

Appendix E Marine Safety and Anchoring Plan

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Cabrillo Power I LLC Encina Marine Oil Terminal Decommissioning Project Marine Safety and Anchoring Plan

June 2015

1.0 INTRODUCTION

This Marine Safety and Anchoring Plan (MSAP) has been prepared in support of the proposed Cabrillo I LLC Encina Marine Oil Terminal Decommissioning Project (Project). The purpose of this MSAP is to provide a precise set of procedures and protocols to be used by the decommissioning contractor when executing the decommissioning work for the marine component of the Project. The primary concerns addressed in this MSAP are personal, environmental, and vessel safety.

2.0 DISTRIBUTION OF MSAP

The MSAP would be distributed to all pertinent regulatory agencies, including the U.S. Coast Guard Station in San Diego (USCG), the City of Oceanside Police Department Harbor Unit, the decommissioning contractor superintendent, the Encina Power Station (EPS) marine project manager, the EPS environmental monitor, and all marine supervisors, support vessel operators, radio operators, and diving supervisors. In addition, a copy of the MSAP would be placed on each support vessel used for the Project.

3.0 TRAINING

All project managers, environmental monitors, and field supervisors would review the contents of the MSAP at the pre-decommissioning kick-off meeting that would take place after all environmental permits are issued and before any marine decommissioning work commences. Any comments or suggestions made during the training session that would enhance operational safety may be incorporated into the final MSAP. The final MSAP would be included in the Contractor Work Plan (CWP) and presented to the California State Lands Commission (CSLC) prior to the start of onsite decommissioning work.

4.0 MARINE PROJECT LOCATION

The marine component of the Project would occur in front of the EPS facility in Carlsbad, California from the shoreline to 6,500 feet offshore. Although the offshore Project site is well removed from ship traffic, it may be accessed by fisherman and recreational boaters. Sea and surf conditions at the Project site are generally mild during late spring, summer, and fall months, with San Clemente Island, located approximately 60 miles offshore, providing some shelter from the open ocean swells. The seafloor at the offshore work site is composed of shallow sand cover over rock, with exposed rock and a kelp bed to the southeast. Carlsbad Canyon, a submarine canyon, is located approximately one mile offshore of the EPS facility. It is near the top of this canyon that the tanker berth's navigation buoy was located (in 110 feet of water) before it was removed during decommissioning work in 2010.

Oceanside Harbor may be used as the decommissioning contractor's base of operations (e.g., loading and offloading equipment and recovered tanker berth materials) and the point of daily embarkation of crews to the offshore Project site. Oceanside Harbor, located approximately six

miles northwest of the offshore Project site, is controlled by the City of Oceanside's Harbor Unit, while the offshore Project site is controlled by the USCG. Neither Oceanside Harbor nor the offshore Project site are USCG Vessel Traffic Service areas, and there are no known special restrictions on vessel operations or vessel anchoring at the offshore Project site.

5.0 OPERATIONAL PROTOCOLS

The following operational protocols are intended for use by the decommissioning contractor during decommissioning. The purpose of these protocols is to provide a precise set of operational requirements and duties to ensure that all marine operations are conducted safely.

5.1 INFORM

Notices would be issued by Cabrillo I LLC or the decommissioning contractor as appropriate and in compliance with all environmental permit conditions for the Project. At a minimum, the decommissioning contractor would notify the USCG Station in San Diego and the City of Oceanside Harbor Unit in writing of the pending offshore operations approximately 15 days prior to the start of marine activities. The CSLC would be given verbal notification by the Project Manager the day before operations commence. No other notifications are required.

5.2 NOTIFY

The MSAP requires the decommissioning contractor to file a Local Notice to Mariners with the USCG no less than 15 days prior to the start of each phase of decommissioning at the offshore Project site. This notice would inform local boaters of the temporary and potential navigational hazards at the EPS MOT offshore Project site as a result of marine decommissioning activities. This notice would state the following:

_____ Contractor name _____ will be conducting debris recovery and diving operations at the Encina Power Station offshore tanker berth located offshore of Carlsbad, California beginning _____, 201_ through _____, 201_. The derrick barge _____ barge name _____ will be onsite along with the support tugboat _____ tugboat name _____, and the vessel _____ vessel name _____. A four-point mooring system will anchor the derrick barge. All anchors will be marked with a _____ (color) crown buoy marked with a 5-inch wide reflective blue band, and at night time, flashing white lights. These decommissioning operations will involve extensive diving and, as such, all vessels are requested to remain at least 500-feet outside of the perimeter formed by the four crown buoys. The tugboat will monitor VTS channel 16 when working at the site. For further comments or details, contact the Project Manager, _____ (name), at _____ project manager's contact number _____.

6.0 ANCHOR PLAN

All marine decommissioning work would take place from an anchored derrick barge and would utilize a mooring spread that would be deployed in pre-planned and pre-plotted anchor sets. A four-point mooring system would be used for all mooring requirements; however, if dynamic pipe ramming (DPR) is used to extract the fuel oil submarine pipeline from the surf zone, a six-point mooring system may be used to support the required pulling forces.

6.1 DEFINITION OF AN ANCHORAGE AND ANCHOR LEG

Anchorage is defined as any combination of anchors set at predetermined locations to provide anchorage within a defined work area. For example, a four-point anchor set involves the deployment of one anchor from each of the four corners of the derrick barge or support vessel. A six-point anchor set is shown in Figure 1.

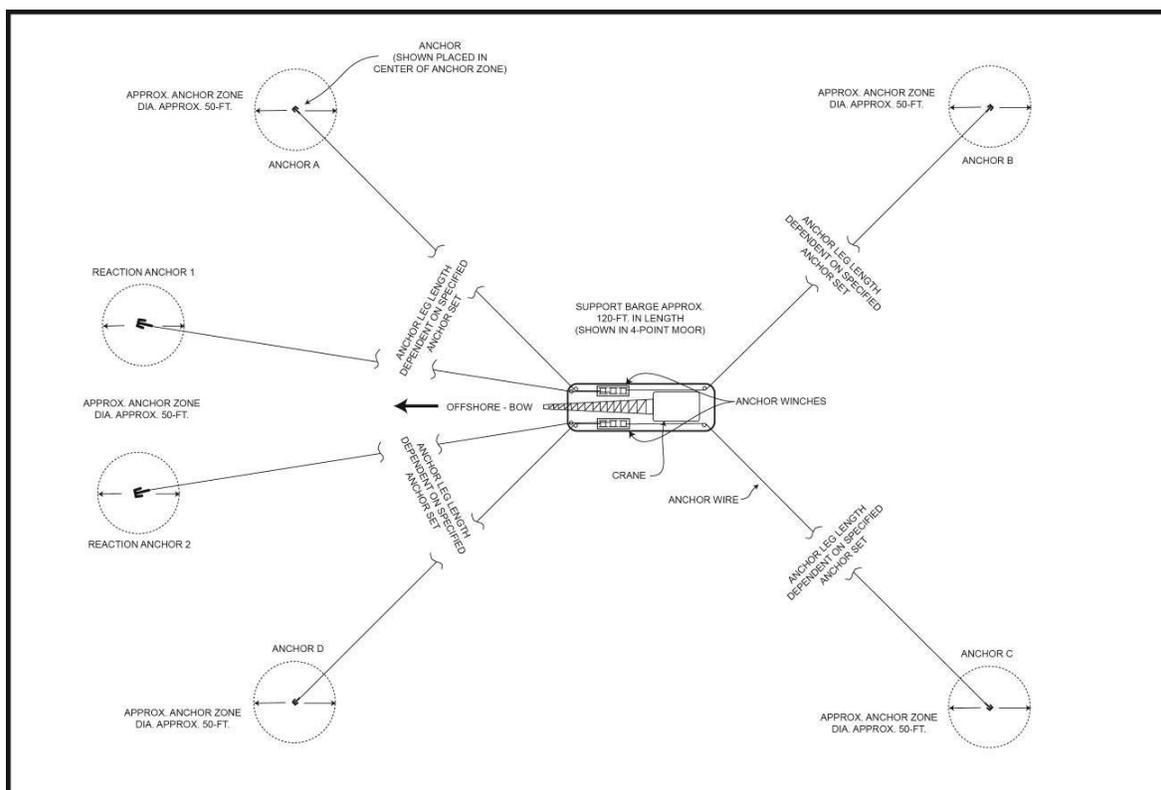


Figure 1. Typical Six-Point Anchor Set

An “anchor leg” is comprised of one anchor, an anchor wire, a crown line, and a crown buoy. The anchors would anchor the derrick barge through wire ropes (anchor wires) that are connected to anchor winches fastened to the deck of the derrick barge. A wire rope pennant (crown line) would be attached to the crown (bottom end) of each anchor and be supported by and pass through a floating steel buoy to facilitate an environmentally friendly recovery of the anchors (Figure 2).

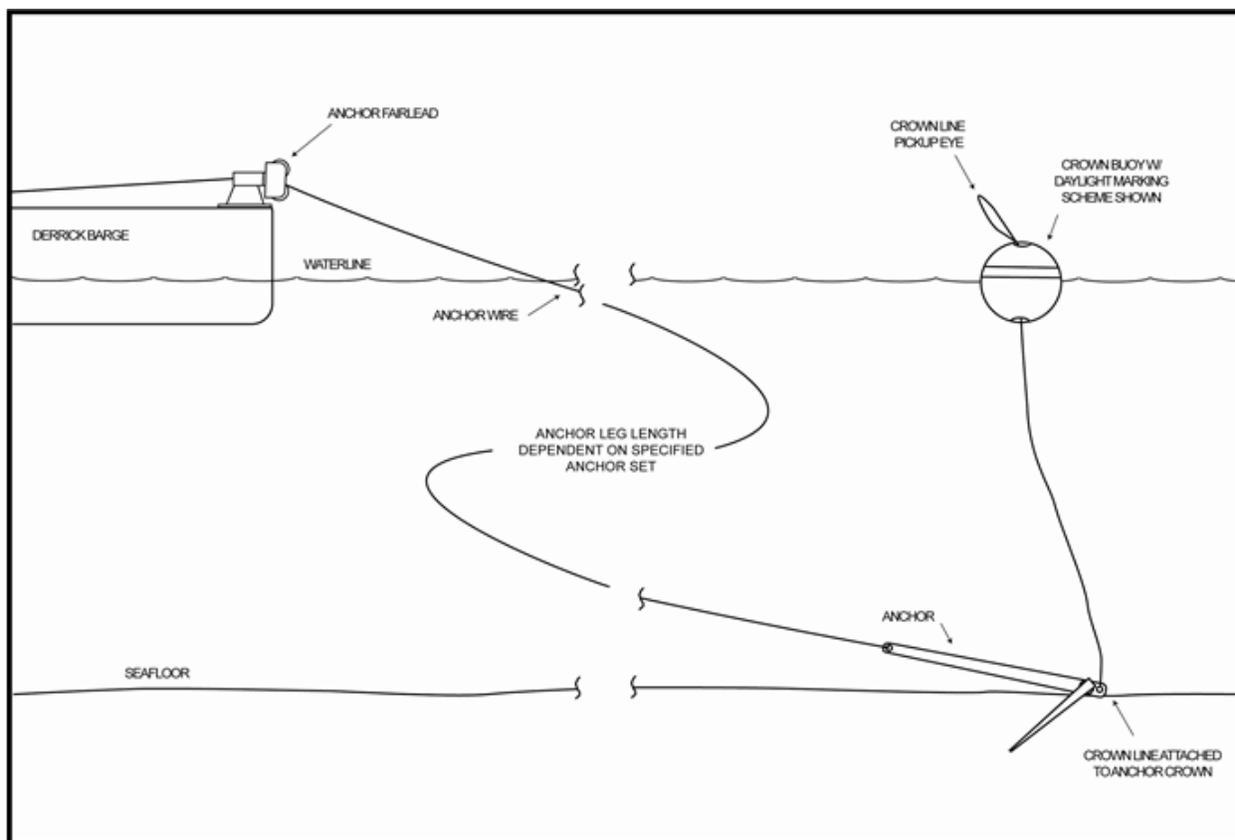


Figure 2. Typical Anchor Leg

6.3 PRE-DEFINED ANCHOR SETS

A total of twelve derrick barge anchorages have been identified for marine decommissioning work and are plotted in Figure 3. Because the locations and dimensions of the derrick barge anchorages are dependent on the selected decommissioning contractor's equipment and/or existing site conditions when decommissioning work commences, the final anchorage positions would be provided in the CWP.

A safety zone is proposed around each anchorage and the offshore Project site to help keep recreational and commercial vessels from entering the work site. The safety zone around each anchorage would be defined as a boundary drawn between each anchor crown buoy of the specific anchorage and offset 500 feet outside of this boundary. The safety zone around the offshore Project site would be defined as the boundary formed by connecting the planned anchor locations on the periphery and offsetting that boundary by 500 feet. In order to visually discern the safety zone around the offshore Project site, the crown buoys of each anchorage along the perimeter of the work site would be appropriately colored with stripping and lettering and affixed with strobe lights.



Figure 3. Preliminary Anchor Pre-Plot

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6.4 IDENTIFICATION OF VESSELS AND BUOYS

The derrick barge, support vessels, and buoys would be marked in accordance with the United States Code of Federal Regulations, Title 33, Chapter 34, Subchapter I, Part C and the publication titled Private Aids to Navigation.

a. Derrick Barge

The derrick barge would serve as the anchored work platform at the offshore Project site, and would range from approximately 120 feet to 180 feet in length. The deck of the derrick barge would carry a crane and other support equipment and would be equipped with extensive deck lighting.

1. **Daylight Marking Scheme – Under Tow** - A single three-dimensional “diamond shape,” no less than 2 feet in length and width, would be suspended above the deck of the derrick barge at the highest point possible.
2. **Daylight Marking Scheme – Anchored** - Two three-dimensional “ball shapes,” no less than 2 feet in diameter, would be suspended in a vertical line at the highest point possible above the deck on the side of the derrick barge where work is taking place.
3. **Nighttime Marking Scheme – Under Tow** - The derrick barge would be marked with sidelights and a stern light.
4. **Nighttime Marking Scheme – Anchored** - Two “all-round” red lights would be displayed in a vertical line on the side of the derrick barge where work is taking place. Additionally, two “all-round” green lights would be displayed in a vertical line on the side of the derrick barge to notify mariners which side of the barge to pass. The deck would also be lighted with deck illumination lights as needed.

b. Crown Buoys

The derrick barge would be moored with a four-point mooring system, or it would be moored with a six-point mooring system if DPR is used. Although the mooring system anchors would be located on the seafloor, crown lines with floating buoys would be attached to the anchor crowns to facilitate placement and recovery of the anchor and to provide a visual reference of the safety zone established around the work site. The crown buoys would consist of spherical or cylindrical metal or plastic buoys that would sit upright and visible above water line.

1. **Daylight Marking Scheme** - The crown buoys would be white and marked with a 5-inch-wide horizontal band of blue reflective tape around the circumference of the buoy.

2. **Nighttime Marking Scheme** - The crown buoys would be marked with white strobe marking lights (a JOTRON™ MF-1112 or equivalent) attached to the top of the buoys. The lights would be visible approximately 6 miles away and would flash approximately 25 flashes per minute. The lights would be activated by a photocell that turns the light on at the onset of darkness and off in daylight.

c. Support Tugboat

A support tugboat would be required to deploy and recover the derrick barge anchors and tow the derrick barge. Additionally, a second tugboat would be used to support a materials or deck barge to haul recovered piping to an offsite dock for offloading and recycling/disposal. These rules would apply to any tugboat towing a barge for Project-related activities.

1. **Daylight Marking Scheme – When Towing** - The support tug would display three three-dimensional “shapes,” two “round shapes” with a “diamond shape” in middle, suspended above the deck in a vertical line. The “round shapes” would be no less than 2 feet in diameter (in the highest and lowest positions) and the “diamond shape” would be no less than 2 feet in length and width.
2. **Nighttime Marking Scheme – With and Without a Tow** - The support tug would be marked with sidelights and a stern light. In addition, the support tug would be marked with three “all-round” lights in a vertical line where they can best be seen; the highest and lowest of these lights would be red and the middle light would be green.

6.5 GENERAL ANCHORING PROCEDURES

The following general anchoring procedures would be used to deploy and recover all anchors used to support marine decommissioning activities.

a. Surface Navigation and Pre-Plots

A full-time professional marine surveyor would use a commercial-quality differential geographic positioning system (DGPS) with sub-meter accuracy to position the anchors, derrick barge, and marine equipment at their pre-designated positions at the offshore Project site. The DGPS system would be installed in the wheelhouse of the support tug and preprogrammed with all bathymetric survey, geophysical survey, and diver verification data, as well as all debris targets, needed for decommissioning. A backup system and uninterruptible power source would also be provided.

Pre-existing site data superimposed with the real-time positioning of the support vessel would be viewed by the marine surveyor and support tug operator on a computer display located in the wheelhouse. The display would update approximately every 0.5 seconds and would allow the operator to position the support tug in the exact locations required for anchoring.

The DGPS system would also be used to position the tip of the derrick barge crane boom and the airlift or submersible pump over the real-time displayed position of the buried offshore segment of the fuel oil submarine pipeline.

b. Deploying and Recovering Anchors

With the exception of the first deployed anchor, all derrick barge anchors would be deployed and recovered by the support tug utilizing the basic procedures described in this section.

The first anchor may be lowered from the support tug to the seafloor at the pre-designated anchor location. Once the first anchor is lowered, the support tug would "fly" the other anchors from the derrick barge or support vessel to their pre-designated anchor locations. "Flying" refers to an anchoring procedure where the anchor would be carried or suspended by a support tug to the pre-designated anchor location with a crown line. The anchor would then be lowered by the crown line into place on the seafloor. The crown line would also be used to retrieve the anchor using a winch located on the support barge or support vessel.

In this application, the crown line would consist of a synthetic soft line or wire rope pennant with one end attached to the crown, or base of the anchor stock, and the other attached to the floating anchor marking buoy. The use of a crown line enables the support tug to slip (trip) an anchor backwards out of its set rather than having the support barge righting the anchor with the anchor wire during the anchor weighing process (when the anchor is lifted off the seafloor). Recovering anchors using crown lines generally results in less seafloor disturbance than weighing the anchor vertically with the anchor wire or chain, and it also eliminates any unnecessary anchor wire contact with the bay or channel floors; at no time would the decommissioning contractor be permitted to drag anchors across the seafloor.

c. Establishing and Maintaining Safety Zones

The anchor crown buoys will serve as visual indicators of the safety zone established around the marine decommissioning work. The safety zones will be described in the Notice to Mariners and a thorough description of the crown buoys provided.

7.0 MARINE COMMUNICATIONS PLAN

The Marine Communications Plan would be used by the captain and crew on the marine work vessels to communicate with each other, vessel traffic in and around the work site, and the USCG.

7.1 WORK SITE RADIO COMMUNICATIONS

Radio communications would be conducted using VHF-FM marine band radios, and the marine work crews would monitor channel 16.

7.2 CELLULAR TELEPHONE CONTACT

The marine project manager, decommissioning contractor superintendent, and pertinent managers and supervisors would be available by cellular telephone. The contact information for these individuals would be found in the Operational Contact List included in the CWP.

8.0 CRITICAL OPERATIONS AND CURTAILMENT PLAN

The following are critical operation issues and responses specific to this Project:

8.1 REFUELING OF VESSELS AND EQUIPMENT

Critical Operation: The support vessels and equipment mounted on the deck of the derrick barge or support vessel would require periodic refueling. As with any refueling requirement, the possibility of spillage exists.

Curtailement: All refueling of support vessels would take place at the local shore base or at approved fueling docks. Refueling of the equipment mounted on the deck of the support barge would take place from integral fuel tanks built into the support barge, or from USCG-approved deck-mounted fuel totes. If necessary, USCG-approved fuel totes would be used and transported to the offshore Project site where they would be placed on the deck of the support barge with the support barge crane. All refueling operations would follow USCG regulations and oil spill containment equipment would be onsite in accordance with the Project Oil Spill Contingency Plan and the CWP; cross-vessel fueling would be prohibited.

8.2 SANITATION

Critical Operation: Sanitation facilities would be required for crews working at the offshore work sites.

Curtailement: Portable sanitation devices (Porta-Potty or equivalent) would be placed on the deck of the derrick barge. These devices would be changed out on a weekly basis or as needed to ensure clean sanitation facilities. No effluents or sanitation wastes would be allowed to enter the ocean.

8.3 ADDITIONAL CRITICAL OPERATIONS AND CURTAILMENTS

Additional critical operations and curtailments are expected, but would be identified in the CWP after the decommissioning contractor has been selected.

9.0 DIVE PLAN

The decommissioning contractor would develop and implement a Project-specific Dive Plan that would: identify all diving requirements and environments; list all planned diving methods and equipment; identify all dive team members and their responsibilities; and provide a list of all diving procedures and a diving emergency action plan.

10.0 SITE SAFETY PLAN

The decommissioning contractor would develop and implement a site-specific personnel and environmental safety plan for all of its operations at the work site, and it would comply with all Cabrillo I LLC contractor safety requirements.

11.0 EMERGENCY RESPONSE PLAN

The decommissioning contractor would develop, publish, and display an Emergency Response Plan at the work site that would include maps with the locations of all local emergency medical facilities and contact numbers for local emergency service providers. Additionally, the Plan would also include a simple emergency response process for various levels of injury or incidents.

12.0 OPERATIONAL CONTACT LIST

An Operational Contact List would be included in the CWP with contact information for the facility owner/operator, marine project manager, marine decommissioning superintendent, and all managers, authorities, agencies, support facilities, and contractors involved with the decommissioning work at the offshore Project site.