1

Data Gap: 1

Describe the cutting mechanism that would be used to remove piles during decommissioning in the event they cannot be successfully pulled from the substrate. (Vol. II, Section 1.7.3, Page 1-85).

Response to Data Gap: 1

At the end of the economic life of the deepwater port, the subsea valves will be closed. The risers and control umbilicals will be disconnected from the riser manifolds then reeled up and disconnected from the buoys. The mooring lines will be disconnected from the unloading buoys and the buoys will be removed. The mooring lines will be disconnected from the anchor points and reeled up. The risers, control umbilicals, mooring lines, unloading buoys and anchor piles will be loaded onto barges and removed from the deepwater port site. In the event the anchor piles could not be removed, they will be cut 15 feet below the mudline and the top section removed. There are four alternative methods that could be used to cut a pile 15 feet below the mudline, as described below:

- Diamond wire cutters (external tools only), which use a mechanically driven industrial-diamond impregnated wire rope to saw through the pile;
- High pressure abrasive water jetting systems (internal and external tools), which uses high pressure streams of an abrasive water slurry to cut through the pile; and
- Mechanical mag-base cutting tools (internal and external tools), which are similar in principal to lathe cutting tools or circular saws to remove the pile top section.

It is important to emphasize Calypso LNG, LLC's (the Applicant's) belief that the cost and energy required to employ any of the foregoing cutting methods is likely to far exceed that of removal by reverse suction.

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1 Clarification

Data Gap: 1

USCG Clarification Request of May 8, 2007

Based on Calypso's March 9, 2007 data gap response (Response #1), clarify whether there are three or four alternative methods for cutting piles below the mudline during decommissioning. If four alternatives, describe the fourth method for cutting piles below the mudline.

Response

The reference to four methods in the original response was an error. The response should have made reference to only three methods.

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2

Data Gap: 2

Provide an estimate of the amount of marine diesel fuel that would be transported to the SRS on a monthly or annual basis, and provide additional information on how that transfer process would occur. (Vol. I, Section 18.5.5, Page 41)

Response to Data Gap: 2

The estimated diesel fuel consumption of the storage and regasification ship (SRS) each month will be approximately 25,000 liters, or 6,604 U.S. Gallons. It is planned to supply the SRS with diesel fuel through the use of a purpose-built bunker barge or bunker tanker, supplied by a local company that is in the marine fuels supply business. The bunker barge/ship will be a "load line" vessel or ship, certified to trade in offshore waters in which the deepwater port is located. The bunker vessel will moor to the side of the SRS, utilizing the same fenders as will be used by an liquefied natural gas (LNG) carrier delivering LNG to the SRS. The fuel for the SRS will be transferred by the bunker vessel to the SRS at its diesel oil bunker receiving connection which will be located adjacent to the cargo arms of the SRS. Transfer will be accomplished using the bunker vessel's cargo transfer hose and the bunker vessel's cargo transfer pump. This is a commonly used method of providing bunkers to vessels that are either in a port which is not equipped with bunkering facilities or in the offshore environment. Provision of fuel by hose transfer is indicated in Section 18.5.5 of *Calypso*'s September 2006 DPLA. The hose transfer procedures followed for all bunkering activities will be the written procedures incorporated in the terminal operations manual and approved by the U.S. Coast Guard. An example of these procedures is as follows:

1. The bunker vessel Captain requests permission to approach the SRS to deliver diesel fuel.
2. When permission is received from the SRS, the bunker vessel maneuvers alongside the SRS adjacent to its cargo arms and moors to the SRS.
3. The SRS crane operator instructs the bunker vessel deck crew to attach the free end of the bunker vessel's hose to the sling on the hook at the end of the SRS's crane wire runner.
4. The bunker vessel's deck crew verifies the attaching arrangement and ensures that the blind flange at the end of the hose is secure and that the hose is not under any fluid pressure.

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5. The SRS crane operator then lifts the free end of the bunker hose to the deck of the SRS and the SRS deck crew secures the hose to the hose support railing of the SRS.

6. The SRS deck crew releases the hose from the crane's sling, removes the blind flange with the hose end over the bunker drip tray, and connects the hose to the bunker connection of the SRS. All bolt holes in the flanges MUST have bolts in them and all bolts MUST be tightened when the hose is secured to the bunker connection.

7. The deck crews of the SRS and the bunker vessel stand by the hose connections on their respective vessels while the duty engineer lines up the cargo transfer pump to pressure test the hose connections. The bunker vessel Captain communicates by radio to the SRS deck crew, a request to pressure test the hose and connections.

8. The discharge valve of the bunker vessel manifold is opened slowly to pressurize the bunker hose. The hose and manifold are then isolated from the pump pressure, after which the pump is stopped, to verify that it is holding the required pressure.

9. When both the deck crews of the two vessels are satisfied there are no leaks in the hose or at the connections, the bunker vessel engineer will open the discharge valve and the SRS deck crew will open the bunker connection valve on the SRS.

10. The bunker vessel Captain will request permission to commence bunker transfer and when the SRS grants permission, the transfer pump on the bunker vessel is started and bunker transfer commences.

11. Throughout bunker transfer, the levels in the bunker tanks on both the bunker vessel and the SRS are monitored to ensure no over-filling of tanks or spillage of bunkers occurs.

12. When the bunker transfer is complete, the transfer pump is shut off. The SRS deck crew will then close their bunker connection valve and then vent the bunker hose at their end of the connection, allowing the contents of the bunker hose to drain to the bunker vessel's tanks through the pump.

13. When the bunker vessel hose connection pressure gauge reads zero, the bunker vessel's crew closes all of the discharge and manifold valves and communicates this to the deck crew on the SRS.

14. The deck crew on the SRS then disconnects the hose from the SRS bunker connection and re-installs the blind flange on the end of the bunker hose, tightening all the securing bolts to ensure that no residual bunker oil in the hose will be able to leak out of the hose.

15. The SRS deck crew then advises the bunker vessel Captain that the bunker hose is free and ready to be retrieved.

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16. The SRS crane lifts the hose clear of its bunker connection and the bunker hose support railing and lowers the hose to the deck of the bunker vessel in a controlled manner.
17. The quantity of bunker fuel transferred from the bunker vessel to the SRS is then verified and agreed by fuel tank level measurements taken both on the SRS and on the bunker vessel.
18. Following the reconciliation of the amount of bunkers transferred from the bunker vessel to the SRS, the bunker vessel prepares to depart from alongside the SRS.
19. When the Master of the bunker vessel is ready, the mooring lines of the bunker vessel are cast off and the bunker vessel departs the SRS.

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3

Data Gap: 3

Provide the vessel traffic patterns, density, and composition in the region of the proposed deepwater port and in the area to be avoided.

Response to Data Gap: 3

The vessel traffic information requested in this comment is for the sole purpose of the Independent Risk Assessment (IRA) being conducted by a third-party consultant (Risknology) working under U.S. Coast Guard (USCG) supervision. We understand that the USCG R & D center has been contracted and tasked with evaluating the vessel traffic data, performing the analysis, and providing the information to the IRA third-party consultant. We believe that no further Applicant action is required to address this comment.

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4

Data Gap: 4

Characterize the displacement tonnage for each LNG vessel type (SRS, TRV, and LNG carrier) that could visit the deepwater port (DWP). For the TRVs and LNG carriers, a range or average displacement tonnage would be acceptable.

Response to Data Gap: 4

Table 4-1 provides a range of full-load displacements for each LNG vessel type (SRS, TRV, and LNG carrier) that could visit the *Calypso* deepwater port.

Table 4-1 Transport and Regasification Vessel (TRV), LNG Carrier, and Storage and Regasification Ship (SRS) Full-Load Displacement

Vessel Type	Range of Full-Load Displacement	
	Low (ton m)	High (ton m)
LNG Carrier	105,000	140,000
Transport and Regasification Vessel	100,000	120,000
Storage and Regasification Ship [(a)]	180,000	180,000

Notes:
(a) The estimated full load displacement for the SRS is given as both extremes of the range.
Key:
LNG = liquefied natural gas.
ton m = metric tons.

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5

Data Gap: 5

Characterize the range of oil volumes that would be held on LNG carriers. (Vol. II, Section 4.3.1.3, Page 4-47).

Response to Data Gap: 5

LNG carriers likely to call on the port will carry fuel oils and lubricating oils stored in storage tanks and in day tanks. LNG carriers are typically designed with fuel oil and lubricating oil storage tanks of sufficient volumetric capacity to enable each unit to make at least two round trip voyages without having to stop and refuel. However, the high cost of fuel compels carriers to carry as little fuel as possible without prejudice to the safe return voyage. Because they will not refuel at *Calypso*, they must arrive and depart with enough fuel stored on board to return safely to the LNG loading port or a convenient refueling port. Saint Eustacius in the Caribbean is such a port, the proximity of which may signify large variances in fuel inventory carried by LNG carriers unloading at *Calypso*.

Table 5-1 gives a range of oil volumes required by a typical carrier to return safely from *Calypso* to Trinidad [low inventory] and from *Calypso* to a port in the Mideast [high inventory] as if a refueling stop in Saint Eustacius was not an option for the owners. The onboard inventory values shown include an amount held in reserve and also take into consideration the owners' incentive to minimize stored inventories of expensive fuel oil.

Table 5-1 The Range of Oil Volumes That Would be Held on LNG Carriers at the *Calypso* Deepwater Port

LNG carrier size (m^3 LNG capacity)	Lubricants (m^3)	Fuel Oil for Return to Trinidad (m^3)	Fuel Oil for Return to Mideast (m^3)
125,000 – 200,000	120	2200	2800

Key:
LNG = liquefied natural gas.
m^3 = cubic meter(s).

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6

Data Gap: 6

Provide the estimated amount of time on an annual basis that the SRS machinery cooling system would be operated in an open-loop mode (i.e., during periods of transit and when not vaporizing LNG). Identify the typical duration of such operations and any anticipated seasonal patterns. Identify the intake rate and volumes of water that would be required when operating in an open-loop mode. Also, provide clarification as to whether the SRS machinery cooling system would be operated in an open-loop or closed-loop mode when a TRV is moored at the deepwater port (i.e., would the TRV and SRS simultaneously and continuously vaporize and send-out LNG).

Response to Data Gap: 6

Refer to the response to Data Gap: 29 for a comprehensive tabular and descriptive summary of water use during *Calypso* operations.

On an annual average, the SRS machinery cooling system is estimated to operate in an open-loop mode about 5% of the time (about 18 days per year). It is important to note that it is the intent to operate the SRS engine cooling system in the closed-loop mode as normal operation. However, operation in open-loop mode would occur when the closed-loop system is down for maintenance or when insufficient LNG vaporization results in inadequate cooling being available for engine cooling. The open-loop system is provided to assure continued operation of generators on the vessel to provide power for: 1) basic hoteling requirements when LNG is not being vaporized and 2) LNG vaporization in the event the LNG-based closed-loop cooling system is unavailable.

The typical duration of specific maintenance events is estimated to require three to five days on average. Given the dual gas-delivery ability of the *Calypso* design, SRS maintenance events may be scheduled so as not to affect *Calypso*'s ability to deliver gas (i.e., when a TRV is attached to the other buoy).

If the LNG vaporization system is shut down or is operating at very low rates, the open-loop engine cooling system will need to be placed in operation. During these times, the SRS will require open-loop engine cooling of one generator to provide shipboard electrical demand, and will require the intake and discharge of about 4.1 million gallons per day (mgd) of sea water. In addition, on occasions it may be necessary for the SRS to operate in open-loop engine-cooling mode while vaporizing LNG (e.g., if the closed-loop system requires being down for maintenance).

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There is no direct relationship between the operation of the SRS closed-loop cooling system and the presence, or not, of a TRV at the port. During normal operations, the SRS will continue vaporizing LNG and will be operated in closed-loop mode for engine cooling whether or not a TRV is moored at the deepwater port.

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6 Clarification

Data Gap: 6

USCG Clarification Request of May 8, 2007

Clarify the volume of intake and discharge that would occur when the SRS would be vaporizing LNG when the closed-loop machinery cooling system would be down for maintenance.

Response

Although not part of normal port operations, the SRS would be capable of vaporizing LNG while operating in the open-loop engine cooling mode. During such rare occasions, the peak SRS engine cooling intake of sea water would be at a rate of about 12.2 million gallons per day at the peak natural gas delivery rate of 1.5 billion cubic feet per day.

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7

Data Gap: 7

Provide additional information on onshore project components associated with the construction and operation of the proposed Calypso Deepwater Port. Indicate if the proposed locations contain sui infrastructure or if new infrastructure or substantial modifications to the existing infrastructure (dredging or ground-disturbing activities) would be required to construct or accommodate the construction or operation of the proposed Port. Please address the following:

a. Dock facilities for the support vessels, both construction and operation; (Vol. I, Section 22.1, Page 60);

b. Operations control center (would existing office space be used?) (Vol. I, Section 22.5, Page 61);

c. Radio tower (would a transmitter be placed on an existing tower/structure or would a new tower be required); (Vol. I, Section 22.5, Page 61);

d. Onshore construction staging areas; (Vol. I, Section 23, Page 63)

e. Other onshore facilities, if applicable, such as fuel storage areas, waste handling and disposal facility, and crew staging areas. (Vol. I, Section 22, Page 59)

Response to Data Gap: 7

a. Dock facilities required by the support vessels during both construction and operation will not be constructed especially for this Project. At this writing, there is sufficient wharf space and available capacity on the Florida coast between Fort Lauderdale and Miami to assert that satisfactory commercial arrangements can be set up as required to provide for the load out of needed materials. The Applicant does not have plans to be a party to the commercial negotiation of these arrangements. This will be delegated to the key subcontractors who provide construction support and operations support to the deepwater port.

b. As with the dock facilities, the office facilities referred to would not be constructed especially for this Project. Construction support might well be provided by use of a portable on or near the load out yard. For operations, the provision of an office sufficient to give infrastructure support to a team of an estimated five people will be part of the commercial operations. SUEZ will use existing infrastructure in the Fort Lauderdale area for the *Calypso* port operation.

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c. No radio tower is required for the high frequency radio transmission capability prescribed. Marine VHF voice frequencies carry well for up to 30 miles on 1.0-watt power gain using only a small fiberglass whip antenna. The emergency radio transceiver, if licensed, will utilize simplex and duplex voice maritime frequencies up to 8,000 kiloHertz (KHz). These also function well with vertical whip antennas mounted on the roof of an office building. A decision to use a secure microwave VOIP communications link to the port will depend on the cost and benefit when the *Calypso* port begins operation. A small microwave dish antenna for this purpose does not require a tower although it may be mounted on the service provider's existing tower as part of the service subscribed.

d. Almost all required storage of construction materials is simple outside storage. This suggests a field surrounded by a chain link fence and one or two gates for entry and egress. The field will have to have good storm runoff during heavy rains and a hard surface capable of supporting the wheel loads of heavy equipment entering and leaving. The selection of a sui site for this will be determined by the installation contractor. It will be this contractor's responsibility to operate the storage area in strict compliance with applicable permits and to restore the premises to its original condition and use by its owner.

e. Calypso LNG, LLC (the Applicant) foresees no compelling need to store fuel or waste material temporarily. Although the decision to store fuel or waste temporarily will be made by the port's major subcontractors, each will in turn be accountable to Calypso LNG, LLC for strict compliance with applicable laws, regulations and permit conditions. Any failure in regard to the latter invites the commercial sanctions available to Calypso LNG, LLC as well as penalties that may be imposed by local authorities.

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7 Clarification

Data Gap: 7

USCG Clarification Request of May 8, 2007

Confirm whether or not the onshore laydown and staging area for construction of the Calypso LNG Deepwater Port would be the same as that for the FERC-approved Calypso pipeline. If not, clarify the designated land use, existing uses, and acreage for the potential laydown and staging area(s) for construction of the Calypso LNG Deepwater Port.

Response

The Applicant expects to use the same onshore storage and laydown area for equipment staging as that which has been designated by Calypso Pipeline for its storage area.

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8

Data Gap: 8

Clarify that the east buoy would consist of a single flexible jumper and that the west buoy would include a single flexible jumper and an umbilical anchor (30 x 30 feet) since the text and corresponding figures do not agree. (Vol. II, Section 1.2.2, Pages 1-7 through 1-15)

Response to Data Gap: 8

The east buoy will have two flexible risers and one flexible control umbilical, which descend to the seabed from the buoy. The west buoy will have one flexible riser and one flexible control umbilical, which descend from the buoy. Additional clarification and details follow.

The east buoy will have two gas paths to the pipeline end manifold (PLEM) which are two flexible risers. The east buoy will also have one flexible control umbilical descending to the seabed from the buoy. The APL Drawing [1368-APL-W-XD-MG-0003] for the east buoy, included as Figure 1-4 (Volume II, Section 1, page 1-13) in the September 2006 DPLA, depicts two risers in the top view and only one in the side or profile view, as it should. The control umbilical is not shown in this drawing, but is shown in APL Drawing [1368-APL-U-XD-RG-0002], included as Volume I, Appendix I.3 in the September 2006 DPLA. Each is shown connecting to a "Riser Anchor" which in turn is connected to the single "PLEM" via its own jumper. These two jumpers are not labeled in the drawing and it is too soon to know whether they will be flexible jumpers or rigid jumpers. The seafloor termination for the single control umbilical is not shown on the Riser Anchor detail because it will terminate on the PLEM directly. The DPLA calculation for impacted seabed area included the two riser anchors and the PLEM.

Regrettably the APL drawings provided as Figures 1-4 and 1-5 in the September 2006 DPLA (Volume II, Section 1, pages 1-13 and 1-15) label the flowline downstream of the PLEM "Jumper to Calypso Pipeline." This use of the term jumper is not incorrect, but is inconsistent with the use of the term on this Project. These details will be made clearer in the next stage of the development

The west buoy has a single riser and a single control umbilical that descend from the buoy. Both are anchored to the 30-foot by 30-foot PLEM connected to the north end of the west flowline as depicted in Volume I, Appendix I.11 [APL drawing 1368-APL-U-XD-RG-0001] of the September 2006 DPLA. As with the east buoy riser anchors, the PLEM which serves as the west buoy riser anchor was included in the DPLA seabed area impact calculation.

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9

Data Gap: 9

Expand the discussion of estimated acreage impacts to include the size of the construction area and permanent area occupied by the umbilical anchor, riser anchor, suction piles, and gravity anchors. Include technical drawings to illustrate typical gravity anchor installation. (Vol. II, Section 1.3.1.4, Pages 1-17 and 1-18 and Page 4-45).

Response to Data Gap: 9

Detailed information regarding the calculation of estimated area impacts for all deepwater port components is provided in Volume I, Appendix H.5 "Affected Seabed Area Calculation" of the September 2006 DPLA.

The determination of the area affected by any materials installed or any related construction activities on the seabed is a requirement of the United States Army Corps of Engineers (USACE) permit and other regulating agency permit processes. *Calypso*'s draft USACE Section 10 Permit Application, included in the September 2006 DPLA (Volume I, Appendix B), provides additional information regarding seabed impacts.

Permanent acreage impacts result from the installation of mooring system anchors and anchor legs, manifolds, jumpers, and flowlines. The mooring system proposed by Advanced Production and Loading, Inc. (APL) was modified for the existing soil conditions and a mooring radius determined for each anchor within the mooring system. The anchor layout is depicted on the Terminal Location Preferred Alternative Drawing (Figure 1-1, Volume II, Section 1, page 1-5). Since each anchor length will vary, calculations were performed for each anchor.

To calculate the seabed area affected by the mooring chains, the effect of excursive movement of the vessel connected to the buoy must be considered. The maximum vessel excursion is a radius from the initial buoy position of 157.4 feet (48 meters) and 196.8 feet (60 meters) for the transport and regasification vessel (TRV) and the SRS, respectively. Due to this vessel movement, the anchor chains and cables are assumed to sweep the seabed due to lateral movement of the buoy while the vessel is attached. The length to the touchdown point (TDP) where the chain rests on the sea bottom was taken from the drawings entitled "STL Mooring for SRS" (Volume I, Appendix I.2 in the September 2006 DPLA) and "STL Mooring for TRV" (Volume I, Appendix I.10 in the September 2006 DPLA) obtained from APL.

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Comparing total horizontal lengths of the chain on the seabed from the anchor to the initial TDP and the expected position of the anchor chain after vessel movement, a sweep pattern can be established. A general depiction of the expected area affected by the anchor chain is shown on Figure 9-1. The chain is conservatively assumed to sweep the area of the seabed from the chain's initial position to where the chain rests during the maximum excursion in each lateral direction. The chain movement in each lateral direction is conservatively assumed to be a straight line to form a triangle on each side of the initial chain position. As the buoy moves closer to the anchor, the distance of the anchor TDP from the buoy decreases. The lateral excursion of the anchor chain from its initial position also decreases. This is depicted by the second smaller set of triangles where the point closest to the buoy is the TDP of the chain since the maximum excursion of the buoy is in the direction of the anchor.

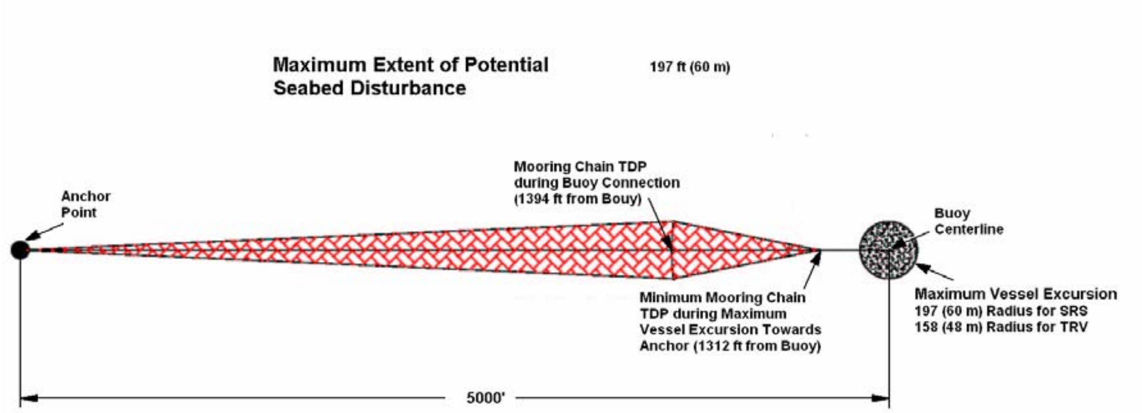

Figure 9-1 Anchor Chain and Riser Affected Area

There will be no seabed disturbance from the proposed TRV riser since it will be a steep "S" configuration that will not rest on the seabed. The TRV riser configuration is depicted in the APL drawing entitled "STL Riser System for TRV" (Volume I, Appendix I.11 in the September 2006 DPLA). The SRS has two 16-inch inner-diameter flexible risers. Each SRS riser attaches to a gravity anchor, which then connects to the riser manifold via a 328-foot (100-meter)-long flexible jumper laid on the seabed. The flexible jumper is assumed to have the same properties as those used for the risers. The initial quotation from the riser flexible pipe manufacturer gives the outer diameter of the riser pipe as 1.66 feet.

Suction piles will be used at 12 of 17 the mooring anchor points. Each suction pile is assumed to be 20 foot (6.1 meter) in diameter. The suction pile depth will be determined during a later design phase, however it is estimated that the piles will penetrate approximately 30 feet. Gravity anchors will be required at the other five locations. Anchor locations are discussed in Volume II, Section 1.3.1.4 (page 17) in the September 2006 DPLA. A conservative estimate of the size of these gravity anchors is assumed to be a width of 59.1 foot (18 meter) and a length of 72.2 feet (22 meter). Each SRS riser connection to the riser manifold requires a different type gravity anchor. These two riser anchors are provided by APL as a 30-foot by 30-foot square.

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The flowline lengths were rounded up to the nearest 10-feet interval. The east and west flowlines are estimated as 12,660 and 13,530 feet, respectively. This is depicted on the drawing entitled “Preferred Location Deepwater Port Layout” (Volume I, Appendix F.5 in the September 2006 DPLA). A 30-inch outer-diameter steel pipe was selected for the flowline. Although a stability analysis was not performed during this design phase, the flowline is assumed to have 3 inches of concrete weight coating. The total width of the 36-inch outer-diameter flowline was then multiplied by the flowline lengths to obtain a total area affected by the flowlines.

Subsea structures such as the riser manifolds, pipeline end terminations (PLETs), and in-line tie-ins (wyes) require mudmats which are essentially a flat, steel plate foundation that supports the structure on the seabed. The mudmats were sized using an estimate of the weight of the required components and the results presented in the Subsea Mudmat Calculation. The subsea structure components were initially sized from the dimensions provided by the component manufacturers and the larger of the two structure sizes used. The structure components will be finalized during detailed design and the structure size and foundation support requirements refined.

Two riser manifolds are expected to be required for the deepwater port. The TRV and SRS riser manifold mudmat sizes are both provided by APL as 40-foot by 40-foot squares. A quick design check of the mudmat sizes was performed for the known TRV components in the Subsea Mudmat Calculation. This design check confirmed that the mudmat sizes given for the TRV and SRS riser manifold structures will be more than adequate for the required components for both systems.

To accommodate the sizes of the valve, bend, and associated piping, the structure requires a structure length of 25 feet. Therefore, the structure dimensions used to calculate the area of seabed affected by the structure is 25 foot in length by 8 feet in width.

The in-line tie-ins (wyes) will be installed with the Calypso Pipeline. The revised Federal Energy Regulatory Commission (FERC) permit submitted May 2006 does not include the areas affected by the in-line tie-in (wye) structures. The areas affected by the wye structures and their associated mudmats will therefore be included in the total affected areas calculated for the *Calypso* deepwater port. The wye structure configuration is sized to be deployed through the stinger of a pipeline installation vessel. A mudmat size of 41 foot in length by 7 foot in width is required to fit the structure supporting the valve, wye, and required piping. This size is used to calculate the area affected by the in-line tie-ins (wyes).

Temporary acreage impacts are those arising from construction installation necessities. These include pipelay initiation anchors, attaching cables and concrete mattresses to protect existing equipment.

Pipelay initiation anchors are required to apply tension to the flowline pipe string to initiate the flowline installations. Suction pile anchors are recommended for the expected soil conditions. Each suction pile is assumed to be 20 feet (6.1 meter) in diameter.

The flowline pipestring is attached to the initiation anchor by means of a steel cable as shown in the Western and Eastern Flowline Tie-In Layouts (Volume I, Appendix B, Figures 7 and 8). The cable is assumed to sweep 5 feet in each direction from the centerline shown. This sweep triangle is then used to calculate the area affected by the temporary installation cable.

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Concrete mattresses are placed in order to protect the Calypso Pipeline from damage that could be caused by the initiation cable. These mattresses are typically sized as 20 feet by 8 feet, but can be cut to any size. The mattresses are shown on the drawings entitled “Eastern Flowline Tie-in Layout” (Volume I, Appendix B, Figure 8) and Western Flowline Tie-In Layout (Volume I, Appendix B, Figure 7). The mattresses are stacked two layers deep, however, only a three-mattress footprint area (60 feet by 8 feet) of the seabed is affected.

Total areas permanently impacted are shown in Table 9-1 as “long-term” impacts. Those having a temporary impact are shown as “short-term.”

Volume III, Attachment 8 “Construction Plan with Contingencies” provides additional descriptions of construction and decommissioning equipment and activities.

Technical drawings to illustrate typical gravity anchor installation are provided on Figures 9-2, 9-3, and 9-4 (Drawings 11199502-302-DRW-00-002-A, 11199502-302-DRW-00-003-A, and 11199502-302-DRW-00-004-A).

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Table 9-1 Base Case Affected Area Summary

Component	Duration	Width (Feet)	Length (Feet)	Quantity (Unit)	Area (Acres)
East Terminal Anchor [a] [f]	Long-term	Varies	Varies	9	0.342
East Terminal Anchor Chain/Wire	Long-term	Varies	Varies	9	84.160
West Terminal Anchor [a] [f]	Long-term	Varies	Varies	8	0.244
West Terminal Anchor Chain/Wire	Long-term	Varies	Varies	8	55.362
East SRS Flexible Riser Jumpers	Long-term	1.65	328.08	2	0.026
East SRS Riser Anchors	Long-term	30	30	2	0.042
East Riser Manifold	Long-term	40	40	1	0.037
East Flowline [b]	Long-term	3	12,660	1	0.872
East Pipeline End Termination (PLET)	Long-term	8	25	1	0.005
East In-Line Tie-In (Wye at MP 23)	Long-term	7	41	1	0.007
West Riser Manifold	Long-term	40	40	1	0.037
West Flowline [b]	Long-term	3	13,530	1	0.932
West Pipeline End Termination (PLET)	Long-term	8	25	1	0.005
West In-Line Tie-In (Wye at MP 26)	Long-term	7	41	1	0.007
Anchor Piles (start of pipelay)[a]	Short-term	20	20	2	0.016
Concrete Mattresses	Short-term	8	20	6	0.024
Installation Anchor Chain/Wire	Short-term	Varies	Varies	2	0.058
Total Long-term Impacts					142.078
Total Short-term Impacts					0.098
Total Impacts					**143**

Notes:
(a) Suction Pile Anchor diameter is assumed as 20 feet
(b) The width of the pipeline affecting the seabed surface is its diameter.
(c) Each anchor line length is the average anchor line for each terminal.
(d) The transition area is the pipe transition from the proposed burial depth to the surface and includes the portion residing on the seabed.
(e) Affected area rounded to the nearest acre
(f) Gravity Anchor assumed as 18 meters by 22 meters

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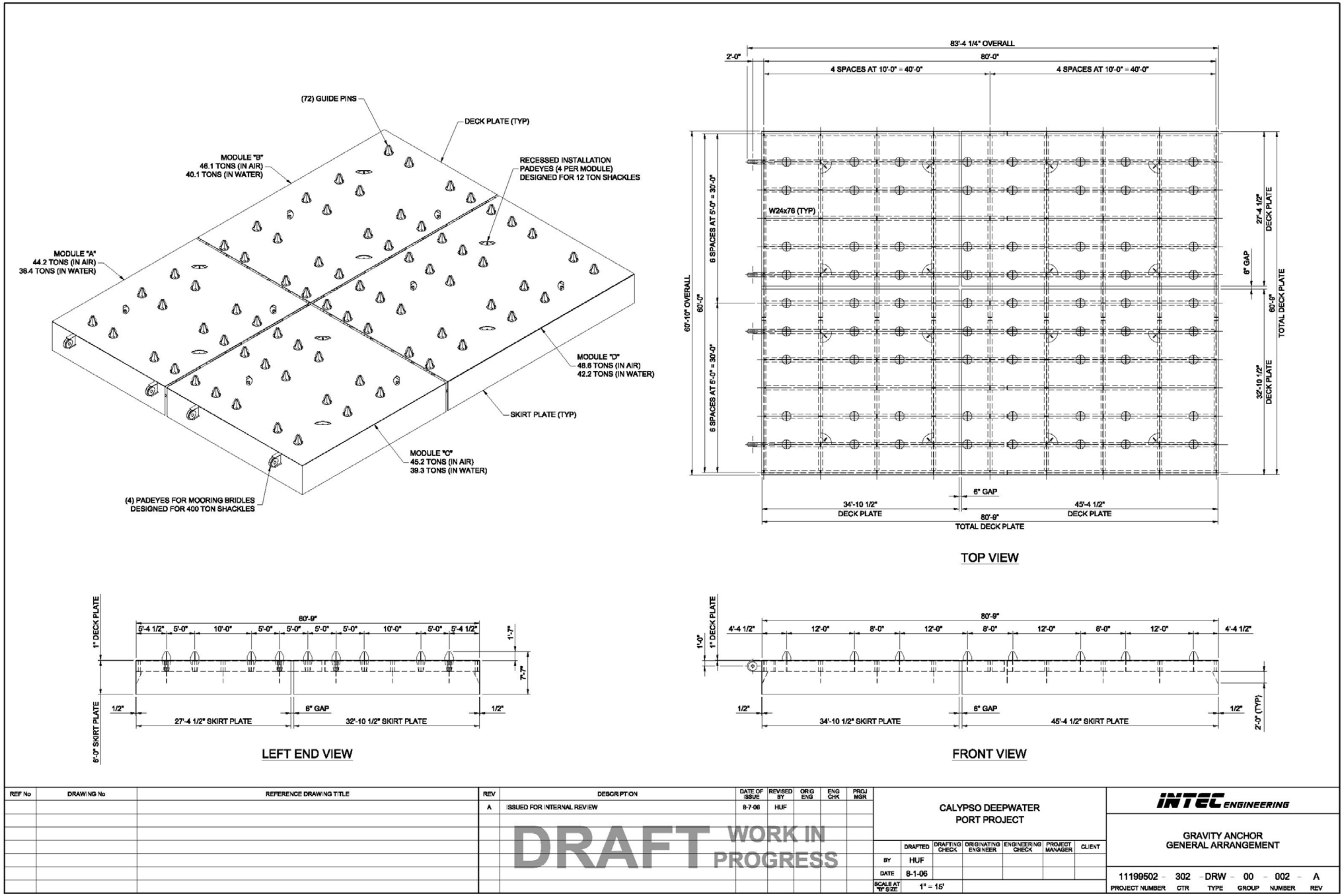

Figure 9-2 Gravity Anchor General Arrangement

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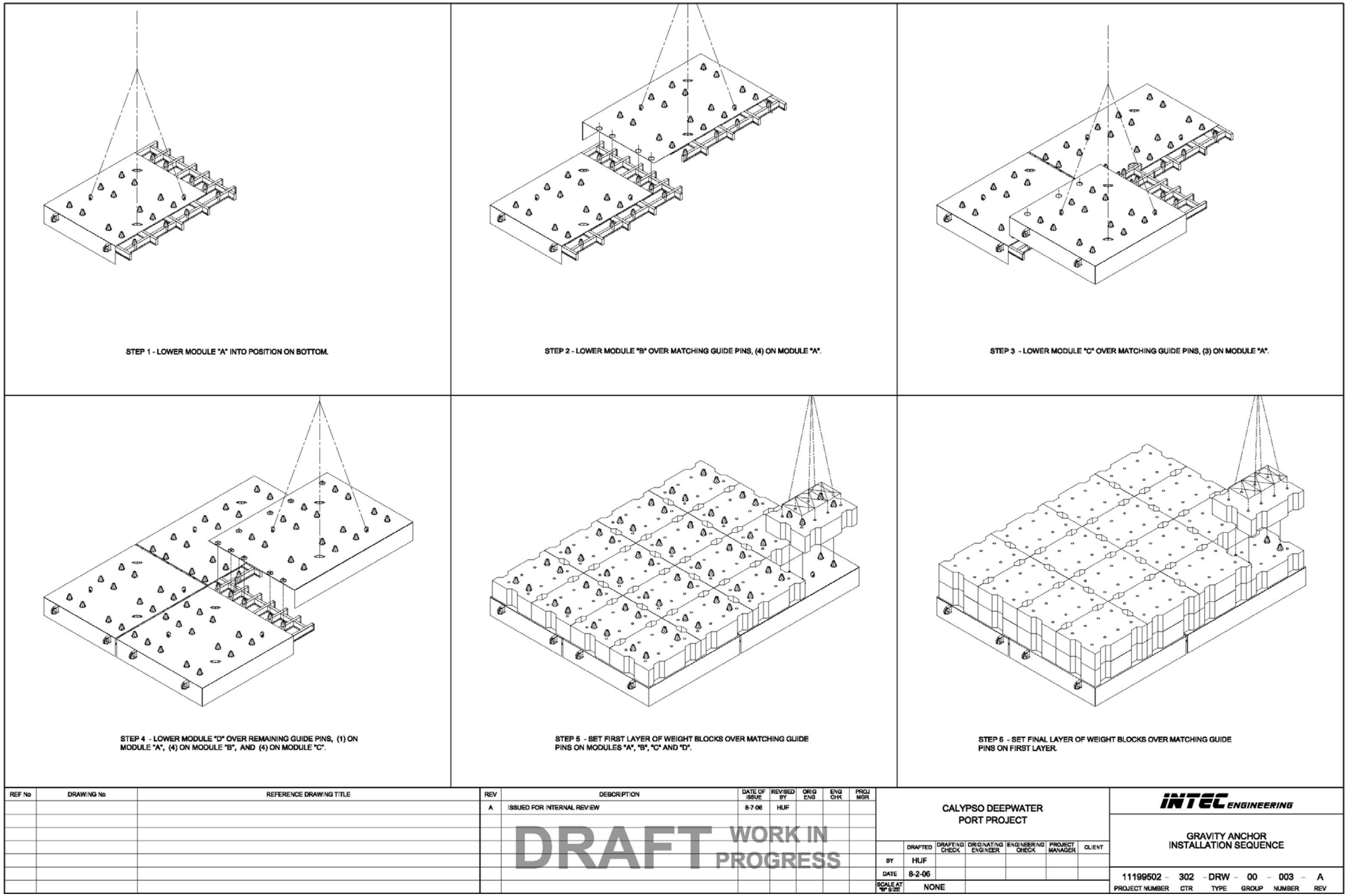

Figure 9-3 Gravity Anchor Installation Sequence

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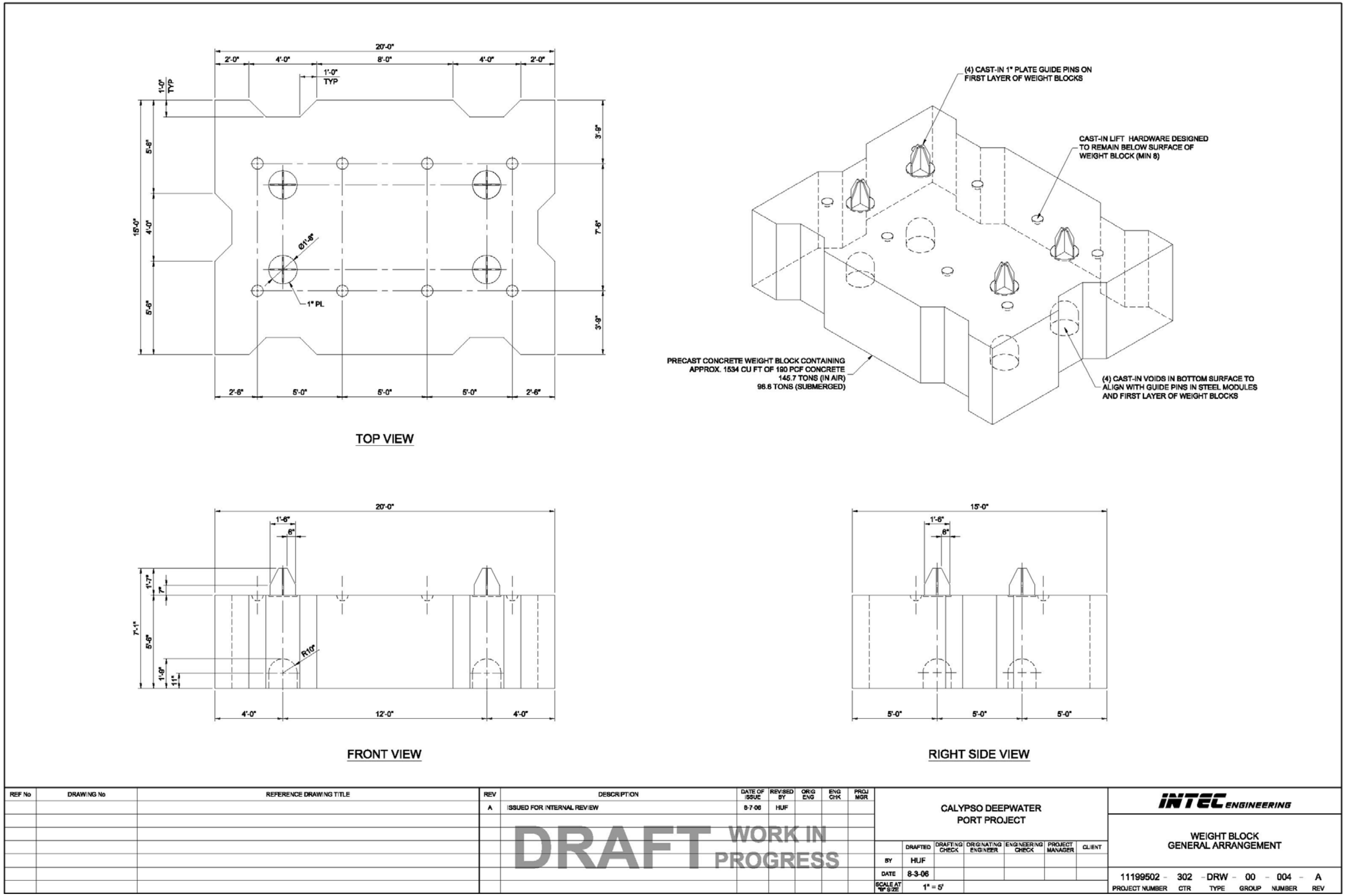

Figure 9-4 Weight Block General Arrangement

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9 Clarification

Data Gap: 9

USCG Clarification Request of May 8, 2007

Verify whether or not the information presented in the attached Land Disturbance table accurately represents the currently proposed project, and revise the table as warranted.

Response

The Applicant has reviewed the Land Disturbance Table provided by USCG on May 8, 2007. Table 9-2 provides minor revisions and explanatory footnotes to this table as provided. For convenience in interpretation, another version of same table is provided as Table 9-3, which shows the specific tracked changes relative to the original version provided by USCG. The Applicant agrees that this revised table (Table 9-2) provides the most accurate estimates of *Calypso* land requirements and should supersede Table 9-1 provided in the original response to Data Gap: 9.

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Table 9-2 Land Requirement for Each Calypso Offshore Component

Data Gap #9 – Verify Land Requirement for Each Offshore Component					
Component	**Duration**	**Width (feet)**	**Length (feet)**	**Quantity (unit)**	**Area (acres)**
East Buoy					
Suction pile anchors	Long-term	20-foot diameter		6	0.043
Gravity anchors	Long-term	61	84	3	0.353
Anchor chain/wire	Long-term	Varies	Varies	9	84.160
Flexible riser jumpers	Long-term	1.65	328.08	2	0.025
Riser anchors	Long-term	30	30	2	0.041
Riser manifold	Long-term	40	40	1	0.037
East flowline	Long-term	3	12,660	1	0.872
Pipeline end termination	Long-term	8	25	1	0.005
In-line tie-in (wye at MP 23)	Long-term	7	41	1	0.007
West Buoy					
Suction pile anchors	Long-term	20-foot diameter		6	0.043
Gravity anchors	Long-term	61	84	2	0.235
Anchor chain/wire	Long-term	Varies	Varies	8	55.362
Riser manifold	Long-term	40	40	1	0.037
West flowline	Long-term	3	13,530	1	0.932
West pipeline end termination (PLET)	Long-term	8	25	1	0.005
West in-line tie-in (wye at MP 26)	Long-term	7	41	1	0.007
Construction Activities					
Concrete mattresses (temporary)	Short-term	8	25	6	0.028
Installation anchor chain/wire	Short-term	Varies	Varies	2	0.058
Installation of suction piles, (including 2 temporary pipelay anchor piles)	Short-term	100-foot diameter area of short-term disturbance (2.524 acres) minus the area of long-term disturbance due to the 12 east and west buoy suction pile anchors (0.086 acres)		14	2.438
Total long-term land requirement					**142.164**
Total short-term land requirement					**2.524**
Total acres affected					**144.688**

Notes:
The width of the pipeline affecting the seabed surface is its outside diameter (3 feet).

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Table 9-3 Land Requirement for Each Calypso Offshore Component (Track Changes Version)

Data Gap #9 – Verify Land Requirement for Each Offshore Component					
Component	**Duration**	**Width (feet)**	**Length (feet)**	**Quantity (unit)**	**Area (acres)**
East Buoy					
Suction pile anchors	Long-term	20-foot diameter		6	0.043
Gravity anchors	Long-term	61	84	3	0.353
Anchor chain/wire	Long-term	Varies	Varies	9	84.160
Flexible riser jumpers	Long-term	1.65	328.08	2	0.025
Riser anchors	Long-term	30	30	2	0.041
Riser manifold	Long-term	40	40	1	0.037
East flowline	Long-term	3	12,660	1	0.872
Pipeline end termination	Long-term	8	25	1	0.005
In-line tie-in (wye at MP 23)	Long-term	7	41	1	0.007
West Buoy					
Suction pile anchors	Long-term	20-foot diameter		6	0.043
Gravity anchors	Long-term	61	84	2	0.235
Anchor chain/wire	Long-term	Varies	Varies	8	55.362
Riser manifold	Long-term	40	40	1	0.037
West flowline	Long-term	3	13,530	1	0.932
West pipeline end termination (PLET)	Long-term	8	25	1	0.005
West in-line tie-in (wye at MP 26)	Long-term	7	41	1	0.007
Construction Activities					
Concrete mattresses (temporary)	Short-term	8	25	6	0.028
Installation anchor chain/wire	Short-term	Varies	Varies	2	0.058
Installation of suction piles, (including 2 temporary pipelay anchor piles)	Short-term	100-foot diameter area of short-term disturbance (2.524 acres) minus the area of long-term disturbance due to the 12 east and west buoy suction pile anchors (0.086 acres)		14	2.438
Total long-term land requirement					**142.164**
Total short-term land requirement					**2.524**
Total acres affected					**144.688**

Notes:
The width of the pipeline affecting the seabed surface is its outside diameter (3 feet).

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10

Data Gap: 10

Describe Best Management Practices that would be used to minimize the duration of construction; as it relates to onshore prefabrication and inspections prior to initiating offshore construction, and any other BMPs that would be implemented. (Vol. II, Section 4.7, Page 4-70).

Response to Data Gap: 10

Minimizing the duration of offshore construction will be the high goal for all project team members in all *Calypso* project phases. To assure that the final and most costly phase of the entire project is minimized, Calypso LNG LLC (the Applicant and developer) will leverage its own best management practices (BMPs) with an equally strong emphasis on group accountability and continuous improvement.

The first essential BMP is to assemble a strong and competent project team reporting directly to the developer's project sponsor. The team charter is sanctioned by a clear project execution plan that outlines the reporting responsibilities for each position and the delegated authority of the team to function effectively.

Following are other high-level project practices Calypso LNG LLC intends to employ on the Project to ensure that the installation phase period is minimized.

Contractors and Vendors

Suppliers of quality equipment, competent fabricators, and experienced installation contractors are important contributors to the success of major projects. As contracts are awarded each vendor/fabricator should take ownership for its unique contribution to the global result. Cooperation and design flexibility by all participants are the hallmark for successful integration of all components into the finished product.

Project Risk Assessment

Offshore projects are susceptible to unplanned obstacles to a successful result. The experienced *Calypso* project team knows this and should subject the early planning phase to a rigorous assessment of risks that could threaten timely project completion. The results of this assessment can thereby be considered in the detailed project planning phase.

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Clearly Established Expectations of the Developer

Clearly defined and communicated project goals, target completion milestones, and performance measurement criteria are essential for managing any large integrated project. *Calypso* is no exception. The stated objectives and criteria should be formalized early and promulgated as part of the Project Execution Plan. Target completion milestones should be developed jointly with full buy-in by those responsible for the results.

Reviews of Progress Against Plan

A global project schedule should be maintained by the project team using element schedules supplied in standard format by each major equipment supplier and contractor. Critical paths should be determined and monitored closely for any early signs of slippage. Actual progress against the plan may be quantified by man-hours but should also be benchmarked against discreet milestones established for each element schedule. Contracts should require that contractors report progress at least monthly and allow independent reviews to be conducted by the project quality assurance/quality control (QA/QC) group.

Contract Disincentives

Traditional contract penalties for late delivery by vendors and fabricators should be used in all cases where the benefit of doing so is not counteracted by equivalent disincentives. Keeping the vendor and his progress under close project team scrutiny is a key to learning of a late delivery.

Project Change and Interface Management

Nothing is more threatening to on-time project delivery than design or schedule changes made in isolation. The interfaces between project elements should be managed in a disciplined way from the start and include change management procedures that prevent improvements from being incorporated or adopted by one party that impact the others adversely and as a consequence the global result. A dedicated resource should be assigned to manage both interfaces and changes in design or schedule.

Continuous Improvement

In the project execution plan, a provision should be included for consideration of improvement in design or execution of the project by any of the parties involved, i.e. project team members, project team leads, key suppliers and installation contractors, underwriters and regulators. All suggested improvements should be subject to interface management review and change management review before being adopted by the project. Project team emphasis on continuous improvement is itself a BMP because it encourages innovation in design, logistics, and installation.

Proven Project Method and Techniques

Use only onshore fabrication and offshore installation techniques and methods that are known to achieve the desired result. These include the following, at a minimum:

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- Ensure that all work is properly planned and all designs are final before the onshore fabrication of components is started. This will reduce and/or eliminate midway teardowns and retrofits.
- Award as much of the work as possible to a minimum number of fabricators (e.g., one fabricator for all the manifolds and PLETs, one fabricator for all the suction piles, etc.) in order to reduce and/or eliminate delays due to fabrication and construction interface and coordination issues.
- Perform thorough offshore geotechnical surveys to ensure that the anchors, the mud-mats for the manifolds and PLETs are appropriately sized. This will ensure rapid installation offshore without any remedial work. Remedial work would require additional onshore fabrication to rectify problems encountered during installation.
- Maximum pre-fabrication of pipeline components, including design of integral welded PLET to the maximum extent possible. This will be a factor considered during the contractor selection process. Selection of the best contractor for the job will reduce the onshore and offshore construction duration.
- Provide QA/QC inspectors and representatives at fabrication yards to ensure fabrications are of high quality, are on time, have the correct interface fitting(s), and are fully tested as appropriate before being sent offshore.
- Invite contractor input into potential alternate construction methods that could result in simpler manifolds and/or PLETs (this could reduce offshore construction time as could allowing contractor flexibility in the order work is performed).
- Plan the project and develop a schedule showing each phase of construction. Develop the project schedule so that a clear sequence of construction shows that no delays are incurred while waiting on the delivery of critical components or equipment.
- Establish the design basis early so that suppliers can develop technical solutions, production plans and schedules with the least uncertainty possible.

Finally, the Applicant's response to Data Gap: 126 describes several specific methods typically used in offshore projects to overcome the installation challenges posed by deep water, strong currents, and occasionally high waves. The net effect of applying any of those described is to minimize the time spent by the construction team in the challenging environment. While these methods are not strictly BMPs as asked for by this question, they are certainly tools available to the Applicant to minimize the time period for construction and installation.

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11

Data Gap: 11

Discuss the need for temporary mooring buoys and how these buoys would be deployed and maintained. (Vol. II, Section 6.6.2.2, Page 6-80).

Response to Data Gap: 11

No temporary mooring buoys are expected on site for cargo barges and / or supply boats that are on standby. The *Calypso* construction plan (refer to Volume III, Attachment 8 "Construction Plan with Contingencies") calls for the use of dynamic positioning (DP) vessels during construction, therefore, temporary anchors and mooring lines and buoys will not be used during construction or decommissioning.

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12

Data Gap: 12

Clarify how long decommissioning would require. Pages 1-84 and 5-29 of the application state that it would require 2.5 months; however pages 4-71 and 5-52 suggest that the process would take a month. (Vol. II, Section 4.7, Page 4-71).

Response to Data Gap: 12

The correct length of time that decommissioning will require is 2.5 months, as stated in Volume II, Section 1.7 ("Decommissioning") on page 1-84. The references to one month on pages 4-71 and 5-52 are incorrect. Volume III, Attachment 11 (Deepwater Port Decommissioning Plan) of the September 2006 DPLA provides further details regarding decommissioning.

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13

Data Gap: 13

Provide additional detail on what equipment may be dragged during installation and decommissioning and provide the rationale. (Vol. II, Section 5.3.1.4, Page 5-32).

Response to Data Gap: 13

The reference in question incorrectly suggests that dragging equipment is an intentional or necessary decommissioning activity. Dragging equipment during offshore fixed installation and decommissioning is unacceptable and will not occur during normal operations.

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14

Data Gap: 14

Provide a description and drawings of the typical LNG Carriers that would supply the SRS during operations, comparable to the discussion of the SRS and TRV operations in Section 1.6. (Volume II, Section1 1.3.2 and 1.3.3)

Response to Data Gap: 14

The worldwide fleet of LNG carriers numbers over 225 varying in age from one to 35 years. The oldest have cargo capacities on the order of 75,000 cubic meters (m^3), while the newest in the fleet have more than 155,000 m^3. New designs are now under construction with 265,000 m^3 capacity. Some are steam-propelled and some are diesel-propelled. All employ one of the following three different cargo containment systems types:

- Self supporting prismatic tanks;
- Self supporting spherical tanks [MOSS]; or
- Membrane tanks.

Each has advantages and disadvantages, but all types have been approved by licensing authorities and have been proved in service over many years.

A correct response to this item requires that one system be chosen and designated as more "typical" than any other. This will be done with the clear caveat that the design of the SRS and its mooring system has only one physical limitation pertaining to incoming LNG carriers. That limitation restricts inbound carriers to those having a cargo capacity of less than 215,000 m^3.

The typical LNG carrier is a 10-year-old displacement hull design, built of mild steel. It has a flush deck without raised forecastle and a bulbous bow and flat or transom stern. The engine room, crew accommodation, and bridge are located aft. One bow thruster is provided to improve maneuvering in port. The typical LNG carrier has an inner hull to accommodate the MOSS (spherical)-type cargo tanks. Double bottoms and double sides are utilized for seawater ballast. Fuel oil tanks are located in the forward and aft portions of the LNG carrier.

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Principal Dimensions

The dimensional characteristics are:

Length overall .... 950 feet
Length between perpendiculars ....910 feet
Breadth molded...88.6 feet
Design draft...11.4 feet

Particulars of the typical LNG carrier are shown graphically in the attached General Arrangement drawing, Figure 14-1.

Principal Capacities

The cargo tank total capacity at 100%-full is 145,000 m^3. The non-cargo tanks have the following capacities:

Ballast water tanks including peak tanks .... 14,000,000 gallons
Marine diesel (MDO) fuel oil tanks, including settling tanks 1,585,000 gallons
Gas oil tanks.. 63,000 gallons
Distilled water tanks (two sets).. 74,000 gallons
Freshwater tanks (two sets).. 66,000 gallons
Po water tank.. 53,000 gallons

Codes and Certifications

The LNG carrier is designed and built to meet all applicable codes and standards required by LNG shippers and shipowners' underwriters. The owner has registered the ship in Panama and submitted the design and construction to Lloyds Register for classification notation and approval. Panama is a signatory to SOLAS conventions under the International Maritime Organization (IMO; United Nations), meaning that the ship, the crew, and the ship manager are subject to all accepted international safety and environmental certifications.

Propulsion

Propulsion is achieved with a single-screw driven by twin steam turbines through a single reduction gear. Developed shaft horsepower is 45,000 HP and can achieve a speed of 19.5 knots on even keel at design draft in calm weather. Steam to power the turbines is furnished by a separate steam plant consisting of two low-pressure marine boilers, each rated at about 332 million British thermal units per hour (mmBtu/hr), which are designed to operate on cargo boil-off gas as well as heavy fuel oil (HFO). Normally, the propulsion machinery would be controlled from the bridge in seagoing condition.

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Cargo Tanks

Each cargo tank has three cargo pumps. Two of the each tank's three pumps will be able to transfer up to 2,900 m^3 per hour of LNG from the cargo tanks to the shore tanks. The third pump will be used for tank stripping and line cool down.

The LNG will be stored at –261°F. The chosen design will comply with all IMO requirements in accordance with a 40-year world-wide operational lifespan.

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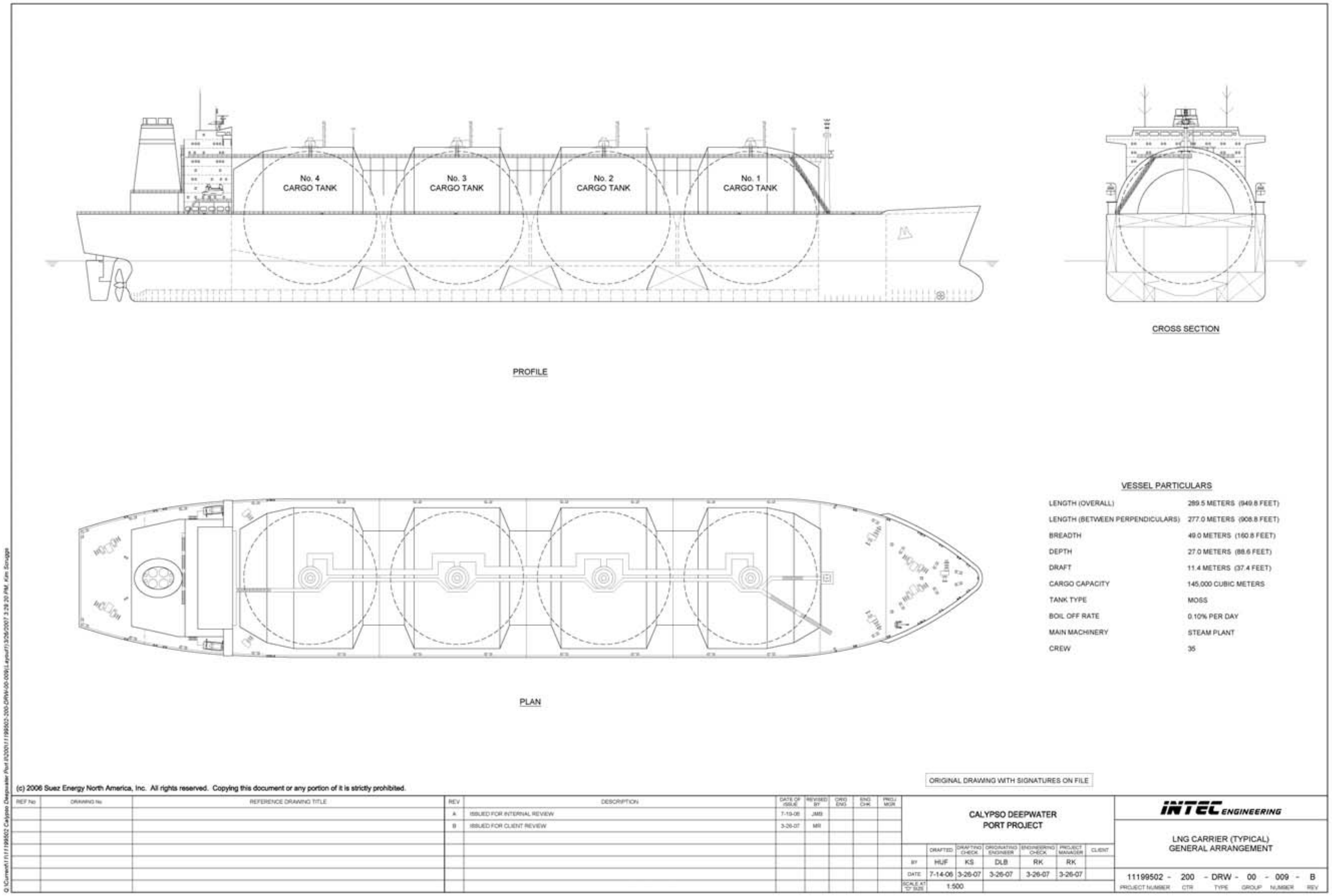

Figure 14-1 LNG Carrier (Typical) General Arrangement

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15

Data Gap: 15

The application indicates that the peak send-out capability of the SRS and TRV would be 1.5 and 1.0 billion standard cubic feet per day (bscfd), and that the hydraulic limit for send-out from the deepwater port would be 1.9 bscfd. However, the certificated capacity of the Calypso U.S. Pipeline Project is 832,000 dekatherms/day, or approximately 832 million standard cubic feet per day, which is less than the peak send-out capability of either vessel operating independently. Provide clarification of the actual anticipated send-out rates and durations from the deepwater port during operation.

Response to Data Gap: 15

Confidential Business Information

Provided under separate cover.

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16

Data Gap: 16

Clarify whether intake velocities at the port and starboard sea chests would be limited to less than 0.49-foot-per-second during intake of ballast water on the SRS.

Response to Data Gap: 16

SRS ballast intake velocities will be limited to less than 0.49 foot-per-second, as indicated in Volume I, Appendix G.14 "SRS Ballast System" of the September 2006 DPLA.

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17

Data Gap: 17

Provide a description of the decommissioning of the TRV, or indicate that it would be similar to the decommissioning of the SRS described in Section 1.7.2.

Response to Data Gap: 17

The "TRVs that service the port would be drawn from the existing or future global fleet of specialized LNG carriers compatible with *Calypso*'s unloading buoy system" (Volume I, Section 1, page 1). Consequently, TRVs will not be controlled by the Project and the plan for their removal from service and decommissioning is not known, nor can it be specified by the Project.

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