United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

Honorable Joseph Westphal
Assistant Secretary of the Army (Civil Works)
Department of the Army
108 Pentagon
Washington, D.C. 20310-0108

APR - 5 1999

Dear Dr. Westphal:

In accordance with the provisions of the Section 404(q) Memorandum of Agreement between the Department of the Interior and the Department of the Army (pursuant to the Clean Water Act at 33 U.S.C. 1344 *et seq.* and as revised on December 21, 1992), I am requesting your review of the U.S. Army Corps of Engineers, Alaska District Engineer's decision to authorize British Petroleum Exploration, Alaska to develop the proposed Northstar oil and gas unit (Public Notice No. N-950372, Beaufort Sea 441). The proposed project would be the first offshore development in Alaska's Beaufort Sea without a causeway to shore and the first to transport oil via a buried subsea pipeline in the entire Arctic. The project would establish design precedents for subsequent offshore development. The Department of the Interior has determined that the proposed project will result in unacceptable risks to fish and wildlife resources which depend on the lagoons and nearshore habitats in the project area.

The applicant has proposed to minimize potential impacts from the project by engineering the pipeline to reduce the risk of a spill, and by agreeing to many of the stipulations proposed by Federal and State agencies. The Department believes that the potential project impacts can be further minimized by routing the entire offshore pipeline seaward of the barrier islands. Compensatory mitigation has not been proposed, nor is it practicable. Therefore, avoidance and minimization are the only options available to offset potential impacts, including secondary and cumulative impacts of an oil spill.

On March 29, 1999, the U.S. Fish and Wildlife Service's Alaska Regional Office received a Notice of Intent to issue the above-referenced permit. After a thorough review of background information on the project, the Department has determined that this case warrants elevation in accordance with the criteria found in Part IV of the revised Section 404(q) MOA (Elevation of Individual Permit Decisions). Specifically, the Department has concluded that the proposed project will have substantial and unacceptable adverse impacts on aquatic resources of national importance.

The District Engineer's proposed permit decision could lead to substantial direct and cumulative adverse impacts to marine mammals, waterfowl, shorebirds, and fish. The Department of the Interior, acting through the Service, is vested with the authority and obligation to protect, conserve, and enhance the Nation's fish and wildlife resources. These matters fall within our jurisdiction under the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*),

Section 404(m) of the Clean Water Act (62 Stat. 1155; 33 U.S.C. 1251-1376), the Fish and Wildlife Act of 1956 (70 Stat. 1119; 16 U.S.C. 742), the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712), the Marine Mammal Protection Act (86 Stat. 1027; 16 U.S.C. 1361-1407), as amended, and the Endangered Species Act of 1973 (87 Stat. 844; 16 U.S.C.1531-1544), as amended.

The District Engineer proposes to permit the applicant to route the subsea portion of pipeline directly through Gwydyr Bay/Simpson Lagoon, a shallow water system that provides habitat for large numbers of migratory waterfowl, shorebirds, and anadromous fish. Offshore habitats also support fish and wildlife, but at lower numbers and diversity than the nearshore areas. Nearshore coastal habitats are characterized by abundant invertebrates which are the dominant foods for both fish and migratory birds (National Research Council 1994). A primary concern in the Beaufort Sea is the potential effects of oil and gas development on the nearshore zone where Arctic cod, fourhorn sculpin, Arctic and least cisco, Dolly Varden, and other anadromous fish species feed, migrate and gain access to freshwater overwintering sites. The use of nearshore areas by migratory birds is also considerable. In a study sponsored by the Minerals Management Service, the National Research Council (1994:101) concluded that "nearshore waters...are critically important habitats for migrating waterfowl, as are their shorelines for shorebirds. Birds in these areas are particularly vulnerable [to oil spills and disturbance] because they need to acquire food rapidly for successful completion of migration or because they are molting and can be flightless."

The Final Environmental Impact Statement (pp. 8-79) concluded that an oil spill in the nearshore areas could result in the mortality of tens of thousands of birds depending on the timing, size, location and persistence of the spill. Up to 50,000 oldsquaw ducks molt during mid-July through August in Simpson Lagoon. Up to 1,600 black brant use coastal saline tundra in the area potentially affected by a spill. The threatened spectacled eider also uses nearshore habitats during spring migration, post-breeding migration, and fall migration. Common eiders, and red and red-necked phalaropes also use nearshore habitats, along with other migratory birds, and would be at risk in the event of a spill. Spills occurring during the open water period have the greatest potential to cause direct mortality, but spills at any time of year can cause long-lasting impacts to the invertebrate food base and habitats with consequent impacts on migratory species.

Polar bears are wide-ranging and can occur throughout the project area. The Final EIS concludes that up to 30 polar bears could be killed in the event of an oil spill. As we expressed in our final rule on the incidental take of polar bears and Pacific walrus from oil and gas operations in the Beaufort Sea (64 Federal Register 4328, 4220; January 28, 1999), the Fish and Wildlife Service emphasizes that any discussion about the suitability of different subsea pipeline alternatives remains subject to final Department of the Interior approval of Incidental Take Regulations under Section 101(a)(5) of the Marine Mammal Protection Act. Approval of new regulations requires a finding of negligible impact on marine mammal species or stocks and a finding that any take will not have an unmitigable adverse impact on the availability of such species or stocks for subsistence take for all oil and gas activities in the region. The Department has not yet made

these findings for subsea pipeline construction and use. Preparation of these findings will require additional analyses of oil spill probabilities discussed in the Final EIS for the Northstar project and other proposed projects such as Liberty and Sandpiper.

Because of the lack of precedent and because of the challenges presented by the offshore Arctic marine environment, there is considerable uncertainty associated with assessing the oil spill risks for the proposed project. The applicant's preferred alternative (Alternative 2) includes a 6-mile offshore pipeline which routes approximately 4 miles offshore of the barrier islands and 2 miles within Gwydyr Bay/Simpson Lagoon. Alternative 5, identified as the Environmentally Preferred Alternative in the Final EIS by the U.S. Army Corps of Engineers, Fish and Wildlife Service, Environmental Protection Agency, and the National Marine Fisheries Service, would route the offshore buried pipeline entirely seaward of the barrier islands with a landfall on the man-made West Dock causeway. The selection of Alternative 5 is justified and warranted because:

- routing the pipeline offshore of the barrier islands significantly reduces the potential for an oil spill directly in Gwydyr Bay/Simpson Lagoon, and provides additional response time to contain a spill before it contaminates nearshore habitats, including coastal marshes and shorelines;

- risk of pipeline failure due to permafrost thaw subsidence and shoreline erosion are eliminated under Alternative 5 by routing the pipeline in a corridor likely free of near-surface subsea permafrost and by placing the landfall on a stable structure (West Dock);

- offshore oil spill response and recovery will be improved under Alternative 5 since response equipment will be staged on West Dock. In addition, spill response offshore of the barrier islands will occur in deeper water, thus allowing the use of larger and more efficient spill recovery equipment compared to the smaller equipment required in the shallow waters (0-5 feet) of Simpson Lagoon;

- Alternative 5 reduces oil spill response time, improves leak detection, and reduces access-related damage related to oil spill response and unplanned maintenance of onshore pipelines; and

- onshore pipelines under Alternative 5 can be consolidated into existing pipeline corridors for most of their length, eliminating the need for 6.5 miles of new pipeline in currently undisturbed tundra.

In addition to the advantages of Alternative 5 described above, several of the disadvantages identified by the applicant could be eliminated by modifying Alternative 5 to route the pipeline directly from Seal Island to West Dock (the proposed Alternative 5 routes the pipeline first to the outer edge of the barrier islands, then to West Dock, resulting in two angles in the pipeline). A straight-line route would eliminate the engineering concerns with an angled pipeline, avoid the

potential water current and ice forces along the barrier islands, reduce the overall pipeline length from 9 to 7 miles (only 1 mile longer than the Alternative 2 pipeline), and reduce the maximum spill volume from 5200 barrels to 4100 barrels (compared to 3600 barrels under Alternative 2).

Because the amount of dredge and fill material is positively correlated with pipeline length, Alternative 2 would require 264,000 cy compared to 378,000 cy for Alternative 5. However, dredging and filling associated with the subsea pipeline would result in only temporary disturbance of the benthic invertebrates within and near the pipeline trench and a temporary decrease of water quality (FEIS:6-25 to 6-26). Because pipeline installation would occur during winter, impacts to anadromous fish and migratory birds will likely be negligible. Alternative 5 also requires an additional 300,000 cy of gravel fill to widen the west side of the West Dock causeway by approximately 50 ft for approximately 0.9 mi. While this would cause approximately 5.5 acres of the shallow, previously disturbed seafloor adjacent to the causeway to be covered, the Service believes that increased fill adjacent to the causeway is a minor impact (Final EIS:11-17).

The project as proposed is unacceptable to the Department of Interior. A viable alternative exists which would further minimize risk to fish and wildlife resulting from an oil spill. The concerns expressed by the applicant (e.g., spill risk, spill response capabilities) about routing the pipeline offshore of the barrier islands under Alternative 5 also apply to 4 miles of the pipeline route under Alternative 2. The engineering and planning required for construction and operation of 4 miles of the Alternative 2 subsea pipeline are identical to what would be required for the 7 to 9 miles of pipeline seaward of the barrier islands under Alternative 5. We are encouraged that BPXA intends to comply with many of the stipulations proposed by the various permitting agencies, but continue to believe that potential impacts can be further avoided or minimized by selection of Alternative 5 or a Modified Alternative 5 as the action alternative.

Enclosed is additional information addressing these and other issues relative to the proposed permit decision. Please do not hesitate to contact us if you have any questions.

Sincerely,

Donald J. Barry

Assistant Secretary for Fish
and Wildlife and Parks

Enclosure

ENCLOSURE

Project Description

The applicant, British Petroleum (Alaska) Inc. (BPXA), proposes to produce oil from the Northstar Unit, located approximately 15 miles NW of Prudhoe Bay, in the Alaskan Beaufort Sea. The predominant infrastructure required for the project includes: a self-contained development-production facility on a reconstructed 21.3 acre gravel island (Seal Island) in 39 feet of water; a 10 inch subsea gas pipeline and 10 inch oil pipeline, buried 6 - 9 feet deep in a common trench for approximately 6 miles from Seal Island to the coast; and 9.6 miles of new onshore pipelines through undisturbed tundra. If permitted and constructed, Northstar will be the first offshore oil and gas development/production facility in the Alaskan Beaufort Sea without a causeway to shore and the first to use a buried subsea oil pipeline in the entire Arctic.

Aquatic Resources of National Importance

In 1976, the U.S. Congress defined the barrier island-nearshore lagoon system as "...a band of dry land and adjacent ocean space in which land ecology and use directly interacts with ocean ecology and use. The coastal zone is one of the most sensitive and biologically productive areas of the marine environment. Because of the importance of the coastal zone to marine ecosystems, the environmental impacts from Outer Continental Shelf oil and gas operations are most likely critical in this area" (Library of Congress 1976:114 in Johnson and Richardson 1981:348). The Service concurs with this statement and believes the Northstar Project Area is an aquatic resource of national importance. A primary concern in the Beaufort Sea is the potential effects of Outer Continental Shelf oil and gas activities in the nearshore coastal zone. A discussion of the potentially impacted aquatic resources follows:

Anadromous Fish

Arctic cisco (*Coregonus autumnalis*), least cisco (*C. sardinella*), broad whitefish (*C. nasus*), humpback whitefish (*C. pidschian*), Dolly Varden (*Salvelinus malma*), and other anadromous species use the nearshore coastal zone to feed, migrate, and gain access to freshwater overwintering sites (National Research Council 1994:108; see also Craig and Haldorson 1980, Craig et al. 1985, Craig 1989a:29). This nearshore zone provides a transportation corridor for fishes not fully adapted to the marine environment (Craig 1989a:29), as well as important feeding habitat due to the abundant invertebrate resources (e.g., mysids, amphipods, copepods, polychaetes; National Research Council 1994:108).

Studies of fish use of coastal habitats in Simpson Lagoon found that the largest gillnet catches consistently occurred within 100 miles of the mainland shoreline, with progressively smaller catches along barrier island inner shorelines, in mid-lagoon, adjacent to barrier island outer shorelines, and offshore (Craig and Haldorson 1981 in Thorsteinson et al. 1990:375; Craig et al. 1985:Fig.4, 5, 6). Of the anadromous fish, least cisco, broad whitefish and humpback whitefish in Simpson Lagoon were uncommon anywhere except in relatively warm and brackish nearshore habitats along the mainland (Craig 1984 in Thorsteinson 1990:375, Craig et al. 1985:13).

The Nuiqsut subsistence fishery targets Arctic cisco in the Colville Nigliq Channel and outer Colville Delta (Craig 1989b:144). The annual harvest of Arctic cisco by Nuiqsut residents was estimated at 27,920 lbs in 1985-86 (Pedersen and Shishido 1988 in Craig 1989b:Table 8). Helmerick's commercial fishery in the Colville Delta harvested approximately 20,600 lbs of Arctic cisco and 12,300 lbs of least cisco in 1985 (Craig 1989b:146).

Migratory Birds

In contrast to many areas of Alaska where pelagic environments support the major portion of avian biomass, the most important habitats in the Beaufort Sea for water- and shorebirds are the nearshore, lagoon, and littoral zones (National Research Council 1994:98). Nearshore habitats, lagoons, and barrier islands are migration corridors and provide staging, brood-rearing, and molting habitats for waterfowl, loons, and shorebirds (Dixon 1943, Thompson and Person 1963, Barry 1968, Bergman et al. 1977, Schamel 1978, Richardson and Johnson 1981, Johnson and Richardson 1982, Johnson 1985, Johnson and Herter 1989, Suydam et al. 1997). Studies of waterfowl use of Simpson Lagoon and other coastal nearshore habitats have established the importance of these systems to migratory birds and that interruption of the lagoon food webs could displace tens to hundreds of thousands of birds (Divoky 1978, Johnson et al. 1992 in National Research Council 1994:103). During portions of the year, significant fractions of the total North American populations of a number of species are present in the nearshore waters of the Beaufort Sea; these include: yellow-billed loon (*Gavia adamsii*); Pacific black brant (*Branta bernicla nigricans*); oldsquaw (*Clangula hyemalis*); common eider (*Somateria mollissima*); king eider (*S. spectabilis*); glaucous (*Larus hyperboreus*), Sabine's (*Xema sabini*), and Ross' gulls (*Rhodostethia rosea*); arctic terns (*Sterna paradisaea*); and red (*Phalaropus fulicaria*) and red-necked phalaropes (*P. lobatus)* Johnson et al. 1975 in Johnson and Richardson 1981:118).

Spectacled eiders (*Somateria fischeri*), a federally listed threatened species, use nearshore habitats, including lagoon systems, during spring migration, post-breeding migration, and fall migration (Johnson and Richardson 1982:Table 3; Richardson and Johnson 1981:117; Johnson and Herter 1989; Petersen 1996 pers. comm. and Napageak 1995 pers. comm., both in Minerals Management Service 1996:III-B-13). Although data on habitat use of nearshore and offshore habitats in the Beaufort Sea by spectacled eiders is limited, one biotelemetry study concluded that postbreeding male and female spectacled eiders stage and migrate offshore a median distance of 4 miles ($\pm$ 7 mile) and 10 miles ($\pm$ 10 mile), respectively (M. Petersen, USGS/BRD, unpubl. data cited in Final EIS:9-41). Variance associated with these median point estimates indicate that spectacled eiders were located from 3 miles onshore to 20 miles offshore.

Mammals

The Southern Beaufort Sea polar bear (*Ursus maritimus*) population is estimated at about 1,500 to 1,800 with an overall average density of 1 bear per 39 to 77 mi^2, with somewhat higher densities (1 bear per 30 to 50 mi^2) within the nearshore Alaskan Beaufort Sea. This population is likely at or near the carrying capacity of the environment. Polar bears range from approximately 40 miles inland to over 180 miles offshore, and migrate, feed, and den throughout the Northstar

Project Area. Pregnant adult female polar bears are known to have denned near the Kuparuk River Delta in the Northstar Project. Polar bear maternity den records within a 5- to 20-mile radius of Seal Island show no den sites within 10 miles, three within 15 miles, and seven within 20 miles (G. Durner, pers. comm. in Final EIS:6-71).

Caribou (*Rangifer tarandus*) of the Central Arctic Herd can inhabit the project area at any time of the year. However, most of the caribou use is during July, when post-calving aggregations move along the coast and river deltas where winds reduce incidence and severity of insect harassment. Once at the coast, caribou travel eastward parallel to the coast. Large groups of caribou can move into the Pt. Storkersen and Pt. McIntyre areas after prolonged periods of insect harassment. In early to mid-August, animals usually disperse south and west as they encounter the more developed portions of the oilfield.

Substantial and Unacceptable Adverse Impacts

The primary concern regarding Beaufort Sea OCS development impacts on fish is the possibility of effects in the near-coastal zone, where many anadromous species feed, migrate and gain access to freshwater overwintering sites (National Research Council 1994:108). Because of the species richness of anadromous fish in the relatively confined coastal lagoon system (see Craig et al. 1985), and because shallow, turbulent waters, and currents tend to disperse oil throughout the water column, an oil spill within a lagoon and along the coastal shorelines increases the vulnerability of fish to contamination, injury, and mortality compared to the marine habitat offshore of the barrier islands.

Migratory birds in coastal lagoons and nearshore habitats are particularly vulnerable to oil spills and disturbance because they need to acquire food rapidly for successful completion of migration or because they are molting and can be flightless. Contamination of coastal resources by oil spills can affect birds, whether birds are present or not, because the oil can contaminate or kill food organisms such as mysids, euphausids, and small fish needed by birds during migratory stopovers (Sanders et al. 1980 in National Research Council 1994:101). Because spring migrating birds can be expected to land in any open water areas or leads in nearshore areas (Bergman et al. 1977:6, Schamel 1978:57, Johnson and Richardson 1981:24, Richardson and Johnson 1981:116-117), open water leads in nearshore areas which are contaminated with spilled oil could result in the mortality of thousands to tens of thousands of birds depending on the timing, size, location and persistence of the spill (Northstar Final EIS:8-79).

Mortality estimates of molting oldsquaws from a summer oil spill "...along the coast of the Beaufort Sea could affect as many as several hundred thousand oldsquaws, depending on the duration and location of the pollution" (Johnson and Richardson 1981:348). Assessment of oil spill impacts in OCS Lease Sales 144 and 170 concluded that a spill contaminating lagoon waters where large aggregations of several thousand oldsquaw or other species were rafting could cause mortality ranging from several thousand to 10,000 seaducks (Minerals Management Service 1996:IV-B-21 and 1998:IV-B-43). The Northstar Final EIS (pg. 8-79) also found that because the highest densities of birds (primarily oldsquaw and other sea ducks) are found in nearshore lagoons in July and August, mortality could be in the thousands of birds.

Nearshore circulation and small tidal fluctuations would distribute oil throughout the semi-enclosed waters of Gwydyr Bay/Simpson Lagoon and smear a 1- to 2-foot vertical section of the shoreline (Final EIS:8-17). The predicted distribution of oil within the lagoon system is along approximately 24 miles of coastal shoreline (Kuparuk River Delta to Oliktok Point) and contaminate nine coastal salt marshes used by Pacific black brant during brood-rearing (Final EIS:Fig. 6.7-1). Loss of coastal salt marsh, which the Service has categorized as unique and irreplaceable wetland habitat, could result in mortality or injury to most of the breeding population of Pacific black brant in Arctic Alaska.

Because breeding common eiders on the Arctic Coastal Plain nest almost exclusively on barrier islands, and use nearshore habitats during brood rearing, an oil spill or increased disturbance during egg laying, incubation, and brood rearing would likely decrease productivity. Common eider ducklings use coastal lagoons, shallow tidal pools and nearshore areas where they likely feed on mysids, amphipods and isopods.

Although other species of shorebirds occur in the Gwydyr Bay/Simpson Lagoon area (see Final EIS:Table 6.7-2), phalaropes (primarily red phalaropes) are the most common shorebird occurring in nearshore coastal areas. Consequently, phalaropes could be at risk from an oil spill outside of the barrier islands unless the spill was diverted or contained, or birds were hazed from contaminated waters.

Indirect impacts of an oil spill in feeding, molting, and brood-rearing habitats may affect avian productivity and survival. Biopsies of harlequin ducks (*Histrionicus histrionicus*) collected in 1998 and Barrow's goldeneyes (*Bucephala islandica*) collected in winter 1996-97 from oiled parts of Prince William Sound continue to show evidence of exposure to hydrocarbons. Significantly lower overwintering survival of adult female harlequins from oiled areas of the Sound suggest this species may not have recovered from effects of the 1989 Exxon Valdez oil spill (Exxon Valdez Oil Spill Trustee Council 1999:10). An oil spill occurring in Simpson Lagoon could have similar long-term effects on molting oldsquaws, breeding and brood-rearing common eiders, brood-rearing Pacific black brant, and staging phalaropes.

The potential loss of up to 30 polar bears as the result of an oil spill is possible, given toxic and physiological effects of oil on polar bears, and periodic concentrations of bears in nearshore habitats. Even if polar bears are not present in an area contaminated by an oil spill, later consumption of oiled carcasses or a disruption of the dominant food chain could result in injury and mortality of polar bears or the functional loss of habitat. Lingering effects of spilled oil in or near denning areas could cause the loss of litters, aborted fetuses, or selection of maternal den sites in less favorable habitats. Recovery of polar bears killed as the result of a large oil spill event will likely be slow due to their low reproductive potential, loss of ringed seals in the affected area, and the potential persistence of oil in the marine ecosystem.

Cumulative Impacts

In addition to Northstar, the Service is aware of two proposed offshore developments in the nearshore Beaufort Sea. Although the Liberty project (located east of the Northstar project area

in Foggy Island Bay) has not yet been approved by British Petroleum for full development. Minerals Management Service is currently writing the Environmental Impact Statement (Nelson 1999a). The *Petroleum News Alaska* reported that during October 1999, BPXA will submit an exploration plan for approval for the Sandpiper Unit, located approximately 10 miles NW of Seal Island (Nelson 1999b). Development of the Sandpiper Unit, which has a projected field life of 24 years, could involve piping oil to the Northstar facility or constructing production facilities on a man-made island in Loon Shoal and routing sales quality oil directly to shore. The increased probability of oil spills associated with multiple offshore developments significantly increases risk to fish, migratory birds, and polar bears.

Consolidating facilities is one of the most effective practices used on the North Slope to reduce the impact of development and minimize wetland reductions (BPXA 1989:20, 1995:11). North Slope wetland losses are also mitigated via "...the joint use of roads, pipeline corridors, airport facilities and other support services by more than one unit operator, when applicable" (BPXA 1989:20). The Service suggests that Alternative 5 provides an opportunity for the applicant to "...avoid unnecessary loss or alteration of wetland plant communities, disturbance to bird nesting concentrations,... and maximize aesthetic benefit" (BPXA 1989:20).

Proposed Mitigation Measures

Before making a permit decision, the Corps must demonstrate that the alternative proposed for authorization complies with the standards in the Clean Water Act Section 404(b)(1) guidelines, that is: that the least environmentally damaging practicable alternative has been selected; that the alternative itself will not cause or contribute to significant degradation of the waters of the United States; and that appropriate and practicable steps have been taken that will minimize potential adverse impacts. Simply put, the Corps must demonstrate that practicable measures have been taken to avoid, minimize, and then compensate for unavoidable impacts. It is our opinion that the Corps has not satisfied these requirements in their proposal to authorize Alternative 2.

Avoidance

The Corps has failed to take the most significant step to avoid and minimize impacts, as recommended by the U.S. Fish and Wildlife Service: the selection of Alternative 5 as the Agency Preferred Alternative. In previous correspondence dated March 10, 1999, March 18, 1999, and March 31, 1999, the Service has appealed to the Corps regarding the critical nature of permitting this project in a manner to ensure the absolute best environmental protection for our trust resources which are dependent upon the nearshore ecosystem. Since the close of the public comment period (March 10, 1999), the Corps has not attempted to engage the Service in discussion or resolution to meet the Section 404(b)(1) mandates.

Availability of less environmentally damaging practicable alternatives

The first step in avoiding adverse environmental impacts should be thorough analysis of alternatives. The Service and the Department of the Interior have recommended in previous correspondence that Alternative 5 be selected as the action alternative to reduce potential risks

from the Northstar Project. Instead, the Corps' final determination has been to select Alternative 2 over what we believe are less environmentally harmful options, i.e., Alternative 5 or Modified Alternative 5. We believe that the Corps decision should support Alternative 5 for the following reasons:

1) An offshore pipeline route decreases oil spill risks to aquatic resources of national importance, including anadromous fish and migratory birds which are dependent upon nearshore lagoons, bays, coastal salt marsh, and shorelines;

- The offshore pipeline route completely avoids Gwydyr Bay/Simpson Lagoon thereby providing an increased level of protection to the lagoon system including shorelines, coastal salt marshes, and the Kuparuk River Delta.

- The applicant (March 22, 1999) and the Corps (ROD:31) have failed to consider: climatic and oceanographic data; available boom technology; and the Alaska Clean Seas Manual, which show that deploying boom in cuts between barrier islands is a feasible, appropriate, and effective response to protect the nearshore ecosystem. Despite meeting with the Service, the applicant has dismissed this response technique by citing only the inadequacies of a straight-line, exclusion boom design. DOI maintains that Alternative 5 provides greater protection to Gwdyr Bay/Simpson Lagoon relative to spill response, containment and recovery.
- Because Alternative 2 routes 40 percent (approximately 2 mi) of pipeline directly through Gwydyr Bay/Simpson Lagoon, a spill in this area immediately surrenders the opportunity to protect nearshore habitats.

- Because the offshore pipeline is routed entirely seaward of the barrier islands, Alternative 5 provides two response options. The primary oil spill response would occur just outside and along the barrier islands; a secondary response could also occur just shoreward of the barrier islands to clean up the oil before it spreads within the lagoon systems and contacts shorelines and bays.

- The barrier islands act as natural booms; consequently nearshore habitats can be protected with diversion and exclusion booms to divert along barrier islands. Current boom technology (e.g., American Marine, RO-CLEAN DESMI) is available for climatic and oceanographic conditions of the nearshore Beaufort Sea.

- The Alaska Clean Seas Technical Manual, Volume 1, Tactics Description (Tactic R-15) demonstrates that anchored V booms between mainland points or between barrier islands can be used to effectively divert, capture, and recover oil thereby preventing contamination of nearshore habitats.

- DOI disagrees with the applicant's and the Corps' determination (ROD:31) that the most effective spill response would occur nearshore. Because of a larger encounter area, more response options, and the ability to use larger, more efficient equipment (e.g., larger boats which can carry and deploy more boom), the most

effective oil spill response would occur seaward of the barrier islands. Shallow water (0 -5 feet) inside the barrier islands restricts response equipment to skiffs and airboats, which have decreased capacity and efficiency to contain and recover oil.

2) The offshore pipeline route of Alternative 5 will likely avoid potential risks of pipeline damage due to permafrost thaw bulb subsidence and shoreline erosion inherent to Alternative 2.

- The Final EIS acknowledges that offshore zones of ice-bond permafrost are located in Simpson Lagoon between the coastline and 2,200 feet from shore and between 3,800 feet from shore and 2,000 feet offshore of the barrier islands. The applicant has acknowledged that near-surface subsea permafrost is an engineering risk to the pipeline for which estimates of thaw strain have been provided. Finally, a Corps' review of the alternatives concluded that "it is likely that a permafrost-free pipeline route [Alternative 5] could be chosen...and that this would avoid design complications associated with permafrost-rich sediments that arise in Alternative 2..."(Richter-Menge, CRREL, 1998). Despite this assessment, the Corps has ignored that Alternative 5 clearly decreases this risk to the offshore pipeline and has requested, as mitigation, that the applicant take additional geotechnical samples. DOI agrees with CRREL that Alternative 5 eliminates the risk of permafrost subsidence which would inherently decrease the probability of pipeline failure to this environmental risk.

- The Corps fails to determine that Alternative 5 landfalls the offshore pipeline on West Dock and thereby eliminates the shoreline erosion hazard and long-term maintenance requirements of a natural shoreline landfall identified in the Final EIS (pg.11-35). Because the Northstar offshore pipeline may also serve to transport oil produced from the Sandpiper development (projected field life of 24 years; see cumulative impacts discussion of this enclosure), the potential risk of shoreline erosion and required maintenance under Alternative 2 is increased (see CRREL 1999, final report).

3) The Corps incorrectly states that the 9 miles of offshore pipeline of Alternative 5 poses a significantly greater risk to offshore resources (e.g., bowhead whale) than Alternative 2 (4 miles of offshore pipeline outside of the barrier islands). This conclusion:

- Is not supported by the Corps' statement that "either alternative has a similar acceptable risk" of an oil spill (NOI:31).

- Does not acknowledge that although the CONCAWE exposure variable which is based on flow rate and pipeline length, determined that the difference between oil spill probability between Alternative 2 and Alternative 5 is only 0.8 percent. DOI does not consider a 0.8 percent difference in spill probability to pose a greater risk to offshore resources.

- Fails to acknowledge the Corps' finding (J. Richter-Menge [CRREL] December 12, 1998, letter to T. Jennings [Corps]) that because Alternative 5 would likely route the entire offshore pipeline in a permafrost-free area, design complications and inherent risks associated with permafrost-rich sediments that arise in Alternative 2 are eliminated and therefore these risks to the pipeline are eliminated.

- Fails to acknowledge the Corps' finding (J. Richter-Menge [CRREL] December 12, 1998, letter to T. Jennings [Corps]) that because Alternative 5 landfalls on a stable causeway, risks of shoreline erosion are eliminated.

- Does not acknowledge that although threatened post-breeding spectacled eiders stage and migrate offshore of Seal Island, the DOI does not believe Alternative 5 poses any greater risks to this species than Alternative 2 (DOI 1999:5)

- Fails to clarify that ice gouge risks to the offshore pipeline do not differ among all action alternatives; consequently, pipeline length and location are not pertinent factors relative to ice gouge risk.

- Fails to state that Alternative 2 routes a greater length of the offshore pipeline in a high density (> 6 scours / km) area of strudel scour (Final EIS:Fig. 5.6-8) relative to Alternative 5.

4) The Corps states that because the maximum spill volume of Alternative 5 (5,200 bbl) is greater than Alternative 2 (3,600 bbl), the former inherently poses greater risk to the environment.

- The Corps fails to cite that the Final EIS (Table 8-5) states "the estimated spill volumes [assume] complete evacuation of pipeline volume [and that] drainage of the entire pipeline volume between valves would likely be prevented by seawater intrusion (offshore) and operational measures..." Consequently, the actual amount of oil released from a complete rupture under either of these alternatives is unknown.

- While the DOI acknowledges that an additional 1,600 bbl of oil could contaminate a greater area of offshore marine water, 1) oil spill recovery would be more efficient due to the use of larger and more effective response equipment, 2) the likelihood of impacts to fish and wildlife resources are less because of decreased density and species richness compared to the nearshore lagoon system, and 3) the marine habitat (i.e., deep open water, sand/gravel barrier islands) represents a less complex environment for spill response.

- The DOI has requested the Corps examine a modified Alternative 5 offshore pipeline (see below), which would be approximately 7 miles long

(1 mile > Alt. 2). Complete evacuation of a Modified Alternative 5 would release 3681 bbl compared to 3135 bbl for Alternative 2, a difference of 546 bbl.

5) The Corps discounts the potential benefits to be accrued by routing onshore pipelines in existing infrastructure/corridors.

- By locating onshore pipelines in proximity to roadway access and within existing pipeline corridors, Alternative 5 would 1) increase probability of leak detection, and 2) reduce oil spill response time and unplanned pipe maintenance during the summer.

- There is no mention of the previous policy statements by BPXA (1989:20; 1995:11) that consolidating facilities is one of the most effective practices used to reduce the impact of development and minimize wetland loss. The Corps fails to mention that the applicant has determined that North Slope wetland losses are also mitigated via "...the joint use of roads, pipeline corridors, airport facilities and other support services by more than one unit operator, when applicable" (BPXA 1989:20)

- Alternative 5 provides an opportunity for BPXA to comply with the company's goal to "avoid unnecessary loss or alteration of wetland plant communities, disturbance to bird nesting concentrations,... and maximize aesthetic benefit" (BPXA 1989:20).

- The ROD states that a new pipeline corridor containing an elevated pipeline would have minor impacts on caribou and their movements. The Corps does not acknowledge that the scientific community is undecided on potential impacts of elevated pipelines on large caribou herds. Consequently, DOI suggests that it is prudent and practicable to consolidate onshore pipelines into existing infrastructure. The publication, *Mitigation of the effects of oil field development and transportation corridors on caribou* (LGL Alaska Research Associates, Inc. 1994:vii) suggests impacts to caribou will be partially mitigated in the future because "newer oil fields have technologies which have resulted in smaller areas of impact and consolidation of infrastructure compared to the original developments at Prudhoe Bay."

6) Biological impacts of increased dredge and fill required with Alternative 5 (relative to Alternative 2) are not significant.

- Because the amount of dredge and fill material is positively correlated with pipeline length, Alternative 2 would require 264,000 cubic yards compared to 378,000 cubic yards for Alternative 5. However, dredging and filling associated with the subsea pipeline would result in only temporary disturbance of the benthic invertebrates within and near the pipeline trench and a temporary decrease of water quality (Final EIS:6-25 to 6-26). Because pipeline installation would occur during

winter, impacts to anadromous fish and migratory birds will likely be negligible. Alternative 5 also requires an additional 300,000 cubic yards of gravel fill to widen the west side of the West Dock causeway by approximately 50 feet for approximately 0.9 of a mile. While this would cause approximately 5.5 acres of the shallow, previously disturbed seafloor adjacent to the causeway to be covered, the Service believes that increased fill adjacent to the causeway is a minor impact (Final EIS:11-17).

Discussion of Modified Alternative 5

The Corps' NOI fails to mention or discuss the Service's discussion of a Modified Alternative 5, which (compared to the proposed Alternative 5) would provide cost benefits to BPXA, decrease engineering complexity, and provide greater environmental protection. The Final EIS states that alternatives "...are presented as specific routes to allow the evaluation and comparison of impacts, but each should be considered representative of possible variations which include the same general landfall location and approach to onshore routing" (Final EIS:11-1 to 11-2). It is clear that the Modified Alternative 5 described by the Service (March 10, 1999) fits these criteria.

- Despite a description of the proposed modification (P. Sousa to Col. Jahn; March 10, 1999) and BPXA's draft comparison (BPXA 1999) between Alternative 2 and a Modified Alternative 5, termed 5A (March 23, 1999), the Corps did not engage the Service in discussing the merits or practicability of this alternative.

- The Corps apparently failed to recognize or correct significant errors in BPXA's analysis of Alternatives 2 versus 5A (BPXA 1999). The DOI considers this a serious error relative to justification used by the Corps to determine that Alternative 5 was not practicable and did not result in significantly fewer potential adverse impacts. DOI also maintains that a more thorough review and assessment by the Corps would have resulted in justification for selecting a Modified Alternative 5 as the agency preferred Alternative. A partial list of errors in the BXPA analysis between Alternative 2 and a Modified Alternative 5 (termed 5A) follow:

    - ice gouging, strudel scour, permafrost: Despite that risks of ice gouge do not differ between Alternative 2 and 5A, risks of strudel scour are greater for Alternative 2, and near-surface permafrost is absent both within the pipeline corridor and at the West Dock landfall for Alternative 5A, BPXA ranked Alternative 2 higher than Alternative 5A.

    - BPXA set the offshore pipeline length of Alternative 5A at 8.3 miles. The Service suggests that a modified Alternative 5 could be approximately 7 miles long.

    - *trench excavation complications are over-exaggerated. Alternative 2 requires* 4 miles of trenching in deeper water versus 7 miles for Alternative 5A. DOI does not consider the total excavation differential between the 3 miles in deeper water versus 2 miles in the lagoon to be significant.

- "Alternative 5a requires 4.6 miles more subsea pipeline." This statement is incorrect for BPXA's 5A proposal (8.3 miles total length or 2.3 miles longer than Alternative 2) or for the Service's Modified 5 estimate (7 mile total length or 1 mile longer than Alternative 2). DOI does not agree that because "this pipe would be a special order from Japan" raises any issue of practicability because the offshore pipeline will not be installed until Winter 2000-2001.

- Alternative 5A has the potential to release 1,600 more barrels of oil in the unlikely event of a spill." Due to incorrect calculations on pipeline length, this estimate is wrong and exaggerates spill volume for BPXA's Alternative 5A or the Service's Modified Alternative 5:

  BPXA 2= 31,480' x 0.0996 bbl/ft = 3,135 bbl
  BPXA 5A= 43,624' x 0.0996 bbl/ft = 4,345 bbl
  FWS Mod. 5= 36,960' x 0.0996 bbl/ft = 3,681 bbl

  Thus, BPXA Alternative 5A would spill an additional 1,210 bbl (not 1,600 bbl). More importantly, because the Service suggests a direct route would be approximately 7 miles long, the additional spill volume would be approximately 550 bbl.

- "In open water, with prevailing easterly winds, the oil from a leak would travel into Gwydyr Bay from either alternative." DOI disagrees. A Modified Alternative 5A routing of the offshore pipeline provides increased protection via exclusion or diversion booms between barrier island cuts to significantly decrease oil spill impacts to Gwydyr Bay/Simpson Lagoon.

- By routing the offshore pipeline in a straight corridor between Seal Island and West Dock, a Modified Alternative 5 would:

  - be approximately 7 miles long (approximately 1 mile longer than Alternative 2);

  - decrease 2 miles of offshore pipeline material and required trenching;

  - decrease risk of a two season construction season;

  - have a spill probability of approximately 1.9 percent (Alternative 2 = 1.6 percent);

  - allow a maximum spill size = 4,100 bbl (Alternative 2 = 3,600 bbl);

  - decrease risks of strudel scour compared to Alternative 2;

  - not increase risks associated with ice gouge;

- allow selection of optimal landfall on West Dock to avoid water currents;

- eliminate the engineering issue of pipeline bends; and

- avoid "high energy" water currents associated with barrier islands.

Other proposed mitigation measures

The Corps has proposed 21 mitigative measures, carried as conditions on the permit, as recommended by Federal and State agencies. Relative to the specific interests of the DOI, the Corps has included:

1) All reasonable and prudent measures and conservation measures described in the Service's Biological Opinion;

2) Protective measures to avoid disturbance of polar bears and polar bear denning habitat;

3) Support to better describe distribution and potential impacts of oil development on polar bears;

4) Potential removal of an abandoned gravel airstrip and pad at Kuparuk River State No. 1;

5) Identification and adherence to flight corridors by helicopters during May 15 to September 15, to decrease disturbance to nesting, staging, and molting birds; and

6) Monitoring of avian injury and mortality due to birds striking Seal Island facilities.

Mitigative measures to minimize potential impacts from pipeline spills:

Despite the above mentioned "mitigative measures," the DOI remains extremely concerned about the project's potential to result in significant adverse environmental effects. We are concerned that current offshore pipeline leak prevention measures, which the applicant and the Corps (NOI:27) describe as "state of the art," allow an undetected release of oil of up to 100 bbl (4,200 gallons) per day and up to 3,000 bbl (126,000 gallons) per month. Based on Condition #21, the Corps is requiring the applicant to: "...design, construct, install during pipeline trenching activities, operate, and maintain a prototype oil spill leak detection system...[with the capability] of detecting a 32.5 bbl/day chronic leak." While the DOI agrees this is a pro-environmental condition, the undefined parameters significantly weaken this condition as appropriate mitigation:

- The detection system has not been designed nor deemed feasible; furthermore, it may simply not work;

- The proposed system would be a "prototype" without a record of accuracy or reliability relative to engineering or environmental constraints in the Arctic;

- The Corps has not defined what is meant by "early detection;" without defining a time period, a potential total spill volume cannot be estimated;

- A figure for the probability of detecting a <32.5 bbl/day leak is not provided; because leak detection is a function of both volume of oil released and the probability of finding the leak, the improved environmental protection implied is not justified; and

- Because the prototype leak detection system has not been designed, tested, or proven reliable in the Beaufort Sea, this proposed condition may not mitigate the risks of an offshore oil spill. Furthermore, without defining the probability and time required to detect a specific leak, DOI questions how this system improves leak detection.

Failure to evaluate alternatives on an equal basis

In its Draft ROD (pg. 32), the Corps states that a technical review conducted by the State of Alaska and a zoning change approved by the North Slope Borough were considered in the draft decision to permit Alternative 2. The State determined that Alternative 2 would not result in unacceptable impacts; it did not determine that Alternative 5 or any other alternative would result in unacceptable impacts. The North Slope Borough reviewed and approved Alternative 2 with conditions; it did not consider other alternatives for a possible zoning change. The Corps is charged under the 404(b)(1) Guidelines with examining practicable alternatives to the proposed discharge (Section 230.5(c)). It would be appropriate to consider the State and North Slope Borough's decisions as a basis in the Corps' decision only if the same level of analyses were provided for all alternatives. Decisions by the State of Alaska and the North Slope Borough can be used only to conclude that they did not find Alternative 2 objectionable. The Corps cannot use these decisions to support its conclusion that a practicable alternative with less adverse impacts does not exist.

Compliance with 404(b)(1) Guidelines

Under the 404(b)(1) Guidelines, the permitting agency may conclude that the proposed action fails "to comply with the requirements of the Guidelines where: (i) there is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem,...[and](iii) the proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem" (Section 230.12(a)(3)). As discussed elsewhere in this document, the DOI believes that both Alternative 5 and a Modified Alternative 5 meet the definition of practicable contained in the Guidelines (Section 230.3(q)), and that these alternatives minimize potential harm to the aquatic ecosystem. For actions subject to NEPA, "the analysis of alternatives required for NEPA environmental documents...will in most cases provide the information for the evaluation of alternatives under [the] Guidelines" (Section 230.10(a)(4)). On those occasions when the NEPA documents do not consider the alternatives in sufficient detail, "it may be necessary to supplement [the] NEPA documents with...additional information." The Corps has failed to consider Alternative 5 or a Modified Alternative 5 in sufficient detail to conclude that they do not present environmental advantages over Alternative 2. This is particularly true when the Corps decision is based, in part, on professional judgement and

on a technical review by the State and a zoning decision by the Borough that evaluated only Alternative 2 in detail.

Conclusion

The Section 404(b)(1) guidelines of the Clean Water Act states: "...no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences" (Federal Register 45(249):85348, December 24, 1980).

The DOI has provided an accurate and substantive assessment of the proposed project regarding the potential effects on Aquatic Resources of National Importance. We have demonstrated that Alternative 5, especially a Modified Alternative 5, clearly would have fewer adverse impacts on this ecosystem including habitats which are among the most critical in the Beaufort Sea. DOI has also demonstrated that relative to Alternative 2, there are no other significant adverse effects that would result from Alternative 5. Therefore, it is the DOI's opinion that Alternative 5, especially a Modified Alternative 5, provides a practicable alternative which would have significantly fewer adverse impacts.

The DOI does not agree that the applicant's preferred project, Alternative 2, meets the Section 404(b)(1) guidelines. Specifically, all alternatives are practicable as defined in the Final EIS. Alternative 5, which was identified in the Final EIS as the Environmentally Preferred Alternative by the Corps, Environmental Protection Agency, National Marine Fisheries Service, and the Service would have significantly fewer adverse impacts on the environment. This is especially true with a Modified Alternative 5 as previously discussed. Potential effects of Alternative 2 could cause or contribute to significant degradation of waters of the U.S..

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