Appendix B

National Pollutant Discharge Elimination System

Authorizations & Notice of Intent

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Authorization and Extension of Authorizations
Dated 23 June 2011
Covering EP Blocks Posey Area 6714, 6762, 6764, 6812, 6912, and 6915

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF THE
REGIONAL
ADMINISTRATOR

JUN 23 2011

Ms. Susan Childs
Alaska Venture Support Integrator Manager
Shell Exploration & Production Company
3601 C Street, Suite 1000
Anchorage, Alaska 99503

RE: Coverage for Shell Exploration & Production Company under the National Pollutant Discharge Elimination System (NPDES) General Permit for Oil and Gas Exploration Activities on the Outer Continental Shelf and Contiguous State Waters for Discharges into the Chukchi and Beaufort Seas, Alaska

Dear Ms. Childs:

This letter provides the U.S. Environmental Protection Agency's (EPA) response to the Shell Exploration & Production Company's (Shell) submission of new and revised Notices of Intent (NOIs) and related documents for authorization to discharge into the Chukchi and Beaufort Seas. Specifically, the Shell NOIs requested permit coverage under the NPDES General Permit, AKG-28-0000 (Arctic GP), for wastewater discharges from Shell's proposed exploration activities beginning in the 2012 drilling season in both seas. This letter also addresses permit number changes for prior EPA-issued discharge authorizations under the Arctic GP.

Permit Number Changes and Revised Permit Authorizations for Blocks 6658 and 6610

In May 2009, Shell submitted NOIs for five lease blocks in the Chukchi Sea and two lease blocks in the Beaufort Sea. On January 20, 2010, the EPA issued discharge authorizations under the Arctic GP for Blocks 6764, 6714, 6912, 6864 and 7007 located in the Chukchi Sea. The EPA assigned permit number AKG-28-0004 for these five proposed drill sites. On April 20, 2010, the EPA issued discharge authorizations under the Arctic GP for Blocks 6658 and 6610 located in the Beaufort Sea. The EPA assigned permit number AKG-28-0005 for these two proposed drill sites.

On October 12, 2010, Shell submitted a revised NOI for Block 6658 (Sivulliq N/G). The revised NOI removed six waste streams from the original NOI (i.e., drilling muds, drilling cuttings, sanitary waste, domestic waste, uncontaminated ballast water and bilge water).

On December 16, 2010, Shell resubmitted the five (5) original NOIs for the Chukchi Sea in accordance with the duty to reapply provisions of the Arctic GP, Part IV.B and 40 C.F.R. § 122.21(d). Shell also resubmitted the Sivulliq N/G NOI for Block 6658 and included a revised NOI for Block 6610 (Torpedo H). The revised NOI removed six waste streams from the original NOI (i.e., drilling muds, drilling cuttings, sanitary waste, domestic waste, uncontaminated ballast water and bilge water).

The five Chukchi Sea and the two revised Beaufort Sea NOIs were deemed complete. Accordingly, Arctic GP coverage for the five Chukchi Sea proposed drill sites is continued pursuant to the NPDES regulations at 40 C.F.R. §§ 122.6 and 122.21(d).

Pursuant to Part I.D.3 of the Arctic GP and in accordance with the two revised Beaufort Sea NOIs, Shell is authorized the following discharges into the Beaufort Sea from the two proposed drill sites, Block 6658 (Sivulliq N/G) and Block 6610 (Torpedo H), subject to the terms and conditions of the Arctic GP:

Discharge Number	***Discharge Description***
002	Deck Drainage
005	Desalination Unit Wastes
006	Blowout Preventer Fluid
009	Non-contact Cooling Water
012	Excess Cement Slurry
013	Muds, Cuttings, Cement at Seafloor

The EPA has determined that administration of Arctic GP discharge authorizations will be clearer if different permit numbers are assigned to individual proposed drill sites. Consequently, the EPA is reassigning permit numbers as identified in the enclosed Attachment A. Attachment A is incorporated herein by reference. Please use the applicable NPDES permit numbers in all future correspondence and reports.

New Discharge Authorizations

On December 16, 2010, Shell also submitted 24 new NOIs for 11 proposed drill sites in the Chukchi Sea and 13 proposed drill sites in the Beaufort Sea (six in Harrison Bay and seven in Camden Bay). The 24 NOIs were submitted before any applicable deadline under 40 C.F.R. § 122.21(d)(2) or Part VI.B of the Arctic GP. The 24 NOIs are deemed complete.

Pursuant to Part I.D.3 of the Arctic GP, Shell is authorized the following discharges into the Chukchi Sea from 11 proposed drill sites (i.e., 6564, 6514, 6812, 6762, 6713, 6811, 6914, 6864, 6915, 6763 and 6971), subject to the terms and conditions of the Arctic GP:

Discharge Number	***Discharge Description***
001	Drilling Fluids and Drilling Cuttings
002	Deck Drainage
003	Sanitary Wastes
004	Domestic Wastes
005	Desalination Unit Wastes
006	Blowout Preventer Fluid
009	Non-contact Cooling Water
010	Uncontaminated Ballast Water
011	Bilge Water
012	Excess Cement Slurry
013	Muds, Cuttings, Cement at Seafloor

Pursuant to Part I.D.3 of the Arctic GP, Shell is authorized the following discharges into the Beaufort Sea (Harrison Bay) from six proposed drill sites (i.e., 6222, 6273, 6352, 6373, 6374/6424 and 6351/6401), subject to the terms and conditions of the Arctic GP:

Discharge Number	***Discharge Description***
001	Drilling Fluids and Drilling Cuttings
002	Deck Drainage
003	Sanitary Wastes
004	Domestic Wastes
005	Desalination Unit Wastes
006	Blowout Preventer Fluid
009	Non-contact Cooling Water
010	Uncontaminated Ballast Water
011	Bilge Water
012	Excess Cement Slurry
013	Muds, Cuttings, Cement at Seafloor

Pursuant to Part I.D.3 of the Arctic GP, Shell is authorized the following discharges into the Beaufort Sea (Camden Bay) from the seven proposed drill sites (i.e., 6757, 6707, 6709, 6559 (Torpedo C/J), 6609, 6558 and 6508), subject to the terms and conditions of the Arctic GP:

Discharge Number	***Discharge Description***
002	Deck Drainage
005	Desalination Unit Wastes
006	Blowout Preventer Fluid
009	Non-contact Cooling Water
012	Excess Cement Slurry
013	Muds, Cuttings, Cement at Seafloor

The EPA has assigned individual permit numbers to each of the 24 proposed drill sites as identified in the enclosed Attachment A. Please use the applicable NPDES permit numbers in all future correspondence and reports.

Please note the effluent limitations and monitoring requirements in Part II and the monitoring, recording and reporting requirements in Part III of the Arctic GP. Discharge Monitoring Reports must be submitted monthly by the 10th day of the following month.

A copy of the Arctic GP is enclosed and is also available on the EPA's webpage at http://yosemite.epa.gov/r10/water.nsf/npdes+permits/arctic-gp . Facilities discharging under the authority of the Arctic GP must keep a copy of the permit and this coverage letter at the facility where the discharges occur, or retain a copy at the nearest administrative or field office managing the operation.

The EPA is in the process of reissuing the Arctic GP as two separate exploration general permits for the Beaufort and Chukchi Seas. Permit coverage under the Arctic GP will expire when coverage under the reissued general permits is in effect. Operators authorized to discharge under the Arctic GP will be required to submit new NOIs for continued permit coverage under the applicable general permits when they are reissued.

If you have any questions regarding this coverage letter or the Arctic GP, please do not hesitate to contact Hanh Shaw, NPDES Permits Unit, at shaw.hanh@epa.gov or (206) 553-0171.

Sincerely,

Dennis J. McLerran
Regional Administrator

Enclosures

Attachment A
Shell Exploration and Production Company
AKG-28-0000 NPDES Permit Numbers

Permit Number	Lease Block	Well Name	Location
AKG-28-0004	6912	Burger J	Chukchi Sea
AKG-28-0005	6764	Burger C	Chukchi Sea
AKG-28-0006	6714	Burger F	Chukchi Sea
AKG-28-0007	7007	SW Shoebill C	Chukchi Sea
AKG-28-0008	6864	Crackerjack C	Chukchi Sea
AKG-28-0009	6658	Sivulliq N/G	Beaufort Sea – Camden Bay
AKG-28-0010	6610	Torpedo H	Beaufort Sea – Camden Bay
AKG-28-0011	6564	Bluefoot A	Chukchi Sea
AKG-28-0012	6514	Bluefoot B	Chukchi Sea
AKG-28-0013	6812	Burger R	Chukchi Sea
AKG-28-0014	6762	Burger S	Chukchi Sea
AKG-28-0015	6713	Burger TBD	Chukchi Sea
AKG-28-0016	6811	Burger TBD	Chukchi Sea
AKG-28-0017	6914	Burger TBD	Chukchi Sea
AKG-28-0018	6864	Burger U	Chukchi Sea
AKG-28-0019	6915	Burger V	Chukchi Sea
AKG-28-0020	6763	Burger Z	Chukchi Sea
AKG-28-0021	6971	Honey Guide A	Chukchi Sea
AKG-28-0022	6222	Cornell A	Beaufort Sea – Harrison Bay
AKG-28-0023	6273	Cornell B	Beaufort Sea – Harrison Bay
AKG-28-0024	6352	Mauya A	Beaufort Sea – Harrison Bay
AKG-28-0025	6373	Mauya B1	Beaufort Sea – Harrison Bay
AKG-28-0026	6374/6424	Mauya B2	Beaufort Sea – Harrison Bay
AKG-28-0027	6351/6401	Maya B3	Beaufort Sea – Harrison Bay
AKG-28-0028	6757	Sivulliq K	Beaufort Sea – Camden Bay
AKG-28-0029	6707	Sivulliq R	Beaufort Sea – Camden Bay
AKG-28-0030	6709	Sivulliq W	Beaufort Sea – Camden Bay
AKG-28-0031	6559	Torpedo C/J	Beaufort Sea – Camden Bay
AKG-28-0032	6609	Torpedo D	Beaufort Sea – Camden Bay
AKG-28-0033	6558	Torpedo E	Beaufort Sea – Camden Bay
AKG-28-0034	6508	Torpedo F	Beaufort Sea – Camden Bay

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Initial EPA Authorization
Dated 20 January 2010
Covering EP Blocks Posey Area 6762, 6915, and 6812

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

JAN 2 0 2010

Reply to
Attn of: OWW-130

Ms. Susan Childs
Regulatory Affairs Manager, Alaska
Shell Exploration & Production Company
3601 C Street, Suite 1000
Anchorage, Alaska 99503

Re: Coverage for Shell Exploration & Production Company under the National Pollutant Discharge Elimination System (NPDES) General Permit for Oil and Gas Exploration Activities on the Outer Continental Shelf and Contiguous State Waters for Discharges into the Chukchi Sea, Alaska (AKG-28-0004)

Dear Ms. Childs:

On May 22, 2009, the U.S. Environmental Protection Agency received five Notices of Intent (NOIs) from Shell Exploration & Production Company (Shell) for authorization to discharge into the Chukchi Sea. Specifically, the NOIs requested permit coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit, AKG-28-0000 (Arctic GP), for wastewater discharges from Shell's proposed exploration activities planned for the 2010 Outer Continental Shelf (OCS) drilling season with the drillship *Frontier Discoverer.*

On November 5, 2009, EPA requested additional information from Shell to determine whether the requested discharges could be covered under the Arctic GP. EPA received the supplemental information on December 1, 2009.

Pursuant to Part I.D.3 of the Arctic GP, Shell is authorized the following discharges into the Chukchi Sea from the five proposed drill sites summarized in Table 1, below, subject to the terms and conditions of the Arctic GP:

Discharge Number	Discharge Description
001	Drilling Fluids and Drilling Cuttings
002	Deck Drainage
003	Sanitary Wastes
004	Domestic Wastes
005	Desalination Unit Wastes
006	Blowout Preventer Fluid
009	Non-contact Cooling Water
010	Uncontaminated Ballast Water
011	Bilge Water
012	Excess Cement Slurry
013	Muds, Cuttings, Cement at Seafloor

Table 1 – Proposed Drill Sites (Chukchi Sea)

Prospect	Well	Area	Block	Lease No.
Burger	C	Posey	6764	OCS-Y-2280
Burger	F	Posey	6714	OCS-Y-2267
Burger	J	Posey	6912	OCS-Y-2321
Crackerjack	C	Karo	6864	OCS-Y-2111
SW Shoebill	C	Karo	7007	OCS-Y-2142

Please note the effluent limitations and monitoring requirements in Part II. and the monitoring, recording and reporting requirements in Part III of the Arctic GP. Discharge Monitoring Reports must be submitted monthly by the 10th day of the following month.

The permit number assigned to this operation is AKG-28-0004. Please use this number in all future correspondence and reports. A copy of the Arctic GP is enclosed and is also available on EPA's webpage at http://epa.gov/r10earth/waterpermits.htm under general permits. Facilities discharging under the authority of the Arctic GP must keep a copy of the permit and this coverage letter at the facility where the discharges occur, or retain a copy at the nearest administrative or field office managing the operation.

If you have any questions regarding this coverage letter or the Arctic GP, please do not hesitate to contact Hanh Shaw of my staff at shaw.hanh@epa.gov or (206) 553-0171.

Sincerely,

Michael J. Lidgard, Manager
NPDES Permits Unit

Enclosure

Notice of Intent for Extension
Dated 16 December 2010
Covering EP Blocks Posey Area 6762, 6915, and 6812

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Shell Exploration & Production Company

December 16, 2010

Ms. Hanh Shaw
U.S. EPA, Region 10
Office of Water & Watersheds, NPDES Permits Unit
1200 Sixth Avenue, Suite 900, M/S OWW-130
Seattle, WA 98101

Shell
3601 C Street, Suite 1000
Anchorage, AK 99503

Tel. (907) 646-7112
Email susan.childs@shell.com
Internet http://www.shell.com/

Dear Ms. Shaw:

Subject: Notice of Intent for administrative extension under General Permit AKG-28-0000
Lease Number OCS-Y-2266, Lease Block 6713
Lease Number OCS-Y-2278, Lease Block 6762
Lease Number OCS-Y-2279, Lease Block 6763
Lease Number OCS-Y-2310, Lease Block 6864
Lease Number OCS-Y-2323, Lease Block 6914
Lease Number OCS-Y-2324, Lease Block 6915
Lease Number OCS-Y-2294, Lease Block 6812
Lease Number OCS-Y-2293, Lease Block 6811
Lease Number OCS-Y-1976, Lease Block 6971
Lease Number OCS-Y-2040, Lease Block 6514
Lease Number OCS-Y-2050, Lease Block 6564

In accordance with 40 CFR 122.21(d) Shell Gulf of Mexico Inc. (Shell) is submitting Notices of Intent (NOIs) for the Lease Blocks listed above for authorization to discharge under General Permit AKG-28-0000 that expires on June 26, 2011. It is Shell's understanding that a new general permit is not scheduled to be issued until the fall of 2011. Therefore, these NOIs also serve as Shell's request for an administrative extension to discharge under NPDES General Permit AKG-28-0000 for 2011 and beyond for each authorized NOI until the new General Permit is available.

If you have questions about any component of the proposed project, please contact me at (907) 646-7112 or email susan.childs@shell.com, or call Nicole St. Amand at (907) 646-7152 or email nicole.stamand@shell.com.

Sincerely,

Susan Childs
Alaska Venture Support Integrator Manager
Attachments - Notice of Intent (NOI) Information Sheets
Location Maps
Ocean Discharge Tables
Discharge Flow Diagrams

cc: Diane Soderlund, USEPA Region 10, Alaska Operations
Michael Lidgard, USEPA Region 10
Jeff Walker, BOEM Alaska
Don Perrin, Alaska DNR
Administrative Record

ATTACHMENT 1

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

APPLICANT *(Owner/Operator)*			
Owner Name:	Shell Gulf of Mexico Inc.	Operator Mailing Address:	3601 C Street
Telephone Number:	907-770-3700		Suite 1000
Operator Name:	Shell Gulf of Mexico Inc.		Anchorage, AK 99503
Telephone Number:	907-770-3700		

FACILITY			
Facility Name:	Noble Discoverer	Facility Mailing Address:	3601 C Street
Contact Name:	Susan Childs		Suite 1000
Telephone Number:	907-770-3700		Anchorage, AK 99503
Beginning Date of Operation:	TBD	Stationary Facilities	Latitude:
Expected Duration of Operation:	32 days per well site		Longitude:
Facility Type *(check applicable type)*	☐ Jackup ☒ Drill Ship ☐ Semisubmersible ☐ Other (specify):	Mobile Facilities	Initial Latitude: TBD Initial Longitude: TBD

Submit a site map showing the exact location of facility and discharges associated with the project. Mobile facilities may designate an area where they may be operating and must include a map showing those areas and a description of operations within those areas. If the discharge is within 4000 meters of an environmentally sensitive area indicated by the permit, those areas and their distance from the operation/discharge must be shown on the map.

RECEIVING WATER			
☒	Chukchi Sea	☐	Other (*specify*): ☐
☐	Beaufort Sea		

Supply confirmation with the U.S. Department of State and NOAA that the discharge is seaward of the inner boundary baseline, if applicable.

LOCATION OF DISCHARGE					
MMS	Lease Number	**OCS-Y-2278**	ADNR	Lease Number	**N/A**
	Block Number	**Posey Area Block 6762**		Block Number	**N/A**
Range of water depths below mean lower low water (MLLW) in the lease block:		From:	**145'**	To:	**145'**

Attachment 1: NOI Information Sheet **Permit No.: AKG280000**

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Discharges (*check all that apply)*			
☒	001 Drilling Mud and Cuttings	Water Depth:	**19.6'**
☒	002 Deck Drainage	Water Depth:	**19.6'**
☒	003 Sanitary Waste	Water Depth:	**19.6'**
☒	004 Domestic Waste	Water Depth:	**19.6'**
☒	005 Desalination Unit Waste	Water Depth:	**19.6'**
☒	006 Blowout Preventer Fluid	Water Depth:	**145'**
☐	007 Boiler Blowdown	Water Depth:	
☐	008 Fire Control System Test Water	Water Depth:	
☒	009 Non-Contact Cooling Water	Water Depth:	**on the surface at several locations**
☒	010 Uncontaminated Ballast Water	Water Depth:	**19.6'**
☒	011 Bilge Water	Water Depth:	**19.6'**
☒	012 Excess Cement Slurry	Water Depth:	**19.6'**
☒	013 Mud, Cuttings, Cement and Seafloor	Water Depth:	**MLC through 26" section cuttings at 135', excess cement at 145'**
☐	014 Test Fluid	Water Depth:	

Provide a brief description of the treatment process(es) and disposal practices (e.g., backhauled, reinjected, discharged, etc.) at the facility. See attached (Table 1)

Provide a line drawing that shows flow of discharged waste streams through the facility. Indicate intake sources, operations contributing to the effluent, and treatment units labeled to correspond to the discharges (001 – 014). Construct a flow balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a flow balance cannot be determined, provide a pictorial description of the nature and amount of any sources, and any collection or treatment measures.

Well Information

Well Name:	**Burger**	Latitude:	**TBD**
Well Number:	**S**	Longitude:	**TBD**
Beginning Drill Date:	**TBD**	Hole Diameter or Estimated Total Discharge Volume:	**36" diameter at surface, reducing through 4 stages to 8.5" at depth**

Drilling Fluid

Category (*check all that apply*)	☒	Water-based	Group (*check all that apply*)	☐	Lignosulfonate
	☐	Oil-based		☐	Lime
	☐	Synthetic-based		☐	Gyp
	☐	Other (*specify*):		☒	Sea-water

				☒	Saltwater
				☐	Saturated Saltwater
				☒	Nondispersed (Viscosifier/Polymer) PH/PA

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Zone of Deposit Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a Zone of Deposit from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A ZONE OF DEPOSIT. The burden of proof for justifying a zone of deposit through demonstrating compliance with the requirements of 18 AAC 70.210 rests with the applicant.

Distance from shoreline of discharge point (measured at M.L.L.W.):		Average Mud density:	
Depth of discharge (measured at M.L.L.W.):		Flow Rate:	
Orientation of outfall to shoreline (e.g., perpendicular, 45°, parallel):		Total Volume:	
Orientation of outfall to water surface (e.g., perpendicular, 45°, parallel):		Maximum current and direction:	

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

Mixing Zone Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a mixing zone from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 through 18 AAC 70.270 rests with the applicant.

Distance from shoreline of discharge point or first port of diffuser (measured at M.L.L.W.):		Length of diffuser:	
Depth of discharge port or diffuser (measured at M.L.L.W.):		Diameter of port(s):	
Orientation of diffuser to shoreline (e.g., perpendicular, 45°, parallel):		Number of ports:	
Maximum current:		Port spacing:	

USE OF RECEIVING WATER AT DISTANCE FROM DIFFUSER i.e., Supply for drinking water, Supply for agriculture including irrigation & stock water, Supply for aquaculture, Supply for industrial use, Contact recreation, Secondary recreation, Fish spawning, Harvesting and consumption of raw fish, or other aquatic life (Not needed if not requesting a mixing zone from ADEC):

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Special Conditions (*provide justification for all that are not required, completed or provided)*					
Special Monitoring	☐	Required	☒	Not Required	Justification:
Exploration Plans	☐	Attached	☒	Not Provided	Justification: TBD
Biological Surveys	☐	Attached	☒	Not Provided	Justification: None required
Environmental Report(s)	☐	Attached	☒	Not Provided	Justification: Will be submitted to BOEMRE as part of the Exploration Plan
Drilling Fluid Plan	☐	Complete	☒	Not Complete	Justification: In Preparation

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:	Susan Childs	Date:	12/16/2010
Printed Name:	Susan Childs	Title:	Alaska Support Intergrator Manager

Mail Completed NOI to EPA and ADEC at the following addresses:

US EPA 1200 6th Avenue, M/S OWW-130 Seattle, WA 98101	ADEC, Water Division 555 Cordova Street Anchorage, Alaska 99501

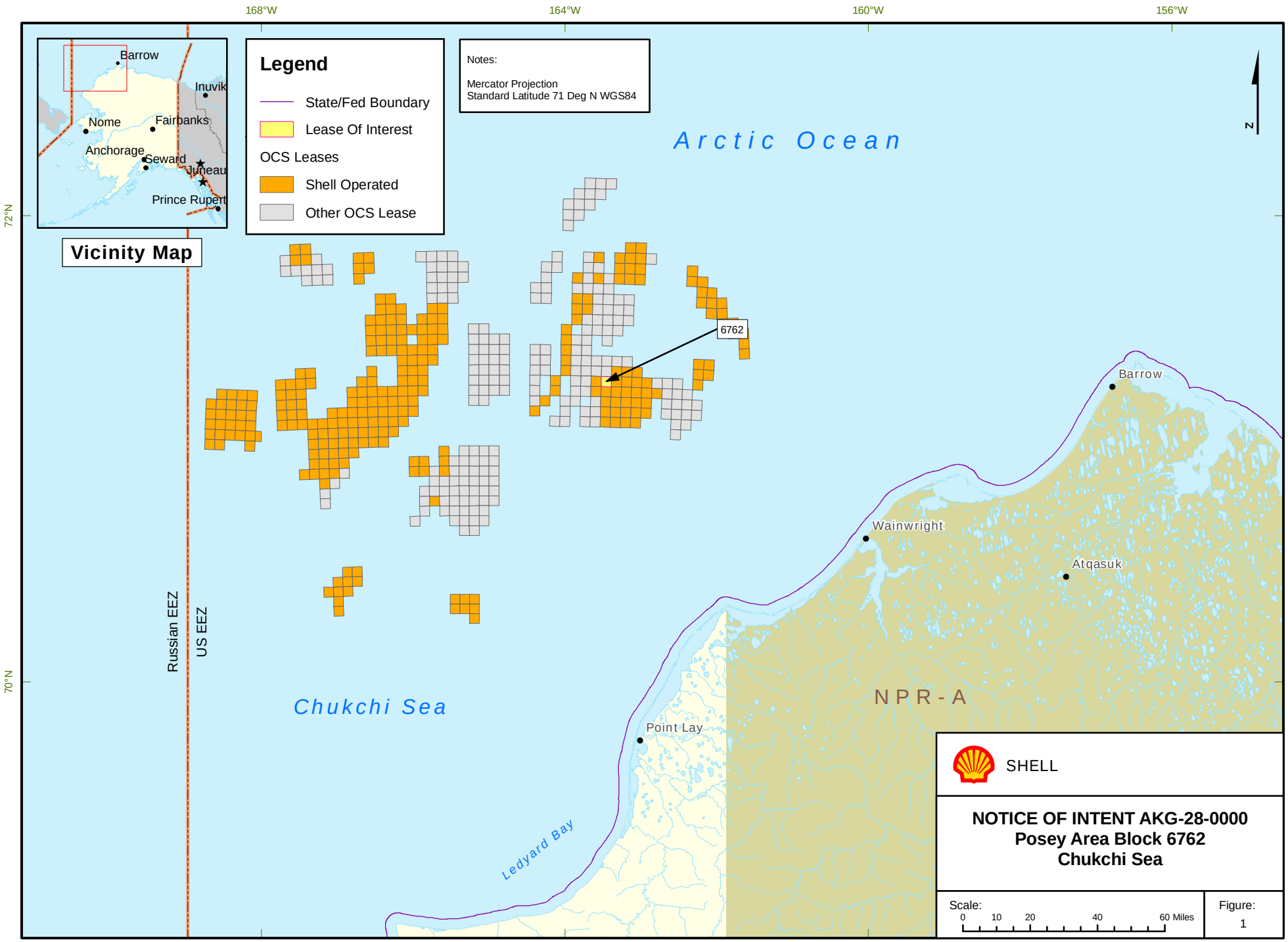
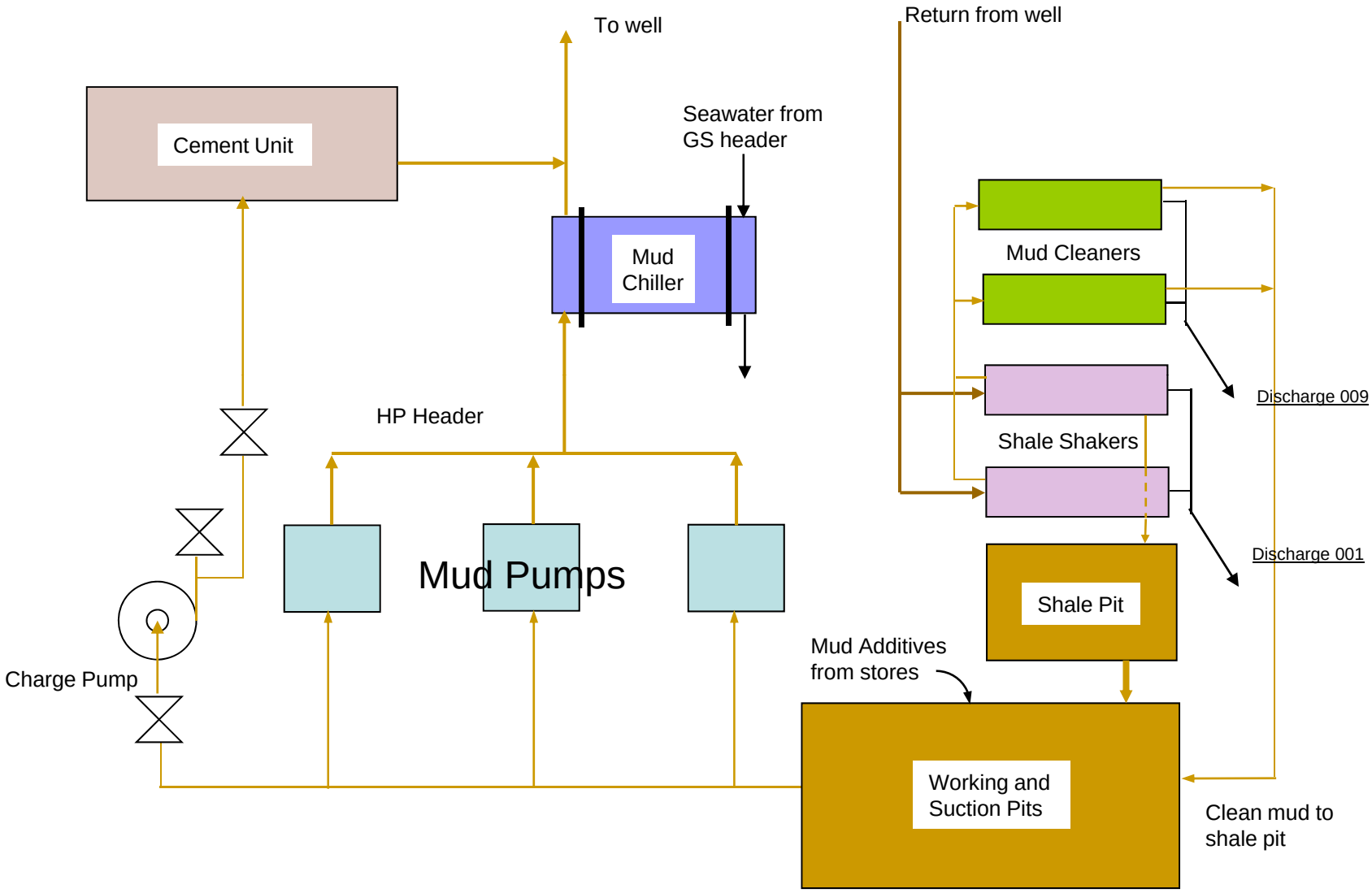

168°W
164°W
160°W
156°W
72°N
70°N
Barrow
Inuvik
Nome
Fairbanks
Anchorage
Seward
Juneau
Prince Rupert
Vicinity Map
Legend
State/Fed Boundary
Lease Of Interest
OCS Leases
Shell Operated
Other OCS Lease
Notes:
Mercator Projection
Standard Latitude 71 Deg N WGS84
N
Arctic Ocean
6762
Barrow
Wainwright
Atqasuk
Point Lay
N P R - A
Russian EEZ
US EEZ
Chukchi Sea
Ledyard Bay
SHELL
NOTICE OF INTENT AKG-28-0000
Posey Area Block 6762
Chukchi Sea
Scale:
0 10 20 40 60 Miles
Figure:
1
Shell AV GIS/12-14-2010/AKG-28-0000_Fig1_v1.mxd

TABLE 1
Types and Estimated Volume Ocean Discharges – Burger S Prospect

Type of Waste	Total Amount to be Discharged	Discharge Rate*	Discharge Method
Drill cuttings (from MLC through 26-inch section) Discharge 013	4,152 bbl/well (cuttings only; no drilling muds used)	346 bbl/day	Mud Line Cellar (MLC) through 26" section cuttings deposited at the seafloor
WBM spent drilling fluids – Discharge 001	3,327 bbl/well spent mud plus mud in tanks (if multiple wells drilled per season, water based muds will be transferred to and used at the next well)	166 bbl/day (including discharge of excess water based drilling fluid at end of the drilling season)	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Cuttings from water based intervals – Discharge 001	1,664 bbl/well	83 bbl/day	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Sanitary waste – Discharge 003	960 bbl/well	30 bbl/day	Treated in marine sanitary device prior to discharge to meet NPDES limits (based on 140 people at 9 gal/person/day)
Domestic waste – Discharge 004	10,667 bbl/well	333 bbl/day	Discharged to water through the disposal caisson (based on 140 people at 100 gal/person/day) Note: all food waste to be incinerated
Excess cement – Discharge 012	50 bbl/well	Two occasions at 1 bbl/min	Discharged at seafloor during 30-inch and 20-inch cementing operations
Desalination unit brine water – Discharge 005	4,000 bbl/well	125 bbl/day	Discharged to water through disposal caisson
Deck drainage – Discharge 002	160 bbl/well	5 bbl/day (dependent on rainfall)	Drains to the oily water separator. Uncontaminated water id discharged through the disposal caisson; contaminated water is stored in a waste oil tank then transferred by boat to an approved treatment/disposal site.
Cooling water – Discharge 009	1,440,000 bbl/well	45,000 bbl/day	Discharged to water through a number of outlets
Firewater - Discharge 008	0	0 bbl/month	No routine firewater system testing anticipated
Ballast water – Discharge 010	160 bbl/well	5 bbl/day	Discharged to sea through disposal caisson
Bilge water – Discharge 011	404 bbl/well	13 bbl/day	Treated in oily water separator, uncontaminated water discharged to sea through disposal caisson, oily water stored onboard, transferred for transport by boat to an approved disposal site
BOP fluid – Discharge 006	42 bbl/well (6 tests; 7 bbl per test)	7 bbl/test	Discharged subsea at BOP when testing BOP

* assumes 12 days to complete the MLC through 26-inch section; 20 days to complete the remainder of the well

Figure 1. Drilling Fluid Flowpath



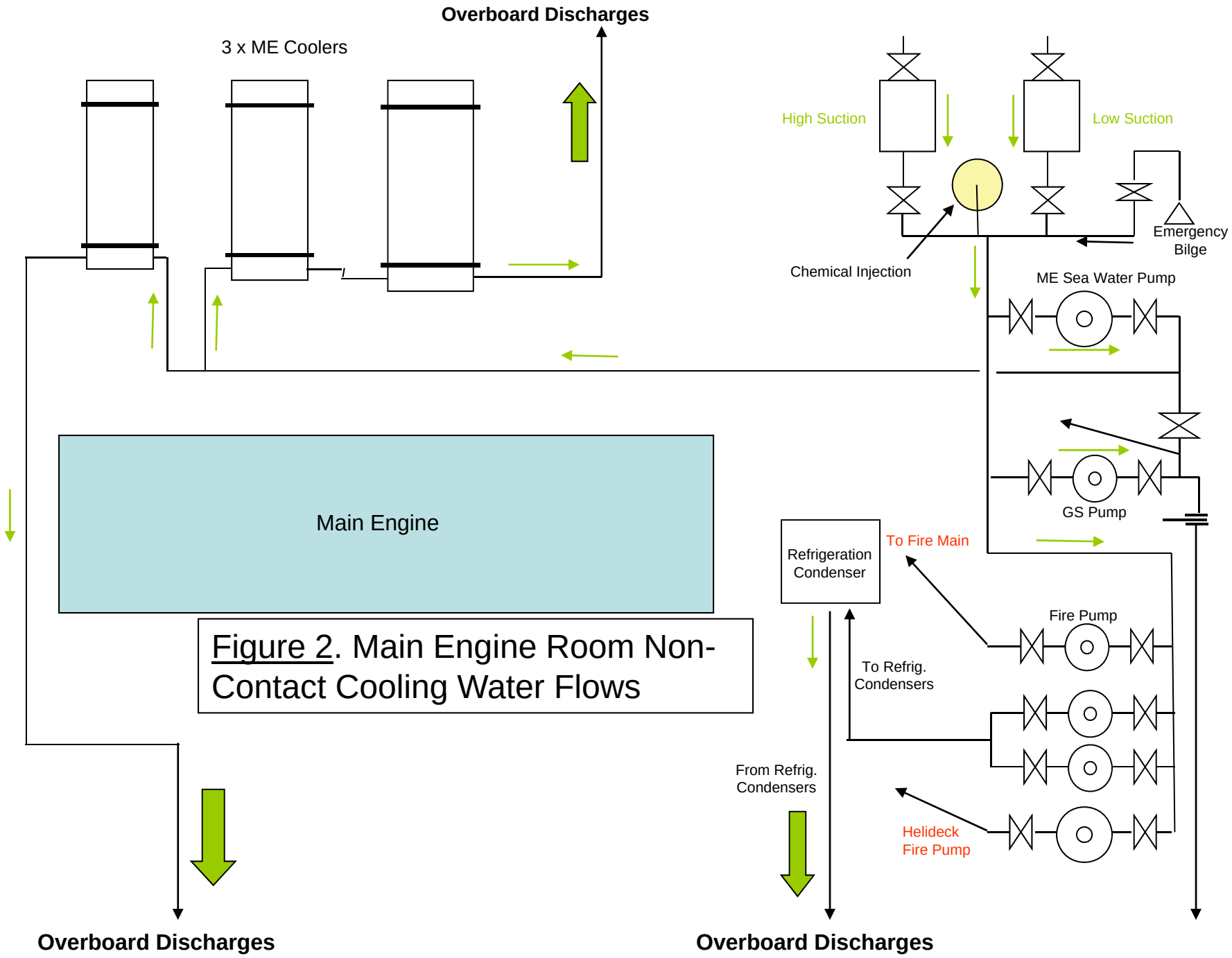


Figure 2. Main Engine Room Non-Contact Cooling Water Flows

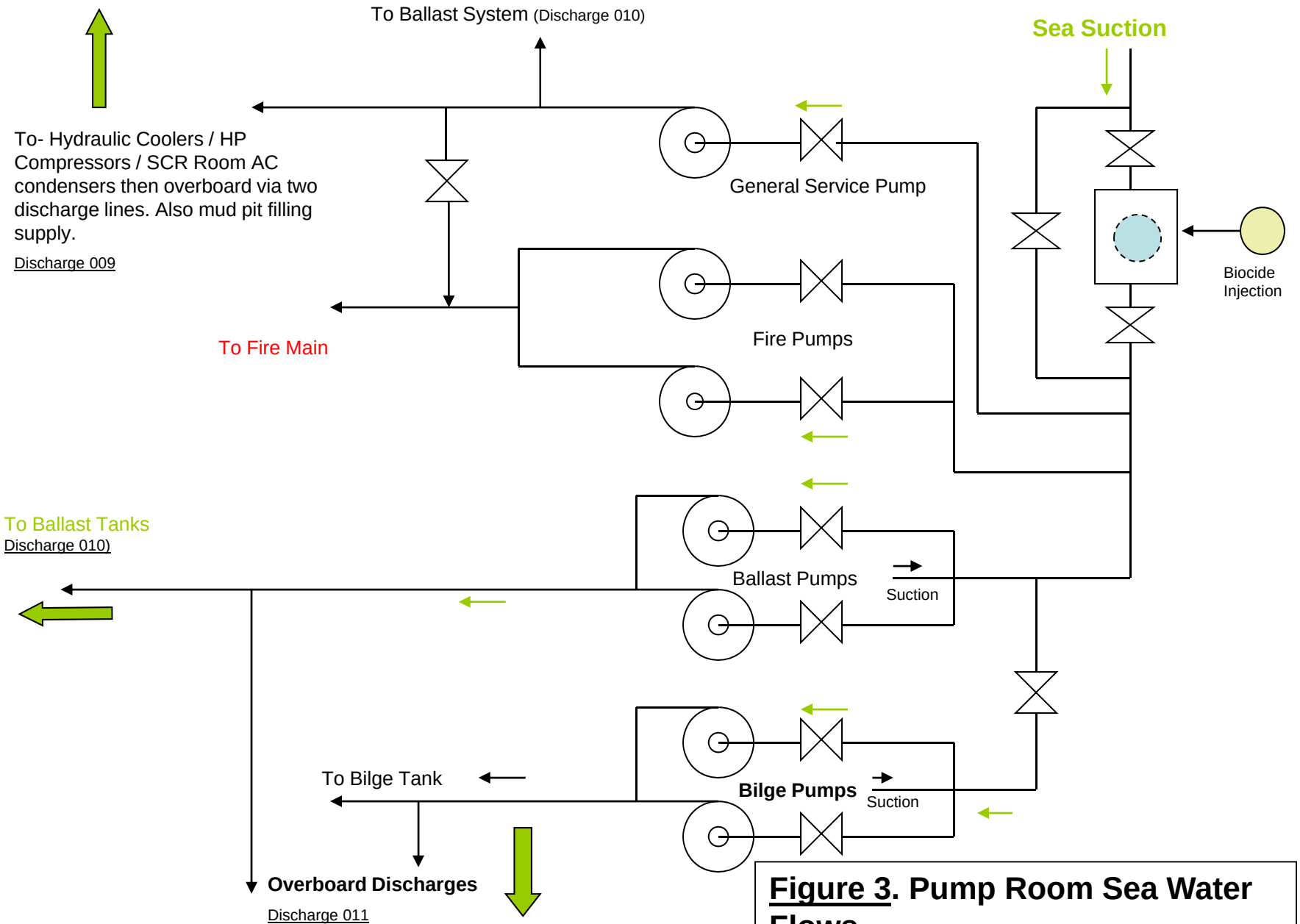
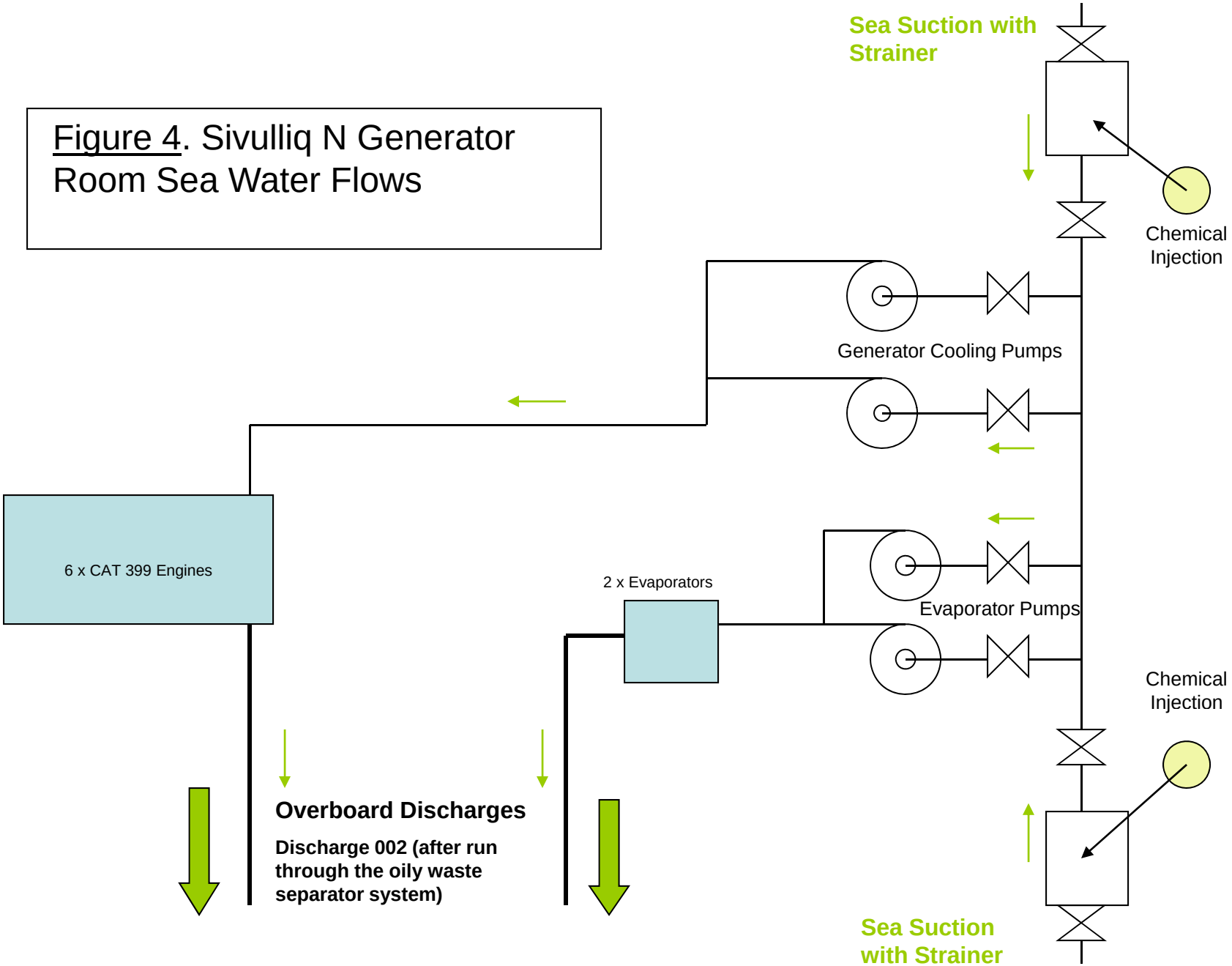


Figure 3. Pump Room Sea Water Flows

Figure 4. Sivulliq N Generator Room Sea Water Flows



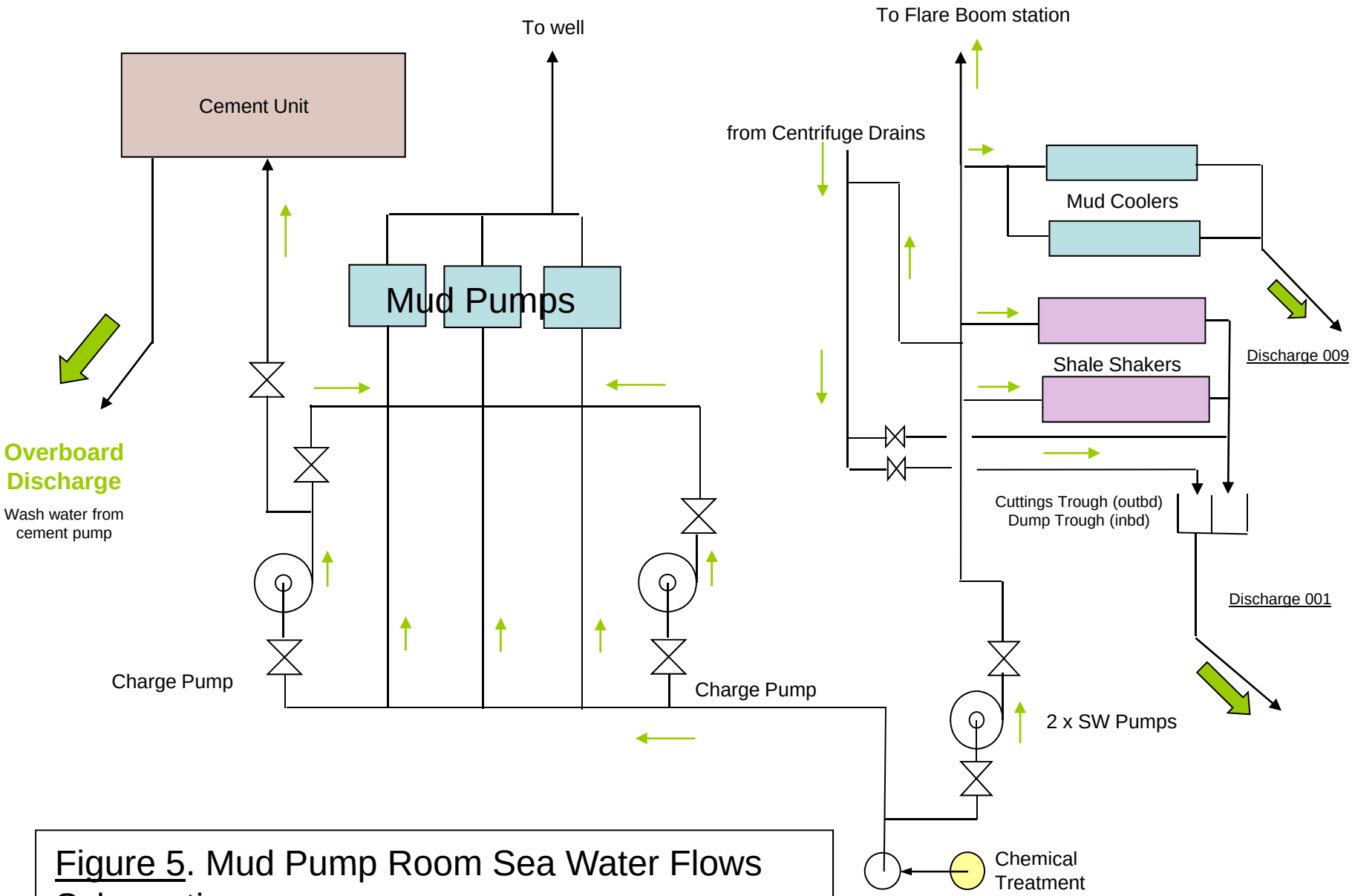
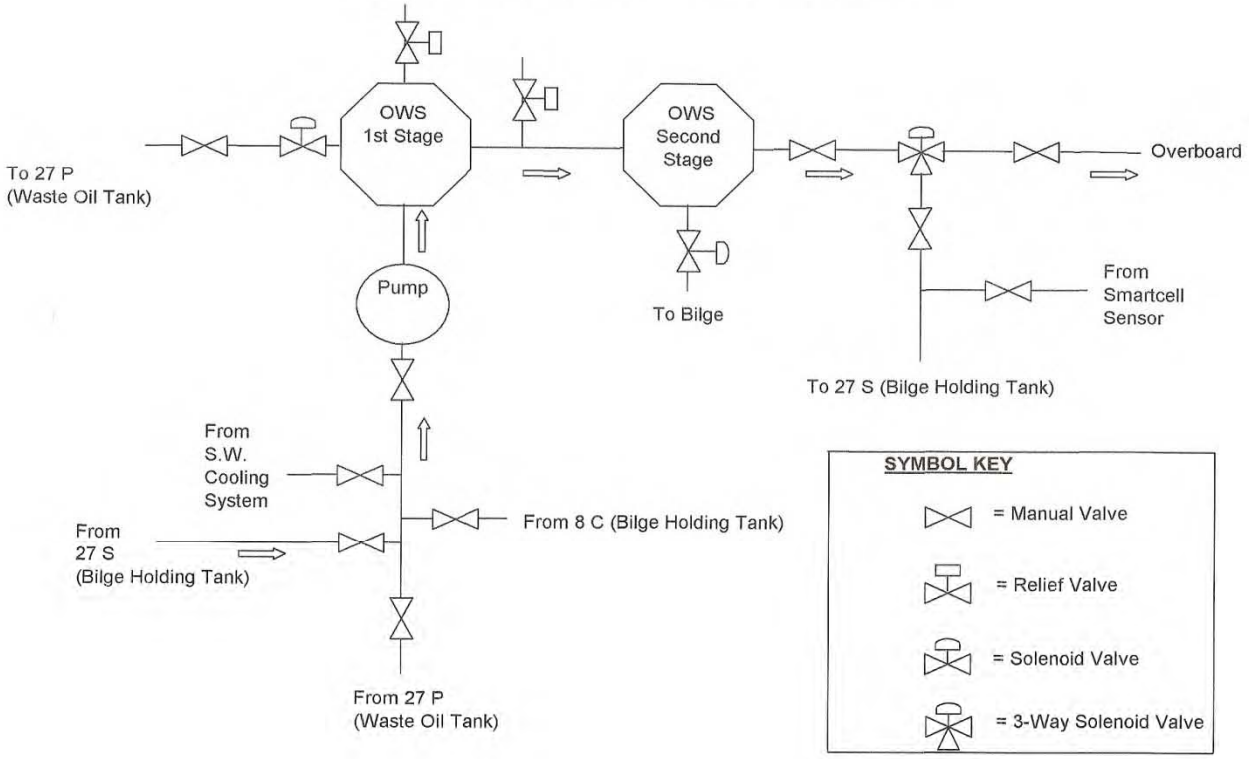


Figure 5. Mud Pump Room Sea Water Flows Schematic

Oily Water Separator System



Discharge Caisson

The discharge caisson is a pipe that runs vertically through the sponson on the hull of the drillship from the main deck level to the base of the sponson. The sponson is an exterior reinforced cladding installed on the *Discoverer* to provide ice resistance. It is hollow and extends from the main deck level to well below the water line.

Waste streams are collected aboard the drillship to a point on the main deck near the mud room. A 15-in. diameter pipe exits the hull, turns downwards and is connected to the top of the discharge caisson.

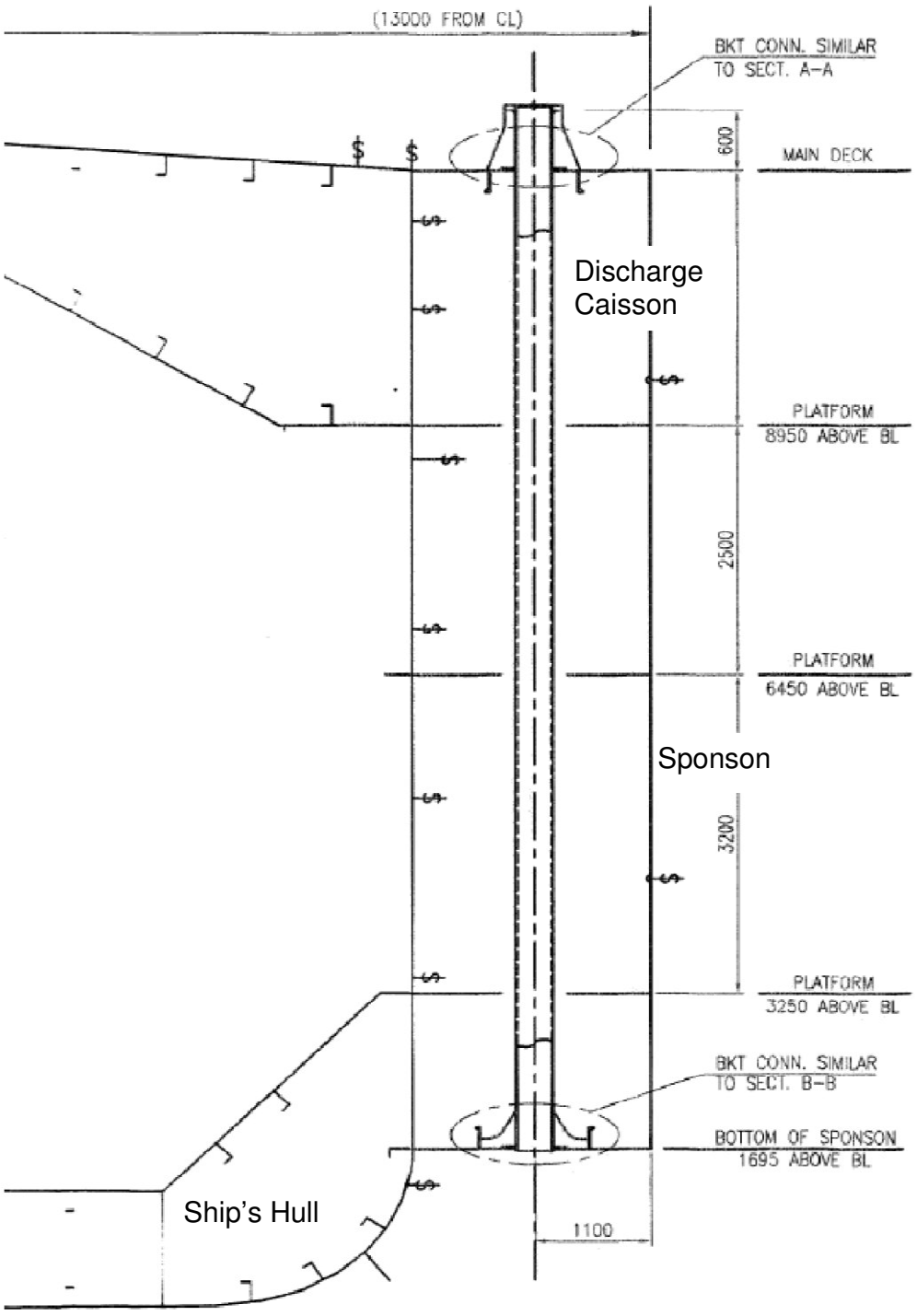
The discharge caisson, also a 15-in OD pipe, is welded into the sponson top and bottom (so that the interior of the sponson remains dry). The bottom of the sponson and the end of the discharge caisson is 5.6 ft (1.7 m) above the keel depth, and since it remains open to the sea at all times, the discharge caisson is constantly filled with water to mean sea level. This caisson is not equipped with a "float" valve; it is merely an open conduit to the sea through which most waste streams are discharged below sea level.

The *Discoverer* has the following draft characteristics:

Max draft at load line:	27 ft (8.2 m)
Transit draft	26.3 ft (8.0 m)
Drilling draft	25.2 ft (7.7 m)
Light ship draft	19.0 ft (5.8 m)

With the bottom of the sponson 5.6 ft above the keel, the base of the discharge caisson while drilling is 25.2 ft – 5.6 ft = 19.6 ft (6.0 m) below mean sea level. Because of heave, the water level inside the caisson is constantly changing.

See attached schematic drawings: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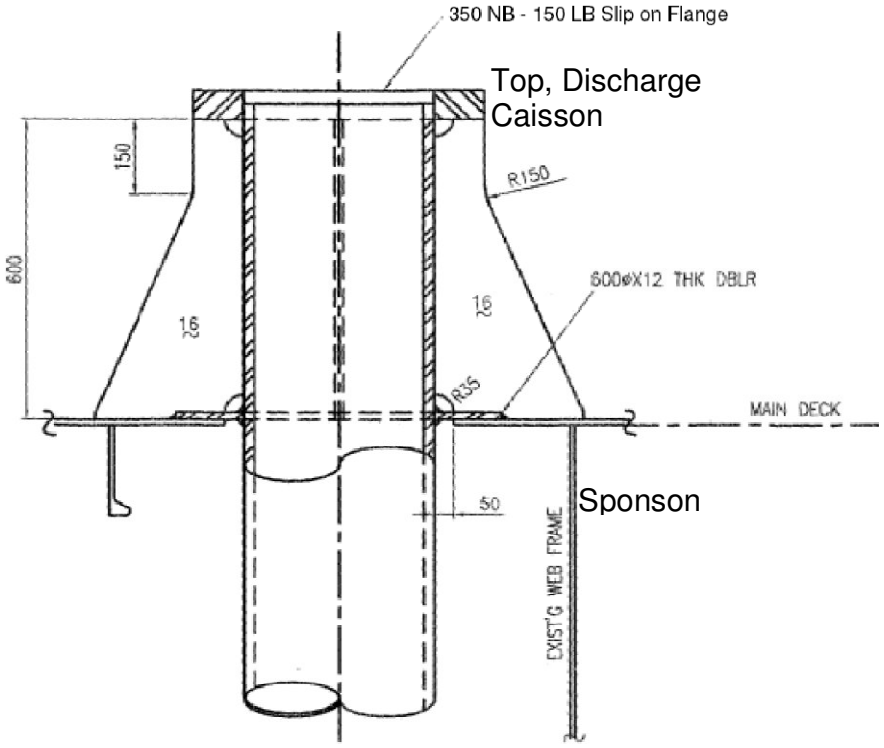
TO SECT. A-A
600
MAIN DECK
Discharge
Caisson
PLATFORM
8950 ABOVE BL
2500
PLATFORM
6450 ABOVE BL
Sponson
3200
PLATFORM
3250 ABOVE BL
BKT CONN. SIMILAR
TO SECT. B-B
BOTTOM OF SPONSON
1695 ABOVE BL
Ship's Hull
1100



SECTION A–A
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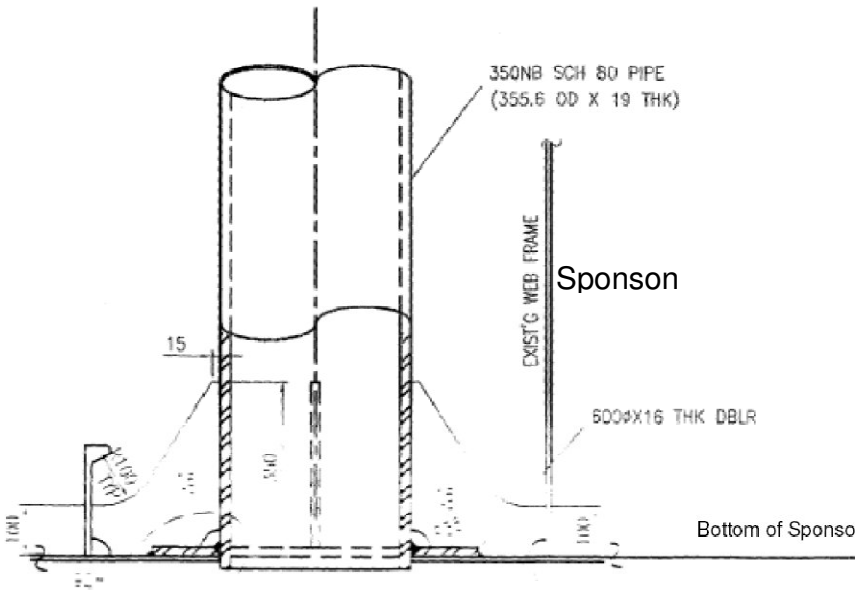


Section B-B
Base, Discharge Caisson

ATTACHMENT 1

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

APPLICANT *(Owner/Operator)*			
Owner Name:	Shell Gulf of Mexico Inc.	Operator Mailing Address:	3601 C Street
Telephone Number:	907-770-3700		Suite 1000
Operator Name:	Shell Gulf of Mexico Inc.		Anchorage, AK 99503
Telephone Number:	907-770-3700		

FACILITY			
Facility Name:	Noble Discoverer	Facility Mailing Address:	3601 C Street
Contact Name:	Susan Childs		Suite 1000
Telephone Number:	907-770-3700		Anchorage, AK 99503
Beginning Date of Operation:	TBD	Stationary Facilities	Latitude:
Expected Duration of Operation:	31 days per well site		Longitude:
Facility Type *(check applicable type)*	☐ Jackup ☒ Drill Ship ☐ Semisubmersible ☐ Other (specify):	Mobile Facilities	Initial Latitude: TBD Initial Longitude: TBD

Submit a site map showing the exact location of facility and discharges associated with the project. Mobile facilities may designate an area where they may be operating and must include a map showing those areas and a description of operations within those areas. If the discharge is within 4000 meters of an environmentally sensitive area indicated by the permit, those areas and their distance from the operation/discharge must be shown on the map.

RECEIVING WATER			
☒	Chukchi Sea	☐	Other (*specify*): ☐
☐	Beaufort Sea		

Supply confirmation with the U.S. Department of State and NOAA that the discharge is seaward of the inner boundary baseline, if applicable.

LOCATION OF DISCHARGE					
MMS	Lease Number	**OCS-Y-2324**	ADNR	Lease Number	**N/A**
	Block Number	**Posey Area Block 6915**		Block Number	**N/A**
Range of water depths below mean lower low water (MLLW) in the lease block:		From: **145'**		To:	**145'**

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Discharges (*check all that apply)*			
☒	001 Drilling Mud and Cuttings	Water Depth:	**19.6'**
☒	002 Deck Drainage	Water Depth:	**19.6'**
☒	003 Sanitary Waste	Water Depth:	**19.6'**
☒	004 Domestic Waste	Water Depth:	**19.6'**
☒	005 Desalination Unit Waste	Water Depth:	**19.6'**
☒	006 Blowout Preventer Fluid	Water Depth:	**145'**
☐	007 Boiler Blowdown	Water Depth:	
☐	008 Fire Control System Test Water	Water Depth:	
☒	009 Non-Contact Cooling Water	Water Depth:	**on the surface at several locations**
☒	010 Uncontaminated Ballast Water	Water Depth:	**19.6'**
☒	011 Bilge Water	Water Depth:	**19.6'**
☒	012 Excess Cement Slurry	Water Depth:	**19.6'**
☒	013 Mud, Cuttings, Cement and Seafloor	Water Depth:	**MLC through 26" section cuttings at 135'; excess cement at 145'**
☐	014 Test Fluid	Water Depth:	

Provide a brief description of the treatment process(es) and disposal practices (e.g., backhauled, reinjected, discharged, etc.) at the facility. See attached (Table 1)

Provide a line drawing that shows flow of discharged waste streams through the facility. Indicate intake sources, operations contributing to the effluent, and treatment units labeled to correspond to the discharges (001 – 014). Construct a flow balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a flow balance cannot be determined, provide a pictorial description of the nature and amount of any sources, and any collection or treatment measures.

Well Information

Well Name:	**Burger**	Latitude:	**TBD**
Well Number:	**V**	Longitude:	**TBD**
Beginning Drill Date:	**TBD**	Hole Diameter or Estimated Total Discharge Volume:	**36" diameter at surface, reducing through 4 stages to 8.5" at depth**

Drilling Fluid

Category (*check all that apply*)	☒	Water-based	Group (*check all that apply*)	☐	Lignosulfonate
	☐	Oil-based		☐	Lime
	☐	Synthetic-based		☐	Gyp
	☐	Other (*specify*):		☒	Sea-water

				☒	Saltwater
				☐	Saturated Saltwater
				☒	Nondispersed (Viscosifier/Polymer) PH/PA

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Zone of Deposit Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a Zone of Deposit from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A ZONE OF DEPOSIT. The burden of proof for justifying a zone of deposit through demonstrating compliance with the requirements of 18 AAC 70.210 rests with the applicant.

Distance from shoreline of discharge point (measured at M.L.L.W.):		Average Mud density:	
Depth of discharge (measured at M.L.L.W.):		Flow Rate:	
Orientation of outfall to shoreline (e.g., perpendicular, 45°, parallel):		Total Volume:	
Orientation of outfall to water surface (e.g., perpendicular, 45°, parallel):		Maximum current and direction:	

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

Mixing Zone Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a mixing zone from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 through 18 AAC 70.270 rests with the applicant.

Distance from shoreline of discharge point or first port of diffuser (measured at M.L.L.W.):		Length of diffuser:	
Depth of discharge port or diffuser (measured at M.L.L.W.):		Diameter of port(s):	
Orientation of diffuser to shoreline (e.g., perpendicular, 45°, parallel):		Number of ports:	
Maximum current:		Port spacing:	

USE OF RECEIVING WATER AT DISTANCE FROM DIFFUSER i.e., Supply for drinking water, Supply for agriculture including irrigation & stock water, Supply for aquaculture, Supply for industrial use, Contact recreation, Secondary recreation, Fish spawning, Harvesting and consumption of raw fish, or other aquatic life (Not needed if not requesting a mixing zone from ADEC):

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Special Conditions (*provide justification for all that are not required, completed or provided)*					
Special Monitoring	☐	Required	☒	Not Required	Justification:
Exploration Plans	☐	Attached	☒	Not Provided	Justification: TBD
Biological Surveys	☐	Attached	☒	Not Provided	Justification: None required
Environmental Report(s)	☐	Attached	☒	Not Provided	Justification: Will be submitted to BOEM as part of the Exploration Plan
Drilling Fluid Plan	☐	Complete	☒	Not Complete	Justification: In Preparation

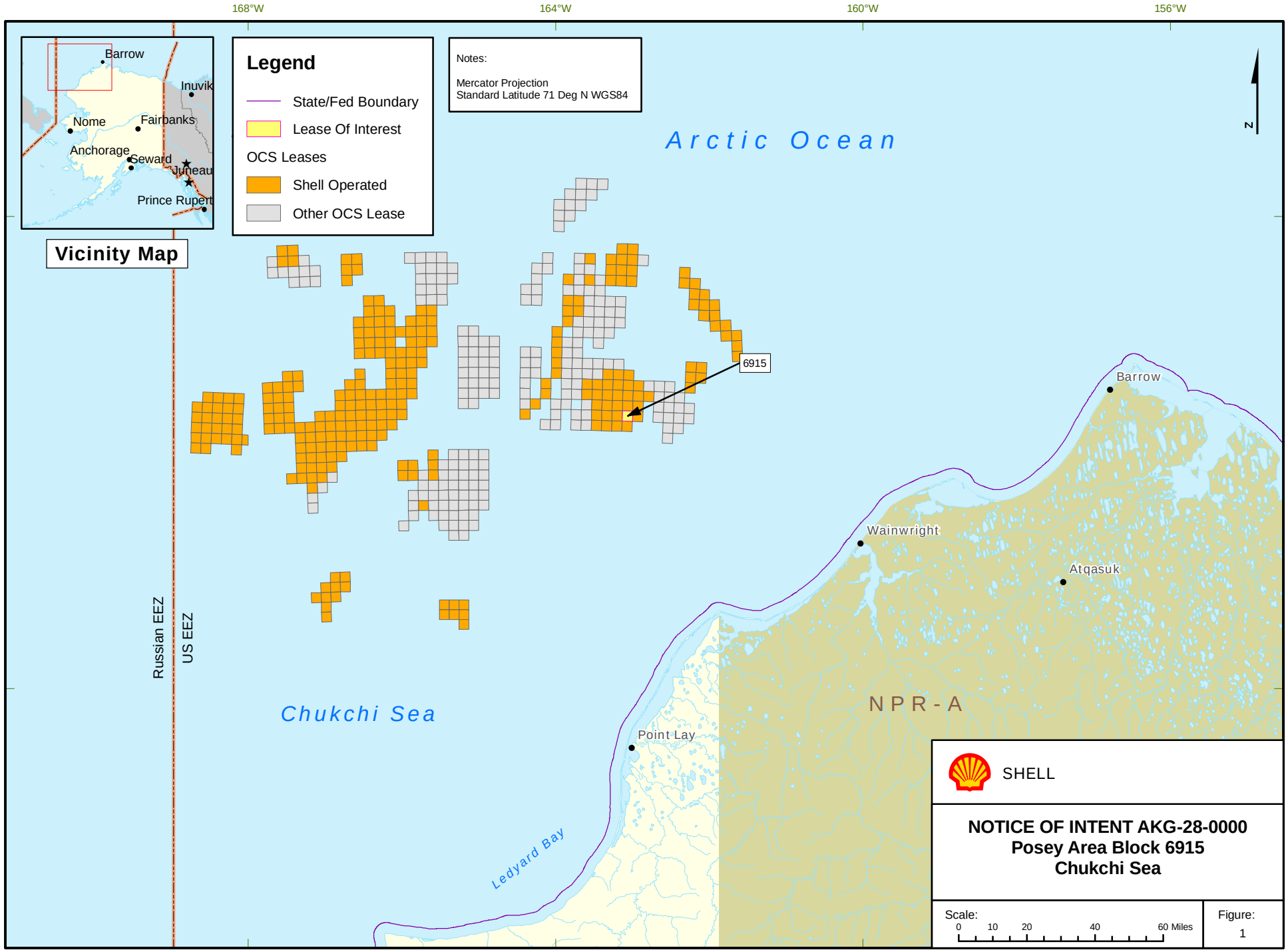
Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:	Susan Childs	Date:	12/16/2010
Printed Name:	Susan Childs	Title:	Alaska Support Intergrator Manager

Mail Completed NOI to EPA and ADEC at the following addresses:

US EPA 1200 6th Avenue, M/S OWW-130 Seattle, WA 98101	ADEC, Water Division 555 Cordova Street Anchorage, Alaska 99501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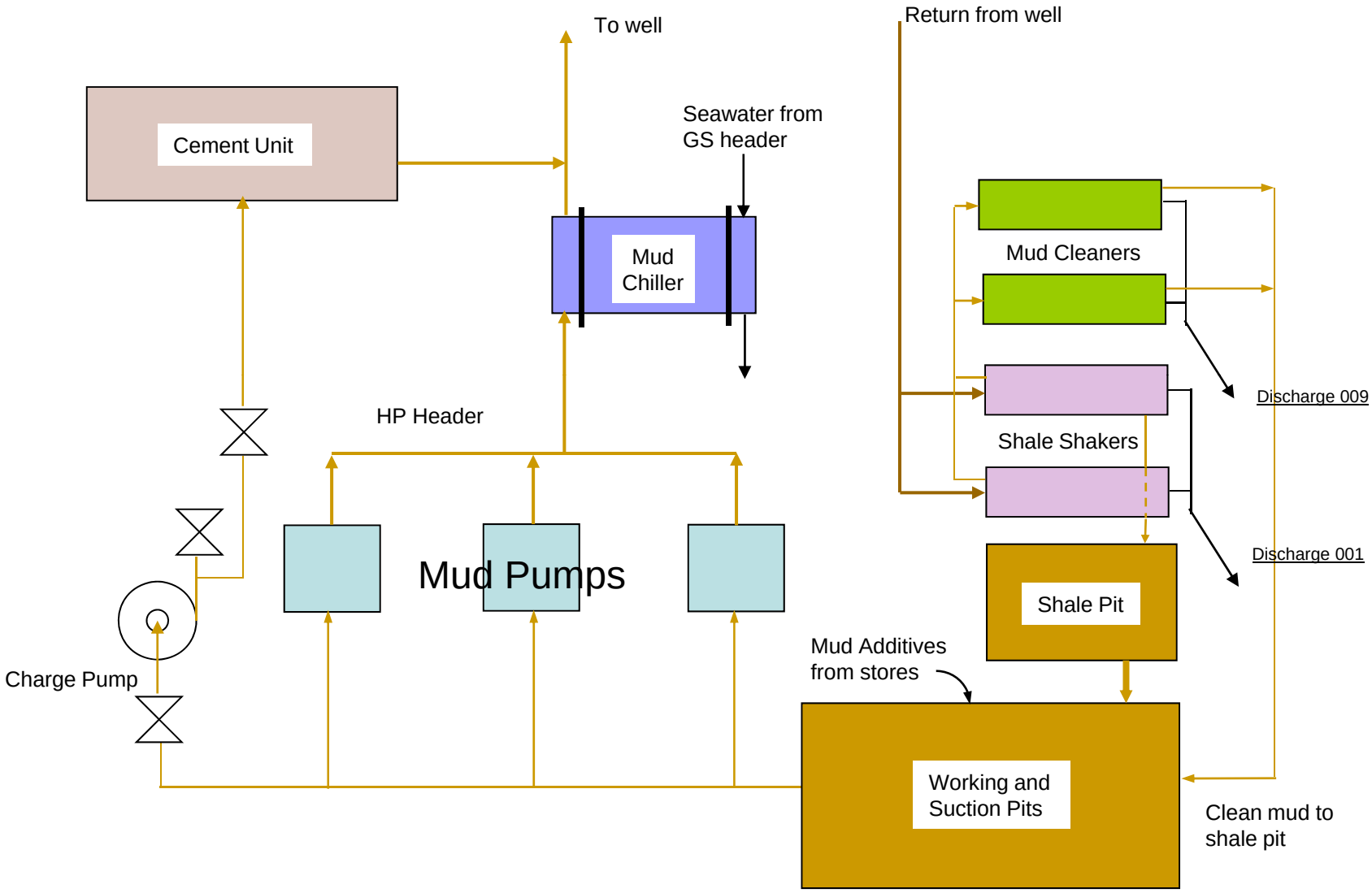
164°W
160°W
156°W
72°N
70°N
Barrow
Inuvik
Nome
Fairbanks
Anchorage
Seward
Juneau
Prince Rupert
Vicinity Map
Legend
State/Fed Boundary
Lease Of Interest
OCS Leases
Shell Operated
Other OCS Lease
Notes:
Mercator Projection
Standard Latitude 71 Deg N WGS84
N
Arctic Ocean
6915
Barrow
Wainwright
Atqasuk
Point Lay
N P R - A
Russian EEZ
US EEZ
Chukchi Sea
Ledyard Bay
SHELL
NOTICE OF INTENT AKG-28-0000
Posey Area Block 6915
Chukchi Sea
Scale:
0 10 20 40 60 Miles
Figure:
1
Shell AV GIS/12-14-2010/AKG-28-0000_Fig1_v1.mxd

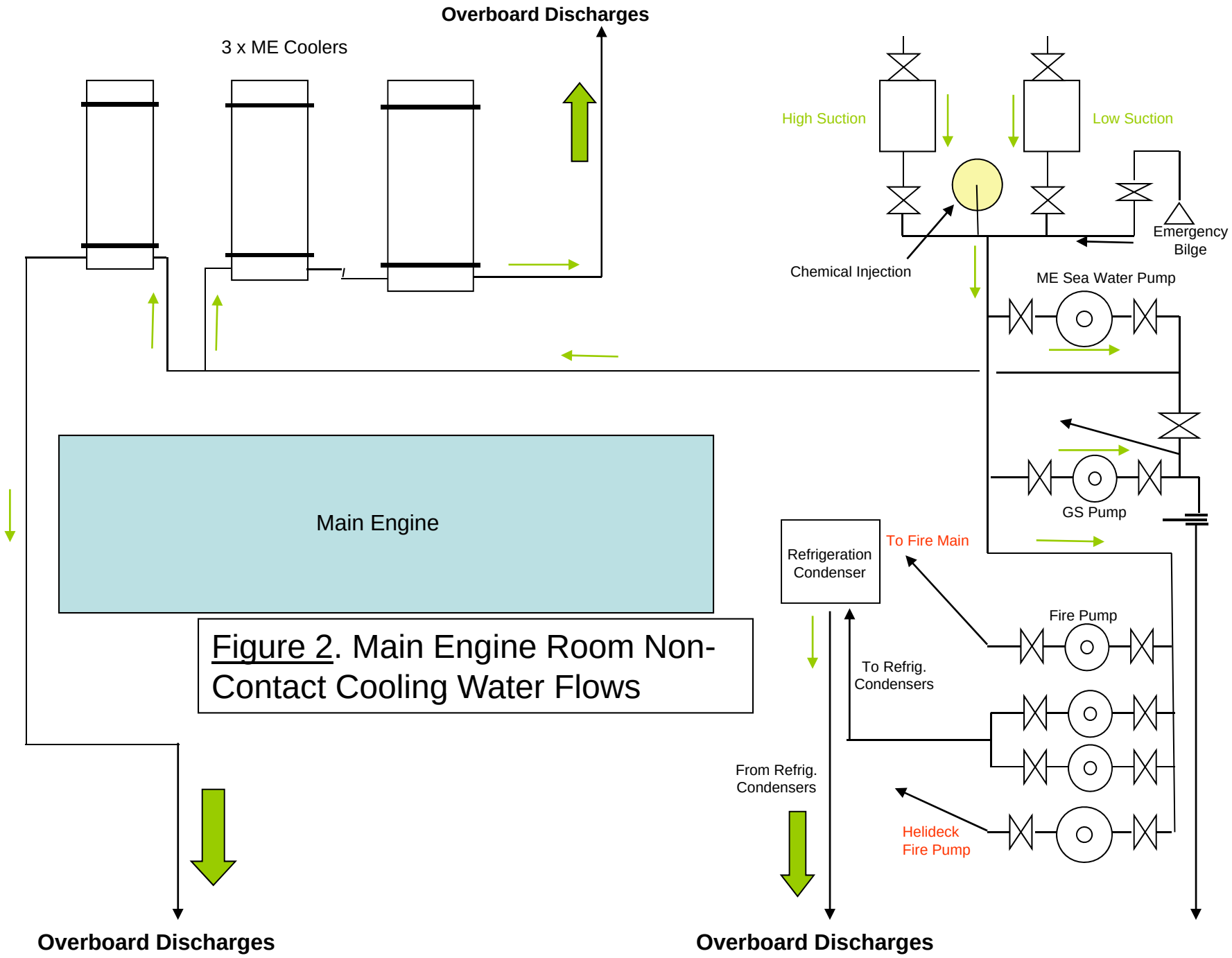
TABLE 1
Types and Estimated Volume Ocean Discharges – Burger V Prospect

Type of Waste	Total Amount to be Discharged	Discharge Rate*	Discharge Method
Drill cuttings (from MLC through 26-inch section) Discharge 013	4,152 bbl/well (cuttings only; no drilling muds used)	346 bbl/day	Mud Line Cellar (MLC) through 26" section cuttings deposited at the seafloor
WBM spent drilling fluids – Discharge 001	3,291 bbl/well spent mud plus mud in tanks (if multiple wells drilled per season, water based muds will be transferred to and used at the next well)	173 bbl/day (including discharge of excess water based drilling fluid at end of the drilling season)	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Cuttings from water based intervals – Discharge 001	1,645bbl/well	87 bbl/day	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Sanitary waste – Discharge 003	10,333 bbl/well	30 bbl/day	Treated in marine sanitary device prior to discharge to meet NPDES limits (based on 140 people at 9 gal/person/day)
Domestic waste – Discharge 004	2573 bbl/well	333 bbl/day	Discharged to water through the disposal caisson (based on 140 people at 100 gal/person/day) Note: all food waste to be incinerated
Excess cement – Discharge 012	50 bbl/well	Two occasions at 1 bbl/min	Discharged at seafloor during 30-inch and 20-inch cementing operations
Desalination unit brine water – Discharge 005	3,875 bbl/well	125 bbl/day	Discharged to water through disposal caisson
Deck drainage – Discharge 002	155 bbl/well	5 bbl/day (dependent on rainfall)	Drains to the oily water separator. Uncontaminated water id discharged through the disposal caisson; contaminated water is stored in a waste oil tank then transferred by boat to an approved treatment/disposal site.
Cooling water – Discharge 009	1,395,000 bbl/well	45,000 bbl/day	Discharged to water through a number of outlets
Firewater - Discharge 008	0	0 bbl/month	No routine firewater system testing anticipated
Ballast water – Discharge 010	155 bbl/well	5 bbl/day	Discharged to sea through disposal caisson
Bilge water – Discharge 011	391 bbl/well	13 bbl/day	Treated in oily water separator, uncontaminated water discharged to sea through disposal caisson, oily water stored onboard, transferred for transport by boat to an approved disposal site
BOP fluid – Discharge 006	42 bbl/well (6 tests; 7 bbl per test)	7 bbl/test	Discharged subsea at BOP when testing BOP

* assumes 12 days to complete the MLC through 26-inch section; 19 days to complete the remainder of the well

Figure 1. Drilling Fluid Flowpath





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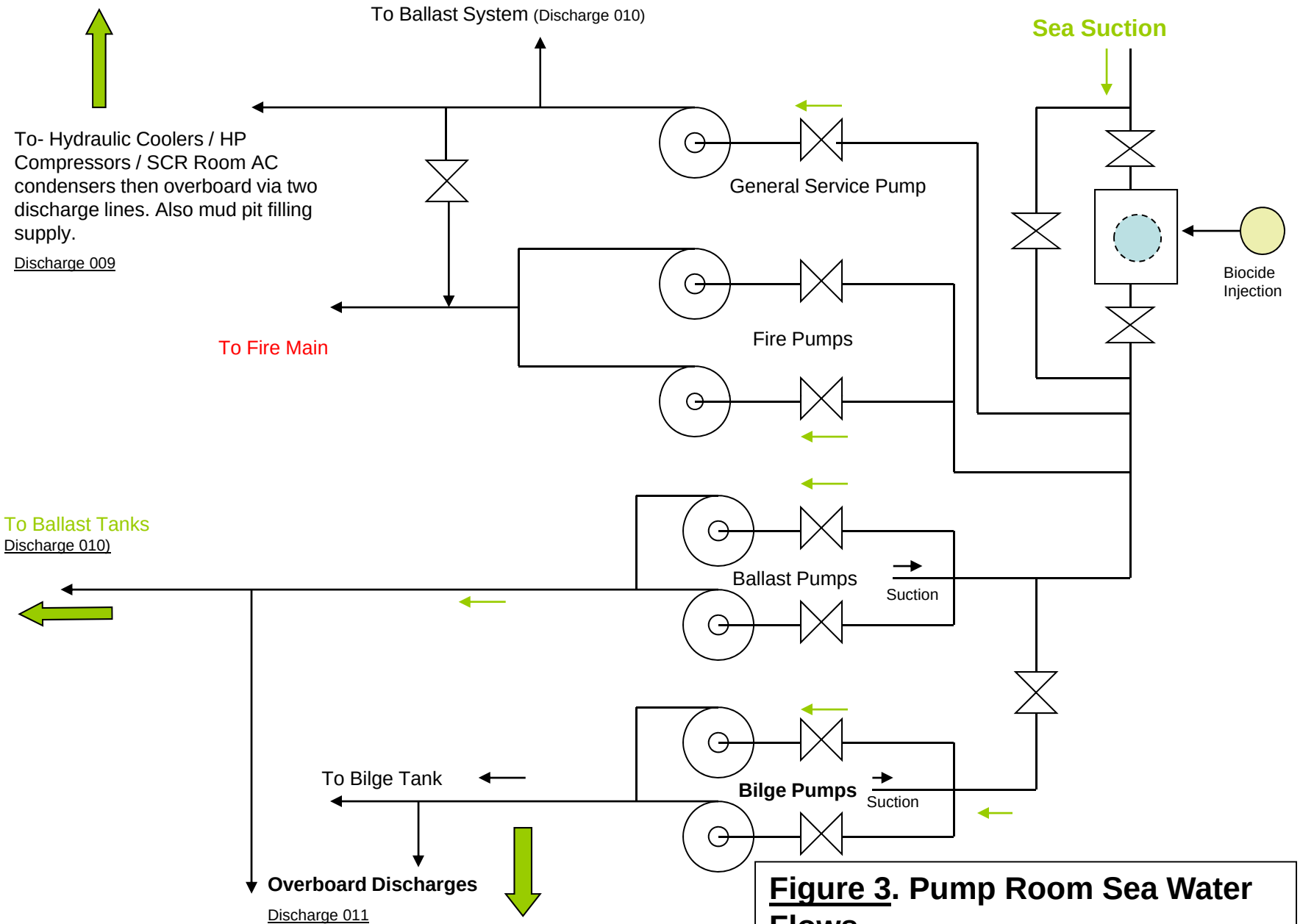
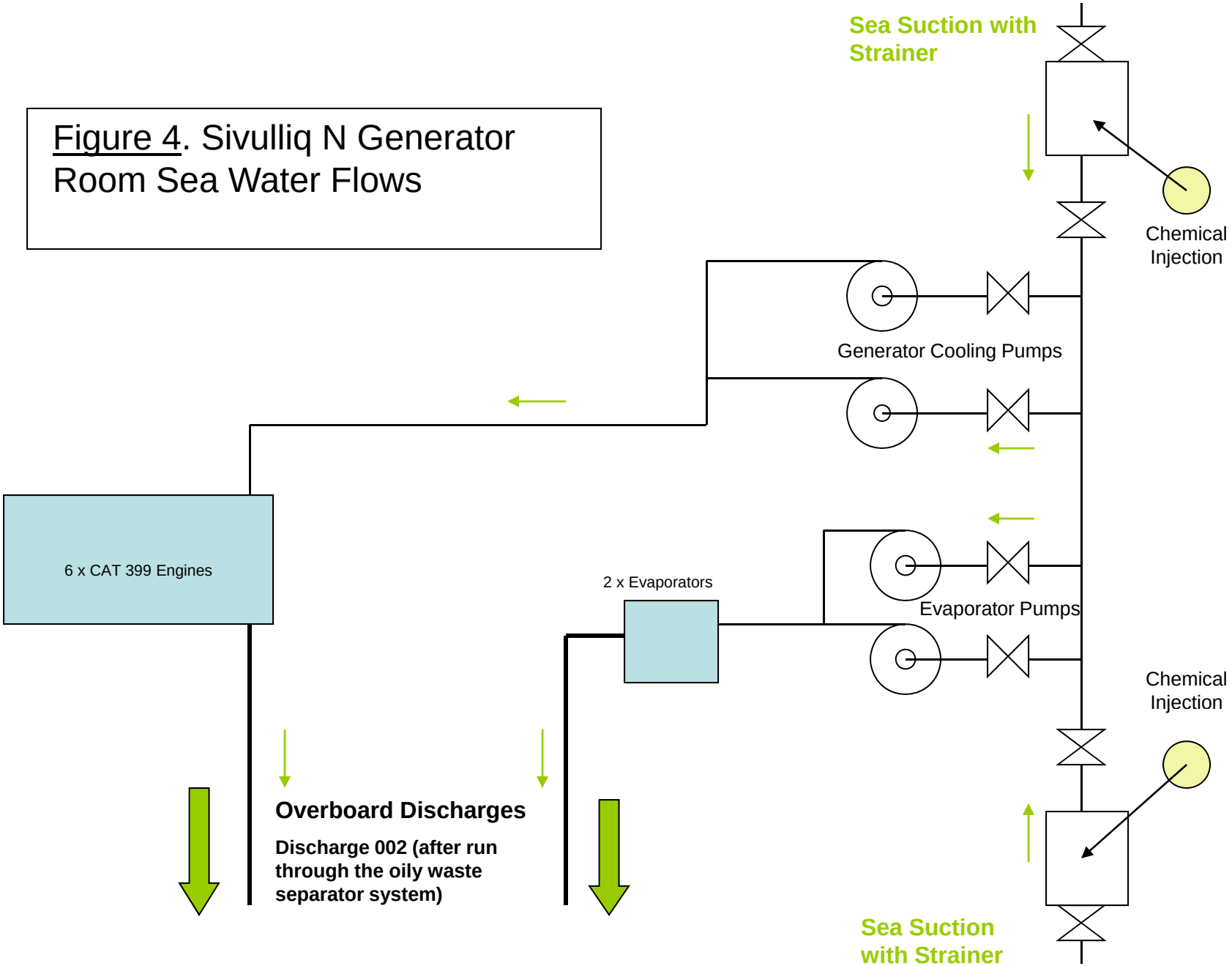


Figure 3. Pump Room Sea Water Flows

Figure 4. Sivulliq N Generator Room Sea Water Flows



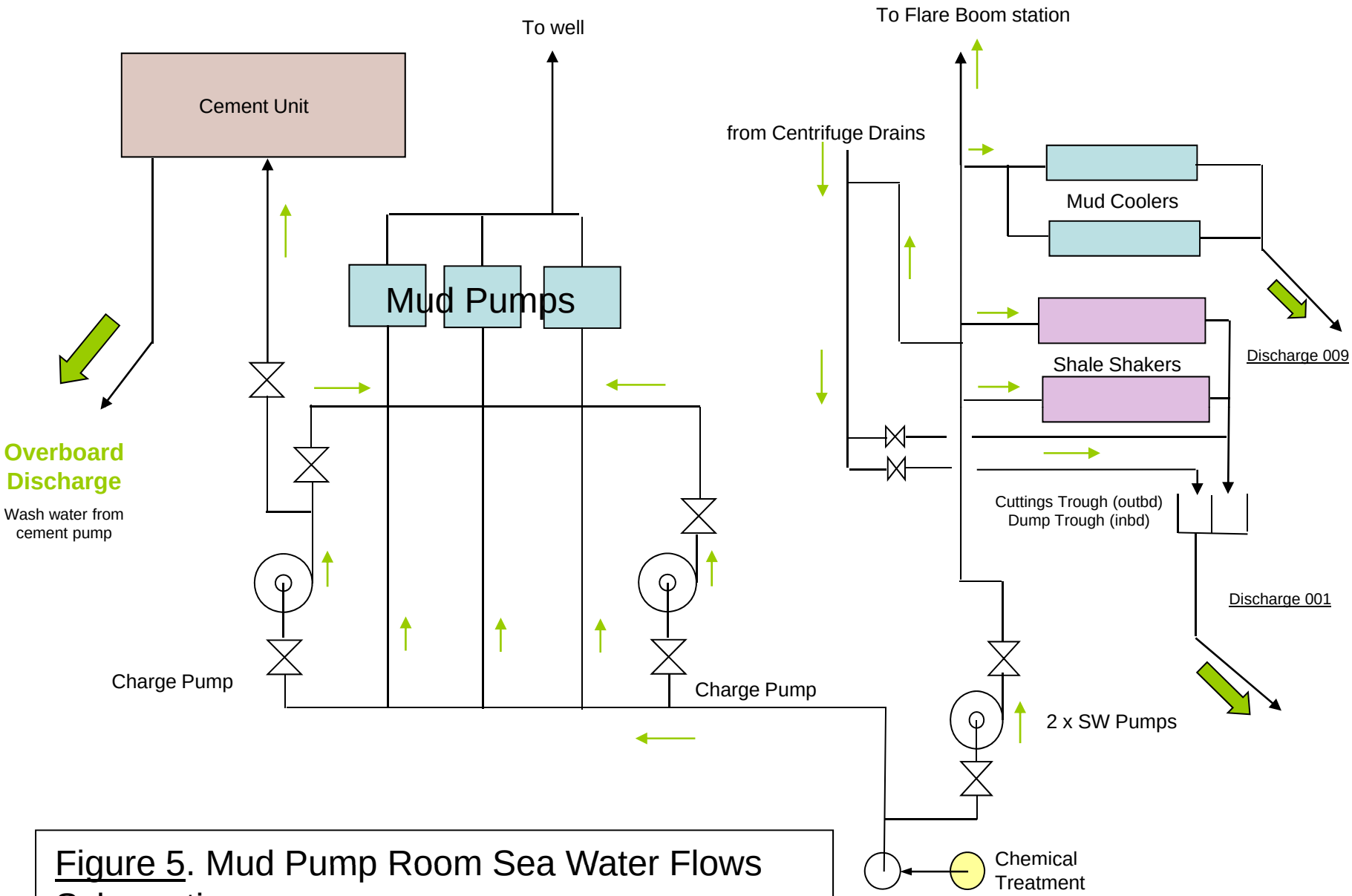
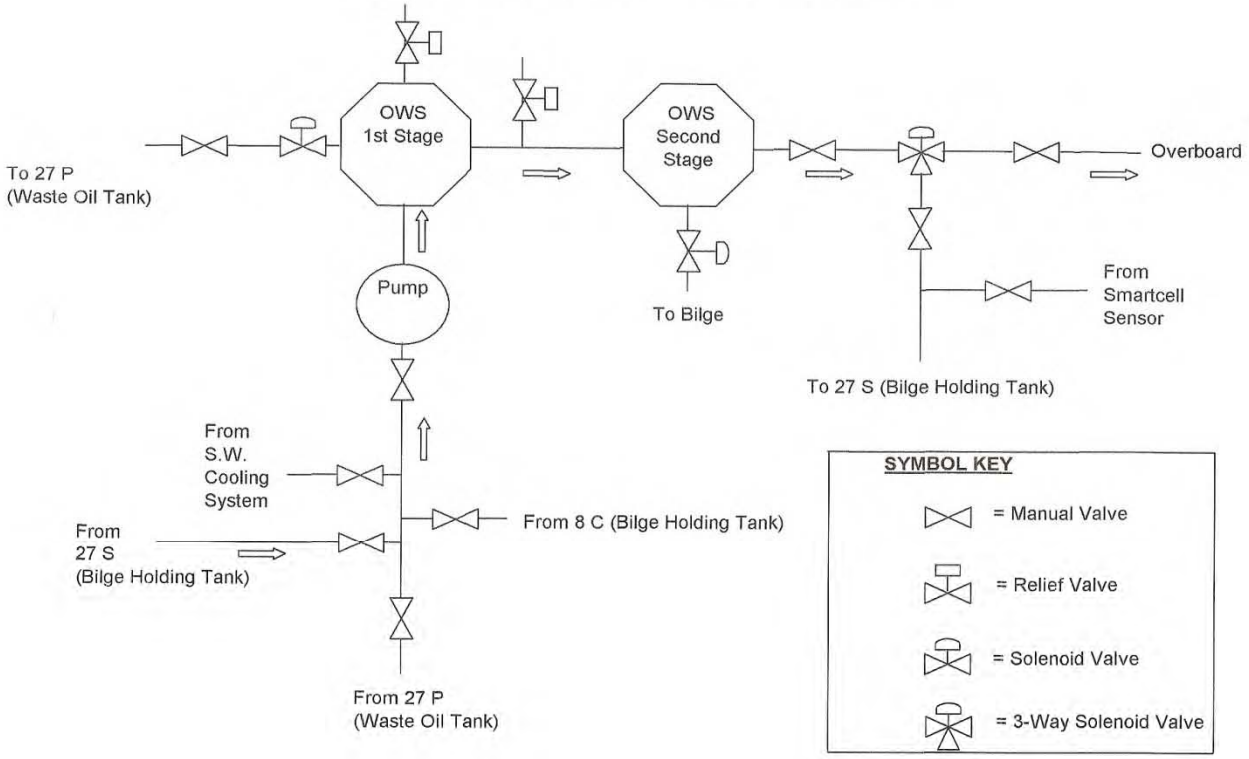


Figure 5. Mud Pump Room Sea Water Flows Schematic

Oily Water Separator System



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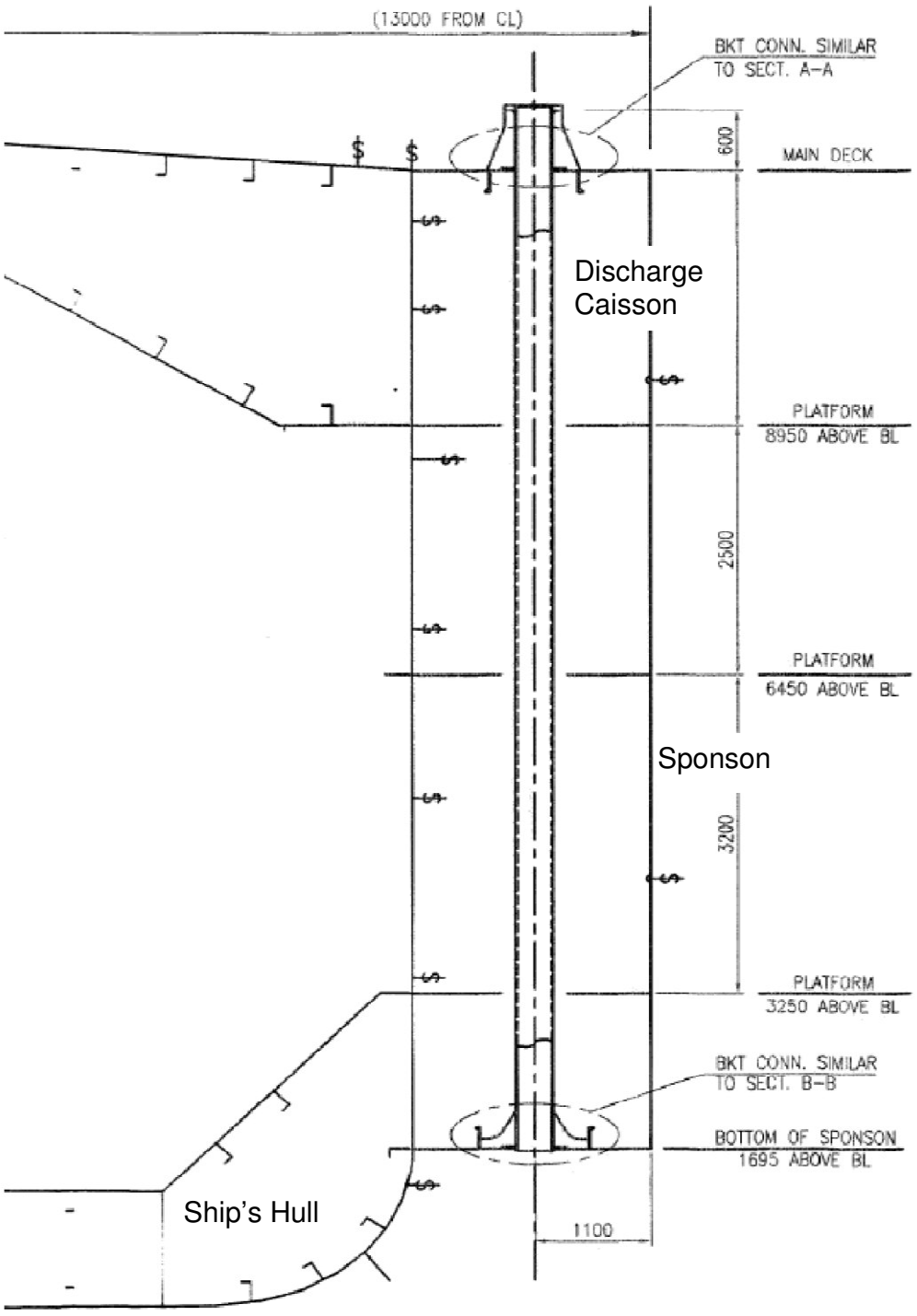
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BOTTOM OF SPONSON
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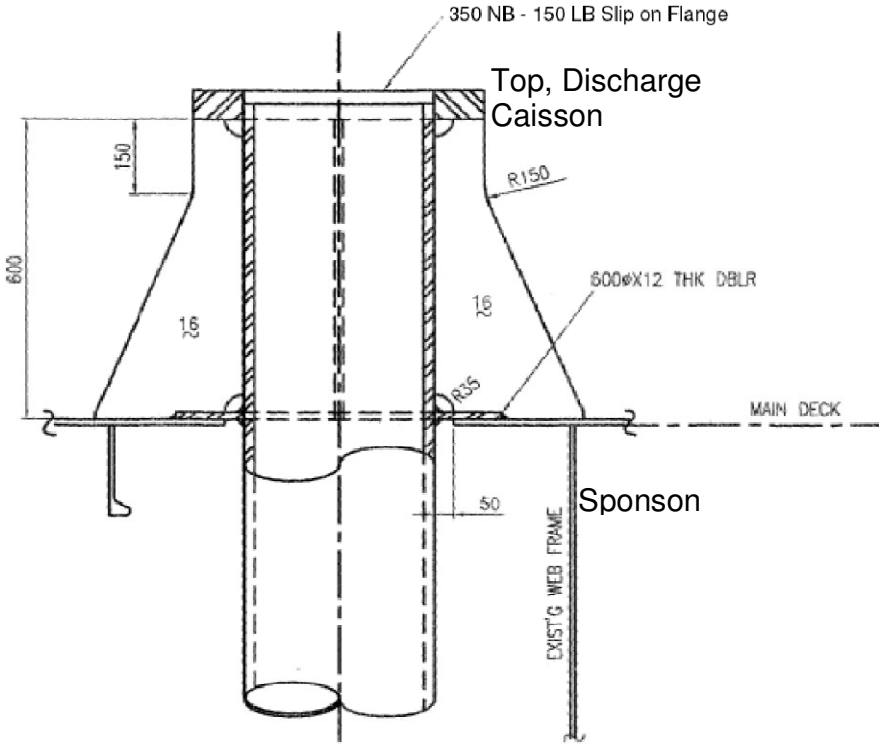
Ship's Hull
1100



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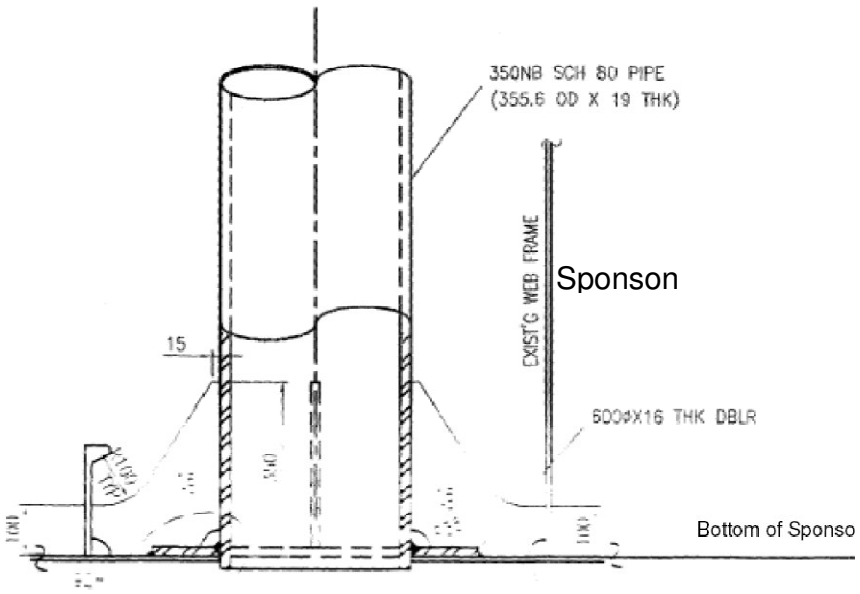

Section B-B
Base, Discharge Caisson

ATTACHMENT 1

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FACILITY			
Facility Name:	Noble Discoverer	Facility Mailing Address:	3601 C Street
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Telephone Number:	907-770-3700		Anchorage, AK 99503
Beginning Date of Operation:	TBD	Stationary Facilities	Latitude:
Expected Duration of Operation:	50 days per well site		Longitude:
Facility Type *(check applicable type)*	☐ Jackup ☒ Drill Ship ☐ Semisubmersible ☐ Other (specify):	Mobile Facilities	Initial Latitude: TBD Initial Longitude: TBD

Submit a site map showing the exact location of facility and discharges associated with the project. Mobile facilities may designate an area where they may be operating and must include a map showing those areas and a description of operations within those areas. If the discharge is within 4000 meters of an environmentally sensitive area indicated by the permit, those areas and their distance from the operation/discharge must be shown on the map.

RECEIVING WATER			
☒	Chukchi Sea	☐	Other (*specify*): ☐
☐	Beaufort Sea		

Supply confirmation with the U.S. Department of State and NOAA that the discharge is seaward of the inner boundary baseline, if applicable.

LOCATION OF DISCHARGE					
MMS	Lease Number	**OCS-Y-2294**	ADNR	Lease Number	**N/A**
	Block Number	**Posey Area Block 6812**		Block Number	**N/A**
Range of water depths below mean lower low water (MLLW) in the lease block:		From: **145'**		To:	**145'**

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Discharges (*check all that apply)*			
☒	001 Drilling Mud and Cuttings	Water Depth:	**19.6'**
☒	002 Deck Drainage	Water Depth:	**19.6'**
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☐	014 Test Fluid	Water Depth:	

Provide a brief description of the treatment process(es) and disposal practices (e.g., backhauled, reinjected, discharged, etc.) at the facility. See attached (Table 1)

Provide a line drawing that shows flow of discharged waste streams through the facility. Indicate intake sources, operations contributing to the effluent, and treatment units labeled to correspond to the discharges (001 – 014). Construct a flow balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a flow balance cannot be determined, provide a pictorial description of the nature and amount of any sources, and any collection or treatment measures.

Well Information

Well Name:	**Burger**	Latitude:	**TBD**
Well Number:	**R**	Longitude:	**TBD**
Beginning Drill Date:	**TBD**	Hole Diameter or Estimated Total Discharge Volume:	**36" diameter at surface, reducing through 4 stages to 8.5" at depth**

Drilling Fluid

Category (*check all that apply*)	☒	Water-based	Group (*check all that apply*)	☐	Lignosulfonate
	☐	Oil-based		☐	Lime
	☐	Synthetic-based		☐	Gyp
	☐	Other (*specify*):		☒	Sea-water

				☒	Saltwater
				☐	Saturated Saltwater
				☒	Nondispersed (Viscosifier/Polymer) PH/PA

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Zone of Deposit Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a Zone of Deposit from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A ZONE OF DEPOSIT. The burden of proof for justifying a zone of deposit through demonstrating compliance with the requirements of 18 AAC 70.210 rests with the applicant.

Distance from shoreline of discharge point (measured at M.L.L.W.):		Average Mud density:	
Depth of discharge (measured at M.L.L.W.):		Flow Rate:	
Orientation of outfall to shoreline (e.g., perpendicular, 45°, parallel):		Total Volume:	
Orientation of outfall to water surface (e.g., perpendicular, 45°, parallel):		Maximum current and direction:	

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

Mixing Zone Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a mixing zone from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 through 18 AAC 70.270 rests with the applicant.

Distance from shoreline of discharge point or first port of diffuser (measured at M.L.L.W.):		Length of diffuser:	
Depth of discharge port or diffuser (measured at M.L.L.W.):		Diameter of port(s):	
Orientation of diffuser to shoreline (e.g., perpendicular, 45°, parallel):		Number of ports:	
Maximum current:		Port spacing:	

USE OF RECEIVING WATER AT DISTANCE FROM DIFFUSER i.e., Supply for drinking water, Supply for agriculture including irrigation & stock water, Supply for aquaculture, Supply for industrial use, Contact recreation, Secondary recreation, Fish spawning, Harvesting and consumption of raw fish, or other aquatic life (Not needed if not requesting a mixing zone from ADEC):

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Special Conditions (*provide justification for all that are not required, completed or provided)*					
Special Monitoring	☐	Required	☒	Not Required	Justification:
Exploration Plans	☐	Attached	☒	Not Provided	Justification: TBD
Biological Surveys	☐	Attached	☒	Not Provided	Justification: None required
Environmental Report(s)	☐	Attached	☒	Not Provided	Justification: Will be submitted to BOEMRE as part of the Exploration Plan
Drilling Fluid Plan	☐	Complete	☒	Not Complete	Justification: In Preparation

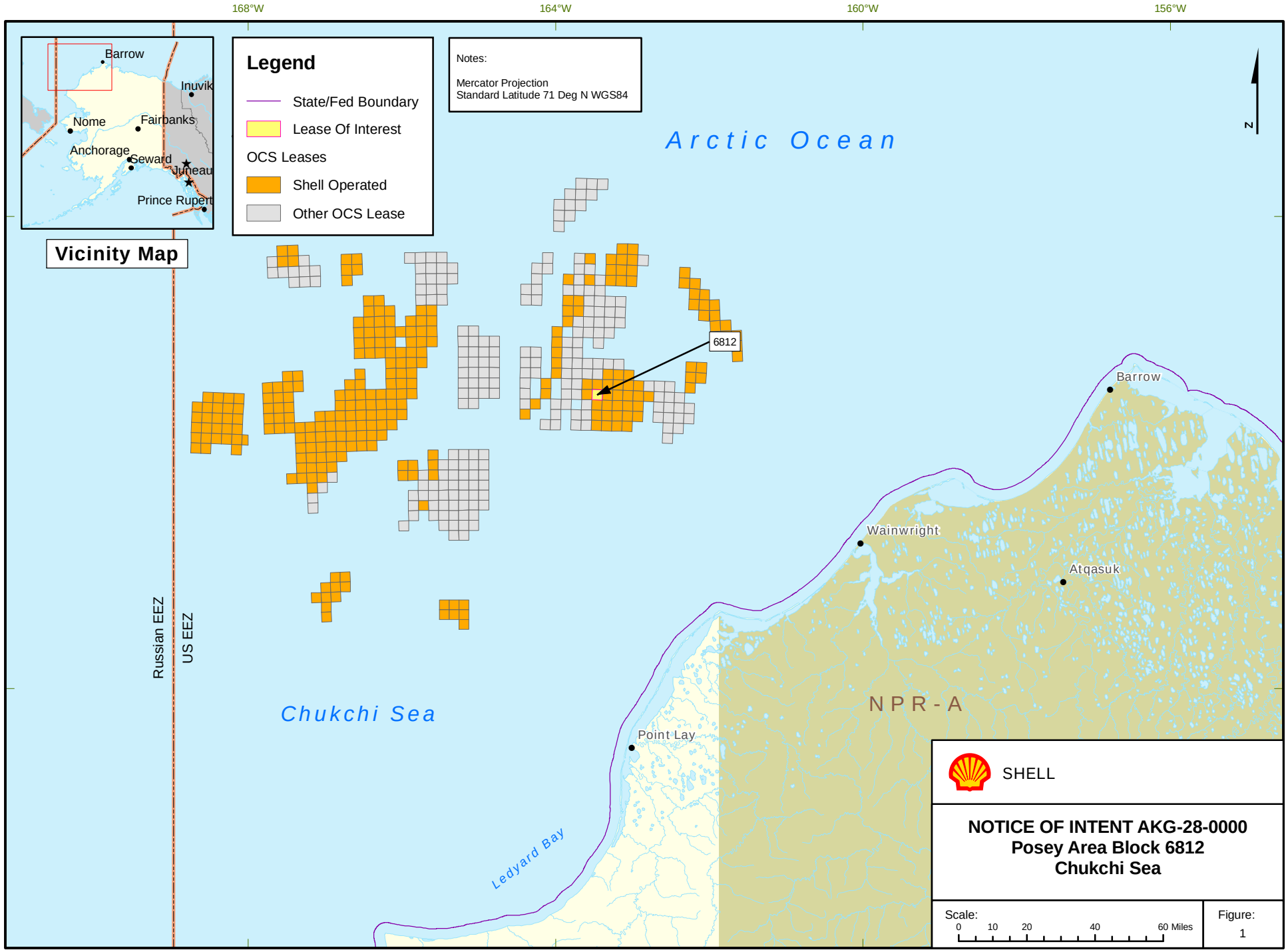
Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:	Susan Childs	Date:	12/16/2010
Printed Name:	Susan Childs	Title:	Alaska Support Intergrator Manager

Mail Completed NOI to EPA and ADEC at the following addresses:

US EPA 1200 6th Avenue, M/S OWW-130 Seattle, WA 98101	ADEC, Water Division 555 Cordova Street Anchorage, Alaska 99501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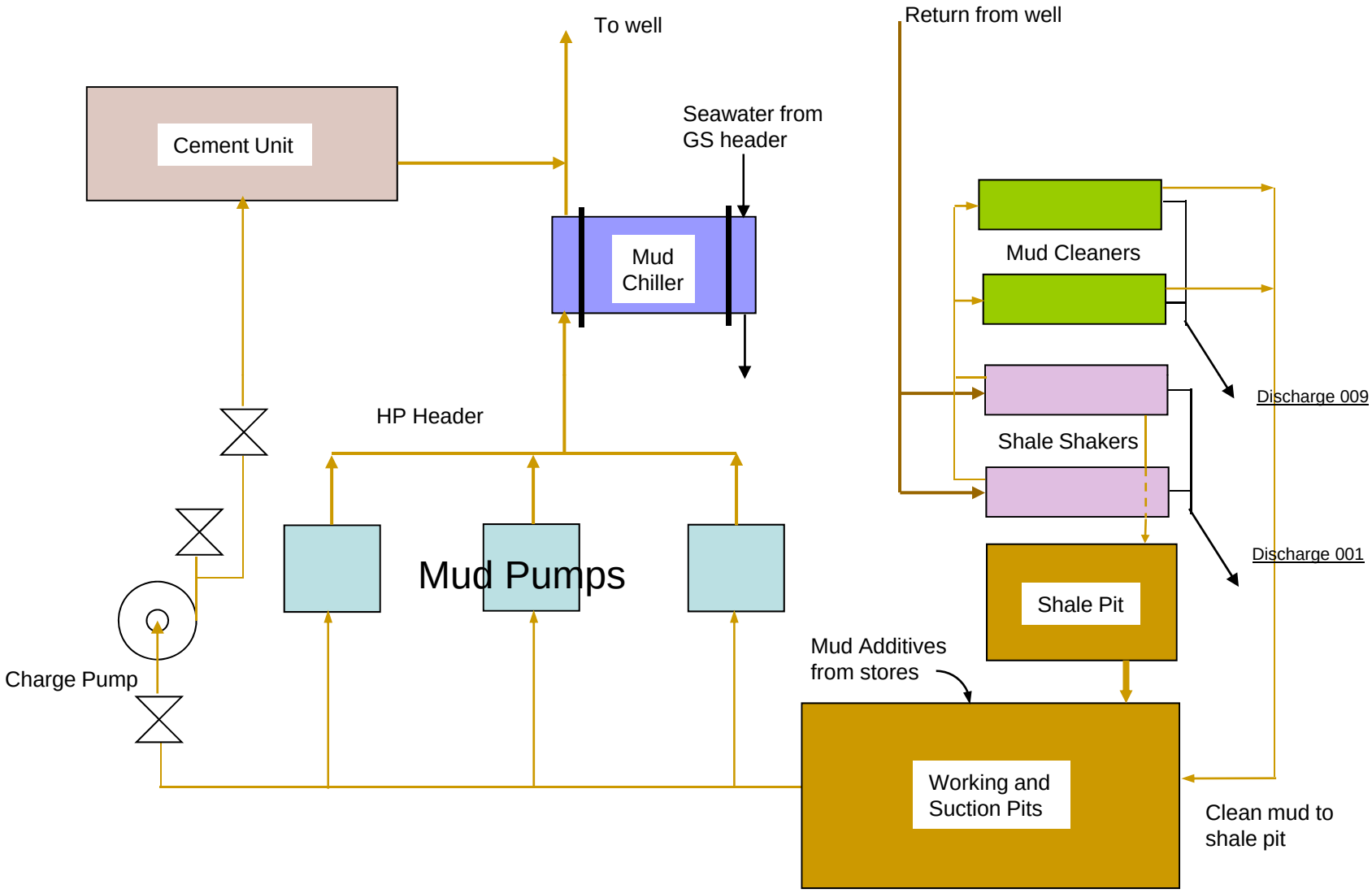
160°W
156°W
72°N
70°N
Barrow
Inuvik
Nome
Fairbanks
Anchorage
Seward
Juneau
Prince Rupert
Vicinity Map
Legend
State/Fed Boundary
Lease Of Interest
OCS Leases
Shell Operated
Other OCS Lease
Notes:
Mercator Projection
Standard Latitude 71 Deg N WGS84
N
Arctic Ocean
6812
Barrow
Wainwright
Atqasuk
Point Lay
N P R - A
Russian EEZ
US EEZ
Chukchi Sea
Ledyard Bay
SHELL
NOTICE OF INTENT AKG-28-0000
Posey Area Block 6812
Chukchi Sea
Scale:
0 10 20 40 60 Miles
Figure:
1
Shell AV GIS/12-14-2010/AKG-28-0000_Fig1_v1.mxd

TABLE 1
Types and Estimated Volume Ocean Discharges – Burger R Prospect

Type of Waste	Total Amount to be Discharged	Discharge Rate*	Discharge Method
Drill cuttings (from MLC through 26-inch section) Discharge 013	4,152 bbl/well (cuttings only; no drilling muds used)	346 bbl/day	Mud Line Cellar (MLC) through 26" section cuttings deposited at the seafloor
WBM spent drilling fluids – Discharge 001	4,159 bbl/well spent mud plus mud in tanks (if multiple wells drilled per season, water based muds will be transferred to and used at the next well)	109 bbl/day (including discharge of excess water based drilling fluid at end of the drilling season)	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Cuttings from water based intervals – Discharge 001	2,080 bbl/well	55 bbl/day	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Sanitary waste – Discharge 003	1,500 bbl/well	30 bbl/day	Treated in marine sanitary device prior to discharge to meet NPDES limits (based on 140 people at 9 gal/person/day)
Domestic waste – Discharge 004	16,667bbl/well	333 bbl/day	Discharged to water through the disposal caisson (based on 140 people at 100 gal/person/day) Note: all food waste to be incinerated
Excess cement – Discharge 012	50 bbl/well	Two occasions at 1 bbl/min	Discharged at seafloor during 30-inch and 20-inch cementing operations
Desalination unit brine water – Discharge 005	6,250 bbl/well	125 bbl/day	Discharged to water through disposal caisson
Deck drainage – Discharge 002	250 bbl/well	5 bbl/day (dependent on rainfall)	Drains to the oily water separator. Uncontaminated water id discharged through the disposal caisson; contaminated water is stored in a waste oil tank then transferred by boat to an approved treatment/disposal site.
Cooling water – Discharge 009	2,250,000 bbl/well	45,000 bbl/day	Discharged to water through a number of outlets
Firewater - Discharge 008	0	0 bbl/month	No routine firewater system testing anticipated
Ballast water – Discharge 010	250 bbl/well	5 bbl/day	Discharged to sea through disposal caisson
Bilge water – Discharge 011	631 bbl/well	13 bbl/day	Treated in oily water separator, uncontaminated water discharged to sea through disposal caisson, oily water stored onboard, transferred for transport by boat to an approved disposal site
BOP fluid – Discharge 006	42 bbl/well (6 tests; 7 bbl per test)	7 bbl/test	Discharged subsea at BOP when testing BOP

* assumes 12 days to complete the MLC through 26-inch section; 38 days to complete the remainder of the well

Figure 1. Drilling Fluid Flowpath



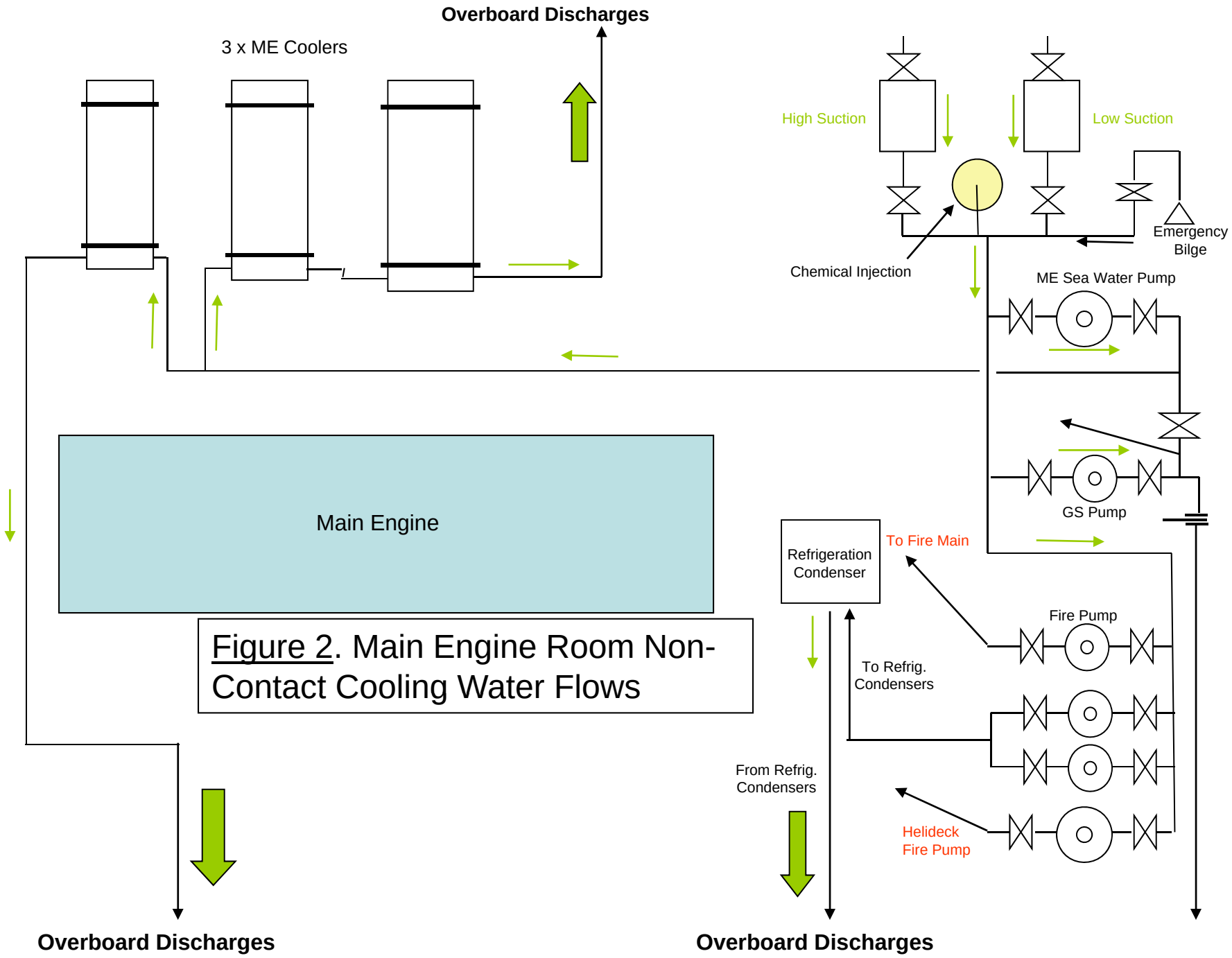


Figure 2. Main Engine Room Non-Contact Cooling Water Flows

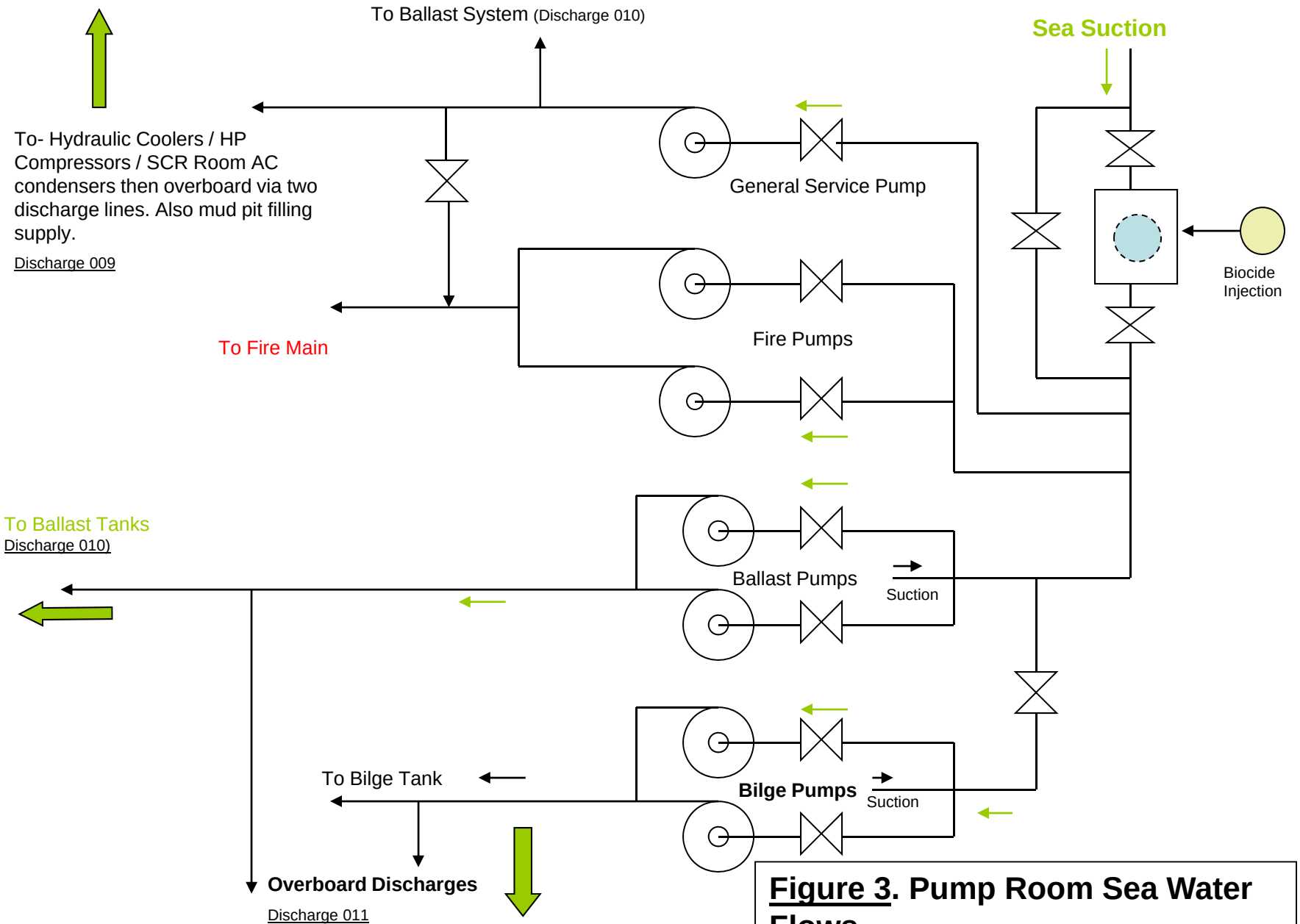
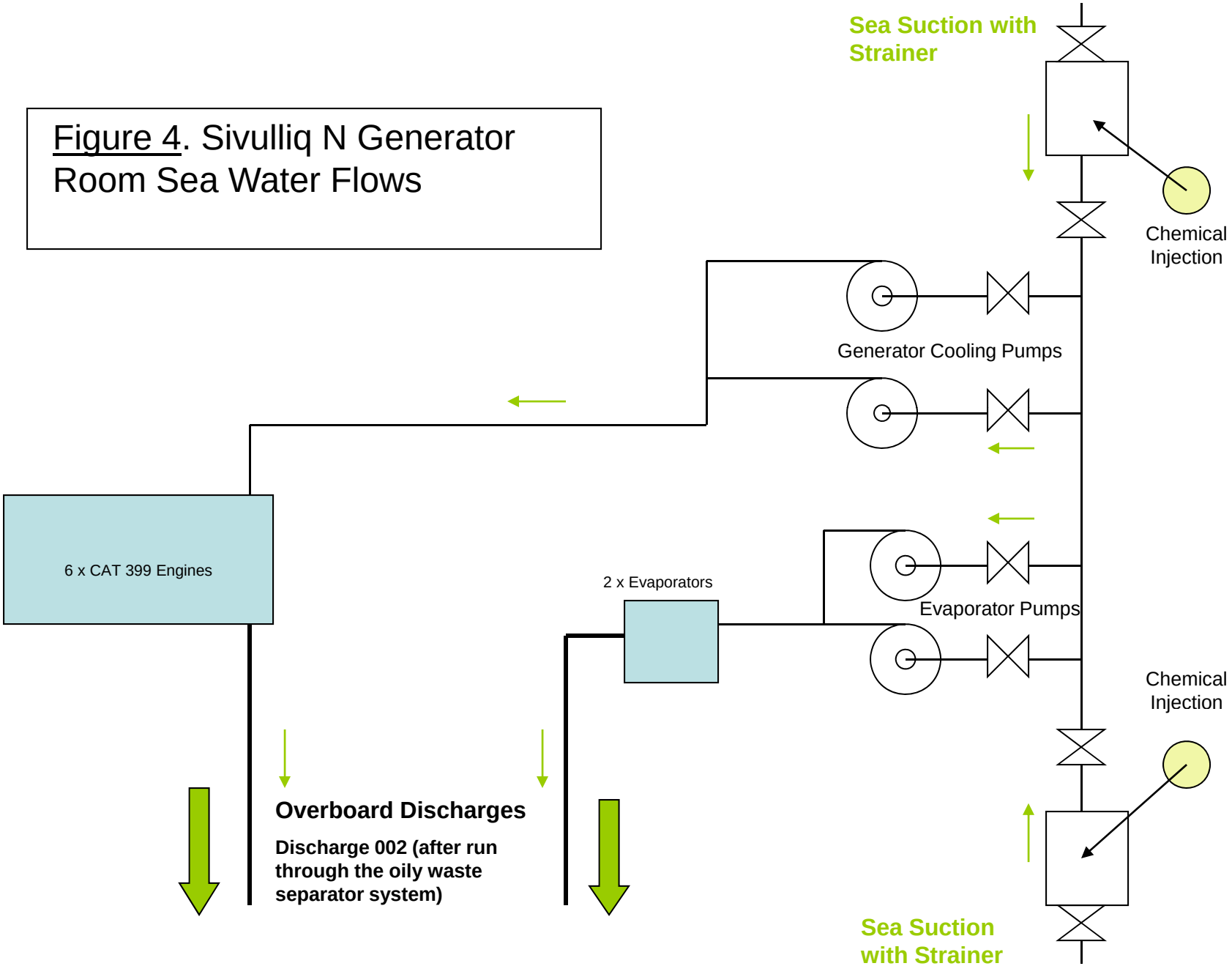


Figure 3. Pump Room Sea Water Flows

Figure 4. Sivulliq N Generator Room Sea Water Flows



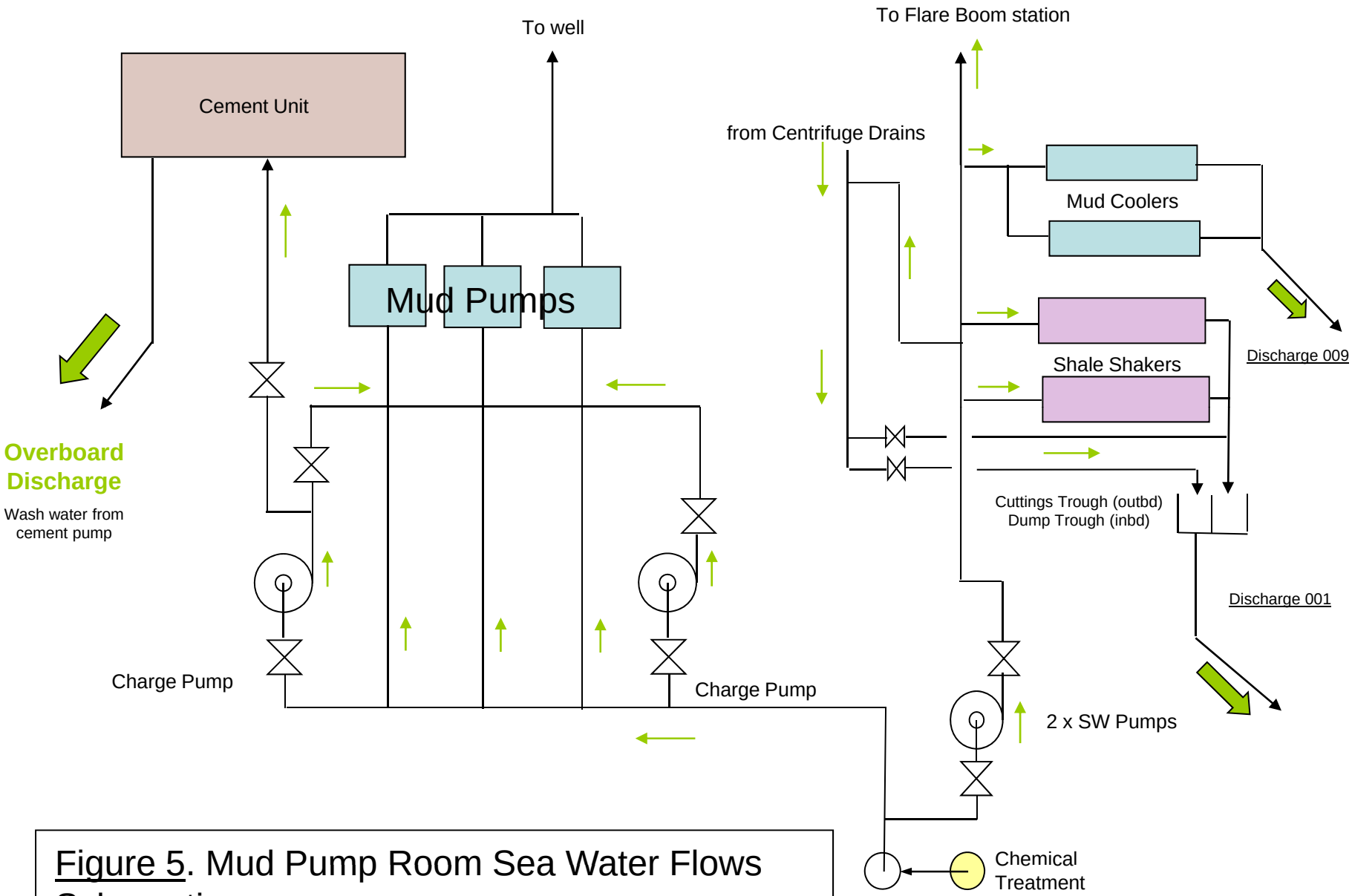
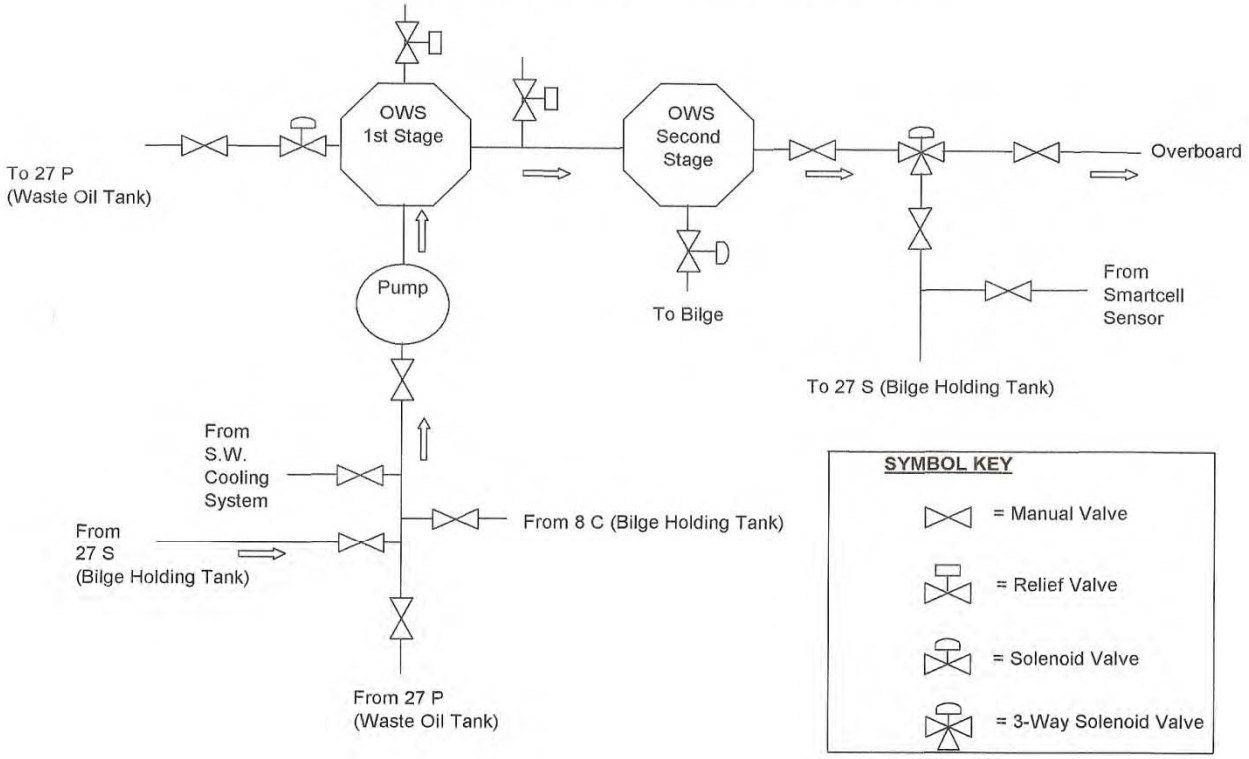


Figure 5. Mud Pump Room Sea Water Flows Schematic

Oily Water Separator System



Discharge Caisson

The discharge caisson is a pipe that runs vertically through the sponson on the hull of the drillship from the main deck level to the base of the sponson. The sponson is an exterior reinforced cladding installed on the *Discoverer* to provide ice resistance. It is hollow and extends from the main deck level to well below the water line.

Waste streams are collected aboard the drillship to a point on the main deck near the mud room. A 15-in. diameter pipe exits the hull, turns downwards and is connected to the top of the discharge caisson.

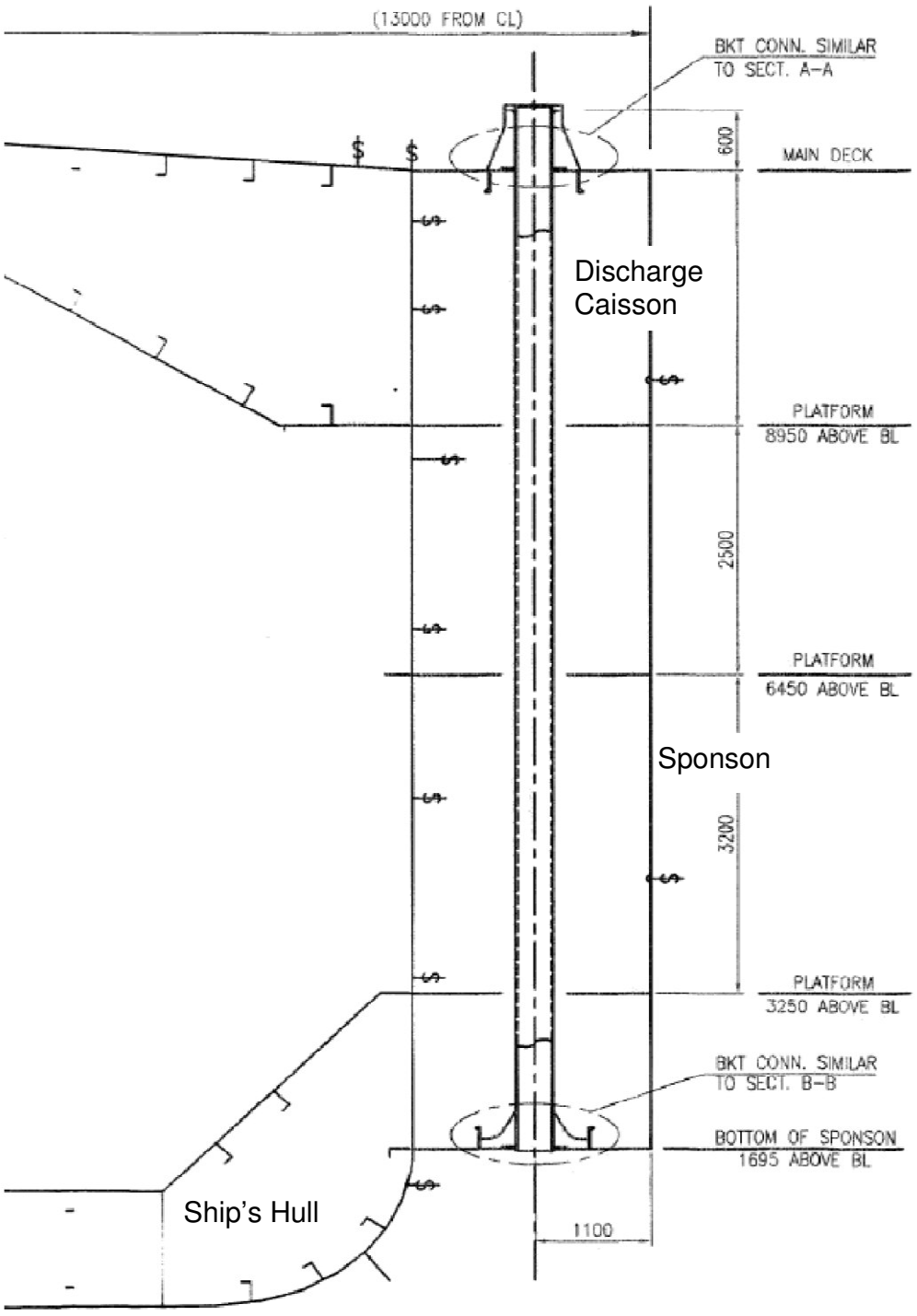
The discharge caisson, also a 15-in OD pipe, is welded into the sponson top and bottom (so that the interior of the sponson remains dry). The bottom of the sponson and the end of the discharge caisson is 5.6 ft (1.7 m) above the keel depth, and since it remains open to the sea at all times, the discharge caisson is constantly filled with water to mean sea level. This caisson is not equipped with a "float" valve; it is merely an open conduit to the sea through which most waste streams are discharged below sea level.

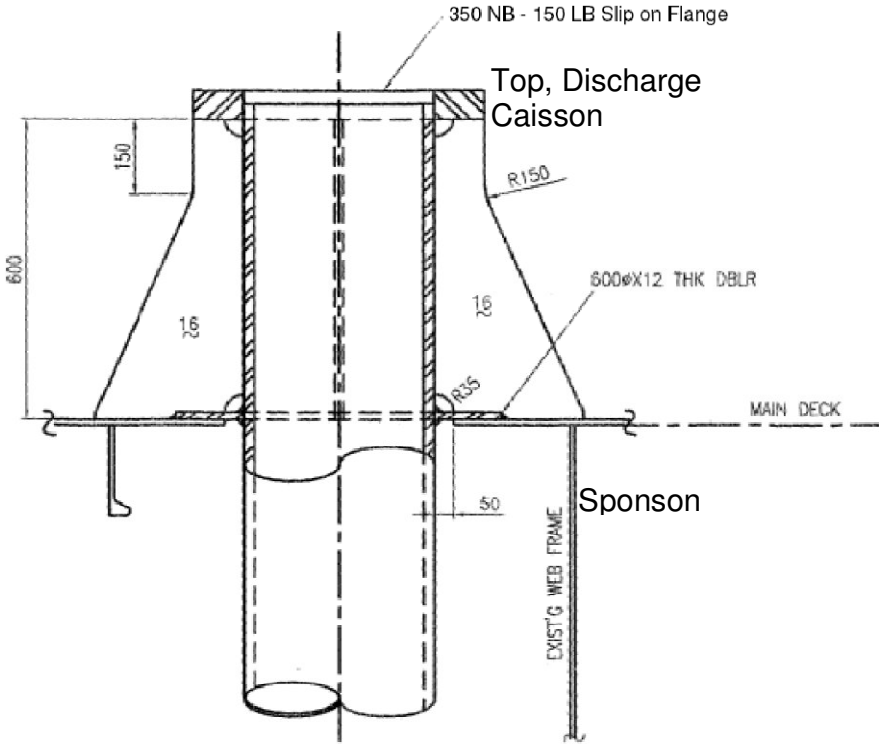
The *Discoverer* has the following draft characteristics:

Max draft at load line:	27 ft (8.2 m)
Transit draft	26.3 ft (8.0 m)
Drilling draft	25.2 ft (7.7 m)
Light ship draft	19.0 ft (5.8 m)

With the bottom of the sponson 5.6 ft above the keel, the base of the discharge caisson while drilling is 25.2 ft – 5.6 ft = 19.6 ft (6.0 m) below mean sea level. Because of heave, the water level inside the caisson is constantly changing.

See attached schematic drawings:


(13000 FROM CL)
BKT CONN. SIMILAR
TO SECT. A-A
600
MAIN DECK
Discharge
Caisson
PLATFORM
8950 ABOVE BL
2500
PLATFORM
6450 ABOVE BL
Sponson
3200
PLATFORM
3250 ABOVE BL
BKT CONN. SIMILAR
TO SECT. B-B
BOTTOM OF SPONSON
1695 ABOVE BL
Ship's Hull
1100



SECTION A–A
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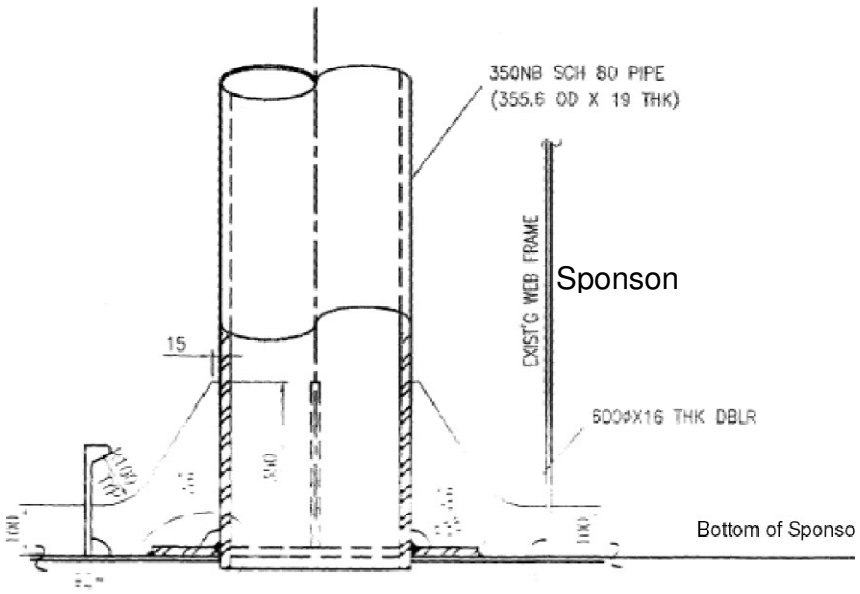

Section B-B
Base, Discharge Caisson

Notice of Intent for Initial / Extension
Dated 16 December 2010
Covering EP Blocks Posey Area 6764, 6714, and 6912

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Shell Exploration & Production Company

December 16, 2010

Ms. Hanh Shaw
U.S. EPA, Region 10
Office of Water & Watersheds, NPDES Permits Unit
1200 Sixth Avenue, Suite 900, M/S OWW-130
Seattle, WA 98101

Shell
3601 C Street, Suite 1000
Anchorage, AK 99503

Tel. (907) 646-7112
Email susan.childs@shell.com
Internet http://www.shell.com/

Dear Ms. Shaw:

Subject: Notice of Intent for administrative extension under General Permit AKG-28-0000
Lease Number OCS-Y-2280, Lease Block 6764
Lease Number OCS-Y-2267, Lease Block 6714
Lease Number OCS-Y-2321, Lease Block 6912
Lease Number OCS-Y-2111, Lease Block 6864
Lease Number OCS-Y-2142, Lease Block 7007

In accordance with 40 CFR 122.21(d) Shell Gulf of Mexico Inc. (Shell) is submitting Notices of Intent (NOIs) for the Lease Blocks listed above for authorization to discharge under General Permit AKG-28-0000 that expires on June 26, 2011. It is Shell's understanding that a new general permit is not scheduled to be issued until the fall of 2011. Therefore, these NOIs also serve as Shell's request for an administrative extension to discharge under NPDES General Permit AKG-28-0000 for 2011 and beyond for each authorized NOI until the new General Permit is available. The attached NOIs were originally granted by EPA on January 21, 2010 for AKG-28-0004.

If you have questions about any component of the proposed project, please contact me at (907) 646-7112 or email susan.childs@shell.com, or call Nicole St. Amand at (907) 646-7152 or email nicole.stamand@shell.com.

Sincerely,

Susan Childs
Alaska Venture Support Integrator Manager

Attachments - Notice of Intent (NOI) Information Sheets
Location Maps
Ocean Discharge Tables
Discharge Flow Diagrams

cc: Diane Soderlund, USEPA Region 10, Alaska Operations
Michael Lidgard, USEPA Region 10
Jeff Walker, BOEMRE Alaska
Don Perrin, Alaska DNR
Administrative Record

ATTACHMENT 1

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

APPLICANT *(Owner/Operator)*					
Owner Name:	Shell Gulf of Mexico Inc.		Operator Mailing Address:	3601 C Street	
Telephone Number:	907-770-3700			Suite 1000	
Operator Name:	Shell Gulf of Mexico Inc.			Anchorage, AK 99503	
Telephone Number:	907-770-3700				
FACILITY					
Facility Name:	Noble Discoverer		Facility Mailing Address:	3601 C Street	
Contact Name:	Susan Childs			Suite 1000	
Telephone Number:	907-770-3700			Anchorage, AK 99503	
Beginning Date of Operation:	TBD		Stationary Facilities	Latitude:	
Expected Duration of Operation:	32 days per well site			Longitude:	
Facility Type *(check applicable type)*	☐	Jackup	Mobile Facilities	Initial Latitude:	TBD
	☒	Drill Ship			
	☐	Semisubmersible			
	☐	Other (specify):		Initial Longitude:	TBD
Submit a site map showing the exact location of facility and discharges associated with the project. Mobile facilities may designate an area where they may be operating and must include a map showing those areas and a description of operations within those areas. If the discharge is within 4000 meters of an environmentally sensitive area indicated by the permit, those areas and their distance from the operation/discharge must be shown on the map.					
RECEIVING WATER					
☒	Chukchi Sea		☐	Other (*specify*): ☐	
☐	Beaufort Sea				
Supply confirmation with the U.S. Department of State and NOAA that the discharge is seaward of the inner boundary baseline, if applicable.					
LOCATION OF DISCHARGE					
MMS	Lease Number	**OCS-Y-2280**	ADNR	Lease Number	**N/A**
	Block Number	**6764**		Block Number	**N/A**
Range of water depths below mean lower low water (MLLW) in the lease block:		From: **149'**		To:	**149'**

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Discharges (*check all that apply)*			
☒	001 Drilling Mud and Cuttings	Water Depth:	**19.6'**
☒	002 Deck Drainage	Water Depth:	**19.6'**
☒	003 Sanitary Waste	Water Depth:	**19.6'**
☒	004 Domestic Waste	Water Depth:	**19.6'**
☒	005 Desalination Unit Waste	Water Depth:	**19.6'**
☒	006 Blowout Preventer Fluid	Water Depth:	**149'**
☐	007 Boiler Blowdown	Water Depth:	
☐	008 Fire Control System Test Water	Water Depth:	
☒	009 Non-Contact Cooling Water	Water Depth:	**on the surface at several locations**
☒	010 Uncontaminated Ballast Water	Water Depth:	**19.6'**
☒	011 Bilge Water	Water Depth:	**19.6'**
☒	012 Excess Cement Slurry	Water Depth:	**19.6'**
☒	013 Mud, Cuttings, Cement and Seafloor	Water Depth:	**MLC through 26" section cuttings at 139', excess cement at 149'**
☐	014 Test Fluid	Water Depth:	

Provide a brief description of the treatment process(es) and disposal practices (e.g., backhauled, reinjected, discharged, etc.) at the facility. See attached (Table 1)

Provide a line drawing that shows flow of discharged waste streams through the facility. Indicate intake sources, operations contributing to the effluent, and treatment units labeled to correspond to the discharges (001 – 014). Construct a flow balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a flow balance cannot be determined, provide a pictorial description of the nature and amount of any sources, and any collection or treatment measures.

Well Information

Well Name:	**Burger**	Latitude:	**TBD**
Well Number:	**A**	Longitude:	**TBD**
Beginning Drill Date:	**TBD**	Hole Diameter or Estimated Total Discharge Volume:	**36" diameter at surface, reducing through 4 stages to 8.5" at depth**

Drilling Fluid

Category (*check all that apply*)	☒	Water-based	Group (*check all that apply*)	☐	Lignosulfonate
	☐	Oil-based		☐	Lime
	☐	Synthetic-based		☐	Gyp
	☐	Other (*specify*):		☒	Sea-water

				☒	Saltwater
				☐	Saturated Saltwater
				☒	Nondispersed (Viscosifier/Polymer) PH/PA

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Zone of Deposit Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a Zone of Deposit from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A ZONE OF DEPOSIT. The burden of proof for justifying a zone of deposit through demonstrating compliance with the requirements of 18 AAC 70.210 rests with the applicant.

Distance from shoreline of discharge point (measured at M.L.L.W.):		Average Mud density:	
Depth of discharge (measured at M.L.L.W.):		Flow Rate:	
Orientation of outfall to shoreline (e.g., perpendicular, 45°, parallel):		Total Volume:	
Orientation of outfall to water surface (e.g., perpendicular, 45°, parallel):		Maximum current and direction:	

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

Mixing Zone Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a mixing zone from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 through 18 AAC 70.270 rests with the applicant.

Distance from shoreline of discharge point or first port of diffuser (measured at M.L.L.W.):		Length of diffuser:	
Depth of discharge port or diffuser (measured at M.L.L.W.):		Diameter of port(s):	
Orientation of diffuser to shoreline (e.g., perpendicular, 45°, parallel):		Number of ports:	
Maximum current:		Port spacing:	

USE OF RECEIVING WATER AT DISTANCE FROM DIFFUSER i.e., Supply for drinking water, Supply for agriculture including irrigation & stock water, Supply for aquaculture, Supply for industrial use, Contact recreation, Secondary recreation, Fish spawning, Harvesting and consumption of raw fish, or other aquatic life (Not needed if not requesting a mixing zone from ADEC):

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NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Special Conditions (*provide justification for all that are not required, completed or provided)*					
Special Monitoring	☐	Required	☒	Not Required	Justification:
Exploration Plans	☐	Attached	☒	Not Provided	Justification: approved 2010 EP previously submitted to BOEMRE
Biological Surveys	☐	Attached	☒	Not Provided	Justification: None required
Environmental Report(s)	☐	Attached	☒	Not Provided	Justification: Submitted to BOEMRE as part of the 2010 Exploration Plan
Drilling Fluid Plan	☐	Complete	☒	Not Complete	Justification: In Preparation

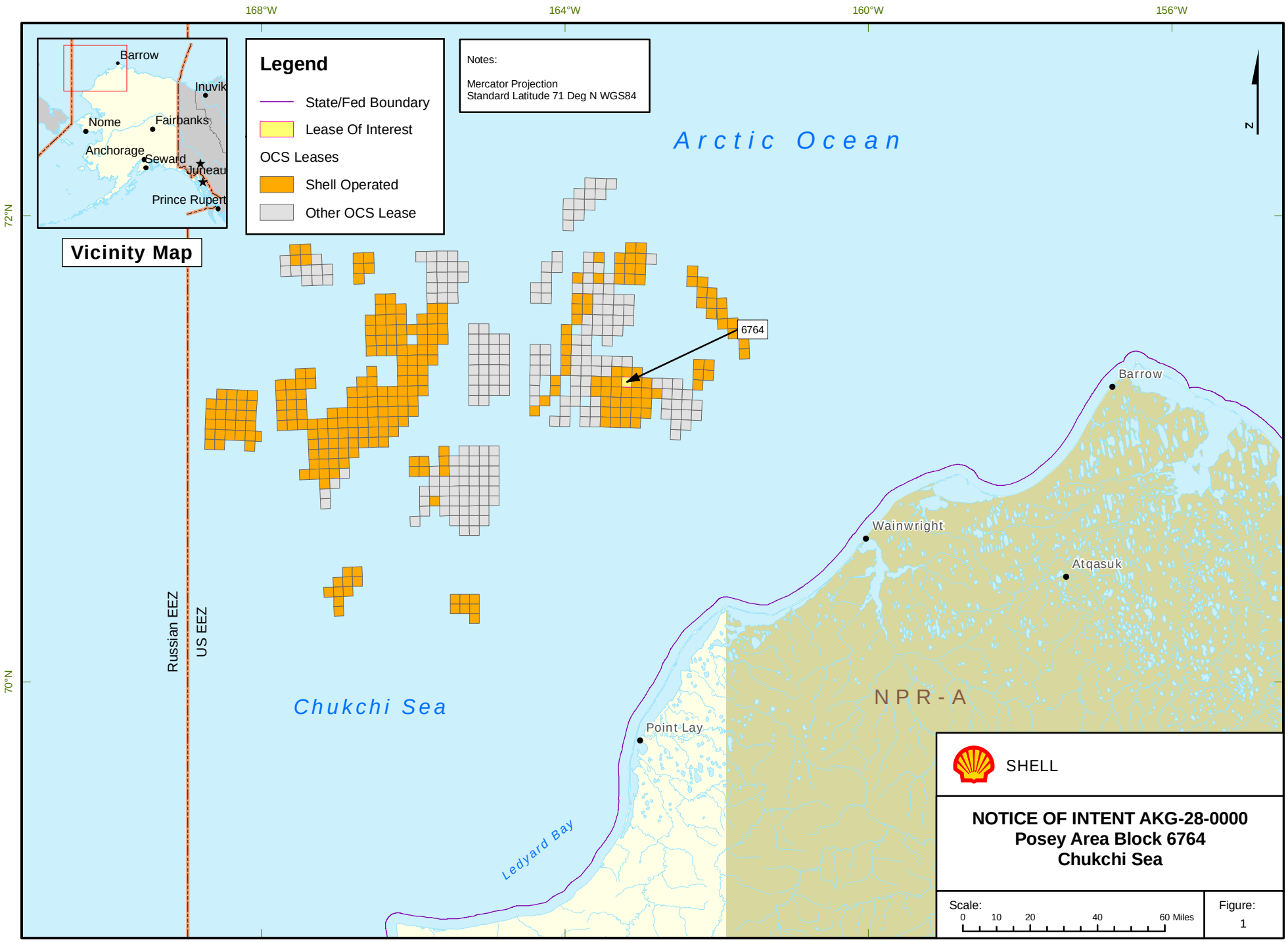
Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:		Date:	12/16/2010
Printed Name:	Susan Childs	Title:	Alaska Support Intergrator Manager

Mail Completed NOI to EPA and ADEC at the following addresses:

US EPA 1200 6th Avenue, M/S OWW-130 Seattle, WA 98101	ADEC, Water Division 555 Cordova Street Anchorage, Alaska 99501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160°W
156°W
72°N
70°N
Barrow
Inuvik
Nome
Fairbanks
Anchorage
Seward
Juneau
Prince Rupert
Vicinity Map
Legend
State/Fed Boundary
Lease Of Interest
OCS Leases
Shell Operated
Other OCS Lease
Notes:
Mercator Projection
Standard Latitude 71 Deg N WGS84
N
Arctic Ocean
6764
Barrow
Wainwright
Atqasuk
Point Lay
N P R - A
Russian EEZ
US EEZ
Chukchi Sea
Ledyard Bay
SHELL
NOTICE OF INTENT AKG-28-0000
Posey Area Block 6764
Chukchi Sea
Scale:
0 10 20 40 60 Miles
Figure:
1
Shell AV GIS/12-14-2010/AKG-28-0000_Fig1_v1.mxd

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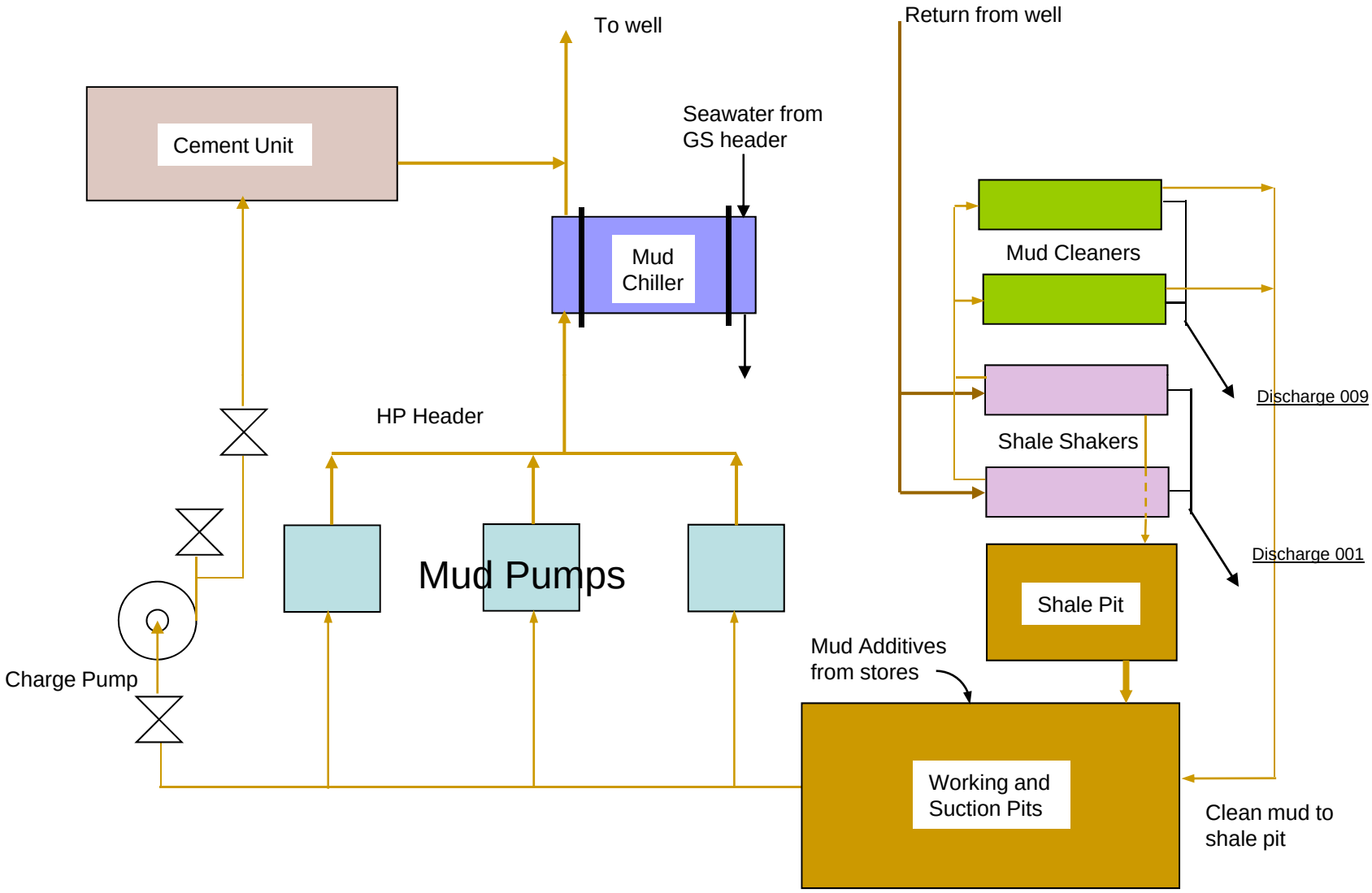
WBM spent drilling fluids – Discharge 001	3,327 bbl/well spent mud plus mud in tanks (if multiple wells drilled per season, water based muds will be transferred to and used at the next well)	166 bbl/day (including discharge of excess water based drilling fluid at end of the drilling season)	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Cuttings from water based intervals – Discharge 001	1,664 bbl/well	83 bbl/day	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Sanitary waste – Discharge 003	960 bbl/well	30 bbl/day	Treated in marine sanitary device prior to discharge to meet NPDES limits (based on 140 people at 9 gal/person/day)
Domestic waste – Discharge 004	10,667 bbl/well	333 bbl/day	Discharged to water through the disposal caisson (based on 140 people at 100 gal/person/day) Note: all food waste to be incinerated
Excess cement – Discharge 012	50 bbl/well	Two occasions at 1 bbl/min	Discharged at seafloor during 30-inch and 20-inch cementing operations
Desalination unit brine water – Discharge 005	4,000 bbl/well	125 bbl/day	Discharged to water through disposal caisson
Deck drainage – Discharge 002	160 bbl/well	5 bbl/day (dependent on rainfall)	Drains to the oily water separator. Uncontaminated water id discharged through the disposal caisson; contaminated water is stored in a waste oil tank then transferred by boat to an approved treatment/disposal site.
Cooling water – Discharge 009	1,440,000 bbl/well	45,000 bbl/day	Discharged to water through a number of outlets
Firewater - Discharge 008	0	0 bbl/month	No routine firewater system testing anticipated
Ballast water – Discharge 010	160 bbl/well	5 bbl/day	Discharged to sea through disposal caisson
Bilge water – Discharge 011	404 bbl/well	13 bbl/day	Treated in oily water separator, uncontaminated water discharged to sea through disposal caisson, oily water stored onboard, transferred for transport by boat to an approved disposal site
BOP fluid – Discharge 006	42 bbl/well (6 tests; 7 bbl per test)	7 bbl/test	Discharged subsea at BOP when testing BOP

* assumes 12 days to complete the MLC through 26-inch section; 20 days to complete the remainder of the well

Figure 1. Drilling Fluid Flowpath



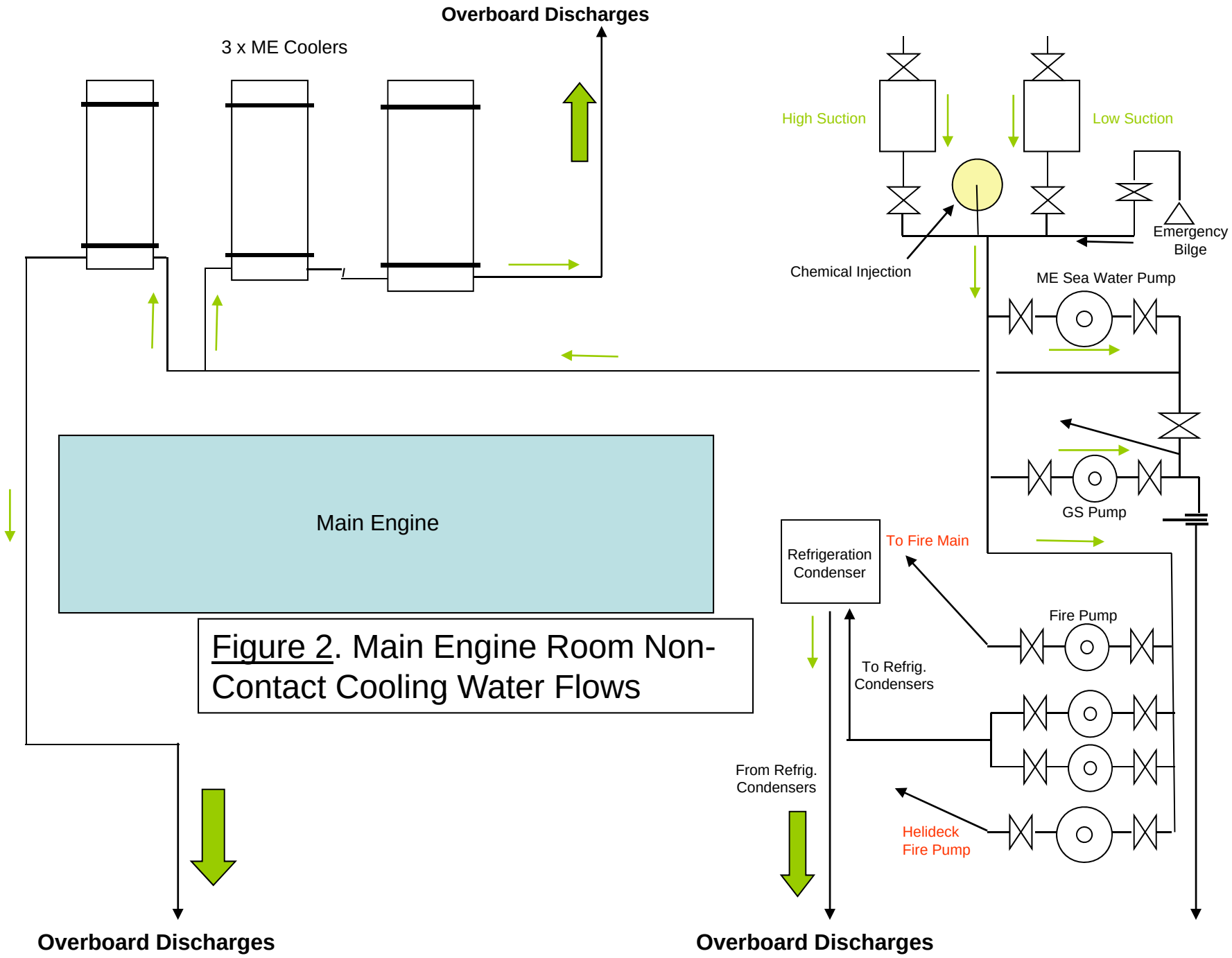


Figure 2. Main Engine Room Non-Contact Cooling Water Flows

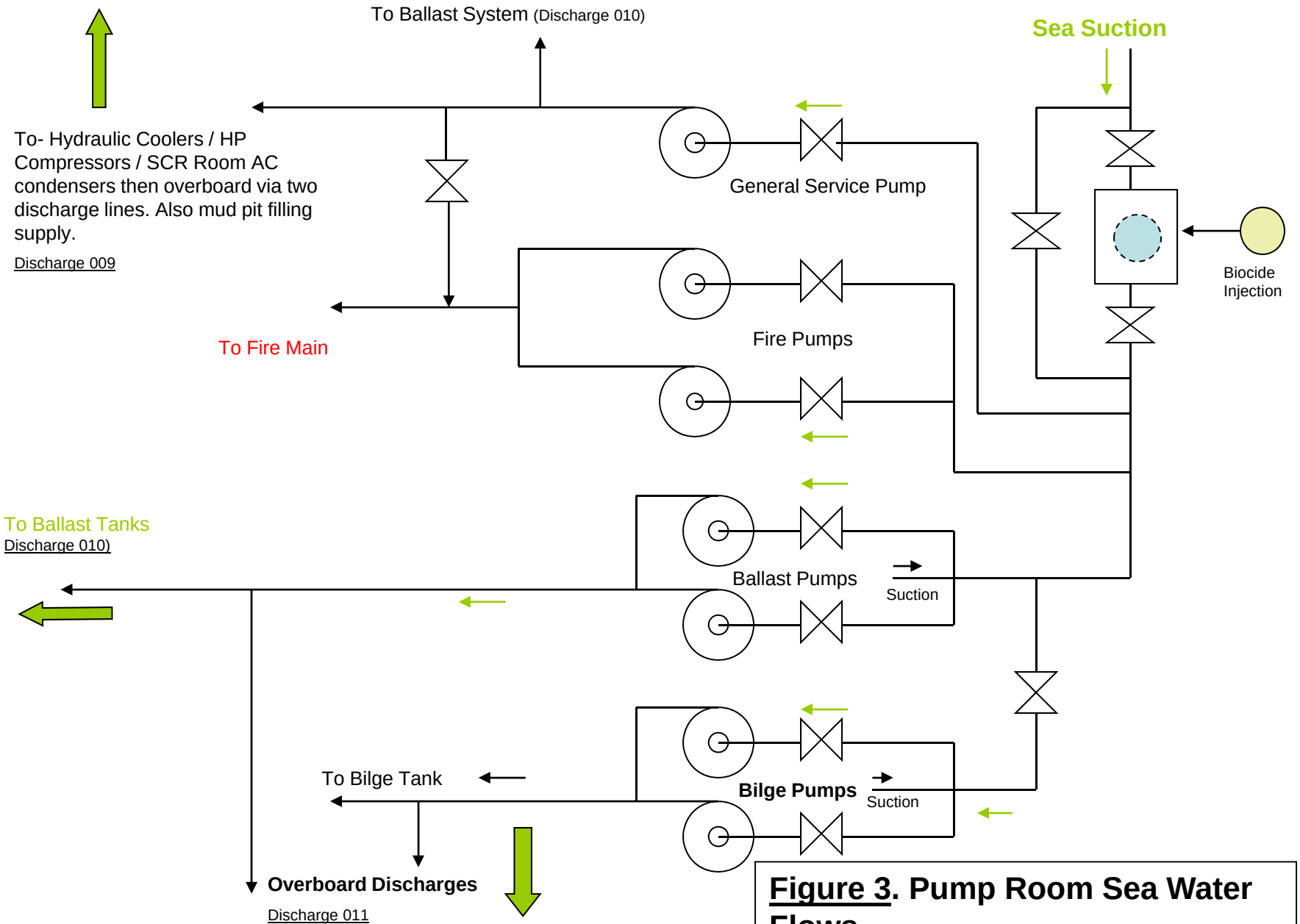
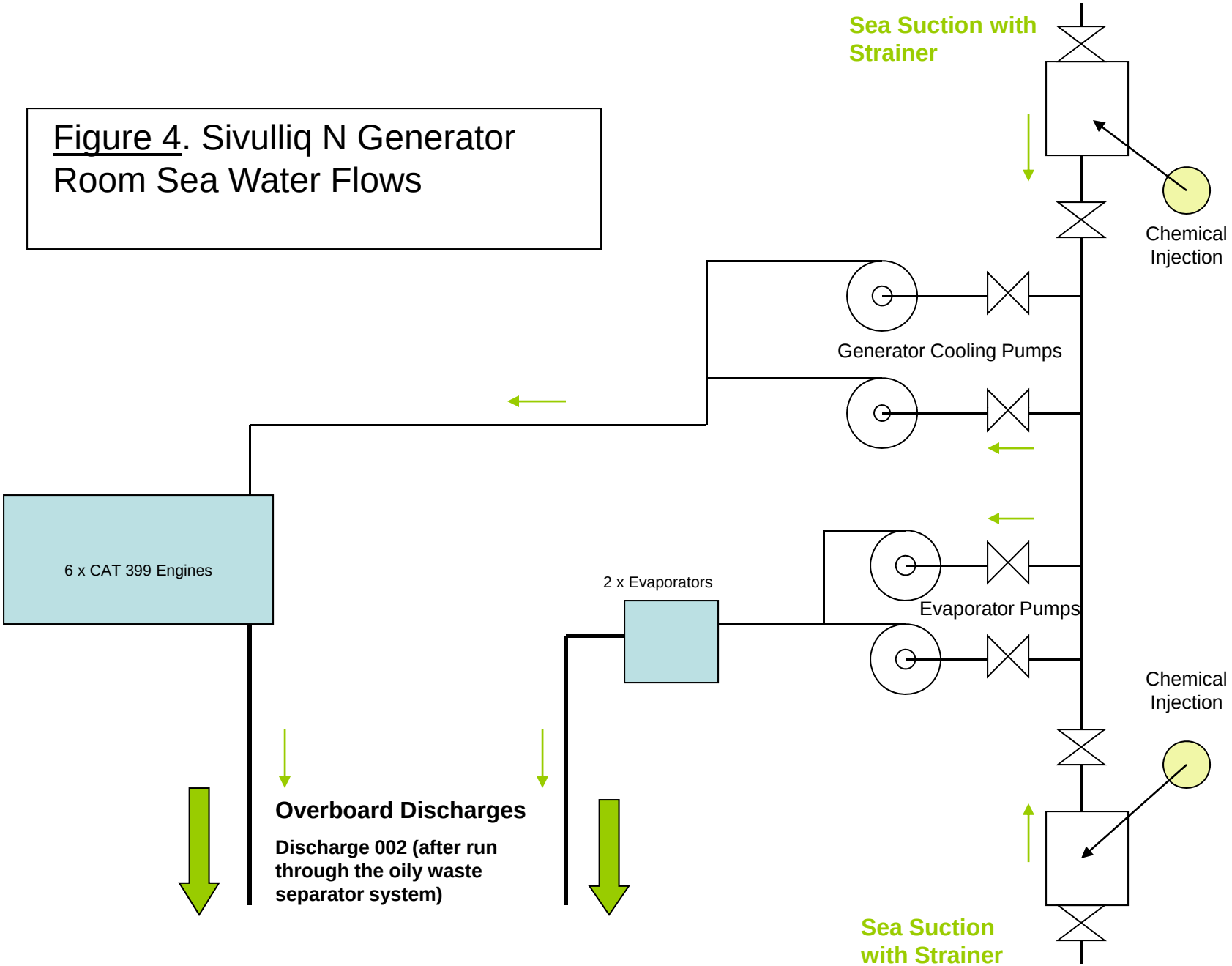


Figure 3. Pump Room Sea Water Flows

Figure 4. Sivulliq N Generator Room Sea Water Flows



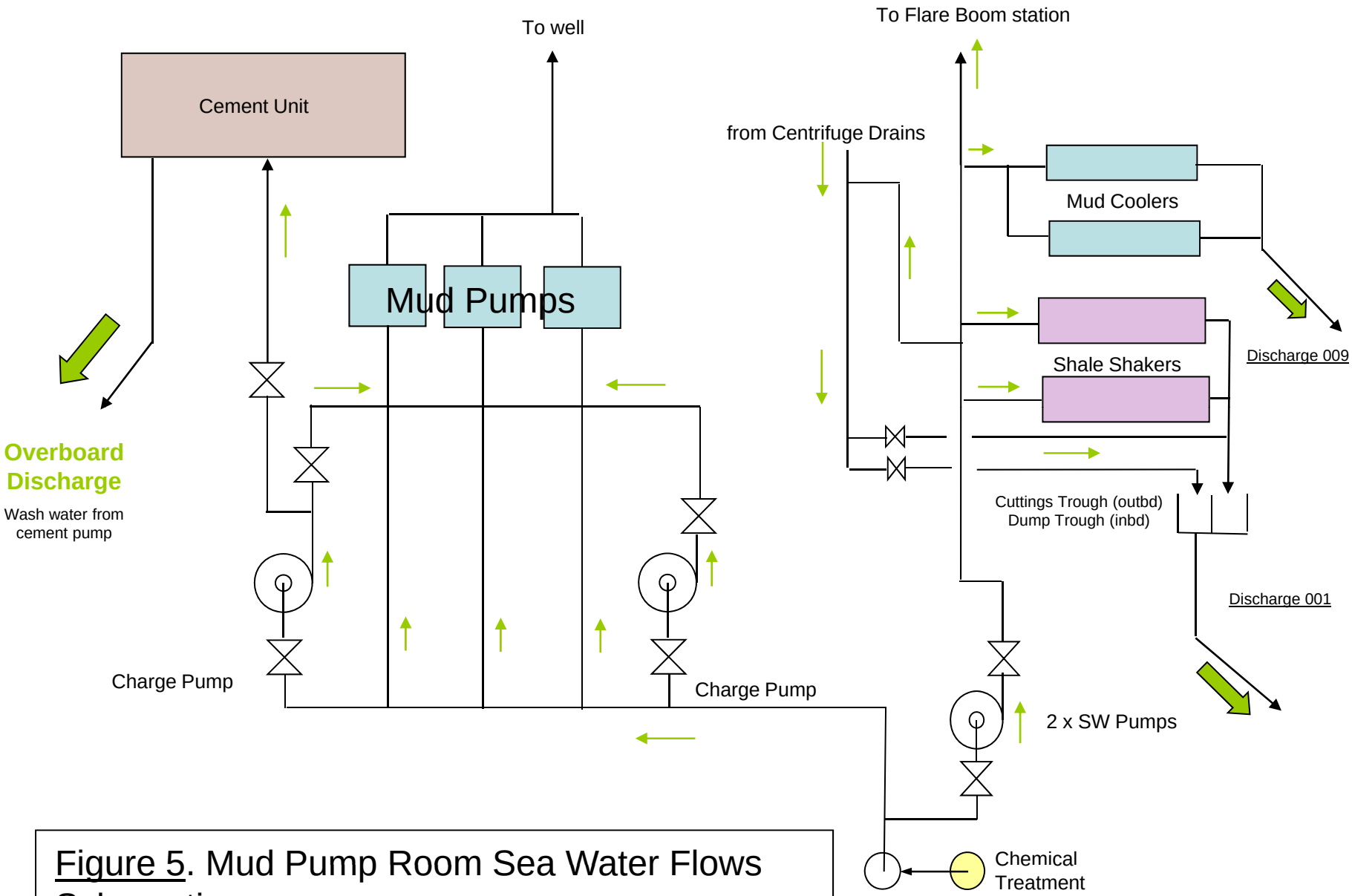
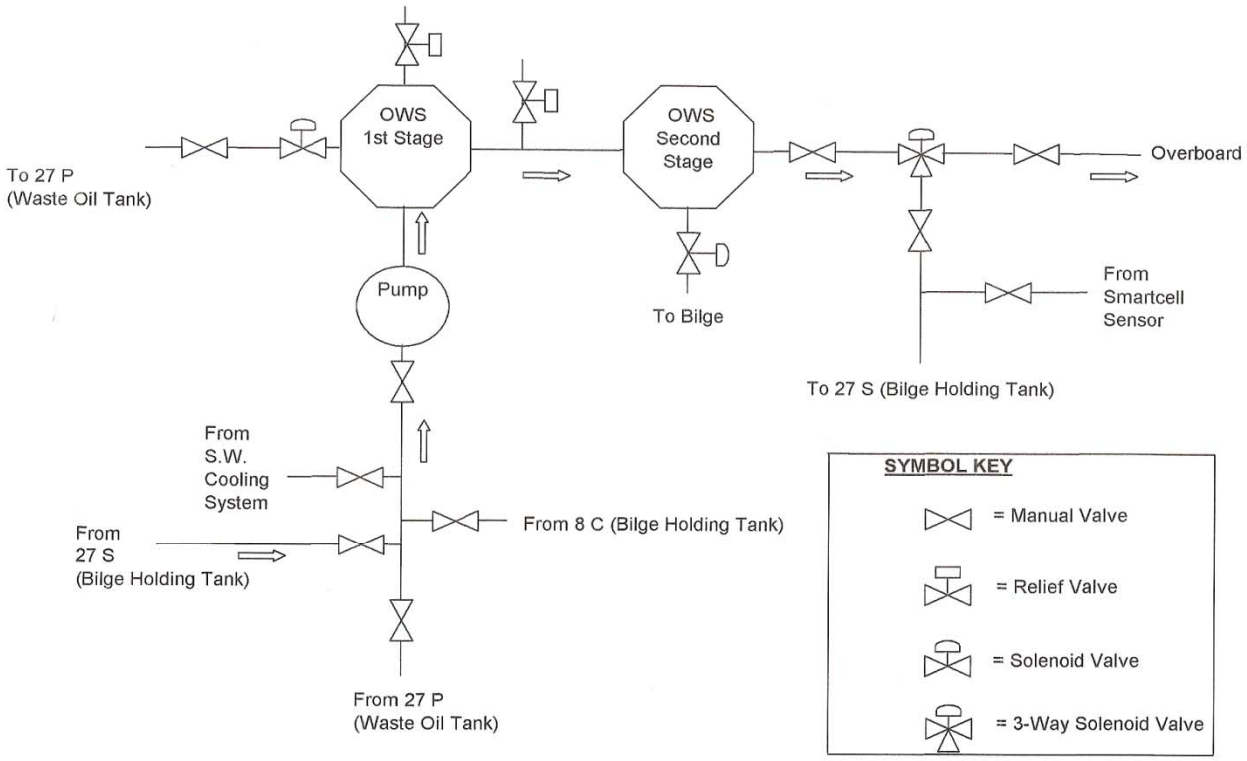


Figure 5. Mud Pump Room Sea Water Flows Schematic

Oily Water Separator System



Discharge Caisson

The discharge caisson is a pipe that runs vertically through the sponson on the hull of the drillship from the main deck level to the base of the sponson. The sponson is an exterior reinforced cladding installed on the *Discoverer* to provide ice resistance. It is hollow and extends from the main deck level to well below the water line.

Waste streams are collected aboard the drillship to a point on the main deck near the mud room. A 15-in. diameter pipe exits the hull, turns downwards and is connected to the top of the discharge caisson.

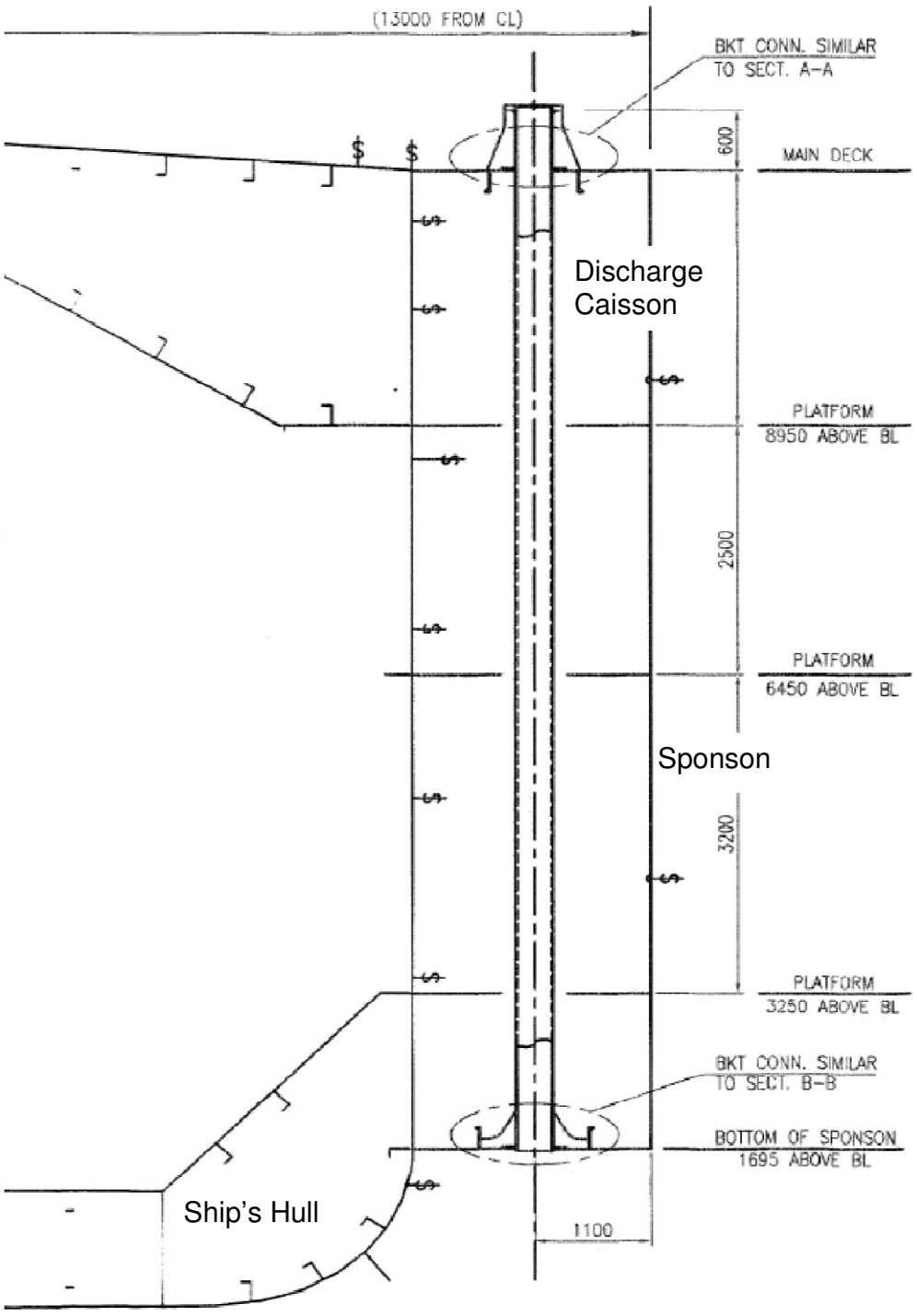
The discharge caisson, also a 15-in OD pipe, is welded into the sponson top and bottom (so that the interior of the sponson remains dry). The bottom of the sponson and the end of the discharge caisson is 5.6 ft (1.7 m) above the keel depth, and since it remains open to the sea at all times, the discharge caisson is constantly filled with water to mean sea level. This caisson is not equipped with a "float" valve; it is merely an open conduit to the sea through which most waste streams are discharged below sea level.

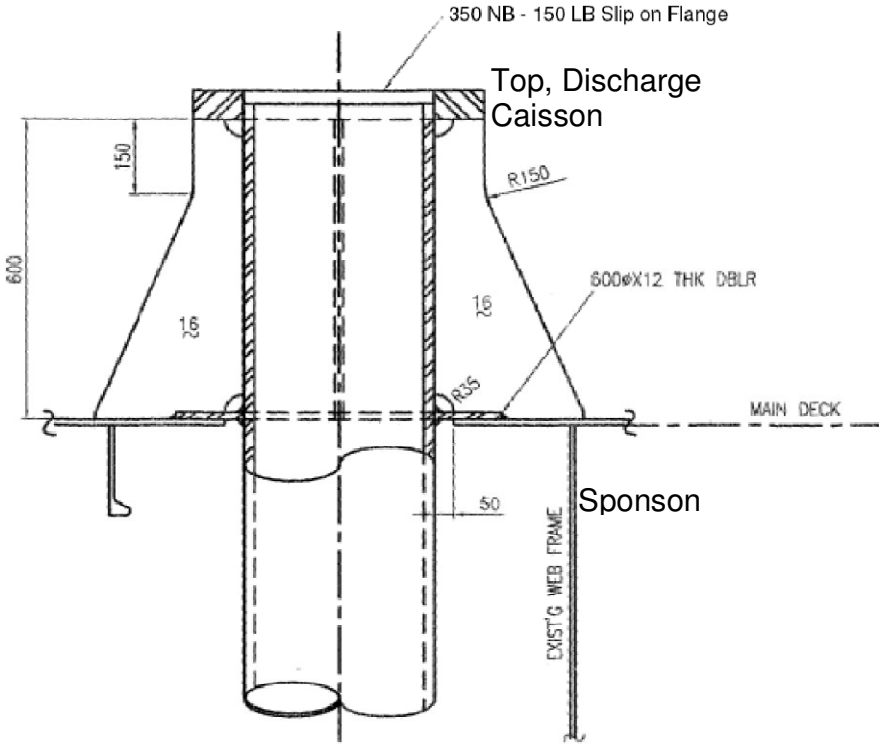
The *Discoverer* has the following draft characteristics:

Max draft at load line:	27 ft (8.2 m)
Transit draft	26.3 ft (8.0 m)
Drilling draft	25.2 ft (7.7 m)
Light ship draft	19.0 ft (5.8 m)

With the bottom of the sponson 5.6 ft above the keel, the base of the discharge caisson while drilling is 25.2 ft – 5.6 ft = 19.6 ft (6.0 m) below mean sea level. Because of heave, the water level inside the caisson is constantly changing.

See attached schematic drawings:


(13000 FROM CL)
BKT CONN. SIMILAR
TO SECT. A-A
600
MAIN DECK
Discharge
Caisson
PLATFORM
8950 ABOVE BL
2500
PLATFORM
6450 ABOVE BL
Sponson
3200
PLATFORM
3250 ABOVE BL
BKT CONN. SIMILAR
TO SECT. B-B
BOTTOM OF SPONSON
1695 ABOVE BL
Ship's Hull
1100



SECTION A–A
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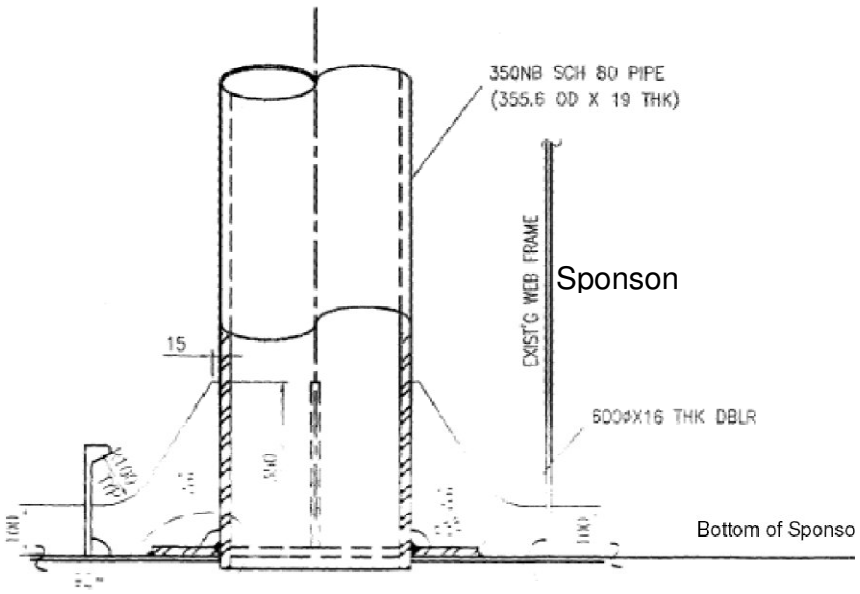

Section B-B
Base, Discharge Caisson

ATTACHMENT 1

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

APPLICANT *(Owner/Operator)*			
Owner Name:	Shell Gulf of Mexico Inc.	Operator Mailing Address:	3601 C Street
Telephone Number:	907-770-3700		Suite 1000
Operator Name:	Shell Gulf of Mexico Inc.		Anchorage, AK 99503
Telephone Number:	907-770-3700		

FACILITY			
Facility Name:	Noble Discoverer	Facility Mailing Address:	3601 C Street
Contact Name:	Susan Childs		Suite 1000
Telephone Number:	907-770-3700		Anchorage, AK 99503
Beginning Date of Operation:	TBD	Stationary Facilities	Latitude:
Expected Duration of Operation:	32 days per well site		Longitude:
Facility Type *(check applicable type)*	☐ Jackup ☒ Drill Ship ☐ Semisubmersible ☐ Other (specify):	Mobile Facilities	Initial Latitude: TBD Initial Longitude: TBD

Submit a site map showing the exact location of facility and discharges associated with the project. Mobile facilities may designate an area where they may be operating and must include a map showing those areas and a description of operations within those areas. If the discharge is within 4000 meters of an environmentally sensitive area indicated by the permit, those areas and their distance from the operation/discharge must be shown on the map.

RECEIVING WATER			
☒	Chukchi Sea	☐	Other (*specify*): ☐
☐	Beaufort Sea		

Supply confirmation with the U.S. Department of State and NOAA that the discharge is seaward of the inner boundary baseline, if applicable.

LOCATION OF DISCHARGE					
MMS	Lease Number	**OCS-Y-2267**	ADNR	Lease Number	**N/A**
	Block Number	**Posey Area Block 6714**		Block Number	**N/A**
Range of water depths below mean lower low water (MLLW) in the lease block:		From: **148'**		To:	**148'**

Attachment 1: NOI Information Sheet **Permit No.: AKG280000**

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Discharges (*check all that apply)*			
☒	001 Drilling Mud and Cuttings	Water Depth:	**19.6'**
☒	002 Deck Drainage	Water Depth:	**19.6'**
☒	003 Sanitary Waste	Water Depth:	**19.6'**
☒	004 Domestic Waste	Water Depth:	**19.6'**
☒	005 Desalination Unit Waste	Water Depth:	**19.6'**
☒	006 Blowout Preventer Fluid	Water Depth:	**148'**
☐	007 Boiler Blowdown	Water Depth:	
☐	008 Fire Control System Test Water	Water Depth:	
☒	009 Non-Contact Cooling Water	Water Depth:	**on the surface at several locations**
☒	010 Uncontaminated Ballast Water	Water Depth:	**19.6'**
☒	011 Bilge Water	Water Depth:	**19.6'**
☒	012 Excess Cement Slurry	Water Depth:	**19.6'**
☒	013 Mud, Cuttings, Cement and Seafloor	Water Depth:	**MLC through 26" section cuttings at 138'; excess cement at 148'**
☐	014 Test Fluid	Water Depth:	

Provide a brief description of the treatment process(es) and disposal practices (e.g., backhauled, reinjected, discharged, etc.) at the facility. See attached (Table 1)

Provide a line drawing that shows flow of discharged waste streams through the facility. Indicate intake sources, operations contributing to the effluent, and treatment units labeled to correspond to the discharges (001 – 014). Construct a flow balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a flow balance cannot be determined, provide a pictorial description of the nature and amount of any sources, and any collection or treatment measures.

Well Information

Well Name:	**Burger**	Latitude:	**TBD**
Well Number:	**F**	Longitude:	**TBD**
Beginning Drill Date:	**TBD**	Hole Diameter or Estimated Total Discharge Volume:	**36" diameter at surface, reducing through 4 stages to 8.5" at depth**

Drilling Fluid

Category (*check all that apply*)	☒	Water-based	Group (*check all that apply*)	☐	Lignosulfonate
	☐	Oil-based		☐	Lime
	☐	Synthetic-based		☐	Gyp
	☐	Other (*specify*):		☒	Sea-water

				☒	Saltwater
				☐	Saturated Saltwater
				☒	Nondispersed (Viscosifier/Polymer) PH/PA

NOTICE OF INTENT (NOI) IFORMATION SHEET
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OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Zone of Deposit Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a Zone of Deposit from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A ZONE OF DEPOSIT. The burden of proof for justifying a zone of deposit through demonstrating compliance with the requirements of 18 AAC 70.210 rests with the applicant.

Distance from shoreline of discharge point (measured at M.L.L.W.):		Average Mud density:	
Depth of discharge (measured at M.L.L.W.):		Flow Rate:	
Orientation of outfall to shoreline (e.g., perpendicular, 45°, parallel):		Total Volume:	
Orientation of outfall to water surface (e.g., perpendicular, 45°, parallel):		Maximum current and direction:	

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

Mixing Zone Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a mixing zone from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 through 18 AAC 70.270 rests with the applicant.

Distance from shoreline of discharge point or first port of diffuser (measured at M.L.L.W.):		Length of diffuser:	
Depth of discharge port or diffuser (measured at M.L.L.W.):		Diameter of port(s):	
Orientation of diffuser to shoreline (e.g., perpendicular, 45°, parallel):		Number of ports:	
Maximum current:		Port spacing:	

USE OF RECEIVING WATER AT DISTANCE FROM DIFFUSER i.e., Supply for drinking water, Supply for agriculture including irrigation & stock water, Supply for aquaculture, Supply for industrial use, Contact recreation, Secondary recreation, Fish spawning, Harvesting and consumption of raw fish, or other aquatic life (Not needed if not requesting a mixing zone from ADEC):

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Special Conditions (*provide justification for all that are not required, completed or provided)*					
Special Monitoring	☐	Required	☒	Not Required	Justification:
Exploration Plans	☐	Attached	☒	Not Provided	Justification: approved 2010 EP previously submitted to BOEMRE
Biological Surveys	☐	Attached	☒	Not Provided	Justification: None required
Environmental Report(s)	☐	Attached	☒	Not Provided	Justification: Submitted to BOEMRE as part of the 2010 Exploration Plan
Drilling Fluid Plan	☐	Complete	☒	Not Complete	Justification: In Preparation

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:		Date:	12/16/2010
Printed Name:	Susan Childs	Title:	Alaska Support Intergrator Manager

Mail Completed NOI to EPA and ADEC at the following addresses:

US EPA 1200 6th Avenue, M/S OWW-130 Seattle, WA 98101	ADEC, Water Division 555 Cordova Street Anchorage, Alaska 99501

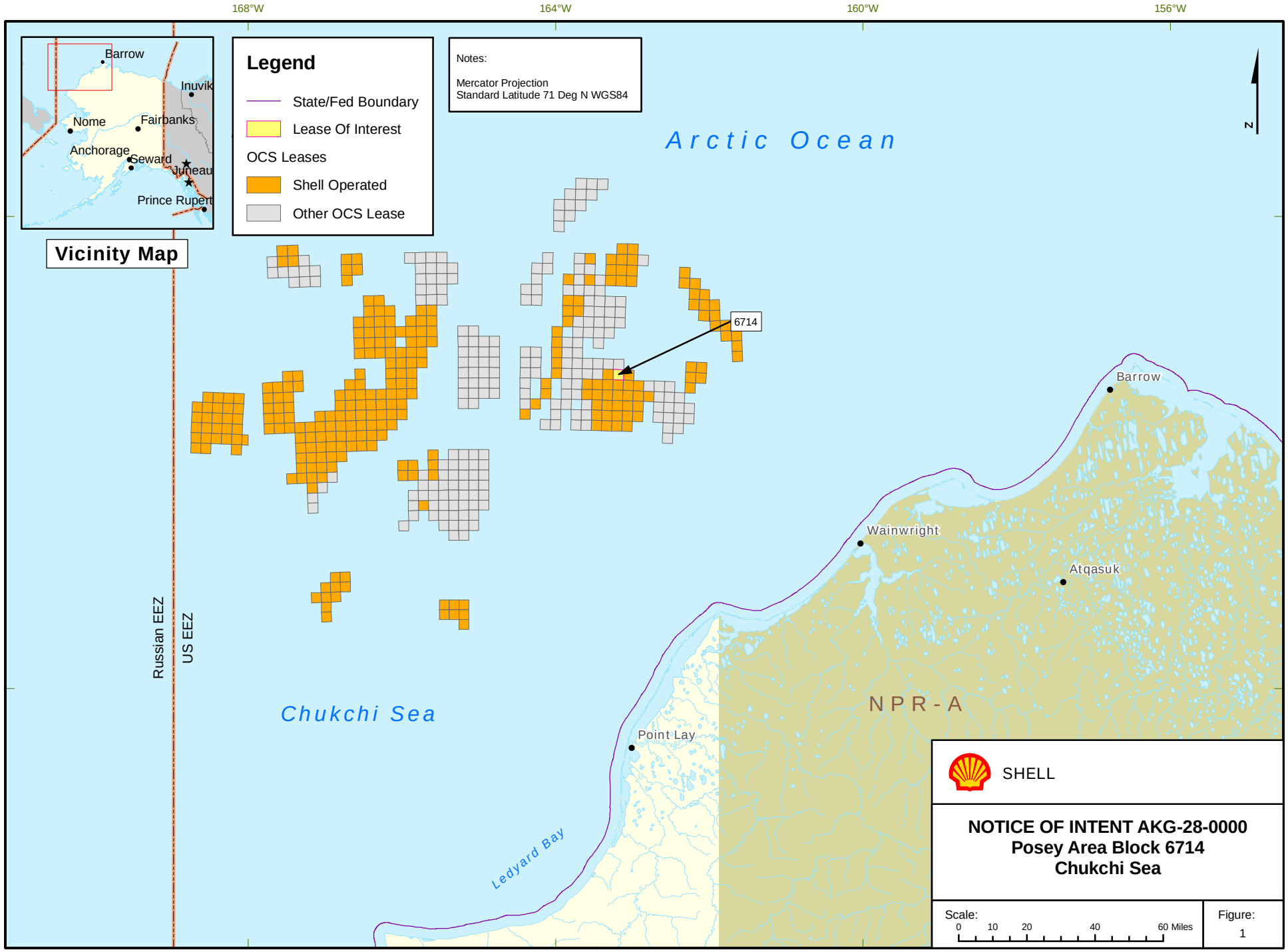
168°W
164°W
160°W
156°W
72°N
70°N
Barrow
Inuvik
Nome
Fairbanks
Anchorage
Seward
Juneau
Prince Rupert
Vicinity Map
Legend
State/Fed Boundary
Lease Of Interest
OCS Leases
Shell Operated
Other OCS Lease
Notes:
Mercator Projection
Standard Latitude 71 Deg N WGS84
N
Arctic Ocean
6714
Barrow
Wainwright
Atqasuk
Point Lay
N P R - A
Russian EEZ
US EEZ
Chukchi Sea
Ledyard Bay
SHELL
NOTICE OF INTENT AKG-28-0000
Posey Area Block 6714
Chukchi Sea
Scale:
0 10 20 40 60 Miles
Figure:
1
Shell AV GIS/12-14-2010/AKG-28-0000_Fig1_v1.mxd

TABLE 1
Types and Estimated Volume Ocean Discharges – Burger F Prospect

Type of Waste	Total Amount to be Discharged	Discharge Rate*	Discharge Method
Drill cuttings (from MLC through 26-inch section) Discharge 013	4,152 bbl/well (cuttings only; no drilling muds used)	346 bbl/day*	Mud Line Cellar (MLC) through 26" section cuttings deposited at the seafloor
WBM spent drilling fluids – Discharge 001	3,506 bbl/well spent mud plus mud in tanks (if multiple wells drilled per season, water based muds will be transferred to and used at the next well)	175 bbl/day (including discharge of excess water based drilling fluid at end of the drilling season)	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Cuttings from water based intervals – Discharge 001	1,753 bbl/well	88 bbl/day	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Sanitary waste – Discharge 003	960 bbl/well	30 bbl/day	Treated in marine sanitary device prior to discharge to meet NPDES limits (based on 140 people at 9 gal/person/day)
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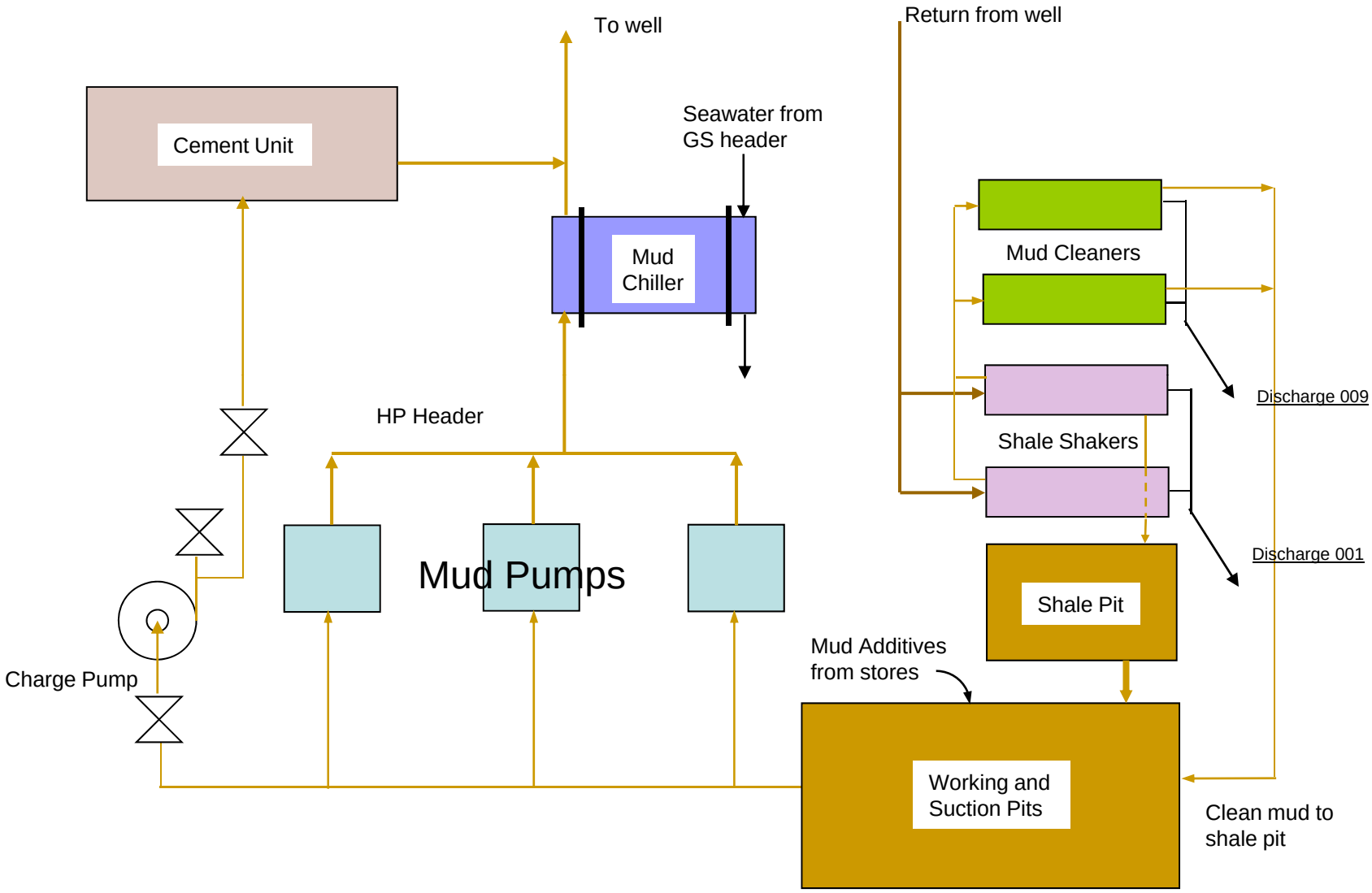
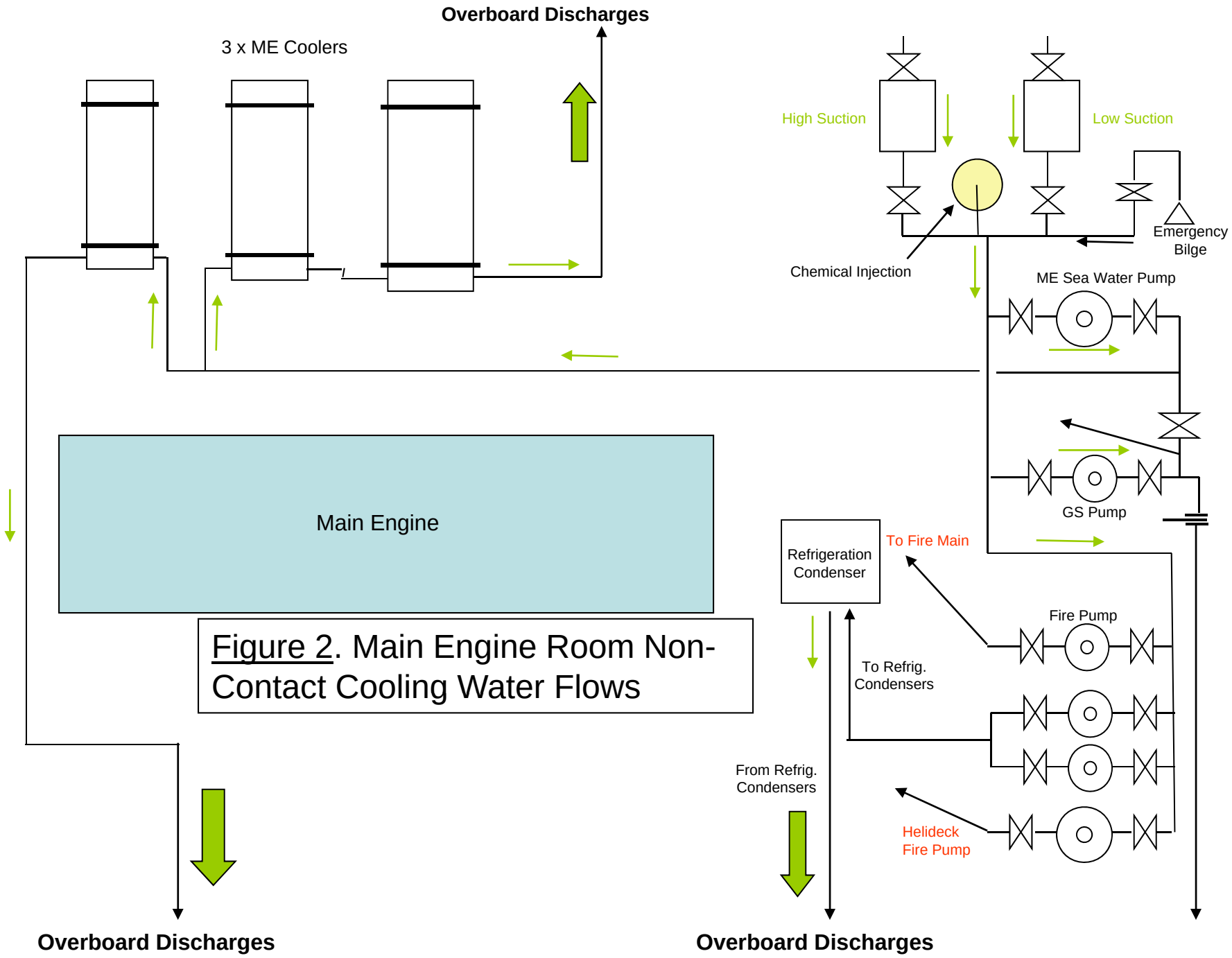
* assumes 12 days to complete the MLC through 26-inch section; 20 days to complete the remainder of the well

Figure 1. Drilling Fluid Flowpath





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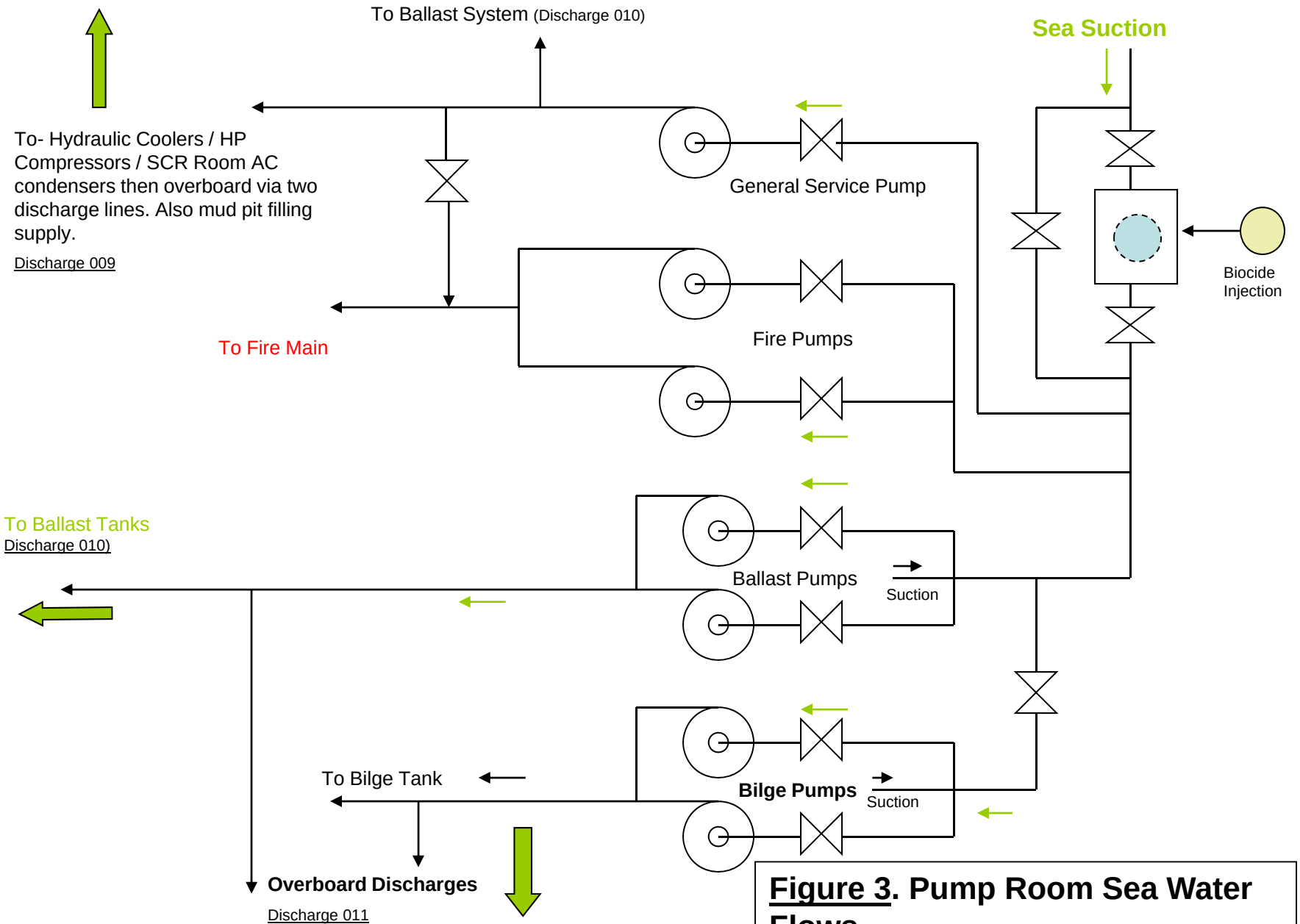

Figure 3. Pump Room Sea Water Flows

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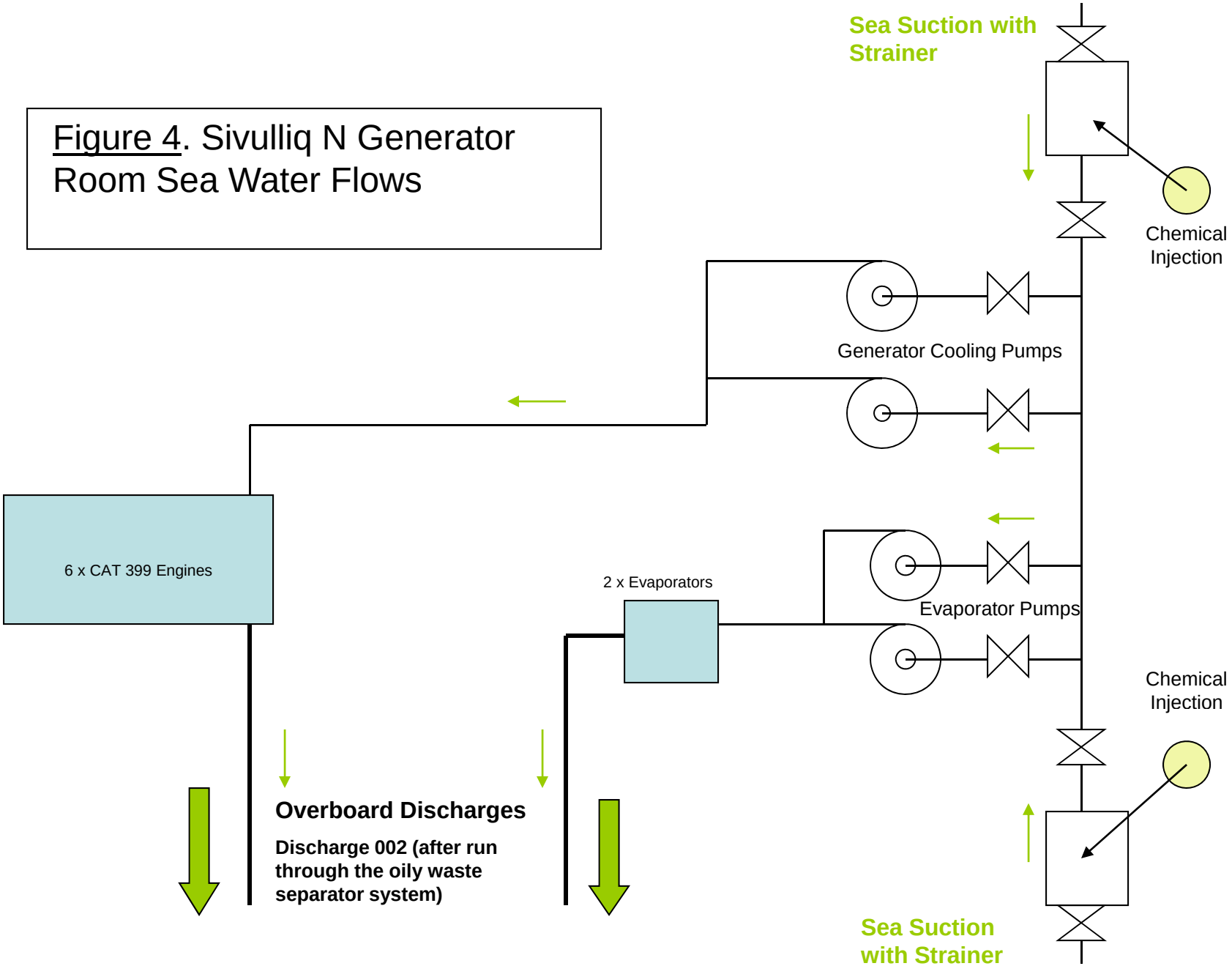


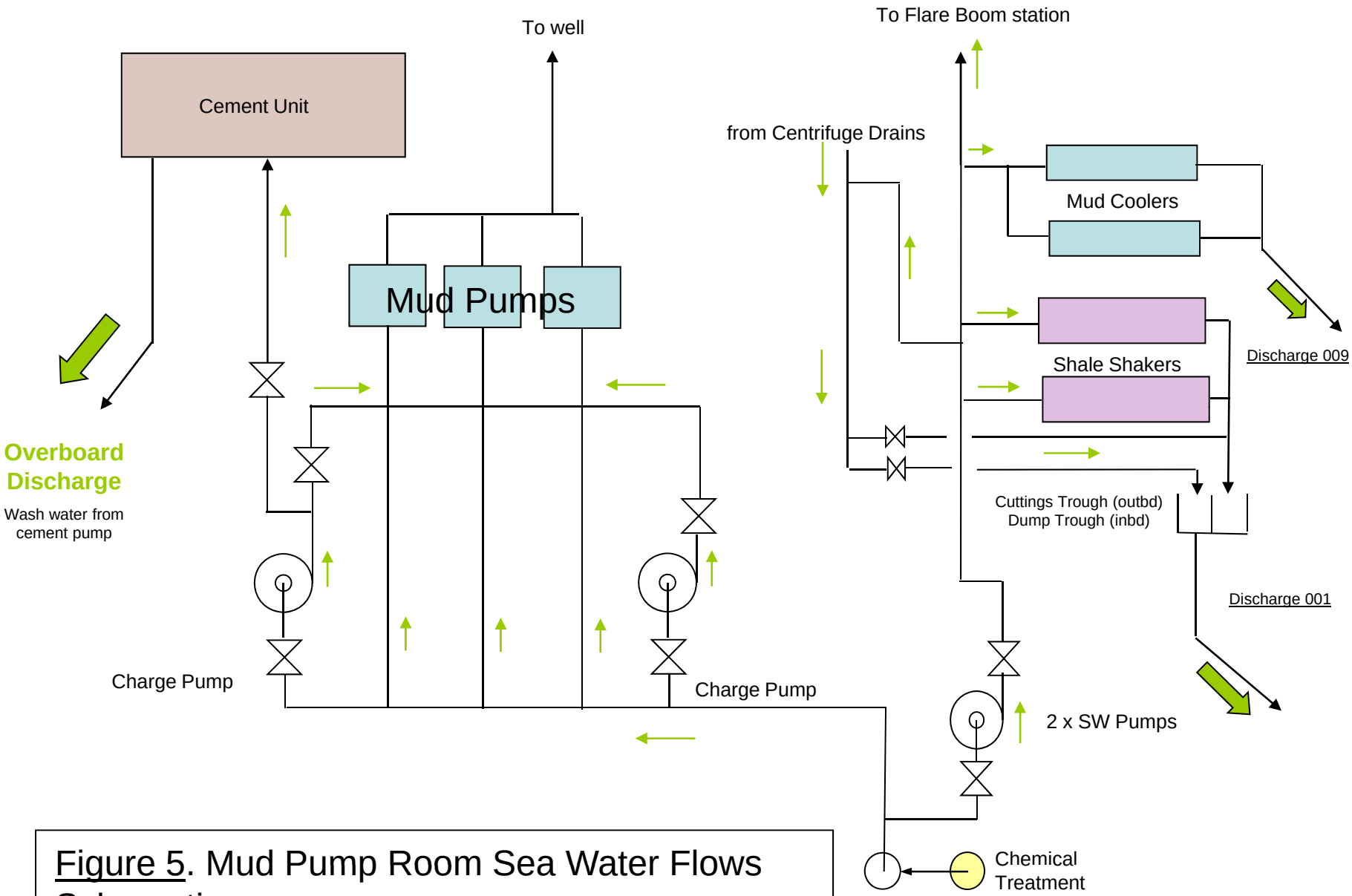
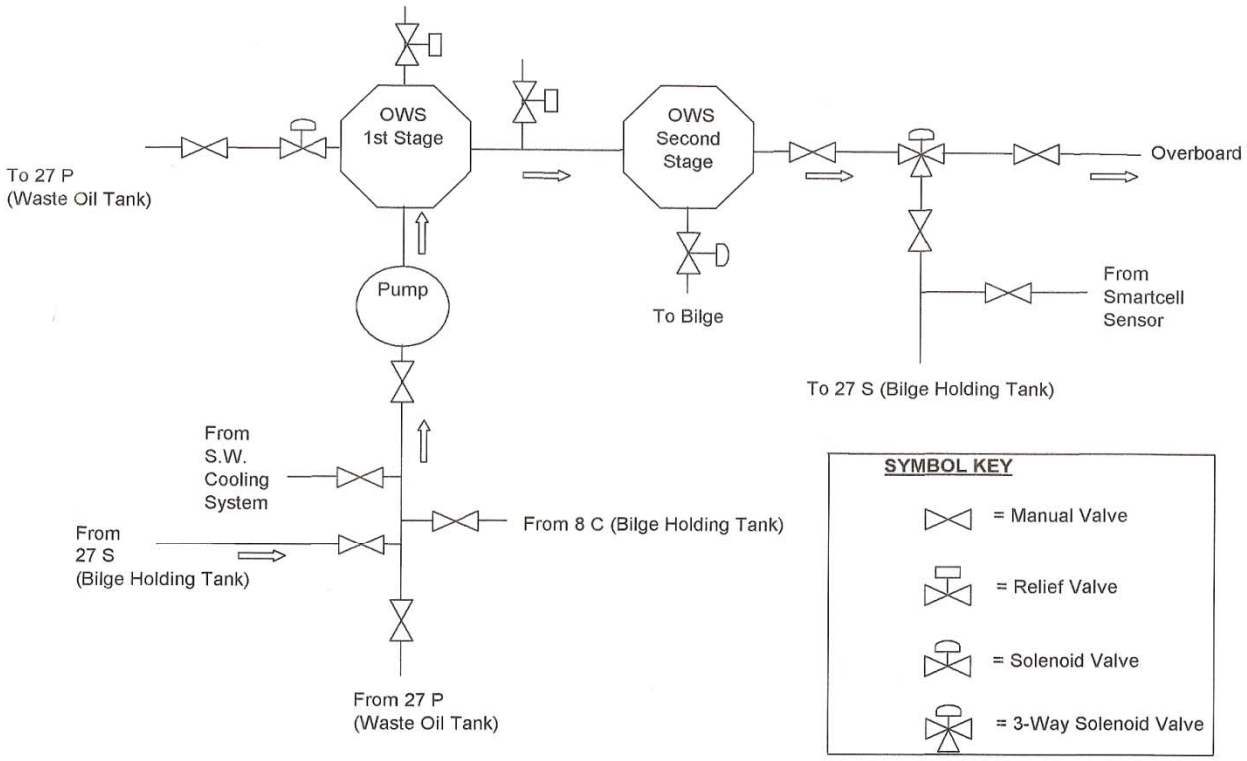


Figure 5. Mud Pump Room Sea Water Flows Schematic

Oily Water Separator System



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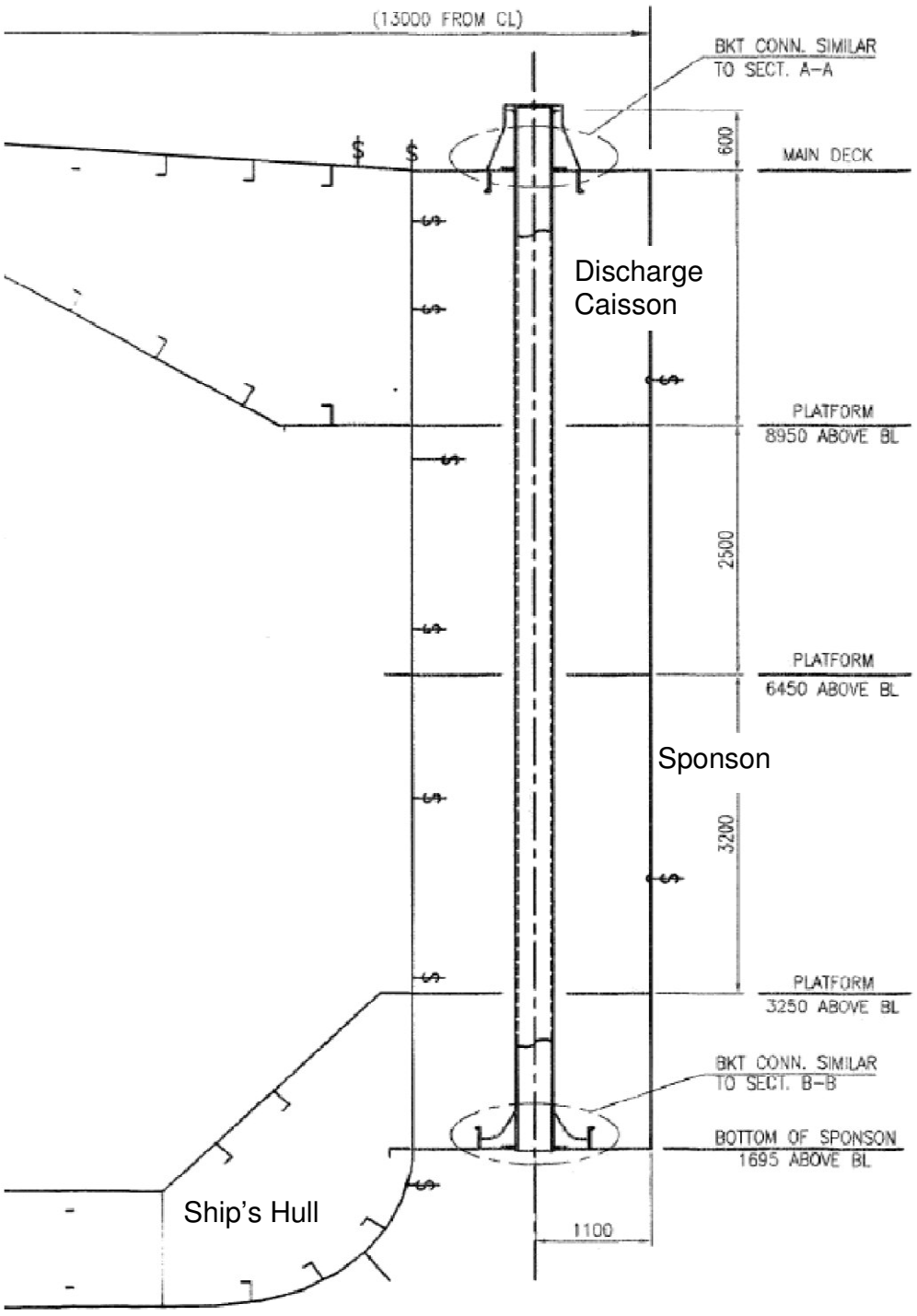
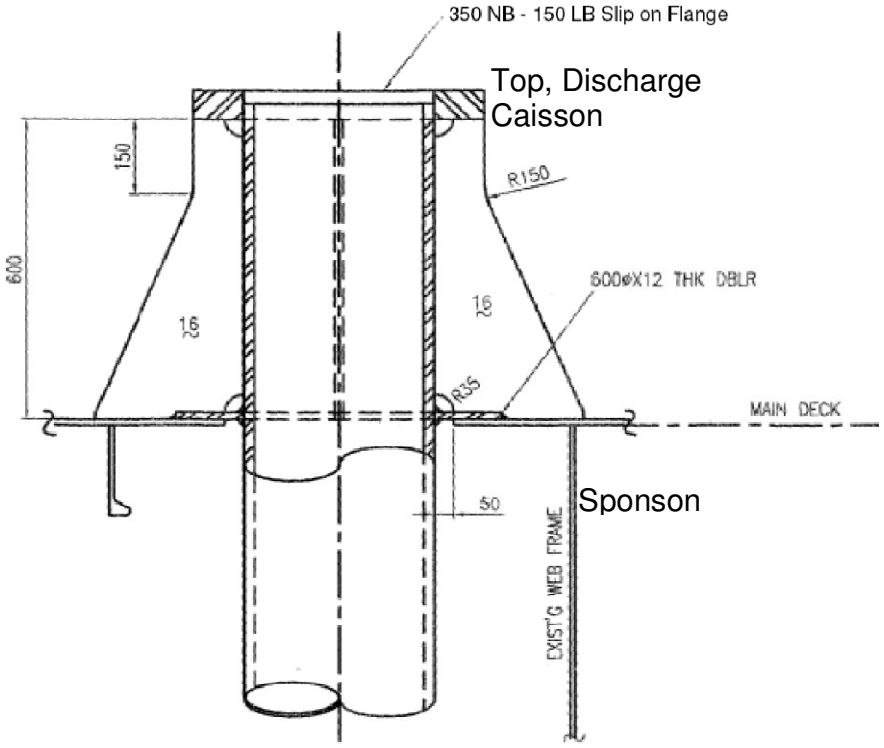
See attached schematic drawings:


(13000 FROM CL)
BKT CONN. SIMILAR
TO SECT. A-A
600
MAIN DECK
Discharge
Caisson
PLATFORM
8950 ABOVE BL
2500
PLATFORM
6450 ABOVE BL
Sponson
3200
PLATFORM
3250 ABOVE BL
BKT CONN. SIMILAR
TO SECT. B-B
BOTTOM OF SPONSON
1695 ABOVE BL
Ship's Hull
1100



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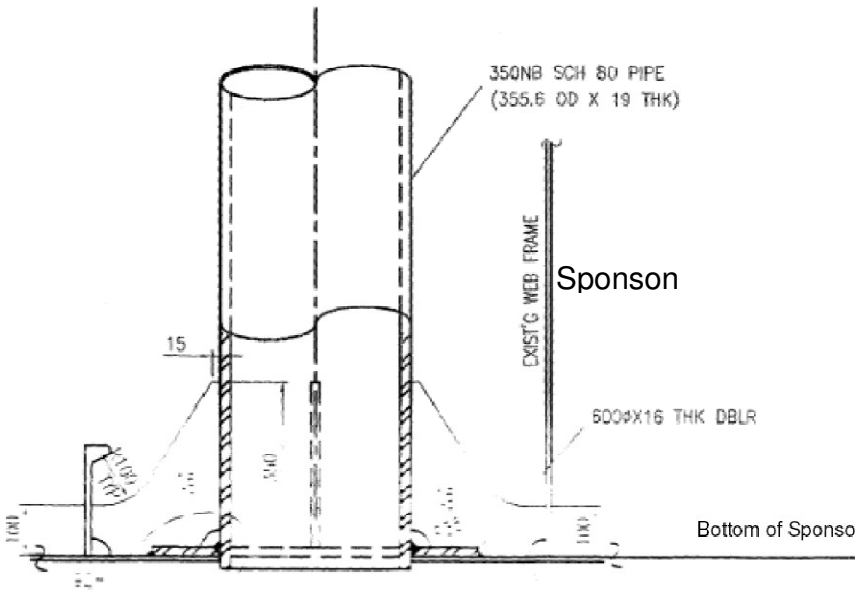

Section B-B
Base, Discharge Caisson

ATTACHMENT 1

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

APPLICANT *(Owner/Operator)*					
Owner Name:	Shell Gulf of Mexico Inc.		Operator Mailing Address:	3601 C Street	
Telephone Number:	907-770-3700			Suite 1000	
Operator Name:	Shell Gulf of Mexico Inc.			Anchorage, AK 99503	
Telephone Number:	907-770-3700				
FACILITY					
Facility Name:	Noble Discoverer		Facility Mailing Address:	3601 C Street	
Contact Name:	Susan Childs			Suite 1000	
Telephone Number:	907-770-3700			Anchorage, AK 99503	
Beginning Date of Operation:	TBD		Stationary Facilities	Latitude:	
Expected Duration of Operation:	32 days per well site			Longitude:	
Facility Type *(check applicable type)*	☐	Jackup	Mobile Facilities	Initial Latitude:	TBD
	☒	Drill Ship			
	☐	Semisubmersible			
	☐	Other (specify):		Initial Longitude:	TBD
Submit a site map showing the exact location of facility and discharges associated with the project. Mobile facilities may designate an area where they may be operating and must include a map showing those areas and a description of operations within those areas. If the discharge is within 4000 meters of an environmentally sensitive area indicated by the permit, those areas and their distance from the operation/discharge must be shown on the map.					
RECEIVING WATER					
☒	Chukchi Sea		☐	Other (*specify*): ☐	
☐	Beaufort Sea				
Supply confirmation with the U.S. Department of State and NOAA that the discharge is seaward of the inner boundary baseline, if applicable.					
LOCATION OF DISCHARGE					
MMS	Lease Number	**OCS-Y-2321**	ADNR	Lease Number	
	Block Number	**6912**		Block Number	
Range of water depths below mean lower low water (MLLW) in the lease block:		From: **144'**		To:	**144'**

NOTICE OF INTENT (NOI) IFORMATION SHEET
NPDES GENERAL PERMIT AKG280000
OIL AND GAS EXPLORATION FACILITIES
ON THE OUTER CONTINENTAL SHELF AND CONTIGUOUS STATE WATERS

Discharges (*check all that apply)*			
☒	001 Drilling Mud and Cuttings	Water Depth:	**19.6'**
☒	002 Deck Drainage	Water Depth:	**19.6'**
☒	003 Sanitary Waste	Water Depth:	**19.6'**
☒	004 Domestic Waste	Water Depth:	**19.6'**
☒	005 Desalination Unit Waste	Water Depth:	**19.6'**
☒	006 Blowout Preventer Fluid	Water Depth:	**144'**
☐	007 Boiler Blowdown	Water Depth:	
☐	008 Fire Control System Test Water	Water Depth:	
☒	009 Non-Contact Cooling Water	Water Depth:	**on the surface at several locations**
☒	010 Uncontaminated Ballast Water	Water Depth:	**19.6'**
☒	011 Bilge Water	Water Depth:	**19.6'**
☒	012 Excess Cement Slurry	Water Depth:	**19.6'**
☒	013 Mud, Cuttings, Cement and Seafloor	Water Depth:	**MLC through 26" section cuttings at 134', excess cement at 144'**
☐	014 Test Fluid	Water Depth:	

Provide a brief description of the treatment process(es) and disposal practices (e.g., backhauled, reinjected, discharged, etc.) at the facility. See attached (Table 1)

Provide a line drawing that shows flow of discharged waste streams through the facility. Indicate intake sources, operations contributing to the effluent, and treatment units labeled to correspond to the discharges (001 – 014). Construct a flow balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a flow balance cannot be determined, provide a pictorial description of the nature and amount of any sources, and any collection or treatment measures.

Well Information

Well Name:	**Burger**	Latitude:	**TBD**
Well Number:	**J**	Longitude:	**TBD**
Beginning Drill Date:	**TBD**	Hole Diameter or Estimated Total Discharge Volume:	**36" diameter at surface, reducing through 4 stages to 8.5" at depth**

Drilling Fluid

Category (*check all that apply*)	☒	Water-based	Group (*check all that apply*)	☐	Lignosulfonate
	☐	Oil-based		☐	Lime
	☐	Synthetic-based		☐	Gyp
	☐	Other (*specify*):		☒	Sea-water

				☒	Saltwater
				☐	Saturated Saltwater
				☒	Nondispersed (Viscosifier/Polymer) PH/PA

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Zone of Deposit Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a Zone of Deposit from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A ZONE OF DEPOSIT. The burden of proof for justifying a zone of deposit through demonstrating compliance with the requirements of 18 AAC 70.210 rests with the applicant.

Distance from shoreline of discharge point (measured at M.L.L.W.):		Average Mud density:	
Depth of discharge (measured at M.L.L.W.):		Flow Rate:	
Orientation of outfall to shoreline (e.g., perpendicular, 45°, parallel):		Total Volume:	
Orientation of outfall to water surface (e.g., perpendicular, 45°, parallel):		Maximum current and direction:	

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

Mixing Zone Request (*applicable to those discharges within state of Alaska waters)*				
Are you requesting a mixing zone from ADEC?	☐	Yes (*continue filling out this section*)	☒	No (*skip this section and proceed to Special Conditions, below*)

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 through 18 AAC 70.270 rests with the applicant.

Distance from shoreline of discharge point or first port of diffuser (measured at M.L.L.W.):		Length of diffuser:	
Depth of discharge port or diffuser (measured at M.L.L.W.):		Diameter of port(s):	
Orientation of diffuser to shoreline (e.g., perpendicular, 45°, parallel):		Number of ports:	
Maximum current:		Port spacing:	

USE OF RECEIVING WATER AT DISTANCE FROM DIFFUSER i.e., Supply for drinking water, Supply for agriculture including irrigation & stock water, Supply for aquaculture, Supply for industrial use, Contact recreation, Secondary recreation, Fish spawning, Harvesting and consumption of raw fish, or other aquatic life (Not needed if not requesting a mixing zone from ADEC):

If possible, provide salinity and temperature data from the receiving water surface to the depth of the discharge port or diffuser.

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Special Conditions (*provide justification for all that are not required, completed or provided)*					
Special Monitoring	☐	Required	☒	Not Required	Justification:
Exploration Plans	☐	Attached	☒	Not Provided	Justification: approved 2010 EP previously submitted to BOEMRE
Biological Surveys	☐	Attached	☒	Not Provided	Justification: None required
Environmental Report(s)	☐	Attached	☒	Not Provided	Justification: Submitted to BOEMRE as part of the 2010 Exploration Plan
Drilling Fluid Plan	☐	Complete	☒	Not Complete	Justification: In Preparation

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:		Date:	12/16/2010
Printed Name:	Susan Childs	Title:	Alaska Support Intergrator Manager

Mail Completed NOI to EPA and ADEC at the following addresses:

US EPA 1200 6th Avenue, M/S OWW-130 Seattle, WA 98101	ADEC, Water Division 555 Cordova Street Anchorage, Alaska 99501

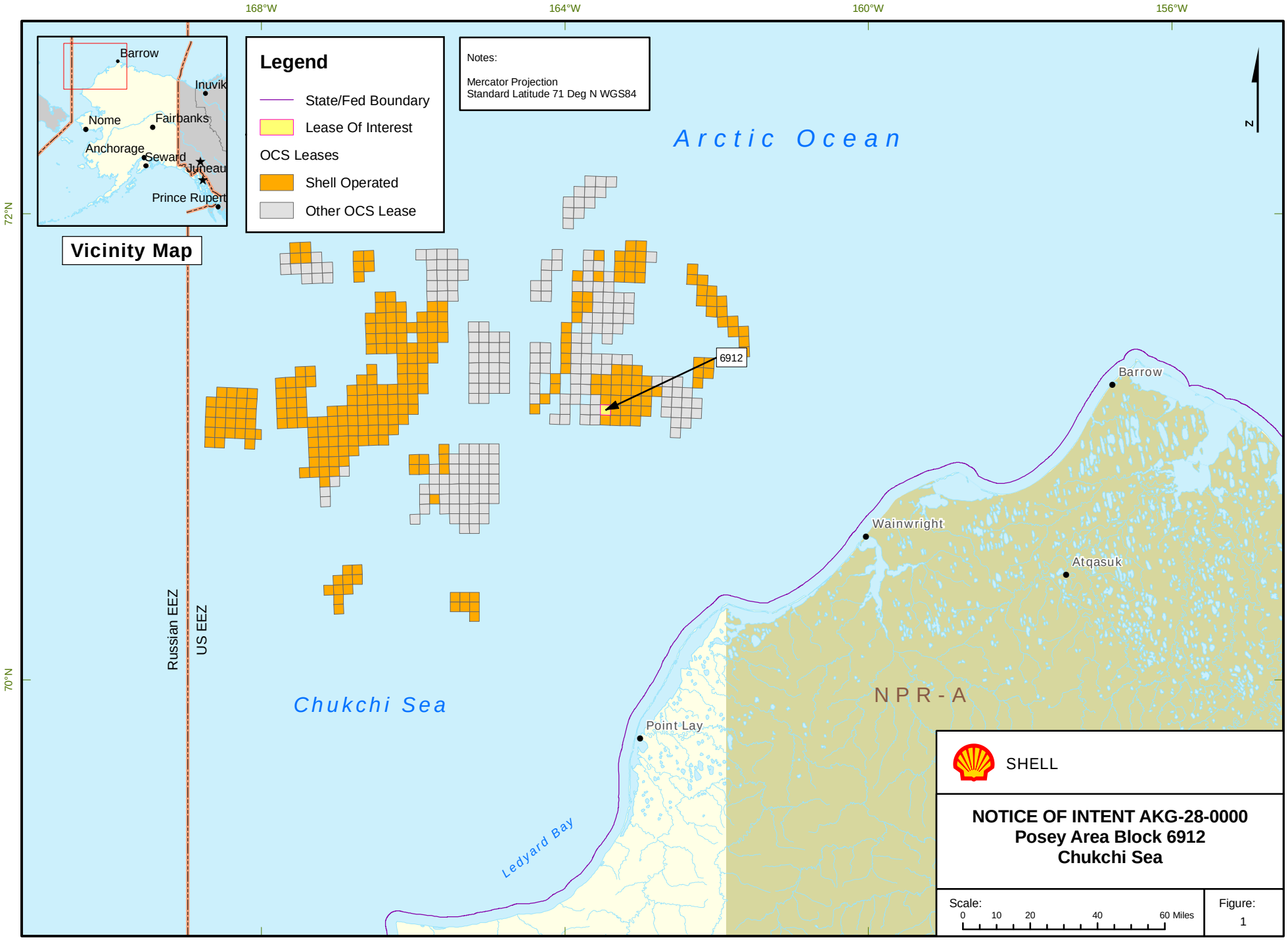
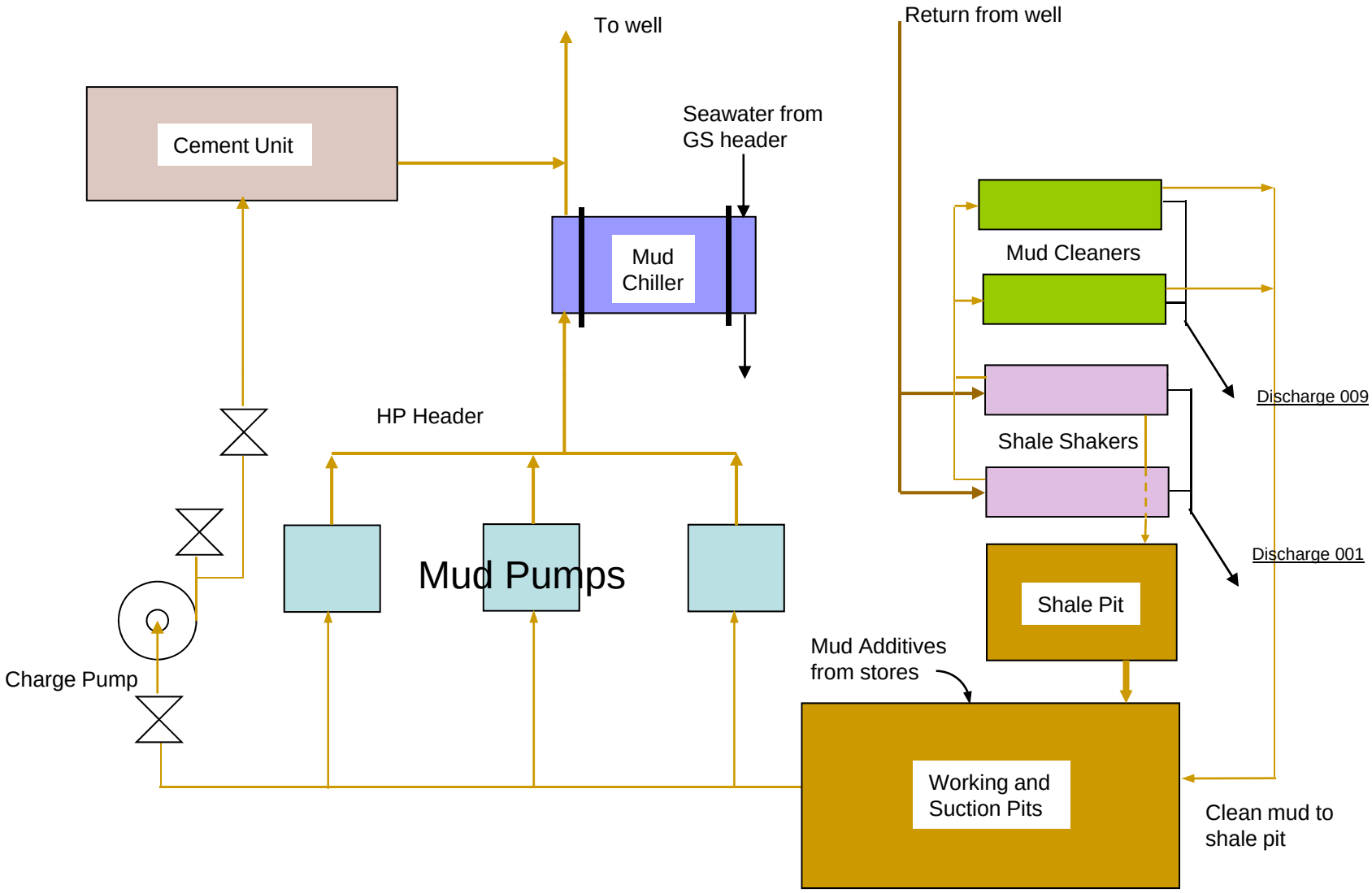

168°W
164°W
160°W
156°W
72°N
70°N
Barrow
Inuvik
Nome
Fairbanks
Anchorage
Seward
Juneau
Prince Rupert
Vicinity Map
Legend
State/Fed Boundary
Lease Of Interest
OCS Leases
Shell Operated
Other OCS Lease
Notes:
Mercator Projection
Standard Latitude 71 Deg N WGS84
N
Arctic Ocean
6912
Barrow
Wainwright
Atqasuk
Point Lay
N P R - A
Russian EEZ
US EEZ
Chukchi Sea
Ledyard Bay
SHELL
NOTICE OF INTENT AKG-28-0000
Posey Area Block 6912
Chukchi Sea
Scale:
0 10 20 40 60 Miles
Figure:
1
Shell AV GIS/12-14-2010/AKG-28-0000_Fig1_v1.mxd

TABLE 1
Types and Estimated Volume Ocean Discharges – Burger J Prospect

Type of Waste	Total Amount to be Discharged	Discharge Rate*	Discharge Method
Drill cuttings (from MLC through 26-inch section) Discharge 013	4,152 bbl/well (cuttings only; no drilling muds used)	346 bbl/day	Mud Line Cellar (MLC) through 26" section cuttings deposited at the seafloor
WBM spent drilling fluids – Discharge 001	3,378 bbl/well spent mud plus mud in tanks (if multiple wells drilled per season, water based muds will be transferred to and used at the next well)	169 bbl/day (including discharge of excess water based drilling fluid at end of the drilling season)	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Cuttings from water based intervals – Discharge 001	1,689 bbl/well	84 bbl/day	Discharged to sea through disposal caisson after 30:1 dilution with seawater
Sanitary waste – Discharge 003	960 bbl/well	30 bbl/day	Treated in marine sanitary device prior to discharge to meet NPDES limits (based on 140 people at 9 gal/person/day)
Domestic waste – Discharge 004	10,667 bbl/well	333 bbl/day	Discharged to water through the disposal caisson (based on 140 people at 100 gal/person/day) Note: all food waste to be incinerated
Excess cement – Discharge 012	50 bbl/well	Two occasions at 1 bbl/min	Discharged at seafloor during 30-inch and 20-inch cementing operations
Desalination unit brine water – Discharge 005	4,000 bbl/well	125 bbl/day	Discharged to water through disposal caisson
Deck drainage – Discharge 002	160 bbl/well	5 bbl/day (dependent on rainfall)	Drains to the oily water separator. Uncontaminated water id discharged through the disposal caisson; contaminated water is stored in a waste oil tank then transferred by boat to an approved treatment/disposal site.
Cooling water – Discharge 009	1,440,000 bbl/well	45,000 bbl/day	Discharged to water through a number of outlets
Firewater - Discharge 008	0	0 bbl/month	No routine firewater system testing anticipated
Ballast water – Discharge 010	160 bbl/well	5 bbl/day	Discharged to sea through disposal caisson
Bilge water – Discharge 011	404 bbl/well	13 bbl/day	Treated in oily water separator, uncontaminated water discharged to sea through disposal caisson, oily water stored onboard, transferred for transport by boat to an approved disposal site
BOP fluid – Discharge 006	42 bbl/well (6 tests; 7 bbl per test)	7 bbl/test	Discharged subsea at BOP when testing BOP

* assumes 12 days to complete the MLC through 26-inch section; 20 days to complete the remainder of the well

Figure 1. Drilling Fluid Flowpath



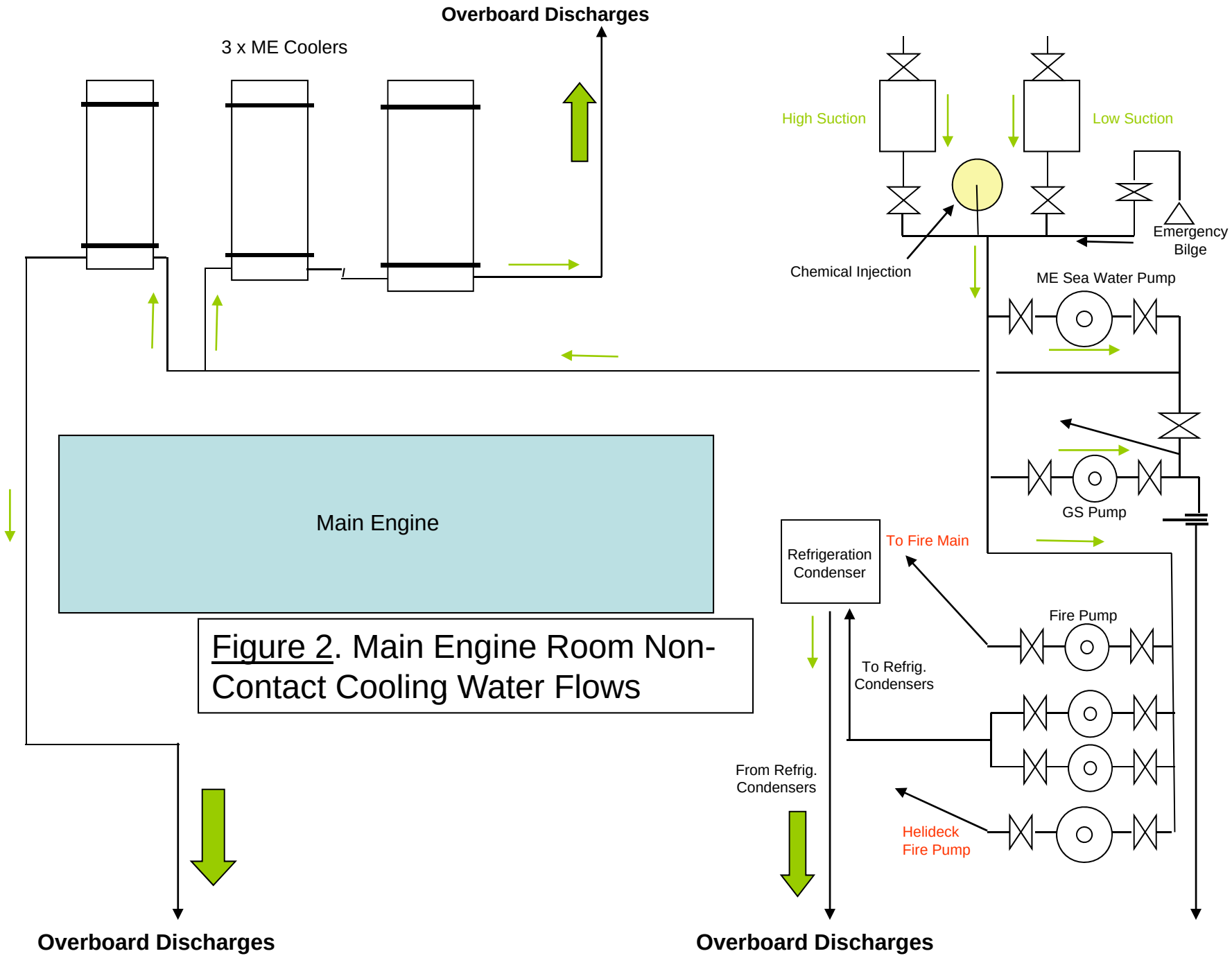


Figure 2. Main Engine Room Non-Contact Cooling Water Flows

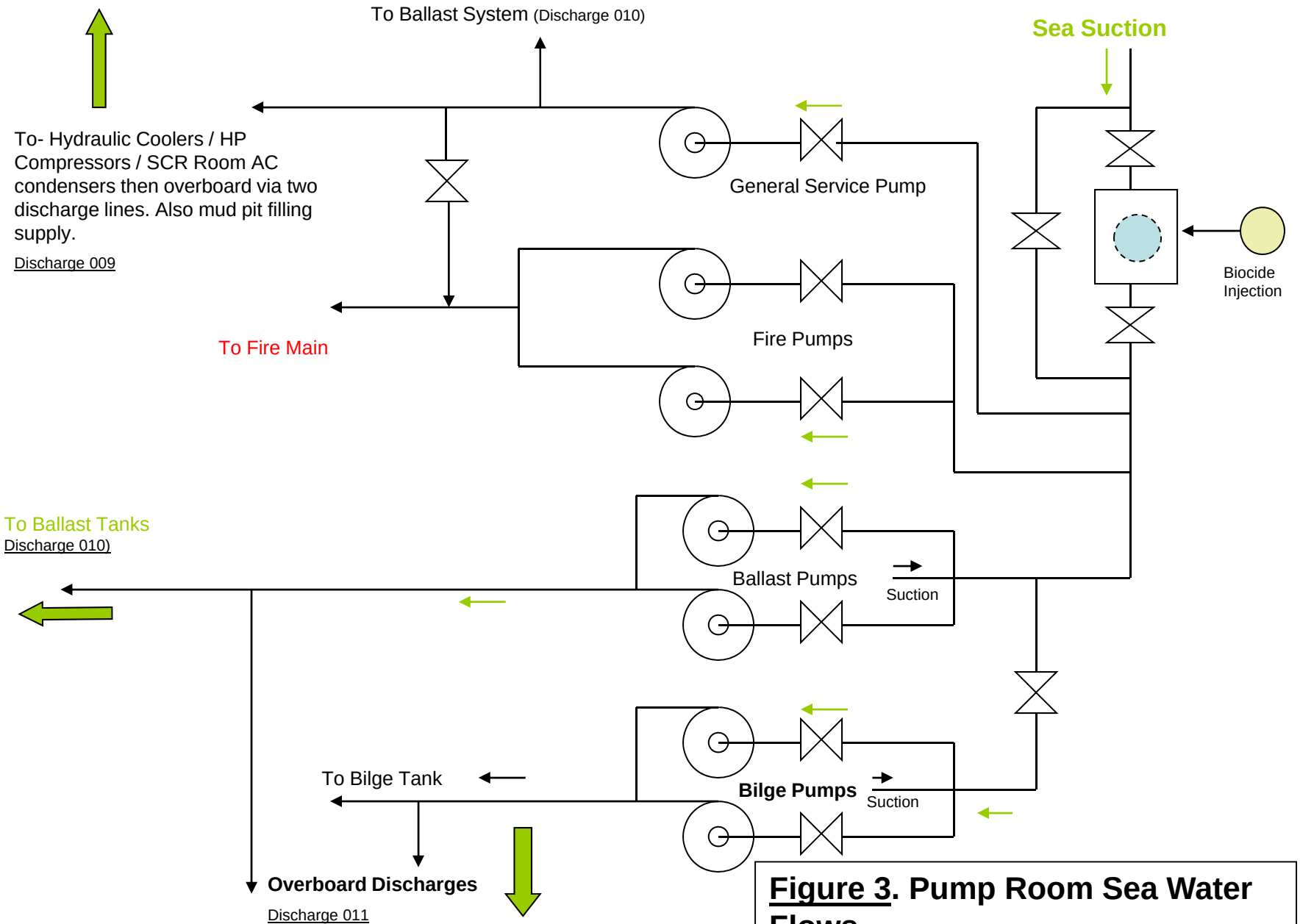
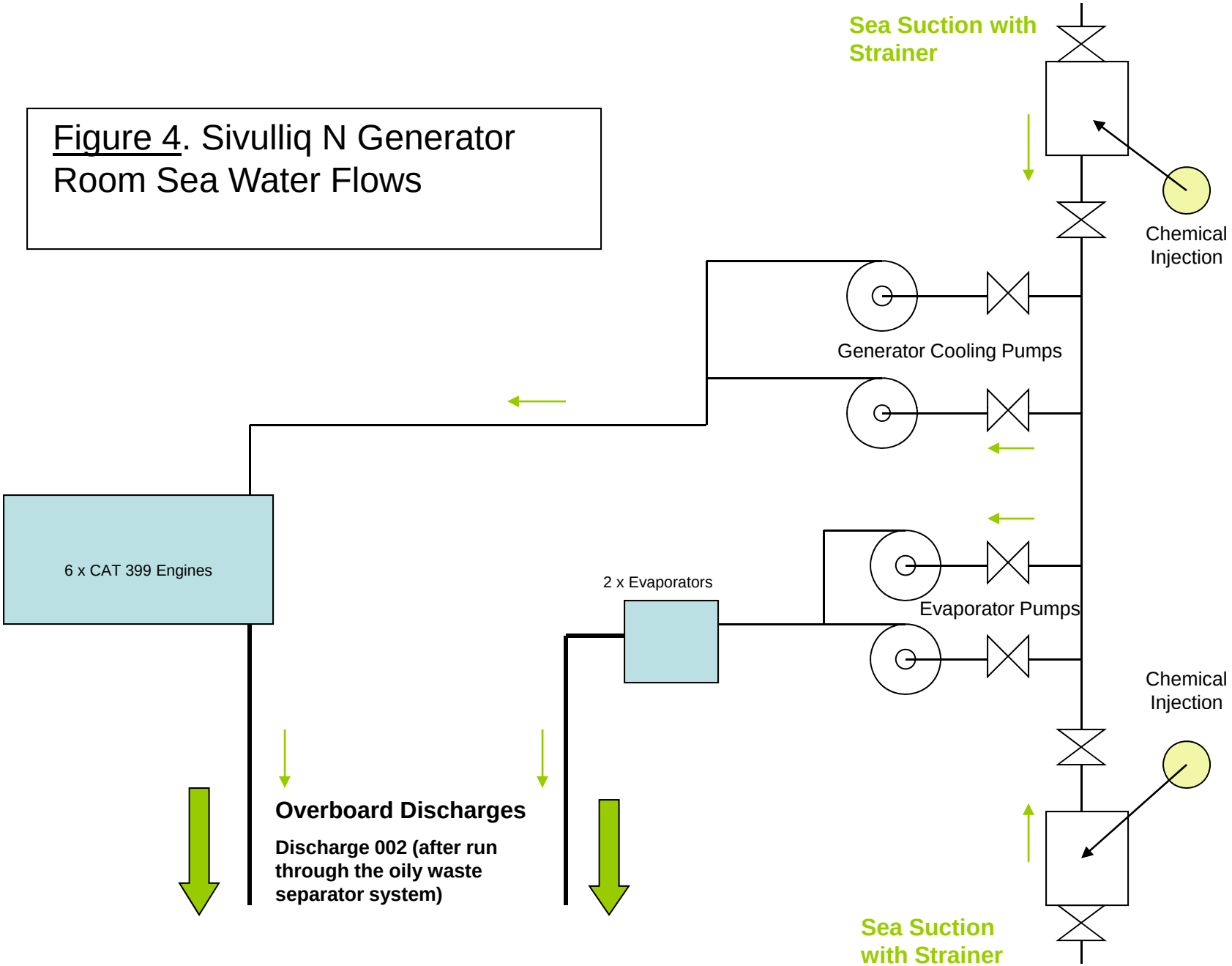


Figure 3. Pump Room Sea Water Flows

Figure 4. Sivulliq N Generator Room Sea Water Flows



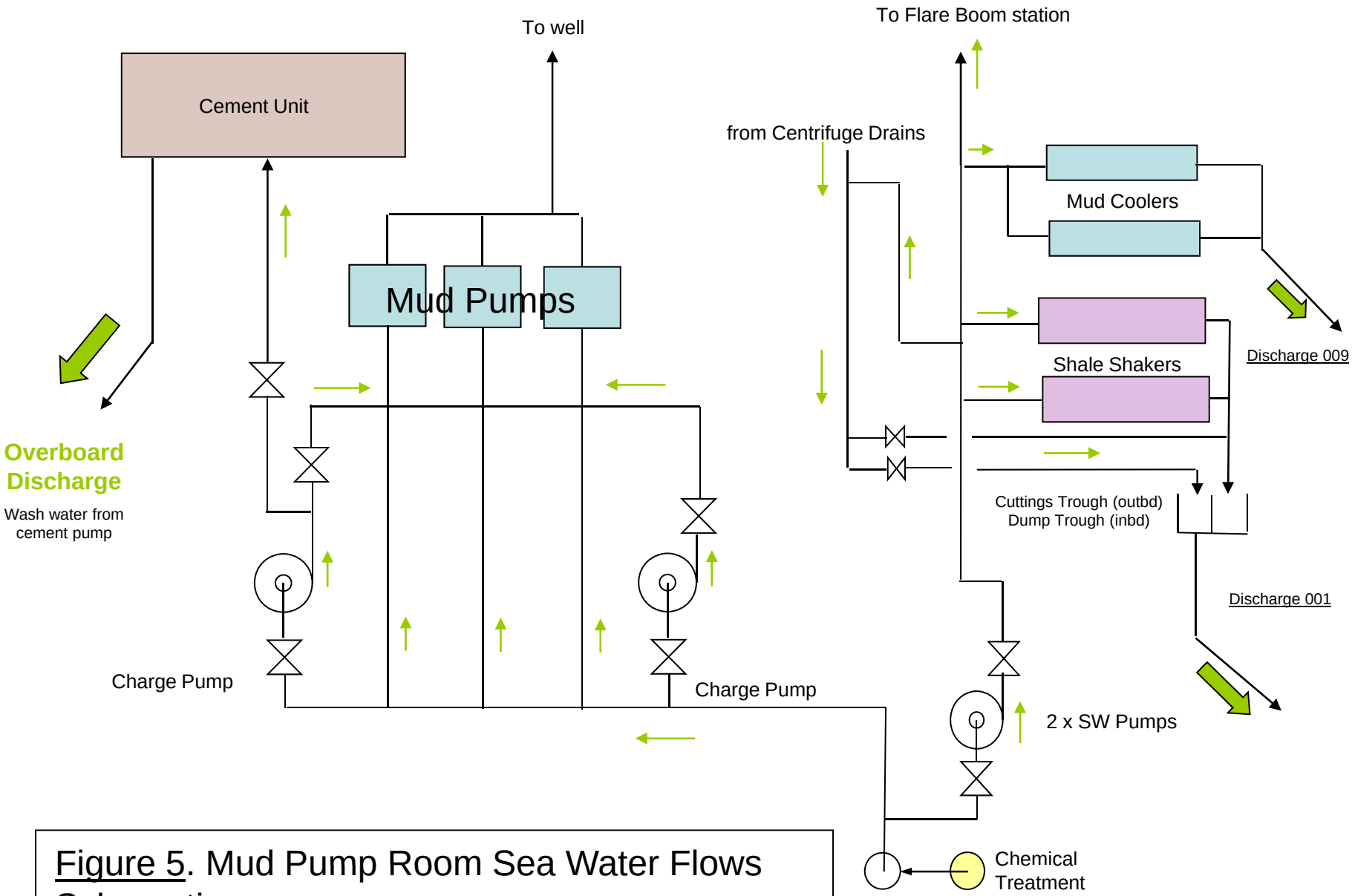
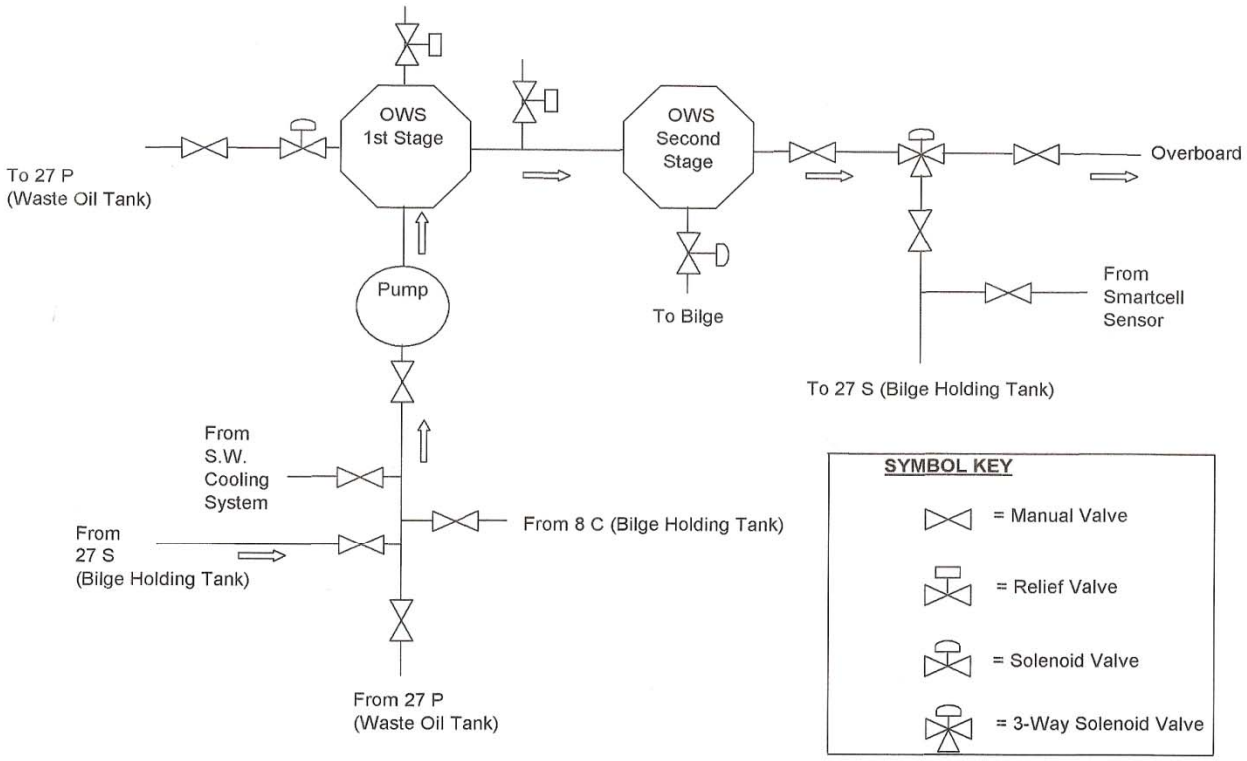


Figure 5. Mud Pump Room Sea Water Flows Schematic

Oily Water Separator System



Discharge Caisson

The discharge caisson is a pipe that runs vertically through the sponson on the hull of the drillship from the main deck level to the base of the sponson. The sponson is an exterior reinforced cladding installed on the *Discoverer* to provide ice resistance. It is hollow and extends from the main deck level to well below the water line.

Waste streams are collected aboard the drillship to a point on the main deck near the mud room. A 15-in. diameter pipe exits the hull, turns downwards and is connected to the top of the discharge caisson.

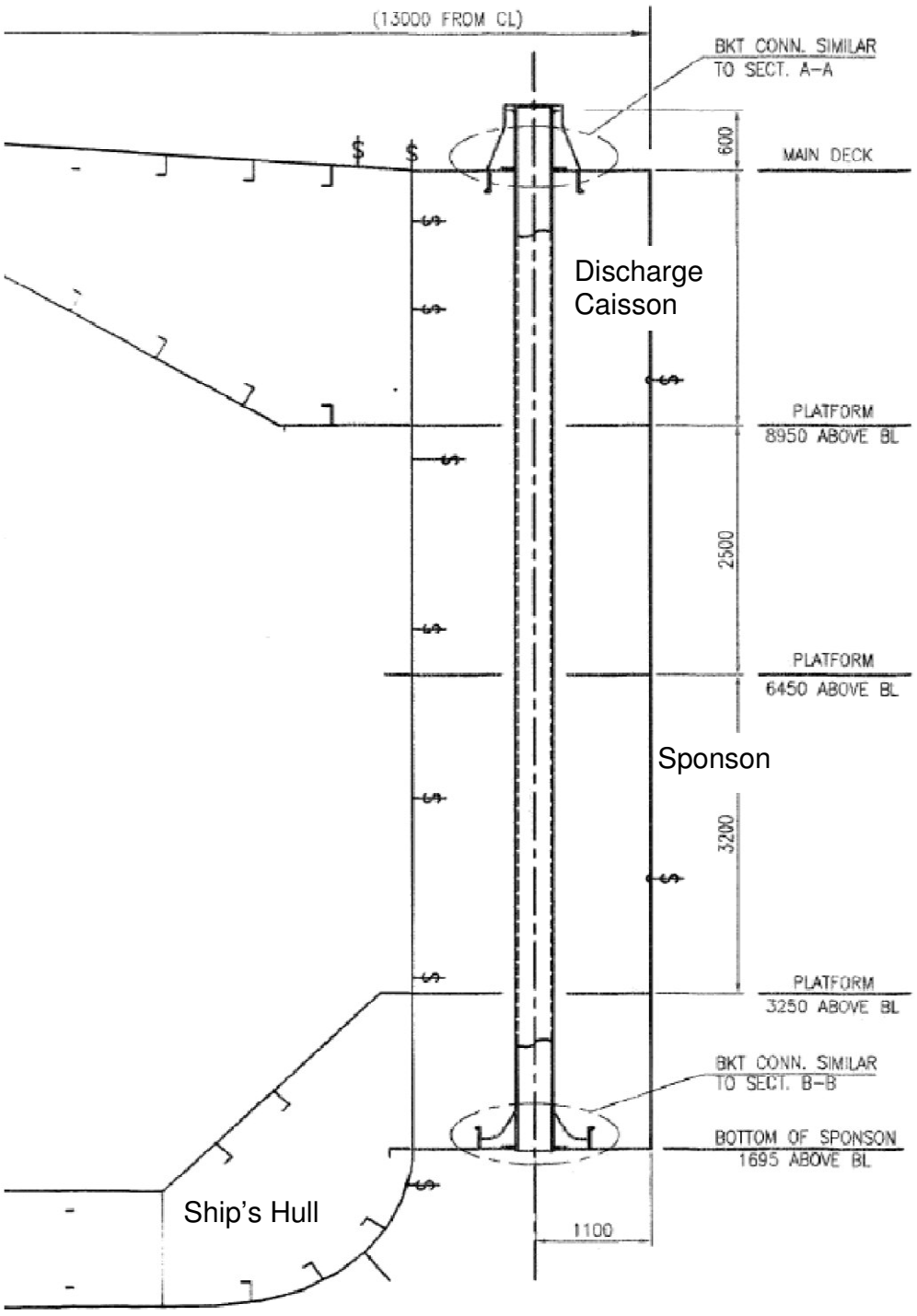
The discharge caisson, also a 15-in OD pipe, is welded into the sponson top and bottom (so that the interior of the sponson remains dry). The bottom of the sponson and the end of the discharge caisson is 5.6 ft (1.7 m) above the keel depth, and since it remains open to the sea at all times, the discharge caisson is constantly filled with water to mean sea level. This caisson is not equipped with a "float" valve; it is merely an open conduit to the sea through which most waste streams are discharged below sea level.

The *Discoverer* has the following draft characteristics:

Max draft at load line:	27 ft (8.2 m)
Transit draft	26.3 ft (8.0 m)
Drilling draft	25.2 ft (7.7 m)
Light ship draft	19.0 ft (5.8 m)

With the bottom of the sponson 5.6 ft above the keel, the base of the discharge caisson while drilling is 25.2 ft – 5.6 ft = 19.6 ft (6.0 m) below mean sea level. Because of heave, the water level inside the caisson is constantly changing.

See attached schematic drawings: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BKT CONN. SIMILAR
TO SECT. A-A
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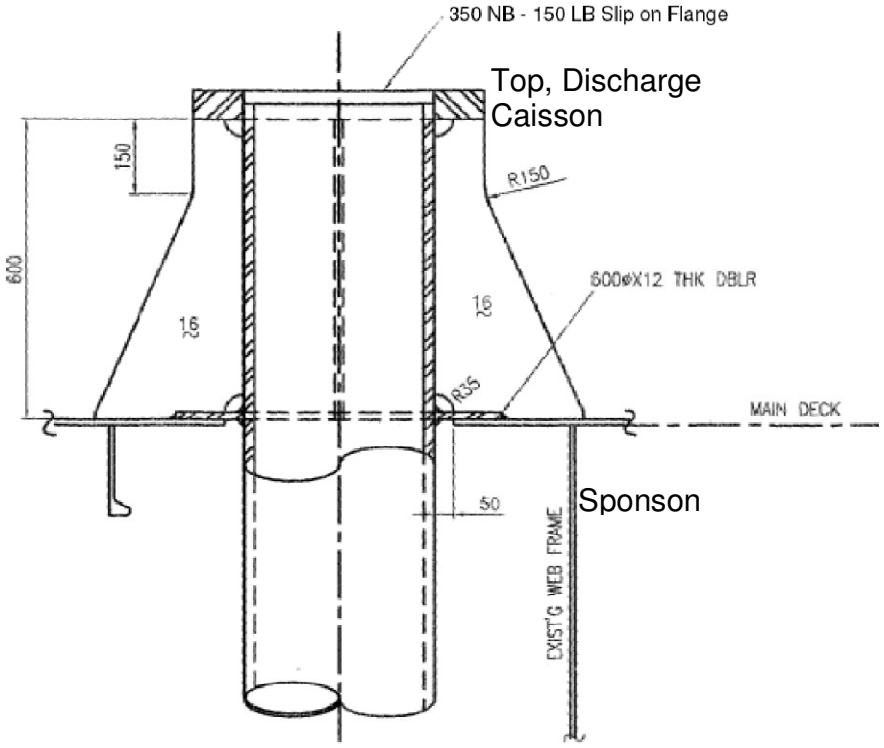
MAIN DECK
Discharge
Caisson
PLATFORM
8950 ABOVE BL
2500
PLATFORM
6450 ABOVE BL
Sponson
3200
PLATFORM
3250 ABOVE BL
BKT CONN. SIMILAR
TO SECT. B-B
BOTTOM OF SPONSON
1695 ABOVE BL
Ship's Hull
1100



SECTION A–A
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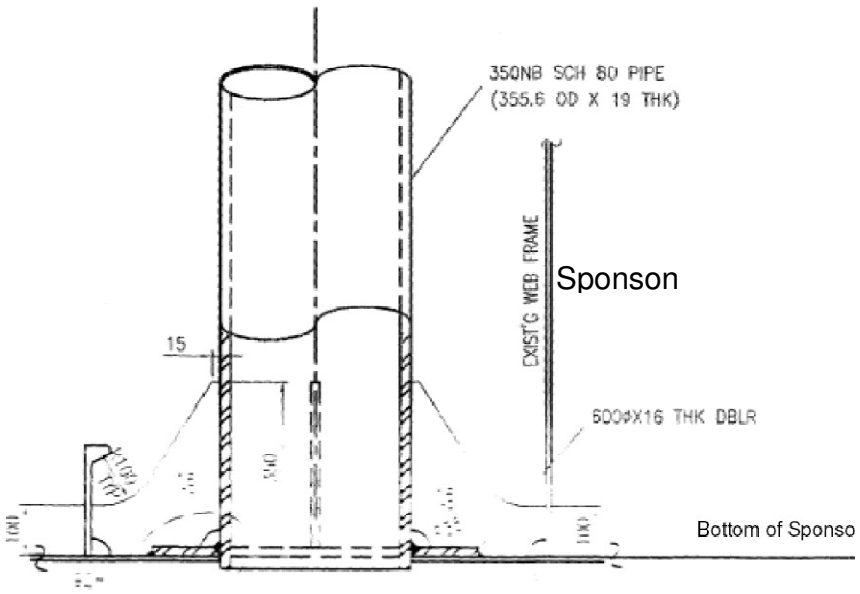

Section B-B
Base, Discharge Caisson