Re: Page B-199, Refurbish Microwave Site, $202,200

Q. Please provide an engineering report which details the current condition of the site.

A. The engineering report for the site is attached.

ORIGINAL 1979 WEST COAST TOWER SITE

DEFICIENCY SUMMARY AND SITE REPORT

Gull Pond Hill Repeater, NL
280 ft (85 m)

Tiller Engineering Inc.

Issue Date:	Status:	Project #:	Issued By:	Checked By:	Approved By:
May 30, 2007	R1 – Issued to Client	2005-71	CS	RT	RT

X:\JILCHISP\2008 CBA\RFIs from X Drive\GPH Deficiency Summary.doc

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1.0 SCOPE:

This document has been prepared as a summary of the outstanding deficiency items found at the Newfoundland and Labrador Hydro 1979 west coast tower site, Gull Pond Hill Repeater, which was inspected by Tiller Engineering during the 2005 inspection program.

The items that were corrected or repaired during the 2006 Tower Maintenance Program and the items included in the 2007 Tower Maintenance Program has been removed from this report.

The deficiency items are broken into two (2) categories:

1. Capital Deficiency Items and,
2. Maintenance Deficiency Items.

The following deficiency priority levels have been adopted in the inspection recommendations:

HIGH PRIORITY: Deficiencies that if not corrected may lead to a collapse or failure of the system or items which pose a threat to life safety of individuals using the system.

MODERATE PRIORITY: Deficiencies which do not have an immediate effect on the system but if not corrected will in time shorten the service life of the system.

LOW PRIORITY: Deficiencies which require monitoring or house-keeping items.

Cost estimates are prepared for each deficiency and are intended to be used as a bench-mark to evaluate the feasibility of upgrade vs a new tower install. All costs are ±15% and are based on our experience and judgment in the industry.

This report also summarizes the structural compliance of the tower to CSA S37-01 Antennas, Towers and Antenna Supporting Structures.

The priority based capital and maintenance deficiency lists, structural compliance and the related costs to bring a system into full CSA S37-01 compliance are used as a basis of determining the feasibility of upgrading the asset vs replacement.

2.0 DEFICIENCY SUMMARIES:

Gull Pond Hill Repeater (GPH) - 280 ft (85 m) Guyed Tower

CAPITAL DEFICIENCY LIST

Tower CSA S37-01 Capital Deficiency List

Item	Description	Priority	Cost	Comment
1	Install anti-climb system. 	High	$ 5 k	
2	Install new ladder. 	High	$ 25 k	The rung spacing is outside of CSA S37-01 and presents a very difficult climb.
3	Replace guys and guy hardware.	High	$ 40 k	Requires Engineering input
4	Install cathodic protection at Anchor 3.	Moderate	$ 5 k	

Tower Total= $ 75k

Building Capital Deficiency List

Item	Description	Priority	Cost	Comment
1	Add ice protection to the utility shed. 	Moderate	$ 3 k	

2	Pour a concrete slab for smaller fuel tank. 	Moderate	$ 1 k	
3	Add ice protection to smaller fuel tank.	Moderate	$ 2 k	

Buildings Total= $ 6 k

Electrical Capital Deficiency List

Item	Description	Priority	Cost	Comment
1	Install inverter lighting generator in building.	High	$ 5 k	
2	Install GFI exterior receptacles.	High	$ 1.5 k	
3	Install lightning protection.	Moderate	$ 5 k	
4	Replace service panel boards. 	Low	$ 5 k	
5	Provide additional fence grounding.	Low	$ 3 k	
6	Install second building base ground connection. 	Low	$ 1 k	
7	Install single heater thermostat in Transmitter building.	Low	$ 1.5 k	
8	Ground tower base. 	Low	$ 3 k	
9	Correct wiring deficiencies.	Low	$ 2 k	

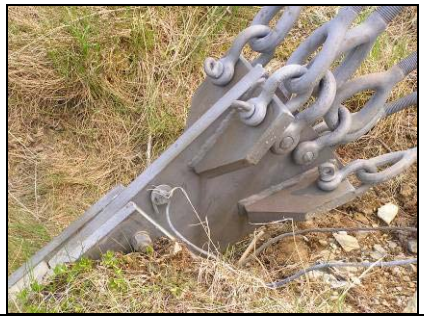
						

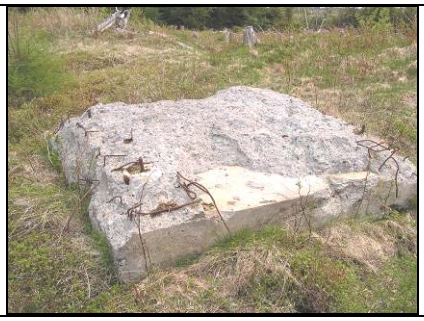
Electrical Total = $ 27 k

Grand Total for Capital Deficiencies= $ 108 k

MAINTENANCE DEFICIENCY LIST

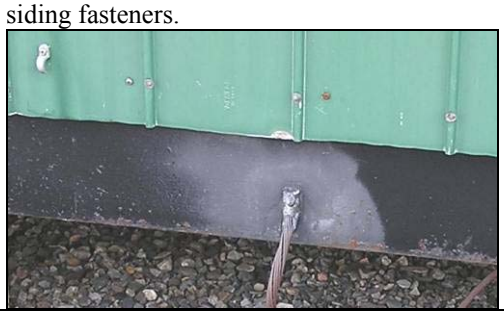
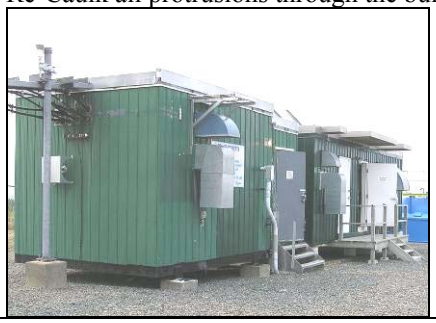
Tower CSA S37-01 Maintenance Deficiency List

Item	Description	Priority	Cost	Comment
1	Perform a sub-surface investigation on the anchors to determine their condition. 	High	$ 10 k	Requires Engineering input
2	Replace the used bolts in the new tower reinforcing with new A-325 bolts. 	High	$ 3 k	
3	Clean and cold galvanize the ice guard guys and hardware for the HP 6 ice guard. 	Moderate	$ 5 k	
4	Replace the braided copper and mechanical connector ground kit at 50’ on transmission line 4. 	Moderate	$ 3 k	
5	Install additional support to transmission line 1 at the top of the run.	Moderate	$ 1 k	
6	Remove debris and old concrete foundations from site.	Low	$ 5 k	

				
7	Grade access road to remove ruts and washouts.	Low	$ 5 k	
8	Remove unused conduit hangers between the elevations 240' and 280'.	Low	$ 1 k	

Tower Total= $ 33 k

Building Maintenance Deficiency List

Item	Description	Priority	Cost	Comment
1	Clean the steel channel framing and cover with a protective paint. 	Moderate	$ 3 k	
2	Replace caulking on the siding where the porch meets the building and around the door frame.	Moderate	$ 1 k	
3	Replace the corroded and missing siding screws with proper siding fasteners. 	Moderate	$ 1 k	
4	Re-Caulk all protrusions through the buildings' siding. 	Moderate	$ 2 k	
5	Assess corrosion on smaller fuel tank.	Moderate	$ 1 k	

				
6	Secure and properly attach the building's aluminum stairs. 	Moderate	$ 1 k	
7	Replace exterior building lighting system.	Moderate	$ 3 k	

Buildings Total= $ 12 k

Electrical Maintenance Deficiency List

Item	Description	Priority	Cost	Comment
1	Re-verify fire alarm devices.	High	$ 3 k	
2	Provide ground strapping on generator building. 	Low	$ 1 k	
3	Clean oil stains.  	Low	$ 2 k	
4	Top up generator lubrication oil. 	Low	$ 1 k	
5	Replace damaged fixture lens and lamp.	Low	$ 1 k	
6	Remove obsolete oil heater.	Low	$ 1.5 k	

Electrical Total = $ 9.5 k

Grand Total for Maintenance Deficiencies= $ 54.5 k

Gull Pond Hill Repeater - 280 ft Guyed Tower CSA S37-01 Structural Compliance

No Overloads In full structural compliance with respect to strength and serviceability. See Tiller Engineering Inc. West Coast Tower Sites Structural Analyses Report.

Estimated Cost to bring this site to full compliance with applicable standards and codes= $ 162.5 k +/- 15%, which includes $ 108 k for Capital items and $ 54.5 k for Maintenance items.

With the above noted maintenance completed, the life expectancy of this tower is estimated to be approximately 25 years providing the structure is regularly inspected and maintained.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The following cost is required to bring the existing Gull Pond Hill West Coast NL Hydro site into conformance with CSA S37-01 and to extend its design life for 20 to 25 years.

Gull Pond Hill (GPH) $ 162.5 k +/- 15%

The site is technically feasible to be upgraded to CSA S37-01 requirements.

Based on the priority based deficiencies presented and the associated costs, a systematic upgrade plan can be provided for GPH based on costs and priorities.