ONTARIO POWER GENERATION

OPG Confidential | Page: 3 of 18

BUSINESS CASE SUMMARY

Standby Generator Governor Upgrades Pickering B 13 - 49109 Capital 13 - 40528 OM&A

Full Release (Phase 2) Business Case Summary NK30-BCS-54600-00011-R000

1/ RECOMMENDATION:

We recommend a Phase 2 release of $8.8M (total project $23.3M) to complete the design, comprehensive installation work packages and installation/commissioning of governors on the remaining four (of six) Pickering B Standby Generators (SG's).

This project is one of five SG Upgrade projects designed to reduce the likelihood of a forced outage due to SG obsolescence and spare parts unavailability that has been negatively impacting reliability. The scope of these projects was based on a Pratt & Whitney (P&W) report IMR # 510 issued in May 1999 which focused on equipment obsolescence issues and the OEM's inability to support critical products. Phase 2 of this project ($8.8M) and the Protective Relay project ($1.8M) are the two outstanding initiatives of the overall program that is estimated to cost $50M. We have a REGM target to complete this work by Dec 31, 2007.

Prior to the start of this initiative, Pickering B SG performance indicated a deteriorating trend. We were not able to consistently meet the design basis SG start reliability. Approximately 70% of the total SG trips identified in the P&W report could have been prevented by the SG Governor upgrade by ensuring consistent SG starting time bench marks within the start permissive logic. Continued degradation has the potential of severe, protracted adverse impact on SG performance and forced unit outages due to unavailability of Standby Class III Power redundancy. Forced shutdowns of operational Nuclear units can occur when SG unavailability is combined with other safety support system degradation, functional failures or operational restrictions (such as Class II UPS and SES).

At this time, two (2) Governors have been installed, placed in service, and a Post Implementation Reviews (PIR) has been completed. We have seen improvements in SG performance, as work has progressed and the SG health system has recently changed from RED to WHITE. Project completion is a requirement to maintain system health WHITE assessment. The total project estimate has increased $1.2M to $23.3M, due primarily to Vendor QA issues, material costs, and underestimated design costs. Lessons learned from Phase 1 have been incorporated into the Phase 2 estimate.

The current Integrated Operating Plan (IOP) schedule calls for the completion of four (4) SGs in 2007. However, due to the degree of difficulty in executing four installations in one year, we are recommending the installation of three (3) governors in 2007 and one early in 2008. This will involve an adjustment to the IOP schedule and an extension to the REGM commitment. However, if conditions prove favourable, we will install four (4) units in 2007.

$000's (Incl contingency)	Funding	LTD 2005	2006	2007	2008	2009	2010	Later	Total
Currently Released	Full - Phase 1	2,672	8,850	2,969	-				14,491
Requested Now	Full - Phase 2	-	(1,186)	6,984	3,042				8,840
Future Funding Req'd	None								-
Total Project Costs		**2,672**	**7,664**	**9,953**	**3,042**	-	-	-	**23,331**
Other Costs									-
Ongoing Costs									-
Grand Total		**2,672**	**7,664**	**9,953**	**3,042**	-	-	-	**23,331**
Investment Type: Sustaining		Class: Cap & OM&A		Breakeven Level of Risk: 5.2% forced outage		IRR: N/A		Discounted Payback: N/A	

Submitted By:

Pierre Tremblay
Senior Site Vice President, Pickering B
Date: Feb 12/07

Approved by:

T.N. Mitchell
Chief Nuclear Officer

Finance Approval:

D. Power
V. P. Corporate Investment Planning
Date: Feb 18/07

Line Approval (Per OAR Element 1.1 Project in Budget):

Jim Hankinson
President and CEO
Date: Mar 5/07

2/ BACKGROUND & ISSUES

The Standby Generator Health system was rated as RED as recently as Q1 2006 due to functional failures on aging parts that are obsolete and no longer supported by the OEM. Over the last few years the SGs have experienced a number of functional failures that contributed to forced outages. The functional failures reduce redundancy and potentially could lead to a Pickering B units shutdown. Recent upgrades and maintenance have improved the system health rating from RED (Q1) to YELLOW (Q2/3) to WHITE (Q4). Project completion is required to ensure system reliability and resolve obsolescence of the governor system which is not supported by the OEM.

The SG system is an essential safety related support system which supplies Class III power to the electrical equipment required to ensure a safe shutdown of the reactor; continuous core cooling, and supply to essential loads in the turbine, water and air systems, in the event of loss of Class IV power. There are three SGs that support each pair of Pickering units (i.e. 056-54600-SG1/SG2/SG3 supports Units 5 & 6, and 078-54600-SG1/SG2/SG3 supports Units 7 & 8).

As per Abnormal Incidence Manual (NK30-AIM-058-09013-04.01), following are the impairments for the Standby Generator system:

- Coincidental unavailability of three SGs per pair of units will result in SG system impairment (system does not meet design intent). In this impairment, both Pickering B affected Units need to be shutdown within 24 hours unless approval has been given by the Duty Manager for continued operation beyond 24 hours. The minimum system requirement is to have at least one SG available per pair of units.

- If two of the three SGs are unavailable per pair of units, the system will be considered to have reduced redundancy or margin of safety and required action will be to suspend testing of remaining SGs and repair to be carried out on high priority basis for the affected SG.

- If one of the three SGs is unavailable per pair of units, the system will be considered to have reduced redundancy or margin of safety and required action will be to suspend non-emergency operation of remaining SGs above 3.5MWe in peaking mode and repair to be carried out on high priority basis for the affected SG.

The following projects represent the Pickering B SG Upgrade program:

Pickering B Standby Generator Upgrade Projects				
49033	SES/HPECI Power Supply Upgrade	Capital	12.7	Complete
49088	Standby Generator Upgrade	OM&A	1.0	Near Completion
40412	Standby Generator Upgrade	Capital	11.0	Near Completion
40628	New Protective Relays	Capital	1.8	Developmental Stage
49109 /40528	Standby Generator Governor Upgrade	Capital / OM&A	23.3	2 of 6 complete
Total			**49.8**	

See Attachment 'D' for summary of Pickering B SG functional failures extracted from the System Health Report.

3/ ALTERNATIVES AND ECONOMIC ANALYSIS

$ 000's	Stop the Project	Alt 1 (Recommended)		Alt 2	Alt 3	Alt 4	Alt 5
		Full Cost	Incremental Cost	Delay 1 yr			
Revenue	(16,265)	(1,857)	(1,857)	(3,778)			
OM&A	(9,847)	(2,466)	(2,007)	(2,316)			
Capital	1,477	(22,872)	(12,995)	(13,385)			
NPV (after tax)	(12,401)	(20,782)	(12,401)	(13,353)			
Impact on Economic Value (IEV)	N/A	(8,381)	-	(952)			
IRR%	N/A	N/A	N/A	N/A			
Discounted Payback (Yrs)	N/A	N/A	N/A	N/A			

Stop the Project - Not Recommended

This is not recommended as we are at risk of an unplanned SG outage or possible forced unit outage due to SG obsolescence and a lack of spare parts. Moreover, the REGM commitment would not be addressed and we would have to write approximately $ 5.4 M of capital charges off to OM&A

Alternative 1 - Proceed with Project - Recommended

Proceed with upgrades to the SG Governor system and related controls as outlined in section 4 below to reduce the increasing likelihood of an unplanned SG outage or forced unit outage. Because we cannot effectively install more than 3 governors this year, we will need to seek an extension to our REGM commitment and complete the final installation early in 2008. Completion of this work and the Protective Relay project will finalize the upgrades to the Pickering B Standby Generators and thereby remove the threat of a forced outage, maintain the Health System at white and satisfy a REGM commitment.

Due to the complexity of such an event (see Background Section), the likelihood of a forced outage due SG failure is not easily estimated. Lacking an accurate way to determine this level of risk, financial justification must be made on an assessment of whether there is a reasonable chance that the breakeven point for the incremental investment will be surpassed. Calculations indicate that the breakeven point is reached when the likelihood of a forced 30 day outage (involving 2 units) is 5.2% and the cost to repair is $300K. Based on past SG performance (see Attachment D), we feel it is reasonable to assume that we would likely surpass this level of risk, should the investment not be made. Moreover, it makes sense to complete the last major initiative of the $50M SG Upgrade program, so that we can realize the overall objective of SG reliability.

Alternative 2 - Delay Project - Not Recommended

This is not recommended as there is an increasing likelihood of an unplanned SG outage / forced unit outage and we would not be addressing the REGM commitment.

Alternative 3 – Install 2 of the remaining 4 - Not Recommended

Modifying only 2 of the remaining 4 Pickering B SG's is not recommended for the following reasons:

a) OPG is locked into an Engineered Material Vendor contract totaling all six SG's (as per previous release),
b) Increased likelihood of error when performing SG maintenance, as there would be two designs.
c) Increased documentation effort as all the operating and maintenance documentation would need to reflect two designs.
d) 68 percent of the project cost is with the first two SG's.

4/ THE PROPOSAL

We recommend continuing with the replacement of the existing SG Governor, sequencing/control relay logic, fuel delivery package and associated I&C monitoring for the remaining four Pickering B SGs.

Scope Breakdown:

Governor fuel delivery system replacement
New PLC based integrated governor and sequencer controls
Replace majority of the relay start/control logic with PLC
Independent over speed protection system (due to adoption of PLC)
Relay logic changes covered by Pratt & Whitney Study Report IMR 510
PLC based speed switches and timers
New Data event logger with expansion capabilities
New Machine monitor (temperature and vibration)

Phase II major project deliverables are as follows:

(a) Update Project Execution Plan
(b) Revise Vendor design packages as required
(c) Complete Design Packages for remaining two SG's (first four SG's completed under Phase I)
(d) Work Plans and Field Engineering Packages for remaining four SG's
(e) Systems and equipment installation and commissioning remaining four SG's
(f) New and/or revised Operating and Maintenance Procedures for remaining SG's.
(g) Project close out – station document updates, PASSPORT updates
(h) Post implementation review, lessons learned

The SG Governor Upgrade Project Execution Plan (PEP) NK30-PEP-54600-00001 defines the project scope to complete the deliverables. Finish dates in future based on current SG outage schedule. Should outages move, dates will vary accordingly.

5/ QUALITATIVE FACTORS

1. Lower system maintenance costs (Governor and logic failures being minimized) with the new Governor and start/control logic.
2. Improved diagnostic capabilities using new data logger and machine monitor, thus reducing forced SG outage troubleshooting times.
3. Elective and Corrective Maintenance backlogs expected to decrease due to replacement of instrumentation and components

6/ RISKS

Description of Risk	Description of Consequence	Risk Before Mitigation	Mitigating Activity	Risk After Mitigation
Cost				
Additional material may be required depending on as found condition of machine when disassembled for the retrofit modification.	Added material costs to replace broken or unusable existing equipment.	**Medium**	Added $211K specific contingency for materials	**Low**
Increased OPG installation package preparation and design review costs due to Vendor documentation QA issues.	May not be able to complete installation packages within budget and schedule.	**Medium**	$209K Specific Contingency included for increased installation package preparation effort. OPG Supply Chain working with the Vendor to improve documentation QA through OPG corrective action process. Incorporating Lessons Learned.	**Low**
Scope				
May need to account for field discovery during installation phase.	Delay completion of tasks. May not be able to complete scope within allocated budget.	**Medium**	$499K Specific Contingency included for Installation to minimize impact. Design phase comprehensive walkdowns complete. Increase scope only with management approval and funding allocation. Incorporating Lessons Learned.	**Low**
Integration complexities with SG Upgrade project and other Maintenance.	Delay completion of tasks. May not be able to complete scope within allocated budget.	**Medium**	Specific Contingency included for Installation (see above) to minimize impact. Integrated work programs of SG Governor & SG Upgrade projects and station maintenance. Multiple station challenge reviews conducted. Incorporating Lessons Learned.	**Low**
Schedule				
REGM commitment for Dec07 at risk (aggressive station SG outage schedule).	Project may not meet current REGM deadline	**High**	REGM commitment date to be reviewed and extended as required.	**Low**
Station driven SG Outage	IOP process not being followed for	**High**	General contingency includes amounts for	**Medium**

schedule and SG outage maintenance window is very aggressive with little contingency. SG outage opportunities may change.	design issuance milestones and installation package preparation. Delay installation and SG return to service. May not be able to complete scope within allocated schedule windows and budget.		minor delays for the remaining 4 SG's. Many challenge reviews conducted to minimize hand-off / turn-over delays. Increased pre-outage preparation planning. Incorporating Lessons Learned. Recommend adding $2.8M to 2008 B.P. budget against final SG installation delays to 2008. To be reviewed during 2008 Business Planning. Risk remains medium.	
Delays caused by maintenance activities (unforeseen work) during SG outages could affect SG outage schedule	Delay installation. May not be able to complete scope within allocated budget.	**Medium**	Project integrated into station SG maintenance program. Added minor contingency to project schedule. Covered by Specific Installation Contingency discussed on previous page.	**Low**
Resources				
Limited engineering resources. Other project priorities.	Delay completion of scope. Impact on design schedule for subsequent SG's.	**Medium**	Use contract resources, if necessary.	**Low**
Limited installation resources (BTU and PWU). Competing with SG Upgrade project and other maintenance programs. Limited Ops resources during commissioning.	Delay installation	**Medium**	Use contract resources, if necessary. General contingency includes overheads to administer contracts. Pre-arranged Ops support including a SPOC prior to outage. Permit walkdown prior to outage.	**Low**
Engineered Material Vendor resources diverted to other contracts. Vendor has access to limited resources and has limited project management skills.	Delays in subsequent design packages for remaining SG's. Delays in testing and material delivery	**High**	OPG added resources to assist Vendor in project co-ordination. Vendor added technical and project management resources. Vendor advancing production schedule for remaining SG's. Supply Chain exploring other contractual remedies.	**Low**
Technical				
Commissioning / testing of complete modification on subsequent SGs. Possible software modifications during commissioning.	Delay return to service due to cumbersone SQA field change process. SG unavailability combined with other safety support system degradations (i.e., UPS, SES) may cause forced unit shutdowns.	**Medium**	Minor schedule and cost contingency added (see specific contingency on previous page). Design verifications, simulations and comprehensive FAT prior to installation. Independent verification of software and hardware design. Software Field Change process developed with Computer Design Group to enable parallel Software	**Low**

			verification with field implimentation. Incorporating Lessons Learned.	
Regulatory				
None.				
Environmental				
Scrapping of old material	Environmental regulatory non-compliance	**Medium**	Material to be sampled and scrapped in accordance with approved procedures.	**Low**
Health & Safety				
None.				
Investment				
Project does not satisfy the Business Objectives	Rework, extra cost	**Low**	The first two governors have been installed and are operating as designed	**Low**

7/ POST IMPLEMENTATION REVIEW PLAN

Type of PIR:	Targeted Final AFS Date:	Targeted PIR Approval Date:	PIR Responsibility (Sponsor Title)
Simplified	Jun 2008	Dec 2008	Director - Station Engineering

Comments:

	Measurable Parameter	Current Baseline	Targeted Result	How will it be measured?	Who will measure it? (person / group)
1.	Available For Service (first 2 SG's)	N/A	AFS and open items acceptance by stakeholders	Attach copy of AFS and open items with A/R's to PIR	System Engineer
2.	SG Machine performance Criteria Met	N/A	Commissioning results acceptance by Design	Signed Commissioning Report scanned in Passport	Project Manager
3.	Standby Generator (SG) System Health	Red	Removal of SG Governor and associated control systems as contributor to Red system status	Updated SG system health report indicating improved status for affected equipment	System Engineer
4.	REGM 28007285 complete	Dec 2007	SG Governor Project contribution to REGM completion	SMB REGM schedule review Milestone added to SG Outage Plan	Project Manager
5.					

Appendix "A" Glossary (acronyms, codes, technical terms)

AFS	Available for Service
BCS	Business Case Summary
B.P.	Business Plan
BTU	Builders Trade Union
COMS	Constructability, Operability, Maintainability, Safety
CUSW	Direct Hire Building Trade Union (Electrical)
CWP's	Comprehensive Work Packages
DCN	Design Change Notice
ECC	Engineering Change Control
EPG	Emergency Power Generator
FAT	Factory Acceptable Test
FE	Field Engineering
FIPR	Field Installation Package Release
FME	Foreign Material Exclusion
HFE	Human Factors Engineering
IOP	Integrated Operating Plan
ITP	Inspection Test Plan
I&C	Instrumentation and Controls
IRR	Internal Rate of Return
NUCORDS	Nuclear Components Reliability Data System
NPV	Net Present Value
OAR	Organizational Authority Register
OLW	Online Wiring
OM&A	Operations, Maintenance and Administrative expense
ONL	Online Wiring
OPEX	Operating Experience
Ops	Operations
O.T.	Overtime
PC1	Worker Protection Permit application Form
PEP	Project Execution Plan
PIR	Post Implementation Review
PFU	Predicted Unavailability Factor
PINO	Performance Improvement Nuclear Oversite
PLC	Programmable Logic Control
PSL	Power Supply List
PWU	Power Workers Union
QA	Quality Assurance
QCIV	Quality Control Inspection Verification
QSITP	Quality Surveillance Inspection Test Plan
REGM	SNSC Management Commitment
SCR	Site Condition Report
SE's	System Engineer
SES	Site Electrical System
SG	Standby Generator
SMB	Site Management Board
SPOC	Single Point of Contact
SQA	Software Qualification Assurance
TSSA	Technical Safety Standards Authority
UPS	Uninterruptible Power Supply

ONTARIO POWER GENERATION

OPG Confidential

BUSINESS CASE SUMMARY

Appendix "B" Project Funding History

$ 000's		All Existing and Planned Releases (incl contingency) Cumulative Values									
Release Type	Month	Year	2002	2003	2004	2005	2006	2007	2008	Later	Total
Developmental	Jul	2,002	300								300
Full (Phase 1)	Apr	2,004	87	0	1,010	7,712					8,809
Superseding	Feb	2,006	87	0	372	2,213	8,850	2,969	0		14,490
Full (Phase 2)	Jan	2,007	87	0	372	2,213	7,664	9,953	3,042		23,331
											0
											0
											0
											0
LTD Spent	Dec	2,006	87		372	2,213	7,664				10,336

Comments:

ONTARIO POWER GENERATION

OPG Confidential

BUSINESS CASE SUMMARY

Appendix "C" Financial Model – Assumptions

Project Cost Assumptions:

Cost estimates have been verified by 3rd party reviewer, Atlas Helyar. Task Identification Sheets (N-Form-11025) have been validated by all contributing resource groups. Actuals and lessons learned have been incorporated into estimates.

Financial Assumptions:

The breakeven point for this investment is reached when the probability of a 2 unit forced outage of 30 days reaches 5.2% and the cost of repair accumulates to $300K. This is based on the following:

Loss of Revenue during forced unit outages:

(516MW for PB) X (85% Capacity Factor) X (24 Hours) X (30 Days) X (Rate MWH) X (2 Units).

Repair Costs during forced SG outages:

$300K per year + 3% inflation

Project / Station End of Life Assumptions:

Pickering B End of Life: 2014 Units 5, 6, and 7 2016 Unit 8

Energy Price / Production Assumptions:

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
56.2	58.2	57.0	55.6	54.4	54.2	56.3	60.2	64.4	67.1

Operating Cost Assumptions:

N/A

Other Assumptions:

N/A

ONTARIO POWER GENERATION

BUSINESS CASE SUMMARY

Standby Generator Governor Upgrades Pickering B 13 - 49109 Capital 13 - 40528 OM&A

Full Release (Phase 2) Business Case Summary NK30-BCS-54600-00011-R000

Attachment "A" **Project Cost Summary**

$000's Capital & OM&A	LTD Prior Yr 2006	This Release 2007	This Release 2008					Later	Total
Project Management (OPG)	623	253	260	-					1,136
Engineering & Drafting (OPG)	1,874	1,018	374	-					3,266
Material	2,370	3,159	1,053						6,582
Installation – PWU, BTU	3,534	4,068	920						8,522
Contract - Design	495	57	4	-					556
Contract - Installation	386	264	86						736
Contract - Other	340	75	25	-					440
OMA Project 40528	459	-	-	-					459
									-
Interest (Capital Project Only)	255	249	74	-					578
Project Costs (excl contingency)	**10,336**	**9,143**	**2,796**	**-**	**-**	**-**	**-**	**-**	**22,275**
General Contingency		67	227						294
Specific Contingency		743	20						763
Project Costs (Incl contingency)	**10,336**	**9,953**	**3,042**	**-**	**-**	**-**	**-**	**-**	**23,331**
2007-2011 Business Plan	10,336	7,083	2,230	-					19,649
Variance to Business Plan	**-**	**2,060**	**566**	**-**	**-**	**-**	**-**	**-**	**2,626**
Committed Cost									-
Inventory Write Off Required									-
Spare Parts / Inventory									-
Total Release (excl contingency)	**10,336**	**9,143**	**2,796**	**-**	**-**	**-**	**-**	**-**	**22,275**
Total Release (incl contingency)	**10,336**	**9,953**	**3,042**	**-**	**-**	**-**	**-**	**-**	**23,331**

Ongoing OM&A (non-project)									-
Removal Costs (incl in above)									-

Basis of Estimate					
Design Complete	100%		Quality of Estimate	Release + 15% to - 10%	
3rd Party Estimate	Yes	OPEX used	Yes	Lessons Learned	Yes
Reviewed by Sponsor	Yes	Budgetary Quote(s)	Yes	Phase 1 Actual Used	Yes
Similar Projects	Yes	Contracts in place	Yes	Competitive Bid	Yes

Variance to Business Plan

The estimated variance(s) to the 2007-2011 Business Plan will be addressed through the portfolio management process. A PCRAF will be approved by Apr 2007.

Reviewed By:

George Makdessi
Project Manager

30 Jan 2007
Date:

Approved By:

Randy Ludlow
Eng & Mods Manager (Strat IV)

31 Jan 2007
Date:

ONTARIO POWER GENERATION

OPG Confidential | Page: 15 of 18

BUSINESS CASE SUMMARY

Standby Generator Governor Upgrades Pickering B 13 - 49109 Capital 13 - 40528 OM&A

Full Release (Phase 2) Business Case Summary NK30-BCS-54600-00011-R000

Attachment "B" Project Variance Analysis

Capital & OM&A	LTD Dec 2006	Total Project Last BCS Feb 2005	Total Project This BCS Jan 2007	Variance	Comments
Phase 1					
Project Management (OPG)	623	668	623	(45)	As per actuals
Engineering & Drafting (OPG)	1,874	1,518	2,039	521	Vendor software changes QA, Rework, Field Changes
Material	2,370	5,667	6,142	475	Commissioning Supp from Vendor, Increases to Misc Matl
Installation – PWU, BTU	3,534	3,654	3,735	81	As per actuals
Contract - Design	495	322	502	180	As above
Contract - Installation	386	260	392	132	056-SG3 Outage start delays, ES Fox/Crosby Dewar Increased Costs due to design changes.
Contract - Other	340	302	340	38	Training materials and hardware costs
OMA Project 40528	459	459	459	-	Sunk costs of previous OM&A project
Interest (Capital Project Only)	255	258	255	(3)	As per Actuals
Phase 1 (excluding contingency)	**10,336**	**13,108**	**14,486**	**1,378**	
General Contingency		**242**	**-**	(242)	Materialized risk as outlined in last BCS brought into budget.
Specific Contingency	-	1,140	-	(1,140)	Materialized risk as outlined in last BCS brought into budget
Phase 1 (incl contingency)	**10,336**	**14,490**	**14,486**	**(4)**	
Phase 2					
Project Management (OPG)	-	238	513	275	Outage Delays and increased support of Vendor
Engineering & Drafting (OPG)	-	450	1,227	777	Adjustments as per lessons learned and increased review effort of vendor design and field changes
Material	-	186	440	254	Commissioning Support from Vendor, Increased Misc Matl costs (lessons learned)
Installation – PWU, BTU	-	4,650	4,787	137	Adjustments as per lessons learned
Contract - Design	-	49	55	6	Adjustments as per lessons learned
Contract - Installation	-	393	344	(49)	Adjustments as per lessons learned
Contract - Other	-	100	100	-	
OMA Project 40528	-	-	-	-	
Interest (Capital Project Only)	-	174	323	149	Cash Flow adjustments
Phase 2 (excluding contingency)	**-**	**6,240**	**7,789**	**1,549**	
General Contingency		**1,409**	**86**	(1,323)	Incorporation of lessons learned.
Specific Contingency		-	970	970	Identified risks going forward
Phase 2 (incl contingency)	**-**	**7,649**	**8,845**	**1,196**	
Total Project (incl contingency)	**10,336**	**22,139**	**23,331**	**1,192**	
General Contingency		**1,651**	**86**		
Specific Contingency		**1,140**	**970**		
Total Project (excl contingency)	**10,336**	**19,348**	**22,275**	**2,927**	

Comments:

Attachment "C" **Key Milestones**

Completion Date			Description
Day	Mth	Yr	
15	Apr	2007	Revise PEP
09	Feb	2007	5th SG Detailed Design Package 056SG2
07	May	2007	6th SG Detailed Design Package 078SG2
19	Feb	2007	056-SG1 (3rd SG) Installation Start (T-0)
07	May	2007	078-SG1 (4th SG) Installation Start (T-0)
22	Oct	2007	056-SG2 (5th SG) Installation Start (T-0)
15	Feb	2008	078-SG2 (6th SG) Installation Start (T-0)
10	Apr	2007	056-SG1 (3rd SG) AFS
06	Jul	2007	078-SG1 (4th SG) AFS
21	Dec	2007	056-SG2 (5th SG) AFS
7	Apr	2008	078-SG2 (6th SG) AFS
30	Dec	2008	Project Complete

A Project Execution Plan (PEP) will be approved by 2007

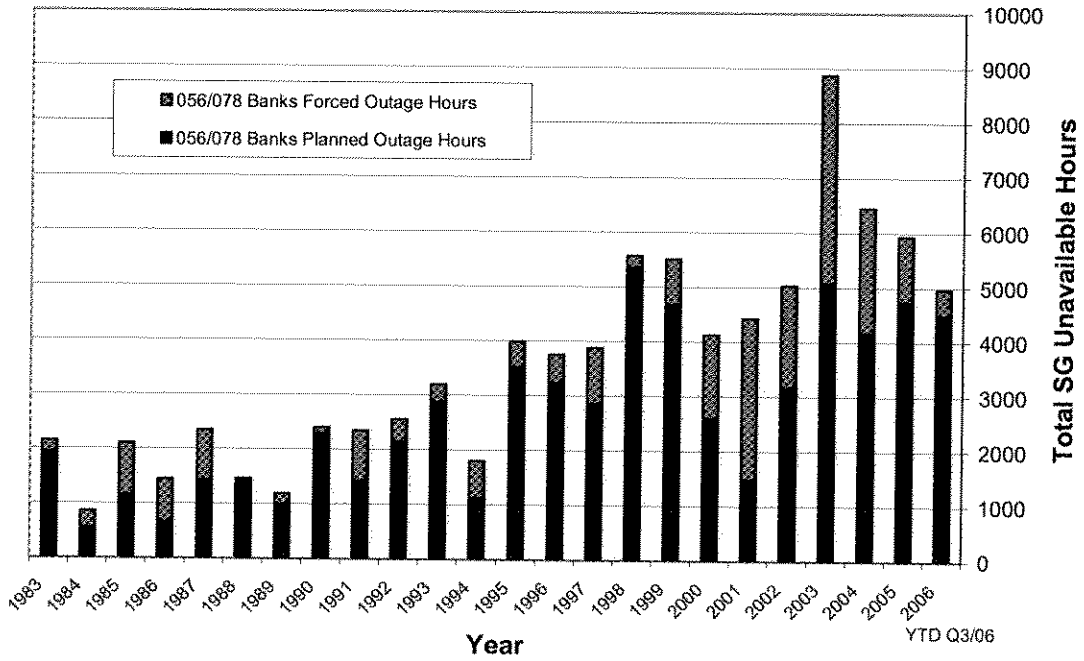
Comments:

Attachment 'D'

Pickering B Standby Generator 2005 & 2006 Failures / SCR Summary

Functional Failures (QTR/2YR)	Common		056 SGs		078 SGs		Overall System Health
	Qtr	2 Yr	Qtr	2 Yr	Qtr	2 Yr	
Q1 2005	0 →	0	0 ↓	9 ↓	2↑	17 →	RED
Q3 2005	0 →	0	1 ↓	6 ↓	1↓	16 ↓	RED
Q2 2005	0 →	0	2 ↓	6 ↓	2↓	16 ↓	RED
Q4 2005	0 →	0	0 ↓	6 →	1→	16 →	RED
Q1 2006	0 →	0 →	0 ↓	4 ↓	0→	14 ↓	RED
Q2 and Q3 2006	0 →	0 →	0 ↓	4 ↓	0→	14 ↓	YELLOW
Q4 2006	0 →	0 →	0 →	1 ↓	0→	7↓	WHITE

Pickering B SG Unavailable Hours per Year (Planned vs Forced/Outage Extension)



Event Date	SCR	Equipment / Event Summary
Jan 04, 2005	P-2005-00131	056-54600-SG3 tripped during start-up of pre-outage test run on "PT Exhaust Temp.
Jan 18, 2005	P-2005-01151	078-54600-SG2 tripped during start-up of routine P-07 test run.
Feb 13, 2005	P-2005-02699	078-54600-SG2 tripped on "DC Lube Oil Pump Failure" during U7 P-05 routine test - defective pressure switch PS12.
Feb 18, 2005	P-2005-03115	056-54600-SG1 incurred a "Fuel Boost Pressure Low" (Test Mode only) start trip during U5 loss of class III bus test. It is a Peaking Mode only trip.
Feb 19, 2005	P-2005-03249	078-54600-SG3 failed to start and was rejected duringU7 P-5 test. Fault was traced back to a faulty T8 timer.
Mar 18, 2005	P-2005-05152	056-54600-SG3 tripped on "PT Exhaust Temp. High" during start-up of U6 UPSB backup test.
May 01, 2005	P-2005-07961	056-54600-SG1 tripped during start-up of P7 routine test run on "PT Lube Oil Sequence Failed". – It is a Peaking Mode only trip. Intermittent equipment failure.
May 22 , 2005	P-2005-09305	078-54600-SG3 tripped during start-up of routine P-07 test run on "Main Lube Pressure Low" - defective T8 timer.
Jun 18, 2005	P-2005-10865	056-54600-SG2 tripped on "PT Lube Oil Sequence Failed" during P7 routine test. It is a Peaking Mode only trip. Defective T11 timer.
Jun 28, 2005	P-2005-11400	078-54600-SG3 tripped during start-up of routine P-07 test run on "Main Lube Pressure Low". – Defective T8 timer.
Jul 05, 2005	P-2005-11683	078-54600-SG2 failed to start.
Jul 06, 2005	P-2005-11734	Temperature Switch Non-Conformance.
Jul 07, 2005	P-2005-11779	Actual Past Unavailability due to SGs Failures
Aug28, 2005	P-2005-14142	056-54600-SG3 Unavailable.
Sep 19, 2005	P-2005-15563	Fuel leak at 056-SG3 fuel oil integrator FZ3399
Nov 22, 2005	P-2005-19625	078-54600-SG3 tripped during start up for routine test.
April 20, 2006	P-2006-06624	078 SG2 trip on startup. 078-SG2 started for supporting Unit 8 BUS transfer operation @ 10:52 on April 20/06. The machine tripped approximately 15 seconds into the start sequence. DC Lube Oil pump did not start as expected. Trip appears to be spurious.
Sept. 30, 2006	P-2006-16975	On 09/30/06 @ 4:00, CI 525 "056-SG1 Process Trouble" annunciated in MCR. Local inspection discovered "FIRE" window lit on. SG was declared unavailable (ref. SCR P-2006-16975 & WR# 520871). Fault was traced back to a defective R1 relay which caused this spurious alarm.
Dec 18, 2006	P-2006-24708	Standby Generation Impairment 078-SG1 tripped on routine test run./ During routine P-007 test run of 078-SG1on Dec 18/06, the machine started up with an initial frequency @ 63 Hz which was above the normal 61.2 Hz.