

SUMMARY – March 2012

Draft Beaufort and Chukchi NPDES General Permits

I. Overview

- EPA is reissuing the expired Arctic NPDES General Permit as two general permits (Beaufort and Chukchi GP). The areas of coverage include discharges from existing lease locations and future leases that might be sold during the five-year permit term (2012-2017).
- The general permits are for discharges of exploration activities; any future offshore development and production activities or discharges would undergo a separate robust environmental review and permitting process.
- The Beaufort and Chukchi exploration general permits contain a vast improvement from the expired permit. Examples include:
 - expand the scope of the environmental monitoring program (EMP) and require it to be implemented at every drilling site for four phases of exploration activity;
 - impose additional EMP requirements, if water-based drilling fluids and drill cuttings are authorized to be discharged by the Director;
 - eliminate the authorization to discharge non-aqueous drilling fluids and associated drill cuttings (i.e., only water-based drilling fluids and cuttings are authorized);
 - eliminate the authorization to discharge test fluids;
 - increase the Notice of Intent (NOI) requirements;
 - increase the chemical additive inventory and reporting requirement for all discharges, including limitations on chemical additive concentrations;
 - apply a 5-meter water depth discharge prohibition to all discharges;
 - limit drilling to 5 wells per lease block, except upon the EPA's review and authorization for discharges from the additional wells;
 - prohibit the discharge of water-based drilling fluids and drill cuttings during active bowhead whaling activities in the Beaufort Sea, unless the EPA authorizes the discharge after review of the operator's evaluation of the feasibility of drilling facility storage capacity and land-based disposal alternatives;
 - require an alternatives analysis before authorization is granted for discharge of water-based drilling fluids and drill cuttings, sanitary, and domestic wastes to stable ice in the Beaufort Sea area of coverage;
 - require screening of certain waste streams for toxicity and conduct whole effluent toxicity (WET) testing if those waste streams exceed a volume discharge threshold and if chemicals are added to the system, or if an initial toxicity screen shows potential toxicity;
 - include cooling water intake structure requirements; and
 - include electronic Discharge Monitoring Report (DMR) requirements.
- EPA relied on Traditional Knowledge (TK) information collected from four North Slope whaling communities to inform the draft general permits (See Section V, below).

- EPA is currently consulting with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) to ensure its action do not adversely affect marine resources and critical habitat protected under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA).
- EPA is requesting public review and comment on the draft general permits and fact sheet. Public meetings and hearings are scheduled next week in several communities. The comment period will end on March 30, 2012.
- EPA plans to reissue the permits by October 31, 2012.

II. Authorized Discharges

No.	Description	Monitoring Requirements
001	<p><u>Water-Based Drilling Fluids</u> - The circulating fluid (mud) used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation pressure. The draft Beaufort and Chukchi GPs propose to only authorize the discharge of water-based drilling fluids.</p> <p><u>Drill Cuttings</u> – 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 other equipment processing drilling fluid (i.e., accumulated solids).</p>	<p>Test suspended particulate phase (SPP) toxicity weekly. Test stock barite mercury and cadmium for each well. Monitor for pH, total aqueous hydrocarbons (TAqH) and total aromatic hydrocarbons (TAH). 24-hour noncompliance reporting.</p> <p>Limit the rates of discharge based on water depths.</p>
002	<p><u>Deck Drainage</u> – Any waste resulting from deck washings, spillage, rainwater, and runoff from gutters and drains, including drip pans and work areas within oil and gas facilities.</p>	<p>Use oil-water separator. No discharge if oil or sheen present. Monitor flow, pH, TAqH, TAH, and WET (if screen test shows toxicity).</p>
002	<p><u>Sanitary Waste</u> – Human body waste discharged from toilets and urinals located within oil and gas facilities.</p>	<p>State waters (combined with Domestic Waste): Limit and monitor flow, dissolved oxygen, pH, residual chlorine, BOD₅, TSS, fecal coliform (weekly);</p> <p>Federal waters: Limit and monitor pH, residual chlorine, BOD₅, TSS, fecal coliform (weekly). Monitor flow. No discharge if oil or sheen present.</p>
004	<p><u>Domestic Waste</u> – Materials discharged from sinks, showers, laundries, safety showers, eye-wash stations, hand-wash stations, fish cleaning stations, and galleys located within oil and gas facilities.</p>	<p>Federal waters: Monitor flow, pH. No discharge of solids, garbage, or foam.</p>
005	<p><u>Desalination Unit Waste</u> – Wastewater associated with the process of creating freshwater from seawater.</p>	<p>No discharge if oil or sheen present. Monitor flow. Test pH and WET (if screen test shows toxicity).</p>
006	<p><u>Blowout Preventer Fluid</u> – Fluid used to actuate hydraulic equipment on the blowout preventer.</p>	<p>No discharge if oil or sheen present. Monitor: flow, pH</p>
007	<p><u>Boiler Blowdown</u> – Water and minerals drained from boiler drums to minimize solids build-up in the boiler.</p>	<p>No discharge if oil or sheen present. Monitor flow. Test pH and WET (if screen test shows toxicity).</p>

008	<u>Fire Control System Test Water</u> – Water released during the training of personnel in fire protection, and the testing and maintenance of fire protection equipment.	No discharge if oil or sheen present. Monitor flow. Test pH and WET (if screen test shows toxicity).
009	<u>Non-contact Cooling Water</u> – Water used for non-contact, once-through cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content.	No discharge if oil or sheen present. Monitor: flow, pH, temperature. Test WET (if screen test shows toxicity).
010	<u>Uncontaminated Ballast Water</u> – Harbor or seawater added or removed to maintain the proper ballast floater level and ship draft and to conduct jack-up rig related seabed support capability tests (e.g., jack-up rig preload water).	Use oil-water separator. No discharge if oil or sheen present. Monitor: flow, pH.
011	<u>Bilge Water</u> – Water that collects in the lower internal parts of the drilling vessel hull.	Use oil-water separator. Monitor pH, flow. Test WET (if screen test shows toxicity).
012	<u>Excess Cement Slurry</u> – Excess cement slurry that results from equipment washdown after cementing operations. Excess cement slurry is discharged intermittently while drilling, depending on drilling, casing, and testing program and problems.	No discharge if oil or sheen present. Monitor: flow, pH.
013	<u>Mud, Cuttings, Cement at the Seafloor</u> – Materials discharged at the surface of the ocean floor during construction of the mudline cellar, during the early phases of drilling operations before the riser is installed, and during well abandonment and plugging.	No discharge if oil or sheen present. Monitor: flow.

III. Estimated Discharge Volumes

Beaufort GP – Estimated discharge quantities based on NOIs (per well) (18-34 wells estimated over 5-year permit term)

Discharge	Discharge Quantities ^a (bbl/well)
Water-based drilling fluids and drill cuttings (001)	5,071 ^a
Deck drainage (002) ^b	244
Sanitary wastes (003)	1,022 ^a
Domestic wastes (004)	11,390 ^a
Desalination unit wastes (005)	5,390
Blowout preventer fluid (006)	42
Boiler blowdown (007)	0
Fire control system test water (008)	0
Non-contact cooling water (009)	2,187,000
Uncontaminated ballast Water (010)	212 ^a
Bilge water (011)	652 ^a
Excess cement slurry (012)	50
Muds, cuttings, and cement at the seafloor (013)	2,791

a. Shell's NOIs indicated zero discharge in Camden Bay at the Sivulliq and Torpedo prospects.

**Chukchi GP – Estimated discharge quantities based on NOIs (per well)
(24-42 wells estimated over 5-year term)**

Discharge	Discharge quantities (bbl/well)
Water-based drilling fluids and drill cuttings (001) ^a	7,693
Deck drainage (002)	478
Sanitary wastes (003)	1,100
Domestic wastes (004)	9,343
Desalination unit wastes (005)	7,990
Blowout preventer fluid (006)	42
Boiler blowdown (007)	390
Fire control system test water (008)	110 bbl/month
Non-contact cooling water (009)	2,700,000
Uncontaminated ballast Water (010)	168
Bilge water (011)	622
Excess cement slurry (012)	50
Muds, cuttings, and cement at the seafloor (013)	3,747

bbl = barrel

a Quantities include combined average drilling fluids and drill cuttings quantities from 26 NOIs received from Shell, ConocoPhillips, and Statoil.

IV. Environmental Monitoring Program (EMP) Requirements – at each drill site

EMP elements:

1. Dilution, plume and deposition modeling (Discharges 001, 009, and 013).
2. Contains four phases:
 - Phase I (baseline) assessment – Initial site survey, physical and receiving water data collection, and benthic community structure;
 - Phase II (during drilling) assessment – Effluent toxicity characterization, cooling water (Discharge 009) plume and water column monitoring, and collect observations for potential marine mammal deflection during high periods of discharge;
 - Phase III (post-drilling) assessment – Physical sea bottom survey
 - Phase IV (15 months after drilling ceases) assessment – Physical sea bottom survey, benthic community structure.
3. Whole Effluent Toxicity (WET) testing once per well for certain discharges that (a) initial screening indicates potential toxicity, or (b) exceed a discharge rate greater than 10,000 gallons during any 24-hour period, and (3) if chemicals are added.
4. Two EMP reports must be submitted.

Additional EMP requirements for discharge of water-based drilling fluids and drill cuttings:

5. Analyze drilling fluids and drill cuttings for metals contaminants of concern (Phases I and II);
6. Sediment monitoring of the drilling site (Phases I, III, and IV);
7. Evaluate benthic community tissue for metals and organic compounds, and conduct a metals bioaccumulation study in the drilling site area (Phases I, III, and IV);
8. Sample and assess metals, organics, turbidity, and total suspended solids throughout the discharge-affected water column and discharge plume (Phase II); and
9. Observe for potential marine mammal deflection (Phase II).

V. How TK Informed EPA's Draft Decisions - examples

1. Eliminate the authorization to discharge non-aqueous drilling fluids and associated drill cuttings (i.e., only water-based drilling fluids and cuttings are authorized);
2. Prohibit the discharges of water-based drilling fluids and drill cuttings under the Beaufort general permit during active bowhead hunting activities in the Beaufort Sea, unless authorized in writing by EPA. If the permittee proposes to discharge this waste stream during this period, it must demonstrate (1) storage capacity is not available on the drilling facility during this period, and (2) land-based disposal options are not feasible;
3. Require an alternatives analysis before authorization is granted for discharge of water-based drilling fluids and drill cuttings, sanitary, and domestic wastes to stable ice in the Beaufort Sea area of coverage;
4. Require an inventory of chemicals added to each wastestream, where in the drilling process they are used, and establish limits on chemical additive concentrations;
5. Require Environmental Monitoring Programs (EMP) at each drilling site during four phases of the drilling activity;
6. Toxicity screening and WET testing;
7. Limit drilling to 5 wells per lease block, except upon the EPA's review and authorization for discharges from the additional wells; and
8. Prohibit all discharges in areas with water depths of less than 5 meters.

VI. ODCE – no unreasonable degradation

Definitions and Evaluation Criteria

EPA's Ocean Discharge Criteria (40 CFR Part 125, Subpart M) set forth specific determinations of unreasonable degradation that must be made before permit issuance. Unreasonable degradation of the marine environment is defined (40 CFR 125.121[e]) as follows:

- Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
- Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
- Loss of aesthetic, recreational, scientific, or economic values, which are unreasonable in relation to the benefit derived from the discharge.

This ODCE is based on 10 criteria (40 CFR 125.122):

- Quantities, composition, and potential for bioaccumulation or persistence of the pollutants to be discharged;
- Potential transport of such pollutants by biological, physical, or chemical processes;
- Composition and vulnerability of the biological communities which may be exposed to such pollutants, including the presence of unique species or communities of species, the presence of species identified as endangered or threatened pursuant to the Endangered Species Act, or the presence of those species critical to the structure or function of the ecosystem, such as those important for the food chain;

- Importance of the receiving water area to the surrounding biological community, including the presence of spawning sites, nursery/forage areas, migratory pathways, or areas necessary for other functions or critical stages in the life cycle of an organism;
- Existence of special aquatic sites including, but not limited to, marine sanctuaries and refuges, parks, national and historic monuments, national seashores, wilderness areas, and coral reefs;
- Potential impacts on human health through direct and indirect pathways;
- Existing or potential recreational and commercial fishing, including finfishing and shellfishing;
- Any applicable requirements of an approved Coastal Zone Management Plan;
- Other factors relating to the effects of the discharge as may be appropriate; and
- Marine water quality criteria developed pursuant to CWA section 304(a)(1).

Areal extent of solids discharges

Chukchi Sea – Modeling results indicate at a maximum rate of discharge at 1000bb/hr, a 1,000 m (3,280 ft) radius for the distribution of fine-grained solids. Each well would affect approximately 62 acres, with a deposition thickness of less than 1 inch. The completion of a maximum of 42 wells over the duration of the 5-year permit would result in the coverage of approximately 2,604 acres of the seafloor by the solid components compared to the size of the 33.76 million-acre (53,750 sq mi) total Area of Coverage. Under those assumptions, solids discharges would affect less than 0.01 percent of the seafloor in the Chukchi area of coverage.

[Comparison: North Carolina (53,800 sq mi); Arkansas (53,200 sq mi)]

Beaufort Sea – Similar to the Chukchi, the solid components of the discharge would settle within a radius of 3,280 ft affecting approximately 62 acres of seafloor per well. The completion of a maximum of 34 wells over the duration of the 5-year permit would result in the coverage of approximately 2,100 acres of the seafloor compared to the size of the 65 million-acre (101,750 sq mi) total Area of Coverage. As such, solids discharges would affect about .0032 percent of the seafloor in the Beaufort area of coverage.

[Comparison: Oregon (98,400 sq mi); Colorado (104,000 sq mi)]