

Modification: Condensate Pumps and Motors

Initial Scope and Estimate	<ul style="list-style-type: none"> • Replace condensate pump internals; • Replace condensate pump motors; and • Testing. • \$3.2 million
Final Scope	<ul style="list-style-type: none"> • Replace condensate pump and motor (not just internals of pump). • Replace condensate pump and motor auxiliaries. • Replace area HVAC for condensate pump motors. • Increase condenser hotwell level. • Testing.
Milestones	<ul style="list-style-type: none"> • Late 2007: Decision to further analyze replacing condensate pumps and motors in response to overall analysis and decision to replace reactor feed pumps. • February 2008: Decision to move to 2011 outage. • 2009: Determined that Net Positive Suction Head (“NPSH”) required was higher than the NPSH available. • May 2010: Initial HVAC evaluation for motors. • August 2010: Decision to move replacement to mid-2011 outage. • October 2010: One motor failed factory voltage specification test. Vendor identified solution to add iron to stator. • December 2010: Pump failed first test. • January 2011: Final pump and motor engineering change approved. • August 2011: Pump re-test satisfactory result. Condensate pump motor damaged by motor vendor – repair estimated to take 10 weeks. • August 2011: Decision to move replacement to mid-cycle 2012 outage. • November 2011: Decision to move replacement to 2013 outage. • September 2011: Motor heating load increased with added iron – required further design and engineering of HVAC cooling system. • Fall-2012: Second pump test at pump vendor failed, requiring further pump modifications. • 2013: Pump and motor shipped from pump vendor to MNGP. • February 2013: Final HVAC engineering change approved. • 2013 Outage: Condensate pumps and motors replaced.
Costs Incurred	<ul style="list-style-type: none"> • <i>Installation:</i> \$11.1 million <ul style="list-style-type: none"> ○ Personnel presence required at motor and pump fabricators to verify modifications to equipment to meet specifications. ○ Labor to raise level instrumentation to achieve NPSH. ○ Vibrations experienced on condensate minimum flow line after installation resulted in redesign of the valve actuators and required repairs. ○ Additional work necessary to install the HVAC cooling equipment to resolve the motor heating load concerns. ○ Testing of equipment including construction testing, pre-operational testing,

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	<p>and operational testing.</p> <ul style="list-style-type: none"> • <i>Design/Engineering</i>: \$5.7 million <ul style="list-style-type: none"> ○ Decision to replace reactor feed pumps drove the scope of condensate pumps from replacement of pump internals to replacement of the pump. ○ Change in design vendor related to HVAC cooling design. ○ Redesign of pipe supports after identification of vibrations. ○ Design and engineering to resolve concerns with NPSH. ○ Equipment is primarily standard and like-for-like with exception of changing power source delivery from 4.16 kV to 13.8 kV. ○ Overall equipment and instrumentation configuration was predictable. • <i>Materials</i>: \$2.9 million <ul style="list-style-type: none"> ○ Cost of two new pumps and motors to operate on 13.8 kV. ○ HVAC air handling units and ductwork. • 2007: Added approximately \$10 million to replace pump instead of internals only • August 31, 2013: \$21.9 million
WOs	10943052; 11845189

Condensate Pumps & Motors	2008	2009	2010	2011	2012	2013	Total
Licensing-Related	\$ -	\$ -	\$ 3,463	\$ -	\$ -	\$ 2,206	\$ 5,669
Design/Engineering	\$ 310	\$ 299,746	\$ 750,704	\$ 2,225,993	\$ 646,802	\$ 1,822,771	\$ 5,746,325
Materials/Components	\$ -	\$ 535,229	\$ 1,641,006	\$ 20,821	\$ 55,553	\$ 615,802	\$ 2,868,410
Installation	\$ -	\$ 7,447	\$ 190,611	\$ 1,100,697	\$ 1,689,147	\$ 8,128,314	\$ 11,116,216
Common**	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,025,947	\$ 2,025,947
Xcel General Costs	\$ -	\$ -	\$ 65,833	\$ 32,011	\$ 10,866	\$ (12,614)	\$ 96,096
Total	\$ 310	\$ 842,422	\$ 2,651,616	\$ 3,379,522	\$ 2,402,367	\$ 12,582,426	\$ 21,858,664

* Child Work Orders - 10943052 - MNGP EPU Condensate Impeller/P, 11845189 - MNGP EPU Condensate Impeller Repair

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