

1 Q. How have each of (a) the exciter replacements on Holyrood units 1 and 2;
2 (b) the Electro-Hydraulic Control (EHC) replacement on Holyrood unit 2; (c)
3 the installation of on-line performance monitoring at Holyrood; (d) the Boiler
4 Control and Station Service Control replacement on Holyrood unit 3; (e) the
5 new water treatment plant at Holyrood and (f) the upgrade of the wastewater
6 facility and other environmental improvements at Holyrood improved:

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8 1. reliability?

9 2. efficiency?

10 3. environmental performance?

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13 A. (a) Holyrood Units 1 and 2 exciter replacements;

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15 1. Reliability

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17 The exciter replacement project was undertaken as a result of
18 equipment obsolescence in that GE no longer supported the
19 electronic cards. Also some of the components on these cards
20 were no longer available. There are no statistics indicating
21 reliability performance before and after installation. However,
22 continued operation with obsolete parts would have led to
23 reliability problems similar to Bay d'Espoir as these exciters
24 were of similar design and vintage.

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26 2. Efficiency

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28 There were no efficiency implications from this project.

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3. Environmental Performance

The GE exciter had PCB capacitors which have now been removed.

(b) Holyrood Unit 2 Electro-Hydraulic Control Replacement;

1. Reliability

This project was undertaken as a result of equipment obsolescence in that GE no longer supported the electronic cards.

This project also gave the plant an ability to black start the generator to a dead bus and give frequency control as it is loaded, both of which can provide reliability benefits to customers on the system.

2. Efficiency

There are no efficiency improvements from this project.

3. Environmental Performance

There are no environmental performance improvements from this project.

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(c) Holyrood On-Line Performance Monitoring;

1. Reliability

This project did not have a reliability impact.

2. Efficiency

This project was undertaken to improve the efficiency of the Holyrood station. It provides continuous real time data to the operator. This allows the operator to configure the unit at the lowest cost possible and therefore optimum efficiency.

3. Environmental Performance

This project also improves the environmental performance in that any gains in efficiency will mean less fuel consumed and less emissions.

(d) Holyrood Boiler Control and Station Service Control Replacement;

1. Reliability

This project was undertaken as a result of equipment obsolescence in that spare parts were no longer available to maintain the equipment.

1 2. Efficiency

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3 There are no efficiency improvements from this project.

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5 3. Environmental Performance

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7 There are no environmental performance improvements from
8 this project.

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10 (e) Holyrood New Water Treatment Plant;

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12 1. Reliability

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14 This project was undertaken to replace deteriorated equipment
15 that had reached the end of its useful life.

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17 2. Efficiency

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19 The new plant generates high purity water more efficiently.

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21 3. Environmental Performance

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23 It has improved in environmental performance. Generating
24 high purity water is a chemical process that involves raw
25 materials, caustic soda and sulfuric acid to mention a few.
26 Generating water more efficiently means less raw material
27 present in the output. This results in less waste chemical on an
28 annual basis.

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1 (f) Holyrood – Upgrade of Wastewater Facility;

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3 1. Reliability

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5 There are no reliability improvements from this project.

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7 2. Efficiency

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9 There are no efficiency improvements from this project.

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11 3. Environmental Performance

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13 Industrial wastes generated at the Holyrood plant prior to 1996
14 were disposed of at Robin Hood Bay Municipal landfill.

15 Development of this site meant all industrial waste would be
16 contained in a secure landfill at the Holyrood site.