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OIL SPILL CONTINGENCY PLAN

August 1983

Northern Marianas Islands

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Section 1

Introduction

Introduction

The CNMI Oil Spill Plan has been prepared by the CNMI Department of Public Health and Environmental Services, Division of Environmental Quality as part of its approved work program for FY 1983. The Plan covers the coastal locations of Saipan, Tinian and Rota only. Inland sites were not considered. The purpose of this plan is to provide information necessary to:

- understand the behavior and effect of oil in a marine environment;
- present methods and procedures to respond to oil spill situations;
- identify locations having higher risk of oil spills;
- designate important economic, natural and recreational resources for priority protection;
- document the event for the purposes of cost recovery, enforcement and plan updating.

The CNMI Plan has been developed primarily for the CNMI government audience, therefore considerable background information about has been provided from numerous sources. Information has been derived from Australian, Indonesian, European, Caribbean, and United States references to present a well-rounded approach thought to be most applicable to the CNMI situation.

The Plan has also been prepared to serve as the Local Contingency Plan for the Northern Marianas component of United States Region IX Oil Spill Contingency Plan. The United States Coast Guard has prepared similar up-to-date contingency plans for all other regions of the United States. Special effort has been made to make this plan consistent with United States policy as presented in the Region IX Plan, the National Contingency Plan, legislation and regulation.

Regional Plans identify a pre-designated On-Scene-Coordinator (OSC) who has overall responsiblity for oil spill response. The OSC is normally a ranking representative of the USCG for marine spills and the EPA for inland spills. As the nearest qualified representative of either agency is located in Honolulu and San Francisco, respectively, it has become the policy to develop a memorandum of understanding between the Federal government and in this case the CNMI. The MOU would specify a CNMI official as the pre-designated OSC and outline procedures for Federal coordination and access to the Federal cleanup fund.

The CNMI Plan has been developed under the assumption that such an MOU has been consumated. The specific responsibilities of the OSC and response team have been delineated in a manner believed to facilitate

coordination between the CNMI response team, a Federal response team if the situation requires it, and the Federal system of compensation and enforcement.

Procedures contained in the Region IX Plan for accessing Federal cleanup funds have been closely followed, however, the procedures were modified to provide for a CNMI official in the role of a the Federal OSC. Such procedures must be considered during the actual negotiations of the CNMI-Federal MOU.

Information about oil spill clean up methods provides a general explanation of the range of possible responses. In an actual oil spill event, the OSC must use best judgement to determine the most realistic and cost-effective methods on a case-by-case basis. Since it is not possible to predict actual circumstances of an oil spill, specific step-by-step procedures cannot be identified, although classifications and priorities of operations have been clearly reported.

In the CNMI, oil spills have been classified as minor, with cleanup activities usually completed within one day. Information contained in this plan is applicable to the minor spills. However, increased consideration is given to larger spills occuring at sea or nearshore which would overwhelm CNMI response capabilities. It is in such cases where direct Federal participation is warranted. Mobilization time for a major Federal response is estimated to be a minimum of 48 hours, with 72-96 hours perhaps more realistic. During the period between the discovery of the oil spill and arrival of Federal cleanup forces, the CNMI must be prepared to best deploy its limited response capability.

The Plan identifies and describes the organizational structure considered necessry for complete response to four phases of an oil spill event ranging from discovery to cost recovery. It is important that actual personnel be assigned to each role and that each person become thoroughly familiar with assigned duties and responsibilities. It may be desirable to assign collateral assignments which may be more realistic in minor spills. The personnel filling each role should periodically meet to discuss and amend the roles as necessary to best fit the circumstances. However, succesful response to a significant oil spill event depends upon each person's acceptance of full responsibility for assigned duties. Equally critical is the acceptance of the OSC as the person in
by the response team, and the CNMI government. It is further recommended that at least annually, the team undertake a full scale drill to practice for the real event.

Section 2

Update Procedures

who is this?

Update Procedures

The CNMI On-Scene-Coordinator has the overall responsibility for maintaining this contingency plan.

This plan should be reviewed on an annual basis, updated as new information develops and distributed to all recipients. If there have been no changes for a particular year, a negative report should be distributed. As new spills occur, reports of the incident should be distributed for inclusion in the plan immediately. Errata sheets should also be prepared and distributed as often as necessary.

The Plan has been organized for easy update. Each numbered page may be removed and a new page inserted in its place. To ensure a complete and current plan, each amendment should be recorded in the following form:

RECORD OF AMENDMENT

AMEND #	AMENDMENT DATE	POSTED BY	DATE POSTED

Section 3

Legal Authorities

Legal Authorities

CNMI LEGISLATION PERTAINING TO OIL SPILL CONTINGENCY PLANNING INCLUDES THE FOLLOWING:

Public Law 1-40, effective 10/9/79, "CNMI Disaster Relief Act of 1979"

Section (2)(a)(2), Findings and Intent states:

Emergency and disaster may include loss of life, human suffering, loss of income, and property damage resulting from typhoons, tornadoes, storms, floods, high waters, wind-driven waters, tidal waves, earthquakes, droughts, fires, and other catastrophies;

Section (2)(b)(2), (3) and (5) states the intent of the legislature is to:

Clarify and strengthen the roles of the Governor and the mayors in the prevention of, preparation for, and response to, and recovery from disasters;

Provide a disaster management system embodying all aspects of pre-disaster preparedness and post-disaster responses;

Authorize and provide for coordination of activities relating to disaster prevention, preparedness, response, and recovery by agencies and officers of the (CNMI), and similar U.S. intergovernmental and foreign activities in which the (CNMI) and its political subdivisions may participate.

Section (4), Definitions states:

Disaster means occurrence or imminent threat of a widespread or severe damage, injury, or loss of life or property resulting from any natural or man-made cause, including but not limited to ... oil spills, or other water contamination requiring emergency action to avert danger or damage ...

Section (6)(a) establishes the CNMI Disaster Control Office within the Department of Public Safety, supervised by a Disaster Control Officer.

Section (6)(c), (d), (e), (f)(2), (f)(6), (f)(8), (f)(9), (f)(10) and (f)(12) state:

(6)(c) The Disaster Control Officer shall take an integral part in the development and revision of local disaster plans prepared under (Section 7 of the Act)...

(6)(d) In preparing and revising the (CNMI) disaster plan, the Disaster Control Office shall seek the advice and assistance of local government, business, labor, industry, agriculture, civic and volunteer organizations, and community leaders...

(6)(e) The (CNMI) disaster plan, or any part therof, may be incorporated in regulations of the Governor or executive orders which have the force and effect of law.

(6)(f) The Disaster Control Office shall:

(6)(f)(2) Coordinate with appropriate government agencies to procure, and pre-position supplies, ... materials, and equipment;

(6)(f)(6) Establish and operate, or assist political subdivisions and their disaster agencies to establish and operate, training programs and programs of public information;

(6)(f)(8) Plan and make arrangements for the availability and use of any private facilities, services and property, and if in fact used, provide for payment for such use under terms and conditions agreed upon or under the provisions (of this Act) in the absence of such agreement;

(6)(f)(9) Establish a register of persons with types of training and skills important in emergency prevention, preparedness, response and recovery;

(6)(f)(10) Establish a register of mobile and construction equipment and temporary housing available for use in a disaster emergency;

(6)(f)(12) Cooperate with the United States Government and any public or private agency or entity in achieving any purpose of this Act in implementing programs for disaster prevention, preparation, response and recovery;

Public Law 1-44, effective 2/4/80, "Establishing the office of Civil Defense Coordinator ..."

Section (1) establishes the Office of the Civil Defense Coordinator within the Department of Public Safety.

Section (4) Purpose, states: It is hereby declared that it is the best interest of the people of the Commonwealth ... to provide a system of civil defense for the protection of life and property from ...natural disaster or other emergency and to establish procedures and plans to mobilize and utilize all available resources to respond to that emergency.

Section (8), Emergency Authority, states: The provisions of this Section shall be operative only during the existence of a state of emergency proclaimed by the President of the United States or the Governor of the (CNMI). The Civil Defense Coordinator shall have the same authority and ability to utilize federa and Commonwealth property, departments, facilities, agencies, personnel, immunity from suit and waiver of federal and Commonwealth Administrative Procedures Acts as may be so provided or delegated by the Administrator of the

Federal Civil Defense Administration by Title III, Sections 301-306, of the Federal Civil Defense of 1950, as amended, including but not limited to: preservation of life and property, for clearing debris and wreckage, and for making emergency repairs to and temporary replacement of ... transportation facilities or public facilities damaged or destroyed.

Public Law, effective 10/19/81, "Commonwealth Ports Authority Act"

Section (5) Powers of the Ports Authority states;

(5)(b) It shall have exclusive jurisdiction to plan, establish, develop, ... and regulate the ports ... to protect, police ...

(5)(e) The Authority shall have the power to adopt and enforce rules and regulations for the orderly, safe, and sanitary operation of its ports. Public safety officers of the Commonwealth shall have the power to make arrests when necessary to prevent or abate the commission of any offense against any rule or regulation of the Authority, against the laws of the Commonwealth when any such offense or threatened offense occurs upon any lands within ports operated by the authority.

Section (12) states: In case of any major public calamity, or whenever it is in the interest of aviation or shipping safety, or necessary to keep the ports operable by the Authority, the Board may determine that the public interest and necessity demand the immediate expenditure of funds to keep the ports facilities open to traffic or in a safe condiion, and thereupon to authorize the expenditure of such sums as may be needed without observation of the provisions requiring contracts, bids or notices...

Section (16) Penalties states: Any person who violates any provisions of this Chapter, or any valid rule or regulation promulgated under this Chapter, or who refuses or neglects to comply with any lawfull order given by the Executive Director or his delegate concerning the operation of the ports under control of the Authority, is punishable by a fine not to exceed $1,000 or by imprisonment not to exceed 3 months, or both, upon conviction by a court of competent jurisdiction.

Section (16)(a) states: Any person who violates any provision of this Chapter, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any permit, certificate, or operating authority issued by the Authority shall be subject to a civil fine not to exceed $1,000 for each violation. If such violation is a continuing one, each day such violation continues shall constitute a separate offense.

Public Law 3-23, effective 10/8/82, "Commonwealth Environmental Protection Act"

Section (2)(a) Policy and Purpose states: (... it is the policy of the

Commonwealth --)

(2)(a)(1) to affirmatively protect the right of each person to a clean and healthful public environment, as guaranteed by Section 9 of Article I of the Constitution;

(2)(a)(2) to establish and enforce environmental standards to protect and preserve the marine resources of the Commonwealth ...;

(2)(a)(4) to afford special consideration to the environmental quality of places and things of cultural and historic significance to contribute to the protection and preservation thereof, in implementation of Section 3 of Article XIV of the Constitution;

(2)(a)(5) to maintain optimal levels of air, land, and water quality in order to protect and preserve the public health and general safety;

(2)(a)(7) to preserve, protect, and improve the aesthetic quality of the land, water, and natural resources of the Commonwealth in order to promote the beauty of the Commonwealth for the enjoyment of its residents and visitors;

Section (b) states It is the purpose of this Act to implement the policies set forth ... through ... establishment of a sound legal basis for the development and implementation of environmental plans and programs, ... relating to the preservation, protection, maintenance, and enhançement of the quality of the environment of the Commonwealth.

Section (8)(c) Environmental Programs states: The Chief shall develop and administer programs, including where appropriate a system of standards, permits, or prohibitions, to prevent or regulate the public health or welfare from any significant adverse effect of the activities:

(8)(c)(1) discharge of pollutants anywhere within the jurisdiction (of the Commonwealth);

(8)(c)(2) transportation, storage, use, and disposal of solid wastes ... and other hazardous substances;

Section (9) Enforcement, Remedies, and Penalties states:

(9)(a) The Chief, pursuant to regulations issued by the Director, shall have the power to issue any necessary order to enforce the provisions of this Act, any regulation issued under this Act, and any term of a permit granted pursuant to this Act. Such order may require that any person violating such provision or term cease and desist from such violation immediately or within a stated period of time, and may require that such person take such mitigating measures as may be necessary to reverse or reduce any significant adverse effect of such violation. Such order may apply to any person in addition to the violator when necessary to protect public health or welfare.

(9)(b) At the request of the Chief, transmitted through and with the approval of the Director, the Attorney General shall institute a civil action in the Commonwealth Trial Court for a temporary restraining order, injunction, or other appropriate remedy to enforce any provision of this Act, any regulation or order issued under this Act, or any term of a permit granted pursuant to this Act.

(9)(c) If any person fails to comply with any provision of this Act, or any regulation or order issued under this Act, or any term of a permit granted pursuant to this Act, after notice of failure and the expiration of any reasonable period allowed for corrective action, the person shall be liable for a civil penalty of not more than $1,000 for each day of the continuance of such failure. A person shall be liable for an additional penalty for any amount expended by any agency of the Commonwealth in taking any necessary action to reverse or reduce any significant adverse effect of the violation when the person is unwilling or unable to do so...

(9)(d) Any person who knowingly and willfully (1) violates any provision of this Act, or any regulation or order issued under this Act, or any term of a permit granted pursuant to this Act ... shall, upon conviction, be punished by a fine of not more than $50,000, or by imprisonment for not more than one year, or both. Each day that a violation ... continues ... shall constitute a separate violation.

(9)(e) Whenever a corporation or other entity is subject to prosecution under subsection ((d) of his section), any officer or agent of such corporation or entity who knowingly and willfully authorized, ordered, or carried out the proscribed activity shall be subject to the same fines or imprisonment, or both, as provided for under such subsection.

Section (11) Intergovernmental Cooperation states: In carrying out his duties under this Act, the Chief may consult with any other appropriate governmental entity, international organization, or regional organization. The Chief may enter into cooperative agreements with any entity or organization, and may apply for, receive, and administer any grant related to his duties under this Act, eithr directly, or through the Director or the Governor, or through any other person designated by the Governor...

Public Law 3-42, effective 1/7/83, " (CNMI) Nuclear and Chemical Free Zone Act"

Section (2) Statement of purpose and policy states:

(2)(c) The purpose of this Act is to ... ban the dumping of nuclear and chemical wastes into the ocean and seabed surrounding the Commonwealth.

Section (3) Definitions states:

(3)(a) Chemical wastes means ...any other chemical which is toxic to the animal or plant life of the ocean as identified by any federal law or regulation which is applicable on its face to the Commonwealth or by agreement between the Commonwealth and the United States Environmental Protection Agency.

Section (5) Prohibited Acts states:

(5)(b) It is unlawful for any person to dump crude oil, fuel oil, heavy diesel oil, lubrication oil, hydraulic fluid, or any mixture or any petroleum product containg any of these in the ... zone established by ... this Act.

Section (6) Enforcement states:

(6)(a) Primary responsibility for enforcement of this Act shall be assumed by the Department of Natural Resources and the Coastal Resources Management Office.

(6)(b) Any officer who is authorized by the Department of Natural Resources and the Coastal Reources Management Office to enforce the provisions of this Act may:

(6)(b)(1) arrest any person, if there exists probable cause to believe that such person has committed an act prohibited by Section 5 of this Act;

(6)(b)(2) board, search or inspect any vessel or aircraft which may be found within the Exclusive Economic Zone upon probable cause that such vessel or aircraft may have on board any substance proscribed for dumping by this Act;

(6)(b)(3) seize any vessel or aircraft used or employed in, or when there exists probable cause to believe that such vessel or aircraft was used or employed in violation of any provision of this Act;

(6)(b)(4) seize any other evidence related to any violation of any provision of this Act;

(6)(b)(5) execute any warrant or other process issued by any court of competent jurisdiction.

Section (7) Criminal Penalties states: In addition to the civil and criminal penalties provided in the Marine Sovereignty Act of 1980 (P.L. 2-7), a person is guilty of a felony offense if he knowingly and willfully commits any act prohibited by this Act or knowingly or willfully aids, abets or assists another in such commission. Conviction of any violation of this Act shall be punished by a fine of not more than one million dollars, imprisonment of not more than ten years, or both.

Section (8) Civil Penalties states: In addition to the civil and

criminal penalties provided in the Marine Sovereignty Act of 1980, any person who violates any provision of this Act may be fined in an amount of not more than one million dollars. Any vessel or aircraft used in connection with a violation of this Act is subject to forfeiture to the government of the Commonwealth. The crew and personnel of such vessel or aircraft may be detained and summarily deported if criminal charges are not anticipated.

Public Law ___, effective _____ "Coastal Resources Management Act of 1983"

Section (2) Policy states: It is the policy of the (CNMI) to:

(2)(a)(4) Plan for and manage any use or activity with the potential for causing a direct and significant impact on coastal resources. Significant adverse impacts shall be mitigated to the extent practicable;

(2)(a)(6) Provide for adequate consideration of the national interest, including that involved in planning for, and in the siting of, facilities ... which are necessary to meet requirements which are other than local in nature;

(2)(a)(8) Mitigate to the extent practicable, adverse environmental impacts, including those on aquifers, beaches, estuaries and other coastal resources while developing an efficient and safe transportation system;

(2)(a)(10) Maintain or improve coastal water quality through control of erosion, sedimentation, runoff, siltation, sewage and other discharges;

(2)(a)(13) Require compliance with all local air and water quality laws and regulations and any applicable federal air and water quality standards;

(2)(a)(15) Manage ecologically significant resource areas for their contribution to marine productivity and value as wildlife habitats, and preserve the function and integrity of reefs, marine meadows, salt ponds, mangroves and other significant natural areas;

Section (4) CRM Office, Powers, Functions and Duties states: (CRM) shall have the following:

(4)(a) to coordinate the planning and implementation of the coastal resources management policies by the Commonwealth government;

Section (12) Penalties states:

(12)(a) Any person who materially violates any provision of this Act or any regulations or any order issued hereunder, shall be subject to a civil fine not to exceed $10,000 per day for each day the violation occurs.

(12)(c). In addition to the foregoing and in order to deter further violations of the provisions of this Act or regulations issued hereunder, the Attorney General may maintain an action for exemplary damages, the amount of which is left to the discretion of the court, against any person who knowingly violates any provision of these regulations.

FEDERAL LEGISLATION PERTAINING TO OIL SPILL CONTINGENCY PLANNING INCLUDES THE FOLLOWING:

Federal statutes, regulations and administrative orders relative to pollution control are summarized in a tabular summary. Responsible Federal agencies are also shown.

Comprehensive Environmental Response, Compensation, and Liability Act, (42 USC 96701): EPA, FEMA, USCG, DOI, DOL, DHHS, and others.

Federal Water Pollution Control Act, as amended (33 USC 1251 et seq.): DPA, USCG, COE, Justice.

Safe Drinking Water Act amendment to the Public Health Service Act (42 USC 201): EPA.

Refuse Act of 1899 (33 USC 407;411) (aka Rivers and Harbors Act of 1899): COE, USCG, Customs, Justice.

Toxic Substances Control Act (42 USC 2601): EPA.

Resource Conservation and Recovery Act, 1976 (42 USC 6901): EPA.

Marine Protection, Research and Sanctuaries Act of 1976 (33 USC 1401 et seq.): EPA.

Hazardous Materials Transportation Act of 1974 (49 USC 1801 et seq): EPA.

Ports and Waterways Safety Act, as amended (33 USC 1221 et seq.): USCG.

Federal Insecticide, Fungicide and Rodenticide Act of 1972 (7 USC 121 et. seq.): EPA.

Deepwater Ports Act of 1974 (33 USC 1501 et. seq.): DOT, DOI.

Outer Continental Shelf Lands Act, as amended (43 USC 1331): DOT, DOI.

Oil Pollution Act of 1961, as amended (33 USC 1001-1001.5): USCG, Customs, COE, State.

Endangered Species Act of 1973, as amended (16 USC 1531): FWS, NOAA.

Intervention on the High Seas Act (33 USC 1471-1487): USCG.

Related federal statutes, not specific to oil and hazardous materials control, but, applicable to release prevention and cleanup in certain cases include:

Disaster Relief Act of 1974: FEMA, all federal agencies.

U.S. Navy Ship Salvage Authority: U.S. Navy.

The Migratory Bird Treaty Act (16 USC 701-718): FWS.

STATUS OF INTERNATIONAL CONVENTIONS DEALING WITH SHIP-INDUCED POLLUTION:

(NOTE: The most recent source of this information is dated September 1978, therefore the status reported hereunder may have changed unless otherwise noted.)

The International Convention for the Prevention of Pollution of the Sea by Oil 1954 as amended in 1962

- 55 countries have ratified or otherwise accepted this Convention which has been in force since May 1967. The original Convention came into force in May 1958.

- The 1969 amendments to this Convention have been accepted by 38 countries and came into force on January 20, 1978.

- The Convention contains measures for the control of operational discharges from ships through generally prohibiting all discharges within 50 miles from nearest land, and by controlling the volume of discharge beyond that area. To give a measure of control in case of collision or grounding the maximum size of tanks of a tanker is limited.

The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969

- 31 countries have ratified or otherwise accepted this Convention which has been in force since June 1975.

- This Convention deals with the rights of a coastal state to intervene and take measures to protect its coastal and other related interests where a maritime causalty involving oil occurs on the high seas, which may be reasonably expected to result in grave and imminent danger to those interests.

The International Convention on Civil Liability for Oil Pollution Damage 1969

- 32 countries have ratified or otherwise accepted this Convention, which has been in force since June 19, 1975.

- This Convention aims at ensuring that adequate compensation (through compulsory insurance) is available to persons who suffer oil pollution damage resulting from maritime casualties involving ships carrying oil as cargo. The liability placed on the shipowner is strict, but limited except in cases where the owner is actually at fault.

The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971

- 11 countries have ratified or otherwise accepted this Convention. This convention is not yet in force. Although sufficient ratifications have been received, the total annual tonnage of oil received by these countries is below the required 750 million tons.

- This Convention augments the Civil Liability Convention as a supplementary source of compensation in those cases where either (a) there was no compensation due from the owner of the ship involved in the casualty or (b) the compensation due from that owner was insufficient to cover the compensation required. The fund when in force will be funded from levy placed on oil received in shore terminals after being transported by sea.

The International Convention for the Prevention of Pollution by Ships 1973

- 2 countries have ratified or otherwise accepted this Convention which is not yet in force as there are many technical difficulties to overcome. The Convention requires the acceptance by 15 states representing not less than 50% of the gross tonnage of world merchant ships.

- This Convention will eventually replace the 1954 Convention for the Prevention of Pollution of the Sea by Oil. The main objective of the Convention is to eliminate pollution of the sea by oil and other harmful substances which may be discharged operationally, and to minimize the accidental discharge of such substances. It goes well beyond the present Convention as it also covers ship construction, equipment, provides for regular surveys and certification as to compliance with the requirements of the Convention.

(NOTE: the source of the following two paragraphs is from a USCG letter dated March 18, 1981.)

The Conference on Tanker Safety and Pollution Prevention was held in London in February 1978, under the auspices of the Intergovernmental Maritime Consultative Organization (IMCO). As a result of that conference, new tanker safety requirements were adopted in Protocols to the 1974 Safety of Life at Sea Convention (SOLAS) and the 1973 Marine Pollution Convention (MARPOL). The SOLAS Protocol adopted requirements for improved steefing gear systems and procedures, radars, collision avoidance aids, inert gas systems, port state inspections, and flag state responsibilities. The MARPOL Protocol

added requirements for the construction or modification of tankers in relation to segregated ballast tanks and crude oil washing systems. These improvements were largely preventative measures, designed to reduce the collision or other casualty, and to eliminate the discharge of oil-contaminated water into the marine environment during normal ship operations.

The SOLAS Protocol is scheduled to enter into force in the United States on May 1, 1981. The MARPOL Protocol is not in force at this time, but many of the recommendations contained therein have been adopted as United States regulatory requirements. Thes new standards are reflected in part in the latest amendments to regulations contained in 33 CFR Part 157 (concerning segregated ballast, crude oil washing systems, vessel operations, tank vessel inspections, dedicated clean ballast tanks), and 33 CFR Part 164 (navigational safety regulations, steering gear, dual radar).

Section 4

Federal Responsibilities and Role

Federal Responsibility and Role

The CNMI Oil Spill Contingency Plan is organized to be consistent with the Federal Region IX Oil Spill Contingency Plan. This section provides an overview of the Federal planning and response organization.

Federal Policy

The Congress has declared that it is the policy of the United States that there should be no discharge of oil into or upon the waters of the United States, the adjoining shorelines or into or upon the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States. Congress further intended that removal or remedial action or other response measures consistent with the National Contingency Plan whenever any pollutant or containment which may present an imminent and substantial danger to the public health or welfare is released or threatens to be released into the environment.

Federal policy has been extended by the Intervention on the High Seas Act to include taking action on the high seas when the Commandant of the Coast Guard declares a grave and imminent danger exists to the coastline or related interest of the U.S. from pollution or threat of pollution.

In accordance with Section 311(d) of the Act, whenever a marine disaster in or upon the navigable waters of the United States has created a substantial threat of a pollution hazard to the public health or welfare, because of a discharge or an imminent discharge of large quantities of oil from a vessel, the United States may: (a) coordinate and direct all public and private efforts directed at the removal or elimination of such threat; and (b) summarily remove and, if necessary, destroy such vessel by whatever means are available without regard to any provisions of law governing the employment of personnel or the expenditure of appropriated funds. This authority has been delegated under Executive Order 11735 to the Administrator of the EPA (for inland spills) and the Secretary of the Department in which the Coast Guard is operating, in an and for the waters for which each has reponsibility to furnish or provide the OSC under the Region IX Plan.

In addition to any other actions taken by the CNMI or other governments, when the Secretary of the Department in which the Coast guard is operating determines there is an imminent and substantial threat to the public health and welfare because of an actual or threatened discharge of oil into or upon the waters of the United States from any onshore or offshore facility, he may require, through the Attorney General, the District Attorney General secure the relief necessary to abate the threat.

Federal Responsibility

To implement Federal policy, Federal agencies have responsibilities, established by statute, to respond to an oil discharge. Section __ below, outlines the general responsibilities of each agency.

All Federal agencies are responsible for minimizing the occurrence of discharges and for developing the capability to respond promptly in cases of discharges from facilities they operate or supervise, and for making resources available for regional spill response operation. Participating Federal agencies have the following additional responsibilities: to lead all Federal agencies in developing programs to minimize environmental damage from pollution incidents; to develop the capability for rapid coordinated response to any pollution incidents; to provide representatives to the RRT; to advise the RRT and the OSC; to keep the RRT informed of changes in the availability of resources affecting the operation of the Regional Plan.

Spill Response Activity and Coordination - General

For pollution response activities, Federal On-Scene-Coordination is accomplished through a single pre-designated agent, the OSC. The OSC reports to and receives advice from an RRT. Generally, the OSC for the coastal zone is the U.S. Coast Guard and for the inland waters from the EPA. The U.S. Department of Defense will furnish OSC with respect to discharges from DOD facilities.

Regional Response Team

The RRT is comprised of representatives of the Federal and State agencies. Industry and special interest organizations are granted observer status upon request. Observer status places the named organization on the mailing list of RRT activities and minutes. Meetings of the RRT are open to the public. The full participation of high level representation from the CNMI is desired. The RRT serves as the regional body for planning and preparedness actions prior to a pollution incident and for coordination and advice during a pollution incident; the representatives of EPA and USCG act as co-chairman of the RRT. Each Federal participating agency designates one member and at least one alternate to the RRT. When the RRT is activated for a pollution incident, the chairman shall be the EPA or USCG representative, depending upon the are in which the response is taking place.

RRT Functions and Responsibilities

1. The Chairman ensures that the provisions of the regional and local contingency plans are adequate to provide the OSC with appropriate technical and professional assistance from the participating agencies commesurate with an agency's resources, capabilities and responsibilities within the Region. During a pollution emergency the memebers of the RRT shall insure that the resources of their respective agencies are made available to the OSC as agreed to and specified in the Regional and local contingency plans.

2. The RRT designates representatives of participating agencies to work with the OSCs to develop local plans and to plan for the use of agency resources located within the OSC's area of responsibility which do not require RRT involvement.

3. When not activated for a pollution incident, the RRT serves as a standing committee to recommend needed policy changes in the regional response organization, to revise the Regional plan as needed and to evaluate the preparedness of the agencies and effectiveness of local plans for coping with pollution emergencies. The RRT:

a. Maintains a continuing review of regional and local pollution emergency reponse operations and equipment readiness to insure adequacy of regional and local planning, and coordination for combating discharges of oil. RRT also recommends revision of the National Contingency Plan to EPA via the NRT on the basis of observations of response operations.

b. Reviews the functioning of the OSC to insure that local plans are developed and fully coodinated among involved agencies.

c. Develops procedures to promote the coordination of Federal, state and local governments and private agencies to responsd to pollution incidents.

d. Considers necessary changes in policy on the basis of continuing evaluation of regional response actions taken in combating discharges of oil.

e. Maintains a readiness posture to respond to a nationally significant discharge of oil.

f. Maintains a continuing surveillance of incoming reports from all OSC's and activates the RRT when appropriate.

4. The RRT shall act as an emergency response team to be activated in the event of a discharge involving oil which when activated during a pollution response, agency representatives will meet and:

a. Monitor and evaluate reports from the OSC insuring their completeness. The RRT will advise the OSC on the duration and extent of the Federal response and may recommend specific courses of action in combating the discharge for consideration by the OSC.

b. Request other Federal, State, local government or private agencies to consider taking action under their existing authorities to provide resources necessary for combating a discharge or deployement of personnel to monitor response operations.

c. Assist and coordinate with the OSC in formulating public information releases and for information transfer between the OSC and Washington DC headquarters of the agencies concerned, to as to

minimize or prevent dissemination of spurious and incomplete information.

d. Advise the regional head of the agency providing the OSC if a shift of on-scene-coordination from the pre-designated OSC to another OSC is indicated by the circumstances or progress of a pollution discharge.

General Agency Responsibilities

1. Department of Agriculture (Forest Service)

The USDA provides expertise in the area of forest and wilderness management. USDA Forest Service personnel frequently act as OSC until relieved by the pre-designated OSC.

2. Department of Commerce (NOAA, NMFS, NWS, NOS)

The DOC, through NOAA, provides support with respect to living marine resources; meterological, hydrologic, ice and oceanographic data; tide and current information; charts and maps; and satellite imagery.

3. Department of Defense (USA, USN, USA-COE, USAF, USMC)

DOD, consistent with its operational requirements may provide assistance in critical pollution discharges and in the mantenance of navigation channels, salvage, removal of navigation obstructions, and in certain cases cleaning and control of major oil spills.

4. Department of Energy

DOE has responsibility for certain hazardous waste incidents

5. Department of Health and Human Services (CDC NIOSH)

DHHS is responsible for providing expert advice and assistance relative to those discharges that constitute, or may constitute, a threat to public health and safety.

6. Federal Emergency Management Agency

FEMA maintains an awareness of pollution emergencies and evaluates any request for a major disaster declaraton received from a Governor pursuant to PL 93-288. During a Presidentially declared emergency, FEMA will coordinate and direct the Federal response, including relocation, evacuation and housing.

7. Department of Interior (USFWS, USGS/MMS, BLM, NPS, BIA)

DOI supplies expertise in the areas of oil drilling, producing, handling, oil pipeline transport, land, fish and wildlife including migratory birds, marine mammals and endangered species. Liasion with the CNMI and other territores is accomplished by DOI.

8. Department of Justice (U.S. Attorney, Torts)

DOJ can supply expert legal advice to deal with complicated judicial questions arising from discharges and Federal agency responses. DOJ will also assist by issuing orders and by providing litigation.

9. Department of Labor (OSHA)

DOL in cooperation with the Department of Health and Human Services provids advice and assistance concerning occupational health guidelines.

10. Department of Transportation (USCG, MARAD)

DOT provides expertise regarding all modes of transporting oil and hazardous substances. Through the USCG, DOT suppplies support and expertise in the domestic/international fields port safety and security, marine law enforcement, navigation and construction, the manning, operation, and safety of vessels and marine facilities. Additionally, the Coast Guard maintains continuously manned facilities that are capable of command, control and surveillance for the oil dischargges occurring on the waters of the U.S. or the high seas. The USCG is responsible for co-chairing the RRT and for implementing, developing and revising, as necessary, the Regional and local plans.

11. Department of State

State will provide leadership in developing joint international contingency plans. It will also provide assistance in coordination when a pollution discharge transects international boundaries or involves foreign flag vessels.

12. Environmental Protection Agency

EPA provides expertise regarding environmental effects of pollution incidents and environmental pollution control techniques, including assessment of damages. EPA also advices the RRT and OSC in the degree of hazard a particular discharge poses to the public health and safety, and coordinate scientific efforts in support of the RRT in inland sectors. EPA is responsible for co-chairing the RRT and for local plans. EPA will coordinate with USCG regarding pollution control and protection of the environment in the preparation of Regional and Local Plans.

Section 5

Oil Characteristics

Oil Characteristics/Toxicity/Classes

Properties of Oils

Although oil is often referred to as though it is a uniform substance, it is in reality a complex mixture of mainly hydrocarbon components with differing physical, chemical and bilogical properties. The basic product, as obtained from geological strata, is termed crude oil. From this a wide variety of other products are derived during the refining process. In order of increasing density (specific gravity) the main ones can be classed as gases, gasoline, kerosene, fuel oils, lubricating oils, residual fuel oils, asphalt and paraffin. The physical and chemical characteristics of these products differ enormously, to some extent dependent upon the crude from which they are derived.

Oil Spill Classes

Size classes of discharges - The following classifications are provided as guidance for the OSC and serve as the criteria for the actions delineated in Section _____. They are not meant to imply associated degrees of hazard to public health or welfare, nor a measure of public environmental damage. Any discharge that poses a substantial threat to the public health or welfare, or results in critical public concern shall be classed as a major discharge regardless of the following quantitative measures.

1. Minor Discharge means a discharge to coastal waters of less than 10,000 gallons of oil.

2. Medium discharge means a discharge of 10,000 gallons to 100,000 gallons of oil to the coastal waters.

3. Major discharge means a discharge of more than 100,000 gallons of of oil to the coastal waters, or a discharge which poses a substantial threat to the public health or welfare, or results in critical public concern.

Source: Guam Oil Spill Plan (COMNAVMAR Section)

Descriptive terminology for oil spill sitings

Mousse: A water in oil emulsion formed when water is mixed with oil by some agitation process such as wave action. This form of oil is more readily formed by heavier oils than lighter oils. If a mousse is formed it can range in color from light brown to rust and dark brown. The color is dependent on the type of oil, the amount weathering it has undergone, and the presence of surface active agents.

Pancakes: are generally seen as isolated patches of weathered oil. They are roughly round or oblique, giving rise to their name, and can range in size from about 6cm to a few kilometers in radius.

Sheen: The name ascribed to oil that is detectable by a dampened or slick sea surface. Sheen can range from being visible only by the slick it forms, to having a rainbow or gray color associated with it.

Slick: A smooth sea surface are resulting from suppression of small capillary waves by oil.

Streamers: Lines of oil, of any form, aligned in windrows.

Tarballs: A formation of 'globules of oil' occurring when weathered oil undergoes a series of physical processes that break up larger patches of oil into compact semi-solid or solid masses ranging from .5mm to 15 cm in diameter.

Weathering: Changes in the chemical and physical properties of any oil through a series of natural processes.

Windrows: Parallel bands of oil and floating material on the water surface with the long axis aligned to the wind direction.

Wind slicks: Patches of calm sea surface. Caused by localized areas of wind shear where wind conditions change so rapidly that capillary waves do not have time to develop. Wind slicks do not concentrate material on the water surface as do windrows. Wind slicks may be confused with an oil slick.

Source: An Approach to Observing Oil at Sea, in, Proceedings 1983 Oil Spill Conference.

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OIL FILM DESCRIPTIONS AS RELATED TO MAGNITUDE

STANDARD TERM	APPEARANCE	GALLONS OF OIL PER SQUARE MILE
barely visible	barely visible under most favorable conditions	25
Silvery	visible or a silvery sheen on water surface	50
Slightly colored	first trace of color may be observed	100
Brightly colored	bright bands of color are visible	200
Dull	colors begin to turn dull brown	666
Dark	much darker brown	1,332

Note: Each one-inch thickness of oil equals 5.61 gallons per square yard or 17,378,709 gallons per square mile. Source: Guam Oil Spill Plan

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OIL COVERAGE

COVERAGE	PERCENTAGE	ABBREVIATION	VISUAL CUE
very light	1-10%	VL	surface coverage of oil is much less than visible water surface
light	11-30%	LT	surface coverage of oil is less than visible water surface
Moderate	31-60%	MD	surface coverage is equally oil and water
heavy	61-100%	HV	surface coverage of oil is greater than visible water surface

Source: An Approach to Observing Oil at Sea, in, Proceedings 1983 Oil Spill Conference.

Characteristics of spilled oil:

1. Specific Gravity
2. Viscosity
3. Pour point
4. volatility (flashpoint)
5. relative toxicity

Source: Region IX Oil and Hazardous Substances Pollution Contingency Plan

OIL COMPOSITION BY MOLECULAR TYPE	Percent
Paraffin hydrocarbons (alkanes)	30
Napthene hydorcarbons (cycloalkanes)	50
Aromatic hydrocarbons	15
Nitrogen, sulfur, and oxygen-containing compounds (NSO).	5

OIL COMPOSITION BY MOLECULAR SIZE (NUMBER OF CARBON ATOMS PER MOLECULE)

	Percent
Gasoline (5-10)	30
Kerosene (10-12)	10
Light Distillate oil (12-20)	15
Heavy distillate oil (20-40)	25
Residual oil (more than 40)	20

Source: CRM Oil Transshipment Report (March 1981)

CHARACTERISTIC IMPACTS OF OIL POLLUTION ON MARINE LIFE

1. Coating and asphyxiation (example: barnacles and other intertidal organisms);
2. Poisoning through direct contact or ingestion (example: ingestion of oil by preening birds, contact poisoning of vascular plants);
3. Exposure to water-soluble toxic petroleum components (example: sibtidal fishes and invertebrates);
4. Destruction of more sensitive juvenile forms (example: fish eggs and larvae); and,
5. Disruption of body insulation of warm blooded animals (example: diving birds).

Harmful indirect effects of oil pollution may include:

1. Destruction of food sources;
2. Synergistic effects that reduce resistance to other stresses;
3. Incorporation of carcinogenic and potentially mutagenic chemicals;
4. Reduction of reproductive success;
5. Disruption of chemical clues essential to survival, reproduction and breeding; and
5. Reduction of life support habitat.

Source: CRM Oil transhipment Report March 1981.

Estimated typical toxicity ranges (ppm) for various substances

organism	SAD*	#2Fuel oil/ kerosene	fresh crude	weathered crude
Flora	10-100	50-100	10(4)-10(5)	coating more significant than toxicity
Finfish	5-50	25-250	"	
Larvae	.1-1	.5-5	10(2)-10(3)	
Pelagic crustaceans	1-10	5-50	10(3)-10(4)	
Gastropods	10-100	50-500	10(4)-10(5)	
Bivalves	5-50	25-250	10(4)-10(5)	
Benthic crustaceans	1-10	5-50	10(3)-10(4)	
other benthic invertebrates	1-10	5-50	"	

* Soluable aromatic derivatives (aromatics and napthenoaromatics).

Source: Freeman, Coastal Zone Pollution by Oil and other Contaminants

SPILL CAUSES

A. Accidental Spills:

Accidental spills range from small spills during tanker loading and unloading operations to major disasters. Not all spills are from oil tankers. Most ships run on diesel or fuel oil and may have substantial bunkering capacities. Of world shipping only about one ship in ten is an oil tanker. It has been estimated that non-tankers account for 10% of oil entering the oceans.

B. Human Error:

About half of known spills occur during bunkering operations. Others result from bilge or ballast discharge, during deck washing or transfer operations. These spills are almost always caused by failure to turn off valves, pipes incorrectly fitted or tanks overfilled through error or negligence.

other — old underground oil tanks.

C. Equipment Failure:

Many spills, particularly large ones are blamed on equipment failure and structural damage. Comprehensive precautions are taken by the oil industry to prevent accidents through equipment failure and defective equipment, by fail-safe instrumentation, expert maintenance and thorough testing and inspection. This particularly applies to shore-based refineries and offshore rigs.

Almost all spills result from human error, or equipment failure.

Source: adopted from Oil Spills: Prevention and Control of Oil Pollution in the Marine Environment, Parliament of the Commonwealth of Australia.

SPILL BEHAVIOR

Oil tends to mix with sediments due to water turbidity. Oil mixed with coastal sediments may cause erosion by carrying the sediments out to sea. Oil mixed with sediments of turbid water may sink into the water column, or to the bottom.

When petroleum oils are spilled to to the sea, a number of mechanisms come into play:

Spreading: The first observable phenomenon following a spill is the tendency of the oil to spread into a slick over the water surface. Exceptions are certain crude and heavy residual fuel oils which have a high specific gravity causing them to solidify or sink. The horizontal spreading of oil over the water surface will occur even in the absence of wind and water currents and is caused by the force of gravity and the surface tension of water which is generally greater than that of the floating oil mass.

The importance of oil slick spreading has long been recognized. Not only does the process control the extent of the contamination area but it influences the rate of weathering processes such as evaporation, dissolution, photo-oxidation, and biodegradation that are involved in the ultimate fate of oil.

Oil spreads initially by the force of gravity, counterbalanced by inertial forces first and then viscous forces. As the slick becomes thin enough, the surface tensions at the oil-air and oil-water interfaces become the dominant driving forces in overcoming the retarding viscous forces. This continues until the slick ceases to spread. As a general rule, most crude oils will spread to a thickness of approximately 3mm in one hour and to approximately 0.3 mm in ten hours and will continue until the oil forms a virtual monomolecular layer (approximately 0.5 micrometers thick) on the sea only discernable as an area where the surface capillary waves are damped and giving the appearance of a slightly silvery sheen. When such a situation is reached natural dissipation of the oil is rapid. In turbulent seas wind and wave action tends to dominate with the slick

elongating parallel to the prevailing wind direction.

Movement: Oil on the surface of the sea moves under the influence of wind and current. The effect of current alone is direct, that is the surface slick will move in te same direction and at the same velocity as the surface water. Wind alone moves oil at about 3% of its own velocity, thus a wind speed of 60km/h will move oil downwind at 2km/h. A windspeed in excess of about 16km/k will also tend to break a slick up into streaks or windrows. When both wind and current are significant their effects are additive with the resulting movement being a vector of the two components. This situation is often complicated by local variations in wind and currents. While tidal currents can be an important consideration when predicting the movement of oil near shore their cyclic and generally self-cancelling nature means that only wind and residual currents are ususally significant for long range predictions.

Evaporation: Evaporation is the conversion of a liquid to a vapor. Because evaporation can account for the loss of up to 60% of a spilled light crude oil, evaporation is an extremely important process affecting the lifetime of the spill and the extent to which on/offshore resources may be impacted.

The rate of evaporation is assumed to be a function of six key physical parameters: type of petroleum, spill area, wind speed, vapor pressure, slick thickness, and temperature. The spill area is closely correlated with the evaporation and spreading process. As slicks spread, lighter fractions are evaporated rapidly, resulting in changes in oil composition and the physical-chemical characteristics of the oil, which in turn affect the spreading rate.

Most crude oils spilled in temperate waters will lose up to 40% of their volume in the first 24 hours, whereas with residual fuel oils little evaporative loss will occur even after 40 hours (approximately 2% for a heavy fuel oil at 74 degrees F). At the other extreme, light refined products such as gasoline, kerosine and gas oil will evaporate almost competely within a relatively short time. In such cases, cleanup may not be necessary, although other hazards are created. Gasoline evaporates at about 50% of its original volume within 7-8 minutes at 68 degrees F creating a considerable fire hazard since the ignition potential in the surrounding atmosphere becomes dangerously high.

Dissolution: Dissolution is a process in which the soluble hydrocarbons in oil dissolve in the water. Understanding the dissolution rate of hydrocarbons in water is useful in prediciting both weathering pathways and possible biological harm. There is evidence that the hydrocarbon compounds which are most toxic to marine organisms, namely the aromatics and low molecular weight alkanes, are also those which dissolve most readily from a slick. These hydrocarbons tend to evaporate at a much greater rate than they dissolve, removing the most volatile components before they can dissolve and enter the water column. However, it is important for oil

spill impact assessment to calculate the remaining concentration of hydrocarbons in the water column in order to determine toxicity potential.

The rate of dissolution is considered to be a function of type of petroleum, alkalinity of water and its pressure; the surface area, volume and the boundary layer thickness of the oil particle, oil temperature; and the apparent roughness of the sea surfaace.

Emulsification: Emulsification is a mixture of oil and water which is either water-in-oil, or oil-in-water. The process involves the dispersion of water droplets into the oil medium, turning the oil into a thick sticky mixture commonly referred to as 'chocolate mousse.' This process is significant because emulsification may result in an increase in the effective volume of the spilled oil as much as a 4-5 fold. The formation of water-in-oil emulsions is generally a negative factor in both the natural and man-induced removal of spilled oil from the sea and shore. The formations of these emulsions usually occurs in the first 10 hours or so after the spillage. The rate and extent to which water-in-oil emulsions are formed depends upon the type of oil involved and the the prevailing sea state. Emulsions can be extremely stable and may contain up to 80% water. Such conditions may persist at sea for several days or even weeks.

The mechanism by which water droplets become incorporated into a slick is still in doubt. It is generally established that different oils have different susceptibilities to emulsion formation and that emulsification is primarily a function of turbulence and composition of the oil, although temperature may play some role. A critical factor in determining the mousse formation is the amount of natural surfacant present in the spilled oil. Other factors are believed to include such parameters as asphaltene and resin contents, mixing energy, pH, and temperature.

Dispersion: Dispersion is the reduction of oil-water interfacial tensions by natural process or the addition of chemical agents. The process of dispersion of oil particles into the water column is important because it largely determines the lifetime of the slick which, in turn, determines whether or not a given slick is likely to impact a nearby shoreline.

The natural dispersion process is very complicated and the exact nature of the fluid mechanics is not well understood. The most common supposition is that breaking waves cause the oil layer to be propelled into the water column thus forming a 'shower' of oil droplets. Most of the oil particles rise again to the slick and coalesce there, but some ot the smaller oil droplets diffuse downward and become permanentyly incorporated into the water column. It is likely that the dispersion rate is a function of the oil slick thickness, oil-water interfacial tension, sea state, and in particular, the fraction of the sea which is covered by breaking waves.

Auto-oxidation: Oxidation is the combination of hydrocarbons with

oxygen. The term auto-oxidation may include photo-oxidation, bio-oxidation, and the normal chemical oxidation with phot-oxidation being the most important. It involves the oxidation of hydrocarbons, producing some intermediate or end products which are water soluble. The process may occur over weeks or months, but affect the spilled oil in a minor way in terms of the volume of oil involved. Because of the potential toxicity of the oxidation products to aquatic organisms, the process becomes important in the context of biological impact.

Biodegradation: Biodegradation is the change in the chemical and physical properties of an oil through biological activity. The process has a significant effect on the removal of oil from the marine environment. Many species of marine bacteria, fungi and yeasts oxidize petroleum hydrocarbons by utilizing them as a food source. No single microbial species can utilize more than 2-3 hydrocarbon types and most preferentially consume the light ends.

The rate of degradation is dependent upon a number of factors including temperature; the availability of nutrients containing nitrogen and phosphorus; oxygen, and the type of oil and stage of weathering. As bacteria can only attack that part of the oil which is in contact with the water, the opportunity for degradation is enhanced by thinly spread oil or by oil-in-the-water emulsions where a greater surface is exposed for microbial attack. Conversely, water-in-oil emulsions degrade at a much slower rate since any incorporated micro organisms are effectivly surrounded by oil which reduces the rate of replenishment of vital nutrients and oxygen.

Sinking/Sedimentation: Sedimentation of oil can occur when it is weathered to the point where its specific gravity is greater than that of the water, although this is probably a minor factor causing the oil to sink either to a midwater position or to the seabed. It is more likely that the oil adheres to particulate matter with densities greater than the water that the oil weill settle as part of the oil-particulate floc. Thus, in the presence of sediment a significant portion of the spilled oil may be flocculated and then sink to the bottom. Factors influencing the process include the type, size and load of sediment, the salinity, the contents of sulphur and organic matter (particularly humic acid) in the oil, and the degree of agitation.

Source: adapted from A Review of the State of the Art of Oil Spill Fate/Behavior Models, and, An Approach to Observing Oil at Sea, in, Proceedings 1983 Oil Spill Conference; also from Measures to Combat Oil Pollution prepared for Environment and Consumer Protection Service of the Commission of the European Communities, by The International Tanker Owners Pollution Federation Limited.

Section 6

CNMI Bulk Oil Properties

CNMI Bulk Oil Properties

The types of bulk oil, and the amount brought into the CNMI during 1982, are:

1. High grade kerosene (jet fuel) - 3,204,390 gallons
2. Auto diesel oil (ADO) - 1,830,864 gallons
3. Regular automobile gasoline (MOGAS; gasoline 90 RON) - 2,936,220 gallons
4. Residual fuel oil (RFO) - 6,170,390 gallons

The first three figures are for Saipan and Tinian combined--separate figures are not available by island; Rota figures are not available.

Mobil Oil Micronesia brings in the first three types every two months via MV Micronesian Sunrise and transfers to its tanks on Saipan and Rota via pumps from the ship's berthing at Charlie Dock and Tinian Dock.

Guam Oil Refining Company (GORCO) brings in the residual fuel oil for the Saipan power plant every two weeks by barge and pumps the oil from the Baker Dock to a tank.

Based on the 1982 figures, the average amount per shipment is:

1. High grade kerosene: 534,065 gallons
2. Auto diesel oil: 305,144 gallons
3. Regular automobile gasoline: 489,370 gallons
4. Residual fuel oil: 257,099 gallons

The qualities of each oil are:

1. High grade kerosene:

A. Specific gravity: API at 60 degrees F, 47.6
B. Viscosity: At -20 degrees C, cSt, 4.3
C. Pour point: N/A
D. Volatility: 106 degrees F

Section 7

Recovery Equipment and Chemicals

2. Auto diesel oil:

A. Specific gravity: API at 60 degrees F, 33.0
B. Viscosity: SSU at 100 degrees F, 44.9
C. Pour point: Degrees F, +45
D. Volatility: 160 degrees F

3. Regular automobile gasoline:

A. Specific gravity: API at 60 degrees F, 60.9
B. Viscosity: N/A
C. Pour point: N/A
D. Volatility: N/A

4. Residual fuel oil:

A. Specific gravity: API at 60 degrees F, 20.4
B. Viscosity: SSU at 100 degrees F, 491
C. Pour point: Degrees F, +75
D. Volatility: If flash point is below 175 degrees F, fire point is 325 COC degrees F.

Recovery Equipment and Chemicals

Containment barriers:

Because of the natural tendency of oil to spread on water, it is desirable to try to confine a spill to the area of the discharge. The purpose of containment is not only to localize the spill and thus minimize the area affected but also to facilitate removal of the oil by concentrating it on the water surface. Containment is, however, inadvisable in the case of spills of fresh crude oils and refined products in situtations that would present a fire hazard.

Containment barriers or booms are floating devices generally resembling short curtains that prevent an oil slick from spreading beyond the barrier. Many different types of oil containment barriers have been developed. These include floating booms, sorbent barriers, air or water streams, air or bubble barriers and chemical barriers. The most commonly used are the commercially available floating booms. Several designs have been produced for conditions ranging from protected waters to open ocean. Some types of barriers are designed to be towed, while others are stationary. Barriers designed for calm protected waters would not be effective in strong currents or high waves.

Typical barriers have a vertical height ranging from 6 inches to 5 feet. An effective barrier must ride evenly with the waves and not dip below the top of the slick or rise above the bottom. The major limitations to the effectiveness of containment barriers are speed of current (or towing speed if the barrier is not stationary), height of waves, and thickness of the slick.

Booms tend to be used in different ways in different situations. Offshore the approach frequently adopted requires the utilization of a large boom in a 'U' or a 'V' shaped configuration downwind and close to the source of the spill in an attempt to prevent spreading and to concentrate the oil prior to recovery.

The second approach to the use of booms offshore is to deploy shorter lengths from a single pair of vessels in a sweeping mode. This method can be particularly effective when employed to collect oil formed into individual windrows or where wind and water movements continually alter the direction of oil movement.

In more sheltered waters inshore, in estuaries and in harbors, booms can be used in a variety of ways. They can be deployed in an attempt to prevent ingress of oil into sensitive areas; they can be used to contain oil in a harbor or along a shoreline prior to or during recovery operations; or they can be anchored in a diversionary mode. This is frequently the most successful method of operation as careful consideration of the most appropriate angle and position of deployment can reduce the current forces on the boom sufficiently to deflect the oil to a sheltered situation from where it can be recovered. To determine the length of needed boom multiply the point-to-point length

of the area to be protected times a factor of 1.03.

All booms suffer from basic limitations brought about by the forces of wind, waves and currents. These frequently result in the failure of booms and a resultant loss of oil. The most common cause of failure is that a boom held in moving water tends to act as a dam; the restrained surface water tends to be diverted downward and under the boom. As the current flow beneath the boom reaches a critical velocity, about 0.7 knots, oil will be drawn from the surface and carried under the boom skirt. Thus it is important that booms be allowed to flow downwater in order that the critical velocity is not exeeded.

Improvised booms constructed of tangentangen, grasses, beached seagrasses, thick buoyant rope, fire hoses, logs or any other material formed into a floating barrier can be of value in protecting or diverting oil away from sensitive areas. The basic limitations of such systems is that they normally lack sufficient freeboard or skirt to prevent the oil from going over or underneath. As an emergency measure or as a supplement to commercially availble booms they can be useful. In certain circumstances such as at the mouth of a small estuary or lagoon with little water movement, a physical dam of sand or some other readily available material may be the most appropriate solution although considerable thought has to be given to environmental consequences of altering the water flow patterns and the cleanup of the sand or other materials.

In some circumstances a high pressure air or water stream can be deployed to deflect oil or to flush it from inaccessible areas or from certain types of shorelines and structures. Such techniques, however, encourage the formation of both water-in-oil and oil-in-water emulsions which may have adverse consequences. They also require constant attention when employed in a containment or deflection mode.

Oil recovery devices

Recovery of spilled oil from the sea surface or from shorelines is clearly the ideal solution. Three basic approaches are available: the use of mechanical devices, frequently called skimmers; the use of sorbents or manual recovery using non specialized equipment.

Mechanical devices

Several mechanical devices have been produced for collecting oil from the surface of the sea. Since the efficiency of an oil recovery device is improved by increasing the thickness or depth of the oil slick, these devices are frequently used inside a containment barrier. Oil recovery devices include suction-types, weir-types, and moving surface-types.

Suction skimmers float on the surface and use suction pumps to draw in oil and water through tiny holes. A weir type skimmer has a vertical dam or weir around it over which oil floats. A suction pump is

frequently used with the weir to recover the oil. Both weir and suction devices work best in calm waters.

Moving surface skimmers utilize a moving material which absorbs or causes oil to adhere to it in preference to water. The oil coated material then passes over a scraper, squeezer, or other device to remove and recover the oil. Skimming devices of this type have the problem of tending to drive oil away from themselves by the motion of the absorbing or collecting surface. The speed of a skimmer is limited by storage capacity and the ability of pumping equipment to transport the recovered materials.

25-75% of recovered oil is in an emulsified form with a consistency ranging from that of maple syrup to mayonnaise. The oil must usuallly goes through a number of pumping processes. Most commonly available centrifugal or diaphram pumps cannot pump fluids the consistency of mayonnaise. Centrifugal pumps frequently cavitate and burn out, while some diaphram pumps pop their diaphrams. Viscous emulsions are best handled by pumps specially designed for this purpose. Positive dispacement pumps are generally preferred, but certain specially designed diaphram pumps and centrifugal pumps may also be satisfactory. Such pumps include positive displacement pumps such as piston and cylinder, progressive cavity and rotating cavity types; diaphram pumps such as those used for mineral slurries and food products; and centrifugal pumps such as special tanker offloading types.

Mechanical recovery of oil at sea is the most environmentally acceptable method of dealing with oil pollution in that removal of the oil avoids the possibility of further environmental damage; mechanical recovery devices do not in themselves cause any ecological damage; and recovered oil may have a commercial value thus alleviating disposal problems.

Most mechanical recovery devices suffer from a number of fundamental limitations. First they will not operated effectively in anything but relatively calm conditions. For most skimmers, waves in excess of about 3 feet will result in recovery of a far greater quantity of water than oil. Similarly the safe operation of many devices is impossible in anything approaching moderate to rough seas. Current movements of less than 0.7 knots are also required in order that oil is not carried beneath deployed booms. Most devices are also limited in the range of oils they will effectively recover. Since many depend upon the operation of external pumps, the limitations of such systems to handle viscous and highly weathered oils can be a severe handicap. The effects of debris on the operation of many skimmers and the logistics of handling and storing recovered oil impose further restriction on their use.

The basic limitation of oil recovery equipment results from the natural tendency of most oils to spread rapidly on the sea surface and for slicks to become fragmented. The result is that the oil encounter rate of the skimmer at the necessarily slow operating speeds will

almost invariably be so low that recovery of significant quantities of oil will be virtually impossible. While booms may be used in a "U" or "V" configuration in an attempt to overcome this limitation, their deployment, operation and control is frequently very difficult and often requires a minimum of three vessels and considerable logistic support. To have any chance of being effective, response action must begin within hours of the oil release occuring and before spreading and weathering are advanced.

The approach of using recovery devices in association with short lengths of boom deployed from vessels of opportunity and used in a sweeping mode along individual windrows in many respects presents a more realistic approach. However, encounter rates are again almost invariably low and large numbers of such systems would have to be on scene rapidly in a major spill if a significant benefit was likely to be achieved. Speed of response would also be essential if weathering and associated viscosity increase were not going to make pumping of any combined oil difficult.

Sorbents

The second major approach to the recovery of spilled oil is by the use of sorbents. These work either by adsorption (adherence to surfaces) or by absorption (uptake into the structure of the material).

There are three basic types of sorbent materials: mineral based; natural organic; and synthetic organic. All absorbents work on the same basic principle--oil either adheres to the outside of the absorbent particle or is taken into the absorbent materials by capillary action. In either case the absorption capacity depends on the surface area available for oil to adhere to and the density of the oil being absorbed.

Materials treated with certain agents improves the ability of the absorbent material to be wetted by oil instead of water. This treatment process improves the ability of the absorbent material to be wetted by oil instead of water. This treatment for improving the materials' natural water repellency reduces the absorption of water and keep the absorbent floating at the surface where it will be available to absorb the oil.

An inorganic absorbent found in the CNMI is volcanic ash; others include such things as vermiculite, perlite and expanded perlite. Inorganic materials are relatively easy to handle and are lightweight. The recovery efficiency for inorganic absorbents ranges tetween 4 and 8 times their own weight in oil which is slightly better than most of the natural organic materials. Inorganic materials because of their light weight are difficult to distribute on an oil spill when the wind is blowing, unless enclosed in pillows or absorbent booms. Since the materials do not degrade in the environment, they must be recovered, even if not soaked with oil. Recovery methods include dip nets, pool skimmers, and if the material is such that it can be skimmed, vacuum equipment or diaphram pumps may be used.

Natural organic materials found in the CNMI include such things as tangentangen, beached seagrasses, wood cellulose fiber, sawdust and cut grass; others include such things as peat moss, straw, milled corncobs, and milled cottonseed hulls. Being natural materials these absorbents are nontoxic and relatively nonpersistent in the environment. The biological oxygen demand varies greatly. All will absorb water and eventually sink if oil is not first absorbed. The efficiency of natural organic absorbents varies from 3-6 times their weight in oil. All are relatively low cost products. Recovery steps include manual labor and vacuuming equipment. Since these materials are often easy to get, the inexperienced person faced with an oil spill will often indiscriminately spread them on a spill as a first reaction. This response has resulted in tremendous recovery problems. Also, the high cost of recovery must be balanced with the low initial cost of the organic materials.

Synthetic organic absorbents consist primarily of plastic foams or plastic fibers. They include open and closed cell polyurethane foam; urea formaldehyde foam, polyethylene; or polypropylene wall and fibers. Synthetics are higher in cost, but they are usually much more efficient, absorbing upwards as much as 20 to 25 times their weight in oil. Some of the urethane foams and polyethylene and polypropylene fibers can be harvested and reused. Synthetics are available in a wide range of configurations, including sheets, booms, cubes, blocks and rolls. The major problem with synthetic organic foams is that they are persistent in the environment and must be fully recovered. Synthetic organic absorbents have a distinct advantage over all of the inorganics and some of the natural organic absorbents in that they do not present such a monumental disposal problem. Almost all the synthetics can have the oil removed from them and then be reused. Others will burn well.

In general sorbents do not play a major role in the initial stages of the clean-up of a major spill on the sea. Mainly this is because of the difficulties of applying and recovering sufficient of the material to collect a significant quantity of oil. Sorbents are therefore most commonly used during the final stages of a clean-up operation to remove small amounts of oil remaining on water surfaces, shorelines or other areas where other techniques are inappropriate or impractical. They are sometimes also used in order to afford some protection to shoreline areas where oil is likely to strand.

It should be emphasised that absorbent materials are suitable only for removing the last vestiges of oil from a large spill or for recovering very small spills. If absorbents must be used to prevent damage to a beach or shoreline, discretion should be used.

Manual recovery

Most spills are ultimately cleaned up by the manual recovery of oil using a variety of unspecialized equipment. For example, the removal of oil from relatively inaccessible rocky areas, if considered

necessary , can ususally only be accomplished by personnel using shovels, scoops and buckets. Similarly the removal of bulk oil from wetland areas, such as Saipan's two mangrove areas, where physical disturbance is frequently more damaging than the oil may again require the use of manual methods. Even sandy beaches can often be best cleaned by small well controlled teams of workers using shovels to remove the oil and sacks to transport it away. This is especially the case if the oiling is slight and scattered over a wide area. The removal of bulk oil from such areas will frequently require the use of mechanical graders, front end loaders and bulldozers although control of the operations is essential if excessive removal of beach material is to be avoided. Tractor drawn sieving devices developed fr cleaning general debris and tarry lumps from beaches can also be valuable if the oil is highly weathered and can be retained by the screens.

Mechanical removal of oil from coral rubble beaches presents many more problems and invariably involves the large scale removal of large volumes of beach material. In such instances other approaches, including leaving the oil to weather and degrade naturally will have to be considered if the adverse consequences of clean-up are not going to outweigh the benefits of removing the oil.

Steam cleaning equipment and hot water pressure washers are useful for cleaning oil from sea walls, docks, pilings and boats. They can also be used later for cleaning of equipment before placing it back in storage. Steam cleaners and pressure washers often have eductors which are used to add cleaning chemicals or detergents to the water stream. Such chemicals must be approved before using to avoid a violation of the law and undue environmental damage.

Fans, blowers and portable fire pumps can be used for moving oil from around docks and pilings to an area where it can be recovered. Fans and blowers generate wind which can push oil from between docks, or build it up in front of floating skimmers. A fire pump and a section of 2" fire hose can be used for moving oil from one place to another. This equipment is not as good as a fan or a blower because the agitation of the water tends to create an oil-water emulsion which may be difficult to recover. A fire hose is useful for washing oil from sea walls, docks and pilings.

Hand tools are indispensable at an oil spill, including shovels, wire rakes, cane rakes, machetes, axes, dipnets, pitchforks, bushel baskets and lawnspreaders.

Chemical agents

Chemical agents are grouped together because these materials do not play a primary role in the control and recovery of spills. Instead, they are normally used for final cleanup and polishing. Other uses include cleaning the shoreline, structures and equipment and removing oil from water fowl.

It is the policy of the United States to discourage the use of chemical treatment agents in preference of mechanical means of oil recovery. Chemicals may be used anytime, anywhere at the discretion of the (federal) On-scene Coordinator to reduce the immediate hazards to life and property due to explosion and fire. A list of EPA approved chemical agents is included elsewhere in this Plan.

Several types of treating agents are available. Their usage depends to a large extent on the conditions of the individual spill and guidelines or restrictions controlling their application. Among the treating agents that have been used are:

Dispersants

The use of dispersants in U.S. waters is prohibited unless specific permission is granted by the District Coast Guard Commander. The term dispersant includes all chemical products which may be described as detergents, emulsifying agents or solvent emulsifiers. These substances are designed to promote the formation of an oil-in-water emulsion when sufficient mixing is provided. The emulsion tends to be dispersed throughout the sea by currents and turbulence. The dispersants themselves do not destroy the oil but enhance the natural processes of degradation by breaking up the oil, preventing its recombination as a slick and creating a larger surface area on which natural processes may operate.

The use of dispersants has a number of advantages. Stockpiling of dispersants make possible a state of constant readiness for dealing with major oil spills at sea when shoreline contamination is imminent. Dispersants are easily stored and transported, and the initial capital outlay is comparatively low. Dispersant application/agitation systems are simple to operated and can be used from existing craft in open sea conditions which preclude the use of physical recovery methods.

Dispersants are toxic to marine biota. In addition to the toxic effects of the dispersants themselves, environmental damage may result from increased toxicity of oil arising from the use of dispersants. Dispersants cause the oil to spread through the water column increasing the chance that aquatic organisms will come into contact with the toxic compounds in solution. In oceanic or deep water areas these effects will not be significant as the volume of the oil-dispersant mixture is small in comparison with the total volume of seawater. Conversely in lagoons, areas with shallow waters or poor water exchange, mangrove-fringed shorelines and fringing coral reefs, this effect becomes increasingly potent.

Dispersants have limitations when used on oil at sea. Dispersants are not suitable for dealing with stable water-in-oil emulsions (mousse) or oils whose pour point are near to or above that of the ambient temperature. In practice, this means that dispersants have little of no role to play in spills of heavy fuel oils or crude oils which have been able to weather. In some cases dispersant application has proved to be of no significant benefit as little as 24 hours after the

initial spillage.

Dispersants can also have a role to play in shore cleanup, particularly on lightly oiled beaches or as a final stage in cleaning after the bulk oil has been removed by mechanical or manual techniques. On tidal shores, application should be made on an incoming tide not more than 20 minutes before immersion, to avoid penetraton of the oil into the beach and to minimize the possibility of adverse effects on inter-tidal organisms. Usually, surf action is sufficeint to give adequate dispersion, but in very calm conditions additional agitation from fire hoses may be required.

At times when physical control and recovery are not feasible and important resources or shoreline areas are threatened, dispersants may be the best option to control the spilled oil.

Sinking agents

Biodegradants

Biodegradation of oil can be caused by applications of certain bacteria, fungi and yeasts. The process is very slow, largely restricted to certain hydrocarbon components and is limited by temperature, nutrients and the dissolved oxygen in the surrounding waters.

A number of commercial preparations have been developed to enhance natural biodegradation, but these products have the disadvantage of being active only on oil in a floating state, which is not conducive to efficient biodegradation. The uniform application and binding of bacterial preparations and nutrients to floating oil presents severe practical difficulties.

The technique is of little benefit to stranded oil if the oil is out of contact with water since the micro-organisms can only function at the oil-water interface. It may be of some slight benefit for dealing with oil stranded in environmentally sensitive areas where a nutrient-rich environemnt can be provided, however, oxygen

QUANTITY OF BOOM REQUIRED TO ENCIRCLE A SPILL OF A GIVEN SIZE

QUANTITY (K BBL)	OIL THICKNESS (INCHES)	FEET OF BOOM NEEDED
.10	1	200
.10	2	100
.10	3	80
.50	1	600
.50	2	380
.50	3	280
10	1	2900
10	2	2100
10	3	1700
63	1	7300
63	2	5200
63	3	4200
1800*	1	39000
1800	2	27600
1800	3	22500

* Typical VLCC capacity
The formula for determining the amount of boom feet required per volume of oil is <the square root of (oil volume in barrels divided by the oil thickness in inches)> X (29.1) Source: Adapted from Oil Spill Cleanup Manual, Exxon Corporation.

PIT STORAGE REQUIREMENTS TO HOLD ENTIRE VOLUME OF SPILLED OIL AND ITS ASSOCIATED PICKED-UP WATER

QUANTITY OF OIL SPILLED (K BBL)	STORAGE VOLUME REQUIRED TO HOLD RECOVERED VOLUME (K BBL)	TOTAL PIT LENGTH REQUIRED (FEET)
.10	.50	24
.50	2.50	120
1.00	5.00	240
10.00	50.00	2400
63.00	315.00	15000
1800.00	9000.00	430,000

Assuptions: no on-board separation of oil and water takes place; specific gravity of oil is 0.90; no evaporation takes place.
Source: Adapted from Oil Spill Cleanup Manual, Exxon Corporation.

EPA ACCEPTED DISPERSANT PRODUCTS

1. Cold Clean	Adair Equipment Co., Inc. 5518 Mitchelldale POB 19333 Houston, TX 77024 (713) 681-1371
2. Gold Crew	Ara Chemical Inc. POB 5031 E.S.D. San Diego, CA 92105 (714) 442-3346
3. Arco Chemical D-609 Dispersant	Arco Chemical Company POB 370 Sand Springs, OK 74063 (918) 588-8293
4. ECO Atlan'tol AT7	Aspra Inc. 4401 23rd Ave., West Seattle, WA 98199 (206) 284-9838
5. BO1100X BP1100WD	B.P. North America Inc. 620 Fifth Ave. New York, NY 10020 (212) 399-0600
6. CONCO Dispersant K	Continental Chemical Co. 270 Clifton, Blvd. Clifton, NJ 07015 (201) 472-5000
7. Ameroid Oil Spill Dispersant/LT	Drew Chemical Corp. One Drew Chemical Plaza Booton, NJ 07005 (201) 263-7600
8. Corexit 9527 Corexit 8667 Corexit 7664	Exxon Chemical Co. 1333 West Loop South Houston, TX 77027 (713) 656-0293
9. Atlantic Pacific Oil Dispersant	GFC Chemical Company 2539 Old Okiechobee Road West Palm Beach, FL 33409 (415) 362-6065

10. Slik-A-Way	Mi-Dee Products, Inc. POB 4815 Hayward, CA 94540 (415) 782-8811
11. BTO-ALL PRO PRO-FORM	Pro-form Products Corp. 230 California Ave. Palo Alto, CA 94306 (415) 321-5207, 5208
12. Sea Master, NS-555	Whale Chemical Co. Inc. 58 Winant Street Staten Island, NY 10303 (212) 273-1324

Source: Region IX Oil and Hazardous Substances Pollution Contingency Plan

QUANTITY AND TYPE OF BOOMS FOR VARIOUS APPLICATIONS

APPLICATION	TYPE OF BOOM	QUANTITY
ircle a stricken vessel	Offshore or coastal, depending on sea state	3 X ship length
Contain leakage from terminal operations	inshore or coastal, depending on sea state	1.5 X ship length
Use with an ocean kimmer	offshore	2-3000 feet/skimmer
Protected entrance to angroves, wetlands,etc	inshore	3-4 X width of water body
agoons, beaches, etlands	onshore	(1.5 + current speed in knots) X width of protected area*

* In especially swift currents special booming techniques may be required, including double booming; twice as much booming as indicated may be necessary.

ource: adapted from Oil Spill Cleanup Manual, Exxon Corporation.

Section 8

Inventory of CNMI Oil Spill Cleanup Resources

Inventory of CNMI Oil Spill Cleanup Resources

I. SKIMMER:

1. Department of Public Works plans to buy a Douglas Engineering skimmer and related accessories. Pump capacityis 40,000 GPH.

2. Mobil Oil Micronesia has a SPCC system which includes a diaphragm type pump with a ---- GPH capacity. System is made by Slickbar, Inc.

II. BOOM:

1. Coastal Resources Management Office has 1,000 foot boom, Slickbar brand.

2. Mobil Oil Micronesia has a 200 foot boom which is included in its SPCC system.

III. ABSORBENTS:

Coastal Resources Management Office has three bales, each containing 200 pads 18"x18"x3/16". Tangan tangan is also available.

IV. DISPOSAL CONTAINERS:

1. Department of Public Works has one fuel tank truck (1,000 gallon capacity), one asphalt tank truck (1,000 gallon capacity), one honey wagon truck (700 gallon capacity) and drums (asked that 30 be reserved for oil spills).

2. Department of Public Health and Environmental Services, Division of Environmental Quality, has 10 to 15 55-gallon drums.

3. Black Micro Corp. has one tank truck which can be rented at $26 per hour.

4. Maeda Pacific Corp. has one 2,000 gallon tank truck which might be made available in case of an oil spill.

V. HEAVY EQUIPMENT:

1. Department of Public Works has:

- Dump truck (5 & 10 c.y cap)		5
- Bulldozer:	D-4	1
	D-7	1
	D-8	1
- Grader		2
- Backhoe		2
- Front end loader		3

2. Department of Natural Resources

Div. of Parks & Recreation has:

- Tractor:	Saipan	10
	Tinian	3
	Rota	3
- 4WD (Saipan only)		2

Agriculture Div. has:

- Bulldozer (all D-6):	Saipan	3
	Tinian	2
	Rota	2
- 4WD (Saipan only)		1

Div. of Fish and Wildlife has:

- 4WD (Saipan only) 1
- Department of Natural Resources also has one cherry picker

3. Civil Defense/Disaster Control has a 1978 landcruiser and a 1978 4-door Toyota sedan, both in poor condition.

4. Coastal Resources Management Office has Suzuki jeeps:

- Saipan	4
- Tinian	1
- Rota	1

5. Department of Public Health and Environmental Services, Division of Environmental Quality two 4WD Toyota pickups and one Suzuki jeep.

6. Department of Public Safety has:

- Patrol cars	5
- Pickups	3
- Investigation cars	4

The Fire Division has:

Saipan:	
- 1,500 gal. fire truck	2
Note: Each is equipped with 1,500 foot 2 1/2" hose and 400 foot 1 1/2" hose.	
- Ambulance	2
Tinian:	
- 750 gal. fire truck (ordered)	1
- Ambulance	1
Rota:	
- 1,000 gal. fire truck	1
- Ambulance	1

7. Mobil Oil Micronesia has trucks and pickups.

8. East-West Rental Center of Saipan (prices are as of July '83):

EQUIPMENT:	NUMBER	CHARGE
Pickup	2	$40/day
4-ton truck	4	85 "

9. Black Micro Corp.:

Dump truck: 10 c.y.	3	$31/hr.
Rack type; 22 c.y.	1	69 "
End dump type; 24 c.y.	1	25 "
Bulldozer: Baby dozer	1	29.50 "
D-7	1	72.50 "
D-8	1	78 "
Grader	1	32.50 "
Backhoe: Regular	2	36.50 "
Gradall arm type	1	53 "
Front end loader: 2 c.y.	2	40.50 "
5 "	1	54 "
Pickup	5	14.50 "
Crane: 25 ton	1	62.50 "
35 "	1	71 "
50 "	1	83.50 "
Scraper (18 c.y. haul cap.)	1	73.50 "

10. Western Equipment Inc.:

Dump truck (14 c.y.)	2	20 "
Backhoe	1	30 "
Crane (12 tone)	1	50 "

11. Camacho Equipment Rental:

Dump truck (10 c.y.)	2	22 "
Bulldozer: D-8	1	50 "
TD 25 (D-8 equivalent)	1	50 "
Backhoe	1	22 "
Truck tractor	1	35 "

12. Guerrero Bros, Inc.:

Dump truck: 5 c.y.	2	20 "
10 "	1	25 "
Backhoe	1	25 "

13. Construction and Material Supply, Inc.:

Dump truck (10 c.y.)	1	24 "
Bulldozer: Baby dozer	1	24 "
D-8	1	58 "
Grader	1	23.50 "
Backhoe: Ford	1	28 "
Jumbo	1	32.50 "

Flat bed truck	1	22.15 "
Crane: 9 ton	1	44 "
Auger type	1	42.50 "
With bucket	1	46 "

14. Sablan Enterprises, Inc. (nos. not available):

Dump truck	17.50 "
Backhoe	21.50 "
Payloader	45 "
Flat bed truck	13 "

15. Maeda Pacific Corp.(doest not rent out but might help in case of an oil spill):

Dump truck:	3 c.y.	1
	5 "	1
	12 "	2
Backhoe		2
Grader		2
Payloader		2

VI. MARINE EQUIPMENT:

1. Department of Natural Resources

Div. of Fish & Wildlife, Department of Natural Resources, has one Nikonos camera, one 15 foot Boston Whaler with 2 35-h.p. engines, plus three diving tanks equipped with regulators.

Div. of Parks & Recreation, Department of Natural Resources, has one 16 foot wooden and one 16 foot tri-hull fiberglass boats.

2. Department of Public Safety has a 24 foot fiberglass with a 235-h.p. Johnson engine on Saipan and a 18 foot fiberglass on Tinian, plus diving gear sets on Saipan.

3. Coastal Resources Management Office has a Mark IV Zodiac and three 40-h.p. Johnson engines. Coastal Resources Management Office also has one Nikonos IV camera.

4. Department of Public Health and Environmental Services, Division of Environmental Quality has a Mark III Zodiac boat with a 20 h.p. engine and 100 feet anchor rope. The division also has a Nikonos camera and five mask, fin, and snorkel sets. The division also has a water quality laboratory and all the necessary equipments for water sampling.

5. Mobil Oil Micronesia plans to obtain one boat by October.

VII. AUXILIARY EQUIPMENT:

1. Coastal Resources Management Office has 100 foot anchor rope for the Zodiac.

2. Commonwealth Ports Authority has five 50-foot 4" diameter hoses.

3. Department of Natural Resources

Division of Fish and Wildlife has three reels of 5/8 poly rope @ 1,200 foot each.

Division of Agriculture has one to two hand powered sprayers on Saipan and one power sprayer for each island. Department of Natural Resources also has pumps and a 500 gallon tanker.

4. Department of Public Safety has two binoculars and three cameras.

5. East-West Rental Center of Saipan, Inc. has:

- Wheelbarrow	2	$8/day
- Electric compressor (1-h.p.)	2	$21/day
- Water pump: 2" (10,000 GPH)	2	$50/day
3" (17,000 GPH)	1	$67/day

Note: Both pumps come with 25 foot suction hose and 25 foot discharge hose.

6. Black Micro Corp.:

- Pump (no specification available)	1	$6.50/hr.
- Compressor: 175 CFM	2	$16/hr.
600 "	3	$27/hr.

VIII. PORTABLE LIGHTING:

1. Department of Public Works has three 20 KW and one 50 KW generators and several flashlights.

2. Disaster Control has four spotlights and eight flashlights.

3. Commonwealth Ports Authority has nine spotlights which are mounted on poles around the dock and which their beam direction can be changed towards several directions in the water.

4. Department of Public Safety has over 12 flashlights.

5. Department of Public Health and Environmental Services, Division of Environmental Quality has two flashlights.

6. East-West Rental Center of Saipan has the following generators

(the prices are as of July, 1983):

	No.	Price
1,200 watt	1	$24/day
3,000 "	1	30 "
4,000 "	2	37 "
5,000 "	3	42 "
17,500 "	1	80 "

7. Black Micro Corp. has the following generators:

5 kilowatt	1	$7/hr.
15 "	1	13 "

8. Maeda Pacific Corp. has the following generators which it might be willing to lend to the CNMI government but does not rent out:

10 KVA	2
30 "	6
45 "	1

IX. COMMUNICATION:

1. Disaster Control uses Motorola equipments which can reach points throughout Saipan via its office or base stations. All frequencies can also be connected through via Disaster Control. There are 19 VHF portables and two VHF base stations, plus three HF base stations.

2. Department of Public Works uses five Motorollas: No. 13, No. 14, No. 15, Unit 2 and Unit 6.

3. Coastal Resources Management Office uses four radios.

4. Commonwealth Ports Authority has radios capable of communicating with Tinian and Rota. Has Motorolla base station and radios in the vehicles, plus portables.

5. Department of Public Safety has a base station that can communicate with Rota and Tinian and has the frequencies of the hospital, Disaster Control and Department of Public Works. Department of Public Safety also has 12 portable Motorollas and a mounted radio in each vehicle, in addition to VHF radios for its sea operations.

6. Mobil Oil Micronesia uses SSB radios capable ofcommunicating with other Mobil stations in Micronesia.

X. PERSONNEL:

1. Disaster Control: Three radio dispatchers, two radio repair and maintenance, four handling 24 hour communication, on search and rescue/medivac, one planner. One also doubles as a photographer.

2. Coastal Resources Management Office has four staff members on Saipan and one coordinator on Tinian and Rota who are considered as resource persons in case of an oil spill.

3. Commonwealth Ports Authority has four resource persons in case of a spill.

4. Department of Public Works has 30 employees under the Transportation/Road Maintenance Branch.

5. Department of Natural Resources has nine resource staff members.

6. Department of Public Health and Environmental Services, Division of Environmental Quality has one environmental engineer, one chemist/lab supervisor and four environmental technicians.

7. Department of Public Safety has 72 officers on Saipan, 12 on Rota and 8 on Tinian. Its Fire Division has 16 firefighters on Saipan, three on
Rota and two on Tinian.

8. Mobil Oil Micronesia has ten staff members who could be utilized in case of a spill.

XI. DIVERS:

1. Disaster Control: Mr. Felix Sasamoto is certified.

2. Coastal Resources Management Office: Miss Cindy Bowers and Mr. Ben Aldan are certified for Saipan and Miss Lee Taitano on Rota is certified.

3. Department of Natural Resources: Six are certified.

4. Department of Public Works: One is certified.

5. Department of Public Health and Environmental Services, Divison of Environmental Quality has five certified divers.

6. Department of Public Safety: Seven certified (5-Saipan, 1-Tinian, 1-Rota)

XII. TRAINING:

1. Disaster Control: No formal oil spill training. Mr. James Reyes has three years (four spills in all) experience in oil spills and Mr. Felix Sasamoto was on hand in two spills. Mr. Nick Muna and Miss Rachel Hinzten are instructors in First Aid and Mr. Sasamoto is an instructor in Red Cross.

2. Coastal Resources Management Office: Miss Cindy Bowers and Mr. Ben Aldan have attended workshops and conferences on oil spill and are both exposed to oil spills. Miss Lee Taitano from Rota is also

exposed to an oil spill.

3. Department of Public Works: Mr. Jack Duenas attended an oil spill workshop in Honolulu. Mr. John Guerrero has assisted in spills before. Mr. Guerrero has requested for more formal training in oil spills to the Department of Public Works Director.

4. Department of Natural Resources: Mr. Rufo Lujan was a member of Contingency Planning of Guam and has helped in three clean ups before as a biologist. Mr. Frank Aldan has oil spill training on Guam with experience. Mr. Arnold Palacios has helped in an oil spill clean up before. Department of Natural Resources has three wildlife and three fishery biologists.

5. Commonwealth Ports Authority has four persons that were involved with oil spills before.

6. Department of Public Health and Environmental Services, Division of Environmental Quality staff members are exposed to some spills in the Commonwealth, but have no official training. They are trained in marine water surveillance, monitoring and sampling techniques.

7. Department of Public Safety boat operators are trained with search and rescue, first aid, and boating safety. Its Fire Division firefighters are all trained as medics.

XIII. OTHER:

1. Disaster Control has harbor charts of Saipan and Tinian.

2. Department of Natural Resources has general navigational charts.

3. Coastal Resources Management Office has four portable cassette players and a hydrographic map of Rota.

4. Commonwealth Ports Authority has Saipan harbor maps and standard nautical maps of Saipan, Tinian, Rota and the Northern Islands.

5. MPLC has topographic maps and aerial photographic maps (as of 1976; scale of 1 in 2,000 meters) of each island.

6. Department of Public Safety has topograhical maps and precinct maps of each island.

XIV. CHEMICALS: None

Address of Resource Entities on Saipan:

1. Mr. Frank Chong
   Disaster Control Officer
   Civil Defense/Disaster Control
   Office of the Governor
   Tel: 6592

2. Mr. Joaquin Duenas
Transportation/Road Maintenance Branch
Department of Public Works
Tel: 9761

3. Mr. Carlos Shoda
Executive Director
Commonwealth Ports Authority
Saipan, CM 96950
Tel: 67315

4. Mr. Nicolas Guerrero
Director
Department of Natural Resources
Tel: 9830

Mr. Vic Chong
Chief
Parks and Recreation Division
Department of Natural Resources
Tel: 6280

Mr. Rufo Lujan
Chief
Fish and Wildlife Division
Department of Natural Resources
Tel: 9729

5. Mr. Felix Cabrera
Director
Department of Public Safety
Tel: 6333

6. Mr. Jesus Villagomez
Executive Director
Marianas Public Land Corporation
Tel: 6914

7. Mr. Manuel T. Sablan
Program Coordinator
Coastal Resources Management Office
Office of the Governor
Tel: 6623

9. Mr. Carl Goldstein
Chief, Division of Environmental Quality
Dr. Torres Hospital
Saipan, CM 96950
Tel: 6984, 6114

8. Mr. John Temengil
Manager, Saipan/Tinian Branch
Mobil Oil Micronesia
P. O. Box 367
Saipan, CM 96950 Tel: 9453

9. Mr. Alex Wongchuking
Manager
Western Equipment Inc.
P. O. Box 117
Saipan, Cm 96950
Tel: 9561

10. Mr. Augustine Camacho,Owner
Camacho Equipment Rental
San Roque
P. O. Box 53
Saipan, CM 96950
Tel: 9715

11. Mr. Herman Guerrero
Manager
Guerrero Bros, Inc.
P. O. Box 924
Saipan, CM 96950
Tel: 6258

12. Mr. Ariel Austria
Accountant
Construction and Material Supply, Inc.
P. O. Box 609
Saipan, CM 96950
Tel: 6136

13. Mr. Pete Dela Cruz
Manager
Sablan Enterprises, Inc.
P. O. Box 166
Saipan, CM 96950
Tel: 6109

14. Mr. Bill Miller
Manager
East-West Center of Saipan, Inc.
P. O. Box 233 CHRB
Saipan, CM 96950
Tel: 7193

15. Mr. Rosell Torres
Manager
Black Micro Corporation
P. O. Box 545
Saipan, CM 96950
Tel: 6549

16. Mr. Tom Nielson
Ass't. Manager
Maeda Pacific Corporation
P. O. Box 810
Saipan, CM 96950 Tel: 7195

Section 9

Notification, Communication & Reports

Notification, Communications, Reports

Notifications of oil discharges in the CNMI should be reported immediately to:

Commonwealth Emergency Management Officer
San Antonio
Saipan, CM 96950
Tel 6592 or 6678

If this procedure is impractical notify:

CNMI Department of Public Safety -- SAIPAN
Susupe, Saipan
Tel 6333 or 6431

CNMI Department of Public Safety -- ROTA
Police Main Office
Tel 433

CNMI Department of Public Safety -- TINIAN
Tel 22

CNMI Department of Public Safety representatives on Saipan, Tinian and Rota shall immediately notify the CNMI Emergency Management Officer, Saipan.

The CNMI Emergency Management Officer shall immediately notify the CNMI OSC.

Reporting

Initial CNMI OSC notification of the Federal OSC may be by telephone followed by a teletype message. Initial assessment and all subsequent information will be forwarded expeditionsly in pollution report format (POLREP). POLREPS will be submitted in a timely manner as developments occur and as plans for the next days activities are formulated.

The Federal OSC will be responsible for communication with the Regional Response Center (RRC).

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POLREP Format is as follows:

FROM: CNMI OSC

ACTION: Commandant, U.S. Coast Guard

VIA: Federal OSC

INFO: Duty Officer, USCG Marine Safety Office, Honolulu
Commander, 14th Coast Guard District, Honolulu
USCG Marianas Section, Agana Guam

BT

UNCLASS (subject classification numbers)

POLREP (sequential number) (description/title) (medium/major)

1. SITUATION (give full details of the spill or sitings including type of oil, quantity of oil in gallons, name of person making notification, cause of discharge, location, time of discharge, time of discovery, on-scene weather (wind at ___ knots, seas at ___ feet, temperature F), equipment and materials on-scene)

2. ACTION (Summarize all action taken by the party responsible for the spill, by CNMI forces, and by the USCG and Federal agencies)

3. PLANS AND RECOMMENDATIONS (Include all planned action by the party responsible for the spill, by the CNMI, and by the USCG and other Federal agencies. Include any recommendations as to future USCG involvement related to the need for the RRT or NRT assistance in containment of the spill or assistance in cleanup)

4. STATUS (Indicate case closed, case pends, or Federal participation terminated, as appropriate)

BT

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To facilitate the reporting of an oil discharge or potential dishcarge into waters of the United States and adjacent shorelines, a single report should be made to the following office:

Oceania Discharge Reports

Duty Officer
USCG Marine Safety Office
433 Ala Moana Blvd.
Honolulu, HI 96813
Tel: (808) 546-7146

If this procedure is impractical the report may be made to:

USCG Marianas Section
Agana, Guam
Tel (671) 339-8181

or

USCG Rescue Sub-Center
Guam
Tel (671) 339-6100

OSC REPORT

The OSC report is a document which outlines the specific details surrounding the pollution incident, and cleanup efforts. Its purpose is to distribute the knowledge and experience gained by the CNMI and/or Federal OSC during the course of the incident, to highlight any problem areas and/or solutions for the problems enountered for the benefit of all. The NRT and RRT will review all OSC Reports.

It is the responsibility of the CNMI OSC to submit the OSC Report to the Federal OSC within 45 days after the completion of cleanup activities. The Federal OSC shall submit the report within 60 days of the completion of cleanup activities. A report shall be submitted for each major oil discharge, and medium discharge involving unique problems or solutions. A report will also be required for any discharge when requested by the RRT. The content of the report is specified in Section 300.56 of the National Contingency Plan.

Communications

The CNMI government operates an emergency communication vhf radio network
Intra-governmental communications should be established via this network utilizing common channel (177.175 mhz). The CNMI Department of Public Safety operates a separate channel at 166.950 mhz. The CNMI

Department of Public Works operates at 166.900 mhz. The common channel reaches all radios in the system via radio patches made through the Emergency Management Office base station.

The predesignated Federal OSC and all field units will utilize channel 81 vhf-FM. Channel 81 is established for use by mobile stations, including portables, for communications required to coordinate marine environmental protection operations. Channel 81 will remain under the control of the USCG.

Channel 81 will be used for interface communications among government agencies and non-government entities involved in discharge removal operations. Non-governmental agencies will use USCG owned radios and should be limited to supervisory personnel. Equipment loaned for this purpose would be operated as USCG stations unlicensed by the FCC. When portables are loaned for this purpose, the OSC should assign voice call signs according to user function in the cleanup operation (eg. beach supervisor 1, skimmer 2, etc).

Disaster Warnings

If the properties of a spilled substance pose an immediate threat to human life and property, through toxic gases, explosive or flammable hazard, dissemination of disaster warnings should be made by the CNMI Emergency Management Office. The CNMI OSC and other parties shall make every reasonable attempt to accomplish direct communication with CEMA.

Response to Public Inquiries during spills

During many spills, the press and interested bystanders will be seeking information regardng the source, cleanup efforts, etc. The OSC will instruct cleanup forces and monitors to direct all inquiries to the OSC or the PIO. Control has to be maintained on the accuracy and authority of information released in order to provide the public with reliable information. Due to the size of the CNMI community, any oil spill should be reported to the newsmedia. The following personnel to be notified will be able to determine whether the spill is newsworthy.

Pacific Daily News	Frank Rosario	6423
Marianas Variety	Bob Grimac	6341
Commonwealth Examiner	Derson Ramon	7231, 7232
KSAI Radio	Stan_____	6520, 6521
WSZE Radio	Angel Ocampo	9304

The CNMI Public Information Officer is Jack Angelo, tel. 6106, 6129.

Content of Public Releases

The OSC usually does not deal with the press until incident response is well underway and has aroused public attention. The following guidelines may aid in responding to inquiries from the press.

a. Summarize the particulars of the case in your mind or on paper so

that an adequate chronology can be given. Concentrate on the 5 W's (who, what, when, where, why).

b. Give facts, not opinions, when responding to inquiries.

c. Give a narrative explanation rather than an abrupt 'yes' or 'no'.

d. Appear open and straight forward when responding; do not respond with incomplete or doubtful answers.

Section 10

Oil Spill Fund Activation Procedures

Oil Spill Fund Activation Procedures (311K funds)

A primary purpose of this Plan is to encourage the person responsible for a discharge to take appropriate remedial action promptly. Usually this will mean that the cost of removal of the discharge shall be borne by the person responsible for the discharge. The OSC and other officials associated with the handling of a pollution emergency shall make a substantial effort to have the discharger voluntarily accept this responsibility.

In the event that the person responsible for the discharge or threat of discharge does not act promptly, does not take or propose to take appropriate actions to remove the discharged pollutants, or if the person responsible for the discharge is unknown, CNMI and/or Federal discharge removal actions may be initiated pursuant to Section 311(c)(1) of the Clean Water Act. The discharger, if known, is liable for costs of such CNMI and/or Federal removal actions in accordance with Section 311(f) of the Act.

In order to access the fund, the OSC must determine that the following situation exists to meet the criteria:

1. That oil has been discharged into or upon the waters of the CNMI and or the United States or adjoining shoreline; and

2. That the OSC has given the discharger legal notification of improper or inadequate cleanup action and the discharger has failed to voluntarily conduct adequate cleanup action; or

3. The identity of the discharger is unknown.

The OSC shall exert adequate control of removal operations so that he can certify that reimbursement from the Fund is appropriate. Care must be exercized to insure that misunderstandings do not develop about reimbursement of funds expended for removal activities. The OSC should not knowingly request services for which reimbursement is mandatory unless reimbursement funds are known to be available. Similarly, agencies supplying a reimburseable service should determine the source of reimbursement before committing resources necessitating reimbursement.

Funding of response actions not associated with any removal activity, such as scientific investigations, law enforcement or public relations, is the responsibility of the agency having statutory or executive responsibility for those specific actions. Surveys of whether pollution cleanup or abatement is appropriate can be charged to the Fund.

Procedures for Activating the Fund

The CNMI OSC will provide the Federal OSC with the following written information (following a telephone communication) who shall provide such information to the Commander, 14th Coast Guard District in

accordance with the Region IX Plan:

1. Statement that the OSC has determined that Federal discharge removal actions are necessary;

2. Description and location of the discharge;

3. Date spill occurred and type of pollutant;

4. Estimated cost of removal actions reimburseable from the Fund. The estimate should include all Phase III and IV activities (only);

5. Estimated time needed for removal;

6. Name of discharger or suspected discharger, if known.

Reporting and Accounting Procedures

1. As soon as practicable after termination of Phase IV actions, the OSC will submit to the Federal OSC a list which includes the following information. Such information shall then be provided to the Commander, 14th Coast Guard District.

a. Names of agencies and contractors authorized by the OSC to participate in Phase III or IV actions;

b. a general description of the functions of each agency performed; and

c. an estimate of the cost of each function performed.

2. Within 30 days of the termination of Phase IV actions, each CNMI agency must submit to the CNMI OSC:

a. An itemized list of costs that it desires to be paid from the Fund.

b. An itemized list of costs to be recovered against the responsible party under Section 311(f) or (g) of the Act.

3. Within 60 days of the termination of Phase IV actions, the CNMI OSC shall all reimburseable expenses to the Federal OSC who shall submit such information to the Commander, 14th Coast Guard District.

4. Each CNMI agency desiring payment of costs from the Fund must keep accounting data to support the itemized costs and submit that data to the CNMI OSC at his request in such form as the Federal OSC may prescribe.

Reimburseable Expeditures

This section applies to the CNMI when it is acting as the Federal OSC as provided under the CNMI/Federal MOU. This section does not apply to

the CNMI when the Federal OSC has assumed direct command of cleanup actions.

The CNMI will be reimbursed from the Fund for expenditures authorized by the CNMI OSC which were financed from agency funds and which were incurred in removal operations. Reimbursable expeditures are defined by 33 CFR 153.

33 CFR 153.407 provides that the following costs incurred during performance of a Phase III or IV activity, as defined by 33 CFR 300 Subpart E, as authorized by the CNMI and/ or Federal OSC under the authority of Section 311(c) of the Act and the CNMI/Federal MOU, or during the removal or elimination of threats of pollution hazards from the discharges, or imminent discharges, of oil or hazardous substances, and the removal and destruction of vessels, so authorized by the CNMI and/or Federal OSC under the authority of Section 311(d) of the Act are reimbursabe to the CNMI:

a. Costs found to be reasonable by the OSC incurred by government industrial type facilities, including charges for overhead in accordance with the agency's industrial accounting system.

b. Actual cost for which an agency is required or authorized by law to obtain full reimbursement.

c. Costs found to be reasonable by the OSC incurred as a result of removal activities that are not ordinarily funded by an agency's regular appropriations and that are not incurred during normal operations. These costs include but are not limited to the following:

i. Travel (transportation and perdiem) specifically requested of the agency by the OSC.

ii. Overtime for CNMI personnel specifically requested to be on-scene by the OSC.

iii. Incremental operating costs for vessels, aircraft, vehicles, and equipment incurred in connection with the removal activity.

iv. Supplies, material, and equipment procured for the speciric removal activity ad fully expended during the removal activity.

v. Lease of rental equipment for the specific removal activity.

vi. Contracts costs for the specific removal activity.

Limitations on use of the Fund

The Fund may be used only during Phase III and IV response activities and to remove substantial threats.

CNMI Access to the Fund

CNMI Removal Activities

This section applies to the CNMI in situations in which the Federal OSC is the responsible official and when the CNMI OSC is acting in a support role to the Federal OSC.

The CNMI if affected by a discharge may act where "necessary" to remove such dishcarge and may be reimbursed from the Fund for the reasonable costs incurred in such removal. FWPCA Section 311(c)(2)(H) states that removal by a state is "necessary" when the (CNMI and/or Federal) OSC determines that the owner of oprator of the vessel or onshore facility from which the discharge occurs does not effect removal properly and that:

a. CNMI action is required to minimize or mitigate significant damage to the public health or welfare which Federal aciton cannot minimize or mitigate; or

b. removal or partial removal can be effected by the CNMI at a cost which is not significantly greater than the cost which would be incurred by the Federal departments or agencies.

Not withstanding the above, CNMI removal actions are not "necessary" if not in compliance with Federally sanctioned cleanup techniques and policy.

2. CNMI removal operations are considered to be Response Phase III and/or Response Phase IV actions to the extnet that the same operations undertaken by a Federal agency would be so considered.

3. Access of the Fund by the CNMI shall be through the predesignated Federal OSC via the CNMI OSC.

CNMI Agency Reimbursement

The CNMI OSC will seek reimbursement for removal operation expenditures on behalf of all CNMI agencies identified in this Plan. CNMI agencies shall use standard CNMI Department of Finance Job Orders to bill the CNMI OSC. The CNMI OSC shall the CNMI equivalent of SF-1080. Refer to the project number assigned by the USCG to the Federal OSC. The CNMI OSC shall mail the bill to the Federal OSC for certification that services and materials for which billing is submitted were requested by the Federal OSC.

Monitoring Cleanup Operations

When the discharger underatakes appropriate cleanup operations, the CNMI and/or Federal OSC monitors progress and provides counsel. No

operating funds are provided for this activity. The Fund is not activated; and thus there is no provision for paying the CNMI for its monitoring activities.

Prohibited Discharge From a CNMI or Federal Facility

Expenses for such discharges are to be borne by the CNMI agency whose facility is responsible for the prohibited discharge. The Fund is not available to pay the CNMI for the payment or reimbursement of its cost incurred in the removal of oil discharged from a vessel or facility that it owns or operates.

Prohibited Discharge From a non-CNMI or non-Federal Facility

Federal cleanup activities, including those cleanup activities the CNMI undertakes in conjunction with the CNMI/Federal MOU, are instituted when the pollution discharger is: 1) unknown, or 2) does not act promptly, or does not take or purport to take appropriate cleanup action. "Direct" costs incurred for this purpose are chargeable to the Fund. If and when the identity of the discharger is established, the Coast Guard bills these "direct" costs to the discharger as well as certain "indirect" charges (personnel and equipment charges which would have been incurred during normal operations).

Documentation for Enforcement and Cost Recovery

A part of any oil spill cleanup is the investigation and documentation function supporting enforcement of the FWPCA. It is necessary, therefore, to establish uniform procedures for collection of samples, taking of photographs and collecting other information consistent with the several phases in federal response situations in which the CNMI is acting as the Federal OSC, and in support of later direct Federal response.

Necessary information and sample collection must be performed at the proper times during Federal involvement in a spill, for later use in identifying the party responsible, in cleanup cost recovery, damage recovery, and civil and criminal enforcement actions under appropriate CNMI and Federal statutes.

Time is of great importance since wind, tide, and current may disperse or remove the evidence, and witnesses may no longer be available. Thus, during the phase of discovery and notification, containment and contermeasures, cleanup and disposal, and restoration, the OSC must take the necessary action to ensure that information, records, and samples adequate for legal and research purposes are obtained and safeguarded for future use.

Elements of Violation Under Section 311 FWPCA

Section 311(b)(3) of the Act prohibits the discharge of harmful quantities of oil into or upon the navigable waters of the United

States adjoining shorelines (to 3 miles), or into or upon waters of the Contiguous Zone (3-12 miles), in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States. A harmful quantity is defined in 40 CFR 110 as that amount which will cause a film or sheen on, or sludge or emulsion in or under the water. The only exception in the minor amount of oil discharged from the exhaust of a 'properly functioning' marine engine.

The Act provides for a civil penalty of up to $5,000 against the owner/operator or person in charge of the source of the discharge.

Section 311(b)(6) of the Act mandates that, as soon as the 'person-in-charge' of the vessel or facility has 'knowledge of a discharge, he should report the discharge to the U.S. Coast Guard or to the U.S. Environmental Protection Agency. The Coast Guard National Response Center is prepared to receive such calls.

The Act provides for a criminal penalty of up to a $10,000 fine, imprisonment for one year or both, for failure to notify.

Section 311(j) of the Act provides for the creation of regulations (a) establishing methods and procedures for removal of discharged oil (33 CFR 153), and (b) establishing procedures, methods and equipment and other requirements for equipment to prevent discharges and to contain discharges (33 CFR 154, 155, 156).

The Act provides for a civil penalty of up to $5,000 for violation of liability or pollution prevention regulations.

Section 311(f)(1) establishes that 'except where the spiller can prove that the discharge was caused solely by (a) an act of God, (b) an act of war, (c) negligence on the part of the U.S. Government, or (d) act of a third party, ' financial liability to the U.S. Government will be in an amount not to exceed $5,000,000 for an onshore or offshore facility, for oil spill cleanup. Cleanup liability is unlimited if the discharge is proven to result from willful negligence or willful misconduct within the privy and knowledge of the owner. Further, vessels must carry a Certificate of Financial Responsibility to cover their potential liability. Such cleanup costs constitute a maritime lien collectible in an action in rem against the vessel in a U.S. District Court.

Investigations and documentation of evidence must be performed in a timely manner throughout the oil spill event. As several agencies may be on scene and documenting the incident for violations of other laws and cosdes, cross exchange of evidence may be valuable and is encouraged. General procedures for evidence gathering are outlined below.

The elements which must be established for a Section 311(b)(3) violation are as follows:

1. Establish that an oil discharge occurred.

2. Establish that a harmful quantity was discharged. Verify that a film or sheen was created on or a sludge or emulsion was deposited in the waters.

3. Establish that the discharge entered into or upon the waters of the U.S. or upon the adjoining shorelines or into or upon the waters of the contiguous zone or into waters where the U.S. exercizes exclusive resource management authority. Use photographs and/or written narrative recording the path of the polluting substance from the source until entering the water.

4. Establish the source of the discharge. Particular attention must be paid to establishing the 'link' between the discharge and the source. Take samples from the water and the suspected source. Take samples from other vessels in vicinity even though the investigation indicates that these vessels may not be the source.

5. Establish the identity of the owner or operator or person in charge of that source.

The elements which must be established for a Section 311(b)(6) violation are as follows:

NOTE: A violation of Section 311(b)(5) is a criminal violation, thus Miranda warnings must be given to persons suspected of violating this Section of the FWPCA.

1. Establish a violation of Section 311(b)(3) of the Act.

2. Verify time and incident occurred.

3. Identify person in charge of vessel or facility at that time.

4. Establish the time the person in charge 'had knowledge of' the discharge.

5. Establish any reporting procedures taken by the person in charge.

6. If reported by a person other than the person in charge, identify relationship to person in charge.

Documentation of Cleanup Costs

Cleanup costs are always documented irregardless of whether the CNMI OSC is acting in the Federal role. Such documentation will facilitate payment of costs from te Fund, and to enable the CNMI Attorney General or the U.S. Attorney to substantiate a liability claim against the discharger in court as provided in Section 311 (f)(1) of the FWPCA. Further, if the discharger is known, he must be provided with legal notification of his liability for cleanup under the Act. If the

cleanup is proceeding in an inadequate manner, the spiller must be advised to increase his effforts, or the cleanup will be taken over by the CNMI when in a Federal role, or by the Federal Government.

Legal Notice to Suspected Discharger

If an alleged spiller can be identified, and cleanup is required, the OSC must immediately notify the owner/operator or appropriate responsible person, in writing of CNMI and/or Federal interest regarding his liability of cleanup, and other aspects of Section 311 FWPCA and/or CNMI statutes as appropriate.

Legal Notice of Improper Action

If the alleged spiller fails to inititate cleanup action, or inititates improper or inadequate cleanup action, the OSC must advise the spiller in writing that his acitons are considered inadequate and that he is liable for cleanup cost incurred in the event of a Federal cleanup, including when CNMI is acting in a Federal role.

Documentation Procedures

It is noted that cleanup funding may only be utilized when:

a. The elements of the proceeding requirements of this Section are satisfied and;

b. The source of the discharge is unknown; or

c. The spill occurred from a non-Federal and/or non-CNMI owned vessel or facility and the owner/operator after legal notification refused cleanup; and

d. The CNMI OSC when acting in the Federal role must directly request or order services or equipment and effect a purchase contract (verbal or otherwise) before services can be paid from the Fund.

Accounting procedures for administration of the Fund are outlined in 33 CFR 153.

The OSC is required to keep detailed records of personnel and equipment utilized in the cleanup. Participants must submit invoices to the CNMI OSC for certification who shall forward such certified invoices to the Federal OSC for final certification prior to being paid. CNMI agencies will submit 'direct' costs on the CNMI equivalent of Form SF-1080. Private contractors will follow normal invoice procedures.

The CNMI OSC must reconcile all invoices with the purchase orders and with completed records of performance/receipt. The CNMI OSC then

makes a certification on the original invoice. This statement certifies that the actions for which reimbursements are being requested werre authorized as Phase III or Phase IV removal costs, and that they are reasonable, and proper for payment from the Fund. This process is repeated by the Federal OSC who shall have final certifying authority over CNMI authorized costs.

Documentation of resources expended must be made by all parties to carry out the provisions outlined above.

Federal Pollution Monitor Documentation

When the Cleanup is Federally funded, including when the CNMI is acting in the Federal role during Phase III and Phase IV removal activities, each monitor assigned to a spill site is required to keep meticulous records to document cleanup costs. Daily sheets should be made up and turned in to the Cleanup Manager and must reflect areas for which charges would be made to the government. The record sheet should be made out on-scene by the monitor as equipment and personnel are arriving, etc., and not when the Monitor is asked to sign contractor work sheets.

a. Personnel will be listed by name and position including time arrived and time departed.

b. Equipment

1. Consumable Equipment such as sorbent booms, pads, etc., shall be accounted for by quantity used in whole bundle quantities only. Care must be taken to ensure the monitor witnesses the opening of a bundle of pads or bags of sorbent boom. Do not give credit for partial bundles or single sections of boom. When the spill cleanup is completed, the contractor should be required to turn over any opened packs of material since the Fund will normally be charged for the entire pack even if not completely expended. If the rate schedule includes rakes, shovels, etc., as consumable, these should be collected for use in later oilspill cleanup activities.

2. Non-consumable equipment should be individually checked in and out. Boats, motors, trucks, trailers, radios, etc. should be listed separately. The Cleanup Manager should be consulted if questions arise about contract items.

Enforcement Procedures

Civil Penalty Hearings

Violations of Section 311(b)(3) (discharge) and 311(j) (pollution prevention and liability regulations) carry civil penalties of up to $5,000 per offense. Documentation of these violations is developed by the CNMI OSC, particularly when acting in a Federal role. Such documentation is transmitted to the Federal OSC who is responsible for validity of the documentation. The Federal OSC forwards the

documentation to the 14th USCG District Marine Environmental Protection (mep) Office (Honolulu). The violation is checked for legal sufficiency, and the violator is given an opportunity for an informal hearing on the matter. The violation documentation must show 'a preponderance of evidence' in order to assess a penalty. A desighated hearing Officer will conduct the informal hearing and will asseess an appropriate penalty. The amount of the penalty is based on the size of the business of the owner/operator, the ability of the owner/operator to remain in business and the gravity of the violation. The spiller may appeal the Hearing Officer's decision to the Commandant.

Criminal Penalty Procedures

Violation of Section 311 (b)(6) of the Act (failure to notify) carries a criminal penalty of up to a $10,000 fine, one year imprisonment or both. Documentation of this is developed by the CNMI OSC when acting in a Federal role and sent to the Federal OSC who is responsible for its validity. The Federal OSC is sent to the 14th USCG District (mep) Office. The violation documentation must provide evidence 'beyond a reasonable doubt' rather than the less stringent 'preponderance of evidence' required for the civil penalty hearings.

Violations are processed and referred to the U.S. Attorney for action as he deems appropriate.

Collection of Cleanup Costs

Collection of cleanup costs is accomplished under the Collection of Claims Act. The cost records as developed by the CNMI OSC and approved by the Federal OSC are transferred to 14th USCG District Finance for assembly and payment of direct costs to participating agencies and companies. If the spiller is known, a total claim including direct and indirect costs is prepared for collection by the District Legal Officer and/or the U.S. Attorney.

Section 11

CNMI Chain of Command

CNMI chain of command by responsibility

ON SCENE COORDINATOR: the Federal or CNMI official predesignated by agreement of EPA, USCG and CNMI wholly responsible to coordinate and direct the response to spills, and discharge removal efforts at scene of a discharge. all response parties are directly or indirectly supervised by the OSC.

The CNMI OSC is _____

DUTY OFFICER: directly responsible for the personnel involved with the spill. it will be a function of the duty officer to coordinate the action of the forces operating under the OSC in order to ensure that all directions from the OSC are properly executed. This individual will directly supervise command post personnel, and will plot the movement and projected track of the spill, and advise the OSC.

The CNMI Duty Officer is _____

WATCHSTANDER: The command post watchstander will function to assure that the communications required by the OSC are properly maintained and that those logs and records required by the OSC are kept. The Watchstander shall keep the duty officer advised of pertinent information affecting the cleanup efforts such as the weather forecasts, tide changes, sunset, sunrise, etc. The watchstander shall report directly to the duty officer. He shall ensure that all information and/or inquiries are passed to appropriate personnel.

The CNMI Watchstander is _____

RECORD KEEPER: The record keeper will maintain records regarding the type and number of on-scene personnel and equipment utilized during the spill cleanup effort. He will record expendable resources utilized, certify liquid water hauler reports and document all contracts and purchase orders negotiated by the OSC. The records will be utilized to verify purchases made with regard to spill cleanup and to document the government claim in litigation with the alleged spiller.

The CNMI Record Keeper is _____

HISTORIAN: The historian is assigned the duties of preparing and maintaining a chronological record of important events in the spill history. This chronology may be used to :a) develop POLREPs; b) to augment the spill investigator's report; c) as a basis for the OSC's report required by 1510.56 of the National Plan.

The CNMI Historian is _____

PUBLIC INFORMATION OFFICER: The PIO will be assigned as

necessary to develop and coordinate press releases at the scene as directed by the OSC. The PIO shall arrange all press conferences and/or interviews. The PIO will be the liasion with the media and will provide access to the cleanup operation when such activities will not interfere with the ongoing cleanup. He will coordinate all VIP visits and overflights as may be necessary.

The CNMI Public Information Officer is _____

LOGISTICS OFFICER: The Logistics officer will be responsible for the establishment and maintenance of any berthing, messing, and supplies required during the cleanup. He shall ensure that all contracts entered into meet appropriate standards, and will prepare any purchase orders for the OSC's signature to obtain equipment and or materials required for the cleanup manager as authorized by the OSC.

The CNMI Logistics Officer is _____

CLEANUP MANAGER: The cleanup manager plays one of two roles:

Role I: If the spiller does not accept responsibility for the cleanup, is unknown, or is proceeding in a manner not acceptable to the OSC, the cleanup manager assumes responsibility for the cleanup operation as directed by the OSC. The cleanup manager determines the actions to be taken, orders the necessary equipment and personnel, and works closely with any contractors to ensure the spill is cleaned up in a thorough and efficient manner. The cleanup manager shall channel requests through the logistics officer to obtain necessary equipment. Additionally, he may have to utilize and integrate other personnel or volunteers into his work force. He must also be alert to see that all safety standards and procedures are followed.

Role II: In the case where the spiller accepts responsibility for the cleanup, the cleanup manager supervises and directs the monitoring activities. The number of monitors involved will be dictated by the extent of the spill. Monitoring is done to determine the ability of the forces and equipment at a particular a site to accomplish the cleanup tasks assigned to them. Monitors will be required to keep the cleanup manager informed of the progress of cleanup in their assigned areas. Additionally, the cleanup manager will work closely with the duty officer to ensure that personnel relief is provided for meals, rests, etc as needed.

The CNMI Cleanup Manager is _____

MONITORING PERSONNEL: Monitors will report to the cleanup manager and will be responsible to ensure that a proper cleanup is being conducted. They shall maintain records of the personnel and equipment used for each calendar day whenever a cleanup is conducted. When the spiller is conducting the cleanup, they shall act as te OSC's eyes to evaluate the extent and effectiveness of the spiller's efforts.

CNMI Monitoring Personnel include: _____
_____
_____

INVESTIGATOR PERSONNEL: Investigator personnel will investigate and document the causes and extent of the spill. They are responsible for obtaining timely statements, samples, and photographs of such violation. Investigators will determine the extent of the spill and report same to the duty officer or OSC so that cleanup crews may be directed to that area.

CMMI Investigator Personnel include: _____
_____
_____

SCIENTIFIC SUPPORT COORDINATOR: The SSC will work in conjunction with CNMI and Federal agencies and individuals to provide highly qualified scientific assistance to mitigate the environmental and socioeconomic impact of major spills. The SSC will conduct a preliminary assessment at spill onset to determine threatened resources and to advise on the least environmentally degrading methods of spill cleanup. The SSC will provide scientific assistance in assessing environmental damage resulting from spills; and to maximize research and development opportunities offered by a spill, especially with respect to improving future response capabilities.

The CNMI Scientific Support Coordinator is _____

OSC Responsibility

The OSC is responsible for ensuring that all oil and hazardous substance discharges are properly removed. The methods for effecting cleanup operations, in order of preference, are:

a. Spiller's personnel and equipment (or that of a contractor hired by the spiller).

b. Spiller's personnel (or spiller's contracted personnel) and Coast Guard/Federal Equipment.

c. Coast Guard contracted personnel and equipment.

d. Coast Guard/Federal personnel and equipment, and

e. CNMI personel and equipment (or CNMI's contractor)

Selection of appropriate option will be based on the specifics of each incident.

Under the National Plan, the OSC is responsible for the coordination and direction of all efforts aimed at the removal of the discharge.

In the absence of a Federal OSC, the CNMI OSC shall:

a. Immediately determine pertinent facts about a particular spill, such as its potential impact on human health and welfare; the nature, amount and locationof the material spilled; the probable direction and the rate of travel of the material; and the resources and installations which may be affected and the priorities for protecting them, consistent with this plan.

b. Determine the extent and nature of response necessary:

1. When the spiller can and does take adequate and proper action, the OSC will monitor the cleanup to ensure adequacy, to identify hidden trouble spots, etc.

2. When the spiller can not or will not take proper action, or when the spilller is unknown, the OSC will assume control of the removal operation and will conduct such operations as necessary to complete th removal.

3. In either case, containment shall be initiated immediately. Cleanup and disposal will begin as soon as proper equipment and personnel can be brought to the scene.

c. Request participation of other forces and the RRT through proper channels.

d. Immediately initiate and direct investigation, documentation and cost recovery actions, as appropriate.

e. Assure timely release of information relating to the spill. The OSC has final releasing authority on all such information (including POLREPS, press releases, requests for notice to mariners, security zones, restricted air spaces, etc.) Press releases will be issued on a timely basis and will be developed by the PIO as available.

Section 12

Operational Response Steps

Operational Response Actions

Phase I Discovery and notification

The CNMI Disaster Control Office maintains 24 hours telephone and radio watch.

Discharge Discovery

A discharge includes but is not limited to any spilling, leaking, pumping, pouring, emitting, emptying or dumping of oil (or any other hazardous substance).

A potential discharge is any accident or circustance which threatens to result in a discharge. A discharge may be discovered through:

a. A report submitted by the discharger in accordance with statutory regulations.

b. Through deliberate search by vehicle, vessel, police patrol or other monitoring personnel.

c. Through random or incidental observations by governmental agencies or the general public.

d. Incidental reports of fires, collisions, vessel grounding, or natural disasters such as storm damage and earthquakes.

Receipt of Discovery Report

The Disaster Control Officer receiving a report of a dishcarge shall immediately notify the designated CNMI OSC. Inaccurate or too little informaton will cause unnecessary delays, therefore, the reporter shall be prompted to provide the following minimum information:

a. Time discharge discovered or occurred.

b. Specific Location to the extent available

1. place name or other geographical description, or
2. lattitude and longitude, or
3. Distance and direction from a charged object or geographic locations, or
4. Vessel Berth, marina, slip number

c. Extent of coverage, color, substance, type and suspected source.

d. Is the caller reporting on behalf of the responsible party? If so:

1. Name, address, location and telephone number of the caller.

2. Name, address, location and telephone number of responsible

party.

e. If a vesel reports its own spill, obtain the name of vessel, nationality, documentation or local registration number.

A sample pollution report which should be utilized by persons receiving notification of a discharged is provided in _____.

Phase II Preliminary Assessment and Initiation of Action

General

The importance of this phase cannot be overemphasized. Preliminary assessment of the situation sets the response posture. Frequently, spills are underestimated on first arrival, the spill may appear to be in a relatively small area, and estimates of the amount spilled may be inaccurate. The natural forces of wind, gravity, and tide will disperse the oil over a much wider area prior to the arrival of cleanup equipment. It is this wider area that should be considered for planning and response. Knowledge of the fate of the oil spilled in similar situations in the same area should be used for comparison. Night spills are particularly troublesome as it is difficult to evaluate their extent or position. Overreaction is easily rectified, but underreaction could permit expansion of the spill and prolong the cleanup.

Action

Investigator Actions

The OSC is responsible for promptly initiating preliminary assessment which will include:

a. Determining the source of the spill if possible.
b. Conducting a complete survey of the spill and affected area.
c. Establishing good communication with the OSC and/or the Duty Officer and keeping them informed of the situation.
d. Establishing the parameters of the organization that will combat the spill.
e. Keeping everyone informed as to the situation and progress.

OSC Actions

The OSC must conduct a preliminary assessment using all available information, supplemented where necessary and possible by an on-scene inspections.

The OSC shall undertake actions to evaluate the magnitude and severity of the discharge or threat to public health and welfare and the environment, assess the feasibility of removal; determine the existence of potential responsible parties, and ensure that authority

exists to undertake all actions.

The OSC, in consultation with legal authorities whenever possible, shall make a reasonable effort to have the discharger voluntarily and promptly perform removal actions. The OSC shall ensure adequate surveillance over whatever actions are initiated. If effective actions are not being taken to eliminate the threat, or if removal is not being properly done, the OSC shall so advise the reponsible party.

If the spiller is unknown, refuses to initiate voluntary cleanup, or initiates inadequate cleanup, the OSC will take over direction of cleanup efforts. if the spiller assumes liability, the OSC will assume a monitoring role. Continuing efforts should be made to encourage response by the responsible parties.

There are several steps to be considered. The OSC must:

a. Determine if cleanup can be monitored/directed by assigned personnel and equipment, or if additional personel and equipment will be required.

b. Direct and monitor on-scene resources.

c. Evaluate present and anticipated resources.

d. Initiate investigation and documentation of the incident.

e. Respond to public inquiries regarding the incident.

Direct and Monitor on-Scene Resources:

The OSC will monitor cleanup and investigate the extent and concentration of the discharged oil. Oil spill cleanup operations must be constantly updated as new investigative reports are received and as areas become cleaned. Highest priority should be given to: a) securing the source of the discharge, and b) initial containment efforts as outlined in this plan.

Communications are paramount to the success of directing and monitoring the cleanup effort. The OSC will ensure adequate communications are provided for on-scene forces and from the OSC Command post to Federal counterparts if convened.

Evaluation of On-Scene Forces

Upon takeover of a spill, the OSC will initially call in pre-contracted or prearranged cleanup forces. If the OSC is in a monitoring role, he will monitor the spiller's efforts.

The OSC must be constantly alert to the changing oil spill situation, and must anticipate the build-up or reduction of on-scene forces, shelter, provisions, communications,or other support equipment that

will be necessry. Request for support not immediately and locally available will be made to the Federal OSC.

Initiate investigation and documentation

Documentation must be initiated early in the spill situation. Detailed guidance is outlined in the preceeding section.

Response to public inquiries:

The press and interested bystanders will be seeking information regarding the source, cleanup efforts, etc. The OSC will instruct cleanup forces and monitors to direct any inquires to: a) the OSC. b) PIO, or c) the spiller's representative. Control has to be maintained on the accuracy and authority of information released in order to provide the public with reliable information.

Use of Volunteers:

In many pollution emergency situations, volunteers desiring to assist in mitigating the effects of the discharge present themselves at the scene. The OSC shall be prepared to handle this eventuality. Declining to accept their assistance may not be a viable option. The volunteers are likely to put themselves to work, often to the detriment of overall response, if not given tasks.

The spiller should be encouraged to handle volunteers as part of his removal activities. As long as the spiller is taking adequate steps to remove or mitigate the effects of the discharge, CNMI action will be limited to monitoring; therefore, the use of volunteers appropriately should fall to the discharger. If the discharger refuses to deal with volunteers and the volunteers are unwilling to accept this, the OSC must act to insure that response activities are not impeded.

The OSC shall designate one or more persons to take charge of volunteers. This designee should be selected on the basis of knowledge of resonse techniques, ability to deal with the public, and leadership capabilities.

Information for and education of volunteer personnel in general response operations and procedures, as well as specific details of the discharge, is mandatory if response efforts are to be effective. The OSC should establish and maintain training programs for volunteer education for rapid on-site use.

Volunteer efforts should not normally be used to physically remove the oil, particulary when hazardous procedures or materials are involved. Volunteers should be assigned only to tasks with minimum safety risks such as beach surveillance, logistical support, bird and other wildlife treatment, and scientific investigation.

Phase III Containment, countermeasures, cleanup and disposal:

General

Defensive actions should begin as soon as possible to prevent, minimize or mitigate damage to the public health or welfare or the environment. Actions taken to limit the spread of oil in this phase are extremely cost effective. Booms and other barriers to confine the oil and limit its spread, or to keep more oil from entering the water, simplify cleanup by concentrating the oil. The timely availabilty of numerous cleanup contractors or prearranged crews is an important asset.

Action:

Actions may include analyzing water samles to determine the source and spread of the oil; controlling the source of the dishcarge, measuring and sampling; damage control or salvage operations; placement of physical barriers to deter the spread of the oil or to protect important resources; and the use of chemicals and other materials to restrain or disperse the the oil.

All attempts will be made by investigators and other response personnel to limit the flow of the spreading contaminant consistent with health and safety considerations. Usually the spread of oil can be slowed down or stopped by using some form of barrier. As effective control depends upon the timeliness of deployment, all effort shoud be made to deploy nearby barrier resources as soon as possible.

Appropriate actions should be taken to recover the oil or mitigate its effects. Of the numerous chemical and physical methods that may be used, the chosen methods should be the most consistent with protecting the public health and welfare and the environment. Sinking agents shall not be used.

Oil and contaminated materials recovered in cleanup operations shall be disposed of in accordance with this plan, or Federal Regional Plan if convened.

General Pattern of response

When the OSC receives a report of a discharge, actions normally should be taken in the following sequence:

1. Immediately notify the Federal OSC who in turn will notify the RRT.

2. Investigate the report to determine pertinent information such as the threat posed to public health or welfare or the environment, the type and quantity of oil, and the source of the discharge.

3. Officially classify the size of the discharge and determine the course of action to be followed.

4. Determine whether a discharger or other person is properly carrying out removal. Removal is done properly when:

a. The cleanup is fully sufficient to minimize or mitigate damage to the public welfare.

b. The removal efforts are in accordance with applicable regulations and guidelines, including the Federal Plan.

The preliminary assessment will probably show that the situation falls into one of five classes:

1. If the investigation shows that no discharge exists, the case shall be considered a false alarm and should be closed.

2. If the investigation shows a minor discharge with the responsible party taking proper removal action, contact should be established with the party. The removal action should be monitored to ensure continued proper action.

3. If the investigation shows a minor dishcarge with improper removal action being taken, the following measures shall be taken:

a. An immediate effort should be made to stop further pollution.

b. The responsible party shall be advised of what action will be so considered appropriate.

c. If the responsible party does not properly respond, he shall be notified of his potential liability for punitive fines under CNMI law and/or Federal response performed under the Clean Water Act. Liability under CWA includes all costs of removal and may include the costs of assessing and restoring damaged natural resources and other actual or necessary costs of a Federal response.

d. The OSC shall notify the Federal OSC who will notify the RRT.

e. Information shall be collected for possible recovery of response costs.

4. When the investigation shows that an actual or potential medium oil discharge exists, the OSC shall follow the same general procedures as for a minor discharge. The Federal OSC shall be notified who shall determine whether to recommend activation of the RRT.

5. When the investigation shows an actual or potential major oil discharge, the OSC shall follow the same general procedures as for minor and medium discharges.

Phase IV Documentation and Cost Recovery

This section closely follows Federal guidelines. It assumes that the CNMI has negotiated an MOU with the USCG to permit the CNMI to recovery costs as provided by the CWA, and that the CNMI OSC is acting in the role of Federal OSC. It is further assumed that USCG will take appropriate action to recover CWA expenditures from the responsible party and to prosecute violations of Federal law. In order to facilitate these steps, it is important tht the CNMI follow federal procedures for documentation and cost recovery. In the event of a spill of such magnitude that Federal response is necessry, the CNMI role will become a support role for federal actions. In such cases CNMI documentaton will form the basis for further documentation of Federal costs incurred. CNMI should, however, continue to document its costs for later recovery, and continue to investigate the discharge for potential prosecution under CNMI authority.

Documentation shall be collected and maintained to support all claims for financial reimbursement as provided in the Clean Water Act and to form the basis for subsequent cost recovery. In general, documentation should be sufficient to prove the source and circumstances of the incident, the responsible party or parties, and impact and potential impacts to the public health and welfare and the environment. When appropriate, documentation should also be collected for scientific understanding of the environment and for the research and development of improved response methods and technology.

The OSC shall ensure the necessary collection and safeguarding of information, samples, and reports. Samples and information must be gathered expeditiously during this response to ensure an accurate record of the impacts incurred.

The OSC is responsible for proper documentation of a response activity. Investigation, documentation and enforcement procedures include all actions taken to record the events of the spill situation and to ensure adequate documentation for cleanup cost recovery and potential prosecution under CNMI and/or Federal laws.

Proper documentation for cost incurred as a result of CNMI response to an oil pollution incident is of extreme importance for two primary reasons. First, cost must be sufficiently documented to allow for subsequent recovery from the responsible parties. Frequently, this involves legal proceedings and cost documentation must, in all cases, be sufficient to withstand scrutiny of the court. Second, costs must be documented to permit recovery from the Oil Pollution Fund for out-of-pocket expenses incurred by CNMI.

Section 13

Response Steps

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L WILL TRAVEL IN FEET AT WIND VELOCITIES IN KNOTS

T	15KT	20KT	25KT	30KT	35KT	40KT	45KT	50KT
	52	69	86	103	121	138	155	172
	258	344	430	516	603	689	775	861
	516	689	861	1033	1205	1377	1549	1722
	775	1033	1291	1549	1808	2066	2324	2582
	1033	1377	1722	2066	2410	2754	3099	3443
	1291	1722	2152	2582	3013	3443	3873	4304
	1549	2066	2583	3099	3615	4132	4641	5165
	1808	2410	3015	3615	4218	4820	5423	6025
	2066	2754	3443	4132	4820	5509	6198	6886
	2324	3099	3873	4648	5423	6198	6972	7747
	2582	3443	4304	5165	6025	6886	7747	8608
	2841	3787	4734	5681	6628	7575	8522	9468
	3099	4132	5165	6198	7230	8263	9296	10329

nning, Equipment and Training for Oil Pollution Control,
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Section 14

Methods for Cleaning Up Oil Spills

Methods of Cleaning Up Oil Spills

Once an oil spill has occurred ther are a number of steps that should take place. First, the spill is discovered and notificaton is given to the appropriate authority. Second, the spill is evaluated and a course of action inititated. third there are containment and counter measures, and lastly, documentation and cost reovery of the clean up operation.

There are four cases of oils spills which must be considered:

a. an oil spill at sea which will not foul coastal land areas;
b. An oil spill at sea which will foul coastal land areas unless dissipated;
c. An oil spill at sea which has fouled coastal land areas;
d. An oill spill in internal waters which has fouled land areas.

Case 1. The oil spill at sea which will not foul a coastal land area can usually be left to dissipate itself by natural means (bio-degradation, wave action, evaporation of volatile compounds, etc.) regardless of whether the oil spilled is a heavy or light oil. The location, size and forcast direction of movement of the slick should be widely disseminated to permit commercial and private ships/boats to avoid the slick area. The slick should be kept under surveillance until rendered harmless by natural action.

Case 2. An oil spill at sea which will foul coastal land areas unless dissipated must be subjected to the following critical analysis:

a. If the area is remote, not utilized for recreation and does ot include regularly harvested fisheries, it is very probable that less harm would be done to the ecology, regardless of the oil product spilled, by taking not direct action and allowing the oil to dissipate through natural action.

b. If the area is remote, not utilzed for recreation but does include a regularly harvested fishery, spills of heavier oils could be ignored, but spills of ligher oils should be dissipated as far at sea as possible. This decision should have to be made based on the best information available at the time at the scene.

c. If the coastal land area is utilized for recreation, all spills should be dissipated as far at sea as possible by chemical means. Provisions should be made to counteract small oil patches, scum, etc., which might reach the shoreline utilizing sorbents, chemicals and/or mechanical removal.

Case 3. An oil spill at sea which has polluted a coastal land area must be subjected to analysis similar to but more critical than that of case 2 above.

a. If the polluted area is remote, or utilized for recreation and no

regularly harvested fishery is located there, the most reasonable course of action will probably be to take no direct action and let the area cleanse itself by natural means. This course of action may not be politically acceptable because of the emotionalism which usually surrounds an oil pollution incident. A decision of this type would require the agreement of a number of CNMI and possibly Federal agencies and can only be made based on direct information from the scene.

b. If the affected area is used for recreation and/or includes a regularly harvested fishery, cleanup action must be initiated immediately and prosecuted vigorously. The exact form(s) these actions should take can only be determined by the On Scene Coordinator since the use of chemical dispersants may do more ecological damage than the oil. Sorbents should be available as should containment booms mechanical removal equipment, earthmoving equipment, etc. an oil spill/pollution incident under the conditions described above would require a level of expertise which is not routinely available in the CNMI. Until Pacific Strike Force teams arrive on scene, designated CNMI parties must be prepared to take correct and effective action.

c. Case 4. An oil spill in internal waters is the most probable kind of oil spill. Such an oil spill will invariably foul valuable land areas. Removal operations must be prosecuted quickly, vigorously and accurately. Oil which has not yet contacted the shoreline should be confined by booms, mechnically removed and treated with sorbent material. Sorbent materials should be distributed on shore where oil has accumulated; sorbents should not be deployed in the water unless the vast majority of spilled oil has been recovered. Chemical dispersants should only be deployed if authorized by designated CNMI conservation authorities. Expert advice concerning the best ways of dealing with the clean-up of the spill should be requested from Federal counterparts.

Protection of Inshore Waters

One of the most basic lessons to be learned from all major oil spills is that if a substantial quantity of crude or relatevely persistent oil is lost by an instantaneous release close to the coast it is highly unlikely that any response at sea will be sufficiently effective to prevent some, if not most, of the oil reaching inshore waters and shorelines unless offhshore winds and currents prevail. Faced with the reality of the situation, all that has been possible to do has been to minimize the extent of the damage.

Experience has shown the impossibility of protecting the whole length of a threatened coastline. However, on many occasions a lack of detailed knowledge of local resources and agreed policy on priorities for protection has resulted in the limited response capability available being so widely spread that the effort was inadequate in all areas with the consequence that no location received any effective protection at all.

The problem of protection and clean-up of inshore waters and shorelines has often been further exacerbated by a lack of suitable equipment and trained operators. Delayed and incorrect deployment of the equipment that has been available has also frequently occurred as a result of the lack of planning and local personnel experienced in its use. For example, schemes for the deployment of booms during incidents frequently have been over-ambitious, attempting to totally prevent ingress of oil into areas rather than trying to minimize contamination in a realitic manner. This has resulted in booms being deployed in situations where the effect of wind, waves and currents was greatest. As a consequence, booms have been totally ineffective, or at worst, irreparably damaged. Even when booms have been sensibly located, freqently they have not been supplemented by a suitable oil collection capabiltity, and have often been left unattended, especially at night, with the result that tidal changes or excessive accumulations of oil have negated any good effects that had previously been achieved.

Another problem enountered at oil spills related to the compatibiltiy of different makes of equipment. Often the On Scene Coordinator has to accept, through lack of any immediately available alternative, a number of different booms. These will inevitably differ in their dimensions, modes of construction, flotation characteristics and, most importantly, mechanisms for joining sections together. To protect a wide area it may be necessary to join together two different makes. This has always proved to be very difficult and only accomplished by the use of rope, chain, prayer or some oter arrangement. Such a joint has invariably proved to be a point of weakness where oil can escape, often with damaging consequences.

The CNMI should use particular care to ascertain that equipent on hand, and planned purchases are fully compatible with CNMI owned equipment and equipment owned by oil companies and other private parties.

Clean-up Response on Shore

The need for a rapid response has not normally been so critical as for the clean-up operation at sea or the deployment of protective measures in inshore waters. The one major exception has been the case of concentrations of oil deposited on beaches or trapped in coves, etc. that could be moved by subsequent tides or changes of wind thereby causing widespread contamination of areas that may otherwise have remained unaffected. While the rapid and effective containment and recovery of such oil has frequently been vital during major oil spills it has rarely been accomplished.

The choice of cleanup response ashore again depends upon the nature and extent of the fouling, the characteristics of the area and the efficacy of the treatment methods available. There have been many occasions during major spills when the best course of action has been to do nothing. However, leaving the oil to degrade and dissipate naturally has proved to be even more difficult once the oil is ashore

and conspicuous to the the public. All too often this has resulted in over-reaction and the massive mobilization of manpower and machinery when doing nothing, or at most a limited response would have been more effective and less damaging in the long term. Thus while sensitive areas such as coastal wetlands have been shown to recover quickly from single foulings they have been found to still show evidence after several years of the physical damage caused by vehicles or even personnel used during cleanup operations. Animals on rocky shores have similary been shown to be resistent to oil especially if it has weathered at sea for a period and to be significantly affected only by a severe coating sufficient to smother them. Far greater damage has been caused during many spills by the unnecessary use of high pressure hoses, steam, dispersants or other techniques used to remove the oil. A similar situation has been found to apply to sandy beaches when the amount of fouling has been light. The alternative to natural dissipation and degradation has been the physical removal of the oiled sand and an associated large quantity of clean sand. On a number of occasions such large scale removal of sand has not only reduced the amenity value of the area, but has also enhanced erosion sometimes to the extent that replacement material has had to be deposited in an attempt to remedy the situation.

When removal of oil from shorelines has been necessary, the methods employed have usually been relatively straightforward and on most occasions have not required sophisticated clean-up equipment. For example, removal of oil from tourist and recreational beaches has ususally been best accomplished by the combination of small teams of laborers with shovels and limited mechanical equipment (e.g. graders, bulldozers, front-end loaders). When contamination has been sufficiently heavy, it has frequently been possible to use suction trucks or skimmers to remove much of the oil.

A variety of methods and a great deal of improvization have been found to be requrired to clean up a contaminated shoreline. Non-toxic dispersants if approved, heated seawater, steam, high pressure hosing and sand blasting of manmade structures, use of sorbents, careful trimming of coated vegetation and a wide variety of other methods in addition to physical removal have a have all proved useful, particularly during the final stages of cleanup. Inevitably, shoreline clean-up has always proved time-consuming and labor intensive. It has also never been possible to achieve the same degree of cleanliness in all areas.

Sorbents should be deployed on important shorelines and beaches in advance of a spill reaching shore. By using sorbents as a preventitive device instead of a recovery device, severe contamination can be avoided. Any type of sorbent which will remain on the shoreline without blowing away is adequate for this purpose. This includes sorbent sheets and sorbent booms tied together.

The materials should not be spread on the shoreline too soon. Make a calculation of the drift rate, and in consideration of the tide, to plan the best time to deploy.

In many cases oil will have reached the shoreline before protective steps could be taken. Particulate sorbents and some sorbent sheets can be used to leech oil from the surface of a beach if the oil has not soaked in too far. This works especially well below the high tide level where the sand is water soaked. If sorbents are spread on these areas at low tide, some oil will be absorbed immediately. Then as the tide comes up, water will force oil out of the sand where it will then be absorbed. The oily sorbents can then be recovered easily either by skimming or by hand. The area should be boomed-off before using the sorbents to prevent it fom getting away.

Priority of Cleanup Operations

It is extremely important in the early hours of a spill that all personnel involved know priority of operations to be carried out.

The first step involves the stopping of the discharge. This may be range from closing off valves, diverting flows to impound areas, removal of the damaged ship, the moving of the ship to a less vulnerable area, the lightering of the cargo, the stopping of a leak with a patch, the transferring of cargo to other tanks which are not damaged, or if feasible, by encircling the ship or other point of discharge with oil spill control booms to retain the oil.

The second step involves implementing a plan to protect sensitive environmental systems such as mangroves, critical or important habitats, economically and recreationally important beaches and other areas before the oil reaches them. This protection may involve booming with oil spill booms or using deflection booms to cause the oil to bypass the sensitive area and impact less sensitive areas.

The third step is the prevention of the released oil from coming into contact with the coastline by dealing with it offshore. This may involve the use of mechanical means to contain and remove the oil or may include chemical treatment by dispersants to disperse the floating oil into the water column.

The fourth step assumes the above phase is unsuccessful and that the oil is pooled against the coastline in areas where the coastline serves as a natural boom to collect and pool the oil or where booms can be used to hold the oil in pools and prevent it from moving. If the oil can be removed at this point, the removed material will be in the least contaminated condition and the cost per unit volume will usually be lower. It is particularly desirable to collect the oil where it can be most easily removed, in consideration of environmental damage which can result from removal actions.

If the oil becomes stranded on the shore, a variety of processes are needed to remove it. Priority is usually given to removal from the beach because the use of mechanical equipment may lead to a higher recovery rate and more thorough removal. Removal from the wetlands and rock areas follow in the priority sequence.

After the loose or liquid oil is removed, the priority shifts to that of removing the materials contaminated by the oil, such as vegetation, trash, collected absorbents, etc.

The final steps in the impacted zone are the intensive cleanup by washing with low and high pressure water systems and other forms of cleanup to leave the coastline in a condition where it can again be used. Part of this cleanup is the restoration of damaged environment or of those areas damaged in the cleanup operation such as access roads, interim storage pits, damage to roadways and indirect damage, such as to hotels by cleanup crews.

The final steps dealing with the collected material are the consolidation of the materials from the interim storage areas near the impacted zones to final storage areas and the activities to reclaim the oil or to dispose of the oil.

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TYPICAL PRIORITY OF RESPONSE OPERATIONS

1. Stop the discharge of oil.

2. Protect endangered environmental systems of greatest value.

3. Contain and remove the oil or otherwise prevent it from coming ashore.

4. Remove floating oil and mousse from the water where possible and transport to interim liquid storage.

5. Remove stranded oil from beach faces to interim liquid storage.

6. Remove stranded oil from wetlands to interim liquid storage.

7. Remove oiled sand, beached seagrasses, dead vegetation and detritus and transport to interim dry storage.

8. 'Polish' cleanup by deployment of sorbents, cleaning rockfaces, ramps, breakwaters, etc.

9. Move materials from interim storage to final disposal sites.

10. Restore environmental systems damaged by the oil or by the protection and cleanup operations.

11. Reclaim or dispose of residual materials.

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"DO'S AND DON'TS" FOR CLEANING A SANDY BEACH

WHAT TO DO	WHAT TO AVOID
Consider amenity use of affected beach, seasonal influences and ecological advice to determine the degree of optimal cleanup.	Do not overclean; in particular do not remove more sand and substrata than is absolutely necessary.
Bear in mind that under unfavorable conditions a second cleanup may be necessary.	Do not let machinery/people run over contaminated beaches before cleaning.
If dispersants or other chemicals are used, apply them with the incoming tide.	Do not use dispersants without first obtaining USCG approval. Do not use undiluted dispersants. Do not use fresh water to hose down dispersants.
Adhesion of oil to sand may be prevented by using herding agents.	
Use earthmoving machinery, or where impossible, manual labor to gather oil and oily sand.	Do not pile oily sand higher than 2'
Decide whether on-site disposal is possible; if not arrange transport or temporary storage.	Do not 'bury' oily debris or plow into the ground. Avoid driving oil into inaccessible areas or tidal and subtidal zones. Raking of the top layer of sand is, however, an appropriate way to accelerate biodegradation.
If necessary, move unaffected sand into areas where large volumes of oiled sand have been removed.	Do not destroy vegetation bordering the beach more than absolutely necessary; instead accept slightly oiled spots. Avoid displacing rocks and boulders lodged in the beach.

Source: Adapted from: Proceeding of the 1983 Oil Spill Conference, page 387.

Section 15

Disposal

Disposal

Large quantities of oil and oily debris are recovered during cleanup operations at sea and onshore. The formation of water-in-oil emulsions and the incorporation of sand, seaweed and other debris has almost invariably resulted in a requirement to deal with a volume of material that has been in excess of the total quantity of oil originally spilled.

The techniques for dealing with such material have included: re-refining of relatively uncontaminated oil; landfarming, composting; dumping at inland sites; incineration and treatment with a cloaking agent for subsequent use as land fill. All techniques have been shown to have considerable limitations, not the least of which has been the inability to deal with large quantities of materials. All have also proved to have secondary detrimental effects when a strict level of control has not been exercized. For example, severe air pollution has resulted from uncontrolled burning and incineration; potable water supplies have been contaminated by indiscriminate disposal on land.

During most spills a combination of methods have been employed with the majority of material being deposited on land. Frequently, however, suitable sites have not been designated at the planning stage with the result that dumping has been carried out indiscriminately or delays have been experienced while safe sites were located.

Procedures for dealing with reovered oil and oily debris are many but all have limitations. Relatively uncontaminated oil may on occasions be accepted by oil refineries, especially if they possess slop reception facilities. However, there is frequently considerable reluctance to take large quantities in view of the fact that water and salt contamination may interfere with the normal operations of the plant. The oil having lost its light ends through evaporation is also of reduced value and may only be worth processing after blending with naphtha or other petroleum products rich in low boiling components. Commercial reprocessors of waste oil will frequently regard the treatment of oil recovered from clean-up operations as uneconomic for similar reasons. Reclamation is therefore rarely a viable method for disposing of large amounts of oil and is certainly not the economic proposition it is often made out to be, especially if transport and storage are costly.

The high viscosity particularly of weathered oil and emulsions can introduce severe problems in pumping and handling collected oil. Some relief can be given by the use of recently formulated chemical emulsion breakers, which have the effect of reducing the viscosity of many oil-water mixtures. These additives do not always achieve complete phase separation of emulsions, but the reduction in viscosity is often sufficient to improve pumping operations.

Probably the most frequent procedure for disposal, particularly of heavily contaminated oil, is burial. However, selection of the site is critical if contamination of ground water supplies and other

detrimental effects are to be avoided. Consideration of the soil conditions, geological structure and surface topography is also vital in order to determine the potential for the oil to migrate in all directions. Because of these and other related problems land disposal in an unavailable option in many locations.

Burning of recovered oil is a commonly used technique, especially where on-site disposal is advantageous because of transport difficulties. However, heavily weathered or emulsified oils will rarely burn easily and may need the addition of some wicking agent. Once burning, all oils can also produce thick black smoke which can also carry droplets of unburned residues causing an unacceptable degree of air pollution and possible contamination of nearby areas by 'black rain'. The location at which burning is carried out therefore has to be chosen with care, especially if penetration of the substrate by the heated oil is also to be avoided. Low temperature burning will also tend to leave a tarry residue which may cause subsequent disposal problems.

Procedures that make use of natural or artificially enhanced biodegradative processes have been found to be successful in some instances. One approach is to spread the material on land followed by fertilizers and repeated plowing to ensure adequate aeration and high rates of biodegradation. Commercial preparations of bacteria may be added but often naturally occurring populations suffice. As with burial, land farming should only be carried out after a careful consideration of soil type, drainage patterns, climatic conditions and nature of contaminated material. While it has been proved that such procedures can result in rapid removal of oil and the growth of crops only months after treatment, it remains applicable only to lightly oiled material and so contributes little in instances of extensive and severe contamination. Similar comments apply to composting techniques where contaminated oil is mixed in layers with other organic materials and fertilizer.

Use of lightly contaminated sand and shingle in road construction, land reclamation and similar works has also on occasions proved successful, given prior detailed investigation of the particular sites involved. The use of quicklime (calcium oxide) which reacts with the water and at the same time acts as an efficient cloaking agent has been found to render such approaches more viable.

Contamination of shorelines often results in large-scale removal and disposal of clean as well as soiled sand and shingle. One recent approach that has proved promising on a smal scale in the on-site separation of water-in-oil emulsions and cleansing of beach material so that the recovered oil can be taken away and the cleaned sand or shingle returned to the beach directly, thereby removing the necessity to transport large quantities of water and substrate.

In the CNMI consideration should be given to temporary storage of the oil and oily debris in 55 gallon drums, waste tanks, plastic swimming pools and lined temporary impoundments. As water separates from the

recovered oil it can be drained off, allowing the oil to become concentrated for efficient recovery. It should be noted that most membrane liners have a projected longevity in contact with oil of less than one year with polyethyline lasting less than one month. Oil may also be used for dust control on roadbeds. Certain types of oil, once recovered, may be classified as hazardous waste, subject to RCRA regulations. In such cases, funding may be available to transport the material to approved disposal sites outside the CNMI (Region IX Plan, page XVIII-1).

The DEQ designated temporary storage site for the CNMI is _____.
The DEQ designated permanent storage site for the CNMI is _____.

Section 16

Monitoring

Monitoring

This section sets forth general guidelines for monitoring oil and related contamination for the protection of critical zones and enforcement of water quality. Monitoring can aid in conserving the productivity of particularly valuable species or particularly productive waters.

Initially, monitoring should be carried out for suspected or known pollutants which may be dangerous to the life and productivity of these zones. Monitoring will ensure the control of discharges and to confirm the absence of unwanted pollutants in the marine environment.

Petroleum and its products are known to be toxic to marine life in high concentrations, but the sublethal effects are not well known. Sublethal concentrations of petroleum hydrocarons and halogenated hydrocarbons can affect general productivity in various ways: through inhibition of growth, disturbance of feeding patterns, interference with reproduction, etc. It is not known at what levels hydrocarbon pollution can be safely tolerated in the marine ecosystem; hence, criteria are lacking for guiding monitoring as well as standards for water quality.

Estuaries and nearshore waters which receive contaminated runoff should be monitored for heavy metals, coliform and halogenated hydrocarbons. Heavy metals and total coliform should be periodically monitored in the flesh of shellfish. Heavy metals should also be monitored in the flesh of food-fish which spend most of their time in estuaries (e.g near the Lower Base mangrove area).

In waters not yet polluted or only lightly polluted and where public health is not threatened, monitoring should be undertaken until baseline studies have been carried out. The health and productivity of these waters can be better monitored by periodic study in sample areas of the aquatic environment and its biota. Species diversity, community structure, or other indicators of ecosystem health and productivity are better measures of possible pollution than the monitoring of small concentrations of substances whose sublethal biological effects are not well known.

The development of manpower and laboratory capabilities for monitoring marine pollution shoud be done in coordination with other monitoring efforts, particularly where expensive instruments or highly skilled technicians are required.

Water samples should be taken at: lower reaches of estuary on a weekly basis for heavy metals and halogenated hydrocarbons; shellfish grounds on a monthly basis for total coliforms; outfalls on a weekly basis for total coliform and heavy metals; midestuary on a monthly basis for all sustpected pollutants and physical and chemical parameters.

Sediment samples should be taken where fine-grained materials

accumulate every 2-3 years to test for heavy metals, petroleum hydrocarbons, halogenated hydrocarbons.

Biota (shellfish) samples should be taken monthly or more frequently to test for Escherichia coli.

Sampling equipment which should be kept on hand for monitoring oil spills include: 1 bound notebook; 1 box 12 guage shotgun cleaning patches; 10 500ml nalgene graduated cylinders; 10 cases of 1 pint stoppered sample bottles and manila custody tags; 1 ballpoint pen; and 10 1" wide sticks.

Section 17

Classification of Resource Priority

CLASSIFICATION OF SHORELINE VULNERABILITY TO OIL SPILLS

VULNERABILITY INDEX	SHORELINE TYPE	COMMENTS
1	Exposed rocky headlands	Wave reflection keeps most of oil off-shore. No cleanup necessary.
2	Eroding wave-cut platforms in sedmimentary rock	Wave swept. Most oil removed by natural processes within weeks.
3	Fine-grained sand beach	oil does not penetrate sediment, facilitating mechanical recovery if necessary. Otherwise oil will persist several months.
4	coarse-grained sand beach	oil may sink and/or be buried rapidly, making cleanup difficult.Under moderate to high energy conditions, oil will be removed naturally within months from most of the beachface.
5	Exposed, compacted tidal flat	Most oil will not adhere to or penetrate compacted tidal flat.Cleanup usually not necessary.
6	Mixed sand and gravel	Oil may undergo rapid penetration and burial. Under moderate to low energy conditions, oil may persist for years.
7	Gravel beaches	Same as above. Cleanup should concentrate on high-tide swash. A solid asphalt pavement may form under heavy oil accumulations
8	Sheltered rocky coasts	Areas of reduced wave action. Oil may persist for many years.Cleanup is not recommended unless oil concentration is very heavy.
9	Sheltered tidal flats	Areas of great biologic activity and low wave energy. Oil may persist for years. Cleanup is not recommended unless oil accumulation is very heavy.These areas should receive prior protection by using booms or oil sorbent materials.
10	Mangroves	Most productive of aquatic environment.Mangroves should not be altered. Protection of these areas by booms and sorbent materials should receive first priority.

Source: Adapted from Gundbach and Hayes, Marine Technology Society Journal 12(4), 1978, in Oil Spill Cleanup Manual Vol.II, Exxon Corporation.

CLASSIFICATION OF RESOURCES PRIORITY

PRIORITY 1: Endangered/threatened species and critical habitat. This category includes any species of plant or animal identified in CNMI or Federal lists. Critical habitat is a specific term used in those habitats that have been identified as being essential to the reproduction or success of the species in question.

PRIORITY 2: Reproduction, nursery, and rearing areas. This category includes breeding grounds, nursery areas, and rearing habitats for all organisms, but particularly for marine mammals, migratory birds, and fish species of importance. This category focuses on sensitive life stages and important habitats such as wetlands, mangroves and corals.

PRIORITY 3: Fish and wildlife concentration areas. This category includes those habitats known to have high population levels of birds, fish and mammals. These are areas where large numbers of animals may be impacted.

PRIORITY 4: Aquacultural areas. This includes private and governmental facilities such as fish hatcheries, commercial oyster operations, and similar facilities where the stock may be replenished from elsewhere.

PRIORITY 5: Recreational and industrial areas. This category includes other habitats and facilities which might be affected, such as marinas, water intakes, nonsensitive shorelines and beaches and docking facilities.

Source: Dispersant Use Guidelines for Federal Region IX and X, in Proceedings, 1983 Oil Spill Conference.

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Concern for biological damage due to oil spills in tropical waters should concentrate on 3 threats:

1. Oil spills on spawning grounds of shrimp and other important species, due to the toxicity of oil to developing eggs and larvae.

2. Oil spills in nearshore nursery areas, again because of the relative greater vulnerability of juvenile forms to oil pollution.

3. Tainting of fish flesh and fouling of fishing gear, both of which may cause local hardship.

Section 18

Physical and Environmental Setting

Physical and Environmental Setting

Saipan is about 13 miles long, averages approximately 4 miles in width, and has a total area of 46.7 square miles. The dominant topographic feature is an axial upland area extending through northern three-fourths of Saipan. The northern, eastern and southern coastlines exhibit moderate to steep slopes and cliffs, lowlands with a narrow barrier reef run parallel to the shore along the western coastline.

The climate of Saipan is tropical with little variation in temperature. Rainfall averages 83 inches a year with the heaviest rainfall occurring from July through October. A dry season occurs from January to April. Trade winds predominate on Saipan. During the rainy season, from July to October, the wind direction and velocity are variable.

The predominant winds are the 'trades' that blow from the east and northeast at an average velocity of 10.5 mph. These trades are most pronounced from January through May when the winds blow from northeast and east-northeast more than 90% of the time.

Two kinds of storms contribute to the climatic character of the CNMI: Small-scale storms, consisting of thunderstorms and squalls, and large systems of tropical storms and typhoons. The CNMI is within the 'breeding grounds' of typhoons of the Western Pacific. From 1949 to 1969, 40 typhoons and 30 tropical storms have passed near Saipan. Since 1969, five major storms have caused severe damages: Typhoon Jean in April 1968; Typhoon Pamela in May 1976; Tropical Storm Carmen in August 1978; Typhoon __ in __; and, Typhoon __ in__.

Average annual temperature is 81.5 degrees F. There is very little fluctuation in temperature, which normally ranges between 78 and 85 degrees F. The extreme minimium temperature of 68 degrees F was recorded at Garapan while the extreme maximum, also recorded at the same location, was 89 degrees F. The hottest period is usually between the months of June and October, while the cooler period is between the months of January and April.

Saipan has either barrier or fringing reefs along most of its coast. Major coastal habitats include beaches, rocky shores, mangroves, coastal strand, limestone forest, volcanic forest, disturbed and urban areas and offshore islets. A barrier reef runs along nearly 90 percent of the western shoreline, forming Saipan Lagoon.

Saipan Lagoon extends from Agingan Point on the south to Magpi Point on the north. The lagoon covers about 13.5 square miles and is about 2 miles wide off the Tanapag Harbor, 0.5 miles off Garapan and 0.4 miles off Chalan kanoa. Most of the lagoon floor south of American Memorial Park is less than 10 feet deep. North of that site, in the main harbor area, depths are more variable and range up to 30 feet in the ship channel. Most of the lagoon area has a sandy bottom but scattered rubble and coral patch reefs are also present. Although

marine vegetation stabilizes the sand in some places, patterns on aerial photographs indicate that there is extensive shifting in most of the lagoon due to currents. There are few areas of extensive coral cover within the lagoon, however, luxuriant coral does occur along the lagoon's outer edge.

The offshore reef protects the lagoon and shorline from ocean swells. Inshore chop is generally light since roughly 90% of the time winds are from the northeast.

Astronomical tides are measured at Apra Harbor Guam, the nearest tidal station considered applicable to the study area. Tidal data at Apra Harbor referenced to mean lower low water were obtained from the National Oceanic and Atmosperic Adminitration, National Ocean Survey. Tides are characteristically diurnal.

Reference	Feet
Highest tide, observed	3.31
Mean higher high water	2.40
Mean high water	2.30
Mean tide level	1.45
Mean sea level	1.41
Mean low water	0.60
Mean lower low water	0.00
Lowest tide observed	-0.89

Temperature of the waters of Saipan Lagoon varies from 22 degrees C in the night to a high in the upper thirties. Solar heating is reported to cause the large temperature variations in the shallow waters nearshore.

Ocean current patterns around the CNMI are similar to those experienced by most islands in the central Pacific. The North Equatorial Drift Current, which sweeps past the CNMI from east to west is responsible for much of the energy that transports water along the coast of Saipan. It has been theorized that the current tends to split on the northern and southern corners of Saipan and pass along the western coastline. This was partially verified in 1977 when drogue measurements were taken in the open coast area off Tanapag-San Roque. Drogue measurements indicated that movement of the surface current is generally parallel to the western coastline of Saipan with mean speeds of 25 cm/second.

Nearshore currents are influenced primarily by the tides with flood current moving in a westerly direction and ebb currents in an easterly direction. It is reported that tidal currents flow northward at a rate of 0.5 to 1 knot during flood tide conditions and southwesterly during ebb tide in the Garapan area.

Current studies suggest that the Tanapag Harbor area of Saipan is an area of convergence where water from the northern and southern parts of the lagoon meet and flow back into the ocean through the opening in

the barrier reef.

Water movement is primarily controlled by wind speed and direction and maintains a relatively consistent direction irrespective of tidal fluctuation. Surface drogues and dye patches generally moved to the west-southwest at speed of approximately 0.15 knots and the subsurface currents moved in the same direction at slower speeds of approximately 0.04 knots.

Current structure within the lagoon is mainly influenced by the inflow of water across the reef and its outward transit through passes in the reef. Currents are southwesterly from Tanapag Harbor while the current in the lagoon fronting Garapan is generally northward except for short stretches immediately north of several small passes.

At Puntan Flores, water currents moved generally in a westerly direction. In Echo Bay, the mangrove swamp channel had a positive net outflow due to a spring discharge in the swamp. Water movement in the principal areas of Tanapag Harbor was more variable suggesting an eddying effect. It has been reported that oil and flotsam tended to drift to the west and southwest, away from the shoreline toward the ocean, but the data also indicated an onshore drift may occur at certain times of the year. This area of convergence is also considered to be high in plankton, making it an important feeding area for fish larvae.

The lagoon area fronting the Garapan drainage basin is composed of a noncontinuous reef structure extending from the Punton Muchot to the small boat ramp. To the south of the small boat ramp and extending beyond the southern boundary of the Garapan drainage basin is a continuous reef structure.

General circulaton pattern is an offshore transport from the lagoon fronting the area between the Hyatt Hotel and the small boat ramp. The offshre water transport takes place primarily through the openings in the shallow coral reefs, in conformance with hydraulic principles.

The direction of the current is virtually independent of the tidal range. A continuous southwesterly component occurs in the lagoon area fronting the Hyatt to Hafa Adai hotel area except during flood tide condition. During this period, the transport component was found to be nearly parallel to the shoreline. Only after moving southward toward the Hafa Adai Hotel will the flow component divert to the offshore direction. One study reported the current speed at Garapan dock area as moving northerly from 0.5 knots to 2 knots depending upon the tide.

Water in the lagoon immediately south of the small boat ramps moves north and exit the lagoon through the opening of the channel of the small boat ramp. The reason for this is the continuous reef extending beyond the southern boundary of the Garapan drainage basin impedes the offshore water transport.

The general cirulation pattern of the lagoon area fronting Susupe/Chalan Kanoa is depicted on Map ___. The major factor influencing the current pattern in this area is the reef opening of the Sugar Dock Channel and shoal.

Water within this area converge toward the reef opening-shoal area for transport out of the lagoon area, consistent with the principle of flow seeking the path of least hydraulic resistance.

Water to the south of the reef opening flows northward. Since the shoal presents an obstruction to the flow, water is diverted offshore. The reef seaward of the shoal is noticeably eroded probably due to the relatively high velocities of the converging flow stream seeking outlet to the sea. The eroded reef area has a concave shape with an opening of 300 feet and a depth of 200 feet.

Water north of the reef opening flows southward toward the reef opening of the Sugar Dock channel. Because of the relatively narrow opening of the reef and the converging flow from both north and south, the velocities through the reef are higher (35 cm/sec) as compared to the velocities found in the lagoon (16 cm/sec).

It is noted that circulation pattern is independent of tidal cycle (flow is in the same direction at a specific location during both ebb and flood tide). There is a continuous offshore transport component in the reef opening and near the shoal. This implies that transport of water into the lagoon is primarily over the reef with the outflow primarily through openings in the reef.

The wave characteristics affecting the western coastline of Saipan are shown below. The majority of waves are generated from easterly tradewinds. The deepwater wind waves are generally 2-6 feet in height with periods of 6-12 seconds.

PERCENT FREQUENCY OF WIND SPEED VERSUS SEA HEIGHT ANNUAL PERIOD 1963-70

HEIGHT (FEET)	WIND SPEED IN KNOTS 0-3	4-10	11-21	22+	TOTAL %
Less than 2	4.1	19.4	9.2	-	32.6
3-4	0.2	10.7	20.7	0.7	32.4
5-6	0.1	3.4	15.4	2.6	21.4
7	0.1	0.5	5.7	1.6	7.8
8-9	-	0.2	1.9	1.1	3.2
10-11	-	-	0.7	0.6	1.3
12+	-	-	0.2	1.1	1.3
Total %	4.5	34.2	53.6	7.7	100.0

Source: Saipan Lagoon Circulation Study, M&E Pacific, June 1980.

Beaches of Saipan Lagoon consist mainly of loose limesand. These sands are classified medium to coarse-grained and well sorted to very well sorted. Lagoon sediments are derived from several sources: (1) those of calcium carbonate compositon from the organic reef; (2) approximately 1100 to 1600 tons of calcareous detrites per square mile is attributable to the excrement of fishes. Most of Saipan Lagoon has a sandy bottom interspersed with small rubble and coral patches.

Marine Resources

A survey of fish resources of Saipan Lagoon was completed by Amesbury et al which identified 24 fish habitats and 249 fish species in Saipan Lagoon. Twenty-two species of fish were identified as economically valuable. The mangrove area near Charlie Dock and a coral thicket offshore from Garapan Dock were recommended for preservation due to their uniqueness, diverse fish community and limited areal extent. The mangrove habitat contained the highest density of mullets and leiognathids. The coral thicket had the highest density of large squirrelfish and other valuable fish and a high diversity of fish species. Eleven other habitats in various mid-lagoon and barrer reef locations were also found to have a high diversity of fish species.

An Enhalus acoroides seagrass habitat can be found at Tanapag Harbor and Garapan Dock sites. While the seagrass habitat was not specified as a unique habitat, the survey indicated that rabbitfish were found to be the most abundant food fish present, and goatfish and snappers werre found to be relatively abundant. Because of the high density of economically valuable fish found in the seagrass habitat, the habitat, along with 20 others were recommended for preservation.

Fish and larvae surveys in the lagoon found the highest concentration of fish eggs associated with the Halodule uninervis seagrass beds at Chalan Kanoa and the highest concentration of fish larvae associated with the mangrove community ner Charlie Dock. Fish eggs and larvae were widely distributed throughout the lagoon and formed a major component of zooplankton sampled. The mean density of fish eggs collected in Saipan Lagoon was 14.3 individuals per cubic meter. The highest densities were obtained in the Halodule seagrass bed. The maximum number of fish larval forms collected was 3.1 individuals per cubic meter in the mangrove channel. The inner Tanapag Harbor had the highest concentration of zooplankton.

The abundance of zooplankton as a whole appears relatively low, however, the concentration of fish eggs and larvae is particularly pronounced. Habitats of richly developed seagrass beds primarily composed of Halodule uninervis seem to be exceptionally productive areas in terms of the production of fish eggs.

The irregular and slow water rate and the generaly eddying effect of the waters of the inner harbor area make the area an especially likely area for the accumulation of nutients and the possible development of an enriched plankton community. After exhausting the food reserves of

its egg sac, it would be advantageous for a larval fish to be in an area of enriched food supply to support its rapid development and growth. With egg production occurring in the north and south extensions of the lagoon and with allowance for the time lag in larval development during transit to the harbor area, the hatched larvae would then be in the richest area of food production within the lagoon, i.e., the mangrove channel and the inner harbor areas.

The results of the zooplankton analysis made by Amesbury suggest that the protection of the rich Halodule beds, the mangrove channel and the adjacent areas are integral to the maintenance and development of a viable fishery in Saipan Lagoon.

Habitats richest in fish species were those associated with the barrier reef, coral rich habitats near Managaha Island, and the rich growth of Acropora near Garapan dock.

Seagrass beds between Puntan Flores and Tanapag village have been estimated to cover 100 acres. It has been reported that it is believed that the seagrass beds formed 3 zones: an algal mat Enhalus acoroides and Halodule-Halophila. The algal mat extended 100-200 feet seaward from the shoreline. The zone was characterized by warm waters, fine sands and silt and anaerobic muds. the Enhalus zone was about 300 feet wide and seaward of the algal mat zone. Waters were generally turbid, but the seagrass covered about 90% of the substrate. The Halodule-Halphila zone was about 1000 feet from shore in clear waters near the lagoon slope growing on coralline-algal rubble. Corals and fishes increased in abundance in this zone.

The shallow nearshore habitat supports marine vascular plants Halophila ovalis and Zostera nana in lesser abundance with the algae Halimeda, Caulerpa, padina, Hydroclathrus and Turbinaria. The characteristic invertebrate life in these meadows include nereid, spinoid, and terebellid worms, and holothurians (sea cucumbers). The black cucumber Holothuria atra is by far the most abundant holothurian within this habitat. The blue starfish Linckia laevigata , the bun urchin Tripneustes gratilla and the snakelike synaptid Opheodesoma are other echinoderms which are well represented in this habitat.

Corals of the southern end of the barrier reef are abundant on the wave-washed seaward margin, becoming scattered and patchy on outer, shallow part of platforms; more abundant and diverse on inner deeper parts of the platform, particularly where it grades into lagoon moat.

Corals of the southern end of Saipan Lagoon are absent to widely scattered along the inner part of the moat, becoming scattered to patchy along the middle part of the moat, and more abundant at outer parts, particulary where it grades into the barrier reef. There are diverse and abundant corals on surface and sides of patch reefs at the northern end.

Corals of the northern end of the barrier reef are abundant on wave-washed, seaward margins, becoming patchy and scattered on outer,

shallower parts of the platform, more abundant and diverse on deeper parts of the platform where it grades into the lagoon. Corals are particularly abundant and diverse along deeper platforms and on patch reefs southwest of Managaha Island.

Corals of the northern end of the lagoon are absent to widely scattered along inner parts of the lagoon north of Puntan Flores, locally common to absent in disturbed areas between Puntan Flores and Puntan Muchot, becoming scattered to patchy in deeper parts of the lagoon, and more abundant at outer parts where it grades into the barrier reef and fringing reef of Managaha Island. Corals are diverse and abundant on coral mounds and most patch reefs; abundant on fringing reef-flat platform to the north.

Beaches generally contain fragments of coral, calcareous red algae, mollusks, Halimeda (an articulated calcareous green alga), echinoids, foraminifers, and small amounts of hard parts from marine organisms. The percent of composition varies greatly from place to place, depending for a large part upon the type of marine communities which occupy the adjacent reef and bench platforms or shallow offshore slopes. Small amounts of organic debris are also found intermixed with beach deposits, particularly along the intertidal portion of the foreshore slope where tides and waves carry algae and other plant remains up onto the beach. Storm tides and waves may periodically carry similar organic materials into the backshore beach deposits as well.

Beaches support only a marginal diversity of marine animals. Large numbers of ghost crabs Ocypode burrow in clean deep sands. Few small box crabs Calappa are occasionally found at the water's edge where they remain partially buried with sand. Numerous hermit crabs and amphipods inhabit the swash zone.

A great number of sea and migratory birds are also known from Saipan. These include 14 seabirds (albatrosses, Shearwaters and Petrels, Storm Petrels, Tropicbirds and Frigatebirds), 20 shorebirds (Plovers, Sandpipers and snipes),
and 10 species of Gulls and Terns.

Shoreline vegetation can be classified as coastal strand which include creeping vines, low shrubs, and grasses. Important plants in this group include casuarina, wild hibiscus, beach morning glory, breadfruit and a variety of grasses. In some locations Formosan Koa and Kamachile are found.

One Federally listed threatened species is reported in Saipan Lagoon, the green sea turtle chelonia mydas. No breeding sites are known to occur in the lagoon. There are no marine mammals.

Recreation

Garapan Dock provides a pole fishing site. Trailered boats headed for offshore trolling and bottom fishing grounds are launched from the

Garapan, Sugar Dock, American Memorial Park and Seaplane boat launch ramps. Pole fishing, spear fishing and cast net fishing commonly occur in the lagoon, along the shoreline and reef edge. The Acropora formosa coral thicket in the lagoon offshore from Garapan attracts fishermen ad skin diving sightseers because of the diversity of fish fauna and relatively safe swimming waters. A surfing site is located on the south side of the entrance channel at the edge of the barrier reef. The entire coastline of Saipan Lagoon may be considered as a public beach.

Numerous small sailboats, windsurfers and jetskis may be found near all the hotel areas. Equipment rental concessions may also be found.

Wet berthing sites are located at American Memorial Park, Charlie Dock and Delta Docks and offshore anchorages in Tanapag Harbor. There are no commercial marinas. Tourist oriented boats such as glass bottom boats and charter cruisers, pleasure boats such as sail boats and cabin-cruisers mostly utilize these sites.

No historic sites listed on the National Register of Historic Places are found in Saipan Lagoon. The remains of a 1920's era Japanese Lighthouse guarding the entrance to Garapan Dock are found on the barrier reef and appears likely to be eligible for inclusion to the National Register. Garapan Dock, Sugar Dock and the seaplane ramps were constructed by the Japanese and may have historic value, although they were not listed by the CNMI Historic Preservation Officer.

Managaha Island, and Invasion Beach sites are in the process of becoming nominated for the National Register. The entire Saipan Lagoon is proposed for listing the CNMI Register of Historic Places.

The Beaches fronting and adjacent to the Hyatt, Inter-Continental, Hafa Adai and Royal Taga Hotels are important economic resources. Managaha Beach may also be considered an important economic resource.

The Coastal Resources Management Program has designated the shorelines of Saipan, Tinian and Rota as an Area of Particular Concern, except for the port areas of each island which are separately designated as a Port and Industrial Area of Particular Concern. All reef enclosed waters of Saipan, Tinian and Rota are designated as a Lagoon and Reef Area of Particular Concern. This APC includes Saipan's Managaha Island, Bird Island and Forbidden Island, and Anjota Island of Rota. The Mangrove area near Charlie Dock is designated as a Wetland Area of Particular Concern. Tinian's Goat Island and Naftan Rock are protected by the CNMI Division of Fish and Wildlife due to the islands' significance as a a major bird rookery for the southern Marianas.

There are no industrial activities occurring in CNMI waters. There are two point source discharges of treated sewage at Tanapag Harbor and Angingan Point. There is one intake point at Hafa Adai Hotel.

Saipan Harbor is the central commercial port of entry for Saipan and the rest of the Commonwealth of the Northern Mariana Islands. It is

situated at the northwest side of Saipan at 15 degrees 14' north and 145 degrees 43' east longitude.

Saipan Harbor consists of an outer anchorage area, Garapan anchorage and the Puettan Tanapag Harbor Basin. The entrance channel is about 300 feet wide, 1500 feet long, and has a least depth of -29 feet MLLW.

The shore of the harbor is fringed by shallow flats composed of sand, coral rubble, and live coral bottoms which end abruptly in a steep dredge face. The barrier reef protects the harbor to the west enclosing the 1300 hectare lagoon.

The outer anchorage affords shelter during prevailing easterly winds, but none during infrequent westerly storms. This anchorage, which lies from 3-5 miles offshore, is suitable only for temporary anchorage for large vessels.

The inner anchorage, which includes Garapan Anchorage, contains numerous berths in depths ranging from 50 feet to over 180 feet, holding ground fair to good, with coarse coral sands. This anchorage lies from 1-2 miles offshore.

Range Light Bay is a small bay about 1-2 feet deep formed between the seaplane ramps on the north and Echo Dock on the south. The bay sediments are coral rubble and sand.

Echo Dock is a small point of land about 100m southwest of the seaplane ramps. Although it is no longer used as a dock, remains of wood pilings and a concrete seawall can be seen. It is adjacent to the Mangrove area.

Echo Bay lies between Echo Dock on the north and Delta Dock to the South. An abondoned concrete pipeline runs from the shore to the edge of the dredged area near the southern end of the bay. A mangrove lined stream empties into the harbor at the southern end of the bay. An oil pipeline transporting RFO crosses the stream at the mouth of the stream.

Delta Dock is a small point just north of Charlie Dock. It is used primarily for small fishing boats, a ferry service and government small craft.

Charlie Dock is the central commercial port for the island. It is L shaped and has about 530 feet of berthing space along its north side. Berths, with depths of 25 feet to 20 feet are available along the north and west sides of the pier. Depths of 8 feet are found alongside the south side of the pier. Mobil Oil Micronesia Inc. tankers offload various petroleum products from the western face of Charlie Dock.

Charlie Bay is a semi-enclosed area of about 6 acres between Charlie Dock and Baker Docks. Approximately 1/2 of the bay is sheltered from wave action by Charlie Dock. The unprotected southwestern half

receives heavy turbulence due to the direct impingement of waves from seaward and the reflection of waves from the northwestern side of Baker Dock. The complementary effect of these two sources seems to double some wave heights in this area.

Baker Dock is located southwest of Charlie Dock and Charlie Bay. It consists of coral fill bounded primarily by iron pilings. Approximately 4-6 feet from the dock the bottom has been dredged to 20-30 feet, creating a steep coral rubble slope. The northern side is used weekly to offload Bunker C grade petroleum supplied by GORCO of Guam and barged to Saipan by Saipan Shipping Corporation (SaiShip) for use in the Saipan Power Plant.

Baker Bay is an area of about 4.2 acres between Baker Dock and Able Dock. The bottom has been dredged near the two docks and consists primarily of fine sand and silt with occasional rocks and metal debris.

Able Dock lies southwest of Baker Dock and formerly had a concrete facing descending vertically to the coral rubble bottom. Most of the dock facing northwest toward the harbor has subsided. The area is now characterized by concrete slabs arrayed in various altitudes in a zone extending from above high water to about 6 feet below MLLW. Beyond the concrete is a sloping terrace of boulders, metal debris and coral rubble. The terrace ends in a steep dredge face.

Iron Pilings lie in 11 parallel rows of 57 pilings each, immediately southwest of Able Dock. These pilings formerly supported a wharf which was part of Able Dock. They are steel I beams standing vertically in water about 15 feet deep. The pilings support a good growth of corals and algae. Water depth off the old wharf is estimated to be 30 feet.

Dump Bay is a small bay south and behind the iron pilings. The shore in this area is currently being used as the Saipan's only dump.

Unai Sadog Tase is a large shallow bay of about 50 acres with a depth of 3-6 feet located west and southwest of the iron pilings and the dump. The shore along this bay is fine silt and clay covered with a blue-green algae. Approximately 20-30 feet from the high tide line the bottom becomes sandier and is dominated by the seagrass <u>Enhalus acoroides</u> which forms a band about 450 feet wide.

American Memorial Park is located between Micro Beach and the Saipan Harbor area. Two dredged areas exist. One includes a channel which is used extensively by tour boat operators. The site also serves as a mooring area for pleasure craft. The other basin is a small harbor under construction at the time of the invasion of Saipan. Erosion of coral fill areas where sheet piling and wooden retaining walls have deteriorated resulted in excessive turbidity. The dredged channel contained the highest density of juvenile jacks in Saipan Lagoon

Garapan Dock is located directly adjacent to the community of Garapan.

It is situated on the west coast of Saipan a 15 degrees 12' north lattitude an 145 degrees 42' east longitude. Garapan Dock consists of a 485 foot concrete pier, several wooden piles, wrecks, a formerly dredged entrance channel and docking area. The dock is surrounded by a 90 feet wide, 8-12 foot deep dredged area. Dredging has also occurred along the shoreline for a distance of about 450 feet north and south of the dock. The area is presently used as a trailering and launch area for fishing boats and for embarking and disembarking tour boat passengers.

Chalan Kanoa Sugar Dock is located in the Chalan Kanoa-Susupe communities. The dock is a concrete pier approximately 275 feet long. A culvert beneath the dock allows the passage of strong currents that are evident in the offshore waters. Water depths at the culverts varies from 0.3-3 feet depending on the tide.A launching ramp is available for trailer boats. The existing channel is shallow, being partially filled by sand which prevents entry and exits for most vessels during low tide. Sugar Dock is the site of extensive fishing and boating activity. Spear fishing also occurs along the edges of the dredged area and cast net fishermen stalk mullet along the beach.

Tinian

Tinian is a low relatively flat island in the southern Marianas, 3 miles southwest of Saipan. Tinian is 12.6 miles long (north-south), 6.1 miles wide with an area of 42 square miles. The island of Aguijan, about 5 miles southwest of Tinian's southern tip, is part of the Tinian municipality.

The Tinian shoreline is formed predominantly by sea cliffs 20-100 feet high, although some cliffs reach nearly 500 feet along the southeast coast. There are few well developed beaches, most near Tinian Harbor and San Jose Village.

Climate, weather, winds, waves, tides and sea current conditions are quite similar to those found on Saipan.

Tinian Harbor is located at 14 degrees 58' north latitude and 147 degrees 37' east longitude. It consists of a basin formed between the mainland and an offshore reef on which a breakwater has been constructed. The harbor has a length of over one-half mile and a width of one-eigth to nearly one-fourth mile. The harbor depth ranges from 3 to 30 feet. A boat launching area is located near the juncture of the shoreline with the breakwater.

Shores adjacent to the harbor are cliffs and rocky slopes and, in some places, the shoreline is bordered by reefs. San Jose Village is located short distance northeast of the harbor.

Fringing reefs have a width to 540 feet, relatively flat along the outer parts, mostly submerged during low tide. Corals are widely scattered along the inner part, restricted mostly to holes and depressions, locally abundant along the outer fringe.

Barrier and lagoon fringing reef-flat platforms have a width to 300 feet along unaltered platforms. The outer 3/4 of the barrier reef platform and enclosed lagoon have been altered by dredging, filling, and construction of breakwater and harbor facilities. Corals are scattered, locally abundant along lagoon and seaward margins.

The Harbor area of the lagoon enclosed by the breakwater has been altered by dredging, filling and construction. Corals are widely scattered to locally abundant on some knobs and mounds. Seagrass patches are widely scattered at shore.

An oval patch reef with a length of 900 feet and a width of 540 feet exists south of the harbor area. It has a substrate of irregular reef rock, with some local patches of sand, gravel, and coral algal rubble. Corals are abundant and diverse on platforms and slopes.

A beach is located east of the docks approximately 660 feet long with a width of about 60 feet. It is composed of bioclastic materials from gravel size to coral-algae rubble.

The rocky shoreline is characterized a low, pitted, and pinnacled with few pockets of bioclastic beach deposits, composed mostly of gravel and rubble. Rock is Marianas Limestone.

The shoreline along dock, piers, and breakwater and areas between breakwater and dock have been artifically filled.

Ocean fauna is abundant and includes tuna, bonita, barracuda, sharks, sea bass, eels, flying fish, octopus, many kinds of crustaceans and porpoises. Reef species reported include surgeons, butterfly fishes, wrasse, parrot fishes, damsels and goat fishes as well as eleven other fish families. The foraminifera Calcerina spengler and several forms of coral are found in the reef flat zones of nearby beaches. The reef margin zones have little or no coral, though the reef front zones of the beaches, in areas away from wave assault, show a decided increase in coral colonies. The coral found in the submarine terrace zone of the beaches is not as dense as the reef fronts, but does grow in scattered mounds and raised areas. Certain macroinvertebrates observed in the areas were sea cucumbers, sea urchins and a few gastropods along with a member of the family mollusca pelecypoda. The beach areas are abundantly endowed with hermit crabs.

Rota

The isand of Rota is located approximately half-way between Guam and Aguijan Island just south of Tinian. Rota is approximately 40 miles from Guam and 50 miles from Tinian.

The irregularly shaped island has approximately 32 square miles of land and is approximately 11 miles long, northeast to southwest, and 4 miles wide.

The predominant winds on Rota are the easterly tradewinds which occur over 70 percent of the time. The trades are strongest and most constant between November to June, when windspeeds of 15-25 mph are common. During the typhoon season, from July through October, the tradewinds are often absent and wind direction and velocity are variable.

Strong tidal currents and wave setup induced currents on the shallow reef flat dominate the current patterns in the West Harbor area. The flow patterns on the reef flat are dictated by the natural or manmade depressions and breaks in the reef flat. In the harbor area, the currents both northeast and southeast of the existing channel set toward the harbor and then exit through the deeper channel as a rip current. Current speeds in excess of several knots have been observed on the reef flat adjacent to the harbor and a 3 knot current out of the channel is estimated to be typical during the ebbing tide. The current velocities are accelerated during periods of high waves. Currents setting seaward in the entrance channel in excess of 10 knots have been reported.

Based on physical measurements, the water quality of Rota is oceanic in character and of good quality. Water temperatures are uniform ranging from 81-83F degrees. Water salinity averaged 34 parts per thousand, similar to ocean waters. Lower water temperatures and salinity values suggest a discharge of groundwater onto the reef flat. Dissolved oxygen values ranged from 7-9 ppm with an overall mean of 8 ppm, indicating saturated or supersaturated conditons. Water turbidity values were below 1 Jackson Turbidity Unit indicating relatively clear waters on the reef flat.

West Harbor is located on a 1,200 foot wide and 0-2 foot deep fringing reef on the west side of Tapingot Peninsula at approximately 14 degrees 5' north lattitude and 145 degrees 5' east longitude.

The shallow reef flat provides natural protection from wave energy by causing larger waves to break on the reef face and then further dissipating wave energy by bottom friction as the incoming wave propogates across the reef. Anjota Island located on the reef affords further protection.

There are two beaches to the east of West Harbor. One is approximately 1700 feet long and about 15-60 feet wide. The second beach is about 1050 feet long with a width of 15-30 feet. They are composed of bioclastic materials of sand and gravel size intermixed with coral-algal rubble and some scattered boulders. A third beach intermixed with rocky shoreline extends about 750 feet along the north and south of Taipingot Peninsula. Beach deposits are bioclastic, mostly coral-algal rubble intermixed with some sand and gravel.

Rocky shorelines are characterized as steep slope and cliffs buttressed with boulders and blocks at places along the north and south sides of the peninsula.

Anjota island is a low lying pitted and pinnacled limestone island irregularly surrounded by blocks and boulders with intermittent patches of rubble and sand. Part of its shore has been altered by the construction of a breakwater.

The reefs east and west of West Dock contain the most diverse and luxuriant reef-flat community on Rota. East of West Dock the community is distributed across the entire platform. Except for a few scattered colonies in holes and depressions, corals are mostly absent along the southern platform. A narrow band of seagrasses Enhales acroides may be found along the shore between West Dock and Anjota Island. A dense mat of edible algae Caulpera racemosa is reported at the site of the old Anjota Island causeway.

Dominant coastal strand vegetation consists of blinding tree Excoecaria algalocha, hunig Messerschmidia sp., nanaso Scaevola sp. and heliotrope Heliotropium anomalum. Nigas Pemphis acidula, a salt tolerant shrub is common on exposed limestone rock along the shore and around Anjota Island.

A total of 30 resident and non-resident birds have been reported on Rota in the last 40 years. The total includes 11 migratory shorebirds which use the Japanese-Mariana Flyway and which are regular visitors to the Marianas. Six of the migratory birds are thought to breed in the Marianas. Migratory shorebirds known to have visited Rota include the golden plover Pluvialis dominica, the wandering tattler Heteroscelus incanus, the gray-tailed tattler Heteroscelus brevipes, and the ruddy turnstone Arenaria interpres. The seaward cliff's of Taipingot Mountain provide a nesting and roosting place for the Audubon's shearwater Puffinus inherminieri, the brown booby Sula leucogaster, the common noddy Anous stolidus, and the white tern Gygis alba. Other birds found in the vicinity of West Harbor include the reef heron Demigretta sacra and the white-collared kingfisher Halcyon chloris The U.S. Fish and Wildlife Service believes that the white-tailed tropic bird Phaethon lepturus, the red-footed booby Sula sula, and the brown noddy Anous stolidus also breed on Rota.

East Harbor is adjacent to Songsong Village on Sosanjaya Bay on the southwest coast at approximately 14 degrees 5' north lattitude and 145 degrees 5' east longitude. The harbor is used primarily for small craft. It has a harbor area of approximately 27,000 square feet. The reef is approximately 300 feet wide, which is much narrower than at West Harbor, and 1-2 feet deeper, thus providing less natural wave protection.

There are two existing concrete docks at East Harbor, however, these were severely damaged by Typhoon Pamela in 1976. An offshore mooring and pipeline are currently used to offload diesel fuel and gasoline from Mobil Oil Micronesia Inc. tankers.

Park and recreational needs for island residents are organized around beach areas and historic sites. Beach areas designated for protection by the Rota Physical Development Master Plan include Mochon Area

General Park, Agusan Beach Park, Tatachog Beach Park, Taipingot General Park, East Coast Nature Preserve and Wilderness Area.

Fishing activities include reef foraging for shellfish and octupus, spearing, net casting for small schooling fish, trapping and pole fishing over the reef during calm seas. Trolling and bottom fishing also occur from boat launch locations at East and West Harbors.

Section 19

Risk

Risk

The risks of a major oil spill occuring near the shores of the CNMI under present conditions are few due to the relatively light ship traffic. The risk of open ocean spills may be somewhat higher due to the higher numbers of ship traffic found in the roads existing to the West of the CNMI which carry traffic between Australia/New Zealand and Japan/Korea/Taiwan. Little or no sea traffic is found to the east of the CNMI, therefore the risk of spill occuring is small. Probably the highest risk is associated with minor spills incidental to normal shipping and bunkering operations.

Wind conditions protect the CNMI from exposure to oil spills which may occur along the north-south ship roads 70-90% of the year. Such wind conditions however, place the CNMI directly in the path of oil which may be spilled to the east, however, the risk is low. During the period from July to October the wind speed and direction is variable. During this period, oil spilled to the west of the CNMI may present a higher risk.

Small spills near the shoreline would generally be sheltered by the islands from prevailing winds. Water currents would then play an increased role in oil movement. In Saipan Lagoon, water moves from the north and the south toward Tanapag Harbor where it converges with a mild eddying effect, and exits through breaks in the reef with the major break located at the shipping channel.

The coastal sites with the highest risks of oil spill occur for each island is the location where oil is transferred from ships to shore storage facilities. On Saipan, the site where the highest volume of oil is offloaded with the greatest freqency is Baker Dock where every two weeks approximately 257,099 gallons of RFO is offloaded from Baker Dock.

Another coastal site with a high risk of oilspill occuring is Charlie Dock where approximately 507,362 gallons of jet fuel, 289,887 gallons of automotive diesel oil, and 464,902 gallons of gasoline every two months. (Note: figures for separate volumes of fuel delivered to Saipan and Tinian were not available, therefore 95% was assumed to be delivered to Saipan based on percentage of population. Bimonthly figures were derived by dividing 95% of annual volume of each product by 6.)

Other Saipan coastal locations of risk are the Mobil Storage facilities near Baker Dock and the two pipelines transporting RFO across the mangrove stream to the power plant and from Charlie Dock to the Mobil tank farm.

Mobil Storage Facilities consist of 6 tanks: 1. 10,734 bbls; 2. 18,129 bbls; 3. 1,994 bbls; 4. 21,089 bbls; 5. 5,111 bbls; 6. 10,368. The CNMI Government storage facility for RFO has a capacity of 10,0000 bbls.

At Tinian, all oil is offloaded from the Mobil Oil/Taga Oil Company pipeline facility located on the northeast dock. This site handles approximately 26,703 gallons of jet fuel, 15,257 gallons of automotive diesel oil, 24469 gallons of gasoline every two months.

Tinian has two 40,000 gallon tanks for storage of diesel and two 40,000 gallon tanks for storage of gasoline. Tanks are located about 500 feet inland from Tinian Harbor.

At Rota, all bulk fuels are offloaded from an offshore mooring facility located at East Harbor. There, approximately _____ gallons of jet fuel, ___ gallons of automotive diesel oil and ___ gallons of gasoline are offloaded every two months.

Section 20

Resources at Risk

RESOURCES AT RISK

Numerous sites in Saipan, Tinian and Rota contain important reosurces which merit priority protection. Protection measures are identified elsewhere in this Plan. To the extent practicable, designated resources should be protected first by containing discharged oil before it can move to designated resources. If this is not possible, oil should either be trapped or deflected by boom. If this is not possible, or as added precaution, resources may be treated with sorbent materials in advance of impact. If designated resources have been fouled with oil, this guide should serve to focus the priority of cleanup efforts.

Maps accompanying this Plan identify designated important resources described hereunder, and locate areas for boom deployment. The OSC, however, is responsible for determining the best methods for protecting and cleaning up designated resources in consideration of this Plan, available equipment and personnel, response time, wind and current condiions and other special circumstances of the event.

Saipan

Saipan Lagoon contains many important resources which should be protected in the event of an oil spill of any size which threaten one or more of the resources. This Plan will designate and map the location the resources which have been reported to have the highest values. In order of apparent priority the following resources are believed to be most deserving of priority protection. For an explanation of resource value, refer to Section ____.

Resources	Location	value
1. Mangrove Community	Echo Bay	natural/economic
2. Mangrove Community	Unai Sadog Tase	natural/economic
3. Managaha Island	Barrier Reef	economic/recreational
4. Micro/Hotel Beaches	Puntan Muchot	economic/recreational
5. Acropora coral thicket	Garapan Dock	natural/recreational
6. Halodule uninervis beds	Chalan Kanoa	natural/economic
7. zooplankton	Inner Tanapag Hrbr	natural/economic
8. exposed fringe/barrier corals and reef	Lagoon	natural
9. Algal mats	Puntan Flores-Tanapag	natural/economic
10. Algal mats	Garapan	natural/economic
11. Beaches	Island-wide	recreation/natural
12. Charlie Dock	Tanapag Harbor	economic
13. Smiley Cove	American Mem.Park	recreational
14. Water Intake	Hafa Adai Hotel	industrial
15. Garapan Dock	Garapan	recreation/economic
16. Sugar Dock	Chalan Kanoa	recreation/economic
17. Iron Pilings	Dump Bay	natural

Important resource areas outside of Saipan Lagoon include Unai

Dangkulo Agingan Beach, Unai Peo Beach, Unai Obyan Beach, Unai Laulau, Unai Kagman, Unai Laulau Katan Beach, Unai Halaihai Beach, Unai Hasngot Beach, Unai Talofofo Beach, Jeffries Beach, Hidden Beach, Bird Island and Beach and Forbidden Island.

Tinian

Resources extant near Tinian Harbor which should be protected from any spill include:

1. Corals	outside brkwater	natural
2. Taga Beach	near harbor	recreation/economic
3. Patch Reef	450' S of harbor	natural
4. Aguijan Island/Naftan Rock	5 mi.SW Tinian	natural
5. Taga Beach	1 mi.S Harbor	recreation
6. Tinian Dock/Brkwater	Tinian Harbor	economic
7. Breakwater Beach	north of brkwater	recreation

Beaches outside the Tinian Harbor area to be protected inlclude: Unai Tachungua Beach (east coast) Unai Chiyet (northeast coast), Unai Babui Beach, Unai Chulu Beach (both northwest coast), Unai Peipeinimaru Beach (approx 1' north of breakwater).

Rota

Resources extant near Rota Harbors which should be protected include:

1. Anjota Island	West Harbor	natural
2. <u>Enhales acroides</u>	West Harbor	natural
3. Songsong Beach	West Harbor	recreation
4. West Harbor	West Harbor	economic
5. Taipingot Beach	West Harbor	recreation
6. Teneto Beach	East Harbor	recreation
7. Pona Point Beach	East Harbor	recreation
8. Boat Launch Ramps	East Harbor	economic

Other important resource areas outside of East and West Harbors include: North coast areas: Mochon Beach, Agusan Swimming Hole, Tagua Beach, Guata Beach, Teteto Beach, Unylan Beach, Sonton Beach, Tatachog Beach. South coast area: Baboa-Afa Beach and Tomag Beach.

Guidelines For Decision-Making and Conflict Resolution

Obstacles to decision-making arise when groups and individuals responding to a spill have differing perspectives on a problem. Many potential problems can be resolved before a conflict through good planning and frequent interaction among responding groups.

Most spill responders have been in conflict situations and usually have written off these problems as 'personality conflicts.' This simplistic answer ignores a variety of subtle interactions and messages. if the OSC is attuned to these messages, a great many conflicts can be resolved before they can disrupt the spill response effort.

To understand these messages, and their underlying behavioral motivations, the OSC's and groups involved in spill response should think about why a particular group is represented on the response team, what its purpose or functions are and what the individual representing that group expects. First responders are concerned with protecting public welfare through fire, law and order and medical services. Mission-oriented agencies are concerned with protecting natural resources and preventing pollution, and affected parties are trying to minimize personal losses, obtain relief, and carry out assigned tasks. It is between the individuals representing these groups that conflicts often occur.

It is important to recognize that each response team member also represents a group or agency. Within that external group, the individual functions and behaves in an environment which may be quite different from that of the response team. Certain norms of behavior probably exist within that group, and purpose and group goals may be well defined. The role of the individual within that group also may be well defined, and a certain pattern for communications, decision-making and overall leadership established.

In addition to the norms and expected behavior established by the group, each individual has his own personal needs that directly influence his behavior. Some people have very strong power drives and want to be in charge of the situation. Others are highly motivated to accomplish tasks assigned to them, either by the team leader or external group or agency. Still others are motivated primarily by a strong need to socialize and interact with other team members.

In one way or another, all are driven by a need for status- they have to know where they fit in, and many want to be as high on the ladder as possible. Finally, most individuals involved in a response effort usually have to report their success, or lack therof, to another person, usually their boss. For a variety of reasons most people want to do their job well, and a successfully completed job carries with it all manner of rewards. This need to do a good job strongly motivates most of the response team members.

Face-to-face interaction during the planning process can define

Section 21

Guidelines for Decision-making

clearly a purpose and the goals of the response team, thus minimizing behavioral conflicts. Objectives to be achieved can be agreed upon, and the broader organizational responsibilities of participating agencies can be addressed. Second, the roles to be played by each team member and represented agency can be identified. Role conflicts can be resolved and ambiguities addressed.

Third, the mechanisms for decision-making also can be discussed at such a meeting. They include: decision by default (lack of a group response); unilateral decision (authority rule); majority vote; consensus; or unanimity. Fourth, alternatives for resolving conflicts can be agreed on, such as: ignore it, smooth over it; allow one person to force a decision; create a compromise; or confront all the realities of the conflict (fact and feelings), and attempt to develop an innovative solution.

Fifth, means and patterns of communication can be resolved. This would include not only establishing radio frequencies and other electronic means of communicating, but also establishing patterns of information flow among group members. Finally, leadership roles and hierarchies can be established. Although an OSC may be in charge of an operation, a variety of other leadership roles under him need to be filled if a response effort is to be successful.

Interaction among team members can take the form of both periodically scheduled meetings and planned drills and exercises. Such interaction, quite subtly, will establish the status of each member, including leadership roles, and it will become apparent who can be relied on to carry out assigned responsibilities. The job of each team member will be better understood by all, and unwritten norms for the response team will evolve.

Conflicts can be anticipated and minimized. If causes of such conflicts are sorted into two lists labeled 'substantive issues' and 'organizational factors,' a simple tool for understanding and forestalling potential conflict situations can result. The substantive issues are real and can be resolved through the conscientious involvement of all affected groups in the planning process. Organizational factors also are real and can best be dealt with by just getting to know one another better through frequent communication and joint training exercises, where one learns what to expect from the other person under a variety of situations.

If this interaction fails to occur before an actual oil spill incident, an OSC can expect much of his time will be taken up in resolving conflicts under less than ideal conditions and under the vigilant eyes of CNMI and federal agencies, the news media, and others affected by the spill.

Section 22

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