EPA United States Environmental Protection Agency

Region 9 Enforcement Division
75 Hawthorne Street
San Francisco, CA 94105

Inspection Date(s):	March 8 & 9, 2017	
Time:	**Entry:** 12:30pm (March 8)	**Exit:** 3:00pm (March 9)
Media:	Water	
Regulatory Program(s)	Clean Water Act NPDES	
Company Name:	Beta Offshore	
Facility or Site Name:	Platform Elly and Platform Ellen	
Facility/Site Physical Location:	Outer Continental Shelf, Long Beach, CA	
Geographic Coordinates:	33.583537, -118.128567	
Mailing address:	111 W. Ocean Blvd. Suite 1240 Long Beach, CA 90802	
Facility/Site Contact:	Diana Lang	**Title**: HSE Manager
	Phone: 562-628-1529	**Email**: dlang@memorialpp.com
Facility/Site Identifier:	NPDES Permit CAG280000 / CAF001147 & CAF001148	
NAICS:	211111	
SIC:	1311	

Facility/Site Personnel Participating in Inspection:

Name	Affiliation	Title	Email
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Federal/State/Tribal/Local Representatives:

N/A			
N/A			

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		Date:

SECTION I – INTRODUCTION

I.1 Purpose of the Inspection

The purpose of the inspection was to ensure that Beta Offshore (Beta or Discharger) is in compliance with the requirements of the Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) permit CAG280000 for facility numbers CAF001147 (Platform Ellen), and CAF001148 (Platform Elly) (collectively, "Platforms"). During the inspection we evaluated the accuracy and reliability of the Discharger's self-monitoring and reporting program and the Facility onsite generated waste streams, treatment processes and discharges to the Pacific Ocean, a water of the United States. The announced inspection consisted of two parts: a records review (conducted onshore on March 8, 2017 and continued on March 9, 2017) and a general facility site visit (conducted offshore on March 9, 2017). The primary representative for the Discharger is Diana Lang, HSE Manager of Beta Offshore.

SECTION II – FACILITY / SITE DESCRIPTION

II.1 Facility Description

Platforms Elly and Ellen are two of the three "Beta Unit" offshore platforms built for Royal Dutch Shell Oil in the 1980s. Beta Offshore, an affiliate of Memorial Production Partners LP, manages and operates all three platforms of the Beta Unit: Platform Elly, Ellen, and Eureka. These facilities are located off the coast of Long Beach, California about 11 miles from shore. Platform Elly and Ellen are located on the Outer Continental Shelf (OCS) and stand in about 250 feet of water. Platform Ellen is a wellbore platform equipped with permanent drilling equipment including a drilling rig, a well bay with about 25 producing wells, and associated equipment. Platform Elly handles production and processing from wells located on both Ellen and Eureka. Platforms Elly and Ellen are connected by a bridge walkway and various pipes including production pipes, injection well pipes, and piping conductors carrying electrical cables. The wells on Ellen produce crude oil, water, natural gas, and associated by-products, namely hydrogen sulfide.

Platform Elly is connected to shore by a pipeline delivering crude oil for sale and by an electrical power feed. Elly then distributes power to Ellen and Eureka. Elly is also able to produce its own power through turbines powered by natural gas collected from the oil extraction process.

The Platforms are independently covered under the Master General Permit CAG280000 with individual facility numbers (see above). Given the connectivity and proximity of the two platforms, this report describes and evaluates wastewater discharges on both platforms as they relate to the CAG280000 permit.

II.2 Wastewater Sources

At the time of the inspection and within the past three years, the Platforms discharged at least four types of wastewater:

- Produced Water (Discharge 002) (Platform Elly)
- Domestic and Sanitary Wastes (Discharge 005) (Platform Ellen)

- Fire Control System Water (Discharge 008) (Platform Elly)
- Noncontact Cooling Water (Discharge 009) (Platforms Elly and Ellen)

Note: The number that follows the type of wastewater refers to Permit references that type of discharge.

Produced water is a by-product of crude oil and natural gas extraction on Platform Ellen. Produced water flows up through the producing well heads and on to Platform Elly for treatment and discharge. Typically, treated produced water returns to Platform Ellen for reinjection into the geological formation. Platform Elly has monitoring requirements for oil and grease, zinc, and toxicity. Platform Elly has effluent limits for oil and grease. Part II.B of the Permit discusses effluent limits and monitoring requirements associated with produced water discharges.

Depending on the activity on the Platforms, there are about 30 resident employees on Platform Ellen at any given time who contribute to Domestic and Sanitary Wastes. The number of people on board typically increases during daylight hours as non-resident employees, contractors, regulators, and other visitors travel to the Platforms. On March 8, 2017 there were 28 residents and 26 non-residents on the Platforms. Most domestic waste, sink, shower, and toilet water, is commingled with the sanitary waste stream and routed to a Marine Sanitation Device (MSD) for treatment and discharge. Other domestic waste, namely wastewater from laundry, is commingled with produced water. Part II.E of the Permit discusses effluent limits and monitoring requirements associated with Domestic and Sanitary Wastes.

Fire Control System Water originates as seawater pumped through the main seawater intake and routed through the fire control system. If this water is discharged on deck during testing, then it is comingled with deck drainage. During testing at Platform Elly, fire water sometimes discharges directly to the Pacific Ocean. Part II.F of the Permit discusses effluent limits and monitoring requirements associated with Fire Control System Water.

Noncontact Cooling Water discharges from both Platform Ellen and Elly. This water originates as seawater pumped through the main seawater intake and is pumped through various pipes to cool equipment. Operators add between 0.2 – 0.5ppm of chlorine to the seawater pumps as a biofilm inhibitor. Both Platform Elly and Ellen have specific chlorine effluent limits regarding noncontact cooling water. Part II.F and Appendix C, Table C-1 of the Permit discusses effluent limits and monitoring requirements associated with noncontact cooling water.

The following are notable permitted discharges that do not appear to have been discharged in the past three years:

- Drilling Muds and Cuttings (Discharge 001) (Platform Ellen)
- Well Treatment Completion and Workover Fluids (Discharge 003) (Platform Elly)
- Deck Drains (Discharge 004) (Platform Ellen and Elly)

Drilling Muds and Cuttings occur during well drilling. For each well drilled in the last three years, all drilling muds and cuttings appear to have been discharged in a waste facility onshore.

Beta produces Well Treatment Completion and Workover Fluids when Beta operators conduct well treatments and workovers. Those fluids that are not lost downhole are surfaced at Platform Ellen and can be routed to the produced water treatment train on Platform Elly or captured and sent onshore for disposal. Beta claims no discharge of these fluids.

Deck Drains on Platform Ellen and Elly capture fluids and solids on the decks mobilized by precipitation, fire test water or another source. Deck drains are routed to sumps that in turn are pumped to a disposal well.

II.3 Wastewater Treatment

II.3.i Produced Water

Platform Elly treats the produced water through a three step process. Produced water first flows to a free-water knockout for oil-water separation. Then, water flows to a heater treater for further separation and treatment. Finally, produced water travels to a flotation cell (Wemco model 120) for finishing treatment (see Appendix 3). The crude oil product is separated for delivery after the first and second steps.

From the Wemco, the produced water flows to tank S-03, Filtered Produced Water Surge Tank. This tank flows to two possible destinations: injection wells or to an overflow location called the "Emergency Sump" (see the engineering flow diagram Appendix 4 and the simplified schematic Appendix 5. Platform Elly has three booster pumps (P-21A, P-20A, and P-20B) that pump produced water to the injection wells. When injection pumps fail and tank S-03 exceeds capacity, treated produced water is routed to an open-bottomed vessel, labeled "Emergency Sump." The Emergency Sump begins 16 feet above sea-level and extends 177 below sea level. Flow from tank S-03 enters the Emergency Sump at 120 feet below sea level.

The Emergency Sump has a pump that operates four times every 24 hours which is connected to tank S-06, Disposal Tank. The Disposal Tank pump then pumps down the Disposal Tank and discharges to the disposal well.

II.3.ii Sanitary Waste

The Marine Sanitary Device (MSD) is located on Platform Ellen and it treats sanitary waste from both Elly and Ellen. All sanitary waste from the Platforms flow to the MSD. Beta employs a Type II MSD manufactured by Omnipure. A mixture of waste and seawater enters a receiving tank and flows through a macerator pump to create a slurry. The slurry then flows through the book cells for oxidation and disinfection through electrochlorination. Residual chlorine is measured on a daily basis.

II.4 Compliance History

The following table is a list of Beta's self-reported effluent limit violations on Discharge Monitoring Reports (DMRs) from January 2014 to January 2017.

DMR Date	Parameter / Discharge #	Reported Value	Permit Limit
August 2016	Oil and Grease / 002	15,300 mg/L	42 mg/L (daily max)
August 2016	Oil and Grease / 002	15,300 mg/L	29 mg/L (monthly avg.)
July 2015	Oil and Grease / 002	34.2 mg/L	29 mg/L (monthly avg.)
July 2014	Oil and Grease / 002	30.3 mg/L	29 mg/L (monthly avg.)

SECTION III – NARRATIVE & OBSERVATIONS

Drilling fluids and Cuttings (Discharge 001)

1. No drilling occurred while EPA inspectors Colby Tucker and Elizabeth Aubuchon (we) were on board.
2. According to Christian Zumaran, depending on the formation and technical issues, drilling a well can take around five weeks to complete.
3. Beta maintains documents related to drilling fluids and cuttings. We conducted a spot check of the documents relating to Discharge 001 between 2014 and 2017. All documents viewed showed no discharge of fluids and solids relating to Discharge 001.
4. We observed chemical inventories relating to drilling fluids.
5. According to Diana Lang, drilling fluids not lost downhole and cuttings are captured and sent on shore for disposal.

Produced Water (Discharge 002)

6. According to Jamie Cool and Mr. Zumaran, the Produced Water Surge Tank (S-03) receives treated produced water and make-up water. According to DMR cover letters, sources of domestic waste that do not flow to the disposal well also flow to S-03.
7. Beta maintains records of the effectiveness of the Wemco by taking daily measurements of the concentration of oil entering the Wemco and oil exiting the Wemco. These measurements are conducted using a non-approved EPA method.
8. According to piping and instrumentation diagrams (P&ID), the capacity of tank S-03 is 600 barrels.
9. According to Mr. Cool and Mr. Zumaran, produced water and make-up water is responsible for most of the flow entering tank S-03.
10. Platform Elly has three injection pumps, and according to Mr. Cool, normal operations are when two pumps are operating and one is off, serving as a backup. The pumps can be run on either produced gas or diesel.
11. During normal operations, the produced water mixture in tank S-03 is pumped from Platform Elly to the injection wells on Platform Ellen.
12. P&IDs indicate there are two high level alarms in the Produced Water Surge Tank (S-03). One alarm serves as a warning, and the second alarm occurs when the tank is 95% full.

According to the control room operator working during the time of the inspection, this second alarm means that discharge is imminent. He said that when this alarm goes off, he instructs an operator via radio to begin the sampling protocol. Control room operators are responsible for watching for and communicating process alarms to field operators.

13. According to an operator who has sampled in the past, when he receives notice to sample from the control room, he goes to the laboratory to retrieve four glass amber bottles with H_2SO_4 preservative in the bottles. Then, he goes to the sampling point and fills all the bottles.
14. We observed glass amber bottles and plastic bottles (for metals) in the laboratory (see Appendix 1, Photo 6).
15. According to this operator, most discharge events occur between 15 and 20 minutes. He does not recall any event lasting more than one hour.
16. According to Ms. Lang, ice is not used after sample collection to avoid contamination of sample.
17. A sampling protocol for Discharge 002 dated 2/11/2015 calls for ice (see Appendix 6).
18. A sample protocol for Discharge 002 dated 2/11/2015 states:

    > "Preferably during the actual discharge, collect four 1-liter samples of produced water from the outlet of the last treatment vessel (the official NPDES sample point) following the procedure outlined herein…
    >
    > 1. Purge the sample point for 1 full minute and then reduce the stream to avoid splashing the preservative out of the sample jar. Slowly fill each bottle to the top and do not overfill." (see Appendix 6).

19. Chain of Custody forms are prefilled and have four samples spaces prefilled (see Appendix 7). Three of the prefilled samples have "***Hold***" written in the "Analyses Requested" column. In the GRAB/COMP. column, all prefilled rows have "grab" written.
20. Ms. Lang said that typically only one sample gets analyzed and the other three are discarded by the laboratory if no other analyses are requested by Beta. Ms. Lang said that she considers these samples to be duplicates.
21. We requested documents relating to sampling standard operating procedures (SOP) and Ms. Lang produced a sampling SOP dated December 2007 for discharge 002 (see Appendix 8. It states, "On the c-o-c, request that <u>only the first sample be analyzed and hold the other three until further notice: (per ESH Manager.)</u>. [emphasis not added] (If the first sample is less then [*sic*] the permit limit, the other three will not need to be analyzed. If it is over the limit, the compliance group will notify the lab to have all remaining samples analyzed to get an actual composite value.)"
22. We observed at least three differently dated versions of the sampling protocol, some located on the platform (laboratory and control room) and the on-shore office. These protocols are different in length and content.
23. According to Mr. Cool and Mr. Zumaran, the only way for tank S-03 to exceed capacity and overflow is if one or more injection pumps fail.
24. The sampling point is located after S-03 (see Appendix 1, Photos 3 & 4). The sampling point is located behind several pipes and requires bending and shifting to access.
25. Mr. Lang produced a document summarizing Produced Water (Discharge 002). Of note, the document states that on 7/4/2015 there was a discharge with a concentration of 30.7

mg/L and on 7/23/2015 there was a discharge with a concentration of 30.7 mg/L. (see Appendix 9). The relevant section of the July 2015 DMR states that Beta had a monthly average of 34.2 mg/L which is an exceedance (see Appendix 10). The effluent limit for Discharge 002, monthly average, is 29 mg/L.

26. The summary document of Produced Water (Discharge 002) indicates that on August 9, 2016, there was a discharge of 15,300 mg/L, which is the same value recorded on the DMR for the month of August 2016.

Events on August 9, 2016 relating to Discharge 002

27. We asked about the exceedance on August 9, 2016 and Ms. Lang produced a document titled "Beta Offshore (P-0300) Produced Water Discharge August 9, 2016 24-hour reporting of permit limit exceedance – NRC #1156753." (see Appendix 11). The document describes the events on August 9, 2016, when injection pumps failed, S-03 exceeded capacity, and produced water flowed to the open-bottomed Emergency Sump.
28. The document states, "Lab results reviewed on 8-18-16 at 2:05 pm. Note: *Lab used 500 ml; on 8-19-16 Beta HSE Manager requested the 3 HOLD samples be tested for O&G. Results forthcoming."
29. Ms. Lang produced a chain of custody form for the samples of this event that suggests that the data of the "3 HOLD" samples were discarded; an arrow from the relevant rows points to "Lab data discarded: Not trustworthy" (see Appendix 12).
30. On the chain of custody form submitted in the August 2016 DMR there is no writing of "Lab data discarded: Not trustworthy" (see Appendix 13).
31. Ms. Lang stated that the results from the three hold samples were "not believable" and were higher than the reported result. She did not say what the results were.
32. Ms. Lang stated that she has decided to use a different company to analyze future oil and grease samples because of the analyses relating to the event on August 9, 2016. The new contracted company is named Positive Lab Service and uses Method 1664B to determine oil and grease concentrations.
33. An email from Eurofins Calscience, the laboratory Beta contracted with to run the oil and grease and metals analysis, stated that Beta gave approval to deviate from the EPA approved methods when analyzing discharge samples from August 9, 2016 (see Appendix 14).
34. After the inspection, we acquired the analytical results of the three remaining bottles from Eurofins Calscience which were analyzed used Method 1664A. The analysis showed that the concentrations of oil and grease in these bottles were: 64,200 mg/L, 64,300 mg/L, and 86,000 mg/L (Appendix 15).

Domestic and Sanitary Wastes (Discharge 005)

35. We observed the MSD and the Coast Guard approved certification.
36. Signs on the MSD suggest maintenance should occur both daily and weekly.
37. An operator describing how the MSD works said that maintenance occurs daily and weekly.
38. Daily maintenance consists of backflushing the macerator pump.

39. Weekly maintenance consists of opening the book cell (see Photo 12) and scrubbing the electrode plates with a brush. An operator said this typically takes a couple of hours and starts around 12:00 am when the sanitary system use is low.
40. The residual chlorine is tested daily using CHEMets (see Photo 11). An operator demonstrated how he would fill the glass pipette and compare the color within the pipette to a standard in the box (see Photo 11).
41. The residual chlorine discharged for March 7, 2017 was 3.5 mg/L.
42. There is an offline MSD unit adjacent to MSD unit online.

Preventative Maintenance

43. Mr. Cool demonstrated the Avantis preventative maintenance (PM) system to EPA inspectors Colby Tucker and Elizabeth Aubuchon.
44. We observed that Avantis serves as both a way to manage and schedule PM and as a way to issue, document, and report work orders.
45. Mr. Cool said that Beta has changed PM systems three times in the last three years due to various management decisions.
46. Mr. Cool said that all assets with moving parts (i.e. pumps) were currently listed with PM schedules. Other assets (i.e. tanks) are listed in the Avantis system, but do not currently have any PM scheduled. The required certification schedule for tanks is maintained elsewhere.
47. Mr. Cool said that when injection pumps fail there would be a work order associated with the repair of the pump.
48. In an email after the inspection, Ms. Lang clarified that pump failures do not trigger work orders and any indication of pump failures be noted on the Daily Morning Report (i.e. Appendix 16).

SECTION IV – AREAS OF CONCERN

The presentation of areas of concern does not constitute a formal compliance determination or violation by EPA.

1. Permit Part III.A states, "Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit."

   The chain of custody from the August 9, 2016 sampling event (Appendix 12) indicates that one glass amber bottle was used to analyze the concentrations of both oil and grease and zinc, two parameters that have different sample collection requirements. EPA Method 1664 ("Oil and Grease") states, "A 1-L sample is acidified to pH<2 and serially extracted three times with…" This statement indicates that the entire 1-L sample needs to be extracted to be consistent with method protocol.

2. Beta Sampling Procedure (Appendix 6, page 8), state that the sampling procedures for metals, including zinc, includes using a two-quart plastic bottle and preservation with HNO_3, and cooling to a temperature of 4°C. EPA approved sampling methodology listed in 40 CFR Par 436 for metals, including zinc, includes requirements to use nitric acid for preservation.

The chain of custody from the August 9, 2016 sampling event (Appendix 12) suggests that one glass amber bottle with H_2SO_4 as a preservative was used to analyze both the concentrations of oil and grease and zinc. Eurofins completed an analysis of the concentration of zinc from the sample collected in the glass amber bottle utilizing EPA Method 200.8. The contracted laboratory, Eurofins Calscience, also submitted a Sample Anomaly Report with their analysis report to Beta Offshore. This Sample Anomaly Report states, "metals container not received" (Appendix 17).

It is not clear why Beta elected to split one sample between two analyses (oil and grease and zinc) when three other samples were available and not initially used for analysis.

3. The Eurofins Calscience report indicates the concentration of zinc in the August 9, 2016 sample was 0.0610 mg/L (60.10 µg/L) (Appendix 18).

   The August 2016 DMR reports that the zinc concentration was 8 µg/L (Appendix 19) for "Monitoring Period" of "01/01/2016 - 12/31/2016". There does not appear to be any reported monitoring of zinc with respect to Discharge 002 in any other month in 2016.

4. Permit Part III.D states, "If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the permittee shall include the results of this monitoring in the calculation and reporting of the data submitted in the DMR."

   During the records review, Ms. Lang stated to us that a total of four samples were obtained on August 9, 2016 and were analyzed using Method 1664. Laboratory reports (Appendices 15 and 18) confirm that all four samples were analyzed. The results of three samples were not reported. The analytical data suggests that the DMR entries for oil and grease for August 2016 should have been 71,500 mg/L as the daily maximum and 71,500 mg/L as the monthly average.[1]

5. Permit Part III.A states, "Monitoring must be conducted according to test procedures approved under 40 CFR Part 136." 40 CFR 136 Table II states that samples taken to be analyzed for oil and grease must be cooled to ≤6°C. Best practices for sample collection include labeling sample containers.

   Ms. Lang stated that ice was not regularly used to preserve samples, however, many chain of custody forms indicated a satisfactory arrival temperature below 6°C, as required by Method 1664.

   Beta sampled discharge 002 on July 3, 2014 and sent samples to Eurofins Calscience, the laboratory contracted to complete the analysis. The chain of custody form from this sampling event does not include a relinquished signature and is unclear in its notation what samples were included in the shipment to the laboratory. Eurofins Calscience

[1] This is the average of the three analytical results (64,200 mg/L, 64,300 mg/L, and 86,000 mg/L) determined using EPA approved methods. The reported value (15,300 mg/L) was obtained using an unapproved method.

produced a "Sample Anomaly Report" indicating that no containers in the shipment were labeled (Appendix 20).

6. Beta has produced documents with conflicting messages regarding the representativeness of the sampling location for Discharge 002. A sampling SOP dated December 2007 for discharge 002 states, "Confirm with Operations that all conditions are safe and the NPDES sample point is in service…All samples are to be collected downstream of the last treatment vessel and prior to ocean discharge. If there is another source of water (i.e. cooling water) mixed with the produced water, the produced water sample must be sampled prior to the commingling of the fluids" (Appendix 8). Here Beta appears to recognize that the NPDES compliance point is on the platform, accessible for sampling, and before commingling of any fluids, including seawater. In a letter to EPA dated on August 23, 2016, Beta writes, "The sample point where the oil and grease samples were collected was downstream of the produced water tank S-03 and prior to an emergency sump U-06. The emergency sump is located on the lower deck and extends to the ocean. It is a vertical pipe type structure used to capture any free oil twice per day. The sump extends -177 ft. and it was not possible to sample the water discharged at the bottom of the sump's outlet. Instead, the sample was collected upstream of the sump (which is technically the last treatment vessel) and may not necessarily be representative of the water that was actually discharged from the sump outlet" (Appendix 21). Here Beta suggests that the appropriate place to sample discharge for compliance is at the sump outlet.

   We believe that the previously established compliance point (see Photos 3 and 4) is indeed the appropriate compliance point for the Platforms. Any attempt to sample discharge at the bottom of the emergency sump would be sampling the discharge after comingling and dilution with seawater.

7. Permit Part III.B states, "Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity." And Permit Part II.B.5.b states, "The term maximum for any one day as applied to BPT, BCT and BAT effluent limitations for oil and grease in produced water shall mean the maximum concentration allowed as measured by the average of four grab samples collected over a 24-hour period that are analyzed separately. Alternatively, one grab sample may be taken instead of four samples. If only one grab sample is taken for any one week, it must meet the maximum for any one-day limit. If four samples are taken for oil and grease over a 24-hour period, the maximum value for reporting purposes under Part III.A.2.a.i. of the permit is the average of the four samples rather than the maximum of the four samples."

   The sampling protocol for produced water (Discharge 002) does not appear to be representative of the discharge. Section III.18-21 of this report outlines the sampling protocol and chain of custody practices.

   The permit states, "If four samples are taken…the maximum value is the average of four samples." This indicates that when Beta takes four samples they are obligated to analyze and report the four samples taken. Beta is in the practice of collecting four samples during each sampling event, but not analyzing each sample. It is unclear how Beta is

choosing the one sample of the four collected to be analyzed. It does not appear that three of the samples are duplicates, but rather all four samples are sampled with the intention of creating a 24-hour composite sample. Given the nature of the discharge (often 15-30 minutes), the 24-hour composite sampling protocol does not appear to be representative of the discharge.

It appears that Beta is in the practice of collecting samples with the intention of analyzing some of the samples only after the results of the first container is obtained. This practice is also outlined in a sampling SOP updated on December 2007 (Appendix 8). Beta appears to be actively engaged in this practice as a record review of DMRs shows that in some cases Beta analyzed all samples collected and in other cases only analyzed one sample collected. Such a sampling and analysis scheme appears to complicate sample analysis and may introduce a bias of the monitored activity.

SECTION V – CONCLUSION

The National Pollution Discharge Elimination System (NPDES) relies on self-monitoring in order to ensure compliance with the rules and regulations of the Clean Water Act. We noted several areas of concern that call into question the reliability of Beta's monitoring protocols and reporting of discharge. Our March 8 and 9, 2017 inspection and subsequent record review concludes that it remains unclear whether Beta's apparent and stated produced water sampling methodology is consistent with permit and Clean Water Act regulation requirements.

SECTION VI – DOCUMENTS REQUESTED DURING INSPECTION AND ANALYTICAL RESULTS

Received:

1. Engineering Flow Diagram – Production Water Surge – NO. C6 – 1757
2. Engineering Flow Diagram – Emergency Drains and Sump – NO. 008-10-201
3. Produced Water Discharge Sampling and Monitoring Procedure (Updated 2/11/2015) (1 page)
4. OCS NPDES Monitoring Procedures for the Dec. 2004 General NPDES Permit CAG 2800000 (Updated 12/07) (8 pages)
5. Beta Offshore Spill History (Revised 5/4/2016) (4 pages)
6. Daily Morning Reports March 1 – March 9, 2017 (4 pages each)
7. Laboratory results for produced water discharges on:
   - 7/31/2014
   - 11/8/2014
   - 11/12/2014
   - 12/10/2014
   - 3/17/2015
   - 7/4/2015
   - 7/23/2015
   - 8/9/2016
   - 9/24/2016
   - 9/26/2016
8. Work Orders associated with water discharges on:
   - 7/23/2015
   - 8/9/2016
   - 9/24/2016

APPENDICES

Appendix 1 – Photograph Log

Appendix 2 – Sign in Sheet

Appendix 3 – Piping and Instrumentation Drawing of Produced Water Treatment Train

Appendix 4 – Piping and Instrumentation Drawings of Produced Water Surge Tank and Emergency Sump

Appendix 5 – Simplified Schematic of Produced Water Surge Tank and Emergency Sump

Appendix 6 – Sampling protocol for Discharge 002 dated 2/11/2015

Appendix 7 – Blank Chain of Custody form

Appendix 8 – Appendix C Sampling Information (Sampling SOP December 2007)

Appendix 9 – Summary of Discharge 002 sample dates and results

Appendix 10 – July 2015 DMR Discharge 002 Entry

Appendix 11 – 24-hour reporting of permit limit exceedance – NRC #1156753

Appendix 12 – Chain of Custody of samples from August 9, 2016 Discharge 002 (received during inspection)

Appendix 13 – Chain of Custody of samples from August 9, 2016 Discharge 002 (as submitted in August 2016 DMR)

Appendix 14 – Email from Eurofins Calscience to EPA on March 20, 2017

Appendix 15 – Eurofins Calscience Analytical Report 16-08-0626_s1

Appendix 16 – Daily Morning Report: August 9, 2016

Appendix 17 – Eurofins Calscience Sample Anomaly Report, August 9, 2016

Appendix 18 – Eurofins Calscience Analysis Report for Zinc, August 9, 2016

Appendix 19 – August 2016 DMR Entry for Zinc

Appendix 20 – Eurofins Calscience Analysis Report Dated July 30, 2014

Appendix 21 – Beta Exceedance Letter to EPA dated August 23, 2016

Appendix 1 – Photograph Log

The photographs were taken during the inspection by Colby Tucker. Original copies of the photos are maintained by EPA Region 9.

Photo 1: Platform Ellen (left) and Elly (right) are connected by a walkway. Platform Edith (owned and operated by DCOR LLC) is in the background.

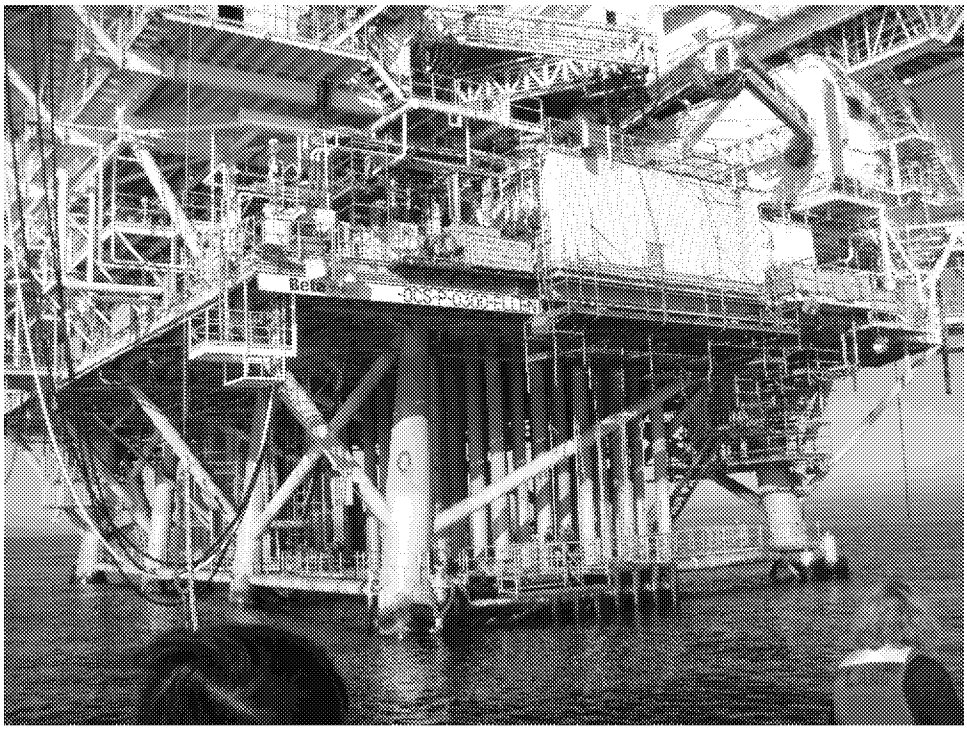

Photo 2: Platform Ellen. Note the several conductors entering the Pacific Ocean and rising to the well bay. Produced water is pumped up through the wells encased in the conductors and reinjected through other wells. The seawater intake and outflow is among the conductors. Conductors for wells extend into the sea floor and seawater intake and outflow pipes are at a depth of -42 feet.

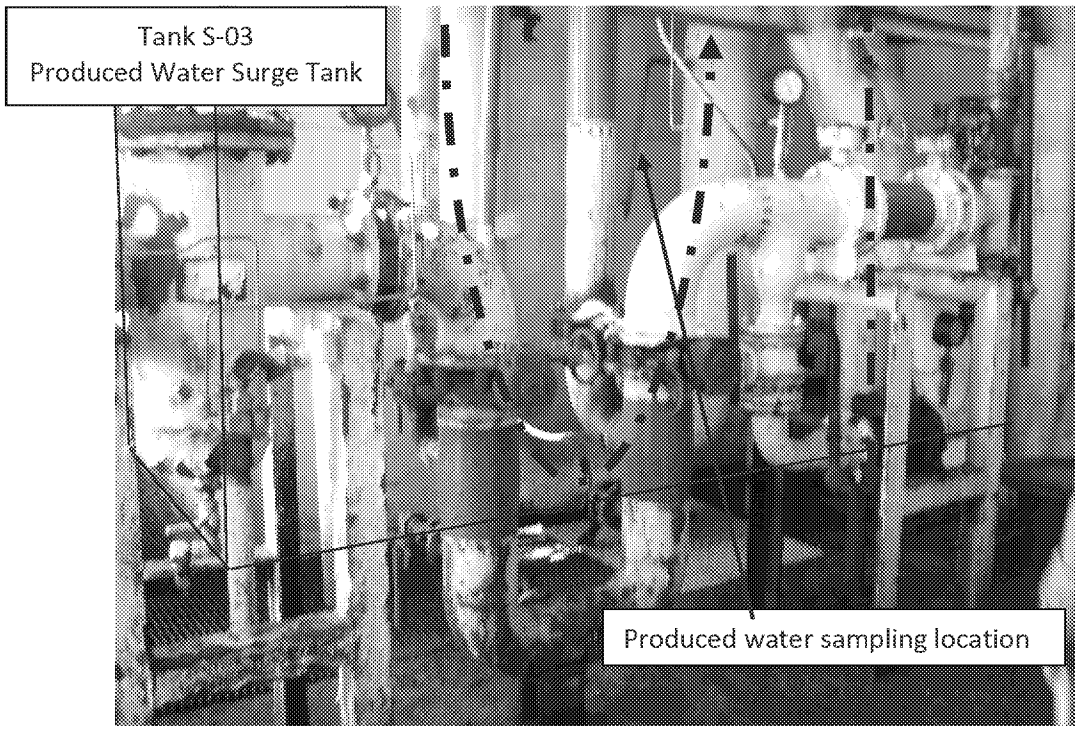

Photo 3: Tank S-03 (outlined in red and extending above and off to the right of the image) and associated piping and sampling location for produced water (Discharge 002). Produced water follows the dotted line in the 14" pipe that leads from tank S-03, through the floor in the image and to the sump in Photo 6. Treated produced water follows this path only if capacity of tank S-03 is exceeded. See Appendix X for simplified schematic.

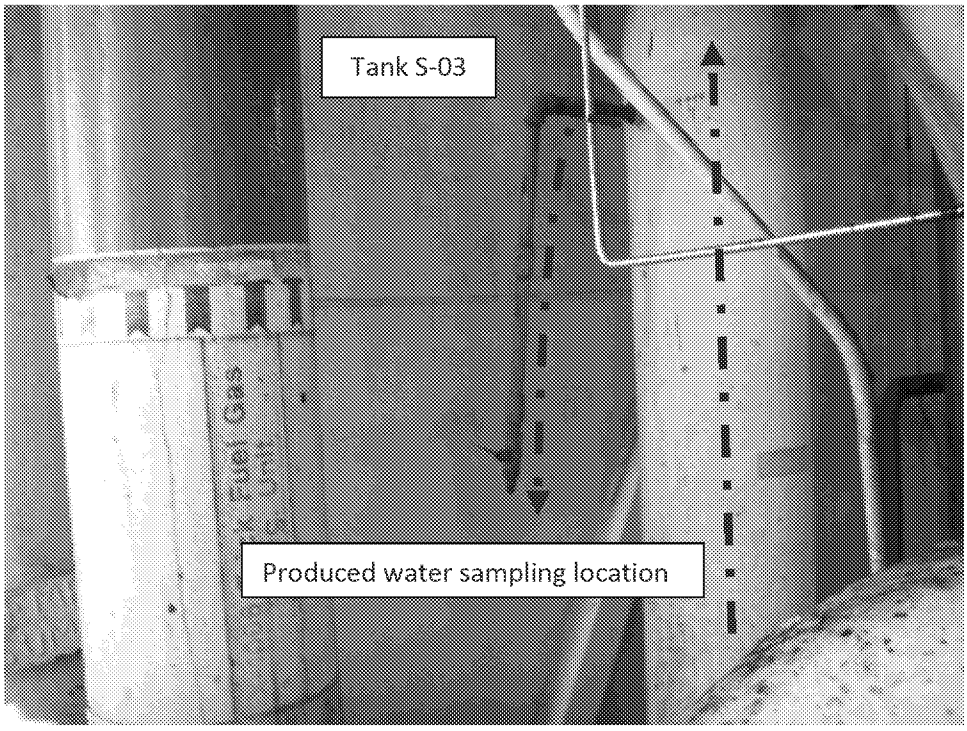

Photo 4: Close up of sampling location for produced water.

Photo 5: Close up of sign posted on 14" pipe leaving tank S-03 and leading to the open-bottomed Emergency Sump.

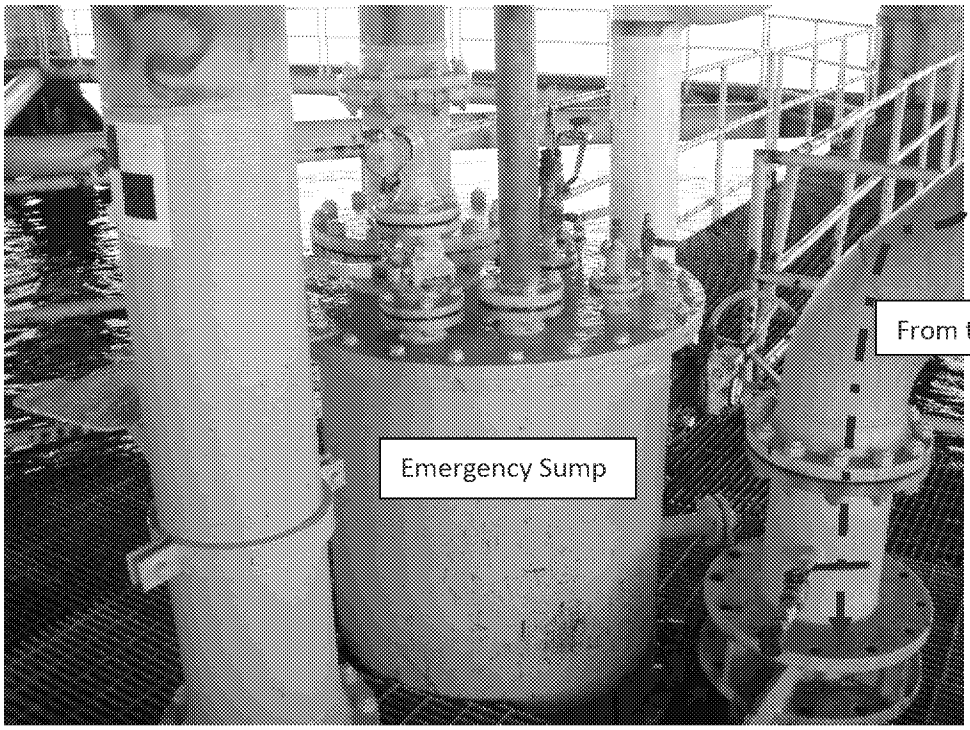

Photo 6: Open-bottomed emergency sump and pipe leading from tank S-03. Pipe will connect to the open-bottomed emergency at -120 feet.

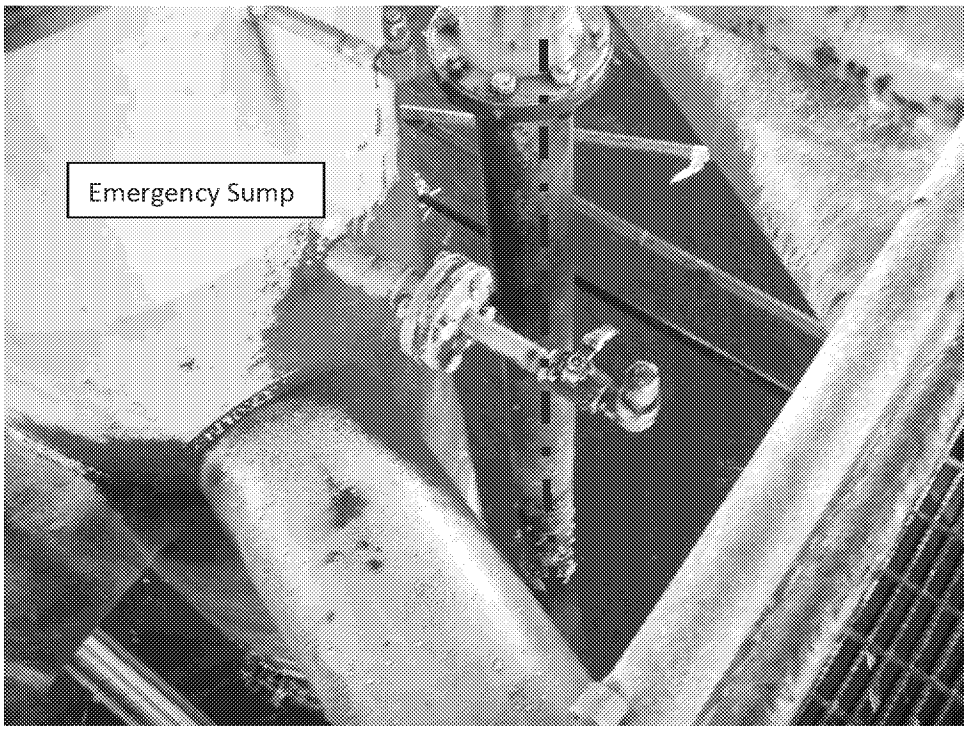

Photo 10: Open-bottomed Emergency Sump and pipe leading from tank S-03 entering the Pacific Ocean. P&IDs indicate that the pipe connects with the sump at -120 feet and the open-bottom of the sump is at -177 feet.

Photo 6: In Laboratory, box of glass amber bottles for oil and grease sampling of Discharge 002.

Photo 7: In Laboratory, box of plastic sample jars for metals sampling of discharge 002.

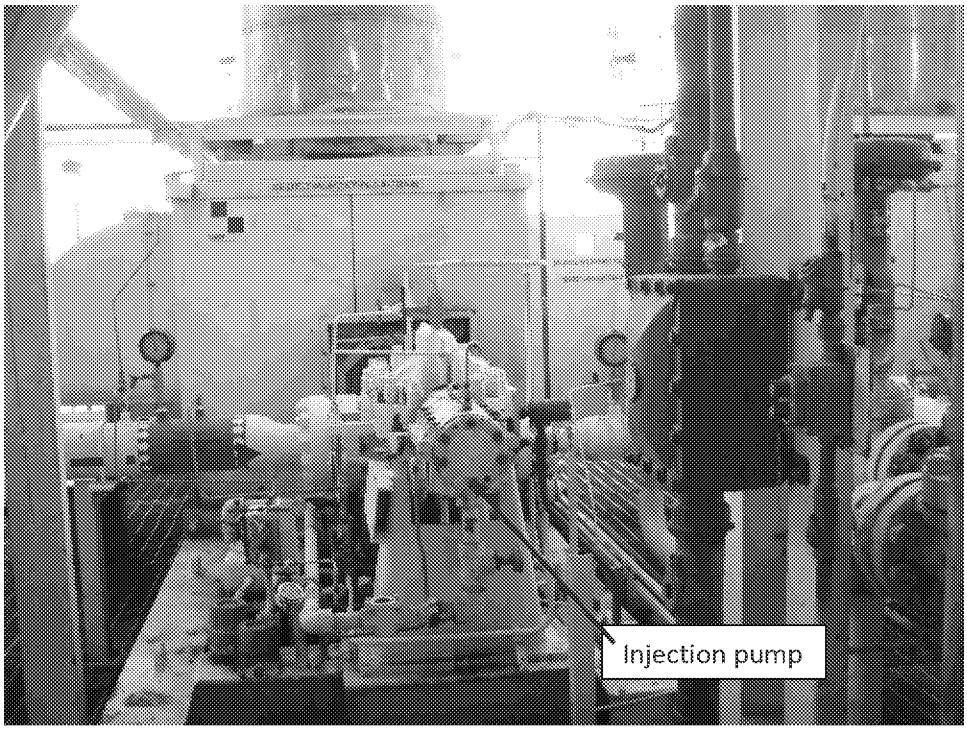

Photo 8: Injection pumps system. One of three injection pumps on Platform Elly. Dotted arrow shows flow direction of produced water.

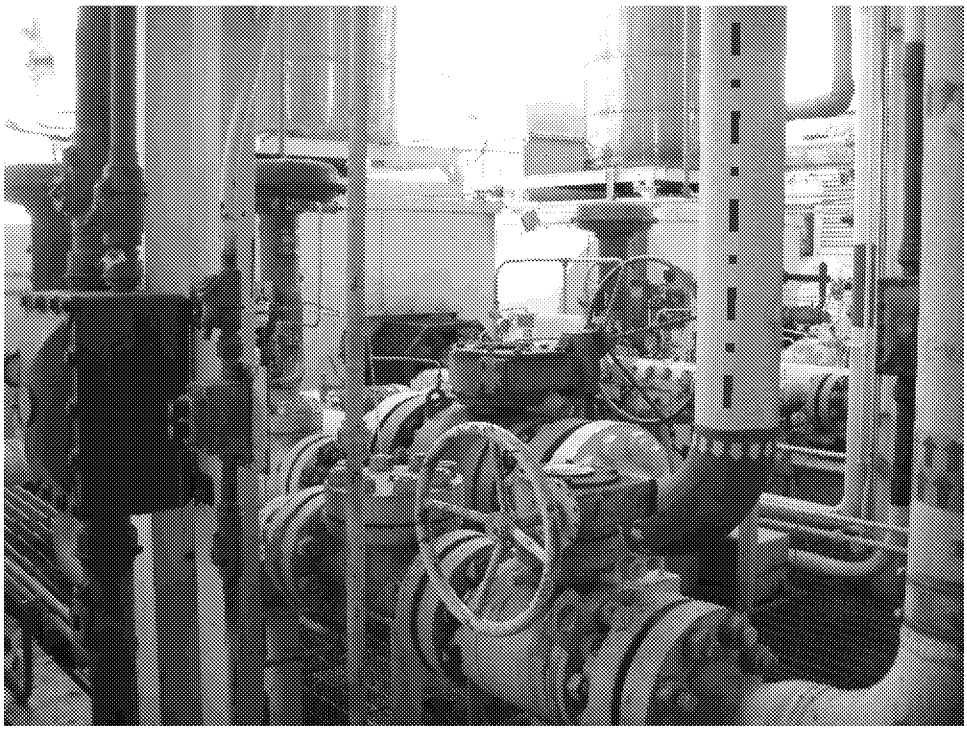

Photo 9: Injection pumps system. Treated produced water follows red dotted line.

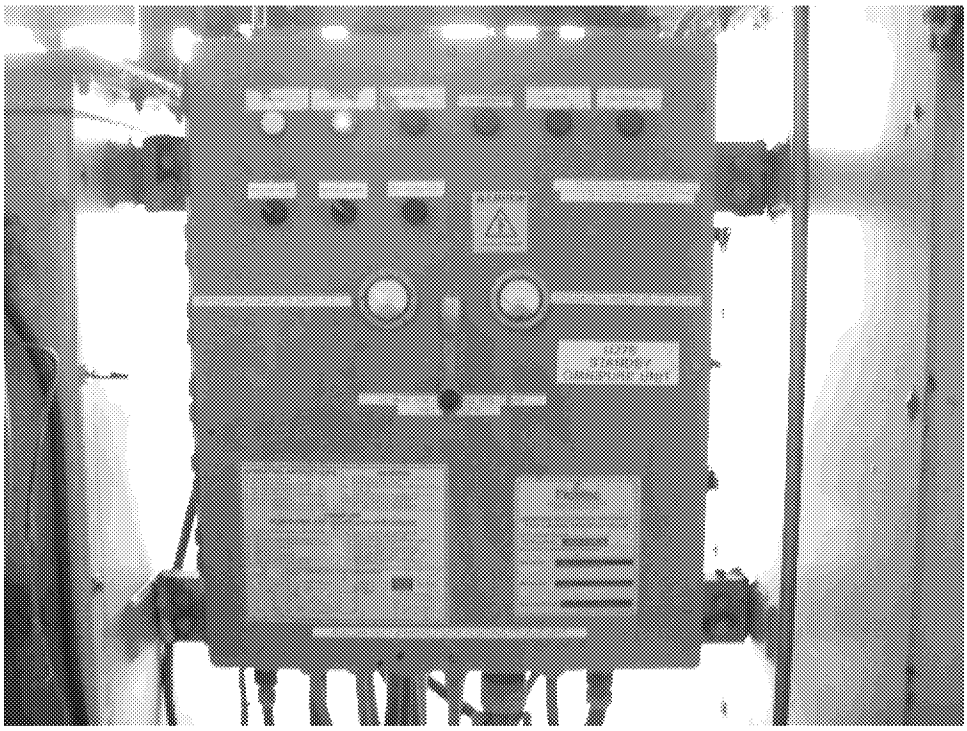

Photo 10: Panel of the Marine Sanitation Device (MSD) Omnipure system.

Photo 11: Residual chlorine test kit. Note the ampule with purple fluid on the left—part of the demonstration of how residual chlorine is tested.

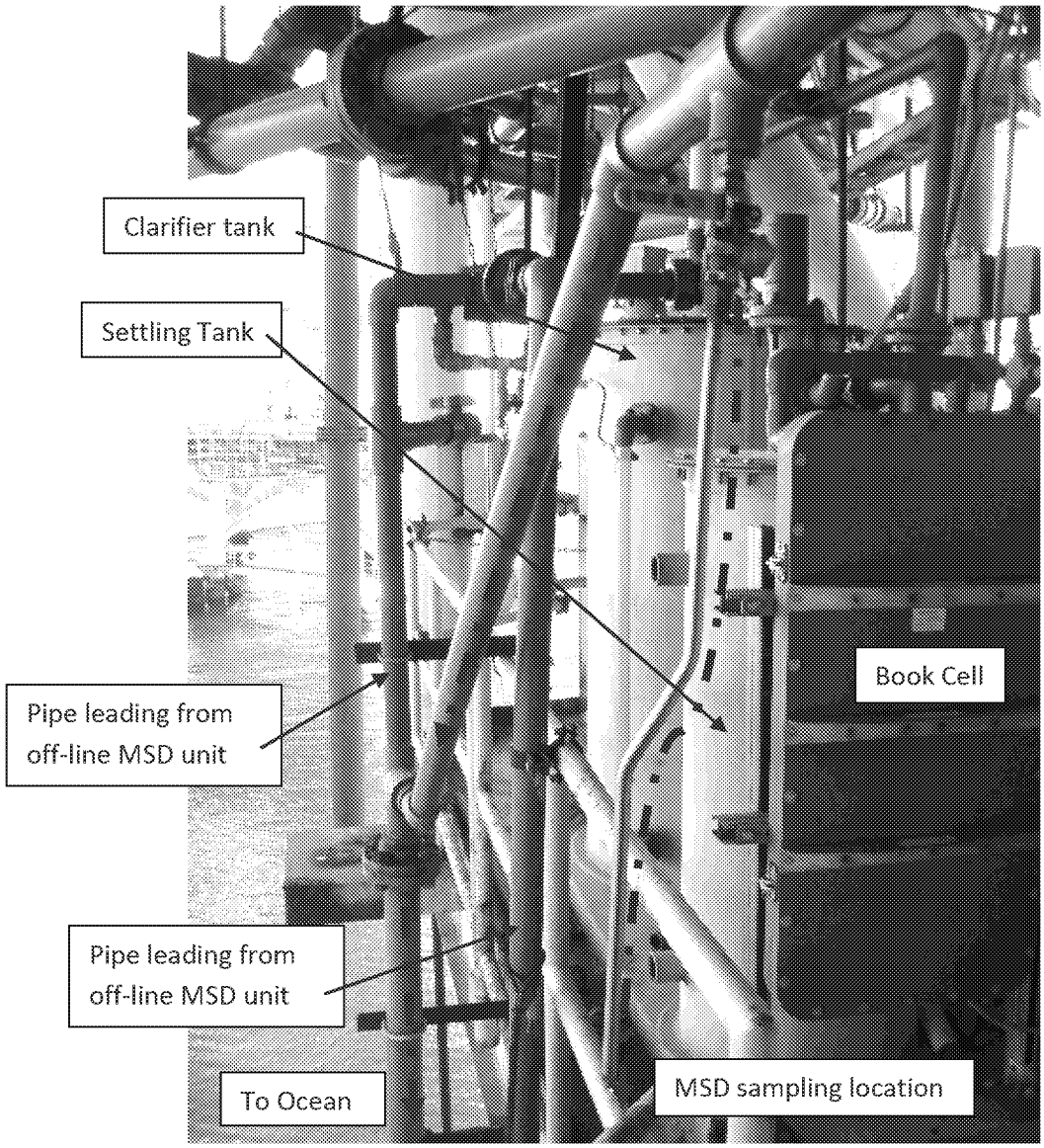

Photo 12: MSD Omnipure system. Blackwater enters the receiving tank, flows through the macerator pump (not shown), flows through the book cell for oxidation and chlorination. Not shown in this photo is the offline MSD unit which is next to this unit.