

Modification: Reactor Feed Pumps and Motors

Initial Scope and Estimate	<ul style="list-style-type: none"> • Supplemental reactor feed pump; • Reactor feed pump motor; and • Testing. • \$27.8 million
Final Scope	<ul style="list-style-type: none"> • Replace two pumps and motors, including new foundations. • Replace discharge piping with larger diameter piping. • Install four five ton jib cranes. • Replace feedwater regulating valves and controls. • Relocating emergency service water lines. • Replace minimum flow valves. • Replace auxiliary instrumentation. • Demolition of existing equipment in reactor feed pump and motor room. • Relocation of area cooling. • Modifications and replacements to vent, drain, bypass, hydrogen injection, pump warm-up, and service water piping. • Testing.
Milestones	<ul style="list-style-type: none"> • April 2007: Company notifies GE of its decision to replace reactor feed pumps instead of adding supplemental pump. • February 2008: Decision to move to 2011 outage. • August 2010: Decision to move replacement to mid-2011 outage. • October 2010: One motor failed motor vendor factory voltage specification test. Motor vendor identified solution to add iron to stator. • December 2010: Pump fails first test at pump vendor. • August 2011: Decision to move replacement to mid-cycle 2012 outage. • November 2011: Decision to move replacement to 2013 outage. • December 2011: Final engineering change for modification approved. • Mid-2012: Motor shipped to pump vendor's facility for testing. • 2012: Motor heating load increased with added iron – HVAC system capable of handling. • Fall-2012: Second pump test at pump vendor fails, requiring further pump modifications. • 2013: Pump and motor shipped from pump vendor to MNGP. • 2013 Outage: Reactor feed pumps and motors replaced.
Costs Incurred	<ul style="list-style-type: none"> • <i>Design/Engineering</i>: \$25.2 million <ul style="list-style-type: none"> ○ Evolution of regulatory expectations and industry experience resulted in escalation of testing standards. ○ Replumbing and identification of new piping paths and connection schemes. ○ Independent review of piping changes supports during the design process. ○ Personnel presence required at motor and pump fabricators to verify modifications to ensure factory acceptance testing complied with specifications.

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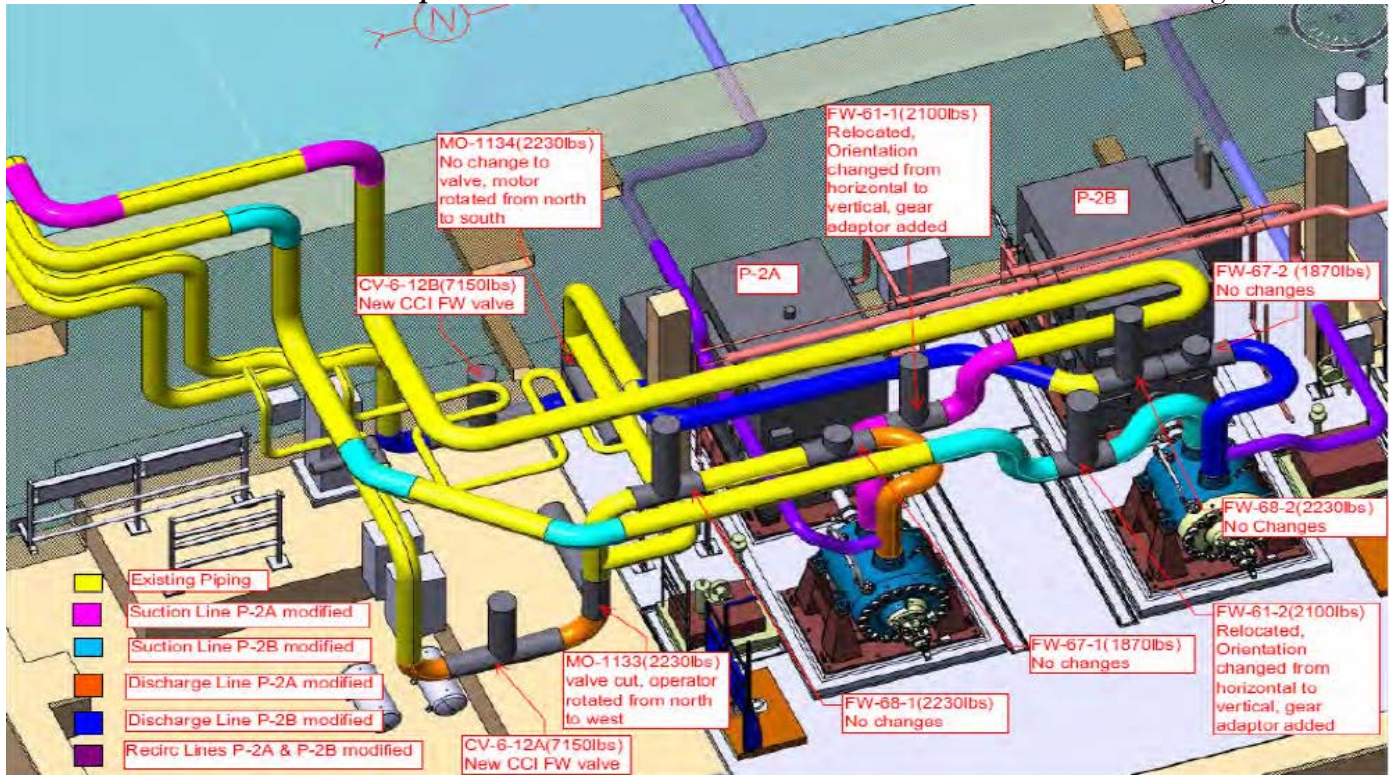
	<ul style="list-style-type: none"> • <i>Installation:</i> \$54.2 million <ul style="list-style-type: none"> ○ Space limitations affected ability to perform replacement work in the time allotted during the outage. Craft labor costs increased (Underestimated labor required at 35,000 hours). ○ Installation timeline exceeded estimates by approximately 40 days. ○ Mylar remaining in motor after shipment from the motor manufacturer to the pump manufacturer damaged the motor bearings and required personnel monitoring of additional testing prior to pump testing at pump manufacturer. ○ Significant replumbing of the piping feeding to and discharging from pumps, some of which was not discoverable until demolition of existing surrounding equipment. ○ New foundations required to support equipment. ○ Demolition of pump foundations, existing piping, pumps, and instrument racks. ○ Testing of equipment including construction testing, pre-operational testing, and operational testing. • <i>Materials:</i> \$3.7 million <ul style="list-style-type: none"> ○ Cost of two new pumps and motors to operate on 13.8 kV. ○ Associated piping, instrumentation, valves, and controls. • August 31, 2013: \$92.2 million
WOs	11286955

Reactor Feed Pumps & Motors	2008	2009	2010	2011	2012	2013	Total
Licensing-Related	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Design/Engineering	\$ -	\$ 79,334	\$ 4,137,932	\$ 12,687,338	\$ 3,390,334	\$ 4,925,807	\$ 25,220,745
Materials/Components	\$ -	\$ -	\$ 370,213	\$ 747,618	\$ 641,635	\$ 1,966,609	\$ 3,726,075
Installation	\$ -	\$ 8,017	\$ 1,037,213	\$ 8,116,451	\$ 8,226,721	\$ 36,773,035	\$ 54,161,437
Common	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,636,856	\$ 8,636,856
Xcel General Costs	\$ -	\$ 222	\$ 115,634	\$ 237,372	\$ 38,552	\$ 26,021	\$ 417,801
Total	\$ -	\$ 87,573	\$ 5,660,992	\$ 21,788,780	\$ 12,297,241	\$ 52,328,329	\$ 92,162,915

* Child Work Order 11286955 MNGP EPU Replacement FW Pump

** "Common" represents the allocated portion of the \$103 million of Work Order 10435578. See Exhibit __ (SLW-1), Schedule 3.

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