

BUSINESS CASE SUMMARY

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# **DNGS Construction Change Room 16 - 31718**

Attachment 1 Tab 6

#### Full Release Business Case Summary D-BCS-28200-10004-R001

## 1/ RECOMMENDATION:

Approval is requested for this Full Release for a total 23,781 K\$ Capital, contingency) to complete both the construction of a new Construction Change Room (CCR) c/w Lunchroom facility and the removal of the old CCR. The new CCR is being constructed in time to support the March 2009 Vacuum Building Outage (VBO) at Darlington.

The objective of this project is to construct a new CCR for DNGS maintenance and contract staff to provide a safe and effective work environment, and then to decommission and remove the existing CCR. The new CCR will have an increased capacity over the previous change room, which will relieve overcrowding and congestion, thereby improving current health and safety inefficiencies.

A firm fixed price contract is in place for the construction of the new CCR. The Project has obtained a contractor budgetary quote for the removal of the old CCR based on applicable approved and accepted design packages.

This project is being executed in several phases between 2007 and 2010:

- 2007/2008 Detailed Design has been completed
- 2008/2009 Construction of new CCR and turnover to OPG Operations & Maintenance
- 2009 Removal and decommissioning of existing CCR / prepare Design for fire alarm signal integration
- 2010 Field installation of fire alarm signal / Project close-out

The timeline for the completion of the new change room is extremely tight. Full station management support, including exemption from certain activity milestones in station work processes, is required to adhere to the schedule as planned.

A Partial Release of 13,304 K\$ had been approved in March 2008 indicating a total project cost of \$16,020 K\$. Since then the cost estimate has increased primarily due to an increase in the construction costs based on the completed design package, the project having to complete multiple parallel activities and field discovery work. A station contingency plan should be available for the 2009 VBO to mitigate contractor change facility needs should this project be delayed.

Ongoing negotiations with the CNSC are still progressing to limit the scope of new fire protection work required to meet the new nuclear fire code CSA N293-07. There is a risk that the CNSC may require a fire suppression system to be installed in the new CCR. This would have to be completed after the VBO and would be an impact to the cost of the project.

\$000's (incl contingency)	Funding	LTD 2008	2009	2010			Jan Jan A	Later	Total
Currently Released	Partial	12,622	2,312	**************************************	<del></del>				14,934
Requested Now	Full	901	6,692	1,254					8,847
Future Funding Req'd	***************************************							****	
Total Project Costs		13,523	9,004	1,254	-		-		23,781
Other Costs									
Ongoing Costs					· · · · · · · · · · · · · · · · · · ·				
Grand Total	······································	13,523	9,004	1,254	•	•	•	-	23,781
Investment 1	уре	Clas	S	(IEV) Impact	on Ec Value		RR	Discount	ed Payback
Sustainin	9	Capit	ai	-0.8	MS				VA.

	or segui tant
Submitted By:	
Theype Robbins	2009-01-30
Wayne Robbins	Date:
Site VP, Darlington	

Finance Approval:

Donn Hanbidge SVP & CFO Line Approval (Per OAR Element 1.1 Project in Budget):

Jim Harikinson President & CEO

Date:

Data:



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#### 2/ BACKGROUND & ISSUES

The existing CCR was installed in the early 1990's and is nearing its end of useful life nominally rated at a maximum of 20 years for a mobile type building design. This facility was not designed for its current capacity and hence is congested and inefficient when utilized at or near capacity during outages and major projects. The Design Agency that performed the Conceptual Study for the new Maintenance Facility and new CCR had recommended that a new change room be constructed instead of relocating or refurbishing the existing CCR due to doubt that the existing CCR could survive relocation.

Due to changing work force demographics since DNGS was first built, many of the permanent staff and contractors hired for project and outage work are more regularly women. The current CCR does not have sufficient women's change room facilities. There are insufficient lunchroom facilities to accommodate the required contractor staff to support station activities such as major outages or large projects. The proposed new CCR will be approximately 19,000 sq. ft. and as per the project charter (D-PCH-28200-10002) developed by Darlington Maintenance, the capacity is required to increase from the old CCR as follows:

- Women's change room from 24 to 150 personnel
- Men's change room from 450 to 500 personnel
- Lunchroom from 125 to 225 personnel fixed seating capacity

The expected occupancy level of the new CCR is 100 - 150 people during low periods, and 350 - 500 people during peak (unit outage) periods. The timeline for peak periods is about one month prior to an outage to the end of the outage, based on a 3 month planned outage. These capacity estimates were provided by the DNGS Contract Management Office (CMO) and are based upon the current occupancy of the existing CCR and the current outage schedule at Darlington.

A Design Agency was commissioned to perform a conceptual study on the project. The design agent provided one conceptual layout and three cost estimates for the different construction methods selected to provide a permanent CCR in the most cost effective and expeditious manner to meet our tight timeline. The construction options provided by the design agent are "Modular", "Relocatable", and "Mobile".

- The "Modular" building would be constructed as uniform structure throughout. It would be constructed on site using
  prefabricated wall sections, which would provide better control of quality and specification compliance at all phases of
  construction.
- The "Relocatable" building would be assembled on site from prefabricated structures that are built, cut and transported in large sections from the manufacturing site. However this would not allow full quality control and specification compliance on the construction site. The sections joints would be sealed, and depending on the quality of seals installation, the structure may be susceptible to leaks.
- The "Mobile" building would also be assembled onsite; however it would consist of prefabricated trailers attached together to meet OPG's specification. This is the preferred option.

The "Mobile" building design selected for the change room has a life span of approximately 20 years and will be able to support maintenance activities for DNGS beyond the current expected end of life of 2018 to approximately 2029. Decisions will need to be made in regards to continuing maintenance costs to extend the mobile CCR life beyond its expected 20 year lifespan.

The new CCR is required to be completed before the start of the DNGS 2009 Vacuum Building Outage (VBO) and the demolition and decommissioning of the existing CCR will be scheduled after the 2009 VBO Outage. The basis for this time frame is to ensure both the old and new Construction Change Rooms are available to facilitate the expected large influx of contract staff during the 2009 VBO Outage.

Approval has been obtained from the Director of Operations & Maintenance for the project to be exempt from Integrated Online Work Scheduling per N-PROC-MA-0022. However, it is the intent of the project to follow N-PROC-MA-0022 to the extent possible.

Ongoing discussions have been taking place with the CNSC to seek concurrence for our proposed alternative solution to meeting the new nuclear fire code CSA N293-07. It has been agreed that the migration of the fire alarm signal to the Main Control Room work can be implemented after the partial AFS in order to not jeopardize the availability of the new CCR for the 2009 VBO. An additional risk pertaining to the requirement for an alternate solution to meeting the new code requirement to install automatic fire suppression has been added under specific contingency, (installation of smoke exhaust).



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#### **Current Project Status**

Detailed Design for both the installation of the new CCR and demolition of the old CCR has been completed by a design agent.

Construction contract for the new CCR has been awarded to a construction contractor.

#### **Construction Work Completed for New CCR**

- Re-routing of all underground services
- Site Preparation and construction of the foundation
- Fabrication and setting in place of the all 26 CCR modules
- Interconnection of modules is in progress
- Tie-ins to the stations domestic water and sanitary sewer
- Routing of the 4kV power supply cables from the CCR to the station
- Routing of IT cables from the CCR to the Bill Gearing Guardhouse
- Routing of IT cables from the CCR to the Auxiliary Security Building
- Installation of building lightening arrestor system and grounding

#### Construction Work to be Completed to Meet the March 23<sup>rd</sup> AFS to Support VBO

- Completion of interconnection of modules
- Installation of exterior stairs & ramps
- Return all roads and walkways to preconstruction condition and construction of new walkways
- Complete tie-ins to Fire Protection System Alarms
- Complete tie-ins to Security
- Complete installation and station tie of transformer, switch gear, revenue metering & transfer switch
- All testing and commissioning of systems.

#### Post Partial AFS Work for the New CCR

- Complete all required Engineering Change Control work
- Complete the design and installation to migrate the Fire Alarm Signal from the Main Security Building to the Main Control Room to satisfy CSA code N293-07 prior to March 2010.

#### **Demolition of Old CCR**

- Scanning of the building and contents for radiological and conventional hazards (including mold and asbestos)
- Cut and cap all services from the station
- Removal of all internal equipment/material
- Demolition of old CCR and return site to acceptable condition.

A budgetary quote for the decommissioning and removal of the old CCR has been obtained from the construction contractor.



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## 3/ ALTERNATIVES AND ECONOMIC ANALYSIS

one of a contract of the contr		Alt 1 (Reco	ommended)	Alt 2	Alt 3	Alt 4	Alt 5
\$ 000's	Stop the Project	Full Cost	Incremental Cost	Delay			
Revenue							
OM&A	-	(1,015)	(890)				
Capital		(22,221)	(9,068)				
NPV (after tax)	(7,582)	(20,336)	(8,398)				
Impact on Economic Value (IEV)	N/A	(12,754)	(816)				
IRR%	N/A						
Discounted Payback (Yrs)	N/A						

#### Stop the Project - Not Recommended

This option is not recommended as the projected change room and lunchroom capacity would then not be in place to support the large number of contract staff expected to be onsite during the 2009 VBO. This would also require the station to then develop alternate contingency plans to facilitate the expected large influx of contractors. Furthermore major repair and renovations will have to be considered for the existing change room for it to continue to operate beyond 2009. A new CCR will be required in the future as the existing CCR has gone over its expected useful life and is not expected to survive beyond 2012. The Project has a Life to Date investment of 8,537 K\$, (as of Oct 22, 2008), and projects the 2008 year end investment to be \$13,792k. The costs associated with a decision to defer or cancel the Project would be significantly higher than the cost to complete as it would have to take into account the penalties to cancel the current contracts, the effort to resurrect the Project at a future date, and the associated inflationary impacts.

Alternative 1 - Complete building a new "Mobile type" CCR and remove existing CCR - Recommended This option is recommended as a new CCR is required to replace the existing life expired CCR and provide a safe and effective work environment for the next ~ 20 years. The "Mobile" type building option (consisting of pre-fabricated modules) has a manufacturer recommended nominal life of 20 years and will be available to support future maintenance activities should DNGS life extension become a reality to ~ 2029. It will also increase the capacity of the women's change room to address this identified demographic deficiency and provide a larger lunchroom to meet the projected future DNGS contractor needs with regard to outages and large projects as identified by stakeholders. The new CCR will be available to support future outage, project, and VBO maintenance activities. The "Mobile" building meets the requirements of the charter and is the estimated least costly option.

The Project has already completed the re-routing of underground services, the construction of the 26 modular units, and the tying in the domestic water and sanitary sewer services. The major items remaining to be completed prior to the CCR being put into service is the installation of the electrical equipment (2000 KVA transformer, Disconnect, Transfer Switch, and Revenue Metering), completing tie-ins to the station and commissioning activities. The significant life to date investment in this project will be realized once the final services are tied into the building and it is put into service prior to the VBO.

There are significant risks associated with this implementation schedule as the timeline for the completion of the new change room is extremely tight. Future decisions will need to be made in regards to extent of continuing maintenance costs to extend the mobile CCR life beyond its expected 20 year life expectancy.

Alternative 2 - Delay Project - Not Recommended

Alternative 3 - N/A - Not Recommended

Alternative 4 - N/A - Not Recommended

Alternative 5 - N/A - Not Recommended



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## 4/ THE PROPOSAL

The Following are the objectives and deliverables for this Full Release BCS:

- Complete installation of the new CCR
- OPG support for construction of the new CCR
- Partial AFS of new CCR prior to 2009 VBO
- Issue RFP and PO for the decommissioning and removal of the old CCR
- Complete the field work to decommission and remove the old CCR
- 2009/2010 Design and execution for the migration of the Fire Alarm signal from the Main Security Building to Main Control Room to comply with CSA-N293-07
- Final AFS to ensure completion of Engineering Change Control process and full station turn-over
- Closeout of the Project

## 5/ QUALITATIVE FACTORS

The successful completion of this project will improve the following:

#### Staff Relations

New larger capacity change rooms and a lunchroom which will relieve overcrowding and congestion and result in improved staff morale.

#### Health and Safety

- Increased site capacity of DNGS women's change room to reflect changing demographics to ensure compliance with Occupational Health and Safety requirements.
- New improved larger capacity change rooms and lunchroom will relieve overcrowding and congestion and hence improve health and safety inefficiencies.



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# 6/ RISKS

Description of Risk	Description of Consequence	Risk Before Mitigation	Mitigating Activity	Risk After Mitigation
Cost				
Cost for demolition of existing CCR exceeds the contractor estimate of \$420K	Potential increase in cost of the project	Low	Cost to remove the CCR was derived by a budgetary quote by a Constructor upon completion of detailed design of the CCR demolition	Low
Actual cost for design and installation of fire alarm signal migration exceeds current estimate	Increase cost to the project	High	Performed preliminary walkdown with contractor and design agent Budget estimate for design portion obtained	Medium
Permanent power supply from the station not installed in time for Partial AFS	Must provide temporary power in the form of generators for operation during the VBO & D931 (est. \$300k/month)	Medium	Specific contingency money included in project cost estimate	Low
Delay in the delivery of electrical equipment and design package may lead to the need to shorten execution timeframe.	Increase in cost	High	Premium paid to expedite delivery of equipment.  Bi-Weekly meeting with vendor  Weekly meeting with design agency frequent dialogue with contractor  WARR design package issued to run cables	medium
Scope				
*** Cost, Scope and Schedule Risk *** Limited Implementation timeline could result in discovery items in construction	Potential increase in the cost, scope and schedule of the project	Medium	-Close involvement with constructor and design agency during both design and installation phases -Mitigation actions to be considered for outstanding items for partial AFS	Low
Requirement to install a sprinkler system in the new CCR to meet the new fire code	Significant impact to Project cost and schedule. Installation would have to be executed while Change Room was in service which would have further negative impact.	high	Ongoing discussions with the CNSC Utilize third party fire consultant to propose alternate solution to installing sprinklers Engage senior level management in the station as part of the resolution process	Filed: 2013- EB-2013-03 Ex. D2-1-3 Attachment
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Schedule				
Overall schedule is too tight to complete implementation of the new CCR	Inadequate change room facilities available to support DNGS VBO	Medium	-Current constructor installation schedule demonstrate AFS date can be met -Management support required for exemption from certain milestones for work processes	Low
Discovery field issues may jeopardize project schedule	Delay to project	Medium	Contractor working extended hours to maintain schedule	Low
Requirement to keep the existing CCR in service beyond the current scheduled demolition date may effect the estimate for the demolition of the existing CCR	Increase duration of the project and extend final AFS date	Medium	Inform station stakeholders of impact on cost and schdeule to this project.	Low
Availability of contractors to support commissioning	Delay commissioning and AFS of the CCR	Low	Ensure Service contracts in place with vendors to support commissioning	
CCR fails one or more commissioning requirements	The time to correct any deficiencies discovered may delay commissioning and AFS of the CCR	Low	Detailed Commissioning Specification issued and commissioning workplan to be reviewed and approved by stakeholders	
Inability to secure CNSC's concurrance for alternative solution to meet N293-07	Significant cost increase to retrofit fire protection system back into the new CCR	High	Engage third party fire consultant to propose alternate solution to fire suppression system Secured CNSC's concurrence on a number of deviations Ongoing senior level discussions between OPG and CNSC to seek resolution Specific contingency of \$500k added for the installation of a smoke exhaust system	medium
Environmental				Filed: EB-20 Ex. D Attac
Hazardous materials may be present in existing life-expired	Waste Disposal could have environmental impact	Low	Waste Disposal Plan has been developed by Design Agency to ensure proper disposal of	2013-09- 013-0321 02-1-3 hreent 1 T

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CCR Health & Safety			all material as per OPG guidelines.	
Hazardous materials may be present in existing life-expired CCR	Health and Safety Hazards are possible (Asbestos, PCBs, mold etc.)	Medium	-All health and safety hazards will be identifed, as testing and analysis will be performed on the existing CCR materials prior to demolition by Conventional Safety.	Low
Investment				
Cost benefit information cannot justify proceeding with the project.	Value of invested capital not fully realized <b>Medium</b>	Medium	-Engage investment finance and long term strategic planning group in reviewing cost and benefit calculation -Clear identification of cost and benefits of new CCR -Seek cost efficiency in both design and construction phases	Medium

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# 7/ POST IMPLEMENTATION REVIEW PLAN

Type of PIR:	Targeted Final AFS Date:	Targeted PIR Approval Date:	PIR Responsibility (Sponsor Title)
Comprehensive	Jan 2010	Dec 2010	Director, Operations and Maintenance

## **Comments:**

	Measurable Parameter	Current Baseline	Targeted Result	How will it be measured?	Who will measure it? (person / group)
1.	Construction of new CCR	Not in service	New building will be available in time to support VBO	Successful Partial AFS	DNGS Maintenance
2.	Demolition of existing CCR	In Service	Demolition complete following D931	Successful AFS	DNGS Maintenance
3.					
4.					
5.					



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## Appendix "A"

## Glossary (acronyms, codes, technical terms)

#### **Acronyms**

**Business Case Summary BCS** Construction Change Room CCR Power House Annex PHA Request For Proposal **RFP** Quality Control QC Station Condition Report SCR Acres Sargent and Lundy ASL Net Present Value NPV CM Control Maintenance PO

CM Control Maintenance
PO Purchase Order
DTL Design Team Leader
OPEX Operating Experience
LLM Long Lead Material
TBD To Be Determined

PIR Project Implementation Report

PWU Power Workers Union
VBO Vacuum Building Outage
BTU Building Trades Union
PEP Project Execution Plan
AFS Available For Service
IEV Impact On Economic Value
IRR Internal Rate of Return



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# Appendix "B"

# **Project Funding History**

\$ 000's		All	Existing a	nd Plann	ed Releas	ses (incl (	continger	icy)			
Release Type	Month	Year	2006	Cum 2007	ulative Va 2008	lues 2009	2010	2011	2012	Later	Total
Developmental	Jul	2007		1,204	426						1,630
Partial	Feb	2008		(693)	11,685	2,312					13,304
Full	Dec	2008			13,523	9,004	1,254			***************************************	23,781
											0
77 / 77 N. P.											0
											0
2000 / AN Address commencer of process of the process of the process of the commencer of th											0
											0
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LTD Spent	Oct	2008		511	8,026	THE PROPERTY OF THE PARTY OF TH					8,537

#### Comments:

PCRAF approved in September 2008 to release \$2.2M of contingency funding.



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## Appendix "C"

#### Financial Model - Assumptions

# **Project Cost Assumptions:**

- OPG staff will provide project management and support role during design and implementation
- Design and Installation work will be performed by contractors
- Estimated costs include utility tie-ins.

#### **Financial Assumptions:**

 Current P3 resource costs were used thru 2009. Escalation rate of 3% was used for 2010 and 2011

## **Project / Station End of Life Assumptions:**

• Darlington end of life ~ 2018, (2040+ with refurbishment)

# **Energy Price / Production Assumptions:**

## **Operating Cost Assumptions:**

- Additional ongoing Utility costs new CCR to old CCR:
  - A design agency calculated Delta of 100KW electrical consumption Current Energy Cost of \$0.0466/kWh @ escalation rate of 2% per annum.
  - A design agency calculated Delta of 27,000 ft3 water consumption Current Regional Municipality of Durham rate of consumption of \$0.437/m3 @ escalation rate of 2% per annum.
- Any extra janitorial costs have not been included.

#### Other Assumptions:



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# **DNGS Construction Change Room 16 - 31718**

# Full Release Business Case Summary D-BCS-28200-10004-R001

## **Attachment "A"**

## **Project Cost Summary**

\$000's Capital & OM&A	LTD Prior Yr 2008	This Release 2009	This Release 2010					Later	Total
Project Management (OPG)	863	910	234						2,007
Engineering & Drafting (OPG)	304	227	136						667
Material	300	1,385	-						1,685
Installation - PWU, BTU	1,401	660				MANAGEMENT OF THE SECOND SET OF THE STREET STREET STREET			2,061
Contract - Design	2,072	380	25			**************************************			2,477
Contract - Installation	8,134	2,663				***************************************			10,797
Contract - Other	104		*		***************************************	8000 000 A A A A A A A A A A A A A A A A			10,737
Security	100	*	-						100
Interest (Capital Project Only)	245	300	-						- 545
Project Costs (excl contingency)	13,523	6,525	395			-			20,443
General Contingency	<del></del>	979	59	-	-	_	_		1,038
Specific Contingency		1,500	800	=======================================	**************************************		***************************************		2,300
Project Costs (incl contingency)	13,523	9,004	1,254			*			23,781
2009-2013 Business Plan	9,316	2,613	-						11,929
Variance to Business Plan	4,207	3,912	395	•				a Selik <b>.</b> te	8,514
Committed Cost	f : / / / / / / / / / / / / / / / / / /	damanin Saltas Lati			Car Charles	A CONTRACTOR OF THE PARTY OF TH	<u> </u>		_
Inventory Write Off Required				**************************************					
Spare Parts / Inventory									-
Total Release (excl contingency)	13,523	6,525	395	***		•	o lagos <b>#</b> lúaj		20,443
Total Release (incl contingency)	13,523	9,004	1,254		***************************************	***************************************		*	23,781
Ongoing OM&A (non-project)									
Removal Costs (incl in above)	125	700	190			<del></del>			1,015

Ongoing OM&A (non-project)	18.3				
Removal Costs (incl in above)	125	700	190		1,015

		Basis of E	stimate		***************************************	
Design Complete		100%	Quality of E	stimate	Release + 1	5% to - 10%
3 <sup>rd</sup> Party Estimate	Yes	OPEX used	Yes	Lessons Lea	ırned	N/A
Reviewed by Sponsor	Yes	Budgetary Quote(s)	Yes	Phase 1 Act	ual Used	Yes
Similar Projects	No	Contracts in place	Yes	Competitive	Bid	Yes

Variance to Business Plan

The estimated variance(s) to the 2008-2012 Business Plan will be addressed through the portfolio management process. A PCRAF is not required

Reviewed By:

Stephanie Tham Project Manager

Dianne Gaine

Eng & Mods Manager (Strat IV)

Date:



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# DNGS Construction Change Room 16 - 31718

# Full Release Business Case Summary D-BCS-28200-10004-R000

#### Attachment "B"

#### **Project Variance Analysis**

Capital	LTD Dec 2008	Total Project			
		Last BCS Feb 2008	This BCS Dec 2008	Variance	Comments
Project Management (OPG)	863	1,125	2,007	882	multiple parallel activities & 2010 costs
Engineering & Drafting (OPG)	304	335	667		scope change and field changes
Material .	300	660	1,685	1025	electrical equip, whole body monitors
Installation - PWU, BTU	1,401	519	2,061		field changes
Contract - Design	2,072	1,168	2,477		scope changes & field changes
Contract - Installation	8,134	8,100	10,797	2697	scope changes (completed design)
Contract - Other	104	69	104	35	
Security	100	24	100	76	
				0	
Interest (Capital Project Only)	245	440	545	105	
Project Costs (excl contingency)	13523	12440	20443	8003	
General Contingency	***************************************	3732	1038	-2694	
Specific Contingency			2300	2300	temporary power & smoke exhaust
Project Costs (incl contingency)	13523	16172	23781	7609	
Committed Cost			0	0	
Inventory Write Off Required				0	
Spare Parts / Inventory				0	
Total Release (incl contingency)	13523	16172	23781	7609	
Total Release (excl contingency)	13523	12440	20443	8003	

			Telephone Al	
Ongoing OM&A (non-project)			0	
Removal Costs (incl in above)	816	1015	199	

# Comments:

#### **Details of Project Cost Increase**

- The Project Management, Contract Management Office, Field Engineering costs have all increased due the project having to complete multiple parallel activities in order to meet the tight timeline of the project in order for the CCR to be in service by March 2009 for the VBO.
- The original BCS estimate was based on only partial design completion and as identified in the risks there was a potential for design, installation and material cost increases due to the potential for scope additions. The following scope additions have contributed to the overall project estimate increase:
  - Meet newly implemented CSA N293-07 Fire Protection code :
    - Installation of double layers of fire rated drywall inside the CCR
    - Installation of concrete board on the underside and skirting of the CCR
    - Requirement to migrate the Fire Alarm signal from the Main Security Building to the Main Control Room
  - Requirement to use a 4kV power supply from the station resulted in the project having to install a 200kVA transformer, switch gear, revenue metering & transfer switch and run a 15kV line from the CCR into the station.
  - The Construction Contractor's original construction estimate was based on a partially completed design.
     Now that the design has been completed the contractor has provided a change notice based on changes to the design.



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ENGINEERING & MODIFICATIONS
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- The contractor was required to work overtime to maintain the installation schedule due to inclement weather and several discovery issues during excavation for the foundation and underground services
- Design Agent costs have increased due to the scope change to the electrical power supply and an increase in Time & Material costs to cover the cost of Field Changes due to discovery issues in the field during installation.
- · Adjustment of the budgetary estimate for the demolition of the old CCR.
- Specific contingency of \$1,500k is identified if the installation of the electrical power to the CCR is delayed and the project must provide generators for temporary power for the CCR. It is estimated that the temporary power would be required for 5 months at a cost of \$300k/month
- · Specific contingency of \$800k for the design and installation of a smoke exhaust system if deemed required by the CNSC

The Project has implemented the following mitigating actions to contain costs:

- CNSC concurrence sought for combustible structure to eliminate the requirement to install sprinklers.
- Obtained station concurrence to build the CCR to commercial standards to reduce design and construction costs.
- Pre-fabrication of the modular units completed offsite for cost and production efficiency.
- The Project, Design & Field Engineering implemented a simplified field change process to reduce potential delays in the field.



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# Attachment "C"

# **Key Milestones**

Completion Date		Date	Description						
Day	Mth	Yr							
15	Mar	2009	Full Release BCS						
23	Mar	2009	Partial AFS (New CCR)						
12	May	2009	Workplans for Demolition of old CCR Assessed						
4	June	2009	Major contract awarded - Demolition						
30	Jun	2010	Final AFS (New CCR)						
31	Dec	2010	Project Close-out						

A Project Execution Plan (PEP) will be approved by March 2009

#### Comments: