GE-Hitachi Nuclear Energy Canada Inc.

January 1 to December 31

2012

The information contained in this report concerns the performance and operation of GE Hitachi Canada's Class 1B nuclear facilities located in Peterborough and Toronto, Ontario. This report is prepared to meet licence condition 2.4. The content shows adherence to the GE Hitachi commitment to operate a safe Class 1B nuclear facility, as well as demonstrate compliance with fuel fabrication operating licence FFOL-3620.00/2020 and those conditions specified by the Canadian Nuclear Safety Commission.

Peterborough & Toronto

Revision	Description	Prepared By and Date	Approved By and Date
00	Initial Issue	EHS Specialist EHS Technician EHS Leader EHS & Licencing Manager March 28, 2013	EHS & Licencing Manager March 28, 2013

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1 EXECUTIVE SUMMARY

This purpose of this compliance report is to demonstrate that GE Hitachi Nuclear Energy Canada Inc. (GEH-C) has successfully met the requirements of the Nuclear Safety and Control Act and the Class 1B Nuclear Fuel Facility Operating Licence renewed by the Canadian Nuclear Safety Commission (CNSC) on January 1, 2011, and expiring December 31, 2020. The licence authorizes GEH-C to operate and modify its nuclear fuel facility for the production of natural and depleted uranium dioxide (UO_2) pellets and produce and test fuel bundles. The Peterborough facility is additionally authorized to receive, repair, modify and return contaminated equipment from off-site nuclear facilities.

This report is prepared based on the Canadian Nuclear Safety Commission's *Annual Compliance Monitoring and Operational Performance Reporting Requirements for Class 1 A & B Nuclear Facilities*. It has been divided into two parts to separate worker protection from public and environmental protection. Appendices containing security and proprietary information are submitted to the CNSC under separate cover.

GEH-C maintains the following external registrations:

- International Standards Organization (ISO) 9001:2008 Quality Management System
- Canadian Standards Association (CSA) Z299.1-1985 Quality Management System
- ISO 14001:2004 Environmental Management System

GEH-C maintains the following internal certifications:

- GE Global Star Site for Health and Safety program excellence

In 2012, GEH-C updated the facilities safety analysis (SA), which is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility, and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. The Safety Analysis Report (SAR) supports the overall safety case for the facilities and was submitted to the CNSC.

The Fire Hazard Analysis (FHA) was also updated in 2012 and is compliant with the requirements of National Fire Protection Association (NFPA) 801.

Employee workplace exposures, conducted by CNSC approved methods and systems, were below regulatory limits. One GEH-C *action level* was exceeded for annual extremity dose during the reporting period at the Toronto facility. Overall dose trends were favorable and consistent with an effective application of the ALARA (As Low As Reasonably Achievable - Social and Economic Factors considered) principle.

Air and water emissions are routinely measured to demonstrate compliance with the Canadian Nuclear Safety Commission's environmental protection requirements and the ALARA principle. All measurements were below GEH-C *action levels* and annual releases were a small fraction of regulatory limits.

No significant operational changes occurred at either facility. Upgrades were made to programs with the objective of achieving continuous improvement and environmental health and safety excellence. Details are provided in the main sections of this report.

The facility change process has been continuously improved throughout the reporting period. An electronic workflow process ensures that changes receive adequate review from process owners, quality assurance and the EHS department. The EHS department screens for potential impact to the SA, FHA, licence conditions, radiation protection, environmental protection, health and safety, and ergonomics. Adequate mitigations can then be applied including modification of the proposed change, up to rejection of the modification.

Each facility has established emergency response plans that describe the actions to be taken in order to minimize the health and environmental hazards, which may result from fires, explosions, or the release of hazardous materials. This includes effects to the local area and members of the public. The plan is intended to reduce the risk of fires within the facility and assist emergency staff and plant personnel in understanding key emergency response issues, and assist the facility in protecting employees, the local community and the environment through sound emergency management practices. The emergency response plans fulfil the CNSC operating licence requirements and the following standards or guides:

1. CAD/CSA-Z731-03 *Emergency Planning for Industry Standard*
2. NFPA 801, *Fire Protection for Facilities Handling Radioactive Materials*
3. CNSC Regulatory Guide G-225, *Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills*
4. The Province of Ontario Nuclear Emergency Plan Part VIII
5. Canada Labour Code

Routine training and drills are conducted accordingly.

GEH-C has implemented and maintains a safeguards program and undertakes all required measures to ensure safeguards implementation in accordance with International Atomic Energy Agency (IAEA) commitments and CNSC regulatory document RD-336 *Accounting and Reporting of Nuclear Material*. Movement of natural and depleted uranium (inventory changes) are documented and reported to the CNSC daily and as required.

GEH-C safely transports Class 7 radioactive material shipments as defined by the *Transportation of Dangerous Goods (TDG) Act and Regulations*. Shipments occur routinely between the uranium powder supplier and the Toronto and Peterborough facilities, customers and waste vendors. Shipments occur in accordance with TDG Regulations, CNSC Packaging and Transport of Nuclear Substances Regulations and IAEA Regulations for the Safe Transport of Radioactive Material.

GEH-C has established facility specific CNSC approved *action levels* for various radiological and environmental parameters. An *action level* is defined in the *Radiation Protection Regulations* "as specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee's radiation protection program, and triggers a requirement for specific action to be taken." *Action levels* are also applied to environmental protection. *Action levels* are set below regulatory limits; however they are CNSC reportable events. Accordingly, GEH-C has established *internal control levels* for various radiological and environmental parameters that are set even lower than *action levels* to act as an early warning system. *Internal control level* exceedances result in internal investigation and correction and are not CNSC reportable events.

GEH-C recognizes that the most effective way of maintaining public trust is to maintain environmental excellence. This requires a demonstrated commitment to operating in accordance with the highest environment, health and safety standards, and keeping all environmental impacts well within applicable standards and as low as reasonably achievable. The public information program defines the process for providing information about GEH-C operations to interested members of the public. Significant improvements to the program occurred during the reporting period and continue into 2013 due to increased public interest, particularly in the Toronto facility.

2 INTRODUCTION

GE Hitachi Nuclear Energy Canada Inc. (GEH-C) operates a Class 1B nuclear facility to fabricate natural uranium fuel in two separate facilities. Ceramic grade uranium dioxide powder from Cameco Corporation is received at GEH-C's Toronto Facility where uranium dioxide pellets are fabricated. The majority of these pellets are shipped to GEH-C's Peterborough Facility and assembled into CANDU (Canadian Deuterium Uranium) reactor fuel bundles. A smaller quantity of pellets is fabricated for our parent company in Wilmington North Carolina. Finished bundles are then shipped to various customers. In addition, GEH-C's Class 1B licence approves the receipt of contaminated equipment for repair/modification in Peterborough.

As a nuclear facility, GEH-C is federally regulated for health and safety. The federal health and safety legislation is commonly referred to as Canada Labour Code (CLC) Part II and regulations. The CLC is enforced by Human Resources and Skills Development Canada (HRSDC). GEH-C facilities are also regulated federally by Transport Canada. GEH-C is additionally regulated provincially by the Ontario Ministry of the Environment (MOE). Compliance to these agency requirements is ensured through management systems, GE policies and the following external registrations:

- International Standards Organization (ISO) 9001:2008 Quality Management System
- Canadian Standards Association (CSA) Z299.1-1985 Quality Management System
- ISO 14001:2004 Environmental Management System

GEH-C also maintains GE Global Star certification for Health and Safety program excellence.

GEH-C's Environment, Health and Safety (EHS) Mission Statement defines it a top business priority to continuously improve our EHS systems to protect fellow employees, the environment, and our communities against environmental, health and safety hazards. GEH-C management reviews, prioritizes and controls workplace hazards and ensures compliance with the pertinent regulatory requirements, applicable codes and GE policies. The primary safety goals and objectives established and the corresponding results are in Table 1 below.

Goal	Toronto Results	Peterborough Results
Injury rate <0.5	Not Achieved	Achieved
Zero lost time injuries	Not Achieved (1 recordable injury)	Achieved
Favourable dose trend with at least 5% reduction in average effective radiation dose from previous year	Not Achieved	Not Achieved
All EHS findings tracked in Action Tracking System; 95% closed on time (30-days regulatory, 60 days non-regulatory, all<120 days)	Achieved	Achieved
100% completion Environment Health and Safety regulatory training	100% regulatory achieved	100% regulatory achieved
Achieve Global Star recertification	Achieved	Achieved

Table 1: Primary Safety Goals

The primary facility potential hazard is the inhalation of airborne UO_2 particles. Measurements are performed of airborne and surface traces of uranium as an indicator of process containment efficiency. Urine samples donated

by employees are used to indicate if inhalation has occurred. A lesser potential hazard exists in the form of low-level external gamma and beta doses to employees.

Whole body, skin and extremity dose measurements are conducted to demonstrate compliance with the Canadian Nuclear Safety Commission's radiation dose limits and the ALARA (As Low As Reasonably Achievable - Social and Economic Factors considered) principle. All dose measurement results for employees were below regulatory limits. All effective dose results were below GEH-C *action levels*.

Air and water emissions are routinely measured to demonstrate compliance with the Canadian Nuclear Safety Commission's environmental protection requirements and the ALARA (As Low As Reasonably Achievable - Social and Economic Factors considered) principle. All measurements were below GEH-C *action levels* and annual releases were a small fraction of regulatory limits. Because of the very low potential for releases, environmental monitoring is not required at the Peterborough facility.

Production operations continued routinely, without any significant challenges. Natural uranium dioxide pellets were shipped to GEH-C's facilities without incident. They were assembled into CANDU reactor fuel bundles. Finished bundles in Peterborough and were then safely shipped to various customers. Radiation Safety Instructions were issued for the receipt of contaminated equipment from Nuclear Reactor Sites for repair or modification at the Peterborough facility. These tasks were carried out safely and successfully with the involvement of the Environment, Health and Safety (EHS) department.

There was one annual extremity dose *action level* exceedance at the Toronto Facility. The CNSC was notified in accordance with the Radiation Protection Manual and an investigation completed. Results of the investigation were reported to the CNSC. Two corrective actions were identified. One requires a review and update to the task safety risk assessment to improve operator technique for scrap material processing. The second requires an *internal control level* be implemented for extremity exposures.

Table 2 below defines the acronyms used in this report.

Acronym	Definition
ALARA	As Low as Reasonably Achievable (social and economic factors considered)
ATS	Action Tracking System
CANDU	Canadian Deuterium Uranium
CCME	Canadian Council of Ministers of the Environment
CLC	Canada Labour Code
CNSC	Canadian Nuclear Safety Commission
DAFW	Days away from work
dpm	Disintegrations per minute
EHS	Environment, Health and Safety
EMS	Environmental Management System
FHA	Fire Hazards Analysis
GEH-C	General Electric Nuclear Energy Canada Inc.
HAZOP	Hazards and Operability

HEPA	High-Efficiency Particulate Air
HVAC	Heating, ventilation, air conditioning
IAEA	International Atomic Energy Agency
ISO	International Standards Organization
MP	Member of Parliament
MPP	Member of Provincial Parliament
MP2	GEH-C electronic maintenance system
mSv	millisievert - unit of measure for radiation dose
NFPA	National Fire Protection Association
ppm	Parts per million
QRA	Quantitative Risk Analysis
RSI	Radiation Safety Instruction
SA	Safety Analysis
SAR	Safety Analysis Report
SAT	Systematic Approach to Training
SSC	Systems, structures and components
TDG	Transportation of Dangerous Goods
TDPH	Toronto Department of Public Health
TLD	Thermoluminescent Dosimeter
UO_2	Uranium Dioxide
WSC	Workplace Safety Committee

Table 2: Definition of Acronyms

PART II: PUBLIC AND ENVIRONMENTAL PROTECTION

6.7 Environmental Protection

Environmental protection covers programs that monitor and control all releases of nuclear and hazardous substances into the environment, as well as their effects on the environment as a result of licenced activities.

GEH-C facilities are ISO-14001 registered to ensure effective environmental management systems are in place to achieve environmental goals and objectives. The environmental management system takes into account all relevant legal requirements. These programs also demonstrate compliance to relevant federal and provincial legislation.

GEH-C has established facility specific CNSC approved *action levels* for various environmental parameters. An *action level* is defined in the *Radiation Protection Regulations* "as specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee's radiation protection program, and triggers a requirement for specific action to be taken." *Action levels* are also applied to environmental protection. *Action levels* are set below regulatory limits; however they are CNSC reportable events. Accordingly, GEH-C has established i*nternal control levels* for various environmental parameters that are set even lower that *action levels* to act as an early warning system. *Internal control level* exceedences result in internal investigation and correction and are not CNSC reportable events.

6.7.1 Air Effluent Monitoring

A single process air emission point exists in the Peterborough facility. The R2 Area Decan Station exhausts through a High Efficiency Particulate Air (HEPA) absolute filter. The GEH-C Peterborough Facility performs weekly in-stack monitoring by removal of a filter capable of trapping natural uranium dust in the exhaust system. Filter papers are sent to an independent laboratory for testing by delayed neutron activation analysis. Results are compared to the previous week, and to current *action levels*.

The Toronto facility performs continuous in-stack sampling and boundary air monitoring. Boundary samples are high volume air samples drawn at five positions around the facility perimeter. The in-house filter papers are analyzed in-house daily and verified externally. Boundary samples are analyzed externally only.

A summary of air samples are in Table 14 and Table 15 below:

	Peterborough	Toronto
Number of Uranium Air Exhaust Samples Taken	48	743
Number of Samples > *Action Level* (1 µg/m^3)	0	0
Average Concentration (µg U/m^3)	0.0009	0.008
Highest Value Recorded (µg U/m^3)	0.0054	3.6*
Total Uranium Discharge to Air (g)	0.0106	12.67

Table 14: Summary of Uranium Releases to Air at Exhaust Stack

*The highest value recorded occurred during execution of a radiation safety instruction for a 6H-68 ventilation system filter change out. During filter change outs, higher concentrations are expected because of the potential for disturbance of trapped material in the existing filters while the filters are removed from the housing. In addition, higher concentrations are expected during filter loading.

	Toronto
Number of Boundary Samples Taken	260
Number of Samples > *Action Level* (0.08 µg/m^3)	0
Average Concentration (µg U/m^3)	0.0011
Highest Value Recorded (µg U/m3)	0.0047

Table 15: Summary of Toronto Boundary Air Quality Monitoring

6.7.1.1 Trending

Air monitoring results are trended over 5 years as shown in the Figure 7 and Figure 8. Toronto's boundary monitor results are trended over 5 years as shown in Figure 9.

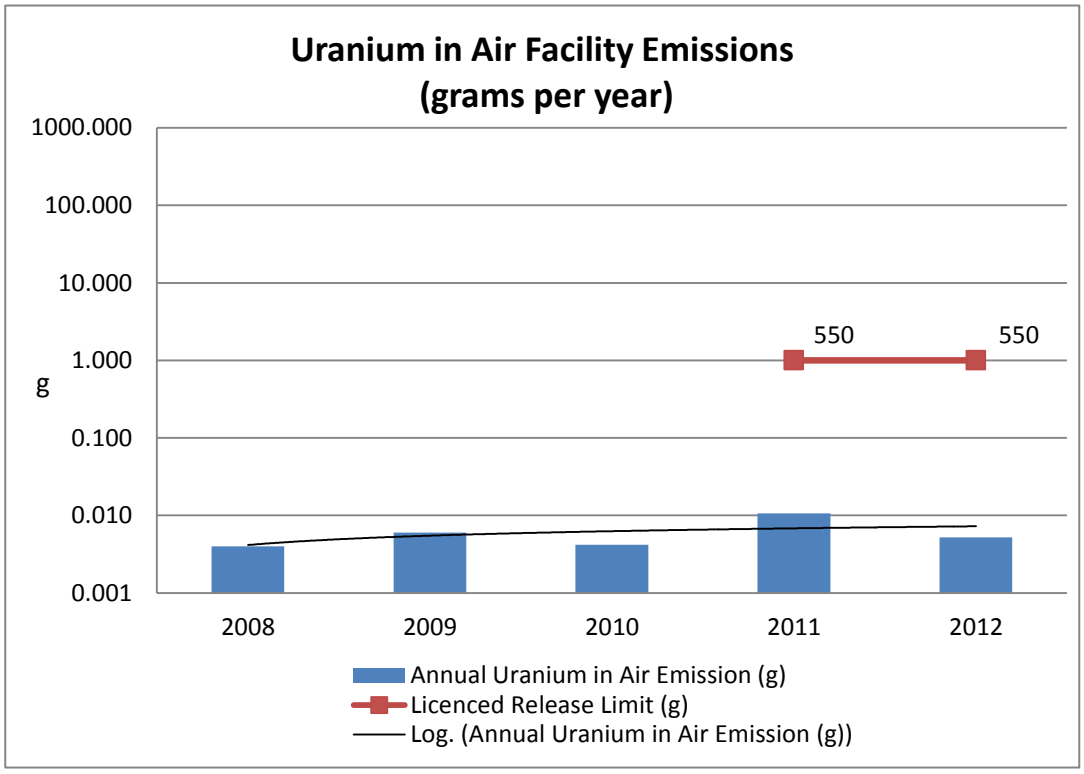

Figure 7: Peterborough Stack Air Emission Trending

Note: the above graph has a logarithmic scale

Air release results continue to remain low and well below the *action level* of 1 ug/m^3. The annual discharge trend is shown in the above Figure. The five year trend graph of air releases shows a fairly stable five year performance consisting of very low air releases. The increase in 2011 may be due to an increase in the production amount over prior years.

The total release of 0.0052 g in 2012 is well below the discharge limit of 550 g.

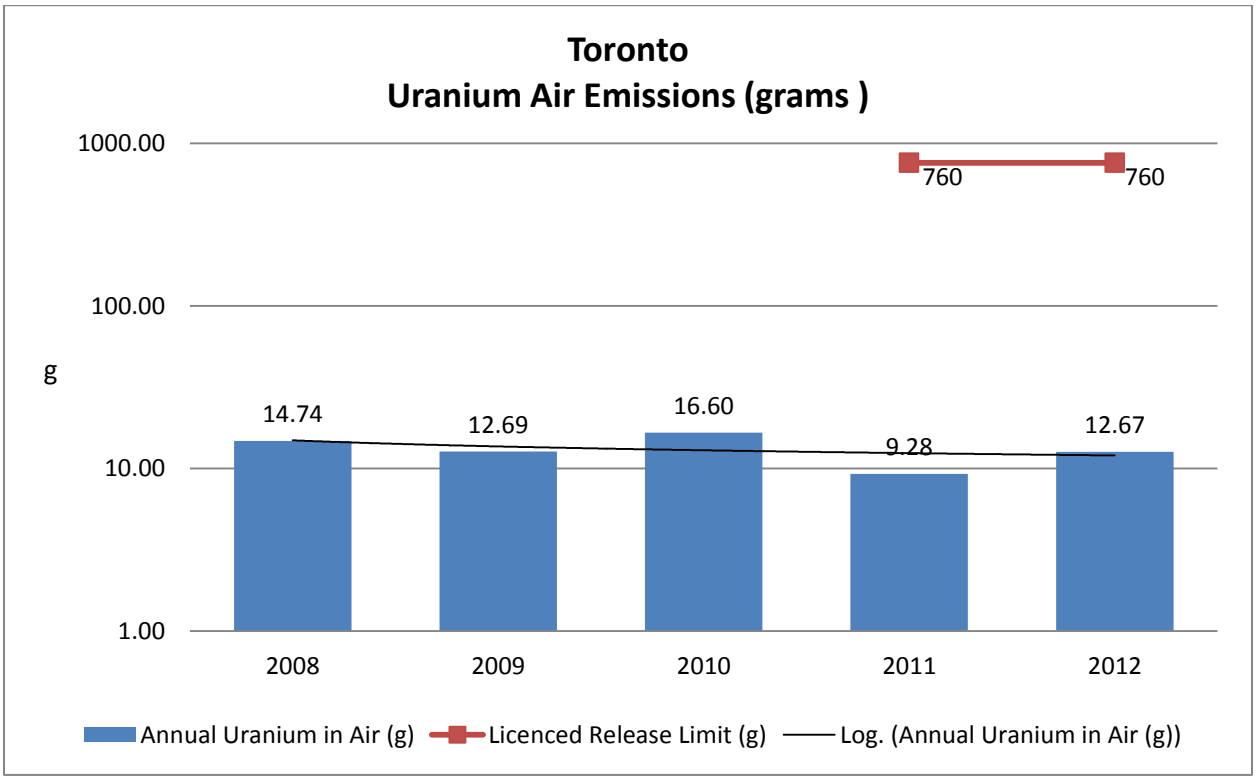

Figure 8: Toronto Stack Air Emission Trending

Note: the above graph has a logarithmic scale

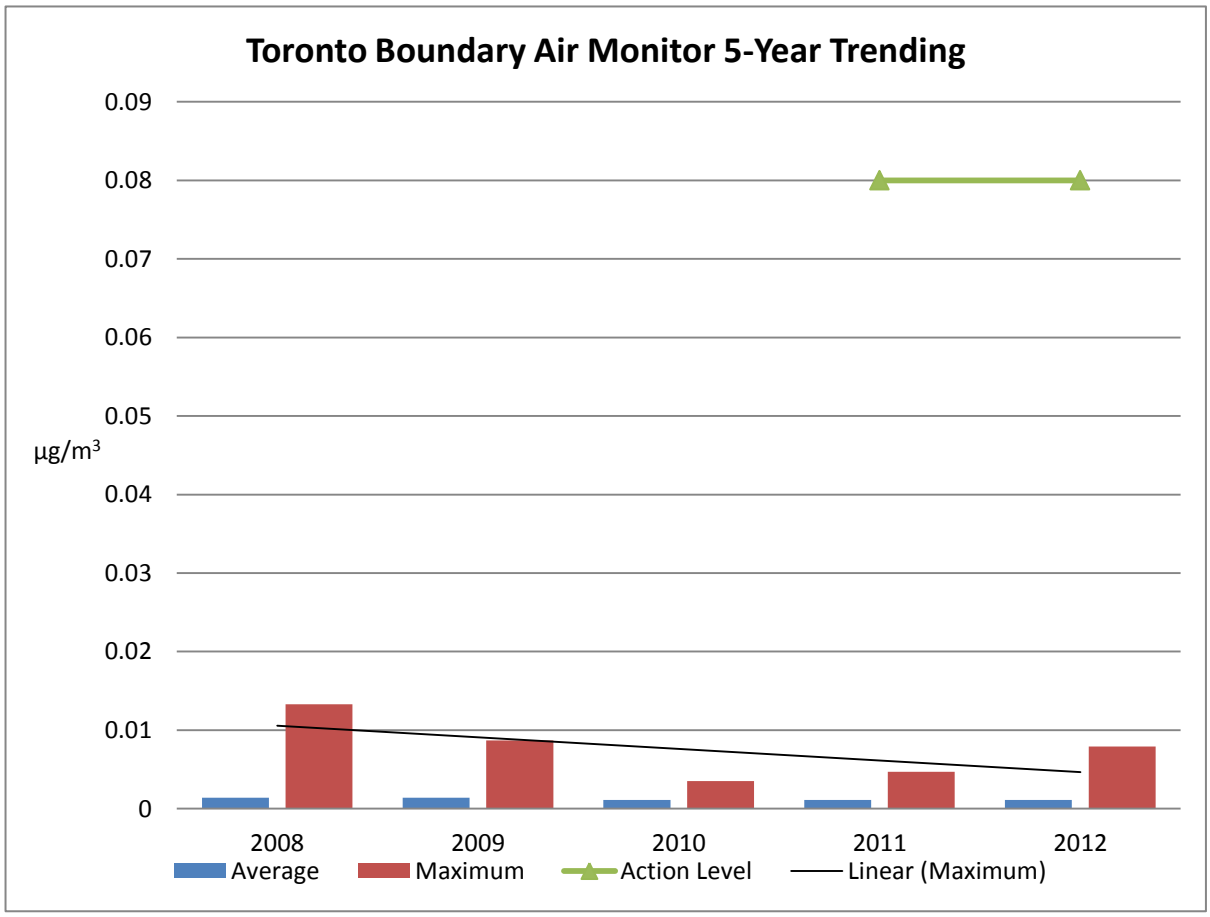

Figure 9: Toronto Boundary Monitor Air Emission Trending

The Toronto stack air emission trend up until 2010 was fairly flat, i.e. within the range of measurement uncertainties. However, there is a noted decreasing trend year over in 2011. This is likely due to upgrades completed in 2010 to the rotoclone system including:

- Installation of a drain-pan and insulation to reduce condensation along with a recurring regular task to drain water
- Implementation of a recurring regular task to clean part of the duct work
- Semi-annual MP2 task to clean Hopper and Baffles

2012 stack air emissions are slightly higher than 2011 due to an exhaust system filter change that occurred on January 9th under RSI 12-001. During filter change outs, higher concentrations are expected because of the potential for disturbance of trapped material in the existing filters while the filters are removed from the housing. In addition, new filters require a break-in period with initial loading for filter performance to reach its optimum level.

The Toronto boundary air monitor average and maximum concentration measurements continue to remain low and well below the *action level* of 0.08 µg/m^3. An increase was not seen in the first quarter at the time of

the exhaust system filter change. Overall, the five year trend graph of boundary air monitor concentrations shows a fairly stable five year performance consisting of very low measurements.

6.7.2 Water Effluent Monitoring

The primary hazardous liquid effluent from the Peterborough facility is uranium dioxide in water that is from washing floors and walls in the uranium pellet loading and end closure weld area. This water is collected in a 205 litre (45-Imperial gallon) drum and is filtered prior to sampling.

After the water sample is verified to be below the *action level* of 6 ppm (per batch) the wash water is filtered again during discharge to the sanitary sewer. The GEH-C plant sewer also receives other wastewater from the non-nuclear fuel operations resulting in increased dilution prior to discharge to city sewers. Total grams are measured prior to additional filtering and dilution during discharge.

In Toronto, bulk quantities of UO_2 powder are handled. This requires frequent cleaning and washing, creating higher concentrations of uranium in wastewater to be treated. The water is used to clean protective clothing, walls, and floor and in various other janitorial functions. The water is treated to remove uranium dioxide and the concentration of UO_2 in waste water leaving the treatment system is measured. The concentration of UO_2 in the total waste water leaving the plant premises is calculated. Water volumes are based on metered usage rates.

The water effluent treatment system at the Toronto facility operates as follows:

1. Waste water is held in batches
2. Each batch is treated, then sampled
3. Each batch is only released when sample results confirm the concentration is less than 3 ppm (note: the *action level* for a batch is 6 ppm)
4. The released water mixes with sanitary water
5. Dilution factors range from 4 to about 12; the resulting volume discharges to a combined sanitary/storm city sewer
6. Reported results do not include dilution, i.e., sample measurements are taken prior to mixing with non-process water

Results from water effluent monitoring are summarized in Table 16 below. Annual discharges are trended in Figure 10 and Figure 11: Toronto Water Emission Trending.

	Peterborough	Toronto
Total Amount of Liquid Discharged (L)	1230	1,368,270
Highest Uranium Concentration in Water (ppm)	0.16	2.49
Average Uranium Concentration in Water (ppm)	0.06	1.02
Number of Samples Exceeding Action Level (6 ppm per batch)	0	0
Total Uranium Discharge to Sewer (g)	0.06	900

Table 16: Liquid Effluent Monitoring Results

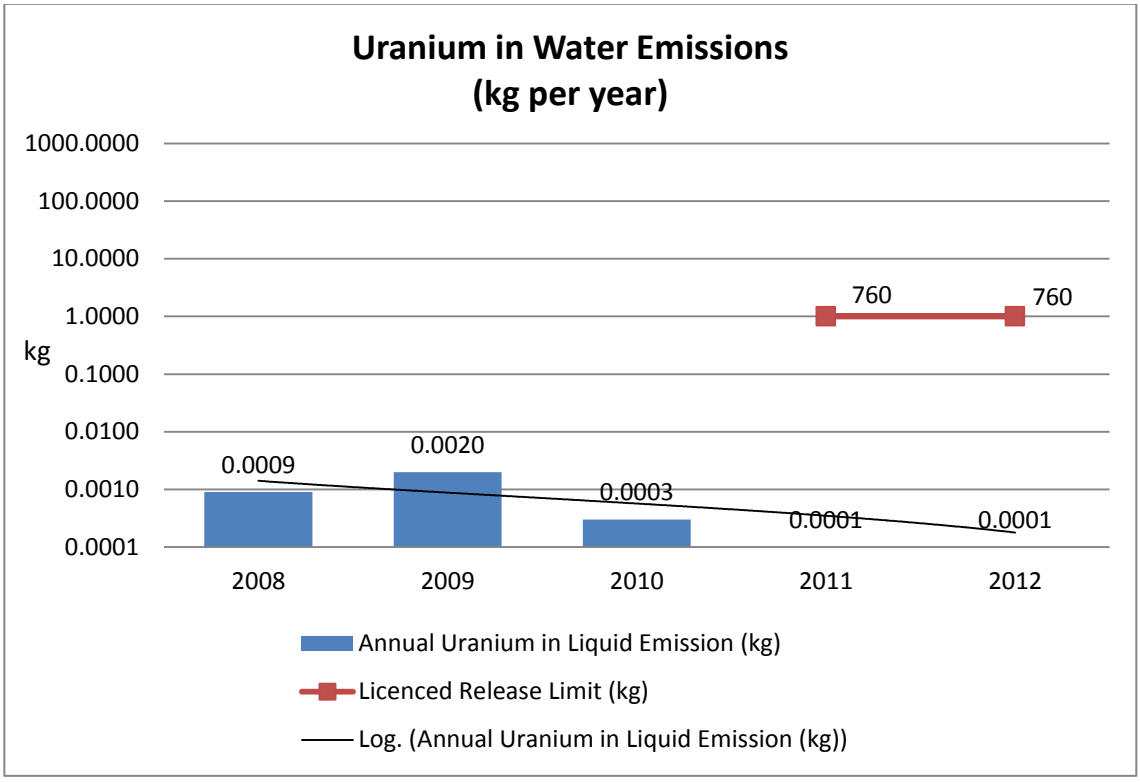

Figure 10: Peterborough Water Emission Trending

Note: the above graph has a logarithmic scale

In Peterborough, the five year trend graph of water releases shows a fairly stable five year performance consisting of low water releases. The sample batch number size is limited and trending is difficult due to small random fluctuations in low concentrations.

Water release results continue to remain low and below the *action level* of 3 ppm (annual average). The total release of 0.06 g is a very small fraction of the derived emission limit and of the new discharge limit of 760 kg/year.

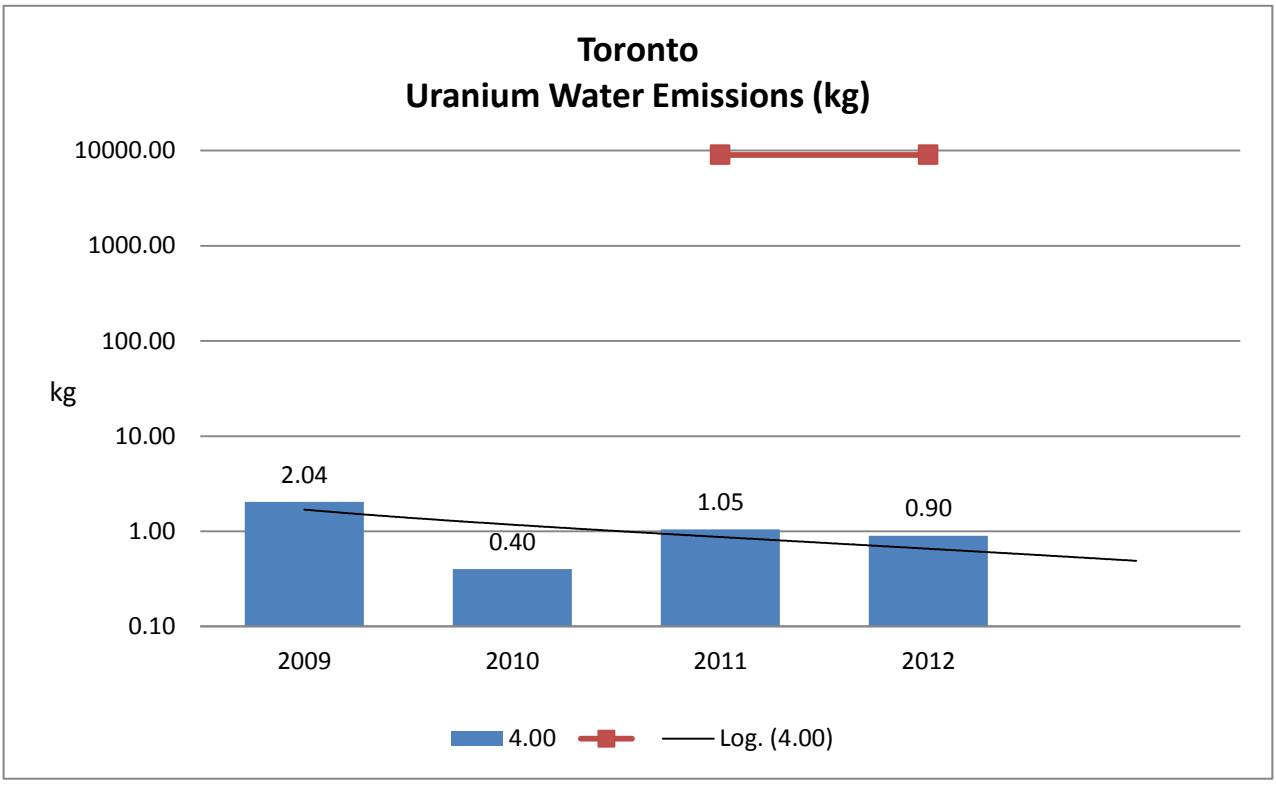

Figure 11: Toronto Water Emission Trending

Note: the above graph has a logarithmic scale

Toronto liquid effluent releases are trending downward. In 2009 a six sigma project to drive down water releases in accordance with the ALARA principle was initiated. Upgrades included a water waste characterization study. They also included an optimization of water mixing and treatment processes and reduction in the *internal control level*, which together reduced the average concentration of each batch and also the discharge quantity. In 2011 however, the facility saw a higher source term which was due to a higher decontamination load and grinder wash water output in 2011.

6.7.3 Well and Soil Sampling Measurements/Monitoring

Well monitoring is not conducted at either facility. Soil sampling is not conducted at the Peterborough facility due to the negligible release amounts.

Soil sampling is conducted annually at the Toronto facility. Samples are retrieved from 49 locations and analyzed externally by delayed neutron activation for the amount of natural uranium in parts per million and compared to the previous year's results. The Canadian Council of Ministers of the Environment (CCME) guideline for residential parkland is <23 ugU/g soil. The results are summarized in Table 17 below.

	2011 Result	2012 Result	% of CCME Guideline
Highest Uranium Concentration (ppm)	14.8	10.8	47%
Average Uranium Concentration (ppm)	2.3	1.9	8.3%

Table 17: Toronto Soil Sampling Result Summary

6.7.4 Exceedances of Regulatory Limits or Action Levels

No *action levels* or regulatory limits were exceeded during the reporting period.

6.7.5 Total Estimated Doses to Critical Group

The estimated dose to the public includes the realistic pathways summarized in Table 18 below.

Pathway		Description
A	Air immersion	Airborne uranium dioxide particles (UO_2) can expose members of the public via direct radiation This is accounted for in the Peterborough and Toronto Derived Emission Limits
C1	Soil deposition gamma ground shine	Gamma ground shine dose from direct radiation This is accounted for in the Toronto Derived Emission Limit
C2	Soil deposition beta ground shine	Beta ground shine dose from direct radiation This is accounted for in the Toronto facility Derived Emission Limit
C3	Soil re-suspension and inhalation	Soil re-suspension and inhalation dose This is accounted for in the Toronto facility Derived Emission Limit
E	Air inhalation	Airborne uranium dioxide particles (UO_2) can exposure members of the public via inhalation This is accounted for in the Peterborough and Toronto Derived Emission Limits

Table 18: Radiological Exposure Pathways

The facility Derived Emission Limits account for the exposure pathways as described in the facilities Radiation Protection Manual to restrict dose to a member of the public to 1mSv (1,000 µSv), which is the Canadian Nuclear Safety Commission's regulatory dose limit as defined in the Radiation Protection Regulations. The Derived Emission Limits assume that a member of the public occupies the GEH-C boundary continuously (24 hours per day, 365 days per year). Liquid effluent is not included in the calculation of public dose as the effluent from both facilities is discharged directly to city sewer systems and is not used for drinking.

Through direct correlation with the facility Derived Emission Limits, the estimated effective dose to the critical group in Peterborough as a result of air releases in 2012 is estimated to be 0.00 µSv. Through direct correlation with the facility Derived Emission Limits, the estimated effective dose to the critical group in Toronto as a result of air releases in 2012 is estimated to be 0.83 µSv. In comparison to the 1 mSv (1,000)

effective dose limit to a member of the public, releases from the Peterborough and Toronto facilities are a fraction of the public dose limit.

6.7.6 Environmental Protection Program Effectiveness

GEH-C's Peterborough and Toronto facilities are registered to ISO14001:2004. As part of the requirement for maintaining ISO14001 registration an Environmental Management System (EMS) is in place. Our Environmental Management System meets the requirements of both ISO14001 and GE's internal 6 Element E-Framework.

Internal inspections are completed on a routine basis and focus on all areas of the plant. The purpose of these inspections is to identify Environmental and Safety issues. WSC members carry out monthly plant safety and environmental inspections. After an inspection, the inspection findings are documented, corrective actions identified, and submitted to applicable personnel. Depending on the complexity of the finding immediate action may be required (i.e. equipment shutdown), or the action may be incorporated into meeting minutes, or tracked in GEH-C's Action Tracking System.

The following audits of the environmental protection program are conducted at each facility:

- The EMS is audited internally every year as per ISO14001:2004
- The EMS is audited externally (by QMI-SAI Global) every year as per ISO14001:2004
- An annual self-assessment is conducted for each of the 6 E-framework elements

Following an audit, the findings are documented, corrective actions identified and tracked to completion in GEH-C's Action Tracking System.

In 2012, there were 37 environmentally related audit findings for Peterborough and 41 for Toronto. All corrective actions have been implemented and closed within 60 days of the finding.

6.7.7 Environmental Protection Program Improvements

No significant changes or improvements were made to the Peterborough environmental protection program.

In Toronto, there were several environmental projects completed. Improved controls for 6H68 and 4H48 ventilation system filter changes were completed. Improvements to the bipel feed ventilation system were completed. Improvements are on-going to the hydrogen safety system, such as sensor upgrades, installation of a message horn, and a new shut-down valve. To reduce green-house gas emissions, a new washer has been installed that decreases water and energy usage. A new press heating ventilation and air conditioner has been installed and is more efficient.

6.7.8 Environmental Protection Program Performance

2012 goals and results are summarized in Table 19 below.

	Goal Description	Goal Achieved
Peterborough	Reduce water usage by 5% over 2011	Achieved: 24% water reduction over 2011
	Waste diversion rate increased by 5% over 2011	Achieved: Waste diversion rate increased by 11% over 2011
	Reduce power consumption by 5,000 kWh	Not Achieved: Power consumption was reduced by 2,000 kWh
	100% of regulatory and non-regulatory training completed	Achieved: All training completed
	100% of emergency drills held	Achieved: quarterly emergency drills held
Toronto	Minimize liquid drum storage	Achieved: Drums reduced by 50% and remaining liquid material put in plastic drums and/or spill skids. Continue to operate band heater.
	Focus on 6H-68 exhaust	Achieved: 6H68 unit was replaced and improved controls were implemented on filter changes
	Hydrogen safety audit	Achieved: Actions were completed as per study - sensor upgrades, message horn, new shutdown valve
	Minimize high surface contamination swipes	Not Achieved: Swipes has increased in 2012
	Implement ventilation system improvements in rotoclone and bipel feed	Not Achieved: Changes to bipel feed completed Work on rotoclone improvements continue into 2013
	Washer and new press heating ventilation and air conditioning	Achieved: New washer installed HVAC more efficient
	Optimizing grinders/coolant concentration	Not Achieved

Table 19: EMS Program Goals

The following Peterborough EMS goals have been set for 2013:

1. Reduce water usage by 5% over 2012
2. Waste diversion rate increased by 10% over 2012
3. Reduce power consumption by 2,000 kWh

4. 100% of regulatory and non-regulatory training completed
5. 100% of emergency drills held

The following Toronto EMS goals have been set for 2013:

1. 40% reduction in liquid drum inventory (based on January 2013 inventory)
2. Zero reportable spills or releases
3. Maintain ISO-14001 certification
4. 5% reduction in emissions over 2012
5. Educational campaign on green-house gases
6. Reduce on-site chemical inventory
7. Achieve GE environmental excellence award

6.8 Emergency Management and Response

Each facility has established emergency response plans that describe the actions to be taken in order to minimize the health and environmental hazards, which may result from fires, explosions, or the release of hazardous materials. This includes effects to the local area and members of the public. The plan is intended to reduce the risk of fires within the facility and assist emergency staff and plant personnel in understanding key emergency response issues, and assist the facility in protecting employees, the local community and the environment through sound emergency management practices. The emergency response plans fulfil the CNSC operating licence requirements and the following standards or guides:

1. CAD/CSA-Z731-03 Emergency Planning for Industry Standard
2. NFPA 801, Fire Protection for Facilities Handling Radioactive Materials
3. CNSC Regulatory Guide G-225, Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills
4. The Province of Ontario Nuclear Emergency Plan Part VIII
5. Canada Labour Code

6.8.1 Review of Emergency Preparedness Program Activities

Emergency drills were performed in the following areas:

Peterborough:

- Medical (once)
- Evacuation (twice)
- Hazardous materials transportation (once)

Toronto:

- Fire (three)

- Medical (one)
- Hydrogen shut-off (once)

6.8.2 Emergency Preparedness Training Program and Effectiveness

The Peterborough Emergency Response Team was trained on fire extinguishers, first aid/cardio-pulmonary resuscitation/automatic external defibrillator, blood-borne pathogens and emergency spill response. Training course completion is summarized in Table 20 below.

The Toronto Fire Warders were trained on fire extinguishers and fire warden responsibilities. The Toronto first aid team was trained in first aid/cardio-pulmonary resuscitation/automatic external defibrillator, blood-borne pathogens and emergency spill response. Training course completion is summarized in Table 20 below.

	Course Name	Number of Employees who Required Course	Number of Employees who Completed Course
Peterborough	Emergency Preparedness and Fire Prevention (Initial)	8	8
	Emergency Preparedness and Fire Prevention (Refresher)	79	79
	Portable Fire Extinguisher Training (Practical)	11	11
	Portable Fire Extinguishers	307	307
	Spill Response (Practical)	12	8
	Blood borne Pathogens Awareness (Initial)	39	39
	Blood borne Pathogens Awareness (Refresher)	8	8
	First Aid	79	79
Toronto	Emergency Preparedness and Fire Prevention (Initial)	6	6
	Emergency Preparedness and Fire Prevention (Refresher)	45	45
	Portable Fire Extinguisher Training (Practical)	11	11
	Portable Fire Extinguishers	54	54
	Spill Response (Practical)	0	0
	Blood borne Pathogens Awareness (Initial)	0	0
	Blood borne Pathogens Awareness (Refresher)	10	10
	First Aid	10	10

Table 20: Emergency Preparedness and Fire Prevention Training Summary

6.8.3 Fire Protection Program Activities and Effectiveness

An internal compliance audit is conducted annually at each site, as well as a self-assessment to GE's Health and Safety Framework requirements. Internal Fire Protection Inspections are performed as per the National Fire Code, 1995. In Toronto, an inspection by Toronto Fire Services was conducted in November 12 and November 14, 2012. No non-compliance notices resulted.

In Peterborough, twenty-two Action Tracking System items were raised in 2012 in regards to emergency response and fire protection. Three items remain open, with closure planned by 2nd Quarter 2013. Open actions do not present an unreasonable risk to the health and safety of persons or the environment.

In Toronto, fifty-nine Action Tracking System items were raised related to emergency response and fire protection. Six items remain open and are expected to be completed within the due date. The open items were recommendations for improvement and do not present an unreasonable risk to the health and safety of persons or the environment.

6.8.4 Fire Protection Program Improvements

In Peterborough, two new emergency evacuation stations were added to Building 26 and two additional alarm bells. A fire separated lift truck storage area in building 24 and a fire separation at the south end of Building 24 North were constructed. No significant program improvements or revisions were made.

No changes were made to the Toronto program.

6.9 Waste and By-Product Management

Waste and by-product management is described and summarized in Appendix C, sent to the CNSC under separate cover.

6.10 Nuclear Security

Nuclear Security is described and summarized in Appendix D, sent to the CNSC under separate cover.

6.11 Safeguards and Non-Proliferation

GEH-C has implemented and maintains a safeguards program and undertakes all required measures to ensure safeguards implementation in accordance with International Atomic Energy Agency (IAEA) commitments and CNSC regulatory document RD-336 *Accounting and Reporting of Nuclear Material*. Movement of natural and depleted uranium (inventory changes) are documented and reported to the CNSC daily and as required.

In Peterborough, a short notice random inspection conducted by the IAEA was conducted on March 26, 2012. A Physical Inventory Taking Evaluation was conducted by the CNSC on July 23, 2012. There were no findings or major concerns noted.

In Toronto, a Physical Inventory Taking Evaluation was conducted by the CNSC on July 26, 2012. A short notice random inspection conducted by the IAEA was conducted on November 8, 2012. There were no findings or major concerns noted.

6.12 Packaging and Transport of Nuclear Substances

Shipments to and from both facilities was conducted safely and in accordance with regulations.

An unannounced routine inspection by Transport Canada was conducted in Toronto on January 6, 2012. A review of training material and shipping documentation was conducted. No regulatory findings were issued.

A self-assessment conducted on August 14, 2012 in Peterborough revealed all items were in compliance.

A self-assessment conducted on March 20, 2012 in Toronto revealed two recommendations concerning the facility hazardous waste procedures.

6.13 Other Matters of Regulatory Interest

6.13.1 Public Information Program

As part of its Public Information Program, GEH-C updated the information pamphlet for each of the Peterborough and Toronto facilities to include data for 2011. This pamphlet was made available at the facilities as well as on the GEH-C web page.

The web page was updated to include the Annual Compliance Report for 2011. The web page was transitioned to the GE Energy format in mid-2012. Other changes to the web page through 2012 include;

- A graphic providing context for radiation dose was provided.
- A dedicated e-mail address and toll free phone number were introduced and provided on the web page.
- A feedback button was made available.

The EHS mission statement and ISO certificates were removed (due to limits on number of files).

Comments and concerns from the public are received through various media including the toll-free telephone line, email address, mail, from community or GEH-C meetings, or other means. Inquiries were received, tracked and responded to in a timely manner.

Public interest in the Peterborough facility is relatively low with no significant public issues or media activity in the period. A meeting and facility tour for teachers and parents of the Prince of Wales school was conducted in September 2012.

Public interest in the Toronto facility is high, particularly since October 2012. Media coverage has included print, television, radio, and social media with media coverage peaking in November.

Based on participation in community meetings, the GEH-C open house, media coverage, interactions with local politicians and the solicitation of questions from individuals nearby to the Toronto plant, the prevailing public view is one of raised interest in plant operations and the associated safety of the plant. Areas of concerns include impact on human health, nuclear production, regulations, consultation and property values.

GEH-C participated in a number of community meetings and conducted its own open house in close proximity to the Toronto plant. During these events feedback has been solicited from neighbours and information provided. The open house conducted on November 22, 2012, included sections on the operations, history and safety record of the facility. An invitation to the open house was distributed to residents in the vicinity of the facility, posted at nearby libraries and community centres, in addition to being published by local media outlets online and via social media channels including Facebook. Approximately 50 visitors attended this four-hour open house. These meetings have provided valuable feedback and have provided an opportunity to address questions stakeholders may have about the facility.

On November 13, 2012, GEH-C invited local politicians to the Toronto facility for a tour and briefing. Several political leaders, including the federal Member of Parliament (MP), local Member Provincial Parliament (MPP), a city councillor, and a representative of a second councillor attended. During the event, plant management

provided general information and a tour. Management also answered questions about the facility, our safety record, compliance with federal regulations and other topics.

On November 14, 2012, GEH-C conducted a media tour of the Toronto facility. Local print, online and television reporters toured the facility, asked questions and received a briefing from plant management. This information was broadcast extensively in the local area.

Councillor Palacio introduced a motion at Council in late November to require reporting of environmental data to the Toronto Department of Public Health (TDPH) and also to request GEH-C to phase out their operations over several years. An amended motion, with the phase out item struck from the motion, was passed by city council. It should be noted that GEH-C already shares this data with TDPH and has started discussions with them on how to make this reporting as transparent as possible

GEH-C participated in a public meeting with the federal MP representing the area at his request on Saturday, December 8, 2012, along with several other panelists.

6.13.1.1 Public Information Program Initiatives

As a result of the increased interest in our Toronto facility we have updated our Public Information Program in response to the changing level of interest in the plant. The updated program establishes an annual newsletter, requests for an annual meeting with local municipal councillors, expansion of public advertisement, and additional outreach, including the intent to establish a community liaison group. GEH-C is actively working with community groups for representation on the liaison committee.

GEH-C is in process of migrating the Public Information Program portion of the web site to its own dedicated micro-site so as to be able to present information to the public in a more user-friendly way and to provide more information of interest. This is expected to be completed in the first part of the year.

A follow-up to the GEH-C public meeting in Toronto on November 22, 2012 is planned to take place in the fourth quarter of 2013.

The signage on the Toronto facility will be updated to indicate the full company name of "GE Hitachi Nuclear Energy Canada" to make clearer the purpose of the facility.

Other stakeholder meetings will also be held in 2013.

6.13.2 Site-Specific

6.13.2.1 Nuclear Criticality

GEH-C does not have an active Nuclear Criticality Program since neither facilities process enriched uranium. This section is not applicable.

6.13.2.2 Financial Guarantee

In December of 2012 a revised preliminary decommissioning plan was submitted to the CNSC for both facilities. The primary changes were the inclusion of an external management company in the plan and the consolidation of all relevant information (from the original preliminary decommissioning plan and subsequent updates) into a single plan for each facility.

The cost estimate increased as a result of these changes and a revised financial guarantee is to be secured and submitted to the CNSC in 2013 along with the final plan once all CNSC feedback is incorporated.

6.13.3 Improvement Plans and Future Outlook

Operational changes planned for 2013 are summarized in Appendix C, submitted to the CNSC under separate cover.

6.13.4 Objectives for the Following Year

Facility operations are expected to remain fairly constant in 2013. Fuel production levels are projected to be similar to the amount processed in 2012. No significant changes are currently forecasted for either the Fuel or Services operations. The facility operating licence remains valid until 2020. As no significant changes are expected outside of continuous improvement, no licence document submissions or changes are expected.

7 CONCLUDING REMARKS

At GEH-C, it is a top business priority to continuously improve our EHS systems to protect fellow employees, the environment, and our communities against environmental, health and safety hazards. GEH-C management recognizes, reviews, prioritizes and controls workplace hazards and ensures compliance with the pertinent regulatory requirements, applicable codes and GE policies.

There were no significant environmental issues or incidents encountered during the reporting period. All production limits were respected. Transportation of dangerous goods was conducted between suppliers and customers and waste vendors without incident. Health and safety programs were well implemented and rewarded with GE's Global Star certification. Radiation protection programs at each facility were well implemented. Whole body, skin and extremity radiation dose measurement results for employees in uranium handling areas were all below regulatory limits. A single annual extremity dose *action level* exceedence occurred in Toronto with the investigation results reported to the CNSC. Environmental protection programs at each facility were well implemented. Both facilities maintained ISO 14001:2004 Environmental Management System registrations. Facility emission results were all below regulatory limits. Annual releases to the water and air were both a very small fraction of regulatory limits, resulting in minimal dose to the public.

Public interest in the Toronto facility is high, particularly since October 2012. New initiatives and improvements to the Public Information Program continue into 2013.

This compliance report demonstrates that GEH-C has successfully met the requirements of the Nuclear Safety and Control Act, Regulations and CNSC Class 1B nuclear facility operating licence requirements.