

PHASE 2 INITIAL BOREHOLE DRILLING AND TESTING, IGNACE AREA

*WP03 Data Report - Geological and Geotechnical
Core Logging, Photography and Sampling for
IG_BH03*

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September 2020

Golder Associates Ltd.

nwmo

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MANAGEMENT
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REPORT

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WP03 Data Report - Geological and Geotechnical Core Logging, Photography and Sampling for IG_BH03

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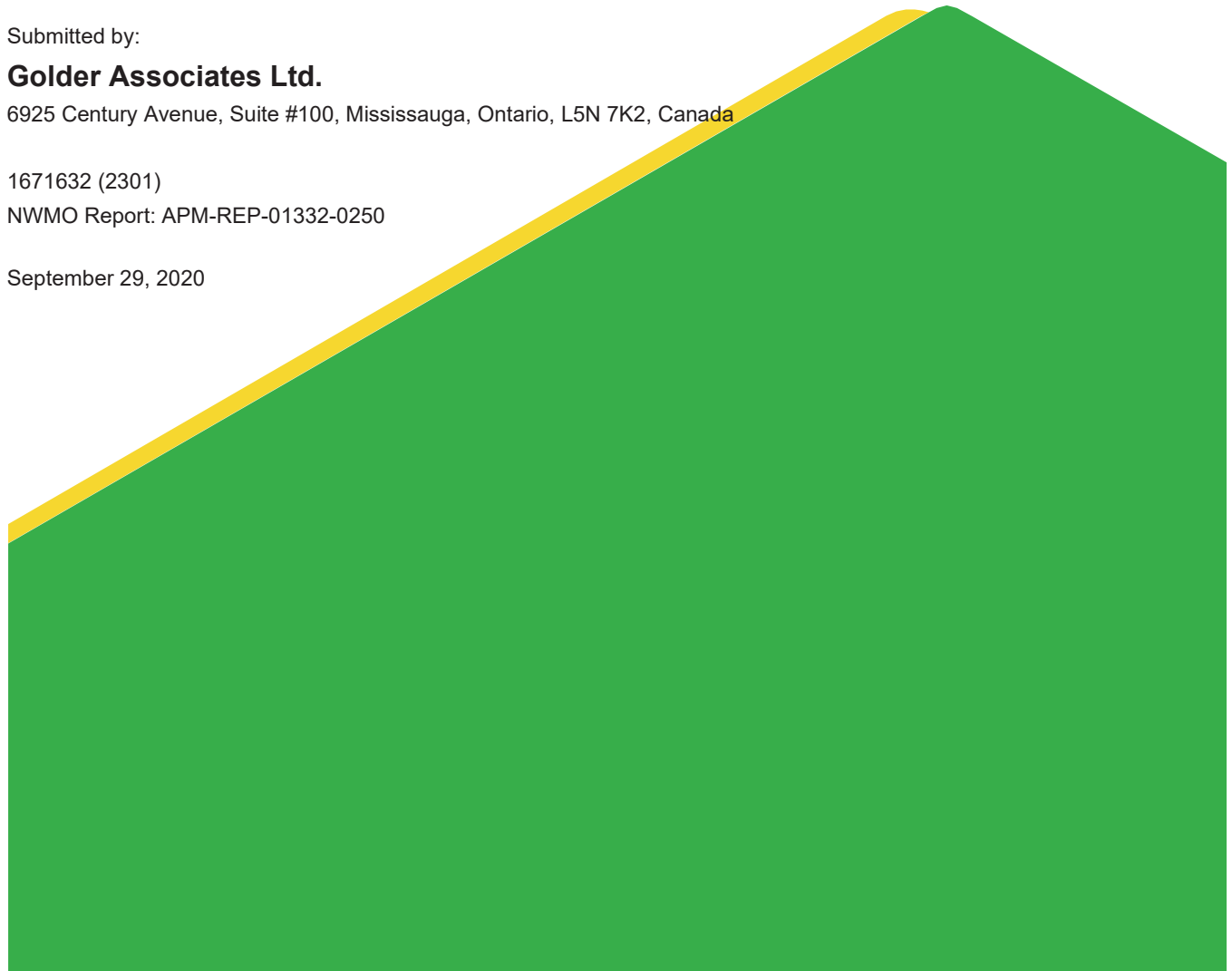
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WP03 DATA REPORT

GEOLOGICAL AND GEOTECHNICAL CORE LOGGING, PHOTOGRAPHY AND SAMPLING FOR IG_BH03

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Table of Contents

1.0 INTRODUCTION	1
2.0 BACKGROUND INFORMATION.....	3
2.1 Geological Setting	3
2.2 Technical Objectives	5
3.0 DESCRIPTION OF ACTIVITIES	6
3.1 Health and Safety.....	9
3.2 Quality Confirmation.....	9
4.0 SUMMARY OF DATA COLLECTION	10
4.1 Lithology	10
4.1.1 Biotite Tonalite	12
4.1.2 Additional Rock Types Encountered in IG_BH03	13
4.2 Weathering and Alteration.....	15
4.3 Geotechnical Logging	18
4.3.1 TCR, SCR, and RQD	19
4.3.2 Structure Frequency	20
4.3.3 Strength.....	20
4.4 Structural Data	20
4.4.1 Primary Igneous Structures and Ductile Structures.....	24
4.4.2 Brittle Structures.....	25
5.0 LABORATORY SAMPLING	31
6.0 REFERENCES	35

TABLES

Table 1: Summary of Rock Types Encountered in IG_BH03	12
Table 2 : Summary of Structure Types, by number of occurrences, observed in IG_BH03	21
Table 3 : Summary of Rock Core samples in IG_BH03	32

FIGURES

Figure 1 :	Location of IG_BH03 in Relation to the Wabigoon / Ignace Area	2
Figure 2 :	Geological Setting of the Northern Portion of the Revell Batholith.....	4
Figure 3 :	IG_BH03 WP03 Workflow	8
Figure 4 :	Summary of Lithology by Rock Type and by Depth along borehole as logged in IG_BH03.....	11
Figure 5 :	Biotite tonalite observed in IG_BH03 (a) 164 m, and (b) 857 m.	13
Figure 6 :	Examples of the additional rock types observed in IG_BH03: a) Amphibolite (774 m), b) Felsic dyke (4 m), c) Feldspar-phyric Felsic dyke (870 m), d) Aplite dyke (478 m), e) Pegmatite dyke (921 m), f) Tonalite dyke (736 m)	15
Figure 7 :	Portion of 6.19 m wide zone of slightly weathered horizon at approximately 4.5 m depth along borehole observed in IG_BH03	15
Figure 8 :	Examples of the Different Types of Alteration observed in IG_BH03: a) Hematization (A3 – 29 m), b) Potassic Alteration (A3 – 893 m), c) Silicification (A3 – 376 m), d) Chloritization (A3 – 874 m), e) Bleaching (A3 – 867 m), f) Sericitization (A3 – 774 m), g) Argillization (A2 – 774 m).....	17
Figure 9 :	Summary of Alteration by Type and by Depth along borehole as logged in IG_BH03	18
Figure 10 :	Summary of Geotechnical Parameters by Depth along borehole as logged in IG_BH03.....	19
Figure 11 :	Summary of the Distribution of Structures by Depth along borehole and Joint Condition Rating (JCR) as logged in IG_BH03	23
Figure 12:	Ductile Structures and Primary Igneous Structures, observed in IG_BH03: a) Primary Igneous Structure (158 m), b) Foliation (548 m), c) Ductile Shear Zone (976 m), d) Brittle-Ductile Shear Zone (973 m)	25
Figure 13 :	Examples of Brittle Structure Types observed in IG_BH03: a) Broken Core Zone (150 m), b) Lost Core Zone (1 m), c) Joint (492 m), d) Narrow Fault (973 m), e) Quartz Vein (261 m), f) Epidote Vein (882 m).....	26
Figure 14 :	Summary of Primary Vein Type and Vein Thickness (mm) by Depth along borehole as logged in IG_BH03	29
Figure 15 :	Summary of Primary Infill Mineral Information for all Joint, Vein and Fault Surfaces by Depth along borehole and by Joint Condition Rating (JCR) as logged in IG_BH03	30
Figure 16 :	Summary Showing the Distribution Core Samples Collected in IG_BH03 by Sample Test Type and by Depth along borehole	33
Figure 17 :	Examples of Sample Preservation Methods: a) Example photograph of a rock core sample preserved for Porewater (PW) testing (IG_BH03_PW010), b) Example photograph of preserved rock core samples ready for laboratory shipment	34

APPENDICES

APPENDIX A

Geological and Geotechnical Core Logging Procedures Manual for IG_BH03 and IG_BH02

APPENDIX B

Sampling Schedule Table

APPENDIX C

Record of Core Logging

APPENDIX D

Photography Tables

1.0 INTRODUCTION

The Initial Borehole Drilling and Testing project in the Wabigoon and Ignace Area, Ontario is part of Phase 2 Geoscientific Preliminary Field Investigations of the Nuclear Waste Management Organization (NWMO)'s Adaptive Phased Management (APM) Site Selection Phase.

This project involves the drilling and testing of the second of three deep boreholes within the northern portion of the Revell batholith. The second borehole, IG_BH03, is located a direct distance of approximately 23 km southeast of the Wabigoon Lake Ojibway Nation and a direct distance of 42 km northwest of the Town of Ignace. Access to the IG_BH03 drill site is via Highway 17 and primary logging roads, as shown on Figure 1.

The project was carried out by a team led by Golder Associates Ltd. (Golder) on behalf of the NWMO. This report describes the methodology, activities and results for Work Package 3 (WP03): Geological and Geotechnical Core Logging, Photography, and Sampling for IG_BH03.

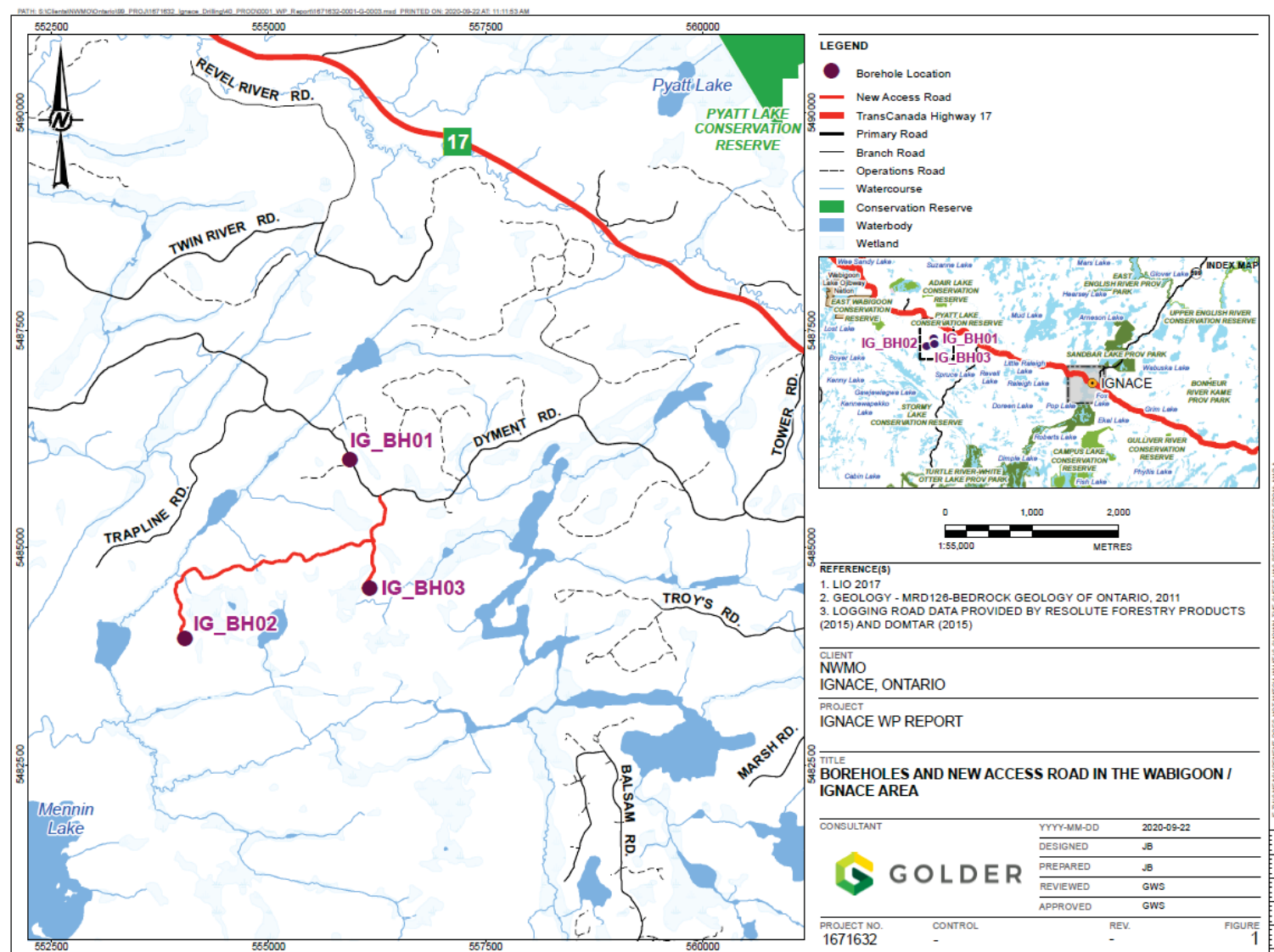


Figure 1 : Location of IG_BH03 in Relation to the Wabigoon / Ignace Area

2.0 BACKGROUND INFORMATION

2.1 Geological Setting

The approximately 2.7 billion year old Revell batholith is located in the western part of the Wabigoon Subprovince of the Archean Superior Province. The batholith is roughly elliptical in shape trending northwest, is approximately 40 km in length, 15 km in width, and covers an area of approximately 455 km². Based on geophysical modelling, the batholith is approximately 2 km to 3 km thick through the center of the northern portion (SGL, 2015). The batholith is surrounded by supracrustal rocks of the Raleigh Lake (to the north and east) and Bending Lake (to the southwest) greenstone belts (Figure 2).

IG_BH03 is located within an investigation area of approximately 19 km² in size, situated in the northern portion of the Revell batholith. Bedrock exposure in the area is generally very good due to minimal overburden, few water bodies, and relatively recent logging activities. Ground elevations generally range from 400 to 450 m above sea level. The ground surface broadly slopes towards the northwest as indicated by the flow direction of the main rivers in the area. Local water courses tend to flow to the southwest towards Mennin Lake (Figure 1).

Four main rock units are identified in the supracrustal rock group: mafic metavolcanic rocks, intermediate to felsic metavolcanic rocks, metasedimentary rocks, and mafic intrusive rocks (Figure 2). Sedimentation within the supracrustal rock assemblage was largely synvolcanic, although sediment deposition in the Bending Lake area may have continued past the volcanic period (Stone, 2009; Stone, 2010a; Stone, 2010b). All supracrustal rocks are affected, to varying degrees, by penetrative brittle-ductile to ductile deformation under greenschist- to amphibolite-facies metamorphic conditions (Blackburn and Hinz, 1996; Stone et al., 1998). In some locations, primary features, such as pillow basalt or bedding in sedimentary rocks are preserved, in other locations, primary relationships are completely masked by penetrative deformation. Uranium-lead (U-Pb) geochronological analysis of the supracrustal rocks produced ages that range between 2734.6 \pm 1.1 Ma and 2725 \pm 5 Ma (Stone et al., 2010).

Three main suites of plutonic rock are recognized in the Revell batholith, including, from oldest to youngest: a Biotite Tonalite to Granodiorite suite, a Hornblende Tonalite to Granodiorite suite, and a Biotite Granite to Granodiorite suite (Figure 2). Plutonic rocks of the Biotite Tonalite to Granodiorite suite occur along the southwestern and northeastern margins of the Revell batholith. The principal type of rock within this suite is a white to grey, medium-grained, variably massive to foliated or weakly gneissic, biotite tonalite to granodiorite. One sample of foliated and medium-grained biotite tonalite produced a U-Pb age of 2734.2 \pm 0.8 Ma (Stone et al., 2010). The Hornblende Tonalite to Granodiorite suite occurs in two irregularly-shaped zones surrounding the central core of the Revell batholith. Rocks of the Hornblende Tonalite to Granodiorite suite range compositionally from tonalite through granodiorite to granite and also include significant proportions of quartz diorite and quartz monzodiorite. One sample of coarse-grained grey mesocratic hornblende tonalite produced a U-Pb age of 2732.3 \pm 0.8 Ma (Stone et al., 2010). Rocks of the Biotite Granite to Granodiorite suite underlie most of the northern, central and southern portions of the Revell batholith. Rocks of this suite are typically coarse-grained, massive to weakly foliated, and white to pink in colour. The Biotite Granite to Granodiorite suite ranges compositionally from granite through granodiorite to tonalite. A distinct potassium (K)-Feldspar Megacrystic Granite phase of the Biotite Granite to Granodiorite suite occurs as an oval-shaped body in the central portion of the Revell batholith (Figure 2). One sample of coarse-grained, pink, massive K-Feldspar Megacrystic Biotite Granite produced a U-Pb age of 2694.0 \pm 0.9 Ma (Stone et al., 2010).

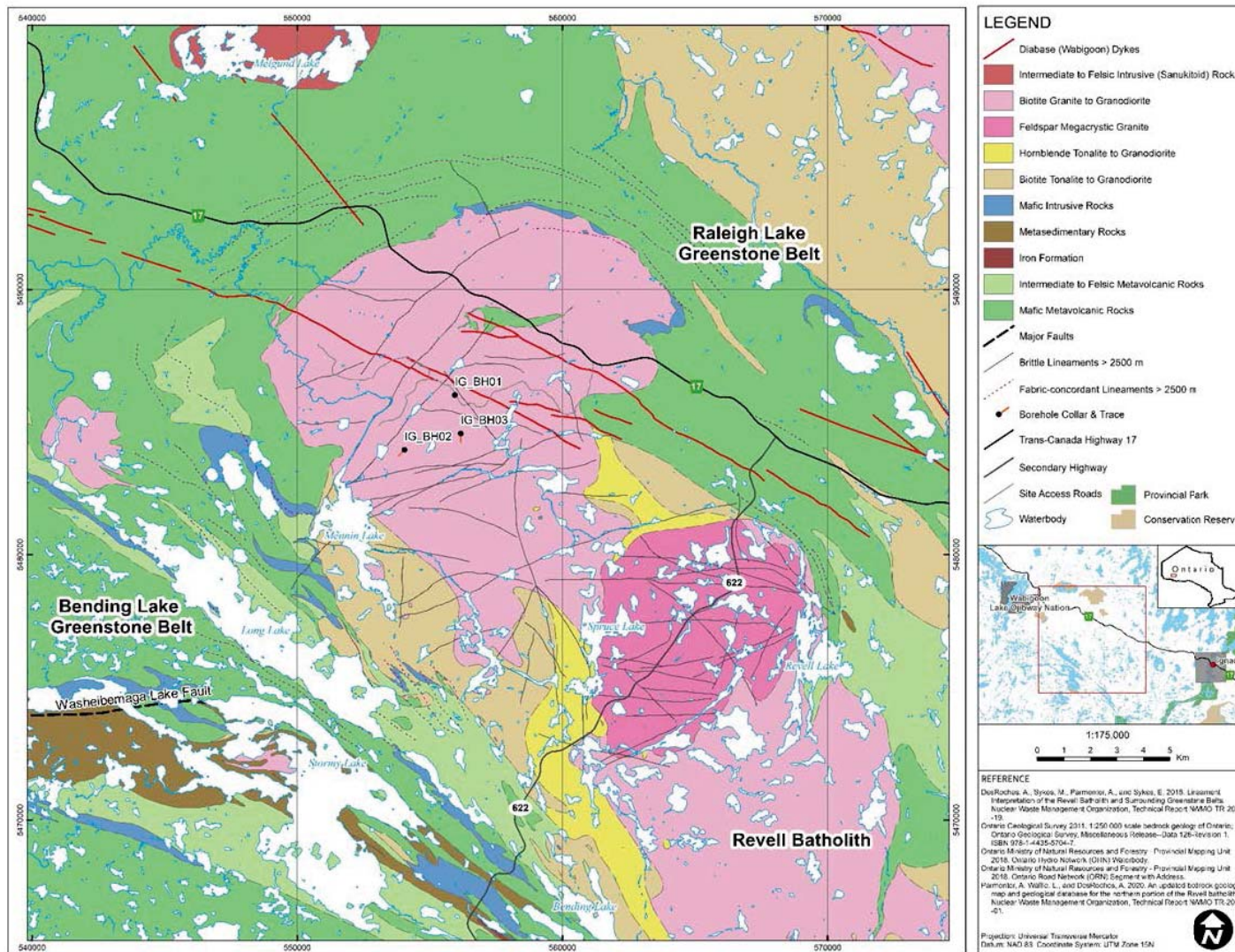


Figure 2 : Geological Setting of the Northern Portion of the Revell Batholith

The bedrock surrounding IG_BH03 is composed mainly of massive to weakly foliated felsic intrusive rocks that vary in composition between granodiorite and tonalite, and together form a relatively homogeneous intrusive complex. Bedrock identified as tonalite transitions gradationally into granodiorite and no distinct contact relationships between these two rock types are typically observed (SRK and Golder, 2015; Golder and PGW, 2017). Massive to weakly foliated granite is identified at the ground surface to the northwest of the feldspar-megacrystic granite. The granite is observed to intrude into the granodiorite-tonalite bedrock, indicating it is distinct from, and younger than, the intrusive complex (Golder and PGW, 2017).

West-northwest trending mafic dykes interpreted from aeromagnetic data extend across the northern portion of the Revell batholith and into the surrounding greenstone belts. One mafic dyke occurrence, located to the northwest of IG_BH01, is approximately 15-20 m wide (Figure 2). All of these mafic dykes have a similar character and are interpreted to be part of the Wabigoon dyke swarm. One sample from the same Wabigoon swarm produced a U-Pb age of 1887 \pm 13 Ma (Stone et al., 2010), indicating that these mafic dykes are Proterozoic in age. It is assumed based on surface measurements that these mafic dykes are sub-vertical (Golder and PGW, 2017).

Long, narrow valleys are located along the western and southern limits of the investigation area (Figure 2). These local valleys host creeks and small lakes that drain to the southwest and may represent the surface expression of structural features that extend into the bedrock. A broad valley is located along the eastern limits of the investigation area and hosts a more continuous, un-named water body that flows to the south. The linear and segmented nature of this waterbody's shorelines may also represent the surface expression of structural features that extend into the bedrock.

Regional observations from mapping have indicated that structural features are widely spaced (typical 30 to 500 cm spacing range) and dominantly comprised of sub-vertical joints with two dominant orientations, northeast and northwest trending (Golder and PGW, 2017). Interpreted bedrock lineaments generally follow these same dominant orientations in the northern portion of the Revell batholith (Figure 2; DesRoches et al., 2018). Minor sub-horizontal joints have been observed with minimal alteration, suggesting they are younger and perhaps related to glacial unloading. One mapped regional-scale fault, the Washeibemaga Lake fault, trends east and is located to the west of the Revell batholith (Figure 2). Ductile lineaments, also shown on Figure 2, follow the trend of foliation mapped in the surrounding greenstone belts. Additional details of the lithological units and structures found at surface within the investigation area are reported in Golder and PGW (2017).

2.2 Technical Objectives

The technical objectives of WP03 were to:

- Photograph, and undertake geological and geotechnical core logging for the entire length of core recovered from the borehole;
- Provide high quality, properly preserved core samples for conducting laboratory core testing; and
- Provide a dataset to aid in the assessment and delineation of initial subsurface geological and geotechnical domains, and for comparison with surface-based information (e.g., geological mapping and lineament interpretation) as a foundation for the development of an initial three-dimensional conceptual geological model.

The data collected during logging, and reported on herein, was provided to the NWMO as an acQuire core logging database after a complete quality assurance check of the data.

3.0 DESCRIPTION OF ACTIVITIES

The WP03 activities were carried out in parallel with WP02 (Borehole Drilling and Coring) activities between July 10, 2019 and September 16, 2019. Full details of drilling progress are documented in the WP02 Data Report (Golder, 2020a).

Work Package WP03 included several activities, which together implemented the safe, efficient, comprehensive and traceable handling and initial visual investigation and documentation of continuous core recovered from IG_BH03 at Ignace, Ontario from geological and geotechnical standpoints. This section of the report provides an overview of the WP03 activities. Additional details relating to specific guidance and procedures followed for the geological and geotechnical logging are provided in Appendix A. IG_BH03 was planned to a plunge of 70° and azimuth of 185°. The length of the hole was 1000.54 m (meters along the borehole), and the full length of recovered core was 999.33 m to a true depth of 937.26 meters below ground surface (-495.7 meters elevation). All depths reported in this document are as meters depth along the core axis.

Golder had a qualified person monitoring and supervising the borehole drilling and coring activities (drilling supervisor), and the retrieval of HQ3-sized rock core from the core barrel. A second qualified person undertook the core logging, photography, and sampling (core logger). When the drill was not in operation, the drilling supervisor provided support for core logging, photography, and sampling, as required.

After the core was retrieved from the borehole by the drillers and extracted from the core tube, the run of core was carried by the drillers in a split tube to the core logging trailer for WP03 activities, where it was received by the core logger.

A dedicated trailer for WP03 activities was located immediately outside the fenced drill rig area, providing easy and clear access from the drill and the core extraction point (where the core is extracted from the inner tube). The core was transferred to the logging trailer as soon as it was extracted, both to avoid cluttering the drill rig area and to meet the requirements of time-sensitive sampling that was done as part of the core logging activity, as described further below. The Drilling Supervisor recorded the depth of the drill string and time that each core run was retrieved from the borehole. They relayed the depth and retrieval time to the core logger, to establish the logging depth and time deadline for time-sensitive sampling, which must occur as soon as possible after core retrieval from the borehole.

The core logging trailer had allocated areas for the logging bench, photography and sampling. The trailer also had climatic control, with adequate space and lighting, and was set up to maximize efficient logging and minimize hazards, including ergonomically awkward actions.

An overview of the workflow that was followed during the geological and geotechnical core logging, photography and sampling activities is shown below (Figure 3). Geological and geotechnical logging, photography and sampling was carried out at the same time as the drilling, on a 24/7 basis, using two core loggers working on two-12-hour cross-shifts (dayshift and nightshift). Shift cross-over occurred at site and provided the two core loggers time to exchange any relevant logging learnings. Shifts were shortened to manage fatigue up to twice per week where the number of site hours was reduced to 20 for a 24 hour period (i.e. 10 hour day and night shifts). The Golder site supervisors (WP01) were on site during this 4 hour window, however the drillers also adhered to the fatigue management schedule. At each shift change, the incoming core logger first undertook a quality check of the geological and geotechnical logging, photography and sampling that was completed during the previous shift and examined the sampling plan, reproduced in Appendix B, to identify if time-sensitive tasks would be required during that shift.

Sampling frequency was increased while drilling between 425 – 640 m depth during which time one additional staff member was added to both the day and night shifts to assist the core loggers. Minor adjustments to the sampling plan were made throughout the drilling program, based on availability of intact core suitable for sampling near targeted depths. The planned and actual depths along borehole of core samples from IG_BH03 is presented in Appendix B.

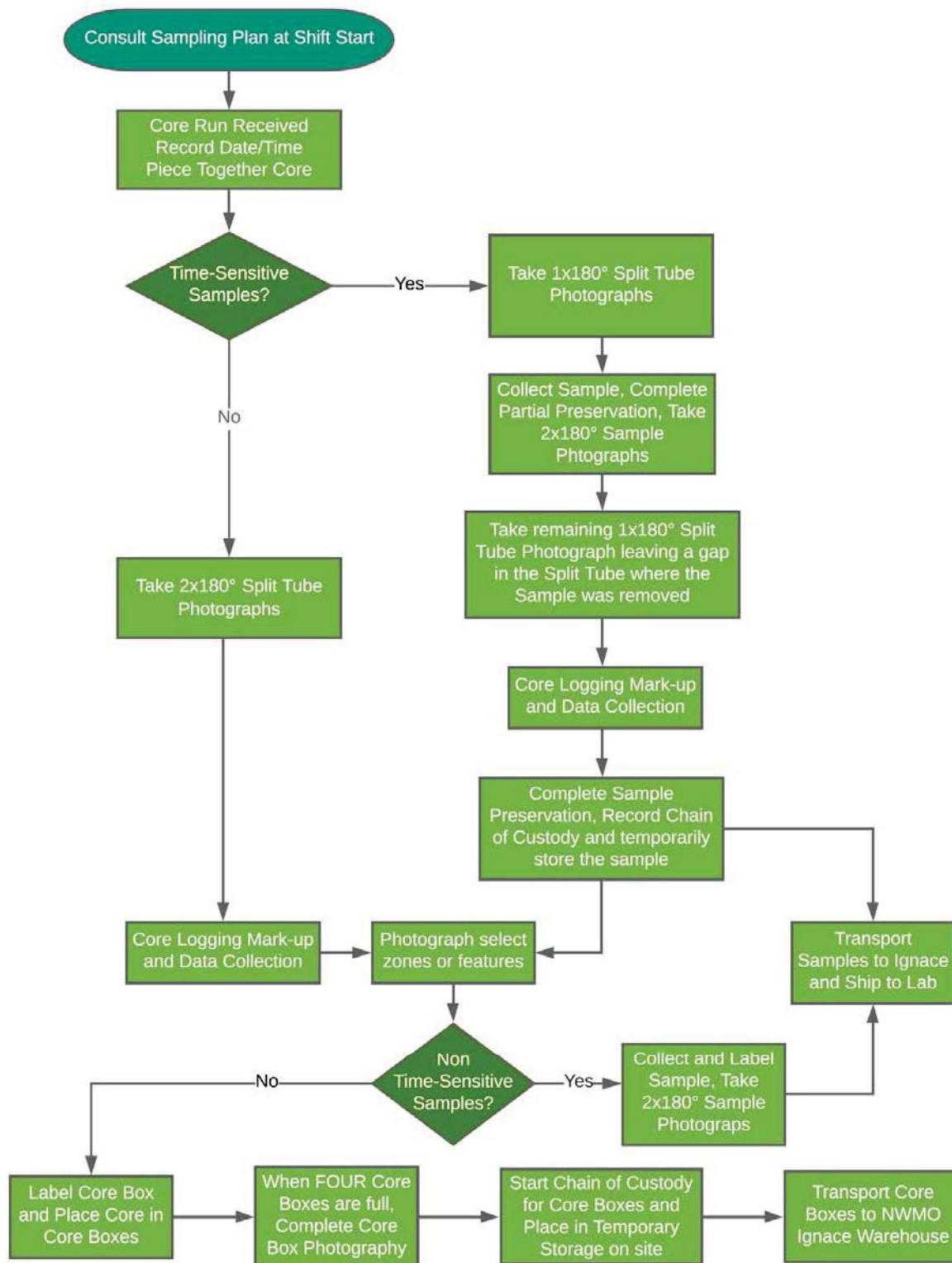


Figure 3 : IG_BH03 WP03 Workflow

Once the core is retrieved by the Core Logger, the main activities for this work package are as follows:

- Review upcoming sampling requirements;
- Record time received for the core run;
- Piece together core;
- If no sampling is required in a core run, photograph the full length and both front and back (2×180° split tube photography);
- When time-sensitive samples are required to be taken from a core run, first complete 1x180° photography, then collect the sample and complete sample photography and preservation, package and store sample according to the preservation and chain of custody requirements, then complete a second 1x180° photography leaving gaps where samples were removed;
- Mark-up, log, and collect core data into NWMO's acQuire database. Logging details are expanded in the following section and in Appendix A;
- Photograph core detailed features where pertinent;
- Place core into core box(es), label and photograph boxes; At this stage, complete non-time sensitive sampling and complete preservation, sample photography, packaging, and storage according to the preservation and chain of custody requirements; and
- Transport core boxes and samples to Ignace for shipment to appropriate laboratory, or store in the warehouse, one to two times per week, according to the chain of custody requirements.

3.1 Health and Safety

The drilling and testing program conformed to applicable health and safety standards for the duration of the program.

Health and safety toolbox meetings were held at the beginning of each shift (day and night), where attendance of all site personnel was mandatory. The meeting reviewed all activities to be completed during that shift and identified the hazards and mitigation efforts to reduce risk of injury. Any visitors on site, who did not participate in the toolbox meetings, were required to review and acknowledge the toolbox report before allowed to perform work on site.

3.2 Quality Confirmation

Cross-shifts between the day shift and night shift core loggers were carried out to transfer knowledge and information from the previous shift. These meetings were typically 10-15 minutes in duration, but occasionally longer when more specific knowledge needed to be relayed. Cross-shifts were also carried out between crews switching rotations and typically involved spending an entire shift together to ensure consistency in the procedures.

During ongoing core logging activities, a quality confirmation process was employed for each shift, such that the core logger on duty would perform quality confirmation of the previous shift's work before commencing core logging activities for their shift. The NWMO participated in the review process by providing comments based on

the daily interim data deliveries. This quality confirmation process was documented in the daily quality confirmation reports, submitted as part of the WP03 Data Delivery.

Following completion of the core logging program, the acQuire database was reviewed by Golder, in collaboration with the NWMO, to provide quality assurance for the entire dataset. All updates to the database, made to ensure quality and consistency in the final data product, were documented for quality control purposes.

All stitched core run, detailed structure, core box, and core sample photographs were submitted in draft on a day-by-day basis throughout the duration of logging. All photographs were reviewed for clarity, lighting, photo labeling and file naming and were corrected if needed. A final suite of all photographs was provided to the NWMO in the WP03 Data Delivery. WP03 data delivery was delivered to the NWMO in draft, reviewed and accepted prior to writing this report.

4.0 SUMMARY OF DATA COLLECTION

A total of 1000.54 m of bedrock core was drilled with 999.33 m of recovery starting at 1.21 m depth along borehole. The 356 core runs were recovered from the plunging borehole IG_BH03 targeting 70° to the south (185°) and logged as part of WP03. Locations of rock types and structures are referred to as depth along borehole throughout this section. This section provides a summary of the core logging observations. Information on the lithology encountered and logged in IG_BH03 is presented first (Section 4.1), followed by the presentation of weathering and alteration information (Section 4.2), geotechnical information (Section 4.3) and structural information (Section 4.4) logging observations.

The core logging data for the entire borehole is presented in a comprehensive strip log in Appendix C. Lists of the photographs taken during the logging and sampling activities are included within separate tables in Appendix D, including core box (Table D-1), core run (Table D-2), core sample (Table D-3) and core feature (Table D-4) photographs. A detailed list of all core samples collected is presented in Table D-5.

The descriptions presented in these sections are based on an initial visual inspection of the core, as captured in the acQuire database. Supplemental investigations, including laboratory petrographic and geochemical analyses, as well as the integration with WP05 (Geophysical Borehole Logging) data may ultimately refine the understanding, particularly in relation to the types and abundances of rock and mineral phases identified.

4.1 Lithology

Lithology was logged continuously during core logging activities, with all units greater than 5 cm in width described by their unique rock type and associated characteristics including texture, fabric and grain size. A gamma ray spectrometry spot analysis was utilized to help distinguish between the three felsic granitoid phases likely to be encountered along IG_BH03, including, tonalite, granodiorite and granite. The spot analysis was performed once per run for runs without lithological variation.

The distribution of the distinct rock units encountered in IG_BH03 is shown in Figure 4 and Table 1. Note that each rock unit occurrence includes two contacts (upper and lower), and the total number of contacts identified during logging as broken or intact/partially intact for each rock unit is presented in Table 1. In 9 occurrences (14%) the contact was logged as broken, while in the remaining 53 occurrences (86%) the contact was logged as intact or partially intact. The predominant rock type encountered was biotite tonalite (Section 4.1.1), followed by amphibolite, and several distinct suites of dykes including: very fine-grained felsic dykes, feldspar-phyric felsic dykes, aplite dykes, pegmatite dykes, and tonalite dykes (Section 4.1.2). The horizontal lines in each column in

Figure 4 indicate the depths along the borehole of the logged contacts for each rock unit occurrence, except for the predominant biotite tonalite unit which was logged along the majority of the length of the borehole and is represented by the pink shading in the leftmost column in Figure 4. The leftmost column in Figure 4 also provides an integrated overview of the distribution of all other rock units in IG_BH03.

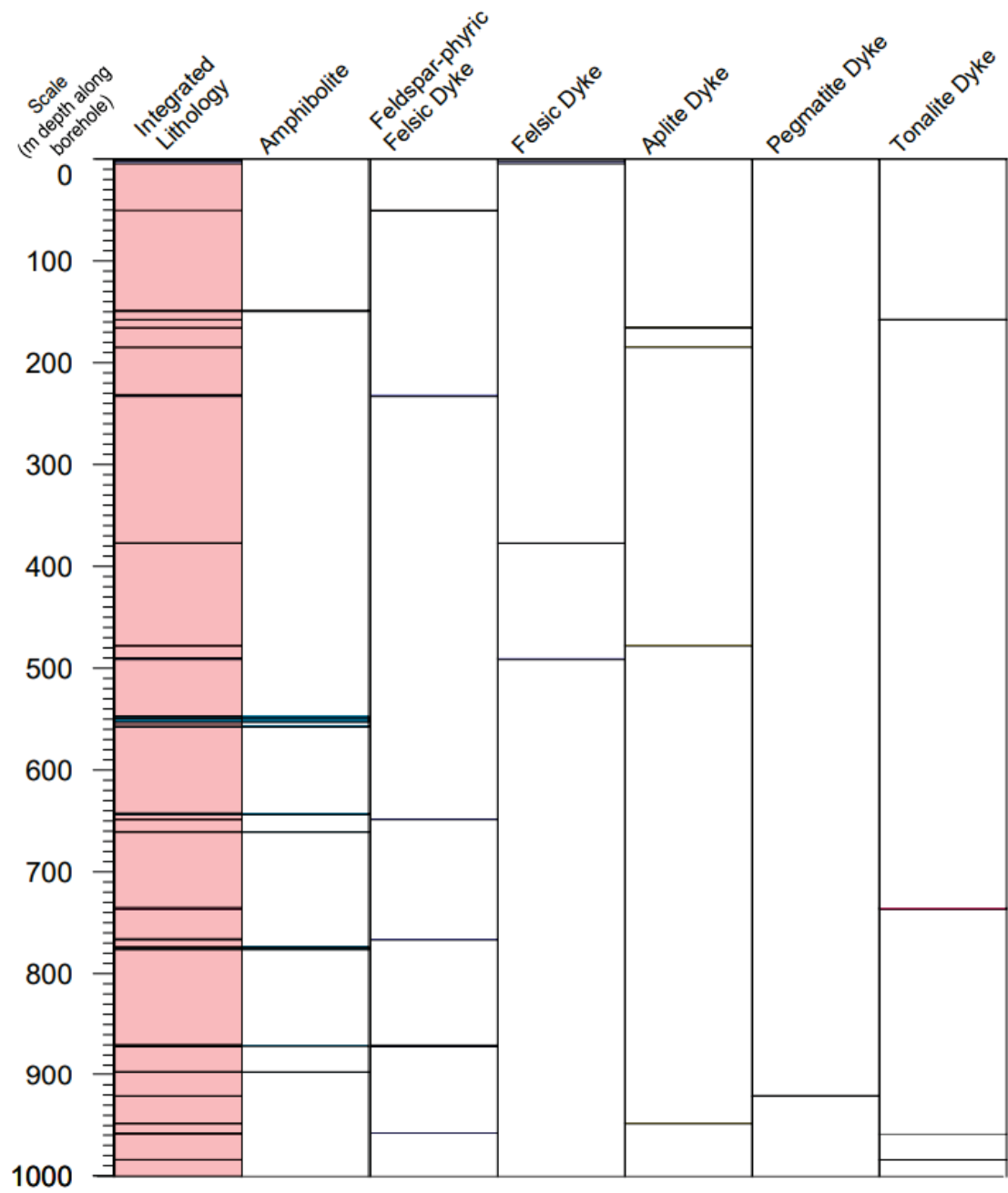


Figure 4 : Summary of Lithology by Rock Type and by Depth along borehole as logged in IG_BH03

Note – Leftmost Column is a Composite of all Other Columns and also shows the distribution of biotite tonalite, shaded in pink.

Table 1: Summary of Rock Types Encountered in IG_BH03

Rock Type	Texture	Fabric	Grain Size (mm)	# Occurrences (# Broken Contacts, # Intact/Partially Intact Contacts)	Total Logged Width (m)	% of Recovered Core
Biotite Tonalite	Equigranular	Massive to weakly foliated	1-5	Throughout recovered core	973.945	97.5
Amphibolite	Granoblastic	Foliated	<1	12 (6, 18)	13.095	1.3
Feldspar-phryic felsic dykes	Inequigranular	Foliated to massive	<1	7 (1, 13)	4.66	1.2
Felsic dykes	Inequigranular to Equigranular	Foliated	<1	3 (2, 4)	4.53	
Tonalite dykes	Equigranular to Inequigranular	Massive to foliated	1-5	4 (0, 8)	2.13	
Aplite dykes	Equigranular	Massive	<1	4 (0, 8)	0.88	
Pegmatite dykes	Inequigranular	Massive	5-50	1 (0, 2)	0.09	

Note: Percentages are relative to the length of total recovered core (999.33 m).

4.1.1 Biotite Tonalite

The predominant rock type encountered in IG_BH03 is a biotite tonalite, comprising 973.945 m (97.5%) of the total recovered core. The biotite tonalite is light to medium white-grey and equigranular with mineral size tending towards the upper range of medium-grained (1-5 mm). Its main mineral phases include quartz, plagioclase, and biotite, with the latter comprising up to 15% of the rock volume by visual inspection (Figure 5a), but most commonly around 10% (Figure 5b).

The confidence in identifying biotite tonalite as the main unit in IG_BH03 is based on the visual lack of K-feldspar, and the incorporation of the results from gamma ray spectrometry spot analysis undertaken once per run of recovered core. The typical potassium (K) values ranged between 0.8 and 0.9%, indicative of a granitoid rock in

the tonalite field. Uranium (U) and thorium (Th) content typically ranged from 0.9 to 1.2 ppm (U) and from 5.1 to 5.5 ppm (Th).

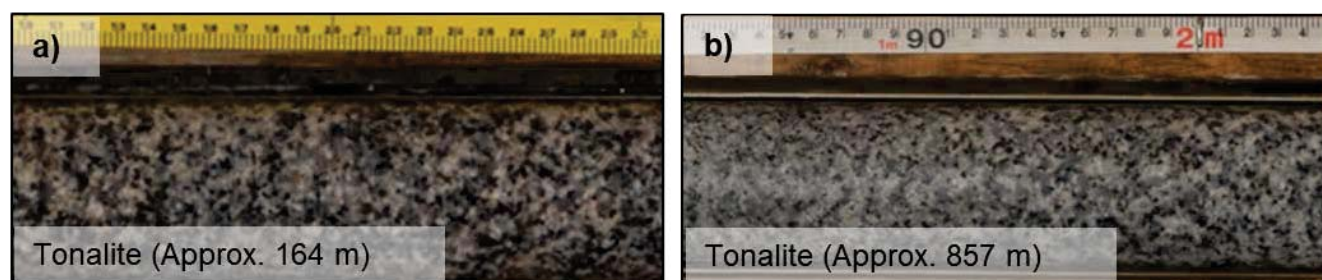


Figure 5 : Biotite tonalite observed in IG_BH03 (a) 164 m, and (b) 857 m.

4.1.2 Additional Rock Types Encountered in IG_BH03

In IG_BH03, the remaining rock types encountered represent a combined total of 2% of the total in the recovered core (Table 1). Examples of each rock type are shown in Figure 6, and their distribution along the length of the borehole is shown in Figure 4. All the additional rock types, along with their main characteristics, are described below.

- **Amphibolite:** Twelve occurrences of amphibolite were logged in IG_BH03, accounting for 1.3% (13.095 m) of the total recovered core. The amphibolite occurrences range in width from 0.13 m to 3.88 m. One amphibolite interval was identified at approximately 149 m depth, while the remainder of the occurrences were observed between 540 m and 900 m depth (Figure 4). The amphibolite in IG_BH03 is dark grey-green, equigranular granoblastic and usually fine-grained (<1 mm) (Figure 6a). The main mineral phases are plagioclase, hornblende, and biotite, with varying amounts chlorite. Veining in the amphibolite is predominantly calcite. The amphibolite consistently exhibits a well-defined foliation and sharp contacts with the adjacent biotite tonalite. Ductile shear zones were observed localized along the contacts of logged amphibolite occurrences. Six amphibolite-tonalite contacts are broken (25%). Contact orientations are generally observed to align with the internal foliation fabric. A dm- to m-scale chloritic, potassic, or silicification alteration halo in the surrounding tonalite envelops the amphibolite in all occurrences.
- **Felsic dykes:** A suite of fine-grained felsic dykes were logged in three occurrences between 0 – 500 m depth (Figure 4). These dykes range in width from 0.25 m to 2.61 m and have a combined total logged length of 4.53 m, representing less than 0.5% of the recovered core. These dykes are characteristically dark grey-black with a very fine-grained matrix composed of quartz, plagioclase and biotite (Figure 6b). All three occurrences of felsic dykes are logged as foliated. The felsic dykes exhibit sharp contacts with the adjacent biotite tonalite. Fine-grained felsic dyke-tonalite contacts were identified as broken in two occurrences (33%). Contact orientations are generally observed to align with the internal foliation. Two of the dyke contacts are oriented perpendicular to the core axis and one is at a low angle (35°) to the core axis. The internal foliation is predominantly parallel to the dyke contacts.
- **Feldspar-phyric felsic dykes:** A suite of seven feldspar-phyric felsic dykes (Figure 4) exhibited distinct, medium-grained feldspar phenocrysts, within a matrix that is otherwise compositionally and texturally similar to felsic dykes (Figure 6c). These dykes range in width from 0.15 m to 1.84 m and have a combined total logged length of 4.66 m, representing less than 0.5% of the recovered core. The feldspar-phyric felsic dykes exhibit sharp contacts with the adjacent biotite tonalite. One contact (7%) was identified as broken. Ductile shear zones were observed localized along the contacts of logged feldspar-phyric felsic dykes. The texture

of the felsic dykes varies between massive and strongly foliated, a well-defined foliation is present in five occurrences (71%). Contact orientations are generally observed to align with the internal foliation fabric. Both the dyke contacts and internal foliation are predominantly oriented oblique (ranging from 40° to 80°) to the core axis.

- **Aplite dykes:** Four aplite dykes (Figure 4), ranging in width between 0.07 m and 0.36 m, represent a combined total length of 0.88 m (<0.1%) of the recovered core. The aplite dykes are light white-grey, equigranular and fine-grained (<1 mm) (Figure 6d). They exhibit an average grain size that is larger, and lighter in colour, than the fine-grained felsic dykes described above. The aplite dykes are felsic in composition with main mineral phases of plagioclase, quartz and lesser biotite, muscovite, and K-feldspar. Their contacts with the adjacent biotite tonalite are consistently sharp and intact, and oriented oblique (ranging from 55° to 77°) to the core axis. All aplite dyke contacts were logged as intact adjacent to the surrounding biotite tonalite with no contacts identified as broken (0%). Aplite also occurs in widths < 5 cm; these occurrences are logged as structural data, specifically as veins with granitic infill.
- **Pegmatite dykes:** A single pegmatite dyke of 0.09 m width was observed in the recovered core. The pegmatite dyke was logged at 920 m depth (Figure 4). This dyke is light grey-pink, massive and inequigranular with distinct, very coarse-grained (10-50 mm), square-edged, K-feldspar crystals within a fine-grained (<1 mm) matrix of quartz and plagioclase (Figure 6e). The pegmatite dyke exhibits sharp and intact contacts with the adjacent biotite tonalite. The contacts are oriented oblique, at 42° and 62°, to the core axis. Pegmatite also occurs in widths < 5 cm; these occurrences are logged as veins with granitic infill.
- **Tonalite dykes:** Four tonalite dykes, with widths ranging between 0.10 and 1.51 m were observed (Figure 4). These dykes are light grey-off white, massive to foliated, equigranular and fine- (<1 mm) to medium-grained (5-10 mm), with main mineral phases of quartz, plagioclase, and biotite (Figure 6f). These tonalite dykes exhibit sharp and consistently intact contacts (0% broken contacts) with the adjacent biotite tonalite that are oriented at moderate angles (ranging from 25° to 75°) relative to the core axis. Tonalite also occurs in widths < 5 cm; these occurrences are logged as veins with granitic infill.

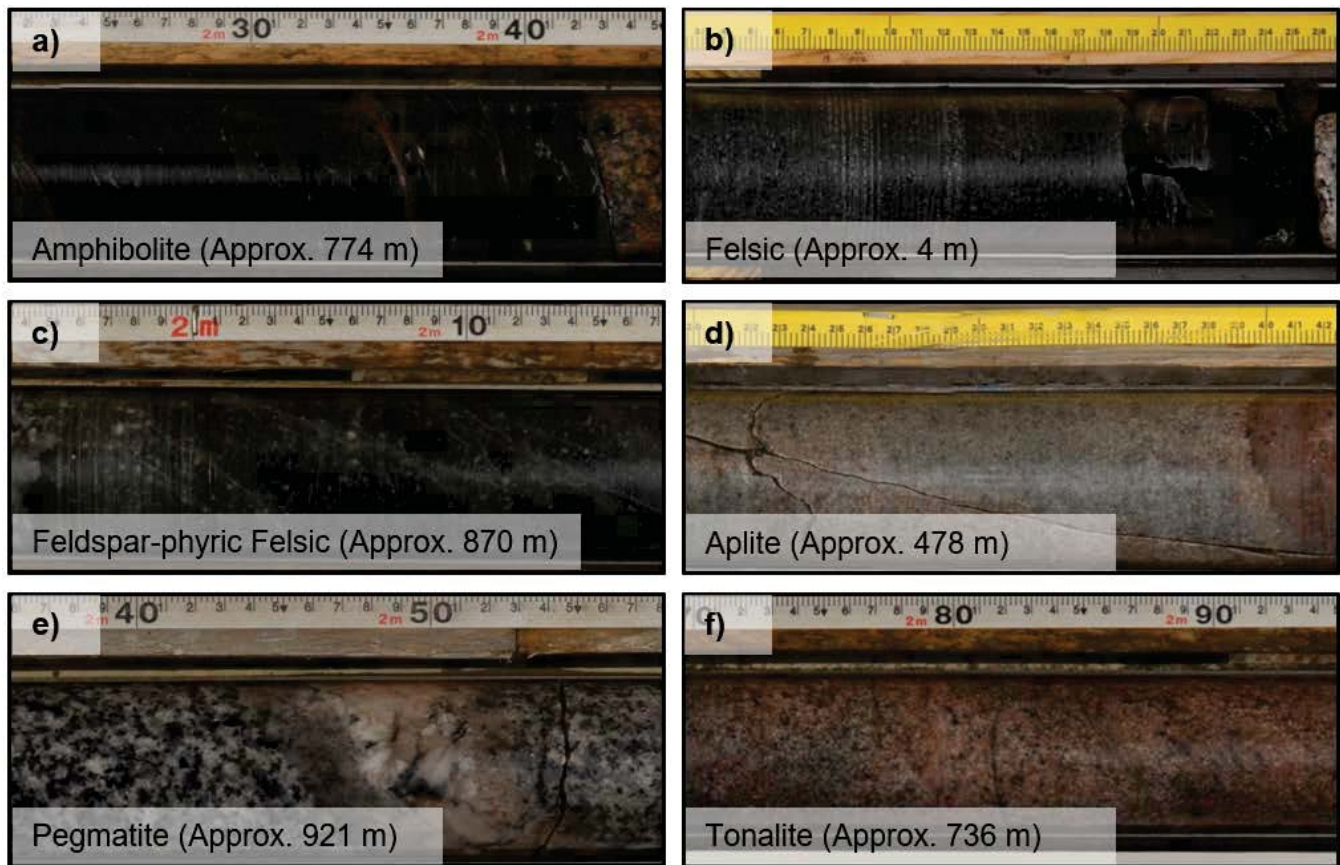


Figure 6 : Examples of the additional rock types observed in IG_BH03: a) Amphibolite (774 m), b) Felsic dyke (4 m), c) Feldspar-phyric Felsic dyke (870 m), d) Aplite dyke (478 m), e) Pegmatite dyke (921 m), f) Tonalite dyke (736 m)

4.2 Weathering and Alteration

Weathering and alteration of the rock mass were logged, where present, along the entire length of recovered core using the ISRM (1981) alteration index and weathering classification (Appendix A). Regarding weathering specifically, a single 6.19 m wide zone of rock, at approximately 4.5 m depth in the borehole, was described as slightly weathered (Figure 7). Throughout the rest of the recovered core the rock mass is uniformly described as fresh. The remainder of this section will focus on the alteration features that were observed in the recovered core.



Figure 7 : Portion of 6.19 m wide zone of slightly weathered horizon at approximately 4.5 m depth along borehole observed in IG_BH03

Slightly less than half of the recovered core (41%; 490.71 m) exhibited no visual indication of alteration. Approximately 59% (591.25 m) of the recovered core was identified as slightly to highly altered, with the majority (44.67%, 446.36 m) logged as slightly altered, 133.80 m (13.39%) logged as moderately altered, and the remainder (1.11%, 11.09 m) logged as highly altered. Seven alteration types were logged based on the alteration mineral assemblages. Potassic alteration, hematization, and silicification were the dominant alteration types. Lesser occurrences of chloritization, bleaching, sericitization and argillization were also observed. The main characteristics of each alteration type are described below, and typical example photographs are presented in Figure 8. The distribution of each alteration type in IG_BH03 is shown in Figure 9.

- **Potassic:** Potassic alteration, identified in 52 occurrences, is the most prevalent alteration type encountered in the recovered core. Approximately 45% (446.49m) of the recovered core by length is logged as showing potassic alteration. The rock mass with potassic alteration was primarily described as slightly altered (37%, 369.51 m), with 7% moderately altered (71.54 m), and <1% highly altered (5.44 m). Individual occurrences of potassic alteration range in widths from hairline to 82.6 m. Potassic alteration was only observed below 150 m, with an increase in prevalence between 450 m and 680 m depth, and below 850 m depth. The pink-coloured alteration of potassic alteration was used as the main differentiating feature from hematization (Figure 8b). Locally, epidote was observed in conjunction with potassic alteration.
- **Hematization:** Hematization was observed in three occurrences. Approximately 10% (94.85 m) of the core was logged with some degree of hematite alteration, with 6% described as slightly altered and 4% described as moderately altered. The distribution of hematization ranged from hairline alteration zones to broader intervals of the core. The three occurrences are 0.42 m, 1.3 m, and 93.13 m in width. It is characterized by red, brown, or rusty staining of the rock and/or coating around mineral grains that is interpreted as hematite (Figure 8a). Hematization occurs predominantly in the upper 100 m of the borehole.
- **Silicification:** Silicification was identified in 83 occurrences representing approximately 6% (63.42 m) of the recovered core. Silicification was primarily described as slightly altered (4%, 38.52 m), with 2% as moderately altered (19.25 m), and <1% as highly altered (5.65 m). This alteration is characterized by a grey discoloration of the rock mass and associated reduction in the clarity of the grain boundaries of the biotite tonalite (Figure 8c). Silicification occurs along the entire length of the borehole, with concentrations around 400 m depth and below 650 m depth. Individual occurrences range in width from 0.01 to 9.06 m, with an average width of 0.88 m.
- **Chloritization:** Chloritization was identified in eleven occurrences, representing 1% (11.54 m) of the recovered core. Individual occurrences of chloritization range in width from hairline zones to 4.02 m. The appearance of green chlorite was the main diagnostic characteristic of this alteration type. The rock mass was described as slightly altered (<1%, 6.52 m), and moderately altered (<1%, 5.02 m) (Figure 8d). All logged occurrences of chloritization are identified within, or along the contacts of, amphibolite, feldspar-phyric felsic dykes, and tonalite dykes. Chloritization occurs throughout the borehole, with a slightly higher prevalence between 550 and 900 m.
- **Bleaching:** Bleaching was observed to slightly alter the biotite tonalite in fifteen occurrences, representing <1% (6.08 m) of the recovered core. Individual occurrences of bleaching range in width from hairline zones to 1.42 m. The rock mass altered by bleaching was primarily described as slightly altered (<1%, 4.85 m),

with <1% moderately altered (1.23 m). Bleaching was identified by a whitening of the altered rock mass (Figure 8e). Bleaching was primarily observed both above 150 m depth and below 850 m depth.

- **Sericitization:** Sericitization was observed to slightly alter the biotite tonalite in three occurrences, ranging in width from 0.06 to 0.48 m and representing a combined total length of 0.97 m of the recovered core. Sericitization imparts a white to grey colour to the altered rock (Figure 8f). It was observed at depths of 200 m and 770 m in the borehole.
- **Argillization:** Argillization was observed in a single 0.01 m occurrence in the recovered core. Argillization imparts a white colour to the altered rock and softens the rock (Figure 8g). It was observed at a depth of 774 m in the borehole.

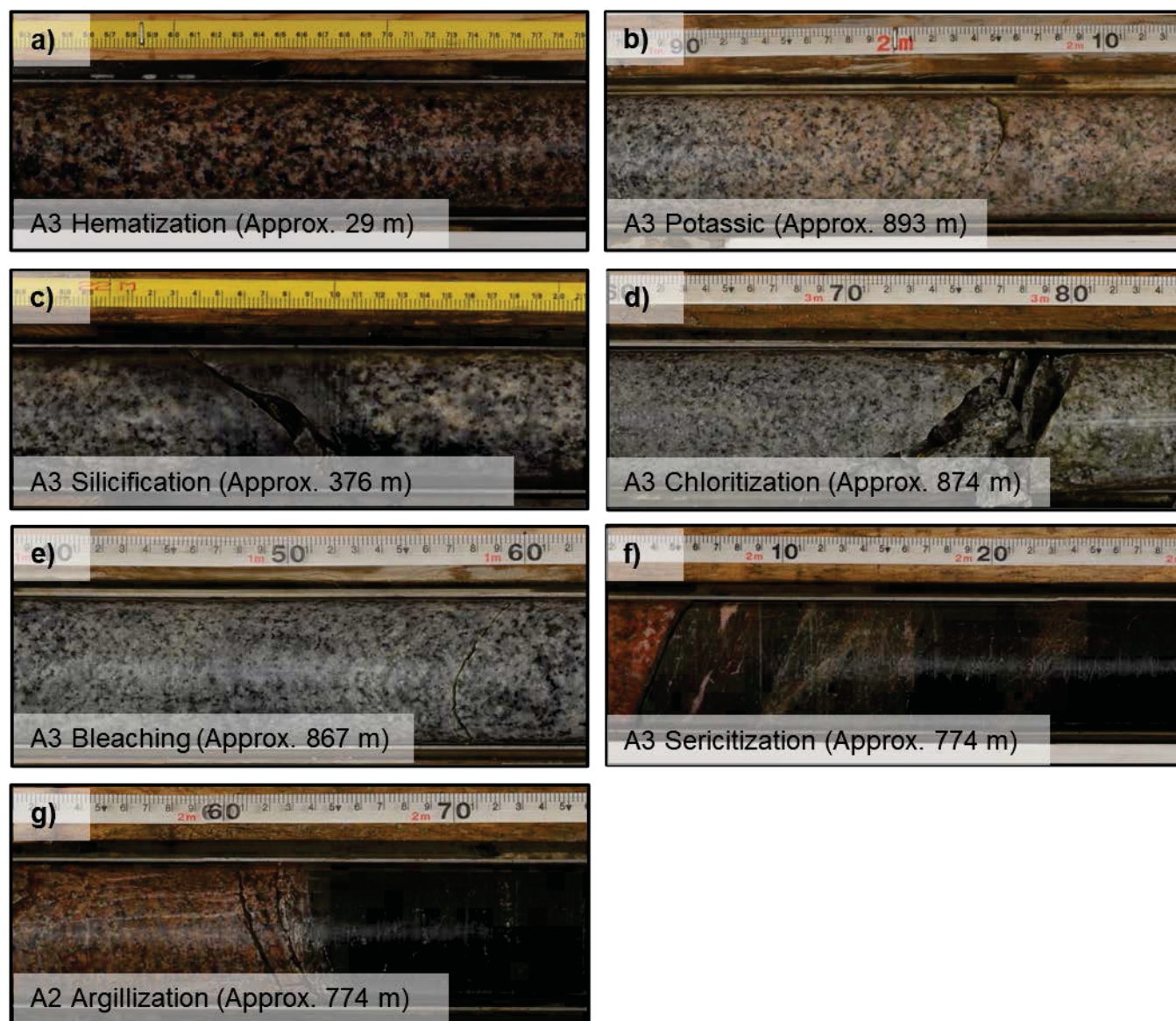


Figure 8 : Examples of the Different Types of Alteration observed in IG_BH03: a) Hematization (A3 – 29 m), b) Potassic Alteration (A3 – 893 m), c) Silicification (A3 – 376 m), d) Chloritization (A3 – 874 m), e) Bleaching (A3 – 867 m), f) Sericitization (A3 – 774 m), g) Argillization (A2 – 774 m)

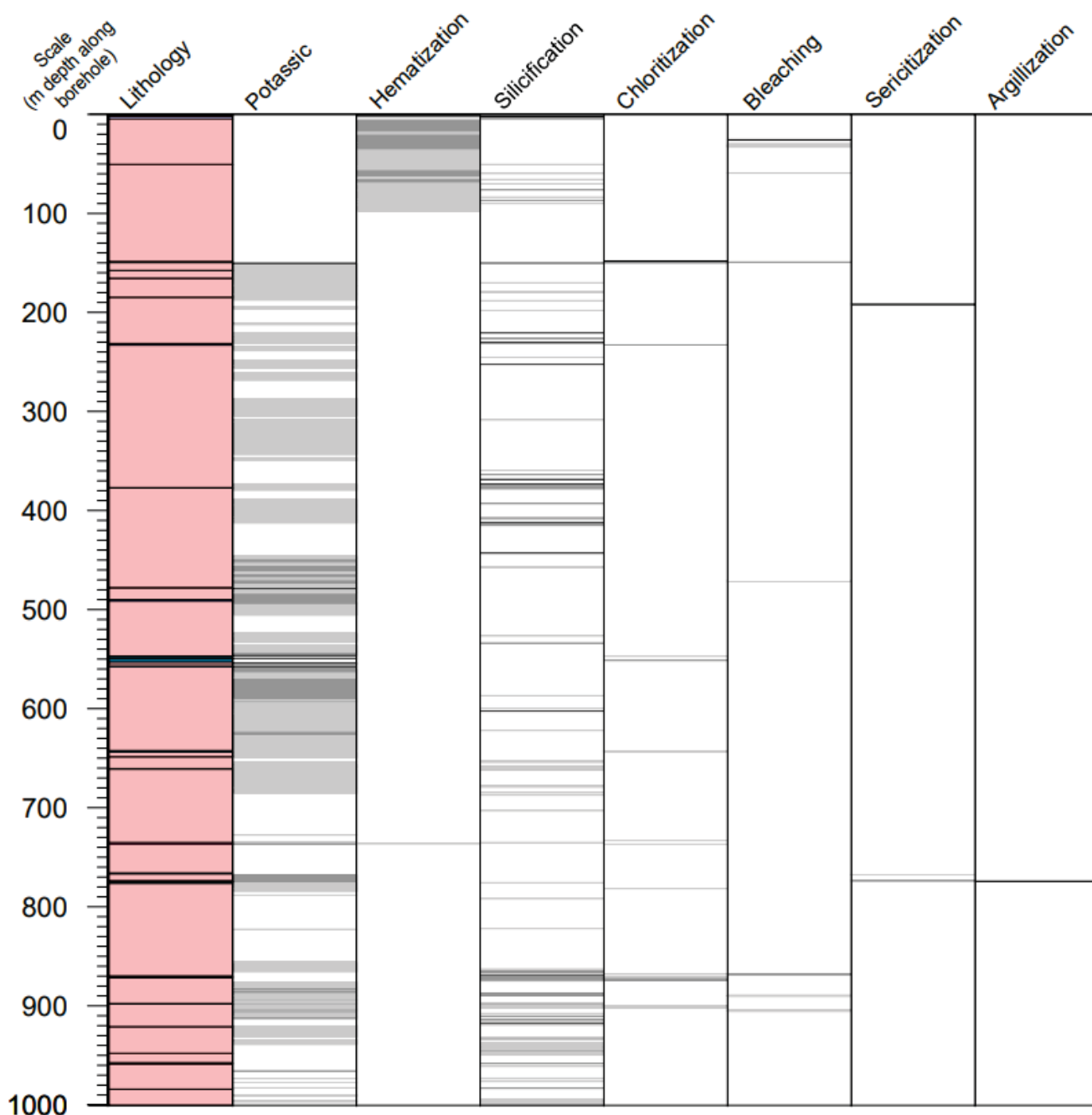


Figure 9 : Summary of Alteration by Type and by Depth along borehole as logged in IG_BH03

Note – Grayscale indicates alteration intensity (Slightly altered – light gray, moderately altered – medium gray, highly altered – dark gray)

4.3 Geotechnical Logging

A suite of geotechnical parameters was logged in all core runs of the recovered core including: total core recovery (TCR), solid core recovery (SCR) and rock quality designation (RQD). In addition, the structure count per meter was determined for each core run, based on the number of logged broken and intact structures (described further in Section 4.4). Field hammer tests also provided initial strength index ratings, taken opportunistically along the

length of the borehole (as further discussed in Section 4.3.3). The summary of results from these geotechnical assessments for IG_BH03 is described below and presented in Figure 10.

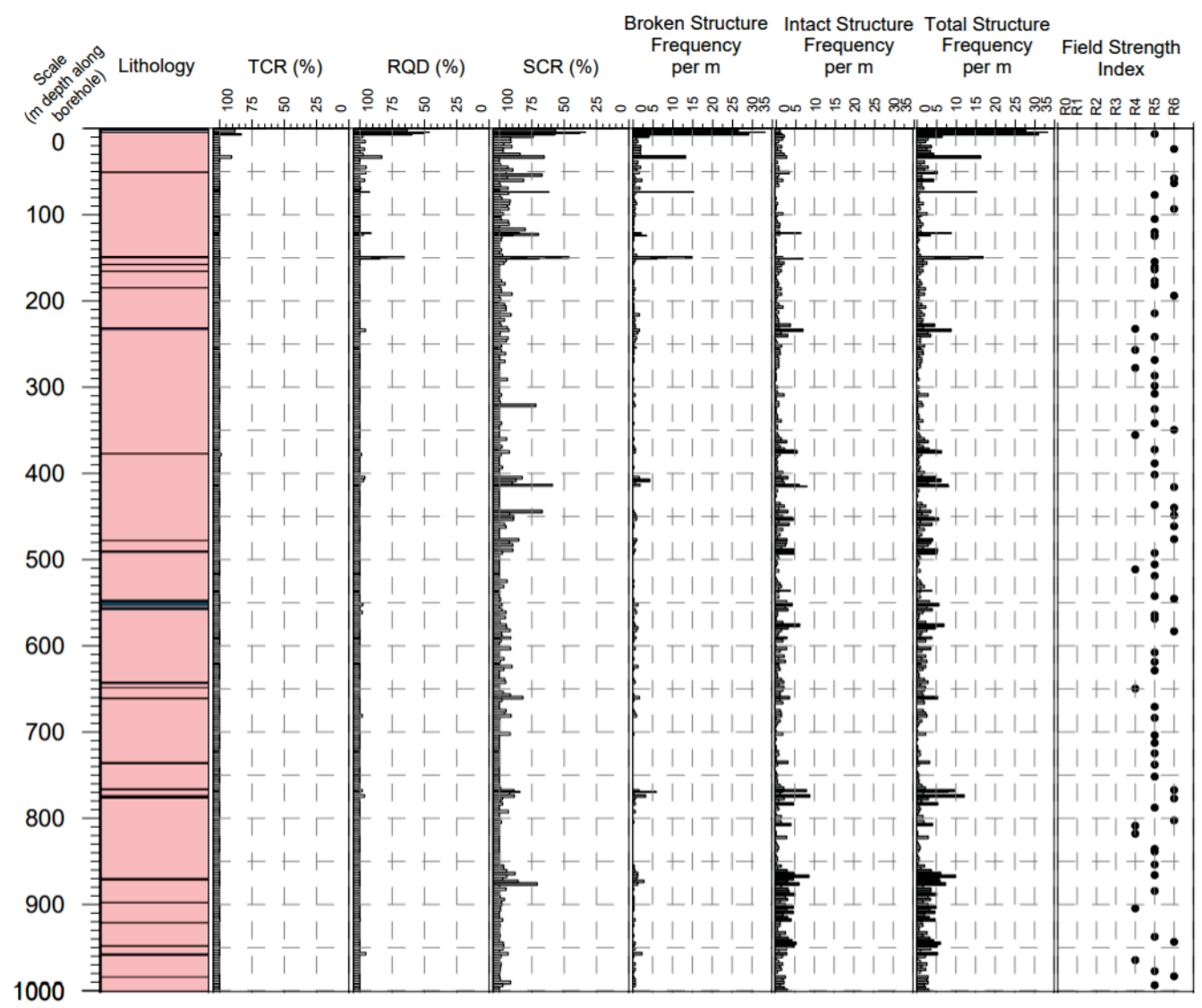


Figure 10 : Summary of Geotechnical Parameters by Depth along borehole as logged in IG_BH03

4.3.1 TCR, SCR, and RQD

TCR, which measures the total amount of core recovered divided by the measured length of rock drilled, was uniformly very high along the entire length of the borehole. More than 98% of the core runs logged had complete core recovery (TCR=100%) and the lowest recorded TCR was 83% at approximately 7 m depth (Figure 10).

SCR is a measure of the cumulative length of all full axial diameter core pieces in one core run divided by the total run length. Approximately 90% of the core runs recorded a measured SCR of 90% or higher. Nearly half (48%) of the intervals below 90% SCR, generally ranging between 33% and 90%, are above 160 m drill hole depth. The lowest recorded SCR, in a run at approximately 4 m depth, was 33% (Figure 10).

RQD records the total cumulative length of pieces of recovered core greater than 10 cm in length measured from midpoint to midpoint between adjacent broken fractures and along the centre line axis of the core, divided by the length of the core run. The results for IG_BH03 indicate that overall, the rock quality is excellent, averaging 99% RQD, and ranging between 46% and 100% (Figure 10). All RQD values below 65% occur in the weathered zone in the upper 8 m of the borehole. An additional occurrence of 66% RQD occurs at approximately 149 m depth, coinciding with the presence of amphibolite. Elsewhere, the RQD values are consistently above 80%.

4.3.2 Structure Frequency

Individual brittle structures of any type (i.e., joints, veins and faults) were logged at their mid-point depth in all core runs and characterized as 'intact', 'partially intact' or 'broken' based on the degree of continuity across the structure. These observations provided a count of broken and intact (including partially intact) structures for each core run, which was then expressed as counts of structures per metre of core (Figure 10). Structure types will be further discussed in Section 4.4.

Typically, throughout the core, broken structures, including broken core zones (BCZ), were recorded as one to none per meter, especially below a borehole depth of 35 m. A broken structure frequency greater than 2 per m was observed in 4% of the core by length, while 11.58 m of core (approximately 1% by length) has a broken structure frequency greater than 10 per m. The highest logged broken structure count was 33 per m, encountered near surface at 4 m depth.

The broken structure frequency is generally highest in the upper 35 m of the borehole; however, zones of greater broken structure frequency are interspersed within zones of lesser broken fracture frequency along the length of the borehole. In general, core runs containing lithological contacts to amphibolite, felsic dykes, and feldspar-phyric felsic dykes have an increased broken structure count. Aplite, pegmatite, and tonalite dykes, however, are characterized by intact contacts and are not associated with increased fracture frequency.

Of the intact structures, 14% of the core by length has an intact structure frequency of greater than 3 per m, with the highest logged intact structure frequency of 8.9 per m. Typically, intact structures were recorded approximately once per metre, however, alternating zones of greater and lesser frequency persist along the length of the borehole, closely following the broken structure frequency trends.

4.3.3 Strength

Discrete field strength index measurements were taken opportunistically while breaking the core with a hammer for sampling and for fitting core into the core boxes. A total of 75 field strength index measurements were made during the logging of IG_BH03 (Figure 10). All but one of these tests were carried out on the tonalite.

Overall, the tonalite was classified as strong (R4) in nine (12%) occurrences, very strong (R5) in 47 (64%) occurrences and extremely strong (R6) in 18 (24%) occurrences. One strength index measurement was collected within a feldspar-phyric felsic dyke, at approximately 232 m depth, resulting in R4 (strong rock).

4.4 Structural Data

A total of 2619 features were logged during the collection of structural data for IG_BH03. A breakdown of logged structures, distinguished by their unique structure type, is summarized in Table 2 below. The list below includes the information recorded, where applicable, for each identified structure. The complete guidance for recording this structural information is described in detail in Appendix A and a comprehensive reproduction of the collected dataset is included in Appendix C.

■ Depth;

- Type (of structure);
- Sub-Type;
- Broken/Intact/Partially Intact;
- Intensity;
- Infill Character;
- Infill Type;
- Infill Thickness;
- Weathering;
- Shape;
- Roughness;
- Alpha Angle, Beta Angle, Gamma Angle, Delta Angle;
- Aperture;
- Lineation Subtype and Minerology;
- Defining Minerals; and
- Width.

Table 2 : Summary of Structure Types, by number of occurrences, observed in IG_BH03

Structure Type	# Occurrences Logged in IG_BH03
Joint (JN)	1302
Mechanical Break (MB)	653
Vein (VN)	400
Fault (FLT)	93
Ductile Shear Zone (SHRD)	51
Brittle-Ductile Shear Zone (SHR)	45
Foliation (FO)	25
Igneous Primary Structure (IPS)	24
Broken Core Zone (BCZ)	23
Lost Core Zone (LCZ)	3
Total	2619

The recovered core was not oriented during the coring process. Therefore, the orientation measurements were recorded as alpha angle between 0 and 90 degrees relative to the core axis for dip and beta angle between 0 and 359 degrees relative to an arbitrary reference line marked along the long axis of each core run for dip direction. For lineations, the gamma angle was recorded for linear plunge and the delta angle was recorded for linear trend.

A subsequent step in the analysis of structures involves the integration of the core logged structures with those structures interpreted from the analysis of optical and acoustic televiewer datasets collected as part of the geophysical logging activity (WP05) (Golder, 2020b). This step of integration allows, in many instances, for the correction to true dip and dip direction, or trend and plunge, of logged planar and linear structures. The structure summary presented here is based on the unoriented dataset, so no orientation information is included. The results from this integration of structural information between WP03 and WP05 form the integrated structure log for IG_BH03.

Mechanical breaks occur during drilling, for example when core breaks due to stresses from the drilling action, or when the driller or core logger is handling the core. The determination that a structure is mechanical is based on the experienced judgement of the core logger. If the genesis of a specific feature is in doubt, the core logger will adopt a conservative approach and log it as a natural feature. Mechanical breaks identified in the core are characterized by clean, fresh, irregular surface that are usually oriented perpendicular to the core axis. A total of 653 features (or zones) were identified and logged as being mechanically broken (Table 2). If any of the logged mechanical breaks, lost core zones or broken core zones are identified within the televiewer dataset during the step of structure integration they will be reclassified as clean joints or broken core zones, where appropriate, in the integrated structure log for IG_BH03.

The description of the results from the structural core logging portion of the WP03 activity is separated below into sections that focus on: primary igneous structures and ductile structures (Section 4.4.1) and brittle structures (Section 4.4.2).

A compilation of the distribution of broken and lost core zones, and ductile and brittle structures along the length of the borehole is shown in Figure 11. The logging characteristics (described in detail in Appendix A) such as intactness, aperture, weathering, shape, roughness, infill character and infill type, are used to provide a joint condition rating (JCR) for all structures. The details regarding how JCR is assigned to each structure is described in Appendix A. The JCR rating ranges from 0 for structures with low frictional strength up to 30 for intact structures. The JCR rating is plotted on the horizontal axis for all structures on Figure 11.

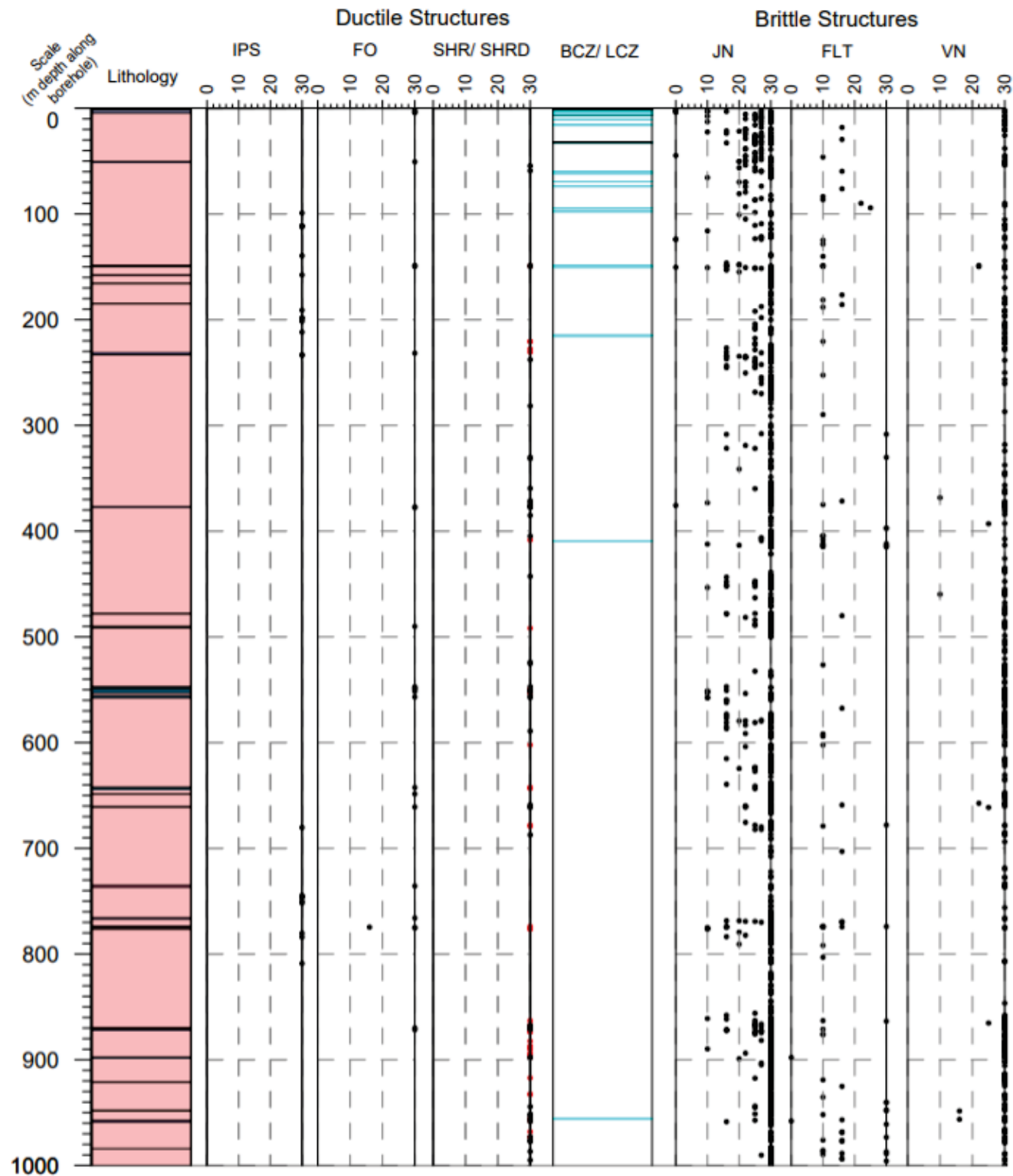


Figure 11 : Summary of the Distribution of Structures by Depth along borehole and Joint Condition Rating (JCR) as logged in IG_BH03

Note – Structure Types: Igneous Primary Structure (IPS, Black). Ductile Structures – Foliation (FO), Shear Zone Brittle-Ductile (SHR, red), and Shear Zone Ductile (SHRD, black). Broken Core Zone (BCZ, blue), Lost Core Zone (LCZ, black). Brittle Structures – Joint (JN), Fault (FLT), and Vein (VN)

4.4.1 Primary Igneous Structures and Ductile Structures

This section describes the core logging observations of primary igneous structures and ductile structures. Primary igneous structures include features interpreted to have originated with the formation or emplacement of the igneous rock. In IG_BH03, these features were occasionally identified. A total of 24 occurrences were logged as primary igneous structures, including 14 occurrences of primary igneous layering and 10 occurrences of igneous flow foliation. Primary igneous structures are characterized by sharp to gradational changes in concentrations of mineral components or grain size (Figure 12a).

Ductile structures identified during core logging include occurrences of foliation, ductile shear zones and brittle-ductile shear zones. Some of the shear zone and foliation occurrences also included an associated mineral lineation. A total of 25 occurrences of foliation (FO) were logged in IG_BH03. Occurrences of foliation are distributed throughout the entire length of the borehole and are mostly associated with the presence of dykes and amphibolite (Figure 11). The foliation is described as weakly developed and characterized by the preferred alignment of biotite in tonalite (Figure 12b) and alignment of hornblende in amphibolite occurrences. Mineral lineation associated with foliation was observed in one instance, where it was defined by hornblende.

A total of 51 ductile shear zones (SHRD) were logged throughout the borehole with occurrences from 54.5 m to 994.92 m. The majority of the occurrences (88%) distributed between 300 m depth and the bottom of the borehole (Figure 11). Individual ductile shear zones range in width from hairline (< 1 mm) to up to 130 cm and were commonly observed as groups of hairline width, quartz-filled, layers within cm-scale zones (Figure 12c). Ductile shear zones were all observed to be intact (JRC = 30). Quartz is the most common mineral phase associated with the brittle-ductile shear zones, logged as primary or secondary defining mineral in 36 occurrences (71%). Few occurrences of calcite (27%), biotite (16%), epidote (12%), muscovite (12%), chlorite (8%), plagioclase (6%), hornblende (2%), alkali-feldspar (2%), and 'Other' (hematite) (2%) were also recognized locally. Three occurrences (6%) of lineations were observed, including 1 occurrence of epidote lineation (33%), 1 occurrence of stretched biotite (33%), and 1 occurrence of slickenlines on a calcite and chlorite shear plane (33%). All three lineations indicate oblique slip of the shear zone. Ductile shear zones were observed within, or localized along the contacts of, logged amphibolite occurrences and feldspar-phyric felsic dykes.

A total of 45 brittle-ductile shear zones (SHR) were logged throughout the borehole with occurrences from 149.16 m to 973.06 m. The majority of the occurrences (89 %) distributed between 396 and 970 m depth in the borehole (Figure 11). They were all observed to be intact (JRC = 30), cm-scale structures (e.g., Figure 12d). Brittle-ductile shear zones were commonly localized within logged amphibolite and felsic dykes, or along their contacts with the surrounding biotite tonalite. Quartz is the most common mineral phase associated with the brittle-ductile shear zones, logged as primary or secondary defining mineral in 38 (8%) occurrences. Fewer occurrences of chlorite (31%), calcite (18%), epidote (18%), hornblende (9%), muscovite (4%), biotite (4%), pyrite (2%), alkali-feldspar (2%) and plagioclase (2%) also recognized locally within brittle-ductile shear zones. Three occurrences (7%) of lineations were observed, defined by 1 occurrence of mineral chlorite (33%), 1 occurrence of stretched epidote (33%), and 1 occurrence of hornblende slickenlines (33%). Two lineations were recorded with their orientation, and both indicate oblique slip of the shear zone.

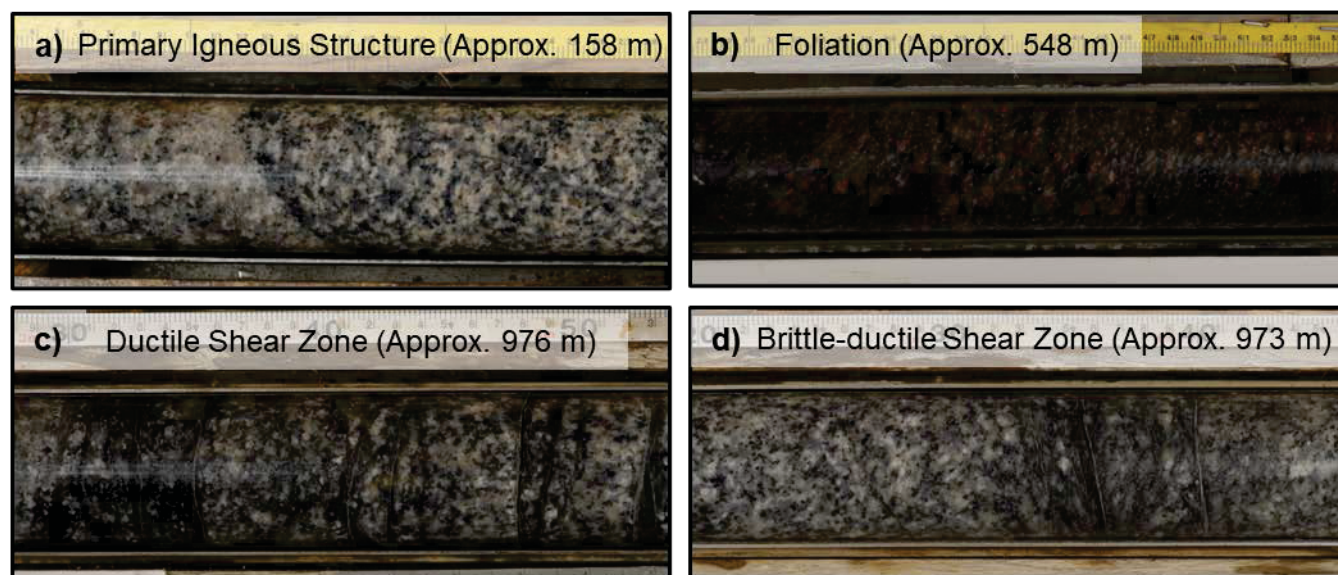


Figure 12: Ductile Structures and Primary Igneous Structures, observed in IG_BH03: a) Primary Igneous Structure (158 m), b) Foliation (548 m), c) Ductile Shear Zone (976 m), d) Brittle-Ductile Shear Zone (973 m)

4.4.2 Brittle Structures

Brittle structures identified during logging of IG_BH03 include features described as broken core zones and lost core zones, as well as all fracture types including joints (JN), faults (FLT) and veins (VN). Figure 11 shows the summary of the distribution of all logged brittle structures along the length of the borehole, along with their unique JRC rating on the horizontal axis for each structure type. For further description of the logging characteristics, see Appendix A.

Broken core zones are intervals of gravel- to cobble sized core, generally angular, that do not contribute to solid core recovery (SCR, full circumferential segments). A total of 23 broken core zones were logged in the recovered core and their occurrences span the entire length of the borehole (Figure 11). Broken core zones range between 1 and 48 cm in width. Typical broken core zones are not associated with infill minerals and generally are the result of intersecting broken structures. The eight upper broken core zones observed above 7.65 m depth, are spatially associated with minor weathering and moderate alteration (Figure 13a). There is some uncertainty as to whether or not these broken core zones are natural features or mechanically-induced breaks. This uncertainty will be addressed during the step of integration with the televiewer datasets. If any of the broken core zones identified during core logging are not also identified in either of the optical or acoustic televiewer datasets, then they will be classified as mechanical breaks, and thereby excluded from the fracture frequency count.

Lost core zones are intervals characterized by incomplete recovery and may be related to mechanical grinding or to soft natural materials that are washed out in the drilling process. A total of 3 lost core zones were logged in IG_BH03, all occurring in the upper 35 m of the borehole (Figure 11). In all cases, the width of the zone of lost core was estimated by the core logger. In IG_BH03 the lost core zones were estimated to range in width between 25 and 31 cm. There is some uncertainty as to whether or not these intervals of lost core are natural features of the rock mass or mechanically-induced features. As above, this uncertainty will be addressed during the step of integration with the televiewer datasets. If any of the lost core zones identified during core logging are not also identified in either of the optical or acoustic televiewer datasets, then they will be classified as mechanical

features. Inversely, if any of the lost core zones are identified in the televiewer datasets their width will be confirmed or revised based on observed televiewer width.

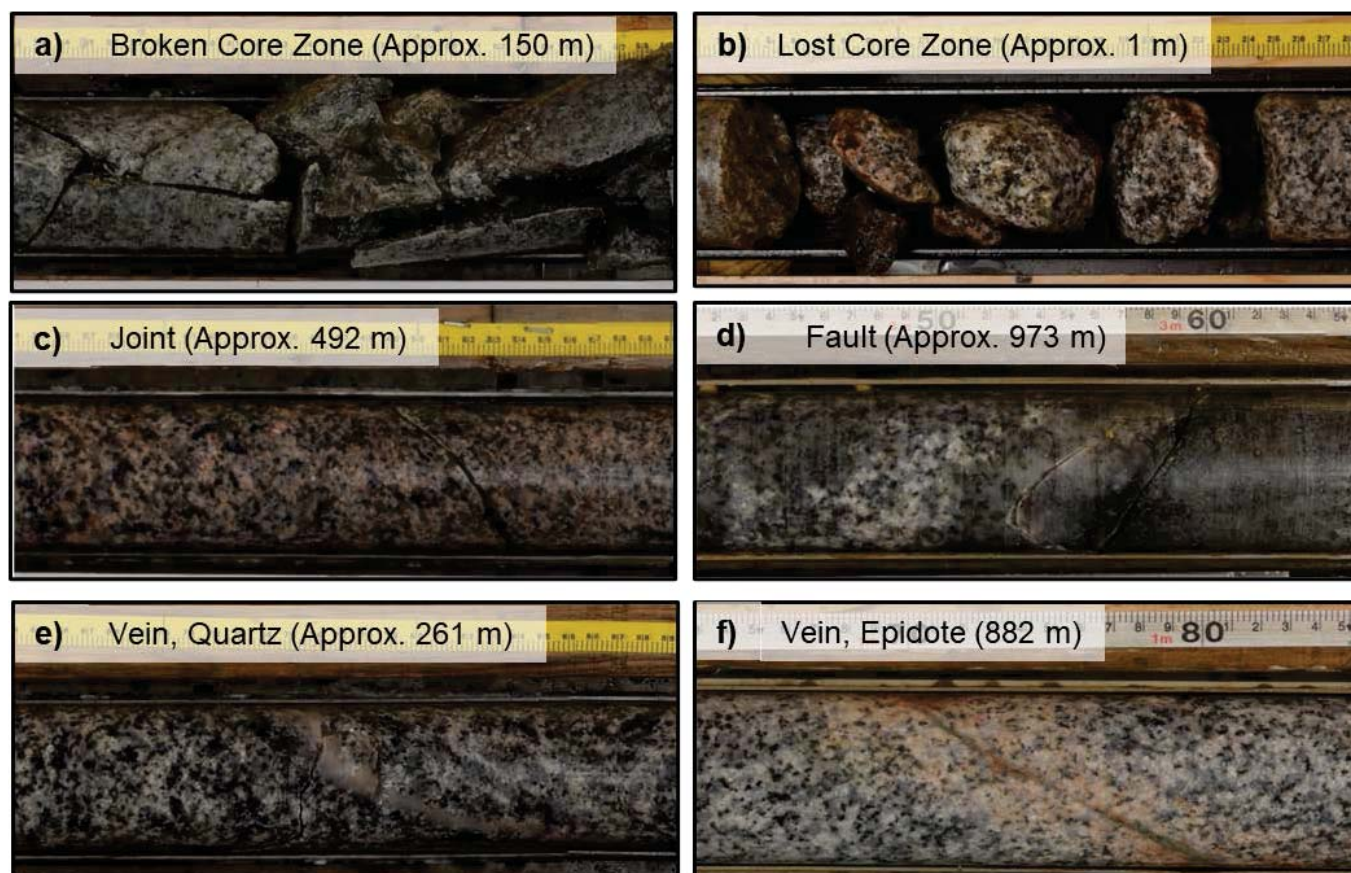


Figure 13 : Examples of Brittle Structure Types observed in IG_BH03: a) Broken Core Zone (150 m), b) Lost Core Zone (1 m), c) Joint (492 m), d) Narrow Fault (973 m), e) Quartz Vein (261 m), f) Epidote Vein (882 m)

A total of 1302 joints were logged in IG_BH03 and their occurrences are distributed along the entire length of the borehole (Figure 11). In 284 occurrences (22%) the joints were observed to be broken, while in the remaining 1018 (78%) joints were intact or partially intact. The latter were assigned JCR values of 30, while the broken joints were assigned JCR values ranging between 0 and 30. The majority of the logged joints (98%) exhibited zero aperture (e.g., Figure 13c). In the remaining occurrences mm- to cm-scale apertures were logged. Of the total set of logged joints, 48 were logged as clean (4%), elsewhere the surface condition was logged as stained, slightly altered, coated, or infilled. The most common mineral phase associated with logged joints was quartz, identified in 701 occurrences (54%), followed by calcite in 145 occurrences (11%), muscovite in 130 occurrences (10%), epidote in 84 occurrences (6%), chlorite in 70 occurrences (5%), iron staining (hematite) in 67 occurrences (5%), biotite in 15 occurrences (1%), and 15 occurrences (1%) of broken rock derived from adjacent wall rock. The remaining infill types observed included 28 occurrences (2%) comprising clay, plagioclase, alkali-feldspar, graphite, soft gouge, or other. The “Other” infill types (9 occurrences) refer to mineral phases which could not be identified by the core logger.

A total of 93 faults were logged in IG_BH03. These fault occurrences are distributed along the entire length of the borehole with occurrences from 18.13 m to 995.80 m, although there is a slight concentration of faults below 910 m depth where twenty-six occurrences (28%) were logged (Figure 11). The main diagnostic criteria used to

identify a fault in the recovered core was the presence of slickenlines on the fault surface. The majority of the logged faults (81%) were broken, allowing the full plane to be observed. For intact faults, the slickensided fault surface was observed when the core broke along the fault plane during handling. Intact and partially intact fault received a JCR rating of 30, with the remainder assigned JCR values ranging between 0 and 25. Eighty-three of the logged faults (89%) were identified as hairline structures with no aperture (e.g., Figure 13d). The remaining ten faults were mm- to cm-scale. Two instances were logged with apertures 20 to 30 mm thick and will be reviewed in detail during the integration process. A mineral phase was observed to infill, coat or stain all fault surfaces (100%) and the adjacent wall rock. The most common mineral phase associated with logged faults was chlorite, identified in 32 occurrences (34%), followed by 23 occurrences of quartz (25%), 12 occurrences of epidote (13%), 8 occurrences of calcite (9%), 7 occurrences of soft gouge derived from the adjacent wall rock (8%), and 3 occurrences of muscovite (3%). The remaining observed infill types included 8 occurrences (<9 %) comprising clay, biotite, iron staining (hematite), other, and stiff gouge derived from the adjacent wall rock. The “Other” infill types (2 occurrences) refer to mineral phases which could not be identified by the core logger. Ninety faults (97%) were observed to be associated with lineations. Where no lineation could be observed, the fault classification was based on the observation of displacement of a vein, and the occurrence of soft fault gouge. The majority (66% of the faults) are associated with lineation orientations indicative of oblique fault slip. 21 slickenlines (23%) were measured with the delta angle within 15 degree of perpendicular to the beta angle and would thereby characterize strike-slip faults. Eight slickenlines (9% of the faults) were identified as dip-slip, where the delta angle is within 15 degrees of the beta angle. The defining minerals are chlorite in 43 instances (48%), quartz in 14 instances (16%), epidote in 11 instances (12%), calcite in 8 instances (9%), and muscovite in 5 instances (6%). The remaining lineation minerals (<9 %) include clay, biotite, iron oxide (hematite), and undefined (“N/A”) minerals which could not be uniquely identified by the core logger.

A total of 400 veins were logged in IG_BH03 and these occurrences were distributed along the entire length of the borehole (Figure 11). The majority of the logged veins (98%) were intact or partially intact. The primary vein mineral is plotted by vein thickness in Figure 14. The distribution shows the prevalence of quartz-filled veins (Figure 13e) with 292 occurrences (73%), followed by 30 occurrences of calcite (8%), 29 occurrences of epidote (7%), 14 occurrences of granite (4%), 12 occurrences of iron oxide (hematite) (3%), 10 occurrences of chlorite (3%), 6 occurrences of biotite (2%), 3 occurrences of muscovite (1%), and 1 occurrence (1%) each of alkali-feldspar, aplite, hornblende, and other. The “Other” vein types refer to mineral phases which could not be identified by the core logger. Epidote-filled veins are typically associated with potassic alteration, as seen in Figure 13f. Most of the veins logged have an infill thickness of 10 mm or less (87%). There were 29 occurrences where the veins were logged with an infill thickness between 10 mm and 20 mm (8%), and 22 occurrences where the veins were logged with an infill thickness greater than 20 mm (5%).

The mineral infill phases of joints, veins and faults which had mineral occurrences (1748 out of a total of 1795 structures), are compiled in Figure 15 to show their distribution along the length of the borehole. The horizontal axis for each column of data also identifies the JCR value of the associated structure. The structures identified as clean or exhibiting no mineral phase, are also plotted. Where a feature was identified as intact or partially intact, there is more uncertainty associated with identification of mineral phase(s), as the observation is limited to the exposed portion of the structure surface. The mineral phases identified as a stain, slight alteration, coat or infill on the surface of logged joints, veins and faults included 1016 occurrences of quartz (57%), 183 occurrences of calcite (10%), 136 occurrences of muscovite (8%), 125 occurrences of epidote (8%), 112 occurrences of chlorite (6%), 81 occurrences of iron oxide (hematite) (5%), 22 occurrences of biotite (1%), 15 occurrences of broken rock derived from the adjacent wall rock (<1%), 14 occurrences of granitic (comprising aplitic, pegmatitic, and tonalite infill) (<1%), 12 occurrences of other (<1%), 9 occurrences of soft gouge (<1%), 9 occurrences of plagioclase (<1

%), and 14 occurrences (<1%) comprising alkali-feldspar, clay, stiff gouge, aplite, or hornblende. The “Other” infill types (12 occurrences) refer to mineral phases which could not be identified by the core logger. Of the combined joints, veins, and faults, 48 occurrences were logged with clean surfaces or where no mineral phase was observed along an intact or partially intact structure surface (3%). In general, clean structures and structures with quartz, calcite, feldspar, muscovite, biotite, and iron oxide (hematite) infill show high JCR values, with an average JCR between 27 and 30. Chlorite mineral infills yield slightly wider ranges of JCR spanning from 10 to 30, with an average of 20. Slightly lower JCR ratings, ranging mostly from 0 to 16, are associated with soft or slick mineral infills (clay, average JCR = 13; broken rock, average JCR = 11; and soft gouge; average JCR = 9) show lower JCR ratings.

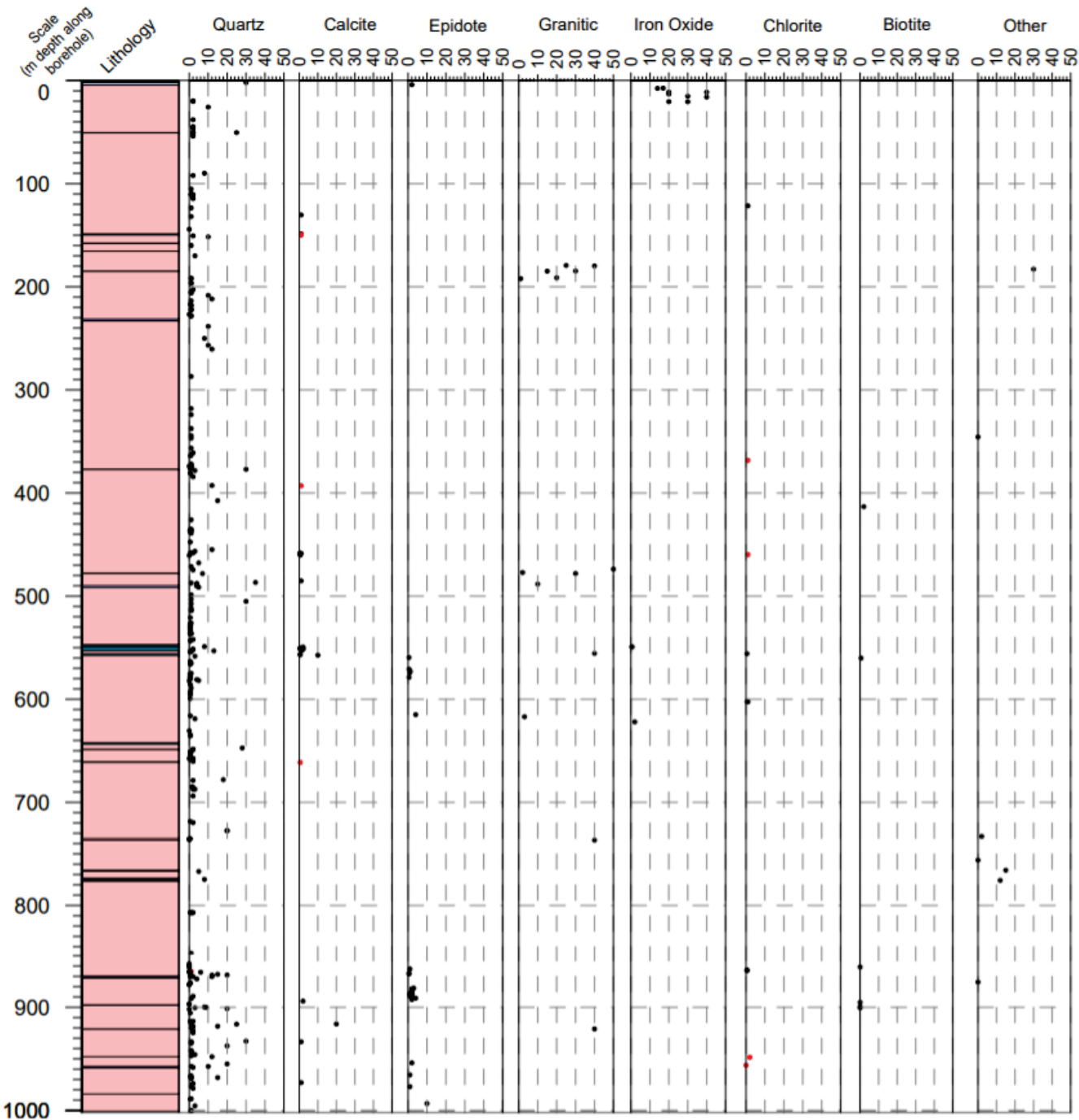


Figure 14 : Summary of Primary Vein Type and Vein Thickness (mm) by Depth along borehole as logged in IG_BH03

Note – Intact and partially intact veins are represented in black and broken veins are represented in red.

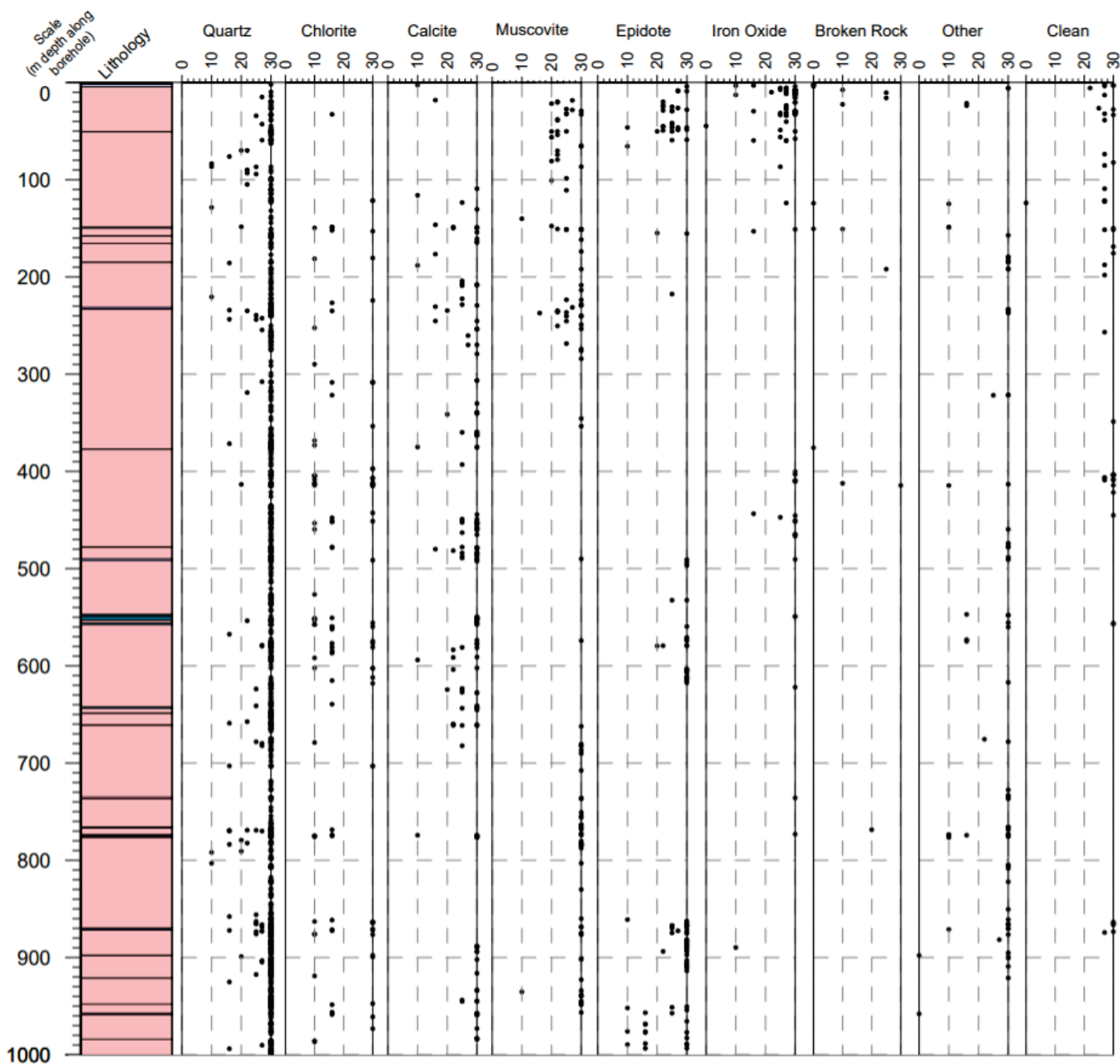


Figure 15 : Summary of Primary Infill Mineral Information for all Joint, Vein and Fault Surfaces by Depth along borehole and by Joint Condition Rating (JCR) as logged in IG_BH03

5.0 LABORATORY SAMPLING

Core samples were collected during the logging activity for laboratory assessment of certain geomechanical, petrophysical and pore water characteristics of the intact core. In addition, some samples were collected and archived, including test-specific archived samples and a 'general archive' sample set, as a precautionary measure in the event additional testing was deemed required. Some samples were also collected for research and development activities that occurred outside of the scope of WP03, specifically microbiology and sorption studies. The sampling activities, including sample-specific preservation, storage and transportation requirements, were designed so that the collected core samples would remain, to the extent possible, representative of in-situ conditions. Time-sensitive samples (porewater extraction, petrophysical, sorption, effective diffusion, noble gas, microbiology or general archive) are sensitive to exposure and contamination, and the workflow (Section 3) is designed to optimize preservation. A suite of reports, documenting the results from the laboratory analyses, will ultimately be produced as part of the documentation for IG_BH03.

Table 3 lists the number of samples collected and shipped to specific laboratories for each test type, as well as the number of archived samples. Figure 16 provides an overview of the depths at which each sample for each test type was collected. The complete list of core samples is provided in Appendix D-5.

All samples were individually photographed (front side, back side and packaged) and packaged according to the sample-specific preservation requirements. One example of a packaged sample is shown in Figure 17a. The complete list of sample photographs is included in Appendix D-3. An example of a cooler packed with preserved samples prepared for shipping is shown in Figure 17b. All unshipped samples were sent to the NWMO's Ignace warehouse for archiving and custody of these samples was transferred to the NWMO. Samples specifically collected as 'archive' for the porewater extraction tests were all shipped to Hydroisotop, rather than transferred custody to the NWMO, to address the potential risk associated with damage to the sample and/or preservation during shipment. Custody was transferred to the NWMO for all samples collected for microbiology and sorption testing, to coordinate all associated laboratory and shipping activities. All Chain of Custody forms for the sample shipments were provided in the WP03 Data Delivery.

Table 3 : Summary of Rock Core samples in IG_BH03

Core Testing Type	Test Type	Number of Samples Collected	Number of Samples Shipped to Laboratory for Core Testing	Laboratory
Geomechanical	Uniaxial Compressive Strength	7	7	CANMET Bells Corners Lab
	Indirect Tensile Strength (Brazilian)	7	7	
	Thermal Properties	9	9	RESPEC Laboratories
Porewater Extraction and Analysis	Porewater Extraction and Analysis	20	20 ¹	Hydroisotop GmbH
	Aqueous Extraction	10	10	
Petrophysical	Effective Diffusion Coefficient	10	N/A ²	N/A ²
	Petrophysical Suite	8	N/A ²	N/A ²
Microbiology		6	N/A ²	N/A ²
Sorption		4 (10 cm) 1 (20 cm)	N/A ²	N/A ²
Specific Surface Area and Cation Exchange Capacity		2	N/A ²	N/A ²
Noble Gas		10	N/A ²	N/A ²
General Archive		20	N/A ²	N/A ²

Note:

1) All 'archive' Porewater Extraction samples (10) were sent to Hydroisotop GmbH.

2) Golder Transferred custody of all Petrophysical, Microbiology, Sorption, Specific Surface Area and Cation Exchange Capacity, Noble Gas, and General Archive samples to the NWMO and shipped all of these samples to NWMO's Ignace Warehouse.

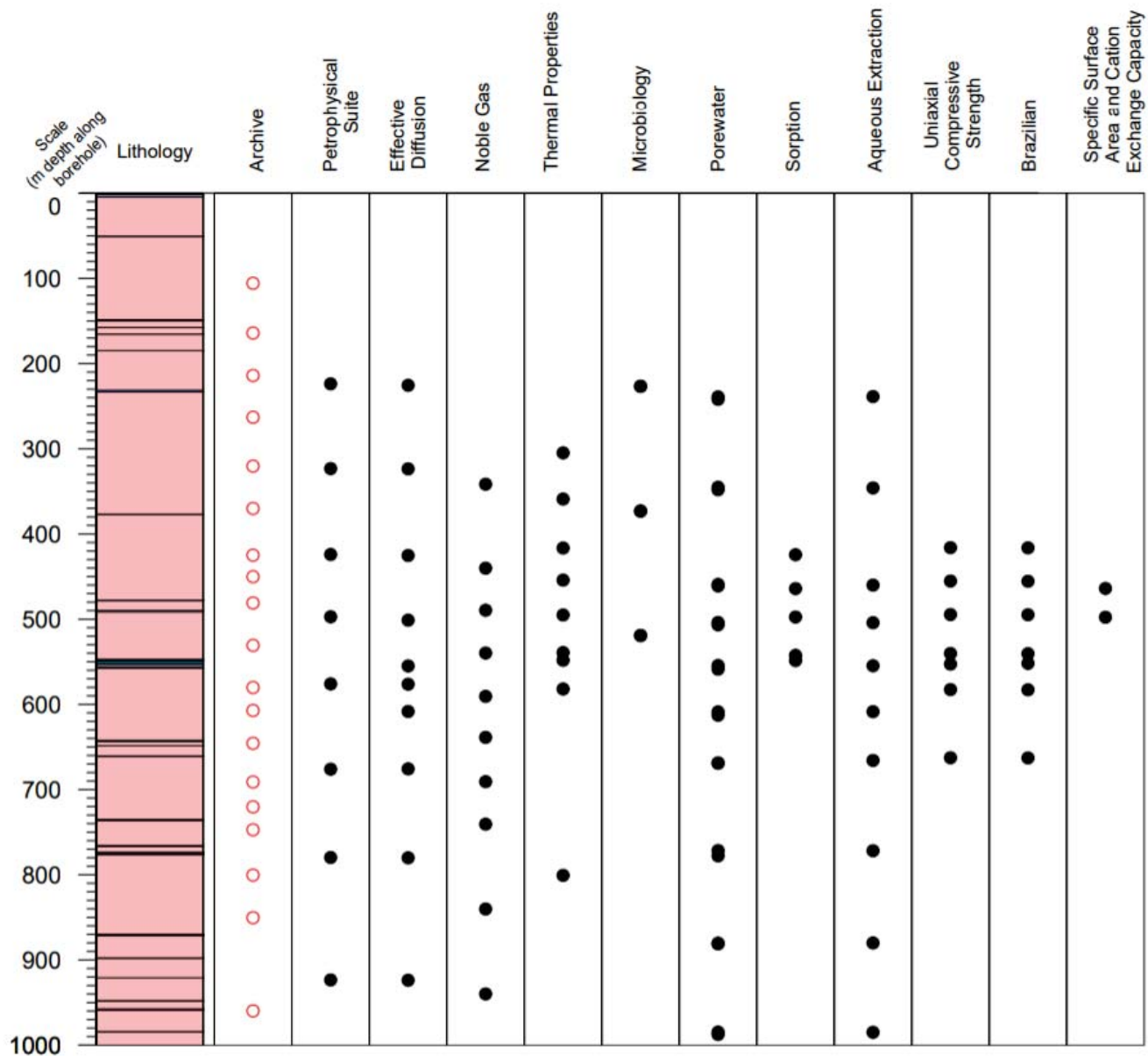


Figure 16 : Summary Showing the Distribution Core Samples Collected in IG_BH03 by Sample Test Type and by Depth along borehole

Note –Samples shipped to labs for initial testing or to the NWMO Warehouse - filled black circle, samples archived at the NWMO Warehouse - unfilled red circle

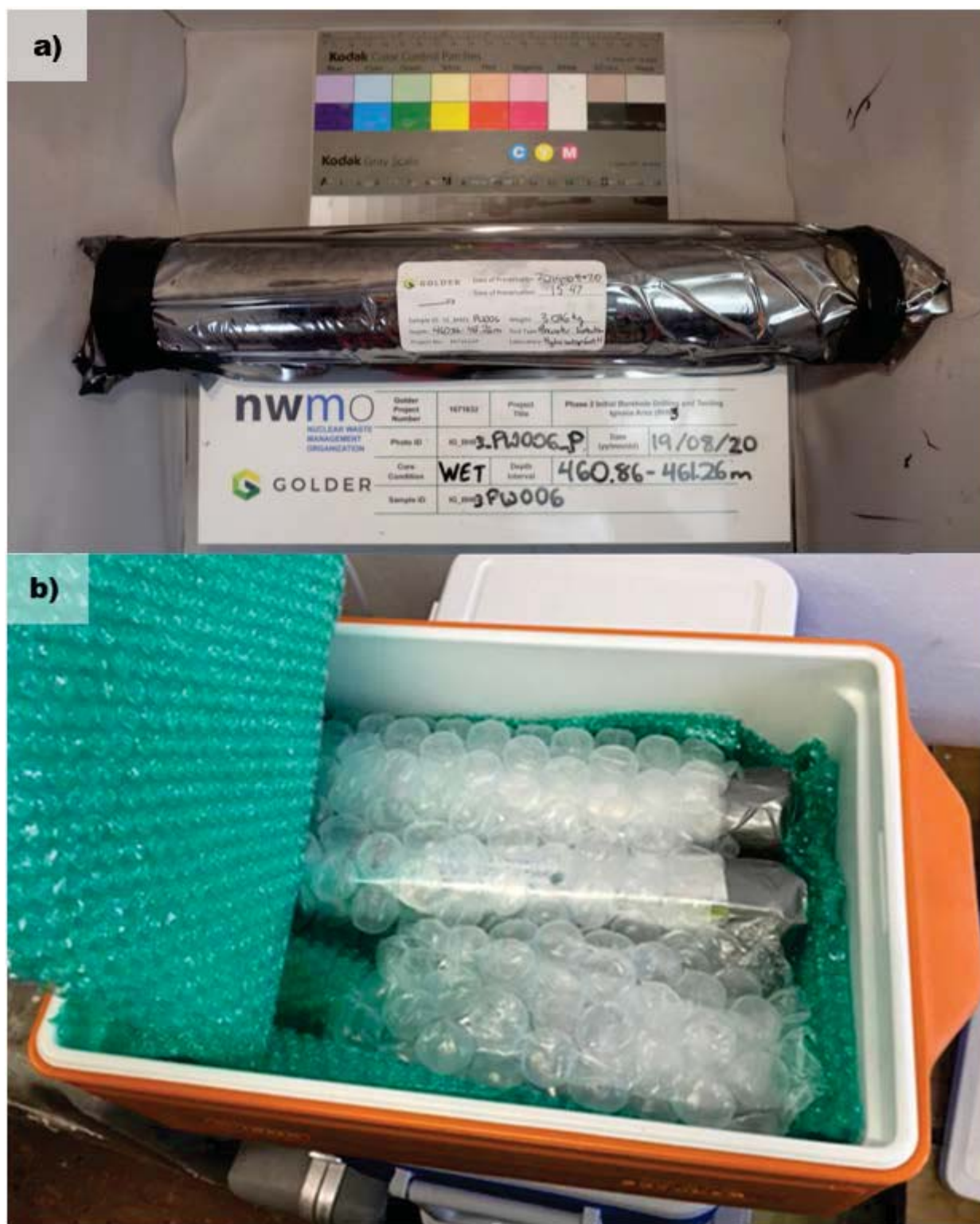


Figure 17 : Examples of Sample Preservation Methods: a) Example photograph of a rock core sample preserved for Porewater (PW) testing (IG_BH03_PW010), b) Example photograph of preserved rock core samples ready for laboratory shipment

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APPENDIX A

**Geological and Geotechnical Core
Logging Procedures Manual for
IG_BH03 and IG_BH02**



Geological and Geotechnical Core Logging Procedures Manual for IG_BH03 and IG_BH02

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Table of Contents

1.0 PURPOSE OF THE MANUAL	4
1.1 Overview of Geology of the Area around IG_BH03 and IG_BH02	4
2.0 ROCK CORE LOGGING PROCEDURES	5
2.1 Marking the Core	6
2.2 Core Run and Reference Line Data Collection	8
2.3 Structure Data Collection	12
2.4 Lithology Data Collection	32
2.5 Alteration Data Collection	40
2.6 Weathering Data Collection	42
2.7 Rock Strength Data Collection	44
3.0 REFERENCES	46

TABLES

Table 1: Classification of Structure Type	14
Table 2: Discontinuity Shape and Roughness	21
Table 3: Infill Character	23
Table 4: Infill Type (Infill Type 1/2)	23
Table 5: Joint Roughness, Jr (after Barton et. al. 1974)	25
Table 6: Joint Alteration, Ja (after Barton et al. 1974)	26
Table 7: Joint Condition Rating (RMR 1989)	27
Table 8: Classification of Rock Class and Rock Type	34
Table 9: Classification of Rock Fabric	37
Table 10: Classification of Metamorphic Rock Textures	37
Table 11: Classification of Igneous Rock Textures	37
Table 12: Grain Size Class Terminology	38
Table 13: Alteration Index (ISRM, 1981)	41
Table 14: Alteration Assemblages	41
Table 15: Weathering Classification (after ISRM 1981)	43
Table 16: Field Estimation of Rock Hardness (ISRM, 1981)	45

FIGURES

Figure 1: Example of Mechanical Break	7
Figure 2: Example of Reference Line (red with arrows) and Marking of Natural and Mechanical Breaks.....	8
Figure 3: acQuire input page for Core Run data (top, 3a) and for Reference Line data (bottom, 3b)	9
Figure 4: Determination of SCR	10
Figure 5: Determination of RQD (AFTER Deere, 1989).....	11
Figure 6: acQuire input page for Structure data	13
Figure 7: Examples of Aperture	20
Figure 8: Examples of Discontinuity Shape and Roughness	22
Figure 9: Alpha Angle Measurement	29
Figure 10: Beta Measurement	30
Figure 11: Gamma and Delta Measurement	31
Figure 12: acQuire input for Lithology data	33
Figure 13: Igneous Rock Classification Diagrams. A) Q-A-P Diagram for Felsic Rocks. B) Plagioclase- Clinopyroxene-Orthopyroxene-Olivine Diagram for Mafic and Ultramafic Rocks.	36
Figure 14: Example of groundmass vs. phenocryst mineral phases	38
Figure 15: acQuire input for Alteration data.....	40
Figure 16: acQuire input for Weathering data	43
Figure 17: acQuire input for Rock Strength data	44

1.0 PURPOSE OF THE MANUAL

This manual has been prepared for the guidance of Golder Associates' personnel involved in the NWMO Drilling Program. This manual describes procedures for geological and geotechnical core logging. The geological logging, including collection of lithological and structural information, will provide the first subsurface information of bedrock characteristics for the northern portion of the Revell batholith, where borehole IG_BH03 and IG_BH02 are located. The geotechnical logging procedures described herein provide direct inputs to the NGI Q-System and the RMR classification systems, as is common practice on mining and tunnel geotechnical projects.

The procedures for photography, sampling as well as core boxing and storage are covered in the WP3 Test Plan for IG_BH03 and IG_BH02 and will not be repeated in this manual. The purpose of this manual is to establish a common standard for the marking and logging of lithological, structural and geotechnical characteristics within the core recovered from IG_BH03 and IG_BH02.

All of the fields that will be available for data collection during logging, and the available picks within those fields, are described below. Standardized pick lists are utilized in order to maintain consistency between users and reduce data entry errors. Consistency in descriptions and records by all Core Loggers is essential to avoid misunderstanding or incorrect interpretation of actual conditions and to minimize the differences in logging practices between Core Loggers.

1.1 Overview of Geology of the Area around IG_BH03 and IG_BH02

The following overview of the geology of the area around IG_BH03 and IG_BH02 provides a general guide to the types of lithological units and structures that may likely be encountered within the borehole itself.

Boreholes IG_BH03 and IG_BH02 are located within the northern portion of the approximately 2.732 to 2.694 billion year old Revell batholith. The Revell batholith is roughly rectangular in shape trending northwest, is approximately 40 km in length, and covers an area of approximately 455 km². The shape of the plan-view gravity anomaly across the Revell batholith suggests that the depth of the intrusion may be relatively uniform, being deepest in the south. It is likely that the batholith is approximately 2 km to 3 km thick through the center of the northern portion.

The northern portion of the Revell batholith is underlain mainly of granodiorite and tonalite, which together form a relatively homogeneous intrusive granitoid complex. The granodiorite is massive to weakly foliated, with a variable equigranular to inequigranular, locally porphyritic texture. The granodiorite matrix is most commonly medium-grained (1-5 mm). The tonalite is massive to weakly foliated, with a medium-grained (1-5 mm), locally porphyritic, texture. Overall, the tonalite transitions gradationally into granodiorite and no distinct contact relationships between these two rock types are typically observed. It is likely that these will be the most common rock types encountered in IG_BH03 and IG_BH02. There is also a younger granite intrusion, which is observed primarily in the south-eastern portion of the northern portion of the Revell batholith. The granite post-dates and intrudes into the granodiorite-tonalite intrusive complex. Granodiorite xenoliths are observed locally within the granite. The granite is massive to weakly foliated with a matrix that varies between fine-grained (0.5-1 mm) and medium-grained (1-5 mm).

Mafic dykes were observed in several locations across the northern portion of the Revell batholith area, including but not limited to areas where mafic dykes of the Wabigoon dyke swarm were previously mapped. All of the mafic dykes observed during detailed geological mapping in the Revell batholith area are similar in character and they are interpreted to be part of the Wabigoon dyke swarm. It is assumed, based on surface measurements that these mafic dykes are sub-vertical. The mapped locations of the mafic dyke segments, to the northeast of borehole IG_BH03, suggest that they will not likely be encountered in the borehole.

A few occurrences of diorite/quartz diorite, mafic metavolcanic rocks and schist have also been observed, primarily in the eastern half of the batholith. It is less likely that these minor lithological units will be encountered in IG_BH03 and IG_BH02.

The following summary of structural observations provides an indication of the types of structures that may be encountered in IG_BH03 and IG_BH02.

Igneous flow foliation tends to parallel the curved northwestern boundary of the Revell batholith. There is a good correlation between foliation trajectories documented by Stone et al. (2011) and nearby measurements of tectonic foliation made during detailed mapping, with both suggesting an overall east-west trend, with local variability.

Subvertical joints, dipping greater than 65°, are the most common structural feature at the outcrop scale across the Revell candidate area. Two broad orientation peaks highlight the dominant northeast and northwest trends of observed subvertical joints. Subhorizontal joints, dipping less than 25°, show minimal evidence of secondary mineralization or alteration and the majority are interpreted as unloading structures. More than 50% of all joint spacings measured in the Revell batholith area range between 30 and 500 cm.

The majority of ductile and brittle-ductile shear zones occurrences are observed throughout the eastern portion of the Revell candidate area. Shear zones primarily strike east-northeast, north, south-southeast or east-southeast. Shear zones dip moderately to steeply and are most commonly observed as centimetre to decimetre wide structures. Quartz is locally observed to infill shear zones. Kinematic indicators suggest multiple episodes of shearing occurred on similarly oriented structures throughout the deformation history.

The majority of fault occurrences are observed throughout the eastern portion of the Revell candidate area. Dominant strike orientations for faults are north-northeast, northeast, east-southeast and south-southeast. Faults primarily dip steeply and often exhibit shallowly-plunging to sub-horizontal slickenlines suggesting a history of strike-slip motion. The observed damage to bedrock due to faulting, primarily in the form of tighter joint spacing or increased number of evident joint orientation families, is generally concentrated between 5 and 10 m beyond fault core zones. Epidote, chlorite, hematite and quartz occur locally as mineral infill in faults.

2.0 ROCK CORE LOGGING PROCEDURES

All rock core logging will be captured in an acQuire database customized for this project. All required fields (highlighted in red) must be entered for every run in order for acQuire to 'accept' the run data. Many fields of entry have been pre-populated with drop-down lists of options to choose from and have been set up to include the features/parameters most likely to be encountered during the drilling of IG_BH03 and IG_BH02. This standardization of the database results in consistency in the type and level of data recorded in the field.

Geological and geotechnical logging of recovered core will be performed on site in the core logging trailer and immediately after completion of the 2x180° split tube core photography.

Core logging will generally following the following procedures on a per run basis:

- Marking the Core
- Core Run (including Reference Line Orientation) Data Collection (acQuire Forms)
- Structure Data Collection (acQuire Form)
- Lithology Data Collection (acQuire Form)
- Contact Data Collection (acQuire Form)
- Alteration Data Collection (acQuire Form)

- Weathering Data Collection (acQuire Form)
- Rock Strength Data Collection (acQuire Form)

All rock logging and depth measuring will be recorded in metric units (metres, centimetres, millimetres). Depths will be recorded to the nearest centimetre. Drillhole depths will be recorded as distance down hole.

Time sensitive sampling and photography will occur prior to undertaking the procedures listed above, when required. Otherwise, all sampling and photography will be completed after the core logging is completed, consistent with the WP3 workflow shown in Figure 2 in the main document.

The applicable acQuire data collection fields for core logging, photography and sampling, and their pick lists, are described in detail below in the appropriate sub-sections for each of the procedures to be completed during the logging.

2.1 Marking the Core

Core marking will take place after the 2x180° core photography, and time-sensitive sampling (if applicable), has been completed. These markings will highlight many of the geological and geotechnical features in the core that will be subsequently logged. The Core Logger will mark the run of core following a standard set of procedures that are listed below and then described in detail, including:

- Draw Reference Line
- Mark Run Depths
- Identify and Mark Mechanical Breaks
- Identify and Mark Broken Structures
- Identify and Mark Intact and Partially Intact Structures

Draw Reference Line

All pieces of core will be properly positioned such that all broken features fit together as if they were not broken or the core pieces were not rotated out of position. Then a reference line will be drawn on the aligned core, throughout the whole run, in **Red**. The reference line will include arrows on each piece of core pointing towards the downhole direction. These are included for ease of re-alignment when handling the core. A long angled aluminum bar (~1m) will be used in order to help maintain a continuously straight line along the core, when marking.

Marking of the core will occur such that the reference line is visible in the photographs of boxed core, which are taken after the core logging has been completed. The line will be carried to all subsequent runs whenever possible; if a broken core section makes continuing this line impossible, then a new line will be started.

Mark Run Depths

Run depths corresponding to the depth at the end-of-run marker are written on the core every 25 centimetres in **Black** china marker. If there are lost core intervals in the run, the Core Logger will attempt to position the lost core interval in the run and replace it with a wood or PVC spacer that is marked with the correct depth range for the lost core it replaces.

Identify and Mark Mechanical breaks

One of the important steps in geotechnical core logging is to identify and separate the natural fractures from the mechanical breaks.

Mechanical breaks can occur during drilling, when the core breaks due to stresses from the drilling action. The break can occur through intact rock, along a pre-existing plane of weakness or along an otherwise intact fracture. Mechanical breaks can also occur when the driller or Core Logger is handling the core. For example, if the core is weak and friable material, or when the core is being boxed after logging and must be broken into pieces small enough to fit into the core box. As noted below in Section 2.3, fractures identified in the field as mechanical breaks will be logged as part of the structural data collection.

Clean, fresh, irregular surfaces that are oriented at close to 90° to the core axis and/or that can be rejoined with only a hair-line separation are typically considered to be a mechanical break (Figure 1). Surfaces that are stained, weathered, contain infilling or coatings, occur at some angle other than near-perpendicular to the core axis, or cannot be rejoined cleanly are characteristics common to natural fractures. It is sometimes difficult to distinguish natural fractures from mechanical breaks, if in doubt, the feature will be identified as a natural fracture.

Mechanical breaks in the core, based on the judgement of the Core Logger, will be marked using a **Red** china marker with X's next to the break (Figure 2). The "X" marks will be visible in the boxed core photographs.



Figure 1: Example of Mechanical Break

Identify and Mark Broken Structures

BROKEN structures, in the context of geotechnical characterization, refer to all natural fractures that break the core into separate pieces. They are non-cohesive. BROKEN structures will be identified as such on the core using a **Blue** china marker (Figure 2). The Core Logger will identify and label the structure using its unique structure type code (e.g., JN, joint; see Section 2.3 below for a full list of structure type codes). The core logger will trace both sides of the structure, using solid lines, if it has an identifiable width or aperture. Depth values will be measured, and marked, at the midpoint of the natural fracture along core axis or midpoint of the identified zone (Figure 2). The final assessment of the dip and dip direction of natural, broken, fractures will be completed in association with analysis of the televiewer data (collected as part of WP5), for those fractures that are apparent in both the core and the televiewer data. It is possible that some natural, broken, fractures may not be apparent in the televiewer data. It is also possible that some fractures, initially logged as mechanical breaks, will be re-interpreted as natural fractures if they are identified in the televiewer image.

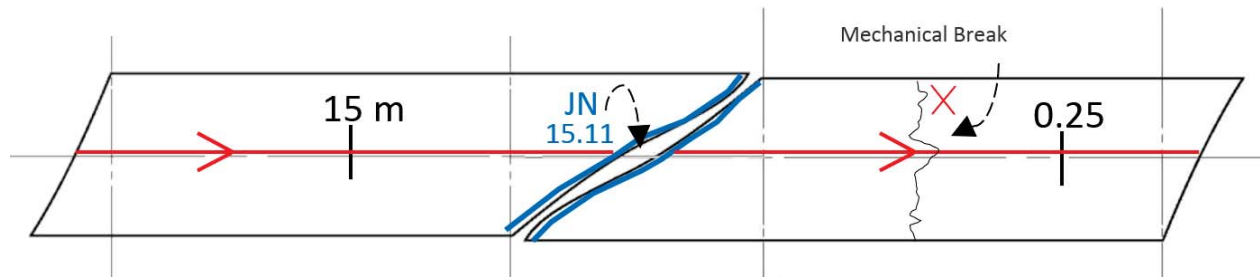


Figure 2: Example of Reference Line (red with arrows) and Marking of Natural and Mechanical Breaks. Note that JN is the structure code for Joint in the acQuire database. See Section 2.3 below for a full list of structure type codes.

Identify and Mark Intact and Partially Intact Structures

The Core Logger will also identify intact structures in the core run. In the context of geotechnical characterization, intact refers to natural fractures that are cohesive, and these fractures may be completely intact or partially intact, and this distinction will be captured in the acQuire database. The intact structures are marked similarly to natural fractures, i.e., on the core in Blue china marker, with the exception that the traced lines marking both sides of the feature are dashed. The initial interpretation that partially intact structures are grouped with intact structures implies that the broken portion of an otherwise intact fracture is the result of a mechanical process. The validity of this assumption will be ultimately determined by re-assessment of all logged partially intact structures in association with analysis of the televiewer data (collected as part of WP5).

2.2 Core Run and Reference Line Data Collection

The following Core run data is recorded, in the order listed below, in the Core Run tab within the acQuire database:

- Drilled From:To (Depth)
- (Core) Run Number
- Retrieval Time (of Core)
- Logged By, Photos By, Sampled By
- Total Core Recovery (TCR)
- Rock Quality Designation (RQD) Length
- Solid Core Recovery (SCR) Length
- Count of Fractures

Core run data will be recorded in its entirety as one entry regardless of lithological, alteration, weathering, or other geotechnical changes occurring throughout the run. The Core Logger will not break up the run into multiple geotechnical intervals. Figure 3a shows the screen in the acQuire database for inputting the Core Run data. Figure 3b shows the screen in the acQuire database for inputting the accompanying Reference Line data.

Core Run

Short Cuts
F9 = Accept F7 = Previous Sheet
F11 = Change Entry Mode F8 = Next Sheet

Insert Mode

Borehole ID
IG_BH00
Community
IGNACE
Drilled From (m)
Drilled To (m)
Run Number
CR001
Front Photo File Name
IG_BH00CR001_F.jpg

Retrieval Time (24hr)
Logged By
Photo By
Back Photo File Name
IG_BH00CR001_B.jpg

TCR (m)
RQD Length (m)
SCR Length (m)
Count of Fractures
<-- DISCREPANCY --> 0
The number of fractures logged on the Structures tab for this Core Run

TCR (%)
RQD (%)
SCR (%)
Fractures / m

Comments

Accept (F9)

Cancel

Reference Line

Short Cuts
F9 = Accept F7 = Previous Sheet
F11 = Change Entry Mode F8 = Next Sheet

Insert Mode

Borehole ID
IG_BH00
Community
IGNACE
Drilled From (m)
Drilled To (m)
Reference Line Run Number
RL001
Reference Line Orientation (deg)

NOTE: If Reference Line is a continuation of previous, select the last record and update the "Drilled To (m)" field accordingly.

Comments

Accept (F9)

Cancel

Figure 3: acQuire input page for Core Run data (top, 3a) and for Reference Line data (bottom, 3b)

AcQuire automatically generates values for TCR (%), RQD (%), SCR (%) and fractures/m based on core logger inputs. AcQuire also automatically generates file names for both front and back core run (stitched) photographs. The core logger, separately, will rename the photograph in the camera to be consistent with this automatically generated photograph name.

Record Drilled From and To Depths

Depth data is entered in meters to the nearest centimeter for both the top (from) and bottom (to) of the drilled run length. It is important to always enter the drilled depth (according to the total length of the rod string in the ground and stick-up) and not necessarily the recovered depths in these input fields.

Record Core Run Number

Intervals are numbered starting from the first core run into bedrock. The acQuire logging template will automatically generate a run number once the depths of the top and bottom of each run are inputted. It is important to enter all runs in sequential order as the acQuire system will assign run numbers based on the entry sequence not the depth sequence.

Record Core Retrieval Timestamp

The first data to be entered into the core run data sheet in acQuire is the Date and Time the core run was retrieved from the ground (and subsequently delivered to the core shack). This data is important as it provides a way to ensure time-sensitive lab samples are collected within their required timing.

Record Logged By, Photos By, Sampled By Information

The Core Logger that will be inputting the geological and geotechnical logging information into acQuire will input his or her unique two letter initial code, based on the loggers first and last name.

Measure and Record TCR, SCR, RQD

Total core recovery (TCR), solid core recovery (SCR) and rock quality designation (RQD) will be recorded as length in metres, which is compared to the length of the run drilled. TCR, SCR, and RQD will be generated automatically as a percentage of the total run length in acQuire once the core run data entry is accepted.

Total Core Recovery (TCR)

TCR records the total amount of core recovered over the measured length drilled for each core run.

The length of any broken core or gouge must be estimated as its true length in the rock mass (not as it appears spread out in the split tube) and is included in the total recovery length. When the core is highly fragmented, the length of such portions will be estimated by assembling the fragments and estimating the length of core that the fragments appear to represent.

Core losses are an important indication of potentially poor geotechnical conditions, since they most commonly occur in weak or highly fractured zones, which may be important for determining rock mass properties. Rubble or slough which has fallen into the drillhole and is recovered at the top of a core lift is not counted as recovered core and will be discarded or clearly labeled to avoid subsequent misclassification.

Solid Core Recovery (SCR)

SCR is another measure of core quality. It involves recording the cumulative length of all core pieces, regardless of individual length, that are recovered at full axial diameter (full circumference), as shown in Figure 4. If there is a vertical fracture running through the entire run, the solid core recovery is 0%.

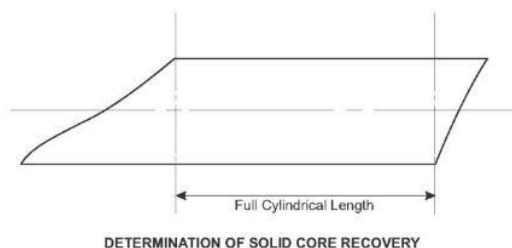


Figure 4: Determination of SCR

Rock Quality Designation (RQD)

RQD is a quantitative index of rock quality based on the total cumulative length of sound core recovered in lengths greater than 10 cm (4 inches), as measured from midpoint to midpoint of natural BROKEN discontinuities (including the midpoint of the sub-parallel discontinuities), along the centre line axis of the core, as shown in Figure 5.

RQD is estimated by measuring the length of only those pieces of hard, sound core that is longer than 100 millimetres. Therefore, RQD value is obtained by summing the pieces of core which are 100 millimetres or greater in length, as follows:

$$\text{RQD}(\%) = 100 \times \frac{\text{length of core in pieces 100 mm or longer}}{\text{length of core run}}$$

If there is a joint running along the core axis or natural break running through the entire run, the RQD of that run is 100% (where the SCR is 0%).

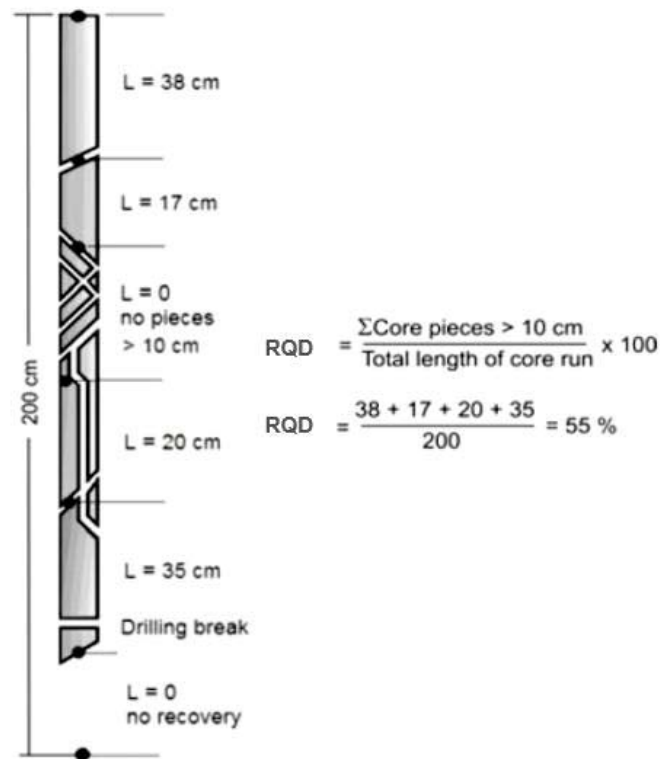


Figure 5: Determination of RQD (AFTER Deere, 1989)

Record Count of Fractures

A fracture count is simply a count of the number of naturally occurring non-cohesive (completely broken) fractures over the length of the run and includes broken core zones and lost core zones, but does not include mechanical breaks, intact or partially intact fractures in the count.

Note that for broken and lost core zones, if the individual fractures cannot be seen or estimated, the maximum number of fractures that will be recorded is 1 fracture per 1 cm of broken or lost core. For example if there is a 34 cm zone of broken core which cannot be pieced back together, this will be recorded as 34 fractures. If the core logger is able to piece together a broken core zone or there is some indication as to the true number of fractures that existed in the core, the true or estimated value will be recorded instead of the default of 1 fracture per cm.

Acquire will automatically create a Fracture Spacing (fracs/m) based on the recorded Fracture Count. A QA step included in acQuire is the ability to check and confirm that the total number of broken structures logged in

the Structure Tab (see below) is consistent with the count of fractures made in the Core Run tab. This QA step ensures a high degree of consistency in the data collection process.

Recording Reference Line

The reference line marked onto each core run provides a relative marker from which to measure the orientation of planar and linear structures in the core. The acoustic televiewer data, collected as part of the geophysical well logging activity (WP5), will be used to orient the reference line and correct the orientation of all structures, including those structures not identified in the geophysical survey, to their true orientations. This will provide a final corrected structural dataset. The procedure that will be followed to undertake this correction is described in the test plan for WP5. As part of the correction, the angle (0 – 360°) between the reference line and true north, which is a known orientation in the televiewer dataset, will be determined and captured in acQuire.

In order to facilitate the process of structural correction, a Reference Line Tab is included in acQuire to capture each individual reference line (Figure 3b). The top and bottom depth for each unique reference line will be captured in the Reference Line tab within the acQuire database. A new, unique, reference line is entered into acQuire when the extracted core cannot be confidently fit together with the broken end of the core from the previous run. Each unique reference line is then automatically sequentially numbered in acQuire (e.g., RL001, RL, 002, etc.). If the adjacent core runs can be fit together, the same reference line is continued, with only the 'Drilled To (m)' depth updated to reflect the continuation of the same reference line. The reference line orientation field is filled in during the later stage of structural integration.

2.3 Structure Data Collection

The following Structure data is recorded in the Core Run tab within the acQuire database (where applicable):

- Structure Depth
- Type (of structure)
- Sub-Type^{1,2}
- Broken/Intact/Partially Intact^{1,2,3}
- Intensity
- Width
- Alpha Angle, Beta Angle
- Defining Mineral(s)
- Aperture³
- Rock Wall Hardness³
- Shape^{1,3}
- Roughness^{1,3}
- Infill Character^{1,2,3}
- Infill Type^{2,3}
- Infilling Thickness²
- Lineation (with subtype, Gamma and Delta angles)⁴

¹Inputs for Joint Roughness (Jr) Number determination

²Inputs for Joint Alteration (Ja) Number determination

³Inputs for Joint Condition Rating (JCR) Number determination

⁴Logger will enter lineation information (when applicable) as part of the characterization of each planar structure

AcQuire will automatically determine several geotechnical parameters using information entered into a subset of the fields listed above, including inputs for determination of Joint Roughness (Jr) number, Joint Alteration (Ja) number and Joint Condition Rating (JCR) number. The relationships employed to determine these numbers are based on the Norwegian Geotechnical Institute (NGI) Q-system (NGI, 2015) and rock Mass Rating (RMR) number (Bienawski, 1989), which are current best practice classification systems for rock masses with respect to stability of underground openings. Derivation of these geotechnical parameters is discussed further towards the end of this section.

Detailed photographs of specific structures not captured in any of the other photograph products are captured directly in the Structure tab. Primarily this feature will be used to document structures that are not visible on the outer surface of the core and already captured by one of the other types of photograph. For example, lineations or mineral infill preserved on planar surfaces. AcQuire will automatically generate photograph names for detailed structural photos. The core logger, separately, will rename the photograph in the camera to be consistent with this automatically generated photograph name.

Figure 6 shows the acQuire input fields for the Structure data.

Figure 6: acQuire input page for Structure data

Identify and Record Structure Type, Sub-Type and Broken/Intact/Partially Intact

The following structures listed below are those that may be characterized in borehole IG_BH03 and IG_BH02. It is likely that joints and foliation will be the most common structure types encountered.

- **FOLIATION (FO)**
- **CLEAVAGE (CL)**

- **SCHISTOSITY (SCH)**
- **GNEISSOSITY (GNS)**
- **IGNEOUS PRIMARY STRUCTURE (IPS)**
- **MYLONITE ZONE (MYL)**
- **SHEAR ZONE DUCTILE (SHRD)**
- **SHEAR ZONE BRITTLE-DUCTILE (SHR)**
- **FOLD AXIAL PLANE (FAX)**
- **LINEATION (LIN)**
- **VEIN (VN, Broken, Intact or Partially Intact)**
- **JOINT (JN, Broken, Intact or Partially Intact)**
- **FAULT (FLT, Broken, Intact or Partially Intact)**
- **BROKEN CORE ZONE (BCZ, Broken)**
- **INTACT FRACTURE ZONE (IFZ, Intact or Partially Intact)**
- **LOST CORE ZONE (LCZ, Broken)**
- **MECHANICAL BREAK (MB, Broken)**

These structures are defined below in Table 1 along with *Sub-Type* descriptors also noted below, where applicable. Brittle structures (e.g., joint, fault, broken core zone) and contacts are also characterized as either Broken, Intact or Partially Intact, as applicable.

In addition, the table below indicates the Structural Data acQuire inputs for each Structure Type. The circumstances and procedures for measuring or assigning these different inputs are described in further detail later in this section.

Table 1: Classification of Structure Type

Structure Type (acQuire Code)	Description
FOLIATION (FO)	Planar preferred orientation of mineral grains. No Sub-Type. Note: <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. <i>Intensity</i> will be assigned. 3. Mineral(s) defining this foliation type will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured.</i>
CLEAVAGE (CL) <i>Type of Foliation</i>	A locally planar fabric in fine-grained rock of low metamorphic grade (e.g., slate or phyllite) that is defined by the tendency to split in a particular direction. Cleavage is a penetrative, non-primary, structure distinguishing it from non-penetrative fractures and from bedding. No Sub-Type. Note: <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. <i>Intensity</i> will be assigned.

	<ol style="list-style-type: none"> 3. Mineral(s) defining this foliation type will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured.</i>
SCHISTOSITY (SCH) <i>Type of Foliation</i>	<p>Foliation in schist or other medium- to coarse-grained, crystalline rock defined by the parallel alignment of platy mineral grains (mica) or inequant crystals of other minerals. No Sub-Type.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. <i>Intensity</i> will be assigned. 3. Mineral(s) defining this foliation type will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured .</i>
GNEISSOSITY (GNY) <i>Type of Foliation</i>	<p>Foliation in coarse-grained, medium- or high-grade, metamorphic rock defined by a planar grain-shape fabric or by compositional layering/banding. Alternating dark (mafic) and light (felsic or silicic) layers (bands) are common. No Sub-Type.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. <i>Intensity</i> will be assigned. 3. Mineral(s) defining this foliation type will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured .</i>
IGNEOUS PRIMARY STRUCTURE (IPS)	<p>A structure in an igneous rock that originated contemporaneously with the formation or emplacement of the rock, but before its final consolidation. For example, the preferred orientation of phenocrysts with no evidence of solid state deformation of the groundmass minerals. Sub-Type: Igneous Layering; Igneous Flow Foliation</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. <i>Intensity</i> will be assigned. 3. Mineral(s) defining this foliation type will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured .</i>

MYLONITE ZONE (MYL)	<p>A strongly deformed rock from a ductile shear zone produced by crystalplastic flow of the rock matrix, giving the appearance of a 'flowing' texture. A mylonite may or may not have a macroscopic foliation. No Sub-Type.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where the mid-point of the zone intercepts the core-axis. 2. Mineral(s) defining this zone will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 3. Width of zone, in cm, will be entered. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured .</i>
SHEAR ZONE DUCTILE (SHRD)	<p>A planar zone of strong deformation surrounded by rocks with a lower state of finite strain. The deformed zone exhibits only ductile characteristics.</p> <p>Sub-Type: Unknown slip; dextral (right-lateral) ; sinistral (left-lateral) ; normal; reverse</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the SHRD is identified, and <i>Width</i> is SHRD thickness measured perpendicular to the planes that define the zone. 2. Mineral(s) defining this zone will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 3. Width of zone, in cm, will be entered. 4. <i>Alpha</i> and <i>Beta</i> angles will be entered. 5. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured. representative Alpha and Beta angles will be entered, as applicable.</i>
SHEAR ZONE BRITTLE-DUCTILE (SHR)	<p>A planar zone of strong deformation surrounded by rocks with a lower state of finite strain. The deformed zone exhibits brittle and ductile characteristics.</p> <p>Sub-Type: Unknown slip; dextral (right-lateral); sinistral (left-lateral); normal; reverse.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the SHR is identified, and <i>Width</i> is SHR thickness measured perpendicular to the planes that define the zone. 2. If the <i>Width</i> of a SHR is greater than 5 cm, it will be classified as a FLT. 3. Mineral(s) defining this zone will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 4. Width of zone, in cm, will be entered. 5. <i>Alpha</i> and <i>Beta</i> angles will be entered.

	6. <i>Any associated lineation (incl. subtype, gamma and delta angles, defining mineral) will be captured.</i>
FOLD AXIAL PLANE (FAX)	<p>A surface that connects the hinge lines of a fold. The axial plane may be vertical, horizontal, or inclined. Sub-Type: S-asymmetry; Z-asymmetry; U-symmetric; Undefined.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. Mineral(s) defining FAX will be entered in <i>Defining Mineral (1/2)</i>, as applicable. 3. <i>Alpha</i> and <i>Beta</i> angles will be entered. 4. If possible, <i>lineation (subtype = fold axis, gamma and delta angles) associated with the fold structure will be captured.</i> 5. If possible, fold wavelength will be recorded (in cm) in the Comments field.
LINEATION (LIN)	<p>A linear structure or fabric in a rock. Sub-Type: Mineral; Stretching; Intersection; Slickenline.</p> <p><i>In the case of a penetrative lineation that occurs within the rock mass without an associated planar structure (i.e., an L-tectonite), the Lineation information is captured in the same way as other structure types.</i></p> <p><i>When a planar structure also hosts a (e.g., slickenlines on a fault surface), the lineation information, including applicable sub-type and both gamma and delta angles, is recorded as part of the data collected for that planar structure. The 'Lineation' fields become active and available for data entry when logging any planar structure.</i></p> <p>.</p>
VEIN (VN, Broken, Intact or Partially Intact)	<p>A feature 5 cm or less in width and containing a mineral infilling. No Sub-Type.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the VN is identified. 2. <i>Alpha</i> and <i>Beta</i> angles will be entered. 3. <i>If Broken, Aperture, Rock Wall Hardness, Shape and Roughness</i> will be entered. 4. Mineral Infill Character and Infill Type will be entered. 5. Mineral Infilling Thickness (in mm) will be entered. .
JOINT (JN, Broken, Intact or Partially Intact)	<p>A fracture on which there is no measurable fracture plane parallel displacement. A group of joints having the same general orientation is termed a set. Joints sets intersect to form a joint system. No Sub-Type.</p> <p>Note:</p>

	<ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. <i>Alpha and Beta</i> angles will be entered. 3. <i>If Broken, Aperture, Rock Wall Hardness, Shape and Roughness</i> will be entered. 4. Mineral Infill Character and Infill Type will be entered.
FAULT (FLT, Broken, Intact or Partially Intact)	<p>A fracture or a zone of fractures that occurs as a result of brittle deformation and within which there is relative displacement parallel to the fracture surfaces. Sub-Type: Unknown slip; dextral (right-lateral); sinistral (left-lateral); normal; reverse.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the FLT is identified, and <i>Width, also recorded</i>, is FLT thickness measured perpendicular to the plane(s) that define the fault or fault zone. 2. If FLT is greater than 0.3 m wide, a Lithology Change is triggered and CO Structures are taken, in addition to a FLT Structure. 3. <i>Alpha and Beta</i> angles will be entered. 4. <i>If Broken, Aperture, Rock Wall Hardness, Shape and Roughness</i> will be entered. 5. Mineral Infill Character and Infill Type will be entered. 6. Mineral Infilling Thickness (in mm) will be entered. .
BROKEN CORE ZONE (BCZ, Broken)	<p>Naturally-occurring feature characterized by core pieces that do not form full circumferential segments (e.g., not disks or cylinders). Broken core generally consists of angular fragments. The broken core generally has the same intact rock strength as the surrounding core. No Sub-Type.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the BCZ is identified, and <i>Width</i> is BCZ thickness. 2. If BCZ is greater than 0.3 m, a <i>Lithology Change</i> is triggered and CO Structures are taken, in addition to a BCZ Structure. 3. <i>Alpha and Beta</i> angles will be entered, if possible. 4. <i>Aperture, Rock Wall Hardness, Shape and Roughness</i> will be entered, if possible 5. Mineral Infill Character and Infill Type will be entered. 6. Mineral Infilling Thickness (in mm) will be entered.
INTACT FRACTURE ZONE (IFZ, Intact or Partially Intact)	<p>A brittle high-strain zone composed of a network of intact fractures. Sub-Type: None; Minor: spacing more than 100 mm; Moderate: spacing 10 to 100 mm; Heavy: spacing <10 mm</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the IFZ is identified, and <i>Width</i> is IFZ thickness. 2. <i>Alpha and Beta</i> angles will be entered.

	<p>3. Mineral Infill Character and Infill Type will be entered.</p> <p>4. Mineral Infilling Thickness (in mm) will be entered.</p>
LOST CORE ZONE (LCZ)	<p>Naturally-occurring feature characterized by missing blocks or zones of core, where the pieces recovered do not fit together cleanly. Lost core can occur in zones of unconsolidated material (i.e., sand seams, clay beds), highly broken zones, fault zones, and zones where the core has been mechanically degraded from the drilling process (i.e., bit change zones, redrilled core, etc.). Zones of 'lost core' may also occur due to natural voids in the subsurface encountered during drilling. No Sub-Type.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded at the mid-point of where the LCZ is identified, and <i>Width</i> is LCZ thickness. 2. Identify a <i>Depth Confidence</i> (<i>Low, Moderate, High</i>) in the Comments based on Core Loggers ability to accurately place the location of the LCZ.
MECHANICAL BREAK (MB, Broken)	<p>Mechanical breaks are unnatural breaks observed in the core, determined based on the judgement of the Core Logger Sub-Type: N/A; MB - Broken Core Zone; MB – Lost Core Zone</p> <p>Note:</p> <ol style="list-style-type: none"> 1. <i>Depth</i> is recorded, where break intercepts the center-axis. 2. <i>Width</i> is recorded for subtypes MB – Broken Core Zone and MB – Lost Core Zone.

Record Intensity (Foliation and Primary Igneous Structures Only)

The intensity of foliation (including all types listed above) and primary igneous structures will be captured, where applicable, as either weak or strong. This characteristic will be determined by visual assessment of the degree of development and clarity of the foliation.

Record Defining Minerals

Defining Minerals (1/2) will capture characteristic or distinctive minerals that are identified in the fabric of the identified structure, as applicable. For example, the alignment of biotite or hornblende may define the foliation plane. Defining minerals will be captured for all foliation and both shear zone types, as well as for mylonite zones.

The full list of minerals that can be picked are indicated below; and those most likely to be encountered in the Igneous area are shaded in gray.

- Alkali-feldspar
- Amphibole
- Quartz

- Biotite
- Hornblende
- Magnetite
- Muscovite
- Plagioclase
- Chlorite
- Pyroxene
- Olivine
- Phlogopite
- Calcite
- Cordierite
- Cordierite – Pinite
- Graphite
- Garnet
- Kyanite
- Sillimanite
- Andalusite
- Talc
- Tourmaline
- Titanite
- Apatite
- Olivine
- Other

Record Aperture

Aperture is the separation between competent rock wall surfaces along a broken structure, as seen in Figure 7, measured in millimetres (mm). If an infilling behaves like a soil (Strength Rating, R0; See Section 2.6 below) the infill thickness will be included as an aperture.

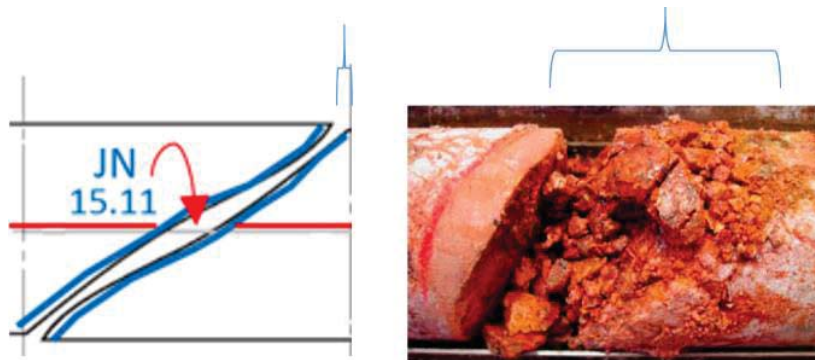


Figure 7: Examples of Aperture

Record Rock Wall Hardness

The rock wall hardness (strength) of each natural fracture refers to the hardness of the wall of the fracture itself (not infill or mineral coatings). This information will record qualitatively whether the rock at the fracture wall is weaker relative to the rock mass away from the fracture wall. A weaker or altered fracture wall will be denoted as SOFT, and an unaltered fracture wall will be denoted as HARD. The distinction between SOFT and HARD is related to the softening behaviour of the rock wall mineral(s) and is based Moh's scale of mineral hardness, where any mineral with a Moh's hardness of 1 or 2 is considered SOFT and any mineral higher on

the scale is considered HARD. Note that this usage of hardness, for fracture wall characterization, is independent of the scale employed in the Field Estimation of Rock Hardness described below .

Record Discontinuity Shape and Roughness

The shape and roughness of each natural discontinuity (e.g., fracture or broken contact, etc.) will be described using the abbreviations shown below in Table 2, when possible. Examples of discontinuity Shape and Roughness character are provided in Figure 8.

Table 2: Discontinuity Shape and Roughness

Shape	Roughness
PL – Planar	K – Slickensided
UN – Undulated	PO – Polished
CU – Curved	SM – Smooth
ST – Stepped	RO – Rough
	VR – Very Rough



Figure 8: Examples of Discontinuity Shape and Roughness

Record Infill Character, Infill Type and Infill Thickness

Where present, the infill character, mineral type and thickness will be captured for Broken, Intact and Partially Intact structures. The infill character and infill type will be described using the appropriate abbreviations listed in Table 3 and Table 4. The infill thickness will be entered as a measurement perpendicular to the structure plane, in mm, for any infill that is 1 mm in thickness or greater.

Table 3: Infill Character

Character	Description
CL	Clean
ST	Staining only – no apparent change to frictional properties
SA	Slightly altered – through chemical processes the joint wall rock has been altered to an apparently weaker mineral assemblage.
CT	Continuous coating < 1 mm - mineral coating is thin enough that joint wall asperities are in contact
IN	Continuous infill > 1 mm - mineral infills joint completely thereby apparently minimizing the frictional influence of joint wall asperities. Record value for Infill Thickness (mm)

Table 4: Infill Type (Infill Type 1/2)

Infill Type	Description		Typical Occurrence
Cl	Clay	SOFT	Common Alteration Mineral
Go_Sw	Clay Gouge (Swelling)	SOFT	Associated with shear or fault zones (Infill material, IN only)
Go_So	Clay Gouge (Soft)	SOFT	Associated with shear or fault zones (Infill material, IN only)
Go_St	Clay Gouge (Stiff)	SOFT	Associated with shear or fault zones (Infill material, IN only)
Br	Broken Rock	HARD	Crushed rock, often associated with shear or fault zones (Infill material, IN only)
Chl Talc	Chlorite Talc	SOFT	Commonly found in veins or broken joints
Ca	Calcite	HARD	Commonly found in veins
Qz Afs Bt Hbl Ms Ol Pl Px Am	Quartz Alkali-Feldspar Biotite Hornblende Muscovite Olivine Plagioclase Pyroxene Amphibole	HARD	Commonly found in veins

Infill Type	Description	Typical Occurrence	
Phl And Ap Crd Crd-P Grt Gr Ky Mag Sil Tur	Phlogopite Andalusite Apatite Cordierite Cordierite (Pinite) Garnet Graphite Kyanite Magnetite Sillimanite Tourmaline		
Bc	Breccia	HARD	Associated with shear or fault zones (Infill material, IN only)
Fe	Iron Oxide	HARD	Sometimes found on discontinuities, appears as rust as FeOx (iron oxide). Specific mineralogy (e.g., hematite) will be included in the comment field
Ep	Epidote	HARD	Commonly found in veins or broken joints
Gt Pg	Granitic Pegmatitic	HARD	Commonly found in igneous rocks. Pegmatitic is coarse-grained equivalent to granitic vein infill.

Note: Any additional infilling minerals identified during logging will be noted in the Comment field of the Structure Tab.

Derived Discontinuity Properties (Jr, Ja, JCR)

AcQuire will automatically derive several geotechnical parameters using information entered into a subset of the fields described above, including inputs for determination of Joint Roughness (Jr) number and Joint Alteration (Ja) number.

The relationships employed to determine these numbers are based on the Norwegian Geotechnical Institute (NGI) Q-system (Barton et al. 1974; NGI, 2015) and Rock Mass Rating (RMR) number (Bienawski, 1989), which are current best practice classification systems for rock masses with respect to stability of underground openings.

A Jr value will be derived for all natural fractures using the information recorded for

- Intact/Broken sub-type
- Shape
- Roughness
- Infill Character

The values for Jr range between 0.5 and 4, and are derived as indicated in Table 5.

The value of Ja, for each fracture, will be derived using the information recorded for:

- Intact/Broken sub-type
- Infill Character
- Infill Type
- Inflling Thickness

The derived Ja logging values are described in Table 6.

In addition, according to the Bieniawski criteria, the general condition of the natural fractures or series of natural discontinuities within a recorded interval are assigned a particular Joint Condition Rating (JCR) number according to information recorded for:

- Intact/Broken sub-type
- Aperture
- Rock Wall Strength
- Shape
- Roughness
- Infill Character
- Infill Type

The derived JCR logging values are described in

Table 7.

Table 5: Joint Roughness, Jr (after Barton et. al. 1974)

Intact/Broken	Shape	Roughness	Infill Character	Jr
IN (Intact)	Any, incl. null	Any, incl. null	Any, incl. null	4
PIN (Partially Intact)	Any, incl. null	Any, incl. null	Any, incl. null	4
Broken	PL	K, PO	CL, ST, SA, CT	0.5
	PL	SM	CL, ST, SA, CT	1
	PL	RO	CL, ST, SA, CT	1.5
	PL	VR	CL, ST, SA, CT	2
	UN, CU, ST	K, PO	CL, ST, SA, CT	1.5
	UN, CU, ST	SM	CL, ST, SA, CT	2
	UN, CU, ST	RO, VR	CL, ST, SA, CT	3
	ANY	ANY	IN	1

Table 6: Joint Alteration, Ja (after Barton et al. 1974)

Intact/Broken	Infill Character	Infill Type	Infill Thickness	Ja
IN (Intact)	Any, incl. null	Soft & Hard Mineral	any	0.75
PIN (Partially Intact)	Any, incl. null	Soft & Hard Mineral	any	0.75
BR (Broken)	IN (Continuous Infill)	Clay Gouge (Swelling)	>5mm	20
		Clay Gouge (Soft)	> 5mm	13
		Clay Gouge (Stiff)	> 5mm	10
		Soft Mineral (Not Clay Gouge)	> 5mm	6
		Hard Mineral	> 1mm	3
		Clay Gouge (Swelling)	≤5mm, >1mm	12
		Clay Gouge (Soft)	≤5mm, >1mm	8
		Clay Gouge (Stiff)	≤5mm, >1mm	6
		Soft Mineral (Not Clay Gouge)	≤5mm, >1mm	4
	CT (Continuous Coating)	Soft Mineral	≤1mm	4
		Hard Mineral	≤1mm	3
	SA (Slightly Altered)	Soft Mineral	<1mm	3
		Hard Mineral	<1mm	2
	ST	ANY	<1mm	1
	CL	null	<1mm	1

Note: "Soft" Minerals (Strain softening coatings) see Table 4.

Table 7: Joint Condition Rating (RMR 1989)

Intact/ Broken	Aperture	Rock Wall Strength	Shape	Roughness	Infill Character	Infill Type	JCR
IN (Intact)	Any, incl. null	Any, incl. null	Any, incl. null	Any, incl. null	Any, incl. null	<i>Soft & Hard Mineral</i>	30
PIN (Partially Intact)	Any, incl. null	Any, incl. null	Any, incl. null	Any, incl. null	Any, incl. null	<i>Soft & Hard Mineral</i>	30
BR (Broken)	≥ 5mm	ANY	ANY	ANY	ANY	ANY	0
	1-<5mm						10
	< 1 mm	S (Soft)	ANY	K, PO	ANY	ANY	10
				SM, RO, VR			16
		H (Hard)	PL	K, PO	ANY	ANY	10
				SM	IN	<i>Soft Mineral (Not Clay Gouge)</i>	16
						<i>Hard Mineral</i>	20
					CT	<i>Soft Mineral</i>	16
						<i>Hard Mineral</i>	20
					SA	ANY	20
					CL, ST	ANY	22
				RO	IN	<i>Soft Mineral (Not Clay Gouge)</i>	16
						<i>Hard Mineral</i>	20
					CT	<i>Soft Mineral</i>	20
						<i>Hard Mineral</i>	22
					SA	ANY	22
					CL, ST	ANY	25
				VR	IN	<i>Soft Mineral (Not Clay Gouge)</i>	16
						<i>Hard Mineral</i>	20

Intact/ Broken	Aperture	Rock Wall Strength	Shape	Roughness	Infill Character	Infill Type	JCR
					CT	<i>Soft Mineral</i>	22
						<i>Hard Mineral</i>	25
					SA	ANY	25
					CL, ST	ANY	27
			UN, CU, ST	K, PO	ANY	ANY	16
					SM	<i>Soft Mineral (Not Clay Gouge)</i>	16
						<i>Hard Mineral</i>	20
					CT	<i>Soft Mineral</i>	20
						<i>Hard Mineral</i>	22
					SA	ANY	22
					CL, ST	ANY	25
				RO	IN	<i>Soft Mineral (Not Clay Gouge)</i>	16
						<i>Hard Mineral</i>	20
					CT	<i>Soft Mineral</i>	22
						<i>Hard Mineral</i>	25
					SA	ANY	25
					CL, ST	ANY	27
				VR	IN	<i>Soft Mineral (Not Clay Gouge)</i>	16
						<i>Hard Mineral</i>	20
					CT	<i>Soft Mineral</i>	25
						<i>Hard Mineral</i>	27
					SA	ANY	27
					CL, ST	ANY	30

Note:

"Soft" Minerals (Strain softening coatings) see Table 4.

Measure and Record Discontinuity Orientation (Alpha, Beta, Gamma and Delta Angles)

Planar and linear structural orientations will be measured during the core logging. The core will not be oriented and so the measurements will be made relative to the core axis and the reference line that will be drawn on the core (See Section 2.1 above). Two angles (Alpha – α and Beta – β ,) are measured to describe the dip magnitude and dip direction of planar structures, with respect to the core axis and the reference line. Two angles (Gamma – γ and Delta – δ) are measured to describe the plunge and trend of linear structures, with respect to the core axis and the reference line. Alpha and Beta will be recorded for all structures in Table 1 except for Lost Core Zone and Lineation. It is understood that for intact structures the orientation of planar structures will be approximate. Gamma and Delta will be recorded for all lineations. It is understood that for intact structure lineations may not be measureable.

The Alpha angle is measured as the acute angle of the structure, relative to the core axis. An Alpha angle of 90° indicates an orientation perpendicular to the core axis; a measured angle of 0° indicates an orientation parallel to the core axis. This angle will be measured in single degree increments using a Carpenter's Protractor. The example shown in Figure 9 would be recorded as Alpha = 59° .



Figure 9: Alpha Angle Measurement

The Beta angle is the circumferential angle measured from the reference line drawn on the core to the line of “maximum dip” of the structure. The Beta angle is measured in 5 degree increments with a linear protractor around the circumference of the core. The convention for defining the Beta angle is to measure in a clockwise direction from the reference line to the point where the maximum dip vector of the discontinuity intersects the side of the core, when looking in a down hole direction. The example shown in Figure 10 would be recorded as Beta = 300° .

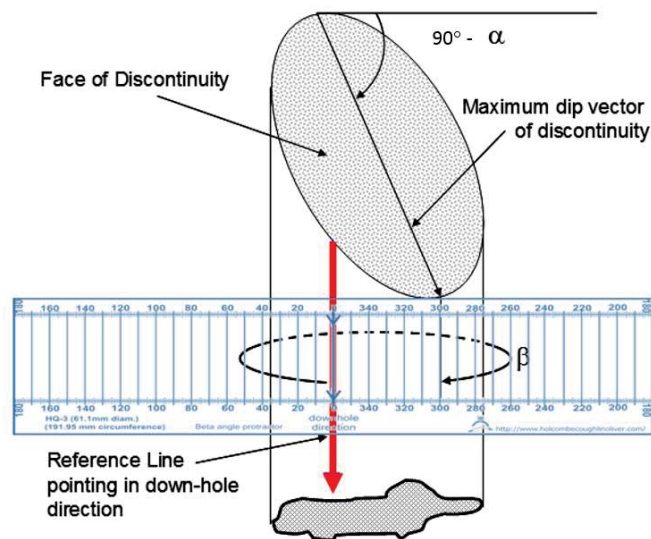


Figure 10: Beta Measurement

The Gamma angle is measured as the acute angle of the lineation in the direction of its plunge, relative to the core axis. A Gamma angle of 0° indicates a lineation parallel to the core axis; a Gamma angle of 90° indicates a lineation that is perpendicular to core axis. This angle will be measured in single degree increments using a Carpenter's Protractor.

The Delta angle is another circumferential angle measured from the reference line drawn on the core to the line of trend of the lineation. The Delta angle is measured in 5 degree increments with a linear protractor. The convention for measuring Delta is to measure from the reference line in the clockwise direction to the point of the lower intersection between the lineation and the edge of the core, as indicated in Figure 11 below. The example shown in Figure 11 below would be recorded as Delta = 330° .

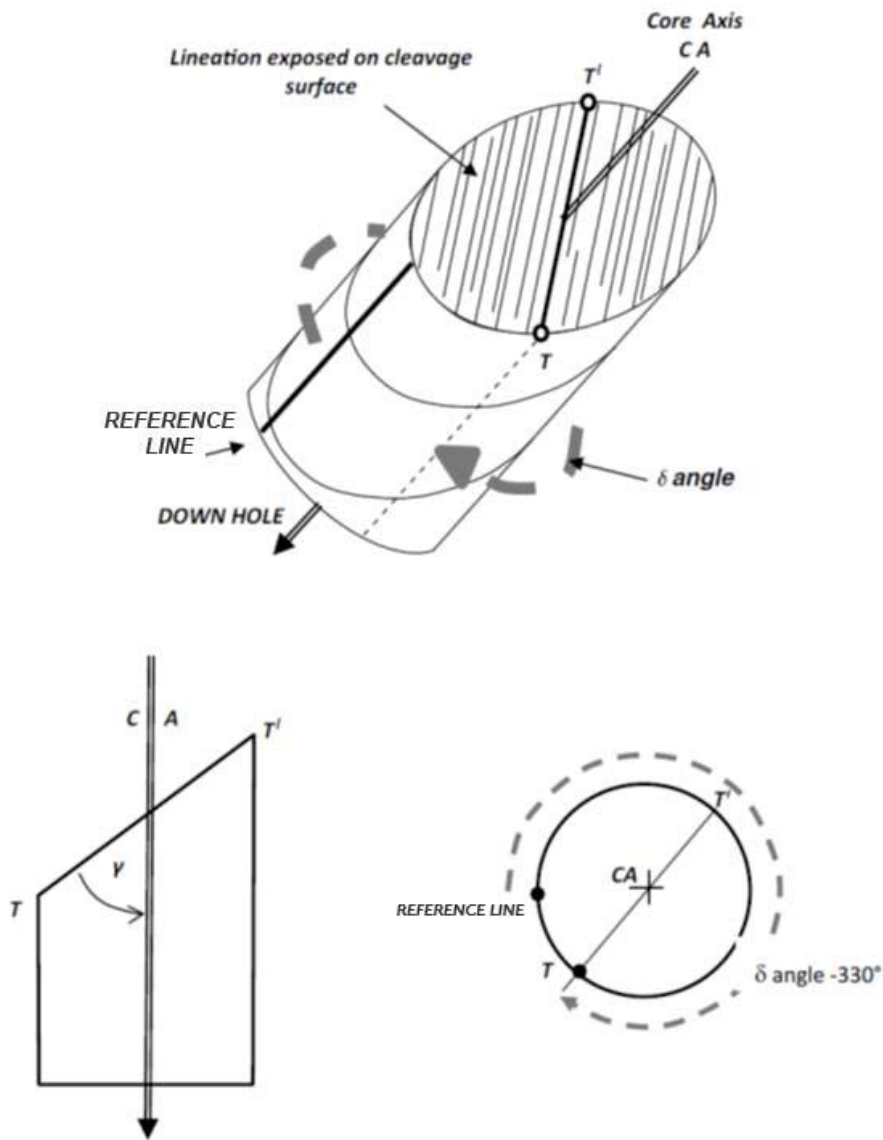


Figure 11: Gamma and Delta Measurement

Record Width

A Width is recorded for applicable structures that are not a singular discontinuity, but extend over an interval. Widths are recorded in cm and are measured perpendicular to the contact orientation of the structure.

Note: Where applicable, all structure descriptors (Shape, Roughness, Infill, Alpha, Beta, etc.) will be measured at the **TOP** margin of the zone. If the orientations are measurable at the bottom margin of the zone and it is different from those measured at the TOP margin of the zone, the BOTTOM margin orientations will be recorded as a new Structure (same *Type/Sub-Type*), but record the *Depth* of the BOTTOM margin. Record a *Width = 0* and a note in the *Comments* indicating that it was measured from the same feature.

2.4 Lithology Data Collection

A lithology entry will be recorded for EVERY core run recovered during drilling and every distinct lithological unit within a core run will be logged, with the following single exception. Felsic, intermediate or mafic intrusions will be identified and recorded as a distinct 'Dyke' lithology only if they exceed a minimum width of 5 cm. If they do not exceed 5 cm in width, they will not be identified as a distinct lithology and will only be identified as vein structures (See Section 2.3 above). If there is a high frequency of cm-scale lithological units of similar composition within a single core run they can also be described as a single interval of occurrence rather than individually logged.

Figure 3 shows the screen in the acQuire database for inputting the Lithology data. Also included on the Lithology Tab are the fields to collection information about geological contacts. Contacts represents the boundary between two different rock types, including dyke contact(s) with adjacent rock. Contact sub-types include: Chilled; Gradational; Sharp. The contact information fields are made available for data entry in any case where the logger enters a rock type that is different from the previous entry. In other words, if two adjacent core runs are logged as the same 'tonalite', then there is no requirement to define or characterize a geological contact. However, if 'biotite-rich tonalite' is entered as a rock type subsequent to a 'tonalite' being logged, the logger will be required to fill the contact fields. In all instances, it will be the uppermost (top) contact that will be characterized. AcQuire will auto-generate the rock above field with the previously logged rock type. The logger will enter a suitable sub-type, along with measured alpha and beta angles of the top contact. Note that if any type of structure is coincident with the contact, for example a shear zone or fault, that structure is logged independently of the contact in the Structure Tab. The contact depth will be aligned to the 'From (m)' depth.

To aid in distinguishing between felsic granitoid phases that are likely to be encountered in the borehole the core logger will undertake one Gamma Ray Spectrometry spot analysis per core run on the single most persistent felsic granitoid unit evident in the core run. The spot analysis will be done over a 180 second interval. If no felsic component is identified in the core run, then no measurement is taken. For example if an entire run is characterised as amphibolite. The measurement will be done in the 'Assay' mode of the device, with a sampling time of three minutes. The core logger will record the total count, %K, ppm U, ppm Th and Dose Rate (R units) from the device directly into the appropriate fields on the Lithology Tab (Figure 12), along with the depth at which the measurement was taken in the core run. As needed, the logger will then use the Gamma Ray Spectrometry result is aid in assigning a correct Rock Type based on the received %K value with pre-defined bin ranges of %K (0 – 1.7 %K = tonalite; >1.7 – 3 %K = granodiorite; >3 %K = granite).

Lithology

Short Cuts
 F9 = Accept F7 = Previous Sheet
 F11 = Change Entry Mode F8 = Next Sheet

Insert Mode

Borehole ID: IG_BH00 From (m): To (m): Core Run:

ROCK TYPE

Rock Class: Rock Type: Rock Fabric:

TEXTURES

Metamorphic: Igneous:

MINERALS

Mineral 1: Percentage (%):

Mineral 2: Percentage (%):

Mineral 3: Percentage (%):

Total:

TOP CONTACT

Rock Above:

Broken/Intact:

Sub Type:

Alpha Angle:

Beta Angle:

GROUND MASS GRAIN SIZE

Grain Size 1: Grain Size 2:

COLOURS

Colour 1: Intensity 1:

Colour 2: Intensity 2:

PHENOCRYST/POPHYROBLAST GRAIN SIZE

Grain Size 1: Grain Size 2:

GAMMA

Gamma readings collected?

Assay #:

Dose Rate (TBD):

K (%):

Th (ppm):

U (ppm):

Comments:

Accept (F9) Cancel

Figure 12: acQuire input for Lithology data

Each lithologic unit description will include the following descriptions:

- Rock Class & Rock Type;
- Rock Fabric
- Textures (Igneous; Metamorphic);
- Grain Size (Ground Mass; Phenocryst/Porphyroblast);
- Defining Minerals (including estimate percent of rock mass)
- Colour and Intensity

Identify and Record Rock Class and Rock Type

The complete list of picks for Rock Class and Rock Type, along with specific logging guidance are included below in Table 8.

The Revell batholith area are primarily granodiorites (55%), tonalites (36%) and granites (18%), with possible inclusions of diorite or quartz diorite, mafic meta-igneous rocks or schists. The more likely rock types that will be encountered in borehole IG_BH03 and IG_BH02, based on surface mapping, are highlighted in grey shading.

Table 8: Classification of Rock Class and Rock Type

Rock Class	Project Definition	Rock Type	Logging Guidance
Igneous	A rock that crystallized from molten or partly molten material (i.e., from magma).	Tonalite Biotite(Bt)-rich Tonalite ¹ Granodiorite Granite Alkali-feldspar granite Diorite Quartz Diorite Monzodiorite Quartz monzodiorite Quartz monzonite Syenite Gabbro Anorthosite Dunite Other	<p>Refer to the Igneous Rock Classification Diagram, included below as Figure 13.</p> <p>A visual estimate of the percentage of the cumulative area of each of quartz, alkali feldspar, plagioclase feldspar and mafic minerals will be included in the Comments field of the Lithology Tab, for each Igneous rock type identified in the core run.</p>
Metamorphic	A rock derived from pre-existing rocks by mineralogical, chemical or structural changes, essentially in the solid-state, in response to marked changes in temperature, pressure, shearing stress, or chemical environment.	Mafic meta-igneous Schist Gneiss Amphibolite Metasedimentary Felsic meta-igneous Granofels Hornfels Skarn Other	<p>Metamorphic rocks will be defined by their texture (e.g., schistose or gneissose), their composition (e.g., mafic or felsic) and defining minerals.</p> <p>Where a sedimentary protolith can be determined, the relevant metasedimentary rock type will be included in the Comments field (e.g., psammite, pelite, etc.).</p>
Dyke (Igneous)	A planar injection of magmatic or sedimentary material at least 5 cm in width that cuts across the pre-existing fabric of a rock.	Granitic Aplite Pegmatite Gabbro Diabase Amphibolite Quartzolite Tonalite Feldspar(Fsp)-phyric Tonalite ¹ Very fine-grain (VFG) Tonalite ¹ Feldspar(Fsp)-phyric Felsic ¹ Granodiorite Mafic Felsic Lamprophyre Other	<p>Injected (intrusive) material will be described as a 'Dyke' if its measured width is greater than 5 cm. Otherwise no lithology is captured for this feature and it is only described in the Structure Tab as a 'Vein'</p> <p>Pegmatites are coarse-grained dykes (crystals several centimeters to several meters in length) of mafic or felsic composition</p> <p>Aplites are fine-grained dykes (crystal size ≤ 1 mm) of granite or granitic composition with very little to</p>

Rock Class	Project Definition	Rock Type	Logging Guidance
			<p>no mafic minerals and a granular texture.</p> <p>Gabbro is a coarse-grained mafic intrusive igneous rock composed principally of calcic plagioclase and clinopyroxene, and often olivine (see Figure 13B)</p> <p>Quartzolites are composed primarily of quartz (>90 %)</p> <p>Diabase is a mafic intrusive rock with the same composition as gabbro and with characteristic lath-shaped plagioclase grains, interstitial, anhedral, pyroxene, and often olivine.</p> <p>Lamprophyres are dark-coloured, porphyritic igneous rocks composed of mafic minerals (e.g., biotite, hornblende, pyroxene) that occur as phenocrysts within a fine-grained crystalline groundmass.</p> <p>A visual estimate of the percentage of the cumulative area of each of quartz, alkali feldspar, plagioclase feldspar and mafic minerals will be included in the Comments field of the Lithology Tab, for each Igneous (Dyke) rock type identified in the core run.</p>

¹Rock sub-types added to Rock Type list herein and in acQuire based on experience from IG_BH01 to aid the Core Logger during lithology characterization.

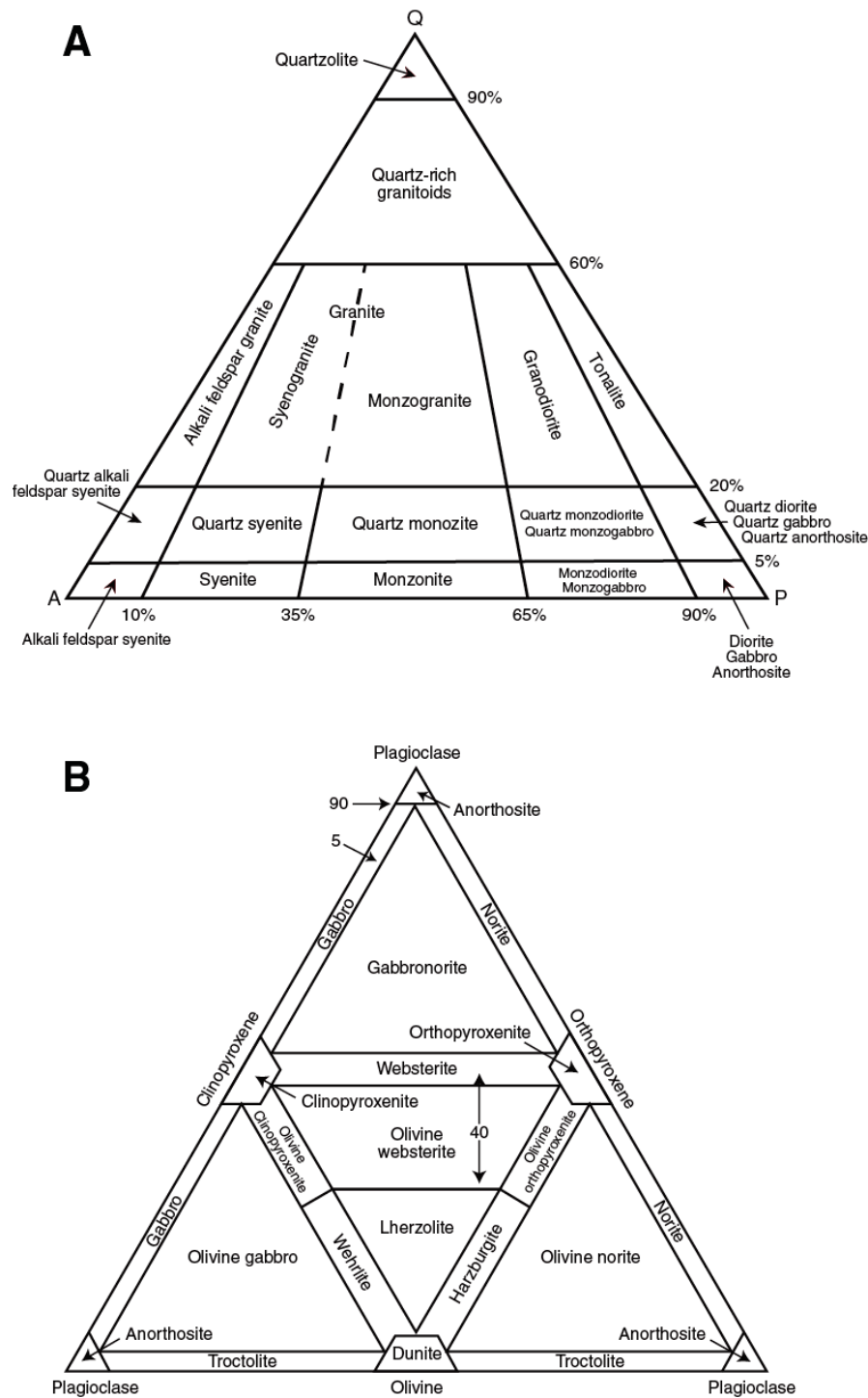


Figure 13: Igneous Rock Classification Diagrams. A) Q-A-P Diagram for Felsic Rocks. B) Plagioclase-Clinopyroxene-Orthopyroxene-Olivine Diagram for Mafic and Ultramafic Rocks.

Identify and Record Rock Fabric

The fabric of the rock describes the nature of mineral alignment, or lack thereof, within the rock unit. The main fabric types most likely to encounter in rock types identified during the geological core logging of IG_BH03 and IG_BH02 are described below in Table 9.

Table 9: Classification of Rock Fabric

Fabric	Description
Massive	Having no distinctive planar or linear arrangement of mineral grains in any one particular direction.
Foliated	Having a planar preferred orientation of mineral grains. Schistose and gneissose are foliation subtypes that will be assigned, instead of this generic descriptor, when applicable.
Schistose	Having a foliation characterized by the parallel alignment of medium- to coarse-grained platy minerals (e.g., mica) or inequant crystals of other minerals.
Gneissose	Having a foliation characterized by the parallel alignment of medium- to coarse-grained platy minerals (e.g., mica) or inequant crystals of other minerals.

Record Rock Texture

The rock texture refers to the sizes and shapes of grains, the relationships between neighboring grains, and the orientation of grains within a rock. The main Metamorphic and Igneous textures types likely to encounter during logging, are described below in Table 10 and Table 11, respectively.

Table 10: Classification of Metamorphic Rock Textures

Metamorphic Texture	Description
<u>Porphyroblastic</u>	Consisting of large grains that grew in the solid state (porphyroblasts) surrounded by a fine-grained matrix of other minerals.
<u>Granoblastic</u>	Consisting of mineral grains relatively of uniform size and dimension, with well sutured or interlocked boundaries.
<u>Augen</u> (Porphyroclastic)	Consisting of large, lenticular mineral grains (porphyroclasts) or mineral aggregates, within a fine-grained matrix, having the shape of an eye in cross-section.

Table 11: Classification of Igneous Rock Textures

Igneous Texture	Description
Equigranular	Consisting of grains roughly equal in size.
Inequigranular	Consisting of grains exhibiting a range in grain size.
Vari-Texture	Consisting of more than one texture within the rock mass.

Igneous Texture	Description
Porphyritic	Consisting of larger crystals (phenocrysts) set in a finer-grained groundmass, which may be crystalline or glassy or both.
Graphic	Consisting of an intergrowth of triangular or linear-angular quartz grains within larger alkali feldspar grains.

Record Grain or Crystal Size

Grain size is defined separately for the groundmass phase (or rock matrix) and the phenocryst phase. Figure 14 indicates the distinction between groundmass and phenocryst phases. The phenocryst size field(s) can also be used to describe the size of porphyroblasts and porphyroclasts in metamorphic rocks.

Two grain size fields are provided for each phase: Grain Size 1; Grain Size 2. Where there is more than one crystal size within the phase, the more dominant grain size will be recorded as Grain Size 1. If only one grain size is identified, Grain Size 2 can be left empty.

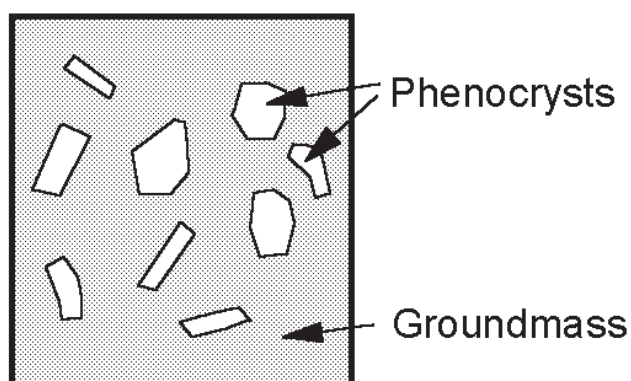


Figure 14: Example of groundmass vs. phenocryst mineral phases

The size of visible grains or crystals will be selected, in accordance with the grain-size classes indicated below in Table 12 for all identified rock types.

Table 12: Grain Size Class Terminology

Grain Size	Description
Fine-grained	<1mm
Medium-grained	1-5mm
Coarse grained	5-10mm
Very coarse-grained	10-50mm
Extremely coarse-grained	>50mm

Record Any Characteristic Minerals

There are three fields (Mineral 1, Mineral 2, Mineral 3) within which to capture any characteristic or distinctive minerals that are identified in the rock. Note that the main rock forming minerals in the matrix of the felsic igneous rocks (e.g., quartz, plagioclase, alkali-feldspar) are not to be picked unless they occur as a phenocryst phase (e.g., alkali-feldspar phenocrysts within a granite).

Where there are multiple distinctive minerals identified, record them in order of abundance (i.e. % of Mineral 1 > % of Mineral 2 > % of Mineral 3), and capture the percentage of each. Note that the total % of all minerals can be less than but not greater than 100 %.

The full list of minerals that can be picked are indicated below; and those most likely to be encountered in the Igneous area are shaded in gray.

- Alkali-feldspar
- Amphibole
- Quartz
- Biotite
- Hornblende
- Magnetite
- Muscovite
- Plagioclase
- Chlorite
- Pyroxene
- Olivine
- Phlogopite
- Calcite
- Cordierite
- Cordierite – Pinite
- Graphite
- Garnet
- Kyanite
- Sillimanite
- Andalusite
- Talc
- Tourmaline
- Titanite
- Apatite
- Olivine
- Other
- Alkali-feldspar

Record Colour and Intensity

The colour of the WET rock core will be described. In some cases the colour of the rock may be of importance to the overall understanding of the origin, classification, or performance of a given rock type. Colour (of the rock) is assigned using two fields: Colour 1; Colour 2. Where two colours are identified, the more dominant colouring is recorded as Colour 1 and secondary colour is recorded as Colour 2.

Intensity is an additional descriptor for each assigned colour field, to better define the overall colour characteristic of the rock. Colour 1 is associated with Intensity 1; Colour 2 is associated with Intensity 2.

Colour	Intensity
■ White	■ Very light
■ Off white	■ Light
■ Pink	■ Normal
■ Red	■ Dark
■ Rust	■ Very Dark
■ Orange	
■ Green	
■ Beige	
■ Brown	
■ Grey	
■ Black	
■ Other	

2.5 Alteration Data Collection

Characteristics associated with the Alteration of the rock mass will be logged in acQuire using the Alteration input sheet shown in Figure 15. Alteration characteristics will be assigned to all structural features entered into the Structure data input sheet (see Section 2.3) that exhibit evidence of alteration. Alteration refers to any change in the mineralogical composition of a rock brought about by the action of hydrothermal solutions. Alteration is distinct from weathering (described in Section 1.1), which is a destructive process by which rock, on exposure to atmospheric agents at or near the Earth's surface, is changed in colour, texture, composition or form.

Alteration characterization includes two steps, including:

- Record Alteration State
- Assign Alteration Assemblage

Alteration

Short Cuts
 F9 = Accept
 F11 = Change Entry Mode
 F7 = Previous Sheet
 F8 = Next Sheet

Insert Mode

Borehole ID: IG_BH00
 From (m): [Red]
 To (m): [Red]
 Core Run: []

Index: []
 Alteration Assemblage 1: []
 Alteration Assemblage 2: []
 Alteration Assemblage 3: []
 Colour: []

Comments: []

Accept (F9)
 Cancel

Figure 15: acQuire input for Alteration data

Record Alteration State

Alteration is only recorded when an altered zone, or discrete altered structure, has been identified. Where alteration is not recorded it is implied that the rock mass is not altered. The alteration state, or degree of alteration, is recorded in correspondence with the alteration index descriptions shown in Table 13. These descriptions are indicative of how the mechanical properties of the rock mass are affected by the physical and chemical changes to the rock forming minerals, and are also based on the presence (or lack thereof) of secondary mineralization in structures such as fractures or shear zones. The comments field will be used to describe the colour of the alteration, if not adequately captured in another field.

Table 13: Alteration Index (ISRM, 1981)

Term	Symbol	Description
Slightly altered	A2	Generally alteration is confined to veins and/or veinlets; little or no penetration of alteration beyond vein/veinlet boundaries; no discernible effect on the strength properties of the parent rock type
Moderately altered	A3	Alteration is controlled by veins and may penetrate wallrock as narrow vein selvages or envelopes; alteration may be pervasive; alteration results in slightly lower rock strength, but rock may still be hard and brittle.
Highly altered	A4	Pervasive alteration of rock forming minerals and rock mass to assemblages that significantly decrease the strength properties of the parent rock type such as sericite, chlorite, ankerite, graphite, kaolinite, talc, gypsum, or anhydrite; obvious degradation of rock strength; some individual veinlet control is still visible; fracture surfaces and vein selvages, where noted, may be friable.
Completely altered	A5	Intense, pervasive, complete alteration of rock forming minerals to weaker mineral assemblages such as sericite, chlorite, ankerite, graphite, kaolinite, talc, gypsum, or anhydrite; rock mass may be friable, or 'rotten'; rock mass may resemble soil as in the case of fault gouge; inter-crystalline bonds are destroyed; no perceptible individual veinlet control; any alteration assemblage that results in the nearly complete, or complete, degradation of rock strength relative to the parent rock type.

Assign Alteration Assemblage

The alteration that has been identified will be distinguished and characterized based on the mineral assemblage that defines it. Table 14 below provides the list of mineral assemblages and their descriptions that will be used for this characterization.

Table 14: Alteration Assemblages

Alteration Type	Alteration Assemblage Description
Albitization	Replacement of calcium rich plagioclase or K-feldspar by calcium poor plagioclase (albite).

Alteration Type	Alteration Assemblage Description
Advanced Argillization	Formation of kaolinite, pyrophyllite, or dickite (depending on the temperature) and alunite together with lesser quartz, topaz, and tourmaline.
Argillization	Formation of clay minerals, including kaolinite and the smectite group (mainly montmorillonite). Mainly affects plagioclase feldspar.
Carbonatization	Formation of carbonate minerals (calcite, dolomite, magnesite, siderite, etc.) during alteration of a rock.
Chloritization	Formation of chlorite, epidote and actinolite. Mainly affects mafic minerals.
Hematization	Associated with oxidizing fluids and the formation of minerals with a high Fe ³⁺ /Fe ²⁺ ratio (e.g., Hematite), with associated K-feldspar, sericite, chlorite, and epidote.
Potassic	Formation of new K-feldspar and/or biotite, usually together with minor muscovite (sericite), chlorite, and quartz.
Propylitic	Formation of chlorite, epidote and albite, plus addition of calcite. Affects intermediate and mafic rocks.
Sericitization	Conversion of feldspar into sericite.
Silicification	Formation of new quartz or amorphous silica minerals in a rock during alteration of a rock.
Bleaching	Not characterized by any specific mineral assemblage, but rather recognized by a color change between altered and unaltered rock.

2.6 Weathering Data Collection

Record Weathering State

Weathering is only recorded when a weathered zone is identified (i.e., not fresh) within the rock mass and will be logged in acQuire using the Weathering input sheet (Figure 16). When weathering is not recorded it is implied that the rock mass has not experienced weathering. The degree of weathering is recorded in correspondence with the classification described below in Table 15. This characteristic provides a qualitative measure of the degree of weathering for the original rock mass. The comments field will be used to describe weathering colouring and any interpretations, if not adequately captured in another field.

Weathering

Short Cuts
F9 = Accept
F11 = Change Entry Mode

F7 = Previous Sheet
F8 = Next Sheet

Insert Mode

Borehole ID
IG_BH00

From (m)

To (m)

Core Run

Weathering

Comments

Accept (F9)
Cancel

Figure 16: acQuire input for Weathering data

Table 15: Weathering Classification (after ISRM 1981)

Term	Symbol	Description	Discoloration Extent	Fracture Condition	Surface Characteristics
Residual soil	W6	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.	Throughout	n/a	Resembles soil
Completely weathered	W5	100% of rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.	Throughout	Filled with alteration minerals	Resembles soil
Highly weathered	W4	More than 50% of the rock material is decomposed and/or disintegrated to a soil. Fresh or discoloured rock is present either as a discontinuous framework or as corestones.	Throughout	Filled with alteration minerals	Friable and possibly pitted

Term	Symbol	Description	Discoloration Extent	Fracture Condition	Surface Characteristics
Moderately weathered	W3	Less than 50% of the rock material is decomposed and/or disintegrated to a soil. Fresh or discoloured rock is present either as a discontinuous framework or as corestones. Visible texture of the host rock still preserved. Surface planes are weathered (oxidized or carbonate filling) even when breaking the "intact rock".	>20% of fracture spacing on both sides of fracture	Discoloured , may contain thick filling	Partial to complete discoloration, not friable except poorly cemented rocks
Slightly weathered	W2	Discoloration indicates weathering of rock material on discontinuity surfaces (usually oxidized). Less than 5% of rock mass altered.	<20% of fracture spacing on both sides of fracture	Discoloured , may contain thin filling	Partial discoloration

2.7 Rock Strength Data Collection

Record Strength of Intact Rock

The acQquire rock strength data input sheet is shown below in Figure 17. The field estimation of intact rock strength undertaken for IG_BH03 and IG_BH02 will be based on the International Society of Rock Mechanics (ISRM, 1981) guidelines as shown in Table 16.

Confirming the strength rating by hammer blows will be carried out opportunistically, when breaking the core for sampling and for fitting the core pieces into the core boxes. This approach is taken in order to preserve the integrity of the core as much as possible. However, whenever a change in strength is suspected, the full range of tests will be performed to determine hardness, including hitting the core with a rock hammer, scraping or peeling with a knife and scratching with your thumbnail, as per the procedures described in Table 16.

Rock Strength

Short Cuts
 F9 = Accept F7 = Previous Sheet
 F11 = Change Entry Mode F8 = Next Sheet

Insert Mode

Borehole ID: IG_BH00 Depth (m): [Redacted] Core Run: [Empty]

Strength Index: [Dropdown] Test Rock Type: [Dropdown]

Comments: [Text Area]

Accept (F9) Cancel

Figure 17: acQquire input for Rock Strength data

Table 16: Field Estimation of Rock Hardness (ISRM, 1981)

Term	Symbol	Field Identification	Approx. UCS Range (MPa)
Extremely weak rock	R0	Indented by thumbnail.	0.25 -1
Very weak rock	R1	Material can be shaped with a pocket knife or can be peeled by a pocket knife. Crumbles under firm blows of pick (or point) of geological hammer.	1.0 – 5.0
Weak rock	R2	Knife cuts material but too hard to shape into triaxial specimens or material can be peeled by a pocket knife with difficulty. Shallow indentations (< 5 mm) made by firm blow with pick (or point) of geological hammer.	5.0 – 25
Medium strong rock	R3	Cannot be scraped or peeled with a pocket knife. Hand held specimens can be fractured with <i>single</i> firm blow of geological hammer.	25 – 50
Strong rock	R4	Hand held specimen requires more than one blow of geological hammer to fracture it.	50 – 100
Very strong rock	R5	Specimen requires many blows of geological hammer to break intact rock specimens (or to fracture it).	100 – 250
Extremely strong rock	R6	Specimen can only be chipped under repeated hammer blows, rings when hit.	>250

NOTES:

1. Hand held specimens should have height \cong 2 times the diameter.
2. Materials having a uniaxial compressive strength of less than about 0.5 MPa and cohesionless materials should be classified using soil classification systems.
3. Rocks with a uniaxial compressive strength below 25 MPa (i.e., below R2) are likely to yield highly ambiguous results under point load testing.

3.0 REFERENCES

- Barton, N.R., Lien, R. and Lunde, J. 1974. Engineering classification of rock masses for the design of tunnel support. *Rock Mech.* 6(4), 189-239.
- Bieniawski, Z.T. 1989. *Engineering rock mass classifications*. New York: Wiley.
- Deere, D.U. 1989. Rock quality designation (RQD) after 20 years. U.S. Army Corps Engrs Contract Report GL-89-1. Vicksburg, MS: Waterways Experimental Station.
- ISRM (1981). *Rock Characterization Testing and Monitoring - ISRM Suggested Methods*, Pergamon Press, London, England, p. 32, ed. Brown, E.T.
- NGI (Norwegian Geological Institute), 2015. *Using the Q-System – Rock Mass Classification and Support Design*. NGI Publication, Oslo.



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APPENDIX B

Sampling Schedule Table

TABLE B-1: IG_BH03 SAMPLING SCHEDULE

		Planned Sample Depth		Actual Sample Depth		Opportunistic Amphibolite Samples		Planned Repository Horizon					
Test Type	Petrophysics	UCS	Brazilian	Thermal	Eff. Diffusion	Porewater	Aqueous Extraction	Sorption	CEC/BET	Microbiology	Noble Gas	Archived	Totals
# of planned samples	8	6	6	8	10	20	10	4	2	6	10	20	110
# of samples	8	7	7	9	10	20	10	5	2	6	10	20	114
Additional amphibolite samples	0	1	1	1	0	0	0	1	0	0	0	0	4
BH #	BH03	BH03	BH03	BH03	BH03	BH03	BH03	BH03	BH03	BH03	BH03	BH03	BH #
Length along borehole													Length along borehole
0													0
3													3
6													6
9													9
12													12
15													15
18													18
21													21
24													24
27													27
30													30
33													33
36													36
39													39
42													42
45													45
48													48
51												Planned AR	51
54													54
57													57
60													60
63													63
66													66
69													69
72													72
75													75
78													78
81													81
84													84
87													87
90													90
93													93
96													96
99													99
102													102
105												AR001	105
108												105.61 - 105.98	108
111													111
114													114
117													117
120													120
123													123
126													126
129													129
132													132
135													135
138													138
141													141
144													144
147													147
150													150
153													153
156													156
159													159
162												Planned AR	162
165												AR002	165
168												164.01 - 164.35	168
171													171
174													174
177													177
180													180
183													183
186													186
189													189
192													192
195													195
198													198
201													201
204													204
207													207
210													210
213										2 sampling intervals (2 adjacent samples per interval) of fractured and hematized rock		AR003	213
216												213.88 - 214.17	216
219													219

2 sampling intervals (2 adjacent samples per interval) of fractured and hematized rock

TABLE B-1: IG BH03 SAMPLING SCHEDULE

[illegible]

TABLE B-1: IG_BH03 SAMPLING SCHEDULE

444													444
447												AR008	447
450												449.99 - 450.38	450
453		Planned UC	Planned BR	TH004									453
456		UC002	BR002	454.03 - 454.37			Planned PW	Planned AQ					456
459		455.14 - 455.41	455.41 - 455.67				PW005	AQ003					459
462							459.01 - 459.44	459.99 - 460.14					462
465							PW006		Planned SO	Planned SA			465
468							460.86 - 461.26		SO002	SA001			468
471									464.06 - 464.21	463.83 - 464.06			471
474													474
477												AR009	477
480												480.80 - 481.18	480
483												Planned AR	483
486													486
489												NG001	489
492												489.39 - 489.67	492
495												Planned NG	495
498		UC003	BR003	TH005					SO003	SA003			498
501		494.49 - 494.72	494.72 - 494.97	494.97 - 495.25					497.41 - 497.64	497.64 - 497.87			501
504													504
507													507
510													510
513													513
516													516
519													519
522													522
525													525
528													528
531												AR010	531
534												530.60 - 530.97	534
537													537
540												NG004	540
543												539.61 - 539.93	543
546									SO004				546
549									542.41 - 542.56				549
552													552
555													555
558													558
561													561
564													564
567													567
570													570
573													573
576													576
579													579
582												AR011	582
585												580.02 - 580.42	585
588													588
591													591
594												NG005	594
597												590.49 - 590.79	597
600													600
603													603
606												AR012	606
609												607.00 - 607.40	609
612												Planned AR	612
615													615
618													618
621													621
624													624
627													627
630													630
633													633

TABLE B-1: IG_BH03 SAMPLING SCHEDULE

636													636
639												NG006	639
642												638.63 - 638.91	642
												Planned AR	
645												AR013	645
648												645.67 - 645.98	648
651													651
654													654
657													657
660													660
		Planned UC	Planned BR										
		UC007	BR007										
663		663.08 - 663.80	662.90 - 663.03										663
666						PW013	AC007						666
						666.55 - 668.95	665.78 - 665.91						
669						PW014							669
						668.95 - 669.36							
672													672
	PS006				ED008								
675	675.91 - 676.28				675.58 - 675.91								675
678													678
681													681
684													684
687													687
												NG007	
690												690.63 - 690.92	690
693												690.63 - 691.32	693
696													696
699													699
702													702
705													705
708													708
711													711
714													714
717													717
												AR015	
720												720.41 - 720.51	720
723													723
726													726
729													729
732													732
735													735
738													738
												NG008	
741												740.47 - 740.82	741
744													744
												AR016	
747												747.02 - 747.43	747
750													750
753													753
756													756
759													759
762													762
765													765
768													768
						PW015	AC008						
771						771.46 - 771.76	771.78 - 771.82						771
774	Planned PS				Planned ED	Planned PW							774
						PW016							
777						777.56 - 778.08							777
	PS007				ED009								
780	779.58 - 780.00				780.00 - 780.36								780
783													783
786													786
789													789
792													792
795													795
798													798
				TH009								AR017	
801				800.61 - 800.90								800.22 - 800.61	801
804													804
807													807
810													810
813													813
816													816
819													819
822													822
825													825
828													828
831													831
834													834
837													837
												NG009	
840												840.09 - 840.30	840
843													843
846													846
												AR018	
849												850.22 - 850.61	849
852													852
855													855
858													858
861													861
864													864

TABLE B-1: IG_BH03 SAMPLING SCHEDULE

867													867
870													870
873													873
876													876
879						PW017 880.16 - 880.56	AD009 880.02 - 880.16						879
882						PW018 880.56 - 881.34							882
885													885
888													888
891													891
894													894
897													897
900													900
903												AR019 901.40 - 902.78	903
906													906
909													909
912													912
915													915
918													918
921													921
924	P5008 923.30 - 923.70				ED010 923.70 - 924.04								924
927													927
930													930
933													933
936													936
939											NG010 939.76 - 940.04		939
942													942
945													945
948													948
951													951
954													954
957													957
960												AR020 959.62 - 959.98	960
963													963
966													966
969													969
972													972
975													975
978													978
981													981
984						PW019 984.89 - 984.89	AR010 984.89 - 985.03						984
987						PW020 987.32 - 987.67							987
990													990
993													993
996													996
999													999

APPENDIX C

Record of Core Logging

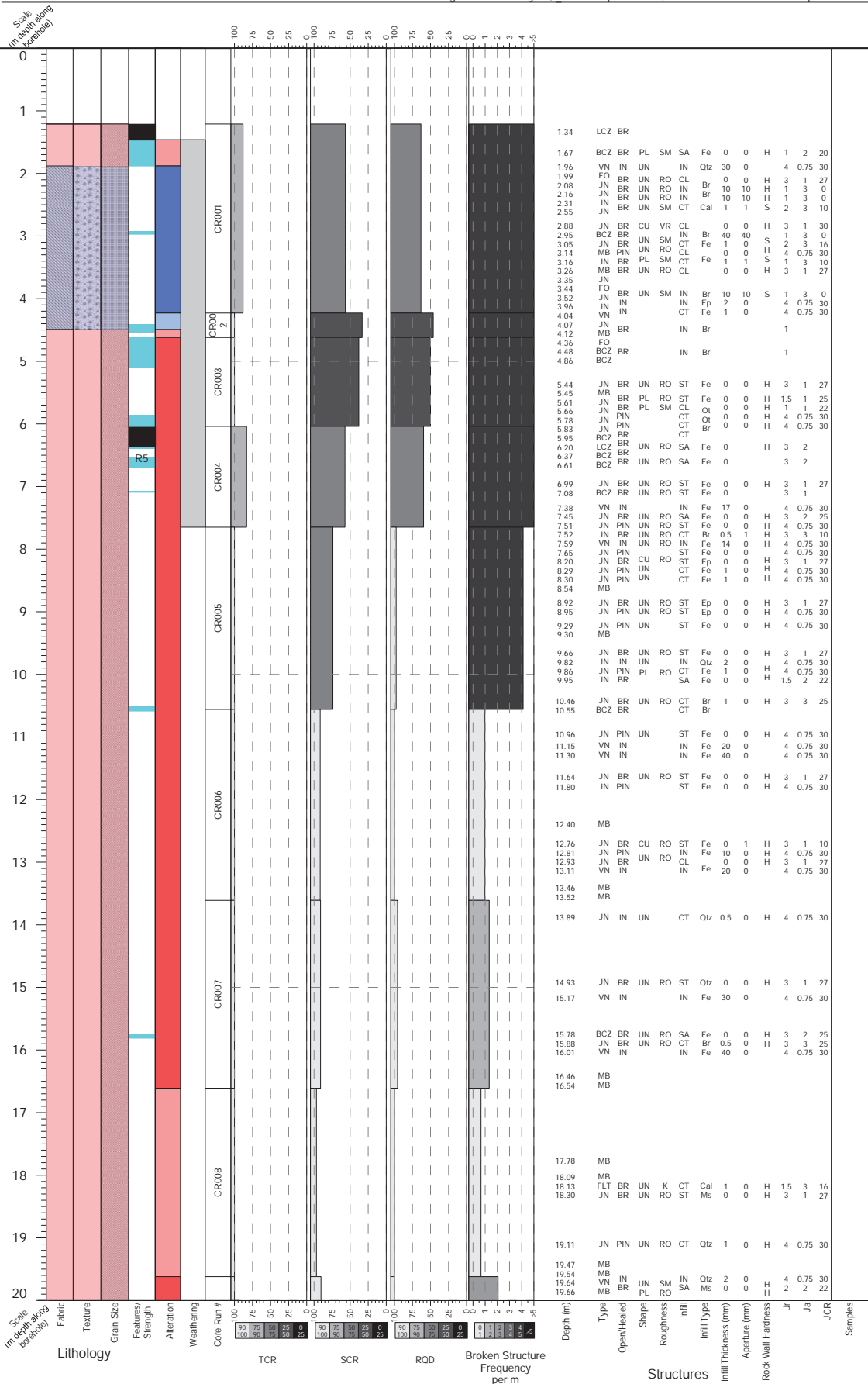
IG BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



CLIENT	NWMO Ignace Drilling
TITLE	Record of Core Logging

YYYY-MM-DD
2020-09-02

DRAWN/REV
KF/CM

PROJECT NO.
1671632A (2301)

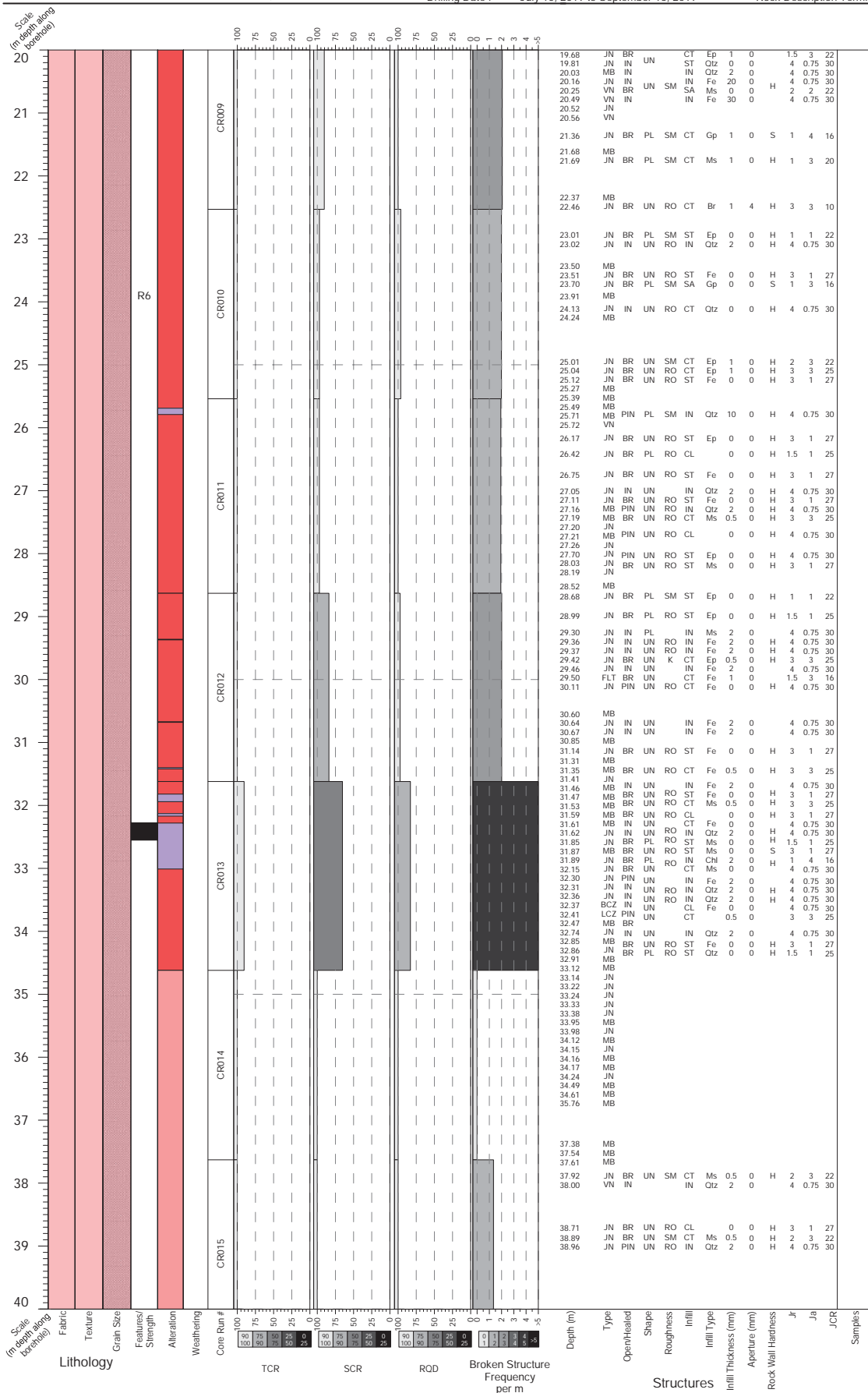
IG_BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
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GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

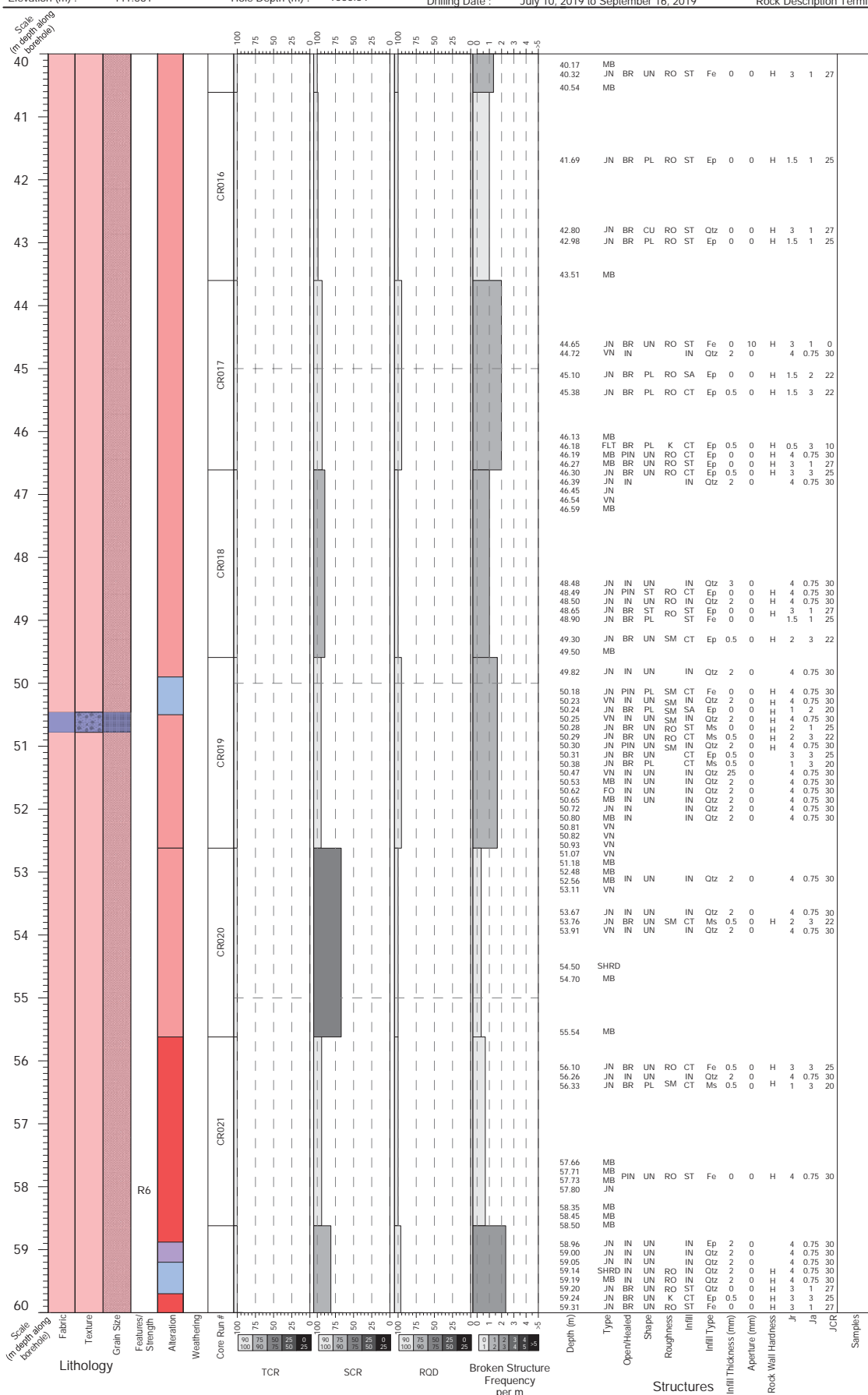
IG BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



CLIENT	NWMO Ignace Drilling
TITLE	Record of Core Logging

YYYY-MM-DD
2020-09-02

DRAWN/REV
KF/CM

PROJECT NO.
1671632A (2301)

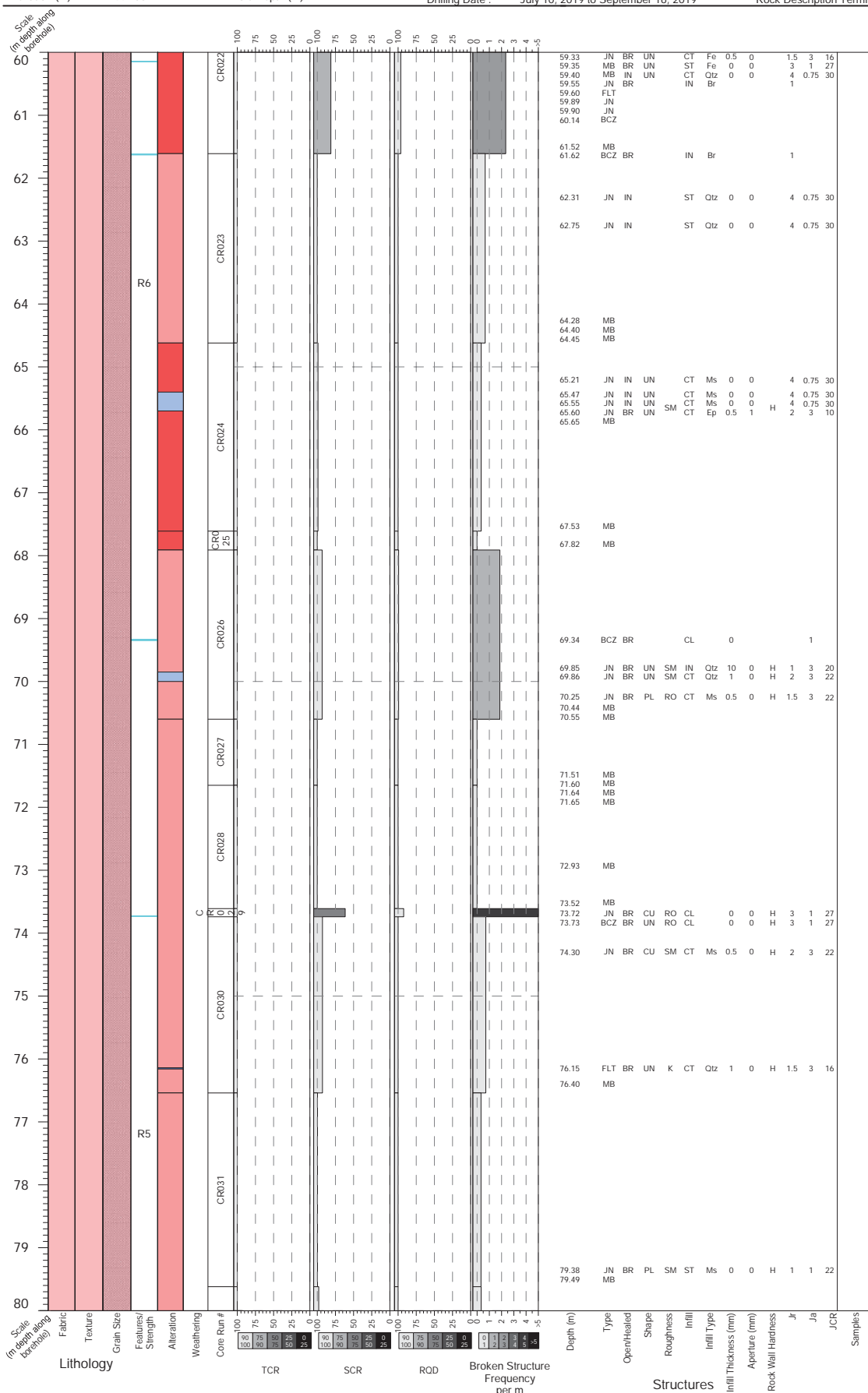
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 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Rodden Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

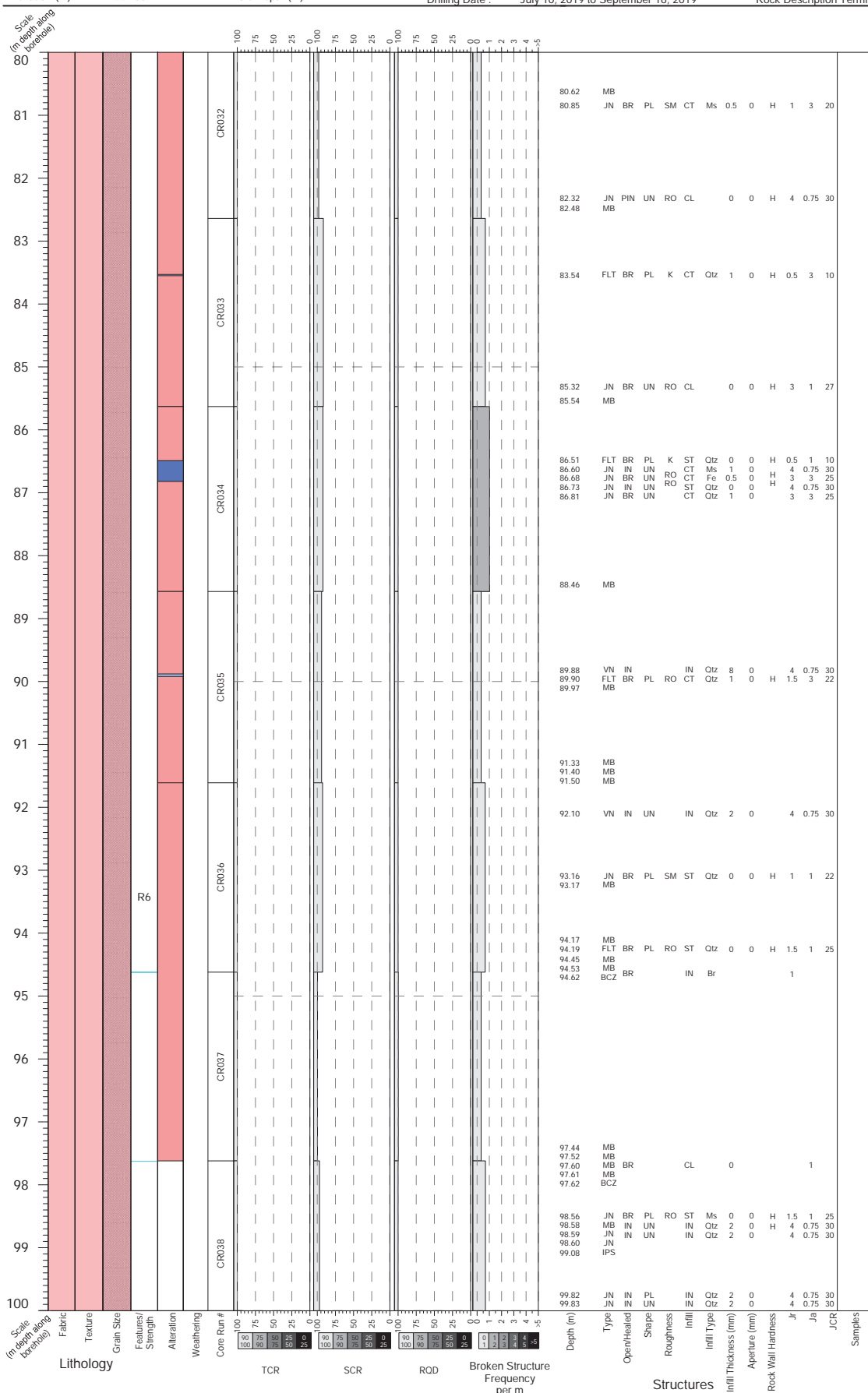
IG BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



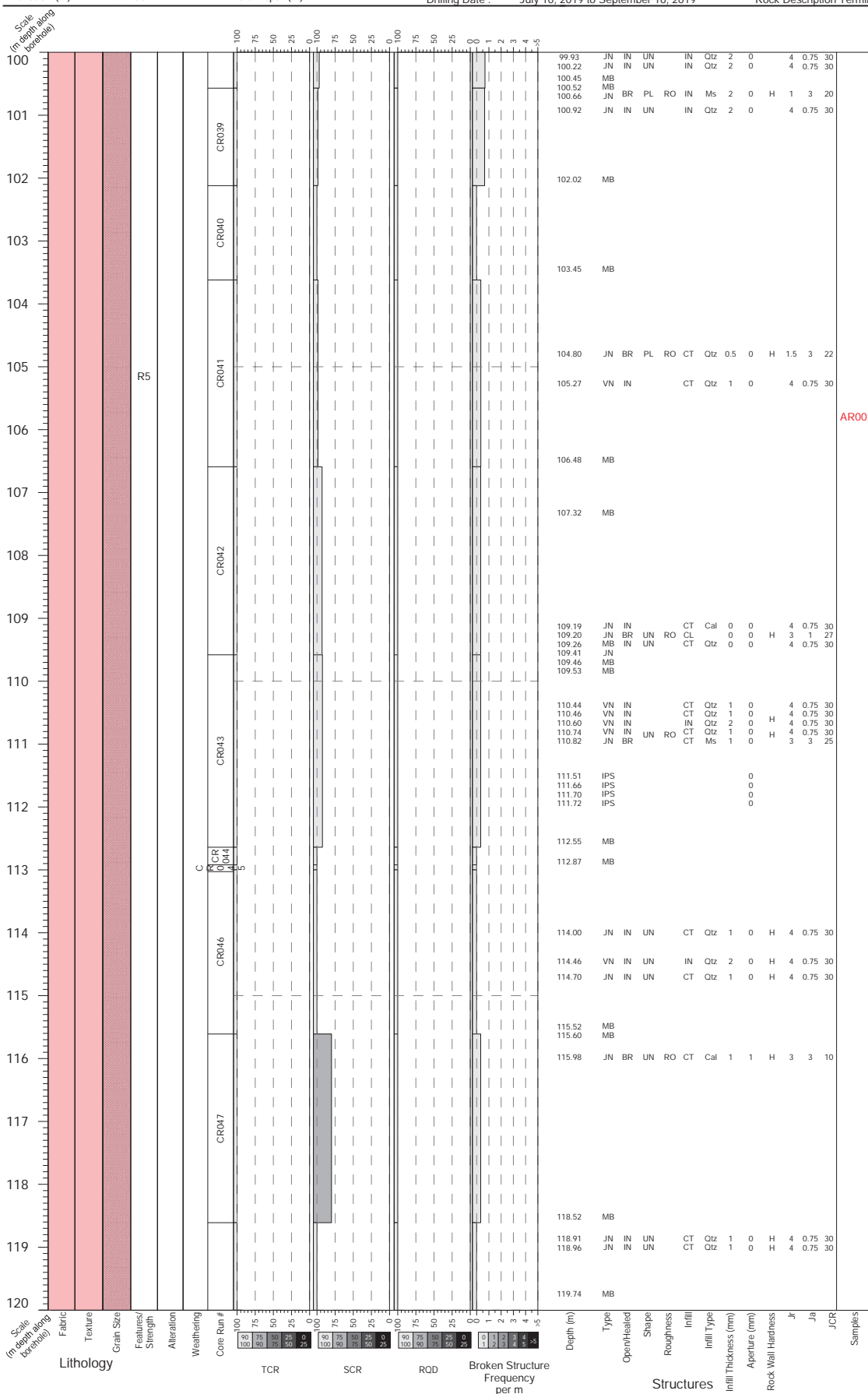
IG_BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Rodden Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

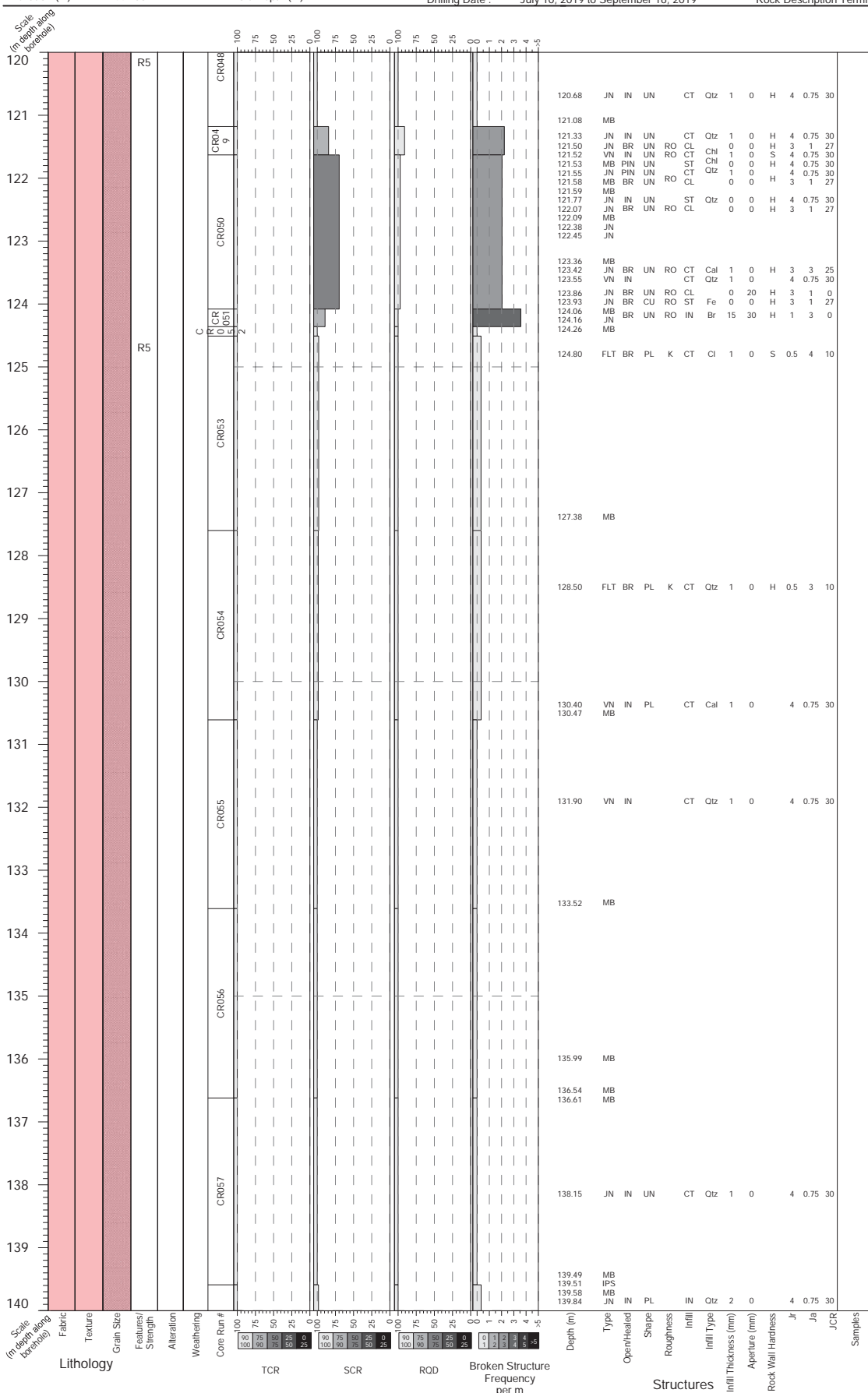
IG_BH03

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 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Rodren Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

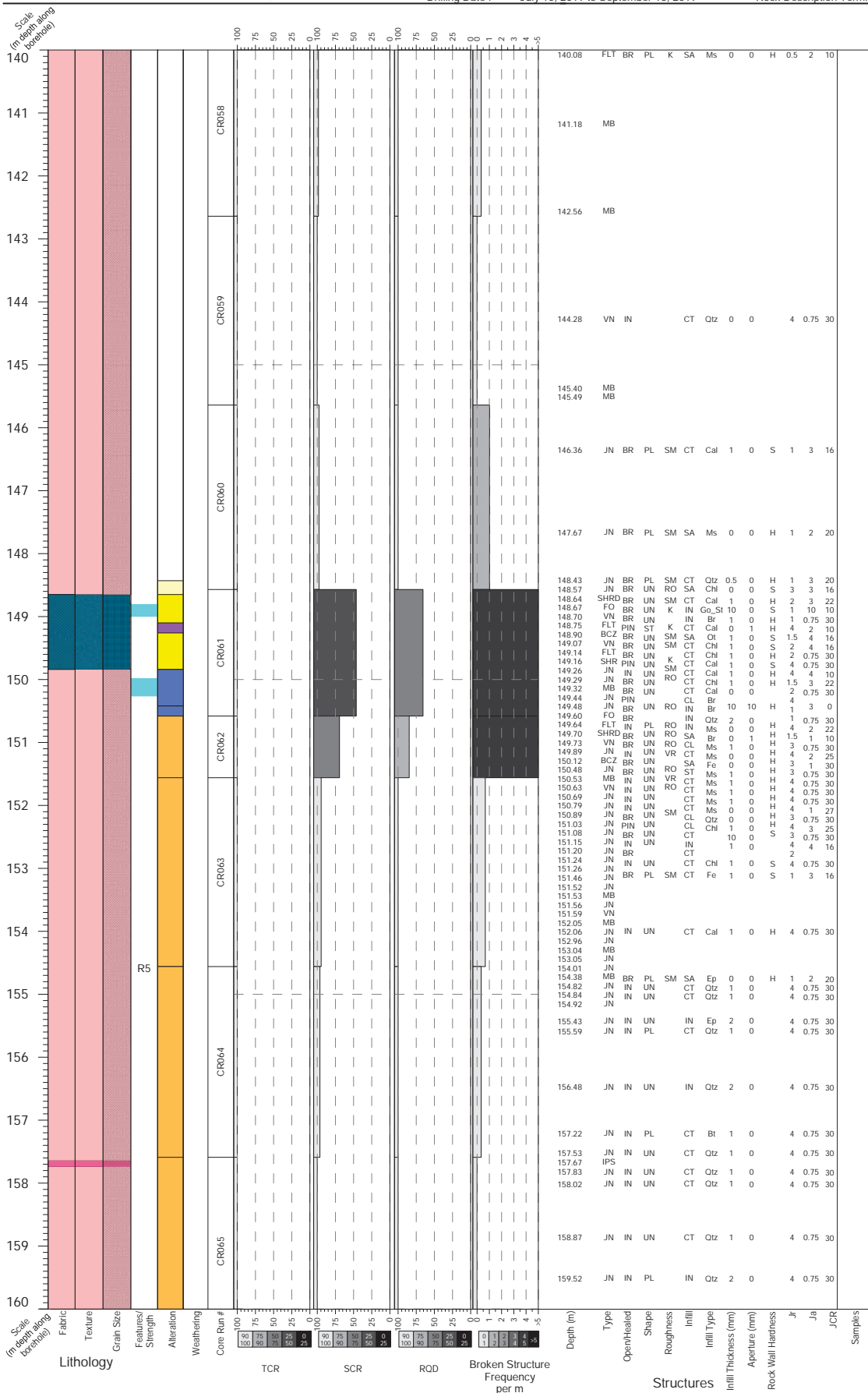
IG_BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Røfren Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

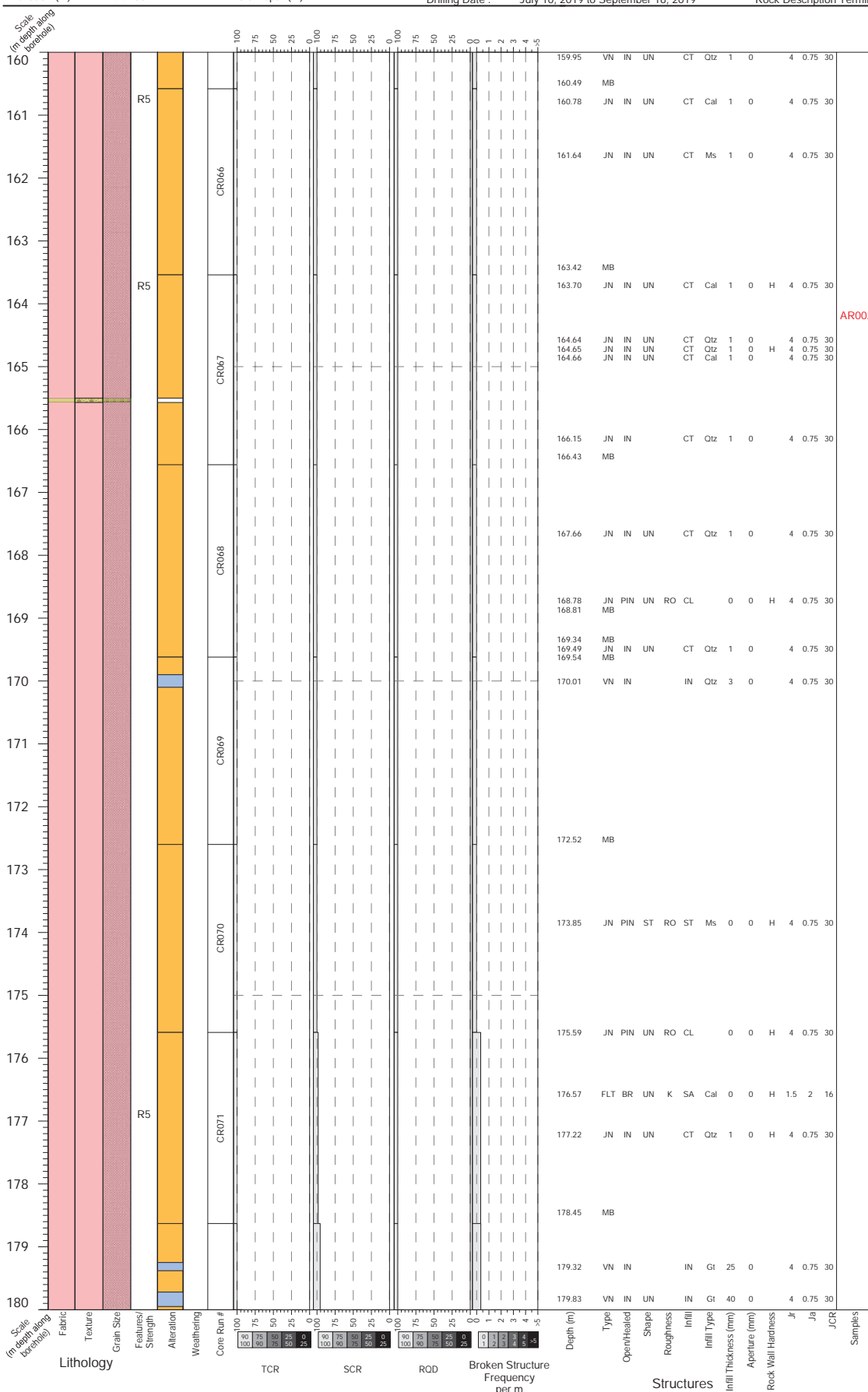
IG_BH03

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 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Rodren Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

IG_BH03

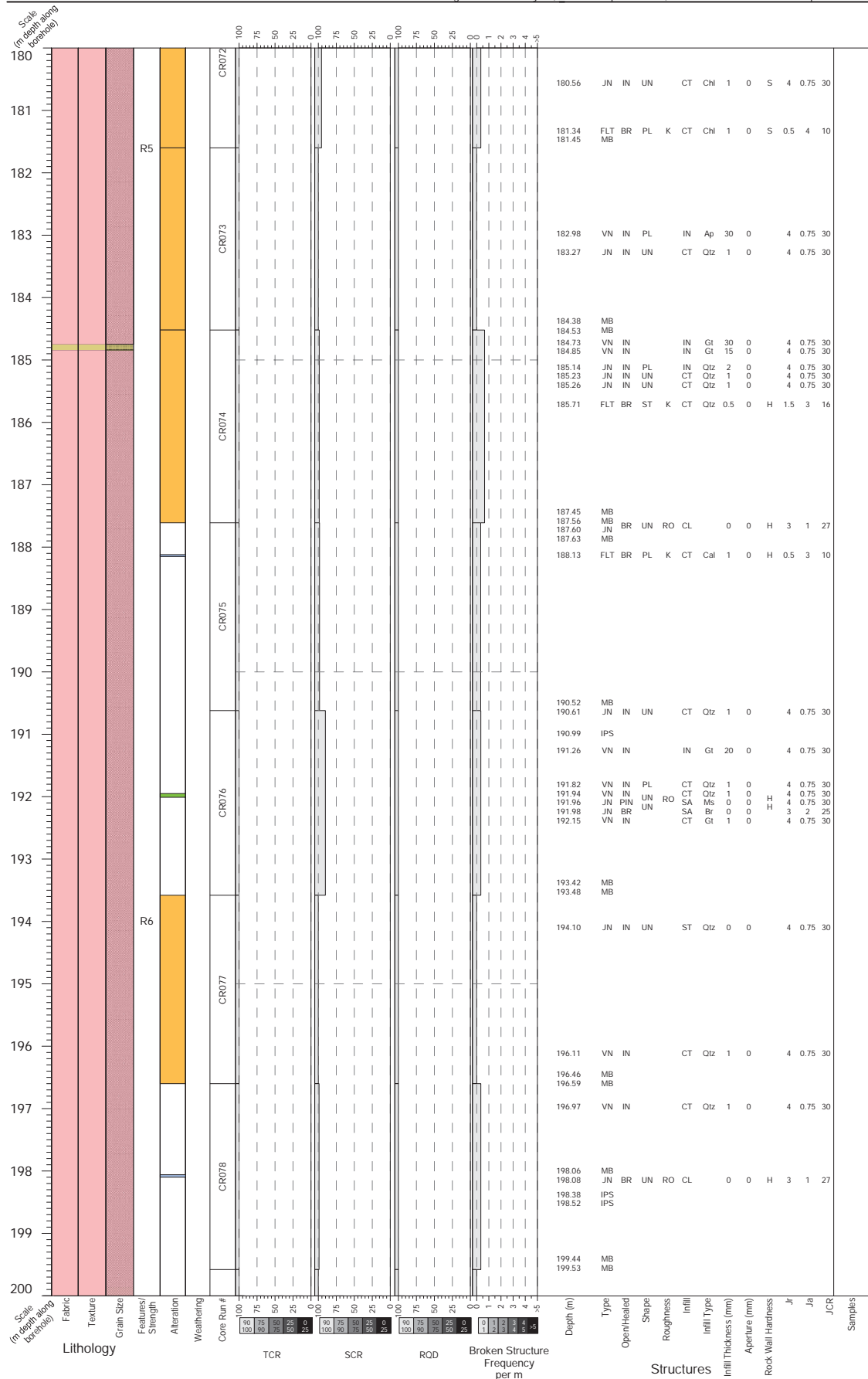
10 of 51

Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Rodden Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

IG_BH03

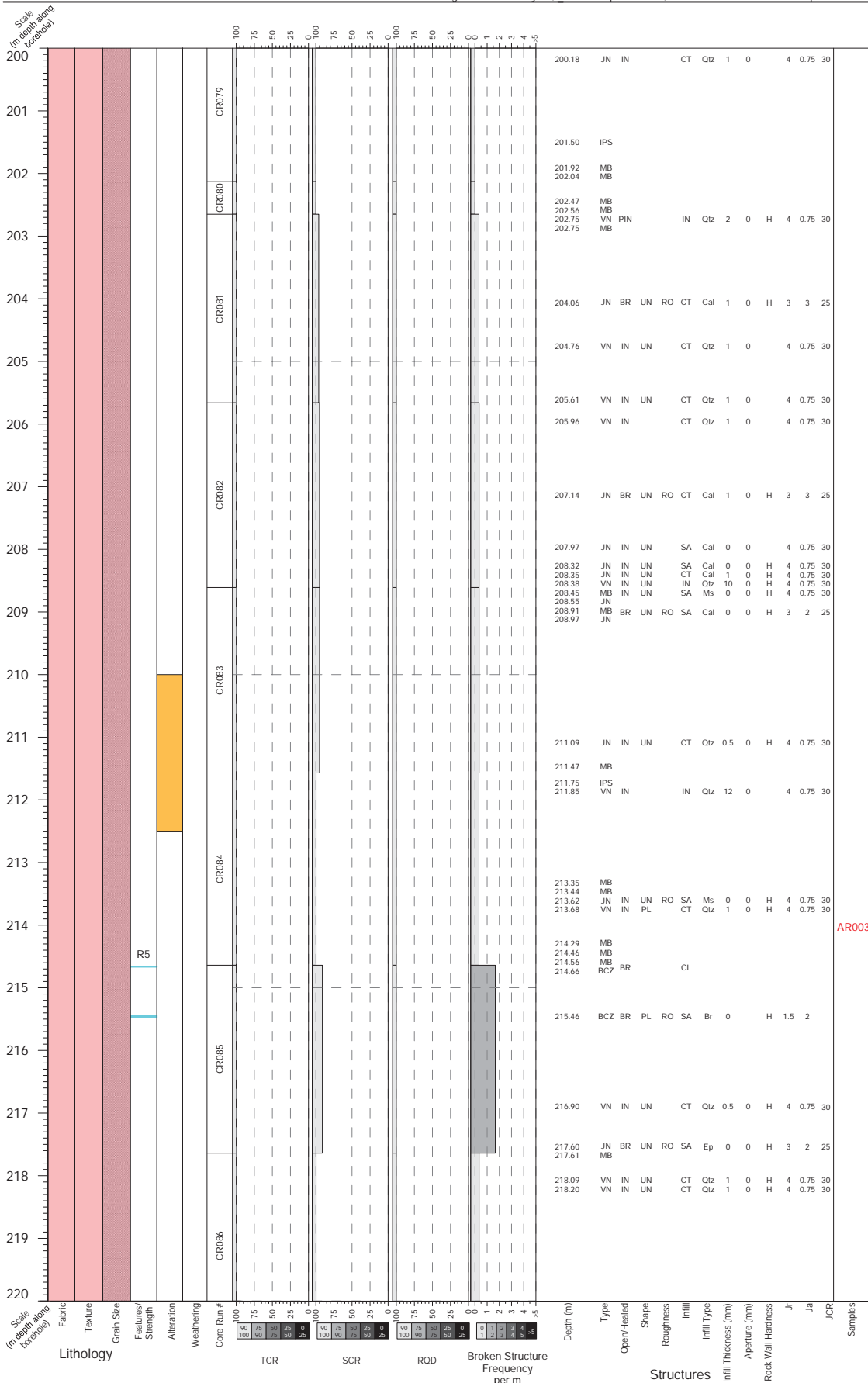
11 of 51

Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

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CONSULTANT



GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

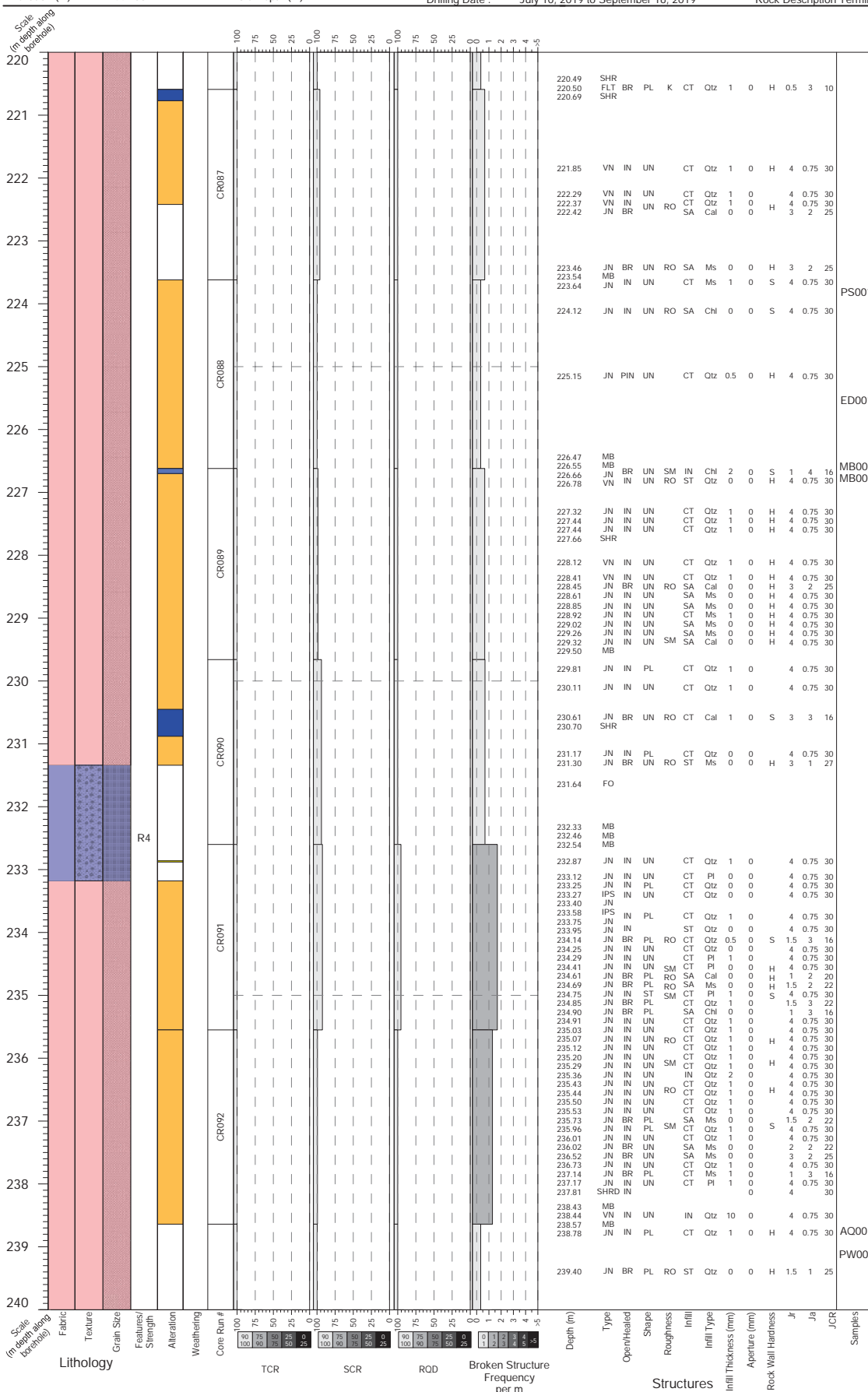
IG_BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
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2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

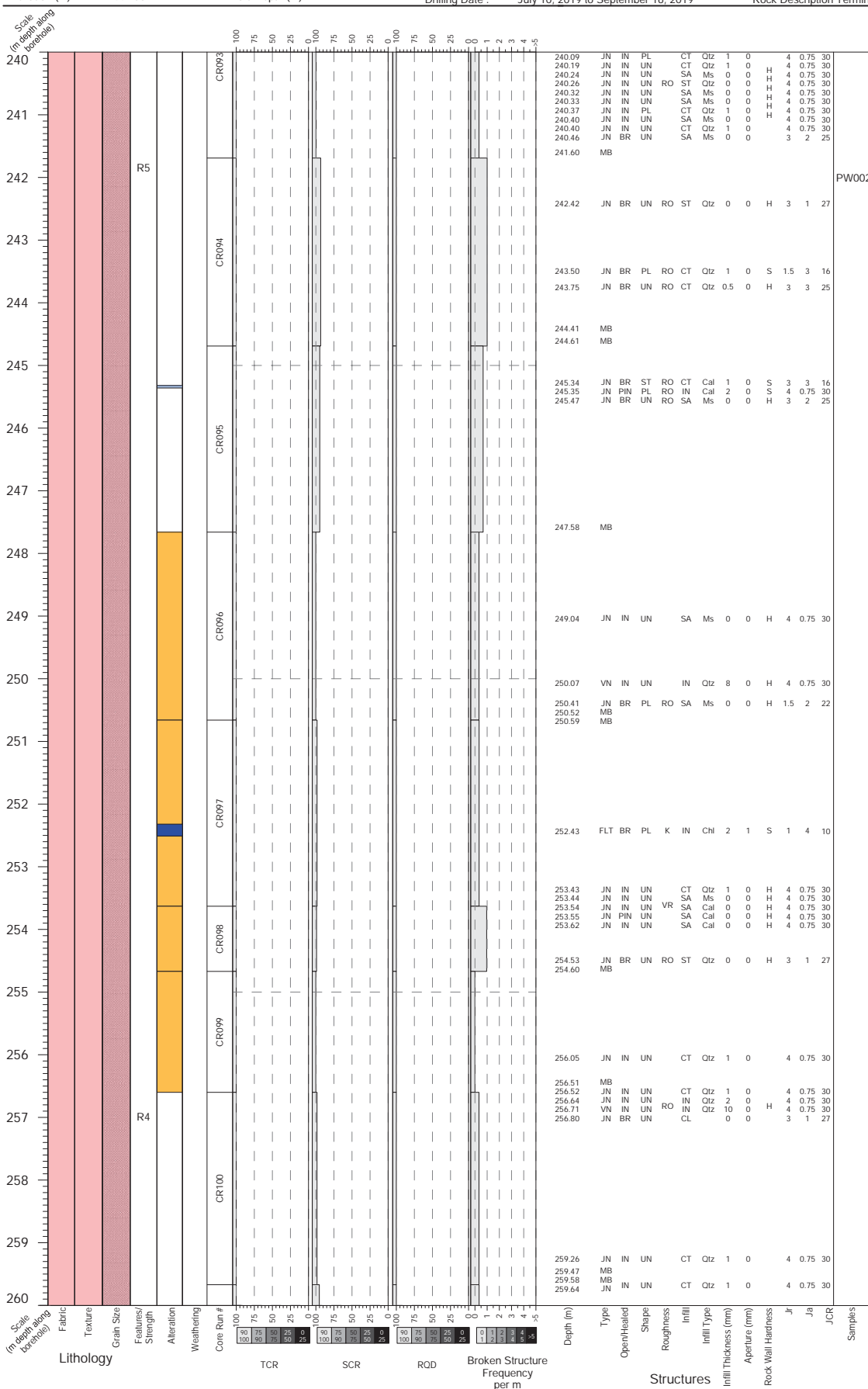
IG_BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
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CONSULTANT



GOLDER

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1671632A (2301)

IG_BH03

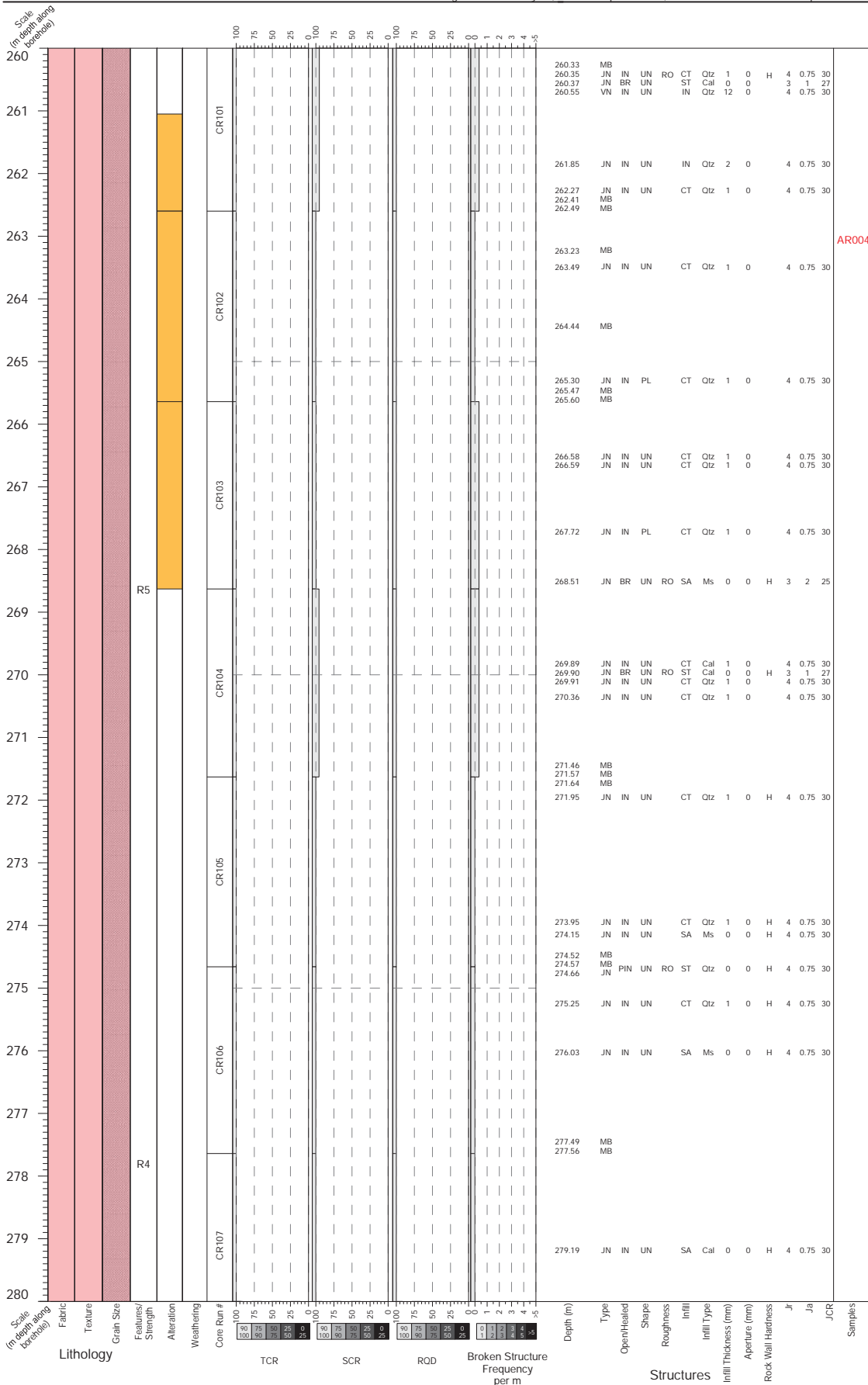
14 of 51

Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
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CONSULTANT



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1671632A (2301)

IG_BH03

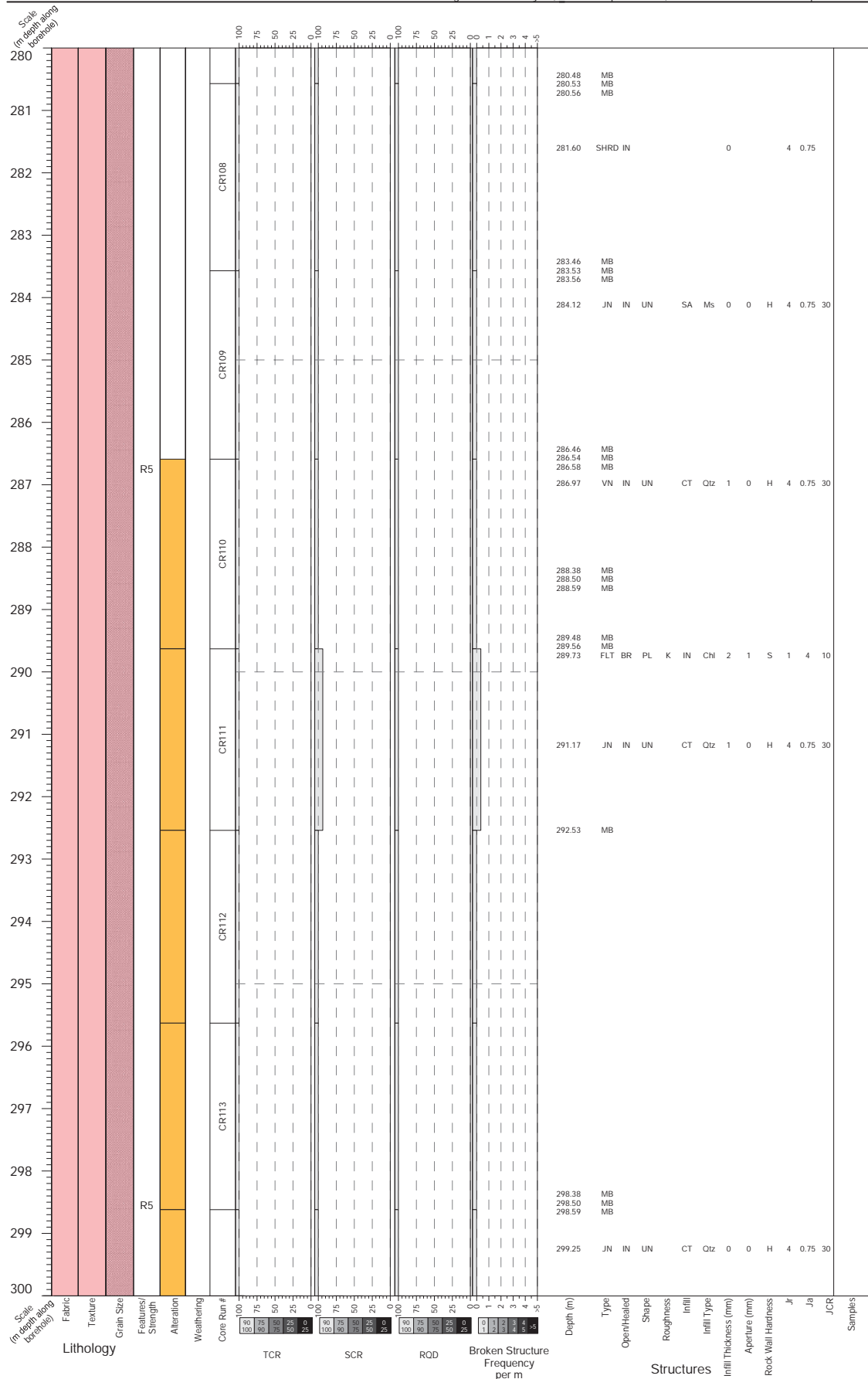
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Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
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Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Rofren Drilling Ltd.
Drill Core Size : HQ3
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CONSULTANT



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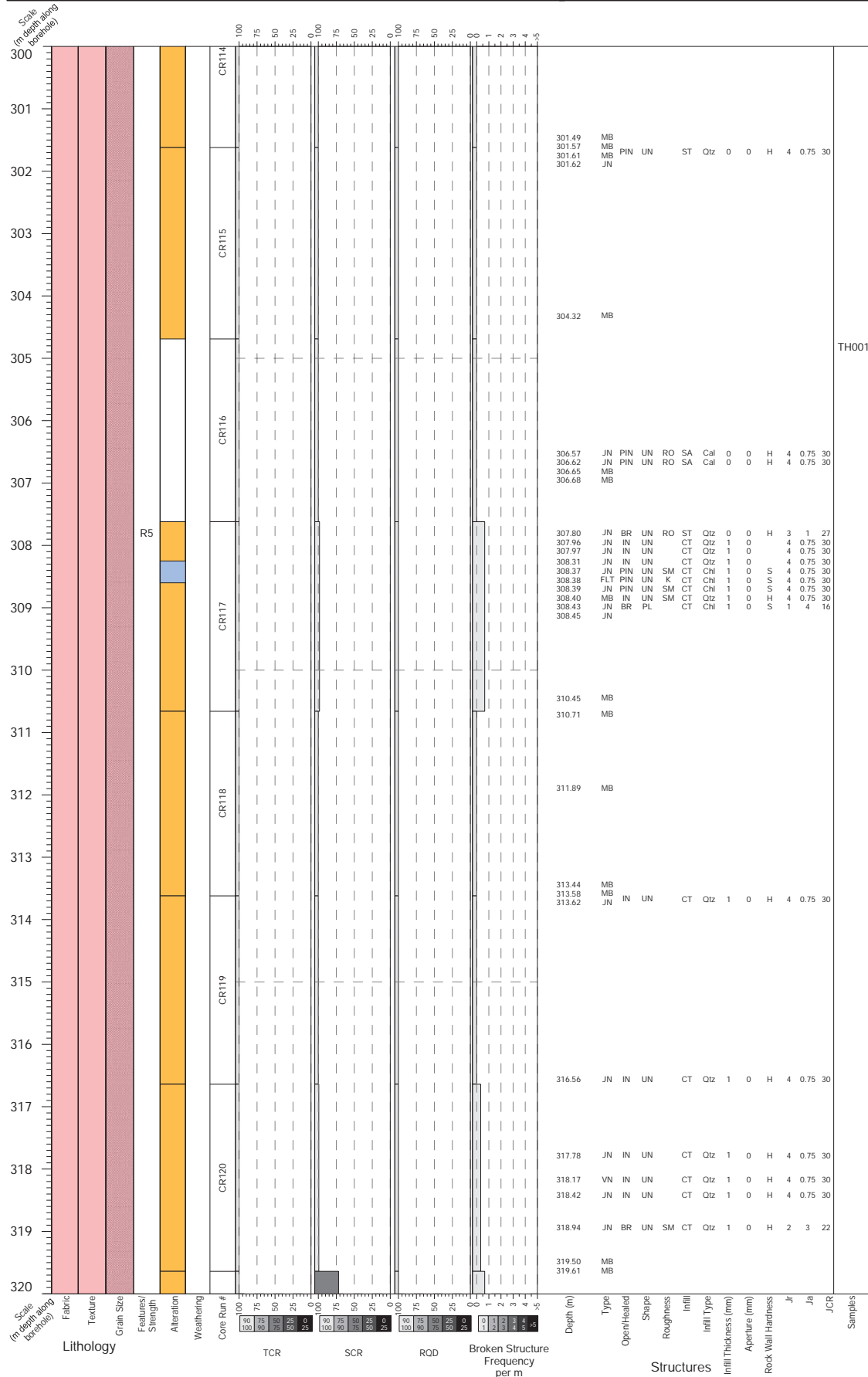
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Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
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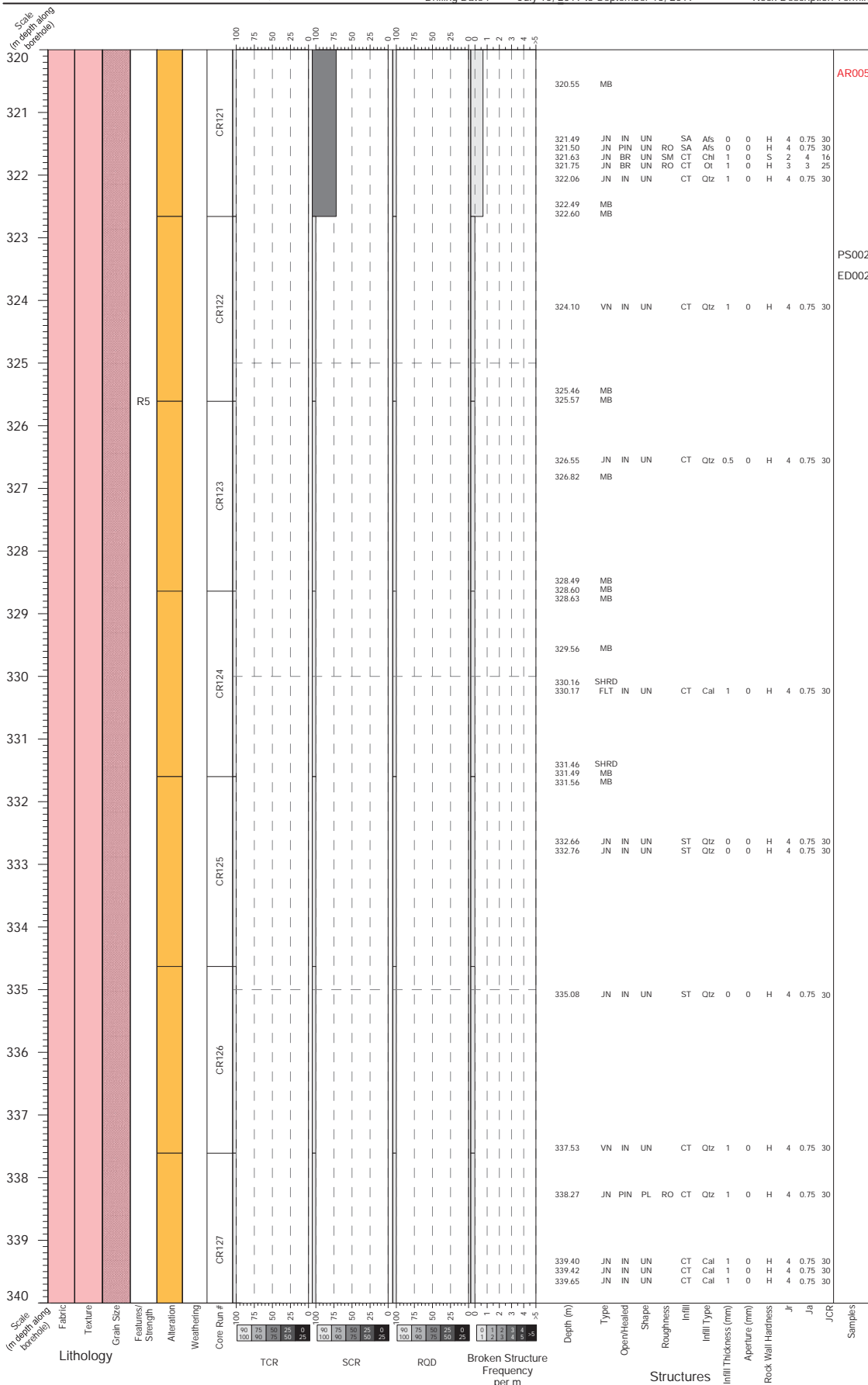
17 of 51

Northing (m) : 5484534.33
Easting (m) : 556171.46
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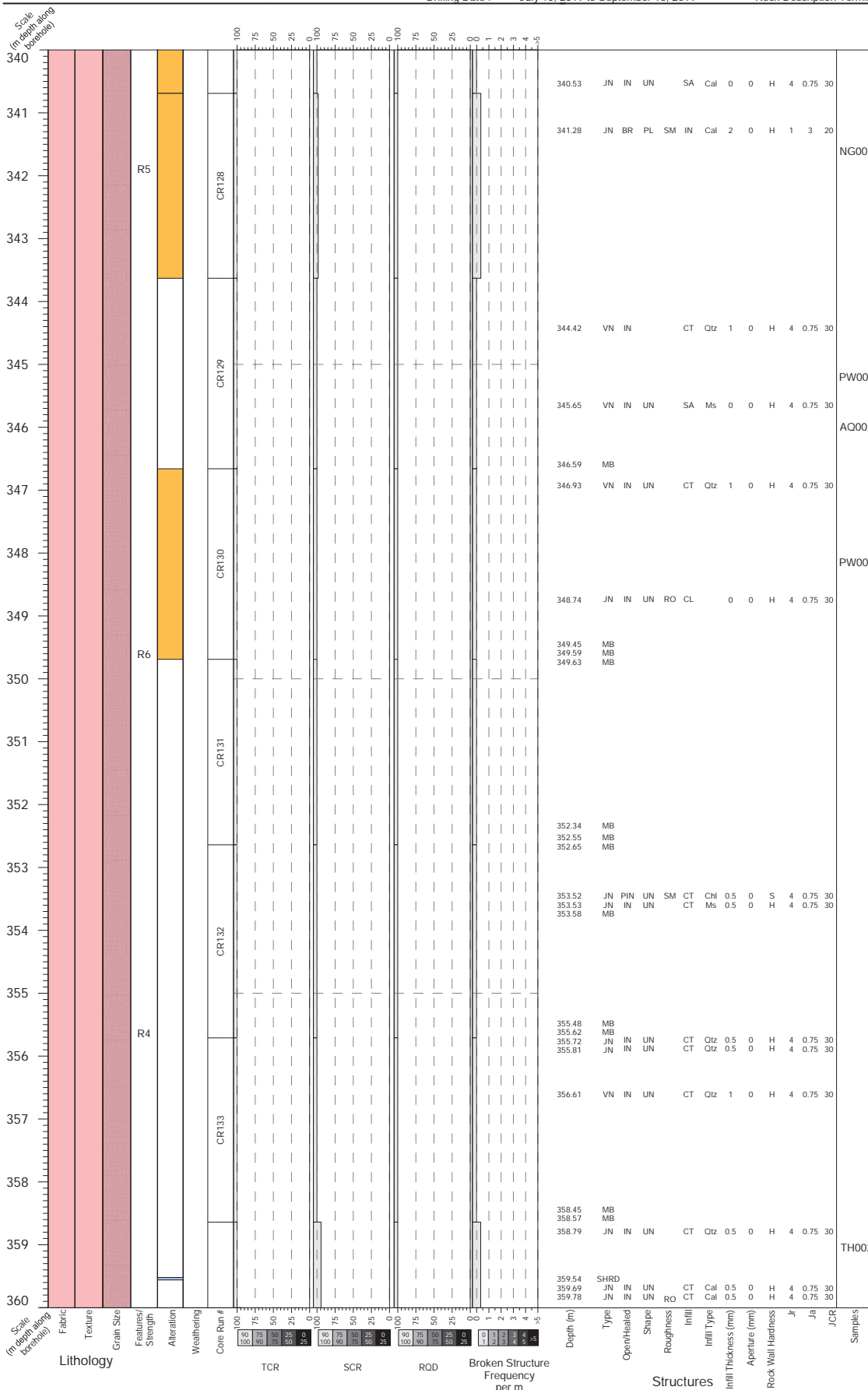
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CONSULTANT



GOLDER

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NWMO Ignace Drilling

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1671632A (2301)

IG_BH03

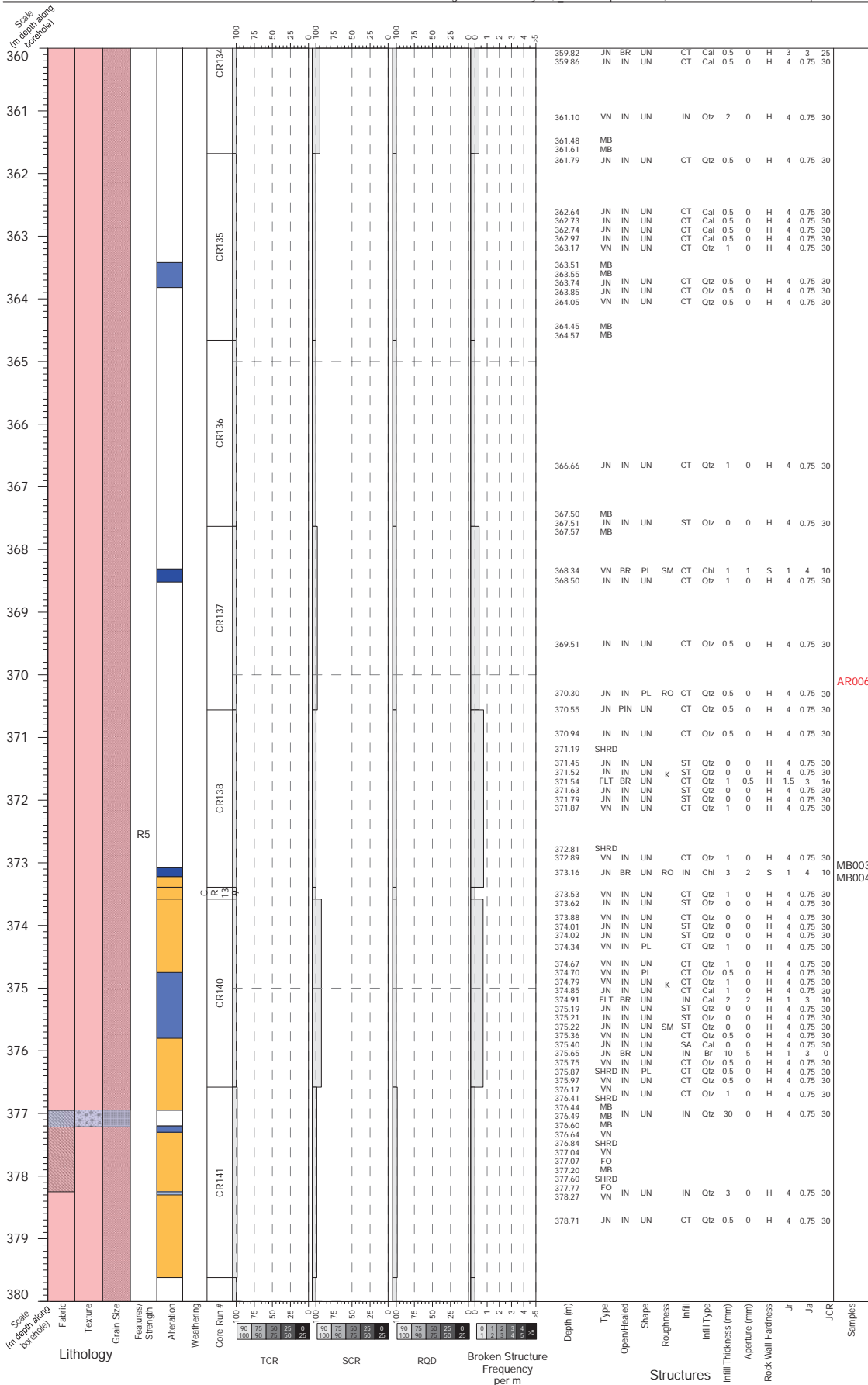
19 of 51

Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

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Contractor : Redfern Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

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CONSULTANT



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NWMO Ignace Drilling

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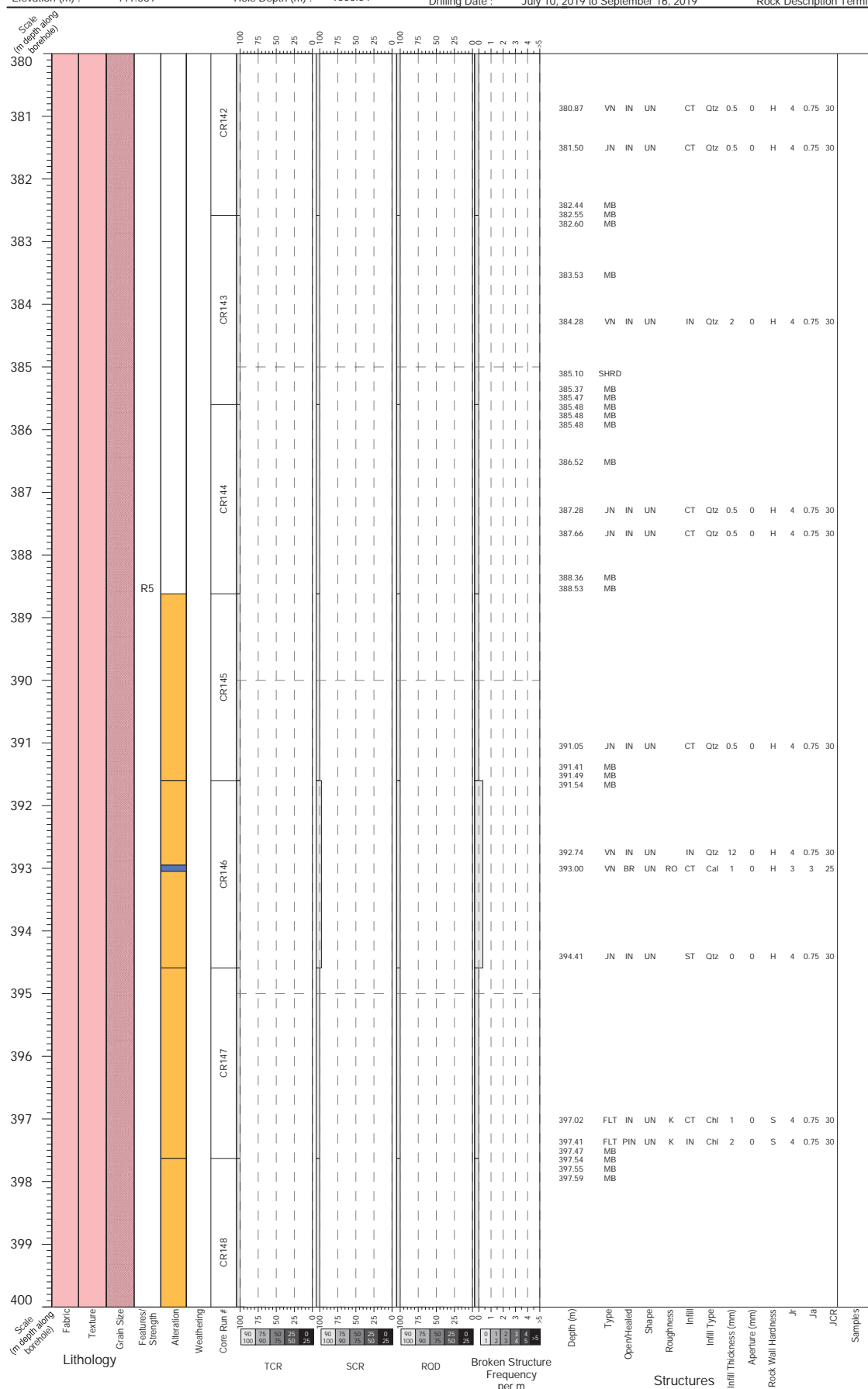
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CONSULTANT



GOLDER

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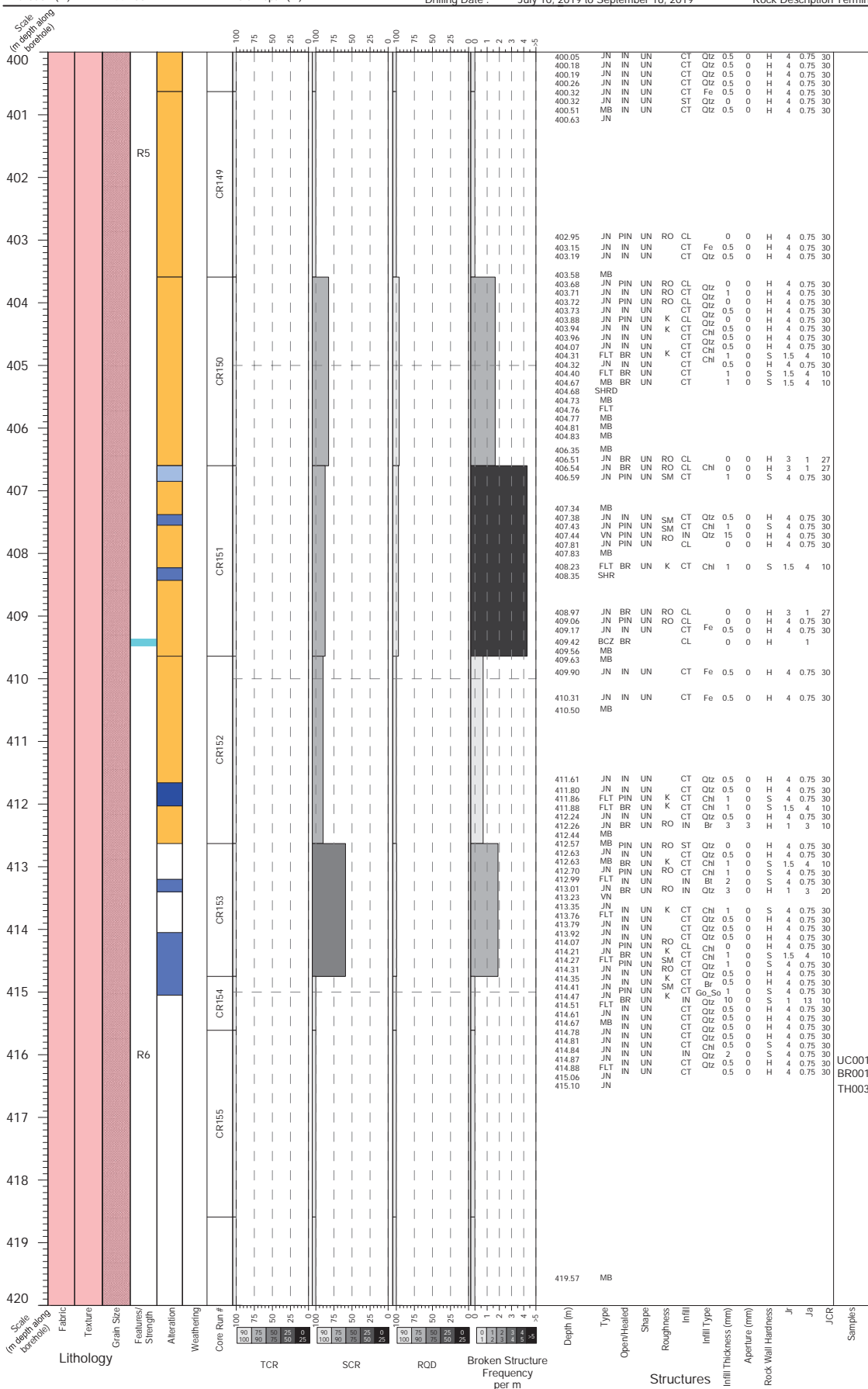
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CONSULTANT



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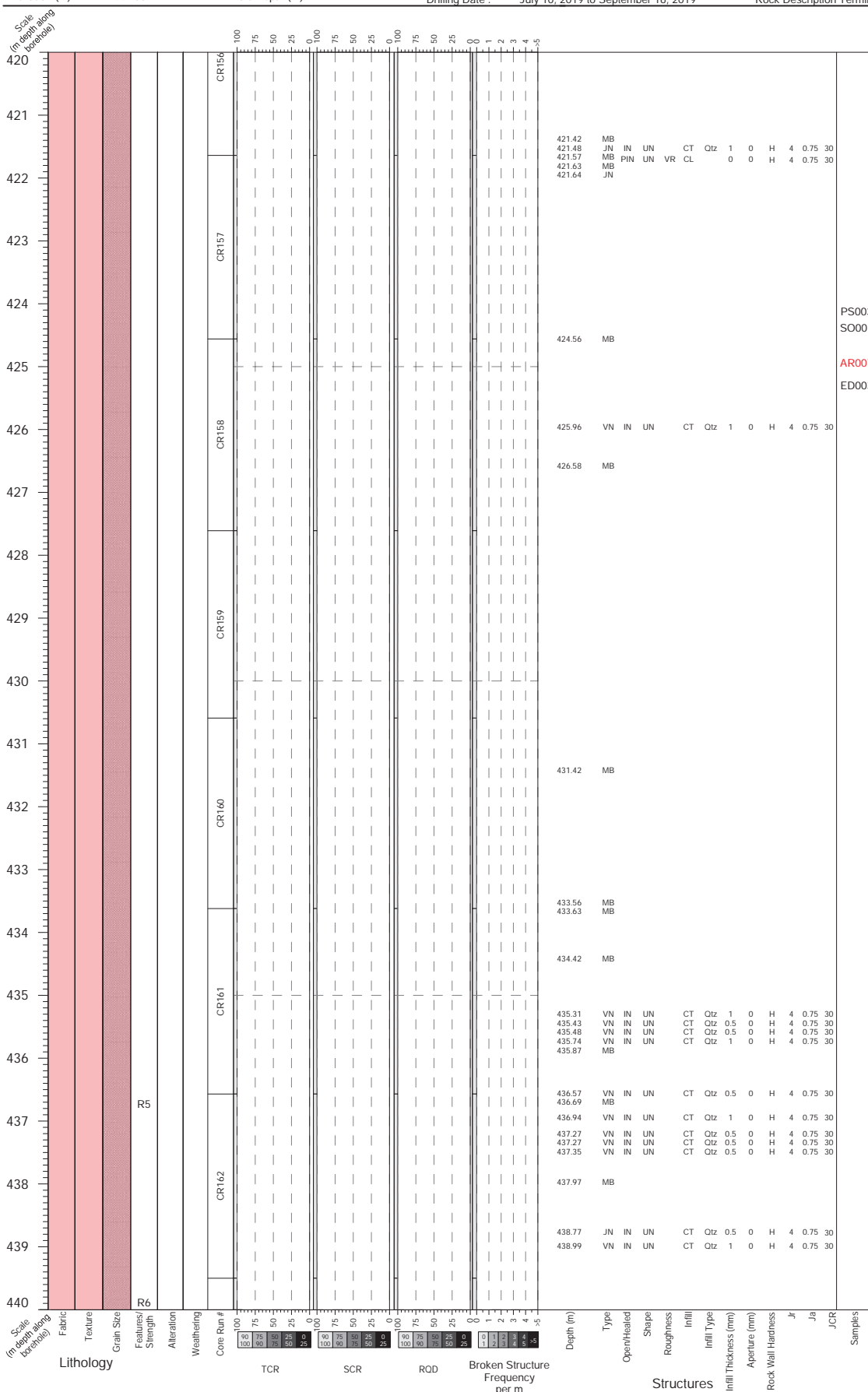
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CONSULTANT



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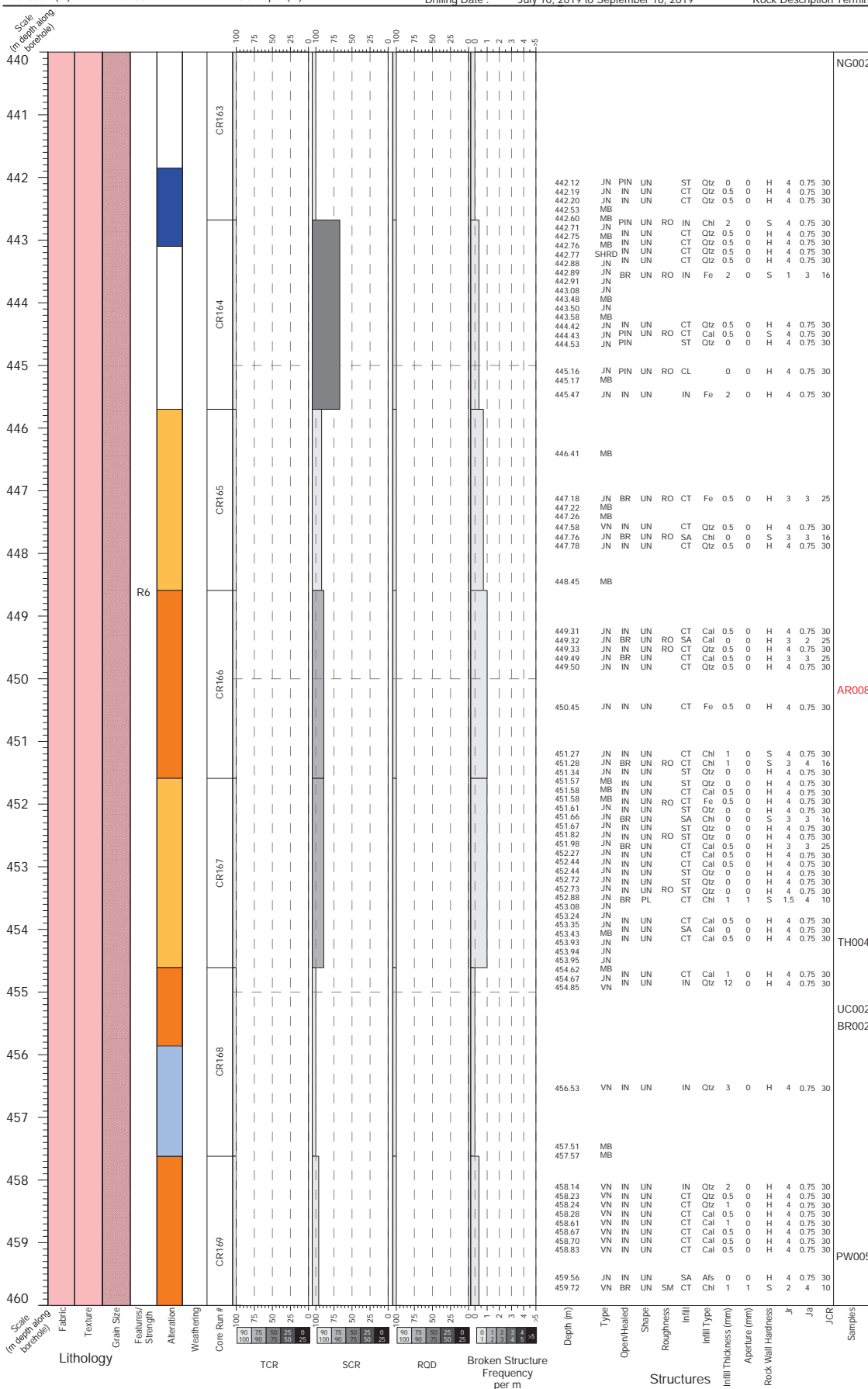
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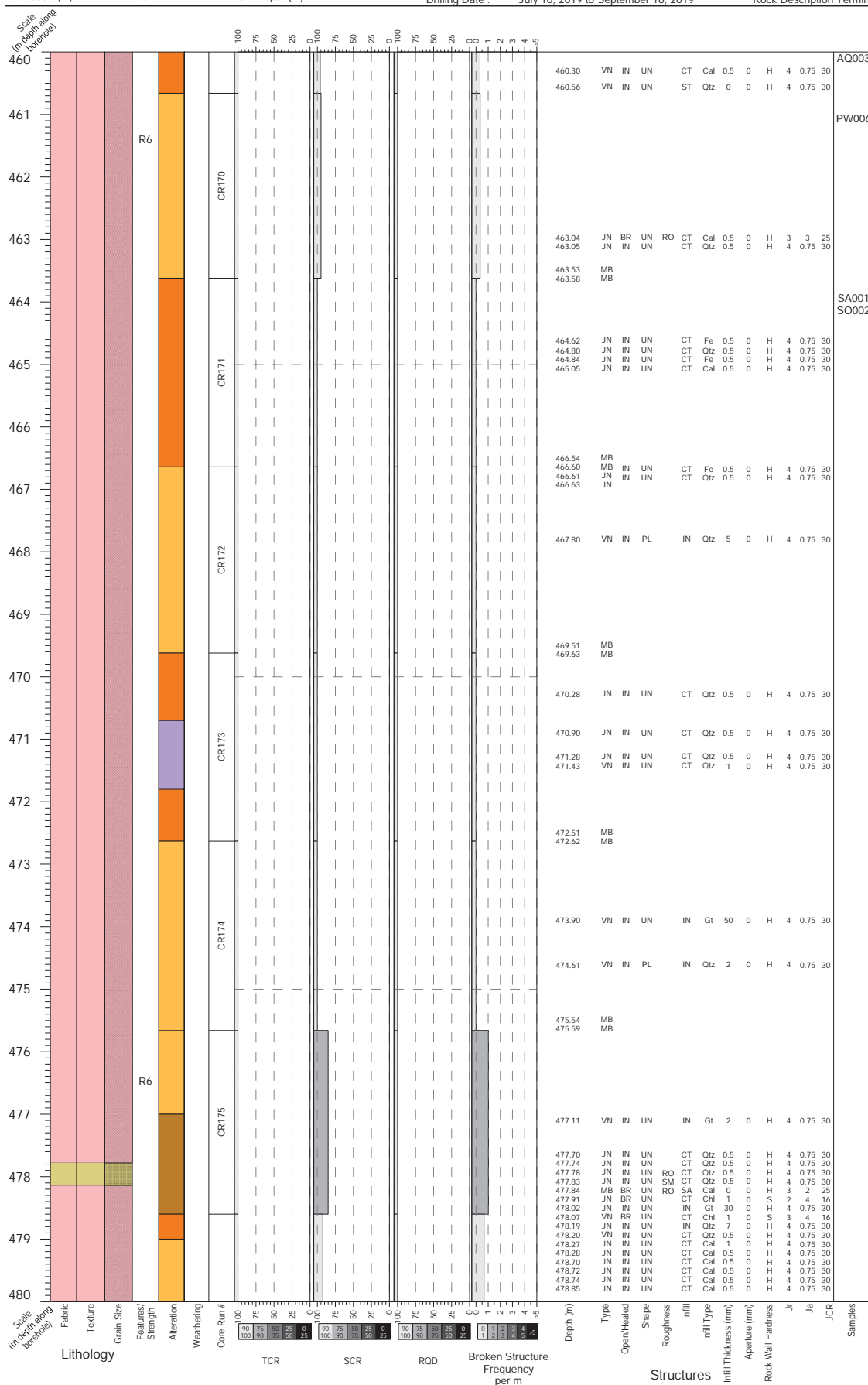
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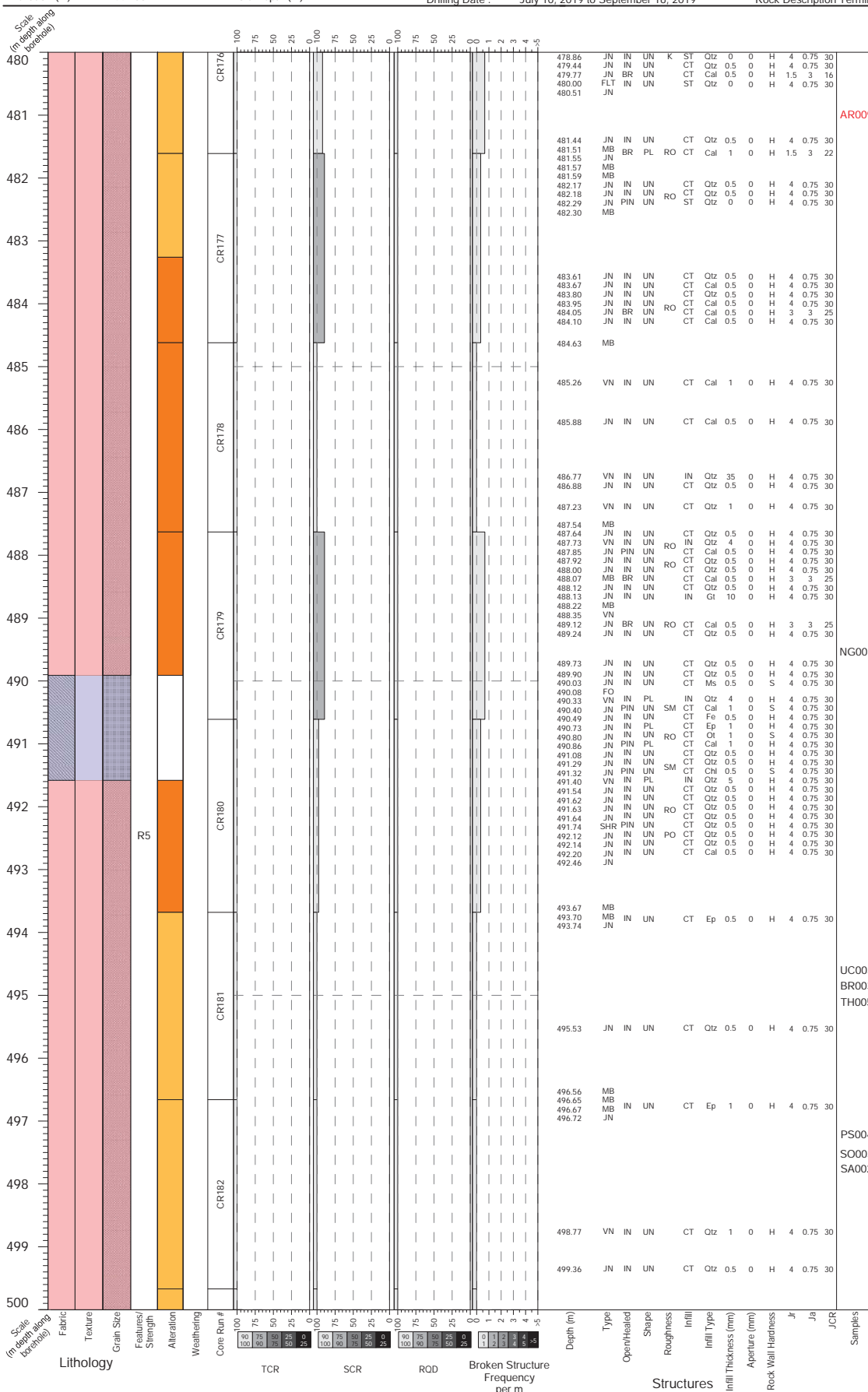
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CONSULTANT



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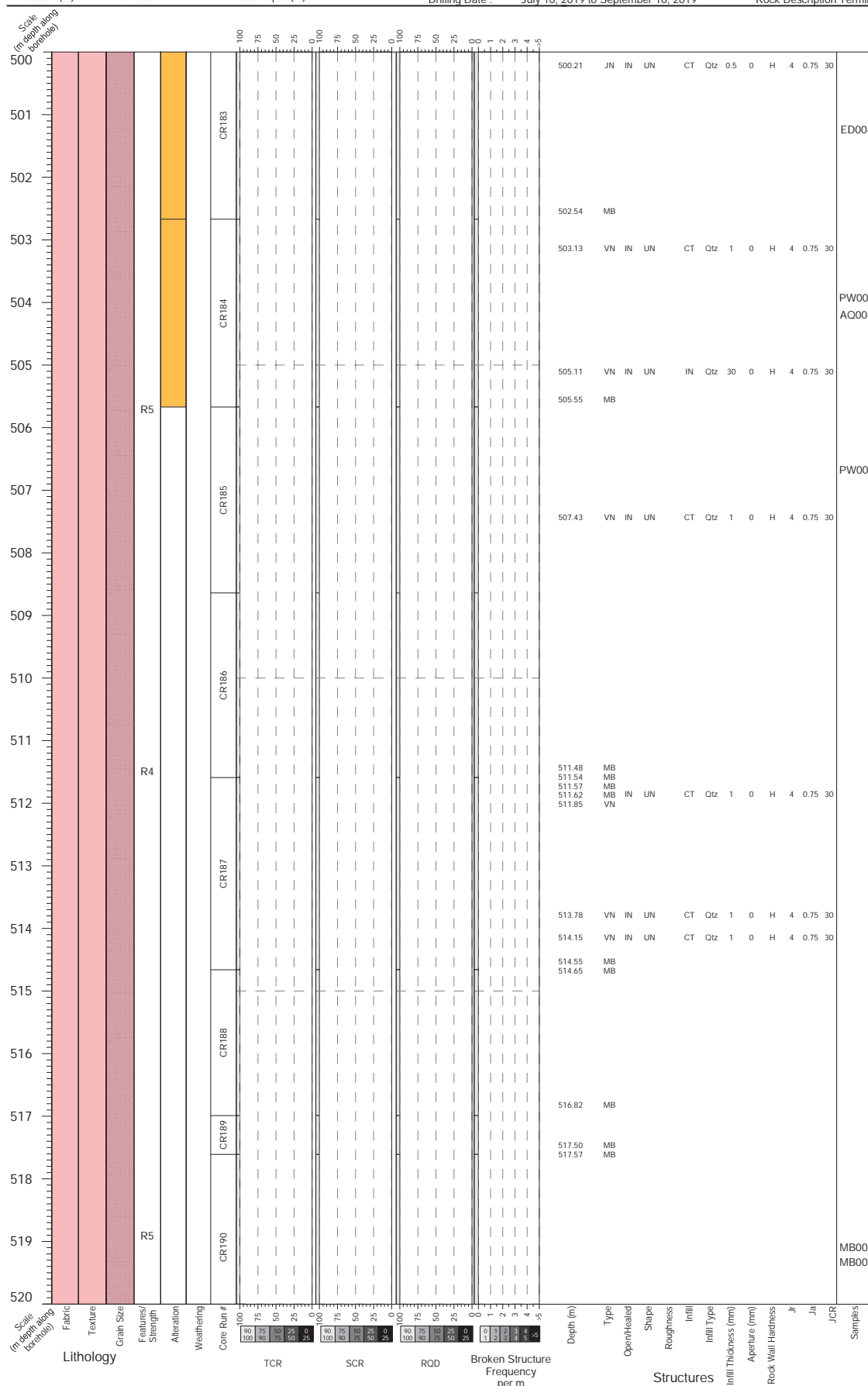
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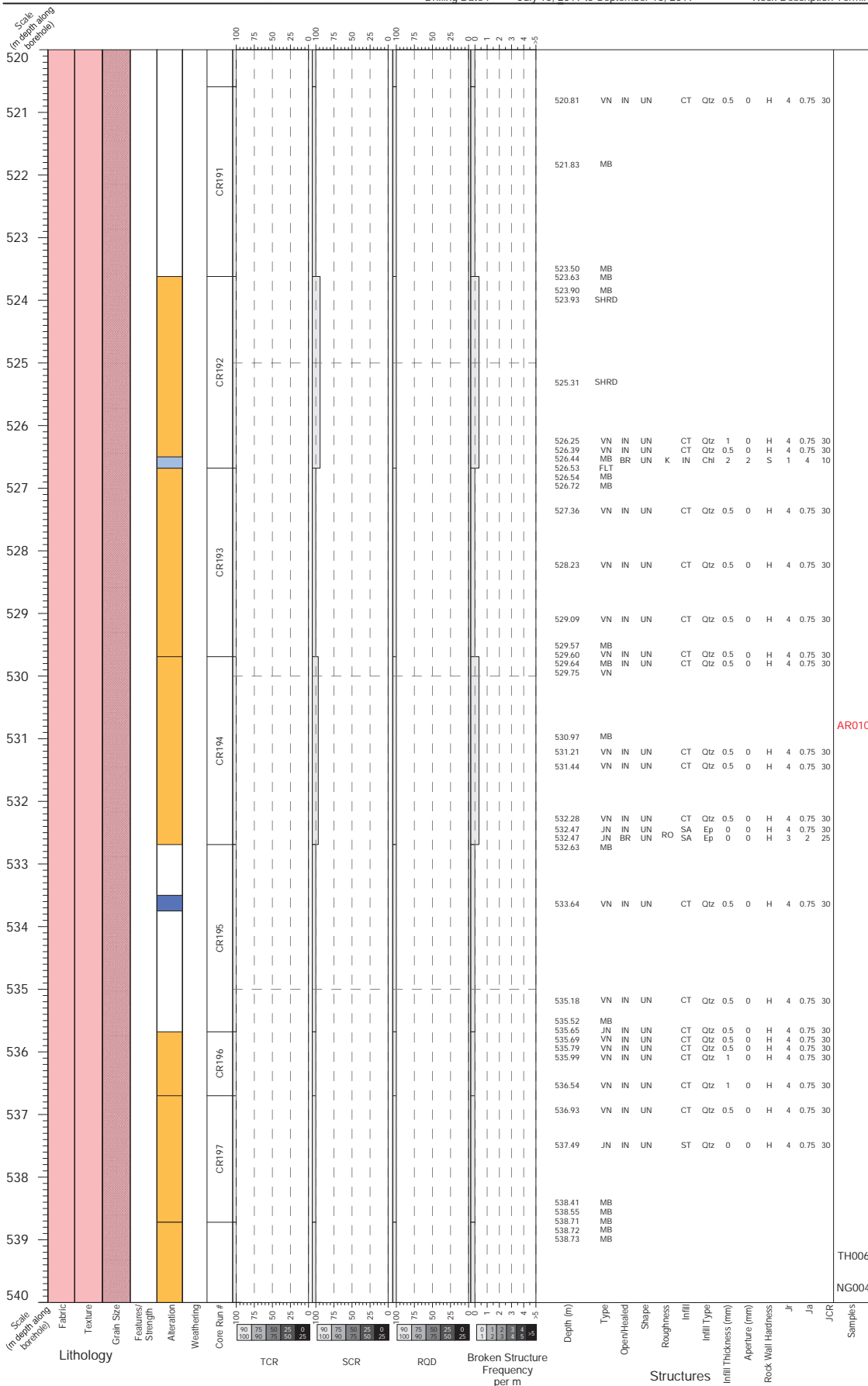
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CONSULTANT



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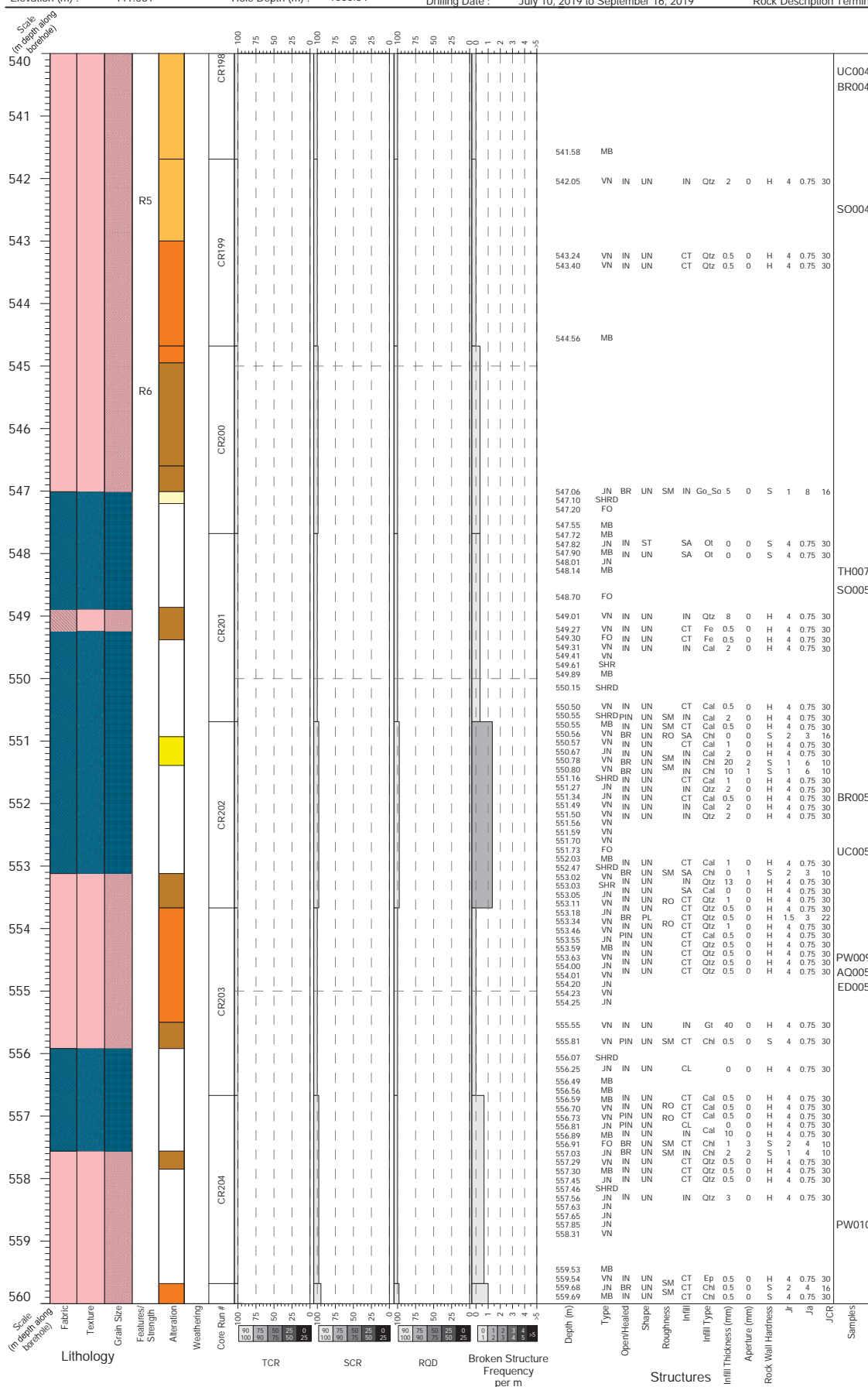
IG BH03

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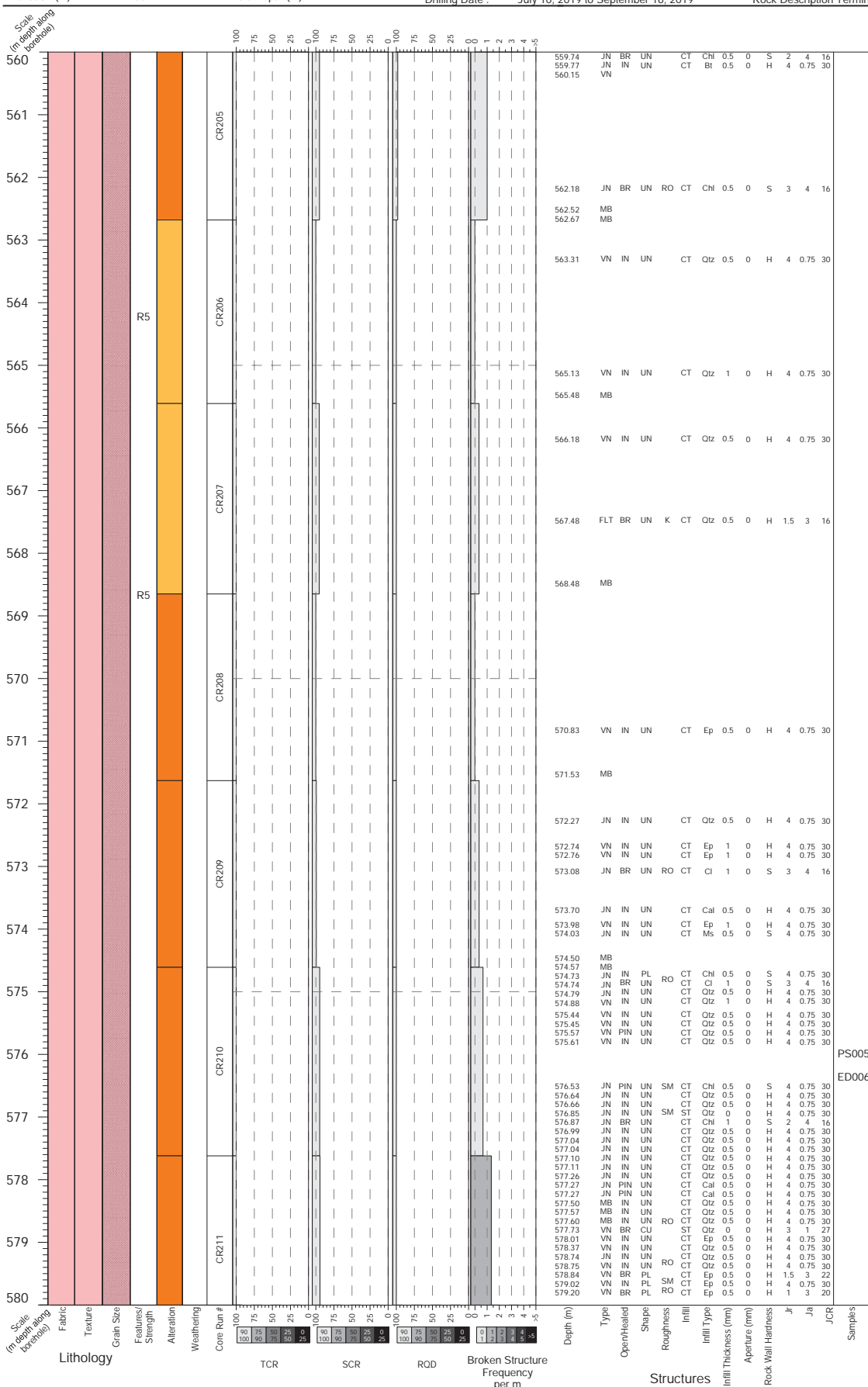
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CONSULTANT



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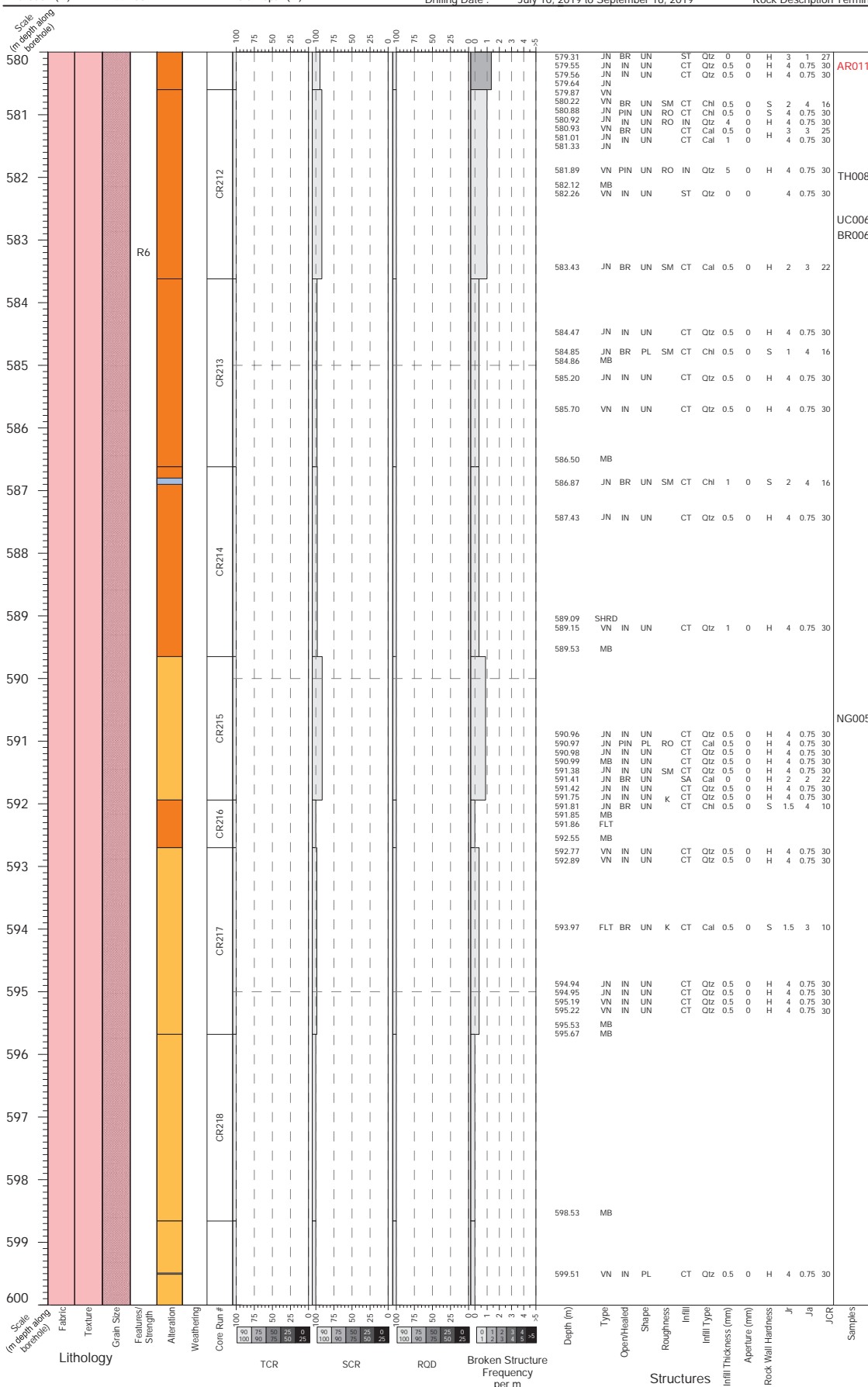
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CONSULTANT



GOLDER

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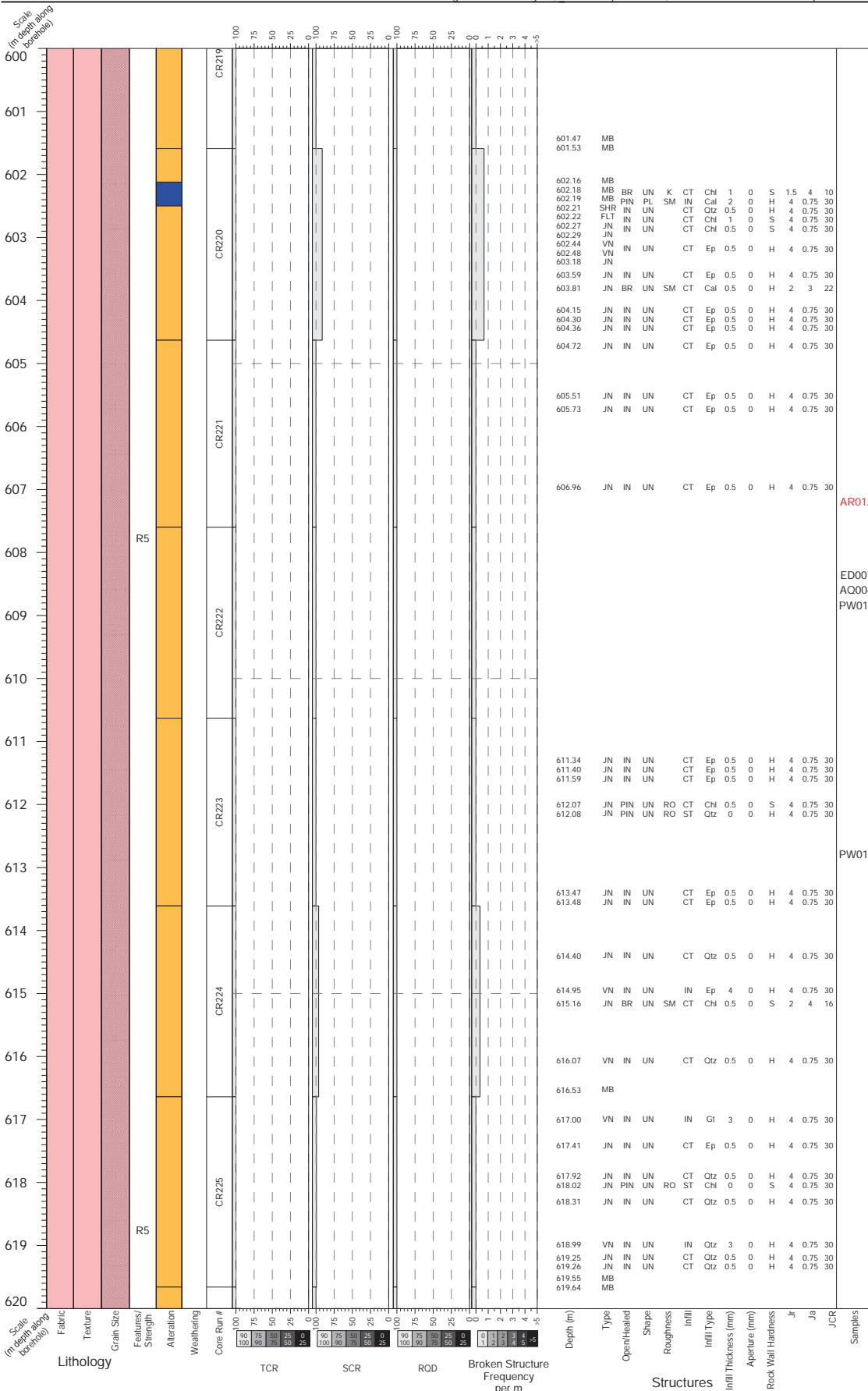
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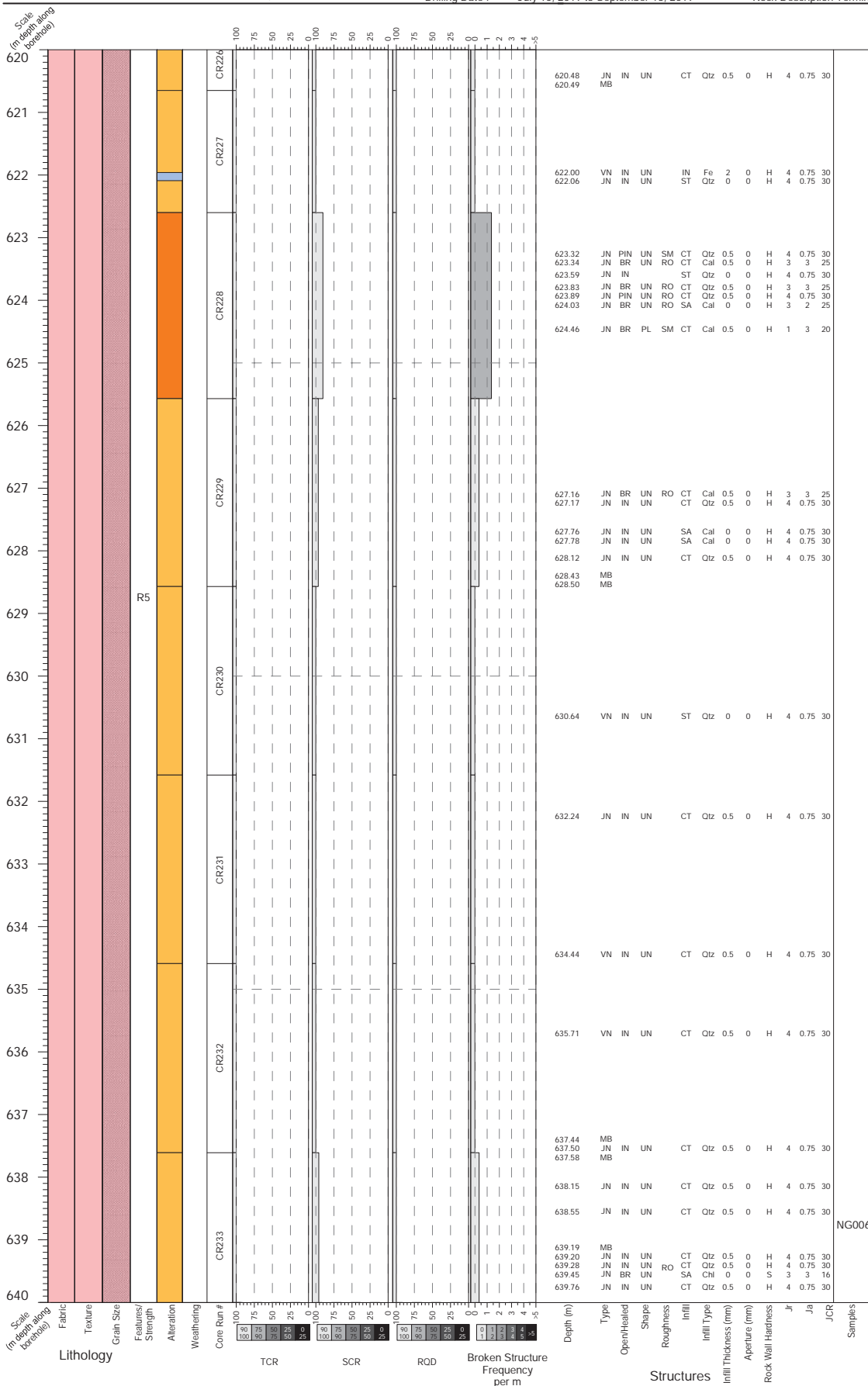
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CONSULTANT



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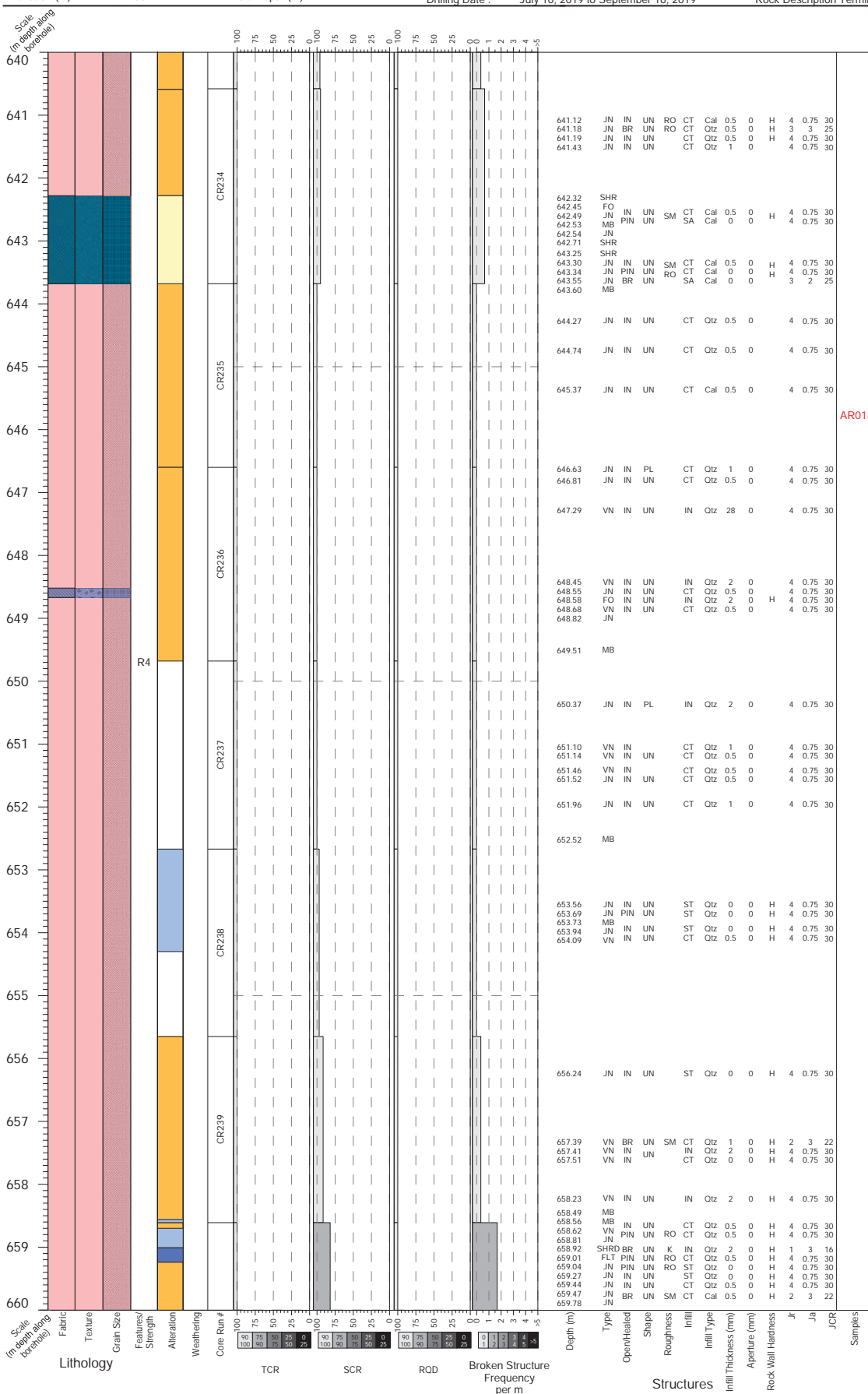
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CONSULTANT



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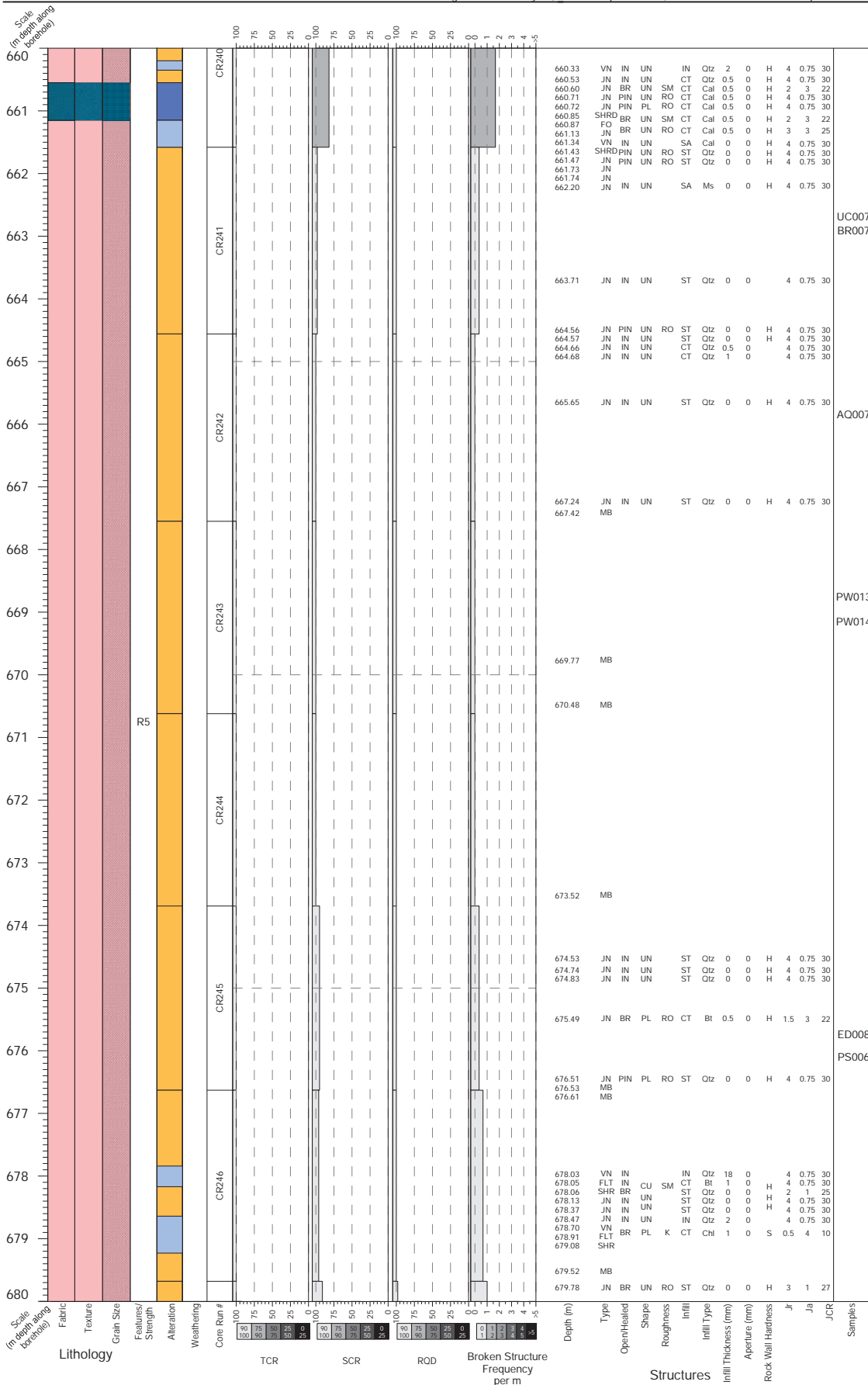
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Northing (m) : 5484534.33
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CONSULTANT



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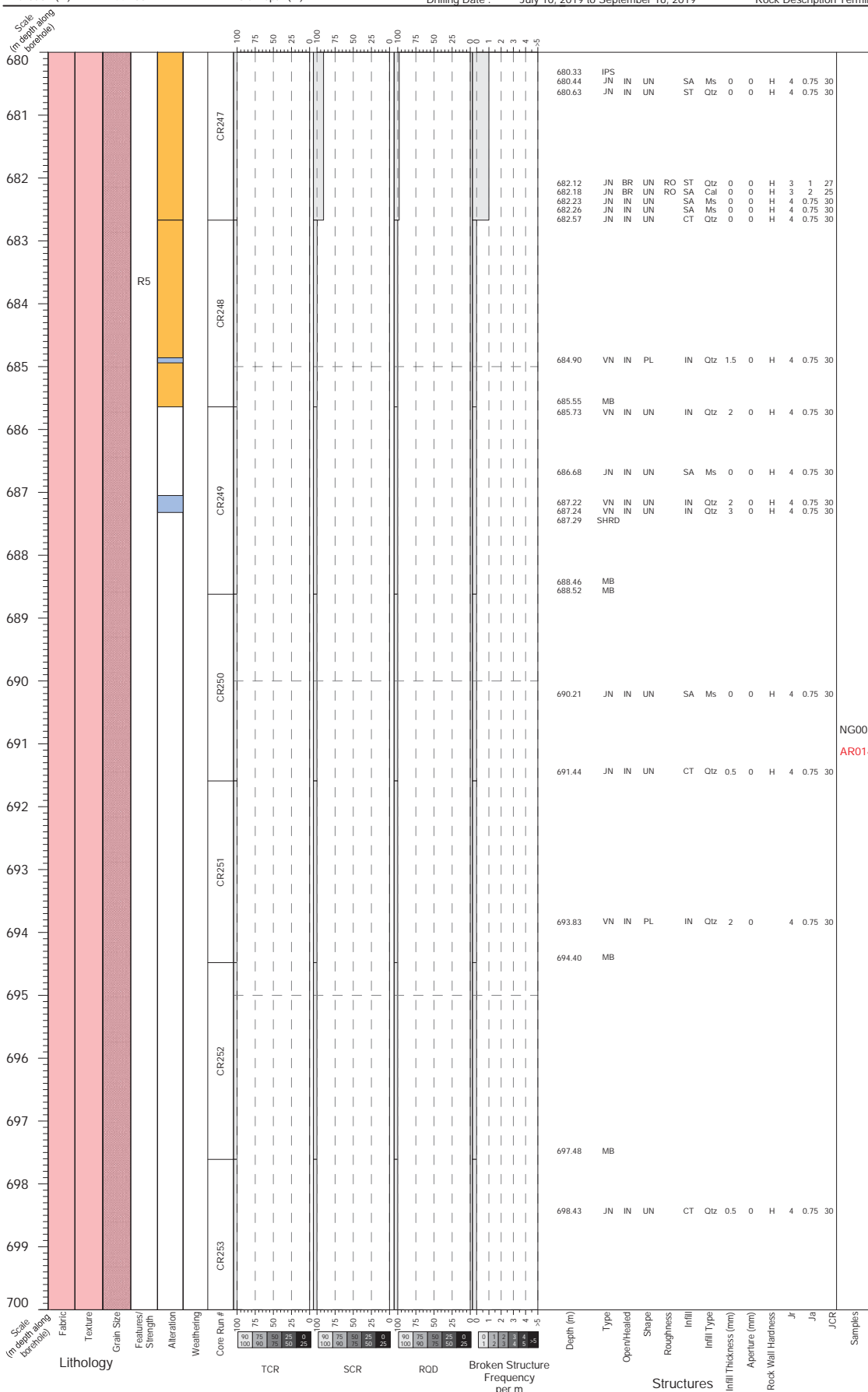
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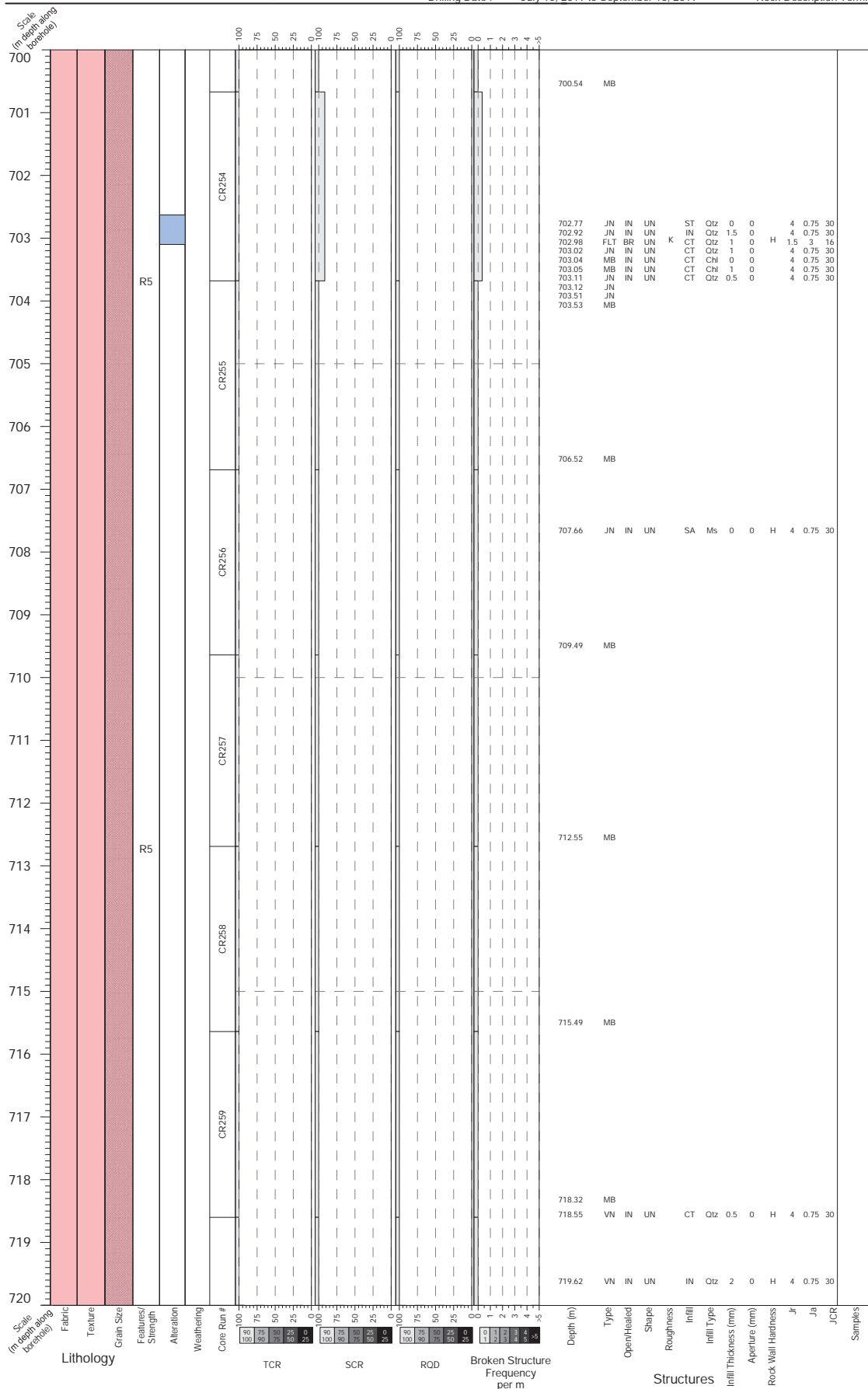
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CONSULTANT



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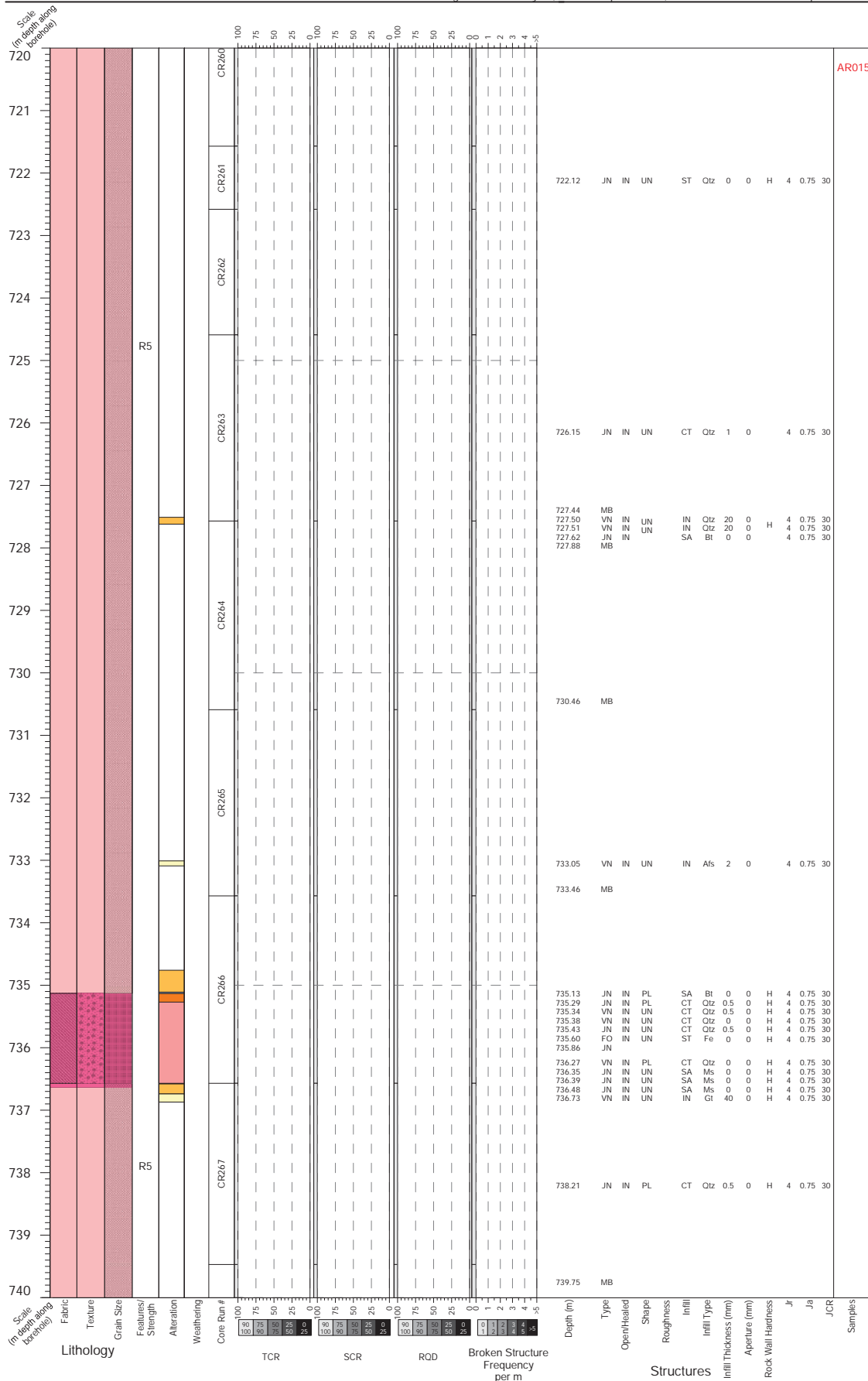
37 of 51

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Collar Azimuth (°) : 185.3
Collar Dip (°) : -69.5
Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
Contractor : Røfren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



CONSULTANT



GOLDER

CLIENT

NWMO Ignace Drilling

TITLE

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

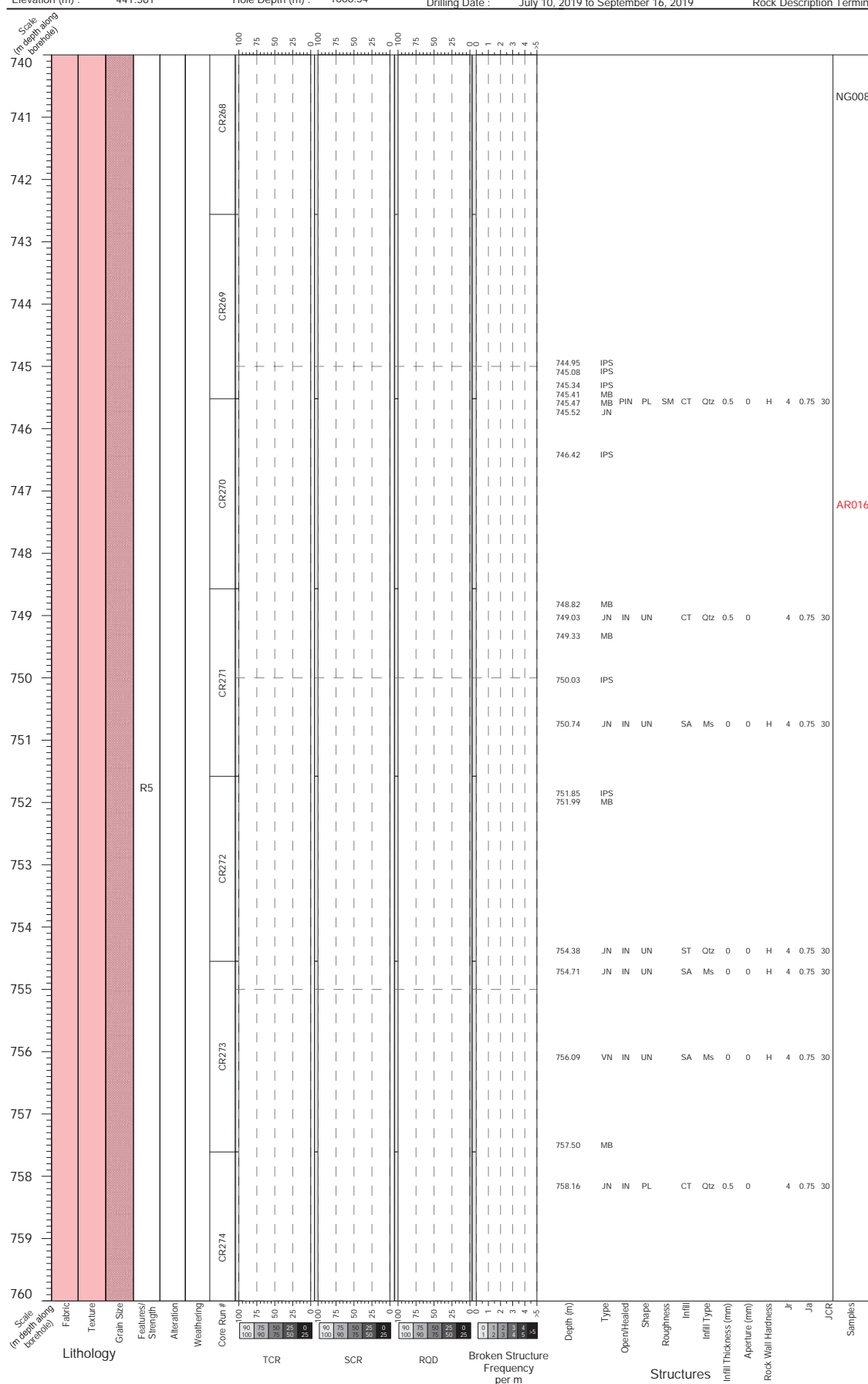
IG_BH03

Northing (m) : 5484534.33
 Easting (m) : 556171.46
 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Rodren Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

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CONSULTANT



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2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

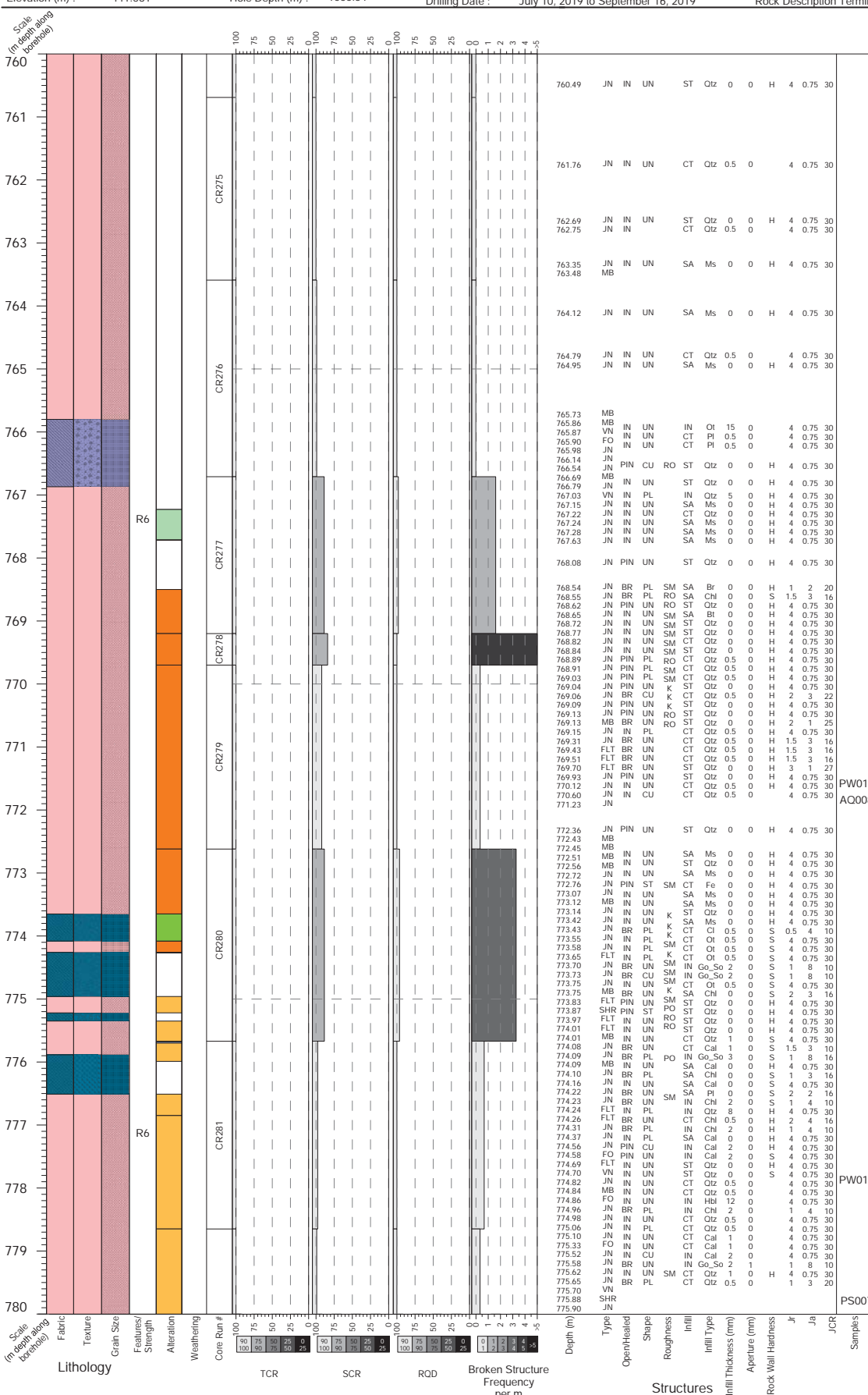
IG BH03

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Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
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CONSULTANT



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YYYY-MM-DD
2020-09-02

DRAWN/REV
KF/CM

PROJECT NO.
1671632A (2301)

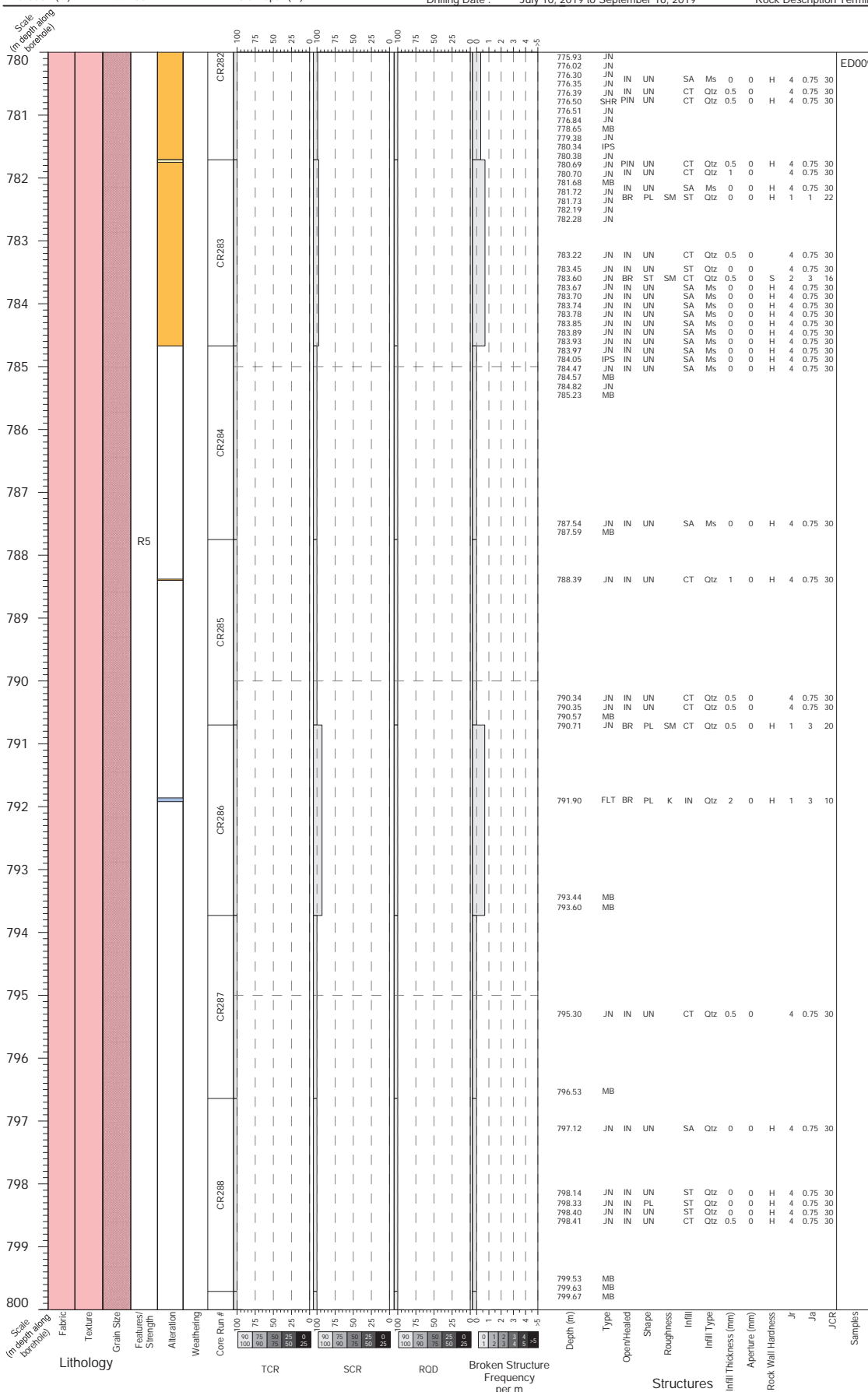
IG_BH03

Northing (m) : 5484534.33
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 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Redfern Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

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YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)

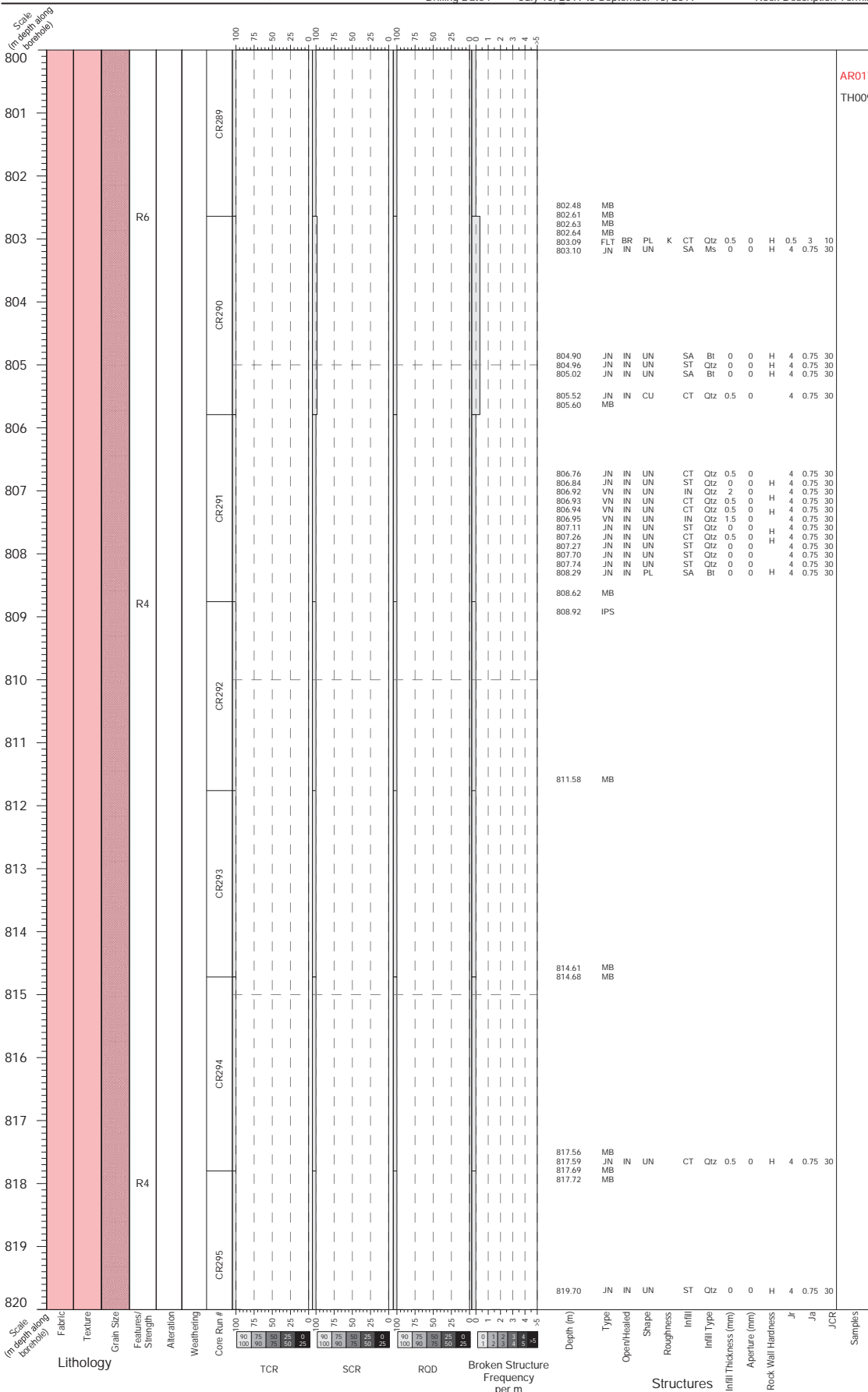
IG BH03

Northing (m) : 5484534.33
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Record of Core Logging

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2020-09-02

DRAWN/REV

KF/CM

PROJECT NO. _____

1671632A (2301)

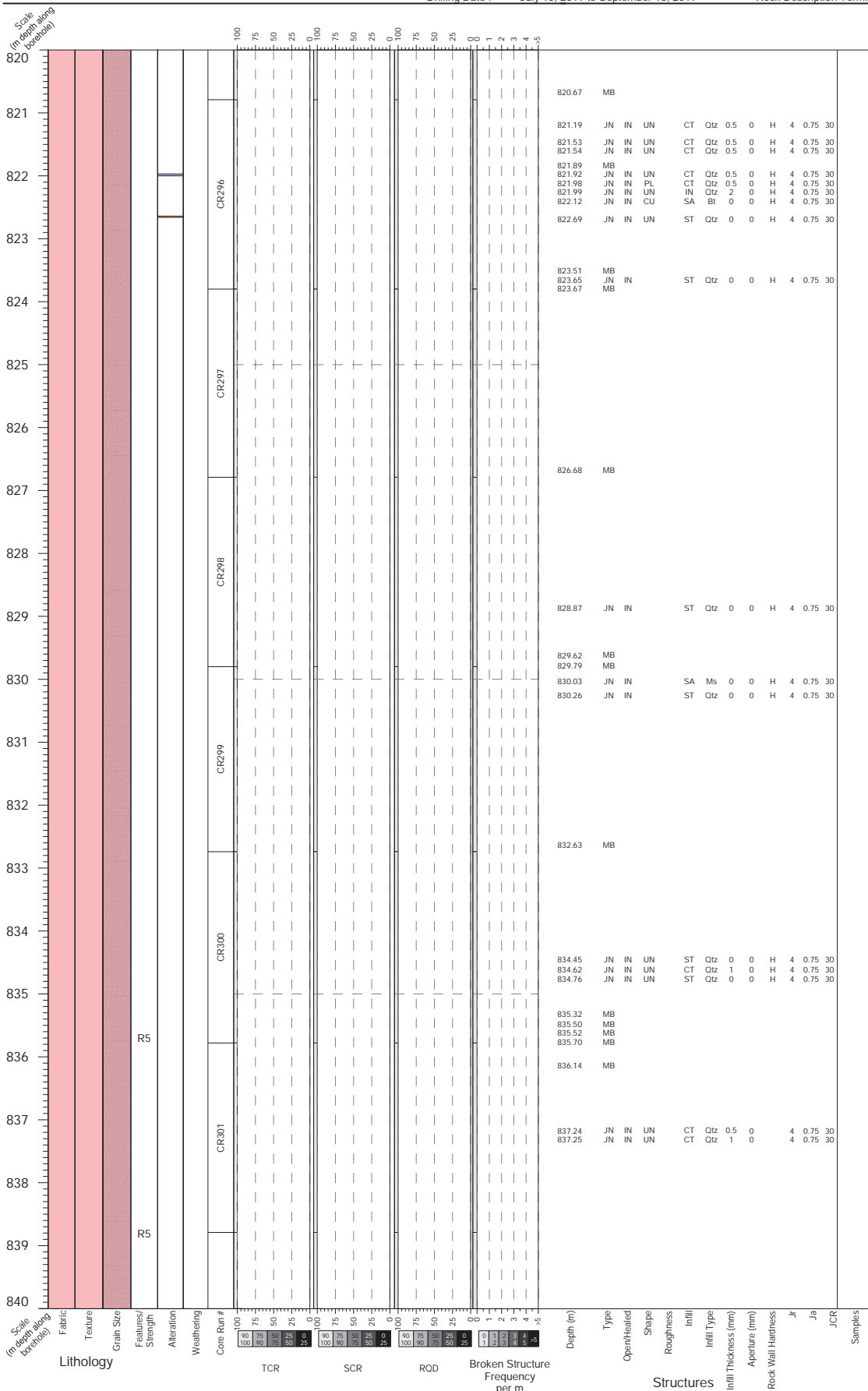
IG_BH03

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DRAWN/REV

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PROJECT NO.

1671632A (2301)

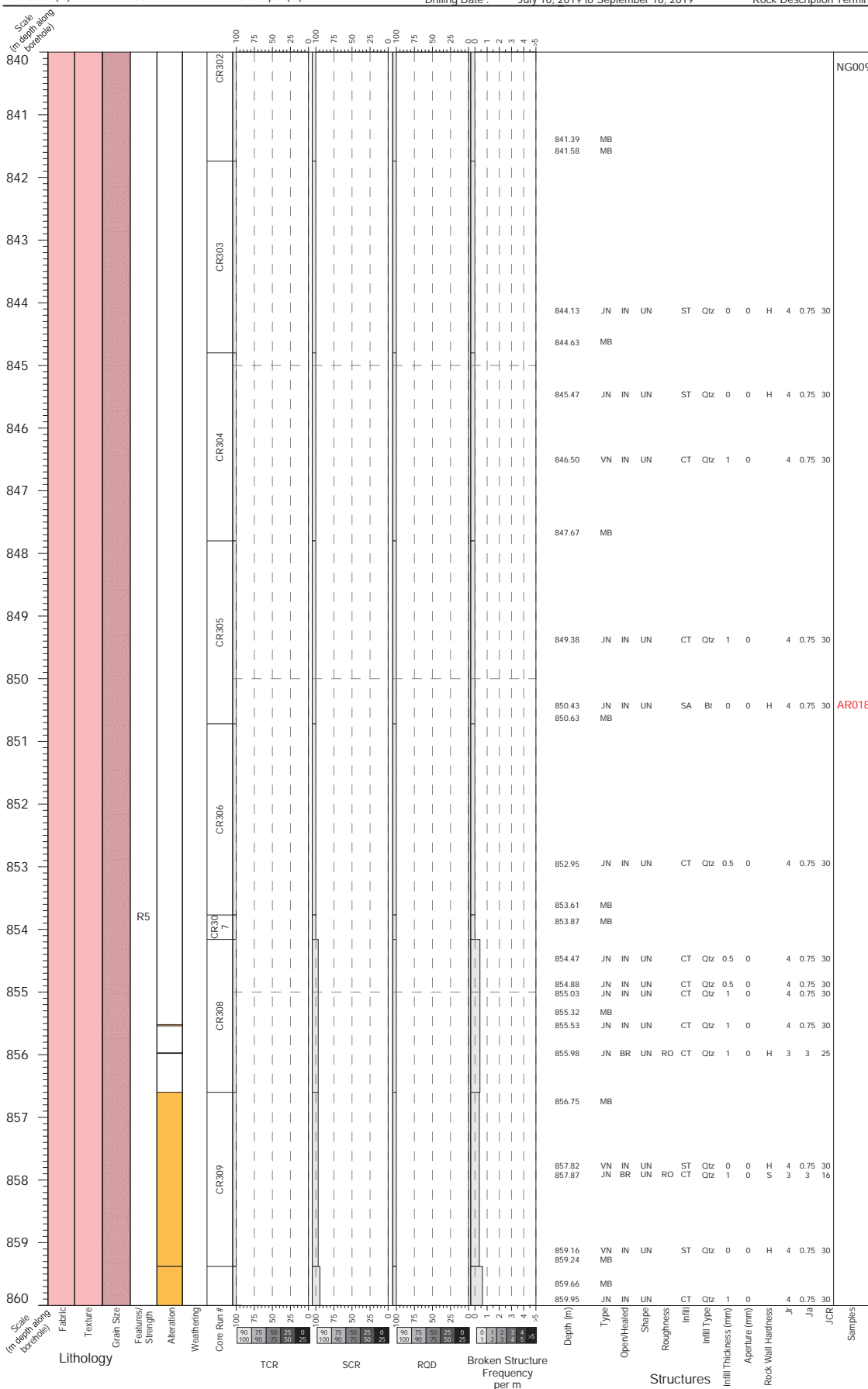
IG_BH03

Northing (m) : 5484534.33
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PROJECT NO.

1671632A (2301)

IG_BH03

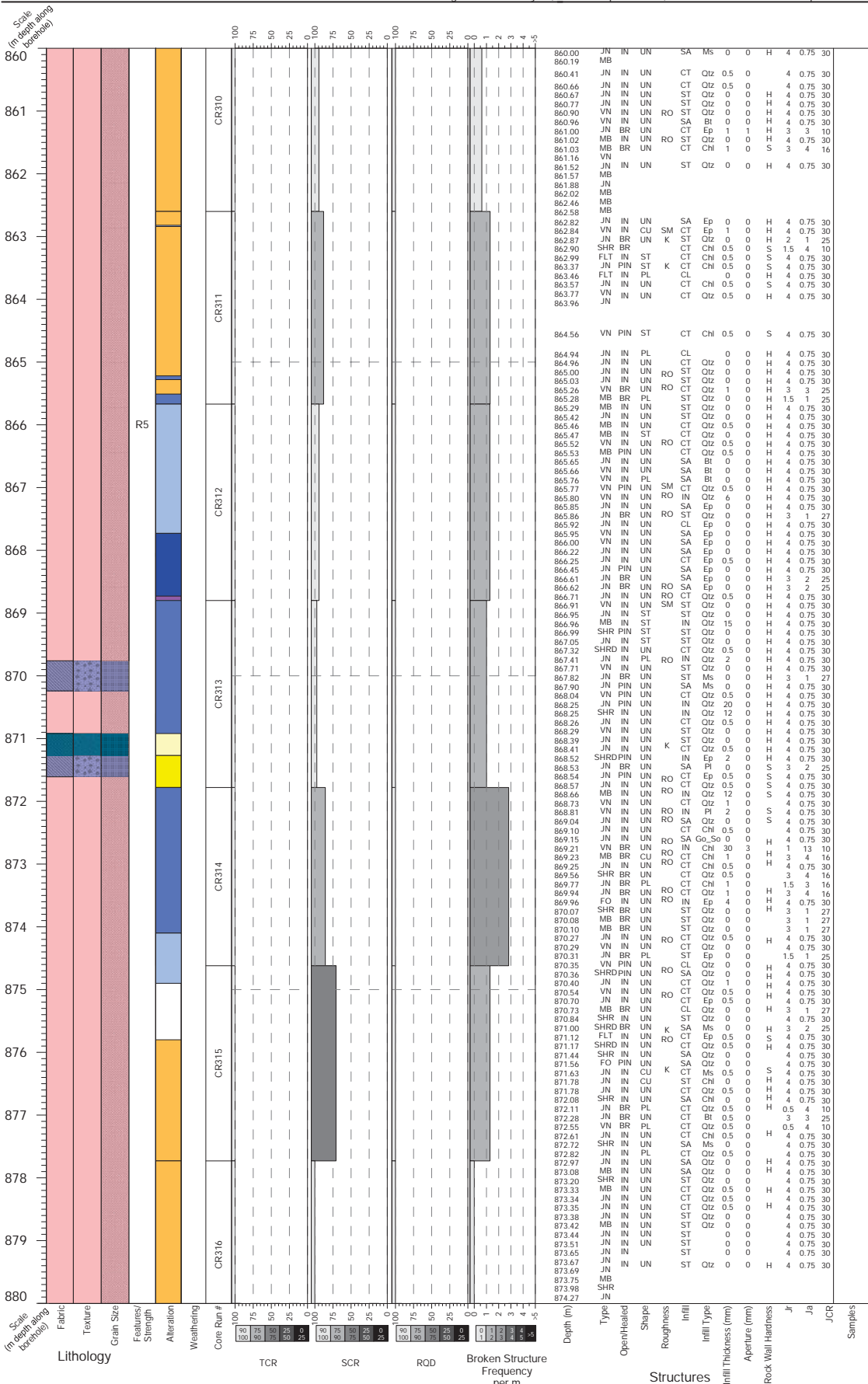
44 of 51

Northing (m) : 5484534.33
Easting (m) : 556171.46
Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
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KF/CM

PROJECT NO.

1671632A (2301)

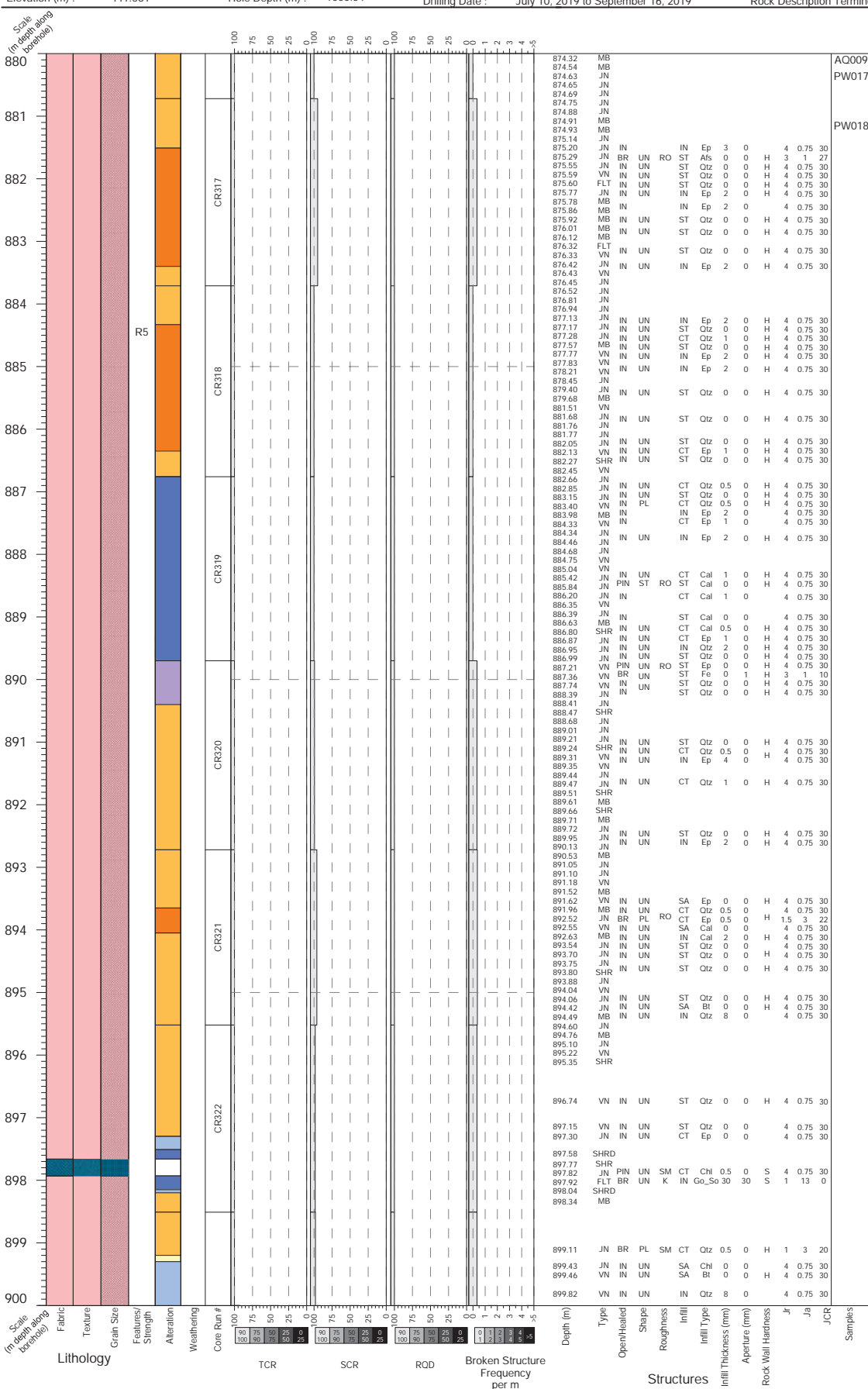
IG BH03

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CONSULTANT



CLIENT	NWMO Ignace Drilling
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2020-09-02

DRAWN/REV
KF/CM

PROJECT NO.
1671632A (2301)

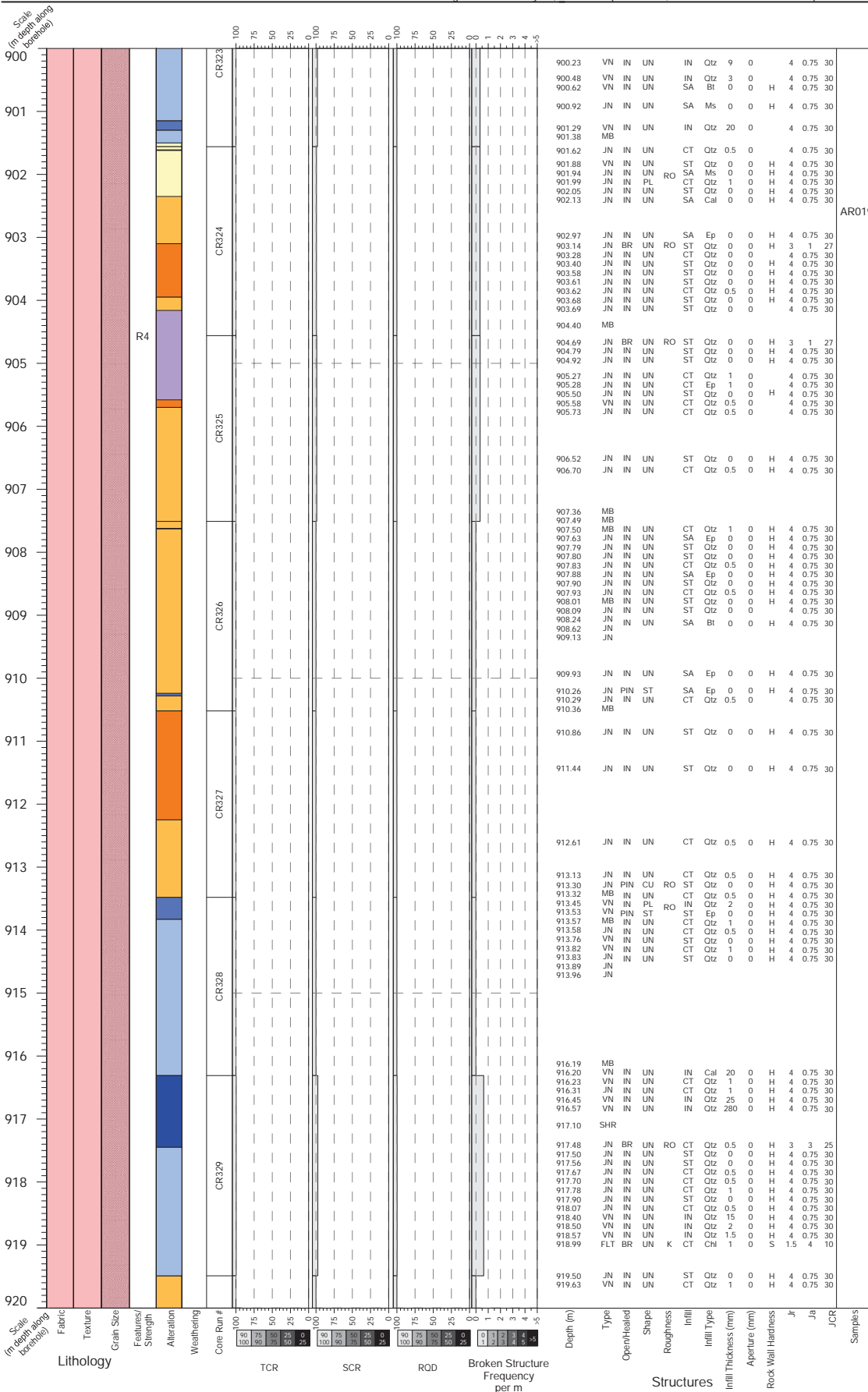
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CONSULTANT



GOLDER

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NWMO Ignace Drilling

TITEL

Record of Core Logging

YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO. _____

1671632A (2301)

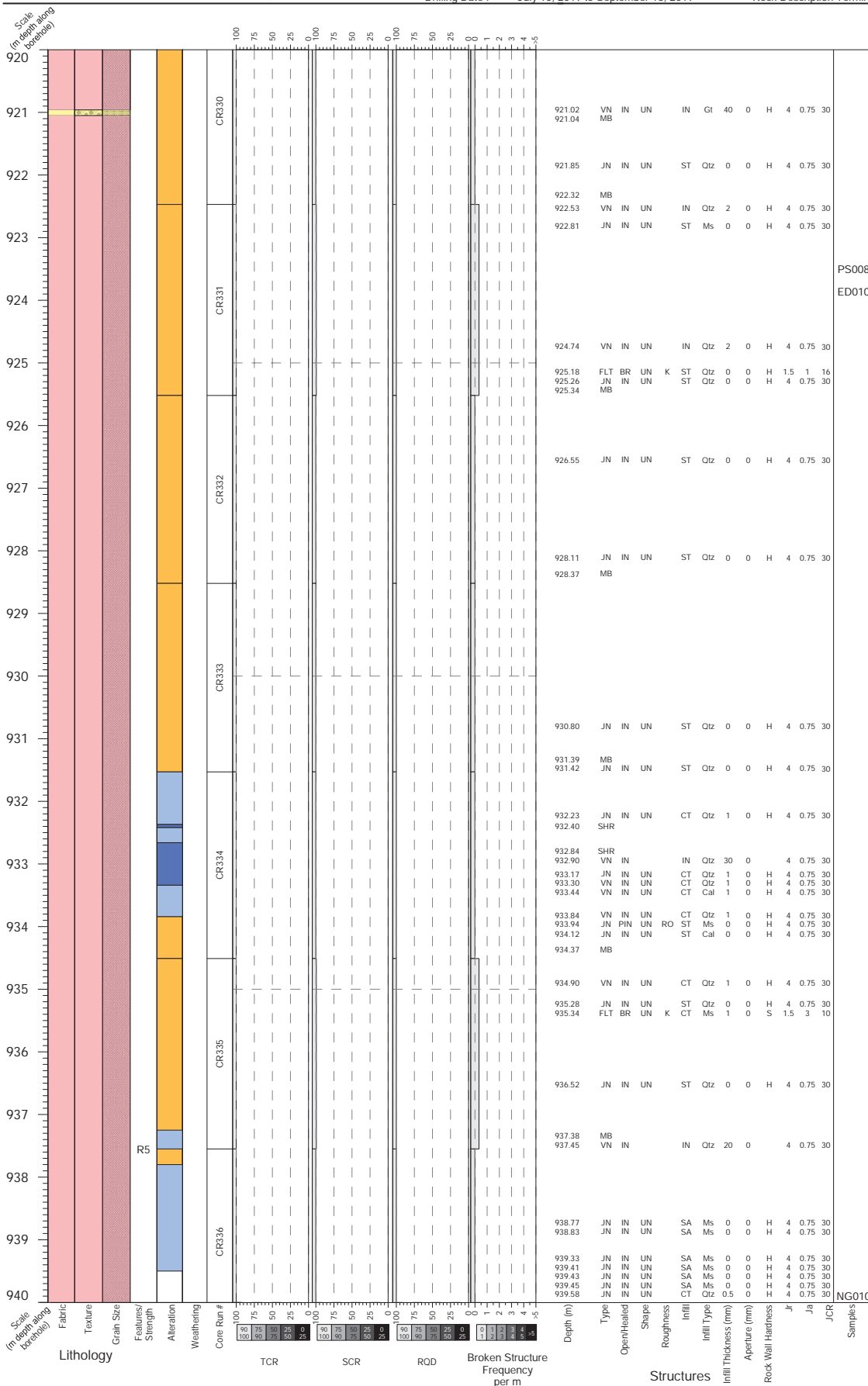
IG_BH03

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 Elevation (m) : 441.561

Collar Azimuth (°) : 185.3
 Collar Dip (°) : -69.5
 Hole Depth (m) : 1000.54

Loggers : CM, EJ, KF, AKV, AC, KG
 Contractor : Rodden Drilling Ltd.
 Drill Core Size : HQ3
 Drilling Date : July 10, 2019 to September 16, 2019

Note: For legend, abbreviations, symbols, and description refer to the Lithological and Geotechnical Rock Description Terminology.



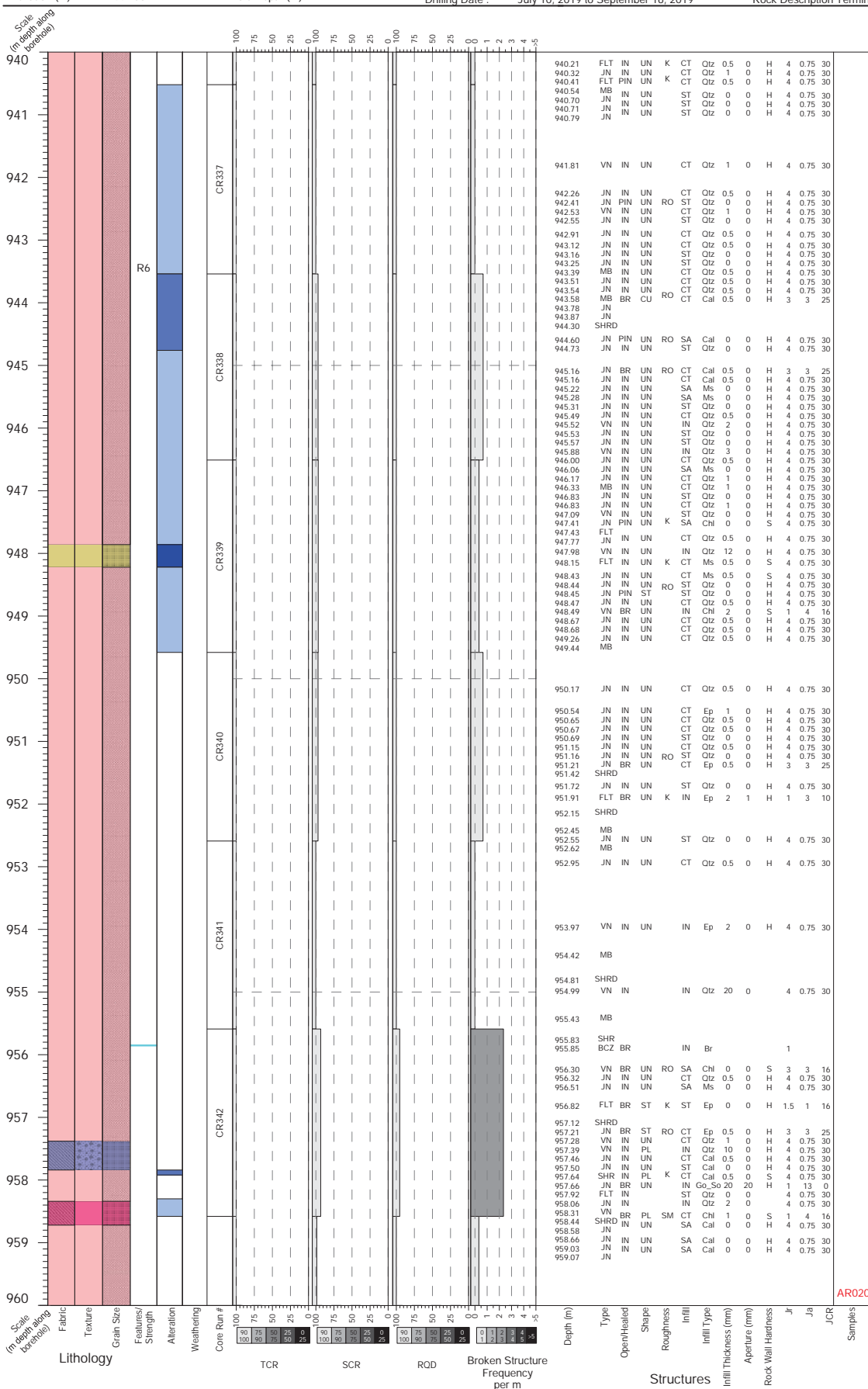
IG_BH03

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KF/CM

PROJECT NO.

1671632A (2301)

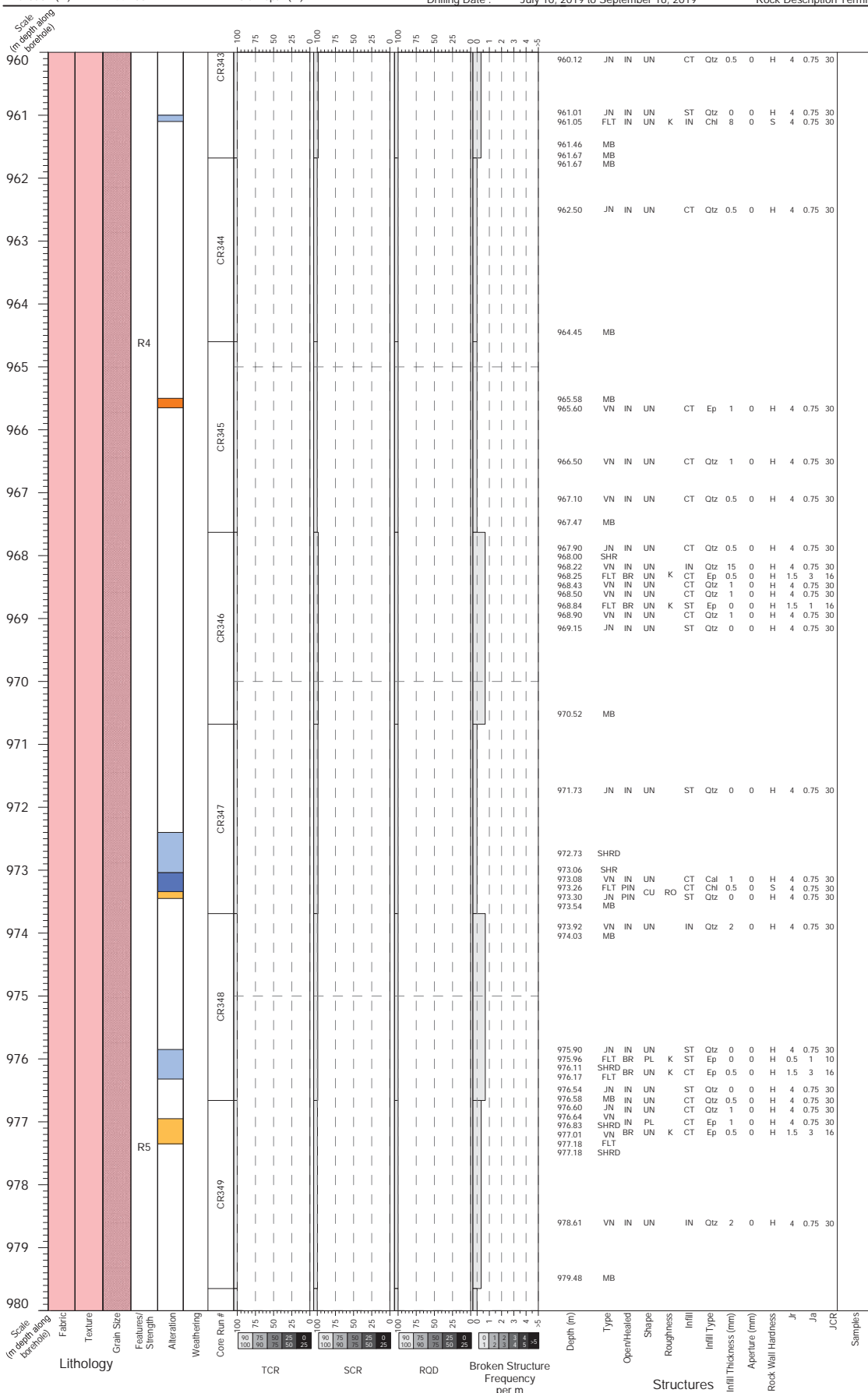
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PROJECT NO.

1671632A (2301)

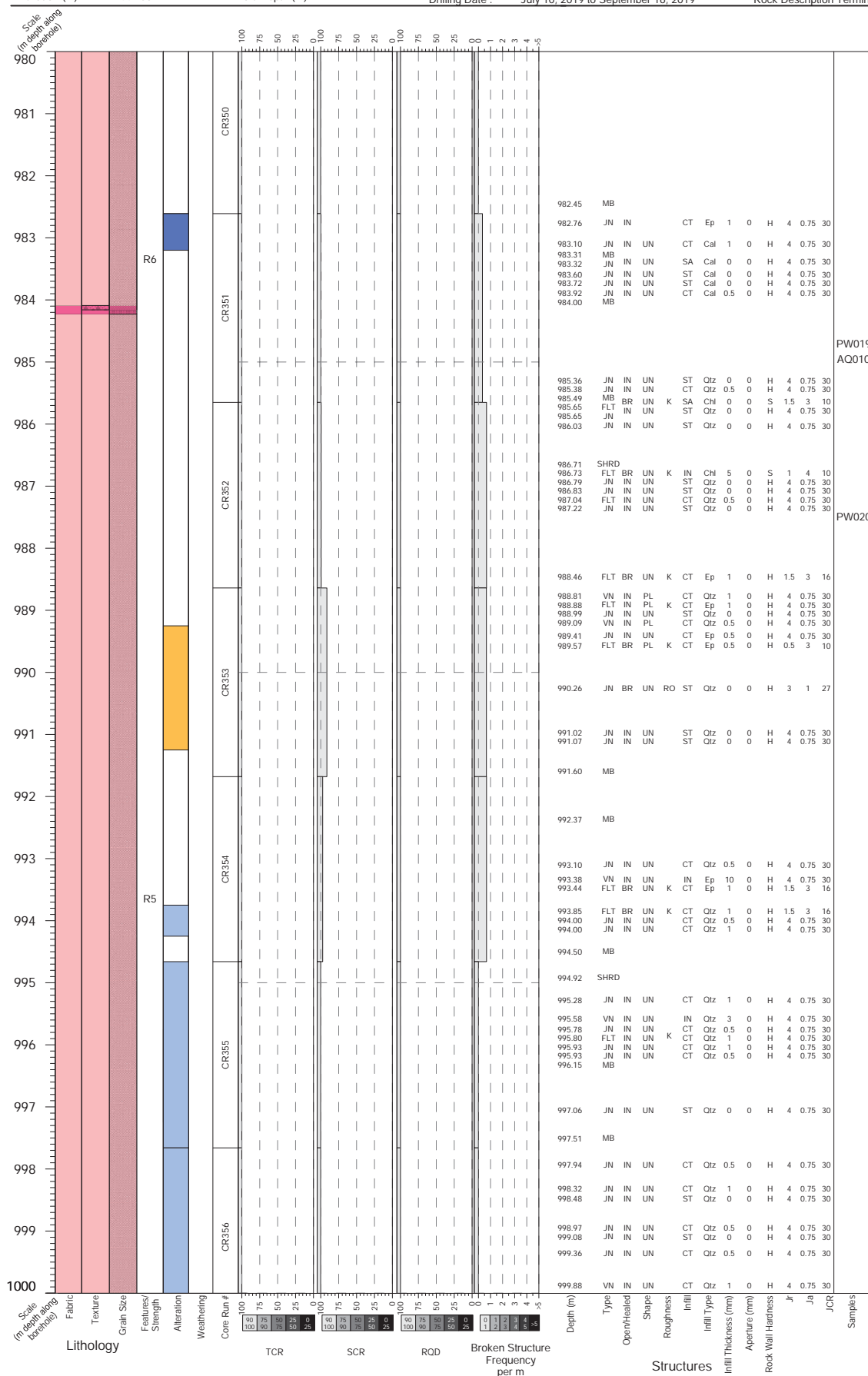
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KF/CM

PROJECT NO.

1671632A (2301)

IG_BH03

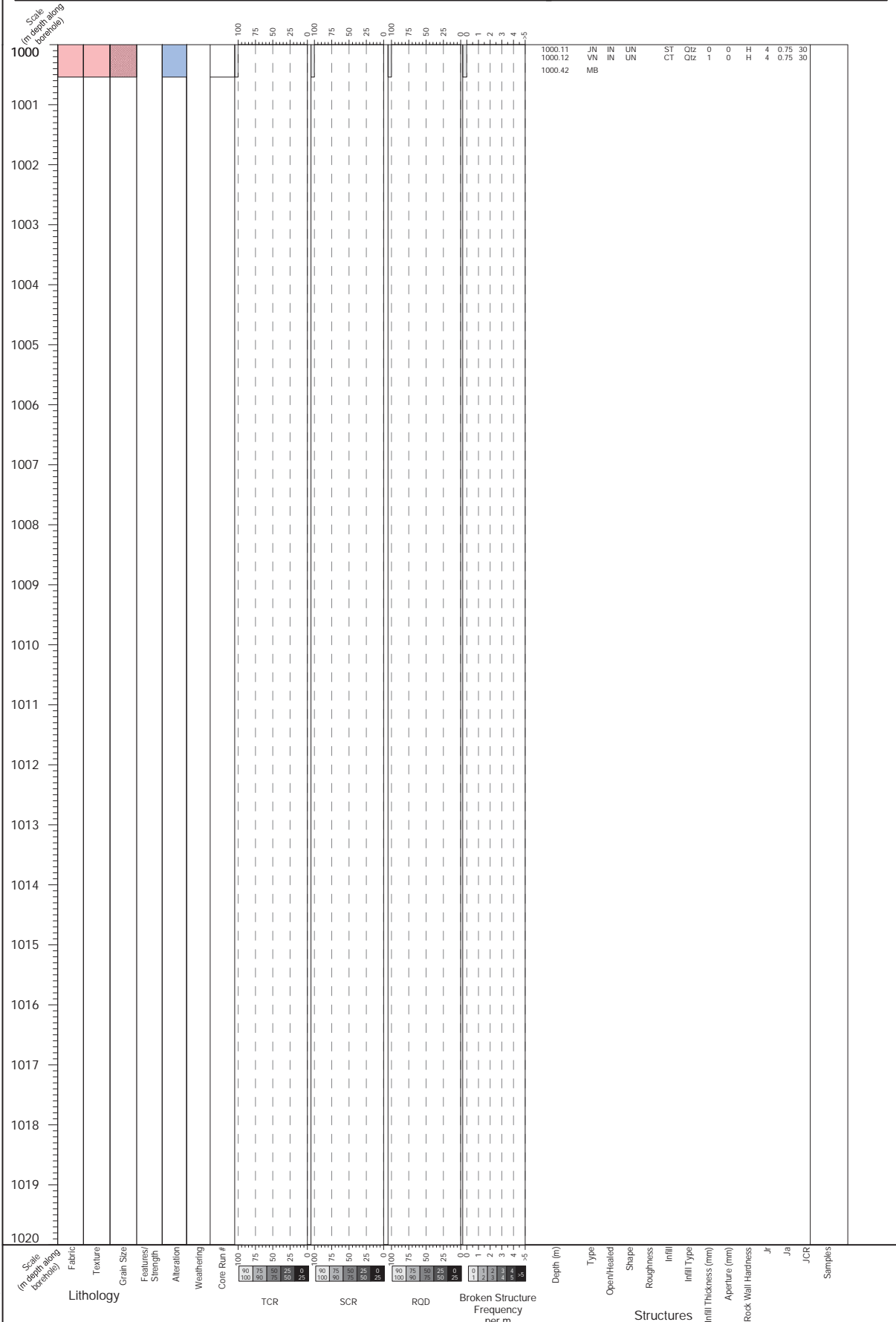
51 of 51

Northing (m) : 5484534.33
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YYYY-MM-DD

2020-09-02

DRAWN/REV

KF/CM

PROJECT NO.

1671632A (2301)















Lithological and Geotechnical Rock Description Terminology

Full logging details are provided in the Appendix A: Geological and Geotechnical Core Logging Procedures Manual.



Lithology

Lithology	
	Amphibolite
	Aplite Dyke
	Biotite-rich Tonalite
	Biotite Tonalite
	Feldspar-phyric Felsic Dyke
	Felsic Dyke
	Pegmatite Dyke
	Quartzolite Dyke
	Tonalite Dyke

Fabric, Texture and Grain Size

Fabric		Texture		Grain Size	
	Foliated		Augen		FG
	Gneissose		Equigranular		MGR
	Massive		Granoblastic		CG
	Schistose		Inequigranular		
			Porphyritic		
			Porphyroblastic		
			Vari-Texture		

































Features

	BCZ (Broken Core Zone)
	LCZ (Lost Core Zone)

Strength

R1	Very weak rock
R2	Weak rock
R3	Medium strong rock
R4	Strong rock
R5	Very strong rock
R6	Extremely strong rock

Alteration and Weathering

Argillization  A2  A3  A4  A5	Bleaching  A2  A3  A4  A5	Chloritization  A2  A3  A4  A5	Hematization  A2  A3  A4  A5	Potassic  A2  A3  A4  A5	Sericitization  A2  A3  A4  A5	Silicification  A2  A3  A4  A5	Weathering  W2  W3  W4  W5
--	--	---	---	---	---	---	---

Note that the alteration rating A1 is considered unaltered and is not displayed on the logs. The weathering rating W1 is considered unweathered and is not displayed on the logs.

Core Condition

TCR	Total Core Recovery: Records the total amount of core recovered over the measured length drilled for each core run, and is expressed as a percentage.
SCR	Solid Core Recovery: Defined as the length of full axial diameter (full circumference) core recovered per run and is expressed as a percentage. The full diameter is defined as the pieces of core not intersected by any fractures.
RQD	Rock Quality Designation : Based on the total cumulative length of sound core recovered in lengths greater than 10 cm (4 inches) as measured along the center line axis of the core from the mid-point of one natural fracture to the mid-point of the next natural fracture. It is expressed as a percentage of the core run length.
Broken Structure Frequency	Broken Structure Frequency per m refers to broken features logged per core run and does not include intact structures.

Structure Type

JN	Joint	MYL	Mylonite	LIN	Lineation
FO	Foliation	SCH	Schistosity	FAX	Fold Axial Plane
FLT	Fault	GNV	Gneissosity	VN	Vein
CL	Cleavage	SHR	Shear (Brittle-Ductile)	SHRD	Shear (Ductile)
MB	Mechanical Break	IPS	Igneous Primary Structure		

Open/Healed

BR	Broken (Open)	IN	Intact	PIN	Partially Intact
----	---------------	----	--------	-----	------------------

Shape

CU	Curved	ST	Stepped
PL	Planar	UN	Undulating

Roughness

K	Slickensided	SM	Smooth	RO	Rough
PO	Polished	VR	Very Rough		

Infill

CL	Clean	SA	Slightly Altered	IN	Continuous Infill
CT	Continuous Coating	ST	Staining Only		

Infill Type

Afs	Alkali-feldspar	Ap	Aplite	Br	Broken Rock
Bt	Biotite	Cal	Calcite	Chl	Chlorite
Cl	Clay	Ep	Epidote	Fe	Iron Oxide
Go_So	Soft Gouge	Go_St	Stiff Gouge	Gp	Graphite
Gt	Granite	Hbl	Hornblende	Ms	Muscovite
Ot	Other	Pl	Plagioclase	Qtz	Quartz

Rock Wall Hardness

H	Hard	S	Soft
---	------	---	------

Joint Ratings

Jr	Joint Roughness: Describes the small-scale geometry of the joint surface (Barton, 1974).
Ja	Joint Alteration: Rating based on the presence or absence of alteration minerals, such as clay, on the discontinuity surfaces (Barton, 1974).
JCR	Joint Condition Rating: A numeral description used in RMR ₈₉ (Bieniawski, 1989) ranging from 0 to 30 based on the shape, roughness, and infill character observed in a discontinuity.

Samples

AQ	Aqueous Extraction	AR	General Archive
BR	Brazilian (Indirect Tensile Strength)	ED	Effective Diffusion
MB	Microbiology	NG	Noble Gas
PS	Petrophysical Suite	PW	Porewater
SA	Specific Surface Area and Cation Exchange Capacity	SO	Sorption
TH	Thermal Properties	UC	Uniaxial Compression Strength

Note that all red sample labels represent archive samples.

APPENDIX D

Photography Tables

Photo Name	Photo Description
IG_BH03_BCD_1.21_13.52.jpg	Dry Core Box Photo from 1.21 to 13.52 m
IG_BH03_BCD_13.52_25.27.jpg	Dry Core Box Photo from 13.52 to 25.27 m
IG_BH03_BCD_25.27_37.16.jpg	Dry Core Box Photo from 25.27 to 37.16 m
IG_BH03_BCD_37.16_48.9.jpg	Dry Core Box Photo from 37.16 to 48.9 m
IG_BH03_BCD_48.9_60.65.jpg	Dry Core Box Photo from 48.9 to 60.65 m
IG_BH03_BCD_60.65_72.56.jpg	Dry Core Box Photo from 60.65 to 72.56 m
IG_BH03_BCD_72.56_84.41.jpg	Dry Core Box Photo from 72.56 to 84.41 m
IG_BH03_BCD_84.41_96.39.jpg	Dry Core Box Photo from 84.41 to 96.39 m
IG_BH03_BCD_96.39_108.38.jpg	Dry Core Box Photo from 96.39 to 108.38 m
IG_BH03_BCD_108.38_120.27.jpg	Dry Core Box Photo from 108.38 to 120.27 m
IG_BH03_BCD_120.27_131.89.jpg	Dry Core Box Photo from 120.27 to 131.89 m
IG_BH03_BCD_131.89_143.69.jpg	Dry Core Box Photo from 131.89 to 143.69 m
IG_BH03_BCD_143.69_155.jpg	Dry Core Box Photo from 143.69 to 155 m
IG_BH03_BCD_155_166.67.jpg	Dry Core Box Photo from 155 to 166.67 m
IG_BH03_BCD_166.67_178.28.jpg	Dry Core Box Photo from 166.67 to 178.28 m
IG_BH03_BCD_178.28_189.69.jpg	Dry Core Box Photo from 178.28 to 189.69 m
IG_BH03_BCD_189.69_201.31.jpg	Dry Core Box Photo from 189.69 to 201.31 m
IG_BH03_BCD_201.31_213.01.jpg	Dry Core Box Photo from 201.31 to 213.01 m
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IG_BH03_BCD_224.7_236.36.jpg	Dry Core Box Photo from 224.7 to 236.36 m
IG_BH03_BCD_236.36_248.02.jpg	Dry Core Box Photo from 236.36 to 248.02 m
IG_BH03_BCD_248.02_259.94.jpg	Dry Core Box Photo from 248.02 to 259.94 m
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IG_BH03_BCD_283.82_295.52.jpg	Dry Core Box Photo from 283.82 to 295.52 m
IG_BH03_BCD_295.52_307.46.jpg	Dry Core Box Photo from 295.52 to 307.46 m
IG_BH03_BCD_307.46_319.23.jpg	Dry Core Box Photo from 307.46 to 319.23 m
IG_BH03_BCD_319.23_331.18.jpg	Dry Core Box Photo from 319.23 to 331.18 m
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IG_BH03_BCD_342.96_354.64.jpg	Dry Core Box Photo from 342.96 to 354.64 m
IG_BH03_BCD_354.64_366.39.jpg	Dry Core Box Photo from 354.64 to 366.39 m
IG_BH03_BCD_366.39_378.23.jpg	Dry Core Box Photo from 366.39 to 378.23 m
IG_BH03_BCD_378.23_389.94.jpg	Dry Core Box Photo from 378.23 to 389.94 m
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IG_BH03_BCD_401.59_413.14.jpg	Dry Core Box Photo from 401.59 to 413.14 m
IG_BH03_BCD_413.14_424.76.jpg	Dry Core Box Photo from 413.14 to 424.76 m
IG_BH03_BCD_424.76_436.78.jpg	Dry Core Box Photo from 424.76 to 436.78 m
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IG_BH03_BCD_483.62_495.25.jpg	Dry Core Box Photo from 483.62 to 495.25 m
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IG_BH03_BCD_542.34_553.89.jpg	Dry Core Box Photo from 542.34 to 553.89 m
IG_BH03_BCD_553.89_565.61.jpg	Dry Core Box Photo from 553.89 to 565.61 m

Photo Name	Photo Description
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IG_BH03_BCD_588.75_600.71.jpg	Dry Core Box Photo from 588.75 to 600.71 m
IG_BH03_BCD_600.71_612.6.jpg	Dry Core Box Photo from 600.71 to 612.6 m
IG_BH03_BCD_612.6_624.46.jpg	Dry Core Box Photo from 612.6 to 624.46 m
IG_BH03_BCD_624.46_636.4.jpg	Dry Core Box Photo from 624.46 to 636.4 m
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IG_BH03_BCD_648.05_659.78.jpg	Dry Core Box Photo from 648.05 to 659.78 m
IG_BH03_BCD_659.78_671.52.jpg	Dry Core Box Photo from 659.78 to 671.52 m
IG_BH03_BCD_671.52_683.27.jpg	Dry Core Box Photo from 671.52 to 683.27 m
IG_BH03_BCD_683.27_695.08.jpg	Dry Core Box Photo from 683.27 to 695.08 m
IG_BH03_BCD_695.08_707.01.jpg	Dry Core Box Photo from 695.08 to 707.01 m
IG_BH03_BCD_707.01_718.86.jpg	Dry Core Box Photo from 707.01 to 718.86 m
IG_BH03_BCD_718.86_730.59.jpg	Dry Core Box Photo from 718.86 to 730.59 m
IG_BH03_BCD_730.59_742.31.jpg	Dry Core Box Photo from 730.59 to 742.31 m
IG_BH03_BCD_742.31_754.13.jpg	Dry Core Box Photo from 742.31 to 754.13 m
IG_BH03_BCD_754.13_765.86.jpg	Dry Core Box Photo from 754.13 to 765.86 m
IG_BH03_BCD_765.86_777.08.jpg	Dry Core Box Photo from 765.86 to 777.08 m
IG_BH03_BCD_777.08_788.61.jpg	Dry Core Box Photo from 777.08 to 788.61 m
IG_BH03_BCD_788.61_800.22.jpg	Dry Core Box Photo from 788.61 to 800.22 m
IG_BH03_BCD_800.22_811.96.jpg	Dry Core Box Photo from 800.22 to 811.96 m
IG_BH03_BCD_811.96_823.96.jpg	Dry Core Box Photo from 811.96 to 823.96 m
IG_BH03_BCD_823.96_835.7.jpg	Dry Core Box Photo from 823.96 to 835.7 m
IG_BH03_BCD_835.7_847.49.jpg	Dry Core Box Photo from 835.7 to 847.49 m
IG_BH03_BCD_847.49_859.1.jpg	Dry Core Box Photo from 847.49 to 859.1 m
IG_BH03_BCD_859.1_870.19.jpg	Dry Core Box Photo from 859.1 to 870.19 m
IG_BH03_BCD_870.19_881.51.jpg	Dry Core Box Photo from 870.19 to 881.51 m
IG_BH03_BCD_881.51_893.26.jpg	Dry Core Box Photo from 881.51 to 893.26 m
IG_BH03_BCD_893.26_904.88.jpg	Dry Core Box Photo from 893.26 to 904.88 m
IG_BH03_BCD_904.88_916.79.jpg	Dry Core Box Photo from 904.88 to 916.79 m
IG_BH03_BCD_916.79_928.62.jpg	Dry Core Box Photo from 916.79 to 928.62 m
IG_BH03_BCD_928.62_940.41.jpg	Dry Core Box Photo from 928.62 to 940.41 m
IG_BH03_BCD_940.41_952.15.jpg	Dry Core Box Photo from 940.41 to 952.15 m
IG_BH03_BCD_952.15_963.94.jpg	Dry Core Box Photo from 952.15 to 963.94 m
IG_BH03_BCD_963.94_975.81.jpg	Dry Core Box Photo from 963.94 to 975.81 m
IG_BH03_BCD_975.81_987.67.jpg	Dry Core Box Photo from 975.81 to 987.67 m
IG_BH03_BCD_987.67_999.45.jpg	Dry Core Box Photo from 987.67 to 999.45 m
IG_BH03_BCD_999.45_1000.54.jpg	Dry Core Box Photo from 999.45 to 1000.54 m
IG_BH03_BCW_1.21_13.52.jpg	Wet Core Box Photo from 1.21 to 13.52 m
IG_BH03_BCW_13.52_25.27.jpg	Wet Core Box Photo from 13.52 to 25.27 m
IG_BH03_BCW_25.27_37.16.jpg	Wet Core Box Photo from 25.27 to 37.16 m
IG_BH03_BCW_37.16_48.9.jpg	Wet Core Box Photo from 37.16 to 48.9 m
IG_BH03_BCW_48.9_60.65.jpg	Wet Core Box Photo from 48.9 to 60.65 m
IG_BH03_BCW_60.65_72.56.jpg	Wet Core Box Photo from 60.65 to 72.56 m
IG_BH03_BCW_72.56_84.41.jpg	Wet Core Box Photo from 72.56 to 84.41 m
IG_BH03_BCW_84.41_96.39.jpg	Wet Core Box Photo from 84.41 to 96.39 m
IG_BH03_BCW_96.39_108.38.jpg	Wet Core Box Photo from 96.39 to 108.38 m
IG_BH03_BCW_108.38_120.27.jpg	Wet Core Box Photo from 108.38 to 120.27 m

Photo Name	Photo Description
IG_BH03_BCW_120.27_131.89.jpg	Wet Core Box Photo from 120.27 to 131.89 m
IG_BH03_BCW_131.89_143.69.jpg	Wet Core Box Photo from 131.89 to 143.69 m
IG_BH03_BCW_143.69_155.jpg	Wet Core Box Photo from 143.69 to 155 m
IG_BH03_BCW_155_166.67.jpg	Wet Core Box Photo from 155 to 166.67 m
IG_BH03_BCW_166.67_178.28.jpg	Wet Core Box Photo from 166.67 to 178.28 m
IG_BH03_BCW_178.28_189.69.jpg	Wet Core Box Photo from 178.28 to 189.69 m
IG_BH03_BCW_189.69_201.31.jpg	Wet Core Box Photo from 189.69 to 201.31 m
IG_BH03_BCW_201.31_213.01.jpg	Wet Core Box Photo from 201.31 to 213.01 m
IG_BH03_BCW_213.01_224.7.jpg	Wet Core Box Photo from 213.01 to 224.7 m
IG_BH03_BCW_224.7_236.36.jpg	Wet Core Box Photo from 224.7 to 236.36 m
IG_BH03_BCW_236.36_248.02.jpg	Wet Core Box Photo from 236.36 to 248.02 m
IG_BH03_BCW_248.02_259.94.jpg	Wet Core Box Photo from 248.02 to 259.94 m
IG_BH03_BCW_259.94_271.86.jpg	Wet Core Box Photo from 259.94 to 271.86 m
IG_BH03_BCW_271.86_283.82.jpg	Wet Core Box Photo from 271.86 to 283.82 m
IG_BH03_BCW_283.82_295.52.jpg	Wet Core Box Photo from 283.82 to 295.52 m
IG_BH03_BCW_295.52_307.46.jpg	Wet Core Box Photo from 295.52 to 307.46 m
IG_BH03_BCW_307.46_319.23.jpg	Wet Core Box Photo from 307.46 to 319.23 m
IG_BH03_BCW_319.23_331.18.jpg	Wet Core Box Photo from 319.23 to 331.18 m
IG_BH03_BCW_331.18_342.96.jpg	Wet Core Box Photo from 331.18 to 342.96 m
IG_BH03_BCW_342.96_354.64.jpg	Wet Core Box Photo from 342.96 to 354.64 m
IG_BH03_BCW_354.64_366.39.jpg	Wet Core Box Photo from 354.64 to 366.39 m
IG_BH03_BCW_366.39_378.23.jpg	Wet Core Box Photo from 366.39 to 378.23 m
IG_BH03_BCW_378.23_389.94.jpg	Wet Core Box Photo from 378.23 to 389.94 m
IG_BH03_BCW_389.94_401.59.jpg	Wet Core Box Photo from 389.94 to 401.59 m
IG_BH03_BCW_401.59_413.14.jpg	Wet Core Box Photo from 401.59 to 413.14 m
IG_BH03_BCW_413.14_424.76.jpg	Wet Core Box Photo from 413.14 to 424.76 m
IG_BH03_BCW_424.76_436.78.jpg	Wet Core Box Photo from 424.76 to 436.78 m
IG_BH03_BCW_436.78_448.45.jpg	Wet Core Box Photo from 436.78 to 448.45 m
IG_BH03_BCW_448.45_460.14.jpg	Wet Core Box Photo from 448.45 to 460.14 m
IG_BH03_BCW_460.14_471.99.jpg	Wet Core Box Photo from 460.14 to 471.99 m
IG_BH03_BCW_471.99_483.62.jpg	Wet Core Box Photo from 471.99 to 483.62 m
IG_BH03_BCW_483.62_495.25.jpg	Wet Core Box Photo from 483.62 to 495.25 m
IG_BH03_BCW_495.25_506.87.jpg	Wet Core Box Photo from 495.25 to 506.87 m
IG_BH03_BCW_506.87_518.7.jpg	Wet Core Box Photo from 506.87 to 518.7 m
IG_BH03_BCW_518.7_530.6.jpg	Wet Core Box Photo from 518.7 to 530.6 m
IG_BH03_BCW_530.6_542.34.jpg	Wet Core Box Photo from 530.6 to 542.34 m
IG_BH03_BCW_542.34_553.89.jpg	Wet Core Box Photo from 542.34 to 553.89 m
IG_BH03_BCW_553.89_565.61.jpg	Wet Core Box Photo from 553.89 to 565.61 m
IG_BH03_BCW_565.61_577.27.jpg	Wet Core Box Photo from 565.61 to 577.27 m
IG_BH03_BCW_577.27_588.75.jpg	Wet Core Box Photo from 577.27 to 588.75 m
IG_BH03_BCW_588.75_600.71.jpg	Wet Core Box Photo from 588.75 to 600.71 m
IG_BH03_BCW_600.71_612.6.jpg	Wet Core Box Photo from 600.71 to 612.6 m
IG_BH03_BCW_612.6_624.46.jpg	Wet Core Box Photo from 612.6 to 624.46 m
IG_BH03_BCW_624.46_636.4.jpg	Wet Core Box Photo from 624.46 to 636.4 m
IG_BH03_BCW_636.4_648.05.jpg	Wet Core Box Photo from 636.4 to 648.05 m
IG_BH03_BCW_648.05_659.78.jpg	Wet Core Box Photo from 648.05 to 659.78 m
IG_BH03_BCW_659.78_671.52.jpg	Wet Core Box Photo from 659.78 to 671.52 m
IG_BH03_BCW_671.52_683.27.jpg	Wet Core Box Photo from 671.52 to 683.27 m

Photo Name	Photo Description
IG_BH03_BCW_683.27_695.08.jpg	Wet Core Box Photo from 683.27 to 695.08 m
IG_BH03_BCW_695.08_707.01.jpg	Wet Core Box Photo from 695.08 to 707.01 m
IG_BH03_BCW_707.01_718.86.jpg	Wet Core Box Photo from 707.01 to 718.86 m
IG_BH03_BCW_718.86_730.59.jpg	Wet Core Box Photo from 718.86 to 730.59 m
IG_BH03_BCW_730.59_742.31.jpg	Wet Core Box Photo from 730.59 to 742.31 m
IG_BH03_BCW_742.31_754.13.jpg	Wet Core Box Photo from 742.31 to 754.13 m
IG_BH03_BCW_754.13_765.86.jpg	Wet Core Box Photo from 754.13 to 765.86 m
IG_BH03_BCW_765.86_777.08.jpg	Wet Core Box Photo from 765.86 to 777.08 m
IG_BH03_BCW_777.08_788.61.jpg	Wet Core Box Photo from 777.08 to 788.61 m
IG_BH03_BCW_788.61_800.22.jpg	Wet Core Box Photo from 788.61 to 800.22 m
IG_BH03_BCW_800.22_811.96.jpg	Wet Core Box Photo from 800.22 to 811.96 m
IG_BH03_BCW_811.96_823.96.jpg	Wet Core Box Photo from 811.96 to 823.96 m
IG_BH03_BCW_823.96_835.7.jpg	Wet Core Box Photo from 823.96 to 835.7 m
IG_BH03_BCW_835.7_847.49.jpg	Wet Core Box Photo from 835.7 to 847.49 m
IG_BH03_BCW_847.49_859.1.jpg	Wet Core Box Photo from 847.49 to 859.1 m
IG_BH03_BCW_859.1_870.19.jpg	Wet Core Box Photo from 859.1 to 870.19 m
IG_BH03_BCW_870.19_881.51.jpg	Wet Core Box Photo from 870.19 to 881.51 m
IG_BH03_BCW_881.51_893.26.jpg	Wet Core Box Photo from 881.51 to 893.26 m
IG_BH03_BCW_893.26_904.88.jpg	Wet Core Box Photo from 893.26 to 904.88 m
IG_BH03_BCW_904.88_916.79.jpg	Wet Core Box Photo from 904.88 to 916.79 m
IG_BH03_BCW_916.79_928.62.jpg	Wet Core Box Photo from 916.79 to 928.62 m
IG_BH03_BCW_928.62_940.41.jpg	Wet Core Box Photo from 928.62 to 940.41 m
IG_BH03_BCW_940.41_952.15.jpg	Wet Core Box Photo from 940.41 to 952.15 m
IG_BH03_BCW_952.15_963.94.jpg	Wet Core Box Photo from 952.15 to 963.94 m
IG_BH03_BCW_963.94_975.81.jpg	Wet Core Box Photo from 963.94 to 975.81 m
IG_BH03_BCW_975.81_987.67.jpg	Wet Core Box Photo from 975.81 to 987.67 m
IG_BH03_BCW_987.67_999.45.jpg	Wet Core Box Photo from 987.67 to 999.45 m
IG_BH03_BCW_999.45_1000.54.jpg	Wet Core Box Photo from 999.45 to 1000.54 m

Photo Name	Photo Description
IG_BH03CR001_B.jpg	Split Tube Photo Back of Core Run ID CR001
IG_BH03CR001_F.jpg	Split Tube Photo Front of Core Run ID CR001
IG_BH03CR002_B.jpg	Split Tube Photo Back of Core Run ID CR002
IG_BH03CR002_F.jpg	Split Tube Photo Front of Core Run ID CR002
IG_BH03CR003_B.jpg	Split Tube Photo Back of Core Run ID CR003
IG_BH03CR003_F.jpg	Split Tube Photo Front of Core Run ID CR003
IG_BH03CR004_B.jpg	Split Tube Photo Back of Core Run ID CR004
IG_BH03CR004_F.jpg	Split Tube Photo Front of Core Run ID CR004
IG_BH03CR005_B.jpg	Split Tube Photo Back of Core Run ID CR005
IG_BH03CR005_F.jpg	Split Tube Photo Front of Core Run ID CR005
IG_BH03CR006_B.jpg	Split Tube Photo Back of Core Run ID CR006
IG_BH03CR006_F.jpg	Split Tube Photo Front of Core Run ID CR006
IG_BH03CR007_B.jpg	Split Tube Photo Back of Core Run ID CR007
IG_BH03CR007_F.jpg	Split Tube Photo Front of Core Run ID CR007
IG_BH03CR008_B.jpg	Split Tube Photo Back of Core Run ID CR008
IG_BH03CR008_F.jpg	Split Tube Photo Front of Core Run ID CR008
IG_BH03CR009_B.jpg	Split Tube Photo Back of Core Run ID CR009
IG_BH03CR009_F.jpg	Split Tube Photo Front of Core Run ID CR009
IG_BH03CR010_B.jpg	Split Tube Photo Back of Core Run ID CR010
IG_BH03CR010_F.jpg	Split Tube Photo Front of Core Run ID CR010
IG_BH03CR011_B.jpg	Split Tube Photo Back of Core Run ID CR011
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IG_BH03CR012_B.jpg	Split Tube Photo Back of Core Run ID CR012
IG_BH03CR012_F.jpg	Split Tube Photo Front of Core Run ID CR012
IG_BH03CR013_B.jpg	Split Tube Photo Back of Core Run ID CR013
IG_BH03CR013_F.jpg	Split Tube Photo Front of Core Run ID CR013
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IG_BH03CR015_B.jpg	Split Tube Photo Back of Core Run ID CR015
IG_BH03CR015_F.jpg	Split Tube Photo Front of Core Run ID CR015
IG_BH03CR016_B.jpg	Split Tube Photo Back of Core Run ID CR016
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IG_BH03CR017_B.jpg	Split Tube Photo Back of Core Run ID CR017
IG_BH03CR017_F.jpg	Split Tube Photo Front of Core Run ID CR017
IG_BH03CR018_B.jpg	Split Tube Photo Back of Core Run ID CR018
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IG_BH03CR019_B.jpg	Split Tube Photo Back of Core Run ID CR019
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IG_BH03CR020_B.jpg	Split Tube Photo Back of Core Run ID CR020
IG_BH03CR020_F.jpg	Split Tube Photo Front of Core Run ID CR020
IG_BH03CR021_B.jpg	Split Tube Photo Back of Core Run ID CR021
IG_BH03CR021_F.jpg	Split Tube Photo Front of Core Run ID CR021
IG_BH03CR022_B.jpg	Split Tube Photo Back of Core Run ID CR022
IG_BH03CR022_F.jpg	Split Tube Photo Front of Core Run ID CR022
IG_BH03CR023_B.jpg	Split Tube Photo Back of Core Run ID CR023
IG_BH03CR023_F.jpg	Split Tube Photo Front of Core Run ID CR023
IG_BH03CR024_B.jpg	Split Tube Photo Back of Core Run ID CR024
IG_BH03CR024_F.jpg	Split Tube Photo Front of Core Run ID CR024

Photo Name	Photo Description
IG_BH03CR025_B.jpg	Split Tube Photo Back of Core Run ID CR025
IG_BH03CR025_F.jpg	Split Tube Photo Front of Core Run ID CR025
IG_BH03CR026_B.jpg	Split Tube Photo Back of Core Run ID CR026
IG_BH03CR026_F.jpg	Split Tube Photo Front of Core Run ID CR026
IG_BH03CR027_B.jpg	Split Tube Photo Back of Core Run ID CR027
IG_BH03CR027_F.jpg	Split Tube Photo Front of Core Run ID CR027
IG_BH03CR028_B.jpg	Split Tube Photo Back of Core Run ID CR028
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IG_BH03CR029_F.jpg	Split Tube Photo Front of Core Run ID CR029
IG_BH03CR030_B.jpg	Split Tube Photo Back of Core Run ID CR030
IG_BH03CR030_F.jpg	Split Tube Photo Front of Core Run ID CR030
IG_BH03CR031_B.jpg	Split Tube Photo Back of Core Run ID CR031
IG_BH03CR031_F.jpg	Split Tube Photo Front of Core Run ID CR031
IG_BH03CR032_B.jpg	Split Tube Photo Back of Core Run ID CR032
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IG_BH03CR033_B.jpg	Split Tube Photo Back of Core Run ID CR033
IG_BH03CR033_F.jpg	Split Tube Photo Front of Core Run ID CR033
IG_BH03CR034_B.jpg	Split Tube Photo Back of Core Run ID CR034
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IG_BH03CR041_B.jpg	Split Tube Photo Back of Core Run ID CR041
IG_BH03CR041_F.jpg	Split Tube Photo Front of Core Run ID CR041
IG_BH03CR042_B.jpg	Split Tube Photo Back of Core Run ID CR042
IG_BH03CR042_F.jpg	Split Tube Photo Front of Core Run ID CR042
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IG_BH03CR044_B.jpg	Split Tube Photo Back of Core Run ID CR044
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IG_BH03CR045_B.jpg	Split Tube Photo Back of Core Run ID CR045
IG_BH03CR045_F.jpg	Split Tube Photo Front of Core Run ID CR045
IG_BH03CR046_B.jpg	Split Tube Photo Back of Core Run ID CR046
IG_BH03CR046_F.jpg	Split Tube Photo Front of Core Run ID CR046
IG_BH03CR047_B.jpg	Split Tube Photo Back of Core Run ID CR047
IG_BH03CR047_F.jpg	Split Tube Photo Front of Core Run ID CR047
IG_BH03CR048_B.jpg	Split Tube Photo Back of Core Run ID CR048
IG_BH03CR048_F.jpg	Split Tube Photo Front of Core Run ID CR048

Photo Name	Photo Description
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IG_BH03CR049_F.jpg	Split Tube Photo Front of Core Run ID CR049
IG_BH03CR050_B.jpg	Split Tube Photo Back of Core Run ID CR050
IG_BH03CR050_F.jpg	Split Tube Photo Front of Core Run ID CR050
IG_BH03CR051_B.jpg	Split Tube Photo Back of Core Run ID CR051
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IG_BH03CR052_B.jpg	Split Tube Photo Back of Core Run ID CR052
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IG_BH03CR053_B.jpg	Split Tube Photo Back of Core Run ID CR053
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IG_BH03CR061_B.jpg	Split Tube Photo Back of Core Run ID CR061
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IG_BH03CR066_F.jpg	Split Tube Photo Front of Core Run ID CR066
IG_BH03CR067_B.jpg	Split Tube Photo Back of Core Run ID CR067
IG_BH03CR067_F.jpg	Split Tube Photo Front of Core Run ID CR067
IG_BH03CR068_B.jpg	Split Tube Photo Back of Core Run ID CR068
IG_BH03CR068_F.jpg	Split Tube Photo Front of Core Run ID CR068
IG_BH03CR069_B.jpg	Split Tube Photo Back of Core Run ID CR069
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IG_BH03CR070_B.jpg	Split Tube Photo Back of Core Run ID CR070
IG_BH03CR070_F.jpg	Split Tube Photo Front of Core Run ID CR070
IG_BH03CR071_B.jpg	Split Tube Photo Back of Core Run ID CR071
IG_BH03CR071_F.jpg	Split Tube Photo Front of Core Run ID CR071
IG_BH03CR072_B.jpg	Split Tube Photo Back of Core Run ID CR072
IG_BH03CR072_F.jpg	Split Tube Photo Front of Core Run ID CR072

Photo Name	Photo Description
IG_BH03CR073_B.jpg	Split Tube Photo Back of Core Run ID CR073
IG_BH03CR073_F.jpg	Split Tube Photo Front of Core Run ID CR073
IG_BH03CR074_B.jpg	Split Tube Photo Back of Core Run ID CR074
IG_BH03CR074_F.jpg	Split Tube Photo Front of Core Run ID CR074
IG_BH03CR075_B.jpg	Split Tube Photo Back of Core Run ID CR075
IG_BH03CR075_F.jpg	Split Tube Photo Front of Core Run ID CR075
IG_BH03CR076_B.jpg	Split Tube Photo Back of Core Run ID CR076
IG_BH03CR076_F.jpg	Split Tube Photo Front of Core Run ID CR076
IG_BH03CR077_B.jpg	Split Tube Photo Back of Core Run ID CR077
IG_BH03CR077_F.jpg	Split Tube Photo Front of Core Run ID CR077
IG_BH03CR078_B.jpg	Split Tube Photo Back of Core Run ID CR078
IG_BH03CR078_F.jpg	Split Tube Photo Front of Core Run ID CR078
IG_BH03CR079_B.jpg	Split Tube Photo Back of Core Run ID CR079
IG_BH03CR079_F.jpg	Split Tube Photo Front of Core Run ID CR079
IG_BH03CR080_B.jpg	Split Tube Photo Back of Core Run ID CR080
IG_BH03CR080_F.jpg	Split Tube Photo Front of Core Run ID CR080
IG_BH03CR081_B.jpg	Split Tube Photo Back of Core Run ID CR081
IG_BH03CR081_F.jpg	Split Tube Photo Front of Core Run ID CR081
IG_BH03CR082_B.jpg	Split Tube Photo Back of Core Run ID CR082
IG_BH03CR082_F.jpg	Split Tube Photo Front of Core Run ID CR082
IG_BH03CR083_B.jpg	Split Tube Photo Back of Core Run ID CR083
IG_BH03CR083_F.jpg	Split Tube Photo Front of Core Run ID CR083
IG_BH03CR084_B.jpg	Split Tube Photo Back of Core Run ID CR084
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IG_BH03CR253_B.jpg	Split Tube Photo Back of Core Run ID CR253
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IG_BH03CR254_B.jpg	Split Tube Photo Back of Core Run ID CR254
IG_BH03CR254_F.jpg	Split Tube Photo Front of Core Run ID CR254
IG_BH03CR255_B.jpg	Split Tube Photo Back of Core Run ID CR255
IG_BH03CR255_F.jpg	Split Tube Photo Front of Core Run ID CR255
IG_BH03CR256_B.jpg	Split Tube Photo Back of Core Run ID CR256
IG_BH03CR256_F.jpg	Split Tube Photo Front of Core Run ID CR256
IG_BH03CR257_B.jpg	Split Tube Photo Back of Core Run ID CR257
IG_BH03CR257_F.jpg	Split Tube Photo Front of Core Run ID CR257
IG_BH03CR258_B.jpg	Split Tube Photo Back of Core Run ID CR258
IG_BH03CR258_F.jpg	Split Tube Photo Front of Core Run ID CR258
IG_BH03CR259_B.jpg	Split Tube Photo Back of Core Run ID CR259
IG_BH03CR259_F.jpg	Split Tube Photo Front of Core Run ID CR259
IG_BH03CR260_B.jpg	Split Tube Photo Back of Core Run ID CR260
IG_BH03CR260_F.jpg	Split Tube Photo Front of Core Run ID CR260
IG_BH03CR261_B.jpg	Split Tube Photo Back of Core Run ID CR261
IG_BH03CR261_F.jpg	Split Tube Photo Front of Core Run ID CR261
IG_BH03CR262_B.jpg	Split Tube Photo Back of Core Run ID CR262
IG_BH03CR262_F.jpg	Split Tube Photo Front of Core Run ID CR262
IG_BH03CR263_B.jpg	Split Tube Photo Back of Core Run ID CR263
IG_BH03CR263_F.jpg	Split Tube Photo Front of Core Run ID CR263
IG_BH03CR264_B.jpg	Split Tube Photo Back of Core Run ID CR264
IG_BH03CR264_F.jpg	Split Tube Photo Front of Core Run ID CR264

Photo Name	Photo Description
IG_BH03CR265_B.jpg	Split Tube Photo Back of Core Run ID CR265
IG_BH03CR265_F.jpg	Split Tube Photo Front of Core Run ID CR265
IG_BH03CR266_B.jpg	Split Tube Photo Back of Core Run ID CR266
IG_BH03CR266_F.jpg	Split Tube Photo Front of Core Run ID CR266
IG_BH03CR267_B.jpg	Split Tube Photo Back of Core Run ID CR267
IG_BH03CR267_F.jpg	Split Tube Photo Front of Core Run ID CR267
IG_BH03CR268_B.jpg	Split Tube Photo Back of Core Run ID CR268
IG_BH03CR268_F.jpg	Split Tube Photo Front of Core Run ID CR268
IG_BH03CR269_B.jpg	Split Tube Photo Back of Core Run ID CR269
IG_BH03CR269_F.jpg	Split Tube Photo Front of Core Run ID CR269
IG_BH03CR270_B.jpg	Split Tube Photo Back of Core Run ID CR270
IG_BH03CR270_F.jpg	Split Tube Photo Front of Core Run ID CR270
IG_BH03CR271_B.jpg	Split Tube Photo Back of Core Run ID CR271
IG_BH03CR271_F.jpg	Split Tube Photo Front of Core Run ID CR271
IG_BH03CR272_B.jpg	Split Tube Photo Back of Core Run ID CR272
IG_BH03CR272_F.jpg	Split Tube Photo Front of Core Run ID CR272
IG_BH03CR273_B.jpg	Split Tube Photo Back of Core Run ID CR273
IG_BH03CR273_F.jpg	Split Tube Photo Front of Core Run ID CR273
IG_BH03CR274_B.jpg	Split Tube Photo Back of Core Run ID CR274
IG_BH03CR274_F.jpg	Split Tube Photo Front of Core Run ID CR274
IG_BH03CR275_B.jpg	Split Tube Photo Back of Core Run ID CR275
IG_BH03CR275_F.jpg	Split Tube Photo Front of Core Run ID CR275
IG_BH03CR276_B.jpg	Split Tube Photo Back of Core Run ID CR276
IG_BH03CR276_F.jpg	Split Tube Photo Front of Core Run ID CR276
IG_BH03CR277_B.jpg	Split Tube Photo Back of Core Run ID CR277
IG_BH03CR277_F.jpg	Split Tube Photo Front of Core Run ID CR277
IG_BH03CR278_B.jpg	Split Tube Photo Back of Core Run ID CR278
IG_BH03CR278_F.jpg	Split Tube Photo Front of Core Run ID CR278
IG_BH03CR279_B.jpg	Split Tube Photo Back of Core Run ID CR279
IG_BH03CR279_F.jpg	Split Tube Photo Front of Core Run ID CR279
IG_BH03CR280_B.jpg	Split Tube Photo Back of Core Run ID CR280
IG_BH03CR280_F.jpg	Split Tube Photo Front of Core Run ID CR280
IG_BH03CR281_B.jpg	Split Tube Photo Back of Core Run ID CR281
IG_BH03CR281_F.jpg	Split Tube Photo Front of Core Run ID CR281
IG_BH03CR282_B.jpg	Split Tube Photo Back of Core Run ID CR282
IG_BH03CR282_F.jpg	Split Tube Photo Front of Core Run ID CR282
IG_BH03CR283_B.jpg	Split Tube Photo Back of Core Run ID CR283
IG_BH03CR283_F.jpg	Split Tube Photo Front of Core Run ID CR283
IG_BH03CR284_B.jpg	Split Tube Photo Back of Core Run ID CR284
IG_BH03CR284_F.jpg	Split Tube Photo Front of Core Run ID CR284
IG_BH03CR285_B.jpg	Split Tube Photo Back of Core Run ID CR285
IG_BH03CR285_F.jpg	Split Tube Photo Front of Core Run ID CR285
IG_BH03CR286_B.jpg	Split Tube Photo Back of Core Run ID CR286
IG_BH03CR286_F.jpg	Split Tube Photo Front of Core Run ID CR286
IG_BH03CR287_B.jpg	Split Tube Photo Back of Core Run ID CR287
IG_BH03CR287_F.jpg	Split Tube Photo Front of Core Run ID CR287
IG_BH03CR288_B.jpg	Split Tube Photo Back of Core Run ID CR288
IG_BH03CR288_F.jpg	Split Tube Photo Front of Core Run ID CR288

Photo Name	Photo Description
IG_BH03CR289_B.jpg	Split Tube Photo Back of Core Run ID CR289
IG_BH03CR289_F.jpg	Split Tube Photo Front of Core Run ID CR289
IG_BH03CR290_B.jpg	Split Tube Photo Back of Core Run ID CR290
IG_BH03CR290_F.jpg	Split Tube Photo Front of Core Run ID CR290
IG_BH03CR291_B.jpg	Split Tube Photo Back of Core Run ID CR291
IG_BH03CR291_F.jpg	Split Tube Photo Front of Core Run ID CR291
IG_BH03CR292_B.jpg	Split Tube Photo Back of Core Run ID CR292
IG_BH03CR292_F.jpg	Split Tube Photo Front of Core Run ID CR292
IG_BH03CR293_B.jpg	Split Tube Photo Back of Core Run ID CR293
IG_BH03CR293_F.jpg	Split Tube Photo Front of Core Run ID CR293
IG_BH03CR294_B.jpg	Split Tube Photo Back of Core Run ID CR294
IG_BH03CR294_F.jpg	Split Tube Photo Front of Core Run ID CR294
IG_BH03CR295_B.jpg	Split Tube Photo Back of Core Run ID CR295
IG_BH03CR295_F.jpg	Split Tube Photo Front of Core Run ID CR295
IG_BH03CR296_B.jpg	Split Tube Photo Back of Core Run ID CR296
IG_BH03CR296_F.jpg	Split Tube Photo Front of Core Run ID CR296
IG_BH03CR297_B.jpg	Split Tube Photo Back of Core Run ID CR297
IG_BH03CR297_F.jpg	Split Tube Photo Front of Core Run ID CR297
IG_BH03CR298_B.jpg	Split Tube Photo Back of Core Run ID CR298
IG_BH03CR298_F.jpg	Split Tube Photo Front of Core Run ID CR298
IG_BH03CR299_B.jpg	Split Tube Photo Back of Core Run ID CR299
IG_BH03CR299_F.jpg	Split Tube Photo Front of Core Run ID CR299
IG_BH03CR300_B.jpg	Split Tube Photo Back of Core Run ID CR300
IG_BH03CR300_F.jpg	Split Tube Photo Front of Core Run ID CR300
IG_BH03CR301_B.jpg	Split Tube Photo Back of Core Run ID CR301
IG_BH03CR301_F.jpg	Split Tube Photo Front of Core Run ID CR301
IG_BH03CR302_B.jpg	Split Tube Photo Back of Core Run ID CR302
IG_BH03CR302_F.jpg	Split Tube Photo Front of Core Run ID CR302
IG_BH03CR303_B.jpg	Split Tube Photo Back of Core Run ID CR303
IG_BH03CR303_F.jpg	Split Tube Photo Front of Core Run ID CR303
IG_BH03CR304_B.jpg	Split Tube Photo Back of Core Run ID CR304
IG_BH03CR304_F.jpg	Split Tube Photo Front of Core Run ID CR304
IG_BH03CR305_B.jpg	Split Tube Photo Back of Core Run ID CR305
IG_BH03CR305_F.jpg	Split Tube Photo Front of Core Run ID CR305
IG_BH03CR306_B.jpg	Split Tube Photo Back of Core Run ID CR306
IG_BH03CR306_F.jpg	Split Tube Photo Front of Core Run ID CR306
IG_BH03CR307_B.jpg	Split Tube Photo Back of Core Run ID CR307
IG_BH03CR307_F.jpg	Split Tube Photo Front of Core Run ID CR307
IG_BH03CR308_B.jpg	Split Tube Photo Back of Core Run ID CR308
IG_BH03CR308_F.jpg	Split Tube Photo Front of Core Run ID CR308
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IG_BH03CR310_B.jpg	Split Tube Photo Back of Core Run ID CR310
IG_BH03CR310_F.jpg	Split Tube Photo Front of Core Run ID CR310
IG_BH03CR311_B.jpg	Split Tube Photo Back of Core Run ID CR311
IG_BH03CR311_F.jpg	Split Tube Photo Front of Core Run ID CR311
IG_BH03CR312_B.jpg	Split Tube Photo Back of Core Run ID CR312
IG_BH03CR312_F.jpg	Split Tube Photo Front of Core Run ID CR312

Photo Name	Photo Description
IG_BH03CR313_B.jpg	Split Tube Photo Back of Core Run ID CR313
IG_BH03CR313_F.jpg	Split Tube Photo Front of Core Run ID CR313
IG_BH03CR314_B.jpg	Split Tube Photo Back of Core Run ID CR314
IG_BH03CR314_F.jpg	Split Tube Photo Front of Core Run ID CR314
IG_BH03CR315_B.jpg	Split Tube Photo Back of Core Run ID CR315
IG_BH03CR315_F.jpg	Split Tube Photo Front of Core Run ID CR315
IG_BH03CR316_B.jpg	Split Tube Photo Back of Core Run ID CR316
IG_BH03CR316_F.jpg	Split Tube Photo Front of Core Run ID CR316
IG_BH03CR317_B.jpg	Split Tube Photo Back of Core Run ID CR317
IG_BH03CR317_F.jpg	Split Tube Photo Front of Core Run ID CR317
IG_BH03CR318_B.jpg	Split Tube Photo Back of Core Run ID CR318
IG_BH03CR318_F.jpg	Split Tube Photo Front of Core Run ID CR318
IG_BH03CR319_B.jpg	Split Tube Photo Back of Core Run ID CR319
IG_BH03CR319_F.jpg	Split Tube Photo Front of Core Run ID CR319
IG_BH03CR320_B.jpg	Split Tube Photo Back of Core Run ID CR320
IG_BH03CR320_F.jpg	Split Tube Photo Front of Core Run ID CR320
IG_BH03CR321_B.jpg	Split Tube Photo Back of Core Run ID CR321
IG_BH03CR321_F.jpg	Split Tube Photo Front of Core Run ID CR321
IG_BH03CR322_B.jpg	Split Tube Photo Back of Core Run ID CR322
IG_BH03CR322_F.jpg	Split Tube Photo Front of Core Run ID CR322
IG_BH03CR323_B.jpg	Split Tube Photo Back of Core Run ID CR323
IG_BH03CR323_F.jpg	Split Tube Photo Front of Core Run ID CR323
IG_BH03CR324_B.jpg	Split Tube Photo Back of Core Run ID CR324
IG_BH03CR324_F.jpg	Split Tube Photo Front of Core Run ID CR324
IG_BH03CR325_B.jpg	Split Tube Photo Back of Core Run ID CR325
IG_BH03CR325_F.jpg	Split Tube Photo Front of Core Run ID CR325
IG_BH03CR326_B.jpg	Split Tube Photo Back of Core Run ID CR326
IG_BH03CR326_F.jpg	Split Tube Photo Front of Core Run ID CR326
IG_BH03CR327_B.jpg	Split Tube Photo Back of Core Run ID CR327
IG_BH03CR327_F.jpg	Split Tube Photo Front of Core Run ID CR327
IG_BH03CR328_B.jpg	Split Tube Photo Back of Core Run ID CR328
IG_BH03CR328_F.jpg	Split Tube Photo Front of Core Run ID CR328
IG_BH03CR329_B.jpg	Split Tube Photo Back of Core Run ID CR329
IG_BH03CR329_F.jpg	Split Tube Photo Front of Core Run ID CR329
IG_BH03CR330_B.jpg	Split Tube Photo Back of Core Run ID CR330
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IG_BH03CR331_B.jpg	Split Tube Photo Back of Core Run ID CR331
IG_BH03CR331_F.jpg	Split Tube Photo Front of Core Run ID CR331
IG_BH03CR332_B.jpg	Split Tube Photo Back of Core Run ID CR332
IG_BH03CR332_F.jpg	Split Tube Photo Front of Core Run ID CR332
IG_BH03CR333_B.jpg	Split Tube Photo Back of Core Run ID CR333
IG_BH03CR333_F.jpg	Split Tube Photo Front of Core Run ID CR333
IG_BH03CR334_B.jpg	Split Tube Photo Back of Core Run ID CR334
IG_BH03CR334_F.jpg	Split Tube Photo Front of Core Run ID CR334
IG_BH03CR335_B.jpg	Split Tube Photo Back of Core Run ID CR335
IG_BH03CR335_F.jpg	Split Tube Photo Front of Core Run ID CR335
IG_BH03CR336_B.jpg	Split Tube Photo Back of Core Run ID CR336
IG_BH03CR336_F.jpg	Split Tube Photo Front of Core Run ID CR336

Photo Name	Photo Description
IG_BH03CR337_B.jpg	Split Tube Photo Back of Core Run ID CR337
IG_BH03CR337_F.jpg	Split Tube Photo Front of Core Run ID CR337
IG_BH03CR338_B.jpg	Split Tube Photo Back of Core Run ID CR338
IG_BH03CR338_F.jpg	Split Tube Photo Front of Core Run ID CR338
IG_BH03CR339_B.jpg	Split Tube Photo Back of Core Run ID CR339
IG_BH03CR339_F.jpg	Split Tube Photo Front of Core Run ID CR339
IG_BH03CR340_B.jpg	Split Tube Photo Back of Core Run ID CR340
IG_BH03CR340_F.jpg	Split Tube Photo Front of Core Run ID CR340
IG_BH03CR341_B.jpg	Split Tube Photo Back of Core Run ID CR341
IG_BH03CR341_F.jpg	Split Tube Photo Front of Core Run ID CR341
IG_BH03CR342_B.jpg	Split Tube Photo Back of Core Run ID CR342
IG_BH03CR342_F.jpg	Split Tube Photo Front of Core Run ID CR342
IG_BH03CR343_B.jpg	Split Tube Photo Back of Core Run ID CR343
IG_BH03CR343_F.jpg	Split Tube Photo Front of Core Run ID CR343
IG_BH03CR344_B.jpg	Split Tube Photo Back of Core Run ID CR344
IG_BH03CR344_F.jpg	Split Tube Photo Front of Core Run ID CR344
IG_BH03CR345_B.jpg	Split Tube Photo Back of Core Run ID CR345
IG_BH03CR345_F.jpg	Split Tube Photo Front of Core Run ID CR345
IG_BH03CR346_B.jpg	Split Tube Photo Back of Core Run ID CR346
IG_BH03CR346_F.jpg	Split Tube Photo Front of Core Run ID CR346
IG_BH03CR347_B.jpg	Split Tube Photo Back of Core Run ID CR347
IG_BH03CR347_F.jpg	Split Tube Photo Front of Core Run ID CR347
IG_BH03CR348_B.jpg	Split Tube Photo Back of Core Run ID CR348
IG_BH03CR348_F.jpg	Split Tube Photo Front of Core Run ID CR348
IG_BH03CR349_B.jpg	Split Tube Photo Back of Core Run ID CR349
IG_BH03CR349_F.jpg	Split Tube Photo Front of Core Run ID CR349
IG_BH03CR350_B.jpg	Split Tube Photo Back of Core Run ID CR350
IG_BH03CR350_F.jpg	Split Tube Photo Front of Core Run ID CR350
IG_BH03CR351_B.jpg	Split Tube Photo Back of Core Run ID CR351
IG_BH03CR351_F.jpg	Split Tube Photo Front of Core Run ID CR351
IG_BH03CR352_B.jpg	Split Tube Photo Back of Core Run ID CR352
IG_BH03CR352_F.jpg	Split Tube Photo Front of Core Run ID CR352
IG_BH03CR353_B.jpg	Split Tube Photo Back of Core Run ID CR353
IG_BH03CR353_F.jpg	Split Tube Photo Front of Core Run ID CR353
IG_BH03CR354_B.jpg	Split Tube Photo Back of Core Run ID CR354
IG_BH03CR354_F.jpg	Split Tube Photo Front of Core Run ID CR354
IG_BH03CR355_B.jpg	Split Tube Photo Back of Core Run ID CR355
IG_BH03CR355_F.jpg	Split Tube Photo Front of Core Run ID CR355
IG_BH03CR356_B.jpg	Split Tube Photo Back of Core Run ID CR356
IG_BH03CR356_F.jpg	Split Tube Photo Front of Core Run ID CR356

Photo Name	Photo Description
IG_BH03_AQ001_B.JPG	Sample AQ001 Photo, Back
IG_BH03_AQ001_F.JPG	Sample AQ001 Photo, Front
IG_BH03_AQ001_P.JPG	Sample AQ001 Photo, Package
IG_BH03_AQ002_B.JPG	Sample AQ002 Photo, Back
IG_BH03_AQ002_F.JPG	Sample AQ002 Photo, Front
IG_BH03_AQ002_P.JPG	Sample AQ002 Photo, Package
IG_BH03_AQ003_B.JPG	Sample AQ003 Photo, Back
IG_BH03_AQ003_F.JPG	Sample AQ003 Photo, Front
IG_BH03_AQ003_P.JPG	Sample AQ003 Photo, Package
IG_BH03_AQ004_B.JPG	Sample AQ004 Photo, Back
IG_BH03_AQ004_F.JPG	Sample AQ004 Photo, Front
IG_BH03_AQ004_P.JPG	Sample AQ004 Photo, Package
IG_BH03_AQ005_B.JPG	Sample AQ005 Photo, Back
IG_BH03_AQ005_F.JPG	Sample AQ005 Photo, Front
IG_BH03_AQ005_P.JPG	Sample AQ005 Photo, Package
IG_BH03_AQ006_B.JPG	Sample AQ006 Photo, Back
IG_BH03_AQ006_F.JPG	Sample AQ006 Photo, Front
IG_BH03_AQ006_P.JPG	Sample AQ006 Photo, Package
IG_BH03_AQ007_B.JPG	Sample AQ007 Photo, Back
IG_BH03_AQ007_F.JPG	Sample AQ007 Photo, Front
IG_BH03_AQ007_P.JPG	Sample AQ007 Photo, Package
IG_BH03_AQ008_B.JPG	Sample AQ008 Photo, Back
IG_BH03_AQ008_F.JPG	Sample AQ008 Photo, Front
IG_BH03_AQ008_P.JPG	Sample AQ008 Photo, Package
IG_BH03_AQ009_B.JPG	Sample AQ009 Photo, Back
IG_BH03_AQ009_F.JPG	Sample AQ009 Photo, Front
IG_BH03_AQ009_P.JPG	Sample AQ009 Photo, Package
IG_BH03_AQ010_B.JPG	Sample AQ010 Photo, Back
IG_BH03_AQ010_F.JPG	Sample AQ010 Photo, Front
IG_BH03_AQ010_P.JPG	Sample AQ010 Photo, Package
IG_BH03_AR001_B.JPG	Sample AR001 Photo, Back
IG_BH03_AR001_F.JPG	Sample AR001 Photo, Front
IG_BH03_AR001_P.JPG	Sample AR001 Photo, Package
IG_BH03_AR002_B.JPG	Sample AR002 Photo, Back
IG_BH03_AR002_F.JPG	Sample AR002 Photo, Front
IG_BH03_AR002_P.JPG	Sample AR002 Photo, Package
IG_BH03_AR003_B.JPG	Sample AR003 Photo, Back
IG_BH03_AR003_F.JPG	Sample AR003 Photo, Front
IG_BH03_AR003_P.JPG	Sample AR003 Photo, Package
IG_BH03_AR004_B.JPG	Sample AR004 Photo, Back
IG_BH03_AR004_F.JPG	Sample AR004 Photo, Front
IG_BH03_AR004_P.JPG	Sample AR004 Photo, Package
IG_BH03_AR005_B.JPG	Sample AR005 Photo, Back
IG_BH03_AR005_F.JPG	Sample AR005 Photo, Front
IG_BH03_AR005_P.JPG	Sample AR005 Photo, Package
IG_BH03_AR006_B.JPG	Sample AR006 Photo, Back
IG_BH03_AR006_F.JPG	Sample AR006 Photo, Front
IG_BH03_AR006_P.JPG	Sample AR006 Photo, Package

Photo Name	Photo Description
IG_BH03_AR007_B.JPG	Sample AR007 Photo, Back
IG_BH03_AR007_F.JPG	Sample AR007 Photo, Front
IG_BH03_AR007_P.JPG	Sample AR007 Photo, Package
IG_BH03_AR008_B.JPG	Sample AR008 Photo, Back
IG_BH03_AR008_F.JPG	Sample AR008 Photo, Front
IG_BH03_AR008_P.JPG	Sample AR008 Photo, Package
IG_BH03_AR009_B.JPG	Sample AR009 Photo, Back
IG_BH03_AR009_F.JPG	Sample AR009 Photo, Front
IG_BH03_AR009_P.JPG	Sample AR009 Photo, Package
IG_BH03_AR010_B.JPG	Sample AR010 Photo, Back
IG_BH03_AR010_F.JPG	Sample AR010 Photo, Front
IG_BH03_AR010_P.JPG	Sample AR010 Photo, Package
IG_BH03_AR011_B.JPG	Sample AR011 Photo, Back
IG_BH03_AR011_F.JPG	Sample AR011 Photo, Front
IG_BH03_AR011_P.JPG	Sample AR011 Photo, Package
IG_BH03_AR012_B.JPG	Sample AR012 Photo, Back
IG_BH03_AR012_F.JPG	Sample AR012 Photo, Front
IG_BH03_AR012_P.JPG	Sample AR012 Photo, Package
IG_BH03_AR013_B.JPG	Sample AR013 Photo, Back
IG_BH03_AR013_F.JPG	Sample AR013 Photo, Front
IG_BH03_AR013_P.JPG	Sample AR013 Photo, Package
IG_BH03_AR014_B.JPG	Sample AR014 Photo, Back
IG_BH03_AR014_F.JPG	Sample AR014 Photo, Front
IG_BH03_AR014_P.JPG	Sample AR014 Photo, Package
IG_BH03_AR015_B.JPG	Sample AR015 Photo, Back
IG_BH03_AR015_F.JPG	Sample AR015 Photo, Front
IG_BH03_AR015_P.JPG	Sample AR015 Photo, Package
IG_BH03_AR016_B.JPG	Sample AR016 Photo, Back
IG_BH03_AR016_F.JPG	Sample AR016 Photo, Front
IG_BH03_AR016_P.JPG	Sample AR016 Photo, Package
IG_BH03_AR017_B.JPG	Sample AR017 Photo, Back
IG_BH03_AR017_F.JPG	Sample AR017 Photo, Front
IG_BH03_AR017_P.JPG	Sample AR017 Photo, Package
IG_BH03_AR018_B.JPG	Sample AR018 Photo, Back
IG_BH03_AR018_F.JPG	Sample AR018 Photo, Front
IG_BH03_AR018_P.JPG	Sample AR018 Photo, Package
IG_BH03_AR019_B.JPG	Sample AR019 Photo, Back
IG_BH03_AR019_F.JPG	Sample AR019 Photo, Front
IG_BH03_AR019_P.JPG	Sample AR019 Photo, Package
IG_BH03_AR020_B.JPG	Sample AR020 Photo, Back
IG_BH03_AR020_F.JPG	Sample AR020 Photo, Front
IG_BH03_AR020_P.JPG	Sample AR020 Photo, Package
IG_BH03_BR001_B.JPG	Sample BR001 Photo, Back
IG_BH03_BR001_F.JPG	Sample BR001 Photo, Front
IG_BH03_BR001_P.JPG	Sample BR001 Photo, Package
IG_BH03_BR002_B.JPG	Sample BR002 Photo, Back
IG_BH03_BR002_F.JPG	Sample BR002 Photo, Front
IG_BH03_BR002_P.JPG	Sample BR002 Photo, Package

Photo Name	Photo Description
IG_BH03_BR003_B.JPG	Sample BR003 Photo, Back
IG_BH03_BR003_F.JPG	Sample BR003 Photo, Front
IG_BH03_BR003_P.JPG	Sample BR003 Photo, Package
IG_BH03_BR004_B.JPG	Sample BR004 Photo, Back
IG_BH03_BR004_F.JPG	Sample BR004 Photo, Front
IG_BH03_BR004_P.JPG	Sample BR004 Photo, Package
IG_BH03_BR005_B.JPG	Sample BR005 Photo, Back
IG_BH03_BR005_F.JPG	Sample BR005 Photo, Front
IG_BH03_BR005_P.JPG	Sample BR005 Photo, Package
IG_BH03_BR006_B.JPG	Sample BR006 Photo, Back
IG_BH03_BR006_F.JPG	Sample BR006 Photo, Front
IG_BH03_BR006_P.JPG	Sample BR006 Photo, Package
IG_BH03_BR007_F.JPG	Sample BR007 Photo, Front
IG_BH03_BR007_P.JPG	Sample BR007 Photo, Package
IG_BH03_ED001_B.JPG	Sample ED001 Photo, Back
IG_BH03_ED001_F.JPG	Sample ED001 Photo, Front
IG_BH03_ED001_P.JPG	Sample ED001 Photo, Package
IG_BH03_ED002_B.JPG	Sample ED002 Photo, Back
IG_BH03_ED002_F.JPG	Sample ED002 Photo, Front
IG_BH03_ED002_P.JPG	Sample ED002 Photo, Package
IG_BH03_ED003_B.JPG	Sample ED003 Photo, Back
IG_BH03_ED003_F.JPG	Sample ED003 Photo, Front
IG_BH03_ED003_P.JPG	Sample ED003 Photo, Package
IG_BH03_ED004_B.JPG	Sample ED004 Photo, Back
IG_BH03_ED004_F.JPG	Sample ED004 Photo, Front
IG_BH03_ED004_P.JPG	Sample ED004 Photo, Package
IG_BH03_ED005_B.JPG	Sample ED005 Photo, Back
IG_BH03_ED005_F.JPG	Sample ED005 Photo, Front
IG_BH03_ED005_P.JPG	Sample ED005 Photo, Package
IG_BH03_ED006_B.JPG	Sample ED006 Photo, Back
IG_BH03_ED006_F.JPG	Sample ED006 Photo, Front
IG_BH03_ED006_P.JPG	Sample ED006 Photo, Package
IG_BH03_ED007_B.JPG	Sample ED007 Photo, Back
IG_BH03_ED007_F.JPG	Sample ED007 Photo, Front
IG_BH03_ED007_P.JPG	Sample ED007 Photo, Package
IG_BH03_ED008_B.JPG	Sample ED008 Photo, Back
IG_BH03_ED008_F.JPG	Sample ED008 Photo, Front
IG_BH03_ED008_P.JPG	Sample ED008 Photo, Package
IG_BH03_ED009_B.JPG	Sample ED009 Photo, Back
IG_BH03_ED009_F.JPG	Sample ED009 Photo, Front
IG_BH03_ED009_P.JPG	Sample ED009 Photo, Package
IG_BH03_ED010_B.JPG	Sample ED010 Photo, Back
IG_BH03_ED010_F.JPG	Sample ED010 Photo, Front
IG_BH03_ED010_P.JPG	Sample ED010 Photo, Package
IG_BH03_MB001_B.JPG	Sample MB001 Photo, Back
IG_BH03_MB001_F.JPG	Sample MB001 Photo, Front
IG_BH03_MB001_P.JPG	Sample MB001 Photo, Package
IG_BH03_MB002_B.JPG	Sample MB002 Photo, Back

Photo Name	Photo Description
IG_BH03_MB002_F.JPG	Sample MB002 Photo, Front
IG_BH03_MB002_P.JPG	Sample MB002 Photo, Package
IG_BH03_MB003_B.JPG	Sample MB003 Photo, Back
IG_BH03_MB003_F.JPG	Sample MB003 Photo, Front
IG_BH03_MB003_P.JPG	Sample MB003 Photo, Package
IG_BH03_MB004_B.JPG	Sample MB004 Photo, Back
IG_BH03_MB004_F.JPG	Sample MB004 Photo, Front
IG_BH03_MB004_P.JPG	Sample MB004 Photo, Package
IG_BH03_MB005_B.JPG	Sample MB005 Photo, Back
IG_BH03_MB005_F.JPG	Sample MB005 Photo, Front
IG_BH03_MB005_P.JPG	Sample MB005 Photo, Package
IG_BH03_MB006_B.JPG	Sample MB006 Photo, Back
IG_BH03_MB006_F.JPG	Sample MB006 Photo, Front
IG_BH03_MB006_P.JPG	Sample MB006 Photo, Package
IG_BH03_NG001_B.JPG	Sample NG001 Photo, Back
IG_BH03_NG001_F.JPG	Sample NG001 Photo, Front
IG_BH03_NG001_P.JPG	Sample NG001 Photo, Package
IG_BH03_NG002_B.JPG	Sample NG002 Photo, Back
IG_BH03_NG002_F.JPG	Sample NG002 Photo, Front
IG_BH03_NG002_P.JPG	Sample NG002 Photo, Package
IG_BH03_NG003_B.JPG	Sample NG003 Photo, Back
IG_BH03_NG003_F.JPG	Sample NG003 Photo, Front
IG_BH03_NG003_P.JPG	Sample NG003 Photo, Package
IG_BH03_NG004_B.JPG	Sample NG004 Photo, Back
IG_BH03_NG004_F.JPG	Sample NG004 Photo, Front
IG_BH03_NG004_P.JPG	Sample NG004 Photo, Package
IG_BH03_NG005_B.JPG	Sample NG005 Photo, Back
IG_BH03_NG005_F.JPG	Sample NG005 Photo, Front
IG_BH03_NG005_P.JPG	Sample NG005 Photo, Package
IG_BH03_NG006_B.JPG	Sample NG006 Photo, Back
IG_BH03_NG006_F.JPG	Sample NG006 Photo, Front
IG_BH03_NG006_P.JPG	Sample NG006 Photo, Package
IG_BH03_NG007_B.JPG	Sample NG007 Photo, Back
IG_BH03_NG007_F.JPG	Sample NG007 Photo, Front
IG_BH03_NG007_P.JPG	Sample NG007 Photo, Package
IG_BH03_NG008_B.JPG	Sample NG008 Photo, Back
IG_BH03_NG008_F.JPG	Sample NG008 Photo, Front
IG_BH03_NG008_P.JPG	Sample NG008 Photo, Package
IG_BH03_NG009_B.JPG	Sample NG009 Photo, Back
IG_BH03_NG009_F.JPG	Sample NG009 Photo, Front
IG_BH03_NG009_P.JPG	Sample NG009 Photo, Package
IG_BH03_NG010_B.JPG	Sample NG010 Photo, Back
IG_BH03_NG010_F.JPG	Sample NG010 Photo, Front
IG_BH03_NG010_P.JPG	Sample NG010 Photo, Package
IG_BH03_PS001_B.JPG	Sample PS001 Photo, Back
IG_BH03_PS001_F.JPG	Sample PS001 Photo, Front
IG_BH03_PS001_P.JPG	Sample PS001 Photo, Package
IG_BH03_PS002_B.JPG	Sample PS002 Photo, Back

Photo Name	Photo Description
IG_BH03_PS002_F.JPG	Sample PS002 Photo, Front
IG_BH03_PS002_P.JPG	Sample PS002 Photo, Package
IG_BH03_PS003_B.jpg	Sample PS003 Photo, Back
IG_BH03_PS003_F.jpg	Sample PS003 Photo, Front
IG_BH03_PS003_P.JPG	Sample PS003 Photo, Package
IG_BH03_PS004_B.JPG	Sample PS004 Photo, Back
IG_BH03_PS004_F.JPG	Sample PS004 Photo, Front
IG_BH03_PS004_P.JPG	Sample PS004 Photo, Package
IG_BH03_PS005_B.JPG	Sample PS005 Photo, Back
IG_BH03_PS005_F.JPG	Sample PS005 Photo, Front
IG_BH03_PS005_P.JPG	Sample PS005 Photo, Package
IG_BH03_PS006_B.JPG	Sample PS006 Photo, Back
IG_BH03_PS006_F.JPG	Sample PS006 Photo, Front
IG_BH03_PS006_P.JPG	Sample PS006 Photo, Package
IG_BH03_PS007_B.JPG	Sample PS007 Photo, Back
IG_BH03_PS007_F.JPG	Sample PS007 Photo, Front
IG_BH03_PS007_P.JPG	Sample PS007 Photo, Package
IG_BH03_PS008_B.JPG	Sample PS008 Photo, Back
IG_BH03_PS008_F.JPG	Sample PS008 Photo, Front
IG_BH03_PS008_P.JPG	Sample PS008 Photo, Package
IG_BH03_PW001_B.JPG	Sample PW001 Photo, Back
IG_BH03_PW001_F.JPG	Sample PW001 Photo, Front
IG_BH03_PW001_P.JPG	Sample PW001 Photo, Package
IG_BH03_PW002_B.JPG	Sample PW002 Photo, Back
IG_BH03_PW002_F.JPG	Sample PW002 Photo, Front
IG_BH03_PW002_P.JPG	Sample PW002 Photo, Package
IG_BH03_PW003_B.JPG	Sample PW003 Photo, Back
IG_BH03_PW003_F.JPG	Sample PW003 Photo, Front
IG_BH03_PW003_P.JPG	Sample PW003 Photo, Package
IG_BH03_PW004_B.JPG	Sample PW004 Photo, Back
IG_BH03_PW004_F.JPG	Sample PW004 Photo, Front
IG_BH03_PW004_P.JPG	Sample PW004 Photo, Package
IG_BH03_PW005_B.JPG	Sample PW005 Photo, Back
IG_BH03_PW005_F.JPG	Sample PW005 Photo, Front
IG_BH03_PW005_P.JPG	Sample PW005 Photo, Package
IG_BH03_PW006_B.JPG	Sample PW006 Photo, Back
IG_BH03_PW006_F.JPG	Sample PW006 Photo, Front
IG_BH03_PW006_P.JPG	Sample PW006 Photo, Package
IG_BH03_PW007_B.JPG	Sample PW007 Photo, Back
IG_BH03_PW007_F.JPG	Sample PW007 Photo, Front
IG_BH03_PW007_P.JPG	Sample PW007 Photo, Package
IG_BH03_PW008_B.JPG	Sample PW008 Photo, Back
IG_BH03_PW008_F.JPG	Sample PW008 Photo, Front
IG_BH03_PW008_P.JPG	Sample PW008 Photo, Package
IG_BH03_PW009_B.JPG	Sample PW009 Photo, Back
IG_BH03_PW009_F.JPG	Sample PW009 Photo, Front
IG_BH03_PW009_P.JPG	Sample PW009 Photo, Package
IG_BH03_PW010_B.JPG	Sample PW010 Photo, Back

Photo Name	Photo Description
IG_BH03_PW010_F.JPG	Sample PW010 Photo, Front
IG_BH03_PW010_P.JPG	Sample PW010 Photo, Package
IG_BH03_PW011_B.JPG	Sample PW011 Photo, Back
IG_BH03_PW011_F.JPG	Sample PW011 Photo, Front
IG_BH03_PW011_P.JPG	Sample PW011 Photo, Package
IG_BH03_PW012_B.JPG	Sample PW012 Photo, Back
IG_BH03_PW012_F.JPG	Sample PW012 Photo, Front
IG_BH03_PW012_P.JPG	Sample PW012 Photo, Package
IG_BH03_PW013_B.JPG	Sample PW013 Photo, Back
IG_BH03_PW013_F.JPG	Sample PW013 Photo, Front
IG_BH03_PW013_P.JPG	Sample PW013 Photo, Package
IG_BH03_PW014_B.JPG	Sample PW014 Photo, Back
IG_BH03_PW014_F.JPG	Sample PW014 Photo, Front
IG_BH03_PW014_P.JPG	Sample PW014 Photo, Package
IG_BH03_PW015_B.JPG	Sample PW015 Photo, Back
IG_BH03_PW015_F.JPG	Sample PW015 Photo, Front
IG_BH03_PW015_P.JPG	Sample PW015 Photo, Package
IG_BH03_PW016_B.JPG	Sample PW016 Photo, Back
IG_BH03_PW016_F.JPG	Sample PW016 Photo, Front
IG_BH03_PW016_P.JPG	Sample PW016 Photo, Package
IG_BH03_PW017_B.JPG	Sample PW017 Photo, Back
IG_BH03_PW017_F.JPG	Sample PW017 Photo, Front
IG_BH03_PW017_P.JPG	Sample PW017 Photo, Package
IG_BH03_PW018_B.JPG	Sample PW018 Photo, Back
IG_BH03_PW018_F.JPG	Sample PW018 Photo, Front
IG_BH03_PW018_P.jpg	Sample PW018 Photo, Package
IG_BH03_PW019_B.JPG	Sample PW019 Photo, Back
IG_BH03_PW019_F.JPG	Sample PW019 Photo, Front
IG_BH03_PW019_P.JPG	Sample PW019 Photo, Package
IG_BH03_PW020_B.JPG	Sample PW020 Photo, Back
IG_BH03_PW020_F.JPG	Sample PW020 Photo, Front
IG_BH03_PW020_P.JPG	Sample PW020 Photo, Package
IG_BH03_SA001_B.JPG	Sample SA001 Photo, Back
IG_BH03_SA001_F.JPG	Sample SA001 Photo, Front
IG_BH03_SA001_P.JPG	Sample SA001 Photo, Package
IG_BH03_SA002_B.JPG	Sample SA002 Photo, Back
IG_BH03_SA002_F.JPG	Sample SA002 Photo, Front
IG_BH03_SA002_P.JPG	Sample SA002 Photo, Package
IG_BH03_SO001_B.JPG	Sample SO001 Photo, Back
IG_BH03_SO001_F.JPG	Sample SO001 Photo, Front
IG_BH03_SO001_P.JPG	Sample SO001 Photo, Package
IG_BH03_SO002_B.JPG	Sample SO002 Photo, Back
IG_BH03_SO002_F.JPG	Sample SO002 Photo, Front
IG_BH03_SO002_P.JPG	Sample SO002 Photo, Package
IG_BH03_SO003_B.JPG	Sample SO003 Photo, Back
IG_BH03_SO003_F.JPG	Sample SO003 Photo, Front
IG_BH03_SO003_P.JPG	Sample SO003 Photo, Package
IG_BH03_SO004_B.JPG	Sample SO004 Photo, Back

Photo Name	Photo Description
IG_BH03_SO004_F.JPG	Sample SO004 Photo, Front
IG_BH03_SO004_P.JPG	Sample SO004 Photo, Package
IG_BH03_SO005_B.JPG	Sample SO005 Photo, Back
IG_BH03_SO005_F.JPG	Sample SO005 Photo, Front
IG_BH03_SO005_P.JPG	Sample SO005 Photo, Package
IG_BH03_TH001_B.JPG	Sample TH001 Photo, Back
IG_BH03_TH001_F.JPG	Sample TH001 Photo, Front
IG_BH03_TH001_P.JPG	Sample TH001 Photo, Package
IG_BH03_TH002_B.JPG	Sample TH002 Photo, Back
IG_BH03_TH002_F.JPG	Sample TH002 Photo, Front
IG_BH03_TH002_P.JPG	Sample TH002 Photo, Package
IG_BH03_TH003_B.JPG	Sample TH003 Photo, Back
IG_BH03_TH003_F.JPG	Sample TH003 Photo, Front
IG_BH03_TH003_P.JPG	Sample TH003 Photo, Package
IG_BH03_TH004_B.JPG	Sample TH004 Photo, Back
IG_BH03_TH004_F.JPG	Sample TH004 Photo, Front
IG_BH03_TH004_P.JPG	Sample TH004 Photo, Package
IG_BH03_TH005_B.JPG	Sample TH005 Photo, Back
IG_BH03_TH005_F.JPG	Sample TH005 Photo, Front
IG_BH03_TH005_P.JPG	Sample TH005 Photo, Package
IG_BH03_TH006_B.JPG	Sample TH006 Photo, Back
IG_BH03_TH006_F.JPG	Sample TH006 Photo, Front
IG_BH03_TH006_P.JPG	Sample TH006 Photo, Package
IG_BH03_TH007_B.JPG	Sample TH007 Photo, Back
IG_BH03_TH007_F.JPG	Sample TH007 Photo, Front
IG_BH03_TH007_P.JPG	Sample TH007 Photo, Package
IG_BH03_TH008_B.JPG	Sample TH008 Photo, Back
IG_BH03_TH008_F.JPG	Sample TH008 Photo, Front
IG_BH03_TH008_P.JPG	Sample TH008 Photo, Package
IG_BH03_TH009_B.JPG	Sample TH009 Photo, Back
IG_BH03_TH009_F.JPG	Sample TH009 Photo, Front
IG_BH03_TH009_P.JPG	Sample TH009 Photo, Package
IG_BH03_UC001_B.JPG	Sample UC001 Photo, Back
IG_BH03_UC001_F.JPG	Sample UC001 Photo, Front
IG_BH03_UC001_P.JPG	Sample UC001 Photo, Package
IG_BH03_UC002_B.JPG	Sample UC002 Photo, Back
IG_BH03_UC002_F.JPG	Sample UC002 Photo, Front
IG_BH03_UC002_P.JPG	Sample UC002 Photo, Package
IG_BH03_UC003_B.JPG	Sample UC003 Photo, Back
IG_BH03_UC003_F.JPG	Sample UC003 Photo, Front
IG_BH03_UC003_P.JPG	Sample UC003 Photo, Package
IG_BH03_UC004_B.JPG	Sample UC004 Photo, Back
IG_BH03_UC004_F.JPG	Sample UC004 Photo, Front
IG_BH03_UC004_P.JPG	Sample UC004 Photo, Package
IG_BH03_UC005_B.JPG	Sample UC005 Photo, Back
IG_BH03_UC005_F.JPG	Sample UC005 Photo, Front
IG_BH03_UC005_P.JPG	Sample UC005 Photo, Package
IG_BH03_UC006_B.JPG	Sample UC006 Photo, Back

Photo Name	Photo Description
IG_BH03_UC006_F.JPG	Sample UC006 Photo, Front
IG_BH03_UC006_P.JPG	Sample UC006 Photo, Package
IG_BH03_UC007_B.JPG	Sample UC007 Photo, Back
IG_BH03_UC007_F.JPG	Sample UC007 Photo, Front
IG_BH03_UC007_P.JPG	Sample UC007 Photo, Package

Photo Name	Photo Description
IG_BH03_ST_2.55_1.JPG	Detailed Photo #1 of Structure at Depth 2.55 m
IG_BH03_ST_18.13_1.JPG	Detailed Photo #1 of Structure at Depth 18.13 m
IG_BH03_ST_18.13_2.JPG	Detailed Photo #2 of Structure at Depth 18.13 m
IG_BH03_ST_29.5_1.JPG	Detailed Photo #1 of Structure at Depth 29.5 m
IG_BH03_ST_46.18_1.JPG	Detailed Photo #1 of Structure at Depth 46.18 m
IG_BH03_ST_59.6_1.JPG	Detailed Photo #1 of Structure at Depth 59.6 m
IG_BH03_ST_76.15_1.JPG	Detailed Photo #1 of Structure at Depth 76.15 m
IG_BH03_ST_83.54_1.JPG	Detailed Photo #1 of Structure at Depth 83.54 m
IG_BH03_ST_86.51_1.JPG	Detailed Photo #1 of Structure at Depth 86.51 m
IG_BH03_ST_89.9_1.JPG	Detailed Photo #1 of Structure at Depth 89.9 m
IG_BH03_ST_94.19_1.JPG	Detailed Photo #1 of Structure at Depth 94.19 m
IG_BH03_ST_124.8_1.JPG	Detailed Photo #1 of Structure at Depth 124.8 m
IG_BH03_ST_139.51_1.JPG	Detailed Photo #1 of Structure at Depth 139.51 m
IG_BH03_ST_153.05_1.JPG	Detailed Photo #1 of Structure at Depth 153.05 m
IG_BH03_ST_153.05_2.JPG	Detailed Photo #2 of Structure at Depth 153.05 m
IG_BH03_ST_176.57_1.JPG	Detailed Photo #1 of Structure at Depth 176.57 m
IG_BH03_ST_181.34_1.JPG	Detailed Photo #1 of Structure at Depth 181.34 m
IG_BH03_ST_188.13_1.JPG	Detailed Photo #1 of Structure at Depth 188.13 m
IG_BH03_ST_220.5_1.JPG	Detailed Photo #1 of Structure at Depth 220.5 m
IG_BH03_ST_252.43_1.JPG	Detailed Photo #1 of Structure at Depth 252.43 m
IG_BH03_ST_252.43_2.JPG	Detailed Photo #2 of Structure at Depth 252.43 m
IG_BH03_ST_289.73_1.JPG	Detailed Photo #1 of Structure at Depth 289.73 m
IG_BH03_ST_289.73_2.JPG	Detailed Photo #2 of Structure at Depth 289.73 m
IG_BH03_ST_308.38_1.JPG	Detailed Photo #1 of Structure at Depth 308.38 m
IG_BH03_ST_308.38_2.JPG	Detailed Photo #2 of Structure at Depth 308.38 m
IG_BH03_ST_330.16_1.jpg	Detailed Photo #1 of Structure at Depth 330.16 m
IG_BH03_ST_330.16_2.jpg	Detailed Photo #2 of Structure at Depth 330.16 m
IG_BH03_ST_371.54_1.JPG	Detailed Photo #1 of Structure at Depth 371.54 m
IG_BH03_ST_371.54_2.JPG	Detailed Photo #2 of Structure at Depth 371.54 m
IG_BH03_ST_374.91_1.JPG	Detailed Photo #1 of Structure at Depth 374.91 m
IG_BH03_ST_374.91_2.JPG	Detailed Photo #2 of Structure at Depth 374.91 m
IG_BH03_ST_397.02_1.JPG	Detailed Photo #1 of Structure at Depth 397.02 m
IG_BH03_ST_397.41_1.JPG	Detailed Photo #1 of Structure at Depth 397.41 m
IG_BH03_ST_397.41_2.JPG	Detailed Photo #2 of Structure at Depth 397.41 m
IG_BH03_ST_404.31_1.JPG	Detailed Photo #1 of Structure at Depth 404.31 m
IG_BH03_ST_404.31_2.JPG	Detailed Photo #2 of Structure at Depth 404.31 m
IG_BH03_ST_404.40_1.JPG	Detailed Photo #1 of Structure at Depth 404.4 m
IG_BH03_ST_404.40_2.JPG	Detailed Photo #2 of Structure at Depth 404.4 m
IG_BH03_ST_404.76_1.JPG	Detailed Photo #1 of Structure at Depth 404.76 m
IG_BH03_ST_404.76_2.JPG	Detailed Photo #2 of Structure at Depth 404.76 m
IG_BH03_ST_408.23_1.JPG	Detailed Photo #1 of Structure at Depth 408.23 m
IG_BH03_ST_408.23_2.JPG	Detailed Photo #2 of Structure at Depth 408.23 m
IG_BH03_ST_411.86_1.JPG	Detailed Photo #1 of Structure at Depth 411.86 m
IG_BH03_ST_411.86_2.JPG	Detailed Photo #2 of Structure at Depth 411.86 m
IG_BH03_ST_411.88_1.JPG	Detailed Photo #1 of Structure at Depth 411.88 m
IG_BH03_ST_411.88_2.JPG	Detailed Photo #2 of Structure at Depth 411.88 m
IG_BH03_ST_412.99_1.JPG	Detailed Photo #1 of Structure at Depth 412.99 m
IG_BH03_ST_412.99_2.JPG	Detailed Photo #2 of Structure at Depth 412.99 m

Photo Name	Photo Description
IG_BH03_ST_413.76_1.JPG	Detailed Photo #1 of Structure at Depth 413.76 m
IG_BH03_ST_414.27_1.JPG	Detailed Photo #1 of Structure at Depth 414.27 m
IG_BH03_ST_414.51_1.JPG	Detailed Photo #1 of Structure at Depth 414.51 m
IG_BH03_ST_414.88_1.JPG	Detailed Photo #1 of Structure at Depth 414.88 m
IG_BH03_ST_480_1.JPG	Detailed Photo #1 of Structure at Depth 480 m
IG_BH03_ST_480_2.JPG	Detailed Photo #2 of Structure at Depth 480 m
IG_BH03_ST_526.53_1.JPG	Detailed Photo #1 of Structure at Depth 526.53 m
IG_BH03_ST_526.53_2.JPG	Detailed Photo #2 of Structure at Depth 526.53 m
IG_BH03_ST_567.48_1.JPG	Detailed Photo #1 of Structure at Depth 567.48 m
IG_BH03_ST_591.86_1.jpg	Detailed Photo #1 of Structure at Depth 591.86 m
IG_BH03_ST_591.86_2.JPG	Detailed Photo #2 of Structure at Depth 591.86 m
IG_BH03_ST_593.97_1.JPG	Detailed Photo #1 of Structure at Depth 593.97 m
IG_BH03_ST_602.22_1.JPG	Detailed Photo #1 of Structure at Depth 602.22 m
IG_BH03_ST_602.22_2.JPG	Detailed Photo #2 of Structure at Depth 602.22 m
IG_BH03_ST_659.01_1.JPG	Detailed Photo #1 of Structure at Depth 659.01 m
IG_BH03_ST_678.91_1.JPG	Detailed Photo #1 of Structure at Depth 678.91 m
IG_BH03_ST_678.91_2.JPG	Detailed Photo #2 of Structure at Depth 678.91 m
IG_BH03_ST_702.98_1.JPG	Detailed Photo #1 of Structure at Depth 702.98 m
IG_BH03_ST_702.98_2.JPG	Detailed Photo #2 of Structure at Depth 702.98 m
IG_BH03_ST_769.43_1.JPG	Detailed Photo #1 of Structure at Depth 769.43 m
IG_BH03_ST_769.51_1.JPG	Detailed Photo #1 of Structure at Depth 769.51 m
IG_BH03_ST_773.14_1.JPG	Detailed Photo #1 of Structure at Depth 773.14 m
IG_BH03_ST_773.83_1.JPG	Detailed Photo #1 of Structure at Depth 773.83 m
IG_BH03_ST_774.01_1.JPG	Detailed Photo #1 of Structure at Depth 774.01 m
IG_BH03_ST_774.26_1.JPG	Detailed Photo #1 of Structure at Depth 774.26 m
IG_BH03_ST_791.9_1.JPG	Detailed Photo #1 of Structure at Depth 791.9 m
IG_BH03_ST_803.09_1.JPG	Detailed Photo #1 of Structure at Depth 803.09 m
IG_BH03_ST_803.09_2.JPG	Detailed Photo #2 of Structure at Depth 803.09 m
IG_BH03_ST_855.98_1.JPG	Detailed Photo #1 of Structure at Depth 855.98 m
IG_BH03_ST_857.87_1.JPG	Detailed Photo #1 of Structure at Depth 857.87 m
IG_BH03_ST_862.99_1.JPG	Detailed Photo #1 of Structure at Depth 862.99 m
IG_BH03_ST_863.46_1.JPG	Detailed Photo #1 of Structure at Depth 863.46 m
IG_BH03_ST_897.92_1.JPG	Detailed Photo #1 of Structure at Depth 897.92 m
IG_BH03_ST_918.99_1.JPG	Detailed Photo #1 of Structure at Depth 918.99 m
IG_BH03_ST_925.18_1.JPG	Detailed Photo #1 of Structure at Depth 925.18 m
IG_BH03_ST_935.34_1.JPG	Detailed Photo #1 of Structure at Depth 935.34 m
IG_BH03_ST_940.21_1.JPG	Detailed Photo #1 of Structure at Depth 940.21 m
IG_BH03_ST_940.41_1.JPG	Detailed Photo #1 of Structure at Depth 940.41 m
IG_BH03_ST_947.43_1.JPG	Detailed Photo #1 of Structure at Depth 947.43 m
IG_BH03_ST_948.15_1.JPG	Detailed Photo #1 of Structure at Depth 948.15 m
IG_BH03_ST_951.91_1.JPG	Detailed Photo #1 of Structure at Depth 951.91 m
IG_BH03_ST_956.82_1.JPG	Detailed Photo #1 of Structure at Depth 956.82 m
IG_BH03_ST_957.92_1.JPG	Detailed Photo #1 of Structure at Depth 957.92 m
IG_BH03_ST_961.05_1.JPG	Detailed Photo #1 of Structure at Depth 961.05 m
IG_BH03_ST_968.25_1.JPG	Detailed Photo #1 of Structure at Depth 968.25 m
IG_BH03_ST_968.84_1.JPG	Detailed Photo #1 of Structure at Depth 968.84 m
IG_BH03_ST_973.26_1.JPG	Detailed Photo #1 of Structure at Depth 973.26 m
IG_BH03_ST_975.96_1.JPG	Detailed Photo #1 of Structure at Depth 975.96 m

Photo Name	Photo Description
IG_BH03_ST_976.17_1.JPG	Detailed Photo #1 of Structure at Depth 976.17 m
IG_BH03_ST_977.18_1.JPG	Detailed Photo #1 of Structure at Depth 977.18 m
IG_BH03_ST_985.65_1.JPG	Detailed Photo #1 of Structure at Depth 985.65 m
IG_BH03_ST_986.73_1.JPG	Detailed Photo #1 of Structure at Depth 986.73 m
IG_BH03_ST_988.46_1.JPG	Detailed Photo #1 of Structure at Depth 988.46 m
IG_BH03_ST_988.88_1.JPG	Detailed Photo #1 of Structure at Depth 988.88 m
IG_BH03_ST_989.57_1.JPG	Detailed Photo #1 of Structure at Depth 989.57 m
IG_BH03_ST_993.44_1.JPG	Detailed Photo #1 of Structure at Depth 993.44 m
IG_BH03_ST_993.85_1.JPG	Detailed Photo #1 of Structure at Depth 993.85 m
IG_BH03_ST_995.80_1.JPG	Detailed Photo #1 of Structure at Depth 995.80 m

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_AQ001	238.64	238.87	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ002	345.93	346.06	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ003	459.99	460.14	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ004	504.12	504.27	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ005	554.64	554.77	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ006	608.52	608.66	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ007	665.79	665.91	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ008	771.76	771.92	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ009	880.02	880.16	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ010	984.89	985.03	Aqueous Extraction	N	Hydroisotop
IG_BH03_AR001	105.61	105.98	Archive	Y	NWMO Warehouse
IG_BH03_AR002	164.01	164.35	Archive	Y	NWMO Warehouse
IG_BH03_AR003	213.88	214.17	Archive	Y	NWMO Warehouse
IG_BH03_AR004	262.9	263.23	Archive	Y	NWMO Warehouse
IG_BH03_AR005	320.19	320.55	Archive	Y	NWMO Warehouse
IG_BH03_AR006	369.9	370.3	Archive	Y	NWMO Warehouse
IG_BH03_AR007	424.76	425.13	Archive	Y	NWMO Warehouse
IG_BH03_AR008	449.99	450.38	Archive	Y	NWMO Warehouse
IG_BH03_AR009	480.8	481.18	Archive	Y	NWMO Warehouse
IG_BH03_AR010	530.6	530.97	Archive	Y	NWMO Warehouse
IG_BH03_AR011	580.02	580.42	Archive	Y	NWMO Warehouse
IG_BH03_AR012	607	607.4	Archive	Y	NWMO Warehouse
IG_BH03_AR013	645.57	645.98	Archive	Y	NWMO Warehouse
IG_BH03_AR014	690.93	691.32	Archive	Y	NWMO Warehouse
IG_BH03_AR015	720.11	720.51	Archive	Y	NWMO Warehouse
IG_BH03_AR016	747.02	747.43	Archive	Y	NWMO Warehouse
IG_BH03_AR017	800.22	800.61	Archive	Y	NWMO Warehouse
IG_BH03_AR018	850.22	850.61	Archive	Y	NWMO Warehouse
IG_BH03_AR019	902.4	902.78	Archive	Y	NWMO Warehouse
IG_BH03_AR020	959.62	959.98	Archive	Y	NWMO Warehouse
IG_BH03_BR001	416.19	416.4	Brazilian	N	CANMET
IG_BH03_BR002	455.41	455.67	Brazilian	N	CANMET
IG_BH03_BR003	494.72	494.97	Brazilian	N	CANMET
IG_BH03_BR004	540.41	540.66	Brazilian	N	CANMET
IG_BH03_BR005	551.78	552.03	Brazilian	N	CANMET
IG_BH03_BR006	582.81	583.04	Brazilian	N	CANMET
IG_BH03_BR007	662.8	663.01	Brazilian	N	CANMET
IG_BH03_ED001	225.38	225.7	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED002	323.45	323.75	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED003	425.13	425.46	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED004	501.05	501.42	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED005	554.77	555.1	Effective Diffusion Coefficient	N	Transferred to NWMO Custody

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_ED006	576.18	576.53	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED007	608.19	608.52	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED008	675.58	675.91	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED009	780	780.36	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED010	923.7	924.03	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_MB001	226.62	226.66	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB002	226.66	226.78	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB003	372.91	373.16	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB004	373.16	373.32	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB005	518.98	519.22	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB006	519.22	519.44	Microbiology	N	Transferred to NWMO Custody
IG_BH03_NG001	341.47	341.74	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG002	440.02	440.32	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG003	489.39	489.67	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG004	539.61	539.93	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG005	590.49	590.79	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG006	638.61	638.91	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG007	690.63	690.93	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG008	740.47	740.87	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG009	840.09	840.39	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG010	939.76	940.04	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_PS001	223.62	224	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS002	323.09	323.45	Petrophysical Suite	N	Transferred to NWMO Custody

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_PS003	423.92	424.32	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS004	497.02	497.41	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS005	575.79	576.18	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS006	675.91	676.28	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS007	779.58	780	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS008	923.3	923.7	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PW001	238.94	239.31	Pore Water	N	Hydroisotop
IG_BH03_PW002	241.81	242.2	Pore Water	N	Hydroisotop
IG_BH03_PW003	345.03	345.38	Pore Water	N	Hydroisotop
IG_BH03_PW004	347.96	348.34	Pore Water	N	Hydroisotop
IG_BH03_PW005	459.01	459.44	Pore Water	N	Hydroisotop
IG_BH03_PW006	460.86	461.26	Pore Water	N	Hydroisotop
IG_BH03_PW007	503.72	504.12	Pore Water	N	Hydroisotop
IG_BH03_PW008	506.47	506.87	Pore Water	N	Hydroisotop
IG_BH03_PW009	554.28	554.64	Pore Water	N	Hydroisotop
IG_BH03_PW010	558.53	558.94	Pore Water	N	Hydroisotop
IG_BH03_PW011	608.66	609.02	Pore Water	N	Hydroisotop
IG_BH03_PW012	612.6	612.98	Pore Water	N	Hydroisotop
IG_BH03_PW013	668.55	668.95	Pore Water	N	Hydroisotop
IG_BH03_PW014	668.95	669.36	Pore Water	N	Hydroisotop
IG_BH03_PW015	771.4	771.76	Pore Water	N	Hydroisotop
IG_BH03_PW016	777.66	778.08	Pore Water	N	Hydroisotop
IG_BH03_PW017	880.16	880.56	Pore Water	N	Hydroisotop
IG_BH03_PW018	880.96	881.34	Pore Water	N	Hydroisotop
IG_BH03_PW019	984.52	984.89	Pore Water	N	Hydroisotop
IG_BH03_PW020	987.32	987.67	Pore Water	N	Hydroisotop
IG_BH03_SA001	463.83	464.06	Specific Surface Area and Cation Exchange Capacity	N	Transferred to NWMO Custody
IG_BH03_SA002	497.64	497.87	Specific Surface Area and Cation Exchange Capacity	N	Transferred to NWMO Custody
IG_BH03_SO001	424.32	424.46	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO002	464.06	464.21	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO003	497.41	497.64	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO004	542.41	542.56	Sorption	N	Transferred to NWMO Custody

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_SO005	548.52	548.65	Sorption	N	Transferred to NWMO Custody
IG_BH03_TH001	304.69	304.94	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH002	358.92	359.18	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH003	416.4	416.68	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH004	454.03	454.37	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH005	494.97	495.25	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH006	539.1	539.41	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH007	548.14	548.42	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH008	581.84	582.12	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH009	800.61	800.9	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_UC001	415.98	416.19	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC002	455.14	455.41	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC003	494.49	494.72	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC004	540.17	540.41	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC005	552.65	552.89	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC006	582.54	582.81	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC007	662.58	662.8	Uniaxial Compressive Strength	N	CANMET

Note:

Golder collected Petrophysical, Sorption Specific Surface Area and Cation Exchange Capacity, Noble Gas and Microbiology samples as part of the core logging activities for WP3, but was not involved in the sample testing. Petrophysical, Sorption Specific Surface Area and Cation Exchange Capacity, Noble Gas and Microbiology core samples were transferred to NWMO custody for sample testing coordination. The other laboratory sampling will be discussed

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_AQ001	238.64	238.87	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ002	345.93	346.06	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ003	459.99	460.14	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ004	504.12	504.27	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ005	554.64	554.77	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ006	608.52	608.66	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ007	665.79	665.91	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ008	771.76	771.92	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ009	880.02	880.16	Aqueous Extraction	N	Hydroisotop
IG_BH03_AQ010	984.89	985.03	Aqueous Extraction	N	Hydroisotop
IG_BH03_AR001	105.61	105.98	Archive	Y	NWMO Warehouse
IG_BH03_AR002	164.01	164.35	Archive	Y	NWMO Warehouse
IG_BH03_AR003	213.88	214.17	Archive	Y	NWMO Warehouse
IG_BH03_AR004	262.9	263.23	Archive	Y	NWMO Warehouse
IG_BH03_AR005	320.19	320.55	Archive	Y	NWMO Warehouse
IG_BH03_AR006	369.9	370.3	Archive	Y	NWMO Warehouse
IG_BH03_AR007	424.76	425.13	Archive	Y	NWMO Warehouse
IG_BH03_AR008	449.99	450.38	Archive	Y	NWMO Warehouse
IG_BH03_AR009	480.8	481.18	Archive	Y	NWMO Warehouse
IG_BH03_AR010	530.6	530.97	Archive	Y	NWMO Warehouse
IG_BH03_AR011	580.02	580.42	Archive	Y	NWMO Warehouse
IG_BH03_AR012	607	607.4	Archive	Y	NWMO Warehouse
IG_BH03_AR013	645.57	645.98	Archive	Y	NWMO Warehouse
IG_BH03_AR014	690.93	691.32	Archive	Y	NWMO Warehouse
IG_BH03_AR015	720.11	720.51	Archive	Y	NWMO Warehouse
IG_BH03_AR016	747.02	747.43	Archive	Y	NWMO Warehouse
IG_BH03_AR017	800.22	800.61	Archive	Y	NWMO Warehouse
IG_BH03_AR018	850.22	850.61	Archive	Y	NWMO Warehouse
IG_BH03_AR019	902.4	902.78	Archive	Y	NWMO Warehouse
IG_BH03_AR020	959.62	959.98	Archive	Y	NWMO Warehouse
IG_BH03_BR001	416.19	416.4	Brazilian	N	CANMET
IG_BH03_BR002	455.41	455.67	Brazilian	N	CANMET
IG_BH03_BR003	494.72	494.97	Brazilian	N	CANMET
IG_BH03_BR004	540.41	540.66	Brazilian	N	CANMET
IG_BH03_BR005	551.78	552.03	Brazilian	N	CANMET

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_BR006	582.81	583.04	Brazilian	N	CANMET
IG_BH03_BR007	662.8	663.01	Brazilian	N	CANMET
IG_BH03_ED001	225.38	225.7	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED002	323.45	323.75	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED003	425.13	425.46	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED004	501.05	501.42	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED005	554.77	555.1	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED006	576.18	576.53	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED007	608.19	608.52	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED008	675.58	675.91	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED009	780	780.36	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_ED010	923.7	924.03	Effective Diffusion Coefficient	N	Transferred to NWMO Custody
IG_BH03_MB001	226.62	226.66	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB002	226.66	226.78	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB003	372.91	373.16	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB004	373.16	373.32	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB005	518.98	519.22	Microbiology	N	Transferred to NWMO Custody
IG_BH03_MB006	519.22	519.44	Microbiology	N	Transferred to NWMO Custody

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_NG001	341.47	341.74	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG002	440.02	440.32	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG003	489.39	489.67	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG004	539.61	539.93	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG005	590.49	590.79	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG006	638.61	638.91	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG007	690.63	690.93	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG008	740.47	740.87	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG009	840.09	840.39	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_NG010	939.76	940.04	Noble Gas	N	Transferred to NWMO Custody
IG_BH03_PS001	223.62	224	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS002	323.09	323.45	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS003	423.92	424.32	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS004	497.02	497.41	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS005	575.79	576.18	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS006	675.91	676.28	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS007	779.58	780	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PS008	923.3	923.7	Petrophysical Suite	N	Transferred to NWMO Custody
IG_BH03_PW001	238.94	239.31	Pore Water	N	Hydroisotop
IG_BH03_PW002	241.81	242.2	Pore Water	N	Hydroisotop
IG_BH03_PW003	345.03	345.38	Pore Water	N	Hydroisotop
IG_BH03_PW004	347.96	348.34	Pore Water	N	Hydroisotop
IG_BH03_PW005	459.01	459.44	Pore Water	N	Hydroisotop
IG_BH03_PW006	460.86	461.26	Pore Water	N	Hydroisotop
IG_BH03_PW007	503.72	504.12	Pore Water	N	Hydroisotop
IG_BH03_PW008	506.47	506.87	Pore Water	N	Hydroisotop
IG_BH03_PW009	554.28	554.64	Pore Water	N	Hydroisotop

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_PW010	558.53	558.94	Pore Water	N	Hydroisotop
IG_BH03_PW011	608.66	609.02	Pore Water	N	Hydroisotop
IG_BH03_PW012	612.6	612.98	Pore Water	N	Hydroisotop
IG_BH03_PW013	668.55	668.95	Pore Water	N	Hydroisotop
IG_BH03_PW014	668.95	669.36	Pore Water	N	Hydroisotop
IG_BH03_PW015	771.4	771.76	Pore Water	N	Hydroisotop
IG_BH03_PW016	777.66	778.08	Pore Water	N	Hydroisotop
IG_BH03_PW017	880.16	880.56	Pore Water	N	Hydroisotop
IG_BH03_PW018	880.96	881.34	Pore Water	N	Hydroisotop
IG_BH03_PW019	984.52	984.89	Pore Water	N	Hydroisotop
IG_BH03_PW020	987.32	987.67	Pore Water	N	Hydroisotop
IG_BH03_SA001	463.83	464.06	Specific Surface Area and Cation Exchange Capacity	N	Transferred to NWMO Custody
IG_BH03_SA002	497.64	497.87	Specific Surface Area and Cation Exchange Capacity	N	Transferred to NWMO Custody
IG_BH03_SO001	424.32	424.46	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO002	464.06	464.21	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO003	497.41	497.64	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO004	542.41	542.56	Sorption	N	Transferred to NWMO Custody
IG_BH03_SO005	548.52	548.65	Sorption	N	Transferred to NWMO Custody
IG_BH03_TH001	304.69	304.94	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH002	358.92	359.18	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH003	416.4	416.68	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH004	454.03	454.37	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH005	494.97	495.25	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH006	539.1	539.41	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH007	548.14	548.42	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH008	581.84	582.12	Thermal Properties	N	Transferred to NWMO Custody
IG_BH03_TH009	800.61	800.9	Thermal Properties	N	Transferred to NWMO Custody

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH03_UC001	415.98	416.19	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC002	455.14	455.41	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC003	494.49	494.72	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC004	540.17	540.41	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC005	552.65	552.89	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC006	582.54	582.81	Uniaxial Compressive Strength	N	CANMET
IG_BH03_UC007	662.58	662.8	Uniaxial Compressive Strength	N	CANMET

Note:

Golder collected Petrophysical, Sorption Specific Surface Area and Cation Exchange Capacity, Noble Gas and Microbiology samples as part of the core logging activities for WP3, but was not involved in the sample testing. Petrophysical, Sorption Specific Surface Area and Cation Exchange Capacity, Noble Gas and Microbiology core samples were transferred to NWMO custody for sample testing coordination. The other laboratory sampling will be discussed in the WP4 (Core Testing) Report.



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