

PHASE 2 INITIAL BOREHOLE DRILLING AND TESTING, IGNACE AREA

*WP03 Data Report - Geological and Geotechnical
Core Logging, Photography and Sampling for
IG_BH01*

APM-REP-01332-0230

December 2018

Golder Associates Ltd.

nwmo

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MANAGEMENT
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REPORT

PHASE 2 INITIAL BOREHOLE DRILLING AND TESTING, IGNACE AREA

WP3 Data Report - Geological and Geotechnical Core Logging, Photography and Sampling for IG_BH01

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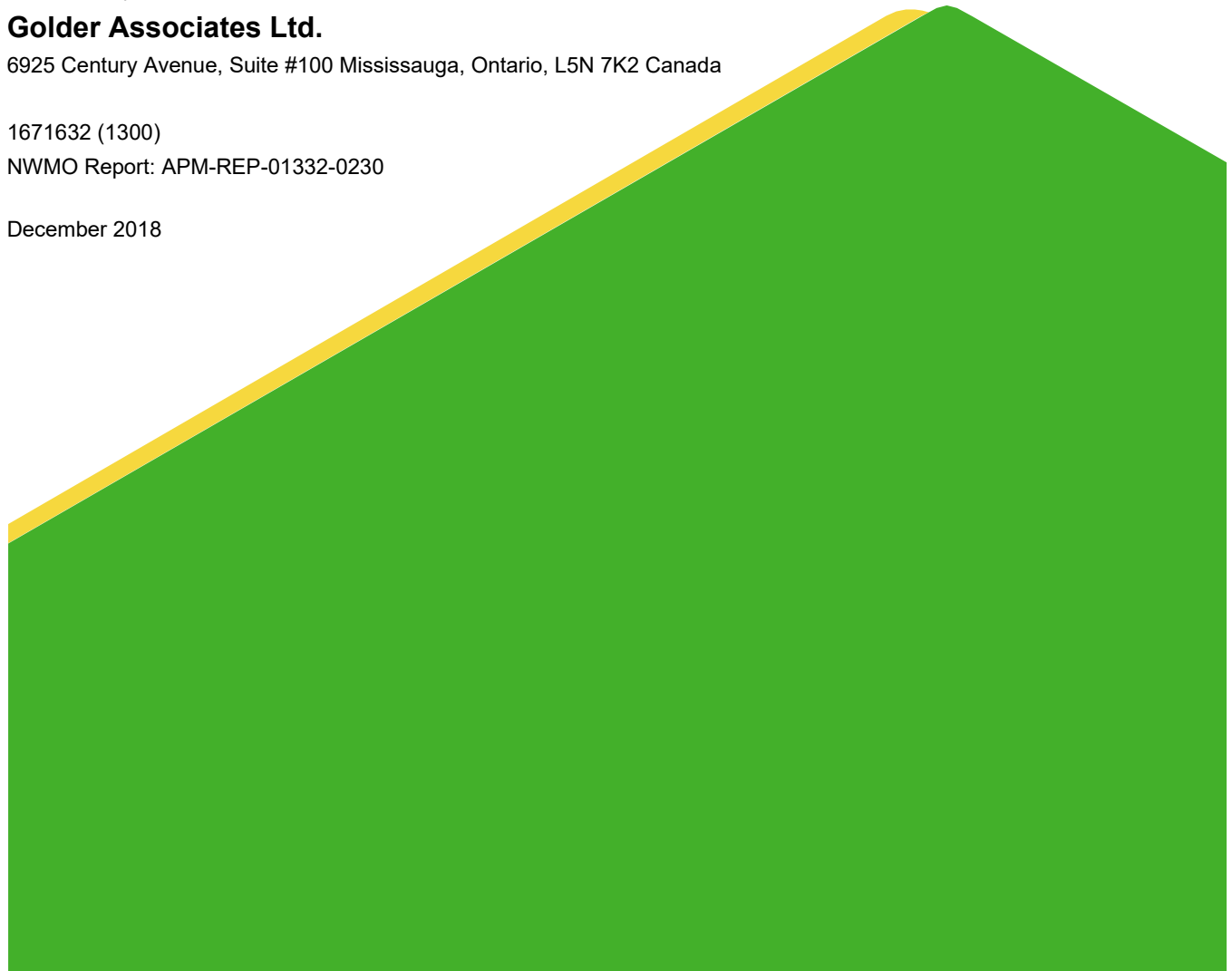
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GEOLOGICAL AND GEOTECHNICAL CORE LOGGING, PHOTOGRAPHY AND SAMPLING FOR IG_BH01

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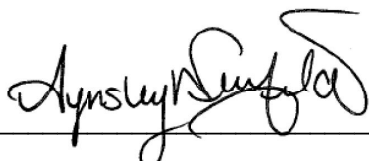
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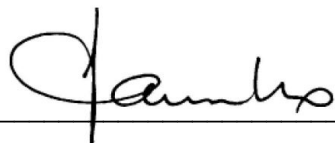
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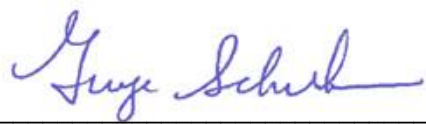
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1.0 INTRODUCTION

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 first of three deep boreholes within the northern portion of the Revell batholith. The first drilled borehole, IG_BH01, is located a direct distance of approximately 21 km southeast of the Wabigoon Lake Ojibway Nation and a direct distance of 43 km northwest of the Town of Ignace. Access to the IG_BH01 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 (WP3): Geological and Geotechnical Core Logging, Photography, and Sampling for IG_BH01.

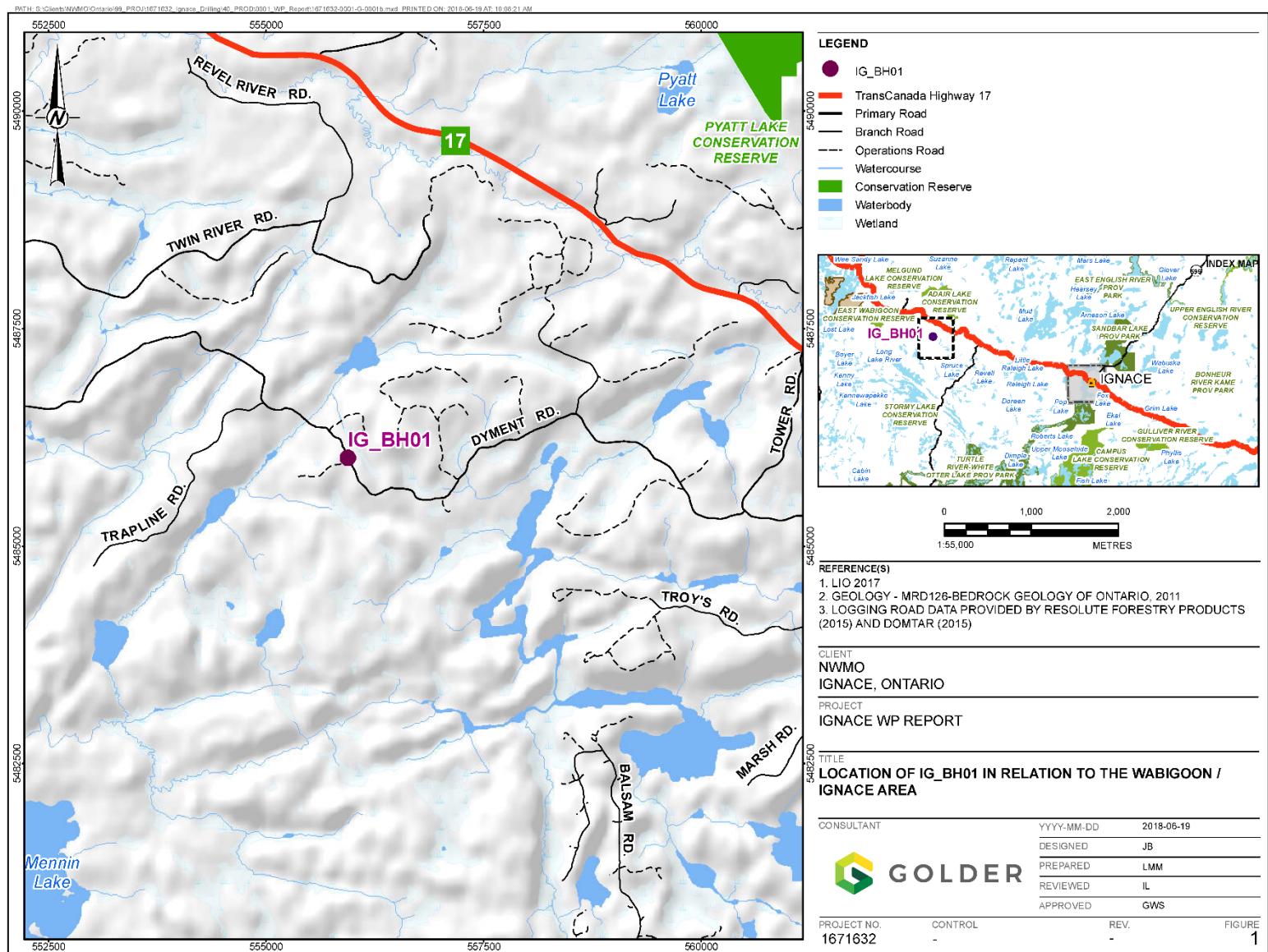


Figure 1: Location of IG_BH01 in Relation to the Wabigoon / Ignace Area

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. It is likely that the batholith is approximately 2 km to 3 km thick through the center of the northern portion (SGL, 2015). The Revell batholith is surrounded by the Raleigh Lake (to the north and east) and Bending Lake (to the southwest) greenstone belts (see Figure 2).

Borehole IG_BH01 is within an investigation area of approximately 19 km² in size, situated in the northern portion of the Revell batholith. Bedrock exposure is frequent in this area 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 (Revell and Mennin rivers). Local water courses within the investigation area tend to flow to the southwest towards Mennin Lake.

The northern portion of the Revell batholith is composed mainly of granodiorite and tonalite, which together form a relatively homogeneous intrusive granitoid complex. The granodiorite and tonalite are massive to weakly foliated. Overall, the tonalite transitions gradationally into granodiorite and no distinct contact relationships between these two rock types are typically observed. There is also a younger granite intrusion, which is observed southeast of the investigation area and primarily in the central portion of the Revell batholith. The granite, which is massive to weakly foliated, post-dates and intrudes into the granodiorite-tonalite intrusive complex (Golder & PGW, 2017). In the centre of the investigation area, a west-northwest trending mafic dyke is interpreted from aeromagnetic data and observed during detailed mapping to be approximately 15-20 m wide (see Figure 2). This dyke is associated with a similarly-orientated mafic dyke that stretches along the entire northern limit of the investigation area. Both dykes, along with others in the northern portion of the Revell batholith, have a similar character and are interpreted to be part of the Wabigoon dyke swarm. 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 (see Figure 1). 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.

Details of the lithological units and structures found within the investigation area are provided in the Detailed Geological Mapping Report (Golder and PGW, 2017).

Regional observations from mapping have indicated that structural features are widely spaced (typical 30 to 500 cm spacing range) and dominantly comprises subvertical joints with two dominant orientations, northeast and northwest trending. Minor subhorizontal joints have been observed with minimal alteration, suggesting they are related to glacial unloading.

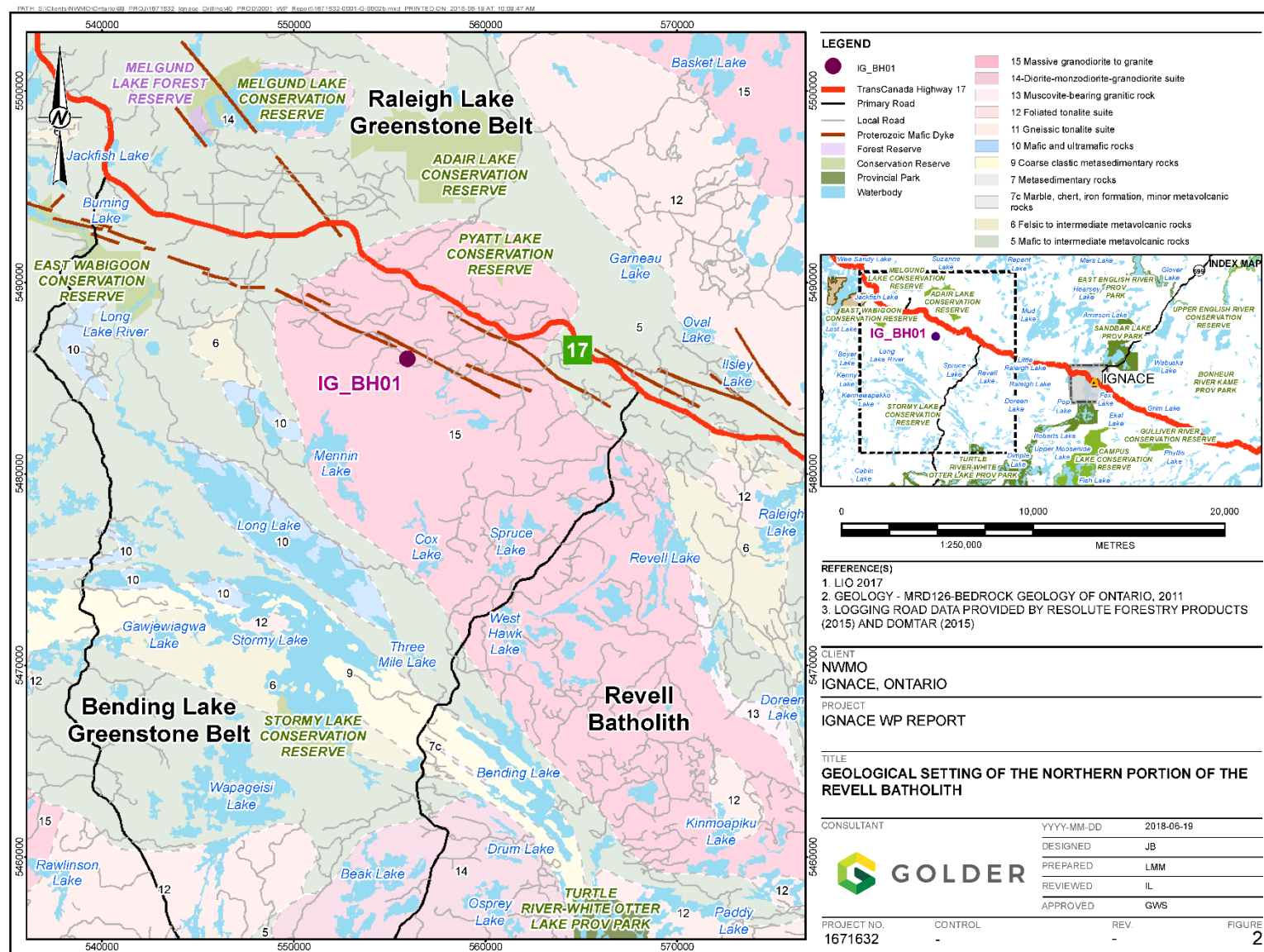


Figure 2 : Geological Setting of the Northern Portion of the Revell Batholith

2.2 Technical Objectives

The technical objectives of WP3 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 NWMO as an acQuire core logging database.

3.0 DESCRIPTION OF ACTIVITIES

The WP3 activities were carried out in parallel with WP2 (Borehole Drilling and Coring) activities between November 5, 2017 and January 16, 2018. Full details of drilling progress are documented in the WP2 Data Report (Golder, 2018a).

Work Package WP3 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_BH01 at Ignace, Ontario from geological and geotechnical standpoints. This section of the report provides an overview of the WP3 activities. Additional details relating to specific guidance and procedures followed for the geological and geotechnical logging are provided in Appendix A.

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 WP3 activities, where it was received by the core logger.

A dedicated trailer for WP3 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 time that each core run was retrieved from the borehole. They relayed the retrieval time to the core logger, to establish a 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. Due to fatigue concerns, Golder reduced the number of hours on site, effective November 30th, where morning cross-shifts were conducted at the lodging, and evening cross-shifts were conducted at site. 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 Table B-1 (Appendix B), to understand if time-sensitive tasks would be required during that shift.

Sampling frequency was increased while drilling between 400 – 600 m depth during which time one additional staff member was added to the day shift to assist the core logger. To make better use of the increased capacity on day shift, the sampling plan was adjusted with flexible depth targets such that the majority of the sampling could occur during the day shift, as seen in Table B-2 (Appendix B).

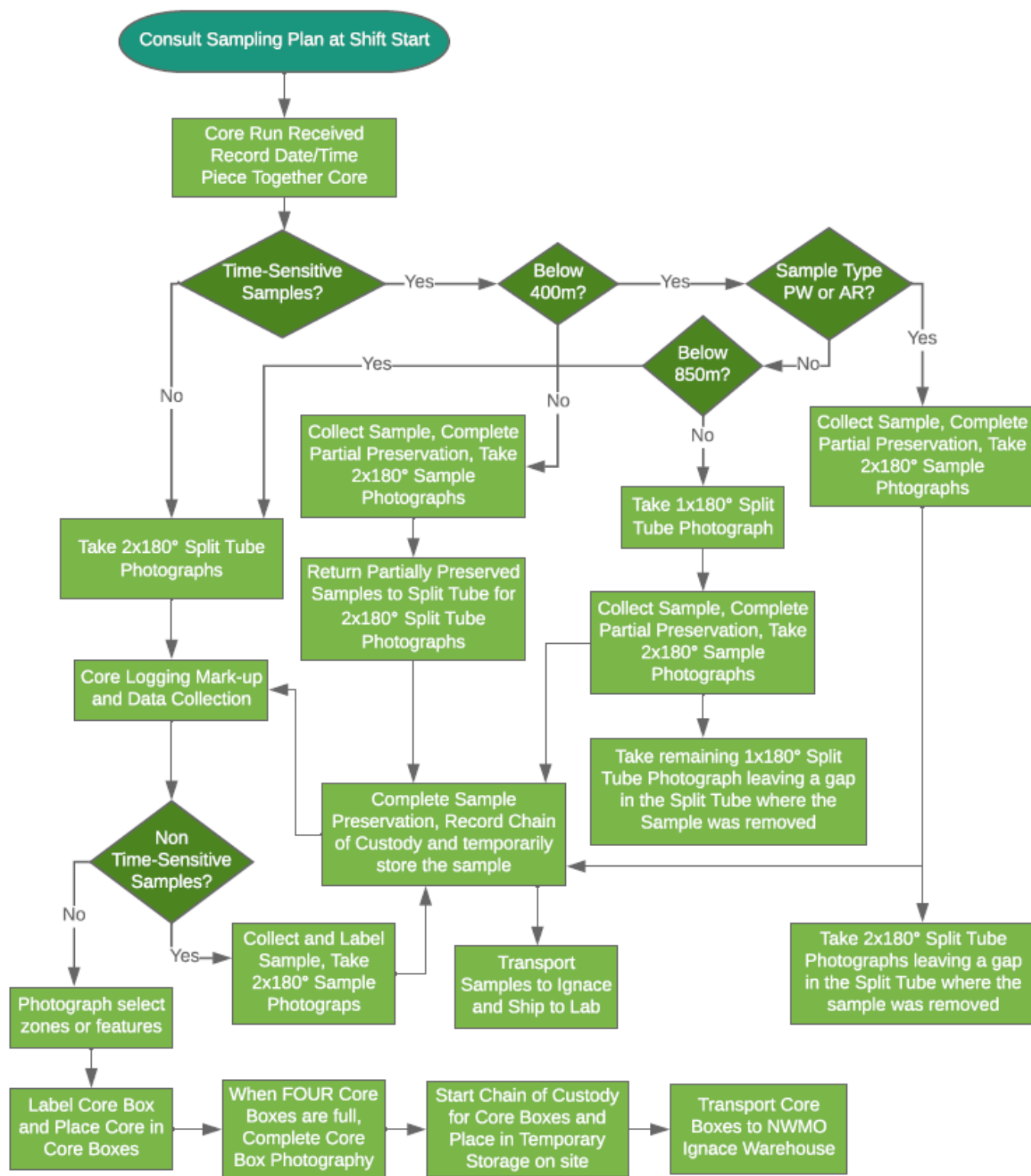


Figure 3: IG_BH01 WP3 Workflow

Once the core was retrieved by the core logger, the main activities for this work package were as follows:

- Piece together core and photograph it, full length and both front and back (2x180° split tube photography), in split tube;
- If time-sensitive sampling is required in the core run – collect, photograph, package and temporarily store samples according to preservation and Chain of Custody requirements;
- Provide high quality photographs of each retrieved core run, both front and back;
- Mark and then log the core directly into NWMO's acQuire database. Logging includes documentation of:
 - Lithology (rock class and type, fabric, texture, grain size, defining minerals, and colour);
 - Weathering (degree of weathering of rock mass);
 - Alteration (alteration minerals, colour and degree of alteration of rock mass);
 - Rock Strength (rock strength index);
 - Geotechnical Parameters (TCR, SCR and RQD); and
 - Structure (type, surface conditions, intensity, thickness/width, mineral assemblage, alpha/beta and/or gamma/delta angles, where applicable). Note that features identified as mechanical breaks are marked with an "X". At the beginning of the program, these features were not input into the acQuire database. Based on the QC process, it was decided to input the mechanical breaks into acQuire as a precaution to be compared with geophysical logging.
- Collect, photograph, package and temporarily store non-time-sensitive samples according to preservation and Chain of Custody requirements;
- Photograph core detailed features;
- Place core into core box(es), label and photograph box(es);
- Temporarily store core boxes according to Chain of Custody requirements; and
- Ship core boxes to warehouse, and samples to appropriate labs, following Chain of Custody requirements.

3.1 Health and Safety

The Ignace 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 continuity 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 work before commencing core logging activities for their shift. 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 WP3 Data Delivery.

Following completion of the core logging program, the acQuire database was reviewed by Golder, in collaboration with 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 photographs were original submitted in draft throughout the duration of the logging. A final suite of core run photographs was re-stitched using Adobe® Photoshop® (Version 19), and reviewed for quality, prior to delivery. All photographs, including core run, core box, and core sample photographs were also colour-corrected using Adobe® Photoshop® and the Kodak colour charts used in the field photography label boards.

4.0 SUMMARY OF DATA COLLECTION

A total of 1001.18 m of bedrock core, comprising 349 core runs, were recovered from the near-vertical borehole IG_BH01 and logged as part of WP3. This section provides a summary of the core logging observations. Information on the lithology encountered and logged in IG_BH01 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.

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, may ultimately refine the understanding, particularly in relation to the types and abundances of 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 on a run by run basis, to help distinguish between the three felsic granitoid phases likely to be encountered along IG_BH01: tonalite, granodiorite and granite.

The distribution of the distinct rock units encountered in IG_BH01 is shown in Figure 4 and Table 1. Note that each rock unit occurrence includes two contacts, and the total number of contacts identified during logging as broken or intact/partially intact for each rock unit is presented in Table 1. The predominant rock type encountered was biotite tonalite, including a distinct biotite-enriched tonalite sub-unit (Section 4.1.1), followed by amphibolite, and several distinct suites of felsic dykes including: very fine-grained felsic dykes, aplitic and pegmatitic granite dykes, tonalite dykes and quartzolite dykes (Section 4.1.2). The horizontal lines in each column in Figure 4 indicate the depths 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. The leftmost column in Figure 4 provides an integrated overview of the distribution of all rock units in IG_BH01.

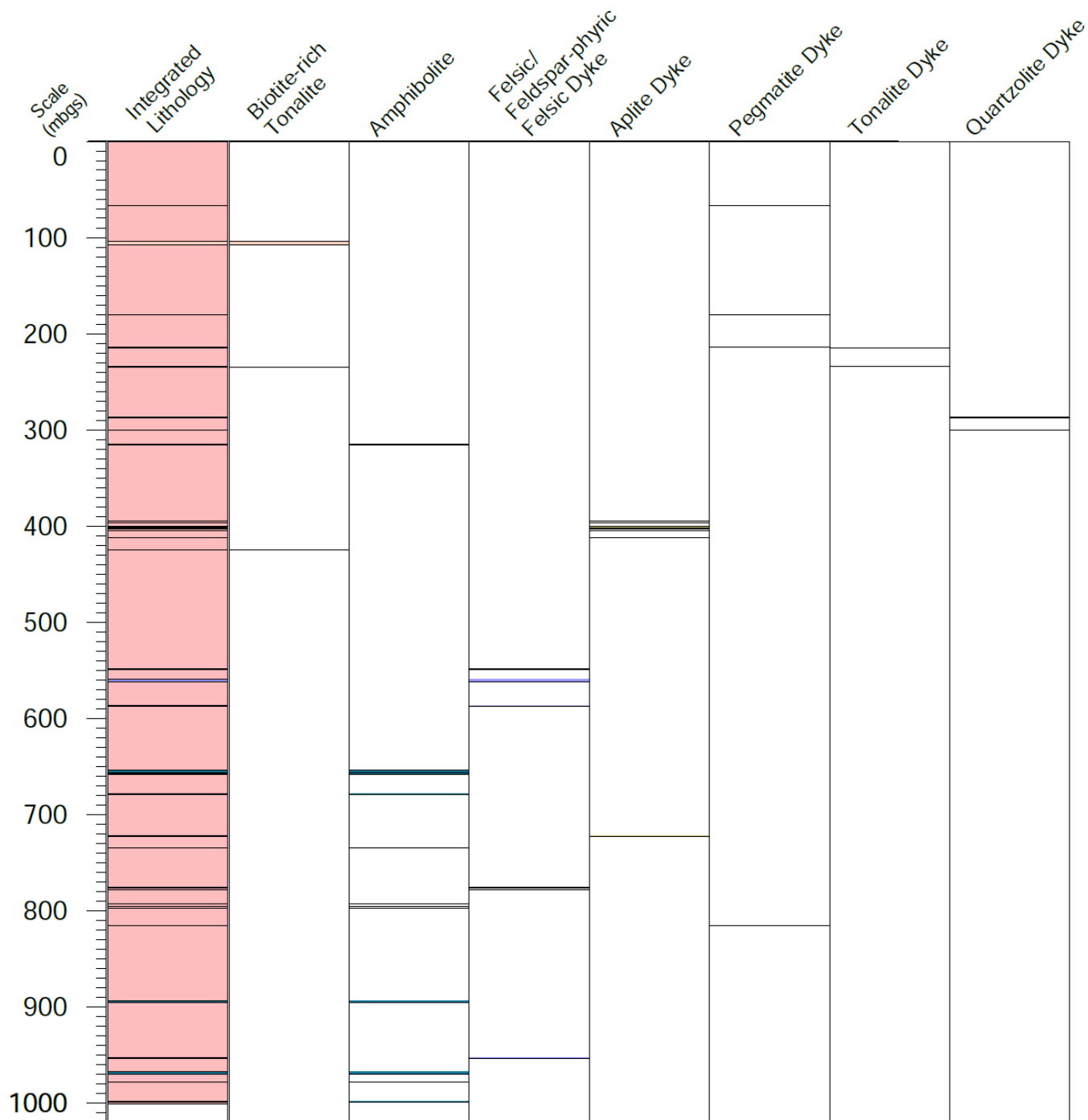


Figure 4: Summary of Lithology by Rock Unit and by Depth as logged in IG_BH01

Note – Leftmost Column is a Composite of all Other Columns

Table 1: Summary of Rock Types Encountered in IG_BH01

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	975.11	97
Biotite-rich tonalite sub-unit	Equigranular	Massive	1-5	3 (0, 6)	3.51	<1
Amphibolite	Equigranular	Foliated to massive	<1	13 (14, 12)	12.39	1
Fine-grained felsic dykes	Equigranular or porphyritic	Foliated to massive	<1	7 (2, 12)	5.50	1
Aplite dykes	Equigranular	Massive	<1	9 (1, 17)	3.27	
Pegmatite dykes	Inequigranular	Massive	5-50	4 (0, 8)	0.65	
Tonalite dykes	Equigranular	Massive	5-10	2 (0, 4)	0.38	
Quartzolite dykes	Equigranular	Massive	5-10	2 (0, 4)	0.37	

4.1.1 Biotite Tonalite

The predominant rock type encountered in IG_BH01 is a biotite tonalite, comprising 975.11 m (97 %) 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 matrix by visual inspection (Figure 5a). The biotite tonalite is

predominantly massive although a weak biotite-defined foliation becomes locally apparent below approximately 400 m depth.

Another biotite tonalite rock unit, herein distinguished as biotite-rich tonalite, is present as a distinct sub-unit of the biotite tonalite. The biotite-rich tonalite is characterized by a visual increase in biotite content to approximately 20 - 25 % and a darker grey appearance (Figure 5b). The biotite-rich tonalite exhibits an equigranular, medium-grained (1-5 mm) and massive fabric, with main mineral phases of quartz, plagioclase, and biotite. The biotite-rich tonalite was logged in three occurrences, ranging in width from 0.15 m to 3.02 m, and representing less than 1 % of the recovered core, by total logged width (3.51 m). The contact between the biotite tonalite and the biotite-rich subtype was consistently intact and varied between very sharp and very gradational. In the latter occurrences it was difficult to identify the precise contact depth and the zone of gradation was measured on the dm- to m-scale.

The confidence in identifying biotite tonalite as the main unit in IG_BH01 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 K values ranged between 0.6 and 0.8% K, indicative of a granitoid rock in the tonalite field. Uranium (U) and Thorium (Th) content typically ranged from 0.8 to 1.6 ppm (U) and from 2.4 to 3.5 ppm (Th).

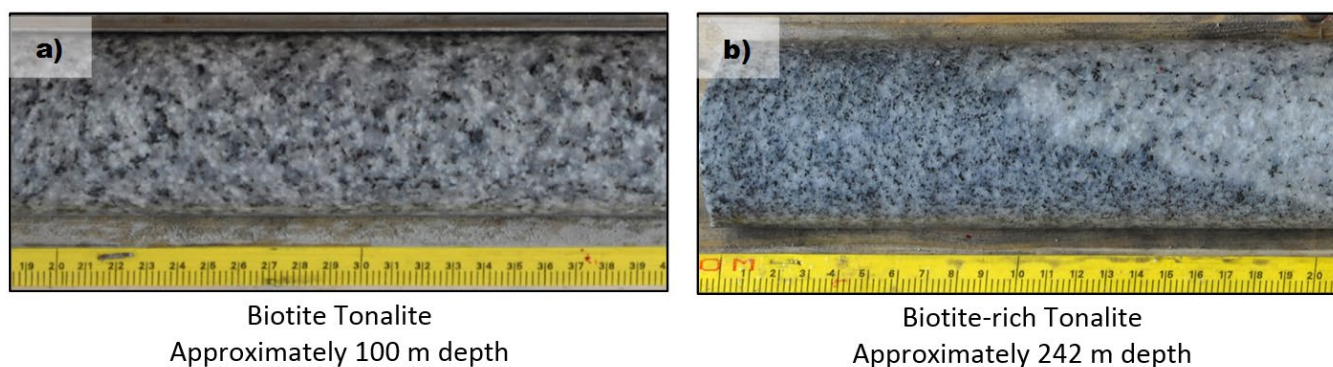


Figure 5 : Biotite tonalite types observed in IG_BH01: a) Biotite Tonalite unit from approximately 100 m depth, and b) Biotite-Rich Tonalite unit (left) in contact with Biotite Tonalite (right) from approximately 242m depth.

4.1.2 Additional Rock Types Encountered in IG_BH01

In IG_BH01, 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 on Figure 6, and their distribution along the length of the borehole is shown on Figure 4. All the additional rock types, along with their main characteristics, are described below.

- **Amphibolite:** Thirteen occurrences of amphibolite were logged in IG_BH01, accounting for 1% (12.39 m) of the total recovered core. The amphibolite is distributed as lenses ranging in width from 0.26 m to 2.62 m. One amphibolite lens was identified at approximately 314 m depth, while the remainder of the occurrences were observed below 650 m depth (Figure 4). Amphibolite lenses are dark grey-green, equigranular and usually fine-grained (<1 mm) (Figure 6a). The main mineral phases in the amphibolite include plagioclase, hornblende, and biotite, with varying amounts chlorite. The amphibolite lenses consistently exhibit a well-defined foliation and sharp contact with the adjacent biotite tonalite. Just over half of the amphibolite-tonalite contacts are broken (54 %). Within the amphibolite lenses themselves, transitions between massive and strongly foliated amphibolite are often observed to be sharp. Contact orientations are generally observed to align with the internal foliation fabric, which is mostly oriented perpendicular to the core axis, though one of

the deeper examples exhibits a contact with the adjacent biotite tonalite that is only slightly oblique to the core axis. A dm- to m-scale alteration halo commonly envelops the amphibolite in the surrounding tonalite.

- **Fine-grained felsic dykes:** A suite of fine-grained felsic dykes were logged in seven occurrences between 500 – 1000 m depth (Figure 4). These dykes range in width from 0.19 m to 2.92 m and have a combined total length of 5.50 m, representing less than 0.5 % of the recovered core. These dykes are characteristically dark grey-black with a very fine-grained (almost aphanitic) matrix composed of quartz, plagioclase and biotite (Figure 6b). Five of the occurrences also exhibit distinct, medium-grained, feldspar phenocrysts, within a matrix that is otherwise compositionally and texturally similar to the other two occurrences. These felsic dykes are denoted as feldspar-phyric felsic dykes (Figure 6c). The deepest occurring feldspar-phyric felsic dyke (depth = 953 m), exhibits feldspar phenocrysts that are typical of this suite of dykes but within a matrix with a larger grainsize (fine-grained as opposed to very fine-grained) than the other occurrences. Additional analysis would be required to confirm that this unique occurrence is indeed related to the rest of the dykes in this suite. All of the felsic dykes exhibit sharp contacts with the adjacent biotite tonalite and in most instances a well-defined foliation is also present. Fine-grained felsic dyke-tonalite contacts were identified as broken in only a small number of occurrences (14 %). Internally these felsic dykes vary between massive and strongly foliated. Both the dyke contacts and internal foliation are predominantly oriented at a high angle to the core axis.
- **Aplite dykes:** Aplite dykes, ranging in width between 0.1 m and 0.84 m, were observed in nine occurrences, and represent a combined total length of 3.27 m (<0.5%) of the recovered core. They are primarily clustered between 390 m and 410 m depth (Figure 4). The aplite dykes are light white-grey, equigranular and fine-grained (<1 mm) (Figure 6d). They exhibit an average matrix grain size that is larger, and lighter in colour, than the fine-grained felsic dykes described above. The aplite dykes are granites in composition with main mineral phases of plagioclase, K-feldspar, quartz and lesser biotite. Their contacts with the adjacent biotite tonalite are consistently sharp and intact, and oriented at a relatively low angle to the core axis. Aplite dyke contacts were predominantly intact adjacent to the biotite tonalite with only one contact identified as broken (6 %).
- **Pegmatite dykes:** Pegmatite dykes, ranging in width from 0.12 m to 0.21 m, were observed in four occurrences and represent a combined total length of 0.65 m of the recovered core. Pegmatite dykes are mostly found in the upper 250 m of the borehole (Figure 4). These dykes are light grey-pink, massive and inequigranular with distinct, very coarse-grained (10-50 mm), square-edged, K-feldspar crystals within a medium-grained (5-10 mm) matrix of quartz and plagioclase (Figure 6e). The pegmatite dykes exhibit gradational to sharp and consistently intact contacts with the adjacent biotite tonalite. The contacts are consistently oriented at a low angle to the core axis.
- **Tonalite dykes:** Two tonalite dykes, with widths of 0.15 and 0.23 m, were observed in the recovered core between 200 m and 250 m depth (Figure 4). These dykes are light grey-off white, massive, equigranular and 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 with the adjacent biotite tonalite that are oriented at moderate to low angles relative to the core axis.
- **Quartzolite dykes:** Two quartzolite dykes, with widths of 0.13 and 0.24 m, were observed in the recovered core between depths of 275 and 300 m (Figure 4). These dykes are white, massive and medium-grained (5-10 mm) and composed almost entirely of quartz with some minor occurrences of pyrite (Figure 6g). The quartzolite dyke occurrences exhibit sharp and consistently intact contacts with the adjacent biotite tonalite. These contacts are oriented at low angles relative to the core axis.

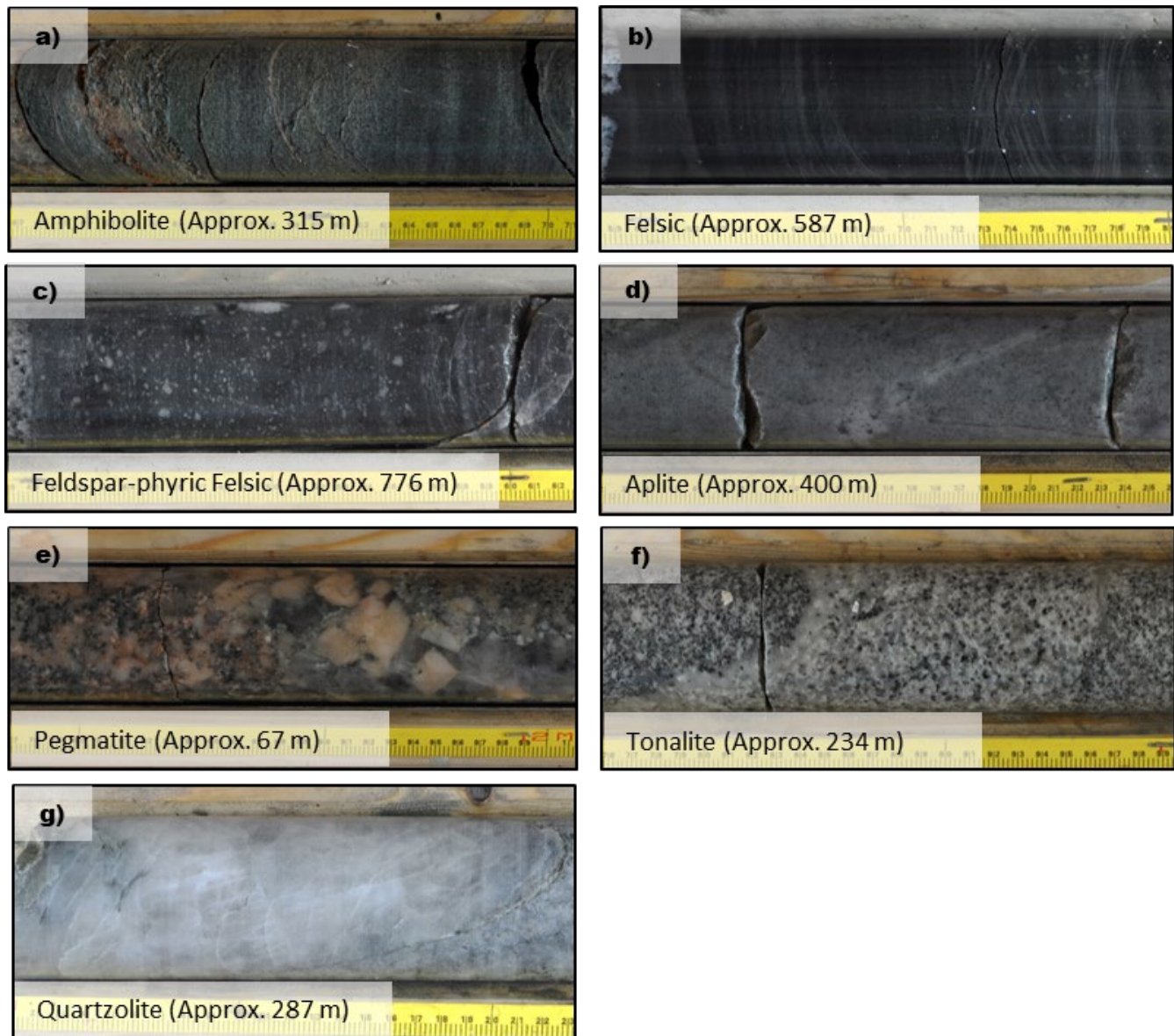


Figure 6 : Examples of the additional Rock Units observed in IG_BH01: a) Amphibolite lens (315 m), b) Fine-grained Felsic dyke (587 m), c) Feldspar-phyric fine-grained Felsic dyke (776 m), d) Aplite dyke (400 m), e) Pegmatite dyke (67 m), f) Tonalite dyke (234 m), g) Quartzolite dyke (287m)

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, only a single narrow 2.49 m wide zone of rock, at approximately 41.5 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 : Slightly weathered horizon at approximately 41.5 m depth observed in IG_BH01

The majority of the rock mass exhibited no visual indication of alteration. Approximately 10% (96.13 m) of the recovered core was identified as slightly to moderately altered, with the majority (82.34 m) logged as slightly altered and the remainder (13.79 m) logged as moderately altered. No occurrences of highly altered rock were identified. Six alteration types were logged based on the alteration mineral assemblages identified, including: hematization, potassic alteration and silicification, which were the dominant alteration types observed, and lesser occurrences of chloritization, bleaching and sericitization. The distribution of each alteration type is shown in Figure 8. The main characteristics of each alteration type are described below, and typical example photographs are presented on Figure 9.

- **Hematization:** Hematization was observed in 60 occurrences, is the most prevalent alteration type encountered in the recovered core. Approximately 6 % (61.64 m) of the core was logged with some degree of hematite alteration, including 5 % described as slightly altered and 1% described as moderately altered. The distribution of hematization ranged from hairline alteration zones to broader intervals of the core up to 3.72 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 the iron oxide mineral hematite (Figure 9a). There was a slightly increased tendency for identifying hematization in the upper 50 m of the borehole. Hematization was commonly developed adjacent to logged amphibolite lenses.
- **Potassic:** Potassic alteration was identified in 85 occurrences, representing approximately 2% (19.19m) of the recovered core by length. The altered rock mass was primarily described as slightly altered, with one occurrence of moderately altered. Individual occurrences of potassic alteration range in widths from hairline to 2.97 m. Potassic alteration was only observed below 400 m, with an increase in prevalence between 700 m and 900 m depth. The mineral assemblage defining potassic alteration overlaps with that of hematization with the pink-coloured alteration of the former being used as the main differentiating feature (Figure 9b).
- **Silicification:** Silicification was identified in 35 occurrences representing approximately 1% (11.14 m) of the recovered core. This alteration is characterized by a light to medium grey discoloration of the rock mass and associated reduction in the clarity of the original texture of the biotite tonalite (Figure 9c). There is a slight increase in silicification within the lower half of the borehole relative to the upper half. Individual occurrences range in width from 0.02 to 1.65 m and the majority of silicified horizons are described as slightly altered.
- **Chloritization:** Chloritization was identified in three occurrences, ranging in width from hairline zones to 1.5 m, and representing <1% (2.01 m) of the recovered core. The appearance of grey-green chlorite was the main diagnostic characteristic of this alteration type and in all occurrences the rock mass was described as slightly altered (Figure 9d). All logged occurrences of chloritization are below 600 m and they are all identified within, or along the contacts of, the amphibolite lenses.

- **Bleaching:** Bleaching was observed to slightly alter the biotite tonalite in six occurrences, ranging in width from hairline zones to 1.5 m, and representing <1% (1.51 m) of the recovered core. Bleaching induces a whitening of the altered rock mass (Figure 9e). Bleaching was observed both in the near surface above 100 m depth and below 700 m depth.
- **Sericitization:** Sericitization was observed to slightly alter the biotite tonalite in two occurrences, ranging in width from 0.30 to 0.34 m and representing a combined total length of 0.64 m of the recovered core. Sericitization imparts a grey colour to the altered rock (Figure 9f). It was observed between depths 650 m and 700 m in the borehole.

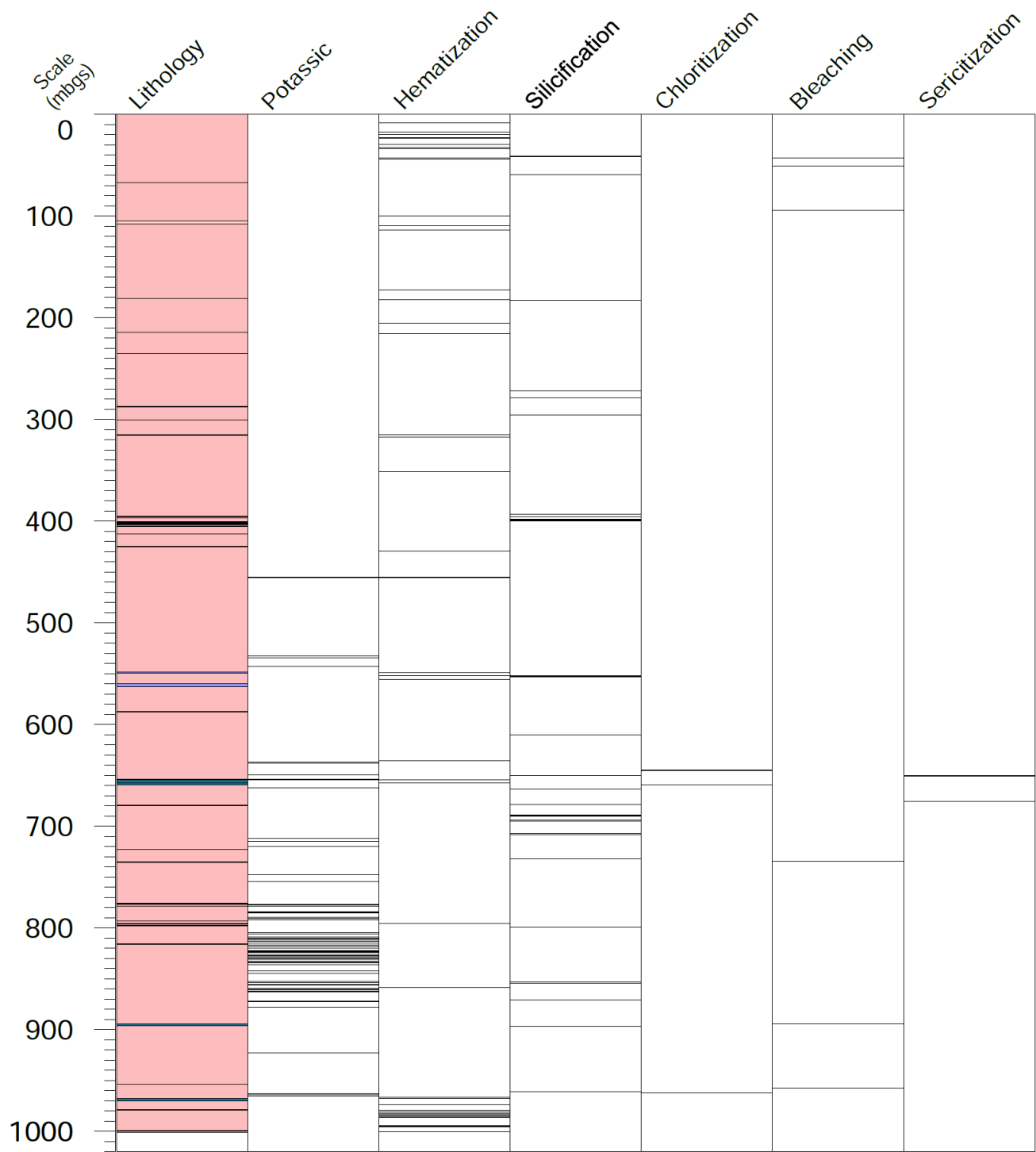


Figure 8: Summary of Alteration types as logged in IG_BH01

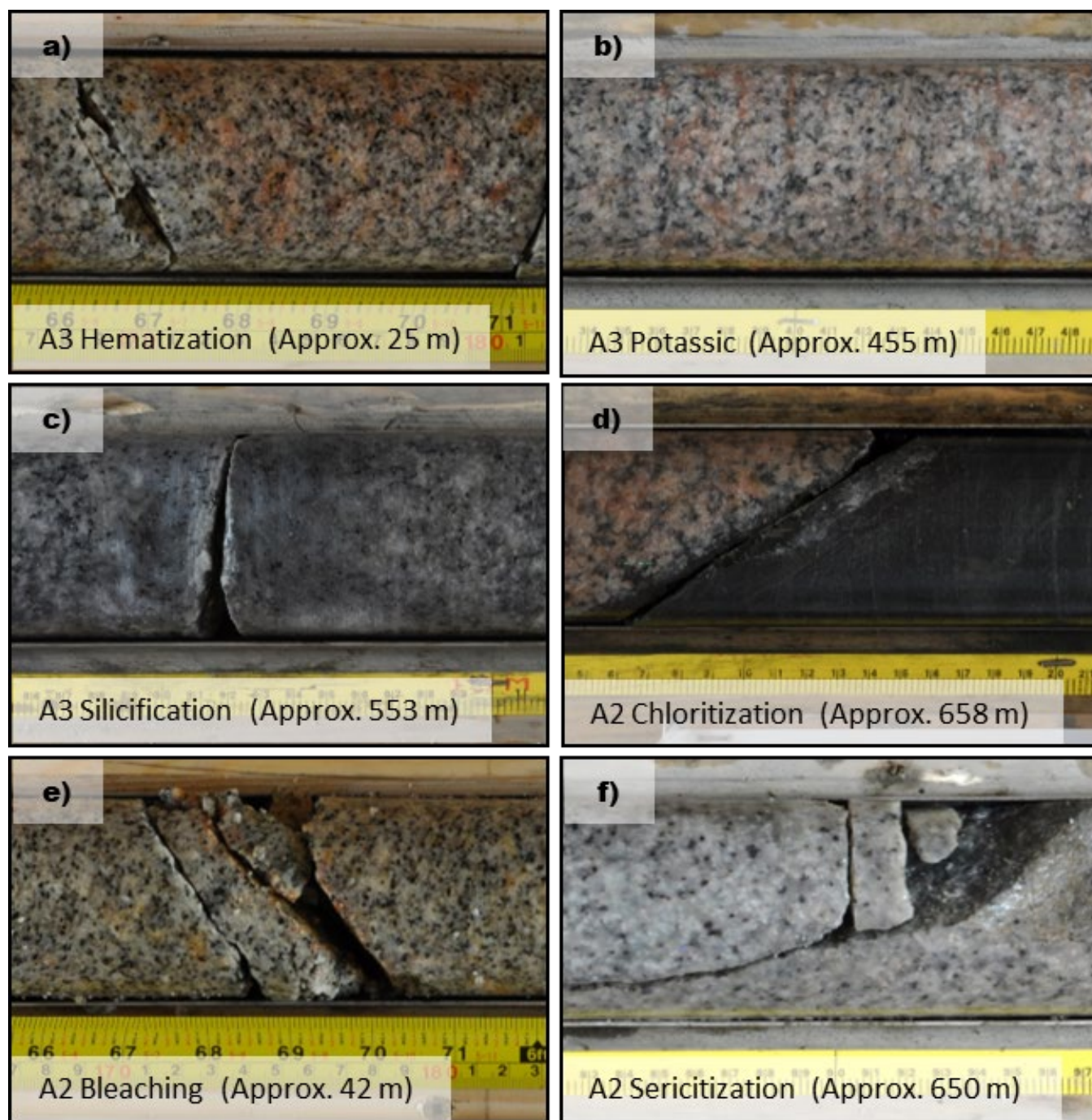


Figure 9: Examples of the Different Types of Alteration observed in IG_BH01, a) Hematization (A3 – 25 m), b) Potassic (A3 – 455 m), c) Silicification (A3 – 553 m), d) Chloritization (A2 – 658 m), e) Bleaching (A2 – 42 m), f) Sericitization (A2 – 650 m)

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 fractures (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_BH01 is described below and presented on Figure 10.

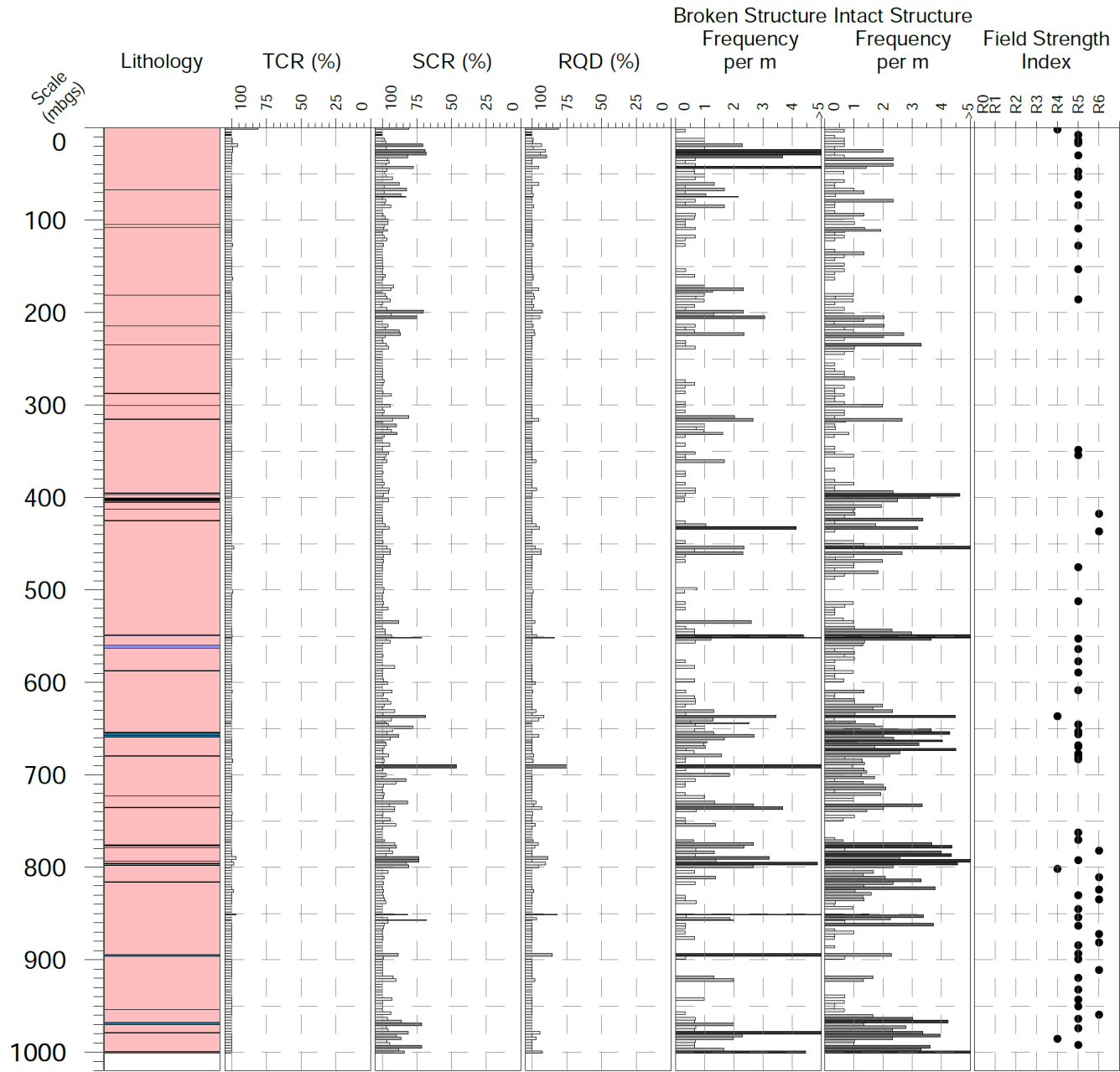


Figure 10 : Summary of Geotechnical Parameters as logged in IG_BH01

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 very high and uniform along the entire length of the borehole. More than 95% of the core runs logged had complete

core recovery (TCR=100%) and the lowest recorded TCR, encountered in the top run at ground surface, was 81% (Figure 10).

SCR, which is a measure of the cumulative length of all full axial diameter core pieces divided by the total run length. Approximately 90% of the core runs recorded a measured SCR of 90% or higher. Several discrete intervals, in particular above 350 m and below 600 m depth exhibited lower SCR values, generally ranging between 68% and 90%. The lowest recorded SCR, in a run at approximately 700 m depth, was 46% (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. The results for IG_BH01 indicate that overall the rock quality is excellent, averaging 99% RQD, and ranging between 80% and 100%, along the length of the borehole (Figure 10). Some discrete intervals exhibit a reduced RQD, and this reduction is observed in particular within core runs that intersect amphibolite lenses. In these runs, and also in runs near the ground surface, the RQD reaches the lower end of its range at approximately 95%.

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 or partially intact' versus '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 for each core (Figure 10). Structure types will be further discussed in Section 4.4.

Overall, 5% of the core by length has broken structure frequency of greater than 3 per m, while less than 4 m of core (approximately 0.4% by length) has broken structure frequency greater than 10 per m. The highest logged broken structure count was 18 per m, encountered at approximately 850 m depth. The broken structure frequency is generally highest in the upper 50 m of the borehole; however alternating zones of greater and lesser frequency persist along the length of the borehole. Typically, broken structures were recorded once to none per meter, as borehole depth increased. In general, the core runs containing lithological contacts have increased broken structure count. It should be noted that certain lithological units are characterized by intact contacts and are not associated with increased fracture frequency. The trend of increased fracture frequency in connection to lithological contacts is influenced by the often broken and sheared contacts of the amphibolite lenses.

Of the intact structures, 9% of the core by length has intact structure frequency of greater than 3 per m, with the highest logged intact structure frequency of 7 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 61 field strength index measurements were made during the logging of IG_BH01 (Figure 10). All but one of these tests were carried out on the biotite tonalite.

Overall, the biotite tonalite was classified as strong (R4) in four (7%) occurrences, very strong (R5) in 47 (77%) occurrences and extremely strong (R6) in 10 (16%) occurrences. One strength index measurement was collected within a dyke interval, at approximately 655 m depth within an amphibolite layer, resulting in R5 (very strong rock).

4.4 Structural Data

A total of 2102 features were logged during the collection of structural data for IG_BH01. 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)
- Broken/Intact/Partially Intact
- Sub-Type
- Infill Character
- Infill Type
- Infill Thickness
- Rock Wall
- Shape
- Roughness
- Alpha Angle, Beta Angle, Gamma Angle, Delta Angle
- Aperture
- Width

Table 2: Summary of Structure type, by number of occurrences, observed in IG_BH01

Structure Type	# Occurrences Logged in IG_BH01
Joint (JN)	1133
Mechanical Break (MB)	427
Vein (VN)	257
Contact (CO)	80
Brittle-Ductile Shear Zone (SHR)	38
Broken Core Zone (BCZ)	12
Foliation (FO)	29
Lineation (LIN)	23
Fault (FLT)	16
Ductile Shear Zone (SHRD)	14
Lost Core Zone (LCZ)	13
Igneous Primary Structure (IPS)	60
Total	2102

The recovered core was not oriented during the coring process. Therefore, the orientation measurements taken were recorded as alpha angle between 0 and 90 degrees relative to the core axis for dip (for lineation measurements, linear plunge = gamma angle) 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 lineation measurements, linear trend = delta angle).

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 (WP5) (Golder, 2018b). 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, respectively. The structure summary presented here is based on the unoriented dataset so no orientation information is included. The method and results from this integration of structural information between WP3 and WP5, including the final structure log for IG_BH01, will be presented in the Work Package 10 (WP10) data integration report (Golder, 2018c).

Mechanical breaks do occur during drilling, for example when the 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 judgement of the core logger. If the genesis of a specific features 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 427 features (or zones) were identified and logged as being mechanically broken (Table 2). If any of the logged mechanical breaks 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 final structure log for IG_BH01.

The description of the results from the structural core logging portion of the WP3 activity is separated below into sections that focus on: primary igneous structures, contacts and ductile structures (Section 4.4.1) and brittle structures (Section 4.4.2).

A compilation of the distribution of contacts, 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, rock wall strength, 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 detail 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.

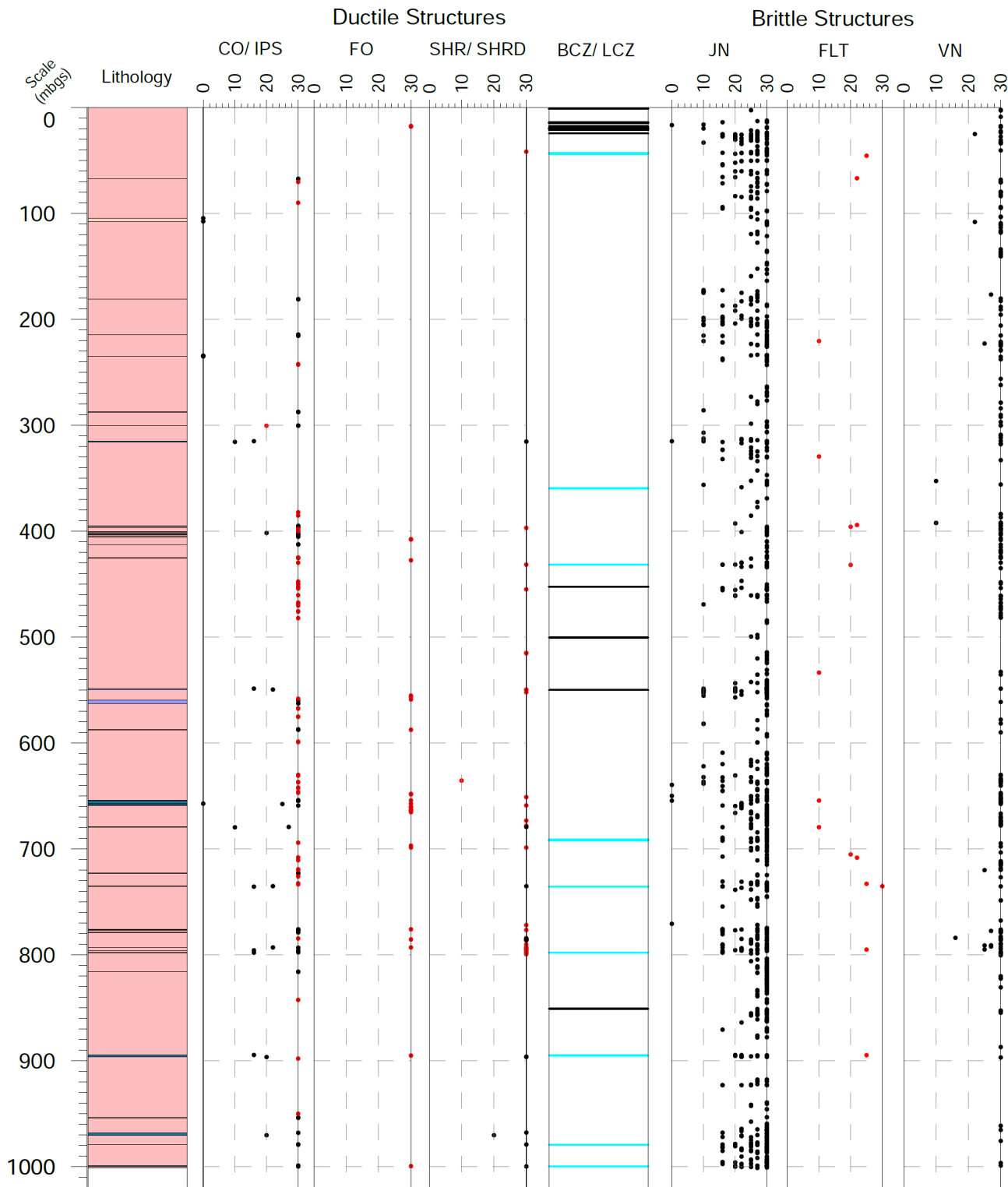


Figure 11: Summary of the Distribution of Structures by Depth and Joint Condition Rating (JCR) as logged in IG_BH01

Note - Structure Types: Contact (CO, black), Igneous Primary Structure (IPS, red). 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, Contacts and Ductile Structures

This section describes the core logging observations of primary igneous structures, contacts and ductile structures. Primary igneous structures include features interpreted to have originated with the formation or emplacement of the igneous rock. In IG_BH01, these features were occasionally identified. Primary igneous structures include a total of 60 logged occurrences of primary igneous layering, observed along the length of the borehole, and characterized by sharp to gradational changes in concentrations of mineral components or grain size (Figure 12a).

Top and bottom contacts were logged for each rock unit described above in Section 4.4.1. The distribution of all 80 logged contacts (CO) is shown in Figure 11, including the integration of JCR values on the horizontal axis. In 17 occurrences (21 %) the contact was logged as broken, while in the remaining 63 occurrences (79 %) the contact was logged as intact or partially intact. This distinction influences the JRC value assigned to each logged contact (Figure 11). Table 1 above includes a summary of the broken vs. intact/partially intact nature of all logged contacts for each rock unit identified in the recovered core.

Ductile structures identified during core logging include occurrences of foliation and ductile or brittle-ductile shear zones. Some of the shear zone occurrences also included an associated mineral lineation. A total of 29 occurrences of foliation (FO) were logged in IG_BH01. Two occurrences of foliation were identified within 20 metres of the ground surface, while the majority of the occurrences were observed in core recovered from below 400 m (Figure 11). The foliation is described as weakly developed and characterized by the preferred alignment of biotite (Figure 12b). Foliation was uniformly logged as an intact feature throughout the recovered core and a JRC of 30 was assigned to all occurrences.

A total of 14 ductile shear zones (SHRD) were logged throughout the borehole, with the majority of the occurrences (93 %) distributed between 679 m depth and the bottom of the borehole (Figure 11). One additional ductile shear zone was logged above, at approximately 315 m depth. Individual ductile shear zones range in width from hairline (< 1 mm) to up to 12 cm and were commonly observed as groups of hairline width, quartz-filled, layers within cm-scale zones (Figure 12c). Ductile shear zones were primarily observed to be intact or partially intact (93 % had JRC = 30), with only one occurrence identified as having been broken along a shear plane (JCR = 20). Quartz was identified in association with nine (64 %) of the logged ductile shear zones and was the most common mineral phase observed. Few occurrences of chlorite, epidote, hematite, pyroxene and hornblende were also recognized locally. Ductile shear zones were observed within, or localized along the contacts of, logged amphibolite lenses and feldspar-phyric felsic dykes. One of the logged ductile shear zones exhibits a mineral lineation, defined by chlorite.

A total of 38 brittle-ductile shear zones (SHR) were logged throughout the borehole, with the majority of the occurrences (97 %) distributed between 396 and 799 m depth in the borehole (Figure 11). They were primarily observed to be intact or partially intact (95 % had JCR = 30), cm-scale structures (e.g., Figure 12d), with only two discrete occurrences identified as broken (JCR = 10). Brittle-ductile shear zones were commonly localized within logged amphibolite lenses and fine-grained 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 in 24 (63 %) occurrences. Lesser chlorite, epidote and hematite also recognized locally within brittle-ductile shear zones. Three of the brittle-ductile shear zones also exhibited a mineral lineation, including one instance where the mineral phase (epidote) was identifiable.

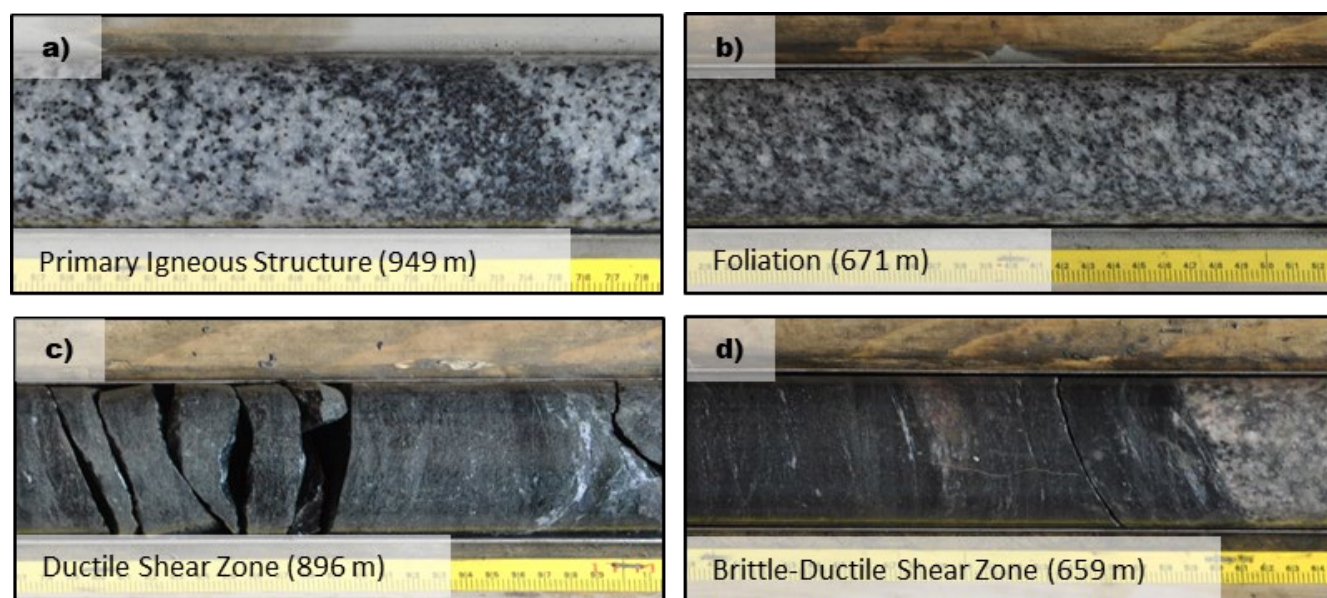


Figure 12: Ductile Structures and Primary Igneous Structures, observed in IG_BH01: a) Primary Igneous Structure (949 m), b) Foliation (671 m), c) Ductile Shear Zone (896 m), d) Brittle-Ductile Shear Zone (659 m)

4.4.2 Brittle Structures

Brittle structures identified during logging of IG_BH01 include features described as broken core zones and lost core zone, 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 with their unique JRC number 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 12 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 10 cm in logged width. Typical broken core zones (Figure 13a) are not associated with infill minerals and generally are the result of intersecting broken structures, while one broken core zone, observed at approximately 42 m depth, is spatially associated with minor weathering and moderate alteration (Figure 13b). 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.

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 (e.g., c). A total of 13 lost core zones were logged in IG_BH01, with the majority (69 %) occurring in the upper 25 m of the borehole (Figure 11). In all cases, the width of the zone of core that was lost was estimated by the core logger. In IG_BH01 the lost core zones were estimated to range in width between 1 and 32 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. In addition, if any of the Lost Core Zones are identified in the televiewer datasets their width will be confirmed or revised to match what is observed.

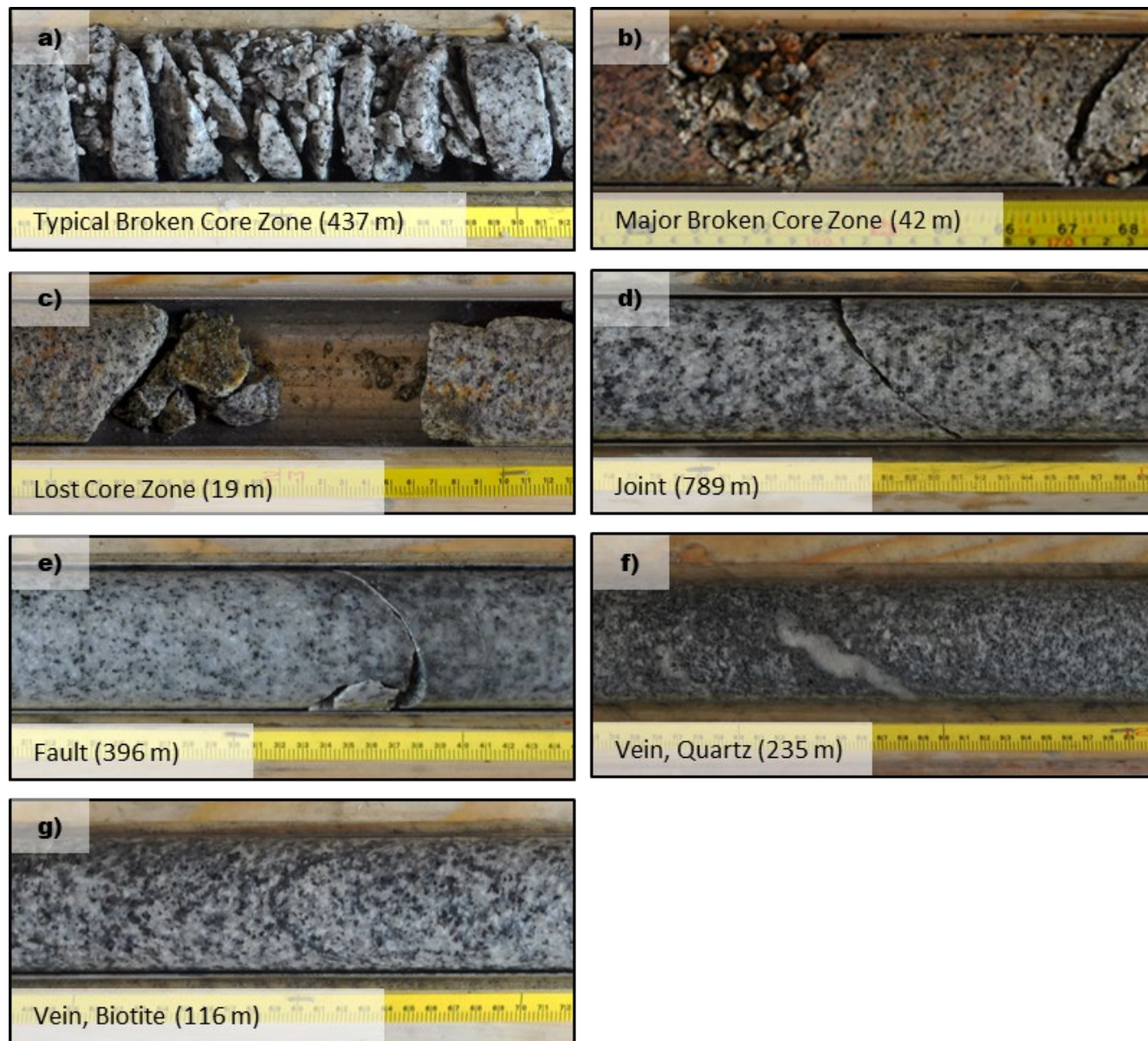


Figure 13: Examples of Brittle Structure Types observed in IG_BH01: a) Typical Broken Core Zone (437 m), b) Major Broken Core Zone (42 m), c) Lost Core Zone (18 m), d) Clean Joint (789 m), e) Narrow Fault (396 m), f) mm-scale Quartz Vein (235 m), g) mm-scale Biotite Vein (116 m)

A total of 1133 joints were logged in IG_BH01 and their occurrences are distributed along the entire length of the borehole (Figure 11). In 530 occurrences (47 %) the joints were observed to be broken, while in the remaining 603 (53 %) 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 27. The majority of the logged joints (96 %) exhibited zero aperture (e.g., Figure 13d). In the remaining occurrences mm- to cm-scale apertures (maximum of 10 mm) were logged. Of the total set of logged joints, 388 (34 %) were logged as clean, 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 364 occurrences (32 %), followed by chlorite in 166 occurrences (15 %), iron staining (hematite) in 105 occurrences (9 %), calcite in 47 occurrences (4 %) and epidote in 41 occurrences (4 %). The remaining infill types observed included 22 occurrences (<2 %) comprising clay, soft gouge or broken rock derived from the adjacent wall rock.

A total of 16 faults were logged in IG_BH01. These fault occurrences are distributed along the entire length of the borehole although there is a slight concentration of faults between 654 and 735 m depth where six occurrences (38 %) 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 (94 %) were broken, allowing the full plane to be observed. In one occurrence the fault was partially intact such that a portion of the plane was exposed. Only the partially intact fault received a JCR of 30, with the remainder having assigned JCR values ranging between 10 and 25. Fifteen of the logged faults (94 %) were identified as hairline structures with no aperture (e.g., Figure 13e). The remaining fault had recorded with one mm aperture. Of the total set of logged faults, three (19 %) were logged without any clear mineral infilling, coating or stain. Elsewhere a mineral phase was observed to infill, coat or stain the fault surface and the adjacent wall rock. The most common mineral phase associated with logged faults was chlorite, identified in 9 occurrences (56 %), followed by clay and epidote with two occurrences each (13 %) and one occurrence each of quartz and iron staining (6 %).

A total of 257 veins were logged in IG_BH01 and these occurrences were distributed along the entire length of the borehole (Figure 11). The majority of the logged veins (95 %) were intact or partially intact. The vein infilling minerals were logged with a defining or primary infilling mineral and additional infilling mineral were assigned to the vein if other minor infilling minerals were identified. For example, quartz occurs both as the only (primary) infilling mineral in some veins (e.g., Figure 13f), but also in association with the other identified mineral phases (secondary), like biotite (Figure 13g). The vein minerals, which were logged as the defining or primary infilling minerals, are plotted by the dominant primary infill mineral and vein thickness on Figure 14. The distribution shows the prevalence of quartz-dominant veins with 176 occurrences (68%), followed by 25 occurrences of alkali-feldspar (10%), 20 occurrences of mica (8%), 14 occurrences of calcite (5%), 6 occurrences of plagioclase (2%), 3 occurrences of chlorite (1%), 3 occurrences of hornblende (1%), and 10 occurrences of other (4%). The mica phases observed include biotite (most prevalent), muscovite, and phlogopite (least prevalent). The "Other" vein types refer to mineral phases which could not be identified by the core logger. Most of the veins logged have a width of 10 mm or less (77%). There were 35 occurrences where the veins were logged with a width between 10 mm and 20 mm (14%), and 24 occurrences where the veins were logged with a width between 20 mm and 60 mm (9%).

The infilling (secondary) mineral phases were logged for all joints, veins and faults (1406 total structures) of which 795 had secondary mineral occurrences, and are compiled on 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 distribution of structures identified as clean or exhibiting no mineral phase, is also plotted. Where a feature was identified as intact or partially intact, there is more uncertainty associated with identifying the occurrence and type of mineral phase(s) that may be present, as the observation is limited to the portion of the structure surface that is exposed. The mineral phases identified as a stain, slight alteration, coat or infill on the surface of logged joints, veins and faults included 376 (27%) occurrences of quartz, 181 (13%) occurrences of chlorite, 107 (8%) occurrences of iron oxide (hematite), 47 (3%) occurrences of calcite, 42 (3%) occurrences of epidote, 8 (<1%) occurrences of broken core, 8 (<1%) occurrences of clay, 6 (<1%) occurrences of soft gouge material, and 20 occurrences (1%) where the mineral phase is not identifiable. Of the combined joints, veins, and faults, 611 (43%) occurrences were logged with clean surfaces or where no mineral phase was observed along

an intact or partially intact structure surface. In general, clean and quartz infill show high JCR values. Calcite and epidote mineral infills yield slightly wider ranges of JCR, while the soft or slick mineral infills (clay, soft gouge, chlorite, iron oxide, and broken rock) show lower JCR ratings.

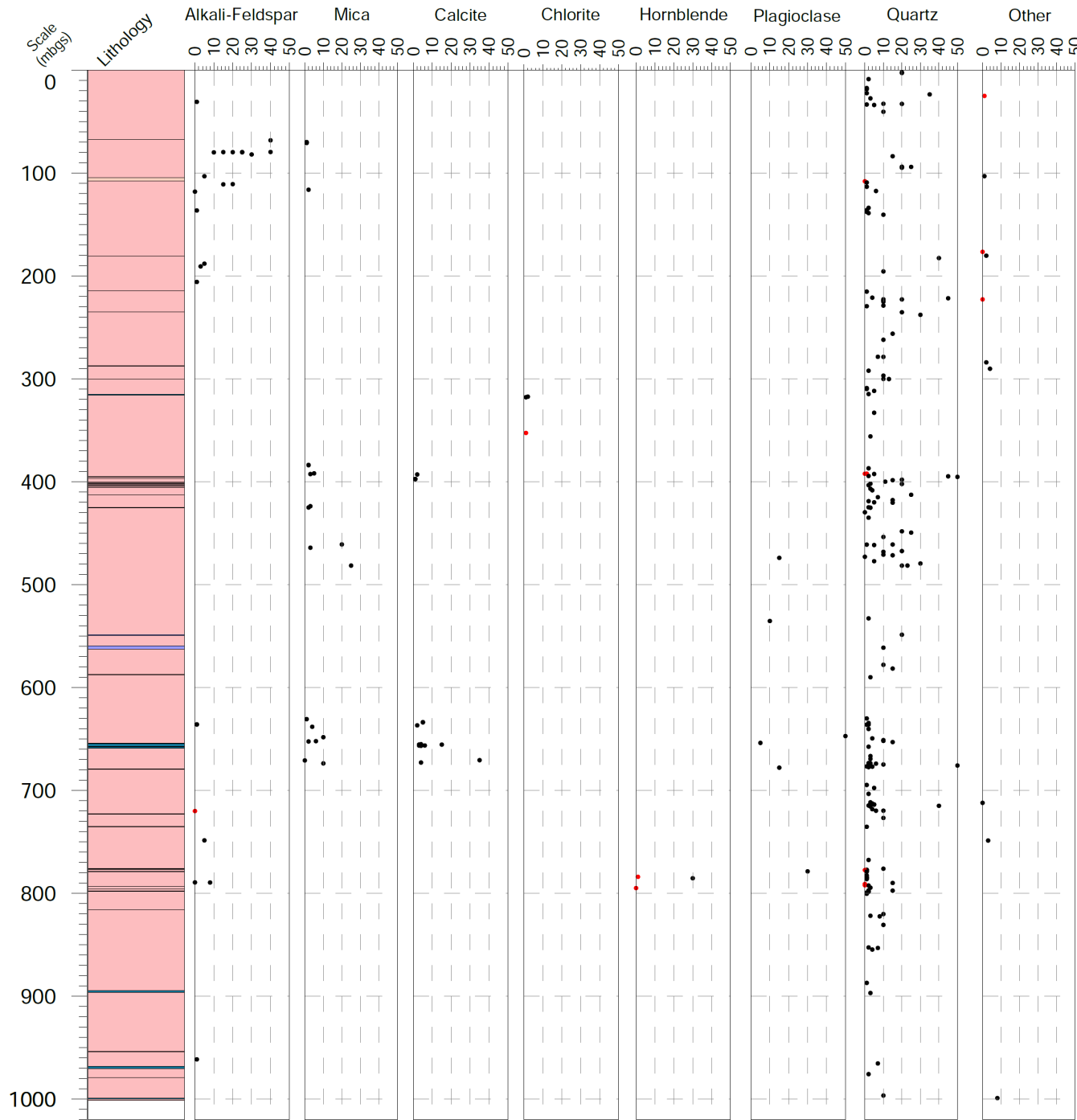


Figure 14: Summary of Primary Vein Infilling Minerals by Type and by Vein Thickness (mm) as logged in IG_BH01

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

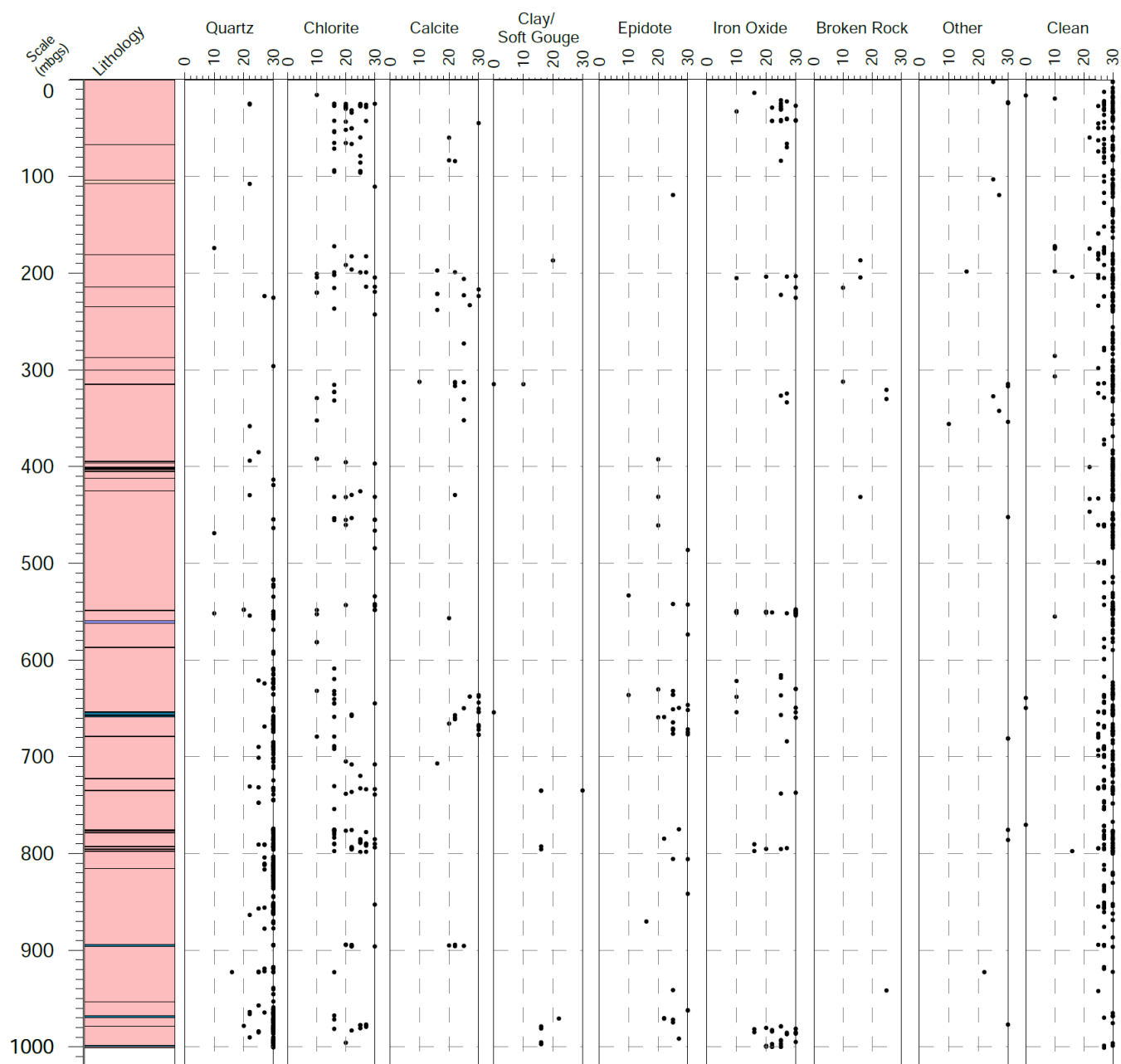


Figure 15: Summary of Secondary Infilling Mineral Information for all Joint, Vein and Fault Surfaces by Depth and by Joint Condition Rating (JCR) as logged in IG_BH01

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 WP3, 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. A suite of reports, documenting the results from the laboratory analyses, will ultimately be produced as part of the documentation for IG_BH01.

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. Note that all archived sample locations are indicated by the position of the open red circles while the samples sent directly to each lab are denoted by the position of the black filled circles.

All samples were individually photographed (both front side and back side) and packaged according to the sample-specific preservation requirements. One example of a packaged sample is shown on Figure 17a. The complete list of sample photographs is included in Appendix D. An example of a cooler packed with preserved samples prepared for shipping is shown on Figure 17b. All unshipped samples were sent to NWMO's Ignace warehouse for archiving and custody of these samples was transferred to NWMO. Samples specifically collected as 'archive' for the porewater extraction tests were all shipped to Hydroisotop, rather than transferred to NWMO custody, to address the potential risk associated with damage to the sample and/or preservation during shipment. Custody was transferred to 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 WP3 Data Delivery.

Note that Mercury Porosity Injection samples were to be shipped directly to the Particle Technology Labs from site once all samples were collected. Due to limited fridge storage on site, these samples were transferred (in two shipments) to the NWMO Warehouse for storage prior to completing the shipment to Particle Technology Labs.

Table 3 : Summary of Rock Core samples in IG_BH01

Core Testing Type	Test Type	Number of Samples Collected	Number of Samples Shipped to Laboratory for Core Testing	Laboratory
Petrophysical	Bulk Density	20	20	Golder Associates Laboratory
	Total Porosity	10	10	
	Effective Diffusion Coefficient	16	12 ¹	
	Hydraulic Conductivity	3	3	
	Mercury Injection Porosity	10	10	Particle Technology Labs
Geomechanical	Uniaxial Compressive Strength	6	3	CANMET Bells Corners Lab
	Indirect Tensile Strength (Brazilian)	6	3	
Porewater Extraction and Analysis and Thin Section Analysis	Out-diffusion/Isotope Exchange Experiments & Thin Section	20	20 ²	Hydroisotop GmbH
	Aqueous Extraction Experiments	10	10	
Sorption	Sorption	7 (10 cm) 5 (20 cm)	N/A ³	N/A ³
Microbiology	Microbiology	6	N/A ³	N/A ³
General Archive	Archive	10	0 ³	N/A ³

Note:

- 1) Two archived Effective Diffusion Coefficient Samples were sent to Golder Associates Laboratory.
- 2) All archived Porewater Extraction samples (10) were sent to Hydroisotop GmbH.
- 3) Golder Transferred custody of all Sorption, Microbiology and Archive samples to NWMO and shipped all of these samples to NWMO's Ignace Warehouse.

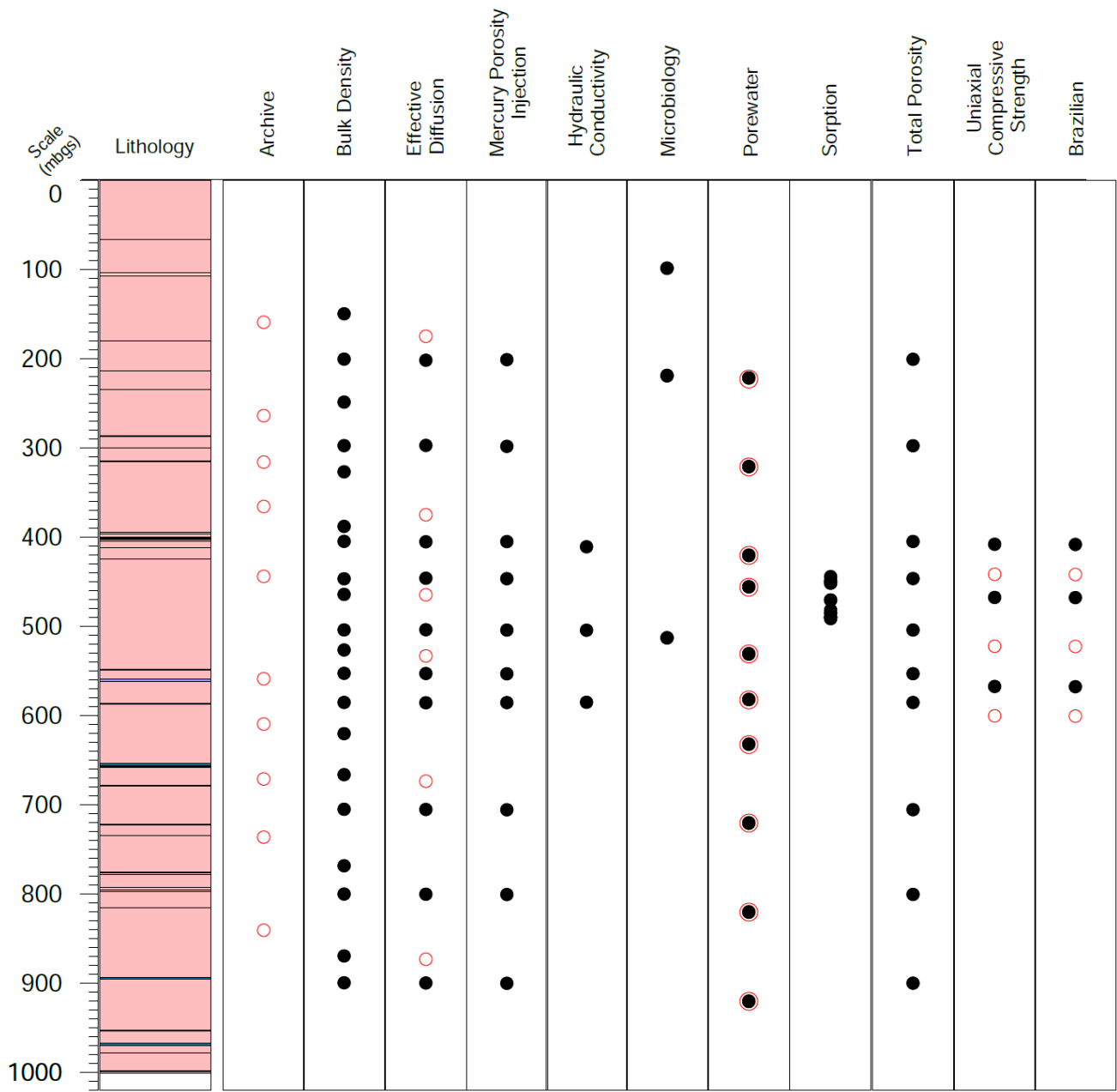


Figure 16: Summary Showing the Distribution Core Samples Collected in IG_BH01 by Sample Test Type and by Depth (filled black circle = samples shipped to labs for initial testing; unfilled red circle = samples archived)

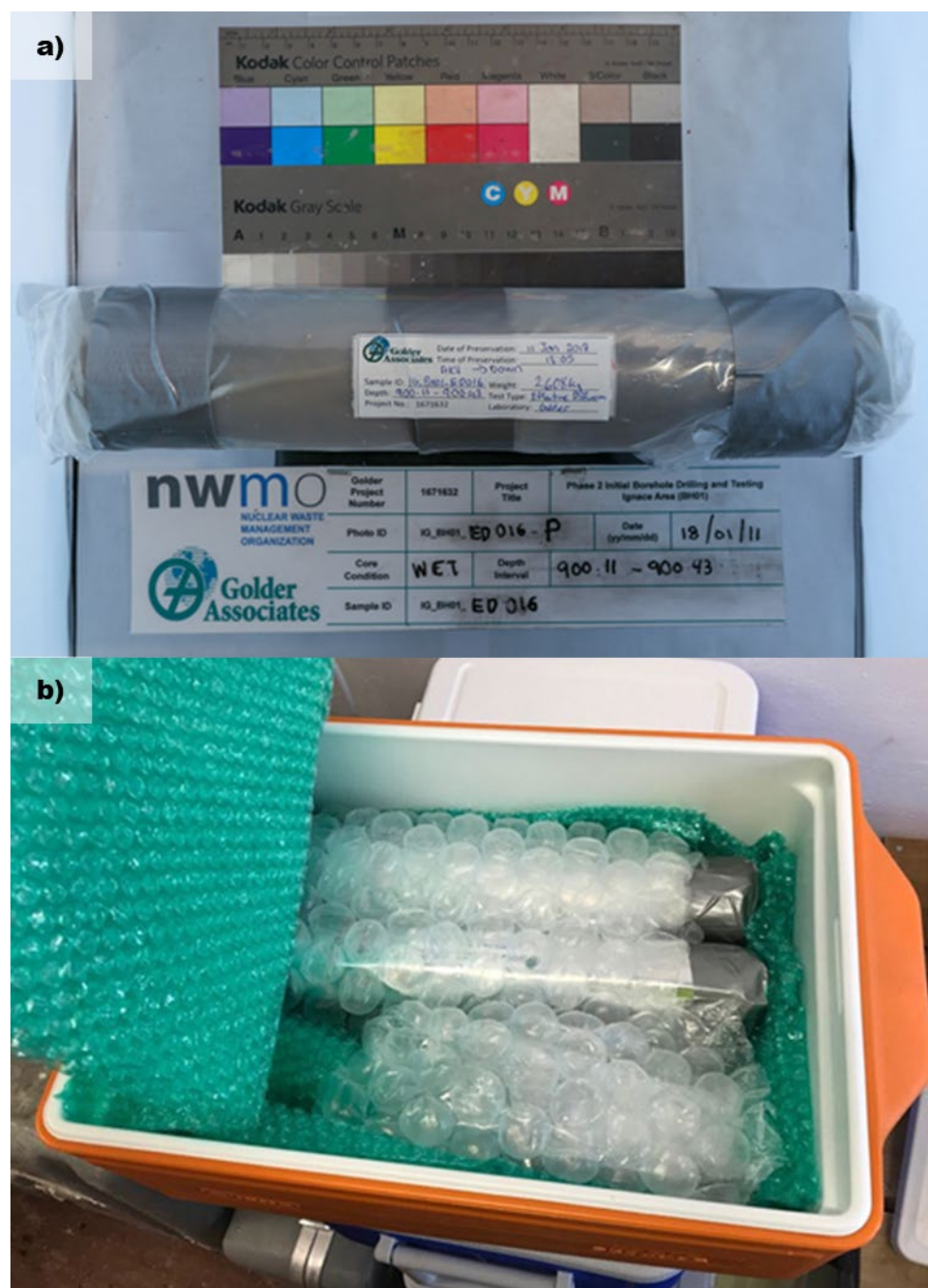


Figure 17: Examples of Sample Preservation Methods: a) Example photograph of a rock core sample preserved for Effective Diffusion (ED) testing (IG_BH01_ED016), b) Example photograph of a rock core shipment to be sent to laboratory

6.0 REFERENCES

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APPENDIX A

Rock Core Logging Procedures

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_BH01. 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 follow the following procedures on a per run basis:

- Marking the Core
- Core Run Data Collection (acQuire Form)
- Structure Data Collection (acQuire Form)
- Lithology 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 3 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.

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.

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 A1). 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 A2). The "X" marks will be visible in the boxed core photographs.



Figure A1: 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 A2). 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 A2). 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.

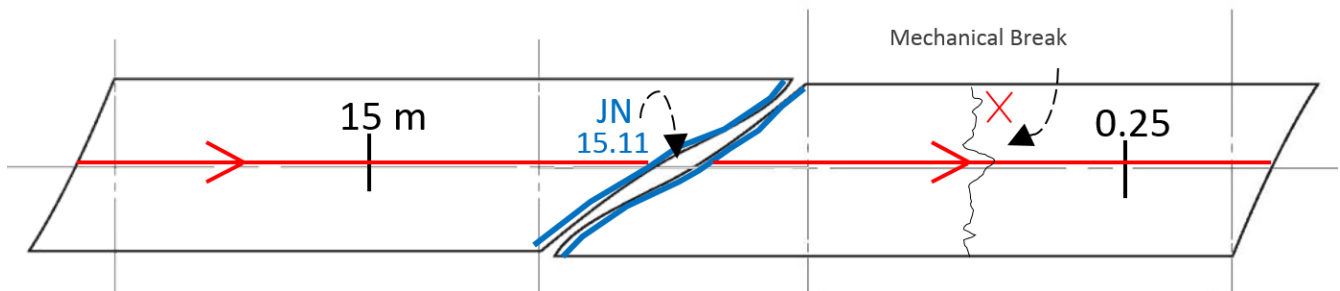


Figure A2: Example of Reference Line (red with arrows) and Marking of Natural and Mechanical Breaks. Note that JN is the structure code for Joint in the acQuire database. See Section 2.3 below for a full list of structure type codes.

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).

CORE RUN 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
- Total Core Recovery (TCR)
- Rock Quality Designation (RQD) Length
- Solid Core Recovery (SCR) Length
- Count of Fractures
- Retrieval Time (of Core)
- Logged By, Photos By, Sampled By
- Raw Photo – Core Run (front/back)
- Reference Line Orientation

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 A3 shows the screen in the acQuire database for inputting the Core Run 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): 5 Drilled To (m): Run Number: CR002

Retrieval Time (24hr): 25-Aug-2017 11:43:04 Logged By: Photo By: Sampled By:

TCR (m): RQD Length (m): SCR Length (m): Count of Fractures: TCR (pct): RQD (pct): SCR (pct): Fractures / m:

Raw Photo - Core Run (front): Front Photo File Name: IG_BH00CR002_F.jpg Reference Line Orientation (deg):

Raw Photo - Core Run (back): Back Photo File Name: IG_BH00CR002_B.jpg

Comment:

Accept (F9) Cancel

Figure A3: acQuire input page for Core Run data

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 A4. If there is a vertical fracture running through the entire run, the solid core recovery is 0%.

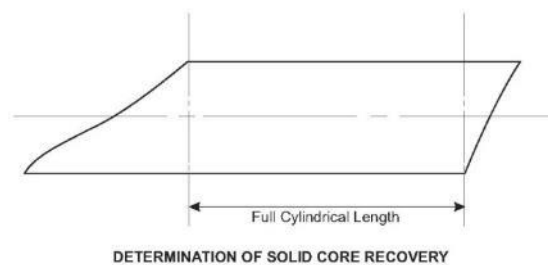


Figure A4: Determination of SCR

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 A5.

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%).

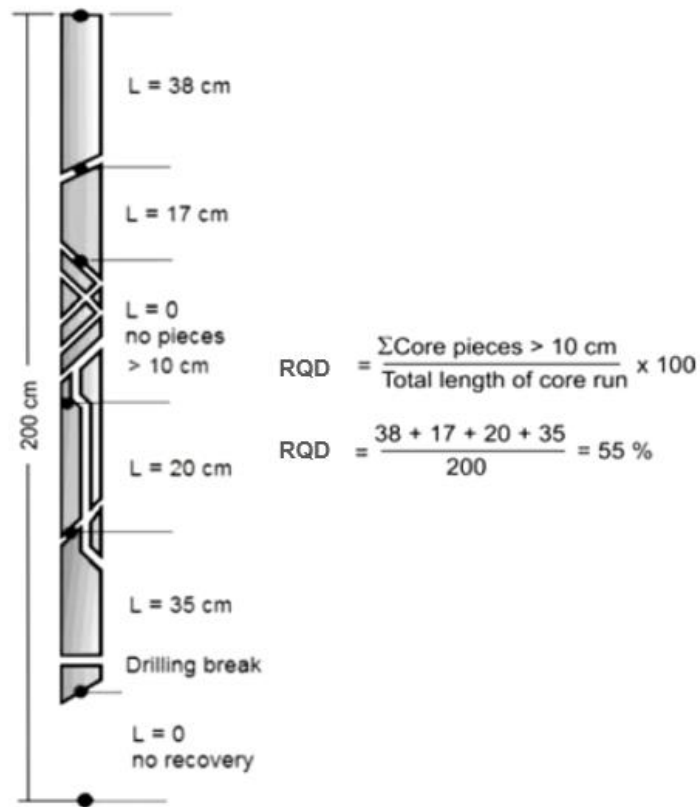


Figure A5: Determination of RQD (AFTER Deere, 1989)

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 you are 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.

Record Raw Photo Front:Back Photo Names

Figure 3 in the main body of this report provides the photography work flow completed as part of the geological and geotechnical core logging activity. Here, only the procedure for entering the correct names of the 2x180° core photographs is described. The 2x180° core photography will be completed when the core is brought in from the drill rig and only while the core is wet.

Two series of photos, one for the first exposed side in the split tube, designated the 'front', and one for the other side, designated the 'back' will be stitched together and delivered as individual photos. The Core Logger will enter the raw, stitched, image file names, recorded by the capturing camera (ex. "DSC456734.jpg"), into the corresponding 'front' and 'back' entry boxes on the form.

Record Reference Line Orientation

It will be clearly stated in the comments box on the Core Run sheet if a reference line was continued or if a new reference line is started. If the reference line was lost within a run, the comment will include the depth of the new 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. 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.

1.1 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
- Defining Mineral(s)
- Aperture³
- Rock Wall Strength³
- Shape^{1,3}
- Roughness^{1,3}
- Infill Character^{1,2,3}
- Infill Type^{2,3}
- Infilling Thickness²
- Width
- Alpha Angle, Beta Angle, Gamma Angle, Delta Angle

¹Inputs for Joint Roughness (Jr) Number determination

²Inputs for Joint Alteration (Ja) Number determination

³Inputs for Joint Condition Rating (JCR) Number determination

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.

Figure A6 shows the acQuire input fields for the Structure data.

Figure A6: 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_BH01. 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)**
- **FRACTURE (FR, 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, N/A)
- **CONTACT** (CO, Broken, Intact or Partially Intact)

These structures are defined below in Table A1, 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 A1: Classification of Structure Type

Structure Type (acQuire Code)	Description
FOLIATION (FO)	Planar preferred orientation of mineral grains. No Sub-Type. Note: 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.
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: 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.
SCHISTOSITY (SCH) <i>Type of Foliation</i>	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. Note: 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.

GNEISSOSITY (GNY) <i>Type of Foliation</i>	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. Note: 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.
IGNEOUS PRIMARY STRUCTURE (IPS)	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 Note: 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.
MYLONITE ZONE (MYL)	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. Note: 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. <i>Alpha</i> and <i>Beta</i> angles will be entered.
SHEAR ZONE DUCTILE (SHRD)	A planar zone of strong deformation surrounded by rocks with a lower state of finite strain. The deformed zone exhibits only ductile characteristics. Sub-Type: Unknown slip; dextral (right-lateral) ; sinistral (left-lateral) ; normal; reverse Note:

	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) associated with SHRD will be entered in <i>Structure Infill 1</i> and/or <i>Structure Infill 2</i>, as well as <i>Type</i> and <i>Infilling Thickness (mm)</i>, as applicable. 3. Representative <i>Alpha</i> and <i>Beta</i> angles will be entered, as applicable.
SHEAR ZONE BRITTLE-DUCTILE (SHR)	A planar zone of strong deformation surrounded by rocks with a lower state of finite strain. The deformed zone exhibits brittle and ductile characteristics. Sub-Type: Unknown slip; dextral (right-lateral); sinistral (left-lateral); normal; reverse. Note: 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) associated with SHR will be entered in <i>Structure Infill 1</i> and/or <i>Structure Infill 2</i>, as well as <i>Type</i> and <i>Infilling Thickness (mm)</i>, as applicable. 4. Representative <i>Alpha</i> and <i>Beta</i> angles will be entered, as applicable.
FOLD AXIAL PLANE (FAX)	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. Note: 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, fold wavelength will be recorded (in cm) in the Comments field.
LINEATION (LIN)	A linear structure or fabric in a rock. Sub-Type: Mineral; Stretching; Intersection; Slickenline.

	1. <i>Depth</i> is recorded at the mid-point of where the LIN is identified. 2. Mineral(s) defining LIN will be entered in <i>Defining Mineral(1/2)</i>, as applicable. 3. <i>Gamma and Delta angles</i> will be entered.
VEIN (VN, Intact or Partially Intact)	A fracture 5 cm or less in width and containing a mineral infilling. Every identified vein will be qualified in comment field by the nature of the infilling material, e.g., aplite vein, quartz vein, etc. No Sub-Type. Note: 1. <i>Depth</i> is recorded at the mid-point of where the VN is identified. 2. Mineral(s) associated with VN will be entered in <i>Structure Infill 1 and/or Structure Infill 2, Infilling Thickness (mm)</i>, as applicable. 3. <i>Alpha and Beta angles</i> will be entered.
FRACTURE (FR, Broken, Intact or Partially Intact)	A general term for any surface across which there is usually no cohesion. A sub-type will be assigned to describe fractures developed parallel to pre-existing structures (e.g., foliation, vein) and the sub-type will be N/A where no geometrical association with a pre-existing structure is recognized. Sub-Type: N/A, Foliation Fracture (usage for all foliation types, e.g., cleavage, etc.); Vein Fracture; Mylonite Zone Fracture; Ductile Shear Zone Fracture; Brittle-Ductile Shear Zone Fracture. Note: 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. Mineral(s) associated with FR will be entered in <i>Structure Infill 1 and/or Structure Infill 2</i>, as well as <i>Type and Infilling Thickness (mm)</i>, as applicable. 3. <i>Aperture, Rock Wall Strength, Shape and Roughness</i> will be entered. 4. <i>Alpha and Beta angles</i> will be entered.
JOINT (JN, Broken, Intact or Partially Intact)	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. Note: 1. <i>Depth</i> is recorded, where structure intercepts the core-axis. 2. Mineral(s) associated with JN will be entered in <i>Structure Infill 1 and/or Structure Infill 2</i>, as well as <i>Type and Infilling Thickness (mm)</i>, as applicable. 3. If Open, <i>Aperture, Rock Wall Strength, Shape and Roughness</i> will be entered. 4. <i>Alpha and Beta angles</i> will be entered

FAULT (FLT, Broken, Intact or Partially Intact)	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. Note: 1. <i>Depth</i> is recorded at the mid-point of where the FLT is identified, and <i>Width</i> is FLT thickness. 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. Mineral(s) associated with FLT will be entered in <i>Structure Infill 1</i> and/or <i>Structure Infill 2</i>, as well as <i>Type</i> and <i>Infilling Thickness (mm)</i>, as applicable. 4. <i>Alpha and Beta angles</i> will be entered, as applicable.
BROKEN CORE ZONE (BCZ, Broken)	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. Note: 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. Mineral(s) associated with BCZ will be entered in <i>Structure Infill 1</i> and/or <i>Structure Infill 2</i>, as well as <i>Type</i> and <i>Infilling Thickness (mm)</i>, as applicable. 4. <i>Alpha and Beta angles</i> will be entered, if applicable.
INTACT FRACTURE ZONE (IFZ, Intact or Partially Intact)	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 Note: 1. <i>Depth</i> is recorded at the mid-point of where the IFZ is identified, and <i>Width</i> is IFZ thickness. 2. Mineral(s) associated with IFZ will be entered in <i>Structure Infill 1</i> and/or <i>Structure Infill 2</i>, as well as <i>Type</i> and <i>Infilling Thickness (mm)</i>, as applicable. 3. Representative <i>Alpha and Beta angles</i> will be entered, if applicable.

LOST CORE ZONE (LCZ)	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. Note: 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 (Low, Moderate, High)</i> in the Comments based on Core Loggers ability to accurately place the location of the LCZ.
CONTACT (CO, Broken, Intact or Partially Intact)	The boundary between two different rock types. Includes dyke contact(s) with adjacent rock. Sub-Type: Not Observed; Chilled; Gradational; Sharp. Note: 1. <i>Depth</i> is recorded, where structure intercepts the center-axis. 2. <i>Mineral(s) associated with CO will be entered in Structure Infill 1 and/or Structure Infill 2, as well as Type and Infilling Thickness (mm), as applicable.</i> 3. If Broken, <i>Aperture, Rock Wall Strength, Shape and Roughness</i> will be entered. 4. <i>Alpha and Beta angles will be entered.</i>

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.

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

- Alkali-feldspar
- Amphibole
- Quartz
- Biotite
- Garnet
- Hornblende
- Magnetite
- Muscovite
- Plagioclase
- Titanite
- Apatite
- Olivine
- Pyroxene
- Other

Record Aperture

Aperture is the separation between competent rock wall surfaces along a broken structure, as seen in Figure A7, 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.

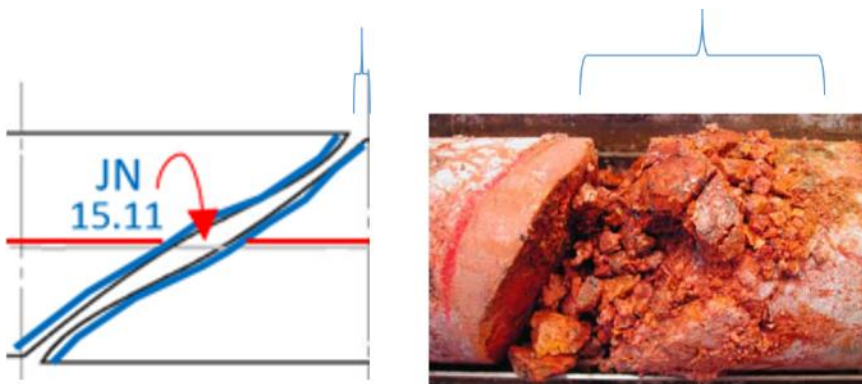


Figure A7: Examples of Aperture

Record Rock Wall Hardness

The rock wall 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 in Rock Strength Data Collection.

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 A2, when possible. Examples of discontinuity Shape and Roughness character are provided in Figure A8.

Table A2: 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 A8: Examples of Discontinuity Shape and Roughness

Record Infill Character, Type and 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 A3 and Table A4. The infill thickness will be entered as a measurement perpendicular to the fracture plane, in mm, for any infill that is greater than 1 mm in thickness.

Table A3: 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 A4: 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	Chlorite	SOFT	Commonly found in veins or broken joints
Ca	Calcite	HARD	Commonly found in veins
Qz	Quartz	HARD	Commonly found in veins
Bc	Breccia	HARD	Associated with shear or fault zones (Infill material, IN only)

Infill Type	Description		Typical Occurrence
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

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 A5. The value of Ja, for each fracture, will be derived using the information recorded for:

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

The derived Ja logging values are described in Table A6. 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 A7.

Table A5: Joint Roughness, Jr (after Barton et. al. 1974)

Intact/Broken	Shape	Roughness	Infill Character	Jr
Intact	-	-	-	4
Broken	PL	K, PO	CL,ST,SA,CT	0.5
Broken	PL	SM	CL,ST,SA,CT	1
Broken	PL	RO	CL,ST,SA,CT	1.5
Broken	PL	VRO	CL,ST,SA,CT	2
Broken	UN, CU, ST	K, PO	CL,ST,SA,CT	1.5
Broken	UN, CU, ST	SM	CL,ST,SA,CT	2
Broken	UN, CU, ST	RO, VRO	CL,ST,SA,CT	3
Broken	ANY	ANY	IN	1

Table A6: Joint Alteration, Ja (after Barton et al. 1974)

Intact/Broken	Infill Character	Infill Type	Infill Thickness	Ja
Intact	-	-	-	0.75
Broken	IN	Clay Gouge (Swelling)	>5mm	20
Broken	IN	Clay Gouge (Soft)	> 5mm	13
Broken	IN	Clay Gouge (Stiff)	> 5mm	10
Broken	IN	Soft Mineral (Not Clay Gouge)	> 5mm	6
Broken	IN	Hard Mineral	> 1mm	3
Broken	IN	Clay Gouge (Swelling)	<5mm, >1mm	12
Broken	IN	Clay Gouge (Soft)	<5mm, >1mm	8
Broken	IN	Clay Gouge (Stiff)	<5mm, >1mm	6
Broken	IN	Soft Mineral (Not Clay Gouge)	<5mm, >1mm	4
Broken	CT	Soft Mineral	=<1mm	4

Intact/Broken	Infill Character	Infill Type	Infill Thickness	Ja
Broken	CT	Hard Mineral	=<1mm	3
Broken	SA	Soft Mineral	<1mm	3
Broken	SA	Hard Mineral	-	2
Broken	ST	-	-	1
Broken	CL	-	-	1

Note: "Soft" Minerals (Strain softening coatings) see Table A4.

Table A7: Joint Condition Rating (RMR 1989)

Intact/Broken	Aperture	Rock Wall Strength	Shape	Roughness	Infill Character	Infill Type	JCR
Intact	-	-	-	-			30
Broken	≥ 5mm	ANY	ANY	ANY	ANY	ANY	0
	1-<5mm						10
	< 1 mm	SOFT	ANY	K,PO	ANY	ANY	10
				SM,RO, VRO			16
		HARD	PL	K,PO	ANY	ANY	10
				SM			16
					IN	Soft Mineral (NOT CLAY GOUGE)	16
						Hard Mineral	20
					CT	Soft Mineral	16
						Hard Mineral	20
					SA	ANY	20
					CL, ST	ANY	22

Intact/Broken	Aperture	Rock Wall Strength	Shape	Roughness	Infill Character	Infill Type	JCR
				RO	IN	Soft Mineral (NOT CLAY GOUGE)	16
						Hard Mineral	20
					CT	Soft Mineral	20
						Hard Mineral	22
					SA	ANY	22
					CL,ST	ANY	25
				VRO	IN	Soft Mineral (NOT CLAY GOUGE)	16
						Hard Mineral	20
					CT	Soft Mineral	22
						Hard Mineral	25
					SA	ANY	25
					CL,ST	ANY	27
			UN, CU, ST	K,PO	ANY	ANY	16
				SM	IN	Soft Mineral (NOT CLAY GOUGE)	16
						Hard Mineral	20
					CT	Soft Mineral	20
						Hard Mineral	22
					SA	ANY	22

Intact/Broken	Aperture	Rock Wall Strength	Shape	Roughness	Infill Character	Infill Type	JCR
					CL,ST	ANY	25
				RO	IN	Soft Mineral (NOT CLAY GOUGE)	16
						Hard Mineral	20
					CT	Soft Mineral	22
						Hard Mineral	25
					SA	ANY	25
					CL,ST	ANY	27
				VRO	IN	Soft Mineral (NOT CLAY GOUGE)	16
						Hard Mineral	20
					CT	Soft Mineral	25
						Hard Mineral	27
					SA	ANY	27
					CL,ST	ANY	30

Note:

“Soft” Minerals (Strain softening coatings) see Table A4.

Clay Gouge zones are classified by Aperture thickness

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 A1 except for Lost Core Zone and Lamination. 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 A9 would be recorded as Alpha = 59° .



Figure A9: 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 A10 would be recorded as Beta = 300° .

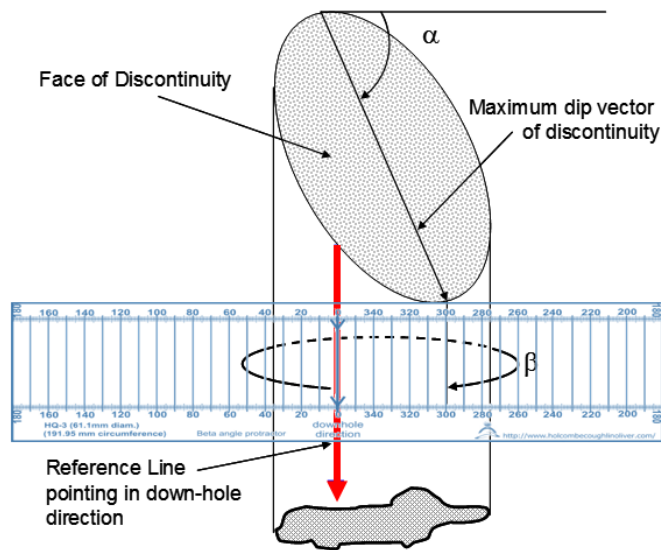


Figure A10: Beta Measurement

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 A11 below. The example shown in Figure A11 below would be recorded as Delta = 330° .

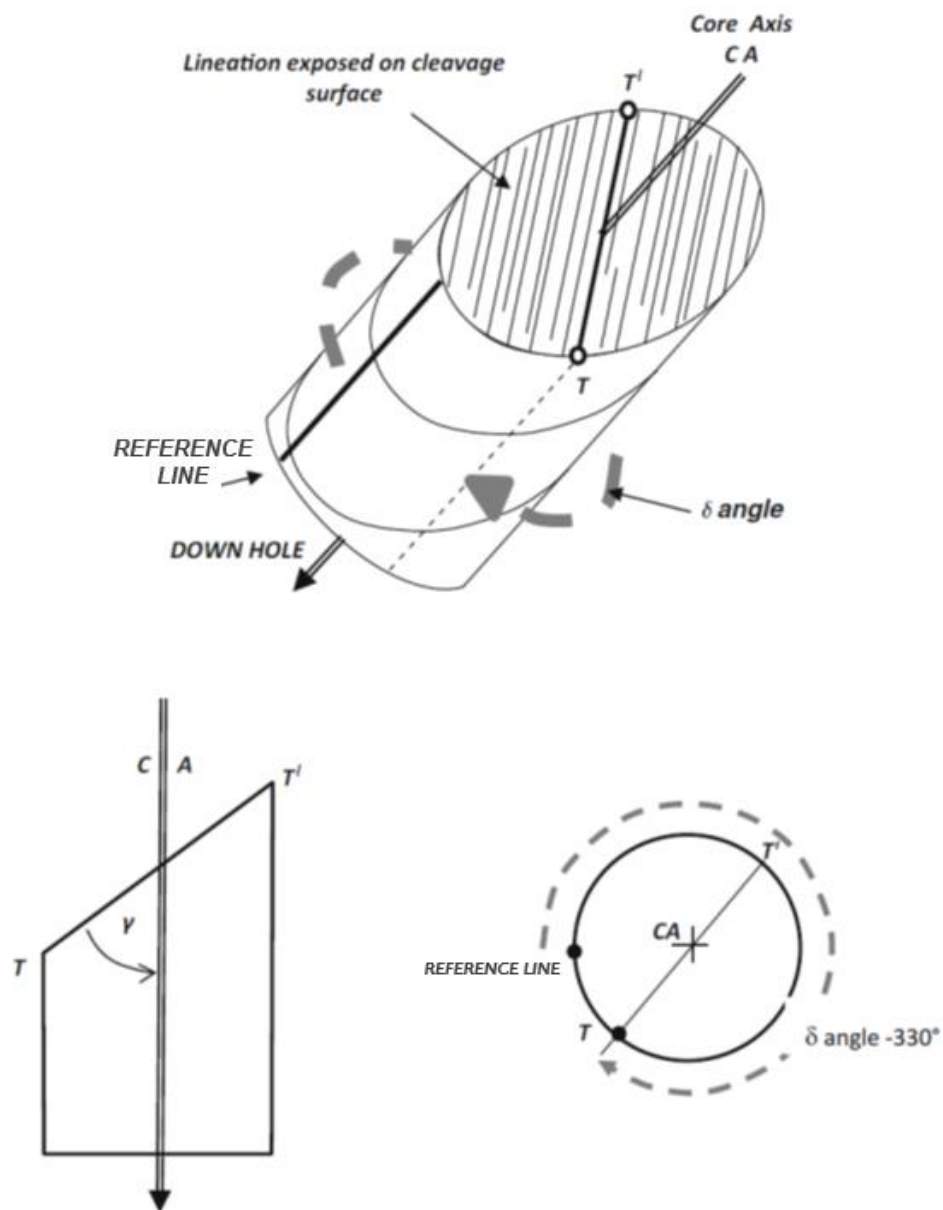


Figure A11: Gamma and Delta Measurement

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: 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.

1.2 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 A12 shows the screen in the acQuire database for inputting the Lithology data.

Lithology

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

Insert Mode

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

IG_BH00

Rock Type

Rock Class Rock Type Rock Fabric

Textures

Metamorphic Igneous

Ground Mass Grain Sizes

Grain Size 1 Grain Size 2

Phenocryst/Pophyroblast/GrainSize

Grain Size 1 Grain Size 2 Mineral 1 Mineral 2 Mineral 3

Colours

Colour 1 Intensity 1 Colour 2 Intensity 2

Comments

Accept (F9) Cancel

Figure A12: 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
- Colours & 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 A8.

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_BH01, based on surface mapping, are highlighted in grey shading.

Table A8: 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 Granodiorite Granite Alkali-feldspar granite Diorite Quartz Diorite Monzodiorite Quartz monzodiorite Quartz monzonite Syenite Gabbro Anorthosite Dunite Other	Refer to the Igneous Rock Classification Diagram, included below as Figure A13. 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.
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	Metamorphic rocks will be defined by their texture (e.g., schistose or gneissose), their composition (e.g., mafic or felsic) and defining minerals. Where a sedimentary protolith can be determined, the relevant metasedimentary rock type will be included in the Comments field (e.g., psammite, pelite, etc.).
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 Lamprophyre Other	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' Pegmatites are coarse-grained dykes (crystals several centimeters to several meters in length) of mafic or felsic composition

Rock Class	Project Definition	Rock Type	Logging Guidance
			Aplites are fine-grained dykes (crystal size ≤ 1 mm) of granite or granitic composition with very little to no mafic minerals and a granular texture. Gabbro is a coarse-grained mafic intrusive igneous rock composed principally of calcic plagioclase and clinopyroxene, and often olivine (see Figure 13B) 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. 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. 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.

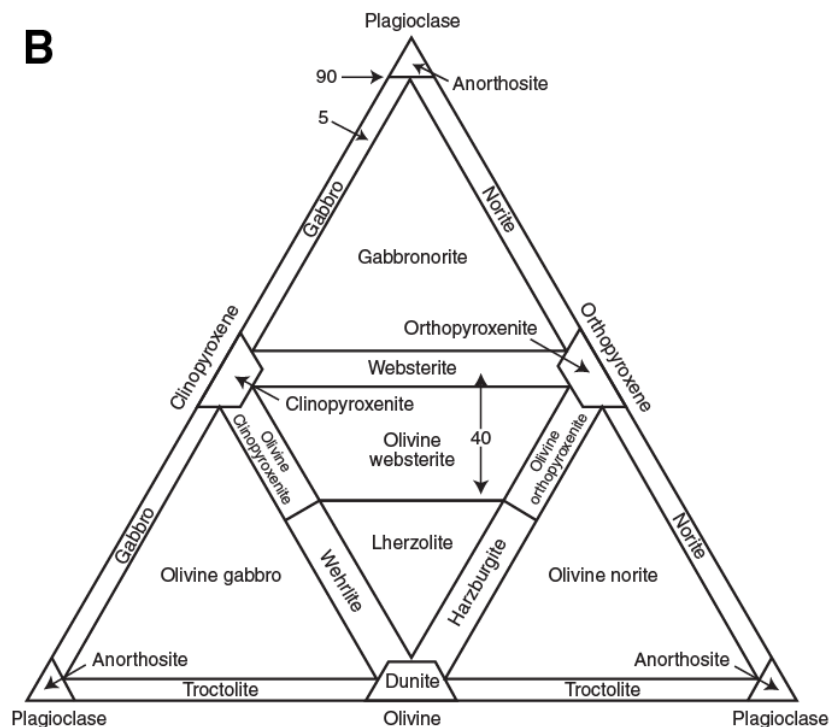
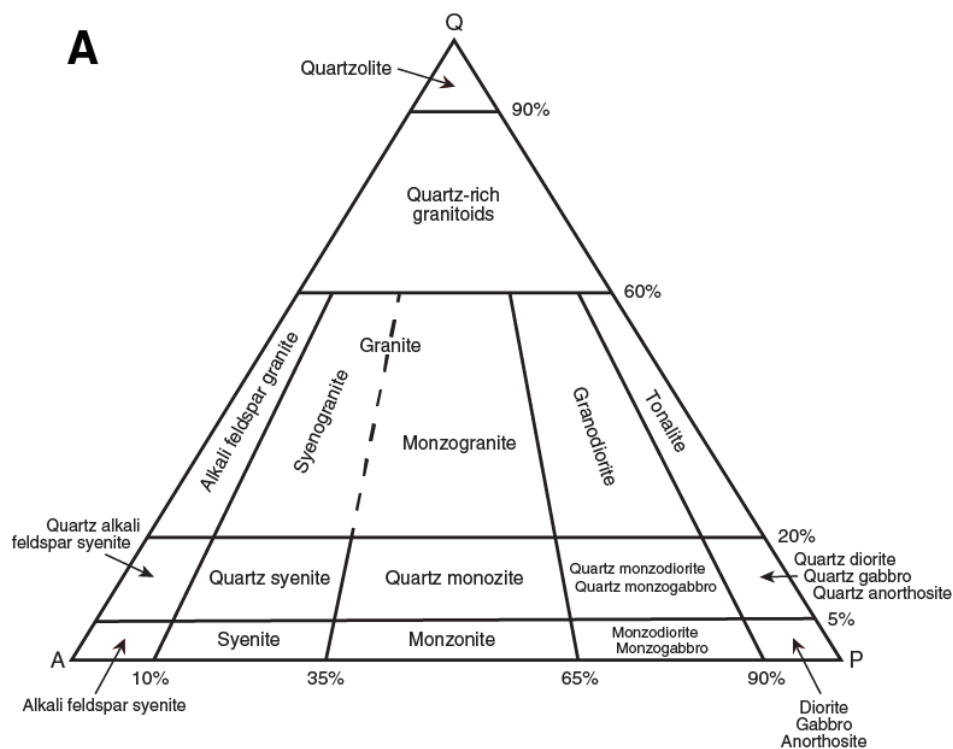


Figure A13: Igneous Rock Classification Diagrams. A) Q-A-P Diagram for Felsic Rocks. B) Plagioclase-Clinopyroxene-Orthopyroxene-Olivine Diagram for Mafic and Ultramafic Rocks.

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. 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 %K, ppm U and ppm Th, from the device in the comments field of the acQuire Lithology tab, along with noting the depth at which the measurement was taken in the core run. 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).

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_BH01 are described below in Table A9.

Table A9: 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 A10 and Table A11, respectively.

Table A10: 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.

Metamorphic Texture	Description
<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 A11: 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.
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 A14 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.

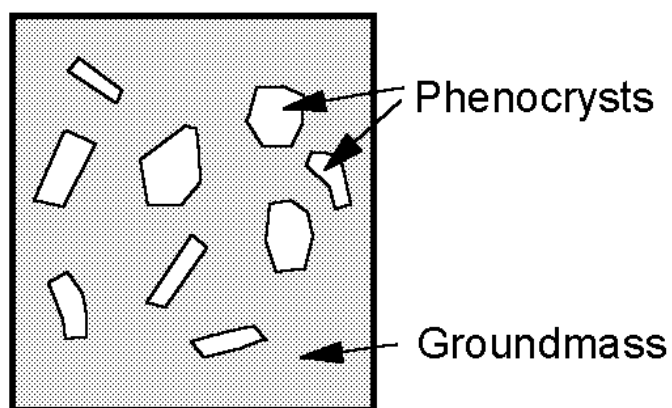


Figure A14: Example of groundmass vs. phenocryst mineral phases

The size of visible grains or crystals will be selected, in accordance with the grain-size classes indicated below in Table A12 for all identified rock types.

Table A12: 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).

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

- Alkali-feldspar
- Amphibole
- Biotite
- Garnet
- Hornblende
- Magnetite
- Muscovite
- Plagioclase
- Titanite
- Apatite
- Olivine
- Pyroxene

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	

1.3 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 A15. Alteration characteristics will be assigned to all structural features entered into the Structure data input sheet (see Section 1.1) 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 1.4), 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 F7 = Previous Sheet
F11 = Change Entry Mode F8 = Next Sheet

Insert Mode

Borehole ID
IG_BH00

From (m)

To (m)

Core Run

Index

Alteration 1

Colour

Alteration 2

Alteration 3

Comments

Accept (F9)

Cancel

Figure A15: 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 A13. 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 A13: Alteration Index (ISRM, 1981)

Term	Symbol	Description
Unaltered	A1	Fresh rock; or rock with any alteration assemblage that significantly enhances the strength properties of the parent rock type.
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.

Term	Symbol	Description
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 A14 below provides the list of mineral assemblages and their descriptions that will be used for this characterization.

Table A14: Alteration Assemblages

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

Alteration Type	Alteration Assemblage Description
Bleaching	Not characterized by any specific mineral assemblage, but rather recognized by a color change between altered and unaltered rock.

1.4 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 A16). 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 A15. 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): [Redacted]
To (m): [Redacted]
Core Run: [Empty]
Weathering: [Dropdown]
Comments: [Text Area]
Accept

Figure A16: acQuire input for Weathering data

Table A15: 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

Term	Symbol	Description	Discoloration Extent	Fracture Condition	Surface Characteristics
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
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
Fresh	W1	No visible sign of rock material weathering.	None	Closed or discoloured	Unchanged

1.5 Rock Strength Data Collection

Record Strength of Intact Rock

The acQquire rock strength data input sheet is shown below in Figure A17. The field estimation of intact rock strength undertaken for IG_BH01 will be based on the International Society of Rock Mechanics (ISRM, 1981) guidelines as shown in Table A16.

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 A16.

Rock Strength

Short Cuts
F9 = Accept
F11 = Change Entry Mode

F7 = Previous Sheet
F8 = Next Sheet

Insert Mode

Borehole ID

Depth (m)

Core Run

Strength Index

Accept

IG_BH00

Figure A17: acQuire input for Rock Strength data

Table A16: 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.

REFERENCES

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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.

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APPENDIX B

Sampling Schedule Tables

Table B-1: Master Core Sampling Schedule

Table B-2: Planned and Actual Repository Horizon Core Sampling Schedule Deviation

Table B-1: Master Core Sampling Schedule

1671632 (1300)

Master Core Sampling Schedule														
		Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	Comments	
	Samples to Lab	0	3	3	3	20	10	10	10	10	3	15		
	Archived/Duplicate Samples	10	3	3	6 total petrophysical archived sample						10	3		0
	Minimum Sample Length (cm)	35	20	20	20	10	30	10	10	35	20	10/20		
Interval Top Depth (m)	Domains	Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption		
0	Above Repository Horizon													
3														
6														
9														
12														
15														
18														
21														
24														
27														
30														
33														
36														
39														
42														
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48														
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54														
57														
60														
63														
66														
69														
72														
75														
78														
81														
84														
87														
90														
93														
96														
99												2 samples		
102												Microbiology (2)		
105														
108														
111														
114														
117														
120														
123														
126														
129														
132														
135														
138														
141														
144														
147														
150												Bulk Density		
153														
156														
159												Archive		
162														
165														
168														
171														
174												Eff Diff Coeff - duplicate		
177														
180														
183														
186														
189														
192														
195														
198												Eff Diff Coeff, MIP, Bulk Density, Total Porosity		
201														
204														
207														
210														
213														
216														
219														
222												Porewater/Mineralogy		
225												Porewater/Mineralogy - duplicate		
228														
231											2 samples			
234												Microbiology (2)		

Table B-1: Master Core Sampling Schedule

1671632 (1300)

Master Core Sampling Schedule													
		Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	Comments
	Samples to Lab	0	3	3	3	20	10	10	10	10	3	15	
	Archived/Duplicate Samples	10	3	3	6 total petrophysical archived sample					10	3	0	
	Minimum Sample Length (cm)	35	20	20	20	10	30	10	10	35	20	10/20	
Interval Top Depth (m)	Domains	Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	
237	Above Repository Horizon												
240													
243													
246													
249													
252													
255													
258													
261													
264													
267													
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396													
399	Repository Horizon												
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Table B-1: Master Core Sampling Schedule

1671632 (1300)

Master Core Sampling Schedule													
		Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	Comments
	Samples to Lab	0	3	3	3	20	10	10	10	10	3	15	
	Archived/Duplicate Samples	10	3	3	6 total petrophysical archived sample					10	3	0	
	Minimum Sample Length (cm)	35	20	20	20	10	30	10	10	35	20	10/20	
Interval Top Depth (m)	Domains	Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	
474	Repository Horizon												Porewater/Mineralogy - duplicate
477												2 at 10 cm each	Sorption (2)
480												2 at 10 cm each	Sorption (2)
483												2 at 10 cm each	Sorption (2)
486												2 at 10 cm each	Sorption (2)
489												2 at 10 cm each	Sorption (2)
492													
495													
498													
501													
504													
507													
510													
513													
516													
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582													
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594													
597													
600													
603	Below Repository Horizon												
606													
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636													
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705													
708													

Table B-1: Master Core Sampling Schedule

1671632 (1300)

Master Core Sampling Schedule													
		Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	Comments
	Samples to Lab	0	3	3	3	20	10	10	10	10	3	15	
	Archived/Duplicate Samples	10	3	3	6 total petrophysical archived sample					10	3	0	
	Minimum Sample Length (cm)	35	20	20	20	10	30	10	10	35	20	10/20	
Interval Top Depth (m)	Domains	Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	
711	Below Repository Horizon												
714													
717													
720													Porewater/Mineralogy
723													Porewater/Mineralogy - duplicate
726													
729													
732													
735													Archive
738													
741													
744													
747													
750													
753													
756													
759													
762													
765													
768													Bulk Density
771													
774													
777													
780													
783													
786													
789													
792													
795													
798													Eff Diff Coeff, MIP, Bulk Density,Total Porosity
801													
804													
807													
810													
813													
816													
819													
822													Microbiology/Mineralogy
825													Microbiology/Mineralogy - duplicate
828													
831													
834													
837													Archive
840													
843													
846													
849													
852													
855													
858													
861													
864													
867													Bulk Density
870													Eff Diff Coeff - archive/duplicate
873													
876													
879													
882													
885													
888													
891													
894													
897													
900													Eff Diff Coeff, MIP, Bulk Density,Total Porosity
903													
906													
909													
912													
915													
918													
921													Porewater/Mineralogy
924													Porewater/Mineralogy - duplicate
927													
930													
933													
936													
939													
942													
945													

Table B-1: Master Core Sampling Schedule

1671632 (1300)

Master Core Sampling Schedule													
		Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	Comments
	Samples to Lab	0	3	3	3	20	10	10	10	10	3	15	
	Archived/Duplicate Samples	10	3	3	6 total petrophysical archived sample					10	3	0	
	Minimum Sample Length (cm)	35	20	20	20	10	30	10	10	35	20	10/20	
Interval Top Depth (m)	Domains	Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Porewater/Mineralogy	Microbiology	Sorption	
948													
951													
954													
957													
960													
963													
966													
969													
972													
975													
978													
981													
984													
987													
990													
993													
996													
999													

Repository Horizon Deviation Core Sampling Chart													
		Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity	Minerology	Porewater	Microbiology	Sorption
Minimum Sample Length (cm)		35	20	20	20	10	30	10	10	10	35	20	20
Run	Domains	Archive	UCS	Brazilian	Hyd. Conductivity	Bulk Density	Effective Diffusion	Total Porosity	Mercury Injection Porosity		Porewater/Minerology	Microbiology	Sorption
Sampling Scheduled Within the Repository Horizon (400-600 m)		2	6	6	2	7	7	5	5	8	8	2	10
	400 +/- 10m		UC001 408.37-408.58	BR001 408.58-408.79									
1	415 +/- 10m (trigger Run 1)									PW009 420.73-421.08	PW007 / PW008 420.38-420.73 421.08-421.19		
2						BD007 405.16-405.28	ED005 405.52-405.83	TP003 405.28-405.4	MP003 405.4-405.52				
3													
Nightshift	435 +/- 10m		UC002 442.00-442.24	BR002 442.24-442.48									
1	450 +/- 10m (trigger Run 1)	AR005 443.3-444.65			HC001 411.19-411.39								SO001 444.65-444.85
2						BD008 447.1-447.2	ED006 446.36-446.68	TP004 446.86-446.98	MP004 446.98-447.1				SO002 / SO003 449.55-449.65 449.65-449.76
3										PW010 455.98-456.08	PW011 / PW012 456.08-456.42 456.42-456.77		SO004 / SO005 451.92-452.04 452.04-452.15
4													SO006 / SO007 470.79-470.99 470.99-471.20
Nightshift	475 +/- 10m		UC003 468.20-468.20	BR003 468.20-468.40			ED007 465.01-465.31						
						BD009 464.62-464.73							
1	500 +/- 10m (trigger Run 1)											MB005 / MB006 513.10-513.36 513.36-513.60	SO008 482.23-482.45
2					HC002 504.75-504.95	BD010 504.42-504.54	ED008 504.11-504.42	TP005 504.54-504.64	MP005 504.64-504.75				SO009 / SO010 485.51-485.61 485.61-485.71
3													SO011/SO012/ SO013/SO014 490.07-490.18 490.18-490.29 490.29-490.40 490.40-490.50
4													SO015 491.73-491.94
Nightshift	525 +/- 10m		UC004 522.63-522.89	BR004 522.89-523.14									
						BD011 526.89-527.04							
1	550 +/- 10m (trigger Run 1)									PW013 531.59-531.71	PW014 / PW015 530.88-531.23 531.23-531.59		
2						BD012 553.09-553.19	ED010 553.19-553.49	TP006 553.49-553.59	MP006 553.59-553.70				
3							ED009 533.55-533.86						
4		AR006 559.0-559.38											
Nightshift	575 +/- 10m		UC005 567.75-568.01	BR005 568.01-568.25									
1	585 +/- 10m (trigger Run 1)				HC003 585.5-585.7	BD013 585.7-585.79	ED011 586.01-586.32	TP007 585.79-585.9	MP007 585.9-586.01				
2										PW016 582.3-582.41	PW017 / PW018 582.41-582.76 582.76-583.13		
Nightshift	600 m		UC006 600.71-600.97	BR006 600.97-601.20									

Notes: 1. Sampling plan, deviated from original, is defined by designated boxes, in relation to approximate (+/-) depths which triggered a round of sampling. Increased sampling was targetted for dayshift for efficiency.

2. Actual sampling depths are recorded in their respective planned locations.

3. Yellow cells indicate archived samples

APPENDIX C

Record of Core Logging

Lithological and Geotechnical Rock Description Terminology

Note that full logging details can be found in the Geological and Geotechnical Core Logging Procedures Manual provided in the WP3 Test Plan.

CORE CONDITION

Total Core Recovery (TCR): TCR records the total amount of core recovered over the measured length drilled for each core run.

Solid Core Recovery (SCR): SCR is defined as the length of full axial diameter (full circumference) core recovered in a run. The full diameter is defined as the pieces of core not intersected by any fractures.

Rock Quality Designation (RQD): RQD is 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.

Joint Roughness (Jr): Describes the small scale geometry of the joint surface (Barton, 1974).

Joint Alteration (Ja): This rating distinguishes between fractures which are filled with alteration minerals such as clay, and those which are not (Barton, 1974).

Joint Condition Rating (JCR): The Joint Condition Rating is a numeral description used in RMR₈₉ (Bieniawski, 1989) ranging from 0 to 30 based on the shape, roughness, and infill character observed in a discontinuity.

Note that the Fracture per m refers to broken fractures logged by core run and does not include intact fractures.

LEGEND

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	

Strength

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

Features

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

Alteration and Weathering

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.

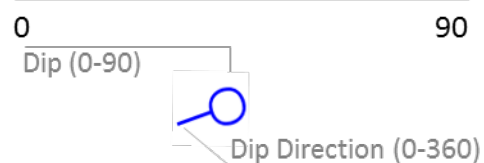
Bleaching	Chloritization	Hematization	Potassic	Sericitization	Silicification	Weathering
 A2	 A2	 A2	 A2	 A2	 A2	 W2
 A3	 A3	 A3	 A3	 A3	 A3	 W3
 A4	 A4	 A4	 A4	 A4	 A4	 W4
 A5	 A5	 A5	 A5	 A5	 A5	 W5

Structure Orientation

	Structure observed only in core
	Structure observed only in Televue
	Structure observed in core and Televue

Note: Structures that were not possible to orient have no symbol plotted (only structure characteristics are displayed on the log)

Orientation Tadpole



Structure Type

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

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

Br	Broken Rock	Ca	Calcite
Chl	Chlorite	Cl	Clay
Ep	Epidote	Fe	Iron
Go	Gouge	Qz	Quartz

Rock Wall Hardness

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

Samples

AR	Archive	BD	Bulk Density
ED	Effective Diffusion Coefficient	EP	Effective Porosity
HC	Hydraulic Conductivity	MB	Microbiology
MN	Mineralogy	PE	Permeability
PW	Pore Water	SO	Sorption
TP	Total Porosity	UC	Uniaxial Compression Strength

Note that all red sample labels represent archive samples

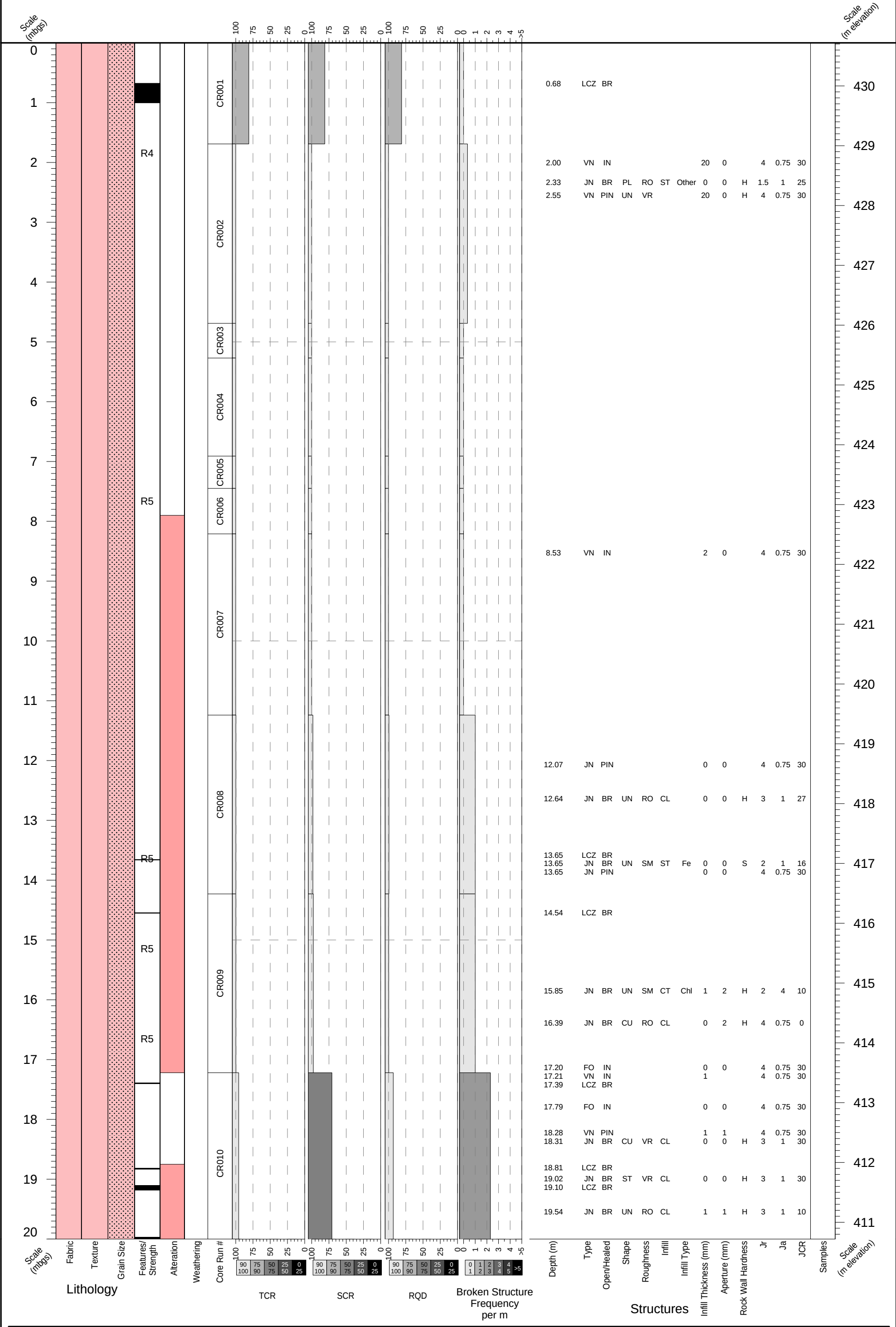
IG_BH01

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Easting (m) : 555943.35
Elevation (m) : 430.72

Collar Azimuth (°) : 259.0
Collar Dip (°) : -88.9
Hole Depth (m) : 1001.18

Loggers : AKV, CM, ET, KF
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : November 6, 2017 to January 16, 2018

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 Geological and Geotechnical
Core Logging of IG_BH01

YYYY-MM-DD
2018-12-19

DRAWN/REV
AKV/CM

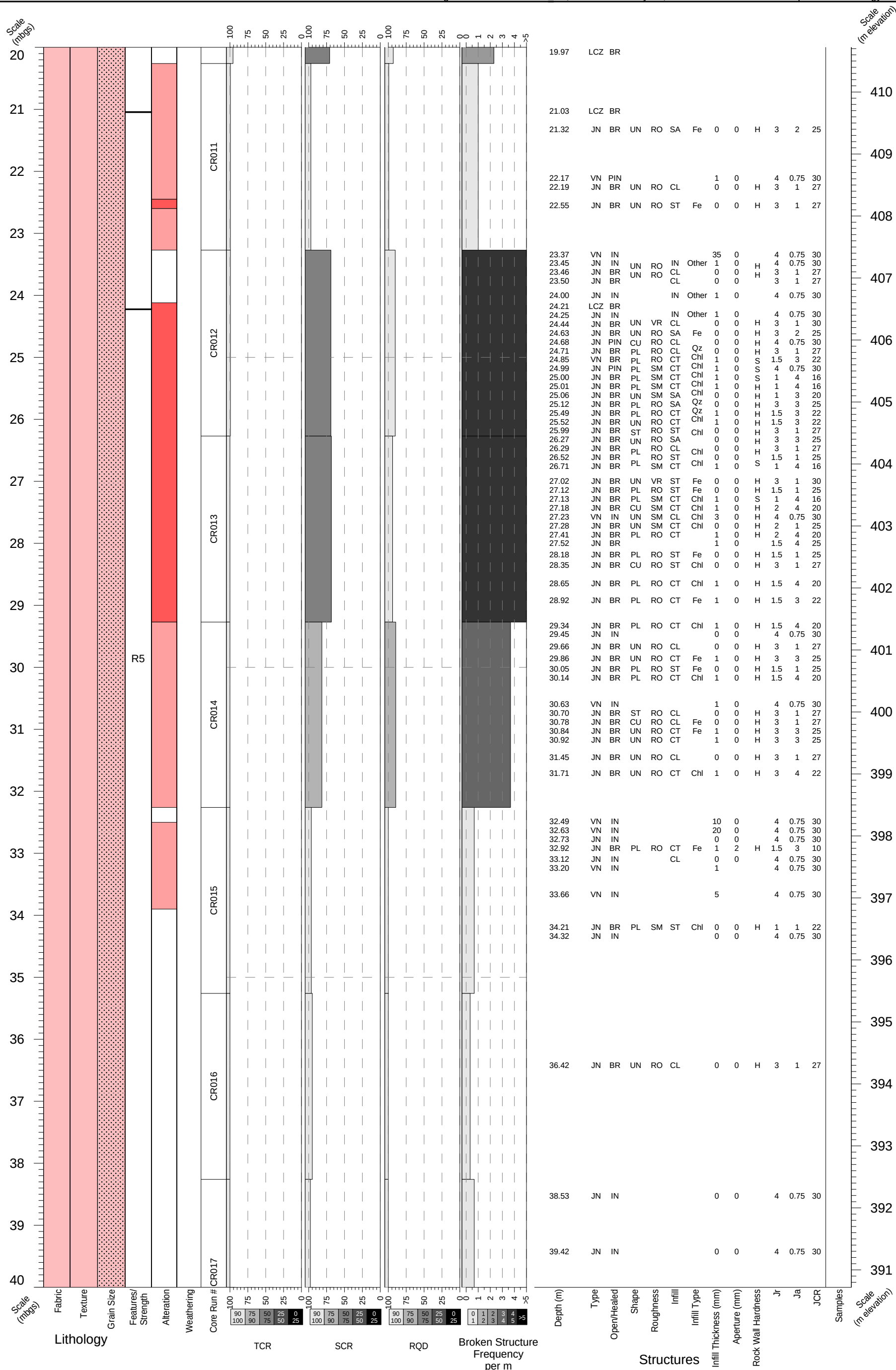
PROJECT NO.
1671632 (1300)

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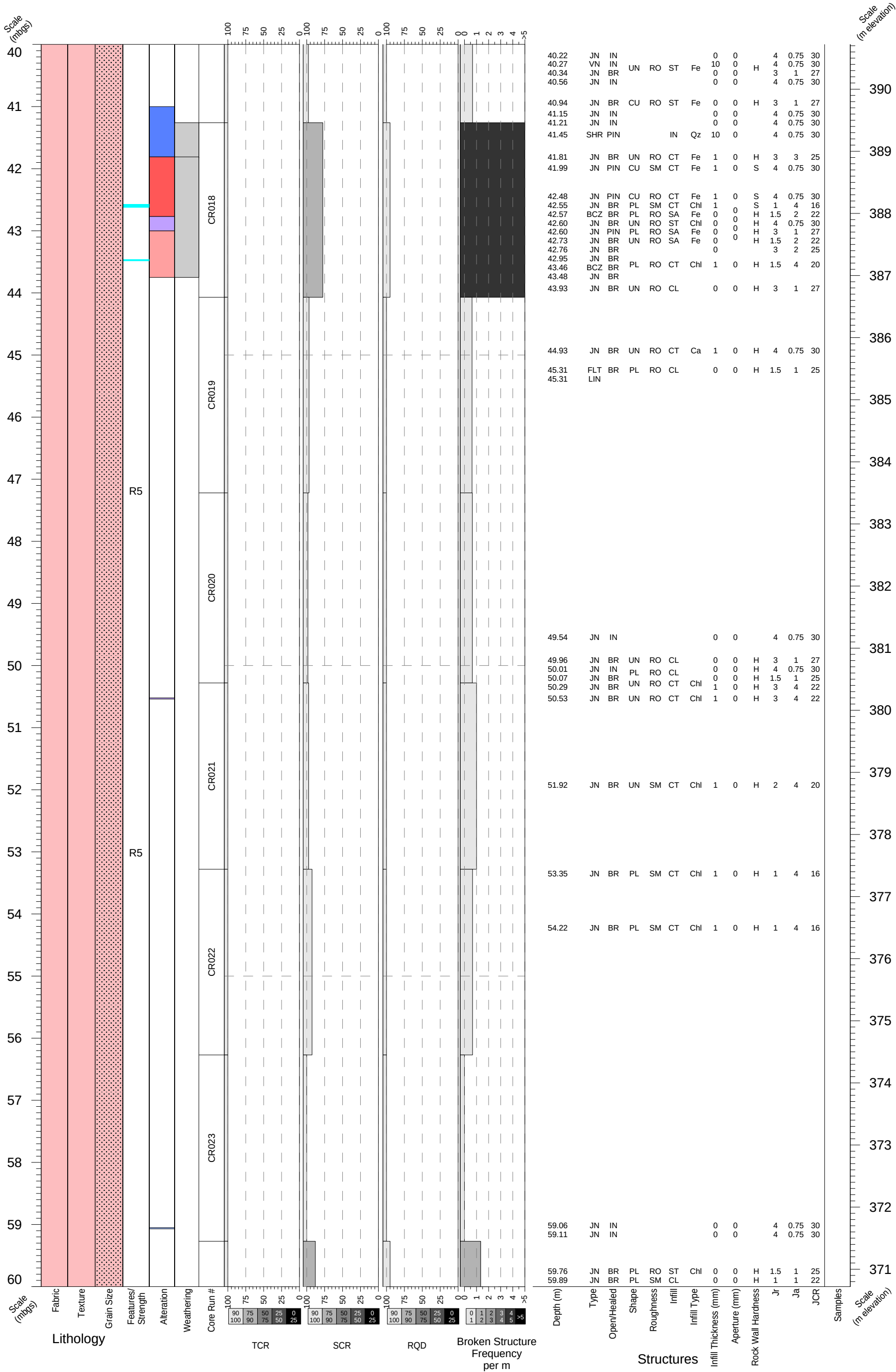
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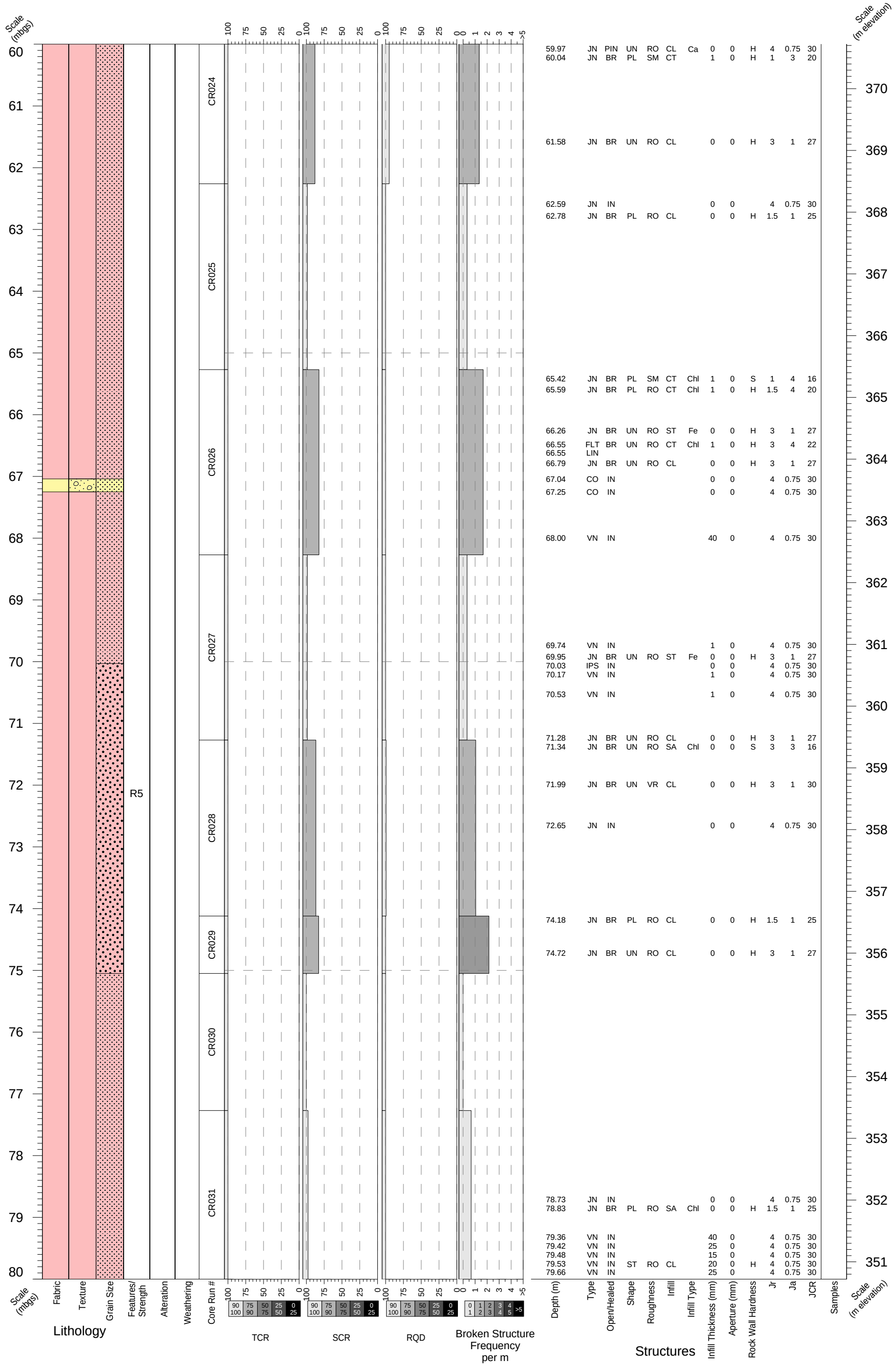
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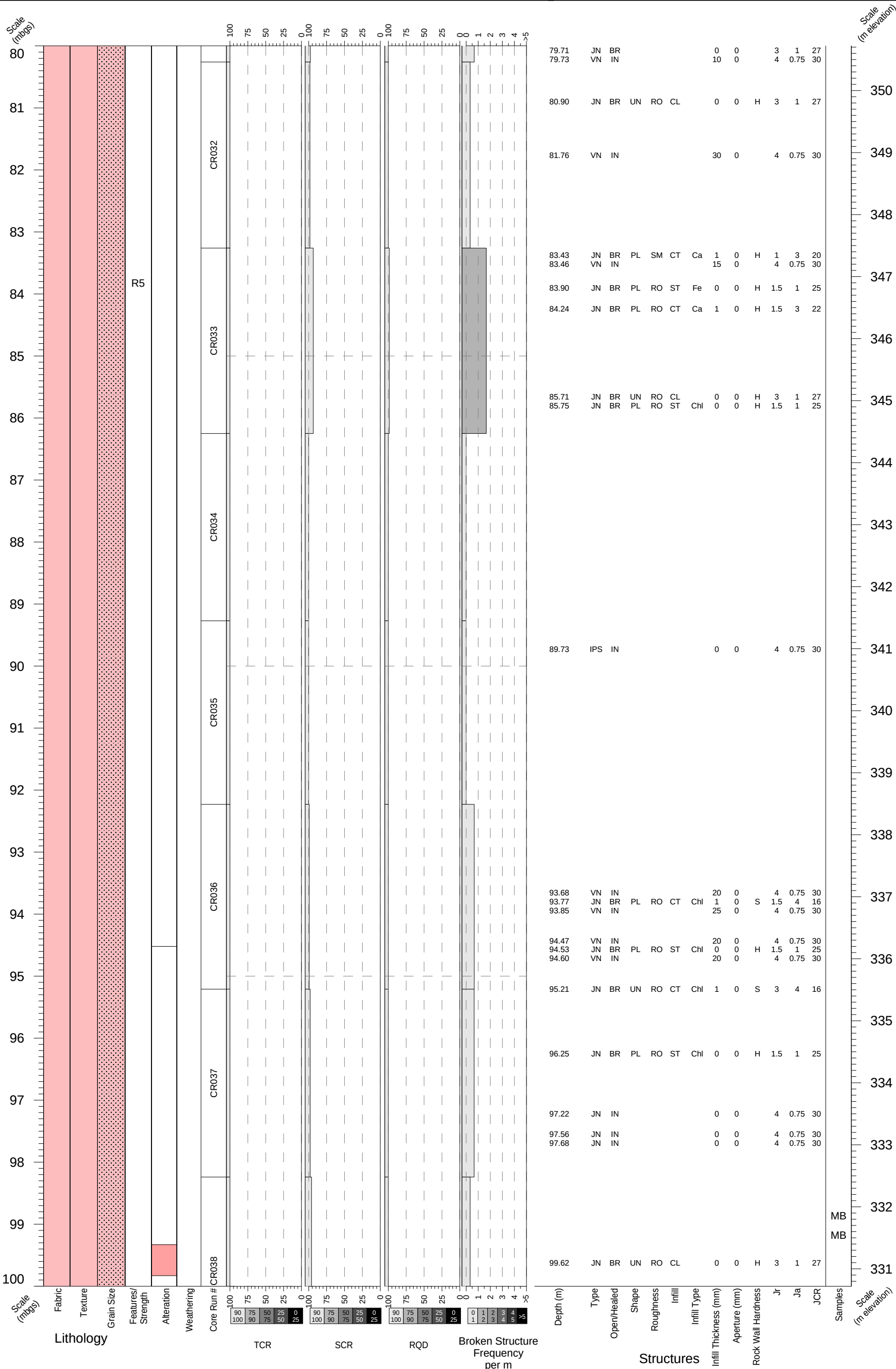


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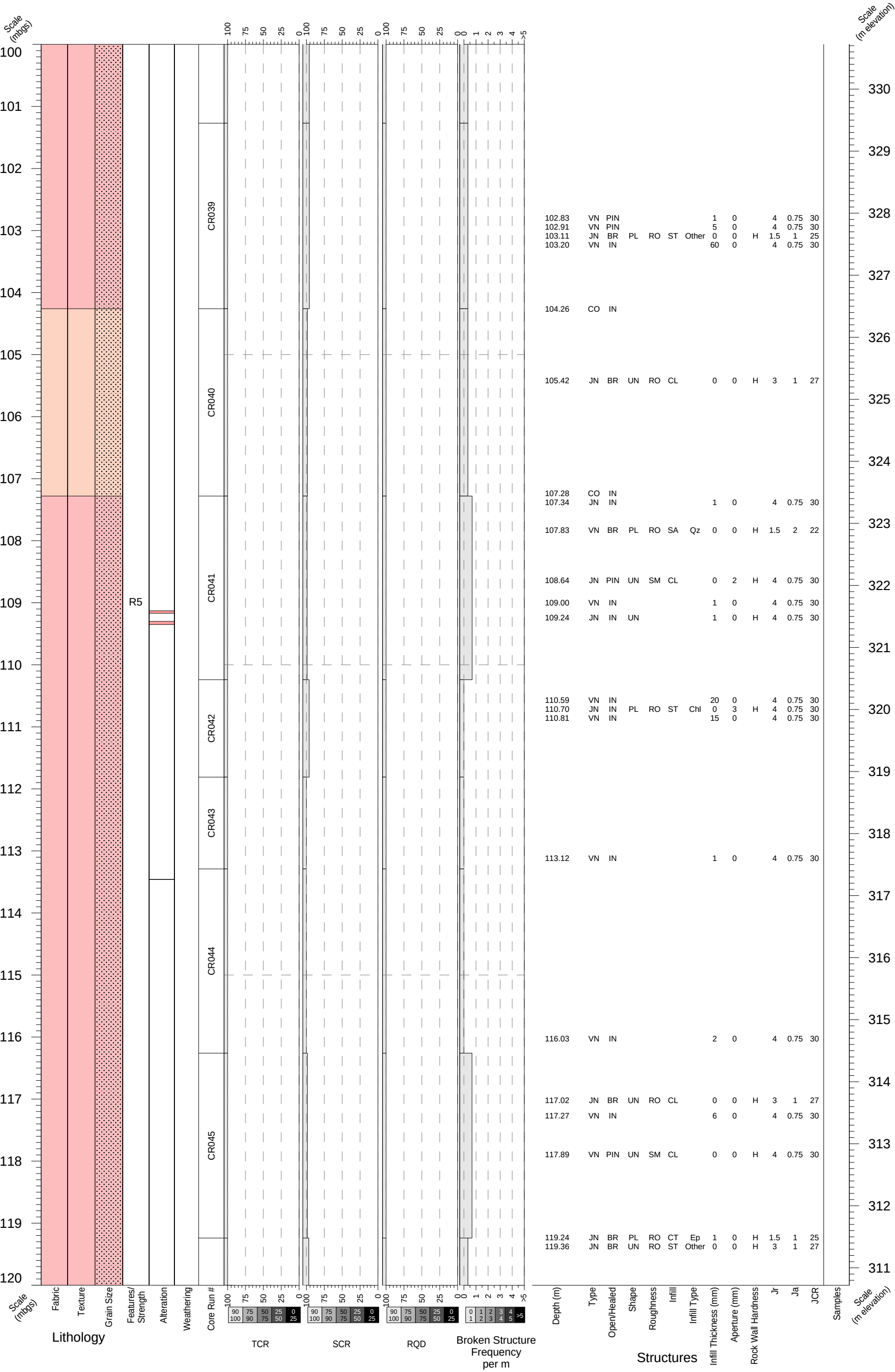
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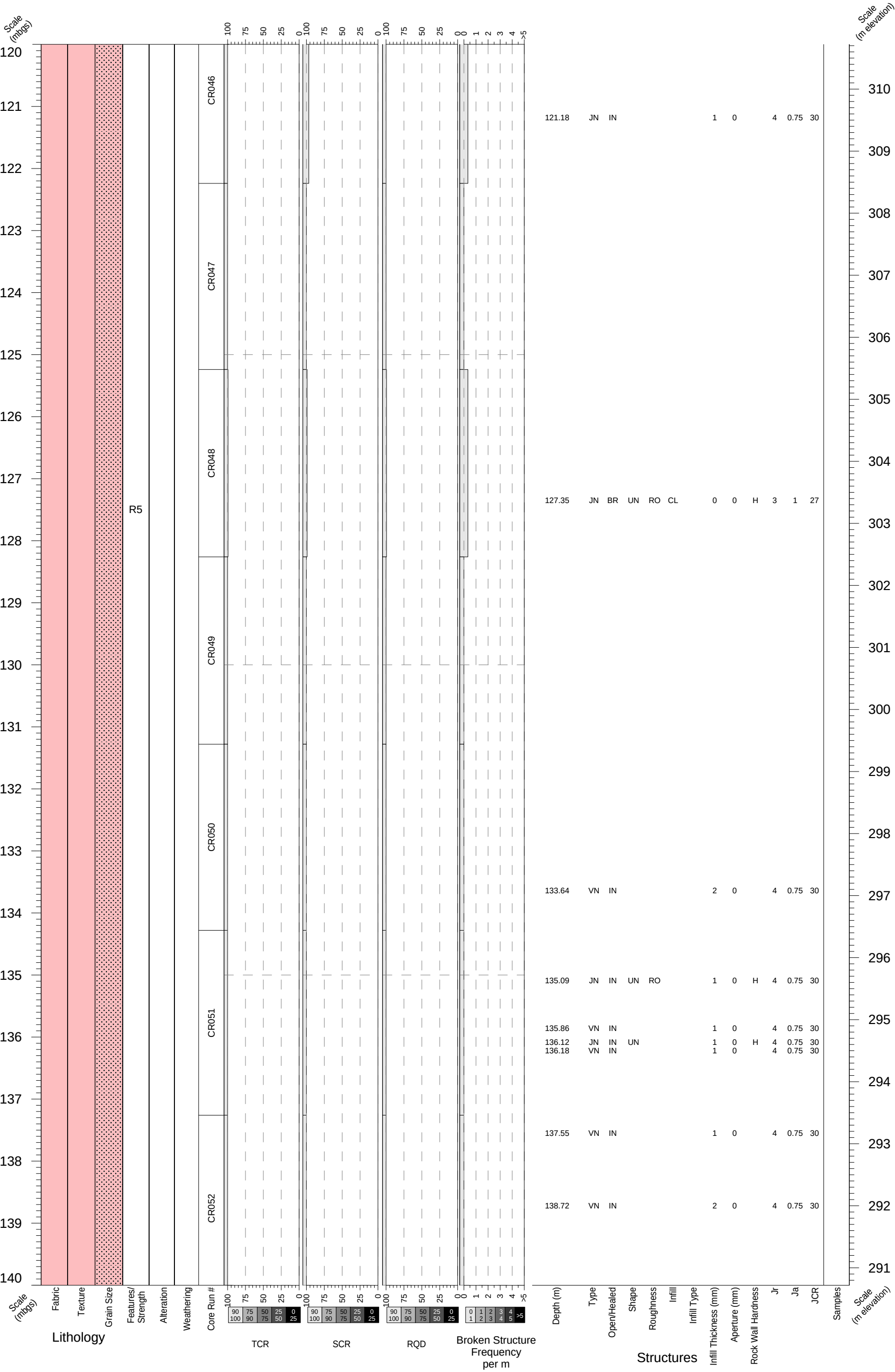
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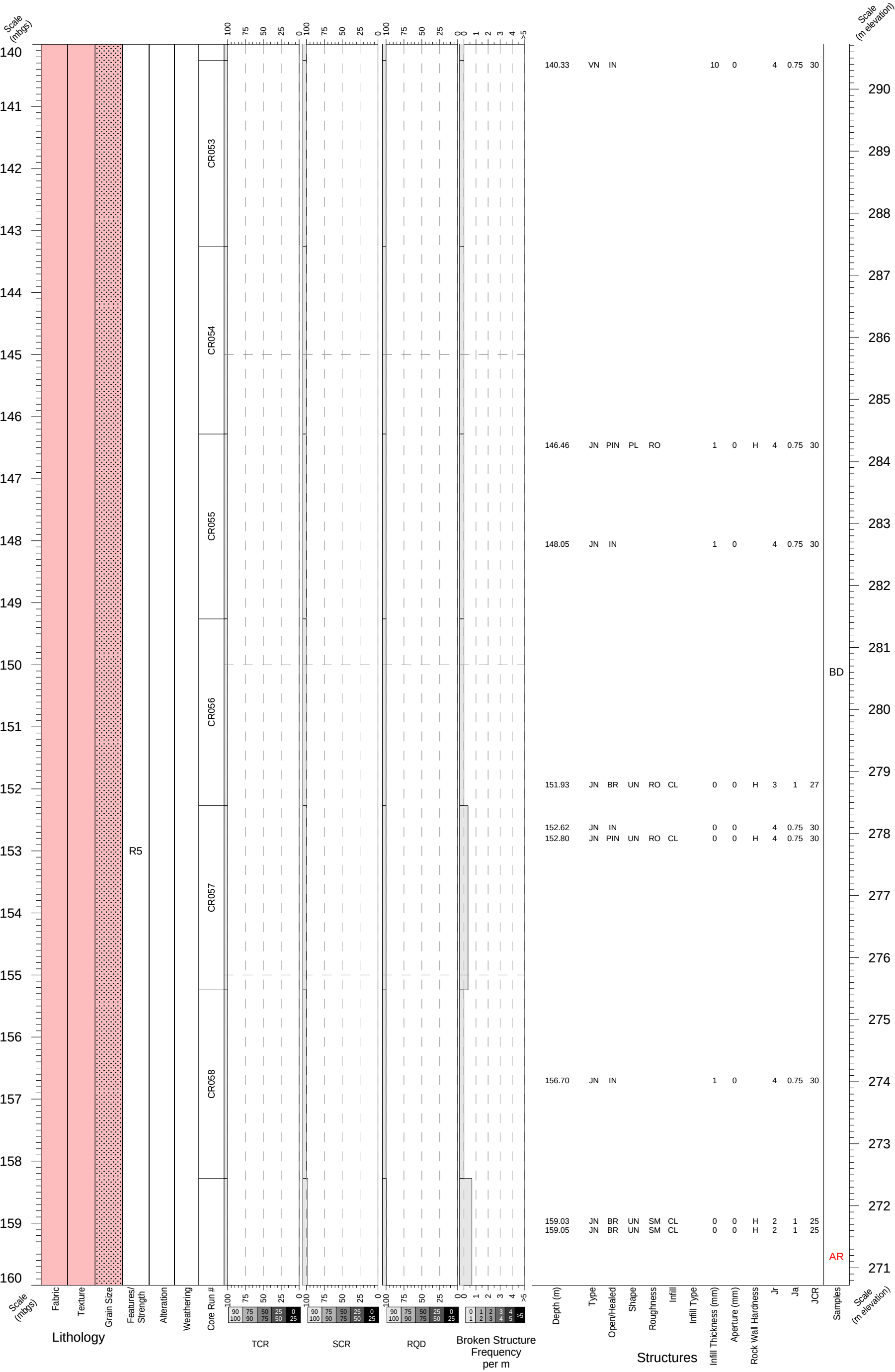
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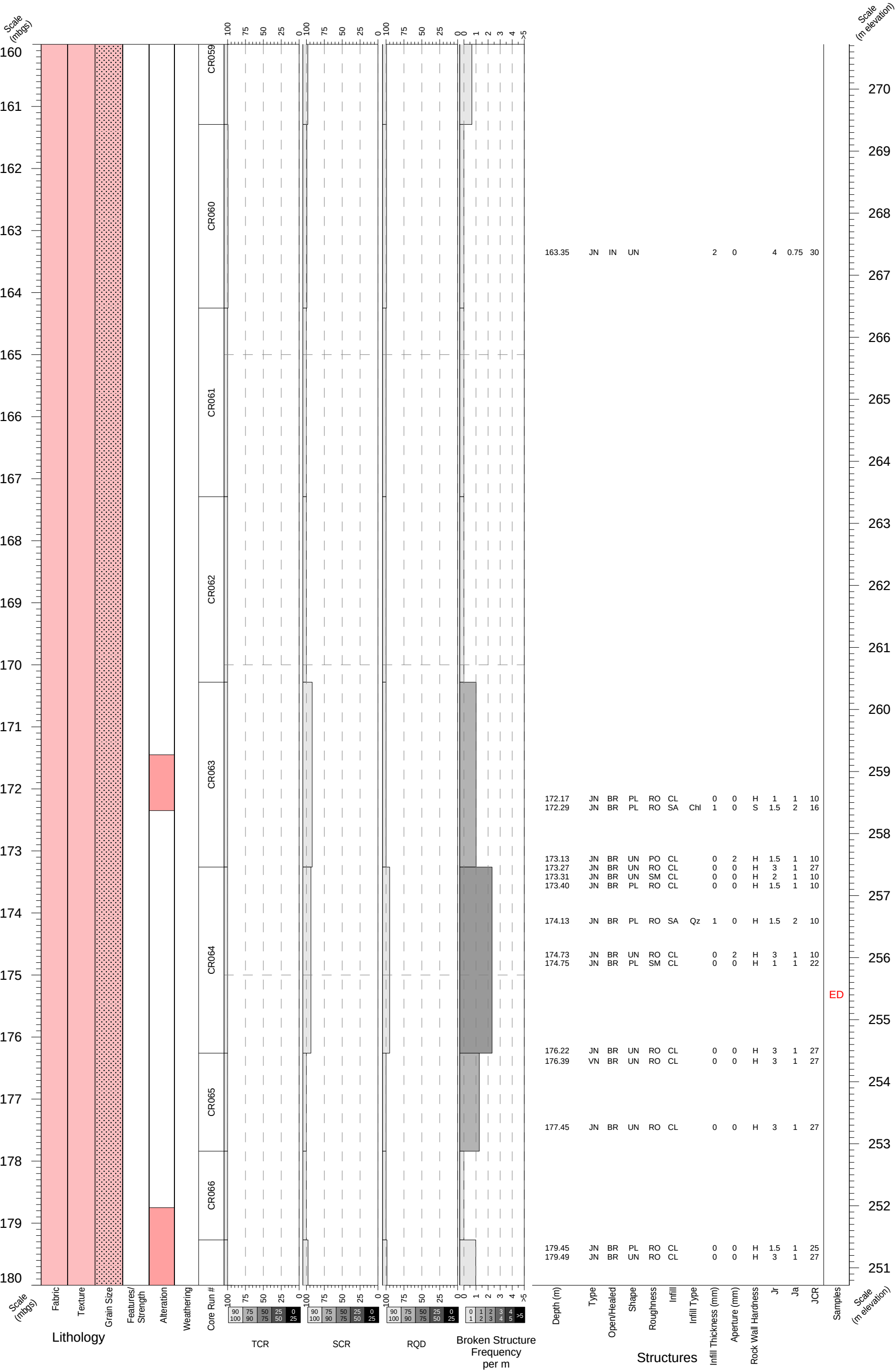
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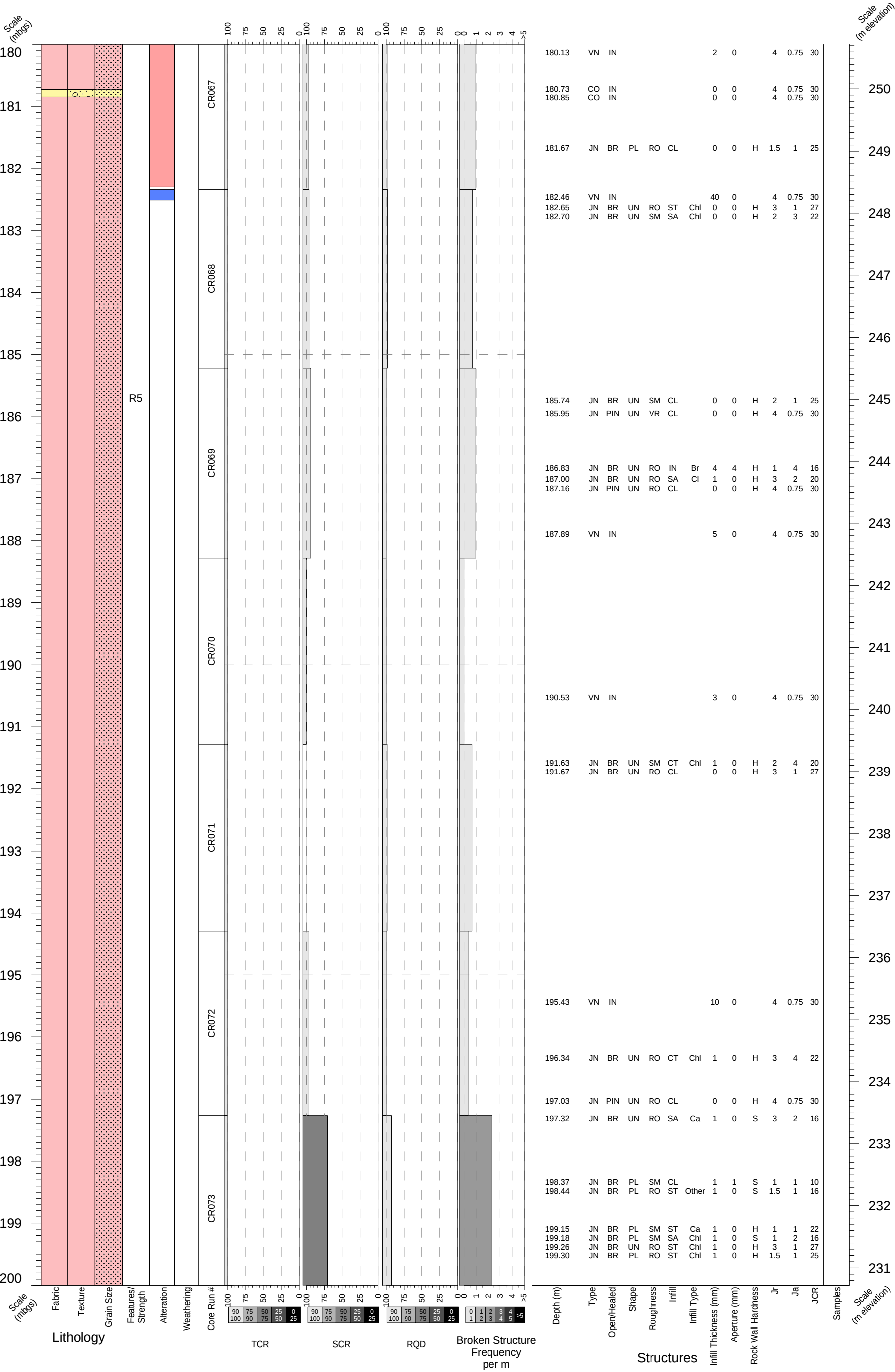
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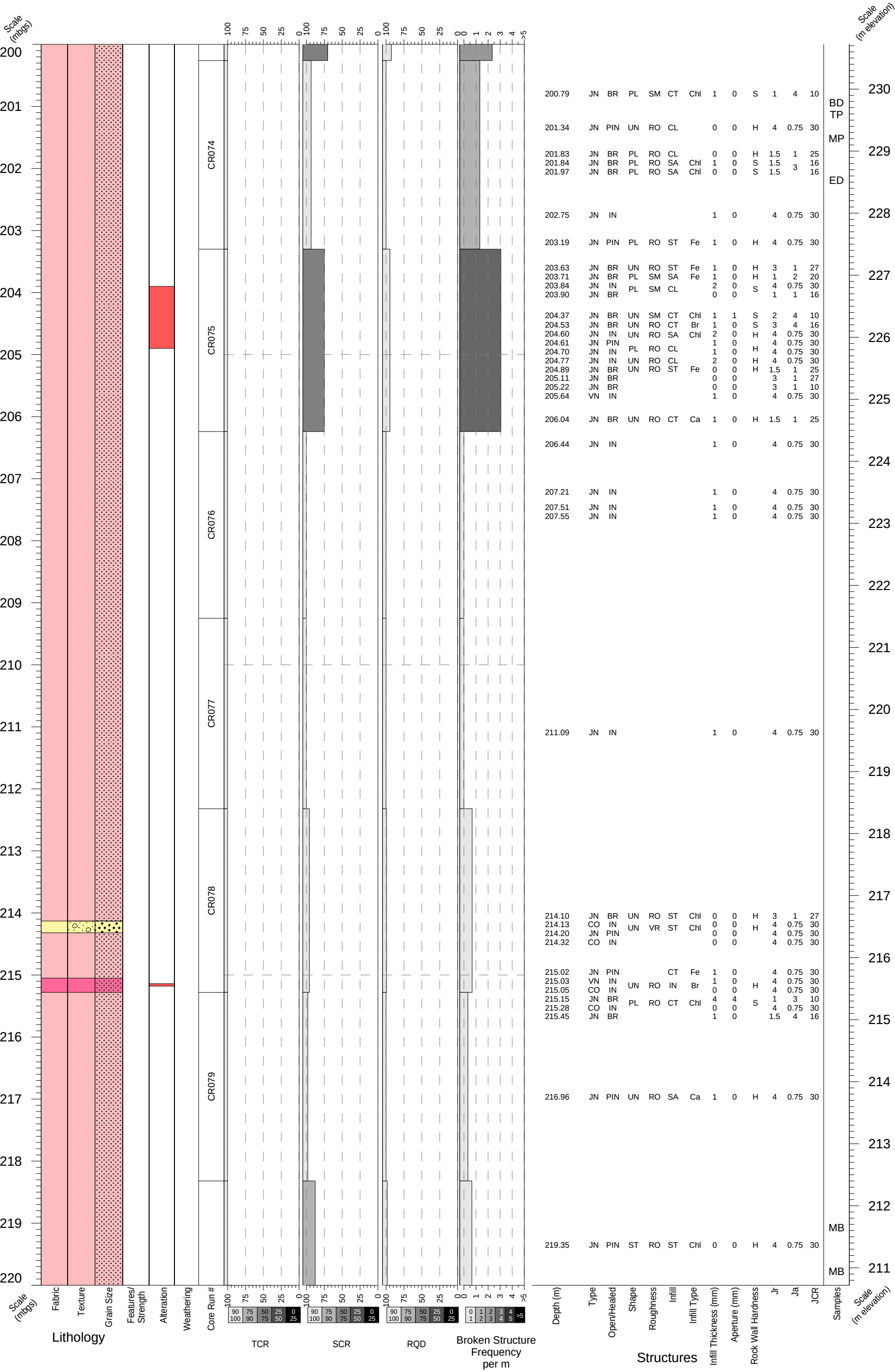
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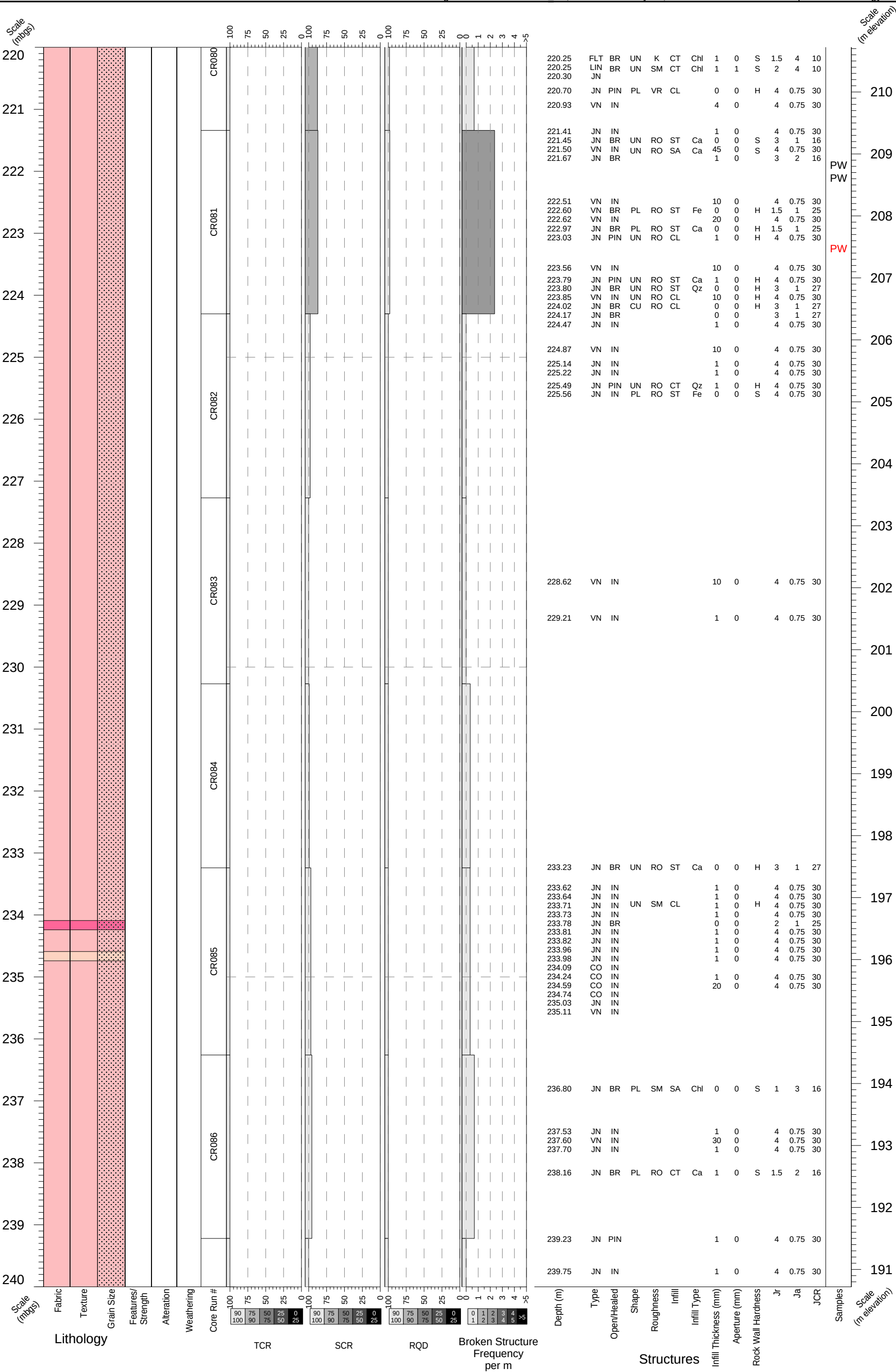
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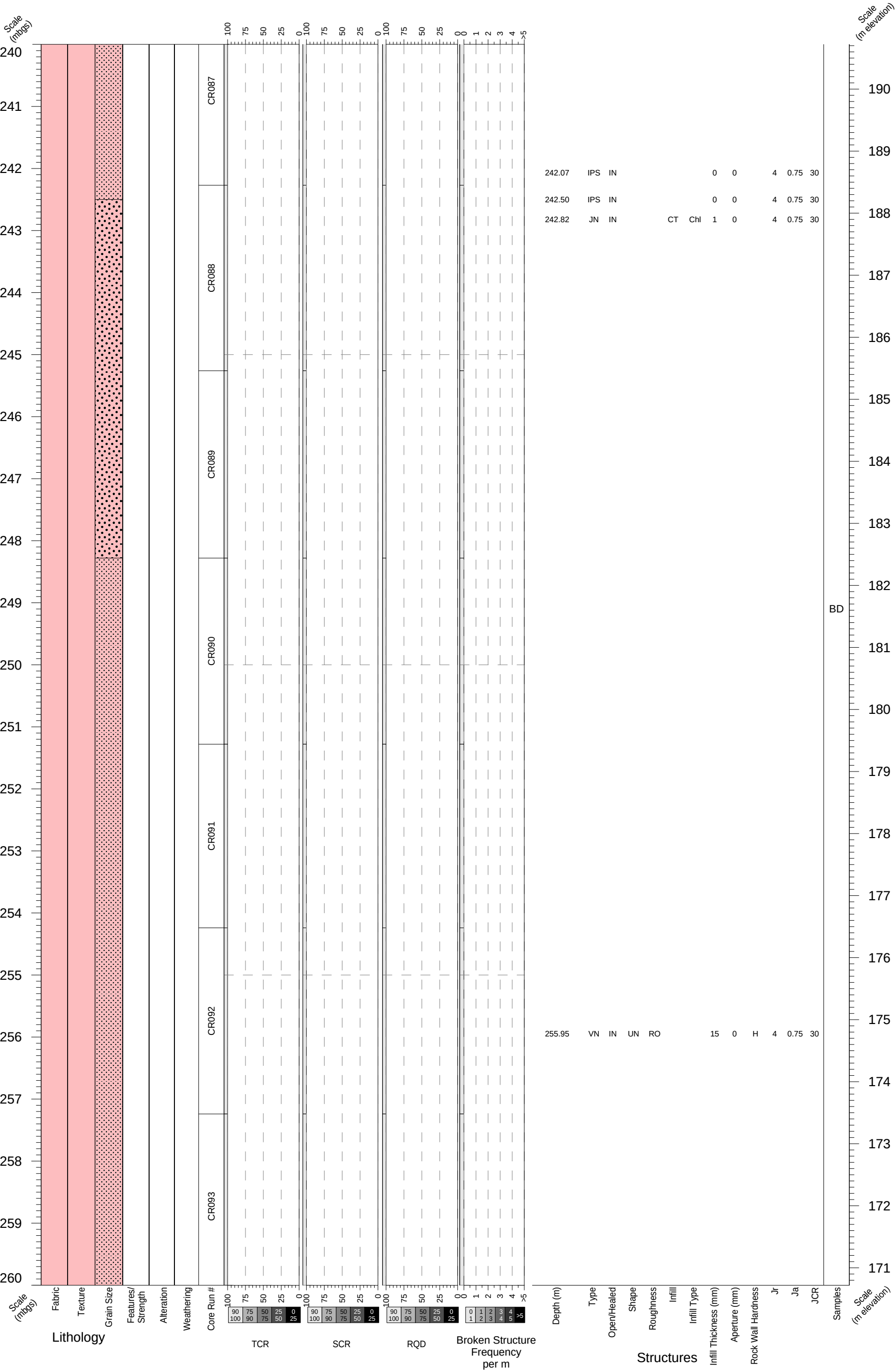
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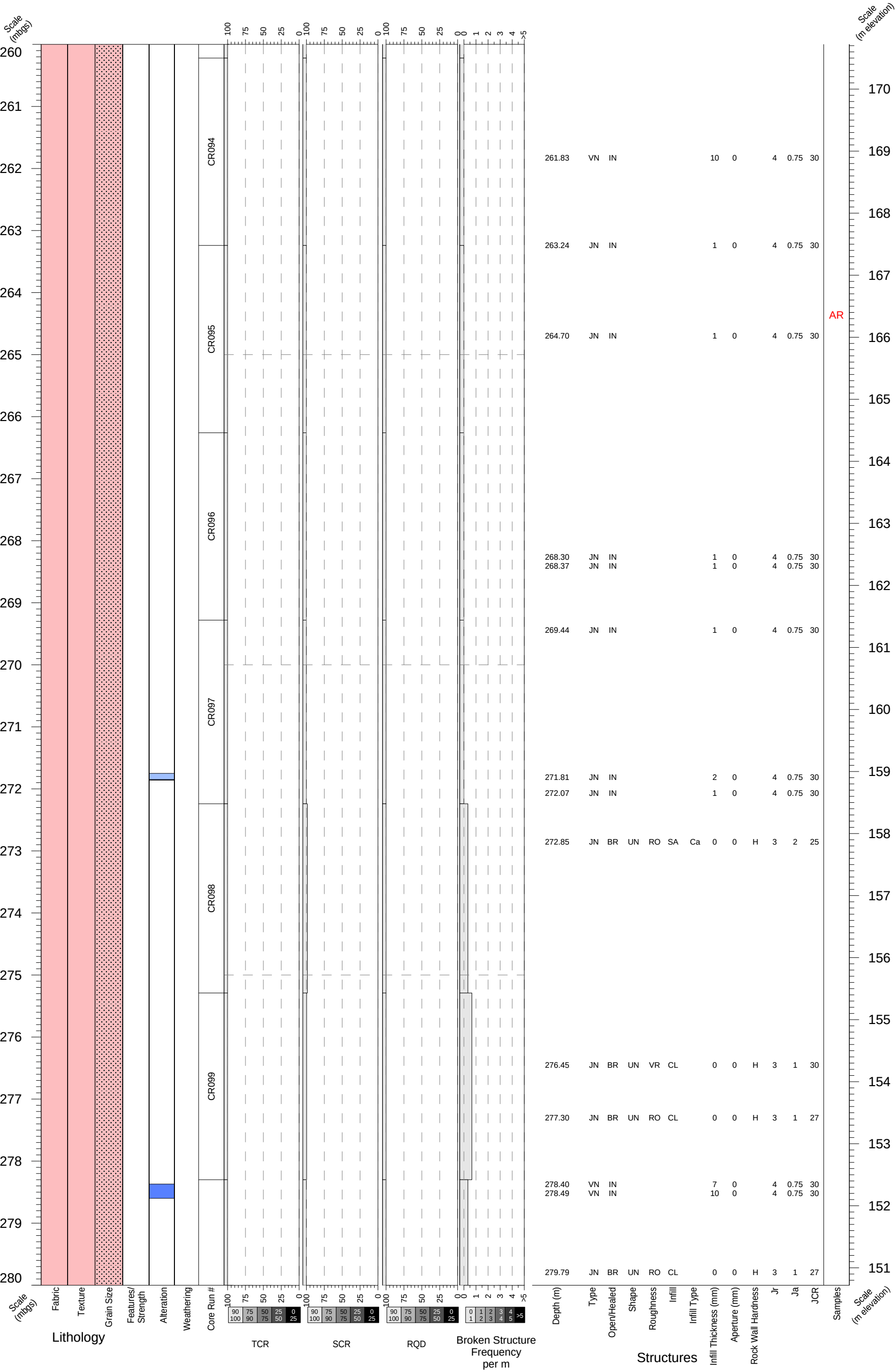
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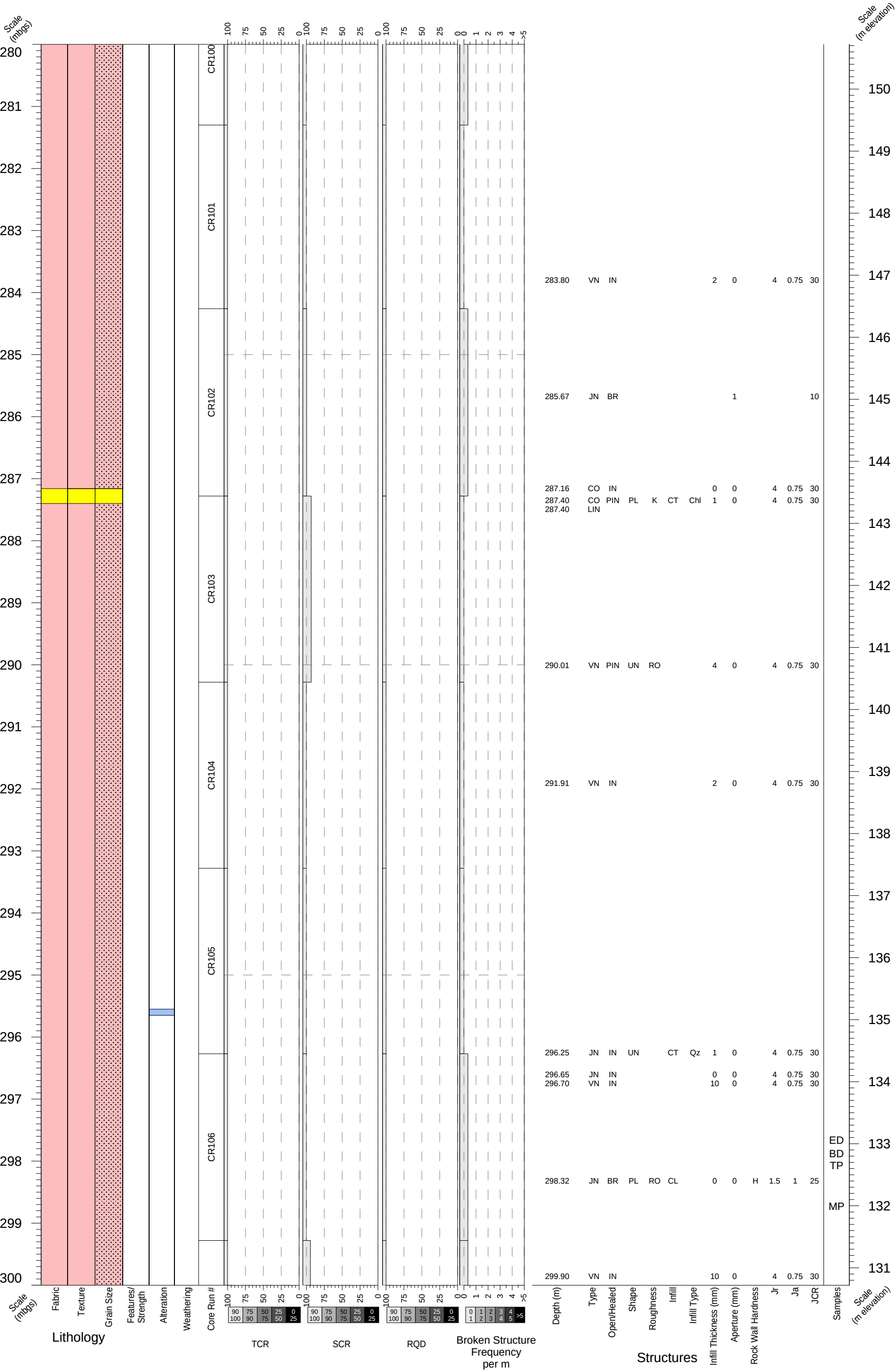
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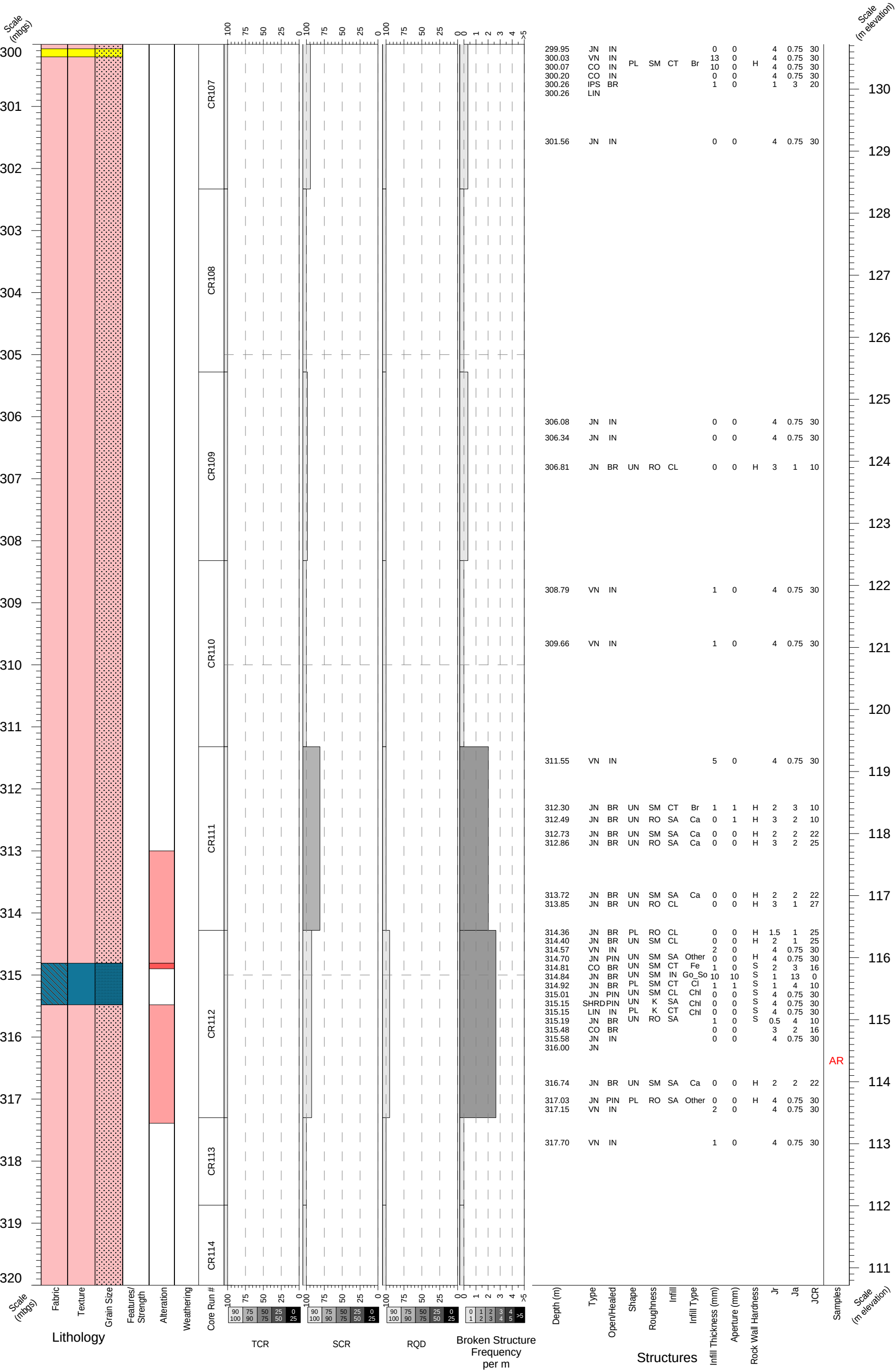
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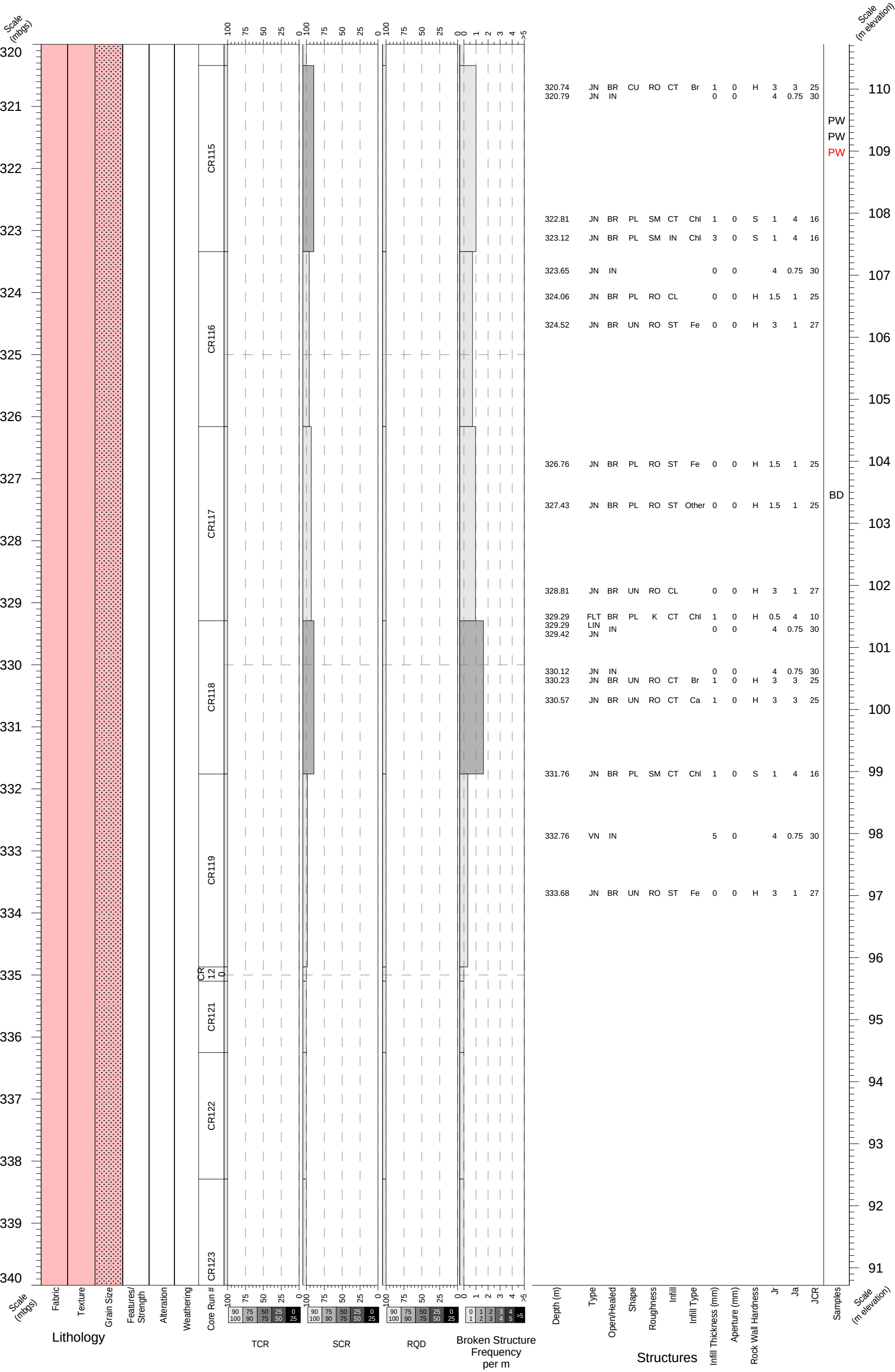
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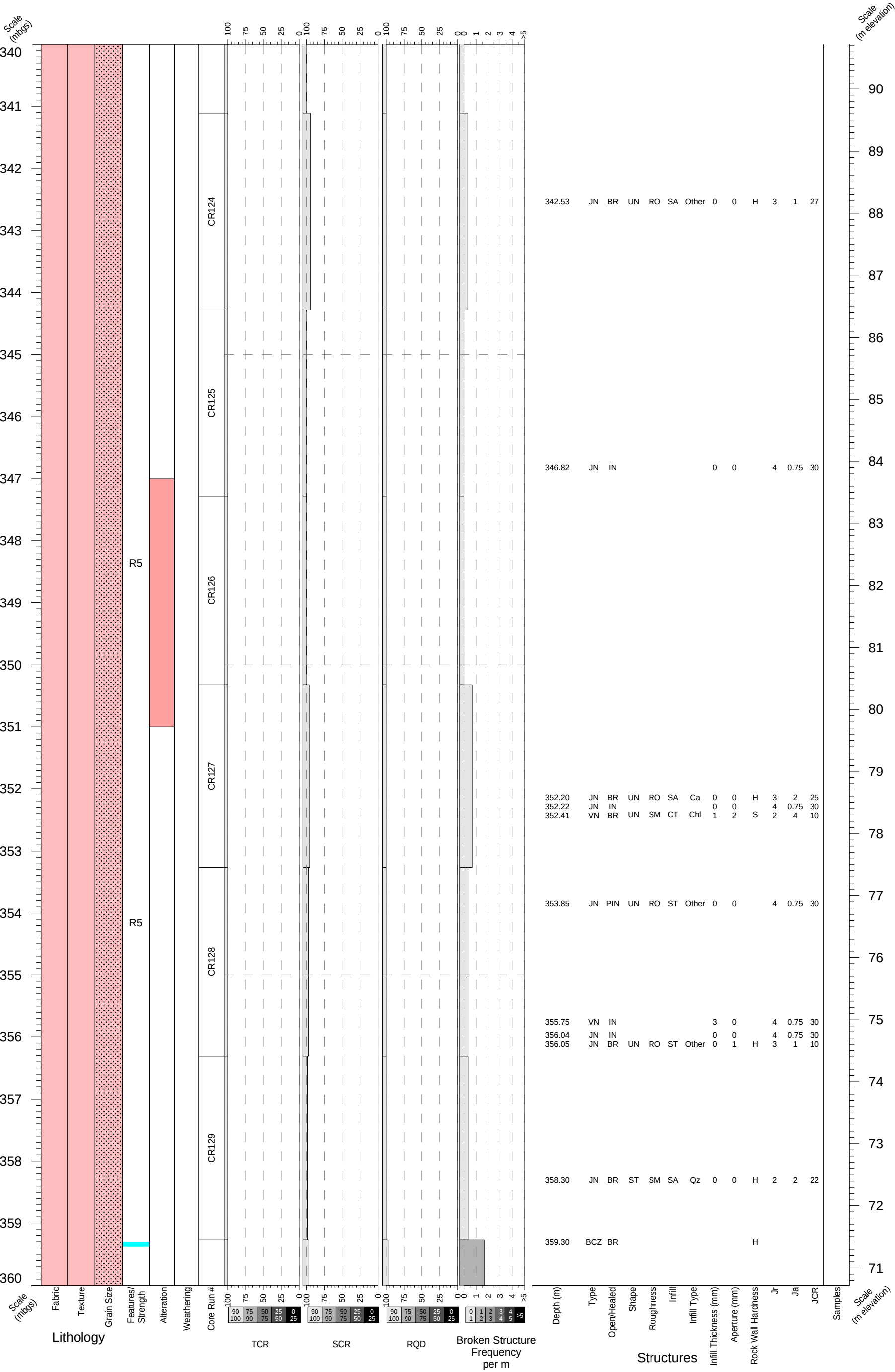
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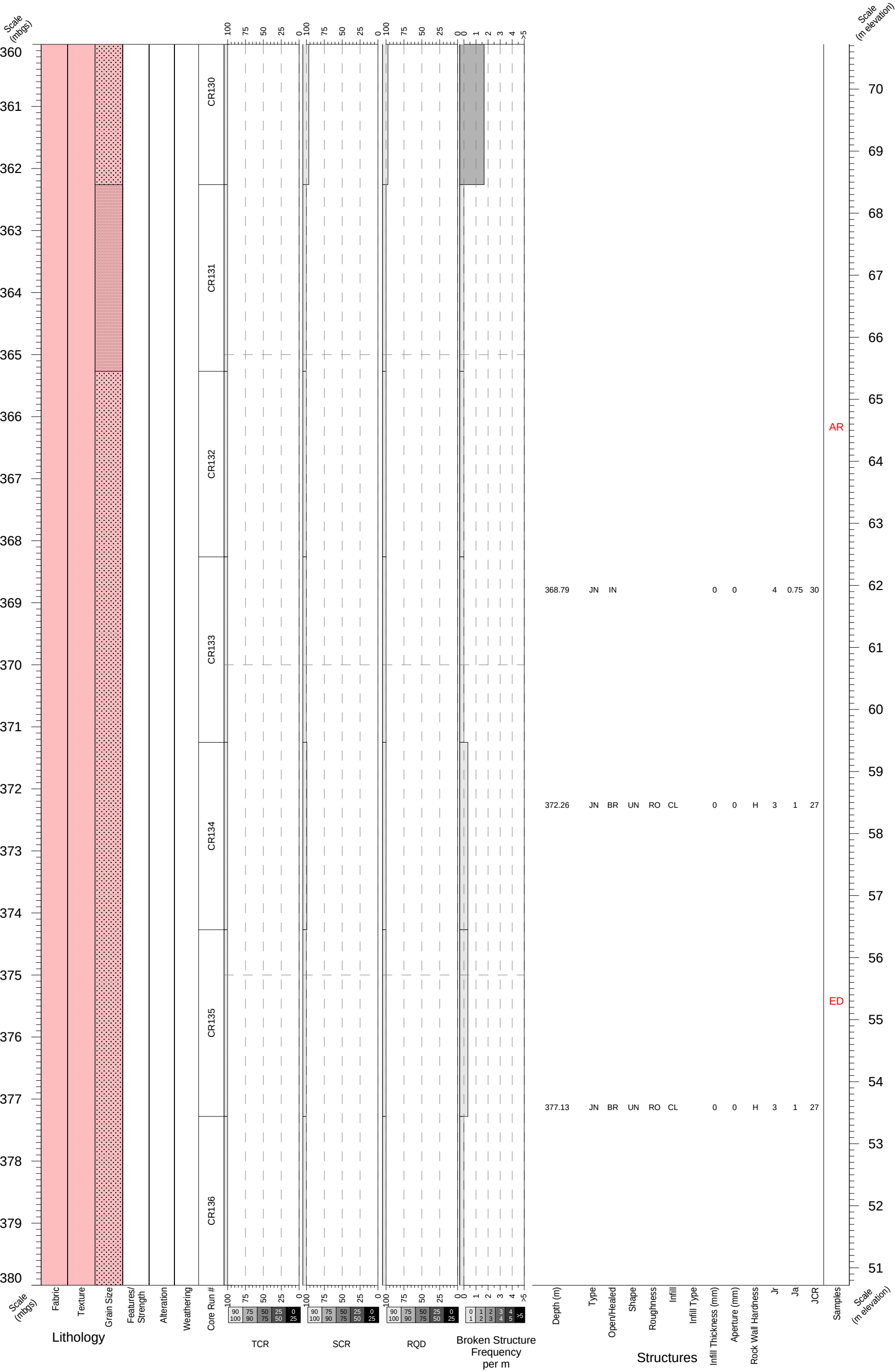
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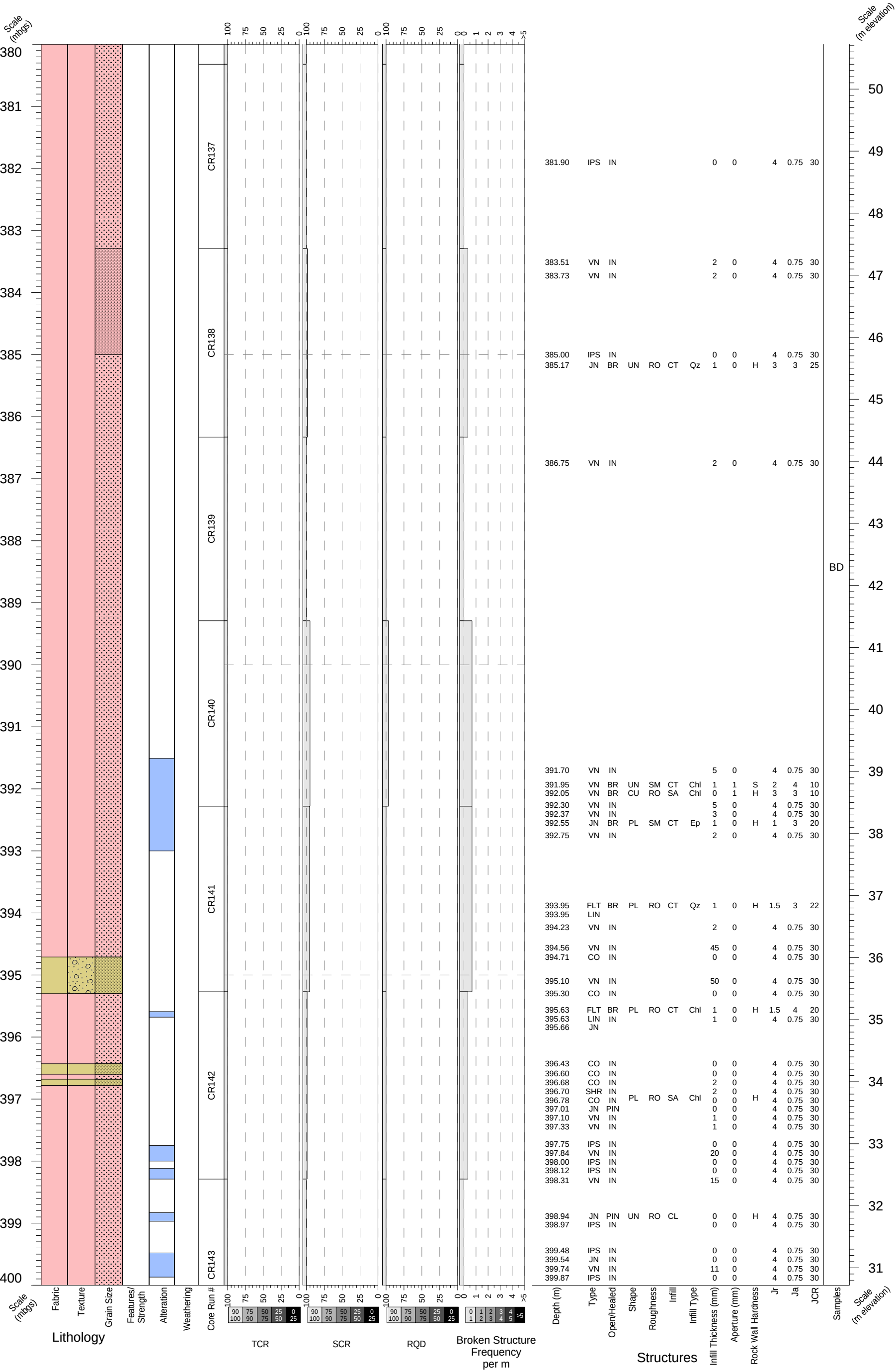
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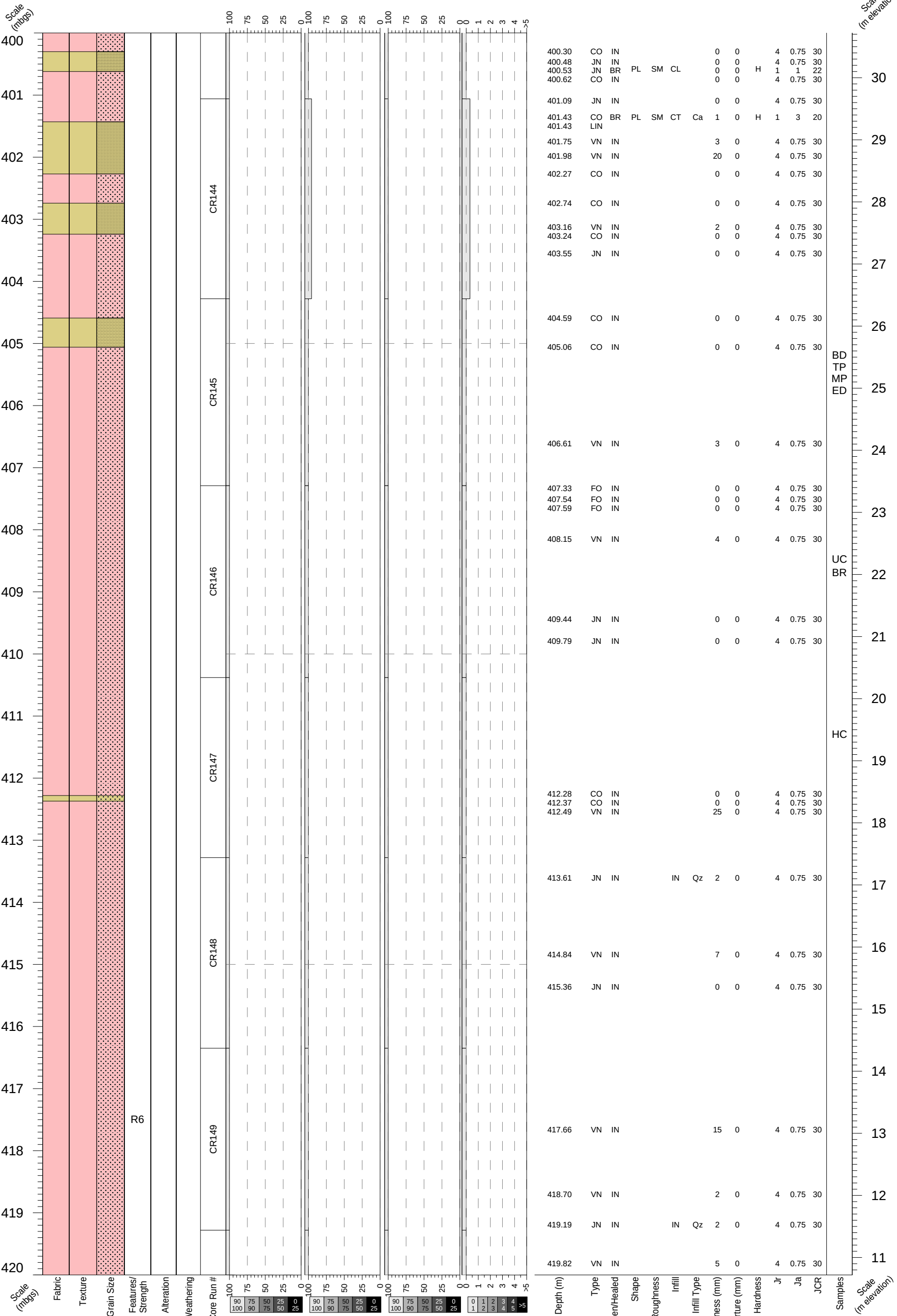
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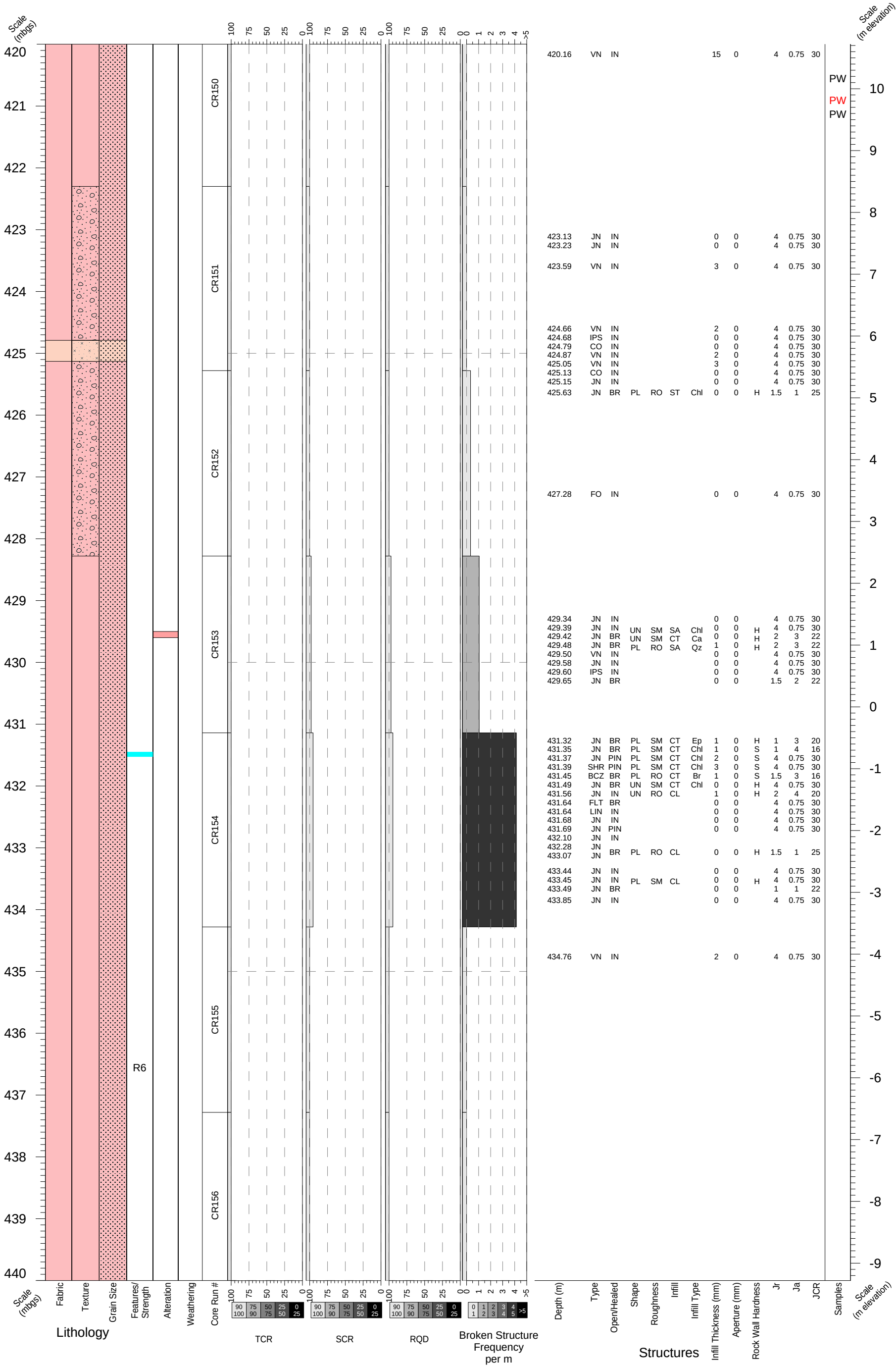
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PROJECT NO.

1671632 (1300)

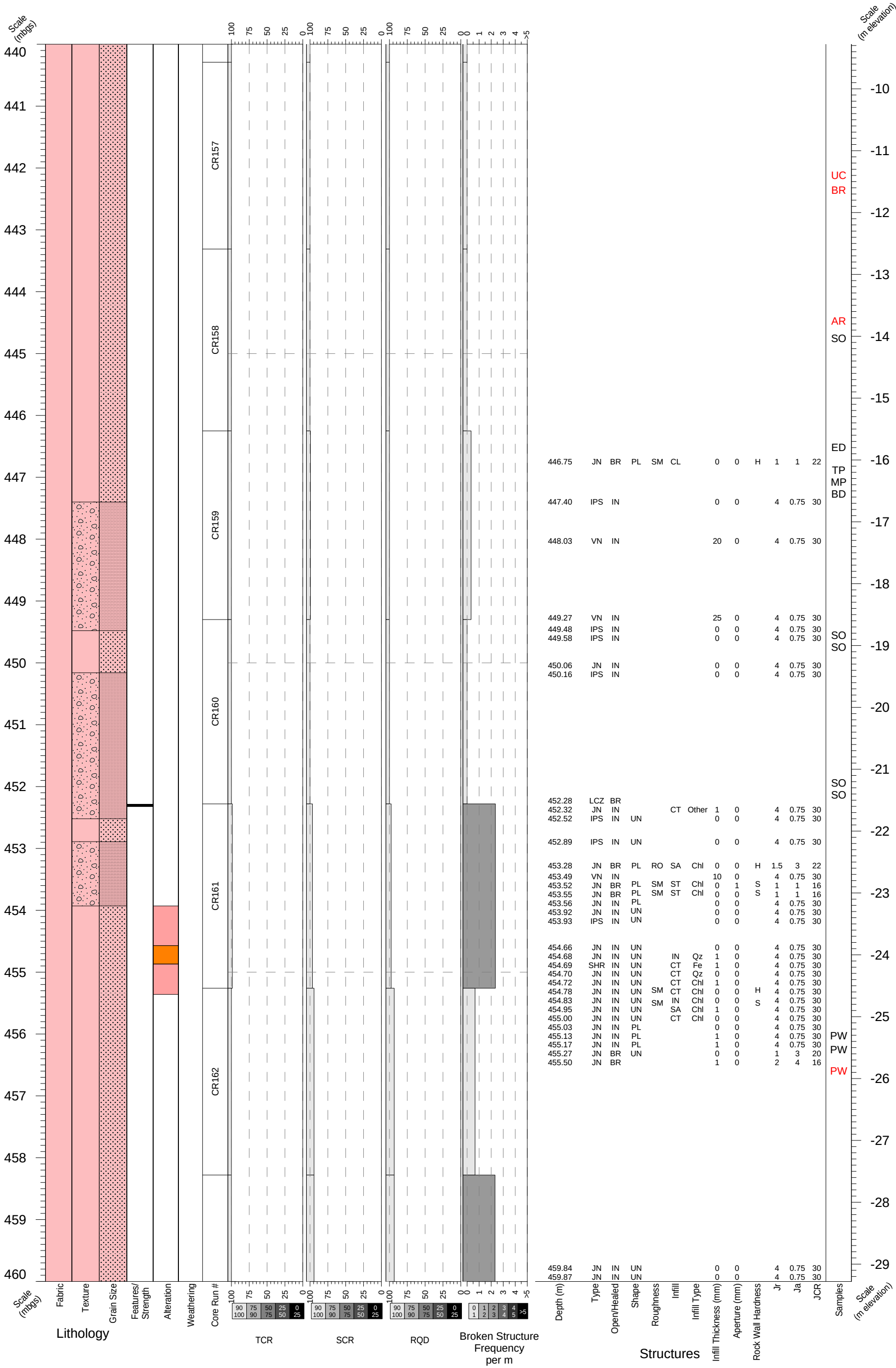
IG_BH01

Northing (m) : 5486016.45
Easting (m) : 555943.35
Elevation (m) : 430.72

Collar Azimuth (°) : 259.0
Collar Dip (°) : -88.9
Hole Depth (m) : 1001.18

Loggers : AKV, CM, ET, KF
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : November 6, 2017 to January 16, 2018

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AKV/CM

PROJECT NO.

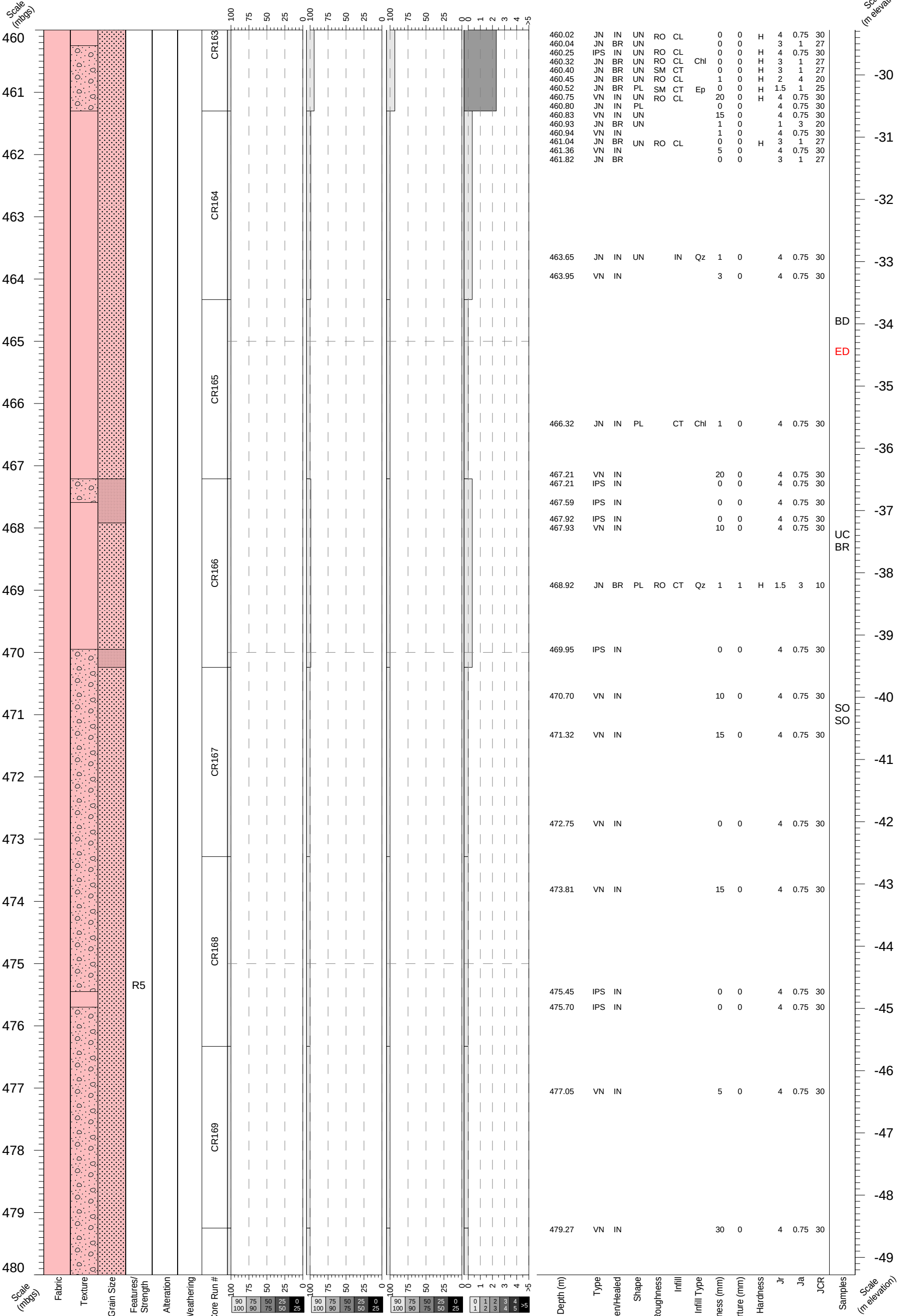
1671632 (1300)

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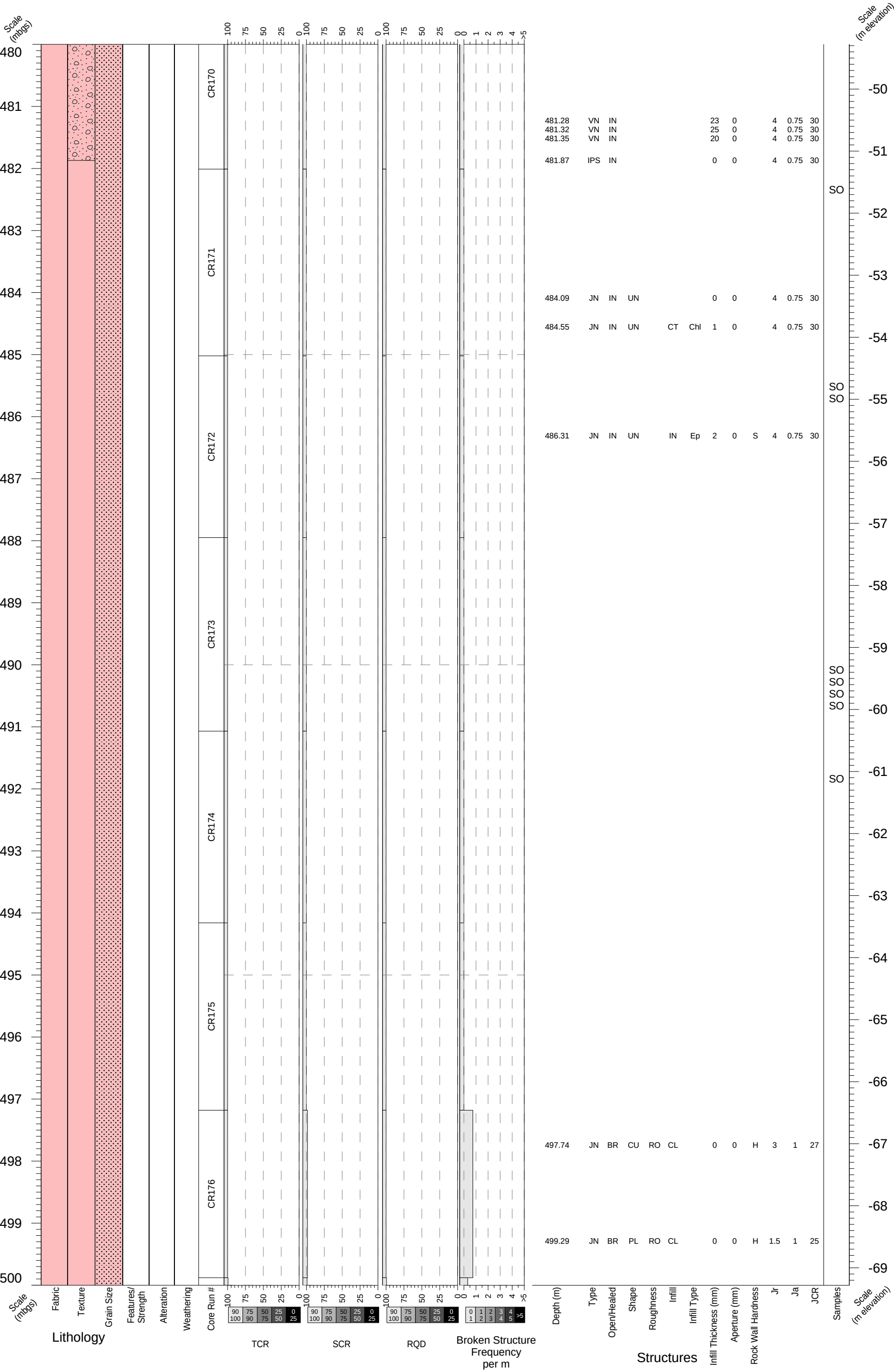
IG_BH01

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1671632 (1300)

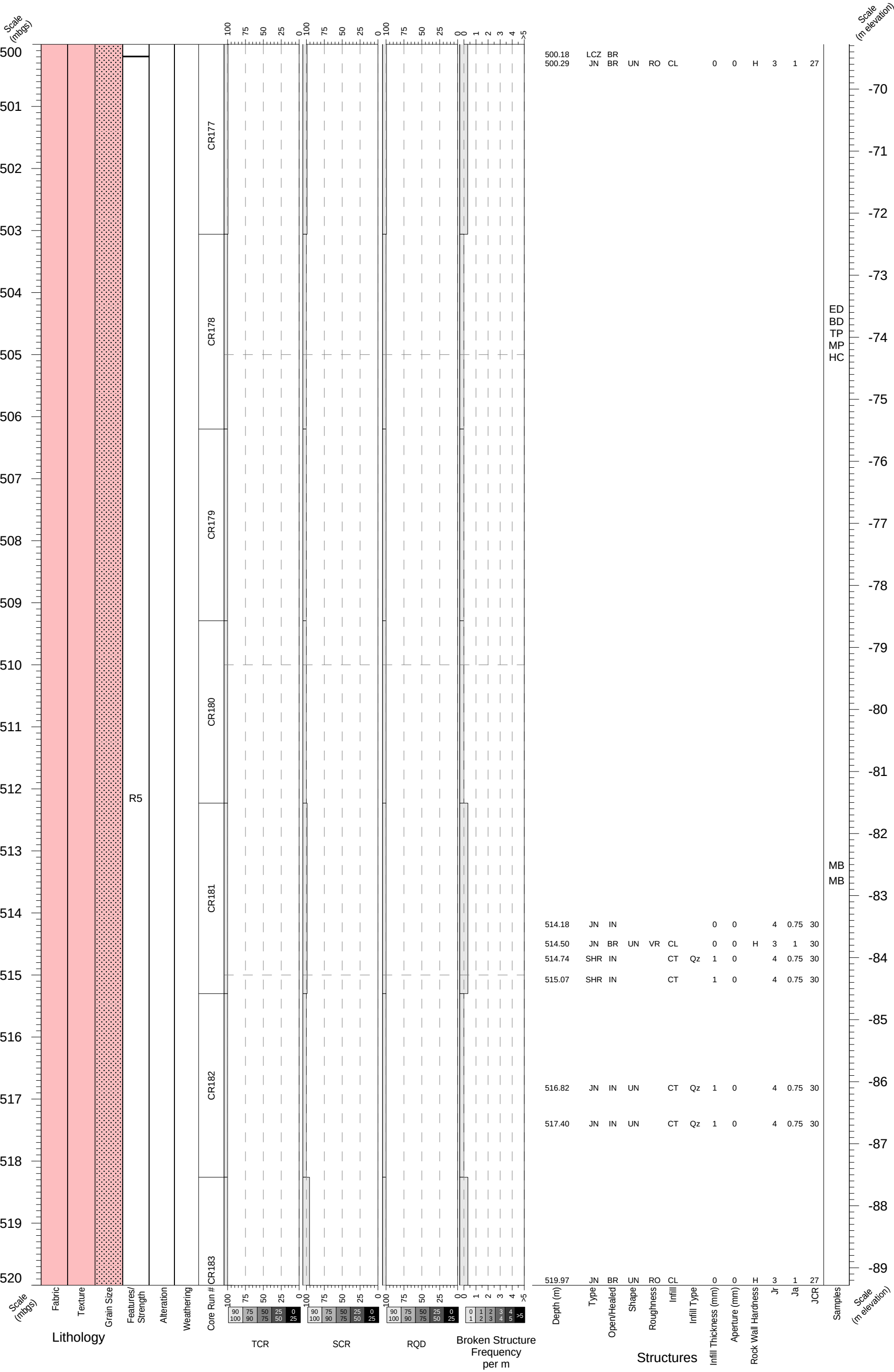
IG_BH01

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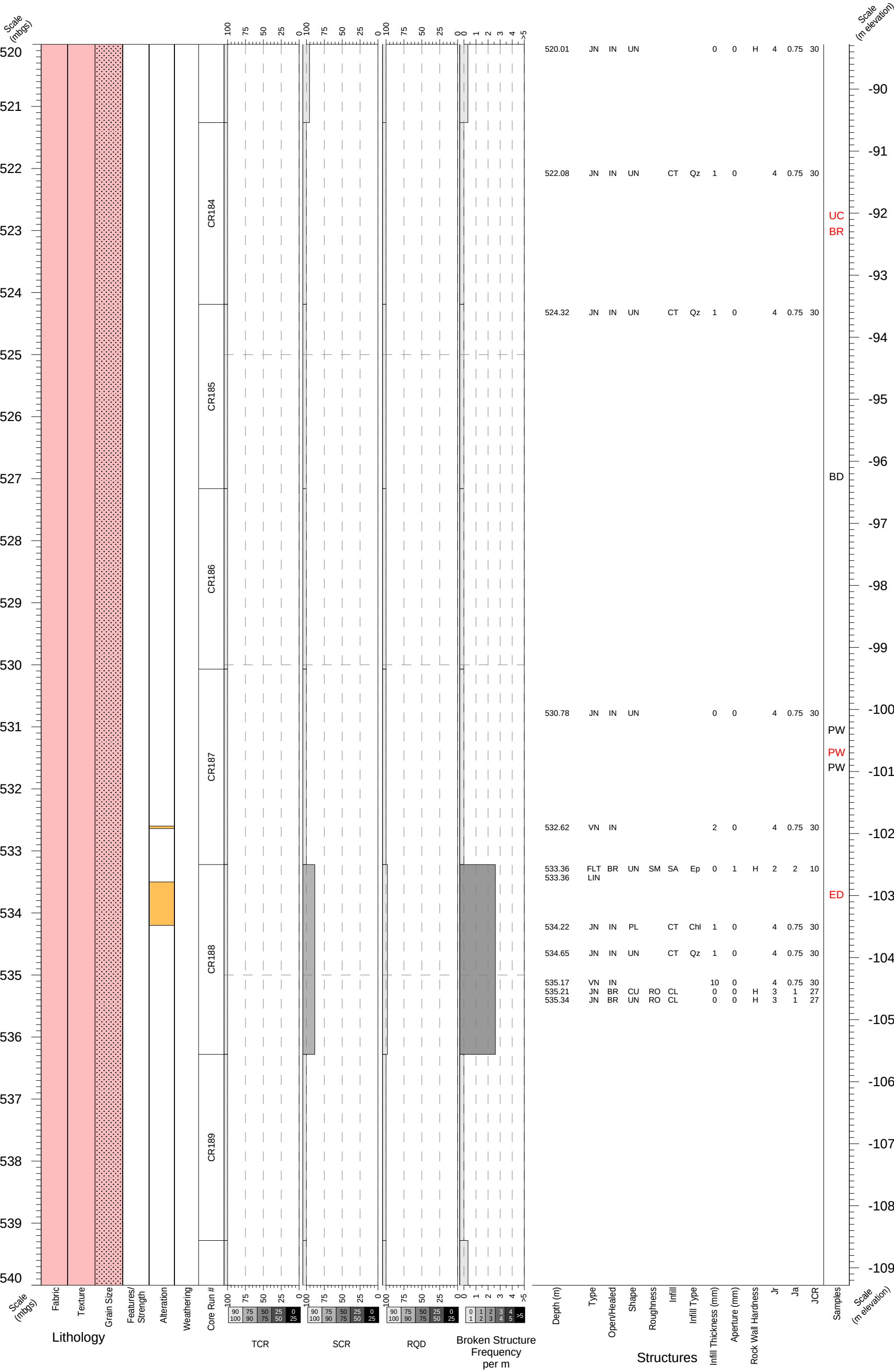
IG_BH01

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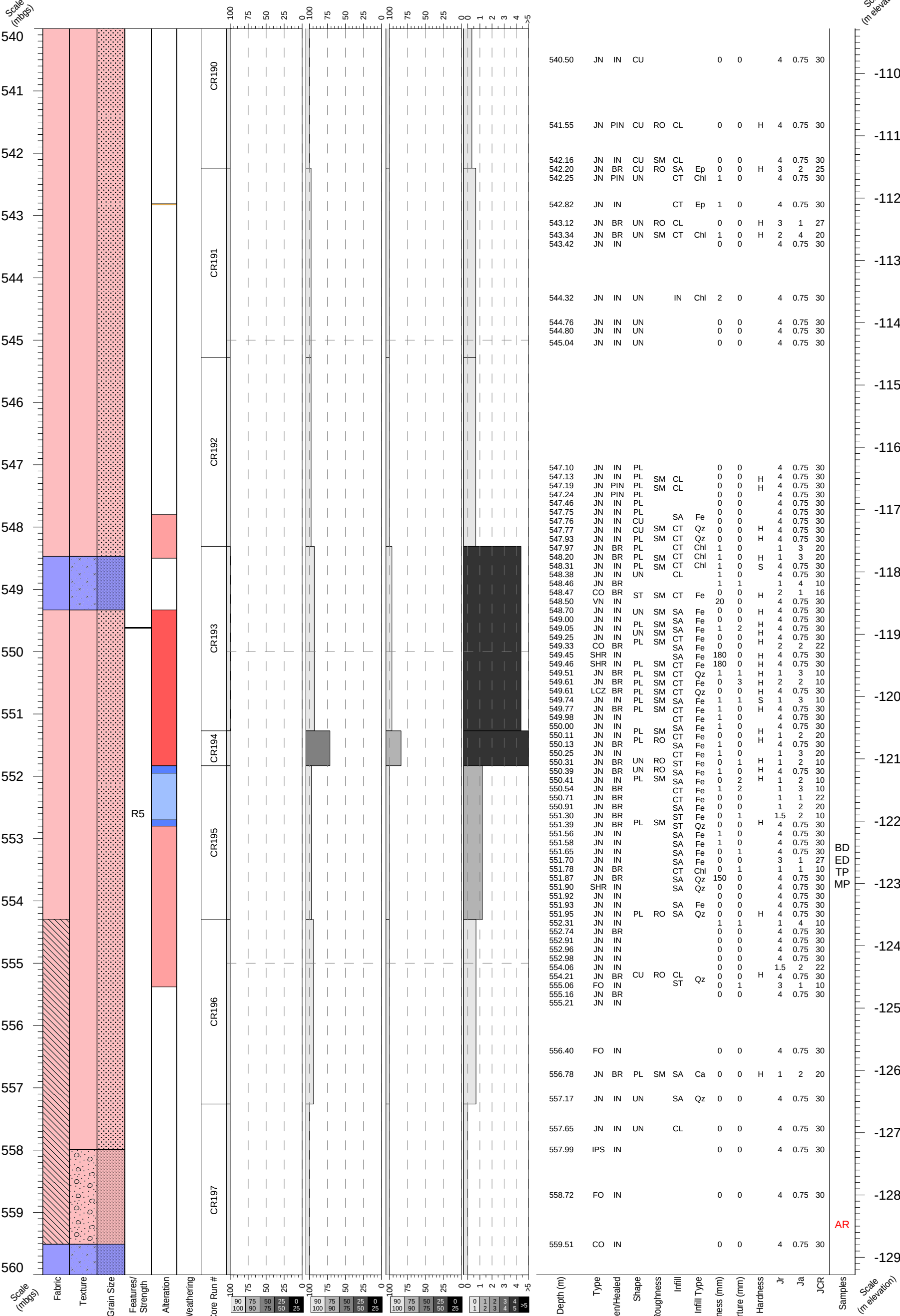
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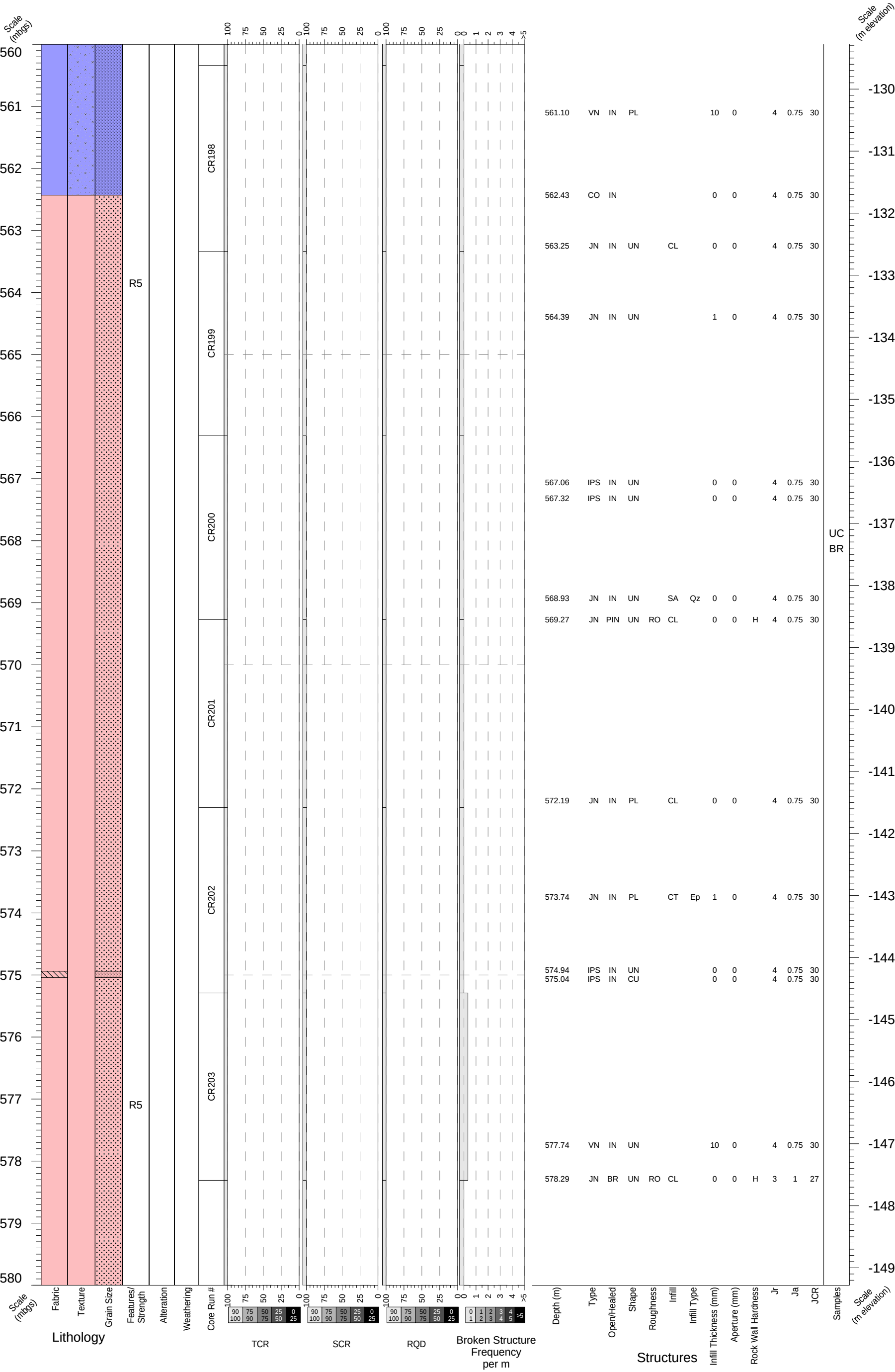
IG_BH01

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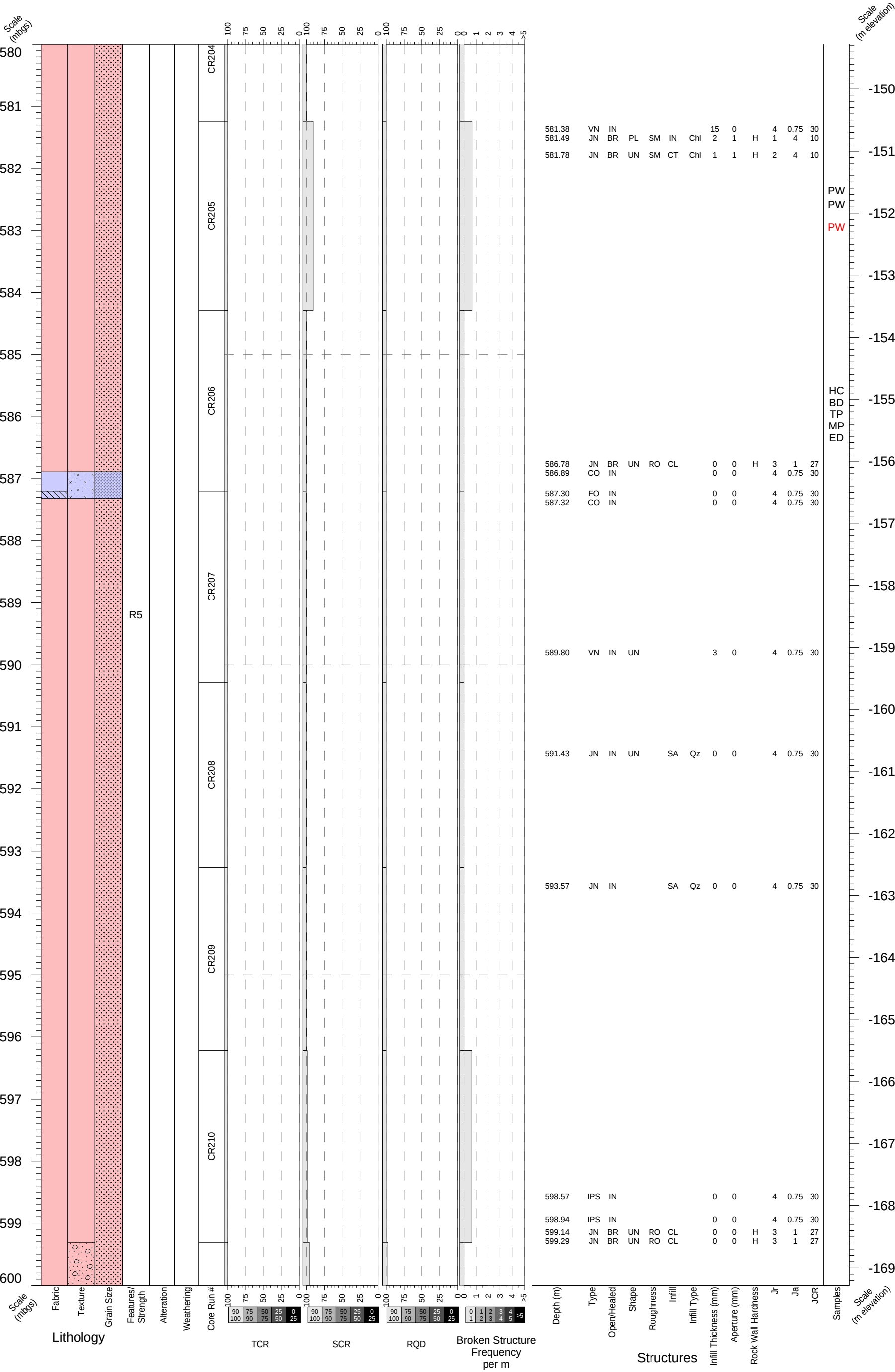
IG_BH01

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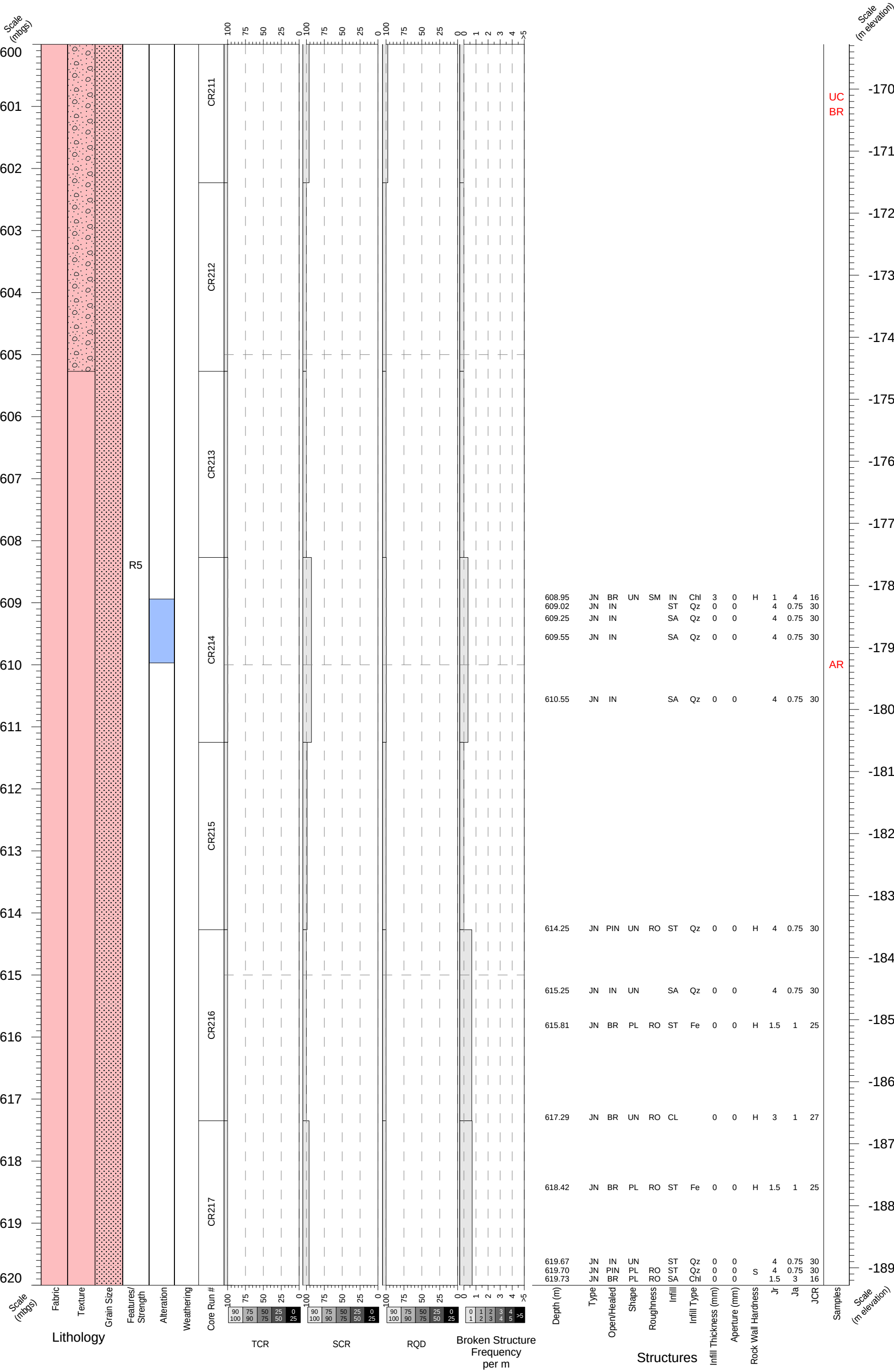
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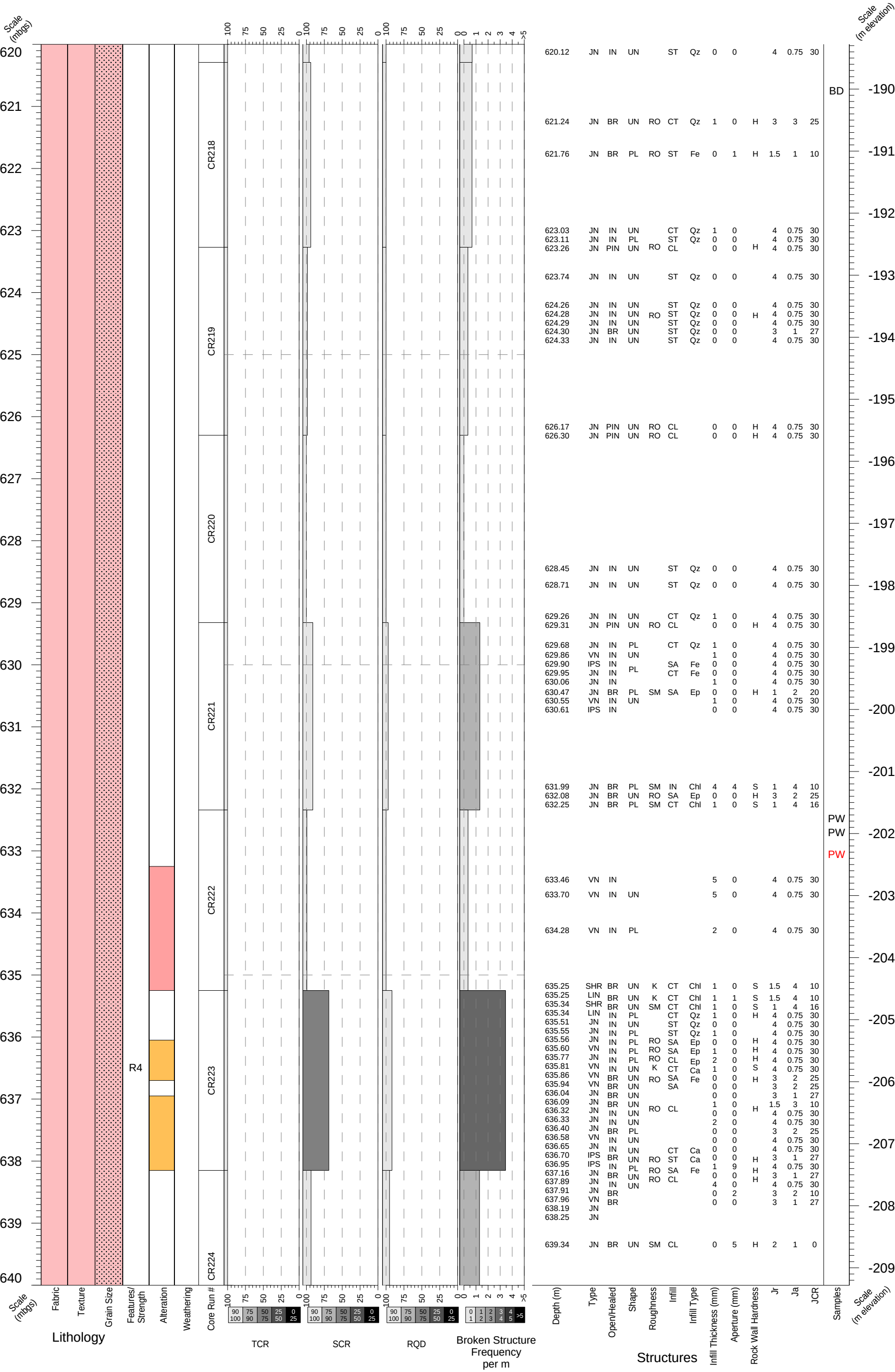
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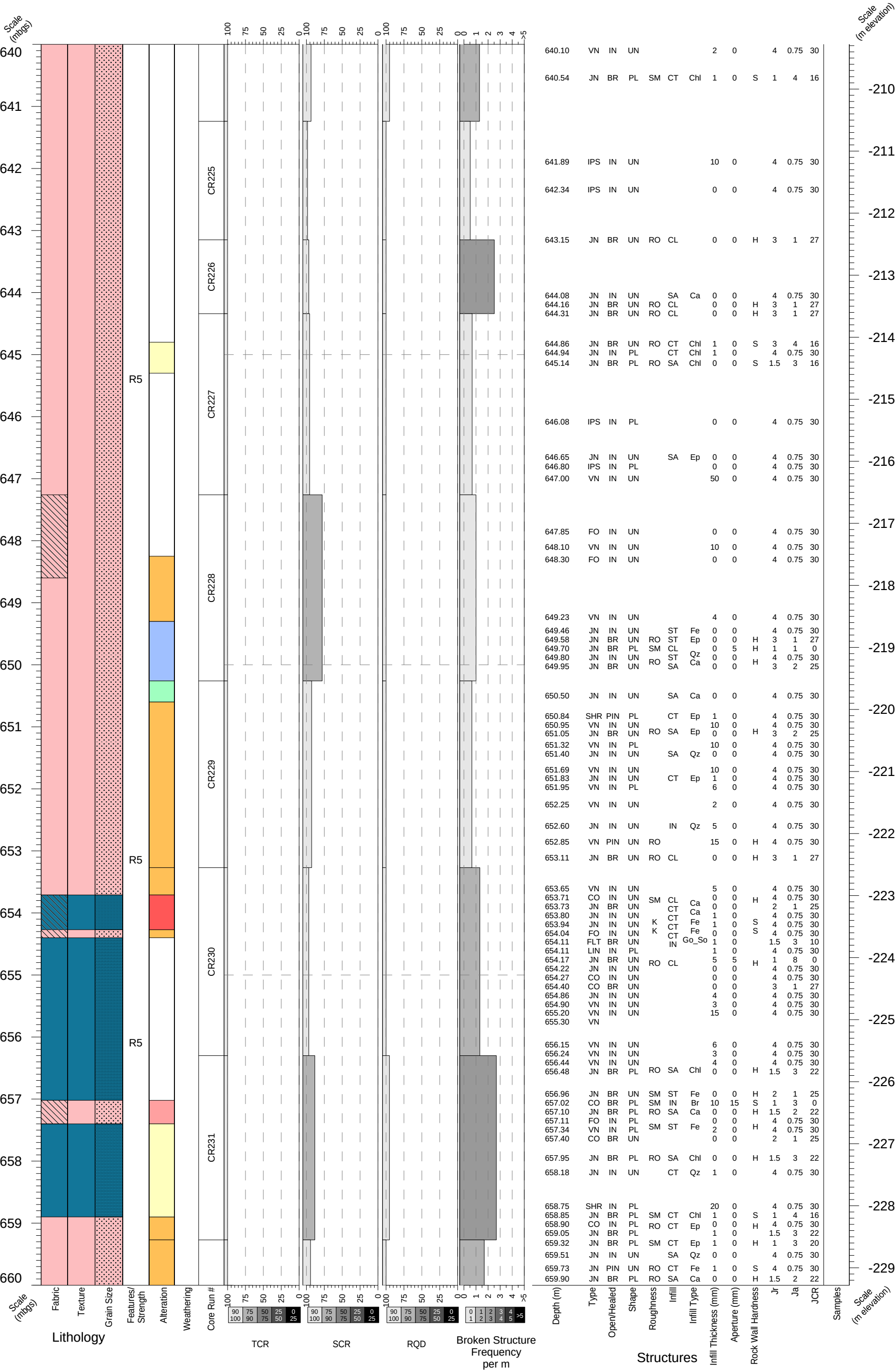
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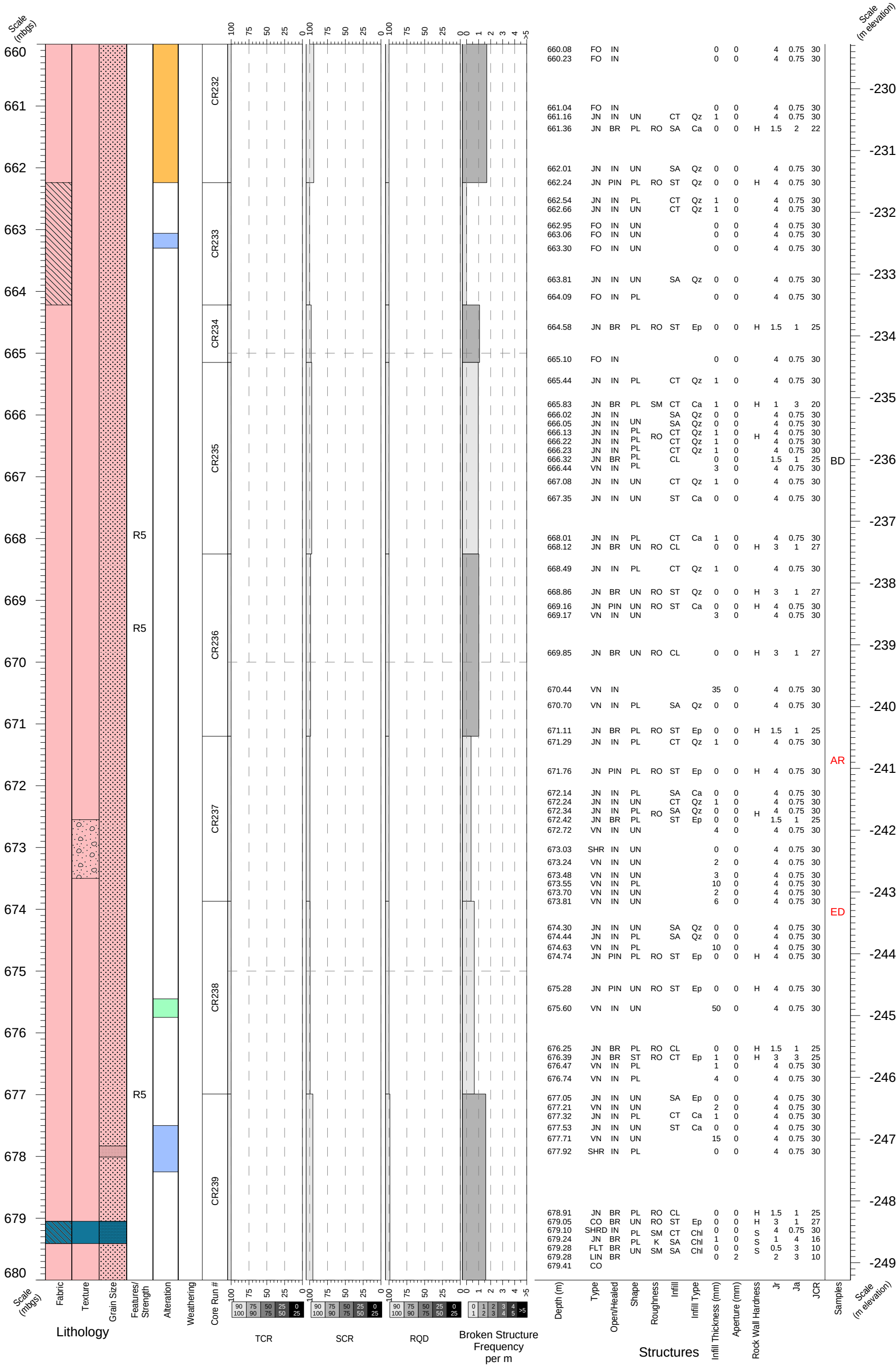
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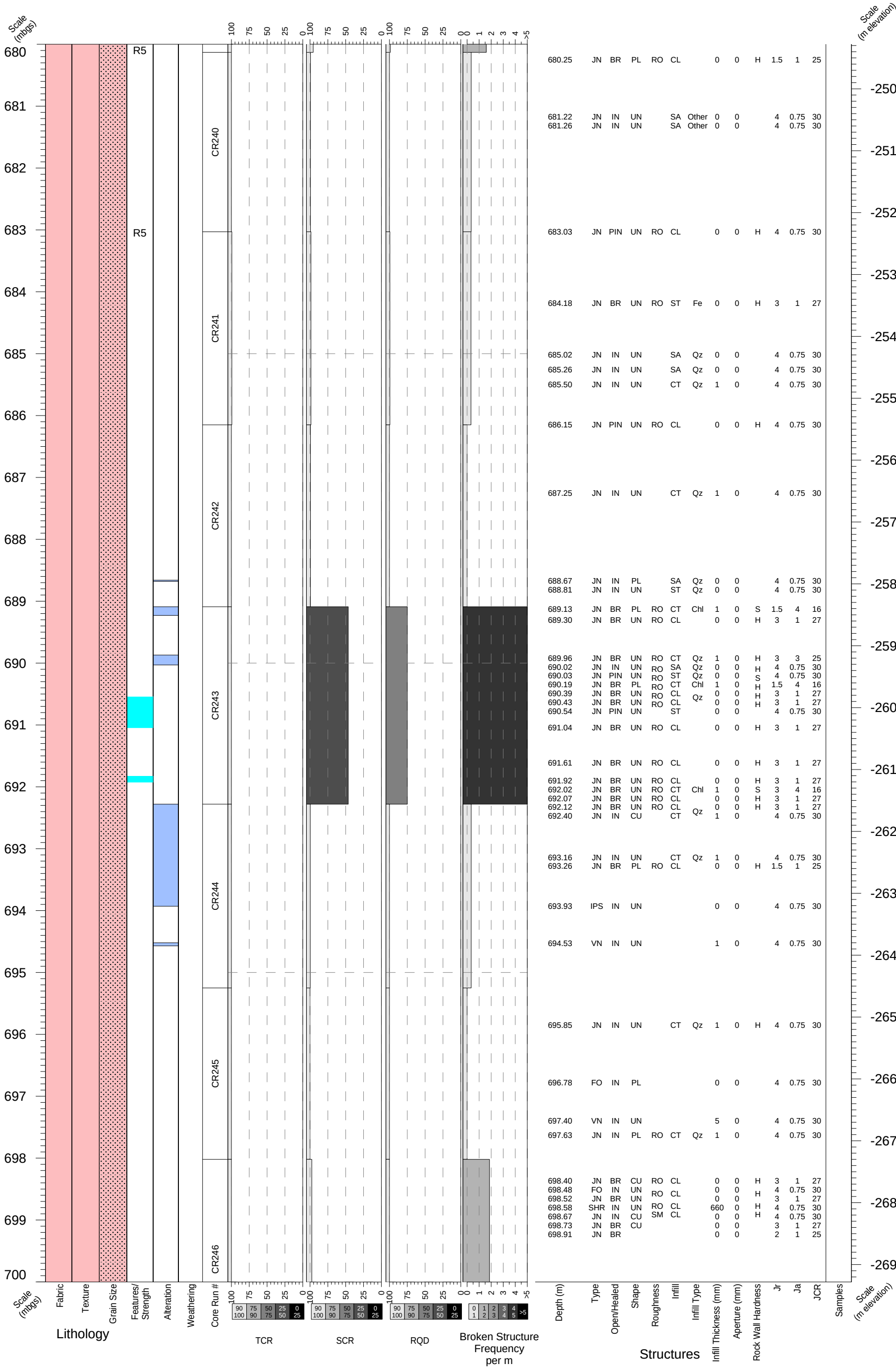
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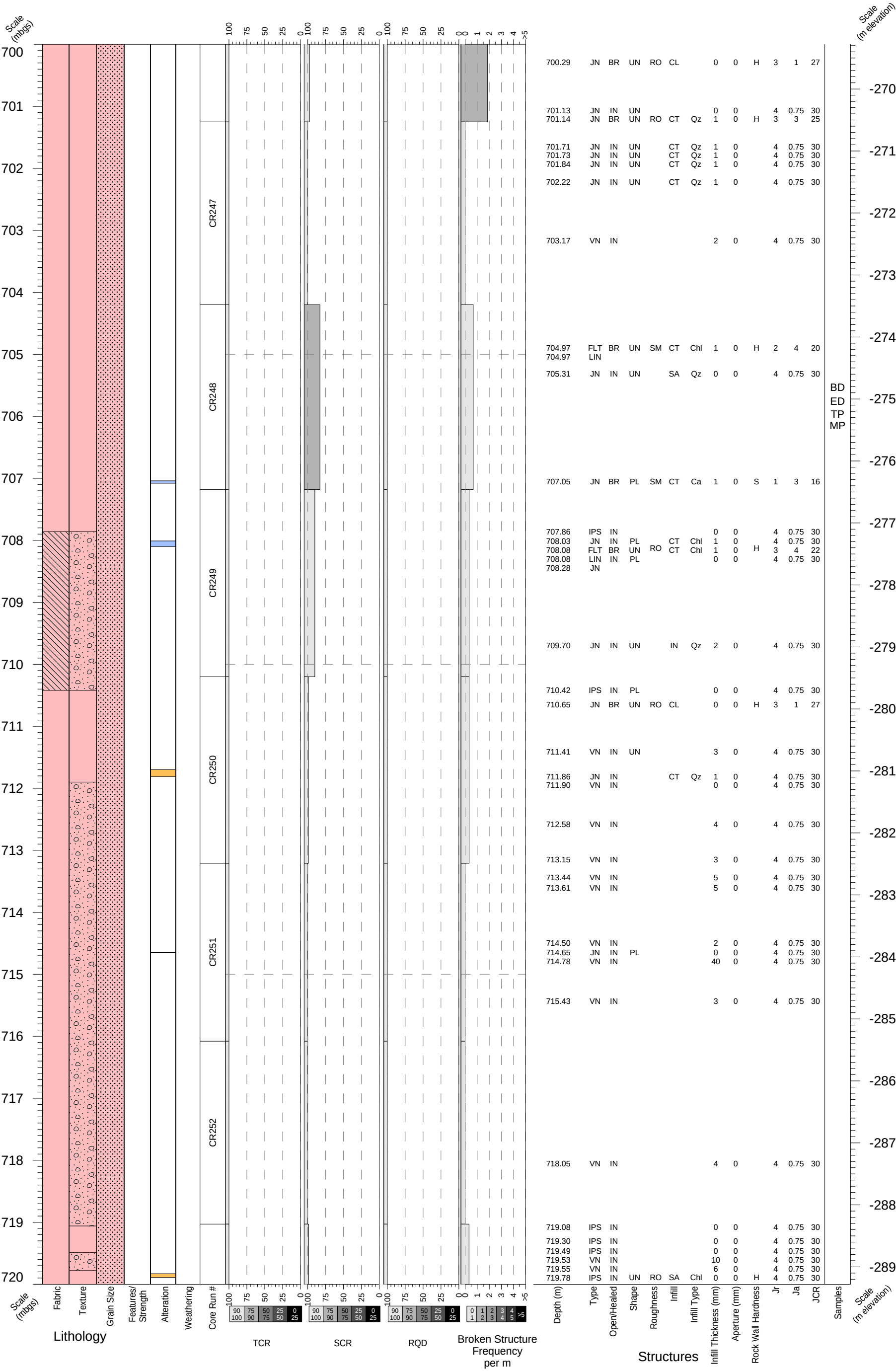
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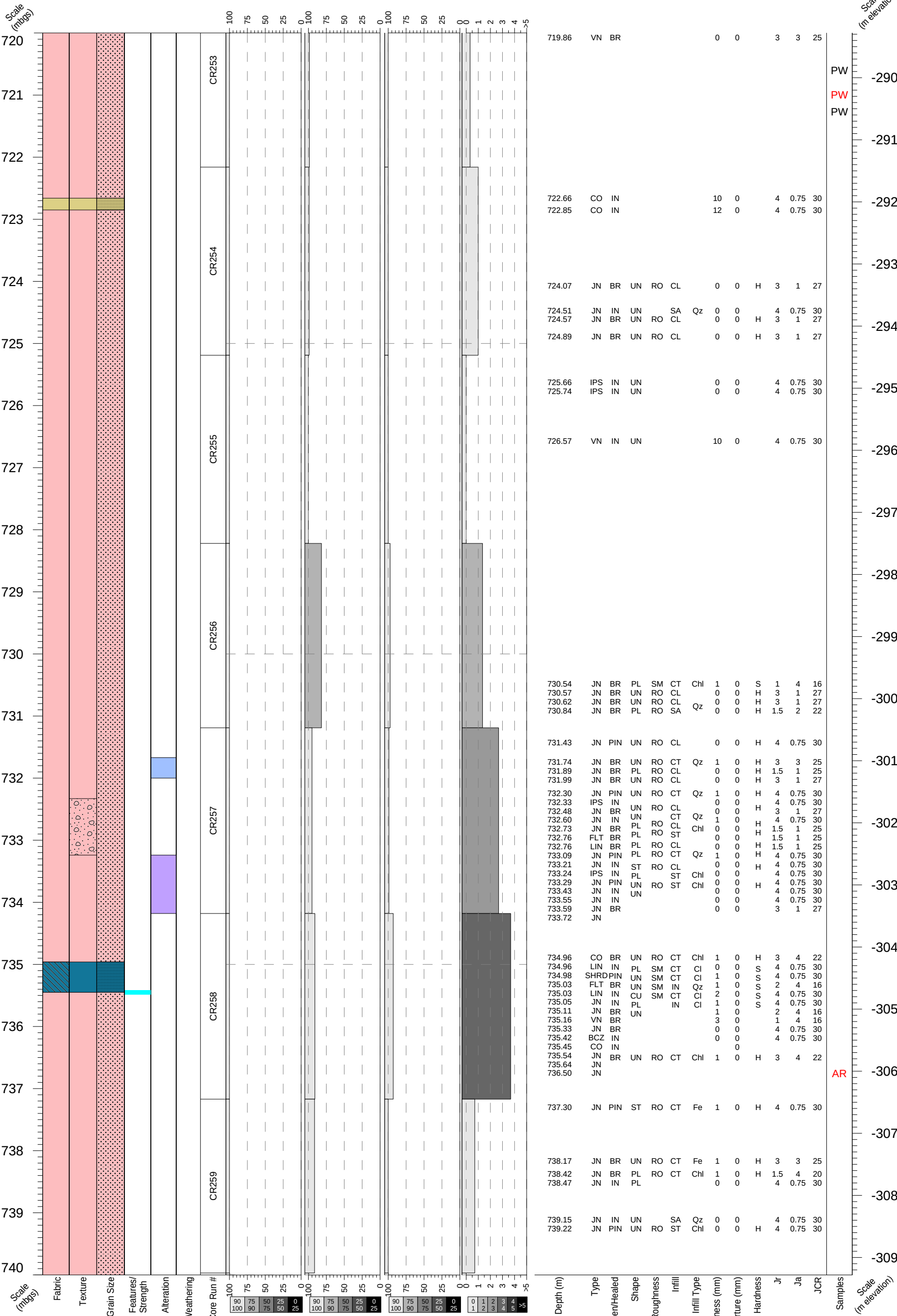
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1671632 (1300)

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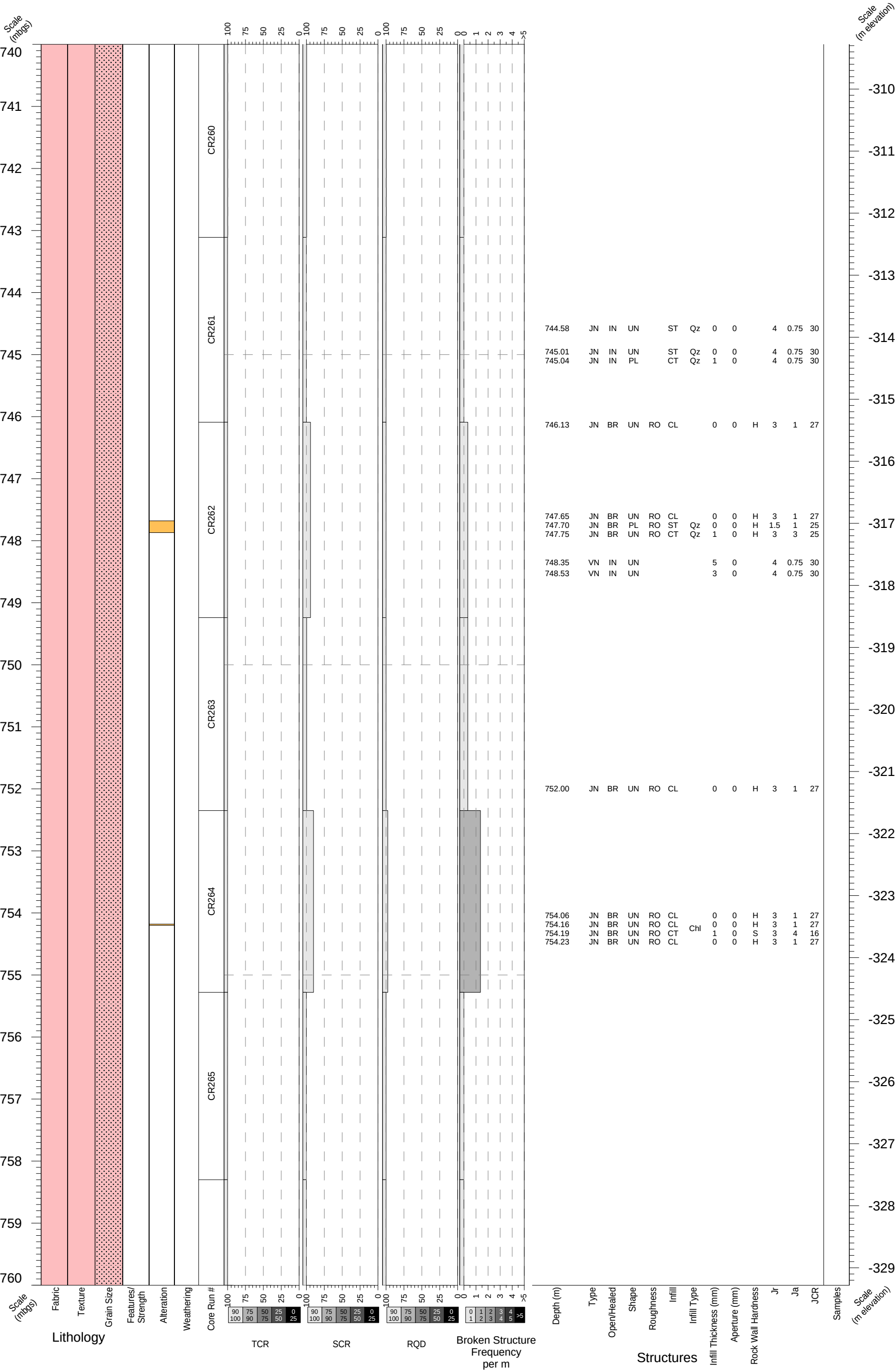
IG_BH01

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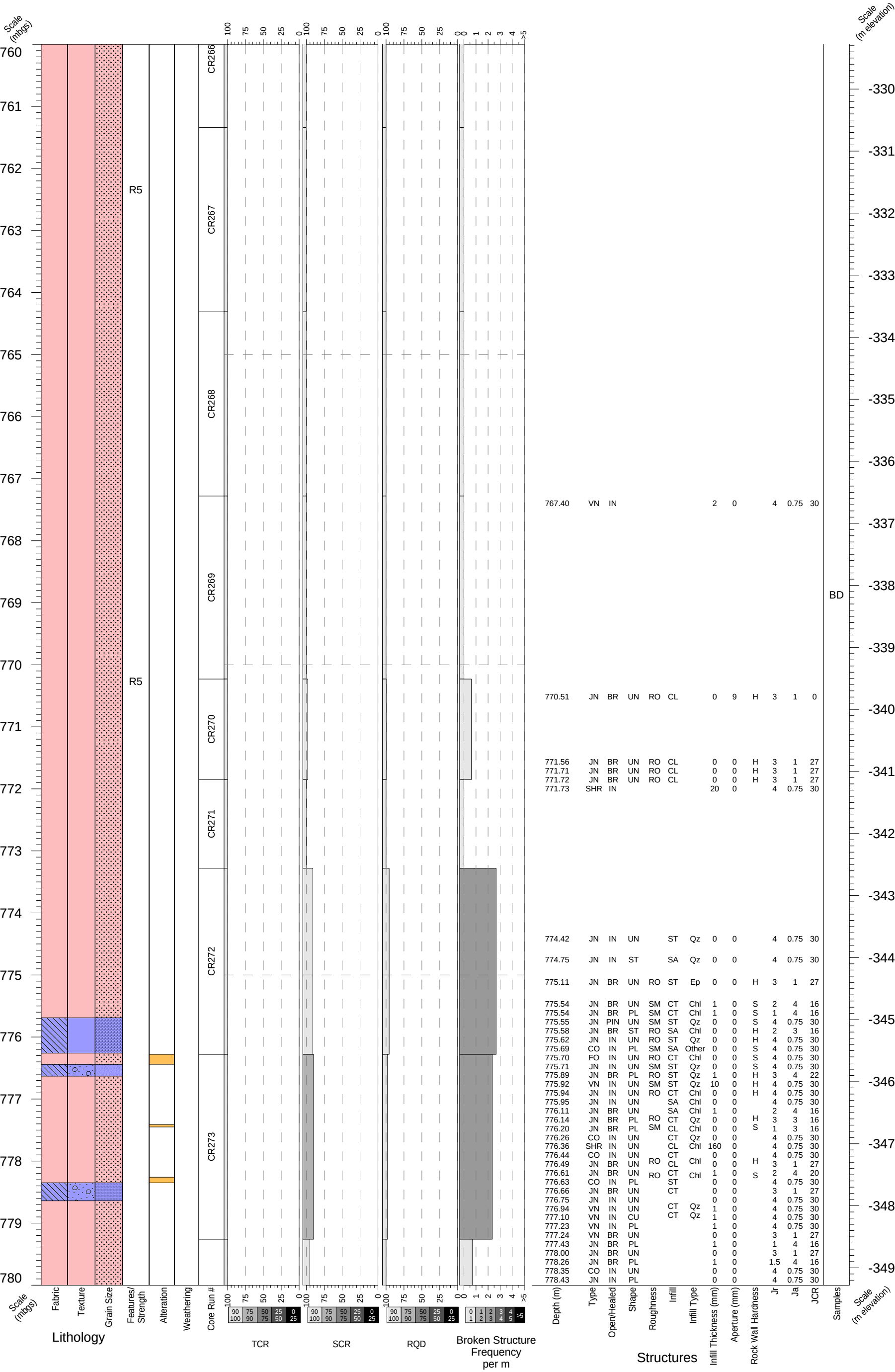
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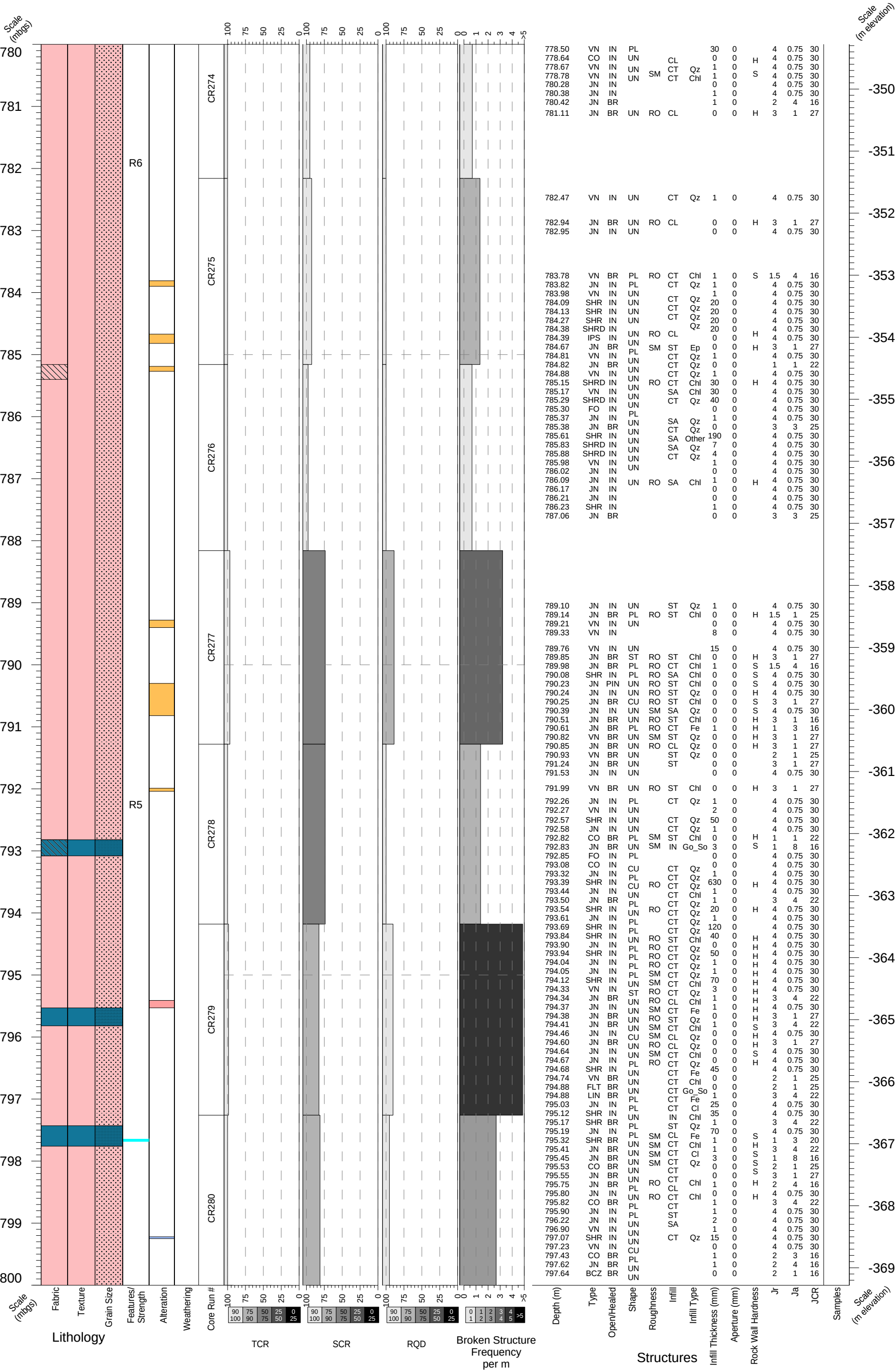
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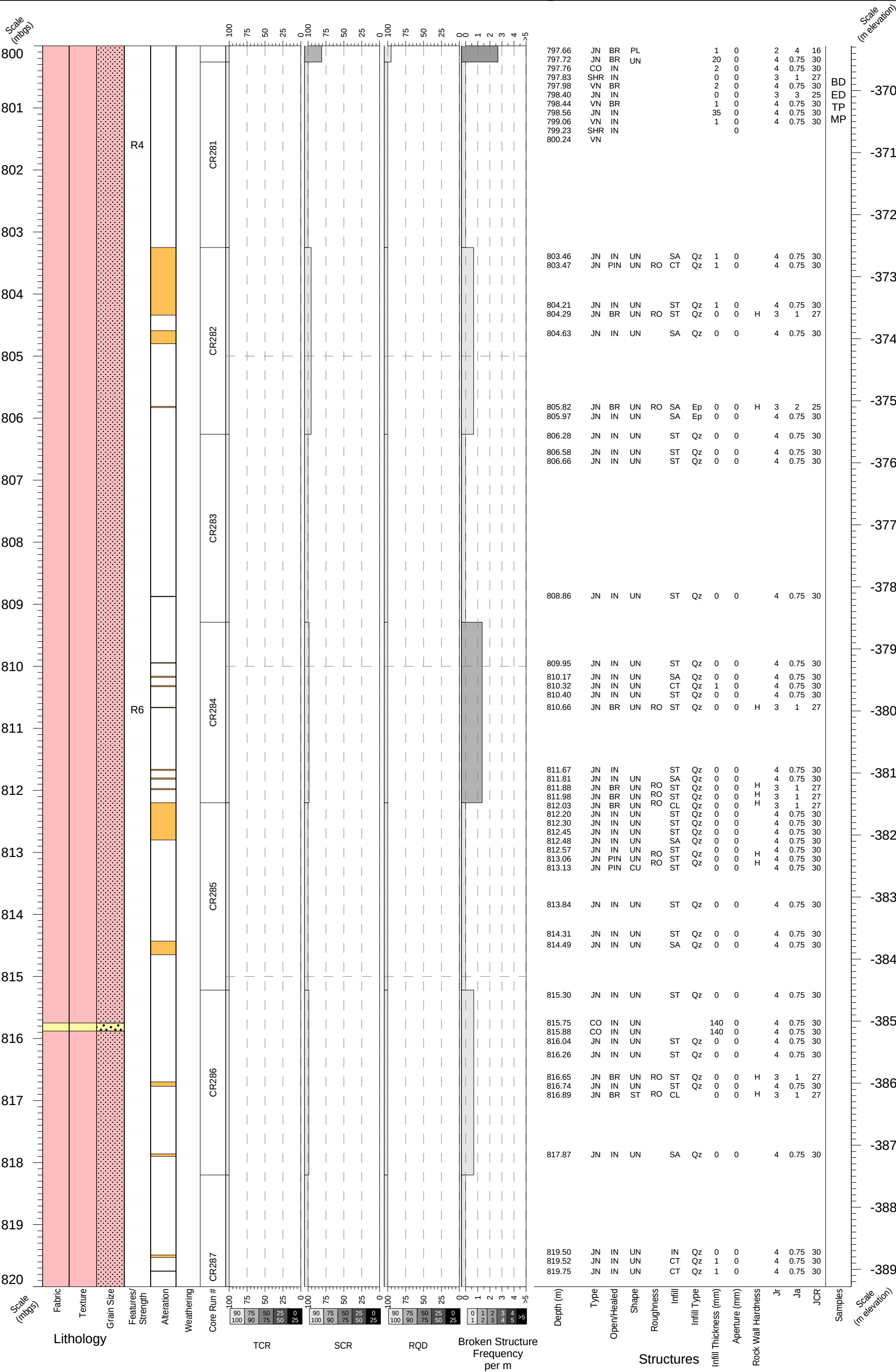
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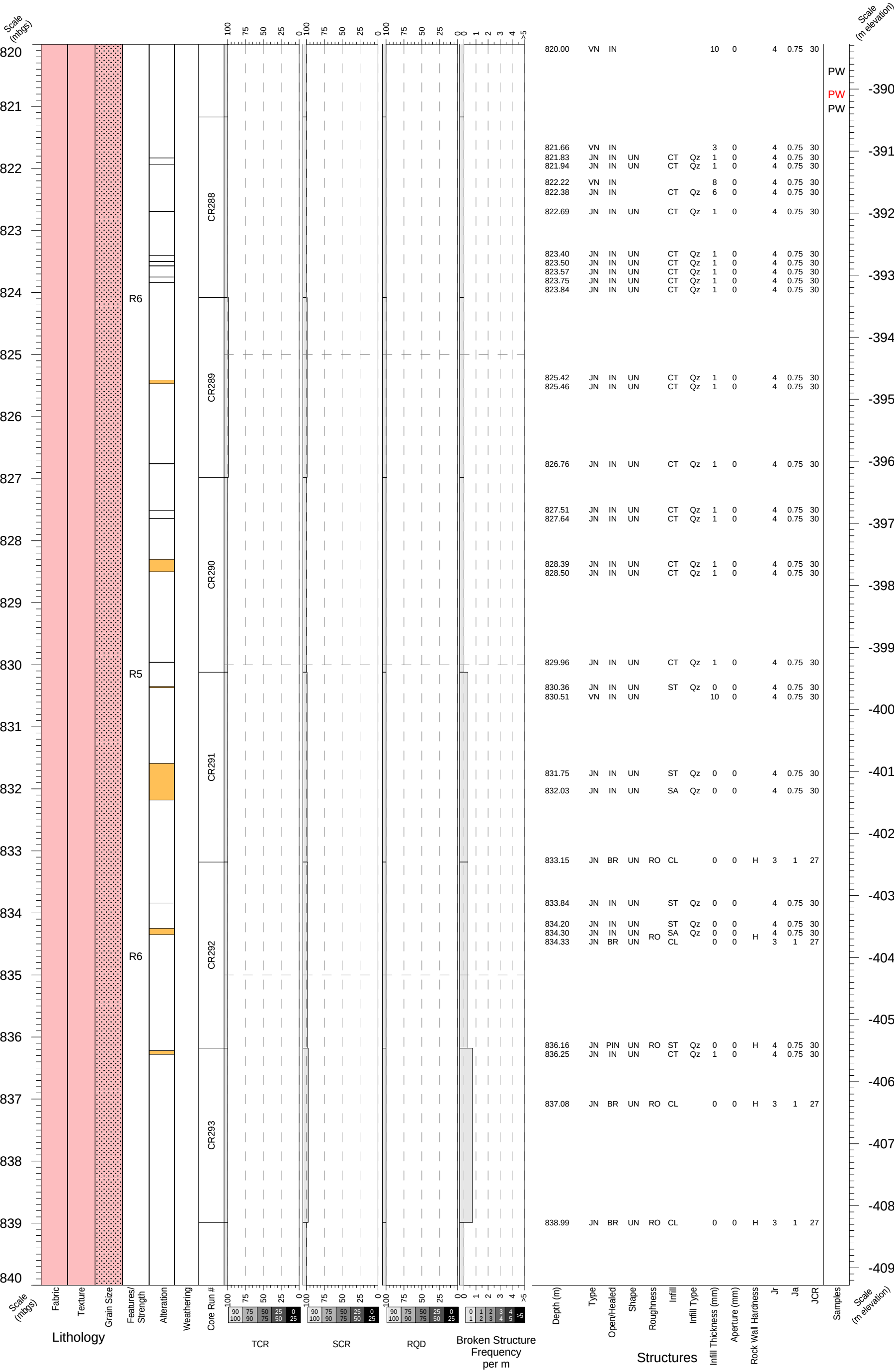
IG_BH01

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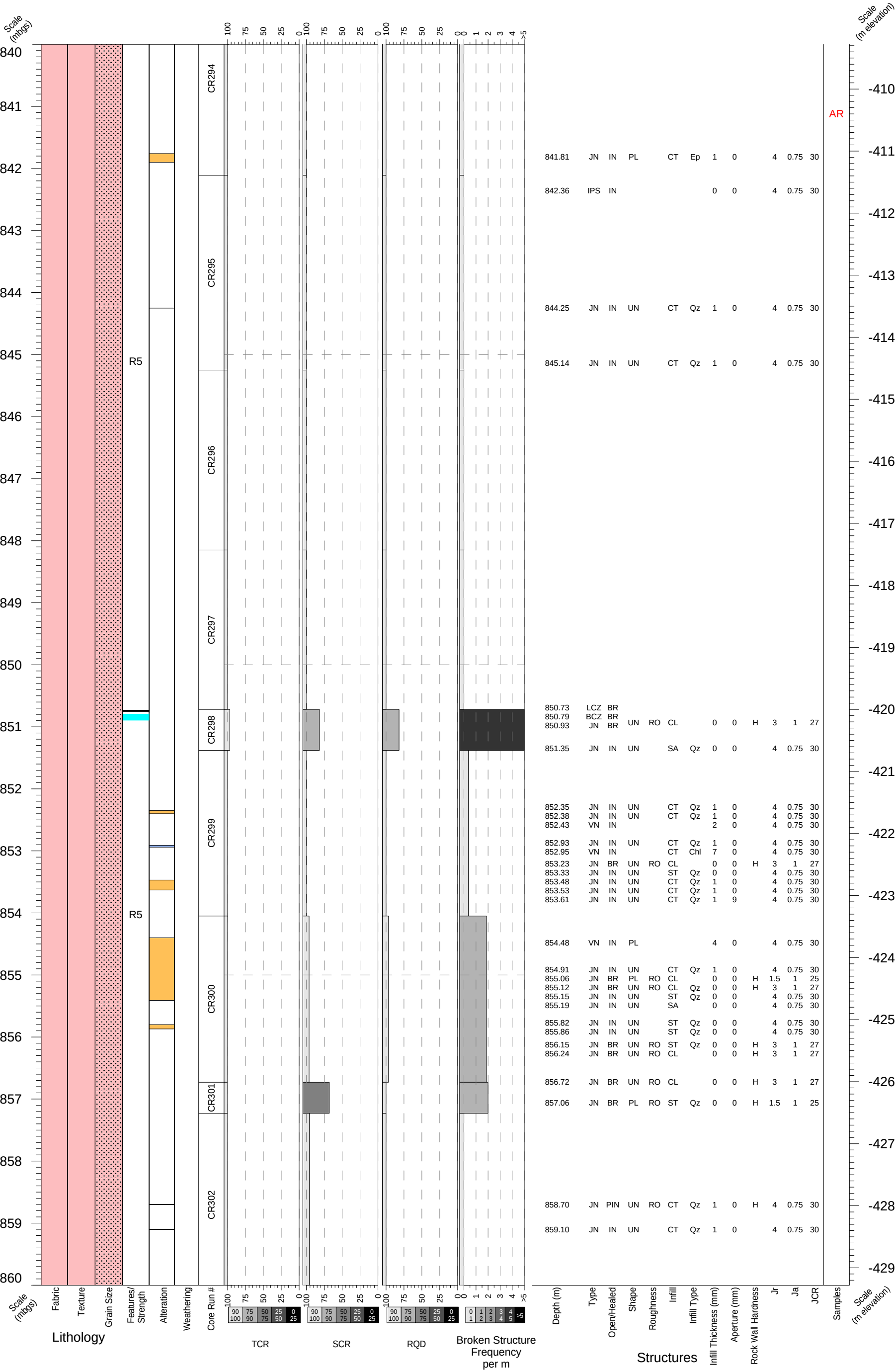
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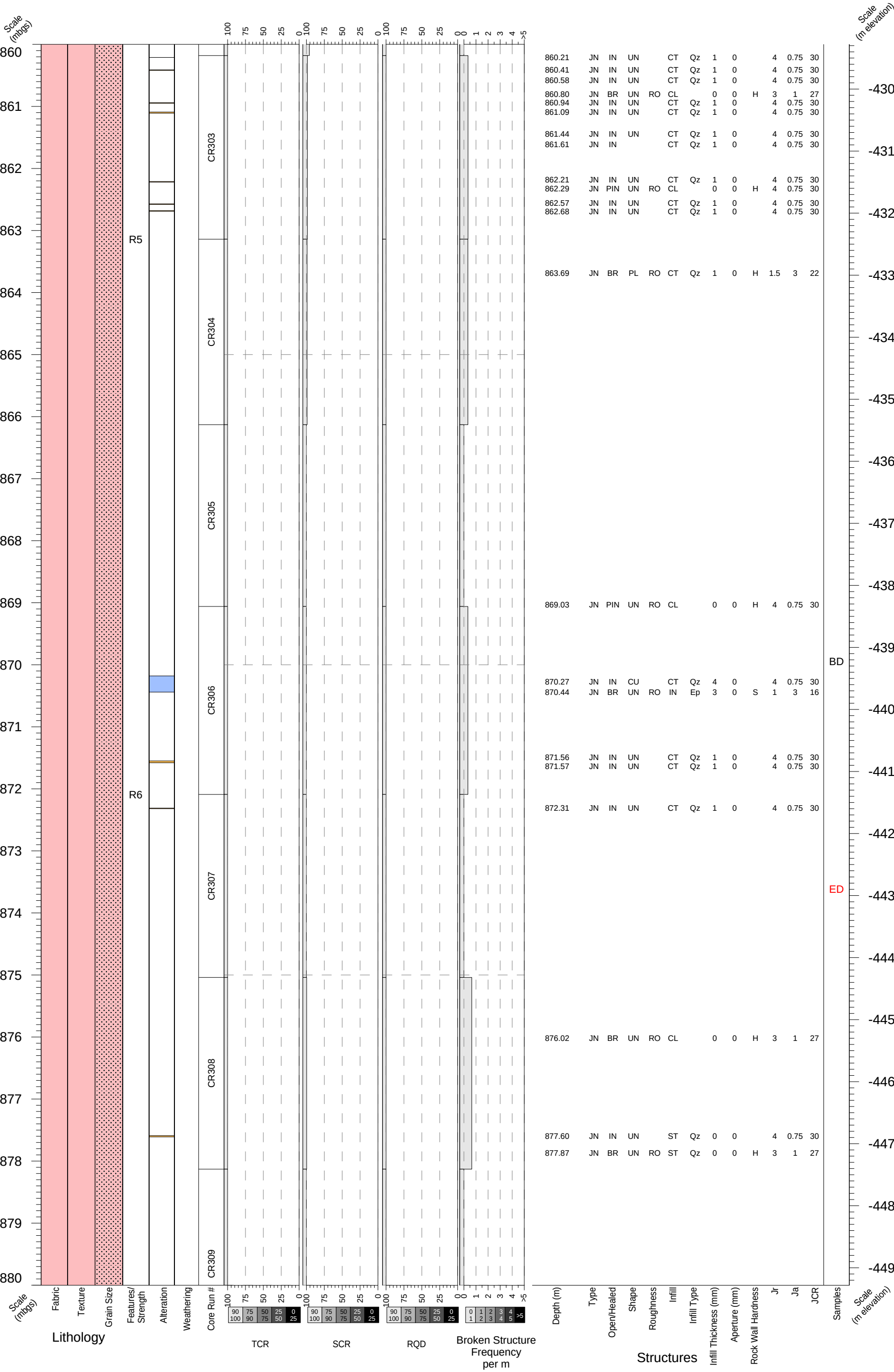
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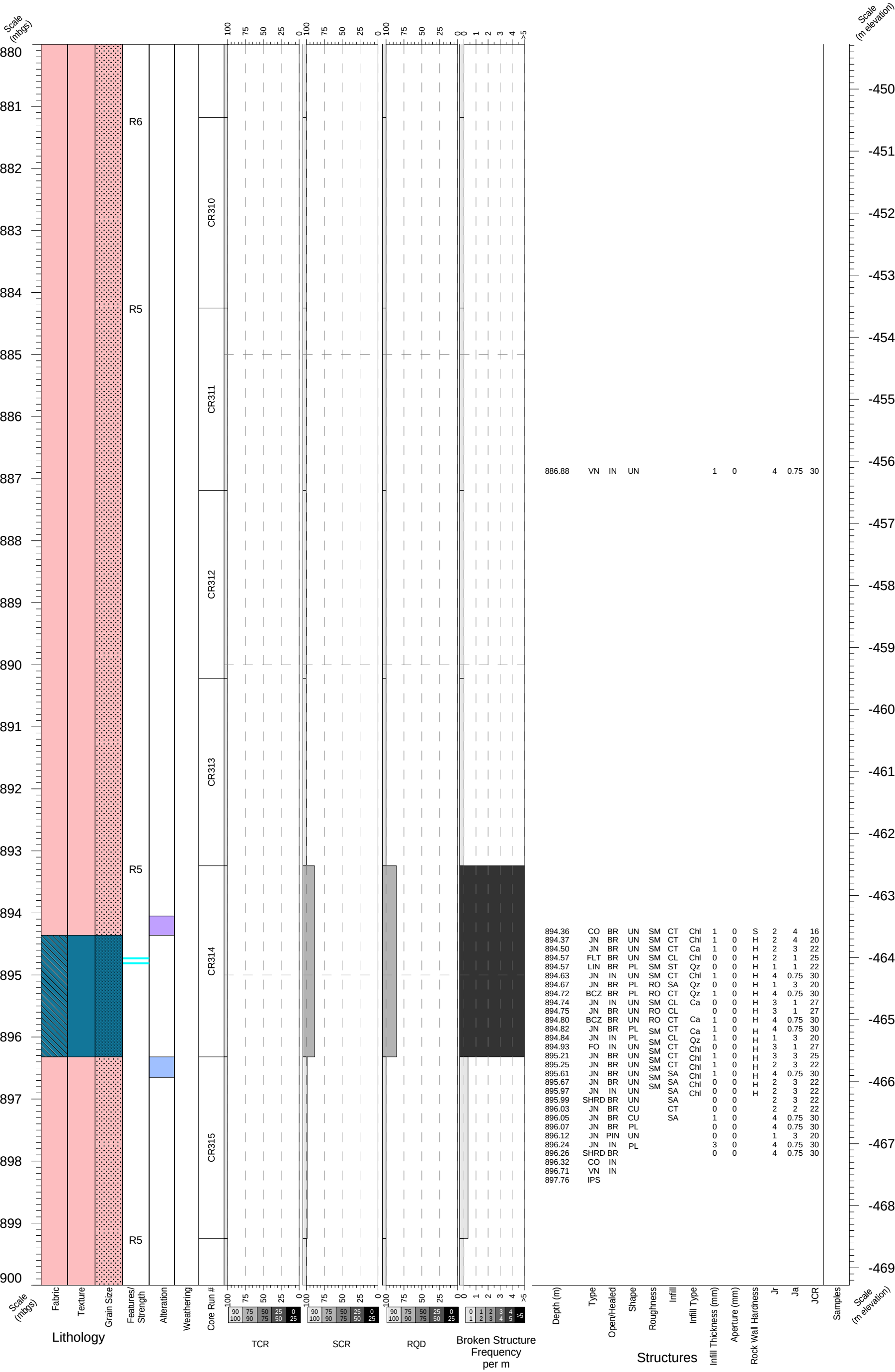
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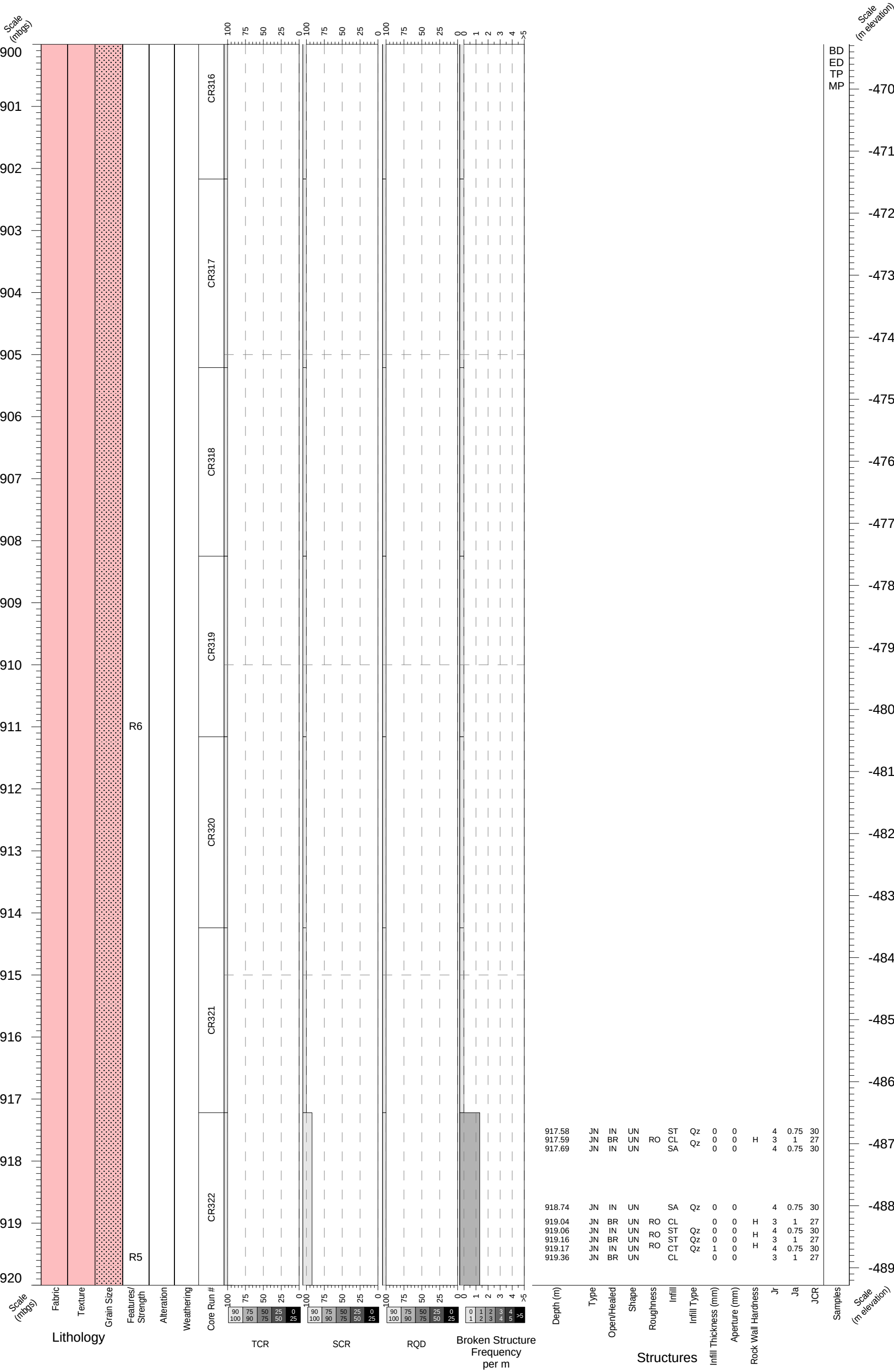
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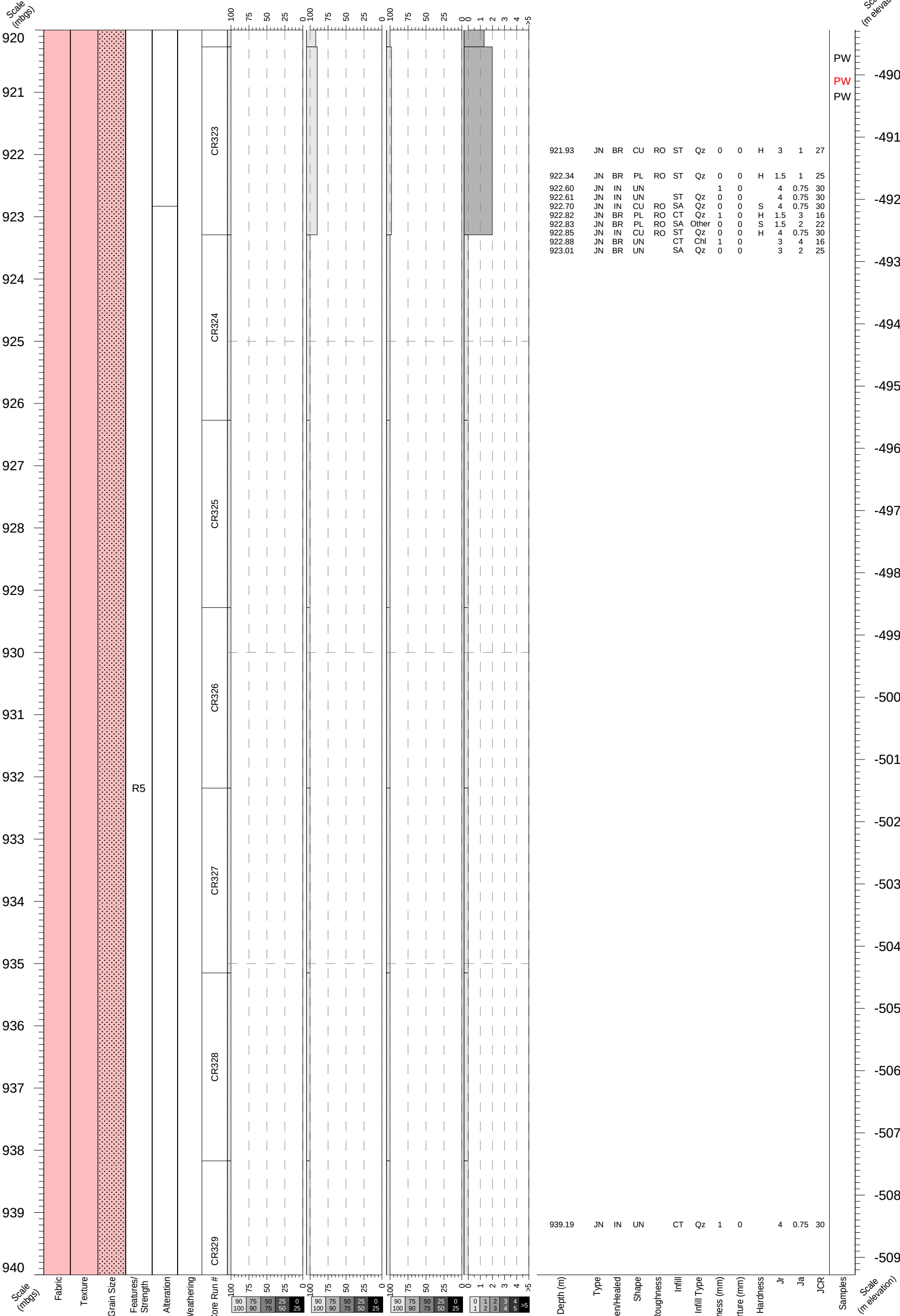
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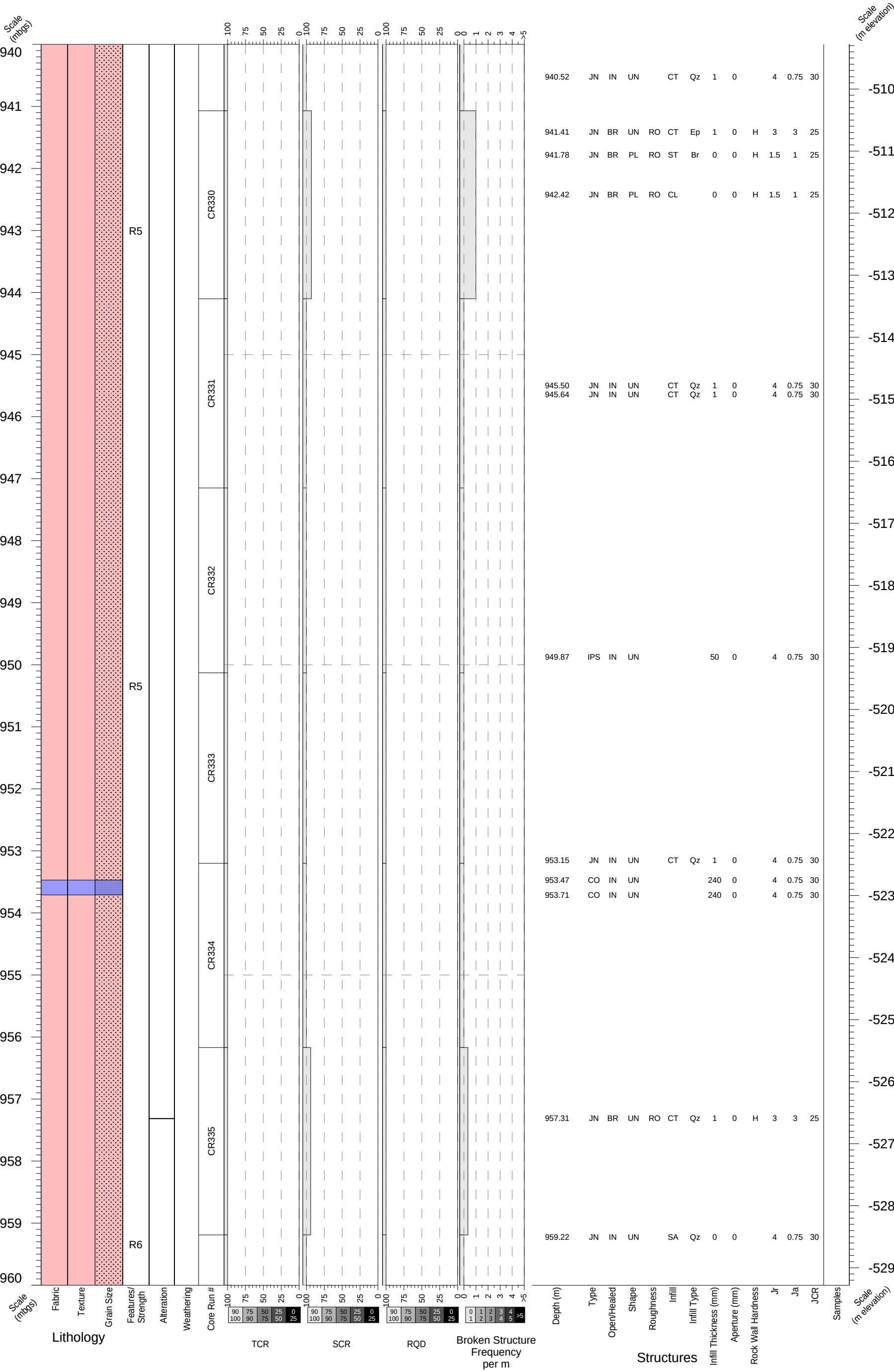
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PROJECT NO.
1671632 (1300)

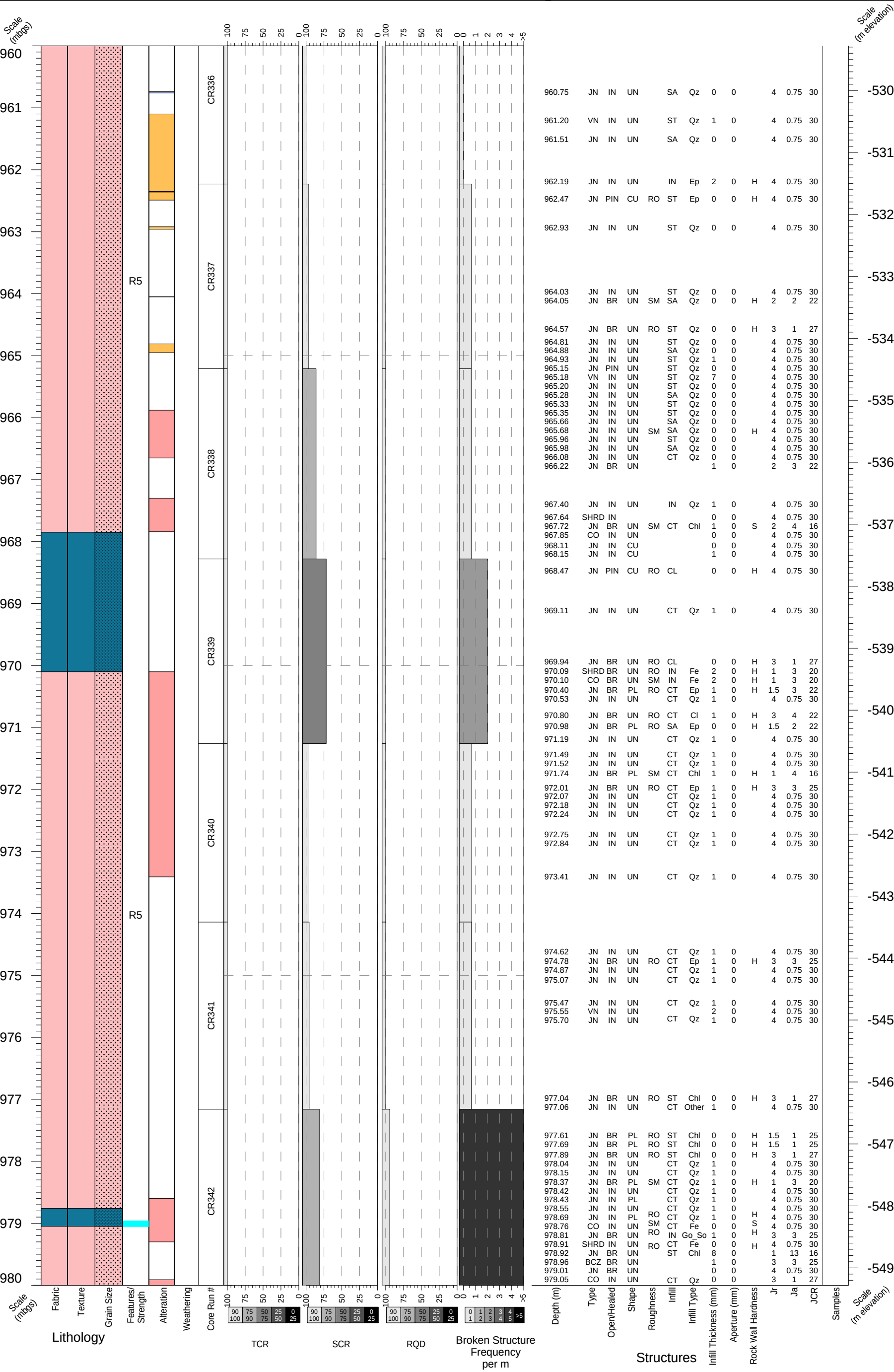
IG_BH01

Northing (m) : 5486016.45
Easting (m) : 555943.35
Elevation (m) : 430.72

Collar Azimuth (°) : 259.0
Collar Dip (°) : -88.9
Hole Depth (m) : 1001.18

Loggers : AKV, CM, ET, KF
Contractor : Rodren Drilling Ltd.
Drill Core Size : HQ3
Drilling Date : November 6, 2017 to January 16, 2018

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



CONSULTANT



CLIENT

NWMO Ignace Drilling

TITLE

Record of Geological and Geotechnical Core Logging of IG_BH01

YYYY-MM-DD

2018-12-19

DRAWN/REV

AKV/CM

PROJECT NO.

1671632 (1300)

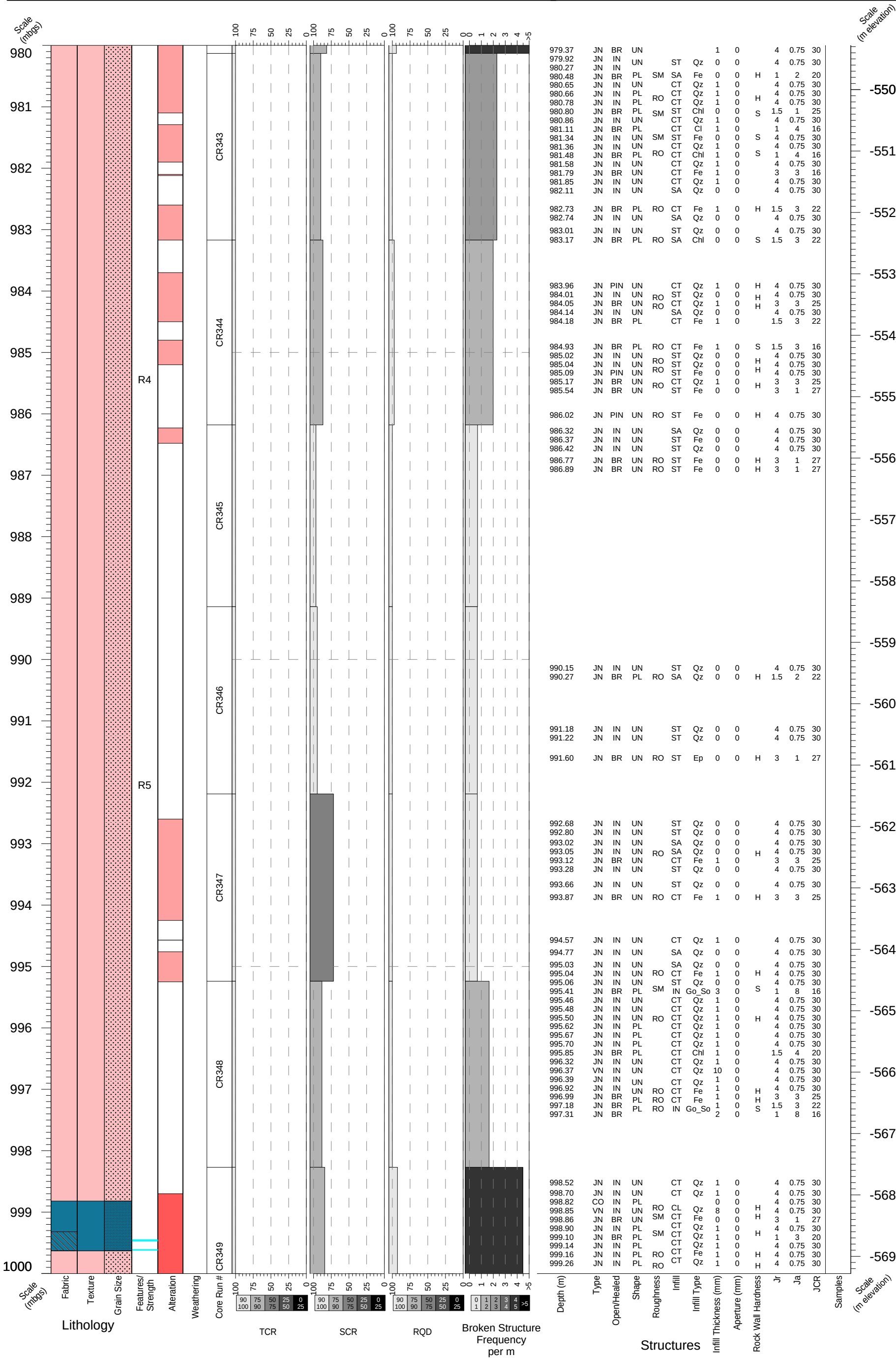
IG_BH01

Northing (m) : 5486016.45
Easting (m) : 555943.35
Elevation (m) : 430.72

Collar Azimuth (°) : 259.0
Collar Dip (°) : -88.9
Hole Depth (m) : 1001.18

Loggers : AKV, CM, ET, KF
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Drill Core Size : HQ3
Drilling Date : November 6, 2017 to January 16, 2018

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 Geological and Geotechnical
Core Logging of IG_BH01

YYYY-MM-DD

2018-12-19

DRAWN/REV

AKV/CM

PROJECT NO.

1671632 (1300)

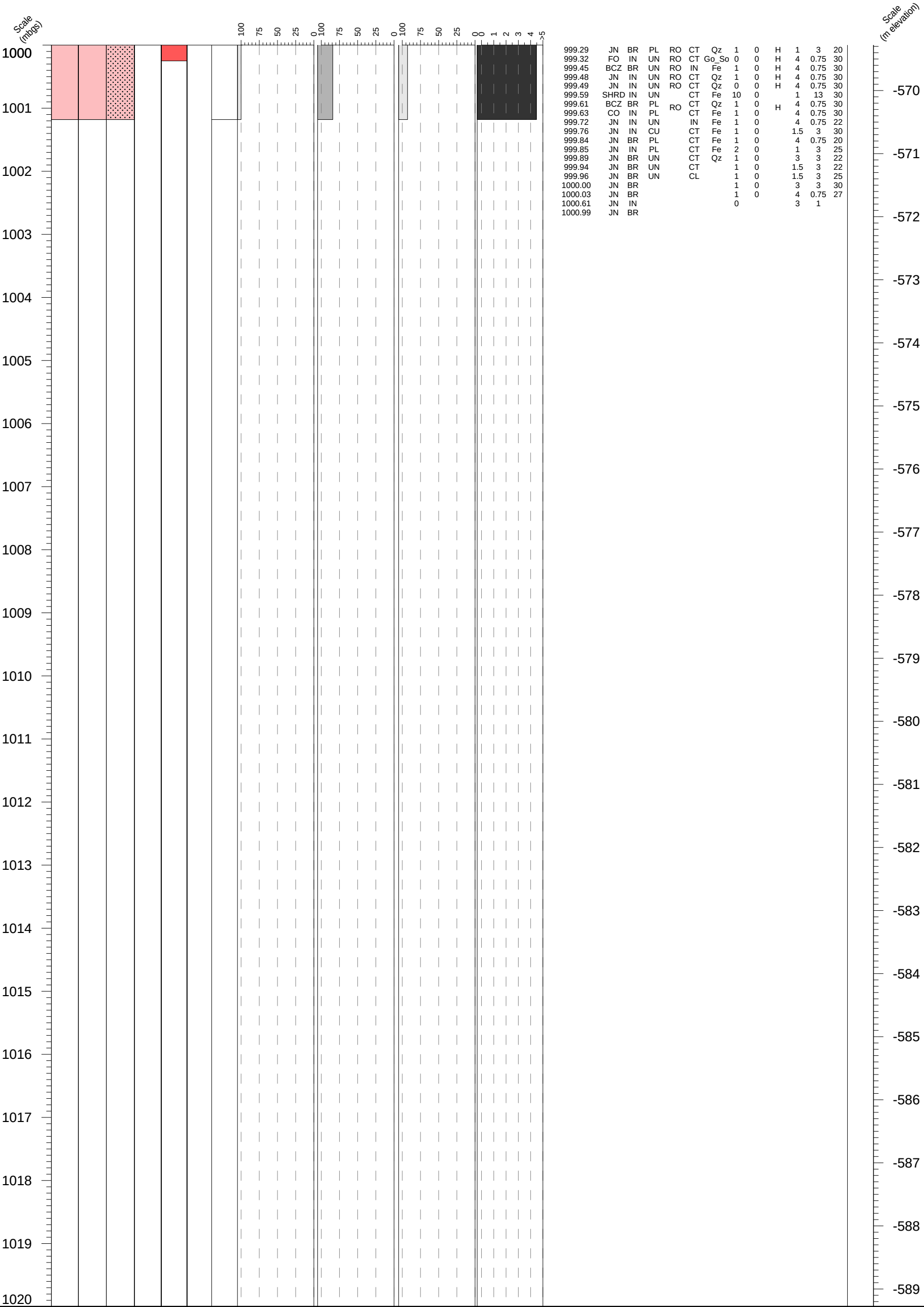
IG_BH01

Northing (m) : 5486016.45
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Drill Core Size : HQ3
Drilling Date : November 6, 2017 to January 16, 2018

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



Scale (mbgs)	Fabric	Texture	Grain Size	Features/Strength	Alteration	Weathering	Core Run #	TCR	SCR	RQD	Broken Structure Frequency per m	Structures	Infill Thickness (mm)	Aperture (mm)	Rock Wall Hardness	Jr	Ja	JCR	Samples	Scale (m elevation)
Lithology							Geotechnical Data													
CONSULTANT							CLIENT							PROJECT INFORMATION						
							NWMO Ignace Drilling							YYYY-MM-DD 2018-12-19						
							Record of Geological and Geotechnical Core Logging of IG_BH01							DRAWN/REV AKV/CM						
														PROJECT NO. 1671632 (1300)						

APPENDIX D

Photography Tables

Table D-1:	Core Box Photography Details
Table D-2:	Core Run Photography Details
Table D-3:	Core Sample Photography Details
Table D-4:	Core Feature Photography Details
Table D-5:	Core Sample Details

Photo Name	Photo Description
IG_BH01_BCD_0.32_12.05_1.jpg	Dry Core Box Photo from 0.32 to 12.05 m
IG_BH01_BCD_12.05_23.98_1.jpg	Dry Core Box Photo from 12.05 to 23.98 m
IG_BH01_BCD_23.98_35.55_1.jpg	Dry Core Box Photo from 23.98 to 35.55 m
IG_BH01_BCD_35.55_47.09_1.jpg	Dry Core Box Photo from 35.55 to 47.09 m
IG_BH01_BCD_47.09_58.87_1.jpg	Dry Core Box Photo from 47.09 to 58.87 m
IG_BH01_BCD_58.87_70.64_1.jpg	Dry Core Box Photo from 58.87 to 70.64 m
IG_BH01_BCD_70.64_82.24_1.jpg	Dry Core Box Photo from 70.64 to 82.24 m
IG_BH01_BCD_82.24_94.23_1.jpg	Dry Core Box Photo from 82.24 to 94.23 m
IG_BH01_BCD_94.23_106.01_1.jpg	Dry Core Box Photo from 94.23 to 106.01 m
IG_BH01_BCD_106.01_117.38_1.jpg	Dry Core Box Photo from 106.01 to 117.38 m
IG_BH01_BCD_117.38_128.92_1.jpg	Dry Core Box Photo from 117.38 to 128.92 m
IG_BH01_BCD_128.92_140.26_1.jpg	Dry Core Box Photo from 128.92 to 140.26 m
IG_BH01_BCD_140.26_151.52_1.jpg	Dry Core Box Photo from 140.26 to 151.52 m
IG_BH01_BCD_151.52_163.06_1.jpg	Dry Core Box Photo from 151.52 to 163.06 m
IG_BH01_BCD_163.06_174.05_1.jpg	Dry Core Box Photo from 163.06 to 174.05 m
IG_BH01_BCD_174.05_185.40_1.jpg	Dry Core Box Photo from 174.05 to 185.4 m
IG_BH01_BCD_185.40_196.93_1.jpg	Dry Core Box Photo from 185.4 to 196.93 m
IG_BH01_BCD_196.93_207.65_1.jpg	Dry Core Box Photo from 196.93 to 207.65 m
IG_BH01_BCD_207.65_218.78_1.jpg	Dry Core Box Photo from 207.65 to 218.78 m
IG_BH01_BCD_218.78_230.12_1.jpg	Dry Core Box Photo from 218.78 to 230.12 m
IG_BH01_BCD_230.17_241.14_1.jpg	Dry Core Box Photo from 230.17 to 241.14 m
IG_BH01_BCD_241.29_252.81_1.jpg	Dry Core Box Photo from 241.29 to 252.81 m
IG_BH01_BCD_252.81_264.17_1.jpg	Dry Core Box Photo from 252.81 to 264.17 m
IG_BH01_BCD_264.17_275.53_1.jpg	Dry Core Box Photo from 264.17 to 275.53 m
IG_BH01_BCD_275.53_286.96_1.jpg	Dry Core Box Photo from 275.53 to 286.96 m
IG_BH01_BCD_286.96_298.52_1.jpg	Dry Core Box Photo from 286.96 to 298.52 m
IG_BH01_BCD_298.52_310.36_1.jpg	Dry Core Box Photo from 298.52 to 310.36 m
IG_BH01_BCD_310.36_322.16_1.jpg	Dry Core Box Photo from 310.36 to 322.16 m
IG_BH01_BCD_322.16_333.68_1.jpg	Dry Core Box Photo from 322.16 to 333.68 m
IG_BH01_BCD_333.68_345.40_1.jpg	Dry Core Box Photo from 333.68 to 345.4 m
IG_BH01_BCD_345.40_356.86_1.jpg	Dry Core Box Photo from 345.4 to 356.86 m
IG_BH01_BCD_356.86_368.68_1.jpg	Dry Core Box Photo from 356.86 to 368.68 m
IG_BH01_BCD_368.68_380.59_1.jpg	Dry Core Box Photo from 368.68 to 380.59 m
IG_BH01_BCD_380.59_392.44_1.jpg	Dry Core Box Photo from 380.59 to 392.44 m
IG_BH01_BCD_392.44_404.19_1.jpg	Dry Core Box Photo from 392.44 to 404.19 m
IG_BH01_BCD_404.19_415.90_1.jpg	Dry Core Box Photo from 404.19 to 415.9 m
IG_BH01_BCD_415.90_427.70_1.jpg	Dry Core Box Photo from 415.9 to 427.7 m
IG_BH01_BCD_427.70_439.47_1.jpg	Dry Core Box Photo from 427.7 to 439.47 m
IG_BH01_BCD_439.47_451.46_1.jpg	Dry Core Box Photo from 439.47 to 451.46 m
IG_BH01_BCD_451.46_463.47_1.jpg	Dry Core Box Photo from 451.46 to 463.47 m
IG_BH01_BCD_463.47_475.24_1.jpg	Dry Core Box Photo from 463.47 to 475.24 m
IG_BH01_BCD_475.24_487.00_1.jpg	Dry Core Box Photo from 475.24 to 487 m
IG_BH01_BCD_487.00_498.74_1.jpg	Dry Core Box Photo from 487 to 498.74 m
IG_BH01_BCD_498.74_510.53_1.jpg	Dry Core Box Photo from 498.74 to 510.53 m
IG_BH01_BCD_510.53_522.89_1.jpg	Dry Core Box Photo from 510.53 to 522.89 m
IG_BH01_BCD_522.89_535.10_1.jpg	Dry Core Box Photo from 522.89 to 535.1 m
IG_BH01_BCD_535.10_547.24_1.jpg	Dry Core Box Photo from 535.1 to 547.24 m
IG_BH01_BCD_547.24_558.90_1.jpg	Dry Core Box Photo from 547.24 to 558.9 m
IG_BH01_BCD_558.90_570.71_1.jpg	Dry Core Box Photo from 558.9 to 570.71 m

Photo Name	Photo Description
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IG_BH01_BCD_582.41_594.68_1.jpg	Dry Core Box Photo from 582.41 to 594.68 m
IG_BH01_BCD_594.68_606.55_1.jpg	Dry Core Box Photo from 594.68 to 606.55 m
IG_BH01_BCD_606.55_618.66_1.jpg	Dry Core Box Photo from 606.55 to 618.66 m
IG_BH01_BCD_618.66_630.62_1.jpg	Dry Core Box Photo from 618.66 to 630.62 m
IG_BH01_BCD_630.62_642.38_1.jpg	Dry Core Box Photo from 630.62 to 642.38 m
IG_BH01_BCD_642.38_654.48_1.jpg	Dry Core Box Photo from 642.38 to 654.48 m
IG_BH01_BCD_654.48_666.32_1.jpg	Dry Core Box Photo from 654.48 to 666.32 m
IG_BH01_BCD_666.32_678.45_1.jpg	Dry Core Box Photo from 666.32 to 678.45 m
IG_BH01_BCD_678.45_690.23_1.jpg	Dry Core Box Photo from 678.45 to 690.23 m
IG_BH01_BCD_690.23_701.98_1.jpg	Dry Core Box Photo from 690.23 to 701.98 m
IG_BH01_BCD_701.98_714.06_1.jpg	Dry Core Box Photo from 701.98 to 714.06 m
IG_BH01_BCD_714.06_726.13_1.jpg	Dry Core Box Photo from 714.06 to 726.13 m
IG_BH01_BCD_726.13_737.97_1.jpg	Dry Core Box Photo from 726.13 to 737.97 m
IG_BH01_BCD_737.97_750.20_1.jpg	Dry Core Box Photo from 737.97 to 750.2 m
IG_BH01_BCD_750.20_762.14_1.jpg	Dry Core Box Photo from 750.2 to 762.14 m
IG_BH01_BCD_762.14_774.30_1.jpg	Dry Core Box Photo from 762.14 to 774.3 m
IG_BH01_BCD_774.30_786.35_1.jpg	Dry Core Box Photo from 774.3 to 786.35 m
IG_BH01_BCD_786.35_798.56_1.jpg	Dry Core Box Photo from 786.35 to 798.56 m
IG_BH01_BCD_798.56_810.54_1.jpg	Dry Core Box Photo from 798.56 to 810.54 m
IG_BH01_BCD_810.54_822.58_1.jpg	Dry Core Box Photo from 810.54 to 822.58 m
IG_BH01_BCD_822.58_834.52_1.jpg	Dry Core Box Photo from 822.58 to 834.52 m
IG_BH01_BCD_834.52_846.52_1.jpg	Dry Core Box Photo from 834.52 to 846.52 m
IG_BH01_BCD_846.52_858.37_1.jpg	Dry Core Box Photo from 846.52 to 858.37 m
IG_BH01_BCD_858.37_870.44_1.jpg	Dry Core Box Photo from 858.37 to 870.44 m
IG_BH01_BCD_870.44_882.63_1.jpg	Dry Core Box Photo from 870.44 to 882.63 m
IG_BH01_BCD_882.63_894.63_1.jpg	Dry Core Box Photo from 882.63 to 894.63 m
IG_BH01_BCD_894.63_906.34_1.jpg	Dry Core Box Photo from 894.63 to 906.34 m
IG_BH01_BCD_906.34_918.08_1.jpg	Dry Core Box Photo from 906.34 to 918.08 m
IG_BH01_BCD_918.08_929.65_1.jpg	Dry Core Box Photo from 918.08 to 929.65 m
IG_BH01_BCD_929.65_941.49_1.jpg	Dry Core Box Photo from 929.65 to 941.49 m
IG_BH01_BCD_941.49_953.41_1.jpg	Dry Core Box Photo from 941.49 to 953.41 m
IG_BH01_BCD_953.41_965.21_1.jpg	Dry Core Box Photo from 953.41 to 965.21 m
IG_BH01_BCD_965.21_976.73_1.jpg	Dry Core Box Photo from 965.21 to 976.73 m
IG_BH01_BCD_976.73_988.56_1.jpg	Dry Core Box Photo from 976.73 to 988.56 m
IG_BH01_BCD_988.56_1000.57_1.jpg	Dry Core Box Photo from 988.56 to 1000.57 m
IG_BH01_BCD_1000.57_1001.18_1.jpg	Dry Core Box Photo from 1000.57 to 1001.18 m
IG_BH01_BCW_0.32_12.05_2.jpg	Wet Core Box Photo from 0.32 to 12.05 m
IG_BH01_BCW_12.05_23.98_2.jpg	Wet Core Box Photo from 12.05 to 23.98 m
IG_BH01_BCW_23.98_35.55_2.jpg	Wet Core Box Photo from 23.98 to 35.55 m
IG_BH01_BCW_35.55_47.09_2.jpg	Wet Core Box Photo from 35.55 to 47.09 m
IG_BH01_BCW_47.09_58.87_2.jpg	Wet Core Box Photo from 47.09 to 58.87 m
IG_BH01_BCW_58.87_70.64_2.jpg	Wet Core Box Photo from 58.87 to 70.64 m
IG_BH01_BCW_70.64_82.24_2.jpg	Wet Core Box Photo from 70.64 to 82.24 m
IG_BH01_BCW_82.24_94.23_2.jpg	Wet Core Box Photo from 82.24 to 94.23 m
IG_BH01_BCW_94.23_106.01_2.jpg	Wet Core Box Photo from 94.23 to 106.01 m
IG_BH01_BCW_106.01_117.38_2.jpg	Wet Core Box Photo from 106.01 to 117.38 m
IG_BH01_BCW_117.38_128.92_2.jpg	Wet Core Box Photo from 117.38 to 128.92 m
IG_BH01_BCW_128.92_140.26_2.jpg	Wet Core Box Photo from 128.92 to 140.26 m

Photo Name	Photo Description
IG_BH01_BCW_140.26_151.52_2.jpg	Wet Core Box Photo from 140.26 to 151.52 m
IG_BH01_BCW_151.52_163.06_2.jpg	Wet Core Box Photo from 151.52 to 163.06 m
IG_BH01_BCW_163.06_174.05_2.jpg	Wet Core Box Photo from 163.06 to 174.05 m
IG_BH01_BCW_174.05_185.40_2.jpg	Wet Core Box Photo from 174.05 to 185.4 m
IG_BH01_BCW_185.40_196.93_2.jpg	Wet Core Box Photo from 185.4 to 196.93 m
IG_BH01_BCW_196.93_207.65_2.jpg	Wet Core Box Photo from 196.93 to 207.65 m
IG_BH01_BCW_207.65_218.78_2.jpg	Wet Core Box Photo from 207.65 to 218.78 m
IG_BH01_BCW_218.78_230.12_2.jpg	Wet Core Box Photo from 218.78 to 230.12 m
IG_BH01_BCW_230.12_241.24_2.jpg	Wet Core Box Photo from 230.12 to 241.24 m
IG_BH01_BCW_241.24_252.81_2.jpg	Wet Core Box Photo from 241.24 to 252.81 m
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IG_BH01_BCW_286.96_298.52_2.jpg	Wet Core Box Photo from 286.96 to 298.52 m
IG_BH01_BCW_298.52_310.36_2.jpg	Wet Core Box Photo from 298.52 to 310.36 m
IG_BH01_BCW_310.36_322.16_2.jpg	Wet Core Box Photo from 310.36 to 322.16 m
IG_BH01_BCW_322.16_333.68_2.jpg	Wet Core Box Photo from 322.16 to 333.68 m
IG_BH01_BCW_333.68_345.40_2.jpg	Wet Core Box Photo from 333.68 to 345.4 m
IG_BH01_BCW_345.40_356.86_2.jpg	Wet Core Box Photo from 345.4 to 356.86 m
IG_BH01_BCW_356.86_368.68_2.jpg	Wet Core Box Photo from 356.86 to 368.68 m
IG_BH01_BCW_368.68_380.59_2.jpg	Wet Core Box Photo from 368.68 to 380.59 m
IG_BH01_BCW_380.59_392.44_2.jpg	Wet Core Box Photo from 380.59 to 392.44 m
IG_BH01_BCW_392.44_404.19_2.jpg	Wet Core Box Photo from 392.44 to 404.19 m
IG_BH01_BCW_404.19_415.90_2.jpg	Wet Core Box Photo from 404.19 to 415.9 m
IG_BH01_BCW_415.90_427.70_2.jpg	Wet Core Box Photo from 415.9 to 427.7 m
IG_BH01_BCW_427.70_439.47_2.jpg	Wet Core Box Photo from 427.7 to 439.47 m
IG_BH01_BCW_439.47_451.46_2.jpg	Wet Core Box Photo from 439.47 to 451.46 m
IG_BH01_BCW_451.46_463.47_2.jpg	Wet Core Box Photo from 451.46 to 463.47 m
IG_BH01_BCW_463.47_475.24_2.jpg	Wet Core Box Photo from 463.47 to 475.24 m
IG_BH01_BCW_475.24_487.00_2.jpg	Wet Core Box Photo from 475.24 to 487 m
IG_BH01_BCW_487.00_498.74_2.jpg	Wet Core Box Photo from 487 to 498.74 m
IG_BH01_BCW_498.74_510.53_2.jpg	Wet Core Box Photo from 498.74 to 510.53 m
IG_BH01_BCW_510.53_522.89_2.jpg	Wet Core Box Photo from 510.53 to 522.89 m
IG_BH01_BCW_522.89_535.10_2.jpg	Wet Core Box Photo from 522.89 to 535.1 m
IG_BH01_BCW_535.10_547.24_2.jpg	Wet Core Box Photo from 535.1 to 547.24 m
IG_BH01_BCW_547.24_558.90_2.jpg	Wet Core Box Photo from 547.24 to 558.9 m
IG_BH01_BCW_558.90_570.71_2.jpg	Wet Core Box Photo from 558.9 to 570.71 m
IG_BH01_BCW_570.71_582.41_2.jpg	Wet Core Box Photo from 570.71 to 582.41 m
IG_BH01_BCW_582.41_594.68_2.jpg	Wet Core Box Photo from 582.41 to 594.68 m
IG_BH01_BCW_594.68_606.55_2.jpg	Wet Core Box Photo from 594.68 to 606.55 m
IG_BH01_BCW_606.55_618.66_2.jpg	Wet Core Box Photo from 606.55 to 618.66 m
IG_BH01_BCW_618.66_630.62_2.jpg	Wet Core Box Photo from 618.66 to 630.62 m
IG_BH01_BCW_630.62_642.38_2.jpg	Wet Core Box Photo from 630.62 to 642.38 m
IG_BH01_BCW_642.38_654.48_2.jpg	Wet Core Box Photo from 642.38 to 654.48 m
IG_BH01_BCW_654.48_666.32_2.jpg	Wet Core Box Photo from 654.48 to 666.32 m
IG_BH01_BCW_666.32_678.45_2.jpg	Wet Core Box Photo from 666.32 to 678.45 m
IG_BH01_BCW_678.45_690.23_2.jpg	Wet Core Box Photo from 678.45 to 690.23 m
IG_BH01_BCW_690.23_701.98_2.jpg	Wet Core Box Photo from 690.23 to 701.98 m
IG_BH01_BCW_701.98_714.06_2.jpg	Wet Core Box Photo from 701.98 to 714.06 m

Photo Name	Photo Description
IG_BH01_BCW_714.06_726.13_2.jpg	Wet Core Box Photo from 714.06 to 726.13 m
IG_BH01_BCW_726.13_737.97_2.jpg	Wet Core Box Photo from 726.13 to 737.97 m
IG_BH01_BCW_737.97_750.20_2.jpg	Wet Core Box Photo from 737.97 to 750.2 m
IG_BH01_BCW_750.20_762.14_2.jpg	Wet Core Box Photo from 750.2 to 762.14 m
IG_BH01_BCW_762.14_774.30_2.jpg	Wet Core Box Photo from 762.14 to 774.3 m
IG_BH01_BCW_774.30_786.35_2.jpg	Wet Core Box Photo from 774.3 to 786.35 m
IG_BH01_BCW_786.35_798.56_2.jpg	Wet Core Box Photo from 786.35 to 798.56 m
IG_BH01_BCW_798.56_810.54_2.jpg	Wet Core Box Photo from 798.56 to 810.54 m
IG_BH01_BCW_810.54_822.58_2.jpg	Wet Core Box Photo from 810.54 to 822.58 m
IG_BH01_BCW_822.58_834.52_2.jpg	Wet Core Box Photo from 822.58 to 834.52 m
IG_BH01_BCW_834.52_846.52_2.jpg	Wet Core Box Photo from 834.52 to 846.52 m
IG_BH01_BCW_846.52_858.37_2.jpg	Wet Core Box Photo from 846.52 to 858.37 m
IG_BH01_BCW_858.37_870.44_2.jpg	Wet Core Box Photo from 858.37 to 870.44 m
IG_BH01_BCW_870.44_882.63_2.jpg	Wet Core Box Photo from 870.44 to 882.63 m
IG_BH01_BCW_882.63_894.63_2.jpg	Wet Core Box Photo from 882.63 to 894.63 m
IG_BH01_BCW_894.63_906.34_2.jpg	Wet Core Box Photo from 894.63 to 906.34 m
IG_BH01_BCW_906.34_918.08_2.jpg	Wet Core Box Photo from 906.34 to 918.08 m
IG_BH01_BCW_918.08_929.65_2.jpg	Wet Core Box Photo from 918.08 to 929.65 m
IG_BH01_BCW_929.65_941.49_2.jpg	Wet Core Box Photo from 929.65 to 941.49 m
IG_BH01_BCW_941.49_953.41_2.jpg	Wet Core Box Photo from 941.49 to 953.41 m
IG_BH01_BCW_953.41_965.21_2.jpg	Wet Core Box Photo from 953.41 to 965.21 m
IG_BH01_BCW_965.21_976.73_2.jpg	Wet Core Box Photo from 965.21 to 976.73 m
IG_BH01_BCW_976.73_988.56_2.jpg	Wet Core Box Photo from 976.73 to 988.56 m
IG_BH01_BCW_988.56_1000.57_2.jpg	Wet Core Box Photo from 988.56 to 1000.57 m
IG_BH01_BCW_1000.57_1001.18_2.jpg	Wet Core Box Photo from 1000.57 to 1001.18 m

Photo Name	Photo Description
IG_BH01_CR001_B.jpg	Split Tube Photo Back of Core Run ID CR001
IG_BH01_CR001_F.jpg	Split Tube Photo Front of Core Run ID CR001
IG_BH01_CR002_B.jpg	Split Tube Photo Back of Core Run ID CR002
IG_BH01_CR002_F.jpg	Split Tube Photo Front of Core Run ID CR002
IG_BH01_CR003_B.jpg	Split Tube Photo Back of Core Run ID CR003
IG_BH01_CR003_F.jpg	Split Tube Photo Front of Core Run ID CR003
IG_BH01_CR004_B.jpg	Split Tube Photo Back of Core Run ID CR004
IG_BH01_CR004_F.jpg	Split Tube Photo Front of Core Run ID CR004
IG_BH01_CR005_B.jpg	Split Tube Photo Back of Core Run ID CR005
IG_BH01_CR005_F.jpg	Split Tube Photo Front of Core Run ID CR005
IG_BH01_CR006_B.jpg	Split Tube Photo Back of Core Run ID CR006
IG_BH01_CR006_F.jpg	Split Tube Photo Front of Core Run ID CR006
IG_BH01_CR007_B.jpg	Split Tube Photo Back of Core Run ID CR007
IG_BH01_CR007_F.jpg	Split Tube Photo Front of Core Run ID CR007
IG_BH01_CR008_B.jpg	Split Tube Photo Back of Core Run ID CR008
IG_BH01_CR008_F.jpg	Split Tube Photo Front of Core Run ID CR008
IG_BH01_CR009_B.jpg	Split Tube Photo Back of Core Run ID CR009
IG_BH01_CR009_F.jpg	Split Tube Photo Front of Core Run ID CR009
IG_BH01_CR010_B.jpg	Split Tube Photo Back of Core Run ID CR010
IG_BH01_CR010_F.jpg	Split Tube Photo Front of Core Run ID CR010
IG_BH01_CR011_B.jpg	Split Tube Photo Back of Core Run ID CR011
IG_BH01_CR011_F.jpg	Split Tube Photo Front of Core Run ID CR011
IG_BH01_CR012_B.jpg	Split Tube Photo Back of Core Run ID CR012
IG_BH01_CR012_F.jpg	Split Tube Photo Front of Core Run ID CR012
IG_BH01_CR013_B.jpg	Split Tube Photo Back of Core Run ID CR013
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IG_BH01_CR016_F.jpg	Split Tube Photo Front of Core Run ID CR016
IG_BH01_CR017_B.jpg	Split Tube Photo Back of Core Run ID CR017
IG_BH01_CR017_F.jpg	Split Tube Photo Front of Core Run ID CR017
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IG_BH01_CR018_F.jpg	Split Tube Photo Front of Core Run ID CR018
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IG_BH01_CR019_F.jpg	Split Tube Photo Front of Core Run ID CR019
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IG_BH01_CR022_F.jpg	Split Tube Photo Front of Core Run ID CR022
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IG_BH01_CR024_F.jpg	Split Tube Photo Front of Core Run ID CR024
IG_BH01_CR025_B.jpg	Split Tube Photo Back of Core Run ID CR025

Photo Name	Photo Description
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IG_BH01_CR026_F.jpg	Split Tube Photo Front of Core Run ID CR026
IG_BH01_CR027_B.jpg	Split Tube Photo Back of Core Run ID CR027
IG_BH01_CR027_F.jpg	Split Tube Photo Front of Core Run ID CR027
IG_BH01_CR028_B.jpg	Split Tube Photo Back of Core Run ID CR028
IG_BH01_CR028_F.jpg	Split Tube Photo Front of Core Run ID CR028
IG_BH01_CR029_B.jpg	Split Tube Photo Back of Core Run ID CR029
IG_BH01_CR029_F.jpg	Split Tube Photo Front of Core Run ID CR029
IG_BH01_CR030_B.jpg	Split Tube Photo Back of Core Run ID CR030
IG_BH01_CR030_F.jpg	Split Tube Photo Front of Core Run ID CR030
IG_BH01_CR031_B.jpg	Split Tube Photo Back of Core Run ID CR031
IG_BH01_CR031_F.jpg	Split Tube Photo Front of Core Run ID CR031
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IG_BH01_CR032_F.jpg	Split Tube Photo Front of Core Run ID CR032
IG_BH01_CR033_B.jpg	Split Tube Photo Back of Core Run ID CR033
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Photo Name	Photo Description
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Photo Name	Photo Description
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Photo Name	Photo Description
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Photo Name	Photo Description
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Photo Name	Photo Description
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IG_BH01_CR335_F.jpg	Split Tube Photo Front of Core Run ID CR335
IG_BH01_CR336_B.jpg	Split Tube Photo Back of Core Run ID CR336
IG_BH01_CR336_F.jpg	Split Tube Photo Front of Core Run ID CR336
IG_BH01_CR337_B.jpg	Split Tube Photo Back of Core Run ID CR337
IG_BH01_CR337_F.jpg	Split Tube Photo Front of Core Run ID CR337
IG_BH01_CR338_B.jpg	Split Tube Photo Back of Core Run ID CR338
IG_BH01_CR338_F.jpg	Split Tube Photo Front of Core Run ID CR338
IG_BH01_CR339_B.jpg	Split Tube Photo Back of Core Run ID CR339
IG_BH01_CR339_F.jpg	Split Tube Photo Front of Core Run ID CR339
IG_BH01_CR340_B.jpg	Split Tube Photo Back of Core Run ID CR340
IG_BH01_CR340_F.jpg	Split Tube Photo Front of Core Run ID CR340
IG_BH01_CR341_B.jpg	Split Tube Photo Back of Core Run ID CR341
IG_BH01_CR341_F.jpg	Split Tube Photo Front of Core Run ID CR341
IG_BH01_CR342_B.jpg	Split Tube Photo Back of Core Run ID CR342
IG_BH01_CR342_F.jpg	Split Tube Photo Front of Core Run ID CR342
IG_BH01_CR343_B.jpg	Split Tube Photo Back of Core Run ID CR343
IG_BH01_CR343_F.jpg	Split Tube Photo Front of Core Run ID CR343

Photo Name	Photo Description
IG_BH01_CR344_B.jpg	Split Tube Photo Back of Core Run ID CR344
IG_BH01_CR344_F.jpg	Split Tube Photo Front of Core Run ID CR344
IG_BH01_CR345_B.jpg	Split Tube Photo Back of Core Run ID CR345
IG_BH01_CR345_F.jpg	Split Tube Photo Front of Core Run ID CR345
IG_BH01_CR346_B.jpg	Split Tube Photo Back of Core Run ID CR346
IG_BH01_CR346_F.jpg	Split Tube Photo Front of Core Run ID CR346
IG_BH01_CR347_B.jpg	Split Tube Photo Back of Core Run ID CR347
IG_BH01_CR347_F.jpg	Split Tube Photo Front of Core Run ID CR347
IG_BH01_CR348_B.jpg	Split Tube Photo Back of Core Run ID CR348
IG_BH01_CR348_F.jpg	Split Tube Photo Front of Core Run ID CR348
IG_BH01_CR349_B.jpg	Split Tube Photo Back of Core Run ID CR349
IG_BH01_CR349_F.jpg	Split Tube Photo Front of Core Run ID CR349

Photo Name	Photo Description
IG_BH01_AR001_B.jpg	Sample AR001 Photo, Back
IG_BH01_AR001_F.jpg	Sample AR001 Photo, Front
IG_BH01_AR001_P.jpg	Sample AR001 Photo, Package
IG_BH01_AR002_B.jpg	Sample AR002 Photo, Back
IG_BH01_AR002_F.jpg	Sample AR002 Photo, Front
IG_BH01_AR002_P.jpg	Sample AR002 Photo, Package
IG_BH01_AR003_B.jpg	Sample AR003 Photo, Back
IG_BH01_AR003_F.jpg	Sample AR003 Photo, Front
IG_BH01_AR003_P.jpg	Sample AR003 Photo, Package
IG_BH01_AR004_B.jpg	Sample AR004 Photo, Back
IG_BH01_AR004_F.jpg	Sample AR004 Photo, Front
IG_BH01_AR004_P.jpg	Sample AR004 Photo, Package
IG_BH01_AR005_B.jpg	Sample AR005 Photo, Back
IG_BH01_AR005_F.jpg	Sample AR005 Photo, Front
IG_BH01_AR005_P.jpg	Sample AR005 Photo, Package
IG_BH01_AR006_B.jpg	Sample AR006 Photo, Back
IG_BH01_AR006_F.jpg	Sample AR006 Photo, Front
IG_BH01_AR006_P.jpg	Sample AR006 Photo, Package
IG_BH01_AR007_B.jpg	Sample AR007 Photo, Back
IG_BH01_AR007_F.jpg	Sample AR007 Photo, Front
IG_BH01_AR007_P.jpg	Sample AR007 Photo, Package
IG_BH01_AR008_B.jpg	Sample AR008 Photo, Back
IG_BH01_AR008_F.jpg	Sample AR008 Photo, Front
IG_BH01_AR008_P.jpg	Sample AR008 Photo, Package
IG_BH01_AR009_B.jpg	Sample AR009 Photo, Back
IG_BH01_AR009_F.jpg	Sample AR009 Photo, Front
IG_BH01_AR009_P.jpg	Sample AR009 Photo, Package
IG_BH01_AR010_B.jpg	Sample AR010 Photo, Back
IG_BH01_AR010_F.jpg	Sample AR010 Photo, Front
IG_BH01_AR010_P.jpg	Sample AR010 Photo, Package
IG_BH01_BD001_B.jpg	Sample BD001 Photo, Back
IG_BH01_BD001_F.jpg	Sample BD001 Photo, Front
IG_BH01_BD001_P.jpg	Sample BD001 Photo, Package
IG_BH01_BD002_B.jpg	Sample BD002 Photo, Back
IG_BH01_BD002_F.jpg	Sample BD002 Photo, Front
IG_BH01_BD002_P.jpg	Sample BD002 Photo, Package
IG_BH01_BD003_B.jpg	Sample BD003 Photo, Back
IG_BH01_BD003_F.jpg	Sample BD003 Photo, Front
IG_BH01_BD003_P.jpg	Sample BD003 Photo, Package
IG_BH01_BD004_B.jpg	Sample BD004 Photo, Back
IG_BH01_BD004_F.jpg	Sample BD004 Photo, Front
IG_BH01_BD004_P.jpg	Sample BD004 Photo, Package
IG_BH01_BD005_B.jpg	Sample BD005 Photo, Back
IG_BH01_BD005_F.jpg	Sample BD005 Photo, Front
IG_BH01_BD005_P.jpg	Sample BD005 Photo, Package
IG_BH01_BD006_B.jpg	Sample BD006 Photo, Back
IG_BH01_BD006_F.jpg	Sample BD006 Photo, Front
IG_BH01_BD006_P.jpg	Sample BD006 Photo, Package
IG_BH01_BD007_B.jpg	Sample BD007 Photo, Back

Photo Name	Photo Description
IG_BH01_BD007_F.jpg	Sample BD007 Photo, Front
IG_BH01_BD007_P.jpg	Sample BD007 Photo, Package
IG_BH01_BD008_B.jpg	Sample BD008 Photo, Back
IG_BH01_BD008_F.jpg	Sample BD008 Photo, Front
IG_BH01_BD008_P.jpg	Sample BD008 Photo, Package
IG_BH01_BD009_B.jpg	Sample BD009 Photo, Back
IG_BH01_BD009_F.jpg	Sample BD009 Photo, Front
IG_BH01_BD009_P.jpg	Sample BD009 Photo, Package
IG_BH01_BD010_B.jpg	Sample BD010 Photo, Back
IG_BH01_BD010_F.jpg	Sample BD010 Photo, Front
IG_BH01_BD010_P.jpg	Sample BD010 Photo, Package
IG_BH01_BD011_B.jpg	Sample BD011 Photo, Back
IG_BH01_BD011_F.jpg	Sample BD011 Photo, Front
IG_BH01_BD011_P.jpg	Sample BD011 Photo, Package
IG_BH01_BD012_B.jpg	Sample BD012 Photo, Back
IG_BH01_BD012_F.jpg	Sample BD012 Photo, Front
IG_BH01_BD012_P.jpg	Sample BD012 Photo, Package
IG_BH01_BD013_B.jpg	Sample BD013 Photo, Back
IG_BH01_BD013_F.jpg	Sample BD013 Photo, Front
IG_BH01_BD013_P.jpg	Sample BD013 Photo, Package
IG_BH01_BD014_B.jpg	Sample BD014 Photo, Back
IG_BH01_BD014_F.jpg	Sample BD014 Photo, Front
IG_BH01_BD014_P.jpg	Sample BD014 Photo, Package
IG_BH01_BD015_B.jpg	Sample BD015 Photo, Back
IG_BH01_BD015_F.jpg	Sample BD015 Photo, Front
IG_BH01_BD015_P.jpg	Sample BD015 Photo, Package
IG_BH01_BD016_B.jpg	Sample BD016 Photo, Back
IG_BH01_BD016_F.jpg	Sample BD016 Photo, Front
IG_BH01_BD016_P.jpg	Sample BD016 Photo, Package
IG_BH01_BD017_B.jpg	Sample BD017 Photo, Back
IG_BH01_BD017_F.jpg	Sample BD017 Photo, Front
IG_BH01_BD017_P.jpg	Sample BD017 Photo, Package
IG_BH01_BD018_B.jpg	Sample BD018 Photo, Back
IG_BH01_BD018_F.jpg	Sample BD018 Photo, Front
IG_BH01_BD018_P.jpg	Sample BD018 Photo, Package
IG_BH01_BD019_B.jpg	Sample BD019 Photo, Back
IG_BH01_BD019_F.jpg	Sample BD019 Photo, Front
IG_BH01_BD019_P.jpg	Sample BD019 Photo, Package
IG_BH01_BD020_B.jpg	Sample BD020 Photo, Back
IG_BH01_BD020_F.jpg	Sample BD020 Photo, Front
IG_BH01_BD020_P.jpg	Sample BD020 Photo, Package
IG_BH01_BR001_B.jpg	Sample BR001 Photo, Back
IG_BH01_BR001_F.jpg	Sample BR001 Photo, Front
IG_BH01_BR001_P.jpg	Sample BR001 Photo, Package
IG_BH01_BR002_B.jpg	Sample BR002 Photo, Back
IG_BH01_BR002_F.jpg	Sample BR002 Photo, Front
IG_BH01_BR002_P.jpg	Sample BR002 Photo, Package
IG_BH01_BR003_B.jpg	Sample BR003 Photo, Back
IG_BH01_BR003_F.jpg	Sample BR003 Photo, Front

Photo Name	Photo Description
IG_BH01_BR003_P.jpg	Sample BR003 Photo, Package
IG_BH01_BR004_B.jpg	Sample BR004 Photo, Back
IG_BH01_BR004_F.jpg	Sample BR004 Photo, Front
IG_BH01_BR004_P.jpg	Sample BR004 Photo, Package
IG_BH01_BR005_B.jpg	Sample BR005 Photo, Back
IG_BH01_BR005_F.jpg	Sample BR005 Photo, Front
IG_BH01_BR005_P.jpg	Sample BR005 Photo, Package
IG_BH01_BR006_B.jpg	Sample BR006 Photo, Back
IG_BH01_BR006_F.jpg	Sample BR006 Photo, Front
IG_BH01_BR006_P.jpg	Sample BR006 Photo, Package
IG_BH01_ED001_B.jpg	Sample ED001 Photo, Back
IG_BH01_ED001_F.jpg	Sample ED001 Photo, Front
IG_BH01_ED001_P.jpg	Sample ED001 Photo, Package
IG_BH01_ED002_B.jpg	Sample ED002 Photo, Back
IG_BH01_ED002_F.jpg	Sample ED002 Photo, Front
IG_BH01_ED002_P.jpg	Sample ED002 Photo, Package
IG_BH01_ED003_B.jpg	Sample ED003 Photo, Back
IG_BH01_ED003_F.jpg	Sample ED003 Photo, Front
IG_BH01_ED003_P.jpg	Sample ED003 Photo, Package
IG_BH01_ED004_B.jpg	Sample ED004 Photo, Back
IG_BH01_ED004_F.jpg	Sample ED004 Photo, Front
IG_BH01_ED004_P.jpg	Sample ED004 Photo, Package
IG_BH01_ED005_B.jpg	Sample ED005 Photo, Back
IG_BH01_ED005_F.jpg	Sample ED005 Photo, Front
IG_BH01_ED005_P.jpg	Sample ED005 Photo, Package
IG_BH01_ED006_B.jpg	Sample ED006 Photo, Back
IG_BH01_ED006_F.jpg	Sample ED006 Photo, Front
IG_BH01_ED006_P.jpg	Sample ED006 Photo, Package
IG_BH01_ED007_B.jpg	Sample ED007 Photo, Back
IG_BH01_ED007_F.jpg	Sample ED007 Photo, Front
IG_BH01_ED007_P.jpg	Sample ED007 Photo, Package
IG_BH01_ED008_B.jpg	Sample ED008 Photo, Back
IG_BH01_ED008_F.jpg	Sample ED008 Photo, Front
IG_BH01_ED008_P.jpg	Sample ED008 Photo, Package
IG_BH01_ED009_B.jpg	Sample ED009 Photo, Back
IG_BH01_ED009_F.jpg	Sample ED009 Photo, Front
IG_BH01_ED009_P.jpg	Sample ED009 Photo, Package
IG_BH01_ED010_B.jpg	Sample ED010 Photo, Back
IG_BH01_ED010_F.jpg	Sample ED010 Photo, Front
IG_BH01_ED010_P.jpg	Sample ED010 Photo, Package
IG_BH01_ED011_B.jpg	Sample ED011 Photo, Back
IG_BH01_ED011_F.jpg	Sample ED011 Photo, Front
IG_BH01_ED011_P.jpg	Sample ED011 Photo, Package
IG_BH01_ED012_B.jpg	Sample ED012 Photo, Back
IG_BH01_ED012_F.jpg	Sample ED012 Photo, Front
IG_BH01_ED012_P.jpg	Sample ED012 Photo, Package
IG_BH01_ED013_B.jpg	Sample ED013 Photo, Back
IG_BH01_ED013_F.jpg	Sample ED013 Photo, Front
IG_BH01_ED013_P.jpg	Sample ED013 Photo, Package

Photo Name	Photo Description
IG_BH01_ED014_B.jpg	Sample ED014 Photo, Back
IG_BH01_ED014_F.jpg	Sample ED014 Photo, Front
IG_BH01_ED014_P.jpg	Sample ED014 Photo, Package
IG_BH01_ED015_B.jpg	Sample ED015 Photo, Back
IG_BH01_ED015_F.jpg	Sample ED015 Photo, Front
IG_BH01_ED015_P.jpg	Sample ED015 Photo, Package
IG_BH01_ED016_B.jpg	Sample ED016 Photo, Back
IG_BH01_ED016_F.jpg	Sample ED016 Photo, Front
IG_BH01_ED016_P.jpg	Sample ED016 Photo, Package
IG_BH01_HC001_B.jpg	Sample HC001 Photo, Back
IG_BH01_HC001_F.jpg	Sample HC001 Photo, Front
IG_BH01_HC001_P.jpg	Sample HC001 Photo, Package
IG_BH01_HC002_B.jpg	Sample HC002 Photo, Back
IG_BH01_HC002_F.jpg	Sample HC002 Photo, Front
IG_BH01_HC002_P.jpg	Sample HC002 Photo, Package
IG_BH01_HC003_B.jpg	Sample HC003 Photo, Back
IG_BH01_HC003_F.jpg	Sample HC003 Photo, Front
IG_BH01_HC003_P.jpg	Sample HC003 Photo, Package
IG_BH01_MB001_B.jpg	Sample MB001 Photo, Back
IG_BH01_MB001_F.jpg	Sample MB001 Photo, Front
IG_BH01_MB001_P.jpg	Sample MB001 Photo, Package
IG_BH01_MB002_B.jpg	Sample MB002 Photo, Back
IG_BH01_MB002_F.jpg	Sample MB002 Photo, Front
IG_BH01_MB002_P.jpg	Sample MB002 Photo, Package
IG_BH01_MB003_B.jpg	Sample MB003 Photo, Back
IG_BH01_MB003_F.jpg	Sample MB003 Photo, Front
IG_BH01_MB003_P.jpg	Sample MB003 Photo, Package
IG_BH01_MB004_B.jpg	Sample MB004 Photo, Back
IG_BH01_MB004_F.jpg	Sample MB004 Photo, Front
IG_BH01_MB004_P.jpg	Sample MB004 Photo, Package
IG_BH01_MB005_B.jpg	Sample MB005 Photo, Back
IG_BH01_MB005_F.jpg	Sample MB005 Photo, Front
IG_BH01_MB005_P.jpg	Sample MB005 Photo, Package
IG_BH01_MB006_B.jpg	Sample MB006 Photo, Back
IG_BH01_MB006_F.jpg	Sample MB006 Photo, Front
IG_BH01_MB006_P.jpg	Sample MB006 Photo, Package
IG_BH01_MP001_B.jpg	Sample MP001 Photo, Back
IG_BH01_MP001_F.jpg	Sample MP001 Photo, Front
IG_BH01_MP001_P.jpg	Sample MP001 Photo, Package
IG_BH01_MP002_B.jpg	Sample MP002 Photo, Back
IG_BH01_MP002_F.jpg	Sample MP002 Photo, Front
IG_BH01_MP002_P.jpg	Sample MP002 Photo, Package
IG_BH01_MP003_B.jpg	Sample MP003 Photo, Back
IG_BH01_MP003_F.jpg	Sample MP003 Photo, Front
IG_BH01_MP003_P.jpg	Sample MP003 Photo, Package
IG_BH01_MP004_B.jpg	Sample MP004 Photo, Back
IG_BH01_MP004_F.jpg	Sample MP004 Photo, Front
IG_BH01_MP004_P.jpg	Sample MP004 Photo, Package
IG_BH01_MP005_B.jpg	Sample MP005 Photo, Back

Photo Name	Photo Description
IG_BH01_MP005_F.jpg	Sample MP005 Photo, Front
IG_BH01_MP005_P.jpg	Sample MP005 Photo, Package
IG_BH01_MP006_B.jpg	Sample MP006 Photo, Back
IG_BH01_MP006_F.jpg	Sample MP006 Photo, Front
IG_BH01_MP006_P.jpg	Sample MP006 Photo, Package
IG_BH01_MP007_B.jpg	Sample MP007 Photo, Back
IG_BH01_MP007_F.jpg	Sample MP007 Photo, Front
IG_BH01_MP007_P.jpg	Sample MP007 Photo, Package
IG_BH01_MP008_B.jpg	Sample MP008 Photo, Back
IG_BH01_MP008_F.jpg	Sample MP008 Photo, Front
IG_BH01_MP008_P.jpg	Sample MP008 Photo, Package
IG_BH01_MP009_B.jpg	Sample MP009 Photo, Back
IG_BH01_MP009_F.jpg	Sample MP009 Photo, Front
IG_BH01_MP009_P.jpg	Sample MP009 Photo, Package
IG_BH01_MP010_B.jpg	Sample MP010 Photo, Back
IG_BH01_MP010_F.jpg	Sample MP010 Photo, Front
IG_BH01_MP010_P.jpg	Sample MP010 Photo, Package
IG_BH01_PW001_B.jpg	Sample PW001 Photo, Back
IG_BH01_PW001_F.jpg	Sample PW001 Photo, Front
IG_BH01_PW001_P.jpg	Sample PW001 Photo, Package
IG_BH01_PW002_B.jpg	Sample PW002 Photo, Back
IG_BH01_PW002_F.jpg	Sample PW002 Photo, Front
IG_BH01_PW002_P.jpg	Sample PW002 Photo, Package
IG_BH01_PW003_B.jpg	Sample PW003 Photo, Back
IG_BH01_PW003_F.jpg	Sample PW003 Photo, Front
IG_BH01_PW003_P.jpg	Sample PW003 Photo, Package
IG_BH01_PW004_B.jpg	Sample PW004 Photo, Back
IG_BH01_PW004_F.jpg	Sample PW004 Photo, Front
IG_BH01_PW004_P.jpg	Sample PW004 Photo, Package
IG_BH01_PW005_B.jpg	Sample PW005 Photo, Back
IG_BH01_PW005_F.jpg	Sample PW005 Photo, Front
IG_BH01_PW005_P.jpg	Sample PW005 Photo, Package
IG_BH01_PW006_B.jpg	Sample PW006 Photo, Back
IG_BH01_PW006_F.jpg	Sample PW006 Photo, Front
IG_BH01_PW006_P.jpg	Sample PW006 Photo, Package
IG_BH01_PW007_B.jpg	Sample PW007 Photo, Back
IG_BH01_PW007_F.jpg	Sample PW007 Photo, Front
IG_BH01_PW007_P.jpg	Sample PW007 Photo, Package
IG_BH01_PW008_B.jpg	Sample PW008 Photo, Back
IG_BH01_PW008_F.jpg	Sample PW008 Photo, Front
IG_BH01_PW008_P.jpg	Sample PW008 Photo, Package
IG_BH01_PW009_B.jpg	Sample PW009 Photo, Back
IG_BH01_PW009_F.jpg	Sample PW009 Photo, Front
IG_BH01_PW009_P.jpg	Sample PW009 Photo, Package
IG_BH01_PW010_B.jpg	Sample PW010 Photo, Back
IG_BH01_PW010_F.jpg	Sample PW010 Photo, Front
IG_BH01_PW010_P.jpg	Sample PW010 Photo, Package
IG_BH01_PW011_B.jpg	Sample PW011 Photo, Back
IG_BH01_PW011_F.jpg	Sample PW011 Photo, Front

Photo Name	Photo Description
IG_BH01_PW011_P.jpg	Sample PW011 Photo, Package
IG_BH01_PW012_B.jpg	Sample PW012 Photo, Back
IG_BH01_PW012_F.jpg	Sample PW012 Photo, Front
IG_BH01_PW012_P.jpg	Sample PW012 Photo, Package
IG_BH01_PW013_B.jpg	Sample PW013 Photo, Back
IG_BH01_PW013_F.jpg	Sample PW013 Photo, Front
IG_BH01_PW013_P.jpg	Sample PW013 Photo, Package
IG_BH01_PW014_B.jpg	Sample PW014 Photo, Back
IG_BH01_PW014_F.jpg	Sample PW014 Photo, Front
IG_BH01_PW014_P.jpg	Sample PW014 Photo, Package
IG_BH01_PW015_B.jpg	Sample PW015 Photo, Back
IG_BH01_PW015_F.jpg	Sample PW015 Photo, Front
IG_BH01_PW015_P.jpg	Sample PW015 Photo, Package
IG_BH01_PW016_B.jpg	Sample PW016 Photo, Back
IG_BH01_PW016_F.jpg	Sample PW016 Photo, Front
IG_BH01_PW016_P.jpg	Sample PW016 Photo, Package
IG_BH01_PW017_B.jpg	Sample PW017 Photo, Back
IG_BH01_PW017_F.jpg	Sample PW017 Photo, Front
IG_BH01_PW017_P.jpg	Sample PW017 Photo, Package
IG_BH01_PW018_B.jpg	Sample PW018 Photo, Back
IG_BH01_PW018_F.jpg	Sample PW018 Photo, Front
IG_BH01_PW018_P.jpg	Sample PW018 Photo, Package
IG_BH01_PW019_B.jpg	Sample PW019 Photo, Back
IG_BH01_PW019_F.jpg	Sample PW019 Photo, Front
IG_BH01_PW019_P.jpg	Sample PW019 Photo, Package
IG_BH01_PW020_B.jpg	Sample PW020 Photo, Back
IG_BH01_PW020_F.jpg	Sample PW020 Photo, Front
IG_BH01_PW020_P.jpg	Sample PW020 Photo, Package
IG_BH01_PW021_B.jpg	Sample PW021 Photo, Back
IG_BH01_PW021_F.jpg	Sample PW021 Photo, Front
IG_BH01_PW021_P.jpg	Sample PW021 Photo, Package
IG_BH01_PW022_B.jpg	Sample PW022 Photo, Back
IG_BH01_PW022_F.jpg	Sample PW022 Photo, Front
IG_BH01_PW022_P.jpg	Sample PW022 Photo, Package
IG_BH01_PW023_B.jpg	Sample PW023 Photo, Back
IG_BH01_PW023_F.jpg	Sample PW023 Photo, Front
IG_BH01_PW023_P.jpg	Sample PW023 Photo, Package
IG_BH01_PW024_B.jpg	Sample PW024 Photo, Back
IG_BH01_PW024_F.jpg	Sample PW024 Photo, Front
IG_BH01_PW024_P.jpg	Sample PW024 Photo, Package
IG_BH01_PW025_B.jpg	Sample PW025 Photo, Back
IG_BH01_PW025_F.jpg	Sample PW025 Photo, Front
IG_BH01_PW025_P.jpg	Sample PW025 Photo, Package
IG_BH01_PW026_B.jpg	Sample PW026 Photo, Back
IG_BH01_PW026_F.jpg	Sample PW026 Photo, Front
IG_BH01_PW026_P.jpg	Sample PW026 Photo, Package
IG_BH01_PW027_B.jpg	Sample PW027 Photo, Back
IG_BH01_PW027_F.jpg	Sample PW027 Photo, Front
IG_BH01_PW027_P.jpg	Sample PW027 Photo, Package

Photo Name	Photo Description
IG_BH01_PW028_B.jpg	Sample PW028 Photo, Back
IG_BH01_PW028_F.jpg	Sample PW028 Photo, Front
IG_BH01_PW028_P.jpg	Sample PW028 Photo, Package
IG_BH01_PW029_B.jpg	Sample PW029 Photo, Back
IG_BH01_PW029_F.jpg	Sample PW029 Photo, Front
IG_BH01_PW029_P.jpg	Sample PW029 Photo, Package
IG_BH01_PW030_B.jpg	Sample PW030 Photo, Back
IG_BH01_PW030_F.jpg	Sample PW030 Photo, Front
IG_BH01_PW030_P.jpg	Sample PW030 Photo, Package
IG_BH01_SO001_B.jpg	Sample SO001 Photo, Back
IG_BH01_SO001_F.jpg	Sample SO001 Photo, Front
IG_BH01_SO001_P.jpg	Sample SO001 Photo, Package
IG_BH01_SO002_B.jpg	Sample SO002 Photo, Back
IG_BH01_SO002_F.jpg	Sample SO002 Photo, Front
IG_BH01_SO002_P.jpg	Sample SO002 Photo, Package
IG_BH01_SO003_B.jpg	Sample SO003 Photo, Back
IG_BH01_SO003_F.jpg	Sample SO003 Photo, Front
IG_BH01_SO003_P.jpg	Sample SO003 Photo, Package
IG_BH01_SO004_B.jpg	Sample SO004 Photo, Back
IG_BH01_SO004_F.jpg	Sample SO004 Photo, Front
IG_BH01_SO004_P.jpg	Sample SO004 Photo, Package
IG_BH01_SO005_B.jpg	Sample SO005 Photo, Back
IG_BH01_SO005_F.jpg	Sample SO005 Photo, Front
IG_BH01_SO005_P.jpg	Sample SO005 Photo, Package
IG_BH01_SO006_B.jpg	Sample SO006 Photo, Back
IG_BH01_SO006_F.jpg	Sample SO006 Photo, Front
IG_BH01_SO006_P.jpg	Sample SO006 Photo, Package
IG_BH01_SO007_B.jpg	Sample SO007 Photo, Back
IG_BH01_SO007_F.jpg	Sample SO007 Photo, Front
IG_BH01_SO007_P.jpg	Sample SO007 Photo, Package
IG_BH01_SO008_B.jpg	Sample SO008 Photo, Back
IG_BH01_SO008_F.jpg	Sample SO008 Photo, Front
IG_BH01_SO008_P.jpg	Sample SO008 Photo, Package
IG_BH01_SO009_B.jpg	Sample SO009 Photo, Back
IG_BH01_SO009_F.jpg	Sample SO009 Photo, Front
IG_BH01_SO009_P.jpg	Sample SO009 Photo, Package
IG_BH01_SO010_B.jpg	Sample SO010 Photo, Back
IG_BH01_SO010_F.jpg	Sample SO010 Photo, Front
IG_BH01_SO010_P.jpg	Sample SO010 Photo, Package
IG_BH01_SO011_B.jpg	Sample SO011 Photo, Back
IG_BH01_SO011_F.jpg	Sample SO011 Photo, Front
IG_BH01_SO011_P.jpg	Sample SO011 Photo, Package
IG_BH01_SO012_B.jpg	Sample SO012 Photo, Back
IG_BH01_SO012_F.jpg	Sample SO012 Photo, Front
IG_BH01_SO012_P.jpg	Sample SO012 Photo, Package
IG_BH01_SO013_B.jpg	Sample SO013 Photo, Back
IG_BH01_SO013_F.jpg	Sample SO013 Photo, Front
IG_BH01_SO013_P.jpg	Sample SO013 Photo, Package
IG_BH01_SO014_B.jpg	Sample SO014 Photo, Back

Photo Name	Photo Description
IG_BH01_SO014_F.jpg	Sample SO014 Photo, Front
IG_BH01_SO014_P.jpg	Sample SO014 Photo, Package
IG_BH01_SO015_B.jpg	Sample SO015 Photo, Back
IG_BH01_SO015_F.jpg	Sample SO015 Photo, Front
IG_BH01_SO015_P.jpg	Sample SO015 Photo, Package
IG_BH01_TP001_B.jpg	Sample TP001 Photo, Back
IG_BH01_TP001_F.jpg	Sample TP001 Photo, Front
IG_BH01_TP001_P.jpg	Sample TP001 Photo, Package
IG_BH01_TP002_B.jpg	Sample TP002 Photo, Back
IG_BH01_TP002_F.jpg	Sample TP002 Photo, Front
IG_BH01_TP002_P.jpg	Sample TP002 Photo, Package
IG_BH01_TP003_B.jpg	Sample TP003 Photo, Back
IG_BH01_TP003_F.jpg	Sample TP003 Photo, Front
IG_BH01_TP003_P.jpg	Sample TP003 Photo, Package
IG_BH01_TP004_B.jpg	Sample TP004 Photo, Back
IG_BH01_TP004_F.jpg	Sample TP004 Photo, Front
IG_BH01_TP004_P.jpg	Sample TP004 Photo, Package
IG_BH01_TP005_B.jpg	Sample TP005 Photo, Back
IG_BH01_TP005_F.jpg	Sample TP005 Photo, Front
IG_BH01_TP005_P.jpg	Sample TP005 Photo, Package
IG_BH01_TP006_B.jpg	Sample TP006 Photo, Back
IG_BH01_TP006_F.jpg	Sample TP006 Photo, Front
IG_BH01_TP006_P.jpg	Sample TP006 Photo, Package
IG_BH01_TP007_B.jpg	Sample TP007 Photo, Back
IG_BH01_TP007_F.jpg	Sample TP007 Photo, Front
IG_BH01_TP007_P.jpg	Sample TP007 Photo, Package
IG_BH01_TP008_B.jpg	Sample TP008 Photo, Back
IG_BH01_TP008_F.jpg	Sample TP008 Photo, Front
IG_BH01_TP008_P.jpg	Sample TP008 Photo, Package
IG_BH01_TP009_B.jpg	Sample TP009 Photo, Back
IG_BH01_TP009_F.jpg	Sample TP009 Photo, Front
IG_BH01_TP009_P.jpg	Sample TP009 Photo, Package
IG_BH01_TP010_B.jpg	Sample TP010 Photo, Back
IG_BH01_TP010_F.jpg	Sample TP010 Photo, Front
IG_BH01_TP010_P.jpg	Sample TP010 Photo, Package
IG_BH01_UC001_B.jpg	Sample UC001 Photo, Back
IG_BH01_UC001_F.jpg	Sample UC001 Photo, Front
IG_BH01_UC001_P.jpg	Sample UC001 Photo, Package
IG_BH01_UC002_B.jpg	Sample UC002 Photo, Back
IG_BH01_UC002_F.jpg	Sample UC002 Photo, Front
IG_BH01_UC002_P.jpg	Sample UC002 Photo, Package
IG_BH01_UC003_B.jpg	Sample UC003 Photo, Back
IG_BH01_UC003_F.jpg	Sample UC003 Photo, Front
IG_BH01_UC003_P.jpg	Sample UC003 Photo, Package
IG_BH01_UC004_B.jpg	Sample UC004 Photo, Back
IG_BH01_UC004_F.jpg	Sample UC004 Photo, Front
IG_BH01_UC004_P.jpg	Sample UC004 Photo, Package
IG_BH01_UC005_B.jpg	Sample UC005 Photo, Back
IG_BH01_UC005_F.jpg	Sample UC005 Photo, Front

Photo Name	Photo Description
IG_BH01_UC005_P.jpg	Sample UC005 Photo, Package
IG_BH01_UC006_B.jpg	Sample UC006 Photo, Back
IG_BH01_UC006_F.jpg	Sample UC006 Photo, Front
IG_BH01_UC006_P.jpg	Sample UC006 Photo, Package

Photo Name	Photo Description
IG_BH01_AT_22.45_22.60_1.jpg	Detailed Photo of AT Feature at depth 22.45 to 22.6m
IG_BH01_AT_50.28_50.81_1.jpg	Detailed Photo of AT Feature at depth 50.28 to 50.81m
IG_BH01_AT_50.28_50.81_2.jpg	Detailed Photo of AT Feature at depth 50.28 to 80.81m, Photo 2
IG_BH01_ST_1.83_2.33_1.jpg	Detailed Photo of ST Feature at depth 1.83 to 2.33m
IG_BH01_ST_42.5_48.1_1.jpg	Detailed Photo of ST Feature at depth 42.5 to 48.1m

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH01_AR001	159.34	159.74	Archive	Y	NWMO Warehouse
IG_BH01_AR002	264.17	264.55	Archive	Y	NWMO Warehouse
IG_BH01_AR003	316.21	316.55	Archive	Y	NWMO Warehouse
IG_BH01_AR004	365.98	366.34	Archive	Y	NWMO Warehouse
IG_BH01_AR005	444.3	444.65	Archive	Y	NWMO Warehouse
IG_BH01_AR006	559	559.38	Archive	Y	NWMO Warehouse
IG_BH01_AR007	609.81	610.18	Archive	Y	NWMO Warehouse
IG_BH01_AR008	671.42	671.76	Archive	Y	NWMO Warehouse
IG_BH01_AR009	736.58	736.93	Archive	Y	NWMO Warehouse
IG_BH01_AR010	840.93	841.3	Archive	Y	NWMO Warehouse
IG_BH01_BD001	150.03	150.2	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD002	200.84	201.05	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD003	249.02	249.18	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD004	297.84	297.98	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD005	327.21	327.32	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD006	388.36	388.49	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD007	405.16	405.28	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD008	447.1	447.2	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD009	464.62	464.73	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD010	504.42	504.54	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD011	526.89	527.04	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD012	553.09	553.19	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD013	585.7	585.79	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD014	620.67	620.83	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD015	666.68	666.8	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD016	705.47	705.59	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD017	768.81	768.93	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD018	800.53	800.63	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD019	869.88	870.02	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BD020	900	900.11	Bulk Density	N	Golder Associates Ltd.
IG_BH01_BR001	408.58	408.79	Brazilian	N	CANMET
IG_BH01_BR002	442.24	442.48	Brazilian	Y	NWMO Warehouse
IG_BH01_BR003	468.2	468.4	Brazilian	N	CANMET
IG_BH01_BR004	522.89	523.14	Brazilian	Y	NWMO Warehouse
IG_BH01_BR005	568.01	568.25	Brazilian	N	CANMET
IG_BH01_BR006	600.97	601.2	Brazilian	Y	NWMO Warehouse
IG_BH01_ED001	175.16	175.47	Effective Diffusion Coefficient	Y	NWMO Warehouse
IG_BH01_ED002	202.03	202.35	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED003	297.48	297.84	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED004	375.26	375.58	Effective Diffusion Coefficient	Y	NWMO Warehouse
IG_BH01_ED005	405.52	405.83	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED006	446.36	446.68	Effective Diffusion Coefficient	N	Golder Associates Ltd.

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH01_ED007	465.01	465.31	Effective Diffusion Coefficient	Y	Golder Associates Ltd.
IG_BH01_ED008	504.11	504.42	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED009	533.55	533.86	Effective Diffusion Coefficient	Y	Golder Associates Ltd.
IG_BH01_ED010	553.19	553.49	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED011	586.01	586.32	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED012	673.87	674.21	Effective Diffusion Coefficient	Y	NWMO Warehouse
IG_BH01_ED013	705.59	705.92	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED014	800.63	800.94	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_ED015	873.47	873.77	Effective Diffusion Coefficient	Y	NWMO Warehouse
IG_BH01_ED016	900.11	900.43	Effective Diffusion Coefficient	N	Golder Associates Ltd.
IG_BH01_HC001	411.19	411.39	Hydraulic Conductivity	N	Returned from Golder Associates Ltd. To NWMO Custody
IG_BH01_HC002	504.75	504.95	Hydraulic Conductivity	N	Returned from Golder Associates Ltd. To NWMO Custody
IG_BH01_HC003	585.5	585.7	Hydraulic Conductivity	N	Returned from Golder Associates Ltd. To NWMO Custody
IG_BH01_MB001	98.7	99.02	Microbiology	N	Transferred to NWMO Custody
IG_BH01_MB002	99.02	99.33	Microbiology	N	Transferred to NWMO Custody
IG_BH01_MB003	218.95	219.2	Microbiology	N	Transferred to NWMO Custody
IG_BH01_MB004	219.67	219.9	Microbiology	N	Transferred to NWMO Custody
IG_BH01_MB005	513.1	513.36	Microbiology	N	Transferred to NWMO Custody
IG_BH01_MB006	513.36	513.6	Microbiology	N	Transferred to NWMO Custody
IG_BH01_MP001	201.44	201.6	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP002	298.66	298.79	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH01_MP003	405.4	405.52	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP004	446.98	447.1	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP005	504.64	504.75	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP006	553.59	553.7	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP007	585.9	586.01	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP008	706.03	706.16	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP009	801.05	801.16	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_MP010	900.55	900.67	Mercury Injection Porosity	N	Returned from Particle Technology Labs to NWMO Custody
IG_BH01_PW001	221.75	222.05	Pore Water	N	Hydroisotop
IG_BH01_PW002	222.05	222.17	Pore Water	N	Hydroisotop
IG_BH01_PW003	223.05	223.45	Pore Water	Y	NWMO Warehouse
IG_BH01_PW004	324.05	324.41	Pore Water	N	Hydroisotop
IG_BH01_PW005	324.41	324.56	Pore Water	N	Hydroisotop
IG_BH01_PW006	324.56	324.92	Pore Water	Y	NWMO Warehouse
IG_BH01_PW007	420.38	420.73	Pore Water	N	Hydroisotop
IG_BH01_PW008	421.08	421.19	Pore Water	N	Hydroisotop
IG_BH01_PW009	420.73	421.08	Pore Water	Y	NWMO Warehouse
IG_BH01_PW010	455.98	456.08	Pore Water	N	Hydroisotop
IG_BH01_PW011	456.08	456.42	Pore Water	N	Hydroisotop
IG_BH01_PW012	456.42	456.77	Pore Water	Y	NWMO Warehouse
IG_BH01_PW013	531.59	531.71	Pore Water	N	Hydroisotop
IG_BH01_PW014	530.88	531.23	Pore Water	N	Hydroisotop
IG_BH01_PW015	531.23	531.59	Pore Water	Y	NWMO Warehouse
IG_BH01_PW016	582.3	582.41	Pore Water	N	Hydroisotop
IG_BH01_PW017	582.41	582.76	Pore Water	N	Hydroisotop
IG_BH01_PW018	582.76	583.13	Pore Water	Y	NWMO Warehouse
IG_BH01_PW019	632.43	632.53	Pore Water	N	Hydroisotop
IG_BH01_PW020	632.53	632.88	Pore Water	N	Hydroisotop
IG_BH01_PW021	632.88	633.23	Pore Water	Y	NWMO Warehouse
IG_BH01_PW022	720.41	720.79	Pore Water	N	Hydroisotop
IG_BH01_PW023	720.79	721.2	Pore Water	Y	NWMO Warehouse
IG_BH01_PW024	721.2	721.34	Pore Water	N	Hydroisotop

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH01_PW025	820.25	820.62	Pore Water	N	Hydroisotop
IG_BH01_PW026	820.62	820.98	Pore Water	Y	NWMO Warehouse
IG_BH01_PW027	820.98	821.09	Pore Water	N	Hydroisotop
IG_BH01_PW028	920.27	920.64	Pore Water	N	Hydroisotop
IG_BH01_PW029	920.64	921	Pore Water	Y	NWMO Warehouse
IG_BH01_PW030	921	921.13	Pore Water	N	Hydroisotop
IG_BH01_SO001	444.65	444.85	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO002	449.55	449.65	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO003	449.65	449.76	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO004	451.92	452.04	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO005	452.04	452.15	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO006	470.79	470.99	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO007	470.99	471.2	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO008	482.23	482.45	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO009	485.51	485.61	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO010	485.61	485.71	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO011	490.07	490.18	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO012	490.18	490.29	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO013	490.29	490.4	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO014	490.4	490.5	Sorption	N	Transferred to NWMO Custody
IG_BH01_SO015	491.73	491.94	Sorption	N	Transferred to NWMO Custody
IG_BH01_TP001	201.05	201.21	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP002	297.98	298.11	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP003	405.28	405.4	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP004	446.86	446.98	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP005	504.54	504.64	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP006	553.49	553.59	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP007	585.79	585.9	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP008	705.92	706.03	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP009	800.94	801.05	Total Porosity	N	Golder Associates Ltd.
IG_BH01_TP010	900.43	900.55	Total Porosity	N	Golder Associates Ltd.

Sample Name	Depth From (m)	Depth To (m)	Sample Type	Archive (Y/N)	Location
IG_BH01_UC001	408.37	408.58	Uniaxial Compressive Strength	N	CANMET
IG_BH01_UC002	442	442.24	Uniaxial Compressive Strength	Y	NWMO Warehouse
IG_BH01_UC003	468	468.2	Uniaxial Compressive Strength	N	CANMET
IG_BH01_UC004	522.63	522.89	Uniaxial Compressive Strength	Y	NWMO Warehouse
IG_BH01_UC005	567.75	568.01	Uniaxial Compressive Strength	N	CANMET
IG_BH01_UC006	600.71	600.97	Uniaxial Compressive Strength	Y	NWMO Warehouse

Note:

Golder collected Sorption and Microbiology samples as part of the core logging activities for WP3, but was not involved in the sample testing. Sorption and Microbiology core samples were transferred to NWMO custody for sample testing coordination. Golder sent Mercury Injection Porosity and Hydraulic Conductivity samples to the respective laboratories, but when testing of those samples was cancelled, they were returned to NWMO custody.

The other laboratory sampling will be discussed in the WP4 (Core Testing) Report.



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