MINUTE ITEM

This Calendar Item No. 34 was approved as Minute Item No. 37 by the State Lands Commission by a vote of 3 to 0 at its 6-26-80 meeting.

MINUTE ITEM

6/26/80
W 9773.1
Gaal

34. APPROVAL FOR THE RESUMPTION OF DISPOSAL OF DRILL CUTTINGS AND DRILLING MUD FROM EXISTING PLATFORM EMMY AND OTHER SITES ON STATE OIL AND GAS LEASES IN OFFSHORE HUNTINGTON BEACH AND SEAL BEACH, ORANGE COUNTY.

During consideration of Calendar Item 34 attached, Commission Alternate David Ackerman raised the question of where the liability lies regarding whether or not the drill cuttings are clean when they are discharged into the water.

Jan Stevens, Assistant Attorney General, stated it would be the applicant because they would be acting under the liability provisions specified under the lease.

Spencer Sheldon, representing Aminoil, appeared and also advised that the responsibility rests with Aminoil as part of its MPDES Permit with the Regional Water Quality Control Board which was obtained in September 1979.

Upon motion duly made and carried, the resolution as presented in Calendar Item 34 was approved by a vote of 3-0.

Attachement: Calendar Item 34

A 73

S 36

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CALENDAR ITEM

34.

6/80
W 9773.1
Gaal

APPROVAL FOR THE RESUMPTION OF DISPOSAL OF DRILL CUTTINGS AND DRILLING MUD FROM EXISTING PLATFORM EMMY AND OTHER SITES ON STATE OIL AND GAS LEASES IN OFFSHORE HUNTINGTON BEACH AND SEAL BEACH, ORANGE COUNTY

LEASES: PRC 91, 163, 392, 425 and 426, Huntington Beach, and PRC 186 and 3095, Seal Beach.

LESSEES: Aminoil U.S.A., Inc.
P.O. Box 88
Huntington Beach, California 92648

Chevron USA, Inc.
575 Market Street
San Francisco, CA 94119

Exxon Company, USA
1800 Avenue of the Stars
Los Angeles, CA 90067

COUNTY: Orange.

AREA: Offshore Huntington Beach and Seal Beach Fields.

PERTINENT INFORMATION:

Pursuant to Section 6873(b) of the Public Resources Code the State Lands Commission may permit the discharge into State waters of drill cuttings and drilling mud which are free of oil and materials that are deleterious to marine life if such activities are authorized by a Regional Water Quality Control Board. This is consistent with former practices allowed by the State for many years (1955-1969).

A 73

S 36

The purpose of the proposed action is to allow resumption of State regulated offshore discharge of cleaned drill cuttings and non-oil based drilling muds. This return to a former procedure would allow present and future lease holders to discharge these materials on site, and would allow for more cost effective drilling and production.

The area under study includes State Oil and Gas Leases PRC 91, 163, 392, 425 and 426 in the offshore Huntington Beach area and Leases PRC 186 and 3095 offshore Seal Beach (see attached map). Platform Emmy is located in PRC 425.

The results of several studies over the years of offshore platforms and a recent study at Platform Emmy, all of which are described in the initial study for this project, have shown that there are no significant adverse effects to the environment. Consequently, the staff believes that the proposed action would have no significant effect upon the environmental characteristics identified pursuant to Section 6370.1 of the Public Resources Code. NPDES permits for the proposed discharge of cleaned drill cuttings and oil-free drilling muds from Platform Emmy have been obtained from the California Regional Water Quality Control Board, Santa Ana Region. The activities will be conducted in accordance with rules and regulations of the State Lands Commission, California Regional Water Quality Control board and other State agencies.

ENVIRONMENTAL IMPACT CONSIDERATION:

The Commission staff, in accordance with the State Guidelines for implementation of the CEQA of 1970 as amended, has prepared an Initial Study for the proposed action and concluded that the proposed activity will not result in a significant effect on the environment. Therefore, the preparation of an EIR is not required.

In compliance with Section 2905(c) of the California Administrative Code, a Negative Declaration was prepared and filed with the State Clearinghouse. The Negative Declaration was circulated to responsible agencies and agencies having jurisdiction by law and to the public. No adverse comments were received during the circulation period.

EXHIBITS: A. Location Map. B. Negative Declaration.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT AN EIR HAS NOT BEEN PREPARED FOR THIS PROJECT, BUT THAT A NEGATIVE DECLARATION HAS BEEN PREPARED BY THE COMMISSION STAFF.

2. CERTIFY THAT THE NEGATIVE DECLARATION (EIR/ND 265) HAS BEEN COMPLETED IN COMPLIANCE WITH CEQA OF 1970, AS AMENDED, AND THE STATE GUIDELINES, AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.

3. DETERMINE THAT THE PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.

4. FIND THAT GRANTING THIS AUTHORIZATION WILL HAVE NO SIGNIFICANT EFFECT UPON THE ENVIRONMENTAL CHARACTERISTICS IDENTIFIED PURSUANT TO SECTION 6370.1 OF THE P.R.C.

5. AUTHORIZE THE DISCHARGE OF DRILL CUTTINGS AND DRILLING MUD WHICH ARE FREE OF OIL AND MATERIALS THAT ARE DELETERIOUS TO MARINE LIFE FROM AMINOIL'S PLATFORM EMMY AND ON OTHER SITES ON STATE OIL AND GAS LEASES PRC 91, 163, 392, 425, AND 426, IN THE OFFSHORE HUNTINGTON BEACH AREA AND LEASES 186 AND 3095 OFFSHORE SEAL BEACH, IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF EACH LEASE, THE RULES AND REGULATIONS OF THE STATE LANDS COMMISSION, AND IN ACCORDANCE WITH THE CONDITIONS AND LIMITATIONS OF THE NPDES AUTHORIZED BY THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SANTA ANA REGION.

EXHIBIT "A"

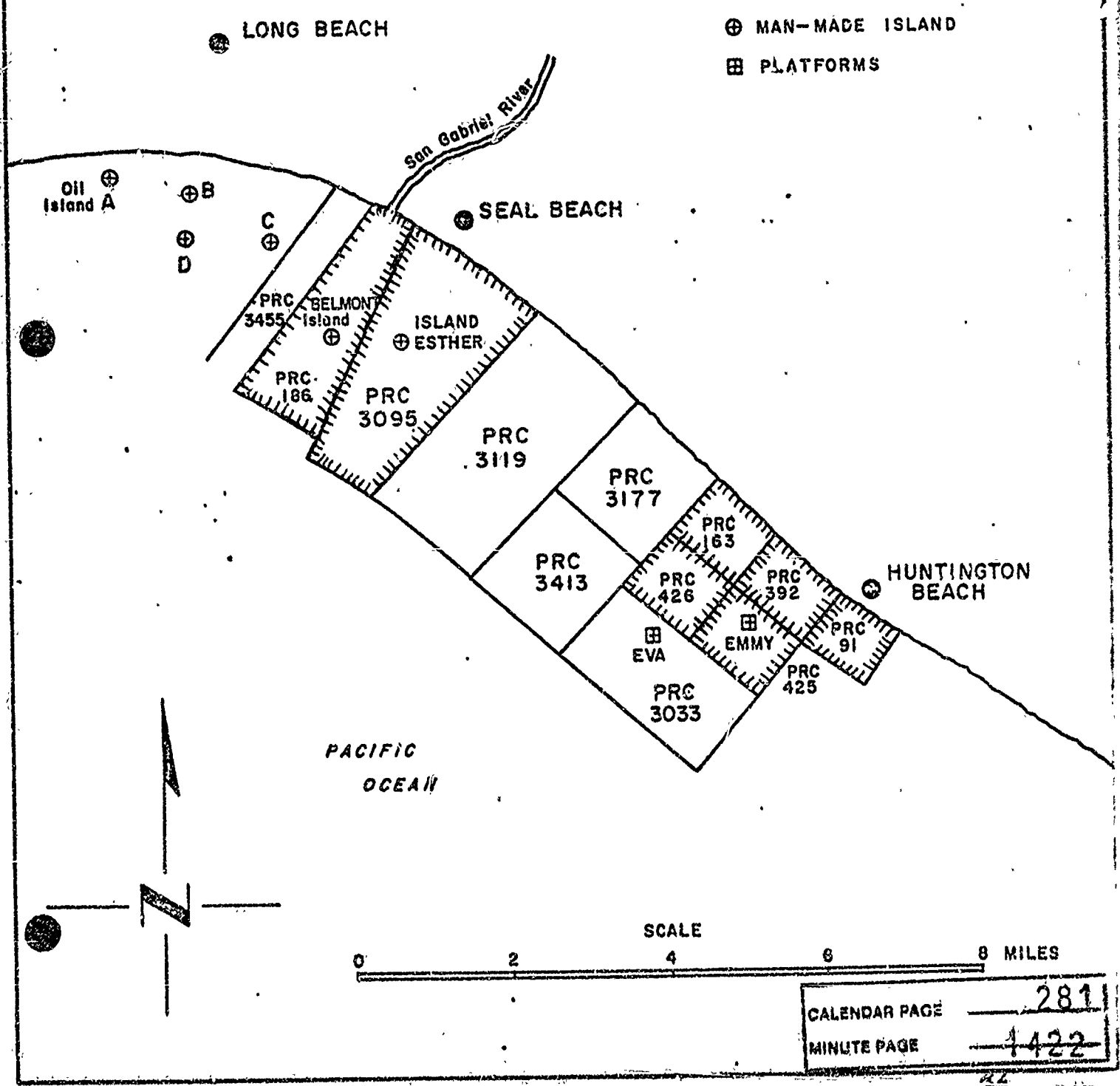

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EXHIBIT B

STATE OF CALIFORNIA
STATE LANDS COMMISSION

KENNETH CORY, Controller
MIKE CURB, Lieutenant Governor
RICHARD T. SILBERMAN, Director of Finance

EDMUND G. BROWN JR., Governor

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, California 95814

WILLIAM F. NORTHROP
Executive Officer

EIR ND _____

File Ref.: W 9773

NEGATIVE DECLARATION

Project Applicant: Aminoil U.S.A., Inc.

Project Location: State Oil and Gas Leases PRC 91, 163, 392, 425 and 426 in the offshore Huntington Beach area and Leases PRC 186 and 3095 offshore Seal Beach.

Project Description: Initial study analyzes the effects of disposal of clean drill cuttings and oil-free muds at sea in accordance with the new State law S.B. 678 (Chapter 197, Statutes of 1979) and in compliance with California Regional Water Quality Control Board regulations.

This NEGATIVE DECLARATION is prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et. seq. of the Public Resources Code), the State EIR Guidelines (Title 14, Section 15000 et. seq. of California Administrative Code), and the State Lands Commission regulations (Section 2901 et. seq. of California Administrative Code).

Based upon the attached Initial Study, it has been found that:

[XX] the project will not have a significant effect on the environment.

[ ] the mitigation measures included in the project will avoid potentially significant effects.

Contact Person: Robert Gaal
Senior Marine Geolggist

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Form [illegible]

W 9773

INITIAL STUDY

THE DISPOSAL AT SEA OF CLEANED DRILL CUTTINGS AND NON-OIL BASE DRILL MUDS FROM EXISTING OFFSHORE DRILLING AND PRODUCTION FACILITIES

INTRODUCTION

From 1955 through the early 1970's, the State Lands Commission in conjunction with the Department of Fish and Game and the Regional Water Quality Control Boards, permitted oil companies to discharge cleaned drill cuttings and non-oil base drilling muds into State waters from platforms and mobile drilling facilities operating on State tide and submerged lands oil and gas leases.

However, since the 1969 blowout in Federal waters, Section 6873 of the Public Resources Code (see attachment 1) was interpreted by the Office of the Attorney General to apply to drill cuttings and drilling muds thereby considering these materials as "refuse of any kind from any well works." Therefore, this interpretation precluded the dumping of this material into State waters.

The Federal government permits the discharge of clean drill cuttings and drilling muds in Federal waters.

In 1979, the state legislature approved S.B. 678 (Chapter 197 statutes of 1979) to provide for clean drill cuttings and oil-free muds under authorization from a Regional Water Quality Control Board to be deposited into waters of the State (see attachment 2).

PURPOSE

The State Lands Commission has authorized drilling operations on 7 leases in offshore Orange County (see attachment 3) wherein the environmental analysis was based on the transport of drill cuttings and muds to an onshore disposal site. Since S.B. 678 was passed, a review of past State and present disposal practices was deemed pertinent for a better understanding of the potential effects of this proposed action. The purpose of this study is to analyze the disposal of clean drill cuttings and oil free muds at sea in accordance with the new law for the previously authorized drilling operations. This study is based mainly on the work of others and the sources for the information contained within this document are found in the list of references.

PROJECT LOCATION

The area under consideration lies within the San Pedro Channel and includes State oil and gas leases PRC 91, 163, 392, 425, and 426, in the offshore Huntington Beach area and leases 186 and 3095 offshore Seal Beach (see attachment 3).

DESCRIPTION OF THE PROPOSED ACTION

State Lands Commission as lead agency, proposes to allow the offshore disposal of cleaned drill cuttings and oil free muds on 7 existing State oil and gas leases identified in Attachment 3. Such action will be in accordance with State Law and will require strict compliance with applicable regional Water Quality Control Board regulations.

The approval of this action will:

1. Decrease the potential offshore air and water pollution due to ship/barge transport to shore facilities.
2. Decrease potential onshore air and noise pollution.
3. Decrease the need for use of the present rapidly disappearing Class I disposal sites, and make these available for other priority users.
4. Decrease the pressure on harbor facilities.
5. Decrease the probability of accidents in transit to harbor and potential spills.
6. Decrease ship traffic in heavily traveled recreational and commercial waterways.

Operators presently in the OCS and previously in State waters washed the cuttings to remove oil and other contaminants and placed them on the ocean floor in compliance with Federal and State approved methods. There have been no reported beneficial or adverse impacts from this previous practice.

ENVIRONMENTAL SETTING/GENERAL

The existing environment includes the State owned tide and submerged lands in offshore southern California near Huntington Beach and Seal Beach (see attachment 3). The Aminoil lease area lies nearshore in 42 feet of water where the seabottom is constantly in flux and is reworked periodically due to seasonal storms and bottom current action. The surrounding shorezone includes a low energy

sandy beach shoreline. Some of the water area is used for recreation, commercial and sport fishing, and other types of commercial activities.

GEOLOGICAL

Geologically, the Aminoil lease in the offshore Huntington Beach field is in the southern part of the Los Angeles Basin, within the submerged portion of the Peninsular Range Province of southern California. The rocks underlying this region range in age from Precambrian to Recent age and have been subjected to extensive folding. The entire region is cut by major faults. Platform "Emmy" is situated on one of a group of fields which lies en-echelon among the Inglewood-Newport fault zone which is located about two and one-half miles northeast of the platform.

Faults within the Huntington Beach oil field die out upward and there are no historic surface ruptures associated with any of the many earthquakes attributed to the Newport-Inglewood Fault Zone (Burmah Oil and Gas, Draft EIR, 1976). Furthermore, seismic activity near the project area has been very low during the last 10 years.

The general offshore shelf area includes a variety of sediments and rock types. Generally, nearshore sediments are sand and silty sands becoming finer silty clay deposits seaward, although some areas nearshore are hard rock surfaces. There are no rock outcrops in the immediate platform area.

The sea floor between the mainland shoreline and the continental slope of southern California is where all the State offshore oil and gas development has taken place. In this environment, the present-day detrital sediments, mostly sands and silts are the most important sea floor deposits in terms of shelf area covered by sediment.

The Recent (Holocene) sediment thickness in the vicinity of Platform "Emmy" at water depths of 30 to 95 feet is variable ranging from 10 to 30 feet (Shell OCS Beta Unit EIR-EA Vol. 1, 1978). This sediment consists of fine to very fine sand and silty fine sand (Personal Communication, Joe Kabakoff, USC, 1980).

Bathymetric survey data from the vicinity of Platform "Emmy" indicate that the seafloor is almost flat-lying with the bottom slope averaging one percent for the first 2,000 feet from shore and 0.3 percent for the next three miles seaward. There is no evidence of slumping, subsidence or unstable slopes. No rock crops out in the immediate platform area. Local lenses of silty clay noted on the

core holes have been observed projecting through the fine bottom sand shoreward of the platform (Burmah Oil and Gas, Draft EIR, 1976).

PHYSICAL OCEANOGRAPHY/GENERAL

The physical oceanographic environment along the California coast has variable characteristics although the generalized current pattern is towards the southeast with local counter currents. The tidal regime is mixed. Surface water temperature generally decreases from north to south with some variability and slight differences in salinity. Minimum and maximum surface temperatures for the area are 53.0 and 73.6°F, respectively.

There are differences in current velocities and direction over monthly and annual periods. Bottom currents may correspond to surface currents directions or may be quite different.

CURRENTS

The southeasterly flowing California Current dominates the California coastline. It has a complex meandering and changing pattern moving cold water southeastward along its 500 mile width. A large eddy forming a countercurrent, flows northward from northern Baja California up through the Channel Islands forming the Southern California Eddy. During the spring and early summer, the prevailing northwesterly winds drive surface water obliquely along the coast resulting in an offshore movement of surface water causing upwelling. In autumn, upwelling ceases and an onshore relatively warm counter-current develops (Davidson Current).

The Davidson Current, a northward-moving deep countercurrent is the dominant nearshore current along the coast from Baja California to beyond Cape Mendocino. Surface currents form complex patterns in the Southern California Borderland area. Bottom current velocities along the entire shelf are relatively little known although current velocities in the Santa Barbara channel have been recorded from 0.2 knots to 1.45 knots. During the months of November through January, the Davidson Current flows northerly or upcoast and is the predominating pattern along the Huntington Beach and Seal Beach coastal zone.

Currents for the Huntington Beach area generally flow from the north or northwest from January to June and from the south or southeast from July to December at variable velocities of 0.4 to 0.6 knots (Burmah Oil and Gas, Draft EIR, 1976).

WAVES

In southern California, wind waves are predominantly from the northwest and swells may occur from any seaward direction. Swells along the California coast are mostly from a westerly direction although occasional south swells due to storms off Mexico or near Antartica may occur.

Wind waves and swell generally occur simultaneously throughout the year in the Huntington Beach and Seal Beach area. Wave and swell heights throughout the year vary from less than one foot to greater than 6 feet and have periods ranging from approximately 5 to 15 seconds. Waves as high as 25 feet have been recorded in the San Pedro Channel.

TIDES

The tidal pattern along the California coast is mixed with two high and low tide cycles of unequal magnitude each lunar day. In the southern California Area, the tidal wave moves from southeast to northwest at an average speed less than 0.5 knots. Nearshore in the Huntington Beach area there is an oscillatory tidal effect with one or more complete reversals of flow direction in each 25 hour tidal day, and current velocities vary from 0.4 to 0.6 knots (Burmah Oil and Gas, Draft EIR, 1976).

Spring tide ranges in the area are of the order of two meters; a common tidal range for the area is between 4 to 4.5 feet (1.2 and 1.4 meters).

CHEMICAL

The chemical environment of the offshore area is locally fairly constant although during periods of upwelling there are changes. Surface salinities average about 33.5 parts per thousand depending upon the season near Platform Emmy.

Upwelling is the principal source of nutrients to the surface waters. Natural turbidity consist of organic and inorganic material from river floods, benthic plants, sewage outfalls, and plankton blooms. Trace metal concentrations in seawater along the California coast are highly variable. Trace metals concentrations in a few benthic sediment locations have been intensively studied especially in the vicinity of sewage outfalls.

BIOLOGICAL

The dominant biological features in the offshore area of interest are various types of planktonic, nektonic, and benthic organisms and plants that have been relatively

well-studied by the USBLM (Pacific OCS Lease Sale 48, Draft EIS and Baseline Studies) in certain areas. Planktonic forms include the phytoplankton which are almost exclusively free-floating microscopic algae. The zooplankton, a diverse group of plant and animal feeders, have a limited swimming ability and consequently are dependent upon the currents for transportation. There are both permanent and temporary organisms in the zooplankton community which locally can consist of a large variety in species, form, size, and habitats.

The benthic forms consist of both invertebrates and vertebrates which are extremely complex, made up of many species and assemblages. A thorough review of these organisms exists in USBLM publications (Draft EIS, 1978). The sea bottom in the leased area has been sampled in connection with many studies and the range of species is great and similar to other southern California shallow grading bottoms from sand beaches. These studies indicate there has been no change in their populations during Burmah's offshore operations (Burmah Oil and Gas, Draft EIR, 1976). An inventory of the fauna on, below and around Platform Emmy is in "Underwater Survey of the Marine Life Associated with Oil Platform Emmy" (Chambers Consultants and Planners, 1979).

Nekton are composed of the free-swimming aquatic animals including the fishes and mammals. The fisheries off the California coast are highly diverse due to the complex prevailing current patterns and water mass systems.

ROTARY DRILLING AND DRILLING MUDS

To better understand the effect drill cuttings and drilling mud have in the offshore environment, one should have a knowledge of rotary drilling.

Rotary drilling rigs use a drilling mud which is pumped down the drill pipe continuously while drilling. The mud travels through the drill bit to clean the hole of cuttings and cool the bit and returns to the surface outside the drill pipe within the casing carrying the drill cuttings with it. These "cuttings" are a byproduct of the drilling operation, and must be disposed of in an acceptable manner.

The action of the rotary drilling bit on the bottom of the hole causes the material being penetrated to be ground up into small particles called "drill cuttings." In California, the bulk of this material ground up is made up of sand, sandstone, clay or shale (compacted clay). At the Platform Emmy site the drill cuttings are composed of pulverized sediments (sands and silts) and underlying rock consisting of sand, silt and clay sized particles.

At the surface the circulating drilling mud is separated from the cuttings, treated and conditioned, and pumped back down the drill pipe to repeat the cycle. After separation, the "cuttings" may remain partially coated with minute quantities of mud residue which may contain insignificant amounts of oil or additives which are below the allowable limits imposed by the NPDES and CRWQCB discharge requirements.

The drilling mud performs other functions; most important of these are to keep the hole from caving in and to prevent the fluids contained in the exposed porous and permeable rock from entering the hole.

The muds to be used in Aminoil's offshore wells, down to the surface casing setting point, consist of seawater and gel (bentonite clay). This is a light-weight mud with few, if any, chemical additives. Below the surface casing, the mud system is generally changed to a seawater lignosulfonate system.

From information received from Aminoil, U.S.A., the Clay Base Drilling Mud may consist of the following in varying amounts:

Gel (Bentonite)	Lignosulfonate
Bicarbonate of Soda	Soda Ash
Barite ($BaSO_4$)	D.D (Drilling Detergent, Soap)
Caustic Soda (NaOH)	

The Polymer Base Drilling Mud may consist of the following in varying amounts:

XC Polymer	Calcium-Carbonate ($CaCO_3$)
Caustic Soda (NaOH)	Defoamer
Salt (NaCl)	

Details of the drilling mud and additives proposed to be used by Aminoil U.S.A., Inc., are described in Exhibit "A" following this page.

Under existing State requirements, the drill cuttings are placed in storage containers and periodically barged to shore for disposal. This method of disposal requires special storage containers. Because storage space is limited on offshore drilling structures, frequent barge trips to shore are required. On the shore, the cuttings are trucked to one of a decreasing number of available Class I disposal sites which adds to the solid waste disposal problem in upland locations.

Under the new law, Chapter 197, Statutes of 1979, it is permissible with approval of the Regional Water Quality Control Board, to power-wash the drill cuttings of mud,

Soda Ash—(Na_2CO_3) (pH 11.5)

Soda ash (sodium carbonate) is used as a chemical precipitant for calcium in water-base muds, especially calcium sulfate in low pH muds.

$$CaSO_4 + Na_2CO_3 \rightarrow Na_2SO_4 + CaCO_3\downarrow$$

One (1.0) lb of soda ash will precipitate 1.283 lbs of calcium sulfate.

Treating with large amounts of soda ash will increase the pH. Supplementary additions of SAPP will tend to keep a low pH value. Also, the sodium sulfate that is formed when calcium carbonate is precipitated acts to increase the gel strength. Supplementary treatment with IMCO VC-10 aids dispersion.

Soda ash also may be used to treat for cement contamination. However, due to the high pH of soda ash and the caustic that is formed when treating cement, a high pH will result. An organic dispersant should be used as a supplementary treatment to reduce viscosity and gel strength.

$$Ca(OH)_2 + NA_2CO_3 \rightarrow CaCO_3\downarrow + 2\,NaOH$$

The amount of soda ash required for effective calcium removal will depend on the amount of calcium present in the mud and the amount of calcium sulfate or cement to be drilled. Also, the hardness of the cement will greatly determine the amount of precipitant to use. Caution should be taken not to overtreat with soda ash since gel strengths will result from the excess carbonates. If the sales and service representative is not sure of the amount of soda ash to use, treatments of ½ ppb should be made until the desired results are obtained. (The calcium should be checked by the quantitative versenate test for its removal.)

Soda ash is not sensitive to pH or previous chemical treatment.

Caustic Soda—(NaOH) (pH 14)

Caustic soda (sodium hydroxide) is used for pH control in all water-base muds. The amount of caustic soda required for pH or P-alkalinity control is influenced by several factors: pH of mud before making caustic additions, amount and type of additives made to the mud system, type and amount of formations drilled, amount and freshness of water additions, contaminants encountered, etc.

The following additions of caustic soda may be used as a guide only. (Additions made to base mud with pH of approximately 7.5.)

Caustic Soda ppb	pH	P-alkalinity: cm^3
1/4	8 to 8.5	Trace to 0.1
1/3	8.5 to 9.0	0.1 to 0.25
1/2	9.5 to 10.0	0.3 to 0.5
3/4	10.0 to 10.5	0.5 to 0.7
1	11 to 11.5	0.8 to 1 cm^3
2	12+	3 cm^3
3	12.5+	5 cm^3
4	12.5+	7 cm^3

Caustic soda, if added to the mud raw, will cause the mud to clabber. For best results the caustic treatment should be added to water with an organic dispersant in the chemical barrel and be allowed to drip into the mud over a complete circulation. Caution should be taken since caustic in water generates heat in solution that can cause the barrel to boil over.

IMCO XC Polymer

IMCO XC, a bacterially produced pot mar industrial grade of xanthan gum, is a high molecular weight linear polysaccharide that is readily soluble in water to form a viscous, highly non-Newtonian solution.

XC is used to impart viscosity in low solids, non-weighted, or low-weighted mud systems. It is capable of building viscosity in fresh, sea, and saltwater without assistance from other additives. IMCO XC can be reacted with chromium ions to increase viscosity and reduce polymer cost. A preservative is recommended since XC is subject to bacterial degradation.

IMCO XC may be used in any water-base mud for improved lifting capacity.

1. Add ½ ppb XC to system, or an amount required to give desired viscosity.
2. Add 0.3 lb of chromic chloride on chrome alum/lb of polymer.
3. Adjust pH to 7.5 to 10 with caustic soda.
4. Add ½ ppb IMCO CIDE as preservative.
5. Add bentonite (to give proper particle size distribution for better control of fluid loss). Note: Usually 1 to 6 ppb.

Salt

Salt (NaCl) is added to drilling fluids to increase their salt content. It is used primarily in formulating saturated saltwater muds. Additions of salt are sometimes made to water-base muds to adjust the resistivity for logging purposes.

Recommended treatment:

To saturate fresh water—125 ppb

CALCIUM CARBONATE

IMCO WATE calcium carbonate has a specific gravity of approximately 2.8.

It is used primarily for increasing the density of oil-base muds to prevent solids invasion in producing formations.

The material may be removed from producing formations by acidizing.

$$\text{Amount to use: } X = \frac{945\,(W_2 - W)}{22.5 - W_2}$$

where: X = Sacks per 100 bbl

W_2 = Weight desired, and

W = Present weight

Volume increase: For each 9½ sacks added there will be 1-bbl volume increase:

The maximum weight that can be obtained is approximately 10.8 ppg.

Aluminum Stearate

Aluminum stearate, an aluminum salt reacted with stearic acid, is a surface-active agent in powder form used primarily in gyp and lignosulfonate muds as a defoamer. It is insoluble in water and for best results should be mixed with diesel oil before being added to the mud.

Proper mixture is approximately 5 to 10 lb of aluminum stearate mixed with 5 gal. of diesel oil. The mixture is allowed to slowly drip into the mud system.

Treatment—Approximately 10 to 20 lb per 100 bbl of mud.

EXHIBIT "A"

DRILLING MUD ADDITIVES

BENTONITE

IMCO GEL is a premium grade western bentonite that will yield 92 to 100 bbl/ton in fresh water.

IMCO GEL meets API specifications of plastic viscosity, fluid loss, screen analysis, moisture, and calcium content.

GEL is used for viscosity and fluid-loss control in all fresh-water muds. In muds that contain salt in excess of 35,000 ppm, the yield of bentonite is greatly reduced unless prehydrated in fresh water and then added to the salt mud.

When adding bentonite to water 22.5 ppb will give a minimum of 15 cps viscosity or approximately 36 sec/qt funnel viscosity.

Tourly additions of from 2 to 5 sacks should be made to all muds to assure a good compressible filter cake.

Sodium Bicarbonate—($NaHCO_3$) (pH 8.3)

Sodium bicarbonate (baking soda) is used for calcium precipitation (from cement or anhydrite) in muds above 8.5 pH.

$$Ca(OH)_2 + NaHCO_3 \rightarrow CaCO_3 + NaOH + H_2O$$

$$NaOH + NaHCO_3 \rightarrow Na_2CO_3 + H_2O$$

The primary application of sodium bicarbonate is precipitating the calcium from cement contamination; the pH will be reduced toward 8.3 (1.0 lb of bicarbonate will react with 1.1 lbs of cement).

The pH of the mud should be at least 8.3 for successful treatment with bicarb. Also, for best results mud should have minimum previous chemical treatment with alkaline-tannate of phosphates.

Treatment amounts are similar for those of soda ash. Avoid overtreatment.

BARITE

IMCO BAR barite has a specific gravity ranging from 4.2 to 4.27.

Barite is used in all muds to increase the density. Mud weights up to approximately 22 ppg may be obtained and remain pumpable.

The amount of IMCO BAR barite to use and the volume increase may be determined quickly by dividing the desired weight by two to give the number of sacks required per 100 bbl mud for each 0.1 ppg increase. For each 15 sacks added there will be 1-bbl volume increase.

$$\text{Amount to use: } X = \frac{1.490\ (W_2 - W)}{35.5 - W_2}$$

where: X = Sacks per 100 bbl

W_2 = Weight desired, and

W = Present weight

LIGNOSULFONATES

(A) IMCO VC-10 additive is a modified sodium chrome lignosulfonate (pH 4.0).

VC-10 dispersant contributes to fluid-loss control in fresh water muds; calcium muds (gyp, lime and calcium chloride), and salt muds (from brackish to saturated). It is effective over a wide pH range (7.0 to 12.0), and is excellent for treating contamination from gyp or anhydrite, cement, or salt.

When used at higher concentrations, IMCO VC-10 serves as an inhibitive mud without additions of calcium salts. It also eliminates or reduces the need of additional fluid-loss control additives. (The pH usually is controlled at 9.0 to 9.5 with caustic soda.)

VC-10 is effective when high temperatures are encountered (300° to 400°F) and is compatible with other mud additives. It is also an excellent emulsifier of diesel or crude oil.

Normal optimum treatment:

Thinner for fresh-water muds—1 to 3 ppb

Treating for contamination from gyp, salt, or cement—2 to 4 ppb

Thinner for lime-treated muds—2 to 5 ppb

Thinner for gyp muds—3 to 6 ppb

As an inhibitive lignosulfonate system—6 to 10 ppb

Thinner for salt muds—2 to 6 ppb

Thinner for seawater muds—4 to 10 ppb

For low filtration rate—4 to 10 ppb

For heat stability (excess of 300°F)—8 to 10 ppb

IMCO MD

IMCO MD drilling mud detergent is a compounded, highly-active detergent and wetting agent developed specifically for use in drilling fluids. MD is not affected by contaminating electrolytes and may be used in all water-base muds to aid in dropping sand, reducing surface tension, and minimizing bit balling. MD also serves as an excellent emulsifier for oil-in-water emulsions. It is used primarily in upper hole drilling.

Normal treatment—2 to 3 gal. per 100 bbl of mud.

and other residue and deposit them on the ocean floor through a deep disposal pipe. This procedure which was developed and employed in California offshore drilling operations several years past was investigated by the California Department of Fish and Game in their study entitled "Offshore Oil Drilling and Its Effects Upon the Marine Environment." This report, which was released in 1967, concluded after studying the marine environment in and about five offshore structures that "depositing washed drill cuttings on the bottom of these sites was neither deleterious nor beneficial to marine life in the area" (Turner, C.H., 1967)

POTENTIAL ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION

GENERAL

The proposed resumption of discharging cleaned oil-free drill cuttings and mud as a result of rotary drilling systems from floating, semi-submersible or fixed drilling production facilities may cause some temporary minor alterations to the environment. The drill cuttings will be washed, cleaned and monitored in accordance with existing State and Federal Regulations with equipment on board the drilling facility. The cuttings will be discharged through a downpipe to the sea floor and will cover a small area beneath the Platform.

As a result of these proposed activities the present environment will be only temporarily altered by the discharge of cleaned drill cuttings and non-oil based drilling muds by changing the topographic expression and bottom sediment type of a small area under the Platform.

Because of the limited, and temporary, nature of the proposed action, the short-term environmental impacts require more consideration than the long-term impacts. The results of the California Department of Fish and Game studies of platform discharge of drill cuttings reported in their Fish Bulletin 124 indicated that there were neither deleterious nor beneficial effects from the drill cuttings during the 3-year study (Carlisle, Turner, and Ebert, 1964).

Since drilling is a short-term activity it is believed that no long-term environmental impacts would be anticipated. No significant impacts have been recognized in the studies by the State Department of Fish and Game (Carlisle, Turner and Ebert, 1964) and by Mearns and Moore, 1976, off platform Hazel and Hilda in the Santa Barbara Channel and by Wolfson, et al., 1979 at Platform Eva, and other studies in the Gulf of Mexico. Furthermore, a study by Chambers Consultants and Planners of Platform Emmy, 1979, indicates that there has been no apparent deleterious effect from previously discharged drill cuttings and mud. The study at Platform Emmy indicates that bottom conditions

are constantly changing apparently as the result of winter storms scouring the sea bottom.

A discussion of the identifiable short-term environmental impacts which might result from discharge of cleaned oil free drill cuttings and mud is given below and will be discussed in greater detail in following sections.

1) The disposal of drill cuttings while drilling with water-base drilling fluid may have some minimal adverse effect on any living marine organisms in the water column and primarily on the ocean floor immediately below and adjacent to an offshore drilling facility; however, the 3-year study by Carlisle, California Department of Fish and Game, (Carlisle, et al., 1964), indicated no significant impact on the marine environment from this type of disposal operation.

2) Disposal at sea can be considered "beneficial", hence a positive effect, since it nullifies the potential adverse effect of hauling material asnore which increases air, water, and noise pollution, traffic density, (both land and sea), increases potential onshore treating and facilities impacts, increases the need for Class I disposal sites, increases the cost of drilling, and thereby increases production costs and the ultimate cost to consumers.

EFFECTS OF DRILL CUTTINGS DISPOSAL AT SEA

Discussion on the effects of the disposal of drill cuttings and drilling muds at sea often center on the arguments that, 1) solid additives (particulate matter) may cause excessive turbidity, 2) some additives may alter the chemical balance in the surrounding sea water and the bottom sediment forming an inhospitable toxic environment to local plant and animal life, and 3) the solid mud-and cuttings-discharge settling on the bottom may form a new bottom sediment type smothering included plants and animals as well as forming a potentially uninhabitable substrate.

It should be noted that at Platform Emmy, the depth of water is 42 feet. At this depth, discharges do not tend to accumulate in a concentrated area. This absence of concentrated bottom accumulation was verified by observation during a recent marine life inventory conducted in the underplatform of Emmy (Chambers Consultants and Planners, 1979). Despite considerable discharges prior to 1970, cuttings were found spread evenly over a broad area of the littoral surface near Emmy due to the action of currents of variable velocities and directions and scouring by winter storms (Naval Weather Service Command, 1971 and Chambers Consultants and Planners, 1979).

During storm periods, the bottom under Platform Emmy is swept clean with only bare sand and scattered shells present. Previously deposited cuttings under Platform Emmy were dispersed and made undetectable in the vicinity of Platform Emmy in the Huntington Beach area due to scouring and longshore currents (Chambers Consultants and Planners, 1979). Also, in the Baltimore Canyon area, it has been shown that extensive bottom sand transport occurs during storms; cuttings even in the deepest water presumably will be dispersed after several storms and made undetectable in the vicinity of the drill site (Shinn, E.A., 1975). Consequently, the finer-grained portions of the cuttings at Platform Emmy are expected to be rapidly distributed in response to prevailing currents over a large area (predominately down current) and will grade harmoniously into the natural finer-grained sediments in the area.

Recent field studies by ECOMAR, 1978, to determine the potential effect of mud and cuttings discharges at Tanner Bank, California indicated: (1) the cuttings separated from the mud and fell rapidly to the bottom, (2) the mud that adhered to the cuttings (usually 1 to 5 percent by volume) formed a plume reaching dilutions in excess of 100,000:1 within 330 feet of the discharge point; within 650 feet from the discharge point the mud plumes had reached background levels, (3) only minor accumulations of trace metals (Ba, Cr, Pb) were found in the sediment after two months, and these trace metals were below or reached background levels between 330 and 660 feet from the discharge pipe, (4) the barium had no apparent toxic effect on marine species, (5) the temperature, pH, dissolved oxygen, and salinities, at or near the mud-and cuttings-discharge were transported and/or dispersed beyond detection limits, and (7) the dilution-dispersion effects of Pacific coastal waters appear to be considerable.

The volume of cuttings and the period of time that cuttings are proposed to be discharged in the Huntington and Seal Beach areas is of considerable importance in assessing the effects of drill cuttings disposal at sea. Discharged drill cuttings in the ocean released from a vertical outfall pipe several feet above the bottom from, for example, a 5000 foot well at Platform Emmy would produce an accumulation of approximately 80 to 100 cubic yards per well. Deposition will be more or less continuous during drilling operations.

When the proposed discharge, which will occur over a "number of years", estimated to be about 5 to 15 years for Platform Emmy, is viewed in perspective, the volume generated is seen to be of minor consequence. For example, if an inch is assumed as the maximum thickness of accumulated discharged sediments that the less mobile infauna

can accommodate (a very conservative estimate in light of the slow rate of accretion), then the maximum area of volume of about 10,000 cubic yards from possibly 100 to 125 wells in the Huntington and Seal Beach area could cover to that depth is approximately 360,000 square yards or approximately 75 acres or about 0.10 square mile.

The effects of drill cuttings deposition on the ocean floor will be limited to the following:

1) Smothering of the less mobile representatives of the benthic epifauna and infauna (occlusion of feeding mechanisms of filter and suspension feeders and asphyxiation attending burial). This short term effect will include effects of burial of encrusting epifauna only in the lower reaches (near bottom) of casings, platform substructures, and portions of the pipeline near the platforms. The effect will be a local reduction of the food available to animals at higher trophic levels. As the affected area is so limited, and of short time duration, cuttings deposition is not of measureable significance to fish population. Periodic storms will flush the area of cuttings and mud, dilute, and distribute these materials in the surrounding area so that they become undetectable.

2) Adverse temporary local increases in water turbidity could result in reducing the amount of light available for plant (mainly plankton) photosynthesis. However, the attached NPDES and CRWQCB regulations preclude this event. The potentially impacted area and portions of the local populations of primary producers involved are very small, especially since the depth of Platform Emmy is in shallow coastal waters affected by storm waves and tides.

3) Possible impedance of recolonization in the cuttings could occur if sediment texture contrasts with local sediment. This effect, should it exist, might be temporary if deposition of a substantial layer of natural sediment occurs subsequent to drilling operations. Note: Studies by the California Department of Fish and Game (Turner, et al., 1971) indicated that the deposition of washed drill cuttings on the bottom beneath Chevron-Exxon Oil Platform Hazel (PRC 1824) neither added anything favorable nor greatly detracted from the character of the environment. The extent of recolonization on cuttings by benthic epifauna and infauna is known in some areas and indications are that they repopulate and establish healthy communities after

a short period of time (Sheen Technical Subcommittee, 1976; Zingula, 1975; Farrel, 1975; and Hauser, 1974).

It should be noted that marine organisms do repopulate areas in which drill cuttings have been discharged and the platforms with shell debris accumulations on the bottom below the structure form an artificial habitat. The abundance of the marine biological community associated with Platform Emmy is similar to the rich reef-type community described for other offshore oil platforms in southern California where discharge of drill cuttings and drilling mud was allowed (Carlisle, et al., 1964; Mearns and Moore, 1976; Wolfson, et al., 1979).

EFFECTS OF DRILLING MUDS

Drilling "muds" are complex fluids with "designed in" properties to cool and lubricate the drilling bit, transport cuttings from the bit to the surface, and with sufficient density to overcome anticipated formation pressures at the depth of the bit. Mud is continuously circulated through the drill string during the drilling process. Relatively small amounts of mud will be discharged since for economic reasons the mud can and is often recycled and reused for further drilling.

The principal anticipated impact of cleaned, oil-free mud discharge would be on the aquatic biota, and would depend on the quantity discharged, depth of discharge, and physical conditions at various depths (currents, wave energy, density gradients, and mixing). Therefore, the possible effects of turbidity on light transmittance, filter feeders, and various chemicals on organisms are considered. However, the transmittance of natural light shall not be significantly reduced at any point outside the initial dilution zone from Platform Emmy which is in compliance with NPDES permit requirements. The amount and type of chemicals used will be insignificant since any direct toxicity that could be present is rapidly reduced because the muds will be diluted within a short distance from the point of discharge by the variable currents in the area and discharge of toxic materials is prohibited by California Administrative Code, Title 22, Division 4. Consequently, the impact on the aquatic and benthic biota should be insignificant at Platform Emmy.

Spent drilling muds in the offshore area in the past were diluted and disposed of by those responsible for the well in an approved manner under State and Federal permits and operating orders. The results of these previous activities indicate that there has been no deleterious or beneficial effect on the environment.

Minor local turbidity resulting from the discharge of drilling muds and cuttings should not impact planktonic communities. These turbidities from mud will not be visible as plumes because they will become diluted beyond recognition and settle, usually within a range of a few yards or less than a mile from the source. Environmental impacts on the benthic community resulting from any possible discharge turbidities are primarily physical in nature. These impacts are expected to be localized, temporary, and of low severity.

Drill cuttings separated from drilling muds and discharged into the ocean usually accumulate on the ocean floor as piles which in the high energy coastal waters are rapidly dissipated forming a thin blanket of sediment on the seafloor. Undoubtedly, depending on cutting type, smothering as some benthic forms may occur, especially with epibenthic communities. At the same time, however, colonization and repopulation can occur on the newly formed substrate, although species different from the original ones may occur. A survey in offshore Louisiana revealed drill cuttings deposits to be inhabited by benthic organisms (Zingula, 1976.). Similar positive effects occur in the Santa Barbara Channel on the drill cutting deposits below Platforms Hilda and Hazel (Bascom, Mearns and Moore, 1976).

Deposition of washed drilled cuttings and mud on the ocean bottom would destroy some non-mobile bottom dwelling organisms in the covered area locally. Otherwise, the cuttings should have no adverse impact on aquatic resources and in studies conducted by the California Department of Fish and Game, Fish Bulletin 124, it was concluded that washed drill cuttings appear to have little or no effect on sea life.

One of the potential deleterious effects of disposal of used drilling mud at sea is that incorporation of mud into bottom sediments might inhibit recruitment of benthic communities. A recent laboratory study by Gilfillan, Gerber, Hanson, Page and Hotham (1980) has shown that used drilling muds are quickly repopulated by the local organisms.

Barium sulfate is used for mud weight control. This additive is insoluble in sea water and thereby settles immediately, due to its high specific gravity, and apparently has no deleterious effect on the biota.

IMPACTS ON BOTTOM SEDIMENTS

Impacts on bottom sediments from discharge operations would be minor. Small areas would be occupied or covered by components of drill cuttings and drilling mud for a short period of time.

The microrelief on the ocean floor could be somewhat changed, as, e.g., in the localized deposition of drill cuttings. The appearance of the bottom would be slightly changed in the immediate vicinity. This effect is considered neither beneficial nor adverse. The effects of redistributing these materials from the zone of deposition down current from the platform are negligible and of limited extent.

Eventually, the drill cuttings and drilling mud once deposited on the seafloor will in turn be covered by sediment through natural depositional processes and the bottom environment will return to its former state.

SUMMARY

It is believed that implementation of the proposed action within the existing State and Federal regulating network will not have any significant adverse effect on the water column and life contained therein or on the seafloor with its epifauna and infauna.

The pressures imposed by oil and gas development discharges of drill cuttings and drilling mud will be minimal with no threat to fisheries or other users.

It appears that wave-induced surge in consort with storm wave scouring and steady currents are sufficient to rapidly disperse and transport the drilling mud and cuttings discharged, preventing accumulations beneath platforms (Chamber Consultants and Planners, 1979).

Covering of small areas of the ocean floor does not represent an irreversible or irretrievable loss, since normal deposition with recolonization of organisms will soon bring the affected areas back into equilibrium with the ecosystem. According to Turner, California Department of Fish and Game, 1967, the changes in habitat brought about by establishing offshore oil-drilling installations were generally beneficial to the flora and fauna, and depositing washed drill cuttings on the bottom at these sites was neither deleterious nor beneficial to the marine life in the area.

Studies of the biology of both Platform Hilda and Hazel in the Santa Barbara Channel by California Fish and Game biologists in 1960 and 1970 provided historical data for Comparison by Bascom, Mearns and Moore, 1976, who found that life on and around the two platforms was healthy and showed no indications of uptake of any toxicant.

We are confident that modern technology is capable of ensuring preservation of the environmemt and CRWQCB

strict rules and regulations must account for the proper disposal and inactivation of materials such as barium, chromium, and other biocidal compounds. The effects of drilling and discharge of drill cuttings and oil free drilling mud will probably be very limited spatially and temporally.

ANY ADVERSE EFFECTS THAT CANNOT BE AVOIDED IF THE ACTION IS IMPLEMENTED

The adverse effects that cannot be avoided if the action is implemented include 1) smothering of the less mobile benthic faunas, 2) slight reduction of light transmission for a very short period of time, 3) very localized changes in the microrelief of the seafloor, 4) minute quantities of trace metals will be added to the environment, 5) short-term change in sea bottom sediment grain size and texture, and 6) minor temporary local increases in the chemical oxygen demand, with possible short-term modification of salinity, pH and temperature.

No degree of exactitude can be exercised in making predictions as to the probability and the magnitude of potential adverse impacts of discharging cleaned oil-free drill cuttings and mud or precisely where and how they will occur if the proposed action takes place. Factors such as drilling schedules, currents, wave action, tidal effects, storms, etc., are potential causes for the lack of predictability for any adverse effect of mud and drill cutting discharge on the environment.

While the potential for adverse effects may exist, it is our belief that the proposed area and included biota are unlikely to be significantly impacted as a r ult of the proposed action because of the stringent limitations imposed on the discharger by the CRWQCB.

MITIGATING MEASURES PROPOSED TO MINIMIZE IMPACTS

Under Chapter 197, Statutes of 1979, discharge of cleaned oil-free drill cuttings and oil-free mud is permitted in State waters. All traces of oil will be removed by the discharger prior to discharge. Under law, the discharge requirements of the Regional Water Quality Control Boards and EPA are such as to prevent any unreasonable degradation of existing water quality or have any detrimental effect on living organisms.

Implementation of Chapter 197, Statutes of 1979, with the strict procedures and requirements developed by EPA and the Regional Water Quality Control Board will virtually guarantee the continuance of the present record of no significant effect on the environment from discharge of cleaned oil-free drill cuttings and mud at sea.

Drill cuttings and drilling mud will be treated in strict compliance with all Federal and State laws and regulations established for offshore drilling. Cuttings will be washed with clean ocean water to remove all traces of oil and other contaminants, and the wash water will be processed in an air flotation cell or similar device to remove the oil prior to discharge. This method of disposing of drill cuttings when using a water-based drilling fluid is the same as used in previously allowed practices in State waters prior to 1970 in drilling during which time no deleterious effect was recorded in the offshore environment. It should be noted that the filtrate residue from the washed cuttings containing deleterious materials is stored on the drilling facility and later transported to shore where it is disposed of according to CRWQCB regulations. The closest Class I disposal sites to Platform Emmy are the Palos Verdes Landfill which is presently phasing out as a disposal site and the BKK Site in West Covina, approximately 35 miles from the platform.

In the case of pre-1970 discharges, receiving water limitations (B-1-K and 1, page 3 of Aminoil's CRWQCB permit attachment 4) prohibits visible plumes as a result of discharge. Under the monitoring program, CRWQCB regulations require a daily inspection and record of any visible oil, floatables, or discoloration (see attachment 4). Discharge operations from Platform Emmy will have to be conducted in such a manner and only under conditions in which no visible plume is created. The receiving water limitation of Aminoil's CRWQCB Permit, B-1-a, requires that the transmittance of natural light shall not be significantly reduced at any point outside the initial dilution zone (attachment 4).

Further, effluent limitation number 3, page 2 of Aminoil's CRWQCB permit (see attachment 4) prohibits the discharge of wastes containing any toxic materials as defined in the California Administrative Code, Title 22, Division 4. Additionally, the California Regional Water Quality Control Board's general provision number 8 provides that Aminoil's discharge permit will be revised and modified to reflect toxic effluent standards and prohibitions that are more stringent than any limitation imposed by current standards. The permit monitoring and reporting program also requires an annual chemical analysis on a sample of bottom sediments. Similarly, an annual biological assay program is required to be conducted on benthic organisms collected from bottom sediments. Such monitoring and testing programs will provide the data to determine if prohibitions against degradation of benthic communities, indigenous biota or marine life can be and are being met.

The State Lands Commission will actively provide surveillance and strict enforcement of good safety, operating and management practices to insure that accidental spillage

of mud and cuttings containing oil should not occur. This is accomplished by the State Lands inspectors checking and inspecting the various systems involved in the method and handling of drill cuttings and drilling mud.

ALTERNATIVES TO THE PROPOSED ACTION

No action would result in the continuance of hauling drill cuttings and mud to onshore disposal sites.

If the proposed action is not implemented, then conditions and procedures will remain as at present with mud and cuttings being stored at sea, barged to and trucked onshore. Hauling of cuttings and mud requires frequent round trips of barges which would increase pressure on the environment both by ship traffic off the coast of southern California, and in local harbor facilities. Truck traffic on land would subsequently increase which involves potential environmental impacts such as increasing air emissions, noise pollution, highway traffic congestion, etc. that would not exist in the proposed project. This procedure will increase exploration and production costs of oil and gas resulting in more air, water, and land pollution occurring as a consequence of the processing and storage of the cuttings, mud, and waters including the haulage to disposal sites onshore. Additionally, the costs of new disposal sites, if available for this type material, will be greatly increased since there are fewer and fewer potential Class I disposal sites available and those that are available will become prohibitive to use as their distance from port facilities becomes greater.

Another possible alternative would be to find an offshore basin with bottom waters that do not mix with the upper layers, e.g., similar to the San Pedro Basin which was effectively used by THUMS from about 1966 to the early 1970's. Cleaned cuttings and mud would be barged to these offshore disposal sites and discharged through a down-spout at a predetermined depth. This method of disposal has been reported to be dangerous because of variable sea states that can cause potential accidents during the transfer process from the platform to the barge tied up alongside the platform and in transit to the dump site. (McGregor, J.R., 1980, Statement of J.R. McGregor, ODECO, U.S.A. before the Environmental Protection Agency, Region IX Public Hearing to modify 14 NPDES permits for Pacific OCS Lease Sale No. 48, Santa Barbara, California, January 21, 1980).

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Discharge of cleaned oil-free drill cuttings and mud in the past on State offshore land (prior to 1970) and the ongoing practices of the Federal Government in the

Offshore Continental Shelf (OCS) leases have demonstrated that there should be no cumulative and/or long-range adverse effects from disposal at sea. Presently, there are no foreseeable adverse long-term effects.

Although there is insufficient evidence to make a firm conclusion on this proposed action, it appears that this activity will have no significant positive or negative effect on the environment.

On a short-term basis, the addition of small amounts of discharge from drilling facilities to small areas will not narrow the range of potential options with regards to possible uses of these for future generations.

The short-term effects will be temporary and insignificant and after completion of discharge there will only be small changes in the bottom topography and an insignificant loss of the benthic community.

The proposed action is a means to accelerate exploration and minimize costs of production of oil and gas reserves for the benefit of the people of the State of California. At the same time, this action will reduce the length of time that offshore operators will have to make numerous haulages by sea and land, thereby decreasing the amount of pollutants that could be added to water and land and consequently, saving scarce land for much needed disposal sites for future generations.

ANY IRREVERSILE ENVIRONMENTAL CHANGES THAT WOULD BE INVOLVED IF THE PROPOSED ACTION SHOULD BE IMPLEMENTED

Under the proposed action, minor modification of the seafloor topography might occur which could be the only irreversible physical change and is considered to be of minor consequence since the volume of cuttings and area involved is small.

These minor modifications are short-term effects that will be further modified by natural erosional, depositional, and biological processes until they come into equilibrium with the surrounding area.

WATER QUALITY ASPECTS

The California Regional Water Quality Control Board's established rules and regulations will be adhered to at all times in regards to the procedures and permit securement by offshore operators (see Aminoil's CRWQCB permit attached). This compliance will include, but not be limited to, the proper discharge of waste materials such as drilling mud and cuttings that contain substances that are toxic to

life and chemical which shall be disposed of onshore in a dumping area in conformance with local regulatory requirements.

As indicated earlier in this statement, existing laws and regulations guarantee that this activity will result in no significant degradation of water quality. Enforcement and surveillance of offshore disposal of waste materials are an integral part of the Regional Water Pollution Control Board's responsibilities.

No fluids or materials of any sort are expected to reach the shorezone. All fluids other than drilling muds will be handled in accordance with all Federal and State rules and regulations for the prevention of degradation of water quality hauled ashore for disposal at designated sites.

THE GROWTH-INDUCED IMPACT OF THE PROPOSED ACTION

There will be no apparent growth-inducing impact due to the implementation of the proposed action since existing facilities will be used and less manpower, and less equipment will be needed.

ECONOMIC AND SOCIAL FACTOR

There will be no major apparent, present or future, social effect caused by implementation of the proposed action.

No increase in the immediate population or support facilities is anticipated at this time. Therefore, this impact is negligible.

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