

Appendix 13: Operations & Maintenance Manual

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EXCELLENCE

LIQUIDS HANDLING HUB OPERATIONS & MAINTENANCE MANUAL

Document No.:

Prepared by: DJ Basin Facilities Group

03/24/2014

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OPERATIONS

Table of Contents

1.0	Introduction.....	7
1.1	Facility Objectives	7
1.2	Authorized Influent	7
1.3	Permitted Capacity	7
	1.3.2 Produced Oil Tanks.....	8
	1.3.3 Produced Water Storage Tanks.....	8
	1.3.4 Combustor	8
	1.3.5 Produced Oil Truck Load-out	8
	1.3.7 Equipment Leaks.....	9
1.4	Other Air Permit Requirements	9
	1.4.1 Monitoring.....	9
	1.4.2 Measurement & Sampling.....	9
	1.4.3 Additional Requirements	9
2.0	Facility Description	9
2.1	Site	9
2.2	Site Security	9
2.3	Storage Facilities.....	10
2.4	Process Description	10
	2.4.1 Influent.....	10
	2.4.2 Treatment Overview	11
	2.4.3 Produced Water Discharge to Third Party	11
	2.4.4 Solids Handling	12
	2.4.5 Oil Handling.....	12
2.5	Dust Control	12
2.6	Noise and Odor Mitigation.....	12
3.0	Contact Lists.....	13
4.0	Site-Specific Hazards.....	16
5.0	Plant Operator Responsibilities.....	17
5.1	Site Security	17
5.2	Health & Safety	17
	5.2.1 Facility Information	17
	5.2.2 Visitor Preparedness.....	17
5.3	Environment	18
5.4	Facility Operation	18

5.4.1 Operating Within Permit Requirements and Design Capacity 18

5.4.2 Performing Work On-Site 18

5.4.3 Overseeing Work On-Site 19

5.5 Monitoring & Reporting..... 19

5.5.1 Purpose 19

5.5.2 Daily Reports..... 19

6.0 Inspection & Maintenance Schedule..... 20

7.0 Encana Internal Reporting 22

List of Tables

Table 2.1: Storage Tanks 10

Table 2.2: Water Disposal Facilities..... 11

Table 2.3: Waste Disposal Facilities 12

Table 3.1: Emergency Contacts..... 13

Table 3.2: Utilities..... 13

Table 3.3: Trucking Companies 13

Table 3.4: Other Contacts 13

Table 3.5: Operator Contact Information 14

Table 3.6: Encana Contacts..... 14

Table 4.1: Site-Specific Hazards..... 16

Table 5.1: Daily Reporting Requirements 20

Table 6.1: Site Inspection Schedule 20

Table 6.2: Monitoring Schedule 21

Table 6.3: Equipment Inspection Schedule 21

Table 6.4: Equipment Maintenance Schedule 21

List of Figures

Figure 2.1: Liquids Handling Hub Site Plan **Error! Bookmark not defined.**

Figure 2.2: Liquids Handling Hub Block Flow Diagram **Error! Bookmark not defined.**

Figure 3.1: Organizational Chart..... 15

Figure 7.1: Reporting Responsibilities 22

Figure 7.2: Reporting Process 23

List of Appendices

Appendix A Sample Plant Operator Reports

Appendix B Process & Instrumentation Drawings (*not included in COGCC Form 28 Submittal*)

Appendix C As-Built Drawings (*not included in COGCC Form 28 Submittal*)

Appendix D Air Permits (*included as separate appendix in COGCC Form 28 Submittal*)

Appendix E Migratory Bird Treaty Act and Other Wildlife Protection Requirements

List of Acronyms

APCD	Air Pollution Control Division
bbbl	barrel
BMP	Best Management Practice
BS&W	Basic Sediment and Water
BTEX	Benzene, Toluene, Ethylbenzenes, and Xylenes
CDPHE	Colorado Department of Public Health and Environment
CO	Carbon Monoxide
COGCC	Colorado Oil & Gas Conservation Commission
DJ	Denver-Julesburg
EH&S	Environmental, Health & Safety
ERP	Emergency Response Plan
FR	Fire Retardant
HDPE	High-Density Polyethylene
JSA	Job Safety Analysis
LOE	Lease Operating Expense
LOTO	Lock Out / Tag Out
NO _x	Mono-nitrogen oxides NO and NO ₂
O&M	Operation & Maintenance
P&ID	Process & Instrumentation Diagram
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control & Countermeasure
SRBU	South Rockies Business Unit
TPY	Tons per year
TSS	Total Suspended Solids
TVP	True Vapor Pressure

VOC	Volatile Organic Compound
VRT	Vapor Recovery Tower
VRU	Vapor Recovery Unit

List of Reference Documents to be Maintained On-Site

Emergency Response Plan *(included as separate appendix in COGCC Form 28 Submittal)*

Liquids Handling Hub SPCC Plan *(included as separate appendix in COGCC Form 28 Submittal)*

SDS Forms for all Chemicals On-Site *(Major chemicals included in COGCC Form 28 Submittal)*

Liquids Handling Hub Equipment Manuals *(not included in COGCC Form 28 Submittal)*

1.0 Introduction

This Operation and Maintenance (O&M) manual covers the procedures and guidelines for Liquids Handling Hub (the Hub). This facility receives, stores, and transfers produced water, produced oil and residual hydrocarbons and solids 24 hours per day, 365 days per year.

1.1 Facility Objectives

The objectives of this facility are to:

- Gather produced oil from wells
- Gather excess produced water that cannot be recycled within Encana's network
- Minimize community and environmental impact by:
 - Reducing equipment located in residential areas
 - Reducing truck traffic in residential areas
 - Controlling emissions of production equipment
 - Maximizing the use of recycled water
 - Following Best Management Practices (BMPs)
 - Operating the facility in accordance with all permits.

1.2 Authorized Influent

This facility is authorized to receive the following influent:

- Produced oil and produced water from wells operated by Encana or with an Encana working interest in the DJ Basin.

Produced water from other oil and gas operators may be received by this facility on a case-by-case basis through a Colorado Oil & Gas Conservation Commission (COGCC) Rule 502.b variance request and approval with a water sharing agreement in place. Any arrangements of this nature must be authorized by the DJ Basin Team Lead and the COGCC. No third-party influent will be accepted if doing so violates Liquids Handling Hub's status as a non-commercial facility.

1.3 Permitted Capacity

The Liquids Handling Hub will be subject to the permitted capacity constraints in this section per the CDPHE APCD Permits which were submitted in August 2013 and modified on March 23, 2014. All monthly limits are based on a 31-day month. Note that monthly rates in the following sections apply to the first calendar year of operation only, with annual limits all subsequent years. Annual limits cannot apply in the first calendar year if the facility does not operate 12 full months.

1.3.2 Produced Oil Tanks

- Throughput
 - 775,000 bbl per month (applicable during first year of operation only)
 - 9,125,000 bbl / year
- Emissions
 - 2624.67 pounds VOC per month (applicable during first year of operation only)
 - 15.45171 tons VOC per year

1.3.3 Produced Water Storage Tanks

- Throughput
 - 155,000 bbl per month (applicable during first year of operation only)
 - 1,825,000bbl / year
- Emissions
 - 2029.86 pounds VOC per month (applicable during first year of operation only)
 - 11.95 tons VOC per year

1.3.4 Combustor

- Throughput
 - The combustor throughput limit will be the same as the truck load-out limit
- Emissions
 - 890.08 pounds NOx per month (applicable during first year of operation only)
 - 5.24 tons NOx per year
 - 3539.95 pounds CO per month (applicable during first year of operation only)
 - 20.84 tons CO per year

1.3.5 Produced Oil Truck Load-out

- Throughput
 - 755,000 bbl per month (applicable during first year of operation only)
 - 9,125,000 bbl /year
- Emissions
 - 6279.84 pounds VOC per month (applicable during first year of operation only)
 - 36.97 tons VOC per year

1.3.7 Equipment Leaks

- Emissions
 - 3483.890 pounds VOC per month (applicable during first year of operation only)
 - 20.51 tons VOC per year

1.4 Other Air Permit Requirements

The Construction Permits were submitted to the Colorado Department of Public Health and Environment Air Pollution Control Division in August 2013. Revised calculations were submitted in March 2014. Additional air permit requirements such as monitoring, measurement and sampling may be included in the permits upon issuance. Encana will comply with all conditions mandated by the permit.

1.4.1 Monitoring

To be completed when permit is issued.

1.4.2 Measurement & Sampling

To be completed when permit is issued.

1.4.3 Additional Requirements

To be completed when permit is issued.

2.0 Facility Description

2.1 Site

The Liquids Handling Hub is located east of Erie, CO in Weld County near the intersection of CR 6 & CR 7. A site plan showing the general layout of the facility is provided at the end of this document. All land that the Hub resides on is owned by Encana.

2.2 Site Security

Liquids Handling Hub is a gated, restricted-access, privately-owned facility. Access to the site by members of the public is restricted by a controlled gate at the entrance. There are separate access gates for the truck offloading and process areas.

In addition, Liquids Handling Hub is staffed 24-hours a day, 365 days a year. Internet connected video cameras will be utilized at all gates and around the facility for monitoring locally and remotely.

Wildlife and domestic animal access will be controlled at Liquids Handling Hub through the following measures:

- Fencing around the entire facility
- Mesh coverings on any tank or building openings including vents, stacks, etc.
- No dogs or other domestic animals are allowed on-site.

Agricultural activities are not permitted on Encana-owned land surrounding the Hub.

2.3 Storage Facilities

Table 2.1 details the above ground storage tanks at Liquids Handling Hub.

Table 2.1: Storage Tanks

Tank ID	Name	Working Capacity (bbl)	Contents
T-6000	Produced Oil Storage Tank	33,000	Treated / Produced Oil
T-6100	Produced Oil Storage Tank	33,000	Treated / Produced Oil
T-6200	Produced Oil Storage Tank	33,000	Treated / Produced Oil
<i>T-6300</i>	<i>Produced Oil Storage Tank</i>	<i>33,000</i>	<i>Treated / Produced Oil</i>
<i>T-6400</i>	<i>Produced Oil Storage Tank</i>	<i>33,000</i>	<i>Treated / Produced Oil</i>
<i>T-6500</i>	<i>Produced Oil Storage Tank</i>	<i>33,000</i>	<i>Treated / Produced Oil</i>
T-9400	Produced Water Storage Tank	5,000	Produced Water
T-9500	Produced Water Storage Tank	5,000	Produced Water
T-9600	Solids Storage Tank	500	Bottom Solids
T-9700	Solids Storage Tank	500	Bottom Solids
T-1700	Off-Spec Oil Surge Tank	750	Produced Oil & Water
<i>TBD</i>	<i>Off-Spec Oil Surge Tank</i>	<i>750</i>	<i>Produced Oil & Water</i>
<i>TBD</i>	<i>Off-Spec Oil Surge Tank</i>	<i>750</i>	<i>Produced Oil & Water</i>

Note: Italics indicate future construction

2.4 Process Description

The process flow diagram located at the end of this section shows the overall process at the Liquids Handling Hub. Detailed Process and Instrumentation Diagrams (P&ID's) are not included in the COGCC Form 28 submittal.

2.4.1 Influent

Produced oil and water undergo primary separation at each Encana-operated well pad. They are then transported in separate pipelines to the Hub. Un-stabilized produced oil with entrained water enters the facility from 3 pipelines that combine produced oil from multiple well pads and transport the fluid to Liquids Handling Hub for treatment and stabilization:

- Pipeline from Eureka and Hwy 52 well pads
- Pipeline from Pratt Energy well pad

- Pipeline from Vessels Minerals well pad.

Untreated produced water enters the facility in the following ways:

- Pipeline from Eureka and Hwy 52 well pads
- Pipeline from Pratt Energy well pad
- Pipeline from Vessels Minerals well pad.

2.4.2 Process Overview

Upon entering the Hub, the produced oil pipelines will pass into 100% redundant, heated 3-Phase Produced Oil Separators for secondary separation. The separated water will be transferred to the (2) two 5,000 bbl Produced Water Storage Tanks. The vapor recovered from the produced oil separators will be captured by a booster compressor unit and sold to others. The separated oil will be flashed to a vapor recovery tower (VRT). Overhead vapors from the VRT will be recovered by a vapor recovery unit (VRU). Oil leaving the VRT will be cooled with an aerial cooler before entering the Produced Oil Storage Tanks, which will be fitted with floating roofs. The purpose of the aerial cooler is to ensure the actual vapor pressure is sufficiently below atmospheric pressure. This protects the integrity of the floating roof and eliminates emissions from the floating roof vents.

After storage, the produced oil will be transported offsite via the truck load-out stations where the truck emissions will be captured by a VRU and sent to an emission control device. The oil load-out stations are designed with produced oil custody transfer, ticketing, and remote Ethernet communications.

The produced water gathering pipelines will feed directly into 100% redundant, 3-phase Produced Water Separators to further separate any residual gas and oil from the water. The separated gas will be delivered to the vapor combustion unit (VCU), while the separated oil will be pumped to the Off-Spec Oil Surge Tank prior to being re-processed in the 3-Phase Produced Oil Separators. The produced water will flow into two (2) 5,000 bbl Produced Water Storage Tanks.

2.4.3 Produced Water Discharge to Third Party

Water which cannot be reused within the Hub system due to the near-term water balance is disposed of via third party. This water is pumped out of the Produced Water Storage Tanks into trucks for transportation to a third-party facility (options listed in Table 2.2) where it will be treated, or disposed of via injection wells:

Table 2.2: Water Disposal Facilities

Disposal Facility	Address	Permit Number
High Sierra Water Services	8207 W. 20th St., Suite B Greeley, CO 80634 Phone: (877) 893-2466	150361
High Plains Disposal	3770 Puritan Way, Suite J Frederick, CO 80516 Phone: (303) 800-1128	09WE0929

2.4.4 Solids Handling

Bottom solids that accumulate in the Produced Water Storage Tanks, Produced Oil Separators and Produced Water Separators will be pumped to the two (2) 500 bbl Solids Storage Tanks where they will be stored until pressed and trucked offsite for disposal (options listed in Table 2.3).

Table 2.3: Waste Disposal Facilities

Disposal Facility	Address	Permit Number
Denver Regional Landfill	1441 Weld CR 6 PO Box 320 Erie CO 80516 Phone: (303) 673-9431	970PWE188

2.4.5 Oil Handling

Stabilized produced oil is stored in the Produced Oil Storage Tanks before being transported by truck off-site. The oil loading stations are designed with produced oil custody transfer, ticketing, and remote Ethernet communications. Each loading arm will capture displaced vapors from the truck

Condensate that accumulates in the Produced Water Storage Tanks or water separators is pumped to the inlet of the inlet 3-Phase separators where it is stabilized and transported to the produced oil storage tanks.

2.5 Dust Control

The access roads at Liquids Handling Hub will be paved asphalt or crushed gravel.

2.6 Noise and Odor Mitigation

The following noise and odor mitigation measures are designed into Liquids Handling Hub:

- All storage and handling of liquids is done in sealed equipment
- Truck off-loading facilities include vapor capture.

3.0 Contact Lists

(Contact lists will be filled in for the on-site copy of O&M Manual)

Table 3.1: Emergency Contacts

Type	Phone Number
Supervisor On-Call	303-435-0904
Environmental, Health, & Safety On-Call	303-489-0238
Security Watch Center	1-855-822-0169

Table 3.2: Utilities

Utility	Phone Number	Utility	Phone Number

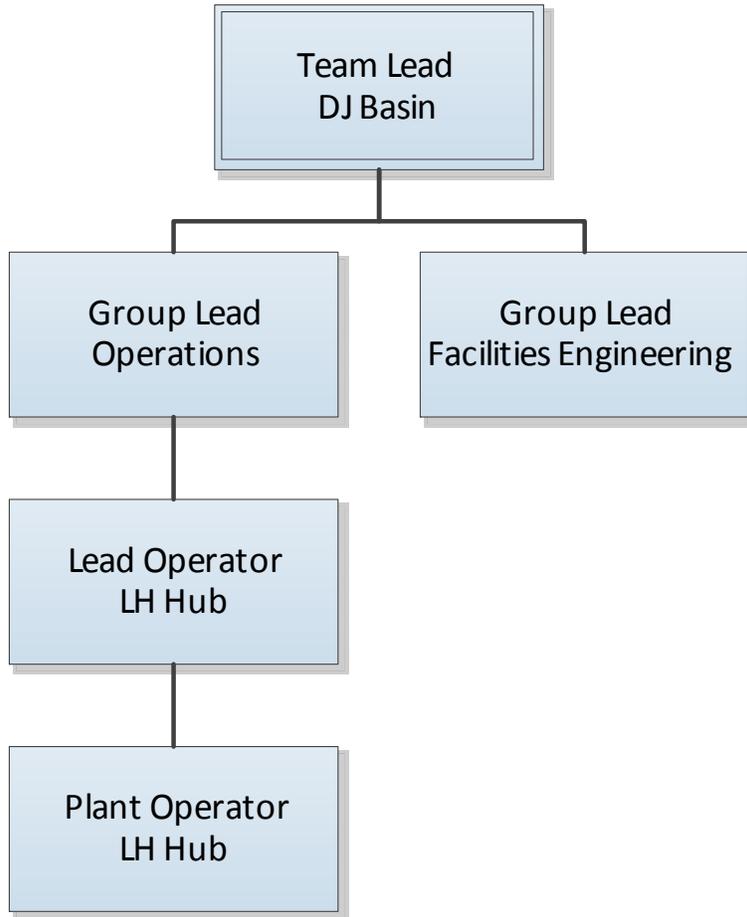
Table 3.3: Trucking Companies

Trucking Company	Phone Number	Trucking Company	Phone Number

Table 3.4: Other Contacts

Name / Company	Phone Number	Name / Company	Phone Number

Figure 3.1: Organizational Chart



4.0 Site-Specific Hazards

Encana is committed to providing a safe work environment for all employees and contractors. Failure to comply with safety programs may result in immediate removal from Encana properties.

This section provides a list of known, long-term hazards at Liquids Handling Hub. Intermittent, short-term hazards may not be listed here.

Detailed information for each hazard should be reviewed before undertaking any work in a hazardous area. Detailed information on each hazard is available in the following places:

- Encana Ethos Practices.
 - <http://ecn.encana.com/usa/EHS/managementsystems-byalphabet.shtml>
- Contractor Expectations Manual for Environmental, Health, Safety & Security
 - Hard copy on-site

Site-specific hazards that may be encountered at Liquids Handling Hub are shown in Table 4.1.

Table 4.1: Site-Specific Hazards

Hazard	Potentially Hazardous Area
Benzene	Tanks (interior)
Hydrogen Sulfide	Tanks (interior)
Confined Spaces	Tanks (interior)
Flammable / Restricted Hot Work areas (Class 1 Division 1 or Class 1 Division 2)	Containment area around tanks and process area
Walking and working surfaces	Site-wide potential for slips, trips and falls Site-wide use of ladders, scaffolding and harnesses

5.0 Plant Operator Responsibilities

5.1 Site Security

The Liquids Handling Hub is a restricted access, privately-owned facility. The facility is manned 24 hours per day, 365 days per year.

The Plant Operator is responsible for the following site security tasks:

- Controlling access by third parties.
- Immediately reporting any unusual or unauthorized use of the site to the Encana Security team.

RIGHT TO REFUSE ENTRY – 3rd PARTY

The Plant Operator has the right to refuse entry to any non-Encana parties at any time while he contacts the Encana Security team.

5.2 Health & Safety

The Liquids Handling Hub is an active gathering facility with known hazards. Encana takes the health and safety of staff members, contractors and visitors seriously and has developed practices and procedures to minimize risk to everyone on-site.

The Plant Operator has an integral role in maintaining a safe work environment at the facility, as described in this section. The Plant Operator is responsible for knowing this information regardless of whether or not they have received official EH&S training from Encana or their contract operators.

Specific hazards at Liquids Handling Hub are listed in Section 4.0.

5.2.1 Facility Information

The Plant Operator is responsible for knowing, at a minimum, the following facility-specific health & safety information:

- Location of the Emergency Response Plan (ERP).
- Where to look in the ERP for instructions on how to handle an emergency.
- Location of the Safety Data Sheets (SDS) files.
- What personal protective equipment (PPE) is required to handle the chemicals on-site.
- Location of all emergency shut-off valves.
- Any day-to-day work or conditions on-site that could impact the safety of *anyone*, even if they are not specifically involved in that task.

5.2.2 Visitor Preparedness

The Plant Operator is responsible for protecting the safety of *all visitors* by:

- Requiring them to sign in at the site office.

- Requiring them to read and sign the general site JSA.
- Verifying that they are wearing appropriate FR clothing, hard hats, steel toed boots and safety glasses.
- Explaining any day-to-day work or conditions on-site that could impact their safety, even if they are not specifically involved in that task.

The Plant Operator is responsible for protecting the safety of *contractors* by:

- Requiring them to have a JSA for their planned work.
- Verifying they are wearing any additional PPE called for in their JSA.

RIGHT TO REFUSE ENTRY – PPE & JSA

The Plant Operator has the right to refuse entry to any visitors who are not wearing appropriate PPE or who do not have a JSA for their task.

5.3 Environment

The Plant Operator is responsible for knowing, at a minimum, the following environmental policies and procedures and communicating them to contractors on-site:

- Oil Spill Contingency Plan for DJ Basin
- Liquids Handling Hub SPCC Plan

5.4 Facility Operation

5.4.1 Operating Within Permit Requirements and Design Capacity

The Plant Operator is responsible for operating the plant in accordance with all permits, as follows:

- Air Permits

The Plant Operator is also responsible for operating the plant in accordance with the design capacity.

5.4.2 Performing Work On-Site

When performing work on-site, the Plant Operator must:

- Only perform work that is authorized by the DJ Facilities Engineers and DJ Field Operations.
- Only perform work that has a written SOP unless authorized by DJ Facilities Engineers or DJ Field Operations.
- Follow the SOP when performing work. The Plant Operator should talk to the DJ Production Coordinator if any of the following are true:
 - An SOP is incorrect, missing information or no longer relevant.
 - A new SOP is needed.
 - The Plant Operator is unsure of how to follow a SOP.
 - The Plant Operator thinks a SOP could be improved.

- Follow all Encana health and safety practices.

STOP WORK AUTHORITY

Any Encana employee, contractor, or sub-contractor has the authority and responsibility to stop work on any site for any suspected hazard or unsafe work.

The Plant Operator has the right to stop work without consequence if there is no written procedure for the task or if the operator feels the task is unsafe.

If the Plant Operator chooses to stop work, the operator must immediately contact the DJ Production Coordinator to resolve the problem.

5.4.3 Overseeing Work On-Site

Regular on-site maintenance performed by contractors may be overseen by the Plant Operator. The DJ Production Coordinator is responsible for checking and verifying completeness of the work performed.

5.5 Monitoring & Reporting

5.5.1 Purpose

Daily reports are completed by the Plant Operator for the following reasons:

- Many of the items contained in these reports are required for compliance with state and federal laws. Completing these reports ensures that Encana has a record of activity on its properties.
- The engineers and managers of the Hub are always working towards continuous improvement. Records help them identify what works well and what needs to be improved on-site. In addition, records help them obtain funding to fix the problem.

5.5.2 Daily Reports

Plant Operators are the “eyes and ears” for the DJ Operations Group. It is the Plant Operator’s responsibility not only to complete their daily reports but also to notify the Operations Group Lead if something of significance occurs. If there is any doubt whether something is “significant”, the Plant Operator should report the event.

The Plant Operator is responsible for completing the reports shown in Table 5.1. Sample report forms are included in Appendix A.

Table 5.1: Daily Reporting Requirements

Report	Recording Time	Submission Time	Submission Method
Daily Flow Report	Between 6 AM and 7 AM	7 AM	Email to Lead Operator
Daily Shift Log	End of each shift	7 AM	Email to Lead Operator
Site Inspection Checklist	Approximately once per hour during each site walkthrough.	N/A	File hard copy on-site

6.0 Inspection & Maintenance Schedule

Table 6.1: Site Inspection Schedule

Location	Action	Frequency	Report
Off-Load / On-Load Pads	Check pad for spills, trash and any damage to pipes, valves, hoses or other equipment.	Once per hour	Site Inspection Checklist
Tanks (Exterior)	Check for leaks, damage, or obstructions such as ice that may prevent proper functioning. Check for liquids in tank containments.		
Piping / Valves	Check for leaks, damage, or obstructions (on outlets) such as ice that may prevent proper functioning.		
Ingress / egress roads	Inspect roads for spills, safety hazards such as potholes or ice, and erosion or other damage to roadway or berms.	Minimum twice per shift	
Buildings (Exterior & Interior)	Check for safety hazards, and any damage to exterior, interior, and electrical and phone lines.		
Tank Mesh	Check that mesh on tank vents is attached and fully covering the openings.		
Site Security	Check on-site lights, cameras, and locks for proper functioning		
Drainage Ditches / Swales	Check for spills, standing water, erosion or other damage.		

Note: All loose trash and debris should be cleaned up daily.

Table 6.2: Monitoring Schedule

Metric	Measurement	Frequency	Report
Tank Levels	Oil sales, sludge	Daily	Daily Flow Report
Water Volumes In / Out	Water in, Truck load-out		
Oil Volumes In / Out	Oil flow in, Truck load-out		

Table 6.3: Equipment Inspection Schedule

Equipment	Inspection Schedule	Frequency	Report
Oil Separator	Check operating temperature	Every shift	N/A
Water Separator	Check operating temperature	Every shift	N/A
VRU	Check Oil Level	Every shift	N/A

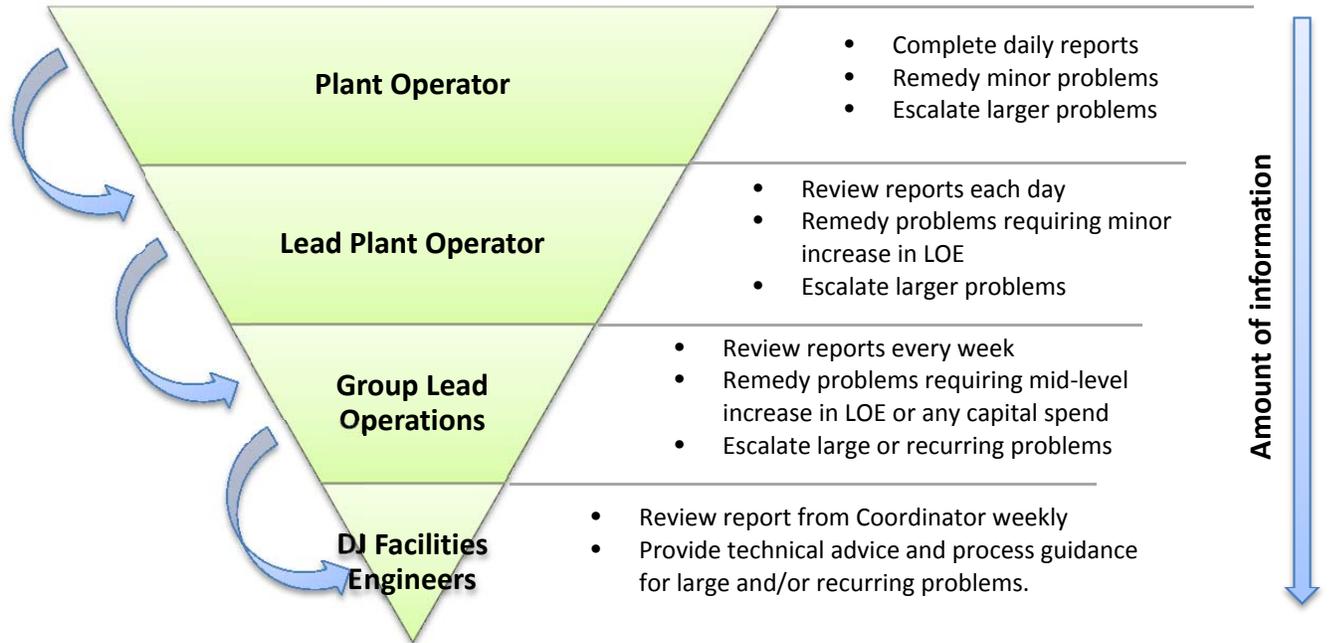
Table 6.4: Equipment Maintenance Schedule

Equipment	Maintenance Schedule	Minimum Frequency	Report
Oil Separator	Clean out bottom solids	Annually	N/A
Water Separator	Clean out bottom solids	Annually	N/A
VRU	Change oil & filter	Quarterly	N/A
VRU Discharge Cooler	Check fan drive belt condition & tension	Quarterly	N/A
Centrifugal Pumps	Check oil level	Weekly	N/A

7.0 Encana Internal Reporting

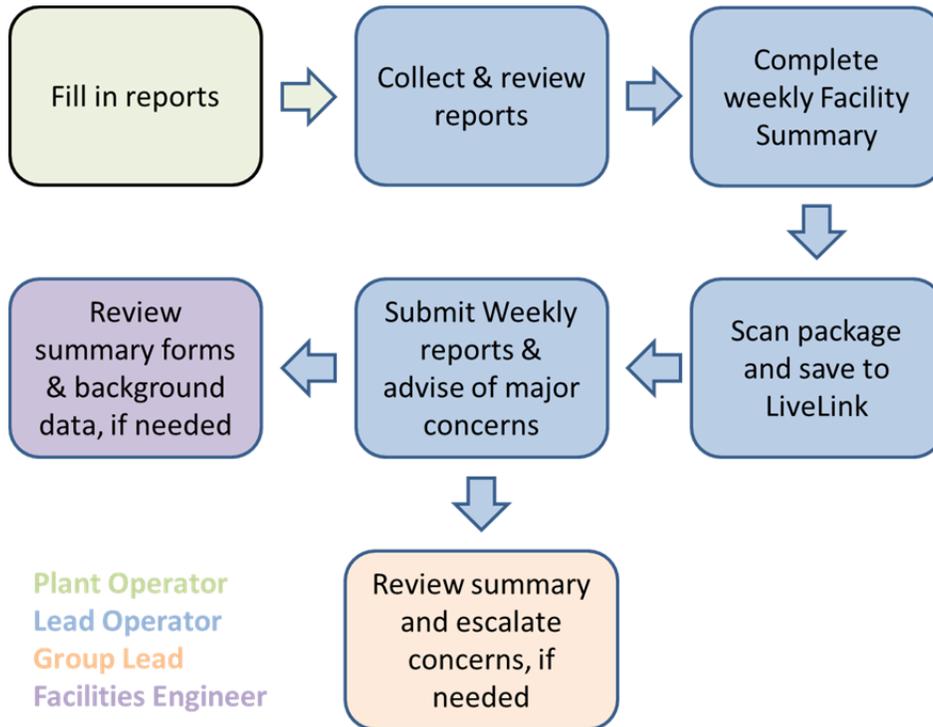
Each member of the group has specific reporting responsibilities, as shown in Figure 7.1.

Figure 7.1: Reporting Responsibilities



The reporting process is shown in Figure 7.2.

Figure 7.2: Reporting Process



Migratory Bird Treaty Act and Other Wildlife Protection Requirements **Encana Operations**

- 1) **Our company is required to apply protective measures for wildlife by:**
 - a. **Encana company practices and policies**
 - b. **County Permits**
 - c. **Colorado State:** Colorado Division of Wildlife (DOW) and Colorado Oil and Gas Conservation Commission (OGCC).
 - d. **Federal laws and agencies:** Bureau of Land Management (BLM), U.S. Forest Service (FS), and U.S. Fish and Wildlife Service (FWS).
- 2) **The FWS enforces several federal laws including the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Act, and the Endangered Species Act.** These federal regulations apply regardless of surface ownership.
- 3) **Violations of federal laws protecting wildlife can be considered criminal acts and result in fines and jail time. The FWS can prosecute both individuals and companies for violation of federal laws.**
- 4) **The MBTA makes it illegal to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess any bird that the law protects.** The MBTA also applies to bird parts (such as feathers), nests and eggs.
- 5) **FWS and Encana have entered into a plea agreement** because of 55 birds killed in pits, tanks, and containments on our operations in Colorado and Wyoming. This settlement includes specific protection measures and inspections that we must follow.
- 6) **We are subject to inspection by FWS Law Enforcement at any time.**
- 7) **MBTA is a strict liability law.** This means that FWS does not have to prove intent in order to find an individual guilty of violating the law. If a bird dies in relation to our operations, we are liable. **It is our responsibility to identify hazards and take action** to prevent bird deaths.
- 8) **Violations of federal laws protecting wildlife can be considered criminal acts and may result in fines and jail time. Both individuals and companies can be prosecuted** for violation of federal laws.
- 9) **Understand what wildlife protection measures are in place for your work site and make sure that they are maintained!** Ask if you are unsure. Here are some that apply everywhere:
 - a. Fired-equipment (combustors, heater-treaters, etc.) should have screens or cones on the stacks to exclude birds. Holes in the equipment housing should be covered to prevent animals or birds from entering.
 - b. Check equipment for gaps or holes where birds or small mammals may enter and become trapped or build nests. (Remember that under the MBTA, birds and their nests and eggs are protected.)

CONTRACTOR: _____

EMPLOYEE _____

- c. All containments that may collect contaminated water should be should be grated or covered (methanol tubs, fuel tank stations, drip tanks or sumps, for example). If no grate or cover is in place, containments should be drained within 24 hours of accumulating liquids.
- d. If there is a temporary tank on location, the top should be closed when active operations are not present, or the tank should be screened or netted.
- e. If there is a pit with fluid in it, that pit should be fenced and netted. Nets should be in good condition and should clear freeboard. Netting (or equivalent mesh fencing) should be secured at ground level on all sides to prevent animals or birds from entering under the edges.

10) The above list is the result of incidents that have occurred on natural gas operations in Colorado.

11) Walk around the pit, tanks and/or containments when inspecting them. Small issues can lead to large problems. They can certainly lead to reportable wildlife mortalities!

12) Following Encana practices and maintaining compliance with local, state, and federal requirements is everyone's responsibility! This is an important issue that can have large impacts on our business. If you have questions or find an issue, please do not hesitate to contact your Encana supervisor or Encana EHS.

I have read and understand the above information:

Name

Signature

Date

Shift Report	Site Inspection Checklist
Owner: SRBU: DJ Basin: Liquids Handling Hub	Publication date: March 7, 2014

Date: _____ **Shift:** _____ **Name:** _____

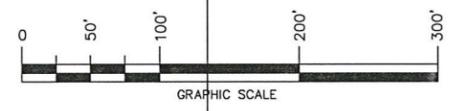
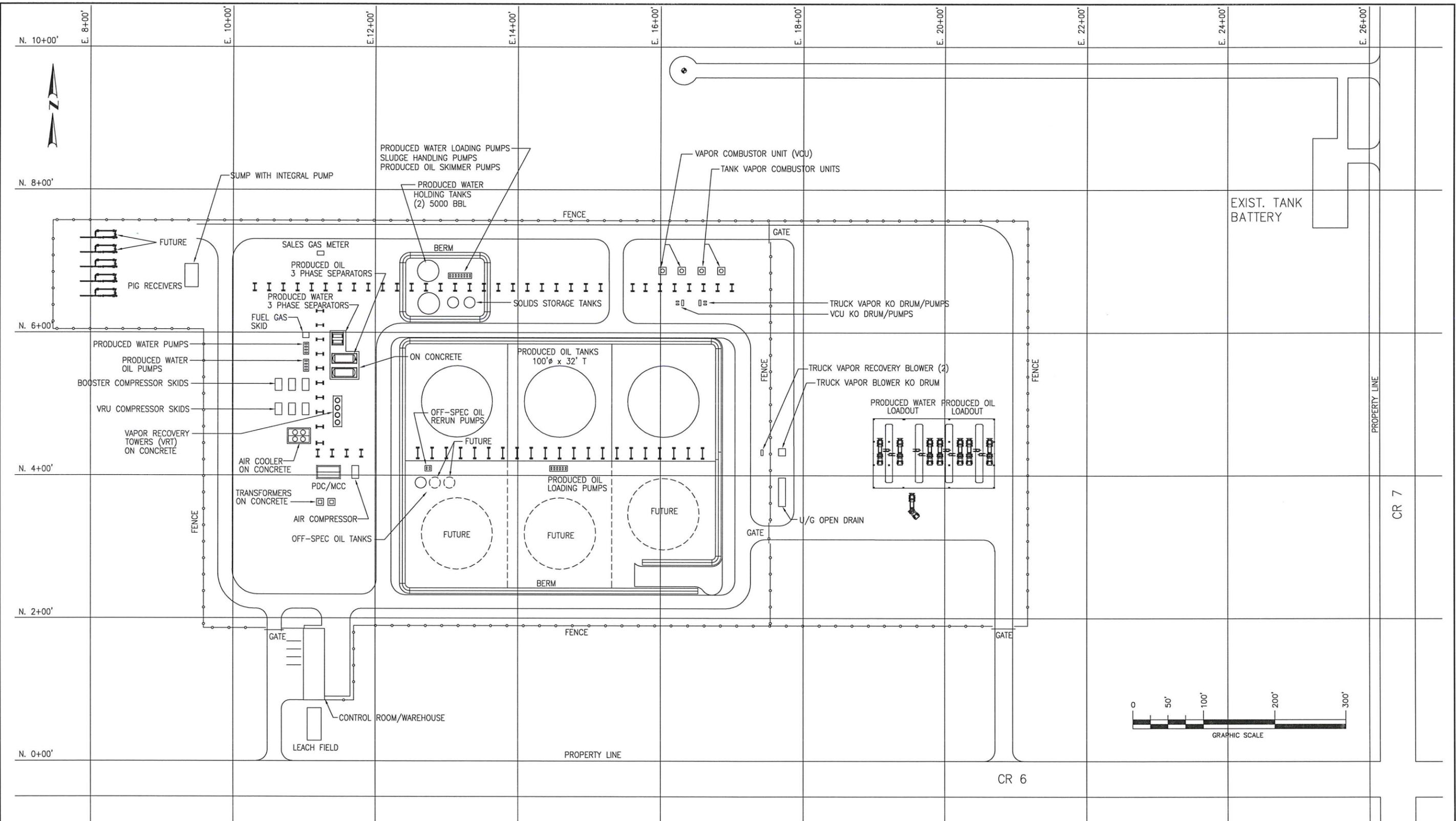
CHECK EACH ITEM IN THIS TABLE ONCE PER HOUR						
Location	Action	Time				
Off-Load / On-Load Pads	Checked pad for spills, trash and any damage to pipes, valves, hoses or other equipment.					
Tanks (Exterior)	Checked for leaks, damage, or obstructions such as ice that may prevent proper functioning. Checked for liquids in tank containments.					
Piping / Valves	Checked for leaks, damage, or obstructions (on outlets) such as ice that may prevent proper functioning.					

CHECK EACH LOCATION IN THIS TABLE AT LEAST TWICE PER SHIFT			
Location	Action	Time	
Ingress / egress roads	Inspected roads for spills, safety hazards such as potholes or ice, and erosion or other damage to roadway or berms.		
Buildings (Exterior & Interior)	Checked for safety hazards, and any damage to exterior, interior, and electrical and phone lines.		
Site Security	Checked on-site lights, cameras, and locks for proper functioning.		
Drainage Ditches / Swales	Checked for spills, standing water, erosion or other damage.		

If any of these inspections showed that something was wrong, what action did you take? Are there any other non-urgent issues that need to be corrected?

Signature: _____ **Time:** _____

Date and Time Saved: 2014-02-28, 8:00 AM



PLOTTER: 2/28/2014 10:49:18 AM BY: STEVE OSTWALD
LAST SAVED: 2/28/2014 8:00:27 AM BY: STEVE OSTWALD

CAUTION : READ BEFORE EXCAVATION
ALL EXCAVATIONS MUST BE CARRIED OUT AS PER
"ENCANA'S GROUND DISTURBANCE PRACTICE"

NO.	DATE	PROJECT DESCRIPTION	PROJ.	AFE	EPCM Co.	EPCM No.	APPD.
1	2014-02-21	LH HUB DESIGN	-	-	RES	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

REV. NUMBER	ISSUE STAGE	DATE	BY	CHKD.	APPD.	PERMIT STAMP	ENGINEER'S STAMP
A1	IFCR (A1)	2014-02-21	SDO	MJE	GAD		
A2	IFCR (A2)	2014-02-25	SDO	MJE	PJS		
A3	IFCR (A3)	2014-02-26	SDO	MJE	GAD		
A4	IFCR (A4)	2014-02-28	SDO	MJE	GAD		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

MAIN FAC: LIQUIDS HANDLING HUB
 MAIN L.S.D.: 21-1N-68W
 FAC. TYPE: CENTRAL BTRY.
 SITE L.S.D.: 21-1N-68W
 SCALE: NTS (A1 Size) EPCM No. EPCM-NM

EPCO FOR: **REDI ENGINEERING SERVICES, LLC**

TITLE: **PLOT PLAN**

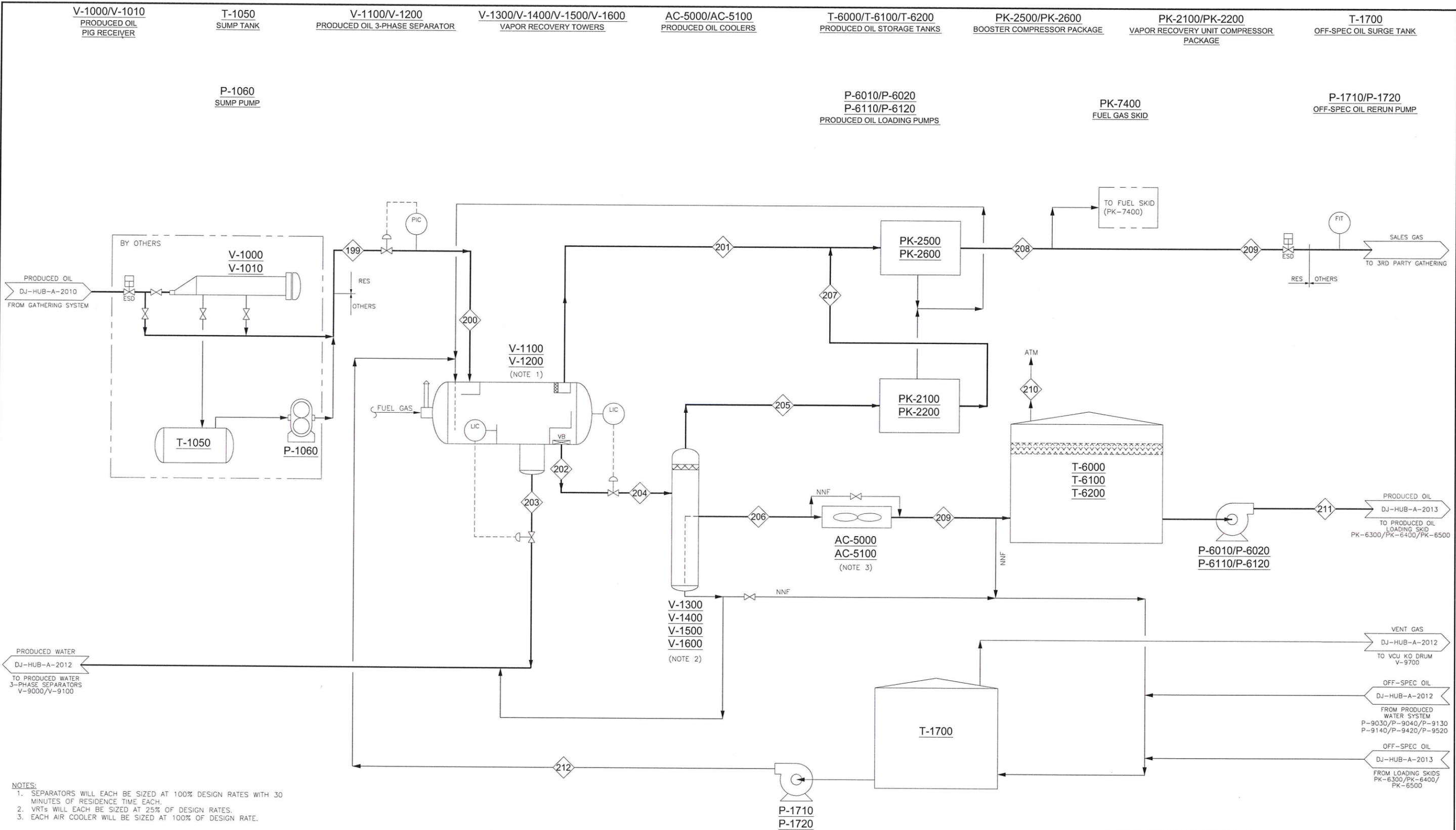
AREA: **DJ BASIN**

CLASS: **A** FILE NO.: **DJ-HUB-A-3100**

PERMIT STAMP AND PROFESSIONAL STAMP
 AFFIXED ABOVE SHALL APPLY ONLY TO REV(s)

Drawings Must Comply with Encana Drafting Standards (ECA-DDM-S-01)

Date and Time Saved: 2014-02-21, 4:02 PM



- NOTES:
- SEPARATORS WILL EACH BE SIZED AT 100% DESIGN RATES WITH 30 MINUTES OF RESIDENCE TIME EACH.
 - VRTs WILL EACH BE SIZED AT 25% OF DESIGN RATES.
 - EACH AIR COOLER WILL BE SIZED AT 100% OF DESIGN RATE.

REFERENCE DRAWINGS	DWG. NO.	NO.	DATE (YYYY-MM-DD)	PROJECT DESCRIPTION	PROJ.	AFE	EPCM Co.	EPCM No.	APPD.
		1	2014-02-07	LH HUB DESIGN			RES		ERE

ISSUE STAGE	DATE (YYYY-MM-DD)	BY	CHKD.	APPD.	PERMIT STAMP	ENGINEER'S STAMP
IFIR (A1)	2014-02-07	AF	ME	ERE		
IFCR (A2)	2014-02-11	JVC	ME	ERE		
RE-IFCR (A3)	2014-02-21	[Signature]	ERE	[Signature]		
REV NUMBER						

CAUTION : READ BEFORE EXCAVATION
ALL EXCAVATIONS MUST BE CARRIED OUT AS PER "ENCANA'S GROUND DISTURBANCE PRACTICE"

LIQUIDS HANDLING HUB
21-1N-68W
CENTRAL BTRY.
21-1N-68W
NTS (A1 Size) EPCM-NM

EPC No. REDI ENGINEERING SERVICES, LLC

TITLE PROCESS FLOW DIAGRAM OIL FLASH STABILIZATION

AREA DJ BASIN CLASS A FILE NO. DJ-HUB-A-2011

PLOTTED: 2/21/2014 6:08:55 PM BY: ALEX FARWELL LAST SAVED: 2/21/2014 4:02:25 PM BY: ALEX FARWELL

Drawings Must Comply with Encana Drafting Standards (ECA-DDM-S-01) FILE: P:\ENCANA\REDI CENTRAL GATHERING FACILITY\PIPING\PDFS\DJ-HUB-A-2011.DWG

Date and Time Saved: 2014-02-21, 6:10 PM

V-9000/V-9100
PRODUCED WATER
3-PHASE SEPARATORS

P-9110/P-9120/P-9130
PRODUCED WATER OIL
PUMPS

T-9400/T-9500
PRODUCED WATER HOLDING TANKS

PK-6800
PRODUCED WATER
LOADING SKID

V-9700
VCU KO DRUM

T-9600
SOLIDS STORAGE TANKS

H-9710
VAPOR COMBUSTION UNIT (VCU)

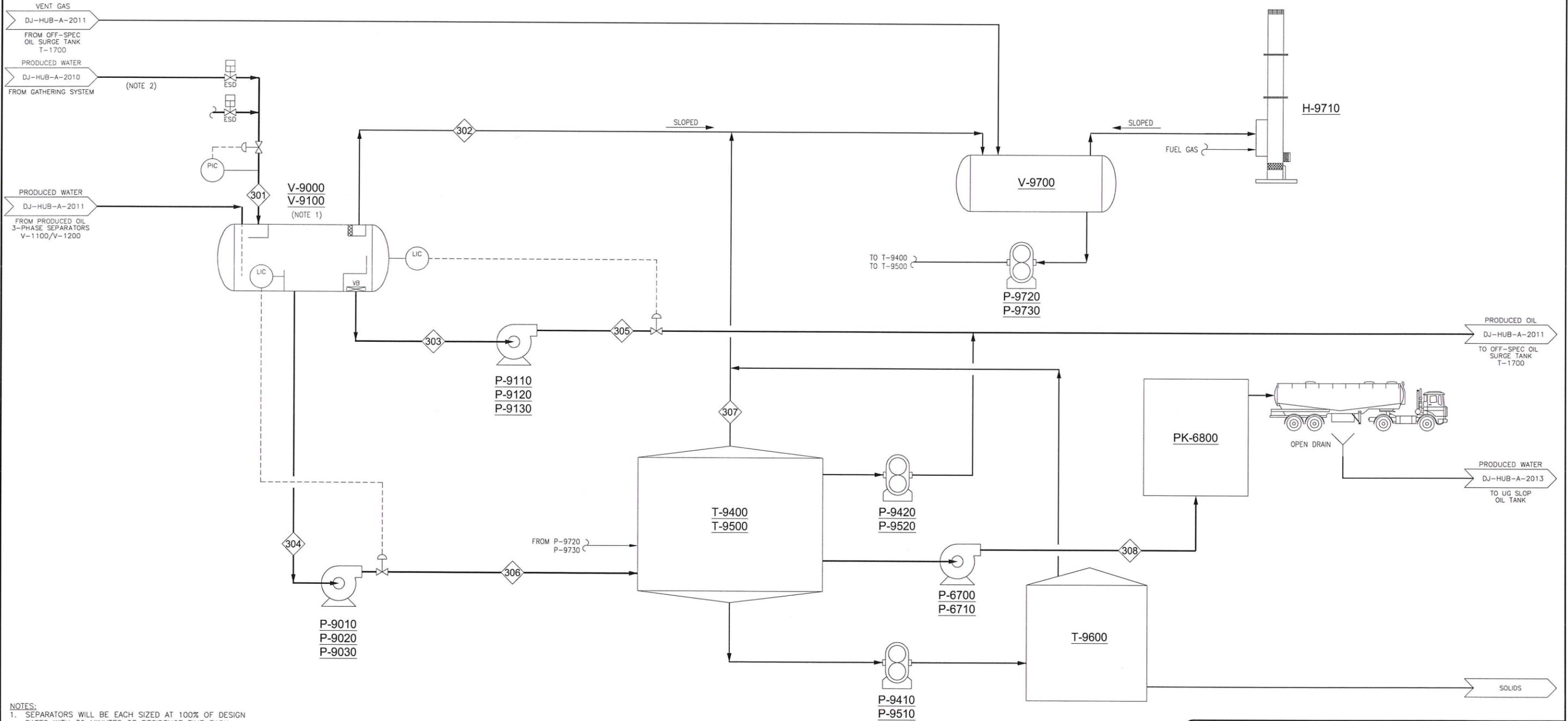
P-9010/P-9020/P-9030
PRODUCED WATER PUMPS

P-6700/P-6710
PRODUCED WATER
LOADING PUMP

P-9420/P-9520
PRODUCED OIL
SKIMMER PUMP

P-9720/P-9730
VCU KO PUMP

P-9410/P-9510
SOLIDS HANDLING PUMP



NOTES:
1. SEPARATORS WILL BE EACH SIZED AT 100% OF DESIGN RATES WITH 30 MINUTES OF RESIDENCE TIME EACH.
2. PROVIDE STUB-UPS FOR FUTURE RECEIVERS.

REFERENCE DRAWINGS	DWG. NO.	NO.	DATE (YYYY-MM-DD)	PROJECT DESCRIPTION	PROJ.	AFE	EPCM Co.	EPCM No.	APPD.
		1	2014-02-07	LH HUB DESIGN			RES		ERE

ISSUE STAGE	DATE (YYYY-MM-DD)	BY	CHKD.	APPD.	PERMIT STAMP	ENGINEER'S STAMP
IFIR (A1)	2014-02-07	AF	ME	ERE		
IFCR (A2)	2014-02-11	JVC	ME	ERE		
RE-IFCR (A3)	2014-02-21	AF	ERE	GAO		

MAIN FAC: LIQUIDS HANDLING HUB
 MAIN LSO: 21-1N-68W
 FAC TYPE: CENTRAL BTRY.
 SITE LSO: 21-1N-68W
 SCALE: NTS (A1 Size) EPCM No.: EPCM-NM

EPC Co.: REDI ENGINEERING SERVICES, LLC
 TITLE: PROCESS FLOW DIAGRAM
 PRODUCED WATER TREATMENT
 AREA: DJ BASIN CLASS: A FILE NO.: DJ-HUB-A-2012

CAUTION : READ BEFORE EXCAVATION
ALL EXCAVATIONS MUST BE CARRIED OUT AS PER "ENCANA'S GROUND DISTURBANCE PRACTICE"

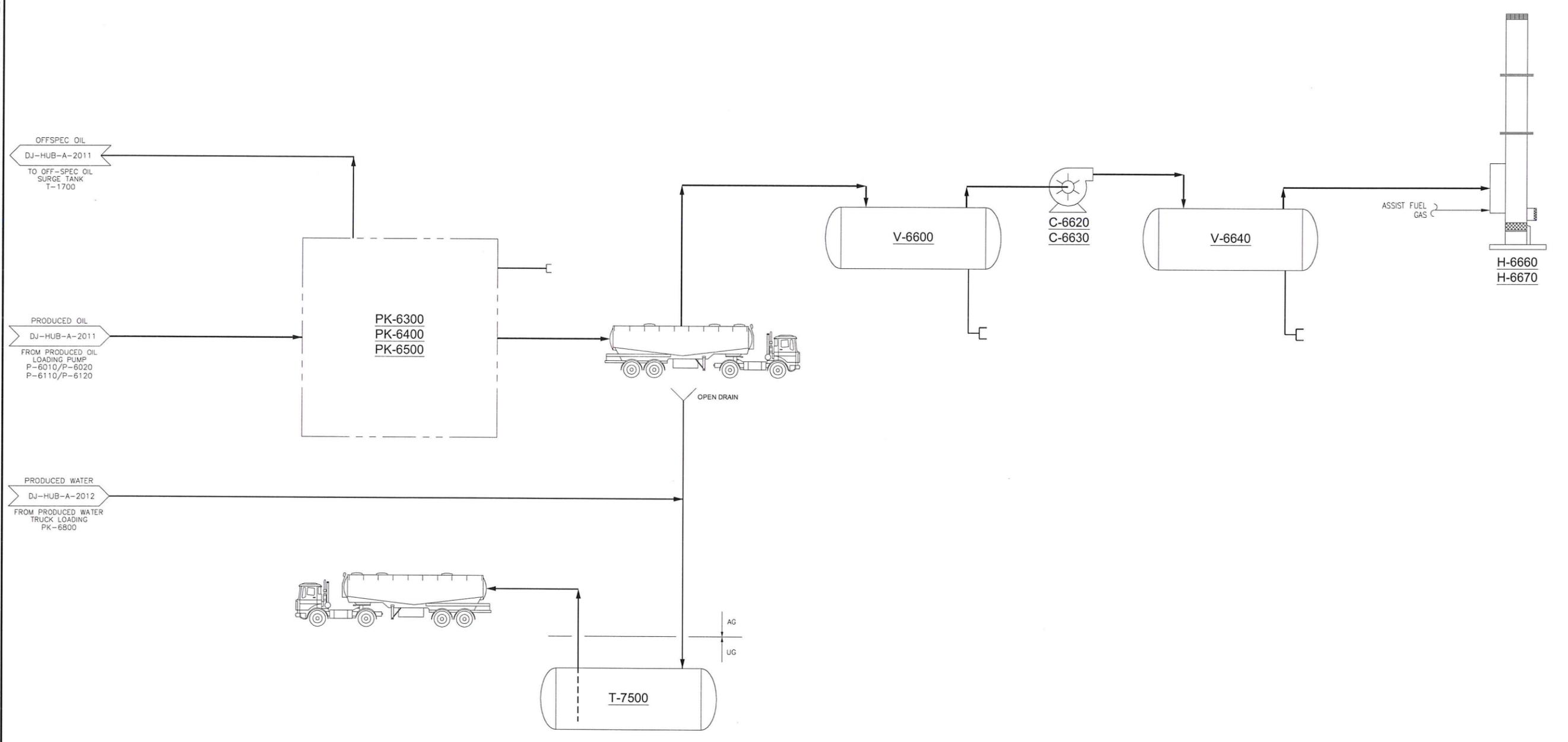
PLOTTED: 2/24/2014 8:20:13 AM BY: ALEX FARWELL LAST SAVED: 2/21/2014 6:10:47 PM BY: ALEX FARWELL

FILE: P:\ENCANA\ERE CENTRAL GATHERING FACILITY\PIPING\FPDS\DJ-HUB-A-2012.DWG

Drawings Must Comply with Encana Drafting Standards (ECA-DDM-S-01)

Date and Time Saved: 2014-02-20, 11:04 AM

PK-6300/PK-6400/PK-6500
PRODUCED OIL LOADING SKIDS
T-7500
UNDERGROUND SLOP OIL STORAGE TANK
V-6600
TRUCK VAPOR BLOWER KO DRUM
C-6620/C-6630
TRUCK VAPOR RECOVERY BLOWER
V-6640
VAPOR COMBUSTOR KO DRUM
H-6660/H-6670
TRUCK VAPOR COMBUSTION UNITS



PLOTTED: 2/21/2014 4:08:49 PM BY: ALEX FARWELL
LAST SAVED: 2/20/2014 11:04:15 AM BY: ALEX FARWELL

REFERENCE DRAWINGS	DWG. NO.	NO.	DATE	PROJECT DESCRIPTION	PROJ.	AFE	EPCM Co.	EPCM No.	APPD.
		1	2014-02-07	LH HUB DESIGN			RES		ERE

ISSUE STAGE	DATE	BY	CHKD.	APPD.	PERMIT STAMP	ENGINEER'S STAMP
IFIR (A1)	2014-02-07	JVC	ME	ERE		
IFCR (A2)	2014-02-11	JVC	ME	ERE		
RE-IFCR (A3)	2014-02-21	JVC	ME	ERE		

MAIN FAC.	LIQUIDS HANDLING HUB
MAIN USD.	21-1N-68W
FAC. TYPE	CENTRAL BTRY.
SITE USD.	21-1N-68W
SCALE	NTS (A1 Size)
EPCM Co.	EPCM-NM

REDI ENGINEERING SERVICES, LLC

PROCESS FLOW DIAGRAM
PRODUCED OIL LOADING

AREA	DJ BASIN	CLASS	A	FILE NO.	DJ-HUB-A-2013
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Drawings Must Comply with Encana Drafting Standards (ECA-DDM-S-01)