

SEAPA Board of Directors Meeting Petersburg, AK June 9, 2016 Special Projects Report



# Alarm – Controls-Protection

Major Attributes
Training
Machine Integrity
Less condensation
Better Understanding of load and response
Better root cause analysis
Efficiency- a gain of 1,000 MWh –CW
Better capacity utilization





### Before ACP Project

All Unit Protection Conditions Transformer Oil Temperature, oil level, winding temperature transformer electrical conditions- fault currents and voltages, Excitation failure Generator Electrical Protection Conditions: Over-current, over voltage, Phase-Phase Voltage, Phase-Ground fault Generator Mechanical Protection Conditions: Bearing oil level, oil temperature, metal temperature, Cooling water flow.

Turbine Protection: packing water flow, bearing metal temperature, oil level



### After ACP Project

#### **Mechanical Unit Conditions**

Transformer Mechanical Conditionswinding temperatures, oil levels Generator Mechanical Protection Conditions: bearing oil level, oil temperature, bearing metal temperature, cooling water flow Turbine Protection: packing water flow, bearing metal temperature, oil level



Initiates an Alarm- and a 15 minute delay before slowly ramping the affected unit giving the operator time to interrupt the shut down sequence, or allows the operator time to start a standby unit while the ramp-down sequence proceeds to take the affected unit offline

> Opens Unit Breaker without frequency disturbance

Electrical Unit Conditions Transformer & Generator Electrical Conditions: Over-current, over voltage, Phase-Phase Voltage, Phase-Ground fault, excitation failure



Opens Unit Breaker (Switch to System) causing 3 city frequency disturbance





March 16-Submitted 100% design to FERC & BOC-60 days to review

2 weeks later-BOC responds with no major comments

3 weeks after that we sent BOC design comments to FERC

May 3 to May 7 – conducted four bay assembly test and design review

May 14<sup>th</sup> Mobilization under way at SWL- PPM did all the barge, equipment, concrete

material and personnel planning prior to mobilization without a signed contract!

May 16- conducted a meeting with FERC PRO and DC office telephonically for

approval of 100% design Meeting, 6 FERC members of both DC Office and

PRO in attendance-Minor comments received back,

### May 22 SWL stops spilling

May 26- **SWL elevation reaches 326**, PPM installs safety barriers and walkways, survey work underway, notified by Phone FERC wanted additional study to approve design, authorization to construct pending the study results

May 31-SEAPA supplied FB sill plates bid-fabricated-inspected, and shipped May 31 June 3- Formal Authorization letter received from FERC while concrete removal Sub mobilized to site

June 5 to June 16- Spillway demolition, prep for critical path middle pier construction





May 16, 2016













## SEAPA-FERC Design Review, FB Factory Inspection





- Contract was not signed yet we continued with relationship to get the project moving- Took PPM Neil Williams to 4 Bay test in Austria
- Allowed mobilization to start before FERC finished reviewing our 100% design
- Allowed survey efforts to start before FERC granted Authorization and mobilized all the concrete cutting crews to site during high water
- The day after FERC granted authorization we started concrete demolition



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# Swan Lake Raise-Meanwhile







# Surveying-3<sup>rd</sup> week of May

# Platforms & Handrail-3<sup>rd</sup> and 4<sup>th</sup> week of May



# Swan Lake Raise-Concrete Demolition





# Swan Lake Raise-Concrete Demolition















# Swan Lake Raise-Concrete Demo





# Swan Lake Raise-Concrete Demolition





# Swan Lake Raise-Schedule

Demolition Work	84 days	Mon 5/23/16	Sun 8/14/16	26
Spillway Demolition	20 days	Mon 5/23/16	Sat 6/11/16	26
Setup Access Platforms	4 days	Mon 5/23/16	Thu 5/26/16	26
Setup Survey Control	2 days	Fri 5/27/16	Mon 5/30/16	31
Demolition to South Pier and Middle Pier Chipping	7 days	Tue 5/31/16	Mon 6/6/16	32
Demo/Chip Spillway Crest	8 days	Tue 5/31/16	Tue 6/7/16	33SS
Wire Saw/Demo North Pier	5 days	Tue 6/7/16	Sat 6/11/16	33
Demo for Bracing	1 day	Wed 6/8/16	Wed 6/8/16	34
Forebay Wall Demolition	8 days	Sun 7/31/16	Sun 8/7/16	93
Demo Railing	0.5 days	Sun 7/31/16	Sun 7/31/16	93
Demo Parapet Construction Joints	4.5 days	Sun 7/31/16	Thu 8/4/16	38
Remove/Preserve JB and Conduit and Ladder	2 days	Fri 8/5/16	Sat 8/6/16	39
Demo Jib Crane	1 day	Sun 8/7/16	Sun 8/7/16	40
Boat Dock Demolition	2.5 days	Mon 8/8/16	Wed 8/10/16	41
Remove Boat House and Superstructure	1.5 days	Mon 8/8/16	Tue 8/9/16	41
Remove Dock Posts/Foundations	1 day	Tue 8/9/16	Wed 8/10/16	43
Intake House Demolition	4.5 days	Wed 8/10/16	Sun 8/14/16	44
Demo Parapet Wall	2 days	Wed 8/10/16	Fri 8/12/16	44
Demo Doors	1.5 days	Fri 8/12/16	Sat 8/13/16	46
Demo Mangate, guardrail, other misc demo	1 day	Sun 8/14/16	Sun 8/14/16	47
Concrete Work	113 days	Thu 6/9/16	Thu 9/29/16	36
First Stage - North Pier Concrete	33 days	Sat 6/18/16	Wed 7/20/16	36
Trial Run for Concrete Mix	1 day	Sat 6/18/16	Sat 6/18/16	65
Fabricate Wood Forms	1 day	Tue 6/28/16	Tue 6/28/16	70
Form/Rebar/Pour Lift 1 Concrete	5 days	Wed 6/29/16	Sun 7/3/16	52,9
Form/Rebar/Pour Lift 2 Concrete	5 days	Mon 7/4/16	Fri 7/8/16	53
Form/Rebar/Pour Lift 3 Concrete	5 days	Sat 7/9/16	Wed 7/13/16	54
Cure Concrete	18 days	Sun 7/3/16	Wed 7/20/16	53FS-1 day
First Stage - Middle Pier Concrete	31 days	Thu 6/16/16	Sat 7/16/16	69
Fabricate Wood Forms	1 day	Thu 6/16/16	Thu 6/16/16	69
Form/Rebar/Pour Lift 1 Concrete	5 days	Sun 6/19/16	Thu 6/23/16	51,9
Form/Rebar/Pour Lift 2 Concrete	5 days	Fri 6/24/16	Tue 6/28/16	59
Form/Rebar/Pour Lift 3 Concrete	5 days	Wed 6/29/16	Sun 7/3/16	60
Form/Rebar/Pour Lift 4 Concrete	5 days	Mon 7/4/16	Fri 7/8/16	61
Cure Concrete	24 days	Thu 6/23/16	Sat 7/16/16	59FS-1 day
First Stage - South Pier Concrete	32 days	Fri 6/17/16	Mon 7/18/16	58
Fabricate Wood Forms	1 day	Fri 6/17/16	Fri 6/17/16	58
Form/Rebar/Pour Lift 1 Concrete	4 days	Sat 7/9/16	Tue 7/12/16	62,9
Cure Concrete	7 days	Tue 7/12/16	Mon 7/18/16	66FS-1 day
Spillway Crest Concrete	25 days	Thu 6/9/16	Sun 7/3/16	36
Drill/Epoxy Dowels	7 days	Thu 6/9/16	Wed 6/15/16	36
Install Embed Plate / Place Grout	12 days	Thu 6/16/16	Mon 6/27/16	
Ouro Grout	7 daws	Mon 6/27/16	Sup 7/2/16	7055 1 day

Swan Lake Raise-Schedule Building the center pier is the critical path



