Parameter	Units	AND-15-02	CCME†
Carbonate	mg/L	<1	
Chloride	mg/L	4.2	
Hydroxide	mg/L	<1	
P. alkalinity	mg/L	<1	
pH	pH units	6.88	6.5-9
Specific conductivity	uS/cm	80	
Sum of Ions	mg/L	69	
Total alkalinity	mg/L	38	
Total hardness	mg/L	30	
Nitrate (calc. from NO_2+NO_3-N)	mg/L	<0.04	13
Nitrite+Nitrate nitrogen	mg/L	<0.01	
Mercury	ug/L	<0.02	0.026
Fluoride	mg/L	0.22	
Total dissolved solids	mg/L	137	
Total suspended solids	mg/L	5	
Calcium	mg/L	8.2	
Magnesium	mg/L	2.4	
Potassium	mg/L	0.8	
Sodium	mg/L	6.7	
Sulfate	mg/L	0.8	
Aluminum	mg/L	0.058	0.005 (pH < 6.5)
			0.1 (pH ≥ 6.5)
Antimony	mg/L	<0.0002	
Arsenic	ug/L	0.5	5
Barium	mg/L	0.053	
Beryllium	mg/L	<0.0001	
Boron	mg/L	<0.01	29 Short-term
			1.5 Long-term
Cadmium	mg/L	<0.00001	0.001 Short-term
			0.00009 Long-term
Chromium	mg/L	0.0014	
Cobalt	mg/L	<0.0001	
Copper	mg/L	0.0020	0.002 (if hardness unknown)
			0.004 (hardness>180 mg/L)
Iron	mg/L	0.59	0.3 (Long-term)
Lead	mg/L	0.0001	0.001 (if hardness unknown)
			0.007 (hardness >180 mg/L)
Lithium	ug/L	1.6	
Manganese	mg/L	0.0070	
Molybdenum	mg/L	0.0002	0.073
Nickel	mg/L	0.0010	0.025 (if hardness unknown)
			0.15 (hardness >180 mg/L)
Selenium	mg/L	<0.0001	0.001
Silver	mg/L	<0.00005	0.0001
Strontium	mg/L	0.032	
Thallium	mg/L	<0.0002	0.0008
Tin	mg/L	<0.0001	
Titanium	mg/L	0.0013	
Uranium	ug/L	1.7	33 Short-term

Parameter	Units	AND-15-02	CCME†
			15 Long-term
Vanadium	mg/L	0.0002	
Zinc	mg/L	0.0024	0.03

†Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

While drilling the AND-15-02 hole, an artesian flow of 20 L/min was encountered at 2:00 am at a depth of 280.5 m. As shown in the results above, the AND-15-02 artesian had elevated levels of iron. The flow was contained in the designated discharge area with no potential for harm to aquatic life. The total depth of the hole was 282 m and was completed and capped on August 8. None of the other three holes in the Andrew area intercepted any artesians.

3.4 Spill Contingency Plan

In accordance with existing legislation and requirements, AREVA maintains a Spill Contingency Plan for the Kiggavik Project. The objectives of this plan are to:

- Identify the potential for and the appropriate response to spills at the Project
- Provide procedures for prevention or mitigate adverse environmental effects through effective and efficient response
- Identify personnel and their responsibilities
- Identify emergency contacts
- Describe reporting requirements

To implement the plan effectively, all site staff and contractors receive orientation on the location of the Safety Data Sheets (SDS), spill kit locations, and spill response supplies and tools. Personnel are trained to identify the probable location of potential leaks and spills and the response should leaks or spills be identified. Additional training for mock spill scenarios is provided as necessary. Spill prevention is implemented through use of secondary containment, availability of spill kits where hazards exist, conducting inspections at all storage locations, and providing SDS sheets. Spill response is reviewed with all site personnel, and the site supervisors or designates are aware of spill reporting procedures.

3.4.1 Fuel Cache

The primary fuel storage area is located on an esker 3.5 km southwest of the Kiggavik camp. The fuel cache includes eight 50,000 L double walled steel Envirotanks that are registered with Environment Canada, and were installed in accordance with Canadian Council for Ministers of the Environment (CCME) – *Environmental Code of Practice for Aboveground and Underground*

Storage Tank Systems Containing Petroleum and Allied Petroleum Products. Three Envirotanks are used for jet fuel and five for diesel fuel (Photograph 3.4-1).

Photograph 3.4-1: Kiggavik Fuel Cache

A small number of 205 L diesel fuel drums are used to fuel the geostoves and incinerator and are stored within secondary containment berms. Five double walled slip tanks containing diesel are used to fuel the camp generator. All fuel containers are labeled, identifying the contents and AREVA's name. The camp fuel storage is located at 64° 26' 25.82" N, 97° 39' 39.05" W (14W 564464, 7146782).

3.4.2 Reportable Spill

While drilling in the 85W area on June 17, 2015, drill cuttings mobilized into a water body located at 64°25'12.32" N, 97°48'17.27" W (14W 557578 7144369). The spill was detected during a routine drill inspection by the Safety, Health, Environment, and Quality Supervisor and Project Geologist (Photograph 3.4-2). Reporting was completed in accordance with the NWB licence Part H item five and the AANDC Land Use Permit N2014C0001 item 32. In addition to immediate notification to the NT-NU Spill Report Line, the thirty day report summarizing the incident and corrective actions was distributed to regulators. The impacted spill area was estimated to be approximately 2,000 m^2 (Photograph 3.4-3).

Photograph 3.4-2: Unauthorized Cuttings Discharge near 85W-009 on June 17, 2015

Photograph 3.4-3: Unauthorized Cuttings Discharge to Unnamed Lake June 17, 2015

Non-mineralized drill cuttings located at 64°25'17.91" N, 97°48'17.18" W (14W 557576 7144542) were washed downhill away from the drilling rig due to the presence of runoff in the area. The excess clean water line further facilitated the downhill migration of the cuttings into a water body approximately 120 m to the west. A ground survey of the area was immediately

conducted and indicated that the spill was a combination of runoff water, drill return water, and cuttings from the installation of the casing (Photograph 3.4-4 and Photograph 3.4-5).

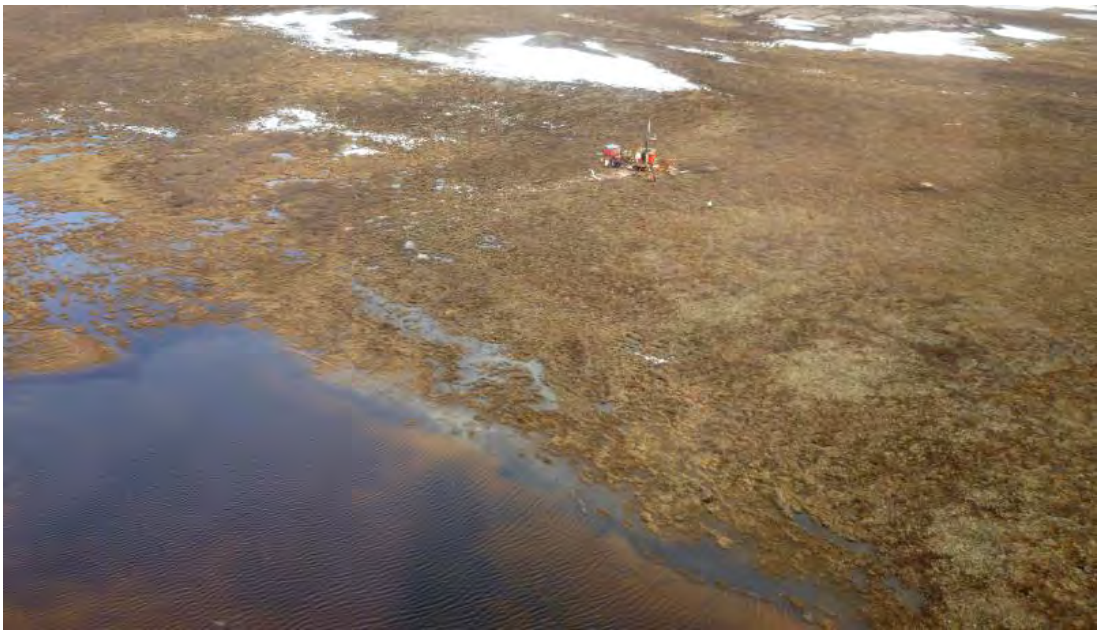
Photograph 3.4-4: Spill Water Mixture June 17, 2015

Photograph 3.4-5: Runoff Water Mixed with Drill Cuttings June 17, 2015

Various corrective and preventative measures were implemented following the spill identification. To limit the spatial extent of the spill, the pump discharging clean water was stopped and the hose was relocated and extended away from the affected area. All drill crews on site were subsequently instructed not to place their excess clean water hoses in places that could create a potential uncontrolled runoff into a water body and to alert AREVA staff if discharge fluids are accumulating around the drill. A sump pump and wood chip sock berm were placed at the bottleneck of the spill to further reduce the transport of sediments towards the small water body (Photograph 3.4-6).

Photograph 3.4-6: Installation of Filter Socks and Sump Pump June 17, 2015

An Automess 6150 AD radiation detection device was used to scan the spill area immediately following the spill with an additional survey the following day. The surveys indicated no radioactive contamination in the area as a result of the spill. The site was monitored over the days following the spill and by June 18 the white discoloration of the water was no longer visible (Photograph 3.4-7).



Photograph 3.4-7: Aerial Survey of Spill Area on June 18, 2015

A surface water grab sample was obtained the day of the spill and again one month later. The samples were sent to the Saskatchewan Research Council (SRC) for analysis and results are shown in Table 3.4-1 below.

The placement of drill discharge sites and follow-up inspection by AREVA staff and contractors was reviewed to ensure all personnel were aware of the requirements. It was concluded through the water sample and radiometric survey that the spill consisted of non-mineralized drill cuttings, and was turbid water flowing from the drill site location into the small water body. Future drill sites will utilize a sump pump near the drill hole during operations where drill return water is a risk. Additionally, four new Aqua Berms were acquired which will provide better containment in high risk drilling areas. The berms are flexible and are better able to conform to the uneven terrain where drilling is occurring.

Table 3.4-1: 85W Spill Water Results

Parameter	Unit	Spill Sample June 17, 2015	30 Day Sample July 17, 2015	CCME†
Bicarbonate	mg/L	15	8	
Carbonate	mg/L	<1	<1	
Chloride	mg/L	2.0	0.3	
Hydroxide	mg/L	<1	<1	
P. alkalinity	mg/L	<1	<1	
pH	pH units	6.90	6.74	6.5-9
Specific conductivity	uS/cm	38	19	
Sum of ions	mg/L	38	11	
Total alkalinity	mg/L	12	7	
Total hardness	mg/L	27	8	
Nitrate	mg/L	0.08	<0.04	13
Mercury	ug/L	<0.02	<0.02	0.026
Fluoride	mg/L	0.06	0.06	
Total dissolved solids	mg/L	253	21	
Total suspended solids	mg/L	7	<1	
Calcium	mg/L	5.4	1.9	
Magnesium	mg/L	3.4	0.7	
Potassium	mg/L	9.3	<0.1	
Sodium	mg/L	1.5	<0.1	
Sulfate	mg/L	1.7	0.3	
Aluminum	mg/L	2.12	0.037	0.005 (pH < 6.5) 0.1 (pH > 6.5)
Antimony	mg/L	<0.0002	<0.002	
Arsenic	ug/L	0.8	0.2	5
Barium	mg/L	0.18	0.026	
Beryllium	mg/L	0.0003	<0.001	
Boron	mg/L	<0.01	<0.01	29 Short-term 1.5 Long-term
Cadmium	mg/L	0.00008	<0.00001	0.001 Short-term 0.00009 Long-term
Chromium	mg/L	0.0032	<0.0005	
Cobalt	mg/L	0.0011	<0.0001	
Copper	mg/L	0.0071	0.0011	0.002 (if hardness unknown) 0.004 (hardness>180 mg/L)
Iron	mg/L	2.24	0.26	0.3 (Long-term)
Lead	mg/L	0.0021	<0.0001	0.001 (if hardness unknown) 0.007 (hardness >180 mg/L)
Lithium	ug/L	2.9	0.3	
Manganese	mg/L	0.032	0.0055	
Molybdenum	mg/L	0.0002	<0.0001	0.073
Nickel	mg/L	0.0046	0.0006	0.025 (if hardness unknown)

Parameter	Unit	Spill Sample June 17, 2015	30 Day Sample July 17, 2015	CCME†
				0.15 (hardness >180 mg/L)
Selenium	mg/L	<0.0001	<0.0001	0.001
Silver	mg/L	<0.00005	<0.00005	0.0001
Strontium	mg/L	0.026	0.0088	
Thallium	mg/L	<0.0002	<0.0002	0.0008
Tin	mg/L	<0.0001	<0.0001	
Titanium	mg/L	0.0050	0.0005	
Uranium	ug/L	0.8	<0.1	33 Short-term 15 Long-term
Vanadium	mg/L	0.0035	<0.0001	
Zinc	mg/L	0.035	0.002	0.03

†Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

3.5 Noise Abatement Plan

A Noise Abatement Plan was developed to mitigate the effects from noise generated during camp set-up, camp operation, winter road use, helicopter use, and drilling activities. Noise controls and abatement serve a combination of environmental and occupational health and safety purposes. The focus of the plan is the control of environmental noise for the protection of wildlife.

Implementation of the plan ensures that drill rigs and vehicles are equipped with mufflers and/or silencers and are subject to commitments made in the Wildlife Mitigation and Monitoring Plan regarding required minimum flying altitudes and the take-off and landing of aircraft.

The plan is reviewed by all site staff, contractors, and AREVA contract administrators to ensure all contractors operating drill rigs, vehicles or aircraft are aware of requirements. Frequent review allows for revision to occur with the expansion of infrastructure, changing field programs and the identification of improved practices.

3.6 Wildlife Mitigation and Monitoring Plan

The Wildlife Mitigation and Monitoring Plan (WMMP) was developed to monitor and reduce disturbance to wildlife, particularly caribou. The plan incorporated recommendations from the Government of Nunavut – Department of Environment (GN-DoE), Environment Canada (EC) and the Beverly and Qamanirjuaq Caribou Management Board (BQCMB); as well as conditions

from the NIRB, Kivalliq Inuit Association (KIA), Aboriginal Affairs and Northern Development Canada (AANDC) and the Nunavut Water Board (NWB). The plan is designed to protect wildlife from Project activities, increase the current understanding of wildlife interactions with human development and aid in determining the effectiveness of mitigation measures.

The objective of the WMMP is to prevent or reduce any potential adverse effects from exploration activities on wildlife. The plan was implemented by Wildlife Monitors from the Baker Lake community, as well as AREVA staff. Wildlife monitoring and mitigation measures were summarized in monthly reports, and distributed to the Baker Lake Hunter and Trapper's Organization (HTO), the KIA, the Baker Lake Conservation Officer, AANDC, and the GN-DoE Regional Biologist. The reports are also publicly available at www.kiggavik.ca/resources/.

3.6.1 Summary of Wildlife Monitoring Activities and Results

The Kiggavik personnel and Wildlife Monitors implement the WMMP through providing regular reports of wildlife sightings. Observation methods vary with sightings provided from the personnel in camp, the field, aerial flights, and the Wildlife Monitors. Wildlife logs are placed in the camp kitchen, camp office and in each helicopter for ease of recording. During site orientation, personnel are informed of the wildlife log locations and are encouraged to record all sightings. Animals present regularly around camp such as the ptarmigan, siksik and arctic hare were often not recorded each day they were observed, thus being under recorded by this method. The Government of Northwest Territories (GNWT) also provides collar data that enables proper implementation of the WMMP by avoiding migrating Caribou.

Ground-based monitoring was primarily conducted by the Wildlife Monitor and additional data was collected from incidental field observations by personnel. The Wildlife Monitors discussed sightings with the Safety, Health, Environment, and Quality (SHEQ) Supervisor, while the remainder of Kiggavik personnel recorded sightings which were collected and discussed during weekly safety meetings. The Wildlife Monitor observed wildlife activity from five height-of-land (HOL) locations around camp and occasionally visited areas outside of camp where required. When caribou were observed in the area, the Wildlife Monitor was responsible for assisting in the determination of herd movements and proximity to activity. Occasionally the Wildlife Monitor was flown to elevated locations for ease of monitoring the herd movements. The SHEQ Supervisor and designate recorded all observations in a spreadsheet for inclusion in the monthly reports. As shown in Table 3.6-1, there was a total of 12 species documented from 107 wildlife sightings.

Table 3.6-1: Summary of Wildlife Sightings

Species (common name)	Wildlife Sightings	Total Number Observed	Range of Individuals per Sighting	Timeline of Sightings		Observation Method		
				Initial	Final	Field Observation*	Aerial	Camp*
Arctic Fox	3	3	1	Jun-17	Aug-17	X	X	X
Arctic Hare	1	1	1	Jun-25	Jun-25			X
Bald Eagle	1	1	1	Jun-25	Jun-25			X
Caribou	32	45,549†	1 – 10,000	Jun-15	Aug-15	X	X	X
Eagle	2	2	1	Jul-10	Jul-16		X	
Grizzly Bear	1	3	3	Jun-29	Jun-29	X		
Muskox	42	556	1-50	Jun-16	Aug-19	X	X	X
Juvenile Ptarmigan	1	1	1	Jul-15	Jul-15			X
Sandhill Cranes	5	28	1 - 12	Jun-23	Aug-20	X		
Canadian Geese‡	4	47	2-20	Jun-21	Aug-19			X
Wolverine	1	1	1	Aug-1	Aug-1		X	
Wolf	14	20	1 - 3	Jun-15	Aug-5	X	X	X
Total	**107**	**46,212**						

* Wildlife Monitor sightings were often recorded as camp sightings, but were also included in the field observations.
†From July 2 to July 14, caribou herds numbering in the thousands migrated through the area. The number observed is overestimated due to repeat reporting of the same herds.

3.6.2 Wildlife Mitigation Summary

Mitigation measures were implemented for caribou herds and deterrence measures for grizzly bears and wolves. As shown in Table 3.6-1, three grizzly bears and 20 wolves were observed during the season. Many wolf sightings were repeat observations of a pack of three wolves denning near one of the geophysical survey areas. The frequency of predatory species sightings was likely due to caribou migrations in the area.

3.6.2.1 Caribou Migration

During caribou migrations, mitigation measures were implemented as required by the Nunavut Impact Review Board (NIRB) 2007 screening decision and the WMMP. During the post calving period from May 15 to July 15, operations were suspended within 10 km of areas occupied by cows and calves. Occasional shutdown was required after July 15 when herds greater than 50

caribou were within two kilometers of operations. Caribou herds numbering in the thousands were intermittently present during the post calving period, thus causing temporary shutdown of drilling operations and helicopter activity. Aircraft pilots abided by the altitude restrictions and did not land within one km of herds.

Caribou migrated through the area from July 2 to July 14. Aerial observation of the caribou herd was notes on July 2 approximately 40 km East of camp. On July 12, all drilling operations were shutdown to allow a dispersed caribou herd to pass undisturbed. While drilling remained on standby, non-essential flights were grounded and the helicopters did not take off or land within one kilometer of caribou herds. Following a survey by the wildlife monitor, one rig was approved to restart operations the evening of July 12 when the large herd moved southwest towards the second rig. A smaller herd of caribou remained near the second drilling rig until July 14 when drilling was approved to resume. A smaller herd was present near one drilling rig on August 9, but quickly moved out of the area (Photograph 3.6-1). Large herds were absent during the remainder of the season.

Photograph 3.6-1: Small Caribou Herd – August 9, 2015

3.6.2.2 Deterrence Measures

As outlined in the WMMP, deterrent measures were implemented to ensure the safety of personnel. These interventions were necessary on one occasion. A grizzly bear sow and two cubs approached within 500 m of a three-person field crew while conducting a ground survey. One helicopter and the wildlife monitor were sent to the area to extract the field crew. The wildlife monitor remained stationed near an active drilling rig in the area to ensure the grizzly bear had moved away. The survey crew returned to the field the following day completing work in a different area to avoid unnecessary wildlife interactions. There were no physical interactions between bears or wolves with project personnel during the 2015 field season.

3.7 Abandonment and Restoration Plan

The Abandonment and Restoration Plan was developed to address permit conditions, regulations and industry standards for seasonal operation, shut-down and final closure. This plan is frequently reviewed and revised to reflect the expansion of infrastructure, cost estimates, changing field programs and the identification of improved reclamation practices.

The objectives of the plan are to:

- Protect human health
- Reduce or eliminate environmental effects
- Re-establish conditions to similar pre-exploration land use
- Establish physical and chemical stability of disturbed areas

3.7.1 Seasonal Shutdown

As required by the Abandonment and Restoration Plan, the following activities were conducted for the seasonal shutdown of the Kiggavik camp during the last week of August:

- All equipment stored in secure buildings or containers
- Plywood placed over windows and doors to prevent inadvertent opening
- Pumps and hoses drained and dismantled
- Inventory of chemicals, products and wastes securely stored on site (See Table 3.2-2)
- Final inspection of all storage areas and secondary containment
- Removal of chemicals or storage in secure buildings
- Drill rigs dismantled and stored appropriately
- Generator shut down and winterized
- Waterlines drained, flushed and winterized with antifreeze

All personnel vacated the site by August 27, 2015. Photograph 3.7-1 and Photograph 3.7-2 shows the Kiggavik camp during seasonal shutdown on August 27, 2015.

Photograph 3.7-1: Kiggavik Camp Seasonal Shutdown

Photograph 3.7-2: Kiggavik Camp Seasonal Shutdown

3.7.2 Progressive Reclamation

The Abandonment and Restoration Plan has been implemented to ensure drill site stability. Consistent with the objective to return lands to a state similar to pre-exploration use, AREVA

intends to implement progressive restoration practices and incorporate new abandonment and/or reclamation methods and procedures, where applicable. Radiologically or chemically contaminated soil or cuttings are collected inside industrial bulk bags and stored in the radioactive storage compound for future management, which may include transfer to an approved site. The gamma radiation one meter (m) from the boundary of the radioactive storage compound is reduced as much as practical to less than one micro Sievert per hour (µSv/h) and in no instances exceeding 2.5 µSv/h. Where collected cuttings are non-mineralized (i.e. gamma radiation readings less than one µSv/h), they are used to re-establish physical stability by levelling depressions that may have formed from permafrost thaw around drill locations. Where inadequate fill material is available, excess material from the End grid discharge or gravel another location will be used to fill larger depressions.

To minimize the affected footprint and the amount of physical reclamation required, there is a focused effort on proper planning of infrastructure placement and drill sites. Reclamation techniques are currently being investigated and when required, will be implemented under the direction and approval of experienced consultants, community members and regulatory agencies. During a meeting with available members of the Baker Lake Community, Land and Resources Committee (CLARC), the CLARC stated a preference that any re-vegetation occurs without seeding or fertilization interventions.

3.7.2.1 End East Grid Sink Hole Reclamation

During a 2014 AANDC annual inspection, a sink hole was discovered at 64°20’42.21” N, 97°50’24.37” W (14W 556030 7135977) in the End East grid that was approximately two meters in diameter (Photograph 3.7-3). It is believed that the sink hole was created due to drilling activities in the area during the 2014 drilling program.

Photograph 3.7-3: Sink Hole Discovered at EE-05

The area was identified during a 2014 inspection and reclamation work was completed during the 2015 season. Throughout the 2015 season non-mineralized drill cuttings were deposited in the sink hole from various locations. Additionally, 30 cubic meters of gravel was obtained from Baker Lake and shipped to site during the 2015 winter haul for use as additional fill. Approximately 15 bags of cuttings and 15 bags (one cubic meter bags) of gravel were used to completely fill the sink hole (Photograph 3.7-4 and Photograph 3.7-5).

Photograph 3.7-4: Filling Sink Hole at EE-05

Photograph 3.7-5: Completed Work at EE-05

3.7.2.2 Drill Hole Reclamation

Drill sites are inspected prior to and following the completion of drilling activities to assess the impact drilling is having in the region. The area is examined, size of impact is recorded, and a photograph is taken if necessary to record the remediation completed. Remaining garbage and drilling debris is also removed from the site. All sites were inspected and remediated as necessary following the completion of drilling in an area.

Upon finalizing a post drilling inspection in the Contact area, a slight depression from drilling activities was discovered near the CONT-027 drill hole (Photograph 3.7-6 and Photograph 3.7-7). Non-mineralized drill cuttings collected from that drill hole were used to level out the depression and restore physical stability in the area (Photograph 3.7-8).

Photograph 3.7-6: CONT-027 Pre Drill Inspection August 5, 2015

Photograph 3.7-7: CONT-027 Post Drill Inspection August 12, 2015