UNITED STATES MARINE CORPS
2D MARINE AIRCRAFT WING
II MARINE EXPEDITIONARY FORCE
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G-3/CBRN
JUL 28 2011

WING ORDER 3400.4E

From: Commanding General, 2d Marine Aircraft Wing
To: Distribution List

Subj: STANDING OPERATING PROCEDURES (SOP) FOR CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR (CBRN) OPERATIONS (OPS) (SHORT TITLE: SOP FOR CBRN OPS)

Ref: (a) MCO 3400.3F
(b) MCO 3500.70
(c) MCO 3750.2
(d) MCWP 3-37
(e) MCWP 3-37.1
(f) MCWP 3-37.2
(g) MCWP 3-37.3
(h) MCWP 3-37.4
(i) MCWP 3-37.5
(j) MCRP 3-37.2A
(k) MCRP 3-37.2B
(l) MCRP 3-37.2C
(m) OPNAVINST 3710.7T
(n) OPNAVINST 4790.2
(o) NAVAIR 00-80T-121
(p) NAVAIR 00-35-QH-2
(q) NAVAIR 13-1-6.10
(r) NAVAIR 01-1A-509
(s) WgO 5100.29B

1. Situation. To implement references (a) through (s) and promulgate training and readiness policies, procedures and specific guidance to enable the 2d Marine Aircraft Wing (MAW) to prepare for operating in a CBRN environment.

2. Cancellation. WgO P3400.4D.

3. Mission. The potential CBRN threat requires that 2d MAW personnel and units at all levels of command be familiar with

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the actions necessary to counter such attacks and continue with their assigned missions. The references provide performance objectives, maintenance procedures, training requirements and procedures for Marines and Sailors within 2d MAW operating in a CBRN environment.

4. Execution. This Order contains major chapter and paragraph modifications, which are designed to provide ease in locating specific items and a more comprehensive understanding of procedures, operations and training of CBRN Operations. This order contains a substantial number of changes and new procedures and must be completely reviewed.

5. Administration and Logistics. Commanding Officers (COs) will be guided by the provisions of this order in CBRN readiness. Units will publish amplifying standard operation procedures to meet local requirements.

6. Command and Signal

a. Command. This Order is applicable to all units within 2d MAW.

b. Signal. This Order is effective on the date signed.

R. W. REGAN
Chief of Staff

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LOCATOR SHEET

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Location: _____
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SOP FOR CBRN OPS

RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporated Change

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CHAPTER 1

INTRODUCTION

1. General. This order comes under the cognizance of the Assistant Chief of Staff (AC/S), G-3, 2d MAW. Copies can be obtained through the 2d MAW CBRN section, Building 4081, Marine Corps Air Station (MCAS), Cherry Point. This order addresses CBRN considerations by the General Staff, the CBRN responsibilities of subordinate commands, the procedures, training and equipment necessary to execute those responsibilities and how CBRN readiness is evaluated.

2. Scope. This order contains instructions for the standardization of tactics and techniques for the following aspects of CBRN operations: staff, organizational and individual responsibilities, operations, organizational training, logistics and inspections.

3. CBRN Defense Terminology. The Marine Corps has historically used "Nuclear Biological and Chemical (NBC) Defense" to describe those operations conducted by the operating force to defend against CBRN weapons. Department of Defense (DoD) and the Joint Staff have adopted CBRN Defense. The Marine Corps' use of the term "CBRN" in this and other Marine Corps publications is synonymous with NBC Defense.

4. Policy. Avoidance of CBRN contamination is the most important policy of CBRN Operations. If avoidance is not possible, the protective measures necessary to effectively continue the mission must be applied. Decontamination, if required, will be conducted as time and mission permit. Once CBRN warfare has been initiated, any attack by a weapons system capable of delivering CBRN agents will be considered a CBRN attack until verified as otherwise.

5. Command Responsibility. The commander is responsible for the organization's readiness to meet conditions produced by CBRN weapons.

6. Supporting Publications. All subordinate organizations must retain a copy of this order, all doctrinal publications that speak to CBRN capabilities inherent to that unit and all technical publications relevant to that unit's echelon of maintenance for their CBRN Table of Equipment. Publications may be hard copies or electronic copies.

7. Marine Air-Ground Task Force (MAGTF) CBRN Operating Concept. This order is based on an operating concept that has been tailored to support Expeditionary Maneuver Warfare (EMW). The concept was approved by the Marine Requirements Oversight Council (MROC) and now provides the basis for operations planning and existing military doctrine, organization, materiel acquisition, training, education, tactics, techniques and procedures.

8. Fundamentals of CBRN Defense. The comprehensive U.S. counter proliferation strategy consists of a set of mutually supporting core capabilities. These core capabilities are counterforce operations, active and passive defense, and Consequence Management (CM) operations. To fight and win under CBRN conditions requires an application of effective counterforce, active defense, passive defense and consequence management measures.

a. Counterforce Operations. While typically a mission conducted at the operational level of war, counterforce operations are generally conducted early in a campaign to apply strategic air power and missile forces to render an enemy's capability to deliver CBRN weapons impotent. When conducted effectively and early in a campaign, counterforce operations will severely restrict an enemy's ability to apply CBRN fires in the battle space.

b. Active Defense. This facet of CBRN Defense involves employing capabilities in the battle space to detect, track, identify, intercept and destroy and neutralize CBRN warheads delivered by airborne launch platforms, ballistic missiles and cruise missiles, while minimizing collateral effects.

c. Passive Defense. Measures taken to reduce the vulnerability and minimize the effects of CBRN employed against forces, key installations, any U.S. installation and facility and ports of embarkation and debarkation. Commanders should initiate Weapons of Mass Destruction (WMD) CM planning and integration. Commanders will employ measures that may include early warning, avoidance, operations security, dispersion, individual and collective protection, WMD medical response, detection, reporting and decontamination. All CBRN operations and capabilities fall into one of four CBRN Functional Categories: Sense, Shape, Shield, and Sustain. The Marine Corps focuses these concepts to allow commanders to make decisions quickly and heavily relies on proper staff education on operating in a CBRN environment. Operations in a CBRN

environment will focus on Operational Risk Management (ORM) guided decisions that allow the Commander to minimize the operational impact of enemy CBRN weapons employment.

(1) Sense. Continually provide the information about the CBRN hazard at a time and place by early detection, identifying and quantifying hazards (in all physical states) in air, water, on land, personnel, equipment or facilities.

(2) Shape. Describe the CBRN hazard to the Commander. In conjunction with other information this creates a state of situational understanding, which is crucial to battle management. This allows the Commander to make informed decisions to optimize our capability to operate in the CBRN environment.

(3) Shield. Shield the force from harm caused by CBRN hazards by hardening systems and facilities, preventing or reducing individual and collective exposures and applying prophylactics to prevent or mitigate weapons effects on personnel and equipment.

(4) Sustain. Continue operations through the conduct of decontamination and medical actions that enable the quick restoration of combat power, maintain/recover essential functions and facilitate the return to pre-incident operational capability as soon as possible.

d. Consequence Management. Forces may be required to support civil authorities in domestic or foreign situations/incidents due to deliberate or unintentional use of CBRN weapons or materials. Commanders must prepare an appropriate response to meet the full spectrum of CBRN incidents, both deliberate and unintentional, to support civilian, Hospital man (HN) or military installation recovery. Support to civil authorities from DoD would be according to applicable federal emergency plans and would likely require coordination and cooperation with agencies, organizations and individuals outside the military's chain of command or direct control.

9. CBRN Defense Integration. CBRN functions allow for the integration of all Marine Corps and Joint CBRN missions; Counter Force, Active Defense, Passive Defense, Consequence Management and Force Protection.

CHAPTER 2

STAFF RESPONSIBILITIES

1. Command Function. CBRN operations are under the staff cognizance of the AC/S, G-3.

2. Assignment of Responsibilities. To effectively defend against a CBRN attack, Commanders and Staff Officers require a general knowledge of the characteristics, effects and concept for employment and defense against CBRN munitions. The technical knowledge and skills required for CBRN defense are provided by personnel especially trained for CBRN duties. These specialists form the nucleus (CBRN section) for CBRN staff functions. The CBRN Officer, under the cognizance of the Operations Officer, supervises the Nuclear, Biological and Chemical Center (NBCC) and all CBRN operations. At each echelon of command, the CBRN Officer/Non-Commissioned Officer (NCO) assists and makes recommendations to the appropriate Staff Officer. As a Staff Officer, the CBRN Officer has no authority over subordinate Commanders. CBRN defense is part of all operations and CBRN defense operations are often conducted with the same assets that perform other tasks assigned to subordinate Commanders. Therefore, care must be taken when delegating authority to CBRN Officers to ensure that their instructions and those of the Commander and Operations Officer do not conflict. Timeliness, accuracy and efficiency of 2d MAW command and staff actions in a CBRN environment depend on the staff's state of preparedness. Staff Officers need to understand the characteristics and effects of CBRN weapons as they relate to the conduct of specific war fighting functions. Staff considerations for CBRN warfare must become a routine concern in the planning and training phases of 2d MAW's continuous preparation for combat operations.

3. AC/S, G-1

a. Prepares and maintains CBRN casualty records, reports and unit radiation dosage records in coordination with the Medical Officer and CBRN Officer/NCO.

b. Anticipates casualty levels for areas assessed as prime CBRN targets and plans for emergency replacements required per anticipated casualty levels.

c. Coordinates radiation exposure status of subordinate organizations with the G-3 and Medical Officer.

d. Incorporates contamination considerations.

e. Determines straggler control measures.

f. Supervises graves registration.

g. Coordinates with the CBRN Officer for the handling of Prisoners Of War (POWs) in order to provide CBRN protective equipment and self-decontamination operations as specified in current international agreements and treaties.

h. Coordinates with the G-3 for the appropriate priority/assignment of personnel to CBRN billets.

4. AC/S, G-2. Supervise the production and dissemination of intelligence in the following areas:

a. Enemy CBRN capabilities including production capabilities, weapons and delivery systems.

b. Enemy CBRN defense equipment and training status.

c. Enemy intent to use CBRN weapons.

d. Identifies and locates enemy targets appropriate for nuclear attack.

e. Initiates activities that degrade and counter the enemy's ability to acquire targets for CBRN attack.

f. Recommends CBRN reconnaissance of routes and areas.

g. Assist in vulnerability analysis.

5. AC/S, G-3

a. Ensures all squadrons are capable of accomplishing all Mission Essential Tasks (METs) in a CBRN environment.

b. Prepares operation plans, orders, appendices and annexes in accordance with the Commander's guidance for CBRN operations.

c. Considers the CBRN threat when determining the general location of the command post.

d. Plans and coordinates CBRN defense training and inspections.

e. Reviews and updates CBRN defense SOPs as well as training SOPs.

f. Prepares and supervises the CBRN training program.

g. Supervises training of CBRN monitor/survey teams, decontamination teams and CBRN control center personnel.

h. Inspects CBRN equipment of subordinate units.

i. Activates the NBCC and coordinates its activities.

j. Conducts vulnerability analysis.

k. Prepares and disseminates friendly force hazard predictions, Minimum Mission Oriented Protective Posture (MOPP) recommendations and effective downwind messages to subordinate units.

l. Recommends required units, personnel and equipment to conduct radiological/chemical surveys.

m. Forwards CBRN reports and enemy CBRN attack alerts to higher, subordinate and adjacent units or headquarters.

n. Directs and supervises chemical detection, biological sampling and radiological monitor/survey operations and reports within the unit.

o. Ensures the preparation and promulgation of troop safety information.

6. AC/S, G-4

a. Disperses logistic support facilities to reduce vulnerability to CBRN weapons.

b. Plans for increased transportation requirements due to the dispersion of units, increased demand for CBRN replacement equipment and decontamination logistic requirements.

c. Ensures availability of CBRN defense equipment.

d. Supervises maintenance of CBRN defense equipment.

e. Develops plans to transport increased numbers of uncontaminated and contaminated casualties.

f. Plans for decontamination operations in response to a CBRN attack.

g. Prepares plans for and when directed, supervises the construction and/or use of personnel shelters, decontamination sites, emergency power plants and laundry facilities.

h. Receives recommendations from the CBRN Officer or NCO on CBRN equipment and supply requirements.

i. Receives CBRN equipment and supply request information from the CBRN Officer or NCO and effectively ensures distribution.

j. Supervises installation and establishment of collective protection facilities as recommended by the CBRN Officer or NCO.

k. Coordinates movement of convoys or contact teams along contaminated routes.

l. Plans and coordinates mortuary affairs and graves registration.

7. AC/S, G-6

a. Provides a communications-electronics annex to operational orders/plans. This includes appropriate net utilization for CBRN traffic if required.

b. Provides communications for CBRN teams directly under the control of the headquarters.

c. Prepares special communications plans for mass casualty evacuation.

d. Plans to counter the effect of electromagnetic pulse on communication equipment.

8. Medical Officer

a. Describes treatment procedures for CBRN casualties.

b. Ensures that facilities for treatment of CBRN casualties are available.

c. Supervises the inspection of food and water supplies for signs of contamination.

d. Coordinates with the CBRN control center to monitor and evaluate a subordinate unit's nuclear radiation exposure history.

e. Advises the Commander and G-3 on the impact of a unit's additional exposure.

f. Makes recommendations to prevent and takes actions to detect, contamination of food and water supplies.

g. Coordinates the collection and processing of all biological samples with the unit CBRN Officer.

h. Oversees periodic monitoring of all individual health records to ensure up-to-date immunization of all personnel against potential biological agents.

i. Verifies that personnel requiring optical inserts have them.

j. Ensures the training of medical personnel in the treatment of CBRN casualties.

k. Coordinates the training of Marines to identify CBRN symptoms.

l. Provides first aid response in conjunction with the G-3.

m. Coordinates, with the G-4, the procurement and distribution of all medical supplies required for the treatment of CBRN casualties.

n. Develops plans, in coordination with the G-4, for the handling and movement of contaminated casualties.

o. Plans and supervises medical treatment of POWs and civilian internees and detainees that may have been exposed to CBRN agents.

p. Assists the G-1 in maintaining radiation exposure records.

q. Maintains and distributes, in coordination with the CBRN Officer or NCO, information on CBRN antidotes.

r. Coordinates with the CBRN Officer or NCO to determine the requirements for medical personnel in casualty decontamination.

9. CBRN Defense Officer

a. Advise the Commander on CBRN defense readiness.

b. Advise the Commander on operational exposure guidance.

c. Prepare the CBRN defense plans, orders and instructions necessary to implement the Commander's policies. This includes SOPs for CBRN defense, CBRN orders and annexes and CBRN inspections.

d. Determine and recommend requirements for CBRN supplies and equipment.

e. Estimate personnel, equipment and supply requirements to support the CBRN appendix of the operation order.

f. Coordinate and develop CBRN defense training exercises.

g. Evaluate unit CBRN defense readiness.

h. Supervise operation of the NBCC.

i. Conduct and supervise CBRN inspections.

j. Provide recommendations for the training of the command and for the training of CBRN specialists. This includes formal school quotas.

k. Provide technical assistance in the examination of captured CBRN equipment.

l. Plan and make recommendations for decontamination functions.

10. Marine Aircraft Group (MAG) CBRN Officers

a. Support and evaluate all required squadron aircrew Chemical Biological Radiological Defense (CBR-D) special mission aircrew equipment ensemble familiarization training to ensure that squadron aircrews are familiar with the function, donning and wearing of the CBR-D special mission aircrew equipment ensemble as directed. Further guidance can be found per reference (q).

b. Support and evaluate all required squadron aircrew CBR-D specific T&R training to ensure that squadron aircrew conduct CBR-D specific training and readiness (T&R) based on aircraft Type/Model/Series (T/M/S) requirements prior to deployment.

c. Support and evaluate all required squadron flight equipment personnel CBR-D Individual Protective Equipment (IPE) familiarization training to ensure that squadron Flight Equipment personnel are familiar with all aspects of required Aircrew CBR-D IPE requirements, maintenance and inspections as directed. Further guidance can be found per references (n) and (q).

d. Support and evaluate all required squadron aviation specific CBRN Defense Team training to ensure that squadron CBRN Teams incorporate aviation specific training, based on aircraft T/M/S, into quarterly team training.

11. CBRN Defense Specialist

a. Assist the CBRN Officer in the execution of duties.

b. Inspect or assist in the inspection of CBRN equipment for serviceability.

c. Maintain or assist in maintaining CBRN equipment.

d. Assist the CBRN Officer in ensuring that CBRN SOPs are up to date and effectively promulgated.

e. Maintain or assist in maintaining CBRN publications.

f. Recommend unit CBRN training requirements.

g. Provide direct supervision to the administration of the NBCC.

h. Plan CBRN monitor/survey operations.

12. CBRN Additional Duty Officers. At the squadron level, CBRN responsibilities are usually assigned as an additional duty. These unit CBRN Officers:

a. Train unit-level individuals in the effective use of individual CBRN protective items.

b. Supervise unit monitoring/survey operations.

c. Supervise CBRN reconnaissance of routes and areas to be occupied.

d. Supervise the preparation of CBRN 1 and 4 reports.

e. Maintain unit radiation dosage records.

f. Advise the Group CBRN Officer on the conduct of integrated CBRN training within the unit training program.

g. Assist in first aid or evacuation of CBRN casualties.

h. Supervise basic skills and immediate decontamination of personnel and equipment.

i. Supervise the training of CBRN techniques and procedures (i.e., unmasking procedures and crossing of contaminated area).

j. Supervise the marking of contaminated areas.

k. Supervise the training and activities of the CBRN NCO.

l. Ensure that squadron aircrews are familiar with the function, donning and wearing of the CBR-D special mission aircrew equipment ensemble as directed. Further guidance is provided per reference (q).

m. Ensure that squadron aircrew conduct CBR-D specific T&R training based on aircraft T/M/S requirements prior to any deployment.

n. Ensure that Aircrews receive CBR-D Fleet Air Indoctrination and Liaison of Survival Aircrew Flight Equipment (FAILSAFE) Survival Brief during pre-deployment training as directed. Further guidance is provided per reference (s).

o. Ensure that squadron Flight Equipment personnel are familiar with all aspects of required Aircrew CBR IPE requirements, maintenance and inspections as directed. Further guidance is provided per references (n) and (q).

p. Ensure that squadron CBRN Teams incorporate aviation specific training, based on aircraft T/M/S, into quarterly team training. Aviation specific CBRN training includes:

(1) Aircrew CBR-D IPE familiarization.

(2) Contaminated aircrew doffing.

(3) Contaminated environment ingress and egress.

(4) Launch and recovery in a contaminated environment.

(5) Maintenance of aircraft and equipment in a contaminated environment.

(6) Monitoring of aircraft and equipment for contamination.

(7) Immediate and operational aircraft decontamination.

(8) Aircraft handling and operations in a contaminated environment.

(9) Ensure Maintenance Departments coordinate with the CBRN section and Aviation Logistics Dept (ALD) to establish TMS procedures for aircraft non-destructive inspection (NDI), to conduct monitoring for the presence of CBR contamination. Further guidance is provided per references (n) and (o).

(10) Ensure Maintenance Departments coordinate with the CBRN section and ALD to establish TMS/Site specific procedures for contaminated aircraft cleaning/maintenance process and procedures. Further guidance is provided per references (n), (o) and (r).

13. Aeromedical Safety Officer

a. Ensure completion of Aircrew CBR Survival Brief for deploying squadrons as directed. References (c) and (s) provide further guidance.

b. Ensure aircrew CBR-D IPE configurations and aircraft compatibility is current with Naval Air (NAVAIR) Aviation Life Support Systems (ALSS) guidance. Reference (q) is provided for further guidance.

c. MAG Aeromedical Safety Officers shall be responsible for the conduct of squadron aircrew CBR-D Survival pre-deployment training in accordance with references (c) and (s).

14. Flight Equipment Chief

a. Ensure all squadrons possess adequate quantities of Aircrew CBR IPE as directed prior to any deployment. References (m) and (p) are provided for further guidance.

b. Ensure squadron Flight Equipment personnel are familiar with all aspects of required Aircrew CBR IPE requirements and inspections as directed. References (n) and (q) are provided for further guidance.

c. Ensure squadron Flight Equipment personnel maintain aircrew CBR IPE and are familiar with fitting, modifications, donning procedures, location drills and function checks as directed. Reference (q) is provided for further guidance.

d. Coordinate with CBR-D for Emergency Reclamation teams to recover and dispose of contaminated aircrew IPE. Refer to reference (n) for further guidance.

e. Identify inventories of aircrew CBR-D IPE.

15. MAG Aircraft Maintenance Officer (AMO)

a. MAG and squadron Maintenance Departments will coordinate with the CBRN section and ALD to establish TMS procedures for aircraft Non-Destructive Inspection (NDI), to conduct monitoring for the presence of CBR contamination. Refer to references (n) and (o) for further guidance.

b. MAG and squadron Maintenance Departments will coordinate with the CBRN section and ALD to establish TMS/Site specific procedures for contaminated aircraft cleaning/maintenance process and procedures. Refer to references (n), (o) and (r) for further guidance.

16. Naval Aviation CBR-D Coordinator

a. Assist and advise the CBRND Officer on all matters pertaining to the Naval Aviation CBR-D program.

b. Assist and advise the Flight Equipment Chief in determining the aircrew CBR-D IPE requirements needed for deploying units and tracking of CBD IPE assets.

c. Conduct tech training for MOS 57XX personnel on ALSS CBD IPE and aviation CBD operations.

d. Coordinate with and assist MAG CBRN sections with subordinate squadrons' CBRN training programs relating to aviation CBRN operations.

e. Conduct squadron aircrew ALSS CBR-D IPE training/ familiarization.

f. Conduct squadron flight equipment personnel tech training /familiarization of ALSS CBR-D IPE.

g. Maintain awareness of any CBR-D Program technical and logistics issues affecting Naval Aviation.

h. Be familiar with emerging programs that will affect the future of CBR-D ALSS.

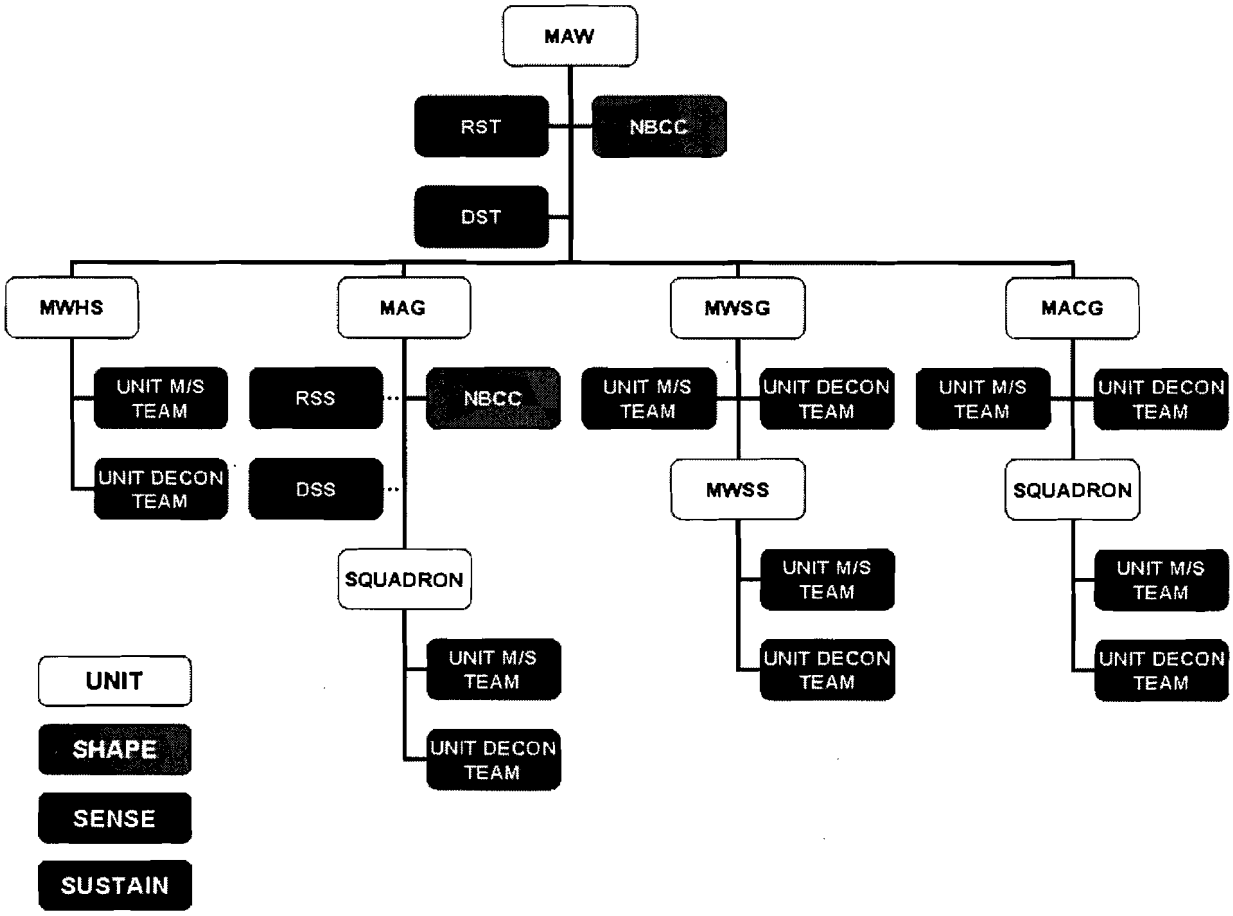
CHAPTER 3

ORGANIZATIONAL STRUCTURE

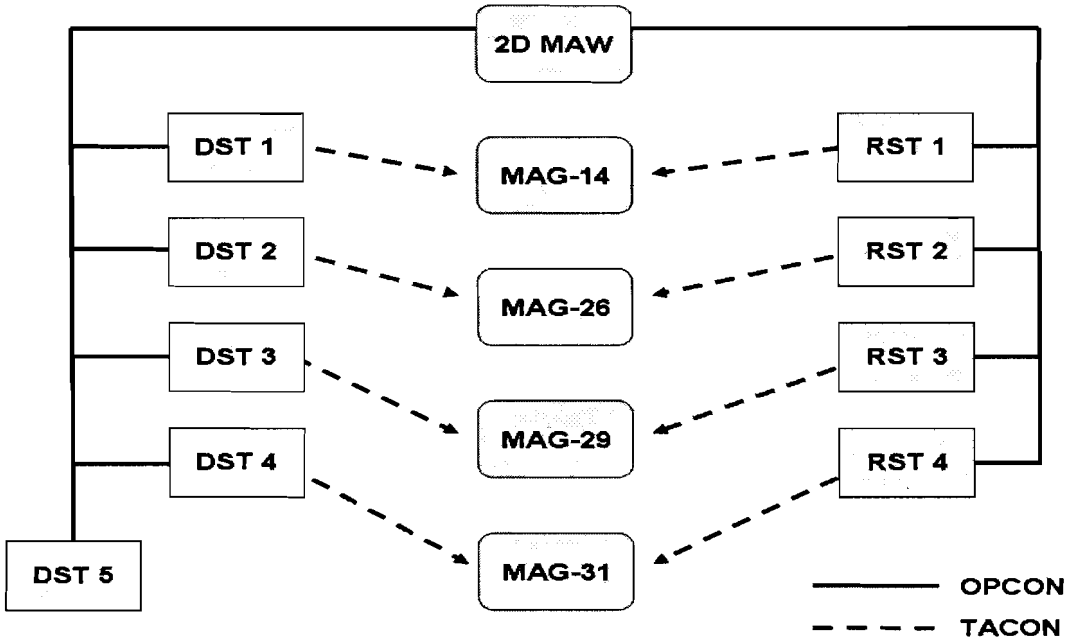
1. General. To conduct CBRN defense effectively, units require a clear understanding of the mission, command relationships and available resources.

a. Since 2d MAW has a limited number of Military Occupational Specialty (MOS) qualified CBRN specialists (MOS' 5702 and 5711), these specialists are placed where they will have the greatest impact on overall mission accomplishment.

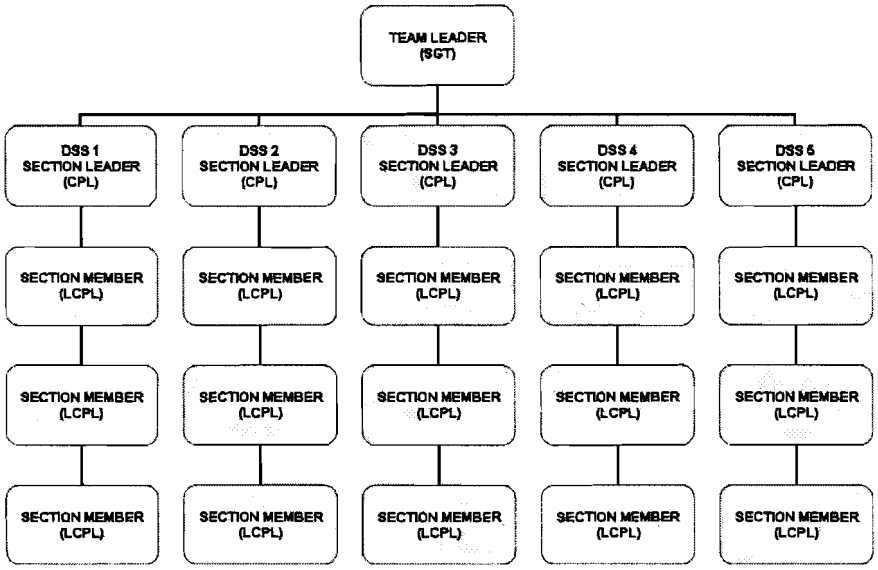
b. The success of a CBRN team relies on the competency of the individual Marine. Individual Marines must hone their CBRN skills and their understanding of CBRN defense operations. Their responses to CBRN defense operations must become conditioned responses.



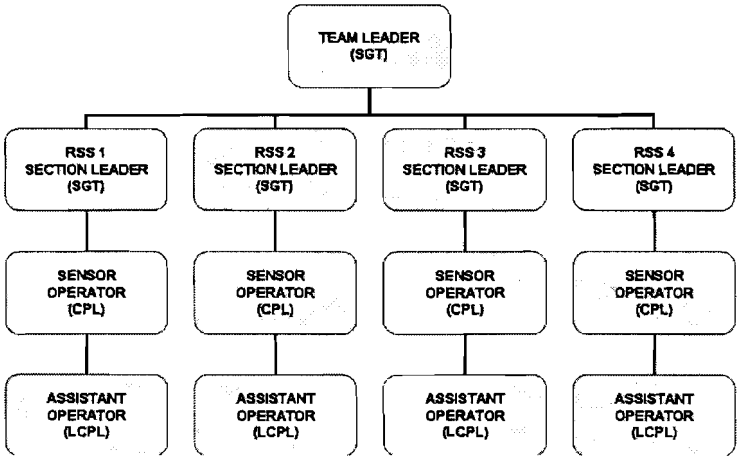
2. 2d MAW CBRN Support Teams. The 2d MAW CBRN Support Team has two sub-teams within it, a Decontamination Support Team (DST), and a Reconnaissance Support Team (RST). These teams are further divided into five Decontamination Support Sections (DSS) and four Reconnaissance Support Sections (RSS). When activated, one DSS and one RSS are attached to each MAG to reinforce the decontamination and reconnaissance efforts of its respective MAG.



a. Decontamination Support Team (DST). DST is trained and equipped in a manner that facilitates task organization and tailoring to specific decontamination operations. Teams are force multiplied by unit decontamination teams to support sustained operations. The DST is comprised of CBRN Defense Specialists that are task organized as required to support operations. The actual Concept of Employment (COE) will initially be based upon the vulnerability analysis and adjusted as required to respond the enemy's use of CBRN agents. Each DSS is trained and equipped to support Vehicle/Aircraft Wash down, Casualty Decontamination Sites (CDS) or additional thorough decontamination operations if required.



b. Reconnaissance Support Team (RST). CBRN detection systems are used to support the CBRN recon efforts. The RST is primarily responsible for conducting CBRN recon operations. All three section members of the RST must be cross trained for all duties.



3. Group CBRN Sections. CBRN defense specialists are normally consolidated at the Group level. This allows for centralized control of the maintenance of equipment, CBRN warning and reporting and CBRN training. Group CBRN Sections shall be able to:

a. Coordinate all CBRN related issues that involve or impact other staff sections and subordinate elements.

b. Participate in staff briefings.

c. Coordinate all CBRN operations within the command.

d. Coordinate support for those CBRN operations that are beyond the command's capability, through the higher headquarters NBCC.

e. Prepare the unit's CBRN vulnerability analysis.

f. Recommend the unit's MOPP Level. Subordinate squadrons may need to be separately assessed, as one MOPP level may not be appropriate for the entire unit.

g. Develop, implement, support and supervise the unit's surveillance and monitoring plan.

h. Ensure that the unit's staff and subordinate commands are aware of any higher headquarters CBRN reconnaissance missions being conducted in the area.

i. Collect surveillance and monitoring data, prepare and forward the appropriate CBRN reports to the higher headquarters NBCC.

j. Receive and analyze CBRN reports from the NBCC and advise the staff on any actions required to avoid or mitigate CBRN contamination.

k. Compile the unit's radiological exposure status and forward it to the NBCC. Recording of individual exposure is a medical responsibility.

l. Review the NBCC's decontamination plan to ensure that it provides adequate support for the unit.

m. Operate the Joint Warning And Reporting Network (JWARN). Units staffed with CBRN Defense personnel (MOS 5702 and 5711) must be prepared to operate JWARN. JWARN use is dependant upon the operational scenario. In those instances when the CBRN Defense personnel are not able to operate JWARN, they must be able to manually produce, receive, plot and record CBRN reports.

4. Subordinate Command CBRN Teams

a. General. Although CBRN specialists are not located at all levels, all units are still required to:

b. Appoint a collateral duty CBRN Officer in writing, if the unit does not rate an MOS 5702 by Table of Organization (T/O).

c. Appoint a collateral duty CBRN NCO in writing, if the unit does not rate an MOS 5711 by T/O.

d. Maintain individual and unit CBRN defense equipment. This includes maintenance, calibration, distribution and requisition of this equipment.

e. Ensure that each equipment or vehicle operator, weapons crewman and aircraft crewman can perform spot decontamination of their equipment, vehicle or aircraft.

f. Squadron monitor/survey teams provide the commander with the ability to rapidly confirm or deny information obtained from level I detectors, as well as operate level II detectors. The team assists in collection of radiation exposure data and conducts monitoring and/or surveillance of unit areas of concern and during command post movement. If directed, each squadron will provide personnel in support of airfield monitor/survey team operations.

g. Each squadron will be capable of performing immediate decontamination and supporting operational decontamination of its personnel and equipment. If thorough decontamination operations are necessary, each squadron should be prepared to augment with extra personnel to facilitate their support of squadron decontamination efforts.

h. Commanders should consider the following while forming the unit's CBRN defense team:

(1) All CBRN personnel and equipment organic to, assigned to or under the operational control (OPCON) to the unit.

(2) Additional CBRN equipment and personnel available from senior agencies.

(3) The unit's command and support relationships.

(4) The availability of CBRN specialists (MOS 57XX).

i. All echelons of command must supervise and reinforce the CBRN defense efforts of subordinate elements. Each commander in 2d MAW must prepare and implement CBRN defense measures while also ensuring that their subordinates can operate in a CBRN environment.

j. Units at all levels must be capable of performing the following:

(1) Detecting and identifying CBRN agents and materials.

(2) Warning of and reporting CBRN attacks and hazards.

(3) Performing individual/collective protection measures.

(4) Decontaminating personnel and equipment, as required.

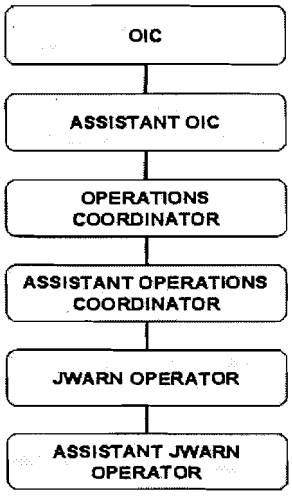
(5) Administering first aid following unit medical operations and OEG.

5. Unit Monitor/Survey Team. All commands that function as an integral unit during combat operations will be trained and equipped to conduct local area surveillance and monitoring. All commands will establish a Monitor/Survey (M/S) team. Teams will be task organized to perform their recon missions based on mission requirements and the Commander's priorities. The M/S teams provide the Commander with the ability to rapidly confirm or deny information obtained from level I detectors, assist in collection of radiation exposure data, operate level II detectors, conduct surveillance/monitoring of unit areas of concern and during command post movement.

6. Unit Decontamination Teams. All commands that function as an integral unit during combat operations will be trained to support casualty decontamination, MOPP Gear Exchange and Vehicle/Aircraft Wash down. Teams will be task organized to support decontamination missions based on mission requirements and the Commander's priorities. The decontamination teams also provide support for thorough decontamination operations if required.

7. NBC Centers (NBCC)

a. General. The NBCC provides the Commander with information that supports rapid decision-making. This ensures the Commander is able to maintain his momentum and his desired Operations Tempo (OPTEMPO) while emphasizing to the enemy commander that CBRN employment is ineffective against U.S. Forces. The NBCC monitors and coordinates all CBRN defense operations and is the hub for CBRN defense battle management within the Wing. It is responsible for collecting, collating, analyzing and disseminating all CBRN related information. CBRN information originating from many different agencies and units is compiled, evaluated and validated. Validated information is disseminated via the C4I network where commanders at all levels can access it. Personnel assigned to MOS 5702 and 5711 are assigned as NBCC members and must be capable of coordinating all CBRN operations.



8. 2d MAW NBCC. The 2d MAW CBRN section contains the personnel required to staff an NBCC. This center is normally located in the Tactical Air Command Center (TACC). These personnel perform overall CBRN defense planning, organization and readiness. The NBCC requires a minimum of six personnel for continuous operations. It maintains close coordination with all intelligence assets in order to exchange CBRN reconnaissance, surveillance and monitoring intelligence.

9. MAG NBCC. Groups are staffed with CBRN Defense personnel (CBRN Section) who coordinate all CBRN operations within their command. The CBRN Section is resident within the S-3 and the total number of personnel varies depending upon the type of unit. All subordinate commands must be able to communicate with the higher headquarters NBCC and are responsible for coordinating and/or conducting those CBRN defense operations necessary to support the command.

10. Squadron NBCC. Squadrons do not establish an NBCC team, however, they must be prepared to submit CBRN 1 and 4 reports to higher headquarters. They also must be capable of analyzing and assessing CBRN reports in order to take appropriate actions.

CHAPTER 4

OPERATIONS

1. General. Contamination avoidance will always be the first principle of CBRN operations. CBRN planning will be based on the vulnerability assessment. The alert conditions designated by the CBRN Warning and Reporting System (CBRNWRS) or the observed/confirmed reports of threat CBRN agent delivery will trigger planned CBRN defensive measures. CBRN objectives are, first to maintain the lowest and least debilitating protective posture without incurring unacceptable risk, second, to warn individuals of hazards so they may take protective action prior to becoming casualties and finally, to provide information to commanders so they can visualize CBRN effects on the battle space and focus assets for efficient, proactive CBRN operations.

2. Sense. Awareness of CBRN hazards is a critical component of overall situational awareness of the battle space. Units must know their location, the location of CBRN hazards and whether the hazards will affect their ability to conduct operations at all times. Under most circumstances, an adversary cannot contaminate an entire area of operations or large installation. Technological and structure limitations determine when and how CBRN detectors are employed. The ability to effectively employ detectors is the cornerstone for achieving informational awareness and situational dominance.

3. Detection Systems. The combined capabilities of detection systems provide the Commander with the assets necessary to accomplish CBRN surveillance, monitoring and reconnaissance operations. No one system by itself can be relied upon to provide coverage.

a. Point Detectors. A point detector's ability to detect a CBRN agent is limited to the area immediately surrounding the detector. In most cases the detector is employed only a few inches from the contamination or in the contamination itself.

b. Standoff Detectors. A standoff detector has the ability to detect a CBRN agent as far as several kilometers from where the detector is located. The actual distance varies depending on the type of detector employed. The detector's ability is limited to line of sight and will not detect agent clouds that are obscured from sight.

c. NBC Reconnaissance Systems (NBCRS). NBCRS are mobile platform based systems that have been dedicated for conducting CBRN reconnaissance operations. NBCRS may provide a combination of CBRN point detection, standoff detection, warning and reporting, sample collection, etc. The combined capabilities of

these detection systems provide the commander with the assets necessary to accomplish CBRN surveillance, monitoring and reconnaissance operations.

4. Detection Capability Levels. Detection capability levels are used to assist the commander in employing their detectors in a manner that limits redundancy while simultaneously ensuring that sufficient detectors are available to support the mission. Each level may include both point and standoff detectors. The agent(s) detected will be based on the threat.

LOCATION	CAPABILITY LEVEL
Individuals	Level I
Squadrons	Level I-II
Groups	Level I-III
CBRN Support Teams	Level I-III

a. Level I Detectors. Level I detectors are fielded in large quantities and provide a limited capability at low cost. Level I detectors are small, light weight (worn or carried by personnel for long periods of time with little or no degrading effect), individual and platform/facility-based detectors whose functions are primarily to detect and warn. All personnel can use these detectors with little or no training.

b. Level II Detectors. Level II detectors are fielded in moderate quantities providing transportable and man portable detectors whose function is to detect, warn and identify CBRN Agents. Level II detectors may have the ability to be remotely controlled, monitored and report via the CBRN network. Special training is required for those personnel who employ level II detectors.

c. Level III Detectors. Level III detectors are fielded in limited quantities providing transportable/man portable detectors whose function is to detect, warn, sample, identify, quantify and report CBRN agents. Level III detectors may have the ability to be remotely controlled and monitored and to report via the CBRN network. Level III detectors require specialized training for proper operation and employment.

5. Detector Employment

a. Detector Employment Plan. The NBCC will develop a detector employment plan that ensures sufficient detectors are employed. The plan will focus on eliminating redundancy by integrating detection capabilities. The plan must clearly outline how Level II and III detectors will be employed. The plan will also identify the network used to forward detection information between the NBCCs.

(1) Multiple detectors that provide various capabilities and methods of detection are employed in accordance with the detector employment plan to provide integrated coverage of the battle space. This allows the detectors to achieve synergy and compensate for gaps in coverage or technological limitations in any single detector or sensor. The information gained from the CBRN detectors complements the information from intelligence systems, theater missile defense systems and all other C4ISR sources.

(2) The CBRN detector employment plan will ultimately provide enhanced situational awareness of the battle space. Enhanced situational awareness increases force readiness by eliminating the requirement to unnecessarily don protective equipment when no hazard is present and provides a warning of an actual CBRN attack in sufficient time for personnel to take protective measures and actions. Situational awareness requires combining data from level I through III detectors to yield near-real time detect-to-warn capabilities and initiate appropriate medical actions.

b. Detector Employment Methods. Individual employment is the easiest means of providing detector coverage for a unit's area(s) of concern. Unit detection plans may take advantage of personnel assigned to perimeter security, watch standers and other duties that allow for dispersion of the detectors in a manner that provides adequate area coverage and availability of communications. Operation of these detectors should not interfere with the individuals' primary duties.

(1) Attended. This method relies primarily upon level I and II detectors being used to provide attack warning to personnel in the immediate area who will pass detection information to the NBCC. Depending upon the type of detector employed, detection information may be passed via the interactive CBRN network either manually or automatically using available communications assets. When using this method, the detector is not left unattended and the detector location is reported to the NBCC only when it detects a CBRN hazard/event or when requested. M8 and M9 paper may be used in conjunction with other detectors to ensure all areas of concern are adequately covered. Both M8 and M9 should be checked frequently when place in areas that are not under the direct observation of unit personnel.

(2) This method is limited to level II and III detectors that can be remotely operated/monitored. Remote employment is best suited for fixed sites and other secure locations from which the unit does not plan to move on short notice. Detection information from remote detectors is passed to the interactive CBRN network using available communications assets and/or is hardwired.

6. Aerial Reconnaissance. Aerial reconnaissance may be used to support the Radiological and Nuclear reconnaissance efforts. Personnel from any MOS can make up the aerial reconnaissance teams.

a. Aerial reconnaissance operations will be requested through and coordinated by the NBCC Operations Coordinator.

b. All Marine Light/Attack Helicopter Squadrons (HMLA) will be prepared to provide Aircraft and crew (not the reconnaissance team) to support CBRN reconnaissance operations.

c. The NBCC Operations Coordinator will task organize the reconnaissance team needed to conduct the aerial reconnaissance mission.

7. Biological Sampling, Presumptive Identification, Evacuation, and Validation Procedures. Enemy use of biological warfare agents is primarily a medical management problem. Given the current technological limitations, we rely upon the ability to collect samples that can be subsequently tested for biological agents. Current biological sampling systems are not well suited for employment by all elements of the 2d MAW. Current systems are best suited for fixed site usage. Samples are taken over time and identification of agents requires more time before protective measures and treatment can be initiated. Unlike most chemical agents, an immediate action is not necessarily required for biological agents except in the case of toxins. If biological attack indicators are present, personnel should still perform immediate decontamination and report the attack. Additionally, because of the incubation period related to pathogens, treatment can be administered once the agent has been identified.

a. All RSTs and M/S teams will be trained and equipped for biological sampling.

b. The NBCC Operations Coordinator will oversee the evacuation of all biological samples taken.

c. RSTs and M/S teams will evacuate all biological samples that have been tested positive through unit level presumptive identification using organic biological detection assets (i.e. - Hand-held Assays (HHA)). Biological agent detections using these types of assets are presumptive because they have not been verified using reliable detection methods (i.e. - Theater Army Medical Lab (TAML)).

d. Samples will be expeditiously transported to an approved field or shipboard laboratory (identified by the NBCC Operations Coordinator). When neither a field nor shipboard laboratory is

available, the NBCC Operations Coordinator will need to arrange for a change of custody. RSTs and unit M/S teams will not evacuate samples out of the operational area.

8. Toxic Industrial Radiological (TIR)/Toxic Industrial Chemical (TIC) Reconnaissance. Commanders should make every effort to avoid areas where TIR/TICs may be encountered. Avoidance in part depends on the effective Intelligence Preparation of the Battlefield (IPB). CBRN reconnaissance elements must be trained and equipped to detect and identify TIR/TICs. CBRN reconnaissance elements will conduct reconnaissance operations in areas where TIR/TICs are expected to be encountered only when it is an operational necessity.

9. Shape. Information processing, communications and staffing networks are the key enablers allowing Commanders to gain an understanding of CBRN threats, situations and associated hazards and therefore achieve and maintain decision superiority. CBRN hazard visualization allow the Commander to develop a clear understanding of the CBRN situation and envision the end states of contamination avoidance, protection and restoration actions.

a. Nuclear, Biological, Chemical Center (NBCC). NBCCs coordinate all CBRN operations within the command. The NBCC is resident within the Operations Section and requires a minimum of six personnel for continuous operations. It maintains close coordination with all intelligence assets in order to exchange CBRN reconnaissance, surveillance and monitoring intelligence. Unit CBRN reports will go directly to the NBCC. All members must be capable of assuming any position within the NBCC.

b. Officer in Charge (OIC). The NBCC OIC is a special Staff Officer who supervises the overall operation of the NBCC. In those instances where space is an issue, the OIC does not require a full time seat in the operations center however, the OIC must be able to communicate at all times with the Operations Coordinator and the JWARN Operator. The duties include:

(1) Coordinate all CBRN related issues that involve or impact other staff sections. This coordination requires direct lines of communication to the medical, logistics, intelligence and personnel staff sections.

(2) Supervise the Operations Coordinator. All CBRN Operations must be reviewed by the OIC and approved by the appropriate watch officer prior to execution.

(3) Supervise the JWARN operator.

(4) Approve all reports and overlays before they are posted in C2PC or other C4I networks.

(5) Activate the 2d MAW CBRN Support Team.

c. Operations Coordinator. All CBRN operations are coordinated with the NBCC Operations Coordinator. The Operations Coordinator must be able to communicate at all times with the OIC, JWARN Operator, subordinate command CBRN Section, CBRN reconnaissance elements and decontamination sites/teams. The duties include:

(1) Prepare an overall CBRN vulnerability analysis.

(2) Recommend the MOPP Level. Subordinate commands will establish their own MOPP level based upon their vulnerability analysis and the minimum MOPP level set by the NBCC or Higher Headquarters (HHQ).

(3) Develop, implement, support and supervise the surveillance and monitoring plan.

(4) Develop, implement, support and supervise the CBRN reconnaissance missions.

(5) Collect and analyze surveillance, monitoring and reconnaissance data and prepare CBRN reports and overlays.

(6) Collect subordinate commands radiological exposure status and compile overall radiological exposure status. Recording of individual exposure is a medical responsibility.

(7) Forward CBRN reports and overlays to the JWARN operator.

(8) Develop, implement, support and supervise the decontamination plan.

(9) Once activated, supervise the task organization of the RST and DST into RSSs and DSSs.

d. JWARN Operator. The NBCC JWARN Operator operates the Joint Warning and Reporting Network. The JWARN Operator requires a full time seat in the operations center and must be able to communicate at all times with the OIC, Operations Coordinator, adjacent command NBCCs and subordinate command NBCCs. The JWARN Operator must be able to take reports and overlays generated by JWARN and put them directly into C2PC. The duties include:

(1) Review and disseminate Chemical Downwind Messages and Effective Downwind Messages. Any changes necessary to reflect accurate weather conditions in the operating area must be immediately forwarded to NBCC's.

(2) Collecting, collating and analyzing CBRN information received from subordinate, adjacent and higher NBCCs.

(3) Preparing and disseminating CBRN reports, overlays and information to subordinate, adjacent and higher NBCCs.

(4) Disseminating CBRN reports, overlays and information to subordinate commands through C2PC.

10. Unit CBRN Reporting. Squadrons must be capable of reporting suspected CBRN attacks to their higher headquarters CBRN Section/NBCC. These organizations may not be staffed with CBRN specialists. All personnel assigned to these organizations must be capable of recognizing CBRN attack indicators and reporting what they saw. This information does not need to be in an NBC report format as either the NBC Section or NBCC accomplishes this. Reports of suspected CBRN attacks should be forwarded to the CBRN Section/NBCC as soon as possible and must not be delayed for local validation, gathering additional information, formatting, etc. Units should send a follow up report; ideally in NBC-1 report format after additional information is gathered or validated. Failure to rapidly pass CBRN attack information could result in the needless exposure in the downwind hazard area.

11. Chemical, Biological, Radiological, and Nuclear Warning and Reporting System (CBRNWRS). The collection, evaluation and exchange of information on CBRN incidents are extremely important parts of avoidance. The CBRNWRS is a CBRN avoidance cornerstone.

a. It provides the information transfer necessary to develop the situation. Commanders at all levels must be provided with timely, accurate and evaluated information on contamination from CBRN attacks. These incidents can have a significant effect on military operations, plans and decisions. The primary means of warning units of an actual or predicted CBRN hazard is the CBRNWRS. The CBRNWRS allows Commanders and staffs to determine required protective measures and plan operations accordingly.

b. The CBRNWRS serves to warn of and initiate reaction to threat CBRN agent delivery and to provide estimated or confirmed boundaries of contamination. The CBRNWRS consists of four elements; the NBCC, unit CBRN personnel, the communications means that ties those entities together and CBRN alert conditions. The NBCC at every airfield will be the primary hazard evaluation center and will establish alert conditions for that airfield based on the threat. Every unit CBRN Officer/SNCO/NCO will also serve as that unit's CBRN Advisor. This advisor will provide that units interface with the CBRNWRS and will ensure that those CBRN defensive measures required by the prescribed alert condition are accomplished by their respective commands.

12. Responsibilities. The NBCC collects, evaluates, collates and disseminates information concerning friendly and enemy CBRN operations to the commander, his staff, higher headquarters and subordinate and supporting units. Commanders and their staff use the information to assist them in their decision making process. This information influences the conduct of operations based on the enemy CBRN threat and the existing level of contamination on the battlefield. The NBCC does the following:

a. Receives, evaluates and disseminates CBRN information.

b. Conducts hazard prediction (performs the computation needed to convert basic CBRN information into the required form).

c. Plans the employment of CBRN detectors and sensors.

d. Directs the monitor/survey teams.

e. Coordinates decontamination operations.

f. Coordinates troop safety considerations when friendly nuclear operations are planned.

g. Disseminates overall unit CBRN defense guidance.

13. Briefing the Principal Staff Members. A primary responsibility of the CBRN personnel is getting accurate and timely information to key personnel within the TACC, such as the watch officer, Operations Officer or the unit Commander. The CBRN personnel must be able to brief the required information in a quick and highly efficient manner. There is no established format for what the Commander may want or need to hear. Depending on the type of attack (chemical, biological or nuclear) and the units mission and current status, the information the commander needs may vary. Each Commander or Operations Officer will dictate the exact briefing format for their unit. Typically, the following items are briefed at a minimum:

a. Current Threat Condition (THREATCON). THREATCON lets the commander know what the current CBRN situation is, whether an attack is likely or if there is contamination in the area.

b. Current MOPP level. MOPP level lets the Commander know how well his unit can perform because of MOPP restrictions.

c. CBRN attacks in unit's AOR. What happened? (Received a CBRN report; there was a CBRN attack; time of attack; location of attack; type of agent; whether unit was in the attack or hazard area). What actions the unit took? (Upgraded MOPP; conducted monitoring; confirmed agent type).

d. Effect on unit. Recommended actions units should do next (i.e., displace the unit, conduct decontamination operations, conduct unmasking procedures, reduce MOPP level, etc.)

e. Impact on future operations. Provide estimate of what may happen in the future, review enemy capabilities, advise what the enemy's likely courses of action will be.

14. Unit Journal. The unit journal is a brief, chronological, continuous official record of events and incidents that take place during an operation. It is composed of journal sheets and the journal file.

a. Purpose. The journal is used to record events and incidents as they occur. It provides a complete picture of the activities of the command for the period covered, showing what the unit did, where it was located and what important events took place. As stated earlier, the journal is an important source document for the preparation of historical reports, unit reports and command diaries.

b. Form and Content. The journal normally covers a 24-hour period but may be extended to cover longer periods when prescribed by higher authority. Often the journal will cover the length of an operation or exercise. Standardized journal sheets are used to record signification events in the journal. The amount of detail recorded on the journal sheet will vary with the types of operations being conducted. In general, all incoming and outgoing messages and all relevant information transmitted or received telephonically, via computer, FAX, radio or word of mouth must be accurately captured in the journal. The journal sheets provide a quick reference or brief summary of the information received.

c. Journal File. A journal file is a folder used to file orders, messages, records of conversations and other documents supporting entries made in the journal sheets. Each item that is files in the journal is assigned a document serial number. The serial number is written on the document and on the journal sheet next to the appropriate entry.

15. Shield. Shielding against CBRN hazards leverages sensing and shaping the battle space to avoid contamination. When contamination cannot be avoided, shielding prevents casualties by protecting against direct exposure to the hazard. Shielding begins in the pre-deployment phase by pre-treating personnel to minimize the chemical and biological threat through use of vaccines and other medical countermeasures. Shielding against residual radiation includes individual protective equipment. Personnel are provided with medical vaccines and pretreatments to provide increased resistance to CBRN hazards. Despite avoidance

efforts, a unit may become contaminated, either by direct attack or if the mission dictates movement through a contaminated area. We divide CBRN shield into four broad areas; force protection, collective protection and individual and unit protection.

16. Force Protection. Force protection involves actions taken by a Commander to reduce the vulnerability of his force to a CBRN attack. The unit CBRN Section, NBCC and Medical advise the Commander on CBRN force protection. At the lower levels of command (MAG and below) this will require that the unit conduct MOPP analysis. The final result of this analysis will be a determination of protective equipment to be worn by unit personnel based upon the mission, threat of exposure and intelligence assessments. However, several other decisions concerning alarm placement and automatic masking criteria will be required as a part of the analysis. The NBCC will conduct a vulnerability analysis. The vulnerability analysis is an estimate of the probable impact of an enemy CBRN attack on the force. It occurs prior to and after initiation of CBRN warfare. This analysis will be used in conjunction with mission, enemy, terrain, troops and time available (METT-T) information to determine acceptable means of reducing force vulnerability to enemy attack.

17. Collective Protection. Collective Protection is protection provided for personnel to carry out functions without being restricted by protective clothing. Due to its adverse logistical impact, 2d MAW has very limited ability to employ collective protection assets. 2d MAW capabilities are primarily limited to specific vehicles and specialized shelters. 2d MAW does not have the ability to provide collective protection to buildings, rest and relief facilities, medical treatment facilities, command posts, etc. Current collective protection provides a system that can be employed in support of fixed sites.

18. Individual and Unit Protection. The most important facet to Shield is the ability for individual Marines to protect themselves in the event of a CBRN attack. Individual and unit protection involves those actions taken by individuals to survive and continue the mission under CBRN conditions and must be rigorously exercised in training. It includes those actions taken to protect supplies and equipment, construct field expedient shelters, identify water draw points, establish contamination-free sectors/zones, identify high-value targets and protection provided to an individual by protective clothing and personal CBRN Defense equipment.

19. Sustain. Sustain provides the Commander with the ability to conduct decontamination and medical actions necessary to enable the quick restoration of combat power and facilitate the return to pre-incident operational capability as soon as possible.

Decontamination is the removal or neutralization of hazardous levels of CBRN contamination on personnel and material.

a. Immediate Decontamination. Once an individual is aware of chemical or biological contamination on his bare skin, he initiates immediate decontamination techniques, without command, by using his individual decontamination kit.

b. Skin Decontamination. This begins within one minute of becoming contaminated. Some toxic chemical agents, especially nerve agents, kill within minutes. Using an individual decontamination kit, the Marine decontaminates his exposed skin, mask and gloves. Radiological contamination is removed from equipment and personnel by brushing it off and/or use of soap and water.

c. Personal Wipe down. The personal wipe down technique is most effective when done within 15 minutes of being contaminated. Wipe down the mask, hood, gloves and other essential gear. Use an M291 Skin Decontamination Kit (SDK) pad, a stick or any stiff device to remove the gross contamination from the protective over garment. Scrape any clumps off the material. Brush off radiological contamination or frozen chemical contamination.

d. Operator Wipe down. Decontaminate mission essential surfaces of equipment before continuing the mission. Operator wipe down is most effective when done within 15 minutes of contamination. Use the M100 Sorbent Decontamination System (SDS) to decontaminate those portions of equipment that the individual will contact (steering wheel, crew hatch, etc.) while accomplishing his mission.

e. Spot Decontamination. Aircrews and aircraft ground support crews can use spot decontamination as an immediate measure to remove contamination from critical locations. Spot decontamination is performed to limit the spread of contamination on aircraft that requires servicing between sorties, to support ingress and egress of aircraft by crews and passengers and when performing preflight and post flight inspections. Spot decontamination reduces the contamination on the areas that must be touched during servicing.

20. Operational Decontamination. Operational decontamination operations are designed to limit the spread of contamination, allow temporary relief from MOPP 4 and facilitate additional decontamination requirements. By combining operational decontamination with the weathering process, the need for thorough decontamination may be eliminated. Since a risk of contamination remains, periodic checks with the vapor detectors and M8/M9 detector paper must be performed after each operation.

After operational decontamination the unit may undergo resupply to prepare for future operations.

a. Vehicle Wash down. This procedure will significantly reduce the contamination and may eliminate the need for any further decontamination until retrograde operations begin. Vehicles that have been decontaminated should be allowed to weather. Weathering is a very effective means for decontaminating most chemical and biological agents. When operationally feasible, vehicles that have had interior contamination should leave their doors, windows and hatches open to allow interior spaces to weather. To accelerate weathering, allow the unoccupied vehicle to run for a period of time. This causes thermal desorption of the agent and is effective for mitigating residual vapor hazards that may be present on vehicle interiors. The DST/DSS, with support provided by the contaminated unit, is responsible for setting up, operating and closing the site.

b. Aircraft Wash down. This technique should be employed to reduce the level of contamination on aircraft when time allows between sorties. Aircraft wash down should be performed as a minimum contamination reduction measure when time does not permit detailed decontamination. Aircraft wash down is accomplished by decontaminating surfaces (exterior and interior) that must be touched during aircraft operations. The DST/DSS, with support provided by the contaminated unit, is responsible for setting up, operating and closing the site.

c. MOPP Exchange. A MOPP-gear exchange should be performed within six hours of being contaminated when MOPP drop or thorough decontamination cannot be done. A MOPP exchange allows individuals to continue to wear MOPP gear at a reduced operating tempo. MOPP Exchange is conducted when personnel must remove their contaminated CBRN IPE and immediately re-dress and return to a contaminated area and may be conducted in a contaminated area. Commanders must consider the maximum work rates and work rest cycles when the determination is made to do MOPP exchange verses MOPP Drop. MOPP exchange will normally be conducted only under extreme circumstances. Requiring personnel to remain in MOPP 3 and 4 for extended periods of time may result in a significant number of heat illness casualties and mission degradation. Occupation of contaminated areas must be the exception rather than the rule and Commanders should consider personnel/unit rotation over MOPP exchange when continued occupation of contaminated areas is required. CBRN detection equipment is used to confirm the presence of a persistent agent before conducting MOPP Exchange. Decontamination is not required for non-persistent agents. Personnel/units exposed to non-persistent agents will monitor their area for contamination using available CBRN detection devices. When detectors indicate that

the agent is no longer present, personnel/units will conduct selective unmasking procedures to reduce their MOPP.

d. MOPP Drop. Conducted after CBRN detection equipment or direct observation has confirmed the presence of a liquid or dusty/persistent agent. Decontamination is not required for non-persistent agents. Personnel/units exposed to non-persistent agents will monitor their area for contamination using available CBRN detection devices. When the detectors indicate that the agent is no longer present they will conduct selective unmasking procedures to reduce their MOPP.

21. Thorough Decontamination Operations. The DST is prepared to support thorough decontamination of vehicles, equipment and aircraft. The DST is structured and equipped in a manner that provides a flexible capability. Operational decontamination will be used to support the high OPTEMPO associated with force projection. Thorough decontamination will be conducted in support of retrograde or as required to support unusual circumstances. The goal of a thorough decontamination is to reduce contamination to negligible levels or to eliminate it so that vehicles/aircraft can be operated and maintained safely for extended periods of time without aircrew IPE or MOPP. The NBCC Operations Coordinator will organize and coordinate thorough decontamination operations. The DST and subordinate command decontamination teams, medical personnel and other augments are task organized as required to support thorough decontamination operations.

a. Detailed Troop Decon (DTD). Removing contaminated MOPP gear, including the protective mask, is the major action in DTD. If DTD is not performed, chemical agents may eventually penetrate the over garment and contaminate underclothing or skin. The DST, along with contaminated units, will provide support to HHQ for setting up, operating and closing the DTD site.

b. Aircrew Decon Site (ADS). Removing contaminated IPE, including the respirator, is the major action in ADS. If ADS is not performed, chemical agents may eventually penetrate the IPE and contaminate underclothing or skin. The DST, along with contaminated units, will provide support to HHQ for setting up, operating and closing the ADS.

c. Casualty Decontamination Site (CDS). The DST/DSS maintains a capability set with sufficient supplies and materials to setup one CDS. The DST will require additional personnel augmentation to set up and sustain operations on the CDS. This augmentation will consist of available Marines (CDS workers) and medical personnel who are familiar with triage and treatment of casualties with conventional and CBRN agent injuries. Medical personnel required to support the CDS will be task organized

based on mission requirements and Commanders' priorities. The NBCC will direct the establishment of at least one CDS whenever the vulnerability analysis indicates the likelihood of encountering CBRN contamination.

d. Detailed Equipment Decon (DED). The DED technique is done at the same site as the detailed troop technique. The site must have access to large water sources - rivers, ponds and public water systems are best. The DST, along with contaminated units, will provide support to HHQ for setting up, operating and closing the DED site.

e. Detailed Aircraft Decontamination (DAD). A critical limitation to aircraft thorough decontamination is decontamination of the interior. Electronics, electrical systems and other sensitive components of cockpits, flight decks and cargo areas can become damaged if subjected to the volume of water that would have to be introduced in order to effectively remove contamination from these areas. There are currently no available decontamination technologies, other than using standard aircraft soaps and cleaners to displace contamination from an aircraft. Therefore, in considering thorough decontamination of an aircraft, Commanders must first determine the extent of the contamination to the interior spaces of the aircraft. If these spaces are heavily contaminated, it may make more sense to operationally decontaminate the exterior of the aircraft, spot-decontaminate the interior of the aircraft and allow the aircraft to weather to an acceptable level instead of spending the resources to conduct a thorough decontamination of the exterior. The DST, along with contaminated units, will provide support to HHQ for setting up, operating and closing the DAD site.

22. Special Decontamination Operations. The NBCC will task organize decontamination teams as required to support these operations.

a. Depleted Uranium (DU) Decontamination. DU exposure and incidents may occur anytime there is damage to the DU armor package, when a vehicle is hit with DU munitions, when DU munitions are damaged or equipment components containing DU are damaged. The DU armor package can be damaged during vehicle maneuvers, on-board fires, maintenance activities or ballistic impacts. DU munitions problems may occur during storage, transportation, combat, testing or manufacturing. DU contamination may be present on the ground in areas where equipment was destroyed or damaged. DU emits primarily alpha particles, however, beta, gamma and x-ray ionizing radiation are also emitted. Operational and thorough decontamination procedures, for radiological agents, will be used when decontaminating DU. All personnel will be trained to identify potential DU contamination and take protective actions.

b. Contaminated Remains Decontamination. Contaminated Remains Decontamination is designed to remove CBRN contamination from contaminated remains down to a level that is safe for mortuary personnel to work around. Members of the RST and/or subordinate command M/S teams will monitor remains for contamination. Contaminated remains will be placed in CBRN protective body bags for transport to the mortuary affairs decontamination site. The NBCC Operations Coordinator will coordinate the follow-on decontamination requirements. Site workers can be any MOS available and all support provided will be coordinated through the NBCC Operations Coordinator.

23. Pre-Deployment Administrative Actions

a. CBRN procedures outlined in this order will be reflected in subordinate unit CBRN SOPs within one year of the issue of this Order.

b. Subordinate unit CBRN personnel are authorized and encouraged to reproduce any and all applicable information from this Order for incorporation into their CBRN SOP.

c. When embarking CBRN equipment the Responsible Officer must ensure that appropriate quantities of ground and aircrew CBRN equipment are available to support all personnel assigned, that the contents of the box are correctly stated (to include sizes in plain language, on the outside of the box), that impermeable coverings (sheets of plastic, etc.) are embarked for later use in covering supplies as required and copies of the CBRN equipment lists are disseminated to all supported units.

d. When personnel are attached to any unit, the responsibility for their IPE being transferred with them rests with the detachment OIC. The supported unit should always coordinate with the appropriate logistics section to ensure that quantities of on hand CBRN equipment always meet or exceed the unit's total strength.

e. Every Commanding Officer (CO) will ensure that all personnel within the command have a field protective mask and/or aircrew respirator as required. In addition, all mask and respirator filters will be marked using masking tape and permanent ink showing, at a minimum, the individuals name, SSN and blood type.

f. The location (box number), serviceability and operation of detection and decontamination equipment will be verified.

g. Unit CBRN personnel will be mustered and made aware of the location of detection and decontamination equipment.

24. Administrative Actions Upon Arrival in Theater

a. The NBCC at each airfield will ensure that all subordinate commands are aware of the CBRNWRS communication means and local alarm procedures for that airfield.

b. Every command will ensure that all elements under their operational control are tied into the CBRNWRS.

c. All CBRN equipment will be operationally transferred to the NBCC at the airfield to which they are assigned.

d. The NBCC will designate the circumstances under which CBRN decontamination and M/S teams will be activated, their relief schedule and method of employment. The CBRN detection plan will incorporate this information as each command reports up the chain of command.

e. Upon reporting to a command, all detachments will be incorporated into the CBRN detection plan.

f. When CBRN alert conditions are established, each condition will have a minimum prescribed MOPP level. Subordinate commanders may upgrade these established levels. Caution must be observed in directing upgraded levels based on apprehension rather than necessity.

g. The NBCC at each airfield will initiate detailed contamination control planning upon arrival at each airfield. This includes identifying the potential sites and support necessary to conduct decontamination operations for personnel, equipment, aircraft, aircrew and contaminated casualties. The responsibility for providing technical expertise for the planning, coordination and execution belongs to the NBCC. The decontaminants, equipment and personnel to operate these sites will be identified by the NBCC. The NBCC will in turn source those requirements throughout the tenant commands at that airfield.

h. The NBCC will coordinate with the G4 Medical Planner to identify primary and alternate locations for the staging of contaminated remains and the primary and secondary contaminated casualty collection points.

i. Traffic Control Points at which traffic must be warned of agent transfer hazards or must be diverted to an alternate route are identified within the plan and provisions made for their manning. Any equipment requirements for this purpose will also be identified and sourced. These points can not be established or identified until after a CBRN attack.

j. Alternate routes are necessary in order to avoid possibly contaminated primary routes. Each airfield NBCC will identify the alternate routes necessary for that airfield. These routes can not be established or identified until after a CBRN attack.

k. The communication net or means by which each unit receives and disseminates CBRN reports are identified within the contamination control plan. This allows mobile elements to tie into the CBRNWRS regardless of their potential location.

l. Zones where aircraft can land and disembark contaminated casualties are also identified in the contamination control plan. In addition, the personnel and equipment required to decontaminate those casualties before further evacuation will be identified and sourced.

m. Immediate and Operational decontamination is planned for in detail at all levels with organic resources.

n. The NBCC will identify the location of prospective primary and secondary decontamination sites and any other information necessary to construct the decontamination sites for that airfield.

o. The NBCC at each airfield will conduct site reconnaissance and will construct a decontamination plan for the airfield that will include which commands will support and process through each site, in what priority and with what equipment support.

p. The NBCC will coordinate with subordinate units for all support requirements, to include medical personnel.

q. All levels of command will familiarize themselves with the decontamination sites available for their location.

25. CBRN Alert Conditions. CBRN alert conditions are a series of four colors (green, yellow, red and black) with corresponding levels of threat and procedures to be accomplished for each alert condition. When an alert condition is indicating a nuclear threat it will be followed by the phrase "NUC." When an alert condition is upgraded it is disseminated in a "FLASH" priority throughout the airfield by all means of communication. Subordinate commands may upgrade alert conditions of their own volition when they observe a threat CBRN activity that justifies the upgrade.

a. Alarm Condition Green

(1) Indicators. Probability of attack is not probable but is possible. No overt CBRN activity. The enemy has a CBRN capability but has not shown intent to apply them.

(2) Recommended unit actions

(a) Personnel carry their Individual Protective Equipment (IPE) and commanders have additional contingency IPE stockpiles identified readily available for distribution should the THREATCON increase.

(b) Conduct refresher CBRN training to include individual CBRN common survival skills training, CBRN team training, operational decontamination and unmasking procedures.

(c) Activate the CBRNWRS.

(d) Activate passive CBRN measures, ensure equipment covers are readily available.

(e) Identify decontamination sites, water sources and civilian nuclear, biological and chemical hazards.

(f) Analyze IPE requirements. Submit requests for additional IPE to the HHQ NBCC or ALD for aircrew IPE.

(g) Conduct detailed vulnerability analysis.

(h) Issue NAAK kits, PB Tabs. The Commanding General (CG) retains the right to issue or not issue.

(i) Rehearse decontamination procedures.

(j) Prepare a 5-paragraph order to include: threat, symptoms, first aid, protection required, alarms to be used, type of decontamination to be used.

(k) Commands can, within their ability to equip and control, designate buildings or shelters with nonporous overhead cover for liquid contamination avoidance. Mask only protective posture within these buildings can be designated.

(l) Identify muster sites for the decontamination and M/S teams.

(m) Ensure adequate transportation is available to move teams to their operational areas.

(n) Establish a reaction plan with the base defense operations center for CBRN reconnaissance teams.

(o) Establish CBRN alarms.

b. Alarm Condition Yellow

(1) Indicators. Probability of attack is Probable. The enemy has used CBRN weapons in Theater, CBRN munitions have been deployed to either field storage sites or firing sites, enemy troops are wearing or carrying protective equipment, enemy CBRN reconnaissance elements observed with conventional units, enemy decontamination units observed with front line units, enemy use of meteorological radar associated with SSMs has been detected, or CBRN release authority has been given to field Commanders.

(2) Recommended unit actions

(a) Tasks organize the RST and DST into RSSs and DSSs. Attach/Detach sections as required.

(b) Deploy CBRN detection devices and alarms; initiate selective, periodic or continuous monitoring.

(c) Integrate routine CBRN reconnaissance assets into conventional reconnaissance plan and convoy operations.

(d) Analyze MOPP level and consider changes based on current situation and mission. MOPP level is set by the Commander and radioed to higher. If MOPP is to remain at (0) due to climate or mission, then ponchos or other means of expeditious cover must be carried by all personnel.

(e) Begin taking PB tablets with Commander's approval.

(f) Position decontamination and CBRN reconnaissance and monitoring teams at muster points.

(g) Fill all canteens.

(h) Cover all equipment, food, water cans and ammo to limit the spread of contamination.

(i) Secure all vehicles and buildings. (i.e. close them up).

(j) CBRN 1 and 4 reports are prepared.

c. Alarm Condition Red

(1) Indicators. Attack imminent or in progress. Observed impact or release of CBRN weapons/agents or confirmed use of CBRN weapons by detection equipment.

(2) Recommended unit actions

(a) Upgrade MOPP levels using the buddy system.

(b) If inside a building remain there.

(c) Sound the alarm.

(d) Perform skin decontamination if required.

(e) ID casualties and give first-aid.

(f) Submit CBRN-1 reports.

(g) Ensure every Marine drinks one quart of water every two hours.

(h) Ensure that sleeping personnel are properly masked.

d. Alarm Condition Black

(1) Indicators. CBRN attack over.

(2) Recommended unit actions

(a) Mission is continued in MOPP IV.

(b) Individual wipe down is conducted if required.

(c) CBRN reconnaissance and monitor teams are deployed to the attack area to confirm or deny the existence of contamination.

(d) Unit begins MOPP Exchange as required.

(e) Unit conducts operational decontamination as required.

(f) Request from higher to conduct unmasking if area is all clear.

(g) Unit conducts unmasking as required.

(h) Commanders coordinate with G-3 to determine if relocation is required.

(i) If "CBRN BLACK NUC" is established, the following procedures will be followed:

1. To employ units where they may exceed the moderate risk criteria for radiation exposure requires the prior approval of the CG.

2. Within 24 hours of their initial exposure to radiation, all units will report their initial Radiation Exposure Status (RES) up the chain of command. Thereafter, RES will be reported only when the RES category is increased or reclassified.

3. If a nuclear hazard is detected continuous monitoring will then be conducted using the indirect method until the dose rate falls below 0.1 cGyph. Continuous monitoring may also be initiated when distant nuclear attacks pose a fallout hazard.

4. For nuclear contamination all commands will report at a minimum their initial readings, peak readings and their last reading if they vacate a contaminated area. A reading, which will indicate that unit will exceed its Operational Exposure Guidance (OEG) limit within the next six hours, will also be reported and annotated as such.

26. Consequence Management Operations

a. Background. Incidents involving CBRN material produce a chaotic and hazardous environment requiring immediate response to minimize pain and suffering, reduce casualties and restore essential infrastructure. Responders at the local, state and federal levels may be overwhelmed by the magnitude of the incident and DOD forces may be requested to provide additional support through the NRP.

b. In order to synchronize DOD support to CM operations, units must understand the NRP Emergency Support Functions (ESFs). ESFs detail the missions, policies, structures and responsibilities of federal agencies for coordinating resources and support during incidents of national significance.

ESF #1	Transportation.
ESF #2	Communications.
ESF #3	Public Works and Engineering.
ESF #4	Firefighting.
ESF #5	Emergency Management.
ESF #6	Mass Care, Housing, and Human Services.

ESF #7	Resource Support.
ESF #8	Public Health and Medical Services.
ESF #9	Urban Search and Rescue.
ESF #10	Oil and Hazardous Materials Response.
ESF #11	Agriculture and Natural Resources.
ESF #12	Energy.
ESF #13	Public Safety and Security.
ESF #14	Long-Term Community Recovery and Mitigation.
ESF #15	External Affairs.

27. Terms of Reference

a. Consequence Management. Actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade or terrorist incidents. Also called CM.

b. CBRN and High-Yield Explosives (CBRNE) Hazards. Those CBRNE elements that pose or could pose a hazard to individuals. CBRNE hazards include those created from accidental releases, toxic industrial materials (TIM) (especially air and water poisons), biological pathogens, radioactive matter and high-yield explosives. Also included are any hazards resulting from the deliberate employment of WMD during military operations; also called CBRNE hazards.

c. CBRNE Incidents. An emergency resulting from the deliberate or unintentional release of nuclear, biological, radiological or toxic or poisonous chemical materials or the detonation of a high-yield explosive also called CBRNE incidents.

d. CBRNE Consequence Management. The consequence management activities for all deliberate and inadvertent releases of chemical, biological, radiological, nuclear and high-yield explosives that are undertaken when directed or authorized by the President of the United States also called CBRNE CM.

e. WMD. Weapons that are capable of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. WMD can be high-yield explosives or NBC and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon also called WMD.

f. Immediate Response Authority. Any form of action taken by the DoD component or military Commander to assist civil authorities or the public to save lives, prevent human suffering or mitigate great property damage under imminently serious conditions when there is insufficient time to obtain approval from the chain of command.

g. First Responder. Local and nongovernmental police, fire and emergency personnel who, in the early stages of an incident, are responsible for the protection and preservation of life, property, evidence and the environment, including emergency response provider, as well as emergency management, public health, clinical care, public works and other skilled support personnel (such as equipment operators) who provide immediate support services during prevention, response and recovery operations. First responders may include personnel from federal, state, local, tribal or Non-Governmental Organizations (NGOs).

h. Emergency Responder. Firefighters, law enforcement, security personnel, emergency medical technicians, emergency management and operations personnel, Explosive Ordnance Disposal (EOD) personnel, physicians, nurses, medical treatment providers at medical treatment facilities, disaster preparedness Officers, public health Officers, bioenvironmental engineers and mortuary affairs personnel.

i. CBRN Responder. DoD military and civilian personnel who are trained to respond to CBRN incidents and certified to operate safely at appropriate levels according to Federal Regulations and standards. The levels of CBRN responder certification are Awareness, Operations and Technician.

28. Goals

a. The primary goals of CBRNE CM are to save lives, prevent injury, provide temporary critical life support, protect infrastructure, property and the environment, restore essential operations, contain the event and preserve national security.

b. The CBRN defense principles of contamination avoidance, protection and decontamination support these same goals.

(1) Saving Lives. Saving lives is the greatest priority during CM operations. This includes immediate life-saving measures given by first responders; life-sustaining techniques, such as emergency decontamination and MCD; and prophylaxis to ensure long term casualty care, treatment and safety.

(2) Preventing Injury. Protection-related measures help prevent or mitigate exposure to hazards that cause injury or illness. These measures include setting up a security perimeter and establishing hazard control zones.

(3) Providing Temporary Critical Life Support. Response-related measures are conducted to assist civil authorities in the provision of medical services to injured personnel.

(4) Protecting Critical Infrastructure, Property and the Environment. The protection of critical infrastructure, property and the environment occurs through the rapid application of decontamination efforts, early warning and reporting of incidents and protection of key personnel. Command decisions to Shelter In Place (SIP) or evacuate also support the protection of resources.

(5) Restoring Essential Operations. Following a CBRN event, a likely consequence is the loss of one or more essential services or operations. Rapid restoration of power, water, communication nodes and transportation routes accompanied by decontamination efforts are vital to continuing critical command missions.

(6) Containing the Event. Controlling access to an incident site and conducting proper decontamination procedures limits the spread of contamination. Establishing hazard control zones (cold, warm and hot zones) helps to ensure safe work areas for emergency responders and supporting resources.

(7) Preserving National Security. CBRN defense principles contribute to the preservation of national security by protecting critical infrastructure within the United States or other locations. When U.S. forces are prepared to respond to an incident, it supports the larger strategic goal of preserving national security.

29. Operational Environments. CBRN CM operations occur in foreign and domestic settings. DoD must be prepared to conduct CBRN CM operations whenever called upon. An operational environment is a composite of the conditions, circumstances and influences that affect the employment of capabilities and bear on the decisions of the Commander. DoD conducts CM operations in three types of operational environments.

a. Defense Support of Civil Authorities during a Domestic Response. This response includes assisting federal agencies within the U.S., territories and possessions according to guidance in the NRP. DoD supports operations within its capabilities through liaison with the Incident Commander (IC).

b. Defense Support to a Foreign Request. DoD supports the Department of State (DOS) with operations originating from a foreign request. Tasks originate from the Host Nation (HN) through the DOS. However, DoD Commanders may take appropriate action in life-threatening situations while awaiting DoD or DOS tasking.

c. DoD-Led Operations. DoD leads the operational response for an incident involving U.S. forces and allies across the range of military operations. This also includes responding on a DoD

installation. See JP 3-41 for more information on DoD-led operations.

d. DoD forces tasked to support civil authorities during Domestic Consequence Management (DCM) and FCM operations will use the level of protection as determined by the IC. However, in a DoD-led CM response, the senior DoD official will make risk-based decisions, to include decisions on the level of protection.

e. A DCM response will normally be led by the DHS and the DOS will normally lead a foreign response. In the first two environments, DoD will normally operate in support of the DHS or the DOS. However, DoD will likely have full control in the third operational environment. In each of the three response elements, DoD retains C2 of all DoD assets.

30. Tasks

a. Assess the Situation. Response units continually collect and analyze information before, during and after each mission to enable the confirmation, correction or refutation of existing analyses. Assessment activities provide the ability to predict future requirements in order to make necessary planning and operational adjustments. Assessment activities include threat, readiness, plans and TTP, detection and analysis and surveillance. At the tactical level, the response element (a decontamination or survey team) assesses information on the hazard (agent flammability, reactivity, explosiveness and physical properties; protective clothing requirements; weather information; and site drawings).

b. Coordinate Operations. Response units coordinate the full range of activities across the spectrum of the mission. Coordination activities include exercise; warning and reporting; C2 and synchronization; security and control; forensics; sample collection and packaging; and public and civil affairs activities. At the tactical level, the response element conducts coordination within the military task force to coordinate link-up times and locations for staging area operations or operational updates. Responding units report to the incident Command Post (ICP) and are assigned tasks according to its level of training and incident requirements.

c. Conduct Logistics. Response units plan and conduct the movement and sustainment of forces for CBRN CM operations. Logistic activities that may be conducted by response elements include prepositioning materials; transporting casualties, remains and samples; deploying personnel and material; and maintaining facilities and material.

d. Provide Health Service Support. Response units provide HSS during CBRN CM operations. HSS addresses services performed, provided or arranged to promote, improve, conserve or restore the mental or physical well-being of personnel. These services include, but are not limited to, the management of health services resources, such as manpower, monies and facilities; preventive and curative health measures; evacuation of the wounded, injured or sick; selection of the medically fit and disposition of the medically unfit; blood management; medical supplies and equipment and maintenance thereof; combat stress control; and medical, dental, veterinary, laboratory, optometric, nutrition therapy and medical intelligence services. The term Force Health Protection (FHP) will be used whenever the following definition applies: measures to promote, improve or conserve the mental and physical well-being of military members. These measures enable a healthy and fit force, prevent injury and illness and protect the force from health hazards.

e. Decontaminate. Response units remove contamination from personnel, equipment and facilities. Decontamination activities include emergency, responder, mass casualty and patient decontamination.

31. CBRN Consequence Management Process. The operations process consists of four primary activities—plan, prepare, execute and continually assess. CBRN CM follows this model. Within the CBRN CM process, the execution activity is further expanded into two subordinate activities—response and recovery. This expansion is necessary to address the graduated level of effort from immediate actions to full restoration. Assessments are continuous throughout pre-incident and post incident activities. The planning and preparation activities support the NRP prevention efforts, while the response and recovery actions support the NRP mitigation efforts. The chapters and appendixes that follow provide doctrine and supporting TTP for these CBRN CM activities.

a. Plan. Planning involves the assessment of the operational environment and enables Commanders to identify minimum standards for training, organizing, equipping and protecting resources. The response unit's planning process determines preparation and facilitates response and recovery operations.

b. Prepare. Preparation implements the approved plan and relevant agreements to increase readiness through training, exercises and certification. Vulnerability reduction measures are initiated by the response unit to support prevention and mitigation functions.

c. Respond. The response process addresses the short-term, direct effects of an incident. Response measures initiated by

the response unit include those actions taken to save lives, protect property and establish control.

d. Recover. The response unit initiates the recovery process, focusing on restoring mission capability and essential public and government services interrupted by the incident. The recovery phase also includes completing the mitigation of the immediate hazard.

32. Joint Operational Phases for Consequence Management. During domestic or foreign response operations, response elements follow a multiphase operational approach that is similar to the approach taken for other military deployment operations. The operational phases parallel the operations process as the CBRN CM objectives unfold.

a. Alert, Preparation and Situation Assessment. Response elements take actions such as alerting unit personnel, assessing the incident, preparing for deployment and the Advanced Echelon (ADVON) traveling to the incident site.

b. Deployment. Upon receipt of the appropriate directive, the unit moves to the designated location within the time frame specified.

c. Support to U.S., Civil or HN Authorities. Response elements (remaining under DoD C2) support coordinated actions to accomplish the CM goals.

d. Transition. This phase outlines the remaining tasks for the response element to complete prior to redeployment, following coordination between the DoD C2 element and the applicable HN or domestic authority.

e. Redeployment. The response unit begins redeployment when directed. This phase is complete when the unit has reached its designated home station.

33. CM Planning. Planning is an integral part of CBRN CM. A CBRN CM plan is a living document which must be maintained and updated as changes occur.

a. CBRN CM Mission. Response units begin planning for CBRN CM operations when they receive a mission from its headquarters to conduct or support CM operations. A unit may determine if it must be prepared to support or conduct CM operations by analyzing its given mission and conducting a mission-to-task analysis.

b. The CBRN CM Plan. The supporting response unit's plan can be an Operation Plan (OPLAN) or a contingency plan which can be converted to an Operation Order (OPORD) to execute or support operations.

c. CBRN CM Planning. Planning involves conducting assessments of the operational environment (including the threat), vulnerabilities, capabilities and risk. Additionally, war gaming is conducted for scenarios that address deliberate site assessments for known locations. Response unit planning is conducted like other military mission planning. The unit uses whatever method it normally uses to plan its missions. One such method is called the military decision-making process.

d. Planning Levels. There are two levels of planning that occur, contingency and crisis action. Contingency planning includes those Joint Operation Planning and Execution System (JOPES) planning activities that occur in non-crisis situations. The joint planning and execution community uses contingency planning to develop OPLANs for a broad range of contingencies. OPLANs are based on requirements identified in the Contingency Planning Guidance, Joint Strategic Capabilities Plan or other planning directives. Contingency planning underpins and facilitates the transition to crisis Action Planning (CAP). CAP is a JOPES process involving the time-sensitive development of joint OPLANs and OPORDs for the deployment, employment and sustainment of assigned and allocated forces and resources in response to an imminent crisis. CAP is based on the actual circumstances that exist at the time planning occurs.

34. Operational Environment Assessment. An operational environment assessment provides the response unit Commander information on the threat, the physical environment and the political environment. Decision support tools may be used in conjunction with this information to assist predictive modeling. Decision support tools may be in the hands of the response unit or obtained by the unit using reach back capabilities or a capability available at the incident site.

a. Threat

(1) The threat assessment identifies what the response unit will face during a CM operation. At the tactical level, the threat assessment is provided by the applicable military C2 element. The threat assessment addresses the types of agents and hazards at an incident site and includes Occupational and Environmental Health (OEH) assessments. Additionally, the response unit receives information on potential CBRN storage or production facilities in the vicinity and the methods used to deliver or release CBRN agents or materials. Estimates may be furnished regarding when, where and how agents or materials may be used. Higher headquarters guidance provides information on previous incidents (past use) and the current threat level as established at the incident site.

(2) The CBRN response unit (or element) receives Situation Reports (SITREPs), intelligence summary reports and spot reports, which provide information to update the Commander's Situational Awareness (SA) and Common Operational Picture (COP). Information sharing between civil and military law enforcement agencies provides a means to track local civil threats.

b. Physical Environment. The physical environment includes terrain, weather and characteristics of the geographical area that impact the CM response. Characteristics include critical infrastructure, hazard sites and zone analysis considerations.

c. Critical Infrastructure. The response unit reviews the critical infrastructure in the vicinity of the incident site. The presence (or absence) of the following critical infrastructure impacts the operations at an incident site:

(1) Telecommunications. The availability of networks and systems that support the transmission and exchange of electronic communications among and between end-users (such as networked computers) directly impacts operations such as technical reach back.

(2) Electrical Power. The availability of generation stations and transmission and distribution networks that create and supply electricity to response teams impacts the logistic support required.

(3) Chemical, Nuclear Power, Gas and Oil Production, Storage and Delivery. The holding, refining and processing facilities for these fuels and the pipelines, ships, trucks and rail systems that transport them could be potential targets.

(4) Transportation. The aviation, rail, highway and aquatic vehicles, conduits and support systems by which Hazardous Material (HAZMAT) is moved from a point-of-origin to a destination point could be targets; its availability directly impacts logistic support.

(5) Water Supply Systems. The sources of water, reservoirs and holding facilities, aqueducts and other transport systems, filtration and cleaning systems, pipelines, cooling systems, sewage treatment plants and other delivery mechanisms that provide for domestic and industrial applications, including systems dealing with decontamination, could be targets. Availability of an adequate water supply system impacts logistic support and decontamination operations.

(6) Emergency Services. Local, state or federal medical, police, fire and rescue system capabilities provide resources that military response assets will augment.

d. Hazard Sites. Known or suspected WMD and TIM production, storage, research or related facilities must be considered potential sources for CBRN hazard release. This is an especially critical aspect to the targeting process. These facilities must be identified and prioritized on WMD or TIM master site lists and maintained with other target folders.

e. Zone Analysis. The response unit receives a zone analysis of the vicinity of the CBRN CM incident site. The zoning procedure essentially divides an urban area into zones according to the major categories of building occupancy or function. The zoning information can be presented in the form of an annotated map or color-coded overlay. Typical zones include residential, commercial, industrial, transportation, storage or military.

f. Political Environment

(1) For support of domestic operations, the response unit receives information on agreements (Memorandums Of Understanding (MOUs) and Memorandums Of Agreement (MOAs)) that are in place to support operations. For example, Contracted Logistic Support (CLS) may be available at the incident site (via an MOA) to provide logistic support or other agreements may be in place to provide other needed capabilities (such as water resupply).

(2) For support of foreign CBRN CM operations, the response unit is advised of applicable HN agreements, status-of-forces agreements and other sovereignty issues that may apply.

(3) Installation assets receive tasks to provide support to validated Requests For Assistance (RFA). Installation resources capable of providing the necessary response are then sent to a CM incident area to perform the tasks, with Operational Control (OPCON) normally assigned to the Defense Coordinating Officer (DCO) or Joint Task Force (JTF) during a CBRN incident. The DCO is the DOD on-scene representative who coordinates DSCA requirements for the supporting response units with the IC or designated representative.

35. Capabilities Assessment. A capabilities assessment is conducted during CBRN CM planning. It provides a candid picture of DoD's ability to conduct CBRN CM.

a. The capabilities assessment is a tool used by the Commander to gauge the unit's ability to conduct or support CBRN CM operations. It involves the continuous assessment of a unit's plans, organization, manpower, equipment, logistics, training, leadership and readiness.

b. Prior to a CBRN CM incident, military organizations and activities identified to conduct, augment or manage CM operations assess its readiness posture to determine its ability to perform the full range of CM tasks. The Commander considers the capabilities required to execute the missions and their ability to integrate CBRN CM tasks. Representative CM tasks include the following:

(1) Provide Logistical and Engineering Support of Operations. This task involves identifying, allocating and providing resources necessary for the protection of responders, personnel, victims, critical infrastructure and equipment.

(2) Handle, Process, Store and Transport Contaminated Equipment, Material, Samples, Residues and Animal Remains. This task includes gathering samples, adhering to chain of evidence procedures and recovering animal remains. It encompasses the preparation for transport of contaminated materials, samples, residues, equipment, animal remains and waste.

(3) Handle, Process, Store and Transport Contaminated Human Remains. This task addresses marking, handling, decontaminating, processing and temporarily storing contaminated human remains and preparing them for transport.

(4) Protect Against Exposure and Effects of Chemical Agents. This task includes the application of guidelines for operations within contaminated environments; implementation and maintenance of safety requirements; application and wearing of PPE; provision/administration of prophylaxes; marking of contaminated material and hazard locations; enforcement of protective posture protocols; establishment and operation of collective protective systems; implementation of SIP procedures; issuance of CBRNE protective material to affected civilian populations, nonmilitary responders or non-DoD forces; and the implementation of movement controls.

(5) Protect Against Exposure and Effects of Biological Agents. This task includes the application of guidelines for operations within contaminated or infectious environments; implementation and maintenance of safety requirements; application and wearing of PPE; provision and administration of prophylaxes; marking of contaminated or infectious material and hazard locations; enforcement of protective posture protocols; establishment and operation of collective protective systems; implementation of SIP procedures; issuance of CBRNE protective material to affected civilian populations, nonmilitary responders or non-DoD forces; and the implementation of movement controls. It encompasses the performance and enforcement of prescribed measures for isolation and quarantine.

(6) Protect Against Exposure and Effects of Nuclear and Radiological Agents. This task includes the application of guidelines for operations within contaminated environments; implementation and maintenance of safety requirements; application and wearing of PPE; marking of contaminated material and hazard locations; enforcement of protective posture protocols; establishment and operation of collective protective systems; implementation of SIP procedures; issuance of CBRNE protective material to affected civilian populations, nonmilitary responders or non-DoD forces; and the implementation of movement controls.

(7) Provide Large-Scale Medical Services. This task includes collecting and processing laboratory specimens, administering medical prophylaxes and treatment, triaging and resuscitating patients, tracking casualties and providing in-transit medical care to casualties. It also includes communicating and coordinating medical response with relevant non-DOD agencies, decontaminating casualties, providing medical oversight of responder health and well-being and ensuring food and water safety.

(8) Conduct Tactical CM CAP. This task involves forecasting future resource and operational requirements to support anticipated taskings. It integrates attached forces, DoD and non-DoD and defines responsibilities and roles; identifies areas of interoperability and provides instruction for areas of no interoperability; and specifies subordinate unit tasks and activities to accomplish the mission. It also includes contingency planning for potential circumstances.

(9) Assess the Operational Environment. This task addresses the conduct of assessment and characterization of the operational environment, including the integration of information and data to determine the location and source of the primary and secondary hazards associated with the task.

(10) Conduct Tactical CM C2. This task encompasses the establishment and operation of a CBRN CM response C2 structure that facilitates CBRN CM operations and activities and is interoperable with participating forces.

(11) Perform Incident/Hazard Risk Assessment. This task includes establishing a mutually supporting warning and reporting system for the collection and dissemination of prompt, accurate information to the public, joint forces, HNs, Intergovernmental Organizations (IGOs), NGOs and Private Voluntary Organizations (PVOs) and disseminating appropriate intelligence information regarding continuing or potential primary and secondary hazards.

(12) Establish and Maintain Access/Egress Controls and Hazard Zone Perimeter. This task addresses implementing measures to contain and control contamination, including marking and identifying hazard areas, maintaining clear access to the incident site and controlling access to and from hazard areas.

(13) Conduct Victim and Casualty Search, Rescue and Extraction. This task includes establishing and operating search and rescue processing centers, applying applicable quarantine and isolation measures, providing support for people with special needs (physical or mental disabilities) who require medical attention or personal care beyond basic first aid, managing and conducting immediate lifesaving measures, evacuating casualties to hot-zone egress points and into a decontamination site and evacuating non-contaminated victims to appropriate medical and/or mass care facilities.

(14) Conduct Temporary Housing, Processing Operations and Evacuation of Affected Population. This task addresses the establishment and operation of processing centers to receive and process the affected population, including screening for medical needs, collecting relevant information and facilitating evacuation.

(15) Conduct Decontamination Operations. This task includes the performance of decontamination operations of civilian and military personnel, equipment and assets. It encompasses ambulatory and non-ambulatory personnel, including casualties. Decontamination may include a range of activities such as removal, sealing, weathering, neutralization and other means of mitigating or eliminating contamination.

(16) Isolate, Quarantine, and Manage Potentially Contaminated or Infectious Human and Animal Population. This task includes screening individuals and animals for exposure patterns and symptoms, establishing isolation and quarantine enforcement requirements and implementing movement controls from isolation and quarantine areas.

(17) Perform Medical Surveillance (MEDSURV). This task includes screening individuals for symptoms and conducting medical evaluations before and after the incident. It also includes establishing, maintaining and populating a central medical database to assist health care providers and decision makers; integrating surveillance data; and ensuring that information contained in the database is interoperable with relevant interagency and HN entities.

36. Vulnerability Assessment (VA)

a. A VA is a key part of CBRN CM planning. It allows Commanders to take a holistic look at the organization's strengths and weaknesses compared to the operational environment and CBRN threat. The process examines unit terrorism CM plans and terrorist incident response measures, capabilities of the military unit or activity to support its core competencies such as emergency operations and response. These include fire or medical capabilities; mass casualty, technical or emergency decontamination; EOD; HAZMAT; mass notification; Emergency Operations Center (EOC) operations; and incident response operations. This includes an assessment of its training and resources, unit advisory or assistance support and the adequacy of deployment procedures to support operations.

b. The VA includes the other types of assessments discussed into an overall snapshot of a unit's ability to support or conduct an operation given the operational environment and the unit's capabilities.

c. The VA identifies weaknesses in the unit and its plan(s) and develops (or recommends) vulnerability reduction measures to counter these identified weaknesses.

d. Developing a VA plan requires comparison of the threat with a unit's vulnerabilities to determine the efforts necessary to safely meet incident requirements. The VA also includes the integration of the Commander's guidance through a Composite Risk Management (CRM) process in order to prioritize vulnerability reduction measure implementation. During the planning phase, the VA begins with the identification of the hazards and an analysis of each. VA during the planning phase continues by integrating the specific threat assessment with analysis of specific vulnerabilities and identification of potential vulnerability reduction measures. The end-state during the planning phase is typically an estimate and recommendation to the Commander on the priorities for vulnerability reduction.

37. Risk Assessment. Commanders conduct risk assessments during CBRN CM planning to quantify the level of risk that may exist in the conduct of CBRN. The response unit identifies and assesses the risks associated with its assigned missions and makes decisions that balance the costs of those risks with mission benefits. In certain incidents (such as high radiation hazards) the risk may not be acceptable. Commanders must be cognizant of their operational environment. Acceptable risks associated with wartime may not be acceptable when conducting a CM operation. An example can be found in the differences in guidance for radiation exposure for military personnel during war and civilian first responders in a domestic environment. Generally, a higher level

of risk is accepted during a wartime situation than would be acceptable under Occupational Safety and Health Administration (OSHA) standards for radiation exposures in a domestic environment. It is expected that DoD forces operating in a DCM environment will be held to the same standards as their civilian counterparts.

38. Deliberate Site Assessments. Deliberate site assessment allows Commanders to better recognize and identify potential CBRN hazards within their Area of Operation (AO). This allows units to be prepared to execute CBRN CM operations against potential existing sites, if needed.

a. Prior to an incident, a response unit conducts deliberate assessments of sites within its AO that may pose a potential hazard in the future.

b. Units conduct deliberate site assessments as part of the Intelligence Preparation of the Operational Environment (IPOE) and prepare "potential threat folders" for each site assessed. They use these folders to strategize how they would respond if an incident occurred at these sites and to prepare tentative response plans for each. Pertinent information collected by the units for each potential threat is maintained in the folder for use in a future response. Information could include floor plans, site maps, routes in and out, potential staging areas and a determination of prevailing winds to produce downwind hazard predictions.

(1) It is critical to gather as much information and intelligence as possible on the site. It is probable that extensive information will be available on most sites.

(2) Background information on the site will be critical for detailed planning. Imagery, maps and site sketches will assist in the planning.

(3) The site assessment identifies sample information such as the types of CBRN agents or material that may be present, the organization of the facility and the number of people who typically work at the site.

c. CBRN response units identify specified and implied mission tasks. Specified tasks are those directly stated in the mission order that specifically outline what is to be accomplished by the mission. Implied tasks are the necessary tasks that will be executed by the team to accomplish the specified tasks.

d. Using the information collected, the response unit determines what primary missions can be accomplished from within

its capabilities. Primary and secondary mission objectives should be clearly outlined.

e. Using the Essential Elements of Information (EEI) list, the unit generates Requests For Information (RFIs).

39. Operational Exposure Guidance (OEG). The OEG provides Commanders a flexible system of controlling the radiation exposure of personnel.

a. Maximum total dose for friendly forces from nuclear radiation is 50 centigray (cGy). Maximum total dose for personnel conducting radiological surveys is 70 cGy with a turn back dose of 35 cGy.

b. Emergency risk exposure (150 cGy) is only acceptable in cases of urgent tactical necessity in which there is clearly insufficient time to obtain authority from HHQ Commander.

c. Squadrons are the lowest level at which Radiation Exposure Status (RES) is recorded. Groups will maintain the status of squadrons.

CHAPTER 5

TRAINING

1. General. The primary objective of individual and unit CBRN operations training is to develop the skills and proficiency necessary to survive a CBRN attack, sustain operations in a CBRN environment and accomplish the mission. The wide variety and availability of CBRN weapons found on the modern battlefield increases the level of training required to ensure efficiency of the individual Marine and Sailors and success for the unit. Anytime we separate CBRN from other training events, we condition Marines and Sailors to regard CBRN operations as a separate form of warfare and ensure failure. Commanders must select training objectives and support the integration of CBRN operations into the unit's overall training plans.

a. Every unit and Commander will fully integrate CBRN operations training into every combat, combat support, combat service support and command and control exercise during offensive and defensive operations, to include live fire evolutions. Integration is intended to develop and test the ability of Marines and Sailors at all levels to survive a CBRN attack, perform subsequent missions under CBRN conditions and utilize proper CBRN warning and reporting procedures. Exercises that include Chemical/Biological (CB) and TIM incidents of other than a combative or conflict nature are encouraged. This type of exercise will focus primarily on potential CB implications if it were introduced during Humanitarian Assistance and Disaster Relief (HADR) operations.

b. CBRN operations training will be included and scheduled on the unit's annual, quarterly, monthly and weekly training schedules/TEEP.

c. Unit CBRN Officers are required to maintain records of all CBRN operations training conducted. Copies of Letters of Instruction (LOIs), operations orders and training schedules/TEEPs reflecting CBRN operations training must be maintained for a minimum of two years. Class rosters containing the date, subject taught, length of class, instructor and legible signatures of personnel attending CBRN operations training will be maintained for a minimum of two years. For periods of instruction/training conducted in the field, such as MOPP-FT and BOS, a memorandum for the record signed by the unit Commander, stating the date, type of training conducted, length of training, instructor (if any) and number of personnel participating in training (Officer/SNCO/enlisted) may be utilized instead of a class roster.

d. All unit CBRN Officers must maintain copies of current CBRN operations lesson plans. Lesson plans must be reviewed and updated at least every two years, to ensure current and accurate information is being taught.

2. Policy. All personnel assigned to the operating force must be trained in CBRN operations in order to survive and continue their mission in a CBRN environment. CBRN operational proficiency standards are defined as individual survival and basic operating standards. Individual Survival Standards are those that the individual must master in order to survive CBRN attacks. CBRN Basic Operating Standards are those that the individual and collectively the unit, must be capable of performing to continue operations in a CBRN environment.

3. Training Requirements. Every unit and Commander will fully integrate CBRN training into every combat, combat support, combat service support and command and control exercise during offensive and defensive operations, to include live fire evolutions. Integration is intended to develop and test the ability of Marines at all levels to survive an CBRN attack, perform subsequent missions under CBRN conditions and utilize proper CBRN warning and reporting procedures. Exercises that include CB and TIM incidents of other than a combative or conflict nature are encouraged. This type of exercise will focus primarily on potential CB implications if it were introduced during HADR operations.

a. Individual Survival Standards (ISS) Training. Annually, on a calendar year basis, ISS training will be conducted for all Marines using the standards of proficiency. In conjunction with ISS training, all Marines will complete an IPE Confidence Exercise, once per calendar year. Upon completion of the IPE confidence exercise, appropriate reporting will be conducted utilizing the Marine Corps Total Force System (MCTFS).

b. Basic Operating Standards (BOS) Training. Annually, on a calendar year basis, BOS training will be conducted for all unit personnel. BOS training can be conducted in garrison, in the field and/or concurrently with Mission Oriented Protective Posture Familiarization Training (MOPP-FT).

c. Unit/Collective Training. All Mission Essential Tasks (METs) must be accomplished in a simulated CBRN environment. This training will be conducted annually, on a calendar year basis and more frequently when feasible. Additionally, it can be conducted both in garrison, in the field and/or concurrently with MOPP-FT. All exercises should focus on mission accomplishment in a CBRN environment and will incorporate some level of CBRN in staff planning, operations and individual actions. Many individual and unit training requirements can be accomplished

concurrently during these exercises. Requiring a unit to wear CBRN IPE for a specific length of time does not, by itself, constitute accomplishment of a MET in a CBRN environment. Small unit leaders must be actively involved and ensure all METs can be accomplished while wearing CBRN IPE. A unit's inability to accomplish METs in a simulated CBRN environment must be documented and formally staffed to the 2d MAW G-3 for resolution (e.g. re-training/re-evaluation).

d. Live Fire Exercises. Annually, on a calendar year basis, each Marine must fire their assigned T/O weapon while wearing their appropriate field protective mask. Additionally, each crew-served weapon team must fire its crew-served weapon while masked during live fire exercises. These requirements can be accomplished during field firing exercises and during Phase III (Field Firing) of Sustainment Level Rifle Qualification.

e. MOPP-FT. Will be conducted semi-annually by all personnel on a calendar year basis. MOPP-FT familiarizes the individual with the physical limitations of protective clothing and the inherent heat stress this environment places on each individual. MOPP-FT consists of personnel spending a minimum of eight continuous hours in MOPP levels set by the unit Commander while conducting/continuing normal operations. To be effective, the goal of MOPP-FT is for units to be able to successfully accomplish all METs while in MOPP Level IV. Invariably, this will require units to acclimatize personnel, gradually increase protection levels and apply the appropriate work/rest cycles to ensure success. MOPP familiarization training will be conducted semi-annually at a minimum.

4. ISS. To meet survival proficiency standards in CBRN, the individual must be able to:

a. Identify NATO CBRN markers.

b. Properly maintain IPE. The type of IPE worn, particularly the field protective mask, is dependent upon the MET the individual performs. Individuals must train with the appropriate IPE.

c. Properly don, clear and check their field protective mask within nine seconds of a CBRN alarm or attack.

d. Properly don the appropriate individual protective clothing and assigned field protective mask to MOPP Level 4. The type of individual protective clothing worn is dependant upon the MET the individual performs. Individuals must train with the appropriate individual protective equipment.

e. Perform basic functions, (e.g. drinking, waste removal, sleep) while in MOPP Level 4.

f. Perform CBRN detection measures with issued detection equipment, i.e., M256A1 Chemical Detection Kit, M8 detection paper, M9 detection tape and DT 236 RADIAC detector.

g. Decontaminate skin and personal equipment using M291 skin decontamination kit or other appropriate decontaminants.

h. Perform individual (emergency) MOPP gear exchange.

i. React to a nuclear attack.

j. React to a chemical attack.

k. React to a biological attack.

l. Take the specific actions required to operate efficiently before, during and after CBRN attacks to reduce the effects of CBRN contamination.

m. Recognize or detect chemical agent contamination and perform immediate decontamination techniques: e.g., person, weapon, clothing, equipment, position, vehicle and crew-served weapons.

n. Treat a chemical agent casualty.

o. Be able to drink water from a canteen or other water container while masked.

p. Be able to properly format and send a CBRN 1 Report.

5. Unit Basic Operating Standards (BOS). To meet the BOS of Proficiency when conducting missions under CBRN conditions, the individual must be able to perform the survival standards listed above as well as the operating standards below. The unit must be able to perform to these standards to continue operations in a CBRN environment. Basic Operating Standards include the following:

a. The unit will maintain their collective CBRN equipment in a high state of serviceability at all times (IAW the appropriate Technical Manual).

b. The unit must be proficient in taking the specific actions required to operate efficiently before, during and after CBRN attacks to reduce the effects of CBRN contamination.

c. The unit must be able to recognize or detect chemical agent contamination, perform immediate individual decontamination techniques and support operational decontamination: e.g., person, weapon, clothing, equipment, position, vehicle and crew-served weapons.

d. The unit must demonstrate proficiency in contamination avoidance procedures when crossing CBRN contaminated areas.

e. The unit must demonstrate proficiency in performing primary military duties, to include the use of crew/personal weapons(s) and minimum/basic combat skills, while wearing IPE for extended periods.

f. The unit must demonstrate the ability to support operational and thorough decontamination procedures.

g. The unit must demonstrate proficiency in the principles of collective protection, including passage through contamination control areas, where applicable.

h. The unit must demonstrate proficiency in the use of dissymmetric devices, chemical and biological detection and monitoring equipment, where applicable.

i. The unit must be able to send and receive CBRN-1 Reports.

j. The unit must be able to properly conduct Monitor missions as directed by higher headquarters.

6. Aircrew Training. The following items will be covered as part of the pre-deployment training schedule for flying squadrons that are deploying to a combat zone.

a. Aircrew will be trained in CBD equipment. This includes introduction, donning and Emergency Procedures, contaminated ingress and egress operations and will conduct an Aircrew CBD IPE exercise.

b. Flight Equipment Personnel will receive tech training for Aircrew respirators and Below The Neck (BTN) equipment. They will also be trained for equipment donning and equipment requirements and allowances.

c. The Aircrew CBR-D FAILSAFE Survival Brief is required part of pre-deployment training as directed.

d. Familiarization, safety of Flight and build-up training is strongly recommended prior to operational flight. Examples include:

(1) Fitting and familiarization with the CBD ensemble.

(2) On the ground cockpit familiarization while wearing the CBD ensemble.

(3) Simulator flights while wearing the CBD ensemble.

(4) Ground pre-flight and taxi FAM with a non-CBD safety pilot (where applicable).

e. The following limitations and performance degradations can be expected while wearing the aircrew CBD IPE ensemble.

(1) Restriction in field of view and head rotation.

(2) Reduced hand tactility and dexterity.

(3) Decreased range of motion.

(4) Increased work rates and body temperatures.

(5) Degraded aircrew situational awareness.

(6) Dehydration and increases potential for heat stress injuries.

(7) Additional Emergency procedures.

(8) Aviation Survival Training Center (ASTC)

f. N10 curriculum for advanced water survival training is available and recommended to familiarize aircrew utilizing the CBD ensemble.

g. Appropriate Aircrew CBRN Protective Equipment shall be worn or available for immediate use when operating in identified CB threat areas.

h. Determine Aircrew CBR-D specific T/M/S T&R training requirements based off aircraft and missions and incorporate into training prior to deployment.

i. Integrate the conduct of aviation specific CBRN procedures into squadron quarterly CBRN training. Aviation specific CBRN training includes:

(1) Conduct Aircrew CBR-D IPE familiarization.

(2) Perform contaminated aircrew doffing.

(3) Perform contaminated environment ingress and egress.

(4) Perform launch and recovery in a contaminated environment.

(5) Perform maintenance of aircraft/equipment in a CBRN environment.

(6) Perform periodic and continuous monitoring of aircraft and equipment.

(7) Perform immediate and operational aircraft decontamination.

(8) Perform aircraft handling and operations in a contaminated environment.

7. Unit CBRN Team Training Requirements. Each unit CBRN Officer, SNCO or NCO will conduct sufficient team training, four hours minimum per quarter, to ensure proficiency of all CBRN teams. A record of training conducted (class rosters) will be maintained. Unit Commanders must ensure all team members receive the required training each quarter.

a. Unit Monitor/Survey Team Training. Training of Unit Monitor/Survey Teams will include basic lectures and practical application on the following:

(1) Stress operational procedures under field conditions.

(2) Operations of all Level I and II radiological, chemical and biological detection and sampling equipment.

(3) Procedures for personnel and area monitoring, ground and aerial CBRN Recon.

(4) Chemical agent characteristics.

(5) Self-aid.

(6) Communications and reporting.

b. Unit Decontamination Team Training. Training of Unit Decontamination Teams will include basic lectures and practical application on the following:

(1) Types of decontamination operations (Personnel, Vehicle, Aircraft, Aircrew and Casualty).

(2) Required equipment and supplies.

(3) Site location.

(4) Site setup/close down.

(5) Decontamination procedures and techniques.

(6) Decontaminants and mixtures.

(7) Work/rest and relief procedures.

(8) Site safety.

8. NBCC Training. In anticipation of the responsibility of operating an NBCC, each CBRN section must conduct control center operations training each quarter. Training will be scenario driven and include:

a. Preparing a CBRN vulnerability analysis.

b. Recommending MOPP Level based upon the vulnerability analysis.

c. Planning surveillance and monitoring plan.

d. Planning a CBRN reconnaissance mission.

e. Collecting and analyzing surveillance, monitoring and reconnaissance data, and preparing the appropriate CBRN reports and overlays.

f. Collecting radiological exposure status and compiling overall radiological exposure status.

g. Forwarding CBRN reports and overlays.

h. Planning a decontamination plan.

i. Exercise the CBRN Warning and Reporting System.

j. Review CBRN Basic Wind Reports.

k. JWARN Operations.

(1) Reviewing and disseminating Chemical Downwind Messages and Effective Downwind Messages.

(2) Collecting, collating and analyzing CBRN information received.

(3) Preparing and disseminating CBRN reports, overlays and information.

(4) Disseminating CBRN reports, overlays and information through C2PC.

9. Consequence Management Training

a. Education. The 2d MAW CBRN Support Team must be appropriately educated to provide an effective all-hazards CM capability. For team members without experience in civilian exercises on a local, state, regional or national basis, limited opportunities exist to incorporate lessons learned from these events into institutional education, simulations and exercises. All personnel are educated in basic CBRN awareness. Personnel assigned to the 2d MAW CBRN Support Team receive more specific operational instruction. Numerous courses and training opportunities are available from various government and private sources.

b. General Awareness

(1) Protection/Antiterrorism. One component of combating terrorism includes defensive measures against terrorist attacks. All personnel train on the fundamentals necessary to defend against terrorist attacks.

(2) Overview of CBRN Counterterrorism Operations. Based on the roles and responsibilities of the 2d MAW CBRN Support Team, this includes the fundamentals of the NRP, the ICS and Service-specific issues.

c. Specific Operational Education

(1) The role of the senior action agency, such as DHS or DOS.

(2) Legal authorities, constraints and limitations.

(3) Logistic and support requirements.

(4) C2 structures.

d. Training. The 2d MAW CBRN Support Team trains to perform individual and collective CBRN CM tasks as a unit. Licensing and certification standards vary, based on the geographical location and the equipment available. 2d MAW CBRN Support Team leaders ensure that all operators are trained to complete their assigned missions.

(1) Training Tasks. The 2d MAW CBRN Support Team conducts training on key Universal Joint Task List (UJTL) and applicable Service-specific training tasks that support preparedness and response and recovery measures. Using the UJTL as a baseline helps to support a common framework for training.

(2) Training Conditions. The 2d MAW CBRN Support Team uses a simulated hazardous environment as a condition for selected training events. The degradation experienced by operating in the appropriate protective posture provides a level of realism that improves team preparedness. This type of training provides team leadership with an assessment of the effectiveness of vulnerability reduction measures.

(3) General Training Considerations. CBRN awareness training is available for every military member, DOD civilian, contractor, appropriate Family member, and local national hired by DOD, regardless of rank. These personnel should be aware of CBRN actions and effects, the need to maintain vigilance for possible CBRN actions and methods for employment of CBRN TTP. To ensure an effective CM response, the 2d MAW CBRN Support Team implements a cross-functional training program. Thorough training is required to prepare individuals and response teams to safely and efficiently respond to a terrorist CBRN attack at their required level of proficiency.

(4) Incident Management System Training

(a) General Considerations. The 2d MAW CBRN Support Team must have personnel trained to respond to a CBRN attack. Personnel participating in the incident response should be trained to competently perform within the ICS/Unified Command (UC) structure. Incident management system training focuses on DCM operations.

(b) Minimum Requirements

1. The 2d MAW CBRN Support Team requires an introduction to the basic components of the ICS.

2. 2d MAW CBRN Support Team leaders and CBRN SNCOs require an introduction to the basic components of the ICS and ICS for Single Resources and Initial Action Incidents training.

3. Anyone involved in the EOC also require an introduction to the basic components of the ICS, ICS for Single Resources and Initial Action Incidents training and Intermediate ICS for Expanding Incidents for Operational First Responders training.

4. CBRN Officers require an introduction to the basic components of the ICS, ICS for Single Resources and Initial Action Incidents training, Intermediate ICS for Expanding Incidents for Operational First Responders and Advance ICS for Command and General Staff, Complex Incident, MACS for Operational First Responders training.

5. All personnel providing support to civil authorities must complete IS-800 prior to providing support.

(5) CBRN Responder Training. CBRN responders are DoD military and civilians trained and certified to operate safely from the awareness through technician response levels.

(a) General Considerations

(1) All responding personnel must be trained at least to the responder operations level.

(2) Persons functioning in more complex roles, such as the RST members, DST members or team leaders must have completed additional training appropriate for the functions to be performed.

(3) The competency and training requirements for local responders and technical experts are defined in 29 CFR 1910.120; NFPA Standard 471.

(b) Specific Requirements. The 2d MAW CBRN Support Team shall complete the following training:

(1) Responder awareness-level training is for personnel who are likely to witness or discover an incident and have been trained to initiate an emergency response sequence. This training provided for all team personnel.

(2) Responder operations-level training is required for personnel who respond to incidents as part of the initial response to protect persons, property or the environment from the effects of the hazard. The 2d MAW CBRN Support Team is trained to respond in a defensive fashion without actually trying to contain the hazard. They are required to receive training equal to responder awareness-level training and to demonstrate additional competencies.

(3) HAZMAT technician-level unit and individual training is provided for personnel who respond to contain the hazard. This training is required for the 2d MAW CBRN Support Team. They are required to receive training equal to responder operations-level training and to demonstrate additional competencies.

(4) On-scene IC-level training is needed for 2d MAW CBRN Officers to assume control of the incident scene. They are required to receive training equal to responder operations level training and to demonstrate additional competencies.

e. Conducting Response Exercises

(1) Education and training alone are not enough to adequately prepare the 2d MAW CBRN Support Teams. Realistic exercises are required to ensure that operations can be conducted under CBRN conditions. State and local response plans must be understood by responders. Participation in federal, state and local exercises increases interoperability and supportability to those plans. Aspects to consider when developing an exercise should include the following:

(a) Participants. Include as many participants as possible from all appropriate local, state, federal and HN CM agencies.

(b) Realism. Ensure that CBRN CM scenarios that units could face based on the current threat assessment are realistic. Provide realistic master events sequence lists that exercise each aspect of CBRN CM collective tasks. Include unexpected challenges (such as disabling key personnel and equipment) to assess the resiliency of the response process.

(c) Scheduling. Align unit exercise and training schedules with related CBRN exercises. HN civilians and units supporting CM operations may require frequent rehearsals and refresher training. When possible, the 2d MAW CBRN Support Team should consider aligning its exercise and training schedules with the DHS exercise and training programs for state and local preparedness programs as appropriate.

(d) Leadership Exercises. Tabletop exercises should be used to provide the leadership and staff opportunities to war-game multiple scenarios. Tabletop training exercises are specifically designed for team leaders to train in executing critical missions and critical collective tasks.

(2) Each exercise should be designed to evaluate specific critical missions or tasks within the overall evaluation scenario. The evaluators must be thoroughly familiar with all aspects of the test in order to implement it correctly. The use of realistic exercises is required to ensure that the 2d MAW CBRN Support Team can conduct operations under CBRN or TIM conditions.

(3) Each evaluator, regardless of position, must have expert knowledge of the capabilities and responsibilities, communications equipment, weapons and vehicles and should thoroughly understand the mission. Poor evaluator training may result in poor after-action or lessons-learned information.

f. CBRN Responder. The 2d MAW CBRN Support Team members are personnel who are trained to respond to CBRN incidents and

certified to operate safely at the awareness, operations or technician level according to 29 CFR 1910.120 and NFPA Standard 472. The various levels of CBRN responders are as follows:

(1) CBRN Responder (Awareness Level). CBRN responders at the awareness level are individuals who are likely to witness or discover a CBRN or hazardous material release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. CBRN responders at the awareness level shall have had sufficient training or experience to demonstrate the following competencies:

(a) Understand what CBRN or hazardous substances are and the risks associated with them in an incident.

(b) Understand the potential outcomes associated with an emergency created when hazardous substances are present.

(c) Recognize the presence of CBRN or hazardous substances in an emergency.

(d) Identify the CBRN or hazardous substances, if possible.

(e) Understand the awareness-level responder's role in the emergency response plan, including site security and control.

(f) Recognize the need for additional resources and make appropriate notifications to the communication center.

(2) CBRN Responder (Operations Level). CBRN responders at the operations level are individuals who respond to releases or potential releases of CBRN or hazardous material as part of the initial response to the site for the purpose of protecting nearby persons, property or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. In addition to awareness-level training, CBRN responders at the operational level shall have had sufficient training or experience to demonstrate the following competencies:

(a) Know basic hazard and CBRN risk assessment techniques.

(b) Know how to select and use proper PPE provided to the operational-level responder.

(c) Understand basic hazardous and CBRN material terms.

(d) Know how to perform basic control, containment and confinement operations within the capabilities of the resources and PPE/equipment available within the unit.

(e) Know how to implement basic decontamination procedures.

(f) Understand the relevant SOPs and termination procedures.

(3) CBRN Responder (Technician Level). CBRN responders at the technician level are individuals who respond to releases or potential releases for the purpose of stopping the release. In addition to awareness-and operations-level training, CBRN responders at the technician level shall have the following competencies:

(a) Know how to implement emergency response plans.

(b) Know how to classify, identify and verify known and unknown materials by using field survey instruments and equipment.

(c) Be able to function within an assigned role in the ICS.

(d) Know how to select and use proper specialized CBRN PPE.

(e) Understand hazard and risk assessment techniques.

(f) Be able to perform advanced control, containment and confinement operations within the capabilities of the resources and PPE available with the unit.

(g) Understand and implement decontamination procedures.

(h) Understand termination procedures.

(i) Understand basic CBRN and toxicological terminology and behavior.

10. CBRN MOS Training. Skills and capabilities acquired through the accomplishment of training events are to be refreshed at predetermined intervals. Units will ensure that these intervals are adhered to in order to ensure the unit and CBRN Marines of the unit maintain proficiency. Unit CBRN training shall be designed to accomplish the events that support the unit's METL, while simultaneously sustaining proficiency in individual core skills.

a. Functional Areas. There are eight functional areas that must be sustained by CBRN MOS personnel:

(1) Shape (Battle Management). Provides the ability to characterize the CBRN hazard to the force Commander-develop a clear understanding of the current and predicted CBRN situation; collect, query and assimilate info from sensors, intelligence, medical, etc., in near real time to inform personnel, provide actual and potential impacts of CBRN hazards; envision critical SENSE, SHIELD and SUSTAIN end states (preparation for operations); visualize the sequence of events that moves the force from its current state to those end states.

(2) Sense (Contamination Avoidance). The capability to continually provide the information about the CBRN situation at a time and place by detecting, identifying and quantifying CBRN hazards in air, water, on land, on personnel, equipment or facilities. This capability includes detecting, identifying and quantifying those CBRN hazards in all physical states (solid, liquid and gas).

(3) Shield (Protection). The capability to shield the force from harm caused by CBRN hazards by preventing or reducing individual and collective exposures, applying prophylaxis to prevent or mitigate negative physiological effects and protecting critical equipment.

(4) Sustain (Decontamination). The ability to conduct decontamination and medical actions that enable the quick restoration of combat power, maintain/recover essential functions that are free from the effects of CBRN hazards and facilitate the return to pre-incident operational capability as soon as possible.

(5) Training. Conduct of training, training management, and organizing training plans.

(6) Equipment. Maintenance of CBRN equipment.

(7) Publications/Inspection/Evaluations. Publication and records management and conducting and supervising unit CBRN training.

(8) Consequence Management Operations. The ability to take actions that maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade, or terrorist incidents.

b. Mission Essential Tasks. A Mission Essential Task (MET) is a collective task in which an organization must be proficient in order to accomplish an appropriate portion of its wartime

mission. METs are the foundation for training and readiness. The CBRN METs are:

(1) MET 1: Conduct CBRN Aspects of Command and Control Operations

(2) MET 2: Implement Contamination Avoidance

(3) MET 3: Establish CBRN Protection

(4) MET 4: Conduct Decontamination Operations

(5) MET 5: Conduct WMD Consequence Management (CM) Operations

(6) MET 6: Conduct CBRN Training

(7) MET 7: Maintain CBRN Equipment

c. MET 1: Conduct CBRN Aspects of Command and Control Operations

(1) Annually, CBRN personnel will perform CBRN mission analysis training. CBRN personnel will be required to advise the commander of the doctrinal employment of CBRN capabilities (organizations, personnel, technology, information, etc.) to characterize CBRN threats and hazards, including TIM. CBRN personnel will also provide commanders and staffs at the operational and tactical levels with capability employment planning data and considerations to shape military operations involving CBRN threats and hazards, and a better understanding of where and when to expect CBRN hazards by applying information management (IM) to the staff planning process. This training will consist of CBRN aspects of the operational environment, command and control, and the Marine Corps Planning Process, intelligence, CBRN threat, vulnerability, and capabilities assessment, CBRN reduction measures, planning, preparation, and execution activities for CBRN operations, and identifying unit CBRN employment capabilities.

(3) Annually, CBRN personnel will conduct NBCC operations training. The extent of NBCC operations is dependant on the level of command. For Wing, the NBCC is fully staffed with CBRN personnel and they are responsible of all aspects of NBCC operations. At MAG and below, the tasks the CBRN personnel are required to perform are less. At a minimum, all CBRN personnel must be able to monitor the battle, track the location of CBRN attacks and their associated hazards, and execute the CBRN defense warning and reporting system. This training will consist of the roles of NBCC personnel, CBRNWRS, information and hazard management procedures, CBRN contamination avoidance measures,

CBRN operational exposure guidance, and CBRN reconnaissance and decontamination operations.

(4) Annually, CBRN personnel will conduct activities for combating weapons of mass destruction (CWMD) operations training. CBRN personnel must be able to identify the elements of CWMD operations and coordinate efforts with other Staff personnel to advise the commander to prevent an attack of CBRN weapons and be able to counter the resulting effects if such weapons are used. Procedures and training must be developed with multiservice and joint operations in mind. Within the scope of roles and responsibilities of CBRN personnel are the CWMD activities taken to detect, deter, disrupt, deny, or destroy an adversary's CBRN capabilities and to minimize the effects of an enemy CBRN attack. The USMC has interlinked the operational pillars of CWMD as counter proliferation and consequence management. These operational-level pillars support the overarching guidance, in the form of military mission areas, provided in the National Military Strategy to Combat Weapons of Mass Destruction (NMS-CWMD), and the operational pillars identified in the Joint Doctrine for Combating Weapons of Mass Destruction (WMD) and the National Strategy to Combat WMD. This training will consist of identifying the policies, principles, framework, pillars, objectives, enablers, and mission areas for combating weapons of mass destruction (CWMD).

d. MET 2: Implement Contamination Avoidance

(1) Quarterly, CBRN personnel must be able to identify the hazard effects in the event of an attack/incident. CBRN personnel must be able to determine the duration of the hazard by recognizing the means of delivery of the hazard, as well as the environmental impacts on the hazard's effectiveness.

(a) CBRN personnel will conduct identification of chemical hazard effects training consisting of significant events in chemical warfare agent history, U.S. Policy for use of chemical warfare agents, classification of toxic agents, characteristics of a chemical hazard attack, chemical warfare agent, and chemical agent compounds, factors effecting the duration of a chemical hazard, physiological effects from a chemical hazard, protection and decontamination required per chemical hazard, and immediate treatment of a chemical hazard casualty.

(b) CBRN personnel will conduct identification of biological hazard effects training consisting of significant events in biological agent history, U.S. Policy for use of biological agents, characteristics of a biological agent attack and biological agents, categories of biological agents, factors effecting the duration of a biological hazard, physiological

effects from a biological hazard, immediate treatment of a biological hazard casualty, and determining the protection and decontamination required per biological hazard.

(c) CBRN personnel will conduct identification of radiological hazard effects training consisting of significant events in nuclear warfare history, U.S. Policy for use of nuclear warfare, characteristics of a nuclear attack, types of nuclear radiation and bursts, factors effecting the duration of a nuclear hazard, physiological effects from a nuclear hazard, and determining the protection and decontamination required per radiological hazard.

(d) CBRN personnel will conduct identification of toxic industrial material hazard effects training consisting of significant events in TIM history, terms associated with TIM, possible sources and hazards of TIM exposure, hazards associated with the use of depleted uranium, factors effecting the duration of a TIM hazard, physiological effects from a TIM hazard, and determining the protection and decontamination required per TIM hazard.

(2) Quarterly, CBRN personnel must be able to predict where contamination from a CBRN attack is likely to be located. CBRN personnel must be able to utilize attack information and current weather data to predict the location of the attack, the size of the attack area, the hazard area, and the extent of contamination, when the contamination will arrive at a given location, and the duration of the contamination. CBRN personnel must be able to conduct CBRN hazard prediction utilizing both the manual and automated methods.

(a) CBRN personnel will perform chemical hazard warning and reporting training consisting of processing CBRN Chemical Downwind Messages, determining GZ location for a chemical attack, determining chemical types/cases, predicting chemical hazard and attack areas, calculating chemical downwind travel distances, calculating chemical hazard duration, calculating chemical expected arrival times, processing chemical reconnaissance information, and processing a CBRN 5 CHEM message.

(b) CBRN personnel will perform biological hazard warning and reporting training consisting of determining GZ location for a biological attack, determining biological types/cases, determining biological hazard and attack areas, predicting biological downwind travel distances, calculating biological hazard duration, calculating biological expected arrival times, processing biological reconnaissance information, and processing a CBRN 5 BIO message.

(c) CBRN personnel will perform radiological hazard warning and reporting training consisting of determining GZ location for a nuclear attack, determining yield estimation for a nuclear attack, processing a basic wind message, processing a wind vector plot, processing a CBRN EDM, categories of radiological hazard fallout, radiological prediction methods, calculating radiological fallout area zones, calculating radiological fallout expected arrival times, predicting radiological hazard (simplified and detailed procedures), calculating radiological data, processing radiological reconnaissance information, and processing a CBRN 5 NUC message.

(d) CBRN personnel will perform ROTA hazard warning and reporting training consisting of types of ROTA Release, determining ROTA types and cases, predicting ROTA hazard and attack areas, calculating ROTA downwind travel distances, calculating ROTA hazard duration, calculating ROTA expected arrival times, processing ROTA reconnaissance information, and processing a CBRN 5 ROTA message.

(3) Quarterly, CBRN personnel will conduct CBRN assessment operations training. CBRN personnel must be able to assess the CBRN situation. CBRN personnel must be able to utilize all available information and current weather data to plan prepare and execute predict the location of the attack, the extent of contamination, the duration of the contamination. This training will consist of identifying types of release, recommending protection methods, predicting hazard areas, calculating hazard duration, processing reconnaissance information, and recommending decontamination methods.

(4) Quarterly, CBRN personnel will identify CBRN contamination avoidance measures. Mission requirements, protective equipment available and steps to reduce and limit expose must all be considered. Additionally, in order to avoid contamination, CBRN personnel must be able to identify where the contamination is likely to be located. This training will consist of identifying the fundamentals of contamination avoidance and CBRN pre-attack, during-attack, and post-attack contamination avoidance TTPs.

(5) Quarterly, CBRN personnel will conduct employment of CBR reconnaissance equipment training. Enemy attacks utilizing CBRN weapons or agents may cause residual contamination. In order to properly protect the unit from the resulting contamination hazard, CBRN personnel must be able to conduct operations utilizing detection equipment. This training will consist of identifying the Levels of CBRN Detection Equipment, description for the levels of CBRN detection equipment, performing Preventive Maintenance Checks and Services (PMCS) for the levels of CBRN detection equipment, preparing the levels of

CBRN detection equipment for use, employing the levels of CBRN detection equipment, and performing after employment operations for the levels of CBRN detection equipment.

(6) Quarterly, CBRN personnel will perform CBRN reconnaissance TTPs CBRN personnel must direct and/or conduct reconnaissance operations for CBRN contamination. Reconnaissance operations involve teams utilizing assigned detection equipment to determine whether CBRN contamination is present at their location. Reconnaissance operations include zone reconnaissance, sampling, search, monitor and survey techniques to determine either the existence or extent of contamination. This training will consist of identifying the principles of CBRN reconnaissance, CBRN reconnaissance tasks, planning a CBRN reconnaissance mission, CBRN sample evacuation protocols, and conducting CBRN reconnaissance tasks.

e. MET 3: Establish CBRN Protection

(1) Quarterly, CBRN personnel will conduct employment of CBRN protection equipment training. Properly employing CBRN protection equipment is vital for providing the necessary protection for personnel. CBRN personnel must equip unit personnel with the appropriate CBRN protection equipment applicable to the unit's mission.

(a) Field Protective Mask Training. This training will consist of describing, disassembling, assembling, performing PMCS, performing Left/Right canister conversion, performing cleaning, performing sanitization, fitting, donning, drinking water, and doffing.

(b) Self Contained Breathing Apparatus (SCBA) Training. This training will consist of conditions requiring use, limitations, types of SCBA, donning/doffing procedures, standard and emergency use procedures, reduced profile use methods, "buddy breathing" procedures, inspection and maintenance procedures, and filling SCBA cylinders.

(c) MOPP Training. This training will consist of identifying the components of each MOPP level, identifying the two categories of protective clothing, description of the over garment, over boots, and gloves, conducting PMCS of the over garment, over boots, and gloves, and donning and doffing of the individual protective ensemble.

(d) PPE Training. This training will consist of identifying the components of Level A and B protective ensembles, description of the suits, boots, and gloves, conducting PMCS of the suits, boots, and gloves, and donning and doffing of Level A and B protective ensemble.

(2) Quarterly, CBRN personnel will perform individual CBRN protection action training. CBRN personnel must also be able to provide recommendations for individual protection procedures during any stage of the CBRN incident (prior, during or after the incident). This training will consist of identifying the indicators of a CBRN incident, different types of CBRN alarms/warning signals, protection actions prior, during, and after a CBRN incident, procedures for automatic masking and selective unmasking, degradation to personnel during sustained operations while in MOPP, MOPP Analysis considerations, and conducting a MOPP analysis

(3) Annually, CBRN personnel will conduct coordination of unit CBRN protection action training. Unit CBRN protection measures, such as collective protection, provides a means to protect the force without individuals having to wear individual protective equipment for a prolonged period of time. It enables personnel to operate in a clean environment and protects equipment from becoming contaminated. This training will consist of unit CBRN protection planning and preparation considerations and unit protection actions prior, during, and after a CBRN incident.

f. MET 4: Conduct Decontamination Operations

(1) Quarterly, CBRN personnel will conduct fundamentals of CBRN decontamination training. The levels of decontamination are immediate, operational, and thorough. Decontamination is necessary to allow personnel to remove their protective gear and resume normal operations after they become contaminated. Weathering is the most desirable means of decontamination. However, time and operational needs may not permit this option. Decontamination is the removal or neutralization of hazardous levels of contamination from personnel, equipment, and materiel. The ultimate purpose of decontamination is to restore full combat power in the shortest possible time. This training will consist of identifying the different methods of hazard transmission, purpose, principles, and methods of decontamination, different types decontaminants and levels of decontamination operations, and categories of special decontamination operations.

(2) Quarterly, CBRN personnel will conduct employment of CBRN decontamination equipment training. Decontamination equipment is used to remove or neutralize hazardous levels of contamination from personnel, equipment, and materiel. This training will consist of identifying, describing, preparing, performing PMCS, employing, and performing after employment operations the levels of CBRN decontamination equipment.

(3) Quarterly, CBRN personnel will operate power driven equipment. CBRN personnel must be able to properly utilize the

equipment during decontamination operations. This training will consist of identifying the characteristics of the power driven decon apparatus (PDDA), performing PMCS, the procedures for repairing the water bladder, potential hazards associated with the use of the PDDA, preparing the PDDA for use, employing the water bladder and PDDA, and performing post-operation procedures for the PDDA.

(4) Quarterly, CBRN personnel will perform immediate decontamination operations training. Immediate decontamination consists of three techniques; skin decontamination, personal wipe down, and operator spray down/wipe down. These are initiated without command, utilizing a personal skin decontamination kit, individual equipment decontamination kit, or field expedient methods. The goal is to remove gross contamination and in order to stop agents from penetrating skin, protective equipment and other equipment/weapons. This training will consist of identifying the purpose, techniques, time parameters, and procedures to conduct immediate decontamination, proper procedures for using Level I individual decontamination kits and field expedient methods for conducting immediate decontamination, and performing eye, skin, and individual equipment decontamination.

(5) Quarterly, CBRN personnel will perform MOPP gear exchange training. MOPP gear exchange allows units to systematically remove contaminated chemical protective equipment and redress into uncontaminated chemical protective equipment. This training will consist of characteristics, methods, considerations for site selection, logistical requirements, procedures, and site close for MOPP gear exchange, and performing MOPP gear exchange.

(6) Quarterly, CBRN personnel will perform wash down training. Wash down is conducted utilizing unit organic decontamination assets and is most effective if initiated within six hours of contamination. Wash down removes the gross contamination, thereby limiting the spread of contamination and facilitating additional decontamination requirements. This training will consist of characteristics, considerations for site selection, logistical requirements, procedures, and site close out for wash down, and performing wash down. Both vehicle and aircraft wash down training will be conducted.

(7) Annually, CBRN personnel will conduct thorough decontamination training. This training will consist of the purpose, considerations for site selection, logistical requirements, station descriptions, set up, procedures and site close out for:

(a) Detailed Troop Decontamination (DTD). DTD is utilized to decontaminate personal equipment and weapons by safely removing contaminated chemical protective equipment from personnel. At the completion of DTD, personnel will no longer be in a protective posture.

(b) Aircrew Decontamination Site (ADS). An ADS is utilized to decontaminate aircrew by safely removing contaminated chemical protective equipment. At the completion of ADS, aircrew will no longer be in a protective posture.

(c) Detailed Equipment Decontamination (DED). DED is utilized to decontaminate vehicles and equipment to a level in which chemical protective posture is not required to operate them.

(d) Detailed Aircraft Decontamination (DAD). DAD is utilized to decontaminate aircraft to a level in which chemical protective equipment is not required to operate them.

(e) Casualty Decontamination Site (CDS). A CDS is utilized to remove all traces of contamination from personnel who are unable to conduct operational or thorough decontamination on their own in order to limit the spread of contamination during evacuation or to admit them into a medical treatment facility. Casualty decontamination can be conducted at the unit level prior to evacuation or at consolidated casualty collection point co-located at with a medical treatment facility.

g. MET 5: Conduct WMD Consequence Management (CM) Operations

(1) Annually, CBRN personnel will conduct homeland defense support requirement training. Homeland defense support requirements include the placement of CBRN monitors and sensors on their perimeter and within the area of the installation. It also includes ensuring the installation personnel, especially first responders, have the necessary protection, detection, medical and decontamination equipment. Additionally, it includes training first responders and other installation personnel to respond to, identify, and contain any contamination that may occur as a result. This training consists of the CBRN characteristics, elements, missions, enabling activities, and planning considerations in support to Homeland Defense.

(2) Annually, CBRN personnel will conduct hazardous materials awareness certification training. CBRN personnel will be trained in hazardous evaluation methods, emergency preparedness, and in emergency response plan implementation techniques with the intent that they learn who, what and how to report on an incident. This training will consist of HAZMAT

certification requirements, hazardous substances, risks associated with a hazardous substance in an incident, potential outcomes associated with an emergency created when hazardous substances are present, recognizing the presence of hazardous substances in an emergency, and procedures to react to a suspicious hazardous substance situation.

(3) Annually, CBRN personnel will conduct hazardous materials operations certification training. CBRN personnel at the operations level respond to release or potential release of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of release. CBRN personnel respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposure. This training will consist of identifying hazardous substances, risks associated with a hazardous substance in an incident, potential outcomes associated with an emergency created when hazardous substances are present, recognizing the presence of hazardous substances in an emergency, procedures to react to a suspicious hazardous substance situation, basic hazard and risk assessment techniques, procedures to select and use proper specialized chemical PPE provided to the first responder operational level, basic hazardous materials terms, procedures for basic hazardous substance control operations, procedures for basic rescue of injured or contaminated persons, procedures to implement basic equipment, victim, and rescue personnel decontamination procedures, relevant SOP and termination procedures, and relevant termination procedures.

(4) Annually, CBRN personnel will conduct hazardous materials technician certification training. CBRN personnel at the technician level respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than CBRN personnel at the operations level. They will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. This training will consist of identifying the procedures to implement the emergency response plan, the classification and verification of known and unknown materials by using field survey instruments and equipment, function within an assigned role in the ICS, procedures to select and use proper specialized chemical PPE provided to the hazardous materials technician, hazard and risk assessment techniques, termination procedures, basic chemical and toxicological terminology, and basic chemical and toxicological substance behavior, performing hazardous substance control operations, rescuing injured or contaminated persons, implementing decontamination procedures.

(5) Annually, CBRN personnel will conduct CBRN CM operations support training. CBRN personnel must have the necessary protection, detection, medical and decontamination equipment as well as training and education required to support or sustain CBRN CM operations through recovery to ensure restoration activities can begin. This training will consist of identifying CBRN CM planning, preparation, mitigation, sustainment, Health Service Support, logistic recovery, and redeployment considerations.

(6) Annually, CBRN personnel will conduct training to provide support to civil authorities for domestic incidents as directed by the President or Secretary of Defense, consistent with the military readiness and when appropriate under the circumstances and the law. The Marine Corps also receives support from civil authorities in response to domestic incident, which can be essential to sustaining or restoring capabilities that are critical to our operations and the execution of the National Military Strategy. Any such mutually beneficial, cooperative relationship is most effective when based upon a shared understanding with a common language and structure for coordination. NIMS and NRP provide that framework. The Incident Command System (ICS) is an essential element of NIMS. This training will include:

(a) Incident Command System (ICS) process training consisting of identifying the purpose of the ICS, incident tasks, Command and General Staff personnel, ICS facilities, and common responsibilities of ICS personnel.

(b) National Incident Management System (NIMS) process training consists of identifying the purpose, fundamentals, and components of NIMS.

(c) National Response Plan (NRP) training consisting of identifying the purpose, fundamentals, and components of the NRP.

(d) Responder and Emergency Operations personnel roles and responsibilities training consisting of identifying the ICS chain of command relationships, the ICS tools to manage an incident, providing an operational brief, providing scenario analysis, and the change of command process.

h. <u>MET 6: Conduct CBRN Training</u>

(1) Annually, CBRN personnel will conduct Instructor training. One of the primary responsibilities of CBRN personnel is to ensure that unit personnel are properly trained to survive and conduct operations in a CBRN environment. To accomplish this, CBRN personnel must be able to instruct CBRN training for

all personnel of their unit. This training may include Individual Survival Measures (ISM), Individual Protective Equipment (IPE) wear and use, CBRN warning and reporting, CBRN detection equipment and procedures, and decontamination operations. Additionally, the CBRN personnel must be able to conduct training for the unit CBRN monitor/survey and decontamination teams. Training must be interesting, informative, well rehearsed and presented in a professional manner. This training will consist of identifying the function and components of a lesson plan, selecting an instructional method and media, developing instructional media, elements necessary to properly prepare for instruction, the principles of effective communication, and instructing a lesson.

(2) Annually, CBRN personnel will conduct Individual Protective Equipment (IPE) confidence exercise training. The IPE confidence exercise is designed to prepare personnel to operate in a contaminated environment. It provides all personnel the opportunity to experience how their IPE performs and protects them. When properly conducted the IPE confidence exercise provides the personnel the confidence to survive, operate and accomplish their mission in a CBRN environment. This training will consist of identifying the purpose of, facility requirements, safety standards, the number of CS capsules required, and responsibilities for conducting Individual Protective Equipment Confidence Exercises, and executing an Individual Protective Equipment Confidence Exercise.

(3) Annually, CBRN personnel will conduct Operational Risk Management (ORM) for CBRN training. In order to ensure CBRN training is conducted safely and that no unnecessary risk is accepted, CBRN personnel must conduct a thorough ORM assessment for all planned CBRN training. This training will consist of identifying the CBRN Aspects, terms, and process of ORM, identifying common risk considerations and reduction measures associated with CBRN defense training, and conducting an ORM for a planned CBRN defense training evolution.

i. MET 7: Maintain CBRN Equipment

(1) Annually, CBRN personnel will conduct CBRN equipment automated systems training. In order to properly conduct CBRN operations, the Marine Corps has developed and fielded automated systems to increase the efficiency and accuracy of CBRN reporting for both tactical and logistical information. CBRN personnel must be familiar with the systems available, when and where they are employed, and their limitations. This training will consist of identifying the description and capabilities of the current automated equipment programs, and operating current automated systems.

(2) Annually, CBRN personnel will conduct CBRN equipment account Maintenance training. CBRN personnel must identify CBRN equipment requirements and maintain the accountability and the serviceability of the equipment in accordance with the applicable references. Additionally, they must ensure the proper storage, embarkation and distribution of assigned equipment. This training will consist of identifying unit T/O and T/E authorizations, duties and responsibilities of the personnel responsible for ordering equipment and order reconciliation, shelf life codes, equipment inspections, purpose of the SL-3, supply terms, equipment record keeping forms, calibration control, inventory, embarkation considerations, Desk-Top procedures, Turnover Folders, Material Safety Data Sheet (MSDS), transportation of equipment containing radiological material, and swipe tests.

CHAPTER 6

EQUIPMENT AND LOGISTICS

1. General. Unit CBRN personnel are responsible for ensuring the operational readiness of all equipment issued to the unit to support ground and aircrew CBRN operations and missions. Due to the consolidation of all ground related CBRN assets at local Consolidated Storage Facilities (CSF), certain procedures are required to request equipment for training and deploying. Additionally, there are certain procedures for requesting aircrew CBRN equipment for deployment and training from the Central Storage Facility in Dallas-Ft. Worth, Texas (CSF-DFW). For units that are not assigned (do not have physical custody of) their ground related CBRN equipment they can monitor what is allocated to them through the Total Asset Visibility (TAV) system.

2. Shipping Defects. Equipment found to be deficient in quantity or damaged at the time of receipt as a result of shipping/handling should be reported on a Report of Discrepancy (ROD). Damage can be that of the shipping and/or storage container or the item itself.

3. Quality Defects. Equipment found to be deficient or defective based upon a visual inspection or a functional test should be reported on a Product Quality Deficiency Report (PQDR).

4. Equipment Policies

a. Equipment Serviceability. Unit CBRN personnel are responsible for ensure their unit's assigned CBRN equipment is serviceable when it is received from a CSF. Serviceability standards for CBRN equipment are found in the current edition of TI 10010-20/5 for ground related CBRN equipment, NAVAIR 13-1-6.10 for aircrew CBR IPE, and Civilian Manuals for COTS equipment. Additionally, most items of CBRN equipment have a pre-determined shelf life that cannot be extended without proper testing/evaluation. Because of this, all CBRN equipment in the unit's custody must be periodically inspected to ensure its serviceability.

b. Ground Equipment Maintenance. Many items of CBRN equipment require periodic and/or scheduled preventive maintenance check and services (PMCS). Unit CBRN personnel must ensure all required PMCS are performed on assigned CBRN equipment in accordance with applicable directives and technical manuals.

c. Aircrew Equipment Maintenance. The aviation gas mask is referred to as a respirator. MALS Aviation Life Support System (ALSS) provides required Intermediate Maintenance Activity (IMA) level support for maintenance and repair of the aircrew

respirator. Only ALSS personnel are authorized to conduct modifications to or replace parts of the aircrew respirator. ALSS personnel are required to conduct cyclic inspections for respirators. All test results are to be recorded on a Performance Test Sheet and maintained on file at the MALS ALSS section.

d. Equipment Storage. All CBRN equipment will be stored at the CSF, with the exception of training gear, combat stocks that have been issued to units for upcoming deployments, and MAGTF Consequence Management Sets. CBRN equipment held by individual units will be stored at the discretion of the unit commander under the guidance of applicable warehousing and hazardous material requirements and regulation. It is the responsibilities of the unit CBRN personnel to advise the commander of any restrictions or special requirements applicable to the storage of CBRN equipment.

5. Embarkation. Units are responsible for coordinating with the unit Embarkation Officer to ensure all CBRN equipment is properly prepared for embarkation.

6. Logistical Requirements

a. Filters. All units must maintain a minimum of three sets of combat filters per mask or respirator if the equipment has been issued. Unit CBRN personnel will be responsible for the inventory, lot number identification and serviceability inspections of these filters while in the unit's custody.

b. Decontamination Support Equipment. All units must maintain sufficient quantities of decontamination support equipment to enable the unit to conduct operational decontamination operations.

c. Material Safety Data Sheets. All units must maintain a copy of all required material safety data sheets for all equipment that will be issued from the CSF in the event of the unit deploying.

d. Training Equipment. Unit CBRN sections should maintain adequate quantities of CBRN training equipment to ensure realistic and worthwhile training can be conducted. Additional equipment can be requested from the CSF to support training that goes beyond the unit issued training allowance.

e. Aircrew CBD IPE. Aircrew CBD IPE is specifically designed for use by aircrew in their aircraft. Aircrew will deploy with both aircrew CBD IPE for use in flight duties, and ground CBD IPE for use when not performing flight duties.

f. Ordering aircrew CBD IPE. All squadrons shall order aircrew CBD IPE through the Wing ALSS Class Desk, and the CNAF ALSS Class Desk prior to deployment using the below procedures.

(1) Submit CBD IPE request to Wing ALSS Class Desk using order form and instructions available in the CNAF section of the PMA-202 web site.

(2) Submit order no later than 30 days prior to needed date to allow for processing, and shipping.

(3) Include military and commercial shipping address (street name, building/hangar number).

(4) All Naval aircrew CBD IPE is stored at the Naval CSF Fort Worth, TX. The CSF will package aircrew CBD IPE and send it to requested delivery site.

(5) Upon receipt, the squadron Flight Equipment section is responsible for the Place-In-Service Inspection, and MALS Flight Equipment section is responsible for Bench Testing, and QA.

(6) Once deployed, aircrew CBD IPE will be issued according to SOP local directives, and operational requirements.

g. Returning aircrew CBD IPE

(1) Ensure all aircrew CBD IPE is inventoried and any discrepancies from original issue accounted for.

(2) Unit will ship CBD IPE back to the Naval CSF using provide shipping data.

(3) Naval CSF warehouse will inspect CBD IPE for serviceability and return RFI equipment to rotating inventory.

h. Aircrew CBR IPE consists of the A/P22P-14(V) series Aircrew CBR Respirator, and Below-The-Neck (BTN) equipment. The BTN ensemble consists of:

(1) Chemical Protective Undergarment.

(2) Chemical Protective Gloves.

(3) Chemical Protective Glove Inserts.

(4) Chemical Protective Socks.

(5) Disposable Footwear Covers.

(6) Disposable Aircrew Cape.

7. Equipment Assessment Unit. The Equipment Assessment Unit (EAU) is available to provide technical support (physical testing of selected CBRN equipment) and technical assistance (instruction/consultation in the use of CBRN serviceability standards) to all units. This service should be utilized by all units at least once every two years.

8. Consolidated Storage Facility

a. Accountability, storage, maintenance, disposal, and replacement of all CBRN equipment are the responsibility of the CSF.

b. Each CBRN section has a training allowance and additional equipment can be requested. A request for equipment must be submitted 10 working days prior to day of pickup as well as 10 working days prior to turn in.

c. Deploying units must request their combat stock for deployment 30 working days prior to day of pickup as well as 10 working days prior to turn in.

d. All individuals within 2d MAW will be issued their field protective mask upon checking from the CSF.

9. MEU Support. Elements designated to support MEU operations and deployments will receive their required CBRN ground equipment from the Camp Lejeune CSF as part of the MEU Block and all aircrew CBR IPE will be ordered through the 2d MAW CBR Coordinator and ALSS Chief.

CHAPTER 7

INSPECTIONS

1. General. The intent of the CBRN inspection program is to provide the Commanding General and subordinate Commanders with an accurate appraisal of equipment and operational readiness.

2. Commanding General Readiness Inspection (CGRI). On a two year cycle, each squadron, battalion and group will receive a CGRI by the 2d MAW CGRI Team. The inspection consists of three Functional Area Ratings; CBRN Equipment, Logistics, and CBRN Training. Each inspected unit will maintain a copy of the most recent inspection results on file. Inspected units will, upon request, be provided with a copy of the current checklist a minimum of 30 days prior to the next scheduled inspection.

3. Supply Maintenance Analysis Team (SMAT). Each squadron, battalion, and group will, upon request, receive a Supply Maintenance Analysis Team (SMAT) Inspection, approximately 90 days prior to a scheduled CGRI. The SMAT is a non-graded event with the results forwarded to the inspected units Commanding Officer and MAW G-4. The same checklist will be utilized for both the CGRI and SMAT inspections.

4. Marine Corps Combat Readiness Evaluation System (MCCRES). Groups are responsible for conducting MCCRES evaluations biannually. As many CBRN Mission Performance Standards (MPS) as possible will be accomplished during the subject evaluation. At a minimum before, during, and after operation standards for a chemical attack and Operational Decontamination will be accomplished. Results of the CBRN portion will be forwarded to this Headquarters (G-3/CBRN). Viability of MCCRES, regardless of operational area being inspected, is contingent upon the effort placed in training and preparation by the unit.

5. Staff Assist Visit (SAV). Additional assistance from the G3/CBRN inspection team can be requested by Squadrons, Battalions and Groups at any time.

APPENDIX A

TACTICS, TECHNIQUES, AND PROCEDURES FOR CBRN RECONNAISSANCE, SAMPLING, MONITORING, AND SURVEYS

This appendix provides a reference for CBRN reconnaissance, sampling, monitoring, and surveys. It contains tactics, techniques, and procedures (TTP) for planning and executing operations in a CBRN environment. This appendix addresses concepts, principles, and TTP to include planning, operational considerations, and training and support functions. It serves as the foundation for the development of subordinate unit SOPs and refinement of existing training support packages and unit exercises. It drives the examination of developments applicable to CBRN reconnaissance, sampling, monitoring, and surveys. The TTPs of this appendix may be modified, adjusted, or adapted by the user as necessary.

1. CBRN Monitoring

a. Purpose. The purpose of monitoring is to determine whether contamination is present at the unit's location and if so, the extent of the contamination. Knowing this information enables the commander to decide the protective posture of the unit. Monitoring can be done on personnel, equipment and terrain (area).

b. Chemical Monitoring

(1) Chemical States. Before units can avoid chemical agents, they must know what type of agent is present and where it is located. Non-persistent agents are present as vapor hazards. Persistent agents are present as solid, liquid and vapor hazards. Solid and liquid agents are usually found in the attack area. Vapor hazards are in both the attack and hazard areas. Vapor hazards are the most difficult to predict and detect. They may come from an agent delivered as a vapor or from evaporation of a liquid chemical agent. The location of liquid chemical agents is much easier to predict because wind and terrain have less affect on their location. It takes significant weather such as a heavy rainfall to move liquid and solid chemical agents. Liquid agents evaporate more rapidly from areas exposed to weathering and slower from areas that are sheltered from the effects of the weather.

(2) Equipment Required. At the unit level, the ACADA, M256A1 Chemical Detector Kit and CAM are the primary pieces of equipment used to monitor for chemical agents. This equipment

provides the monitoring unit with the ability to detect the presence of chemical agents in their local area. Additionally, M8 and M9 paper can also be used to supplement the unit's detection capabilities.

(3) Procedures. Monitoring is done in the unit's local area whenever there is sufficient enemy threat or indication of chemical agent use. Detectors such as the ACADA are set upwind of the unit's position at a sufficient distance to detect when a hazard is present and give Marines sufficient time to react properly. If a unit does not have automatic monitoring equipment, Marines may be tasked to use the CAM and M256A1 kits on a regular, routine basis to check for contamination.

(a) Developing a Monitoring Plan. The monitoring plan developed by the unit CBRN personnel must support both on-target attacks and off-target attacks. On-target attacks, as the name implies, are attacks directly on the unit's position. These attacks generally produce immediate results (casualties and contamination). Because detectors may take several seconds to respond and do not detect all chemical agents, personnel must be able to recognize the delivery means and symptoms of the chemical agents, and augment automated detectors with the CAM and M8 and M9 detector paper. Off-target attacks are easier to protect against than on-target attacks. Units use detectors with alarms to alert personnel that a chemical agent is about to drift over their position. Personnel can then take protective action before being exposed to the agent. Detector paper can also be used to augment automated detectors for off-target attacks. CBRN personnel prepare a dispersal/employment scheme based on the number of available automatic detectors, CAMs, M256A1 kits, and M8 and M9 detector paper and on the size of the unit. The larger the unit, the larger the unit's front is. In this case, front means the upwind direction which could be on the left or right flank, in front, or even behind the unit, depending on the wind direction. The majority of automatic detectors should be concentrated on the upwind side of the unit in order to provide an advance warning of an off-target attack. If automatic detectors are not available, the unit should disperse M8 and M9 paper and utilize the CAM and M256A1 kits to determine the presence of chemical agents.

(b) Detector Employment Guidelines. Emplace detectors as soon as arriving in an area. If possible, detectors should be no more than 150 meters upwind from the farthest upwind unit position. The detector units should never be placed more than 400 meters from the alarm unit; otherwise, the signal may not be strong enough to sound the alarm. The

optimum spacing of 300 meters between detectors reduces the risk that a chemical cloud will drift between detectors without sounding the alarm. For night operations, a strip of engineer tape can be placed on the alarms to help locate them. Detectors should be positioned at least 3 feet off the ground, but no more than 6 feet, to ensure maximum exposure to a contaminated environment. Detectors should be placed near personnel so that alarms can be heard and detector malfunctions reported. When emplacing alarms, the wire connecting the alarms and the detectors must be protected from indirect fire. This can be done by burying the wire. The wire should be checked periodically (at least every 4 to 6 hours) to ensure that it has not been broken or cut. Automatic detectors are also used at decontamination sites to validate the absence of contamination at designated stations.

(c) Monitoring with the CAM. The CAM is a point monitor, not a detector, and can only report contamination directly in front of the inlet probe. Because of this, the CAM cannot give a realistic assessment of the vapor hazard over an area within moving it from one location/object to another. In addition to utilizing the CAM for verifying the presence of chemical agents after an attack, the CAM is also used in conjunction with decontamination operations. Vehicles and personnel are monitored for contamination prior to, and during movement through decontamination sites. This reduces the logistic and operational burden of decontamination operations and ensures personnel are not contaminated before leaving the decontamination site.

(4) Recording and Reporting. Monitor results are recorded on DA Form 1971-2-R. Block headings are self-explanatory. Any heading not applicable to the situation should be lined out. The method the monitors use to report the information depends on how urgently the information is needed. If the information is time critical, it is passed over the radio using a CBRN-4 Chemical Report. If time is not critical, or if radio assets are not available, the information is recorded and hand carried to the unit CBRN defense team.

a. Biological Monitoring. Currently, the Marine Corps does not have any detect to warn biological detection capability. Units must use threat indicators and locally produced Biological Sampling Kits (BSK) to help determine whether a biological attack has occurred. Hand Held Assay (HHA) tickets provide additional biological detection capability.

b. Radiological Monitoring

(1) Overview. Radiological monitoring is conducted to determine the presence and intensity of a residual radiation hazard. Monitoring is performed while in a stationary position. The radiation may be from fallout or neutron-induced areas. Since nuclear weapons may be employed at any time on the battlefield, all units will monitor for radiation after the first use of nuclear weapons. Monitoring provides a warning of the presence of radiological contamination and provides useful information to assist in planning future operations.

(2) Types of Monitoring

(a) Periodic. Periodic monitoring consists of frequent checks of the unit's area for radiation. Periodic monitoring assures the commander that the unit's area is not contaminated. It also warns the unit when contamination arrives. Periodic monitoring is initiated after the first use of nuclear weapons in theater, when a unit is out of contact with higher headquarters, when ordered by higher headquarters, or when the unit stops continuous monitoring. During periodic monitoring, the monitor will take a reading with the AN/VDR-2 RADIAC meter at least once an hour.

(b) Continuous. Continuous monitoring is the constant checking for radiation in the unit's area. It is usually performed using the indirect technique. Frequency of readings is generally recorded at 15 or 30 minute intervals but may depend on the current situation. Units will initiate continuous monitoring when a nuclear detonation is observed, heard, or reported in their area of operations, when a CBRN 3 Nuclear Report is received and the unit is in the predicted area of contamination, when a dose rate of 1cGyph (or higher) is recorded during periodic monitoring (periodic monitoring is resumed when the unshielded dose rate falls below 1cGyph), or when ordered by the unit commander.

(3) Techniques of Monitoring

(a) Direct. Direct monitoring is the simplest and most precise of the monitoring techniques. An AN/VDR-2 RADIAC meter is used to get a direct, unshielded dose rate. Direct monitoring is used while monitoring for the initial detection or arrival of fallout, when in low dose rate areas, when determining unshielded, outside ground dose rates for transmission or correlation factors, when verifying the

contamination status of a new position, while moving through a contaminated area on foot, or when OEG permits.

(b) Indirect. Indirect monitoring is conducted from inside shelters or vehicles. This allows the unit to measure radiation levels while keeping exposure to a minimum. Indirect monitoring is the preferred technique when operating in a contaminated area. It is used whenever dose rates are high enough to be read inside the shielded location.

(4) Correlation Factor. Correlation Factor (CF) is a ratio of outside radiation to inside radiation. When the indirect technique is used, most of the readings are taken inside the vehicle or shelter. However, at least one outside reading is necessary to determine the correlation factor. Both the inside and outside readings must be taken within three minutes of each other and be taken after fallout is complete before determining the correlation factor. For vehicles that have the AN/VDR-2 installed, the user needs to verify that the correct attenuation factor has been entered and then read the outside dose rate directly off the display. Additionally, the RADIAC meter needs to be installed in the correct location.

(5) Recording and Reporting. The NBCC receives monitoring reports from subordinate units. These reports provide data essential for the construction and updating of the contamination overlay. At the unit level the primary purpose of monitoring is to warn all personnel of the arrival or presence of contamination. This allows the commander to take prompt action to minimize the risk to personnel, equipment and supplies (food and water).

(a) Flow of Monitoring Data

1. Unit monitors do not originate the CBRN 4 Nuclear Report or send it to higher headquarters. Instead, they capture the data and pass it to their unit CBRN defense section. The CBRN defense section formats and sends the CBRN 4 Nuclear Report to higher headquarters. A "zero" dose rate may be reported in set ROMEO, indicating clean areas or routes, but are reported only if it is of tactical significance.

2. The NBCC provides guidance on reporting precedence for CBRN 4 Nuclear Reports in the operations order, or other instructions. The precedence depends on the urgency of the report. It is usually sent IMMEDIATE, but may be upgraded or downgraded as the situation dictates (for example, if a unit

is in the immediate downwind hazard and has not been previously warned, the precedence could be FLASH).

(b) Automatic Reports. All units in the contaminated area submit certain monitoring reports automatically. These provide the minimum essential information for warning, hazard evaluation and survey planning. Reports are sent to the NBCC. The purpose of establishing automatic reports is to prevent overloading of communications systems. In this way units are obligated, yet limited, to certain types of reports.

1. Initial Report. During monitoring, either periodic or continuous, after receiving a dose rate of 1 cGyph or more outside, the monitor notes the time and then moves directly into shelter. The monitor reports to the unit CBRN defense section that an outside dose rate of 1 cGyph exists and gives the time of reading. The CBRN defense section formats a CBRN 4 Nuclear Report using INIT in set ROMEO.

2. Peak Report. While performing continuous monitoring, the units monitor records dose rates on DA Form 1971-R. Dose rates should be recorded at 15-minute intervals while fallout is arriving. Because radiation is still arriving, the dose rate steadily rises until it reaches a peak and then it decreases. Once there is a constant decrease (two consecutive reports with a lower reading), the monitor takes an inside reading and then an outside reading for the Correlation Factor calculation. The monitor then reports the location of the readings, the time of readings, the inside dose rate and the outside dose rate to the unit CBRN defense section. After all information is recorded, the CBRN defense section calculates the CF and applies it to the highest dose rate. They then format the CBRN 4 Nuclear Report using the word PEAK in set ROMEO. The monitor resumes continuous monitoring and records dose rates at 30-minute intervals after the peak dose rate have been reported. This procedure is continued until the unit leaves the contaminated area, the radiation level drops below 1 cGyph or the commander directs that periodic monitoring begin. The monitor's information is recorded on DA Form 1971-R.

3. Special Reports. There may be requirement for special CBRN 4 Nuclear Reports. These special reports are evaluated by the NBCC. They focus command attention to areas or conditions of serious concern.

(c) Directed Reports. Selected units in the contaminated area may be directed to submit additional CBRN 4

Nuclear Reports. The NBCC carefully selects units and locations for additional dose-rate readings. Selection is based on how long the unit is likely to remain in the area, the training status of the unit, comparison of average soil, vegetation and terrain across the entire area and at the proposed monitoring location, the tactical situation, and the need for representative information throughout the contaminated area according to its size and unit distribution. Instructions for report frequency, precedence, reporting procedures, communications channels, and format are established by the operations order, or as directed.

1. Series Reports. A series report consists of dose-rate readings taken at the same location at 30-minute intervals for 2½ hours, followed by hourly reports. This report begins after the peak dose rate has been noted at the monitor's location.

2. Summary Reports. A summary report shows the radiation distribution throughout a unit's area of responsibility. The locations for readings are selected by the reporting unit according to the distribution of its elements and the extent or variety of the area's terrain. The time each reading was taken is also reported. Inside dose rates are converted to outside dose rates. Units may be directed to submit the Summary report at a specified time (for example, H+24 or H+48).

3. Verification Reports. The verification report is a unit's response to a request from the NBCC. If data is lacking from a specified location near or in the unit area, the NBCC may request a verification report. These reports can also be used to recheck an unusually high dose rate, a zero reading or other abnormalities. A verification report is not a retransmission of previously reported readings, but a check of the actual condition of the area.

(d) Forms

1. DA Form 1971-R is used to record monitoring data at the unit level. Block headings are self-explanatory. Any heading not applicable to the situation should be lined out. Space is provided for the monitor to enter data for the Correlation Factor. The monitor does not calculate the CF, it is done by the unit CBRN defense section.

2. The monitor may use the remarks block to provide any additional critical information. This block is also

used by the CBRN defense section to enter the time of burst and to calculate the CF.

3. The DA Form 1971-R is also used as a copy sheet for monitoring data passed from one headquarters to another. Only outside dose rates are forwarded.

4. The form can also be sent or hand carried directly to the NBCC.

2. CBRN Reconnaissance

a. General. CBRN Reconnaissance is a contamination avoidance measure, the purpose of which is to provide commanders with information about CBRN hazards in an area of operations.

(1) CBRN Reconnaissance Missions. Conducted whenever the commander needs additional information on the location or extent of contamination on the battlefield. In order for CBRN reconnaissance elements to confirm the presence or absence of CBRN hazards in an area, they must conduct reconnaissance. Pertinent information is obtained by direct observation, the use of sensors, detectors, or other methods. This also includes gathering information regarding the enemy's use of CBRN weapons, associated hazards (toxic industrial materials, for example), or specific meteorological data for hazard prediction. Generally, radiological reconnaissances are area type missions. Chemical/Biological reconnaissance may be all three, route, area, and zone.

(a) Route Reconnaissance. The focus of performing route reconnaissance is on obtaining information along a specific route, such as a road, railway, or cross-country mobility corridor. The route may be either a single road or an axis of advance.

(b) Area Reconnaissance. This type of reconnaissance mission is also referred to as "point reconnaissance" and focuses on obtaining information within a prescribed area. This may include a town, installation, bridge, or another feature that might be considered critical to military operations.

(c) Zone Reconnaissance. Zone reconnaissance focuses on obtaining information within a specified zone, such as ALL routes, obstacles, terrain, and enemy forces within a zone defined by boundaries. This type of reconnaissance may include several route or area reconnaissance missions assigned

to subordinate elements. It may also be appropriate when knowledge of an area is limited and there are indications or reports of possible CBRN hazards.

b. Principles Of CBRN Reconnaissance. Based off a unit's capabilities, the reconnaissance missions performed are able to provide the necessary information to allow friendly forces to avoid contaminated areas and to take appropriate protective measures. As an integrated component of battle space planning, CBRN reconnaissance is dedicated to the detection of possible CBRN hazards.

(1) Maximizing the Probability of Detection. This is accomplished by using the IPB process to determine where and when to employ sensors.

(2) Retaining Freedom of Action. Commanders maintain freedom of action by avoiding contaminated areas. Knowing the location of contamination allows units to practice contamination avoidance. This allows air base, maritime, and ground forces to continue their operations unimpeded.

(3) Orienting on the Reconnaissance Objective. In order to orient reconnaissance assets appropriately, commanders must identify a reconnaissance objective within the area of operations (AO). This objective may include a certain terrain feature, geographical area, or enemy activity about which additional information must be obtained.

(4) Reporting Information Rapidly and Accurately. This principle of reconnaissance is vital because CBRN reconnaissance is performed to support critical decisions, critical information loses value quickly, negative reports tell as much as positive reports and accurate reporting provides information on the current CBRN hazards in the air, in water, on land, on personnel, on equipment, or in facilities. It also provides the physical state of the hazard (gas, liquid, or solid).

(5) Developing the Situation Rapidly. Once contamination has been encountered, the reconnaissance element providing the information must determine the agent type, intensity or concentration, and geographic area affected, select a course of action for the CBRN reconnaissance unit, recommend a course of action to the supported unit, and implement the commander's decision.

(6) Maximizing Capabilities. The CBRN reconnaissance unit must use all available capabilities and integrate them to

increase the probability of detection. Additionally, the commander must plan to use his reconnaissance assets wisely and support them logistically to ensure operations when needed.

c. CBRN Reconnaissance Considerations

(1) CBRN reconnaissance can be accomplished utilizing vehicles or on foot, depending on available assets. These units are normally directed through the unit CBRN defense section or NBCC.

(2) The minimum size of a team is two people. One member maintains a constant watch for hazards, provides security, and calls for assistance if accidents or injuries occur. There is no maximum number of team members. However team size should be kept to a minimum to reduce the number of people exposed to hazards and still accomplish the mission. The use of large teams depends on the mission, weather, and need for additional security.

(3) Reconnaissance missions utilizing vehicle platforms, such as the JCBRNRS are typically employed in pairs. This allows for greater expediency in conducting missions. Vehicle-based reconnaissance assets will also require security provided by supporting units.

(4) CBRN reconnaissance reports contribute vital information to develop a common operational picture. This information assists in predicting, detecting, identifying, warning of, and reporting CBRN attacks/hazards. In other words, the reports provided by reconnaissance units inform others of clean areas and possible contamination.

Suggested Equipment for a Two-Party Reconnaissance Team

Item	Quantity
Flashlight, high quality	2 each
Batteries, flashlight	amount for 8 hrs use
CBRN marking kit, signs	1 each
Communications device	1 each
M8 detector paper	5 booklets
M9 detector tape	2 rolls
M256A1 detector kits	2 kits
RADIAC equipment	As required
BSK sampling kit	1 each
Handheld assay device	25 each

(5) The unit commander designates an area for the reconnaissance team to return to for decontamination. Depending on whether the team found contamination or not, decontamination procedures could range from not being required to thorough decontamination. Generally, operational decontamination is the Marine Corps standard for contaminated reconnaissance personnel during offensive combat operations.

d. Recording and Reporting. Preparations for the recording and reporting of reconnaissance data must be made prior to assigning the mission. The method the reconnaissance team uses to report information depends on how urgently the information is needed. If time is critical, the information is passed over the radio using the CBRN 4 Report format. If time is not critical, or if radio assets do not permit passing the information over the radio, the information is recorded and carried back to the NBCC.

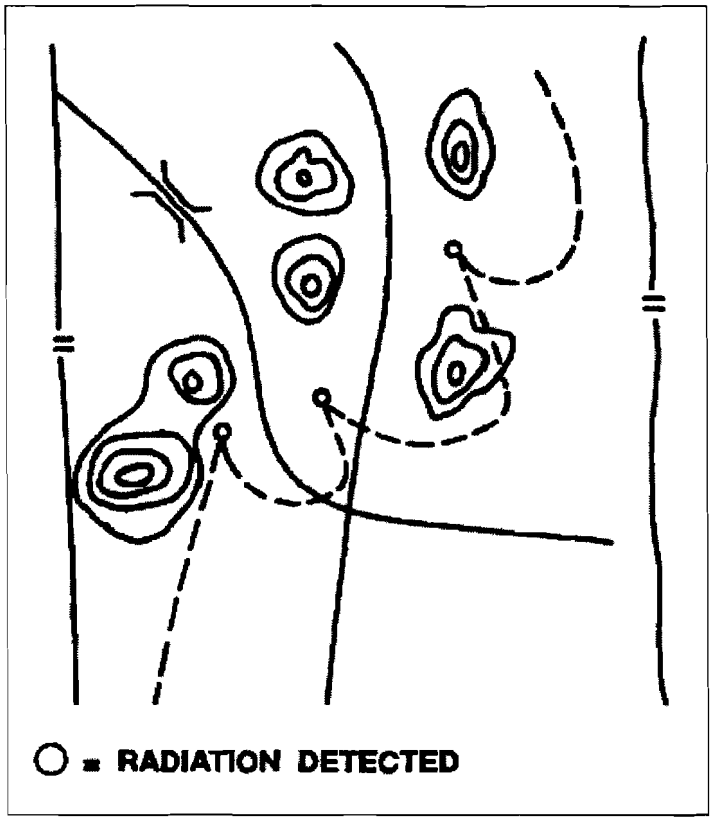
e. Radiological Reconnaissance. Radiological reconnaissance is the act of detecting and measuring the presence of radiation with RADIAC instruments while on the move. It is done before the main body of the unit encounters the hazard and helps them avoid the hazard. Reconnaissance may be used when a unit is required to move through or occupy an area where the presence of CBRN contamination is unknown, the boundaries of a known contaminated area must be determined, or a clear route through or around a contaminated area is required. Radiological contamination could be the result of fallout, rainout or neutron-induced contamination. Regardless of the source, reconnaissance concentrates on finding contamination rather than determining intensity or dose rate. Once plotted, reconnaissance data provides the information needed to evaluate the impact the contamination will have on current and future operations.

(1) Ground Radiological Reconnaissance. In ground radiological reconnaissance, the most important information is the location of uncontaminated areas. Ground radiological reconnaissance is rarely concerned with determining the dose rates. The location of the perimeter of the contamination and paths around or through the contamination is the primary mission of ground radiological reconnaissance. This knowledge helps units to avoid the hazard as much as the mission will allow. Ground radiological reconnaissance missions are best performed while in a vehicle that provides good shielding. The overall objective is to locate a clean or relatively clean path through the contamination. The level of contamination that can be crossed safely is dependant on the type of vehicles and speed at which a unit can move.

(a) Limitations. Ground radiological reconnaissance takes longer to conduct than aerial radiological reconnaissance. Team members are exposed to higher doses of radiation than aerial team members. It takes more equipment and Marines away from the primary mission than aerial radiological reconnaissance.

(b) Procedures. The ground radiological reconnaissance team uses the in-and-out technique. After finding contamination, they record the reading, time and location on DA Form 1971-R and report finding contamination to their unit. The team then moves back to an uncontaminated area. The team flanks the contamination, repeating the in-and-out technique within the team's assigned area of responsibility.

Ground Radiological Reconnaissance In-and-Out Technique



(c) Exposure Limit. The reconnaissance team will be assigned a maximum exposure limit. This limit is set low enough to help ensure the safety of team while still allowing the reconnaissance mission to be conducted. While planning the reconnaissance mission, the CBRN defense section will determinate the maximum turn back dose and maximum dose rate in order to limit the exposure to the reconnaissance team. Radiological reconnaissance missions should be conducted while

vehicle mounted if at all. The exposure limit would then be an inside vehicle dose rate reading. The exposure limit may be entered into the AN/VDR-2 as a dose rate alarm, after which it will automatically alarm every time this dose rate is reached.

(d) Flow of Reconnaissance Data and Reports. When the reconnaissance teams locate contamination, they report the location. They will also report dose rates and time of detection. The CBRN 4 Nuclear Report can be used to report the data. The unit CBRN defense section plots the ground radiological reconnaissance team reports. The plot attempts to outline the contaminated area. The CBRN defense section attempts to evaluate the ground radiological reconnaissance data for avoidance planning. The CBRN defense section may have to exchange data with other units to obtain a larger picture of the area of contamination. It also must submit its data to the NBCC for evaluation using the CBRN 4 Nuclear Report. When the CBRN 4 Nuclear Report format is used, the word "CONTACT" is used with the dose rate on set ROMEO.

(1) Aerial Radiological Reconnaissance. Aerial radiological reconnaissance begins after fallout is complete. It consists of reconnaissance teams in helicopters flying over areas of immediate operational concern to locate contamination. As with ground radiological reconnaissance, the aerial radiological reconnaissance's focus is on locating contamination rather than identifying how much contamination is there. Because of the logistics involved in planning and executing an aerial radiological reconnaissance (personnel, aircraft, equipment, enemy threat), it will be coordinated and directed at the NBCC level. Additionally, the NBCC is responsible for analyzing the aerial radiological reconnaissance data.

(a) Limitations. Aerial radiological reconnaissance teams must be well trained. In general, aerial radiological reconnaissance teams must be better trained than survey teams because aerial radiological reconnaissance teams are essentially on their own while conducting the reconnaissance. They must understand all facets of the operation. They must also be capable of independent and innovative action to accomplish their missions. The previous absorbed dose of the aerial radiological reconnaissance team may be an important limitation. The aerial radiological reconnaissance team members carry a DT-236 and it is checked after each reconnaissance mission to ensure the exposure limit is not exceeded. Additionally, the AN/VDR-2 is used to store accumulated dose absorbed by the team. Usually the maximum dose allowed for aerial radiological reconnaissance teams will be around 10 cGy. Because of the maneuverability of

the helicopter, the team can immediately remove itself from high dose rate areas, if necessary. Availability of helicopters may be a limitation depending on the operational situation. Commanders may determine that certain missions are too important to divert helicopters for reconnaissance.

(b) Air-Ground Correlation Factor. Before an aerial radiological reconnaissance can be conducted, the reconnaissance team must determine the Air-Ground Correlation Factor (AGCF). It allows the reconnaissance team to take contamination reading from inside the helicopter at a predetermined altitude, without having to landing the helicopter and take a direct reading at each location or checkpoint identified by the NBCC. The AGCF accounts for shielding from the helicopter and from distance (height above ground). During aerial radiological reconnaissance, the pilot must maintain the predetermined altitude as closely as possible.

(c) Techniques. The three techniques used to conduct aerial radiological reconnaissance are the route technique, the course leg technique, and the point technique. Once fallout is complete, the NBCC predicts where the edge of contamination will be. Once the edge of the contamination is determined, the NBCC determines the areas in which reconnaissance should be conducted and designates checkpoints that can be identified from the air and on the map. These checkpoints can be used during all three aerial radiological reconnaissance techniques.

1. Route. In the route technique, the pilot flies between two checkpoints, following the route of some predominant terrain feature (such as a road) that connects the two checkpoints.

2. Course Leg

a. In the course leg technique, the pilot flies a straight-line (course leg) between two checkpoints or known points. The pilot maintains tries to keep a constant height above the ground, a constant ground speed, and a straight flight direction between the starting and ending checkpoints of each course leg. A new Air-Ground Correlation Factor (AGCF) is obtained every 2-4 course legs. The result is a series of ground dose rates evenly spaced along the path over which the aircraft flew.

b. The pilot locates the starting checkpoint of a course leg to be flown and either locates the

end checkpoint or determines the azimuth of the course leg. The pilot flies the aircraft on the proper course to pass over the initial checkpoint on a straight path to the end checkpoint. When on course, the pilot alerts the monitor and gives him the height above ground. Shortly before reaching the initial checkpoint, the monitor records the time and height above ground. The pilot commands "Mark" when the aircraft is directly over the starting checkpoint, at which time the monitor reads the RADIAC meter, records the dose rate, and begins timing pre-selected time intervals. The monitor reads the RADIAC meter and records the dose rate at each pre-selected time interval (for example, every 10 seconds). The NBCC, in coordination with the helicopter squadron that will be flying the reconnaissance mission, will determine the checkpoints, course leg start and stop points, predetermined altitude of flight, aircraft speed and time between readings. They will provide this information to the reconnaissance team prior to the reconnaissance mission. The pilot again alerts the monitor when the aircraft approaches the end checkpoint. When the aircraft is directly over the end checkpoint, the pilot commands "Mark." At this time, the monitor reads and records the final dose rate.

3. Point. The point technique is used to determine the ground dose rate at points of operational concern and is normally employed to obtain more precise dose-rate information than can be obtained by use of other aerial reconnaissance techniques.

(3) Reporting Reconnaissance Results. Face-to-face delivery of data using the DA Form 1971-1-R or DA Form 1971-R is preferred. Reconnaissance results can be delivered to the NBCC by physical delivery, radio or telephone from the nearest landing zone. The NBCC must specify in the reconnaissance brief how this is to be done. A debriefing is held by the NBCC after the reconnaissance is complete.

3. CBRN Surveys. Once contamination has been found, surveys are conducted to determine the size and exact location of the contamination. Survey techniques can be conducted by a mounted or dismounted team. Survey techniques used include nearside-farside, box, star, and bounce-and-bypass. The distances suggested for each technique will vary depending on the situation.

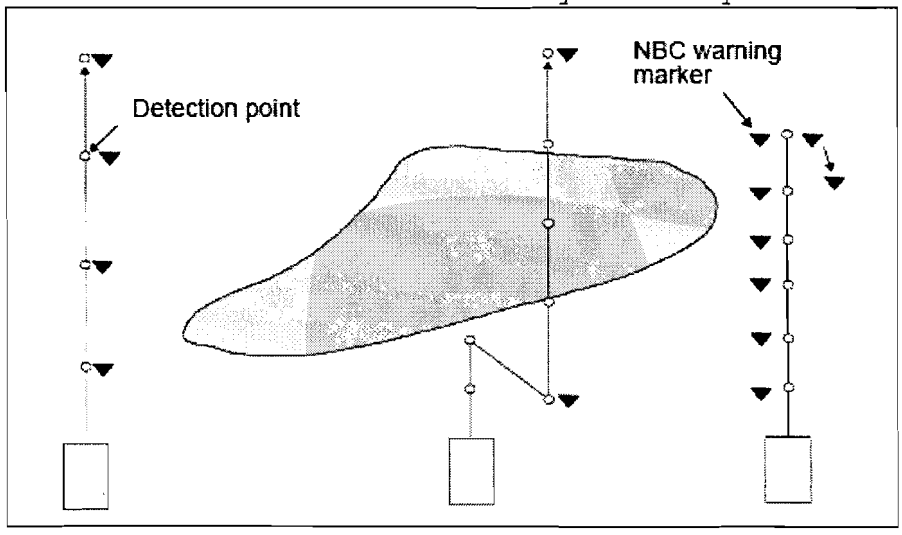
a. Ground Chemical/Biological Surveys

(1) Nearside-farside. The nearside-farside survey technique is used by a reconnaissance element where a team or teams enter the contaminated area.

(a) All vehicles or personnel in the reconnaissance element stop. Each team determines if it is in the contaminated area. If a team is in the contaminated area, it moves back along its original path for 200 meters and checks for contamination. If it is out of the contaminated area, it emplaces appropriate warning markers. If it is still in the contaminated area, it moves back another 200 meters and checks for contamination. This process is repeated until it is clear of the contamination.

(b) Once the initial vehicle or individual has found the nearside boundary of contamination, it moves forward across the contaminated area, testing every 200 meters.

Nearside-Farside Survey Technique



(c) When contamination is no longer detected, the team moves forward another 200 meters and checks again. If no contamination is detected, it places a CBRN warning marker. Each team in the element executes this process to determine the nearside and farside boundaries of the contamination.

(d) It is possible that the left and right limits of the contamination are not identified, even though the left and right reconnaissance teams determined a nearside and a farside. In this case, the reconnaissance element can shift teams to the left and right to find the boundaries or it can execute a box survey technique. The lateral spacing between teams is

important to quickly locate all boundaries of the contaminated area. Once the boundaries are located, clear bypass routes can be easily located.

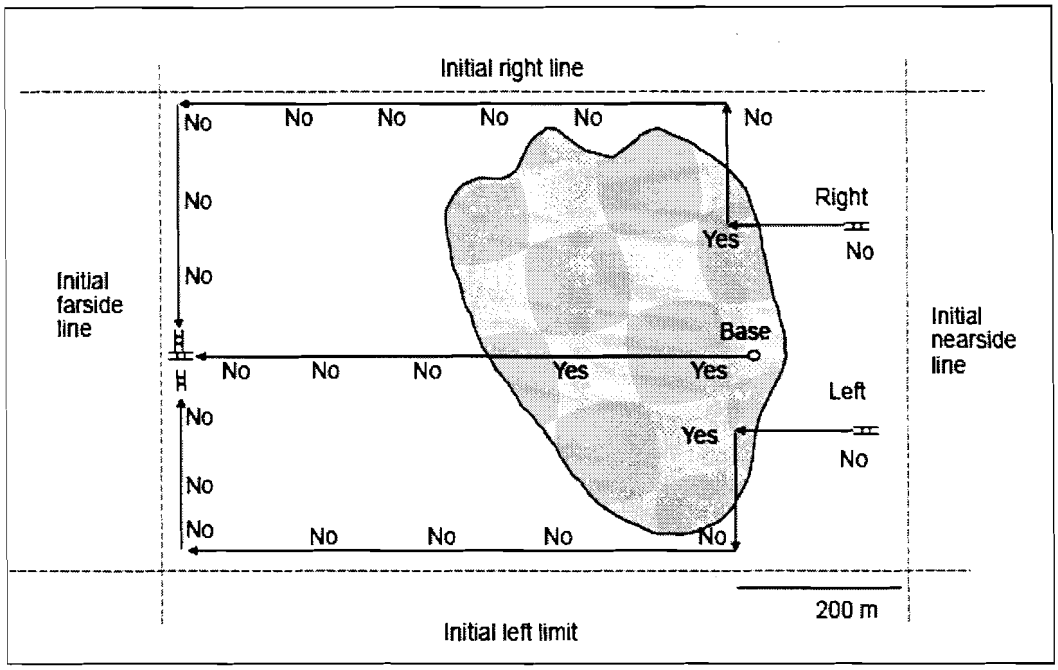
(2) Box. The box survey technique is used to determine the general dimensions (length and width) of a contaminated area. The process starts once a team enters the contaminated area.

(a) All teams in the reconnaissance element stop and check for contamination in their immediate areas. The first team to report contamination becomes the base element. If any other teams in the element are located in the contaminated area, they must back out of the contamination. All teams in the element should orient on the base team. At least one team should be to the left and one team to the right of the base team.

(b) The base team moves forward and finds the farside of the contamination. The crew continues to check for contamination every 200 meters. When the crew fails to get a positive reading, they proceed another 200 meters and establish the initial farside line. The team to the right of the base team places a CBRN warning marker to indicate the initial nearside line; moves forward 200 meters, and checks for contamination.

(c) If contamination is detected, the team turns 90 degrees to the right, moves 200 meters, and checks again. If no contamination is found, the team moves forward 200 meters and checks again. This process of going straight or turning will continue in a boxlike movement until the team has crossed the initial farside line; this is the initial right limit of the contamination. The movement of the team depends on the orientation of the contaminated area.

Box Survey Technique

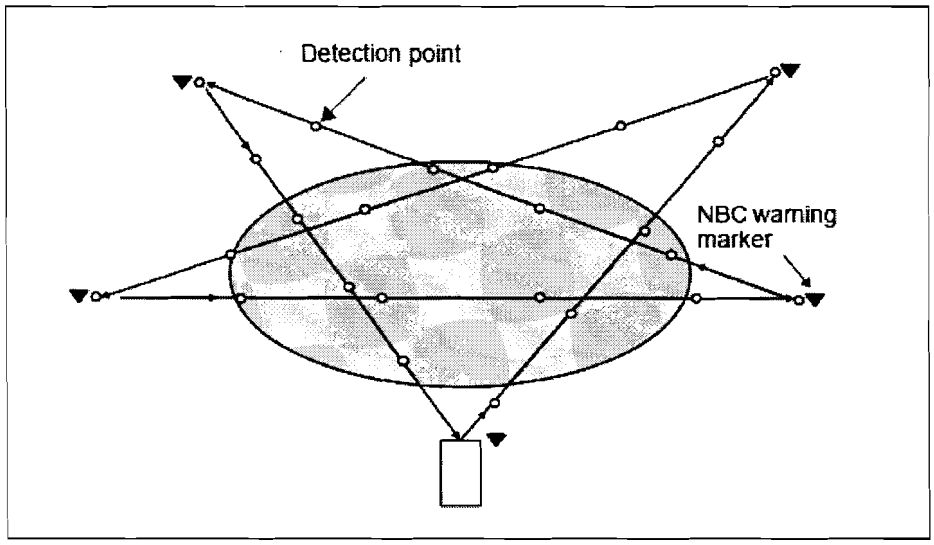


(d) Once the team has reached the initial farside line, the team moves toward the base team while checking for contamination. The team to the left of the base vehicle executes the same movement as the team to the right, except its first turn will be to the left. The reconnaissance unit leader must receive continuous reports from the other teams on their findings. From these reports the CBRN reconnaissance unit leader plots the findings to get a general idea of the contamination layout.

(e) Once the CBRN reconnaissance unit leader is satisfied that the limits of the contamination have been determined, the unit locates the best route to bypass the contamination. Warning markers are erected around the contamination and along any trails leading into the contaminated area so that the bypass route is clearly marked.

(3) Star. The star survey technique is a very quick way to determine the rough limits of a contaminated area. The team that encounters the contamination moves back from the contaminated area 200 meters from the last positive reading. This point is the base of the star. The team posts a warning marker and proceeds forward, detecting every 200 meters to find the farside.

Star Survey Technique with One Team

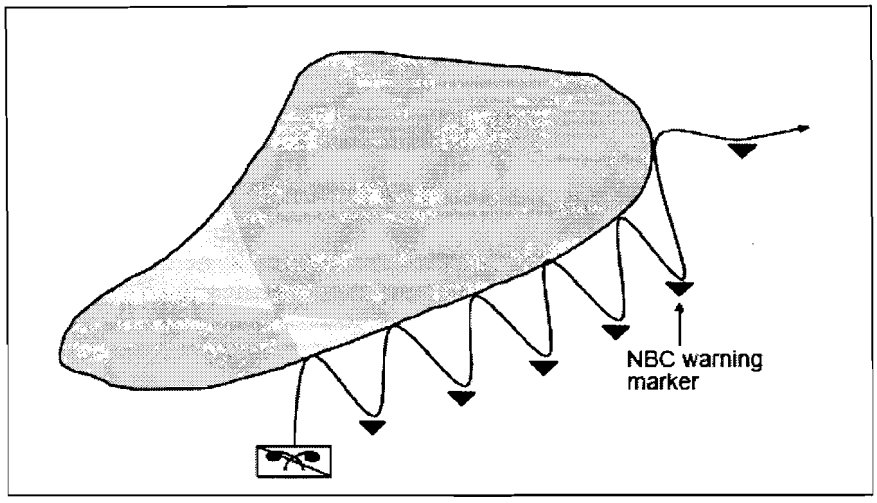


(a) Once the team has detected no contamination, it proceeds for another 200 meters and checks again. If no contamination is detected, another warning marker is posted. This ends the first leg of the star.

(b) The team turns about 135 degrees and travels in that direction, detecting every 200 meters. If no contamination is detected on this leg, the team does not travel any longer than the length of the initial leg. The team repeats this process until it arrives at or near the base of the star. This technique can be used by two or more teams to obtain more detection points, increasing the accuracy of the survey.

(4) Bounce-and-Bypass. The bounce-and-bypass survey technique is used to locate the general boundaries of a contaminated area. The team places warning markers at specified intervals around the contaminated area and at all entry points. This technique can also be used to support a radiological survey. The team reports the intensity of radiation at the contamination boundary.

Bounce-and-Bypass Survey Technique



(5) Recording and Reporting Survey Data. Record results of a chemical survey on a DA Form 1971-2-R. The important information is the type of agent, the location where it was detected, and the type of test taken. The method used to report the chemical survey results depends on the situation. Since chemical survey reports are lengthy, the information usually is not transmitted via radio back to the NBCC. The completed data sheet is carried back and handed to the NBCC. If time is essential, however, the information can be sent over the radio as a CBRN 4 Chemical Report.

b. Ground Radiological Survey. Ground radiological surveys are normally performed by personnel in vehicles.

(1) General Considerations. Regardless of the survey technique used, all ground surveys require that, the survey (RADIAC) meter should remain in the same position for all the readings, that the survey meter should be held in a vertical position (face up) by the monitor sitting in the assistant driver's seat, that the average ground survey vehicle speed is 15 miles per hour.

(2) Techniques. The techniques used to conduct ground surveys are the route, the point, and the pre-selected dose-rate technique.

(a) Route. Most ground surveys are performed using the route technique. In this technique, dose-rate readings are taken inside the vehicle at selected intervals along a route. The route and interval are determined prior to the survey. The correlation factor is obtained at several pre-selected points on the route and averaged.

(b) Point. In using the point technique, the ground dose rate is determined at a selected point. The reading is obtained by dismounting from the vehicle and taking a direct ground dose-rate reading or by taking the dose-rate reading inside the vehicle. For accuracy, the first method is preferred. If the dose rate is taken inside the vehicle, the ground dose rate will be determined by the unit CBRN defense section by using a correlation factor. When taking readings while dismounted, monitors should move at least 10 meters from the vehicle to take the readings. This prevents shielding of the radiation by the vehicle.

(c) Pre-Selected Dose Rate. With the pre-selected dose-rate technique, the survey team will only check locations along an assigned route that meet the pre-select dose-rate or higher. This technique is normally only used for resurveying an area of old fallout contamination (after H+48) where decay is very slow.

(3) Vehicle Correlation Factor. Correlation factor data is required to convert the reported readings taken inside the vehicle to ground dose rates outside the vehicle. Data for the vehicle correlation factor are provided by the survey team. It consists of a set of two readings taken at the same location within three minutes of each other. One reading is taken as a normal, unshielded monitoring reading (the vehicle is at least 10 meters away). The second reading (taken within 3 minutes) is taken inside the vehicle. All subsequent readings are taken from inside the vehicle, with the RADIAC meter in the same location in the vehicle. The VCF, AGCF and CF are all relatively the same time; only the object providing shielding is different.

(4) Recording and Reporting. Record data obtained using the point or pre-selected dose rate technique on DA Form 1971-R and record data obtained using the route technique on DA Form 1971-1-R. Report survey data to the unit CBRN defense section or the authority directing the survey as rapidly as possible. Intermediate headquarters do not screen or evaluate this data. The reporting procedure for the data is specified by the NBCC during the survey briefing.

c. Aerial Radiological Survey. Aerial surveys are conducted for large areas while ground surveys can be done under unit control using unit equipment. Aerial radiological surveys are normally performed by well trained personnel, utilizing helicopter assets. By using helicopters the total dose received by the survey team is reduced.

(1) Techniques

(a) Route. In the route technique, the pilot flies between two checkpoints, following the route of some predominant terrain feature such as a road that connects the two checkpoints. The result is a series of ground dose rates spaced at equal distances along the path over which the aircraft flew.

(b) Point. The point technique is used to determine the ground dose rate at points of operational concern and is normally employed to obtain more precise dose-rate information at those points than can be obtained by use of other aerial survey techniques.

(c) Course Leg. In the course leg technique, the pilot flies a straight line between two checkpoints. Then the pilot turns and flies a different heading to a new checkpoint. In this manner, the general contamination over a large area may be determined.

(2) Procedures. The procedures for conducting all three aerial radiological survey techniques are the same as for conducting aerial radiological reconnaissance techniques. The major difference between an aerial radiological survey and reconnaissance is that the survey is more detailed, covering more points, course legs and routes.

(3) Recording and Reporting. Data obtained using the route or course leg techniques are recorded on DA Form 1971-1-R. Data obtained by the point technique are recorded on DA Form 1971-R. Survey results are delivered to the CBRN defense section upon completion of the survey, by physical drop, radio or telephone from the nearest landing zone.

4. CBRN Sampling

a. General. Sampling is the process of selecting, collecting, documenting, and packaging specimens. Sampling operations may or may not be conducted. When anticipated, a sampling plan is essential to successful operations. The most important consideration is that the sample accurately reflects the scene and that it has not been contaminated by the collection or handling process. The sampling plan must consider the expected results of the sampling operation as a guide, defining the following the purpose and scope of the operation, sampling media, sampling parameters, sampling scheme, techniques to be used, and time schedule.

b. Types of Samples

(1) Environment. Samples from common materials (water, soil).

(2) CBRN. This sample could include chemical or biological agents, radiological samples, and toxic industrial material.

(3) Matrix. The environmental medium sampled may contain a suspect analyte (such as groundwater, surface water, soil, sediments, waste, or air). Matrices are commonly broken down into three categories-liquid, solid, and vapor - referring to the physical state of the medium.

(4) Background. Background samples are collected away from the source area to isolate the effects of the source or site on the sampling process. Control samples ensure that the target compound is specific to the operation's location and is not a result of cross-contamination or naturally occurring background components.

(5) Blank. This collection item is taken to the field for a collection mission, but it is not used. The blank sample is analyzed with the collected samples to ensure that specific materials identified in the samples were not present before the sampling operation.

(6) Medical. This specimen is taken from animals or humans suspected of being infected with a biological agent. The specimen may include blood, tissue, nasal secretions, vomitus, urine, or feces.

c. Sampling Strategies

(1) Random. Random, unsystematic sampling of the target or portion of the target may be used when there is no known specific area of concentration or when there is concern, but a lack of definitive information, that drives site selection to a specific zone.

(2) Systematic. Also referred to as "grid" sampling; in this strategy, samples are taken at predetermined intervals. Regular patterns of samples can rely on a grid structure that is superimposed on the target area or some other type of persistent pattern that is a plied to a zone. In some cases, the grid can actually be literally demarcated with string or stakes.

(3) Judgmental. Judgmental, or "selective" sampling, is a strategy where sampling sites are selected based on the assessment or determination of the sampling team. Often, judgmental sampling is employed to take a series of samples from the areas considered to be the most likely sites of contamination.

d. Documentation. A complete history of the circumstances surrounding the acquisition of each sample or specimen taken must be documented and provided to the analyzing entity. The confirmatory laboratory should receive both the sample itself, along with the appropriate documentation, which should include information regarding:

(1) Meteorological conditions. Describe meteorological conditions at the time of sampling and at the time of alleged attack/release.

(2) Attack to collection time. Record the estimated length of time after the alleged attack when the sample or specimen was taken.

(3) Circumstances to Acquisition. Describe how the sample or specimen was obtained and indicate the source of sample material.

(4) Physical Description. Describe the physical state (solid, liquid, powder, and viscosity), color, approximate size, weight or volume, and dose rate (if radiological contaminated), etc.

(5) Agent Effects on Vegetation. Describe the general area (jungle, mountain, grassland) and changes in vegetation (color changes, wilting, drying, and dead) after agent use in the main attack and fringe areas.

(6) Agent Effects on Humans. Describe how the agent affected personnel in the main attack area versus the fringe areas; the duration of agent effects; peculiar odors that may have been noticed before, during, and after the attack; measures taken that alleviated or worsened effects; and the approximate number of victims and survivors (including age and gender is possible).

(7) Agent Effects on Animals. Describe the types of animals that be and were not effected by the attack and a description of how they were affected.

(8) Grid Coordinates. Identify the location where the sample or specimen was taken.

(9) Presumptive Identification. Identify the system that conducted the sample identification (e.g., Joint Biological Point Detection System).

e. Chain of Custody. The chain of custody is a vital component of sample packages. When samples are transferred from one person to another, a custody transfer occurs. All sample transfers or custody changes are documented. Use of Department of Defense Form 1911 (Material Courier Receipt) should be complete and used for each sample. Chain of custody provides information on when was the sample taken, how many samples were collected, who maintained custody of the sample, and what was done with the ample at each change of custody.

APPENDIX B

TACTICS, TECHNIQUES, AND PROCEDURES FOR CBRN DECONTAMINATION

This appendix provides a reference for CBRN decontamination and contains tactics, techniques, and procedures (TTP) for planning and executing operations in a CBRN environment. This appendix addresses concepts, principles, and TTP to include planning, operational considerations, and training and support functions. It serves as the foundation for the development of subordinate unit SOPs and refinement of existing training support packages, training centers, and unit exercises. The TTPS of this appendix may be modified, adjusted, or adapted by the user as necessary.

1. Immediate Decontamination

a. General

(1) The purpose of immediate decontamination is to minimize casualties and limit the spread of contamination. Immediate decontamination is conducted by the individual upon becoming contaminated. The individual must perform this task without waiting to be ordered to. Immediate decontamination may include decontamination of personnel, clothing, and mission essential equipment. Immediate decontamination will help prevent casualties and permit the use of individual equipment and key systems.

(2) Additionally, immediate decontamination will reduce the overall risk of contamination transfer or spread and speed the weathering process.

b. Skin Decontamination. Skin decontamination is a basic survival skill and should be performed within one minute of being contaminated. The four techniques of skin decontamination are eye, hand, face, and neck decontamination.

(1) Chemical Contamination. For chemical contamination, you will use the M291 Skin Decontamination Kit (SDK) within one minute of contamination on exposed skin. To decontaminate the eyes, flush the eyes with water. When a M291 SDK is not available, chemical contamination can be removed by blotting the skin with a wet cloth (with water from a canteen, and/or soap if it is available). This is the best alternative for skin decontamination if a M291 SDK is not available. This method is not as effective as the decontamination kits.

(2) Biological Contamination. For biological contamination or suspected exposure to a biological warfare aerosol, you should immediately wash with soap and water, or as soon as possible. Because washing exposed skin with soap and water does not remove the entire agent, a hypochlorite solution (bleach) and other decontaminants should be needed to completely remove contamination on the skin. A 0.5 percent sodium hypochlorite solution, if available, should be left in direct contact of contaminated skin for 10 to 15 minutes.

(3) Radiological Contamination. For radiological contamination, remove by brushing, washing, or wiping them off. If your MOPP ensemble is wet, you will need to perform MOPP gear exchange as soon as possible because you will not be able to remove contamination. Wash exposed skin, paying particular attention to your hair and fingernails. It is difficult to remove radiological particles in these areas by simply shaking, wiping, and washing.

(4) Procedures

(a) Eye Decontamination. Any suspected chemical agent contamination of your eyes or face must be removed immediately. In most cases, you will not be able to identify the agent before decontamination. Quickly obtain overhead shelter to protect yourself while performing the eye wash decontamination process.

(b) Hand Decontamination. When you find or suspect chemical agent contamination on your skin you need to act immediately. You will use the M291 SDK to decontamination your hands.

(c) Face Decontamination. You will use the M291 SDK to decontamination your face. With the field protective mask on the face, thoroughly scrub exposed skin of face.

(d) Neck Decontamination. Without breaking the seal between the face and mask, thoroughly scrub the neck and ears.

c. Personal Wipe Down. Personal Wipe Down is most effective when conducted in the first 15 minutes of being contaminated. Use chemical detector paper or a chemical agent monitor (CAM) to locate any contamination on personal equipment, such as field protective mask, weapon or other mission essential equipment you need to touch frequently to perform your mission. For radiological contamination, use a RADIAC meter to locate the

areas of contamination. After contamination is located, conduct personal wipe down procedures as listed below.

(1) Chemical Contamination. For chemical contamination, utilize M8/M9 chemical detector paper or a CAM to detect contamination on your personal equipment. You will use the M291 SDK to decontaminate your individual equipment.

(2) Biological Contamination. For biological contamination, you will need to wash with soap and water. If water is not available, use the M291 SDK in the same manner as you would for chemical contamination.

(3) Radiological Contamination. For radiological contamination, locate the contamination with monitoring equipment and remove it by shaking or brushing it off. Avoid breathing in the dust particles as you remove them. Hold a cloth over your mouth and nose to prevent the inhalation of the particles. After you wipe off the particles from your clothing, wipe down equipment with warm, soapy water using rags or damp towels.

d. Operators Wipe Down. Operators Wipe Down is also most effective if conducted in the first 15 minutes after contamination. Decontaminate all critical surface areas that you must touch to operate equipment, vehicles or crew-served weapons.

(1) Chemical Contamination. For chemical contamination, use M8/M9 paper or a CAM to determine what surfaces require decontamination. You need to decontaminate all surfaces that you must touch to operate equipment, the exterior of the vehicles (door handles, steps, etc) or the surfaces on crew-served weapons that you need to accomplish the mission. Use the M100 SDS to decontaminate the equipment. If a M100 SDS is unavailable, you can use non-standard decontaminates or STB (if available). If using STB, scrub the exterior surface with STB dry mix or slurry with brushes. Wait 30 minutes then wash off.

(2) Biological Contamination. For biological decontamination of equipment, a five percent hypochlorite (bleach) solution is used. A contact time of 30 minutes is required prior to normal cleaning. This solution is destructive to metals and fabrics, so rinse thoroughly and oil metal surfaces after completion.

(3) Radiological Contamination. For all forms of radiological contamination, you will need to use radiological

detection equipment to locate it in order to properly decontaminate it. If monitoring equipment is unavailable, and you believe that you are contaminated, decontaminate critical surface areas of equipment, vehicles or crew-served weapons by brushing the contamination off. Water works well to flush off the contamination off surfaces. Use drainage ditches that flow to a sump so that the contamination is controlled.

e. Spot Decontamination. Spot decontamination is an immediate decontamination technique that will normally be performed on aircraft that have been recovered and will be quickly turned around for continued flight operations. Spot decontamination reduces the contamination on areas that must be touched during an operation and while servicing the aircraft. Conducting spot decontamination will reduce contamination and limit its spread. The following steps should be used for conducting spot decontamination:

(1) Fixed-Wing Ejection Seat Aircraft and Helicopters

(a) Determine a location for the decontamination. The location to conduct spot decontamination depends on the operating cycle, the space available, and the aircraft size being decontaminated.

(b) Spot decontamination should be performed by the crew or work section responsible for the service being performed. All personnel involved in spot decontamination shall wear appropriate non-aircrew MOPP gear. Wet-weather clothing may be worn over MOPP gear to prevent the saturation of the non-aircrew protective ensemble.

(c) The following list provides a baseline for the areas that should be decontaminated prior to servicing the aircraft:

1. Refueling access.

2. Ordnance, armament, and equipment.

3. Ingress and egress (ladders, handholds, steps, etc.).

4. Preflight and post-flight check areas.

5. Inspection areas.

6. Canopies, windscreens, windows, and optical sensors.

7. Support equipment (chocks, chains, etc.).

8. Aircraft tie-down and tow points.

(d) Procedures

1. Make available sufficient quantities of soapy water or applicable aircraft cleaner and fresh water.

2. Scrub the service areas using brushes, rags, or sponges with soapy water until deposited CB material, dirt, and grime are removed.

3. Rinse with fresh water from a bucket or hose.

4. Decontaminate gloves.

5. Perform service.

6. Decontaminate runoff cleaner by applying standard or nonstandard decontaminant to the deck, ground, and airfield and then hose into collection sumps. If runoff is hosed without prior decontamination, it should be treated as contaminated.

(e) Large-Frame, Fixed-Wing, Non-ejection Aircraft. If mission requirements do not allow ample time for operational decontamination or weathering, provide spot decontamination of large-frame aircraft. Large-frame aircraft (C-130) will normally operate from an open ramp without cover while on the ground for a short period of time. Their vulnerability to CBRN contamination on the ground will result from being outside and unprotected at the time of a chemical attack. Additionally, the size of the aircraft makes spot decontamination a much larger task. Contamination can also transfer from contaminated personnel or cargo allowed on the aircraft.

(f) A Team Leader (TL) directs the efforts of two-person teams as they decontaminate the aircraft. The TL can be any military occupational specialty (MOS) but it is recommended that a qualified aircraft crew chief be used. The mechanics performing as members of the two-person teams can be any MOS provided they are familiar with the ground handling and flight line safety procedures for the applicable aircraft and can work in full MOPP gear.

(g) Three two-person teams designated as Teams A, B, and C is recommended. The number of personnel can be adjusted based on the availability and workload, provided the two-person team concept is not violated. Tasks are designated by the letter (A, B, or C) of the team doing the work, but these team designations are optional if more or less personnel are used.

(h) The TL assembles the full team at the nose of the aircraft for a situation and safety briefing. He uses the applicable aircraft ground handling TM or TO to make the aircraft safe for maintenance. He briefs personnel on the absolute necessity of operating in two-person teams and the use of the "buddy system" to enhance personal decontamination and safety throughout the operation. The TL also performs the following duties:

1. Ensures that the required supplies are available (such as M295 kits, M9 tape, shuffle box, logbook, bags, heavy-duty plastic).

2. Ensures that the required equipment is available (such as handheld radios and CAMs).

3. Uses M295 kits to spot-decontaminate ground fire extinguisher(s) to ensure that they are available in an emergency.

4. Assigns two-person inspection teams to inspect and spot-decontaminate portions of the aircraft interior and exterior.

(i) Team A performs the following duties:

1. Inspects (using the appropriate detection device) and spot-decontaminates the crew entry area, Pays particular attention to the crew entry doors, ladder, and handrail.

2. Places the shuffle box with absorbent at the foot of the ladder.

3. Cleans feet in the shuffle box prior to entering the aircraft, checks each other for contamination (decontaminate if necessary), and proceeds up the ladder into the aircraft.

4. Inspects and decontaminates any contamination present onboard in the crew entry area, to include the galley and closest floorboards.

5. Exits the aircraft and reports the findings to the TL for entry into the log.

6. Disposes of waste in the garbage bag.

7. Inspects (using CAMs or the appropriate detection device) and spot-decontaminates the ground interphone connection/door, pays particular attention to the cable connection area and door latches.

8. Reports the findings to the TL for entry into the log.

9. Disposes of waste in the garbage bag.

10. Inspect (using CAMs or the appropriate detection device) the main landing gear (MLG) wheel wells.

11. Enters the MLG wheel wells and Records the detector reading in the front and rear of each MLG wheel well.

12. Spot-decontaminates (as needed) any safety down-lock pins and wheel chocks.

13. Reports the findings to the TL for entry into the log.

(j) Team B performs the following duties:

1. Inspects (using CAMs or the appropriate detection device) and spot-decontaminates the ground power unit (GPU) and aircraft ground power receptacle. Team B pays particular attention to the electrical plug area, the spindle hook area, and all knobs and switches, reports the findings to the TL for entry into the log and Disposes of the waste in the garbage bag.

2. Inspects (using CAMs or the appropriate detection device) and spot-decontaminates any ground servicing points that will be accessed prior to launch (i.e., oxygen, hydraulic, and latrine servicing ports). Team B pays particular attention to the connection areas, doors and latches, and all knobs and switches, reports the findings to the TL for entry into the log and Disposes of the waste in the garbage bag.

3. Inspects (using CAMs or the appropriate detection device) the nose landing gear (NLG) wheel well. Enters the NLG wheel well and records the detector reading in the front and rear of the wheel well, decontaminates (as needed) any safety down-lock pins and wheel chocks and reports the findings to the TL for entry into the log.

(k) Team C performs the following tasks:

1. Inspects (using CAMs or the appropriate detection device) and spot-decontaminates the fuel truck and hoses, and the aircraft fuel servicing ports (filler caps if used) and fuel servicing panels. Team B pays particular attention to the hose connections, all knobs and switches, and the driver's-side door area, reports the findings to the TL for entry into the log and disposes of the waste in the garbage bag.

2. Inspects (using CAMs or the appropriate detection device) and spot-decontaminates the aircraft ramp areas. Cleans feet in the shuffle box prior to entering the aircraft, checks each other for contamination (decontaminates if necessary), and enters the aircraft through the crew entry door after using the shuffle box. Pays close attention to the ramp control panel and the ramp hinge areas. Decontaminates all knobs, switches, and handles as appropriate and reports the findings to the TL for entry into the log.

(l) The TL reviews the aircraft forms and directs the teams to spot-decontaminate any areas of the aircraft requiring access for maintenance (engine nacelle latches, access panels, tires). The TL reports any abnormal findings or actions to the maintenance and operations sections.

f. Patient Decontamination. The process of patient decontamination begins at the incident site (unit location). The contaminated Marine performs immediate personal decontamination. If the Marine is unable to decontaminate themselves, due to injury or incapacitation, a buddy performs this function. Contaminated areas on MOPP ensemble and exposed skin are decontaminated.

2. Operational Decontamination

a. General. Operational decontamination limits the spread and transfer of contamination, allows temporary relief from MOPP IV, and facilitates additional decontamination requirements.

(1) Concentrate the decontamination efforts on operational decontamination during hostilities. Thorough decontamination is generally conducted following the end of hostilities. The magnitude of this effort will depend upon the type and concentration of contamination, mission requirements, and available resources. This process will likely require about a 120-square-yard area (depending on the number of contaminated vehicles) and may not require a nearby water source. An operational decontamination consists of a vehicle wash down, aircraft wash down, and a MOPP gear exchange.

(2) By combining operational decontamination with the weathering process, the need for thorough decontamination may be eliminated. Since a risk of contamination remains, periodic checks with the vapor detectors and M8/M9 detector paper must be performed after each operation. After operational decontamination, the unit moves out of the decontamination site and may undergo resupply to prepare for future operations.

b. Preparation Phase

(1) The preparation phase starts with the decision to conduct operational decontamination, and ends when the site is set up and ready to execute the operation.

(2) The number of personnel for a MOPP gear exchange, the number and types of vehicles for a vehicle wash down, and the number and types of aircraft for aircraft wash down are determined.

(3) Site selection is done by the controlling headquarters. The site may have been pre-designated in the Operation Order (OPORD) or selected based on the current situation.

(4) The site is required to be approximately 120 square yards per squad size element. The site will be larger or smaller depending on the number of personnel and equipment that must be decontaminated.

(5) The CBRN Defense Specialist may be required to conduct and supervise the execution of the decontamination operations, however operational decontamination may be conducted without CBRN Defense Specialist support (provided your unit is properly trained and equipped).

c. Execution Phase. This phase starts with the establishment of positive control of the site and ends with the

complete decontamination of the last vehicle, aircraft, and person to pass through the process. Vehicles move from the pre-decontamination area to the site either on order or by watching the vehicle ahead. Contaminated Marines leave the vehicle and proceed to the MOPP gear-exchange site.

d. Site Clearance Phase. The site-clearance phase includes cleanup, marking, and reporting. The tactical situation will dictate the cleanup requirements. The personnel operating the decontamination site will either bury or double bag and removes contaminated MOPP gear and other expendables. Standard CBRN contamination markers are posted, and the site personnel submit a CBRN-5 report.

e. Vehicle Wash Down. Conducted to remove gross contamination, thereby reducing contamination on vehicle, which helps to limit the spread and augment the weathering process. Vehicle wash down may be conducted in conjunction with MOPP gear exchange or separately as a stand-alone operation. The contaminated unit may request additional decontamination support from their higher headquarters to assist and expedite vehicle wash down. In order to conduct vehicle wash down, the unit must have the ability to spray pressurized water at a force of 60 to 120 psi.

f. Site Selection. Site selection is an important step for conducting vehicle wash down and, like MOPP gear exchange, is conducted during the preparation phase. When selecting a vehicle wash down site, consider Pre-designated sites, accessibility, size, good water source, and good drainage.

(1) Procedures

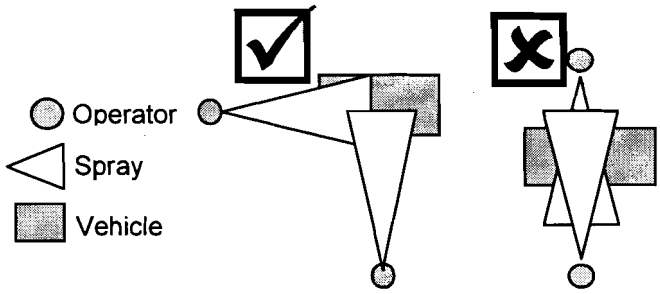
(a) Step One-Assemble Vehicles. The unit's vehicles are tactically dispersed. Personnel at the control point supervise preparing vehicles and directing movement out of the assembly area.

(b) Step Two-Prepare Vehicles. The individual or crew closes all the access doors, hatches, windows, and other openings. The crew removes camouflage and cover muzzles. If required, crews, minus the driver, move to the MOPP gear exchange area. The vehicle moves to the wash area on order. No additional equipment is needed for this step.

(c) Step Three-Perform Wash Down. Personnel during this step will wash the vehicle from top to bottom and front to back. The objective is to remove more of the gross

contamination from the vehicle. Personnel will spray 100-150 gallons of water per vehicle. Depending on the decontamination apparatus, this procedure will take between two and fifteen minutes (the M17 MCHF pumps 9 gpm). Decontamination crews will wear a toxicological apron, protective (TAP) or wet weather gear over MOPP.

When more than one operator is spraying a vehicle, operators should position themselves around the vehicle so that they are not in the path of the other operator's overspray.



(d) Step Four - Move Out To The Next Position. Personnel during this step will direct vehicle to move to the MOPP gear exchange area (if required) or to the next battle position. No equipment is needed for this step.

(2) Site Close Out. The procedures for vehicle wash down site close out are basically the same as for MOPP gear exchange site close out. The site is cleaned up, marked appropriately and a CBRN 5 report is prepared and submitted to higher headquarters.

g. Aircraft Wash Down. The goal of aircraft wash down is to limit the spread of contamination and to minimize the hazards to personnel, while allowing operations to continue. The following procedures apply to ejection seat aircraft, large-frame aircraft, and helicopters.

(1) Responsibilities. Performing aircraft wash down within 1 to 6 hours of contamination will speed the weathering process and may allow the aircraft to be operated and maintained in reduced aircrew IPE levels. Aircraft operational decontamination is accomplished by decontaminating surfaces that must be touched during aircraft servicing and operations.

(2) Preparation

(a) Areas. Multiple areas will need to be set up, marked, and maintained within zones to effectively control or eliminate the potential for cross contamination. The locations depend on the operating cycle, the space available, and the type of aircraft being decontaminated.

(b) Equipment. Washing equipment that can produce 60 to 120 psi of water pressure is preferred. The capacity to heat water and inject soap increases the effectiveness. The lack of pressurized washing equipment decreases the effectiveness of the wash down and may require scrubbing to achieve the desired effect. The M17 LDS (Senator), standard water pumps, pressure washers, and firefighting equipment are examples of standard and field-expedient equipment.

(c) Water. The site must have sufficient fresh water to wet the entire exterior of the aircraft. Water requirements are approximations. The water requirements for specific aircraft should be based on the surface area compared to the recommended water volumes provided below. For planning purposes, the following recommendations are provided:

Estimated Water Requirements for Aircraft Wash Down

Aircraft Type	Gallons Required
AH-1	250
AV-8	300
CH-46	250
CH-53	350
MV-22	350
UH-1	250
F/A-18	300
C-130	800

(d) Decontamination Area or Pad. A suitable remote site that is at least 500 feet away from all other flight line activities must be selected to conduct aircraft decontamination. The decontamination pad must have enough space so that all of the drainage and wastewater runoff is collected and contained. The establishment and enforcement of an entry control point is required to control and monitor access to the decontamination pad.

(e) Containment Area. An aircraft decontamination containment area should be large enough to completely cover the ground under the entire aircraft and catch all the contaminated runoff water. The construction of the pad should be of a waterproof material (vinyl, plastic, or tarp) with suitable sides (berm) to control and contain the water or decontaminant runoff. Operational decontamination sites established at wash racks will require a containment feature (such as sandbags, sand-filled fire hoses, or commercially available containment berms or pools) that is large enough to accommodate the aircraft being washed and to prevent runoff from spreading contamination. The pad size will vary based on the type of aircraft requiring decontamination and must be built to accommodate the largest known contaminated aircraft.

(f) Overspray or Splatter Hazard Area. Another factor to consider is the potential for an overspray or splatter hazard during decontamination operations. The liquid containment system associated with a ground barrier is designed to allow the wastewater to be collected in an appropriate container, pending further analysis and proper disposal. If possible, establish the decontamination area at a 20 degrees angle to the prevailing winds. Using this method, the concentration of trailing vapor hazards will be significantly reduced.

(g) Site. Sewer drains must be plugged, and a system for containing discarded wastewater must be established using a temporary berm. Ensure that the ground slope allows the runoff to flow to the downwind side of the washing operation but still be retained in the area so that it will not cross contaminate other areas. All wastewater used in the decontamination process will need to be collected and tested.

(h) Wastewater Storage. Wastewater storage tanks should be available to store runoff. In areas where sufficient natural drainage exists to carry wastewater away from the operation, wastewater lagoons could be constructed to provide a holding area for the wastewater, pending proper disposal. If lagoons are utilized, they must be established downwind of the decontamination area, properly marked, and fenced. Because of the large construction requirements, lagoons should only be used as a last resort.

(i) Collection System. The design of the collection system largely depends on the specific site conditions such as the slope of the land, soil composition, and wind direction. Planners must also consider piping and sump pumps to move

contaminated water into storage tanks or a holding lagoon. The quantity and selection of piping and pumps depend on the slope and distance from the decontamination pad to the holding tanks.

(3) Procedures. Aircraft wash-down techniques are employed to reduce the levels of contamination on the aircraft between sorties (when time allows). An aircraft wash down should be performed as a minimum contamination reduction measure when time does not permit a more extensive decontamination.

(a) All personnel involved in the aircraft wash down shall wear the appropriate MOPP gear prior to the aircraft entering the decontamination site. Wet-weather clothing or TAP aprons worn over MOPP gear is recommended to prevent saturation of the protective ensemble.

(b) Personnel place the appropriate barrier and contamination hazard markings prior to commencing the wash down. They erect barriers to isolate the decontamination site. NATO contamination markers should be attached to the rope barrier to warn personnel of a contamination hazard.

(c) Aircraft stands or ladders should be available to the spray areas inaccessible from the ground. As a last resort, decontamination personnel can climb on the aircraft.

(d) The aircraft is towed or taxied into position.

(e) The aircrew egress. If contaminated, the aircrew must remain with the aircraft in IPE or may be directed to a aircrew decontamination site for the removal of contaminated IPE and flight gear.

(f) The crew closes all aircraft hatches, doors, and windows.

(g) Warm, soapy water is applied to the aircraft. Spray should be applied to the aircraft working upwind to downwind and top to bottom. Do not neglect the landing gear and the belly of the aircraft. Angle the spray streams from 15 degrees to 30 degrees in order to avoid water being introduced behind the hatch and cover seams that house the sensitive aircraft components. Control the overspray to avoid transferring the contaminated runoff to personnel or to areas outside the decontamination barrier.

(h) For areas that could be damaged by the application of water spray, prepare these areas for aircraft

wash down as specified for normal washing. Ensure that only approved aircraft cleaners are used.

(i) Rinse. Perform this optional step for corrosion control purposes if time allows.

(j) Check the interior for liquid or solid contamination. If contamination is discovered, spot-decontaminate by wiping with rags dipped in warm, soapy water or another approved aircraft cleaner.

(k) Move the aircraft to an area where it can weather.

(l) Repeat as required.

(4) Site Close-Out. At the end of the decontamination procedures, the decontamination pad must be cleaned with a standard or nonstandard decontamination solution to ensure that all traces of contamination have been neutralized. Additionally, the planners should consider that all joint- or crack-sealing material will need to be removed and replaced.

h. MOPP Exchange. A MOPP-gear exchange should be performed within 6 hours of being contaminated when MOPP drop or thorough decontamination cannot be done. A MOPP exchange allows individuals to continue to wear MOPP gear at a reduced operating tempo.

(1) Characteristics

(a) MOPP Exchange is conducted when personnel must remove their contaminated CBRN IPE and immediately re-dress and return to a contaminated area (Note: MOPP Exchange may be conducted in a contaminated area). Commanders must consider the maximum work rates and work rest cycles when the determination is made to do MOPP exchange verses MOPP Drop. MOPP exchange will normally be conducted only under extreme circumstances. Requiring personnel to remain in MOPP III and 4 for extended periods of time may result in a significant number of heat illness casualties and mission degradation. Occupation of contaminated areas must be the exception rather than the rule and Commanders should consider personnel/unit rotation over MOPP exchange when continued occupation of contaminated areas is required.

(b) CBRN detection equipment is used to confirm the presence of a persistent agent before conducting MOPP Exchange.

Decontamination is not required for non-persistent agents. Personnel/units exposed to non-persistent agents will monitor their area for contamination using available CBRN detection devices. When detectors indicate that the agent is no longer present, personnel/units will conduct selective unmasking procedures to reduce their MOPP.

(c) CBRN detection equipment is used to confirm the presence of a persistent agent before conducting MOPP Exchange. Decontamination is not required for non-persistent agents. Personnel/units exposed to non-persistent agents will monitor their area for contamination using available CBRN detection devices. When detectors indicate that the agent is no longer present, personnel/units will conduct selective unmasking procedures to reduce their MOPP.

(d) MOPP gear exchange is conducted at the unit (squad) level under the direction of a non-commissioned officer (NCO), or a site leader. A squad or a platoon-sized element should complete MOPP gear exchange appropriately sixty minutes.

(e) An individual's performance is degraded after six hours of being in MOPP IV, so MOPP gear exchange should be conducted prior to this time. Respiratory protection is maintained during the entire process of MOPP gear exchange.

(f) Super tropical bleach (STB) or high-test hypochlorite (HTH) is used during MOPP gear exchange to decontaminate chemically contaminated individual equipment.

(2) Methods

(a) Individual (Emergency) Method. This is the least preferred method, and should only be used for individuals that are alone and do not have a buddy to assist them.

(b) Buddy-Team Method. This is the most common method, and uses pairs of Marines under the direction of a squad/team leader to conduct the. The buddy-team method with the JSLIST over garment will be covered in detail later in this lesson plan.

(3) Site Selection. Site selection is an important step for conducting MOPP gear exchange and is conducted during the preparation phase. When selecting a MOPP-gear exchange site, consider Pre-designated sites, accessibility, size, good water source, and good drainage

(4) Procedures

(a) Step One - Decontaminate Gear. Performing this step removes gross contamination from individual gear (weapon, helmet, load-bearing equipment, and mask carrier).

(b) Step Two - Prepare For Decontamination. Performing this step helps the Marine remove their over garment trousers and over boots later.

(c) Step Three - Decontaminate Mask. Performing this step removes gross contamination from the mask. Both Marines need to ensure that they do not break the seal on their buddy's mask by pressing to hard.

(d) Step Four - Remove Over garment Coat. This step limits the spread of agents and helps prevent agents from penetrating through to the skin or undergarments.

(e) Step Five - Remove Over garment Trousers. This step limits the spread of agents and helps prevent agents from penetrating through to the skin or undergarments.

(f) Step Six - Remove Over boots. This step limits the spread of agents and helps prevent agents from penetrating through to skin or undergarments.

(g) Step Seven - Remove Gloves. This step limits the spread of agents and helps prevent agents from penetrating through to the skin or undergarments.

(h) Step Eight - Put On Over garment Trousers. This step starts the reconstitution process of MOPP gear exchange.

(i) Step Nine - Put On Over garment Coat.

(j) Step Ten - Put On Boots.

(k) Step Eleven - Put On Chemical Protective Hood.

(l) Step Twelve - Put On Gloves.

(m) Step Thirteen - Reverse Roles.

(n) Step Fourteen - Secure Gear. Both Marines secure their equipment and check each other for proper fit of protective equipment.

(5) Site Close Out. Close out procedures include ensuring the site is cleaned up, and that contaminated MOPP gear and other expendables are either buried or double bagged and removed. The site leader will ensure that the site is marked appropriately and that a CBRN 5 report is prepared and submitted.

i. MOPP Drop. Conducted after CBRN detection equipment or direct observation has confirmed the presence of a liquid or dusty/persistent agent. Decontamination is not required for non-persistent agents. Personnel/units exposed to non-persistent agents will monitor their area for contamination using available CBRN detection devices. When the detectors indicate that the agent is no longer present they will conduct selective unmasking procedures to reduce their MOPP.

(1) Characteristics

(a) The decontamination team/section will require additional personnel augmentation when individual equipment must be decontaminated in conjunction with MOPP Drop. This augmentation will consist of any available Marines (no training necessary). When and where the individual equipment is decontaminated is based upon the operational requirement.

(b) The goal of MOPP Drop is to rapidly get people out of their CBRN IPE. The decontamination of their associated equipment is a secondary consideration and may be delayed indefinitely if the operational scenario permits. Individual equipment does not require decontamination in conjunction with the MOPP Drop when:

(c) MOPP drop is executed to provide rest and relief to personnel who must continue to work in a contaminated area. In this instance, equipment will be staged until personnel return to the contaminated area.

(d) Personnel do not have a follow on mission and/or a follow on mission does not require the immediate decontamination of the individual equipment.

(e) Personal equipment that is not decontaminated in conjunction with the personnel should be staged in a manner that facilities weathering. Weathering alone may reduce contamination to safe levels depending upon the agent and weather conditions. All individual equipment must be checked for contamination prior to being returned to unprotected personnel.

(f) Individual MOPP Drop must be conducted in a contamination free area.

(g) A contamination control line must be established. While undressing the over garment blouse is placed beside the control line. Note: A control line does not need to be physically in place.

(h) Once the individual reaches the point where he is supposed to put on clean CBRN IPE he steps off the blouse over the control line.

(i) If the individual does not need to keep his mask he will walk 30 meters away from the control line and continue walking, at approximately 30 meters the individual will hold his breath, remove and drop the mask, and keep walking away from the control line. When the individual cannot hold his breath any longer he can continue breathing and resume his mission.

(j) If the individual must keep his mask he must ensure that he thoroughly decontaminants the mask with the M291 kit (or other appropriate decontaminant) before the hood is removed. If possible, the Second Skin should be removed following hood removal.

(k) Once the individual has walked 30 meters from the control line he will hold his breath and remove the mask. The individual can put his mask back on at any time after they have checked it for contamination.

(2) MOPP Drop ORM considerations

(a) Chemical Agents

1. While not typically the case, the commander may determine that selective unmasking is not necessary when detection devices indicate that there is no longer a hazard present based on type of agent and environmental conditions. This decision should be based on two different types of detector (vapor and/or aerosol), or multiple detectors of the same type, indicating that an agent is no longer present.

2. Units/personnel that do not have detectors must conduct selective unmasking.

(b) Biological Agents

1. Rapid detection, identification, and initiation of treatment is preferred over decontamination. Thorough decontamination measures for personnel may not be necessary to sustain operations in those instances where biological agents aren't rapidly detected since we know that we can effectively treat exposed personnel. In these cases, personnel decontamination may only consist of taking a shower to limit further spread of contamination.

2. Decontamination should be conducted when an operational pause permits to avoid further spread of contamination.

3. Thorough Decontamination is required prior to retrograde.

(c) Radiological Agents

1. Commanders may opt to undress personnel contaminated by radiological agents and send them directly into a shower

2. Alpha and Beta emitters do not pose an immediate threat to life and health as long as they are not ingested and/or inhaled. Steps must be taken to avoid ingestion and/or inhalation such as washing affected clothing/782 gear, showering, and conducting Vehicle Wash down.

j. Operational Patient Decontamination. Every attempt must be made to limit the spread of contaminants on land, air, and water MEDEVAC vehicles. As much contamination as possible is removed from the patient's MOPP prior to loading the patient on "dirty" evacuation assets, to reduce contamination of these assets and cross contamination of other patients and crew. Individuals who are transported to the medical treatment facility for care may be contaminated or uncontaminated. If feasible, uncontaminated patients should be protected from cross contamination by contaminated patients. To reduce cross contamination, designate areas for contaminated patients on the ambulance, place contaminated patients on plastic sheets in the vehicle, identify separate assets for dirty and clean patients who are transported from the battlefield in MOPP, and decontaminate the MOPP of all patients that come from "dirty" evacuation assets.

3. Thorough Decontamination. The MAGTF must be prepared to conduct thorough decontamination of its vehicles, equipment, and aircraft. Personnel decontamination will be accomplished primarily by using the MOPP-drop procedures, but may use DTD if operationally feasible.

a. The 2d MAW CBRN Support Teams are structured and equipped to provide a flexible capability. Operational decontamination will be used to support the high OPTEMPO associated with force projection. Thorough decontamination will be conducted in support of retrograde or as required to support unusual circumstances.

(1) The MAGTF NBCC Operations Coordinator will organize and coordinate thorough decontamination operations. The MSC and subordinate command operational decontamination teams, medical personnel, engineers, and other augments are task organized as required to support the MAGTF's thorough decontamination operations.

(2) All vehicles, equipment, and aircraft should be checked for contamination during retrograde operations. Contaminated vehicles, equipment and aircraft must go through thorough decontamination operations.

b. Characteristics

(1) Purpose. Thorough decontamination of personnel and equipment severely reduces contamination, with the intent of completely eliminating it. The reduction of contamination allows reduced MOPP levels. Thorough decontamination operations are directed and coordinated at the MAGTF level, and will generally be conducted during retrograde or as required to support unusual circumstances.

(2) Site Selection. Performing thorough decontamination puts a unit in a vulnerable position; therefore, it should be conducted beyond the range of enemy direct fire systems.

(a) Decontamination sites are selected from areas within the unit's area of operation (AO) by the CBRN staff, in coordination with the Operations section.

(b) Once the site has been selected, a decontamination team will perform reconnaissance to verify whether the site is acceptable. After the site has been both selected and verified, linkup points will be identified to support each site (each site may have more than one linkup point).

(c) Generally, the contaminated unit requiring thorough decontamination will also be conducting reconstitution operations (re-supply), so the decontamination site must be established near the reconstitution area or the parent unit's rear area.

(3) Planning Considerations. Thorough decontamination is the most effective form of decontamination, as well as the most resource intensive. Because of the intense logistical requirements, both personnel and equipment, the contaminated unit will request thorough decontamination support through their higher headquarter. The decontamination site will be set up and operated by personnel from other than the contaminated unit.

(a) All echelons prepare for thorough decontamination operations as part of the overall planning process. From the commander's general guidance, the CBRN staff can begin to develop the decontamination plan.

(b) The MAGTF NBCC will determine the availability of engineer support for site preparation and closure. Engineers provide much more effective means of digging sumps and drainage ditches.

(c) The commander is responsible for establishing priorities for limited decontamination assets. From phase to phase, during operations, different units will receive priority; determined by the CBRN staff's interpretation of the commander's intent.

(d) Subordinate units review their headquarters' decontamination plan, and ensure any extra materials have been requested.

(4) Request for Decontamination Support. The request for thorough decontamination support must contain several essential elements of information in order to assist CBRN personnel and the decontamination unit leader in coordinating the decontamination process. These elements are comprised of the following:

(a) Designation of the contaminated unit.

(b) Location of the contaminated unit.

(c) Time the unit became contaminated.

(d) Earliest time the unit can begin decontamination.

(e) Number of personnel contaminated, number and type of vehicles contaminated, and number and type of aircraft contaminated.

(f) Special requirements (such as patient decontamination necessity, recovery assets, etc.)

(5) Decontamination Area

(a) Pre-decontamination Staging Area. The contaminated unit uses the pre-decontamination staging area to ready itself.

(b) Detailed Decontamination Areas. The DTD, ADS, DED, and DAD areas are the areas used for thoroughly decontaminating equipment and personnel.

(c) Post-Decontamination Assembly Area (AA). The post-decontamination assembly area is the location where the vehicles and personnel exiting the DED, DAD,, ADS, and DTD areas are linked-up before leaving the decontamination site.

(6) Pre-Decontamination Area

(a) Segregate vehicles by checking for contamination. Use CAM and M8/M9 paper for chemical contamination and use AN/VDR-2 to monitor for radiological contamination. Additionally, the AN/PDR-75 can be used to check if the unit received any radiation, which helps determine the presence or absence of radiological contamination.

(b) Vehicles with isolated areas of contamination can be considered clean if isolated areas have been decontaminated with M100 SDS, and a second reading detects no contamination.

(7) Vehicle Crews

(a) Vehicle crews, except for driver, will exit vehicle and remove all contaminated equipment from top and sides of vehicle (including sensitive items, i.e. electronics and optical sensors).

(b) Crewmembers will not reenter the vehicle.

(8) Vehicle Preparation

(a) Crew uses pioneer tools from the contaminated vehicle to remove heavy mud and debris (pay special attention to undercarriage), and then puts pioneer tools back on vehicle.

(b) The heavy mud and debris that is removed may be contaminated, so where it is removed in relation to other traffic and detection operations must be considered.

c. Detailed Troop Decontamination (DTD). Setting up, operating, manning, and closing the DTD area at the thorough-decontamination site is a MAGTF level responsibility.

(1) The MAGTF NBCC determines the general location of the DTD within the decontamination site and provides technical advice on setting up, operating, and closing the DTD area.

(2) The supervisor of the DTD must establish a work/rest cycle. There are eight stations for a DTD.

(3) Spacing between the stations is approximately 5 meters.

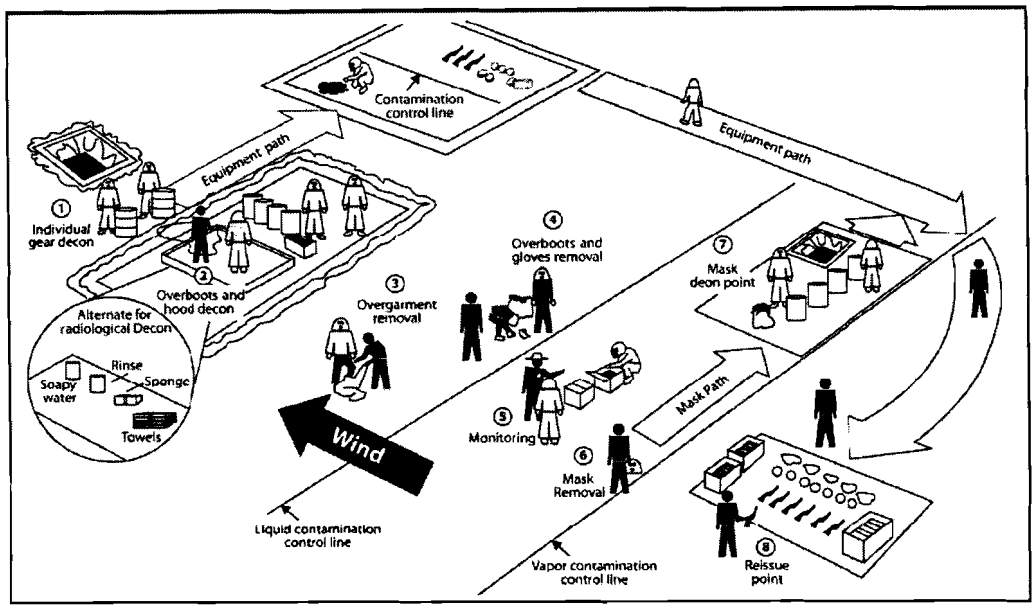
(4) Whenever possible, personnel should process through the DTD in buddy teams. If a buddy is not available, the station attendant will provide assistance.

Estimated DTD Personnel and Equipment Requirements

Station	Personnel	Equipment and Supplies
Station 1—individual-gear decontamination	1 monitor (CAM operator) 2 attendants	4 30-gallon containers 2 long-handled brushes 2 ponchos/plastic sheets 1 CAM 8 books of M8 paper 4 M256A1 detector kits 100 plastic trash bags Sufficient STB slurry mix Rinse water *Hot, soapy water *AN/VDR-2/AN/PDR-77 *Sponge
Station 2—overboots and hood decontamination	1 attendant	1 cutting tool 1 SDK per person Large plastic sheet Plastic trash bags 10 drums of STB 1 shovel
Station 3—overgarment removal	1 attendant	2 30-gallon containers 100 plastic trash bags 10 boxes of SDKs
Station 4—overboots and gloves removal	3 attendants	8 30-gallon containers 2 long-handled brushes M8 detector paper 100 plastic trash bags 1 CAM Engineer tape 1 cutting tool 2 ponchos/large plastic sheets 5 percent STB/HTH solution Hot, soapy water Cold rinse water
Station 5—monitoring	1 attendant (CAM operator) 1 Corpsman	1 CAM First aid supplies 5 books of M8 detector papers 1 box of SDKs
Station 6—mask removal	2 attendants	1 M22 ACADA Engineer tape
Station 7—mask decontamination point	2 attendants 1 monitor	1 30-gallon container 4 3-gallon containers 1 CAM 2 sponges 1 case of paper towels Mask sanitizing solution Hot, soapy water Rinse water
Station 8—reissue point	Unit CBRN NCO/supply sergeant	Mask PLL
Total Personnel	15	

Denotes the equipment needed for radiological contamination.
NOTE: Assume that operational decontamination was done before the thorough decontamination.

Sample Detailed Troop Decontamination Site



(5) Procedures

(a) Station 1 - Individual-Gear Decontamination. At this station, contamination is removed from individual gear (load-bearing equipment, mask carrier, helmet, and weapon). The individual gear is checked with the CAM or M256 kit to ensure the completeness of the decontamination. If these procedures are done improperly, contamination may remain on the equipment. The resulting vapor hazard could cause casualties to unmasked personnel, particularly in closed areas (vehicle interiors) or heavily wooded areas where air circulation is poor.

(b) Station 2 - Over boots and Hood Decontamination. At this station, gross contamination on over boots, trouser legs, mask, and hood is neutralized. If ample hoods are available at the reissue point, the hood should be cut away. If these procedures are done improperly, contamination can be transferred from the hood to the combat boots, head, and neck.

(c) Station 3 - Over garment Removal. At this station, the contaminated over garments are removed before the agent penetrates the over garment material and touches the undergarments or the skin.

(d) Station 4 - Over boots and Gloves Removal. At this station, contaminated over boots and gloves are removed to limit the spread of contamination. The over boots and gloves may also be decontaminated for reissue. If the over boots are improperly removed, the combat boots may become contaminated and

contamination may be spread to the clean areas. If the gloves are not properly removed, the undergarments and skin may become contaminated.

(e) Station 5 - Monitoring. At this station, contamination on personnel is identified, spot decontamination is provided, and medical aid is provided, as required. If this station is omitted, the contaminated personnel could become a casualty. After this station, the personnel will not be checked for contamination or decontaminated again. Commanders can choose to conduct a more extensive contamination check here if medical assistance and time are available. This decreases the risk of casualties.

(f) Station 6 - Mask Removal. At this station, the mask is removed without contaminating the person. The mask is taken to a mask decontamination point, limiting agent transfer at the station. If the mask is removed improperly, the person can breathe toxic vapors. There is a high probability that the vapor hazard is still present on the mask and the hood after it is decontaminated. The person must not touch the outside of the mask because it could contaminate his bare hands. (The person then proceeds to Station 8.)

(g) Station 7 - Mask Decontamination Point. At this station, all the contamination is removed from the mask. Once 20 items have been processed in the wash containers, replace the water. Once 10 items have been processed in the rinse water, replace it. If these procedures are done improperly, personnel may become contaminated when the masks are reissued at the reissue point. Even if they are done correctly, there is still a possible danger when many masks are stacked together. Small amounts of residual vapor from each mask can become potentially dangerous.

(h) Station 8 — Reissue Point. At this station, the mask and its components are provided to personnel for reassembly and decontaminated individual equipment from Station 1 is reissued. Runners between Stations 7 and 8 are in MOPP II and are prepared to go to MOPP IV. If these procedures are done improperly, personnel may be inadequately equipped for future operations.

(6) Site Close Out. The DTD site may be closed out once all personnel from the DED and the DAD have processed through. Once all units have been processed through, the thorough decontamination site can be closed out. Once the entire site

has been closed out, it will be marked as a contaminated area and the exact position reported to the MAGTF NBCC.

(a) Pick up all the used supplies, move all usable supplies and equipment from all the stations to Station 1. Discard all unusable supplies.

(b) Decontaminate all supplies and equipment collected at Station 1 using the decontaminant and rinse water at Station 1. Empty the decontaminant, rinse water and decontaminate the containers.

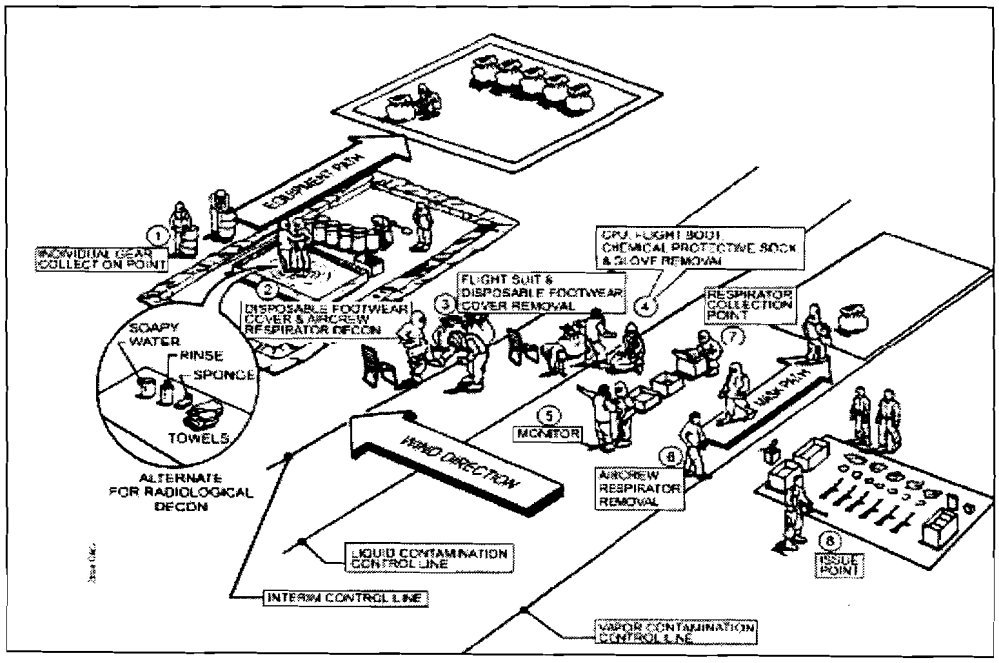
(c) Mark the entire decontamination area. Remove your over garment using the MOPP gear exchange technique.

d. Aircrew Decontamination Site (ADS). Procedures presented in this section are patterned after DTD procedures.

(1) Characteristics. The procedures capitalize on the layout of the eight-station DTD in order to promote commonality between doffing layouts and procedures for aircrew and non-aircrew IPE.

(a) Procedures and equipment have been modified from the source manual to support aircrew IPE and ALSS. Stations 1 and 7 have been modified from equipment decontamination points to aircrew equipment collection points.

Sample Aircrew Decontamination Site



Estimated ADS Personnel and Equipment Requirements

Stations	Personnel	Equipment/Supplies
Station #1– Individual Gear Collection Point	1 Attendant 1 Flight Equipment Specialist	2 30-gallon containers 1 radio (optional) 1 pr scissors or knife 1 roll masking or duct tape 1 indelible marker 1 box M291 kit 1 box plastic trash bags
Station #2– Disposable Footwear Cover and Aircrew CBR Respirator Gross Decontamination	1 Attendant	1 30 gal container 1 Shuffle pit 1 box M291 SDK 1 drum STB 1 shovel Plastic trash bags
Station #3 – FlightSuit/Disposable Footwear Cover Removal	2 Attendants	1 30-gallon container 1 box M291 SDK Plastic trash bags 2 pr scissors or knife Engineer tape Folding Chair
Station #4 – Chemical Protective Undergarment or JPACE/Flight Boot/Chemical Protective Sock/Chemical Protective Glove Removal	2 Attendants	1 30-gallon container Engineer tape 2 M291 SDK Plastic trash bags 2 pr scissors 1 Roll CP socks Folding Chair
Station #5 – Monitor	1 Monitor (CAM Operator) 1 Corpsman	1 CAM 1 AN/VDR-2/AN/PDR-77 5 book M-8 paper M291 SDK First-aid supplies
Station #6 – Aircrew CB Respirator Removal	1 Attendant	1 M22 ACADA Engineer tape 1 30-gallon container 1 box M291 SDK Plastic trash bags
Station #7 – Aircrew Respirator Collection Point	None	None
Station #8 –Issue Point	As required	As required
Total personnel	10	N/A

1 For chemical or biological contamination only, If wet decon is preferred over dry decon, substitute M291 kits with hand wash. Decontaminate radiological contamination with soap and water.

2 HTH boot wash can use either dry HTH mix or wet HTH solution. Mix dry HTH in same concentration as STB for a dry "shuffle pit". Wet mix containment can be achieved either by using a container or by digging a shuffle pit and lining it with plastic sheeting.

(b) These procedures assume that aircrew have declared their contamination status to airfield/FARP operations personnel and have been cleared to land. These procedures also assume that the presence of contamination has been verified. Finally, these procedures assume that aircraft would be directed to a remote location on the field, and that ground transportation would bring the crew to the ADS.

(c) Permanent/expeditionary airfields and FARPs shall be responsible for establishing, equipping, and manning personnel decontamination sites and for providing emergency reclamation teams to recover ALSS.

(d) Aviation units shall be responsible for understanding the site processes, and if a tenant, providing personnel to process contaminated aircrews and recovering reclaimable aircrew equipment.

(2) Site Set-Up and Operation. There are eight stations for a thorough decontamination site. Spacing between the stations is 10 to 16 feet. Crewmen will proceed through the decontamination site one-at-a-time, and will be assisted at each station by the station attendant(s).

(a) Station 1 - Individual Gear (ALSS) Collection. At this station, individual gear (helmet, body armor, survival vest, g-suit, harness, etc) is collected and placed in a plastic garbage bag, designated for the crewman's flight equipment and is labeled with the crewman's name. Disposable gear is placed in a waste can. (i.e., aircrew cape and M-9 tape).

(b) Station 2 - Disposable Footwear Cover and Aircrew CBR Respirator Decontamination. At this station, gross contamination on disposable footwear covers, flight suit legs, and respirators is neutralized/removed.

(c) Station 3 - Flight Suit/Disposable Footwear Cover Removal. At this station, contaminated flight suits and footwear covers are removed. If wearing JPACE it shall not be removed at station 3. JPACE is removed at station 4. Removing JPACE at station 3 may expose the crewman to contamination resulting in serious injury or death. If wearing JPACE, the only action occurring at this station is removal of disposable footwear covers, if worn by the crewman.

(d) Station 4 - Chemical Protective Underwear or JPACE, Flight Boot, Chemical Protective Socks, and Chemical Protective Glove Removal. At this station, flight boots, chemical protective undergarments or JPACE, chemical protective socks, and chemical protective gloves are removed to limit the spread of contamination.

(e) Station 5 - Monitor. At this station, contamination on personnel is identified, spot decontamination capabilities are provided, and medical aid is provided, as required.

(f) Station 6 - Aircrew Respirator Removal. At this station, the aircrew respirator and chemical protective socks (temporary gloves) are removed without contaminating the crewman. The respirator is placed in a plastic bag, sealed, and taken to a respirator collection point.

(g) Station 7 - Aircrew Respirator Collection. At this station, aircrew respirators are staged pending recovery for decontamination or packaging for hazardous material disposal induction into the maintenance cycle by Emergency Reclamation Teams or by flight equipment men.

(h) Station 8 - Issue Point. The issue point can be located at the decontamination site or may be situated away at normal facility activities. Following processing, aircrew will need at a minimum: clothing, shelter, medical support, food and water. Shower facilities are desirable, particularly for radiological contamination. Read individual dosimeters and document the individual radiation exposure of each air crewman.

(3) Site Close Out. The ADS may be closed out once all aircrew have processed through.

(a) Once all units have been processed through, the thorough decontamination site can be closed out.

(b) Pick up all the used supplies, move all usable supplies and equipment from all the stations to Station 1.

(c) Discard all unusable supplies. Decontaminate all supplies and equipment collected at Station 1 using the decontaminant and rinse water at Station 1. Empty the decontaminant, rinse water and decontaminate the containers.

(d) Once the entire site has been closed out, it will be marked as a contaminated area and the exact position reported to the MAGTF NBCC.

(e) Remove your over garment using the MOPP gear exchange technique.

e. Casualty Decontamination Site (CDS)

(1) Characteristics

(a) Patient decontamination is the systematic removal of clothing and contaminates from patients who are unable to decontamination themselves.

(b) The decontamination of the patient serves two purposes: it prevents the patient's system from absorbing additional contaminants. It also protects medical personnel treating the patient and other patients from contamination.

(c) Decontamination teams/sections will require additional personnel augmentation to set up and sustain operations on the CDS. This augmentation will consist of any available Marines and medical personnel who are familiar with triage and treatment of casualties with conventional and CBRN agent injuries. Personnel working on the CDS will be rotated in accordance with the work rates and work rest cycles.

(d) Medical personnel required to support the CDS will be task organized based on mission requirements and Commanders' priorities.

(e) The MAGTF NBCC will direct the establishment of at least one CDS whenever the vulnerability analysis indicates the likelihood of encountering CBRN contamination. Additional CDSs will be established in those instances when the single site does not adequately support decontamination needs.

(2) Health Service Support During CBRN Operations. The objectives of health service support in CBRN operations are to:

(a) Return to duty the maximum number of personnel as soon as possible.

(b) Manage casualties so that CBRN agent injuries are minimized and any other injuries or illnesses are not aggravated.

(c) Protect persons handling contaminated casualties or working in contaminated areas.

(d) Avoid spreading contamination in ambulances, other evacuation vehicles, MTFs, and adjoining areas.

(e) Continue the MTFs operations so that normal services unrelated to the medical treatment of CBRN agent injuries are maintained.

(3) Classifications Of Casualties

(a) Contaminated patients. Patients that may suffer from the effects of a CBRN agent, a conventional wound, psychological stress reactions, or a combination.

(b) Uncontaminated patients. Patients that are not suffering from the effects of a CBRN agent, but are suffering from a conventional wound. Some may suffer battle fatigue or heat injuries induced by the stress of CBRN conditions and the extended time spent in MOPP IV.

(4) Evacuation Considerations

(a) There are three basic modes of evacuating patients; personnel, ground vehicles, and aircraft. Cumbersome MOPP gear, climate, increased workloads, and fatigue will greatly reduce the effectiveness of unit personnel. As such, using personnel to physically carry patients incurs a great deal of inherent stress, and should be minimized.

(b) Evacuation assets could become contaminated in the course of battle. Optimize the use of contaminated medical and non-medical resources, before employing uncontaminated resources.

(c) Once a vehicle enters a contaminated area, it is highly unlikely that it can be spared long enough to undergo decontamination. This will depend upon the contaminant, the tempo of the battle, and the resources available for patient evacuation. Normally, contaminated vehicles (air, water, and ground) will be confined to contaminated environments. However, immediate decontamination (operator wipe down or spot decontamination and weathering) may be accomplished to reduce the amount of contaminant in the patient transport area.

(d) Use ground ambulances or other assets that are easier to decontaminate and more readily replaced versus air ambulances. This, however, does not preclude the use of aircraft in a contaminated environment or in evacuation of contaminated patients.

(e) If evacuation personnel are sent into radiological contaminated areas, operational exposure guidance should be adhered to. Radiation exposure records must be maintained.

(f) The relative positions of the contaminated area, forward line of own troops (FLOT), threat air defense systems, and patient's medical condition will determine if and where air ambulances may be used in the evacuation process. One or more air ambulances may be restricted to contaminated areas. To the greatest extent possible, use ground vehicles to cross the line separating contaminated and clean areas.

(g) Patients should receive immediate and patient decontamination at the operational level as well as first aid and buddy care prior to being placed on evacuation vehicles.

(h) Even if operational level decontamination has been conducted, all ambulance crewmembers will need to wear MOPP while in their vehicles to protect them from possible cross contamination or any vapor hazards from agent on patient MOPP.

(i) When employing ground ambulances, watercraft or aircraft in MEDEVAC to evacuate potentially contaminated patients, place plastic sheeting under the litters to prevent transferring contaminants from patients or litters to the inside of the vehicle. The plastic sheeting can be removed with the patients, thus, removing most contamination with it.

(j) The rotor wash of the helicopter must always be kept in mind when evacuating patients, especially in a contaminated environment. The intense winds may disturb contaminants, increasing vapor hazards at the contaminated landing site. To reduce this, the helicopter must not land too close to a decontamination site.

(k) Casualty protection during evacuation is critical. Casualties that have been thoroughly decontaminated at a forward medical treatment facility (MTF), who have had their MOPP ensemble removed, must be placed in a patient protective wrap or have their MOPP ensemble replaced if they are to be transported on a dirty aircraft, watercraft, or ground vehicle when moved across a contaminated or potentially contaminated area.

(l) Medical evacuation by fixed-wing aircraft will be severely limited as these assets are few, compared with rotor wing and ground ambulance, and they require significant time to decontaminate.

(m) Operational decontamination of MEDEVAC assets should be accomplished to minimize crew exposure, mission permitting.

(5) Planning Factors. The key in patient decontamination at the thorough level is that proper decontamination procedures must be followed to limit the spread of contamination so that medical facilities and other patients are not compromised through the incapacitation of medical staff who are wearing CBRN protective equipment. The following principles apply to patient decontamination at the thorough level:

(a) Medical personnel supervise patient decontamination operations. Augments from the supported units (or as designated by the MAGTF) are usually required to assist in the decontamination process and perform patient lifting and washing.

(b) In the triage area, outside the decontamination site, further decontamination of MOPP is performed to limit the spread of contamination, while necessary medical care is provided to stabilize the patient.

(c) Medical triage officers, officer or enlisted, triage (sort) patients with three considerations in mind: priority for treatment, priority for decontamination, and priority for evacuation, based on the patient's need for care and ability to benefit from what is available at that MTF.

(d) Those who do not require life saving procedures at a smaller MTF may remain in their MOPP IV ensemble on the dirty side of the hot line, be given patient operational decontamination and medical stabilization, and then returned to duty or given "dirty" evacuation to a larger in-theater MTF where there is adequate staff to provide patient thorough decontamination to larger numbers of patients.

(e) Patient decontamination at the thorough level is a comprehensive cleaning process that must be carried out prior to a patient being allowed inside any MTF for treatment. It involves removing all of the patient's MOPP and any other clothing that is suspected of being contaminated. The patient's skin is then decontaminated. Medical care and triage are provided before, during, and after patient decontamination to ensure that the patient remains stable enough to survive the procedure.

(f) The least desired alternative for skin decontamination is hypochlorite solution. If used, only a 0.5 percent (1/2 percent) hypochlorite solution is used for patient decontamination, higher concentrations will irritate and burn the skin.

(g) All patients who arrive at the decontamination site wearing protective masks will remain in their mask during the decontamination process until they are out of the vapor hazard area.

(h) Patients who are treated outside of the MTF should not have their MOPP removed as long as they do not enter the MTF or a clean area or do not require skin decontamination.

(i) Contaminated bandages and splints are only removed by trained medical personnel. Bandages are removed; the skin is decontaminated and only replaced if bleeding continues. Splints are not removed during the decontamination process.

(6) CBRN Casualty Receiving Area

(a) Any MTF that receives contaminated casualties will have a casualty-receiving area, which consists of a dirty side and a clean side, separated by a "hotline". The "hotline" must not be crossed by contaminated casualties, garments, or equipment.

(b) The area where casualties are received, on the dirty side of the line, is where initial triage is done, emergency medical care is provided, and the casualty is decontaminated.

(c) A CBRN CDS consists of the arrival point, triage point, emergency treatment station, decontamination area, and clean treatment area.

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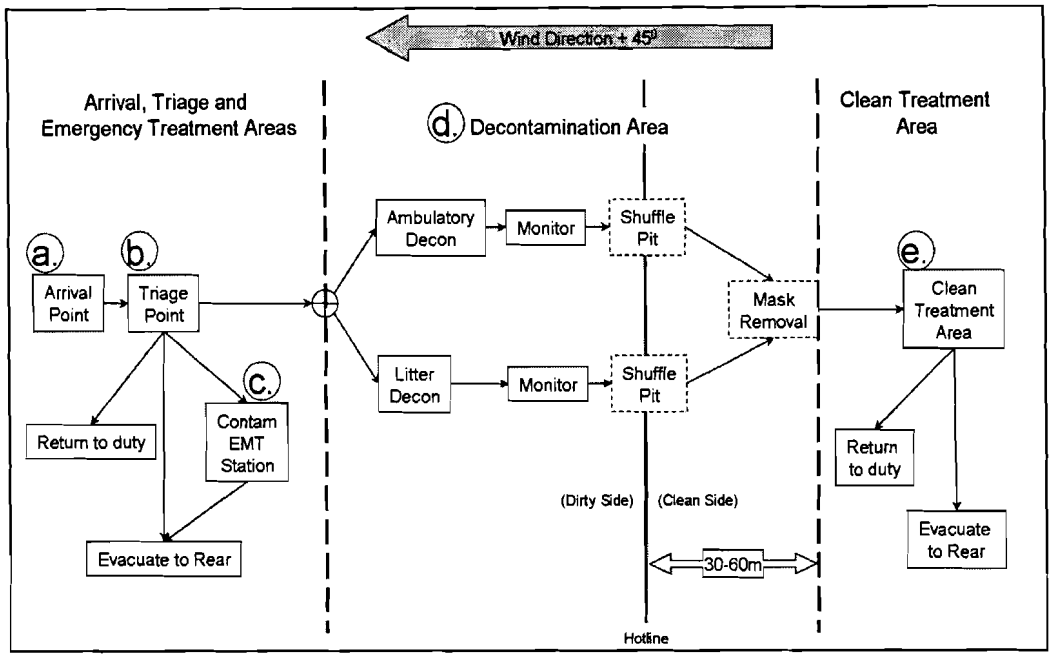
Sample Casualty Decontamination Site



(7) The Entry Point

(a) The entry point is a clearly separated and marked area into which all casualties arrive. Ambulances unload casualties at this point, and ambulatory casualties report to this point.

(b) The entry and exit roads must also be clearly marked. All casualties arriving at this area will be sent to the triage station.

(8) The Triage Point. The triage officer sorts casualties into one of the four triage categories:

(a) Immediate-needs to have a medical procedure performed within an hour or so to save his life.

(b) Minimal-needs minor care and return to duty within hours.

(c) Delayed-has a serious injury, but can wait for care.

(d) Expectant-needs care that is beyond the capabilities of the MTF and the care are needed before the casualty can be evacuated.

(9) The Emergency Treatment Station. At the emergency treatment station, the casualty is provided emergency lifesaving medical care and is stabilized for the 10 to 20 minute decontamination procedure that is necessary before he can enter the clean area of the MTF for more-elaborate treatment. Casualties with minor wounds might be treated here if they can be returned to duty. Care at the emergency treatment station is limited. The care provider and the casualty are both in MOPP IV. The care provider can apply dressings, start intravenous fluids, and insert an endotracheal tube. In each case, the care provider must decontaminate the casualty's skin in the areas that he will touch, and he must ensure that his hands (gloves) are decontaminated. From the emergency treatment station the casualty will return to duty, go to the decontamination area, or go to the ambulance area for evacuation in a dirty ambulance.

(10) The Decontamination Area. In this area, the patient's contaminated clothing is removed (over garment, utilities, boots, etc), the skin is decontaminated, and the patient is monitored to verify the completeness of decontamination. The decontamination process will usually take about 10 to 20 minutes; a well-trained team can decontaminate a casualty in slightly less than 10 minutes. Additionally, the decontamination area is generally divided into two separate lines, one for litter patients and one for ambulatory patients.

(11) The Clean Treatment Area. The function of this station is to provide lifesaving care and to prepare the casualty for evacuation. By necessity, these must be short, simple procedures. From this station, the casualty is evacuated in a clean vehicle to a higher echelon for further care. This station should be at least 100 meters upwind from the receiving area.

(12) Litter Patient Procedures. Before patients may receive medical treatment in the clean treatment area, they must first be decontaminated. The following procedures are for patients who are unable to perform decontamination on their own due to injuries. The steps for treating chemical and biological litter patients are almost identical. The only difference between the two is that biological agent casualty's skin may be decontaminated with the 0.5 percent chlorine solution or hot soapy water during step 6. Place scissors in a 5 percent chlorine solution between each use.

(a) Step 1 - Decon the Patient's Mask and Hood. Decontaminate the patient's hood and wipe the external parts of the mask. Be sure to cover the mask's air inlets with gauze or

your hand to ensure that the inside of the filter does not get wet. Wipe the exposed areas of the patient's face to include the neck and behind the ears. Do not remove the patient's protective mask. Remove the field medical card (FMC). Place under the back of the protective mask's head straps. The FMC will remain with the patient in the contaminated area and a clean copy will be made before the patient is moved into the clean area.

(b) Step 2 - Remove Gross Contamination. Remove all visible contamination spots from the patient's over garments with a skin decontamination kit or a 5 percent chlorine solution.

(c) Step 3 - Remove Personal Effects and MOPP. Remove the patient's personal effects from their protective over garment pockets. The over garment jacket and trousers will be cut simultaneously. One Marine will cut the jacket while the other cuts the trousers. Remove gloves and over boots.

(d) Step 4 - Remove the Utilities and Undergarments. Cut and remove utilities, remove combat boots, and cut and remove undergarments. Do not remove the patient's identification tags.

(e) Step 5 - Transfer to a Decontamination Litter. The patient should be transferred to a litter with a plastic-sheeting cover. Carefully lift the patient while another decontamination team member removes the dirty litter and replaces it with a clean one.

(f) Step 6 - Decontaminate the Patient's Skin. Use a M291 skin decontamination kit or 0.5 percent chlorine solutions to spot decontaminate the patient's skin. A full body wash is not necessary to ensure decontamination and it may be harmful to the patient. A corpsman will then cut away bandages, irrigate wounds with 0.5 percent chlorine solution, replace bandages if bleeding continues, replace tourniquets and decontaminate before applying a new one, and will decontaminate splints with a 0.5 percent chlorine solution. Check the patient with M8 paper or the CAM to ensure adequate decontamination has occurred.

(g) Step 7 - Transfer the Patient Across the Shuffle Pit. The patient should be transferred to a litter with a plastic-sheeting cover. Carefully lift the patient while another decontamination team member removes the dirty litter and replaces it with a clean one. Two medics from the clean side of the shuffle pit move the patient to the clean treatment area.

(h) Step 8 - Mask Removal. Once the patient is in the air lock of the collective protective shelter (CPS) and the air lock has been purged, their protective mask can then be removed by medical personnel. If the MTF (clean treatment area) does not have a CPS with air lock because the facility is in a clean area, the patient's mask can be removed after clearing the shuffle pit and before entering the clean treatment area.

(13) Ambulatory Patient Procedures. The following procedures are for patient who, with a little extra assistance, can conduct decontamination for themselves. The steps for treating chemical and biological ambulatory patients are almost identical. The only difference between the two is that biological agent patient's skin may be decontaminated with the 0.5 percent chlorine solution OR hot soapy water during step 7.

(a) Step 1 - Remove Load Carrying Equipment. Remove the patient's load-carrying equipment (LCE) by unfastening/unbuttoning all connectors and straps.

(b) Step 2 - Decontaminate the Mask and Hood. After the patient has been triaged and treated (if necessary) in the patient decontamination station, the patient (assisted by another ambulatory patient or a member of the patient decontamination team) begins the clothing removal process. Decon the hood, protective mask, and exposed skin. Remove FMC.

(c) Step 3 - Remove Gross Contamination. Remove all visible contamination spots from the patient's over garments with a skin decontamination kit or a 5 percent chlorine solution.

(d) Step 4 - Remove the Personnel Effects and MOPP. Remove personal effects, over garment, gloves, and over boots.

(e) Step 5 - Check Patient for Contamination. After the patient's over garments have been removed, check their utilities by using M8 detector paper or the CAM. Carefully survey all areas of the patient's clothing, paying particular attention to discolored areas on the uniform, damp spots, tears, areas around the neck, wrist, ears, and dressings, splints, or tourniquets.

(f) Step 6 - Decontaminate Skin. Use a M291 skin decontamination kit or 0.5 percent chlorine solutions to spot decontaminate the patient's skin. A corpsman will then cut away bandages, irrigate wounds with 0.5 percent chlorine solution, replace bandages if bleeding continues, replace tourniquets and decontaminate before applying a new one, and will decontaminate

splints with a 0.5 percent chlorine solution. Check the patient with M8 paper or the CAM to ensure adequate decontamination has occurred.

(g) Step 7 - Proceed to the Clean Treatment Area. The decontaminated patient proceeds through the shuffle pit to the clean treatment area. Make sure that the patient's boots are thoroughly decontaminated by stirring the contents of the shuffle pit with their boots as they cross it.

(h) Step 8 - Mask and Combat Boot Removal. The patient will remove their combat boots and protective mask in the entrance of the collective protection shelter (CPS) or clean treatment area.

(14) Site Closeout. The closure of the CDS will pose as difficult a mission as did the actual patient decontamination operation itself. The disestablishment of the site must be accomplished carefully so as to not produce further causalities of the personnel that were attendants of the site. The following considerations should be evaluated during the site close out phase of patient decontamination:

(a) Equipment Recovery. The decontamination of equipment can take place approximately 50 meters to the left or right of the site. A contact time may be required for some contaminants or decontaminants.

(b) Site Closure. All items on the "dirty" (contaminated) side of the hot line will either be decontaminated or designated as site waste and placed in garbage bags. The garbage bags will then be discarded.

(c) Personnel Recovery. After equipment decontamination and site closure is complete, all personnel with the exception of two will conduct MOPP gear exchange. Personnel will then need to be checked for contamination prior to crossing over the contamination control line. The last two personnel will then complete the closure of the site by placing CBRN contamination markers to mark the contaminated site. The two personnel will then utilize the techniques of MOPP gear exchange to remove their contaminated MOPP gear.

f. Detailed Equipment Decontamination (DED). Setting up, operating, manning, and closing the DED area at the thorough-decontamination site is a MEF/MEB level responsibility.

(1) The DED site for chemical and biological contamination is comprised of five stations, while the DED for

radiological contamination uses only four (station two is omitted).

(2) Stations are normally spaced 50 meters apart, dependent on mission, enemy, time, terrain, and troops (METT-T).

(3) Re-supply vehicles (such as water trucks) typically operate independently and need to maintain communications with the CBRN personnel operating the site, in the event that the link up locations or mission requirements changes.

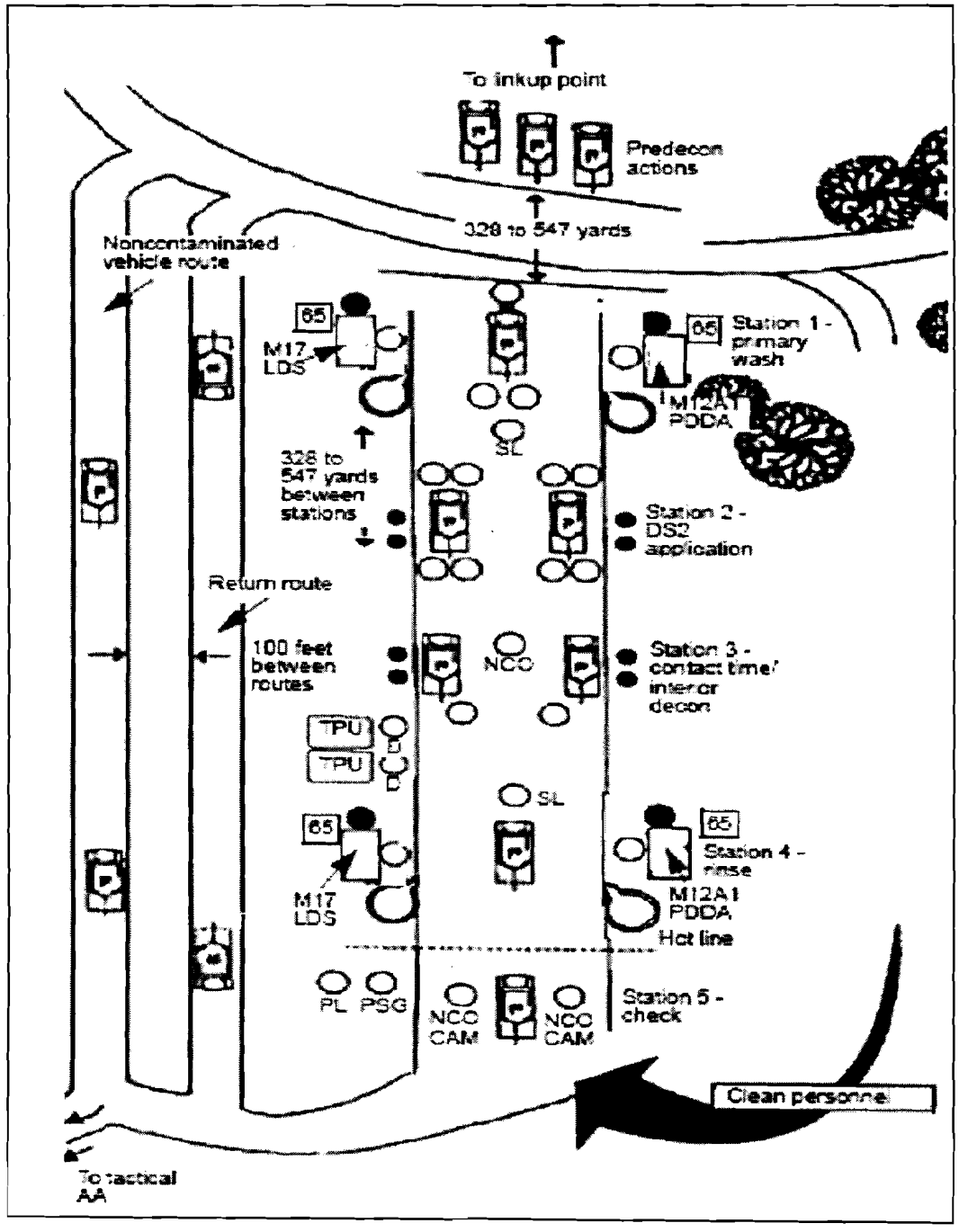
(4) The number of personnel identified for each station is for one work cycle. Depending on the workload and temperature, these numbers may be multiplied several times to account for the required work/rest cycle.

(a) Station 1 - Primary Wash. Approximately 250 gallons of water per vehicle will be used at this station. Runoff from this station is contaminated and must be controlled. Personnel operating the spray wands will wear TAP aprons.

(b) Station 2 - Decontaminant Application. Decontaminant is applied to entire vehicle. Crew will wear toxicological agent protective (TAP) apron or wet weather gear. The vehicle is divided into four parts, and members of the scrubbing team are assigned to each part of the vehicle.

(c) Station 3 - Contact Time/Interior Decontamination. Decontaminant is allowed to neutralize the chemical agent and the interior of the vehicle is decontaminated. The driver will inspect the interior of the vehicle for liquid contamination, using M8 paper. If contamination is found, he will be given decontamination supplies to conduct decontamination. After the interior has been decontaminated, the driver proceeds to the DTD site. The assistant driver, who has already been processed through the DTD site, will mount the vehicle and move it to the next station.

Sample Detailed Equipment Decontamination Site



Estimated DED Personnel and Equipment Requirements

Station	Personnel	Equipment and Supplies
Station 1—Primary wash	1 NCOIC 4 sprayers 4 scrubbers	2 M17 LDSs 1 3,000-gallon tank 4 long-handled brushes 8 TAP aprons Liquid detergent 2 flashlights
Station 2—Decontaminant application	1 NCOIC 8 scrubbers/mixers	1 3,000-gallon tank 12 long-handled brushes 8 mops with extra mop heads 3 30-gallon containers Sufficient STB 2 flashlights
Station 3—Contact time/interior decontamination	1 NCO 2 decontamination assistants	2 AN/VDR-2s 3 TAP aprons 6 30-gallon containers 10 books of M8 detector paper 30 sponges 8 M256A1 detector kits 50 trash bags 1 clipboard with pen 1 stopwatch
Station 4—Rinse	1 NCOIC 4 sprayers	2 M17 LDSs 1 3,000-gallon tank 4 TAP aprons 2 flashlights
Station 5—Check	2 CAM operators	2 CAMs 10 M256A1 detector kits 20 books of M8 detector paper 2 AN/VDR-2s 2 M22 ACADAs
Total Personnel	27	N/A

(d) Station 4 - Rinse. Decontaminant is removed from the vehicle by spraying it from top to bottom with water. Runoff from this station may be contaminated and must be controlled. Personnel operating the spray wands will wear TAP aprons.

(e) Station 5 - Check. Vehicles are checked for a negligible contamination level (one bar or less on CAM, less than 0.33 centigray of radiological contamination). Suspected liquid contamination can be checked with M8 paper. If both the CAM and M8 detector paper are suspected to have produced false positives, use an M256A1 detector kit near the area to confirm or deny presence of contamination. If significant contamination is found on the vehicle, the vehicle will be recycled to Station 2 for chemical contamination or Station 1 for radiological

contamination. After the vehicle is verified to be clean down to a negligible level, the assistant driver takes the vehicle to the post-decontamination assembly area.

(5) Logistical Requirements. Detailed equipment decontamination operations are initiated at the MAGTF level because of the logistics involved in performing these operations. In addition to the required equipment needed to construct the site, the manpower requirements to adequately conduct thorough decontamination operations are immense. The procedures required at each station require hard labor, especially which in MOPP IV. The additional factors of personnel to initially man/operate the stations, additional personnel to provide for an adequate work-rest cycles, other equipment required to reconstitute the vehicles (new canvas and other items removed at the pre-decontamination area), can be overwhelming and must be pre-planned well before operations in a contaminated areas are conducted.

(6) Site Close Out. The DED is closed in sequence. All vehicles, equipment, and nonexpendable supplies are inspected for contamination. If contamination is found on an item, it is decontaminated.

(a) Station 1 - Primary Wash. Spray all vehicles and equipment with hot, soapy water to remove any contamination that may have been transferred during the primary wash operations. Drain the water from the fabric water tanks. Inspect all equipment and vehicles for contamination using the appropriate detection equipment.

(b) Station - Decontaminant Application. Discard the mops and brushes that were used and inspect and load the unused decontaminant on a vehicle.

(c) Station 3 - Contact Time/Interior Decontamination. Inspect any unused supplies and equipment for contamination. If no contamination is detected, load the equipment and supplies on a vehicle. Discard all contaminated supplies.

(d) Station 4 - Rinse. Spray all vehicles and equipment with hot, soapy water to remove any contamination that may have been transferred during the rinse operations. Drain the water from the fabric water tanks. Inspect all equipment and vehicles for contamination using the appropriate detection equipment. If no contamination is detected, load the equipment on the vehicles.

(e) Station 5 - Check. Ensure that all equipment has been checked for contamination. If it is not contaminated, load it on a vehicle. If it is contaminated, decontaminate it according to the appropriated technical manual. Discard any contaminated supplies. Move all vehicles upwind of Station 5 and inspect them again for contamination. If any contamination is detected, the crew will use the M100 to decontaminate the identified areas. Once the vehicles are staged, all the personnel will proceed to the DTD. Once the entire site has been closed out, it will be marked as a contaminated area and the exact position reported to the MAGTF NBCC (using a CBRN-5 chemical report).

g. Detailed Aircraft Decontamination (DAD)

(1) Characteristics

(a) The goal of a thorough decontamination is to reduce contamination to negligible levels or to eliminate it so that aircraft can be operated and maintained safely for extended periods of time without aircrew IPE or non-aircrew IPE.

(b) The Detailed Aircraft Decontamination (DAD) restores items so that they can be used without aircrew IPE or non-aircrew IPE. Normally, the DAD are conducted as part of a reconstitution or during breaks in combat operations.

(c) The thorough decontamination of aircraft is costly in terms of time and resources. A critical limitation to aircraft thorough decontamination is decontamination of the interior. Electronics, electrical systems, and other sensitive components of cockpits, flight decks, and cargo areas can become damaged if subjected to the volume of water that would have to be introduced in order to effectively remove contamination from these areas.

(d) There are currently no available decontamination technologies, other than using standard aircraft soaps and cleaners to displace contamination from an aircraft. Therefore, in considering thorough decontamination of an aircraft, commanders must first determine the extent of the contamination to the interior spaces of the aircraft. If these spaces are heavily contaminated, it may make more sense to operationally decontaminate the exterior of the aircraft, spot-decontaminate the interior of the aircraft, and allow the aircraft to weather to an acceptable level instead of spending the resources to conduct a thorough decontamination of the exterior, knowing that spot decontamination of the interior is

the best that can be achieved with the current decontamination technology.

(e) The procedures for DAD are similar to those for operational decontamination. The principal difference between the two techniques is the amount of time that is required. DAD will take longer because of the requirement to scrub the aircraft. Scrubbing the aircraft with soap will assist with the contaminant removal process and increase the effectiveness of decontamination.

(f) All personnel involved in the DAD may wear the appropriate rain gear. Rain gear is recommended to prevent the saturation of the non-aircrew protective ensemble.

(2) General Planning. The protection of aircraft and aircrews is of utmost importance during a CBRN threat. The ultimate goal is to minimize sortie generation degradation (by limiting the number of personnel that are exposed, the amount of equipment exposed to the contamination, and the time spent in IPE). The following factors should be considered during decontamination planning:

(a) Combatant commanders have the responsibility to designate a decontamination location and coordinate approval with the HNs. AB, airfield, and FARP commanders and officers in charge must organize the capabilities and personnel of permanent, tenant, and transient organizations to support decontamination operations.

1. Infrastructure factors that should be considered during the site selection process include the adequacy of the aircraft ramp area, access to water (free of contaminants but not necessarily potable), prevailing winds, the slope of the terrain, security, and hookup to electricity or an electric generator (for water pump operation, lighting, billeting, communications, etc.).

2. The goal is to eliminate or reduce the contamination and restore the mission-critical resources to a condition that permits unrestricted use, handling, and operation. Thorough decontamination operations will be conducted after hostile actions have terminated, when the commander determines it is in the unit's best interest, or when directed by higher authority.

(b) Operational units shall coordinate locations for parking the contaminated and uncontaminated aircraft, the

location of aircraft and aircrew decontamination sites, maintenance personnel decontamination sites, and the retro gradation or disposal of contaminated equipment and consumables with host commands.

(c) Aircraft are most vulnerable while they are on the ground and not protected by overhead cover. For this reason, taxi time should be minimized and every effort made to take advantage of available cover. Units and activities place special emphasis on securing the aircraft points of ingress and egress by closing or covering cockpits, doors, and ramps when the aircraft is not in use and prior to decontamination.

(d) The priority of the decontamination should support sortie generation. Maintenance procedures shall address the decontamination considerations (such as covered areas for parking, inspections, servicing, munitions/pod/tank loading and unloading, arming and dearming, and washing) prior to maintenance. The pre-decontamination procedures focus on the following areas:

1. Protecting critical assets, using detection devices, marking and segregating contaminated equipment, and removing and replacing contaminated coverings. Commanders should use the contaminated equipment for contaminated operations.

2. Receiving and providing disposition of contaminated equipment or products (e.g., support equipment, munitions, fuel, and spare parts). Actions may include moving equipment and aircraft through a decontamination line or outside of the maintenance areas for weathering.

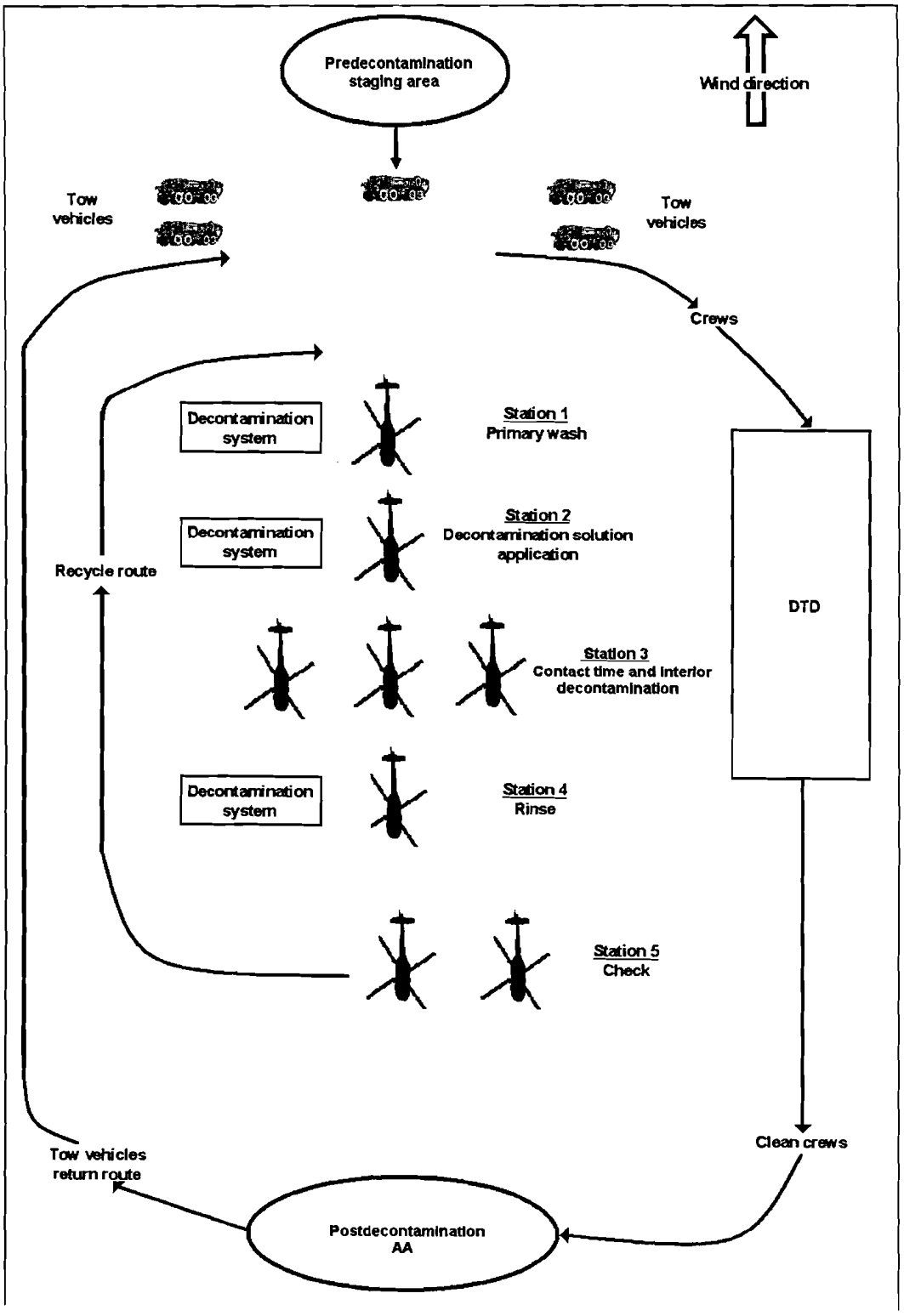
3. Aircraft returning from missions may present little or no threat of contamination to the airfield or facility. Contaminated aircraft will be directed to an alternate (contaminated) airfield before landing (if possible).

(3) Special Considerations

(a) Decontamination procedures are similar to aircraft corrosion control.

(b) Key leadership and installation personnel must realize that there are limitations associated with decontamination efforts and form realistic expectations for an effective decontamination.

Sample Detailed Aircraft Decontamination Site



Estimated DAD Personnel and Equipment Requirements

[illegible]	Personnel		[illegible]
	[illegible]	[illegible]	
Station 1—Primary wash	1 TL 1 M17 LDS operator 1 sprayer	2 scrubbers	1 M17 LDS 1 3,000-gallon tank 6 long-handled brushes 5 TAP aprons Liquid detergent
Station 2—Decontaminant application	1 TL 2 appliers 2 sprayers 1 M17 LDS operator	4 appliers	1 M17 LDS 18 long-handled brushes 9 mops with extra heads 5 TAP aprons Liquid detergent
Station 3—Interior decontamination	1 CAM operator	2 assistants	2 AN/VDR-2s/AN/PDR-77 2 TAP aprons 6 30-gallon containers 10 books of M8 paper 30 sponges 8 M256A1 detector kits 50 plastic trash bags 1 clipboard with pen 1 stopwatch 1 CAM
Station 4—Rinse	1 TL 1 M17 LDS operator 2 sprayers	None	1 M17 LDS 1 3,000-gallon tank 2 TAP aprons
Station 5—Check	1 TL 2 CAM operators	None	1 CAM 10 M256A1 detector kits 20 books of M8 paper 2 AN/VDR-2/AN/PDR-77 1 M22 ACADA
C2	1 TL 1 assistant	None	1 HMMWV 3 marking kits
Aircraft moving team	None	6 drivers 18 ground guides	None
Total Personnel	19	32	N/A

(c) CBRN agents can infiltrate the aircraft interior through the aircraft environmental control system and contaminate the cockpit area and avionics bay.

(d) The principal chemical-agent challenge to avionics components is vapor, regardless of the type of agent.

(e) The sensitivity of electrical equipment to chlorine or other water-based solutions severely limits its feasibility for decontamination.

(f) Units conduct operational and thorough decontamination planning by identifying C2 relationships, team requirements, equipment requirements, decontamination assets, and contaminated-waste collection points.

(g) Team checklists guide the decontamination team activities. These plans and checklists are focused on the unit tasks.

(h) Requirements that exceed the unit resources are included in the resource requests.

(i) No effective chemical compound is available for thorough aircraft decontamination.

(j) Immediate decontamination may be performed using the service-authorized decontamination kits or solutions.

Estimated Water Requirements for a DAD

Aircraft Type	Gallons Required
AH-1	500
AV-8	700
CH-46	500
CH-53	700
MV-22	800
UH-1	500
F/A-18	700
C-130	1600

(4) Determine the Location for the Decontamination. The location to conduct aircraft decontamination is dependent on the operating cycle, space available at the facility, and the type of aircraft being decontaminated.

(5) Conduct Site Preparation. Considerations for selecting a thorough decontamination site and the preparation of that site are similar to those discussed in operational decontamination. Thorough decontamination will require more logistics support. Containment at the DAD will have to be increased to hold the additional runoff. Water requirements are approximations. The water requirements for specific aircraft

should be based on the surface area compared to the recommended water volumes provided.

(6) Procedures

(a) Station 1 - Primary Wash. Gross contamination is removed. The aircraft is sprayed for 2 to 3 minutes with hot, soapy water.

(b) Station 2 - Decontaminant Application. A decontamination solution is applied using a decontamination apparatus (in the siphon injector mode). After the solution is applied, a member of the scrubbing team scrubs the aircraft skin. This allows the chemical agent to mix with the decontamination solution (especially when thickened chemical agents are present). STB and HTH should not be used because of their corrosive nature.

(c) Station 3 - Interior Decontamination

1. The decontamination solution is allowed to completely neutralize the chemical agent; also, the interior of the aircraft is decontaminated (if necessary). The aircraft will remain in Station 3 at least 30 minutes. The decontamination solution reacts with most chemical agents within 5 minutes. However, allowing the decontamination solution to remain on the contaminated surface for 30 minutes should ensure a complete neutralization.

2. Inspect the interior of the aircraft for liquid contamination using the CAM and M8 detector paper. If a liquid-chemical contamination is identified, decontaminate the interior of the aircraft. Personnel should not be in the aircraft during this operation.

3. Decontaminate the aircraft's interior with hot, soapy water as long as maintenance personnel approve the use of it on certain pieces of equipment. Use damp, soapy washcloths to decontaminate optical and electrical equipment and instruments. Use a radiance meter to determine the extent and location of radiological contamination inside the aircraft. If there is contamination, determine the intensity. If greater than 0.33 cGy, decontaminate the interior of the aircraft. Use hot, soapy water to wash the contaminated areas and a sponge to mop up the water and the contamination.

(d) Station 4 - Rinse

1. Remove the decontamination solution from the aircraft. Spray the aircraft with water from top to bottom. Take care not to damage the aircraft skin.

2. Failure to remove all of the decontamination solution from the aircraft skin may cause corrosion.

(e) Station 5 - Check

1. At this station, the completeness of the decontamination is checked. Detection procedures vary depending on the type of contamination. If significant contamination is found on the aircraft, recycle it to Station 2 for chemical contamination or to Station 1 for radiological contamination.

2. Use the CAM to check for the presence of vapors. If the CAM indicates the presence of vapors, use the M8 detector paper to check for liquid contamination. If it is suspected that these are producing a false positive, use an M256A1 detector kit to confirm or deny the presence of contamination. If the aircraft has significant contamination remaining, recycle it. Desorption of chemical agents may occur after the decontamination.

3. Use the radiance meter to determine if any contamination remains. If so, determine the intensity of the contamination.

4. The commander establishes the recycle criteria before starting a decontamination operation. If contamination is detected at Station 5, the recycle criteria are used to determine which aircraft are returned to Station 2 or, if radiological contaminated, to Station 1. If the unit has sufficient time and resources available, the aircraft still having detectable levels of contamination should be recycled. However, time and resources are usually limited and not all aircraft can be recycled.

(7) Site Closeout. There are two main options for conducting site closeout, depending on whether containment pits were used to control runoff.

(a) Without Containment Pit. If possible, move aircraft upwind of the decontamination station to a clean area. The decontamination site should be decontaminated with standard

or non-standard decontaminant, using means available to apply the decontaminant (brooms, swabs, etc).

(b) With Containment Pit. Pump run-off into drums or barrels for proper disposal, overboard, or into sumps. Move aircraft upwind of the decontamination station to clean areas. Decontaminate containment pit with standard or non-standard decontaminant. Pump residual into drums or barrels for proper disposal, overboard, or into sumps.

(c) Decontaminate pumps, hoses, washing and support equipment (stands, ladders, tow tractors, tow bars, dollies, etc) if required. Rubber, plastic and metal buckets can be decontaminated and re-used for future decontamination if necessary. Store these items outside on or near decontamination sites. Discard all rags, sponges, brushes, brooms, and swabs in sumps or in drums or barrels for proper disposal.

4. Special Decontamination Operations. There are several other decontamination operations that may be conducted by the MAGTF. The MAGTF NBCC will task organize decontamination teams as required to support these operations.

a. Terrain Decontamination. Terrain decontamination has little applicability for the MAGTF and it is unlikely that terrain decontamination will be required in support of MAGTF operations. The value of performing Terrain Decontamination is coming under more scrutiny as a valid decontamination method. In theory, it provides more long-term rather than short-term benefits, but recent discoveries in the Agent Fate program indicate that the impact of performing terrain decontamination is minimal. Additionally, you cannot decontamination occupied terrain well enough to allow for a reduced MOPP level right away. Terrain decontamination can be so expensive in terms of manpower and resources, and so ineffective that relocation from a contaminated area is generally a more viable option.

b. Fixed Site Decontamination. Fixed Site Decontamination is designed to decontaminate large areas in which personnel must continue to operate after being contaminated. The goal is to reduce contamination down to a level that is safe for personnel to operate without protective equipment (down to the limits of our current detection devices, tactically clean). The inability of a fixed site to move away from contamination makes decontamination more critical. Decontamination is necessary when protective items cannot be worn in performing the mission and may be necessary when long-term occupancy is anticipated. Fixed Site Decontamination would normally be initiated

simultaneously or soon after operational decontamination operations. The MAGTF does not currently possess the equipment and decontaminants necessary to conduct Fixed Site Decontamination. Commanders must rely upon current TTPs to sustain operations on fixed sites.

c. Sensitive Equipment Decontamination. Sensitive Equipment Decontamination is designed to remove CBRN contamination from sensitive equipment down to a level that is safe for personnel to continue to operate, or work around (decontaminate down to the limits of our current detection devices, tactically clean). Sensitive Equipment Decontamination is typically conducted during retrograde, and when special circumstances require. The MAGTF does not currently possess the equipment and decontaminants necessary to conduct Sensitive Equipment Decontamination. Commanders must rely upon current TTPs to protect vulnerable equipment and avoid the need for decontamination.

d. Depleted Uranium Decontamination

(1) DU exposure and incidents may occur anytime there is damage to the DU armor package, when a vehicle is hit with DU munitions, when DU munitions are damaged, or equipment components containing DU are damaged. The DU armor package can be damaged during vehicle maneuvers, on-board fires, maintenance activities, or ballistic impacts. DU munition problems may occur during storage, transportation, combat, testing, or manufacturing. DU contamination may be present on the ground in areas where equipment was destroyed or damaged. DU emits primarily alpha particles; however, beta, gamma, and x-ray ionizing radiation are also emitted.

(2) Current depleted uranium decontamination procedures are tailored towards peacetime operations (Radiation Safety Officer Responsibilities) and are not suited for combat operations. The MAGTF will use the operational and thorough decontamination procedures, for radiological agents, outlined in this document when decontaminating DU. All personnel assigned to the MAGTF must be trained to identify potential DU contamination and take appropriate protective actions per current Marine Corps Common Skills standards.

e. Contaminated Remains Decontamination. Contaminated Remains Decontamination is designed to remove CBRN contamination from contaminated remains down to a level that is safe for mortuary personnel to work around (we can currently only decontaminate down to the limits of our current detection

devices, tactically clean). The MAGTF must be prepared to accomplish the following tasks.

(1) Monitor remains for contamination. Members of CBRN reconnaissance teams will accomplish this task. Contaminated remains will be placed in CBRN protective body bags for transport to the mortuary affairs decontamination site. The MAGTF NBCC Operations Coordinator will coordinate the follow-on decontamination requirements.

(2) Provide site workers. Site workers can be any MOS available. The Army has the lead for mortuary affairs decontamination. All support provided by the Marine Corps will be coordinated through the MAGTF NBCC Operations Coordinator.

f. Other Personnel Decontamination. The MAGTF will most likely encounter non-military (Friendly and enemy civilian, contractor, POW, etc.) contaminated personnel. Our current doctrinal personnel decontamination procedures were designed for well-trained military personnel who are wearing protective equipment and are not applicable for other personnel that a MAGTF commander might be responsible for. CBRN Specialists will have to improvise to conduct this type of decontamination. The following guidance is provided.

(1) All personnel suspected of being contaminated must be immediately restricted to a designated area in order to prevent further spread of contamination.

(2) When and if possible separate men and women and run two decontamination lines.

(3) Encourage the contaminated personnel to remove all outer clothing down to their under clothes. This step should be conducted immediately prior to being washed down and will remove most of the contamination.

(4) Personnel must be washed down from head to foot. This may be accomplished using available decontamination apparatus, shower units, fire hoses, garden hoses, car wash, etc. The larger the volume of water the more effective the decontamination will be.

(5) Personnel should be mustered in an open area, provided clothing or other appropriate cover, and medical attention. If a CBRN reconnaissance team is available, personnel should be monitored for contamination (low level included).

(6) MAGTF personnel assisting in the decontamination operations must wear appropriate protective equipment throughout these procedures.

(7) Contaminated personnel that refuse to cooperate must not be allowed into designated clean areas

g. Aircraft Munitions Decontamination

(1) Munitions personnel must possess an immediate decontamination capability for themselves (M291 kits, and glove and boot decontamination troughs with 5 percent chlorine solutions) and an operational decontamination capability for munitions, assets, and vehicles. For the decontamination operations to be beneficial, the site personnel must initiate the decontamination shortly after the onset of contamination since there will not be sufficient time for off-site personnel to arrive and conduct the decontamination operations.

(2) If the aircraft munitions are contaminated while in the storage area, the munitions handlers maintain MOPP IV (even if the aircraft parking area and other resources are uncontaminated). If dealing with contaminated individually wrapped trailers in the flight line weapons storage area, the weapons load crew removes the barrier material and disposes of it as contaminated waste before transporting the load to the aircraft parking area. However, if positioning the weapons without overhead cover for more than 1 hour at (or in the immediate vicinity of) the aircraft parking area, the weapons load crew replaces the barrier material before leaving for the site.

(3) Because of the hazard that is imbedded in contaminated munitions equipment and weapons, munitions personnel must conspicuously identify the contaminated assets and keep them separated from the uncontaminated resources (whenever possible). Contaminated munitions remain hazardous to unprotected personnel for extended periods.

(a) Contaminated munitions should be hung on the contaminated aircraft. If it is necessary to use the contaminated munitions on uncontaminated aircraft, ordnance shall be decontaminated before applying it to an aircraft.

(b) If the munitions area is contaminated and the weapons build process did not have an overhead cover, the commanders should determine the need for additional weapons during this period. If the munitions operation built enough

weapons for the next 24 hours, it may not be necessary to continue building bombs in the first few hours after an attack. Munitions work crews should conduct decontamination of the munitions area, munitions equipment, and munitions.

(c) The supervisors and munitions work crews shall ensure that the contamination status of munitions and equipment is clearly marked.

(4) For the decontamination operations to be beneficial, the individual vehicle and equipment operators must immediately decontaminate the parts of the munitions assets that will be touched within 15 minutes of being contaminated. Units may organize and equip contamination control teams to support sustained operations. They use the team concept (normally two members) to assist unit personnel in developing and executing the immediate decontamination measures, resupplying the unit with decontaminants, and collecting and disposing of contaminated waste.

(a) There is no need for extensive decontamination of each contaminated piece of ordnance, vehicle, or equipment (trailer, bomb loader, etc.) as long as the personnel clearly identify the contaminated assets as containing a residual hazard. The operator's or work center's accomplishment of the immediate decontamination using M295 decontamination kits will suffice to continue the mission operations. The decontamination operations will not produce significant results once the agent has absorbed into the paint or other absorbent surfaces. Depending on the surface, this sorption takes place in periods ranging from less than 1 minute up to 1 hour. Regardless of the decontamination technique used, it will be relatively easy to remove agents from the smooth panels before they absorb into the surface. However, the CBRN agents will tend to remain at low levels in crevices, rivet heads, and joints.

(b) The majority of munitions assets on installations use paint with polyurethane compounds. Chemical agents readily absorb into this type of paint. Thus, the decontamination operations will not have a significant effect unless they take place within minutes after the time of contamination. Timely decontamination will reduce the residual contact hazard. Impermeable surfaces (arming wires and other unpainted metal components) do not allow the agent to penetrate. Therefore, these locations represent the most dangerous areas on the contaminated assets.

(c) Plastic and rubber components are porous materials, and the agents easily soak into these components. While the use of the M295 decontamination kit or a 5 percent chlorine solution will effectively reduce or eliminate the operational contact hazard, the agent will remain imbedded in the material and an off-gassing hazard will remain.

(d) There are no effective, operationally feasible methods for completely decontaminating canvas storage covers, webbing, and other textile materials contaminated with liquid chemical agents. These items will have to be weathered or removed and treated as contaminated waste.

h. Air Cargo

(1) Contamination can significantly disrupt the air and ground cargo movements if the cargo handlers do not plan and execute pre-attack and post-attack actions.

(2) The commanders must identify and coordinate the task priorities, obtaining additional support when needed.

(3) Cargo handlers must effectively employ pre-attack and post-attack measures to minimize mission degradation and enable sustained operations. This includes the coordinated use of a system that balances the mission criticality level (importance) of the cargo with the hazard category (residual danger) associated with the materials to determine the appropriate action.

(4) The cargo handlers will require assistance from their unit CBRN reconnaissance team and CBRN specialists to determine the degree of contamination that is present on the cargo, cargo storage areas, and cargo movement areas.

(5) Personnel controlling the cargo movement will identify the mission criticality of the material and will conspicuously mark the relative code on the cargo.

Cargo Movement Mission Criticality Level

Mission Criticality Level	Definition
C—Critical	The cargo is sufficiently important that it must be transported within 4 hours, regardless of the existence of contamination.
P—Priority	The cargo is sufficiently important that it must be transported within 12 hours, regardless of the existence of contamination.
A—Accelerated	The cargo is sufficiently important that it must be transported within 24 hours, regardless of the existence of contamination.
R—Routine	The mission can be delayed until contamination levels, such as MOPP IV are not required, regardless of how long it takes the contamination to dissipate.
N—Negligible	The mission can be delayed until there is no measurable contamination. This type of cargo should not be accepted inside the cargo movement area. Room must be saved for higher priority cargo.

Cargo Movement Hazard Category

Hazard Category	Definition
1	Actual or suspected surface disposition of biological pathogens
2	HD, L, or GB vapor present without contact hazard
3	VL or L contact hazard present without measurable vapor hazard
4	HD or GB contact hazard combined with a medium level of danger associated with vapor concentrations (4 to 5 CAM bars with HD and up to 6 CAM bars with GB)
5	HD, L, GB, or VX contact hazard combined with a high level of danger associated with vapor concentrations (6 or more CAM bars with HD, positive M256A1 tab for L, 7 or more CAM bars with GB, or 6 or more CAM bars with VX). In the case of GB, high vapor hazard alone can drive this category designation.

(6) In addition to the required CBRN reconnaissance, self-aid, and buddy care activities, cargo handlers accomplish the following actions. The timing of the post-attack reconnaissance and self-aid buddy care activities depend on the situation, the direction from the installation, and the unit chain of command. Unless otherwise directed, do not accomplish the following actions until after the liquid deposition phase of the attack has ended.

(a) Determine the contamination status of each individual cargo pallet. Annotate and report the results to the commander.

(b) Remove and replace the covering within 6 hours (the sooner the better) if a single sheet of plastic is protecting the contaminated assets. Carefully remove the outer layer and replace it as time permits if a double or triple sheet of plastic or canvas is protecting the contaminated assets. Carefully roll the material so that the contaminated side is rolled to the inside, and discard the material as contaminated waste; always triple wrap the cargo.

(c) Mark the item as contaminated according to the unit marking procedures (CBRN marking kit, signs on all sides) if barrier material is not protecting the contaminated cargo. Attach each type of signs to the cargo if it is contaminated with more than one type of agent (e.g., CB).

(d) Annotate the front of the appropriate CBRN marking kit sign with the mission criticality and hazard category designator for prioritizing the cargo movement. The code for the mission criticality designator will be the first letter of the appropriate word (i.e., "C" represents critical and "N" represents negligible). The code for the hazard category is the number designator itself (i.e., "3" represents a contact hazard without a measurable vapor hazard).

(e) Annotate the specific agent, date, time of marking, and temperature (F or Celsius [C]) at the time of the marking operation on the rear of the marking sign. If using the DOD sampling kits (biological-agent samplers), annotate on the rear of the sign whether the HHA tests are positive or negative. Report the contamination status of each pallet to the unit operations center.

(f) Determine what decontamination actions, if any, are necessary based on the mission criticality level and hazard category of the contaminated cargo.

Cargo Decontamination Actions

Hazard Rating Level	Hazard Rating	Decontamination Action	Designator
Critical	1	Spray the cargo with water if it will not damage the contents.	C1
Critical	2	Aerate for 30 minutes if the surrounding environment is clean.	C2
Critical	3	Decontaminate.	C3
Critical	4	Decontaminate. Aerate for 30 minutes if GB is the agent and the surrounding area is clean.	C4
Critical	5	Decontaminate. Aerate for 30 minutes if GB is the agent and the surrounding area is clean.	C5
Priority	1	Spray the cargo with water if it will not damage the contents. Wipe down the cargo with a dust remover, retest the cargo with HHA.	P1
Priority	2	Aerate for 6 hours if the surrounding area is clean.	P2
Priority	3	Decontaminate, recheck with the M8 paper, and decontaminate again if necessary.	P3
Priority	4	Aerate for 6 hours if the surrounding area is clean, decontaminate.	P4
Priority	5	Aerate for 6 hours if the surrounding area is clean, decontaminate.	P5
Accelerated	1	Spray the cargo with water if it will not damage the contents. Expose cargo to sunlight for 4 hours, attempt a wash down, conduct wipe down again if second HHA test was positive.	A1
Accelerated	2	Aerate for 12 hours if the surrounding environment is clean.	A2
Accelerated	3	Aerate for 12 hours before the decontamination process, decontaminate, recheck with the M8 paper, and decontaminate as often as necessary or until time no longer permits.	A3
Accelerated	4	Aerate for 12 hours if the surrounding area is clean, decontaminate, and recheck with the M8 paper. Repeat if contact hazard still exists.	A4
Accelerated	5	Aerate for 12 hours if the surrounding area is clean, decontaminate, and recheck with the M8 paper. Repeat if contact hazard still exists.	A5

Routine	1	Spray the cargo with water if it will not damage the contents. Expose cargo to sunlight for 4 hours, attempt a wash down, and conduct wipedown again if the second HHA test was positive. Continue until HHA tests are negative.	R1
Routine	2	Aerate for 12 hours if the surrounding environment is clean.	R2
Routine	3	Aerate for 24 hours before the decontamination process, decontaminate, recheck with the M8 paper, and decontaminate as often as necessary or until time no longer permits.	R3
Routine	4	Aerate for 24 hours if the surrounding area is clean, decontaminate, and recheck with the M8 paper. Repeat if the contact hazard still exists. The cargo should not be loaded until contact hazard has completely dissipated.	R4
Routine	5		R5

Negligible	1	Spray the cargo with water if it will not damage the contents. Expose the cargo to sunlight for 4 hours, attempt a wash down, and conduct wipe down again if second HHA test was positive. Continue process until HHA tests are negative.	N1
Negligible	2	Do not process unless contamination dissipates or mission criticality level is upgraded.	N2
Negligible	3		N3
Negligible	4		N4
Negligible	5		N5

(7) Use the following decontamination guidelines for aircraft pallets:

(a) Determine, report, and annotate the contamination status of each pallet. If a single sheet of barrier material protected the contaminated assets, remove and replace the covering. Accomplish this within 6 hours (the sooner the better). Carefully roll the material so that the contaminated side rolls to the inside, and then dispose of the material as contaminated waste. If a double or triple sheet of plastic or canvas protected the contaminated assets, remove the outer layer and replace it as time permits.

(b) Dispose of the barrier material as contaminated waste in the appropriate predetermined location. If a barrier

material did not protect the contaminated property, identify the item as contaminated.

(c) Pay special attention to pallet netting. If the netting was contaminated, it will most likely be impossible to decontaminate over time. Ensure that the contaminated wrapping materials are disposed of in a temporary waste disposal area. Routinely transfer the contaminated waste to the installation contaminated waste disposal site.

APPENDIX C

TACTICS, TECHNIQUES, AND PROCEDURES FOR CBRN CONTAMINATION AVOIDANCE

This appendix provides tactics, techniques, and procedures (TTP) for conducting chemical, biological, radiological, and nuclear (CBRN) avoidance. This appendix presents comprehensive TTP for passive and active avoidance measures. It provides the tools for CBRN defense personnel to implement active and passive CBRN avoidance measures and supports the decision-making process. Users of this appendix will be CBRN staff officers, CBRN noncommissioned officers (NCOs), non-CBRN personnel performing collateral duties as an additional duty CBRN officer or NCO, and commanders and staff at the tactical level. It will support command staff planning in preparing for and conducting CBRN avoidance operations. It also provides guidance to unit leaders and personnel for implementing CBRN avoidance TTP. It also serves as a key source document for refining existing training support packages and training exercises. The TTPs of this appendix may be modified, adjusted, or adapted by the user as necessary.

1. General. Enemy use of CBRN weapons makes battlefield operations more difficult and time consuming. Further, they almost guarantee casualties and loss of equipment due to contamination. To survive and accomplish the mission, individuals and units must take precautions to avoid or minimize the effects of CBRN weapons. These precautions are collectively called contamination avoidance.

2. Purpose. To conduct individual and unit actions designed to reduce the threat and lessen the impact of enemy use of CBRN weapons. Contamination avoidance is the best defense against enemy use of chemical, biological and nuclear weapons.

a. Step 1 - Implement passive defensive measures. Passive defensive measures are those measures taken to reduce the probability of being hit by a CB attack or, if hit, to reduce the effects of the attack. Passive defensive measures can include both operational security measures and CBRN defensive measures. Operational security measures such as good communication procedures, light discipline, and good camouflage reduce the chances of a unit being targeted. Dispersion, hardening of positions and equipment, and using overhead cover reduces the effectiveness of an attack. Some examples of passive CBRN defensive measures are, conducting CBRN training, properly maintaining CBRN equipment, vaccinations, employing

CBRN detection equipment, conducting periodic monitoring for CBRN hazards, practicing proper MOPP discipline, and covering food and supplies.

b. Step 2 - Warn and report CBRN attacks. Once a CBRN attack has occurred, everyone who might be affected by the hazard must be warned. This gives units time to protect themselves against a possible hazard. The CBRN Warning and Reporting System (CBRNWRS) are used for warning and reporting CBRN hazards.

c. Step 3 - Locate, identify, track and predict CBRN hazards. By locating, identifying, tracking, and/or predicting CBRN hazards, commanders can make informed decisions for operating in or around CBRN hazards. Calculating hazard predictions and planning reconnaissance are vital to this step.

d. Step 4 - Limit exposure to CBRN hazards. If operations in a contaminated area are necessary, the necessary steps must be taken to limit troop exposure for CBRN contamination.

3. Passive Defensive Measures. Passive defensive measures are those measures taken to reduce the probability of being hit by a CBRN attack or, if hit, to reduce the effects of the attack. Listed below are some common principals that apply, no matter what CBRN threat the enemy presents:

a. Plan Ahead. It requires considerably more time and logistics to accomplish tasks in a CBRN environment. Therefore, prior plan is essential to ensuring all the required logistics are in place when needed, and that operational timelines can be met.

b. Avoid Detection. Use good operational security measures. Radio communications should be encrypted. Camouflage, light discipline, noise discipline, and even moving the unit if necessary will help the unit avoid being detected.

c. Provide Warning. If a CBRN attack happens, early warning is paramount. The CBRN Warning and Reporting System (CBRNWRS) is designed to allow notification of attacks and predicted downwind hazards. Units must be familiar with, and be able to effectively operate the CBRNWRS. Additionally, detectors should be placed far enough upwind of unit positions to provide sufficient warning.

d. Maintain Discipline. Marines must maintain discipline and confidence in their ability to survive and operate after a

CBRN attack. Physical and mental conditioning help Marines function in MOPP gear. Physical conditioning is developed by being in shape, eating well, maintaining good hygiene habits and keeping immunizations up to date. Mental discipline is developed through training.

e. Seek Protection. When seeking protection, select it wisely and based on the CBRN threat. While terrain such as ditches, ravines and depressions may provide shelter from a nuclear attack, it will tend to accumulate chemical agents. Forests and jungles protect against liquid chemical agent but increase the duration of vapor hazards. Any overhead protection offers some degree of protection against liquid chemical agents.

f. Disperse. Dispersion provides protection from CBRN attacks. Troops and supplies should be dispersed so that any single CBRN attack is less effective. However, often times the terrain or tactical situation will not allow for sufficient dispersion. Additionally, the more dispersed a unit is, the longer it will take to do even routine tasks.

g. Remain Mobile. Constant movement prevents the enemy from pinpointing locations and accurately using CBRN weapons.

h. Cover Supplies and Equipment. Storing supplies and equipment under cover helps prevent contamination. Contamination seeps through all cover, so the cover must be replaced as soon as possible after heavy contamination. Covering supplies with several layers allows for the contaminated top layer to be removed, thereby reducing the chance of contamination seeping through, while at the same time leaving the supplies covered.

i. Limit Exposure. OPORDs include plans for limiting exposure after contamination. Prevent accidental contamination by marking contaminated equipment and areas. When possible, limit exposure with time. By waiting to enter a contaminated area, the contamination level will be greatly reduced due to weathering. Only personnel required to accomplish the mission are sent into contaminated areas.

j. Prevent Spread of Contamination. Limit the number of personnel and equipment in contaminated areas. Contaminated areas are detected by monitoring first, and then defined by reconnaissance and survey operations. Decontaminate at the edge of contamination or as far forward as possible. Mark contamination whenever possible. Mission essential equipment must be decontaminated. When transporting equipment, use as few

vehicles as possible and cover storage and troop spaces to limit the spread of contamination.

k. Individual and Unit Actions. Individual immediate actions must be accomplished quickly with little supervision. Marines who are properly trained will react faster and stand a better chance of surviving and continuing their mission. Unit actions are planned out and rehearsed during operations, exercises and other training.

4. General Pre-Attack Actions. The below procedures apply to all CBRN attacks and hazards. They should all be performed before an attack happens.

a. Designate Proposed Decontamination Sites. Pre-planned decontamination sites should be identified before offensive operations commence. When selecting sites, consider mission, enemy, terrain and weather, troops and support available and time available (METT-T); water availability; accessibility; and logistics supportability.

b. Implement CBRN Defense Plans. Units must have CBRN defense plans in place and ready to execute. The plans should include required actions while operating in a CBRN environment. Units should be well trained in CBRN defense procedures. Immediate actions should be instinctive, detectors should be dispersed, Individual Protective Equipment (IPE) should be issued and additional training conducted.

c. Prepare to Provide Care for Casualties. Every Marine should know how to provide first aid for CBRN casualties. Additionally, there should be additional equipment available to support providing first aid and conducting decontamination of casualties, as necessary. Plans should also be made for the transport of contaminated casualties, if required.

d. Determine and Implement MOPP. Based on the tactical situation, commanders should determine and implement the appropriate MOPP level. Consider the mission, threat, water requirements and work/rest cycles.

e. Minimize Skin Exposure. Personnel should minimize skin exposure (e.g., wearing shirt sleeves down and closing neck buttons) when ever tactically possible. Although inhalation of an agent is the primary concern, many agents can enter the body by penetrating the skin or through skin cuts, cracks or abrasions. By minimizing skin exposure before an attack there is less area to be contaminated before MOPP ensembles can be donned.

f. Good Hygiene and Sanitation. Practicing good hygiene and sanitation will help reduce the effects of enemy CBRN attacks. Commanders must require their personnel to practice proper hygiene and sanitation methods at all times.

g. Deploy and Activate Detectors. Anything the unit is operating under the threat of CBRN attack or moving in/near an area where CBRN contamination have been employed, all available detectors should be employed. These detectors will provide warning of CBRN hazards and allow the units to upgrade their protective posture.

h. Designate and Prepare Shelters. The commander should direct and designate appropriate shelters for rest and relief from MOPP, and for meals and command and control. Protection from weapons effects, liquid and vapor contamination, blast, shrapnel and heat, should be considered when determining the suitability of buildings as shelters. Use procedures like shuffle pits at doors, closing all doors/windows and HEPA filters on ventilation systems to reduce contamination.

i. Watch for Attack Indicators. All personnel should be alert for signs of CBRN attack. The faster an attack can be identified, the better chance the unit will have to protect themselves. The CBRN monitoring and reconnaissance can confirm or deny the presence of contamination after the unit has taken the necessary measure for protection.

j. Monitor Meteorological Data. Meteorology is an important factor on the impact of a CBRN attack. The weather will affect how effective and persistent a CBRN attack is. Additionally, the weather will have a direct impact on the unit's ability to operating in increased levels of MOPP. Units should request meteorological information on a regular basis.

k. Cover Mission Essential Equipment. Covering mission essential equipment helps to prevent contamination from being deposited on the equipment. This will reduce the need for decontamination and minimize the possibility of personnel contaminating themselves if they have to handle the equipment later.

l. Integrating Alarms and Warning Systems. Warning signals direct Marines to take preplanned defense actions based on threat conditions. Signals used to initiate preplanned actions may be specific to one or more sections. Other actions, such as automatic masking, assuming pre-designated MOPP conditions or seeking protective cover or shelter, may apply to the entire

unit. Although warning signals are primarily designed to provide air, missile, artillery and ground attack warning, they may be used to warn of covert attacks with CBRN weapons. New personnel need to be briefed on warning signals and protective actions. Standard warning signals should be used to the greatest extent possible.

m. Monitor Status of CBRN Equipment and Supplies. To effectively survive a CBRN attack and operate in a contaminated environment, units must possess the necessary equipment and the equipment must be readily available. Units must regularly assess the status of supplies that support operation in a CBRN environment and determine what additional equipment and supplies are needed.

5. Chemical Contamination Avoidance

a. Pre-Attack Actions. In addition to the common pre-attack actions listed above, you need to assess the chemical threat, potential risk and likelihood of attack. Intelligence data may suggest enemy capabilities and even intent.

b. During Attack Actions

(1) Give Attack Warnings. Detection and warning of the attack are critical to the implementation of protective measures. The warning signal for the attack directs Marines to take cover, initiate additional protective measures and increase their MOPP levels.

(2) Take Cover. Taking cover protects personnel against shrapnel, liquid and particulate contamination. During an attack, personnel don their masks, take cover and don other protective gear, as appropriate.

(3) Use MOPP IV. All personnel should remain in MOPP IV until directed to reduce their MOPP level.

c. Post Attack Actions

(1) Begin Post Attack Recovery. If the enemy uses air-bursting chemical munitions, Marines need to stay inside or under cover during the chemical droplet fall phase. The chemical droplet fall phase could last up to 60 minutes. The length of time depends on factors such as meteorological data and the weapon's height of burst.

(2) Avoid Potentially Contaminated Surfaces/Areas. All personnel should minimize contact with potentially contaminated surfaces and stay out of potentially contaminated areas until monitoring can be conducted.

(3) Report Observations/Evidence of an Attack. Personnel provide reconnaissance and assessment information for all types of damage, hazards, and CBRN agents/contamination. Initially, these will be reported in the form of CBRN-1 Reports. After these, additional information that might be pertinent will still need to flow to the control center by appropriate means.

(4) Treat and Evacuate Casualties. Chemical casualties present special problems for the victim and medical personnel. Care should be taken to avoid contaminating medical and transport personnel and facilities or further injuring casualties. Limited decontamination of casualties may be required prior to transportation.

(5) Adjust MOPP. Adjust MOPP levels to the lowest possible level consistent with the hazards.

(6) Document Exposure. Medical staffs should clearly document exposure in the medical records of those personnel who have been exposed.

(7) Conduct Monitoring/Reconnaissance/Survey. Monitoring should be conducted as soon as possible. Once the tactical situation permits, determine the extent and duration of the residual hazards by conducting survey and reconnaissance operations.

(8) Plan and Implement Decontamination. Decontamination is designed to minimize the operational impacts of contamination. Units must have established decontamination plans and be trained, equipped and prepared to execute decontamination operations.

(9) Conduct Unmasking Procedures. In order to reduce the protective posture to pre-attack levels, unmasking procedures must be conducted. When it has been determined that the area is free from contamination, all personnel should reduce their MOPP to the directed level, and return their IPE to a ready status in anticipation of the next attack warning. This may include conducting filter exchange.

d. Chemical Hazard Prediction. The purpose of chemical hazard prediction is to provide information on the location and extent of contamination resulting from a chemical attack.

Chemical hazard prediction is a progressive procedure starting from a report of a chemical attack, to a safe sided estimate of where contamination may be, to an actual plot of where contamination is known to exist. It provides the means to warn units of a possible hazard and contamination from a chemical attack.

(1) Chemical Downwind Report (CMR). A CBRN Chemical Downwind Report (CBRN CDR) is either a CBRN Chemical Downwind Message (CBRN CDM) or a CBRN Chemical Downwind Forecast (CBRN CDF). These messages contain basic meteorological information for predicting biological aerosol and chemical vapor hazard areas. The CBRN CDM is the predicted weather for the current weather period (six hours) and the CBRN CDF is a forecast of the predicted weather for the next weather periods (six hours). MAGTF NBCCs are usually the lowest level that prepares a Chemical Downwind Message. Separate NBCCs also may be required to prepare a CDM when operating independently. The current meteorological data required for biological and chemical downwind hazard prediction is contained in the CBRN CDM. The CBRN CDM is transmitted at least four times a day, and each message is valid for a six hour period. Each six hour period is subdivided into three two hour periods. The CBRN CDF contains information for subsequent six hour periods.

(2) Types Of Chemical Attacks. After a chemical attack, both liquid and vapor contamination might be present, depending on the agent used. Liquid contamination will be found around the area attacked and will primarily present a contact hazard. Vapor contamination will present a larger hazard downwind of the attack. For chemical hazard prediction, all chemical attacks are classified as either Type A, B or C.

TYPE OF AGENT CONTAINER	RADIUS OF ATTACK AREA	WIND SPEED	TYPE	CASE	FIGURE
BML, BOM, RKT, SHL, MNE, UNK, surface burst MSL	= 1 km	≤ 10 KPH	A	1	
BML, BOM, RKT, SHL, MNE, UNK, surface burst MSL	= 1 km	> 10 KPH		2	
BML, SHL, MNE, surface burst RKT and MSL	= 1 km	≤ 10 KPH	B	1	
BML, SHL, MNE, surface burst RKT and MSL	= 1 km	> 10 KPH		2	
BOM, UNK, air burst RKT and MSL	= 2 km	≤ 10 KPH		3	
BOM, UNK, air burst RKT and MSL	= 2 km	> 10 KPH		4	
SPR, GEN	= 1 km	≤ 10 KPH		5	
SPR, GEN	= 1 km	> 10 KPH		6	
Detection after unobserved attack (CBRN 4 CHEM report)	= 10 km		C	N/A	

(a) Type A (Air Contamination, Non-Persistent). Type A attacks are those that have been dispersed as an aerosol or vapor cloud by munitions that explode upon impact with the ground. This results in little or no contamination on the ground, however can produce a large downwind vapor hazard area.

(b) Type B (Ground Contaminating, Persistent). Type B attacks are those that have been dispersed as a liquid by air bursting munitions. Liquid contamination on the ground in attack area and smaller downwind vapor hazard areas.

(c) Type C (Attack Origin Unknown). Type C attacks are only used when an agent is found, but the attack was not observed.

(3) Cases of Chemical Attacks. The "Types" of chemical attacks are subdivided into "Cases" based on the wind speed, delivery means (type of agent container) and the radius of the

attack area. The radius of the attack area is determined by the delivery means of the attack.

(4) Procedures

(a) Step 1 - Plot The Attack Location. The attack location is determined by looking at set FOXTROT, field 1 or by performing intersection of observer locations and direction of attack (set BRAVO) from the CBRN 1 or 2 Chemical Report. Once the location is determined, plot it as a dot on the map. Plot an arrow indicating grid north starting at the attack location and label it "GN". Note that for some attacks, there may be up to six set FOXTROTs in order to define a line or area attack.

(b) Step 2 - Determining Type And Case. The next step in chemical hazard prediction is to determine the Type and Case of the attack.

1. Determine Type. The agent used determines Type. Non-persistent agents are Type A, persistent are Type B. All attacks are assumed to be Type A unless they are confirmed to be persistent, in which case they are Type B. Agent persistency is found in set INDIA, field 2 and 3. Type C attacks are only used if chemical agent is detected, but there was no attack observed. This information will be reported via a CBRN 4 Chemical Report.

2. Determine Case. The Case is determined by looking at wind speed and radius of attack area. Wind speed is determined by finding the time of attack on set DELTA. Next, determine the set (set WHISKEYM, XRAYM or YANKEEM) of the Chemical Downwind Message (CDM) that indicates weather for the time of attack. This set will be used repeatedly, so note which one it is. Finally, get the wind speed from field 2 of the appropriate CDM set. For chemical hazard prediction, wind speed is either less than or equal to 10KPH OR greater than 10KPH. The radius of attack depends on the type of agent containers (set GOLF, field 4) and whether the attack is a surface or air burst (set GOLF, field 2). Larger agent containers result in a larger attack area and air bursts cause the agent to be spread over a larger area. Attack areas will either be a radius of 1 KM, 2 KM or 10 KM (Type C). Spray or generator attacks are determined by a linear attack area rather than an attack radius.

(c) Step 3 - Draw The Attack Area. Draw a 1 KM or 2 KM radius circle around the attack location based on the Type and Case. Label the attack area "AA." For Type B, Case 5 or 6, draw a 1 KM radius circle around the start point and end point

of the attack. Connect these two circles' outside edges with tangent lines.

(d) Step 4 - Draw The Downwind Direction Line. For cone plots only, extract the downwind direction from field 1 of the CDM. Plot the downwind direction line starting at the attack location. Extend the downwind direction line for a minimum of 10 KM, ensuring that it extends to the end of the hazard area to be determined in the next step. Extend this line upwind of the attack location twice the radius of the attack area. Label the downwind direction line "downwind direction 90 percent."

(e) Step 5 - Draw The Hazard Area

1. Circular Plots. For all circular plots except Type B, Case 5, plot a 10 KM radius circle around the attack location. Label the hazard area as "HA." For Type B, Case 5, plot a 10 KM radius circle around both the start point and end point attack locations. Connect the outside edges of these two circles with tangent lines. Label the hazard area as "HA."

2. Cone Plots. Draw a line perpendicular to the downwind direction line at the Downwind Hazard Distance (10 KM for all attacks except Type A, Case 2). Label this line "DHD 10KM." For Type A, Case 2 attacks, determine downwind hazard distance by using the air stability and agent container. Air stability is listed on the CDM, field 3 and agent container is found on set GOLF, field 4 of the CBRN 1 or 2 Chemical Report. From the end of the upwind line, draw 30 percent tangent lines on both sides of the downwind direction line. These lines will touch the outside of the attack area and terminate at the DHD line. This will form an equilateral triangle. Label the hazard area as "HA." Erase all excess lines, i.e. lines that are outside of the attack area that are upwind.

Type of agent container	Distance from center of attack area along downwind axis, when stability condition is:		
	U	N	S
Shell, Bomblets and Mines. (SHL, BML, MNE)	10 KM	30 KM	50 KM
Air burst Missiles, Bombs, Rockets and Unknown Munitions. (MSL, BOM, RKT, UNK)	15 KM	30 KM	50 KM

(f) Step 6 - Add Marginal Information. Complete a CBRN 3 Chemical Report and label the plot with it. Additionally, if the plot is on an overlay, add grid register marks, map name and scale, preparer and organization, and any non-standard information or colors.

e. Earliest And Latest Arrival Time. The earliest or latest time a chemical cloud can arrive at a certain point should be calculated for every unit potentially affected by a chemical attack. This information is extremely valuable to commanders. With this information, commanders can determine how much time there is before the chemical hazard arrives at the unit's position, allowing them to upgrade their protective posture. Additionally, these times will provide an indicator of when units can expect chemical detectors to sound and provide some indication when the chemical hazard will pass and unmasking procedures may begin.

(1) To determine earliest arrival time, calculate the fastest speed that the leading edge of the chemical cloud will travel. The distance to the point must be measured from the outermost edge of the attack area closest to the unit at risk.

(2) To determine latest arrival time, calculate the slowest speed that the trailing edge of the chemical cloud will travel. Note that latest arrival time is only used for Type A attacks. The distance to the point must be measured from the upwind edge of the attack area, furthest from the unit (attack location for Case 1).

f. Recalculation. When significant changes in weather occur, chemical hazard predictions and the associated CBRN Chemical Reports must be recalculated to account for the changes. These significant weather changes are indicated by Chemical Downwind Messages (CDR). The chart below illustrates which weather changes affect which "Type" and "Case" plots.

CHANGES OF:	A 1	A 2	B 1	B 2	B 3	B 4	B 5	B 6
Wind Speed:								
From > 10 KPH to ≤ 10 KPH		X		X		X		X
From ≤ 10 KPH to > 10 KPH	X		X		X		X	
Wind Direction: By 30 DEG or more		X		X		X		X
Air Stability Category:		X						

(1) Recalculation of Type A Attacks. Type A attacks are vapor or aerosol clouds. When significant weather changes

occur, the distance the chemical agent cloud travels before and after the weather change must be calculated.

(2) Recalculation of Type B Attacks. Type B attacks are persistent agents and will not move from original attack area. When significant weather changes occur, a new plot is drawn on top of original plot indicating where contamination may be present under new weather conditions. The area covered by the old and new hazard areas must be considered dangerous until confirmation of no chemical hazard is received.

g. Reporting the Actual Hazard Area. After a CBRN attack occurs, units conduct monitoring, reconnaissance and survey to determine the extent of the contamination. Information gathered from monitoring, reconnaissance and survey is formatted and passed as a CBRN 4. If no chemical agent is detected on initial reconnaissance and survey operations, this should be reported by entering "NIL" into set INDIA. Additionally, if no chemical agent is found during resurvey of a known previously contaminated area, "NIL" should be entered in set INDIA and "CHEMICAL FREE ATTACK" in set GENTEXT along with the strike serial number in set ALPHA.

h. Plotting Contaminated Areas. Contaminated areas reported via CBRN 4 Chemical Reports are plotted as a series of points on a map overlay for use on the situation map. This contamination overlay is reported to other units as a CBRN 5. The CBRN 5 may be sent verbally via radio, but this requires lengthy transmission and requires the recipient to plot each point to redraw the plot. Map overlays are the preferred method of dissemination. In order to make the CBRN 5, you will need to plot set QUEBEC of the CBRN 4 reports and "connect the dots". This results in an outline of the contamination, reported on set XRAYA of the CBRN 5 report with the first and last grid point being repeated. In rare situations, the survey mission may not be completed due to a geographical obstruction or enemy activity. This results in an open plot and is indicated by not repeating the first grid point in set XRAYA.

6. Biological Contamination Avoidance

a. Pre-Attack Actions. Preparations before an attack should be accomplished long before a biological attack occurs.

(1) Up-To-Date Immunizations. Immunizations reduce the chances of becoming biological casualties. Proper immunizations protect against many known disease-producing biological agents.

(2) Good Hygiene. Proper hygiene protects against the spread of disease by practicing good health habits. The best defense against biological agents is good personal hygiene, which is keeping the body as clean as possible. This means not only washing the face and hands, but all parts of the body, particularly the feet and any exposed skin. Hands need to be cleaned before meals or anytime bare hands are used to help ingest food and liquid or when smoking. Shaving may seem unimportant in the field, but it is required to achieve a proper seal of the mask. This is important because biological agents are usually most effective when introduced via the respiratory system or the skin. Small nicks, scratches and cuts are unavoidable in a field situation. Pathogens, either naturally occurring or intentionally employed as biological agents, enter these breaks in the skin and will cause infections if left untreated. Marines should make every effect not to cut themselves while shaving and to clean any breaks in the skin with soap and water followed by appropriate first aid treatment.

(3) Area Sanitation. Another way to stop the spread of disease is to keep the area clean. Bury all empty ration packets and residue. Locate or construct and use field sanitation facilities. Control of insects and rodents is also essential in preventing the spread of disease.

(4) Physical Conditioning. Good physical condition requires maintaining the body in a well-rested, well-fed and healthy state. Personnel should get as much exercise and rest as the situation permits, and they must remember to eat properly. If they stay healthy, their bodies will be better able to fight off germs and infection. A high level of physical fitness also reduces the likelihood of heat stress when the MOPP ensemble is worn for extended periods. Continuous operations will require that personnel learn to sleep in short naps and while in MOPP IV.

(5) Insect Repellent. Proper application of insect repellent will provide protection from those insects and ticks that may be used as biological agent vectors.

(6) CBRN Training. Training for operations in a CBRN environment must be integrated into all areas of unit training. Personnel learn, practice and train to perform individual CBRN survival tasks. Leaders are directly responsible for reinforcing these tasks through continuous training, thereby instilling individual confidence.

b. During Attack Actions. If the enemy attacks with biological agents, there may be little or no warning. When

there are indications of a biological attack, Marines automatically assume MOPP IV to protect themselves against contamination.

(1) Biological Attack Indicators. Biological agents may be disseminated as aerosols, liquid droplets and dry powder or via vectors. Attacks with biological agents can be very subtle or direct, if favorable weather conditions prevail. In most circumstances, an individual may not know a biological attack has occurred. Symptoms may appear minutes to days after an attack has occurred. Indicators may include:

(a) Mysterious illness (many individuals sick for unknown reasons).

(b) Large numbers of vectors, such as insects, unusual insects or rodents.

(c) Large numbers of dead or strange-acting (wild and domestic) animals.

(d) Mass casualties with flu-like symptoms; fever, sore throat, skin rash, mental abnormalities, pneumonia, diarrhea, dysentery, hemorrhaging or jaundice.

(e) Artillery shells with less powerful explosions than high-explosive (HE) rounds.

(f) Aerial bombs that pop rather than explode.

(g) Mist or fog sprayed by aircraft or aerosol generators.

(h) Unexploded bomblets found in the area.

(2) Immediate Actions. There is currently no widely fielded biological detector that can provide immediate warning. Therefore, any unknown agent cloud should be considered a possible biological attack and the same protective actions prescribed for a chemical attack should be initiated. MOPP IV provides excellent protection against biological agents.

c. Post Attack Actions. Actions after a biological attack include submitting CBRN reports, beginning post attack recovery and other actions, such as taking samples, identifying casualties by the symptoms they exhibit and treating those symptoms. Early recognition of symptoms and treatment is essential in trying to limit casualties. Additionally,

personnel should decontaminate immediately after an attack by using decontamination kits or washing with soap and water.

(1) Agent Exposure. Individuals showing symptoms of a contagious disease must be quarantined. This isolation helps prevent the possible spread of the disease to others. Treatment of biological agent casualties requires medical assistance as soon as possible. Symptoms associated with some biological agents may mimic other illness or chemical casualty symptoms. Agent symptoms may include:

(a) Dizziness, mental confusion, double vision or blurred vision.

(b) Skin tingling, numbness, paralysis or convulsions.

(c) Formation of rashes or blisters.

(d) Coughing.

(e) Fever, aching muscles, fatigue and difficulty in swallowing.

(f) Nausea, vomiting and/or diarrhea.

(g) Bleeding from body openings or blood in urine, stool or sputum (spit).

(h) Shock (symptoms appear in minutes or hours after the biological attack).

(2) Unmasking Procedures. Unless warning is received from higher headquarters to mask in advance of the arrival of a biological attack, units will likely not be aware that they have been exposed to a biological agent. However, if the unit is warned and masked, then unmasking procedures should be conducted only after the threat is fully analyzed.

c. Biological Hazard Prediction. The purpose of biological hazard prediction is to provide information on the location, extent and duration of the hazard resulting from attacks with biological weapons. It provides the necessary information to warn units within the predicted hazard area.

(1) Types and Cases Of Biological Attacks

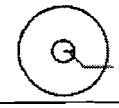
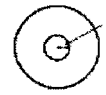
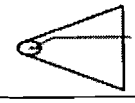
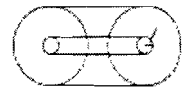
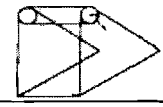
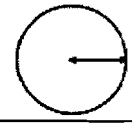
(a) Types of Biological Attacks. For biological hazard prediction, all biological attacks are divided into four different Types.

1. Type P-Localized Exploding Munitions or Surface Spray. Munitions that explode but do not cover a large area (bombs, shells, rockets and mines). Munitions that are released as a surface attack (missiles, spray and aerosol generators) fall under Type P attacks.

2. Type Q - Munitions Covering a Large Area. Type Q attacks consists of munitions that cover a large area (bomblets and air bursting missiles).

3. Type R - Container Unknown or Air Spray. Type R attacks indicate that attack location is known but the type of delivery container is unknown or the attack is an air release (spray or generator). Surface release attacks that are mobile and release material over a distance exceeding 1KM (spray) also fall under Type R attacks.

4. Type S - Unobserved Attack. Type S attacks are only used when an agent is detected, but the attack was not observed.

TYPE OF AGENT CONTAINER	RADIUS OF ATTACK AREA	WIND SPEED	TYPE	CASE	FIGURE
BOM, RKT, SHL, MNE, Surf Burst MSL, Surf SPR, or GEN	2km	≤ 10 KPH	P	1	
	2km	> 10 KPH		2	
BML, Air Burst MSL	10km	≤ 10 KPH	Q	1	
	10km	> 10 KPH		2	
Air release SPR and GEN, UNK	2km 100km default	≤ 10 KPH	R	1	
	2km	> 10 KPH		2	
Detection after unobserved attack (CBRN 4 BIO message)	50km		S	1/2	

(b) Cases of Biological Attacks. The "Types" of biological attacks are subdivided into "Cases" based on the wind speed, delivery means (type of agent container) and the radius of the attack area. The radius of the attack area is determined by the delivery means of the attack.

(2) Procedures

(a) Step 1 - Plot the Attack Location. The attack location is determined by looking at set FOXTROT, field 1 or by performing intersection of observer locations and direction of attack (set BRAVO) from the CBRN 1 or CBRN 2 Biological Report. Once the location is determined, plot it on the map. Plot an arrow indicating grid north starting at the attack location and label it "GN". Note that for some attacks, there may be up to six set FOXTROTS in order to define a line or area attack.

(b) Step 2 - Determining Type and Case

1. Determine Type. The agent container used and where the agent is dispersed (air or surface) determines the Type. This information is found in set GOLF, field 4 and set

India, field 1. Set Golf, field 4 provides the agent container. Set India, field 1 states whether the attack was a surface or air attack.

2. Determine Case. The Case is determined by looking at the wind speed. Wind speed is determined by finding the time of attack on set DELTA. Next, determine the set (set WHISKEYM, XRAYM or YANKEEM) of the Chemical Downwind Message (CDM) that indicates weather for the time of attack. This set will be used repeatedly throughout plotting, so note which it is. Finally, get the wind speed from field 2 of the appropriate CDM set.

(c) Step 3 - Draw the Attack Area. Draw a circle around the attack location with a radius based off the Type and Case: note that the size of the attack area can be reduced or enlarged based on available information. This reduction or enlargement will be reported in set GENTEXT. Type R attack areas are defined by the two end points of the attack. If only one position is reported in set FOXTROT, there is a default line of 100KM centered on this point and orientated in the direction of the aircraft flight path. If the flight path is unknown, assume it to be perpendicular to the wind direction. The attack area for Type S is only an initial area and may increase in size as more information is gathered. Skip to add marginal information once the Type S attack area is drawn. Label the attack area "AA."

(d) Step 4 - Draw The Downwind Direction Line. Extract the downwind direction from the CDM, field 1. Plot the downwind direction line starting at the attack location. Extend the downwind direction line to the end of the hazard area determined in the next step. Extend this line upwind of the attack location twice the radius of the attack area. Label the downwind direction line "downwind direction."

(e) Step 5 - Draw The Hazard Area

1. The hazard areas for biological attacks are generated for three periods, the initial hazard area, the "first CDRs" hazard area, and the "beyond first CDRs" hazard area. The only hazard areas we will be concerned with plotting while you are here are the initial and "first CDRs" hazard areas. The initial hazard areas for a biological attack are similar in appearance of those for a chemical attack. Biological agents will generally remain hazardous through multiple changes in meteorological conditions and multiple CDM's. Because of this, the downwind travel distance or hazard area for biological attacks is

broken/calculated into three segments corresponding to the three time periods in a CDR. The downwind travel distance is defined as the distance traveled by the center of the cloud.

a. Circular Plots. For all circular plots the total hazard area will be DL, even though we are not concerned with a moving cloud with a circular plot, DL is still the edge of the hazard area. We will also discuss the initial hazard area. To calculate the initial hazard area we will have to find out H_1. The initial hazard area (H_1) is calculated using $H_1 = A + d_1$ and $d_1 = u_1 \times t_1$. To calculate the total hazard distance for a circular plot, so we can account for the "initial CDR", we will have to calculate DA. Since this is a circular plot A must be added into the equation. The total hazard area (DL) is calculated for a circular plot using $DA = d_1 + d_2 + d_3$ and $DL = (1.5 \times DA) + A$.

b. Cone Plots. For all cone plots, the total hazard area will be DL, but we must also calculate DT. For all cone plots DL, DA, and DT will be labeled. When determining the total downwind distance for a cone plot A does not have to be accounted for since the downwind distance is measured from FOXTROT vice the edge of the attack area. We will also discuss the initial hazard as well. The initial downwind hazard distance for a cone plot is d_1. d_1 is calculated using $d_1 = u_1 \times t_1$. To calculate the total downwind hazard distance (DA) to include DL and DT we must use $DA = d_1 + d_2 + d_3$, $DL = (1.5 \times DA)$ and $DT = (0.5 \times DA)$.

c. Once you have determined the downwind hazard distance, draw a line perpendicular to the downwind direction line at the downwind hazard distance (DL). Label this line DL. From the end of the upwind line, draw tangent lines 30 percent on both sides of the downwind direction line. These lines will touch the outside of the attack area and terminate at the DL line. This will form an equilateral triangle. Label the hazard area "HA". Once you have done this, a perpendicular line must be drawn to the downwind direction line for DA and DT. Erase all lines outside of the attack area that are upwind.

(f) Step 6 - Add Marginal Information. Complete a CBRN 3 Biological Report and label the plot with it. Additionally, if the plot is on an overlay, add grid register marks, map name and scale, preparer and organization, and any non-standard information or colors.

d. Recalculation. Recalculations will only be plotted when the wind speed changes from less than or equal to 10 KPH to

greater than or equal to 11 KPH or vice versa or when the wind direction changes by 30 degrees or more. Computations for the recalculation of biological hazard predictions are similar to the procedures for Type "A" chemical attacks.

e. Plotting And Reporting Actual Biological Contamination. After a CBRN attack occurs, units conduct monitoring, reconnaissance and survey to determine the extent of the contamination. Information gathered from initial detection, monitoring, reconnaissance and survey is formatted and passed as a CBRN 4 and CBRN 5 Biological Reports.

(1) CBRN 4 Biological Reports can be assumed to be associated with the same attack if they can be placed in the hazard area for a CBRN 3 Biological Report between the earliest and latest arrival times or they are within 10KM and 2 hours of another CBRN 4 Biological Report, which has been assigned to an attack.

(2) If no biological agent is detected on initial reconnaissance and survey operations, this should be reported by entering "NIL" into set INDIA.

(3) Additionally, if no biological agent is found during resurvey of a known previously contaminated area, "NIL" should be entered in set INDIA and "BIOLOGICAL FREE ATTACK" in set GENTEXT" along with the strike serial number in set ALPHA.

(4) The CBRN 5 Biological Report will outline the area of ground contamination within the predicted hazard area. CBRN 4 Biological Reports that have been assigned to the same attack may be used to produce a CBRN 5 Biological Report. Areas within the hazard prediction where airborne biological contamination has been detected may be reported in set XRAYA as part of the CBRN 3 Biological Report for the same attack.

(5) The CBRN 5 may be sent verbally via radio, but this requires lengthy transmission and requires the recipient to plot each point to redraw the plot. The preferred method of dissemination is to send it as a map overlay.

(6) In order to make the CBRN 5 Biological Report, you will need to plot set QUEBEC of the CBRN 4 Biological Reports and "connect the dots". This results in an outline of the contamination, reported on set XRAYA of the CBRN 5 Biological Report with the first and last grid point being repeated.

(7) In rare situations, the survey mission may not be completed due to a geographical obstruction or enemy activity. This results in an open plot and is indicated by not repeating the first grid point in set XRAYA.

7. Radiological Contamination Avoidance

a. General. Marines must make defensive preparations to protect themselves from nuclear weapons. With training and practice, they can learn to recognize defensive positions that will give them optimum protection against a nuclear blast and how/when they should use them. Some examples of terrain that provides good protection from a nuclear blast would be hills, mountains, depressions and other natural obstructions.

b. Pre-Attack Actions. Pre-attack actions are critical because they will increase the unit's survivability to the greatest possible extent. These actions consist of selecting the right shelters, fortifying those shelters, and protecting vital equipment to increase survivability. Whenever the tactical situation permits, units should harden defensive positions. These will vary from individual fighting positions to reinforced bunkers. These actions and good prior planning help protect against nuclear effects. One primary concern should be protection from gamma and neutron radiation. Gamma radiation protection requires thick layers of dense or heavy shielding material, such as lead, iron, or stone. On the other hand, light, hydrogen-based material (water, paraffin, oil) gives good neutron radiation protection. Below is a list of defensive positions to consider:

(1) Fighting Positions. Because earth is a good shielding material, a well-constructed fighting position gives excellent protection against initial nuclear effects. It can also reduce residual radiation (fallout). Personnel must harden their fighting positions against the blast wave as time permits, by lining the inside of fighting position, making the opening as small as possible, making it as deep as possible, covering the fighting position and keep as low as possible.

(2) Underground Shelters. Well-constructed bunkers can provide excellent protection against all effects of a nuclear detonation. It is important that as much earth as possible be placed between individuals and the blast. The more earth, the better the shielding. Damp earth or concrete protects from both forms of radiation. Cover sandbags with a small amount of earth or sod to protect them from thermal radiation.

(3) Buildings. Certain types of buildings offer excellent shelter from nuclear hazards and require minimum time and effort to adapt for use. The stronger the structure is, the better the protection against blast effects. The strongest are heavily framed buildings of steel and reinforced concrete. The worst choices are shed-type industrial buildings with light frames and long beam spans.

(4) Tents. Tents are not a preferred shelter against the effects of nuclear weapons but do provide some protection from fallout.

(5) Armored Vehicles. Armored vehicles provide good nuclear protection. In most situations, tanks offer the best vehicle protection available.

(6) Wheeled Vehicles. Avoid using wheeled vehicles as shelter. Generally, wheeled vehicles provide little or no protection from the effects of nuclear explosions. Worse still, they are particularly vulnerable to overturning.

(7) Aircraft Ground Operations. Use overhead cover for aircraft if it is available. Close doors and windows against damaging overpressure. Tie-downs can reduce damage from tumbling of the aircraft. Tape the edges and the centers of windows. This reduces the extent of fragmentation and the damage that fragments may cause to equipment found in the aircraft's cockpit.

(8) Electromagnetic Equipment. When enough warning has been given, commanders must ensure that electronic equipment, such as radios and computers, are turned off and protected. Electromagnetic Pulse (EMP) is the high-energy, short-duration pulse (similar in some respects to a bolt of lightning) generated by a nuclear detonation. It can induce a current in any electrical conductor and temporarily disrupt or overload and damage components of improperly protected or unprotected electronic equipment.

c. During Attack Actions. Nuclear attack indicators are unmistakable. The bright flash, enormous explosion, high winds and mushroom-shaped cloud clearly indicate a nuclear attack. An enemy attack would normally come without warning. Initial actions must be automatic and instinctive.

(1) If in the open when a detonation occurs, personnel should perform immediate actions. This will lessen the possibility of heat/blast injuries to the head, face and neck.

(2) Personnel inside shelters should take protective actions. A blast wave can enter the shelter with great force, and the debris it carries can cause injuries. Lying facedown on the floor of the shelter offers some protection. However, avoid the violent flow of air from doors or windows.

(3) Lying near a wall is safer than standing away from a wall. Constructing baffles or turns in shelter entrances can prevent overpressure buildups and the entry of dust and debris.

d. Post Attack Actions. Protection must not stop when the attack ends. Immediately after an attack, post attack recovery begins.

(1) Personnel must check for radioactive contamination and, then, must reduce the hazard with immediate decontamination. Decontamination techniques to reduce radioactive contamination are to brush, scrape or flush radiological contamination from surfaces.

(2) At a minimum, unit personnel should cover positions and shelters, and begin monitoring. Individual Protective Equipment (IPE) reduces the amount of contaminants that can enter the lungs and the potential for skin burns from beta and alpha particles.

(3) Treat Nuclear Casualties. Blast, thermal radiation and nuclear radiation can all cause casualties. Treat nuclear casualties the same as conventional casualties. Wounds caused by blast are similar to other combat wounds. Thermal burns are treated as any other type of burn.

(4) First aid cannot help radiation casualties; these casualties must be evacuated to medical treatment facilities.

e. CBRN Basic Wind Report (BWR). The purpose of the CBRN BWR is to transmit basic meteorological data to be used for nuclear fallout prediction. In order to construct a wind vector plot, you need the information provided by the CBRN BWR.

(1) Types Of CBRN Basic Wind Reports (BWR). A CBRN Basic Wind Report (CBRN BWR) is either a CBRN Basic Wind Message (CBRN BWM) or a CBRN Basic Wind Forecast (CBRN BWF). They contain information on the wind conditions, i.e., wind directions (from which the wind is blowing) and wind speeds in a number of layers from the surface of the earth to 30,000 meters (m) of altitude. Additionally, the zone of validity and time of measuring are stated.

(2) Validity Period. The CBRN BWM contains weather information for a six hour period. The CBRN BWF contains information for subsequent six hour periods. For example, you receive a CBRN BWM at 1100 which is effective from 1200 to 1800. In addition, you receive a CBRN BWF which covers the next six hour period from 1800 to 2400. At 1700 you should receive a new CBRN BWM. If not, then you will need to use the original CBRN BWF.

(a) Each layer has a height of 2000 meters. The message begins with information on the wind conditions within the layer from the surface to 2000 meters, then for the 2000 to 4000 meter layer, etc. A numerical identifier is used for each of the layers, beginning with 2 for the 0-2000 meter layer, 4 for the 2000-4000 meter layer, etc.

(b) The wind information for each layer is provided by six digits; three digits for wind direction (the direction from which the wind is blowing), and three digits for the wind speed. The unit of measurement will be indicated under set UNITM. Wind direction is normally given as Degrees/True North (DGT) and wind speed as Kilometres/Hour (KPH).

(c) The wind directions listed in the CBRN BWR are converted into downwind directions for each layer of height by reversing the wind direction 180 degrees. Additionally, the wind speed of each layer as listed in the CBRN BWM is represented by a vector, the length of which is extracted from a chart found in the ATP-45B.

f. Wind Vector Plots. To determine the lateral limits of fallout, the effective downwind direction, and the effective wind speed. Wind vector plots are prepared by the NBCC upon receipt of upper-air wind data. Each wind vector plot is prepared on overlay paper; oriented to grid north and drawn to a convenient map scale. Each plot consists of a series of vectors representing wind layers between the surface of the earth and the height at which upper air wind data is obtained. The vectors are plotted head to tail; and each vector represents the distance and direction where medium fallout is expected to land.

(1) Categories Of Fallout

(a) Immediate. The depositing of heavy debris within the first 30 minutes after the burst. This fallout occurs mostly in the area where physical damage is sustained. Within the Cloud Stem parameters, this fallout is underneath the 2/3 Stem height. The approximate size of this fallout is greater than 100 microns.

(b) Medium. The fallout that is deposited between half an hour and approximately twenty hours after a nuclear explosion. Medium range fallout may extend out hundreds of kilometers from ground zero when large weapons are used. Within the Cloud Stem parameters, this falls between the 2/3 stem height and Cloud Top height. The approximate size of this fallout is between 75 and 100 microns. Medium range fallout is the primary concern when conducting nuclear hazard prediction.

(c) Long Range. Long range fallout consists of very small particles that may continue to fall for months or even years. Within the Cloud Stem parameters this occurs above the Cloud Top height. The approximate size of this fallout is less than 75 microns.

(2) Procedures to Create a Wind Vector Plot

(a) Step 1 - The wind directions listed in the CBRN BWM are converted into downwind directions for each layer of height, by reversing the wind direction 180 degrees.

(b) Step 2 - The wind speed of each layer as listed in the CBRN BWM is represented by a vector, the length of which is extracted from the appropriate table (Figure A-IV to A-IX in Annex A of the ATP-45B). The different tables represent different map scales and units of measurement. Ensure you use the correct table.

(c) Step 3 - Using a piece of overlay (or other) paper, label ground zero (GZ), grid north (GN).

(d) Step 4 - From GZ draw a vector in the downwind direction of the layer 0-2000 meters. The direction is derived using the CBRN BWM and step 1. The length of the vector is derived using the CBRN BWM and step 2 (the appropriate table in Annex A of the ATP-45B). Label the downwind end of the vector with the number 2 to represent 2000 meters, and label the vector length alongside the vector.

(e) Step 5 - From the end of this vector, draw the next vector, the direction and the length is determined in the same manner as the last vector. The downwind end of this vector is labeled with the number 4 representing 4000 meters. Proceed in the same manner, using all information given in the CBRN BWM.

g. Effective Downwind Reports (EDR)

(1) Purpose. To provide information on downwind speed and downwind direction (towards the direction the wind is blowing to) for each of seven pre-selected nuclear weapon yields. These reports are produced at designated meteorological centers from computer originated forecast winds and are used in nuclear fallout hazard prediction. A CBRN Effective Downwind Report (EDR) is either a CBRN Effective Downwind Message (CBRN EDM) or a CBRN Effective Downwind Forecast (CBRN EDF). The CBRN EDM contains weather information for the current 6-hour period. The CBRN EDF contains information for subsequent 6-hour periods. The CBRN EDF may be used only if a CBRN EDM is not available.

(2) Interpret a CBRN EDR. Higher yield weapons make fallout travel farther into the atmosphere. The higher the fallout travels into the atmosphere, the farther it will travel along the ground. The longer fallout is in the air, the more of an effect wind will have on the downwind distance and direction. Since the overall effective downwind speed and effective downwind direction will vary with the yield, the CBRN EDR lists seven pre-selected yield groups and provides the downwind speeds and downwind directions for each group.

(3) Procedures to Create a CBRN EDM

(a) STEP 1 - Mark the cloud top (CT), cloud bottom (CB), and 2/3 stem (2/3) for the first yield group (ALFAM) on the current wind vector plot. In order to accurately mark the CT, CB and 2/3 stem for each yield group, you must divide the vector length into decimal (even) increments. Each vector length represent 2000 meters in altitude, therefore each vector length is divided into 20 increments (10 per each 1000m of altitude).

(b) STEP 2 - Draw a radial line from ground zero to cloud bottom.

(c) STEP 3 - Measure the length of the radial line from ground zero to cloud bottom using the appropriate map scale.

(d) STEP 4 - Enter the distance of GZ/CB radial line (STEP 3) into the appropriate column of the CBRN EDM Worksheet (labeled as (1) on the CBRN EDM worksheet) and divide this length by the time of fall (provided on worksheet) to determine the effective wind speed (sss), round the number up to the nearest kilometer per hour (KPH).

(e) STEP 5 - If the effective wind speed is 8 KPH or more, skip this step. If the effective wind speed is less than 8KPH write "Compute Zone I" across remaining space on same line. Use the "Determination of Zone I, Downwind Distance" monogram to find the distance of Zone I. In the Effective Downwind Message section of the worksheet, fill Field 1 (zzz) of the appropriate yield with the Zone I Downwind Distance determined from the monogram.

(f) STEP 6 - Draw radial lines from ground zero to cloud top and from ground zero to 2/3 stem.

(g) STEP 7 - Measure the angle of the radial line from ground zero to cloud top and enter that angle into the appropriate column of the CBRN EDM Worksheet

(h) STEP 8 - Measure the angle of the radial line from ground zero to 2/3 stem and enter that angle into the appropriate column of the CBRN EDM Worksheet.

(i) STEP 9 - Determine the Effective Downwind Direction by averaging the two radial line angles. To accomplish this, add the two radial line angles together and divide that total by two. Write the number in the appropriate (ddd) column.

(j) STEP 10 - Determine warning area angle. Subtract the angle from ground zero to 2/3 stem from the angle from ground zero to cloud top. If the result is greater than 40 degrees, round up to the nearest multiple of ten and, using the Angle Expansion Indicator Chart from Table C27 in the ATP-45B, write in the correct angle expansion indicator in the Warning Area Angle (w) column. For example, your radial lines are at 0 degrees (GZ to 2/3) and 43 degrees (GZ to CT). The difference between the two angles is 43 degrees. Round up to 50 degrees and use the Angle Expansion Indicator of 5 in Warning Area Angle column (w).

(k) STEP 11 - Repeat Steps 1-10 for each of the yield groups.

(l) STEP 12 - Transfer the information from the "Data and Calculations" portion of the worksheet to the "Effective Downwind Message" section of the worksheet. The proper format is explained on the "Effective Downwind Message" section of the worksheet.

h. Yield Estimation And Determining Ground Zero

(1) Methods For Determining Ground Zero (GZ). Any unit that is not part of the designated observer system is obligated to take cloud measurements to the best of its ability and record all observed burst data. This data is recorded in the CBRN 1 (NUC) Report format. They do not report to higher headquarters unless specifically requested. All units use this data to locate Ground Zero (GZ) and to estimate yield. At unit level, GZ is located in one of three ways: direct observation, intersection or by polar plot method.

(a) Direct Observation. For small yield weapons, direct observation may provide actual GZ location. Units do not, however, search for the GZ location. If the GZ can be observed, determine the UTM coordinates or place name. Enter this data as Set FOXTROT (actual). (Aerial observers may provide estimated or actual GZ, depending on altitude, orientation, terrain, and visibility conditions.)

(b) Intersection (Estimated). The principal method for determining GZ location is a plot of intersecting azimuths sent by designated observers. This is used when the location of GZ can not be observed. Observers will measure the azimuth from their location to the center of the stem (surface burst) or nuclear burst cloud (air burst) and report this information in Set BRAVO of the CBRN 1 NUC Report.

(c) Polar Plot (Flash to bang time). Flash-to-bang time is the time from the light of a nuclear detonation being first observed until the sound of the detonation is heard. Flash-to-bang time is not used for yield estimation, except as a last resort. This information is usually regarded as unreliable because of the stress associated with slow counting immediately after an attack. The polar plot method should only be used when there is only one CBRN 1 NUC Report available. Polar plot techniques are based on flash-to bang time and the speed of sound (350 meters per second or 0.35 kilometers per second).

(2) Preferred Sets When Determining Ground Zero

(a) Direct Observation. Set FOXTROT, if reported in a CBRN 1 NUC Report, will be the preferred set to use because it represents the observed location of the attack. If FOXTROT is not available, other information contained in set BRAVO will have to be used.

(b) Intersection (Direction of Observers to GZ). If direct observation is not available, use two or more observers' position and the reported direction toward GZ to determine the intersection points for GZ.

(c) Distance of Observer to Ground Zero (GZ). As previously stated, distance/flash-to-bang time should only be used as a last resort. Additionally, if the distance is greater than 50 km then the information should be disregarded when calculating GZ.

(3) Methods for Estimating Yield. Estimation of the yield of a nuclear detonation requires observation results as contained in the observers' report (CBRN 1 NUC). The observers must report as much of the data as possible, subsequent reports can be sent, as more details become available. Rather than require field personnel to solve complex formulas, the nuclear burst parameters are presented in monograms which can be found in the ATP-45B. The yield of a detonation may be estimated by using the data in Sets JULIET, LIMA and MIKE and the monograms found in Annex A of ATP-45B, Figures A-I, A-II and A-III. All monograms are designed to provide approximate yields.

(a) Distance from Observer to GZ or Flash-to-Bang Time and Angular Cloud Width. When distance from observer to GZ or flash-to-bang time and nuclear burst angular cloud width (measured at five minutes after burst) are known use the monogram (Figure A-I).

(b) Distance from Observer to GZ or Flash-to-Bang Time and Cloud Top and/or Cloud Bottom Angle. When distance from observer to GZ or flash-to-bang time and cloud top and/or cloud bottom angle (measured at ten minutes after burst) is known, use the monogram (Figure A-II).

(c) Height of Stabilized Cloud Top and/or Cloud Bottom. When height of cloud top and/or cloud bottom (measured at ten minutes after burst) is known, use the monogram (Figure A-III).

(4) Preferred Sets When Determining Yield

(a) Set JULIET - Flash-to-Bang Time. This Set should only be used if there is only one CBRN 1 NUC report and no other information is available.

(b) Set LIMA - Cloud Width Angle. A cloud width angle of about 15 percent is regarded as the most accurate to

estimate the weapon yield. If the cloud width angle is measured to be less than 4 percent or more than 40 percent then the measurement should be disregarded.

(c) Set MIKE - Angle to the Cloud Bottom/Top. Angle to the Cloud Bottom/Top can be used, however, if the angle to the cloud bottom/top is measured to be less than 10 percent or more than 45 percent then the measurement should be disregarded.

i. Simplified Fallout Prediction. The purpose of the simplified fallout prediction is to provide subordinate commands with a direct and immediately means to estimate the fallout hazard with the least possible delay.

(1) ABC-M5A2 Radiological Fallout Area Predictor. The ABC-M5A2 Radiological Fallout Area Predictor is a transparent sheet of plastic that contains information for outlining potential fallout hazard zones.

(a) The ABC-M5A2 Fallout Predictor is composed of two simplified predictors and a monogram for determining the downwind distance of Zone I.

(b) One simplified predictor is drawn to a scale of 1:50,000; the other predictor is drawn to a scale of 1:250,000. Each predictor contains pre-selected yield groups: 1:50,000 contains yield groups A, B, C, D, and E; and 1:250,000 contains yield groups A, B, C, D, E, and F. Each simplified fallout predictor consist of four major parts.

(c) An azimuth dial, also called an inverted compass rose, whose center represents ground zero (GZ).

(d) Two radial lines, 40 degrees apart, extend from the dial center and are marked in kilometers.

(e) Semicircles (A, B, C, D, E), representing stabilized nuclear cloud radii for pre-selected yield groups (2, 5, 30, 100, and 300 KT), are also centered on ground zero. An additional semicircle (F), for a 1 MT yield group, is provided for the 1:250,000 kilometer scale.

(f) The "Zone I Downwind Distance for Surface Burst" monogram is located on the right side of the area predictor.

(2) Cases Associated With Simplified Fallout Prediction There are three different cases for simplified fallout

prediction: normal; effective downwind speed less than 8 KPH (special case); and angle expansion (special case).

(a) Normal Case. The normal case is the standard (most common) case. It is used when wind speeds are greater than 8 KPH and there is no angle expansion. The normal case is used when Fields 2 and 3 of the CBRN EDM for the determined yield group contains three digits each, and Fields 1 and 4 contain dashes.

(b) Effective Downwind Speed Less Than 8 KPH (Special Case). When the effective downwind speed is less than 8 KPH for a given yield group, the applicable Set of the CBRN EDM will contain only three digits, giving the downwind distance of Zone I. These three digits are listed in Field 1. Fields 2, 3 and 4 contain dashes. An effective downwind direction is not provided, since in this case the downwind distance of Zone I describe Zone I as a circle around GZ.

(c) Angle Expansion (Special Case). The simplified procedure does not normally provide for a warning angle greater than 40 degrees. In instances where the downwind speed is greater than 8 KPH and an angle greater than 40 degrees is required, the warning angle is listed on the CBRN EDM. For the angle expansion case, Fields 2, 3 and 4 of the CBRN EDM is used. Fields 2 and 3 will each contain three digits (downwind direction and downwind speed) and Field 4 will contain one digit representing the warning angle.

(3) Predicted Fallout Zones. The predicted fallout zones are computed by using the yield of the weapons, the effective downwind speed and the Zone I Downwind Distance for Surface Bursts monogram (found on the M5A2 fallout predictor). Zone I and II are drawn on the M5A2 Radiological Fallout Area Predictor as solid arcs from one radial line to the other radial line. Each zone is labels between the radial lines with "Zone I" and "Zone II", respectively.

(a) Zone I. Zone I is of immediate operational concern. Within this Zone, exposed, unprotected personnel may receive doses of 150 cGy or greater in less than 4 hours after actual arrival of fallout. Major disruptions to unit operations and casualties may occur in some parts of this zone.

(b) Zone II. Zone II is a secondary hazard. Within this Zone, the total dose received by exposed, unprotected personnel is expected to be less than 150 cGy within four hours after the actual arrival of fallout. However, if personnel

remain in this Zone, they may receive a total dose of 50 cGy or greater within the first 24 hours after arrival of fallout.

(c) Outside Zone 1 and Zone II. Outside the two predicted Zones, exposed, unprotected personnel may receive a total dose that is less than 50 cGy in the first 24 hours after the actual arrival of fallout. The total dose for an infinite stay time should be less than 150 cGy.

(4) Time of Arrival Arcs. The Time of Arrival Arcs are dotted arcs on the simplified fallout plot that represent where the front of the fallout cloud is expected to be at a given time. Generally these arcs are plotted in whole hours after the time of detonation. The letter "H" represents the time of detonation and a number will represent the time after detonation. For example, H+1 represents one hour after detonation and H+2 represents two hours after detonation. Time of Arrival Arcs will be drawn and labelled to the end of Zone II, but not past Zone II. If the arc for Zone I or II and a Time of Arrival Arc are at the same distance, both will be labelled.

(a) Formula for Time of Arrival Arcs (H+ lines). Use the effective downwind speed times the number of hours after detonation to determine time of arrival arcs.

(b) Determine When Fallout Is Expected To Reach Unit. Take the distance your unit is from GZ and divide that number by the effective downwind speed to determine when fallout is expected to reach your unit. For example: if your unit is 30 KM from GZ and the effective downwind speed is 10 KPH, you divide 30 KM by 10 KPH which equal 3 Hours. Another example: If your unit is 15 KM from GZ and the effective downwind speed is 10 KPH, you divide 15 KM by 10 KPH which equal 1.5 Hours.

j. Normal Case Procedures

(1) Step 1 - Determine Yield Group. Set NOVEMBER on the CBRN 2 NUC Report will give the estimated or actual yield. The yield obtained from the CBRN 2 NUC Report is rounded up to the nearest yield group. This rounding is for determining which CBRN EDM Set to use only, not to round the yield of the weapon itself. For an example, CHARLIEM is used for up to 30 KT yields and DELTAM is used for up to 100 KT yields. If a yield is 35 KT, it is too large of a yield for CHARLIEM, so the CBRN EDM Set DELTAM (which will make the prediction safe-sided for your prediction).

(2) Step 2 - Draw and Label Grid North Line. Use the Effective Downwind Direction from Field 2 of the appropriate CBRN EDM Set based on the yield reported. Draw a line from GZ, through the direction in degrees on the azimuth dial for the scale you are plotting. Label that line with "GN", for Grid North.

(3) Step 3 - Determine Distance of Zone I and Zone II and Plot the Appropriate Lines. Obtain the yield of the weapon from Set NOVEMBER of the CBRN 2 NUC Report and the Effective Downwind Speed from Field 3 of the CBRN EDM based on the yield reported. On the "Zone I Downwind Distance for Surface Burst" monogram, align a hairline or straight edge from the yield on the right hand scale to the wind speed scale on the left hand side. At the intersection of the hairline with the center scale, read the value of the downwind distance of Zone I. Multiply the Zone I distance by 2, to obtain the downwind distance of Zone II (distance from GZ to outer limit of Zone II). To draw the arcs for Zone I and Zone II, use a compass set to the required number of kilometres. Solid arcs are drawn from radial line to radial line to plot these. Zone I and II are labelled between the radial lines with "ZONE I" and "ZONE II" and the distance is added if the line cannot be drawn on the plot (example: Zone II 45 KM).

(4) Step 4 - Draw Tangent Lines from Yield Group Semi-Circle to Zone I. On the simplified fallout predictor, draw the contour extension around GZ on the appropriate yield semi-circle and then draw a line from the appropriate yield semi-circle to the point where the Zone I arc meets the radial line. Use this procedure for the left and the right side of the predictor.

(5) Step 5 - Calculate and Draw Time of Arrival Arcs. Calculate the distance of the Time of Arrival Arcs for whole hours following the detonation. The Time of Arrival Arcs extends up to, but do not exceed, the Zone II distance. The Time of Arrival Arcs is a dotted arc, drawn by a compass, which extends from one radial line to the other. If the Time of Arrival Arc is shorter than the Zone I distance, the dotted arc extends to the tangent line. Label each Time of Arrival Arc with the correct number of hours (H+1, H+2, H+3, etc) outside of the radial lines or tangent lines.

(6) Step 6 - Label Template. Label the template to indicate the scale used, the estimated yield in KT, the date and time of attack, the location of the attack and the CBRN EDM used for the prediction.

(7) Step 7 - Use Template. Place GZ of the template over the GZ on the map, and align GN of the template with the map GN.

k. Angle Expansion (Special Case) Procedures

(1) Step 1 - Determine Yield Group. Set NOVEMBER on the CBRN 2 NUC Report will give the estimated or actual yield. The yield obtained from the CBRN 2 NUC Report is rounded up to the nearest yield group. This rounding is for determining which CBRN EDM Set to use only, not to round the yield of the weapon itself. For an example, CHARLIEM is used for up to 30 KT yields and DELTAM is used for up to 100 KT yields. If a yield is 35 KT, it is too large of a yield for CHARLIEM, so the CBRN EDM Set DELTAM (which will make the prediction safe-sided for your prediction).

(2) Step 2 - Draw and Label Grid North Line. Use the Effective Downwind Direction from Field 2 of the appropriate CBRN EDM Set based on the yield reported. Draw a line from GZ, through the direction in degrees on the azimuth dial for the scale you are plotting. Label that line with "GN", for Grid North.

(3) Step 3 - Plot Expansion Angle. Use the Angle Expansion Indicator, Field 4, of the CBRN EDM Set for the determined yield. For example, if Field 4 contains a 6, this means the angle between the two radial lines is 60 degrees instead of the standard 40 degrees. To plot this, you will draw radial lines 30 degrees on each side of the reference line.

(4) Step 4 - Determine Distance of Zone I and Zone II and Plot the Appropriate Lines. Obtain the yield of the weapon from Set NOVEMBER of the CBRN 2 NUC Report and the Effective Downwind Speed from Field 3 of the CBRN EDM based on the yield reported. On the "Zone I Downwind Distance for Surface Burst" monogram, align a hairline or straight edge from the yield on the right hand scale to the wind speed scale on the left hand side. (2) At the intersection of the hairline with the center scale, read the value of the downwind distance of Zone I. Multiply the Zone I distance by 2, to obtain the downwind distance of Zone II (distance from GZ to outer limit of Zone II). To draw the arcs for Zone I and Zone II, use a compass set to the required number of kilometres. Solid arcs are drawn from radial line to radial line to plot these. Zone I and II are labelled between the radial lines with "ZONE I" and "ZONE II" and the distance is added if the line cannot be drawn on the plot (example: Zone II 45 KM).

(5) Step 5 - Draw Tangent Lines from Yield Group Semi-Circle to Zone I. On the simplified fallout predictor, draw the contour extension around GZ on the appropriate yield semi-circle and then draw a line from the appropriate yield semi-circle to the point where the Zone I arc meets the radial line. Use this procedure for the left and the right side of the predictor.

(6) Step 6 - Calculate and Draw Time of Arrival Arcs. Calculate the distance of the Time of Arrival Arcs for whole hours following the detonation. The Time of Arrival Arcs extend up to, but do not exceed, the Zone II distance. The Time of Arrival Arcs is a dotted arc, drawn by a compass, which extends from one radial line to the other. If the Time of Arrival Arc is shorter than the Zone I distance, the dotted arc extends to the tangent line. Label each Time of Arrival Arc with the correct number of hours (H+1, H+2, H+3, etc) outside of the radial lines or tangent lines.

(7) Step 7 - Label Template. Label the template to indicate the scale used, the estimated yield in KT, the date and time of attack, the location of the attack and the CBRN EDM used for the prediction.

(8) Step 8 - Use Template. Place GZ of the template over the GZ on the map, and align GN of the template with the map GN.

1. Effective Downwind Speed <8 Kph (Special Case) Procedures. There are only four steps for completing an effective downwind speed less than 8 KPH (special case) simplified fallout prediction.

(1) Step 1 - Determine Yield Group. Set NOVEMBER on the CBRN 2 NUC Report will give the estimated or actual yield. The yield obtained from the CBRN 2 NUC Report is rounded up to the nearest yield group. This rounding is for determining which CBRN EDM Set to use only, not to round the yield of the weapon itself. For an example, CHARLIEM is used for up to 30 KT yields and DELTAM is used for up to 100 KT yields. If a yield is 35 KT, it is too large of a yield for CHARLIEM, so the CBRN EDM Set DELTAM (which will make the prediction safe-sided for your prediction).

(2) Step 2 - Determine Distances of Zone I and Zone II, and Plot the Appropriate Lines. In Field 1 of the CBRN EDM for the appropriate yield set, the three digit number represents is radius of Zone I. Multiply the Zone I distance by 2, to obtain the radius of Zone II (distance from GZ to outer limit of Zone

II). Solid circles are drawn at these two distances. Zone I and II are labelled inside the appropriate circle with "ZONE I" and "ZONE II" and a distance is added if the line cannot be drawn on the plot.

(3) Step 3 - Label Template. Label the template to indicate the scale used, the estimated yield in KT, the date and time of attack, the location of the attack, and the CBRN EDM used for the prediction.

(4) Step 4 - Use Template. Place GZ of the template over the GZ on the map, and align GN of the template with the map GN.

8. Joint Warning and Reporting (JWARN)

a. Characteristics. JWARN enables an immediate and integrated response to threats of contamination through rapid warning and dissemination of Nuclear, Biological, and Chemical (CBRN) information. The JWARN program is comprised of three programs, Hazard Prediction Analysis Code (HPAC), Joint Effects Model (JEM) Display, and CBRN Analysis.

(1) Hazard Prediction Analysis Capability (HPAC). The Hazard Prediction and Assessment Capability is an atmospheric dispersion modeling tool developed for military operations. This tool was developed to provide a quick response to threats from weapons of mass destruction. HPAC uses weather data and incident location to generate a plot in a variety of ways (i.e. concentration, dose, etc.).

(2) Joint Effects Model (JEM) Display. The Joint Effects Model (JEM) provides a single, validated capability to predict and track Nuclear, Biological, Chemical (CBRN) and Toxic Industrial Chemical/Material (TIC/TIM) events and effects.

(3) CBRN Analysis. CBRN Analysis is a Nuclear, Biological and Chemical (CBRN) Risk Management information system enhancing coordination, decision-making and operational tasking. Manually collect and consolidate sensor information. Report CBRN and Toxic Industrial Materials (TIM) hazard detection. Generate hazard area plot ATP-45B (Allied Technical Protocol), HPAC, JEM, and CBRN Analysis. Display hazard warning area on Common Operational Picture. Generate warning and de-warning (CBRN) messages to affected forces.

b. Setting up the program. The Setup window has been designed to help you setup the program. The setup window can be

activated by selecting the File menu, Properties, and then Setup. The "Setup" window will appear, and the General tab will be automatically highlighted. This information is used to switch between Operational and Exercise mode.

c. Setup Date Time Group (DTG). You can change the CBRN-Analysis system clock by selecting the File menu, Properties, Set DTG or by double clicking on the DTG shown in the lower right corner of the CBRN-Analysis screen, and a "System Clock" window will be displayed.

d. CBRN-Analysis Screen Layout. The CBRN-ANALYSIS screen layout is very similar to most Windows based programs. There is a Name bar, Menu bar, Button/Icon bar, Information bar, and a Tool bar. In addition to the Windows standardized bars, there is a Map Display, a System Clock and an Incoming/Outgoing Communications Display box.

(1) Name Bar. The "Name Bar" displays the name of the program and the currently opened scenario (when the map is maximized).

(2) Menu Bar. The "Menu Bar" displays all program functions relevant to the primary screen display. Available menus include: File, Edit, Map, View, Wizard, Calculation, Documentation, Window, and Help.

(3) Button/Icon Bar. The Button bar controls the major functions of the program: CBRN reports, Units, Communications, New Chemical Attack, Calculate, Units at Risk, Mapping, Toxic Industrial Materials, Medical Guide, and Help.

(4) Information Bar. The Information bar displays the mode of Exercise or Operational, inbox, outbox, & calculation.

(5) Toolbar. Toolbar controls displayed information. This will be covered later in the Mapping lesson and again in the CBRN reports lesson. These tools are similar to those found in basic presentation programs.

e. Main Display Area. This is the area that all windows, such as Map Display, CBRN Reports, Edit Scenario, etc, are displayed.

f. System Clock. The CBRN-ANALYSIS System Clock is located in the lower right corner of the CBRN-ANALYSIS screen. Double click on the System Clock and the current setting of the clock is shown. You can type in a new DTG to make a change.

g. Map Introduction. The program can use Raster and Vector maps at the same time. Raster maps can also be overlaid onto Vector maps. The Maps and Chart function may be operated in two ways. You may either use the map menu or the icons on the toolbar. The functions are exactly the same. Some functions can also be performed using the keyboard.

(1) Map Menu. The program will have a selection of sample maps in the Maps subdirectory when it is installed. When additional maps are imported, they are placed in the directory that is indicated and have to be opened from there. More than one map can be open at the same time and the same map can be opened more than once to allow the operator to use different scales or details.

(2) Map Toolbar. The Map Toolbar provides a shortcut to the options provided by the Map Menu. There is a Print Map button, which allows the user to print the current map to the default printer defined in the operating system.

(3) Display map information. Clicking on the Display map information icon will display coordinates, the Met area and map scale.

(4) Ruler. The ruler can be used to measure a distance or route on the map.

(5) Zoom in. The program can zoom in and out on Raster and Vector maps by pressing the Plus key on the numeric keyboard to zoom in.

(6) Zoom Out. This will move back one-step.

(7) Pan. The Pan enables the map to be scrolled left, right, up or down by selecting the pan icon and holding down the left hand mouse key, then move the map to the new position.

(8) Select Pointer. The Select Pointer can be used to show the co-ordinate of the cursor position and Met area; to select any drawing item on the map; and either to change the properties of that item, or to delete it.

h. Drawing Tools. There is drawing tools included in the CBRN-ANALYSIS program. These tools allow the user to customize the map by adding further information, such as boundaries or text. The drawing tools are located on the toolbar and include Print, Copy, Line, Polyline, Polygon, Ellipse, Rectangle, Text, and Delete (Figure 4-4).

(1) Printer. Clicking on the printer icon will print the displayed map (Vector and Raster maps).

(2) Copy. The Copy option allows the user to copy the entire Map Window to the Windows clipboard. From there the user can insert the screen capture into Word, PowerPoint, etc. This option is useful when presenting a brief.

(3) Line. The Line option allows the user to draw a line on the map.

(4) Polyline. The Polyline option allows the user to draw a continuous line with many connected segments.

(5) Polygon. The Polygon option allows the user to draw a closed polygon. Use the same method for a polyline, ending at the same point as the drawing was started. If the user does not finish (double-click) at the same point that the polygon was started, the program will automatically add a line segment from the last click to the staring point. The Polygon option continues to be active until the user clicks on another drawing tool. To change the appearance of the polygon, use the Select User Drawing Pointer option.

(6) Ellipse. The Ellipse option allows the user to draw an ellipse on the map. This option inserts an ellipse into a square drawn by the user. To draw an ellipse click the Ellipse button then drag diagonally away from the first click. The Ellipse option continues to be active until the user clicks on another drawing tool. To change the properties of the ellipse, use the Select User Drawing Pointer option.

(7) Rectangle. Same as Ellipse, but the finished area will be a rectangle.

(8) Text. The Text option allows the user to add text to the map.

(9) Delete. Click onto any item to be deleted and then click the Delete Selected user Drawings icon.

i. Mapping Mouse Functions. Right-clicking the mouse on the map will display a menu. The first two items on the menu are map functions: move this point to center & copy this point to clipboard.

(1) Move This Point to Center. This function allows the user to center any position on the screen.

(2) Copy This Point to Clipboard. This option allows the user to copy a co-ordinate.

j. Importing Maps. CBRN-Analysis contains map-importing support for ASRP, ADRG, CADRG, VPF or CRP. Once imported, Vector and Raster maps can be placed on top of one another to provide greater detail.

k. Creating a Unit Database. Databases are used for many purposes by CBRN-ANALYSIS. The unit database is used to calculate a Warn view with instruction of which units are in danger of encountering CBRN hazards and when.

(1) Creating a Unit. Click on the Units icon located on the Button/Icon bar. The Unit Window will now be displayed. To insert a new unit database, click on the Create icon located on the tool bar. The cursor will automatically tab to the required entry fields.

(2) General Tab. Type in the unit name in the Name field, type in unit position in the Position field, and select Warn Unit option if the unit is to be shown on the list of Units at Risk.

(3) Symbol Tab. The symbol tab is used to define the unit's symbol that will appear on the map.

l. Advanced Tab

(1) Destination. If a destination in the current destination database corresponds to this unit, you can select it here. If you enter a destination here, you can press the transmit button directly from the list of Units at Risk, provided that unit is at risk. This will transmit a CBRN 3 to the destination indicated here. Transmission from Units at Risk is not implemented in CBRN-ANALYSIS 4.0SP2.

(2) Area of Operation. The area of operation for the unit can be defined as a circle or as an outline of coordinates. The information is only used for display on maps; it is not used for calculating the list of Units at risk.

(3) None. There is no area of Operation defined.

m. Communication Setup - Destination. The Destinations is used for working with information which the user needs to transmit reports.

(1) Destination window. Click the unit icon, then highlight the desired unit, or click on create new unit icon to create a new unit. The unit window will appear, then click the Advanced tab, and click new destination.

(a) Identifier. Type in the destination unit's name.

(b) Description. Type in any other information regarding the unit.

(c) Format. The program is able to transmit in more than one message format. From the drop-down list, select the appropriate format.

(2) Communication Media. The CBRN Analysis program can send information to another unit or individual via various communications media. There are six ways to send information, via modem, LAN, cable, fax, email or using an address book.

n. Entering Meteorological (MET) Reports. The MET information needed is the same Meteorological messages that are transmitted every 6 hours: BWR or EDR messages for the NUC situation. EDR messages are normally only used for manual plotting procedures but if a BWR is not available CBRN-ANALYSIS can use EDR for fallout prediction. CDR messages are used for a chemical and biological situation if the BIO hazard prediction module is present. If a situation should occur where a CBRN 2 report has no valid MET information a warning is given. Another warning is given if a CBRN report is used for a calculation where MET is required but is missing, this could be when drawing a template, performing a Units at Risk calculation, or calculating an estimate of a hazard. You should check that the MET periods created in Setup for BIO/CHEM cover the attack period.

APPENDIX D

TACTICS, TECHNIQUES, AND PROCEDURES FOR CBRN ASPECTS OF CONSEQUENCE MANAGEMENT

This appendix provides a reference for mitigating the CBRN aspects of CM and contains tactics, techniques, and procedures for planning and executing CBRN operations in MOOTW. This appendix addresses concepts, principles, and fundamentals, to include planning, operational considerations, and training and support functions. It serves as the foundation for refining existing training packages, mission training, and unit exercises. The TTPs of this appendix may be modified, adjusted, or adapted by the user as necessary.

1. Preparation

a. Background

(1) During the preparation phase, the 2d Marine Aircraft Wing (2d MAW) CBRN Support Team conducts systematic vulnerability reduction measures. The accomplishment of these measures supports unit readiness to undertake assigned missions.

(2) The 2d MAW CBRN Support Team undertakes concurrent actions to maintain its readiness as part of a continuous cyclic process. The concurrent unit vulnerability reduction measures include assessment, planning, training and education, and exercises.

(3) The 2d MAW CBRN Support Team also undertakes measures to integrate its preparation activities with other supporting and supported assets. Representative action areas include coordination, logistics, and HSS.

(4) Exercises serve as a gauge for the commander to reassess capabilities and identify remaining vulnerabilities that impact mission execution. Exercises provide an opportunity to test plans and make refinements as necessary.

b. Vulnerability Reduction Measures

(1) CBRN CM Unit Logistics

(a) The 2d MAW CBRN Support Team does not possess an organic logistic capability to support the following basic functions, sustain the unit's ability to conduct operations, maintain logistic status reports, coordinate with supporting

logistic providers, and procure and store unit equipment according to command guidance.

(b) The 2d MAW CBRN Support Team deploys with adequate stocks to sustain operations for a limited duration. To sustain extended operations, a deployed team receives additional logistical and personnel augmentation.

(c) The logistic posture for the 2d MAW CBRN Support Team includes military standard equipment (MOPP gear) and DOD-approved commercial off-the-shelf (COTS) equipment (civilian protective ensembles). During the preparation phase, the 2d MAW CBRN Support Team identifies the supporting logistic requirements to sustain operations.

(d) The military standard issue of CBRN detection, protection, and decontamination equipment provides units with the ability to detect and protect against a number of CBRN agents. However, standard issue items such as the M40A1 mask are technically noncompliant with OSHA and National Institute for Occupational Safety and Health (NIOSH) standards and may not be used during nonmilitary operations such as DCM.

(e) The MAGTF CM sets provide units with additional capabilities, such as the ability to detect many substances and chemicals that are immediately dangerous to life or health. The 2d MAW CBRN Support Team is required to maintain PPE sets that provide greater protection than those commonly provided for military protection against chemical warfare (CW) and biological warfare (BW). In a DCM environment, DOD forces tasked to support civil authorities in downrange operations shall meet the training, equipment, and proficiency standards for such operations as determined by federal law and policy. Standards may be found in 29 CFR 1910.120 and applicable guidance for the interagency board and other federally recognized policy boards or documents. Additionally, equipment that is capable of detecting a greater range of substances is required to identify TIM and organic substances in addition to CW and BW agents.

(f) Other logistic considerations include personnel support measures that are needed while deployed to an incident site. Considerations include billeting, rations, transportation support, and security.

(2) <u>2d MAW CBRN Support Team Personnel</u>

(a) The 2d MAW CBRN Support Team leaders identify the duties and responsibilities for each position in their

section. Checklists are prepared to identify the individual and collective tasks that require completion.

(b) During this preparation phase, leaders are aware of the requirements that each section member must fulfill (such as periodic medical examinations and scheduled certification training).

c. Coordinating, Monitoring, and Reporting Requirements

(1) Coordinating

(a) The 2d MAW CBRN Support Team Coordination. One major objective of CBRN CM preparedness efforts is to ensure mission integration and interoperability during responses to emergent crises across functional and organizational lines and between public and private organizations. The 2d MAW CBRN Support Team must make certain that its CBRN CM response plan has been coordinated with other applicable response elements; with the response plans of local, state, and federal organizations; and with the plans of any JTFs, coalition forces, or HN.

(b) Focus of Coordination Efforts. Coordination is conducted within and between the 2d MAW CBRN Support Team and surrounding area resources (civil or HN). Good coordination efforts help to ensure that proper emphasis has been placed on planning (identifying threats, determining vulnerabilities, and identifying required resources), training and exercises, personnel qualification and certification, equipment certification, and other preparedness requirements. Coordination efforts focus on identifying the range of deliberate and critical planning tasks and activities necessary to build, sustain, and improve the operational capability of the 2d MAW CBRN Support Team's plans to prevent, protect against, respond to, and recover from any CBRN incident. Coordination allows the 2d MAW CBRN Support Team to refine its plan by identifying assets and resources available, refining how a unit will task-organize with other responders, identifying communications methods and procedures, maintaining a reach back database, developing common operating procedures and details and an understanding of each unit's role in the plan. The team can request, collect, and assess all available local, state, and federal plans and directives, to include mutual aid agreements (MAAs), that involve CBRN preparedness and response. This information can be used to help ensure that the team's needs are met and that interagency unity of effort is achieved, developing and maintaining a COP of civil and military forces conducting CM

operations. This includes AO information, climate, infrastructure, and site assessments, maintaining a responder/EOC/Emergency Management Agency database, maintaining duty rosters and call-up procedures, and preparing modeling information for known sensitive sites within its AO.

(2) Monitoring. Any analysis of a the 2d MAW CBRN Support Team's status should include a step-by step review of command standing operating procedures (SOPs) and associated formal checklists. These emergency response checklists should be analyzed to ensure that maximum coordination between responding elements is addressed.

(3) Status Reporting. The 2d MAW CBRN Support Team periodically reports its operational status. Status reporting helps to ensure that applicable incident plans are updated, executable, and relevant.

d. Health Service Support

(1) DOD components implement a comprehensive deployment health program during CBRN CM, which helps them effectively anticipate, recognize, evaluate, control, and mitigate health threats encountered during deployments. During the preparation phase, the 2d MAW CBRN Support Team must:

(a) Ensure that team members maintain a high state of pre-deployment health and medical readiness. This includes ensuring that team members complete or confirm a Pre-Deployment Health Assessment. Ensure that team members follow the requirements of a respiratory protection program according to guidance from 29 CFR 1910-134 and DODI 6055.1.

(b) Ensure that team members are briefed on deployment health threats and are trained and equipped with necessary countermeasures.

(c) Ensure that prescription products (such as nerve agent antidote kits and pyridostigmine tablets) are prescribed, as required.

(d) Ensure that team members' immunization, medical, and dental records are updated.

(e) Ensure that team members have completed an occupational health baseline examination prior to responding to an incident.

(f) Develop and implement health risk communication plans during all phases of deployment to communicate health threats and countermeasures to all deployed team members.

e. Evaluate Capabilities and Identify Remaining Vulnerabilities

(1) The 2d MAW CBRN Support Team's CBRN defense vulnerability assessment must be a continuous process. Following the implementation of a CM plan, the 2d MAW CBRN Support Team starts scheduling periodic follow-ups to reassess CBRN CM preparation. These periodic follow-ups help ensure that necessary resources remain properly deployed, prepared, and synchronized to successfully execute CBRN CM tasks. However, the timing of these reassessments should not be based strictly on time (calendar year, etc.). Other factors, such as changes in the threat or changes in unit or resource availability, should also be considered. Pre-incident checks re-verify that the 2d MAW CBRN Support Team has supplies and equipment such as the required PPE.

(2) The measures that comprise protection actions also provide VA feedback. This feedback improves the overall response plan. For example, team members may take notice of the shortcomings of HN protective equipment (protective ponchos issued by some nations may be effective in protecting against a direct spray hazard would provide little protection against regional mustard contamination).

f. National Special Security Events

(1) In preparation for CM operations, DOD response assets may be tasked to support NSSE. This unique CM operation requires DOD assets to prepare for possible CM scenarios, deploy, and be prepared to respond, prior to any incident occurring. Preparations for NSSE operations are based on the event supported and the mission the unit is assigned. In many instances, a unit can even be pre-positioned near the site where the CBRN CM operation could occur.

(2) An important aspect of preparation for CM at an NSSE is the ability of the unit to directly interface with its counterparts to fully determine its role in the planned response. Unlike other pre-incident preparation where the exact role of the unit cannot be known until the scope and magnitude of the CBRN incident is determined, the NSSE involves the pre-execution of a response plan to such a degree that many of the responding assets are pre-positioned and prepared to execute its part on very short notice.

2. Response

a. Background

(1) CBRN incidents may occur without warning and at a time of day and location that will produce chaos, confusion, and casualties. In a no-notice incident, local emergency services and possibly state and federal agency personnel will be the responders. Notification from local responders to the 2d MAW CBRN Support Team may trigger an immediate response to save lives, prevent human suffering, or mitigate great property damage. Notification of an approved RFA triggers the domestic emergency response provided by DOD. 2d MAW CBRN Support Team assistance for FCM operations requires approval from the DOS.

(a) The major functions performed by the 2d MAW CBRN Support Team are safeguarding lives, preserving health and safety, securing and eliminating the hazard, protecting property, preventing further damage to the environment, and maintaining public confidence in the government's ability to respond to a CBRN incident. Responding forces initiate actions to restore conditions at and in the vicinity of the incident site. Transition and redeployment plans are developed once the role of the 2d MAW CBRN Support Team is established and follow-on local, state, and federal assets have been determined.

(b) Although the 2d MAW CBRN Support Team's primary CM focus is minimizing the effects of CBRN on military operations, it must also be prepared to support the response to a CBRN incident in the homeland and support allies and partners. To defend against and recover from CBRN use, the 2d MAW CBRN Support Team must execute passive-defensive measures and be prepared to conduct CBRN CM activities. If prevention efforts fail and a CBRN attack cannot be prevented, the 2d MAW CBRN Support Team must be prepared to respond to RFAs; initiate or support ongoing CM efforts; and actively support local, state, and federal or allied and partner authorities.

(2) The sequence and time of a response to a CBRN incident depends on factors such as the operational environment (DCM or FCM), the magnitude of the CBRN incident, and the resources needed to respond.

b. Incident Response Overview

(1) First Response

(a) First response is conducted by local and nongovernmental police, fire, and emergency personnel. In its most basic form, first responders are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. In its more advanced form, first responders are personnel who are trained to operational or technical levels.

(b) Personnel who provide first response support include local and nongovernmental police, fire, and emergency personnel who, in the early stages of an incident, are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers.

(2) Emergency Response

(a) Emergency response occurs when responders from outside the immediate release area deploy to an occurrence which resulted in, or is likely to result in, an uncontrolled release of a hazardous substance. Responses to releases of hazardous substances where there is no potential safety or health hazard are not considered to be emergency responses.

(b) Representative functions of emergency response include firefighting, law enforcement, security, medical support, emergency management, EOD, and mortuary affairs.

c. Response Environment

(1) Department of Defense Role. The 2d MAW CBRN Support Team responding in a domestic or foreign CM response environment act in a supporting role and will not take control from the IC. However, in a DOD-led response environment, the U.S. military will assume the lead role.

(2) Command and Control

(a) Notification. Notification of a CBRN CM support mission will be processed through normal military channels, and notification of the units tasked to provide support will commence using local SOPs. Generally, a unit may be notified when the installation EOC and command receives an approved RFA

and provides a warning order (WARNORD) to the units tasked to provide the support.

(b) Warning and Reporting. CBRN warning and reporting procedures are still applicable to the 2d MAW CBRN Support Team while supporting CBRN CM operations. These common reporting procedures provide a means of communicating hazards for the 2d MAW CBRN Support Team. Other reporting requirements may be implemented by the IC during the response operation and should be coordinated through the military liaison to ensure that the 2d MAW CBRN Support Team complies.

(c) Liaison. Liaison provides information continuity between the 2d MAW CBRN Support Team and the IC to ensure effective two-way communication. This includes information from the IC for local, state, and federal plans and directives, to include other representative information such as established MAAs.

(d) Immediate Response Authority

1. Immediate response is defined as any form of immediate action taken to assist civil authorities or the public to save lives, prevent human suffering, or mitigate great property damage under imminently serious conditions when time does not permit approval from a higher authority.

2. DOD policy for immediate action to save lives, prevent human suffering, or mitigate great property damage authorizes military commanders to respond to civil authorities' requests for emergency military support. The policy is based on the law commonly known as the Stafford Act, and it gives the commander authority to:

a. Support an incident response without formal activation or direction when immediate, serious conditions exist and time does not permit prior approval from higher headquarters.

b. Save lives, prevent human suffering, or mitigate major property damage under immediate, serious conditions where there has not been a Presidential declaration of a catastrophe, a major disaster, or an emergency.

3. While the policy allows for an immediate response, it requires commanders to advise the DOD Executive Secretary, through command channels and by the most expeditious means available, and to seek approval or additional

authorizations as needed. Although an immediate response may be provided on a reimbursable basis, it will not be delayed or denied because of the inability or unwillingness of the requester to make a commitment to reimburse DOD. Commanders must exercise extreme caution if electing to deploy under the auspices of an immediate response. Immediate response authority is not a basis for using established MAAs. While this policy allows for great flexibility, commanders must ensure that immediate-response deployment authority is used as a last resort.

(e) Tiered Response. The 2d MAW CBRN Support Team might be employed as part of a flexible tiered response, and the 2d MAW CBRN Support Team will be tailored to support a Tier I, II, or III response. The scope and magnitude of the 2d MAW CBRN Support Team response will focus on providing capabilities that meet the response requirements that are beyond the resources of civil authorities.

1. Tier I is normally implemented for small-scale, localized CBRNE incidents that meet Secretary of Defense Criteria. In a Tier I situation, the DCO can effectively exercise command over the small number of DOD forces required and still execute his functional responsibilities with respect to processing mission assignments.

2. Tier II is the normal response posture for CBRNE incidents having met the Secretary of Defense criteria and the need to establish a JTF to respond to the incident. Specialized units, detachments, teams, supplies, and equipment will likely be required from DOD in Tier II.

3. Tier III involves extremely complex CBRNE scenarios impacting a wide geographic area or a large population—or threatening national security.

d. Joint Operational Phases for Consequence Management

(1) CBRN response is an organized response effort employed to mitigate hazards for an emergency resulting from a deliberate or unintentional CBRN release. The Joint Director of Military Support (JDOMS), located within the operations directorate of a joint staff (J-3), produces military orders that pertain to domestic emergencies. The J-3 forwards the orders to the Secretary of Defense for approval and then to the appropriate military commander for execution. A six-step process is initiated when an RFA is received from a lead or other primary agency.

(a) The lead or other primary agency initiates the RFA.

(b) The RFA is sent to the DOD Executive Secretary for assessment and processing.

(c) The RFA is processed and sent to the Assistant Secretary of Defense (Homeland Defense) and the JDOMS.

(d) The JDOMS processes the order.

(e) The Secretary of Defense approves the order.

(f) The JDOMS issues the order to appropriate CCDRs, services, and agencies.

(2) The response is generally conducted in the following sequence:

(a) Request for Support. When a CBRN incident occurs, the lead agency receives and generates requests for support, and DOD may be tasked to provide resources. Although specific unit tasking may occur, the requestor normally asks for a capability to meet an identified shortfall.

1. Prescript RFAs may be used by the lead agency to expedite the process for requesting support. Prior to preparing a prescript RFA, the preparer considers what federal agency has the unique capability to satisfy the requirement.

2. Since prescription RFAs can assist with time-sensitive response requirements, the preparer should prioritize the capabilities required for the incident. The following factors should be considered when preparing a prescript RFA:

a. Unique capabilities of the supporting agency.

b. Lifesaving capabilities of the supporting agency.

c. Agency capabilities that can reduce the scope, scale, and/or impact of the incident.

(b) Alert. Upon notification of a CBRN response mission, the 2d MAW CBRN Support Team initiates local alert procedures and prepare to deploy to the incident site. The 2d

MAW CBRN Support Team gathers the information required to prepare their units to support the response efforts.

(c) Deploy. Deploying the 2d MAW CBRN Support Team assets at the appropriate time is the key to success. Establishing a base support installation (BSI), which may take place during the alert phase or during a transition between these phases, is a key consideration. The 2d MAW CBRN Support Team, with direction from the parent unit and service, are responsible for coordinating and executing pre-deployment activities, movement to and activities at ports of embarkation (POEs), and arrival at ports of debarkation (PODs). Deployment ends when the 2d MAW CBRN Support Team is secured in the AO and is ready to execute the mission.

(d) Transition. Transitioning encompasses the remaining tasks the 2d MAW CBRN Support Team must complete prior to redeployment.

(e) Redeployment. Redeploying the 2d MAW CBRN Support Team begins when directed by the commander.

e. Chemical, Biological, Radiological, and Nuclear Response Operations. The initiation of response operations occurs following a triggering incident. Response measures include the first and emergency response, establishment of the ICS, ensuring that requisite control measures are in place, and execution of mission-essential functions that occur in the hazard control zones.

(1) Triggering Incident. Triggering refers to the initial event, or sequence of events, which causes response actions to begin. Trigger help to determine when a response to the incident begins. A trigger may prompt an immediate DOD response (conditions permitting) or a delayed response based on DOD approval of a validated RFA. Information from the triggering incident supports the ongoing assessment and will influence the follow-on response actions. An effective response will drive a more effective recovery phase, limit the severity of the CBRN event on operations, and reduce the overall number of casualties.

(a) Detector triggers occur when a detection device signals that a CBRN agent may be present in the environment. Detectors are limited to those CBRN agents they are designed to find. They may not indicate the presence or absence of all CBRN agents due to the sensitivity of the devices and the possibility of false-positive and false-negative readings.

(b) Weapon triggers refer to an overt attack by a weapons system, such as theater ballistic missiles, submunitions, or artillery that might be armed with a CBRN agent. If intelligence has indicated a CBRN-weapons capability, a weapons incident in a high-threat area will likely be initially treated as an unknown agent. Detection of an attack in progress may result from an attack warning, a detector alarm, or observable weapons incident. During and immediately after an attack, the top priority should be to determine whether it was a CBRN attack. Detection, observation, or other notices of attack prior to the occurrence of casualties trigger during-attack actions, which are initially focused on immediate actions to preserve human life.

(c) MEDSURV may be the first means of detection for a CBRN incident, especially in the case of sentinel casualties discovered following a covert biological attack. A sentinel casualty triggering incident refers to the medical community's detection of a biological agent or infectious disease incident by assessing trends in medical symptoms among personnel or diagnosis of an index case. Response actions based on a sentinel casualty may begin well into the disease progression cycle. At its highest level, MEDSURV could occur through the theater MEDSURV network, where epidemiology is focused on theater-wide tracking of medical symptoms.

(d) Intelligence triggers occur when a commander receives intelligence indicating that a threat possesses an offensive CBRN capability, that there is unusual threat activity consistent with operational use of a CBRN agent, or that a specific target may be attacked with a CBRN agent. Intelligence warning is the triggering incident that allows a commander the best opportunity to prepare for a response.

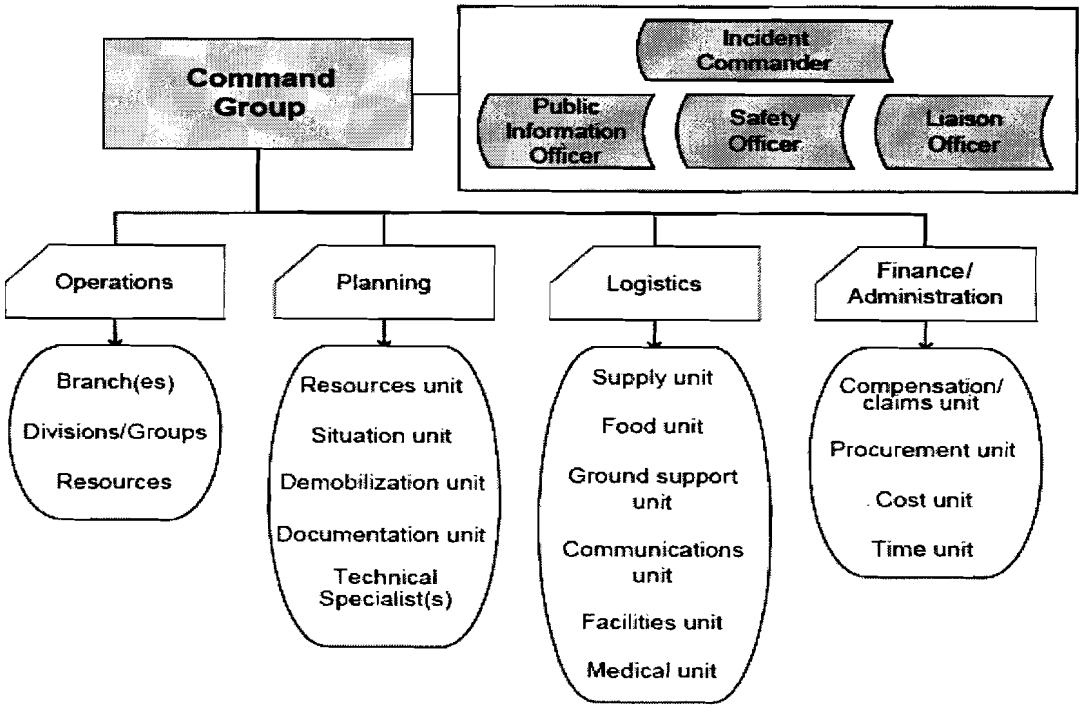
1. First, Emergency, and CBRN Response. Based on the initial and follow-on assessments, the response to a CBRN incident is tailored to the scope and magnitude of the situation, and follow-on response assets are requested as required. First response is conducted by local police, fire, and emergency personnel who are likely to witness or discover a CBRN release and notify the proper authorities of the release. The first response elements use resources to identify the associated hazards and determine hazard control zones. These zones take into consideration the CBRN material, population or area threatened, and weather conditions. Efforts are made by the first response element arriving at the incident to ensure that no one enters the hazard control zones without authorization from the ICP. Emergency response is conducted by trained

responders from outside the immediate release area. CBRN response by the 2d MAW CBRN Support Team provides specialties in areas such as decontamination, site assessment, planning, or C2.

(2) First Receivers. Health care workers at a hospital receiving contaminated victims for treatment are a subset of responders (firefighters, law enforcement, HAZMAT teams, and ambulance service personnel). Most responders typically act at the site of an incident (the location where the primary release occurred). In contrast, inherent to the definition of first receivers, is an assumption that the hospital is not itself the primary incident site, but rather is remote from the location where the hazardous substance release occurred.

(3) ICS Initiation. Under circumstances when the ICS will be used, the senior responder at the incident site, who is most experienced for the type of incident, assumes the role of the IC. The IC is responsible for directing, assessing, prioritizing, and controlling resources by virtue of explicit legal, agency, or delegated authority. As the response progresses, the role of the IC may change hands as more qualified responders arrive on the scene or are appointed.

Incident Command System Command Structure



(4) Site Assessments. Although the IC's initial site assessment may be completed before the 2d MAW CBRN Support Team

arrives at the incident site, assessment is a continual process. Representative tasks that support assessment include CBRN detection, identification, and surveillance. The results of detection, identification, and surveillance support identifying the specific hazards and determining the extent or degree of contamination. Other assessment support during response operations can be obtained through agencies that provide technical reach back.

(5) Control Measures. The IC establishes control measures to prevent or reduce the spread of contamination, human injury or death, environmental damage, and property damage from the release or potential release of CBRN or HAZMAT materials. All control measures are coordinated and controlled through the IC, the focal point for key information (such as maximum exposure limits). The IC determines the level of protection that will be worn or available in each of the hazard control zones.

(a) PPE. Based on hazardous substances and conditions present, the IC will implement appropriate emergency operations and ensure that the PPE worn is appropriate for the hazards expected to be encountered. For example, responders who are engaged in CBRN defense and emergency response who are exposed to hazardous substances of unknown quantities will wear a positive-pressure self-contained breathing apparatus (SCBA). They will continue to wear SCBA until the IC or designated safety officer determines a decreased level of respiratory protection will not result in hazardous exposure.

(b) Limited Access. The IC will limit the number of team members at the emergency site who enter areas of potential or actual exposure to incident or site hazards. Personnel will be limited to those who are actively performing emergency operations; however, operations in hazardous areas will be performed using the buddy system in groups of two or more.

(c) Contamination Control. The IC initiates defensive contamination control operations in order to limit the spread of contamination. This includes preventing potentially contaminated personnel from leaving the scene without being decontaminated, controlling water runoff, and beginning emergency decontamination.

(d) Site Security. The IC ensures that safe site management activities have been instituted. The site is secured by establishing a security perimeter and controlling site access to prevent additional personnel from entering the contaminated

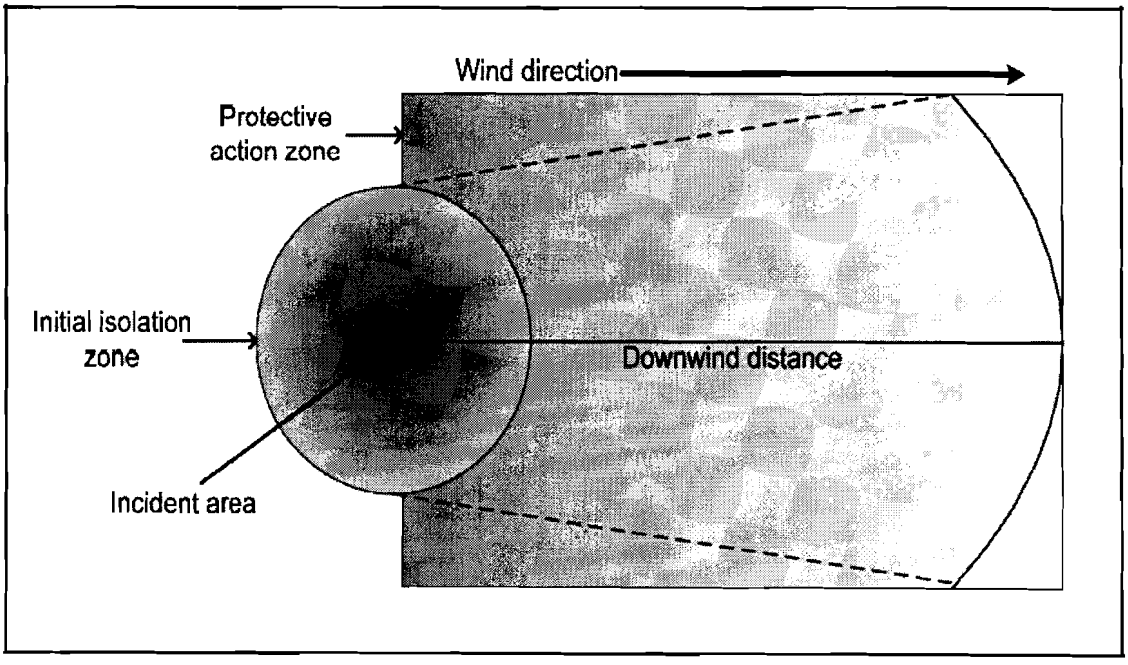
area(s) and to prevent media personnel or bystanders from interfering with responders.

(e) Decontamination. The IC directs that the following types of decontamination operations can be conducted in the decontamination corridor.

(f) Hazard Control Zones. The IC identifies and designates hazard control zones, including initial isolation and protective action zones and hot, warm, and cold zones.

1. Initial Isolation and Protective Action Zones. The initial isolation zone is an area surrounding the incident in which persons may be exposed to dangerous (upwind) and life threatening (downwind) concentrations of material. The protective action zone is an area downwind from the incident in which persons may become incapacitated and unable to take protective action and/or incur serious or irreversible health effects.

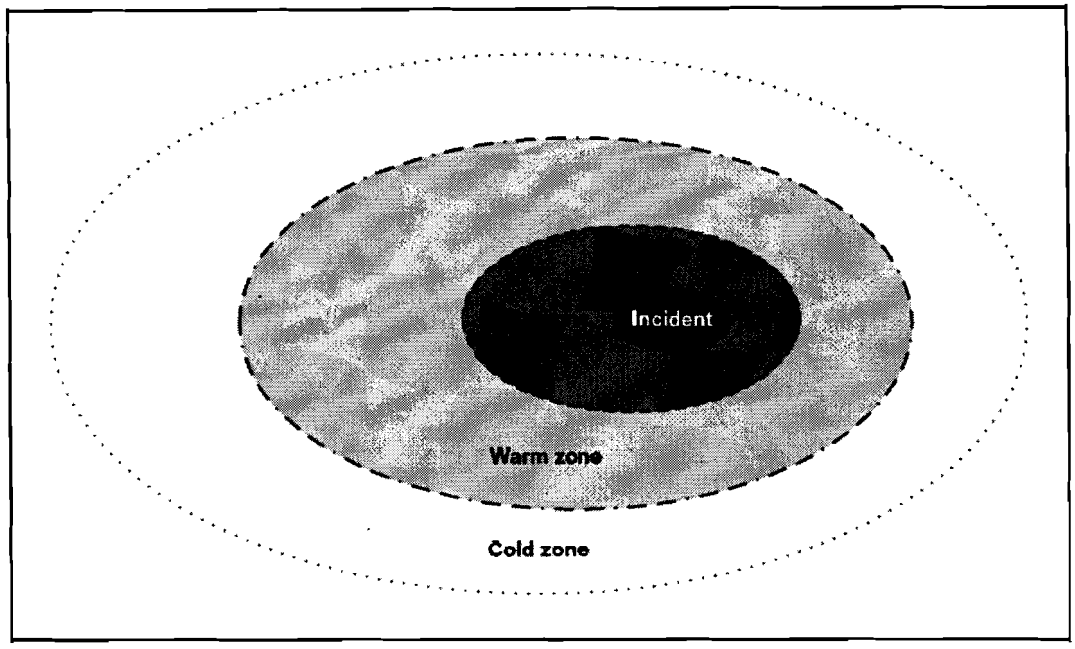
Initial Isolation and Protective Action Zones



2. Hot, Warm, and Cold Zones. Hazard control zones (hot, warm, and cold) are established to provide areas for functions such as decontamination and support operations. The hot zone is an area immediately surrounding a hazardous materials incident which extends far enough to prevent adverse effects from released contamination to personnel outside the zone. The warm zone is the area between the hot and cold zones

where personnel and equipment decontamination and hot zone support take place. It includes control points for the access corridor and thus assists in reducing the spread of contamination. The cold zone is the area where the CP and support functions that are necessary to control the incident are located.

Sample Hazard Control Zones



(g) Access Routes. The IC identifies safe approaches along multiple routes, if available, for the movement of response assets to and from the incident site and assembly areas. The routes identified include road, rail, sea, and aerial approaches to the incident site.

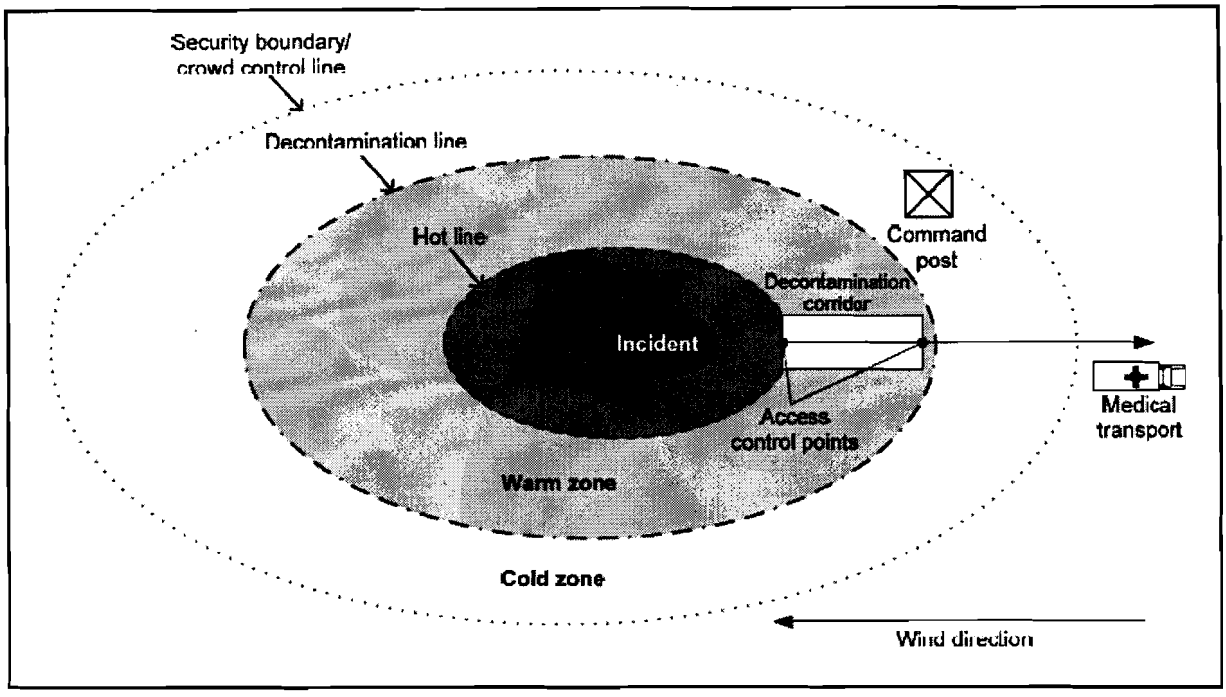
(h) Staging Areas. The IC designates assembly areas for the staging of follow-on response elements. The initial assembly point is a safe distance from the incident site to prevent interference and to protect personnel.

(6) Hazard Control Zone Functions. Control zones are established by the IC at an incident site. Control zones are established to ensure the safety of all responders and control access into and out of a contaminated area. Figure IV-5 depicts hazard control zone functions.

(a) Hot Zone. The hot zone is the area that the IC judges to be the most affected by the incident and includes any area to which the contaminant has spread or is likely to spread.

The hot zone is also the location where contamination reduction begins, and representative functions that can occur within the hot zone include conducting search and rescue operations, performing mitigation measures, identifying CBRN or other physical obstacles to the entry point, conducting assessment activities (evaluating damage and/or presence of contamination, etc.), performing chemical or radiological monitoring, and conducting biological agent sampling.

Hazard Control Zone Functions



(b) Warm Zone. The warm zone is the area between the hot and cold zones where decontamination operations (decontamination corridor) and hot zone support take place. Representative functions that can occur in the warm zone include decontamination and staging of survey teams prior to entry into the hot zone.

(c) Cold Zone. The cold zone is an area that is readily accessible and provides a clean location for support operations. It must be large enough to accommodate local, state, and federal CBRN response forces, if required. Representative functions that can occur within the cold zone include incident command operations, support activities such as logistic, sustainment, and security operations, and staging area operations.

(7) Hazard Communications (HAZCOM). During response operations, units maintain its HAZCOM program. Representative HAZCOM program execution functions include sustaining the capability to store and use regulatory reference data and product hazard data, preparing to receive and process CBRN materials information, maintaining access to information on CBRN hazards at the incident site, and adhering to safety guidance as contained in applicable OSHA and CFR guidance.

f. Transition to Recovery Operations

(1) A fine, unclear line exists between the end of response operations and the beginning of recovery operations. Often, recovery starts while response operations are still in progress. Recovery operations may begin when the 2d MAW CBRN Support Team assets are no longer required or when replacements have arrived to provide relief in place.

(2) Additionally, there may be a handover of response authorities and responsibilities when transitioning from response to recovery. For example, a responding fire chief may hand over control of the scene to crime investigators, incident investigation teams, or other officials.

3. Recovery

a. Background

(1) The recovery phase will begin when the immediate hazards are contained or controlled during the response phase. The 2d MAW CBRN Support Team will likely continue support to complete any remaining mitigation of the immediate hazard (supporting reconnaissance, decontamination, and assessment and providing advisory assistance). Understanding and defining CBRN CM recovery operations requires a crosswalk between the traditional military term and the NRP definition.

(a) DOD defines recovery and reconstitution as those actions taken "to minimize the effects of an attack, rehabilitate the national economy, provide for the welfare of the populace, and maximize the combat potential of remaining forces and supporting activities."

(b) The NRP addresses recovery in terms of "the development, coordination, and execution of service and site-restoration plans and the reconstitution of government operations and services through individual, private-sector, nongovernmental, and public assistance programs."

(c) Overall, CBRN recovery operations occur within the context of CM and include those actions taken to maintain or restore essential services and manage and mitigate the consequences resulting from a CBRN incident.

(2) The operational duration of the recovery mission for the 2d MAW CBRN Support Team is determined by the requirements established by the appropriate authority (the IC for domestic operations or the HN and/or DOS for foreign operations). The operational role for the 2d MAW CBRN Support Team changes during the recovery phase. During recovery operations, survey operations may continue in the hot zone while supporting technical decontamination. Additionally, technical advice and assistance and support to other decontamination operations may occur.

(3) The 2d MAW CBRN Support Team revises the mission-recovery plan prior to and during the recovery phase and coordinates the plan with civil authorities to help ensure that the transfer of tasks between civil authorities and the 2d MAW CBRN Support Team is understood and completed. Top priorities are reestablishing mission capability, developing a plan to cover short and long-term recovery requirements, and returning to normal operations. Special consideration is given to minimizing and mitigating environmental damage.

(4) The operational environment will impact CBRN CM decontamination as follows:

(a) For support of DHS-led CBRN CM operations in a domestic setting, the 2d MAW CBRN Support Team will likely augment U.S. civilian response elements. Additionally, the 2d MAW CBRN Support Team will be subject to OSHA and United States Environmental Protection Agency (EPA) requirements.

(b) For support of DOS-led CBRN CM operations in a foreign setting, the 2d MAW CBRN Support Team may augment HN response elements, and actions may be bound by existing HN treaty and/or status of forces agreements.

(c) In DOD-led CBRN CM response operations, recovery measures undertaken will support the commander's guidance and the overall CBRN CM goals.

(5) There is no established timetable for recovery operations. During this phase, there will come a time when the 2d MAW CBRN Support Team is replaced or are no longer needed. The transition and order for redeployment may occur when the 2d

MAW CBRN Support Team receives a new mission, the assigned mission is complete (such as MCD), or civilian authorities take over the mission. The 2d MAW CBRN Support Team commander facilitates the orderly transition from the assigned recovery mission and conducts the withdrawal from the incident site.

(a) The 2d MAW CBRN Support Team implements the transition plan by transferring CBRN CM tasks to the appropriate civil authorities (such as the DOS or FEMA) commensurate with their ability to continue to conduct operations.

(b) During transition, NGOs and contracted services may augment these civil authorities. Upon completion of the required recovery support, the 2d MAW CBRN Support Team executes transition and redeploys.

b. CBRN CM Decontamination

(1) General. By the time the recovery phase has begun, decontamination efforts will have started in order to minimize casualties, save lives, and limit the spread of contamination. Through decontamination may have begun on specific mission-essential equipment, materiel, or infrastructure.

(2) Decontamination Principles. Decontamination is a process that reduces CBRN contamination to levels that minimize the risk of further harm to the victim and cross contamination. To support the goal of decontamination operations to provide effective support for the largest number of personnel, apply the decontamination principles of speed, need, priority, and limited Area.

(3) Decontamination Methods. Decontamination methods vary in its effectiveness for removing different substances. The process of selecting a decontamination method begins by identifying the substance quickly in order to define hazard control zones and the most effective method of decontamination. The selection of a decontamination method will rely on multiple sources of data, such as physical indicators, medical symptoms, communication with victims, and detection instrument results. Continue to assess the effectiveness of any decontamination method throughout the decontamination operation. If decontamination does not appear to be effective, select and implement a different method.

(4) Incident-Specific Decontamination Considerations. In order to determine what decontamination practices may be followed, the 2d MAW CBRN Support Team assesses the

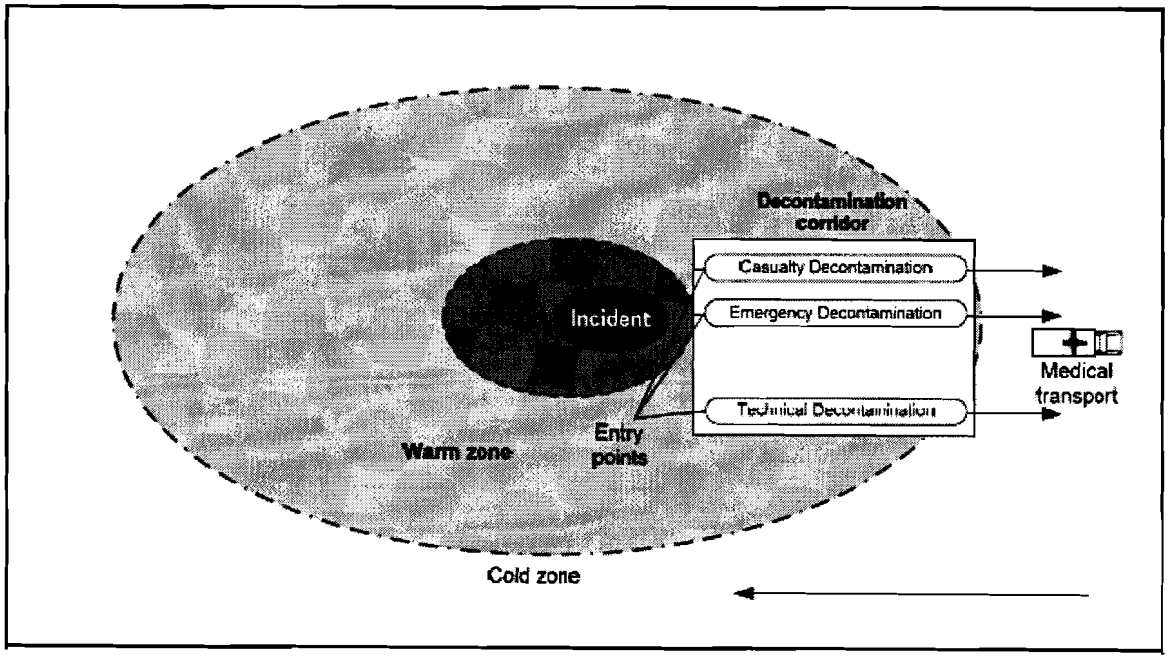
characteristics of the incident. Although data may be incomplete, addressing type of agent, agent properties, type of release, physical environment, available resources, and operational desirability of various decontaminants (such as cold weather).

(5) Agent-Specific Decontamination Considerations. The type of agent released is a critical factor in determining the decontamination practices to be used. Every situation will have unique challenges, and responders must be flexible enough to adjust to the situation with the resources available.

(6) Decontamination Corridors

(a) NFPA Standard 471 defines the decontamination corridor as the area, usually located within the warm zone, where decontamination procedures take place. This is a controlled access area leading from the hot zone (incident site) to the cold zone (support zone) in which decontamination operations for the incident are conducted.

Sample Decontamination Corridor Layout

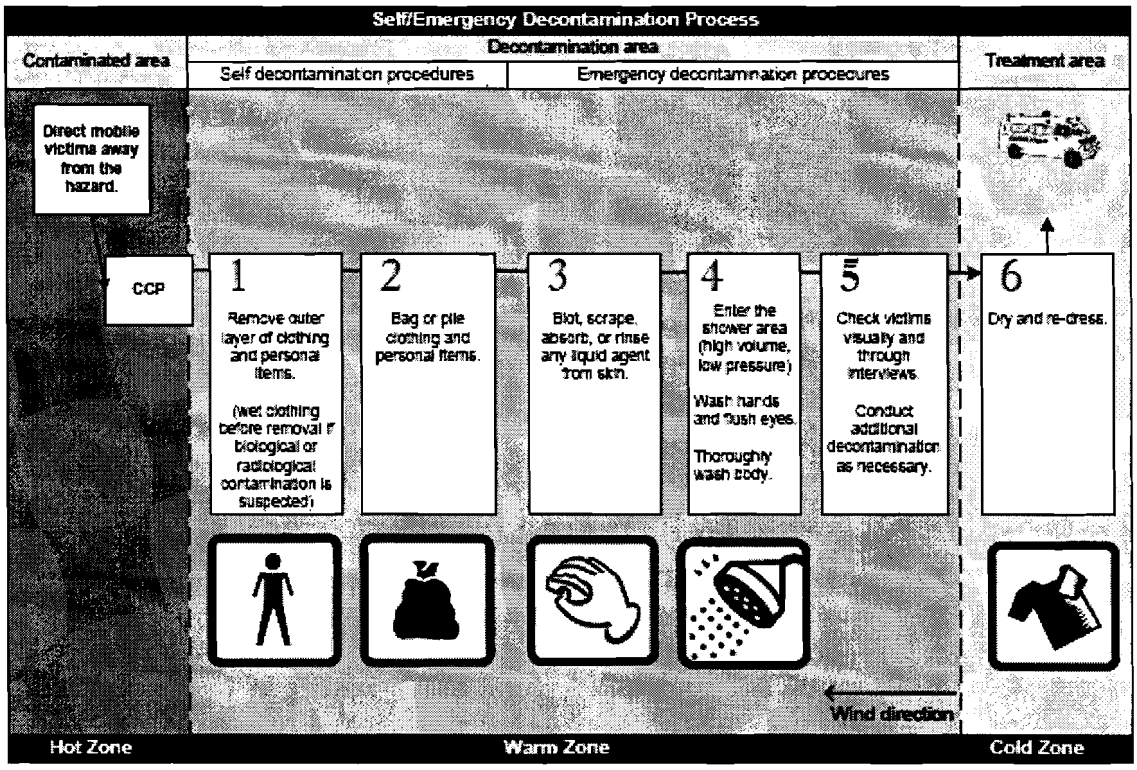


(b) The main points of a decontamination corridor are an entry point, an exit point (vapor control line [VCL]), and an upwind direction of travel for personnel processing through the decontamination corridor. The stations between the entry and exit points vary with the type of decontamination corridor used.

(7) Personnel Decontamination Procedures

(a) Emergency Decontamination. Emergency decontamination is a process that removes contamination from personnel in order to save lives, minimizes casualties, and limits the spread of the contamination. It also facilitates rapid medical attention without transferring the contamination to other personnel or equipment.

Sample Emergency Decontamination Site



1. Decontaminants used are those that are safe for use on skin and wounds. Basically, emergency decontamination directs mobile victims away from the hazard.

2. The process involves removing outer layers of clothing, removing any liquid agent from the skin, showering, checking victims visually, and (time permitting) conducting brief interviews.

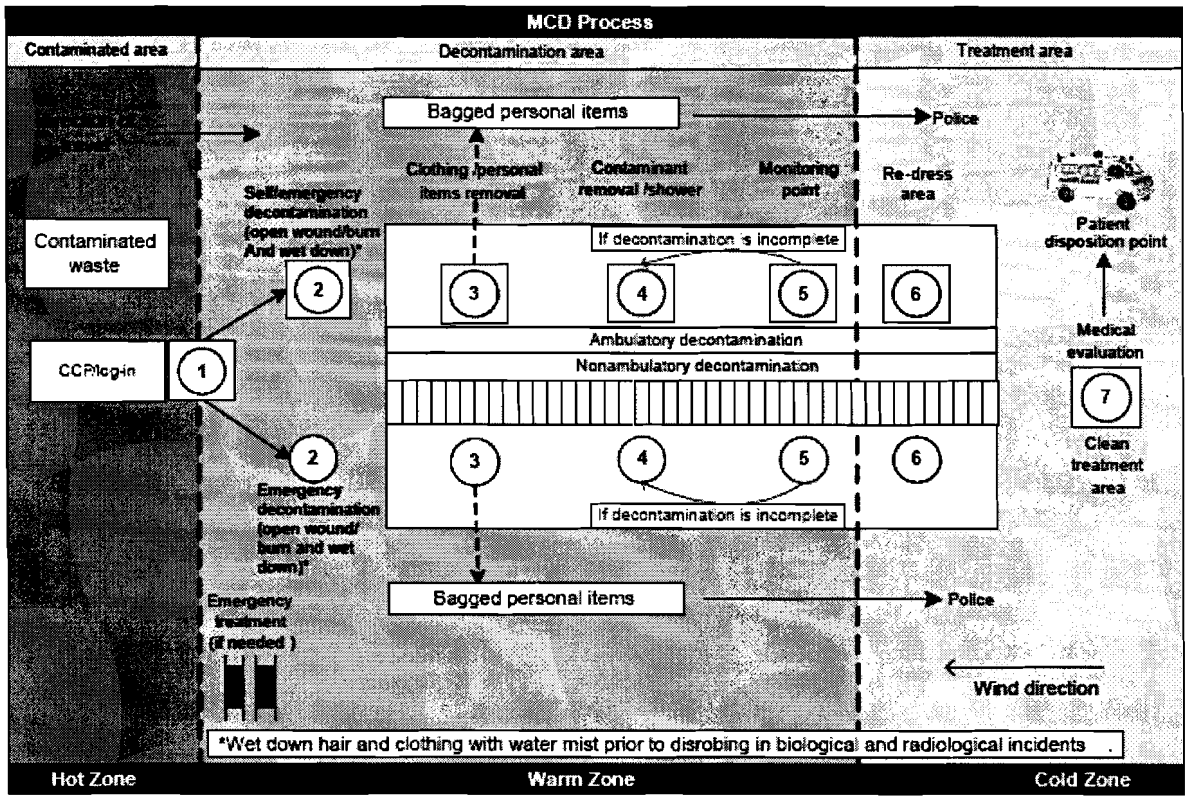
3. Following an incident, the IC may direct that the first decontamination measure taken be emergency decontamination. The rapid setup of emergency decontamination stations should help to minimize the number of casualties.

(a) Technical Decontamination. Technical decontamination commonly refers to the deliberate decontamination of responders, response equipment, and evidence. It is conducted during a CBRN CM response where trained responders conduct decontamination operations. The focus of technical decontamination is neutralization of the agent. Terms that are commonly associated with technical decontamination are detailed, thorough, deliberate, definitive, and responder decontamination. The 2d MAW CBRN Support Team does not provide a technical decontamination capability.

(b) Patient Decontamination. Patient decontamination is similar to MCD; however, it commonly refers to the decontamination operations that occur at the patient decontamination site in the vicinity of the medical treatment facility (MTF). This type of operation is primarily conducted to protect the MTF from contamination. Patient decontamination follows all of the guidelines of MCD, but it may be a smaller operation that handles the persons who did not go through the MCD site and are presenting themselves to the MTF for medical treatment. Patient decontamination is performed to ensure that patients are not admitted to the MTF until they are contamination-free.

(c) Mass Casualty Decontamination. When a CBRN incident results in mass casualties, MCD operations may be required. Because personnel processing through a domestic MCD operation are not likely to have PPE, they require a fast, efficient, and effective decontamination process. In addition to a rapid response, MCD operations require large numbers of team members, equipment, and supplies. For information concerning decontamination of human remains. Augmentation support for this operation may be performed by the 2d MAW CBRN Support Team or by members of the affected installation or activity, community, state, or nation.

Sample Mass Casualty Decontamination Site



(8) Facility, Terrain, and Equipment Decontamination Procedures. CBRN CM decontamination operations may involve facility, terrain, or equipment contamination. Based on the highly specialized and technical nature of these decontamination requirements, the 2d MAW CBRN Support Team will support other United States Government technical response assets.

c. Logistic Recovery Operations

(1) Logistic planning must consider CBRN CM recovery and restoration actions. Further restoration may require remediation of the actual site, and support during this phase of CBRN CM requires detailed assistance that will likely be provided by other federal response assets (such as the EPA) or the HN.

(2) The restoration of a CBRN CM site places a logistic burden on all levels of response. A site may require a large amount of time and resources before it can be used again, if at all. The 2d MAW CBRN Support Team may continue supporting recovery operations such as clearance, facility, or terrain decontamination.

(3) As the recovery phase progresses, the 2d MAW CBRN Support Team begins to look ahead and prepare for eventual redeployment. Representative issues that may occur include identifying equipment or supplies that may have to be left at the incident site because of contamination, confirming load-planning configurations, verifying the status of supply requisitions and ship-to addresses, checking on the status of equipment awaiting repair, and updating records on the use of resources.

d. Transition Operations

(1) Transition involves the transfer of responsibilities and functions to other organizations. Termination or transition occurs when the mission has been accomplished or when directed by the President or the Secretary of Defense.

(2) The 2d MAW CBRN Support Team DOD will disengages from operations when the designated authorities no longer require support. This is generally when the immediate danger from the CBRN incident is eliminated, the capabilities to save lives are in place, and critical services are restored. The 2d MAW CBRN Support Team assets generally do not remain to conduct site recovery operations.

(3) If the 2d MAW CBRN Support Team is transitioning functions between units, then the transition requirements follow standard military handover procedures. If transition involves the transfer of functions to civil authorities or to local or HN agencies, the transition will reflect operational procedures and existing agreements established by the IC. A key factor is the transfer of any logs kept during the CM operation. Logs provide the element assuming responsibilities a detailed picture of the events and actions that have occurred. Rosters of all affected personnel and all responding personnel will be transferred along with the logs, when appropriate.

(4) A transition plan helps the staff identify transition issues in relation to the desired or projected end state. It is especially important to identify the parties or agencies that will accept functional responsibilities from the JTF Commander. The transition plan should identify organizations, operating procedures, and transition recommendations and considerations. When implementing the transition plan, the transitioning parties should discuss criteria for transferring operations. The plan should be unclassified, clear, and concise, using terminology appropriate to all parties.

(a) Transitioning may be accomplished by function or specific areas of the incident site. The transition process should be event-driven and not tied to calendar dates. Functions or areas transfer only when a similar capability becomes available or is no longer needed. Procedures for the transfer of equipment or supplies—either between the 2d MAW CBRN Support Team, to civil authorities or to local or HN agencies—must be established according to regulation and command guidance.

(b) Planners identify key transition factors within functional areas that may include logistics, medical services, communications, security, and technical services. Planners should develop a series of transition criteria to monitor progress. Indicators ensure that a consistent method is used to measure progress during the transition.

e. Redeployment Operations

(1) Redeployment begins as soon as objectives are accomplished or the need for the 2d MAW CBRN Support Team diminishes. Redeployment planning and operations follow normal military guidelines and protocols. Careful consideration is given to identifying physical assets that can be safely removed from the incident site and those that should be contained, controlled, and/or left in place.

(2) During a response, incoming and outgoing data (questions and responses) should be captured and archived so that personnel reviewing the data at a later date can be confident that it is complete and accurate.

(3) Following a response mission, the 2d MAW CBRN Support Team document lessons learned, identify post-operation follow-up actions, and provide a copy of the AAR to the applicable C2 headquarters. Key areas of documentation include personnel and equipment expenditures or costs, incident event logs, and medical documentation for response personnel.

(4) Documentation of the incident occurs during the post-emergency period. Actions that occurred during the notification, response, and recovery phases will be critical to providing answers to questions that will be asked in areas such as fiscal or resource management, MEDSURV, medical treatment, and mortuary affairs.

(5) Accurate record keeping also facilitates monitoring of the 2d MAW CBRN Support Team personnel for long-term health problems that could be incident-related.

(6) The following HSS considerations during redeployment operations should be considered:

(a) Ensuring that post-deployment health and risk communications debriefings are provided to personnel who have returned or are returning from deployment.

(b) Conducting long-term MEDSURV to detect latent diseases because exposure to environmental health threats may have acute, chronic, or latent effects.

(c) Using health surveillance data to document any occurrence of disease or health outcomes due to exposures, conducting epidemiological investigations, determining new prevention strategies and countermeasures for current or future deployments, and developing health risk communication materials.

(d) Establishing guidance for archiving operational records to investigate deployment health-related questions and concerns.

(e) Providing face-to-face health assessment with a trained health care provider for redeploying personnel who are required to complete a Post-Deployment Health Assessment (PDHA). Scheduling medical and dental referrals and follow-up visits for health concerns or issues.

APPENDIX E

MAGTF CBRN CAPABILITY CHARTS

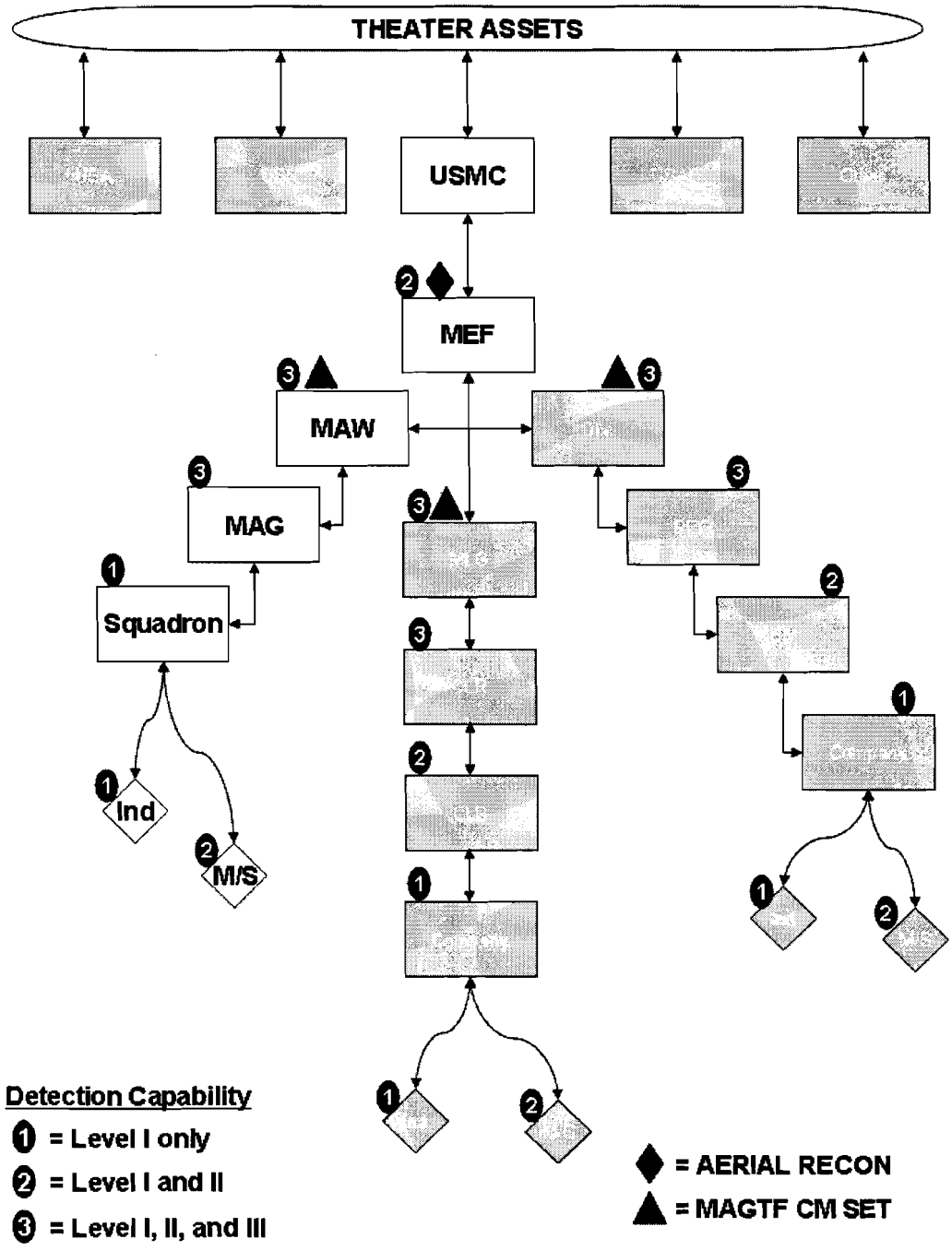
1. Sense Charts. Depict the CBRN Sense Concept and flow of information for the MEF and MEB. The operational scenario will dictate the means of communication used by the detector operators, units, CBRN Sections, and NBCCs to pass on detection information. The level I detectors shown below the battalion and squadron level would be distributed throughout the MAGTF at the individual, squad, section, and company levels. Each step up the chain of command depicts the additional detectors that will be employed by the higher commands.

2. Shape Charts. Depict the CBRN shape concept for the MEF and MEB. The operational scenario will dictate the means of communication used by the units, CBRN Sections, and NBCCs to pass on CBRN reports and overlays, and communicate with CBRN teams. The MAGTF NBCC will maintain an overall situational awareness of how the RST, DST, and unit M/S and decon teams are being employed and may take operational control of these assets when required. Employment of the Arial Reconnaissance Team is coordinated through the MAGTF NBCC Operations Coordinator.

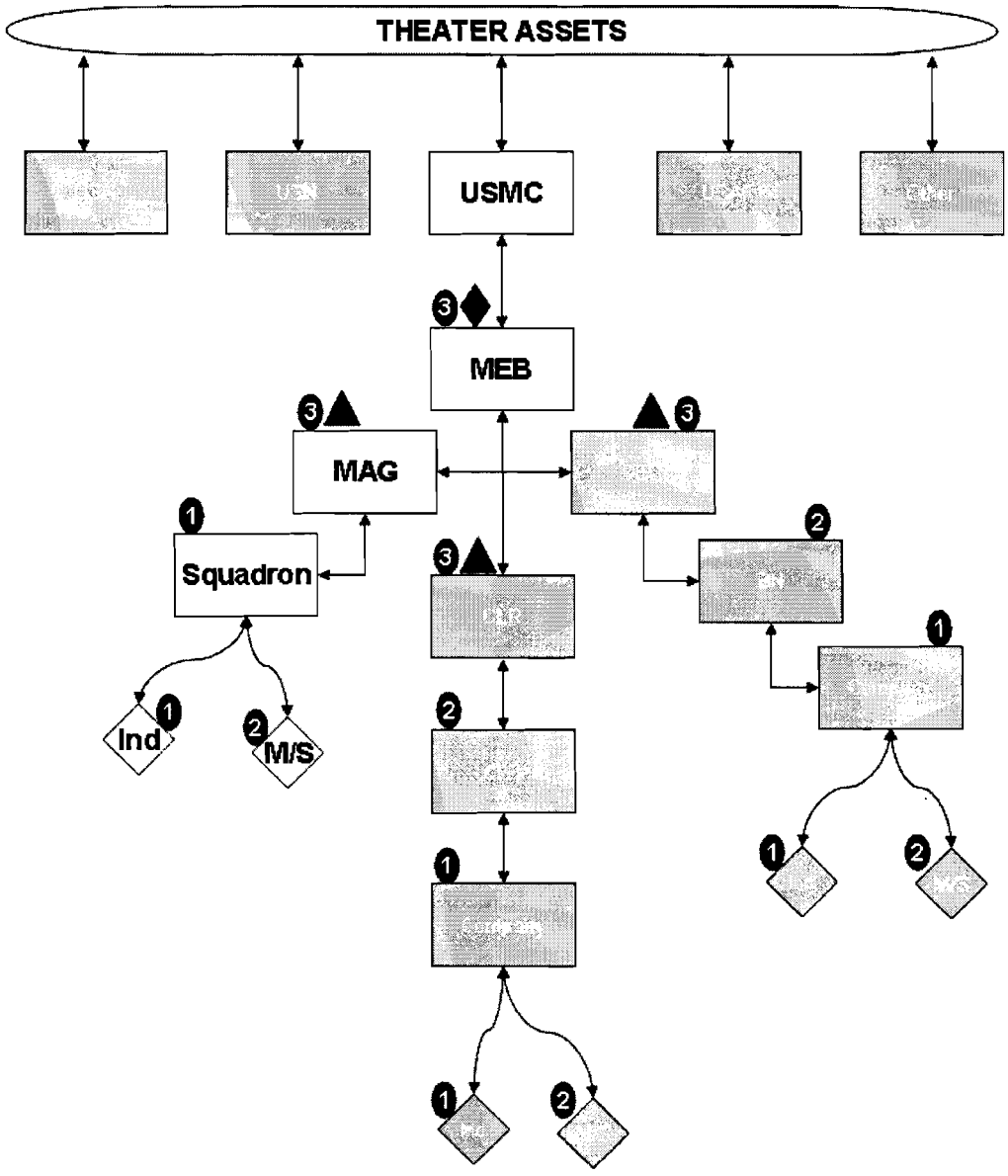
3. Shield Charts. Depict the CBRN shield concept for the MEF and MEB. CBRN IPE is issued one set to the individual, one set held leveling the unit's logistics train, and two sets held as war reserve materiel requirements (WRMR) on MPF and at USMC Logistics bases. The current Collective Protection System (CPS) provides a capability that has limited application within the MAGTF. These systems are held in the CSF as a MEF contingency asset. The MEF NBCC Operations Coordinator will control their distribution. The MWSS will hold any CPSs that are not issued to units during combat operations. Units planning to use the CPS should train with them on a regular basis before attempting to employ them in a combat operation. The system design and operating requirements are limiting factors that must be considered before attempting to employ the system. The CPS is best suited for fixed site use.

4. Sustain Charts. Depict the CBRN sustain concept for the MEF and MEB. The operational scenario will dictate the means of communication used by the units, CBRN Sections, and NBCCs to pass on NBC reports and overlays, and communicate with CBRN teams.

MEF Level Sense Chart



MEB Level Sense Chart



Detection Capability

1 = Level I only

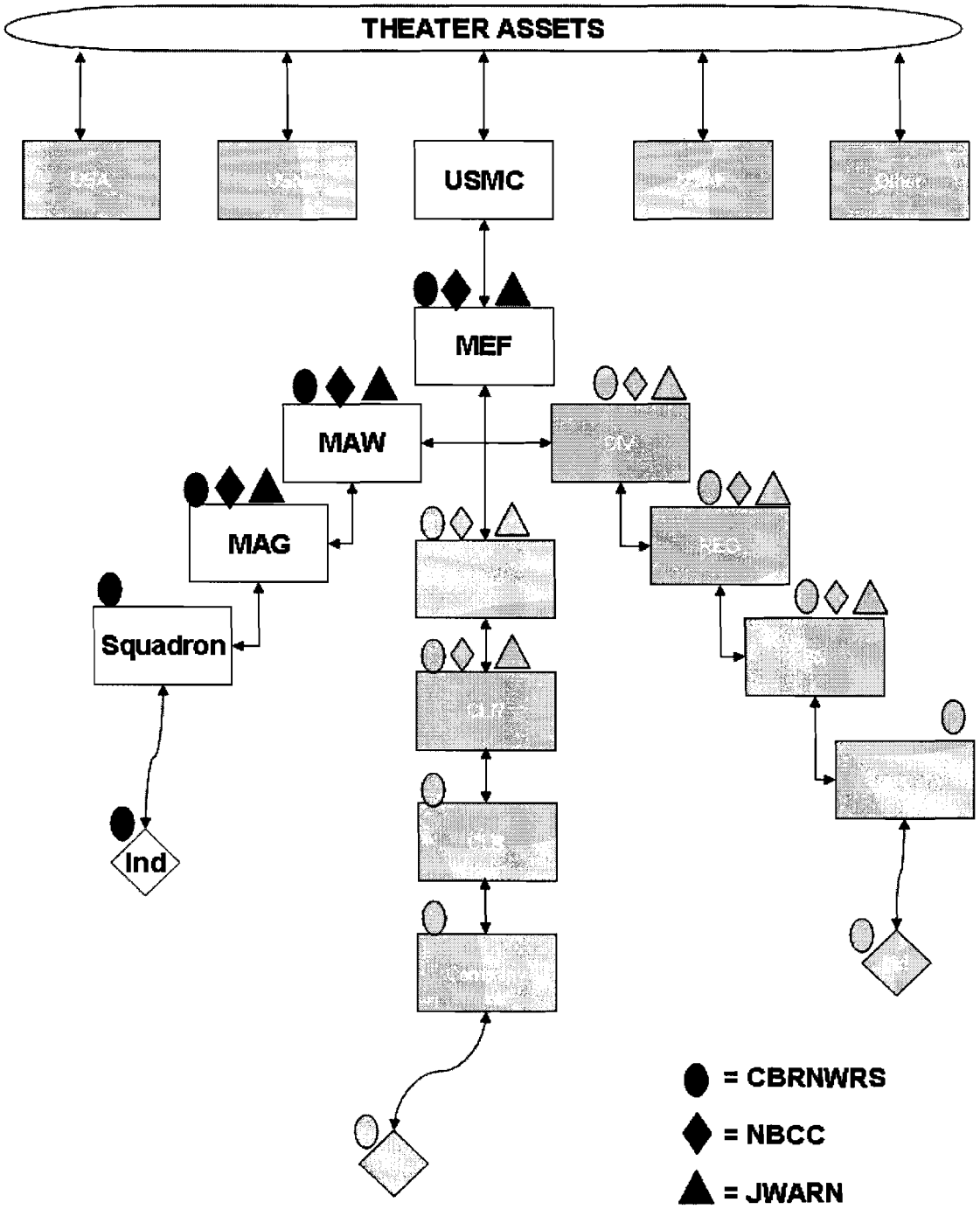
2 = Level I and II

3 = Level I, II, and III

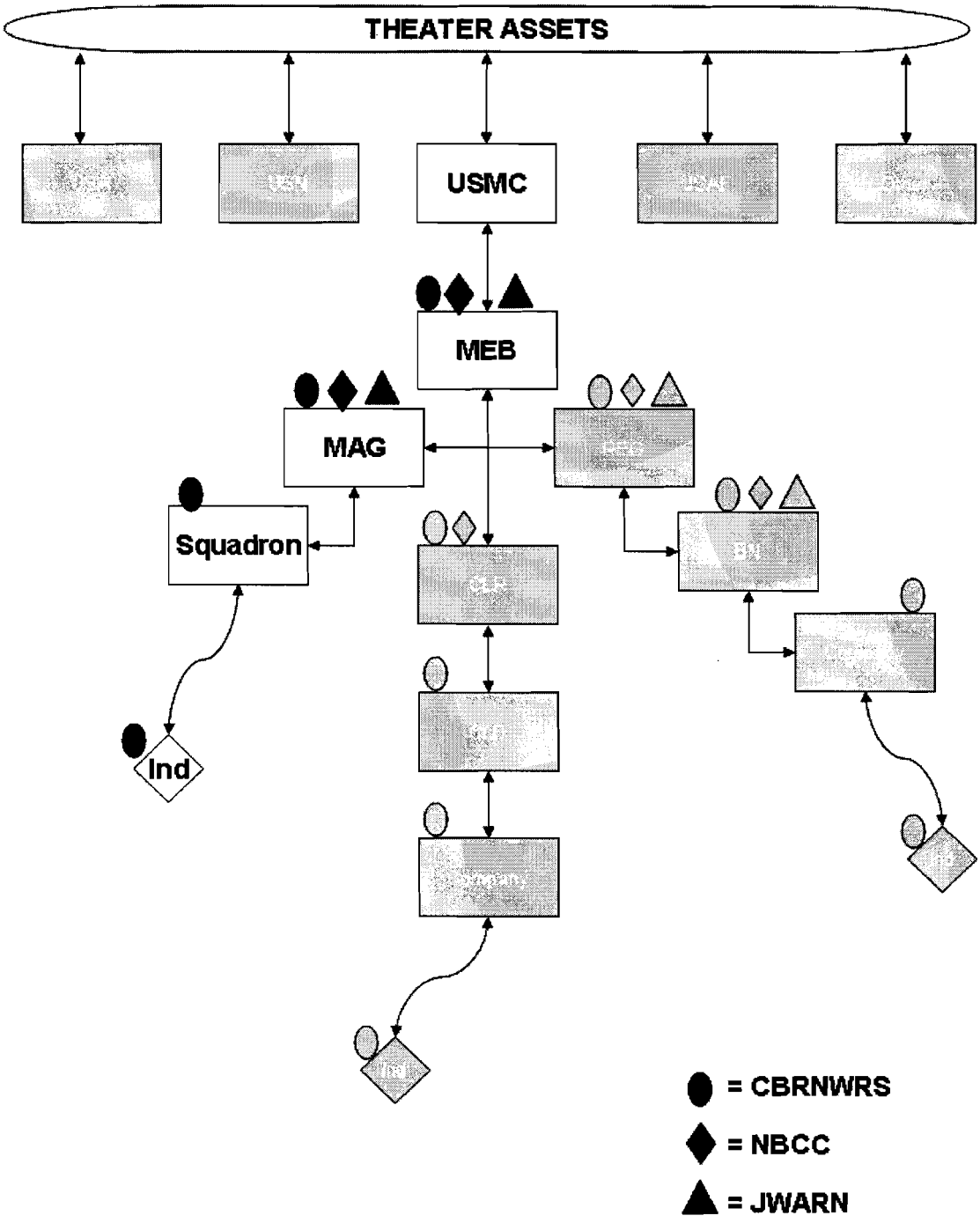
◆ = AERIAL RECON

▲ = MAGTF CM SET

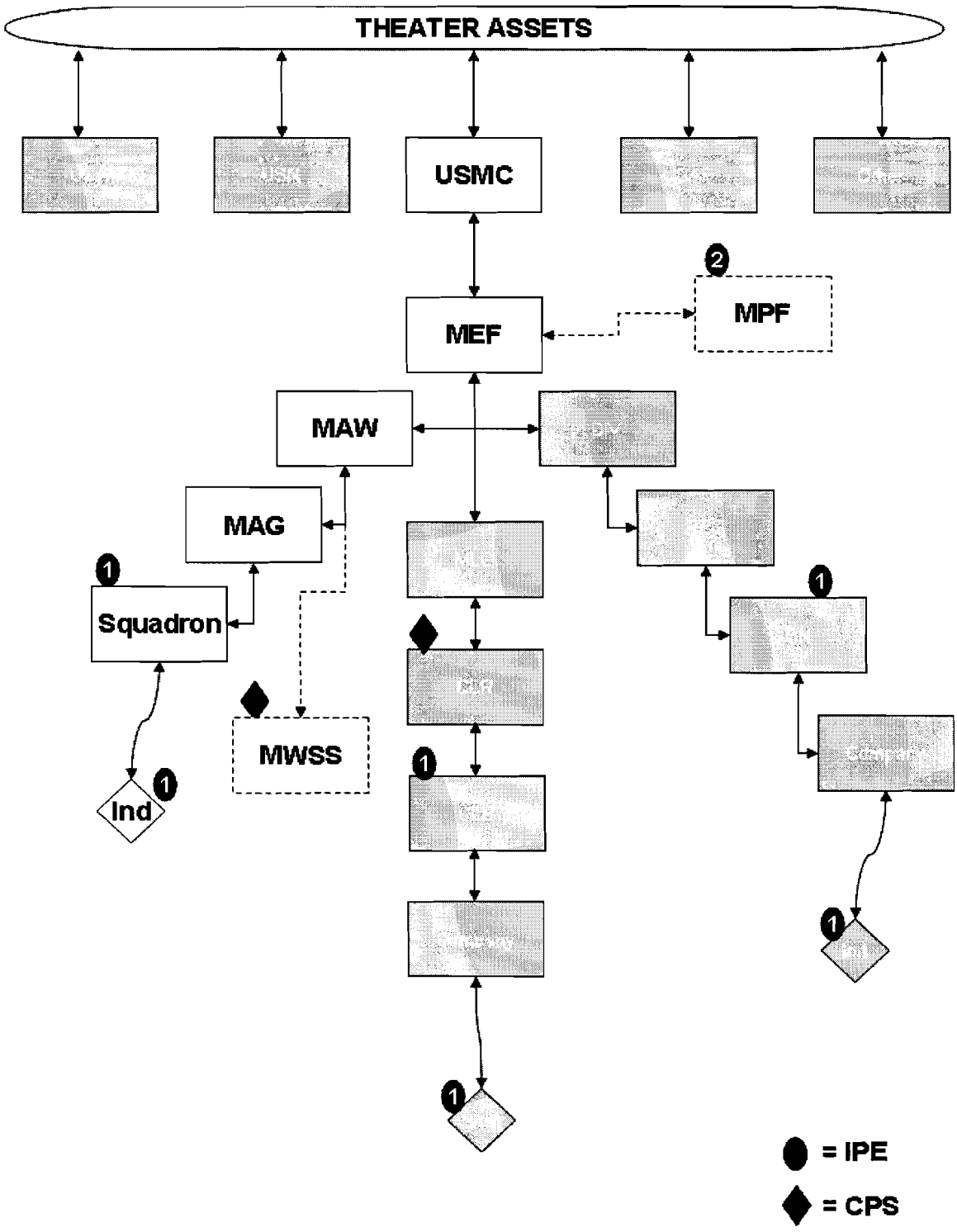
MEF Level Shape Chart



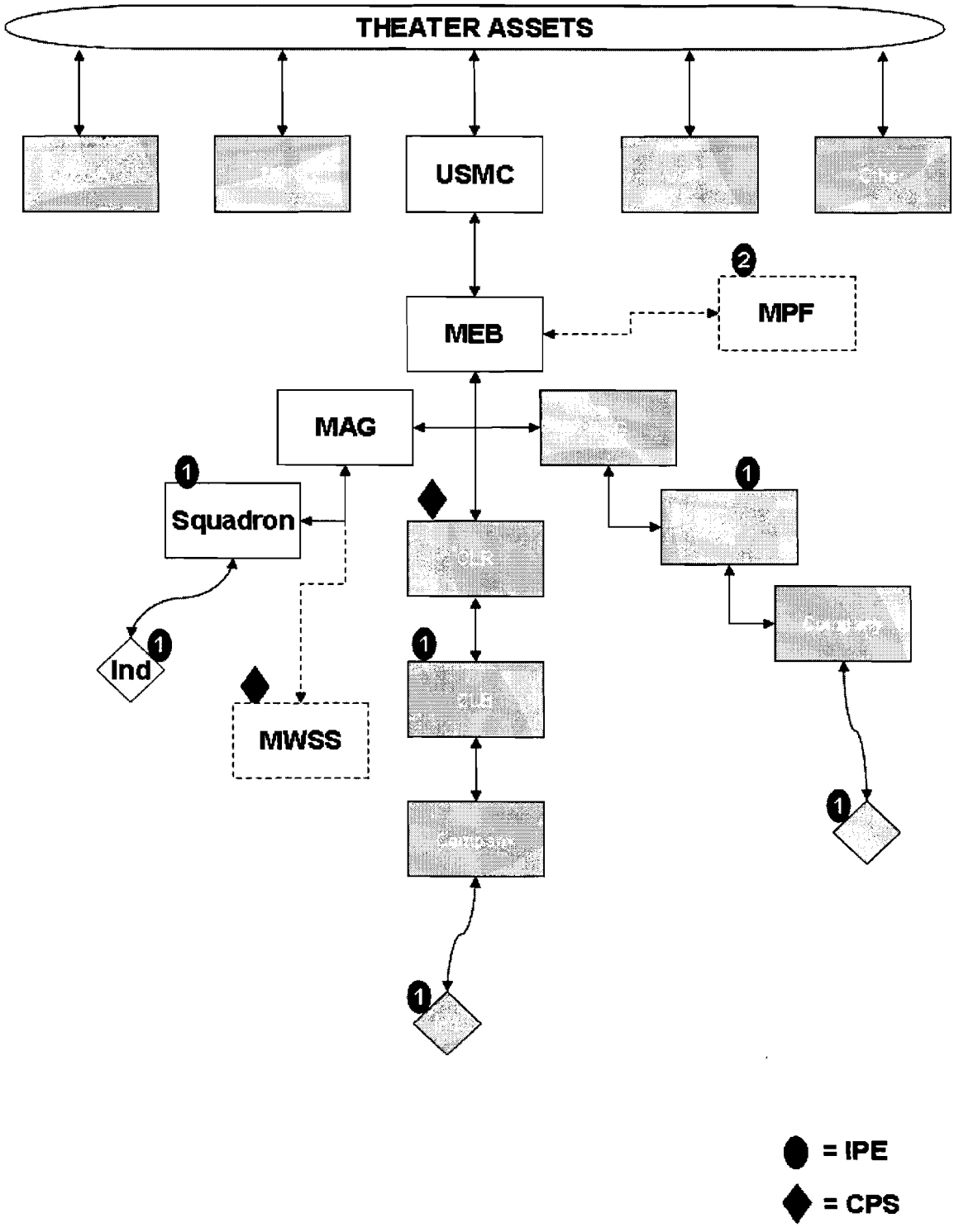
MEB Level Shape Chart



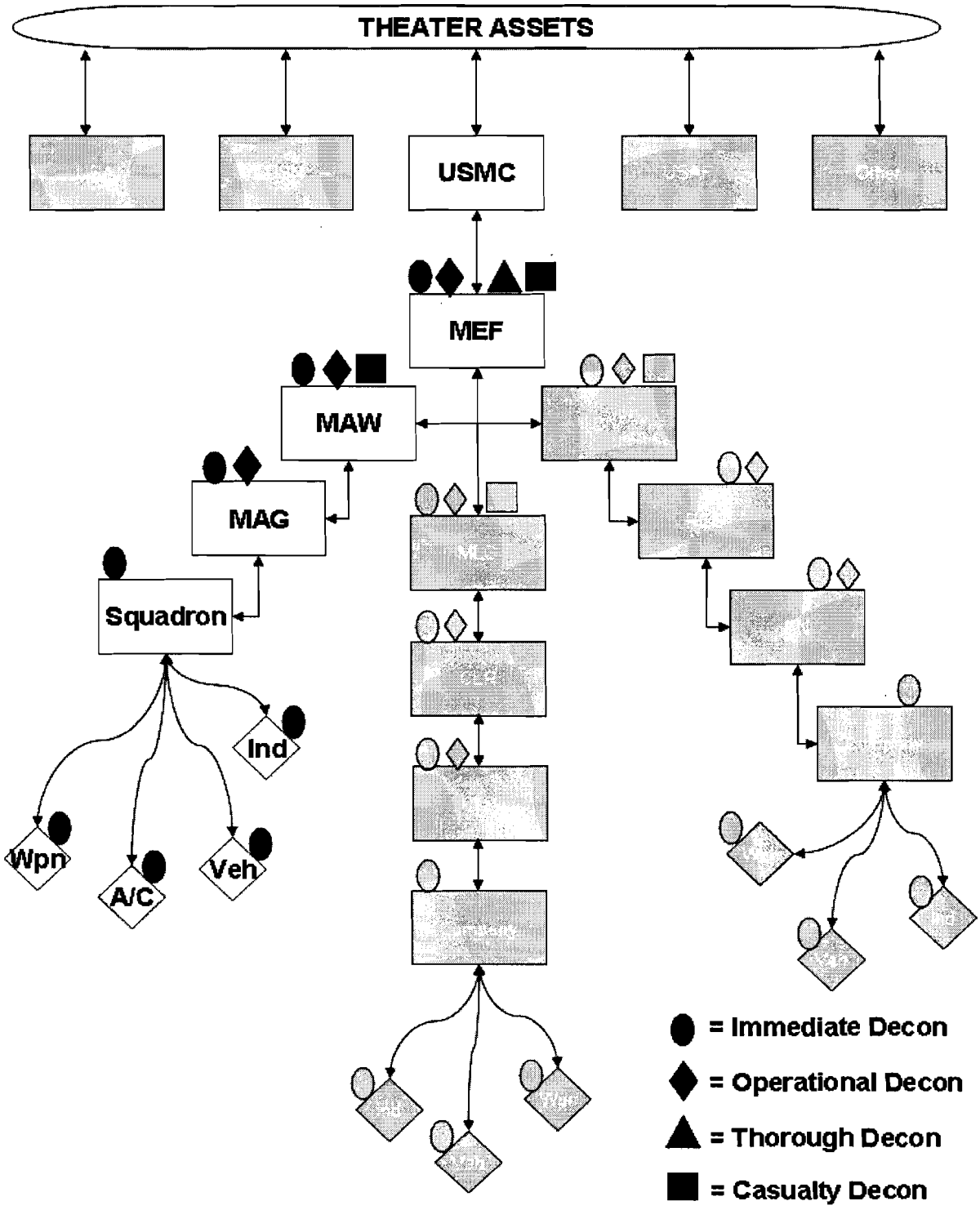
MEF Level Shield Chart



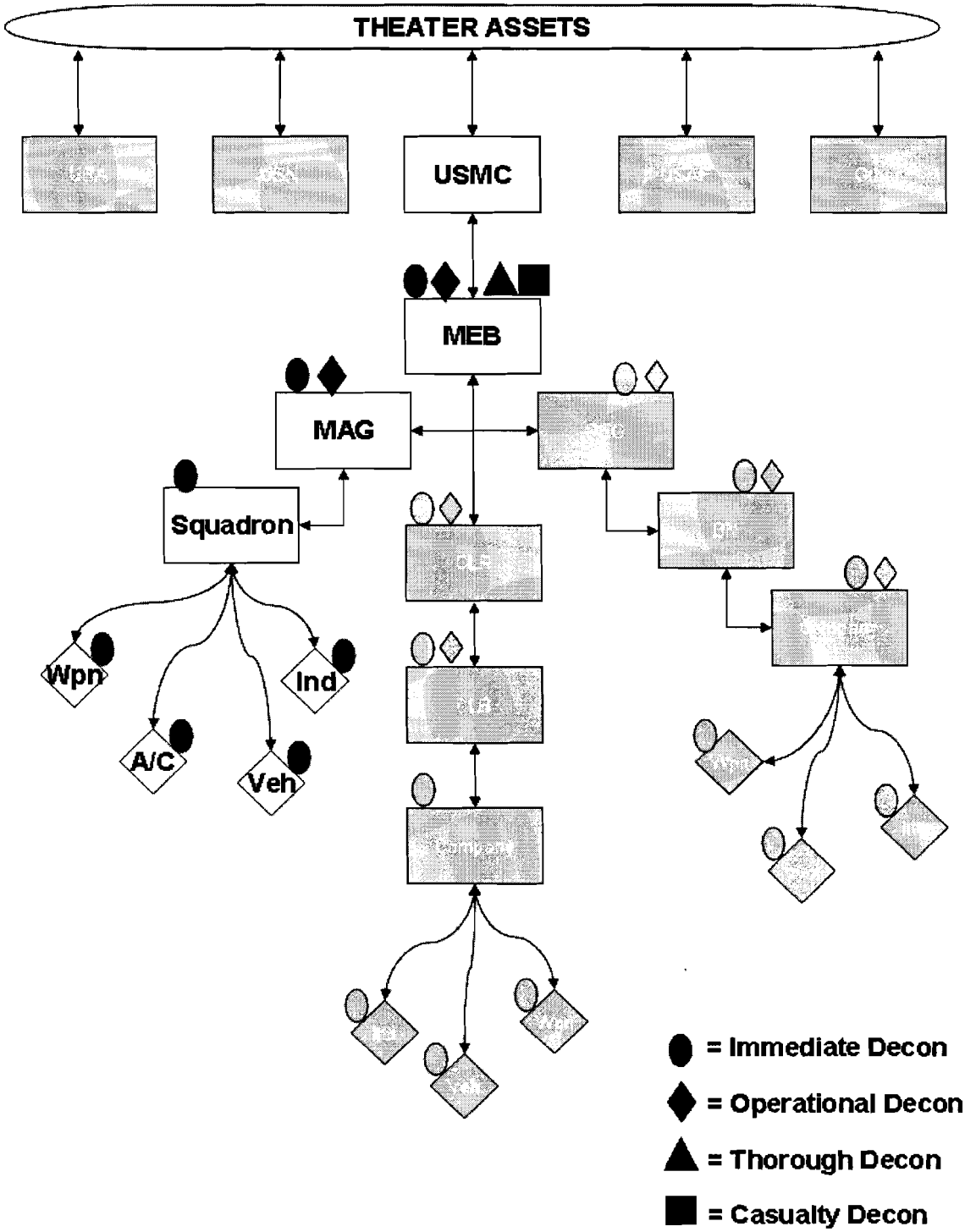
MEB Level Shield Chart



MEF Level Sustain Chart



MEB Level Sustain Chart



APPENDIX F

CBRN WARNING AND REPORTING SYSTEM (CBRNWRS)

CBRN-1 (OBSERVER'S REPORT)

Nuclear (NUC)

Set	Description	Example
BRAVO	Observer Location and Attack Direction	BRAVO/32UNB062634/2500MLG/
DELTA	DTG of Detonation	DELTA/201405ZSEP1997//
FOXTROT	Location of Detonation	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/SUS/AIR/1/BOM/1//
HOTEL	Type of Nuclear Burst	HOTEL/SURF//
JULIET	Flash-to-Bang Time in seconds	JULIET/57//
LIMA	Angular Cloud Width	LIMA/18DGT//
MIKE	Stabilized Cloud Measure at H+10	MIKE/TOP/33DGT/9KM//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Chemical or Biological (CHEM/BIO)

Set	Description	Example
BRAVO	Observer Location and Attack Direction	BRAVO/32UNB062634/2500MLG//
DELTA	DTG of Attack	DELTA/201405ZSEP1997//
FOXTROT	Location of Attack	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/OBS/AIR/1/BML/-//
INDIA	Release Information on Agent	INDIA/AIR/NERV/P/ACD//
TANGO	Terrain and Vegetation Description	TANGO/FLAT/URBAN//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Release Other than Attack (ROTA)

Set	Description	Example
BRAVO	Observer Location and Event Direction	BRAVO/32UNB062634/2500MLG//
CHARLIE	DTG of Event	CHARLIE/281530ZSEP1997//
FOXTROT	Location of Event	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/SUS/TPT/1/TNK/SML//
INDIA	Release Information on event	INDIA/SURF/2978/-/ARD//
MIKER	Description and Status	MIKER/LEAK/CONT//
TANGO	Terrain and Vegetation Description	TANGO/URBAN/URBAN//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

CBRN-2 (EVALUATED DATA)

Nuclear (NUC)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/N/55//
DELTA	DTG of Detonation	DELTA/201405ZSEP1997//
FOXTROT	Location of Detonation	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/SUS/AIR/1/BOM/1//
HOTEL	Type of Nuclear Burst	HOTEL/SURF//
NOVEMBER	Estimated Nuclear Yield in KT	NOVEMBER/UNK//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Chemical or Biological (CHEM/BIO)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/B//
DELTA	DTG of Attack	DELTA/201405ZSEP1997//
FOXTROT	Location of Attack	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/OBS/AIR/1/BML/-//
INDIA	Release Information on Agent	INDIA/AIR/BIO/-/DET//
TANGO	Terrain and Vegetation Description	TANGO/FLAT/URBAN//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Release Other than Attack (ROTA)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/US/WEP/001/RN//
CHARLIE	DTG of Event	CHARLIE/281530ZSEP1997//
FOXTROT	Location of Event	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/SUS/TPT/1/TNK/1//
INDIA	Release Information on event	INDIA/SURF/2978/-/ARD//
MIKER	Description and Status	MIKER/LEAK/CONT//
TANGO	Terrain and Vegetation Description	TANGO/URBAN/URBAN//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

CBRN-3 (IMMEDIATE WARNING OF EXPECTED CONTAMINATION)

Nuclear (NUC)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/N//
DELTA	DTG of Detonation	DELTA/201405ZSEP1997//
FOXTROT	Location of Detonation	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/SUS/AIR/1/BOM/4//
HOTEL	Type of Nuclear Burst	HOTEL/SURF//
NOVEMBER	Estimated Nuclear Yield in KT	NOVEMBER/50//
PAPAB	Fallout Hazard Prediction Parameters	PAPAB/019KPH/33KM/5KM/ 272DGT/312DGT//
PAPAC	Radar Determined External Contour of Radioactive Cloud	PAPAC/32VNJ456280/32VNJ456119/32VNJ556 182/ 32VNJ576200//
PAPAD	Radar Determined Downwind Direction of Radioactive Cloud	PAPAD/030DGT//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Chemical or Biological (CHEM/BIO)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/C//
DELTA	DTG of Attack	DELTA/201405ZSEP1997//
FOXTROT	Location of Attack	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/OBS/AIR/1/BML/-//
INDIA	Release Information on Agent	INDIA/AIR/NERV/P/ACD//
PAPAA	Predicted Attack and Hazard Area	PAPAA/1KM/3-10DAY/10KM/2-6DAY//
PAPAX*	Hazard Area Location for Weather Period	PAPAX/201600ZSEP1997/ 32VNJ456280/32VNJ456119//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Release Other than Attack (ROTA)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/US/WEP/001/RN//
CHARLIE	DTG of Event	CHARLIE/281530ZSEP1997//
FOXTROT	Location of Event	FOXTROT/32UNB058640/EE//
GOLF	Delivery and Quantity Information	GOLF/SUS/TPT/1/TNK/1//
INDIA	Release Information on event	INDIA/SURF/2978/-/ARD//
PAPAR	Predicted Isolation and Hazard Area	PAPAR/1000M/5KM//
PAPAX*	Hazard Area Location for Weather Period	PAPAX/081200ZSEP1997/ 32VNJ456280/32VNJ456119//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

** Repeatable up to 3 times corresponding to the time periods from the CDM.*

CBRN-4 (RECONNAISSANCE AND MONITORING RESULTS)

Nuclear (NUC)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/N//
KILO	Crater Description	KILO/UNK//
QUEBEC*	Location & Type of Reading	QUEBEC/32VNJ481203/GAMMA/-
ROMEO*	Dose and Decay Rate Trend	ROMEO/7CGH/DECR/DN//
SIERRA*	DTG of Reading	SIERRA/202300ZSEP1997//
YANKEE*	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU*	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Chemical or Biological (CHEM/BIO)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/C//
INDIA	Release Information on Agent	INDIA/UNK/NERV//
QUEBEC*	Location & Type of Detection	QUEBEC/32VNJ481203/-/DET//
ROMEO*	Level of Contamination	ROMEO/20PPM//
SIERRA*	Initial Detection of Contamination	SIERRA/202300ZSEP1997//
TANGO*	Terrain and Vegetation Description	TANGO/FLAT/URBAN//
YANKEE*	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU*	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Release Other than Attack (ROTA)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/US/WEP/001/RN//
INDIA	Release Information on Event	INDIA/SURF/2978/-/SPEC//
QUEBEC*	Location & Type of Reading/Detection	QUEBEC/32VNJ481203/GAMMA/-
ROMEO*	Level of Contamination, Dose and Decay Rate Trend	ROMEO/7CGH/DECR/DF//
SIERRA*	DTG of Reading/Detection	SIERRA/202300ZSEP1997//
TANGO*	Terrain and Vegetation Description	TANGO/URBAN/URBAN//
YANKEE*	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU*	Actual Weather Conditions	ZULU/4/10C/7/5/1//

** Sets QUEBEC, ROMEO, SIERRA and TANGO are a segment. With exclusion of set ROMEO, this segment is mandatory. Sets YANKEE and ZULU are a 2nd segment, this segment is operationally determined. Sets/segments are repeatable up to 20 times in order to describe multiple detection, monitoring or survey points.*

CBRN-5 (AREAS OF ACTUAL CONTAMINATION)

Nuclear (NUC)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/N//
DELTA	DTG of Detonation	DELTA/201405ZSEP1997//
OSCAR	DTG for Estimated Contour Lines	OSCAR/201505ZSEP1997//
XRAYA*	Actual Contour Information	XRAYA/5CGH/32UND620475/ 32UND662522/32UND883583//
XRAYB*	Predicted Contour Information	XRAYB/75/100CGH/32UND621476/32UND62147/ 32UND622477//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Chemical or Biological (CHEM/BIO)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/C//
DELTA	DTG of Attack	DELTA/201405ZSEP1997//
INDIA	Release Information on Agent	INDIA/AIR/NERV/P/ACD//
OSCAR	DTG for Estimated Contour Lines	OSCAR/201505ZSEP1997//
XRAYA*	Actual Contour Information	XRAYA/LCT50/32VNJ575203/ 32VNJ572211/32VNJ560219/ 32VNJ534218/32VNJ575203//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

Release Other than Attack (ROTA)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/US/WEP/001/RN//
CHARLIE	DTG of Event	CHARLIE/281530ZSEP1997//
INDIA	Release Information on event	INDIA/SURF/2978/-/SPEC//
OSCAR	DTG for Estimated Contour Lines	OSCAR/281830ZSEP1997//
XRAYA*	Actual Contour Information	XRAYA/0.003CGH/334015N1064010W/ 334020N1064010W/ 334020N1064020W/ 334015N1064020W/ 334015N1064010W//
YANKEE	Downwind Direction and Speed	YANKEE/270DGT/015KPH//
ZULU	Actual Weather Conditions	ZULU/4/10C/7/5/1//

** Sets are repeatable up to 50 times to represent multiple contours*

CBRN-6 (DETAILED CBRN ATTACK REPORT)

Nuclear (NUC)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/N//
DELTA	DTG of Detonation	DELTA/201405ZSEP1997//
FOXTROT	Location of Attack and Qualifier	FOXTROT/32UNB058640/EE//
QUEBEC	Location & Type Reading	QUEBEC/32VNJ481203/GAMMA/-
SIERRA	DTG of Reading	SIERRA/202300ZSEP1997//
GENTEXT	General Text	GENTEXT/NBCINFO/WEAPON YIELD ESTIMATED FOR EVALUATION OF COLLATERAL DAMAGE PURPOSES ONLY//

Chemical or Biological (CHEM/BIO)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/UK/A234/001/C//
DELTA	DTG of Attack	DELTA/201405ZSEP1997//
FOXTROT	Location of Attack and Qualifier	FOXTROT/32UNB058640/EE//
INDIA	Release Information on Agent	INDIA/AIR/NERV/P/ACD//
QUEBEC	Location & Type of Detection	QUEBEC/32VNJ481203/-/DET//
SIERRA	DTG of Detection	SIERRA/202300ZSEP1997//
GENTEXT	General Text	GENTEXT/NBCINFO/SICA LAB REPORT HAS IDENTIFIED THE AGENT AS VX//

Release Other than Attack (ROTA)

Set	Description	Example
ALFA	Strike Serial Number	ALFA/US/WEP/001/RN//
CHARLIE	DTG of Event	CHARLIE/281530ZSEP1997//
FOXTROT	Location of Event	FOXTROT/32UNB058640/EE//
INDIA	Release Information on event	INDIA/SURF/2978/-/SPEC/-//
QUEBEC	Location & Type of Reading/Detection	QUEBEC/32VNJ481203/GAMMA//
SIERRA	DTG of Reading/Detection	SIERRA/282300ZSEP1997//
GENTEXT	General Text	GENTEXT/NBCINFO/HOSPITAL VEHICLE CARRYING RADIOACTIVE WASTE OVERTURNED ON ROUTE 25//

CBRN REPORT DATA BLOCK EXPLANATIONS

ALFA Strike Serial Number

```
/-     /-     /-     /-     /-     //
|      |      |      |      ↳(O) Grading of Message/Report.
|      |      |      ↳(M) Type of incident
|      |      ↳(M) Sequence Number
|      ↳(M) Code for Originator
↳(M) Nationality
```

BRAVO Location of Observer and Direction of Attack or Event

```
/-     /-     //
|      ↳(M) Direction of Event from Observer and Unit of Measure
↳(M) Location of Observer (Place Name, LAT/LON, 6/8 Digit Grid)
```

CHARLIE Date Time Group of Report or Observation and End of Event

```
/-     /-     //
|      ↳(O) DTG Event ended in Zulu-Time, Month and Year
↳(M) DTG of Report or Observation in Zulu-Time, Month and Year
```

DELTA Date Time Group of Attack or Detonation and Attack End

```
/-     /-     //
|      ↳(O) DTG Attack ended in Zulu-Time, Month and Year
↳(M) DTG of Attack or Detonation in Zulu-Time, Month and Year
```

FOXTROT Location of Attack or Event

```
/-*    /-     //
|      ↳(M) Location Qualifier
↳(M) Event Location (Place Name, LAT/LON,  6/8 Digit Grid)
```

** Field 1 is repeatable to accommodate up to 6 data entries in order to define a line or area attack.*

GOLF Delivery and Quantity Information

```
/-      /-      /-      /-      /-      //
|       |       |       |       ↳(M) Number of Containers or Size of Release
|       |       |       ↳(M) Type of Agent Containers
|       |       ↳(M) Number of Delivery Systems
|       ↳(M) Type of Delivery
↳(M) Suspected/Observed Event
```

HOTEL Type of Nuclear Burst

```
/-      //
↳(M) Type of Nuclear Burst
```

INDIA Release Information on Agent Attacks or ROTA Events.

```
/-      /-      /-      /-*     //
|       |       |       ↳(O) Type of Detection
|       |       ↳(O) Type of Persistency
|       ↳(O) Type of Agent, Agent Name, or UN/NA Number
↳(M) Type of Agent-Release-Height
```

** Field 4 is repeatable to accommodate up to 2 entries in order to provide information on multiple types of detection.*

JULIET Flash-to-Bang Time in Seconds

```
/-      //
↳(M) Flash-to-Bang Time in Seconds
```

KILO Crater Description

```
/-      /-      //
|       ↳(O) Crater Width and Unit of Measure
↳(M) Crater Indicator
```

LIMA Nuclear Burst Angular Cloud Width at H+5 Minutes

/- //
↳(M) Angular Cloud Width (at H + 5 Min) and Unit of Measure

MIKE Stabilized Cloud Measure at H+10 Minutes

/-* /- /- //
| | ↳(M) Cloud Height and Unit of Measure
| ↳(M) Cloud Angle and Unit of Measure
↳(M) Cloud Section
** Fields 1-3 are repeatable to accommodate up to 2 data entries in order to describe the cloud height and/or the cloud angle for cloud top and/or for cloud bottom.*

MIKER Description and Status of ROTA Event

/- /- //
| ↳(M) Status of ROTA-Event
↳(M) Description of ROTA-Event

NOVEMBER Estimated Nuclear Yield in Kilotons

/- //
↳(M) Estimated Nuclear Yield in Kilotons

OSCAR Reference Date Time Group for Estimated Contour Lines

/- //
↳(M) DTG for contour lines in Zulu-Time, Month and Year

PAPAA Predicted Attack and Hazard Area

/- /- /- /- //
| | | ↳(M) Hazard Area Duration and Unit of Measure
| | ↳(M) Hazard Area Distance and Unit of Measure
| ↳(M) Duration of Hazard in Attack Area and Unit of Measure
↳(M) Attack Area Radius and Unit of Measure

PAPAB Detailed Fallout Hazard Prediction Parameters

```
/-      /-      /-      /-      /-      //
|       |       |       |       ↳(M) Right Radial Line and Unit of Measure
|       |       |       ↳(M) Left Radial Line and Unit of Measure
|       |       ↳(M) Cloud Radius and Unit of Measure
|       ↳(M) Downwind Distance of Zone I and Unit of Measure
↳(M) Effective Wind Speed and Unit of Measure
```

PAPAC Radar Determined External Contour of Radioactive Cloud

```
/-*     //
↳(M) External Contour of Cloud (Place, LAT/LON, 6/8 Digit Grid)
```

** Field 1 is repeatable to accommodate up to 6 entries in order to describe the radioactive cloud outline.*

PAPAD Radar Determined Downwind Direction of Radioactive Cloud

```
/-      //
↳(M) Downwind Direction of Radioactive Cloud and Unit of Measure
```

PAPAR Predicted ROTA Release and Hazard Area

```
/-      /-      //
|       ↳(M) Hazard Area Distance and Unit of Measure
↳(M) Release Area Distance and Unit of Measure
```

PAPAX Hazard Area Location for Weather Period**

```
/-      /-*     //
|       ↳(M) Hazard Area Location (Place, LAT/LON, 6/8 Digit Grid)
↳(M) DTG of Meteorological Period in Zulu-Time, Month and Year
```

** Field 2 is repeatable up to 20 times in order to describe the hazard area outline.*
*** Set is repeatable up to 3 times in order to describe three possible hazard areas corresponding to the time periods from the CDM. A hazard area for a following time period will always include the previous hazard area.*
Note: If Hazard Area Location has only one Position, draw a circle with Radius of the (Remaining) Hazard Area Distance from set PAPAA.

QUEBEC* Location and Type of Reading/Detection

/- /- /- /- //
| | | ↳(O) Altitude in feet above Ground Level (AGL)
| | ↳(M) Type of Detection
| ↳(M) Type of Sample
↳(M) Location (Place, LAT/LON, 6/8 Digit Grid)
** Set is repeatable up to 20 times in order to describe multiple detectors, monitoring or survey points.*

ROMEO* Level of Contamination, Dose and Decay Rate Trend

/- /- /- //
| | ↳(O) Relative Decay Rate or Actual Decay Rate
| ↳(O) Dose Rate Trend
↳(M) Level of Dose Rate/Dosage and Unit of Measure, Level of Dose and Unit of Measure, or Level of Contamination and Unit of Measure
** Set is repeatable up to 20 times in order to describe multiple detection, monitoring or survey points.*

SIERRA* DTG of Reading or Initial Detection of Contamination

/- //
↳(M) DTG Agent Detected/Reading in Z-Time, Month and Year

* Set is repeatable up to 20 times in order to describe multiple detection, monitoring or survey points.

TANGO* Terrain/Topography and Vegetation Description

/- /- //
| ↳(M) Vegetation Description
↳(M) Terrain/Topography Description
** Set is repeatable up to 20 times in order to describe multiple detection, monitoring or survey points.*

XRAYA Actual Contour Information**

```
/-      /-*     //
|       ↳(M) Limit Contour Line or Area of Contamination
↳(M) Level of Dose Rate/Dosage and Unit of Measure, Level of
     Dose and Unit of Measure, Level of Contamination and
     Unit of Measure, or Level of Hazard
```

** Field 2 is repeatable to accommodate up to 50 data entries in order to describe respective contour lines.*
*** Set is repeatable up to 50 times to represent multiple contours.*

XRAYB Predicted Contour Information**

```
/-      /-      /-*     //
|       |       ↳(M) Limit Contour Line or Area of Contamination
|       ↳(M) Level of Dose Rate/Dosage and Unit of Measure, Level
|            of Dose and Unit of Measure, Level of Contamination
|            and Unit of Measure, or Level of Hazard
↳(M) Type of Contour
```

** Field 3 is repeatable to accommodate up to 50 data entries in order to describe respective contour lines.*
*** Set is repeatable up to 50 times to describe multiple contours or segments.*

YANKEE* Representative Downwind Direction and Downwind Speed

```
/-      /-      //
|       ↳(M) Representative Downwind Speed and Unit of Measure
↳(M) Representative Downwind Direction and Unit of Measure
```

** Set is repeatable up to 20 times in order to describe multiple detection, monitoring or survey points.*

ZULU* Actual Weather Conditions

```
/-      /-      /-      /-      /-      //
|       |       |       |       ↳(M) Cloud Coverage
|       |       |       ↳(M) Significant Weather Phenomena
|       |       ↳(M) Relative Humidity Range
|       ↳(M) Surface Air Temperature and Unit of Measure,
↳(M) Detailed or Simplified Air Stability Category
```

** Set is repeatable up to 20 times in order to describe multiple detection, monitoring or survey points.*

GENTEXT General Text (unlimited free text).

/- /- //
| ↳(M) Free Text
↳(M) Text Indicator

METEOROLOGICAL REPORTS (*Letter "M" added)*

Effective Downwind Message (EDM)

Set	Description	Example
AREAM	Area Of Validity	AREAM/NFEA//
ZULUM	Period Of Validity	ZULUM/271100ZMAY1999/271200ZMAY1999/271800ZMAY1999//
UNITM	Units Of Measure	UNITM/KM/DGT/KPH/-//
ALFAM	For Yield Group A	ALFAM/-/095/020//
BRAVOM	For Yield Group B	BRAVOM/-/102/024//
CHARLIEM	For Yield Group C	CHARLIEM/-/115/028//
DELTAM	For Yield Group D	DELTAM/-/122/029//
ECHOM	For Yield Group E	ECHOM/-/126/029//
FOXTROTM	For Yield Group F	FOXTROTM/-/132/029//
GOLFM	For Yield Group G	GOLFM/-/140/035//

Chemical Downwind Message (CDM)

Set	Description	Example
AREAM	Area Of Validity	AREAM/NFEB4//
ZULUM	Period Of Validity	ZULUM/231100ZNOV2004/231200ZNOV2004/231800ZNOV2004//
UNITM	Units Of Measure	UNITM/-/DGT/KPH/C//
WHISKEYM	Weather For 0-2 Hour Period	WHISKEYM/120/10/4/18/7/4/2
XRAYM	Weather For 2-4 Hour Period	XRAYM/100/015/4/15/7/5/2//
YANKEEM	Weather For 4-6 Hour Period	YANKEEM/110/010/4/13/7/6/2

Basic Wind Message (BWM)

Set	Description	Example
AREAM	Area Of Validity	AREAM/NFEA1//
ZULUM	Period Of Validity	ZULUM/140000ZSEP1999/140400ZSEP1999/141000ZSEP1999//
UNITM	Units Of Measure	UNITM/-/DGT/KPH/-//
LAYERM	Wind Conditions At 2,000m Increments Up To 30,000m	LAYERM/ 02/265/020/ 04/290/030/ 06/300/035/ 08/310/035/ 10/330/040/ 12/345/040/ 14/355/035/ 16/005/030/ 18/015/025/ 20/020/015/ 22/020/020/ 24/025/020/ 26/025/020//

METEOROLOGICAL REPORTS DATA BLOCK EXPLANATIONS

AREAM

/- //
↳(M) Name of Area of Validity

ZULUM

/- /- /- //
| | ↳(M) DTG in Zulu-time, Month and Year Valid to
| ↳(M) DTG in Zulu-time, Month and Year Valid from
↳(M) Observation DTG in Zulu-time, Month and Year

UNITM

/- /- /- /- //
| | | ↳(M) Unit of Measure/Temperature (CDM only)
| | ↳(M) Unit of Measure/Speed
| ↳(M) Unit of Measure/Direction
↳(M) Unit of Measure/Linear (EDM Only)

ALFAM, BRAVOM, CHARLIEM, DELTAM, ECHOM, FOXTROTM, and GOLFM

```
/-      /-      /-      /-      //
|       |       |       ↳(C) Angle Expansion Indicator
|       |       ↳(C) Wind Speed
|       ↳(C) Downwind Direction
↳(O) Radius of Zone I
```

Notes: If Field 1 is used, field 2, 3 and 4 are not used.
If Field 1 is not used, fields 2, 3 and 4 must be used.

LAYERM

```
/-*     /-      /-      //
|       |       ↳(M) Wind Speed
|       ↳(M) Wind Direction
↳(M) Layer Indicator
```

** Fields 1 - 3 are repeatable up to 15 (2km layer wind data).*

WHISKEYM

```
/-      /-      /-      /-      /-      /-      /-      //
|       |       |       |       |       |       ↳(M) Cloud Coverage
|       |       |       |       |       ↳(M) Significant Weather Phenomena
|       |       |       |       ↳(M) Relative Humidity Range
|       |       |       ↳(M) Surface Air Temperature
|       |       ↳(M) Detailed or Simplified Air Stability Category
|       ↳(M) Wind Speed
↳(M) Downwind Direction
```

XRAYM

```
/-      /-      /-      /-      /-      /-      /-      //
|       |       |       |       |       |       ↳(M) Cloud Coverage
|       |       |       |       |       ↳(M) Significant Weather Phenomena
|       |       |       |       ↳(M) Relative Humidity Range
|       |       |       ↳(M) Surface Air Temperature
|       |       ↳(M) Detailed or Simplified Air Stability Category
|       ↳(M) Wind Speed
↳(M) Downwind Direction
```

YANKEEM

```
/-      /-      /-      /-      /-      /-      /-      //
|       |       |       |       |       |       ↳(M) Cloud Coverage
|       |       |       |       |       ↳(M) Significant Weather Phenomena
|       |       |       |       ↳(M) Relative Humidity Range
|       |       |       ↳(M) Surface Air Temperature
|       |       ↳(M) Detailed or Simplified Air Stability Category
|       ↳(M) Wind Speed
↳(M) Downwind Direction
```

STRIKWARN (*Letter "W" added)*

STRIKWARN

Set	Description	Example
ALFAW	STRIKWARN Target Identifier	ALFAW/LAMPPOST//
DELTAW	Date-Time of Strike/Strike cancelled	DELTAW/162025ZSEP1997/ 162155ZSEP1997/
FOXONEW	Minimum Safe Distance One	FOXONEW/011/32UNB058640//
FOXTWOW	Minimum Safe Distance Two	FOXTWOW/025//
HOTELW	Number of Surface Bursts	HOTELW/03/SURF//
INDIAW	Number of Burst in a multiple Strike	INDIAW/022//

STRIKWARN DATA BLOCK EXPLANATIONS

ALFAW

```
/-      //
↳(M) Target Number or Target Nickname
```

DELTAW

```
/-      /-      //
|       ↳(M) DTG Strike Cancelled in Zulu-time, Month and Year
↳(M) DTG of Strike in Zulu-time, Month and Year
```

FOXONEW

/- /-* //
| ↳(M) MSD 1 Box Area (Place, LAT/LON, 6/8 Digit Grid)
↳(M) Minimum Safe Distance 1 in Hundreds of Meters

FOXTWOW

/- /-* //
| ↳(M) MSD 2 Box Area (Place, LAT/LON, 6/8 Digit Grid)
↳(M) Minimum Safe Distance 2 in Hundreds of Meters

HOTELW

/- //
↳(M) Number of Surface Bursts

INDIAW

/- //
↳(M) Number of Bursts in a Multiple Strike

APPENDIX G

CBRN EDUCATIONAL OPPORTUNITIES

CORRESPONDENCE TRAINING

Marine Corps Institute
(www.mci.usmc.mil)

Number	Course Title
571	CBRN Individual Survival Measures
5714	CBRN Reconnaissance and Contamination Avoidance
54	Hazardous Material/ Hazardous Waste Marine

MarineNet
(www.marinenet.usmc.mil)

Number	Course Title
BISC-010	Basic Instructor Skills Course
DI5101A	ORM Indoctrination Course
DI5101B	ORM Refresher Course
DI5101C	ORM Advanced User Course
DI5101D	ORM Facilitator Course

US Army Knowledge Online
(www.train.army.mil)

Number	Course Title
CM1203	Radiation Dosimetry
CM1301	Chemical Detection and Reporting
CM1302	Nuclear Warning and Detection
CM1303	Implement Mission-Oriented Protection Posture
CM2206	Chemical and Biological Reconnaissance
CM2300	Operational and Thorough Decontamination Operations
CM2302	Supervise Decontamination Operations
CM2304	Planning Radiological and Chemical Surveys
CM2306	Radiological Operations
CM2307	Nuclear reporting

CM2308	Calculate and Compute Nuclear Data
CM2402	Biological Sampling
CM2506	CBRN Decontamination Concepts
CM3401	Effective Downwind Message
CM3404	Chemical Agent/Compounds
CM5204	Nuclear Warning and Reporting
CM5206	Nuclear Weapons Effects
CM7106	CBRN Logistics
CM7114	Chemical and Biological Operations
CM7116	Radiological Monitoring and Survey
IS0341	Chemical and Biological Reporting
IS0342	NBC Intelligence
IS0343	NBC First Aid
IS0344	Use and Maintenance of Protective Masks and Clothing
IS0345	Operations in an NBC Environment
IS0346	Chemical Detection and Decontamination
IS0347	Individual Survival in a NBC Environment
IS7045	Describe NBC Defense Concepts

USN Advancement Center
(www.advancement.cnet.navy.mil)

Number	Course Title
14010	Aerographer's Mate 1 & C
14269	Surface Weather Observations
14270	Miscellaneous Observations and Codes
14271	Environmental Satellites and Weather Radar
14272	Environmental Communications and Administration
14312	Basic Meteorology

FEMA (EMI)
(http://training.fema.gov/IS/crslist.asp)

Number	Course Title
IS-1	Emergency Manager: An Orientation to the Position
IS-3	Radiological Emergency Management
IS-5.A	An Introduction to Hazardous Materials
IS-100	Incident Command System, Intro
IS-208	State Disaster Management
IS-230	Principles of Emergency Management
IS-235	Emergency Planning

IS-275	EOC's Role in Preparedness, Response and Recovery
IS-301	Radiological Emergency Response
IS-700	National Incident Management System (NIMS), Intro
IS-800.B	National Response Framework, Intro

FEMA (NFA)
(www.nfaonline.dhs.gov)

Number	Course Title
Q157	EMS Operations at Multi-Casualty Incidents
Q462	Introduction to ICS for Operational First Responders
Q463	Basic NIMS ICS for Operational First Responders
Q534	Emergency Response to Terrorism

Texas A&M University (TEEX)
(www.teex.com)

Number	Course Title
AWR110	WMD Terrorism Awareness for Emergency Responders
AWR111	Internet-EMS I: Basic Concepts for WMD Incidents
MGT101	Incident Management / Unified Command
PER303	Concerns for the First Responder in Terrorism
AWR112	Public Works: WMD Basic Concepts

National Center for Biomedical Research and Training
(www.ncbrt.lsu.edu/elearn/Courses.aspx)

Number	Course Title
AWR-190-W	Foundational Awareness of WMD/Terrorism
AWR-191-W	Intro to NIMS/NRP

RESIDENT COURSES

JMITC, Washington, DC
(http://hqinet001.hqmc.usmc.mil/DirInt/Formal_Schools/schools_TITLE.html)

Title	CID	Length
CB WARFARE INTELLIGENCE	C03HDN1	5 Days

USA CBRN SCHOOL, Ft. Leonard Wood, MO
(www.wood.army.mil/3chembde/irtd%20web%20page/index.htm)

Title	CID	Length
CIVIL SUPPORT SKILLS	494-F28	8 Weeks
RADIOLOGICAL SAFETY	494-F14	3 Weeks
DISASTER PREPAREDNESS	A-494-0006	4 Weeks
CBRN MASS CASUALTY DECON	494-F-30	8 Days

MCCSSS, Camp Lejuene, NC
(http://www.lejeune.usmc.mil/mccsss/index.shtml)

Title	CID	Length
MAINTENANCE MANAGEMENT	P143832	4 weeks
BASIC ENLISTED WAREHOUSING	P152260	3 weeks
FORMAL SCHOOL INSTRUCTOR	P166807	1 week
CURRICULUM DEVELOPER	P166808	2 weeks
ADMINISTRATORS COURSE	P166809	3 Days

OEMS, Redstone Arsenal, AL
(www.omems.redstone.army.mil/tec-escort/tec-escort.html)

Title	CID	Length

TECHNICAL ESCORT	494-ASIJ5	4 Weeks

Defense Nuclear Weapons School, Ft. Belvoir, VA
(https://dnws.abq.dtra.mil/)

Title	CID	Length
CONSEQUENCE ASSESSMENT (GICA)	DNWS-R023	2 Days
HPAC LEVEL 1	DNWS-R017	5 Days
HPAC LEVEL 2	DNWS-R018	5 Days
HPAC LEVEL 3	DNWS-R033	5 Days

Defense Nuclear Weapons School, Kirtland AFB, NM
(https://dnws.abq.dtra.mil/)

Title	CID	Length
CATS LEVEL 1	DNWS-R020	3 Days
CATS LEVEL 2	DNWS-R021	3 Days
NUC/RAD INCIDENT MANAGEMENT (NRIM)	DNWS-R025	4 Days
APPLIED RAD RESPONSE TECHNIQUES (ARRT)	DNWS-R027	5 Days
FIRST RESPONDER RAD COURSE (FRC)	JRT-001	2 Days
NUC EMERGENCY TEAM OPERATIONS (NETOP)	DNWS-NR022	10 Days

APPENDIX H

MOS 57XX SUSTAINMENT TRAINING AND UNIT TRAINING MATRIX

CBRN Aspects of Command and Control Operations			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Perform CBRN Mission Analysis	Annual	X	X
Coordinate NBCC Operations	Annual	X	X
Coordinate Activities for Combating WMD Operations	Annual	X	X

Contamination Avoidance			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Identify Chemical Agents and Effects	Quarterly	Semi-Annual	Annual
Identify Biological Agents and Effects	Quarterly	Semi-Annual	Annual
Identify Radiological Effects	Quarterly	Semi-Annual	Annual
Identify the Effects of a Toxic Industrial Material (TIM) Hazard	Quarterly	Semi-Annual	Annual
Identify CBRN Warning and Reporting System	Quarterly	Semi-Annual	Annual
Perform Chemical Hazard Warning and Reporting	Quarterly	Semi-Annual	X
Perform Biological Hazard Warning and Reporting	Quarterly	Semi-Annual	X
Perform Radiological Hazard Warning and Reporting	Quarterly	Semi-Annual	X
Perform TIM Hazard Warning and Reporting	Quarterly	Semi-Annual	X
Conduct CBRN Assessment Operations	Quarterly	Semi-Annual	X
Identify CBRN Contamination Avoidance Measures	Quarterly	Semi-Annual	Annual
Employ Chemical Detection Equipment	Quarterly	Semi-Annual	Annual
Employ Biological Detection Equipment	Quarterly	Semi-Annual	X
Employ Radiological Detection Equipment	Quarterly	Semi-Annual	Annual
Perform CBRN Reconnaissance TTPs	Quarterly	Semi-Annual	X

CBRN Protection			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Employ CBRN Protection Equipment	Quarterly	Semi-Annual	Annual
Perform Individual CBRN Protection Actions	Quarterly	Semi-Annual	Annual
Coordinate Unit CBRN Protection Actions	Annual	Annual	X

WMD Consequence Management (CM) Operations			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Perform HAZMAT Awareness Certification Training	Annual	X	X
Perform HAZMAT Operations Certification Training	Annual	X	X
Perform HAZMAT Technician Certification Training	Annual	X	X
Identify the Requirements for Supporting CBRN CM Ops	Annual	X	X
Identify the Elements of the ICS Process	Annual	X	X
Identify the Elements of the NIMS Framework	Annual	X	X
Identify the Elements of the NRP	Annual	X	X
Responder and Emergency Ops Roles and Responsibilities	Annual	X	X

Decontamination Operations			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Identify the Fundamentals of Decontamination	Quarterly	Semi-Annual	Annual
Employ CBRN Decontamination Equipment	Quarterly	Semi-Annual	X
Perform Immediate Decon Operations	Quarterly	Semi-Annual	Annual
Perform MOPP Gear Exchange	Quarterly	Semi-Annual	Annual
Perform Vehicle Washdown	Quarterly	Semi-Annual	X
Perform Aircraft Washdown	Quarterly	Semi-Annual	X
Operate Power Driven Decon Equipment	Quarterly	Semi-Annual	X
Perform Individual Actions for Detailed Troop Decon	Annual	Annual	Annual
Perform Individual Actions for Aircrew Decon	Annual	Annual	Annual
Perform Individual Actions for Detailed Equipment Decon	Annual	Annual	Annual
Perform Individual Actions for Detailed Aircraft Decon	Annual	Annual	Annual
Perform Individual Actions for Casualty Decon	Annual	Annual	Annual

CBRN Training			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Assist with the conduct of an IPE	Annual	X	X
Perform ORM for CBRN Training	Annual	X	X
Individual Survival Standards (ISS) Training	Annual	Annual	Annual
Basic Operating Standards (BOS) Training	Annual	Annual	Annual
Unit/Collective MET Training	Annual	Annual	Annual
Live Fire Exercises	Annual	Annual	Annual
MOPP Familiarization Training (MOPP-FT)	Semi-Annual	Semi-Annual	Semi-Annual

CBRN Equipment			
SKILL	**57XX**	**UNIT CBRN TEAMS**	**ALL**
Utilize CBRN Equipment Automated Systems	Annual	X	X
Maintain CBRN Equipment Account	Annual	X	X

APPENDIX I

QUARTERLY CBRN STATUS REPORT

3400
CBRN
DATE

From: Commanding Officer, Unit Name (S-3)
To: Commanding General, 2d Marine Aircraft Wing (AC/S, G-3)

Subj: QUARTERLY CBRN READINESS REPORT; XX QUARTER, CY-XX

1. Per the reference, the following report is submitted. The information provided is accurate as of MM/DD/YYYY.

2. Personnel:

a. Unit T/O Strength:

MARINE OFFICER	MARINE ENLISTED	NAVY OFFICER	NAVY ENLISTED

b. CBRN Personnel Status (MOS 57XX):

NAME	RANK	DCTB	EAS

c. Additional Duty CBRN Officer/NCO:

NAME	RANK	DATE TRAINED	EAS

d. Unit CBRN Team Personnel:

NAME	RANK	DATE TRAINED	EAS

c. CBRN Personnel Concerns:

3. Training:

a. CBRN Training Conducted:

DATE	UNIT	NUMBER TRAINED	TRAINING CONDUCTED	HOURS

b. CBRN MOS Training Conducted:

DATE	NUMBER TRAINED	TRAINING CONDUCTED	HOURS

c. Mask Confidence Exercise (Personnel Total To Date-Calendar Year):

	MARINE OFFICER	MARINE ENLISTED	NAVY OFFICER	NAVY ENLISTED
ON HAND STRENGTH				
ON HAND TRAINED				

d. CBRN Training Scheduled:

DATE	UNIT	TRAINING SCHEDULED	LOCATION

e. CBRN Training Concerns:

4. Point of contact concerning this matter is (Operations Officer) at 45X-XXXX.

M. MARINE
By direction

APPENDIX J

TOXIC INDUSTRIAL MATERIALS, ROTA, AND DEPLETED URANIUM

1. Toxic Industrial Materials (TIM)

a. Terms

(1) Toxic industrial materials, also referred to as TIM, can be found in abundance in all countries and are commonly used in chemical manufacturing processes, agriculture, water treatment, and many other areas. Annually, more than 70,000 different chemicals (which amount to billions of tons commercial material), are produced, processed, or consumed by the global chemical industry. Militarily, a significant portion of these chemicals may exhibit characteristics or are sufficiently hazardous, to pose a viable threat to both military and civilian populations.

(2) Also, while chemical warfare agents are highly toxic and lethal in small amounts, the countries that produce them are generally known and are few in number when compared with the quantities and universal nature of toxic industrial materials. TIM hazards, previously considered insignificant during wartime, increase greatly in significance when they are manufactured, stored, distributed, or transported in close proximity to fixed sites, ports, or airfields.

b. Toxic Industrial Material Classification. The term "toxic industrial material" is used to collectively describe the following three terms:

(1) Toxic Industrial Chemical (TIC). Chemical materials or compounds that are used for multiple purposes such as fuels or solvents, or in manufacturing that are toxic to humans and animals or damages plants.

(2) Toxic Industrial Biological (TIB). Biological material found in medical research or pharmaceutical manufacturing that are toxic to humans and animals or damages plants.

(3) Toxic Industrial Radiological (TIR). Radiation materials used in research, power generation, and medical treatment that are harmful to humans and animals if released outside their controlled environments.

c. Sources of Exposure. As previously mentioned, materials classified as toxic industrial materials are used worldwide in a variety of peaceful applications. Possible sources of TIM exposure exists both in wartime and peacetime situations.

(1) Accidents in civilian operations significantly increase when technically trained personnel flee an area, such as combat zones. Remaining civilian personnel may be pressured to operate equipment beyond their training/technical expertise.

(2) Pipelines offer an attractive target for non-state groups (terrorists) because actions can be planned well in advance of the execution and also because pipelines do not rely on shipping or transportation.

(3) Storage yards, ports, airfields and rail yards often contain significant amounts of transiting toxic industrial chemicals. This not only presents opportunities for improvised use against U.S. forces, but also presents increased possibility of accidents and targets for those who want to destroy the TIC, such as ammunition precursor chemicals.

(4) Large stockpiles of obsolete pesticides have been accumulated in almost every developing country over 40 years. The term, "pesticides," as used by U.S. forces include insecticides, rodenticides, fungicides, and herbicides. Depending on the type of pesticide, health effects may vary. Organophosphates and carbamates affect the nervous system in the very same manner as G and V series nerve agents. Other pesticides may irritate the skin or eyes. Some may even be carcinogens, chemicals capable of causing cancer in exposed individuals.

d. Toxic Industrial Material Hazards. A number of hazards are associated with the potential release of toxic industrial materials. While the threat to personnel is similar to those posed by the more "traditional" CBRN threats, toxic industrial materials pose additional challenges that must be evaluated.

(1) Some toxic industrial materials have the ability to bypass or penetrate current military protective equipment and, in many cases, are not detectable by current military equipment.

(a) Degree of protection may be greater that what is provided by standard chemical protective over garments. TIM may be caustic, explosive, flammable, or radioactive. It may displace oxygen or be present in very high concentrations.

(b) While detection and identification equipment and methods are available, the number of possibilities makes knowing what type of protection to use and when to don protection more difficult.

(c) Military protective filters are optimized for use against chemical and biological warfare agents, but not TIM. The charcoal filters do not provide adequate protection against some

organic vapors and should not be used in atmospheres with oxygen content of less than 19.5 percent by volume.

(2) Exposure can occur through several routes, including inhalation, ingestion, or surface contact with the material.

(3) Many of the toxic industrial materials are capable of causing a variety of symptoms, some of which may be immediate or delayed, that make detection, diagnosis, and treatment difficult. Also, symptoms are often difficult to trace back to a specific chemical.

(4) Determining the exposure level that constitutes a hazard for the individual is often difficult due to the variances of susceptibility among individuals.

2. Release Other Than Attack (ROTA). ROTA is a term used to designate releases of toxic industrial materials by means other than "traditional" military CBRN attacks. These releases may include but are not limited to damaged or destroyed storage bunkers, transport vehicles, storage or production facilities, ammunition supply sites, power plants, etc.

3. Depleted Uranium. Depleted Uranium (DU) is an extremely dense metal used in munitions to penetrate heavy armor or as protective shielding (armor packages).

a. Exposure. DU exposure and incidents may occur anytime there is damage to the DU armor package—a vehicle is hit with DU munitions, DU munitions are damaged, or equipment components containing DU are damaged. The DU armor can be damaged during vehicle maneuvers, on-board fires, maintenance activities, or ballistic impacts. DU munitions' problems may occur as an occupational exposure during storage, transportation, combat, testing, or manufacturing. DU contamination may be present on the ground in areas where equipment was destroyed or damaged.

b. Contamination. DU contamination may include DU oxides (dust), contaminated shrapnel, munitions components, or armor components. DU primarily emits alpha particles; however, beta, gamma, and X-ray ionizing radiation are also emitted. DU contamination can be inhaled, ingested, injected, or absorbed through open cuts or wounds. DU contamination does not pose an immediate health risk. Consequently, contamination should be removed from personnel or vehicle surfaces when directed by the unit commander based on METT-T.

c. Presence of DU. Visual signs that DU contamination is present immediately after a high-heat event (impact and/or fire) include heavy, dull black dust or small round holes. DU fragments or residues that have weathered in the environment may

exhibit a green or yellow appearance. DU contamination can only be verified with a RADIAC meter. An AN/VDR-2 or AN/PDR-77 with an alpha probe or beta (flat pancake) probe is used to detect and measure DU contamination. Care should be taken when surveying with the alpha probe to prevent puncturing the probe window, which renders the probe useless.

d. Protection. When working on or within DU-contaminated equipment, personnel must wear gloves, use respiratory protection (e.g., painter mask, bandana, surgical mask), and wear coveralls or roll down their sleeves and blouse their trousers as directed by unit chemical or medical personnel.

APPENDIX K

CBRN IPE CONFIDENCE EXERCISE

1. General. MCO 3400.3F requires that all personnel complete an IPE confidence exercise once per calendar year. Commanders should schedule these exercises as often as necessary to ensure total participation.

2. Purpose. The purpose of the exercise is to meet the following objectives. Instructor personnel will keep in mind that this exercise is not an exercise in misery and will hold the concentration of CS to the appropriate levels. Under no circumstances will safety be sacrificed for realism.

a. Test the fit and operation of the individual's protective mask and associated IPE.

b. Establish confidence and a sense of value in the protection afforded by proper use of the protective mask and associated IPE.

c. Build confidence in the ability to don and clear the mask in a contaminated environment.

d. Establish confidence in the individual to operate in a contaminated environment.

e. Prevent panic in combat.

3. Authorized CS Chambers. IPE confidence exercises will be conducted in an approved CS chamber or training area. An enclosed area, such as a CS chamber, is preferable to an open area because the desired vapor concentration can be more easily achieved and maintained. The CS chamber must be a minimum safe distance (MSD) of 500 meters from uncontrolled civilian access roads and cantonment areas. Local range regulations take precedence and can increase but never decrease the MSD. Base safety, or the appointed equivalent, must approve the chamber facility. Prior to placing any newly built or established CS chamber into operation, the base industrial hygienist must conduct an oxygen (02) level test prior to and during a test chamber to ensure the required level of oxygen is present within the chamber.

a. CS Chamber Training. A CS chamber should be reasonably airtight. The enclosed space must be of sufficient size to safely conduct the exercise and should have separate entrance and exits. Minimum equipment to be worn into the CS chamber includes a protective mask or respirator, chemical protective suit, boots and gloves. The only authorized ammunition that can be used

inside the CS chamber is CS capsules. At no time will CS canisters or baseball grenades to be used.

b. Open Area CS Training. Host nation, state and/or base regulations will dictate this type of CS training. Range control or other appropriate authorities must approve the training area and ammunition for such training. The CS training exercises are should be relatively flat, free from ditches, holes, and other possible safety hazards. CS canisters and grenades can be used for this type of training. Ensure that the downwind hazard drift of CS will not non participating personnel. As with CS chamber training, all appropriate IPE should be used during this training.

4. Scheduling. Commanders will schedule IPE exercises via their group CBRN sections. Requests will be submitted a minimum of 10 working days prior to the training date requested.

5. Safety. The following safety standards must be practiced and enforced during all IPE confidence exercises.

a. IPE confidence exercises must occur at a MSD from other training activities and events. Units should provide appropriate government transportation to and from the training area. If, for unforeseen reasons, government transportation is not available, not adequate, or fails to materialize, individuals can utilize POV's to and from the training. All efforts should be made to maximize the number of personnel in each vehicle, car pool, to cut down on the number of vehicles at the training site.

b. CBRN instructors must consider heat stress created during the exercise. An adequate water supply must be made available at the exercise location.

c. Wearing of contact lenses during IPE confidence exercises is not authorized. Personnel that are wearing contact lenses must remove them prior to entering the CS chamber or CS training area.

d. A safety vehicle with a non-participating driver, and a Navy Corpsman with support equipment, must be on hand prior to personnel entering the CS chamber or CS training area. Any personnel that become incapacitated while in the CS chamber, or CS training area, will be removed by other participants and moved to a clean area so the Corpsman can render assistance.

e. A safety brief will be given by a qualified CBRN instructor holding the MOS of 5702 or 5711 prior to conducting any IPE exercise. The brief will consist of the following items:

(1) Proper donning, fitting, and doffing of the field protective mask or respirator and all associated IPE.

(2) Mask or respirator serviceability checks IAW the appropriate TM's.

(3) Use of the buddy system during the exercise. Personnel must continuously observe each other during the conduct of the training.

(4) Individual conduct, actions and events preformed during the exercise to include entrance, actions within the CS chamber or CS training area, and exiting procedures.

(5) Medical clearance for all participants. Personnel that are pregnant, have had dental surgery within the past 48 hours, have open wounds or exposed rashes will not be allowed into the CS chamber or CS training area.

(6) Emergency procedures while inside the CS chamber or CS training area. This will include the location of the medical personnel, emergency vehicle and a designated rally point following an emergency.

(7) Actions upon exiting the CS chamber or CS training area. Participants are not to operate vehicles for at least 30 minutes after the completion of training.

6. Responsibilities

a. The Officer-In-Charge OIC and the NCO-In-Charge (NCOIC)

(1) Must possess the MOS of 5702/5711. The OIC should hold the rank of SSgt or above. The NCOIC should hold the rank of Cpl or Sgt. If an NCO is not available the OIC may appoint the ranking LCpl as the NCOIC.

(2) Are to ensure that all personnel participating in the IPE exercise participate in the safety brief and understand all required safety measures.

(3) Are to be knowledgeable in all local range and safety regulations pertaining to the use of CS.

(4) Are to ensure that the IPE exercise is appropriately scheduled with the local range or area authorities.

(5) Are to ensure that a safety vehicle and Navy Corpsman with appropriate support equipment are on hand prior to personnel entering the CS chamber or CS training area. The vehicle driver and the Navy Corpsman are not to participate in the IPE exercise.

(6) Are to supervise the preparation and conduct of the exercise. This includes monitoring the concentration of CS within the CS chamber or CS t raining area.

(7) Are to ensure adequate amounts of IPE are on hand.

(8) Are to ensure the chamber is cleaned after the exercise.

(9) Are to brief the primary and assistant instructors on all safety requirements.

(10) Are to ensure that accurate attendance rosters are forwarded to the parent unit.

b. Primary Instructor

(1) Must possess the MOS of 5702/5711 and should hold the rank of Cpl or above. If an NCO is not available the OIC may appoint the ranking LCpl as the primary instructor.

(2) Brief all participants on the characteristics of CS, the proper fit and function of all IPE, on all procedures to be carried out during the IPE exercise, and on all emergency procedures.

(3) Brief the assistant instructor on their duties and responsibilities.

(4) Inspect the proper fit of all participants IPE prior to entering the CS chamber or CS training area.

(5) Carry out all periods of instruction as directed by the OIC and/or appropriate orders pertaining to CBRN training and operations.

c. Assistant Instructor

(1) Assist the OIC, NCOIC and primary instructor as directed.

(2) Maintain the proper CS agent concentration.

(3) Regulate the safe flow of all participants into and out of the CS chamber or CS training area.

(4) Closely observe all participants inside the CS chamber or CS training area.

(5) Guide exiting personnel away from the CS chamber or CS training area and into the wind.

d. Medical Personnel

(1) A Corpsman will brief the personnel attending the exercise on the medical conditions that would prevent them from entering the CS Chamber. Personnel that are identified as having a medical condition will not be permitted to enter the CS Chamber unless cleared by the attending Corpsman.

(2) The Corpsman must remain on site at all times during the exercise. If the Corpsman must depart the area the exercise will be halted until the Corpsman can return.

7. IPE Confidence Exercise Procedures

a. Orientation. Prior to entering the CS Chamber:

(1) Instructors will conduct IPE inspections and mask donning drills. Personnel will be able to don the field protective mask within (9) seconds with an additional (6) for securing the hood of the chemical protective suit. Personnel will be provided time to practice donning the field protective mask and to check for proper fitting and serviceability of all associated IPE.

(2) A safety brief will be conducted prior to the start of the exercise.

(3) The instructor will give a general orientation on the objectives and procedures of the exercise as well as a brief orientation on the layout of the CS Chamber. Personnel, properly dressed in all required IPE, will enter the chamber in an orderly manner upon command from the instructor. The number of personnel allowed to enter the CS Chamber at any one time will depend on the size of the CS Chamber and the number of instructors on hand. An unassisted instructor will have no more then (10) personnel in the CS Chamber at any one time. Personnel will be informed that it is their responsibility to take immediate action to correct a leaking mask once they enter the CS Chamber. If the individual cannot seal the leak then an instructor will attempt to fix the leak or instruct the individual to exit the chamber.

b. Chamber Preparation. Instructors will initiate the concentration of CS inside the CS Chamber. The initial charge of CS will be calculated using the following formula:

(1) length X width X height (interior of CS chamber in meters) 30

(2) The concentration of CS within the CS Chamber will be maintained between each group by burning an additional capsule for each group of ten personnel.

(3) CS capsules are the only item authorized for use in a CS Chamber (DODIC K765). CS concentrations will be monitored and adjusted by CBRN personnel ONLY. No other individuals, regardless of rank, are authorized to handle the CS or charge the CS Chamber.

c. Procedures. Once all personnel are in the chamber the instructor will lead all personnel through the following movements. These movements are conducted to ensure a proper fit and seal of the field protective mask through a range of motion. Between these events the instructor will allow enough time for personnel to make any required adjustments the field protective mask.

(1) Have all personnel conduct side-straddle hops for 30 seconds.

(2) All personnel bend at the waist and shake their heads from side to side.

(3) All personnel then turn their heads from side to side as far as they can.

(4) Have all personnel break the seal of their field protective masks by inserting two fingers between one of the cheeks and pulling away from the face. On command all participants will break the seal. Once the instructor is satisfied that all personnel have complied, they will instruct all personnel to reseal and clear the field protective mask. This step will train personnel to properly seal and clear the field protective mask in a contaminated environment if needed. At no time will the instructor direct personnel to remove the field protective mask inside the chamber.

(5) The assistant instructor will move about the interior of the chamber at all times and observe personnel for any problems.

(6) The total length of time in the CS Chamber should not exceed 15 minutes.

(7) Upon completion of the exercise the assistant instructor will lead the personnel out and away from the CS Chamber. The instructor should attempt to lead the personnel into the wind. Once clear of the CS Chamber the instructor will direct all personnel to remove their field protective mask.

(8) The CS Chamber will be swept out and ventilated at the conclusion of each IPE confidence exercise. It is the using unit's responsibility to ensure this is conducted.

8. Procedures for CS Issue and use. The following procedures will be used by 2d MAW units at MCAS New River and MCAS Beaufort.

a. Organizations may only draw sufficient CS to support a single day's exercise.

b. CS will be drawn by unit ammunition technicians and delivered to the appointed Chamber OIC, SNCOIC or NCO for accounting and control.

c. Upon completion of the exercise the recover any unused CS and deliver it to the Ammunition Technician for immediate return to the Ammunition Supply Point (ASP).

9. Required Reports

a. Immediately after the exercise, the CSO will submit through the organizational logistics chain a receipt/expenditure report. This report documents all expenditures and all transfers of custody/accountability.

b. Using units will reconcile receipt/expenditure reports with normal ASP issue/turn-in documents, and retain these records for a period of at least one year.

APPENDIX L

APPENDIX 2 (CBRN OPERATIONS)

CLASSIFICATION

COPY NO._____OF _____COPIES
Headquarters, UNIT XXXX
MCAS CHERRY POINT, NC
DTG

APPENDIX 2 (CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR (CBRN) OPERATIONS) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

References:

(a) HHQ ORDER
(b) HHQ CAMPAIGN PLAN

Time Zone Used Throughout the Plan: XXXX

1. Situation

a. Enemy forces

(1) Chemical THREATCON is GREEN (Low): there has not been a deliberate chemical warfare agent or toxic industrial chemical (TIC) attack to date despite threats communicated by enemy forces in every sector; the majority of communicated threats are in the XXXX area. There have been several CS mortar attacks against friendly forces in the past several months. Toxic industrial chemical sites and Country X and coalition-generated HAZMAT are prevalent throughout theater.

(2) Biological THREATCON is GREEN (Low): country X was believed to possess Anthrax, Botulinum Toxin, and Small Pox. There have been no biologicals found.

(3) Radiological THREATCON is GREEN (Low): high and low-level radiation sources found throughout theater (material being removed from theater). Irradiating substances such as Yellow Cake and Depleted Uranium (DU) are prevalent and still pose a low threat to friendly forces.

(4) Nuclear THREATCON is WHITE (None): it is believed that country X did pursue a nuclear weapons development program, but no nuclear weapons have been found.

(5) The threat level here is assessed as low for Chemical, Biological, and Radiological, and none for Nuclear. There has been no use of Chem or Bio munitions to date. Friendly forces have found one Mustard and one Sarin artillery projectile, and a cache of eighteen 122mm rocket warheads with Sarin fill. It is likely that munitions will continue to be discovered during further operations. The primary chemical threats to friendly forces are the toxic industrial chemicals used throughout the country. The vast amount of these chemicals, coupled with years of neglect in safeguarding and control, may present a hazard to all personnel. Enemy forces could employ a range of chemical agents and toxic industrial chemicals in a low-level terrorist attack in country, including Sodium and Potassium Cyanide, Arsenic Trioxide, Cyanogen Chloride, Hydrogen Chloride, Chlorine gases, pesticides, Mustard, and Tabun. Enemy forces have demonstrated an interest in using poisonous chemicals in traditional improvised explosive devices (IEDs) and creating improvised chemical devices (ICDs). As with conventional IEDs, an ICD can be detonated remotely or with a timer. Enemy forces may also attempt to fill rockets with toxic industrial chemicals or military chemicals to increase panic following an attack.

(6) Chemical agents in country are:

AGENT	TYPE	EFFECT
HD Sulfur/Dusty Mustard	Blister Agent	Casualty
GA Tabun	Semi-persistent Nerve	Lethal
GB Sarin	Non-persistent nerve	Lethal
GD Soman	Semi-persistent nerve	Lethal
VX	Persistent Nerve	Lethal
CX Phosgene Oxime	Blister	Casualty

(7) Toxic Industrial Chemicals in country:

CAS NUMBER	CHEMICAL NAME
7647010	Hydrochloric Acid
7782505	Chlorine
7664417	Ammonia
7697372	Nitric Acid
7664393	Hydrogen Fluoride
50000	Formaldehyde
74908	Hydrogen Cyanide
75218	Ethylene Oxide

(8) TIC/TIM Threat by city. TAB A.

(9) CBRN Hazmat Report Format. TAB B.

(10) Weather effects.

b. Friendly forces

(1) Friendly forces response to Country X's WMD/TIM/HAZMAT capabilities focuses on force protection and CM of CBRN, WMD, HAZMAT incidents or accidents.

(2) Defensive capabilities. Friendly forces are fully equipped and trained to operate in a CBRN environment; however, CBRN defense training will continue to receive emphasis through out operations.

(3) Civilian populace does not have the capability to defend against CBRN attacks. Should a WMD strike, HAZMAT or other CBRN incident occur, country X's government will request mitigation assistance through the Department of State. If the Department of State approves assistance, assistance will be provided through the HHQ-C3-CBRN. This HQ may request CFLCC to provide assets to assist in the mitigation of a WMD attack.

(4) Country X's government, medical and civilian agencies do not have the ability to adequately cope with the medical and logistical burdens that will result from CBRN warfare. U.S. ability to handle large numbers of contaminated casualties is also limited.

c. Assumptions

(1) All friendly forces CBRN personnel, as well as higher and adjacent units CBRN personnel, will be available for critical WMD/TIC/TIM/HAZMAT missions.

(2) The primary chemical hazards are industrial chemicals capable of producing both acute and chronic health effects. Toxic Industrial Chemicals (TIC) and Toxic Industrial Materials (TIM) will be found.

(3) Captured enemy ammunition and cache sites may include chemical rounds.

(4) Additional radiation sources such as yellow cake and depleted uranium may be found.

2. Mission. Friendly forces CBRN defense assets conduct early warning, Chemical, Biological, Radiological, and Nuclear (CBRN) protection; contamination avoidance; and decontamination operations in the unit of Operations in order to protect the force and provide requested support to the Country X Survey Group (CSG). BPT conduct and assist consequence management operations to mitigate and/or remediate a CBRN/HAZMAT accident or incident affecting friendly forces or Country X personnel as directed.

3. Execution

a. Concept of operation

(1) Friendly forces conduct CBRN operations IAW the principles of contamination avoidance, protection, and decontamination to preserve combat power and allow freedom of maneuver. Contamination avoidance requires a thorough risk assessment and comprehensive passive measures at all levels. Decontamination operations focus on restoring combat power and limiting the spread of contamination. CBRN incidents that are beyond the capability of friendly force units will coordinate through HHQ G3 for resources and force augmentation.

(2) CBRN defense efforts will concentrate on protection of personnel and protection of mission essential equipment as contamination avoidance along MSRs.

(3) Offensive. Friendly forces will not employ biological or chemical weapons. Nuclear release authority is

retained by the POTUS. RCA release authority is retained by the theater CDR.

(4) Defensive. Friendly forces are trained and adequately equipped to conduct operations in a CBRN environment.

(5) CBRN reconnaissance assets will identify and mark lanes through or around chemically contaminated areas allowing friendly forces and country X citizens to avoid contamination. Additionally CBRN route reconnaissance will be conducted along MSRs to maintain lines of communication.

(6) Decontamination. Planning and preparation to conduct decontamination operations is essential and should be executed immediately. The units NBCC will plan decontamination sites in their area of operation. Specifically, decontamination operations should be planned by all units near TIC/TIM sites. All friendly force units will prepare for and rehearse immediate actions for a CBRN incident.

(7) Biological. There are no biological detection nodes.

b. Concept of Support

(1) PHASE I (Preparation): this phase begins upon TOA and ends when all units have arrived in theater. Units remain assigned or organic to their respective Headquarters for preparation activities but report deployment force readiness information to HHQ as directed. Units identify report and resolve to the extent possible, shortfalls in their ability to conduct operations in a CBRN environment.

(2) Phase II (Shape the battlefield): begins when all units are in theater and have conducted TOA and ends with friendly force capabilities established in Theater. Friendly forces will utilize organic and external CBRN assets to provide detection and monitoring capability during the build-up of forces, with special emphasis placed on high concentration areas of troops and equipment.

(a) CBRN reconnaissance. CBRN reconnaissance assets will conduct ground reconnaissance operations of the AO as required. Priority of effort is C2 nodes, living areas, flight line and maintenance areas, logistic areas, and MSRs.

(b) HAZMAT. All friendly forces CBRN personnel and assets will be prepared to respond to any HAZMAT incident within the AO.

(c) Friendly forces will ensure the CBRN warning and reporting system (CBRNWRS) is an integral part of the battle management process. Initial enemy use of CW/BW will be reported using flash precedence. Report follow-on use of CW/BW using priority precedence. Commanders will establish MOPP levels based on threat assessments and vulnerability analysis.

(d) Biological. No change.

c. Tasks

(1) NBC Control Center (NBCC).

(a) Conduct CBRN turnover with departing units. Conduct initial receipt inspections and determine CBRN equipment serviceability and availability. NLT 15 days after RIP, report to HHQ G3/G4 unit CBRN inventory. Identify any CBRN shortfalls and areas of concerns.

(b) Operate the Chemical, Biological, Radiological, and Nuclear Warning Reporting System (CBRNWRS) network.

(c) Submit Chemical, Biological, Radiological, and Nuclear Situation Reports (CBRN SITREP) NLT 1200 Hours the 1st and 15th of each month via SIPR Email to addressee HHQ NBCC. Negative Response CBRN SITREPs are required. Submit "NSTR" (Nothing Significant to Report) or "No-Change" via Email. Report format can be found in TAB C.

(d) Submit Chemical, Biological, Radiological, and Nuclear Equipment Reports (CBRN REPORT) each month on the 15th via SIPR Email to addressee HHQ NBCC. Negative Response CBRN REPORTS are required. Submit "NSTR" (Nothing Significant to Report) or "No-Change" via Email. Report format can be found in TAB D.

(e) Plan and conduct decontamination operations to include patient, personnel, equipment and aircraft decontamination. Provide planned decontamination site locations to HHQ NBCC. HHQ NBCC will publish a consolidated list of decontamination sites based on MSCs input. The decontamination site list will be updated as required. As decontamination sites

are prepared/establish provide the location and current status of sites to HHQ NBCC.

(f) Plan and conduct CBRN reconnaissance operations to protect the force. Utilize internal CBRN reconnaissance teams to confirm or deny CBRN attacks, and identify the extent of contamination.

(g) Detect, identify, classify, and characterize TIC/TIM in confined spaces, work areas, and areas of operational significance.

(h) BPT operate the TIC/PDE Protection and Detection Equipment set if available to detect TIC/TIM concentrations lethal to operating forces and to provide early warning and response to military installations.

(i) BPT Conduct CBRN incident modeling.

(j) BPT conduct TIC/TIM incident response to mitigate or eliminate hazard.

(k) BPT conduct CBRN reconnaissance in open and confined spaces.

(l) BPT perform sampling operations and transport sample.

(m) BPT provide presumptive analysis of TIC/TIM material.

(n) BPT Conduct ground and air radiological reconnaissance.

(o) BPT conduct operational decontamination for CBRN and TIC/TIM contamination.

(p) BPT assist in patient decontamination.

(q) Coordinate confirmatory CBRN/TIC/TIM identification.

(r) BPT support consequence management of CBRN/TIC/TIM accidents or incidents.

(s) BPT conduct limited WMD SSE with organic assets.

(t) Identify CBRN NAIs to HHQ NBCC and provide CBRN NAI overlays.

(u) Develop a comprehensive plan to rapidly issue IPE to all personnel within the MOPP READY (MODIFIED 2 + Hours) timeline.

(2) G-4 Medical

(a) Conduct CBRN medicant turnover with departing units. Conduct initial receipt inspections and determine CBRN medicant serviceability and availability. Not later than (NLT) 15 days after RIP, report to HHQ G-4 Medical via unit NBCC the status of CBRN medicant inventory. Identify any CBRN medicant shortfalls and areas of concerns.

(b) Develop plans to respond to mass casualty situations caused by CBRN, TIC/TIM or HAZMAT attacks or incidences. Include plans for decontamination of casualties and for handling of contaminated remains.

(3) Subordinate Commands

(a) Provide all unit CBRN personnel OPCON to the Consolidated NBCC for the duration of operations.

(b) S/REL XXXX) Units will report "suspected" TIC/TIM incidents to HHQ NBCC using the Hazmat Report (TAB B). If available, units will take digital photographs of materials and send with report via e-mail.

(c) BPT provide CBRN augmentation to support patient, personnel, equipment, and aircraft decontamination operations, and CBRN M/S or reconnaissance operations.

(d) BPT provide equipment and personnel support for the establishment and maintenance of decontamination sites.

d. Coordinating instructions

(1) MOPP level adjusted to the non-doctrinal MOPP READY (MODIFIED + 2 hours). MOPP-READY (MODIFIED + 2 hours), is defined as having the 12 items, Protective Mask and 11 Individual Protective Equipment (IPE) for use within 2 hours of warning. Unit commanders are authorized to adjust MOPP levels as their mission dictates. Report changes in MOPP levels to HHQ NBCC as soon as they are made.

(2) Automatic Masking Criteria: chemical alarms, personnel w/symptoms.

(3) The units NBCC will conduct CBRNWRS utilizing JWARNS. HHQ NBCC will provide the CBRNWRS for all units operating in the AO.

(a) Use of chemical or biological warfare agents will be reported to the NBCC using a CBRN-1 report at FLASH precedence. Verification of enemy first use CBW consists of: delivery system, type of agent and how verified (i.e. M256 kit, CAM) and a determination by medical authorities based on symptoms exhibited. Report number of casualties with a description of symptoms/injuries.

(b) The MSC NBCCs will report subsequent chemical attacks to HHQ using CBRN 3 and CBRN 5.

(c) The MSC NBCC will assign strike serial numbers IAW HHQ CBRN SOP.

ITEM	QUANTITY
MTOE ITEMS (U.S. ITEMS LISTED)* **	
PROTECTIVE MASK	1 per INDIVIDUAL
INDIVIDUAL PROTECTIVE EQUIPMENT (U.S. ITEMS LISTED)* **	
JSLIST (TOP/BOTTOM)	1 per INDIVIDUAL (SET)
VINYL OVERBOOTS (BVO)	1 per INDIVIDUAL (PAIR)
GLOVES, CP, RUBBER	1 per INDIVIDUAL (PAIR)
C2A1 CANISTER or EQUIVALENT	1 per INDIVIDUAL
M8 DETECTOR PAPER	1 per INDIVIDUAL (BOOKLET)
M9 DETECTOR PAPER	1 per INDIVIDUAL (ROLL)
M291 DECON KIT	1 per INDIVIDUAL
M256 DETECTOR KIT	1 per SQUAD/EQUIVALENT
HOOD, M40-SERIES (if required)	1 per INDIVIDUAL
**** COALITION FORCES DETERMINE APPROPRIATE EQUIVALENT IPE**	

(4) Identification of suspected Sensitive Site or locations of suspected TIC/TIM will be reported to the MSC NBCC using HAZMAT Reports at FLASH precedence. Requests for TIC/TIM assessment team support will be routed to the MSC NBCC. HAZMAT report format can be found in TAB B.

(5) Units will report unusual sickness or unexplained high rate of ailments to the MSC Surgeon and CBRN Officer by the fastest means available.

(6) NAAK/CANA will be issued down to the squadron/detachment level medical and carried by the corpsman.

Squadrons will maintain 3 sets of NAAK and 1 CANA per individual.

(7) PB tablets will not be issued to or consumed by any personnel unless/until directed by HHQ.

(8) All M40 Series Field Protective Mask C2/C2A1 filters will have the filter canister opening date/date filter installed annotated on the filter body in permanent marker. Additional information (name, blood type, is encouraged).

(9) Forward any requests for additional CBRN assets through MSC NBCC for forwarding to HHQ NBCC.

(10) Suspected CBRN munitions will be handled IAW the sample transfer plan. Sample Transfer Plan format can be located in TAB E. Units will coordinate with the MSC NBCC for collecting, securing and transporting samples to the HHQ NBCC. HHQ CBRN will coordinate further analysis.

(11) Hazardous materials include toxic industrial chemicals (TIC), radiological materials (RADMAT), medical waste materials, explosive and flammable materials, corrosives, poisons, and flammable or poisonous gases.

(12) TTPS and responsibilities for Hazmat:

(a) Detect: units may encounter hazmat during patrols, raids, recons, and occupation of operating bases. Other means of detection include Humint sources, physical indicators such as sick personnel or animals, and the packaging or labeling of containers.

(b) Identify: units discovering hazmat will attempt to identify the materials, and take digital photographs of them. Units will use standard CBRN detection and identification equipment to check for the presence of WMD or radioactive materials. Pay special attention to labels on containers, and photograph these. The unit then reports its findings to its unit NBCC. The unit CBRN personnel will analyze the information to ensure all required data is obtained and conduct its own assessment of the material before forwarding the completed Hazmat Spot-rep and digital photographs thru CBRN channels to HHQ NBCC.

(c) Classify: MSC NBCC collects this information and passes it to HHQ. Assessments of the potential hazard to

friendly forces personnel and civilians, and its potential for use in WMD-related activities is conducted. The materials are classified into three broad categories:

1. WMD. Materials categorized as militarily significant CBRN materials intended for use on the battlefield.

2. TIC/TIM (Non-WMD). Materials are categorized as viable materials or waste. Hazardous, radioactive, or biological materials that have viable industrial, scientific, or medical use are not considered waste. Materials that, due to physical condition or environmental exposure, no longer have a viable use are considered waste.

3. Unknown. Materials that cannot be identified without laboratory analysis.

(d) Characterize: MSC and HHQ NBCC characterizes the material according to its physical properties, hazards, and level of protection required.

1. Emergency Response Guide 2004: Hazard Classification System. Categorizes material, recommends protective equipment, describes fire hazards and firefighting techniques, health risks, and gives isolation guidance.

2. NIOSH Handbook: Gives occupational exposure limits, immediate danger to life and health limits, and reactivity's and incompatibilities.

3. Material Safety Data Sheets: Lists the physical properties of the material.

4. CAS Number: Common chemical reference number.

(e) Modeling of hazard area: Using modeling software such as HPAC to determine exclusion zones and downwind hazard area.

(f) Mitigate: Mitigation falls into two categories-passive and active.

1. Passive: Avoid the materials; cordon the area off; mark area with warning signs.

2. Active: Secure the materials or area with locks, barriers, or guards; seal the room, bunker, or container to prevent vapor leaks; containerize dry materials or vessels containing hazardous materials.

(g) Eliminate: Elimination falls into two categories-destruction and removal.

(h) Destroy: If the materials can be safely burned, thermal decomposition of the material to a safe form can be accomplished. This is only done when the unit is directed to do so by the MSC Commander and CBRN Officer. EOD teams are qualified to conduct disposal of propellant, explosives, and munitions.

(i) Removal: If the materials are identified, are safe to transport in their current state, and are containerized, they can then be taken to the defense reutilization and marketing service (DRMS) hazmat site at LSA XXXX. Turn in the hazmat under a unit DODAC. DRMS will not take unidentified, unstable, or uncontainerized hazmat. If the hazmat can serve a viable use to the country X government, HHQ CBRN will engage the ministry of environment and ministry of science and technology to determine if an appropriate ministry can be found to take possession of the materials.

(13) Units turning in hazmat to DRMS will fill out a DD1348-1 and attach a Material Safety Data Sheet for each material being turned in. The hazmat must be known, clearly labeled, and containerized, preferably in the original container.

(14) If a unit encounters known or suspected WMD munitions or materials, do not bring them into a coalition base or facility. Mark and cordon off their location, and post a guard force on the site. Report the findings to the MSC NBCC and G4 using the Hazmat reporting format. Maintain a guard on the material's location until they are removed by the proper agency.

4. Service Support

a. General and stockage levels for all classes of supplies.

b. Modified IPE requirements. The CBRN threat within the AOR has been mitigated through decisive action to combat WMD proliferation and the threat of its employment. Based upon this

threat reduction, CDRUSCENTCOM established a new ratio of IPE per individual. The intent is to have at minimum one IPE set (i.e. MOPP suit) per individual and a reserve IPE set equal to one-quarter of the parent unit organization's table of organization.

c. Publish a comprehensive plan issue IPE to all personnel within the MOPP READY (MODIFIED + 2 Hours) timeline.

d. General Support

(1) Contaminated Casualties

(a) All casualties will be decontaminated prior to being transported to a Medical care facility. Additional guidance concerning care for contaminated casualties is contained in FM 8-9, FM 8-285, FM 8-10-7, and FM 3-5.

(b) Contaminated remains will be segregated and temporarily interred on site. Temporary internment will take place only if remains cannot be decontaminated due to mission requirements. All contaminated remains must be decontaminated prior to return.

(2) Requests for additional CBRN equipment will be sent through S4/G4 channels.

(3) Requests for additional CBRN personnel will be sent through S1/G1 channels.

(4) Sustainment. Requests for CBRN equipment will be submitted to Program Manager CBRN (PM CBRN) Strategic Logistics Asset Management (SLAM) via HHQ G4 and NBCC.

5. Command and Signal. Communications and Electronics.

a. Command. CBRN Officer and NBCC will be located at XXX.

b. Signal

(1) CBRN Warning and Reporting System IAW HHQ SOP.

(2) MSC NBCC will initiate Joint Warning and Reporting Network (JWARN) on SIPR upon completion of RSOI.

(3) The MSC NBCC will maintain NBCC operations for all units operating in the assigned area of operations.

(4) The MSC NBCC will provide voice and fax telephone numbers, SIPRNET e-mail address, C2PC role name with IP address and C2PC "maneuver" name to the HHQ NBCC. The requested "addresses" will be incorporated into appropriate address groups for rapid transmission of reports, overlays, etc.

ACKNOWLEDGE:

I.M. Commander
BGen
Commanding Officer

OFFICIAL:
G-3

TAB A: TIC/TIM THREAT BY CITY
TAB B: CBRN HAZMAT REPORT FORMAT
TAB C: CBRN SITUATION REPORT FORMAT
TAB D: CBRN EQUIPMENT REPORT FORMAT
TAB E: COUNTRY SURVEY GROUP (CSG) SOP FOR CLAIMS OF WMD
TAB F: SAMPLING FLOWCHART
TAB G: CBRN THREATCON LEVELS
TAB H: CWC SCHEDULE TABLES
TAB I: AIRCREW IPE REPORT

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TAB A TO APPENDIX 2 (TIC/TIM THREAT BY CITY) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

DTG Report Prepared: XXXXXX

Report Prepared By: I.B. Marine Cpl USMC

FACILITY	LOCATION	CHEMICAL
Badr	Yousefiya	Phosphorus oxychloride
Qaqa'a	as above	Hydrogen iodide
Al Wafa'a	Jurf Al Sakhar	Hydrogen bromide
Al Faris	Abu Ghraib	Nitric oxide
Al Wathiq	Al Taji	Nitrogen dioxide
Ibn Majid	Basra	Diphenylmethane-4
Heavy Industrial	Al Doura (Baghdad)	Boron tribromide
Al Hareth	Tarmia (Baghdad)	Ethyl phosphonic dichloride
Thaet Al Sawari	Al Taji	Ethylene dibromide
Oxide Magnesium	Khawr Al Zubayr (Basra)	Acrolein
Metal Conversion	Al Tajiyat	Allylamine
Al Kindi	Mosul	Acrylonitrile
Jaber bin Hayan	Mosul	Allyl alcohol
Al Asil	Al Tuweitha (Baghdad)	Chloroacetaldehyde
The Iraqi Factory	Al Taji	Tetraethyl pyroposphate
Salahudin	Tikrit	n-Propyl chloroformate
Al Mansour	Qadmia/Muthana	n-Butyl isocyanate
Al Youm Al Adeem	Jurf Al Sakhar	n-Octyl mercaptan
Al Jazirah	Skarkat	Crotonaldehyde
Ibn Al Athir	Jurf Al Sakhar	Iron pentacarbonyl
TRC	Salman Pak/Al Sakhar	Chlorine pentafluoride
Sabah Nisan	Jurf Al Nidaf (Baghdad)	Bromine chloride
Saddam	Yousefiya	tert-Butyl isocyanate
Bilad Al Shuheda	Al Taji	sec-Butyl chloroformate
Al Muthanna	Thartar Lake (Baghdad)	Isopropyl isocyanate
Hateen	Latifiya (Baghdad)	Diborane
Al Faw	around Baghdad	Sulfuryl fluoride
Sabahasher Nisan	different locations	Allyl chlorocarbonate
Nasr.	Abu Ghraib	Ethyl chlorothioformate
Ur	Naseriya	Carbonyl fluoride

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TAB B TO APPENDIX 2 (CBRN HAZMAT REPORT FORMAT) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

DTG Report Prepared: XXXXXX

Report Prepared By: I.B. Marine Cpl USMC

LINE	ITEM	ENTRY
1	**Reporting Unit & Mission Designator** (e.g. FRAGO)	
2	**Site Name & Location** (grid)	
3	**DTG Mission Started**(local)	
4	**DTG Mission Ended**(local)	
5	**Survey Team Members**(Rank, Last, First)	
6	**Executive Summary**	
7	**Mission Assessment by Unit**	
8	**Observed Indicators**	
9	**PIR Answers**	
10	**Site Layout/Description & Diagrams** (digital photos)	
11	**Personnel Interviewed & Results**	
12	**Enemy Contact**	
13	**Non-Combatants**	
14	**Unit Recommendation for Further Action**(include external requirements)	

ATTACHMENTS (Documents, Photos, etc):

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TAB C TO APPENDIX 2 (CBRN SITUATION REPORT FORMAT) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

Security Classification	
Reporting Unit	
Report Prepared By	
Report Sent To	
Mode of Transmission	

LINE 1: DTG OF REPORT	

LINE 2: CHEMICAL STAFF DISPOSITION

UNIT	LOCATION (GRID)	PERSONNEL (G/A/R/B)	UNIT EQUIPMENT (G/A/R/B)	NBC Officer / NCO Contact	OVERALL STATUS	REMARKS

LINE 3: SUPPORT RECEIVED FROM CHEMICAL UNITS TO SEPARATE BRIGADE/BATTALION ELEMENTS						
UNIT	SUPPORTING UNIT	MISSION LOCATION	MISSION START (DTG)	MISSION END (DTG)	MISSION TYPE/ DESC.	REMARKS

LINE 4: KEY CBRN EVENTS DURING REPORTING PERIOD						
UNIT	KEY CBRN EVENT	MISSION LOCATION	MISSION START (DTG)	MISSION END (DTG)	DETECTION METHOD	REMARKS

LINE 5: ADDITIONAL COMMENTS

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TAB D TO APPENDIX 2 (CBRN EQUIPMENT REPORT FORMAT) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

Classification	
Reporting Unit	
DTG of Report	
Receiving Units	
Mode of Transmission	

LIN	NOMENCLATURE	QTY RQD	QTY ON-HAND	QTY FMC	QTY ON ORDER
	PROTECTIVE MASKS				
M12418	MASK INDIVIDUAL (M40)				
	MASK INDIVIDUAL (MCU-2A/P)				
M18526	MASK ARMORED VEHICLE (M42)				
M12736	MASK AVIATOR (M45)				
M13515	MASK APACHE (M48)				
T62350	PROT ASSESSMENT TEST SET (M41)				
	RADIOLOGICAL DETECTION EQUIPMENT				
R20684	RADIACMETER (AN/VDR-2)				
R30993	RADIACMETER (A,B,& X-RAY) (AN/PDR-77)				
R31061	INDIVIDUAL POCKET SURVEY (AN/UDR-13)				
R30925	TOTAL DOSE GAMMA/NEUTRON (AN/PDR-75)				
N/A	INDIVIDUAL DOSIMETER (DT236)				
	CHEMICAL DETECTION EQUIPMENT				
C05701	CHEMICAL AGENT MONITOR (ICAM / CAM)				
A32355	CHEMICAL AGENT POINT DETECTOR (M8)				
A33020	CHEMICAL AGENT POINT DETECTOR (M22)				
R41532	CHEMICAL STAND-OFF ALARM (M21)				

DECONTAMINATION EQUIPMENT					
D82404	PORTABLE DECON SYS (M17 SANATOR)				
N/A	KARCHER DECON APPARATUS				
N/A	FALCON DECON SYSTEM				
F81880	TRUCK MOUNTED DECON (M12 PDDE)				
P92030	PUMP (125 GPM)				
P91756	PUMP (65 GPM)				
BIOLOGICAL DETECTION EQUIPMENT					
N/A	MOBILE BIOLOGICAL INTEGRATED DETECTION SYSTEM (BIDS) (M31)				
N/A	PORTABLE DRY FILTER UNIT (DFU)				
N/A	FIXED BIO DETECTION (PORTAL SHIELD)				
COLLECTIVE PROTECTION (CP)					
C79000	CP SHELTER (M20/M20A1)				
N/A	DEPLOYABLE MED SHELTER, CP (M28)				
Z78133	CB PROTECTION SHELTER (REPL M51)				
T00474	CP SHELTER (M51)				
NBC RECONNAISSANCE VEHICLES					
R41282	NBC RECON SYSTEM (M93 FOX)				
SMOKE SYSTEMS					
G51840	MOTORIZED SMOKE (M157)				
C12815	MECH SMOKE (M1059 LYNX)				
G58151	MOTORIZED SMOKE (M56 COYOTE)				
C12815	MECH SMOKE (M58 WOLF)				
COMMERCIAL ITEMS (TIC/TIM DETECTION)					

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TAB D TO APPENDIX 2 (COUNTRY SURVEY GROUP (CSG) SOP FOR HANDLING CLAIMS OF WMD) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

1. General

a. The CSG responds to many of claims or discoveries of potential WMD materials every month. In nearly every case, this material turns out to be some sort of scam, a type of hazardous materials (Toxic Industrial Chemical/Material [TIC/TIM]), and in rare cases, the material turn out to be real. Example of some of the claims of WMD material received by CSG include, but are not limited to, red mercury, radiation sources, vials of VX or other CW agents, BW agents, and a myriad of others. We take every one of these claims seriously.

b. The intent of this SOP is not to discourage submission of possible WMD claims to the CSG, but rather to ensure that when the CSG receives the claim, we have the minimum amount of information to take actions without having to request further information.

c. Gather as much information as possible about the sample/claim of WMD material. The more information provided the quicker CSG's assessment of the sample/claim. If a source claims to have or is aware of WMD related material, make every effort to elicit the following information:

(1) Obtain as much information about the sample/claim of WMD material.

(a) When, where, and how was the sample and/or information obtained?

(b) What is the location (geocoords [or MGS/UTM]) of the suspect material?

(c) Where is the material currently stored?

(d) Other questions as deemed necessary.

(2) Obtain as much information about the source.

(a) Is the source requesting compensation for the material/information?

(b) If not, what is his motivation.

(3) Do not promise any monetary reward for the items. **If** the item turns out to be authentic WMD material, a reward will likely be provided.

(4) Request verification of the WMD material.

(a) Preferred Method - Obtain detailed pictures of the item. In many cases, the ISG is able to determine the authenticity of a WMD claim through photographs. Be sure to obtain photos from many different angles, and if possible, include an item for scale. The scale could be a ruler or even other items such as a pen or a dollar bill.

(b) If given a sample, treat it as hazardous material and follow the procedures outlined below.

(5) Forward picture or sample (IAW procedures below) to the CSG.

(6) If possible, take possession of the (suspected WMD) item and forward to the CSG.

2. Procedures for Receiving Samples from Outside Sources

a. The goal is to reduce the number of improperly packaged samples, and samples of undetermined content that are brought directly to the laboratory. Listed below is the procedure for units and agencies that wish to submit samples to the CSG labs for analysis.

b. Based on best available information provided regarding the suspected WMD material, CSG will determine if an exploitation of sampling of material is warranted on-site.

(1) Ensure proper protection when collecting samples. Protect yourself and others when collecting the material.

(a) At a minimum have some protective gloves and some respiratory protection on hand and wear them while handling the material.

(b) Package the materials in multiple layers of containment (as stated above).

(c) Decontaminate yourself and the items used in the collection. This could be as simple as washing your hands, or removing and disposing of gloves and mask.

(2) Ideally, all samples will be contained in at least 3 layers of containment. If possible, ensure that the samples can be viewed. For example, the suspect material might be contained in a primary container, such as a glass jar, then placed in a secondary container, such as a Ziploc bag and then put into a tertiary container, like another Ziploc bag or a trash bag. The containers used should be sealed airtight and not leak.

(3) Prior to bringing the samples to the CSG, contact the sample manager or personnel at the numbers listed below. Please do not bring the sample directly to the CSG facility without prior coordination.

(4) Once CSG personnel are contacted, coordination will be made for the involved parties to meet at the sample reception area. At the sample reception area the samples will be assessed, repackaged if necessary at this point and a chain of custody will be initiated. This allows for materials being brought into Camp XXXX to be taken to a remote area, rather than into the center of the camp.

(5) From here, CSG will take custody of the samples that will be analyzed.

3. We understand that not all samples can be collected and brought in under ideal conditions, and that's not always a problem. However, here are some helpful things to keep in mind when collecting or accepting material that you will bring to CSG for analysis:

a. Attempt to find out as much as possible about the history of the material. Ask the 5 W's (who, what, when, where, why) when receiving or collecting the material. This will help in the initial assessment of the sample.

b. Attempt to keep the sample in its original state. If it was found being cooled in a refrigerator, attempt to keep it cool. Do not add anything to the sample or dilute it. If it is in its original container, try to keep it in there. If you can

not bring the original container; attempt to photograph the container or record any labels or markings that are on it.

c. CSG will not accept materials in large quantities. If you have a large quantity of material, we will gladly take a smaller sample of it. We currently do not have the capability necessary storage space to accept bulk materials.

4. CSG Sample Management Contact Information

a. Sample Manager: (Cell: XXX-XXX-XXXX)

b. HQ Trailer: (DSN: XXX-XXXX / DNVT XXX-XXX-XXXX)

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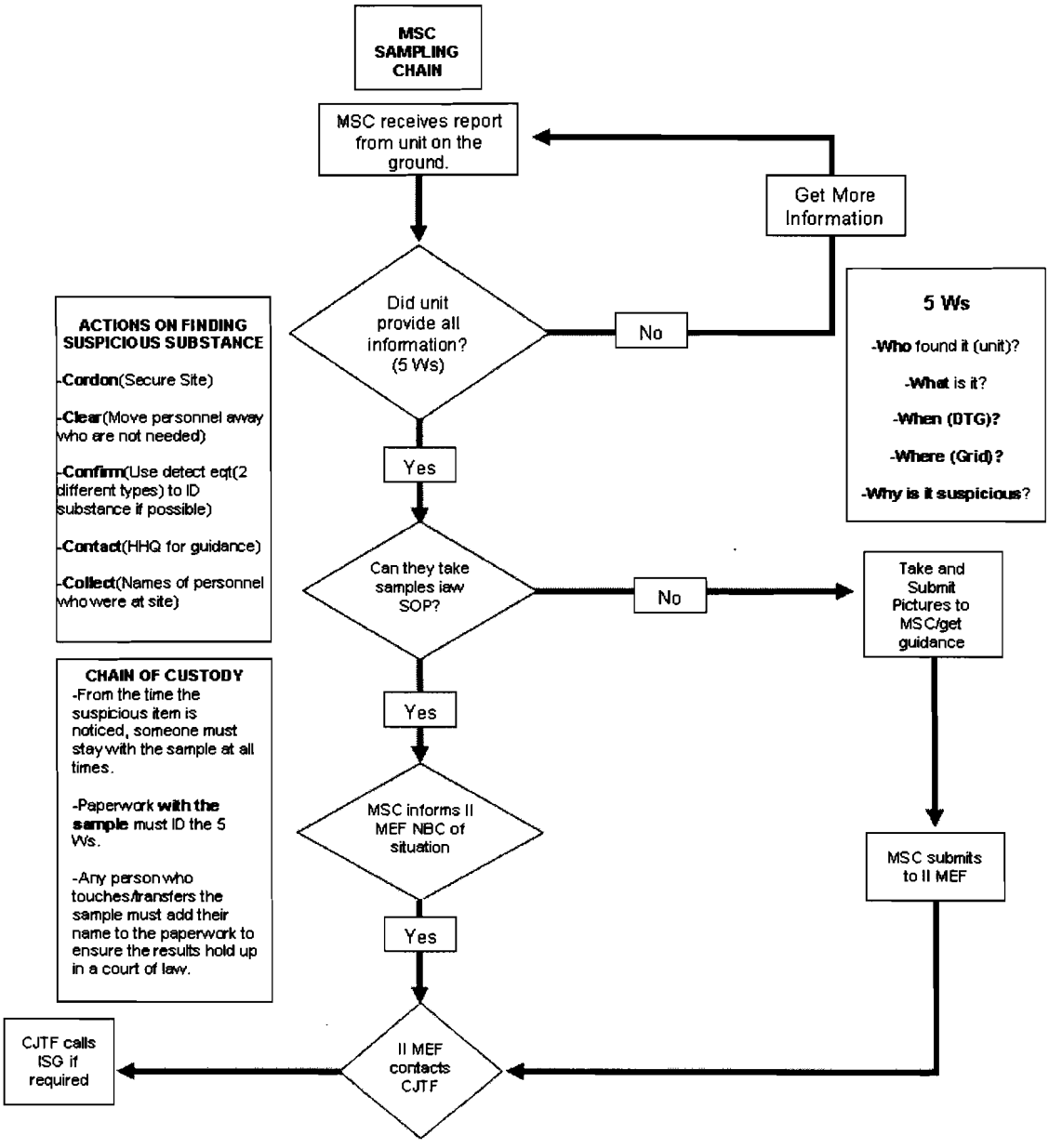
TAB F TO APPENDIX 2 (SAMPLING FLOWCHART) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX



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TAB G TO APPENDIX 2 (CBRN THREATCON LEVELS) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

CBRN ALARM CONDITIONS.

Alarm Condition	If You:	This Indicates	General Actions
Green	Hear: Alarm "green" See: Green flag	Attack is not probable.	• Don MOPP0 or as directed.[1,3] • Perform normal wartime operations. • Resume operations. • Continue recovery operations.
Yellow	Hear: Alarm "yellow" See: Yellow flag	Attack is probable in less than 30 minutes.	• Don MOPP2 or as directed.[1] • Protect and cover assets. • Go to protective shelters or seek the best protection with overhead cover.[2]
Red	Hear: Alarm "red", or a siren (wavering tone) See: Red flag	Attack by air or missile is imminent or in progress.	• Seek immediate protection with overhead cover.[2] • Don MOPP4 or as directed.[1] • Report observed attacks.
	Hear: Ground attack, or a bugle (call-to-arms) See: Red flag	Attack by ground force is imminent or in progress.	• Take immediate cover.[2,3] • Don MOPP4 or as directed.[1] • Defend self and position. • Report activities.
Black	Hear: Alarm "black" or a siren (steady tone) See: Black flag	Attack is over, and NBC contamination and/or UXO hazards are suspected or present.	• Don MOPP4 or as directed.[1,3] • Perform self-aid/buddy care. • Remain under overhead cover or within shelter until directed otherwise.

[1] Wear field gear and personal body armor (if issued) when outdoors or when directed.

[2] Commanders may direct continuation of mission-essential tasks or functions at increased risk.

[3] This alarm condition may be applied to an entire installation or assigned to one or more defense sectors or zones.

1. Alarm Condition Green

a. Attack is not probable.

b. Opposing forces do not possess any CBRN equipment, are not trained in CBRN or Weapons of Mass Destruction (WMD) employment and do not posses the capability to employ WMD agents or systems.

c. Second MAW does not necessarily carry the full complement of chemical defense equipment (CDE). However, ground forces carry protective masks and components maintain contingency plans to deploy and distribute the full complement of CDE, if the situation warrants.

d. Chemical personnel concentrate efforts in smoke planning and constantly monitor threat indicators for any change in the enemy CBRN status.

2. Alarm Condition Yellow. This alarm condition establishes that the enemy is deploying CBRN resources (CBRN agents, CBRN units or protective equipment) and elements of the Wing are within range of the threat means of delivery. The threats intent to use these weapons is assessed as probable.

a. Attack is probable in less than 30 minutes.

b. Provisions will be made for the 24-hour manning of CBRN alarms.

c. All commands will be at a minimum of MOPP level 0.

d. Unit leaders will arrange for the issue of ponchos or other means of expeditious cover to members of their command.

e. Commands can, within their ability to equip and control, designate buildings or shelters with nonporous overhead cover for liquid contamination avoidance. Mask only protective posture within these buildings can be established.

f. Personnel will mask at any indicator (munitions that explode peculiarly, aircraft that seem to deliver mist or fog) of threat CBRN agent delivery. This also pertains to all alert conditions higher than "CBRN YELLOW".

g. No more than one box of any type of supply will be left open.

h. Equipment will be placed in the most protected positions.

i. All exposed equipment not in immediate use will be covered.

j. Unit teams will be issued their equipment and be on immediate standby.

k. For potential detection surveys each unit will submit its expected requirements to the airfield NBCC. Requirements will include the exact boundaries where the presence or absence of contamination will need to be verified and the reason why verification is absolutely necessary.

(1) Based on these requirements the NBCC will begin planning and will prioritize survey requests.

(2) The NBCC will identify personnel and equipment necessary to conduct the surveys to its subordinate elements and will also designate a muster site.

(3) All biological detection will be considered a survey. If the threat possesses a biological agent the NBCC will divide the airfield into a number of areas each approximately 100x100 meters. For each area a biological sampling team of two personnel and a medical representative will be assigned.

l. Each NBCC will identify, source equipment, and train personnel required for contamination control.

m. Dry runs will be conducted at each potential decontamination site. The dry run will consist of the set up of the site and mustering of personnel.

n. When the Wing is in "CBRN YELLOW NUC" the following actions will be taken:

(1) The construction of, or identification of pre-existing, personnel shelters will be initiated.

(2) Unit leaders will arrange for the issue of sandbags to their respective units positions.

(3) The priority of engineer shelter construction for protection from the effects of nuclear weapons will be established by the Commanding Officer of the Air Command Element, with recommendations from the NBCC at each airfield.

(4) Shelters constructed to protect the personnel and/or equipment of the Wing from the effects of nuclear weapons will possess a radiation protection factor sufficient to limit personnel to a negligible risk category.

3. ALARM CONDITION RED. This alarm condition establishes that threat activity indicates that an attack with CBRN agents is imminent or in progress.

a. All commands will establish a minimum of MOPP level 2. When MOPP level 2 or higher is established, all Wing elements will use a buddy system. Individuals will not be assigned to details on their own.

b. All units will ensure that a minimum of two days food and water is protected from possible contamination.

c. Continuous monitoring by real time chemical detectors throughout work and billeting areas will commence. If real time detectors are not available, commence periodic monitoring.

d. Survey teams will be mustered and briefed on the basic survey plan. At all times their location will be made known to the NBCC representative in charge of coordinating the survey.

e. Biological sampling teams will be required to keep their sampling equipment with them at all times and make their location known to the NBCC representative that is in charge of coordinating airfield surveys.

f. The personnel and equipment necessary for each contamination control function will be assembled.

g. All necessary equipment, decontaminants and personnel will be assembled and ready for decontamination operations.

4. Alarm Condition Black. This alarm condition establishes that a CBRN attack is in progress within the boundaries of the airfield. "CBRN BLACK" actions will be conducted once the alert

condition is established or if a threat CBRN attack is observed. Once confirmation of the absence or the curtailment of contamination is verified, local commanders will initiate local procedures to sound the all clear.

a. When "CBRN BLACK" is passed over unsecure voice communications the source will be authenticated.

b. When at all possible, civil defense sirens will be used as the CBRN alarm.

(1) A second means of audible CBRN alarm is an interrupted (e.g., 10 seconds on, 10 seconds off) warbling sound on a siren. Sirens will not be used as the all clear for CBRN attacks.

(2) A third means of nonstandard audible means of CBRN alarm will be the sounding of short signals on vehicle horns in a ratio of approximately one to one.

(3) The vocal "All Clear" will be given with unmasking instructions when it is confirmed that an attack was a false alarm or when the agents from an actual attack have dissipated.

(4) All units will go to MOPP level 4, regardless of previous MOPP level. Priority of donning equipment will be the mask, protective over-garment, boots and gloves. When MOPP level 4 is established the following procedures will be initiated:

(5) Ensure everyone drinks one quart of water every two hours.

(6) Ensure that sleeping personnel are properly masked.

(7) Ensure that key personnel can be identified in MOPP 4.

c. When using CBRN reports, elements of the Wing will utilize the following procedures:

(1) All initial CBRN attacks will be reported using the CBRN 1 report with "FLASH" precedence. To avoid confusion and the overload of communications assets each detachment or unit will submit only one consolidated report per attack. Additional reports are submitted to correct erroneous information, provide

information not previously known, or to report additional attacks.

(2) CBRN 3 reports will be constructed only by a NBCC.

(3) Only the senior NBCC at an airfield will construct or disseminate CBRN 5 or 6 reports.

(4) Wing units of a MAG equivalent or larger will be expected to pass all CBRN related information in the appropriate format.

d. Once CBRN warfare has been initiated, all threat attacks with a means of delivery known to be CBRN capable are to be considered CBRN attacks until otherwise verified.

e. All means of detection will be continuously employed until presence of contamination is confirmed to be present or absent. Continuous monitoring may also be initiated when chemical attacks are suspected, or CBRN 3 reports indicate a command may be subject to a downwind vapor hazard.

f. Surveys, detection reconnaissance operations and biological sampling will be executed as required at the direction of the airfield NBCC.

g. Reference (m) gives the standard techniques and procedures for marking contaminated areas. In addition, all equipment that is contaminated and then removed from a contaminated area will be marked with the appropriate contamination signs that are visible from all angles. This includes vehicles.

h. The contamination control plan will be executed as directed by the airfield NBCC.

i. Operate decontamination sites as directed by the NBCC.

j. If "CBRN BLACK NUC" is established, the following procedures will be followed:

(1) To employ units in missions where those units may exceed the moderate risk criteria for radiation exposure requires the prior approval of the Wing Commanding General.

(2) Within 24 hours of their initial exposure to radiation, all units will report their initial Radiation

Exposure Status (RES) up the chain of command. Thereafter, RES will be reported only when the RES category is increased or reclassified.

(3) If a nuclear hazard is detected continuous monitoring will then be conducted using the indirect method until the dose rate falls below 1 cy/hr. Continuous monitoring may also be initiated when distant nuclear attacks are assessed as posing a fallout hazard.

(4) For nuclear contamination all commands will report at a minimum their initial readings, peak readings and their last reading if they vacate a contaminated area. A reading, which will indicate that unit will exceed its Operational Exposure Guidance (OEG) limit within the next six hours, will also be reported and annotated as such.

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TAB H TO APPENDIX 2 (CWC SCHEDULE TABLES) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

SCHEDULE 1	
TOXIC CHEMICALS	
Sarin: O-Isopropyl methylphosphonofluoridate	107-44-8
Soman: O-Pinacolyl methylphosphonofluoridate	96-64-0
Tabun: O-Ethyl N,N-dimethyl phosphoramidocyanidate	77-81-6
VX: O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate	50782-69-9
Sulfur mustards:	
2-Chloroethylchloromethylsulfide	2625-76-5
Mustard gas: Bis(2-chloroethyl)sulfide	505-60-2
Bis(2-chloroethylthio)methane	63869-13-6
Sesquimustard: 1,2-Bis(2-chloroethylthio)ethane	3563-36-8
1,3-Bis(2-chloroethylthio)-n-propane	63905-10-2
1,4-Bis(2-chloroethylthio)-n-butane	142868-93-7
1,5-Bis(2-chloroethylthio)-n-pentane	142868-94-8
Bis(2-chloroethylthiomethyl)ether	63918-90-1
O-Mustard: Bis(2-chloroethylthioethyl)ether	63918-89-8
Lewisites:	
Lewisite 1: 2-Chlorovinyldichloroarsine	541-25-3
Lewisite 2: Bis(2-chlorovinyl) chloroarsine	40334-69-8
Lewisite 3: Tris(2-chlorovinyl)arsine	40334-70-1
Nitrogen mustards:	
HN1: Bis(2-chloroethyl)ethylamine	538-07-8
HN2: Bis(2-chloroethyl) methylamine	51-75-2
HN3: Tris(2-chloroethyl)amine	555-77-1
Saxitoxin	35523-89-8
Ricin	9009-86-3
PRECURSORS	
DF: Methylphosphonyldifluoride	676-99-3
QL: O-Ethyl O-2- diisopropylaminoethyl methylphosphonite	57856-11-8
Chlorosarin: O-Isopropyl methylphosphonochloridate	1445-76-7
Chlorosoman: O-Pinacolyl methylphosphonochloridate	7040-57-5

SCHEDULE 2	
TOXIC CHEMICALS	
Amiton: O,O-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate and alkylated or protonated salts	78-53-5
PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)- 1-propene	382-21-8
BZ: 3-Quinuclidinyl benzilate	6581-06-2
PRECURSORS	
Chemicals, except Schedule 1, containing phosphorus atom to which is bonded one methyl, ethyl or propyl group	
Methylphosphonyl dichloride	676-97-1
Dimethyl methylphosphonate	756-79-6
Exemption: Fonofos: O-Ethyl S-phenyl ethylphosthiolothionate	944-22-9
N,N-Dialkyl phosphoramidic dihalides	
Dialkyl N,N-dialkyl- phosphoramidates	
Arsenic trichloride	7784-34-1
2,2-Diphenyl-2-hydroxyacetic acid	76-93-7
Quinuclidine-3-ol	1619-34-7
N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ols	
Exemptions: N,N-Dimethylaminoethanol and protonated salts	108-01-0
N,N-Diethylaminoethanol and protonated salts	100-37-8
N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-thiols and protonated salts	
Thiodiglycol: Bis(2-hydroxyethyl)sulfide	111-48-8
Pinacolyl alcohol: 3,3-Dimethylbutane-2-ol	464-07-3

SCHEDULE 3	
TOXIC CHEMICALS	
Phosgene: Carbonyl dichloride	75-44-5
Cyanogen chloride	506-77-4
Hydrogen cyanide	74-90-8
Chloropicrin: Trichloronitromethane	76-06-2
PRECURSORS	
Phosphorus oxychloride	10025-87-3
Phosphorus trichloride	7719-12-2
Phosphorus pentachloride	10026-13-8
Trimethyl phosphite	121-45-9
Triethyl phosphite	122-52-1
Dimethyl phosphite	868-85-9
Diethyl phosphite	762-04-9
Sulfur monochloride	10025-67-9
Sulfur dichloride	10545-99-0
Thionyl chloride	7719-09-7
Ethyldiethanolamine	139-87-7
Methyldiethanolamine	105-59-9
Triethanolamine	102-71-6

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Headquarters, UNIT XXXX
MCAS CHERRY POINT, NC
DTG

TAB I TO APPENDIX 2 (AIRCREW IPE REPORT) TO UNIT XXXX OPERATIONS ORDER FOR OPERATION XXXXXXX

CLASSIFICATION							
REPORTING UNIT							
DTG OF REPORT							
RECEIVING UNITS							
MODE OF TRANSMISSION							
LIN	NOMENCLATURE	QTY REQD	QTY O/H	OVER / SHORT	QTY ON ORDER	% REQD	% O/H
NON EXPENDABLE ITEMS							
	AIRCREW RESPIRATOR A/P22P-14(V)1						
	AIRCREW RESPIRATOR A/P22P-14(V)3						
	AIRCREW RESPIRATOR A/P22P-14(V)4						
	AIRCREW RESPIRATOR A/P22P-14(V)5						
	CBR BATTERY / FILTER POUCHES						
	CMU-29(V)2/P OVERVEST						
	CB HEAD HARNESS						
	2QT CANTEENS						
	CANTEEN CAPS						
EXPENDABLE ITEMS							
	CHEMICAL UNDERGARMENT						
	CHEMICAL PROTECTIVE GLOVES						
	CHEMICAL PROTECTIVE OVERBOOTS						
	AIRCREW CAPES						
	CHEMICAL PROTECTIVE SOCKS						
	PUSHER FAN BATTERIES						
	C2A1 FILTERS						

APPENDIX M

CGRI CHECKLIST

Unit Inspected:_____

Inspection Date(s):_____

Unit CBRND Officer:_____ Date Assigned:_____

Unit CBRND Chief/NCO:_____ Date Assigned:_____

Chief Evaluator:_____

FUNCTIONAL AREA	Totals	YES	NO	N/A	Percent	Rating
I - Unit CBRN SOP	90					
II - CBRN Operations	46					
III - CBRN Training	66					
IV – Supply and Logistics	41					
COMMODITY TOTAL:	**243**					

1. Total Overall Percentage: The below chart is to be used as a guide only. A rating percentage below 74 percent does not "automatically" score a "Not-mission Capable" status nor does a score above 86 percent automatically score a "Mission Capable" status. If the inspector determines that the functional area does not warrant a grade of not-mission capable because they are still able to perform their assigned combat mission, a grade of "Mission Capable" may be given, or if the grade is above 86 percent and the inspector determines the functional area is not able to perform their assigned combat mission, a grade of "Not-mission Capable" may be given.

Percentage	**Rating**
100-86	Mission Capable
85-75	Area of Concern
74-below	Not-Mission Capable

2. Noteworthy Performance:

3. Findings and Area(s) of Concern: A "Finding" is a discrepancy that would extremely reduce the capability of the commodity from performing its mission. An "Area of Concern" is a discrepancy that does not meet the definition of a finding, however if not corrected could evolve into one.

a. Findings:

b. Areas of Concern:

FUNCTIONAL AREA I
UNIT SOP

1. Does the unit have procedures to prepare and maintain CBRN casualty records, reports, and unit radiation dosage records in coordination with the Medical Officer and CBRN Officer/NCO?
Ref: WgO 3400.4E, Chap 2, Para 3.a.

Yes_____ NO_____ N/A_____

2. Does the unit have procedures in place to anticipate casualty levels for areas assessed as prime CBRN targets and plans for emergency replacements required per anticipated casualty levels?
Ref: WgO 3400.4E, Chap 2, Para 3.b.

Yes_____ NO_____ N/A_____

3. Does the unit have procedures to coordinate radiation exposure status of subordinate organizations with the Operations and Medical Officers?
Ref: WgO 3400.4E, Chap 2, Para 3.c.

Yes_____ NO_____ N/A_____

4. Does the unit have procedures to determine straggler control measures?
Ref: WgO 3400.4E, Chap 2, Para 3.e.

Yes_____ NO_____ N/A_____

5. Does the unit have procedures to supervise graves registration?
Ref: WgO 3400.4E, Chap 2, Para 3.f.

Yes_____ NO_____ N/A_____

6. Does the unit have procedures to coordinate with the CBRN Officer for the handling of prisoners of war (POWs) in order to provide CBRN protective equipment and self-decontamination operations as specified in current international agreements and treaties?
Ref: WgO 3400.4E, Chap 2, Para 3.g.

Yes_____ NO_____ N/A_____

7. Does the unit have procedures to supervise the production and dissemination of intelligence with regard to enemy CBRN capabilities including production capabilities, weapons, and delivery systems, enemy CBRN defense equipment and training status, enemy intent to use CBRN weapons?
Ref: WgO 3400.4E, Chap 2, Para 4.a.

Yes_____ NO_____ N/A_____

8. Does the unit have procedures to identify and locate targets appropriate for nuclear attack?
Ref: WgO 3400.4E, Chap 2, Para 4.b.

Yes_____ NO_____ N/A_____

9. Does the unit have procedures to initiate activities that degrade and counter the enemy's ability to acquire targets for CBRN attack?
Ref: WgO 3400.4E, Chap 2, Para 4.c.

Yes_____ NO_____ N/A_____

10. Does the unit have procedures to recommend CBRN reconnaissance of routes and areas?
Ref: WgO 3400.4E, Chap 2, Para 4.d.

Yes_____ NO_____ N/A_____

11. Does the unit have procedures to assist in vulnerability analysis?
Ref: WgO 3400.4E, Chap 2, Para 4.e.

Yes_____ NO_____ N/A_____

12. Does the unit have procedures to ensure the unit is capable of accomplishing all Mission Essential Tasks (MET's) in a CBRN environment?
Ref: WgO 3400.4E, Chap 2, Para 5.a.

Yes_____ NO_____ N/A_____

13. Does the unit have procedures to prepare operation plans, orders, appendices, and annexes in accordance with the commander's guidance for CBRN operations?
Ref: WgO 3400.4E, Chap 2, Para 5.b.

Yes_____ NO_____ N/A_____

14. Does the unit have procedures to consider the CBRN threat when determining the general location of the command post?
Ref: WgO 3400.4E, Chap 2, Para 5.c.

Yes_____ NO_____ N/A_____

15. Does the unit have procedures to plan and coordinate CBRN defense training and inspections?
Ref: WgO 3400.4E, Chap 2, Para 5.d.

Yes_____ NO_____ N/A_____

16. Does the unit have a relevant CBRN SOP and has it been reviewed within the last year?
Ref: MCO 3400.3F, Para 9.b.1.
MCO P5215.1K, Para 4.a.2.f.
WgO 3400.4E, Chap 2, Para 5.e.

Yes_____ NO_____ N/A_____

17. Does the unit have procedures to prepare and supervise the CBRN training program?
Ref: WgO 3400.4E, Chap 2, Para 5.f.

Yes_____ NO_____ N/A_____

18. Does the unit have procedures to supervise training of CBRN monitor/survey teams, decontamination teams, and NBCC personnel?
Ref: WgO 3400.4E, Chap 2, Para 5.g.

Yes_____ NO_____ N/A_____

19. Does the unit have procedures to inspect subordinate units' CBRN equipment?
Ref: WgO 3400.4E, Chap 2, Para 5.h.

Yes_____ NO_____ N/A_____

20. Does the unit have procedures to activate the NBCC and coordinate its activities?
Ref: WgO 3400.4E, Chap 2, Para 5.i.

Yes_____ NO_____ N/A_____

21. Does the unit have procedures to conduct vulnerability analysis?
Ref: WgO 3400.4E, Chap 2, Para 5.j.

Yes_____ NO_____ N/A_____

22. Does the unit have procedures to prepare and disseminate friendly force hazard predictions, minimum mission oriented protective posture (MOPP) recommendations, and effective downwind messages to subordinate units?
Ref: WgO 3400.4E, Chap 2, Para 5.k.

Yes_____ NO_____ N/A_____

23. Does the unit have procedures to recommend required units, personnel, and equipment to conduct radiological/chemical surveys?
Ref: WgO 3400.4E, Chap 2, Para 5.l.

Yes_____ NO_____ N/A_____

24. Does the unit have procedures to forward CBRN reports and enemy CBRN attack alerts to higher, subordinate and adjacent units or headquarters?
Ref: WgO 3400.4E, Chap 2, Para 5.m.

Yes_____ NO_____ N/A_____

25. Does the unit have procedures to direct and supervise chemical detection, biological sampling, and radiological monitor/survey operations and reports within the unit?
Ref: WgO 3400.4E, Chap 2, Para 5.n.

Yes_____ NO_____ N/A_____

26. Does the unit have procedures to disperse logistic support facilities to reduce vulnerability to CBRN weapons?
Ref: WgO 3400.4E, Chap 2, Para 6.a.

Yes_____ NO_____ N/A_____

27. Does the unit have procedures to plan for increased transportation requirements due to the dispersion of units, increased demand for CBRN replacement equipment, and decon requirements?
Ref: WgO 3400.4E, Chap 2, Para 6.b.

Yes_____ NO_____ N/A_____

28. Does the unit have procedures to ensure availability of CBRN defense equipment?
Ref: WgO 3400.4E, Chap 2, Para 6.c.

Yes_____ NO_____ N/A_____

29. Does the unit have procedures to supervise maintenance of CBRN defense equipment?
Ref: WgO 3400.4E, Chap 2, Para 6.d.

Yes_____ NO_____ N/A_____

30. Does the unit have procedures to develop plans to transport increased numbers of uncontaminated and contaminated casualties?
Ref: WgO 3400.4E, Chap 2, Para 6.e.

Yes_____ NO_____ N/A_____

31. Does the unit have procedures to plan for decontamination operations in response to a CBRN attack?
Ref: WgO 3400.4E, Chap 2, Para 6.f.

Yes_____ NO_____ N/A_____

32. Does the unit have procedures to prepare plans for and, when directed, supervises the construction and/or use of personnel shelters, decontamination sites, emergency power plants, and laundry facilities?
Ref: WgO 3400.4E, Chap 2, Para 6.g.

Yes_____ NO_____ N/A_____

33. Does the unit have procedures to receive recommendations from the CBRN Officer or NCO on CBRN equipment and supply requirements?
Ref: WgO 3400.4E, Chap 2, Para 6.h.

Yes_____ NO_____ N/A_____

34. Does the unit have procedures to receive CBRN equipment and supply request information from the CBRN Officer or NCO and effectively ensure distribution?
Ref: WgO 3400.4E, Chap 2, Para 6.i.

Yes_____ NO_____ N/A_____

35. Does the unit have procedures to supervise installation and establishment of collective protection facilities as recommended by the CBRN Officer or NCO?
Ref: WgO 3400.4E, Chap 2, Para 6.j.

Yes_____ NO_____ N/A_____

36. Does the unit have procedures to coordinate movement of convoys along contaminated routes?
Ref: WgO 3400.4E, Chap 2, Para 6.k.

Yes_____ NO_____ N/A_____

37. Does the unit have procedures to plan and coordinate mortuary affairs and graves registration?
Ref: WgO 3400.4E, Chap 2, Para 6.l.

Yes_____ NO_____ N/A_____

38. Does the unit have procedures to provide a communications-electronics annex to operational orders/plans including appropriate net utilization for CBRN traffic if required?
Ref: WgO 3400.4E, Chap 2, Para 7.a.

Yes_____ NO_____ N/A_____

39. Does the unit have procedures to provide communications for CBRN teams directly under the control of the headquarters?
Ref: WgO 3400.4E, Chap 2, Para 7.b.

Yes_____ NO_____ N/A_____

40. Does the unit have procedures to prepare special communications plans for mass casualty evacuation?
Ref: WgO 3400.4E, Chap 2, Para 7.c.

Yes_____ NO_____ N/A_____

41. Does the unit have procedures to plans to counter the effect of EMP on communication equipment?
Ref: WgO 3400.4E, Chap 2, Para 7.d.

Yes_____ NO_____ N/A_____

42. Does the unit have procedures to prescribe treatment procedures for CBRN casualties?
Ref: WgO 3400.4E, Chap 2, Para 8.a.

Yes_____ NO_____ N/A_____

43. Does the unit have procedures to ensure that treatment facilities for CBRN casualties are available?
Ref: WgO 3400.4E, Chap 2, Para 8.b.

Yes_____ NO_____ N/A_____

44. Does the unit have procedures to supervise inspection of food and water for signs of contamination?
Ref: WgO 3400.4E, Chap 2, Para 8.c.

Yes_____ NO_____ N/A_____

45. Does the unit have procedures to coordinate with the NBCC to monitor and evaluate a subordinate unit's nuclear radiation exposure history?
Ref: WgO 3400.4E, Chap 2, Para 8.d.

Yes_____ NO_____ N/A_____

46. Does the unit have procedures to advise the commander on the impact of a unit's additional nuclear radiation exposure?
Ref: WgO 3400.4E, Chap 2, Para 8.e.

Yes_____ NO_____ N/A_____

47. Does the unit have procedures to make recommendations to prevent, and takes actions to detect, contamination of food and water supplies?
Ref: WgO 3400.4E, Chap 2, Para 8.f.

Yes_____ NO_____ N/A_____

48. Does the unit have procedures to coordinate the collection and processing of all biological samples with the unit CBRN Officer?
Ref: WgO 3400.4E, Chap 2, Para 8.g.

Yes_____ NO_____ N/A_____

49. Does the unit have procedures to oversee periodic monitoring of all individual health records to ensure up-to-date immunization of all personnel against potential biological agents?
Ref: WgO 3400.4E, Chap 2, Para 8.h.

Yes_____ NO_____ N/A_____

50. Does the unit have procedures to verify that personnel requiring optical inserts have them?
Ref: WgO 3400.4E, Chap 2, Para 8.i.

Yes_____ NO_____ N/A_____

51. Does the unit have procedures to ensure the training of medical personnel in the treatment of CBRN casualties?
Ref: WgO 3400.4E, Chap 2, Para 8.j.

Yes_____ NO_____ N/A_____

52. Does the unit have procedures to coordinate the training of Marines to identify CBRN symptoms?
Ref: WgO 3400.4E, Chap 2, Para 8.k.

Yes_____ NO_____ N/A_____

53. Does the unit have procedures to provide CBRN first aid response?
Ref: WgO 3400.4E, Chap 2, Para 8.l.

Yes_____ NO_____ N/A_____

54. Does the unit have procedures to coordinate the procurement and distribution of all medical supplies required for the treatment of CBRN casualties?
Ref: WgO 3400.4E, Chap 2, Para 8.m.

Yes_____ NO_____ N/A_____

55. Does the unit have procedures to develop plans for the handling and movement of contaminated casualties?
Ref: WgO 3400.4E, Chap 2, Para 8.n.

Yes_____ NO_____ N/A_____

56. Does the unit have procedures to plan and supervise medical treatment of POWs and civilian internees and detainees that may have been exposed to CBRN agents?
Ref: WgO 3400.4E, Chap 2, Para 8.o.

Yes_____ NO_____ N/A_____

57. Does the unit have procedures to maintain and distribute information on CBRN antidotes?
Ref: WgO 3400.4E, Chap 2, Para 8.q.

Yes_____ NO_____ N/A_____

58. Does the unit have procedures to determine the requirements for medical personnel in a Casualty Decontamination Site (CDS)?
Ref: WgO 3400.4E, Chap 2, Para 8.r.

Yes_____ NO_____ N/A_____

59. Does the unit have procedures to advise the commander on CBRN defense readiness?
Ref: WgO 3400.4E, Chap 2, Para 9.a.

Yes_____ NO_____ N/A_____

60. Does the unit have procedures to advise the commander on operational exposure guidance?
Ref: WgO 3400.4E, Chap 2, Para 9.b.

Yes_____ NO_____ N/A_____

61. Does the unit have procedures to determine and recommend requirements for CBRN supplies and equipment?
Ref: WgO 3400.4E, Chap 2, Para 9.d.

Yes_____ NO_____ N/A_____

62. Does the unit have procedures to estimate personnel, equipment, and supply requirements to support the CBRN appendix of an operations order?
Ref: WgO 3400.4E, Chap 2, Para 9.e.

Yes_____ NO_____ N/A_____

63. Does the unit have procedures to coordinate and develop CBRN defense training exercises?
Ref: WgO 3400.4E, Chap 2, Para 9.f.

Yes_____ NO_____ N/A_____

64. Does the unit have procedures to evaluate unit CBRN defense readiness?
Ref: WgO 3400.4E, Chap 2, Para 9.g.

Yes_____ NO_____ N/A_____

65. Does the unit have procedures to supervise operation of the NBCC?
Ref: WgO 3400.4E, Chap 2, Para 9.h.

Yes_____ NO_____ N/A_____

66. Does the unit have procedures to conduct and supervise CBRN inspections?
Ref: WgO 3400.4E, Chap 2, Para 9.i.

Yes_____ NO_____ N/A_____

67. Does the unit have procedures to provide recommendations for the training of the command and for the training of CBRN specialists, including formal school quotas?
Ref: WgO 3400.4E, Chap 2, Para 9.j.

Yes_____ NO_____ N/A_____

68. Does the unit have procedures to provide technical assistance in the examination of captured CBRN equipment?
Ref: WgO 3400.4E, Chap 2, Para 9.k.

Yes_____ NO_____ N/A_____

69. Does the unit have procedures to plan and make recommendations for decontamination functions?
Ref: WgO 3400.4E, Chap 2, Para 9.l.

Yes_____ NO_____ N/A_____

70. Does the unit have procedures to train individuals in the effective use of individual protective items?
Ref: WgO 3400.4E, Chap 2, Para 11.a.

Yes_____ NO_____ N/A_____

71. Does the unit have procedures to support and evaluate all required aircrew CBR-D special mission aircrew equipment ensemble familiarization training to ensure those aircrews are familiar with the function, donning, and wearing of the CBR-D special mission aircrew equipment ensemble?
Ref: NAVAIR 13-1-6.10
WgO 3400.4E, Chap 2, Para 9.m.1.

Yes_____ NO_____ N/A_____

72. Does the unit have procedures to support and evaluate all required aircrew CBR-D specific T&R training to ensure that aircrew conduct CBR-D specific T&R training based off aircraft T/M/S requirements prior to deployment?
Ref: WgO 3400.4E, Chap 2, Para 9.m.2.

Yes_____ NO_____ N/A_____

73. Does the unit have procedures to supervise monitoring/survey operations?
Ref: WgO 3400.4E, Chap 2, Para 11.b.

Yes_____ NO_____ N/A_____

74. Does the unit have procedures to support and evaluate all required flight equipment personnel CBR IPE familiarization training to ensure that Flight Equipment personnel are familiar with all aspects of required Aircrew CBR IPE requirements, maintenance, and inspections?
Ref: OPNAVINST 4790.2
NAVAIR 13-1-6.10
WgO 3400.4E, Chap 2, Para 9.m.3.

Yes_____ NO_____ N/A_____

75. Does the unit have procedures to support and evaluate all required aviation specific CBRN Team training to ensure that squadron CBRN Teams incorporate aviation specific training, based off aircraft T/M/S, into quarterly team training?
Ref: WgO 3400.4E, Chap 2, Para 9.m.4.

Yes_____ NO_____ N/A_____

76. Does the unit have procedures to supervise CBRN reconnaissance of routes/areas to be occupied?
Ref: WgO 3400.4E, Chap 2, Para 11.c.

Yes_____ NO_____ N/A_____

77. Does the unit have procedures to supervise the preparation of CBRN 1 and 4 reports?
Ref: WgO 3400.4E, Chap 2, Para 11.d.

Yes_____ NO_____ N/A_____

78. Does the unit have procedures to supervise immediate decon of personnel and equipment?
Ref: WgO 3400.4E, Chap 2, Para 11.h.

Yes_____ NO_____ N/A_____

79. Does the unit have procedures to supervise the training of CBRN techniques and procedures; i.e., unmasking procedures and crossing of contaminated area?
Ref: WgO 3400.4E, Chap 2, Para 11.i.

Yes_____ NO_____ N/A_____

80. Does the unit have procedures to supervise the marking of contaminated areas?
Ref: WgO 3400.4E, Chap 2, Para 11.j.

Yes_____ NO_____ N/A_____

81. Does the unit ensure completion of Aircrew CBR Survival Brief prior to deploying?
Ref: MCO 3750.2
WgO P3750.7E
WgO 3400.4E, Chap 2, Para 12.a.

Yes_____ NO_____ N/A_____

82. Does the unit have procedures to support operational decon of its personnel and equipment?
Ref: WgO 3400.4E, Chap 3, Para 3.a.4.

Yes_____ NO_____ N/A_____

83. Does the unit have procedures to ensure aircrew CBR IPE configurations, and aircraft compatibility is current with NAVAIR ALSS guidance?
Ref: NAVAIR 13-1-6.10
WgO 3400.4E, Chap 2, Para 12.b.

Yes_____ NO_____ N/A_____

84. Does the unit have procedures to conduct aircrew CBR-D Survival pre-deployment training?
Ref: MCO 3750.2
WgO 3400.4E, Chap 2, Para 12.c.

Yes_____ NO_____ N/A_____

85. Does the unit have procedures to ensure the unit posses adequate quantities of Aircrew CBR IPE prior to deploying?
Ref: OPNAVINST 3710.7T
WgO 3400.4E, Chap 2, Para 13.a.

Yes_____ NO_____ N/A_____

86. Does the unit have procedures to coordinate with CBRN for Emergency Reclamation teams to recover and dispose of contaminated aircrew IPE?
Ref: OPNAVINST 4790.2
WgO 3400.4E, Chap 2, Para 13.b.

Yes_____ NO_____ N/A_____

87. Does the unit have procedures to coordinate with the CBRN section for aircraft non-destructive inspection (NDI), to conduct monitoring for the presence of CBR contamination?
Ref: OPNAVINST 4790.2
WgO 3400.4E, Chap 2, Para 14.a.

Yes_____ NO_____ N/A_____

88. Does the unit have procedures to coordinate with the CBRN section for contaminated aircraft cleaning/maintenance process and procedures?
Ref: OPNAVINST 4790.2
WgO 3400.4E, Chap 2, Para 14.b.

Yes_____ NO_____ N/A_____

89. Does the unit have procedures to augment thorough decontamination operations with extra personnel to facilitate their support of decontamination efforts?
Ref: WgO 3400.4E, Chap 3, Para 3.a.4.

Yes_____ NO_____ N/A_____

90. Does the unit have procedures to prepare and implement CBRN defense measures while also ensuring that their subordinates can operate in a CBRN environment?
Ref: WgO 3400.4E, Chap 3, Para 3.a.5.

Yes_____ NO_____ N/A_____

Total Yes: _____ of _____

FUNCTIONAL AREA II
OPERATIONS

1. Can the unit perform individual/collective protection measures?
Ref: WgO 3400.4E, Chap 3, Para 3.a.7.c.

Yes_____ NO_____ N/A_____

2. Has the unit established a Decontamination team?
Ref: WgO 3400.4E, Chap 3, Para 3.c.

Yes_____ NO_____ N/A_____

3. Can each equipment or vehicle operator, weapons crewman, and aircraft crewman perform spot decontamination of their equipment, vehicle, or aircraft?
Ref: WgO 3400.4E, Chap 3, Para 3.a.2.

Yes_____ NO_____ N/A_____

4. Can the unit perform immediate decontamination?
Ref: WgO 3400.4E, Chap 3, Para 3.a.4.

Yes_____ NO_____ N/A_____

5. Can the unit conduct MOPP Exchange?
Ref: WgO 3400.4E, Chap 3, Para 3.c.

Yes_____ NO_____ N/A_____

6. Can the unit support Vehicle Wash down?
Ref: WgO 3400.4E, Chap 3, Para 3.c.

Yes_____ NO_____ N/A_____

7. Can the unit support Aircraft Wash down?
Ref: WgO 3400.4E, Chap 3, Para 3.c.

Yes_____ NO_____ N/A_____

8. Can the unit support Detailed Troop Decon (DTD)?
Ref: WgO 3400.4E, Chap 3, Para 5.c.

Yes_____ NO_____ N/A_____

9. Can the unit support an Aircrew Decon Site (ADS)?
Ref: WgO 3400.4E, Chap 3, Para 5.c.

Yes_____ NO_____ N/A_____

10. Can the unit support Detailed Equipment Decon (DED)?
Ref: WgO 3400.4E, Chap 3, Para 5.c.

Yes_____ NO_____ N/A_____

11. Can the unit support Detailed Aircraft Decontamination (DAD)?
Ref: WgO 3400.4E, Chap 3, Para 5.c.

Yes_____ NO_____ N/A_____

12. Can the unit support a Casualty Decontamination Site (CDS)?
Ref: WgO 3400.4E, Chap 3, Para 3.c.

Yes_____ NO_____ N/A_____

13. Has the unit established a Monitor/Survey (M/S) team?
Ref: WgO 3400.4E, Chap 3, Para 3.b.

Yes_____ NO_____ N/A_____

14. Does the unit have procedures to provide personnel in support of airfield monitor/survey team operations?
Ref: WgO 3400.4E, Chap 3, Para 3.a.3.

Yes_____ NO_____ N/A_____

15. Does the unit have procedures for the M/S team to evacuate biological samples that have been tested positive through unit level presumptive identification using organic biological detection assets?
Ref: WgO 3400.4E, Chap 4, Para 2.e.3.

Yes_____ NO_____ N/A_____

16. Can the unit detect and identify CBRN agents and materials?
Ref: WgO 3400.4E, Chap 3, Para 3.a.7.a.

Yes_____ NO_____ N/A_____

17. Is the unit prepared to provide aircraft and aircrew (not the reconnaissance team) to support CBRN aerial reconnaissance operations? (Marine Light/Attack Helicopter Squadrons (HMLA) only)
Ref: WgO 3400.4E, Chap 4, Para 2.d.2.

Yes_____ NO_____ N/A_____

18. Is the unit M/S team trained and equipped to conduct biological sampling?
Ref: WgO 3400.4E, Chap 4, Para 2.e.1.

Yes_____ NO_____ N/A_____

19. Has the unit established an NBCC team?
Ref: WgO 3400.4E, Chap 3, Para 4.

Yes_____ NO_____ N/A_____

20. Can the unit warn of and report CBRN attacks and hazards?
Ref: WgO 3400.4E, Chap 3, Para 3.a.7.b.

Yes_____ NO_____ N/A_____

21. Can the unit collect and analyze surveillance, monitoring, and reconnaissance data, and prepare the appropriate CBRN reports and overlays?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.e.

Yes_____ NO_____ N/A_____

22. Can the unit collect, collate, and analyze CBRN information received from subordinate, adjacent, and higher NBCCs?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.b.

Yes_____ NO_____ N/A_____

23. Can the unit prepare and disseminate CBRN reports, overlays, and information to subordinate, adjacent, and higher NBCCs?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.c.

Yes_____ NO_____ N/A_____

24. Can the unit disseminate CBRN reports, overlays, and information to subordinate commands through C2PC?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.d.

Yes_____ NO_____ N/A_____

25. Can the unit conduct chemical hazard prediction?
Ref: WgO 3400.4E, Chap 4, Para 3.d.2.

Yes_____ NO_____ N/A_____

26. Can the unit conduct biological hazard prediction?
Ref: WgO 3400.4E, Chap 4, Para 3.d.2.

Yes_____ NO_____ N/A_____

27. Can the unit conduct radiological hazard prediction?
Ref: WgO 3400.4E, Chap 4, Para 3.d.2.

Yes_____ NO_____ N/A_____

28. Can the unit review and disseminate Chemical Downwind Messages?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.a.

Yes_____ NO_____ N/A_____

29. Does the unit have procedures to develop a detector employment plan that ensures sufficient detectors are employed?
Ref: WgO 3400.4E, Chap 4, Para 2.c.1.

Yes_____ NO_____ N/A_____

30. Does the unit have procedures to receive requests and coordinate for Aerial reconnaissance operations?
Ref: WgO 3400.4E, Chap 4, Para 2.d.1.

Yes_____ NO_____ N/A_____

31. Does the unit have procedures to task organize reconnaissance teams needed to conduct the aerial reconnaissance missions?
Ref: WgO 3400.4E, Chap 4, Para 2.d.3.

Yes_____ NO_____ N/A_____

32. Does the unit have procedures to oversee the evacuation of all biological samples taken?
Ref: WgO 3400.4E, Chap 4, Para 2.e.2.

Yes_____ NO_____ N/A_____

33. Does the unit have procedures to transport biological samples to an approved field or shipboard laboratory or arrange for a change of custody?
Ref: WgO 3400.4E, Chap 4, Para 2.e.4.

Yes_____ NO_____ N/A_____

34. Does the unit have procedures to coordinate all CBRN related issues that involve or impact other staff sections?
Ref: WgO 3400.4E, Chap 4, Para 3.a.1.a.

Yes_____ NO_____ N/A_____

35. Does the unit have procedures to approve all CBRN reports and overlays before they are posted in C2PC or other C4I networks?
Ref: WgO 3400.4E, Chap 4, Para 3.a.1.d.

Yes_____ NO_____ N/A_____

36. Does the unit have procedures to recommend the unit MOPP Level?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.b.

Yes_____ NO_____ N/A_____

37. Does the unit have procedures to develop, implement, support, and supervise the surveillance and monitoring plan?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.c.

Yes_____ NO_____ N/A_____

38. Does the unit have procedures to develop, support, and supervise CBRN reconnaissance missions?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.d.

Yes_____ NO_____ N/A_____

39. Does the unit have procedures to collect and analyze surveillance, monitoring, and reconnaissance data, and prepare the appropriate CBRN reports and overlays?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.e.

Yes_____ NO_____ N/A_____

40. Does the unit have procedures to collect subordinate commands' radiological exposure status and compile overall radiological exposure status?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.f.

Yes_____ NO_____ N/A_____

41. Does the unit have procedures to develop, implement, support, and supervise the decon plan?
Ref: WgO 3400.4E, Chap 4, Para 3.a.2.h.

Yes_____ NO_____ N/A_____

42. Does the unit have procedures to review and disseminate Chemical Downwind Messages and Effective Downwind Messages?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.a.

Yes_____ NO_____ N/A_____

43. Does the unit have procedures to collect, collate, and analyze CBRN information received from subordinate, adjacent, and higher units?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.b.

Yes_____ NO_____ N/A_____

44. Does the unit have procedures to prepare and disseminate CBRN reports, overlays, and information to subordinate, adjacent, and higher units?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.c.

Yes_____ NO_____ N/A_____

45. Does the unit have procedures to disseminate CBRN reports, overlays, and information to subordinate commands through C2PC?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.d.

Yes_____ NO_____ N/A_____

46. Can the unit review and disseminate Effective Downwind Messages?
Ref: WgO 3400.4E, Chap 4, Para 3.a.3.a.

Yes_____ NO_____ N/A_____

Total Yes: _____ of _____

FUNCTIONAL AREA III
TRAINING

1. Has the unit commander selected training objectives and support the integration of CBRN operations into the unit's overall training plans?
Ref: WgO 3400.4E, Chap 5, Para 1.

Yes_____ NO_____ N/A_____

2. Has the unit and commander fully integrated CBRN operations training into every combat, CS, CSS, and C2 exercise during offensive and defensive operations, to include live fire evolutions?
Ref: WgO 3400.4E, Chap 5, Para 1.a.

Yes_____ NO_____ N/A_____

3. Are CBRN operations training included and scheduled on the unit's annual, quarterly, monthly, and weekly training schedules/TEEP?
Ref: MCO 1553.3A PARA 6.b.4.d.
WgO 3400.4E, Chap 5, Para 1.b.

Yes_____ NO_____ N/A_____

4. Does the unit CBRN Officer maintain copies of current CBRN operations lesson plans?
Ref: WgO 3400.4E, Chap 5, Para 1.d.

Yes_____ NO_____ N/A_____

5. Are lesson plans reviewed and updated at least every two years, to ensure current and accurate information is being taught?
Ref: WgO 3400.4E, Chap 5, Para 1.d.

Yes_____ NO_____ N/A_____

6. Is the unit CBRN Officer maintaining records of all CBRN operations training conducted to include copies of Letters of Instruction (LOIs), Operations Orders and training schedules/TEEPs reflecting CBRN operations training for a minimum of two years?
Ref: WgO 3400.4E, Chap 5, Para 1.c.

Yes_____ NO_____ N/A_____

7. Do unit class rosters contain date, subject taught, length of class, instructor, and signatures of personnel attending CBRN operations training?
Ref: WgO 3400.4E, Chap 5, Para 1.c.

Yes_____ NO_____ N/A_____

8. Are informal and formal evaluations conducted for all CBRN training (i.e. After Action Reports?
Ref: MCRP 3-0A Page 23
MCO P3500.72A Para 7000.3.

Yes_____ NO_____ N/A_____

9. Does the unit conduct ISS training annually, on a calendar year basis, for all unit personnel?
Ref: MCO 3400.3F Para 6.a.
WgO 3400.4E, Chap 5, Para 3.a.

Yes_____ NO_____ N/A_____

10. Have all Marines completed an IPE Confidence Exercise, once per calendar year?
Ref: MCO 3400.3F Para 6.a.
WgO 3400.4E, Chap 5, Para 3.a.

Yes_____ NO_____ N/A_____

11. Has the unit conducted BOS training annually, on a calendar year basis, for all unit personnel?
Ref: MCO 3400.3F Para 6.b.
WgO 3400.4E, Chap 5, Para 3.b.

Yes_____ NO_____ N/A_____

12. Have all unit personnel fired their assigned T/O weapon while wearing their appropriate field protective mask annually, on a calendar year basis?
Ref: WgO 3400.4E, Chap 5, Para 3.d.

Yes_____ NO_____ N/A_____

13. Has each unit crew-served weapon team fired its weapon while masked during live fire exercises?
Ref: WgO 3400.4E, Chap 5, Para 3.d.

Yes_____ NO_____ N/A_____

14. Has MOPP-FT been conducted semi-annually at a minimum by all unit personnel consisting of personnel spending a minimum of eight continuous hours in MOPP levels set by the unit commander while conducting normal operations?
Ref: WgO 3400.4E, Chap 5, Para 3.d.

Yes_____ NO_____ N/A_____

15. Have unit aircrew received CBR-D FAILSAFE Survival Brief as part of pre-deployment training?
Ref: WgO 3400.4E, Chap 5, Para 6.c.

Yes_____ NO_____ N/A_____

16. Have unit aircrew been trained in CBD equipment, including introduction, donning, and Emergency Procedures, contaminated ingress and egress operations, and will conducted an Aircrew CBD IPE exercise as part of the pre-deployment training?
Ref: WgO 3400.4E, Chap 5, Para 6.a.

Yes_____ NO_____ N/A_____

17. Have all unit Flight Equipment Personnel received tech training for Aircrew respirators and Below the Neck (BTN) equipment, and equipment donning and equipment requirements and allowances?
Ref: WgO 3400.4E, Chap 5, Para 6.b.

Yes_____ NO_____ N/A_____

18. Has the unit determined aircrew CBR specific T/M/S T&R training requirements based off aircraft and missions, and incorporated them into pre-deployment training?
Ref: WgO 3400.4E, Chap 5, Para 6.h.

Yes_____ NO_____ N/A_____

19. Has unit Monitor/Survey Team training included basic lectures and practical application on operational procedures under field conditions, operations of all Level I and II radiological, chemical and biological detection and sampling equipment, procedures for personnel and area monitoring, ground and aerial CBRN Recon, chemical agent characteristics, self-aid, and communications and reporting?
Ref: WgO 3400.4E, Chap 5, Para 7.a.

Yes_____ NO_____ N/A_____

20. Has unit Decontamination Team training included basic lectures and practical application on types of decontamination operations (Personnel, Vehicle, Aircraft, Aircrew, and Casualty), required equipment and supplies, site location, setup/close down, decontamination procedures and techniques, decontaminants and mixtures, work/rest and relief procedures, and site safety?
Ref: WgO 3400.4E, Chap 5, Para 7.b.

Yes_____ NO_____ N/A_____

21. Have unit CBRN personnel performed CBRN reconnaissance TTPs quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.6.

Yes_____ NO_____ N/A_____

22. Have unit CBRN personnel conducted annual homeland defense support requirement training?
Ref: WgO 3400.4E, Chap 5, Para 10.g.1.

Yes_____ NO_____ N/A_____

23. Have unit CBRN personnel conducted annual hazardous materials awareness certification training?
Ref: WgO 3400.4E, Chap 5, Para 10.g.2.

Yes_____ NO_____ N/A_____

24. Have unit CBRN personnel conducted annual hazardous materials certification operations training?
Ref: WgO 3400.4E, Chap 5, Para 10.g.3.

Yes_____ NO_____ N/A_____

25. Have unit CBRN personnel conducted annual hazardous materials technician certification training?
Ref: WgO 3400.4E, Chap 5, Para 10.g.4.

Yes_____ NO_____ N/A_____

26. Have unit CBRN personnel conducted annual National Incident Management System (NIMS) process training consists of identifying the purpose, fundamentals, and components of NIMS?
Ref: WgO 3400.4E, Chap 5, Para 10.g.6.b.

Yes_____ NO_____ N/A_____

27. Have unit CBRN personnel conducted annual CBRN CM operations support training?
Ref: WgO 3400.4E, Chap 5, Para 10.g.5.

Yes_____ NO_____ N/A_____

28. Have unit CBRN personnel conducted annual Incident Command System (ICS) process training consisting of identifying the purpose of the ICS, incident tasks, Command and General Staff personnel, ICS facilities, and common responsibilities of ICS personnel?
Ref: WgO 3400.4E, Chap 5, Para 10.g.6.a.

Yes_____ NO_____ N/A_____

29. Have unit CBRN personnel conducted annual National Response Plan (NRP) training consisting of identifying the purpose, fundamentals, and components of the NRP?
Ref: WgO 3400.4E, Chap 5, Para 10.g.6.c.

Yes_____ NO_____ N/A_____

30. Have unit CBRN personnel conducted annual Responder and Emergency Operations consisting of identifying the ICS chain of command relationships, the ICS tools to manage an incident, providing an operational brief, providing scenario analysis, and the change of command process?
Ref: WgO 3400.4E, Chap 5, Para 10.g.6.d.

Yes_____ NO_____ N/A_____

31. Have unit CBRN personnel conduct employment of Field Protective Mask training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.e.1.a.

Yes_____ NO_____ N/A_____

32. Have unit CBRN personnel conduct employment of SCBA training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.e.1.b.

Yes_____ NO_____ N/A_____

33. Have unit CBRN personnel conduct employment of MOPP training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.e.1.c.

Yes_____ NO_____ N/A_____

34. Have unit CBRN personnel conduct employment of PPE training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.e.1.d.

Yes_____ NO_____ N/A_____

35. Have unit CBRN personnel performed individual CBRN protection action training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.e.2.

Yes_____ NO_____ N/A_____

36. Have unit CBRN personnel conducted coordination of unit CBRN protection action training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.e.3.

Yes_____ NO_____ N/A_____

37. Have unit CBRN personnel conducted fundamentals of CBRN decontamination training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.f.1.

Yes_____ NO_____ N/A_____

38. Have unit CBRN personnel conducted quarterly employment of CBRN decon equipment training?
Ref: WgO 3400.4E, Chap 5, Para 10.f.2.

Yes_____ NO_____ N/A_____

39. Have unit CBRN personnel operated power driven equipment quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.f.3.

Yes_____ NO_____ N/A_____

40. Have unit CBRN personnel performed immediate decontamination operations training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.f.4.

Yes_____ NO_____ N/A_____

41. Have unit CBRN personnel performed MOPP gear exchange training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.f.5.

Yes_____ NO_____ N/A_____

42. Have unit CBRN personnel performed vehicle wash down training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.f.6.

Yes_____ NO_____ N/A_____

43. Have unit CBRN personnel performed aircraft wash down training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.f.6.

Yes_____ NO_____ N/A_____

44. Have unit CBRN personnel conducted Detailed Troop Decontamination (DTD) training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.f.7.a.

Yes_____ NO_____ N/A_____

45. Have unit CBRN personnel conducted Aircrew Decontamination Site (ADS) training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.f.7.b.

Yes_____ NO_____ N/A_____

46. Have unit CBRN personnel conducted Detailed Equipment Decontamination (DTD) training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.f.7.c.

Yes_____ NO_____ N/A_____

47. Have unit CBRN personnel conducted Detailed Aircraft Decontamination (DAD) training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.f.7.d.

Yes_____ NO_____ N/A_____

48. Have unit CBRN personnel conducted Casualty Decontamination Site (CDS) training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.f.7.e.

Yes_____ NO_____ N/A_____

49. Have unit CBRN personnel conducted annual activities for CWMD operations training?
Ref: WgO 3400.4E, Chap 5, Para 10.c.3.

Yes_____ NO_____ N/A_____

50. Have unit CBRN personnel conducted identification of chemical hazard effects training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.1.a.

Yes_____ NO_____ N/A_____

51. Have unit CBRN personnel conducted identification of biological hazard effects training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.1.b.

Yes_____ NO_____ N/A_____

52. Have unit CBRN personnel conducted identification of radiological hazard effects training?
Ref: WgO 3400.4E, Chap 5, Para 10.d.1.c.

Yes_____ NO_____ N/A_____

53. Have unit CBRN personnel conducted identification of TIM hazard effects training?
Ref: WgO 3400.4E, Chap 5, Para 10.d.1.d.

Yes_____ NO_____ N/A_____

54. Have unit CBRN personnel conducted annual NBCC operations training?
Ref: WgO 3400.4E, Chap 5, Para 10.c.2.

Yes_____ NO_____ N/A_____

55. Have unit CBRN personnel performed chemical hazard warning and reporting training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.2.a.

Yes_____ NO_____ N/A_____

56. Have unit CBRN personnel performed biological hazard warning and reporting training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.2.b.

Yes_____ NO_____ N/A_____

57. Have unit CBRN personnel performed radiological hazard warning and reporting training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.2.c.

Yes_____ NO_____ N/A_____

58. Have unit CBRN personnel performed ROTA hazard warning and reporting training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.2.d.

Yes_____ NO_____ N/A_____

59. Have unit CBRN personnel conducted CBRN assessment training quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.3.

Yes_____ NO_____ N/A_____

60. Have unit CBRN personnel identified CBRN contamination avoidance measures quarterly?
Ref: WgO 3400.4E, Chap 5, Para 10.d.4.

Yes_____ NO_____ N/A_____

61. Have unit CBRN personnel performed annual CBRN mission analysis training?
Ref: WgO 3400.4E, Chap 5, Para 10.c.1.

Yes_____ NO_____ N/A_____

62. Have unit CBRN personnel conducted CBRN equipment automated systems training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.i.1.

Yes_____ NO_____ N/A_____

63. Have unit CBRN personnel conducted CBRN equipment account Maintenance training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.i.2.

Yes_____ NO_____ N/A_____

64. Have unit CBRN personnel conducted annual Instructor training?
Ref: WgO 3400.4E, Chap 5, Para 10.h.1.

Yes_____ NO_____ N/A_____

65. Have unit CBRN personnel conducted Individual Protective Equipment (IPE) confidence exercise training annually?
Ref: WgO 3400.4E, Chap 5, Para 10.h.2.

Yes_____ NO_____ N/A_____

66. Have unit CBRN personnel conducted annual Operational Risk Management (ORM) for CBRN training?
Ref: WgO 3400.4E, Chap 5, Para 10.h.3.

Yes_____ NO_____ N/A_____

Total Yes: _____ of _____

FUNCTIONAL AREA IV
SUPPLY AND LOGISTICS

1. If the unit doesn't rate a CBRN Officer, is there a collateral duty CBRN Officer appointed in writing?
Ref: WgO 3400.4E, Chap 3, Para 3.a.1.

Yes_____ NO_____ N/A_____

2. If the unit doesn't rate a CBRN NCO, is there a collateral duty CBRN NCO appointed in writing?
Ref: WgO 3400.4E, Chap 3, Para 3.a.2.

Yes_____ NO_____ N/A_____

3. Has a current Turnover Folder been prepared for the CBRN Chief/Officer explaining how to perform CBRN administrative and management functions?
Ref: MCO P4790.2C, Para 1005.2.a.

Yes_____ NO_____ N/A_____

4. Does the turnover folder explain daily section operational procedures?
Ref: MCO P4790.2C, Para 1005.2.a.

Yes_____ NO_____ N/A_____

5. Is the Responsible Officer (RO) assigned in writing by the Commanding Officer and the section maintains a copy of the appointment letter with acceptance endorsement?
Ref: MCO P4400.150E, Para 2003.1.

Yes_____ NO_____ N/A_____

6. Does the unit CBRN Desktop contain appropriate procedures for maintenance and accountability of equipment for deployed and garrison units?
Ref: MCO P4790.2C Para 1005.1.b.
MCO P4790.2C Para 2002.1.a.

Yes_____ NO_____ N/A_____

7. Does the unit CBRN Desktop contain appropriate procedures for maintenance and accountability of calibrations equipment for deployed and garrison units?
Ref: MCO P4790.2C Para 1005.1.b.
MCO P4790.2C Para 3005.2.

Yes_____ NO_____ N/A_____

8. Does the turnover folder show, at a minimum, how to request/order, maintain, and reconcile publications?
Ref: MCO P4790.2C Para 1005.

Yes_____ NO_____ N/A_____

9. Does the turnover folder explain, at a minimum, how to set-up, conduct, and report training?
Ref: MCO P4790.2C Para 1005.b.

Yes_____ NO_____ N/A_____

10. Does the turnover folder explain, at a minimum, the proper procedures to request and return CBRN equipment and maintain section supply records from the CSF?
Ref: TM 4700-15/1H, Chap 2.

Yes_____ NO_____ N/A_____

11. Are unit CBRN personnel familiar with CSF equipment requirement procedures for conus and oconus situations?

Yes_____ NO_____ N/A_____

12. Does the unit maintain two CBRN Marines that have access to the CBRN Tracker to view status and inventory of CBRN equipment maintained at CSF's?

Yes_____ NO_____ N/A_____

13. Is preventative maintenance (PMCS) being performed on equipment checked out from the CSF in accordance with applicable equipment technical manuals (TMs)?
Ref: MCO P4790.2C, Para 3002
TM 4700-15/1H, Para 2-4.b and c & Chap 12

Yes_____ NO_____ N/A_____

14. Does the turnover folder explain the proper procedures to dispose of and store hazardous material?
Ref: MCO 4450.12A, Chap 4.

Yes_____ NO_____ N/A_____

15. Are Material Safety Data Sheets (MSDS) on hand for all materials considered hazardous?
Ref: MCO P5090.2, Para 5.2.

Yes_____ NO_____ N/A_____

16. Are CAM'S and ACADA'S properly stored and the storage area marked?
Ref: SI-6665-15/1C Page 12.
MCO 5104.3A Para 5.2.

Yes_____ NO_____ N/A_____

17. Does a review of maintenance areas and storerooms indicate that a comprehensive, effective, and continuous safety program is in effect?
Ref: MCO P4790.2C, Para 2003.7.
MCO 5100.29A

Yes_____ NO_____ N/A_____

18. Does CBRN desktop contain procedures for ongoing operations involving radioactive material, including management and handling of LLRW?
Ref: MCO 5104.3 Para 4.a.

Yes_____ NO_____ N/A_____

19. Have all users been trained IAW NRMP MCO 5104.3?
Ref: MCO 5104.3

Yes_____ NO_____ N/A_____

20. The Radiation Protection Assistants (RPA) is assigned in writing and the section maintains a copy of the appointment letter with acceptance endorsement.
Ref: NAVSEA S0420-AA-RAD-010, Sec 1.3.5.
MCO 5104.3, Encl 1, Para 7.F.1.

Yes_____ NO_____ N/A_____

21. Is all RAM, including LLRW, stored in seParate warehouse sections away from flammable materials, explosives, food products or other incompatible commodities?
Ref: NAVSEA S0420-AA-RAD-010, Sec 7.5.2.

Yes_____ NO_____ N/A_____

22. Is RAM secured against unauthorized use?
Ref: NRMP 10-67004-T1NP

Yes_____ NO_____ N/A_____

23. Are containers of RAM properly labeled?
Ref: 10 CFR 20.1904.

Yes_____ NO_____ N/A_____

24. Are signs prohibiting smoking, eating and drinking posted in the RAM storage and use areas?
Ref: NAVSEA S0420-AA-RAD-010, Sec 2.6.6.1.

Yes_____ NO_____ N/A_____

25. Are RAM storage areas posted with "CAUTION - RADIOACTIVE MATERIAL" signs? If applicable, are maintenance areas posted?
Ref: 10 CFR 20.1902.
NAVSEA S-0420-AA-RAD-010, Sec 7.5.2.

Yes_____ NO_____ N/A_____

26. Are Form NRC 3, Notice to Employees, and Section 206 of the Energy Reorganization Act of 1974 posted near the RAM storage and use areas?
Ref: 10 CFR 19.11, Sec b-d.
10 CFR 21.6.
NAVSEA S0420-AA-RAD-010, Sec 2.4.3.a.

Yes_____ NO_____ N/A_____

27. Have procedures been implemented to properly receive/open and to ship packages containing RAM?
Ref: 10 CFR 20.1906.

Yes_____ NO_____ N/A_____

28. Are RAM users familiar with applicable technical manuals?
Ref: NRMP 10-67004-T1NP.

Yes_____ NO_____ N/A_____

29. Is a notice posted to describe the location of these documents and a POC: NRMPs, Local SOPs, 10 CFR parts 19, 20, 21, 30 and 71, OPNAVINST 6470.3-Naval Radiation Safety Committee, NAVMED P-5055, Radiation Health Protection Manual, OPNAVINST 3100.6 Special Incident Reporting Procedures, NAVSEA S0420-AA-RAD-010, Radiological Affairs Support Program Manual, and Title 49, Code of Federal Regulations, Part 171-180, "Hazardous Materials Regulations"?
Ref: NRMP 10-67004-T1NP
NAVSEA S0420-AA-RAD-010, Sec 2.4.3.a.

Yes_____ NO_____ N/A_____

30. Have radiation safety procedures been implemented for transporting licensed/permitted material within their own facility, unrelated to the use of public highways?
Ref: 10 CFR 20.1101.

Yes_____ NO_____ N/A_____

31. Have procedures been established for a quarterly inventory, and review of publication requirements?
Ref: MCO P4790.2C, App b.

Yes_____ NO_____ N/A_____

32. Is the current Catalog of Publications NAVMC 2761, SL 1-2/1-3 (within the current PLMS or MCPDS), and the unit's Table of Equipment (T/E) available and used for the quarterly reconciliation of the unit's Publication Listing (PL) to ensure all rated publications and directives re current, on hand, or on order?
Ref: MCO P4790.2C, Pages B9-B12.

Yes_____ NO_____ N/A_____

33. Has a control system been established for the identification, filing, maintenance, and which will facilitate internal distribution and retrieval of publications?
Ref: MCO P4790.2C, Para 2008.1.b.1, 2008.1.c., and App b.

Yes_____ NO_____ N/A_____

34. Does the unit have sufficient quantities of publications required to perform the assigned mission?
Ref: MCO P4790.2C, Para 2008.1.c.
MCO P4790.2C App b.

Yes_____ NO_____ N/A_____

35. Do the quantities reflected in the "Quantity on Order" column of the sections Publication Data Sheet/Inventory Control Form reflect publications on order on the units Back Order Validation (BOV) list?
Ref: MCO P4790.2C, Para 1004.3.e.2.c.

Yes_____ NO_____ N/A_____

36. Do the publications on order on the units Back Order Validation (BOV) list have a valid status?
Ref: MCO P4790.2C, Para 1004.3.e.2.c.

Yes_____ NO_____ N/A_____

37. Are all required changes to publications on hand and incorporated into the basic publication correctly?
Ref: MCO P4790.2C, Para 2008.
MCO P5215.17, Chap 4, Para 4002.

Yes_____ NO_____ N/A_____

38. Are personnel familiar with the use and procedures involved in submission of recommended changes/corrections (NAVMC 10772)?
Ref: MCO P4790.2C, Para 2008.3.
MCO P5215.17C, Para 6002.
TM 4700-15/1H, Para 2-23.

Yes_____ NO_____ N/A_____

39. Have outdated/canceled/superseded publications been removed?
Ref: MCO P4790.2C, App b.

Yes_____ NO_____ N/A_____

40. Does the unit maintain updated technical publications for all items of equipment rated by the T/E?
Ref: MCO P4790.2C, App b.

Yes_____ NO_____ N/A_____

41. Are procedures established to ensure that deployment and contingency libraries for the unit are identified, documented for embarkation, and arranged in such a fashion as to support embarkation plans, extended shipboard operations, and operations ashore?
Ref: MCO P4790.2C, App b.

Yes_____ NO_____ N/A_____

PCN	SHORT TITLE	LONG TITLE	DATE	Y	N	X
N/A	WgO P3400.4E	SOP FOR CBRN DEFENSE OPERATIONS	01-Jul-08			
N/A	Group/Bn/Co/Btry	SOP FOR CBRN DEFENSE	N/A			
10203230000	MCO 3400.3F	NBC DEF TRAINING	01-Mar-04			
10203358800	MCO 3500.70	NBCD T&R MANUAL	20-Sep-04			
10203647900	MCO 3960.5	NBC DEF EQUIP TEST & EVAL PROG	30-Aug-88			
10205650200	MCO 4450.12A	STORAGE & HDLG OF HAZARDOUS MAT	13-Jan-99			
10206528000	MCO 4733.1B	USMC TMDE CAMP	02-Jun-99			
10206545100	MCO P4790.2C W/CH 1	MIMMS FIELD PROCD MAN	19-Jul-94			
10206610700	MCO 4855.10B	QUAL DEFICIENCY RPT	26-Jan-93			
10207380000	MCO 5104.3A	USMC RADIATION SAFETY PROGRAM	13-Jun-03			
10207480000	MCO 5210.11E	REC MGT PROG USMC	18-Apr-06			
10207590200	MCO P5215.17C	THE USMC TECH PUBS SYS	20-Jun-96			
12809991000	SL-8-09991A	SPECIAL LIST FOR TARIFF SIZES	30-Oct-98			
14300000600	MCWP 3-37.3	NBC DECONTAMINATION W/CH 1	28-Jul-00			
14300001000	MCWP 3-37	MAGTF NBC DEFENSE OPERATIONS	21-Sep-98			
14300007800	MCWP 3-37.5	NBC DEFENSE/THEATER SITES, PORTS	01-Sep-00			
14300010800	MCWP 3-37.1	MTTP FOR NBC DEFENSE OPS	02-Mar-03			
14300013000	MCWP 3-37.2	MTTP FOR NBC PROTECTION	01-Jun-03			
14300014600	MCWP 3-37.4	MTTP FOR NBC RECON	30-Jul-04			
14400001200	MCRP 3-37C	FLAME, RCA, & HERB OPS	19-Aug-96			
14400001280	ERR		24-Jun-98			
14400003600	MCRP 3-37.1A	NBC VULNERABILITY ASSESS	01-Dec-04			
14400004300	MCRP 3-37A	NBC FIELD HANDBOOK	29-Sep-94			
14400005100	MCRP 3-37.2A W/CH 1	CB CONTAM AVOIDANCE	16-Nov-92			
14400005180	ERR		14-Sep-98			
14400008000	MCRP 4-11.1C	TRMT BW/CW AGENTS	17-Jul-00			
14400010600	MCRP 4-11.1B	TREM'T/NUC&RADIOLOG CASUALTIES	20-Dec-01			
14400010900	MCRP 3-37.2C	MTTP FOR NBC ASPECTS OF CM	01-Dec-01			
14400012700	MCRP 3-37B W/ERR	FIELD BEHAVIOR OF NBC AGENTS	03-Nov-86			
14400012800	MCRP 3-37.2B W/ERR	NUC CONTAMINATION AVOIDANCE	09-Sep-94			
14400012900	MCRP 4-11.1A	TRETMT CHEM AGNT & CVEN CHEM INJ	25-May-95			
14400012980	ERR		08-Oct-05			
14400014500	MCRP 3-37.1C	TTP FOR BIOLOGICAL SURVEILLANCE	04-Oct-04			
14400015400	MCRP 3-37.1B	POTENTIAL MIL CHEM/BIO AGENTS	01-Jan-05			
16310589500	SI 10589A-12/6	NBC EQUIP DSPL PROC	30-Mar-01			
16467000000	SI-6665-15/1C	CTRL PROCEDURES F/RADIOACTIVE MA	28-Feb-01			
16738355000	TI-4733-15/1E	TMDE CALIBRATION & MAINT PRO	31-May-01			
16747104900	TI-4733-15/9B	RADIAC INSTR CALIBRA REQ	30-May-97			
16747104901	CH 1		30-Sep-98			
16810010000	TI 10010-35	DEPOT SERVICEABILITY STAND F/NBC	29-Aug-03			
16810012300	TI-10010-20/5C	SERVICE STANDARDS, NBC DEFENSE P	03-Jan-06			
16810012500	TI-10010-25/3	DEMIL MIL-TYP MASKS/FILTER UNIT	22-Jul-63			
17710010000	TM 10010-CD	SERVICE STANDARDS CBRN DEF EQUP	31-Jul-00			
18203400500	TM 3400-15	USMC NUCLEAR BIO & CHEM DEF SYS	31-Oct-87			
18203400501	CH 1		20-Feb-90			
18204600000	TM 4700-15/1H	GROUND EQUIP RECORD PROCEDURES	31-Jul-95			
18204600002	CUM 2		30-Sep-99			
18204600003	CH 3		31-Jan-02			
18847905000	UM 4790-5	MIMMS AIS FLD MAINT PROC	30-Jun-87			
31100352500	SB 11-6_(CD)	COMM-ELEC BATT SPLY & MGMT DATA	01-Jun-01			
37908617000	EM 0045	CHEMICAL EQUIPMENT	01-Sep-04			
12301034300	SL-3-01034	TANK FABRIC COLLAPSIBLE	30-Dec-96			
12301034301	CH 1		11-Mar-97			
12301034302	CH 2		21-May-98			
12310692100	SL-3-10692B	LIGHTWEIGHT DECON APPARATUS, M17	31-Jan-02			
12310692101	CH 1		31-Jul-02			
12310692102	CH 2		31-May-05			
12310692103	CH 3		31-Jan-06			
13209223000	ULSS 004085-15	LIGHTWEIGHT DECON SYSTEM (LDS)	31-Mar-95			
16042300000	MI 4230-35/1	INSTL 215CC ENG M17 DECON SYS	28-Feb-01			
17710692000	TM 10692A-CD	DECONTAMINATING APP M17MCHF	30-Nov-00			
18401035000	TM 01034E-12&P/1	TANK, FABRIC, COLLAPSIBLE 90074	15-Oct-00			
18410692000	TM 10692A-10/1	DECONTAMINATING APP M17MCHF	30-Sep-00			

18410692001	CH 1		30-Nov-01			
18410692200	TM 10692A 23&P W/CH 1&2	DECONTAMINATING APP M17 MCHF	29-Apr-05			
17701275000	TM 01275A-CD	BAG WATERPROOF PROTECTIVE MASK	31-Jul-00			
13209717000	ULSS 000587-15A	CHEMICAL AGENT MONITOR (CAM)	30-Jun-97			
18409717000	TM 09717A/ 09717C-12/1	CHEMICAL AGENT MONITOR	30-Sep-97			
18203660000	TM 4230-10/1 W/CH 1	DECONTAMINATION KIT, SKIN	31-Oct-89			
18210755000	TM 10755A-10	DECON SYSTEM, SOTBENT: M100	29-Jun-01			
34502100000	TM 3-6665-307-10	DET KIT CHEM AGENT M256	30-Sep-85			
34502100001	CH 1		05-Jan-88			
34502100002	CH 2		01-Oct-92			
N/A	CH 3		15-Apr-98			
34502200500	TM 3-6665-320-10	M256 TRAINING CHEM AGENT DETECTO	30-Sep-85			
13210434000	ULSS 005397-15	ACADA (EDO)	29-Jun-01			
17710434000	TM 10434A-CD	OPS & UNIT MAINT, ACADA M22 CD	01-Mar-98			
18210434000	TM 10434A-12&P_W/CH 01	ALARM CHEMICAL AGENT AUTO_M22	31-Mar-98			
18210434001	CH 1		21-May-99			
18210434002	CH 2		01-Aug-02			
18210434003	CH 3		15-Mar-05			
35110486000	TM 11-6130-489-13 & P	BATTERY CHRGR PP-8444/U; PP-8444A	01-Sep-97			
N/A	TM 3-6665-311-10	OPERATORS MANUAL M9 PAPER	31-Aug-98			
13209558000	ULSS 006196-15	PROTECTIVE SUIT SARATOGA	29-May-97			
18284160000	TM 8415-10/2	CHEMICAL PROTECTIVE CLOTHING	31-Mar-93			
34502200400	TM 3-6665-319-10 W/CH 1-2	WATER TEST KIT, CHEMICAL AGENT A	30-Apr-87			
34502200403	CH 3		15-Apr-98			
13209205000	ULSS 001887-15	PROTECTIVE MASK SYS M40/M42	31-Mar-95			
16009204100	MI 09204-25/1	PIP F/CHEM-BIO MASK, M40	31-Mar-03			
16009204200	MI 09204/09205-25/2	M40/M42 INTERNAL DRINK TUBE MI	31-May-04			
17709204000	TM 09204A/09205A-CD	M40 GAS MASK	31-Dec-98			
18409204000	TM 09204A/09205A-10/1	CHEM BIO MASK M40A1/M40A2	01-Aug-98			
18409204050	CH A		30-Apr-01			
18409204100	TM 09204A/09205A-20&P/2	CHEM BIO MASK M40A1/M40A2	01-Aug-98			
18409204200	TM 09204A/09205A-10/3	CHEM BIO MASK M40/M42/M42A1	15-Dec-98			
18409204300	TM 09204A/09205A-20&P/4	CHEM BIO MASK M40, M42, M42A1	15-Dec-98			
13210224000	ULSS 003395-15	PROTECTIVE ASSESSMENT TEST SYS	30-Sep-01			
18210224000	TM 10224A-14&P_1CH 01	OPS/UNIT MAINT PROT ASSE TEST SY	30-Nov-99			
13209870000	ULSS 008091-15_REV-1	REMOTE SENSING CHEM AGENT ALARM	30-Sep-03			
18409676000	TM 09870A-10/1	REMOTE SENSING CHEM AGENT W/CH 1	31-Mar-92			
18409676001	CH 1		05-Jun-96			
18409676100	TM 09870A-23&P/2 W/CH 1	REMOTE SENSING CHEMICAL AGENT	31-Mar-92			
13209255000	ULS 003983-15	RADIAC SET, AN/PDR-75	30-Nov-94			
13209255001	CH 1		29-Dec-95			
35176512900	TM 11-6665-236-12	RADIAC SET AN/PDR-75	01-Jun-95			
35176513000	TM 11-6665-236-20P	RADIAC SET AN/PDR-75	01-Feb-87			
13206665000	ULSS 007087-15	RADIAC SET AN/VDR-2	31-Aug-94			
35176525000	TM 11-6665-251-10	RADIAC SET AN/VDR-2	01-Mar-88			
35176525050	CH A		31-May-96			
35176526000	TM 11-6665-251-20 W/CH 1	RADIAC SET AN/VDR-2	01-Apr-88			
20701538000	NAVSEA 0969-005-4000	CHARGER RADIAC DETECTOR PP-4276	06-Jan-65			
16800796000	TI 00796B-15/1	TECH DATA DESCRIPTION IM 143A/PD	30-Mar-01			
34507000000	TM 3-9905-001-10	MARKING SET, CONTAMINATION	23-Aug-82			

Total Yes: _____ of _____

APPENDIX N

ABBREVIATIONS AND ACRONYMS

A

AAR	After-Action Review
ACC	Air Combat Command
ADVON	Advanced Echelon
AFCESA	Air Force Civil Engineer Support Agency
AFDD	Air Force Doctrine Document
AFH	Air Force Handbook
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFMAN(I)	Air Force Manual (Instruction)
AFMIC	Armed Forces Medical Intelligence Center
AFOSHSTD	Air Force Occupational Safety and Health Standard
AFPD	Air Force Policy Directive
AFRAT	Air Force Radiation Assessment Team
AFRRI	Armed Forces Radiobiology Research Institute
AFSPC	Air Force Space Command
AFTTP	Air Force Technical Training Publication
AFTTP(I)	Air Force Tactics, Techniques, and Procedures (Instruction)
AFWA	Air Force Weather Agency
AMC	Air Mobility Command
AML	Area Medical Laboratory
ANG	Air National Guard
AO	Area of Operations
AOR	Area Of Responsibility
AR	Army Regulation
ARNG	Army National Guard
ASCC	Army Service Component Commands
AT	Anti Terrorism
ATP	Allied Tactical Publication
ATTN	Attention

B

BEE	Bio Environmental Engineer
BSI	Base Support Installation
BW	Biological Warfare

C

C2	Command and Control
CAP	Crisis Action Planning
CB	Chemical-Biological
CBIRF	Chemical-Biological Incident Response Force
CBR	Chemical, Biological, and Radiological
CBRN	Chemical, Biological, Radiological, and Nuclear
CBRNCC	Chemical, Biological, Radiological, and Nuclear Control Center
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosives
CCA	Contamination Control Area
CCDR	Combatant Commander
CCIR	Commander's Critical Information Requirement
CCMRF	CBRNE Consequence Management Response Force
CCP	Casualty Collection Point
CDC	Centers for Disease Control and Prevention
CE	Civil Engineer
CERFP	CBRNE Enhanced Response Force Package
CFR	Code of Federal Regulations
CIRG	Critical-Incident Response Group
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CLS	Contracted Logistic Support
CM	Consequence Management
CMAT	Consequence Management Advisory Team
COA	Course Of Action
COCOM	Combatant Command
CONOPS	Concept of Operations
CONPLAN	Concept Plan
CONUS	Continental United States
COP	Common Operational Picture
COS	Combat Operational Stress
COSR	Combat and Operational Stress Reactions
COTS	Commercial Off-The-Shelf
CP	Command Post
CRM	Composite Risk Management
CST	Civil Support Team
CW	Chemical Warfare
CWA	Chemical Warfare Agent

D

DA	Department of the Army
D.C.	District of Columbia
DCM	Domestic Consequence Management
DCO	Defense Coordinating Officer
DD	Department of Defense (form)
DHS	Department of Homeland Security
DMORT	Disaster Mortuary Operational Response Team
DNBI	Disease and Non-Battle Injury
DOD	Department of Defense
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DOS	Department of State
DRCD	Domestic Reconnaissance, Casualty Decontamination
DRF	Disaster Response Force
DSCA	Defense Support of Civil Authorities
DSN	Defense Switched Network
DTG	Date-Time Group
DTRA	Defense Threat Reduction Agency
DTRG	Defense Technical Response Group

E

EMR	Emergency Medical Response
EEI	Essential Element of Information
EMEDS	Expeditionary Medical Support
EMS	Emergency Medical Services
EMT	Emergency Medical Treatment
EOC	Emergency Operations Center
EOD	Explosive Ordnance Disposal
EPA	United States Environmental Protection Agency
EPLO	Emergency Preparedness Liaison Officer
ERT	Emergency Response Team
ESF	Emergency Support Function

F

FBI	Federal Bureau of Investigation
FCC	Federal Coordinating Center
FCM	Foreign Consequence Management
FDPMU	Forward-Deployed Preventive Medicine Unit
FEMA	Federal Emergency Management Agency
FHP	Force Health Protection
FM	Field Manual
FMFM	Fleet Marine Force Manual

FORSCOM	United States Army Forces Command
FP	Force Protection
FPCON	Force Protection Condition
FRP	Federal Response Plan

G

GB	Sarin, a Chemical Agent
GCC	Geographic Combatant Commander
GPS	Global Positioning System
GSA	General Services Administration

H

HAZCOM	Hazard Communications
HAZMAT	Hazardous Material
HEU	Highly Enriched Uranium
HMRU	Hazardous Materials Response Unit
HN	Host Nation
HSL	Health Service Logistics
HSPD	Homeland Security Presidential Directive
HSS	Health Service Support

I

IC	Incident Commander
ICBM	Intercontinental Ballistic Missile
ICP	Incident Command Post
ICS	Incident Command System
ID	Initial Distribution
IED	Improvised Explosive Device
IGO	Intergovernmental Organization
IIMEF	II Marine Expeditionary Forces
IMS	Incident Management System
IS	Independent Study
IND	Improvised Nuclear Device
IPE	Individual Protective Equipment
IPOE	Intelligence Preparation of the Operational Environment
IR	Information Requirement
IRF	Incident Response Force
IRT	Incident Response Team

J

J-3	Operations Directorate of a Joint Staff
JDOMS	Joint Director of Military Support
JFCOM	Joint Forces Command
JOPES	Joint Operation Planning and Execution System
JP	Joint Publication
JTF	Joint Task Force
JTF-CM	Joint Task Force-Consequence Management
JTF-CS	Joint Task Force-Civil Support

L

LNO	Liaison Officer
LRN	Laboratory Response Network

M

MAA	Mutual Aid Agreement
MAGTF	Marine Air-Ground Task Force
MCBAT	Medical Chemical Biological Advisory Team
MCD	Mass Casualty Decontamination
MCRP	Marine Corps Reference Publication
MCWP	Marine Corps War-Fighting Publication
MEDCOM	United States Army Medical Command
MEDSURV	Medical Surveillance
MMRS	Metropolitan Medical Response System
MOA	Memorandum of Agreement
MOPP	Mission-Oriented Protective Posture
MOS	Military Occupational Specialty
MOU	Memorandum Of Understanding
MRAT	Medical Radiobiology Advisory Team
MSC	Major Subordinate Command
MSCA	Military Support to Civil Authorities
MTF	Medical Treatment Facility
MTTP	Multiservice Tactics, Techniques, and Procedures
MTW	Major Theater War
MWD	Military Working Dog

N

NARAC	National Atmospheric Release Advisory Center
NAVMED	Naval Medical
NBC	Nuclear, Biological, and Chemical
NBCC	Nuclear, Biological, Chemical Center

NDMS	National Disaster Medical System
NDPO	National Domestic Preparedness Office
NFPA	National Fire Protection Association
NGB	National Guard Bureau
NGO	Nongovernmental Organization
NGRF	National Guard Response Force
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NMRC	Naval Medical Research Center
NMRT	National Medical Response Team
NRL	Naval Research Laboratory
NRP	National Response Plan
NSF	National Strike Force
NSSE	National Special Security Event
NTRP	Naval Tactical Reference Publication
NTTP	Naval Tactics, Techniques, and Procedures
NWP	Naval Warfare publication

O

OCONUS	Outside the Continental United States
OEH	Occupational and Environmental Health
ONR	Office of Naval Research
OC	Operations Center
OPCON	Operational Control
OPLAN	Operation Plan
OPORD	Operation Order
OPR	Office of Primary Responsibility
OPREP	Operational Report
OPSEC	Operations Security
OSC	On-Scene Commander
OSHA	Occupational Safety and Health Administration

P

PAM	Preventive Aerospace Medical
PCC	Pre-Combat Checks
PCI	Pre-combat Inspections
PDD	Presidential Decision Directive
PDHA	Post-Deployment Health Assessment
PIR	Priority Intelligence Requirement
PMCS	Preventive-Maintenance Checks and Services
POC	Point Of Contact
POD	Port Of Debarkation
POE	Port Of Embarkation
PPE	Personal Protective Equipment

PVNTMED	Preventive Medicine
PVO	Private Voluntary Organization

R

R&S	Reconnaissance and Surveillance
RC	Reserve Component
RDD	Radiological Dispersal Device
RERT	Radiological Emergency Response Team
RFA	Request For Assistance
RFF	Request For Forces
RFI	Request For Information
RFS	Request For Support
ROE	Rules Of Engagement
RSOI	Reception, Staging, Onward Movement, and Integration
RTF	Response Task Force

S

SA	Situational Awareness
SCBA	Self-Contained Breathing Apparatus
SECNAVINST	Secretary of the Navy Instruction
SIMLM	Single Integrated Medical Logistics Management
SIP	Shelter In Place
SITREP	Situation Report
SMART	Special Medical Augmentation Response Team
SNS	Strategic National Stockpile
SOH	Safety and Occupational Health
SOP	Standing Operating Procedure
STANAG	Standardization Agreement

T

TET	Theater Epidemiology Team
TIC	Toxic Industrial Chemical
TIM	Toxic Industrial Material
TOC	Tactical Operations Center
TOE	Table of Organization and Equipment
TRADOC	United States Army Training and Doctrine Command
TSWG	Technical Support Working Group
TTP	Tactics, Techniques, and Procedures

U

UA	Universal Adversary
UC	Unified Command
UJTL	Universal Joint Task List
U.S.	United States
USA	United States Army
USACHPPM	United States Army Center for Health and Preventive Medicine
USAF	United States Air Force
USAFE	United States Air Forces in Europe
USAMEDCOM	United States Army Medical Command
USAMRICD	US Army Medical Research Institute for Chem Defense
USAMRIID	US Army Medical Research Institute of Infectious Diseases
USAR	United States Army Reserve
USARNORTH	United States Army North
USARNORTHCOM	United States Army North Command
USARC	United States Army Reserve Command
USC	United States Code
USCG	United States Coast Guard
USEUCOM	United States European Command
USMC	United States Marine Corps
USN	United States Navy
USNORTHCOM	United States Northern Command
UTC	Unit Type Code

V

VA	Vulnerability Assessment
VCL	Vapor Control Line

W

WARNORD	Warning Order
WMD	Weapons of Mass Destruction
WMD-CST	Weapons of Mass Destruction-Civil Support Team

APPENDIX O

TERMS AND DEFINITIONS

Absorption. A process in which one substance becomes incorporated within another substance, also used to describe interactions between electromagnetic radiation and matter. (Fundamentals of Analytical Chemistry)

Adsorption. A process in which a substance becomes attached to the surface of another substance,(Fundamentals of Analytical Chemistry)

Aerosol. A liquid or solid composed of finely divided particles suspended in a gaseous medium. Examples of common aerosols are mist, fog, and smoke. (JP 1-02)

Airburst. An explosion of a bomb or projectile above the surface as distinguished from an explosion on contact with the surface or after penetration. (JP 1-02)

Antiterrorism (AT). Defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include limited response and containment by local military and civilian forces. (JP 3-07.2)

Assembly area.

1. An area in which a command is assembled preparatory to further action.

2. In a supply installation, the gross area used for collecting and combining components into complete units, kits, or assemblies. (JP 1-02)

Assessment.

1. Analysis of the security, effectiveness, and potential of an existing or planned intelligence activity.

2. Judgment of the motives, qualifications, and characteristics of present or prospective employees or "agents." (JP 1-02)

Avoidance. Individual and/or unit measures taken to avoid or minimize nuclear, biological, and chemical (NBC) attacks and reduce the effects of NBC hazards. (JP 1-02)

Base.

1. A locality from which operations are projected or supported.

2. An area or locality containing installations which provide logistic or other support.

3. Home airfield or home carrier. (JP 1-02)

Battle-Space. The environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission. This includes the air, land, sea, space, and the included enemy and friendly forces; facilities; weather; terrain; the electromagnetic spectrum; and the information environment within the operational areas and areas of interest. (JP 1-02)

Biological agent. A micro-organism that causes disease in personnel, plants, animals or causes the deterioration of materiel. (JP 1-02)

Biological defense. The methods, plans, and procedures involved in establishing and executing defensive measures against attacks using biological agents. (JP 1-02)

Biological environment. Conditions found in an area resulting from direct or persisting effects of biological weapons. (JP 1-02)

Biological operation. Employment of biological agents to produce casualties in personnel, animals or damage to plants. (JP 1-02)

Biological threat. A threat that consists of biological material planned to be deployed to produce casualties in personnel or animals or damage plants. (JP 1-02)

Biological weapon. An item of materiel which projects, disperses, or disseminates a biological agent including arthropod vectors. (JP 1-02)

Blast wave. A sharply defined wave of increased pressure rapidly propagated through a surrounding medium from a center of detonation or similar disturbance. (JP 1-02)

Blast. The brief and rapid movement of air, vapor or fluid away from a center of outward pressure, as in an explosion or in the combustion of rocket fuel; the pressure accompanying this

movement. This term is commonly used for "explosion," but the two terms may be distinguished. (JP 1-02)

Blister agent. A chemical agent who injures the eyes and lungs, and burns or blisters the skin, also called vesicant agent. (JP 1-02)

Blood agent. A chemical compound, including the cyanide group, that affects bodily function by preventing the normal utilization of oxygen by body tissues. (JP 1-02)

Capability. The ability to execute a specified course of action. (A capability may or may not be accompanied by an intention.) (JP 1-02)

Casualty. Any person who is lost to the organization by having been declared dead, duty status-whereabouts unknown, missing, ill, or injured. (JP 1-02)

Chemical agent cumulative action. The building up within the human body of small ineffective doses of certain chemical agents to a point where eventual effect is similar to one large dose. (JP 1-02)

Chemical agent. Any toxic chemical intended for use in military operations. (JP 1-02)

Chemical ammunition. A type of ammunition, the filler of which is primarily a chemical agent. (JP 1-02)

Chemical defense. The methods, plans, and procedures involved in establishing and executing defensive measures against attack utilizing chemical agents. (JP 1-02)

Chemical dose. The amount of chemical agent, expressed in milligrams, that is taken or absorbed by the body. (JP 1-02)

Chemical environment. Conditions found in an area resulting from direct or persisting effects of chemical weapons. (JP 1-02)

Chemical monitoring. The continued or periodic process of determining whether or not a chemical agent is present. (JP 1-02)

Chemical operation. Employment of chemical agents to kill, injure, or incapacitate for a significant period of time, man or animals, and deny or hinder the use of areas, facilities, or materiel; or defense against such employment. (JP 1-02)

Chemical survey. The directed effort to determine the nature and degree of chemical hazard in an area and to delineate the perimeter of the hazard area. (JP 1-02)

Chemical Warfare (CW). All aspects of military operations involving the employment of lethal and incapacitating munitions/ agents and the warning and protective measures associated with such offensive operations. Since riot control agents and herbicides are not considered to be chemical warfare agents, those two items will be referred to separately or under the broader term "chemical," which will be used to include all types of chemical munitions/agents collectively. (JP 1-02)

Chemical weapon. Together or separately, (a) a toxic chemical and its precursors, except when intended for a purpose not prohibited under the Chemical Weapons Convention; (b) a munitions or device, specifically designed to cause death or other harm through toxic properties of those chemicals specified in (a), above, which would be released as a result of the employment of such munitions or device; (c) any equipment specifically designed for use directly in connection with the employment of munitions or devices specified in (b), above. (JP 1-02)

Chemical, biological, radiological, and nuclear hazards. Those toxic chemical, biological, radiological or nuclear (CBRN) hazards that are released in the presence of US forces or civilians, not necessarily in quantities that could cause mass casualties. CBRN hazards include those created from a release other than attack, toxic industrial chemicals (specifically toxic inhalation hazards), biological agents of operational significance and radioactive matter. Also included are any hazards resulting from the deliberate employment of nuclear, biological, and chemical weapons during military operations. (JRO draft Terms of Reference)

Chemical, biological, radiological, and nuclear responder. DOD military and civilian personnel who are trained to respond to CBRN incidents and certified to operate safely at the awareness, operations, or technician level in accordance with 29 CFR 1910.120 and NFPA 472. (NIMS)

Chemical, Biological, Radiological, Nuclear, or High-Yield Explosives Incident (CBRNE incident). An emergency resulting from the deliberate or unintentional, release of nuclear, biological, radiological, or toxic or poisonous chemical materials, or the detonation of a high-yield explosive. (JP 3-28)

Choking agents. This class of agents includes chlorine and phosgene, both of which were used in World War I. In sufficient concentrations, their corrosive effect on the respiratory system results in pulmonary edema, filling the lungs with fluid and choking the victim.

Civil Affairs (CA). Designated Active and Reserve component forces and units organized, trained, and equipped specifically to conduct civil affairs activities and to support civil-military operations. (JP 1-02)

Civil defense. All those activities and measures designed or undertaken to:

1. Minimize the effects upon the civilian population caused or which would be caused by an enemy attack on the United States.

2. Deal with the immediate emergency conditions that would be created by any such attack.

3. Effectuate emergency repairs to, or the emergency restoration of, vital utilities and facilities destroyed or damaged by any such attack. (JP 1-02)

Collective nuclear, biological, and chemical protection. Protection provided to a group of individuals in a nuclear, biological, and chemical environment which permits relaxation of individual nuclear, biological, and chemical protection. (JP 1-02)

Combat Service Support (CSS). The essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war. Within the national and theater logistic systems, it includes but is not limited to that support rendered by service forces in ensuring the aspects of supply, maintenance, transportation, health services, and other services required by aviation and ground combat troops to permit those units to accomplish their missions in combat. Combat service support encompasses those activities at all levels of war that produce sustainment to all operating forces on the battlefield. (JP 1-02)

Combat Support (CS). Fire support and operational assistance provided to combat elements. (JP 1-02)

Command and Control (C2). The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command

and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. (JP 1)

Common Operational Picture (COP). A single display of relevant information shared by more than one command. A common operational picture facilitates collaborative planning and assists all echelons to achieve situational awareness. (JP 3-0)

Concept of Operations (CONOPS). A verbal or graphic statement that clearly and concisely expresses what the joint force commander intends to accomplish and how it will be done using available resources. The concept is designed to give an overall picture of the operation. (JP 5-0)

Consequence Management (CM). Actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade, or terrorist incidents. (JP 3-26)

Contaminated remains. Remains of personnel which have absorbed or upon which, have been deposited radioactive material or biological or chemical agents. (JP 1-02)

Contamination control. Procedures to avoid, reduce, remove, or render harmless, (temporarily or permanently) nuclear, biological, and chemical contamination for the purpose of maintaining or enhancing the efficient conduct of military operations. (JP 1-02)

Contamination.

1. The deposit, absorption, or adsorption of radioactive material, or of biological or chemical agents on or by structures, areas, personnel, or objects.

2. Food and/or water made unfit for consumption by humans or animals because of the presence of environmental chemicals, radioactive elements, bacteria or organisms, the byproduct of the growth of bacteria or organisms, the decomposing material (to include food substance itself), or waste in the food or water. (JP 1-02)

Continental United States (CONUS). U.S. territory, including the adjacent territorial waters, located within North America between Canada and Mexico. (JP 1-02)

Contingency plan. A plan for major contingencies that can reasonably be anticipated in the principal geographic subareas of the command. (JP 1-02)

Contracted Logistic Support (CLS). Support in which maintenance operations for a particular military system are performed exclusively by contract support personnel. (JP 1-02)

Control zones. A controlled airspace extending upwards from the surface of the Earth to a specified upper limit. (JP 1-02) Designated areas at dangerous goods incidents, based on safety and the degree of hazard. Many terms are used to describe control zones; however, in this SOP, these zones are defined as the hot/exclusion/restricted zone, warm/contamination reduction/limited access zone, and cold/support/clean zone. (JP 3-41) (NFPA 471)

Coordinate. To advance systematically an analysis and exchange of information among principals who have or may have a need to know certain information to carry out specific incident management responsibilities. (NIMS)

Course of Action (COA).

1. Any sequence of activities that an individual or unit may follow.

2. A possible plan open to an individual or commander that would accomplish, or is related to the accomplishment of the mission.

3. The scheme adopted to accomplish a job or mission.

4. A line of conduct in an engagement.

5. A product of the Joint Operation Planning and Execution System concept development phase. (JP 5-0)

Crisis Management (CrM). Measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and/or resolve a threat or an act of terrorism. It is predominantly a law enforcement response, normally executed under federal law. (JP 1-02)

Date-Time Group (DTG). The date and time, expressed in digits and time zone suffix, at which the message was prepared for transmission. Expressed as six digits followed by the time zone suffix; first pair of digits denotes the date, second pair the

hours, third pair the minutes, followed by a three-letter month abbreviation and two-digit year abbreviation. (JP 1-02)

Debarkation. The unloading of troops, equipment, or supplies from a ship or aircraft. (JP 1-02)

Decontamination station. A building or location suitably equipped and organized where personnel and materiel are cleansed of chemical, biological, or radiological contaminants. (JP 1-02)

Decontamination. The process of making any person, object, or area safe by absorbing, destroying, neutralizing, making harmless, or removing chemical or biological agents, or by removing radioactive material clinging to or around it. (JP 1-02)

Defense Coordinating Officer (DCO). Department of Defense single point of contact for domestic emergencies. Assigned to a joint field office to process requirements for military support, forward mission assignments through proper channels to the appropriate military organizations, and assign military liaisons, as appropriate, to activated emergency support functions. (JP 1-02)

Defense Support of Civil Authorities (DSCA). Civil support provided under the auspices of the National Response Plan. Refers to DOD support, including Federal military forces, DOD civilians and DOD contractor personnel, and DOD agencies and components, for domestic emergencies and for designated law enforcement and other activities.

Desorption. The process of removing absorbed substance by the reverse of adsorption. (McGraw-Hill Dictionary of Scientific and Technical Terms)

Detection.

1. In tactical operations, the perception of an object of possible military interest but unconfirmed by recognition.

2. In surveillance, the determination and transmission by a surveillance system that has occurred.

3. In arms control, the first step in the process of ascertaining the occurrence of a violation of an arms control agreement.

4. In NBC environments, the act of locating NBC hazards by use of NBC detectors or monitoring and/or survey teams. (JP 1-02)

Directive.

1. A military communication in which policy is established or a specific action is ordered.

2. A plan issued with a view to putting it into effect when so directed, or in the event that a stated contingency arises.

3. Broadly speaking, any communication which initiates or governs action, conduct, or procedure. (JP 1-02)

Doctrine. Principles by which the military forces guide their actions in support of national objectives. It is authoritative but requires judgment in application. (JP 1-02)

Electromagnetic Pulse (EMP). The electromagnetic radiation from a nuclear explosion caused by Compton-recoil electrons and photoelectrons from photons scattered in the materials of the nuclear device or in a surrounding medium. The resulting electric and magnetic fields may couple with electrical/electronic systems to produce damaging current and voltage surges, may also be caused by nonnuclear means. (JP 1-02)

Emergency Operations Center (EOC). The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An emergency operations center may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. Emergency operations centers may be organized by major functional disciplines (fire, law enforcement, and medical services), by jurisdiction (Federal, state, regional), or by some combination thereof. (JP 3-41)

Emergency Preparedness Liaison Officer (EPLO). A senior reserve officer who is the representative of the providing Service, the Federal Emergency Management Agency, and a designated defense coordinating officer. (JP 3-41)

Emergency Response Planning Guideline (ERPG). Values intended to provide estimates of concentration ranges above which one could reasonably anticipate observing adverse health effects; see ERPG-1, ERPG-2 and ERPG-3. (EPA)

Emergency Support Functions (ESF). A grouping of government and certain private sector capabilities into an organizational structure to provide the support, resources, program implementation, and services that are most likely to be needed

to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal, when feasible, following domestic incidents of domestic emergency, disaster, or catastrophe. The emergency support functions serve as the primary operational-level mechanism to provide assistance to state, local, and tribal governments or to Federal departments and agencies conducting missions of primary Federal responsibility. (JP 3-41)

ERPG-1. The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor. (EPA)

ERPG-2. The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action. (EPA)

ERPG-3. The maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life threatening health effects. (EPA)

Evacuation.

1. The process of moving any person who is wounded, injured, or ill to and/or between medical treatment facilities.

2. The clearance of personnel, animals, or materiel from a given locality.

3. The controlled process of collecting, classifying, and shipping unserviceable or abandoned materiel, U.S. or foreign, to appropriate reclamation, maintenance, technical intelligence, or disposal facilities.

4. The ordered or authorized departure of noncombatants from a specific area by Department of State, Department of Defense, or appropriate military commander. This refers to the movement from one area to another in the same or different countries. The evacuation is caused by unusual or emergency circumstances and applies equally to command or non-command sponsored family members. (JP 1-02)

Explosive Ordnance Disposal (EOD). The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance. It may also include explosive ordnance which has become hazardous by damage or deterioration. (JP 1-02)

Explosive ordnance. All munitions containing explosives, nuclear fission or fusion materials, and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket, and small arms ammunition; all mines, torpedoes, and depth charges; demolition charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature. (JP 1-02)

Fallout prediction. An estimate, made before and immediately after a nuclear detonation, of the location and intensity of militarily significant quantities of radioactive fallout. (JP 1-02)

Fallout. The precipitation to Earth of radioactive particulate matter from a nuclear cloud; also applied to the particulate matter itself. (JP 1-02)

Force Health Protection (FHP). Measures to promote, improve, or conserve the mental and physical wellbeing of Service members. These measures enable a healthy and fit force, prevent injury and illness, and protect the force from health hazards. (JP 4-02)

Foreign Internal Defense (FID). Participation by civilian and military agencies of a government to free and protect its society from subversion, lawlessness, and insurgency. (JP 1-02)

Forward Operations Base (FOB). In special operations, a base usually located in friendly territory or afloat that is established to extend command and control or communications or to provide support for training and tactical operations. Facilities may be established for temporary or longer duration operations and may include an airfield or an unimproved airstrip, an anchorage, or a pier. A forward operations base may be the location of special operations component headquarters or a smaller unit that is controlled and/or supported by a main operations base. (JP 1-02)

Ground zero. The point on the surface of the Earth at, or vertically below or above, the center of a planned or actual nuclear detonation. (JP 1-02)

Hazard. A condition with the potential to cause injury, illness or death of personnel; damage to or loss of equipment or property, or mission degradation. (JP 1-02)

Health Service Support (HSS). All services performed, provided, or arranged to promote, improve, conserve, or restore the mental or physical well-being of personnel. These services include, but are not limited to, the management of health services resources, such as manpower, monies, and facilities; preventive and curative health measures; evacuation of the wounded, injured, or sick; selection of the medically fit and disposition of the medically unfit; blood management; medical supply, equipment, and maintenance thereof; combat stress control; and medical, dental, veterinary, laboratory, optometric, nutrition therapy, and medical intelligence services. (JP 4-02)

Herbicide. A chemical compound that will kill or damage plants. (JP 1-02)

High-Value Target (HVT). A target the enemy commander requires for the successful completion of the mission. The loss of high-value targets would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. (JP 1-02)

Host Nation (HN). A nation that receives the forces and/or supplies of allied nations, coalition partners, and/or NATO organizations to be located on, to operate in, or to transit through its territory. (JP 1-02)

Host Nation Support (HNS). Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, crises, or emergencies, or war based on agreements mutually concluded between nations. (JP 1-02)

Hydrolysis.

1. Decomposition or alteration of a chemical substance by water.

2. In aqueous solution of electrolytes, the reactions of cations with water to produce a weak base or of anions to produce a weak acid. (McGraw-Hill Dictionary)

Identification.

1. The process of determining the friendly or hostile character of an unknown detected contact.

2. In arms control, the process of determining which nation is responsible for the detected violations of any arms control measure.

3. In ground combat operations, discrimination between recognizable objects as being friendly or enemy, or the name that belongs to the object as a member of a class. (JP 1-02)

Immediate decontamination. Decontamination carried out by individuals immediately upon becoming contaminated. It is performed in an effort to minimize casualties, save lives, and limit the spread of contamination, also called emergency decontamination. (JP 1-02)

Immediately Dangerous to Life or Health (IDLH). An exposure condition is one that poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment. The purpose of establishing an IDLH exposure level is to ensure that the worker can escape from a given contaminated environment in the event of failure of the respiratory protection equipment. The IDLH is considered a maximum level above which only a highly reliable breathing apparatus providing maximum worker protection is permitted. Any appropriate approved respirator may be used to its maximum use concentration up to the IDLH. (NFPA 1670)

Improvised Explosive Device (IED). A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to destroy, incapacitate, harass, or distract. It may incorporate military stores, but is normally devised from nonmilitary components. (JP 3-07.2)

Improvised Nuclear Device (IND). A device incorporating radioactive materials designed to result in the dispersal of radioactive material or in the formation of nuclear-yield reaction. Such devices may be fabricated in a completely improvised manner or may be an improvised modification to a US or foreign nuclear weapon. (JP 1-02)

Incapacitating agent.

1. An agent that produces temporary physiological or mental effects, or both, which will render individuals incapable of concerted effort in the performance of their assigned duties.

2. A chemical agent which produces temporary disabling conditions which (unlike those caused by riot control agents)

can be physical or mental and persist for hours or days after exposure to the agent has ceased. Medical treatment, while not usually required, facilitates a more rapid recovery. (JP 1-02)

Incident Command System (ICS). A standardized on-scene emergency management organization that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. The incident command system is the combination of facilities, equipment, personnel, procedures, and communications operating with a common organizational structure, designed to aid in the management of resources during incidents. The incident command system is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. The incident command system is used by various jurisdictions and functional agencies, both public and private, or organized field-level incident management operations. (JP 3-41).

Incident management. A national comprehensive approach to preventing, preparing for, responding to, and recovering from terrorist attacks, major disasters, and other emergencies. Incident management includes measures and activities performed at the local, state, and national levels and includes both crisis and consequence management activities. (JP 3-28)

Individual protection. Actions taken by individuals to survive and continue the mission under nuclear, biological, and chemical conditions. (JP 1-02)

Individual Protective Equipment (IPE). In nuclear, biological, and chemical warfare, the personal clothing and equipment required to protect an individual from biological and chemical hazards and some nuclear effects. (JP 1-02)

Industrial chemicals. Chemicals developed or manufactured for use in industrial operations or research by industry, government, or academia. These chemicals are not primarily manufactured for the specific purpose of producing human casualties or rendering equipment, facilities, or areas dangerous for human use. Hydrogen cyanide, cyanogen chloride, phosgene, and chloropicrin are industrial chemicals that also can be military chemical agents. (JP 1-02)

Installation. A grouping of facilities, located in the same vicinity, which support particular functions. Installations may be elements of a base. (JP 1-02)

Intelligence Preparation of the Battlespace (IPB). An analytical methodology employed to reduce uncertainties

concerning the enemy, environment, and terrain for all types of operations. Intelligence preparation of the battlespace builds an extensive database for each potential area in which a unit may be required to operate. The database is then analyzed in detail to determine the impact of the enemy, environment, and terrain on operations and presents it in graphic form. Intelligence preparation of the battlespace is a continuing process. (JP 1-02)

Joint doctrine. Fundamental principles that guide the employment of US military forces in coordinated action toward a common objective. Joint doctrine contained in joint publications also includes terms, tactics, techniques, and procedures. It is authoritative but requires judgment in application. (CJCSI 5120.02)

Joint Task Force-Civil Support (JTF-CS). A standing joint task force established to plan and integrate Department of Defense support to the designated lead federal agency for domestic chemical, biological, radiological, nuclear, and high-yield explosives consequence management operations. (JP 3-41)

Liaison. That contact or intercommunication maintained between elements of military forces or other agencies to ensure mutual understanding and unity of purpose and action. (JP 1-02)

Logistics.

1. The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with:

a. Design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel.

b. Movement, evacuation, and hospitalization of personnel.

c. Acquisition or construction, maintenance, operation, and disposition of facilities.

d. Acquisition or furnishing of services. (JP 1-02)

Mass Casualty (MASCAL). Any large number of casualties produced in a relatively short period of time, usually as the result of a single incident such as a military aircraft accident, hurricane, flood, earthquake, or armed attack that exceeds local logistic support capabilities. (JP 1-02)

Mean lethal dose.

1. The amount of nuclear irradiation of the whole body which would be fatal to 50 percent of the exposed personnel in a given period of time.

2. The dose of chemical agent that would kill 50 percent of exposed, unprotected, and untreated personnel. (JP 1-02)

Median incapacitating dose. The amount of chemical agent which when introduced into the body will incapacitate 50 percent of exposed, unprotected personnel. (JP 1-02)

Medical Surveillance (MEDSURV). The ongoing, systematic collection, analysis, and interpretation of data derived from instances of medical care or medical evaluation, and the reporting of population-based information for characterizing and countering threats to a population's health, well-being and performance. (JP 4-02)

Medical Treatment Facility (MTF). A facility established for the purpose of furnishing medical and/or dental care to eligible individuals. (JP 1-02)

Military Operations Other Than War (MOOTW). Operations that encompass the use of military capabilities across the range of military operations short of war. These military actions can be applied to complement any combination of the other instruments of national power and occur before, during, and after war. (JP 1-02)

Mission-oriented protective posture gear. Military term for individual protective equipment including suit, boots, gloves, mask with hood, first aid treatments, and decontamination kits issued to soldiers. (JP 1-02)

Mission Oriented Protective Posture (MOPP). A flexible system of protection against nuclear, biological, and chemical contamination. This posture requires personnel to wear only that protective clothing and equipment (MOPP gear) appropriate to the threat level, work rate imposed by the mission, temperature, and humidity. (JP 1-02)

Mobile Training Team (MTT). A team consisting of one or more US military or civilian personnel sent on temporary duty, often to a foreign nation, to give instruction. The mission of the team is to train indigenous personnel to operate, maintain, and employ weapons and support systems, or to develop a self-

training capability in a particular skill. The National Command Authorities may direct a team to train either military or civilian indigenous personnel, depending upon host-nation requests. (JP 1-02)

Monitoring.

1. The act of listening, carrying out surveillance on, and/or recording the emissions of one's own or allied forces for the purposes of maintaining and improving procedural standards and security, or for reference, as applicable.

2. The act of listening, carrying out surveillance on, and/or recording of enemy emissions for intelligence purposes.

3. The act of detecting the presence of radiation and the measurement thereof with radiation measuring instruments, also called radiological monitoring. (JP 1-02)

Multiservice Tactics, Techniques, and Procedures (MTTP). Actions and methods that describe how the forces of two or more services will be employed in joint operations. It is ratified by two or more services and is promulgated in publications that identify the participating services, e.g., Army-Navy MTTP. MTTP increase interoperability among service war-fighting, staff, and support elements and, therefore, often require rapid development to maximize war-fighting effectiveness. MTTP supplement joint doctrine and JTTP, generally providing an increased level of detail. As such, it often requires frequent revision.

Munition. A complete device charged with explosives, propellants, pyrotechnics, initiating composition, or nuclear, biological, or chemical material for use in military operations, including demolitions. Certain suitably modified munitions can be used for training, ceremonial, or nonoperational purposes. Also called ammunition. (JP 3-11)

Mutual Aid Agreement (MAA). Reciprocal assistance by local government and an installation for emergency services under a prearranged plan. Mutual aid is synonymous with "mutual assistance," "outside aid," "memorandums of understanding," memorandums of agreement, "letters of agreement," "cooperative assistant agreement," "intergovernmental compacts," or other similar agreements, written or verbal, that constitute an agreed reciprocal assistance plan for emergency services for sharing purposes. MAAs between entities are an effective means to obtain resources and should be developed whenever possible.

MAAs should be in writing, be reviewed by legal counsel, and be signed by a responsible official. (NIMS)

Mycotoxin. Fungal or bacterial toxin (e.g., "yellow rain").

National Incident Management System (NIMS). A national crisis response system that provides a consistent, nationwide approach for Federal, state, local, and tribal governments; the private sector; and nongovernmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. (JP 3-41)

National Special Security Event (NSSE). Events of national significance that require greater visibility. (JP 3-28)

NBC Defense. Nuclear defense, biological defense, and chemical defense, collectively. The term may not be used in the context of US offensive operations. (JP 1-02)

Nerve agent. A potentially lethal chemical agent which interferes with the transmission of nerve impulses. (JP 1-02)

Nonbattle Injury (NBI). A person who becomes a casualty due to circumstances not directly attributable to hostile action or terrorist activity. (JP 1-02)

Nongovernmental Organizations (NGO). Transitional organizations of private citizens that maintain a consultative status with the Economic and Social Council of the United Nations. Nongovernmental organizations may be professional associations, foundations, multinational businesses, or simply groups with a common interest in humanitarian assistance activities (development and relief). "Nongovernmental organizations" is a term normally used by non-United States organizations. (JP 1-02)

Nonpersistent agent. A chemical agent that when released dissipates and/or loses its ability to cause casualties after 10 to 15 minutes. (JP 1-02)

Nuclear defense. The methods, plans, and procedures involved in establishing and exercising defensive measures against the effects of an attack by nuclear weapons or radiological warfare agents. It encompasses both the training for, and the implementation of, these methods, plans, and procedures. (JP 1-02)

Nuclear radiation. Particulate and electromagnetic radiation emitted from atomic nuclei in various nuclear processes. The important nuclear radiations, from the weapon standpoint, are alpha and beta particles, gamma rays, and neutrons. All nuclear radiations are ionizing radiations, but the reverse is not true; X-rays for example, are included among ionizing radiations, but they are not nuclear radiations since they do not originate from atomic nuclei. (JP 1-02)

Nuclear weapon. A complete assembly (i.e., implosion type, gun type, or thermonuclear type), in its intended ultimate configuration which, upon completion of the prescribed arming, fusing, and firing sequence, is capable of producing the intended nuclear reaction and release of energy. (JP 1-02)

Nuclear, Biological, and Chemical Defense (NBCD). Defensive measures that enable friendly forces to survive, fight, and win against enemy use of nuclear, biological, or chemical (NBC) weapons and agents. US forces apply NBC defensive measures before and during integrated warfare. In integrated warfare, opposing forces employ nonconventional weapons along with conventional weapons (NBC weapons are nonconventional). (JP 3-11)

Nuclear, biological, and chemical environment. Environments in which there is deliberate or accidental employment or threat of employment of nuclear, biological, or chemical weapons; deliberate or accidental attacks or contamination with toxic industrial materials, including toxic industrial chemicals; or deliberate or accidental attacks or contamination with radiological (radioactive) materials. (JP 1-02)

Nuclear, biological, and chemical-capable nation. A nation that has the capability to produce and employ one or more types of nuclear, biological, and chemical weapons across the full range of military operations and at any level of war in order to achieve political and military objectives. (JP 1-02)

On-Scene Commander (OSC).

1. The person designated to coordinate the rescue efforts at the rescue site.

2. Federal officer designated to direct federal crisis and consequence management efforts at the scene of a terrorist or weapons of mass destruction incident. (JP 3-50)

Operation order (OPORD). A directed issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. (JP 1-02)

Operational Control (OPCON). Command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority) and may be delegated within the command. When forces are transferred between combatant commands, the command relationship the gaining commander will exercise (and the losing commander will relinquish) over these forces must be specified by the Secretary of Defense. Operational control is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/ or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions; it does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. (JP 1)

Operational decontamination. Decontamination carried out by an individual and/or a unit, restricted to specific parts of operationally essential equipment, materiel and/or working areas, in order to minimize contact and transfer hazards and to sustain operations. This may include decontamination of the individual beyond the scope of immediate decontamination, as well as decontamination of mission-essential spares and limited terrain decontamination. (JP 1-02)

Operations Center (OC). The facility or location on an installation, base, or facility used by the commander to command, control, and coordinate all crisis activities. (JP 3-07.2)

Operations Security (OPSEC).

1. A process of identifying critical information and subsequently analyzing friendly actions attendant to military operations and other activities to:

(a) Identify those actions that can be observed by adversary intelligence systems.

(b) Determine indicators that hostile intelligence systems might obtain that could be interpreted or pieced together to derive critical information in time to be useful to adversaries.

(c) Select and execute measures that eliminate or reduce to an acceptable level the vulnerabilities of friendly actions to adversary exploitation. (JP 3-13.3)

Ordnance. Explosives, chemicals, pyrotechnics, and similar stores, e.g., bombs, guns and ammunition, flares, smoke, or napalm. (JP 1-02)

Persistency. In biological or chemical warfare, the characteristic of an agent which pertain to the duration of its effectiveness under determined conditions after its dispersal. (JP 1-02)

Persistent agent. A chemical agent that when released remains able to cause casualties for more than 24 hours to several days or weeks. (JP 1-02)

Personal Protective Equipment (PPE). The equipment provided to shield or isolate a person from the chemical, physical, and thermal hazards that can be encountered at a hazardous materials incident. Personal protective equipment includes both personal protective clothing and respiratory protection. Adequate personal protective equipment should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. PPE is used in non-military-unique occupational environments where OSHA standards apply, including emergency response to CBRN incidents in the United States. (NFPA 472)

Pig or piglette. A heavy-duty, metal container that is designed to contain small sample containers for transport to the laboratory.

Port of Debarkation (POD). The geographic point at which cargo or personnel are discharged. This may be a seaport or aerial port of debarkation; for unit requirements; it may or may not coincide with the destination. (JP 1-02)

Port of Embarkation (POE). The geographic point in a routing scheme from which cargo or personnel depart. This may be a seaport or aerial port from which personnel and equipment flow

to a port of debarkation; for unit and non-unit requirements, it may or may not coincide with the origin. (JP 4-01.2)

Precursor. Any chemical reactant which takes place at any stage in the production by whatever method of a toxic chemical. This includes any key component of a binary or multi-component chemical system. (JP 1-02)

Preventive Medicine (PVNTMED). The anticipation, communication, prediction, identification, prevention, education, risk assessment, and control of communicable diseases, illnesses and exposure to endemic, occupational, and environmental threats. These threats include non-battle injuries, combat stress responses, weapons of mass destruction, and other threats to the health and readiness of military personnel. Communicable diseases include anthropod-, vector-, food-, waste-, and waterborne diseases. Preventative medicine measures include field sanitation, medical surveillance, pest and vector control, disease risk assessment, environmental and occupational health surveillance, waste (human, hazardous, and medical) disposal, food safety inspection, and potable water surveillance. (JP 4-02)

Proliferation (nuclear weapons). The process by which one nation after another comes into possession of, or into the right to determine the use of, nuclear weapons; each nation becomes potentially able to launch a nuclear attack upon another nation. (JP 1-02)

Protection.

1. Measures that are taken to keep nuclear, biological, and chemical hazards from having an adverse effect on personnel, equipment, or critical assets and facilities. Protection consists of five groups of activities: hardening of positions; protecting personnel; assuming mission-oriented protective posture; using physical defense measures; and reacting to attack.

2. In space usage, active and passive defense measures to ensure that United States and friendly space systems perform as designed by seeking to overcome an adversary's attempts to negate them and to minimize damage if negotiation is attempted. (JP 1-02)

Protective clothing. Clothing especially designed, fabricated, or treated to protect personnel against hazards caused by extreme changes in physical environment, dangerous working conditions, or enemy action. (JP 1-02)

Protective mask. A protective ensemble designed protect the wearer's face and eyes and prevent the breathing of air contaminated with chemical and/or biological agents. (JP 1-02)

Reconnaissance (RECON). A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area. (JP 2-0)

Residual contamination. Contamination which remains after steps have been taken to remove it. These steps may consist of nothing more than allowing the contamination to decay normally. (JP 1-02)

Residual radiation. Nuclear radiation caused by fallout, artificial dispersion of radioactive material, or irradiation which results from a nuclear explosion and persists longer than one minute after burst. See also contamination. (JP 1-02)

Riot control agent (RCA). A substance which produces temporary irritating or disabling physical effects that disappear within minutes of removal from exposure. There is no significant risk of permanent injury, and medical treatment is rarely required. See also incapacitating agent. (JP 1-02)

Risk assessment. This term broadly refers to an evaluation of the probability and severity of safety/health hazards. These can include qualitative, semi-qualitative, and quantitative methods. Field-expedient risk assessments are more qualitative, while environmental or health risk assessments are typically quantitative. (JP 1-02)

Risk Management (RM). The process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits. (JP 1-02)

Search.

1. An operation to locate an enemy force known or believed to be at sea.

2. A systematic reconnaissance of a defined area, so that all parts of the area have passed within visibility.

3. To distribute gunfire over an area in depth by successive changes in gun elevation. (JP 1-02)

Special Reconnaissance (SR). Reconnaissance and surveillance actions conducted by special operations forces to obtain or verify, by visual observation or other collection methods, information concerning the capabilities, intentions, and activities of an actual or potential enemy or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area. It includes target acquisition, area assessment, and post-strike reconnaissance. (JP 1-02)

Status-of-Forces Agreement (SOFA). An agreement that defines the legal position of a visiting military force deployed in the territory of a friendly state. Agreements delineating the status of visiting military forces may be bilateral or multilateral. Provisions pertaining to the status of visiting forces may be set forth in a separate agreement, or they may form a part of a more comprehensive agreement. These provisions describe how the authorities of a visiting force may control members of that force and the amenability of the force or its members to the local law or to the authority of local officials. To the extent that agreements delineate matters affecting the relations between a military force and civilian authorities and population, they may be considered as civil affairs agreements. (JP 3-16)

Surprise dosage attack. A chemical operation which establishes on target a dosage sufficient to produce the desired casualties before the troops can mask or otherwise protect themselves. (JP 1-02)

Surveillance. The systematic observation of aerospace, surface, or subsurface areas, places, persons, or things, by visual, aural, electronic, photographic, or other means. (JP 1-02)

Survey. The directed effort to determine the location and the nature of a chemical, biological and radiological hazard in an area. (JP 1-02)

Sustainment. The provision of personnel, logistic, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective. (JP 1-02)

Tactical Control (TACON). Command authority over assigned or attached forces or commands or military capability or forces made available for tasking, that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks

assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command. When forces are transferred between combatant commands, the command relationship the gaining commander will exercise (and the losing command will relinquish) over these forces must be specified by the Secretary of Defense. Tactical control provides sufficient authority for controlling and directing the application of force or tactical use of combat support assets within the assigned mission or task. (JP 1-02)

Technical decontamination. Technical decontamination commonly refers to the deliberate decontamination of responders, response equipment, and evidence. It is conducted during a CBRN CM response where trained responders conduct decontamination operations. The focus of technical decontamination is neutralization of the agent. Terms that are commonly associated with technical decontamination are detailed, thorough, deliberate, definitive, and responder decontamination. (NFPA 471)

Terrorism. The calculated use of unlawful violence or threat of unlawful violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological. (JP 3-07.2)

Thermal radiation.

1. The heat and light produced by a nuclear explosion.

2. Electromagnetic radiations emitted from a heat or light source as a consequence of its temperature; it consists of ultraviolet, visible, and infrared radiations. (JP 1-02)

Thorough decontamination. Decontamination carried out by a unit, with or without external support, to reduce contamination on personnel, equipment, materiel, and/or working areas equal to natural background or to the lowest possible levels, to permit the partial or total removal of individual protective equipment and to maintain operations with minimum degradation. This may include terrain decontamination beyond the scope of operational decontamination. (JP 1-02)

Threat analysis. In antiterrorism, a continual process of compiling and examining all available information concerning potential terrorist activities by terrorist groups which could target a facility. A threat analysis will review the factors of a terrorist group's existence, capability, intentions, history,

and targeting, as well as the security environment within which friendly forces operate. Threat analysis is an essential step in identifying probability of terrorist attack and results in a threat assessment. (JP 3-07.2)

Total dosage attack. A chemical operation which does not involve a time limit within which to produce the required toxic level. (JP 1-02)

Toxic chemical, biological, or radiological attack. An attack directed at personnel, animals, or crops using injurious agents of chemical, biological, or radiological origin. (JP 1-02)

Toxic chemical. Any chemical which, through its chemical action on life processes can cause death, temporary incapacitation, or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere. (JP 1-02)

Toxic Industrial Biological (TIB). Biological material found in medical research or pharmaceutical manufacturing that are toxic to humans and animals or damages plants. (FM 4-02.7)

Toxic Industrial Chemical (TIC). Chemical materials or compounds that are used for multiple purposes such as fuels or solvents, or in manufacturing that are toxic to humans and animals or damages plants. (FM 4-02.7)

Toxic Industrial Material (TIM). Any toxic industrial material manufactured, stored, transported, or used in industrial or commercial processes. It includes toxic industrial chemicals, toxic industrial radiologicals, and toxic industrial biologicals. (JP 3-41)

Toxic Industrial Radiological (TIR). Radiation materials used in research, power generation, and medical treatment that are harmful to humans and animals if released outside their controlled environments. (FM 4-02.7)

Toxin agent. A poison formed as a specific secretion product in the metabolism of a vegetable or animal organism, as distinguished from inorganic poisons. Such poisons can also be manufactured by synthetic processes. (JP 1-02)

Unconventional Warfare (UW). A broad spectrum of military and paramilitary operations, normally of long duration, predominantly conducted by indigenous or surrogate forces that

are organized, trained, equipped, supported, and directed in varying degrees by an external source. It includes guerrilla warfare and other direct offensive, low visibility, covert, or clandestine operations, as well as the indirect activities of subversion, sabotage, intelligence, and evasion and escape. (JP 1-02)

Vulnerability assessment. A Department of Defense, command, or unit-level evaluation (assessment) to determine the vulnerability of a terrorist attack against an installation, unit, exercise, port, ship, residence, facility, or other site. Identifies areas of improvement to withstand, mitigate, or deter acts of violence or terrorism. (JP 3-07.2)

Vulnerability.

1. The susceptibility of a nation or military force to any action by any means through which its war potential or combat effectiveness may be reduced or its will to fight diminished.

2. The characteristics of a system that cause it to suffer a definite degradation (incapability to perform the designated mission) as a result of having been subjected to a certain level of effects in an unnatural (manmade) hostile environment.

3. In information operations, a weakness in information system security design, procedures, implementation, or internal controls that could be exploited to gain unauthorized access to information or an information system. (JP 3-60)

Weapons of Mass Destruction (WMD). Weapons that are capable of a high order of destruction and/ or of being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can be high explosives or nuclear, biological, chemical, and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon. (JP 3-28)