

# **Exhibit K**

# **Decommissioning Description**

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## Contents

|  |            |
|--|------------|
| <b>Exhibit K Decommissioning Description</b>                       | <b>K-1</b> |
| K.1 TERMINAL FACILITIES .....                                      | K-2        |
| K.1.1 Phase 1 – Decommissioning/Safe Shutdown .....                | K-2        |
| K.1.2 Phase 2 – Removal of Terminal Equipment and Materials .....  | K-2        |
| K.1.3 Phase 3 – Removal of Remaining Terminal Components .....     | K-3        |
| K.1.4 Phase 4 – Removal of Island .....                            | K-3        |
| K.2 PIPELINE FACILITIES .....                                      | K-5        |
| K.3 ENVIRONMENTAL PROTECTION MEASURES DURING DECOMMISSIONING ..... | K-5        |
| K.4 ALTERNATIVE DECOMMISSIONING PLAN .....                         | K-6        |
| K.4.1 Major Top-Side Structures.....                               | K-6        |
| K.4.2 Navigation Facilities.....                                   | K-7        |
| K.4.3 Long Term Maintenance.....                                   | K-7        |

## Figures

|  |     |
|--|-----|
| Figure K-1. Staten Island Safely Abandoned LNG Tanks ..... | K-8 |
|--|-----|

## Exhibit K Decommissioning Description

Atlantic Sea Island Group LLC (ASIG or the Applicant) proposes to construct, own, and operate a liquefied natural gas (LNG) receiving, storage, and regasification facility as a deepwater port that will be capable of delivering up to 2 billion standard cubic feet (bscf) of natural gas per day to the New York metropolitan region. The deepwater port, Safe Harbor Energy (Safe Harbor Energy or the Project), consists of three components: an island (Island) to be constructed in Federal Waters on the Outer Continental Shelf (OCS), approximately 13.5 miles south of the City of Long Beach, New York, on Long Island and 23 miles southeast of the New York Harbor entrance (Island) (see Volume One); an LNG receiving, storage, and regasification facility (Terminal); and subsea pipelines (Pipelines) that will transport the natural gas to a connection with Transco's Morgan, New Jersey to Long Beach, New York existing offshore natural gas pipeline (Transco Pipeline). Safe Harbor Energy will bring to the region a much-needed new and reliable supply of clean-burning, cost-effective, and globally sourced natural gas. In addition, Safe Harbor Energy will enhance supply flexibility, diversity, and competition in U.S. energy markets.

The Island will be constructed in an open area of the ocean between the Ambrose-to-Nantucket and Hudson Canyon-to-Ambrose international shipping lanes. This Project location allows LNG carriers to use established shipping lanes to access the facility, while minimizing interference with commercial shipping. The Project location, shown in Volume One, at approximately 40° 23' 19" N and 73° 36' 35" W, is in water depth of approximately 60 to 70 feet. The Island will be constructed of natural sand, gravel, and rock materials and will be surrounded by armored breakwaters, consisting of prefabricated caissons, prefabricated armor units, and rock; it will be capable of withstanding major (200-year) storms.

The Island has been located and designed to minimize potential negative safety, environmental, and socioeconomic impacts, while providing an optimal facility for the importation of LNG and the delivery of natural gas to the New York area.

The Terminal will incorporate the following features:

- Docking and unloading facilities in a protected harbor for two LNG carriers with capacities of 70,000 to 270,000 cubic meters (m<sup>3</sup>);
- Four identical 180,000 m<sup>3</sup> full-containment storage tanks;
- Ambient air vaporization equipment to convert LNG into natural gas without using sea water;
- Self-contained, state-of-the art related operational, safety, and communication facilities;
- Small craft docking facilities for safety and supply vessels; and
- Self-contained Island power supply facilities fueled by natural gas.

The Pipelines will extend from the Island to a connection with the existing offshore Transco Pipeline passing to the north and west of the Island.

With proper Island and facility maintenance and equipment repair and replacement, the terminal should be able to continue operation for as long as demand for natural gas remains. Should the Proposed Deepwater Port need to be decommissioned, ASIG has prepared the decommissioning plan outline described below in compliance with the Deepwater Port Act. An estimate of the cost of removing the Terminal components, completely dismantling the Island, and decommissioning the Pipelines has been marked as privileged and confidential and provided separately to MARAD.

## **K.1 TERMINAL FACILITIES**

### **K.1.1 Phase 1 – Decommissioning/Safe Shutdown**

When it is determined that the Island will no longer be used as an LNG import and regasification facility, decommissioning activities would be undertaken to put the Terminal into a safe shutdown condition. Decommissioning activities would include the removal of all LNG, natural gas, fuel oil, lube oil, waste lubricating oil, transformer oil, batteries, chemicals, glycol/water, air emission control catalysts, wastewater treatment wastes, and sanitary treatment wastes. All piping, vessels, and tanks that contained LNG, natural gas, or other flammable gases would be carefully drained and purged with inert gas (nitrogen) until air can be introduced to complete the purging. Fuel oil, lube oil, and transformer oil would be drained into transportable containers and this oil would be shipped to the mainland for resale or disposal. The fuel oil and lube oil tanks would be cleaned and certified gas-free. Any tank cleaning wastes would be collected and shipped to the mainland for proper disposal. Terminal documentation and records would be removed from the Island. The emergency vent stack, gas engine stacks, heater stacks, emergency generator stack, and diesel fire pump stacks would be lowered to grade. Vapor corrosion inhibitors will be used to protect equipment that has a resale value, namely the terminal's gas engine generators, emergency generator, compressors, and pumps.

Terminal decommissioning and safe shutdown activities could be completed in 3 months.

### **K.1.2 Phase 2 – Removal of Terminal Equipment and Materials**

After safe shutdown activities have been completed, an experienced contractor would be hired to remove all equipment and materials from the Island. This would include the following equipment:

- LNG unloading and vapor return arms;
- Stainless steel and carbon steel piping;
- Ambient air vaporizers;
- Process area structural steel;
- Pipe rack structural steel;
- Gas engine generators;
- Direct-fired heaters;
- Large pumps, compressors, and motors;
- Electrical switchgear, transformers, and large cable;
- Spare parts;
- Emergency diesel generator package; and
- LNG tank's 9 percent nickel steel inner tank.

The removal of equipment and materials would take approximately 1 year.

The top-side contractor will mobilize demolition equipment to the Island. One or more of the Island's existing buildings would be used as office space and equipment storage space during top-side removal operations. Typical equipment associated with equipment and material removal includes mobile cranes, cranes equipped with hydraulic cutters, cranes with magnets, flatbed trucks, pickup trucks, containers for scrap, portable generators, cutting torches, and supplies. The inner tank removal would require hot work (such as using cutting torches) permits and flammable gas checks to ensure there are no pockets of flammable gas inside or outside of the equipment. Hot work permits and confined space permits, when necessary, would be used to ensure worker safety.

### **K.1.3 Phase 3 – Removal of Remaining Terminal Components**

After removal of the equipment and materials, demolition experts will be brought in to remove the remaining Terminal components. This will include:

- Power plant building,
- Living quarters,
- Control/maintenance/warehouse building,
- Auxiliary building,
- Compressor building,
- Pump building,
- Jetty monitor/control buildings,
- Foundations and pilings,
- Underground duct banks and piping,
- Containment sumps, and
- Four LNG tank concrete containments.

Most of the demolition will be accomplished using conventional excavator-mounted equipment, including paving breakers, hammers, shears, grapples, and drills. This equipment will be used for the demolition of the above-ground structures and their foundations. The initial breakup of the LNG tanks will require the use of explosive charges. This will reduce the tanks to rubble that the conventional excavator-mounted equipment can handle. The tank base and pile caps will be removed by conventional means using hydraulic hammers, shears, and grapples. The rubble will be taken to shore for disposal or recycling.

The removal of the piles will take place in conjunction with the removal of the Island materials (see Section K.1.4). As the elevation of the Island is reduced, the exposed piles will be cut in segments. In the final step, the piles will be pulled or cut at the level of the sea bottom and taken to shore for recycling. The final grading of the seafloor will be by the marine decommissioning contractor.

The removal of the structures as described will take approximately 3 years.

### **K.1.4 Phase 4 – Removal of Island**

Following removal of the Island topside structures (e.g. tanks, vaporizers, buildings, etc.), decommissioning of the Island foundation will begin. The first step in the process will involve removal of 19,000 individual 33-ton CORE-LOC units. It has been assumed that these breakwater armor unit structures will not be re-used in another location for shoreline protection/armoring because they would no longer carry a warranty. However, it is possible that there would be many beneficial and valuable uses for these items. Each CORE-LOC unit will be lifted from the water using a ringer type crane located on a jack-up barge or from the shore (on the Island). Removal will require the work of divers to set slings around each unit. Two ringer cranes will be used simultaneously for removal of the CORE-LOC armor units. Each ringer crane will be on a jack-up barge. The barges will be raised out of the water for stability while lifting. Two tug boats will be required for movement of the crane barges. Each unit will be loaded onto a barge for transport. Four deck barges and four tug boats for transport will be required. It has been assumed that each unit will be offloaded from the barges and used as construction materials or for fish reef habitat in the New York Harbor area. It is estimated that removal of the CORE-LOC structures will take 95 days.

The next layers of armor stone and underlayer stone (12 ton and 6.5 ton, respectively) will also be picked up using cranes. The cranes will be fitted with special grappling buckets (commonly known as “orange peels” for picking up the large materials). Two ringer cranes will be used simultaneously for removal of

the 12 ton and 6.5 ton stone. Each ringer crane will be mounted to a jack-up barge. The barges will be raised out of the water for stability while lifting. Two tug boats will be required for movement of the crane barges. These materials will be loaded onto barges and transported to the New York Harbor area. Four deck barges and four tug boats for transport of materials will be required. The barges will be offloaded at a shoreline location, using a similar type ringer crane, where the material may be crushed into smaller aggregate or sold to the aggregate/construction industry. The large stone quantities would likely be suitable for re-use as shoreline armoring. The quality of the stone will be assessed following removal to evaluate the existence of cracking that may have developed over the years. At this time it is assumed that the stone could be sold back into the aggregate market at a reduced price. Removal of the 12 ton and 6.5 ton armor stone will take approximately 200 days. This work will begin shortly after removal of the CORE-LOC armor units commences (i.e., as one layer is stripped off, stripping of the second layer would begin shortly afterwards).

The remaining stone materials (e.g., 3 ton, 1.2 ton, 1,300 ton, and 100 pounds) will be picked up in a similar fashion using a crane. Because the remaining stone materials are smaller and can be dredged up using a clamshell type bucket, these materials will be loaded to barges and transported to the New York Harbor area. Six large dredge type cranes fitted with 12-cubic yard buckets will be used for this application. Six tug boats will be required for movement of the dredges. Twelve deck barges and six tug boats will be required for transport. The barges loaded with materials will be offloaded at a shoreline location where the material may be crushed into smaller aggregate or sold to the aggregate/construction industry. The quality of the stone will be assessed following removal. Currently ASIG assumes that the stone can be sold back into the aggregate market at a reduced price. A lattice boom type crane will be used at the shoreline location. The crane will be fitted with a material-handling bucket. Removal of these materials will take approximately 180 days. Again, removal of these materials will begin shortly after the upper layers are stripped off.

The next step will involve removal of the sand material. The top foot of material will be removed and disposed of at an onshore landfill. This material will be removed using two excavators and approximately four off-road dump trucks. Materials will be loaded to deck barges and transported to the New York Harbor area for offloading. The next step will involve removing the remaining sand using traditional dredging techniques. Two hopper dredges with an approximate capacity of 6,000 cubic yards will pull over the top of the sand structure or next to the sand structure and suck the materials into the ship. The material will be transported to the New York Harbor area or the Long Island coast where the materials will be sold as construction material or used for beach nourishment projects (respectively). The quality of the sand should be suitable for beach nourishment and would be sold to the local government or to the state for use at these beach nourishment projects.

The sand inside the caisson structures will be pumped out. A dredge type pump will be used for this application. The pump will be lowered from a dredge/crane mounted on a spud barge. Next, the water will be pumped out of each cell within the interior honeycomb cells allowing the caisson to float. The caissons will then be towed to the New York Harbor area. Two tugs will be required for towing. ASIG assumes that these units will not be re-used in another location as the quality of the concrete will have degraded over the years. The concrete and rebar would be demolished and scrapped at an appropriate facility. Removal of the sand from the caissons and floating them to the New York Harbor area will take approximately 10 days.

The berthing pilings will be removed from the sand materials through a vibration process. Any concrete materials will be crushed/broken using an excavator-mounted hammer. It is anticipated that two excavators will perform the demolition work. Concrete debris will be loaded onto barges and transported to the New York Harbor area using similar tugs mentioned above. The concrete and rebar will be demolished and scrapped at an appropriate facility. Concrete demolition and removal of the pilings will take approximately 20 days. All hammering activities will take place above water.

Decommissioning of the sand/armor structure (not including topside components of tanks, vaporizers, etc.) will take approximately 2 years to complete. Of the 2 years, only 6 to 8 months each year are viable due to weather limitations. When the weather is suitable, decommissioning activities will occur 24 hours

per day, 7 days per week. Hydrographic surveys will be taken throughout the process to ensure materials are not misplaced or left behind. Materials will be removed to the approximate original ocean floor grade prior to Island construction.

The duration and impact estimated for removal will be less than the initial construction period. The impact to the water column is also anticipated to be less than initial construction. Any fine-grain materials present during initial construction will have washed away during initial placement (most likely minimal due to the coarse nature of the materials that are being used).

The exact location where offloading and recycling/crushing of materials will take place is not known at this time. It is assumed that a similar staging area to the one used during Island construction would be selected (i.e., an industrial waterfront setting that would not require site upgrades and where noise from the activities should not be an issue).

## **K.2 PIPELINE FACILITIES**

The intent is for the Pipelines to be decommissioned in place. The owner of the Pipelines would submit a pipeline decommissioning application to the MMS Regional Supervisor in accordance with the regulations existing at the time of decommissioning. The MMS Regional Supervisor would determine whether the Pipelines would constitute a hazard obstruction to navigation and commercial fishing operations, would unduly interfere with other uses of the OCS, or would have adverse environmental effects.

The Pipelines will be decommissioned using the best-available technology in accordance with the laws and regulations existing at that time, and in a manner that prevents or minimizes environmental impact, including the following:

- Closing lateral tie-in valves and plugging Pipeline ends;
- Pigging and flushing the Pipelines;
- Filling the Pipelines with seawater;
- Removing the tie-in spools;
- Cutting and plugging each end of the Pipelines; and
- Burying each end of the Pipelines at least 4 feet below the seafloor or covering each end with protective concrete mats, if required by the federal or state regulations.

Pipeline decommissioning activities could be completed in 2 months.

## **K.3 ENVIRONMENTAL PROTECTION MEASURES DURING DECOMMISSIONING**

ASIG will work with resource and regulatory agencies to develop a comprehensive environmental protection plan prior to decommissioning to minimize and mitigate impacts. Key mitigation and minimization measures include:

- Use dynamic positioning (DP) vessels where feasible to minimize disturbance of seafloor.
- When DP vessels are not feasible, multipoint anchored vessels for Project deconstruction will use mid-line buoys to reduce cable sweep of seafloor.
- Implementing deconstruction activities (e.g., vessel maneuvering, anchoring, etc.) in a manner that will minimize impact to the seafloor and will minimize turbidity during Island deconstruction.
- Any discharges from marine support vessels will comply with USCG and/or MARPOL regulations (e.g., all vessels would be equipped with a USCG certified operable Marine Sanitary Device, either a treatment system or holding tank).

- Marine vessels will have, and will be prepared to implement, a vessel oil spill contingency plan, and will have sufficient spill response equipment and sorbent materials to contain and cleanup a spill should one occur.
- Deconstruction related waste streams will be reused and recycled to the extent practicable, such that the need to discharge such water will be essentially eliminated. Sanitary wastewater generated during Terminal and Island deconstruction activities will be collected, stored and shipped off the Island for treatment at mainland wastewater treatment facilities.
- A deconstruction phase stormwater pollution prevention plan (SWPPP) will be developed and implemented. The SWPPP will include implementation of BMPs designed to minimize on-Island soil erosion and sedimentation and minimize potential exposure of stormwater runoff to (fuel/oil, chemicals, raw materials, or other potential pollutants
- Conduct any required blasting in accordance with an agency approved blasting plan and take other noise reduction measures to minimize the effects of underwater noise on pelagic fish and marine mammals.
- Monitor marine mammal and sea turtle activity in the vicinity of deconstruction activities and follow agency approved actions to minimize impact.
- Conduct deconstruction activities in accordance with an unanticipated discovery plan in order to ensure full and complete compliance with all federal regulations concerning the protection of submerged cultural resources

ASIG does not anticipate any significant environmental restoration or remediation costs not already accounted for above. Soil from the top few feet of the Island will be sampled and tested for contaminants and, if necessary, placed in an approved onshore landfill. The remaining materials will still be clean and re-useable for commercial and industrial purposes. In fact, the sand, rock, and CORE-LOC units provide significant opportunities for beneficial use as fish habitat structures at the former Island location or other locations along the New York or New Jersey coasts. It is assumed that at the time of decommissioning the region will meet air quality attainment standards such that purchase of construction related offsets will not be required.

## **K.4 ALTERNATIVE DECOMMISSIONING PLAN**

ASIG has developed an alternative decommissioning plan that allows the Island and major top-side structures to remain. This plan is believed to have positive environmental benefits and result in less cost than the proposed plan. The alternative plan does not conform to MMS regulations currently in place governing decommissioning, but assumes that a waiver of the statutory removal requirement could be obtained. Under the alternative plan, Phase 1 and 2 would be completed as described above. The remaining alternative decommissioning activities are described below.

### **K.4.1 Major Top-Side Structures**

The following structures would remain after completion of Phases 1 and 2:

- Foundations and pilings,
- Underground duct banks and piping,
- Containment sumps, and
- Four LNG tank concrete containments.

Building foundations will be put in a safe condition by filling holes with sand to eliminate fall, entrapment, or drowning hazards. Likewise, piping and electrical manholes will be filled with sand to preclude access.



The LNG containment sumps (some as large as 20 meters by 20 meters by 15 meters deep) will be filled with sand to eliminate fall, entrapment, or drowning hazards.

The outer concrete LNG storage containment structures would be put into a safe condition. The access holes that were cut to remove the 9 percent nickel-steel will be blocked with either concrete or welded steel bars. Drain holes will be provided at the base of the tanks to allow any water that leaks into the tank from above to drain to the existing Island stormwater system. The retaining walls around the LNG storage tank cavities will be reduced to grade level and the cavities will be filled with rubble and sand.

The structural steel pipe supports that are attached to the side of the LNG storage tanks will be removed or cut at 20 feet above grade. All access points and the pump and instrument wells will be welded closed. There is precedent for abandoning LNG tanks in this condition. Two LNG tanks were constructed on Staten Island and later abandoned. Figure K-1, below, shows a Google Earth image of the site.

This safe shutdown and equipment and materials removal work will take 3 months to complete.

#### **K.4.2 Navigation Facilities**

The Terminal design currently includes seven obstruction lights, a Racon, and four fog horns strategically located around the Terminal to provide optimal lighting and navigational warning signals for the facility. Under the alternative plan, the Racon would be removed and replaced with a radar reflector, if the natural radar signature of the Island's mass is not strong enough. Arrangements would be made to ensure that this equipment remains in operation. The equipment would be solar-powered with battery backup and would be designed to be self reporting. The occurrence of a fault in any of the monitored circuits would be transmitted to a shore based security agency or maintenance organization that would dispatch personnel to conduct repairs. The cost of installing the required equipment and maintaining that equipment will be funded by ASIG.

#### **K.4.3 Long Term Maintenance**

Prior to decommissioning ASIG would work with appropriate Federal and state agencies to determine how best to decommission the Terminal while ensuring public safety and preventing hazards to navigation. Under any approved decommissioning plan, ASIG would be responsible for carrying out, or funding, the long-term maintenance of the Safe Harbor Energy Island. This would include the maintenance of the radar reflectors (if installed), navigation lighting, fog horns, and periodic inspections to insure that structures left intact remain in a safe condition..



**Figure K-1. Staten Island Safely Abandoned LNG Tanks**