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14 APR 1983

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Commanding General, Marine Corps Base, Camp Lejeune

Subj: FY-83 Environmental Engineering Survey for Marine Corps Base,
Camp Lejeune; transmittal of

Ref: (a) HCO P11000.5A
(b) OPNAVINST 0240.3E
(c) NAVFACINST 5450.19E

Encl: (1) Environmental Engineering Survey Report for Marine Corps Base,
Camp Lejeune

1. Enclosure (1) is forwarded in accordance with references (a), (b) and (c).
2. Major suggested action items are as follows:
 - a. Upgrade chlorine safety at Hadnot Point and Onslow Beach water and sewage plants and Camp Johnson sewage plant.
 - b. Connect Main Steam Plant blowdown to sanitary sewer.
 - c. Ensure Building 70 pool backwash and Building 20 water plant backwash are tied to sanitary sewer.
 - d. Improve field sanitation compliance.
 - e. Improve erosion control, prepare erosion control plans for borrow pits, and eliminate open dumps.
 - f. Forward ESR for Camp Geiger I/I study.
 - g. Upgrade oil/water separators.
 - h. Upgrade oil SPCC for Buildings 765, 20, 130, 488, 901, 902, 172, and 804.
 - i. Improve Buildings 902 and 1105 ventilation and safety.
 - j. Provide standby power for Camp Johnson and Tarawa Terrace sewage plants and NCAS water plant.
 - k. Improve Building 457 fire protection.

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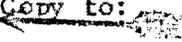
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It is requested that comments/plan of action be prepared to correct all problems noted in enclosure (1).

2. Should there be questions regarding this survey, please contact Messrs. W. Gutter or B. Davenport, LANTMANTACOM, Code 14, telephone (804) 446-9558 or AUSTON 890-9558.

J. R. MAREY
By direction

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ENVIRONMENTAL ENGINEERING SURVEY
MARINE CORPS BASE, CAMP LEJEUNE
JACKSONVILLE, NORTH CAROLINA

(UIC M67001)

APRIL 1983

UTILITIES, ENERGY AND ENVIRONMENTAL DIVISION
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

PREPARED BY:

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Environmental Engineer

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Enclosure (1)

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APPENDICES

- Appendix A Preliminary Survey Findings and Recommendations.
- Appendix B NAPSIS Report (NOTAL).
- Appendix C Analytical Results for PCBs - "LANTNAVFACENCOM ltr 114:WLC:awk
6280 of 20 January 1983".
- Appendix D 40 CFR 112, "Oil Pollution Prevention, Non-Transportation.
Related Onshore and Offshore Facilities".

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ENVIRONMENTAL ENGINEERING SURVEY
MARINE CORPS BASE, CAMP LEJEUNE
JACKSONVILLE, NORTH CAROLINA

I. EXECUTIVE SUMMARY

A. Purpose and Objectives

The purpose of this Environmental Engineering Survey (EES) is to provide an up-to-date compliance report of the facilities and operations at the Marine Corps Base, Camp Lejeune which are related to environmental protection and enhancement. Specific objectives are:

1. Identification of environmental facility deficiencies and required corrective actions.
2. Identification of environmental operation and maintenance deficiencies and recommended corrective actions.

B. Scope

The environmental areas covered in this EES during 25 October through 5 November 1982 include:

1. Air Pollution
2. Potable Water
3. Wastewater
4. Oil
5. Hazardous Waste/Toxic Substances

Any environmental problems that should arise between surveys or problems inadvertently omitted during the current survey should be directed to the program manager concerned as indicated in LANTNAVFACENGCOM environmental organization chart on the next page.

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ENVIRONMENTAL QUALITY BRANCH, CODE 114
J. R. BAILEY, P.E., BRANCH HEAD (EXT 9556)

CODE 114A

S. D. Gatling, (Mgmt. Asst.), PCR and OCR (EXT 9579)

CLEAN AIR ACT (CAA), SAFE DRINKING WATER ACT/POTABLE WATER
SYSTEMS, INDUSTRIAL WATER TREATMENT

CODE 1141

I. Azar, P.E., Section Head (Env. Eng.) (EXT 9567)
R. Thompson, (Env. Eng.), Air Pollution (EXT 9563)
Permits. (Monitoring, NAPSIS, Coal,
Noise, and Industrial Water Treatment)
J. J. Harwood, P.E., (Env. Eng.), Water Distri- (EXT 9557)
bution Systems. (Conservation, Backflow
Cross Connection, Leak Surveys, Fire
Protection)
J. J. Chen, (Env. Eng.), Industrial Water (EXT 9590)
Trmt. (Boilers, Cooling Towers, Pools)
Water Treatment, SDWA (Permits
Monitoring and Lab Contracts)
H. M. Davenport, (Env. Eng.), Air Pollution (EXT 9591)
Permits. (Monitoring, NAPSIS, Coal and
Industrial Water Treatment)

CODE 1143

RESOURCE CONSERVATION & RECOVERY ACT (RCRA); APPLIED
BIOLOGY PROGRAM, TOXIC SUBSTANCE CONTROL ACT
(TOSCA)

P. A. Rakowski, P.E., Section Head (Env. Eng.) (EXT 9562)
S. G. Olson, (Env. Eng.), Hazardous Waste (EXT 9565)
(PCBs)
J. G. Wallmeyer, (Env. Eng.), Solid Waste (EXT 9566)
(NACIP)
D. G. Miello, PhD., Sr. Entomologist (EXT 9596)
Applied Biology
A. Branam, Entomologist, Applied Biology (EXT 9564)
J. W. Eversole, Entomologist, (EXT 9595)
Applied Biology
A. G. Michael, Entomologist, (EXT 9594)
Applied Biology
R. H. Bush, PDC (EXT 9531)

I/A, CLEAN WATER ACT, WASTEWATER UTILITIES, OIL SPILL CONTROL/OILY WASTE MANAGEMENT.
CODE 1142

D. P. Goodwin, P.E., Section Head (Env. Eng.) NPDES permits/DMR/QC, lab contracts (EXT 9561)
S. A. Brewer, P.E., (Env. Eng.), Oil and Oily Waste (Spill Plans and Projects, A²R², (EXT 9560)
Oil Shore Support, Waste Oil, Groundwater [Oil])
W. L. Carter, (Env. Eng.), Sewage Treatment, Wastewater Collection, Infiltration/ (EXT 9558)
Inflow, NETS/NAVDOCKS (O/M), UIC (e.g. septic tanks, sewage sludge)
P. B. Parker, (Env. Eng.), Ind. Wastewater Trtmt. and Pretrmt., CHT Systems, (EXT 9559)
Water Quality, Dredging.
J. H. Parrish, (Phy. Sc. Tech) (EXT 9528)
P. L. Brown, (Wtr. and Wastewater Tech.) (EXT 9528)

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II. INTRODUCTION

A. Description of Activity - Marine Corps Base, Camp Lejeune is located in the coastal region of North Carolina, 350 miles south of Washington, D.C., and 220 miles north of Charleston, South Carolina. United States Route 17 and State Route 24 form the western and northeastern boundaries of the complex. The City of Jacksonville is located on the north boundary adjacent to the New River Air Station. Bear Creek, Freeman Creek, French Creek, Northwest Creek, Southwest Creek, Wallace Creek and New River are the principal watershed drainage areas.

Marine Corps Base, Camp Lejeune is a second-echelon command directly under the command of the Commandant of the Marine Corps. It is the nation's most complete Amphibious Training Base. Established in 1941 and named in honor of Lieutenant General John A. Lejeune, the Camp Lejeune Complex is composed of the Marine Corps Base, Camp Lejeune, the Marine Corps Air Station, New River, and the Naval Regional Medical Center. These three host activities have a number of supported commands including the 2nd Marine Division, the Force Troops, Fleet Marine Force, and the Marine Air Groups 26 and 29.

The Base is divided into nine major subdivisions: Hadnot Point; Tarawa Terrace (I & II); Midway Park (Housing Area); Montford Point (Camp Johnson); Camp Geiger; Marine Corps Air Station (H), New River; Rifle Range; Courthouse Bay; and Onslow Beach.

The mission of Marine Corps Base, Camp Lejeune is as follows:

1. To provide housing, training facilities, logistic support, and certain administrative support for assigned units.
2. To receive and process personnel as assigned and conduct individual combat training as directed.
3. To conduct specialized schools and other training as directed.

B. List of Station Personnel Contacted

Colonel J. T. Marshall	Ass't Chief of Staff of Utilities
Mr. R. Alexander	Environmental Engineer
Mr. F. Crone	Utilities Director
Mr. C. Wetherington	Ass't Utilities Director
Mr. D. Sharpe	Supervisory Ecologist
Mr. T. Stamps	Ecologist
Ms. E. Betz	Supervisory Chemist
Mr. D. Southerland	General Foreman, Steam Plant
Ms. G. Smith	Chemist, Steam Plant
Mr. W. R. Price	General Foreman, Water and Sewage Treatment Plant
Mr. B. M. Frazelle	Foreman, Water Treatment Plant
Mr. M. D. Davis	Foreman, Sewage Treatment Plant

C. The Environmental Engineering Survey Preliminary Report and Recommendations, (Appendix A), was provided to Base personnel at the end of the survey.

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III. DISCUSSION OF DEFICIENCIES AND RECOMMENDATIONS

A. Air Pollution

Background

1. The Clean Air Act (CAA) was enacted in 1963 due to increasing publicity concerning the adverse effects of air pollution. Under CAA, each state has primary enforcement responsibility for assuring air quality within its geographical area.
2. The CAA Admendments of 1970 and 1977, PL 95-95, prescribes current national strategies for abating air pollution for mobile sources and for new and existing stationary sources. These strategies are employed differently depending upon location.
3. Title 40 Code of Federal Regulations Part 60 (40 CFR 60) establishes Federal performance standards for certain industrial categories and sizes of new air pollution sources. It set forth the minimum standards that a newly constructed or modified sources must meet when it becomes operational. Permits are required for the construction of new sources and for the continued operation of existing sources.

Discussion

1. The environmental survey identified over 200 individual air pollution sources at MCB CAMP LEJEUNE and over 60 air pollution sources at MCAS (H) NEW RIVER. The current Navy Air Pollution Source Information System (NAPSIS) required major revisions and updating to include all the new sources and current process information. Appendix B is a copy of the draft NAPSIS forms which have been submitted to NAVENENVSA for input into the computer system. After a computer printout has been completed and reviewed, LANTNAVFACENCOM will submit the NAPSIS computer printout to MCB CAMP LEJEUNE for submittal to the North Carolina Department of Natural Resources and Community Development, Division of Environmental Management (DEM). This printout will be used as the air pollution source registration for these sources. By Engineering Service Request, U-3012, MCB CAMP LEJEUNE has requested LANTNAVFACENCOM to assist in negotiations and meetings with the North Carolina DEM, in completing the NAPSIS update and in completing the air pollution permits. The field work completed during the survey has identified all the air pollution sources but additional meetings are planned for April 1983 with the North Carolina DEM and MCB CAMP LEJEUNE to identify the sources requiring air pollution permits. Through the ESR, LANTNAVFACENCOM will assist in obtaining the air permits for the identified sources.

Recommendation No. 1: MCB CAMP LEJEUNE should contact the North Carolina DEM, Wilmington Region and should plan for several people to attend the above meeting from the Utilities Department of Base Maintenance Division and from the Facilities Division, Natural Resources Department.

Done

2. Contract 62470-82-B-1464 will replace fuel oil boilers at Courthouse Bay and Rifle Range but the North Carolina DEM air permits have not been revised to reflect these changes to the boilers. MCB CAMP LEJEUNE is

responsible for obtaining air pollution permits from the North Carolina DEM for any air pollution source that is constructed as a part of a Non-MILCON project. LANTNAVFACENGCOM is responsible for obtaining air permits for MILCON projects and LANTNAVFACENGCOM will assist MCB CAMP LEJEUNE in obtaining necessary air pollution permits for Non MILCON projects if requested through an ESR.

Recommendation No. 2: MCB CAMP LEJEUNE should apply for the necessary air pollution construction permits on any Non-MILCON funded projects which have any air pollution sources (i.e. paint spray booths, fiberglass booths, vapor degreasers, spray cleaning booths, boilers, fuel tanks, etc). MCB CAMP LEJEUNE should also prepare the yearly updates of the NAPSIS reports for such new sources.

Recommendation No. 3: MCB CAMP LEJEUNE should revise air pollution source registrations and air pollution permits before replacing boilers, fuel storage tanks, paint spray booths, etc.

3. During the survey the main steam plant, Building 1700, was observed exceeding the 20 percent opacity limit required in the North Carolina DEM air permit No. 3769R4. Several projects were being conducted which required frequent changes of boilers, boiler load, and fuel. This malfunction condition should have been reported to the North Carolina DEM by telephone, within 12 hours following the start of the malfunction, and in a subsequent letter.

Recommendation No. 4: During any prolonged (longer than 12 hours) boiler or electrostatic precipitator malfunction in Building 1700, MCB CAMP LEJEUNE is required by the air pollution permit No. 3769R4 to notify the North Carolina DEM by telephone. When notifying the state, the information required are: (1) the nature and cause of the malfunction, (2) time when the malfunction occurred, (3) expected durations and (4) the estimated emission rate.

4. The Woodworking Hobby Shop, Building 1106, does not have any machine ventilation. As a result wood chips and sawdust cover the floor in piles. Sweeping periodically controls the nuisance to some extent. The sawdust is detrimental to the cutting and sawing machine performance and life, a potential fire hazard, and a health hazard to people breathing the sawdust particles.

Recommendation No. 5: MCB CAMP LEJEUNE fire marshall should inspect the Woodworking Hobby Shop, Building 1106, for potential fire hazard. It is recommended that MCB CAMP LEJEUNE request NAVREGMEDCEN and the Safety Office to conduct a comprehensive ventilation survey. Also, a NAVOSH project should be developed to retrofit or replace the Woodworking equipment with equipment which complies with OSHA regulations 29 CFR 1910 Subpart O and Subpart R for ventilation systems and machine guards.

5. No "smoke school" instruction has been provided to boiler operator personnel. The boiler operators should have training in opacity readings and visible emissions using the U.S. Environmental Protector Agency Regulation 40 CFR Part 60 Appendix A Method 9. The North Carolina DEM conducts a visible

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emission school twice a year in Wilmington and Washington, N.C. of one or two days length.

Recommendation No. 6: MCB CAMP LEJEUNE should attend the visible emission school offered by the North Carolina DEM twice yearly in either Willington or Washington, North Carolina. The school is one or two days long and teaches techniques in reading smoke density. Attendance is recommended for several people from Utilities Division of Base Maintenance, especially boiler operators at Building 1700, and from Facilities Division Natural Resource Department.

6. Building 1700 flyash is being transported in open top dump trucks to the MCB CAMP LEJEUNE landfill and causing a transportation, health, safety and nuisance problem. On a daily basis, several trips are made from the power plant to the landfill. Flyash is spilling and blowing off the truck on to the road and makes driving hazardous. Breathing flyash particles is also detrimental.

Recommendation No. 7: Flyash from Building 1700 should not be transported in open top dump trucks. Recommend use of either an enclosed tanker truck (i.e. lime tanker or grain tanker) or a dump truck with a canvas cover which is tied to the truck bed covering the flyash. With every flyash load, the canvas cover would be manually rolled up so the truck can be filled, unrolled to cover the flyash and tied to the truck bed.

B. Potable Water

Background

1. Public Law 93-523, Safe Drinking Water Act (SDWA) promulgated specific legal requirements for the provision of adequate treatment and monitoring of public water supplies. This statute defines water supply systems as Public Water Systems. Public Water Systems can be either a "community water system" or a "non-community water system." Monitoring requirements will vary based on the aforementioned subclassification.

2. In addition, the SDWA gave the Environmental Protection Agency (EPA) authority to prescribe national drinking water regulations. It requires Public Water Systems that deliver water to monitor and test, and to operate and maintain systems in compliance with these regulations. Failure to comply requires public notification.

3. The procedural and substantive requirements are fully applicable to all Federal activities that operate public water systems in the United States. In areas subject to the National Primary Drinking Water Regulations, final determination of monitoring requirements rests with the EPA or those states which have been granted primary enforcement responsibility.

4. On 14 March 1980, the EPA granted North Carolina primary enforcement responsibility for implementation, enforcement and administration of the SDWA. Accordingly, Federal facilities located in North Carolina must report to the State and comply with requirements of the Act contained in the

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North Carolina State rules governing Public Water Supplies Section .0600 through .2500.

Discussion

1. An on-site visit of the MCAS (H), New River water treatment plant backwash settling pond was performed during the-Environmental Engineering Survey (EES) Inspection. Storm water was observed draining into this holding /recycling facility from the adjacent dirt access road. It was indicated that prior to construction of this facility the road, had in past years, been coated with various types of waste oils for surface stabilization. As a result, the presence of Polychlorinated Biphenyls (PCBs) in the pond resulting from area runoff was a grave concern.

2. Water and soil samples were collected by LANTNAVFACENCOM Code 114 personnel and analyzed by its contract laboratory. The results showed no traceable amounts of PCBs, Appendix C.

Recommendation No. 8: Surface drainage should be re-routed away from this holding pond.

3. As an amendment to the National Primary Drinking Water Standards, 40 CFR Part 141 establishes a maximum contaminant level (MCL) of 0.10mg/l for total Trihalomethanes (TTHM), including chloroform, that are introduced into drinking water by the reaction of naturally occurring substances with chlorine in the course of water treatment.

4. TTHM monitoring results from the MCAS (H) New River potable water distribution system which have been consistantly exceeding the recommended MCL were discussed. It is suspected that the treatment plant filter backwash settling pond may be the possible generator. However, similar conditions exist for the filter backwash at MCAS CHERRY POINT and its' sampling data does not sustain the belief that TTHMs are generated/concentrated within holding/recycling ponds, Appendix C.

Recommendation No. 9: There are many factors (i.e., contact time, pH, temperature, chlorine residual, form of residual, Bromide concentration, precursor type, precursor concentration, etc.) affecting formation of Trihalomethane. Therefore, the filter backwash should be discharged to the holding pond and not recycling back through the head of the plant for a period of three (3) days, allowing the water distribution system time to flush. Then collect samples from each of the following locations and send to Granger Laboratory for analysis:

<u>Location</u>	<u>Number of Samples</u>
Filter Backwash Holding Pond	1
Water Plant (1 sample prior to prechlorination and 1 sample prior to post chlorination)	2
Distribution System - Normal Residence Time	3
Distribution System - Longest Residence Time	1

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5. In September 1982, inorganic chemical analyses were performed on potable water samples from various points throughout the Marine Corps Base, Camp Lejeune water treatment plants' distribution systems. All results for sodium were between 19.8 PPM and 88.7 PPM.

There is no established standard for sodium in drinking water. However, physicians do recommend various restricted intakes for a significant portion of the population. It includes, but not necessarily limited to, persons suffering from hypertension, edema associated with congestive heart failure, and women with toxemia of pregnancy. For those reasons, drinking water containing more than 270 PPM of sodium should not be used by those persons placed on moderately restricted sodium diets, and drinking water containing more than 20 PPM should not be used by those on severely restricted diets.

Recommendation No. 10: The Base Preventive Medicine Unit should be advised regarding the level of sodium concentration in the potable water supply in order that alternative measures may be implemented for those individuals whose salt intakes should not exceed the allowable limits.

6. The Tarawa Terrace, Holcomb Boulevard and Hadnot Point water treatment plants serve most of the Housing areas. Their water supplies are fluoridated. Each has a fluoride meter and probe which gives erroneous readings.

Recommendation No. 11: An ion selective meter should be purchased for the Water Quality Control Laboratory (WQCL) to do fluoride analysis.

7. Routine samples for Safe Drinking Water Act (SDWA) and National Pollutant Discharge Elimination System (NPDES) compliance monitoring are collected by water and sewage personnel from the Utilities Division, Base Maintenance Department. The current potable water sampling points for bacteriological monitoring are those locations previously designated by the Base Preventive Medicine Unit and Utilities Division personnel.

Recommendation No. 12: The potable water and sewage samples collectors should be accompanied periodically by personnel from the WQCL. On these occasions, the WQCL personnel would supervise sampling, collection and handling procedures exhibited by the collectors and provide training assistance if required.

Recommendation No. 13: The WQCL chemist should re-evaluate existing sampling point locations for adequacy toward achieving compliance monitoring. *

8. The WQCL has been re-certified by the State of North Carolina to perform bacteriological analysis through calendar year 1984. This lab also has an Atomic Absorption Unit, but, it lacks a recorder to do trace metals analysis. Once that piece of equipment is purchased, the WQCL could then become certified to do their own inorganic primary analyses for SDWA compliance reporting versus contracting out to a private laboratory.

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Recommendation No. 14: Purchase a recorder for the laboratory Atomic Absorption Unit to do trace metals analysis. The WQCL should then achieve North Carolina State certification to perform inorganic analyses.

9. Leaking valves were observed at most of the water plants. Moreover, the MCAS potable water treatment plant is not provided with auxiliary power for in-plant operation in the case of power outage.

Recommendation No. 15: Consolidate an inventory listing of leaking valves for each water plant and replace the seals.

Recommendation No. 16: Provide auxiliary power for in-plant operation at the MCAS potable water plant to prevent shut-down should power outage occur.

10. The Hadnot Point water treatment plant chlorine storage room is inadequately ventilated. No vent and exhaust fan have ever been installed at floor level to be switched on prior to entering the room. There is a window located too high off the floor to be of any benefit to plant personnel entering the room in the event of a chlorine gas leakage or during cold weather when it is kept shut. Moreover, the chlorine tanks are located above the building bottom deck. Once a chlorine leak occurs and should the door be left open, there is nothing to prevent it from traveling and spilling over to seek this lowest level.

Recommendation No. 17: Chlorine gas is approximately 2.5 times as heavy as air. In case of a leak, it would therefore seek the lowest level. The gas is extremely toxic and corrosive in moist atmosphere. It is very irritating to mucous membranes and exposure to this gas can be fatal. Thus, the following corrective actions should be implemented:

a. Install a vent with an exhaust fan at floor level to be switched on prior to entering the chlorination facility. Provide a physical barrier (i.e. brick up the existing doorway) to this facility from the inside environment with an entrance from outside the building or relocate the chlorination room.

11. The entrance to the Onslow Beach water treatment plant chlorination room is in direct contact with the work area. There should be a physical barrier separating the two locations because of the safety hazard involved in case of a chlorine leak.

Recommendation No. 18: Cement block this passageway from inside the water plant. Provide another entrance from the outside.

C. Wastewater

Background

1. The current national strategies for controlling most wastewater discharges are prescribed by Public Law 95-217; Clean Water Act (CWA). Under the National Pollutant Discharge Elimination System (NPDES) program, "point

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source" discharges into waters of the United States are controlled through a permit system. Therefore, unpermitted discharges of a pollutant into any U.S. waters are illegal.

2. This act also mandates pollution control facilities to comply with state and local administrative and procedural requirements, including operator training and certification, as well as discharge standards.

Discussion

1. The Onslow Beach water treatment plant filter backwash discharges to a holding pond. This wastewater is supposed to be pumped out periodically by tank truck and disposed of into the sanitary sewer. However, current wastewater disposal practices consist of pumping this backwash water to an adjacent storm drainage ditch. A National Pollutant Discharge Elimination System (NPDES) permit modification was requested by LANTNAVFACENGCOM ltr 6280 114:DPG of 12 Aug 82.

2. All wastewater streams were not connected to sanitary by MILCON P-996 at the Building 1700 Main Steam Plant. Under P-996, a cooling tank to collect continuous blowdown from the bottom of five (5) boilers with discharge to the sanitary was installed. However, there are five (5) 1/2-inch top continuous blowdown lines that were omitted by the project. Discharges from these top blowdown lines cause storm drain #47 to violate NPDES requirement for both PH and suspended solids.

Additional wastewater sources not connected to the sanitary sewer at the above site are residual runoffs from the coal pile storage area and from the fly ash silo loading operation. Thus, suspended solid limits are being violated at storm drain #42 as well as storm drain #47, from wastewater being transported/collected by the area various storm drainage ditches. These wastewater sources will be connected to the sanitary under P-780. Other sites on-station discharging wastewater to storm drain are the Building 710 Officers' Club pool and the Building 20 Hadnot Point water treatment plant (WTP) filter backwash.

Recommendation No. 19: The Base should:

a. Initiate an in-house project to tie the top blowdown into the drain line for the boilers bottom blowdown which discharges to the cooling pit.

b. Follow-up to insure that the pool and WTP backwash are connected to the sanitary as soon as possible.

3. Sanitary sewers are normally placed at a slope sufficient to produce a velocity of approximately 2 feet per second. Usually, the deposition of solids that may clog sewers or cause odors is prevented at this speed. The Parshall Flume located in the flow chamber at the Onslow Beach sewage treatment plant is elevated too high. This causes a back-up of plant influent into the sewer line until enough head is developed to overcome the flow resistance. Furthermore, the plant has not been equipped with a bar screen or comminutor.

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The previous survey recommended that bathroom fixtures be installed for plant personnel to exercise good personal hygiene, thereby reducing the chances of getting infection from contamination while treating the sewage. A commode and sink have been installed inside the chlorination room. The present location presents a potential safety hazard from possible exposure to chlorine gas leakage. Chlorine gas is extremely toxic and exposure to it can be fatal.

Recommendation No. 20: The Parshall Flume should be lowered in order to achieve normal flow velocity into the plant.

Recommendation No. 21: Furnish this treatment facility with either a comminutor or bar screen.

Recommendation No. 22: Relocate the commode and sink out of the confined space and separate from the chlorination facility.

4. Responsibilities for regulating sanitary waste disposal in the State of North Carolina have changed due to recent regulatory modifications. As a result, the North Carolina Department of Health Services has jurisdiction over systems discharging wastes into the soil (septic tank/tile fields, pit privies, etc.) or into storage devices (vault privies, porta-john, etc.) which are pumped out and wastes transported to sewage treatment facilities. However, the Base Judge Advocate (Staff Judge Advocate, Camp Lejeune Ltr SJA/NTR/jms 11015 of 10 Sep 1980) has concluded that field sanitation practices such as pit privies, slit trenches, "four holers", etc. are not subject to regulation by state and local public health authorities. Therefore, permits from these agencies are not required.

Provisions are included in North Carolina's environmental legislation for regulation of activities which may degrade groundwaters so as to cause quality to fall below established standards. But, before these regulations can be enforced, the Department of Natural Resources and Community Development (NRCD) must first classify the groundwater quality which in effect establishes applicable standards to a given area. NRCD personnel are currently developing proposed classifications which will undergo public review, hearings and comments prior to becoming effective.

Soil scientists from North Carolina State and the U.S. Department of Agriculture have previously mapped soils aboard Base. Although this data documents numerous sites unsuitable for traditional field sanitation practice, there are many currently used bivouac areas which can use these methods if properly installed. This could significantly reduce use of "porta-john" type facilities which are relatively expensive and which some Commanders feel conflict with certain training objectives. Pit privies, "four-holers", etc on the other hand have potential for polluting ground water if installed improperly or on certain types of soil. Determining specific site suitability and water table depths require knowledge of soils. While training facilities officers, if requested, can advise military unit if there are suitable soils within the requested training area, most corpsman responsible for actually siting the sanitation measures do not have adequate training to avoid areas having high water tables. High water tables are often not readily detectable

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based on vegetation and surface features. This is particularly true during periods of dry weather.

Another area of consideration is that permanent ranges regularly utilized by larger groups may justify more permanent facilities. Also, volume of wastes generated by large groups are more difficult to address using field sanitation methods, particularly those from kitchens or laundry.

Information provided during the survey indicates that significant improvement has occurred since the previous Environmental Engineering Survey conducted in 1979. Additionally, Base Maintenance has committed \$20K to further evaluate the problem and to develop alternatives toward reducing potential for environmental impact, reducing expenditure for "porta-john" rentals and upgrading facilities at permanent ranges.

Recommendation No. 23: Current State standards for evaluating soil suitability for waste disposal should be met when on-site disposal of wastes are utilized. Systems discharging to surface waters or utilizing land application must comply with Federal, state and local environmental regulations.

Recommendation No. 24: In that funding is available, a study of field sanitation should be conducted as soon as possible. Base environmental and training facilities personnel should gather data on range and training area use/requirements needed to define scope of project. A Base instruction (Base order) should be issued establishing guidelines and responsibilities in this area.

5. During rain storms, stormwater from infiltration/inflow (I/I) enters the sewer system at Camp Geiger in excess of the plant's sewage basin storage capacity. The additional flow spills over a flood gate into the head of the secondary treatment system. Hence, there is a sixteen inch (16") or eighteen inch (18") line which brings effluent from the secondary clarifier into a distribution box. From the distribution box, the wastewater is picked-up by an eight inch (8") line and carried to the tertiary treatment unit. The 8" line is too small during periods of excessive rain to handle the additional flow, often requiring the plant's tertiary system to be by-passed.

Camp Geiger's treatment plant is located at the base of a sloped hill. The profile is such that during heavy rainstorms the surface drainage which is inadequate causes flooding. When water from over-land storm flows have gotten high enough, it has entered various treatment units and hydraulically overloaded the plant.

Recommendation No. 25: Existing problems/deficiencies noted indicate the need for a comprehensive study of the whole collection system. Submit an ESR to have a scope of work for an A/E to perform a Wastewater Collection System Utility Technical Study (UTS) to determine the approximate extent of the I/I, provide project scope/cost for any recommended sewer lines repair/replacement, as well as an evaluation for improvements to the site storm drainage system.

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6. Much of the soil under the spillway beside the spill-over box for recycling pumps located at the MCAS water treatment plant backwash holding pond has washed away. As a result, the rock-like foundation for the spillway has begun to collapse. The spilled over backwash water which is an unpermitted point source discharge enters an adjacent drainage ditch.

Recommendation No. 26: Replace soil and re-construct spillway beside the spill over box to eliminate need for a NPDES permit for this point source discharge.

7. Soil along the embankment to the Holcomb Boulevard water treatment plant backwash holding pond is eroding away. Numerous gulleys resulting from the overland flow of stormwater drainage into the pond were observed.

Sand used in the water treatment operation is stored in a cement block containment within the parking lot behind building near an area storm drain located approximately 3 feet away. Potable water from an overflow pipe inside the water plant could be observed washing spilled sand into area storm drainage system.

Recommendation No. 27: Install a netted mesh over the embankment for backwash holding pond, cover with top soil and seed.

Recommendation No. 28: When sand is being removed from the cement block containment, special attention should be directed toward cleaning up spilled material so that it won't be washed into the storm drain, eventually causing it to clog.

8. Exhaust fans for the chlorination room at the Camp Johnson, Hadnot Point and Onslow Beach sewage treatment plants are absent.

Recommendation No. 29: For the above treatment facilities, install exhaust fans at floor level to be switched on prior to entering the chlorination rooms.

9. There was evidence of waste paint having been disposed of through an oil/water separator at Camp Johnson. In addition, flow meters at the sewage treatment plant are not functioning properly. Neither the Camp Johnson nor Tarawa Terrace sewage plants has auxillary power.

Recommendation No. 30: The following corrective measures should be implemented:

a. The disposal of paint into the oil/water separator must be discontinued. All waste paint should be drummed and sent to DPDO for acceptable disposal.

b. Repair or replace the flow meters at the Camp Johnson sewage treatment plant.

c. Provide standby power for the Camp Johnson and Tarawa Terrace sewage plants to prevent power outage, should it occur.

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Erosion/Sediment Control

Background

1. Accelerated erosion from unprotected construction sites and other land disturbing activities constitute a major pollution problem. Sediment suspended in water runoff settles out depositing soil and other materials into rivers, lakes and streams. As a result, stream channels, lakes and reservoirs become filled, thereby having detrimental impact upon the environment. Accordingly, Federal and state regulations have been created and are being enforced to effectively control erosion/sedimentation during active construction or after stabilization. Preventive measures, however, are generally considered from both a technical and economic view point.

Discussion

1. Over 200 sites needing erosion control and storm drainage have been identified by the Base Natural Resource Management Plan. More than 100 of these sites are located on dirt roads and along tank trails. The original intent of the plan was to identify problem areas to be corrected through one time fixes. However, implementation of the plan has shown that most problem dirt roads and tank trails will reoccur without routine maintenance.

2. A review of selected trails indicates insufficient maintenance. Currently, a MILCON project is under design to replace and repair major stream crossings. Avoidable sedimentation pollution will none the less continue to occur if maintenance levels are not increased.

Recommendation No. 31: A maintenance program coordinating the use of Base Maintenance, military engineers, forestry equipment and other available resources should be formalized. Inspection and maintenance responsibilities for dirt roads and tank trails must also be clearly defined.

3. It was stated that the U.S. Army Corps of Engineers have previously cited the Base for violation of the Clean Water Act. Severe erosion and sedimentation problems were observed in the area bounded by Sneads Ferry Road, Main Service Road and Louis Road. Open dumping of trash, pallets, old tires, used batteries (a hazardous material) and other types of rubbish/debris in the forested areas denote unsupervised use of the land.

4. A relatively large area of wetland along Cogdells Creek has been negatively impacted from sediment and indiscriminate use of engineering equipment. Storm runoff from the FC-100, FC-200 and FC-300 areas is uncontrolled and contributing to erosion problem.

Recommendation No. 32: Base planners, environmental personnel and military units operating within the above areas should initiate a cooperative effort toward addressing/resolving the following issues:

a. Clean up the illegal dump. Dispose of recoverable materials through DPDO and rubbish/debris into the Base landfill.

b. Review training and outline area to be used for operating heavy equipment.

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c. Delineate wetland areas along Cogdells Creek and sufficient buffer zones. Restrict use of wetlands and buffer areas by tactical vehicles/engineering equipment to designated trails and stream crossings.

d. Consider relocating and eliminating select tank trail and stream crossings in order to reduce erosion.

e. Stabilize areas of exposed soil.

f. Provide diversions and properly designed sediment basins/storm drains to control surface runoff and to trap sediment from engineering training areas, and from shop areas behind FC-100, FC-200 and FC-300.

g. Install a sediment basin and diversions to control runoff from engineering equipment training/test area behind Second Combat Engineers, Building 1808.

5. There are several active and abandoned borrow pits on Base. These areas are subject to the State of North Carolina Natural Resources and Community Development erosion and sedimentation control regulations.

Recommendation No. 33: In accordance with the North Carolina State Erosion and Sedimentation Control Act, erosion control and reclamation plans must be developed and implemented.

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D. Oil

Background

1. The Oil Pollution Prevention for Non-Transportation Related Onshore Facilities legislation was published in the Federal Register, Volume 38, Number 237 on December 1973. Title 40, Part 112, mandates the preparation and implementation of a Spill Prevention Control and Countermeasure (SPCC) Plan at fuel storage facilities whose total capacity exceeds 1,320 gallons in above ground tank capacity, providing no single container has a capacity in excess of 660 gallons or 42,000 gallons in underground tank capacity.

2. These rules and regulations apply to all existing facilities under the cognizance of the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina and apply in general to all oil producing, gathering, storing, processing, transferring, distributing, etc., equipment or containers which due to their location, could reasonably be expected to discharge oil in harmful quantities into or upon navigable waters of the United States or adjoining shorelines.

3. A used oil solvent study is presently scheduled for FY-84.

Discussion

1. The original SPCC Plan for the Base was prepared on 10 June 1978. The Plan is presently being revised to incorporate facilities constructed under P-996. Nonetheless, it was disclosed that fuel content in some of the oil tanks addressed by the Plan previously has been replaced by another type (i.e., JP-5 vs Diesel Fuel vs Kerosene, etc.).

Recommendation No. 34: 40 CFR 112.5 requires that SPCC Plans be reviewed/updated every 3 years. Presently, update to the above document is over one year overdue. Effort should be initiated immediately to reflect prior changes as well as including current modifications.

2. On occasion waste oil is discharged along with excess rain water to the Camp Johnson and Hadnot Point sewage treatment plants. It was learned that much of the excess flow and oil are contributed by the oil/water separators located in the area served by the plants. For some reason, the oil/water separators were not equipped with flow restricter plates during installation.

Recommendation No. 35: A list of all oil/water separators on-base lacking flow restricter plates should be consolidated and an in-house project initiated to have them outfitted with these devices.

3. Also, located at the above site is a Mechanic Shop, Building 765. Four (4)-55 gallon drums of POL are stored outside this facility on a wooden rack upon a narrow strip of concrete pavement. Three (3) of the drums contain motor oil for pump lubrication and the other kerosene for cleaning paint brushes. Evidence of oil contaminated soil resulting from spillage was observed in the general area.

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Recommendation No. (36) Remove the oil contaminated soil and replace with new material. Stricter control should be exercised to ensure that the spillage evident at this site does not continue.

Recommendation No. (37) Construct a drum storage area with impervious pad/curbing, with or without a roof, but with valved drain.

4. Located in back of the Onslow Beach water treatment plant (BA-138) is a 650-gallon fuel oil storage tank. A concrete containment has been constructed around the base of the tank to collect drippings. No valve was installed however to drain rainwater. Consequently, water collects in this structure and freezes during winter months and becomes a breeding place for mosquitoes during summer months.

Recommendation No. (38) Install a drain valve within the concrete containment structure for the above fuel oil storage tank.

5. Near the front of Building A-1, homeport for the Assault Amphibious Battalion at Courthouse Bay, is a 3000-gallon kerosene tank. The containment structure for this facility has a valved drain pipe located within its wall. This drain pipe has been set above level bottom, making drainage impossible once water falls below a certain level.

Recommendation No. (39) Lower drain pipe so that proper drainage may be achieved off the containment structure bottom.

6. Beside Building 20, Hadnot Point water treatment plant, is a paved lot which slopes toward an area storm drain. Stored upon racks over/adjacent to the storm drains are 55-gallon drums containing Sodium Hydroxides, Hydrochloric Acids and petroleum lubricants. Content of these containers from rupture or spillage would enter into the storm drainage system.

Recommendation No. (40) Remove 55-gallon containers away from the site storm drain onto the grassy spot near the facility rear fence.

Recommendation No. (41) Construct a drum storage area with impervious pad/curbing, with or without a roof, but with valved drain.

7. Personnel from the Second Reconnaissance Battalion at Onslow Beach, Building BA-130, suspect fuel leakage from an underground Mogas storage tank. Procedures for testing buried fuel tanks have been outlined in the MCB CAMP LEJEUNE SPCC Plan.

Recommendation No. (42) Have the Mogas underground fuel storage tank pressure tested as soon as possible either in-house or by contract in accordance with procedures delineated in the above Plan.

8. The Second (2nd) Force Support Group is housed at various locations on Mainside of the Base. Under the existing Master Plan all units will be consolidated in the French Creek area. Projects are presently undergoing planning/construction to accomplish this objective in the very near future. The following problem sites were observed during the survey:

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a. FSSG Building TP-448 houses the Operational Readiness Float Group that stock/replace broken down equipment. This group also steam cleans engines, washes equipment and changes oil. Onsite were thirty-four (34) 55-gallon drums (i.e., 15 containing POL and 19 empties), 1000-gallon underground waste oil storage tank and approximately thirteen (13) old batteries awaiting disposal. These batteries were stored outside in the environment on wooden pallets.

b. FSSG Building 901 houses the Second Maintenance Battalion that overhauls deadline equipment. When there is too much maintenance work to be performed inside the building, it is then moved outside onto the paved parking area. This building lacks appropriate waste oil handling facilities for both inside/outside utilization.

Current waste oil disposal practice at this facility includes collecting waste engine oils, fluids, solvents, etc in containers, and having enlisted personnel transport the material across the parking lot area to a semi-exposed waste oil storage tank. Materials are sometimes transported by a fork-lift. Fifty-five (55) gallon drums containing lube oil, hydraulic fluids, antifreeze, dry cleaning solvents are also stored on racks at this location. As a result of previous spillage, the general vicinity has become heavily contaminated with oil.

c. FSSG Building 902 houses the Engineering Maintenance Company. Similar to Building 901, waste oil storage is located away from the actual maintenance site. However, the waste oil tank in this particular case is located above ground. Due to the tank elevation, steps have been built in order to pour waste oil into its portal. The steps are very unsteady and present an imminent danger to anyone climbing upon them.

Eventhough Buildings TP-448, 901 and 902 wash vehicular equipment, neither has adequately equipped washing facilities, oil/water separators and wastewater collection system located on-site to pre-treat/collect/transport the oily wastewaters to the Base sewage treatment plant. The wastewater is therefore discharged onto the ground and evaporates or enters the area natural drainage system.

Lighting and ventilation inside Building 902 appears to be inadequate. The ventilation piping system consists of long vent hoses extending from the ceiling main discharge duct. The mouth of these vent hoses are fitted over the generators exhaust while they are being tested, discharging carbon monoxide fumes to the outside environment. Duct tape utilized for hose connections with metal duct network is not durable enough to support exhaust system hoses and continue to pull loose. Consequently, carbon monoxide fumes escape causing a potential health hazards within the general working area.

- It was stated that the Base Industrial Hygienist has documented carbon monoxide concentrations exceeding standards for the internal work area. It was further stipulated that follow-up response from work requests had yielded very little results. With the advent of the winter months and the closing of doors, there was grave concern about remedying this problem as soon as possible.

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d. FSSG Building VL-172 houses the 8th Motor Transport Battalion. This battalion operates the fuel tankers storage lot. Nine tankers are generally present on-site at any given time. Each tanker contains around 5,000 gallons of diesel fuel when full. The fuel tanker storage lot consisting mostly of sandy soil has no SPCC facilities (i.e., concrete parking area with curbing, oil/water separator, POL storage pad, waste oil storage tank, and etc.). Approximately 200 gallons of waste oil are generated every two weeks. Soil in the areas surrounding the tankers and 55-gallon POL/waste oil storage drums has become heavily contaminated with spilled oil.

Recommendation No. 43: Carbon monoxide is a toxic, flammable, colorless and odorless gas. It is a chemical asphyxiant which acts toxically by combining with the hemoglobin of red blood cells, thus preventing the hemoglobin oxygen-uptake capacity and cutting off needed oxygen from the body. Inhalation of concentrations as low as 0.04 percent will cause headache and discomfort within 2 to 3 hours. Concentrations inhaled at 0.4 percent prove fatal in less than 1 hour. Higher concentrations can cause sudden collapse with little or no warning. According to the American Conference of Government Industrial Hygienists, 50 ppm is the maximum allowable concentration for an 8-hour daily exposure.

The following steps should be pursued to correct existing ventilation deficiencies at Building 902.

- a. Insure that fan used in duct network is adequately sized and functioning properly.
- b. Use hose clamps instead of duct tape to fasten the hoses to the metal duct network.
- c. Measure flows through hoses for proper suction. Seal off all unused hoses that may affect the positive draft.
- d. Check inside lighting for proper illumination and replace with higher wattage lights if required.

Recommendation No. (44) All old batteries and empty 55-gallon drums should be collected/turned in to DPDO for disposal. Note: Leave acid in batteries.

Recommendation No. 45: Appendix A summarizes corrective measures required to bring Buildings TP-448, 901, 902 and VL-172 into environmental compliance. In view of resources already allocated toward achieving this goal, further expenditure for interim fixes should be very closely scrutinized. This scrutinization should be considered from an economic viewpoint as well as timeliness.

Recommendation No. (46) Until existing buildings with appropriately equipped facilities become available or new programmed construction projects are completed, operational control should be enforced at the above sites to the extent possible. There are other sites on-station having similar deficiencies but not identified in this report. They should also be given the same operational control enforcement consideration.

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9. The Assault Amphibious Battalion, Amphibious Tank Vehicles are located at Courthouse Bay, Building A-1, Building A-2 and Building A-3. There are approximately 208 AMTRACK Vehicles, 70 pieces of rolling stock and 20 pieces of engineering equipment assigned to this location.

Existing AMTRACK wash facilities at Building A-3 consist of concrete wash area sloped to drain into grit basins which discharge to a storm water storage tank, designed to operate as an oil/water separator, before the effluent enters the sanitary sewer system.

It was indicated that the AMTRACK vehicles have been pre-washing in the Bay when they returned from field exercises. Accumulation of a large pool of water collected by an earthen embankment located at the base of a concrete access ramp was observed. The earthen embankment appears to be man-made. There is also an obsolete concrete rack being utilized for vehicle washing at the head of this ramp. The grit chamber for this structure which discharges to the site storm water collection system is undersized and has become clogged with grit. A water hose not being used was allowed to discharge potable water continuously onto the contiguous area.

Some AMTRACK equipment is parked on unprotected grounds behind Building A-1. Washing and maintenance are being performed on the unprotected grounds versus utilizing facilities provided at Building A-3. As a result, oily sheen and sediment were observed being transported by storm water runoff into the Bay.

Recommendation No. 47: The following actions are recommended:

1. Remove earthen embankment and clean off access ramp.
2. Close down water to an existing concrete rack at the head of the access ramp to Building A-3 where vehicles washing is now being performed. Concrete block entrance/exit to this rack.
3. Formulate a plan wherein all AMTRACK vehicle washings are able to be performed in the appropriately equipped wash areas through systematic scheduling. Hence, the pre-washing of these vehicles in the Bay must be discontinued.
4. MILCON Project P-346 scheduled for the 1984 construction program will correct many of the existing deficiencies. Nevertheless, effort should be initiated to ensure that a pre-wash facility also be incorporated in the project for this site.

10. In accordance with Base agreement, the Natural Resources and Environmental Affairs (NREA) personnel routinely monitor shop handling, storing and disposal of petroleum, oil, lubricants (POLs) and hazardous materials/waste.

Recommendation No. 48: It is strongly recommended that NREA continue their existing surveillance/inspection program. The NREA inspection team must continue to identify and provide corrective measures. However,

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should significant environmental problems involving the handling and disposal of POLs and other hazardous materials of an ongoing nature develop, the Assistant Chief of Staff Facilities should pursue follow-up enforcement action.

11. Building 804 is an old fenced-in propane gas facility located off Holcomb Boulevard. It is currently being utilized as a contingency for auxiliary waste oil storage. This facility has no fuel level indicators, lacks adequate tank truck loading/unloading rack and etc. Failure to meet oil pollution prevention requirements makes spillage at this location eminent. As a matter of fact, such an incident did occur on-site during the EES.

Recommendation No. 49: In conformity with Federal guidelines and to improve fueling operations and control, new and old tank installations should, as far as practical, be fail-safe engineered to avoid spills. Modify/upgrade the above waste oil storage facility in accordance with Appendix D. Assistance from LANTNAVFACENCOM Code 114 is available upon request.

12. The grease rack at Building 1120 Automobile Repair Hobby Shop is not being used because the containment curb is too high for the engine dollies to roll over.

Recommendation No. 50: At Building HDP-1120, the grease rack containment curb should be modified for easier access by personnel for engine cleaning.

13. The fuel contract may be changed at MCAS New River Main Fuel Farm from railroad tank car unloading of JP-5 fuels to tank truck unloading. The existing railroad tank unloading facilities has recently been upgraded to include oil spill prevention and containment facilities. Before tank truck unloading can be started, the existing tank truck unloading facilities will require modifications and expansions to prevent oil spills.

Recommendation No. 51: At MCAS (H) NEW RIVER, any change in the fuel unloading system from railcar to truck cannot begin until adequate tank truck unloading facilities have been constructed for oil spill containment.

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E. Hazardous Waste/Toxic Substances

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Background

1. Hazardous wastes are those wastes which may cause or contribute to adverse acute or chronic effects on human health or the environment when such wastes are not properly controlled. These wastes primarily consist of by-products of industrial production, surplus chemicals, salvage materials and sludges and may be in the form of solids, slurries, liquids, gases and powders. Hazardous wastes may include residues from pollution control devices (e.g., electrostatic precipitator dusts, industrial waste treatment plant sludges) as well as chemicals and pesticide substances (DDT, etc.).

2. Identification, handling and disposal of hazardous and toxic materials have in the past been an area of relatively minor concern. New

stringent legislation, increased information concerning toxicity to humans and the environment, along with the increasing frequency of accidents involving hazardous materials have rendered past handling and disposal methods unacceptable and re-emphasized the importance of acceptable handling and disposal methods.

Discussion

1. In Building HDP-1410, paint and sign shop waste solvents such as cellulose acetate thimer are poured down the sink drains.

Recommendation No. 52: MCB CAMP LEJEUNE should identify and stop the disposal of waste solvents into the sanitary sewers.

2. Hazardous material is transported by supply trains without railings on the carts. Cans and drums of hazardous materials are stacked onto supply carts and are not secured to prevent falling off the cart. At MCB CAMP LEJEUNE, several spills of paints and solvents occurred in calendar year 1982.

Recommendation No. 53: Railings and side guards should be purchased for the supply carts to prevent hazardous material from falling off of the carts.

3. Building TP-457 Flammable Storage Building has no berms for storage of flammable materials. Battery acids, POL, medical supplies, cleaning solvents, paints, paint thinners, trichloroethylene, etc. are stored without segregation of corrosive materials from the flammable materials. Outside storage drums of POL and trichloroethylene are stacked without any berming or spill containment system. The fire extinguisher system is inadequate to control a chemical fire.

Recommendation No. 54: MCB CAMP LEJEUNE must eliminate the storage of POL, medical supplies, water, etc in Building TP-457 Flammable Storage Building. The building should only be used to store "Flammable Liquids" which are defined as any liquid having a flash point below 100°F. Outside storage of drums should be prevented if possible. A concrete pad and spill containment area should be constructed for outside storage of materials. The fire and safety offices should conduct a detailed investigation of the fire extinguishing system, and of the type and amounts of materials stored in the building. A NAVOSH project should be developed to install a fire detection and extinguishing system in Building TP-457. MCB CAMP LEJEUNE should provide training to personnel in fire prevention, hazardous material storage, and hazardous material spill control. The fire department personnel must be provided building layout and a comprehensive list of items, location, and amount of material stored.

4. All aforementioned personnel are inadequately trained in fire prevention, hazardous material handling/storage/spill response and control, and hazardous wastes disposal.

Recommendation No. 55: Fire prevention and hazardous training courses should be initiated and provided to the various tenant commands. LANNAVFACENGCOM is available to assist in identifying training sources in Hazardous Materials/Hazardous Wastes Management.

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APPENDIX A

Preliminary Survey Findings and Recommendations

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5 Nov 1982

From: Messrs. Wallace Carter and Michael Davenport, Environmental Engineers,
Atlantic Division, Naval Facilities Engineering Command
To: Colonel John T. Marshall, Assistant Chief of Staff, Facilities
Subj: Environmental Engineering Survey Preliminary Report and Recommendation:

I. Deficiencies noted during the survey and preliminary recommendations:

A. The inorganic chemical analyses for potable water supplies on samples collected from various points at each of the Marine Corps Base, Camp Lejeune water treatment plants' distribution systems were performed during September 1982. All results for sodium were 19.8 ppm or greater.

Recommendation No. 1: There is no established standard for sodium in drinking water. However, physicians do not recommend drinking water containing more than 270 ppm of sodium to be used by those persons placed on moderately restricted sodium diets, and drinking water containing more than 20 ppm to be used by those on severely restricted diets. Hence, the Base Prevention Medicine Unit should be notified concerning the levels of sodium concentration in the potable water supply in order that alternative measures may be implemented for those individuals whose salt intake should not exceed the allowable limit.

B. Majority of the housing areas are served by the Tarawa Terrace, Holcomb Boulevard and Hadnot Point Water Treatment Plants. The water supplies are fluoridated but the fluoride meters/probes at these treatment systems frequently give erroneous readings.

Recommendation No. 2: An ion selected meter should be purchased for the Water Quality Control Laboratory (WQCL) to do fluoride analysis. In addition, a recorder should also be purchased for the Lab Atomic Absorption Unit to do trace metals analysis.

C. The WQCL has recently been re-certified to perform bacteriological analyses by the State of North Carolina for Safe Drinking Water Act (SDWA) compliance reporting.

Recommendation No. 3: The current sampling points to collect potable water samples for bacteriological monitoring were established by the Base Preventive Medicine Unit and Utilities Division personnel. These sampling point locations should be re-evaluated by the WQCL Chemist for adequacy toward achieving SDWA compliance monitoring.

Recommendation No. 4: The Utilities Division, Base Maintenance Department water and sewage personnel routinely collect samples for SDWA and NPDES monitoring. WQCL personnel should periodically accompany the water and

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sewage personnel to supervise and provide assistance through training toward ensuring that proper water quality control procedures are followed.

D. Auxiliary power for in-plant operation at the MGAS potable water treatment plant is not provided in the case of power outage.

Recommendation No. 5: Submit project to provide auxiliary power for in-plant operation for such an emergency.

Recommendation No. 6: Trihalomethanes (THMs) monitoring results from the above distribution system have been consistently exceeded by the Maximum Contaminant Level (MCL) of 0.1 ppm. It is therefore suggested that the filter backwash be discharged to the holding pond but not recycled through the plant for approximately 3 days, allowing the water distribution system to flush. Then collect samples from each of the following locations and send to Granger Laboratory for analysis.

<u>Location</u>	<u>Number of Samples</u>
Filter Backwash Holding Pond	1
Water Plant (1 sample prior to pre-chlorination and 1 sample prior to post chlorination)	2
Distribution System - Normal Residence Time	3
Distribution System - Longest Residence Time	1

E. Filter backwash from the Onslow Beach water plant is discharged to a holding pond. Then, the backwash water is supposed to be pumped out periodically by a tank truck and disposed of into the sanitary sewer. However, current disposal practice consists of pumping the backwash water to an adjacent storm drainage ditch. This discharge violates NPDES permit monitoring requirements.

Recommendation No. 7: Either discontinue the discharge of filter backwash into storm drainage ditch immediately and transport/dispose of into sanitary sewer system as previously planned, or comply with all NPDES monitoring and reporting requirements.

F. Leaking valves were observed at most water treatment plants.

Recommendation No. 8: Replace seals to stop discharge of excessive treated water.

G. Filter backwash waters from the Hadnot Point water treatment plant, Building 20, and Officers' Club, Building 710, are not connected to sanitary sewer but instead discharge to storm drain.

H. At Building 1700, Main Steam Plant, all waste streams were not identified/connected to the sanitary sewer under P-996. Continuous blowdown from 5 boilers through 1/2-inch lines discharge into storm drain #47, causing

violations of NPDES requirements for PH and suspended solids. Suspended solids are also being violated at storm drain #42 from the fly ash silo loading operation vehicle washing.

I. Fly ash is still being hauled to landfill on uncovered trucks, discharging material into the environment while enroute to the disposal site. This fugitive fly ash dust is causing a health, safety and nuisance problem.

Recommendation No. 10: Current practice must be discontinued. Fly ash should be transported to landfill disposal site on canvas covered trucks.

J. The supply trains which move supplies from one area to another do not have railing on the carts. There are cases where containers have fallen off causing spillage of materials which had to be handled as hazardous wastes.

Recommendation No. 11: Equip the supply trains with railing to prevent future incidents of spillage.

K. The Parshall Flume at the Onslow Beach sewage treatment plant is not level in the flow chamber causing influent to backup until enough head is developed to overcome the resistance to flow. This flow resistance causes sand and other solids to settle out and eventually cause clogging of sewer line.

Recommendation No. 12: Lower the Parshall Flume in order to achieve normal flow velocity into the plant. The facility should also be equipped with a comminutor or bar screen.

L. During rain storms, excessive storm water enter the sewer system at Camp Geiger in excess of the storage capacity of the plant's surge basin, and require bypassing the plant's tertiary treatment unit.

Recommendation No. 13: Submit a project to do an Infiltration/Inflow (I/I) study to reduce hydraulic overloading of the plant, as well as improving/evaluating the need to increase the site storm drainage system.

M. The Base original Oil SPCC Plan was prepared on 10 June 1978. It is presently being revised to incorporate facilities constructed under P-996.

Recommendation No. 14: Review/update the Marine Corps Base, Camp Lejeune SPCC Plan in accordance with 40 CFR 112.5.

N. Personnel at Building BA-130, Second RECON Battalion, voiced concern regarding possible leakage from an underground Mogas tank.

Recommendation No. 15: The underground Mogas tank should be pressured tested. Procedures for testing buried fuel storage tanks are provided in the MCB CAMP LEJEUNE SPCC Plan.

O. FSSG Building TP-448 has no sanitary sewer connection and lacks pollution abatement facilities (i.e., POL storage facility, grease racks and wash aprons provided with water and steam).

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Recommendation No. 16: Emphasize operational control to the extent possible. Relocate to a new site as soon as one becomes available that has appropriate facilities.

P. The 8th Motor Transport Battalion is located at FSSG Building VL-172. The fuel tanker storage lot has no SPCC devices nor a POL storage facility. Approximately nine 5000-gallon tankers containing diesel fuel will be placed there at any given time.

Recommendation No. 17: The following facilities are suggested to comply with SPCC pollution abatement requirements:

1. Provide drum storage shed with impervious pad/curbing and without drain.
2. Pave parking lot area. Construct drainage outlet and grade parking lot area to direct discharge from possible tank truck rupture through a (typical 50 GPM) gravity oil/water separator capable of retaining at least 6,000 gallons of spilled fuel. Connect gravity oil/water separator to sanitary with a storm water bypass. Note: A (typical 50 GPM) grit trap should be provided upstream of the oil/water separator if large volumes of grit are anticipated. Provisions should be made for sludge storage and easy removal.
3. Relocate the underground waste oil storage tank within the confinement of the pave parking lot area. In case of spillage, it will then be directed to the oil/water separator containment basin.

Q. FSSG Building 901 houses the Second Maintenance Battalion that overhaul deadline equipment. The Ordnance Maintenance Battalion has no facilities for handling waste oil in building. Everything is hand carried and fork-lifted across parking lot to a half exposed underground waste oil disposal tank. It also lacks an appropriate POL storage facility.

Recommendation No. 18: The following facilities are recommended to comply with SPCC pollution abatement requirements to reduce wasting of POL's and to improve operation:

1. Provide drum storage shed with impervious pad/curbing and without drain.
2. Install one 5000-gallon cathodic protected underground waste oil tank outside building, with a suspended funnel located inside building to discharge waste oil into the waste oil tank.

R. FSSG Building 902 houses the Engineering Maintenance Company. This facility has no underground waste oil storage tank or POL storage facility. Lighting and exhaust systems inside building appear to be inadequate. Duct tape utilized for vent house connections is not durable enough to support exhaust system. Carbon monoxide fumes escape causing a potentially hazardous environment. The Base Industrial Hygienist has documented carbon monoxide concentrations exceeding standards.

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Recommendation No. 19: The following suggestions are recommended:

1. Provide drum storage shed with impervious pad/curbing and without drain.
2. Install a cathodic protected underground waste oil tank outside building and preferably with a suspended funnel located inside building to discharge waste oil into the waste oil tank.
3. Check adequacy of lighting inside building to perform work.
4. Submit NAVOSH project to design and install new ventilation system.
5. Relocation of this maintenance company to new site with available facilities would be most desirable.

S. Buildings A-1, A-2 and A-3 are locations for the Assault Amphibious Battalion, Amphibious Tank Vehicles. Oily wastewater discharges from parking area washing, causing oily wastewater and sediment transport to river.

Recommendation No. 20: The following actions are recommended:

1. Perform all AMTRAC vehicles washing in the appropriately equipped wash areas provided through well-planned scheduling.
2. Close down water to an existing washrack at the head of access ramp to Building A-3 and concrete block entrance/exist to rack.
3. Remove earthen embankment and clean off access ramp.
4. Lower drain pipe at bottom of 3,000 gallons kerosene containment structure to acquire proper drainage.

T. Severe erosion and sedimentation problems were observed in the area bounded by Sneads Ferry Road, Main Service Road and Louis Road. Dumping of trash, pallet, old tires, used batteries (a hazardous material) and other types of rubble/debris in the forested areas indicate unsupervised use of the land. Moreover, a relatively large area of wetland along Cogdells Creek has been negatively impacted from sediment and indiscriminate use of engineering equipment. Storm runoff from the FC-100, FC-200, and FC-300 areas is uncontrolled and contributing to erosion problems. It was understood that the Base has previously been cited by the U.S. Army Corps of Engineers for violation of the Clean Water Act.

Recommendation No. 21: A cooperative effort between Base planners, environmental personnel and military units operating within/using the above site should be initiated to address the following issues:

1. Clean up the illegal dumping and dispose of through Defense Property Disposal Office (DPDO) or Base landfill as appropriate. Conduct routine monitoring to control recurrence.

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2. Review training and outline areas to be used for operating heavy equipment.

3. Delineate wetland areas along Cogdells Creek and sufficient buffer zones. Restrict use of wetlands and buffer zones. Restrict use of wetlands and buffer areas by tactical vehicles/engineering equipment to designated trails and stream crossings.

4. Consider relocation/elimination of selected tank trail and stream crossings so as to reduce erosion.

5. Stabilize areas of exposed soil where feasible.

6. Provide diversions and properly designed sediment basins/storm drains to control surface runoff and to trap sediment from engineering training areas, and from shop areas behind FC-100, FC-200 and FC-300.

7. Install a sediment basin and diversions to control runoff from engineering equipment training/test area behind Second Combat Engineers, Building 1808.

U. Several active and abandoned borrow pits were noted. These areas are subject to the State of North Carolina Natural Resources and Community Development erosion/sedimentation control regulations.

Recommendation No. 22: Erosion control and reclamation plans must be developed and implemented in accordance with the North Carolina State Erosion and Sedimentation Control Act.

V. The Base Natural Resource Management Plan of 1975 identified over 230 sites needing erosion control/storm drainage. Over 100 of the sites are located on dirt roads and tank trails. While the original intent was to identify problem areas to be corrected through one time fixes, implementation of the plan has indicated that most problem dirt roads and tank trails will occur without routine maintenance.

Recommendation No. 23: A review of selected trails indicates inadequate maintenance. While a MILCON project is under designed to replace and repair major stream crossings, avoidable sedimentation pollution will continue to occur if maintenance levels are not increased. Therefore, a maintenance program should be formalized which coordinates use of Base Maintenance, military engineers, forestry equipment and other available resources. Moreover, responsibilities for inspecting and maintaining dirt roads and tank trails should be clearly defined.

W. Recent changes in North Carolina regulations have changed responsibilities for regulating disposal of sanitary wastes based on method of disposal. Systems which discharge wastes into the soil (septic tanks/filter fields, pit privies, etc.) or into storage devices (vault privies, porta-johns, etc.) which are pumped out and wastes transported to sewage treatment facilities are regulated by the North Carolina Department of Health Services.

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Recommendation No. 24: Base maintenance has committed funds to evaluate problem with field sanitation devices and develop alternatives to reduce potential for environmental impact, to reduce expenditure for "porta-john" rentals, and to upgrade facilities at permanent ranges. This study of field sanitation should be conducted as soon as possible.

Recommendation No. 25: Base environmental and training facilities personnel should gather data on range and training area use/requirements needed to define scope of project. Current State standards for evaluating soil suitability for waste disposal should be met when on-site disposal of wastes are utilized.

Recommendation No. 26: A Base instruction (Base order) should be issued establishing guidelines and responsibilities in this area.

X. Building 1700 is the Main Steam Plant. Violation of North Carolina Department of Natural Resources and Community Development (NRCD) Air Pollution Permit No. 3769R4 Condition No. 3 on Sunday, 31 October 1982, from at least 1000-1400 hours smoke opacity exceeded 60%. Permit Condition No. 3 requires notification to NRCD of malfunction exceeding one hour duration. Building 1700 has several projects ongoing which require frequent changing of boiler, boiler load and fuel.

Recommendation No. 27: NRCD permit conditions should be followed. NRCD should be notified by telephone prior to any extended (over 1 hour duration) scheduled or unscheduled work on Building 1700 boilers. Also, personnel at Building 1700 and MCB Environmental Office should be sent to "smoke school" for certification by NRCD for EPA Method 9 opacity readings. There is no cost for opacity certification except travel, salary and may be per diem.

Y. Building TP-457, Flammable Storage Facility, has no berm and no concrete pad for flammable materials. Storage of battery acid, POL and medical supplies have also been stored in the flammable storage building, with no segregation of corrosive materials from flammable materials. Hence, there is inadequate training of personnel in fire training and hazardous chemical storage. Refusal of any incoming material is not allowed. Potential fire hazardous and environmental problems do exist.

Recommendation No. 28: Restrict materials stored in building. Remove POL, acid batteries and non-flammable materials. Inventory materials in building that will be readily available to Fire Department personnel for use during an emergency. Install berms and concrete outside storage pad. Provide training for personnel.

Z. The NRCD is aware of fire fighters training at MCB CAMP LEJEUNE and MCAS (H) NEW RIVER. NRCD regulations, under Title 15 of the North Carolina Administrative Code Subchapter 2D.520 "Control and Prohibition of Open Burning", requires notification for fires set for instruction or training of personnel. No notification has been made.

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Recommendation No. 29: MCB CAMP LEJEUNE and MCAS (H) NEW RIVER should submit letter to NRCD with the following information for fire training:

1. Nature and objective of program.
2. Location and maps.
3. Type of material and/or fuel burned.
4. Amount of each material and/or fuel burned.
5. Schedule of dates and times of exercises.

Any changes in the schedule or dates should be verbally communicated to the NRCD twenty four (24) hours prior to fire training.

AA. It was indicated that the dirt road beside the backwash holding/recycling pond for the MCAS Water Treatment Plant was coated with various types of oily wastes for surface stabilization prior to construction of this facility. During the on-site visit storm water runoff from the road was observed draining into the pond.

Recommendation No. 30: Re-route surface drainage away from this holding pond. Also, replace soil and re-construct spillway for the pump station caused by the spill over box.

BB. In accordance with Base agreement, the Natural Resources and Environmental Affairs (NREA) personnel routinely monitor shop handling, storing and disposal of petroleum, oil and lubricants and hazardous waste.

Recommendation No. 31: It is strongly recommended that NREA continue with existing inspection in accordance with Base agreement. Should corrective action not be implemented as provided by the NREA inspection team, follow-up enforcement should be pursued by the Assistant Chief of Staff Facilities.

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APPENDIX B

NAPSIS Report

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APPENDIX C

Analytical Results for PCBs

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(804) 444-9558

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20 JAN 1983

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Commanding General, Marine Corps Base, Camp Lejeune

Subj: Water and Soil Analyses

Ref: (a) LANTRAVFACERCOM Code 1142 Environmental Engineering Survey (EES)
Inspection of MCB CAMP LEJEUNE of 25 Oct through 5 Nov 1982
(b) MCB CAMP LEJEUNE Navy Assessment and Control of Installation
Pollutants (NACIP) Initial Assessment Study Outbriefing of 10 Nov
1982

Encl: (1) Analytical Results Report for PCBs-Water Analysis Case No. 27247
(2) Analytical Results Report for PCBs-Soil Analysis Case No. 27245
(3) Analytical Results Report for THMs-Water Analysis Case No. 27249
(MCAS CHERRY POINT)

1. During reference (a), an on-site visit of the MCAS H NEW RIVER water treatment plant backwash settling pond was performed. Stormwater was observed draining into this holding/recycling facility from the adjacent dirt access road. It was stipulated that prior to construction of this facility the road had, in past years, been coated with various types of waste oils for surface stabilization. As a result, there is concern regarding the presence of Polychlorinated Biphenyls (PCBs) in the pond resulting from area runoff.

2. Following reference (b), water and soil samples were collected by LANTRAVFACERCOM Code 114 personnel to be analyzed by the Code 1142 contract laboratory. Enclosures (1) and (2) forward these results which indicate no traceable amounts of PCBs.

3. Total Trihalomethanes (THMs) monitoring results from the MCAS H NEW RIVER distribution system which have been consistently exceeding the 0.1 ppm MCL limit were also discussed. The recycled filter backwash from the MCAS H NEW RIVER WTP/settling pond was suspected as being the possible culprit. Similar conditions for the filter backwash at the MCAS CHERRY POINT settling pond also exist. However, enclosure (3) does not support the belief that THMs are generated/concentrated within holding/recycling ponds. Nonetheless, it is recommended that MCB CAMP LEJEUNE collect samples at MCAS H NEW RIVER and have a contract laboratory analyze for confirmation.

4. Questions regarding this matter may be addressed to Mr. W. Carter, Code 114, telephone (804) 444-9558 or AUTOVON 690-9558.

J. E. BAILEY
by direction

CAREER
kwasny

Copy to:
MCAS CHERRY POINT (w/o encls (1) and (2))
Blind Copy to: 114,1145,09BS

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19 Jan
nrs

DOC#010

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CENTEC ANALYTICAL SERVICES, INC.
A SUBSIDIARY OF THE CENTEC CORPORATION

P. O. BOX 956
2160 INDUSTRIAL DRIVE
SALEM, VIRGINIA 24153
(703) 387-3995

— ANALYTICAL RESULTS REPORT —

Mr. David Goodwin
Atlantic Division Code 1143
Naval Facilities Engineering Command
Norfolk, VA 23411

Re: Water Analysis
CAS Commission No. 6094

REPORT DATE/NUMBER: 28 December 1982/20

SAMPLES COLLECTED: 10 November 1982

BY: Navy personnel

SAMPLES RECEIVED IN LAB: 13 November 1982: 1200

ANALYSIS FOR: Polychlorinated Biphenyls (PCBs)

METHOD OF ANALYSIS: Re: EPA Method 608, Organochlorine
Pesticides and PCBs, July 1982

CAS No. Description : PCB Results (µg/l)

27247	Air Station WTP Backwash	<0.05 Arochlor 1242
	Settling Pond MCAS New	<0.05 Arochlor 1254
	River MCB Camp Lejune ON 2	<0.05 Arochlor 1260

If you have any questions or comments concerning this report,
please do not hesitate to contact us.

Prepared by:

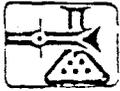
CENTEC ANALYTICAL SERVICES


David F. Tompkins
Chemist

DFT/mls

CLW

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— ANALYTICAL RESULTS REPORT —

Mr. David Goodwin
Atlantic Division Code 1143
Naval Facilities Engineering Command
Norfolk, VA 23411

Re: Soil Analysis
CAS Commission No. 6094

REPORT DATE/NUMBER: 27 December 1982/18

SAMPLES COLLECTED: 10 November 1982: 1235

BY: Navy personnel

SAMPLES RECEIVED IN LAB: 13 November 1982: 1200

ANALYSIS FOR: Polychlorinated Biphenyls (PCBs)

METHOD OF ANALYSIS: Liquid-Solid Extraction, Electron
Capture Gas Chromatography, EPA-600/4-
81-045

CAS No.	Description	PCB Results (ug/g-ppm)
27245	Air Station WTP MCB Clg Inside & outside of fence N 20 yds up from effluent pump. Composite of 6 samples Sample #2	<1 NT Arochlor 1242 <1 NT Arochlor 1254 <1 NT Arochlor 1260
27246	NAVSTA Roos Roads P.R. Transf. Oil Storage site	3400 Arochlor 1260

If you have any questions or comments concerning this report,
please do not hesitaet to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES


David F. Tompkins
Chemist

CLW

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— ANALYTICAL RESULTS REPORT —

Mr. David Goodwin
Atlantic Division Code 1143
Naval Facilities Engineering Command
Norfolk, VA 23411

Re: Water Analysis
CAS Commission No. 6094

REPORT DATE/NUMBER: 27 December 1982/17

SAMPLES COLLECTED: 09 November 1982: 1150

BY: Navy personnel

SAMPLES RECEIVED IN LAB: 13 November 1982: 1200

ANALYSIS FOR: Total Trihalomethanes: Bromoform (CHBr₃),
Bromodichloromethane (CHBrCl₂), Chlorodibromomethane (CHClBr₂), and Chloroform (CHCl₃)

METHOD OF ANALYSIS: Re: Liquid-Liquid Extraction Method 501.2
U.S. EPA 6 November 1979

CAS No.	Description	CHBr ₃ (µg/l)	CHBrCl ₂ (µg/l)	CHClBr ₂ (µg/l)	CHCl ₃ (µg/l)
27249	WTP Backwash Lagoon Lant Dir-MCAS Cherry Point	<2.0	<2.0	<2.0	<2.0
27250	Lantdui -MCAS Cherry Point WTP Backwash Lagoon (on 2)	<2.0	<2.0	<2.0	<2.0

If you have any questions or comments concerning this report,
please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES


David F. Tompkins
Chemist

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APPENDIX D

40 CFR 112, "Oil Pollution Prevention, Non-Transportation Related
Onshore and Offshore Facilities"

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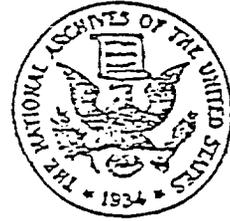
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TUESDAY, DECEMBER 11, 1973

WASHINGTON, D.C.

Volume 38 # Number 237

PART II



ENVIRONMENTAL PROTECTION AGENCY

OIL POLLUTION PREVENTION

Non-Transportation Related Onshore
and Offshore Facilities

ENVIRONMENTAL PROTECTION AGENCY
REGION II, BUILDING 209
EDISON, NEW JERSEY 08817

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Environmental
Protection
Agency
Report
to Congress
on
Oil Pollution
Prevention

Title 40—Protection of the Environment
 CHAPTER 1—ENVIRONMENTAL
 PROTECTION AGENCY
 SUBCHAPTER D—WATER PROGRAMS
 PART 112—OIL POLLUTION PREVENTION
 Non-transportation Related Onshore and
 Offshore Facilities

Notice of proposed rule making was published on July 19, 1973, containing proposed regulations, required by an pursuant to section 311(j)(1)(C) of the Federal Water Pollution Control Act, as amended (86 Stat. 668, 33 U.S.C. 1251 et seq.), (FWPCA), to prevent discharges of oil into the navigable waters of the United States and to contain such discharges if they occur. The proposed regulations endeavor to prevent such spills by establishing procedures, methods and equipment requirements of owners or operators of facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil.

Written comments on the proposed regulations were solicited and received from interested parties. In addition, a number of verbal comments on the proposal were also received. The written comments are on file at the Division of Oil and Hazardous Materials, Office of Water Program Operations, U.S. Environmental Protection Agency, Washington, D.C.

All of the comments have been given careful consideration and a number of changes have been made in the regulation. These changes incorporate either suggestions made in the comments or ideas initiated by the suggestions.

Some comments reflected a misunderstanding of the fundamental principles of the regulation, specifically as they applied to older facilities and marginal operations. During the development of the regulation it was recognized that no single design or operational standard can be prescribed for all non-transportation related facilities, since the equipment and operational procedures appropriate for one facility may not be appropriate for another because of factors such as function, location, and age of each facility. Also, new facilities could achieve a higher level of spill prevention than older facilities by the use of fail-safe design concepts and innovative spill prevention methods and procedures. It was concluded that older facilities and marginal operations could develop strong spill contingency plans and commit manpower, oil containment devices and removal equipment to compensate for inherent weaknesses in the spill prevention plan. Appropriate changes were made in the regulation to simplify, clarify or correct deficiencies in the proposal.

A discussion of these changes, section by section follows:

A. Section 112.1—General applicability. Section 112.1(b), the "foreseeability provision", contained in 112.1(d)(4) was added to paragraph 112.1(b). As modified, the regulation applies to non-transportation-related onshore and offshore facilities which, due to their loca-

tion, could reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines.

Sections 112.1(b), 112.1(d)(4) and 112.3 are now consistent.

Section 112.1(d)(1) was expanded to further clarify the respective authorities of the Department of Transportation and the Environmental Protection Agency by referring to the Memorandum of Understanding between the Secretary of Transportation and the Administrator of the Environmental Protection Agency (Appendix).

Section 112.1(d)(2), the figure for barrels was converted to gallons, a unit of measure more familiar to the public, and now reads "42000 gallons."

Section 112.1(d)(3), exemption for facilities with nonburied tankage was extended to 1320 gallons in aggregate with no single tank larger than 660 gallons and applies to all oils, not just heating oil and motor fuel. Tanks of 660 gallons are the normal domestic code size for nonburied heating oil tanks. Buildings may have two such tanks. Facilities containing small quantities of oil other than motor fuel or heating oil would also be exempt, thus making this consistent with the definition of oil in § 112.2.

B. Section 112.2—Definitions. Section 112.2(1), the term "navigable waters" was expanded to the more descriptive definition used by the National Pollutant Discharge Elimination System.

Section 112.2(m), the U.S. Coast Guard definition of the term "vessel" was included. This term is used in the regulation and the definition is consistent with the Department of Transportation regulations.

C. Section 112.3—Requirements for the preparation and implementation of spill prevention control and countermeasure plans. A new paragraph (c) was added to § 112.3 which applies to mobile or portable facilities subject to the regulation. These facilities need not prepare a new Spill Prevention Control and Countermeasure Plan (SPCC Plan) each time the facility is moved to a new site, but may prepare a general plan, identifying good spill prevention engineering practices (as outlined in the guidelines, § 112.7), and implement these practices at each new location.

Section 112.3(a), (b) and (f) (which was § 112.3(e) in the proposed rule making) have been modified to allow extensions of time beyond the normally specified periods to apply to the preparation of plans as well as to their implementation and to remove the time limitation of one year for extensions. Extensions may be allowed for whatever period of time considered reasonable by the Regional Administrator.

Section 112.3(e) (which was § 112.3(d) in the proposed rule making) was modified to require the maintenance of the SPCC Plan for inspection at the facility only if the facility was normally manned. If the facility is unmanned, the Plan may be kept at the nearest field office.

Section 112.3(f)(1) (§ 112.3(e)(1) in the proposed regulation) was changed to include the nonavailability of qualified personnel as a reason for the Regional Administrator granting an extension of time.

D. Section 112.4—Amendment of spill prevention control and countermeasure plans by Regional Administrator. Section 112.4(a)(11), permits the Regional Administrator to require that the owner or operator furnish additional information to EPA after one or more spill event has occurred. The change limits the request for additional information to that pertinent to the SPCC Plan or to the pollution incident.

Section 112.4(b) now reads "Section 112.4 . . .", not "This subsection . . ."

Section 112.4(e) allowed the Regional Administrator to require amendments to SPCC Plans and specifies that the amendment must be incorporated in the Plan within 30 days unless the Regional Administrator specifies an earlier effective date. The change allows the Regional Administrator to specify any appropriate date that is reasonable.

Section 112.4(f). A new § 112.4(f) has been added which provides for an appeal by an owner or operator from a decision rendered by the Regional Administrator on an amendment to an SPCC Plan. The appeal is made to the Administrator of EPA and the paragraph outlines the procedures for making such an appeal.

E. Section 112.5—Amendment of spill prevention control and countermeasure plans by owners or operators. Section 112.5(b) required the owner or operator to amend the SPCC Plan every three years. The amendment required the incorporation of any new, field-proven technology and had to be certified by a Professional Engineer:

The change requires that the owner or operator review the Plan every three years to see if it needs amendment. New technology need be incorporated only if it will significantly reduce the likelihood of a spill. The change will prevent frivolous retrofitting of equipment to facilities whose prevention plans are working successfully, and will not require engineering certification unless an amendment is necessary.

Section 112.5(c), this paragraph required that the owner or operator amend his SPCC Plan when his facility became subject to § 112.4 (amendment by the Regional Administrator). This paragraph has been removed. It is inconsistent to require the owner or operator independently amend the Plan while the Regional Administrator is reviewing for possible amendment.

F. Section 112.6—Civil penalties. There are no changes in this section.

G. Section 112.7—Guidelines for preparation and implementation of spill prevention control and countermeasure plan. Numerous changes have been made in the guidelines section; 1 changes have been primarily:

1. To correct the use of language consistent with guidelines. For example, the word "shall" has been changed to "should" in § 112.7(a) through (e).

2. To give the engineer preparing the Plan greater latitude to use alternative methods better suited to a given facility or local conditions.

3. To cover facilities subject to the regulation, but for which no guidelines were previously given. This category includes such things as mobile facilities, and drilling and workover rigs.

In addition, wording was changed to differentiate between periodic observations by operating personnel and formal inspections with attendant record keeping.

These regulations shall become effective January 10, 1974.

Dated: November 27, 1973.

JOHN QUARLES,
Acting Administrator.

A new Part 112 would be added to subchapter D, Chapter I of Title 40, Code of Federal Regulations as follows:

- Sec.
- 112.1 General applicability.
- 112.2 Definitions.
- 112.3 Requirements for preparation and implementation of Spill Prevention Control and Countermeasure Plans.
- 112.4 Amendment of Spill Prevention Control and Countermeasure Plans by Regional Administrator.
- 112.5 Amendment of Spill Prevention Control and Countermeasure Plans by owners or operators.
- 112.6 Civil penalties.
- 112.7 Guidelines for the preparation and implementation of a Spill Prevention Control and Countermeasure Plan.

Appendix Memorandum of Understanding Between the Secretary of the Department of Transportation and the Administrator of the Environmental Protection Agency, Section II—Definitions.

AUTHORITY: Secs. 311(j)(1)(C), 311(j)(2), 501(a), Federal Water Pollution Control Act (Sec. 2, Pub. L. 92-500, 86 Stat. 816 et seq. (33 U.S.C. 1251 et seq.)); Sec. 4(b), Pub. L. 92-500, 86 Stat. 897; 5 U.S.C. Reorg. Plan of 1970 No. 3 (1970), 35 FR 15623, 3 CFR 1966-1970 Comp.; E.O. 11735, 38 FR 21243, 3 CFR.

§ 112.1 General applicability.

(a) This part establishes procedures, methods and equipment and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines.

(b) Except as provided in paragraph (d) of this section, this part applies to owners or operators of non-transportation-related onshore and offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing or consuming oil and oil products, and which, due to their location, could reasonably be expected to discharge oil in harmful quantities, as defined in Part 110 of this chapter, into or upon the navigable waters of the United States or adjoining shorelines.

(c) As provided in sec. 313 (86 Stat. 875) departments, agencies, and instrumentalities of the Federal government

are subject to these regulations to the same extent as any person, except for the provisions of § 112.6.

(d) This part does not apply to:

(1) Equipment or operations of vessels or transportation-related onshore and offshore facilities which are subject to authority and control of the Department of Transportation, as defined in the Memorandum of Understanding between the Secretary of Transportation and the Administrator of the Environmental Protection Agency, dated November 24, 1971, 36 FR 24000.

(2) Facilities which have an aggregate storage of 1320 gallons or less of oil, provided no single container has a capacity in excess of 660 gallons.

(3) Facilities which have a total storage capacity of 42000 gallons or less of oil and such total storage capacity is buried underground.

(4) Non-transportation-related onshore and offshore facilities, which, due to their location, could not reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines.

(e) This part provides for the preparation and implementation of Spill Prevention Control and Countermeasure Plans prepared in accordance with § 112.7, designed to complement existing laws, regulations, rules, standards, policies and procedures pertaining to safety standards, fire prevention and pollution prevention rules, so as to form a comprehensive balanced Federal/State spill prevention program to minimize the potential for oil discharges. Compliance with this part does not in any way relieve the owner or operator of an onshore or an offshore facility from compliance with other Federal, State or local laws.

§ 112.2 Definitions.

For the purposes of this part:

(a) "Oil" means oil of any kind or in any form, including, but not limited to petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil.

(b) "Discharge" includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying or dumping. For purposes of this part, the term "discharge" shall not include any discharge of oil which is authorized by a permit issued pursuant to Section 13 of the River and Harbor Act of 1899 (30 Stat. 1121, 33 U.S.C. 407), or Sections 402 or 405 of the FWPCA Amendments of 1972 (86 Stat. 816 et seq., 33 U.S.C. 1251 et seq.).

(c) "Onshore facility" means any facility of any kind located in, on, or under any land within the United States, other than submerged lands, which is not a transportation-related facility.

(d) "Offshore facility" means any facility of any kind located in, on, or under any of the navigable waters of the United States, which is not a transportation-related facility.

(e) "Owner or operator" means any person owning or operating an onshore facility or an offshore facility, and in the

case of any abandoned offshore facility, the person who owned or operated such facility immediately prior to such abandonment.

(f) "Person" includes an individual, firm, corporation, association, and a partnership.

(g) "Regional Administrator", means the Regional Administrator of the Environmental Protection Agency, or his designee, in and for the Region in which the facility is located.

(h) "Transportation-related" and "non-transportation-related" as applied to an onshore or offshore facility, are defined in the Memorandum of Understanding between the Secretary of Transportation and the Administrator of the Environmental Protection Agency, dated November 24, 1971, 36 FR 24080.

(i) "Spill event" means a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities, as defined at 40 CFR Part 110.

(j) "United States" means the States, the District of Columbia, the Commonwealth of Puerto Rico, the Canal Zone, Guam, American Samoa, the Virgin Islands, and the Trust Territory of the Pacific Islands.

(k) The term "navigable waters" of the United States means "navigable waters" as defined in section 502(7) of the FWPCA, and includes:

(1) all navigable waters of the United States, as defined in judicial decisions prior to passage of the 1972 Amendments to the FWPCA (Pub. L. 92-500), and tributaries of such waters;

(2) interstate waters;

(3) intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes; and

(4) intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce.

(l) "Vessel" means every description of watercraft or other artificial contrivance used, or capable of being used as a means of transportation on water, other than a public vessel.

§ 112.3 Requirements for preparation and implementation of Spill Prevention Control and Countermeasure Plans.

(a) Owners or operators of onshore and offshore facilities in operation on or before the effective date of this part that have discharged or could reasonably be expected to discharge oil in harmful quantities, as defined in 40 CFR Part 110, into or upon the navigable waters of the United States or adjoining shorelines, shall prepare a Spill Prevention Control and Countermeasure Plan (hereinafter "SPCC Plan"), in accordance with § 112.7. Except as provided for in paragraph (i) of this section, such SPCC Plan shall be prepared within six months after the effective date of this part and shall be fully implemented as soon as possible, but not later than one year after the effective date of this part.

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(b) Owners or operators of onshore and offshore facilities that become operational after the effective date of this part, and that have discharged or could reasonably be expected to discharge oil in harmful quantities, as defined in 40 CFR Part 110, into or upon the navigable waters of the United States or adjoining shorelines, shall prepare an SPCC Plan in accordance with § 112.7. Except as provided for in paragraph (f) of this section, such SPCC Plan shall be prepared within six months after the date such facility begins operations and shall be fully implemented as soon as possible, but not later than one year after such facility begins operations.

(c) Onshore and offshore mobile or portable facilities such as onshore drilling or workover rigs, barge mounted offshore drilling or workover rigs, and portable fueling facilities shall prepare and implement an SPCC Plan as required by paragraphs (a), (b) and (d) of this section. The owner or operator of such facility need not prepare and implement a new SPCC Plan each time the facility is moved to a new site. The SPCC Plan for mobile facilities should be prepared in accordance with § 112.7, using good engineering practice, and when the mobile facility is moved it should be located and installed using spill prevention practices outlined in the SPCC Plan for the facility. The SPCC Plan shall only apply while the facility is in a fixed (non transportation) operating mode.

(d) No SPCC Plan shall be effective to satisfy the requirements of this part unless it has been reviewed by a Registered Professional Engineer and certified to by such Professional Engineer. By means of this certification the engineer, having examined the facility and being familiar with the provisions of this part, shall attest that the SPCC Plan has been prepared in accordance with good engineering practices. Such certification shall in no way relieve the owner or operator of an onshore or offshore facility of his duty to prepare and fully implement such Plan in accordance with § 112.7, as required by paragraphs (a), (b) and (c) of this section.

(e) Owners or operators of a facility for which an SPCC Plan is required pursuant to paragraphs (a), (b) or (c) of this section shall maintain a complete copy of the Plan at such facility if the facility is normally attended at least 8 hours per day, or at the nearest field office if the facility is not so attended, and shall make such Plan available to the Regional Administrator for on-site review during normal working hours.

(f) Extensions of time.

(1) The Regional Administrator may authorize an extension of time for the preparation and full implementation of an SPCC Plan beyond the time permitted for the preparation and implementation of an SPCC Plan pursuant to paragraphs (a), (b) or (c) of this section where he finds that the owner or operator of a facility subject to paragraphs (a), (b) or (c) of this section cannot fully com-

ply with the requirements of this part as a result of either nonavailability of qualified personnel, or delays in construction or equipment delivery beyond the control and without the fault of such owner or operator or their respective agents or employees.

(2) Any owner or operator seeking an extension of time pursuant to paragraph (f) (1) of this section may submit a letter of request to the Regional Administrator. Such letter shall include:

(i) A complete copy of the SPCC Plan, if completed;

(ii) A full explanation of the cause for any such delay and the specific aspects of the SPCC Plan affected by the delay;

(iii) A full discussion of actions being taken or contemplated to minimize or mitigate such delay;

(iv) A proposed time schedule for the implementation of any corrective actions being taken or contemplated, including interim dates for completion of tests or studies, installation and operation of any necessary equipment or other preventive measures.

In addition, such owner or operator may present additional oral or written statements in support of his letter of request.

(3) The submission of a letter of request for extension of time pursuant to paragraph (f) (2) of this section shall in no way relieve the owner or operator from his obligation to comply with the requirements of § 112.3 (a), (b) or (c). Where an extension of time is authorized by the Regional Administrator for particular equipment or other specific aspects of the SPCC Plan, such extension shall in no way affect the owner's or operator's obligation to comply with the requirements of § 112.3 (a), (b) or (c) with respect to other equipment or other specific aspects of the SPCC Plan for which an extension of time has not been expressly authorized.

§ 112.4 Amendment of SPCC Plans by Regional Administrator.

(a) Notwithstanding compliance with § 112.3, whenever a facility subject to § 112.3 (a), (b) or (c) has: Discharged more than 1,000 U.S. gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single spill event, or discharged oil in harmful quantities, as defined in 40 CFR Part 110, into or upon the navigable waters of the United States or adjoining shorelines in two spill events, reportable under section 311(b)(5) of the FWPCA, occurring within any twelve month period, the owner or operator of such facility shall submit to the Regional Administrator, within 60 days from the time such facility becomes subject to this section, the following:

(1) Name of the facility;

(2) Name(s) of the owner or operator of the facility;

(3) Location of the facility;

(4) Date and year of initial facility operation;

(5) Maximum storage or handling capacity of the facility and normal daily throughput;

(6) Description of the facility, including maps, flow diagrams, and topographical maps;

(7) A complete copy of the SPCC Plan with any amendments;

(8) The cause(s) of such spill, including a failure analysis of system or subsystem in which the failure occurred;

(9) The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacements;

(10) Additional preventive measures taken or contemplated to minimize the possibility of recurrence;

(11) Such other information as the Regional Administrator may reasonably require pertinent to the Plan or spill event.

(b) Section 112.4 shall not apply until the expiration of the time permitted for the preparation and implementation of an SPCC Plan pursuant to § 112.3 (a), (b), (c) and (f).

(c) A complete copy of all information provided to the Regional Administrator pursuant to paragraph (a) of this section shall be sent at the same time to the State agency in charge of water pollution control activities in and for the State in which the facility is located. Upon receipt of such information such State agency may conduct a review and make recommendations to the Regional Administrator as to further procedures, methods, equipment and other requirements for equipment necessary to prevent and to contain discharges of oil from such facility.

(d) After review of the SPCC Plan for a facility subject to paragraph (a) of this section, together with all other information submitted by the owner or operator of such facility, and by the State agency under paragraph (c) of this section, the Regional Administrator may require the owner or operator of such facility to amend the SPCC Plan if he finds that the Plan does not meet the requirements of this part or that the amendment of the Plan is necessary to prevent and to contain discharge of oil from such facility.

(e) When the Regional Administrator proposes to require an amendment to the SPCC Plan, he shall notify the facility operator by certified mail addressed to, or by personal delivery to, the facility owner or operator, that he proposes to require an amendment to the Plan, and shall specify the terms of such amendment. If the facility owner or operator is a corporation, a copy of such notice shall also be mailed to the registered agent, if any, of such corporation in the State where such facility is located. Within 30 days from receipt of such notice, the facility owner or operator may submit written information, views, and arguments on the amendment. After considering all relevant material presented, the Regional Administrator shall notify the facility owner or operator of any amendment required or shall rescind the notice. The amendment required by the Regional Administrator shall become part of the SPCC Plan 30 day

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after such notice, unless the Regional Administrator, for good cause, shall specify another effective date. The owner or operator of the facility shall implement the amendment of the Plan as soon as possible, but not later than six months after the amendment becomes part of the Plan, unless the Regional Administrator specifies another date.

(f) An owner or operator may appeal a decision made by the Regional Administrator requiring an amendment to an SPOC Plan. The appeal shall be made to the Administrator of the United States Environmental Protection Agency and must be made in writing within 30 days of receipt of the notice from the Regional Administrator requiring the amendment. A complete copy of the appeal must be sent to the Regional Administrator at the time the appeal is made. The appeal shall contain a clear and concise statement of the issues and points of fact in the case. It may also contain additional information which the owner or operator wishes to present in support of his argument. The Administrator or his designee may request additional information from the owner or operator, or from any other person. The Administrator or his designee may request additional information from the owner or operator, or from any other person. The Administrator or his designee shall render a decision within 60 days of receiving the appeal and shall notify the owner or operator of his decision.

§ 112.5 Amendment of Spill Prevention Control and Countermeasure Plans by owners or operators.

(a) Owners or operators of facilities subject to § 112.3 (a), (b) or (c) shall amend the SPCC Plan for such facility in accordance with § 112.7 whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines. Such amendments shall be fully implemented as soon as possible, but not later than six months after such change occurs.

(b) Notwithstanding compliance with paragraph (a) of this section, owners and operators of facilities subject to § 112.3 (a), (b) or (c) shall complete a review and evaluation of the SPCC Plan at least once every three years from the date such facility becomes subject to this part. As a result of this review and evaluation, the owner or operator shall amend the SPCC Plan within six months of the review to include more effective prevention and control technology if: (1) Such technology will significantly reduce the likelihood of a spill event from the facility, and (2) if such technology has been field-proven at the time of the review.

(c) No amendment to an SPCC Plan shall be effective to satisfy the requirements of this section unless it has been certified by a Professional Engineer in accordance with § 112.3(d).

§ 112.6 Civil penalties.

Owners or operators of facilities subject to § 112.3 (a), (b) or (c) who violate the requirements of this part by failing or refusing to comply with any of the provisions of § 112.3, § 112.4, or § 112.5 shall be liable for a civil penalty of not more than \$5,000 for each day that such violation continues. The Regional Administrator may assess and compromise such civil penalty. No penalty shall be assessed until the owner or operator shall have been given notice and an opportunity for hearing.

§ 112.7 Guidelines for the preparation and implementation of a Spill Prevention Control and Countermeasure Plan.

The SPCC Plan shall be a carefully thought-out plan, prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources. If the plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, these items should be discussed in separate paragraphs, and the details of installation and operational start-up should be explained separately. The complete SPCC Plan shall follow the sequence outlined below, and include a discussion of the facility's conformance with the appropriate guidelines listed:

(a) A facility which has experienced one or more spill events within twelve months prior to the effective date of this part should include a written description of each such spill, corrective action taken and plans for preventing recurrence.

(b) Where experience indicates a reasonable potential for equipment failure (such as tank overflow, rupture, or leakage), the plan should include a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the facility as a result of each major type of failure.

(c) Appropriate containment and/or diversionary structures or equipment to prevent discharged oil from reaching a navigable water course should be provided. One of the following preventive systems or its equivalent should be used as a minimum:

- (1) Onshore facilities.
 - (i) Dikes, berms or retaining walls sufficiently impervious to contain spilled oil
 - (ii) Curbing
 - (iii) Culverting, gutters or other drainage systems
 - (iv) Weirs, booms or other barriers
 - (v) Spill diversion ponds
 - (vi) Retention ponds
 - (vii) Sorbent materials
- (2) Offshore facilities.
 - (i) Curbing, drip pans
 - (ii) Sumps and collection systems

(d) When it is determined that the installation of structures or equipment listed in § 112.7(c) to prevent discharged oil from reaching the navigable waters

is not practicable from any onshore or offshore facility, the owner or operator should clearly demonstrate such impracticability and provide the following:

(1) A strong oil spill contingency plan following the provision of 40 CFR Part 109.

(2) A written commitment of manpower, equipment and materials required to expeditiously control and remove any harmful quantity of oil discharged.

(e) In addition to the minimal prevention standards listed under § 112.7 (c), sections of the Plan should include a complete discussion of conformance with the following applicable guidelines, other effective spill prevention and containment procedures (or, if more stringent, with State rules, regulations and guidelines):

(1) Facility drainage (onshore); (excluding production facilities). (i) Drainage from diked storage areas should be restrained by valves or other positive means to prevent a spill or other excessive leakage of oil into the drainage system or inplant effluent treatment system, except where plan systems are designed to handle such leakage. Diked areas may be emptied by pumps or ejectors; however, these should be manually activated and the condition of the accumulation should be examined before starting to be sure no oil will be discharged into the water.

(ii) Flapper-type drain valves should not be used to drain diked areas. Valves used for the drainage of diked areas should, as far as practical, be of manual, open-and-closed design. When plant drainage drains directly into water courses and not into wastewater treatment plants, retained storm water should be inspected as provided in paragraph (e) (2) (iii) (B, C and D) before drainage.

(iii) Plant drainage systems from undiked areas should, if possible, flow into ponds, lagoons or catchment basins, designed to retain oil or return it to the facility. Catchment basins should not be located in areas subject to periodic flooding.

(iv) If plant drainage is not engineered as above, the final discharge of all in-plant ditches should be equipped with a diversion system that could, in the event of an uncontrolled spill, return the oil to the plant.

(v) Where drainage waters are treated in more than one treatment unit, natural hydraulic flow should be used. If pump transfer is needed, two "lift" pumps should be provided, and at least one of the pumps should be permanently installed when such treatment is continuous. In any event, whatever techniques are used facility drainage systems should be adequately engineered to prevent oil from reaching navigable waters in the event of equipment failure or human error at the facility.

(2) Bulk storage (onshore); (excluding production facilities). (i) No

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tank should be used for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.

(ii) All bulk storage tank installations should be constructed so that a secondary means of containment is provided for the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation. Diked areas should be sufficiently impervious to contain spilled oil. Dikes, containment curbs, and pits are commonly employed for this purpose, but they may not always be appropriate. An alternative system could consist of a complete drainage trench enclosure arranged so that a spill could terminate and be safely confined in an in-plant catchment basin or holding pond.

(iii) Drainage of rainwater from the diked area into a storm drain or an effluent discharge that empties into an open water course, lake, or pond, and bypassing the in-plant treatment system may be acceptable if:

(A) The bypass valve is normally sealed closed.

(B) Inspection of the run-off rain water ensures compliance with applicable water quality standards and will not cause a harmful discharge as defined in 40 CFR 110.

(C) The bypass valve is opened, and resealed following drainage under responsible supervision.

(D) Adequate records are kept of such events.

(iv) Buried metallic storage tanks represent a potential for undetected spills. A new buried installation should be protected from corrosion by coatings, cathodic protection or other effective methods compatible with local soil conditions. Such buried tanks should at least be subjected to regular pressure testing.

(v) Partially buried metallic tanks for the storage of oil should be avoided, unless the buried section of the shell is adequately coated, since partial burial in damp earth can cause rapid corrosion of metallic surfaces, especially at the earth/air interface.

(vi) Aboveground tanks should be subject to periodic integrity testing, taking into account tank design (floating roof, etc.) and using such techniques as hydrostatic testing, visual inspection or a system of non-destructive shell thickness testing. Comparison records should be kept where appropriate, and tank supports and foundations should be included in these inspections. In addition, the outside of the tank should frequently be observed by operating personnel for signs of deterioration, leaks which might cause a spill, or accumulation of oil inside diked areas.

(vii) To control leakage through defective internal heating coils, the following factors should be considered and applied, as appropriate.

(A) The steam return or exhaust lines from internal heating coils which discharge into an open water course should be monitored for contamination or passed through a settling tank, skimmer, or other separation or retention system.

(B) The feasibility of installing an external heating system should also be considered.

(viii) New and old tank installations should, as far as practical, be fail-safe engineered or updated into a fail-safe engineered installation to avoid spills. Consideration should be given to providing one or more of the following devices:

(A) High liquid level alarms with an audible or visual signal at a constantly manned operation or surveillance station; in smaller plants an audible air vent may suffice.

(B) Considering size and complexity of the facility, high liquid level pump cutoff devices set to stop flow at a predetermined tank content level.

(C) Direct audible or code signal communication between the tank gauger and the pumping station.

(D) A fast response system for determining the liquid level of each bulk storage tank such as digital computers, telepulse, or direct vision gauges or their equivalent.

(E) Liquid level sensing devices should be regularly tested to insure proper operation.

(ix) Plant effluents which are discharged into navigable waters should have disposal facilities observed frequently enough to detect possible system upsets that could cause an oil spill event.

(x) Visible oil leaks which result in a loss of oil from tank seams, gaskets, rivets and bolts sufficiently large to cause the accumulation of oil in diked areas should be promptly corrected.

(xi) Mobile or portable oil storage tanks (onshore) should be positioned or located so as to prevent spilled oil from reaching navigable waters. A secondary means of containment, such as dikes or catchment basins, should be furnished for the largest single compartment or tank. These facilities should be located where they will not be subject to periodic flooding or washout.

(3) *Facility transfer operations, pumping, and in-plant process (onshore); (excluding production facilities).* (i) Buried piping installations should have a protective wrapping and coating and should be cathodically protected if soil conditions warrant. If a section of buried line is exposed for any reason, it should be carefully examined for deterioration. If corrosion damage is found, additional examination and corrective action should be taken as indicated by the magnitude of the damage. An alternative would be the more frequent use of exposed pipe corridors or galleries.

(ii) When a pipeline is not in service, or in standby service for an extended time the terminal connection at the transfer point should be capped or blank-flanged, and marked as to origin.

(iii) Pipe supports should be properly designed to minimize abrasion and corrosion and allow for expansion and contraction.

(iv) All aboveground valves and pipelines should be subjected to regular examinations by operating personnel at which time the general condition of items, such as flange joints, expansion

joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces should be assessed. In addition, periodic pressure testing may be warranted for piping in areas where facility drainage is such that a failure might lead to a spill event.

(v) Vehicular traffic granted entry into the facility should be warned verbally or by appropriate signs to be sure that the vehicle, because of its size, will not endanger above ground piping.

(4) *Facility tank car and tank truck loading/unloading rack (onshore).* (i) Tank car and tank truck loading/unloading procedures should meet the minimum requirements and regulation established by the Department of Transportation.

(ii) Where rack area drainage does not flow into a catchment basin or treatment facility designed to handle spills, a quick drainage system should be used for tank truck loading and unloading areas. The containment system should be designed to hold at least maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded in the plant.

(iii) An interlocked warning light or physical barrier system, or warning signs, should be provided in loading/unloading areas to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines.

(iv) Prior to filling and departure of any tank car or tank truck, the lowermost drain and all outlets of such vehicles should be closely examined for leakage, and if necessary, tightened, adjusted, or replaced to prevent liquid leakage while in transit.

(5) *Oil production facilities (onshore).* (i) *Definition.* An onshore production facility may include all wells, flowlines, separation equipment, storage facilities, gathering lines, and auxiliary non-transportation-related equipment and facilities in a single geographical oil or gas field operated by a single operator.

(ii) *Oil production facility (onshore) drainage.* (A) At tank batteries and central treating stations where an accidental discharge of oil would have a reasonable possibility of reaching navigable waters, the dikes or equivalent required under § 112.7(c)(1) should have drains closed and sealed at all times except when rainwater is being drained. Prior to drainage, the diked area should be inspected as provided in paragraph (e)(2)(iii)(B), (C), and (D). Accumulated oil on the rainwater should be picked up and returned to storage or disposed of in accordance with approved methods.

(B) Field drainage ditches, road ditches, and oil traps, sumps or skimmers, if such exist, should be inspected at regularly scheduled intervals for accumulation of oil that may have escaped from small leaks. Any such accumulations should be removed.

(iii) *Oil production facility (onshore) bulk storage tanks.* (A) No tank should be used for the storage of oil unless its material and construction are compatible with the material stored and the conditions of storage.

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(B) All tank battery and central treating plant installations should be provided with a secondary means of containment for the entire contents of the largest single tank if feasible, or alternate systems such as those outlined in § 112.7(c)(1). Drainage from undiked areas should be safely confined in a catchment basin or holding pond.

(C) All tanks containing oil should be visually examined by a competent person for condition and need for maintenance on a scheduled periodic basis. Such examination should include the foundation and supports of tanks that are above the surface of the ground.

(D) New and old tank battery installations should; as far as practical, be fail-safe engineered or updated into a fail-safe engineered installation to prevent spills. Consideration should be given to one or more of the following:

(1) Adequate tank capacity to assure that a tank will not overflow should a pumper/gauge be delayed in making his regular rounds.

(2) Overflow equalizing lines between tanks so that a full tank can overflow to an adjacent tank.

(3) Adequate vacuum protection to prevent tank collapse during a pipeline run.

(4) High level sensors to generate and transmit an alarm signal to the computer where facilities are a part of a computer production control system.

(iv) *Facility transfer operations, oil production facility (onshore).* (A) All above ground valves and pipelines should be examined periodically on a scheduled basis for general condition of items such as flange joints, valve glands and bodies, drip pans, pipeline supports, pumping well polish rod stuffing boxes, bleeder and gauge valves.

(B) Salt water (oil field brine) disposal facilities should be examined often, particularly following a sudden change in atmospheric temperature to detect possible system upsets that could cause an oil discharge.

(C) Production facilities should have a program of flowline maintenance to prevent spills from this source. The program should include periodic examinations, corrosion protection, flowline replacement, and adequate records, as appropriate, for the individual facility.

(6) *Oil drilling and workover facilities (onshore)* (i) Mobile drilling or workover equipment should be positioned or located so as to prevent spilled oil from reaching navigable waters.

(ii) Depending on the location, catchment basins or diversion structures may be necessary to intercept and contain spills of fuel, crude oil, or oily drilling fluids.

(iii) Before drilling below any casing string or during workover operations, a blowout prevention (BOP) assembly and well control system should be installed that is capable of controlling any well head pressure that is expected to be encountered while that BOP assembly is on the well. Casing and BOP installations should be in accordance with State regulatory agency requirements.

(7) *Oil drilling, production, or workover facilities (offshore).* (i) Definition: "An oil drilling, production or workover facility (offshore)" may include all drilling or workover equipment, wells, flowlines, gathering lines, platforms, and auxiliary nontransportation-related equipment and facilities in a single geographical oil or gas field operated by a single operator.

(ii) Oil drainage collection equipment should be used to prevent and control small oil spillage around pumps, glands, valves, flanges, expansion joints, hoses, drain lines, separators, treaters, tanks, and allied equipment. Drains on the facility should be controlled and directed toward a central collection sump or equivalent collection system sufficient to prevent discharges of oil into the navigable waters of the United States. Where drains and sumps are not practicable oil contained in collection equipment should be removed as often as necessary to prevent overflow.

(iii) For facilities employing a sump system, sump and drains should be adequately sized and a spare pump or equivalent method should be available to remove liquid from the sump and assure that oil does not escape. A regular scheduled preventive maintenance inspection and testing program should be employed to assure reliable operation of the liquid removal system and pump start-up device. Redundant automatic sump pumps and control devices may be required on some installations.

(iv) In areas where separators and treaters are equipped with dump valves whose predominant mode of failure is in the closed position and pollution risk is high, the facility should be specially equipped to prevent the escape of oil. This could be accomplished by extending the flare line to a diked area if the separator is near shore, equipping it with a high liquid level sensor that will automatically shut-in wells producing to the separator, parallel redundant dump valves, or other feasible alternatives to prevent oil discharges.

(v) Atmospheric storage or surge tanks should be equipped with high liquid level sensing devices or other acceptable alternatives to prevent oil discharges.

(vi) Pressure tanks should be equipped with high and low pressure sensing devices to activate an alarm and/or control the flow or other acceptable alternatives to prevent oil discharges.

(vii) Tanks should be equipped with suitable corrosion protection.

(viii) A written procedure for inspecting and testing pollution prevention equipment and systems should be prepared and maintained at the facility. Such procedures should be included as part of the SPCC Plan.

(ix) Testing and inspection of the pollution prevention equipment and systems at the facility should be conducted by the owner or operator on a scheduled periodic basis commensurate with the complexity, conditions and circumstances of the facility or other appropriate regulations.

(x) Surface and subsurface well shut-in valves and devices in use at the facility should be sufficiently described to determine method of activation or control, e.g., pressure differential, change in fluid or flow conditions, combination of pressure and flow, manual or remote control mechanisms. Detailed records for each well, while not necessarily part of the plan should be kept by the owner or operator.

(xi) Before drilling below any casing string, and during workover operation, a blowout preventer (BOP) assembly and well control system should be installed that is capable of controlling any well head pressure that is expected to be encountered while that BOP assembly is on the well. Casing and BOP installation should be in accordance with State regulatory agency requirements.

(xii) Extraordinary well control measures should be provided should emergency conditions, including fire, loss of control and other abnormal conditions occur. The degree of control system redundancy should vary with hazard exposure and probable consequences of failure. It is recommended that surface shut-in systems have redundant or "fail close" valving. Subsurface safety valve may not be needed in producing well that will not flow but should be installed as required by applicable State regulations.

(xiii) In order that there will be no misunderstanding of joint and separate duties and obligations to perform work in a safe and pollution free manner, written instructions should be prepared by the owner or operator for contractor and subcontractors to follow whenever contract activities include servicing well or systems appurtenant to a well or pressure vessel. Such instructions and procedures should be maintained at the offshore production facility. Under certain circumstances and conditions such contractor activities may require the presence at the facility of an authorized representative of the owner or operator who would intervene when necessary to prevent a spill event.

(xiv) All manifolds (headers) should be equipped with check valves on individual flowlines.

(xv) If the shut-in well pressure greater than the working pressure of the flowline and manifold valves up to and including the header valves associated with that individual flowline, the flowline should be equipped with a high pressure sensing device and shut-in valve at the wellhead unless provided with a pressure relief system to prevent overpressuring.

(xvi) All pipelines appurtenant to the facility should be protected from corrosion. Methods used, such as protective coatings or cathodic protection, should be discussed.

(xvii) Sub-marine pipelines appurtenant to the facility should be adequately protected against environmental stress and other activities such as fishing operations.

(xviii) Sub-marine pipelines appurtenant to the facility should be in ge-

operating condition at all times and inspected on a scheduled periodic basis for failures. Such inspections should be documented and maintained at the facility.

(8) *Inspections and records.* Inspections required by this part should be in accordance with written procedures developed for the facility by the owner or operator. These written procedures and a record of the inspections, signed by the appropriate supervisor or inspector, should be made part of the SPOC Plan and maintained for a period of three years.

(9) *Security (excluding oil production facilities).* (i) All plants handling, processing, and storing oil should be fully fenced, and entrance gates should be locked and/or guarded when the plant is not in production or is unattended.

(ii) The master flow and drain valves and any other valves that will permit direct outward flow of the tank's content to the surface should be securely locked in the closed position when in non-operating or non-standby status.

(iii) The starter control on all oil pumps should be locked in the "off" position or located at a site accessible only to authorized personnel when the pumps are in a non-operating or non-standby status.

(iv) The loading/unloading connections of oil pipelines should be securely capped or blank-flanged when not in service or standby service for an extended time. This security practice should also apply to pipelines that are emptied of liquid content either by draining or by inert gas pressure.

(v) Facility lighting should be commensurate with the type and location of the facility. Consideration should be given to: (A) Discovery of spills occurring during hours of darkness, both by operating personnel, if present, and by non-operating personnel (the general public, local police, etc.) and (B) prevention of spills occurring through acts of vandalism.

(10) *Personnel, training and spill prevention procedures.* (i) Owners or operators are responsible for properly instructing their personnel in the operation and maintenance of equipment to prevent the discharges of oil and applicable pollution control laws, rules and regulations.

(ii) Each applicable facility should have a designated person who is accountable for oil spill prevention and who reports to line management.

(iii) Owners or operators should schedule and conduct spill prevention briefings for their operating personnel at intervals frequent enough to assure adequate understanding of the SPOC Plan for that facility. Such briefings

should highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures.

APPENDIX

Memorandum of Understanding between the Secretary of Transportation and the Administrator of the Environmental Protection Agency.

SECTION II—DEFINITIONS

The Environmental Protection Agency and the Department of Transportation agree that for the purposes of Executive Order 11548, the term:

(1) "Non-transportation-related onshore and offshore facilities" means:

(A) Fixed onshore and offshore oil well drilling facilities including all equipment and appurtenances related thereto used in drilling operations for exploratory or development wells, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(B) Mobile onshore and offshore oil well drilling platforms, barges, trucks, or other mobile facilities including all equipment and appurtenances related thereto when such mobile facilities are fixed in position for the purpose of drilling operations for exploratory or development wells, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(C) Fixed onshore and offshore oil production structures, platforms, derricks, and rigs including all equipment and appurtenances related thereto, as well as completed wells and the wellhead separators, oil separators, and storage facilities used in the production of oil, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(D) Mobile onshore and offshore oil production facilities including all equipment and appurtenances related thereto as well as completed wells and wellhead equipment, piping from wellheads to oil separators, oil separators, and storage facilities used in the production of oil when such mobile facilities are fixed in position for the purpose of oil production operations, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(E) Oil refining facilities including all equipment and appurtenances related thereto as well as in-plant processing units, storage units, piping, drainage systems and waste treatment units used in the refining of oil, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(F) Oil storage facilities including all equipment and appurtenances related thereto as well as fixed bulk plant storage, terminal oil storage facilities, consumer storage, pumps and drainage systems used in the storage of oil, but excluding in-line or breakout storage tanks needed for the continuous operation of a pipeline system and any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(G) Industrial, commercial, agricultural or public facilities which use and store oil, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(H) Waste treatment facilities including in-plant pipelines, effluent discharge lines, and storage tanks, but excluding waste treatment facilities located on vessels and terminal storage tanks and appurtenances for the reception of oily ballast water or tank washings from vessels and associated systems used for off-loading vessels.

(I) Loading racks, transfer hoses, loading arms and other equipment which are appurtenant to a nontransportation-related facility or terminal facility and which are used to transfer oil in bulk to or from highway vehicles or railroad cars.

(J) Highway vehicles and railroad cars which are used for the transport of oil exclusively within the confines of a nontransportation-related facility and which are not intended to transport oil in interstate or intrastate commerce.

(K) Pipeline systems which are used for the transport of oil exclusively within the confines of a nontransportation-related facility or terminal facility and which are not intended to transport oil in interstate or intrastate commerce, but excluding pipeline systems used to transfer oil in bulk to or from a vessel.

(2) "Transportation-related onshore and offshore facilities" means:

(A) Onshore and offshore terminal facilities including transfer hoses, loading arms and other equipment and appurtenances used for the purpose of handling or transferring oil in bulk to or from a vessel as well as storage tanks and appurtenances for the reception of oily ballast water or tank washings from vessels, but excluding terminal waste treatment facilities and terminal oil storage facilities.

(B) Transfer hoses, loading arms and other equipment appurtenant to a nontransportation-related facility which is used to transfer oil in bulk to or from a vessel.

(C) Interstate and intrastate onshore and offshore pipeline systems including pumps and appurtenances related thereto as well as in-line or breakout storage tanks needed for the continuous operation of a pipeline system, and pipelines from onshore and offshore oil production facilities, but excluding onshore and offshore piping from wellhead to oil separators and pipelines which are used for the transport of oil exclusively within the confines of a nontransportation related facility or terminal facility and which are not intended to transport oil in interstate or intrastate commerce or to transfer oil in bulk to or from a vessel.

(D) Highway vehicles and railroad cars which are used for the transport of oil in interstate or intrastate commerce and its equipment and appurtenances related thereto, and equipment used for the fueling of locomotive units, as well as the rights-of-way on which they operate. Excluded are highway vehicles and railroad cars and motive power used exclusively within the confines of a nontransportation-related facility or terminal facility and which are not intended for use in interstate or intrastate commerce.

[PR. Doc.73-25448 Filed 12-10-73;8:45 am

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