MARINE SAFETY NANUAL

CHAPTER 6. CONTINGENCY PLANNING FOR ENERGENCY RESPONSE

A National Emergency Response Planning.

1. Authority. Much of the Coast Guard's authority for prevention, enforcement and response to discharges of oil and hazardous substances, the general safety of our ports and waterways, and the transportation of hazardous materials has been delegated by the Secretary of the Department of Transportation (SECDOT).

2. Plan Development. With this authority comes the responsibility for the captain of the port (COTP) to make decisions affecting the safety and security of vessels, waterfront facilities, or the environment. Consideration must be given to additional liabilities or responsibilities which the Coast Guard may incur as a result of response activities. For example, a decision to allow a vessel which is afire or flooding to enter port, subject to certain conditions, requires the COTP to ensure conditions for entry are met. If they are not met, or if activities adversely affect the safety of the vessel, or a waterfront facility or the environment, the COTP must ensure that positive, adequate action is taken to resolve the situation. The COTP should carefully evaluate the capabilities of involved parties (including the Coast Guard) to perform required tasks before making response decisions, and closely monitor response activities during their critical stages. For further information, see volume VII (TO BE DEVELOPED) of this manual.

3. Required Plans. A COTP should have plans for emergencies which fall into two categories: those having a relatively high probability of occurring (e.g., an oil spill); and those which, while having a low probability of occurring, would cause a high level of damage to persons or property (e.g., liquefied natural gas (LNG) in a port which handles LNG vessels). COTP's should have the following plans:

   a. Oil and hazardous substance spill response (see 40 CFR 300);

   b. Maritime counter-terrorism (see volume VII (TO BE I)EVELOPED) of this manual);

   c. Vessel and waterfront fire (see chapter 8 of this volume);

   d. Natural disaster (see Natural Disaster Preparedness Plan (NDPP), CG-368-2);

   e. Civil disorder (see Civil Disturbance Preparedness Plan (CDPP), CG-368-l, and volume VII (TO BE DEVELOPED) of this manual); and

   f. Appropriate mobilization plans as required to support superior plans or those ordered by the Commandant and/or Maritime Defense Zone (NDZ) Commanders.

   COTP's should also have plans as dictated by local conditions. These may be incorporated into a general "Port Emergency Response Plan" which could include the vessel and waterfront fires response plan. Examples of locally-required plans include LNG, aircraft crash, and vessel collision and/or grounding. COTP's may also write operation orders (OPORDER's) in response to a specific incident for a specific time period (see volume VII

(TO BE DEVELOPED) of this manual). OPORDER examples include seasonal icebreaking operations and arrival of nuclear submarines.

B. Regional/Local Contingency Planning.

1. Introduction. A contingency plan enables decision makers to take expeditious and predictable actions to prevent or mitigate potentially disastrous conditions. Contingency planning does not replace good judgment and experience in an emergency; however, it augments those qualities significantly. It allows the COTP to use efficiently all readily available resources and authorities to counter or avoid potentially severe threats to the safety and security of port operations. Such plans should contain valuable information or procedures that may not be immediately apparent, such as:

   a. Operational and inspection procedures for such activities as transits of vessels carrying LNG and cargo transfer operations;

   b. Agencies and organizations to notify or to provide assistance during an incident (e.g., assistance from pilot associations would be critical in situations requiring vessel movements);

   c. Background information on waterfront facilities and vulnerable resources (maps showing facility characteristics, listings of 24-hour phone numbers, key personnel); and

   d. Contacts in other federal, state, and local authorities, and the media.

2. Basic Planning For Pollution Response.

   a. Introduction. The need for the development of comprehensive federal regional contingency plans (RCP's) has been recognized for some time. As experience was gained concerning the effectiveness of these plans, it was realized that more detailed planning was required at the local level to facilitate successful pollution response operations. The result was the establishment of a requirement for the development of federal local contingency plans (LCP's) by each Coast Guard predesignated on-scene coordinator (OSC.). The detailed LCPe5, containing specific information on the local response resources, response organization, and other considerations are supported by a more general RCP. The RCP provides guidance on how an OSC can obtain assistance from within the region for those incidents beyond the capability of an LCP.

   b. Content For RCP's. Section 300.42 of the National Contingency Plan (MOP) requires that an RCP be developed and maintained for each standard federal region, Alaska, and the Caribbean. As co-chairperson of the standing Regional Response Team (RRT), the district (m) officer is responsible for coordinating Coast Guard input to the RCP. RCP's should be more than a simple reiteration of what is stated in the NCP. The content of an RCP is intended to implement the NCP within a region and accomplish all of the coordination necessary for an effective multi-organizational response effort in support of the region's OSC's. Particular attention should be paid to including information on those types of services that an OSO typically requests from an RRT, such as:

(1) Assistance in locating appropriate disposal sites.

(2) Access to barges and other vessels for response-related salvage operations.

(3) Assistance in making environmental damage assessments.

(4) Access to aircraft or trucks with a heavy lift capability.

(5) Coordination of waterfowl conservation efforts.

(6) Identification and prioritization of natural resources requiring protection.

(7) Provision of forecasting services, including weather, currents, and pollutant movement predictions.

The information in an RCP should also be coordinated with any existing state contingency plans and federal LCP's.

c. Format For ROP'S. Although the format for RCP's is not as important as the content, it is recognized that there is a need for uniformity in format among the various plans. Because the responsibility for developing these plans is jointly shared by the Environmental Protection Agency (EPA) and the Coast Guard, section 300.42 indicates that RRT's will follow the format of the NCP to the greatest extent possible.

d. Content For LCP's. Section 300.43 of the NCP requires that a federal LCP be developed for each area where the Coast Guard acts as the predesignated OSC. Detailed, extensive contingency planning by each OSC is considered essential for well-coordinated responses to pollution incidents.

(1) The main objectives of an LOP should be to:

(a) Identify, through a hazard analysis, probable locations of discharges or releases.

(b) Develop effective systems for discovering and reporting pollution incidents.

(c) Institute prompt and effective actions to restrict the spread of pollutants.

(d) Ensure that the public health and welfare are adequately protected.

(e) Minimize damage to wildlife and the environment from oil and hazardous substance incidents.

(f) Provide techniques for removal and locations for the disposal of collected pollutants.

(g) Identify government, commercial, and industry resources capable of responding to pollution incidents and lending expertise to the OSC in specific areas (e.g., analytical support, medical expertise, evacuation, cleanup methods).

(h) Identify available equipment for removal operations and logistical support.

(i) Identify procedures for initiating actions for the recovery of cleanup costs and performance of enforcement actions as necessary.

(2) The first step in accomplishing these objectives in an LOP is to identify potential sources of spills within the OSC's zone. This can be done by determining what types of products are produced, used, stored, or transported in the area; examining historical spill data; and by locating, as a minimum:

(a) High density vessel traffic areas.

(b) Restricted navigational areas (RNA's).

(c) Hazards to navigation.

(d) Waterfront facilities.

(e) Storage facilities.

(f) Production facilities.

(g) Pipelines.

(h) Refineries and processing plants.

(i) Outfalls, municipal sewers, and storm drains.

(j) Railways and highways within the 080's zone.

This information, coupled with a review of local meteorological conditions, winds, waves, tides, oceanographic patterns, and other related parameters will enable an OSO to determine potential sources and the most likely places of occurrence for spills.

(3) The next step is to develop estimates of the size of the areas that would be affected by "worst case" incidents, as well as those more commonly encountered. This may be accomplished in a number of ways. Manual III of the Chemical Hazardous Response Information System (CHRIS), the Hazard Assessment Handbook, Commandant Instruction (COMDTINST) M16465.13, and the pollutant spill trajectory forecasting service available

through the Coast Guard National Response Center may prove useful. In assessing these hazards, the OSO should take into account factors such as the volatility, reactivity, toxicity of the material and the proximity to populated or environmentally sensitive areas.

(4) Once this is completed, it is necessary to identify those public health and environmental resources that would be threatened, and to what extent they would be jeopardized, should one of the possible incidents occur. A survey of each potentially threatened are is required to identify high public health risks such as heavily populated areas, schools, and hospitals; and environmentally sensitive resources such as marine sanctuaries, estuaries, mangroves, wildlife concentration areas, beaches, and water intakes.

(5) The information assembled to this point has:

(a) Established potential sources of spills.

(b) Identified where the incidents are most likely to occur.

(c) Estimated the size of the areas which would be affected for a worst case situation and the more likely types of incidents that may happen.

(d) Identified the types of public health and environmental hazards that would result.

(6) Once this is completed, the unit may want to develop action plans for high risk areas or for certain chemicals. These action plans should cover the characteristics and hazards of the material, potential sources of spills, likely or worst case spill scenarios, areas at risk, and response actions to be carried out.

(7) The final step is the development of a data base of response resources available to the OSC. It is considered most important for each OSC to periodically meet with any persons or organizations which might provide assistance during a spill. This will allow the OSC to better ascertain/update what type and amount of assistance can be reasonably expected. It will also help to establish a rapport with other response organizations, which should prove most helpful during an actual incident. In addition to inventories of equipment and contact point listings, the logistical considerations of utilizing these resources should be addressed. For example, it is necessary to establish an effective communications plan for use during pollution incidents. Suggested methods for collecting information for the LOP may be found in COMDTINST M16466.l, A Suggested Development Plan for A Regional Contingency Plan Data Base.

(8) It is also essential that the LOP be coordinated with any state, local, or industry contingency plans that exist within the 080's zone. This intergovernmental coordination is an essential element of the contingency planning process.

e. Format For LCP's. For purposes of uniformity, it is desired that the following format be utilized for all LCP's. Sections in the format which are not applicable can be omitted, but the associated number should be reserved for future use. If additional sections are required, they should be added to the appropriate part using the next sequential number to identify the topic. The suggested format is shown in Figure 6-1.

f. Coast Guard Involvement In Other Contingency Planning Efforts.

(1) Review Of Outer Continental Shelf (OCS) Contingency Plans. A Memorandum of Understanding (MOU) requires the Coast Guard to determine the adequacy of oil spill contingency plans submitted to the Minerals Management Service (MNS) as part of OCS Exploration Plans or Development and Production Plans. The 080 for the zone in which the drilling activity will occur is responsible for conducting this review. A regional Technical Review Board (TRB) will assist OSC's in determining the adequacy of these contingency plans. Specifically, the TRB will:

(a) Advise the OSC on whether response equipment proposed in the contingency plan meets currently accepted state-of-the-art criteria.

(b) Advise the OSC on the adequacy of the amounts and types of equipment proposed.

(c) Advise the OSC on acceptable response times for local conditions.

(d) Keep abreast of developments in response equipment technology and revise state-of-the-art criteria accordingly.

(e) Provide OSC's with technical information on equipment proposed by operators.

The membership of the TRB includes: Coast Guard district commander representative (co-chairperson), MMS Deputy Minerals Manager representative (co-chairperson), appropriate Coast Guard National Strike Force (NSF) commanding officer (Co), EPA Oil and Hazardous Materials Simulated Environmental Testing Tank (OHMSETT) representative, Coast Guard Headquarters Marine Technology Division (Commandant G-DMT) representative, Coast Guard Headquarters Environmental Response Division (Commandant G-WER) representative, and an MMS Headquarters representative. District commanders should establish a regional TRB where appropriate to assist OSC's in reviewing contingency plans.

FIGURE 6-1

SUGGESTED FORMAT FOR LOCAL POLLUTION CONTINGENCY PLANS

Emergency Response Notification Summary

Letter of Promulgation

Record of Amendments

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(2) Planning Guidelines. OSC's shall consider the following guidelines when evaluating the adequacy of Oil Spill Contingency Plans submitted to MMS for OCS activity:

(a) Risk Analysis. The contingency plan should contain an analysis which indicates the number and size of spills that could occur during OCS mineral exploration, development, and production operations. The spill trajectory analysis should indicate where an oil spill is likely to flow under the various expected sets of local, seasonal meteorological and oceanographic conditions. Impact areas should be identified and strategies should be fully developed for the protection of potentially vulnerable areas and resources. The depth of detail is flexible, but should be sufficient to assure the OCS that adequate contingency planning has been done.

(b) Recovery Equipment. The type of recovery equipment and its method of deployment rests entirely with the operator. However, subject to the prevalent conditions identified in the risk analysis, the equipment should be state-of-the-art. Based on previous research and development (R&D) studies, observations, and experiences, currently available state-of-the-art equipment-is capable of operating in 8-10 foot seas and 20-knot winds with deployment accomplished in the 5-6 foot range. However, the OSC should be aware that mechanical equipment cannot be expected to perform at optimum efficiencies in all environmental situations. Local conditions such as high energy sea states with short wave lengths, or severe icing, may not allow all of the above operational criteria to be met.

(c) Equipment Availability. The quantity and capability of the equipment to be made available should be related to the risk analysis. For planning purposes, open water recovery devices typically have a recovery capacity of at least 1,000 barrels/day. A recovery rate of 1,000 barrels/day should therefore be considered appropriate unless the risk analysis suggests a higher spill rate is likely. This recovery rate may be attained from one device or an array of devices which would be utilized in concert with each other. The contingency plan should also indicate how additional equipment will be made available for extraordinary spills (i.e., spills that exceed the recovery capacity of the readily available equipment).

(d) Response Time. If local conditions or geography permit, the target for initiating recovery operations with pre-staged equipment (i.e., the response time) should be 6 to 12 hours from the time of the spill dependent upon the location and general operating characteristics of the drilling or production activity. Whatever amount of equipment is required to be available for responding to spills should be fully deployed and in operation within the specified response time, weather permitting. The location of

staged equipment will be left to the operator. For extraordinary spills, the operator should be expected to obtain additional equipment within 48 hours.

(e) Drills. Response exercises for deploying equipment in open water shall occur at least annually to test the equipment and the contingency plan. This exercise should be held under realistic environmental conditions in which deployment and operation can be accomplished without endangering the safety of personnel. In addition, at least one hands-on drill should be conducted annually as part of a training program and may include full deployment conducted in protected waters. Exercises that test the alerting/initial response mechanism and command, control, and communications should be held as frequently as necessary to demonstrate effectiveness to the OSC.

(f) Support Vessels. Vessels or vessel types to be used in deploying and operating the response equipment should be identified in the contingency plan. The vessels should be available within the same response time parameters as used for response equipment. The crews of all candidate support vessels should be familiar with equipment deployment and operating techniques; or a system should be developed to supply trained crews/supervisors to the support vessels within the specified response time.

(g) Dispersant Equipment. In addition to oil recovery equipment, dispersant equipment should be included in the contingency plan. Equipment capable of applying dispersants should be maintained at appropriate staging points as well as adequate stockpiles of dispersants if they are not readily available from local distributors. The types and toxicities of dispersants proposed for use should be identified in the contingency plan. The quantity and types of dispersants presited should be related to the risk analysis, taking into account dispersant toxicity, oil composition, and water temperature. The above should not be interpreted as a predilection on the part of government for the use of dispersants, but a recognition that spills may occur when, due to environmental conditions or lack of adequate support resources, mechanical recovery is not possible. The decision to use dispersants would of course be made using the criteria and procedures set forth in Subpart H of the NCP. A response target of 24 hours from the time the spill occurs is appropriate, unless pre-approved contingency plans or streamlined RRT authorization procedures for the use of dispersants are in effect. In this event, the response time may be lessened.

(3) Review Of Incinerator Ship Contingency Plans. As part of the permitting process for the operation of incinerator ships, EPA requires the permittee to submit a contingency plan that describes the company's plan for responding to accidents involving the vessel or its cargo. EPA has

requested that the Coast Guard review the adequacy of these plans before the issuance of a permit. Commandant (G-WER) will coordinate the review of these plans with the appropriate districts, COTP's, and strike teams. Units involved in the plan review will be provided guidance on the review process when comments are solicited by Commandant.

3. Hazardous Materials Operations.

a. Introduction. A 1arge percentage of waterborne cargoes is hazardous in nature. The increasing volume of hazardous material shipments has resulted in increased numbers of casualties resulting from intentional or accidental mishandling of hazardous cargoes in shipment. Much of the nation's population is directly affected by the degree of safety existing in ports and waterways. The potential for loss of life or personal injury, loss of property and the services of our waterways, environmental damage, and threats to our national interest from a casualty involving hazardous materials, is readily apparent. When casualties involving hazardous materials occur, the Coast Guard is authorized to:

(1) Investigate and study them to determine cause;

(2) Institute remedial measures through amendment and revision of the regulations to prevent or minimize the chances of recurrence of such casualties; and

(3) Institute legal action when the circumstances and facts so warrant.

b. Coast Guard Response. It has long been the tradition of the Coast Guard to render all possible assistance in any maritime or marine disaster. Coast Guard district and unit CO's, particularly COTP’s, may be called upon to render assistance and guidance to industry or to local, state, or federal agencies. In the event of an incident involving hazardous materials affecting a vessel, a port, or the environment, the Coast Guard undoubtedly will become involved. To ensure the most effective Coast Guard response to hazardous materials incidents, coordinated plans of action must be formulated in advance. Authority for development of such plans may be found in various federal laws, including the Ports and Waterways Safety Act (NSA), the Federal Water Pollution Control Act (FWPCA), the Hazardous Materials Transportation Act (HMTA), and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CEROLA). The effectiveness of a hazardous materials incident resolution depends upon the severity of the incident, the type(s) of materials involved, the location of the incident, and the degree of preparedness of the responding agencies The locations of facilities handling hazardous materials and their relation to other facilities, industry and residential sections in the proximate area are particularly important factors in planning. Additional considerations may involve operational constraints on vessels and facilities handling hazardous or foreign materials. For further information, see volume VII (TO BE DEVELOPED) of this manual.

c. Plan Administration. Support agreements should be made with various federal, state, and local agencies, including as a minimum:

(1) Port authorities;

(2) Fire departments;

(3) Police departments;

(4) Industry personnel knowledgeable in the hazardous materials handled in the port, and having equipment that may be used in control and recovery; and

(5) Active duty and reserve components of military units in the area.

d. Access To Information. Copies of support agreements containing names and phone numbers of contact points and available resources should be kept in contingency plan files. Hazardous materials incident drills, with participation from other interested agencies, should be conducted on a regular basis to ensure the effectiveness of the plan. To provide response teams with data necessary for prompt and safe countermeasures, systems such as CHRIS, the Hazard Assessment Computer System (HACS), and the Oil and Hazardous Materials Technical Assistance Data Systems (OHMTADS) should be used. Various chemical data manuals, the Chemical Data Guide for Bulk Shipment by Water, COMDTINST M16616.6, and information from other sources such as Chemical Transportation Emergency Center (CHENTREC), a commercial chemical data service, are available. Following each drill all contingency plans should be evaluated and updated as necessary.

4. Planning For Vessel And Waterfront Fires. See chapter 8 of this volume.

5. Planning For Natural Disaster Response. In general, COTP's shall consult CG-368-2. A "natural disaster" is an occurrence or imminent threat of widespread or severe damage, injury, or loss of life or property resulting from any natural cause, including fire, flood, earthquake, storm, wind or wave action, volcanic activity, epidemic, contamination, blight, drought, or infestation. The primary responsibility for disaster response rests at the local and state levels. Federal assistance may be provided when local and state governments are unable to cope with the effects of the disaster; authorities frequently request Coast Guard assistance in such cases as severe port and waterfront damage caused by coastal storms.

6. Planning For Response To Civil Disorder And Terrorism. See volume VII (TO BE DEVELOPED) of this manual.

7. Recovery Of Foreign Military Materiel. Whenever possible, Coast Guard personnel shall recover foreign materiel. All foreign materiel should be handled as potentially explosive. See volume VII (TO BE DEVELOPED) of this manual for further information on recovery and reporting of foreign materiel.

C. Port Emergency Planning. [NOTE: For further information, see volume VII (TO BE DEVELOPED) of this manual.] Under Executive Order (E.O.) 11490, as amended by E.O. 11921, broad emergency preparedness functions have been assigned to the Maritime Administration (MARAD). The functions for which MARAD is responsible fall into two distinct phases: Phase 1 concerns peacetime planning for operation of U.S. seaports under emergency conditions; Phase 2

implements these plans upon the declaration of a national emergency. To ensure coordination of-MARAD programs concerning port utilization and control with Coast Guard responsibilities as delineated by E.O. 10173, direct liaison is maintained between Commandant (G-OIS) and (G-WPE), and MARAD's Office of Port and Intermodal Development. Commandant (G-WPE) has been designated as Coast Guard liaison for port utilization and control and questions concerning subject should be referred to them. In February 1959, MARAD requested 100 port authorities on the Atlantic, Gulf, and Pacific Coasts to initiate preparedness planning for their ports. Since that time, similar requests have been made concerning selected ports of the Great Lakes, Alaska, Hawaii, Puerto Rico, and the Virgin Islands. The basic premise of a port preparedness program is that local authorities can best determine their own emergency needs and develop detailed methods of meeting those needs with available resources. MARAD provides fundamental guidance and coordinates the efforts of neighboring ports having common interests.

1. Port Planning Committees.

   a. Planning Features. At the local level, actual port emergency operations plans are developed by port planning committees. The committee members are usually appointed by the local port authority or port industry, under a "delegation" of responsibility from MARAD. Each committee prepares a plan with universal planning base features. These include:

      (1) Establishment of alternate port operating headquarters and personnel reporting centers;

      (2) Emergency training programs;

      (3) Port security activities in addition to those of the Coast Guard;

      (4) Evaluation of port facilities, maintenance of operations, reconstruction, and restoration; and

      (5) Emergency stockpiling.

   b. Planning Guidelines. Planning guidelines are contained in a MARAD pamphlet "Emergency Port Operations of the National Shipping Authority." [NOTE: The MARAD pamphlet "Emergency Shipping Operations of the National Shipping Authority" contains information concerning the requisitioning of ships during national emergencies.] For additional information see CG-368-l, OG-368-2, and CG-368-3, the Nuclear, Biological, Chemical (NBC) Defense Preparedness Plan. Local port planning committees normally cease to function when they have completed the local plans, except for updating them as necessary. Planning proposals from these committees are not strictly oriented to military or civil defense considerations, but rather to continuing or restoring efficient operations of the port. Port planning committees are expected to maintain close liaison with local civil defense planning groups and, in some cases, may serve this dual function (obviously, the local COTP has a role in the port planning committee).

   c. Federal Involvement. It is not the intention of the federal government to operate port facilities in a national emergency, but to control their use in the national interest. It may be necessary to activate a local port emergency operations group

to implement the committee's plans. This group would be headed by a "director of emergency port operations.," and established and empowered by various local port interests to serve during natural disasters or emergencies. In a national emergency, the group w6uld be subject to the authority of the federal lead agency to the extent that controls may be necessary.

2. Program Goals. The common goal underlying both phases of the port preparedness program is to provide a basis for the efficient operation of U.S. ports during a sustained period of stress. Traffic flow must be maintained with a minimum of disruption to the port industry, by allowing peacetime owners and operators of the facilities to continue operation of the facilities themselves. [NOTE: At the same time, the government must develop plans for federal control of ports if such a need arises.]

3. MARAD Responsibilities In Port Emergencies. [NOTE: For further information, see volume VII (TO BE DEVELOPED) of this manual.] During Phase 2, MARAD is responsible for the emergency use of U.S. ports. MARAD will take the following actions during emergencies:

   a. Allocation of port facilities, equipment, and services (public and private), to meet the requirements of the military, civil defense, war production, and the essential civilian economy;

   b. Assignment of a maximum quota of cargo sealift for each port, consistent with the port's overall transshipment capacity and considering port facilities, equipment, labor, and available surface and air transportation;

   c. Immediate allocations of port facilities and assignments of sealift quotas, as required by possible damage to port areas, and required diversions of ship routes due to enemy action at sea;

   d. Coordination and control, through the federal agency responsible or land transportation, of traffic to and from port areas;

   e. Administration of priorities for the movement of traffic through port areas;

   f. Guidance for the coordination of port terminal operations; control over the use of port facilities, equipment, and services (public and private), except those owned by, or allocated to, the Department of Defense (DOD);

   g. Determination of the need for port development; coordination of the rehabilitation of damaged port facilities, and the development of alternate port facilities to meet essential requirements;

   h. Determination of the need to restore damaged or destroyed ports and facilities, or to improvise new facilities; direction, coordination, and control of federal, state, local, and private activities in restoring or improvising facilities;

   i. Maintenance of current data on the cargo-handling capacities in U.S. port areas, including current conditions affecting such capacities and data reflecting total schedules and anticipated cargo movements; and

j. Furnishing current data, in accordance with sealift schedules, to the federal agency responsible for land transportation. This allows the latter agency to approve and issue block releases for portbound traffic, relative to military traffic; advise this agency when circumstances warrant MARAD control over traffic bound inland from the port area, to minimize congestion in the port area.

[NOTE: Port facilities and services owned by or preallocated to DOD are generally excluded from MARAD controls; these facilities are subject to regulation by DOD. However, DOD facilities are subject to certain MARAD controls, such as the allocation and reallocation of commercial port facilities, movement of cargoes in port areas, and the determination of maximum sealift quotas, for all purposes, to each port area.]

4. Operation And Control Of Port Facilities. The following information has been extracted from the MARAD pamphlet "Emergency Port Operations of the National Shipping Authority (NSA)":

"In keeping with the requirements of the National Plan for Emergency Preparedness and Executive Order 11490, as amended, relating to the emergency utilization and control of ports, the Maritime Administration has prepared plans which would be implemented by NSA to carry out delegated responsibilities in ports with minimum interference or disruption at the local operating level. Basically, these plans involve the use of two types of standby contracts executed prior to the declaration of an emergency, which would be implemented upon the declaration of a national emergency.

"The first type of standby contract will ordinarily be drawn up with one or more companies operating particular terminals to be selected at various seaports. Under this type of service contract, the Government will pay tariff rates in effect at the time of any emergency for dockage, wharfage, checking, loading and unloading of vehicles, wharf demurrage, etc."

"The second type of standby contract will obtain the services of a Federal Local Port Controller. The contract will be made, as a minimum, with the marine element of a port authority or similar agency to fulfill the prescribed coordinating role at major ports where MARAD has two or more terminal operators under standby contract. Through this contract, MARAD will obtain the services of a senior qualified official as .port coordinator and NSA local representative, supporting staff, office space, communications, and other ancillary facilities."

"It must be emphasized that only a restricted number of contracts will initially be drawn up. This number will increased when conditions warrant."

ENCLOSURE (6-1): USE OF THE EXPLOSIVE QUANTITY & DISTANCE TABLES

When assessing the hazards associated with an explosion, the principal effects of the explosives output to be considered are blast pressure, primary and secondary fragments, thermal effects, and chemical agent hazard. Facility damage and personnel injury from the explosion of mass detonating explosive materials, class/division 1.1, results primarily from blast overpressure and impulse. For Quantity-Distance (Q-D) determinations, peak incident overpressure generally is the parameter used to define maximum permissible levels of exposure.

The violent release of energy from a detonation in a medium such as air or water creates a sudden increase in pressure within that medium. The resulting pressure disturbance, or blast wave, is characterized by an almost instantaneous rise from the ambient pressure to a peak incident pressure. This pressure increase, or shock front, travels outward from the detonation point with a diminishing velocity, but one that always exceeds the sonic velocity of the medium. As the shock front expands into increasingly larger volumes of the medium, the peak incident pressure at the shock front decreases and the duration of the pressure increases.

Separation distance requirements for explosives are based on the degree of protection needed and amount of explosive material involved. When making Q-D determinations involving explosives, distance is calculated using the formula:

$$D = KW^{1/3}$$

where D is the separation distance in feet, K is a safety factor depending on the risk assumed or permitted. In accordance with DOD standards, the Coast Guard established risk factor is 40 (K=40), except in cases involving more than 250,000 lbs of explosives (where K=50). W is the net explosive weight (NEW) in pounds of ALL explosives on board the vessel or vessels and the waterfront facility. When determining Q-D requirements for explosives use the Q-D tables provided (figure 6-1-1) or the Ammunition and Explosive Safety Standards, DOD 6055.9-STD and Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation and Shipping, NAVSEA OP 5, Volume 1.

The Coast Guard approach is additive when calculating NEW, the total NEW of ALL explosives present must be taken into account. Although there may be and often is more than one class/division of explosive on board a vessel or at a water front facility (i.e., class 1.1, 1.2, 1.5, etc.), the Coast Guard takes a conservative position that all explosives present will be considered class/division 1.1 if any explosives present are class/division 1.1 when calculating the NEW for Q-D purposes.

However, if the operation includes other than class/divisions 1.1 explosives, refer to DOD 6055.9-STD, Chapter 9 for determining Q-D separation requirements.

For purposes of calculating explosives safety Q-D requirements, commercial and military explosives are currently treated the same. Coast Guard units refer to DOD 6055.9-STD and NAVSEA Op 5, Volume 1 in calculating explosive weight limitations and safe separation distances for both military and commercial explosives. DOD Q-D standards are based on historical data collected and analyzed through studies and observations of explosive incidents, both military and commercial. DOD 6055.9-STD has incorporated fragmentation hazard ("missile hazard") into Q-D calculations for safe separation distances. Since certain types of military explosive assemblies have a greater fragmentation hazard than others, individual Q-D tables are established for various explosive hazard divisions. Exceptions for specific explosive items that have received extensive evaluation, and for which a different minimum distance is

provided, are identified in DOD 6055.9-STD. In general, we do not believe that military explosives are more sensitive or less stable than commercial explosives. C-4 is C-4 regardless who ships it.

The exposed site (ES), or the potential hazard area surrounding explosives, increases in size as the quantity of explosives at any one location increase. For this reason, it is desirable to keep the quantity of explosives present in one location to the minimum amount that is consistent with operating requirements and maximum utilization of land. The distance separating the potential explosion site (PES), from the ES, determines the permissible amount of explosives permitted to be safely loaded/unloaded from vessels in the close proximity to Inhabited Buildings (IBD), public traffic routes (PTR) and other sensitive areas.

Public traffic route distance is the distance separating a PES from a public highway, navigable waterway, passenger railway or other traffic route used by the public. Unless access is clearly limited; e.g., by unsuitable terrain or travel not open to the public because it is government-owned; public traffic route distances apply to all roads outside of a government installation boundary. Public traffic route distances also apply to most passenger vehicle parking areas and to open recreational areas that do not include bleacher stands or other places where large numbers of personnel may be present.

Inhabited building distance is the distance between a PES and any structure, except explosive operations buildings, where persons live, work or assemble. Inhabited building distances apply to all areas beginning at the installation boundary.

Measurements of distance for determining the maximum allowance quantity of explosives shall be made from the nearest wall of the structure containing explosives to the nearest part of an exposed structure site. Separation distances are measured along straight lines. For large intervening topographical features such as hills, measure over or around the feature, whichever is shorter. For golf courses, measure to the nearest edge of the tee or green and the centerline of the fairways.

EXAMPLES

[NOTE: The separation distances in the scenarios below are consistent with DOD 6055.9-STD and NAVSEA OP 5 Volume 1. It should also be noted that the scenarios below do not encompass all possible circumstances a COTP may encounter. The scenarios are only examples/tools for the COTP to use when determining Q-D requirements for explosives.]

SCENARIO I

The M/V Creedmoor is inbound with 60,000 lbs. of class/division 1;1 military explosives for off-loading. What are the IBD and PTR required distances?

Using the tables provided: column 1 lists the NEW (60,000 lbs.), column 5 gives the distance requirement to inhabited buildings (IBD) as 1565 feet and column 9 gives the distance requirement to public traffic routes (PTR) as 940 feet.

SCENARIO II

The M/V Granville is inbound with 20,000 lbs. of class/division 1.1 military explosives, 40,000 lbs. of class/division 1.2 and 10,000 lbs. of class/division 1.5 commercial explosives. What are the IBD and PTR required distances?

In accordance with the additive approach the Coast Guard uses when determining the NEW, we will consider all the explosives on board the vessel class/division 1.1 for calculating the NEW and Q-D requirements.

Using the tables provided: column 1 lists the NEW (70,000 lbs.), column 5 gives the distance requirement to inhabited buildings 1650 feet and column 9 gives the distance requirement to public traffic routes 990 feet.

SCENARIO III

The M/V North Carolina carrying 20,000 of class/division 1.1 military explosives and 5,000 lbs. of class/division 1.2 wants to load an additional 10,000 lbs. of class/division 1.1. What are the IBD and PTR required distances?

In accordance with the additive approach the Coast Guard uses when determining the NEW, we will consider all the explosives on board the vessel and dock as class/division 1.1 for calculating the NEW and Q-D requirements.

Using the tables provided: column 1 list the NEW (35,000 lbs.), column 5 gives the distance requirement to inhabited buildings 1310 feet and column 9 gives the distance requirement to public traffic routes 785 feet.

SCENARIO IV

M/V SIRIUS, an MSC ship inbound with 1.2 million pounds class/division 1.1. wants to load 40,000 lbs of blasting powder (class/division 1.5).

In accordance with the additive approach the Coast Guard uses when determining the NEW, we will consider all the explosives on board the vessel and dock as class/division 1.1 for calculating the NEW and Q-D requirements.

In situations involving more than 500,000 lbs of explosives you have to calculate the Q-D requirements by using the formula described above. Also when calculating Q-D situations involving more than 250,000 lbs. of explosives K=50.

Basic Q-D formula for IBD distance: $D = KW^{1/3}$

In this scenario: K = 50
NEW = 1,240,000
W = 107.43 (cube root of 1,240,000)

D = 50 x l,240,000$^{1/3}$
D = 50 x 107.43
D = 5371.5

The minimum distance requirement to an Inhabited Building (IBD) is 5371.5 feet.

Basic Q-D formula for PTR distance: PTR = IBD x 0.60

In this scenario: PTR = 5371.5 x .60

PTR = 3222.9

The minimum distance requirement to a public traffic route (PTR) is 3222.9 feet.

FIGURE (6-1-1)

Hazard Division 1.1, Inhabited Building and Public Traffic Route Distances (See Notes)

Net Explosive Weight (NEW) (lbs)	Distance in Feet to Inhabited Building From:				Distance in Feet to Public Traffic Route From:			
	Earth-covered Magazine			Other PES	Earth-covered Magazine			Other PES
	Front	Side	Rear		Front	Side	Rear	
Col 1	Col 2[1,8]	Col 3[1,8]	Col 4[2,8]	Col 5[3]	Col 6[4,8]	Col 7[5,8]	Col 8[6,8]	Col 9[7]
1	500	250	250	1,250	300	150	150	750
2	500	250	250	1,250	300	150	150	750
5	500	250	250	1,250	300	150	150	750
10	500	250	250	1,250	300	150	150	750
20	500	250	250	1,250	300	150	150	750
30	500	250	250	1,250	300	150	150	750
40	500	250	250	1,250	300	150	150	750
50	500	250	250	1,250	300	150	150	750
100	500	250	250	1,250	300	150	150	750
150	500	250	250	1,250	300	150	150	750
200	700	250	250	1,250	420	150	150	750
250	700	250	250	1,250	420	150	150	750
300	700	250	250	1,250	420	150	150	750
350	700	250	250	1,250	420	150	150	750
400	700	250	250	1,250	420	150	150	750
450	700	250	250	1,250	420	150	150	750
500	1,250	1,250	1,250	1,250	750	750	750	750
600	1,250	1,250	1,250	1,250	750	750	750	750
700	1,250	1,250	1,250	1,250	750	750	750	750
800	1,250	1,250	1,250	1,250	750	750	750	750
900	1,250	1,250	1,250	1,250	750	750	750	750
1,000	1,250	1,250	1,250	1,250	750	750	750	750
1,500	1,250	1,250	1,250	1,250	750	750	750	750
2,000	1,250	1,250	1,250	1,250	750	750	750	750
3,000	1,250	1,250	1,250	1,250	750	750	750	750
4,000	1,250	1,250	1,250	1,250	750	750	750	750
5,000	1,250	1,250	1,250	1,250	750	750	750	750
6,000	1,250	1,250	1,250	1,250	750	750	750	750
7,000	1,250	1,250	1,250	1,250	750	750	750	750
8,000	1,250	1,250	1,250	1,250	750	750	750	750
9,000	1,250	1,250	1,250	1,250	750	750	750	750
10,000	1,250	1,250	1,250	1,250	750	750	750	750
15,000	1,250	1,250	1,250	1,250	750	750	750	750
20,000	1,250	1,250	1,250	1,250	750	750	750	750
25,000	1,250	1,250	1,250	1,250	750	750	750	750
30,000	1,250	1,250	1,250	1,250	750	750	750	750
35,000	1,250	1,250	1,250	1,310	750	750	750	785
40,000	1,250	1,250	1,250	1,370	750	750	750	820

FIGURE (6-1-1)

Hazard Division 1.1, Inhabited Building and Public Traffic Route Distances (See Notes)

Net Explosive Weight (NEW) (lbs)	Distance in Feet to Inhabited Building From:				Distance in Feet to Public Traffic Route From:			
	Earth-covered Magazine			Other PES	Earth-covered Magazine			Other PES
	Front	Side	Rear		Front	Side	Rear	
Col 1	Col 2[1,8]	Col 3[1,8]	Col 4[2,8]	Col 5[3]	Col 6[4,8]	Col 7[5,8]	Col 8[6,8]	Col 9[7]
45,000	1,250	1,250	1,250	1,425	750	750	750	855
50,000	1,290	1,290	1,250	1,475	775	775	750	885
55,000	1,330	1,330	1,250	1,520	800	800	750	910
60,000	1,370	1,370	1,250	1,565	820	820	750	940
65,000	1,405	1,405	1,250	1,610	845	845	750	965
70,000	1,440	1,440	1,250	1,650	865	865	750	990
75,000	1,475	1,475	1,250	1,685	885	885	750	1,010
80,000	1,510	1,510	1,250	1,725	905	905	750	1,035
85,000	1,540	1,540	1,250	1,760	925	925	750	1,055
90,000	1,570	1,570	1,250	1,795	940	940	750	1,075
95,000	1,595	1,595	1,250	1,825	960	960	750	1,095
100,000	1,625	1,625	1,250	1,855	975	975	750	1,115
110,000	1,740	1,740	1,290	1,960	1,045	1,045	770	1,175
120,000	1,855	1,855	1,415	2,065	1,110	1,110	850	1,240
125,000	1,910	1,910	1,480	2,115	1,165	1,165	890	1,270
130,000	1,965	1,965	1,545	2,165	1,180	1,180	925	1,300
140,000	2,070	2,070	1,675	2,255	1,245	1,245	1,005	1,355
150,000	2,175	2,175	1,805	2,350	1,305	1,305	1,085	1,410
160,000	2,280	2,280	1,935	2,435	1,370	1,370	1,160	1,460
170,000	2,385	2,385	2,070	2,520	1,430	1,430	1,240	1,515
175,000	2,435	2,435	2,135	2,565	1,460	1,460	1,280	1,540
180,000	2,485	2,485	2,200	2,605	1,490	1,490	1,320	1,565
190,000	2,585	2,585	2,335	2,690	1,550	1,550	1,400	1,615
200,000	2,680	2,680	2,470	2,770	1,610	1,610	1,480	1,660
225,000	2,920	2,920	2,810	2,965	1,750	1,750	1,685	1,780
250,000	3,150	3,150	3,150	3,150	1,890	1,890	1,890	1,890
275,000	3,250	3,250	3,250	3,250	1,950	1,950	1,950	1,950
300,000	3,345	3,345	3,345	3,345	2,005	2,005	2,005	2,005
325,000	3,440	3,440	3,440	3,440	2,065	2,065	2,065	2,065
350,000	3,525	3,525	3,525	3,525	2,115	2,115	2,115	2,115
375,000	3,605	3,605	3,605	3,605	2,165	2,165	2,165	2,165
400,000	3,685	3,685	3,685	3,685	2,210	2,210	2,210	2,210
425,000	3,760	3,760	3,760	3,760	2,250	2,250	2,250	2,250
450,000	3,830	3,830	3,830	3,830	2,300	2,300	2,300	2,300
475,000	3,900	3,900	3,900	3,900	2,340	2,340	2,340	2,340
500,000	3,970	3,970	3,970	3,970	2,380	2,380	2,380	2,380

FIGURE (6-1-2)
NOTES FOR USING QUANTITY & DISTANCE TABLES

1 Bases for Columns 2 and 3 distances:

1-45,000 lbs - debris hazard - lesser distances permitted if proved sufficient to limit hazardous debris to 1/600 ft^2. Formula $d = 35W^{1/3}$ (blast overpressure) may be used if fragments and debris are absent.

45,000-100,000 lbs - blast overpressure hazard. Computed by formula $d = 35W^{1/3}$.

100,000-250,000 lbs - blast overpressure hazard. Computed by formula $d = 0.3955W^{0.7227}$

250,000 lbs and above - blast overpressure hazard. Computed by formula $d = 50W^{1/3}$.

2 Bases for Column 4 distances:

1-100,000 lbs - debris hazard - lesser distances permitted if proved sufficient to limit hazardous debris to 1/600 ft^2. Formula $d = 25W^{1/3}$ (blast overpressure) may be used if fragments and debris are absent.

100,000-250,000 lbs - blast overpressure hazard. Computed by formula $d = .004125W^{1.0898}$.

250,000 lbs and above - blast overpressure hazard. Computed by formula $d = 50W^{1/3}$.

3 Bases for Column 5 distances:

1-30,000 lbs - fragments and debris hazard. Lesser distances permitted as follows: (a) thin-cased ammunition and bulk explosives with NEW to 100 lbs - 670 ft (see subparagraph E.2.c.(1) of Chapter 2). (b) Bare explosives in the open, distances computed by formula $d = 40W^{1/3}$. Distances other than 1,250 ft. to be used when required by Table 9-2.

30,000-100,000 lbs - blast overpressure hazard. Computed by formula $d = 40W^{1/3}$.

100,000-250,000 lbs - blast overpressure hazard. Computed by formula $d = 2.42W^{0.577}$.

250,000 lbs and above - blast overpressure hazard. Computed by formula $d = 50W^{1/3}$.

4 Column 6 distances have the same hazard bases and are equal to 60 percent of Column 2 distances.

5 Column 7 distances have the same hazard bases and are equal to 60 percent of Column 3 distances.

6 Column 8 distances have the same hazard bases and are equal to 60 percent of Column 4 distances.

7 Column 9 distances have the same hazard bases and are equal to 60 percent of Column 5 distances.

8 Distances for NEWs between 30,000 and 250,000 lbs apply only for earth-covered magazines that are 26 ft. wide and 60 ft. long, or larger. For smaller earth-covered magazines, use other PES distances of Columns 5 or 9.