

PHASE 2 INITIAL BOREHOLE DRILLING AND TESTING, IGNACE AREA

WP01 Site Infrastructure Commissioning at IG_BH01

APM-REP-01332-0385

February 2018

Golder Associates Ltd.

nwmo

NUCLEAR WASTE
MANAGEMENT
ORGANIZATION

SOCIÉTÉ DE GESTION
DES DÉCHETS
NUCLÉAIRES

Nuclear Waste Management Organization

22 St. Clair Avenue East, 4th Floor

Toronto, Ontario

M4T 2S3

Canada

Tel: 416-934-9814

Web: www.nwmo.ca

DATE Feb. 9, 2018**PROJECT No.** 01559 A-TGS / 1671632**TO** Maria Sánchez-Rico Castejon, Geoff Crann
NWMO**CC** Joe Carvalho, Aynsley Neufeld, Adrian Kowalchuk, Chris Barr**FROM** George Schneider**EMAIL** george_schneider@golder.com**NWMO PHASE 2 DRILLING – IGNACE – WP1 SITE INFRASTRUCTURE COMMISSIONING**

This memorandum and the attached site commissioning checklist documents the commissioning of the site infrastructure at the IG_BH01 drill site. The drill site is located on the Revell batholith, and is accessible from Highway 17 via by Tower and Dymont tertiary roads, southwest of the Town of Ignace, ON. The MNRF has granted permission to the NWMO to conduct borehole drilling and testing at the site, and NWMO has handed over the Care and Custody of the site to Golder Associates Ltd. (Golder) to carry out the drilling and testing work. Golder is the Constructor on the site, and has filed a Notice of Project as well as a Notice of Operation of a Test Drill with the MOL.

The site infrastructure setup was carried out by the Taranis / WLON JV group under contract to Golder. The infrastructure setup work on site substantially took place from October 19 to November 2, 2017 during which time a Golder Site Supervisor was present to monitor the progress of the work. All site construction activities that took place during that period are documented in daily construction reports (DCR), which have been provided to NWMO. An NWMO representative visited the site to observe the progress of the work on a daily basis. An MNRF representative visited the site initially to observe on site construction activities.

A site inspection was carried out by NWMO and Golder representatives on November 2, 2017 (see attached) during which time it was noted that site infrastructure had been substantially completed, with a small number of minor items remaining to complete. Those remaining items were since addressed and are considered to be completed, as documented in the attached completion checklist prepared by the Site Supervisors and approved by the Project Manager.

Attachments: WP1 - Site Infrastructure – Field Inspection Checklist – dated November 2, 2017
IG_BH01 Site Commissioning Checklist – dated February 9, 2018

CB/AK/GWS/

c:\gws-work\1 - active\1671632 ignace bh drilling\06 wp1\18 commissioning checklist\1671632 wp1 commissioning memo 09feb2018 r2.docx



WP1 – Site Infrastructure - Field Inspection Checklist

Security: Internal Use Only File CSI: 01914 x01332

Property Code: NWMO Retention: T10

Contract:		Date:				Comments
Description		Check Status				
STATUS KEY: S-Satisfactory, NS-Not Satisfactory, NA-Not Applicable, CP-Client Provide		S	NS	NA	CP	
SAFETY SECTION – Work plan-specific						
• PPE worn by all site personnel (safety boots, hard hat, safety glasses, gloves, and hearing protection (where indicated as required))	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Certified First Aider and first aid station location identified and first kit appropriately equipped	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Posting in progress, covered in tailgates
• Field Level Hazard Assessment (FLHA) completed prior to the start of work with hazards identified and mitigated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Job Site posting requirements met: Notice of Project Form, Registration of (Sub) Contractors (F1000s), Contractor Identification sign, Construction Site PPE requirements and warning signs, H&S representative name, First Aid Certificate, WSIB "in case of injury" poster, emergency phone numbers and route to hospital map, Health and Safety Environment Plan, OH&S Act and regulations, SDS binder,	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		On site posting in progress. Gate signage to be installed asap
• Housekeeping: Site is tidy, equipment properly stored, no trip hazards	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• All fuel containers barricaded from inadvertent vehicle contact and have dedicated fire extinguishers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Mostly done, some in progress
• Gas cylinders properly stored, secured, and barricaded from vehicle contact	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		None on site yet
• All electrical equipment, power tools, CSA approved and GFCIs used	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		GFCI on generators needs confirmed
ENVIRONMENTAL SECTION – Work plan-specific						
• Silt fence installed prior to clearing and grubbing, and functioning to control sediment from site run-off	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Discussed and decided install as possible as clearing proceeds. Revise WP to state.
• Trees and Brush chipped and stored for use as ground cover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Discussed decided not necessary
• Site is filled and graded to be self-draining, per figure 4 Golder Environment Management Plan	<input checked="" type="checkbox"/>					
• All Fuel storage containers have secondary containment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Spill kits on site, available and correctly stocked and maintained (restocked after use)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Spill response plan available in easy to find location	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Other (note any significant site-specific Safety or Environmental aspect not otherwise identified):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

WP1 – Site Infrastructure - Field Inspection Checklist

Security: Internal Use Only File CSI: 01914 x01332

Property Code: NWMO Retention: T10

QUALITY SECTION					
• Drill pad and site compacted to support equipment, and compaction documented	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• 8' security fencing installed, anchored, and with locking gates	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Anchors not needed
• Drilling equipment arranged with clear access for drilling, testing, and maintenance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Drill equipment and fluid/cuttings management have secondary containment and clear access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check fluid tanks
• Trailers arranged as per figure 2 WP1 plan, level and with OSHA compliant stairs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Golder going to install slip mats
• Sanitary facilities and potable water available, OSHA compliant, with clear access for cleaning, and cleaning records available	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	In progress (commissioning), form to record cleaning to be created
• All electrical connections installed by licenced electrician and ESA inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ESA coming next week
• Sufficient Light Towers installed for night work and with secondary containment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	One wheel out (ok), grounding added
• Garbage and recycling bins have animal proof locking and have clear access for waste removal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Not delivered yet
• Site communications (phone and internet) established	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Parking area sufficient for expected number of personal vehicles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
•	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SUPPLEMENTARY SECTION					
Description of Hazard/Environmental Aspect					Follow-Up With
1)					
2)					
3)					
4)					
Prepared by: <u>Jim McLay par John Van Heerden</u> Contract Administrator/Work Package Lead (print name)					
Signature: <u>[Signature]</u>					
Date: <u>2017-11-02</u> Date: YYYY-MM-DD					

Instructions for Use

The NWMO contractor owner or appointed contract monitor takes a copy of this form with them when going to review the contractor's work. The NWMO contractor owner or appointed contract monitor observes the contractor's employees executing work activities and records if the work is being completed as required. A check mark is recorded in the appropriate column beside the item being observed or inspected. If a whole section is not applicable it can be marked as not applicable using a large N/A. The completed field inspection is signed and dated and provided to NWMO Records for filing. If there are noted deficiencies an NWMO NCAR is completed to track the corrective action.

IG_BH01 Site Commissioning Checklist

Item No.	Item	General Requirements	Date Commissioned	Checked by	Approved by	Comments
1.0	SITE PREPARATION					
1.1	Clearing and grubbing	Site adequately cleared and grubbed, surface material stockpiled adequately, site accessible from road	Oct. 23, 2017	Chris Barr	George Schneider	Completed - Vegetation was stockpiled at the south end of the property, not mulched. This deviation from the WP1 plan was accepted by NWMO.
1.2	Drill pad	Drill pad constructed in the correct location, of adequate size, adequately compacted, levelled	Oct. 26, 2017	Chris Barr	George Schneider	Completed - As documented in the DCRs
1.3	General site levelling	Site generally levelled to allow placement of surface facilities and safe movement between facilities	Oct. 26, 2017	Chris Barr	George Schneider	Completed - This required the importation of additional material (granular B) in order to level out low areas and slopes on the site beyond the drill pad.
1.4	General Site Drainage	Site grading allows for adequate drainage without ponding	Oct. 26, 2017	Chris Barr	George Schneider	Completed – A low lying area was dewatered and additional material was imported to ensure adequate grading and drainage on the site.
2.0	FENCING					
2.1	Silt fencing	Silt fencing around site perimeter, properly installed and in good order	Nov. 1, 2017	Chris Barr	George Schneider	Completed - Silt curtain was installed in parallel with clearing and grubbing around perimeter outside of security fencing and a second silt fence installed around the drill rig area.
2.2	Snow fencing	Snow fencing around site perimeter, properly installed and in good order	Nov. 1, 2017	Chris Barr	George Schneider	Completed – Installed in concurrently with silt fencing.
2.3	Modulock security fencing	Security fencing around required areas, drill area separated, properly installed and in good order	Nov. 1, 2017	Chris Barr	George Schneider	Completed – Acceptable – Taranis was only able to provide gate wheels for one gate – gate wheels still outstanding on second gate. Not considered critical but should be addressed at next site.
3.0	OFFICE TRAILERS					
3.1	Trailer 1 (Golder)	Trailer correctly positioned, blocked and levelled, stairs installed, furnishings supplied meet requirements, heated	Oct. 31, 2017	Chris Barr	George Schneider	Completed – Stairs required construction of additional wood frame platforms and traction mats.

IG_BH01 Site Commissioning Checklist

Item No.	Item	General Requirements	Date Commissioned	Checked by	Approved by	Comments
3.2	Trailer 2 (NWMO)	Trailer correctly positioned, blocked and levelled, stairs installed, furnishings supplied meet requirements, heated	Oct. 30, 2017	Chris Barr	George Schneider	Completed – Stairs required construction of additional wood frame platforms and traction mats.
3.3	Trailer 3 (Rodren)	Trailer correctly positioned, blocked and levelled, stairs installed, furnishings supplied meet requirements, heated	Oct. 30, 2017	Chris Barr	George Schneider	Completed – Stairs required construction of additional wood frame platforms and traction mats.
4.0	CORE LOGGING AND STORAGE					
4.1	Core Logging Seacan	Seacan correctly positioned, blocked and levelled, interior meets requirements, heated	Oct. 29, 2017	Chris Barr	George Schneider	Completed.
4.2	Core Logging Table	Core logging table meets design specifications, correctly installed	Nov. 1, 2017	Andrey Fomenko	George Schneider	Completed – installation and modifications made by Golder.
4.3	Camera Racking	Camera tracking correctly installed, meet performance criteria	Nov. 4, 2017	Andrey Fomenko	George Schneider	Supplied and installed by Golder.
4.4	Core Storage Seacan	Seacan correctly positioned, blocked and levelled, interior meets requirements, heated	Oct. 29, 2017	Chris Barr	George Schneider	Completed.
4.5	Commercial Refrigerator	Refrigerator installed correctly, operating correctly, provides adequate storage capacity	Nov. 4, 2017	Andrey Fomenko	George Schneider	Completed - Commercial glass-door refrigerator initially supplied but found to be unreliable – replaced by two smaller upright refrigerators.
5.0	COMMUNICATIONS					
5.1	Satellite phone	Phone is installed and functioning correctly	Nov. 2, 2017	Chris Barr	George Schneider	Completed.
5.2	Cellular internet	Cellular Internet Wi-Fi network is installed and functioning correctly, reception is adequate in all required areas of the site	Nov. 2, 2017	Chris Barr	George Schneider	Cellular internet used in place of satellite internet. Added Wi-Fi booster in early November to provide signal in Seacans (steel buildings).
6.0	GENERATORS					
6.1	Generator	Generator installed and functioning correctly, installation completed by an electrician, and certified by electrician to meet codes	Oct. 31, 2017	Chris Barr	George Schneider	Completed – Original generator was installed by an electrician but was not certified to meet codes. Current generator on site is CSA approved.

IG_BH01 Site Commissioning Checklist

Item No.	Item	General Requirements	Date Commissioned	Checked by	Approved by	Comments
6.2	Secondary containment	Secondary spill containment in place beneath fuel tank, correctly installed, of adequate capacity	Nov. 1, 2017	Chris Barr	George Schneider	Completed – Fabricated customized containment, as Taranis could not provide the containment originally specified.
6.3	Power distribution	Power distribution panel installed and functioning correctly, installation completed by an electrician, and certified by electrician to meet codes	Nov. 2, 2017	Chris Barr	George Schneider	Completed – certified by ESA inspector, although inspection could not be arranged until January 2018.
7.0	LIGHT TOWERS					
7.1	Light Tower	All light towers installed and functioning correctly, installation completed by an electrician, and certified by electrician to meet codes	Oct. 29, 2017	Chris Barr	George Schneider	Completed.
7.2	Secondary containment	All secondary spill containment in place beneath fuel tank, correctly installed, of adequate capacity	Oct. 29, 2017	Chris Barr	George Schneider	Completed.
8.0	FUEL STORAGE					
8.1	Fuel tank	Fuel tank correctly installed, blocked and levelled	Nov. 3, 2017	Andrey Fomenko	George Schneider	Completed. Fuel tank repositioned on Dec. 15, 2017, to improve stability, containment and protective barricade.
8.2	Secondary containment	Secondary spill containment in place beneath fuel tank, correctly installed, of adequate capacity	Nov. 3, 2017	Andrey Fomenko	George Schneider	
8.3	Protective barricade	Tank is adequately protected from inadvertent collision with mobile equipment	Nov. 3, 2017	Andrey Fomenko	George Schneider	
9.0	SANITARY FACILITIES					
9.1	Washroom	Washroom correctly positioned, blocked and levelled, stairs installed, toilets and sinks functioning correctly, heated	Oct. 29, 2017	Chris Barr	George Schneider	Completed – Skirting added by Golder in Jan. 2018 to help prevent freezing of water and sewer lines.
9.2	Water tank	Water tank building correctly positioned, blocked and levelled, correctly connected to the washroom building, heated	Oct. 29, 2017	Chris Barr	George Schneider	Completed.

IG_BH01 Site Commissioning Checklist

Item No.	Item	General Requirements	Date Commissioned	Checked by	Approved by	Comments
9.3	Septic tank	Septic tank building correctly positioned, blocked and levelled, correctly connected to the washroom building, heated	Oct. 29, 2017	Chris Barr	George Schneider	Completed.
10.0	GARBAGE BINS					
10.1	Garbage Bin	Bin placed in suitable location, secure lid	Nov. 14, 2017	Adrian Kowalchuk	George Schneider	Completed – very late.
10.2	Recycling Bin	Bin placed in suitable location, secure lid	Nov. 14, 2017	Adrian Kowalchuk	George Schneider	Completed – very late.
11.0	SPILL KITS					
11.1	Drill fluid kit	Spill kit components present, size and type meets requirements	Nov. 1, 2017	Chris Barr	George Schneider	Completed.
11.2	Fuel kit	Spill kit components present, size and type meets requirements	Oct. 19, 2017	Chris Barr	George Schneider	Completed.
11.3	General (chemical) kit	Spill kit components present, size and type meets requirements	Nov. 1, 2017	Chris Barr	George Schneider	Completed.