

**Final National Pollutant Discharge Elimination System (NPDES)
General Permit No. GMG460000
For Offshore Oil and Gas Activities in the Eastern Gulf of Mexico
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Authorization To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq.), operators of offshore oil and gas facilities in lease blocks located in Outer Continental Shelf (OCS) Federal waters in the eastern portion of the Gulf of Mexico seaward of 200 meters in the Eastern Planning Area and in a part of the Central Planning Area with existing source or new source discharges originating from exploration or development and production operations are authorized to discharge to receiving waters in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, IV and V, and appendices thereof.

Operators of operating facilities within the National Pollutant Discharge Elimination System (NPDES) general permit coverage area must submit written notification to the Regional Administrator, prior to discharge, that they intend to be covered by either the existing or new source provisions of the general permit (See Part I.A.3). Upon receipt of notification of inclusion by the Regional Administrator Environmental Protection Agency (EPA), Region 4, owners or operators requesting coverage are authorized to discharge under the general permit. Operators of facilities within the general permit coverage area who fail to notify the Regional Administrator of intent to be covered by this general permit are not authorized under the general permit to discharge pollutants from their potential new or existing source facilities.

This permit does not apply to non-operational facilities, planned facilities or planned wells i.e., those on which no production or no discharge has taken place in two (2) years prior to the effective date of this general permit. EPA will not accept Notices of Intent (NOIs) for such facilities, and the general permit will not cover such facilities. Non-operational facilities, planned facilities or planned wells will lose general permit coverage on the effective date of this new general permit.

This permit shall become effective at midnight, Eastern Standard Time, on January 1, 2005.

Coverage under the previous general permit issued on October 16, 1998, and modified on March 14, 2001, shall terminate on the effective of this permit, unless the owner/operator submitted an NOI to be covered under the previous administratively continued general permit prior to October 31, 2003, or an application for an individual permit. Continued coverage under the previous NPDES general permit will cease for operators 30 days after the effective date of this permit. Therefore, such operators must submit a new NOI to be covered under this general permit within 30 days after the effective date of this permit. If a permit application for an individual permit is filed, the coverage under the previous general permit terminates when a final action is taken on the application for an individual permit.

This permit and the authorization to discharge shall expire midnight, Eastern Standard Time on December 31, 2009.

Signed this ninth day of December, 2004.

James D. Giattina,
Director, Water Management Division
U.S. EPA, Region 4.

Part I. Requirements for NPDES Permits

A. Permit Applicability and Coverage Conditions

1. Operations Covered

This permit establishes effluent limitations, prohibitions, reporting requirements, and other conditions for discharges from oil and gas facilities engaged in production, field exploration, drilling, well completion, and well treatment operations from potential new sources and existing sources.

The permit coverage area includes Federal waters in the Gulf of Mexico seaward of the 200 meter water depth for offshore Alabama and Florida in the Eastern Planning Area, and seaward of the outer boundary of the territorial seas for offshore Mississippi and Alabama in the Mobile and Visoca Knoll lease blocks in the Central Planning Area. This permit is available to facilities located in, and discharging to, the Federal waters listed above and does not authorize discharges from facilities in or discharging to the territorial sea (within three miles of shore) of the Gulf coastal states or from facilities defined as "coastal" or "onshore" (see 40 C.F.R. Part 435, subparts C and D at internet address: www.epa.gov/epacfr40/chapt-I.info).

2. Operations Excluded

Any operator who seeks to discharge drill fluids, drill cuttings or produced water within 1000 meters of an Area of Biological Concern (ABC) or within 1000 meters of a Federally Designated Dredged Material Disposal Site is ineligible for coverage under this general permit and must apply for an individual permit. Any leases which are currently under moratorium are excluded from inclusion under this general permit.

Permit coverage will not be extended to non-operational facilities, planned facilities or planned wells, i.e., those on which no production and no discharges have taken place

in the two years prior to the effective date of this general permit, until such time that documentation is submitted to EPA that the Minerals Management Service (MMS) had previously granted approval of an Exploration Plan (EP), Development Operational Coordination Document (DOCD) or Development Production Plan (DPP) or submittal of a new MMS-approved EP, DPP or DOCD.

3. General Permit Applicability

In accordance with 40 C.F.R. §§ 122.28(b)(3) and 122.28(c), the Regional Administrator may require any person authorized by this permit to apply for and obtain an individual NPDES permit when:

- a. The discharge(s) is a significant contributor of pollution;
- b. The discharger is not in compliance with the conditions of this permit;
- c. A change has occurred in the availability of the demonstrated technology or practices for the control or abatement of pollutants applicable to the point sources;
- d. Effluent limitation guidelines are promulgated for point sources covered by this permit, which were not already subject to an effluent guideline;
- e. A Water Quality Management Plan containing requirements applicable to such point source is approved;
- f. It is determined that the facility is located in an Area of Biological Concern;
- g. Circumstances have changed since the time of the request to be covered so that the discharge is no longer appropriately controlled under the general permit, or either a temporary or permanent reductions or elimination of the authorized discharge is necessary;
- h. Other relevant factors (i.e., permittee was in non-compliance status with an individual NPDES permit for offshore oil and gas operations).

The Regional Administrator may require any operator authorized by this permit to apply for an individual NPDES permit only if the operator has been notified in writing that an individual permit is required.

Any operator authorized by this permit may request to be excluded from the coverage of this general permit at any time by applying for an individual permit. Such operator shall submit an application to the Regional Administrator. When an individual NPDES permit is issued to an operator otherwise subject to this permit, the applicability of this permit to the owner or operator is automatically terminated on the effective date of the individual permit.

A source excluded from coverage under this general permit solely because it already has an individual permit may request that its individual permit be revoked, and that it be considered for coverage by this general permit. Revocation of the individual permit will occur upon approval of coverage (see Part I.A.4, below) under this permit.

4. Notification Requirements (Existing Sources and New Sources)

A written Notice of Intent (NOI) requesting coverage in accordance with the general permit requirements shall state whether the permittee is requesting coverage under the requirements for an existing source or requirements for new source, as well as the following information:

- a. the legal name and address of the owner or operator;
 - b. the facility name, Offshore Continental Shelf (OCS) number location, including the lease block assigned by the Minerals Management Service (MMS), or if none, the name commonly assigned to the lease area;
 - c. the number and type of facilities and activities proposed within the lease block;
 - d. a map with longitude and latitude of the facility location and of the expected discharges identified by the nomenclature used in Part I.B.1 - 11.
- Additional information may be requested by the Director regarding miscellaneous discharges;

- e. the date on which the owner/operator commenced/will commence on-site construction, including;
- i). any placement assembly or installation of facilities or equipment; or
 - ii). the clearing or removal of existing structures or facilities.
- f. the date on which the facility plans to commence exploration activities at the site, if applicable;
- g. the date on which the owner/operator entered into a binding contract for the purchase of facilities or equipment intended to be used in its operation within a reasonable time (if applicable);
- h. the date on which the owner/operator plans to commence development;
- i. the date on which the owner/operator plans to commence production;
- j. technical information on the characteristics of the sea bottom in accordance with MMS Notice to Lessees (NTL) no. 98-20, *Shallow Hazard Requirements*, or the most current MMS guidelines for shallow hazard investigation and analysis within 1000 meters of the discharge point.
- k. For facilities in less than 100 meters water depth in the Central Planning Area, permittee's must submit a Live-Bottom survey using either digital high-resolution acoustic data (sidescan sonar) or photodocumentation. The acoustic data may be either new data acquired for this purpose or data obtained by the permittee for lease or site-specific surveys in compliance with Minerals Management Service requirements, as per NTL No. 2003-G17 *Information Requirements for Exploration Plans and Development Operations Coordination Documents*, Appendix C. Digital (or digitized analog data) sidescan sonar data obtained by survey methods described in NTL No. 98-20 *Shallow Hazards Requirements*, if sufficient, may be used as the source of acoustic data for preparation of a live-bottom survey report.

EPA will consider all natural or artificial hard structure detected by acoustic data to be live-bottom unless other data (i.e. video, still photographs, diver visual etc.) determines otherwise. Permittees choosing to continue providing photodocumentation will continue to conduct such surveys, as per NTL No. 2004-G05, attachment 7. Final siting of proposed outfalls must be no further than 500 meters from the proposed surface location. See Part I.D.6 for specific permit requirements pertaining to preparation of reports using high resolution acoustical data;

l. the type of drilling fluids to be used (e.g., water-based and/or synthetic-based);

m. a copy of MMS's authorization/Notice to Drill Permit (e.g, a copy of an MMS signed and approved Application for Permit to Drill (APD) will meet this requirement);

n. information on any toxic compounds not previously approved by EPA-Headquarters. See Part I.C.6;

o. For facilities installed after March 4, 1993, the NOI must also identify that the facility is a new source and state the date on which the facility's protection from more stringent new source performance standards or technology-based limitations ends. That date is the soonest of ten years from the date that construction is completed, ten years from the date the source begins to discharge process or non-construction related wastewater, or the end of the period of depreciation or amortization of the facility for the purposes of Section 167 or 169 (or both) of the Internal Revenue Code of 1954;

- p. the general permit coverage number for the previous general permit (GMG280000) and/or the individual NPDES permit number of any individual permit issued by EPA Region 4 for this activity;
- q. For production platforms, indicate the estimated distance (in meters) from the platform to the nearest Federally Designated Dredged Material Ocean Disposal Site;
- r. Has EPA-Region 4 identified any permit violations or under the previous Region 4 General Permit (NPDES No. GMG280000 issued October 16, 1998)? Yes or No; and
- s. Has EPA-Region 4 identified any permit violations under a previous individual NPDES permit for offshore oil and gas operations in Region 4? Yes or No.

Operators with coverage under the previous general permit that was administratively continued (i.e., a request for continued coverage was received prior to October 31, 2003) must submit a new NOI to be covered under this permit no later than 30 days from the effective date of this permit. All facility owners for newly acquired leases must submit a written NOI prior to the date of discharge and no later than 14 days prior to the expiration date of this permit. All NOIs shall be signed in accordance with 40 C.F.R. § 122.22.

The effective date of coverage will be the postmarked date of the NOI, or if the postmarked date is illegible, the effective date of coverage will be two days prior to the receipt date of the NOI. EPA will notify the applicant within 21 days of the receipt date regarding the new permit coverage number(s) and effective date of permit coverage. If an NOI is determined to be incomplete, EPA will notify the applicant within 21 days of receipt of the NOI regarding any discrepancies, and/or possible termination of coverage.

5. Operational Facilities

a. Change in designation from existing source to new source

Operators obtaining coverage under the existing source general permit for exploration activities (existing source) must send a new NOI for coverage of development and production activities as new source 14 days prior to commencing such operations. All NOIs requesting coverage should be sent by certified mail to: Director, Water Management Division, U.S. EPA-Region 4, Sam Nunn Federal Center, 61 Forsyth Street, S.W., Atlanta, GA 30303-8960.

b. “No Activity” Notification

For any drilling activity for which no discharge is occurring, the operator shall submit a “No Activity” list each calendar quarter along with the quarterly submittal of the Discharge Monitoring Report (DMR). The No Activity list shall include:

- (i) the NPDES general permit coverage number assigned to the facility,
- (ii) the lease block designation and,
- (iii) a certification statement signed in accordance with Part II.D.12. of this permit.

All NOIs, No Activity lists, and any subsequent reports required under this permit shall contain a signed certification statement (see Part II.D.12) and shall be sent by certified mail to the address given above.

6. Non-Operational Facilities

Non-operational facilities, planned facilities or planned wells are only eligible for coverage under this general permit after documentation has been submitted to EPA showing that MMS had previously approved an EP, DOCD or DPP, or a new EP, DOCD or DPP is submitted to EPA.

7. Termination of Operations

Lease block operators shall notify the Director (at the address above) within 60 days after the permanent termination of discharges from their facility.

8. Intent to be Covered by a Subsequently Issued Permit

This permit shall expire on December 31, 2009. An NOI requesting subsequent coverage under the reissuance of a subsequent general permit must be submitted no later than the expiration date this permit. (NOTE: Due to this being a general permit, this stipulation supersedes the 180-day time frame in Part II.D.11). If reissuance of this general permit does not occur before its expiration date and the permittee has submitted a timely and complete NOI, continued coverage under this permit will be allowed until the effective date of the reissued general permit. If the permittee is notified by EPA of the need to submit application forms for an individual permit and a timely and complete NOI was submitted, continued coverage under this general permit will be allowed until the effective date of the individual permit issued to the applicable facility. If the initial NOI(s) requesting coverage under this permit was submitted one (1) year prior to the expiration date of this permit and the information is still current, in lieu of providing the NOI information required in Part I.A.4, the permittee may submit a list of facilities covered by the general permit, their associated permit coverage numbers, and the date the NOIs were submitted. Permittees that fail to notify the Director, during the term of this permit, of their intent to be covered by a subsequently issued permit cannot obtain continued authorization to discharge after the expiration date of this permit and will be operating without NPDES permit coverage until they apply for and obtain coverage under the subsequently issued general permit or apply for, and receive, an effective individual NPDES permit. All NOIs requesting coverage under a subsequently issued general permit should be sent by certified mail to: Director, Water Management

Division, U.S. EPA-Region 4, Sam Nunn Federal Center, 61 Forsyth Street, S.W.,
Atlanta, GA 30303-8960.

9. Transfer of General Permit Coverage

This permit is not transferable to any entity except after written notice to the Director and subsequent written approval by the Director. The request for transfer shall include the permit coverage number, the OSC (Offshore Continental Shelf) number and lease block name, the name of the existing permittee, name of the operator the coverage is being transferred to, and the projected date the transfer is to become effective. The request must be contain a certification statement (see Part II.D.12.d.) and be signed and dated by officials from each operating facility. The Director may require modification or revocation and reissuance of the permit coverage to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act. (The transfer of permit coverage requirements in this section supercede the “Transfer of Ownership of Control” requirements setforth in Part II.D.3 of this permit.)

B. Effluent Limitations and Monitoring Requirements for New and Existing Sources

The following limitations and monitoring requirements are summarized in Part V, Table 1 of this permit.

1. Drilling Fluids

a. Prohibitions

- i. Non-Aqueous Based Drilling Fluids (NAFs) [including Synthetic-Based Drilling Fluids (SBFs)]. There shall be no discharge of NAFs, except that which adheres to cuttings, or which are considered de

minimus discharges (see Part I.D.1) or as small volume discharges (see Part I.D.2).

Exception - NAFs may be used as a carrier fluids (e.g., transporter fluid), lubricity additive or pill in water-based drilling fluids, and may be discharged with those drilling fluids provided the discharge continues to meet the no Free Oil limit, the 96-hour LC₅₀ toxicity limits, and the pill is removed prior to discharge.

ii. Oil-Based Drilling Fluids. There shall be no discharge of oil-based drilling fluids and inverse emulsion drilling fluids.

iii. Oil-Contaminated Drilling Fluids. There shall be no discharge of drilling fluids to which waste engine oil, cooling oil, gear oil or any lubricants which have been previously used for purposes other than borehole lubrication have been added.

iv. Diesel Oil. There shall be no discharge of drilling fluids to which any diesel oil has been added as a lubricant or pill.

v. No Discharge Near Areas of Biological Concern. Unless otherwise authorized by the Director, there shall be no discharge of drilling fluids and cuttings from those facilities within 1000 meters of an Area of Biological Concern.

vi. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites. Unless otherwise authorized by the Director, there shall

be no discharge of any drilling fluids, drill cuttings or wastewaters from those facilities within 1000 meters of a Federally Designated Dredged Material Ocean Disposal Site. See 40 C.F.R. § 228.15(f) for a list of sites covered by this general permit.

b. Limitations

i. Mineral Oil. Mineral oil may be used only as a carrier fluid (e.g., transporter fluid), lubricity additive, or pill. If mineral oil is added to a water-based drilling fluid, the drilling fluid may not be discharged, unless the 96-hr LC₅₀ of the drilling fluid is greater than 30,000 ppm (3% by volume) using the Suspended Particulate Phase (SPP) Toxicity Test and the sample passes the static sheen test for Free Oil. The analytical methods for the SPP Toxicity Test and Free Oil are contained in Part I.B.1(b)(3) and (4) below. Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters.

ii. Cadmium and Mercury in Barite. There shall be no discharge of drilling fluids to which barite has been added if such barite contains mercury in excess of 1.0 mg/kg (dry weight) or cadmium in excess of 3.0 mg/kg (dry weight). The permittee shall analyze a representative sample of each supply of stock barite prior to drilling each well and submit the results for total mercury and cadmium on the Discharge Monitoring Report (DMR). If more than one well is being drilled at a site, new analyses are not required for subsequent wells, provided that no new supplies of barite have been received since the previous analysis. In this case, the results of the previous analysis should be used for completion of the DMR. Alternatively, the permittee may provide

certification, as documented by the supplier(s), that the barite being used on the well will meet the above limits. The concentration of the mercury and cadmium in the barite shall be reported on the DMR as documented by the supplier. Analyses for cadmium shall be conducted by EPA methods 200.7, 200.8 or EPA method 3050 B followed by 6010 B (EPA SW 846), and results expressed in mg/kg (dry weight) of stock barite. Analysis for mercury shall be conducted using method 245.5 or EPA method 7471 A (EPA SW 846), and expressed as mg/kg (dry weight) of stock barite.

iii. Toxicity. Discharged water-based drilling fluids shall meet both a daily minimum and a monthly average minimum effluent toxicity limitation of 30,000 ppm (3.0% by volume), using a volumetric mud-to-water ratio of 1 to 9. The analytical method is cited in 40 C.F.R. Part 435, Appendix 2 of subpart A, entitled, "Drilling Fluid Toxicity Test." Monitoring shall be performed at least once per month by grab sample taken from beneath the shale shaker for both the daily minimum and the monthly average minimum. In addition, an end-of-well sample is required (see definitions). The lowest daily minimum and lowest monthly average for the quarter must be reported on the quarterly DMRs. Copies of the summary sheets for laboratory reports must also be submitted with the DMRs. If a failure occurs, the facility must submit the entire laboratory report with the DMR. Samples for this parameter must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters.

iv. Free Oil. There shall be no discharge of drilling fluids that fail the static sheen test. Monitoring shall be performed once per week using the

static sheen test method in accordance with the method provided in Part V.A.3, as published in 40 C.F.R. Part 435, Appendix 1 of subpart A. The results of each sheen test must be recorded and the number of observations of a sheen must be reported on the quarterly DMR.

v. Maximum Hourly Discharge Rate. The maximum discharge rate (water-based drilling fluids) shall not exceed 1,000 barrels per hour. The maximum hourly discharge rate for each month must be recorded. The highest hourly discharge rate for the quarter must be reported on the quarterly DMR in barrels/hour.

Exception - The Maximum Hourly Discharge shall not apply to Water-Based Drilling Fluids discharged prior to the installation of the marine riser.

c. Monitoring Only Requirements

In addition to the above limitations, the following monitoring and reporting requirements also apply to drilling fluids discharges.

i. Drilling Fluids Inventory. The permittee shall maintain a precise chemical inventory and usage record of all constituents and their total volume, and mass added for each well. Information shall be recorded and retained on site for no less than the term of this permit.

ii. Volume. The total monthly volume (bbl/month) of bulk discharged drilling fluids must be estimated and recorded. The highest monthly volume (in bbl/month) during the quarter and the average volume for the quarter (in bbl/quarter) shall be reported on the quarterly DMR.

2. Drill Cuttings

The permit prohibitions and limitations that apply to drilling fluids also apply to fluids that adhere to drill cuttings. Any permit condition that applies to the drilling fluid system, also applies to cuttings discharges. Monitoring requirements, however, may not be the same.

a. Prohibitions

i. Cuttings from Oil-Based Drilling Fluids. The discharge of cuttings is prohibited when they are generated while using an oil-based or invert emulsion mud.

ii. Cuttings from Oil Contaminated Drilling Fluids. There shall be no discharge of cuttings that are generated using drilling fluids that contain waste engine oil, cooling oil, gear oil or any lubricants which have been previously used for purposes other than borehole lubrication.

iii. Cuttings Generated Using Drilling Fluids Which Contain Diesel Oil. There shall be no discharge of drill cuttings generated using drilling fluids to which any diesel oil has been added as a lubricant.

iv. Cuttings Generated Using Mineral Oil. The discharge of cuttings generated using drilling fluids which contain mineral oil is prohibited except when the mineral oil is used as a carrier fluid (e.g., transporter fluid), lubricity additive, or pill.

v. No Discharge Near Areas of Biological Concern. There shall be no discharge of drill cuttings from those facilities within 1000 meters (or as determined by the Director) of an Area of Biological Concern.

vi. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites. There shall be no discharge of any drilling fluids, drill cuttings or wastewaters from those facilities within 1000 meters (or as determined by the Director) of a Federally Designated Dredged Material Ocean Disposal Site. See 40 C.F.R. § 228.15(f) for a list of sites in the general permitting area.

vii. Cuttings Generated Using Synthetic-Based Drilling Fluid. There shall be no discharge of non-aqueous based drilling fluid, except that which adheres to cuttings, de minimus discharges (see Part I.D.1) and small volume discharges (see Part I.D.2).

Exception - NAFs may be used as a carrier fluid (e.g., transporter fluid), lubricity additive or pill in water-based drilling fluids and discharged with those drilling fluids provided the discharge continues to meet the no Free Oil and 96-hour LC₅₀ toxicity limits, and a pill is removed prior to discharge.

b. Limitations

i. Mineral Oil. There shall be no discharge of mineral oil.

Exception - Cuttings from a water-based mud system may be discharged when mineral oil pills or mineral oil lubricity additives have been introduced if they meet the limitations below for aquatic toxicity and Free Oil.

ii Free Oil. No Free Oil shall be discharged. Monitoring shall be performed on cuttings discharges once per week using the static sheen test method in accordance with the method provided in Part V.A.3. Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. There shall be no discharge of cuttings that fail the static sheen test. The results of each sheen test must be recorded and the number of observations of a static sheen must be reported on the quarterly DMR.

iii. Suspended Particulate Phase Toxicity. Discharged cuttings shall meet both a daily minimum and a monthly average minimum effluent toxicity limitation of at least 30,000 ppm (3.0 % by volume), using a volumetric mud-to-water ratio of 1 to 9. The analytical method is cited in 40 C.F.R. Part 435, Appendix 2 of subpart A, entitled, "Drilling Fluid Toxicity Test." Monitoring shall be performed at least once per month by taking a grab sample from beneath the shale shaker for both the daily minimum and the monthly average minimum limits. The toxicity test may be satisfied by the same sample used for the drilling fluid. In addition, an end-of-well sample is required. The lowest daily minimum value for the quarter as well as the lowest monthly average test result must be reported on the quarterly DMRs. Copies of the summary sheets for laboratory reports also must be submitted with the DMRs. If a failure occurs, the facility must submit the entire laboratory report with the DMR.

c. Discharge Limitations Applicable to Synthetic-Based Drill Cuttings

All the limits for drill cuttings in Part I.B.2.(b), above apply to synthetic-based drill cuttings.

i. Formation Oil. There shall be no discharge of formation oil.

Monitoring of the drilling fluids shall be performed, as follows:

(1). Once prior to drilling using the gas chromatography/mass spectrometry test (GC/MS) method specified in Appendix 5 of 40 C.F.R. Part 435, subpart A. Alternatively, the permittee may provide certification, as documented by the supplier(s) that the drilling fluid being used on the well contains no formation oil as determined using the GC/MS method in Appendix 5 of 40 C.F.R. Part 435, subpart A.

(2). Once per week during drilling using the Reverse Phase Extraction test method specified in Appendix 6 of 40 C.F.R. Part 435, subpart A. If an operator wishes to confirm the results of the RPE method, the GC/MS method, and results of this method shall supercede the results of the RPE method. Alternatively, the operator may use the GC/MS method instead of the RPE method.

All test results shall be reported on the quarterly DMR.

ii. Drilling Fluid Sediment Toxicity Ratio. The sediment toxicity test ratio shall not exceed 1.0 and shall be calculated based on the following:

$$\text{Drilling Fluid Sediment Toxicity Ratio} = \frac{\text{4-day LC}_{50} \text{ of C}_{16}\text{-C}_{18} \text{ internal olefin reference drilling fluid}}{\text{4-day LC}_{50} \text{ of drilling fluid removed from the drill cuttings at the solids control equipment}}$$

The approved test method is ASTM method no. E1367-92 (or the most current EPA approved method) and monitoring for this parameter shall be once per month per well. Samples shall be collected and analyzed in accordance with the sampling protocol in Part V.12.

iii. Base Fluid Retained on Cuttings. For NAFs that meet the stock limitation of C₁₆-C₁₈ internal olefin, the maximum weighted mass ratio

averaged over all non-aqueous-based drilling fluid well sections shall not exceed 6.9 g NAF per 100 g of wet drill cuttings. For NAFs that meet the stock limitation of C₁₂-C₁₄ esters or C₈ ester, the maximum weighted mass ratio averaged over all NAF well sections shall not exceed 9.4 g non-aqueous-based drilling fluid per 100 g of wet drill cuttings. A default value of 14% of base fluid retained on drill cuttings may be used for determining compliance with the base fluids retained on cutting limit where seafloor discharges are made from dual gradient drilling. In those cases, 15% will be used as a default value for the mass fraction of cuttings discharged at the sea floor. The default values will be averaged with results obtained from daily monitoring to determine compliance with the retention limitations. Monitoring for this parameter shall be once per day by grab sample, or one sample for every 500 feet drilled, up to three samplings per day, using the American Petroleum Institute (API) Retort method specified in 40 C.F.R. Part 435, subpart A of Appendix 7. The weighted mass ratio averaged over all non-aqueous-based drilling fluid well sections shall be reported on the quarterly DMR. The sample for the drilling fluid retained on cuttings shall be taken at the solids control equipment.

d. Base Drilling Fluid Stock Limitations Applicable to Synthetic-Based Drill Cuttings

i. Polynuclear Aromatic Hydrocarbon (PAH) Content. The PAH mass ratio shall not exceed 1×10^{-5} . Monitoring shall be by grab sample taken once per year on each fluid blend using EPA Method 1654A (or the most current version), in conjunction with the following equation:

$$\text{PAH mass ratio} = \frac{\text{mass (g) of PAH (as phenanthrene)}}{\text{mass (g) of stock base fluid}}$$

The PAH ratio shall be reported on the DMR.

ii. Stock Drilling Fluid Sediment Toxicity Ratio. The sediment toxicity ratio shall not exceed 1.0, and shall be calculated as follows:

For NAF base fluid of C₁₆-C₁₈ internal olefin,

$$\text{Sediment Toxicity Ratio} = \frac{\text{10-day LC}_{50} \text{ of C}_{16}\text{-C}_{18} \text{ internal olefin reference fluid}}{\text{10-day LC}_{50} \text{ of stock base fluid}}$$

For NAF base fluids of 100% C₁₂-C₁₄ ester or C₈ ester content,

$$\text{Base Fluid Sediment Toxicity Ratio} = \frac{\text{10-day LC}_{50} \text{ of C}_{12}\text{-C}_{14} \text{ ester or C}_8 \text{ ester reference base fluid}^*}{\text{10-day LC}_{50} \text{ of stock base fluid}}$$

* Chemical Abstract No. 135800-37-2

Monitoring for the parameter shall be performed at least once per year on each fluid blend using the 10-day LC₅₀ sediment toxicity test specified in ASTM E1367-92 (or the most current EPA approved method), and reported on the DMR. Samples shall be collected and analyzed using the sampling protocol in Part V.12.

iii. Biodegradation Rate Ratio. The biodegradation rate ratio of the stock base fluid shall not exceed 1.0, and shall be calculated using the following equation:

For NAF base fluid of C₁₆-C₁₈ internal olefin,

$$\text{Biodegradation Rate Ratio} = \frac{\text{Cumulative gas production (ml) of C}_{16}\text{-C}_{18} \text{ internal olefin reference base fluid at 275 days}}{\text{Cumulative gas production (ml) of stock base fluid at 275 days}}$$

For NAF base fluid of 100% C₁₂-C₁₄ ester or C₈ ester content,

$$\text{Biodegradation Rate Ratio} = \frac{\text{Cumulative gas production (ml) of C}_{12}\text{-C}_{14}\text{ ester or C}_8\text{ ester reference base fluid* at 275 days}}{\text{Cumulative gas production of (ml) of stock base fluid at 275 days}}$$

* Chemical Abstract No. 135800-37-2

Monitoring for the parameter shall be performed at least once per year on each fluid blend using International Standards Organization (ISO) Method 11734:1995 (or the most current EPA approved method) and results reported on the DMR. Samples shall be collected and analyzed using the sampling protocol in Part V.12.

iv. Mercury and Cadmium in Stock Barite. There shall be no discharge of drilling fluids to which barite has been added, if such barite contains mercury in excess of 1.0 mg/kg (dry weight) or cadmium in excess of 3.0 mg/kg (dry weight). The permittee shall analyze a representative sample of each supply of stock barite prior to drilling each well and submit the results for total mercury and total cadmium on the DMR. If more than one well is being drilled at a site, new analyses are not required for subsequent wells, provided that no new supplies of barite have been received since the previous analysis. In this case, the results of the previous analysis should be used for completion of the DMR.

Alternatively, the permittee may provide certification, as documented by the supplier(s), that the barite being used on the well will meet the above limits. The concentration of the mercury and cadmium in the barite shall be reported on the DMR as documented by the supplier. Analyses for cadmium shall be conducted by EPA methods 200.7, 200.8 or EPA method 3050 B followed by 6010 B (EPA SW 846), and results expressed in mg/kg (dry weight) of stock barite. Analysis for mercury shall be

conducted using method 245.5 or EPA method 7471 A (EPA SW 846), and expressed as mg/kg (dry weight) of stock barite.

Exception - Stock limitations are designed to ensure that only base fluids meeting Best Available Technology (BAT) criteria are added to existing drilling fluids. As long as fluids or blends of fluids that are added to a built whole mud meet stock limitations criteria, it is acceptable to mix a base fluid to a built whole mud that differs from that originally used to make that mud. It is also acceptable to mix together two built whole mud systems that contain different base fluids so long as they are themselves built with base fluids that are compliant with the stock limitations. Operators choosing to mix previously compliant fluids, or blends of fluids, must analyze the mixture to show compliance with the limitations for:

- Formation Oil (see Part I.B.2.c.i (1)),
- SPP toxicity (see Part I.B.1.b.iii), and
- Drilling Fluid Sediment Toxicity (see Part I.B.2.c.ii).

All test results shall be submitted with the DMR.

Note: A blend of different non-aqueous base fluids may be considered compliant with the biodegradation ratio limit if the weighted average of the base fluids' biodegradation ratio is less than or equal to that of the reference base fluid tested concurrently.

e. Monitoring Only Requirements

Volume. The monthly total discharge of drill cuttings must be estimated. The estimated highest monthly volume (in bbl/month) for the quarter and the average volume for the quarter (in bbl/quarter) for cuttings discharged shall be reported on the quarterly DMR.

3. Produced Water

a. Prohibitions

i. No Discharge Near Areas of Biological Concern. There shall be no discharge of produced water from those facilities within 1000 meters (or as determined by the Director) of an Area of Biological Concern.

ii. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites. There shall be no discharge of any drilling fluids, drill cuttings or wastewaters from those facilities within 1000 meters (or as determined by the Director) of a Federally Designated Dredged Material Ocean Disposal Site. See 40 C.F.R. § 228.15(f) for a list of sites in the general permitting area.

b. Limitations

i. Oil and Grease. Produced water discharges shall not exceed both a daily maximum limitation of 42.0 mg/l and a monthly average limitation of 29.0 mg/l for oil and grease. A grab sample must be taken at least once per month. The daily maximum samples may be based on the average concentration of four grab samples taken within the 24-hour period. If only one sample is taken for any one month, it must meet both the daily and monthly limits. If more samples are taken, they may exceed the monthly average for any one day, provided that the average of all samples taken meets the monthly limitation. The gravimetric method is specified in 40 C.F.R. Part 136. Samples must be taken at the nearest accessible location after final treatment and prior to combining with any other wastewaters. The highest daily maximum concentration and the highest monthly average concentration shall be reported on the quarterly DMR.

ii. Toxicity. Produced water discharges must meet the limiting permissible concentration (LPC) at the edge of a 100-meter mixing zone. The LPC is defined as the No Observed Effect Concentration (NOEC). The LPC must be equal to, or greater than, the predicted effluent concentration at the edge of a 100-meter mixing zone. Predicted effluent concentrations, referred to as critical dilutions, are presented in Tables 3 and 4 of Appendix B for a range of discharge rates and pipe diameters. The critical dilution shall be determined using Tables 3 and 4 of Appendix B of this permit based on the discharge rate most recently reported on the DMR, discharge pipe diameter, and depth difference between the discharge pipe and the sea bottom. Facilities which have not previously reported produced water flow on the DMR shall use the actual estimated monthly average flow for the first three months of produced water flow for determining the critical dilution from Tables 3 and 4 of Appendix B of this permit. The NOEC shall be calculated by conducting 7-day chronic toxicity tests in accordance with methods published in *Short Term Methods for Estimation Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms* (EPA/821-R-02-014), or most current edition. Testing to determine the NOEC shall be done every two months, beginning the first month after coverage under this general permit. Permittees that were covered under the previous general permit, and that are currently performing toxicity tests every six months, may continue with this frequency under this permit.

Permittees that pass three consecutive produced water toxicity tests will be allowed to reduce to a sampling frequency of once every six months. If at any time, a test result indicates a failed test, the permittee must resume testing at a greater frequency, as set forth in Part V.13, until such time that the facility passes three consecutive tests.

If new well(s) are drilled into a formation currently not producing which contain produced water, the permittee shall perform a new toxicity test on the discharge.

The results for both species shall be reported on the quarterly DMR. See Part V.13 of this permit for Whole Effluent Toxicity Testing Requirements.

Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters.

Exception - Permittees wishing to increase mixing may use a horizontal diffuser, add seawater, or may install multiple discharge ports (e.g., vertical diffuser). Permittees using a horizontal diffuser or multiple discharge ports shall install the system such that the NOEC is greater than or equal to the critical dilution. The projected percent effluent (critical dilution) at the edge of the mixing zone will be calculated using CORMIX2 (for horizontal diffusers) and CORMIX1 (for vertical diffusers), with the following input conditions:

Density Gradient = $0.163 \text{ kg/m}^3/\text{m}$

Ambient seawater density at diffuser depth (or at surface for vertical diffuser) = 1023.0 kg/m^3

Produced water density = 1070.2 kg/m^3

Current speed = 5 cm/sec (<200 m water depth); 15 cm/sec (>200 m water depth)

Permittees shall submit a certification that the diffuser, seawater addition, or multiple discharge ports has been installed and state the critical dilution and corresponding NOEC in the certification. The certification shall be submitted along with the first DMR for produced water discharges to:

Director, Water Management Division, U.S. EPA-Region 4, Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, GA 30303-8960.

All modeling runs shall be retained by the permittee as part of its NPDES records.

Permittees discharging produced water at a rate greater than the flows and pipe diameters covered in Tables 3 and 4 of Appendix B shall determine the critical dilution using the appropriate CORMIX model with the above input parameters. Permittees shall retain the model runs as part of the NPDES records.

Permittees using vertically aligned multiple discharge ports/vertical diffuser shall provide vertical separation between ports which is consistent with Table 5 of Appendix B of this permit. When multiple discharge ports are installed, the depth difference between the discharge port closest to the seafloor and the seafloor shall be the depth difference used to determine the critical dilution from Tables 3 and 4 of Appendix B of this permit. The critical dilution value shall be based on the port flow rate (total flow rate divided by the number of discharge ports) and based on the diameter of the discharge port (or largest discharge port if they are of different styles).

When seawater is added to produced water prior to discharge, the total produced water flow, including the added seawater, shall be used in determining the critical dilution from Tables 3 and 4 of Appendix B. When freshwater is added to produced water prior to discharge, the total produced water flow, including the added freshwater, shall be used in determining the critical dilution from Table 7 of Appendix B.

Permittees wishing to reduce a produced water flow rate and thereby the critical dilution through operational changes must provide to EPA a description of the specific changes that were made and the resultant low rate. The permittee must certify that this flow rate will not be exceeded for the remainder of the DMR period, unless the permittee re-certifies.

c. Monitoring Requirements

Flow. The highest monthly discharge flow rate (in MGD) shall be estimated and reported on the quarterly DMR.

4. Deck Drainage

a. Limitations

Free Oil. No free oil shall be discharged. Monitoring shall be performed on each during daylight hours on the day of discharge using the visual sheen test method in accordance with the method provided at Part V.A.4. There shall be no discharge of deck drainage that fails the visual sheen test. The results of each visual must be recorded and the number of observations of a sheen must be recorded for the quarter reported on the quarterly DMR.

b. Monitoring Only Requirements

Volume. The highest monthly discharge and the highest monthly average discharge for the quarter (in barrels per month) must be estimated and recorded as part of NPDES permit records.

5. Produced Sand

There shall be no discharge of produced sand. Wastes must be hauled to shore for treatment and disposal.

6. Well Treatment Fluids, Completion Fluids, and Workover Fluids

a. Limitations

i. Free Oil. No free oil shall be discharged. Monitoring shall be performed prior to discharge and on each day of discharge using the static sheen test method in accordance with the method provided at Part V.A.3. There shall be no discharge of well treatment, completion, or workover

fluids that fail the static sheen test. Samples must be taken at the nearest accessible location after final treatment and prior to discharge, or prior to combining with any other wastewaters. The results of each sheen test must be recorded and the number of observations of a sheen must be reported for the quarter on the quarterly DMR.

ii. Oil and Grease. Well treatment fluids, completion fluids, and workover fluids discharges must meet both a daily maximum of 42.0 mg/l and a monthly average of 29.0 mg/l limitation for oil and grease. A grab sample must be taken at least once per month when discharging. Samples must be taken at the nearest accessible location after final treatment and prior to discharge, or prior to combining with any other wastewaters. The daily maximum concentration may be based on the average of four grab samples taken within the 24-hour period. If only one sample is taken for any one month, it must meet both the daily and monthly limits. If more samples are taken, they may exceed the monthly average for any one day, provided that the average of all samples taken meets the monthly limitation. The analytical method is the gravimetric method, as specified in 40 C.F.R. Part 136. The highest daily maximum and the highest monthly average for the quarter shall be reported on the quarterly DMR.

iii. Priority Pollutants. For well treatment fluids, completion fluids, and workover fluids, the discharge of priority pollutants is prohibited except in trace amounts. "Trace amounts" shall mean the amount equal to or less than the most sensitive method detection limit listed in 40 CFR Part 136 for the applicable parameter. Information on the specific chemical composition of any additives containing priority pollutants shall be recorded and retained on site for no less than five years.

Note: If materials added downhole as well treatment, completion, or workover fluids contain no priority pollutants as determined by 40 CFR Part 136, the discharge is assumed not to contain priority pollutants, except possibly in trace amounts.

b. Monitoring Requirements

Volume. The highest monthly total discharge and the quarterly average discharge must be estimated and reported on the quarterly DMR in barrels per month.

7. Sanitary Waste (Facilities Continuously Manned by 10 or More Persons)

a. Prohibitions

Solids. There shall be no discharge of floating solids. Observations must be made once per day, during daylight in the vicinity of sanitary waste outfalls, and at the time during maximum estimated discharge. The number of days solids are observed during the quarter shall be recorded on the quarterly DMR.

b. Limitations

Total Residual Chlorine. Discharges of sanitary waste must contain a minimum of 1.0 mg residual chlorine per liter and shall be maintained as close to this concentration as possible at all times. A grab sample must be taken once per month and the minimum and average concentrations for the quarter shall be reported on the quarterly DMR. The approved analytical methods are Hach CN-66-DPD or the EPA method specified in 40 C.F.R. Part 136 for Total Residual Chlorine. Samples must be taken at the nearest accessible location prior to discharge and after final treatment.

Exception - Any facility which properly maintains a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed in compliance with permit limitations for sanitary waste. The MSD shall be tested annually for proper operation and the

test results maintained at the facility. The operator shall indicate use of an MSD on the quarterly DMR.

c. Monitoring Only Requirements

Flow. The highest monthly and average quarterly flows (in MGD) must be estimated recorded on the quarterly DMR

8. Sanitary Waste (Facilities Continuously Manned by 9 or Fewer Persons or Intermittently by Any Number)

Prohibition. There shall be no discharge of floating solids. An observation must be made once per day when the facility is manned, during daylight in the vicinity of sanitary waste outfalls, and at a time during maximum estimated discharge.

The number of days solids are observed shall be recorded.

Exception - Any facility which properly maintains an MSD that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed in compliance with permit limitations for sanitary waste. The MSD shall be tested annually for proper operation and the test results maintained at the facility. The operator shall indicate use of an MSD on the quarterly DMR.

9. Domestic Waste

a. Prohibitions

Solids. There shall be no discharge of floating solids.

b. Limitations

Solids. See Part I.C.4 - Rubbish, Trash and Other Refuse

c. Monitoring Only Requirements

Solids. An observation must be made during daylight in the vicinity of domestic waste outfalls, and at a time during maximum estimated discharge. The number of days solids are observed must be recorded and reported on the quarterly DMR.

10. Miscellaneous Discharges

The following miscellaneous discharges are authorized for discharge:

Desalination Unit Discharge; Blowout Preventer Fluid; Uncontaminated Ballast Water; Uncontaminated Bilge Water; Mud, Cuttings, and Cement at the Seafloor; Uncontaminated Seawater; Uncontaminated Freshwater; Boiler Blowdown; Source Water and Sand; Diatomaceous Earth Filter Media; Subsea Wellhead Preservation Fluids; Subsea Production Control Fluids; Umbilical Steel Tube Storage Fluid; Leak Tracer Fluid, Riser Tensioner Fluid, Well Test Fluids, and Bulk Transfer Operations Wastewaters, Excess Cement Slurry and Cement Equipment Washdown.

Additional miscellaneous discharges associated with subsea operations may be discharged based on the requirements set forth in Parts I.C.6 and V.13 of this permit.

a. Prohibitions. Discharges of waste streams not mentioned above, including contaminated freshwater, contaminated seawater, contaminated bilge water and contaminated ballast water, are prohibited. (“Contaminated” refers to wastewater that has failed a Visual Sheen Test.)

b. Limitations

Free Oil. There shall be no discharge of Free Oil. Monitoring shall be performed using the visual sheen test method once per week when discharging on the surface of the receiving water, or by use of the static sheen method. Tests shall be conducted in accordance with the methods contained in Part V.A.3 and V.A.4. Discharges are limited to those times that a visual sheen observation is possible. If the static sheen test is used, samples must be taken at the nearest accessible location after final treatment and prior to discharge, or combination with any other wastewaters. The number of days a sheen is observed must be recorded and reported on the quarterly DMR.

Exception - Miscellaneous discharges may be discharged from platforms that are on automatic purge systems without monitoring for Free Oil when the facility is not manned. Discharges are not restricted to periods when

observation is possible; however, the static sheen test method must be used during periods when observation of a sheen is not possible, such as at night or during inclement conditions. The static sheen testing is not required for miscellaneous discharges occurring at the sea floor.

11. Miscellaneous Discharges of Freshwater and Seawater In Which Treatment Chemicals Have Been Added, including, but not limited to: 1) excess seawater which permits the continuous operation of fire control and utility lift pumps, 2) excess seawater from pressure maintenance and secondary recovery projects, 3) water released during training of personnel in fire protection, 4) seawater used to pressure test new and existing piping and pipelines, 5) ballast water, 6) water flooding discharges and, 7) once through non-contact cooling water.

a. Limitations

Free Oil. There shall be no discharge of free oil. Monitoring shall be performed using the visual sheen test method once per day when discharging on the surface of the receiving water or by use of the static sheen method at the operator's option. Both tests shall be conducted in accordance with the methods contained in Part V.A.3 and V.A.4. Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. Discharges are limited to those times that a visual sheen observation is possible. The number of days a sheen is observed must be recorded and reported on the quarterly DMR.

Exception - Miscellaneous discharges may be discharged from platforms that are on automatic purge systems without monitoring for free oil when the facility is not manned. Discharges are not restricted to periods when observation is possible; however, the static sheen test method must be used during periods when observation of a sheen is not possible, such as a night or

during inclement conditions. The static sheen testing is not required for miscellaneous discharges occurring at the sea floor.

b. Treatment Chemicals. The concentration of treatment chemicals in discharged chemically treated freshwater and seawater shall not exceed the most stringent of the following three constraints:

- i. the maximum concentrations and any other conditions specified in the EPA product registration labeling if the chemical is an EPA registered product,
- ii. the maximum manufacturer's recommended concentration, or
- iii. 500 mg/l of the treatment chemical.

c. Toxicity. The toxicity of discharged freshwater or seawater in which chemicals have been added shall be limited as follows:

The 7-day minimum and monthly average minimum NOEC, must be equal to or greater than the critical dilution concentration specified in this permit in Table 6 for seawater discharges and Table 7 for freshwater discharges.

Critical dilution shall be determined using either Table 6 or 7 of this permit in conjunction with (1) the discharge rate, (2) discharge pipe diameter, and (3) the water depth between the discharge pipe and bottom. The monthly average minimum NOEC value is defined as the arithmetic average of all 7-day minimum NOEC values determined during the month. Compliance with the toxicity limitation shall be demonstrated by conducting 7-day chronic toxicity tests, using *Mysidopsis bahia* (*Americamysis bahia* (Mysid shrimp)) and *Menidia beryllina* (Inland silverside minnow). The 7-day chronic toxicity test method is published in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821-R-02-014), or the most current edition. The results for both species and the critical dilution shall be reported on the quarterly DMR. The operator shall also submit a copy of the summary sheets for all laboratory reports with

the DMR. See Part V.13 of this permit for Whole Effluent Toxicity testing requirements.

The required frequency of toxicity testing for **continuous** discharges shall be determined as follows:

<u>Discharge Rate</u>	<u>Toxicity Testing Frequency</u>
0 - 499 bbl/day	once per year
500 - 4,599 bbl/day	once per quarter
Greater than 4,599 bbl/day	once per month

Toxicity testing for intermittent or batch discharges shall be performed at least once per discharge but are required to be monitored no more frequently than the corresponding frequencies specified above for continuous discharges, unless otherwise specified by the Director.

Samples shall be collected after addition of any substances, including seawater that is added prior to discharge and before the flow is split from multiple discharge ports. Samples also shall be representative of the discharge.

Methods to increase dilution also apply to seawater and freshwater discharges which have been chemically treated previously described for produced water in Part I.B.3.

If the permittee has been compliant with the toxicity limit for one 12-month consecutive period for a continuous discharge of chemically treated seawater or freshwater, the required testing frequency may be reduced to once per year for that discharge, after notification from the EPA-Region 4 Water Management Division. If at any time any toxicity test (i.e., for continuous or intermittent discharges) results indicates a failure, the permittee must resume more frequent toxicity testing intervals, in accordance with Part V.13, or as specified by the Director.

d. Monitoring Only Requirements for discharges of chemically treated freshwater and seawater.

Flow. The average flow (in MGD) must be estimated each month and the highest average monthly flow for the quarter shall be recorded on the quarterly DMR.

C. Other Discharge Limitations

1. Floating Solids or Visible Foam

There shall be no discharge of floating solids or visible foam from any source other than in trace amounts.

2. Halogenated Phenol Compounds

There shall be no discharge of halogenated phenol compounds as a part of any waste streams authorized in this permit.

3. Dispersants, Surfactants, and Detergents

The facility operator shall minimize the discharge of dispersants, surfactants, and detergents, except as necessary, to comply with the safety requirements of the Occupational Safety and Health Administration and MMS. This restriction applies to tank cleaning and other operations which do not directly involve the safety of workers. (The restriction is imposed because detergents disperse and emulsify oil, potentially increasing toxic impacts and making the detection of a discharge of free oil more difficult.)

4. Rubbish, Trash, and Other Refuse

There shall be no discharge of any solid material not authorized in the permit.

This permit includes limitations set forth by the U.S. Coast Guard in regulations implementing Annex V of MARPOL 73/78 for domestic waste disposal from all fixed or

floating offshore platforms and associated vessels engaged in exploration of seabed mineral resources (33 C.F.R. 151). These limitations, as specified by Congress (33 U.S.C. 1901, the Act to Prevent Pollution from Ships), apply to all navigable waters of the United States.

This permit prohibits the discharge of "garbage." Comminuted food waste (able to pass through a screen with a mesh size no larger than 25 mm, approximately one inch) may be discharged when 12 nautical miles or more from land. Greywater, drainage from dishwater, shower, laundry, bath, and washbasins are not considered garbage within the meaning of Annex V. Incineration ash and non-plastic clinkers that can pass through a 25-mm mesh screen may be discharged beyond three miles from nearest land. Otherwise, ash and non-plastic clinkers may be discharged beyond 12 nautical miles from nearest land.

5. Areas of Biological Concern

There shall be no discharge of drilling muds, drill cuttings and produced water within 1000 meters (or as determined by the Director) of Areas of Biological Concern.

6. Toxic Compounds Used In Subsea Operations

The permittee shall notify the Director in writing at least 14 days prior to planned use and discharge of any chemical, other than chlorine or other products previously evaluated by EPA-Headquarters Office of Science and Technology, Engineering and Analysis Branch, that is to be used in subsea operations. Such notification shall include:

- a. Name and general composition of the chemical,
- b. Frequencies of use,
- c. Quantities to be used,
- d. Proposed discharge concentrations,
- e. Any acute and chronic toxicity data (Laboratory reports shall be prepared according to Section 12 of EPA document no. EPA/821-R-02-012 entitled,

Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters for Freshwater and Marine Organisms, or the most current edition.)

Discharge of materials subject to this part is prohibited prior to by EPA.

7. Dual Gradient Drilling Discharges

Operators performing dual gradient drilling operations may require seafloor discharges of large cuttings (greater than 1/4") to ensure the proper operation of subsea pumps (e.g., electrical submersible pumps). Operators performing dual gradient drilling operations which lead to seafloor discharges of large cuttings for the proper operation of subsea pumps shall either:

- a. measure the mass percent NAFs retained on cuttings value [% Base Fluid (BF)] and mass NAF-cuttings discharge fraction (X) for seafloor discharges each time a set of retorts is performed,
- b. use the following set of default values, (%BF=14%; X=0.15) or,
- c. use a combination for %BF and measure (X).

Additionally, operators performing dual gradient drilling operations which lead to seafloor discharges of large cuttings for the proper operation of subsea pumps shall also perform the following tasks:

- a. use side scan sonar or shallow seismic to determine the presence of high density chemosynthetic communities. Chemosynthetic communities are assemblages of tube worms, clams, mussels, and bacterial mats that occur at natural hydrocarbon seeps or vents, generally in water depths of 500 meters or deeper. Seafloor discharges of large cuttings for the proper operation of subsea pumps shall not be permitted within 1000 feet of a high density chemosynthetic community;
- b. seafloor discharges of large cuttings for the proper operation of subsea pumps shall be visually monitored and documented by a Remotely Operated Vehicle (ROV) within the tether limit (approximately 300 feet). The visual

monitoring shall be conducted prior to each time the discharge point is relocated (cuttings discharge hose) and conducted along the same direction as the discharge hose position. Near-seabed currents shall be obtained at the time of the visual monitoring and;

c. seafloor discharges of large cuttings for the proper operation of subsea pumps shall be directed within a 150 foot radius of the wellbore.

8. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites

There shall be no discharge of any drilling fluids, drill cuttings or wastewaters from those facilities within 1000 meters (or as determined by the Director) of a Federally Designated Material Ocean Disposal Site. See 40 C.F.R. § 228.15(f) for a list of sites in the general permit coverage area.

9. Un-mixed Chemicals or Products

There shall be no discharge of any chemical or product not already mixed for use in any wastestream. Such unused chemicals or products shall be shipped onshore for final disposal or reuse.

D. Special Conditions

1. De minimus Discharges

De minimus discharges of non-aqueous based drilling fluids not associated with cuttings shall be contained to the extent practicable to prevent damage. Allowable de minimus discharges can include wind blown drilling fluids from the pipe rack and minor drips and splatters around mud handling and solids control equipment. Such de minimus discharges are not likely to be measurable and are not considered in the base fluids retained on cuttings limit.

2. Small Volume Discharges

Small volume drilling fluid discharges which are associated with cuttings, and for which discharge is authorized, include; displaced interfaces, accumulated solids in sand traps, pit clean-out solids, and centrifuge discharges made while changing mud weight. To determine the percent drilling fluids retained on cuttings for those discharges, the permittee may either monitor the discharge using the retort test method, or use a default value of 25% to determine compliance with the limitation.

3. Seabed Survey

Operators who discharge drill cuttings which are generated using non-aqueous based drilling fluids shall conduct seabed surveys at each location where such a discharge occurs. The purpose of the study is to determine the fate, transport and effects of SBFs, and to supplement previous studies regarding the discharge of SBFs from offshore oil and gas drilling locations. Operators are required to develop a Plan of Study, which must be approved by EPA-Region 4 prior to commencement of any monitoring or data gathering and results of the seafloor surveys shall be submitted to EPA- Region 4 with the discharge monitoring report no later than two years after completion of the drilling operations at the site.

At a minimum, the survey must include: the area and thickness of drill cuttings depositions on the seafloor, analysis of the toxicity of the cuttings depositions on the seafloor, analysis of contaminants present in the deposited cuttings, and analysis of the benthic populations present at the site of cuttings deposition. Monitoring shall be conducted twice at each site where drill cuttings generated using non-aqueous based drilling fluids are discharged. The first survey is required to commence within two weeks after completion of drilling operations. A second survey shall be accomplished one year after commencement of the first survey. In addition, both surveys shall be accompanied by sampling of the seafloor benthic populations and analysis for

contaminant at a site which is located near the discharge, but sufficiently far as to be unaffected by the discharged drill cuttings or any drilling fluids retained on the cuttings.

Operators shall also monitor the discharge of drill cuttings while drilling is conducted. This monitoring will include: the dates discharge takes place, the prevailing current during discharge, the volumes and types of drilling fluids retained on cuttings and discharged, the volume of cuttings discharged, and a chemical analysis of drilling fluids used at the facility.

Alternatively, operators required to conduct seafloor surveys under this permit may submit a plan for an equivalent industry-wide seafloor monitoring study to EPA Region 4 for approval. The alternative industry-wide study shall be designed to provide information on discharges of cuttings generated using non-aqueous based drilling fluids at a minimum of eight locations where the discharge occurs. At least three of those discharge locations must be in deep water (greater than 1000 feet). Monitoring shall include the areal extent and thickness of cuttings deposition, the sediment chemistry and mineralogy, and the extent of anoxic effects resulting from cuttings discharges. Sampling conducted in shallow areas shall include extensive biological sampling intended to measure community structural changes relative to cuttings discharges as well as the physical and chemical monitoring performed in deep water. Detailed information regarding the volume and types of drilling fluids and the cuttings discharged shall also be recorded and reported with the results of such a study. If Region 4 approves the equivalent seafloor monitoring study, monitoring conducted under the study shall constitute compliance with the seafloor survey requirements of this permit for those operators who participate. Participants in the current Gulf of Mexico Seabed Survey will be given consideration for meeting this requirement, as opposed to initiating a new study.

Based on results of the study, EPA may reopen the permit to include more stringent effluent limitations for SBFs adhering to drill cuttings.

4. Reference Drilling Fluid Formulation

The reference C₁₆-C₁₈ internal olefin drilling fluids used to determine the drilling fluid sediment toxicity ratio and compliance with the BAT sediment toxicity discharge limitation shall be formulated to meet the specifications in Table 1 of Appendix 8 of 40 C.F.R. Part 435, subpart A.

5. Cooling Water Intake Structure Study

Operators who have cooling water intake structures with a design intake volume greater than, or equal to 5 MGD shall conduct a study to determine technologies or operating procedures to reduce the adverse environmental impact of these structures on aquatic life. Results of the survey shall be submitted to EPA-Region 4 with the discharge monitoring report no later than three years after the effective date of this permit

At a minimum, the study must investigate the impact of reducing impingement and entrainment of aquatic organisms by reducing intake flow.

Alternatively, operators required to conduct a cooling water intake structure study under this permit may submit a plan for an equivalent industry-wide study to EPA Region 4 for approval no later than two years from the effective date of this permit.

6. Preparation of Live-Bottom Survey and Live Bottom Reports Using High Resolution Acoustical Data

Side-scan sonar data in the 100 kHz frequency or 500 kHz frequency if available (use data set providing best image quality) will be used to interpret for the presence of hard structure that could provide potential habitat for marine plant and animal communities. The area included in this interpretation should consist of a rectangular portion of the seabed with the proposed wells in the center. The sides of the rectangle should be at a distance of 1000 meters from the proposed wells. If several wells are proposed throughout the lease block, a separate live-bottom report shall be provided for each.

The live-bottom report shall consist of text and appropriate figures including a brief

description of the lease block, proposed project, location of wells and water depth. The report shall contain a section describing the methods used to acquire sonar data including sonar and positioning equipment, frequencies, range setting, lane spacing and overlap, cable layback and vessel speed.

The report will include a narrative interpretation of the seabed within the survey area and any discrete features based on acoustical reflection of the seabed. The interpretation shall include a description of features, their relative position within the survey area, the dimensions of discrete features and surface area of scattered targets. The report will include a figure consisting of a sonar mosaic of the sonar lane segments comprising the survey area fitted to a standard page. The mosaic figure shall be an original print (no photocopies). The location of seabed features referred to in the text, including any small or large acoustical targets, scattered or individual, should be shown in a separate figure, consisting of a diagram of the survey area and proposed well locations.

The EPA will not accept previously prepared geophysical survey reports for lease blocks in substitution for the live-bottom survey report described. Remote sensing data from other instruments such as echosounders, magnetometers, subbottom profilers and seismic data should not be included in the live-bottom survey report. Reports containing photocopies of acoustical imagery will not be accepted.

Part II. Standard Conditions for NPDES Permits

A. General Conditions

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage

sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

[40 CFR §§ 122.41(a) and 122.41(a)(1)]

2. Penalties for Violations of Permit Conditions

The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$32,500 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation

implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

[40 CFR § 122.41(a)(2)]

Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$11,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$32,500. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$157,500.

[40 CFR § 122.41(a)(3)]

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph 3, and "Upset" Section B, Paragraph 4, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

[40 CFR § 122.41(d)]

5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

[40 CFR § 122.41(f)]

6. Toxic Pollutants

If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant and that standard or prohibition is more stringent than any limitation on the pollutant in the permit, the Director shall institute proceedings under these regulations to modify or revoke and reissue the permit to conform to the toxic effluent standard or prohibition.

[40 CFR § 122.44(b)(1)]

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Effect of a Permit

Except for any toxic effluent standards and prohibitions imposed under section 307 of the CWA and “standards for sewage sludge use or disposal” under 405(d) of the CWA, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with sections 301, 302, 306, 307, 318, 403, and 405 (a)-(b) of the CWA. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in 40 CFR Sections 122.62 and 122.64.

Compliance with a permit condition which implements a particular “standard for sewage sludge use or disposal” shall be an affirmative defense in any enforcement action brought for a violation of that “standard for sewage sludge use or disposal” pursuant to sections 405(e) and 309 of the CWA.

[40 CFR § 122.5(a)]

10. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

[40 CFR § 122.5(b) & 40 CFR § 122.41(g)]

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulation.

[40 CFR § 122.5(c)]

11. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any waters of the United States.

12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[40 CFR § 124.16 paraphrased]

13. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

[40 CFR § 122.41(h)]

B. Operation and Maintenance of Pollution Controls

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a

permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

[40 CFR § 122.41(e)]

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

[40 CFR § 122.41(c)]

3. Bypass of Treatment Facilities

a. Definitions

- (i) “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility.
- (ii) “Severe property damage” means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations.

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c.) and (d.) of this section.

c. Notice

- (i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
 - (ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph 8 (24-hour notice).
- d. Prohibition of bypass
- (i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (3) The permittee submitted notices as required under paragraph (c) of this section.
 - (ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (m)(4)(i) of this section.

[40 CFR § 122.41(m)(1)-(4)]

4. Upsets

a. Definition

“Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (c) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (i) An upset occurred and that the permittee can identify the cause(s) of the upset;
- (ii) The permitted facility was at the time being properly operated; and
- (iii) The permittee submitted notice of the upset as required in Section D, Paragraph 8 (24 hour notice);
- (iv) The permittee complied with any remedial measures required under paragraph (d) of this section.

d. Burden of proof

In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

[40 CFR § 122.41(n)(1)-(4)]

5. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters of the United States unless specifically limited in Part I.

C. Monitoring Records

1. Representative Sampling

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

[40 CFR § 122.41(j)(1)]

All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than $\pm 10\%$ from the true discharge rates throughout the range of expected discharge volumes. Once-through condenser cooling water flow which is monitored by pump logs, or pump hour meters as specified in Part I of this permit and based on the manufacturer's pump curves shall not be subject to this requirement. Guidance in selection, installation, calibration, and operation of

acceptable flow measurement devices can be obtained from the following references. These references are available in from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. (800) 553-6847 or (703) 487-4650.

“A Guide to Methods and Standards for the Measurement of Water Flow,” U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 100 pp. (Order by NTIS No. COM-7510683.)

“Water Measurement Manual,” U.S. Department of Interior, Bureau of Reclamation, Revised Edition, 1984, 343 pp. (Order by NTIS No. PB-85221109.)

“Flow Measurement in Open Channels and Closed Conduits”, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Order by NTIS No. PB-273535.)

“NPDES Compliance Flow Measurement Manual,” U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-77, September 1981, 149 pp. (Order by NTIS No. PB-82131178.)

3. Monitoring Procedures

Monitoring results must be conducted according to test procedures approved under 40 C.F.R. Part 136 or, in the case of sludge use or disposal, approved under 40 C.F.R. Part 136 unless otherwise specified in 40 C.F.R. Part 503, unless other test procedures have been specified in the permit.

[40 CFR § 122.41(j)(4)]

4. Penalties for Tampering

The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two years, or both. If a conviction

of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four years, or both.

[40 CFR § 122.41(j)(5)]

5. Retention of Records

Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

[40 CFR § 122.41(j)(2)]

6. Record Contents

Records of monitoring information shall include:

- a. The date, exact place, and time of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

[40 CFR § 122.41(j)(3)(i)-(vi)]

7. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

[40 CFR § 122.41(i)(1)-(4)]

D. Reporting Requirements

1. Change in Discharge

Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in § 122.29(b);
or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants

which are subject neither to effluent limitations in the permit, nor to notification requirements under Section D, Paragraph 10.

- c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

[40 CFR § 122.41(l)(1)(i)-(iii)]

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

[40 CFR § 122.41(l)(2)]

Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by the Director.

3. Transfer of Ownership of Control

- a. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the CWA.

[40 CFR § 122.41(l)(3)]

b. Automatic transfers. As an alternative to transfers under paragraph (a) of this section, any NPDES permit may be automatically transferred to a new permittee if:

(i) The current permittee notifies the Director at least 30 days in advance of the proposed transfer date in paragraph (b)(2) of this section;

(ii) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

(iii) The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this subparagraph may also be a minor modification under 40 C.F.R. § 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

[40 CFR § 122.61(b)]

4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit. See Part III of the permit.

[40 CFR § 122.41(1)(4)]

Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

[40 CFR § 122.41(1)(4)(i)]

5. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. Part 136 or, in the

case of sludge use or disposal, approved under 40 C.F.R. Part 136 unless otherwise specified in 40 C.F.R. Part 503, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

[40 CFR § 122.41(I)(4)(ii)]

6. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

[40 CFR § 122.41(I)(4)(iii)]

7. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

[40 CFR § 122.41(I)(5)]

Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

8. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a

description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The following shall be included as information which must be reported within 24 hours under this paragraph.

- a. Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 C.F.R. § 122.41(g).
- b. Any upset which exceeds any effluent limitation in the permit.
- c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See 40 C.F.R. § 122.44(g).)

The Director may waive the written report on a case-by-case basis for reports under this section's paragraph if the oral report has been received within 24 hours.

[40 CFR § 122.41(1)(6)]

9. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Section D at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D-8.

[40 CFR § 122.41(1)(7)]

10. Changes in Discharge of Toxic Substances

The following conditions apply to all NPDES permits within the categories specified below:

- a. *Existing manufacturing, commercial, mining, and silvicultural dischargers.* All existing manufacturing, commercial, mining, and

silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

(i) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:

- (1) One hundred micrograms per liter (100 µg/l);
- (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
- (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or

[40 CFR § 122.42(a)(1)(i-iii)]

(ii) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:

- (1) Five hundred micrograms per liter (500 µg/l);
- (2) One milligram per liter (1 mg/l) for antimony;
- (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7).

[40 CFR § 122.42(a)(2)(i-iii)]

b. *Publicly owned treatment works.* All POTWs must provide adequate notice to the Director of the following:

(i) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and

(ii) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(iii) For purposes of this paragraph, adequate notice shall include information on:

(1) the quality and quantity of effluent introduced into the POTW, and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

[40 CFR § 122.42(b)]

11. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

[40 CFR § 122.41(b)]

The application should be submitted at least 180 days before the expiration date of this permit. The Regional Administrator may grant permission to submit an application later than the 180 days in advance, but no later than the permit expiration date.

[40 CFR § 122.21(d) paraphrased]

When EPA is the permit-issuing authority, the conditions of an expired permit continue in force until the effective date of a new permit if the permittee has submitted a timely application which is a complete application for a new permit; and the Regional Administrator, through no fault of the permittee does not issue a new permit with an effective date on or before the expiration date of the previous permit.

[40 CFR § 122.6(a) paraphrased]

Permits continued under this section remain fully effective and enforceable.

[40 CFR § 122.6(b)]

12. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

[40 CFR § 122.41(k)(1)]

- a. *Applications.* All permit applications shall be signed as follows:
 - (i) *For a corporation.* By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or
 - (2) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and

regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

NOTE: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 C.F.R. § 122.22(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under 40 C.F.R. § 122.22(a)(1)(ii) rather than to specific individuals.

(ii) *For a partnership or sole proprietorship.* By a general partner or the proprietor, respectively; or

(iii) *For a municipality, State, Federal, or other public agency.* By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(1) The chief executive officer of the agency, or

(2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

b. All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(i) The authorization is made in writing by a person described in paragraph a. of this section;

(ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,

(iii) The written authorization is submitted to the Director.

- c. *Changes to authorization.* If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph b. of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
- d. *Certification.* Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

[40 CFR § 122.22]

13. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

[40 CFR §§ 124.18 & 122.7 paraphrased]

14. Penalties for Falsification of Reports

The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

[40 CFR § 122.41(k)(2)]

E. Definitions

1. Permit Issuing Authority

The Regional Administrator of EPA Region 4 or his/her designee, unless at some time in the future the State or Indian Tribe receives authority to administer the NPDES program and assumes jurisdiction over the permit; at which time, the Director of the State program receiving the authorization becomes the issuing authority.

The use of the term “Director” in this permit shall apply to the Regional Administrator of EPA, Region 4.

2. Act

"Act" means the CWA (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Law 95-217 and Public Law 95-576, 33 U.S.C. 1251 et seq.

3. Mass/Day Measurements

- a. The “average monthly discharge” is defined as the total mass of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month. It is therefore, an arithmetic mean determined by adding the weights of the pollutant found each day of the month and then dividing this sum by the number of days the tests were reported. This limitation is identified as “Daily Average” or “Monthly Average” in Part I of the permit and the average monthly discharge value is reported in the “Average” column under “Quantity or Loading” on the Discharge Monitoring Report (DMR).
- b. The “average weekly discharge” is defined as the total mass of all daily discharges sampled and/or measured during the calendar week on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such week. It is, therefore, an arithmetic mean determined by adding the weights of pollutants found each day of the week and then dividing this sum by the number of days the tests were reported. This limitation is identified as “Weekly Average” in Part I of the permit and the average weekly discharge value is reported in the “Maximum” column under “Quantity or Loading” on the DMR.
- c. The “maximum daily discharge” is the total mass (weight) of a pollutant discharged during a calendar day. If only one sample is taken during any calendar day the weight of pollutant calculated from it is the "maximum

daily discharge". This limitation is identified as "Daily Maximum," in Part I of the permit and the highest such value recorded during the reporting period is reported in the "Maximum" column under "Quantity or Loading" on the DMR.

- d. The "average annual discharge" is a rolling average equal to the arithmetic mean of the mass measured in all discharges sampled and/or measured during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and each of the previous eleven months. This limitation is defined as "Annual Average" in Part I of the permit and the average annual discharge value is reported in the "Average" column under "Quantity or Loading" on the DMR.

4. Concentration Measurements

- a. The "average monthly concentration", other than for bacterial indicators, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Monthly Average" or "Daily Average" under "Other Limits" in Part I of the permit and the average monthly concentration value is reported under the "Average" column under "Quality or Concentration" on the DMR.

- b. The “average weekly concentration”, other than for bacterial indicators, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar week on which daily discharges are sampled and measured divided by the number of daily discharges sampled and/or measured during such week (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as “Weekly Average” under “Other Limits” in Part I of the permit and the average weekly concentration value is reported under the “Maximum” column under “Quality or Concentration” on the DMR.
- c. The “maximum daily concentration” is the concentration of a pollutant discharged during a calendar day. It is identified as “Daily Maximum” under “Other Units” in Part I of the permit and the highest such value recorded during the reporting period is reported in the “Maximum” column under “Quality or Concentration” on the DMR.
- d. The “average annual concentration”, other than for bacterial indicators, is a rolling average equal to the arithmetic mean of the effluent or influent samples collected during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and the monthly average of each of the previous eleven months. This limitation is identified as “Annual Average” under “Other Limits” in Part I of the permit and the average annual concentration value is reported in the “Average” column under “Quality or Concentration” on the DMR.

5. Other Measurements

- a. The effluent flow expressed as million gallons per day (MGD) is the 24-hour average flow averaged over a monthly period. It is the arithmetic mean of the total daily flows recorded during the calendar month. Where monitoring requirements for flow are specified in Part I of the permit, the flow rate values are reported in the “Average” column under “Quantity or Loading” on the DMR.
- b. An “instantaneous flow measurement” is a measure of flow taken at the time of sampling, when both the sample and flow are representative of the total discharge.
- c. Where monitoring requirements for pH, dissolved oxygen, or bacterial indicators are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.
- d. The “average annual discharge” for bacterial indicators shall be calculated in the same manner as that for mass limitations (see Paragraph II.E.3.d.).

6. Types of Samples

- a. Composite Sample: A “composite sample” is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over the full time period specified in Part I.A. The composite sample must be flow proportioned by either a time interval between each aliquot or by volume as it relates to effluent flow at the time of sampling or total flow since collection of the previous aliquot. Aliquots may be collected manually or automatically.
- b. Grab Sample: A “grab sample” is a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

7. Calculation of Means

- a. Arithmetic Mean: The “arithmetic mean” of any set of values is the sum of the individual values divided by the number of individual values.
- b. Geometric Mean: The “geometric mean” of any set of values is the N^{th} root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).
- c. Weighted by Flow Value: “Weighted by flow value” means the sum of each concentration times its respective flow divided by the sum of the respective flows.

8. Calendar Day

A “calendar day” is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

9. Hazardous Substance

A “hazardous substance” means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

[40 CFR § 122.2]

10. Toxic Pollutants

A “toxic pollutant” is any pollutant listed as toxic under Section 307(a)(1) of the CWA or, in the case of “sludge use or disposal practices,” any pollutant identified in regulations implementing section 405(d) of the CWA.

Part III. Monitoring Reports and Permit Modification

A. Monitoring Reports

The operator shall be responsible for submitting monitoring results for each facility (e.g., well) within the lease block. If there is more than one type of wastewater for each well, the discharge outfalls shall be designated in the following manner:

001 for Water-based Drilling Fluids

002 for Water-based Drill Cuttings

003 for Synthetic-based Drill Cuttings

004 for Produced Water

005 for Deck Drainage

006 for Well Treatment, Fluids, Completion Fluids, and Workover Fluids

007 for Sanitary Discharges

008 for Domestic Waste Discharges

009 for Miscellaneous Discharges

010 for Miscellaneous Discharges in Which Chemicals Have Been Added

011 for Status Updates for Required Surveys and Plans

Monitoring results obtained for each quarter shall be summarized for that quarter and reported on either a DMR form (EPA No. 3320-1) or optional EPA-Region 4 approved form, and shall be postmarked no later than the 28th day of the month following the completed calendar quarter (January 1 to March 31, April 1 to June 30, July 1 to September 30 and October 1 to December 31). For example, data for January 1 through March 31 shall be submitted by April 28). If a failure of any permit limitation occurs, the permittee must complete a monthly Non-Compliance Report for Permit Exceedances

within seven (7) days of the non-compliance and submit it with the quarterly DMR along with the entire laboratory results for all parameters, until such time as the facility returns to compliance. The Non-Compliance Report for Permit Exceedances shall include:

1. A description of the non-compliance and its cause,
2. The period of non-compliance, including dates and times,
3. The anticipated time the non-compliance is expected to continue (if it has not been corrected), and
4. Steps taken or planned to reduce, eliminate and prevent re-occurrence of the non-compliance.

Signed copies of these and all other reports required by Part II.D. shall be submitted to the following address:

Director
Water Management Division
U.S. EPA- Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960

All laboratory reports submitted with DMRs should clearly indicate the permit number, outfall number(s), and any other identification information necessary to associate the report with the correct facility, waste stream, and outfall(s).

If no discharge occurs during the reporting period, sampling requirements of this permit do not apply. The statement "No Discharge" shall be written on the DMR form or the operator may include the facility on a "No Activity" list each quarter. If, during the term of this permit, the facility ceases discharge to surface waters, the Regional Director shall be notified immediately upon cessation of discharge. This notification shall be in writing.

Additional Monitoring Requirements

1. For effluent monitoring, the permittee shall utilize an EPA-approved test procedure with a minimum level (ML) which is lower than the effluent limitations. The

permittee must utilize a standard calibration where the lowest standard point is equal to, or less than, the concentration of the ML. In accordance with 40 CFR § 122.45.45(c), effluent analyses for metals shall measure “total recoverable metal.”

2. The permittee shall report the analytical results on the DMR, as follows:
 - a. Report for maximum daily, monthly or quarterly effluent limitation (or if no limitation applies but samples are collected during the reporting period):
 - i. The maximum value of all analytical results, if the maximum value is greater than the ML; or
 - ii. For no discharge/no data (e.g., not quantifiable), report “NODI (Q)” on the DMR form, if the maximum value of all analytical results is greater than or equal to the laboratory’s minimum detection limit (MDL), but less than the ML; or
 - iii. Report “NODI (B)” (e.g., below detection level), if the maximum value of all analytical results is less than the laboratory’s MDL.
 - b. Report for average monthly or quarterly effluent limitation (or if no limitation applies but samples are collected during the quarterly reporting period):
 - i. As directed for maximum effluent limitation, if only one sample is collected during the monthly reporting period; or
 - ii. The average value of all analytical results where 0 (zero) is substituted for NODI (B) and the laboratory’s MDL is substituted for NODI (Q), if more than one sample is collected during the reporting period.
 - c. Report an attachment to the DMR form for each value reported under paragraphs 2.a and 2.b:
 - i. The number or title of the approved analytical method, preparation procedure utilized by the laboratory, and MDL or ML of the analytical method for the pollutant available under 40 CFR 136:
 - ii. The laboratory’s MDL for the analytical method computed in accordance with Appendix B of 40 CFR 136, the standard deviation (S) from the laboratory’s

MDL study, and the number of replicate analyses (*n*) used to compute the laboratory's MDL; and

iii. The lowest calibration standard (i.e., the ML, or lower value).

B. Permit Modification

1. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2) (C) and (D), 304(b)(2), 307(b)(2) and 316(b) of the Act, as amended, if the effluent standard or limitation requirement so issued or approved:

a. Contains different conditions or is otherwise more stringent than any conditions in the permit; or

b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

2. In accordance with Section 306(d) of the Clean Water Act, effluent limitations based on standards of performance for new sources in this permit shall not be made more stringent during a ten-year period beginning on the date of completion of such construction or during the period of depreciation or amortization of such facility for the purposes of Section 167 and/or 169 of the Internal Revenue Code of 1954, whichever period ends first. The provisions of Section 306(d) do not limit the authority of EPA to modify, or alternatively revoke and reissue, the permit to require compliance with a toxic effluent limitation promulgated under Best Available Technology (BAT) or toxic pollutant standard established under 307(a) of the Act, or to modify, as necessary to assure compliance with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Act, if the effluent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any conditions in the permit; or

b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

Note: Conditions of the permit section do not apply if EPA proposes/promulgates a different and applicable New Source Performance Standard (NSPS) prior to “start of construction” for any new sources, as defined in 40 CFR Section 122.29(b)(4) or 125.83. In such case, this permit shall be modified to comply with the requirements of such new NSPS.

Part IV. Best Management Practices/Pollution Prevention (BMP3) Plan

A. Objective

This part is directed towards developing and implementing best management practices plan that incorporates pollution prevention measures for the entire facility. The plan shall address measures towards reducing those pollutants of concern which discharge (or could discharge) to surface waters, as well as measures to reduce impingement and entrainment of fish, eggs and larvae in the cooling water intake structure, through the use of good engineering and good housekeeping practices. For the purposes of this permit, pollutants of concern shall be limited to toxic pollutants, as defined below under Part IV.C.4, known to the discharger. If applicable, the plan shall address each component or system capable of generating or causing a release of NAF and identify specific preventative or remedial measures to be implemented.

B. General Requirements

In accordance with Section 304(e) and 402(a)(2) of the CWA as amended, 33 U.S.C. §§ 1251 et seq., and consistent with the policy of the Pollution Prevention Act of 1990, 42 U.S.C. §§ 13101-13109, the permittee must develop and implement a Best Management Practices (BMP) plan incorporating pollution prevention measures for the entire offshore facility. Note that this part does not require the permittee to incorporate

pollution prevention measures that would jeopardize efficient operation or result in an unreasonable economic burden. If applicable, the plan shall also include measures to prevent, or minimize, the discharge of NAFs from the facility to waters of the United States through normal operations and ancillary activities. Ways to reduce impingement and entrainment of organisms in the cooling water intake structure shall also be evaluated.

A BMP plan developed as a requirement of a previous NPDES permit will satisfy the requirements of this part if it addresses both facility-wide and specific BMPS for NAFs per Appendix 7 of 40 C.F.R. Part 435, subpart A, to reduce the likelihood of spills or other releases of oil or oil contaminated water, chemicals, cleaning chemicals, and biocides that may enter waters of the United States. References which may be used in developing the plan are "Criteria and Standards for Best Management Practices Authorized Under Section 304(e) of the Act", found at 40 C.F.R.122.44(k), the Waste Minimization Opportunity Assessment Manual, EPA/625/7-88/003, and other EPA documents relating to BMP guidance.

Pollution prevention requirements per MMS (see 30 C.F.R. Part 250.300), or other federal requirements relating to BMP guidance, may be incorporated by reference.

The BMP plan is to be retained on-site. Within one year of coverage, operators must submit a certification statement that the BMP plan has been developed and is being implemented. Unless otherwise required by the Director, submittal of the BMP plan to EPA is not required.

C. Part IV Definitions

1. The term "pollutants" refers to conventional, non-conventional and toxic pollutants, as appropriate for the NPDES storm water program and toxic pollutants.

2. Conventional pollutants are: biochemical oxygen demand (BOD), suspended solids, pH, fecal coliform bacteria and oil & grease.

3. Non-conventional pollutants are those which are not defined as conventional or toxic, such as phosphorus, nitrogen or ammonia. (Ref: 40 C.F.R. Part 122, Appendix D, Table IV)

4. For purposes of this part, Toxic Pollutants include, but are not limited to: a) any toxic substance listed in Section 307(a)(1) of the CWA, any hazardous substance listed in Section 311 of the CWA, and b) any substance (that is not also a conventional or non-conventional pollutant) for which EPA has published an acute or chronic toxicity criterion, or that is a pesticide regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

5. "Pollution prevention" and "waste minimization" refer to the first two categories of EPA's preferred hazardous waste management strategy: first, source reduction and then, recycling.

6. "Recycle/Reuse" is defined as the minimization of waste generation by recovering and reprocessing usable products that might otherwise become waste; or the reuse or reprocessing of usable waste products in place of the original stock, or for other purposes such as material recovery, material regeneration or energy production.

7. "Source reduction" means any practice which: i) reduces the amount of any pollutant entering a waste stream or otherwise released into the environment

(including fugitive emissions) prior to recycling, treatment or disposal; and ii) reduces the hazards to public health and the environment associated with the release of such pollutant. The term includes equipment or technology modifications, process or procedure modifications, reformulation or substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. It does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a pollutant through a process or activity which itself is not integral to, or previously considered necessary for, the production of a product or the providing of a service.

8. "BMP3" means a Best Management Plan incorporating the requirements of 40 C.F.R. 122.44(k) and Addendum B of Appendix 7 of 40 C.F.R. Part 435, subpart A, plus pollution prevention techniques, except where other existing programs are deemed equivalent by the permittee. The permittee shall certify the equivalency of the other referenced programs.

9. "Waste Minimization Assessment" means a systematic planned procedure with the objective of identifying ways to reduce or eliminate waste.

10. The term "material" refers to chemicals or chemical products used in any plant operation (i.e., caustic soda, hydrazine, degreasing agents, paint solvents, etc.). It does not include lumber, boxes, packing materials, etc.

D. Specific BMP3 Plan Requirements

1. Facility-Wide Operations

The following requirements may be incorporated by reference from existing facility procedures:

- a. name and description of facility, a map illustrating the location of the facility and adjacent receiving waters, and other maps, plot plans or drawings, as necessary;
- b. overall objectives (both short-term and long-term) and scope of the plan, towards reduction of pollutants, anticipated dates of achievement of reduction, and a description of means for achieving each reduction goal;
- c. a description of procedures relative to spill prevention, control and countermeasures and a description of measures employed to prevent storm water contamination, where the storm water can reasonably be expected to reach waters of the U.S. prior to treatment;
- d. a description of practices involving preventive maintenance, housekeeping, record keeping, inspections, and plant security;
- e. a description of a waste minimization assessment (WMA) plan for this facility, to determine actions that could be taken to reduce waste loadings and chemical losses to all wastewater and/or storm water streams, without compromising production efficiency or jeopardizing operations. The plan shall address both short-term and long-term opportunities for minimizing waste generation at this facility, particularly for high volume and/or high toxicity components of wastewater and storm water streams. Initially, the WMA plan should focus primarily on actions that could be implemented quickly, thereby realizing tangible benefits to surface water quality. Long term goals and actions pertaining to waste reduction shall include investigation of the feasibility of eliminating toxic chemical use, instituting

process changes, raw material replacements, etc. At minimum, the WMA plan should include the following items:

(i) Material and Risk Assessment - A materials and risk assessment shall be developed and shall include the following:

- (1) identification of the types and quantities of materials used at the facility;
- (2) identification of the location and types of materials management activities which occur at the facility;
- (3) an evaluation of the following aspects of materials compatibility: containment and storage practices for chemicals, container compatibility, chemical mixing procedures; potential mixing or compatibility problems; and specific prohibitions regarding mixing of chemicals;
- (4) technical information on human health and ecological effects of toxic or hazardous chemicals presently used or manufactured (including by-products produced) or planned for future use or production;
- (5) analyses of chemical use and waste generation, including input parameters for all pollutants, overall facility material balances and as necessary, internal process balances, for all pollutants. (When actual measurements of the quantity of a chemical entering a wastewater or storm water stream are not readily available, reasonable estimates should be made based on best engineering judgment.) The analyses should address reasons for using particular chemicals, and/or measures or estimates of the actual and potential chemical discharges via

wastewater, wastewater sludge, storm water, air, solid waste or hazardous waste media.

(ii) Pollutant Reduction Methods - The WMA plan shall include, at a minimum, the following means of reducing pollutant discharges in wastewater streams or of otherwise minimizing wastes:

(1) process related source reduction measures, including any or all of the following, as appropriate: improved process controls; reduction in use of toxic or hazardous materials; chemical modifications and/or material purification; chemical substitution employing non-toxic or less toxic alternatives; and equipment upgrades or modifications or changes in equipment use.

(2) housekeeping/operational changes, including waste stream segregation, inventory control, spill and leak prevention, equipment maintenance; and employee training in areas of pollution prevention, good housekeeping, and spill prevention and response;

(3) in-process recycling, on-site recycling and/or off-site recycling of materials (such as non-hazardous rags, pads and filters, antifreeze, lube oil, cooking oil, etc);

(4) following all source reduction and recycling practices, wastewater treatment process changes, including the use of new or improved treatment methods, such that treatment degradation products are less toxic to aquatic or human life; and

(5) other means as agreed upon by the permit issuing authority and the permittee.

(iii) Storm Water Evaluation - For storm water discharges and instances where storm water enters the wastewater treatment/disposal system or is

otherwise commingled with wastewater, the BMP3 shall evaluate the following potential sources of storm water contamination, at a minimum:

- (1) loading, unloading and transfer areas for dry bulk materials or liquids;
- (2) outdoor storage of raw materials or products;
- (3) outdoor processing activities;
- (4) dust or particulate generating processes;
- (5) on-site waste and/or sludge disposal practices.

The likelihood of storm water contact in these areas and the potential for spills from these areas shall be considered in the evaluation. The history of significant leaks or spills of toxic or hazardous pollutants shall also be considered. Recommendations for changes to current practices which would reduce the potential for storm water contamination from these areas shall be made, as necessary.

Practices which reduce pollutant loading in wastewater or storm water discharges with a consequent increase in solid hazardous waste generation, decrease in air quality, or adverse affect to groundwater shall not be considered waste reduction for the purposes of this assessment planning.

2. Non-Aqueous Drilling Fluids

Operators are not required to use specific BMPs for NAFs if all cuttings are monitored in accordance with Appendix 7 of 40 C.F.R. Part 435, subpart A. (This special exemption for NAFs cuttings does not excuse the facility from developing and implementing BMPs for other areas/operations at the site.)

The following specific best management practices and pollution prevention activities are required in the BMP3 Plan when operators elect to control NAF discharges associated with cuttings by a set of BMPs:

- a. The operator shall identify and document each NAF well that uses BMPs before starting drilling operations and the anticipated total feet to be drilled with NAF for that particular well.
- b. Each facility component or system controlled through use of BMPs shall be examined for its NAF-waste minimization opportunities and its potential for causing a discharge of NAF to waters of the United States due to natural phenomena (e.g., rain, snowfall).
- c. For each NAF wastestream controlled through BMPs where experience indicates a reasonable potential for equipment failure (e.g., tank overflow or leakage), natural conditions (e.g., precipitation), or other circumstances to result in NAF reaching surface waters, the BMP3 plan shall include a prediction of the total quantity of NAF which could be discharged from the facility as a result of each condition or circumstance. Specifically, the BMP3 plan should address how NAF cuttings will be handled during routine preventative maintenance or repairs periods for non-crucial equipment such as mud cleaner and high-speed centrifuge and crucial equipment such as the cuttings dryer and cuttings transport system. See Part II.B.c. for NPDES permit requirements regarding “anticipated bypass.”
- d. The operator must establish programs for identifying, documenting, and repairing malfunctioning NAF equipment, tracking NAF equipment repairs, and training personnel to report and evaluate malfunctioning NAF equipment.

- e. The operator must establish operating and maintenance procedures for each component in the solids control system in a manner consistent with the manufacturer's design criteria.
- f. The operator must use the most applicable spacers, flushers, pills and displacement techniques in order to minimize contamination of drilling fluids when changing from water-based drilling fluids to NAF, and vice versa.
- g. A daily retort analysis shall be performed (in accordance with Appendix 7 to 40 C.F.R. Part 435, subpart A during the first 0.33 X feet drilled with NAF, where X is the anticipated total feet to be drilled with NAF for that particular well. The retort analyses shall be documented in the well retort log. The operators shall use the calculation procedures detailed in Appendix 7 to subpart A of 40 C.F.R. Part 435 (see equations 1 through 8) to determine the arithmetic average ($\%BF_{\text{well}}$) of the retort analyses taken during the first 0.33 X feet drilled with NAF.
- h. When the arithmetic average ($\%BF_{\text{well}}$) of the retort analyses taken during the first 0.33 X feet drilled with NAF is less than or equal to the base fluid retained on cuttings limitation or standard (see 40 C.F.R. §§ 435.13 and 435.15), retort monitoring of cuttings may cease for that particular well. The same BMPs and drilling fluid used during the first 0.33 X feet shall be used for all remaining NAF sections for that particular well.
- i. When the arithmetic average ($\%BF_{\text{well}}$) of the retort analyses taken during the first 0.33 X feet drilled with NAF is greater than the base fluid retained on cuttings limitation or standard (see 40 C.F.R. §§ 435.13 and 435.15), retort monitoring shall continue for the next 0.33 X feet drilled with NAF, where X is the anticipated total feet to be drilled with NAF for that particular well. The

retort analyses for the first and second 0.33 X feet shall be documented in the well retort log.

j. When the arithmetic average ($\% BF_{\text{well}}$) of the retort analyses taken during the first 0.66 X feet (i.e., retort analyses taken from the first and second X feet) drilled with NAF is less than or equal to the base fluid retained on cuttings limitation or standard (see 40 C.F.R. §§ 435.13 and 435.15), retort monitoring of cuttings may cease for that particular well. The same BMPs and drilling fluid used during the first 0.66 X feet shall be used for all remaining NAF sections for that particular well.

k. When the arithmetic average ($\% BF_{\text{well}}$) of the retort analyses taken during the first 0.66 X feet shall (i.e. retort analyses taken from first and second 0.33 X feet) drilled with NAF is greater than the base fluid retained on cuttings limitation or standard (see 40 C.F.R. §§ 435.13 and 435.15), retort monitoring shall continue for all remaining sections for that particular well. The retort analyses for all NAF sections shall be documented in the well retort log.

l. When the arithmetic average ($\% BF_{\text{well}}$) of the retort analyses taken over all NAF sections for the entire well is greater than the base fluid retained on cuttings limitation or standard (see §§ 435.13 and 435.15), the operator is in violation of the base fluid retained on cuttings limitation or standard and shall submit notification of these monitoring values in accordance with NPDES permit requirements. Additionally, the operator shall, as part of the BMP3 Plan, initiate a re-evaluation and modification to the BMP3 Plan in conjunction with equipment vendors and/or industry specialists.

m. The operator shall include retort monitoring data and dates of retort-monitored and non-retort-monitored NAF-cuttings discharges managed by BMPs in their NPDES permit reports.

n. The operator shall establish mud pit and equipment cleaning methods in such a way as to minimize the potential for building-up drill cuttings (including accumulated solids) in the active mud system and solids control equipment system. These cleaning methods shall include, but are not limited to, the following procedures :

1. Ensuring proper operation and efficiency of mud pit agitation equipment,
2. Using mud gun lines during mixing operations to provide agitation in dead spaces, and
3. Pumping drilling fluids off of drill cuttings (including accumulated solids) for use, recycle, or disposal before using wash water to dislodge solids.

3. Cooling Water Intake Structure

The permittee shall provide a narrative description of the cooling water intake structure. This should include information pertaining to the location, design, construction and capacity, such as daily average intake flow velocity, type of screen, type of fish barrier system, type of fish diversion system, percent intake water used for cooling purposes and average intake flow in MGD. The BMP3 plan shall address practices to reduce impingement and entrainment of organisms.

E. Signatory Authority and Management Responsibilities

The BMP3 plan shall contain a written and dated statement (with signatures) from the drilling engineer, OIM (Offshore Installation Manager), and other individual responsible for development and implementation of the BMP3 plan stating that the review has been completed and that the BMP3 plan fulfills the objective and specific requirements set

forth in Parts IV. A. and D., above. The statement shall be publicized or made known to all facility employees.

F. Plan Certification

The operator shall certify that its BMP3 plan is complete, on-site, and being implemented. This certification shall identify the NPDES permit number and be signed by an authorized representative of the operator. This certification shall be kept with the BMP3 plan. The certification shall be made no later than one year from the effective date of coverage under this general permit, and must be submitted to EPA-Region 4.

G. Plan Documentation

The BMP3 plan shall be documented in narrative form, and shall include any necessary plot plans, drawings or maps, and shall be developed in accordance with good engineering practices. At a minimum, the BMP3 plan shall contain the planning, development and implementation, and evaluation/reevaluation components. Examples of these components are contained in “Guidance Document for Developing Best Management Practices,” EPA document no. 833-B-93-004 (1993).

The permittee shall maintain a copy of the BMP3 plan and related documentation (e.g., training certifications, summary of the monitoring results, records of NAF-equipment spills, repairs, and maintenance) at the facility and shall make the BMP3 plan and related documentation available to EPA upon request.

H. Best Management Practices and Pollution Prevention Committee:

A Best Management Practices Committee (Committee) should be established to direct or assist in the implementation of the BMP3 plan. The Committee should be comprised of individuals within the plant organization who are responsible for

developing, implementing, monitoring of success, and revision of the BMP3 plan. The activities and responsibilities of the Committee should address all aspects of the facility's BMP3 plan. The scope of responsibilities of the Committee should be described in the plan.

I. Employee Training

Employee training programs shall inform appropriate personnel of the components and goals of the BMP3 plan and shall describe employee responsibilities for implementing the plan. Training shall address topics such as good housekeeping, materials management, record keeping and reporting, spill prevention and response, as well as specific waste reduction practices to be employed. The plan shall identify periodic dates for such training.

J. Plan Development and Implementation

The BMP3 plan shall be developed and implemented within one year after the effective date of this coverage under this general permit.

K. Plan Review

The plan shall be reviewed by the permittee's drilling engineer and OIM to ensure compliance with the BMP3 plan purpose and objectives set forth above.

If following review by EPA, the BMP3 plan is determined insufficient, EPA may notify the permittee that the BMP3 plan does not meet one or more of the minimum requirements of this Part. Upon such notification from the Director, or authorized representative, the permittee shall amend the plan and shall submit to the Director a written certification that the requested changes have been made. Unless otherwise

provided by the Director of the Water Management Division-EPA Region 4, the permittee shall have 30 days after such notification to make the changes necessary.

L. Plan Modification

The permittee shall modify the BMP3 plan whenever there is a change in design, construction, operation, or maintenance, pertaining to the facility which has a significant effect on the potential for the discharge of pollutants to waters of the United States or if the plan proves to be ineffective in achieving the general objectives of reducing pollutants in wastewater or wet weather discharges.

At a minimum, the BMP3 plan shall be reviewed once every five years, and amended within three months if warranted. Any such changes to the BMP3 plan shall be consistent with the objectives and specific requirements listed in this permit. All changes in the BMP3 plan shall be reviewed by the operator's drilling engineer and authorized on-site representative.

At any time, if the BMP3 plan proves to be ineffective in achieving the general objective of preventing and minimizing the discharge of toxic pollutants and/or NAF-wastes, the BMP3 plan be subject to modification. If the BMP3 requirements in the permit are modified, the BMP3 plan must be modified to incorporate the revised BMP3 requirements within three months.

In particular, for those NAF-waste streams controlled through BMPs, the operator shall amend the BMP3 plan within 30 days whenever there is a change in the facility or in the operation of the facility which materially increases the generation of those NAF wastes or their release, or potential release to the receiving waters.

Modifications to the plan may be reviewed by EPA in the same manner as described above.

Part V. Test Procedures and Definitions

A. Test Procedures

1. Samples of Wastes

If requested, the permittee shall provide EPA with a sample of any waste in a manner specified by the Agency.

2. Drilling Fluids Toxicity Test (Suspended Particulate Phase Toxicity Test)

The approved sampling and test methods for permit compliance are provided in the final effluent guidelines published at 58 FR 12507 on March 4, 1993, as Appendix 2 to subpart A of 40 C.F.R. Part 435.

3. Static Sheen Test

The approved sampling and test methods for permit compliance are provided in the final effluent guidelines published at 58 FR 12506 on March 4, 1993 as Appendix 1 to subpart A of 40 C.F.R. Part 435.

4. Visual Sheen Test

The visual sheen test is used to detect free oil by observing the surface of the receiving water for the presence of a sheen while discharging. A sheen is defined as a "silvery" or "metallic" sheen, gloss, or increased reflectivity; visual color; iridescence; or oil slick on the surface (see 58 FR 12507). The operator must conduct a visual sheen test only at times when a sheen could be observed. This restriction eliminates observations at night or when atmospheric or surface conditions prohibit the observer from detecting a sheen (e.g., during rain or rough seas, etc.). Certain discharges can only occur if a visual sheen test can be conducted.

The observer must be positioned on the rig or platform, relative to both the discharge point and current flow at the time of discharge, such that the observer can detect a sheen should it surface down current from the discharge. For discharges that have been occurring for at least 15 minutes, observations may be made any time thereafter. For discharges of less than 15 minutes duration, observations must be made both during discharge and 5 minutes after discharge has ceased.

5. Produced Water Toxicity Tests

Operators may choose to demonstrate compliance with the toxicity testing requirements for produced water by performing a 7-day chronic toxicity test in accordance with methods for determining the 7-day NOEC is *Short Term Methods for Estimation Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms* (EPA/821-R-02-014). The species to be used for compliance testing for this permit are *Mysidopsis bahia* (*Americamysis bahia* (Mysid shrimp)) and *Menida beryllina* (Inland silverside minnow).

6. Base Fluid Sediment Toxicity Test

The approved test method for permit compliance is identified as ASTM E1367-92 (or most current EPA approved method) entitled, *Standard Guide Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods* (or the most current EPA approved method), with *Leptocheirus plumulosus* as the test organism and sediment preparation procedures specified in Appendix 3 of 40 C.F.R. Part 435, subpart A.

The base fluid sediment toxicity ratio = $\frac{10\text{-day LC}_{50} \text{ of reference fluid}^*}{10\text{-day LC}_{50} \text{ of stock base fluid}}$

*C₁₆-C₁₈ internal olefin, C₁₂-C₁₄ ester or C₈ ester

7. Base Fluids Biodegradation Rate

The approved method for permit compliance is identified as International Standards Organization (ISO) 11734:1995 (or the most current EPA approved method) entitled, *Water quality - Evaluation of the ultimate anaerobic biodegradability of organic compounds in digested sludge - Method by measurement of the biogas production* (1995 edition), supplemented with modifications in Appendix 4 of 40 C.F.R. Part 435, subpart A. Compliance with the biodegradation limit will be determined using the following ratio:

$$\text{Biodegradation rate ratio} = \frac{\text{Cumulative gas production (ml) of reference fluid}^*}{\text{Cumulative gas production (ml) of stock base fluid, both at 275 days}}$$

*C₁₆-C₁₈ internal olefin, C₁₂-C₁₄ ester or C₈ ester

8. Polynuclear Aromatic Hydrocarbons

The approved method for permit compliance is EPA Method 1654A entitled, *PAH Content of Oil by High Performance Liquid Chromatography with a UV Detector*.

$$\text{PAH mass ratio} = \frac{\text{Mass (g) of PAH (as phenanthrene)}}{\text{Mass (g) of stock base fluid}}$$

9. Formation Oil

a. Contamination of Non-Aqueous Based Drilling Fluids

The approved test method for permit compliance is Gas Chromatography/Mass Spectrometry (GC/MS) contained in Appendix 5 of 40 C.F.R. Part 435, subpart A (or most current EPA approved method). This test shall be performed before drilling fluids are shipped offshore.

The GC/MS method reports results for the GC/MS test as a percentage crude contamination when calibrated for a specific crude oil. In order to define an applicable pass/fail limit to cover a variety of crude oils, the same crude oil used in calibration of the Reverse Phase Extraction (RPE) test shall be used to calibrate the GC/MS test results to a

standardized ratio of the target ION Scan 105 (or most current EPA approved method). Based on the performance of a range of crude oils against the standardized ratio, a value will be selected as a pass/fail standard which will represent detection of crude oil.

b. Contamination of Discharged Non-Aqueous Based Drilling Fluids
Retained on Cuttings

The approved test method for permit compliance is the RPE method in Appendix 6 of 40 C.F.R. Part 435, subpart A, which is applied to drilling fluid removed from drill cuttings. If the operator wishes to confirm with results of the RPE method (Appendix 6 of 40 C.F.R. Part 435, subpart A), the operator may use the GC/MS compliance assurance method (Appendix 5 of 40 C.F.R. Part 435, subpart A). Results from the GC/MS compliance assurance method shall supercede the results of the RPE method.

10. Drilling Fluids Sediment Toxicity

The approved test method for permit compliance is identified as ASTM E1367-92 (or the most current EPA approved method) entitled, *Standard Guide Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods*, with *Leptocheirus plumulosus* as the test organism and sediment preparation procedures specified in Appendix 3 of 40 C.F.R. Part 435, subpart A.

The drilling fluid sediment toxicity ratio =
$$\frac{\text{4-day LC}_{50} \text{ of C}_{16}\text{-C}_{18} \text{ internal olefin}}{\text{4-day LC}_{50} \text{ drilling fluid removed from drill cuttings at the solids control equipment}}$$

11. Retention of Non-Aqueous Based Drilling Fluid on Cuttings

The maximum permissible retention of NAF base on wet drill cuttings averaged over drilling intervals using NAFs shall be determined by the American Petroleum Institute Retort method contained in Appendix 7 of 40 C.F.R. Part 435, subpart A. The required sampling, handling, and documentation procedures are listed in Addendum A of Appendix 7 of 40 C.F.R. Part 435, subpart A.

12. Sampling Protocol for Stock Drilling Fluid Sediment Toxicity Test, Drilling Fluid Sediment Toxicity Test and Biodegradation Rate Test

Compliance with the 1.0 permit limit shall be based on the ratio of the arithmetic average of up to three test results from two grab samples. The first grab sample must be split into two aliquots (e.g., grab1A and grab1B) and analyzed separately. The second grab sample (grab2) shall be a backup sample, which shall be retained following proper storage and handling procedures. The second grab sample will be collected within 15 minutes of the first grab sample, and in the case of base fluid testing, will be from the same production lot. Permittees shall show compliance based on results from grab1A, or from the ratio of the arithmetic average of grab1A, grab1B, and if necessary grab 2. All test results obtained shall be submitted with the DMR and all ratios shall be rounded to the nearest tenths.

All test results shall be generated as follows:

- a. The 10-day stock base fluid toxicity test results consist of individual stock base fluid LC₅₀s and individual reference fluid LC₅₀s (paired results). The arithmetic average of the LC₅₀ for the test fluid sample(s) will be compared to determine compliance with the 1.0 ratio permit limit.
- b. The stock base fluid biodegradation test results consist of individual stock base fluid cumulative gas production (ml) and individual reference fluid cumulative gas production (ml) tests (paired results). The arithmetic average of the cumulative gas production (ml) for the test fluid samples(s) will be compared against the arithmetic average of the cumulative gas production (ml) of the reference fluid sample(s) to determine compliance with the 1.0 ratio permit limit.
- c. The 4-day drilling fluid mud toxicity test results consist of the individual field mud LC₅₀s and individual reference mud LC₅₀s (paired results). The arithmetic average of the LC₅₀ for the field mud sample(s) will be compared against the arithmetic average of the

LC₅₀ of the reference mud sample(s) to determine compliance with the 1.0 ratio permit limit.

13. Whole Effluent Toxicity Testing

The following Whole Effluent Toxicity testing requirements apply to 1) Produced Water Discharges; 2) Miscellaneous Discharges of Seawater and Freshwater to which chemicals have been added; 3) Blowout Preventer Control Fluid and; 4) chemicals used in subsea operations, including but not limited to, Subsea Wellhead Preservation Fluids, Subsea Production Control fluids, Umbilical Steel Tube Storage Fluid, Leak Tracer Fluids and Riser Tensioner Fluids:

The control and dilution water will be natural or synthetic seawater at 25 ppt salinity as described in EPA-821-R-02-014, Section 7, or the most current edition. A standard reference toxicant quality assurance chronic toxicity test shall be conducted concurrently with each species used in the toxicity tests and the results included in summary laboratory report, which is to be submitted with the DMR. Alternatively, if monthly QA/QC reference toxicant tests are conducted, these results must be included in the summary laboratory report. The permittee shall submit a full laboratory report in the event a failure occurs for any test, or upon specific request of EPA. Any deviation from the bioassay procedures outlined or cited herein shall be submitted in writing to the EPA for review and approval prior to use.

1. a. The permittee shall conduct a mysid, Mysidopsis bahia, Survival and Reproduction test and a Inland silverside minnow, Menida beryllina, Larval Survival and Growth test. All tests shall be conducted using a control (0% effluent) and the following dilution concentrations: 0.5 times the critical dilution (CD), the CD, two times the CD, four times the CD and eight times the CD. The

measured endpoints will be the survival and growth No Observed Effect Concentration (NOEC) concentration for each species. The survival and growth responses will be determined based on the number of Mysidopsis bahia or Menidia beryllina larvae used to initiate the test.

- b. For each set of tests conducted, a grab sample of final effluent shall be collected and used to initiate the test within 36 hours of collection.
 - c. If control mortality exceeds 20% in any test, the test(s) with that species (including the control) shall be repeated. For either species, a test will be considered valid only if control mortality does not exceed 20%. Each test must meet the test acceptability criteria for each species as defined in EPA-821-R-02-014, Section 13.12 and Section 11.12, respectively, or the most current edition. Additionally, all test results must be evaluated and reported for concentration-response relationship based on “Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136),” EPA/821/B-00/004, or the most current edition. If the required concentration-response review fails to yield a valid relationship per EPA/821/B-00/004 (or the most current edition), that test shall be repeated. Any test initiated but terminated prior to completion must be reported with a complete explanation for the termination.
2. a. The toxicity tests specified above shall be conducted once every two months for the first year of the permit until six valid bimonthly tests with passing results are completed. The permittee may request a reduction in monitoring frequency to once every six months thereafter for the duration of the permit for Produced Water discharges and once per year thereafter for the duration of the permit for

continuous discharges of Miscellaneous Discharges to Which Chemicals Have Been Added. These tests are referred to as "routine" tests. Exception - Toxicity testing for Blowout Preventer Control fluids and chemicals/fluids used in subsea operations shall be once prior to use during the term of this general permit and at least once per year thereafter on each fluid added to an operation after the effective date of this permit. Additionally, permittees that were covered under the previous general permit and that are currently performing toxicity tests every six months for Produced Water discharges may continue with the testing frequency under this permit, unless a non-compliance occurs.

- b. Results from routine tests shall be reported according to EPA-821-R-02-014, Section 10, or the most current edition. All results shall also be recorded and submitted on the Discharge Monitoring Report (DMR) in the following manner: If the NOEC of a test species is less than CD% effluent, this constitutes a test failure and "1" shall be entered on the DMR for that species. If the NOEC of a test species is greater than or equal to the CD% effluent, this constitutes a pass, and "0" shall be entered on the DMR.
- c. The summary laboratory reports shall include, as a minimum, the following information:
 1. Permittee's Name
 2. Name of test and test method number
 3. Name of test species
 4. Outfall identification designation and type of wastewater
 5. Name of biomonitoring laboratory
 6. Date sample was collected

7. Date and time test initiated
 8. Critical Dilution
 9. Indicate if test is “valid”. If not, state reasons why.
 10. For each species, the percent effluent corresponding to each NOEC for both the growth test and the survival test.
3. a. An NOEC of less than CD% effluent in any valid routine or additional definitive Survival or Growth test for either species will be a violation of this permit.
- b. If an NOEC of less than CD % effluent is found in a routine test, the permittee shall conduct three valid additional tests on each species indicating the violation and report each NOEC obtained. A valid additional definitive test result cannot be used to negate a permit violation based on failure of a routine test.
- c. The first valid additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 0.5 times the CD, CD, two time CD, four times CD and eight times CD. The dilution series may be modified in the second and third valid tests to more accurately identify the toxicity.
- d. For each additional test, the sample collection requirements and the test acceptability criteria and concentration-response relationships specified in sections 1.b and c. above, respectively, must be met for the additional test to be considered valid. The first additional test shall begin within two weeks of the end of the routine test, and shall be conducted weekly thereafter until three additional valid tests are completed.

- e. Results from additional tests, required due to a chronic toxicity violation in a routine test, shall be submitted in a single report prepared according to EPA-821-R-02-014, Section 10, or the most current edition and submitted within 30 days of completion of the third valid additional test.
 - f. After compliance is demonstrated for the three consecutive additional tests, the permittee may return to the testing frequency prior to the non-compliance.
4. To assess within test variability, test results must be evaluated for, and reported with the DMR in terms of the percent minimum significant difference (PMSD), in accordance with Section 10.28 of EPA/821-R-02-014. If toxicity is not found at the critical dilution concentration based on the value of the effect concentration estimate and the PMSD measured for a given test exceeds the upper PMSD bound as provided in this section, then the test shall not be accepted, and a new test must be conducted promptly on a newly collected sample.
 5. This permit may be reopened to require chemical specific effluent limits, additional testing and/or other appropriate actions to address toxicity.

B. Other Definitions

1. Applicable effluent standards and limitations means all state and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards or performance, toxic effluent standards and prohibitions, and pretreatment standards.
2. Areas of Biological Concern for water within the territorial seas (shoreline to 3-mile offshore) are those defined as “no activity zones” for biological reasons by

the states of Alabama, Florida and Mississippi. For offshore waters seaward of three miles, areas of biological concern include “no activity zones” defined by the Department of Interior (DOI) for biological reasons, or identified by EPA in consultation with the DOI, the states, or other interested federal agencies, as containing biological communities, features or functions that are potentially sensitive to discharges associated with the oil and gas industry.

3. Base fluid means the continuous phase or suspending medium of a drilling fluid formation.

4. Base fluid retained on cuttings refers to the American Petroleum Institute Recommended Practice 13B-2 supplemented with the specifications, sampling methods, and averaging method for retention values provided in 40 C.F.R. Part 435, subpart A, Appendix 7.

5. Batch or Bulk Discharge is any discharge of a discrete volume or mass of water based drilling fluid effluent from a pit, tank, or similar container that occurs on a one-time, infrequent, or irregular basis.

6. Biodegradation rate refers to the ISO 11734:1995 (or most current EPA approved method), “Water quality - Evaluation of the ultimate anaerobic biodegradation of organic compounds in digested sludge-Method by measurement of the biogas production (1995 edition),” supplemented with modifications in Appendix 4 of 40 C.F.R. Part 435, subpart A.

7. Blow-Out Preventer Control Fluid means fluid used to actuate the hydraulic equipment on the blow-out preventer or subsea production wellhead assembly.

8. Boiler Blowdown means discharges from boilers necessary to minimize solids build-up in the boilers, including vents from boilers and other heating systems.

9. Bypass means the intentional diversion of waste streams from any portion of a treatment facility. (See Part II.B.3 of this permit.)

10. C₁₂-C₁₄ Ester and C₈ Ester means the fatty-acid/2-ethylhexyl esters with carbon chain lengths ranging from 8 to 16 and represented by the Chemical Abstracts Service (CAS) No. 135800-37-2.

11. C₁₆-C₁₈ Internal Olefin means a 65/35 blend, proportioned by mass, of hexadecene and octadecene, respectively. Hexadecene is an unsaturated hydrocarbon with a carbon chain length of 16, an internal double carbon bond, and is represented by the CAS No. 26952-14-7. Octadecene is an unsaturated hydrocarbon with a carbon chain length of 18, an internal double carbon bond, and is represented by CAS No. 27070-58-2.

12. C₁₆-C₁₈ Internal Olefin Drilling Fluid means a C₁₆-C₁₈ internal olefin drilling fluid formulated as specified in Appendix 8 of C.F.R. Part 435, subpart A.

13. Clinkers are small lumps of residual material left after incineration.

14. Cooling Water means water used for contact or noncontact cooling, including water used for equipment cooling, evaporative cooling tower make-up, and dilution of effluent heat content.

15. Cooling Water Intake Structure means the physical equipment with a design intake flow greater than or equal to 5 MGD, used to intake seawater, of which 25% is used for cooling water purposes.

16. Completion Fluids are salt solutions, weighted brines, polymers and various additives used to prevent damage to the well bore during operations which prepare the drilled well for hydrocarbon production. These fluids move into the formation and return to the surface as a slug with the produced water. Drilling muds remaining in the wellbore during logging, casing, and cementing operations or during temporary abandonment of the well are not considered completion fluids and are regulated by drilling fluids requirements.

17. Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant or waste stream discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the sampling day. Daily discharge determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily discharge determination of concentration shall be the average (weighted by flow value) of all samples collected during that sampling day.

18. Deck Drainage is all waste resulting from platform washings, deck washings, deck area spills, equipment washings, rainwater, and runoff from curbs, gutters, and drains, including drip pans and wash areas, pans and work areas within facilities subject to this permit.

19. Desalination Unit Discharge means waste water associated with the process of creating freshwater from seawater.

20. Development Drilling means the drilling of wells required to efficiently produce a hydrocarbon formation or formations.

21. Development Facility means any fixed or mobile structure that is engaged in the drilling of productive wells.

22. Diatomaceous Earth Filter Media is the filter media used to filter seawater or other authorized completion fluids and subsequently washed from the filter.

23. Diesel oil refers to the grade of distillate fuel oil, as specified in the American Society of Testing and Materials Standard Specifications for Diesel Fuel Oils

D975-91, that is typically used as the continuous phase in conventional oil-based drilling fluids.

24. Director means the Director, EPA Region 4, Water Management Division

25. Domestic waste means materials discharged from sinks, showers, laundries, safety showers, eye-wash stations, hand-wash stations, fish cleaning stations, and galleys located within facilities subject to 40 C.F.R. Part 435, subpart A.

26. Drill cuttings means the particles generated by drilling into subsurface geologic formations and carried out from the wellbore with the drilling fluid.

Examples of drill cuttings include small pieces of rock varying in size and texture from fine silt to gravel. Drill cuttings are generally generated from solids control equipment and settle out and accumulate in quiescent areas in the solids control equipment or the equipment processing drilling fluid (i.e., accumulated solids).

a. Wet drill cuttings means the unaltered drill cuttings and adhering drilling fluid and formation oil carried out from the wellbore with the drilling fluid.

b. Dry drill cuttings means the residue remaining in the retort vessel after completing the retort procedure specified in Appendix 7 of 40 C.F.R. Part 435, subpart A.

27. Drilling fluid means the circulating fluid (mud) used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation.

a. Water-based drilling fluid means the continuous phase and suspending medium for solids is a water-miscible fluid, regardless of the presence of oil.

b. Non-aqueous drilling fluid means the continuous phase and suspending medium for solids is a water-immiscible fluid, such as oleaginous materials (e.g., mineral oil, paraffinic oil, C₁₆-C₁₈ internal olefins, and C₈-C₁₆ fatty acid/2-ethylhexyl esters).

- i. Oil-based means the continuous phase of the drilling fluid consists of diesel oil, mineral oil, or some other oil, but contains no synthetic material or enhanced mineral oil.
- ii. Enhanced mineral oil-based means the continuous phase of the drilling fluid is enhanced mineral oil.
- iii. Synthetic-based means the continuous phase of the drilling fluid is a synthetic material or a combination of synthetic materials.

28. Dual Gradient Drilling means well drilling where a pump is used at the seafloor to lift drilling fluids and cuttings to the surface. This allows for a dual pressure gradient - one from the hydrostatic weight of water in the riser and one from the mud weight in the well. Dual gradient drilling can include a discharge of the larger size cuttings at the seafloor.

29. End of Well Sample means the sample taken after the final log run is completed and prior to bulk discharge.

31. Enhanced mineral oil as applied to enhanced mineral-oil based drilling fluid means a petroleum distillate which has been highly purified and is distinguished from diesel oil in having a lower polynuclear aromatic hydrocarbon (PAH) content. Typically, conventional mineral oils have a PAH content on the order of 0.35 weight percent expressed as phenanthrene, whereas enhanced mineral oils typically have a PAH content of 0.001 or lower weight percent PAH expressed as phenanthrene.

32. Excess Cement Slurry means the excess mixed cement, including additives and wastes from equipment washdown after a cementing operation.

33. Existing Sources are facilities conducting exploration activities and those that have commenced development or production activities that were permitted as of the effective date of the Offshore Guidelines (March 4, 1993).

34. Exploratory facility means any fixed or mobile structure subject to 40 C.F.R. Part 435, subpart A that is engaged in the drilling of wells to determine the nature of potential hydrocarbon reservoirs.

35. Formation oil means the oil from a producing formation which is detected in the drilling fluid, as determined by Gas Chromatography/Mass Spectrometer (GC/MS) compliance assurance method specified in Appendix 5 of 40 C.F.R. Part 435, subpart A, when the drilling fluid is analyzed before being shipped offshore, and as determined by the Reverse Phase Extraction (RPE) method specified in Appendix 6 of 40 C.F.R. Part 435, subpart A, or the GC/MS method when the drilling fluid is analyzed at the offshore point of discharge. Detection of formation oil by the RPE method may be confirmed by the GC/MS method, and the results of the GC/MS compliance assurance method shall supercede those of the RPE method.

36. Free Oil is oil that causes a sheen, streak, or slick on the surface of the test container or receiving water.

37. Garbage means all kinds of food waste, waste generated in living areas on the facility, and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of the facility and liable to be disposed of continuously or periodically except dishwater, graywater, and those substances that are defined or listed in other Annexes to MARPOL 73/78 regulations.

38. Graywater is drainage from dishwater, shower, laundry, bath, and wash basin drains and does not include drainage from toilets, urinals, hospitals, and drainage from cargo areas (see MARPOL 73/78 regulations).

39. Inverse Emulsion Drilling Fluids are oil-based drilling fluids which also contain large amounts of water.

40. Live Bottom Areas are those areas that contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascideians sponges, bryozoans, sea grasses, or corals living upon and attached to naturally occurring hard or rocky formations with fishes and other fauna.

41. Maximum as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings means the maximum concentration allowed as measured in any single sample of the barite for determination of cadmium and mercury content.

42. Maximum for any one day as applied to BCT and BAT effluent limitations and NSPS for oil and grease in produced water means the maximum concentration allowed as measured by the average of four grab samples collected over a 24-hour period that are analyzed separately. Alternatively, for BAT and NSPS the maximum concentration allowed may be determined on the basis of physical composition of the four grab samples prior to a single analysis.

43. Maximum Hourly Rate is the greatest number of barrels of drilling fluids discharged within one hour, expressed as barrels per hour.

44. Maximum weighted mass ratio averaged over all NAF well sections for BAT effluent limitations and NSPS for base fluid retained on cuttings means the weighted average base fluid retention for all NAF well sections as determined by the API Recommended Practice 13B-2, using the methods and averaging calculations presented in Appendix 7 of 40 C.F.R. Part 435, subpart A.

45. Method 1654A refers to the method "PAH Content of Oil by High Performance Liquid Chromatography with a UV Detector," which was published in Methods for the Determination of Diesel, Mineral and Crude Oils in Offshore Oil and Gas Industry Discharges, EPA-821-R-92-008 (incorporated by reference and available from the National Technical Information Service).

46. Minimum as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings means the minimum 96-hour LC₅₀ value allowed as measured in any single sample of the discharged waste stream. Minimum as applied to BPT and BCT effluent limitations and NSPS for sanitary wastes means the minimum concentration value allowed as measured in any single sample of the discharged waste stream.

47. Muds, Cuttings, and Cement at the Seafloor means discharges that occur at the seafloor prior to installation of the marine riser and during marine riser disconnect, well abandonment, and plugging operations.

48. National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements under sections 307, 316, 318, 402, 403, and 405 of the Act.

49. New Source means any facility or activity of this subcategory that meets the definition of "new source" under 40 C.F.R. § 122.2 and meets the criteria for determination of new sources under 40 C.F.R. § 122.29(b) applied consistently with all of the following definitions: (i) the term "water area" as used in the term "site" in 40 C.F.R. § 122.29 and § 122.2 shall mean the water area and ocean floor beneath any exploratory, development, or production facility where such facility is conducting its exploratory, development or production activities and, (ii) the term "significant site preparation work" as used in 40 C.F.R. § 122.29 shall mean the process of surveying, clearing, or preparing an area of the ocean floor for the purpose of constructing or placing a development or production facility on or over the site.

50. Ninety-Six (96)-hour LC₅₀ means the concentration (parts per million) or percent of the suspended particulate phase (SPP) from a sample that is lethal to 50

percent of the test organisms exposed to that concentration of the SPP after 96 hours of constant exposure.

51. No Activity Zones include those areas identified by MMS where no structures, drilling rigs, or pipelines will be allowed. These zones are identified as lease stipulations in the U.S. Department of the Interior, MMS, August 1990, Environmental Impact Statement for Sales 131, 135, and 137 Western, Central, and Eastern Gulf of Mexico. Additional no activity zones may be identified by MMS during the life of this permit, and by the States of Alabama, Mississippi and Florida within their territorial waters (up to 3 miles offshore) where no structures, drilling rigs, or pipelines will be allowed.

52. No Discharge Areas are areas specified by EPA where discharge of pollutants may not occur.

53. No discharge of free oil means that waste streams may not be discharged that contain free oil as evidenced by monitoring method specified for that particular stream, e.g., deck drainage or miscellaneous discharges cannot be discharged when they would cause a film or sheen upon or discoloration of the surface of the receiving water; drilling fluids or cuttings may not be discharged when they fail the static sheen test defined in Appendix 1 of subpart A of 40 C.F.R. Part 435.

54. No Observed Effect Concentration (NOEC) means the greatest effluent dilution which does not result in lethality or sublethal endpoints that are statistically different from the control (0% effluent) at the 95% confidence level.

55. Non-Operational Leases are those facilities from which no discharge has taken place within 2 years prior to the effective date of the reissued general permit.

56. Operating Facilities are facilities from which a discharge has taken place within two years of the effective date of the reissued general permit.

57. Operational waste means all cargo associated waste, maintenance waste, cargo residues, and ashes and clinkers from incinerators and coal burning boilers.
58. Packer Fluids are low solids fluids between the packer, production string, and well casing. They are considered to be workover fluids.
59. PAH (as phenanthrene) means polynuclear aromatic hydrocarbons reported as phenanthrene.
60. Parameters that are regulated by this permit and listed with approved methods of analysis in Table 1.B at 40 C.F.R. § 136.3 are defined as follows:
- a. Cadmium means total cadmium.
 - b. Chlorine means total residual chlorine.
 - c. Mercury means total mercury.
 - d. Oil and Grease means total recoverable oil and grease.
61. Priority Pollutants are the 126 chemicals or elements identified by EPA, pursuant to section 307 of the CWA and 40 C.F.R. § 401.15.
62. Produced Sand means the slurried particles used in hydraulic fracturing, the accumulated formation sands and scales particles generated during production. Produced sand also includes desander discharge from the produced water waste stream, and blowdown of the water phase from the produced water treating system.
63. Produced Water means the water (brine) brought up from the hydrocarbon-bearing strata during the extraction of oil and gas, and can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process. Produced water also includes any wastewater generated during separation and processing operations or any chemicals added downhole, subsea or during separation and processing operations.

64. Production facility means any fixed or mobile structure subject to this subpart that is either engaged in well completion or used for active recovery of hydrocarbons from producing formations. It includes facilities that are engaged in hydrocarbon fluids separation even if located separately from wellheads.
65. Sanitary Waste means human body waste discharged from toilets and urinals.
66. Sediment Toxicity as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings refers to the ASTM E1367-92 (or most current EPA approved method): Standard Guide for Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods with *Leptocheirus plumulosus* as the test organism and sediment preparation procedures specified in Appendix 3 of 40 C.F.R. Part 435, subpart A.
67. Severe Property Damage means substantial physical damage to property, damage to the treatment facilities which cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
68. Sheen means a silvery or metallic sheen, gloss, or increased reflectivity; visual color; iridescence; or oil slick on the water surface.
69. Solids Control Equipment means shale shakers, centrifuges, mud cleaners, and other equipment used to separate drill cuttings and/or stock barite solids drilling fluid recovered from the wellbore.
70. Source Water and Sand are the water and entrained solids brought to the surface from non-hydrocarbon bearing formations for the purpose of pressure maintenance or secondary recovery.
71. Spotting means the process of adding a lubricant (spot) downhole to free stuck pipe.

72. SPP toxicity as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings refers to bioassay test procedure presented in Appendix 2 of subpart A of 40 C.F.R. Part 435.

73. Static sheen test means the standard test procedure that has been developed for this industrial subcategory for the purpose of demonstrating compliance with the requirement of no discharge of free oil. The methodology for performing the static sheen test is presented in Appendix 1 of subpart A of 40 C.F.R. Part 435.

74. Stock barite means the barite that was used to formulate a drilling fluid.

75. Stock base fluid means the base fluid that was used to formulate a drilling fluid.

76. Synthetic material as applied to synthetic-based drilling fluid means material produced by the reaction of specific purified chemical feedstock, as opposed to the traditional base fluids such as diesel and mineral oil which are derived from crude oil solely through physical separation processes include fractionation and distillation and/or minor chemical reactions such as cracking and hydro processing. Since they are synthesized by the reaction of purified compounds, synthetic materials suitable for use in drilling fluids are typically free of polynuclear aromatic hydrocarbons (PAHs) but are sometimes found to contain levels of PAH up to 0.001 weight percent PAH expressed as phenanthrene. Internal olefins and vegetable esters are two examples of synthetic materials suitable for use by the oil and gas extraction industry in formulating drilling fluids. Internal olefins are synthesized from the isomerization of purified straight-chain (linear) alpha olefins. C₁₆₋₁₈ linear alpha olefins are unsaturated hydrocarbons with the carbon to carbon double bond in the terminal position. Internal olefins are typically formed from heating linear alpha olefins with a catalyst. The feed material for synthetic linear alpha olefins is typically purified

ethylene. Vegetable esters are synthesized from the acid-catalyzed esterification of vegetable fatty acids with various alcohols. EPA listed these two branches of synthetic fluid base materials to provide examples, and EPA does not mean to exclude other synthetic materials that are either in current use or may be used in the future. A synthetic-based drilling fluid may include a combination of synthetic materials.

77. Territorial Seas means the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles.

78. Trace Amounts means that if materials added downhole as well treatment, completion, or workover fluids do not contain priority pollutants in a quantity greater than the minimum detection method for that pollutant in accordance with 40 C.F.R. Part 136, then the discharge is assumed not to contain priority pollutants except possibly in trace amounts.

79. Treatment Chemicals means biocides, corrosion inhibitors, or other chemicals which are used to treat seawater or freshwater to prevent corrosion or fouling of piping or equipment. Chemicals or compounds approved by EPA-Region 4 in accordance with Part I.C.6 (“Toxic Compounds”) are not considered treatment chemicals.

80. Uncontaminated Ballast/Bilge water means seawater added or removed to maintain proper draft that does not come in contact with surfaces that may cause contamination.

81. Uncontaminated freshwater means freshwater which is discharged without the addition of chemicals, such as: (1) discharges of excess freshwater that permit the continuous operation of fire control and utility lift pumps, (2) excess freshwater

from pressure maintenance and secondary recovery projects, (3) water released during training and testing of personnel in fire protection, and (4) water used to pressure test new piping.

82. Uncontaminated seawater means seawater which is returned to the sea without the addition of chemicals, such as: (1) discharges of excess seawater which permit the continuous operation of fire control and utility lift pumps, (2) excess seawater from pressure maintenance and secondary recovery projects, (3) water released during training and testing of personnel in fire protection, (4) water used to pressure test new piping and (5) non-contact cooling water which has not been treated with biocides.

83. Water-based Drilling Fluids is the conventional drilling mud in which water is the continuous phase and the suspending medium for solids, whether or not oil is present.

84. Well completion fluids means salt solutions, weighted brines, polymers, and various additives used to prevent damage to the well bore during operations which prepare the drilled well for hydrocarbon production.

85. Well treatment fluids means any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. These fluids move into the formation and return to the surface as a slug with produced water. Stimulation fluids include substances such as acids, solvents, and propping agents.

86. Workover fluids means salt solutions, weighted brines, polymers, or other specialty additives used in a producing well to allow for maintenance, repair or abandonment procedures. High solids drilling fluids used during workover operations are not considered workover fluids by definition and therefore must meet drilling fluid effluent limitations before discharge may occur. Packer fluids,

low solids fluids between the packer, production string, and well casing are considered to be workover fluids and must meet only the effluent requirements imposed on workover fluids.

87. 96-hour LC₅₀ means the concentration (parts per million) or percent of the suspended particulate phase (SPP) from a sample that is lethal to 50 percent of the test organisms exposed to that concentration of the SPP after 96 hours of constant exposure.

88. The term MGD means million gallons per day.

89. The term mg/l means milligrams per liter or parts per million (ppm).

90. The term ug/l shall means micrograms per liter or part per billion (ppb).

Table 1. Effluent Limitations, Prohibitions, and Monitoring Requirements for the Eastern Gulf of Mexico NPDES General Permit for Existing Sources and New Sources

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Water-Based Drilling Fluids	Oil-based Drilling Fluids	No discharge			
	Oil-contaminated Drilling Fluids	No discharge			
	Drilling Fluids to Which Diesel Oil has been Added	No discharge			
	Mercury (Hg) and Cadmium (Cd) in Barite	No discharge of drilling fluids if added barite contains Hg in excess of 1.0 mg/kg or Cd in excess of 3.0 mg/kg (dry wt)	Once per new source of barite used	EPA SW846 method 6010B, or EPA 200.7 or 200.8 for cadmium & EPA SWA 7471 or EPA 245.5 for mercury	mg Hg/kg and mg Cd/kg in stock barite
	Toxicity	30,000 ppm daily minimum 30,000 ppm monthly average of minimum values	Once/month Once/end of well ^b Once/month	Grab/96-hr LC ₅₀ using <i>Mysidopsis bahia</i> ; Method at 58 FR 12507	Minimum LC ₅₀ of tests performed and monthly average LC ₅₀
	Free Oil	No free oil	Once/week during discharge	Static sheen; Method at 58 FR 12506	Number of days sheen observed
	Maximum Discharge Rate	1,000 barrels/hr	Once/day	Estimate	Max. hourly rate in bbl/hr

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Mineral Oil	Mineral oil may be used only as a carrier fluid, lubricity additive, or pill.			
	Drilling Fluids Inventory	Record	Once/well	Inventory	Chemical constituents
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month
Water-Based Drill Fluids (Continued)	Within 1000 Meters of an Areas of Biological Concern (ABC) or a Federally Designated Dredged Material Disposal Site	No discharge			
Water-Based Drill Cuttings	Note: Drill cuttings are subject to the same limitations/prohibitions as drilling fluids except <u>Maximum Discharge Rate</u> .				
	Free Oil	No Free Oil	Once/week	Static sheen; Method at 58 FR 12506	Number of days sheen observed
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month
Produced Water	Oil and Grease	42 mg/l daily maximum and 29 mg/l monthly average	Once/month ^c	Grab/ Gravimetric	Daily max. and monthly avg.

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Toxicity	Chronic toxicity (NOEC); critical dilution as specified by the requirements at Part I.B.3(b) and Appendix A of this permit.	Once/2 month (or Once 6/months after passing six consecutive bimonthly test)	Grab/7-day NOEC using <i>Mysidopsis bahia</i> and Inland Silverside minnows	LPC for both species and summary laboratory report
	Flow (bbl/month)		Once/month	Estimate	Monthly rate
	Within 1000 meters of an Area of Biological Concern (ABC) or a Federally Designated Dredged Material Disposal Site	No discharge			
Deck Drainage	Free Oil	No Free Oil	Once/day when discharging ^d	Visual sheen	Number of days sheen observed
	Volume (bbl/month)		Once/month	Estimate	Monthly total
Produced Sand	No Discharge				

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Well Treatment, Completion, and Workover Fluids (includes packer fluids) ^e	Free Oil	No Free Oil	Once/day when discharging	Static sheen	Number of days sheen observed
	Oil and Grease	42.0 mg/l daily maximum and 29.0 mg/l monthly average	Once/month	Grab/ Gravimetric	Daily max. and monthly avg.
	Priority Pollutants	Non-detect for priority pollutants		Monitor added materials using methods in 40 CFR Part 136	
	Volume (bbl/month)		Once/month	Estimate	Monthly total
Sanitary Waste (Continuously manned by 10 or more persons) ^f	Solids	No floating solids.	Once/day, during daylight	Observation	Number of days solids observed
	Residual Chlorine	At least (but as close to) 1.0 mg/l.	Once/month	Grab/Hach CN-66-DPD or TRC method in 40 C.F.R. Part 136	Concentration
	Flow (MGD)		Once/month	Estimate	
Sanitary Waste (Continuously manned by 9 or fewer persons or intermittently by any) ^f	Solids	No floating solids	Once/day, during daylight	Observation	Number of days solids observed

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Domestic Waste	Solids	No floating solids; no food waste within 12 miles of land; comminuted food waste smaller than 25-mm beyond 12 miles.	Once/day following morning or midday meal at time of maximum expected discharge	Observation	Number of days solids observed
Miscellaneous Discharges ^g – Desalination Unit Blowout Preventer Fluid Uncontaminated Ballast/Bilge Water Mud, Cuttings, and Cement at the Seafloor Uncontaminated Seawater Boiler Blowdown Source Water and Sand Diatomaceous Earth Filter Media	Free Oil	No Free Oil	Once/week during discharge	Visual sheen	Number of days sheen observed

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Miscellaneous Discharges to Which Treatment Chemicals Have Been Added	Free Oil	No Free Oil	Once/day when discharging	Visual Sheen	Number of days sheen observed
	Toxicity	7-day minimum and monthly average minimum NOEC	Rate Dependent	Grab	Lowest NOEC observed for either of the two species

- ^a Toxicity test to be conducted using suspended particulate phase (SPP) of a 9:1 seawater:mud dilution. The sample shall be taken beneath the shale shaker, or if there are no returns across the shaker, the sample must be taken from a location that is characteristic of the overall mud system to be discharged.
- ^b Sample shall be taken after the final log run is completed and prior to bulk discharge.
- ^c The daily maximum concentration may be based on the average of up to four grab sample results in the 24 hour period.
- ^d When discharging and facility is manned. Monitoring shall be accomplished during times when observation of a visual sheen on the surface of the receiving water is possible in the vicinity of the discharge.
- ^e No discharge of priority pollutants except in non-detectable amounts using EPA methods in 40 CFR Part 136. Information on the specific chemical composition shall be recorded but not reported unless requested by EPA.
- ^f Any facility that properly operates and maintains a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed to be in compliance with permit limitations for sanitary waste. The MSD shall be tested yearly for proper operation and test results maintained at the facility.
- ^g Based on LC₅₀ results, the following compounds may also be included as miscellaneous discharges: subsea wellhead preservation fluids, subsea production control fluids, umbilical steel tune storage fluid, leak tracer fluid, riser tensioner fluid.

Table 2. Effluent Limitations, Prohibitions, and Monitoring Requirements for the Eastern Gulf of Mexico NPDES General Permit Existing and New Sources using Synthetic Based Drilling Fluids

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Non-Aqueous Based Drilling Fluids	No discharge, except that which adheres to cuttings, de minimus discharges and small volume discharges.				
Drill Cuttings Generated Using Non-Aqueous-Based Drilling	Cuttings from Oil-Based Drilling Fluids	No Discharge			
	Cuttings from Oil Contaminated Drilling Fluids	No Discharge			
	Cuttings Generated Using Mineral Oil	No Discharge			
	Cuttings Generated Using Drilling Fluids Which Contain Diesel Oil	No Discharge			
	Areas of Biological Concern or a Federally Designated Dredged Material Disposal Site	No discharge within 1000 meters.			
	Free Oil	No Discharge	Once/week	Static sheen; method at 58 FR 12506	Number of days observed

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month
	Formation Oil	No Discharge	RPE test once prior to drilling & RPE or GC/MS once/week.	GC/MS method at 40 C.F.R. Part 435, Appendix 5 of Subpart A	Number of Days
	Suspended Particulate Phase Toxicity	30,000 ppm daily minimum 30,000 ppm monthly ave of minimum values	Once/month and Once/end of well ^b	Grab/96-hr LC ₅₀ using <i>Mysidopsis bahia</i> (same as <i>Americamysis bahia</i>); Method 58 FR 12507	Minimum LC ₅₀ of tests performed and monthly ave LC ₅₀
	Drilling Fluid Sediment Toxicity Ratio	1.0	Once/month by grab sample(s)	Grab(s)/ASTM E1367-92	ratio
	Polynuclear Aromatic Hydrocarbons (PAH)	1 x 10 ⁻⁵	Once per year on each fluid blend	Grab/EPA Method 1654A	ratio
	Sediment Toxicity Ratio	1.0	Once per year on each fluids blend	Grab(s)/ASTM E1367-92	ratio
	Base Fluid Retained on Cuttings (C ₁₆₋₁₈ internal olefin)	6.9 g/100 g wet drill cuttings	Once per day by grab sample, up to three sampling episodes per day	API Retort Method; 40 C.F.R. Part 423, Subpart A, Appendix 7	g/ 100 g wet drill cuttings

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Base Fluid Retained on Cuttings (C ₁₂₋₁₄ ester)	9.4 g/100 g wet drill cuttings	Once per day by grab sample, up to three sampling episodes per day	API Retort Method; 40 C.F.R. Part 423, Subpart A, Appendix 7	g/ 100 g wet drill cuttings
	Biodegradation Rate	1.0	Once per year on each fluid blend	Grab(s)/ISO 11734:1995	ratio
	Mercury in Stock barite	1.0 mg/kg (dry wt.)	Representative sample of each stock barite prior to drilling	EPA SWA method 7471A	mg/kg
	Cadmium in Stock barite	3.0 mg/kg (dry wt.)	Representative sample of each stock barite prior to drilling	EPA SWA method 6010B	mg/kg

- ^a Toxicity test to be conducted using suspended particulate phase (SPP) of a 9:1 seawater:mud dilution. The sample shall be taken beneath the shale shaker, or if there are no returns across the shaker, the sample must be taken from a location that is characteristic of the overall mud system to be discharged.
- ^b Sample shall be taken after the final log run is completed and prior to bulk discharge.
- ^c The daily maximum concentration may be based on the average of up to four grab sample results in the 24 hour period.
- ^d When discharging and facility is manned. Monitoring shall be accomplished during times when observation of a visual sheen on the surface of the receiving water is possible in the vicinity of the discharge.
- ^e No discharge of priority pollutants except in trace amounts. Information on the specific chemical composition shall be recorded but not reported unless requested by EPA.
- ^f Any facility that properly operates and maintains a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed to be in compliance with permit limitations for sanitary waste. The MSD shall be tested yearly for proper operation and test results maintained at the facility.

Appendix A

Effluent concentrations at the edge of a 100-m mixing zone will be modeled by EPA for each *produced water* outfall listed in an operator's notice of commencement of production operations. This projected effluent concentration will be used to calculate the permit limitation for produced water toxicity. The discharge will be modeled using each facility's measured water column conditions and discharge configurations as input for the CORMIX 3.2 expert system for hydrodynamic mixing zone analysis.

The notice of commencement of production operations will be accompanied by a completed CORMIX 3.2 input parameter table presented as Table A-1. The input parameters required are the following.

- Anticipated average discharge rate (bbl/day)
- Water depth (meters)
- Discharge pipe location in the water column (meters from surface or bottom)
- Discharge pipe orientation with respect to the prevailing current (degrees; 0° is co-flowing)
- Discharge pipe opening diameter (meters)

These parameters are site-specific parameters that the operator must determine through monitoring or measurement and certify as true to the best of their knowledge. All other input parameters for the CORMIX 3.2 model are established in Table 1 of Appendix B.

EPA Region 4 will conduct the model using the operator's input parameters and report the toxicity limitation to the operator. If the parameters supplied by the operator change during the life of the permit (e.g., average discharge rate increases or decreases, a change in discharge pipe orientation, etc.), the operator should submit the new input parameters to the Region so that a new toxicity limitation can be calculated.

Compliance with the toxicity limitation will be demonstrated by conducting 96-hour acute or 7-day chronic toxicity tests using mysids (*Mysidopsis bahia*) and inland silverside minnows (*Menida beryllina*) each month. The LC₅₀ for each species will be reported on the DMR and a copy of the complete laboratory report shall be submitted.

Table A-1. CORMIX Input Parameters for Toxicity Limitation Calculation

Permit number: GMG46 _____
Company: _____
Contact name/Phone number: _____
Lease block/number: _____
Facility name: _____

Parameter Units

Discharge Rate _____ Average bbl/day
Water depth _____ Meters

Discharge pipe location in the water column

_____ meters from _____ water surface, or _____ seafloor

Discharge pipe orientation with respect to the seafloor:

degrees (90° is directed toward the surface)
(-90° is directed toward the seafloor)

Discharge pipe opening diameter:

_____ meters

Wind Speed

_____ m/sec

Appendix B

Table 1: CORMIX Ambient Input Parameters and Constant Discharge Input Parameters

Parameter	Units	Value
Surface Density (ρ_s)	kg/m ³	1023.00
Density Gradient ($\Delta\rho$)	kg/m ³ /m	0.163 (Linear)
Current Speed for < 200 m	cm/sec	5
Current Speed for > 200 m	cm/sec	15
Wind Speed	m/sec	4
Darcy-Wiesbach Friction Factor (f)		0.02
Legal Mixing Zone	m	100
Discharge Density	kg/m ³	1070.2
Horizontal Discharge Angle (σ)	degrees	0
Vertical Discharge Angle (θ)	degrees	- 45

Table 2: Produce Water Discharge Pipe Diameters

Range on Table (inches)	Model Input	
	(inches)	(meters)
0 - 5	4	0.1016
>5 - 7	6	0.1524
>7 - 9	8	0.2032
>9 - 11	10	0.3048
>11 - 15	13	0.3302

Table 3: CORMIX Predicted Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Less than 200 meters

Discharge Rate (bbl/day)	Pipe Diameter (inches)				
	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.11	0.11	0.11	0.11	0.11
501 to 1000	0.22	0.22	0.22	0.22	0.22
1001 to 2000	0.37	0.37	0.37	0.37	0.37
2001 to 3000	0.48	0.48	0.48	0.48	0.48
3001 to 4000	0.56	0.56	0.56	0.56	0.56
4001 to 5000	0.65	0.66	0.66	0.66	0.66
5001 to 6000	0.73	0.74	0.74	0.74	0.74
6001 to 7000	0.77	0.78	0.78	0.78	0.78
7001 to 8000	0.84	0.86	0.86	0.87	0.87

Table 4: CORMIX Predicted Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Greater than 200 meters

Discharge Rate (bbl/day)	Pipe Diameter (inches)				
	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.08	0.08	0.08	0.08	0.08
501 to 1000	0.12	0.12	0.12	0.12	0.12
1001 to 2000	0.18	0.18	0.18	0.18	0.18
2001 to 3000	0.22	0.22	0.22	0.22	0.22
3001 to 4000	0.24	0.25	0.25	0.25	0.25
4001 to 5000	0.28	0.28	0.28	0.28	0.28
5001 to 6000	0.30	0.30	0.31	0.31	0.31
6001 to 7000	0.32	0.32	0.32	0.32	0.32
7001 to 8000	0.35	0.35	0.35	0.35	0.35

Table 5: Minimum Vertical Port Separation to Avoid Interference

Port Discharge Rate	Waters Less than 200 meters	Waters Greater than 200 meters
(bbl/day)	(meters)	(meters)
>0 to 500	3.0	3.0
501 to 1000	3.0	6.0
1001 to 2000	4.0	6.0
2001 to 5000	5.0	6.0
5001 to 7000	5.5	6.0
7001 to 10,000	6.0	6.0

Table 6: Critical Dilutions (Percent Effluent) for Toxicity Limitations for Seawater to which treatment chemicals have been added

Water Depth	Discharge Rate (bbl/day)	Pipe Diameter Range (actual diameter modeled)		
		>0 to 2" (1)	>2 to 4" (3)	>4 to 6" (5)
Less than 200 meters (shelf)	500 (0 to 1000)	0.29	0.81	1.23
	1000 (1000 - 2000)	0.31	0.86	1.34
	2000 (2000-4000)	0.34	0.88	1.43
	4000 (4000-8000)	0.33	0.98	1.48
	8000 (>8000)	0.29	1.02	1.68
Deeper than 200 meters (slope)	500 (0 to 1000)	0.32	1.03	1.65
	1000 (1000-2000)	0.28	0.99	1.65
	2000 (2000-4000)	0.24	0.89	1.57
	4000 (4000-8000)	0.20	0.78	1.42
	8000 (>8000)	0.17	0.66	1.24

Table 7: Critical Dilutions (Percent Effluent) for Toxicity Limitations for Freshwater to which treatment chemicals have been added

Water Depth	Discharge Rate (bbl/day)	Pipe Diameter (actual diameter modeled)		
		>0 to 2" (1)	>2 to 4" (3)	>4 to 6" (5)
Less than 200 meters (shelf)	500 (0 to 1000)	0.57	3.85	16.9
	1000 (1000 - 2000)	0.44	3.20	16.7
	2000 (2000-4000)	0.34	2.50	5.76
	4000 (4000-8000)	0.35	1.86	4.66
	8000 (>8000)	0.30	1.36	3.52
Deeper than 200 meters (slope)	500 (0 to 1000)	0.67	11.6	29.9
	1000 (1000 - 2000)	0.40	6.69	29.1
	2000 (2000-4000)	0.26	3.57	15.9
	4000 (4000-8000)	0.22	1.96	9.14
	8000 (>8000)	0.19	1.06	4.67

