Q. **B-14, Upgrade Burnt Dam Spillway $1,703,000**

Using the components of the overall project listed above, please provide references to the Hatch Report, found in Volume II, Tab 6, Appendix A, and the Weir Report, found in Volume II, Tab 6, Appendix B, regarding recommendations that each of these components be undertaken at this time.

A. The Burnt Dam Spillway upgrade is planned to be completed over a four-year period beginning in 2011 and finishing in 2014. References to the Hatch report and the Weir report are provided below for recommendations related to components that should be refurbished/upgraded for the work planned for each year.

Year: 2011

Major Component	Reference
Stop Log Hoist	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 3rd sentence states: 'The stoplog monorail hoist is a safety concern and should be replaced.' Hatch Report, Page 26, Section 4.6.1, Bullet 25 states: 'Replace stop log monorail hoist.'

Year: 2012

Major Component	Reference
Refurbish stop logs	Hatch Report, Page 24, Section 4.2.2.5, 1st paragraph, 2nd sentence states: 'Leakage between stop logs was evident.' Weir Report, Page 5, Section 2, Stop Logs states that: 'Blast clean, inspect (MP and geometry), repaint. Fasteners and rubber seals replaced' is required for the stop logs at Burnt Dam.
Install stop log storage system	The installation of a stop log storage system is a safety concern and was not covered in either of the commissioned reports.
Inspect Structure Concrete and Embedded Parts	Hatch Report, Page 25, Section 4.6.1, Bullet 18, 1st sentence states: '…inspection of embedded parts….' Is required in the short term.

Inspect Gates (rollers, pins, side rollers, etc…)	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …' Hatch Report, Page 22, Section 4.2.2.1, 2nd paragraph states: 'The gates will require painting soon…' Hatch Report, Page 25, Section 4.5, 5th bullet states: 'Rehabilitate the roller assemblies now.' Hatch Report, Page 25, Section 4.6.1, Bullet 18 1st sentence states: 'Refurbish the electrical/mechanical components of the structure including: gate painting, inspection of embedded parts, roller assembly rehabilitation…' Weir Report, Section 2, Sluice Gates states: 'All moving parts and heater ducts need to be dismantled…' 'Rollers are usually replaced c/w pins, "lubrite" bushings, washers and fasteners. Repaint to original specs…'.
Replace/Refurbish Gate Hoists (4 total)	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …' Hatch Report, Page 23, Section 4.2.2.4, 2nd paragraph states: 'Refurbishment of the hoist is required …' Hatch Report, Page 23, Section 4.2.2.4, 2nd paragraph, 3rd bullet states: 'Hoists: Disassemble and clean, inspect and repair gears as necessary, replace bushings, inspect bronze lift nut, inspect thrust bearing, replace seals, check/repair/replace grease lines. (Be equipped to replace lift nut and thrust bearing.)' Hatch Report, Page 25, Section 4.5, 3rd bullet states: 'Rehabilitate the hoists now.' Weir Report, Page 6, Section 2, Hoist gear boxes states: 'Dismantle and clean components. • Analyse oil; • MPI on Clevises; • Replace bearings, gaskets, bronze and locking nuts • Inspect bevel gears and replace if excessive wear found; • Inspection all other gearbox fittings; • Replace also pinion shafts, bushings and keys • Replace hoist screws (use ss304 instead of SAE 1035); • Repair possible damage to bearing fit in gear cases; • Set up gearing; • Gear boxes and covers, blast clean inside and outside, paint (glyptal inside) and epoxy outside. Reassemble gear box

	components.' Weir Report, Page 15 of 16, Conclusions, 1st bullet states: 'The equipment used to raise and lower the gates at Burnt Dam is in need of refurbishment.' Weir Report, Page 15 of 16, Conclusions, 6th bullet states: 'Gearboxes require removal, inspection, sand blasting, reassembly, painting and including replacement of seals, bearings and brass lift nut.'
Replace/Refurbish Gate Main Drive Gearbox (2 total)	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …' Hatch Report, Page 23, Section 4.2.2.4, 2nd paragraph states: 'Refurbishment of the hoist is required …' Hatch Report, Page 23, Section 4.2.2.4, 2nd paragraph, 1st bullet states: 'Gear Box: Disassemble, inspect and repair gears as necessary, replace bushings, replace heater, replace seals.' Hatch Report, Page 25, Section 4.5, 4th bullet states: 'Rehabilitate the hoist reducer gearbox now.' Weir Report, Page 15 of 16, Conclusions, 1st bullet states: 'The equipment used to raise and lower the gates at Burnt Dam is in need of refurbishment.'
Inspect and Clean Gate Screw Stems (4 total)	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …' Hatch Report, Page 23, Section 4.2.2.4, 2nd paragraph, 4th bullet states: 'Screw Stems: Clean, inspect and local repairs as necessary. (Replace if not straight or elongation observed.)' Weir Report, Page 5, Section 2.0, Hoist machinery states: 'Inspect: • Drive shafts;' Weir Report, Page 5 of 16 states: 'Lift screws in need of cleaning and appropriate preserving.' Weir Report, Page 15 of 16, Conclusions, 1st bullet states: 'The equipment used to raise and lower the gates at Burnt Dam is in need of refurbishment.' Weir Report, Page 16 of 16, Recommendations, Bullet 5 states: 'Proper cleaning of vertical lift screws along with a means to preserve is

	also required.'
Install Gate Screw Protectors	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …' Hatch Report, Page 23, Section 4.2.2.4, 3rd paragraph, 1st sentence states: 'A well fitted telescopic stem cover may help keep the grease clean…' Weir Report, Page 5 of 16 states: 'Lift screws in need of cleaning and appropriate preserving.' Weir Report, Page 16 of 16, Recommendations, Bullet 5 states: 'Proper cleaning of vertical lift screws along with a means to preserve is also required.'
Clean and Inspect Drive Shafts and Replace Shaft Couplings	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …' Weir Report, Page 5, Section 2.0, Hoist machinery states: 'Inspect: • Drive shafts;' Weir Report, Page 14 of 16 states: 'Output shaft from gearbox to shaft coupling shows paint cracked. All shafts should be checked for cracks with NDT.' Weir Report, Page 15 of 16, Conclusions, 4th bullet states: 'Drive shafts should be checked for cracks/replaced.' Weir Report, Page 15 of 16, Conclusions, 5th bullet states; 'All couplings should be replaced and spares provided.'

Year: 2013

Major Component	Reference
Rehabilitation of Embedded Parts for Both Gates (seal faces, rollerways, etc.)	Hatch Report, Page 25, Section 4.6.1, Bullet 18, 1st sentence states: '…inspection of embedded parts….' Is required in the short term. Without completion of an inspection of the embedded parts it is not possible to determine the extent of the repairs that are required. However given recent inspection work completed by Nalcor on the Lob stick Spillway Structure and the Intake Structure at the Churchill Falls Plant it can be expected that machining of gate roller ways and seal faces will be required.
Rehabilitation of Both Gates (new rollers, pins, bushings, seals, etc…)	Hatch Report, Page v, Executive Summary, Burnt Spillway, 2nd Bullet, 2nd sentence states: 'Complete rehabilitation of gate mechanical and electrical …'

	Hatch Report, Page 22, Section 4.2.2.1, 2nd paragraph states: 'The gates will require painting soon…' Hatch Report, Page 25, Section 4.5, 5th bullet states: 'Rehabilitate the roller assemblies now.' Hatch Report, Page 25, Section 4.6.1, Bullet 18 1st sentence states: 'Refurbish the electrical/mechanical components of the structure including: gate painting, inspection of embedded parts, roller assembly rehabilitation…' Weir Report, Section 2, Sluice Gates states: 'All moving parts and heater ducts need to be dismantled…' 'Rollers are usually replaced c/w pins, "lubrite" bushings, washers and fasteners. Repaint to original specs…'.
Replace Protection and Control Equipment on Each Gate (limit switches, overload switches, etc…)	Hatch Report, Page 25, Section 4.6.1, Bullet 19 states: 'Upgrade existing water level-measuring instrumentation…' Hatch Report, Page 25, Section 4.6.1, Bullet 20 states: 'Calibrate and re-test upper and lower cut-off limit switches for proper functionality and safety.'
Gate 1 Heating System Modifications	Hatch Report, Page 20, Section 4.2.1.3, 4th paragraph, last sentence states: 'Replacement of gate and gain heating controls including provisions for local and remote indication and alarm sensing is therefore required.'
Address Drainage Issues Associated with Diesel Building	This issue was outside the scope of both commissioned reports. It is an on-going issue that has been identified by Operations Personnel and requires attention.
Replace 120/240 Volt Distribution Panel	Hatch Report, Page 19, Section 4.2.1.1, 2nd paragraph, 3rd sentence states: 'The splitter panel and disconnect appear to be original equipment, are corroded and weathered and are at the end of their service life.' Hatch Report, Page 26, Section 4.6.1, Bullet 23 states: 'Replace the 120/240 V distribution panel.'
Replace 600V to 120/240V Transformer	Hatch Report, Page 19, Section 4.2.1.1, 2nd paragraph, last sentence states: 'The 25kVa, 120/240 V step-down transformer appears to be original equipment and is at the end of its service life.'

Year: 2014

Major Component	Reference
Install Permanent Emergency Hydraulic Drive for Gates	This component was outside of the Scope of Work of the Hatch report. Weir Report, Page 16 of 16, Recommendations, Bullet 3 states: 'New, updated means to drive gearboxes using hydraulic motors with controls on upper platform, in the event of possible loss of power or equipment failure.'

Replace 25kW Diesel Genset and Controls (Includes modifications to exhaust and radiator)	An assessment of the diesel power supply system for Burnt Dam was not part of the scope of either study completed. This item has been put forth by the Long Term Asset Planning Department in Bay d'Espoir and is based on information obtained from the Operations Personnel at Burnt Dam as well as the Maintenance Personnel responsible for the genset up-keep.
Replace 75 kW Diesel Genset and Controls (Includes modifications to exhaust and radiator)	An assessment of the diesel power supply system for Burnt Dam was not part of the scope of either study completed. This item has been put forth by the Long Term Asset Planning Department in Bay d'Espoir and is based on information obtained from the Operations Personnel at Burnt Dam as well as the Maintenance Personnel responsible for the genset up-keep.
Replace Cables from Diesel Building to Gate Control Building	Hatch Report, Page 26, Section 4.6.1, bullet 24 states: 'Replace and re-route all power and control cables, making the electrical panel at the top of the structure redundant and eliminating unnecessary terminations that are a source of potential problems.'