

# **Pacific Chapter**

# Western Dredging Association

# Fall 2014 Conference



# Port of Portland Navigation Division

#### Dredge Oregon



### The Port of Portland's Fleet of Dredges 1898 to Present

- 1898-1921 Portland 600 HP 20" 13,750,880 Cu. Yds
- 1902-1918 Columbia I 1600 HP 30" 58,568,671
- 1912-1930 Willamette 1600 HP 30" 34,021,462
- 1916-1930 Tualatin 2000 HP 30" 33,492,103
- 1921-1938 Columbia II 2700 HP 30" see Col. I
- 1925-1965 Clackamas 2700 HP 30" 127,146,900
- 1965-Present Oregon 5000 HP 30" 242,444,923

TOTAL 506,848,000 Cubic Yards



### **U.S. Army Corps of Engineers Contract**

Port owns and operates the Dredge OREGON

Current 5 Year Contract 2011–2016

Very Unique Contract Between Port and COE

At Cost Reimbursement – No Profit



## **Operational Overview**

Dredge Oregon Operates 24 hours, 5-6 days each week

Typical Season Starts in June and ends in Oct. or Nov.

Standby for few months

Perform Major Maintenance preparing for another season

• \$10 - \$16 M budget



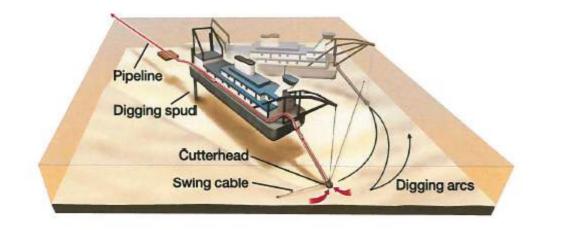
#### DREDGE OREGON

In 1891, to maintain Portland's position as a West Coast commercial center, the Oregon Legislature created the Port of Portland for the purpose of dredging and maintaining the Columbia River channel at a depth of 25 feet. The Port leased its first dredge from the city of Portland and launched a partnership with the U.S. Army Corps of Engineers that still exists. Today, the Port owns the Dredge Oregon, a nonpropelled, cutter (suction) dredge with steel superstructure and hull. It can dredge 2,000 to 3,000 cubic yards of material per hour with a diesel-powered engine. The Dredge Oregon works in the lower Columbia and Willamette rivers.

#### 30-inch pipeline Dredge Oregon

Type: 30-inch hydraulic pipeline dredge, nonpropelled, steel hull and superstructure, cutter (suction) Built: 1965, Bauer Dredging Co. Rebuilt: 1979, Northwest Marine Iron Works, Inc. Repowered: 2014, Vigor Marine

Length, overall	
Length of hull	
Beam, overall	
Suction pipe, inner diameter	
Discharge pipe, inner diameter	
Dredging depth	
Width of cut	0 feet maximum, 100 feet minimum
Pumping engineEMD model SE 20-710G4C-T3, 2	
Cutter gear box	
Auxiliary generators 3 each CAT model C32, V12, 4 st	
Cutter motor	
Swing motor	
Spud motor	
Suction mouth	Open elliptical
Spuds One pair 107 feet long, and one pair 110 feet long, fal	pricated steel with cast steel points
Fuel capacity	32,000-gallon No. 2, diesel average
Total crew	and women, including shore crew
Draft	



PORT OF PORTLAND Possibility. In every direction. -

# THE PORT OF PORTLAND DREDGE "OREGON" • 1965 •

DESIGNED AND CONSTRUCTED BY: BAUER DREDGING CO. INC. PORT LAVACA, TEXAS W. H. BAUER, PRESIDENT - T.I. MILLIET, ENGINEER

PUMP DESIGNED BY: GEORGE PELTON, CHICAGO, ILLINOIS

CONSTRUCTION INSPECTION BY: A.J. HEINEMAN, MARINE MANAGER J. H. FLETCHER, CHIEF ENGINEER-DREDGE



### Dredge OREGON Repower

Crew Reluctant to Change...
Largest Polluter of emissions
High Fuel Costs
Parts Availability
Reliability
Maintenance Costs

PORT OF PORTLAND Possibility. In every direction."

### **Dredge OREGON Repower**

 Replace Main Engine, Pump, Two Generators, Electrical Controls and Cutter Motor

BENEFITS OF THE REPOWER
Lower Maintenance/Operating Costs
Improve Fuel Economy
Lower Emissions
Increase pumping distance to 10,000 feet



### Dredge Oregon Repower

### Shipyard Phase 1 and Phase 2



## Dredge Oregon





### **Repower Schedule**

0	Task Name	Duration	Start	Finish	2010		2011		2012	2013		2014
1	Design	247 days	Mon 5/10/10		2010 Oct Nov Dec Jan Feb Mar Apr May Jun	Jul Aug Sep Oct Nov	Dec Jan Feb Mar Apr Ma	ay Jun Jul Aug Sep Oct No	Dec Jan Feb Mar Apr May Jun Jul /	Aug Sep Oct Nov Dec Jan Feb Mar	Apr May Jun Jul Aug Sep	Oct Nov Dec Jan Feb Mar Apr May
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	Proposals Due	0 days	Fri 6/4/10	Fri 6/4/10	- 6/4		Part - Pa	1		K	7	- A-
	Proposal Evaluation & Selection	15 days	Mon 6/7/10	Fri 6/25/10					1.)			
	Interviews	5 days 5 days	Mon 6/7/10 Mon 6/14/10	Fri 6/11/10	0							
	Final Selection	5 days	Mon 6/21/10	Fri 6/18/10 Fri 6/25/10	BETC JUNEO FILLAL REVIEW 2 0	TANG FINAL	Coloris	SPENDING CONDITIONS				
	Stan Watters Review	5 days	Mon 6/28/10	Fri 7/2/10		PRECION	FUNDING AVAILABLE	ALENDING CONTINUE	<u>v</u>			
	Dry Run	5 days	Mon 7/5/10	Fri 7/9/10		6						
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	Issue Notice to Proceed	20 days	Wed 7/14/10	Tue 8/10/10	CONSULTA HT	Č.		JUNE IS	2011			
	Design Activities	180 days	Wed 8/11/10	Tue 4/19/11		-		EQUIPH	BUT			
	Kickoff Meeting	10 days	Wed 8/11/10	Tue 8/24/10		č.		Earnith	ILNI			
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	40% Design Review 50	45 days	Wed 10/27/10	Tue 12/28/10			<b>T</b> 1	ADVER	TISEMENT			
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	Capital Item Procurements	645 days	Wed 4/20/11	Tue 10/8/13	COLH	ECTOR	· · · · ·					-
	Specification Development (Port Internal)	40 days	Wed 4/20/11	Tue 6/14/11		10.1						
	Advertisements	85 days	Wed 6/15/11	Tue 10/11/11				-				
	Main Engine And Drive Line RFP (Including Gearbox)	30 days	Wed 6/15/11	Tue 7/26/11				ž				
	Main Pump RFP	30 days	Wed 6/15/11	Tue 7/26/11				* •		- 10 Carlos - 10 C		
1	Generator Set RFP	30 days	Wed 6/15/11	Tue 7/26/11					COMMERC	FUNDS		
	Cutter Head Motor RFP	30 days	Wed 6/15/11	Tue 7/26/11					CHIMEDO	AL LOAL		
	CutterHead Gearbox RFP	30 days	Wed 6/15/11	Tue 7/26/11			~		COMMERC	ML LOAN		
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1	Generator Sets	180 days	Wed 10/12/11	Tue 6/19/12				10	BORGER GENERTS	7		
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	Specification Development (Port Internal)	35 days	Wed 10/12/11	Tue 11/29/11				1				
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	Advertisement	25 days	Wed 6/20/12	Tue 7/24/12					<u></u>			120D PRY
1	Bids Due	0 days	Tue 7/24/12	Tue 7/24/12					* 7	24		2013 DRY DOGKING
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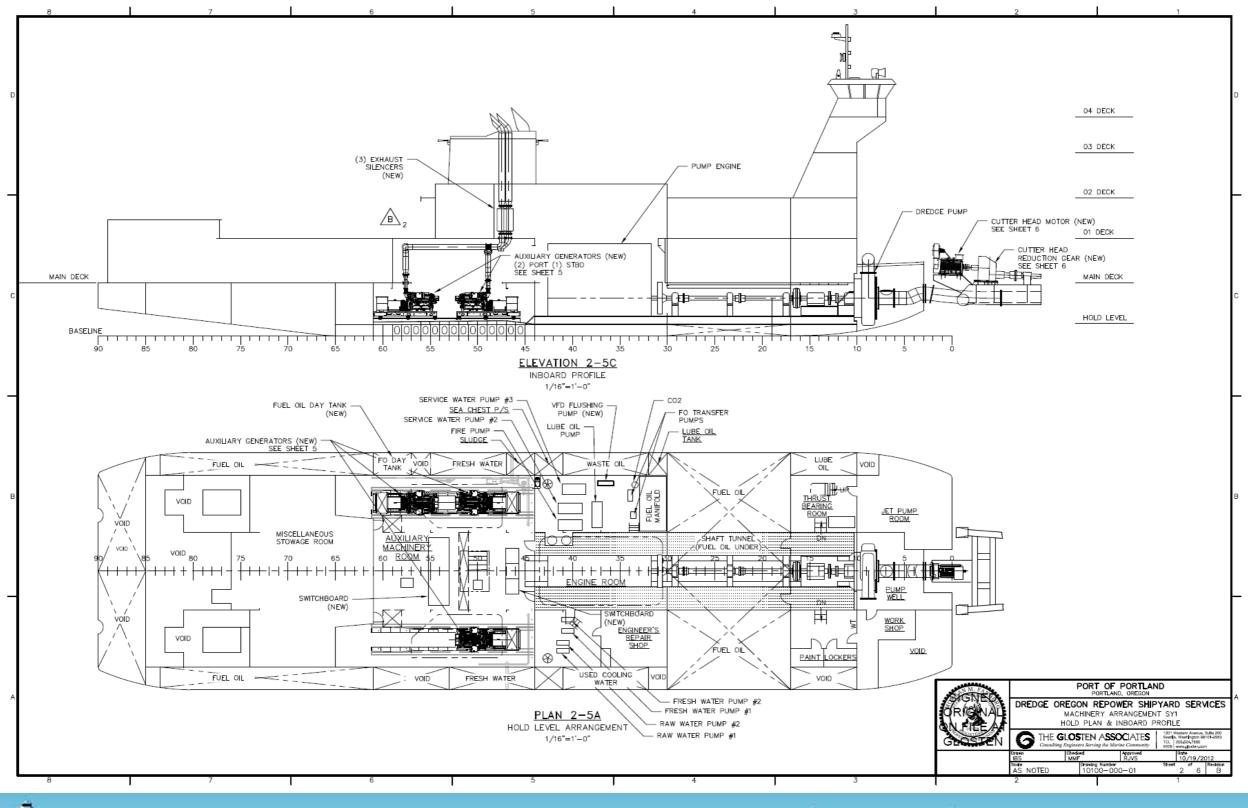


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### Repower Equipment - Shipyard Phase 1



PORT OF PORTLAND Possibility. In every direction." . .



#### **Going on Dry Dock**

#### Lifted on Dry Dock





### SY1 Genset Removal

#### **Old JS-8 Removal**

#### **Bottom Access**







#### **Old Starboard JS-8 Genset**

#### **New CAT C32 Genset**







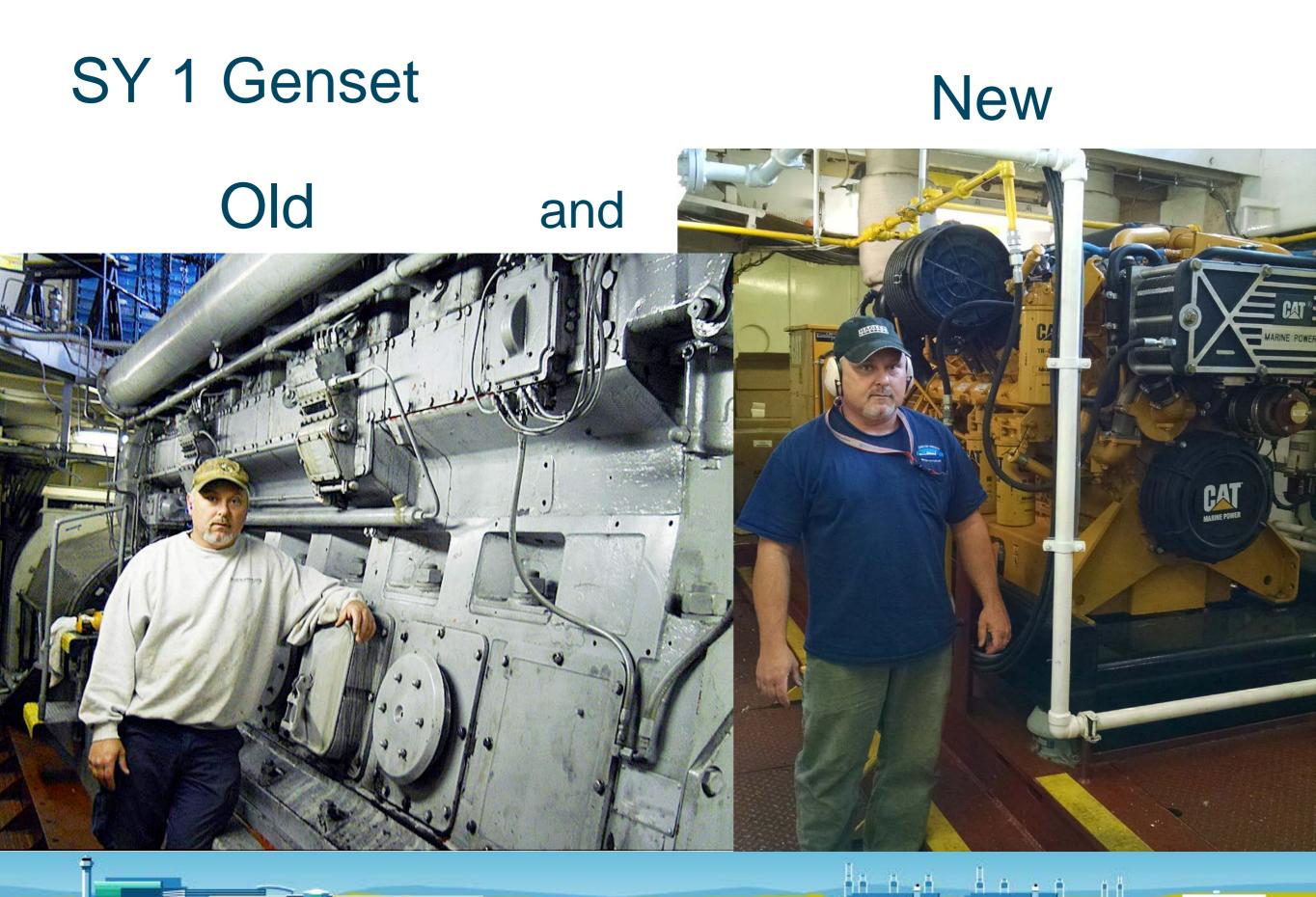


#### **Old Port JS-8 Genset**

#### **New CAT C32 Gensets**











#### **Old 480v Switchgear**

#### **New 480v Switchgear**





# SY1 Distribution System

#### Old 208v Distribution System

#### **New 208v Distribution System**





### SY1 Cutter Motor and Gearbox

#### **Old Cutter Mtr-Gearbox**

#### **New Cutter Mtr-Gearbox**





# SY1 Variable Frequency Drive

#### **Old Drive Room**

#### **New Drive Room VFD**



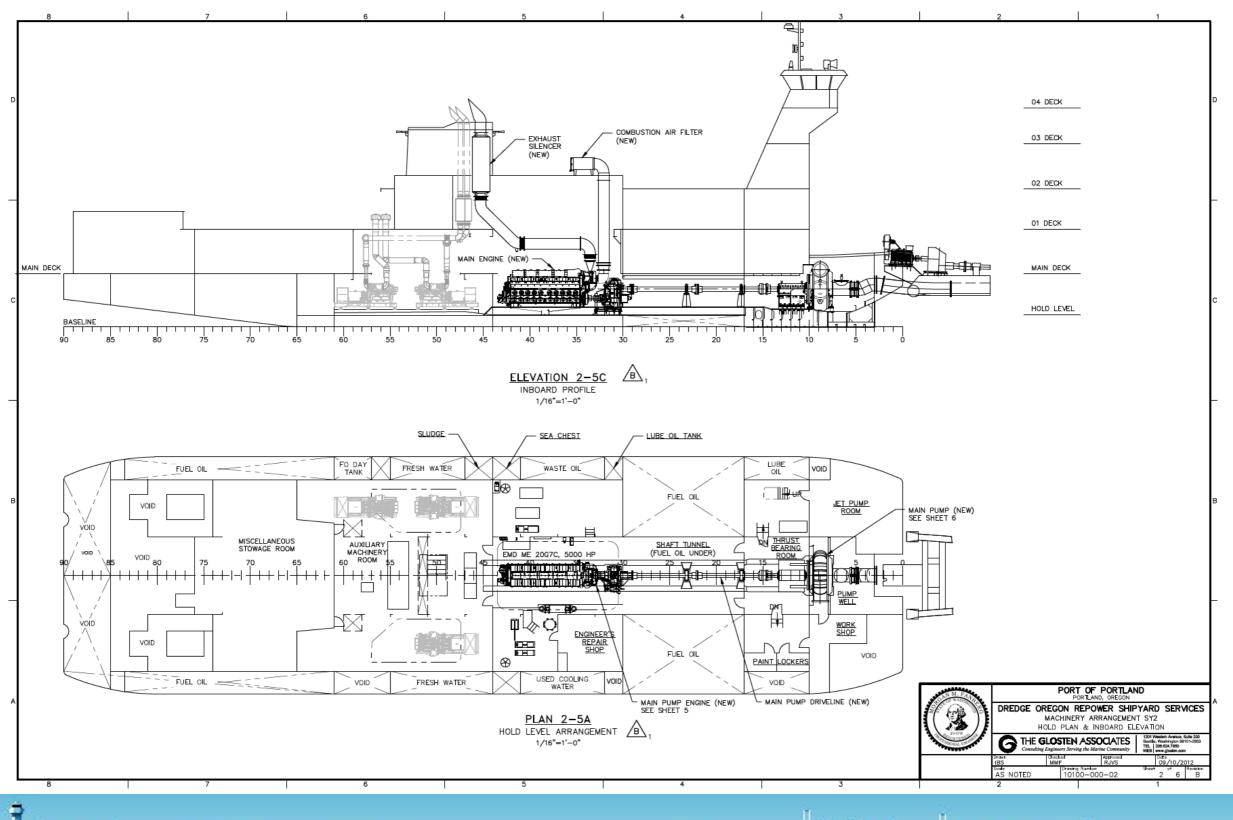


### **Repower Schedule**

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Interviews	5 days		6/19/10			1		
Final Selection	5 days		6/25/10 JUNEO FILL DEVIEW 2	5 ZAUG PILLOL	- FUNDING SPENDING	Churcharter		
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Main Engine And Drive Line RFP (Including Gearbox)	30 days		7/26/11		*			
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Generator Set RFP	30 days	Wed 6/15/11 Tue	7/26/11		*	APDITIONAL - COMMERC	FUNDE	
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Main Pump	260 days		10/9/12					
Phase One Construction	390 days		4/9/13			1		
Specification Development (Port Internal)	35 days		1/29/11					2012
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PORT OF PORTLAND Possibility. In every direction." 11 1 1 1 1 1 1 1 1 1

### Repower Equipment - Shipyard Phase 2



PORT OF PORTLAND Possibility. In every direction." 8 -8

# SY2 Pump Foundation





## SY2 Dry Docking – Fuel Tank Replating





## SY2 Cooper Bessemer LSV-16 Removal

#### **Starting LSV Removal**

#### **Clearing the Hatch**



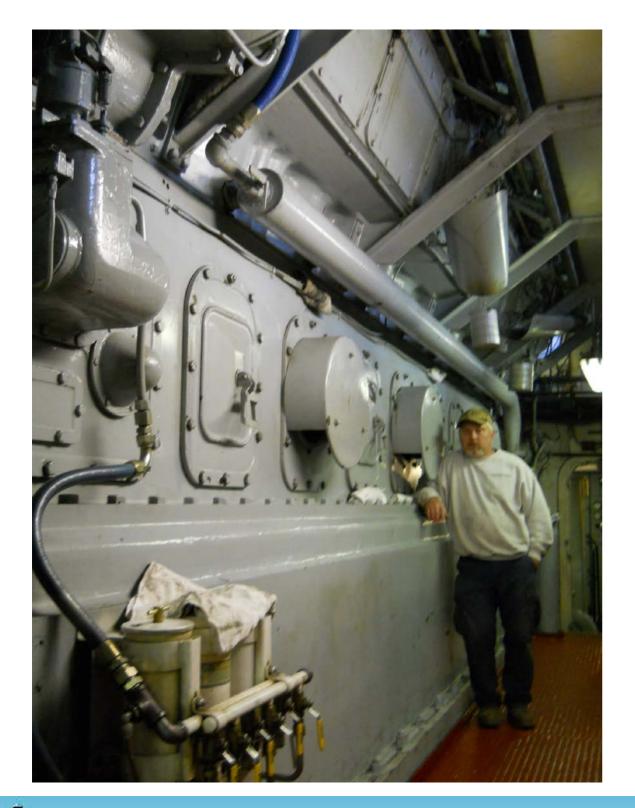


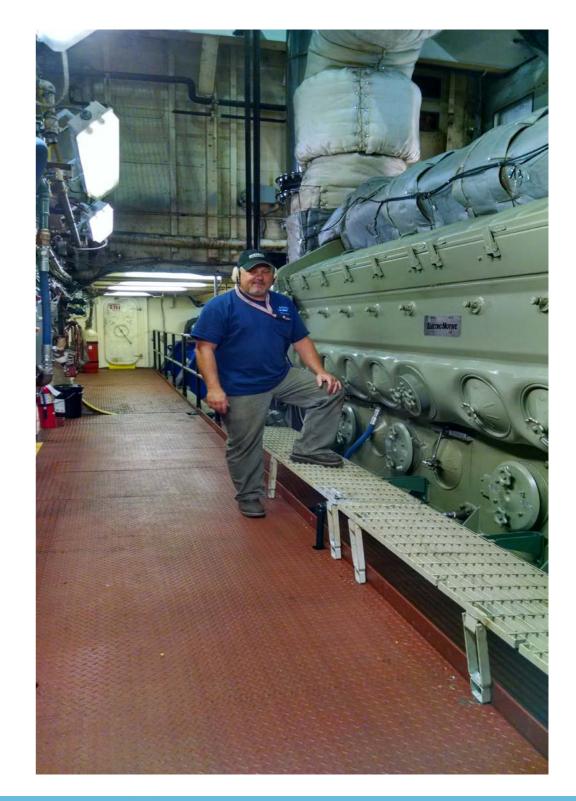
### SY2 New EMD 710-20





### SY 2 LSV and EMD







# SY2 Pump Engine

#### **Old LSV-16 Pump Engine**

#### **New EMD 710-20 Pump Engine**









#### **Old Pump**

#### **New GIW Pump**





# SY2 Engineers Operating Station

#### **Old Engineer's Control Panel**

#### **New Engineer's Control Panel**





# SY2 Engineers Engine Monitoring

#### **Old Engine Gauges**



#### **New Engine Gauges**





### SY2 Lever Room

#### **Old Lever Room Control Panel**

#### **New Lever Room Control Panel**





### **Restrictor Plate Harbor Test**





### **Restrictor Plate 17" Orifice**





### **Repower Schedule**

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	Sea Trials Phase Two Final Acceptance	10 days 0 days	Wed 5/7/14 Tue 5/20/14	Tue 5/20/14 Tue 5/20/14			dune		1 HK	A A A A A A A A A A A A A A A A A A A
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	Issue Notice To Proceed	20 days	Wed 8/8/12 Wed 8/8/12	Tue 9/4/12	Caudiau das				•	
	Bids Due Commission Action	0 days 0 days	Tue 7/24/12 Wed 8/8/12	Tue 7/24/12 Wed 8/8/12					/24 > 8/8	ZOB DRY DOGKING
	Advertisement	25 days	Wed 6/20/12	Tue 7/24/12				±		LUDLAY
	Specification Development (Port Internal) All Phase One Componentry Sequestered In Portland	35 days 0 days	Wed 10/12/11 Tue 6/19/12	Tue 11/29/11 Tue 6/19/12				÷6/19		2012
	Phase One Construction Specification Development (Port Internal)	390 days 35 days	Wed 10/12/11 Wed 10/12/11	Tue 4/9/13 Tue 11/29/11				•		
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	Phase Two Componentry Main engine and Driveline	520 days 520 days	Wed 10/12/11 Wed 10/12/11	Tue 10/8/13 Tue 10/8/13				7'	ENGNE-GENDSex	3.81911
	Monitoring Controls and Switchgear (Design / Build)	180 days	Wed 10/12/11	Tue 6/19/12				101 - South Contract Souther gar Souther		
	Cutterhead Gearbox	180 days	Wed 10/12/11	Tue 6/19/12			= 3.5b	M . Aturne attended the Anthe	42.725M RIMP-RIMPENGINI GEARBOX	E
	Generator Sets Cutterhead Motor	180 days 180 days	Wed 10/12/11 Wed 10/12/11	Tue 6/19/12 Tue 6/19/12			2.00	* 4 ALCON CUTTOR MOTOR	14 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0	
	Phase One Componentry	180 days	Wed 10/12/11	Tue 6/19/12				BARCAD GENTETS		
	Component Manufacturing	520 days	Wed 10/12/11	Tue 10/8/13	REAREMENTS					
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	Dry Run	5 days	Wed 9/7/11	Tue 9/13/11				GENSET CUTER MOTOR		
	Stan Watters Review	5 days	Wed 8/31/11	Tue 9/6/11				5		
	Proposals Due Proposal Evaluation & Selections	0 days 25 days	Tue 7/26/11 Wed 7/27/11	Tue 7/26/11 Tue 8/30/11				* 7/26		
	Monitoring, Controls and SwitchGear RFP (Design/Build) Proposals Due	30 days	Wed 6/15/11	Tue 7/26/11 Tue 7/26/11				= COF.		
	CutterHead Gearbox RFP	30 days	Wed 6/15/11	Tue 7/26/11			. E	- ADDITIONAL	IAL LOAN	
	Generator Set RFP Cutter Head Motor RFP	30 days 30 days	Wed 6/15/11 Wed 6/15/11	Tue 7/26/11 Tue 7/26/11			-	APPIDAL	FUNDS	
	Main Pump RFP	30 days	Wed 6/15/11	Tue 7/26/11			ţ	A DEPARTMENT A	E.u.	
	Main Engine And Drive Line RFP (Including Gearbox)	30 days	Wed 6/15/11	Tue 7/26/11						
	Specification Development (Port Internal) Advertisements	40 days 85 days		Tue 6/14/11 Tue 10/11/11			Construction of the local division of the lo			
	Capital Item Procurements Specification Development (Port Internal)	645 days 40 days	Wed 4/20/11 Wed 4/20/11	Tue 10/8/13 Tue 6/14/11	CENALE			1		
	Final Cleanup	10 days	Wed 4/6/11	Tue 4/19/11	COLLE	TOR 1	T to			
	Final Design Review 100	45 days 25 days	Wed 12/29/10 Wed 3/2/11	Tue 3/1/11 Tue 4/5/11		-	*	TENTING MI		
	40% Design Review 50 80% Design Review 50	45 days 45 days	Wed 10/27/10 Wed 12/29/10	Tue 12/28/10 Tue 3/1/11		ž p	À	DVERTISEMENT		
	20% Design Review	45 days	Wed 8/25/10	Tue 10/26/10		-	F	ROCUREMENT		
	Kickoff Meeting	180 days 10 days	Wed 8/11/10 Wed 8/11/10	Tue 4/19/11 Tue 8/24/10	N N	2,	E	UNE 15, 2011 QUIPMENT ROCUREMENT		
	Issue Notice to Proceed Design Activities	20 days	Wed 7/14/10	Tue 8/10/10	Censusari	1		UNE 15, 2011		
	Commission Action	0 days	Wed 7/14/10	Wed 7/14/10	\$ 7/1	4				
	Stan Watters Review Dry Run	5 days 5 days	Mon 6/28/10 Mon 7/5/10	Fri 7/2/10						
	Final Selection	5 days	Mon 6/21/10	Fri 6/25/10	COTT JUNEO FILLAL REVIEW 200	CECHNON SA	THIDIHA SPENDIN	4 сенотеня		
	Interviews	5 days 5 days	Mon 6/14/10	Fri 6/18/10	BET					
	Proposal Evaluation & Selection Initial Evaluation	15 days	Mon 6/7/10 Mon 6/7/10	Fri 6/25/10 Fri 6/11/10	Ť			1		
		- 100 Scherrer	111014110		0- 014					
	Proposals Due	0 days	Fri 6/4/10	Fri 6/4/10	PARA	MILEON	*3 \$\$,650,000 K#30	2/2002	K # SUPPLICADE >	

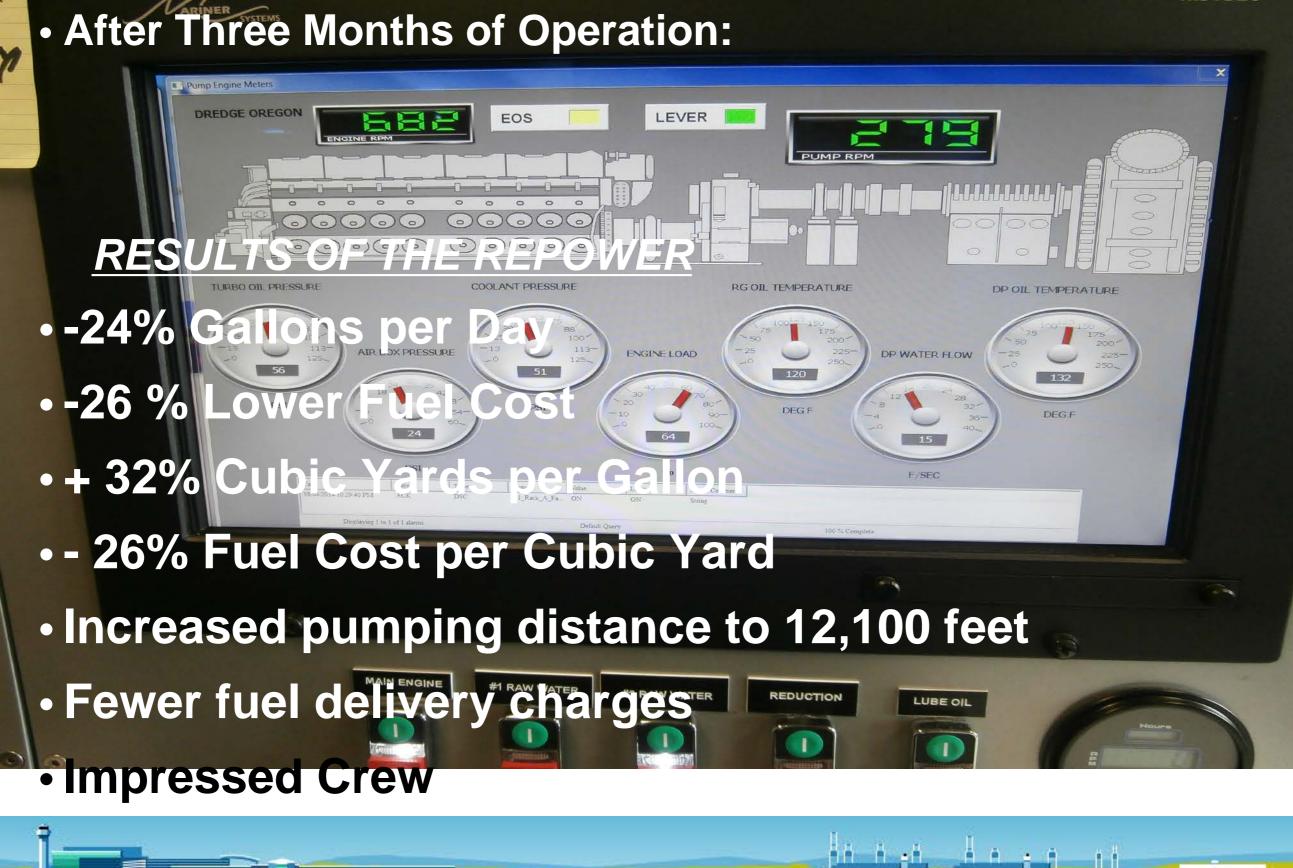
PORT OF PORTLAND Possibility. In every direction." 11 1 at 1 a a a

### **Dredge OREGON Repower**

- ISSUES:
  - Complicated and unique
  - Strain on your relationship (Shipyard, PM)
  - Vibrations
  - **Currently Working Through a Pump Issue**



IVANOFE



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## Dredge Oregon



