Beaufort Sea Outer Continental Shelf
Liberty Development and Production Plan
Record of Decision

Bureau of Ocean Energy Management

Alaska OCS Region

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Record of Decision for the Beaufort Sea Planning Area
Liberty Development and Production Plan

U.S. Department of the Interior
Washington, D.C.

1. INTRODUCTION

On August 23, 2018, the Bureau of Ocean Energy Management (BOEM), Alaska Region released the Alaska Outer Continental (OCS) Shelf, Beaufort Sea Planning Area Liberty Development and Production Plan (DPP) Final Environmental Impact Statement (FEIS), or Liberty DPP FEIS. The Liberty DPP FEIS was prepared to inform BOEM's decision whether to approve, require modification of, or disapprove the Liberty DPP submitted by Hilcorp Alaska LLC.

The Liberty DPP proposes the construction of a self-contained offshore drilling and production facility located on an artificial gravel island with a pipeline to shore. Infrastructure and facilities necessary to drill wells and process and export approximately 60,000 to 70,000 barrels of oil per day (BOPD) to shore would be installed on the island. There would be slots for 16 wells, which include accommodations for 5-8 producing wells, 4-6 water and/or gas injection wells, and up to two disposal wells at surface wellhead spacing of 15 feet. A pipe-in-pipe system, consisting of a 12-inch sales oil pipeline inside a 16-inch outer pipe, would transport crude oil to the Badami Sales Oil Pipeline. The offshore portion of the pipeline would be approximately 5.6 miles long. The overland portion to the Badami pipeline tie-in would be approximately 1.5 miles long.

The Liberty DPP FEIS analyzes the potential environmental impacts of eight alternatives:

- **Alterative 1 – The Proposed Action.** The Proposed Action alternative is comprised of the activities proposed in the Liberty DPP, and would be implemented by approving the Liberty DPP. The Liberty DPP FEIS identified Alternative 1 as BOEM's Preferred Alternative.
- **Alternative 2 – The No Action Alternative.** Under the No Action Alternative, the activities described in the Liberty DPP would not occur. This alternative would be implemented by disapproving the Liberty DPP.
- **Alternatives 3A and 3B – Alternate Island Locations.** These alternatives each analyze different locations for the proposed Liberty Development and Production Island (LDPI) and would be implemented by requiring a modification of the Liberty DPP.
- **Alternatives 4A and 4B – Alternate Processing Locations.** These alternatives each analyze different locations for processing fluids recovered from the Liberty reservoir and for generating power for drilling and production activities, and would be implemented by requiring a modification of the Liberty DPP.
- **Alternatives 5A and 5B – Alternate Gravel Mine Locations.** These alternatives each analyze different locations for the mining of gravel needed for the LDPI and related infrastructure, and would be implemented by requiring a modification of the Liberty DPP.

In addition to these eight alternatives, the Liberty DPP FEIS also identifies and analyzes a variety of proposed mitigation measures. This Record of Decision identifies and explains the alternative and mitigation measures selected by BOEM in rendering its decision on the Liberty DPP.

2. DECISION

BOEM reviews proposed DPPs pursuant to the statutory criteria established under the Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. § 1351(h)) and the regulatory criteria established under 30 C.F.R. §550.270(b). To summarize, BOEM will approve a proposed DPP if it complies with all applicable requirements. BOEM will require modification of a proposed DPP if it fails to make adequate provisions for safety, environmental protection, or conservation of natural resources, or otherwise does not comply with the lease, the Act, the regulations prescribed under the Act, or other Federal laws. BOEM will disapprove a DPP if any of the reasons listed at 30 C.F.R. § 550.271 apply.

After careful review of the Liberty DPP and the potential environmental impacts of the various alternatives analyzed in the Liberty DPP FEIS, BOEM selects Alternative 1, the Proposed Action, subject to the conditions identified in Section 6 of this ROD. BOEM's decision reflects its determination that the proposed Liberty DPP, with the incorporation of certain mitigation measures, meets all applicable requirements to include lease stipulations, Federal laws and regulations, and BOEM's performance standards under 30 C.F.R. § 550.202. More specifically, BOEM has determined that the proposed Liberty DPP, with the incorporation of certain mitigation measures, demonstrates that Hilcorp has planned and is prepared to conduct the proposed activities in a manner that:

- conforms to OCSLA, applicable implementing regulations, lease provisions and stipulations, and other Federal laws;
- is safe;
- conforms to sound conservation practices and protects the rights of the lessor;
- does not unreasonably interfere with other uses of the OCS, including those involved with National security or defense; and
- does not cause undue or serious harm or damage to the human, marine, or coastal environment.

This decision promotes domestic energy production. The decision to authorize the Liberty DPP provides an opportunity to address national and regional demand for domestic energy resources, and to create positive economic impacts through oil and gas development and production in the Beaufort Sea. Production from the Beaufort Sea OCS leases is expected to be processed locally and consumed within the United States, reducing imports from other sources. The Liberty DPP could also positively impact local economic factors on the Alaska North Slope.

Since the Deepwater Horizon explosion, oil spill, and response, BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) have raised standards for OCS drilling safety and environmental protection to reduce the risk of oil spills and improved the ability of the Federal government and industry to respond in the unlikely event of another large oil spill. While OCS exploration and development cannot be made risk free, OCS oil and gas-related activities can be

conducted safely and responsibly with strong regulatory oversight and appropriate measures to protect human safety and the environment.

3. ALTERNATIVES ANALYZED IN THE FEIS BUT NOT SELECTED

Alternative 2 (No Action)

Alternative 2 was not selected because none of the criteria requiring disapproval of the proposed DPP (*see* 30 CFR § 550.271(a)-(d)) are implicated here. The Liberty DPP, subject to certain conditions, complies with the requirements of OCSLA, implementing regulations, and other applicable Federal laws. No consistency concurrence is required in this case because the State of Alaska does not have an approved Coastal Management Program. The activities proposed in the Liberty DPP do not threaten National security or defense. None of the exceptional circumstances described at 30 CFR § 550.271(d) apply here, as implementing the Liberty DPP subject to the conditions specified in the ROD would not cause serious harm or damage to life, property, any mineral deposits, the National security or defense, or the marine, coastal, or human environment.

Under Alternative 2, the opportunity for additional domestic energy sources and subsequent positive economic impacts from development of the Liberty Unit, including employment, would be deferred or lost. No revenue would be collected by the Federal government nor subsequently distributed to the State of Alaska. Although other sources of energy may substitute for a portion of the foregone production, these sources would likely have similar or greater negative environmental impacts of their own, albeit largely outside the Beaufort Sea region.

Alternatives 3A and 3B (Alternate Island Locations)

Alternative 3A would locate the LDPI approximately one mile to the east and further away from the densest mapped areas of the Boulder Patch. This location would result in approximately 0.25 miles of the pipeline being placed in an area with 100% overflood occurrence, which would greatly increase the chance of the pipeline being damaged by upheaval and buckling. The Liberty FEIS discloses that moving the LDPI in accordance with Alternative 3A would result in only a very small marginal reduction to the anticipated minor (i.e. short-term and localized) sedimentation impacts to the Boulder Patch.

Alternative 3B would locate the LDPI approximately 1.5 miles to the southwest. This location would increase the distance from the densest areas of the Boulder Patch and would also locate the island in state-managed waters. The new LDPI location would result in an average increase in wellbore length of 3,300 feet for all wells. This increase would require a larger drilling rig that would use more fuel and each well would take more time to complete, which would have cascading impacts to air quality. Longer wellbores could also result in a drop in production rates which would necessitate additional wells to produce an equivalent volume of oil in a similar time period. Finally, longer wellbores would also increase the risks associated with drilling, including greater risk of a well control event and a corresponding increase in difficulty containing such an event. The Liberty FEIS discloses that moving the LDPI in accordance with Alternative 3B would result in only a very small marginal reduction to the anticipated minor (i.e. short-term and localized) sedimentation impacts to the Boulder Patch.

The small marginal reduction in impacts to the Boulder Patch associated with Alternatives 3A and 3B as compared with Alternative 1 are illustrated in the table below.

Comparison of Impacts to Boulder Patch between Alternatives 3A, 3B, and the Proposed Action

Action	Proposed Action		Alternative 3A		Alternative 3B	
	Acres of Boulder Patch Habitat Affected	Percent of Boulder Patch Affected	Acres of Boulder Patch Habitat Affected	Percent of Boulder Patch Affected	Acres of Boulder Patch Habitat Affected	Percent of Boulder Patch Affected
Island Construction (winter)	330	1.59%	59	0.28%	0	0.00%
Trench Excavation (winter)	991	4.76%	989	4.75%	178	0.86%
Trench Backfill (winter)	679	3.26%	407	1.96%	0	0.00%
Trench Backfill Degradation (summer)	200	0.96%	2	0.01%	0	0.00%

Notes: 1) BOEM used a conservative estimate of Boulder Patch size (20,800 ac) based on known Boulder Patch area 10% or greater coverage. There is likely more Boulder Patch habitat that hasn't been mapped or adequately described in terms of coverage, but BOEM doesn't use it in its calculations. 2) BOEM used 10 mg/l TSS as the threshold for the impacts of the plume and rounded those acreage estimates up when necessary. This results in the most conservative estimates for area affected.

Certain stakeholders have expressed support for this alternative based on potential positive economic impacts to the State of Alaska (SOA) and the North Slope Borough (NSB), but BOEM's economic analysis discloses that the effects of Alternative 3A and Alternative 3B on SOA and NSB employment, labor income, population, and revenues would be largely the same as those for the Proposed Action. While there may be increased revenues to the SOA and NSB as a result of moving the proposed LDPI into state-managed waters, the Liberty DPP FEIS discloses that the incremental increase in annual revenues would be minimal and thus would result in the same impact conclusions as the Proposed Action.

The Liberty FEIS also discloses that impacts to subsistence activities and harvest patterns would not be substantially reduced under Alternative 3A or 3B. Both options would increase drilling time, size and power of the drill rig used, fuel consumption, drilling risks, and technical difficulty. The Liberty DPP FEIS discloses that although Alternative 3B has some potential to reduce the probability of the proposed LDPI interfering with movement patterns of bowhead whales inside the barrier islands, and with Cross Island whaling activities, this decrease would be negligible. Most whale sightings and whaling activities have been farther to the north and east of the Proposed LDPI location.

Based on these findings, I have determined that selecting Alternative 3A or 3B is not necessary to comply with all applicable requirements, to make adequate provisions for safety, environmental protection, or conservation of natural resources, or to ensure compliance with BOEM's performance standards.

Alternatives 4A and 4B (Alternate Processing Locations)

Alternative 4A (Endicott Processing) would move production and power generation activities to the Endicott Main Production Island (MPI). The Endicott MPI does not currently have the capacity to process oil, water, and gas from the LDPI, and existing facilities on Endicott would require upgrades and/or additional generators for the increased demand for onshore and offshore power. As a result, Alternative 4A would require the curtailing of production from current Endicott wells to enable the Endicott processing facility to handle the output from the LDPI. Furthermore, this alternative was considered and then eliminated as a feasible development alternative in the 2002 Liberty FEIS due to the high occurrence of strudel scour on the pipeline route. Finally, the leak detection capabilities for the required multi-phase pipeline would be more

complex and challenging to operate under Alternative 4A. In addition to the substantial operational challenges and new environmental impacts associated with Endicott processing, the Liberty FEIS also discloses that Alternative 4A would not reduce potential noise impacts to marine mammals or subsistence harvest activities to a meaningful degree.

Alternative 4B (Onshore Processing) would move production and power generation facilities to a new onshore pad and gravel road or airstrip. This would increase the size of the gravel mine site and result in additional impacts to wetlands and other terrestrial resources. Alternative 4B would also require additional pipelines and pumps to return the natural gas and water separated from the oil onshore to the LDPI for injection, as well as duplicate systems for onshore power generation for the LDPI and the onshore Liberty Pad processing, which would increase impacts. Onshore fluid processing could also result in complications in wastewater stream injection into disposal wells on the LDPI. The overall footprint of the project facilities would increase as duplication of some facilities at both the offshore and onshore locations would be required. These additional requirements for Alternative 4B would require additional equipment and lengthen overall construction time. In addition to the substantial operational challenges and new environmental impacts associated with onshore processing, the Liberty FEIS also discloses that Alternative 4B would not reduce potential noise impacts to marine mammals or subsistence harvest activities to a meaningful degree.

Based on these findings, I have determined that selecting Alternative 4A or 4B is not necessary to comply with all applicable requirements, to make adequate provisions for safety, environmental protection, or conservation of natural resources, or to ensure compliance with BOEM's performance standards.

Alternatives 5A and 5B (Alternate Gravel Mine Locations)

Alternatives 5A and 5B entail moving the gravel mine site further away from the project area than the proposed site, and would require building a crossing over the Kadleroshilik River. The Liberty FEIS discloses that neither site would reduce the overall amount of wetlands/habitat disturbed. The additional transport distance required for the alternate sites could lengthen the project time and actually result in a slight increase in impacts. The quality or amount of gravel available at the alternate sites also remains uncertain.

Based on these findings, I have determined that selecting Alternative 5A or 5B is not necessary to comply with all applicable requirements, to make adequate provisions for safety, environmental protection, or conservation of natural resources, or to ensure compliance with BOEM's performance standards.

4. ENVIRONMENTALLY PREFERABLE ALTERNATIVE

I have identified Alternative 2, the No Action Alternative in the Liberty DPP FEIS, as the environmentally preferable alternative. The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources (43 C.F.R. § 46.30). Identifying the environmentally preferable alternative involves weighing of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. The No Action Alternative is considered environmentally preferable because not allowing the Liberty DPP to proceed would preclude or delay the adverse environmental impacts associated with development and production activities at the Liberty Unit.

5. CONSULTATIONS AND OTHER ENVIRONMENTAL REQUIREMENTS

Consultation with Tribes and Alaska Native Claims Settlement Act Corporations. Executive Order 13175 requires Federal agencies to consult, on a government-to-government basis, with Federally-recognized Indian tribes (to include Alaska Native tribes) when developing Federal policies with tribal implications. The purpose is to "have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." Federal agencies also consult on the same basis with Alaska Native Claims Settlement Act Corporations (ANCSA Corporations).

BOEM determined that Development and Production activities in the Beaufort Sea could have tribal implications for the recognized tribes representing the villages of Nuiqsut, Kaktovik, and Utqiaġvik (Barrow). During the scoping process, BOEM consulted with each of these tribal governments at venues within the villages, or alternatively, via telephone (an accepted communications practice among tribal members and within the villages of the North Slope Borough). BOEM also met with the Iñupiat Community of the Arctic Slope (the regional Alaska Native tribal government for the North Slope of Alaska) and the following ANCSA Corporations:

- Arctic Slope Regional Corporation (ASRC)
- Kuukpik Corporation (Nuiqsut)
- Kaktovik Iñupiat Corporation
- Ukpeaġvik Iñupiat Corporation

BOEM participated in the Alaska Federation of Natives' Annual Convention and the Elders & Youth Convention to solicit further input on the project.

BOEM also extended the 2016 scoping period to accommodate requests from North Slope communities for additional time to provide comments.

During the 2017 public comment period, BOEM conducted an additional round of consultations with:

- Native Village of Nuiqsut
- Native Village of Utqiaġvik
- Alaska Eskimo Whaling Commission (on behalf of Iñupiat Community of the Arctic Slope)
- ASRC
- Nuiqsut – Kuukpik Corporation
- Utqiaġvik – Ukpeaġvik Iñupiat Corporation

BOEM also scheduled consultations in Kaktovik, but was unable to visit the village due to weather. BOEM offered to travel to the village at another time, or schedule a consultation over the phone, but was turned down due to lack of interest. BOEM also extended the 2017 Draft EIS public comment period in response to requests from North Slope communities for additional time.

The primary issues raised during consultation were:

- Subsistence: the major concern of the North Slope tribes and ANCSA corporations are the potential impacts to subsistence whaling if bowheads are deflected due to project activities.
- Oil Spills: the potential impacts of a very large oil spill would be extremely damaging.
- Economics: North Slope tribes and ANCSA corporations expressed interest in the potential positive economic impacts of the project. Several stakeholders requested to have different aspects of the project moved to State waters or lands to create additional local tax revenue.

BOEM again contacted the above-listed tribal governments and ANCSA corporations upon releasing the FEIS, and provided copies of that document. None of these entities expressed interest in additional consultation concerning the proposed Liberty project.

Comments Received during 30-Day Waiting Period After Issuance of FEIS. BOEM received eight comment letters during the 30-day waiting period that commenced upon publication of the notice of availability of the FEIS. Six of these comment letters expressed general support for the proposed project. One comment letter was received from the applicant, which focused largely on potential mitigation measures and conditions of approval. An explanation of selected mitigation measures and conditions of approval is provided in Section 6, below. The final comment letter reiterated certain criticisms of BOEM's methodologies and analytical conclusions, and further asserted that BOEM must supplement the FEIS in light of recent studies and proposed activities. After reviewing and considering the information provided in this letter, BOEM determined that the studies and activities referenced in this comment letter do not represent significant new circumstances or information, and that supplementation of the FEIS is not warranted.

Essential Fish Habitat (EFH). The Magnuson-Stevens Fishery Conservation and Management Act (as amended) requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) regarding actions that may adversely affect designated EFH. BOEM prepared an EFH assessment that identified adverse effects to designated EFH from activities proposed in the DPP. NMFS provided Conservation Recommendations, including a mitigation measure to prevent the spread of invasive species. This mitigation measure is addressed in Section 6, below.

Endangered Species Act (ESA): BOEM consulted with U.S. Fish and Wildlife Service (USFWS) and NMFS in accordance with Section 7 of the ESA. BOEM prepared a Biological Assessment (BA) that included both USFWS- and NMFS-managed species. This joint BA, developed in partnership with BSEE, the Environmental Protection Agency, and the U.S. Army Corps of Engineers, evaluated the potential for adverse effects on species listed as threatened or endangered and on designated critical habitat.

NMFS and USFWS issued Biological Opinions in August 2018 and July 2018, respectively. Both Biological Opinions included reasonable and prudent measures, and implementing terms and conditions to help reduce potential take of listed species. These measures, terms, and conditions will be included as conditions of BOEM's approval of the Liberty DPP.

National Historic Preservation Act (NHPA): On June 2, 2017, BOEM transmitted a "no effects" determination to the Alaska State Historic Preservation Office (AK SHPO) through a letter detailing the Liberty DPP (Proposed Action) and all Action Alternatives (Alternatives 3-5). On July 6, 2017, BOEM received a concurrence from the AK SHPO of no historic properties affected by the Proposed Action or Action Alternatives.

Coastal Zone Management Act (CZMA): The federally-approved Alaska Coastal Management Program (ACMP) expired on June 30, 2011. As of July 1, 2011, the federal consistency provision no longer applies in Alaska. Consequently, federal agencies are not required to provide the State of Alaska with CZMA Consistency Determinations or Negative Determinations pursuant to 16 U.S.C. § 1456(c)(1) and (2), and 15 CFR Part 930, subpart C. Similarly, persons or agencies seeking federal authorizations or funding are not required to provide the State of Alaska with CZMA Consistency Certifications pursuant to 16 U.S.C. § 1456(c)(3)(A), (B) and (d), and 15 CFR Part 930, subparts D, E and F (76 FR 39857, July 7, 2011). Because the State of Alaska does not have an approved Coastal Management Program, a consistency determination is not available, and the criteria at 30 C.F.R § 550.271(b) do not apply to BOEM's decision concerning the Liberty DPP.

6. CONDITIONS OF APPROVAL

In making this decision, BOEM evaluated the proposed mitigation measures identified and analyzed in Chapter 4 of the Liberty DPP FEIS and compiled in Appendix C, section C-4 of that document. I have determined that conditioning BOEM's approval on implementation of several of these mitigation measures is necessary to ensure compliance with all applicable requirements and adherence to all applicable performance standards. Conditions #1-4, below, stem from mitigation measures proposed and analyzed in the Liberty DPP FEIS.

Condition #5 is necessary to inform BOEM's ongoing evaluation and oversight of Hilcorp's development and production activities over the life of the project. The information to be provided pursuant to this condition will help BOEM ensure that development and production activities at the Liberty unit remain consistent with BOEM's performance standards, including those requiring conformity to sound conservation practices and protection of the rights of the lessor. Condition #6 ensures activities under this DPP comply with other applicable laws and regulations.

Condition #1. Reservoir Drilling Restricted to Solid Ice Conditions

Hilcorp will adhere to the following condition to minimize the likelihood of a large or very large oil spill reaching open-water:

> Reservoir drilling is authorized only during times of solid ice conditions. For the purposes of this condition, "reservoir drilling" is defined to include initial development drilling (as opposed to workovers, recompletions, and other such well operations subsequently conducted on existing wells) beyond the shoe (base) of the last casing string above the Kekiktuk Formation (i.e. drilling that exposes the Kekiktuk Formation to an open, uncased wellbore). 'Solid ice conditions' is defined as at least 18 inches of ice in all areas within 500 feet of the LDPI.

I have determined this measure to be necessary to make adequate provision for safety, and to minimize the probability of undue and serious harm to the environment and/or unreasonable interference with other uses of the OCS.

The Liberty DPP FEIS discloses that a large or very large oil spill could cause major impacts to a variety of physical, biological, and sociocultural resources in the Beaufort Sea region. The Liberty DPP FEIS, along with supporting technical analysis, also discloses that the extent of impacts from such events could vary greatly depending upon the season in which such an oil

spill occurred. A critical factor here is the extent of sea ice in the vicinity of the source of the oil spill; here, the LDPI. An oil spill occurring during the solid ice conditions of winter (and especially occurring on solid ice, as would likely be the case in the event of an oil spill occurring from an uncontrolled blowout scenario) would be largely concentrated in an area relatively close to its source. Thick ice would provide an effective platform for the vehicles and machinery utilized during the ensuing oil spill response and cleanup, and would better facilitate the use of certain techniques such as in situ burning. Taken together, these factors would likely promote a relatively high recovery rate. The fact that many important resources (e.g. bowhead whales, most species of birds, etc.) are not present in the Beaufort Sea region during winter months would further limit potential environmental impacts. In contrast, a large or very large oil spill reaching the open-water conditions characteristic of summer would likely spread across an area orders of magnitude larger than a commensurate spill during solid ice conditions. Responding to and cleaning up spilled oil can be much more difficult in open-water than on solid ice. Moreover, a summer oil spill could contact many more biological resources than in winter, and would be more likely to interfere with critical subsistence harvest activities.

Based on the site- and project-specific analysis summarized above, I have determined that the above seasonal drilling restriction is necessary to ensure that operations are conducted safely, i.e. in a manner that further reduces the probability of a large or very large oil spill occurring during the open-water season. Precluding the possibility of a large or very large oil spill from reservoir drilling – which entails a relatively higher degree of risk than other types of drilling – is also necessary to help ensure that operations do not cause undue or serious harm to the human, marine, or coastal environment. While OCS development activities cannot be made risk free, I find that in this case, imposition of a reasonable measure that can significantly reduce the possibility of a large or very large oil spill occurring during the summer, when it could cause significantly greater impacts as compared with winter, is appropriate and necessary.

In making this determination, I recognize that selecting this mitigation measure will affect the applicant's operations, including the order in which wells are drilled, the duration of development drilling, and the production schedule and return on investment. I find that by limiting this restriction to reservoir drilling, and by allowing all other types of drilling and production activities (e.g., tophole drilling, workovers, and re-completions) to occur on a year-round basis, BOEM has appropriately tailored this mitigation measure to address the issues of greatest risk in a manner that has minimal impacts to the proposed development and production activities in general.

Condition #2 – Seasonal Restrictions to Protect Cross Island Whale Hunt

To reduce potential disturbance to Cross Island subsistence whaling activities, the following activities are prohibited from August 1 through the end of the hunt (or until the quota has been met):

- Pipe-/pile-driving activities at the LDPI, and
- Marine vessel traffic seaward of the barrier islands.

These activities can resume after the Nuiqsut bowhead whale quota has been met or after the Cross Island-based whalers officially end their whaling activities for the season. In the event that Nuiqsut whalers communicate an intent to conduct subsistence whaling activities south of Narwhal Island, Hilcorp must make all reasonable efforts to minimize conflicts between operations (including marine vessel traffic) and subsistence hunting activities.

I have determined this measure to be necessary to make adequate provision to minimize the probability of unreasonable interference with other uses of the OCS.

The Liberty DPP FEIS discloses that support vessel traffic and certain types of construction activities for the LDPI could cause moderate to major adverse impacts to subsistence whaling practices conducted by the community of Nuiqsut. To minimize interference with subsistence whaling on the OCS near Cross Island, pipe-/pile-driving activities and support vessel traffic outside the barrier islands will cease August 1 until the official end of the hunt or until the quota has been met, whichever occurs first. Implementing this measure would effectively establish a quiet period and less operating activities just before and during the subsistence whale harvest season based at Cross Island. Ceasing these activities before the start of the hunt, which begins in late August, ensures that bowhead whales arrive undisturbed at Cross Island when whalers begin to scout for whales.

Condition #2 is necessary because the construction site is located east of where Nuiqsut crews conduct whaling. As migrating whales pass the site from east to west in August and September, vessel traffic and construction activities can disturb and agitate whales. Subsistence whalers have reported that bowhead whales become skittish, and change their behaviors, thus making the whales more difficult to locate and strike. Whales can also move farther from vessels and sound sources as they migrate, increasing the distances whaling boats must travel out to sea to intercept whales as they approach and pass Cross Island.

This mitigation measure would preclude the presence of support vessels and noise from vessels outside the barrier islands and noise from construction activities at the development site during the most critical period when whales are approaching Nuiqsut's offshore whaling area. Waiting to cease these activities when whaling begins later in August is too late to effectively reduce potential adverse impacts to whaling. Condition #2 would minimize and/or avoid interference with subsistence whaling in the OCS.

In making this determination, I recognize that selecting this mitigation measure will affect the applicant's operations, including some transportation operations and timing of construction activities. I find that limiting this measure to pipe-/pile-driving and vessel traffic outside the barrier islands just before and during the bowhead whaling season has allowed BOEM to appropriately address the issues of greatest risk to whaling in the OCS in a manner that has minimal impacts to activities proposed by the applicant.

This additional mitigation measure is not intended to replace or in any way minimize the importance of communication protocols and conflict resolution processes currently used by operators and subsistence whalers. Some marine vessel traffic and other industrial activities in this offshore area are normally suspended to accommodate whaling and the bowhead whale migration beginning at the end of August (i.e., August 26) each year in accordance with a customary process used to avoid conflicts between the oil and gas industry and subsistence whalers in the Beaufort Sea. This timeframe has generally worked well in the past to reduce impacts to subsistence activities during the open-water season; however, the location of the LDPI, i.e., east of Cross Island, warrants an earlier cessation date for these activities, i.e. August 1.

Condition #3 – Additional Wildlife Provisions

Hilcorp has committed to developing a number of work plans, including wildlife interaction plans, bird lighting plans, and others. The intent of the plans is to ensure that the project is conducted in an environmentally sound manner. Hilcorp must provide BOEM copies of all plans as soon as they are developed and no later than three months before project initiation. Where safety allows, the plans must incorporate the following:

- Exterior lights on buildings on the LDPI will be reduced and down-shielded.
- Black-out curtains will be used on exterior windows.
- Green or blue exterior lights on buildings will be used instead of white lights.
- A strobe-based light-repellant system, similar to that used at Northstar, will be designed and implemented.
- Buildings will be painted light tan rather than white or very dark colors.
- Equipment that is not being used (e.g. equipment that has not been used for a year), and that poses a bird strike hazard, will be stored/moved to an off-site location and/or altered to reduce the risk of bird strikes.
- If practicable, given safety and other operational considerations, flare booms will be placed at a height of at least 20 meters.
- All bird mortalities, collisions, and strandings will be recorded on a daily basis for the life of the project, and will include bird species and circumstances of their stranding / death. A report will be submitted annually, in an electronic format, to BOEM. Hilcorp and BOEM will meet annually to discuss report results. Hilcorp will take corrective actions to address activities that are continually resulting in bird strikes/deaths.
- Steps will be taken to minimize destruction of bird nests and harm to nesting birds during ground clearing activities (e.g., for the land-based pipeline and gravel mine). Such steps include clearing the area in winter prior to the arrival of spring migrants, staging mechanized equipment in winter to deter ground-nesting birds, and/or other measures that achieve the stated goal.
- Hilcorp will minimize attracting or feeding predators through the following means: employing strict food waste control measures (e.g., animal-proof containers); providing education/training to staff/contractors to discourage feeding wildlife; incorporating design features that discourage avian nesting; monitoring to detect initiation of bird nests on towers/structures and to detect construction of fox dens; and removing nests and/or dens, eggs, and/or young as appropriate and consistent with federal and state laws.
- Vessels traveling between West Dock/Endicott and Foggy Island Bay will not exceed speeds of 10 knots in order to reduce the potential for whale strikes.
- Aircraft will adhere to a minimum altitude of 1,500 feet AGL (above ground level) in order to minimize disturbance to marine mammals and other wildlife.

I have determined these measures to be necessary to minimize the probability of undue or serious harm to the environment.

The Liberty DPP FEIS discloses that construction and operation of the Liberty project could result in minor to moderate adverse impacts on birds. These impacts stem from anticipated increases in the population of predators, collision hazards, and disruption of nests and nesting

birds. New facilities associated with the project would increase the number of predators by creating new nesting and perching sites for avian nest predators, and by increasing the availability of food/trash and nesting/denning resources for avian and terrestrial predators. The increased abundance of species that prey on adult birds, eggs, and chicks in turn can affect populations of certain bird species, especially those whose populations are vulnerable (i.e., declining) or with limited ranges. The presence of new structures and their associated light sources in otherwise open areas present a collision hazard to flying birds, especially during migration and/or when conditions are stormy or foggy via attraction. Both interior and exterior lighting, as long as it is visible to birds, have the potential to disorient and attract, and ultimately injure or kill birds. Development activities which entail clearing land can disturb nesting birds or destroy nests.

The Liberty EIS discloses that aircraft can disturb and/or displace marine mammals, birds, and terrestrial mammals. For whales, noise generated by aircraft could exceed the minimum hearing thresholds for behavioral disturbance that have been established. While no minimum noise thresholds have been established for birds and terrestrial mammals, they can be disturbed or displaced by aircraft noise and/or presence, potentially during sensitive life stages such as breeding and nesting/calving. Adherence to a 1,500-foot AGL minimum flight altitude requirement will reduce these potential impacts.

The Liberty FEIS also discloses that vessel speed restrictions reduce the potential for whale collisions. Studies referenced in the Liberty FEIS show that almost 90% of collisions where whales were killed or severely injured occurred with vessel speeds in excess of 14 knots, and no collisions occurred at speeds at or below 10 knots.

The conditions listed above are reasonable mitigation measures that will do the following: minimize possible attraction to, and collision with, the LDPI and associated project features, and protect nesting birds; minimize potential disturbance from aircraft noise and/or presence, and protect marine mammals, birds, and terrestrial mammals; and minimize potential vessel collisions with whales. These recommendations are practical, and when implemented in situations where safety allows, will reduce adverse effects to wildlife from the project.

Based on the analysis summarized above, I have determined that the above measures are necessary to ensure the project does not cause undue or serious harm or damage to the human, marine, or coastal environment. While some impacts from the proposed development and production activities to biological resources are unavoidable, others may be avoided or minimized through implementation of reasonable mitigation measures. I find that imposing the mitigation measures listed above would reduce the potential for adverse impacts to birds and marine mammals, and would not substantially interfere with the operator's proposed activities. These measures are consistent with Hilcorp's commitment to develop construction and operational procedures that further minimize potential adverse impacts to biological resources. Incorporation of a monitoring/reporting component will help Hilcorp and BOEM to detect and resolve problems that may arise during the life of the project.

Condition #4 – Invasive Species Prevention

Hilcorp must comply with the following measure, which was originally identified by NMFS in its Conservation Recommendations developed through Essential Fish Habitat (EFH) consultation:

The operator shall develop, in conjunction with NMFS, a Hazard Analysis and Critical Control Point (HACCP) Plan, or similar plan, for prevention and response to marine invasive species associated with operation of the LDPI. The HACCP Plan or similar plan shall be provided to BOEM and NMFS as soon as it is developed or no later than three months before project initiation. At minimum, the plan must include a monitoring program to help provide for early detection and rapid response if invasive species are found.

This measure is necessary to minimize the probability of undue and serious harm to the environment from invasive species (as used here, invasive species are non-native species that result in harm). While invasive species have not yet been detected in U.S. arctic waters, marine invasive species have been found in other northern seas. Introduction of marine invasive species generally occurs through the introduction of foreign or out-of-state vessels.

The Liberty DPP FEIS and BOEM's EFH consultation with NMFS disclose that marine invasive species may be a potential risk that, if established, could affect fish habitat and fish in various ways including: altering native habitat, competing for food or spawning resources, and affecting resident population through predation or pathogens. This mitigation measure is particularly relevant given the changes in ocean conditions that are anticipated over the life of the project.

I have determined that the above measure is necessary to ensure the project does not cause undue or serious harm or damage to the human, marine, or coastal environment. Implementation of this mitigation measure will aid in the early detection of invasive species, before they become established and degrade the ecosystem. Such early detection will help the operator develop strategies to address such problems when they arise. In making this determination, I recognize that selecting this mitigation measure will require the operator to establish a monitoring program, but implementing such a program is not onerous and would not add significant cost or effort to the monitoring efforts Hilcorp already proposes.

Condition #5 – Resource Conservation Conditions

Hilcorp must submit to BOEM or BSEE, as indicated, the following information for each hydrocarbon-bearing reservoir that is penetrated by a well that would meet the producibility requirements of 30 CFR § 550.115. Hilcorp must provide this information so that BOEM can monitor reservoir performance and ensure resource conservation. To prevent duplicative submissions, Hilcorp may make reference to any data on this list that was previously submitted to BOEM at an earlier date.

A. **Reservoir management reports.** In accordance with 30 CFR § 250.1166, Hilcorp must submit an annual reservoir management report to the Bureau of Safety and Environmental Enforcement (BSEE) that discusses the actions taken by Hilcorp during the previous year (i.e., the reporting year) to prevent waste and ensure a greater ultimate recovery of oil and gas and describe the reservoir development strategies Hilcorp anticipates undertaking during the coming year. In addition to whatever information BSEE may require, the reservoir management report must include the total volume of oil and gas produced and the total volume of EOR fluids injected into the reservoir for the reporting year, as well as the overall reservoir pressure at the beginning and end of the reporting year. The report must also include a list of all well tests, logs, reservoir analysis, new and reprocessed seismic data, new and reprocessed geophysical data, and other information collected or conducted by Hilcorp during the reporting year.

Under § 550.115(b), BOEM Form 0127 must be submitted to BOEM no later than March 30 each year.

Hilcorp must also meet quarterly with BOEM and BSEE to discuss the progress on field development and provide details on activities completed during the previous quarter and planned activities for the upcoming quarter. The quarterly meetings are to be held no later than May 1 for Quarter 1 (January 1 to March 31), August 1 for Quarter 2 (April 1 to June 30), November 1 for Quarter 3 (July 1 to September 30), and February 1 for Quarter 4 (October 1 to December 31). The Regional Supervisor, Leasing and Plans (RSLP) may waive or modify the requirement for quarterly meetings after the Liberty reservoir reaches full field development.

B. Log, survey, and test data. No later than 30 days after each new well is drilled and/or completed, or after an existing well is recompleted, Hilcorp must submit to BOEM summary spreadsheets of well log data and reservoir parameters (i.e., sand tops and bases, fluid contacts, net pay with cut-off parameters identified, porosity, permeability, water saturations, reservoir formation pressures, and fluid properties such as API gravity, solution gas-oil ratio, viscosity, and formation volume factor).

In accordance with BSEE NTL 2016-N07, Hilcorp must submit to BSEE copies of any of the following data collected for each well:

i. Digital well log (i.e., gamma ray, resistivity, neutron, density, sonic, caliper) curves in an acceptable digital media type (i.e., flash drive or CD); well log sections should indicate tops and bottoms of the reservoirs and existing perforations.
ii. Mudlogs and hydrocarbon show reports.
iii. Wireline formation test logs.
iv. Drill stem tests to include pressure buildup charts.
v. Directional surveys of wells with NAD83, UTM zone xx coordinates (specify whether coordinates are true north or grid north referenced).
vi. Velocity surveys (time/depth pairs).

Hilcorp must submit to BOEM processed or re-processed geophysical data (when applicable) in SEGY format with appropriate metadata as defined by BOEM no later than 30 days after Hilcorp's receipt of this data. Hilcorp must submit geophysical acquisition and processing reports no later than 30 days after completion.[1]

C. Production and injection reports. Hilcorp must comply with the production reporting requirements of the Office of Natural Resource Revenue (https://www.onrr.gov/), the Bureau of Safety and Environmental Enforcement (https://www.bsee.gov/), and the Bureau of Ocean Energy Management (https://www.boem.gov/).

[1] If any of this data has already been submitted to BOEM, Hilcorp may reference it (e.g. pressure surveys submitted in Form-0140, Bottomhole Pressure Report, per 30 CFR § 550.1153). If any of the information is changed after submission, submit any updated spreadsheets and corrected logs, surveys, and tests in a timely manner. All data and information must include all relevant metadata and in a geographic projection as defined by BOEM.

D. **Maps.** Except for maps/plats required by BSEE under 30 CFR Part 250, Hilcorp must consult with BOEM before submitting maps to ensure appropriate scale, geographic coordinate system (e.g., NAD83), and projection (e.g., UTM) are used.

For all maps, include both a verbal or fractional scale and a visual scale, as well as time and depth grids used to generate the maps, and associated FGDC-compliant metadata including grid-cell size and gridding methodology.

Timely submission of reservoir and well data will allow BOEM and BSEE to more closely monitor the development and production processes over the life of the Liberty field and ensure the optimum recovery of the resource in accordance with resource conservation standards. Data submitted by Hilcorp will be used to update BOEM's independent geologic and reservoir models. These models are created and maintained by Resource Evaluation geoscientists and petroleum engineers and are used to assess resource potential, quantify remaining reserves, test development scenarios, monitor production, and ensure the overall conservation of the resource. Geologic and geophysical data interpreted by Hilcorp and submitted to BOEM will allow BOEM decision makers to fully understand ongoing production and development strategies and allow for a better explanation of discrepancies between Hilcorp and BOEM's working models and expected outcomes.

I have determined that the above measure is necessary to continued conformity to sound conservation practices over the life of reservoir development.

Condition #6 – Additional Conditions

BOEM will also require the following conditions as part of its conditional approval to ensure compliance with other regulatory authorities:

- Prior to construction of the pipeline, Hilcorp must obtain both a ROW lease and written permission to construct from the State of Alaska, Department of Natural Resources, and DOT PHMSA, respectively.
- Prior to commencement of Liberty Project pipeline trenching and construction activities on state lands under the Corps of Engineers 404 permit, Hilcorp must obtain from the State of Alaska, Department of Environmental Conservation (ADEC) a Clean Water Act, Section 401 Water Quality Certification ("401 Certification" or "Certification of Reasonable Assurance") and submit a copy of ADEC's 401 Certification to the Corps of Engineers.
- Prior to operation of crude oil pipelines associated with the Liberty Project, Hilcorp must obtain State of Alaska, Department of Environmental Conservation approval of an Oil Discharge Prevention and Contingency Plan (ODPCP) for the new pipeline and revisions to the Badami Pipeline ODPCP for the Liberty pipeline tie-in.
- Hilcorp must abide by any measures, terms, and conditions specified in the Biological Opinions issued by NMFS and USFWS.
- Hilcorp must obtain Letters of Authorization (LOAs) from NMFS and USFWS prior to commencing operations.
- Hilcorp must maintain records of the monthly fuel consumption (in gallons) or hours of operation for each emission unit described in the Liberty Drilling and Production Island Emission Unit Inventory (Table 9-8 of the DPP), and submit emissions information monthly in a report to BOEM in accordance with 30 C.F.R. 550.303(k). Include in the report sulfur

content of diesel fuel delivered to the island and the BTU value of the natural gas used as fuel. The emissions reports must be submitted to the RSLP by the end of the following month. If an emission unit was not operated during the reporting month, provide a statement to that effect on the monthly report.

7. MITIGATION MEASURES NOT SELECTED

My decision does not incorporate any of the other proposed mitigation measures identified and analyzed in the Liberty DPP FEIS; thus, not all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted. Those measures were not selected because they are not necessary to comply with all applicable requirements or to make adequate provisions for safety, environmental protection, or conservation of natural resources. Many of these measures addressed adverse impacts already considered to be negligible or minor. Many of these measures were also impracticable to implement and/or enforce.

8. CONCLUSION

I considered many factors in making my decision, including public input, comments from the Governor of the State of Alaska, the effects analysis in the FEIS, and the energy policies articulated in OCSLA. In keeping with this congressional policy and the requirements of NEPA, BOEM has fully considered the potential effects of this action, has considered mitigation of these potential impacts, and has herein articulated the relevant factors in selecting the agency's Preferred Alternative. After considering the statutory and regulatory criteria for reviewing proposed DPPs, I find that the proposed Liberty DPP, with the inclusion of the additional mitigation measures specified above, meets all applicable requirements and thus warrants approval subject to appropriate conditions.

My approval of the Liberty DPP recognizes that BOEM will periodically review the activities conducted under the approved DPP, and that BOEM may require Hilcorp to submit updated information on its activities. Based on such information, BOEM may require Hilcorp to revise its approved DPP.

Date 10/17/18

David Johnston
Regional Supervisor, Leasing and Plans
Bureau of Ocean Energy Management – Alaska Region

I approve of the decision of the Regional Supervisor:

Date 10/17/18

Joseph R. Balash
Assistant Secretary
Land and Minerals Management
Department of the Interior