

1 Q. In response to IC-NLH-10 Hydro states that there are no formal studies discussing  
2 black start capability at Holyrood. Please provide any internal memos or  
3 correspondence relating to black start capability at Holyrood from January 2012  
4 when it was determined that the Holyrood Gas Turbine could no longer be available  
5 for use.

6

7

8 A. PUB-NLH-013 Attachments 1 through 12 set out the internal correspondence  
9 relating to this matter. To provide context to this correspondence, the key  
10 timelines are noted below:

11

- 12 • On January 17, 2012, Holyrood staff in Thermal Generation were presented  
13 with a condition assessment report for the Holyrood Gas Turbine which  
14 identified the potential for a "catastrophic failure of the power turbine disk"  
15 as a possibility "due to corrosion and high stress that may be present in  
16 blade roots and attachments". The recommendation was made by email to  
17 the Manager, Thermal Generation, that the unit be taken out of service.
- 18 • On January 18, 2012, email correspondence to management of Hydro from  
19 the Manager, Thermal Generation, advised that the Holyrood Gas Turbine  
20 was no longer available for either blackstart or peaking operations (see PUB-  
21 NLH-013 Attachment 1).
- 22 • On January 18, 2012, the Manager, System Operations and Integration  
23 Support provided the email correspondence noted above to staff in the  
24 Energy Control Centre (ECC) (see PUB-NLH-013 Attachments 3 to 4).  
25 Although not specifically directed in that email, staff in the ECC soon after  
26 began investigation of alternate means of providing blackstart to the  
27 Holyrood Thermal Generating Station.

- In 2012, Project Execution and Technical Services were actively working on a 50 MW combustion turbine project with a scheduled in-service date of 2015. Site selection for the 50 MW combustion turbine project was taking place during this period. Although the primary objective of the new combustion turbine was to provide peaking capability, consideration was also given to using the equipment to provide supporting blackstart capability (see PUB-NLH-013 Attachment 2). This factor contributed to the ultimate decision to site the new combustion turbine at Holyrood (see PUB-NLH-013 Attachments 5 to 8).
- Discussions in 2012 settled on using existing infrastructure as an interim, least cost measure until in-service of the proposed 50 MW combustion turbine in 2015. The use of the Hardwoods Gas Turbine was considered prudent and appropriate to provide interim support until such time as the 50 MW gas turbine could be put in service.
- On June 7, 2012, an operating instruction was issued relating to the use of Hardwoods for blackstart capabilities (see CA-NLH-019 Attachment 1 and PUB-NLH-013 Attachment 12).
- In January 2013, internal correspondence discussed Hydro's review of the NP mobile gas turbine option (PUB-NLH-013 Attachments 9-11). This and subsequent activities by Hydro are more particularly described in Hydro's response to IC-NLH-010.

**Fw: Gas Turbine Status holyrood**

**Terry LeDrew** to: Rob Henderson, Paul Humphries

01/18/2012 04:53 PM

Cc: Jim Haynes, Bob Butler, Nelson Seymour, John MacIsaac, Scott Crosbie

---

History: This message has been forwarded.

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Rob/Paul,

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I'm proposing that we assemble a small working group to explore all the options taking into account the (talked about 50 MW unit- 2014), the other options for Hrd GT replacement, the corresponding system benefits of the new mobile unit approach and off course the status quo. rgs

Terry LeDrew  
Manager, Thermal Generation  
Holyrood Thermal Generating Station  
Tel:(709) 229-2110  
Cell:(709) 682-5518  
Fax:(709) 229-7894

----- Forwarded by Terry LeDrew/HO/NLHydro on 01/18/2012 04:01 PM -----

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From: Jeff Vincent/NLHydro  
To: Terry LeDrew/HO/NLHydro@NLHydro  
Date: 01/18/2012 03:51 PM  
Subject: Gas Turbine Status

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Terry LeDrew	Want to table to OHSC and let them make the call? Th...	10/25/2011 04:31:18 PM
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Jeff Vincent	Terry - we're being asked some questions about our...	10/24/2011 04:34 PM NDT
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**Re: Gas Turbine Status holyrood**

**John MacIsaac** to: Terry LeDrew, Jim Haynes  
Cc: "Rob Henderson", "Paul Humphries"

01/18/2012 05:24 PM

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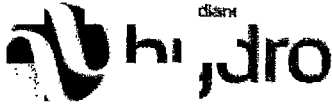
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Jeff Vincent      Terry - we're being asked some questions about our...      10/24/2011 04:34 PM NDT





**Fw: Gas Turbine Status holyrood**

**Rob Henderson** to: Kevin Goulding

Cc: Bob Butler

01/19/2012 07:20 AM

Here is note from Terry Ledrew and John MacIsaac's response. This is not surprising but nevertheless a concern for the Avalon and Holyrood's security. If we lose transmission supply to Holyrood we will not be able to get the plant started to begin restoration.

Rob



**Rob Henderson**

Manager System Operations and Integration Support  
System Operations

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**Fw: Gas Turbine Status holyrood**  
Rob Henderson to: Bob Butler

01/19/2012 09:10 AM



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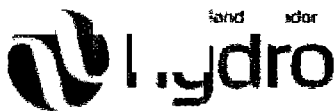
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**GT on Avalon**

**Jim Haynes** to: Rob Henderson

Cc: Bob Butler

04/10/2012 04:54 PM

---

History: This message has been replied to.

---

Rob

Following up on a meeting of last week on GT and as well I understand a meeting this am on SC re LCP and some discussion on Holyrood as a site.

with the risk assessment done it is pretty clear that Hardwoods will be a major siting permit issue. This is driven by the growth around the site primarily. There is pretty good consensus on this I believe at least in most meetings I have attended.

On the White hills site we will have some of this but generally less. Some ops issues will be lines in the area to get out to Snows/Pleasantville stations of NP, operator being needed at both hardwoods and a new site. As well a green-field site is going to cost 5-10M more simply because it is a green-field site.

Holyrood has a lot going for it...staff, industrial site, existing local community committee, elimination of black start concern at the plant, ( and the work done by Sys Ops say we can get the power to Holyrood for Black Start from Hardwoods. As well we have spent a bit on reinforcement of 230 and could not say how much 66 loops are good for.

We are generally prepared to focus on Holyrood only. I know you are partial to within city loop, But I do not see a compelling reason to demand that.

The Hardwoods unit is still there, The 230 kV system has been reinforced since 94 ice storm ( and was 17 yrs ago!) The 66 is surely no better if not worst re ice storm tolerance, particularly the White hills location due to elevation.

As well had we been not putting our future plans on infeed we would not at this time be building a GT on the Avalon. We would be doing hydro and wind. There is still a possibility of hardwoods in future (post 2022).

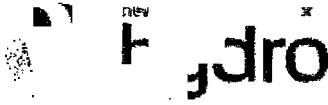
Overall the risk assessment and the cost are in a state likely good enough to eliminate the Hardwoods site for a second GT and White Hills for additional cost ( capital and operating...possible second operator)

We do not have a lot of time on this and moving to Holyrood, barring any major impediment will likely be discussed with Ed shortly.

Am I missing any significant item or factor?

Thanks


Jim



**Jim Haynes, P. Eng., VP Regulated Operations**  
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**SAFETY STARTS WITH ME & YOU!**



**Re: GT on Avalon**   
**Rob Henderson** to: Jim Haynes  
Cc: Bob Butler

04/10/2012 05:04 PM

Jim,

I don't think you are missing anything. We are discounting reliability for cost. However, I think the cost differential is probably not worth the reliability benefits.

With respect to the operator, it is possible that Holyrood will not be required at all based on today's discussion. Therefore, the operator may only be a GT operator in Holyrood. We discussed eliminating unit 3 today by making the SC's larger at Soldiers Pond.

Rob



**Rob Henderson**  
Manager System Operations and Integration Support  
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You owe it to yourself, and your family, to make it home safely every day. What have you done today so that nobody gets hurt?

Jim Haynes

Rob Following up on a meeting of last week on GT and...

04/10/2012 04:54:28 PM

From: Jim Haynes/NLHydro  
To: Rob Henderson/NLHydro  
Cc: Bob Butler/NLHydro@NLHydro  
Date: 04/10/2012 04:54 PM  
Subject: GT on Avalon

Rob

Following up on a meeting of last week on GT and as well I understand a meeting this am on SC re LCP and some discussion on Holyrood as a site.

with the risk assessment done it is pretty clear that Hardwoods will be a major siting permit issue. This is driven by the growth around the site primarily. There is pretty good consensus on this I believe at least in most meetings I have attended.

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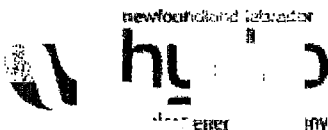
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Thanks

Jim



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**SAFETY STARTS WITH ME & YOU!**



**50 MW Avalon GT**

**Jim Haynes** to: Paul Humphries

04/11/2012 10:02 PM

Cc: Rob Henderson, Bob Butler, John MacIsaac, "Richards, Howard", Terry  
LeDrew

---

At a regular meeting with NPower I brought up the siting of the GT and that we were zeroing via risk review and rough cost that the best location for the GT was Holyrood.

I did not say it was final but the likely outcome and we are driving to conclude quickly.

They had no issue with that location and understood the rationale. I also stated it is unlikely we will attempt to rebuild the Holyrood GT and that black start for Holyrood will be via Hardwoods GT. They know we will need some cooperation on 66 system for that and has been simulated and will do the job.

They have a 42 year old mobile GT and on that one as well they are thinking on replacing vs extending its life and see our concern re investing so much in the Holyrood GT. The new one there vs replacing etc was logical and they felt they would have no issue with that

Jim

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**Re: 50 MW Avalon GT**

**Terry LeDrew** to: Jim Haynes, Paul Humphries  
Cc: Rob Henderson, Bob Butler, John MacIsaac, Howard Richards

04/11/2012 10:50 PM

Glad to hear that positive feedback and as a note our decision to Not reinvest in Holyrood does open the opportunity for acquisition of spare parts to support there's? Tks

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---

Jim Haynes

At a regular meeting with NPower I brought up the si...

04/11/2012 10:02 PM NDT

---

From: Jim Haynes  
To: Paul Humphries  
Cc: Rob Henderson; Bob Butler; John MacIsaac; Howard Richards; Terry LeDrew  
Date: 04/11/2012 10:02 PM NDT  
Subject: 50 MW Avalon GT

---

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**Installation Of Newfoundland Power's Mobile GT and Mobile Diesel on Avalon Peninsula**

**Rob Cater** to: Jim Haynes

01/16/2013 06:16 PM

Cc: Rob Henderson, Bob Butler, John Flynn, Terry LeDrew, Jeff Vincent, Howard Richards

---

Jim,

We have looked at our options to install Newfoundland Power's Mobile Gas Turbine and Mobile Diesel on the Avalon Peninsula and feel that due to availability of fuel, physical space to install units, and ease of connectivity, that Holyrood would be the best location .

**NP's Mobile GT**

This unit is rated at 7.5 MVA , although during discussions with Bob Butler this morning, he suggested the unit is presently rated at 5.5 MW. The generator on this unit has a generation voltage of 4.16 KV, and an on-board transformer with 12.5 and 25 KV windings. Apparently 4.16 KV connections are available on this unit as well. We feel that our best option is to tie the Mobile GT into the existing Holyrood GT breaker SSB-2 , on the 4.16 KV cables associated with T9. The unit would be physically located in the area near T 1/T2 and T9 on the plant side of the road (exact location to be confirmed), with fuel supplied from the HRD Plant Light Oil System .

**Mobile Diesel**

This unit is 3.08 MVA (2.5 MW), has a generation voltage of 4.16 KV and an on board step-up transformer with 12.5 and 25 KV windings. Apparently, the generator 4.16 KV terminals are concealed and NP has never connected directly to these terminals . Other than somehow connecting to the 4.16 KV terminals, one option would be to use a 2nd transformer to step 25 KV down to 4.16 KV such that it could be tied into the same point as the Mobile GT . This is somewhat awkward, but technically possible.

**Discussion**

Connecting the proposed generation on 69 KV busses B6 or B7 was considered and we have asked System Planning to look at the technical feasibility connecting a 3.08 MVA unit at one of these points. The number of voltage transformations and size of the associated transformers being the main concern. As well, I have asked System Planning to look at the suitability of NP's mobile GT for potential station service loading at Holyrood .

It should be noted as well that Howard Richards is looking into portable generation from Toromont Cat and is considering Holyrood as a potential location as well .

Regards,

Rob Cater



**Fw: HTGS Blackstart**  
**Geoff Young to: Rob Henderson**

01/28/2013 08:57 AM



**Geoffrey P. Young**  
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----- Forwarded by Geoff Young/NLHydro on 01/28/2013 08:56 AM -----

From: Jill Chisamore/NLHydro  
To: cblundon@pub.nf.ca, ito@pub.nf.ca  
Cc: DBAZELEY@mail.gov.nf.ca, Angela Dunphy/NLHydro@NLHydro, Geoff Young/NLHydro@NLHydro, Rick Green/NLHydro@NLHYDRO, Kent Legge/NLHydro@NLHydro  
Date: 02/17/2011 11:03 AM  
Subject: HTGS Blackstart

Attached is an electronic copy of Hydro's letter regarding availability of the gas turbine unit at the Holyrood Thermal Generating Station for blackstart purposes.



2011 02 17 HTGS Blackstart Letter to PUB.doc.pdf

Paper copies will follow.



**Jill Chisamore**  
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**Fw: Update on HRD Mobile installs**

**Rob Cater** to: Rob Henderson

02/15/2013 02:37 PM

---

History: This message has been replied to and forwarded.

---

Hey Rob, even with pulling out all the stops, extra crews, etc, it looks like the earliest in service date for the gas Turbine and Mobile Diesel at Holyrood is March 7th. We may be able to shave a few days off if we concentrate our efforts on the Gas Turbine only. I will call Shawn Lacour to let him know.

Thanks,

Rob

----- Forwarded by Rob Cater/NLHydro on 02/15/2013 02:31 PM -----

---

From: Rodney Champion/NLHydro  
To: Rob Cater/NLHydro@NLHydro, Gary Broderick/NLHydro@NLHydro, Michael Churchill/NLHydro@NLHydro  
Date: 02/14/2013 09:41 PM  
Subject: Re: Update on HRD Mobile installs

---

Hey Rob

We are getting closer to 'stopping' the moving target for the installation of the mobiles in HRD. I want to summarize what has transpired so far:

- 1) The grounding has been done.
- 2) O/H bus (this is still best option), design had multiple iterations of design review and calculations. End results:
  - Build cribbed structure near GT, poles partially in ground and guy'ed to poles on opposite side of road.
  - Conductors on other end attached to new steel structure design on the plant wall.
  - Both these items involved civil and T&D engineering that took considerable amount of research and 'digging' out drawings to get a good design.
  - DESIGN COMPLETED
- 3) Re-routing of cables from T9 will require new cable tray, cutting asbestos-stricken walls that will need to be sealed up (this was another part of the design that needed extra attention)
  - DESIGN COMPLETED
- 4) Confirming ability to dig across the road - confirmation given.
- 5) With this new approach in the wall modifications and cable tray design (pulling back cables etc), there will be an added component of utilizing the HRD Crews.
- 6) Other parts of the installation haven't changed.

The challenges are:

- 1) Multiple disciplines involved

- 2) Multiple crews involved, including specialized outside contractors (asbestos and plant siding)
- 3) Weather, since our engagement in this, we have had snow clearing to do etc
- 4) Other operational issues such as CBC cap bank fault, and NARL, - focus put onto this at the time to resolve issue and followup.

With all the risks/challenges in this scope, I want to offer some mitigating tactics :

- 1) We can deploy an extra crew from central to be able to terminate both ends of the cables to the OH bus once its in place. We could save some time there.
- 2) Continue to work some extra hours when it practical - not a favourite, but could be done.
- 3) Have daily/every second update meeting (brief) with crew supervisors (Gary would head this up!). This includes HRD supervisors as well. We haven't been doing this, but it may gain traction. This will give a chance to review the detail schedule I have updated today - piggyback of HRD.
- 4) Have a conference call with yourself, Terry, Terry Gardiner, Mike Churchill, Albreta to re-iterate the importance of keeping the crews going on this venture . Not sure if VP level yet.

With all that being said, here is the latest list of milestones :

- |   |      |                                      |
|---|------|--------------------------------------|
| 1) Grounding  | DONE |                                      |
| 2) HRD plant modifications (new steel, holes etc)             |      |                                      |
| - Started today with scaffolding;                             |      | est date of completion <b>27 Feb</b> |
| 3) The crib structures are started, but O/H bus completion is |      | est to complete <b>28 Feb</b>        |
| 4) Move equipment to final spot                               |      | est to complete <b>1 Mar</b>         |
| 5) Final connections to be done immediately after this;       |      | est to complete <b>5 Mar</b>         |
| 6) Energizing, will be the following day                      |      | est to complete <b>6or7 Mar</b>      |

I will review this again tomorrow morning with Gary and see if there items we can shrink in schedule. I will discuss with Mike C and line crew to ensure we are going the right direction .

I can summarize this for you for NL Power but I want to discuss with before hand . Can we meet in the morning?

I have the updated project file for this meeting too !



**Rodney D. Champion, P.Eng**  
Mgr Oper & Work Execution  
Transmission & Rural Ops  
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Newfoundland and Labrador Hydro - a Nalcor Energy company  
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Rodney Champion	Hey Rob I would like to update you on the progress in	02/08/2013 10:13:51 AM
From:	Rodney Champion/NLHydro	
To:	Rob Cater/NLHydro@NLHydro	
Cc:	Darren Moore/NLHydro@NLHydro, Gary Broderick/NLHydro@NLHydro, Hughie Ireland/NLHydro@NLHydro, Michael Churchill/NLHydro@NLHydro	
Date:	02/08/2013 10:13 AM	
Subject:	Re: Update on HRD Mobile installs	

---

Hey Rob

I would like to update you on the progress in HRD:

1) There has been a set back into the design and installation of the O /H bus in HRD for the mobile GT and MD.

- The design of the O/H bus was re-configured or re--adjusted a couple of times, until yesterday.

- The original design and installation was to be completed by this time as of the latest estimate last week.

- Concerns were:

- a) Attaching to the HRD outside wall with conductors (new design includes this approach),

- b) Use of cribbed structures that wasn't satisfactory with crews (poles to be installed in ground along with cribbed structure)

- c) Stamped drawing or equivalent to ensure proper protocol for the installation . (drawings will be sent to crews)

2) The delays for this engineered solution of the O /H bus will put another 5days into the schedule

3) Other delays in the the installation was responding to operational needs as well as snow clearing and weather conditions.

- Added 2 days on the original schedule.

4) We are working on this install every chance we get, there is a dedicated group ther on the Lines and Terminals side.

5) P&C engineering is being completed.

6) No anticipation of other risks at this time to affect schedule .

7) We will continue to work through weekend if necessary; I understand that engineering group will continue to work through to finalize the design .

To summarize the execution to date:

- Jan 18: - Firm that the GT unit will be on route to HRD from West Coast

- Week of 21-25 Jan: - Team was set up of NL Power and NL Hydro employees (PETS, TROC, HRD)

- 23 Jan: - Site Visit :Discussions of design or installation took place the

following days, with multiple site visits

- Week of 28-31: - Grounding and ground leveling had to take place.
- Week of 28-31: - Discussions on how the O/H bus was going to be installed (Beginning of the discussions)
- ....We are still finalizing the O/H design, waiting to install the equipment into the final resting spots.

*The estimate for completion of the installation and energization will be either **Tuesday or Wednesday (19 or 20 February) of next week.***

If you have any questions, please call.

BELOW - previous email to NL Power last week

\*\*\*\*\*  
\*\*\*\*\*

*Hello Sean*

*I have been asked to summarize the install progress and remaining work to have mobile generation available in HRD.*

*Here is the latest:*

- 1) Grounding and Ground leveling is completed.*
- 2) O/H Design is now completed.*
- 3) Electrical design has been reviewed*
- 4) P&C Engineering has been reviewed and near complete to the changes required.*
- 5) All primary equipment is on site ready for final positioning, except MD3.*
- 6) Crews available to continue with install.*

*Milestones remaining for project:*

- Install O/H bus*
- Move primary equipment into final location*
- Move MD3 into final location*
- Install cables for mobiles*
- Re-locate cables from T9*
- Terminate all power cables*
- Connect fuel lines to tank and mobile units*
- Apply relay setting*
- Energize both units*

*The estimate for completion of the installation and energization will be either **Tuesday or Wednesday (12 or 13 February) of next week.***

*If you have any questions, please don't hesitate to call myself or Rob.*



**Rodney D. Champion, P.Eng**  
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\*\*\*\*\*  
\*\*\*\*\*

Rodney Champion

Hey Rob/Darren Thought I would give you guys a little...

01/31/2013 09:44:17 PM

**System Operations Response to HRD GT Unavailability in January 2012**

**Bob Butler** to: Rob Henderson

11/03/2013 04:01 PM

Cc: Kevin Goulding

Bcc: Bob Butler

---

Hi Rob,

As discussed last week, there is not much documentation on this one.

I looked through my email and diary journal to determine the initial response that System Operations took regarding the notice from Holyrood that its gas turbine was unavailable. The following summarizes the System Operations response, including timelines:

Jan 18 2012 - advised by Manager, Thermal Generation that HRD GT unavailable for generation or black start;

System Operations removed this unit, or 10 MW from the system capacity total and updated the thresholds for Avalon transmission support requirements.

Upon receiving this notice, I recall some discussion about the [proposed] new HRD GT in 2014 as a potential replacement and using HWD GT as a contingency until the new GT was installed and commissioned.


At that time, System Operations proceeded to undertake the development of an instruction to deal with using HWD GT to supply blackstart power for the Holyrood Plant.

Feb 20 2012 - Robert Coish started in his role as System Operation Engineer - Planning. The Operator Training Simulator (OTS) is a key part of this position. From September 2011, the OTS environment had no facilitator or trainer.

April 4 and 5 2012 - Overview training provided to Robert Coish on the use of the OTS environment.

April 26 2012 - Discussion with Robert Coish on simulating HWD GT to provide black start power to Holyrood Plant.

May 2012 - Several iterations of the technical instruction, and finalized at the end of May.

June 7 2012 - T-007 formally issued to stakeholders. [ Link to T-007 -->  ]

If you wish to discuss further please let me know.

Bob