Appendix 11-C

Brucejack Project Feasibility Study: Underground Rock Mechanics Assessment

ERM

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PRETIUM RESOURCES INC.

BRUCEJACK PROJECT FEASIBILITY STUDY

UNDERGROUND ROCK MECHANICS ASSESSMENT

FINAL

PROJECT NO:	1008-007-002	DISTRIBUTION:	
DATE:	May 17, 2013	PRETIUM:	2 copies
DOCUMENT NO:	BJ-2013-03	BGC:	3 copies
		TETRATECH:	1 copy

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
234 St. Paul Street
Kamloops, BC
Canada V2C 6G4
Tel: 250.374.8600
Fax: 250.374.8606

May 17, 2013
Project No: 1008-007-002

Ian Chang, Vice President, Project Development
Pretium Resources Inc.
#1600 – 570 Granville Street
Vancouver, B.C., V6C 3P1

Dear Mr. Chang,

Re: Brucejack Project Feasibility Study – Underground Rock Mechanics Assessment - FINAL

Please find attached a FINAL copy of the above referenced report. Do not hesitate to contact us with any questions or concerns. We appreciate the continued opportunity to take part in the development of the Brucejack Project.

Yours sincerely,

BGC ENGINEERING INC.
per:

ISSUED AS DIGITAL DOCUMENT.
SIGNED HARDCOPY ON FILE WITH
BGC ENGINEERING INC.

Catherine Schmid, M.Sc., P.Eng.
Senior Geotechnical Engineer

Att.

CJS/JRT/ej

EXECUTIVE SUMMARY

BGC Engineering Inc. (BGC) has completed an underground rock mechanics assessment as a component of an ongoing Feasibility Study currently being completed by Pretium Resources Inc. for their Brucejack Project. The Brucejack Project is located near Stewart, in northwestern B.C.

Geotechnical designs and recommendations provided herein are based on the results of site investigations and geotechnical assessments. These assessments include rock mass characterization, structural geology interpretations, excavation and pillar stability analyses, and ground support design.

Geotechnical site investigations completed to support the underground rock mechanics assessments were: geotechnical drilling and logging, oriented drill core measurements, borehole televiewer surveys, laboratory testing of rock core samples, and installation of borehole instrumentation to measure groundwater pressures. Geotechnical mapping of the dewatered historic underground workings was completed to provide structural geology information; the geotechnical performance of excavations in the existing mine were also reviewed.

BGC understands that the designs and recommendations presented herein are to be used by Pretium and their mine planners to support Feasibility Study level underground mine design, production schedules, and cost estimates for the proposed Brucejack Project. These are provided primarily for cost estimating purposes, commensurate with the current level of study. Work completed for the current study focuses on the Brucejack Project's West Zone (WZ) and Valley of Kings (VOK) mineralized zones.

The rock mass of the Brucejack area has been divided into eight geotechnical units based on characteristics of the rock mass.

The geotechnical units in the WZ, in order of increasing competence, are as follows:

- The Fault Zone ("WZ FZ") unit includes fault-disturbed rock. This unit is strong (according to the methods of ISRM (1978)) with fair rock quality designation (RQD (Bieniawski, 1976)) and close to moderate discontinuity spacing.
- The Weathered Rock Zone ("WZ WRZ") unit includes weathered near-surface rock. It is medium strong with good RQD and moderate discontinuity spacing.
- The Fresh Rock ("WZ FR") unit comprises all remaining rock, which is very strong with excellent RQD and wide discontinuity spacing.

The geotechnical units in the VOK, in order of increasing competence, are as follows:

- The Fault Zone ("VOK FZ") unit includes fault-disturbed rock. The Fault Zone unit includes Brucejack Fault Zone rock and rock from all geologic units. It is strong with good RQD and close discontinuity spacing.

- The Weathered Rock Zone (“VOK WRZ”) unit comprises near-surface weathered rock. This unit is strong with good RQD and close discontinuity spacing.
- Rock mass Domain 1 (“VOK D1”) comprises the Argillite (“ARG”) geologic unit and is very strong with good RQD and moderate discontinuity spacing.
- Rock mass Domain 2 (“VOK D2”) comprises the Porphyry (“P1”) and Silicified Rock (“RHY”) geologic units, which are strong with excellent RQD, and moderate discontinuity spacing.
- Rock mass Domain 3 (“VOK D3”) comprises the Jurassic Conglomerate (“JR”), Triassic Sediment (“TRS”), and Andesite (“ANDX”) units, which are very strong with excellent RQD and wide discontinuity spacing.

Rock mechanics analyses were completed to estimate achievable spans for the proposed mine openings. Stope stability analysis for the observed lower quartile (“conservative”) and median (“base case”) rock masses were completed. The recommended maximum unsupported hydraulic radii vary from 1.9 to 3.1 for the backs and from 6.2 to 11.0 for the hangingwalls, for the conservative and base case designs, respectively. The recommended maximum supported hydraulic radii vary from 4.1 to 5.6 for the backs and from 10.0 to 14.5 for the hangingwalls, for the conservative and base case designs, respectively. These hydraulic radii provide a wide range of stope dimension options for mine planning and design.

Standoff distances between excavations of 10 m, 25 m, and 50 m have been recommended for the raises, ramps, and underground crusher, respectively. The recommended stope standoff distance from all hangingwall/footwall drives is 25 m. The proposed portal decline is to be twinned, with a recommended minimum pillar thickness between the two excavations of approximately 10 m. A minimum recommended crown pillar thickness of 15 m is also specified, assuming a maximum span of 10 m for all stopes immediately below the crown pillar. Cable bolt support for the back of stopes immediately below the crown pillar is also recommended. This recommendation is provided to maximize recovery of near-surface ore.

Regular ground deformation monitoring will be required to execute the achievable spans and pillar widths; therefore, recommendations for geotechnical instrumentation have been presented. Additional recommendations for the next stage of design include further studies to increase the confidence in parameters used in the Feasibility level assessments and to address identified data gaps and risks to the project.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

LIST OF DRAWINGS

LIST OF APPENDICES

LIMITATIONS

BGC Engineering Inc. (BGC) prepared this document for the account of Pretium Resources Inc. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents and drawings are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending BGC's written approval. If this document is issued in an electronic format, an original paper copy is on file at BGC and that copy is the primary reference with precedence over any electronic copy of the document, or any extracts from our documents published by others.

1.0 INTRODUCTION

1.1. Project Overview

BGC Engineering Inc. (BGC) was retained by Pretium Resources Inc. (Pretium) to provide a Feasibility Study (FS) level rock mechanics assessment for the proposed underground mine of the Brucejack Project, located near Stewart, in northwestern B.C. The Brucejack Project includes an underground mine targeting a gold-silver resource, waste dumps, and a plant site. The Brucejack Project proposes to re-open and expand a mine previously operated by Newhawk Gold Mines Ltd. during the 1980’s and 1990’s (Pretium, 2012a). Work completed for the current study focuses on the Brucejack Project's West Zone (WZ) and Valley of Kings (VOK) mineralized zones.

1.2. Previous and Other Work by BGC

BGC previously provided open pit slope design criteria for a Preliminary Economic Assessment (PEA) completed for the combined Snowfield and Brucejack properties (BGC, 2010). The results of the PEA are summarized in the technical report issued in June 2011 by Wardrop (Wardrop, 2011).

Three geotechnical drill holes and limited field mapping were completed by BGC in 2010. Those data were combined with a database of geological and geotechnical data provided by Silver Standard Resources Inc. to provide preliminary recommendations for stope dimensions and ground support requirements for proposed underground mining of the VOK and WZ (BGC, 2011b).

As part of concurrent FS work, BGC is also providing geotechnical guidance and recommendations for the design of the Brucejack Project waste rock management (ARD), dewatering infrastructure, and foundations of the buildings at the proposed plant site. Site investigation programs were completed to support these additional scopes of work. Data collected during all of BGC's 2012 geotechnical site investigation programs will be presented under separate cover.

1.3. Scope of Work

The FS level geotechnical assessment conducted for the proposed underground mine consists of the following tasks and deliverables, as presented in the June 2012 cost estimate update (BGC, 2012):

1. Compilation and review of existing geological and geotechnical data.
2. Site investigations to provide additional data for the FS including geotechnical drilling, geotechnical mapping, and hydrogeological testing.
3. Geotechnical analyses of the available data and proposed mine plan to support design recommendations for:
    a. Maximum allowable stope dimensions, for both 'supported' and 'unsupported' cases
    b. Primary and secondary development dimensions

   c. Pillar dimensions
   d. Standoff distances
   e. Ground support designs.
4. Recommendations for additional work to be completed at the detailed design / basic engineering phase of the project to optimize the underground geotechnical recommendations.

This report is divided into three main parts:

1. The project setting and factual data sources that are the basis for the work are summarized in Sections 2 and 3. Sections 4 and 5 provide interpretations of the factual data and estimates of geotechnical parameters needed for the assessment.
2. The FS design recommendations are provided in Sections 6 and 7.
3. Finally, a summary of the work completed, identification of project risks and opportunities, and recommendations for further work are provided in Sections 8, 9, and 10.

This report provides FS level recommendations for underground geotechnical designs. These recommendations are provided for use in the development of a mine plan, capital cost estimate, and operating cost estimate for the Brucejack Project. BGC has not been retained to provide costs; where appropriate, quantities have been provided which can be used to estimate costs with appropriate unit rates as provided by Pretium or others.

2.0 PROJECT SETTING

2.1. Project Location and Layout

The Brucejack Project is located in northwestern BC, approximately 70 km north-northwest of Stewart, B.C. at UTM 426,967E 6,258,719N NAD 83 Zone 9 (Drawing 01). The project is located in the high alpine of the Sulphurets District of the Iskut River region, approximately 30 km west of Bowser Lake and near the western extent of Pretium's claims in the area. It is located in a historically active mining and exploration region. Other developed prospective or past producers near the Brucejack Project are shown in Drawing 02, and include: Eskay Creek, Goldwedge, Granduc, Johnny Mountain, and Snip.

The project area currently includes camp facilities, shop facilities, a ventilation shaft, an adit, and approximately 5,300 m of exploratory underground development from previous mining by Newhawk Gold Mines Ltd., completed between 1985 and 1995 (McLeod, 1999). A portion of the WZ was previously mined, and is accessible when dewatered. A major reclamation program was completed in 1999 and the property has since been on care and maintenance (McLeod, 1999). The proposed underground operation is to be southwest of Brucejack Lake (Drawing 03). Due to the remote location of the project site, there are no existing public infrastructure works such as power lines or access roads. An ore processing plant site is to be located to the immediate east of the underground mine footprint, and to the southwest of Brucejack Lake. Waste rock and flotation tailings will report to a paste backfill plant as well as be deposited into Brucejack Lake.

2.2. Area Physiography and Vegetation

The Brucejack Project is located within the Boundary Range of the Coast Mountain Physiographic Belt along the western margin of the Intermontane Tectonic Belt. The region is characterized by steep mountains and extensive glaciation. Within the local project area, elevations vary from 1,300 to 2,000 m a.s.l, but regional relief can reach 1,000 m. Prominent depositional and erosional features that have resulted from glaciation include melt water channels on sloping surfaces and small depressions frequently occupied by ponds and lakes.

The tree line is at approximately 1,200 m elevation; therefore the main project site is sparsely vegetated. Sparse fir, spruce, and alder grow along the valley bottoms, and scrub alpine spruce, juniper, alpine grasses, moss, and heather cover the steep valley walls (Rescan, 2011).

2.3. Climate and Meteorology

The Brucejack Project is located more than 200 km inland from the Pacific Ocean, but lower mountains near the coast and a corridor created by Behm Canal, Burroughs Bay, and the Unuk River valley allow penetration of maritime air and subsequent abundant precipitation. At high elevations, the heavy precipitation and low temperatures lead to annual snowfalls exceeding annual snowmelts, and permanent icefields result (Rescan, 1987). Temperatures range from -34°C in January to +22°C in July (Pretium, 2013). The climate can be highly variable over short distances in mountainous terrain such as that found in the project area.

Precipitation at the site is seasonally variable, with highest rates occurring in early winter months. From October to May, the majority of precipitation falls as snow. At higher elevations, snow accumulation can reach between 10 m and 15 m, while snow accumulation in low river valleys ranges from 2 m to 3 m (Wardrop, 2011).

Lakes and ponds in the vicinity of the project site are covered with ice and snow approximately nine months every year (Rescan, 1987). This long period of snow and ice cover limits evaporation quantities. Maximum freshet flows are expected to occur in July or early August (Rescan, 1987).

2.4. Geological Setting

The Brucejack Property is underlain by Upper Triassic volcaniclastic and epiclastic sedimentary rocks of the Stuhini Group and Lower to Middle Jurassic volcanic, volcaniclastic, and sedimentary rocks of the Hazelton Group. Unuk River Member andesites of the Hazelton Group are the most important host rocks to the gold and silver bearing quartz veins discovered in the Brucejack Property (P&E Mining Consultants, 2009). The rocks in the VOK and WZ are the deposits of interest for the current study, and the target of the current mine plan.

Multiple zones of alteration have been noted in the project area. Alteration assemblages vary with proximity to deformation events, but sericitic alteration is pervasive throughout the project area. Carbonate, chlorite, and silica alteration are also common.

As summarized by Greig (2012a), mid-Cretaceous deformation, which represents the major phase of regional deformation, has deformed the mineralized zones and the host stratigraphy and therefore post-dates the mineralization event. The regional deformation led to the development of the predominant WNW to ENE trending, very steeply dipping foliation best displayed in the altered rocks which are the immediate hosts to the mineralization. Late stage brittle faulting has locally disrupted some of the earlier tectonic fabrics. There is evidence for northerly, northwest, and northeast fault trends.

Two major phases of folding are present on the property. Although their origin is uncertain, they may have been developed during the mid-Cretaceous event. One fold axis generally trends northerly but with an arcuate shape and the other is a tightly folded syncline plunging to the east-southeast with foliation developed parallel to the axial plane of the fold. Both fold axes are steeply plunging.

2.5. In-Situ Stress Setting

In-situ stress magnitudes and orientations can have a significant influence on underground mine stability. A literature search completed for this study was unable to locate any references from nearby mines. The commonly used 'World Stress Map' dataset also does not contain any relevant data for the study area. However, as discussed by Amadei and

Stephansson (1997), it is not uncommon for in-situ stresses and rock fabric to align; therefore, some speculation on the in-situ stress orientations can be made on the basis of regional geological interpretation.

As discussed above, the project site is located in the Boundary Range of the Coast Mountains. These steep mountains trend approximately north-northwest, and are part of the ring of volcanoes and associated mountains known as the Pacific Ring of Fire. The plate tectonics near the project site consist of extensional cracking, faulting, and rifting, as a result of strike-slip movement between the North American Plate and the Pacific Plate. This strike-slip movement infers a maximum horizontal principal stress striking parallel to the trend of the mountain ranges.

Regional lineaments defined by ESRi (2010) vary in trend from north-south to east-west. The Brucejack Fault lineament trends north-south through the project area, and is inferred to be a normal fault (McPherson, 1994). This could indicate a maximum horizontal principal stress parallel to the strike of the Brucejack Fault Zone.

The interpreted main foliation set strikes NW-SE, although there is variability across the project area due to numerous folding events. The interpreted major fold axis within the project area cuts through the VOK, and strikes east-southeast. However, these structural fabrics are not considered to be representative of the current in-situ stresses.

Borehole breakouts are a well-documented indication of in-situ stresses (Zoback et al., 1985), and two borehole breakouts were recorded by the acoustic televiewer during the 2012 field program. The borehole breakouts suggest different principal horizontal stress orientations in the WZ and VOK.

The available dataset for inference of the orientation of the horizontal principal stresses is summarized in Table 2-1.

Table 2-1. Summary of Data Available for Inference of Horizontal Principal Stress Directions

Source	Inferred major horizontal principal stress direction	Notes
Regional topography	West-southwest to east-northeast	
Regional lineaments	North to south	Brucejack Fault Zone is inferred to be a normal fault
Borehole breakouts	WZ: Southwest to northeast VOK: southeast to northwest	From acoustic televiewer surveys

Due to the lack of consistency in the data, it is not possible to estimate the orientation of the major horizontal principal stress directions from available data.

With regards to magnitude of principal stresses, it is considered appropriate to assume that horizontal stresses are higher than vertical in the near-surface region, particularly in mountainous regions such as the Brucejack Project (McKinnon et al., 2002).

The following additional assumptions, which follow common practice in defining in-situ stresses (McKinnon et al., 2002), have been made:

- The principal axes of the in-situ stress field are horizontal and vertical.
- The orientations of the principal stresses in the horizontal plane do not vary with depth.
- The magnitude of the principal stresses varied linearly with depth below surface.

Recommendations for further investigation of the in-situ stress setting at Brucejack are provided in Section 10.

2.6. Seismic Activity

Site specific seismic hazard information was obtained from the 2010 National Building Code Seismic Hazard Calculation provided by Natural Resources Canada at www.EarthquakesCanada.ca. This service provides spectral and peak hazard values site classes based on material characteristics. The portal face can be classified as Site Class A (hard rock). The design ground motions, corresponding to a 2% probability of exceedance in 50 years (0.000404 per annum) for Site Classes A is g = 0.078.

As discussed by USACE (1997), underground structures are inherently less sensitive to seismic effects than surface structures. Damage can occur under particularly unfavorable conditions, however in general the damage caused by an earthquake is significantly less in the subsurface than it is at the surface (Pratt et al., 1978). The effect of seismic events has been considered in the design of the portal cut face discussed in Section 6.

The only major geological structure currently within the geology model that intersects the mine workings is the Brucejack Fault Zone, and it is not considered to be active (Pretium, 2012b).

2.7. Hydrological Setting

The hydrological system at the Brucejack Project site is consistent with a snow-melt dominated system, and is supplemented by glacier meltwaters in the late summer. Periods of high flow typically occur in July or early August, and low-flow conditions occur when precipitation is accumulated in the snowpack from January through March (Rescan, 1987).

The project area is drained by Sulphurets Creek, which ultimately leads to the Unuk River. The drainage area of the westward sloping watershed is approximately 11.7 km^2. Small streams and glacial meltwaters feed Brucejack Lake throughout the year (BGC, 2011a).

FS level hydrological and hydrogeological assessments are also being completed by BGC and will be provided under separate cover.

3.0 GEOTECHNICAL DATABASE

This section summarizes data and information used in the current study. These data have been collected from multiple sources and compiled by BGC. When considered together they constitute an adequate database to support the assessments completed for this Feasibility-level study.

3.1. Drill Holes

Data from approximately 350 drill holes advanced between 2010 and 2012 are included in the FS geotechnical database. In total, the dataset includes 113,758 m of geological and geotechnical core logging information from NQ, HQ, and PQ diameter core, collected throughout the Brucejack Project area by Pretium and their predecessors.

Ten holes (4,797 m) were drilled specifically for geotechnical purposes and logged by or under the direct supervision BGC (Table 3-1).

Table 3-1. Geotechnical Drill Holes Summary

Hole ID	Year of Site Investigation	Location	Collar[1]			Plunge (°)	Trend (°)	Drilled Length (m)	Length of Oriented Core Data (m)	Televiewer Survey Length (m)	Number of Packer Tests	Piezometers[2] (m)	Distribution (%)[5]			Structural Domains
			Northing	Easting	Elevation (masl)								Stopes	Developments	Wall Rock	
SU-077	2010	VOK	6258327	426598	1507	-66	180	550	NA	541	3	VW 1 (268)	0.0	0.0	100.0	VOK 1
SU-082		VOK	6258041	426509	1541	-59	247	518	397	400	2	VW 2 (76,393)	1.0	0.0	99.0	VOK 2
SU-088		GOSSAN HILL	6258921	426572	1390	-75	360	300	NA	NA	1	VW 2 (75,215)	NA	NA	NA	NA
DH-BGC12-19	2012	WZ	6258822	426563	1375	-75	131	425	403	403	4	VW 1 (214)	4.9	1.4	93.7	WEST ZONE
DH-BGC12-20		WZ	6258607	426552	1419	-76	222	420	366	366	4	NA	0.0	4.0	96.0	WEST ZONE
DH-BGC12-21		VOK	6258223	426406	1499	-75	145	557	532	532	5	VW 2 (252, 514)	1.1	4.5	94.4	VOK 1
DH-BGC12-22		VOK	6257930	426473	1544	-75	036	589	562	562	3	VW 2 (96, 448)	19.4	2.2	78.4	VOK 2
DH-BGC12-23		VOK	6257853	426502	1582	-70	271	566	560	523	4	VW 2 (501,565)	0.0	0.0	100.0	VOK 3
DH-BGC12-24		VOK	6257880	426644	1548	-68	002	501	494	494	3	VW 2 (98, 500)	13.6	0.0	86.4	VOK 2
DH-BGC12-25		VOK	6258086	426350	1524	-37	178	371	369	NA	2	VW 2 (31, 370)	10.8	3.0	86.2	NA
DH-BGC12-31		NORTH PORTAL	6258615	426960	1410	-75	256	50	0	NA	0	VW 2 (23, 44)	NA	NA	NA	NA
DH-BGC12-32		SOUTH PORTAL	6258578	426981	1411	-75	240	50	0	NA	1	VW 1 (44)	NA	NA	NA	NA

Notes:

1. NAD 83 Zone 9N used for coordinates.

2. All vibrating wire piezometers are grouted in the drill hole. Tip depths below the collar for each piezometer are given in brackets.

3. NA = Not Applicable.

4. Trend and plunge shown in the table are an average of downhole survey measurements.

5. Distribution representative of mine plan as of February 1 2013.

3.2. Geotechnical Core Logging

Geotechnical core logging completed for the Brucejack Project can be divided into four phases:

- Data collected by Silver Standard during the 2010 exploration drilling programs.
- Data collected by Pretium during the 2011 exploration drilling program.
- Data collected by Pretium during the 2012 exploration drilling program with training from BGC to facilitate the collection of additional geotechnical data during logging.
- Data collected by or under the direct supervision of BGC during the 2010 and 2012 geotechnical drilling programs.

Core logging data from the 2010 and 2011 exploration drilling program was reviewed by BGC (BGC, 2010). A comparison of logging information collected by both BGC and Silver Standard for parts of drill hole AM08-13 showed that the data collection procedures being used by Silver Standard were generally acceptable. A lack of accurate estimates of the average joint condition for each core run was noted as the main deficiency in the Silver Standard logging.

BGC subsequently provided additional training and supervision for Pretium to complete the 2010 and 2011 drilling program. Additional core logging observations were added to the Pretium logging system to improve rock mass characterization estimates and to increase the amount of data available for geotechnical studies. Pretium also acquired a point load testing device and received training in its use. The 2011 exploration drilling data reflect the improved logging procedures and include point load testing results for the core.

Data from the 2012 drilling program collected by BGC represents the most complete geotechnical dataset available for the project. Parameters and observations logged by BGC per core interval include:

- Total core recovery
- Rock quality designation (RQD) (Deere and Deere, 1988)
- Longest stick
- Number of discontinuities
- Number of discontinuity sets
- Strength grade (ISRM, 1978)
- Weathering grade (ISRM, 1978)
- Average joint condition (Bieniawski, 1976)
- Point load testing.

These data, combined with detailed discontinuity logs, provide the basis for the rock mass characterization completed by BGC. Summary geotechnical drill hole logs are provided in Appendix A.

3.3. Televiewer Surveys and Oriented Core

Data collected from acoustic and optical borehole televiewer surveys are the main source of sub-surface discontinuity orientation information for the Brucejack Project. Eight of the ten geotechnical drill holes completed in 2010 and 2012 were surveyed by BGC (Table 3-1). Interpretations of the televiewer survey logs were completed by BGC. During the 2012 drilling program, six holes were oriented using the ACT II core orientation system to provide an independent check on the televiewer survey results. The results of the ACT II orientation method were consistent with the televiewer results. Stereonets of discontinuities measured from the televiewer surveys and oriented core are provided in Appendix B.

3.4. Instrumentation for Hydraulic Head Monitoring

Instrumentation available for monitoring hydraulic heads at the site includes a network of vibrating wire piezometers (VWP) and standpipe piezometers. All VWPs and standpipes were installed into bedrock by BGC as part of PEA and FS-level site investigations. A summary of installations are presented by BGC in a site investigation summary report to be issued under separate cover.

3.5. Hydraulic Conductivity Testing

To obtain estimates of bedrock hydraulic conductivity, BGC conducted packer tests (constant rate injection and falling head) in all ten of the geotechnical boreholes and carried out a monitoring program to observe the dewatering of the previously flooded underground workings. Thirty packer tests were completed by BGC during the 2010 and 2012 field investigations.

The results from excavation dewatering are used to provide larger scale estimates of rock mass hydraulic conductivity near the existing underground workings. Detailed results of the excavation dewatering monitoring will be presented in the forthcoming hydrogeological design report.

The hydraulic conductivity of the overburden materials was not investigated due to the relatively thin distribution across the project site.

3.6. Hydraulic Head Database and Interpreted Water Table

Current hydrogeological data available at the time of the underground rock mechanics assessment was used to interpret the water table surface for the purposes of geotechnical design. This inferred water table surface is considered preliminary until the FS level hydrogeological investigations are complete and the design report, including dewater requirements, is issued. A plan map with interpreted groundwater elevation contours representative of summer or “high” water table conditions is provided in Drawing 04.

3.7. Laboratory Testing

Laboratory testing of rock core samples from geotechnical drill holes was conducted in 2010 and 2012. Tests completed include uniaxial compressive strength (UCS), Brazilian tensile strength (BTS), triaxial compressive strength, and small scale direct shear (DS), as shown in Table 3-2.

Table 3-2. Laboratory Testing Summary

Sample ID	Test Type	Requested Standard	Depth From (m)	Depth to (m)	Year of Testing	Year Drilled	Struct. Domain
SU-88-03	DIRECT SHEAR	ASTM D5607-08	111.3		2010	2010	WZ
SU-88-01			69.51		2010	2010	WZ
DH25-13			345.24	345.54	2012	2012	-
DH24-06			257.71	257.92	2012	2012	VOK 2
DH23-17			520.77	521.04	2012	2012	VOK 3
DH22-17			324.43	324.70	2012	2012	VOK 2
DH22-11			206.18	206.53	2012	2012	VOK 2
DH-21-05			260.39	260.59	2012	2012	VOK 1
DH-21-03			225.47	225.68	2012	2012	VOK 1
DH20-10			241.30	241.61	2012	2012	WZ
DH20-04			98.52	98.72	2012	2012	WZ
DH19-13			368.19	368.43	2012	2012	WZ
DH19-10			287.3	287.48	2012	2012	WZ
DH19-08			267.66	267.9	2012	2012	WZ
DH23-16	GRAIN SIZE, HYDROMETER AND ATTERBERG LIMIT	GS/HYD: ASTM D 422-63 ATT: ASTM D 4318-93	512.70	512.80	2012	2012	VOK 3
DH23-05			128.85	129.03	2012	2012	VOK 3
DH22-01			21.02	21.06	2012	2012	VOK 2
DH20-01			14.94	15.05	2012	2012	WZ
DH19-06			215.8	215.85	2012	2012	WZ
DH24-09	TRIAXIAL COMPRESSIVE STRENGTH	ASTM D7012-07 Method A	302.35	302.59	2012	2012	VOK 2
DH23-14			336.57	336.85	2012	2012	VOK 3
DH22-18			332.84	333.16	2012	2012	VOK 2
DH-21-06			295.63	295.94	2012	2012	VOK 1
DH20-05			113.76	113.99	2012	2012	WZ
DH19-11			311.78	312	2012	2012	WZ

Sample ID	Test Type	Requested Standard	Depth From (m)	Depth to (m)	Year of Testing	Year Drilled	Struct. Domain
DH25-12	UCS & BTS	UCS: ASTM D7012-07 Method D BTS: ISRM, 1981	320.85	321.14	2012	2012	-
DH25-03			85.25	85.55	2012	2012	-
DH24-13			448.26	448.48	2012	2012	VOK 2
DH24-03			132.53	132.83	2012	2012	VOK 2
DH24-01			72.07	72.32	2012	2012	VOK 2
DH23-21			542.53	542.77	2012	2012	VOK 3
DH23-06			146.40	146.68	2012	2012	VOK 3
DH22-21			436.85	437.12	2012	2012	VOK 2
DH22-05			46.20	46.45	2012	2012	VOK 2
DH-21-11			416.75	416.98	2012	2012	VOK 1
DH21-02			125.69	125.96	2012	2012	VOK 1
DH-20-13			345.64	345.90	2012	2012	WZ
DH20-09			199.34	199.66	2012	2012	WZ
DH20-02			24.49	24.66	2012	2012	WZ
DH19-12			353	353.24	2012	2012	WZ
DH19-09			283.17	283.4	2012	2012	WZ
DH19-07			247.39	247.5	2012	2012	WZ
DH19-01			16.52	16.8	2012	2012	WZ
SU-88-5			162.2	162.42	2010	2010	WZ
SU-88-4			138.57	138.78	2010	2010	WZ
SU-88-2			57.92	58.14	2010	2010	WZ
SU-82-4			287	287.22	2010	2010	VOK 2
SU-82-2			220.77	221.08	2010	2010	VOK 2
SU-77-9			460.93	461.15	2010	2010	VOK 1
SU-77-6			273.02	273.48	2010	2010	VOK 1
SU-77-10			508.95	509.25	2010	2010	VOK 1
SU-77-1			54.9	55.3	2010	2010	VOK 1
DH31-03			35.48	35.72	2012	2012	PORTAL
DH32-03			44.14	44.46	2012	2012	PORTAL

Testing of fault gouge and soil-like materials recovered from the geotechnical drill holes included grain size analysis, hydrometer tests and Atterberg limits. In addition to samples from geotechnical drill holes, BGC sampled core from PQ-sized exploration drill holes stored at Pretium's core warehouse in Stewart, BC, to increase the number of test results for each lithology. Laboratory reports are provided in Appendix C.

3.8. Structural Geology Review

BGC used work completed by Earth Resource Surveys Inc. (ERSi) at the adjacent KSM property, and made available via a data-sharing agreement, for regional structural geology interpretations. Lineations were mapped from color and black and white aerial photographs, LiDAR DEM data, and color orthophotographs. Ground-truthing of the lineament mapping study was completed by ERSi in September 2009 and August 2010. The results of this mapping have been used to develop an understanding of the regional structural fabric and to assist in the selection of design discontinuity sets.

3.9. Structural Mapping

In February 2012, BGC conducted geotechnical mapping of the de-watered underground workings previously mined by Newhawk Gold Mines Ltd. Where accessible, geological structures were mapped and their influence on excavation stability was evaluated. Over 1,000 structural measurements were collected from the portal, ramp, exploration drift and 1350 level. Information on the orientation, infilling, roughness, and persistence of the discontinuities was collected. Photographs and mapping data are included in Appendix D. Additional surface outcrop mapping and structural interpretations by Pretium were made available to BGC and have been incorporated into the geotechnical database.

3.10. Test Pits and Drill Holes at the Proposed Portal Location

One test pit and one drill hole was excavated at each of the proposed north portal and south portal locations. The test pits were excavated to the overburden-rock contact to confirm depth to rock and allow estimation of material take-off requirements for portal construction. Geophysics surveys were completed in the plant site area, and the tail-end of one of the surveys ran through the portal area.

3.11. Mine Plan Referenced for Current Assessment

A draft version of the proposed mine plan was provided by AMC Consultants Ltd. in March 2012, and was used as a guide for the current rock mechanics assessment. An update to the design was provided in February 2013 and reviewed with respect to the recommendations within this report. The final crusher and workshop layout was provided on March 18, 2013.

3.12. Other Relevant Data

Topographic survey data for the study area was provided by Pretium as contour lines with 5 m elevation intervals in DXF format and NAD 83 coordinate space.

Three dimensional (3D) geological models of the main lithologies and geological units as interpreted by Pretium within the WZ and VOK deposits were provided to BGC in DXF format.

The Brucejack Fault Zone surface was provided to BGC by Silver Standard during the 2010 PEA. BGC has reviewed the drill hole intercepts from all drilling (geotechnical and exploration) to refine the interpretation of the Brucejack Fault Zone with respect to orientation, rock mass characteristics, and true thickness of the fault zone. Interpretations of this fault are discussed in Section 5.0. Initial work was carried out using the PEA surface; the interpreted surface based on drilling intercepts was provided to AMC in February 2013 to assist with mine plan optimization.

Geological maps and reports for the area were sourced from the B.C. Geological Survey (BCGS), Geological Survey of Canada (GSC), MinFile, and historic reports from previous owners (Newhawk, Silver Standard). These maps and reports are cited where appropriate.

A re-survey of the dewatered portion of the historic underground workings was provided by Pretium in March 2012.

4.0 STRUCTURAL GEOLOGY AND STRUCTURAL DOMAINS

4.1. Overview

Geological structures or discontinuities, such as faults, joints, foliation, or bedding planes, can define potentially unstable blocks of rock and result in potentially adverse mining conditions. Adequate design of excavations requires the development of a “structural geology model” which divides the proposed workings into regions of common geological structure or “structural domains”. These domains may be separated by folds, major faults, or geological contacts. Excavation orientations and ground support should be optimized, when possible and practical, to address combinations of discontinuities that create adverse block geometries specific to these domains.

The Brucejack Project area has been divided into seven structural domains separated by location and major faults and folds, as shown in Drawing 05. Within each domain, design discontinuity sets have been interpreted for both the ore zone and wall rock, from borehole televiewer surveys, oriented core measurements, underground mapping, outcrop mapping, and regional structural interpretations. Sources of data are shown in Drawing 07. Summary stereonets for each domain are provided in Appendix H.

Observations from outcrop and underground mapping demonstrate that localized variations in joint set orientations and intensity occur due to folding and shearing. These local variations may not be observed in statistically significant quantities in downhole data due to infrequency of measurements. In each structural domain, the design sets constitute approximately 40% to 45% of the total poles measured. The remaining “random” discontinuities do not cluster into dip or dip direction patterns and are unlikely to represent site scale structural fabric; however they demonstrate the structural variability across the site. As discreet discontinuities are present in practically all orientations it can be reasonably assumed that adversely oriented structures may be present around all excavations.

4.2. Major Faults and Regional Structure

The Brucejack Project area includes major faults mapped by various sources. Reports available through MINFILE were reviewed and associated maps were digitized to compile site and regional scale fault traces around the project site. Data from those sources were supplemented by a review of the structural geology of the region completed by ESRi (2010) for an adjacent property. The major faults and lineaments are summarized in Table 4-1.

Table 4-1. Major Geologic Structure in the Project Area

Scale	Structure	Strike (˚)	Dip (˚)	Orientation Source
Regional	Treaty Creek Lineament	291 or 111	-	ERSi, 2010
	Upper Treaty Glacier Lineament	310 or 130	-	ERSi, 2010
	Brucejack Fault Lineament	355	-	ERSi, 2010
		176	60-90	Newhawk, 1990
		356	60	Margolis, 1993
Site	Lancaster Fault	330	74	BGC Mapping, 2012
		023	80-85	Newhawk, 1990
	Sutcliffe Fault	036	86	Newhawk, 1990
		038	73	BGC Mapping, 2012
	Jaz Fault	204	40	BGC Mapping, 2012
		191	-	Newhawk, 1990
	Zorzi Fault	212	74	BGC Mapping, 2012
		200	-	Newhawk, 1990
	Babics Fault	141	83	BGC Mapping, 2012
		125	-	Newhawk, 1990
		122	75	Roach, 1991
	Ryne Fault	246	71	BGC Mapping, 2012
		213	-	Newhawk, 1990
	Maddux Fault	059	69	BGC Mapping, 2012 - 1350 Level Ore Drive
		048	73	BGC Mapping, 2012 - Ramp-Exploration Drift Intersection
		020	72	Roach, 1991
		020	-	Newhawk, 1990
	Not My Fault	312	-	Newhawk, 1990
	Kovacic Fault	124	-	Newhawk, 1990
	SW Fault	151	-	Newhawk, 1990
	Bruce Fault	291	60-70	Newhawk, 1990, SSR NI 43-101
	Wobbegone Fault	237	-	Newhawk, 1990
	Grace Shear Zone	321	-	Newhawk, 1990

The major regional lineaments, as interpreted by ESRi (2010), around the Brucejack area are the Brucejack Fault lineament, the Upper Treaty Glacier lineament and the Treaty Creek lineament. The lineament trends are shown on Drawing 07.

The Brucejack Fault Zone truncates several site-scale faults at the western extent of the Brucejack deposit, and thus has been interpreted as post-dating site-scale deformation events. Orientations parallel to the inferred Brucejack Fault lineament were commonly observed in downhole structural measurements across the property. All interpreted structural domains include sets oriented along the Brucejack Fault Zone with dips ranging from 56˚ to vertical.

The Upper Treaty Glacier lineament is a prominent high angle topographic lineament north of the Brucejack property. Although not associated with a specific fault set, similarities in regional topography and drainages make it likely that parallel structures will be prevalent throughout the study area. The Upper Treaty Glacier lineament appears in drill hole and underground mapping data in the northern regions of the property, and appears locally in the WZ and VOK 1 domains as a moderately strong shear and joint set. It also aligns with the topographic lineament used to define the VOK 2 – VOK 3 structural domain boundary.

The Treaty Creek lineament strikes east-southeast and extends north to the Iskut River Fault. The lineament marks the contact between the Hazleton Group and Bowser Lake Group rocks to the north of the property, and is a common orientation for valleys and drainages in the region. It is expected that lineament-parallel steep structures will be prevalent throughout the study area. The Treaty Creek lineament was observed in drill hole data as a joint and shear set throughout the property, and parallels the VOK 1 – VOK 2 domain boundary.

The level of knowledge with respect to site-scale faulting is greater for the WZ than the VOK. In the WZ, Roach (1991) suggests that the east-west trending Grace Shear zone has rotated structural fabric throughout an approximately 130 m wide halo around the mineralization. The zone of rotation correlates spatially with the most altered and strained rocks and suggests a sinistral ductile shear. The northeasterly trending Ryne and Maddux faults, which were observed during underground mapping in the 1350 Level ore drives, post-date the deformation and are truncated by the development of the shear zone sub-parallel Babics Fault.

The Babics Fault is truncated by the northeasterly trending Lancaster Fault approximately 100 m southeast of the most western extent of the mineralized zone. Additional shear zone parallel faults, such as the Kovacic Fault and SW Fault, are observed in surface traces within the northeast extent of the WZ (Drawing 05).

The VOK mineralized zone is bound to the west by the Brucejack Fault Zone, and is surrounded to the north and south by northeasterly trending fault traces, and is crossed by a southeasterly plunging syncline (Pretium, 2012a). Oriented core measurements from a geotechnical drill hole drilled less than 100 m away from, and parallel to, the Brucejack Fault

Zone showed significantly higher variability than other geotechnical drill holes in the VOK, indicating a potential zone of fault-related structural disturbance in the westerly extents of the mineralization.

4.3. Structural Domains and Design Discontinuity Sets

All sets of geological structures which divide the rock mass into blocks are considered to be part of the rock mass fabric. The rock mass fabric may vary by geotechnical unit. The majority of these discontinuities are joints, shears, and minor faults with a range of persistence or continuity. The orientation and geotechnical characteristics of these sets have been estimated from the borehole televiewer data, oriented core measurements, underground mapping and outcrop mapping data, where available.

The Brucejack Project area has been divided into seven structural domains. Design discontinuity sets for both the ore and wall rock zones in each domain have been interpreted from the available data, and are presented in Appendix H. In defining these sets consideration has been given to the corresponding major faults within the study area and persistent structures as mapped from the underground and outcrop data.

BGC has identified discontinuity sets from the rock mass fabric that are sub-parallel to the major faults of the study area. The data have been grouped into sets so that the limit of the variability cone defining one standard deviation of dip and dip direction is not greater than approximately 15° from the mean pole for the set, as per the suggestion of Heuze and Goodman (1971). These sets are considered to be most likely to result in instability within the proposed excavations, and are included as the design discontinuity sets for each domain.

4.3.1. West Zone

All rocks of the WZ are grouped as a single structural domain. Data for this domain are provided by borehole televiewer surveys, oriented core measurements, and underground mapping. Outcrop mapping data is limited and only available for the southeast portion of the WZ, proximal to the VOK.

In the WZ ore zone, southeast striking vertical and steeply dipping (>60°) discontinuities are prominent, generally striking parallel to the mineralized zone. The WZ wall rock includes steep southwesterly and north-easterly striking sets with similarities to regional and site scale fabric, and a moderately dipping south-southwesterly set identified in the existing workings as a major shear zone. Shallowly dipping (<20˚) sets are identified in wall rock due to their potential for adverse failure geometries in the back of underground excavations.

4.3.2. VOK 1

This structural domain is bound by the limit of the VOK to the north and a southeasterly plunging fold hinge to the south. Data for this domain is only available in the wall rock, and provided by borehole televiewer surveys, oriented core measurements and outcrop mapping.

Prominent discontinuities in this domain include moderately dipping (<70°) southeasterly striking discontinuities, such as sets A1 through A4, as well as steeply dipping southwesterly striking discontinuities of sets F1 and F2 (Appendix H). Sets B1 and D1 are notable in this domain as they are along the trend of the Brucejack Fault lineament.

4.3.3. VOK 2

The VOK 2 structural domain is located in the central portion of the VOK, and is bound to the north by a southeasterly plunging fold hinge and to the south by a topographic lineament. Data for this domain is provided by borehole televiewer surveys, oriented core measurements and outcrop mapping.

The ore zone is dominated by moderate to steeply dipping (>55°) southeast striking discontinuity sets (E1, E2, and A1) that represent the dominant fabric in this domain (Appendix H). Set E1 is parallel to Greig's (2012a) interpretation of the local foliation, and to the Treaty Creek Lineament. Several moderately dipping "random" southwest to northwesterly striking joint sets have been included as design sets for their potential to create adverse combinations with the aforementioned sets. Set B1 is notable as it has a similar orientation to the Sulphurets Thrust Fault, a dominant fabric in properties adjacent to the Brucejack Project.

The wall rock fabric in VOK 2 is similar to the ore zone featuring prominent steep sets striking to the southeast. A flat minor fault and joint set has been identified in this domain. The faults vary greatly in elevation, rock type and geographic location, and thus have been interpreted to be discrete structures.

4.3.4. VOK 3

The VOK 3 domain includes all rocks south of VOK 2 (Drawing 05). Data for this domain is provided by borehole televiewer surveys, oriented core measurements and outcrop mapping.

The ore zone is primarily a collection of moderately to steeply dipping easterly striking shear sets with some variably dipping northwest joint sets. A steeply dipping east to southeast striking shear set (set A1) is parallel to the Treaty Creek lineament and the Not My Fault. Sets A3 and A4 are similar to the Brucejack Fault lineament.

The wall rock in VOK 3 has similar fabric to the ore zone with the addition of two vertical north to north-northwest striking sets, which match bedding measurements taken by Greig (2012b) during outcrop mapping in the area.

5.0 ROCK MASS CHARACTERIZATION AND GEOTECHNICAL UNITS

5.1. Overview

For the current underground rock mechanics assessment the rock mass of the project area has been divided into "geotechnical units" based on the properties of the rock and the character of the discontinuities. The properties of each geotechnical unit are estimated with consideration of:

- Lithology and alteration
- Intact rock properties, including intact strength, specific gravity, Hoek-Brown material constant (m_i), Young's Modulus (E_i), and Poisson's ratio (v)
- Block size versus discontinuity density, or "blockiness"
- Condition of the discontinuities separating the blocks of intact rock
- Fault-disturbed zones.

At present, a geological model is available for the VOK only. No geological model is currently available for the WZ. Therefore, two sets of geotechnical units have been defined: one set in the VOK, which accounts for the various geologic units, and one set in the WZ, which does not.

Note that in the discussion that follows, descriptive terms used for rock strength, Rock Quality Designation (RQD), and discontinuity spacing are defined by established industry standards, as follows:

- Strength grade is a field estimate of compressive strength (ISRM, 1978)
- Rock quality designation (RQD) is a modified core recovery measurement that describes the degree of jointing as a percentage of the drill core greater than 10 cm (Deere and Deere, 1988)
- Discontinuity spacing is the perpendicular distance between discontinuities (Bieniawski, 1976).

The geotechnical units in the WZ, in order of increasing competence, are as follows:

- The Fault Zone ("WZ FZ") unit comprises fault-disturbed rock identified by Pretium ("FZ" lithology), and less competent rock and faulting identified on BGC geotechnical drill hole logs (Appendix A). This unit is strong with fair rock quality designation (RQD) values and close to moderate discontinuity spacing.
- The Weathered Rock Zone ("WZ WRZ") unit comprises weathered near-surface rock as indicated on geotechnical and exploration drill hole logs (Appendix A). It is medium strong with good RQD values and moderate discontinuity spacing. It extends to a depth of between 10 to 50 m below surface.
- The Fresh Rock ("WZ FR") unit comprises all remaining rock mass, which is very strong with excellent RQD values and wide discontinuity spacing.

The geotechnical units in the VOK, in order of increasing competence, are as follows:

- The Fault Zone ("VOK FZ") unit comprises rock identified as fault-disturbed rock by Pretium ("FZ" lithology), and less competent rock and faulting identified on BGC geotechnical drill hole logs (Appendix A). This unit includes the Brucejack Fault Zone. It is strong with good RQD values and close discontinuity spacing.

- The Weathered Rock Zone ("VOK WRZ") unit comprises overburden material identified by Pretium and weathered near-surface rock indicated on geotechnical and exploration drill hole logs (Appendix A). This unit is medium strong with good RQD values and close discontinuity spacing. It extends to a depth of between 10 to 50 m below surface.
- Rock mass Domain 1 ("VOK D1") includes the Argillite ("ARG") geologic unit and is very strong with good RQD values and moderate discontinuity spacing.
- Rock mass Domain 2 ("VOK D2") includes the Porphyry ("P1") and Silicified Rock ("RHY") geologic units, which are strong with excellent RQD values, and moderate discontinuity spacing.
- Rock mass Domain 3 ("VOK D3") includes the Jurassic Conglomerate ("JR"), Triassic Sediment ("TRS"), and Andesite ("ANDX") units, which are strong with excellent RQD values and wide discontinuity spacing.

5.2. Overburden

The overburden in the project area consists of a veneer of well-graded glacial till over bedrock. Grain size varies from sand to gravel, with some silt and clay, and variable quantities of cobbles and boulders. Clasts are subrounded to rounded, and color varies from orangey brown to grey. Overburden thickness varies but is generally less than 5 m and often less than 1 m. A thin (often less than 0.5 m, but occasionally up to 3.0 m) layer of sandy organics overlies the overburden. Outcrop locations can also be used to infer the trends of overburden thickness in an area or topographic region, and are discussed in Section 4.1.

5.3. Lithology and Alteration

The proposed underground workings intersect six main geologic units which have been differentiated by Pretium based on lithology, alteration type, and alteration intensity. Table 5-1 summarizes typical lithology and alteration characteristics of each unit. Photograph 5-1 through Photograph 5-7 illustrate core typical of each unit.

Table 5-1. Typical Lithology and Alteration of Pretium Geologic Units

Unit	Code	Typical Lithology	Typical Alteration
Argillite	ARG	Black, siliceous argillite	Silica alteration
Porphyry	P1	Porphyry. Latite flows. Massive hornblende and/or feldspar phyric latite flows and subordinate fragmental rocks.	Chlorite and silica alteration
Silicified Rock	RHY	Silicified rock. Massive to flow-banded, commonly fragmental rhyolite; may include associated rhyolite pebble conglomerate and siliceous (and/or silicified) sandstone. Conglomerate, sandstone, local tuff and mudstone.	Chlorite and silica alteration
Jurassic Conglomerate	JR	Jurassic conglomerate. Polylithic volcanic pebble, cobble, granule and local boulder conglomerate and associated sandstone and rare mudstone.	Silica alteration
Triassic Sediments	TRS	Lower volcaniclastic sequence. Triassic sediments: mudstone, siltstone, sandstone, and conglomerate; green to dark grey to black. Thinly-bedded, well-stratified and well-sorted typically fine-grained sedimentary rocks.	Sericite ± calcite alteration
Andesite	ANDX	Fragmental volcanic rocks. Hornblende and/or feldspar phyric latite to trachyandesite flows and subordinate fragmental rocks; latite to andesite coarse pyroclastic rocks; fine lapilli and lithic crystal ash tuff, local coarse lapilli tuff and tuff-breccia, rare fine grained volcaniclastic rocks.	Chlorite-sericite and silica alteration

Photograph 5-1. Typical Argillite (ARG) (Photograph Courtesy of Pretium)

Photograph 5-2. Typical Porphyry (P1) (Photograph Courtesy of Pretium)

Photograph 5-3. Typical Silicified Rock (RHY) (Photograph Courtesy of Pretium)

Photograph 5-4. Typical Jurassic Conglomerates (JR) (Photograph Courtesy of Pretium)

Photograph 5-5. Typical Green, More Altered Triassic Sediments (TRS) (Photograph Courtesy of Pretium)

Photograph 5-6. Typical Black, Less Altered Triassic Sediments (TRS) (Photograph Courtesy of Pretium)

Photograph 5-7. Typical Andesite (ANDX) (Photograph Courtesy of Pretium)

The near-surface weathered rock mass is distinguished from the fresh rock below by an increased fracture frequency and a slightly higher degree of alteration characterized by iron oxide staining on joint surfaces (Photograph 5-8).

Photograph 5-8. Typical Weathered Rock Zone

5.4. Intact Strength

The intact strengths of the rocks in the project area have been estimated from laboratory testing of core samples (Drawing 05), point load testing at the project site (Appendix E), and core logging observations (Appendix A).

The laboratory tests provide precise results for a small number of samples which can be used to calibrate the results from the larger point load testing database. The resulting strength estimates based on the point load testing are then checked against the more general estimates of strength from core logging observations. The representative strength for each rock type is then used to estimate the rock mass strength for each geotechnical unit.

Uniaxial compressive strength (UCS) testing was completed for core samples from each unit, and historic laboratory testing results were combined with 2012 laboratory testing results. A total of 33 UCS tests were completed (Table 3-2). Of these, 11 samples failed along pre-existing foliation planes or structural features; these have not been included in the derivation of intact strength values; however they are plotted on intact strength graphs (Drawing 05). The average laboratory results for the WZ FR, VOK D2, and VOK D3 units are 126, 107, and 77 MPa, respectively. No samples from the VOK D1 unit were tested.

Testing in the fault zones (FZ) and the VOK WRZ was not successful due to difficulty obtaining suitable samples. One test was successfully completed in the WZ WRZ, with a result of 14 MPa.

The point load testing database includes 1,234 point load index (Is_{50}) results (Appendix E), with testing data in each geologic unit except the Argillite. BGC has estimated correlation factors (K) between the laboratory UCS and average Is_{50} values, where:

$$UCS = K * Is_{50} \quad [1]$$

The K values for the WZ FR, VOK D2, and VOK D3 units are 18, 15, and 13, respectively. The resulting estimated design UCS values based on point load testing results are 116, 95, and 73 MPa, respectively.

No point load tests were completed in the VOK D1 unit, therefore the design UCS has been estimated from field index (strength grade) tests completed during core logging and a comparison with the WZ FR unit. The estimated design UCS for the VOK D1 unit is 116 MPa.

Due to a limited number of UCS samples in the WRZ units, the UCS and Is_{50} data for these have been combined to estimate an average value of K = 11; this value is applicable to WRZ units in both the VOK and WZ. Based on the average Is_{50} values the estimated design UCS are 37 MPa and 50 MPa for the WZ WRZ and VOK WRZ, respectively.

The point load testing results in the FZ units were highly variable, and UCS tests were not successful. Laboratory samples were difficult to obtain due to sample size requirements. A K value of 20 has been applied to derive a design UCS of 69, 77, and 89 MPa for the Brucejack FZ, WZ FZ, and VOK FZ, respectively, which are within the range of the median field strength grades (R4, 50 – 100 MPa) recorded for these units during core logging. While relatively high, these values are not unexpected considering the core logging and underground mapping observations within fault and shear zones. Faulted and sheared rock mass at Brucejack has a higher fracture frequency than the surrounding rock mass but little to no gouge, resulting in minimal apparent intact strength loss.

A summary of design UCS values for each unit is provided in Tables 5-2, 5-3, and 5-4, below.

5.5. Unit Weight

The unit weight of the geotechnical units have been estimated from UCS samples selected for laboratory testing (Table 5-2). The average unit weights of the intact rock of the VOK FZ, VOK D2, VOK D3, WZ WRZ, and WZ FR units are approximately 26.3, 27.1, 27.3, 28.6, and 27.3 kN/m^3 respectively.

Unit weights for VOK D1 were estimated based on the average value for VOK D2, D3, and VZ FR. Unit weights for VOK WRZ were estimated based on WZ WRZ, and unit weights for WZ FZ were estimated based on the WZ FZ. The estimated unit weights for the VOK D1 and WZ WRZ are 27.2 and 28.6 kN/m^3 respectively.

A summary of unit weights for each geotechnical unit is provided in Tables 5-2, 5-3, and 5-4, below.

5.6. Hoek-Brown Material Constant

The Hoek-Brown material constant for intact rock "m_i" reflects the induration, grain or crystal interlocking, and mineralogy of the intact rock sample. Estimates of m_i for each rock type have been made based on the results of laboratory testing and published results for similar rock types.

Following the suggested approach of Cai (2009), Brown (2008), and Diederichs et al. (2007), BGC estimated m_i (Table 5-6) as follows:

$$m_i \approx \text{UCS / tensile strength} \quad [2]$$

When possible, the tensile strength for each unit has been estimated from the results of the Brazilian tensile strength (BTS) laboratory tests and a correction factor. The BTS is an indirect tensile test and may overestimate the true tensile strength of rocks; therefore, the laboratory values are multiplied by a correction factor of 0.6 before being used to estimate m_i. BGC has developed this correction factor based on a database of BTS and direct tensile testing results compiled for igneous, metamorphic, and sedimentary rocks from North America and Europe.

Six triaxial tests were completed as part of this study, to initiate the development of a triaxial testing database. At this time, there is insufficient data to develop m_i values based on the triaxial data. Completion of additional triaxial testing may increase the accuracy of that methodology.

5.7. Young's Modulus and Poisson's Ratio

Strain data collected during the UCS testing of the laboratory samples (Appendix C) has been used to estimate the average Young's (elastic) modulus (E_i) and Poisson's ratio (v) of the intact rock for each unit (Table 5-2).

Table 5-2. Intact Rock Properties

Unit	UCS - Lab (MPa)	Average Is_{50} (MPa)	K	UCS - Design[1] (MPa)	Brazilian Tensile Strength (MPa)	Hoek-Brown Material Constant m_i	Unit Weight (kN/m^3)	Young's Modulus (GPa)	Poisson's Ratio
VOK FZ	N/A	N/A	N/A	89	N/A	12	26.3	30	0.20
VOK WRZ	N/A	N/A	11	50	N/A	17	28.6	4	0.18
VOK D1	N/A	N/A	N/A	116	N/A	17	27.2	30	0.20

Unit	UCS - Lab (MPa)	Average Is_{50} (MPa)	K	UCS - Design[1] (MPa)	Brazilian Tensile Strength (MPa)	Hoek-Brown Material Constant m_i	Unit Weight (kN/m^3)	Young's Modulus (GPa)	Poisson's Ratio
VOK D2	107	7.3	15	95	9.4	19	27.1	31	0.11
VOK D3	77	6.0	13	73	5.0	26	27.3	30	0.14
WZ FZ	N/A	N/A	20	77	N/A	12	26.3	30	0.20
WZ WRZ	14	1.3	11	37	0.7	17	28.6	4	0.18
WZ FR	126	7.0	18	116	5.7	21	27.3	35	0.17

Notes:

1. Design UCS values have been estimated from the median Is_{50} values using laboratory-derived K values if available.
2. Unit weights are based on average results of specific gravity testing if available.
3. Hoek-Brown material constants have been derived based on a review of laboratory testing results, experience with similar materials, and literature values.
4. Young's Modulus and Poisson's ratio have been estimated based on laboratory testing results if available.

The results in the VOK FZ are not considered representative due to incomplete failure of the sample during UCS testing. A review of literature values and tests on the other geotechnical units were used to derive an estimate for E_i and *v* of 30.0 GPa and 0.20, respectively, and have been applied to the WZ FZ and VOK FZ units.

The E_i and v for the VOK WRZ was estimated as 3.8 GPa and 0.18, respectively, based on results for the WZ WRZ.

Estimates for the VOK D1 are were based on the VOK D2, VOK D3, and WZ FR units, and literature values for argillite. The design E_i and *v* for the VOK D1 are 30.5 GPa and 0.20 respectively.

5.8. Blockiness

The “blockiness” of each geotechnical unit describes the size of the individual blocks of rock which make up the rock mass. The sizes of these blocks are dependent on the density of the structural discontinuities (e.g. joints, faults). The blockiness is an important factor in the rock mass character for each unit; RQD, fracture intercept, and blockiness index rating values are summarized in Table 5-3. Data collected from core logging, including the RQD and number of discontinuities per logged interval, are used to estimate the blockiness of each unit (Appendix F). The longest stick measured in each interval for each unit helps to estimate the maximum diameter of the in-situ blocks, improving the understanding of the block size distribution for each unit.

The geotechnical properties of each geotechnical unit are summarized in Table 5-3. The lower, median, and upper bound properties shown correspond to the 25, 50, and 75% cumulative fraction, respectively. Note that the design UCS values have been estimated from point load testing results, and the calculation of RMR’76 assumes dry conditions.

Table 5-3. Rock Mass Characterization Summary

Unit	Length Observed (m)	Case[1]	RQD (%)	Fracture Intercept (m)	Blockiness Index Rating	Intact Strength						Joint Condition ('76)	RMR'76		Rock Mass Quality Q'
						Logged Strength Grade	Is_{50} (MPa)	No. PLTs	UCS[2] (MPa)	Description	Rating[2]		Rating[3]	Description	
Brucejack FZ	523	Lower Range	39	0.103	16	3	0.3	26	6	Weak	4	12	**42**	Fair	2
		Median	**62**	**0.163**	**23**	**4**	**3.5**		**69**	**Strong**	**7**	**16**	**56**	**Fair**	**4**
		Upper Range	78	0.305	29	5	6.5		128	Very Strong	12	16	67	Good	10
WZ FZ	89	Lower Range	33	0.147	18	3.5	2.0	13	39	Medium Strong	5	12	45	Fair	1
		Median	**64**	**0.244**	**24**	**4**	**3.9**		**77**	**Strong**	**7**	**16**	**57**	**Fair**	**6**
		Upper Range	96	0.510	37	4.5	7.0		138	Very Strong	9	16	72	Good	13
WZ WRZ	43	Lower Range	58	0.170	20	3	1.7	14	18	Weak	4	12	46	Fair	4
		Median	**82**	**0.310**	**31**	**3.5**	**3.5**		**37**	**Medium Strong**	**5**	**16**	**62**	**Good**	**9**
		Upper Range	93	0.388	34	4	5.0		53	Strong	7	20	71	Good	23
WZ FR	8230	Lower Range	87	0.500	33	4	4.7	350	84	Strong	7	16	66	Good	20
		Median	**97**	**1.027**	**43**	**5**	**6.5**		**116**	**Very Strong**	**12**	**20**	**85**	**Very Good**	**59**
		Upper Range	100	3.000	49	6	9.0		161	Very Strong	14	25	98	Very Good	211
VOK FZ	422	Lower Range	54	0.119	20	3	2.6	75	51	Strong	4	12	46	Fair	2
		Median	**78**	**0.225**	**27**	**4**	**4.5**		**89**	Strong	7	**16**	**60**	**Good**	**6**
		Upper Range	93	0.412	34	4	6.5		128	Very Strong	7	16	67	Good	18
VOK WRZ	656	Lower Range	69	0.204	26	3	2.9	30	31	Medium Strong	4	12	52	Fair	4
		Median	**87**	**0.430**	**34**	**4**	**4.7**		**50**	**Medium Strong**	**7**	**12**	**63**	**Good**	**13**
		Upper Range	96	1.010	41	4	5.8		61	Strong	7	20	78	Good	37
VOK D1 (ARG)	191	Lower Range	63	0.169	25	4	N/A	0	75	Strong	7	12	54	Fair	3
		Median	**87**	**0.339**	**34**	**5**	**N/A**		**116**	**Very Strong**	**12**	**16**	**72**	**Good**	**9**
		Upper Range	96	1.017	43	5	N/A		116	Very Strong	12	16	81	Very Good	53
VOK D2 (P1, RHY)	15817	Lower Range	72	0.289	28	4	5.3	206	77	Strong	7	16	61	Good	7
		Median	**91**	**0.533**	**37**	**4**	**6.5**		**95**	**Strong**	**7**	**16**	**70**	**Good**	**23**
		Upper Range	98	1.470	43	5	8.2		120	Very Strong	12	20	85	Very Good	74
VOK D3 (JR, TRS, ANDX)	47264	Lower Range	89	0.507	37	4	4.1	546	52	Strong	7	16	70	Good	18
		Median	**96**	**1.017**	**43**	**5**	**5.7**		**73**	**Strong**	**12**	**20**	**85**	**Very Good**	**52**
		Upper Range	99	2.990	49	5	7.3		93	Strong	12	25	96	Very Good	146

Notes:
1. Lower, median and upper values correspond to 25%, 50%, 75% cumulative fraction, respectively (Appendix F).
2. UCS has been estimated from point load index tests where available. VOK D1 strength is estimated from logged strength grade.
3. Groundwater rating of 10 has been assumed for the calculation of RMR'76 .

The rock mass of the WZ FZ has fair RQD (64%) and moderate discontinuity spacing (0.24 m). The WZ WRZ has good RQD (82%) and moderately spaced discontinuities (0.31 m). The VOK FZ unit has good RQD (78%) and moderately spaced discontinuities (0.23 m). The VOK WRZ and VOK D1 units both have good RQD (87%) and moderately spaced discontinuities (0.43 m and 0.34 m, respectively). The VOK D2, VOK D3, and WZ Fresh Rock units have excellent RQD (91%, 96%, and 97% respectively). The VOK D2 unit has moderate discontinuity spacing (0.53 m) and the VOK D3 and WZ Fresh Rock units have wide discontinuity spacing (1.02 m and 1.03 m, respectively).

5.9. Discontinuity Conditions

The average condition of the discontinuities which form the blocks of the rock mass is estimated during core logging using the “joint condition” parameter as per Bieniawski (1976). The infill thickness, surface roughness, and weathering of the discontinuities affect the shear strength and deformability of the rock mass of each geotechnical unit, and this number is represented by the “joint condition” value (Appendix F). Average joint conditions of each unit are summarized in Table 5-3.

A joint condition of 12 corresponds to slightly rough surfaces, separation less than 1 mm, and highly weathered (soft) walls. A joint condition of 20 corresponds to slightly rough surfaces, separation less than 1 mm, and slightly weathered (hard) walls. Inferring between those two, a joint condition of 16 corresponds to slightly rough surfaces, separation less than 1 mm, and variation between hard and soft joint walls.

The median average joint condition for the VOK WRZ unit is 12. The median average joint condition of the WZ FZ, WZ WRZ, VOK FZ, VOK D1 and VOK D2 units is 16. The average joint condition of the WZ FR and VOK D3 units is 20.

Joint roughness coefficient (JRC) values are estimated in the field for geotechnical drill holes only based on joint roughness profiles published by Barton and Choubey (1977). The median JRC value for WZ FR is 8; VOK FR and FZ units have a median JRC value of 12; and WRZ rock has a median JRC value of 13 (Appendix F).

5.10. Discontinuity Shear Strengths

Discontinuity conditions from core logging are adequate for rock mass characterization tasks; however, quantitative estimates of shear strength are required for stability analyses. BGC has used laboratory testing data to evaluate the small scale residual shear strength of joints, shears, and faults of each geotechnical unit (Appendix C).

Small scale direct shear testing of discontinuities (joints and shears) with no infill was completed for 14 samples according to the recommendations of the International Society for Rock Mechanics (ISRM, 1974) and Hencher and Richards (1989). Test results include peak and residual shear stress estimates for a range of normal stress from 200 kPa to 1600 kPa (Appendix C).

When possible, the dilation angle was estimated for each test, and the test results were corrected for dilation following the recommendations of Hencher (1995) to estimate a “basic” friction angle. This basic friction angle represents a reasonable lower bound estimate for the small scale shear strength of a joint or shear surface.

The design friction angles of the persistent discontinuities used in the stability analyses are based on the small scale friction angles discussed above with additional shearing resistance provided by the variation of the discontinuities surfaces on a scale too large to be tested in the laboratory. The “waviness” of these discontinuities over the stope scale (10 to 30 m) can be significant. The design friction angle estimated for joints and shears of the WRZ geotechnical unit is 25°; while a design friction angle of 35° is estimated for the VOK D1, D2, and D3 geotechnical units (Table 5-4), and the WZ FR unit (Table 5-5), respectively.

Table 5-4. Valley of Kings Zone Discontinuity Shear Strengths

Structural Domain	Zone	Set ID	Dip (˚)	Dip Direction (˚)	Discontinuity Type	Friction Angle (˚)
VOK 1	WALL ROCK	A1	52	207	JOINT	35
		A2	58	234	JOINT	35
		A3	33	209	JOINT	35
		A4	24	229	FAULT	30
		B1	58	272	FAULT	30
		B2	58	332	JOINT	35
		F2	83	327	JOINT	35
		F1	80	304	JOINT	35
		C1	28	049	JOINT	35
		G1	71	032	JOINT	35
		C2	66	059	JOINT	35
		D1	55	100	FAULT	30
VOK 2	ORE	E1	78	215	JOINT	35
		A1	59	219	JOINT	35
		E2	72	237	JOINT	35
		A2	45	214	JOINT	35
		A3	48	245	JOINT	35
		F1	71	275	JOINT	35
		B1	35	289	JOINT	35
		B2	35	337	JOINT	35
		C1	25	028	JOINT	35
		C2	60	028	FAULT	30
		C3	47	059	JOINT	35
		D1	39	100	JOINT	35
		H1	76	123	JOINT	35
	WALL ROCK	E1	76	184	JOINT	35
		E2	76	220	JOINT	35
		E3	72	239	JOINT	35
		A2	58	220	FAULT	30
		A1	36	181	FAULT	30
		A3	44	259	JOINT	35
		F1	70	282	FAULT	30
		B1	33	328	JOINT	35
		C1	29	026	FAULT	30
		C2	43	058	JOINT	35
		G1	72	048	JOINT	35
		G2	84	065	JOINT	35
		I1	5	067	FAULT	30
VOK 3	ORE	A1	64	201	FAULT	30
		A2	39	192	JOINT	35
		A3	57	264	FAULT	30
		A4	81	270	FAULT	30
		C1	26	016	JOINT	35
		C2	59	025	JOINT	35
		G1	78	042	FAULT	30
		D1	22	095	JOINT	35
		D2	60	155	JOINT	35
		D3	74	172	FAULT	30
	WALL ROCK	A1	59	206	JOINT	35
		A2	32	181	FAULT	30
		A3	40	216	JOINT	35
		A4	56	265	JOINT	35
		B1	47	343	JOINT	35
		C1	19	006	JOINT	35
		C2	39	041	JOINT	35
		C3	47	017	JOINT	35
		G1	80	069	FAULT	30
		G2	78	088	JOINT	35
		D1	68	154	JOINT	35
		H1	72	172	FAULT	30

Table 5-5. West Zone Discontinuity Shear Strengths

Structural Domain	Zone	Set ID	Dip (˚)	Dip Direction (˚)	Discontinuity Type	Friction Angle (˚)
WZ	ORE	A1	44	201	JOINT	35
		A2	30	229	JOINT	35
		A3	58	235	FAULT	30
		E1	78	236	JOINT	35
		E2	83	252	FAULT	30
		C1	22	059	JOINT	35
		C2	40	064	FAULT	30
		H1	76	103	JOINT	35
		D1	66	147	JOINT	35
		D2	39	173	JOINT	35
		B1	73	271	FAULT	30
		F1	77	298	JOINT	35
		F2	76	332	FAULT	30
	WALL ROCK	E1	90	205	FAULT	30
		A1	15	212	JOINT	35
		A2	58	236	FAULT	30
		A3	65	255	FAULT	30
		H1	85	091	JOINT	35
		F1	78	289	FAULT	30
		F2	71	312	FAULT	30
		B1	50	295	JOINT	35
		B2	27	323	JOINT	35
		B3	60	349	FAULT	30
		G1	73	048	JOINT	35
		G2	81	072	JOINT	35
		C1	53	051	FAULT	30
		C2	30	064	JOINT	35
		I1	11	144	JOINT	35

The small scale residual shear strength of faults may be controlled by the character of the infilling material where it is thick and soft or by the walls of the structure where infilling is thin or coarse grained and the walls are slickensided. Most fault infilling materials sampled from the geotechnical drill holes were generally granular consisting of sand and gravel sized particles with some to trace fines. Grain size distributions for sampled infill material is shown Drawing C-01.

Photograph 5-10. Typical Fault Infill Material (Sample DH22-01)

A residual friction angle of 30° was estimated for the granular infillings based on previously published work (Terzaghi and Peck, 1967). A residual friction angle of 30° was estimated for the fine grained infillings based on the approach of Stark and Eid (1994) with consideration of the liquid limit and clay fraction of the fine grained samples. When compared with the basic friction angles for the walls of joints and shears, the infill friction angles are lower than the basic friction angles of the wall rocks. Therefore, it is assumed that infill material friction angle will control the small scale shear strength of all faults observed in the work to date.

5.11. Rock Mass Strength and Deformation Modulus

The rock mass strength of each geotechnical unit has been estimated from the intact rock strength, blockiness, and discontinuity conditions.

Following industry practice, a rock mass rating (RMR) has been estimated for each unit (Table 5-3). The 1976 version of the RMR (Bieniawski, 1976) applies a score to each basic rock mass parameter and sums the scores for a total rating.

This rating may be used with the design UCS, estimated m_i, and assumed rock mass disturbance value to define the empirical Hoek-Brown failure envelope for each unit (Table 5-6, Drawing 07). These failure envelopes define the rock mass strength. Based on the data available, the WZ FR unit is estimated to have the highest rock mass strength while the WRZ and FZ units in both the VOK and WZ are estimated to have the lowest.

The rock mass deformation modulus for each geotechnical unit has been estimated from the Young's modulus laboratory testing results of the intact rock, rock mass characterization, and assumed disturbance value (0.8) using the empirical methods of Hoek and Diederichs (2006). Higher deformation moduli result in less deformation of the rock mass when stress is applied. The results for each geotechnical unit are shown in Table 5-6.

Table 5-6. Hoek-Brown Failure Criterion Parameters

Unit	UCS (MPa)	GSI[2]	Unit Weight[3] (kN/m^3)	m_i	m_b	S	E_{rm} (GPa)
VOK FZ	89	60	26.3	12	1.110	0.0023	5.13
VOK WRZ	50	63	28.6	17	1.879	0.0037	0.77
VOK D1	116	72	27.2	17	3.211	0.0144	9.76
VOK D2	95	70	27.1	19	3.186	0.0106	9.02
VOK D3	73	85	27.3	26	10.647	0.103	14.37
WZ FZ	77	57	26.3	12	0.928	0.0015	4.27
WZ WRZ	37	62	28.6	17	1.771	0.0032	0.73
WZ FR	116	85	27.3	21	8.599	0.103	16.77

Notes:

1. The Hoek-Brown failure criteria have been estimated assuming a disturbance factor ('D') of 0.8 for all units.
2. GSI is calculated from median rock mass parameters for each unit, where GSI = RMR '76.
3. Unit weights are based on average results of specific gravity testing when possible.
4. The Hoek-Brown curves have been derived using a sigma3 max. for a tunnel depth of 650 m.

5.12. Site Specific Correlation between RMR'76 and Q

At the FS level, underground geotechnical stability analysis and design recommendations typically rely on empirical design methods and cross-referencing to the current state of practice in operating mines. Many of these design methods are based on classification of the rock mass using either the Rock Mass Rating (RMR) system (Bieniawski, 1976) or the NGI Q system (Barton et al., 1974).

According to Hoek (2007), a well-rounded geotechnical data collection or core logging system should describe the nature of discontinuities and rock mass such that parameters for any rock mass classification system can be derived. Site-specific RMR and Q values can be derived from first principles if the RQD, number of joint sets, joint condition, joint roughness, joint aperture, joint wall strength and alteration, and infill character and strength are recorded during geotechnical data collection activities. As such, these parameters are routinely collected as part of BGC's geotechnical logging system.

Site-specific Q and RMR values have been calculated from data collected by BGC from the ten geotechnical drill holes completed in 2010 and 2012. The resultant values have been used directly in subsequent design tasks.

In an effort to expand the amount of useable data for design tasks these directly determined values were also used to derive Q-RMR correlation equations for each geotechnical unit. These correlation equations were also compared against the most commonly cited correlation (Bieniawski, 1976):

$$RMR'76 = 9 \ln(Q') + 44 \quad [3]$$

The site-specific relationship between Q and RMR derived for the geotechnical units at Brucejack correlates well with the Bieniawski Q'-RMR relationship (Appendix F). Because the Bieniawski relationship produces more conservative lower and median Q' values for stope design than the multiple site-specific Q'-RMR relationships defined for each geotechnical unit, the Bieniawski equation was used to derive Q' values from exploration drill hole data for which no first principles data exists.

The final expanded Q' data set includes those values derived from first principles from geotechnical data collected by BGC during the 2010 and 2012 field investigation campaigns, and those calculated from exploration drill hole data using Bieniawski's more conservative Q'-RMR relationship.

5.13. Brucejack Fault Zone

The Brucejack Fault lineament is currently the only known major structure that intersects the proposed mining footprint (Drawing 07). It is a northerly striking anastomosing fault zone located along the western margin of the study area and extends north to the Iskut River Fault. In places the lineament appears to be several sub-vertical to moderately (greater than 60°) dipping fault strands braided together. The zone has normal faulting with variable displacement estimated at 500 to 800 m (ERSi, 2010).

At the time this report was prepared, Pretium had not yet developed a structural geology model for the project. BGC reviewed drill hole data and core photographs with relation to the Brucejack fault surface used in the PEA (Silver Standard, 2010) to characterize the properties of the Fault Zone and review its proximity to the proposed mine workings. BGC's work focused on identifying the orientation, thickness, and rock mass characteristics of the Fault Zone. These interpretations were combined with the PEA fault surface to develop an updated three-dimensional Brucejack Fault Zone surface, which was provided to Pretium and their mine planners to assist with ongoing project planning.

5.13.1. Rock Mass Characteristics of the Brucejack Fault Zone

In the project area, the Brucejack Fault Zone is comprised of a core of highly fractured rock surrounded by a zone of less fractured, fault-disturbed rock mass on either side. The width of the fault zone varies with depth and along strike from approximately 5 m to 40 m. Two geotechnical drill holes and fifteen exploration drill holes intercept the Brucejack Fault Zone in the VOK, and these interceptions occur primarily in the P1 lithology (D2 geotechnical unit). Two drill holes intercept the fault zone in the WZ.

The Fault Zone has a 'fair' median RQD value (62%) and point load tests in this zone yield a median Is_{50} value of 3.5 MPa compared to the 'excellent' median RQD value (91%) and median Is_{50} value of 6.5 MPa in the surrounding undisturbed D2 rock mass. The Fault Zone rock mass also has a slightly higher degree of weathering / alteration intensity than undisturbed rock; however, both the Brucejack Fault Zone and undisturbed D2 rock mass have comparable median strength grades (R4) and median joint condition values (16). Detailed descriptions and photographs of the Brucejack Fault Zone can be found in Appendix G.

5.13.2. Brucejack Fault Zone Orientation

Data from geotechnical and exploration drill holes inferred to intercept the Brucejack Fault Zone were used to approximate upper and lower boundaries of the fault-disturbed rock mass.

On a property wide scale, the Brucejack Fault Zone is subvertical; however, oriented core and televiewer data from directly above and below the fault zone in drill hole DH-BGC12-23 indicate variable orientations. These observations are supported by previous interpretations (ESRi, 2010) that the Brucejack Fault Zone is potentially braided or splayed along dip.

Based on a review of the available drill hole data, the fault appears to dip slightly east at upper elevations and slightly west from the 1,325 to 1,375 elevation and below. This potentially explains conflicting interpretations by Newhawk (1990), who inferred a westerly dip, and Margolis (1993) and ERSi (2010), who inferred an easterly dip. Regional scale structural interpretations of the Brucejack Fault Zone are discussed in Section 4.0

5.13.3. Inferred Proximity of Brucejack Fault Zone to Proposed Underground Workings

Based on the PEA mine plan (provided by AMC on 8 March 2012), stopes and development in the WZ are unlikely to intercept the Brucejack Fault Zone. A pillar of greater than 100 m is inferred to exist between the WZ resource and the Brucejack Fault Zone. This pillar thickness is considered sufficient to isolate the Brucejack Fault Zone from significant mining-induced stress changes.

However, based on the VOK resource model distributed in April 2012, the Brucejack Fault Zone passes through the proposed VOK footprint. At all proposed working elevations, the resource blocks are continuous across the fault with the inference that stopes will be required proximal to, and likely within, the fault zone. Section 6.0 will discuss options for mining through the fault.

5.13.4. Estimates of Permeability in Faulted Rock at the Brucejack Project

Although the hydrogeological assessments will be presented in a separate report, a review of the packer testing and slug testing data has been completed to estimate hydraulic conductivities in faulted rock within the WZ and VOK.

The geometric mean of bedrock hydraulic conductivity estimates for test zones not interpreted to intersect faulted rock is $1.5\text{x}10^{-7}$ m/s, while the geometric mean of hydraulic conductivity estimates for test zones interpreted to intersect faulted rock is $4.5\text{x}10^{-7}$ m/s.

Based on these data sets, it appears that the increased fracture frequency and rock mass alteration associated with fault zones may increase hydraulic conductivities by up to a factor of three in comparison to hydraulic conductivities of unfaulted rock. This interpretation is preliminary and will be superseded by a forthcoming hydrogeological design report.

6.0 UNDERGROUND ROCK MECHANICS

6.1. Methodology

BGC's underground rock mechanics assessment methodology is based on industry standard techniques. BGC has:

- Estimated achievable stope spans and associated ground support requirements based on empirical stope stability design charts.
- Analyzed potential "kinematic" failure modes (planar, wedge) resulting from major geological discontinuities or persistent rock mass fabrics, developed associated ground support requirements.
- Assessed pillar stability conditions using estimates of pillar strength and induced stresses, using analytical and numerical design tools.

6.2. Overview

The proposed underground operation will use conventional rubber-tired, diesel-powered mobile equipment, with loader mucking and truck haulage material handling via a decline ramp system. The proposed mining method is non-entry longhole open stoping (LHOS) with a combination of rock and paste backfill. The LHOS may be extracted using a transversely oriented primary / secondary stoping approach, or by using a continuous longitudinal retreat. The project resource model and mine plan were not finalized at the time of this report; however the expected mine life is approximately 21 years, with a nominal mining rate of 2,700 t/d (Pretium, 2012c). A detailed description of the primary/secondary long hole stoping method, including a sequence diagram, can be found in a forthcoming design report to be issued by AMC.

A central access decline will be excavated from surface. It is proposed that the existing underground ramp will be utilized for ventilation and emergency egress until it is mined out by WZ stoping. Drawing 03 shows the preliminary mine plan at this time of this report.

BGC understands that all openings will be excavated using standard drill and blast methods, and that all support will be installed at the face as mining advances. The FS mine plan proposed for the project has a bottom-up, centre-out type sequence with a resulting inverted V-shaped extraction profile for each grouping of stopes. The WZ will be mined over seven years, starting with the lowest stopes (WST-L), mining centre up to a sill pillar at 1280 m, and then continuing to the upper portion (WST-U) while taking the stopes in the extremities of WST-L.

The VOK will be mined over 20 years in three zones: upper (U), middle (M), and lower (L). Mining will begin with the uppermost group of stopes (VOK-U) with staggered start years for the middle (VOK-M) and lower (VOK-L) stopes. Each group will be mined in a bottom-up, centre-out sequence with a two to three year stagger. Generally the centre stopes will be mined up to the crown or sill pillars, and then the stopes around the periphery will be extracted. The Galena deposit will be mined concurrently with VOK-U. Stopes are proposed to be backfilled within six months of extraction.

6.3. Primary and Secondary Stope Designs

BGC has developed recommendations for unsupported and supported hydraulic radii and ground support to assist with the development of stoping design criteria. The empirical "Stability Graph" method (Hutchinson and Diederichs, 1996, and Nickson et al., 1992, after Potvin, 1988) was used to estimate acceptable mining dimensions for the proposed stope backs and hangingwalls. Geotechnical and representative stope geometry parameters are combined to determine a "Stability Number" (N'), defined by:

$$N' = Q' \times A \times B \times C \qquad [4]$$

Where:

Q' is a rock mass classification parameter

A is a measure of the ratio of intact rock strength to applied stress

B is a measure of the relative orientation of dominant structure with respect to the excavation surface

C is a measure of the influence of gravity on the stability of the face being considered.

The Q classification system is frequently simplified to include only factors dependent on the rock mass, ignoring environmental considerations such as water and active stresses. The resulting rating will give the same assessment for the same rock conditions at different depths and hydro-geological states. Q' is the modified Q classification value with Jw and SRF set to 1. Modern design approaches account for the influence of stress in the design steps and it would be incorrect to assess these factors twice by including them in the rock mass classification.

$$Q' = \frac{RQD}{Jn} \times \frac{Jr}{Ja} \qquad [5]$$

Parameter A is estimated for each face of the stope using the Stewart and Forsyth method, which estimates the maximum induced tangential stress acting at the centre of the stope face from an assumed stress regime (Stewart and Forsyth, 1995). As virgin stress has not been measured and World Stress Map data is unavailable in the region, stress conditions have been estimated empirically using an assumed vertical stress given by Equation 6, k = 2, and the ratio of opening dimensions.

$$\sigma_v = \text{unit weight} \times \text{depth} \qquad [6]$$

Parameter B is dependent on the discontinuities most likely to cause instability. These discontinuities will intersect the stope face at shallow oblique angles. Design discontinuity sets are available in Tables 5-2 and 5-3. Due to structural variability in all structural domains it has been conservatively assumed that all excavations could have geologic structures that are subparallel to stope walls. Therefore, parameter B has been assumed to be 0.2 for all cases.

Parameter C is calculated using the orientation of the critical discontinuity set used to determine parameter B. However in cases where the discontinuity could contribute to both sliding and gravity fall, a conservative minimum value of C = 2 was used.

In an effort to simply the results of the Stability Graph Method, so as to be useful to mine planners, conservative and base case Q' values of 10 and 40 respectively were used to calculate the hydraulic radii. Statistical observations of the 113,758 m of core indicate that regardless of lithology, alteration, geological domain, or geotechnical unit, less than 20% of the data mapped or logged has Q' values less than 10. Similarly, over 50% of the rock has a Q' value of 40 or greater. It should also be noted that only 1.6% of the dataset has a Q' value less than 1.

For mine planning purposes, the maximum hydraulic radii can be based on the "base case" design values. The conservative case is reserved for contingency costing for stopes in lower quality rock mass. From the Q distribution for all data collected at the project site, 20% of the Q values are 10 or less, and are described as "fair". Therefore, the conservative case could be applied to approximately 20% of the stopes in the mine plan.

The resulting stability graph, Drawing I-01, is used to match the stability number (N') to maximum recommended unsupported and supported hydraulic radii.

Stability charts have also been produced for stopes in weathered rock (Drawings I-04 and I-09). The design of near-surface stopes in relation to crown pillar stability is discussed Section in 6.14.

6.4. Stope Ground Support

If mine planners elect to use supported case hydraulic radii, then the stopes must be supported with cable bolts or their equivalent. Empirical design charts (Hutchinson and Diederichs, 1996) were used to determine the minimum cable bolt length and spacing required for stability and to minimize local ravelling and dilution. Charts for stopes excavated in fresh rock are provided in Appendix I, and assume an equivalent square cable bolt pattern.

If hangingwall development is not planned, then a modified cable bolt pattern will be required, whereby the cable bolts are installed from the footwall side of the topsill and bottomsill into the hangingwall. This will result in a point anchor support approach to hangingwall support, and the cable bolts will be installed in a fan pattern to divide the hangingwall into smaller unsupported stable spans. As discussed by Nickson (1992), this type of support simulates a series of reinforced beams along the hangingwall.

Previous experience (Nickson, 1992) suggests that approximately 5 cable bolts per ring, with rings spaced every 1.5 - 2.5 m can be used for bolt density estimates for cost estimating purposes. Cable bolt lengths should exceed 25% of maximum unsupported span (Nickson, 1992); for example, a hangingwall with an exposed face of 35 m between topsill and bottomsill would require a minimum cable bolt length of 9 m. A schematic of the proposed layout is shown in Drawing 08. The success of point anchor support is heavily dependent on block size, and designs should be calibrated with site specific data from observations of stope dilution when available.

6.5. Unsupported Hangingwall Overbreak

An overbreak analysis has been conducted to estimate the volume of slough expected for the unsupported hangingwalls for stopes in the fresh rock, faulted rock and weathered zones. The equivalent linear overbreak/slough (ELOS) approach was used as proposed by Clark (1995). The ELOS parameter expresses volumetric slough estimates as a linear depth into the rock mass and is used to estimate unplanned dilution. The expected overbreak for hangingwalls in the fresh, weathered, and faulted rock zones is 0.5 m, as shown in Drawing J-01.

6.6. Rib Pillars

Rib pillars are the blocks of rock left between mining excavations, and are classified as permanent or temporary based on plans for their recovery. They are used to provide support to the rock mass and limit rock mass displacement, and are a critical component of a mine plan when the rock mass cannot support open stopes across the full width of the mineralization.

A poorly designed or improperly excavated pillar can result in excessive sloughing, difficult pillar recovery, loss of access, increase rehabilitation or ground support costs, low productivity, and decreased recovery (Hudyma, 1988).

Rib pillar failure mechanisms include progressive failure and bursting failure. Progressive failure occurs through a gradual deterioration of the rock mass, while bursting failure is a violent release of energy and instantaneous fracturing of the pillar (Hudyma, 1988). Purely structural failure can occur but requires highly persistent structures over the height of the pillar. Structural mapping should be completed during excavation of cross-cuts, and amendments to pillar thicknesses or backfill sequencing should be made if persistent adverse structures are inferred to intersect a pillar. When possible, rib pillars should be located to avoid intersection by major geologic structures.

Stressing, pillar loading, and stress-related fracturing are the primary cause of pillar failure (Hudyma, 1988) and are the focus of design and stability analysis methods. These methods generally review the intact UCS of the pillar rock mass, pillar load, pillar shape, geologic structure, and pillar volume to estimate pillar strength and pillar stability. It has been assumed that localized dewatering of the pillar will occur as a result of nearby excavations, and good blasting practices are being followed to minimize blasting-induced pillar damage.

6.6.1. Stability of Footwall Main Development Drives

Historically, main development drives in both the hangingwall and footwall of underground mines have shown the potential to fail into the stope excavations if not sufficiently offset from the stoping areas. The failure mode is often structurally controlled; either progressive failure gradually thins the rib pillar between the stopes and the development drive, or there is an adversely dipping structure(s) that daylights into the stope and allows the entire block to slide down into the stope under gravity loading.

Due to considerable "randomness" of the structures at Brucejack, it is difficult to assess the potential for the types of failure described above. As such, a standoff distance of 25 m is recommended for mine planning purposes, but detailed geological and geotechnical mapping should be completed during development to investigate the potential for adverse structures and amend standoff distances or support standards as required.

6.6.2. Rib Pillars Between Cross-Cuts

The rib pillars between cross-cuts will not be recovered, but are considered temporary based on the short-term lifespan required for access to a given stope.

Mining-induced stress was estimated using two-dimensional numerical modelling in Phase2 (Rocscience, 2008). Pillar stress was assumed to be the average stress at several points along the pillar mid-height centreline. Using the stress criteria developed by Hoek and Brown (1980) and Stacey and Page (1986), the minimum recommended pillar width to height ratio for cross-cut rib pillars for the "base case" stope design (Section 0) is 1.0, and for the "conservative case" stope design is 3.3. If cross-cuts are developed within the weathered zone, the recommended rib pillar width to height ratio is 1.7.

6.6.3. Rib Pillars for Open Stope Mining

The rib pillars between the open stoping blocks are intended to give temporary support to the mining block until the primary stopes are backfilled and the pillar can be recovered in the form of a secondary stope. This assumption is based on the high grade mineralization and a high-recovery objective.

Mining-induced stress was estimated using two-dimensional numerical modelling in Phase2 (Rocscience, 2008). Pillar stress was assumed to be the average stress at several points along the pillar mid-height centreline. Using the Pillar Stability Graph method developed by Hudyma (1988) and tributary loading theory, the minimum recommended secondary stope span (rib pillar thickness) to primary stope span for the "base case" stope design is 1:1 for sublevel intervals of 30 m.

Analysis of the "conservative case" shows that high stresses may develop in the pillar core, and that some spalling and dynamic rockmass damage may be expected. This may result in spalling in 25% of rib pillars, and difficult drilling is approximately 25% of secondary stopes. If stopes are developed within the weathered zone, the minimum recommended secondary stope span (rib pillar thickness) to primary stope span is 1.5:1. Analysis of the weathered zone stopes shows low confinement; ground support including resin-grouted rebar, mesh-reinforced shotcrete, and straps may be required to confine the pillar rock mass and prevent unravelling. Many of the near-surface stopes will actually extend below the weathered zone into the fresh rock, which will reduce the potential for rib pillar instability.

6.7. Sill Pillars

The sill pillars at Brucejack are currently proposed to be 30 m thick, and are assumed to be temporary. Sill pillar stability analysis was completed in MAP3D, and is discussed in Section 6.16.1.

6.8. Full Width Undercutting

The project mine planners have proposed full-width undercutting of select stopes. The Stability Graph method and kinematic analysis in Unwedge were used to assess the stability of the stope back for spans less than 15 m. Ground support recommendations are provided in Table 6-4. Primary stopes should be tight-filled as best as possible.

6.9. Mining Through the Brucejack Fault Zone

The resource model current at the time of this report submittal indicates ore resources on the west side of the Brucejack Fault Zone. BGC was requested to provide recommendations to the FS mine plan for advancement through the fault.

As discussed in Section 5.13, the Brucejack Fault Zone is comprised of a core of highly fractured rock surrounded by a zone of less fractured, fault-disturbed rock mass on either side. The width of the fault zone varies with depth and along strike from approximately 5 m to 40 m. In places the lineament appears to be several sub-vertical to moderately (greater than 60°) dipping fault strands braided together. It is considered to be continuous along strike, and dips slightly to the east above 1325 m elevation, and dips slightly west below 1325 m elevation. For design purposes, the median RQD, JC, and Is_{50} are 62%, 16, and 3.5 MPa, respectively.

At the time of this report, the FS mine plan has development (stope access drifts) sub-parallel to the Brucejack Fault Zone (Drawing 03). At the next level of study, it is recommended that developments near or within the fault zone be aligned perpendicular to the fault trend to minimize the exposure of fault-disturbed rock.

Based on the data available at this time (Table 5-3), we consider the Brucejack Fault Zone to be “supportable”. The exposure of the fault-disturbed ground should be minimized, but locally increased ground support should allow development to advance through the fault zone. For costing purposes, all developments through the Brucejack Fault Zone will require support with fully grouted #7 Dywidag bolts on a 1.5 m square pattern, as per empirical design methods by Grimstad and Barton, 1993. Full coverage (sill to sill) of welded wire mesh and 75 mm of fibre-reinforced shotcrete is also recommended.

Stope recommendations presented in Section 6.3 are not applicable to excavations in the Brucejack Fault Zone. Due to the local structural complexity, blanket empirical methods are not appropriate for stopes in the fault-disturbed rock. Preliminary two-dimensional numerical modeling was completed using Phase2 software. The results of the analysis show that stopes should be excavated in isolation and backfilled prior to any other production openings within the fault zone. The rock mass within the fault zone is not competent enough to form adequate rib or sill pillar strength between stopes. In each case, stopes should be constrained to either the host or fault disturbed rock. Excavations bridging the boundary will have additional unplanned dilution along the contact (i.e. excavations are anticipated to break to the fault-fresh rock boundary). Additional three-dimensional numerical stress modeling has been completed to assess the stopes located through the Brucejack Fault Zone. Interpretations are discussed in Section 6.15

The preliminary recommendation for maximum supported back hydraulic radii is 2.5 (10 m x 10 m), and maximum unsupported hangingwall hydraulic radii is 3.75 (10 m x 30 m), for stopes within the fault zone. Cable bolt support consisting of 6 m single or double strand bulbed cable bolts on a 2.5 m square spacing in the back is recommended. Once mining begins, stope hydraulic radii should be evaluated on a case-by-case basis to address the variable rock quality and fabric dip across the fault zone.

6.10. Mine Portals

This section summarize the proposed portal location at the time of the report, overall stability analysis of the portal cut slope, kinematic stability analysis and ground support for the portal cut slope, and ground support for the portal entrance.

6.10.1. Portal Location and Available Data

The twinned portal declines daylight from the mine adjacent to the proposed plant site area, to the southwest of Brucejack Lake.

The most recent location was provided to BGC in mid-August 2012, subsequent to the completion of the underground geotechnical drilling program. BGC had completed a series of drill holes for the plant site investigations proximal to the proposed portal area. This information, as well as data from nearby exploration and condemnation drill holes, was used for the portal stability analysis. As part of a plant site foundation investigation in October 2012, one geotechnical drill hole was advanced through each of the proposed portal locations. The preliminary designs, which were completed prior to the completion of these drill holes, were checked for consistency with the more recent and portal-site-specific data. Consistency was confirmed.

6.10.2. Overburden Estimates at the Portal Location

An estimate of overburden thickness was required for material take-off quantities and optimization of the ramp grades down the mining elevations. The results of the surface investigations suggest overburden thicknesses of 4.5 m at the north portal location, and 2 m at the south portal location.

Extensive excavation in overburden materials (till, fluvial deposits, colluvium, etc.) is not expected in the proposed mine footprint due to the relatively thin overburden. Where overburden is encountered and excavation is required, excavation should proceed with 8 m single benches down to the overburden-rock contact. Relatively steep bench face angles can often be achieved in the glacial tills common in the B.C. Cordillera, as long as they are not saturated or fine grained; for the current design, maximum bench face angles of 45° (1H:1V) are recommended. Catch benches should be a minimum of 5 m wide. Slopes with multiple benches in overburden should be reviewed on a case-by-case basis with the mine planners.

6.10.3. Overall Stability Analysis of the Portal Cut Slope

The geotechnical units within the vicinity of the portal are VOK D2 and VOK D3, however localized data from the nearby drill holes was used to derive a portal-specific rock mass quality for design. The depth of weathering at the proposed portal locations is estimated to be 10 m at the north portal, and 6 m at the south portal. The near-surface data from the nearby drill holes was used for the stability analysis; therefore the effect of the weathering is represented in the design data.

The Geological Survey of Canada has identified a north – south trending structural lineament through the proposed portal location (Kirkham, 1992), shown on Drawing 07. The proposed portal site is located approximately 25 m west of the lineament. Two drill holes close to the proposed portal site and the fault are DH-BGC12-30 and SU-286. DH-BGC12-30 is located the same distance west of the lineament as the proposed portal site, and did not intersect fault-altered rock. SU-286 has an average RQD of 97%, but intersected an interval between 32.6 to 35.6 m with 38% RQD. Strength grade values of R5 to R6 are maintained throughout the interval. Based on a review of the available data, the south trending structural lineament is not anticipated to have a significant effect on the stability of the portal.

Overall rock mass stability at the proposed portal location was reviewed, including application of a seismically-induced ground acceleration of 0.078 g. The portals should be excavated with a minimum cover of 10 to 12 m of rock above the crown (back) of the tunnel excavation. The rock face should be excavated in two or more benches of equal height (5 to 6 m per bench) with 75° bench face angles and a five to six meter horizontal bench between them. The overall stability analysis for this portal cut design, including seismic loading, resulted in a factor of safety greater than 2.0.

6.10.4. Structural Stability Analysis and Ground Support Recommendations for Portal Cut Face

Resin-grouted rebar bolts, screen, and fibre-reinforced shotcrete should be applied to the portal face to retain loose rock over the portal entrance. Bolt length and spacing should conform to the recommendations provided in Section 6.15, and a minimum fibre-reinforced shotcrete thickness of 50 mm is recommended. Shotcrete drainage tubes are recommended to prevent frost jacking of the shotcrete. The ground support recommendations do not account for failure due to weathering or deterioration of the rock mass, failure caused by moving water (erosion, dissolution, etc.) or failure due to corrosion of ground support components.

6.10.5. Structural Stability Analysis and Ground Support Recommendations for Portal Entrance

Structural stability analysis was completed to determine ground support requirements for the portal location, and results are presented in Section 6.15. Due to lack of confinement and increased fracture frequency at the portal entrance, it is anticipated that steel set support or its equivalent may be required for the first 30 m of excavation. This estimate is for budgeting purposes only; ground support requirements should be adjusted as required during excavation. The ground support recommendations do not account for failure due to weathering or deterioration of the rock mass, failure caused by moving water (erosion, dissolution, etc.) or failure due to corrosion of ground support components.

6.10.6. Rib Pillar Between Twinned Portals

Two-dimensional finite element numerical modelling was completed to analyze the stability of the proposed rib pillar between the twinned portals. The recommended minimum pillar thickness between the two excavations is approximately 10 m, therefore the currently proposed rib pillar thickness of 30 m is considered to be adequate to maintain geotechnical stability. It has been assumed for this analysis that the portals will remain parallel with a consistent pillar thickness until they intersect the primary development drives. If the portals are to converge, the nose pillar at the intersection will be prone to unravelling. Ground support should be installed to maintain an acceptable effective span at the intersection. The back in the vicinity of a nose pillar should be supported with 5 m long coupled grouted rebar or cable bolts as specified in Section 6.15. The walls of the nose pillar should be fitted with steel straps and mesh-reinforced shotcrete to provide confinement and assist the rock mass to support itself.

6.11. WZ and VOK Ramp Stability Considerations

This section discusses the expected rock mass conditions within those areas of the proposed WZ and VOK ramps, and presents recommended standoff (rib pillar) distances between the ramps and stopes.

6.11.1. Proposed VOK Ramp

The proposed ramp location in the VOK is in the D2 geotechnical unit and straddles the ‘VOK 1 Wall Rock’ and ‘VOK 2 Wall Rock’ structural domains. It intersects a fault-disturbed zone between approximately 1120 to 1100 m elevations, which consists of a zone of highly fractured, faulted rock. This zone was intercepted by geotechnical drill hole DH-BGC12-24 between 460 m and 480 m.

The fault zones identify the potential for the proposed VOK ramp to intersect faulted ground. Fault zones were identified during underground mapping in the WZ, and although they required additional ground support compared to the non-faulted ground, there was no indication that they caused significant ground control difficulties. The excavation profiles were maintained and there was minimal bagging behind the mesh despite the long stand-up time and historic flooding events.

At the current time, the faults identified in the VOK ramp area are inferred to be localized structures. If they are identified as major structures in the next geological model issued by Pretium, and there is reason to believe they are persistent along long sections of the ramp, these fault zones may influence mine-scale ramp stability. At this time, they represent areas of the ramp that will possibly require additional ground support.

6.11.2. Proposed West Zone Ramp

The proposed ramp location in the WZ is in the WZ Fresh Rock geotechnical unit and in the 'West Zone Wall Rock' structural domain. Geotechnical drill hole DH-BGC12-20 was drilled to investigate the WZ ramp as proposed at the time. Updates to the mine plan have re-located the lower portions of the ramp, and rock quality data must be inferred from proximal drill hole data.

There is a fault-disturbed zone between 1108 and 1097 m elevation. Geotechnical drill hole DH-BGC12-20 (SU-295) intersects the fault-disturbed rock mass between 317 m and 330 m depth downhole. Core box photos (Photograph 6-1) show the abrupt transition into and out of the fault-disturbed zone and the 'worst case' discontinuities within the zone characterized by variably broken rock with two more frequently occurring sets: one dipping 40 to 60° with a dip direction of 270°, and another dipping 80° with a dip direction of approximately 090°.

At the current time, the faults identified in the WZ ramp area are inferred to be localized structures. As such, they represent areas of the ramp that will possibly require additional ground support.

Photograph 6-1. Core Box Photos from DH-BGC12-20 Showing Abrupt Transition into and out of Fault Disturbed Zone

6.11.3. Standoff Distance Between Ramps and Stopes

The ramps are considered to be life of mine excavations, and because they are the primary egress point for mine personnel, the risk acceptance level is very low. To minimize the potential for mining-induced stress change to affect ramp stability, a minimum standoff distance of 25 m is recommended between the ramps and the development drives in the VOK and WZ. A further 25 m is recommended between the hangingwall/footwall drives and the stopes. A decrease in pillar distance to 20 m is feasible but will likely result in increased stressing of the pillar and an associated increase in ground support and rehabilitation costs.

6.12. Surface Raise Locations

Drawing 07 shows interpreted major faults based on drill hole intersections, underground mapping, and historic geological and geotechnical reports. Most of the major structure at Brucejack is steeply dipping, therefore intersection of a fault zone has the potential to result in long sections of fault-disturbed rock along a subvertical raise and resulting higher ground support costs.

The finalized raise locations should avoid fault-disturbed rock, and minimize intersection of weathered rock. The recommended pillar thickness between a raise and nearby development or production openings, including the decline access ramp, is 10 m.

Ground support recommendations for raises are provided in Section 6.15. The designs presented assume the rock mass is unweathered and not fault-disturbed. The average depth of weathered rock is approximately 20 to 30 meters below surface, but can be as much as 50 m; locally increased ground support will be required in the weathered zone. For budgeting purposes, it should be assumed that a steel liner will be required at the collar of the raise, and that fibre-reinforced shotcrete will be required to maintain stability through the weathered zone and to prevent unravelling of the raise walls over time.

6.13. Underground Crusher Stability and Standoff Distances

An underground crusher stability analysis has been carried out using the layout forwarded by AMC on March 18, 2013. The proposed crusher excavation will require upper level access for trucks and lower level access for conveyor egress. The proposed excavation consists of an upper truck dump and rock breaker level, which connects via a bin and hopper system to the lower level crusher station.

Four exploration drill holes that have geomechanical data come within 100 m of the proposed crusher location. This localized set of data was reviewed to estimate the geotechnical properties of the rock mass where the crusher is proposed to be located. The rock mass is entirely within the VOK D2 geotechnical domain. The 25th percentile rock mass properties are summarized below, with the 50% percentile values in brackets. The 25th percentile values have been used for design.

- RQD: 81% (90%)
- Joint condition (Bieniawski, 1976): 16 (16)

- Strength grade (ISRM, 1978): R3 (R4)
- RMR'76: 60 (73).

The only fault zone logged within this dataset was a 3 m interval in SU-287 between 197.21 to 200.25 m. This interval is approximately level with and 100 m north of the proposed crusher, and is not anticipated to influence rock mass stability at the crusher location.

For structural stability analysis and ground support design, the upper truck dump level and lower conveyor level were analyzed as separate openings due to the offset geometry. The dimensions used for stability analysis and the resulting ground support recommendations for the crusher chamber and associated shops are summarized in Table 6-1. The excavation has been designed for a factor of safety of 2.0, as the excavation must remain operable for the life of the mine and opportunities for rehabilitation will be limited once the mine is in production. Two levels of support are recommended:

- Primary support consisting of galvanized, resin-grouted rebar (or an equivalent) and welded wire mesh (or fibre-reinforced shotcrete). The purpose of these elements is to support and retain material between the cable bolt plates and to provide a shell of near-surface support. In addition, confining surface support (e.g. steel or heavy gauge mesh straps) is recommended for all noses and benches within the excavation to reduce the potential for unravelling and backbreak. Fibre-reinforced shotcrete is recommended when infrastructure will make rehabilitation impractical.
- Secondary support consisting of cable bolts in the back and walls of the excavation. The purpose of these elements is to support larger wedges and increase long-term stability of the excavation.

The crusher chamber excavation should be excavated in stages from the top heading to allow sequential support installation and minimize the dimensions of unsupported spans.

A minimum radial standoff distance of 50 m is recommended to prevent stress interaction between the crusher and development or production openings. This recommendation also applies to offset from major structures (i.e. the Brucejack Fault Zone). Conceptually, the underground crusher should be surrounded by a 50 m zone of undisturbed rock to minimize the potential for instability resulting from mining-induced stress changes over the life of the mine. The proposed crusher location as of March 27 2013 is greater than 100 m east of the inferred Brucejack Fault Zone location at the crusher elevation. This distance is considered adequate to isolate the crusher from the fault.

Table 6-1. Mine Infrastructure Excavations - Ground Support Recommendations

Area	Dimension (height x width (along trend) x length)) (m)	Trend/ Plunge of Excavation	Design FOS	Lifespan	Support
Cap Magazine	3.05 x 6.1 x 3.05	152/21	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure).
Crusher Chamber - Lower level (conveyor)	18.1 x 14.2 x 9.4	057/01	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS. Cable bolts: Walls: 5.0 m length, bulbed strand, 2.5 m square spacing Back. 5.0 m length, bulbed strand, 2.5 m square spacing
Crusher Chamber - Upper level (truck)	17.3 x 7.6 x 9.3	057/01	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.5 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS. Cable bolts: Walls: 5.0 m length, bulbed strand, 2.5 m square spacing Back: 5.0 m length, bulbed strand, 2.5 m square spacing

Area	Dimension (height x width (along trend) x length)) (m)	Trend/ Plunge of Excavation	Design FOS	Lifespan	Support
Electricians and Millwrights Shop	5.5 x 16.2 x 5.5	270/01	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure).
Fuel and Lube Station	4.5 x 35 x 8.5	243/06	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure). Cable bolts:Back: 5.0 m length, bulbed strand, 2.5 m square spacing
Service Bay, Maintenance Bay, and Tire Bay	11.5 x 42 x 10.0	005/00	2	LOM	Galvanized, resin-grouted rebar (or equivalent) 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure). Cable bolts: Walls: 5.0 m length, bulbed strand, 2.5 m square spacing Back. 5.0 m length, bulbed strand, 2.5 m square spacing

Area	Dimension (height x width (along trend) x length)) (m)	Trend/ Plunge of Excavation	Design FOS	Lifespan	Support
Powder Magazine	7.1 x 14.1 x 6.4	152/01	2	LOM	Galvanized, resin-grouted rebar. (or equivalent) 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure). Cable bolts: Walls: 5.0 m length, bulbed strand, 2.5 m square spacing Back. 5.0 m length, bulbed strand, 2.5 m square spacing
Refuge Station and Offices	4.6 x 15 x 5.2	062/01	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure).
Warehouse	5.5 x 27 x 5.5	270/01	2	LOM	Galvanized, resin-grouted rebar (or equivalent). 1.8 m length. 1.75 m square spacing. Welded wire mesh, 100% coverage on back and walls, coated with minimum 2" SFRS (shotcrete only required if rehab will not be practical due to installed infrastructure).

Notes:

1. LOM = life of mine assumed 20-25 years.
2. SFRS = steel fibre reinforced shotcrete.

6.14. Crown Pillar Designs

Based on the proposed stopes shown in the existing PEA mine plan, the Brucejack resource model extends up to ground surface in both the WZ and VOK. The crown pillar stability analysis methods used to investigate the minimum recommended crown pillar thickness were:

- Analytical methods using CPillar (Rocscience, 1999)
- Empirical methodologies by Carter (1992, 2000)
- Structural stability analysis using Unwedge (Rocscience, 2003)
- Analytical methods using MAP3D (Wiles, 2007).

These methods have been used to derive recommendations for design span to thickness relationships for the proposed crown pillars for the WZ and VOK. Three-dimensional numerical stress analysis using MAP3D software has been used to confirm the suitability of the crown pillar dimensions presented in the FS mine plan; MAP3D analyses is discussed in Section 6.16. The results of all analyses have been reviewed with consideration of NIOSH (2011) recommended minimum pillar thickness to span ratio.

As discussed by Carter (2000), the historic data set of crown pillar performance suggests that there are two basic, quite different stability mechanisms. The essentially non-degradable competent rock masses (hard igneous/metamorphic and well-cemented sediments) tend not to spall and therefore stand-up reliably. The degradable, weathering-susceptible weak or highly fragmented rock masses tend towards failure through disaggregation and spalling.

The following assumptions have been used during this analysis section:

- The crown pillars will be located entirely within the WZ WRZ and VOK WRZ
- Two dewatering cases have been considered:
  - Fully dewatered
  - “Moderate” inflow or water pressure, assumed to be represented by:
    - “Medium” inflow or water pressure between 2.5 to 10 kg/cm^2 and occasional outwash of joint infilling material within the crown pillar for methodologies that required Q input
    - An assumed groundwater table 10 m below ground surface, for analytical methods that require a groundwater table elevation
- The average dip of the ore bodies have been measured from the PEA stopes
- Average rock mass strengths for the weathered rock zones (WRZ) in the VOK and WZ have been used for design.

6.14.1. Shear Failure Analysis Using CPillar

The software program CPillar (Rocscience, 1999) was used to assess the potential for sliding (shear failure) along the abutments of the crown pillar.

For the average VOK weathered zone rock mass with a water table approximately 10 m below ground surface, a minimum thickness of 15 m is recommended for a span of 30 m with a strike length of 400 m to maintain an FOS of 1.5 against shear failure along the abutments of the pillar.

For the average WZ weathered zone rock mass with a water table approximately 10 m below ground surface, a minimum thickness of 10 m is recommended for a span of 20 m and a strike length of 360 m.

6.14.2. Scaled Crown Pillar Span Method

Carter (1992) proposed the empirically derived “Scale Span method” for crown pillar stability analysis. This method uses a database of case histories to estimate the stability of crown pillars based on rock quality, span, thickness, ore body geometry, and rock mass weight according to the equation:

$$C_s = S\left\{\frac{SG}{T[(1+S_r)(1-0.4\cos\theta)]}\right\}^{0.5} \quad [8]$$

Where:

C_s = scaled span (m)

S = crown pillar span (m)

SG = rock density (g/cm^3)

Θ = dip of mineralized zone or foliation (°)

S_r = span to length ratio

T = thickness of pillar (m)

The calculated scaled span C_s was then compared with the critical span (S_c) as follows:

$$S_c = 3.3\,Q^{0.43}\big((\sinh Q)\big)^{0.0016} \quad [9]$$

A probability of failure of 5 to 10% has been accepted based on the following assumptions (Carter, 1992):

- The crown pillar is semi-temporary and has a life expectancy of 10 years
- It is located under non-sensitive mine infrastructure or no infrastructure
- Public access will be prevented
- The regulatory position on closure is “moderate level of concern”
- There will be continuous simple monitoring and surveillance throughout the life of the crown pillar.

The analysis showed that as spans exceed approximately 12 to 15 m, the pillar thickness starts to exceed 30 m, and will extend into the “fresh rock” domains. The VOK D1 unit has similar rock mass quality as the WZ and VOK WRZ units; however, the VOK D2, VOK D3, and the WZ FZ have appreciably higher rock mass quality then the WRZ units. This may result in increased pillar strengths and a subsequent reduction in required crown pillar thickness below the weathered zone (approx. 30 m bgs). The Carter Method does not allow for stratigraphic changes in rock mass quality, and the inferred increase in rock mass strength at depth is not represented within the analysis.

Carter (2000) presented an update on his 1992 crown pillar work, and included a guideline for the limiting threshold span, S_{max}, which represents an upper bound “immediate collapse” limit beyond with ground support will be largely ineffective.

6.14.3. Structural Stability Analysis

Structural instability in the crown pillar can result in decreasing crown pillar thickness and subsequent failure via the failure modes discussed above if the thickness is significantly reduced. Due to anticipated low confinement, blocky nature of the weathered zone, and presence of multiple joint sets, support of the crown pillar is recommended. This can be incorporated into the design of the uppermost level of stopes, and should include cable bolts, fibre or mesh -reinforced shotcrete, and resin-grouted rebar. Full recovery of the crown pillar was not considered practical due to water management issues.

As with any large span, ground support will help reduce the potential for unravelling but will not have the capacity to retain large blocks created by major geologic structures. There have been a number of major structures identified parallel and orthogonal to the WZ mineralized zone; all of these structures, if steeply dipping and persistent, are adversely oriented with respect to the potential for plug failure of the crown pillar or portions thereof.

6.14.4. Summary and Recommended Crown Pillar Dimensions

The results of the crown pillar analysis are presented in Table 6-2. The recommended crown pillar thickness for the WZ and VOK is approximately 32 m. This recommendation is based on a limiting threshold span of 13 m (as per the methods of Carter (2000)) in the WZ and VOK for “conservative” (lower quartile) rock mass strengths, a dewatered crown pillar rock mass, and a factor of safety of 1.5 against ravelling failure (Carter, 2000). As the recommended threshold span is narrower than the transverse width of the mineralized zones, transverse stopes must be tight-filled as much as practicable to reduce the potential for collapse.

6.14.5. Maximizing Crown Pillar Recovery

After consideration of the above design recommendations with respect to the high-grade material present within the proposed crown pillar, the stability analysis was reviewed to allow maximal recovery within the crown pillar. The minimum recommended thickness for the crown pillar is 15 m; to achieve this dimension, stopes immediately below the crown pillar should be limited to 10 m span, and the backs of the excavation should be supported with 5 m long single strand bulbed cable bolts on 2.5 m spacing. Stopes should be tight-filled as much as practicable immediately after excavation.

The proposed mining method for each mineralized zone (WZ and VOK) is a bottom-up sequence that is intended to shed stress to the abutments. The crown pillar will be the closure point for each mineralized zone, and will therefore be potentially highly stressed near the end of mine life when crown pillar recovery may be desirable. The crown pillar should be considered permanent.

Table 6-2. Crown Pillar Stability Analysis Results

Deposit	Design Case	Modified Q'	Jw [1,2]	Design Q (SRF = 1)	Density (t/m^3)	Maximum Span of Near-Surface Blocks in Resource Model (m)	Strike Length of Resource Model (m)	Strike/Dip (°)	Threshold Span (m) [3]	Minimum thickness - Shear Failure	Minimum thickness - Ravelling	Minimum thickness - NIOSH [4]
WZ	Conservative	4	1	4	2.8	20	360	314/69	13	15	32	16
	Base	9	1	9					17	10	29	
	Conservative	4	0.66	2.6					11	15	33	
	Base	9	0.66	5.9					15	10	30	
VOK	Conservative	4	1	4		30	400	298/72	13	20	31	24
	Base	13	1	13					20	15	25	
	Conservative	4	0.66	2.6					11	25	33	
	Base	13	0.66	8.6					17	15	27	

Notes:

1. Jw = 1 = Dry.
2. Jw = 0.66 = “Medium” inflow.
3. Threshold span has been determined based on the methods of Carter (2000), and represents an upper bound “immediate” collapse limit line beyond which support would be largely ineffective.
4. NIOSH (2011) recommends a minimum crown pillar thickness of 0.8*span.
5. Minimum thicknesses do not include overburden.

6.15. Ground Support Designs

The structural stability of the proposed excavations was analyzed using an empirical design chart after Grimstad and Barton (1993) and Unwedge© (Rocscience, 2003) to develop minimum ground support recommendations. Discontinuity sets as discussed in Section 4.3 and presented in Appendix H were used in the analysis. Discontinuity cohesion was assumed to be zero. These values are based on direct shear testing and discussed in Section 5.10.

6.15.1. Results of Structural Stability Analysis

Excavation locations and dimensions were provided by AMC on February 27, 2013. Barton's empirical design chart was used to review the required ground support in consideration of given excavation geometries, an assumed excavation support ratio (ESR) of 3, and conservative and base case Q' values. Although most of the rock would be adequately supported using spot bolting, standard practice in Canadian hard rock mines is to have a minimal patterned ground support standard. As such, ground support analyses for primary (permanent "man-entry") and secondary (temporary "development") headings were conducted in each structural domain.

Design sets in each structural domain were chosen based on sampling frequency, similarity to major structure, the variety of sampling methods where the set is present and prominent structure type within each set. All possible combinations of discontinuity sets were analyzed to assess the adequacy of prescribed ground support to prevent wedge failure. Discontinuities were assigned an average persistence of 2 m, as supported by observations of block size during underground mapping. Faults were assigned an average persistence equal to the excavation span width. It was assumed that wedges less than 0.75 m^3 could be retained by surface support (shotcrete or galvanized welded wire mesh). It was also assumed that wedges with acute apex angles would be "clamped" and unlikely to fail.

A factor of safety of 1.3 has been used to guide the primary and secondary heading design recommendations. Intersections with effective span greater than 6 m have been analysed separately. Bolt and resin yield strength parameters are summarized in Table 6-3.

Table 6-3. Ground Support Input Properties

Type	Property	Unit	Source
Swellex Pm12	Tensile Capacity	0.110 MN	Brady et al., 2006
	Plate Capacity	0.110 MN	Minova, 2012
	Bold Strength	0.110 MN / m	Brady et al., 2006
Fully-Grouted #7 Dywidag	Tensile Capacity	0.232 MN	DSI, 2012
	Plate Capacity (6" x 6")	5.6 MN	DSI, 2012
	Bond Strength	0.59 MN / m	Brady et al., 2006
	Bond Length	80%	N/A

Ground support requirements to meet the above minimum factor of safety for each excavation are summarized in Table 6-4, and example applications are shown schematically in Drawing 08. It should be noted that specifications provided are minimum support requirements, and designs should be optimized with surface support (shotcrete, galvanized welded wire mesh, straps) when excavations intersect relatively poorer ground, faults, more persistent joints or narrower joint spacing, soft joint walls, groundwater seepage points, or “dead” sounding material that is difficult to scale. Ground support for the crusher chamber is provided in Section 6.12.

If man-access will not be permitted within the raise, then decreased ground support is feasible. A contingency support (rehabilitation) cost should be assumed for the raises if support is not planned to be installed during development of the raises. Based on the current understanding of the distribution of poorer quality rock mass, a budget of 15% contingency of the ground support recommended in Table 6-4 should be assumed. As the proposed ventilation raise locations were not finalized at the time of the FS site investigations, geotechnical data within the proposed areas of the raise is not available. Therefore, these recommendations are preliminary and some risk is assumed by incorporating unsupported ventilation raises into the mine plan. Support through any surface connection points is strongly recommended.

Table 6-4. Ground Support Recommendations

Opening Type	Cross Section (w x h, m)		Ground Support Type	Length	Spacing	Shotcrete Estimate (%)	Additional Notes
Main access decline, ramps, and other haulage routes	6 x 5.5	Back	Fully-grouted #7 Dywidag	2.4 m	1.8 m x 1.8 m	10	
		Walls	Fully-grouted #7 Dywidag	1.8 m	1.8 m x 1.8 m	10	
Level development	5 x 5.5	Back	Swellex Pm12	1.8 m	1.8 m x 1.8 m	10	Fully-grouted #7 Dywidag can be used in direct substitution of Pm12 when desired for operational efficiency
		Walls	Swellex Pm12	1.8 m	1.8 m x 1.8 m	10	
Intersections	Includes 6 x 5, 5 x 5, three-way, four-way, and herringbone layouts	Back	Pre-support: Fully-grouted #7 Dywidag	2.4 m	1.8 m x 1.8 m	10	Welded wire mesh should be installed on the back and upper portion of each wall for all intersections with an effective span greater than 6 m. Strap consumption estimate: 25% of pillars; 3 straps per pillar.
		Back	Long support: Coupled fully-grouted #7 Dywidag or cable bolts	5.0 m	2.4 m x 2.4 m	10	
		Walls	Fully-grouted #7 Dywidag	1.8 m	1.8 m x 1.8 m	10	
Full-width undercuts	5 m high x 6 m wide pilot	Back	Pre-support: Swellex	2.4 m	1.8 m x 1.8 m	n/a	All support must be installed prior to slashing.

Opening Type	Cross Section (w x h, m)		Ground Support Type	Length	Spacing	Shotcrete Estimate (%)	Additional Notes
			Pm12				
		Back	Long support: Bulbed cable bolts	6 m	2.4 m x 2.4 m	n/a	
		Walls	-			n/a	
	15 m wide full undercut (post-slash)	Back	Swellex Pm12	2.4 m	1.8 m x 1.8 m	25	All support except for shotcrete must be installed as each lateral slash is developed (prior to full width exposure)
		Walls	Swellex Pm12	2.4 m	1.8 m x 1.8 m	25	
Portal		Back	Fully-grouted #7 Dywidag	1.8 m	0.8 m x 0.8 m	100	1 m spaced steel sets in first 30 m and 100% coverage with minimum 50 mm thick steel-fibre reinforced shotcrete throughout the length of the portal
		Walls	Fully-grouted #7 Dywidag	1.8 m	1.8 m x 1.8 m		
Raises	3 m x 3 m cross-section	All	Fully-grouted #7 Dywidag	1.2 m	0.8 m x 0.8 m	50	Staggered spacing. Reduced support may be feasible if man-access is not permitted.

Notes:

1. Design FOS is 1.3.
2. Wall bolts must extend down to within 1.5 m of sill (floor).
3. Surface support should be installed when excavation intersects relatively poorer ground, faults, more persistent joints or narrower joint spacing, soft joint walls, groundwater seepage points, or “dead” sounding difficult to scale material.
4. Use shotcrete estimate percentage for mesh cost estimating if mesh is preferred surface support.
5. All estimates are provided for cost estimating purposes only.

6.15.2. Shotcrete Mix Design

The shotcrete mix design for Brucejack is based on precedent at other hard rock mines in North America. A steel-fibre reinforced wet mix shotcrete was stated as the preferred shotcrete design for the project. The mix design is presented in Table 6-5. Shotcrete consumption is anticipated to be 10% of linear development with a minimum required thickness of 5 cm (2”).

Table 6-5. Recommended Shotcrete Mix Design

Component	**kg/m^3**	**Notes**
Cement	437	
Silica fume	44	
Coarse aggregate	439	(10-5 mm) (SSD)
Fine aggregate	1273	(SSD)
Maximum water	184	
Steel fibres	58	Fibres > 25 mm. Dramix 30 mm, Novocon FeO730 or similar.
High range water reducing admixture	7.0 L/m^3	BASF Rheobuild 1000 or similar.
Hydration controlling admixture	2.01 L/m^3	BASF Delvo or similar.
Accelerator	~7% mass cement	Added at nozzle. BASF SA160 or similar.
Total Mass (kg)	2444	
Specified and Calculated Parameters		
Slump (mm) +/- 20 mm	170	
Air content (%) +/- 1%	2.0	
Maximum water/cement materials ratio	0.38	
28 day compressive strength (MPa)	40	
Rock content (% coarse + fine aggregate)	25.6	
Silica fume content (% mass cement)	10.0	
Density (kg/m^3)	2427	
Yield (m^3)	1.0068	

6.16. MAP3D Analysis

MAP3D (Wiles, 2007) has been used to study the influence of the mining sequence on the stress distribution around the proposed excavations, and particularly around the Brucejack Fault Zone. However, the current level of knowledge is limited with respect to mining sequence and in-situ stress, which significantly limits the extent to which the model can be used to infer local and global rock mass behaviour during mine life.

The MAP3D analysis is considered to be suitable for studying the potential trends of mining-induced stress changes, but it is not considered to be suitably calibrated to estimate precise magnitudes of stress, strain, or rock mass damage. The model is only representative of stress-related stability, and does not account for adverse geologic structure. In consideration of these limitations, the model can be reviewed with the goal of highlighting areas where stress is concentrating, where stress shadows (loss of confinement, or relaxation) are occurring, and where standoff distances or pillar thicknesses are not sufficient to isolate a critical opening from significant mining-induced stress changes.

The mining sequence was approximated on a yearly basis within the MAP3D model. This precludes detailed study of the primary-secondary sequencing and prevents recognition of the beneficial effect on the rock mass of localized backfill in primary stopes. End of mining stope geometries for the VOK and WZ are shown in Figures 6-1 and 6-2 respectively. The topography above the deposits was approximated as a plane dipping at the average orientation of the regional topography, and in-situ horizontal stresses were approximated using a K (horizontal: vertical stress ratio) of 2. Rock mass parameters were based on the work summarized in Section 5.0. The Brucejack Fault Zone was incorporated as a simplified plane parallel to the average orientation of both the PEA and BGC-interpreted fault surface, shown in Figure 6-1. The mine was assumed to be dewatered. As the goal was the review the global mine sequence, development openings, which are small relative to stopes, were not included in the model. Excavated stopes were backfilled in the step immediately after the excavation step.

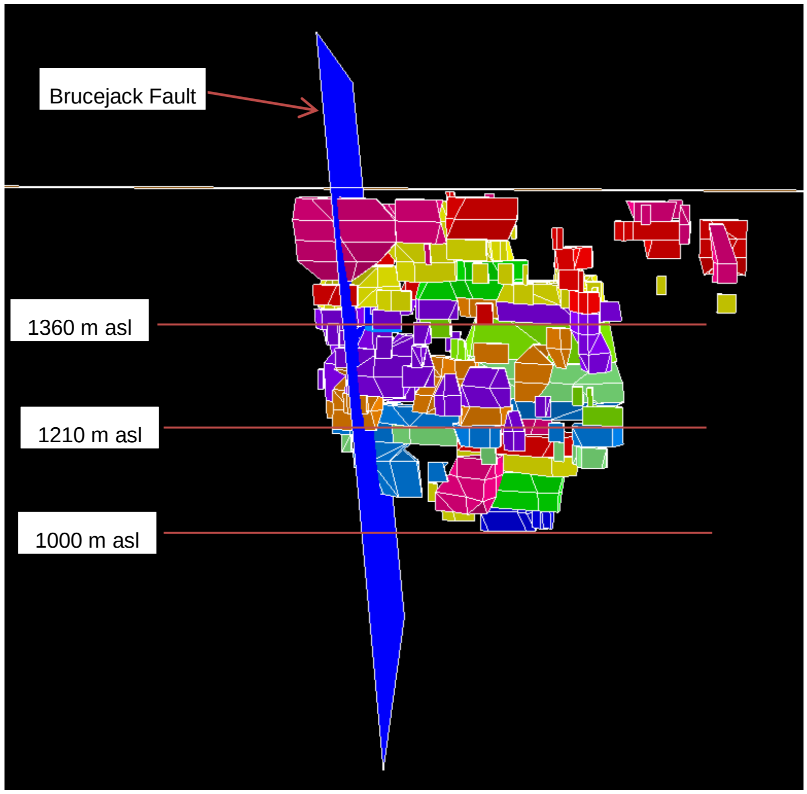


Figure 6-1. MAP3D Model of VOK Deposit Looking North

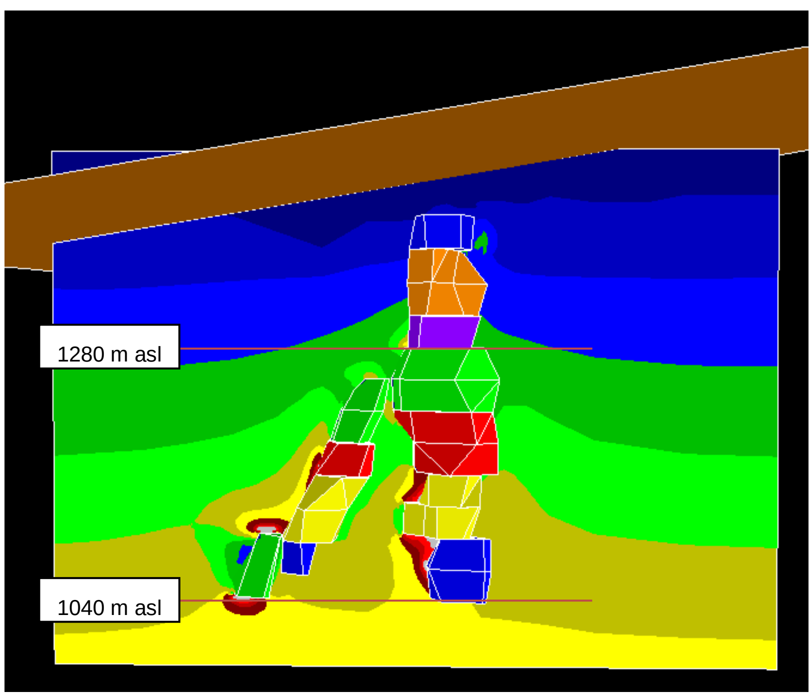


Figure 6-2. MAP3D Model of WZ Deposit Looking West. σ1 contours are plotted.

6.16.1. Review of Sill Pillars

The numerical modelling analysis shows some relaxation in larger stope hangingwalls, and stress concentrations in sill pillars within areas of the mine with denser stoping. The model shows that the bottom-up sequence concentrates stress in both VOK sill pillars. Yielding is likely to occur prior to recovering the entire sill pillar, and therefore achievable sill pillar recovery may be less than 100%. The WZ sill pillar is interpreted to be stable except for stress concentration in the sill pillar abutments. Stress concentration in pillar abutments is common in mines using centre-out sequencing, and does not necessarily indicated stability problems prior to full extraction of the sill pillar.

6.16.2. Review of Primary and Secondary Stopes

The VOK model shows stress concentration and yielding proximal to the dense stope clusters in VOK-M, indicative of potential instability in the stope hangingwalls and footwalls,. The abutments show loss of confinement and yielding conditions. This indicates some potential for increased dilution. Installation of cable bolts into the hangingwalls of dense stoping blocks could be installed to ‘tie’ the hangingwall together until backfill is placed, to help reduce dilution. Note that at the current time, the model is not considered sufficiently calibrated for quantitative designs.

A similar cluster of stopes in the VOK-L shows loss of confinement in the levels below the sill pillar. Yielding into the hangingwall and footwall rock mass is observed as the sequence progresses up to the sill pillar.

In the WZ, individual irregular pillar geometries between some stopes show yielding, however overall the WZ showed little influence of stress on the stopes.

6.16.3. Review of Stopes in the Brucejack Fault Zone

If the mine plan is not suitably sequenced, “fault reactivation” can occur, whereby localized deformation as a result of mining causes shearing and displacement (“reactivation”) along the fault. Dependant on the persistence of the structure and connection to water sources or other excavations, reactivation has the potential to create rock mass instability, rockbursts, and water inflow.

Stopes mined through the Brucejack Fault Zone were evaluated for shear displacement and hangingwall and footwall instability. Generally, the mining sequence redistributes stress up and west along the hangingwall of the fault.

The model indicates the potential for minor shear displacement along the larger lenses of stopes surrounding the lower sill pillar between elevations 1180 m and 1240 m, shown in Figure 6-1. Maximum shear displacement was interpreted in the lower VOK stope abutments that extend through the fault.

Yielding is observed along stope lenses in the footwall of the fault zone, and the extent of the yielding generally increases with depth. No yielding is interpreted in the Upper VOK, while significant yielding is interpreted in the Middle VOK and Lower VOK, respectively. These yield zones should be interpreted as areas where higher ground support costs will occur. Ultimately, tighter definition drilling of both the fault and the mineralization in this area should be drilled and reviewed with consideration to the level of effort required to safety mine through the fault.

6.16.4. Crown Pillars

A minimum 10 m thick crown pillar was modelled for the VOK and WZ. This thickness is sufficient for individual 10 m wide stopes; however extraction of multiple adjacent stopes resulted in of yielding in the 10 m sill pillar. This analysis supports the static analysis which showed that for a 10 m thick crown pillar, stope spans beneath the crown pillar should be limited to 10 m. A crown pillar thickness of 15 m is recommended to reduce the potential for instability. Immediate backfilling of primary stopes and strict adherence to the primary-secondary sequencing plan for the stopes immediately below the crown pillar is recommended.

6.16.5. Summary of MAP3D Analysis

The preliminary MAP3D model demonstrates that at the current level of knowledge and modelling limitations, the proposed mine plan is generally achievable. However, it contains areas that require additional detailed analysis and enhanced ground support designs. Recommendations for model refinement at the next level of study are provided in Section 10.

6.17. Intersection of Exploration Diamond Drill Holes

There are hundreds of exploration and geotechnical diamond drill holes across the project site. Drill holes intersected by underground openings present a potential source of high pressure and/or high flow water. The 2010 and 2012 geotechnical drill holes drilled by BGC were plugged with cement-bentonite grout during instrumentation installation; however, the completion details for all other drill holes are not available and therefore the drill holes should be considered to be open unless proven otherwise.

The mine plan should account for costs associated with open drill holes. Prior to excavation, the surveyed downhole path of all drill holes should be plotted on driving layouts to anticipate drill hole intersections, and necessary contingency devices such as packers or stempipes should be available.

7.0 MONITORING AND DESIGN VERIFICATION

The recommended excavation and ground support designs are based on the geotechnical work summarized in the preceding sections. Successful implementation of these designs will depend on mine operations and ongoing geotechnical evaluations during the development of the mine. These techniques are discussed below.

7.1. Blast Design Optimization and Monitoring

The designs provided assume “controlled” blasting for all excavation work. Controlled blasting will be required to meet the geotechnical requirement to limit disturbance into the excavation walls from blast vibrations or gas pressure.

7.2. Stope Deformation Monitoring

Deformation monitoring of critical stope walls, pillars, and infrastructure excavations such as shops, service bays, crusher chamber, primary developments, and main access ramps are required to:

- Maintain safe operational practices for personnel and equipment
- Provide warning of rock mass instability
- Provide geotechnical information for designs to assist in making subsequent modifications, should they be required, to achieve the desired rock mass performance.

A well-developed risk management system, which includes active monitoring, may allow additional optimization of the excavation and ground support designs during operation of the mine.

The current state of practice for ground movement monitoring in underground mines in North America is based on a multi-layered system, which may include:

- Tape extensometer stations
- Time domain reflectrometry (TDR) cables in excavation walls
- Vibrating wire or manual crackmeters
- Multi-point borehole extensometers (MPBX) in pillars and walls
- Microseismic systems, if appropriate
- Survey prisms tied into the mine coordinate system
- Visual inspections.

The various hardware systems should be augmented with an appropriate suite of software to provide near real-time visualization, displacement calculations, monitoring, and warnings for the geotechnical and operations staff of the mine. Of particular significance will be the excavations near and within the Brucejack Fault Zone, the underground crusher chamber, and the crown pillars.

7.3. Underground Mapping and As-Built Surveys

Once development begins a program of underground geotechnical mapping and as-built surveys should be initiated by Pretium. The geotechnical data collected will be important for the continued development of the mine scale geological model, and will be useful for mine planning, stability assessments, and hydrogeology assessments. The collected data should be stored in a digital format compatible with the mine planning software / geology modelling software and CAD systems used at the mine. This system should be established at the start of mining.

8.0 SUMMARY

A summary of the underground rock mechanics assessment for the Brucejack Project Feasibility Study is presented below:

- Stope stability analysis for the lower quartile ("conservative") and median ("base case") rock mass qualities were completed. The recommended maximum unsupported hydraulic radii are 1.9 and 3.1 for the backs, and 6.2 and 11.0 for the hangingwalls, for the conservative and base case designs, respectively. The recommended maximum supported hydraulic radii are 4.1 and 5.6 for the backs and 10.0 and 14.5 for the hangingwalls, for the conservative and base case designs, respectively.
- The portal should be excavated with a minimum cover of 12 m of rock above the crown (back) of the tunnel excavation. The rock face should be excavated in two or more benches of equal height with 75° bench face angles and a five to six meter horizontal bench between them. Resin-grouted rebar bolts, screen, and fibre-reinforced shotcrete should be applied to the portal face to retain loose rock over the portal entrance.
- Faults have been identified in the VOK ramp area but are inferred to be localized structures. Fault zones have been identified in drill holes proximal to the WZ ramp and should be further constrained. These localized fault zones will likely require additional ground support but are not likely to create large-scale ramp instability. A minimum standoff distance of 25 m is recommended between the ramps and the development excavations.
- A standoff distance of 25 m is recommended between all hangingwall/footwall drives and the stopes.
- The recommended pillar thickness between a raise and any nearby development or production openings is 10 m.
- A minimum radial standoff distance of 50 m is recommended to prevent stress interaction between the proposed underground crusher and production excavations (stopes). This recommendation also applies to offset from major structures (i.e. the Brucejack Fault Zone).
- To maximize crown pillar recovery, the minimum recommended crown pillar thickness for the WZ and VOK is 15 m, with a maximum recommended stope span of 10 m for all stopes immediately below the crown pillar. As the recommended maximum span is narrower than the transverse width of the mineralized zones, transverse stopes immediately below the crown must be tight-filled to reduce the potential for crown pillar collapse. The crown pillar should be supported with 5.0 m long single strand bulbed cable bolts on 2.5 m spacing.
- Ground support requirements to meet the minimum factors of safety for each excavation are summarized in Table 6-1 and Table 6-5 for the mine development and mine crusher and shops, respectively.

- Three-dimensional boundary element stress analysis in MAP3D shows some relaxation in larger stope hangingwalls, and some stress concentrations in sill pillars within areas of the mine with denser stoping. This behaviour indicates the potential for unplanned dilution and reduced sill pillar recovery. The VOK model shows stress concentration in the lowermost eastern stopes, where an offset in the mineralization has required stopes to be offset into the footwall. This pushes these lower stopes into the stress flowing around the stopes above, and results in stress concentration in both the back and hangingwall of the lower stopes. Shear displacement is observed along the Brucejack Fault Zone, and yielding occurs in both the hangingwall and footwall of the fault zone as mine development and production pushes across the fault.

9.0 RISKS AND OPPORTUNITIES

9.1. Risks

This section summarizes BGC's perception of the risks associated with the underground rock mechanics assessment presented in this report.

9.1.1. Structural Geologic Model

As discussed, at the time of reporting, Pretium had not yet developed a structural geology model for the project area. Therefore the structural geologic model remains poorly defined at this stage of study. BGC has generated their own model based on historic maps, a limited review of historic drill hole data, and a structural geologic report generated for an adjacent property. It has been assumed that Brucejack Fault Zone is the only major structure that intercepts the proposed mining footprint. The reliability of the underground designs could be improved if further geological modelling work could define the location, orientation, and geotechnical characteristics of major geologic structures.

9.1.2. West Zone Geology Model

A geology model is currently only available for the VOK. The geotechnical properties of the VOK rock mass were found to vary with respect to Pretium geologic unit, as discussed in Section 5.1. It is likely that the WZ rock mass also varies with respect to these units; however the three-dimensional model showing the distribution of these units within the WZ has not been created. Creation of a WZ Geology Model would increase the understanding of spatial variation of rock mass quality.

9.1.3. In-situ Stress

There is little information available with regards to the in-situ stresses in the project region. A conservative K value (horizontal: vertical stress ratio) of 2 has been assumed for the stability analysis in this report, however, high horizontal stresses are known to occur in steep mountainous terrain similar to that of the Brucejack Project. Underestimation of in-situ stresses could result in a lack of appropriate conservatism in the geotechnical designs.

9.1.4. Underground Crusher

Although unlikely, the proposed underground crusher and conveyor infrastructure could be at risk if even relatively small movements are experienced in the walls, back or sill of the crusher excavation. Back or wall instability could directly impact the conveyor. Instability or deformation in the vicinity of the excavation may require ongoing maintenance of crusher infrastructure, which would increase maintenance costs for the crusher.

The risk to the crusher can be mitigated by:

- Ensuring adequate ground support design for the crusher excavation
- Ensuring adequate barrier pillars are maintained between the crusher excavation and production openings

- Ensure adequate barrier pillars are maintained between the crusher excavation and major structures (fault zones)
- Operating a suitable ground deformation monitoring system to provide early warning of instabilities that could affect the crusher
- Including a contingency in the estimated maintenance costs for the crusher to account for adjustments to the system in response to deformations.

9.1.5. Mining Proximal To or Through the Brucejack Fault Zone

The VOK resource extends across the current interpretation of the Brucejack Fault Zone. Although the grades of the resource blocks that intersect the fault are not known by BGC, the goal for the underground mine at the time of this report was to strive for 100% recovery of the current resource. Mining proximal to and through a fault zone introduces risk to the mining operation due to the potential for interception of weak rock, ravelling ground, and water inflow. Furthermore, a persistent fault zone has the potential to create stability problems on a global mine scale, as the mining-induced stress changes can drive instability through relaxation or stress concentration along a surface across multiple levels. The results of the MAP3D modelling suggest increased ground support costs and/or rehabilitation costs may be required; however, the detailed ground support designs for the Fault Zone have not been completed because the development layout through the fault zone was not finalized at the time of this report.

The risk to the stopes and development may be mitigated by:

- Developing a structural model for the project to better understand the orientation, persistence, and geotechnical characteristics of all major structures in the project area.
- Completing probe hole drilling prior to development to collect rock mass data and further refine geotechnical and structural interpretations around the fault.
- Including a contingency in the estimated development and production costs for all development and stopes planned for within 25 m of the Brucejack Fault Zone, to account for adjustments to the system in response to deformations. This 25 m buffer should extend from the limit of inferred fault-disturbed rock out into inferred unaltered rock, and is intended to represent areas where fault-disturbed ground may be intercepted.

The risk to the global mine stability may be mitigated by:

- Repositioning proposed stopes and large openings further away from the Fault Zone. This may include sterilizing some mineralization within a barrier pillar around the Fault Zone.
- Putting additional resources into defining the Fault Zone at the Final Design stage to more confidently and more clearly outline the fault-disturbed rock zone and its geotechnical characteristics.

9.1.6. Sill Pillar Extraction

Numerical stress modeling has identified stress concentration and potential failure in the VOK sill pillars. Full recovery in the sill pillars may not be possible. Detailed stress analysis is recommended to constrain the sequencing options to optimize recovery in the sill pillars.

9.1.7. Thickness of Weathered Zone

The thickness of the weathered zone varies considerably from 10 to 50 m. No spatial relationships or lithology relationships were evident from a review of the data. The thickness of the weathered zone has an impact on the crown pillar designs, the near-surface stope designs, and the near-surface rib pillar designs.

9.1.8. Seismic Stability Analysis

In the current study, only the portal excavation was reviewed with respect to seismic stability analysis. Although underground excavations are generally much less sensitive to seismic events than surface facilities, some risk is introduced by not incorporating it into the stress analysis of the mine. Considering the current limitations with respect to the model input parameters (primarily WZ geology and in-situ stress conditions), it was not considered appropriate at this time to incorporate seismic loading into the stress analysis.

9.1.9. Intersection of Exploration Diamond Drill Holes

The mine plan should account for costs associated with open drill holes. Prior to excavation, the surveyed downhole path of all drill holes should be plotted on driving layouts to anticipate drill hole intersections, and necessary contingency devices such as packers or stempipes should be available.

9.2. Opportunities

The section summarizes opportunities to improve on the reliability of the recommendations within this report.

9.2.1. Intact Strength of All Units

Additional laboratory testing will improve the reliability of the underground designs completed to date. Particular attention should be paid to samples within the VOK D1 domain, the weathered rock zone, and fault zones, as these geotechnical units are under-represented in the current testing database. This testing may increase confidence in the current designs and allow optimization of stope dimensions and more cost-efficient ground support designs.

9.2.2. Collection of Additional Structural Orientation Data

The stope dimensions provided in this report assume stope-scale geologic structures are present sub-parallel to the stope walls. As additional exploration drill holes are drilled, and particularly as additional underground developments are exposed, the structural database and subsequent structural domains should be reviewed to refine the assumptions inherent in the stope span recommendations. Tighter definition of structural domains may allow less-conservative assumptions with respect to stope-scale structure, with a subsequent increase in recommended maximum stope spans.

10.0 RECOMMENDATIONS FOR FURTHER WORK

Based on the results of the FS level assessments, the following work is recommended at the next stage of design to address remaining gaps in information, increase the reliability of the underground designs, and evaluate mitigation options for risks identified in this study.

10.1. Collection of Geotechnical Information During Proposed Bulk Sample

A bulk sample is currently planned for the VOK. At the time of this report, expansion of the existing WZ workings was underway to allow excavation of a new drift between the existing workings and the VOK to facilitate the bulk sample.

The bulk samples work was anticipated to commence in the third quarter of 2013. Geological and geotechnical mapping should be completed as this work progresses, and regular geotechnical inspections should be carried out to collect additional information about the performance of the rock mass. Consideration should be given to doing overcoring stress measurements (or their equivalent) as the excavation advances to collect stress data as discussed in Section 9.

10.2. Drill Core Testing

Additional laboratory testing including UCS, BTS, and direct shear testing should be completed. Particular attention should be paid to samples within the VOK D1 domain, the weathered rock zone, and fault zones, as these geotechnical units are under-represented in the current testing database.

10.3. Geotechnical Drilling

Six to eight geotechnical drill holes should be completed to collect data for the final design phase of this project. These drill holes should be used to confirm the geological interpretations and the geotechnical parameters of the rock mass of these zones. The drilling program should include packer testing above, below and across/within faults or geologic contacts. Areas requiring additional geotechnical information include the Brucejack Fault Zone, the proposed crusher excavation, exhaust raise developments, and the WZ ramp.

10.4. In-Situ Stress Measurement

A detailed in-situ stress measurement program should be completed at the next level of study. This program can be initiated from the existing underground excavations within the WZ and VOK. The program should target both deposits, as the borehole breakouts visible in the Televiewer images suggest different stress orientations exist in each deposit.

10.5. Geological Interpretations

Additional refinements are required for the 3D geological model of the VOK, and at the time of this study, a 3D geological model had not yet been developed for the WZ. Further work should also be completed on the interpretation and modelling of large and intermediate scale faults. The presence of unknown major structures or splays off of the Brucejack Fault Zone has the potential to significantly affect rock mass stability. Once complete, this updated model should be reviewed by BGC to determine if updates to the geotechnical assessments are required.

10.6. Mine Plan and Mine Sequencing

Numerical stress modeling has identified zones of potential instability throughout stope clusters around the sill pillars and the crown pillar. At the next level of study, the model should be updated with the WZ geology model, in-situ stress measurements, and a detailed stope-by-stope extraction plan, all of which are currently unavailable.

Once the model has been updated, it should be calibrated using observations of ground deformation recorded during the VOK bulk sample currently scheduled for the summer of 2013. This calibration data can then be used to increase the confidence in the modelling results. This will facilitate a more detailed study of the mine sequencing effects on the rock mass stability, including pillars, stope hangingwalls, mine abutments, and excavations through the Brucejack Fault Zone.

10.7. Seismic Stability Analysis

It is possible to incorporate seismic loading effects into the stress analysis in Map3D using a software add-on called Map3Di Integrated Seismicity. A review of the need to incorporate seismic loading into the stability analysis of the underground excavations should be considered at the next level of study. Knowledge of the localized deformation effects of the seismic activity (rockburst or earthquake) is required. MAP3Di uses the field loading information, specifically ride and dilation on a slip plane segment, or deformation of a 3D zone, to calculate the stress contribution of the integrated field loading (Mine Modelling Pty. Ltd., 2013).

11.0 CLOSURE

We trust the above satisfies your requirements at this time. We appreciate the opportunity to work on this exciting British Columbia based mining project. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

BGC ENGINEERING INC.
per:

ISSUED AS DIGITAL DOCUMENT.
SIGNED HARDCOPY ON FILE WITH
BGC ENGINEERING INC.

Catherine Schmid, M.Sc., P.Eng.
Senior Geotechnical Engineer

John Whittall, B.Sc.E, E.I.T.
Geotechnical Engineer

Reviewed by:

J. Roland Tosney, M.Sc., P.Eng.
Senior Mining Engineer

Derek Kinakin, M.Sc., P.Geo.
Senior Engineering Geologist

REFERENCES

Barton, N.R., and Choubey, V. 1977. The shear strength of rock joints in theory and practice. Rock Mechanics. 10, 1-54.

Barton, N.R. 2002. Some new Q-value correlations to assist in site characterization and tunnel design. International Journal of Rock Mechanics and Mining Sciences. 39 (2): 185-216.

Barton, N.R., Lien, R., and Lunde, J. 1974. Engineering classification of rock masses for the design of tunnel support. Rock Mech. 6(4), 189-239.

Biogeoclimatic Ecosystem Classification (BEC) Program. 2008. Provincial Map of BGC Zones, Forest Service British Columbia Research Branch.

BGC Engineering Inc. 2010. Preliminary Open Pit Design Criteria for the Brucejack Zone. Document number SF-2010-12. Issued July 16 2010 to Silver Standard Resources Inc.

BGC Engineering Inc. 2011a. Snowfield-Brucejack 2010 Mine Area Site Investigation Summary. Document number SF-2011-01. Issued February 14 2011 to Silver Standard Resources Inc.

BGC Engineering Inc. 2011b. Brucejack Underground PA – Underground Rock Mechanics and Hydrogeology – FINAL. Document number BJ-2011-03. Issued June 1 2011 to Pretium Resources Inc.

BGC Engineering Inc. 2012. Brucejack Project – Feasibility- Cost Estimate Update – June 2012. Issued June 7 2012 to Pretium Resources Inc.

Bieniawski, Z. T. 1976. Rock mass classification in rock engineering. In: Proceedings of the Symposium on Exploration for Rock Engineering. Johannesburg; pg: 92 - 106

Deere, D. U. and Deere, D. W. 1988. The rock quality designation (RQD) index in practice. In: Rock Classification Systems for Engineering Purposes, AST STP 984. pg: 91 - 101

ERSi Earth Resource Surveys Inc. 2010. KSM Project Area Structural Geology Assessment - Draft.

Greig, C. 2012a. Personal communications via email.

Greig, C. 2012b. Surface mapping data collected at Brucejack property.

Grimstad, E. and Barton, N. 1993. Updating of the Q-system for NMT. Proceedings of the International Symposium on Sprayed Concrete. Modern Use of Wet Mix Sprayed Concrete for Underground Support, Fagemes. Norwegian Concrete Association, Oslo.

Hencher, S. R. 1995. Interpretation of direct shear tests on rock joints. In: Daemen, J. and Schultz, R. (eds). Proceedings of the 35th U.S. Symposium on Rock Mechanics. A. A. Balkema. Pgs 99 - 106

Hencher, S. R. and Richards, L. R. 1989. Laboratory direct shear testing of rock discontinuities. Ground Engineering. 22(2): 24-31

Hoek, E. 2007. Practical Rock Engineering. www.rocscience.com

Hoek, E. and Diederichs, M. S. 2006. Empirical estimation of rock mass modulus. International Journal of Rock Mechanics & Mining Sciences. 43: 203 - 215

Hudyma, M.R. 1988. Development of Empirical Rib Pillar Design Criterion for Open Stope Mining. M.A.Sc. Thesis, University of British Columbia.

International Society of Rock Mechanics (ISRM). 1974. Suggested methods for determining shear strength.

International Society of Rock Mechanics (ISRM). 1978. Suggested methods for the quantitative descriptions of discontinuities in rock masses: International Journal of Rock Mechanics and Mining Sciences. 15(6), 319-368.

International Society of Rock Mechanics (ISRM). 1981. Rock characterization, testing, and monitoring: ISRM suggested methods. The Geol. Society Special Publication, 8, 5-15.

Le Roux, K., Bawden, W., and Grabinsky, M. 2004. Liquefaction analysis of early age cemented paste backfill. Proceedings of the 8th International Symposium on Mining with Backfill (MINEFILL 2004), published by The Nonferrous Metals Society of China, Beijing.

McKinnon, S.D., Harding, D., and Birnie, K. Crown Pillar Design at Inco’s South Mine. NARMS-TAC 2002, Hammah et al. (eds), pp. 1041-1048, University of Toronto.

McLeod, D.B. 1999. Reclamation report on the Sulphurets Property. Report submitted to Newhawk Gold Mines Ltd.

Mine Modelling Pty. Ltd. 2013. Information available on the MAP3D website. www.map3d.com.

NRCAN, 2010. 2010 National Building Code of Canada Seismic Hazard Maps. http://www.earthquakescanada.nrcan.gc.ca/hazard-alea/zoning-zonage/images/NBCC2010canPGAweb.jpg

Nickson, S.D. 1992. Cable Support Guidelines for Underground Hard Rock Mine Operations. Master of Applied Science Thesis for McGill University Faculty of Graduate Studies. University of British Columbia. December 1992.

NIOSH. 2011. Pillar and Roof Span Design Guidelines for Underground Stone Mines. DHHS (NIOSH) publication number 2011-171. National Institute for Occupational Safety and Health, U.S.A.

Onur and Seemann, 2004. Probabilities of Significant Earthquake Shaking in Communities Across British Columbia: Implications for Emergency Management. 13th World Conference on Earthquake Engineering. August 2004.

P&E Mining Consultants. 2009. Technical Report and Resource Estimates on the West, Bridge, Galena Hill, Shore, SG & Gossan Hill Gold and Silver Zones of the Brucejack Property Northern British Columbia Canada. For Silver Standard Resources Inc. Effective Date: December 1, 2009.

Pierce, M.E., Bawden, W.F., and Paynter, J.T. 1998. Laboratory Testing and Stability Analysis of Paste Backfill at the Golden Giant Mine. Proceedings of the Sixth International Symposium on Mining with Backfill (MINEFILL 1998), Editor: Dr. M. Bloss, published by The Australasian Institute of Mining and Metallurgy, April 1998, ISBN 1-875776-55-9.

Pratt, H.R., Hustrulid W.A., and Stephenson, D.E. 1978. Earthquake Damage to Underground Facilities. U.S. Department of Energy. Document DP-1513.

Pretium Resources Inc. 2012a. Brucejack High-Grade Technical Session. May 1, 2012.

Pretium Resources Inc. 2012b. Personal communication via email with regards to the Brucejack Fault. C. Greig. October 11, 2012.

Pretium Resources Inc. 2012c. Personal communication via email for the current mine plan. February 27, 2013.

Pretium Resources Inc. 2013. Site Conditions & Equipment Standards. 02-10-00 SPE. Rev. D. Document number 1291990200-SPE-M0001-00.

Rescan Environmental Services Ltd. 1987. Climate and Hydrology for the Stage 1 Submission. Report to for Newhawk Gold Mines Ltd., Sulphurets Joint Venture. File 25380.02.

Rescan Environmental Services Ltd. 2011. Brucejack Project – Project Description – Draft. Report prepared for Pretium Resources Inc.

Rocscience Inc. 1998. Dips Version 5.0 – Graphical and Statistical Analysis of Orientation Data. www.rocscience.com, Toronto, Ontario, Canada.

Rocscience Inc. 1999. CPillar Version 3.0 – Crown Pillar and Roof Beam Stability Analysis. www.rocscience.com, Toronto, Ontario, Canada.

Rocscience Inc. 2002. RocLab version 1.0 – Rock Mass Strength Analysis using the Generalized Hoek-Brown failure criterion. www.rocscience.com, Toronto, Ontario, Canada.

Rocscience Inc. 2003. Unwedge Version 3.0 – Underground Wedge Stability Analysis. www.rocscience.com, Toronto, Ontario, Canada.

Rocscience Inc. 2008. Phase2 Version 7.0 – Finite Element Analysis for Excavations and Slopes. www.rocscience.com, Toronto, Ontario, Canada.

Silver Standard Resources Inc. 2010. Brucejack Fault surface. Provided via email in DXF format. May 21, 2010.

Stacey, T.R., and Page, C.H. 1986. Practical Handbook for Underground Rock Mechanics. Clausthal-Zellerfeld: Trans Tech Publications.

Stark, T. D. and Eid, H. T. 1994. Drained residual strength of cohesive soils. Journal of Geotechnical Engineering 120(5): 856 – 871.

Stevens, P.R. 1977. A Review of the Effects of Earthquakes on Underground Mines. Open File Report 77-313. U.S. Department of the Interior Geological Survey.

Terzaghi, K., and Peck, R.B. 1967. Soil Mechanics in Engineering Practice. John Wiley & Sons, New York.

U.S. Army Corps of Engineers (USACE). 1997. Engineering and Design – Tunnels and Shafts in Rock. 30 May 1997. EM 1110-2-2901.

Wardrop. 2011. Technical Report and Preliminary Economic Assessment of the Brucejack Project. Report to Pretium Resources Inc. Document No. 1191990100-REP-R0001-01.

Wiles, T.D. 2007. Map3D. http://www.map3d.com

Zoback, M.D., Moos, D., Mastin, L. and Anderson, R.N. 1985. Well bore breakouts and in situ stress. J. Geophys. Res., 90: 5523-30.

DRAWINGS

SCALE:	AS SHOWN	DESIGNED:	CJB
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	JLS	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT:
BRUCEJACK PROJECT FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

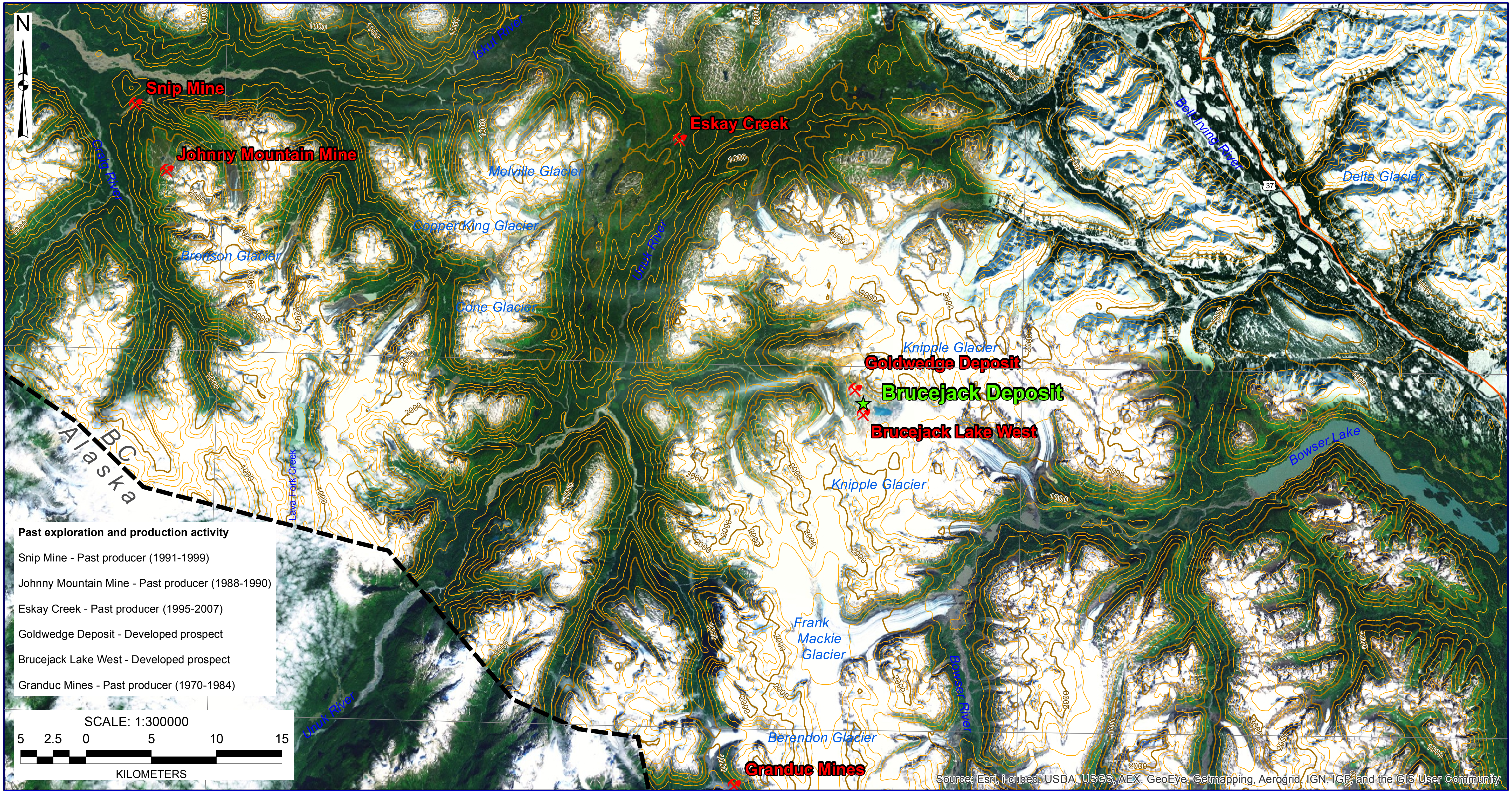
TITLE:
LOCATION MAP

CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.:	DWG No.:	REV.:
1008007	01	A

N:\BGC\Projects\1008 Pretium\007 Feasibility\002 UG - Office\04 Reporting and Reviews\Design report\Drawings\Supporting files\NEW Drawing 01 - Location Map.grf

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013



NAD 1983 UTM Zone 9N
CONTOUR INTERVAL 200 m

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:300,000
DATE:	MAY 2013
DRAWN:	MIB
DESIGNED:	KM
CHECKED:	CJB
APPROVED:	JRT

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT:
PRETIUM RESOURCES INC.

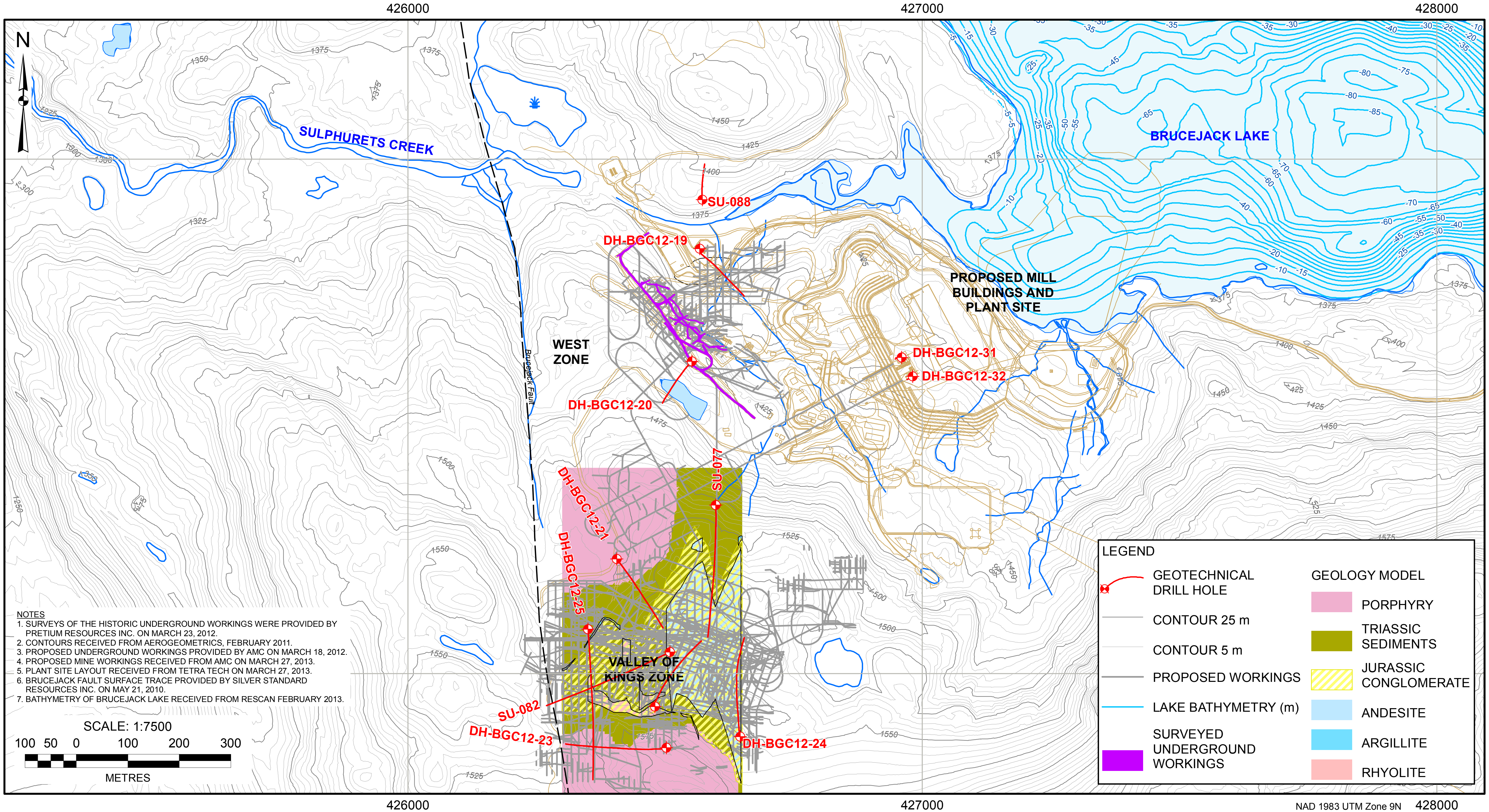
PROJECT:
BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE:
DEVELOPED PROSPECTS AND PAST PRODUCERS NEAR BRUCEJACK PROJECT

PROJECT No.:	DWG No.:	REV.:
1008007	02	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

X:\Projects\1008007_BJ_Feasibility\Workspace\20120709_Report_BrucejackProject_FeasibilityStudy_UndergroundRockMechanics_Assessments\02_DevelopedProspects_and_PastProducers_NearBrucejackProject.mxd Date: May 10, 2013 Time: 9:05 AM



X:\Projects\1008\007_BJ_Feasibility\Workspace\20130327_REPORT_Brucejack_Project_Feasibility_Study_Underground_Rock_Mechanics_Assessment\03_BrucejackSite_PlanMap.mxd Date: Thursday, May 16, 2013 Time: 2:06 PM

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:7,500
DATE:	MAY 2013
DRAWN:	MIB
DESIGNED:	JRW
CHECKED:	CJB
APPROVED:	JRT

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

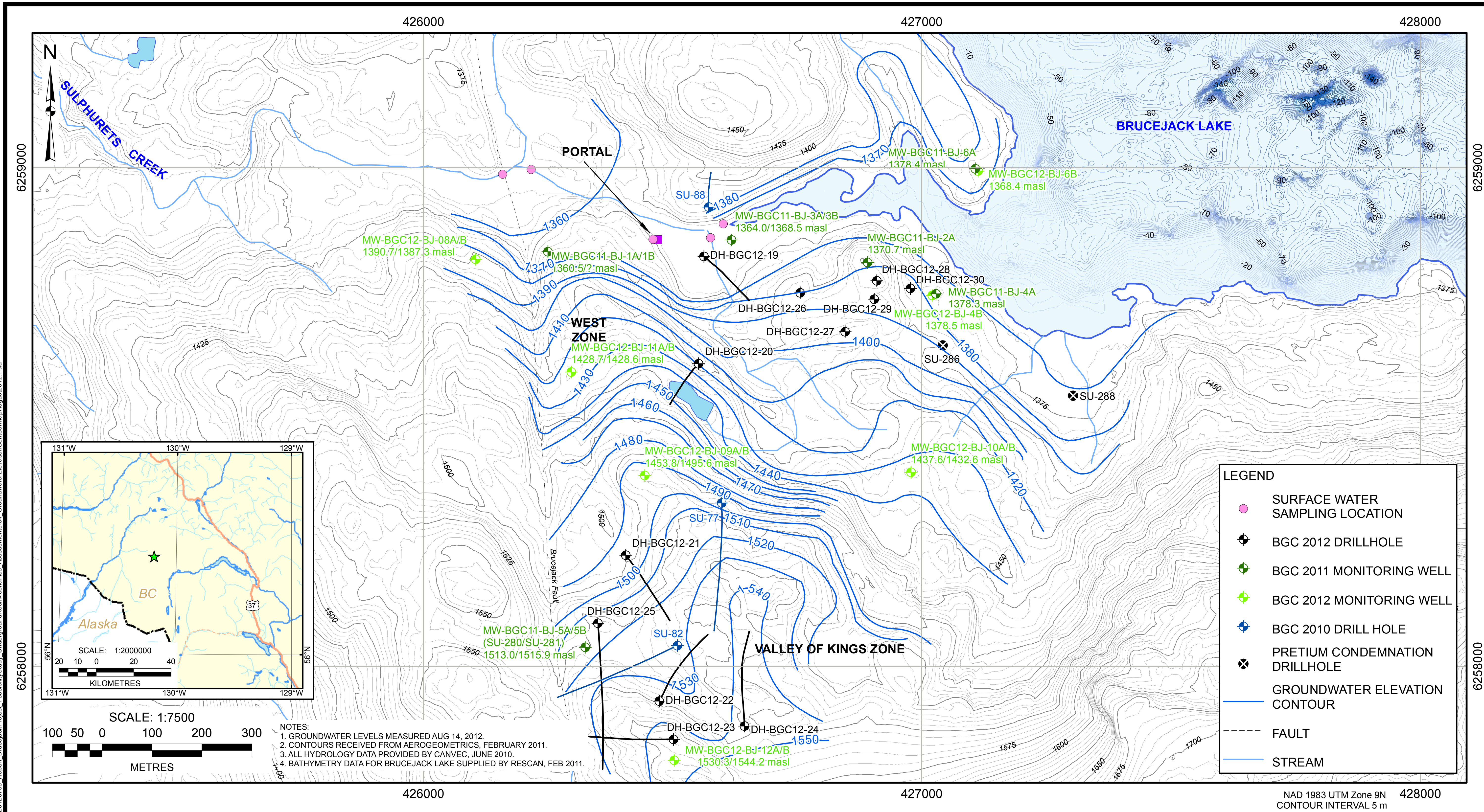
CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: BRUCEJACK SITE PLAN MAP

PROJECT No.:	DWG No.:	REV.:
1008007	03	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013



REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:7,500
DATE:	MAY 2013
DRAWN:	JCS
DESIGNED:	DP
CHECKED:	VC
APPROVED:	VC

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

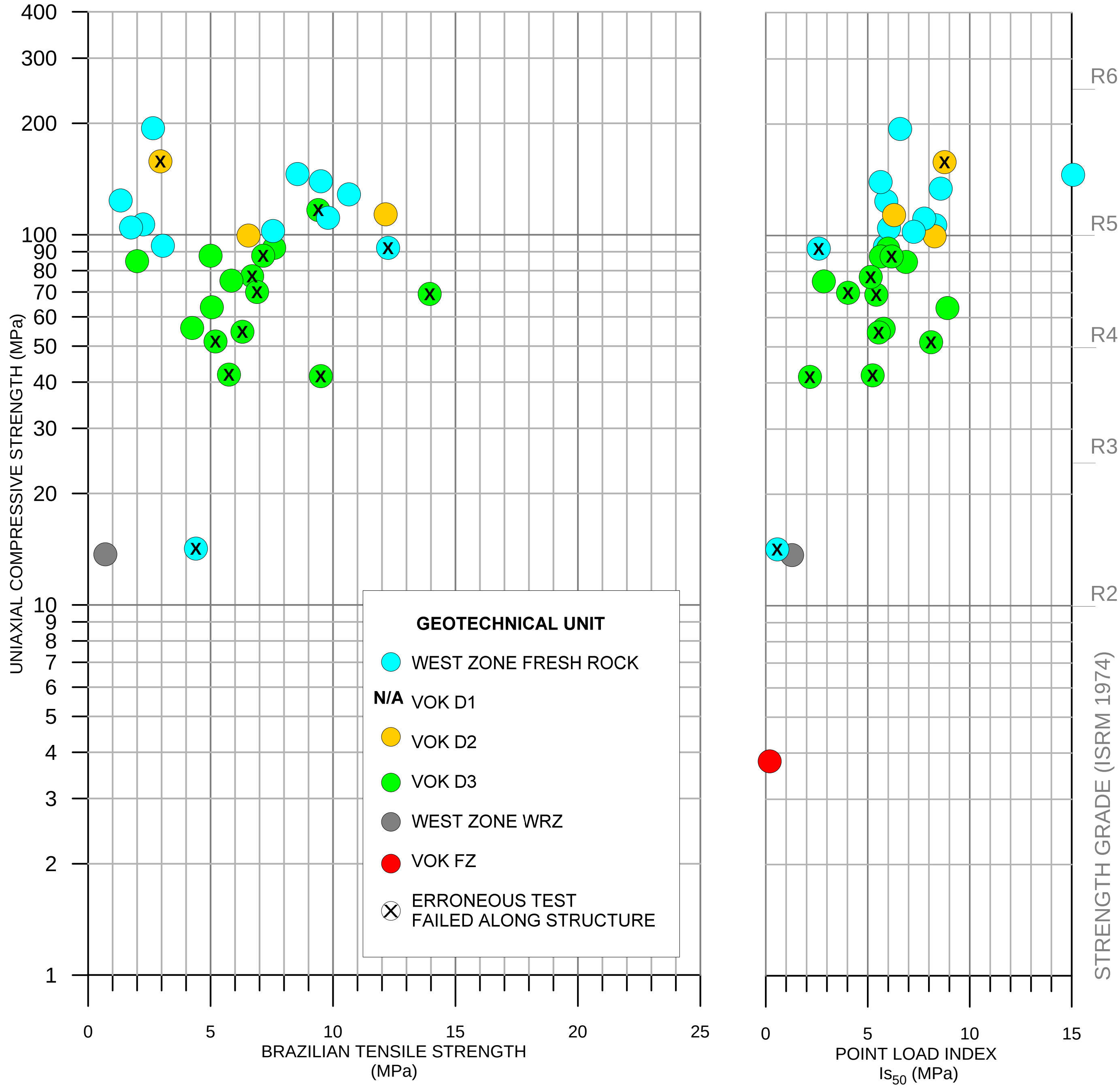
PROJECT: BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: INTERPRETED GROUNDWATER ELEVATION MAP AUGUST 2012

PROJECT No.:	DWG No.:	REV.:
1008007	04	

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

X:\Projects\1008\007_BJ_Feasibility\Workspace\20120709_Report_BrucejackProject_FeasibilityStudy_UndergroundRockMechanics_Assessments\04_GroundwaterElevationContourMapAugust2012.mxd



NOTES:
1. LABORATORY TEST REPORTS PROVIDED IN APPENDIX C.
2. WHERE POSSIBLE, TWO BRAZILIAN TENSILE STRENGTH TESTS HAVE BEEN COMPLETED AND AVERAGED FROM OFF-CUTS OF EACH UNIAXIAL COMPRESSIVE STRENGTH SAMPLE.
3. PLOTTED Is_{50} VALUES ARE THE AVERAGE OF TWO TO FOUR POINT LOAD TESTS COMPLETED ADJACENT TO EACH UCS SAMPLE.

SCALE:	AS SHOWN	DESIGNED:	HKM
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	HKM	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT:
BRUCEJACK PROJECT FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

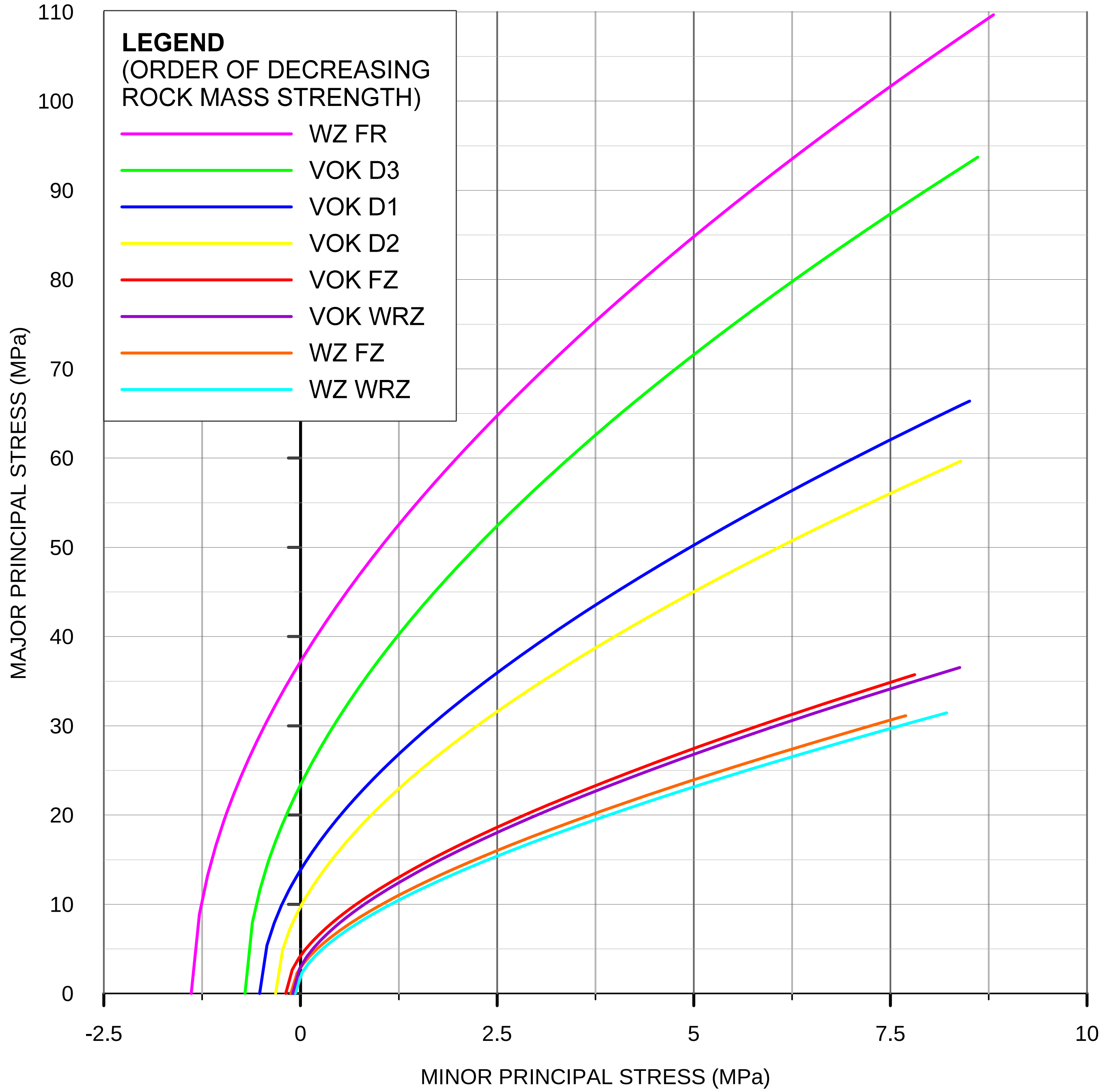
TITLE:
LABORATORY INTACT ROCK STRENGTH
TESTING RESULTS

CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.:	DWG No.:	REV.:
1008-007-002	05	

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\01 ROCKMASS AND STRUCTURE\LAB TESTING

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013.



NOTES:
1. A DISTURBANCE FACTOR OF 0.8 WAS ASSUMED FOR ANALYSES.
2. DATA SOURCES INCLUDE GEOTECHNICAL CORE LOGGING, LABORATORY TESTING, AND LITERATURE.
3. A CONFINING STRESS EQUIVALENT TO A TUNNEL AT 650 m DEPTH WAS ASSUMED FOR THE FAILURE ENVELOPE RANGE.

SCALE:	AS SHOWN	DESIGNED:	JW
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	CJB	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT:
BRUCEJACK PROJECT FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

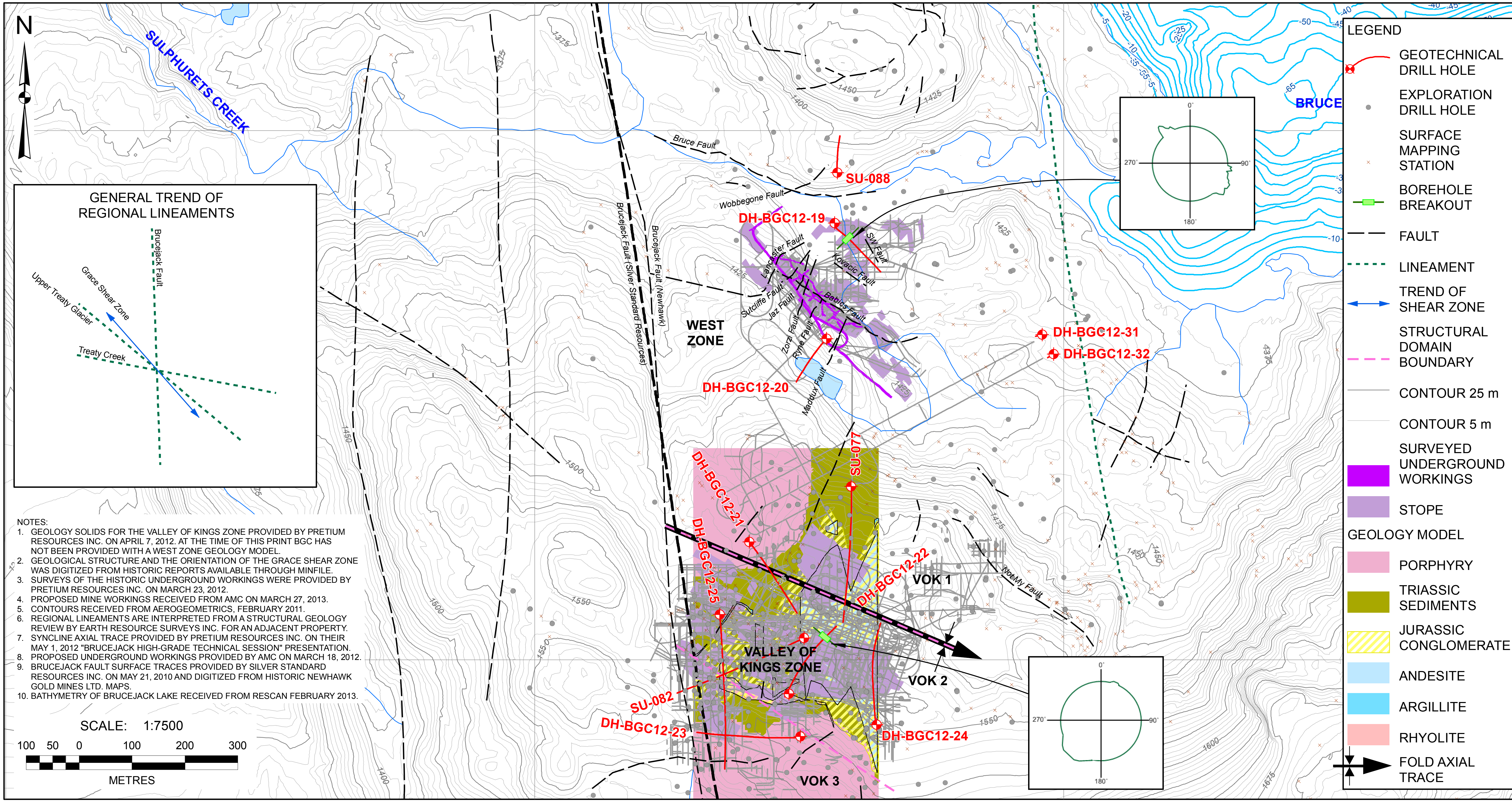
TITLE:
HOEK-BROWN STRENGTH CURVES
FOR GEOTECHNICAL UNITS

CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.:	DWG No.:	REV.:
1008-007-002	06	

N:\BGC\Projects\1008 Pretium\007 Feasibility\002 ug - Office\01 Rockmass and Structure\Rockmass\Strength Curves

DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013



NOTES:
1. GEOLOGY SOLIDS FOR THE VALLEY OF KINGS ZONE PROVIDED BY PRETIUM RESOURCES INC. ON APRIL 7, 2012. AT THE TIME OF THIS PRINT BGC HAS NOT BEEN PROVIDED WITH A WEST ZONE GEOLOGY MODEL.
2. GEOLOGICAL STRUCTURE AND THE ORIENTATION OF THE GRACE SHEAR ZONE WAS DIGITIZED FROM HISTORIC REPORTS AVAILABLE THROUGH MINFILE.
3. SURVEYS OF THE HISTORIC UNDERGROUND WORKINGS WERE PROVIDED BY PRETIUM RESOURCES INC. ON MARCH 23, 2012.
4. PROPOSED MINE WORKINGS RECEIVED FROM AMC ON MARCH 27, 2013.
5. CONTOURS RECEIVED FROM AEROGEOMETRICS, FEBRUARY 2011.
6. REGIONAL LINEAMENTS ARE INTERPRETED FROM A STRUCTURAL GEOLOGY REVIEW BY EARTH RESOURCE SURVEYS INC. FOR AN ADJACENT PROPERTY.
7. SYNCLINE AXIAL TRACE PROVIDED BY PRETIUM RESOURCES INC. ON THEIR MAY 1, 2012 "BRUCEJACK HIGH-GRADE TECHNICAL SESSION" PRESENTATION.
8. PROPOSED UNDERGROUND WORKINGS PROVIDED BY AMC ON MARCH 18, 2012.
9. BRUCEJACK FAULT SURFACE TRACES PROVIDED BY SILVER STANDARD RESOURCES INC. ON MAY 21, 2010 AND DIGITIZED FROM HISTORIC NEWHAWK GOLD MINES LTD. MAPS.
10. BATHYMETRY OF BRUCEJACK LAKE RECEIVED FROM RESCAN FEBRUARY 2013.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	1:7,500
DATE:	MAY 2013
DRAWN:	MIB
DESIGNED:	JRW
CHECKED:	CJB
APPROVED:	JRT

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

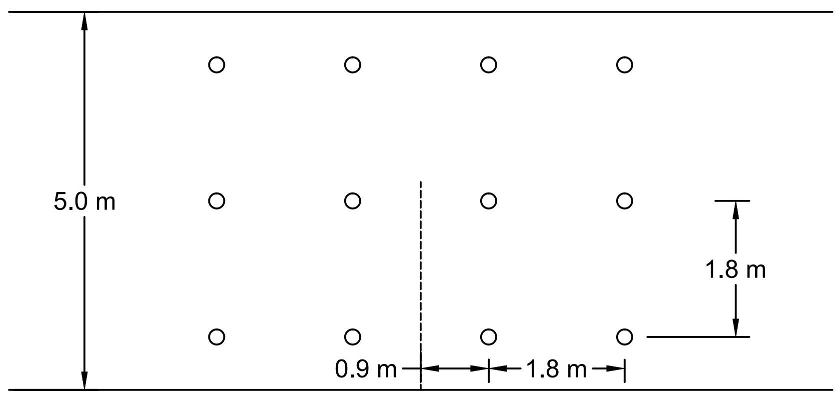
PROJECT: BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: STRUCTURAL GEOLOGY PLAN MAP

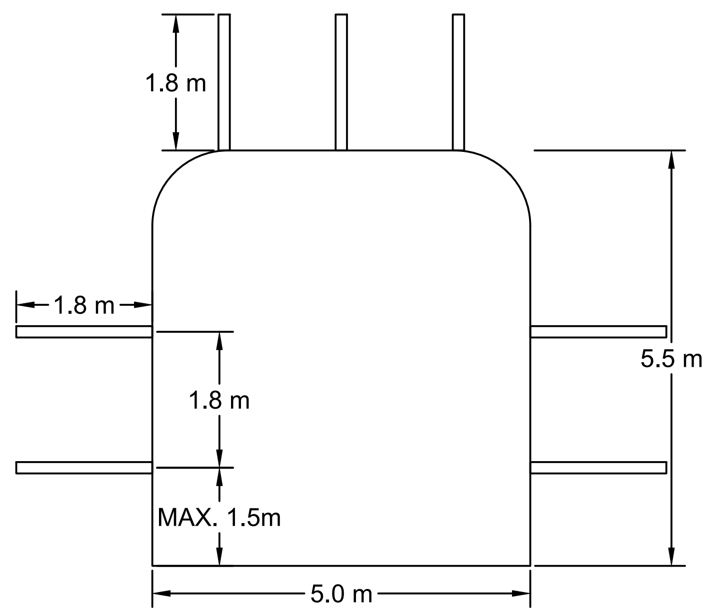
PROJECT No.:	DWG No.:	REV.:
1008007	07	

X:\Projects\1008\007_BJ_Feasibility\Workspace\20130327_REPORT_Brucejack_Project_Feasibility_Study_Underground_Rock_Mechanics_Assessment\07_Structural_Geology_Plan_Map.mxd Date: Thursday, May 16, 2013 Time: 2:06 PM

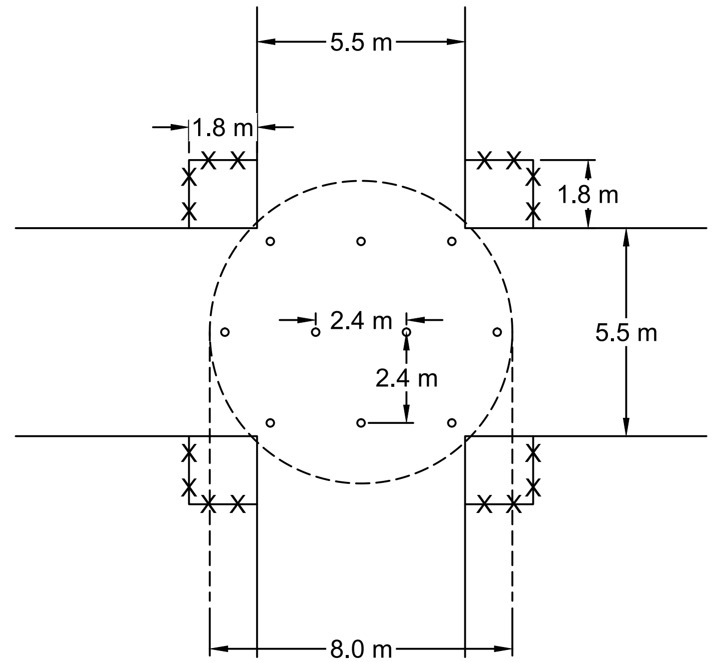
DWG TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013



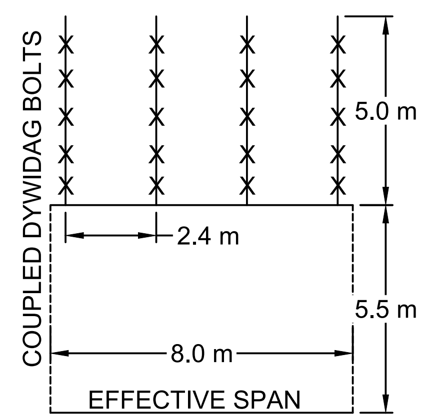
(a) PLAN VIEW: LEVEL DEVELOPMENT (5.5m HEIGHT)
SCALE: 1:100



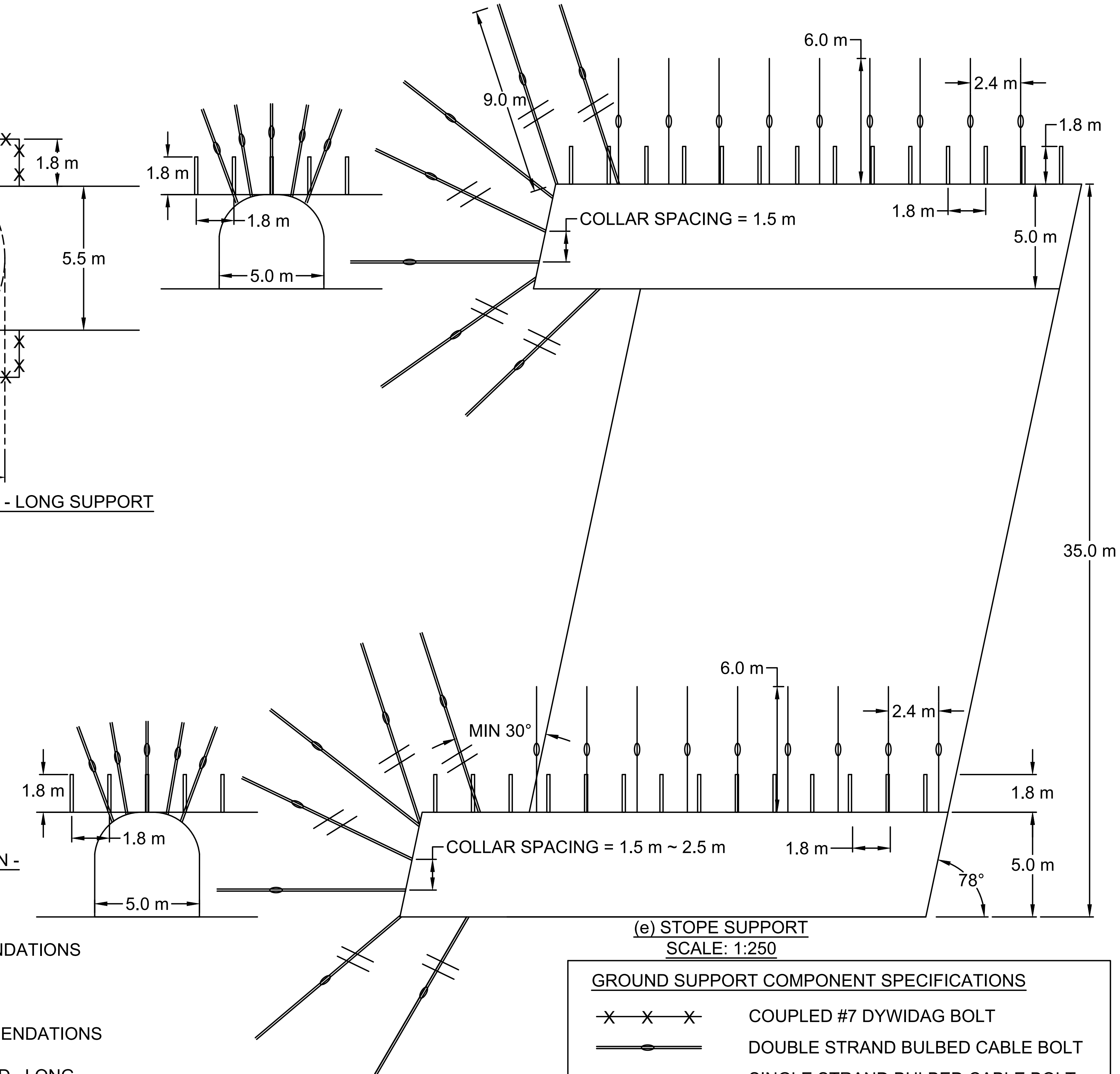
(b) SECTION VIEW: LEVEL DEVELOPMENT (5.0x5.5m)
SCALE: 1:100



(c) PLAN VIEW: TYPICAL INTERSECTIONS - LONG SUPPORT
SCALE: 1:200



(d) SECTION: TYPICAL INTERSECTION -
LONG SUPPORT
SCALE: 1:200



(e) STOPE SUPPORT
SCALE: 1:250

NOTES:
1. THESE SCHEMATICS ARE SHOWN FOR DISCUSSION PURPOSES ONLY. GROUND SUPPORT RECOMMENDATIONS ARE PROVIDED FOR COST ESTIMATING PURPOSES AND SHOULD NOT BE USED FOR CONSTRUCTION.
2. EXCAVATION DIMENSIONS WERE PROVIDED BY AMC.
3. DETAILED DESIGNS ARE PROVIDED IN THE ACCOMPANYING DESIGN REPORT.
4. THE TYPICAL INTERSECTION SCHEMATIC SHOWS ONLY THE LONG SUPPORT. PRE-SUPPORT RECOMMENDATIONS ARE PROVIDED IN THE DESIGN REPORT.
5. LONG SUPPORT IN THE STOPE UNDERCUTS IS REQUIRED ONLY IF FULL-WIDTH SLASHING IS REQUIRED. LONG SUPPORT IN THE HANGINGWALL IS REQUIRED ONLY IF DESIGN HYDRAULIC RADII EXCEED THE RECOMMENDED MAXIMUM UNSUPPORTED HYDRAULIC RADII AS PER THE DESIGN REPORT.

NOT FOR CONSTRUCTION

GROUND SUPPORT COMPONENT SPECIFICATIONS

- COUPLED #7 DYWIDAG BOLT
- DOUBLE STRAND BULBED CABLE BOLT
- SINGLE STRAND BULBED CABLE BOLT
- SWELLEX Pm 12

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	AS SHOWN
DATE:	MAY 2013
DRAWN:	AH
DESIGNED:	JW
CHECKED:	CJB
APPROVED:	JRT

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: SCHEMATIC OF TYPICAL GROUND SUPPORT RECOMMENDATIONS

PROJECT No.:	DWG No.:	REV.:
1008007	08	

DWG TO BE READ WITH BGC REPORT TITLED " BRUCEJACK PROJECT FEASIBILITY STUDY - UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

X:\Projects\1008\007_BJ_Feasibility\Workspace\20121029_REPORT_BRUCEJACK_PROJECT_FEASIBILITY_STUDY_-_UNDERGROUND_ROCK_MECHANICS_ASSESSMENT\08_SCHEMATIC_OF_TYPICAL_GROUND_SUPPORT_RECOMMENDATIONS.dwg Layout: Layout1 Plot Date May 9 13 Time: 4:10 PM

APPENDIX A
DRILL HOLE SUMMARY LOGS

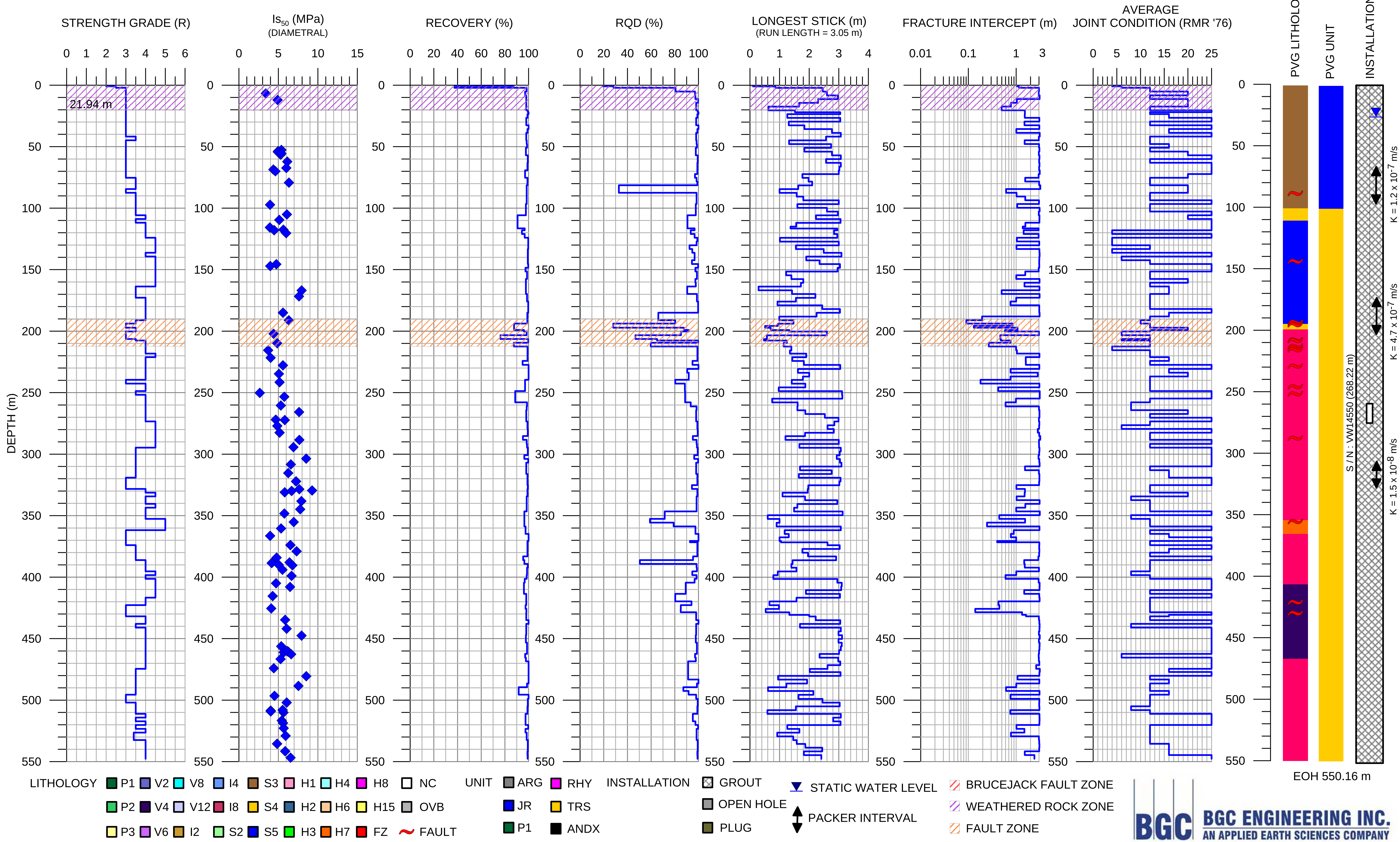
Table 10. Brucejack Project Site Investigation Downhole Plots Unit and Lithology Key

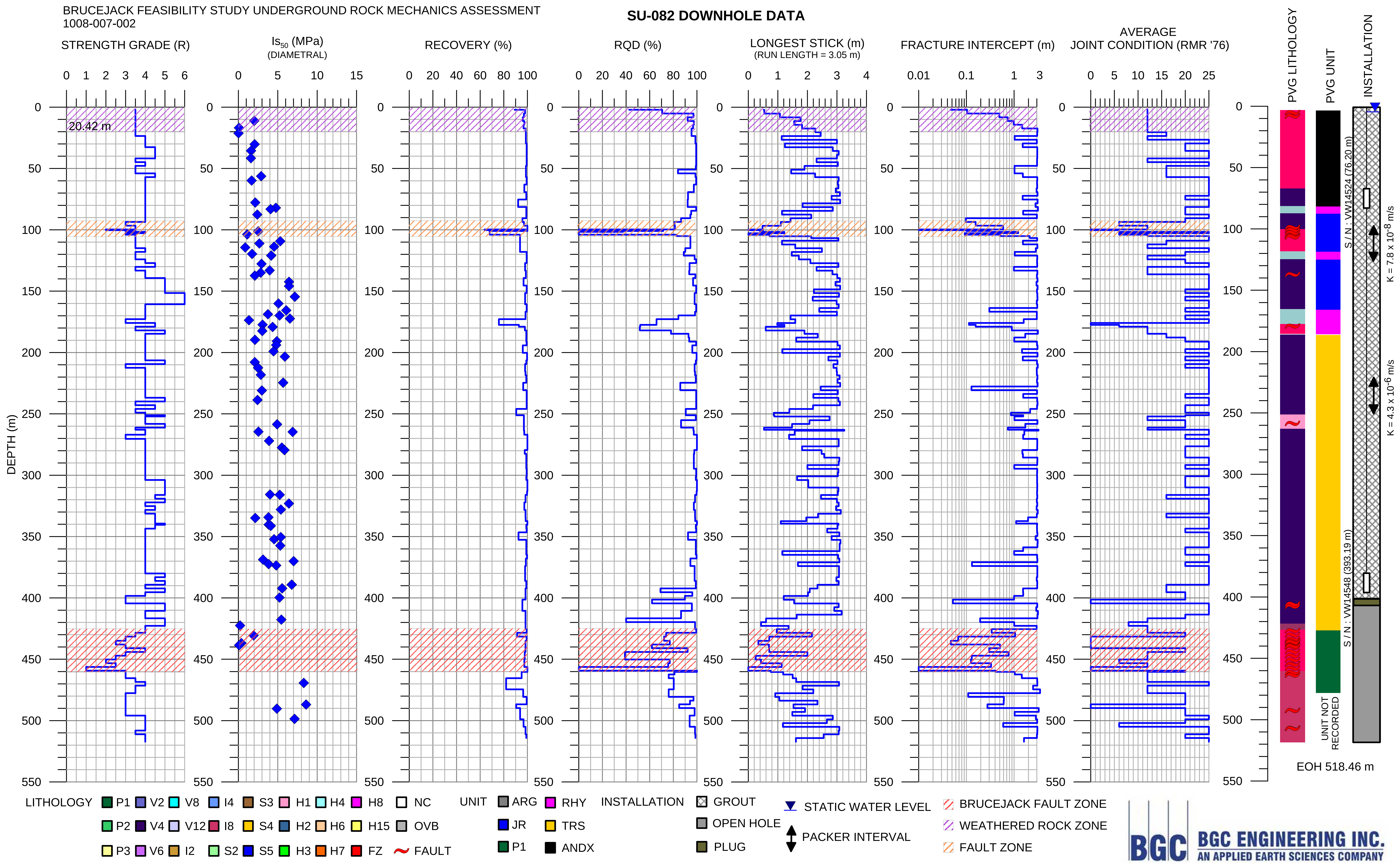
Code	Unit Description
ARG	Argillite
JR	Jurassic conglomerate
P1	Porphyry
RHY	Rhyolite
TRS	Triassic Sediments
ANDX	Andesite

Code	Lithology Description
P1	Plagioclase-hornblende porphyritic rocks (feldspar phyric to porphyritic, lesser hornblende phenocrysts)
P2	Potassium feldsapr-hornblende-plagioclase porphyritic volcanic rocks
P3	Plagioclase porphyritic rocks
V1	Rhyolite (quartz-rich (> 15% quartz by vol) or siliceous volcanic rock)
V2	Felsic volcanic rocks (Rhyolite, Ryodacite, Dacite; silica content > 63%
V4	Intermediate volcanic rocks (Andesite, Latite; Silica content 57-63%)
V5	Trachyte (andesitic; mainly flows/sills with K-feldspar phenocrysts)
V6	Mafic dykes; cross cutting, basaltic-andesite
V8	Mafic volcanic rocks (basaltic-andesite, basalt; silica content 45-57%)
V12	Calcareous intermediate volcanic
I2	Felsic intrusive rocks
I4	Intermediate intrusive rocks
I8	Mafic intrusive rocks
M7	Metamorphosed intermediate to mafic rocks
S2	Oligomictic conglomerate
S3	Polylithic conglomerate (coarser clasts, angular to sub-angular, poorly sorted)
S4	Sandstone/arenite (fine- to coarse-grained); greywacke; carbonate rocks (limestone)
S5	Mudstone/siltstones/pelites (including calcareous); cherts and jasperites
H1	quartz vein (identified as lithology when > 100 cm)
H2	quartz-carbonate vein (massive white to white quartz and pink or white calcite, yellow sericite, ivory ankerite veining, carbonate comprised at least 5% of vein)
H3	quartz-silicate vein (quartz-tourmaline; often occurring as hard, dark-grey veinlets)
H4	quartz-sulphide vein
H6	Hydrothermal replacement (quartz veining is greater than 50% and any clasts present have been largely replaced by silica)
H7	Hydrothermal breccias (quartz veining is greater than 25%)
H8	Intensely silicified breccia zone (possible rhyolite); associated with WZ and VOK
H15	Hydrothermally altered rock
FZ	Fault Zone
NC	no core/chips
NR	not recorded
OVB	overburden

BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

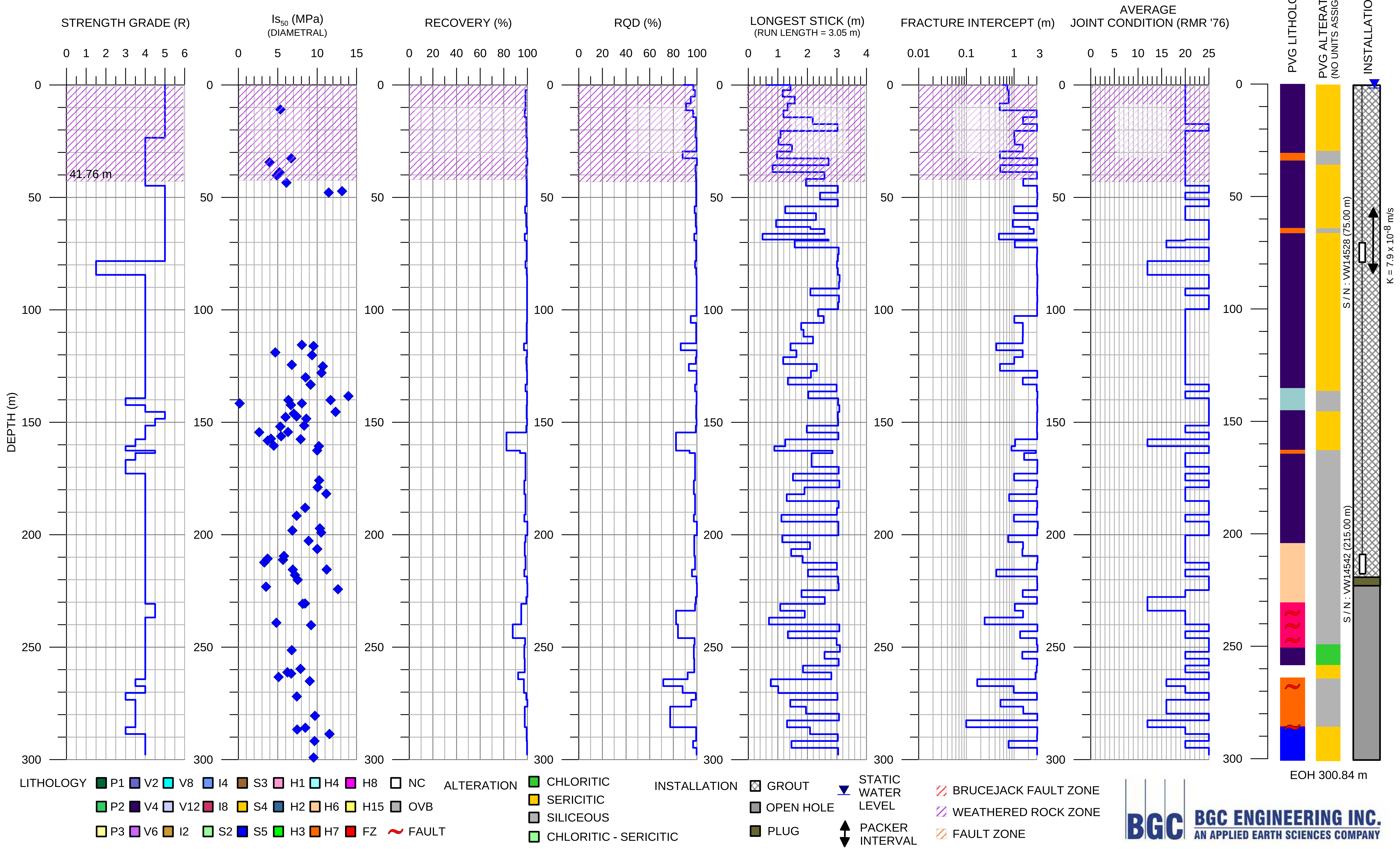
SU-077 DOWNHOLE DATA




BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002
SU-082 DOWNHOLE DATA
STRENGTH GRADE (R)
Is50 (MPa)
(DIAMETRAL)
RECOVERY (%)
RQD (%)
LONGEST STICK (m)
(RUN LENGTH = 3.05 m)
FRACTURE INTERCEPT (m)
AVERAGE
JOINT CONDITION (RMR '76)
PVG LITHOLOGY
PVG UNIT
INSTALLATION
DEPTH (m)
20.42 m
S / N : VW14524 (76.20 m)
S / N : VW14548 (393.19 m)
K = 7.8 x 10-8 m/s
K = 4.3 x 10-6 m/s
UNIT NOT RECORDED
EOH 518.46 m
LITHOLOGY
P1
V2
V8
I4
S3
H1
H4
H8
NC
P2
V4
V12
I8
S4
H2
H6
H15
OVB
P3
V6
I2
S2
S5
H3
H7
FZ
FAULT
UNIT
ARG
RHY
JR
TRS
P1
ANDX
INSTALLATION
GROUT
OPEN HOLE
PLUG
STATIC WATER LEVEL
PACKER INTERVAL
BRUCEJACK FAULT ZONE
WEATHERED ROCK ZONE
FAULT ZONE
BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

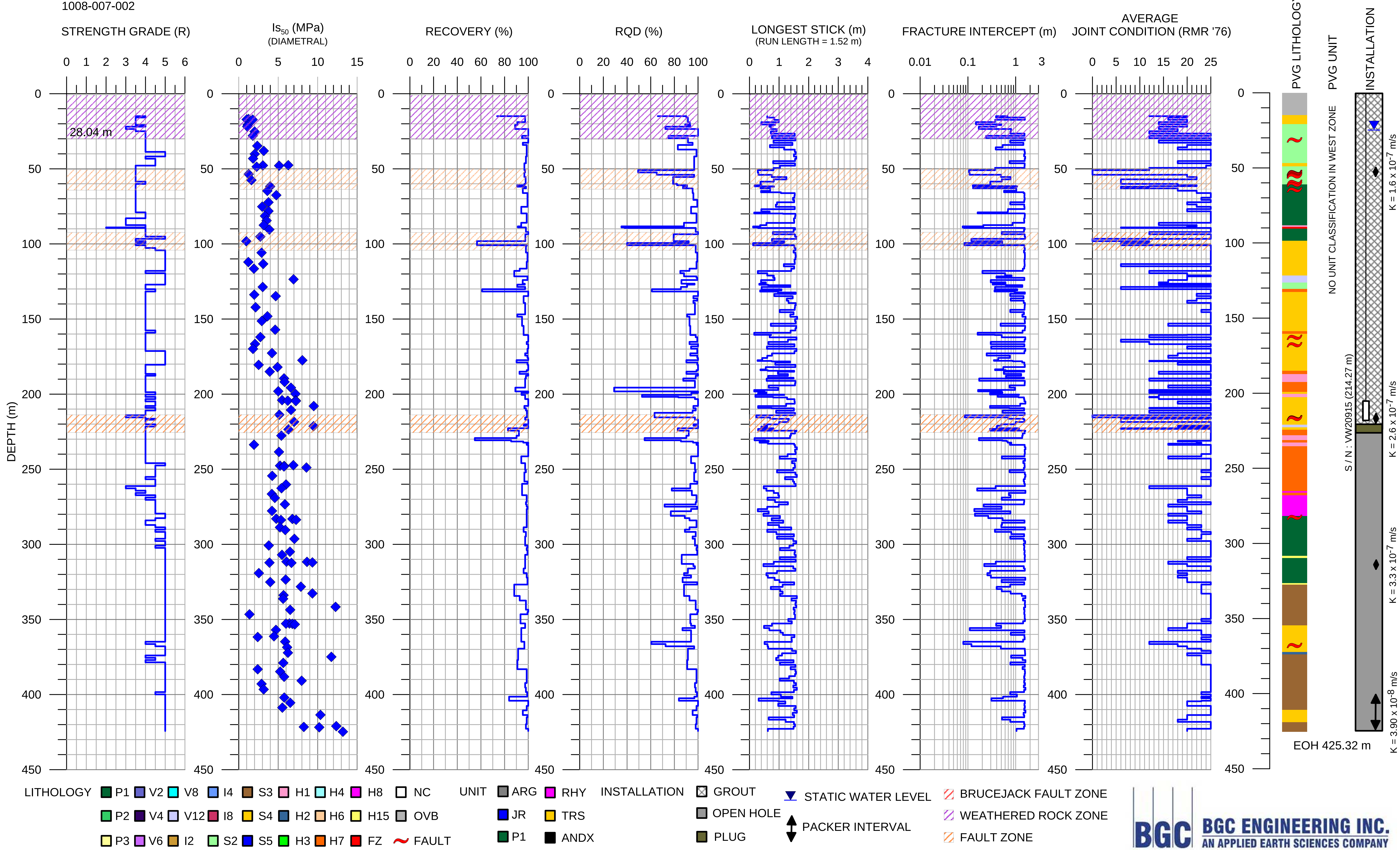
BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

SU-088 DOWNHOLE DATA



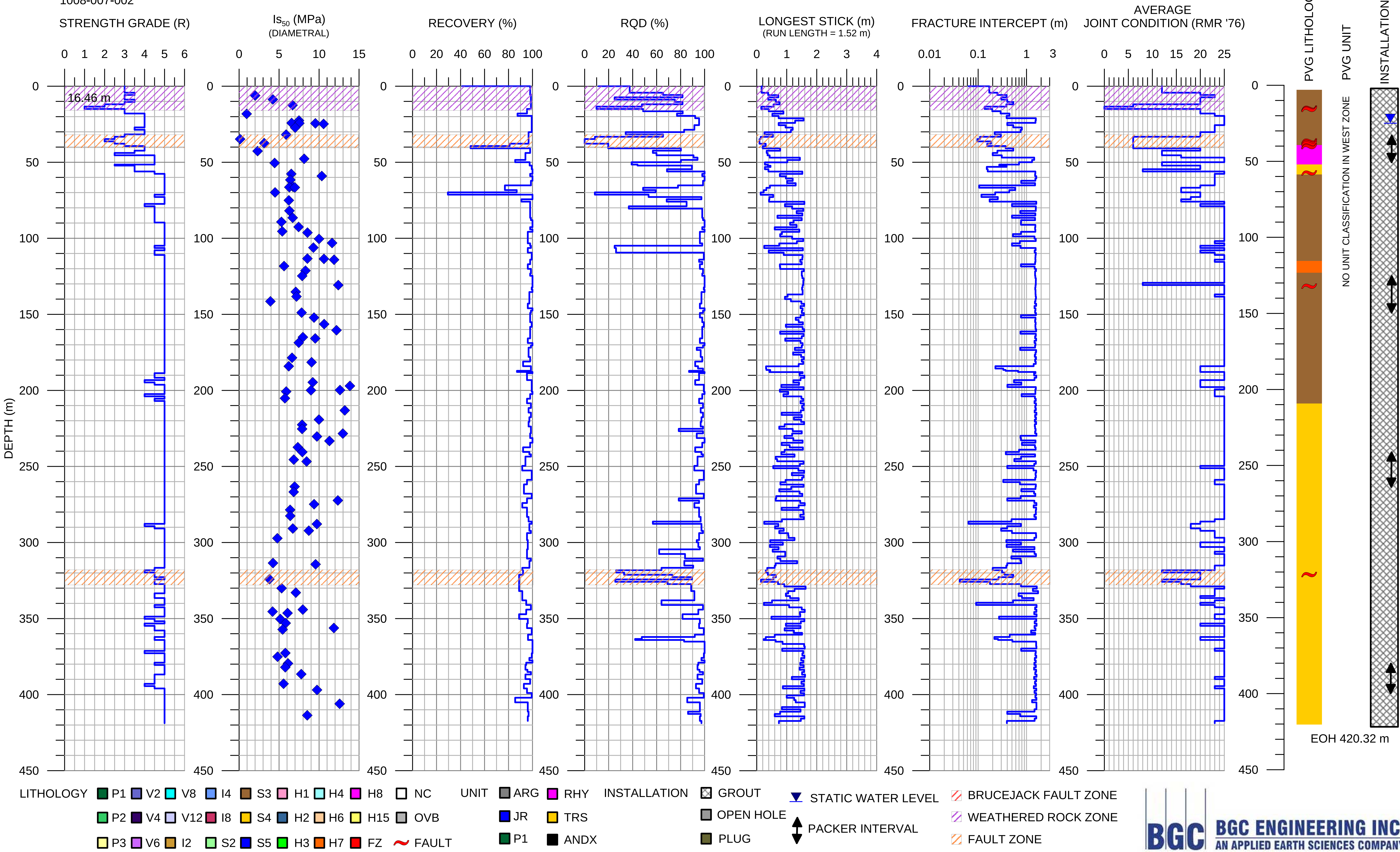
BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

DH-BGC12-19 DOWNHOLE DATA



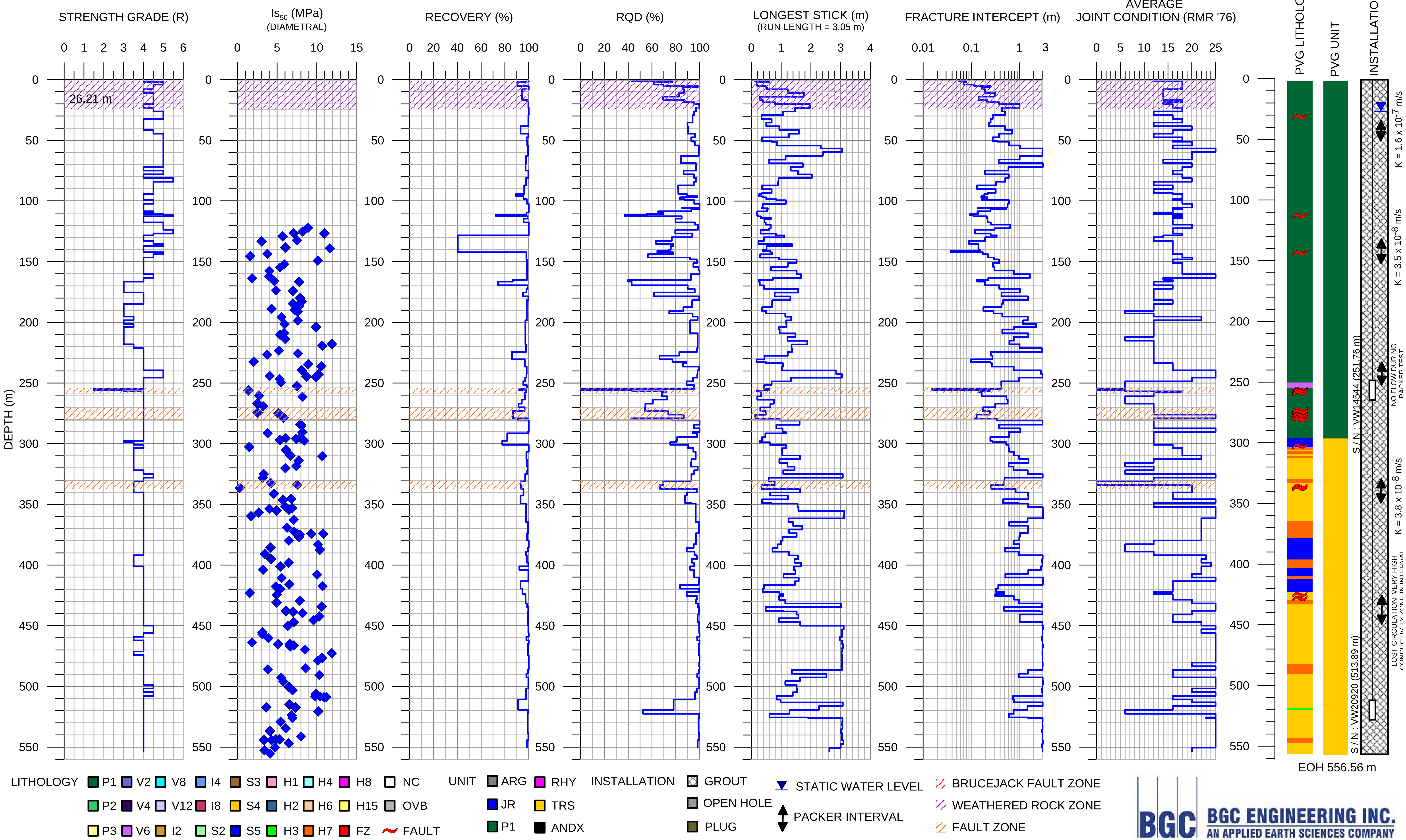
BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

DH-BGC12-20 DOWNHOLE DATA



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

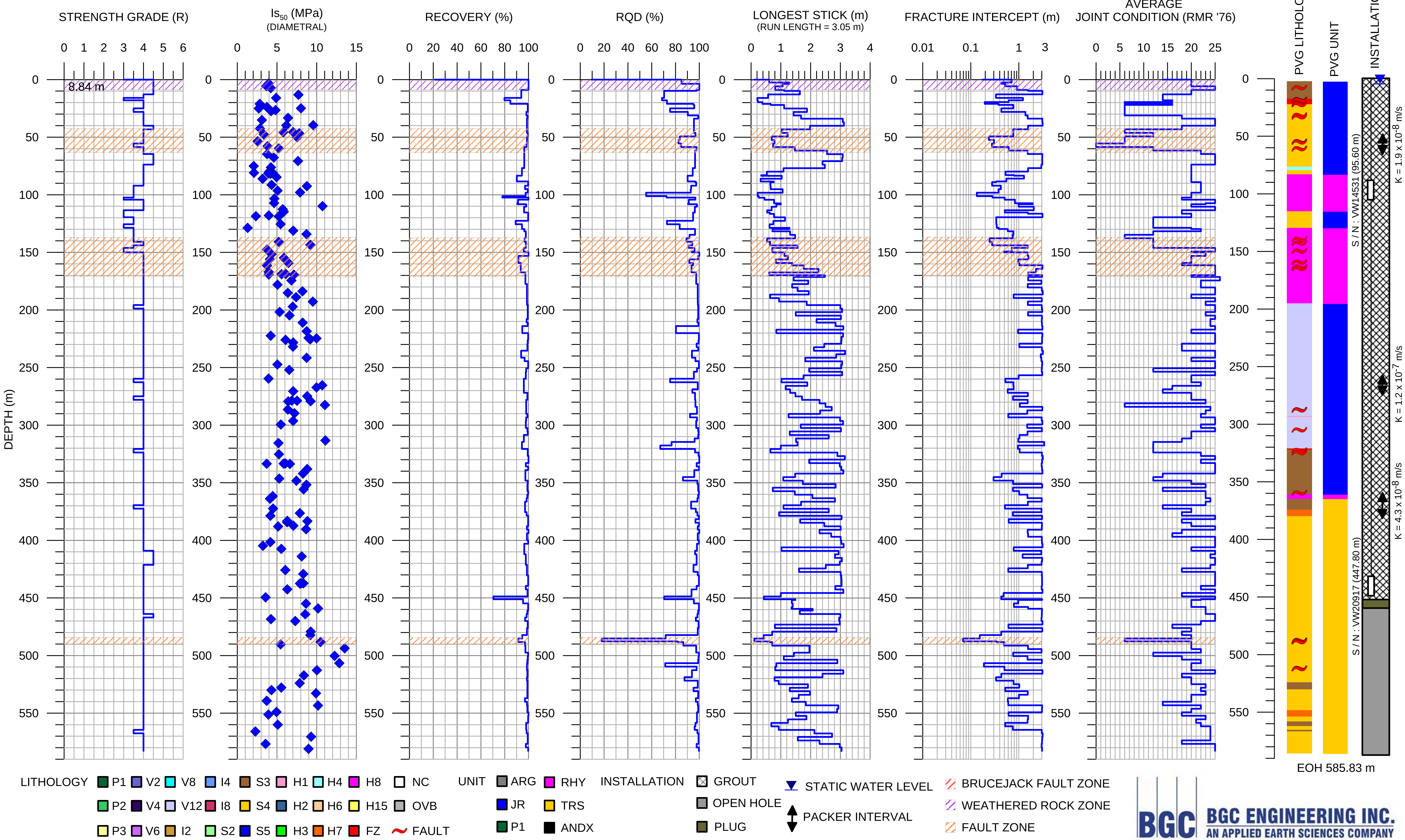
DH-BGC12-21 DOWNHOLE DATA



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

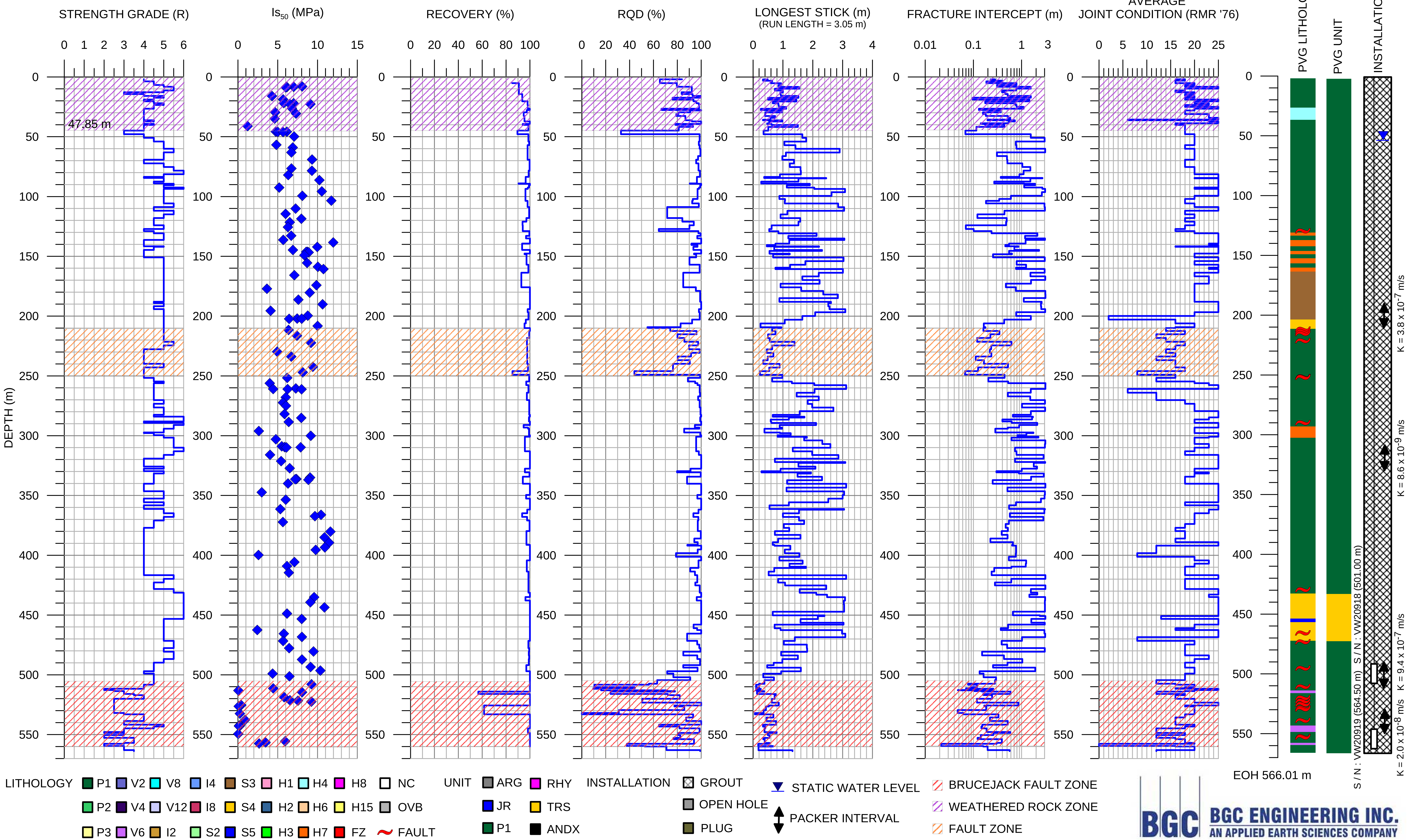
DH-BGC12-22 DOWNHOLE DATA



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

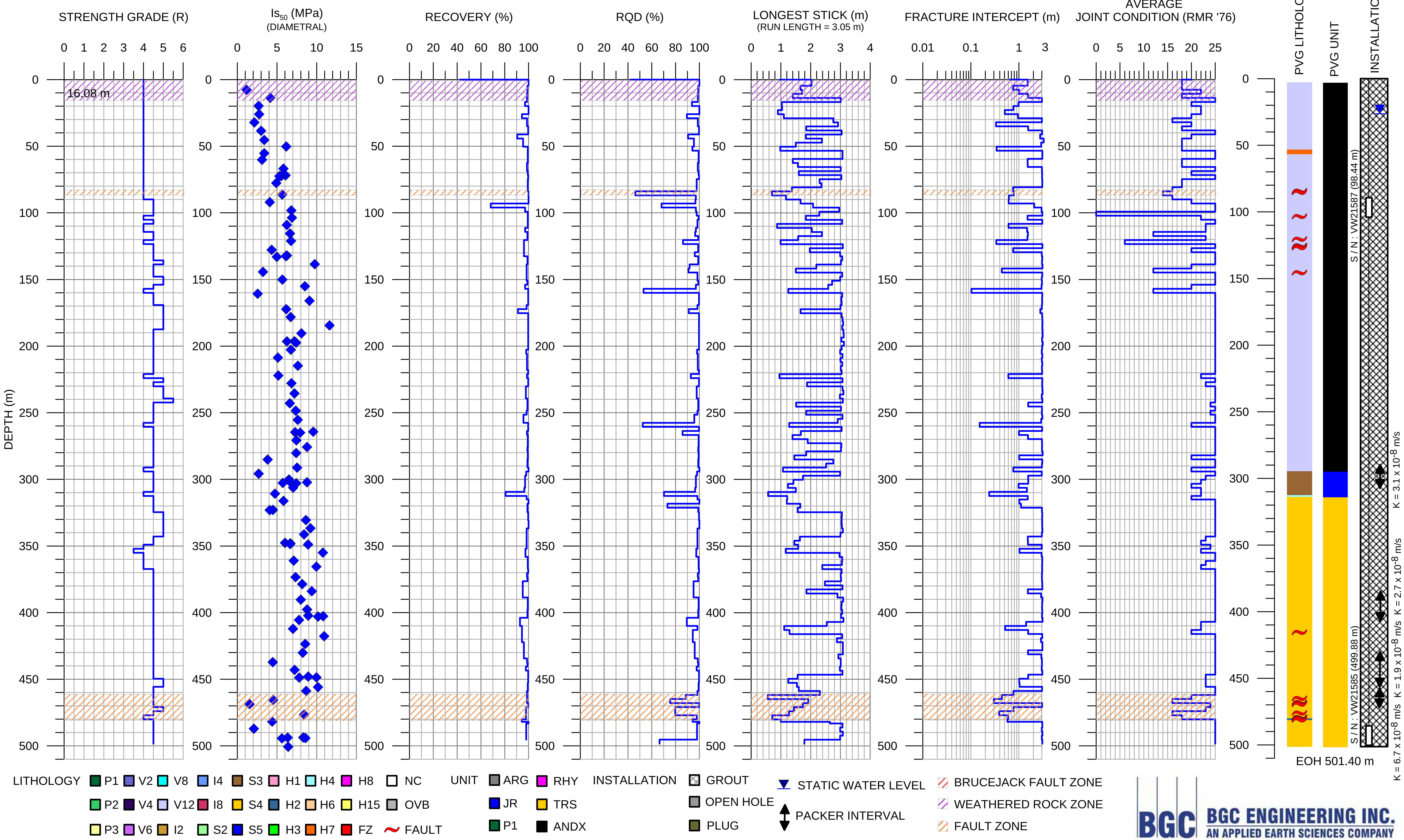
DH-BGC12-23 DOWNHOLE DATA



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

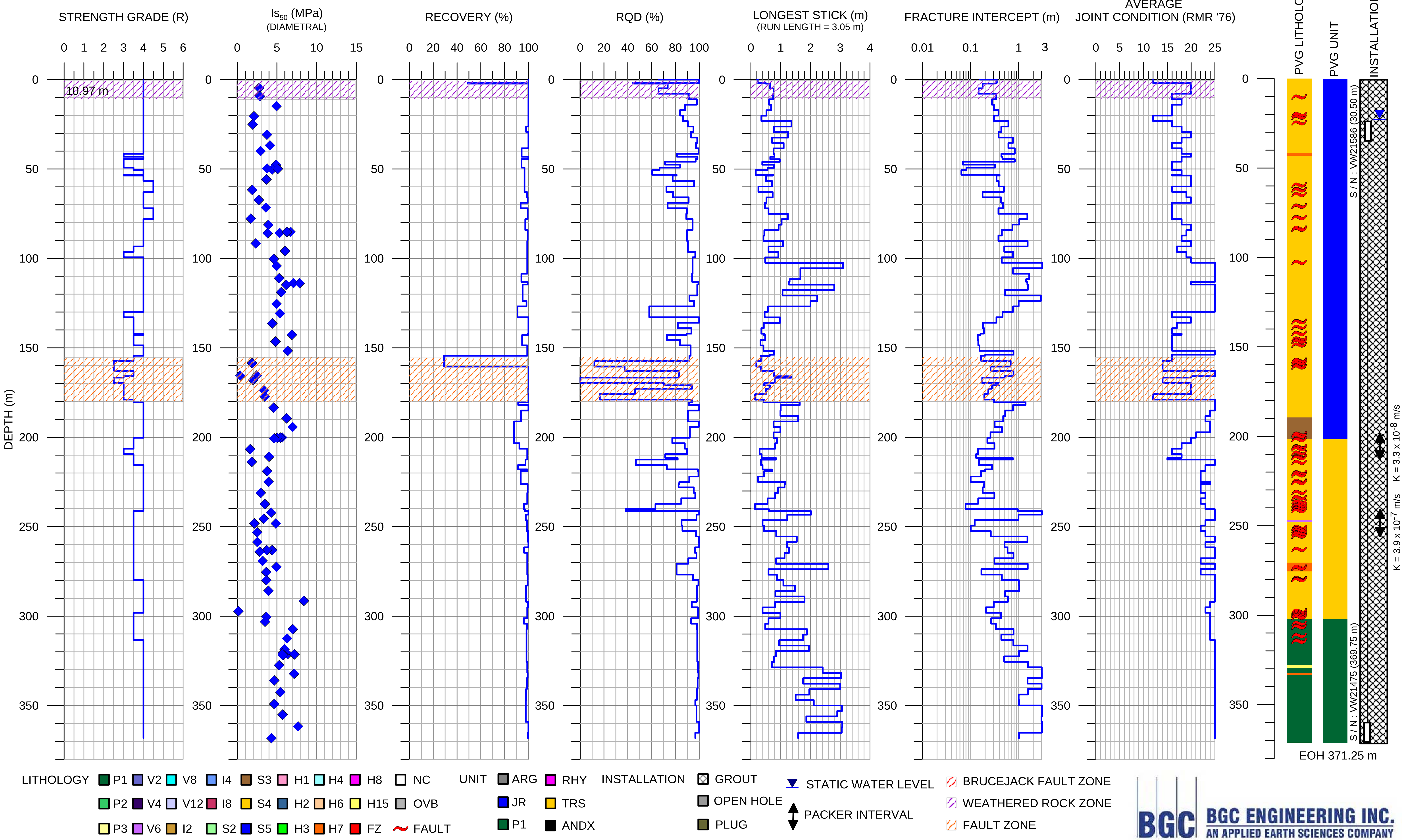
DH-BGC12-24 DOWNHOLE DATA



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

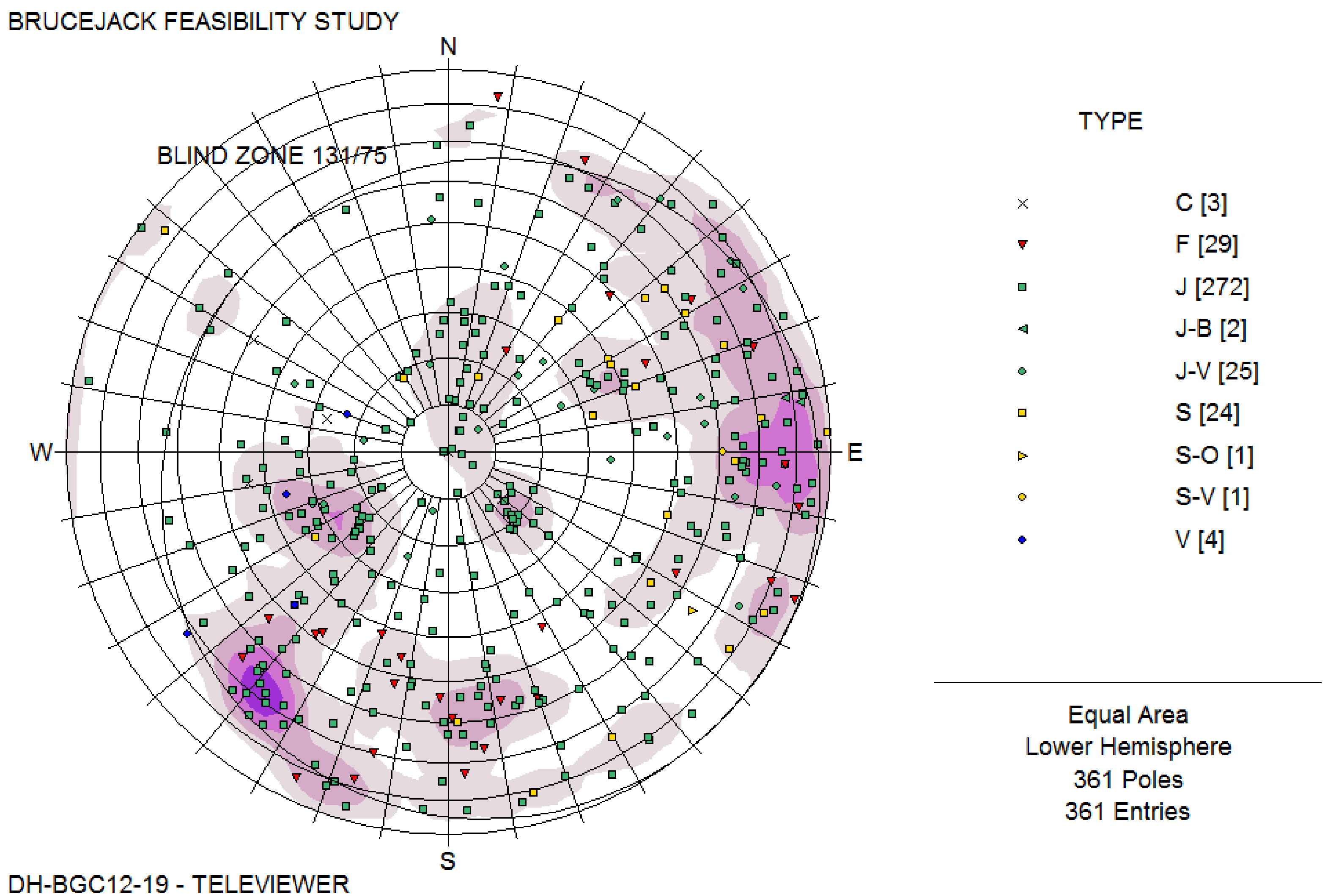
BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
1008-007-002

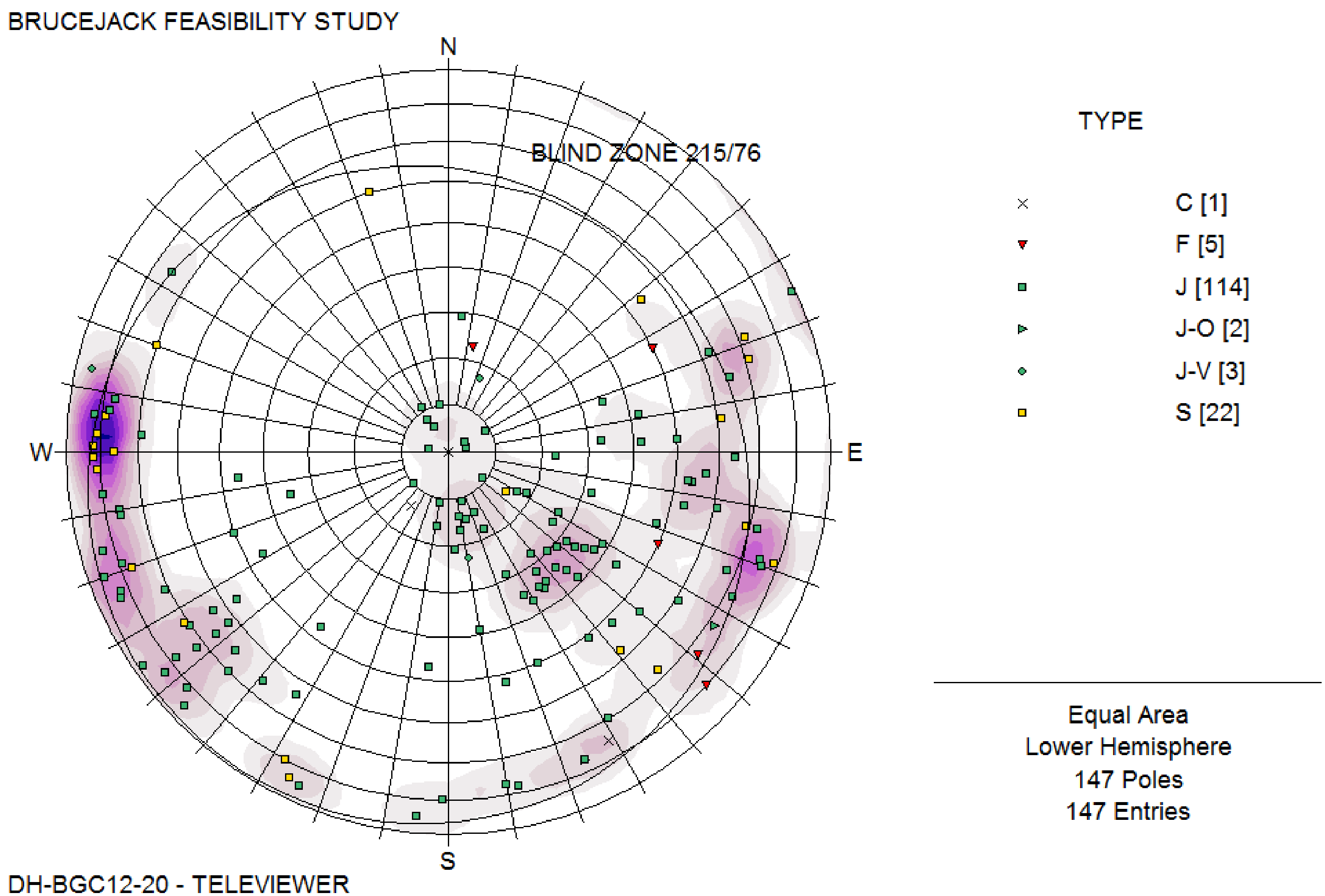
DH-BGC12-25 DOWNHOLE DATA



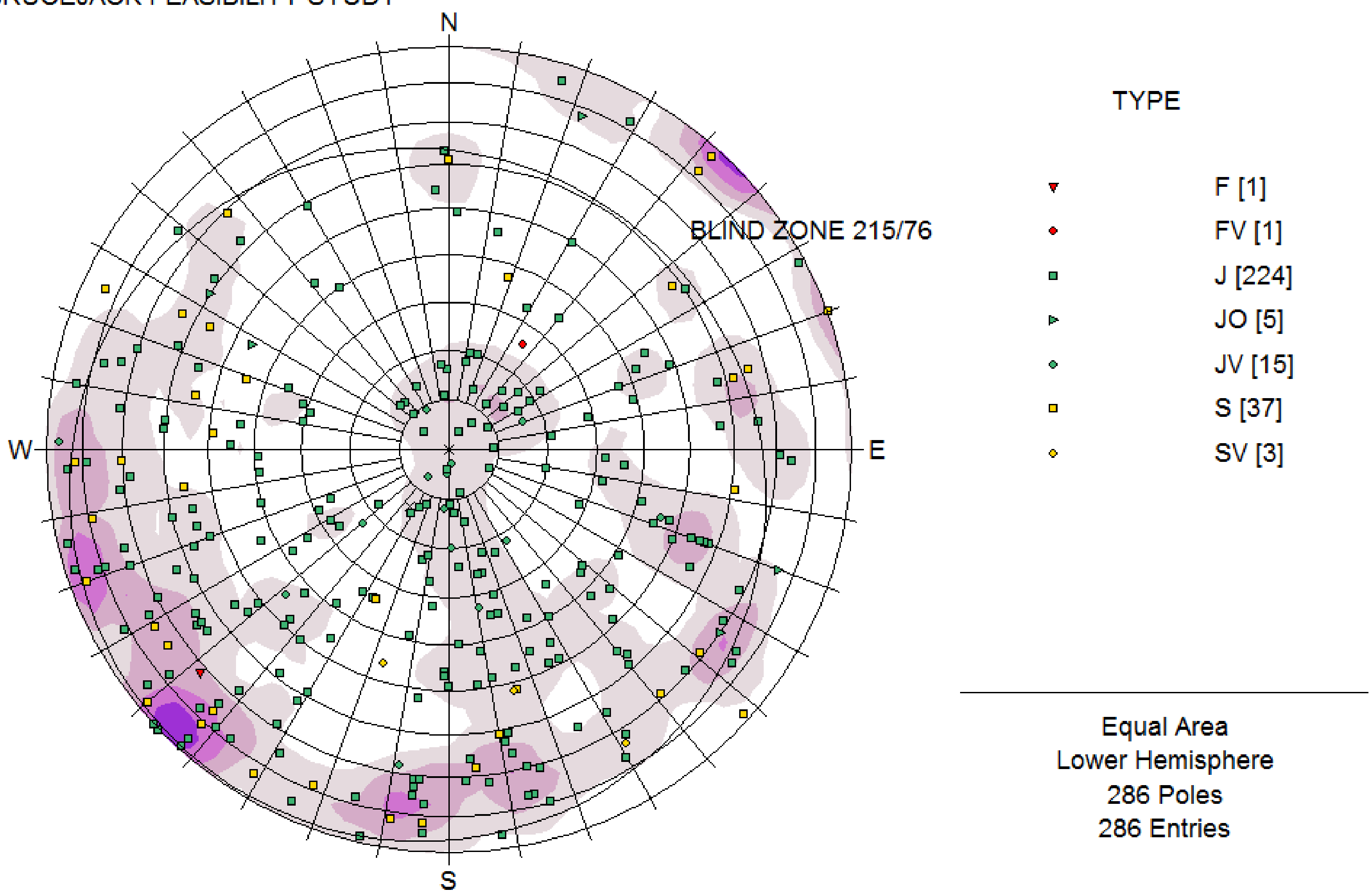
BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

APPENDIX B
DRILL HOLE AND UNDERGROUND MAPPING STEREONETS


BRUCEJACK FEASIBILITY STUDY
N
BLIND ZONE 131/75
W
E
S
DH-BGC12-19 - TELEVIEWER
TYPE
C [3]
F [29]
J [272]
J-B [2]
J-V [25]
S [24]
S-O [1]
S-V [1]
V [4]
Equal Area
Lower Hemisphere
361 Poles
361 Entries

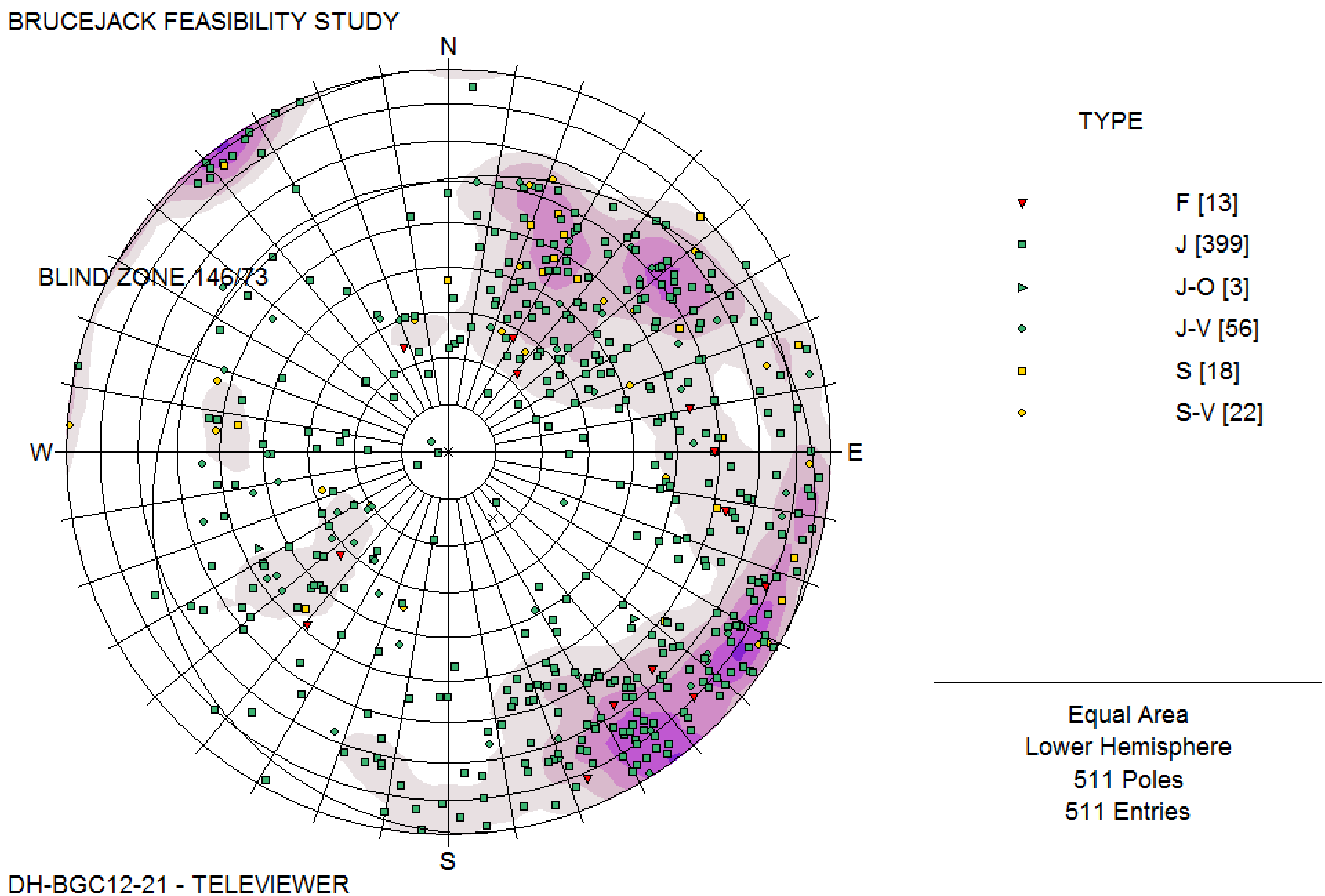

BRUCEJACK FEASIBILITY STUDY
N
E
S
W
BLIND ZONE 215/76
DH-BGC12-20 - TELEVIEWER
TYPE
C [1]
F [5]
J [114]
J-O [2]
J-V [3]
S [22]
Equal Area
Lower Hemisphere
147 Poles
147 Entries

BRUCEJACK FEASIBILITY STUDY



Equal Area
Lower Hemisphere
286 Poles
286 Entries

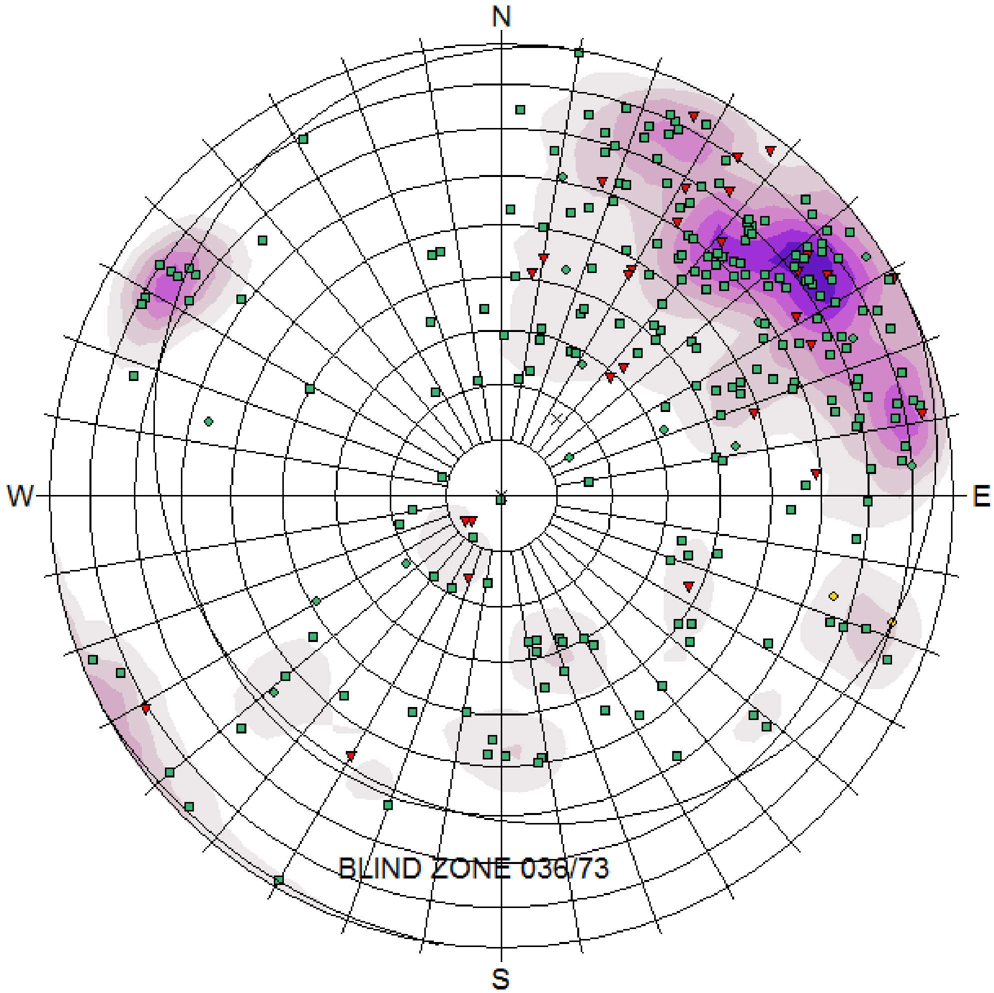
DH-BGC12-20 - ACT II



BRUCEJACK FEASIBILITY STUDY
N
BLIND ZONE 146/73
W
E
S
DH-BGC12-21 - TELEVIEWER
TYPE
F [13]
J [399]
J-O [3]
J-V [56]
S [18]
S-V [22]
Equal Area
Lower Hemisphere
511 Poles
511 Entries


BRUCEJACK FEASIBILITY STUDY
N
BLIND ZONE 146/73
W
E
S
DH-BGC12-21 - ACT II
TYPE
F [11]
FV [1]
J [466]
JV [121]
S [46]
SV [31]
Equal Area
Lower Hemisphere
676 Poles
676 Entries

BRUCEJACK FEASIBILITY STUDY



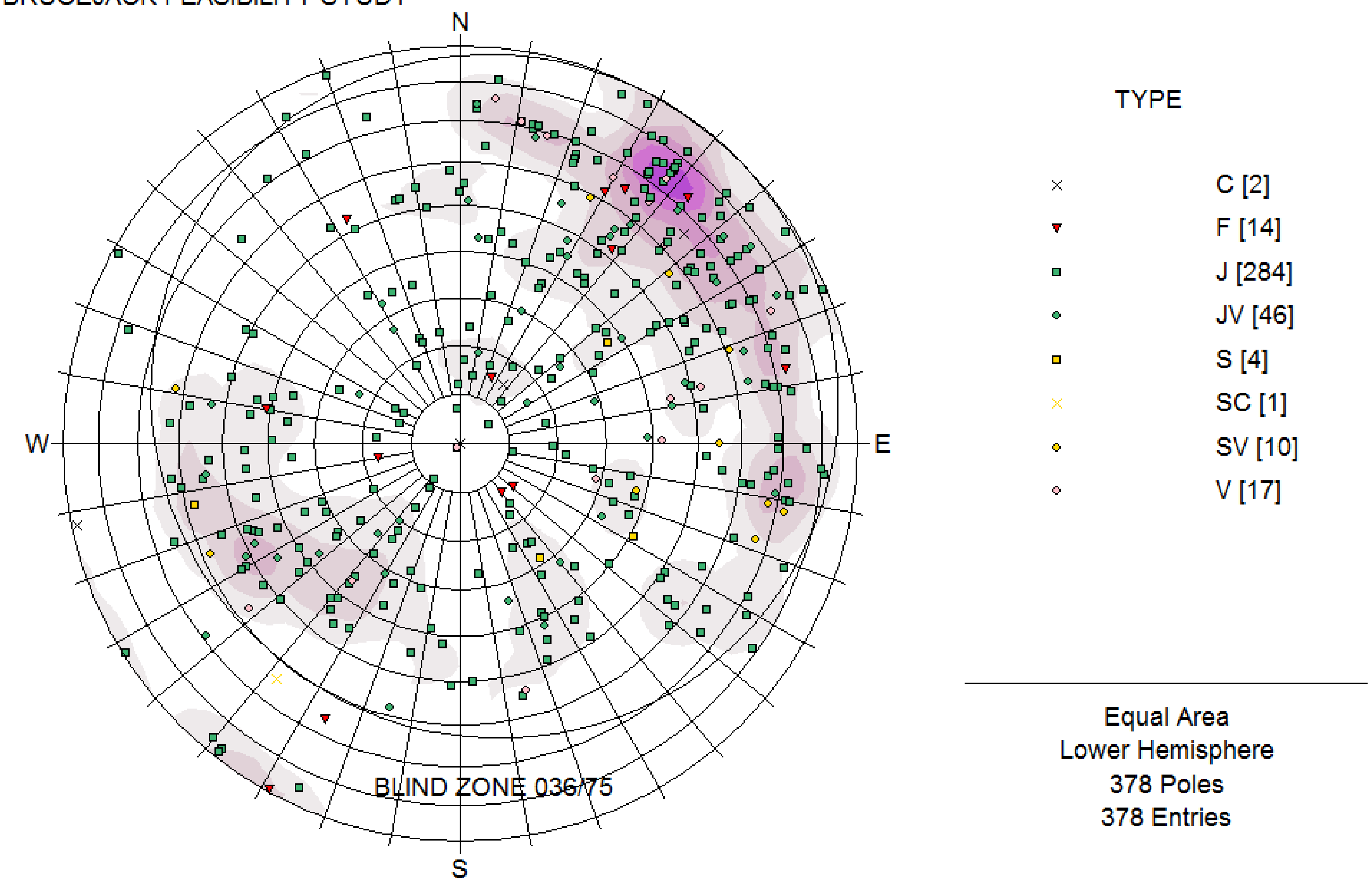
TYPE

- F [30]
- J [217]
- J-V [14]
- S-V [2]

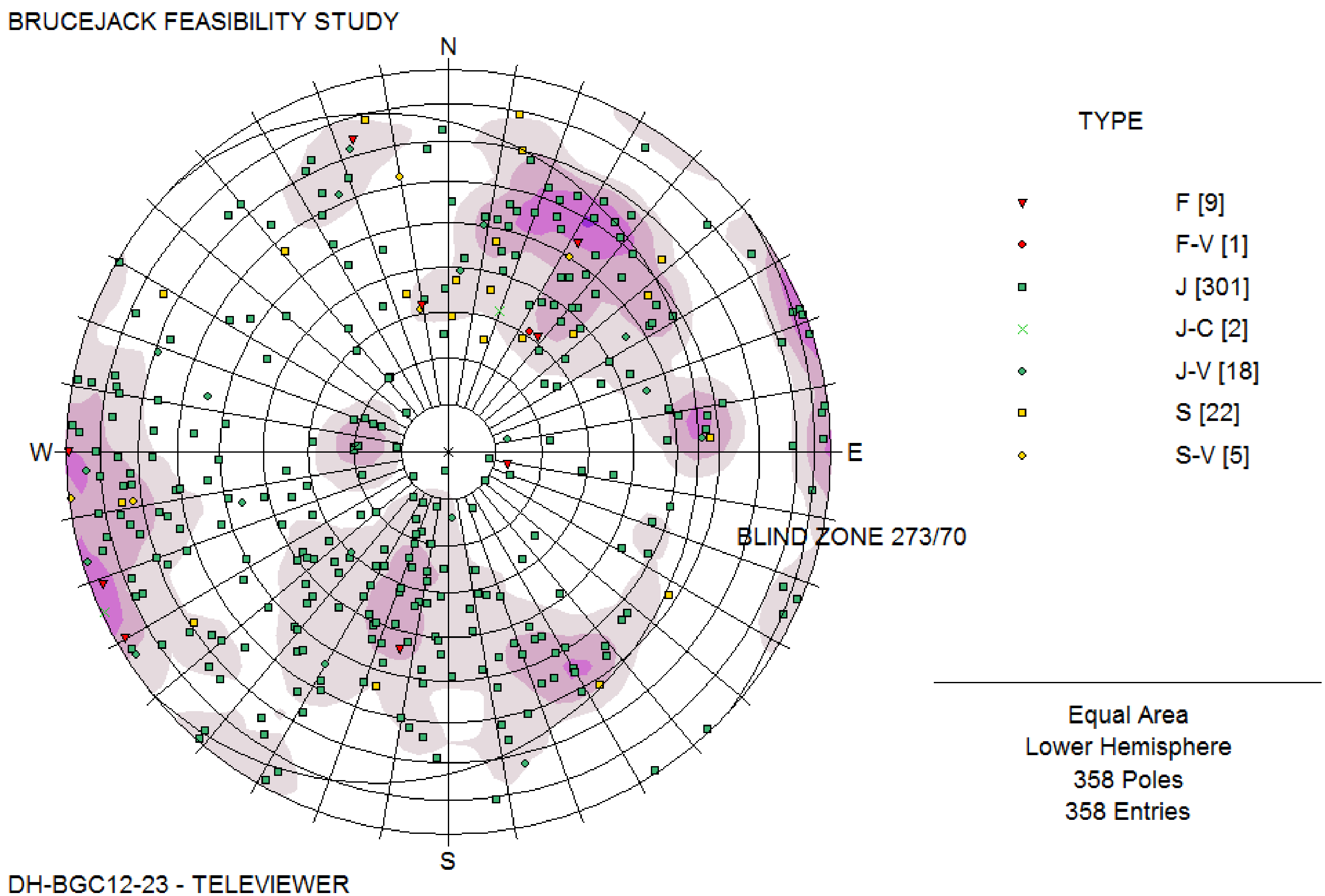
Equal Area
Lower Hemisphere
263 Poles
263 Entries

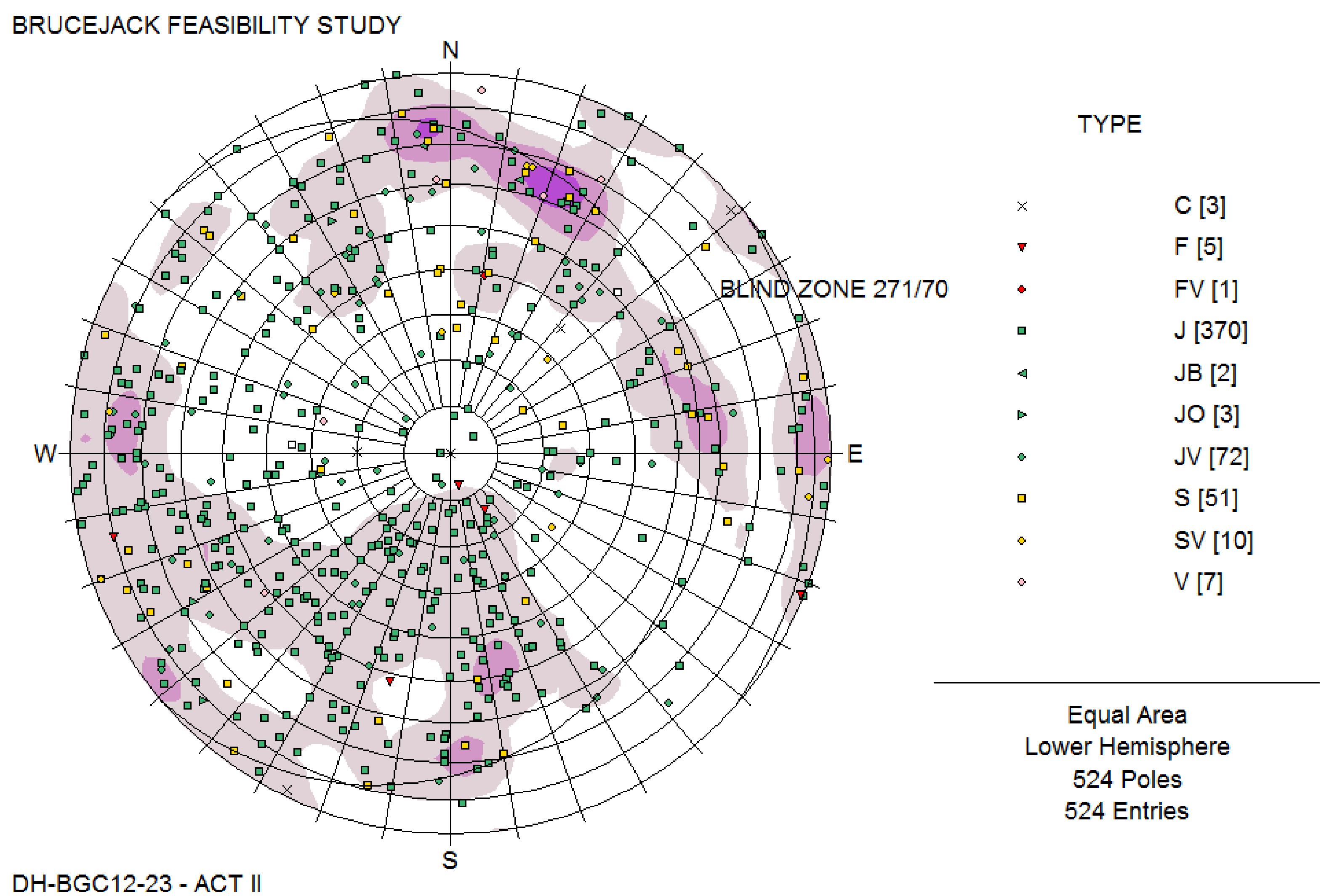
DH-BGC12-22 - TELEVIEWER

BRUCEJACK FEASIBILITY STUDY

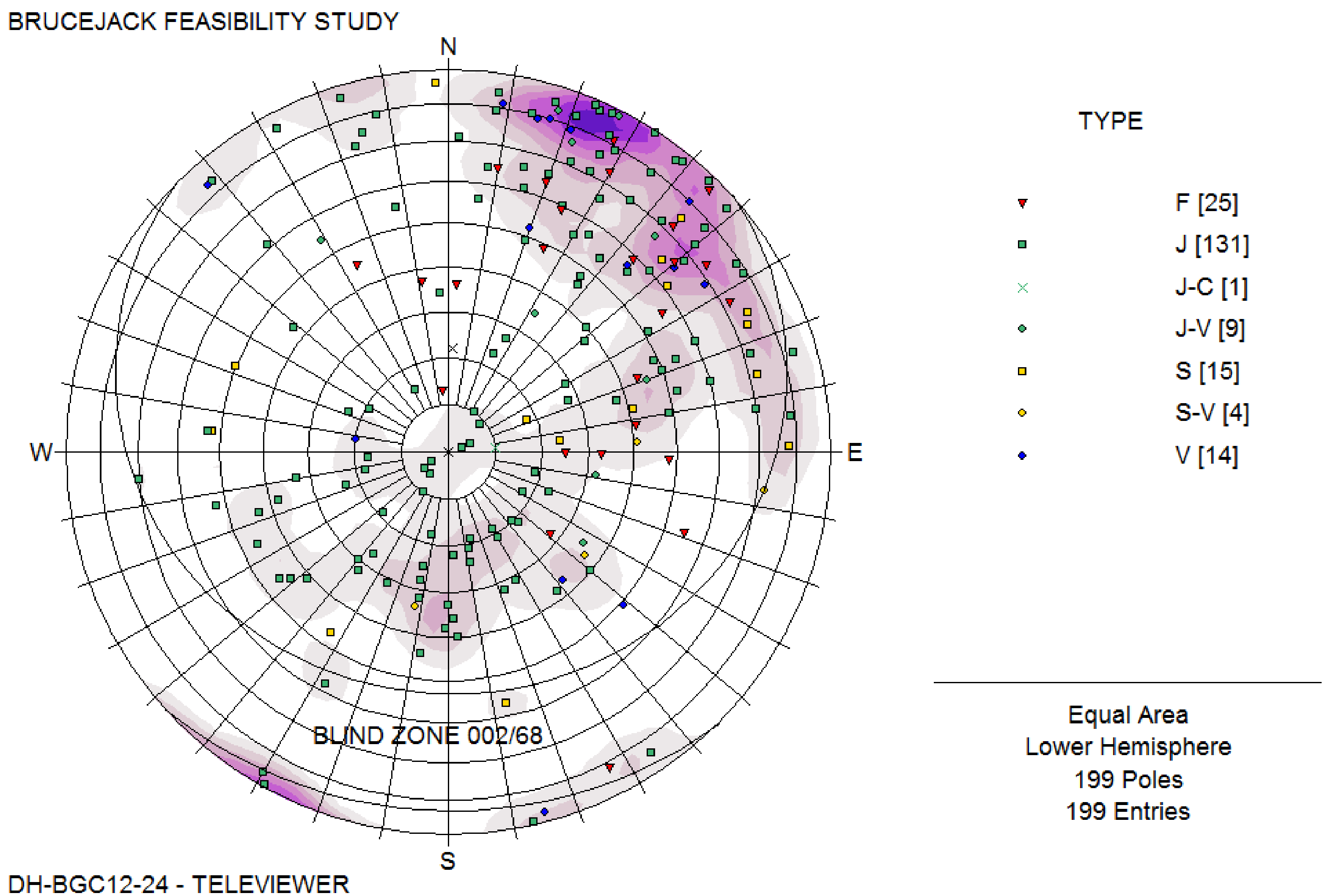


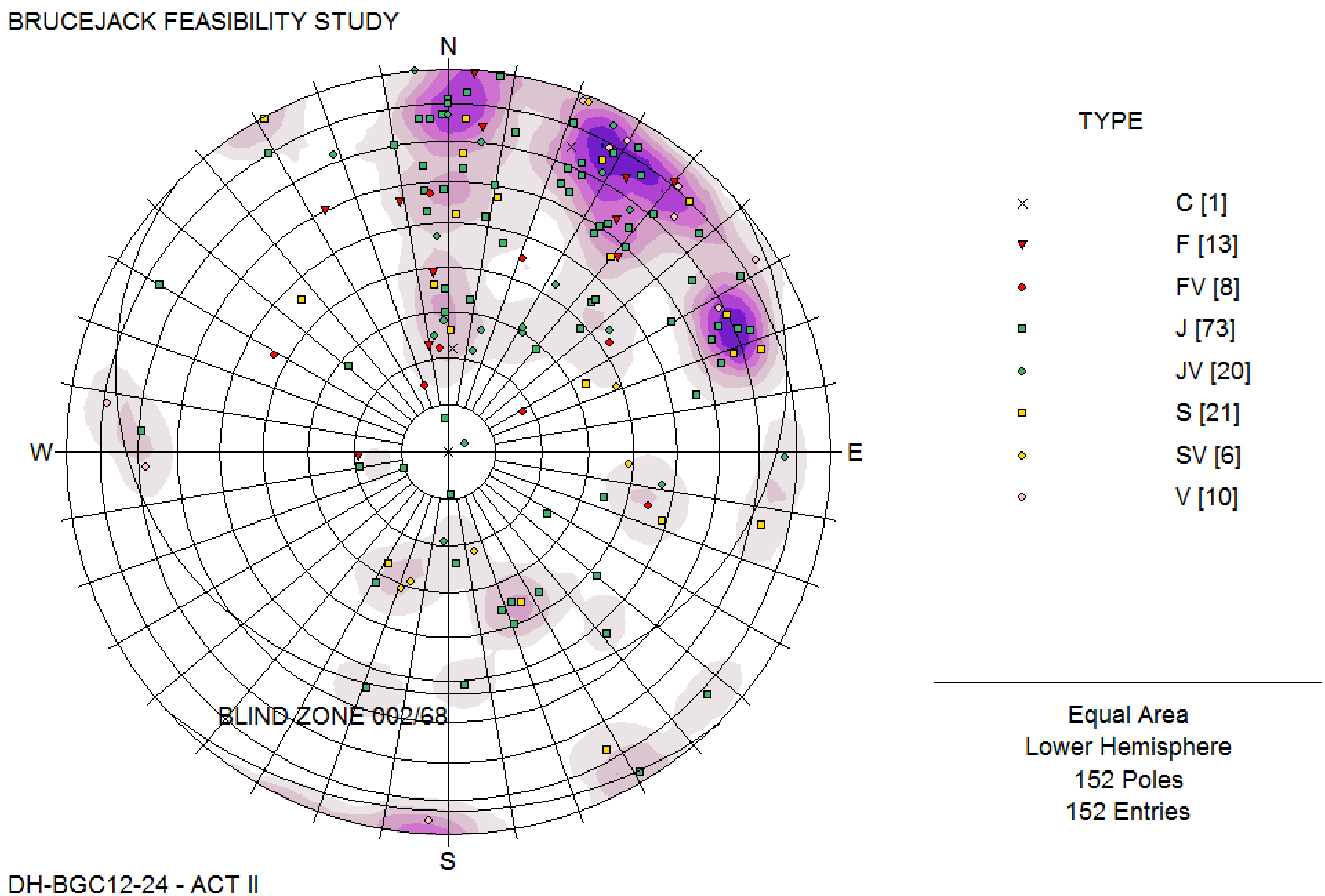
DH-BGC12-22 - ACT II


BRUCEJACK FEASIBILITY STUDY
N
W
E
S
BLIND ZONE 273/70
TYPE
F [9]
F-V [1]
J [301]
J-C [2]
J-V [18]
S [22]
S-V [5]
Equal Area
Lower Hemisphere
358 Poles
358 Entries
DH-BGC12-23 - TELEVIEWER



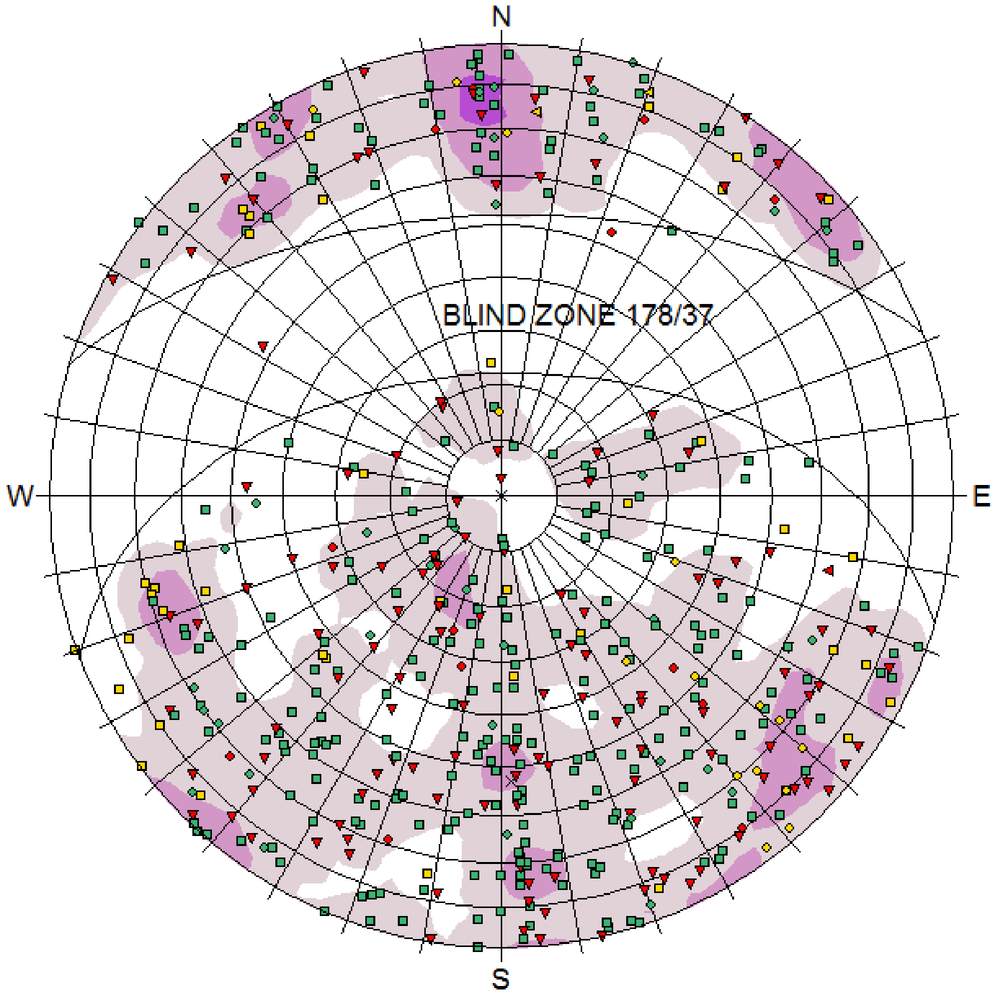
BRUCEJACK FEASIBILITY STUDY
N
E
S
W
BLIND ZONE 271/70
TYPE
C [3]
F [5]
FV [1]
J [370]
JB [2]
JO [3]
JV [72]
S [51]
SV [10]
V [7]
Equal Area
Lower Hemisphere
524 Poles
524 Entries
DH-BGC12-23 - ACT II


BRUCEJACK FEASIBILITY STUDY
N
E
S
W
BLIND ZONE 002/68
DH-BGC12-24 - TELEVIEWER
TYPE
F [25]
J [131]
J-C [1]
J-V [9]
S [15]
S-V [4]
V [14]
Equal Area
Lower Hemisphere
199 Poles
199 Entries



BRUCEJACK FEASIBILITY STUDY
N
W
E
S
BLIND ZONE 002/68
DH-BGC12-24 - ACT II
TYPE
C [1]
F [13]
FV [8]
J [73]
JV [20]
S [21]
SV [6]
V [10]
Equal Area
Lower Hemisphere
152 Poles
152 Entries

BRUCEJACK FEASIBILITY STUDY

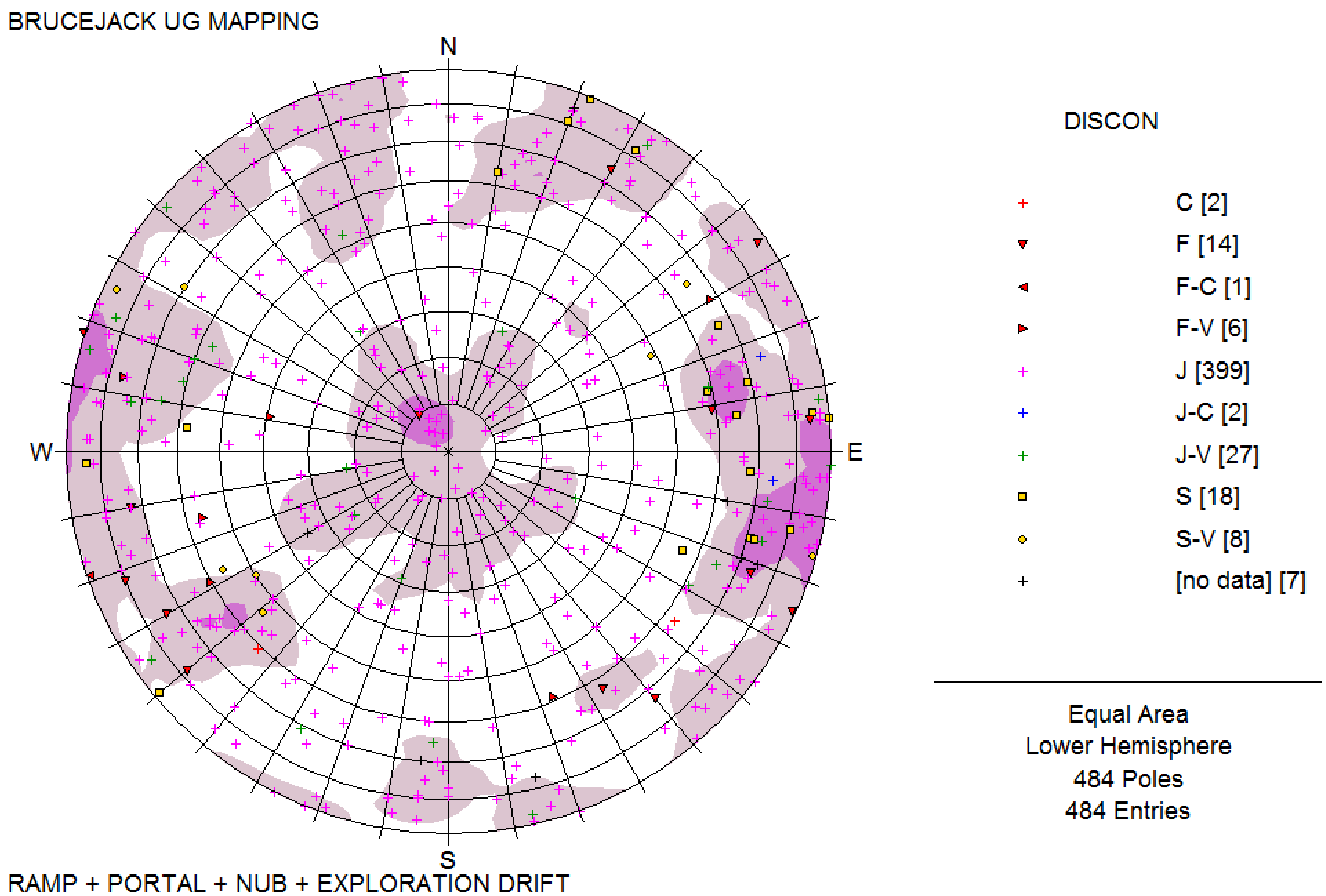


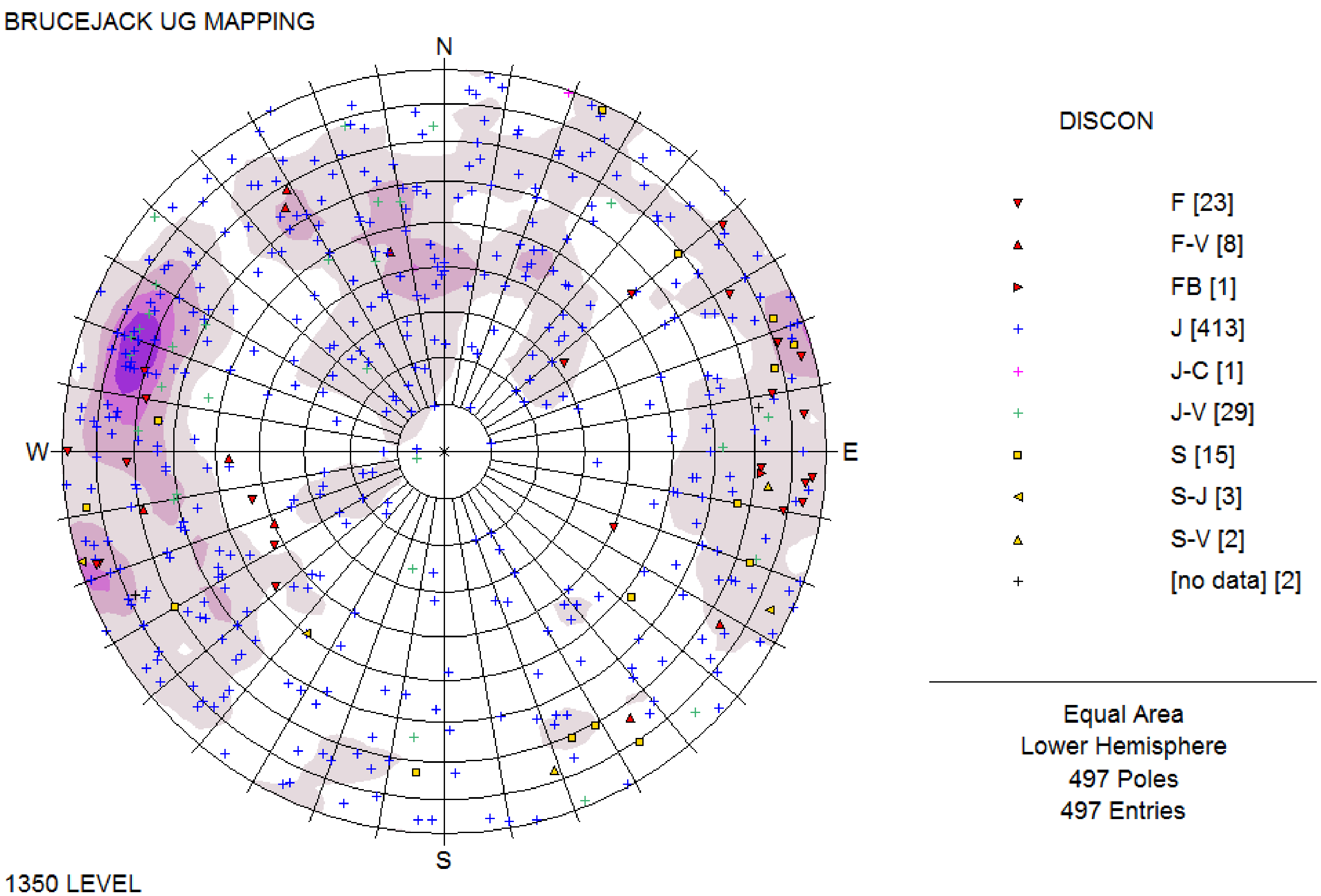
TYPE

▼	F [130]
◄	FO [1]
◆	FV [13]
■	J [275]
◆	JV [35]
■	S [40]
◄	SO [3]
◆	SV [15]

Equal Area
Lower Hemisphere
512 Poles
512 Entries

DH-BGC12-25 - ACT II


BRUCEJACK UG MAPPING
N
W
E
S
RAMP + PORTAL + NUB + EXPLORATION DRIFT
DISCON
C [2]
F [14]
F-C [1]
F-V [6]
J [399]
J-C [2]
J-V [27]
S [18]
S-V [8]
[no data] [7]
Equal Area
Lower Hemisphere
484 Poles
484 Entries


BRUCEJACK UG MAPPING
N
W
E
S
DISCON
F [23]
F-V [8]
FB [1]
J [413]
J-C [1]
J-V [29]
S [15]
S-J [3]
S-V [2]
[no data] [2]
Equal Area
Lower Hemisphere
497 Poles
497 Entries
1350 LEVEL

APPENDIX C
LABORATORY TESTING RESULTS

Summary Results of Sample Failure Tests (Brucejack Project #1008-007-01-03)

Sample (depth)	Bulk Density (g/cm^3)	Unconfined Compressive Strength S_C, (MPa)	Sigma 1 (MPa)	Sigma 3 (MPa)	Young's Modulus E, (GPa)	Poisson's Ratio (m)	Brazilian Indirect Tensile Strength (and range) S_T, (MPa)
DH20-01 (14.94-15.05) *	---	---	---	---	---	---	---
DH20-02 (24.49-24.66)	2.75	133.9	---	---	28.680	0.10	
DH20-04 (98.52-98.72) **	---	---	---	---	---	---	---
DH20-05 (113.76-113.99)	2.77	---	129.6	5	41.093	---	
DH20-09 (199.34-199.66)	2.77	106.6	---	---	21.404	0.23	2.4 (1.3-3.2)
DH20-10 (241.30-241.61) **	---	---	---	---	---	---	---
DH20-13 (345.64-345.90)	2.78	93.4	---	---	27.644	0.10	3.1 (2.6-3.5)
DH19-01 (16.52-16.80)	2.92	13.7	---	---	3.841	0.18	0.7 (0.4-1.0)
DH19-06 (215.80-215.85) *	---	---	---	---	---	---	---
DH19-07 (247.39-247.50)	2.72	123.7	---	---	25.090	0.10	1.4 (0.75-1.9)
DH19-08 (267.66-267.90) **	---	---	---	---	---	---	---
DH19-09 (283.17-283.40)	2.80	104.6	---	---	23.149	0.10	1.8 (1.1-2.4)
DH19-10 (287.30-287.48) **	---	---	---	---	---	---	---
DH19-11 (311.78-312.00)	2.74	---	201.8	20	39.110	---	---
DH19-12 (353.00-353.24)	2.72	193.9	---	---	26.229	0.10	2.6 (2.3-3.0)
DH19-13 (368.19-368.43) **	---	---	---	---	---	---	---
DH21-02 (125.69-125.96)	2.74	157.8 (pf)	---	---	29.662	0.09	3.0 (2.6-3.3)
DH21-03 (225.47-225.68) **	---	---	---	---	---	---	---
DH21-05 (260.39-260.59) **	---	---	---	---	---	---	---
DH21-06 (295.63-295.94)	2.80	---	144.8	10	36.807	---	---
DH21-11 (416.75-416.98)	2.77	84.8	---	---	28.985	0.10	2.0 (1.9-2.1)

(*) – grain size analysis, or other, tests requested but not able to be performed by this laboratory
(**) – direct shear test data listed in following tables
(f) – indicates failure along pre-existing foliation surfaces
(pf) – indicates failure partially along pre-existing foliation surfaces

Summary Results of Direct Shear Failure Tests

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH20-04 (98.52-98.72)	.31	.15
	.62	.32
	.93	.46
Residual Strength Data	1.24	.70
	1.55	.87
Cohesion = 0 kPa	1.86	1.02
Internal Friction Angle = 30.1º	2.17	1.18
	2.48	1.38
r^2 = 0.998	2.79	1.56
	3.10	1.79

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH20-10 (241.30-241.61)	.37	.30
	.74	.52
	1.11	.64
Residual Strength Data	1.48	.79
	1.85	.97
Cohesion = 105 kPa	2.22	1.14
Internal Friction Angle = 25.8º	2.59	1.29
	2.96	1.55
r^2 = 0.995	3.33	1.75

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH19-08 (267.66-267.90)	.27	.13
	.53	.27
	.80	.39
Residual Strength Data	1.06	.49
	1.33	.59
Cohesion = 13 kPa	1.59	.71
Internal Friction Angle = 23.9º	1.86	.78
	2.12	.91
r^2 = 0.991	2.39	1.10
	2.65	1.24

Summary Results of Direct Shear Failure Tests

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH19-10 (287.30-287.48)	.37	.46
	.74	.59
	1.11	.79
Residual Strength Data	1.48	.99
	1.85	1.19
Cohesion = 193 kPa	2.22	1.40
Internal Friction Angle = 28.8º	2.59	1.58
	2.96	1.78
$r^2 = 0.996$	3.33	2.01

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH19-13 (368.19-368.43)	.33	.53
	.65	.69
	.98	.82
Residual Strength Data	1.20	.93
	1.63	1.09
Cohesion = 391 kPa	1.95	1.25
Internal Friction Angle = 23.9º	2.28	1.40
	2.60	1.60
$r^2 = 0.997$	2.93	1.69
	3.25	1.80

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH21-03 (225.47-225.68)	.34	.21
	.68	.42
	1.02	.59
Residual Strength Data	1.36	.76
	1.70	.92
Cohesion = 53 kPa	2.04	1.09
Internal Friction Angle = 27.3º	2.38	1.29
	2.72	1.46
$r^2 = 0.999$	3.06	1.61
	3.40	1.82

Summary Results of Direct Shear Failure Tests

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH21-05 (260.39-260.59)	.33	.20
	.65	.40
	.98	.53
Residual Strength Data	1.30	.69
	1.63	.85
Cohesion = 48 kPa	1.95	1.00
Internal Friction Angle = 26.2º	2.28	1.13
	2.60	1.30
r^2 = 0.997	2.93	1.53
	3.25	1.66

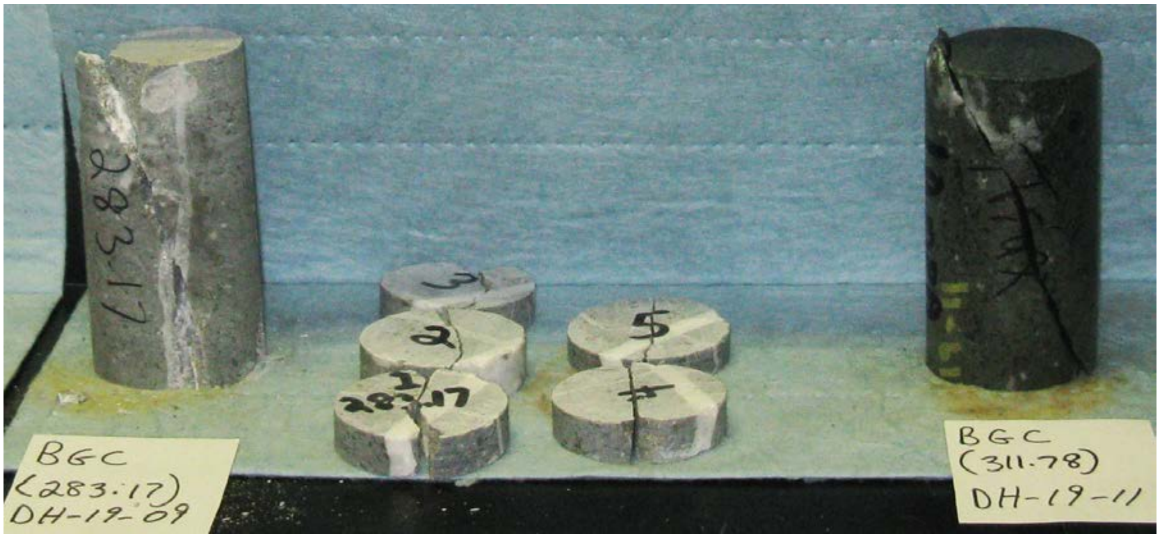
Pre-Test UCS, Triaxial Confined and Brazilian Tensile Sample Test Photographs
(for all except direct shear test specimens)


283.17
311.78
BGC
(283.17)
DH-19-09
BGC
(311.78)
DH-19-11


353.00
125.69
BGC
(353.00)
DH-19-12
BGC
(125.69)
DH-21-02


295.94
416.75
BGC
(295.63)
DH-21-06
BGC
(416.75)
DH-21-11

Post-Test UCS, Triaxial Confined and Brazilian Tensile Test Sample Photographs


BGC
(283.17)
DH-19-09
BGC
(311.78)
DH-19-11


BGC
(353.00)
DH-19-12
BGC
(125.69)
DH-21-02


BGC
(295.63)
DH-21-06
BGC
(416.75)
DH-21-11

Post-Test Direct Shear Sample Photographs

DH20-04 (98.52-98.72)

DH20-10 (241.30-241.61)

DH19-08 (267.66-267.90)

DH19-10 (287.30-287.48)


DH19-13 (368.19-368.43)

DH21-03 (225.47-225.68)


DH21-05 (260.39-260.59)

Summary Results of Set #2 Sample Failure Tests (Brucejack Project #1008-007-01-03)

Sample (depth)	Bulk Density (g/cm^3)	Unconfined Compressive Strength S_C, (MPa)	Sigma 1 (MPa)	Sigma 3 (MPa)	Young's Modulus E, (GPa)	Poisson's Ratio (m)	Brazilian Indirect Tensile Strength (and range) S_T, (MPa)
DH-BGC12-22 (46.20)	2.80	92.2			29.764	0.10	7.4 (6.2-9.0)
DH-BGC12-22 (332.84)	2.82	---	140.4	10	27.049	---	---
DH-BGC12-22 (436.85)	2.80	51.5 (pf)			21.228	0.11	5.0 (3.4-7.0)
DH-BGC12-23 (146.40)	2.77	99.5			30.245	0.10	7.0 (4.6-8.5)
DH-BGC12-23 (336.57)	2.80	---	127.2	20	28.914	---	---
DH-BGC12-23 (542.53)	2.68	3.8			0.731	0.25	---
DH-BGC12-24 (72.07)	2.81	87.8			27.209	0.16	5.0 (4.2-5.8)
DH-BGC12-24 (132.57)	2.88	56.0			21.575	0.17	4.2 (3.4-5.1)
DH-BGC12-24 (302.35)	2.86	---	99.5	5	26.578	---	---
DH-BGC12-24 (448.26)	2.78	63.7			23.361	0.11	5.1 (4.8-5.3)
DH-BGC12-25 (85.25)	2.82	54.7 (pf)			22.989	---	6.2 (3.6-9.0)
DH-BGC12-25 (320.85)	2.77	113.6			31.362	0.11	12.0 (11.0-13.3)

(pf) – indicates failure partially along pre-existing foliation surfaces

Summary Results of Direct Shear Failure Tests (July, 2012)

Borehole, Sample and Depth	Normal Stress (MPa)	Shear Stress (MPa)
DH-BGC12-22 (DH22-11) (206.18-206.53)	0.27	0.38
	0.53	0.54
	0.80	0.70
Residual Strength Data	1.06	0.86
	1.33	1.27
Cohesion = 74 kPa	1.59	1.49
Internal Friction Angle = 41.0º	1.86	1.80
	2.12	1.89
r^2 = 0.986	2.39	2.11

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH-BGC12-22 (DH22-17) (324.43-324.70)	0.45	0.38
	0.90	0.57
	1.35	0.72
Residual Strength Data	1.80	0.88
	2.25	1.01
Cohesion = 190 kPa	2.70	1.32
Internal Friction Angle = 21.7º	3.15	1.45
r^2 = 0.988		

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH-BGC12-23 (DH23-17) (520.77-521.04)	0.68	1.02
	1.02	1.12
	1.36	1.33
Residual Strength Data	1.70	1.54
	2.04	1.82
Cohesion = 521 kPa	2.38	1.96
Internal Friction Angle = 31.9º	2.72	2.24
	3.06	2.45
r^2 = 0.993		

Summary Results of Direct Shear Failure Tests (July, 2012)

Borehole, Sample and Depth	Normal Stress (MPa)	Shear Stress (MPa)
DH-BGC12-24 (DH24-06) (257.71-257.92)	0.36	0.29
	0.72	0.44
	1.08	0.59
Residual Strength Data	1.44	0.74
	1.80	0.90
Cohesion = 181 kPa	2.16	0.90
Internal Friction Angle = 20.2º	2.52	1.10
	2.88	1.25
$r^2 = 0.986$		

Sample	Normal Stress (MPa)	Shear Stress (MPa)
DH-BGC12-25 (DH25-13) (345.24-345.54)	0.31	0.70
	0.62	0.90
	0.93	1.05
Residual Strength Data	1.24	1.37
	1.55	1.60
Cohesion = 449 kPa	1.86	1.73
Internal Friction Angle = 35.8º	2.17	2.05
$r^2 = 0.991$		

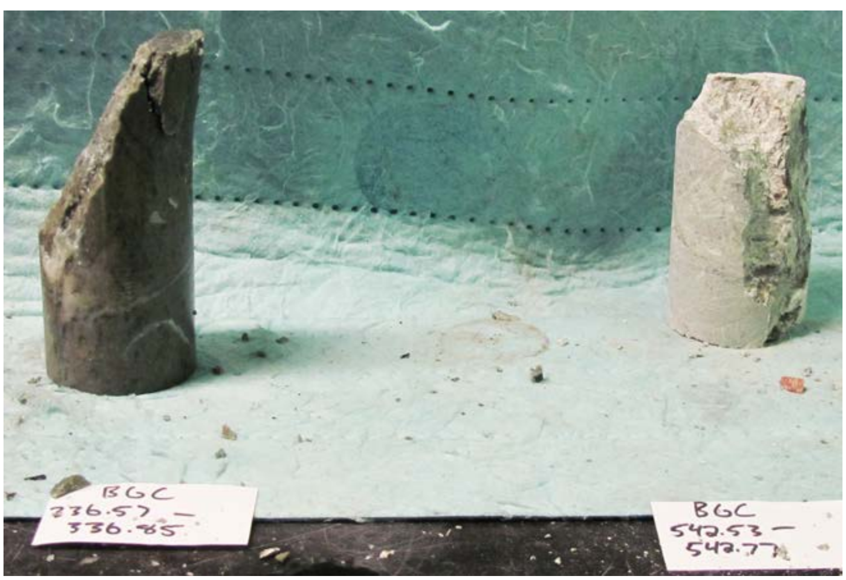
Pre-Test UCS, Triaxial Confined and Brazilian Tensile Sample Test Photographs


BGC
72.07 —
72.32
BGC
132.53 —
132.83


BGC
302.35 —
302.59
BGC
448.26 —
448.48


BGC
85.25 —
85.55
BGC
320.85 —
321.14

Post-Test UCS, Triaxial Confined and Brazilian Tensile Test Sample Photographs

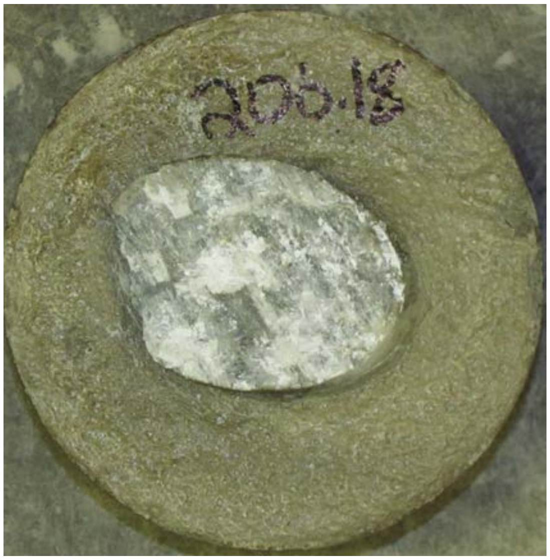



BGC
72.07 —
72.32
BGC
132.53 —
132.88


BGC
302.35 —
302.59
BGC
448.26 —
448.48


BGC
BGC
320.85 —
321.14

Post-Test Direct Shear Test Sample Photographs



DH22-11 (206.18-206.53)

DH22-17 (324.43-324.70)

DH23-17 (520.77-521.04)

DH24-06 (257.71-257.92)

DH25-13 (345.24-345.54)

APPENDIX D
UNDERGROUND MAPPING

Photo 1
Portal

General rockmass view looking down ramp

Photo 2
Portal

Persistent structure dipping at 30˚ down ramp

Photo 3
1400 Level

Fault in wall, can be traced across back

Photo 4
1350 Level

Persistent shear zone

Photo 5
1350 Level

Persistent shear zone

Photo 6
1350 Level

Wedge failure at intersection

Photo 7
Ramp – Exploration Drift intersection

Fault interpretted as Maddux fault

Photo 8
Ramp – Exploration Drift intersection

Current ground support

Appendix D - BGC Underground Mapping

StrikeR (°)	Dip (°)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
134	82			0	J	4	0.5	1	0.25	ST	0.5	P	S	6	45 PACES DOWNRAMP
080	08			0	J	5	0.2	1.5	5	ST	0.5	P	S	4	CLEAR JOINT SETS
008	82			0	J	5	0.15	0.3	0.1	ST	0.5	P	S	7	
358	82			1.8	J	3	0.3	1	0.2	ST	0.5	P	S	9	CLEAR WEDGE FAILURE
110	84			1.8	J	4	0.75	3	0.5	ST	0.5	P	R	8	CLEAR WEDGE FAILURE
132	84			2.4	J	3	0.3	0.2	0.1	ST	0.5	P	S	4	MINOR INFLOW FROM
240	10			2.4	J	5	0.3	0.15	0.15	ST	0.5	P	S	6	MINOR INFLOW FROM
164	12			5.4	J	3	0.5	3	0.2		1	I	R	8	
110	64			6	J	1		2	3	ST	0.5	C	R	10	
144	80			6	J	2	0.3	0.15	0.1	ST	0.5	P	S	5	
048	80			6	J	3	0.4	1	0.3	ST	0.5	P	S	5	
010	86			6	J	5	0.4	0.3	0.2	ST	0.5	P	S	5	
338	80			8.4	F	1		4	5	FB	10	P	K	5	THICKNESS VARIES
260	40			9	J	2	1.5	0.2	2	ST	0.5	U	R	10	
060	74			9	J	4	0.1	0.4	0.3	ST	0.5	S	R	5	
318	80			9.6	J	3	0.15	1	0.15	ST	0.5	P	R	7	
017	18			9.6	J	5	0.3	0.15	1	ST	0.5	U	R	9	
112	82			10.2	J	5	0.1	0.3	0.2	ST	0.5	P	R	7	
110	60			10.8	J	3	0.15	0.5	0.3	ST	0.5	P	S	7	
298	54			11.4	J	3	0.2	0.3	0.2	ST	0.5	P	S	7	
182	78	1	RAMP	11.4	J	2	0.1	2	0.25	ST	0.5	P	R	7	
060	20			11.4	J	5	0.25	0.3	0.2	ST	0.5	P	S	5	NORTH FACE, CONVER
352	20			11.4	J	4	0.3	0.3	0.15	ST	0.5	P	S	5	NORTH FACE, CONVER
274	60			13.8	J	2	0.3	5	1	ST	0.5	U	K	9	NORTH FACE. SLICKS
320	78			14.4	F	1		4	5	FG	5	P	S	7	CLEAR VEIN OFFSETS
120	70			14.4	J	3	0.2	1	2	ST	0.5	S	R	7	UP TO 2 M STRIKE P
260	08			15.6	J	2	1	1	0.3	ST	0.5	P	R	9	NORTH FACE
122	82			15.6	S	1		3	0.3	QZ	1	I	K	11	NORTHFACE. 1M WIDE
068	80			15.6	J	6	0.05	2	0.3	ST	0.5	S	S	13	TIGHT CONSTRAINED
340	80			15.6	J	3	0.2	1	0.1	ST	0.5	I	S	11	SOUTH FACE
112	62			18.6	J	3	0.3	3	0.2	ST	0.5	P	S	9	SOUTH FACE
350	80			18.6	J	5	0.4	1	0.2	ST	0.5	P	S	6	SOUTH FACE. FORMIN
086	18			19.2	J	3	0.4	0.3	0.3	ST	0.5	P	S	9	SOUTH FACE
344	78			20.4	J	4	0.5	2	0.15	ST	0.5	P	S	7	SOUTH FACE
110	70			20.4	J	3	0.2	0.4	0.1	ST	0.5	P	R	7	NORTH FACE
218	86			22.2	J	5	0.15	2	0.2	ST	0.5	P	S	7	AT INTERSECTION A
320	88			22.8	S	1		5	4	FB	50	I	K	13	AT INTERSECTION A.
222	82			22.8	J	3	0.2	0.75	0.4	ST	0.5	P	R	9	
070	30			22.8	J	3	0.4	0.2	1	ST	0.5	P	S	7	NORTH FACE
272	22			23.4	J	2	0.25	0.15	0.75	ST	0.5	U	S	11	SOUTH FACE
340	80			23.4	J	3	0.5	0.5	0.2	ST	0.5	P	S	9	SOUTH FACE
026	76			0	J	1		4			60	P	S	12	INFILL IS RE-WORKED
006	67			0.6	J	3	0.1	3			0.5	P	S	4	
124	74			0.6	J	1		1		ST	1	P	R	16	
264	17			0.6	J	1		0.3			0.5	P	S	8	
091	76			0.6	J	1		4		ST	3	P	S	10	
034	78			1.8	J	3	0.1	4		CX	3	I	S	12	
052	50			3	J	1		2			1	C	S	10	
071	72			3.6	J	5	0.05	0.8			0.5	P	R	16	
053	46			5.4	J	2	0.05	0.2			1	S	S	14	
325	84			6.6	J-V	3	0.08	2.5		QZ	4	U	S	13	
221	86			7.2	J	1		4		ST	1	U	R	16	
188	46			7.2	J	1		1.5			0.5	U	S	13	
326	68			7.2	J	2	0.4	1.5		CX	2	U	S	13	
174	62			8.4	J	2	1	0.5			1	U	R	18	
172	87			9	J-V	1		3		QZ	4	U	S	12	
310	84			9.6	J	2	0.2	4		ST	1	S	S	16	
326	18			10.8	J	1		6			0.5	P	R	16	
344	71			10.8	J	1		1			0.5	S	S	12	
074	65			12.6	J	3	0.3	1		ST	1	I	R	20	
275	60			12.6	J	1		1.2		ST	1	P	S	12	
169	82			13.8	J	1		4		QZ	2	P	S	10	
300	39			13.8	J	1		1		ST	1	C	S	10	PARALLEL TO FAULT
331	60			13.8	F-V	1	0.05	4	4	QZ-FB	100	U	R	18	
005	58			13.8	S	2	0.6	3			0.5	P	P	6	
010	69			14.4	J	2		2.5		CX	2	P	S	12	
209	61			14.4	J-V	1		4	3	QZ-BX	30	P	R	16	
298	71			14.4	J-V	1	0.3	4	2	QZ-BX	30	P	R	16	
011	39			15.6	F-V	1	0.05	5		QZ-BX	60	U	R	18	
076	67			16.8	J	2	0.05	1.2			0.5	S	S	15	
241	66			16.8	J	4		3.5		ST	1	I	R	16	
049	74			16.8	J	3		0.5		ST	1	P	S	12	
203	65			16.8	J-V	1		4	7	QZ-BX	10	S	R	20	DEFINES WALL
192	80			17.4	J	1		1		ST	1	U	R	15	
332	44			17.4	J	1		0.5		ST	1	P	S	10	
189	73			17.4	J-V	1		2		QZ	8	P	S	12	
068	52			18.6	J	2	1	0.5			0.5	I	R	20	
221	76			18.6	J	1		0.6			0.5	S	S	16	
304	61			18.6	J	1		0.6		ST	2	P	S	10	
295	36			18.6	J	1		4			0.5	U	S	12	
337	72			18.6	J	1		2.5		CX	2	U	S	12	
234	39			18.6	J	1		0.3		ST	1	U	S	12	
123	85			18.6	J-V	1		4	4	QZ	3	U	S	10	
333	26			19.8	J	1		2			0.5	S	S	12	
216	36			20.4	J	3	0.3	0.4			0.5	P	R	20	
306	05			21.6	J	2	0.8	2.5			0.5	P	S	12	
032	14	2	RAMP	22.2	J	1		4			0.5	S	S	16	
015	61			22.2	J	2	0.8	0.4	2	ST	2	I	S	12	
279	10			22.8	J	1		3.5			0.5	P	S	10	
040	54			23.4	J	1		1		ST	3	I	V	20	
320	50			24	J	2	0.3	2.5	3		0.5	P	S	8	
318	52			25.2	J	1		1		ST	3	P	S	10	
151	49			25.2	J	1		1		ST	4	P	R	18	
032	65			25.2	J	2	0.4	2		ST	5	I	R	18	DAMP
119	26			25.8	J	1		1.5			0.5	P	R	18	
009	74			27.6	J	2	0.3	4		CRX	8	P	R	20	DEFINES WALL
247	59			28.2	F-V	1		4	6	QZ-FB	100	P	R	16	INFILL IS R3
008	81			28.2	J	2	0.15	4		CX	20	P	S	12	
297	66			28.2	J	3	0.1	0.5		ST	1	U	S	12	
210	61			28.8	J	2	0.8	1		ST	20	I	R	20	
323	65			29.4	J	1		3	5	CX	20	U	R	20	
069	07			30.6	J	2	0.6	2.5		SA	1	U	R	20	
154	35			31.2	J	1		6		ST	1	U	R	20	
019	61			31.2	J	4	0.2	0.5		ST	1	P	S	12	
291	65			32.4	J	1		0.2	4	ST-CX	15	P	R	18	
033	18			32.4	J	4	0.15	3			0.5	P	R	18	
020	74			32.4	J	1		2.5		CX	4	P	S	12	
226	16			33	J	1		2.5			1	P	S	10	
174	85			33	S	1		1		ST	1	P	K	8	
061	56			33.6	J	2	0.6	4		ST	1	P	S	10	
071	17			33.6	J	4	0.15	2		ST	1	P	S	12	
144	59			33.6	J	2	0.15	0.3	1.5		0.5	P	R	18	
024	57			34.8	J-V	1		2.5		CX	3	I	R	20	
331	65			36	J	1		1	3	CX	4	I	R	20	DAMP, DEFINES WALL
296	26			36	J	1		3			0.5	P	S	10	
345	56			36.6	F-V	1				QZ	15	P	R	16	OFFSETS PREVIOUS J
106	73			36.6	J	2	0.8	1				P	R	18	
281	24			36.6	J	2	0.2	5			0.5	P	S	10	
054	27			36.6	J	3	0.5	1.5		ST	3	S	S	16	
134	45			36.6	J	2	1.5	2		ST	1	U	R	18	
326	73			37.2	J	3	0.3	1		CX	3	U	R	20	
061	86			37.8	J	3	0.7	0.6			0.5	P	S	12	
083	76			38.4	J	1		2		ST	1	U	S	12	
358	84			38.4	S	1		2			2	P	K	8	
327	78			39.6	J	1		1.5		ST	1	I	R	20	
130	36			39.6	J	1		0.75	7		0.5	U	R	20	BUMPY SURFACE
324	66			40.2	J	2	0.5	1.5	4	QZ	60	P	S	6	SURFACE HAS MINERAL
071	64			40.2	J	1		2		CX	4	P	R	18	
342	76			40.2	J	1		1.5		CX	4	P	R	18	
202	74			40.8	F	1		5	15	FB	50	U	S	16	RUNS DOWN STRIKE
150	68			40.8	F-V	1		4	4	FB	200	I	R	18	
268	26			40.8	J	3	0.25	0.6	5		0.5	P	S	10	
088	40			1.68	J	3	0.75	0.1	0.5	ST	1	P	S	6	FAILS ALONG THIS STRIKE
142	82			1.68	J	3	0.4	0.25	0.1	ST	0.5	P	S	8	
269	62			2.24	J	6	0.1	0.2	0.1	ST	0.5	U	R	8	FAILS ALONG THIS STRIKE
145	70			2.24	J	1		0.3	0.05	ST	0.5	P	R	10	
188	82			2.24	J	1		0.4	0.1	ST	0.5	C	S	6	

StrikeR (˚)	Dip (˚)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
135	80			2.8	J	3	1	0.5	0.3	ST	0.5	P-U	R	8	
230	74			3.92	J	3	2	0.8	0.1	ST	0.5	C	S	8	
018	40			3.92	J	3	0.75	0.4	0.1	ST	0.5	P	R	6	
015	75			5.6	J	3	1	0.5	0.1	ST	0.5	P	R	6	
007	75	3	1350 LEVEL	6.72	J	10	0.1	2	0.5	ST	0.5	P	S	5	VERY PLANAR. COLUMN
298	48			7.28	J	2	0.5	0.1	1	ST	0.5	C	R	8	MOIST - STAINS RUN
080	65			8.4	J	1									
010	68			9.52	F	1		4	4	ST	0.5	P	S	8	OFFSET IN VEIN AND
342	84			10.64	F	1		4	5	FB	100	U	R	14	OFFSETS AND ALTERED
020	78			11.2	J	3	0.1	2	0.5	ST	0.5	P	S	9	
015	70			12.32	F	1		4	11	FB	400	P	K	12	BROKE TO THIS ON W
078	10			12.88	J	1		0.25	1	ST	0.5	U	R	10	
085	78			13.44	J	2	1	0.25	0.5	ST	0.5	P-U	R	8	DAMP TO WET
004	80			14	J	1		0.05	1.25	ST	0.5	P	S	6	VERY TIGHT
176	50			14	J	1		0.1	1.75	ST	0.5	P	R	10	ORTHOGONAL SET ALS
158	82			1.2	S	1		3	3	FB	100	I	K	15	FROM 1 TO 100MM
024	80			3	J	5	0.15	2	0.3	ST	0.5	C	S	15	
168	60			3	J	3	0.4	0.4	0.15	ST	0.5	P	S	9	
218	52			3	S	1		0.2	3	FB	20	I	R	15	NORTH FACE. SPLAYS
172	60			4.2	J	3	0.1	0.3	0.15	ST	0.5	P	S	7	NORTH FACE. CURVES
314	82			4.2	J	5	0.1	1	0.5	ST	0.5	C	S	7	NORTH FACE. CURVES
148	86			4.2	J	2	0.5	0.5	0.3	ST	0.5	C	S	11	NORTH FACE. CURVES
144	32			4.2	F	1		3	0.1	FB	50	P	K	11	FROM 1 TO 50 MM IN
330	70			4.2	S	1		3	0.1	FG	50	I	S	13	FROM 1 TO 50 MM IN
170	10			5.4	J	3	0.4	0.3	0.15	ST	0.5	P	S	7	NORTH FACE
124	82			5.4	J	3	0.5	0.5	0.2	ST	0.5	P	S	7	SOUTH FACE
060	86			6.6	J	5	0.25	0.4	0.2	ST	0.5	U	S	11	SOUTH FACE
258	60			7.2	J	4	0.2	1	0.05	ST	0.5	C	S	11	NORTH FACE
162	30			7.2	J	3	0.4	2	0.3	ST	0.5	U	R	11	SOUTH FACE
190	52			7.8	J	5	0.4	1.5	0.2	ST	0.5	P	S	7	NORTH FACE
008	78			8.4	J	2	1.5	1.5	0.25	ST	0.5	P	R	9	SOUTH FACE. FORMIN
110	60			8.4	J	4	0.5	3	0.3	ST	0.5	P	S	9	CONSISTENT, WELL D
168	82			8.4	J	4	0.1	2	0.15	ST	0.5	P	S	9	NORTH FACE
330	20			9	J	4	0.1	0.4	0.1	ST	0.5	S	R	9	NORTH FACE
250	20			9.6	J	1		0.1	9	ST	1	U	S	11	SOUTH FACE. EVIDEN
292	74	4	1350 LEVEL	12	J	3	0.5	1.5	0.25	ST	0.5	C	R	10	NORTH FACE
055	60			12	J	2	0.5	0.5	0.3	ST	0.5	P	S	6	SOUTH FACE
020	80			13.2	J	7	0.2	1	0.1	ST	0.5	P	R	10	SOUTH FACE
260	88			13.2	J	7	0.2	0.3	0.15	ST	0.5	P	S	10	SOUTH FACE
148	20			13.8	J	3	0.5	1.5	0.1	ST	0.5	P	S	8	SOUTH FACE
018	74			13.8	J	3	0.1	0.75	0.05	ST	0.5	P	S	8	SOUTH FACE
160	86			14.4	J	2	0.5	0.75	0.15	ST	1	P	R	6	NORTH FACE
140	54			14.4	J	3	0.2	0.3	0.1	ST	0.5	P	S	6	NORTH FACE
038	74			15	J	3	0.75	0.25	0.1	ST	0.5	P	R	6	NORTH FACE
230	66			15.6	J	3	0.1	0.3	1	ST	0.5	P	R	10	NORTH FACE
138	40			16.2	J	4	0.1	0.3	0.15	ST	0.5	S	R	8	SOUTH FACE. LOCALI
356	52			16.8	J	3	0.5	3	0.3	ST	0.5	P	S	6	SOUTH FACE
132	28			16.8	J	3	0.75	0.3	0.1	ST	0.5	P	S	6	SOUTH FACE. APPEAR
232	42			17.4	J	7	0.3	0.5	3	ST	0.5	U	S	10	SOUTH FACE. MAJOR
240	30			18	J	1		0.1	4	ST	0.5	U	S	10	NORTH FACE. ISOLAT
160	88			18.6	J	4	0.2	0.5	0.4	CL	1	P	R	10	NORTH FACE
240	20			19.8	J	5	0.3	0.2	6	ST	0.5	P	K	8	NORTH FACE. VERY P
150	80			19.8	J	2	0.1	0.3	0.2	ST	0.5	P	S	6	SOUTH FACE
074	78			20.4	J	3	0.1	2	0.75	ST	0.5	P	R	10	SOUTH FACE
324	82			21	J	8	0.05	0.3	0.1	ST	0.5	P	S	6	NORTH FACE. TIGHT
340	82			21	J	4	0.1	0.3	0.1	ST	0.5	P	S	6	NORTH FACE. ISOLAT
121	64			0	J	2	0.05	1			0.5	S	S	14	TRAVERSE 1350-8 US
016	24			0	J	8	0.05	1		ST	1	U	S	12	
030	76			0.5	J-V	1		3.5			20	U	R	18	TRUNCATED BY NEXT
226	84			0.5	J-V	1		4	4		40	P	R	18	
332	90			1.5	J	1		2	1.5			S	S	12	DEFINES WALL
359	80			2.5	J	2	0.3	2		ST	2	I	R	20	
083	33			2	J	4	0.2	1		ST	1	P	R	18	
331	56			4	J	1		3	2	ST	2	P	V	20	DEFINES WALL
354	82			3	J	3	0.1	1			0.5	P	R	18	
047	16			5	J	2	0.1	0.5			0.5	P	S	12	
161	50			5.5	J	2	1	1				P	R	18	
304	62			5.5	J	1		1			0.5	U	R	18	
330	26			8	J	1		3		ST	2	P	R	18	
081	54			9	J	2	0.2	0.5	1	ST	4	P	R	18	
350	26			9	J	1		1.2			3	I	R	20	
299	40			13	J	3	0.15	0.5			0.5	I	S	14	
115	45	5	1350 LEVEL	14	J	2	0.4	2		ST	2	I	V	20	
115	68			15.5	J	1		0.5	3	ST	1	U	R	20	
355	89			16.5	J	1		1.5		CX	3	U	R	20	
087	42			17	J	3	0.2	0.5			0.5	P	R	18	
344	27			0	J	2	0.8	1		CX	3	P	R	18	
312	79			0	J	1		0.5	1		0.5	U	R	18	
076	62			1	J	1		0.5		ST	1	I	R	20	
049	58			1	J	2	0.05	0.5		CX	3	U	R	20	
331	42			3	F	1		9	6	FB	100	U	S	14	HITS FLOOR AT 26M,
075	83			3	J	2	0.15	3		ST	1	U	S	14	
109	62			4	J	3	0.1	0.3	2.5	ST	1	I	R	20	
055	64			4	J	3	0.08	2		CX	2	P	S	12	
346	86			6	J	2	0.1	1			0.5	S	S	14	
346	43			6	F	1		8	6	FB	60	P	S	12	*
156	89			11	J	1		0.6		CX	9	P	R	16	
180	59			12	J	1		1		CX	10	P	R	16	AT POINT 0017. TR
350	72			12	J	1		2		ST	1	I	S	16	TRUNCATED BY *
284	54			15	J	2	0.7	0.1	1		0.5	P	R	18	
103	75			0	J	2	0.1	0.25	0.05	ST	0.5	P	S	6	
228	40			0	J	1		0.07	0.07	ST	0.5	U	R	10	
204	71			0	J	1		0.1	0.02	ST	0.5	P	S	8	
179	62			0	J-V	1		0.1	0.05	ST	0.5	U	R	12	
204	77			0.56	J	5	0.1	0.7	2	ST	1	P-C	S	8	APERTURE VARIES 0.
200	65			0.56	J	5	0.1	0.7	2	ST	1	U	S	10	APERTURE VARIES 0.
315	64			1.12	J	2	1	0.3	0.1	ST	1	U	R	20	
256	89			1.68	J	1		0.75	0.1	ST	1	U	S	8	
109	89			2.24	J-C	1		3.5	3		0.5	U-C	S	10	ORE VEIN CONTACT?
275	73			2.24	S	1		3.5	3	FG	20	C	S	10	ADJACENT TO VEIN C
115	88	7	1350 LEVEL	2.24	S	1		3.5	3						AS ABOVE ON OTHER
286	85			3.36	J	1		3	0.1	ST	0.5	U	R	20	
034	76			3.92	J	1		0.6	0.2	ST	0.5	I	R	20	
317	79			3.92	J	4	0.05	2	0.2	CX	10	P	R	12	SOMTEIMES CX ON TH
335	78			4.48											AT 0016, AS ABOVE
274	86			8.4	J	1		3	0.1	CX	10	C	S	8	(OTHER SIDE OF 135
094	84			8.4	J	2	0.05	3	0.2	CX	10	I	R	20	
184	33			8.4	J	1		0.3	2	CX	1	P	S	20	
200	61			8.96	J	5	0.1	0.2	1.5		0.5	U	R	8	PARALLEL TO WALLS,
246	71			9.52	S	1		0.75	0.2	FB	25	C-U	S	12	PINCHES OUT
353	70			9.52	J	1		0.2	2		0.5	U	S	12	POSSIBLY REPETITIO
002	69			0	J	2	0.1	1.5		ST	1	P	S	12	
326	66			0	J	1		1.5			0.5	P	S	10	
021	76			0.6	J	2	0.1	0.5			0.5	P	S	10	
111	73			2.4	J	1		0.4	0.6	ST	2	P	R	18	
116	76			2.4	J	3	0.3	1			0.5	S	R	20	
105	64			3.6	J	2	0.5	2		SA	2	P	R	20	
013	87			3.6	J	1		1		ST	3	P	R	20	
313	18			4.2	J	2	0.8	1.5			0.5	U	S	12	
318	16			4.8	J	2	1	1.5		ST	2	P	S	12	
343	85			4.8	J	1		0.2			0.5	S	S	14	
318	44			6	J	3	0.2	0.5			0.5	S	V	20	
026	29			6.6	J	1		7	4	CX	40	U	R	18	DIPS OUT OF BACK
055	34			6.6	J	1		5	4	CX	1	U	R	18	SAME AS ABOVE
324	26			8.4	J	3	0.3	2			0.5	U	S	14	
342	34			9	J	1		0.2			0.5	U	R	18	
084	58			9.6	J	2	1	1		ST	1	P	R	20	
047	15			10.2	J	1		2.5		ST	2	P	R	18	
003	76			10.2	J	3	0.8	2		ST	1	P	R	20	
223	46			10.8	J	2	0.3	0.2	1		0.5	I	R	20	
186	56			11.4	J	1		1		ST	1	I	R	20	
042	43			1.2	J			3		CX	4	P	R	18	
111	72			1.2	J		0.15	0.3		ST	1	P	R	20	
006	77			1.8	J			0.4			0.5	C	R	16	
049	84			3	J		0.15	1.5		SA	1	STEPPED	S	14	
321	85			4.2	J						0.5	P	S	12	
339	66			5.32	J	1		0.4		CX	1			16	
211	86			5.32	J	2	0.15	0.3		CX	2	P	R	18	

StrikeR (˚)	Dip (˚)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
315	59			5.88	J	2	0.4	0.4		CX	1	U	R	18	
059	27			6.44	J	1		3		CX	5	U	R	20	
341	28			7	J	4	0.08	0.2			0	U	R	20	
357	62			7.56	J	1		0.5		SA	2	P	S	12	
144	64			8.12	J	1		0.5			0.5	I	R	20	
340	66			8.12	J	2	0.5	0.8		ST	1	STEPPED	R	20	
024	35			8.12	J	2	0.5	1.5		ST	1	P	R	18	
001	64			8.68	J	2	0.4	2.5		CX	2	U	S	14	UNDULATES TO STRIKE
003	55			9.24	J	2	0.7	2		ST	5	I	V	20	
153	68			10.36	J	1		0.5		ST	0.5	U	R	20	
356	62			10.36	J	1		3.5			0.5	STEPPED	S-R	16	
034	29	8	1350 LEVEL	12.04	J	2	0.12	3		CX	2	U	R	20	
025	74			12.6	J-V	1		1		QZ	2	STEPPED	R	16	
157	77			13.16	J	1		1.7		CX	3	C	R	18	
317	39			13.72	J	2	0.3	7			0.5	U	S	12	
050	25			15.4	J	4	0.2	1.5		ST	1	U	V	20	
028	47			17.08	J	1		1.5		ST	1	STEPPED	R	20	PASSED OLD DRILLHOLE
021	50			19.32	J	2	1	2			0.5	P	S	12	
000	13			20.44	J	2	0.2	0.6			0.5	U	R	18	
006	64			21.56	J	1		1		ST	1	I	S	12	
090	41			22.68	J	1		1.5		QZ	2	P	S	12	POINT 115
307	50			22.68	J	2	0.25	1		ST	2	STEPPED	R	20	
005	06			23.8	J	1	0.05	0.5			0.5	P	S	10	
143	79			24.36	J	1	.`	0.5			0.5	I	R	16	
086	57			25.48	J	2	0.1	1.5		ST	1	U	S	14	
063	90			26.04	J	1		2.5		CX	30	S	V		CRX
347	56			27.16	J	1		2		SA	1	C	R	20	
096	70			27.16	J	1	0.2	1.5		SA	2	U	R	18	
356	47			27.16	J	3	0.15	1.5		CX	9	U	S	14	
114	48			27.16	J	3	0.2	1			0.5	S	R	20	
097	66			27.16	J	2	0.5	0.5		SA	1	P	S	12	
321	47			27.72	F	1		4		FB	10	P	S	10	REVERSE FAULT
229	64			27.72	J	1		1		ST	1	U	S	14	DAMP
154	81			27.72	J	1		2		CX	1	C	R	16	
206	57			28.84	J	2	0.2	1.5			0.5	U	S	10	WET (DRIPPING)
025	64			28.84	J	2	0.15	1		CX	2	P	S	12	
346	06			29.96	J-V	1		2			3	U	R	18	
216	72			29.96	J	2	1	1		CX	0.5	U	R	20	
031	38			30.52	J	3	0.3	0.5	4		0.5	U	V	20	
113	88			31.64	J	2	0.5	0.5			0.5	P	R	18	
006	64			32.2	S	1		2.5	4	FB	200				FB INFILL
015	74			33.32	J	2	0.1	0.3		CX	1	I	R	20	
175	58			34.44	J	3	0.1	3		SA	1	P	R	18	
071	19			36.12	J	2	0.35	0.5		ST	1	P	R	18	
190	51			37.8	J	7	0.05	1.5			0.5	P	S	12	
051	11			38.36	J	5	0.13	1		ST	1	P	S	10	
080	34			38.92	J	2	0.15	0.3		ST	1	U	R	20	
074	65			40.6	J	1		3		BX	2	U	S	12	
076	39			41.72	J		0.5	1		CX	2	P	S	12	AT INTERSECTION
072	26			43.4	J	2	0.2	1.25		BX	2	P	R	20	FLAKEY INFILL
120	54			0.6	J	1		2		ST	1	I	R	20	
085	24			1.2	J	2	0.5	0.8			0.5	P	V	20	STRIKE 085
275	26			1.2	J	3	0.2	0.3	4		0.5	P	S	12	
070	44			1.8	J-V	1		5	4	QZ	30	U	R	16	APPEARS IN BACK
241	24			3	J	2	0.4	1		CX	1	U	R	20	
022	75			3	J-V	2	0.8	3		QZ-CX	4	P	R	18	
068	36			4.2	J	5	0.15	2			0.5	P	S	14	PERS 2M
328	57			4.2	J	1		1.5		CX	2	P	R	18	STRIKE 328
077	18			4.8	J	1		2.5	2	SA	4	P	S	14	
351	60			4.8	J-V	1		2		QZ	2	U	S	10	
013	53			6	J-V	4	0.2	4		QZ	50	P	S	16	
342	85			6.6	F	1		4		FB	80	P	R	18	DAMP
059	69			7.8	F-V	1		4	4	QZ-FB	150	U	S	14	SAME AS BELOW
057	65			7.8	F-V	1				QZ-FB	2	P	S	14	SAME AS ABOVE
020	76			8.4	J-V	16	0.04	4		QZ-FB	2	P	S	14	FAULT PARALLEL JOINTING
330	80			9.6	J	3	0.2	0.1	2	CX	2	P	S	12	
075	57			9.6	J-V	2	1	4		QZ	0.5	I	R	20	
111	54			10.2	J	2	0.3	1.5			0.5	S	R	20	
017	75	9	1350 LEVEL	11.4	J-V	3	0.2	4		QZ	0.5	C	R	20	
025	89			12.6	J	5	0.1	1.5			0.5	C	S	12	
337	40			13.2	F-V			6	9	FB	10	S	R	18	PT 0020. PARALLEL
093	56			13.8	J			1	5		1	P	V	20	
094	44			15.6	J			0.5	3		1				
013	65			15.6	J-V			3			0.5	P	S	12	
021	65			15.6	J-V			1			0.5	P	S	10	WET
347	56			16.8	J	3	0.2	2			0.5	S	R	20	
080	56			17.4	J-V			1.5		QZ	1	I	R	20	
029	64			18	J			1		ST	1	P	S	16	
350	61			18	J-V			2		QZ	1	S	S	16	
070	54			19.2	J			1	1.5	CX	2	P	V	20	
029	61			19.8	J			2			0.5	C	R	20	
301	62			21.6	J			1.5			0.5	P	V	20	
358	47			22.2	F-V			4	5	QZ-FB	50	P	R	18	
061	57			22.2	J			1		CX	3	P	R	16	
344	16			22.2	J			2.5		CX	4	P	R	16	
034	15			22.8	J			3	6	ST	1	U	R	18	
320	60			23.4	J			2	4	CX	2	P	R	20	
184	86			0	F			4		FG	2	S	S	14	
150	56			0.56	J			4			1	C	S	6	
170	76			1.12	F			1.5		FG	20	U	S	16	GOUGEY
247	64			1.12	J	3	0.1	0.3		ST	0.5	U	R	20	SPACING. 3 X 0.1
340	79			1.12	J			0.2		ST	0.5	I	S	10	
213	76			1.68	J			4		ST	0.5	I	R	20	
076	76			1.68	J			2		ST	0.5	I	R	20	
269	48			2.24	J			0.2		ST	0.5	P	S	8	
176	70			2.8	J			0.5		ST	0.5	P	R	8	
285	26			2.8	J-V			0.1		ST	0.5	P	R	8	
167	63			2.8	J			0.3		ST	0.5	P	R	6	
185	84			2.8	F			4		FG	70	P	R	8	FG/FB. MEANDERS UP
190	79	10	1350 LEVEL	3.36	F			4		FB	10	P	R	8	FG/FB
183	72			3.92	F			4			0.5	P	R	8	
248	88			5.04	J-V			1			0.5	U	R	12	
140	55			5.04	J		0.2	2			3	U	R	12	
297	63			5.04	J			0.1		ST	0.5	U	S	10	
165	63			5.04	J			2		ST	3	S	R	12	
272	57			5.04	J			0.1		ST	1	U	S	10	
051	57			5.04	J			0.1		ST	1	U	R	16	
087	36			5.6	J			0.7		ST	0.5	U	S	8	
172	72			6.72		6	0.1	1.5		ST	0.5	P	R	8	6 AT 0.1M
117	81			7.28	J			0.3			1	C	R	10	
272	86			7.84	J			1.5		ST	1	P	R	10	
188	84			7.84	F			4		FB	30	U	S	8	
140	54			7.84	F			4			1	P	K	6	SLICKS
276	64			0	J-V			2.5			0.5	U	R	8	
073	78			1.12	J-V			1			0.5	U	R	12	DRIPPING WATER
090	39			2.24	J		0.1	0.1		ST	0.5	S	S	16	SPACING 0.1
286	71			2.8	J			0.5		ST	0.5	I	R	20	
063	35			2.8	J			2		CX	5	U	R	12	
248	66			2.8	J			0.2		ST	0.5	U	R	18	
178	73			3.36	J			0.1		ST	0.5	U	S	10	
281	81			3.92	J			0.3		ST	0.5	U	R	12	SPACING 0.1-0.2
224	68			4.48	J			0.5		ST	0.5	U	R	20	
097	76			5.04	J			0.2		ST	0.5	S	S	6	
292	74			5.6	J			0.5		CX	2	U	R	18	
140	69			5.6	S			4		FB	150	S	S	20	VEIN. MINERALIZED?
351	84			6.16	S			0.5		FG	10	U	S	8	
095	83			6.72	J			0.6		ST	0.6	U	R	16	
163	85			6.72	S			2		BX	10	U	R	20	
296	76			7.28	J		0.1	0.1			0.5	I	R	20	SPACING 0.1
174	74	11	1350 LEVEL	8.4	J-V			2		BX	10	P	S	4	WIDELY STEPPED
167	46			8.4	J			2		ST	0.5	U	S	10	
251	77			8.96	S-V			0.6			0.5	I	R	20	
186	74			9.52	S-V			0.5		ST	0.5	P	S	6	
211	62			10.64	J			0.5		ST	0.5	P	S	6	SPACING APPROX 1.5
164	61			11.76	J			0.5			1	U	R	16	MINERALIZED?
219	81			11.76	J			1			1	S	R	16	DIP IS ESTIMATED
199	75			12.32	J-V			1			0.5	P	R	10	
184	72			12.32	FB			4		FB	40	P	S	8	VEIN OFFSET. TRACE

StrikeR (°)	Dip (°)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
174	84			12.32	F										OTHER SIDE OF FAUL
279	54			13.44	J			0.1			0.5	P	S	8	
236	81			14	S			1			300	U	R	16	SHEAR ZONE. BRECCIA
241	71			14	S			1		FB	300	U	R	16	OTHER SIDE OF SHEAR
151	74			14.56	F			4		FG	5	P	R	6	THIS FAULT TRUNCATES
133	71			15.68	J			0.5			0.5	P	S	8	FAULT PARALLEL JOINTING
251	34			16.8	J			0.5			0.5	I	R	20	
165	86			16.8	F			4		FG	50	K	P	4	SLICKS
195	87			0	J			3.5	3.5	BX	2	P	R	14	
030	81			0.56	J			3.5	3.5	ST	0.5	C	S	8	
192	84			1.12	J			3.5	1.5	CX	1	P	S	8	
192	56			2.24	J			1			0.5	U	R	14	
107	76			3.36	J			0.3	0.3		2	P	S	10	
163	69			3.92	J			0.7	0.3		0.5	U	R	16	
125	23			6.72	J			0.2	0.7		0.5	P	S	6	
275	79			8.96	J			2	0.3		0.5	U	R	10	
247	71			10.08	J	2	1	3.5	0.2	BX	2	P	S	6	
257	89			11.2	J			2.5		BX	10	U	S	12	
125	89			12.32	J			0.5	0.5			C	R	14	
070	89			12.88	J			0.2	0.1		0.5	S	R	20	
123	87			13.44	J			2	0.5			S	R	20	
048	81			14	J	2	0.1	0.5	0.2		0.5	P	S	8	
049	88			15.12	J			3	0.2		0.5	S	R	16	
140	79			15.68	J			3.5	2		0.5	P	S	8	
145	37			18.48	J			0.3	0.2		0.5	U	R	20	
144	79			19.6	J			0.5	0.3			P	S	8	
035	90			19.6	J			3.5	3.5		0.5	P	S	10	
144	83			21.28	J			0.75	0.2		0.5	S	S	14	
174	81			21.84	J	2	0.2	3.5	1	SM	0.5	C	R	14	
292	90			21.84	J			1	0.5		0.5	C	S	10	
074	04			22.96	J			0.2	0.5		0.5	P	R	6	
274	75			24.64	J			0.75	0.2		0.5	U	R	18	
124	73			26.88	J	2	0.3	0.2	0.4		0.5	U	R	18	
279	85			30.24	J	3	0.3	2	0.2		0.5	S	R	20	
173	63	12	1314 LEVEI	30.24	J			2	0.5		0.5	U	R	20	
027	45			33.04	J			1	0.2		0.5	S	R	20	
275	86			33.04	J			0.2	0.2		0.5	P	S	6	
259	76			34.72	J			2	0.2		0.5	U	R	12	
170	73			39.76	J			0.1	0.1		0.5	P	S	6	
225	84			39.76	J			2	0.2		0.5	U	S	12	AT SURVEY POINT 13
291	86			42	J			3.5	2		0.5	I	S	18	
280	81			44.24	J			1.5	0.5		0.5	P	R	8	
302	12			44.8	J			0.1	0.5		0.5	U	V	20	VERY ROUGH
122	78			45.92	J			3	0.5		0.5	I	R	20	
184	82			45.92	J			1.5	0.5		0.5	I	V	20	VERY ROUGH
314	61			47.6	C			5	22	BX	100	P	S	10	FAULT ALONG CONTACT
104	33			65.6	J			5	5		1	P-U	S	10	DRILLHOLE IN BACK
072	88			66.72	J			0.5	0.2		0.5	S	S	12	AT SURVEY POINT 13
017	81			67.28	J			1	0.5	CX	2	U	R	20	
273	65			70.08	J-V			3.5	1		2	C	S	14	
350	73			71.76	F			5	5	BX	30	C	R	16	POURING WATER
145	65			74.56	S-V			1	5			U	S	8	
123	81			79.6	J			1	10			P	S	8	
088	80			82.96	J			2	1	BX	10	C	S	8	SMALL POCKETS OF B
174	78			83.52	J			0.3	0.3		0.5	P	S	6	
152	76			86.88	J			5	5		0.5	P	S	6	
146	87			89.12	F			5	3	CX	100	I	R	20	OXIDIZED, BRX, CRX
065	82			91.92	J			0.5	0.5		0.5	U	R	16	
243	47			93.04	J			0.5	0.5		0.5	I	R	20	
152	83			93.04	J			1	0.5	CX	0.5	P	S	6	BLACK STAINING
112	89			95.28	S			2	2		0.5	S	S	10	SHEAR? SLICKS
271	72			0	J	2	0.08	2	2		0.5	P	S	8	
202	69			0	J	1			3		0.5	P	S	12	
098	39			1	J	2	0.8		3	CX	1	P	S	12	
182	66			1	J	1			0.5	ST	2	C	S	16	
184	87			2	J	3	1.5		2	ST	1	P	S	12	
092	57			3	J	2	0.1		0.5		0.5	P	S	12	
101	63			4	J	2	0.15		2		0.5	P	S	8	
181	66			5	J	1			3	ST	0.5	P	S	8	
123	67			6	J	2	0.75		3		0.5	P	S	12	
071	54			6.5	J	1			0.5		0.5	P	S	12	
106	73			10	J	2	0.15		2	ST	1	P	S	12	
325	65			12	J	2	0.5		2	CX	2	P	R	16	
229	89			13	J	5	0.2		2		0.5	P	S	12	
335	34			13.5	J	1			0.5		1	P	R	16	
116	61			19	J	3	0.3		0.5	ST	0.5	U	S	12	
219	33			22	J	1			3	QZ	30	U	R	16	
026	35			26	J	1			3	QZ	0.5	P	S	12	
020	30			26	J	1			0.5			P	R	18	
049	74			31	J	1			2		0.5	C	R	16	
310	76			33	J	1			0.5		0.5	P	R	18	
064	53			34	J-V	1			2	QZ	20	P	S	12	
140	39			36	J	2	0.4		0.65		0.5	P	S-R	16	
024	21			39	J	1			7	QZ	25	P	S	12	
104	61				J	2	0.3		0.65		0.5	U	S	12	
212	52	13	1314 LEVEI		J	2	0.5		2	ST	0.5	P	S	16	
351	32				J	1			7		1	P	R	20	
316	57				J	1			0.65	QZ	2	P	R	20	
350	73				J	1			7	CX	1	P	S	12	
023	89				J	3	0.5		0.65		1	P	S	12	
324	63				J	1			0.65	QZ	0.5	P	V	20	
174	87				J	4	0.15		7	QZ	10	U	S	8	
104	51				J	1			0.65			P	S	12	
034	15				J	4	0.3		2			P	S	12	
349	80				J	1			2	QZ	2	P	V	20	
051	10				F	1		20		QZ	10	U	S	12	
294	36				J	1			2	ST	2	P	R	16	SPLAY OFF OF ABOVE
059	90				J	2	0.3		2		0.5	P	S	12	
343	36				J	2	0.5		0.65	CX	2	U	S	8	
258	73				J	2	0.7		2		0.5	P	V	20	
339	34				J	2	0.1		0.65		0.5	P	S	8	
319	54				S-V	1			7	QZ	20	P	S	12	
056	85				J	2	1.5		0.65		0.5	P	S	8	
032	70				S-V	2	1		2		0.5	S	S	12	
066	89				J	3	1.5		0.65	ST	0.5	P	S	16	
327	50				S-V	1			0.65			P	S	8	
332	56				S-V	1			2			P	S	12	
083	87				J	3	0.6		2	ST		P	S	12	
233	12				J	1		15				P	S	12	
157	64			0	J	2	0.3	0.5	0.2		0.5	S	S	6	
231	59			0	J	3	0.1		0.75		0.5	U	R	16	
230	70			1.8	J	3	0.3		3.5		0.5	S	S	8	
254	86			2.4	J	2	0.2		0.3		0.5	I	S	16	
210	21			2.4	J	1			1		0.5	P	R	10	
275	86			4.2	J	2	1		1	CX	5	P	S	8	
243	65			4.2	J	1			0.5		0.5	S	R	20	
307	52			4.8	J	1			5		0.5	C	R	20	SHOWS UP IN BACK
326	87			6.6	J	2	1.5		2		0.5	P	S	6	
172	18			7.2	J	1			0.5		0.5	P	S	8	
117	18			9	J	1			3		0.5	S	S	10	
156	86			9	J	2	0.1		1.5		1	P	R	8	
219	63			10.8	J	1			2	CX	1	C	R	14	
270	49			11.4	J	1			3		0.5	U	R	20	
217	63			12.6	C				3.5		0.5	P	S	6	FELSIC DYKE
050	76			15	J	3	0.5		0.5		1	C	S	12	
314	56			15	J	2	0.3		0.5		0.5	I	R	20	
002	83			15.6	J	1			0.4		0.5	P	R	8	
056	11			16.2	J	2	0.75		3		0.5	P	S	6	BLACK STAIN, WEDGE FORMING
175	84			16.2	F	2	5		3	FG	1	C	S	8	WEDGE FORMING
296	74			16.2	J	1			2		0.5	I	R	20	WEDGE FORMING
289	70			16.2	J	1			1.5	CX	2	S	S	14	DAMP
144	16			18.44	J	1			0.75		0.5	U	R	20	FLAT STUCTURES IN BACK
352	79			19	J	3	0.3		1.5	CX	1	P	S	10	
068	49			20.12	J	2	0.8		2	CX	1	I	R	20	WEDGE FORMING
021	89			20.12	J	1			1.2		0.5	P	S	10	WED
182	90			21.8	JV	2	0.8		1.2		3	P	S	6	DAMP, WHITE INFILL
077	76			22.92	J	1			1.2	CX	2	P	S	6	
231	22			22.92	J	3	0.5		2		1	P	S	6	ALSO IN BACK

StrikeR (°)	Dip (°)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
045	79			22.92	J	4	0.3		4	ST	5	P	S	12	
086	51			25.16	J	2	0.3		2.5	CX	1	P	S	8	CURVED AT BACK
066	63			26.28	J	1			0.4	ST	1	P	S	8	
016	87			27.4	JV	1			7	QZ	30	U	S	12	DRIFT SCALE
096	50			27.96	J	1			4	CX	2	I	R	20	
164	63			29.64	J	4	0.15		2		4	P	S	4	
138	21			31.32	J	3	0.08		1.5		0.5	P	S	6	END DYKE IN BACK
009	73			32.44	JV	1			4	QZ-CX	1	I	R	20	DAMP IN BACK
154	33			33	J	1			0.5		0.5	I	R	20	
184	21			34.12	J	1			1		0.5	U	S	12	FLAT STRUCTURE IN BACK
065	48			35.24	J	1			3		0.5	C	R	20	
021	46			35.24	J	5	0.1		2	CX	2	I	R	20	
203	44			35.84	J	5	0.1		2		1	I	R	14	
192	66			36.44	J	2	0.2		1.5	CX	2	P	S	6	
353	73			37.64	J	1			2	CX	0.5	S	R	14	
092	69			37.64	J	1			0.4		0.5	S	R	18	WEDGE FORMING
242	49			37.64	J	2	0.5		0.4		0.5	C	S	10	WEDGE FORMING
184	70			38.84	J	3	0.7		4	CX	3	C	S	6	
025	17			39.44	J	2	0.2		0.3		0.5	S	S	12	
232	81			39.44	J	1			4	ST	1	U	S	18	MIGHT BE DYKE CONT
291	21			41.24	J	1		4	0.7		0.5	P	S	8	
210	42	14	RAMP	41.84	J	1			4	ST	0.5	U	S	10	DAMP
121	17			44.24	J	1			0.25		0.5	P	S	6	
209	38			44.24	J	1			2	CX	2	C	S	10	
075	89			46.04	J	1			0.75	ST	0.5	P	R	8	WEDGE FORMING
225	58			46.04	J	2	0.6		1	ST	0.5	P	R	8	WEDGE FORMING
151	09			46.64	J	2	0.4		0.4		1	U	R	14	
341	89			49.04	F-C	1			4	CX	250	U	S	14	INFILL HAS SULPHIDES
121	21			50.24	J	4	0.3	4	4	QZ	0.5	P	S	6	
326	24			53.84	J-V	1			10	QZ	10	U	S	10	OFFSET VEINS
120	26			54.44	J	6	0.15		2		0.5	P	S	6	
290	29			56.84	J-V	1			1.5	QZ	10	U	R	10	
325	19			59.08	J	2	0.5		0.5		0.5	S	S	16	SEEMS BLOCKIER
066	60			60.2	J	2	1.2		1.5	CX	2	I	R	20	SEEMS BLOCKIER
054	32			63	J-V	1			2.5	QZ	1	U	R	20	SEEMS BLOCKIER
297	90			65.8	J	3	0.6		3	CX	2	P	S	8	
351	22			67.48	J-V	2	0.1		2	QZ	60	P	S	12	6 CM VEIN
184	89			69.16	J	1			0.3	CX	40	I	S	12	
250	26			69.72	J	2	0.3		1	ST	1	P	S	6	
135	37			70.84	J	2	0.1		0.5		0.5	P	S	10	
346	18			74.2	J	1			10	ST	0.5	U	S	10	DRIPPING HERE
153	85			78.12	J	1			1.5		1	P	S	8	FLAT STRUCTURES
239	04			79.24	J	2	0.1		0.4		0.5	P	S	6	
075	59			84.28	J	1			1	CX	3	I	S	8	
104	69			85.4	J	4	0.1		1.5	CX	6	P	S	12	
051	23			89.88	J	1			3	CX	8	U	R	20	
322	27			92.12	J	4	0.15		0.5		0.5	I	R	18	
130	69			92.12	J	2	0.3		0.2		2	S	S	8	
026	03			94.92	J	4	0.2		0.75		0.5	S	P	6	
043	57			94.92	J	2	0.2		0.5		0.5	S	P	8	FLAT STRUCTURE
048	06			96.04	J	1			1.5	CX	1	S	P	12	YELLOW CX
319	60			99.4	J	1			3	ST	3	R	I	20	
289	36			100	J	2	0.4	4		CX	1	U	R	20	
185	74			100.6	J-C	1		4		CX	10	U	R	18	
184	41			101.8	J	4	0.5	1			0.5	P	S	6	
095	11			104.2	J	2	0.1	0.1			0.5	S	S	8	
175	87			104.2	J	4	0.1	0.5			0.5	P	S	4	
022	83			106	J-V	1		4		QZ	20	P	S	8	
267	49			107.8	J	3	0.15	0.5		SM	2	I	R	20	
205	73			108.4	J	5	0.15	1			0.5	P	S	4	
106	68			110.8	J	1		0.5			0.5	P	R	12	
141	12			112.6	J	1		0.7		ST	0.5	I	R	20	
224	67			112.6	J	2	0.2	1		CX	1	I	R	16	
021	71			113.2	J	4	0.05	0.3			0.5	U	R	10	
163	74			113.8	J-C	2	0.1	4		CX	1	P	S	4	DAMP
090	54			117.4	J	1		2.5		ST	0.5	U	R	14	
025	62			118.6	J	1		4			1	P	S	6	
203	74			118.6	J	2	0.5	1		ST	0.5	S	S	10	
169	57			121.6	J	1				ST	0.5	U	R	14	PERSISTENCES IN BACK
152	78			124.6	J	1		4	6	BX	15	C	R	10	DAMP
053	05			127.6	J	1		0.7			0.5	U	S	6	
338	31			127.6	J	1		0.35			0.5	C	R	10	
204	90			0	J	1		3	0.5		0.5	P	S	6	
000	64			0	J	1		0.3	0.1		0.5	C	S	8	STAINED
135	45			0	J	1		0.2	0.1	ST	0.5	U	R	10	
209	88			0	J	1			0.1	ST	0.5	P	R	8	
307	50			2.24	S-J	1		0.2	0.1	ST	0.5	C	K	6	SHEAR - SLICKS
206	84			2.24	S-J	3	0.3	3	2	ST	0.5	P-U	S	8	BLOCKY, ALTERED
343	89			2.8	S-J	2	0.25	0.2	0.1	ST	0.5	P	S	6	ALTERED, SHEARED
105	44			3.36	J	1		2.5	3	ST	0.5	U	R	20	IN WALL AND BACK,
224	60			5.04	J	1		0.1	0.2	ST	0.5	U	S	10	SMALL WEDGE
050	44			5.04	J	1		0.2	0.15	ST	0.5	P	R	10	SMALL WEDGE
251	63			5.04	J	4	0.075	0.1	2.5	ST	0.5	S	R	14	REPETITIOUS
003	76			6.72	J	1		0.2	0.2	ST	0.5	C	S	8	
141	83	15	1350 LEVE	9.52	F	1		5	15	FG	10	P	K	4	WEDGE FAILURE
000	88			10.08	F	1		3	0.2	FG	5	U	S	8	
268	73			10.08	J	4	0.1	1	0.3	ST	1	U	S	20	
162	81			10.64	F	1		3	1.5	FB	100	P	S	8	AT ? 0009
071	71			11.76	J	1		0.2	0.1	ST	0.5	P	R	6	
127	76			12.88	J	1		1	0.2	ST	1	U	R	20	
097	88			14.56	J	1		0.3	0.2	ST	1	C	R	12	
186	85			15.68	J	1		1.2	0.5	ST	1	C	S	8	
190	67			10.64	S	3	0.35	1	10	FG-BX	15	P	U	16	
185	64			11.76	J	1		0.3	0.2		7	S	R	16	
127	45			12.32	J	1		0.2	0.1		1	U	S	8	
340	88			12.88	J	1		0.5	0.1		1	P	S	10	
124	67			13.44	J-V	2	0.3	4	0.1	BX	70	U	R	14	
137	90			14	J	1		0.4	0.1	ST	1	U	R	20	
044	57			1.12	J	1		0.2	0.25		0.5	P	S	10	SLIGHT STEPS
115	86			1.12	J	1		0.15	0.15		0.5	C	S	8	
121	11			1.12	J	2	0.05	0.1	0.2	ST	0.5	U	R	20	
237	55			2.24	J	2	0.5	0.3	0.3	ST	0.5	U	R	20	
247	35			2.8	J	2	0.15	0.1	0.6	ST	0.5	U	R	20	
245	65	16	1350 LEVE	2.24	J	1		0.2	0.1	ST	0.5	U	S	12	
229	44			3.92	J	3	0.05	0.1	2	ST	0.5	P	S	6	
290	75			5.04	J	4	0.05	0.2	1	ST	0.5	U	R	16	REPITITIOUS LOCALLY
155	28			6.16	J	1		0.1	0.2	ST	0.5	P	S	8	
055	74			6.72	J	2	0.05	0.1	0.1	ST	0.5	U	S	6	
123	61			6.16	J	1		0.1	0.2	ST	0.5	U	S	20	
103	74			5.6	J	1		0.2	0.2	SA	2	U	R	12	
284	61			0	J			0.4	0.1		0.5	U	S	16	
163	49			0	J	4	0.1	0.2	2	CX	1	C-U	R	8	REPETITIOUS, PERSISTENT
191	86			0	J	1		4	4	CX	10	C	R	8	SEE ON WALLS & BACK
041	87			1.12	J-V	1		2	3	QZ	5	C	S	6	
026	86			1.12	S-V	1		4	3	QZ	30	C	S	6	
163	66			1.68	J	1		0.2	2	ST	0.5	P	R	10	SUBPARALLEL TO TUN
021	72			2.24	J	1		0.75	0.1	ST	0.5	U	S	8	
253	33			2.8	J	4	0.1	0.2	0.1		0.5	P	S	6	
167	59			4.48	S	3	0.2	0.5	5	FG	20	I	R	14	ALTERED ZONE
320	62			4.48	J	1		0.5	3		10	I	R	20	CONJUGATE TO SHEAR
176	58			5.04	J	2	0.3	0.25	0.75	ST	1	U	S	8	
002	84			5.04	J	1		0.3	0.2	ST	0.5	P	S	8	
171	59			7.28	F	1		1.5	4	FB	60	S	S	14	
322	38			7.28	J	4	0.1	0.1	0.4		0.5	U	S-R	8	LOCALIZED
272	46			8.96	J	2	0.15	1.5	0.1		0.5	P	S	6	
095	76			10.08	J	2	0.2	0.75	0.3		0.5	C	S	10	
018	90			10.64	F	1		4	4	FB	10	P	S	18	SEE ON BOTH WALLS
173	65			11.2	S	2	0.2	0.5	0.5	CX	2	P	S	8	SPLAY
095	77			11.2	J	1		0.5	0.1	QZ	0.5	P	R	6	
250	90			11.2	J	1		0.75	0.2		0.5	P	R	8	OLD DHS HERE, 1 PL
252	82			11.76	J	1		1	0.2		0.5	P	S	8	
343	89			12.32	J	1		0.4	0.4		0.5	P	S	8	
196	71			14	S	1		2.5	4	BX	200				SHEAR ZONE, ALTERED
196	72			15.68	S	1		2..5	4			P	S		OTHER SIDE OF SHEAR
175	90			16.24	S	1		1	0.1	CX	1	P	S	6	
283	44			16.8	J	4	0.35	0.3	4	CX	1	P	R	14	
155	49			17.92	S-V	1		1	5	FB	30	U	S	10	SLIDING FAILURE
166	59			20.72	J-V	4	0.3	0.3	5	QZ	1	U	R	14	SOME STEPS

StrikeR (˚)	Dip (˚)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
055	32			20.72	J	1		0.1	0.1			S	P	4	
013	81			21.84	J	2	2	0.75	0.6			S	P	8	SLIGHT CURVE
257	87			23.52	J-V	1		0.2	0.1	QZ	1	S	R	8	
114	28			23.52	J-V	1		0.2	0.2	QZ	1	S	S	10	OLD DHS
015	61			25.2	J-V	1		1	0.2	QZ	1	P	S	6	
264	35			26.32	J	2	0.7	0.25	0.4		0.5	U	R	10	
226	82	17	RAMP 1314 LEVEL	26.88	J	7	0.07	0.1	0.05		0.5	P	R	8	
203	56			28	S	1		7.5	4	FG	10	P	S	8	SHEAR ZONE, ALTERE
231	19			28.56	J	2	0.07	0.6	0.1		1	U	R	14	
168	81			29.12	J	1		1.5	0.4		0.5	I	R	20	
265	48			30.24	J	1		0.3	0.2		0.5	P	S	10	
168	71			30.8	J	3	0.1	0.3	0.3		1	U	R	14	
013	76			30.8	F-V	1		5	5	FB	100	U	S	6	CONTINUOUS ACROSS
047	86			32.48	J	3	0.1	0.2	0.07		0.5	C	R	12	
325	09			33.04	J	1		0.05	0.15		0.5	C	R	12	
134	64			33.6	J	1		0.4	0.5		0.5	S	R	16	ORTHOGONAL, WEDGE
305	63			34.16	J	1		0.4	0.5		0.5	S	R	16	ORTHOGONAL, WEDGE
218	73			35.84	J	2	0.25	0.5	0.1		0.5	P	R	10	NEAR DH89-252
207	84			35.84	J	1		4	4		0.5	U	S	12	
184	68			36.96	S	1		5	5	FB	100	U	S	8	SHEAR ZONE, ALTERED
205	89			35.84	F	1		5	5		0.5	C	S	8	SHEAR ZONE, ALTERED
100	63			34.72	S	2	10	2	2	FB	100	P	S	8	TOPPLING FAILURE
237	63			36.4	F	2	0.4	6	6	FG	10	U	S	8	ACROSS BOTH WALLS
185	33			36.4	J	2	0.6	0.1	0.3		0.5	P	S	6	
275	80			37.52	J	1		0.4	0.3		0.5	S	R	14	
230	73			38.64	F	5	0.05	6	6	FB	100	U	S	12	FZN (FAULT ZONE),
192	73			40.32	J	1		1.5	0.1		0.5	P	S	6	
262	81			42	J	1		0.4	0.2		0.5	I	R	8	?R-13 (?)
196	89			42.56	S-V	1		4	2	QZ-FG	10	U	S	6	
167	64			43.12	J	1		0.25	0.2	ST	0.5	P	S	6	
200	29			43.12	J-V	4	0.5	2	0.1	QZ	1	U	S	10	
163	61			44.8	J	4	2	4	3	BX	1	C	R	14	LISTED AS JOINT,
193	81			46.48	S	2	1	4			1	P	S	8	CANNOT TRACE IN BACK
155	67			47.04	S	1		3	1	ST-BX	2	U	S	8	SHEAR, SLICKS
053	26			47.04	J	6	0.5	5	0.1		0.5	P	S	6	VERY COMMON
137	72			48.16	J	1		0.2	0.5		1	U	S	6	VERY COMMON
190	82			50.4	J	4	0.3	3	0.2		0.5	P	S	6	VERY COMMON
120	74			50.96	F	1		4	4	FB	3	I	R	14	CONTINUOUS ACROSS
167	69			52.64	S	2	0.1	4	4	FB	0.2	U	R	14	SHEAR ZONE, ALTERE
110	81			54.32	S	2	0.3	3	2	FG	1	U	S	8	WET HERE, GROOVED,
162	85			2.24	J	4	0.2	2	2	ST	0.5	P	S	6	PILLAR ON DOWNRAMP
050	28			4.48	J	3	0.5	0.1	0.3	ST	0.5	P	R	8	
334	80			3.36	J	6	0.2	1	0.3	FG	0.5	P	R	8	STAINED
190	58			3.92	J	2	2	1	0.25	ST	0.5	U	R	7	
204	40			3.36	F			4	30	FB		P	S-K	5	SHEAR ZONE
005	85	18	1350 LEVEL	4.48	J	3	1.05	0.4	0.1	ST	0.5	P-U	S	7	SPACING VARIES CONSIDERABLY
345	60			5.6	J	3	0.4	0.4	0.075	ST	0.5	P	R	7	
345	80			9.52	J	2	0.25	0.1	0.05	ST	0.5	P	R	7	FAIRLY MASSIVE ROC
345	18			10.08	J	4	0.25	0.2	0.05	ST	0.5	P	R	9	
345	84			11.2	J	3	0.3	0.2	0.05	ST	0.5	P	R	7	DISCONTINUOUS
334	76			14	J	2	0.1	1	0.15	ST	0.5	P	R	7	LOCALIZED
204	72			3.36	J	2	1.25	1	0.25	ST	0.5	P	S	5	WET
335	80			3.92	J	1		1	0.75	ST	0.5	U	R	9	
132	72			6.72	J	8	0.175	2.5	2.5	ST	3	P	S	5	REPETITIOUS (FOLIATION)
325	65			17.36	J	1		0.2	0.2	ST	0.5	P	R	7	
070	55			30.8	J	4	0.3	0.25	0.1	ST	0.5	P	R	7	
188	65			44.8	J	1		3	1	ST	0.5	U	S	9	STRIKE IS ESTIMATE
295	85			60.48	J	1		0.7	0.2	ST	0.5	P	R	9	
325	80			81.2	J	3	0.2	4	7	ST	0.5	C-U	S	7	WET
328	68			109.76	J	1		0.8	1.5	ST	0.5	C	R	15	WET; NEAR 3 OLD DH
240	45	19	1350 LEVEL	109.76	J	2	1	2	0.4	ST	0.5	C	R	9	
343	60			110.88	J	2	0.75	0.3	0.5	ST	0.5	P	S-P	9	
320	65			112	J	1		1	0.8	ST	0.5	P	S	7	NEAR OLD SURVEY POINT
140	20			114.24	J	1		3	15	ST	0.5	U	S	4	STRIKES PARALLEL TO DRIFT
140	30			115.92	J	1		0.5	4	ST	0.5	U	S	4	
315	38			115.92	J	2	0.75	1	0.2	ST	0.5	C	R	7	
335	75			118.72	J	3	0.35	1	0.8	FG	3	P	S	7	STAINED
284	66			119.84	J	3	0.3	0.5	0.3	ST	0.5	C	R	13	NEAR OLD DHS
130	35			119.84	J	5	0.05	0.2	0.6	FG	2	P	S	7	LOCAL TO BACK
155	72			122.08	J	4	1	3.5	0.5	FG	3	U	S	9	AT ?0009
018	40			0	J	1		1.5			0.5	I	R	20	
127	88			1.8	J	3	0.2	2		ST	1	U	S	12	
033	76			3	J	1		3		ST	4	C	R	18	
247	76			5.4	J	1		1			0.5	U	S	16	
031	61			5.4	J	1		3.5		BX	5	I	R	20	
115	42			6.6	J	2	0.05	0.1			0.5	P	R	12	
034	66			7.2	J	2	0.3	0.2	0.05		0.5	U	R	20	
211	51			8.4	J	1		0.3			0.5	P	S	10	
166	78			8.4	S	1		1			1	S	S	12	
131	39			8.4	J	2	0.6	0.5			1	U	R	20	
136	34			9.6	J	2	0.5	1		ST	1	U	R	20	
194	47			11.4	J	3	0.3	0.8			0.5	P	S	12	
184	33			11.4	J	2	0.2	0.4		ST	1	P	R	16	
112	28			13.2	J	2	0.5	1			0.5	U	R	20	
044	33	20	1350 LEVEL	15.6	J	3	0.5	0.6		ST	1	I	R	20	
081	59			16.8	J	2	0.4	1			0.5	P	R	16	
038	73			17.4	J	2	0.25	1		CX	0.5	U	R	18	
074	29			17.4	J	3	1	0.4			0.5	P	R	16	ALSO APPEARS IN BACK
331	57			18	J	3	0.3	0.8			1	I	R	16	
025	58			19.2	J	2	0.4	0.6			0.5	P	S	10	
233	46			19.2	J	1		1			0.5	P	R	18	
099	86			20.4	J	2	1.5	1.5				P	R	18	
006	75			20.4	J	2	0.15	0.7			0.5	P	S	10	
155	24			21	J	1		0.1	3		0.5	P	S	10	
218	77			22.2	J	1		0.4				S	R	20	CREATE SMALL WEDGE
115	74			22.2	J	1		0.6				I	R	20	CREATE SMALL WEDGE
150	59			24	J	3	0.4	0.7			0.5	I	S	12	
059	54			24.6	J	2	0.1	1		CRX	1	P	S	8	
232	76			24.6	J	1		3				P	S	10	
200	89			0	J	1		1.5		ST	2	I	R	18	
080	49			0	J	2	1	4			0.5	P	S	10	
196	58			1.8	J	3	0.2	0.4				P	S	8	
296	86			1.8	J	1		4				U	S	12	DEFINES WALL
105	23			4.2	J	1		0.3		CX	1	U	R	18	
084	59			4.2	J	2	0.15	1		CX	1	I	R	20	
205	68			4.8	J	1		4		BX	10	C	S	12	DAMP
247	53			6.6	J	1		2		ST	2	U	S	12	DAMP
280	71			7.8	J	2	0.4	0.8			0.5	U	S	15	
354	70			7.8	J	1		4		CX	5	U	S	15	
096	58			7.8	J	2	0.5	0.3				I	R	16	
086	72			7.8	J	1		1		ST	1	I	R	18	
314	80	21	1350 LEVEL	7.8	J	2	0.3	4		CX	5	I	R	20	
103	39			7.8	J	2	0.1	0.4		CX	2	P	S	10	
054	84			7.8	J	2	0.4	4		ST	1	U	R	18	
296	59			7.8	J	1		1			0.5	U	S	10	
315	66			8.4	J	1		3		ST	1	P	S	12	
005	81			8.4	J	4	0.05	3			0.5	P	S	12	
186	55			9.6	J	1		4		CX	5	U	R	6	
202	87			9.6	J	3	0.4	4		ST	1	U	S	12	
060	50			9.6	J	3	0.1	0.1	3		0.5	C	S	10	
152	66			11.4	J	2	1	0.6		ST	1	P	R	18	CREATE BLOCK
061	76			11.4	J	4	0.3	2.5		ST	1	S	S	16	CREATE BLOCK
061	16			11.4	J	2	0.6	0.3		ST	1	P	S	12	CREATE BLOCK
312	73			11.4	J	2	0.2	2				P	S	12	
026	73			0	J	2	0.2	4		CX	8	U	R	18	DAMP
334	52			0.6	J	1		0.5			0.5	P	R	16	
110	38			1.2	J	3	0.5	2		ST	1	U	R	20	APPEARS IN OPPOSITE WALL
086	45			1.2	J	1		3.5			0.5	I	R	20	APPEARS IN OPPOSITE WALL
070	36			1.2	J	1		0.5			0.5	S	S	12	
007	85			1.2	J	2	0.4	0.25			0.5	P	S	10	
042	33			1.2	J	2	0.05	1			0.5	S	S	12	
089	38			3	J	4	0.15	0.5		SA	1	P	R	14	
072	53			3.6	J	2	0.25	1.5		ST	1	P	S	10	
075	45			4.8	F-V	1		4	6	QZ-FB	150	U	S	15	PINCHES OUT IN BACK
029	74			4.8	J	2	0.15	4	4	ST	1	P	S	12	FAULT PARALLEL
016	74			5.4	J	3	0.1	2.5		ST	1	U	S	10	CONNECTS WITH ABOVE
021	70			6	J	2	0.15	3		CX	2	C	S	12	
116	49			6	J	3	0.15	2			0.5	P	R	18	

StrikeR (˚)	Dip (˚)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
235	74			7.2	F-V	1		4	5	QZ-FB	80	U	R	18	RIGHT SIDE OF DRIFT
212	74			7.2	F-V	1		4	5	QZ-FB	60	U	S	16	SAME FAULT, LEFT SIDE
110	48			7.8	J	2	1	0.3		CX	1	I	R	20	
004	69			8.4	J-V	3	0.25	4		QZ-FB	5	C	R	16	
333	56			9	J	1		1.5		ST	1	I	R	20	
134	74			9	J	1		1			0.5				
028	60			10.2	J-V	2	0.2	1.5		Q	5	P	S	8	
344	61			10.2	J	3	0.5	1		ST	3	U	S	10	
321	56			11.4	J	2	1.5	1			0.5	P	R	16	PARALLEL TO SET
126	45			11.4	J	3	0.2	1.5			0.5	P	R	16	
114	44			12	J	1		0.5			1	P	R	16	SAME STRUCTURE
358	72			12.6	F	1		3.5	7	FB	80	P	R	16	
091	23			12.6	J	5	0.2	0.4		ST	1	P	S	10	
047	24			13.2	J-V	2	0.4	1	3	QZ	10	P	S	10	SHOWS IN BACK
059	49			14.4	J-V	1		1.5		QZ	6	P	R	16	
340	35			15	J	1		0.7			0.5	U	R	18	
098	36			16.8	J	2	0.15	2			0.5	P	S	10	
223	88			17.4	J	5	0.1	0.3		ST	1	P	S	8	CREATES COLUMNAR BLOCKS
140	24			17.4	J	3	0.4	3		ST	1	U	R	20	
121	46			19.2	J	2	0.5	0.5		ST	1	U	S	8	
039	87			19.8	J-V	1		4	2.5	QZ	40	C	S	12	PINCHES OUT IN BACK
349	69	22	1350 LEVEL	22.8	F-V	1		4	7	FB	60	P	R	16	DEFINES WALL; END
042	85			22.8	J	1		4			0.5	P	S	8	
195	76			22.8	J	1		4			0.5	P	S	10	
054	75			24	J	1		4			0.5	P	S	10	
074	45			24.6	J	2	1	3			1	P	S	10	
241	89			25.2	J	1		0.5		CX	4	P	R	16	
064	62			25.8	J	5	0.1	3			0.5	P	R	16	DAMP
263	86			26.4	J	1		1.5		ST	2	P	S	12	
060	61			26.4	J	6	0.15	2			0.5	P	S	6	
017	60			28.2	J	2	0.4	6	4	ST	1	P	S	10	IN LEFT WALL AND BACK
336	54			28.2	J	1		3	4		0.5	P	S	12	DEFINES WALL
071	46			28.2	J	1		3.5		BX	25	C	R	16	INFILL ALTERED HOST
100	60			28.2	J	1		2			0.5	P	S	10	
088	74			29.4	J-V	2	0.04	3		QZ	3	U	S	12	
020	74			30	J	1		0.8		ST	4	P	R	16	
328	63			30	J	2	0.4	0.3			0.5	I	R	20	
062	42			33	J	1		1.5			0.5	P	R	18	SHOWS IN BACK, TOO
058	72			33	J	2	0.8	2		CX	3	U	R	15	
015	69			33	J	2	0.6	0.8		ST	1	S	R	20	DAMP
045	70			33	J	5	0.3	6		ST	2	P	R	18	DEFINES RAISE
090	41			34.2	J	4	0.2	1			0.5	P	R	18	
037	70			34.2	J	2	0.1	4		CX	10	C	S	12	
033	81			36	J	4	0.1	1.5			0.5	P	S	8	
171	76			36.6	J	1		2		ST	2	I	R	20	
312	75			36.6	J	1		1				I	R	20	
122	74			37.2	J	3	0.3	3.5		ST	8	S	R	20	DEFINES WALL
015	73			37.8	J	2	1	3.5		ST	8	U	S	12	
017	63			39	J	3	0.2	4		ST	10	S-C	R	20	
017	76			41.4	J	1		2				P	R	16	
058	62			42.6	J	1		0.3			0.5	S	R	20	DIPS OUT OF BACK
332	48			43.8	J	2	0.4	0.15	1.5		0.5	U	R	15	
045	28			43.8	J	1		0.5		CX	4	P	R	16	
200	74			43.8	S	2	0.1	0.2			0.5	S	S	12	DIPS OUT OF BACK
315	42			44.4	J	1		0.5		ST	1	P	S	6	
015	67			45	J	1		0.5			0.5	P	S	10	
324	86			45.6	J	1		1				I	S	12	
095	64			46.2	J	2	0.05	0.6		ST	1	P	R	16	
272	70			1.12	J	6	0.15	4	0.3	ST	0.5	P	S	4	
326	25			1.68	J	3	0.15	0.1	0.1	ST	0.5	S	R	16	LOCALIZED
040	68			2.24	J	3	0.4	1	0.3	ST	0.5	P	S	8	
330	32			2.24	J	2	0.3	0.15	0.1	ST	0.5	P	R	6	
230	50			2.24	J	2	0.05	0.1	0.05	ST	0.5	U	R	16	LOCALIZED
322	72			3.92	J	2	0.75	0.6	0.1	ST	0.5	P	S	6	
150	85			5.04	J	6	0.3	1	0.2	ST	0.5	C	R	12	CURVE FLATTER
270	32			6.72	J	3	0.3	0.05	0.5	ST	0.5	I	R	16	
060	08			8.96	J	4	0.2	0.2	2	ST	0.5	P	S	5	
330	74			9.52	F	1		4	3	FB	800	U	S	7	FAULTED GOUGE & BR
019	83			0	J	1		4		ST	9	U	S	12	
185	83			0	J	1		4			0.5	C	S	12	SAME STRUCTURE
049	56	23	NUB	0	J	2	0.05	0.6			0.5	P	S	10	
344	57			0	J	1		0.1		ST	1	I	R	20	
103	66			0	J	3	0.05	1.2		ST	1	C	S	12	
194	76			0.6	J	1		4	3.5		0.5	U	S	12	SAME STRUCTURE OM
261	62			1.2	J	1		1				I	R	16	
209	85			1.2	J	1		4	1.5	CX	1	C	S	12	
186	85			1.8	J	1		4			0.5	C	S	12	
082	63			1.8	J	4	0.5	0.6	5	CX	1	S	R	20	DAMP; SEMI-PARALLEL
074	78			3.6	J	4	0.5	0.7	3		0.5	U	R	20	SEMI-PARALLEL DIP
234	44			3.6	J	2	0.2	0.5	2		0.5	I	R	18	
119	86			3.6	J	1		0.5			0.5	P	S	12	
072	80			3.6	J	1		4	3			S	S	18	VERY LARGE STEPS
247	31			4.8	J	3	0.6	0.1	2.5		0.5	S	S	10	
174	32				J			2		ST	1	U		16	
228	24				J			0.5				P		12	
270	77				J			2			0.5	P		8	
126	46				J			4	4	BX	5	P		20	
002	48				J			0.5			0.5	P		8	
306	84				J			2			2	P		16	
201	23				J			0.5			0.5	P		20	
077	82	24	UPPER RAMP		J			0.5		BX	15	U		16	
142	64				J			0.5			2	U		14	
207	26				J			2			0.5	U		12	
013	75				J			0.2		ST	0.5	P		18	
021	54				J					ST		P		12	
080	89				J			0.5		SM	0.5	P		15	
064	65				J			0.5				P		12	
289	88				J			2		SA	1	C		12	
002	63				J			2		CL	1	C		12	
274	32			1.12	J			3		CX	10	P		16	
030	69			1.12	J			0.5		ST	0.5	P		12	
049	67			2.24	J			0.5			0.5	P		14	
109	22			2.8	J			4.5		CX	10	P		12	APERTURE VARIES
066	72			3.92	J			0.5		SM	0.5	C		12	
027	75			5.6	J			2			1	P		14	
034	56	25	UPPER RAMP	6.16	J			0.5			0.5	P		8	
046	80			6.16	J			0.5		ST	2	P		8	
068	67			6.16	J			2		ST	0.5	U		12	WHITE STAINING
180	83			6.72	J			2			1	P		20	STRIKE UNCERTAIN
306	87			6.72	J			2		SM	2	P		16	WHITE SILT
017	80			7.84	J			2			0.5	P		8	
283	74			7.84	J			2			0.5	P		16	
136	36			10.08	J			2		CX	2	P		12	
193	26			0	J			0.5			0.5	I	S	12	
160	88			0.56	J			1.5			1	P	R	18	
194	89			1.12	J			1			1	U	R	20	
057	64			3.36	J			4			0.5	I	R	20	
237	56			4.48	J			0.8			1	P	R	16	
081	33			6.16	J			0.15		ST	1	P	R	16	ORANGE STAINING
124	40			7.28	J			2.5			0.5	U	R	20	
301	11			12.32	J			0.15			0.5	P	S	8	
243	15			16.8	J			0.2			0.5	P	S	12	
020	60			17.92	J-V			0.5		ST	1	P	S	12	
004	69			18.48	J			4		ST	2	P	R	16	
249	19			19.04	J			0.3			0.5	U	S	10	
071	64			19.04	J			3		CX	2	I	R	20	FORM WEDGE IN LEFT
270	79			19.04	J			0.2			0.5	U	R	20	RAMP_J1
350	57			22.96	J			2.5		ST	1	I	R	20	
194	45			22.96	J			0.3			0.5	U	R	20	
319	71	26	UPPER RAMP	25.76	J			2				I	R	20	CANNOT TELL APERTURE
326	51			27.44	J			1.5			0.5	S	R	18	
206	70			27.44	J			4		CX	1	U	R	16	
217	90			28	J			4		CX	4	U	R	16	
214	79			28.56	J			4		CX	2	C	R	20	
196	74			30.8	J-V			3		QZ	30	C	S	12	
057	67			32.48	J			3		CX	5	C	R	18	
010	65			33.6	J-V			2.5		QZ	1	C	S	10	CURVES SUBSTANTIAL
043	76			33.6	J			4		CX	1	C	R	16	WHITE INFILL

StrikeR (˚)	Dip (˚)	Traverse	Station	Distance (m)	Type	Number of Features	Spacing (m)	Dip Persistence (m)	Strike Persistence (m)	Infill Type	Aperture (mm)	Planarity	Roughness	Joint Roughness Coefficient (JRC)	Comments
056	80			35.84	J			4		CX	2	C	R	20	
084	26			39.2	J			4			0.5	C	R	20	
026	62			39.76	J			2.5			0.5	S	R	20	
027	42			40.88	J			1.5			0.5	U	R	16	
005	41			43.12	J	2	0.8	1.5		ST	1	P	S	12	REPEATS
014	51			44.8	J			3			0.5	U	S	12	
088	47			45.36	J			4	4		0.5	C	R	20	
101	54			45.92	J			1.5			0.5	C	S	12	
235	65				J										
330	35						2	5	5						VERY PERSISTANT
200	70														
200	75	27	PORTAL												
190	63														
275	70														
255	77														
110	85														

APPENDIX E
POINT LOAD TESTING

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-19	16.2	DIAMETRAL	140	61	∠ TO FABRIC	3.1	INVALID	0.79	0.86
DH-BGC12-19	15.97	DIAMETRAL	190	61	∠ TO FABRIC	4.1	INVALID	1.04	1.14
DH-BGC12-19	16.9	DIAMETRAL	200	61	∠ TO FABRIC	4.46	VALID	1.14	1.24
DH-BGC12-19	17.17	DIAMETRAL	100	61	∠ TO FABRIC	3.64	VALID	0.93	1.01
DH-BGC12-19	17.27	DIAMETRAL	110	61	∠ TO FABRIC	6.32	VALID	1.61	1.76
DH-BGC12-19	20.7	DIAMETRAL	170	61	∠ TO FABRIC	4.12	VALID	1.05	1.15
DH-BGC12-19	21.88	DIAMETRAL	145	61	NA	3.9	VALID	0.99	1.09
DH-BGC12-19	25.23	DIAMETRAL	180	61	NA	7.24	VALID	1.84	2.02
DH-BGC12-19	27.96	DIAMETRAL	180	61	∠ TO FABRIC	6.42	VALID	1.64	1.79
DH-BGC12-19	32.67	DIAMETRAL	120	61	∠ TO FABRIC	5.7	INVALID	1.45	1.59
DH-BGC12-19	34.74	DIAMETRAL	150	61	∠ TO FABRIC	8.44	VALID	2.15	2.35
DH-BGC12-19	38.09	DIAMETRAL	180	61	∠ TO FABRIC	11.4	VALID	2.90	3.18
DH-BGC12-19	40.16	DIAMETRAL	140	61	∠ TO FABRIC	7.28	VALID	1.85	2.03
DH-BGC12-19	43.18	DIAMETRAL	190	61	∠ TO FABRIC	6.52	VALID	1.66	1.82
DH-BGC12-19	47.14	DIAMETRAL	90	61	∠ TO FABRIC	13.08	INVALID	3.33	3.64
DH-BGC12-19	47.6	DIAMETRAL	200	61	∠ TO FABRIC	22.52	VALID	5.74	6.27
DH-BGC12-19	47.79	DIAMETRAL	135	61	∠ TO FABRIC	11	VALID	2.80	3.06
DH-BGC12-19	47.92	DIAMETRAL	140	61	∠ TO FABRIC	18.36	VALID	4.68	5.12
DH-BGC12-19	48.65	DIAMETRAL	145	61	∠ TO FABRIC	8.14	VALID	2.07	2.27
DH-BGC12-19	52.18	DIAMETRAL	195	61	∠ TO FABRIC	11.24	INVALID	2.86	3.13
DH-BGC12-19	53.57	DIAMETRAL	150	65	∠ TO FABRIC	4.54	VALID	1.16	1.26
DH-BGC12-19	57.56	DIAMETRAL	140	61	∠ TO FABRIC	5.78	VALID	1.47	1.61
DH-BGC12-19	61.74	DIAMETRAL	165	61	NA	14.3	VALID	3.64	3.98
DH-BGC12-19	64.7	DIAMETRAL	130	61	NA	13.02	VALID	3.32	3.63
DH-BGC12-19	67.57	DIAMETRAL	180	61	NA	17.08	VALID	4.35	4.76
DH-BGC12-19	69.11	DIAMETRAL	90	61	NA	2.84	INVALID	0.72	0.79
DH-BGC12-19	72.32	DIAMETRAL	140	61	NA	13.52	VALID	3.44	3.77
DH-BGC12-19	75.21	DIAMETRAL	90	61	NA	10.68	VALID	2.72	2.98
DH-BGC12-19	78.19	DIAMETRAL	175	61	NA	13.54	VALID	3.45	3.77
DH-BGC12-19	81.44	DIAMETRAL	120	61	NA	11.92	VALID	3.04	3.32
DH-BGC12-19	84.51	DIAMETRAL	140	61	NA	12.66	VALID	3.23	3.53
DH-BGC12-19	87.56	DIAMETRAL	150	61	NA	11.38	VALID	2.90	3.17
DH-BGC12-19	90.47	DIAMETRAL	115	61	NA	13.92	VALID	3.55	3.88
DH-BGC12-19	95.2	DIAMETRAL	175	61	∠ TO FABRIC	9.82	VALID	2.50	2.74
DH-BGC12-19	98.24	DIAMETRAL	195	61	∠ TO FABRIC	3.44	VALID	0.88	0.96
DH-BGC12-19	101.14	DIAMETRAL	120	61	∠ TO FABRIC	0.46	INVALID	0.12	0.13
DH-BGC12-19	105.86	DIAMETRAL	160	61	∠ TO FABRIC	10.4	VALID	2.65	2.90

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-19	107.19	DIAMETRAL	205	61	∠ TO FABRIC	7.38	INVALID	1.88	2.06
DH-BGC12-19	112.11	DIAMETRAL	120	61	NA	4.36	VALID	1.11	1.21
DH-BGC12-19	113.33	DIAMETRAL	120	61	∠ TO FABRIC	11.14	VALID	2.84	3.10
DH-BGC12-19	116.5	DIAMETRAL	130	61	∠ TO FABRIC	6.9	VALID	1.76	1.92
DH-BGC12-19	119.34	DIAMETRAL	110	61	∠ TO FABRIC	6.82	INVALID	1.74	1.90
DH-BGC12-19	123.57	DIAMETRAL	135	61	NA	24.94	VALID	6.35	6.95
DH-BGC12-19	128.72	DIAMETRAL	170	61	NA	10.92	VALID	2.78	3.04
DH-BGC12-19	133.83	DIAMETRAL	155	61	∠ TO FABRIC	7.06	VALID	1.80	1.97
DH-BGC12-19	134.8	DIAMETRAL	160	61	∠ TO FABRIC	16.82	VALID	4.29	4.69
DH-BGC12-19	137.2	DIAMETRAL	170	61	∠ TO FABRIC	11.44	INVALID	2.91	3.19
DH-BGC12-19	142.19	DIAMETRAL	120	61	∠ TO FABRIC	7.66	VALID	1.95	2.13
DH-BGC12-19	143.95	DIAMETRAL	120	61	∠ TO FABRIC	4.84	INVALID	1.23	1.35
DH-BGC12-19	148.2	DIAMETRAL	190	61	∠ TO FABRIC	13.06	VALID	3.33	3.64
DH-BGC12-19	151.36	DIAMETRAL	120	61	∠ TO FABRIC	10.5	VALID	2.68	2.93
DH-BGC12-19	154.19	DIAMETRAL	130	61	∠ TO FABRIC	6.16	INVALID	1.57	1.72
DH-BGC12-19	157.17	DIAMETRAL	200	61	NA	16.56	VALID	4.22	4.61
DH-BGC12-19	162.02	DIAMETRAL	110	61	NA	9.84	VALID	2.51	2.74
DH-BGC12-19	163.11	DIAMETRAL	210	61	NA	9.56	INVALID	2.44	2.66
DH-BGC12-19	166.63	DIAMETRAL	200	61	NA	7.4	VALID	1.89	2.06
DH-BGC12-19	169.9	DIAMETRAL	150	61	∠ TO FABRIC	6.5	VALID	1.66	1.81
DH-BGC12-19	172.72	DIAMETRAL	180	61	∠ TO FABRIC	15.14	VALID	3.86	4.22
DH-BGC12-19	177.49	DIAMETRAL	190	61	NA	28.94	VALID	7.37	8.06
DH-BGC12-19	180.56	DIAMETRAL	220	61	NA	9.06	VALID	2.31	2.52
DH-BGC12-19	182.03	DIAMETRAL	115	61	NA	17.64	VALID	4.49	4.91
DH-BGC12-19	185.06	DIAMETRAL	100	61	NA	14.12	VALID	3.60	3.93
DH-BGC12-19	189.54	DIAMETRAL	110	61	NA	20.6	VALID	5.25	5.74
DH-BGC12-19	191.89	DIAMETRAL	100	61	NA	20.86	VALID	5.31	5.81
DH-BGC12-19	195.74	DIAMETRAL	110	61	NA	23.76	VALID	6.05	6.62
DH-BGC12-19	198.1	DIAMETRAL	150	61	NA	18	VALID	4.59	5.02
DH-BGC12-19	200.11	DIAMETRAL	275	61	NA	8.96	INVALID	2.28	2.50
DH-BGC12-19	199.72	DIAMETRAL	145	61	∠ TO FABRIC	8.5	INVALID	2.17	2.37
DH-BGC12-19	199.86	DIAMETRAL	190	61	∠ TO FABRIC	25.8	VALID	6.57	7.19
DH-BGC12-19	203.35	DIAMETRAL	105	61	∠ TO FABRIC	6.94	INVALID	1.77	1.93
DH-BGC12-19	204.04	DIAMETRAL	145	61	∠ TO FABRIC	19.7	VALID	5.02	5.49
DH-BGC12-19	204.23	DIAMETRAL	200	61	∠ TO FABRIC	25.88	VALID	6.59	7.21
DH-BGC12-19	204.4	DIAMETRAL	140	61	∠ TO FABRIC	22.3	VALID	5.68	6.21
DH-BGC12-19	204.54	DIAMETRAL	130	61	∠ TO FABRIC	18.18	INVALID	4.63	5.07

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-19	204.66	DIAMETRAL	135	61	∠ TO FABRIC	26	VALID	6.62	7.24
DH-BGC12-19	207.96	DIAMETRAL	170	61	∠ TO FABRIC	34.12	VALID	8.69	9.51
DH-BGC12-19	210.6	DIAMETRAL	190	61	∠ TO FABRIC	23.78	VALID	6.06	6.63
DH-BGC12-19	213.74	DIAMETRAL	110	61	∠ TO FABRIC	18.46	VALID	4.70	5.14
DH-BGC12-19	218.48	DIAMETRAL	135	61	∠ TO FABRIC	25.2	VALID	6.42	7.02
DH-BGC12-19	221.37	DIAMETRAL	116	61	NA	34.06	VALID	8.68	9.49
DH-BGC12-19	223.54	DIAMETRAL	150	61	NA	22.64	VALID	5.77	6.31
DH-BGC12-19	227.64	DIAMETRAL	105	61	NA	19.4	VALID	4.94	5.41
DH-BGC12-19	233.72	DIAMETRAL	110	61	NA	6.94	VALID	1.77	1.93
DH-BGC12-19	238.48	DIAMETRAL	185	61	NA	18.32	VALID	4.67	5.10
DH-BGC12-19	239.32	DIAMETRAL	115	61	NA	0.22	INVALID	0.06	0.06
DH-BGC12-19	247.35	DIAMETRAL	70	61	NA	24.84	VALID	6.33	6.92
DH-BGC12-19	247.67	DIAMETRAL	190	61	NA	18.78	VALID	4.78	5.23
DH-BGC12-19	247.85	DIAMETRAL	110	61	NA	20.66	VALID	5.26	5.76
DH-BGC12-19	248.18	DIAMETRAL	195	61	NA	20.58	VALID	5.24	5.73
DH-BGC12-19	283.1	DIAMETRAL	135	61	NA	24.42	VALID	6.22	6.80
DH-BGC12-19	282.95	DIAMETRAL	150	61	NA	17.04	VALID	4.34	4.75
DH-BGC12-19	283.49	DIAMETRAL	165	61	NA	10.52	INVALID	2.68	2.93
DH-BGC12-19	283.66	DIAMETRAL	150	61	NA	26.1	VALID	6.65	7.27
DH-BGC12-19	283.8	DIAMETRAL	160	61	NA	19.2	VALID	4.89	5.35
DH-BGC12-19	248.9	DIAMETRAL	140	61	∠ TO FABRIC	30.78	VALID	7.84	8.58
DH-BGC12-19	254.41	DIAMETRAL	110	61	NA	15.22	VALID	3.88	4.24
DH-BGC12-19	260.2	DIAMETRAL	165	61	NA	21.52	VALID	5.48	6.00
DH-BGC12-19	262.68	DIAMETRAL	120	61	NA	19.46	VALID	4.96	5.42
DH-BGC12-19	266.5	DIAMETRAL	130	61	NA	15.06	VALID	3.84	4.20
DH-BGC12-19	269.1	DIAMETRAL	90	61	NA	16.4	VALID	4.18	4.57
DH-BGC12-19	273.34	DIAMETRAL	125	61	NA	20.98	VALID	5.35	5.85
DH-BGC12-19	277.75	DIAMETRAL	125	61	NA	15.12	VALID	3.85	4.21
DH-BGC12-19	288.74	DIAMETRAL	135	61	∠ TO FABRIC	18.76	VALID	4.78	5.23
DH-BGC12-19	290.45	DIAMETRAL	145	61	∠ TO FABRIC	21.16	VALID	5.39	5.90
DH-BGC12-19	294.5	DIAMETRAL	115	61	∠ TO FABRIC	13.66	INVALID	3.48	3.81
DH-BGC12-19	296.38	DIAMETRAL	190	61	∠ TO FABRIC	25.32	VALID	6.45	7.05
DH-BGC12-19	300.79	DIAMETRAL	95	61	∠ TO FABRIC	13.66	VALID	3.48	3.81
DH-BGC12-19	304.97	DIAMETRAL	115	61	∠ TO FABRIC	23.3	VALID	5.94	6.49
DH-BGC12-19	307	DIAMETRAL	110	61	∠ TO FABRIC	19.68	VALID	5.01	5.48
DH-BGC12-19	311.58	DIAMETRAL	120	61	∠ TO FABRIC	21.72	VALID	5.53	6.05
DH-BGC12-19	311.71	DIAMETRAL	130	61	∠ TO FABRIC	31.06	VALID	7.91	8.65

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-19	312.07	DIAMETRAL	115	61	∠ TO FABRIC	33.5	VALID	8.53	9.33
DH-BGC12-19	312.2	DIAMETRAL	130	61	∠ TO FABRIC	13.98	VALID	3.56	3.90
DH-BGC12-19	312.34	DIAMETRAL	125	61	∠ TO FABRIC	23.98	VALID	6.11	6.68
DH-BGC12-19	315.28	DIAMETRAL	175	61	∠ TO FABRIC	15.92	INVALID	4.06	4.44
DH-BGC12-19	319.21	DIAMETRAL	150	61	∠ TO FABRIC	9.14	VALID	2.33	2.55
DH-BGC12-19	323.46	DIAMETRAL	130	61	∠ TO FABRIC	21.34	VALID	5.44	5.95
DH-BGC12-19	325.16	DIAMETRAL	115	61	∠ TO FABRIC	14.34	VALID	3.65	4.00
DH-BGC12-19	328.19	DIAMETRAL	165	61	∠ TO FABRIC	28.26	VALID	7.20	7.87
DH-BGC12-19	332.72	DIAMETRAL	105	61	∠ TO FABRIC	33.5	VALID	8.53	9.33
DH-BGC12-19	333.87	DIAMETRAL	130	61	∠ TO FABRIC	20.38	VALID	5.19	5.68
DH-BGC12-19	336.26	DIAMETRAL	175	61	NA	20.2	VALID	5.15	5.63
DH-BGC12-19	341.66	DIAMETRAL	135	61	NA	44.04	VALID	11.22	12.27
DH-BGC12-19	343.6	DIAMETRAL	160	61	NA	23.4	VALID	5.96	6.52
DH-BGC12-19	346.62	DIAMETRAL	110	61	NA	4.9	VALID	1.25	1.37
DH-BGC12-19	352.71	DIAMETRAL	100	61	NA	23.08	VALID	5.88	6.43
DH-BGC12-19	352.83	DIAMETRAL	155	61	∠ TO FABRIC	21.52	VALID	5.48	6.00
DH-BGC12-19	352.96	DIAMETRAL	100	61	∠ TO FABRIC	24.42	VALID	6.22	6.80
DH-BGC12-19	353.3	DIAMETRAL	115	61	∠ TO FABRIC	25.52	VALID	6.50	7.11
DH-BGC12-19	356.96	DIAMETRAL	170	61	∠ TO FABRIC	16.92	VALID	4.31	4.71
DH-BGC12-19	361.23	DIAMETRAL	115	61	∠ TO FABRIC	16.04	VALID	4.09	4.47
DH-BGC12-19	361.72	DIAMETRAL	145	61	∠ TO FABRIC	8.64	VALID	2.20	2.41
DH-BGC12-19	364.79	DIAMETRAL	120	61	∠ TO FABRIC	21.12	VALID	5.38	5.88
DH-BGC12-19	368.57	DIAMETRAL	130	61	∠ TO FABRIC	22.02	VALID	5.61	6.14
DH-BGC12-19	372.22	DIAMETRAL	120	61	∠ TO FABRIC	22.36	VALID	5.70	6.23
DH-BGC12-19	374.94	DIAMETRAL	120	61	∠ TO FABRIC	42.12	VALID	10.73	11.74
DH-BGC12-19	378.98	DIAMETRAL	130	61	∠ TO FABRIC	20.26	VALID	5.16	5.64
DH-BGC12-19	383.19	DIAMETRAL	100	61	∠ TO FABRIC	8.64	VALID	2.20	2.41
DH-BGC12-19	384.74	DIAMETRAL	155	61	∠ TO FABRIC	18.84	VALID	4.80	5.25
DH-BGC12-19	388.22	DIAMETRAL	130	61	∠ TO FABRIC	20.64	VALID	5.26	5.75
DH-BGC12-19	390.83	DIAMETRAL	150	61	∠ TO FABRIC	28.6	VALID	7.29	7.97
DH-BGC12-19	392.93	DIAMETRAL	120	61	NA	10.38	VALID	2.64	2.89
DH-BGC12-19	396.59	DIAMETRAL	220	61	NA	11.34	VALID	2.89	3.16
DH-BGC12-19	402.02	DIAMETRAL	165	61	∠ TO FABRIC	20.7	VALID	5.27	5.77
DH-BGC12-19	405.52	DIAMETRAL	155	61	∠ TO FABRIC	23.44	VALID	5.97	6.53
DH-BGC12-19	408.71	DIAMETRAL	190	61	∠ TO FABRIC	19.84	VALID	5.05	5.53
DH-BGC12-19	410.48	DIAMETRAL	130	61	∠ TO FABRIC	20.16	INVALID	5.14	5.62
DH-BGC12-19	413.55	DIAMETRAL	130	61	∠ TO FABRIC	37.16	VALID	9.47	10.35

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-19	417.86	DIAMETRAL	180	61	∠ TO FABRIC	0.2	INVALID	0.05	0.06
DH-BGC12-19	419.77	DIAMETRAL	120	61	∠ TO FABRIC	26.02	INVALID	6.63	7.25
DH-BGC12-19	421.05	DIAMETRAL	100	61	∠ TO FABRIC	44.38	VALID	11.31	12.37
DH-BGC12-19	421.57	DIAMETRAL	115	61	NA	29.6	VALID	7.54	8.25
DH-BGC12-19	421.68	DIAMETRAL	110	61	∠ TO FABRIC	11.4	INVALID	2.90	3.18
DH-BGC12-19	421.8	DIAMETRAL	150	61	NA	36.62	VALID	9.33	10.20
DH-BGC12-19	422.05	DIAMETRAL	90	61	NA	24.68	INVALID	6.29	6.88
DH-BGC12-19	424.76	DIAMETRAL	125	61	∠ TO FABRIC	47.38	VALID	12.07	13.20
DH-BGC12-20	5.72	DIAMETRAL	150	61	∠ TO FABRIC	8.88	INVALID	2.26	2.47
DH-BGC12-20	6.17	DIAMETRAL	150	61	∠ TO FABRIC	7.22	VALID	1.84	2.01
DH-BGC12-20	8.77	DIAMETRAL	160	61	∠ TO FABRIC	15.18	VALID	3.87	4.23
DH-BGC12-20	12.49	DIAMETRAL	200	61	∠ TO FABRIC	24.02	VALID	6.12	6.69
DH-BGC12-20	16.66	DIAMETRAL	220	61	∠ TO FABRIC	0.42	INVALID	0.11	0.12
DH-BGC12-20	18.21	DIAMETRAL	160	61	∠ TO FABRIC	3.42	VALID	0.87	0.95
DH-BGC12-20	22.61	DIAMETRAL	100	61	∠ TO FABRIC	26.9	VALID	6.85	7.49
DH-BGC12-20	24.23	DIAMETRAL	115	61	NA	23.6	VALID	6.01	6.58
DH-BGC12-20	24.35	DIAMETRAL	110	61	NA	27.04	VALID	6.89	7.53
DH-BGC12-20	24.46	DIAMETRAL	90	61	NA	34.26	VALID	8.73	9.55
DH-BGC12-20	24.82	DIAMETRAL	140	61	NA	37.92	VALID	9.66	10.57
DH-BGC12-20	27.24	DIAMETRAL	110	61	NA	25.2	VALID	6.42	7.02
DH-BGC12-20	31.87	DIAMETRAL	160	61	∠ TO FABRIC	21.12	VALID	5.38	5.88
DH-BGC12-20	34.82	DIAMETRAL	120	61	∠ TO FABRIC	0.46	VALID	0.12	0.13
DH-BGC12-20	37.46	DIAMETRAL	165	61	∠ TO FABRIC	11.28	VALID	2.87	3.14
DH-BGC12-20	42.68	DIAMETRAL	185	61	∠ TO FABRIC	8.3	VALID	2.11	2.31
DH-BGC12-20	47.76	DIAMETRAL	100	61	∠ TO FABRIC	29.24	VALID	7.45	8.15
DH-BGC12-20	50.51	DIAMETRAL	105	61	∠ TO FABRIC	15.96	VALID	4.07	4.45
DH-BGC12-20	52.87	DIAMETRAL	170	61	∠ TO FABRIC	12.6	INVALID	3.21	3.51
DH-BGC12-20	57.67	DIAMETRAL	120	61	∠ TO FABRIC	23.42	VALID	5.97	6.53
DH-BGC12-20	59.1	DIAMETRAL	130	61	∠ TO FABRIC	37.14	VALID	9.46	10.35
DH-BGC12-20	61.6	DIAMETRAL	140	61	∠ TO FABRIC	23	VALID	5.86	6.41
DH-BGC12-20	65.29	DIAMETRAL	110	61	∠ TO FABRIC	16.68	INVALID	4.25	4.65
DH-BGC12-20	65.55	DIAMETRAL	215	61	∠ TO FABRIC	21.2	INVALID	5.40	5.91
DH-BGC12-20	66.05	DIAMETRAL	155	61	∠ TO FABRIC	18.3	INVALID	4.66	5.10
DH-BGC12-20	66.16	DIAMETRAL	150	61	∠ TO FABRIC	24.24	VALID	6.18	6.75
DH-BGC12-20	66.45	DIAMETRAL	185	61	∠ TO FABRIC	22.56	VALID	5.75	6.29
DH-BGC12-20	353.06	DIAMETRAL	140	61	NA	20.94	VALID	5.33	5.83
DH-BGC12-20	357.23	DIAMETRAL	150	61	NA	19.54	VALID	4.98	5.44

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-20	356.25	DIAMETRAL	140	61	NA	42.56	VALID	10.84	11.86
DH-BGC12-20	368.18	DIAMETRAL	180	61	NA	19.32	INVALID	4.92	5.38
DH-BGC12-20	369.2	DIAMETRAL	200	61	NA	22.82	INVALID	5.81	6.36
DH-BGC12-20	372.67	DIAMETRAL	130	61	NA	20.78	VALID	5.29	5.79
DH-BGC12-20	375.11	DIAMETRAL	155	61	NA	17.28	VALID	4.40	4.81
DH-BGC12-20	377.47	DIAMETRAL	175	61	NA	14.3	INVALID	3.64	3.98
DH-BGC12-20	379.55	DIAMETRAL	165	61	NA	21.94	VALID	5.59	6.11
DH-BGC12-20	382.07	DIAMETRAL	200	61	NA	20.74	VALID	5.28	5.78
DH-BGC12-20	386.57	DIAMETRAL	160	61	NA	27.9	VALID	7.11	7.77
DH-BGC12-20	389.84	DIAMETRAL	150	61	NA	17.24	INVALID	4.39	4.80
DH-BGC12-20	392.89	DIAMETRAL	140	61	NA	19.98	VALID	5.09	5.57
DH-BGC12-20	396.97	DIAMETRAL	130	61	NA	34.98	VALID	8.91	9.75
DH-BGC12-20	403.56	DIAMETRAL	190	61	NA	26.48	INVALID	6.75	7.38
DH-BGC12-20	406.04	DIAMETRAL	170	61	NA	45.14	VALID	11.50	12.58
DH-BGC12-20	411.97	DIAMETRAL	140	61	NA	8.84	INVALID	2.25	2.46
DH-BGC12-20	413.67	DIAMETRAL	125	61	NA	30.6	VALID	7.80	8.53
DH-BGC12-20	66.59	DIAMETRAL	135	61	∠ TO FABRIC	25.04	VALID	6.38	6.98
DH-BGC12-20	69.88	DIAMETRAL	160	61	∠ TO FABRIC	16.16	VALID	4.12	4.50
DH-BGC12-20	75.08	DIAMETRAL	150	61	∠ TO FABRIC	22.34	VALID	5.69	6.22
DH-BGC12-20	79.19	DIAMETRAL	210	61	∠ TO FABRIC	17.82	INVALID	4.54	4.96
DH-BGC12-20	81.9	DIAMETRAL	150	61	∠ TO FABRIC	22.6	VALID	5.76	6.30
DH-BGC12-20	86.5	DIAMETRAL	130	61	∠ TO FABRIC	24.06	VALID	6.13	6.70
DH-BGC12-20	89.24	DIAMETRAL	120	61	∠ TO FABRIC	19	VALID	4.84	5.29
DH-BGC12-20	92.56	DIAMETRAL	175	61	∠ TO FABRIC	26.74	VALID	6.81	7.45
DH-BGC12-20	95.46	DIAMETRAL	185	61	∠ TO FABRIC	19.4	VALID	4.94	5.41
DH-BGC12-20	96.3	DIAMETRAL	160	61	∠ TO FABRIC	30.7	VALID	7.82	8.55
DH-BGC12-20	100.42	DIAMETRAL	250	61	∠ TO FABRIC	35.88	VALID	9.14	10.00
DH-BGC12-20	103.1	DIAMETRAL	240	61	∠ TO FABRIC	41.76	VALID	10.64	11.64
DH-BGC12-20	106.17	DIAMETRAL	160	61	∠ TO FABRIC	33.36	VALID	8.50	9.29
DH-BGC12-20	103.32	DIAMETRAL	195	61	NA	18.88	INVALID	4.81	5.26
DH-BGC12-20	113.36	DIAMETRAL	190	61	∠ TO FABRIC	30.68	VALID	7.82	8.55
DH-BGC12-20	113.56	DIAMETRAL	165	61	∠ TO FABRIC	38.08	VALID	9.70	10.61
DH-BGC12-20	113.69	DIAMETRAL	140	61	∠ TO FABRIC	18.26	INVALID	4.65	5.09
DH-BGC12-20	114.14	DIAMETRAL	220	61	∠ TO FABRIC	42.64	VALID	10.86	11.88
DH-BGC12-20	116.94	DIAMETRAL	120	61	∠ TO FABRIC	19.48	INVALID	4.96	5.43
DH-BGC12-20	118.29	DIAMETRAL	100	61	∠ TO FABRIC	20.18	VALID	5.14	5.62
DH-BGC12-20	121.3	DIAMETRAL	155	61	∠ TO FABRIC	29.8	VALID	7.59	8.30

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-20	124.75	DIAMETRAL	170	61	∠ TO FABRIC	28.34	VALID	7.22	7.90
DH-BGC12-20	127.8	DIAMETRAL	170	61	∠ TO FABRIC	37.32	INVALID	9.51	10.40
DH-BGC12-20	130.83	DIAMETRAL	145	61	∠ TO FABRIC	44.52	VALID	11.34	12.40
DH-BGC12-20	135.27	DIAMETRAL	100	61	∠ TO FABRIC	25.44	VALID	6.48	7.09
DH-BGC12-20	138.33	DIAMETRAL	110	61	∠ TO FABRIC	25.78	VALID	6.57	7.18
DH-BGC12-20	141.51	DIAMETRAL	155	61	∠ TO FABRIC	14.08	VALID	3.59	3.92
DH-BGC12-20	146	DIAMETRAL	135	61	∠ TO FABRIC	26.56	INVALID	6.77	7.40
DH-BGC12-20	148.89	DIAMETRAL	155	61	∠ TO FABRIC	28.06	VALID	7.15	7.82
DH-BGC12-20	152.16	DIAMETRAL	130	61	∠ TO FABRIC	33.64	VALID	8.57	9.37
DH-BGC12-20	156.44	DIAMETRAL	145	61	∠ TO FABRIC	38.2	VALID	9.73	10.64
DH-BGC12-20	160.49	DIAMETRAL	120	61	∠ TO FABRIC	43.72	VALID	11.14	12.18
DH-BGC12-20	161.59	DIAMETRAL	190	61	∠ TO FABRIC	10.92	INVALID	2.78	3.04
DH-BGC12-20	165.02	DIAMETRAL	205	61	∠ TO FABRIC	28.64	VALID	7.30	7.98
DH-BGC12-20	165.26	DIAMETRAL	240	61	∠ TO FABRIC	19.36	INVALID	4.93	5.39
DH-BGC12-20	165.64	DIAMETRAL	180	61	∠ TO FABRIC	20.84	INVALID	5.31	5.81
DH-BGC12-20	165.89	DIAMETRAL	130	61	∠ TO FABRIC	34.18	VALID	8.71	9.52
DH-BGC12-20	164.86	DIAMETRAL	135	61	∠ TO FABRIC	20.72	INVALID	5.28	5.77
DH-BGC12-20	168.7	DIAMETRAL	170	61	∠ TO FABRIC	26.8	VALID	6.83	7.47
DH-BGC12-20	170.3	DIAMETRAL	140	61	∠ TO FABRIC	18.26	INVALID	4.65	5.09
DH-BGC12-20	173.52	DIAMETRAL	155	61	NA	16.7	INVALID	4.25	4.65
DH-BGC12-20	178.56	DIAMETRAL	160	61	∠ TO FABRIC	23.78	VALID	6.06	6.63
DH-BGC12-20	181.51	DIAMETRAL	150	61	∠ TO FABRIC	32.54	VALID	8.29	9.07
DH-BGC12-20	184.17	DIAMETRAL	160	61	∠ TO FABRIC	22.3	VALID	5.68	6.21
DH-BGC12-20	186.24	DIAMETRAL	160	61	∠ TO FABRIC	20.4	INVALID	5.20	5.68
DH-BGC12-20	190.12	DIAMETRAL	180	61	NA	19.44	INVALID	4.95	5.42
DH-BGC12-20	194.7	DIAMETRAL	130	61	∠ TO FABRIC	33.06	VALID	8.42	9.21
DH-BGC12-20	197.08	DIAMETRAL	180	61	∠ TO FABRIC	49.74	VALID	12.67	13.86
DH-BGC12-20	199.05	DIAMETRAL	195	61	∠ TO FABRIC	20.62	INVALID	5.25	5.75
DH-BGC12-20	199.2	DIAMETRAL	110	61	∠ TO FABRIC	20.62	INVALID	5.25	5.75
DH-BGC12-20	199.29	DIAMETRAL	100	61	∠ TO FABRIC	15.92	INVALID	4.06	4.44
DH-BGC12-20	199.79	DIAMETRAL	240	61	∠ TO FABRIC	45.3	VALID	11.54	12.62
DH-BGC12-20	199.96	DIAMETRAL	125	61	∠ TO FABRIC	32.26	VALID	8.22	8.99
DH-BGC12-20	200.8	DIAMETRAL	125	61	∠ TO FABRIC	21.14	VALID	5.39	5.89
DH-BGC12-20	203.86	DIAMETRAL	110	61	∠ TO FABRIC	28.16	INVALID	7.17	7.85
DH-BGC12-20	205.2	DIAMETRAL	115	61	∠ TO FABRIC	20.58	VALID	5.24	5.73
DH-BGC12-20	210.07	DIAMETRAL	130	61	∠ TO FABRIC	20.26	INVALID	5.16	5.64
DH-BGC12-20	213.18	DIAMETRAL	225	61	∠ TO FABRIC	47.44	VALID	12.09	13.22

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-20	214.73	DIAMETRAL	150	61	∠ TO FABRIC	18.92	INVALID	4.82	5.27
DH-BGC12-20	219.23	DIAMETRAL	165	61	∠ TO FABRIC	35.84	VALID	9.13	9.99
DH-BGC12-20	222.61	DIAMETRAL	150	61	∠ TO FABRIC	28.3	VALID	7.21	7.88
DH-BGC12-20	225.34	DIAMETRAL	160	61	∠ TO FABRIC	28.3	VALID	7.21	7.88
DH-BGC12-20	228.38	DIAMETRAL	165	61	∠ TO FABRIC	46.58	VALID	11.87	12.98
DH-BGC12-20	230.33	DIAMETRAL	160	61	∠ TO FABRIC	34.96	VALID	8.91	9.74
DH-BGC12-20	233.29	DIAMETRAL	195	61	∠ TO FABRIC	40.56	VALID	10.33	11.30
DH-BGC12-20	237.42	DIAMETRAL	175	61	∠ TO FABRIC	26.38	VALID	6.72	7.35
DH-BGC12-20	240.54	DIAMETRAL	110	61	∠ TO FABRIC	28.38	VALID	7.23	7.91
DH-BGC12-20	240.81	DIAMETRAL	150	61	∠ TO FABRIC	21.94	INVALID	5.59	6.11
DH-BGC12-20	245.54	DIAMETRAL	190	61	∠ TO FABRIC	24.54	VALID	6.25	6.84
DH-BGC12-20	246.34	DIAMETRAL	205	61	∠ TO FABRIC	19.78	INVALID	5.04	5.51
DH-BGC12-20	246.64	DIAMETRAL	115	61	∠ TO FABRIC	20.76	INVALID	5.29	5.78
DH-BGC12-20	246.76	DIAMETRAL	100	61	∠ TO FABRIC	30.3	VALID	7.72	8.44
DH-BGC12-20	246.84	DIAMETRAL	70	61	∠ TO FABRIC	17.72	INVALID	4.51	4.94
DH-BGC12-20	250.71	DIAMETRAL	230	61	∠ TO FABRIC	11.7	INVALID	2.98	3.26
DH-BGC12-20	253.54	DIAMETRAL	195	61	∠ TO FABRIC	8.76	INVALID	2.23	2.44
DH-BGC12-20	247.18	DIAMETRAL	105	61	∠ TO FABRIC	21.16	INVALID	5.39	5.90
DH-BGC12-20	260.24	DIAMETRAL	110	61	∠ TO FABRIC	16.3	INVALID	4.15	4.54
DH-BGC12-20	263.29	DIAMETRAL	130	61	∠ TO FABRIC	24.92	VALID	6.35	6.94
DH-BGC12-20	266.8	DIAMETRAL	150	61	∠ TO FABRIC	24.52	VALID	6.25	6.83
DH-BGC12-20	270.9	DIAMETRAL	110	61	∠ TO FABRIC	14.3	INVALID	3.64	3.98
DH-BGC12-20	272.36	DIAMETRAL	150	61	∠ TO FABRIC	44.34	VALID	11.30	12.35
DH-BGC12-20	274.84	DIAMETRAL	105	61	∠ TO FABRIC	33.66	VALID	8.58	9.38
DH-BGC12-20	278.56	DIAMETRAL	140	61	∠ TO FABRIC	22.9	VALID	5.83	6.38
DH-BGC12-20	282.53	DIAMETRAL	100	61	∠ TO FABRIC	22.98	VALID	5.85	6.40
DH-BGC12-20	234.66	DIAMETRAL	125	61	∠ TO FABRIC	18.8	INVALID	4.79	5.24
DH-BGC12-20	287.88	DIAMETRAL	130	61	∠ TO FABRIC	34.92	VALID	8.90	9.73
DH-BGC12-20	290.86	DIAMETRAL	150	61	∠ TO FABRIC	24.12	VALID	6.15	6.72
DH-BGC12-20	292.23	DIAMETRAL	130	61	∠ TO FABRIC	31.32	VALID	7.98	8.73
DH-BGC12-20	297.24	DIAMETRAL	240	61	NA	17.18	VALID	4.38	4.79
DH-BGC12-20	299.61	DIAMETRAL	185	61	NA	18.28	INVALID	4.66	5.09
DH-BGC12-20	305.91	DIAMETRAL	145	61	NA		INVALID		
DH-BGC12-20	313.51	DIAMETRAL	130	61	NA	15.24	VALID	3.88	4.25
DH-BGC12-20	314.35	DIAMETRAL	220	61	NA	34.36	VALID	8.75	9.57
DH-BGC12-20	318.18	DIAMETRAL	180	61	NA	15.18	INVALID	3.87	4.23
DH-BGC12-20	324.11	DIAMETRAL	220	61	NA	13.62	VALID	3.47	3.79

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-20	328.33	DIAMETRAL	250	61	NA	11.48	INVALID	2.92	3.20
DH-BGC12-20	330.06	DIAMETRAL	180	61	NA	19.12	VALID	4.87	5.33
DH-BGC12-20	333	DIAMETRAL	150	61	NA	25.48	VALID	6.49	7.10
DH-BGC12-20	336.22	DIAMETRAL	200	61	NA	12.52	INVALID	3.19	3.49
DH-BGC12-20	339.34	DIAMETRAL	210	61	NA	17.8	INVALID	4.53	4.96
DH-BGC12-20	344.12	DIAMETRAL	240	61	NA	28.6	VALID	7.29	7.97
DH-BGC12-20	345.45	DIAMETRAL	180	61	NA	15.04	VALID	3.83	4.19
DH-BGC12-20	346.43	DIAMETRAL	180	61	NA	21.76	VALID	5.54	6.06
DH-BGC12-20	350.38	DIAMETRAL	170	61	NA	18.52	VALID	4.72	5.16
DH-BGC12-21	148.22	DIAMETRAL	155	61	NA	6.92	INVALID	1.76	1.93
DH-BGC12-21	214.63	DIAMETRAL	200	61	NA	12.84	INVALID	3.27	3.58
DH-BGC12-21	182.57	DIAMETRAL	220	61	NA	29	VALID	7.39	8.08
DH-BGC12-21	223.36	DIAMETRAL	165	61	// TO FABRIC	18.8	VALID	4.79	5.24
DH-BGC12-21	149.16	DIAMETRAL	130	61	NA	36.36	VALID	9.26	10.13
DH-BGC12-21	213.84	DIAMETRAL	230	61	NA	21.7	VALID	5.53	6.05
DH-BGC12-21	145.46	DIAMETRAL	240	61	// TO FABRIC	5.8	VALID	1.48	1.62
DH-BGC12-21	141.67	DIAMETRAL	220	61	NA	18.82	INVALID	4.79	5.24
DH-BGC12-21	142.67	DIAMETRAL	180	61	NA	24	INVALID	6.11	6.69
DH-BGC12-21	143.68	DIAMETRAL	200	61	NA	13.56	VALID	3.45	3.78
DH-BGC12-21	183.08	DIAMETRAL	160	61	NA	28.32	VALID	7.46	8.10
DH-BGC12-21	139.12	DIAMETRAL	262	61	NA	41.8	VALID	10.65	11.65
DH-BGC12-21	138.4	DIAMETRAL	135	61	NA	21.74	VALID	5.54	6.06
DH-BGC12-21	133.31	DIAMETRAL	163	61	NA	10.98	VALID	2.80	3.06
DH-BGC12-21	132.43	DIAMETRAL	150	61	NA	26.96	VALID	6.87	7.51
DH-BGC12-21	129.14	DIAMETRAL	182	61	NA	20.46	VALID	5.21	5.70
DH-BGC12-21	125.2	DIAMETRAL	200	61	NA	29.56	VALID	7.53	8.24
DH-BGC12-21	122.06	DIAMETRAL	108	61	NA	31.96	VALID	8.14	8.90
DH-BGC12-21	125.27	DIAMETRAL	122	61	NA	17.88	INVALID	4.56	4.98
DH-BGC12-21	124.51	DIAMETRAL	211	61	NA	25.3	INVALID	6.45	7.05
DH-BGC12-21	124.75	DIAMETRAL	145	61	NA	21.58	INVALID	5.50	6.01
DH-BGC12-21	126.41	DIAMETRAL	149	61	NA	27.7	INVALID	7.06	7.72
DH-BGC12-21	126.57	DIAMETRAL	142	61	NA	25.49	VALID	6.49	7.10
DH-BGC12-21	126.71	DIAMETRAL	161	61	NA	39.34	VALID	10.02	10.96
DH-BGC12-21	180.03	DIAMETRAL	116	61	NA	28.34	VALID	7.22	7.90
DH-BGC12-21	174.09	DIAMETRAL	115	61	NA	24.5	VALID	6.45	7.00
DH-BGC12-21	173.78	DIAMETRAL	75	61	NA	16.98	VALID	4.47	4.85
DH-BGC12-21	166.66	DIAMETRAL	122	61	NA	27.2	VALID	7.16	7.78

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-21	163.77	DIAMETRAL	281	61	NA	6.64	VALID	1.69	1.85
DH-BGC12-21	165.91	DIAMETRAL	189	61	NA	16.68	VALID	4.25	4.65
DH-BGC12-21	161.02	DIAMETRAL	134	61	NA	22.54	INVALID	5.74	6.28
DH-BGC12-21	162.13	DIAMETRAL	220	61	NA	14.34	VALID	3.65	4.00
DH-BGC12-21	225.68	DIAMETRAL	152	61	NA	26.68	VALID	7.03	7.63
DH-BGC12-21	157.67	DIAMETRAL	263	61	NA	14.48	VALID	3.69	4.03
DH-BGC12-21	154.82	DIAMETRAL	169	61	NA	19.26	VALID	4.91	5.37
DH-BGC12-21	152.3	DIAMETRAL	109	61	NA	21.14	VALID	5.39	5.89
DH-BGC12-21	210.2	DIAMETRAL	178	61	NA	18.78	VALID	4.95	5.37
DH-BGC12-21	208.96	DIAMETRAL	172	61	NA	21.08	VALID	5.37	5.87
DH-BGC12-21	203.95	DIAMETRAL	308	61	NA	35.56	VALID	9.06	9.91
DH-BGC12-21	201.5	DIAMETRAL	203	61	NA	20.78	VALID	5.47	5.94
DH-BGC12-21	198.52	DIAMETRAL	308	61	NA	26.64	VALID	7.02	7.62
DH-BGC12-21	195.77	DIAMETRAL	172	61	NA	19.42	VALID	5.11	5.55
DH-BGC12-21	191.2	DIAMETRAL	110	61	NA	26.48	VALID	6.97	7.57
DH-BGC12-21	188.93	DIAMETRAL	222	61	NA	15.46	VALID	3.94	4.31
DH-BGC12-21	189.78	DIAMETRAL	113	61	NA	25.28	VALID	6.66	7.23
DH-BGC12-21	187.5	DIAMETRAL	224	61	NA	23.6	INVALID	6.01	6.58
DH-BGC12-21	186.35	DIAMETRAL	165	61	NA	28	VALID	7.13	7.80
DH-BGC12-21	183.94	DIAMETRAL	184	61	NA	27.42	INVALID	6.99	7.64
DH-BGC12-21	183.98	DIAMETRAL	160	61	NA	28.04	INVALID	7.38	8.02
DH-BGC12-21	184.54	DIAMETRAL	150	61	NA	24.44	VALID	6.44	6.99
DH-BGC12-21	219.32	DIAMETRAL	221	61	NA	37.38	VALID	9.84	10.69
DH-BGC12-21	261.45	DIAMETRAL	83	61	NA	29.42	VALID	7.50	8.20
DH-BGC12-21	266.95	DIAMETRAL	104	61	NA	9.1	VALID	2.32	2.54
DH-BGC12-21	269.25	DIAMETRAL	233	61	// TO FABRIC	11.66	VALID	2.97	3.25
DH-BGC12-21	274.48	DIAMETRAL	203	61	NA	9.1	VALID	2.32	2.54
DH-BGC12-21	275.09	DIAMETRAL	187	61	∠ TO FABRIC	18.58	VALID	4.73	5.18
DH-BGC12-21	278.55	DIAMETRAL	200	61	NA	20.9	VALID	5.32	5.82
DH-BGC12-21	284.17	DIAMETRAL	181	61	NA	28.54	VALID	7.27	7.95
DH-BGC12-21	285.15	DIAMETRAL	211	61	NA	28.88	VALID	7.36	8.05
DH-BGC12-21	290.61	DIAMETRAL	108	61	NA	28.68	VALID	7.55	8.20
DH-BGC12-21	291.38	DIAMETRAL	152	61	// TO FABRIC	13.66	VALID	3.48	3.81
DH-BGC12-21	295.43	DIAMETRAL	164	61	NA	21.82	VALID	5.56	6.08
DH-BGC12-21	295.16	DIAMETRAL	165	61	∠ TO FABRIC	28.48	VALID	7.26	7.94
DH-BGC12-21	297.5	DIAMETRAL	213	61	∠ TO FABRIC	30.18	VALID	7.69	8.41
DH-BGC12-21	302.75	DIAMETRAL	101	61	// TO FABRIC	5.38	VALID	1.37	1.50

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-21	305.08	DIAMETRAL	161	61	NA	21.92	VALID	5.58	6.11
DH-BGC12-21	309.77	DIAMETRAL	220	61	NA	23.94	VALID	6.10	6.67
DH-BGC12-21	310.26	DIAMETRAL	123	61	NA	38.38	VALID	9.78	10.69
DH-BGC12-21	314	DIAMETRAL	223	61	NA	27.68	VALID	7.05	7.71
DH-BGC12-21	318.44	DIAMETRAL	292	61	NA	26.64	VALID	6.79	7.42
DH-BGC12-21	320.2	DIAMETRAL	220	61	NA	21.74	VALID	5.54	6.06
DH-BGC12-21	325.04	DIAMETRAL	252	61	NA	11.94	VALID	3.04	3.33
DH-BGC12-21	297.03	DIAMETRAL	255	61	NA	19.24	VALID	4.90	5.36
DH-BGC12-21	296.03	DIAMETRAL	122	61	NA	26.58	VALID	6.77	7.41
DH-BGC12-21	332.59	DIAMETRAL	104	61	NA	15.14	VALID	3.86	4.22
DH-BGC12-21	328.09	DIAMETRAL	230	61	NA	11.5	VALID	2.93	3.20
DH-BGC12-21	333.8	DIAMETRAL	228	61	NA	27.06	VALID	6.89	7.54
DH-BGC12-21	336.4	DIAMETRAL	129	61	// TO FABRIC	1.12	VALID	0.29	0.31
DH-BGC12-21	341.31	DIAMETRAL	104	61	// TO FABRIC	16.5	VALID	4.20	4.60
DH-BGC12-21	345.41	DIAMETRAL	189	61	∠ TO FABRIC	24.34	VALID	6.20	6.78
DH-BGC12-21	346.43	DIAMETRAL	267	61	∠ TO FABRIC	20.62	VALID	5.25	5.75
DH-BGC12-21	351.83	DIAMETRAL	324	61	∠ TO FABRIC	21.64	VALID	5.51	6.03
DH-BGC12-21	354.46	DIAMETRAL	147	61	// TO FABRIC	23.32	VALID	5.94	6.50
DH-BGC12-21	353.7	DIAMETRAL	96	61	// TO FABRIC	14.48	VALID	3.69	4.03
DH-BGC12-21	353.1	DIAMETRAL	195	61	∠ TO FABRIC	24.9	VALID	6.34	6.94
DH-BGC12-21	355.18	DIAMETRAL	189	61	NA	17.7	VALID	4.51	4.93
DH-BGC12-21	356.79	DIAMETRAL	199	61	NA	9.66	VALID	2.46	2.69
DH-BGC12-21	359.79	DIAMETRAL	227	61	NA	6.16	VALID	1.57	1.72
DH-BGC12-21	362.78	DIAMETRAL	100	61	NA	25.46	VALID	6.49	7.09
DH-BGC12-21	368.13	DIAMETRAL	222	61	NA	23.68	INVALID	6.03	6.60
DH-BGC12-21	369.22	DIAMETRAL	183	61	// TO FABRIC	22.48	VALID	5.73	6.26
DH-BGC12-21	372.48	DIAMETRAL	214	61	NA	25.64	VALID	6.53	7.14
DH-BGC12-21	376.81	DIAMETRAL	178	61	NA	27.84	VALID	7.09	7.76
DH-BGC12-21	379.83	DIAMETRAL	100	61	NA	23.28	VALID	5.93	6.49
DH-BGC12-21	383.03	DIAMETRAL	294	61	NA	36.44	VALID	9.28	10.15
DH-BGC12-21	374.7	DIAMETRAL	158	61	NA	27.26	VALID	6.95	7.60
DH-BGC12-21	374.8	DIAMETRAL	131	61	NA	28.28	VALID	7.20	7.88
DH-BGC12-21	374.26	DIAMETRAL	200	61	NA	33.44	VALID	8.52	9.32
DH-BGC12-21	374.2	DIAMETRAL	115	61	NA	38.84	VALID	9.90	10.82
DH-BGC12-21	386.51	DIAMETRAL	202	61	NA	26.38	INVALID	6.72	7.35
DH-BGC12-21	387.26	DIAMETRAL	173	61	NA	33.12	INVALID	8.44	9.23
DH-BGC12-21	385.66	DIAMETRAL	223	61	NA	14.98	VALID	3.82	4.17

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-21	387.5	DIAMETRAL	122	61	NA	37.28	VALID	9.50	10.39
DH-BGC12-21	390.95	DIAMETRAL	160	61	NA	12.4	VALID	3.16	3.45
DH-BGC12-21	395.09	DIAMETRAL	132	61	NA	31.32	INVALID	7.98	8.73
DH-BGC12-21	394.99	DIAMETRAL	204	61	NA	15.22	VALID	3.88	4.24
DH-BGC12-21	398.17	DIAMETRAL	199	61	NA	23.18	VALID	5.91	6.46
DH-BGC12-21	401.21	DIAMETRAL	148	61	NA	19.46	VALID	4.96	5.42
DH-BGC12-21	403.95	DIAMETRAL	210	61	NA	29.42	INVALID	7.50	8.20
DH-BGC12-21	403.89	DIAMETRAL	210	61	NA	11.62	VALID	2.96	3.24
DH-BGC12-21	407.91	DIAMETRAL	136	61	∠ TO FABRIC	36.02	VALID	9.18	10.04
DH-BGC12-21	410.71	DIAMETRAL	120	61	NA	20	VALID	5.10	5.57
DH-BGC12-21	415.97	DIAMETRAL	133	61	NA	23.46	VALID	5.98	6.54
DH-BGC12-21	419.64	DIAMETRAL	105	61	∠ TO FABRIC	30.52	INVALID	7.78	8.50
DH-BGC12-21	419.54	DIAMETRAL	228	61	// TO FABRIC	19.38	VALID	4.94	5.40
DH-BGC12-21	423	DIAMETRAL	160	61	∠ TO FABRIC	5.6	VALID	1.43	1.56
DH-BGC12-21	424.44	DIAMETRAL	134	61	NA	17.82	VALID	4.54	4.96
DH-BGC12-21	427.1	DIAMETRAL	157	61	∠ TO FABRIC	24.38	INVALID	6.21	6.79
DH-BGC12-21	429.41	DIAMETRAL	242	61	NA	28.24	VALID	7.19	7.87
DH-BGC12-21	430.91	DIAMETRAL	203	61	NA	17.76	VALID	4.52	4.95
DH-BGC12-21	416.68	DIAMETRAL	96	61	∠ TO FABRIC	30.26	INVALID	7.71	8.43
DH-BGC12-21	417.51	DIAMETRAL	300	61	∠ TO FABRIC	28.18	INVALID	7.18	7.85
DH-BGC12-21	417.4	DIAMETRAL	212	61	∠ TO FABRIC	38.5	VALID	9.81	10.73
DH-BGC12-21	417.2	DIAMETRAL	229	61	∠ TO FABRIC	24.68	INVALID	6.29	6.88
DH-BGC12-21	417.72	DIAMETRAL	233	61	∠ TO FABRIC	17.38	VALID	4.43	4.84
DH-BGC12-21	434.2	DIAMETRAL	233	61	NA	25.3	INVALID	6.45	7.05
DH-BGC12-21	434.27	DIAMETRAL	144	61	NA	38.08	VALID	9.70	10.61
DH-BGC12-21	437.85	DIAMETRAL	173	61	NA	21.98	VALID	5.60	6.12
DH-BGC12-21	438.58	DIAMETRAL	111	61	∠ TO FABRIC	25.16	VALID	6.41	7.01
DH-BGC12-21	442.35	DIAMETRAL	184	61	∠ TO FABRIC	37.02	VALID	9.43	10.31
DH-BGC12-21	439.62	DIAMETRAL	200	61	∠ TO FABRIC	29.46	VALID	7.51	8.21
DH-BGC12-21	445.16	DIAMETRAL	131	61	∠ TO FABRIC	27.6	INVALID	7.03	7.69
DH-BGC12-21	445.45	DIAMETRAL	164	61	NA	34.42	VALID	8.77	9.59
DH-BGC12-21	446.91	DIAMETRAL	150	61	NA	30.26	INVALID	7.71	8.43
DH-BGC12-21	447.33	DIAMETRAL	229	61	NA	30.52	INVALID	7.78	8.50
DH-BGC12-21	447.5	DIAMETRAL	139	61	NA	30.94	INVALID	7.88	8.62
DH-BGC12-21	451.02	DIAMETRAL	121	61	NA	25.96	INVALID	6.61	7.23
DH-BGC12-21	450.69	DIAMETRAL	170	61	NA	25.9	INVALID	6.60	7.22
DH-BGC12-21	447.05	DIAMETRAL	130	61	// TO FABRIC	25.5	VALID	6.50	7.10

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-21	455.41	DIAMETRAL	147	61	NA	11.28	VALID	2.87	3.14
DH-BGC12-21	457.01	DIAMETRAL	151	61	// TO FABRIC	11.34	VALID	2.89	3.16
DH-BGC12-21	460.22	DIAMETRAL	182	61	// TO FABRIC	14.04	VALID	3.58	3.91
DH-BGC12-21	463.68	DIAMETRAL	306	61	NA	32.22	INVALID	8.21	8.98
DH-BGC12-21	463.77	DIAMETRAL	306	61	NA	6.6	VALID	1.68	1.84
DH-BGC12-21	466.69	DIAMETRAL	282	61	∠ TO FABRIC	23.58	VALID	6.01	6.57
DH-BGC12-21	469.59	DIAMETRAL	270	61	NA	29.54	INVALID	7.53	8.23
DH-BGC12-21	469.65	DIAMETRAL	172	61	NA	30.58	VALID	7.79	8.52
DH-BGC12-21	472.62	DIAMETRAL	212	61	∠ TO FABRIC	42.64	VALID	10.86	11.88
DH-BGC12-21	477.4	DIAMETRAL	294	61	∠ TO FABRIC	29.72	INVALID	7.57	8.28
DH-BGC12-21	467.18	DIAMETRAL	223	61	∠ TO FABRIC	23.88	VALID	6.08	6.65
DH-BGC12-21	478.59	DIAMETRAL	155	61	NA	19.08	INVALID	4.86	5.32
DH-BGC12-21	476.5	DIAMETRAL	210	61	NA	38.32	VALID	9.76	10.68
DH-BGC12-21	478.78	DIAMETRAL	171	61	NA	36.44	VALID	9.28	10.15
DH-BGC12-21	450.42	DIAMETRAL	158	61	NA	20.38	INVALID	5.19	5.68
DH-BGC12-21	450.22	DIAMETRAL	136	61	NA	22.78	VALID	5.80	6.35
DH-BGC12-21	466.17	DIAMETRAL	304	61	∠ TO FABRIC	25.56	VALID	6.51	7.12
DH-BGC12-21	466.29	DIAMETRAL	215	61	∠ TO FABRIC	30.7	INVALID	7.82	8.55
DH-BGC12-21	465.66	DIAMETRAL	222	61	∠ TO FABRIC	29.34	INVALID	7.47	8.17
DH-BGC12-21	465.4	DIAMETRAL	249	61	∠ TO FABRIC	29.18	INVALID	7.43	8.13
DH-BGC12-21	465.21	DIAMETRAL	210	61	// TO FABRIC	18.44	VALID	4.70	5.14
DH-BGC12-21	464.96	DIAMETRAL	315	61	∠ TO FABRIC	23.64	VALID	6.02	6.59
DH-BGC12-21	485.04	DIAMETRAL	180	61	NA	30.84	VALID	7.86	8.59
DH-BGC12-21	485.99	DIAMETRAL	319	61	NA	13.78	VALID	3.51	3.84
DH-BGC12-21	490.69	DIAMETRAL	130	61	NA	37.06	VALID	9.44	10.33
DH-BGC12-21	492.76	DIAMETRAL	280	61	NA	19.78	VALID	5.04	5.51
DH-BGC12-21	495.99	DIAMETRAL	270	61	NA	20.72	VALID	5.28	5.77
DH-BGC12-21	500.49	DIAMETRAL	134	61	NA	23.34	VALID	5.95	6.50
DH-BGC12-21	506.13	DIAMETRAL	151	61	NA	35.48	VALID	9.04	9.89
DH-BGC12-21	503.15	DIAMETRAL	199	61	NA	24.92	VALID	6.35	6.94
DH-BGC12-21	508.99	DIAMETRAL	320	61	NA	39.16	VALID	9.98	10.91
DH-BGC12-21	508.85	DIAMETRAL	223	61	NA	40.22	VALID	10.25	11.21
DH-BGC12-21	508.3	DIAMETRAL	353	61	NA	35.18	VALID	8.96	9.80
DH-BGC12-21	508.37	DIAMETRAL	230	61	NA	37.4	VALID	9.53	10.42
DH-BGC12-21	514.97	DIAMETRAL	380	61	NA	23.6	VALID	6.01	6.58
DH-BGC12-21	517.28	DIAMETRAL	308	61	NA	13.1	VALID	3.34	3.65
DH-BGC12-21	517.38	DIAMETRAL	210	61	NA	26.28	VALID	6.70	7.32

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-21	520.6	DIAMETRAL	251	61	NA	36.6	VALID	9.32	10.20
DH-BGC12-21	523.86	DIAMETRAL	187	61	NA	24.58	VALID	6.26	6.85
DH-BGC12-21	526.23	DIAMETRAL	183	61	NA	30.96	INVALID	7.89	8.63
DH-BGC12-21	526.18	DIAMETRAL	183	61	NA	34.02	INVALID	8.67	9.48
DH-BGC12-21	526.12	DIAMETRAL	183	61	NA	24.9	VALID	6.34	6.94
DH-BGC12-21	529.19	DIAMETRAL	125	61	NA	19.52	VALID	4.97	5.44
DH-BGC12-21	556.32	DIAMETRAL	165	61	NA	25.3	INVALID	6.45	7.05
DH-BGC12-21	555.79	DIAMETRAL	233	61	NA	32.9	INVALID	8.38	9.17
DH-BGC12-21	555.35	DIAMETRAL	198	61	NA	14.78	VALID	3.77	4.12
DH-BGC12-21	552.61	DIAMETRAL	302	61	NA	12.26	VALID	3.12	3.42
DH-BGC12-21	550.26	DIAMETRAL	227	61	NA	16.98	VALID	4.33	4.73
DH-BGC12-21	546.86	DIAMETRAL	227	61	NA	23.24	VALID	5.92	6.48
DH-BGC12-21	544.19	DIAMETRAL	240	61	NA	12.08	VALID	3.08	3.37
DH-BGC12-21	541.25	DIAMETRAL	230	61	NA	28.76	VALID	7.33	8.01
DH-BGC12-21	536.81	DIAMETRAL	161	61	NA	14.72	VALID	3.75	4.10
DH-BGC12-21	534.47	DIAMETRAL	234	61	NA	21.84	VALID	5.56	6.09
DH-BGC12-21	543.6	DIAMETRAL	230	61	NA	17.44	VALID	4.44	4.86
DH-BGC12-21	543.67	DIAMETRAL	165	61	NA	19.08	VALID	4.86	5.32
DH-BGC12-21	544.31	DIAMETRAL	101	61	NA	15.42	VALID	3.93	4.30
DH-BGC12-21	217.89	DIAMETRAL	115	61	NA	41.64	VALID	10.97	11.90
DH-BGC12-21	232.49	DIAMETRAL	100	61	NA	7.34	VALID	1.87	2.05
DH-BGC12-21	234.52	DIAMETRAL	170	61	NA	32.02	VALID	8.16	8.92
DH-BGC12-21	236.2	DIAMETRAL	129	61	NA	37.98	VALID	9.68	10.58
DH-BGC12-21	239.44	DIAMETRAL	139	61	NA	28.38	VALID	7.47	8.11
DH-BGC12-21	242.81	DIAMETRAL	99	61	NA	36.72	VALID	9.36	10.23
DH-BGC12-21	245.79	DIAMETRAL	260	61	∠ TO FABRIC	32.82	INVALID	8.36	9.14
DH-BGC12-21	249.61	DIAMETRAL	200	61	// TO FABRIC	19.72	VALID	5.02	5.49
DH-BGC12-21	226.68	DIAMETRAL	155	61	// TO FABRIC	13.44	VALID	3.42	3.74
DH-BGC12-21	252.63	DIAMETRAL	330	61	NA	26.92	VALID	6.86	7.50
DH-BGC12-21	260.46	DIAMETRAL	112	61	NA	9.8	VALID	2.50	2.73
DH-BGC12-21	256.06	DIAMETRAL	130	61	// TO FABRIC	5.02	VALID	1.28	1.40
DH-BGC12-21	244.64	DIAMETRAL	251	61	∠ TO FABRIC	31.28	VALID	7.97	8.72
DH-BGC12-21	244.24	DIAMETRAL	204	61	// TO FABRIC	14.58	VALID	3.71	4.06
DH-BGC12-21	245.16	DIAMETRAL	148	61	∠ TO FABRIC	35.46	VALID	9.03	9.88
DH-BGC12-21	244	DIAMETRAL	170	61	∠ TO FABRIC	25.38	INVALID	6.47	7.07
DH-BGC12-21	246.8	DIAMETRAL	111	61	// TO FABRIC	19.06	VALID	4.86	5.31
DH-BGC12-21	261.76	DIAMETRAL	124	61	NA	24.4	INVALID	6.22	6.80

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-21	262.24	DIAMETRAL	176	61	NA	27.24	INVALID	6.94	7.59
DH-BGC12-22	70.9	DIAMETRAL	192	61	∠ TO FABRIC	27.7	INVALID	7.06	7.72
DH-BGC12-22	70.67	DIAMETRAL	234	61	∠ TO FABRIC	29.82	INVALID	7.60	8.31
DH-BGC12-22	70.72	DIAMETRAL	234	61	∠ TO FABRIC	27.46	VALID	7.00	7.65
DH-BGC12-22	73.94	DIAMETRAL	179	61	NA	24.86	INVALID	6.33	6.93
DH-BGC12-22	75.09	DIAMETRAL	184	61	// TO FABRIC	7.46	VALID	1.90	2.08
DH-BGC12-22	76.24	DIAMETRAL	298	61	NA	33.5	INVALID	8.53	9.33
DH-BGC12-22	76.17	DIAMETRAL	298	61	NA	15.24	VALID	3.88	4.25
DH-BGC12-22	80.03	DIAMETRAL	229	61	// TO FABRIC	14.42	VALID	3.67	4.02
DH-BGC12-22	84.64	DIAMETRAL	250	61	NA	17.76	VALID	4.52	4.95
DH-BGC12-22	86.17	DIAMETRAL	320	61	NA	11.46	VALID	2.92	3.19
DH-BGC12-22	46.64	DIAMETRAL	244	61	∠ TO FABRIC	28.02	VALID	7.14	7.81
DH-BGC12-22	45.57	DIAMETRAL	326	61	∠ TO FABRIC	25.26	VALID	6.44	7.04
DH-BGC12-22	81.29	DIAMETRAL	134	61	// TO FABRIC	16.22	VALID	4.13	4.52
DH-BGC12-22	81.8	DIAMETRAL	291	61	// TO FABRIC	15.06	VALID	3.84	4.20
DH-BGC12-22	81.64	DIAMETRAL	210	61	∠ TO FABRIC	16.5	INVALID	4.20	4.60
DH-BGC12-22	81.39	DIAMETRAL	172	61	∠ TO FABRIC	14.04	VALID	3.58	3.91
DH-BGC12-22	91.45	DIAMETRAL	168	61	NA	15.52	VALID	3.95	4.32
DH-BGC12-22	92.56	DIAMETRAL	200	61	NA	31.48	VALID	8.02	8.77
DH-BGC12-22	96.38	DIAMETRAL	178	61	NA	18.22	VALID	4.64	5.08
DH-BGC12-22	97.91	DIAMETRAL	232	61	NA	28.38	VALID	7.23	7.91
DH-BGC12-22	103.34	DIAMETRAL	122	61	NA	16.8	VALID	4.28	4.68
DH-BGC12-22	107.16	DIAMETRAL	149	61	NA	16.68	VALID	4.25	4.65
DH-BGC12-22	109.93	DIAMETRAL	301	61	NA	32.9	INVALID	8.38	9.17
DH-BGC12-22	109.89	DIAMETRAL	158	61	NA	38.54	VALID	9.82	10.74
DH-BGC12-22	112.54	DIAMETRAL	254	61	NA	20.54	VALID	5.23	5.72
DH-BGC12-22	114.63	DIAMETRAL	123	61	NA	21.03	VALID	5.36	5.86
DH-BGC12-22	118.04	DIAMETRAL	150	61	∠ TO FABRIC	6.44	INVALID	1.64	1.79
DH-BGC12-22	118	DIAMETRAL	80	61	∠ TO FABRIC	14.28	VALID	3.64	3.98
DH-BGC12-22	118.08	DIAMETRAL	75	61	∠ TO FABRIC	5.8	INVALID	1.48	1.62
DH-BGC12-22	118.2	DIAMETRAL	145	61	∠ TO FABRIC	5	INVALID	1.27	1.39
DH-BGC12-22	118.15	DIAMETRAL	100	61	∠ TO FABRIC	3.88	INVALID	0.99	1.08
DH-BGC12-22	118.35	DIAMETRAL	135	61	∠ TO FABRIC	4.1	INVALID	1.04	1.14
DH-BGC12-22	118.49	DIAMETRAL	100	61	∠ TO FABRIC	4.9	INVALID	1.25	1.37
DH-BGC12-22	118.6	DIAMETRAL	95	61	∠ TO FABRIC	8.42	VALID	2.15	2.35
DH-BGC12-22	118.79	DIAMETRAL	185	61	∠ TO FABRIC	18.8	VALID	4.79	5.24
DH-BGC12-22	121.42	DIAMETRAL	120	61	// TO FABRIC	5.62	INVALID	1.43	1.57

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-22	125.47	DIAMETRAL	190	61	∠ TO FABRIC	19.58	VALID	4.99	5.46
DH-BGC12-22	128.75	DIAMETRAL	195	61	∠ TO FABRIC	4.68	VALID	1.19	1.30
DH-BGC12-22	131.17	DIAMETRAL	130	61	∠ TO FABRIC	25.28	VALID	6.44	7.04
DH-BGC12-22	134.22	DIAMETRAL	145	61	∠ TO FABRIC	31.32	VALID	7.98	8.73
DH-BGC12-22	140.88	DIAMETRAL	95	61	∠ TO FABRIC	18.8	VALID	4.79	5.24
DH-BGC12-22	143.48	DIAMETRAL	150	61	∠ TO FABRIC	33.08	VALID	8.43	9.22
DH-BGC12-22	147.45	DIAMETRAL	190	61	∠ TO FABRIC	13.48	VALID	3.43	3.76
DH-BGC12-22	151.57	DIAMETRAL	120	61	∠ TO FABRIC	15.5	VALID	3.95	4.32
DH-BGC12-22	154.76	DIAMETRAL	110	61	∠ TO FABRIC	21.1	VALID	5.38	5.88
DH-BGC12-22	155.97	DIAMETRAL	185	61	∠ TO FABRIC	14.78	VALID	3.77	4.12
DH-BGC12-22	159.16	DIAMETRAL	120	61	∠ TO FABRIC	23.14	VALID	5.90	6.45
DH-BGC12-22	161.48	DIAMETRAL	150	61	∠ TO FABRIC	13.46	VALID	3.43	3.75
DH-BGC12-22	166.98	DIAMETRAL	140	61	∠ TO FABRIC	14.2	VALID	3.62	3.96
DH-BGC12-22	168.72	DIAMETRAL	95	61	NA	21.96	VALID	5.59	6.12
DH-BGC12-22	168.9	DIAMETRAL	120	61	∠ TO FABRIC	20.02	VALID	5.10	5.58
DH-BGC12-22	169.23	DIAMETRAL	170	61	NA	14.24	VALID	3.63	3.97
DH-BGC12-22	169.44	DIAMETRAL	150	61	NA	25.64	VALID	6.53	7.14
DH-BGC12-22	303.05	DIAMETRAL	140	61	∠ TO FABRIC	11.2	INVALID	2.85	3.12
DH-BGC12-22	305.49	DIAMETRAL	135	61	∠ TO FABRIC	20.08	INVALID	5.12	5.59
DH-BGC12-22	310.23	DIAMETRAL	150	61	∠ TO FABRIC	16.7	INVALID	4.25	4.65
DH-BGC12-22	313.28	DIAMETRAL	120	61	∠ TO FABRIC	39.87	VALID	10.16	11.11
DH-BGC12-22	315.57	DIAMETRAL	160	61	∠ TO FABRIC	18.62	VALID	4.74	5.19
DH-BGC12-22	318.3	DIAMETRAL	150	61	∠ TO FABRIC	11.72	INVALID	2.99	3.27
DH-BGC12-22	325.27	DIAMETRAL	130	61	∠ TO FABRIC	18.86	VALID	4.80	5.25
DH-BGC12-22	332.65	DIAMETRAL	110	61	∠ TO FABRIC	2.34	INVALID	0.60	0.65
DH-BGC12-22	333.23	DIAMETRAL	110	61	∠ TO FABRIC	21.74	VALID	5.54	6.06
DH-BGC12-22	333.36	DIAMETRAL	185	61	∠ TO FABRIC	20.96	VALID	5.34	5.84
DH-BGC12-22	333.54	DIAMETRAL	160	61	∠ TO FABRIC	13.3	VALID	3.39	3.71
DH-BGC12-22	333.7	DIAMETRAL	150	61	∠ TO FABRIC	23.8	VALID	6.06	6.63
DH-BGC12-22	335.81	DIAMETRAL	150	61	∠ TO FABRIC	16.18	INVALID	4.12	4.51
DH-BGC12-22	338.85	DIAMETRAL	170	61	∠ TO FABRIC	19	INVALID	4.84	5.29
DH-BGC12-22	338.14	DIAMETRAL	135	61	∠ TO FABRIC	31.64	VALID	8.06	8.82
DH-BGC12-22	342.08	DIAMETRAL	170	61	∠ TO FABRIC	29.7	VALID	7.57	8.27
DH-BGC12-22	346.42	DIAMETRAL	185	61	∠ TO FABRIC	18.98	VALID	4.84	5.29
DH-BGC12-22	348.27	DIAMETRAL	140	61	∠ TO FABRIC	26.72	VALID	6.81	7.44
DH-BGC12-22	351.74	DIAMETRAL	115	61	NA	31.28	VALID	7.97	8.72
DH-BGC12-22	355.74	DIAMETRAL	220	61	∠ TO FABRIC	30	VALID	7.64	8.36

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-22	357.95	DIAMETRAL	120	61	∠ TO FABRIC	10.1	INVALID	2.57	2.81
DH-BGC12-22	361.66	DIAMETRAL	110	61	∠ TO FABRIC	16.04	VALID	4.09	4.47
DH-BGC12-22	363.84	DIAMETRAL	80	61	NA	14.78	VALID	3.77	4.12
DH-BGC12-22	368.87	DIAMETRAL	170	61	NA	12.12	INVALID	3.09	3.38
DH-BGC12-22	372.4	DIAMETRAL	140	61	NA	16.2	VALID	4.13	4.51
DH-BGC12-22	376.38	DIAMETRAL	150	61	NA	28.3	VALID	7.21	7.88
DH-BGC12-22	378.66	DIAMETRAL	180	61	NA	14.96	VALID	3.81	4.17
DH-BGC12-22	381.13	DIAMETRAL	110	61	∠ TO FABRIC	15.8	INVALID	4.03	4.40
DH-BGC12-22	384.25	DIAMETRAL	160	61	∠ TO FABRIC	22.54	VALID	5.74	6.28
DH-BGC12-22	387.29	DIAMETRAL	90	61	∠ TO FABRIC	25.38	VALID	6.47	7.07
DH-BGC12-22	387.98	DIAMETRAL	115	61	∠ TO FABRIC	18.46	VALID	4.70	5.14
DH-BGC12-22	383.1	DIAMETRAL	110	61	∠ TO FABRIC	22.62	VALID	5.76	6.30
DH-BGC12-22	383.36	DIAMETRAL	160	61	∠ TO FABRIC	31.72	VALID	8.08	8.84
DH-BGC12-22	390.33	DIAMETRAL	130	61	∠ TO FABRIC	31.12	VALID	7.93	8.67
DH-BGC12-22	395.31	DIAMETRAL	170	61	∠ TO FABRIC	13.74	INVALID	3.50	3.83
DH-BGC12-22	394.84	DIAMETRAL	160	61	∠ TO FABRIC	12.32	INVALID	3.14	3.43
DH-BGC12-22	398.3	DIAMETRAL	110	61	∠ TO FABRIC	15.64	INVALID	3.98	4.36
DH-BGC12-22	401.52	DIAMETRAL	115	61	∠ TO FABRIC	14.98	VALID	3.82	4.17
DH-BGC12-22	404.74	DIAMETRAL	175	61	∠ TO FABRIC	11.62	VALID	2.96	3.24
DH-BGC12-22	407.45	DIAMETRAL	130	61	∠ TO FABRIC	19.92	VALID	5.08	5.55
DH-BGC12-22	408.94	DIAMETRAL	120	61	∠ TO FABRIC	12.3	INVALID	3.13	3.43
DH-BGC12-22	413.96	DIAMETRAL	235	61	∠ TO FABRIC	29.14	VALID	7.42	8.12
DH-BGC12-22	416.22	DIAMETRAL	130	61	∠ TO FABRIC	24.5	INVALID	6.24	6.83
DH-BGC12-22	419.38	DIAMETRAL	115	61	∠ TO FABRIC	26.66	INVALID	6.79	7.43
DH-BGC12-22	429.2	DIAMETRAL	145	61	∠ TO FABRIC	29.84	VALID	7.60	8.31
DH-BGC12-22	425.85	DIAMETRAL	140	61	∠ TO FABRIC	21.74	VALID	5.54	6.06
DH-BGC12-22	436.53	DIAMETRAL	125	61	∠ TO FABRIC	10.58	INVALID	2.70	2.95
DH-BGC12-22	436.65	DIAMETRAL	115	61	∠ TO FABRIC	15.58	INVALID	3.97	4.34
DH-BGC12-22	436.77	DIAMETRAL	135	61	∠ TO FABRIC	10.82	INVALID	2.76	3.01
DH-BGC12-22	437.17	DIAMETRAL	100	61	∠ TO FABRIC	28.96	VALID	7.38	8.07
DH-BGC12-22	437.32	DIAMETRAL	190	61	∠ TO FABRIC	29.94	VALID	7.63	8.34
DH-BGC12-22	437.5	DIAMETRAL	135	61	∠ TO FABRIC	28.36	VALID	7.23	7.90
DH-BGC12-22	7.37	DIAMETRAL	318	61	NA	15.16	VALID	3.86	4.22
DH-BGC12-22	5.65	DIAMETRAL	291	61	NA	13.22	VALID	3.37	3.68
DH-BGC12-22	3.37	DIAMETRAL	182	61	NA	14.2	VALID	3.62	3.96
DH-BGC12-22	13.17	DIAMETRAL	275	61	NA	27.64	VALID	7.04	7.70
DH-BGC12-22	15.01	DIAMETRAL	145	61	∠ TO FABRIC	24.24	INVALID	6.18	6.75

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-22	15.94	DIAMETRAL	163	61	// TO FABRIC	17.58	VALID	4.48	4.90
DH-BGC12-22	21.12	DIAMETRAL	135	61	NA	10.16	VALID	2.59	2.83
DH-BGC12-22	26.54	DIAMETRAL	250	61	NA	17.32	VALID	4.41	4.83
DH-BGC12-22	80.89	DIAMETRAL	115	61	// TO FABRIC	7.54	VALID	1.92	2.10
DH-BGC12-22	53.63	DIAMETRAL	141	61	// TO FABRIC	9.2	VALID	2.34	2.56
DH-BGC12-22	50.7	DIAMETRAL	300	61	∠ TO FABRIC	26.84	INVALID	6.84	7.48
DH-BGC12-22	50.16	DIAMETRAL	410	61	∠ TO FABRIC	27.08	VALID	6.90	7.55
DH-BGC12-22	57.8	DIAMETRAL	135	61	// TO FABRIC	13.7	VALID	3.49	3.82
DH-BGC12-22	59.79	DIAMETRAL	170	61	∠ TO FABRIC	18.82	VALID	4.79	5.24
DH-BGC12-22	23.88	DIAMETRAL	285	61	NA	13.42	VALID	3.42	3.74
DH-BGC12-22	25.05	DIAMETRAL	202	61	NA	9.72	VALID	2.48	2.71
DH-BGC12-22	39.63	DIAMETRAL	226	61	∠ TO FABRIC	34.34	VALID	8.75	9.57
DH-BGC12-22	33.26	DIAMETRAL	199	61	NA	22.94	VALID	5.84	6.39
DH-BGC12-22	35.28	DIAMETRAL	155	61	NA	23.12	INVALID	5.89	6.44
DH-BGC12-22	35.16	DIAMETRAL	280	61	NA	11.14	VALID	2.84	3.10
DH-BGC12-22	40.11	DIAMETRAL	240	61	NA	29.18	INVALID	7.43	8.13
DH-BGC12-22	39.71	DIAMETRAL	200	61	NA	22.2	VALID	5.66	6.19
DH-BGC12-22	42.49	DIAMETRAL	101	61	// TO FABRIC	10.26	VALID	2.61	2.86
DH-BGC12-22	45.72	DIAMETRAL	165	61	∠ TO FABRIC	20.78	VALID	5.29	5.79
DH-BGC12-22	47.58	DIAMETRAL	243	61	// TO FABRIC	11.98	VALID	3.05	3.34
DH-BGC12-22	26.15	DIAMETRAL	208	61	NA	22.82	INVALID	5.81	6.36
DH-BGC12-22	24.9	DIAMETRAL	212	61	NA	28.8	VALID	7.34	8.02
DH-BGC12-22	27.37	DIAMETRAL	310	61	// TO FABRIC	15.3	VALID	3.90	4.26
DH-BGC12-22	64.73	DIAMETRAL	189	61	∠ TO FABRIC	25.84	INVALID	6.58	7.20
DH-BGC12-22	64.67	DIAMETRAL	120	61	// TO FABRIC	13.46	VALID	3.43	3.75
DH-BGC12-22	67.72	DIAMETRAL	113	61	// TO FABRIC	16.5	VALID	4.20	4.60
DH-BGC12-22	289.7	DIAMETRAL	150	61	NA	25.86	VALID	6.59	7.21
DH-BGC12-22	295.2	DIAMETRAL	220	61	NA	18.24	INVALID	4.65	5.08
DH-BGC12-22	296.33	DIAMETRAL	150	61	NA	25.24	VALID	6.43	7.03
DH-BGC12-22	299.45	DIAMETRAL	170	61	∠ TO FABRIC	19.72	VALID	5.02	5.49
DH-BGC12-22	581.03	DIAMETRAL	100	61	∠ TO FABRIC	32.22	VALID	8.21	8.98
DH-BGC12-22	174.42	DIAMETRAL	135	61	∠ TO FABRIC	24.48	VALID	6.24	6.82
DH-BGC12-22	176.91	DIAMETRAL	160	61	∠ TO FABRIC	18.72	INVALID	4.77	5.22
DH-BGC12-22	178.08	DIAMETRAL	165	61	∠ TO FABRIC	18.22	VALID	4.64	5.08
DH-BGC12-22	183.79	DIAMETRAL	145	61	∠ TO FABRIC	29.48	VALID	7.51	8.21
DH-BGC12-22	185.2	DIAMETRAL	230	61	∠ TO FABRIC	22.84	VALID	5.82	6.36
DH-BGC12-22	188.91	DIAMETRAL	250	61	∠ TO FABRIC	26.6	VALID	6.78	7.41

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-22	192.74	DIAMETRAL	220	61	∠ TO FABRIC	34.16	VALID	8.70	9.52
DH-BGC12-22	197.13	DIAMETRAL	130	61	∠ TO FABRIC	25.1	VALID	6.39	6.99
DH-BGC12-22	201.72	DIAMETRAL	120	61	∠ TO FABRIC	19.16	VALID	4.88	5.34
DH-BGC12-22	204.74	DIAMETRAL	190	61	∠ TO FABRIC	23.62	VALID	6.02	6.58
DH-BGC12-22	209.71	DIAMETRAL	130	61	∠ TO FABRIC	9.48	INVALID	2.42	2.64
DH-BGC12-22	211.04	DIAMETRAL	190	61	∠ TO FABRIC	29.58	VALID	7.54	8.24
DH-BGC12-22	215.42	DIAMETRAL	120	61	∠ TO FABRIC	29.36	INVALID	7.48	8.18
DH-BGC12-22	218.45	DIAMETRAL	170	61	∠ TO FABRIC	31.4	VALID	8.00	8.75
DH-BGC12-22	222.38	DIAMETRAL	150	61	∠ TO FABRIC	15.14	VALID	3.86	4.22
DH-BGC12-22	224.64	DIAMETRAL	170	61	∠ TO FABRIC	35.82	VALID	9.13	9.98
DH-BGC12-22	225.49	DIAMETRAL	160	61	∠ TO FABRIC	33.02	VALID	8.41	9.20
DH-BGC12-22	225.65	DIAMETRAL	145	61	∠ TO FABRIC	19.7	INVALID	5.02	5.49
DH-BGC12-22	225.82	DIAMETRAL	210	61	∠ TO FABRIC	20.98	INVALID	5.35	5.85
DH-BGC12-22	225.98	DIAMETRAL	130	61	∠ TO FABRIC	21.82	VALID	5.56	6.08
DH-BGC12-22	224.32	DIAMETRAL	120	61	∠ TO FABRIC	32.22	VALID	8.21	8.98
DH-BGC12-22	228.27	DIAMETRAL	140	61	∠ TO FABRIC	25.3	VALID	6.45	7.05
DH-BGC12-22	231.84	DIAMETRAL	150	61	∠ TO FABRIC	25.2	VALID	6.42	7.02
DH-BGC12-22	235.34	DIAMETRAL	150	61	∠ TO FABRIC	25.6	INVALID	6.52	7.13
DH-BGC12-22	237.68	DIAMETRAL	230	61	∠ TO FABRIC	24.38	INVALID	6.21	6.79
DH-BGC12-22	241.47	DIAMETRAL	140	61	∠ TO FABRIC	22.66	INVALID	5.77	6.31
DH-BGC12-22	243	DIAMETRAL	180	61	∠ TO FABRIC	21.4	INVALID	5.45	5.96
DH-BGC12-22	241.59	DIAMETRAL	120	61	∠ TO FABRIC	31.38	VALID	7.99	8.74
DH-BGC12-22	247.34	DIAMETRAL	100	61	∠ TO FABRIC	18.16	VALID	4.63	5.06
DH-BGC12-22	252.04	DIAMETRAL	150	61	∠ TO FABRIC	23.5	VALID	5.99	6.55
DH-BGC12-22	255.34	DIAMETRAL	170	61	∠ TO FABRIC	2.78	INVALID	0.71	0.77
DH-BGC12-22	259.59	DIAMETRAL	190	61	NA	14.14	VALID	3.60	3.94
DH-BGC12-22	260.82	DIAMETRAL	200	61	NA	18.68	INVALID	4.76	5.20
DH-BGC12-22	265.33	DIAMETRAL	150	61	∠ TO FABRIC	38.42	VALID	9.79	10.70
DH-BGC12-22	267.28	DIAMETRAL	120	61	NA	35.82	VALID	9.13	9.98
DH-BGC12-22	270.6	DIAMETRAL	140	61	NA	25.28	VALID	6.44	7.04
DH-BGC12-22	274.87	DIAMETRAL	120	61	NA	31.62	VALID	8.06	8.81
DH-BGC12-22	278.69	DIAMETRAL	130	61	NA	24.68	VALID	6.29	6.88
DH-BGC12-22	278.84	DIAMETRAL	140	61	NA	27.02	VALID	6.88	7.53
DH-BGC12-22	279.24	DIAMETRAL	130	61	NA	33.16	VALID	8.45	9.24
DH-BGC12-22	279.38	DIAMETRAL	110	61	NA	23.04	VALID	5.87	6.42
DH-BGC12-22	282.47	DIAMETRAL	180	61	NA	39.62	VALID	10.09	11.04
DH-BGC12-22	286.44	DIAMETRAL	165	61	NA	22.88	VALID	5.83	6.37

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-22	473.12	DIAMETRAL	125	61	∠ TO FABRIC	19.1	INVALID	4.87	5.32
DH-BGC12-22	459.15	DIAMETRAL	120	61	∠ TO FABRIC	36.53	VALID	9.31	10.18
DH-BGC12-22	463.04	DIAMETRAL	140	61	∠ TO FABRIC	22.4	INVALID	5.71	6.24
DH-BGC12-22	464.18	DIAMETRAL	160	61	∠ TO FABRIC	30.72	VALID	7.83	8.56
DH-BGC12-22	479.24	DIAMETRAL	160	61	∠ TO FABRIC	33.22	VALID	8.46	9.26
DH-BGC12-22	482.29	DIAMETRAL	180	61	∠ TO FABRIC	33.04	VALID	8.42	9.21
DH-BGC12-22	484.8	DIAMETRAL	140	61	∠ TO FABRIC	16.3	INVALID	4.15	4.54
DH-BGC12-22	488.24	DIAMETRAL	100	61	NA	37.64	VALID	9.59	10.49
DH-BGC12-22	490.28	DIAMETRAL	110	61	∠ TO FABRIC	19.6	VALID	4.99	5.46
DH-BGC12-22	493.74	DIAMETRAL	130	61	∠ TO FABRIC	48.56	VALID	12.37	13.53
DH-BGC12-22	497.34	DIAMETRAL	135	61	∠ TO FABRIC	23.18	INVALID	5.91	6.46
DH-BGC12-22	500.32	DIAMETRAL	150	61	∠ TO FABRIC	44.02	VALID	11.21	12.26
DH-BGC12-22	503.66	DIAMETRAL	140	61	∠ TO FABRIC	17.28	INVALID	4.40	4.81
DH-BGC12-22	508.09	DIAMETRAL	100	61	∠ TO FABRIC	17.56	INVALID	4.47	4.89
DH-BGC12-22	506.64	DIAMETRAL	130	61	∠ TO FABRIC	46.14	VALID	11.76	12.86
DH-BGC12-22	511.72	DIAMETRAL	125	61	∠ TO FABRIC	2.4	INVALID	0.61	0.67
DH-BGC12-22	512.77	DIAMETRAL	170	61	∠ TO FABRIC	36	VALID	9.17	10.03
DH-BGC12-22	517.25	DIAMETRAL	135	61	∠ TO FABRIC	30.12	VALID	7.67	8.39
DH-BGC12-22	518.33	DIAMETRAL	95	61	∠ TO FABRIC	10.92	INVALID	2.78	3.04
DH-BGC12-22	523.97	DIAMETRAL	210	61	∠ TO FABRIC	28.24	VALID	7.19	7.87
DH-BGC12-22	527.85	DIAMETRAL	120	61	NA	19.92	VALID	5.08	5.55
DH-BGC12-22	529.98	DIAMETRAL	95	61	NA	15.44	VALID	3.93	4.30
DH-BGC12-22	532.75	DIAMETRAL	155	61	∠ TO FABRIC	35.6	VALID	9.07	9.92
DH-BGC12-22	536.27	DIAMETRAL	150	61	∠ TO FABRIC	18.14	INVALID	4.62	5.05
DH-BGC12-22	539.33	DIAMETRAL	140	61	∠ TO FABRIC	13.32	VALID	3.39	3.71
DH-BGC12-22	543.36	DIAMETRAL	180	61	∠ TO FABRIC	36.48	VALID	9.29	10.16
DH-BGC12-22	545.84	DIAMETRAL	135	61	∠ TO FABRIC	24.44	INVALID	6.23	6.81
DH-BGC12-22	549	DIAMETRAL	150	61	NA	17.74	VALID	4.52	4.94
DH-BGC12-22	551.24	DIAMETRAL	250	61	NA	14.08	VALID	3.59	3.92
DH-BGC12-22	554.71	DIAMETRAL	170	61	∠ TO FABRIC	12	INVALID	3.06	3.34
DH-BGC12-22	560.03	DIAMETRAL	200	61	∠ TO FABRIC	18.32	VALID	4.67	5.10
DH-BGC12-22	565.94	DIAMETRAL	130	61	NA	8.2	VALID	2.09	2.28
DH-BGC12-22	570.51	DIAMETRAL	140	61	∠ TO FABRIC	33.38	VALID	8.50	9.30
DH-BGC12-22	576.77	DIAMETRAL	170	61	∠ TO FABRIC	12.8	VALID	3.26	3.57
DH-BGC12-22	437.76	DIAMETRAL	120	61	∠ TO FABRIC	30.16	INVALID	7.68	8.40
DH-BGC12-22	442.51	DIAMETRAL	120	61	∠ TO FABRIC	22.62	VALID	5.76	6.30
DH-BGC12-22	448.46	DIAMETRAL	120	61	∠ TO FABRIC	11.56	INVALID	2.95	3.22

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-22	449.5	DIAMETRAL	125	61	∠ TO FABRIC	12.8	VALID	3.26	3.57
DH-BGC12-22	453.92	DIAMETRAL	125	61	∠ TO FABRIC	16.8	INVALID	4.28	4.68
DH-BGC12-22	454.5	DIAMETRAL	130	61	∠ TO FABRIC	12.4	INVALID	3.16	3.45
DH-BGC12-22	454.94	DIAMETRAL	140	61	∠ TO FABRIC	31.08	VALID	7.92	8.66
DH-BGC12-22	468.39	DIAMETRAL	150	61	∠ TO FABRIC	15.22	VALID	3.88	4.24
DH-BGC12-22	470.08	DIAMETRAL	140	61	∠ TO FABRIC	26.2	VALID	6.67	7.30
DH-BGC12-23	78.47	DIAMETRAL	210	61	NA	33.38	VALID	8.50	9.30
DH-BGC12-23	82.05	DIAMETRAL	120	61	NA	22.68	VALID	5.78	6.32
DH-BGC12-23	83.23	DIAMETRAL	170	61	NA	13.64	INVALID	3.48	3.80
DH-BGC12-23	86.29	DIAMETRAL	170	61	NA	36.76	VALID	9.37	10.24
DH-BGC12-23	91.27	DIAMETRAL	100	61	NA	15.14	INVALID	3.86	4.22
DH-BGC12-23	7.87	DIAMETRAL	130	61	∠ TO FABRIC	17.6	INVALID	4.48	4.90
DH-BGC12-23	8.01	DIAMETRAL	155	61	∠ TO FABRIC	28.96	VALID	7.38	8.07
DH-BGC12-23	8.3	DIAMETRAL	125	61	∠ TO FABRIC	25.16	VALID	6.41	7.01
DH-BGC12-23	8.46	DIAMETRAL	175	61	∠ TO FABRIC	22.12	VALID	5.64	6.16
DH-BGC12-23	8.76	DIAMETRAL	280	61	∠ TO FABRIC	21.59	VALID	5.50	6.02
DH-BGC12-23	12.88	DIAMETRAL	140	61	NA	9.54	INVALID	2.43	2.66
DH-BGC12-23	16	DIAMETRAL	150	61	NA	15.4	VALID	3.92	4.29
DH-BGC12-23	18.81	DIAMETRAL	160	61	NA	20.4	VALID	5.20	5.68
DH-BGC12-23	21.86	DIAMETRAL	160	61	NA	20.66	VALID	5.26	5.76
DH-BGC12-23	22.02	DIAMETRAL	125	61	NA	25.12	VALID	6.40	7.00
DH-BGC12-23	22.57	DIAMETRAL	110	61	NA	23.38	VALID	5.96	6.51
DH-BGC12-23	22.7	DIAMETRAL	140	61	NA	32.7	VALID	8.33	9.11
DH-BGC12-23	26.24	DIAMETRAL	190	61	NA	24.34	VALID	6.20	6.78
DH-BGC12-23	29.69	DIAMETRAL	200	61	NA	16.82	VALID	4.29	4.69
DH-BGC12-23	30.67	DIAMETRAL	135	61	NA	26.2	VALID	6.67	7.30
DH-BGC12-23	34.88	DIAMETRAL	130	61	NA	16.58	VALID	4.22	4.62
DH-BGC12-23	36.42	DIAMETRAL	100	61	NA	2.58	INVALID	0.66	0.72
DH-BGC12-23	41.66	DIAMETRAL	165	61	NA	14.68	INVALID	3.74	4.09
DH-BGC12-23	41.2	DIAMETRAL	155	61	NA	4.36	VALID	1.11	1.21
DH-BGC12-23	45.32	DIAMETRAL	110	61	NA	16.76	INVALID	4.27	4.67
DH-BGC12-23	45.2	DIAMETRAL	120	61	NA	18.76	INVALID	4.78	5.23
DH-BGC12-23	45.76	DIAMETRAL	220	61	NA	17.1	VALID	4.36	4.76
DH-BGC12-23	45.8	DIAMETRAL	130	61	NA	22.08	VALID	5.63	6.15
DH-BGC12-23	45.97	DIAMETRAL	130	61	NA	17.98	VALID	4.58	5.01
DH-BGC12-23	46.12	DIAMETRAL	150	61	NA	20.4	VALID	5.20	5.68
DH-BGC12-23	49.85	DIAMETRAL	210	61	NA	25.36	VALID	6.46	7.07

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-23	53.08	DIAMETRAL	120	61	NA	9.88	INVALID	2.52	2.75
DH-BGC12-23	56.77	DIAMETRAL	130	61	NA	17.34	VALID	4.42	4.83
DH-BGC12-23	59.08	DIAMETRAL	160	61	NA	24.74	VALID	6.30	6.89
DH-BGC12-23	63.18	DIAMETRAL	160	61	NA	24.14	VALID	6.15	6.73
DH-BGC12-23	64.29	DIAMETRAL	180	61	NA	15.96	INVALID	4.07	4.45
DH-BGC12-23	69.11	DIAMETRAL	120	61	NA	33.46	VALID	8.52	9.32
DH-BGC12-23	72.35	DIAMETRAL	210	61	NA	14.3	INVALID	3.64	3.98
DH-BGC12-23	76.56	DIAMETRAL	160	61	NA	24.14	VALID	6.15	6.73
DH-BGC12-23	92.52	DIAMETRAL	180	61	NA	18.64	VALID	4.75	5.19
DH-BGC12-23	95.75	DIAMETRAL	150	61	NA	37.84	VALID	9.64	10.54
DH-BGC12-23	99.44	DIAMETRAL	140	61	NA	29.08	VALID	7.41	8.10
DH-BGC12-23	103.47	DIAMETRAL	170	61	NA	42.12	VALID	10.73	11.74
DH-BGC12-23	105.69	DIAMETRAL	155	61	NA	14.2	INVALID	3.62	3.96
DH-BGC12-23	110.1	DIAMETRAL	110	61	NA	26.03	VALID	6.63	7.25
DH-BGC12-23	114.36	DIAMETRAL	160	61	NA	24.74	INVALID	6.30	6.89
DH-BGC12-23	114.52	DIAMETRAL	155	61	NA	21.5	VALID	5.48	5.99
DH-BGC12-23	118.58	DIAMETRAL	115	61	NA	28.6	VALID	7.29	7.97
DH-BGC12-23	121.51	DIAMETRAL	115	61	NA	23.4	VALID	5.96	6.52
DH-BGC12-23	125.59	DIAMETRAL	200	61	NA	22.56	VALID	5.75	6.29
DH-BGC12-23	128.84	DIAMETRAL	150	61	NA	12.07	INVALID	3.08	3.36
DH-BGC12-23	132.77	DIAMETRAL	160	61	NA	24.04	VALID	6.12	6.70
DH-BGC12-23	136.3	DIAMETRAL	95	61	NA	20.46	VALID	5.21	5.70
DH-BGC12-23	138.46	DIAMETRAL	110	61	NA	43	VALID	10.96	11.98
DH-BGC12-23	142.15	DIAMETRAL	165	61	NA	35.8	VALID	9.12	9.97
DH-BGC12-23	144.72	DIAMETRAL	155	61	NA	24.8	VALID	6.32	6.91
DH-BGC12-23	146.26	DIAMETRAL	120	61	NA	31.36	VALID	7.99	8.74
DH-BGC12-23	146.35	DIAMETRAL	80	61	NA	30.78	VALID	7.84	8.58
DH-BGC12-23	146.73	DIAMETRAL	100	61	NA	31.92	VALID	8.13	8.89
DH-BGC12-23	149.15	DIAMETRAL	100	61	NA	29.98	VALID	7.64	8.35
DH-BGC12-23	155.51	DIAMETRAL	130	61	NA	31.2	VALID	7.95	8.69
DH-BGC12-23	158.79	DIAMETRAL	110	61	NA	36.08	VALID	9.19	10.05
DH-BGC12-23	160.72	DIAMETRAL	165	61	NA	38.56	VALID	9.82	10.74
DH-BGC12-23	165.83	DIAMETRAL	135	61	NA	25.46	VALID	6.49	7.09
DH-BGC12-23	169.84	DIAMETRAL	140	61	NA	26.68	INVALID	6.80	7.43
DH-BGC12-23	174.16	DIAMETRAL	160	61	NA	35.4	VALID	9.02	9.86
DH-BGC12-23	177.14	DIAMETRAL	165	61	NA	13.08	VALID	3.33	3.64
DH-BGC12-23	180.4	DIAMETRAL	120	61	NA	32.4	VALID	8.25	9.03

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-23	182.42	DIAMETRAL	140	61	NA	33.82	INVALID	8.62	9.42
DH-BGC12-23	186.29	DIAMETRAL	120	61	NA	27.26	VALID	6.95	7.60
DH-BGC12-23	190.14	DIAMETRAL	100	61	NA	38.2	VALID	9.73	10.64
DH-BGC12-23	193.24	DIAMETRAL	135	61	NA	12.9	INVALID	3.29	3.59
DH-BGC12-23	195.58	DIAMETRAL	165	61	NA	14.74	VALID	3.76	4.11
DH-BGC12-23	199.82	DIAMETRAL	100	61	NA	18.58	INVALID	4.73	5.18
DH-BGC12-23	199.68	DIAMETRAL	190	61	NA	31.5	VALID	8.03	8.78
DH-BGC12-23	202.06	DIAMETRAL	150	61	NA	26.74	VALID	6.81	7.45
DH-BGC12-23	202.2	DIAMETRAL	160	61	NA	28.76	VALID	7.33	8.01
DH-BGC12-23	202.35	DIAMETRAL	135	61	NA	23.1	VALID	5.89	6.44
DH-BGC12-23	202.74	DIAMETRAL	130	61	NA	17.38	INVALID	4.43	4.84
DH-BGC12-23	204.67	DIAMETRAL	110	61	NA	21.94	INVALID	5.59	6.11
DH-BGC12-23	208.26	DIAMETRAL	140	61	NA	35.94	VALID	9.16	10.01
DH-BGC12-23	211.58	DIAMETRAL	130	61	⊥ TO FABRIC	22.82	VALID	5.81	6.36
DH-BGC12-23	215.94	DIAMETRAL	140	61	⊥ TO FABRIC	24.68	INVALID	6.29	6.88
DH-BGC12-23	216.42	DIAMETRAL	130	61	⊥ TO FABRIC	26.62	VALID	6.78	7.42
DH-BGC12-23	222.42	DIAMETRAL	185	61	NA	32.96	VALID	8.40	9.18
DH-BGC12-23	224.6	DIAMETRAL	185	61	NA	15.04	INVALID	3.83	4.19
DH-BGC12-23	226.44	DIAMETRAL	155	61	NA	19.22	INVALID	4.90	5.36
DH-BGC12-23	229.77	DIAMETRAL	180	61	NA	17.68	VALID	4.50	4.93
DH-BGC12-23	233.91	DIAMETRAL	200	61	NA	24.08	VALID	6.13	6.71
DH-BGC12-23	236.91	DIAMETRAL	180	61	NA	7.64	INVALID	1.95	2.13
DH-BGC12-23	240.8	DIAMETRAL	160	61	NA	13.92	INVALID	3.55	3.88
DH-BGC12-23	242.41	DIAMETRAL	190	61	NA	33.76	VALID	8.60	9.41
DH-BGC12-23	247.04	DIAMETRAL	175	61	NA	29.26	VALID	7.45	8.15
DH-BGC12-23	251.69	DIAMETRAL	140	61	NA	22.24	VALID	5.67	6.20
DH-BGC12-23	256.15	DIAMETRAL	110	61	NA	14.36	VALID	3.66	4.00
DH-BGC12-23	260.52	DIAMETRAL	110	61	NA	26.12	VALID	6.65	7.28
DH-BGC12-23	260.97	DIAMETRAL	110	61	NA	15.9	VALID	4.05	4.43
DH-BGC12-23	261.1	DIAMETRAL	140	61	NA	22.42	VALID	5.71	6.25
DH-BGC12-23	261.24	DIAMETRAL	120	61	NA	28.7	VALID	7.31	8.00
DH-BGC12-23	265.72	DIAMETRAL	170	61	NA	9.68	INVALID	2.47	2.70
DH-BGC12-23	267.93	DIAMETRAL	115	61	NA	21.56	VALID	5.49	6.01
DH-BGC12-23	272.39	DIAMETRAL	115	61	NA	20.32	VALID	5.18	5.66
DH-BGC12-23	275.05	DIAMETRAL	200	61	NA	21.66	VALID	5.52	6.03
DH-BGC12-23	277.7	DIAMETRAL	130	61	NA	24.28	INVALID	6.19	6.76
DH-BGC12-23	281.87	DIAMETRAL	220	61	NA	21.04	VALID	5.36	5.86

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-23	285.17	DIAMETRAL	160	61	NA	28.58	VALID	7.28	7.96
DH-BGC12-23	288.55	DIAMETRAL	140	61	NA	22.92	VALID	5.84	6.39
DH-BGC12-23	293.5	DIAMETRAL	130	61	NA	18.92	INVALID	4.82	5.27
DH-BGC12-23	296.14	DIAMETRAL	120	61	NA	9.44	VALID	2.41	2.63
DH-BGC12-23	300.14	DIAMETRAL	210	61	NA	32.88	VALID	8.38	9.16
DH-BGC12-23	303.05	DIAMETRAL	155	61	NA	17.12	VALID	4.36	4.77
DH-BGC12-23	308.36	DIAMETRAL	180	61	NA	16.8	INVALID	4.28	4.68
DH-BGC12-23	308.88	DIAMETRAL	125	61	NA	19.78	VALID	5.04	5.51
DH-BGC12-23	309.16	DIAMETRAL	200	61	NA	10	INVALID	2.55	2.79
DH-BGC12-23	309.36	DIAMETRAL	150	61	NA	17.02	INVALID	4.34	4.74
DH-BGC12-23	309.54	DIAMETRAL	200	61	NA	21.06	VALID	5.37	5.87
DH-BGC12-23	309.75	DIAMETRAL	220	61	NA	28.3	VALID	7.21	7.88
DH-BGC12-23	309.85	DIAMETRAL	120	61	NA	21.9	VALID	5.58	6.10
DH-BGC12-23	311.43	DIAMETRAL	140	61	NA	19.46	INVALID	4.96	5.42
DH-BGC12-23	316.01	DIAMETRAL	130	61	NA	14.48	VALID	3.69	4.03
DH-BGC12-23	319.33	DIAMETRAL	180	61	NA	10.6	INVALID	2.70	2.95
DH-BGC12-23	321.31	DIAMETRAL	150	61	NA	19.5	VALID	4.97	5.43
DH-BGC12-23	325.23	DIAMETRAL	210	61	NA	18.56	INVALID	4.73	5.17
DH-BGC12-23	327.26	DIAMETRAL	215	61	NA	23.36	VALID	5.95	6.51
DH-BGC12-23	331.72	DIAMETRAL	190	61	NA	16.06	INVALID	4.09	4.47
DH-BGC12-23	335	DIAMETRAL	200	61	NA	32.56	VALID	8.30	9.07
DH-BGC12-23	336.26	DIAMETRAL	250	61	NA	26.36	VALID	6.72	7.34
DH-BGC12-23	336.47	DIAMETRAL	160	61	NA	25.86	VALID	6.59	7.21
DH-BGC12-23	336.92	DIAMETRAL	125	61	NA	31.78	VALID	8.10	8.85
DH-BGC12-23	337.06	DIAMETRAL	170	61	NA	18.54	INVALID	4.72	5.17
DH-BGC12-23	340.03	DIAMETRAL	95	61	NA	22.6	VALID	5.76	6.30
DH-BGC12-23	347.35	DIAMETRAL	140	61	NA	10.76	VALID	2.74	3.00
DH-BGC12-23	350.53	DIAMETRAL	120	61	NA	20.7	INVALID	5.27	5.77
DH-BGC12-23	353.53	DIAMETRAL	140	61	NA	21.56	VALID	5.49	6.01
DH-BGC12-23	356.55	DIAMETRAL	180	61	NA	9.03	INVALID	2.30	2.52
DH-BGC12-23	358.73	DIAMETRAL	155	61	NA	11.04	INVALID	2.81	3.08
DH-BGC12-23	361.16	DIAMETRAL	180	61	NA	17.5	INVALID	4.46	4.88
DH-BGC12-23	361.45	DIAMETRAL	160	61	NA	19.14	VALID	4.88	5.33
DH-BGC12-23	366.22	DIAMETRAL	200	61	NA	37.5	VALID	9.55	10.45
DH-BGC12-23	367.31	DIAMETRAL	170	61	NA	34.74	VALID	8.85	9.68
DH-BGC12-23	372.24	DIAMETRAL	160	61	NA	20.28	VALID	5.17	5.65
DH-BGC12-23	376.27	DIAMETRAL	180	61	NA	15.14	INVALID	3.86	4.22

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-23	376.46	DIAMETRAL	165	61	NA	22.64	INVALID	5.77	6.31
DH-BGC12-23	380.25	DIAMETRAL	160	61	NA	41.72	VALID	10.63	11.62
DH-BGC12-23	383.5	DIAMETRAL	260	61	NA	16.74	INVALID	4.26	4.66
DH-BGC12-23	385.07	DIAMETRAL	200	61	NA	39.06	VALID	9.95	10.88
DH-BGC12-23	389.45	DIAMETRAL	200	61	NA	41.14	VALID	10.48	11.46
DH-BGC12-23	393.43	DIAMETRAL	150	61	NA	39.22	VALID	9.99	10.93
DH-BGC12-23	395.51	DIAMETRAL	140	61	NA	35.1	VALID	8.94	9.78
DH-BGC12-23	399.81	DIAMETRAL	175	61	NA	9.28	VALID	2.36	2.59
DH-BGC12-23	405.72	DIAMETRAL	110	61	NA	25.48	VALID	6.49	7.10
DH-BGC12-23	409.09	DIAMETRAL	130	61	NA	22.14	VALID	5.64	6.17
DH-BGC12-23	414.58	DIAMETRAL	140	61	NA	22.98	VALID	5.85	6.40
DH-BGC12-23	435.08	DIAMETRAL	190	61	NA	34.38	VALID	8.76	9.58
DH-BGC12-23	437.53	DIAMETRAL	150	61	NA	24.88	INVALID	6.34	6.93
DH-BGC12-23	439.53	DIAMETRAL	180	61	NA	27.32	INVALID	6.96	7.61
DH-BGC12-23	439.36	DIAMETRAL	115	61	NA	32.68	VALID	8.33	9.11
DH-BGC12-23	443.62	DIAMETRAL	175	61	NA	39.02	VALID	9.94	10.87
DH-BGC12-23	448.82	DIAMETRAL	190	61	NA	22.14	VALID	5.64	6.17
DH-BGC12-23	453.28	DIAMETRAL	145	61	NA	28.78	VALID	7.33	8.02
DH-BGC12-23	458.57	DIAMETRAL	120	61	NA	25.38	INVALID	6.47	7.07
DH-BGC12-23	460.92	DIAMETRAL	140	61	NA	18.08	INVALID	4.61	5.04
DH-BGC12-23	462.48	DIAMETRAL	160	61	NA	8.74	VALID	2.23	2.44
DH-BGC12-23	465.2	DIAMETRAL	130	61	NA	8.32	INVALID	2.12	2.32
DH-BGC12-23	465.59	DIAMETRAL	210	61	NA	20.72	VALID	5.28	5.77
DH-BGC12-23	468.35	DIAMETRAL	140	61	NA	28.86	VALID	7.35	8.04
DH-BGC12-23	471.74	DIAMETRAL	140	61	NA	20.38	VALID	5.19	5.68
DH-BGC12-23	474.76	DIAMETRAL	185	61	NA	26.3	INVALID	6.70	7.33
DH-BGC12-23	477.56	DIAMETRAL	140	61	NA	20.3	INVALID	5.17	5.66
DH-BGC12-23	477.72	DIAMETRAL	185	61	NA	23.1	VALID	5.89	6.44
DH-BGC12-23	480.5	DIAMETRAL	180	61	NA	34.08	VALID	8.68	9.50
DH-BGC12-23	483.8	DIAMETRAL	145	61	NA	15.44	INVALID	3.93	4.30
DH-BGC12-23	487.22	DIAMETRAL	170	61	NA	28.9	VALID	7.36	8.05
DH-BGC12-23	489.93	DIAMETRAL	240	61	NA	18.44	INVALID	4.70	5.14
DH-BGC12-23	493.45	DIAMETRAL	140	61	NA	32.78	VALID	8.35	9.13
DH-BGC12-23	496.47	DIAMETRAL	180	61	NA	37.2	VALID	9.48	10.36
DH-BGC12-23	499.02	DIAMETRAL	110	61	NA	15.64	VALID	3.98	4.36
DH-BGC12-23	501.26	DIAMETRAL	130	61	NA	23.24	VALID	5.92	6.48
DH-BGC12-23	506.75	DIAMETRAL	160	61	NA	11.38	INVALID	2.90	3.17

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-23	507.91	DIAMETRAL	160	61	NA	33.18	VALID	8.45	9.24
DH-BGC12-23	511.35	DIAMETRAL	190	61	NA	15.94	VALID	4.06	4.44
DH-BGC12-23	513.14	DIAMETRAL	85	61	NA	0.22	VALID	0.06	0.06
DH-BGC12-23	514.6	DIAMETRAL	130	61	NA	28.92	VALID	7.37	8.06
DH-BGC12-23	518.73	DIAMETRAL	165	61	NA	20.88	VALID	5.32	5.82
DH-BGC12-23	521.27	DIAMETRAL	210	61	NA	23.46	VALID	5.98	6.54
DH-BGC12-23	521.7	DIAMETRAL	120	61	NA	27.08	VALID	6.90	7.55
DH-BGC12-23	522.4	DIAMETRAL	80	61	NA	33.12	VALID	8.44	9.23
DH-BGC12-23	525.34	DIAMETRAL	180	61	NA	1.5	VALID	0.38	0.42
DH-BGC12-23	526.34	DIAMETRAL	200	61	NA	0.38	VALID	0.10	0.11
DH-BGC12-23	532.47	DIAMETRAL	125	61	NA	0.88	VALID	0.22	0.25
DH-BGC12-23	537.73	DIAMETRAL	150	61	NA	3.22	VALID	0.82	0.90
DH-BGC12-23	542.37	DIAMETRAL	90	61	NA	0.64	VALID	0.16	0.18
DH-BGC12-23	542.48	DIAMETRAL	95	61	NA	0.98	VALID	0.25	0.27
DH-BGC12-23	542.83	DIAMETRAL	120	61	NA	0.46	VALID	0.12	0.13
DH-BGC12-23	549.44	DIAMETRAL	130	61	NA	0.16	VALID	0.04	0.04
DH-BGC12-23	555.55	DIAMETRAL	120	61	NA	21.32	VALID	5.43	5.94
DH-BGC12-23	556.54	DIAMETRAL	130	61	NA	12.48	VALID	3.18	3.48
DH-BGC12-23	557.47	DIAMETRAL	130	61	NA	9.56	VALID	2.44	2.66
DH-BGC12-24	412.2	DIAMETRAL	130	61	∠ TO FABRIC	25.18	VALID	6.42	7.02
DH-BGC12-24	7.7	DIAMETRAL	160	61	∠ TO FABRIC	4.2	VALID	1.07	1.17
DH-BGC12-24	13.66	DIAMETRAL	75	61	∠ TO FABRIC	14.92	VALID	3.80	4.16
DH-BGC12-24	19.76	DIAMETRAL	110	61	∠ TO FABRIC	9.62	VALID	2.45	2.68
DH-BGC12-24	26.01	DIAMETRAL	190	61	∠ TO FABRIC	9.88	VALID	2.52	2.75
DH-BGC12-24	32.15	DIAMETRAL	130	61	∠ TO FABRIC	7.7	VALID	1.96	2.15
DH-BGC12-24	38.28	DIAMETRAL	145	61	∠ TO FABRIC	3.46	INVALID	0.88	0.96
DH-BGC12-24	38.43	DIAMETRAL	160	61	∠ TO FABRIC	10.78	VALID	2.75	3.00
DH-BGC12-24	45.33	DIAMETRAL	150	61	∠ TO FABRIC	12.2	VALID	3.11	3.40
DH-BGC12-24	50.21	DIAMETRAL	140	61	∠ TO FABRIC	22.16	VALID	5.65	6.17
DH-BGC12-24	55.28	DIAMETRAL	260	61	∠ TO FABRIC	12.2	VALID	3.11	3.40
DH-BGC12-24	60.16	DIAMETRAL	130	61	∠ TO FABRIC	11.18	VALID	2.85	3.11
DH-BGC12-24	66.84	DIAMETRAL	135	61	NA	20.86	VALID	5.31	5.81
DH-BGC12-24	71.88	DIAMETRAL	180	61	NA	21.82	VALID	5.56	6.08
DH-BGC12-24	72.04	DIAMETRAL	100	61	∠ TO FABRIC	17.48	INVALID	4.45	4.87
DH-BGC12-24	72.39	DIAMETRAL	115	61	∠ TO FABRIC	19.9	VALID	5.07	5.54
DH-BGC12-24	72.51	DIAMETRAL	110	61	∠ TO FABRIC	19	VALID	4.84	5.29
DH-BGC12-24	77.63	DIAMETRAL	170	61	∠ TO FABRIC	17.64	VALID	4.49	4.91

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-24	82.02	DIAMETRAL	170	61	NA	14.34	INVALID	3.65	4.00
DH-BGC12-24	86.26	DIAMETRAL	135	61	NA	20.28	VALID	5.17	5.65
DH-BGC12-24	92	DIAMETRAL	170	61	NA	14.7	VALID	3.75	4.10
DH-BGC12-24	98.21	DIAMETRAL	110	61	NA	24.42	VALID	6.22	6.80
DH-BGC12-24	103.66	DIAMETRAL	120	61	NA	24.7	VALID	6.29	6.88
DH-BGC12-24	108.27	DIAMETRAL	135	61	NA	11.64	INVALID	2.97	3.24
DH-BGC12-24	109.1	DIAMETRAL	150	61	NA	22.4	VALID	5.71	6.24
DH-BGC12-24	115.52	DIAMETRAL	210	61	NA	23.86	VALID	6.08	6.65
DH-BGC12-24	120.95	DIAMETRAL	140	61	NA	14.4	INVALID	3.67	4.01
DH-BGC12-24	121.11	DIAMETRAL	140	61	NA	24.3	VALID	6.19	6.77
DH-BGC12-24	127.78	DIAMETRAL	220	61	NA	15.56	VALID	3.96	4.34
DH-BGC12-24	132.3	DIAMETRAL	140	61	∠ TO FABRIC	17.9	INVALID	4.56	4.99
DH-BGC12-24	132.17	DIAMETRAL	130	61	∠ TO FABRIC	17.98	INVALID	4.58	5.01
DH-BGC12-24	132.06	DIAMETRAL	95	61	∠ TO FABRIC	22.45	VALID	5.72	6.25
DH-BGC12-24	132.45	DIAMETRAL	145	61	∠ TO FABRIC	21.94	VALID	5.59	6.11
DH-BGC12-24	132.91	DIAMETRAL	120	61	∠ TO FABRIC	17.48	INVALID	4.45	4.87
DH-BGC12-24	133.05	DIAMETRAL	180	61	∠ TO FABRIC	17.88	VALID	4.56	4.98
DH-BGC12-24	138.43	DIAMETRAL	100	61	∠ TO FABRIC	24.56	INVALID	6.26	6.84
DH-BGC12-24	138.55	DIAMETRAL	100	61	∠ TO FABRIC	35.02	VALID	8.92	9.76
DH-BGC12-24	144.33	DIAMETRAL	145	61	∠ TO FABRIC	11.61	VALID	2.96	3.23
DH-BGC12-24	149.97	DIAMETRAL	140	61	∠ TO FABRIC	19.72	INVALID	5.02	5.49
DH-BGC12-24	150.1	DIAMETRAL	120	61	∠ TO FABRIC	20.38	VALID	5.19	5.68
DH-BGC12-24	155.13	DIAMETRAL	190	61	∠ TO FABRIC	30.58	VALID	7.79	8.52
DH-BGC12-24	160.72	DIAMETRAL	165	61	∠ TO FABRIC	9.22	VALID	2.35	2.57
DH-BGC12-24	166	DIAMETRAL	210	61	∠ TO FABRIC	32.66	VALID	8.32	9.10
DH-BGC12-24	172.11	DIAMETRAL	135	61	∠ TO FABRIC	22.74	INVALID	5.79	6.34
DH-BGC12-24	172.29	DIAMETRAL	130	61	∠ TO FABRIC	22.12	VALID	5.64	6.16
DH-BGC12-24	178.23	DIAMETRAL	135	61	∠ TO FABRIC	24.12	VALID	6.15	6.72
DH-BGC12-24	184.49	DIAMETRAL	145	61	∠ TO FABRIC	41.72	VALID	10.63	11.62
DH-BGC12-24	190.41	DIAMETRAL	160	61	∠ TO FABRIC	29	VALID	7.39	8.08
DH-BGC12-24	196.36	DIAMETRAL	140	61	∠ TO FABRIC	25.82	VALID	6.58	7.19
DH-BGC12-24	196.5	DIAMETRAL	200	61	∠ TO FABRIC	22.48	VALID	5.73	6.26
DH-BGC12-24	196.98	DIAMETRAL	170	61	∠ TO FABRIC	20.04	INVALID	5.11	5.58
DH-BGC12-24	197.42	DIAMETRAL	220	61	∠ TO FABRIC	26.6	VALID	6.78	7.41
DH-BGC12-24	202.76	DIAMETRAL	185	61	∠ TO FABRIC	24.24	VALID	6.18	6.75
DH-BGC12-24	208.65	DIAMETRAL	200	61	∠ TO FABRIC	18.36	VALID	4.68	5.12
DH-BGC12-24	214.77	DIAMETRAL	215	61	∠ TO FABRIC	27.4	VALID	6.98	7.63

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-24	219.98	DIAMETRAL	160	61	∠ TO FABRIC	22.4	INVALID	5.71	6.24
DH-BGC12-24	222.1	DIAMETRAL	120	61	∠ TO FABRIC	18.56	VALID	4.73	5.17
DH-BGC12-24	227.87	DIAMETRAL	120	61	∠ TO FABRIC	24.48	VALID	6.24	6.82
DH-BGC12-24	233.11	DIAMETRAL	120	61	∠ TO FABRIC	12.86	INVALID	3.28	3.58
DH-BGC12-24	235.67	DIAMETRAL	135	61	∠ TO FABRIC	21.42	INVALID	5.46	5.97
DH-BGC12-24	235.54	DIAMETRAL	110	61	∠ TO FABRIC	25.86	VALID	6.59	7.21
DH-BGC12-24	242.93	DIAMETRAL	100	61	∠ TO FABRIC	23.76	VALID	6.05	6.62
DH-BGC12-24	248.51	DIAMETRAL	185	61	∠ TO FABRIC	26.44	VALID	6.74	7.37
DH-BGC12-24	255.37	DIAMETRAL	160	61	∠ TO FABRIC	27.34	VALID	6.97	7.62
DH-BGC12-24	260.7	DIAMETRAL	185	61	∠ TO FABRIC	19.32	INVALID	4.92	5.38
DH-BGC12-24	264.17	DIAMETRAL	135	61	∠ TO FABRIC	9.7	INVALID	2.47	2.70
DH-BGC12-24	264.3	DIAMETRAL	120	61	∠ TO FABRIC	34.34	VALID	8.75	9.57
DH-BGC12-24	264.67	DIAMETRAL	135	61	∠ TO FABRIC	26.14	VALID	6.66	7.28
DH-BGC12-24	264.81	DIAMETRAL	130	61	∠ TO FABRIC	15.8	INVALID	4.03	4.40
DH-BGC12-24	264.95	DIAMETRAL	200	61	∠ TO FABRIC	28.42	VALID	7.24	7.92
DH-BGC12-24	270.69	DIAMETRAL	180	61	∠ TO FABRIC	26.72	VALID	6.81	7.44
DH-BGC12-24	275.74	DIAMETRAL	180	61	∠ TO FABRIC	31.54	VALID	8.04	8.79
DH-BGC12-24	280.09	DIAMETRAL	175	61	∠ TO FABRIC	25.86	INVALID	6.59	7.21
DH-BGC12-24	280.27	DIAMETRAL	180	61	∠ TO FABRIC	26.64	VALID	6.79	7.42
DH-BGC12-24	285.92	DIAMETRAL	135	61	∠ TO FABRIC	15.86	INVALID	4.04	4.42
DH-BGC12-24	285.15	DIAMETRAL	130	61	∠ TO FABRIC	13.74	VALID	3.50	3.83
DH-BGC12-24	291.2	DIAMETRAL	210	61	∠ TO FABRIC	27.06	VALID	6.89	7.54
DH-BGC12-24	295.08	DIAMETRAL	190	61	∠ TO FABRIC	24.24	INVALID	6.18	6.75
DH-BGC12-24	295.76	DIAMETRAL	140	61	∠ TO FABRIC	9.66	VALID	2.46	2.69
DH-BGC12-24	300.09	DIAMETRAL	170	61	∠ TO FABRIC	23.38	VALID	5.96	6.51
DH-BGC12-24	302.2	DIAMETRAL	100	61	∠ TO FABRIC	31.54	VALID	8.04	8.79
DH-BGC12-24	302.31	DIAMETRAL	95	61	∠ TO FABRIC	24.08	VALID	6.13	6.71
DH-BGC12-24	302.66	DIAMETRAL	110	61	∠ TO FABRIC	20.58	VALID	5.24	5.73
DH-BGC12-24	302.95	DIAMETRAL	180	61	∠ TO FABRIC	26.66	VALID	6.79	7.43
DH-BGC12-24	306.22	DIAMETRAL	190	61	∠ TO FABRIC	25.26	VALID	6.44	7.04
DH-BGC12-24	310.76	DIAMETRAL	180	61	∠ TO FABRIC	17.02	VALID	4.34	4.74
DH-BGC12-24	316.17	DIAMETRAL	160	61	∠ TO FABRIC	20.9	VALID	5.32	5.82
DH-BGC12-24	320.2	DIAMETRAL	140	61	∠ TO FABRIC	14.38	INVALID	3.66	4.01
DH-BGC12-24	322.92	DIAMETRAL	110	61	∠ TO FABRIC	16.14	VALID	4.11	4.50
DH-BGC12-24	323.07	DIAMETRAL	180	61	∠ TO FABRIC	14.66	VALID	3.73	4.08
DH-BGC12-24	330.6	DIAMETRAL	190	61	∠ TO FABRIC	31.02	VALID	7.90	8.64
DH-BGC12-24	334.17	DIAMETRAL	130	61	∠ TO FABRIC	19.3	INVALID	4.92	5.38

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-24	336.67	DIAMETRAL	160	61	∠ TO FABRIC	33.08	VALID	8.43	9.22
DH-BGC12-24	341.31	DIAMETRAL	155	61	∠ TO FABRIC	30.2	VALID	7.69	8.41
DH-BGC12-24	347.68	DIAMETRAL	130	61	∠ TO FABRIC	21.6	VALID	5.50	6.02
DH-BGC12-24	348	DIAMETRAL	210	61	∠ TO FABRIC	24.02	VALID	6.12	6.69
DH-BGC12-24	348.58	DIAMETRAL	185	61	∠ TO FABRIC	23.92	VALID	6.09	6.66
DH-BGC12-24	348.74	DIAMETRAL	170	61	∠ TO FABRIC	22.1	INVALID	5.63	6.16
DH-BGC12-24	348.91	DIAMETRAL	180	61	∠ TO FABRIC	32.02	VALID	8.16	8.92
DH-BGC12-24	355.02	DIAMETRAL	150	61	∠ TO FABRIC	38.7	VALID	9.86	10.78
DH-BGC12-24	361	DIAMETRAL	200	61	∠ TO FABRIC	25.5	VALID	6.50	7.10
DH-BGC12-24	365.54	DIAMETRAL	160	61	∠ TO FABRIC	35.76	VALID	9.11	9.96
DH-BGC12-24	373.37	DIAMETRAL	160	61	∠ TO FABRIC	26.34	VALID	6.71	7.34
DH-BGC12-24	378.6	DIAMETRAL	150	61	∠ TO FABRIC	29.36	VALID	7.48	8.18
DH-BGC12-24	385.48	DIAMETRAL	175	61	∠ TO FABRIC	15.18	INVALID	3.87	4.23
DH-BGC12-24	437.19	DIAMETRAL	90	61	∠ TO FABRIC	16.02	VALID	4.08	4.46
DH-BGC12-24	442.2	DIAMETRAL	110	61	∠ TO FABRIC	14.4	INVALID	3.67	4.01
DH-BGC12-24	442.97	DIAMETRAL	170	61	∠ TO FABRIC	25.92	VALID	6.60	7.22
DH-BGC12-24	448	DIAMETRAL	130	61	∠ TO FABRIC	32.08	VALID	8.17	8.94
DH-BGC12-24	448.18	DIAMETRAL	155	61	∠ TO FABRIC	25.02	INVALID	6.37	6.97
DH-BGC12-24	448.54	DIAMETRAL	90	61	∠ TO FABRIC	25.32	INVALID	6.45	7.05
DH-BGC12-24	448.64	DIAMETRAL	130	61	∠ TO FABRIC	35.8	VALID	9.12	9.97
DH-BGC12-24	448.78	DIAMETRAL	120	61	∠ TO FABRIC	28	VALID	7.13	7.80
DH-BGC12-24	448.9	DIAMETRAL	140	61	∠ TO FABRIC	12.58	INVALID	3.21	3.51
DH-BGC12-24	455.92	DIAMETRAL	155	61	∠ TO FABRIC	36.5	VALID	9.30	10.17
DH-BGC12-24	458.79	DIAMETRAL	170	61	∠ TO FABRIC	31.16	VALID	7.94	8.68
DH-BGC12-24	465.48	DIAMETRAL	145	61	∠ TO FABRIC	16.22	VALID	4.13	4.52
DH-BGC12-24	468.67	DIAMETRAL	90	61	∠ TO FABRIC	5.56	VALID	1.42	1.55
DH-BGC12-24	476.52	DIAMETRAL	185	61	∠ TO FABRIC	30.22	VALID	7.70	8.42
DH-BGC12-24	481.76	DIAMETRAL	190	61	∠ TO FABRIC	15.78	VALID	4.02	4.40
DH-BGC12-24	488.6	DIAMETRAL	150	61	∠ TO FABRIC	21.76	INVALID	5.54	6.06
DH-BGC12-24	487.13	DIAMETRAL	185	61	∠ TO FABRIC	7.48	VALID	1.91	2.08
DH-BGC12-24	493.71	DIAMETRAL	115	61	∠ TO FABRIC	29.84	VALID	7.60	8.31
DH-BGC12-24	493.82	DIAMETRAL	90	61	∠ TO FABRIC	22.8	VALID	5.81	6.35
DH-BGC12-24	494.15	DIAMETRAL	140	61	∠ TO FABRIC	30.82	VALID	7.85	8.59
DH-BGC12-24	494.34	DIAMETRAL	215	61	∠ TO FABRIC	20.18	VALID	5.14	5.62
DH-BGC12-24	494.49	DIAMETRAL	120	61	∠ TO FABRIC	23.02	INVALID	5.86	6.41
DH-BGC12-24	500.11	DIAMETRAL	150	61	∠ TO FABRIC	20.78	INVALID	5.29	5.79
DH-BGC12-24	500.7	DIAMETRAL	160	61	∠ TO FABRIC	23	VALID	5.86	6.41

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-24	383.94	DIAMETRAL	110	61	∠ TO FABRIC	33.66	VALID	8.58	9.38
DH-BGC12-24	390.27	DIAMETRAL	145	61	∠ TO FABRIC	28.72	VALID	7.32	8.00
DH-BGC12-24	395.97	DIAMETRAL	230	61	∠ TO FABRIC	13.54	INVALID	3.45	3.77
DH-BGC12-24	397.68	DIAMETRAL	120	61	∠ TO FABRIC	31.56	VALID	8.04	8.79
DH-BGC12-24	402.14	DIAMETRAL	160	61	∠ TO FABRIC	25.74	INVALID	6.56	7.17
DH-BGC12-24	402.3	DIAMETRAL	135	61	∠ TO FABRIC	32.06	VALID	8.17	8.93
DH-BGC12-24	402.7	DIAMETRAL	115	61	∠ TO FABRIC	38.84	VALID	9.90	10.82
DH-BGC12-24	402.81	DIAMETRAL	120	61	∠ TO FABRIC	17.08	INVALID	4.35	4.76
DH-BGC12-24	402.99	DIAMETRAL	150	61	∠ TO FABRIC	36.54	VALID	9.31	10.18
DH-BGC12-24	405.51	DIAMETRAL	140	61	∠ TO FABRIC	27.92	VALID	7.11	7.78
DH-BGC12-24	417.7	DIAMETRAL	150	61	∠ TO FABRIC	39.28	VALID	10.01	10.94
DH-BGC12-24	423.56	DIAMETRAL	130	61	∠ TO FABRIC	30.7	VALID	7.82	8.55
DH-BGC12-24	429.98	DIAMETRAL	150	61	∠ TO FABRIC	18.48	INVALID	4.71	5.15
DH-BGC12-24	430.14	DIAMETRAL	180	61	∠ TO FABRIC	29.6	VALID	7.54	8.25
DH-BGC12-25	332.25	DIAMETRAL	140	61	NA	25.72	VALID	6.55	7.17
DH-BGC12-25	335.98	DIAMETRAL	160	61	NA	16.78	VALID	4.28	4.68
DH-BGC12-25	342.52	DIAMETRAL	155	61	NA	19.48	VALID	4.96	5.43
DH-BGC12-25	349.14	DIAMETRAL	120	61	NA	16.7	VALID	4.25	4.65
DH-BGC12-25	355.1	DIAMETRAL	230	61	NA	20.52	VALID	5.23	5.72
DH-BGC12-25	361.64	DIAMETRAL	185	61	NA	27.52	VALID	7.01	7.67
DH-BGC12-25	368.27	DIAMETRAL	120	61	NA	15.44	VALID	3.93	4.30
DH-BGC12-25	177.23	DIAMETRAL	170	61	∠ TO FABRIC	12.44	VALID	3.17	3.47
DH-BGC12-25	183.46	DIAMETRAL	135	61	∠ TO FABRIC	16.44	VALID	4.19	4.58
DH-BGC12-25	189.42	DIAMETRAL	170	61	NA	22.3	VALID	5.68	6.21
DH-BGC12-25	194.27	DIAMETRAL	200	61	∠ TO FABRIC	25.02	VALID	6.37	6.97
DH-BGC12-25	200.13	DIAMETRAL	230	61	∠ TO FABRIC	20.28	VALID	5.17	5.65
DH-BGC12-25	200.18	DIAMETRAL	100	61	∠ TO FABRIC	19.52	VALID	4.97	5.44
DH-BGC12-25	200.27	DIAMETRAL	100	61	∠ TO FABRIC	18.12	VALID	4.62	5.05
DH-BGC12-25	200.61	DIAMETRAL	170	61	∠ TO FABRIC	16.7	VALID	4.25	4.65
DH-BGC12-25	206.85	DIAMETRAL	200	61	∠ TO FABRIC	9.12	INVALID	2.32	2.54
DH-BGC12-25	206.65	DIAMETRAL	160	61	∠ TO FABRIC	5.84	VALID	1.49	1.63
DH-BGC12-25	210.91	DIAMETRAL	200	61	∠ TO FABRIC	14.4	VALID	3.67	4.01
DH-BGC12-25	213.77	DIAMETRAL	120	61	∠ TO FABRIC	6.62	VALID	1.69	1.84
DH-BGC12-25	218.97	DIAMETRAL	230	61	∠ TO FABRIC	13.52	VALID	3.44	3.77
DH-BGC12-25	225	DIAMETRAL	155	61	∠ TO FABRIC	13.34	INVALID	3.40	3.72
DH-BGC12-25	224.9	DIAMETRAL	100	61	∠ TO FABRIC	14.22	VALID	3.62	3.96
DH-BGC12-25	230.6	DIAMETRAL	175	61	∠ TO FABRIC	7	INVALID	1.78	1.95

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-25	231.1	DIAMETRAL	115	61	∠ TO FABRIC	10.64	VALID	2.71	2.96
DH-BGC12-25	235.2	DIAMETRAL	145	61	∠ TO FABRIC	10.52	INVALID	2.68	2.93
DH-BGC12-25	237.5	DIAMETRAL	200	61	∠ TO FABRIC	2.62	INVALID	0.67	0.73
DH-BGC12-25	237.33	DIAMETRAL	160	61	∠ TO FABRIC	12.5	VALID	3.18	3.48
DH-BGC12-25	242.14	DIAMETRAL	180	61	∠ TO FABRIC	15.36	VALID	3.91	4.28
DH-BGC12-25	245.57	DIAMETRAL	120	61	∠ TO FABRIC	11.98	VALID	3.05	3.34
DH-BGC12-25	248.18	DIAMETRAL	160	61	NA	7.76	VALID	1.98	2.16
DH-BGC12-25	248.23	DIAMETRAL	100	61	NA	17.44	VALID	4.44	4.86
DH-BGC12-25	253.14	DIAMETRAL	160	61	∠ TO FABRIC	9.06	VALID	2.31	2.52
DH-BGC12-25	258.57	DIAMETRAL	200	61	∠ TO FABRIC	9.08	VALID	2.31	2.53
DH-BGC12-25	263.09	DIAMETRAL	215	61	∠ TO FABRIC	15.78	VALID	4.02	4.40
DH-BGC12-25	263.15	DIAMETRAL	90	61	∠ TO FABRIC	13.36	VALID	3.40	3.72
DH-BGC12-25	263.81	DIAMETRAL	135	61	∠ TO FABRIC	8.58	INVALID	2.19	2.39
DH-BGC12-25	263.96	DIAMETRAL	200	61	∠ TO FABRIC	10.16	VALID	2.59	2.83
DH-BGC12-25	269.1	DIAMETRAL	160	61	∠ TO FABRIC	11.48	VALID	2.92	3.20
DH-BGC12-25	272.44	DIAMETRAL	200	61	NA	17.74	VALID	4.52	4.94
DH-BGC12-25	275.42	DIAMETRAL	170	61	NA	13.1	VALID	3.34	3.65
DH-BGC12-25	279.67	DIAMETRAL	170	61	∠ TO FABRIC	8.44	INVALID	2.15	2.35
DH-BGC12-25	279.97	DIAMETRAL	220	61	∠ TO FABRIC	13.14	VALID	3.35	3.66
DH-BGC12-25	285.8	DIAMETRAL	180	61	∠ TO FABRIC	14.12	VALID	3.60	3.93
DH-BGC12-25	291.47	DIAMETRAL	260	61	∠ TO FABRIC	30.16	VALID	7.68	8.40
DH-BGC12-25	297.31	DIAMETRAL	160	61	∠ TO FABRIC	0.54	VALID	0.14	0.15
DH-BGC12-25	300.37	DIAMETRAL	150	61	∠ TO FABRIC	13.14	VALID	3.35	3.66
DH-BGC12-25	303.14	DIAMETRAL	160	61	∠ TO FABRIC	12.56	VALID	3.20	3.50
DH-BGC12-25	307.31	DIAMETRAL	165	61	∠ TO FABRIC	25.14	VALID	6.40	7.00
DH-BGC12-25	312.51	DIAMETRAL	235	61	NA	22.52	VALID	5.74	6.27
DH-BGC12-25	318.51	DIAMETRAL	165	61	NA	21.42	VALID	5.46	5.97
DH-BGC12-25	320.63	DIAMETRAL	165	61	NA	11.1	INVALID	2.83	3.09
DH-BGC12-25	320.79	DIAMETRAL	120	61	NA	20.62	VALID	5.25	5.75
DH-BGC12-25	321.23	DIAMETRAL	180	61	NA	22.82	VALID	5.81	6.36
DH-BGC12-25	321.42	DIAMETRAL	180	61	NA	25.86	VALID	6.59	7.21
DH-BGC12-25	321.56	DIAMETRAL	135	61	NA	21.02	VALID	5.36	5.86
DH-BGC12-25	321.71	DIAMETRAL	130	61	NA	20.58	VALID	5.24	5.73
DH-BGC12-25	327.45	DIAMETRAL	155	61	NA	18.94	VALID	4.83	5.28
DH-BGC12-25	4.64	DIAMETRAL	125	61	∠ TO FABRIC	9.9	VALID	2.52	2.76
DH-BGC12-25	9.29	DIAMETRAL	115	61	∠ TO FABRIC	10.26	VALID	2.61	2.86
DH-BGC12-25	15.45	DIAMETRAL	180	61	∠ TO FABRIC	9.46	INVALID	2.41	2.64

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-25	14.87	DIAMETRAL	165	61	∠ TO FABRIC	17.8	VALID	4.53	4.96
DH-BGC12-25	20.5	DIAMETRAL	120	61	∠ TO FABRIC	7.58	VALID	1.93	2.11
DH-BGC12-25	25.08	DIAMETRAL	240	61	∠ TO FABRIC	6.96	VALID	1.77	1.94
DH-BGC12-25	30.8	DIAMETRAL	150	61	∠ TO FABRIC	13.44	VALID	3.42	3.74
DH-BGC12-25	36.8	DIAMETRAL	185	61	∠ TO FABRIC	14.82	VALID	3.78	4.13
DH-BGC12-25	39.96	DIAMETRAL	135	61	∠ TO FABRIC	10.54	VALID	2.69	2.94
DH-BGC12-25	47.65	DIAMETRAL	190	61	∠ TO FABRIC	17.6	VALID	4.48	4.90
DH-BGC12-25	50.05	DIAMETRAL	110	61	∠ TO FABRIC	12.14	INVALID	3.09	3.38
DH-BGC12-25	50.28	DIAMETRAL	150	61	∠ TO FABRIC	15.82	VALID	4.03	4.41
DH-BGC12-25	50.62	DIAMETRAL	90	61	∠ TO FABRIC	3.6	INVALID	0.92	1.00
DH-BGC12-25	49.93	DIAMETRAL	130	61	∠ TO FABRIC	18.38	VALID	4.68	5.12
DH-BGC12-25	49.72	DIAMETRAL	110	61	∠ TO FABRIC	13.5	VALID	3.44	3.76
DH-BGC12-25	55.82	DIAMETRAL	130	61	∠ TO FABRIC	13.22	VALID	3.37	3.68
DH-BGC12-25	61.7	DIAMETRAL	130	61	∠ TO FABRIC	6.78	VALID	1.73	1.89
DH-BGC12-25	67.32	DIAMETRAL	175	61	∠ TO FABRIC	9.78	VALID	2.49	2.72
DH-BGC12-25	71.55	DIAMETRAL	140	61	∠ TO FABRIC	13	VALID	3.31	3.62
DH-BGC12-25	76.21	DIAMETRAL	170	61	∠ TO FABRIC	12.4	INVALID	3.16	3.45
DH-BGC12-25	76.36	DIAMETRAL	100	61	∠ TO FABRIC	11.2	INVALID	2.85	3.12
DH-BGC12-25	77.77	DIAMETRAL	105	61	∠ TO FABRIC	6.1	VALID	1.55	1.70
DH-BGC12-25	81.25	DIAMETRAL	135	61	∠ TO FABRIC	14.04	VALID	3.58	3.91
DH-BGC12-25	85.16	DIAMETRAL	190	61	∠ TO FABRIC	24.12	VALID	6.15	6.72
DH-BGC12-25	85.76	DIAMETRAL	145	61	∠ TO FABRIC	19.16	VALID	4.88	5.34
DH-BGC12-25	85.92	DIAMETRAL	200	61	∠ TO FABRIC	13.75	VALID	3.50	3.83
DH-BGC12-25	85.22	DIAMETRAL	90	61	∠ TO FABRIC	22.5	VALID	5.73	6.27
DH-BGC12-25	91.63	DIAMETRAL	150	61	∠ TO FABRIC	8.38	VALID	2.13	2.33
DH-BGC12-25	95.86	DIAMETRAL	130	61	∠ TO FABRIC	21.62	VALID	5.51	6.02
DH-BGC12-25	100.3	DIAMETRAL	220	61	∠ TO FABRIC	16.56	VALID	4.22	4.61
DH-BGC12-25	104.2	DIAMETRAL	130	61	∠ TO FABRIC	17.82	VALID	4.54	4.96
DH-BGC12-25	111.04	DIAMETRAL	135	61	∠ TO FABRIC	18.96	VALID	4.83	5.28
DH-BGC12-25	113.68	DIAMETRAL	165	61	∠ TO FABRIC	14	INVALID	3.57	3.90
DH-BGC12-25	113.78	DIAMETRAL	110	61	∠ TO FABRIC	25.44	VALID	6.48	7.09
DH-BGC12-25	113.88	DIAMETRAL	190	61	∠ TO FABRIC	28.22	VALID	7.19	7.86
DH-BGC12-25	114.26	DIAMETRAL	105	61	∠ TO FABRIC	16	INVALID	4.08	4.46
DH-BGC12-25	114.8	DIAMETRAL	120	61	∠ TO FABRIC	22.15	VALID	5.64	6.17
DH-BGC12-25	118.84	DIAMETRAL	145	61	∠ TO FABRIC	19.88	VALID	5.06	5.54
DH-BGC12-25	125.27	DIAMETRAL	105	61	∠ TO FABRIC	17.38	INVALID	4.43	4.84
DH-BGC12-25	125.43	DIAMETRAL	210	61	∠ TO FABRIC	17.8	VALID	4.53	4.96

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-25	130.77	DIAMETRAL	165	61	∠ TO FABRIC	19.3	VALID	4.92	5.38
DH-BGC12-25	136.35	DIAMETRAL	165	61	∠ TO FABRIC	15.9	VALID	4.05	4.43
DH-BGC12-25	142.72	DIAMETRAL	150	61	∠ TO FABRIC	24.74	VALID	6.30	6.89
DH-BGC12-25	146.47	DIAMETRAL	170	61	∠ TO FABRIC	17.3	VALID	4.41	4.82
DH-BGC12-25	151.72	DIAMETRAL	190	61	∠ TO FABRIC	22.86	VALID	5.82	6.37
DH-BGC12-25	158.52	DIAMETRAL	160	61	∠ TO FABRIC	6.72	VALID	1.71	1.87
DH-BGC12-25	165.55	DIAMETRAL	220	61	∠ TO FABRIC	1.38	VALID	0.35	0.38
DH-BGC12-25	165.45	DIAMETRAL	135	61	∠ TO FABRIC	8.84	VALID	2.25	2.46
DH-BGC12-25	167.95	DIAMETRAL	215	61	∠ TO FABRIC	7.16	VALID	1.82	1.99
DH-BGC12-25	173.8	DIAMETRAL	140	61	∠ TO FABRIC	12.14	VALID	3.09	3.38
DH-BGC12-25	177.4	DIAMETRAL	150	61	∠ TO FABRIC	8.02	INVALID	2.04	2.23
DH-BGC12-26	5.95	DIAMETRAL	100	61	∠ TO FABRIC	3.96	INVALID	1.01	1.10
DH-BGC12-26	6.05	DIAMETRAL	110	61	∠ TO FABRIC	12.72	VALID	3.24	3.54
DH-BGC12-26	5.76	DIAMETRAL	160	61	∠ TO FABRIC	7.78	VALID	1.98	2.17
DH-BGC12-26	6.48	DIAMETRAL	150	61	∠ TO FABRIC	6.34	VALID	1.62	1.77
DH-BGC12-26	6.63	DIAMETRAL	130	61	∠ TO FABRIC	5.84	INVALID	1.49	1.63
DH-BGC12-26	6.8	DIAMETRAL	175	61	∠ TO FABRIC	6.78	VALID	1.73	1.89
DH-BGC12-26	9.23	DIAMETRAL	170	61	∠ TO FABRIC	6.8	VALID	1.73	1.89
DH-BGC12-26	11.65	DIAMETRAL	160	61	∠ TO FABRIC	7.42	VALID	1.89	2.07
DH-BGC12-26	15.8	DIAMETRAL	140	61	∠ TO FABRIC	16.04	VALID	4.09	4.47
DH-BGC12-26	15.93	DIAMETRAL	140	61	∠ TO FABRIC	4.1	INVALID	1.04	1.14
DH-BGC12-26	16.38	DIAMETRAL	190	61	∠ TO FABRIC	13.7	VALID	3.49	3.82
DH-BGC12-26	16.68	DIAMETRAL	190	61	∠ TO FABRIC	15.58	VALID	3.97	4.34
DH-BGC12-26	18.7	DIAMETRAL	175	61	∠ TO FABRIC	13.96	VALID	3.56	3.89
DH-BGC12-26	21.45	DIAMETRAL	200	61	∠ TO FABRIC	13.4	INVALID	3.41	3.73
DH-BGC12-26	21.64	DIAMETRAL	190	61	∠ TO FABRIC	12.96	INVALID	3.30	3.61
DH-BGC12-26	21.8	DIAMETRAL	180	61	∠ TO FABRIC	6.62	VALID	1.69	1.84
DH-BGC12-26	22.94	DIAMETRAL	240	61	∠ TO FABRIC	13.74	VALID	3.50	3.83
DH-BGC12-26	26.21	DIAMETRAL	170	61	∠ TO FABRIC	12.52	INVALID	3.19	3.49
DH-BGC12-26	26.4	DIAMETRAL	240	61	∠ TO FABRIC	14.42	VALID	3.67	4.02
DH-BGC12-26	29.87	DIAMETRAL	200	61	∠ TO FABRIC	15.56	VALID	3.96	4.34
DH-BGC12-27	26.86	DIAMETRAL	250	61	∠ TO FABRIC	19.14	VALID	4.88	5.33
DH-BGC12-27	27.23	DIAMETRAL	180	61	∠ TO FABRIC	28.76	VALID	7.33	8.01
DH-BGC12-27	30.12	DIAMETRAL	250	61	∠ TO FABRIC	15.7	INVALID	4.00	4.37
DH-BGC12-27	2.81	DIAMETRAL	135	61	∠ TO FABRIC	25.36	VALID	6.46	7.07
DH-BGC12-27	4.08	DIAMETRAL	180	61	∠ TO FABRIC	13.38	INVALID	3.41	3.73
DH-BGC12-27	4.6	DIAMETRAL	200	61	∠ TO FABRIC	29.26	VALID	7.45	8.15

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-27	4.75	DIAMETRAL	190	61	∠ TO FABRIC	26.64	VALID	6.79	7.42
DH-BGC12-27	3.93	DIAMETRAL	120	61	∠ TO FABRIC	22.18	VALID	5.65	6.18
DH-BGC12-27	8.61	DIAMETRAL	155	61	∠ TO FABRIC	23.28	VALID	5.93	6.49
DH-BGC12-27	8.43	DIAMETRAL	240	61	∠ TO FABRIC	27.42	VALID	6.99	7.64
DH-BGC12-27	11.39	DIAMETRAL	120	61	∠ TO FABRIC	25.72	VALID	6.55	7.17
DH-BGC12-27	14.45	DIAMETRAL	250	61	∠ TO FABRIC	32.17	VALID	8.20	8.96
DH-BGC12-27	18.08	DIAMETRAL	220	61	∠ TO FABRIC	18.76	INVALID	4.78	5.23
DH-BGC12-27	18.63	DIAMETRAL	240	61	∠ TO FABRIC	32.76	VALID	8.35	9.13
DH-BGC12-27	20.42	DIAMETRAL	180	61	∠ TO FABRIC	20.78	INVALID	5.29	5.79
DH-BGC12-27	20.13	DIAMETRAL	190	61	∠ TO FABRIC	26.7	VALID	6.80	7.44
DH-BGC12-27	24.3	DIAMETRAL	210	61	∠ TO FABRIC	2.1	VALID	0.54	0.59
DH-BGC12-28	4.77	DIAMETRAL	190	61	∠ TO FABRIC	23.06	VALID	5.88	6.42
DH-BGC12-28	7.79	DIAMETRAL	165	61	∠ TO FABRIC	30.58	VALID	7.79	8.52
DH-BGC12-28	9.8	DIAMETRAL	160	61	∠ TO FABRIC	16.98	INVALID	4.33	4.73
DH-BGC12-28	9.98	DIAMETRAL	175	61	∠ TO FABRIC	24.54	VALID	6.25	6.84
DH-BGC12-28	10.12	DIAMETRAL	95	61	∠ TO FABRIC	17.74	INVALID	4.52	4.94
DH-BGC12-28	9.58	DIAMETRAL	165	61	∠ TO FABRIC	22.62	VALID	5.76	6.30
DH-BGC12-28	10.72	DIAMETRAL	95	61	∠ TO FABRIC	20.76	VALID	5.29	5.78
DH-BGC12-28	13.87	DIAMETRAL	140	61	∠ TO FABRIC	25.22	INVALID	6.43	7.03
DH-BGC12-28	14.49	DIAMETRAL	130	61	∠ TO FABRIC	17.44	VALID	4.44	4.86
DH-BGC12-28	18.18	DIAMETRAL	150	61	∠ TO FABRIC	2.92	INVALID	0.74	0.81
DH-BGC12-28	18.54	DIAMETRAL	135	61	∠ TO FABRIC	5.8	VALID	1.48	1.62
DH-BGC12-28	16.49	DIAMETRAL	200	61	∠ TO FABRIC	19.14	VALID	4.88	5.33
DH-BGC12-28	20.12	DIAMETRAL	230	61	∠ TO FABRIC	2.88	VALID	0.73	0.80
DH-BGC12-28	21.48	DIAMETRAL	190	61	∠ TO FABRIC	7.22	INVALID	1.84	2.01
DH-BGC12-28	22.3	DIAMETRAL	175	61	∠ TO FABRIC	10.6	VALID	2.70	2.95
DH-BGC12-28	24.79	DIAMETRAL	200	61	∠ TO FABRIC	9.78	VALID	2.49	2.72
DH-BGC12-28	28.59	DIAMETRAL	140	61	∠ TO FABRIC	30.16	VALID	7.68	8.40
DH-BGC12-28	30.15	DIAMETRAL	180	61	∠ TO FABRIC	14.9	VALID	3.80	4.15
DH-BGC12-29	3.1	DIAMETRAL	200	61	∠ TO FABRIC	33.14	VALID	8.44	9.23
DH-BGC12-29	5.24	DIAMETRAL	120	61	∠ TO FABRIC	24.68	INVALID	6.29	6.88
DH-BGC12-29	5.37	DIAMETRAL	125	61	∠ TO FABRIC	30.44	VALID	7.76	8.48
DH-BGC12-29	5.85	DIAMETRAL	180	61	∠ TO FABRIC	31.1	VALID	7.92	8.67
DH-BGC12-29	5.97	DIAMETRAL	90	61	∠ TO FABRIC	16.78	INVALID	4.28	4.68
DH-BGC12-29	5.03	DIAMETRAL	190	61	∠ TO FABRIC	27.74	VALID	7.07	7.73
DH-BGC12-29	6.88	DIAMETRAL	160	61	∠ TO FABRIC	32.28	VALID	8.22	8.99
DH-BGC12-29	7.16	DIAMETRAL	165	61	∠ TO FABRIC	23.78	INVALID	6.06	6.63

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
DH-BGC12-29	7.65	DIAMETRAL	190	61	∠ TO FABRIC	20.06	INVALID	5.11	5.59
DH-BGC12-29	7.8	DIAMETRAL	165	61	∠ TO FABRIC	30.64	VALID	7.81	8.54
DH-BGC12-29	7.98	DIAMETRAL	180	61	∠ TO FABRIC	29.86	VALID	7.61	8.32
DH-BGC12-29	10.15	DIAMETRAL	255	61	NA	18.9	INVALID	4.82	5.27
DH-BGC12-29	10.98	DIAMETRAL	125	61	NA	31.44	VALID	8.01	8.76
DH-BGC12-29	14.86	DIAMETRAL	230	61	NA	27.96	VALID	7.12	7.79
DH-BGC12-29	18.52	DIAMETRAL	195	61	NA	28.62	VALID	7.29	7.97
DH-BGC12-29	22.11	DIAMETRAL	160	61	NA	24.02	INVALID	6.12	6.69
DH-BGC12-29	21.96	DIAMETRAL	140	61	NA	18.38	VALID	4.68	5.12
DH-BGC12-29	24.47	DIAMETRAL	155	61	NA	17.52	INVALID	4.46	4.88
DH-BGC12-29	24.62	DIAMETRAL	150	61	NA	19.96	VALID	5.09	5.56
DH-BGC12-29	28.29	DIAMETRAL	135	61	NA	27.64	VALID	7.04	7.70
DH-BGC12-30	3.18	DIAMETRAL	130	61	∠ TO FABRIC	15.06	VALID	3.84	4.20
DH-BGC12-30	4.97	DIAMETRAL	180	61	∠ TO FABRIC	29.52	VALID	7.52	8.22
DH-BGC12-30	5.16	DIAMETRAL	180	61	∠ TO FABRIC	20.94	VALID	5.33	5.83
DH-BGC12-30	5.66	DIAMETRAL	190	61	∠ TO FABRIC	26.36	VALID	6.72	7.34
DH-BGC12-30	7.52	DIAMETRAL	190	61	∠ TO FABRIC	18.54	VALID	4.72	5.17
DH-BGC12-30	10.17	DIAMETRAL	175	61	∠ TO FABRIC	18.48	VALID	4.71	5.15
DH-BGC12-30	10.22	DIAMETRAL	120	61	∠ TO FABRIC	10.1	INVALID	2.57	2.81
DH-BGC12-30	10.68	DIAMETRAL	185	61	∠ TO FABRIC	19.3	VALID	4.92	5.38
DH-BGC12-30	10.91	DIAMETRAL	120	61	∠ TO FABRIC	21.44	VALID	5.46	5.97
DH-BGC12-30	11.04	DIAMETRAL	120	61	∠ TO FABRIC	23.26	VALID	5.93	6.48
DH-BGC12-30	13.2	DIAMETRAL	220	61	∠ TO FABRIC	20.76	VALID	5.29	5.78
DH-BGC12-30	14.88	DIAMETRAL	135	61	∠ TO FABRIC	19.92	VALID	5.08	5.55
DH-BGC12-30	15.03	DIAMETRAL	140	61	∠ TO FABRIC	17.8	VALID	4.53	4.96
DH-BGC12-30	15.4	DIAMETRAL	135	61	∠ TO FABRIC	13.44	VALID	3.42	3.74
DH-BGC12-30	15.54	DIAMETRAL	135	61	∠ TO FABRIC	13.26	VALID	3.38	3.69
DH-BGC12-30	18.51	DIAMETRAL	150	61	∠ TO FABRIC	5.8	VALID	1.48	1.62
DH-BGC12-30	17.95	DIAMETRAL	160	61	∠ TO FABRIC	2.8	VALID	0.71	0.78
DH-BGC12-30	18.1	DIAMETRAL	140	61	∠ TO FABRIC	7.14	VALID	1.82	1.99
DH-BGC12-30	18.63	DIAMETRAL	120	61	∠ TO FABRIC	9.5	VALID	2.42	2.65
DH-BGC12-30	20.09	DIAMETRAL	140	61	∠ TO FABRIC	6.56	VALID	1.67	1.83
DH-BGC12-30	22.06	DIAMETRAL	185	61	∠ TO FABRIC	19.02	VALID	4.85	5.30
DH-BGC12-30	26.98	DIAMETRAL	120	61	∠ TO FABRIC	9.7	INVALID	2.47	2.70
DH-BGC12-30	26.84	DIAMETRAL	140	61	∠ TO FABRIC	18.16	VALID	4.63	5.06
DH-BGC12-30	31.55	DIAMETRAL	160	61	∠ TO FABRIC	21.86	VALID	5.57	6.09
SU-077	6.72	DIAMETRAL	330	61	∠ TO FABRIC	12.26	VALID	3.12	3.42

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-077	12.09	DIAMETRAL	220	61	∠ TO FABRIC	17.6	VALID	4.48	4.90
SU-077	19.13	DIAMETRAL	230	61	∠ TO FABRIC	9.68	INVALID	2.47	2.70
SU-077	27.76	DIAMETRAL	170	61	∠ TO FABRIC	9.84	INVALID	2.51	2.74
SU-077	29.29	DIAMETRAL	285	61	∠ TO FABRIC	8	INVALID	2.04	2.23
SU-077	35.93	DIAMETRAL	230	61	∠ TO FABRIC	14.32	INVALID	3.65	3.99
SU-077	41.76	DIAMETRAL	320	61	∠ TO FABRIC		INVALID	0.00	0.00
SU-077	43.25	DIAMETRAL	180	61	∠ TO FABRIC	12.32	INVALID	3.14	3.43
SU-077	44.81	DIAMETRAL	160	61	∠ TO FABRIC		INVALID	0.00	0.00
SU-077	47.72	DIAMETRAL	155	61	∠ TO FABRIC	16.74	INVALID	4.26	4.66
SU-077	52.36	DIAMETRAL	240	61	∠ TO FABRIC	10.64	INVALID	2.71	2.96
SU-077	52.69	DIAMETRAL	170	61	∠ TO FABRIC	19.32	VALID	4.92	5.38
SU-077	53.67	DIAMETRAL	162	61	∠ TO FABRIC	17.86	VALID	4.55	4.98
SU-077	54.26	DIAMETRAL	195	61	∠ TO FABRIC	17.7	VALID	4.51	4.93
SU-077	55.54	DIAMETRAL	180	61	∠ TO FABRIC	19.34	VALID	4.93	5.39
SU-077	56.5	DIAMETRAL	235	61	∠ TO FABRIC	18.98	VALID	4.84	5.29
SU-077	62.19	DIAMETRAL	170	61	∠ TO FABRIC	22	VALID	5.60	6.13
SU-077	67.37	DIAMETRAL	250	61	∠ TO FABRIC	21.56	VALID	5.49	6.01
SU-077	68.61	DIAMETRAL	230	61	∠ TO FABRIC	15.68	VALID	3.99	4.37
SU-077	69.7	DIAMETRAL	255	61	NA	8.5	INVALID	2.17	2.37
SU-077	69.96	DIAMETRAL	240	61	∠ TO FABRIC	16.6	VALID	4.23	4.63
SU-077	70.6	DIAMETRAL	215	61	∠ TO FABRIC	8.46	INVALID	2.16	2.36
SU-077	79.27	DIAMETRAL	275	61	∠ TO FABRIC	22.74	VALID	5.79	6.34
SU-077	87.38	DIAMETRAL	140	61	∠ TO FABRIC	16.6	INVALID	4.23	4.63
SU-077	94.59	DIAMETRAL	155	61	∠ TO FABRIC		INVALID	0.00	0.00
SU-077	94.82	DIAMETRAL	200	61	∠ TO FABRIC	9.94	INVALID	2.53	2.77
SU-077	97.26	DIAMETRAL	280	61	∠ TO FABRIC	14.18	VALID	3.61	3.95
SU-077	105.08	DIAMETRAL	195	61	NA	21.84	VALID	5.56	6.09
SU-077	109.6	DIAMETRAL	140	61	NA	18.36	VALID	4.68	5.12
SU-077	115.69	DIAMETRAL	230	61	NA	14.08	VALID	3.59	3.92
SU-077	115.91	DIAMETRAL	240	61	NA	12.72	INVALID	3.24	3.54
SU-077	116.5	DIAMETRAL	200	61	NA	12.76	INVALID	3.25	3.56
SU-077	117.55	DIAMETRAL	300	61	NA	20.24	VALID	5.16	5.64
SU-077	117.96	DIAMETRAL	156	61	NA	16.02	VALID	4.08	4.46
SU-077	120.35	DIAMETRAL	300	61	∠ TO FABRIC	21.52	VALID	5.48	6.00
SU-077	125.86	DIAMETRAL	270	61	∠ TO FABRIC	15.72	INVALID	4.00	4.38
SU-077	126.12	DIAMETRAL	265	61	∠ TO FABRIC	12.5	INVALID	3.18	3.48
SU-077	129.34	DIAMETRAL	152	61	∠ TO FABRIC		INVALID	0.00	0.00

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-077	130.24	DIAMETRAL	190	61	∠ TO FABRIC		INVALID	0.00	0.00
SU-077	132.51	DIAMETRAL	170	61	∠ TO FABRIC	17.68	INVALID	4.50	4.93
SU-077	136.56	DIAMETRAL	220	61	∠ TO FABRIC	13.86	INVALID	3.53	3.86
SU-077	145.6	DIAMETRAL	150	61	∠ TO FABRIC	17.02	VALID	4.34	4.74
SU-077	146.07	DIAMETRAL	275	61	∠ TO FABRIC	10.04	INVALID	2.56	2.80
SU-077	147.08	DIAMETRAL	140	61	∠ TO FABRIC	14.26	VALID	3.63	3.97
SU-077	147.35	DIAMETRAL	200	61	∠ TO FABRIC		INVALID	0.00	0.00
SU-077	148.43	DIAMETRAL	160	61	∠ TO FABRIC	16.6	INVALID	4.23	4.63
SU-077	152.17	DIAMETRAL	260	61	∠ TO FABRIC	18.96	INVALID	4.83	5.28
SU-077	159.52	DIAMETRAL	270	61	∠ TO FABRIC	15.2	INVALID	3.87	4.24
SU-077	166.94	DIAMETRAL	250	61	∠ TO FABRIC	28.52	VALID	7.27	7.95
SU-077	171.76	DIAMETRAL	205	61	∠ TO FABRIC	27.32	VALID	6.96	7.61
SU-077	178.57	DIAMETRAL	210	61	∠ TO FABRIC	13.72	INVALID	3.50	3.82
SU-077	185.01	DIAMETRAL	280	61	NA	20.08	VALID	5.12	5.59
SU-077	191.21	DIAMETRAL	180	61	NA	22.68	VALID	5.78	6.32
SU-077	227.8	DIAMETRAL	205	61	∠ TO FABRIC	20.02	VALID	5.10	5.58
SU-077	234.74	DIAMETRAL	165	61	NA	18.2	VALID	4.64	5.07
SU-077	241.6	DIAMETRAL	360	61	∠ TO FABRIC	18.5	VALID	4.71	5.15
SU-077	242.62	DIAMETRAL	220	61	∠ TO FABRIC	7.4	INVALID	1.89	2.06
SU-077	242.9	DIAMETRAL	240	61	∠ TO FABRIC		INVALID	0.00	0.00
SU-077	250.21	DIAMETRAL	280	61	∠ TO FABRIC	9.5	VALID	2.42	2.65
SU-077	251.45	DIAMETRAL	240	61	NA	12.22	INVALID	3.11	3.40
SU-077	253.35	DIAMETRAL	285	61	∠ TO FABRIC	20.64	VALID	5.26	5.75
SU-077	260.5	DIAMETRAL	320	61	∠ TO FABRIC	19.08	VALID	4.86	5.32
SU-077	265.8	DIAMETRAL	200	61	NA	27.36	VALID	6.97	7.62
SU-077	272	DIAMETRAL	190	61	∠ TO FABRIC	16.76	VALID	4.27	4.67
SU-077	272.32	DIAMETRAL	150	61	∠ TO FABRIC	20.86	VALID	5.31	5.81
SU-077	273.51	DIAMETRAL	170	61	∠ TO FABRIC	14.52	INVALID	3.70	4.05
SU-077	273.68	DIAMETRAL	245	61	∠ TO FABRIC	16.98	INVALID	4.33	4.73
SU-077	273.9	DIAMETRAL	155	61	∠ TO FABRIC	12.72	INVALID	3.24	3.54
SU-077	274.8	DIAMETRAL	195	61	∠ TO FABRIC	13.34	INVALID	3.40	3.72
SU-077	277.09	DIAMETRAL	150	61	∠ TO FABRIC	17.46	VALID	4.45	4.86
SU-077	277.24	DIAMETRAL	260	61	∠ TO FABRIC	5.56	INVALID	1.42	1.55
SU-077	282.55	DIAMETRAL	265	61	NA	18.5	VALID	4.71	5.15
SU-077	288	DIAMETRAL	180	61	NA	19.86	INVALID	5.06	5.53
SU-077	288.45	DIAMETRAL	200	61	NA	27.48	VALID	7.00	7.66
SU-077	294.15	DIAMETRAL	170	61	NA	16.52	INVALID	4.21	4.60

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-077	294.32	DIAMETRAL	255	61	NA	24.82	VALID	6.32	6.92
SU-077	300.75	DIAMETRAL	150	61	NA		INVALID	0.00	0.00
SU-077	301.69	DIAMETRAL	230	61	NA	21.07	INVALID	5.37	5.87
SU-077	303.67	DIAMETRAL	220	61	NA	30.6	VALID	7.80	8.53
SU-077	308.39	DIAMETRAL	255	61	NA	23.62	VALID	6.02	6.58
SU-077	315.45	DIAMETRAL	240	61	NA	22.44	VALID	5.72	6.25
SU-077	322.17	DIAMETRAL	320	61	NA	25.98	VALID	6.62	7.24
SU-077	324.2	DIAMETRAL	145	61	⊥ TO FABRIC	19.38	INVALID	4.94	5.40
SU-077	328.53	DIAMETRAL	220	61	NA	27.46	VALID	7.00	7.65
SU-077	328.83	DIAMETRAL	200	61	NA		INVALID	0.00	0.00
SU-077	329.57	DIAMETRAL	175	61	NA	33.28	VALID	8.48	9.27
SU-077	330	DIAMETRAL	230	61	NA	23.98	VALID	6.11	6.68
SU-077	331.05	DIAMETRAL	185	61	NA	20.82	VALID	5.30	5.80
SU-077	338.22	DIAMETRAL	270	61	∠ TO FABRIC	28.42	VALID	7.24	7.92
SU-077	340.08	DIAMETRAL	210	61	∠ TO FABRIC	9.72	INVALID	2.48	2.71
SU-077	344.87	DIAMETRAL	250	61	NA	27.88	VALID	7.10	7.77
SU-077	348.29	DIAMETRAL	200	61	NA	20.66	VALID	5.26	5.76
SU-077	355.23	DIAMETRAL	235	61	∠ TO FABRIC	24.94	VALID	6.35	6.95
SU-077	360.45	DIAMETRAL	205	61	NA	19.16	VALID	4.88	5.34
SU-077	366.49	DIAMETRAL	220	61	∠ TO FABRIC	14.2	VALID	3.62	3.96
SU-077	373.98	DIAMETRAL	185	61	∠ TO FABRIC	23.44	VALID	5.97	6.53
SU-077	379	DIAMETRAL	230	61	∠ TO FABRIC	26.24	VALID	6.69	7.31
SU-077	382.29	DIAMETRAL	190	61	∠ TO FABRIC	8.86	INVALID	2.26	2.47
SU-077	384.2	DIAMETRAL	210	61	∠ TO FABRIC	17.14	VALID	4.37	4.78
SU-077	388.05	DIAMETRAL	260	61	∠ TO FABRIC	23	VALID	5.86	6.41
SU-077	388.6	DIAMETRAL	340	61	∠ TO FABRIC	14.92	VALID	3.80	4.16
SU-077	389.23	DIAMETRAL	280	61	∠ TO FABRIC	13.62	INVALID	3.47	3.79
SU-077	390.09	DIAMETRAL	150	61	∠ TO FABRIC	18.14	VALID	4.62	5.05
SU-077	390.29	DIAMETRAL	155	61	∠ TO FABRIC	17.82	INVALID	4.54	4.96
SU-077	390.42	DIAMETRAL	245	61	∠ TO FABRIC	24.32	VALID	6.20	6.78
SU-077	394.01	DIAMETRAL	165	61	NA	19.8	VALID	5.04	5.52
SU-077	399.02	DIAMETRAL	235	61	NA	23.94	VALID	6.10	6.67
SU-077	405.03	DIAMETRAL	250	61	∠ TO FABRIC	16.9	VALID	4.31	4.71
SU-077	408	DIAMETRAL	165	61	∠ TO FABRIC	23.28	VALID	5.93	6.49
SU-077	415.45	DIAMETRAL	195	61	∠ TO FABRIC	15.36	VALID	3.91	4.28
SU-077	418.59	DIAMETRAL	210	61	∠ TO FABRIC	25.62	INVALID	6.53	7.14
SU-077	425.5	DIAMETRAL	215	61	∠ TO FABRIC	14.72	VALID	3.75	4.10

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-077	434.75	DIAMETRAL	195	61	∠ TO FABRIC	21.04	VALID	5.36	5.86
SU-077	442	DIAMETRAL	310	61	∠ TO FABRIC	21.7	VALID	5.53	6.05
SU-077	447.62	DIAMETRAL	330	61	NA	28.5	VALID	7.26	7.94
SU-077	456.29	DIAMETRAL	190	61	∠ TO FABRIC	19.26	VALID	4.91	5.37
SU-077	460.12	DIAMETRAL	270	61	NA	21.96	VALID	5.59	6.12
SU-077	460.71	DIAMETRAL	230	61	NA	22.46	VALID	5.72	6.26
SU-077	461.15	DIAMETRAL	180	61	NA	20.4	VALID	5.20	5.68
SU-077	462.74	DIAMETRAL	305	61	NA	23.78	VALID	6.06	6.63
SU-077	466.7	DIAMETRAL	300	61	NA	18.94	VALID	4.83	5.28
SU-077	474.15	DIAMETRAL	215	61	NA	15.88	VALID	4.05	4.42
SU-077	480.6	DIAMETRAL	230	61	NA	30.62	VALID	7.80	8.53
SU-077	488.5	DIAMETRAL	240	61	NA	27.08	VALID	6.90	7.55
SU-077	489.26	DIAMETRAL	175	61	∠ TO FABRIC	19.18	INVALID	4.89	5.34
SU-077	496.59	DIAMETRAL	200	61	∠ TO FABRIC	16.18	VALID	4.12	4.51
SU-077	502.01	DIAMETRAL	260	61	NA	21.72	VALID	5.53	6.05
SU-077	508.1	DIAMETRAL	240	61	∠ TO FABRIC	19.92	VALID	5.08	5.55
SU-077	508.55	DIAMETRAL	220	61	∠ TO FABRIC	14.47	VALID	3.69	4.03
SU-077	509.25	DIAMETRAL	240	61	∠ TO FABRIC	14.48	VALID	3.69	4.03
SU-077	510.12	DIAMETRAL	275	61	∠ TO FABRIC	20.28	VALID	5.17	5.65
SU-077	516.66	DIAMETRAL	320	61	∠ TO FABRIC	19.48	VALID	4.96	5.43
SU-077	518.65	DIAMETRAL	270	61	∠ TO FABRIC	20.06	VALID	5.11	5.59
SU-077	522.85	DIAMETRAL	320	61	NA	20.38	VALID	5.19	5.68
SU-077	529.05	DIAMETRAL	270	61	NA	21.24	VALID	5.41	5.92
SU-077	535.53	DIAMETRAL	280	61	NA	17.36	VALID	4.42	4.84
SU-077	541.47	DIAMETRAL	165	61	NA	17.82	INVALID	4.54	4.96
SU-077	541.63	DIAMETRAL	290	61	NA	21.06	VALID	5.37	5.87
SU-077	546.85	DIAMETRAL	355	61	NA	23.48	VALID	5.98	6.54
SU-077	191.72	DIAMETRAL	165	61	NA	4.9	INVALID	1.25	1.37
SU-077	195.24	DIAMETRAL	290	61	∠ TO FABRIC	14.74	INVALID	3.76	4.11
SU-077	196.54	DIAMETRAL	255	61	∠ TO FABRIC	17.28	INVALID	4.40	4.81
SU-077	202.18	DIAMETRAL	290	61	∠ TO FABRIC	15.76	VALID	4.02	4.39
SU-077	209.83	DIAMETRAL	265	61	∠ TO FABRIC	17.4	VALID	4.43	4.85
SU-077	210.27	DIAMETRAL	210	61	∠ TO FABRIC	16.3	INVALID	4.15	4.54
SU-077	215.58	DIAMETRAL	250	61	∠ TO FABRIC	13.32	VALID	3.39	3.71
SU-077	220.39	DIAMETRAL	300	61	∠ TO FABRIC	18.64	INVALID	4.75	5.19
SU-077	221.72	DIAMETRAL	280	61	∠ TO FABRIC	14.42	VALID	3.67	4.02
SU-082	5.17	DIAMETRAL	150	61	∠ TO FABRIC	1.58	INVALID	0.40	0.44

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-082	5.32	DIAMETRAL	160	60	∠ TO FABRIC	0.1	INVALID	0.03	0.03
SU-082	11.17	DIAMETRAL	110	61	∠ TO FABRIC	7.26	VALID	1.85	2.02
SU-082	16.89	DIAMETRAL	110	60	∠ TO FABRIC	0.26	VALID	0.07	0.07
SU-082	21.29	DIAMETRAL	90	61	∠ TO FABRIC	0.08	VALID	0.02	0.02
SU-082	29.66	DIAMETRAL	801	60	NA	5.8	INVALID	1.53	1.66
SU-082	30.29	DIAMETRAL	110	60	NA	7.22	VALID	1.90	2.06
SU-082	34.73	DIAMETRAL	125	60	NA	7.78	INVALID	2.05	2.22
SU-082	35.57	DIAMETRAL	90	61	∠ TO FABRIC	5.78	VALID	1.47	1.61
SU-082	41.64	DIAMETRAL	120	61	∠ TO FABRIC	5.72	VALID	1.46	1.59
SU-082	47.74	DIAMETRAL	110	61	NA	12.02	INVALID	3.06	3.35
SU-082	47.85	DIAMETRAL	80	60	∠ TO FABRIC	7.8	INVALID	2.05	2.23
SU-082	53.72	DIAMETRAL	120	61	∠ TO FABRIC	4.78	INVALID	1.22	1.33
SU-082	56.3	DIAMETRAL	160	61	∠ TO FABRIC	10.4	VALID	2.65	2.90
SU-082	59.85	DIAMETRAL	110	61	∠ TO FABRIC	6.04	VALID	1.54	1.68
SU-082	66.2	DIAMETRAL	70	61	∠ TO FABRIC	13.5	INVALID	3.44	3.76
SU-082	69.03	DIAMETRAL	85	61	∠ TO FABRIC	13.5	INVALID	3.44	3.76
SU-082	72.57	DIAMETRAL	125	60	NA	5.26	INVALID	1.39	1.50
SU-082	75.16	DIAMETRAL	110	61	∠ TO FABRIC	7.14	INVALID	1.82	1.99
SU-082	77.8	DIAMETRAL	100	61	∠ TO FABRIC	7.72	VALID	1.97	2.15
SU-082	82.1	DIAMETRAL	90	61	∠ TO FABRIC	17.08	VALID	4.35	4.76
SU-082	83.15	DIAMETRAL	160	61	∠ TO FABRIC	14.68	VALID	3.74	4.09
SU-082	87.55	DIAMETRAL	85	60	∠ TO FABRIC	8.4	VALID	2.21	2.40
SU-082	88.91	DIAMETRAL	80	61	∠ TO FABRIC	6.6	INVALID	1.68	1.84
SU-082	93	DIAMETRAL	90	61	NA	12.62	INVALID	3.22	3.52
SU-082	101.19	DIAMETRAL	120	61	∠ TO FABRIC	9.06	VALID	2.31	2.52
SU-082	103.72	DIAMETRAL	110	61	∠ TO FABRIC	4.06	VALID	1.03	1.13
SU-082	108.05	DIAMETRAL	85	61	∠ TO FABRIC	13.8	INVALID	3.52	3.84
SU-082	109.27	DIAMETRAL	125	61	∠ TO FABRIC	19.12	VALID	4.87	5.33
SU-082	111.14	DIAMETRAL	105	61	∠ TO FABRIC	9.56	VALID	2.44	2.66
SU-082	89.03	DIAMETRAL	120	61	∠ TO FABRIC	6.16	INVALID	1.57	1.72
SU-082	170.21	DIAMETRAL	70	61	∠ TO FABRIC	33.9	INVALID	8.64	9.45
SU-082	171.74	DIAMETRAL	70	61	∠ TO FABRIC	3.26	INVALID	0.83	0.91
SU-082	172.37	DIAMETRAL	170	61	∠ TO FABRIC	23.48	VALID	5.98	6.54
SU-082	169.87	DIAMETRAL	90	61	NA	18.8	VALID	4.79	5.24
SU-082	168.83	DIAMETRAL	170	61	∠ TO FABRIC	13.48	VALID	3.43	3.76
SU-082	165.69	DIAMETRAL	90	61	NA	21.84	VALID	5.56	6.09
SU-082	159.9	DIAMETRAL	150	61	∠ TO FABRIC	6.34	INVALID	1.62	1.77

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-082	160.09	DIAMETRAL	80	61	∠ TO FABRIC	18.26	VALID	4.65	5.09
SU-082	158.05	DIAMETRAL	80	61	∠ TO FABRIC	7.54	INVALID	1.92	2.10
SU-082	159	DIAMETRAL	95	61	∠ TO FABRIC	19.24	INVALID	4.90	5.36
SU-082	154.53	DIAMETRAL	150	61	∠ TO FABRIC	25.72	VALID	6.55	7.17
SU-082	145.9	DIAMETRAL	135	61	∠ TO FABRIC	23.06	VALID	5.88	6.42
SU-082	142.39	DIAMETRAL	110	61	NA	23.06	VALID	5.88	6.42
SU-082	137.37	DIAMETRAL	140	61	NA	7.5	VALID	1.91	2.09
SU-082	133.2	DIAMETRAL	95	61	∠ TO FABRIC	12.04	INVALID	3.07	3.35
SU-082	133.06	DIAMETRAL	115	61	∠ TO FABRIC	14.28	VALID	3.64	3.98
SU-082	134.96	DIAMETRAL	90	61	NA	10.16	VALID	2.59	2.83
SU-082	127.33	DIAMETRAL	70	61	∠ TO FABRIC	10.66	INVALID	2.72	2.97
SU-082	127.71	DIAMETRAL	90	61	∠ TO FABRIC	10.54	VALID	2.69	2.94
SU-082	124.87	DIAMETRAL	110	61	∠ TO FABRIC	4.1	INVALID	1.04	1.14
SU-082	126.74	DIAMETRAL	70	60	∠ TO FABRIC	6	INVALID	1.58	1.72
SU-082	126.64	DIAMETRAL	70	61	∠ TO FABRIC	7.12	INVALID	1.81	1.98
SU-082	121	DIAMETRAL	80	61	NA	14.98	VALID	3.82	4.17
SU-082	119.67	DIAMETRAL	75	59	NA	5.96	VALID	1.62	1.75
SU-082	114.37	DIAMETRAL	85	61	∠ TO FABRIC	3.12	VALID	0.79	0.87
SU-082	113.77	DIAMETRAL	95	61	∠ TO FABRIC	16.3	VALID	4.15	4.54
SU-082	201.24	DIAMETRAL	135	61	∠ TO FABRIC	4.48	INVALID	1.14	1.25
SU-082	203.36	DIAMETRAL	145	61	∠ TO FABRIC	21.2	VALID	5.40	5.91
SU-082	197.91	DIAMETRAL	70	61	∠ TO FABRIC	13.58	INVALID	3.46	3.78
SU-082	199.09	DIAMETRAL	80	61	NA	16.02	VALID	4.08	4.46
SU-082	197.69	DIAMETRAL	95	62	∠ TO FABRIC	13.2	INVALID	3.26	3.59
SU-082	192.64	DIAMETRAL	75	61	∠ TO FABRIC	17.76	INVALID	4.52	4.95
SU-082	193.61	DIAMETRAL	100	61	∠ TO FABRIC	19.42	INVALID	4.95	5.41
SU-082	193.9	DIAMETRAL	90	61	∠ TO FABRIC	17.2	VALID	4.38	4.79
SU-082	189.66	DIAMETRAL	130	61	∠ TO FABRIC	7.58	VALID	1.93	2.11
SU-082	196.77	DIAMETRAL	140	61	∠ TO FABRIC	12.08	INVALID	3.08	3.37
SU-082	190.83	DIAMETRAL	80	61	∠ TO FABRIC	17.54	VALID	4.47	4.89
SU-082	185.82	DIAMETRAL	140	60	NA	19.48	INVALID	5.13	5.57
SU-082	188.62	DIAMETRAL	120	61	∠ TO FABRIC	9.84	INVALID	2.51	2.74
SU-082	182.45	DIAMETRAL	110	61	NA	10.92	VALID	2.78	3.04
SU-082	179.2	DIAMETRAL	90	61	NA	15.62	VALID	3.98	4.35
SU-082	177.35	DIAMETRAL	70	61	NA	11.02	VALID	2.81	3.07
SU-082	173.66	DIAMETRAL	145	62	NA	4.94	VALID	1.22	1.34
SU-082	228.58	DIAMETRAL	110	61	NA	13.38	INVALID	3.41	3.73

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-082	224.64	DIAMETRAL	135	61	NA	20.42	VALID	5.20	5.69
SU-082	221.11	DIAMETRAL	105	62	NA	19.88	INVALID	4.90	5.40
SU-082	222.3	DIAMETRAL	105	61	NA	13.16	INVALID	3.35	3.67
SU-082	223.14	DIAMETRAL	80	60	NA	8.54	INVALID	2.25	2.44
SU-082	218.22	DIAMETRAL	105	61	NA	10.22	VALID	2.60	2.85
SU-082	212.45	DIAMETRAL	140	61	NA	9	VALID	2.29	2.51
SU-082	207.88	DIAMETRAL	70	61	∠ TO FABRIC	7.48	VALID	1.91	2.08
SU-082	299.12	DIAMETRAL	120	61	NA	23.3	INVALID	5.94	6.49
SU-082	299	DIAMETRAL	115	61	NA	28.3	INVALID	7.21	7.88
SU-082	290.49	DIAMETRAL	130	61	NA	15.12	INVALID	3.85	4.21
SU-082	287.22	DIAMETRAL	115	61	NA	23.52	INVALID	5.99	6.55
SU-082	286.86	DIAMETRAL	105	61	NA	25.02	INVALID	6.37	6.97
SU-082	277.51	DIAMETRAL	165	60	∠ TO FABRIC	19.32	VALID	5.09	5.52
SU-082	271.18	DIAMETRAL	70	61	∠ TO FABRIC	4.96	INVALID	1.26	1.38
SU-082	272.06	DIAMETRAL	70	61	∠ TO FABRIC	13.98	VALID	3.56	3.90
SU-082	264.7	DIAMETRAL	150	61	∠ TO FABRIC	24.74	VALID	6.30	6.89
SU-082	264.55	DIAMETRAL	85	61	∠ TO FABRIC	9.14	VALID	2.33	2.55
SU-082	258.54	DIAMETRAL	120	61	∠ TO FABRIC	17.66	VALID	4.50	4.92
SU-082	251.33	DIAMETRAL	130	61	∠ TO FABRIC	7.4	INVALID	1.89	2.06
SU-082	243.58	DIAMETRAL	100	61	NA	9.42	INVALID	2.40	2.62
SU-082	238.7	DIAMETRAL	90	61	∠ TO FABRIC	8.74	VALID	2.23	2.44
SU-082	230.95	DIAMETRAL	90	61	∠ TO FABRIC	10.7	VALID	2.73	2.98
SU-082	278.52	DIAMETRAL	130	61	∠ TO FABRIC	19.7	INVALID	5.02	5.49
SU-082	279.5	DIAMETRAL	240	61	∠ TO FABRIC	20.98	VALID	5.35	5.85
SU-082	334.31	DIAMETRAL	70	61	∠ TO FABRIC	13.72	VALID	3.50	3.82
SU-082	331.05	DIAMETRAL	185	61	∠ TO FABRIC	16.02	INVALID	4.08	4.46
SU-082	328.04	DIAMETRAL	150	62	NA	19.86	VALID	4.90	5.40
SU-082	322.02	DIAMETRAL	155	61	∠ TO FABRIC	22.06	INVALID	5.62	6.15
SU-082	323.08	DIAMETRAL	90	61	∠ TO FABRIC	23.04	VALID	5.87	6.42
SU-082	321.58	DIAMETRAL	90	61	∠ TO FABRIC	10.26	INVALID	2.61	2.86
SU-082	316	DIAMETRAL	105	61	∠ TO FABRIC	18.84	VALID	4.80	5.25
SU-082	315.77	DIAMETRAL	115	61	∠ TO FABRIC	14.42	VALID	3.67	4.02
SU-082	312.8	DIAMETRAL	80	61	∠ TO FABRIC	11.56	INVALID	2.95	3.22
SU-082	303.56	DIAMETRAL	140	61	∠ TO FABRIC	18.42	INVALID	4.69	5.13
SU-082	368.84	DIAMETRAL	185	61	∠ TO FABRIC	11.26	VALID	2.87	3.14
SU-082	364.07	DIAMETRAL	180	61	∠ TO FABRIC	20.5	INVALID	5.22	5.71
SU-082	360.63	DIAMETRAL	165	61	∠ TO FABRIC	22.06	INVALID	5.62	6.15

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-082	357.4	DIAMETRAL	155	61	∠ TO FABRIC	19.1	VALID	4.87	5.32
SU-082	355.7	DIAMETRAL	145	61	∠ TO FABRIC	12.96	INVALID	3.30	3.61
SU-082	350.49	DIAMETRAL	95	61	∠ TO FABRIC	19.34	VALID	4.93	5.39
SU-082	346.56	DIAMETRAL	165	61	∠ TO FABRIC	7.8	INVALID	1.99	2.17
SU-082	343.7	DIAMETRAL	120	61	∠ TO FABRIC	10.74	INVALID	2.74	2.99
SU-082	341.34	DIAMETRAL	130	61	∠ TO FABRIC	14.78	VALID	3.77	4.12
SU-082	340.33	DIAMETRAL	125	61	∠ TO FABRIC	13.82	VALID	3.52	3.85
SU-082	400.08	DIAMETRAL	210	61	∠ TO FABRIC	21.04	INVALID	5.36	5.86
SU-082	399.74	DIAMETRAL	120	61	∠ TO FABRIC	18.76	VALID	4.78	5.23
SU-082	392.28	DIAMETRAL	185	61	∠ TO FABRIC	19.94	VALID	5.08	5.56
SU-082	389.22	DIAMETRAL	125	61	∠ TO FABRIC	24.32	VALID	6.20	6.78
SU-082	386.9	DIAMETRAL	155	61	∠ TO FABRIC	9.6	INVALID	2.45	2.67
SU-082	382.53	DIAMETRAL	210	61	∠ TO FABRIC	13.14	INVALID	3.35	3.66
SU-082	379.13	DIAMETRAL	145	61	∠ TO FABRIC	9.4	INVALID	2.39	2.62
SU-082	376.75	DIAMETRAL	170	61	∠ TO FABRIC	9.86	INVALID	2.51	2.75
SU-082	372.46	DIAMETRAL	235	61	NA	13.8	VALID	3.52	3.84
SU-082	373.57	DIAMETRAL	210	61	∠ TO FABRIC	17.24	VALID	4.39	4.80
SU-082	372	DIAMETRAL	440	61	∠ TO FABRIC	6.1	INVALID	1.55	1.70
SU-082	375.32	DIAMETRAL	200	61	∠ TO FABRIC	8.94	INVALID	2.28	2.49
SU-082	370.07	DIAMETRAL	160	61	∠ TO FABRIC	25.2	VALID	6.42	7.02
SU-082	407.52	DIAMETRAL	160	61	∠ TO FABRIC	17.18	INVALID	4.38	4.79
SU-082	334.92	DIAMETRAL	100	61	∠ TO FABRIC	7.7	VALID	1.96	2.15
SU-082	339.95	DIAMETRAL	70	61	∠ TO FABRIC	8.64	INVALID	2.20	2.41
SU-082	341.47	DIAMETRAL	70	61	∠ TO FABRIC	14.22	INVALID	3.62	3.96
SU-082	343.51	DIAMETRAL	160	61	∠ TO FABRIC	8.32	INVALID	2.12	2.32
SU-082	349.7	DIAMETRAL	80	61	NA	11.44	INVALID	2.91	3.19
SU-082	353	DIAMETRAL	140	61	∠ TO FABRIC	16.66	INVALID	4.24	4.64
SU-082	352.19	DIAMETRAL	70	61	∠ TO FABRIC	16.28	VALID	4.15	4.54
SU-082	359.52	DIAMETRAL	140	61	∠ TO FABRIC	25.9	INVALID	6.60	7.22
SU-082	359.68	DIAMETRAL	120	61	∠ TO FABRIC	12.86	INVALID	3.28	3.58
SU-082	364.26	DIAMETRAL	90	61	∠ TO FABRIC	7.84	INVALID	2.00	2.18
SU-082	422.54	DIAMETRAL	260	61	∠ TO FABRIC	0.78	VALID	0.20	0.22
SU-082	438.58	DIAMETRAL	120	61	∠ TO FABRIC	0.36	VALID	0.09	0.10
SU-082	436.86	DIAMETRAL	120	61	∠ TO FABRIC	1.36	VALID	0.35	0.38
SU-082	430.64	DIAMETRAL	150	61	∠ TO FABRIC	6.94	VALID	1.77	1.93
SU-082	429.14	DIAMETRAL	160	61	∠ TO FABRIC	1.12	INVALID	0.29	0.31
SU-082	429.5	DIAMETRAL	200	61	∠ TO FABRIC	10.52	INVALID	2.68	2.93

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-082	425	DIAMETRAL	160	61	NA	13.02	INVALID	3.32	3.63
SU-082	424.23	DIAMETRAL	260	61	NA	30.42	INVALID	7.75	8.48
SU-082	425.16	DIAMETRAL	240	61	NA	23.3	INVALID	5.94	6.49
SU-082	453.39	DIAMETRAL	200	61	NA	0.62	INVALID	0.16	0.17
SU-082	422.76	DIAMETRAL	190	61	NA	37.28	INVALID	9.50	10.39
SU-082	423.79	DIAMETRAL	130	61	NA	32.64	INVALID	8.32	9.09
SU-082	421.17	DIAMETRAL	110	61	⊥ TO FABRIC	19.18	INVALID	4.89	5.34
SU-082	420.92	DIAMETRAL	210	61	∠ TO FABRIC	20.42	INVALID	5.20	5.69
SU-082	417.74	DIAMETRAL	240	61	∠ TO FABRIC	19.6	VALID	4.99	5.46
SU-082	414.42	DIAMETRAL	190	61	∠ TO FABRIC	11.46	INVALID	2.92	3.19
SU-082	412.03	DIAMETRAL	190	61	∠ TO FABRIC	18.1	INVALID	4.61	5.04
SU-082	452.53	DIAMETRAL	170	61	∠ TO FABRIC	1.96	INVALID	0.50	0.55
SU-082	449.4	DIAMETRAL	270	61	∠ TO FABRIC	1.22	INVALID	0.31	0.34
SU-082	447.33	DIAMETRAL	140	61	∠ TO FABRIC	1.34	INVALID	0.34	0.37
SU-082	446.3	DIAMETRAL	150	61	∠ TO FABRIC	15	INVALID	3.82	4.18
SU-082	445.85	DIAMETRAL	260	61	∠ TO FABRIC	8.9	INVALID	2.27	2.48
SU-082	498.65	DIAMETRAL	210	61	∠ TO FABRIC	25.62	VALID	6.53	7.14
SU-082	495.15	DIAMETRAL	150	61	⊥ TO FABRIC	34.66	INVALID	8.83	9.66
SU-082	494.5	DIAMETRAL	260	61	⊥ TO FABRIC	4.8	INVALID	1.22	1.34
SU-082	490.34	DIAMETRAL	210	61	⊥ TO FABRIC	17.52	VALID	4.46	4.88
SU-082	487.34	DIAMETRAL	230	61	NA	23.92	INVALID	6.09	6.66
SU-082	488.77	DIAMETRAL	200	61	⊥ TO FABRIC	16.6	INVALID	4.23	4.63
SU-082	486.95	DIAMETRAL	270	61	NA	30.86	VALID	7.86	8.60
SU-082	485.7	DIAMETRAL	190	61	∠ TO FABRIC	29.52	INVALID	7.52	8.22
SU-082	484.16	DIAMETRAL	150	61	NA	31.22	INVALID	7.95	8.70
SU-082	480.03	DIAMETRAL	270	61	NA	8.5	INVALID	2.17	2.37
SU-082	481.46	DIAMETRAL	180	61	NA	8.76	INVALID	2.23	2.44
SU-082	478.87	DIAMETRAL	230	61	∠ TO FABRIC	6.64	INVALID	1.69	1.85
SU-082	477.11	DIAMETRAL	260	61	∠ TO FABRIC	22.7	INVALID	5.78	6.32
SU-082	478.6	DIAMETRAL	150	61	NA	22.3	INVALID	5.68	6.21
SU-082	474.86	DIAMETRAL	180	61	NA	46.76	INVALID	11.91	13.03
SU-082	474.67	DIAMETRAL	150	61	NA	18.5	INVALID	4.71	5.15
SU-082	471.54	DIAMETRAL	180	61	∠ TO FABRIC	8.2	INVALID	2.09	2.28
SU-082	473.14	DIAMETRAL	200	61	NA	16.36	INVALID	4.17	4.56
SU-082	469.39	DIAMETRAL	210	61	NA	29.8	VALID	7.59	8.30
SU-082	465.43	DIAMETRAL	250	61	∠ TO FABRIC	9.36	INVALID	2.38	2.61
SU-082	467.01	DIAMETRAL	300	61	∠ TO FABRIC	14.1	INVALID	3.59	3.93

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-082	464.38	DIAMETRAL	190	61	∠ TO FABRIC	9.42	INVALID	2.40	2.62
SU-082	463.47	DIAMETRAL	230	61	NA	4.1	INVALID	1.04	1.14
SU-082	462.14	DIAMETRAL	260	61	NA	3.96	INVALID	1.01	1.10
SU-082	501.45	DIAMETRAL	160	61	NA	27.26	INVALID	6.95	7.60
SU-082	499.84	DIAMETRAL	210	61	NA	29.46	INVALID	7.51	8.21
SU-082	503.04	DIAMETRAL	150	61	NA	14.7	INVALID	3.75	4.10
SU-082	503.25	DIAMETRAL	120	61	NA	14	INVALID	3.57	3.90
SU-082	508.17	DIAMETRAL	120	61	NA	13.94	INVALID	3.55	3.88
SU-082	508.65	DIAMETRAL	140	61	NA	18.68	INVALID	4.76	5.20
SU-082	509.98	DIAMETRAL	230	61	NA	20.8	INVALID	5.30	5.80
SU-082	511.26	DIAMETRAL	230	61	NA	11.78	INVALID	3.00	3.28
SU-082	513.24	DIAMETRAL	250	61	NA	16.18	INVALID	4.12	4.51
SU-082	514.13	DIAMETRAL	165	61	NA	13.98	INVALID	3.56	3.90
SU-082	517.09	DIAMETRAL	130	61	NA	14.1	INVALID	3.59	3.93
SU-088	2.15	DIAMETRAL	130	61	NA	14.1	INVALID	3.59	3.93
SU-088	2.35	DIAMETRAL	200	61	NA	10.78	INVALID	2.75	3.00
SU-088	3.53	DIAMETRAL	185	61	NA	6.12	INVALID	1.56	1.71
SU-088	4.45	DIAMETRAL	230	61	NA	8.24	INVALID	2.10	2.30
SU-088	5.33	DIAMETRAL	190	61	NA	10.7	INVALID	2.73	2.98
SU-088	7.18	DIAMETRAL	110	61	NA	8.72	INVALID	2.22	2.43
SU-088	7.7	DIAMETRAL	210	61	NA	11.44	INVALID	2.91	3.19
SU-088	10.94	DIAMETRAL	180	61	NA	19.16	VALID	4.88	5.34
SU-088	11.14	DIAMETRAL	140	61	NA	21.28	INVALID	5.42	5.93
SU-088	12.52	DIAMETRAL	150	61	NA	9.44	INVALID	2.41	2.63
SU-088	12.67	DIAMETRAL	130	61	NA	6.4	INVALID	1.63	1.78
SU-088	15.37	DIAMETRAL	310	61	NA	15.22	INVALID	3.88	4.24
SU-088	15.68	DIAMETRAL	120	61	NA	15.12	INVALID	3.85	4.21
SU-088	17.37	DIAMETRAL	135	61	NA	13.36	INVALID	3.40	3.72
SU-088	21.79	DIAMETRAL	210	61	NA	14.96	INVALID	3.81	4.17
SU-088	23.47	DIAMETRAL	200	61	NA	17.09	INVALID	4.35	4.76
SU-088	25.76	DIAMETRAL	170	61	NA	21.06	INVALID	5.37	5.87
SU-088	27.11	DIAMETRAL	220	61	NA	12.26	INVALID	3.12	3.42
SU-088	28.62	DIAMETRAL	280	61	NA	15.96	INVALID	4.07	4.45
SU-088	29.12	DIAMETRAL	220	61	∠ TO FABRIC	16.62	INVALID	4.23	4.63
SU-088	29.35	DIAMETRAL	230	61	NA	15.04	INVALID	3.83	4.19
SU-088	32.61	DIAMETRAL	150	61	NA	24.08	VALID	6.13	6.71
SU-088	34.38	DIAMETRAL	210	61	NA	14.2	VALID	3.62	3.96

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	36.29	DIAMETRAL	130	61	NA	16.67	INVALID	4.25	4.64
SU-088	36.43	DIAMETRAL	160	61	NA	21.92	INVALID	5.58	6.11
SU-088	37.5	DIAMETRAL	200	61	NA	13.92	INVALID	3.55	3.88
SU-088	37.7	DIAMETRAL	210	61	NA	11.08	INVALID	2.82	3.09
SU-088	38.17	DIAMETRAL	200	61	NA	17.56	INVALID	4.47	4.89
SU-088	38.82	DIAMETRAL	130	61	NA	18.76	VALID	4.78	5.23
SU-088	38.96	DIAMETRAL	230	61	NA	20.74	INVALID	5.28	5.78
SU-088	39.2	DIAMETRAL	150	61	NA	24.94	INVALID	6.35	6.95
SU-088	39.37	DIAMETRAL	180	61	NA		INVALID	0.00	0.00
SU-088	39.57	DIAMETRAL	160	61	NA	20.16	INVALID	5.14	5.62
SU-088	39.73	DIAMETRAL	200	61	NA	20.78	INVALID	5.29	5.79
SU-088	40.27	DIAMETRAL	120	61	NA	17.54	VALID	4.47	4.89
SU-088	40.39	DIAMETRAL	160	61	NA	11.7	INVALID	2.98	3.26
SU-088	40.65	DIAMETRAL	150	61	NA	18.82	INVALID	4.79	5.24
SU-088	40.79	DIAMETRAL	190	61	NA	16.1	INVALID	4.10	4.49
SU-088	43.45	DIAMETRAL	225	61	∠ TO FABRIC	21.88	VALID	5.57	6.10
SU-088	43.45	DIAMETRAL	225	61	∠ TO FABRIC	21.88	VALID	5.57	6.10
SU-088	44.34	DIAMETRAL	120	61	∠ TO FABRIC	21.88	INVALID	5.57	6.10
SU-088	44.34	DIAMETRAL	120	61	∠ TO FABRIC	21.88	INVALID	5.57	6.10
SU-088	44.81	DIAMETRAL	190	61	∠ TO FABRIC	21.88	INVALID	5.57	6.10
SU-088	44.81	DIAMETRAL	190	61	∠ TO FABRIC	21.88	INVALID	5.57	6.10
SU-088	45.2	DIAMETRAL	125	61	NA	11.88	INVALID	3.03	3.31
SU-088	45.2	DIAMETRAL	125	61	NA	11.88	INVALID	3.03	3.31
SU-088	45.31	DIAMETRAL	245	61	NA	17.44	INVALID	4.44	4.86
SU-088	47.24	IRREGULAR LUMP	110	33	NA	21.98	VALID	15.03	13.16
SU-088	47.24	IRREGULAR LUMP	110	33	NA	21.98	VALID	15.03	13.16
SU-088	47.26	DIAMETRAL	170	61	NA	25.14	INVALID	6.40	7.00
SU-088	47.26	DIAMETRAL	170	61	NA	25.14	INVALID	6.40	7.00
SU-088	47.85	IRREGULAR LUMP	135	36	NA	21.92	VALID	12.59	11.47
SU-088	47.85	IRREGULAR LUMP	135	36	NA	21.92	VALID	12.59	11.47
SU-088	48.04	DIAMETRAL	165	61	∠ TO FABRIC	18.16	INVALID	4.63	5.06
SU-088	48.04	DIAMETRAL	165	61	∠ TO FABRIC	18.165	INVALID	4.63	5.06
SU-088	48.5	IRREGULAR LUMP	100	36	NA	19.04	VALID	10.94	9.96
SU-088	48.5	IRREGULAR LUMP	100	36	NA	19.04	INVALID	10.94	9.96
SU-088	49.35	DIAMETRAL	155	61	NA	23.67	INVALID	6.03	6.59
SU-088	49.5	DIAMETRAL	230	61	NA	18.78	INVALID	4.78	5.23
SU-088	49.72	DIAMETRAL	155	61	NA	14.32	INVALID	3.65	3.99

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	50.75	DIAMETRAL	150	61	NA	12.88	INVALID	3.28	3.59
SU-088	50.9	IRREGULAR LUMP	100	30	NA	13.58	VALID	11.23	9.43
SU-088	50.9	IRREGULAR LUMP	100	30	NA	13.58	VALID	11.23	9.43
SU-088	51.76	IRREGULAR LUMP	100	37	NA	17.86	VALID	9.71	8.96
SU-088	51.76	IRREGULAR LUMP	100	37	NA	17.86	VALID	9.71	8.96
SU-088	52.57	DIAMETRAL	175	61	NA		INVALID	0.00	0.00
SU-088	53.52	DIAMETRAL	175	61	NA	11.6	INVALID	2.96	3.23
SU-088	55.95	DIAMETRAL	170	61	NA	16.64	INVALID	4.24	4.64
SU-088	56.36	IRREGULAR LUMP	110	37	NA	26.22	VALID	14.26	13.15
SU-088	56.36	IRREGULAR LUMP	110	37	NA	26.22	VALID	14.26	13.15
SU-088	56.5	IRREGULAR LUMP	120	37	NA	17.42	INVALID	9.47	8.74
SU-088	56.56	IRREGULAR LUMP	120	37	NA	17.42	INVALID	9.47	8.74
SU-088	57	DIAMETRAL	155	61	NA	22	INVALID	5.60	6.13
SU-088	57.92	DIAMETRAL	120	61	NA	18.6	INVALID	4.74	5.18
SU-088	58.26	IRREGULAR LUMP	100	37	NA	33.88	VALID	18.43	16.99
SU-088	58.96	IRREGULAR LUMP	100	37	NA	33.88	VALID	18.43	16.99
SU-088	59.51	IRREGULAR LUMP	86	35	NA	20.92	INVALID	12.72	11.43
SU-088	59.51	IRREGULAR LUMP	86	35	NA	20.92	INVALID	12.72	11.43
SU-088	60.04	DIAMETRAL	120	61	NA	19.84	INVALID	5.05	5.53
SU-088	60.9	IRREGULAR LUMP	140	34	NA	17.9	INVALID	11.53	10.23
SU-088	60.9	IRREGULAR LUMP	140	34	NA	17.9	INVALID	11.53	10.23
SU-088	61.04	DIAMETRAL	130	61	NA	22.28	INVALID	5.68	6.21
SU-088	61.13	IRREGULAR LUMP	140	35	NA	23.52	VALID	14.30	12.86
SU-088	61.13	IRREGULAR LUMP	140	35	NA	23.52	VALID	14.30	12.86
SU-088	61.55	DIAMETRAL	125	61	NA	15.34	INVALID	3.91	4.27
SU-088	62.16	DIAMETRAL	180	61	NA	12.39	INVALID	3.16	3.45
SU-088	63.05	DIAMETRAL	130	61	NA	18.58	INVALID	4.73	5.18
SU-088	63.39	DIAMETRAL	165	61	NA	23.64	INVALID	6.02	6.59
SU-088	63.51	IRREGULAR LUMP	110	30	NA	22.9	VALID	18.94	15.90
SU-088	63.51	IRREGULAR LUMP	110	30	NA	22.9	VALID	18.94	15.90
SU-088	64.17	DIAMETRAL	200	61	NA	17.94	INVALID	4.57	5.00
SU-088	65	DIAMETRAL	130	61	NA	17.94	INVALID	4.57	5.00
SU-088	65.94	IRREGULAR LUMP	100	32	NA	13.96	VALID	10.15	8.77
SU-088	65.94	IRREGULAR LUMP	100	32	NA	13.96	VALID	10.15	8.77
SU-088	66.04	IRREGULAR LUMP	100		NA		INVALID		
SU-088	66.04	IRREGULAR LUMP	100		NA		INVALID		
SU-088	66.48	DIAMETRAL	140	61	NA	17.94	INVALID	4.57	5.00

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	67.21	DIAMETRAL	190	61	NA	18.52	INVALID	4.72	5.16
SU-088	68.15	IRREGULAR LUMP	95	30	NA	23.8	VALID	19.69	16.52
SU-088	68.15	IRREGULAR LUMP	95	30	NA	23.8	VALID	19.69	16.52
SU-088	68.25	IRREGULAR LUMP	100	31	NA	23.78	VALID	18.42	15.69
SU-088	68.25	IRREGULAR LUMP	100	31	NA	23.78	VALID	18.42	15.69
SU-088	69.05	DIAMETRAL	140	61	NA	16.98	INVALID	4.33	4.73
SU-088	70.1	IRREGULAR LUMP	110	36	NA	21.26	VALID	12.21	11.12
SU-088	70.1	IRREGULAR LUMP	110	36	NA	21.26	VALID	12.21	11.12
SU-088	71.16	DIAMETRAL	140	61	NA	20.28	VALID	5.17	5.65
SU-088	71.6	IRREGULAR LUMP	110	38	NA	21.78	VALID	11.23	10.48
SU-088	71.6	IRREGULAR LUMP	110	38	NA	21.78	VALID	11.23	10.48
SU-088	72.24	DIAMETRAL	120	61	NA	19.22	VALID	4.90	5.36
SU-088	72.7	DIAMETRAL	130	61	NA	11.64	INVALID	2.97	3.24
SU-088	72.83	DIAMETRAL	210	61	NA	21.6	INVALID	5.50	6.02
SU-088	73.04	DIAMETRAL	145	61	NA	18.5	INVALID	4.71	5.15
SU-088	73.18	DIAMETRAL	125	61	NA	14.34	INVALID	3.65	4.00
SU-088	73.81	DIAMETRAL	160	61	NA	19.82	INVALID	5.05	5.52
SU-088	74.48	DIAMETRAL	175	61	NA	31.04	INVALID	7.91	8.65
SU-088	75.04	DIAMETRAL	180	61	NA	29.12	INVALID	7.42	8.11
SU-088	75.28	DIAMETRAL	160	61	NA	29.68	INVALID	7.56	8.27
SU-088	75.42	DIAMETRAL	160	61	NA	24.2	INVALID	6.17	6.74
SU-088	75.64	IRREGULAR LUMP	90	38	NA		INVALID		
SU-088	75.64	IRREGULAR LUMP	90	38	NA		INVALID	0.00	0.00
SU-088	76.37	DIAMETRAL	180	61	NA	21.28	VALID	5.42	5.93
SU-088	76.54	IRREGULAR LUMP	100	34	NA	22.14	INVALID	14.26	12.66
SU-088	78.33	DIAMETRAL	235	61	NA	25.34	VALID	6.46	7.06
SU-088	78.33	DIAMETRAL	235	61	NA	25.34	VALID	6.46	7.06
SU-088	79.6	IRREGULAR LUMP	85	45	NA	24.76	INVALID	9.10	9.17
SU-088	81.12	DIAMETRAL	190	61	NA	20.16	VALID	5.14	5.62
SU-088	81.12	DIAMETRAL	190	61	NA	20.16	VALID	5.14	5.62
SU-088	81.38	IRREGULAR LUMP	90	30	NA	13.26	INVALID	10.97	9.20
SU-088	82.63	IRREGULAR LUMP	95	34	NA	27.8	VALID	17.91	15.89
SU-088	84.1	DIAMETRAL	160	61	NA	18.6	INVALID	4.74	5.18
SU-088	84.1	DIAMETRAL	160	61	NA	18.6	INVALID	4.74	5.18
SU-088	84.43	IRREGULAR LUMP	110	42	NA	17.8	INVALID	7.51	7.33
SU-088	84.43	IRREGULAR LUMP	110	42	NA	17.8	INVALID	7.51	7.33
SU-088	85.5	DIAMETRAL	190	61	NA	24.08	INVALID	6.13	6.71

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	85.5	DIAMETRAL	190	61	NA	24.08	INVALID	6.13	6.71
SU-088	85.78	DIAMETRAL	160	61	NA	14.7	INVALID	3.75	4.10
SU-088	85.78	DIAMETRAL	160	61	NA	14.7	INVALID	3.75	4.10
SU-088	87.17	DIAMETRAL	180	61	NA	23.6	INVALID	6.01	6.58
SU-088	87.17	DIAMETRAL	180	61	NA	23.6	INVALID	6.01	6.58
SU-088	87.48	IRREGULAR LUMP	95	30	NA	14.24	VALID	11.78	9.88
SU-088	87.48	IRREGULAR LUMP	95	30	NA	14.24	VALID	11.78	9.88
SU-088	89.14	DIAMETRAL	180	61	NA	13.02	INVALID	3.32	3.63
SU-088	89.14	DIAMETRAL	180	61	NA	13.02	INVALID	3.32	3.63
SU-088	89.45	DIAMETRAL	130	61	NA	25.32	INVALID	6.45	7.05
SU-088	90.32	IRREGULAR LUMP	95	39	NA	14.78	VALID	7.24	6.83
SU-088	90.52	IRREGULAR LUMP	95	39	NA	14.78	VALID	7.24	6.83
SU-088	90.79	DIAMETRAL	210	61	NA	16.62	INVALID	4.23	4.63
SU-088	90.79	DIAMETRAL	210	61	NA	16.62	INVALID	4.23	4.63
SU-088	91.56	DIAMETRAL	150	61	NA	31.94	INVALID	8.14	8.90
SU-088	91.56	DIAMETRAL	150	61	NA	31.94	INVALID	8.14	8.90
SU-088	93.57	DIAMETRAL	230	61	NA	27.52	INVALID	7.01	7.67
SU-088	93.57	IRREGULAR LUMP	105	41	NA	26.14	VALID	11.58	11.18
SU-088	93.57	DIAMETRAL	230	61	NA	27.52	INVALID	7.01	7.67
SU-088	93.57	IRREGULAR LUMP	105	41	NA	26.14	VALID	11.58	11.18
SU-088	94.07	DIAMETRAL	190	61	NA	9.74	INVALID	2.48	2.71
SU-088	94.07	DIAMETRAL	190	61	NA	9.74	INVALID	2.48	2.71
SU-088	96.07	DIAMETRAL	150	61	NA	28.24	INVALID	7.19	7.87
SU-088	96.07	DIAMETRAL	150	61	NA	28.24	INVALID	7.19	7.87
SU-088	96.27	IRREGULAR LUMP	70	34	NA	14.2	VALID	9.15	8.12
SU-088	96.62	DIAMETRAL	175	61	NA	19.52	INVALID	4.97	5.44
SU-088	96.62	DIAMETRAL	175	61	NA	19.52	INVALID	4.97	5.44
SU-088	97.23	IRREGULAR LUMP	60	61	NA	13.62	INVALID	2.73	3.15
SU-088	97.23	IRREGULAR LUMP	60	61	NA	13.62	INVALID	2.73	3.15
SU-088	99.45	DIAMETRAL	130	61	NA	25.32	INVALID	6.45	7.05
SU-088	99.56	DIAMETRAL	135	61	NA	25.32	INVALID	6.45	7.05
SU-088	99.56	DIAMETRAL	135	61	NA	25.32	INVALID	6.45	7.05
SU-088	100.15	IRREGULAR LUMP	90	30	NA	20.1	VALID	16.63	13.95
SU-088	100.47	IRREGULAR LUMP	65	61	NA	25.32	VALID	5.07	5.85
SU-088	100.47	IRREGULAR LUMP	65	61	NA	25.32	INVALID	5.07	5.85
SU-088	101.71	DIAMETRAL	125	61	NA	20.47	INVALID	5.22	5.70
SU-088	101.71	DIAMETRAL	125	61	NA	20.47	INVALID	5.22	5.70

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	101.86	IRREGULAR LUMP	90	30	NA	22.52	VALID	18.63	15.63
SU-088	102.6	DIAMETRAL	130	61	NA	29.36	INVALID	7.48	8.18
SU-088	102.6	DIAMETRAL	130	61	NA	29.36	INVALID	7.48	8.18
SU-088	103.96	IRREGULAR LUMP	55	61	NA	15.2	INVALID	3.04	3.51
SU-088	103.96	IRREGULAR LUMP	55	61	NA	15.2	INVALID	3.04	3.51
SU-088	105.58	DIAMETRAL	125	61	NA	5.8	INVALID	1.48	1.62
SU-088	105.58	DIAMETRAL	125	61	NA	5.8	INVALID	1.48	1.62
SU-088	105.7	DIAMETRAL	75	61	NA	5.82	INVALID	1.48	1.62
SU-088	105.7	IRREGULAR LUMP	75	61	NA	5.82	INVALID	1.16	1.34
SU-088	105.94	IRREGULAR LUMP	70	35	NA	11.64	INVALID	7.07	6.36
SU-088	106.15	IRREGULAR LUMP	90	31	NA	15.52	INVALID	12.02	10.24
SU-088	107.36	DIAMETRAL	130	61	NA	26.58	INVALID	6.77	7.41
SU-088	107.36	DIAMETRAL	130	61	NA	26.58	INVALID	6.77	7.41
SU-088	108.76	IRREGULAR LUMP	90	34	NA	21.14	VALID	13.62	12.09
SU-088	110.92	IRREGULAR LUMP	85	61	NA	18.86	INVALID	3.77	4.36
SU-088	110.93	DIAMETRAL	85	61	NA	18.86	INVALID	4.80	5.25
SU-088	111.03	DIAMETRAL	120	61	NA	26.2	INVALID	6.67	7.30
SU-088	111.03	DIAMETRAL	120	61	NA	26.2	INVALID	6.67	7.30
SU-088	111.74	DIAMETRAL	120	61	∠ TO FABRIC	24.44	INVALID	6.23	6.81
SU-088	111.74	DIAMETRAL	120	61	∠ TO FABRIC	24.44	INVALID	6.23	6.81
SU-088	113.52	DIAMETRAL	160	61	∠ TO FABRIC	10.68	INVALID	2.72	2.98
SU-088	113.52	DIAMETRAL	160	37	∠ TO FABRIC	10.68	INVALID	7.40	6.46
SU-088	114.27	DIAMETRAL	170	61	NA	24.72	INVALID	6.30	6.89
SU-088	114.27	DIAMETRAL	170	61	NA	27.72	INVALID	7.06	7.72
SU-088	115.6	DIAMETRAL	150	61	NA	28.94	VALID	7.37	8.06
SU-088	115.6	DIAMETRAL	150	61	NA	28.94	VALID	7.37	8.06
SU-088	116.11	IRREGULAR LUMP	105	31	NA	14.46	VALID	11.20	9.54
SU-088	116.11	IRREGULAR LUMP	105	31	NA	14.46	VALID	11.20	9.54
SU-088	118.95	DIAMETRAL	140	61	NA	16.84	VALID	4.29	4.69
SU-088	118.95	DIAMETRAL	140	61	NA	16.84	VALID	4.29	4.69
SU-088	120.19	IRREGULAR LUMP	115	37	NA	18.66	VALID	10.15	9.36
SU-088	120.19	IRREGULAR LUMP	115	37	NA	18.66	VALID	10.15	9.36
SU-088	123.12	DIAMETRAL	240	61	NA	10.44	INVALID	2.66	2.91
SU-088	123.12	DIAMETRAL	240	61	NA	10.44	INVALID	2.66	2.91
SU-088	123.89	DIAMETRAL	270	61	NA	14.76	INVALID	3.76	4.11
SU-088	123.89	DIAMETRAL	270	61	NA	14.76	INVALID	3.76	4.11
SU-088	124.05	DIAMETRAL	260	61	NA	19.88	INVALID	5.06	5.54

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	124.05	DIAMETRAL	260	61	NA	19.88	INVALID	5.06	5.54
SU-088	124.45	IRREGULAR LUMP	90	35	NA	12.42	VALID	7.55	6.79
SU-088	124.45	IRREGULAR LUMP	90	35	NA	12.42	VALID	7.55	6.79
SU-088	125.14	IRREGULAR LUMP	100	35	NA	19.62	VALID	11.93	10.72
SU-088	125.14	IRREGULAR LUMP	100	35	NA	19.62	VALID	11.93	10.72
SU-088	125.45	DIAMETRAL	270	61	NA	38.84	INVALID	9.90	10.82
SU-088	125.45	DIAMETRAL	270	61	NA	38.84	INVALID	9.90	10.82
SU-088	126.84	DIAMETRAL	220	61	NA	15.68	INVALID	3.99	4.37
SU-088	126.84	DIAMETRAL	220	61	NA	15.68	INVALID	3.99	4.37
SU-088	128.01	IRREGULAR LUMP	100	37	NA	21.04	VALID	11.44	10.55
SU-088	128.01	IRREGULAR LUMP	100	37	NA	21.04	VALID	11.44	10.55
SU-088	130.04	DIAMETRAL	120	61	NA	30.62	VALID	7.80	8.53
SU-088	130.04	DIAMETRAL	120	61	NA	30.62	VALID	7.80	8.53
SU-088	130.95	DIAMETRAL	140	61	NA	19.16	INVALID	4.88	5.34
SU-088	130.95	DIAMETRAL	140	61	NA	19.16	INVALID	4.88	5.34
SU-088	133.2	IRREGULAR LUMP	85	35	NA	16.78	VALID	10.20	9.17
SU-088	133.3	IRREGULAR LUMP	85	35	NA	16.78	VALID	10.20	9.17
SU-088	133.53	DIAMETRAL	205	61	NA	26.22	INVALID	6.68	7.31
SU-088	133.53	DIAMETRAL	205	61	NA	26.22	INVALID	6.68	7.31
SU-088	133.85	DIAMETRAL	150	61	NA	19.36	INVALID	4.93	5.39
SU-088	133.85	DIAMETRAL	150	61	NA	19.36	INVALID	4.93	5.39
SU-088	134.1	IRREGULAR LUMP	155	32	NA	19.08	INVALID	13.87	11.98
SU-088	134.1	IRREGULAR LUMP	155	32	NA	19.08	INVALID	13.87	11.98
SU-088	135.3	DIAMETRAL	135	61	NA	24.16	INVALID	6.16	6.73
SU-088	135.3	DIAMETRAL	135	61	NA	24.16	INVALID	6.16	6.73
SU-088	138.4	IRREGULAR LUMP	100	29	NA	19.1	VALID	16.91	13.97
SU-088	138.4	IRREGULAR LUMP	100	29	NA	19.1	VALID	16.91	13.97
SU-088	140.14	IRREGULAR LUMP	100	33	NA	19.56	VALID	13.37	11.71
SU-088	140.14	IRREGULAR LUMP	100	33	NA	19.56	VALID	13.37	11.71
SU-088	140.15	DIAMETRAL	190	61	NA	22.82	VALID	5.81	6.36
SU-088	140.15	DIAMETRAL	190	61	NA	22.82	VALID	5.81	6.36
SU-088	141.62	IRREGULAR LUMP	100	33	NA	0.282608696	VALID	0.19	0.17
SU-088	141.62	IRREGULAR LUMP	100	33	NA	13.46	VALID	9.20	8.06
SU-088	142.34	DIAMETRAL	155	61	NA	23.94	VALID	6.10	6.67
SU-088	142.34	DIAMETRAL	15	61	NA	23.94	VALID	6.10	6.67
SU-088	145.39	IRREGULAR LUMP	110	35	NA	22.58	VALID	13.72	12.34
SU-088	146.2	DIAMETRAL	140	61	NA	25.24	VALID	6.43	7.03

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	146.2	DIAMETRAL	140	61	NA	25.24	VALID	6.43	7.03
SU-088	147.39	DIAMETRAL	200	61	NA	26.52	VALID	6.76	7.39
SU-088	147.39	DIAMETRAL	200	61	NA	26.52	VALID	6.76	7.39
SU-088	147.7	DIAMETRAL	150	61	NA	21.5	VALID	5.48	5.99
SU-088	147.7	DIAMETRAL	150	61	NA	21.5	VALID	5.48	5.99
SU-088	148.44	IRREGULAR LUMP	95	39	NA	18.66	VALID	9.13	8.62
SU-088	151.48	IRREGULAR LUMP	105	33	∠ TO FABRIC	13.96	VALID	9.54	8.36
SU-088	151.92	DIAMETRAL	150	61	NA	19.1	VALID	4.87	5.32
SU-088	151.92	DIAMETRAL	150	61	NA	19.1	VALID	4.87	5.32
SU-088	153.47	IRREGULAR LUMP	185	38	NA	21.82	INVALID	11.25	10.50
SU-088	154.32	DIAMETRAL	115	61	NA	22.64	VALID	5.77	6.31
SU-088	154.32	DIAMETRAL	115	61	NA	22.64	INVALID	5.77	6.31
SU-088	154.46	IRREGULAR LUMP	75	67	NA	13.26	VALID	2.20	2.65
SU-088	154.46	IRREGULAR LUMP	75	67	NA	13.26	INVALID	2.20	2.65
SU-088	156.12	IRREGULAR LUMP	120	27	NA		INVALID	0.00	0.00
SU-088	156.24	DIAMETRAL	225	61	∠ TO FABRIC	19.48	VALID	4.96	5.43
SU-088	156.24	DIAMETRAL	225	61	∠ TO FABRIC	19.48	INVALID	4.96	5.43
SU-088	157.32	DIAMETRAL	140	61	∠ TO FABRIC	14.86	VALID	3.79	4.14
SU-088	157.32	DIAMETRAL	140	61	∠ TO FABRIC	14.86	INVALID	3.79	4.14
SU-088	157.54	IRREGULAR LUMP	110	38	NA	16.44	VALID	8.48	7.91
SU-088	158.17	IRREGULAR LUMP	65	49	NA	11.48	VALID	3.56	3.72
SU-088	158.17	IRREGULAR LUMP	65	49	NA	11.48	INVALID	3.56	3.72
SU-088	160.41	DIAMETRAL	120	61	∠ TO FABRIC	16.14	VALID	4.11	4.50
SU-088	160.41	DIAMETRAL	120	61	∠ TO FABRIC	16.14	INVALID	4.11	4.50
SU-088	160.63	IRREGULAR LUMP	95	38	NA	21.24	VALID	10.95	10.22
SU-088	161.95	IRREGULAR LUMP	110	39	NA	7.36	INVALID	3.60	3.40
SU-088	162.36	DIAMETRAL	160	61	NA		INVALID	0.00	0.00
SU-088	162.36	DIAMETRAL	160	61	NA		INVALID	0.00	0.00
SU-088	162.55	IRREGULAR LUMP	100	40	NA	22.52	VALID	10.48	10.01
SU-088	162.65	IRREGULAR LUMP	110	37	NA	11.74	INVALID	6.39	5.89
SU-088	166.09	IRREGULAR LUMP	100	34	NA	11.74	INVALID	7.56	6.71
SU-088	166.72	IRREGULAR LUMP	105	30	NA	15.22	INVALID	12.59	10.56
SU-088	169.28	IRREGULAR LUMP	85	40	NA	17.54	INVALID	8.16	7.79
SU-088	175.01	IRREGULAR LUMP	90	36	NA	23.4	INVALID	13.44	12.24
SU-088	175.87	IRREGULAR LUMP	90	35	NA	18.76	VALID	11.40	10.25
SU-088	178.92	IRREGULAR LUMP	95	34	NA	17.6	VALID	11.34	10.06
SU-088	181.48	DIAMETRAL	135	61	NA	13.12	INVALID	3.34	3.66

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	181.48	DIAMETRAL	135	61	NA	13.12	INVALID	3.34	3.66
SU-088	181.81	IRREGULAR LUMP	95	33	NA	18.64	VALID	12.74	11.16
SU-088	188.06	IRREGULAR LUMP	110	33	NA	14.16	VALID	9.68	8.48
SU-088	188.36	IRREGULAR LUMP	105	40	NA	19.66	INVALID	9.15	8.74
SU-088	191.57	IRREGULAR LUMP	80	37	NA	14.74	VALID	8.02	7.39
SU-088	197.08	DIAMETRAL	130	61	NA	17.1	INVALID	4.36	4.76
SU-088	197.08	DIAMETRAL	130	61	NA	17.1	INVALID	4.36	4.76
SU-088	197.21	IRREGULAR LUMP	95	33	NA	17.28	VALID	11.81	10.35
SU-088	198.14	DIAMETRAL	170	61	NA	24.6	VALID	6.27	6.85
SU-088	198.14	DIAMETRAL	170	61	NA	24.6	VALID	6.27	6.85
SU-088	199.05	IRREGULAR LUMP	90	33	NA	17.56	VALID	12.01	10.51
SU-088	202.75	IRREGULAR LUMP	80	33	NA	14.9	VALID	10.19	8.92
SU-088	204.62	DIAMETRAL	170	61	NA	11.7	INVALID	2.98	3.26
SU-088	204.62	DIAMETRAL	170	61	NA	11.7	INVALID	2.98	3.26
SU-088	204.81	DIAMETRAL	160	61	NA	18.86	INVALID		
SU-088	204.81	DIAMETRAL	160	61	NA	18.86	INVALID	4.80	5.25
SU-088	206.35	IRREGULAR LUMP	85	31	NA	15.18	VALID	11.76	10.01
SU-088	208.84	IRREGULAR LUMP	80	38	NA	13.26	INVALID	6.84	6.38
SU-088	209.48	DIAMETRAL	180	61	NA	20.78	VALID	5.29	5.79
SU-088	209.48	DIAMETRAL	180	61	NA	20.78	VALID	5.29	5.79
SU-088	210.67	DIAMETRAL	165	61	NA	13.3	VALID	3.39	3.71
SU-088	210.67	DIAMETRAL	165	61	NA	13.3	VALID	3.39	3.71
SU-088	211.18	DIAMETRAL	170	61	NA	20.34	VALID	5.18	5.67
SU-088	211.18	DIAMETRAL	170	61	NA	20.34	VALID	5.18	5.67
SU-088	212.33	DIAMETRAL	120	61	NA	11.8	VALID	3.01	3.29
SU-088	212.33	DIAMETRAL	120	61	NA	11.8	VALID	3.01	3.29
SU-088	213.31	IRREGULAR LUMP	115	40	NA	11.54	INVALID	5.37	5.13
SU-088	215.49	IRREGULAR LUMP	95	31	NA	17	VALID	13.17	11.22
SU-088	215.54	DIAMETRAL	150	61	NA	24.82	VALID	6.32	6.92
SU-088	215.54	DIAMETRAL	150	61	NA	24.82	VALID	6.32	6.92
SU-088	217.96	IRREGULAR LUMP	100	31	NA	10.9	VALID	8.45	7.19
SU-088	220.08	DIAMETRAL	190	61	NA	27.02	VALID	6.88	7.53
SU-088	220.08	DIAMETRAL	190	61	NA	27.02	VALID	6.88	7.53
SU-088	223.14	DIAMETRAL	115	61	NA	12.62	VALID	3.22	3.52
SU-088	223.14	DIAMETRAL	115	61	NA	12.62	VALID	3.22	3.52
SU-088	224.26	IRREGULAR LUMP	90	33	NA	21.12	VALID	14.44	12.65
SU-088	230.6	DIAMETRAL	130	61	NA	30.38	VALID	7.74	8.46

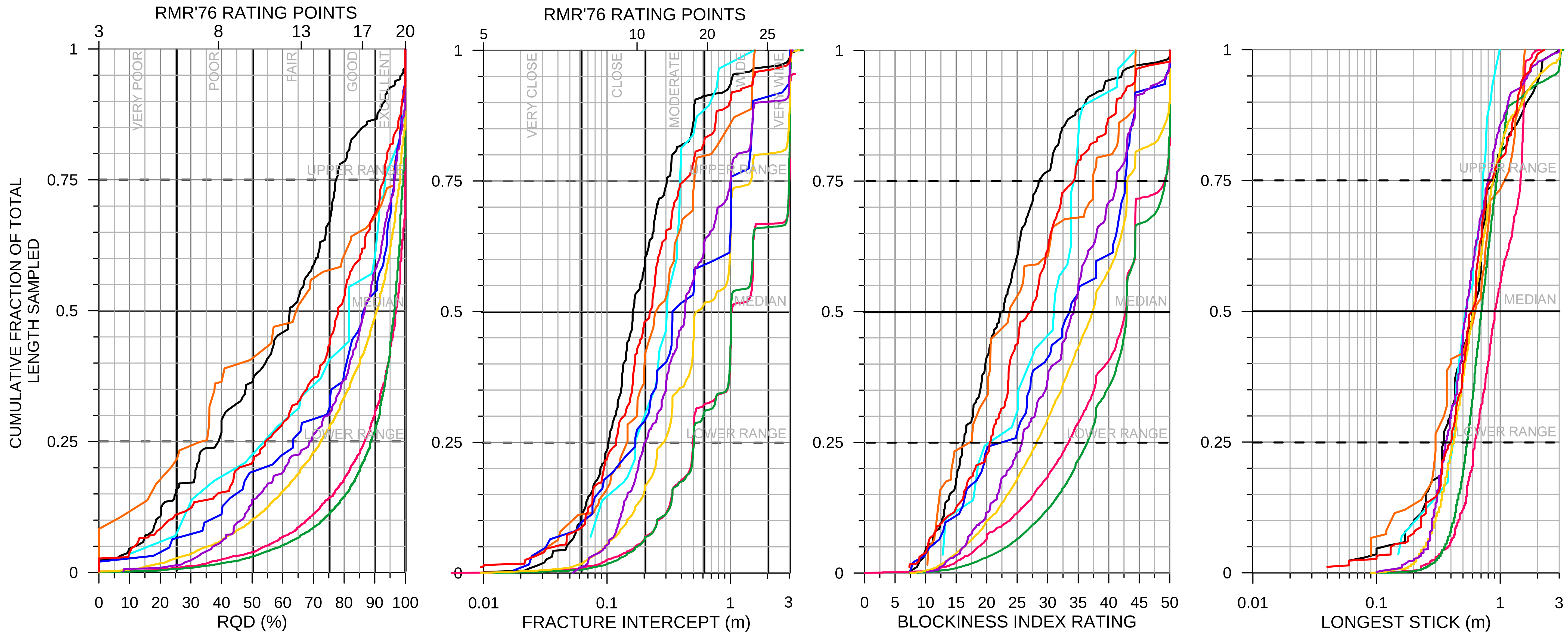
Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	230.73	DIAMETRAL	140	61	NA	29.34	VALID	7.47	8.17
SU-088	239.19	DIAMETRAL	145	61	NA	17.32	VALID	4.41	4.83
SU-088	239.99	DIAMETRAL	170	61	∠ TO FABRIC	13	INVALID	3.31	3.62
SU-088	240.25	DIAMETRAL	180	61	∠ TO FABRIC	33.12	VALID	8.44	9.23
SU-088	241.24	DIAMETRAL	120	61	∠ TO FABRIC	5.12	INVALID	1.30	1.43
SU-088	243.38	DIAMETRAL	130	61	∠ TO FABRIC	25.38	INVALID	6.47	7.07
SU-088	243.51	DIAMETRAL	125	61	∠ TO FABRIC	24.34	INVALID	6.20	6.78
SU-088	245.35	DIAMETRAL	200	61	∠ TO FABRIC	24.02	INVALID	6.12	6.69
SU-088	251.35	DIAMETRAL	125	61	NA	24.34	VALID	6.20	6.78
SU-088	252.07	DIAMETRAL	165	61	NA	27.04	INVALID	6.89	7.53
SU-088	252.49	DIAMETRAL	160	61	NA	12.62	INVALID	3.22	3.52
SU-088	254.41	DIAMETRAL	120	61	NA	12.62	INVALID	3.22	3.52
SU-088	254.98	DIAMETRAL	135	61	NA	11.78	INVALID	3.00	3.28
SU-088	255.27	DIAMETRAL	170	61	NA	5.92	INVALID	1.51	1.65
SU-088	259.35	DIAMETRAL	165	61	NA	5.02	INVALID	1.28	1.40
SU-088	259.68	IRREGULAR LUMP	90	34	NA	13.8	VALID	8.89	7.89
SU-088	260.51	DIAMETRAL	165	61	NA	9.74	INVALID	2.48	2.71
SU-088	261.21	DIAMETRAL	120	61	NA	13.94	INVALID	3.55	3.88
SU-088	261.21	IRREGULAR LUMP	80	35	NA	11.4	VALID	6.93	6.23
SU-088	261.78	DIAMETRAL	130	61	∠ TO FABRIC	24.08	VALID	6.13	6.71
SU-088	263.29	DIAMETRAL	180	61	NA	18.34	VALID	4.67	5.11
SU-088	265.09	DIAMETRAL	120	61	NA	12.6	INVALID	3.21	3.51
SU-088	265.11	IRREGULAR LUMP	70	33	NA	15.14	VALID	10.35	9.07
SU-088	268.89	IRREGULAR LUMP	90	30	∠ TO FABRIC	10.94	INVALID	9.05	7.59
SU-088	268.99	DIAMETRAL	170	61	∠ TO FABRIC	8.64	INVALID	2.20	2.41
SU-088	269.92	DIAMETRAL	200	61	NA	19.46	INVALID		
SU-088	271.96	DIAMETRAL	140	61	NA	26.62	VALID	6.78	7.42
SU-088	272.17	IRREGULAR LUMP	90	31	∠ TO FABRIC	10.96	INVALID	8.49	7.23
SU-088	272.87	IRREGULAR LUMP	80	30	∠ TO FABRIC	11.94	INVALID	9.88	8.29
SU-088	277.12	DIAMETRAL	140	61	NA	10.58	INVALID	2.70	2.95
SU-088	278.58	DIAMETRAL	180	61	NA	13.62	INVALID	3.47	3.79
SU-088	280.53	DIAMETRAL	160	61	NA	23.8	INVALID	6.06	6.63
SU-088	280.56	IRREGULAR LUMP	10	40	∠ TO FABRIC	21.88	VALID	10.18	9.72
SU-088	284.88	DIAMETRAL	155	61	NA	15.9	INVALID	4.05	4.43
SU-088	284.95	IRREGULAR LUMP	80	32	NA	13.14	INVALID	9.55	8.25
SU-088	285.87	IRREGULAR LUMP	80	31	NA	12.88	VALID	9.98	8.50
SU-088	286.65	DIAMETRAL	145	61	∠ TO FABRIC	26.78	VALID	6.82	7.46

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-088	288.64	DIAMETRAL	145	61	NA	17.08	INVALID	4.35	4.76
SU-088	288.64	IRREGULAR LUMP	100	40	NA	26.04	VALID	12.12	11.57
SU-088	290.6	DIAMETRAL	150	61	NA	13.12	INVALID	3.34	3.66
SU-088	291.62	DIAMETRAL	125	61	∠ TO FABRIC	23.9	INVALID	6.09	6.66
SU-088	291.76	IRREGULAR LUMP	80	31	NA	14.66	VALID	11.36	9.67
SU-088	292.13	DIAMETRAL	140	61	∠ TO FABRIC	23.58	INVALID	6.01	6.57
SU-088	293.98	DIAMETRAL	135	61	∠ TO FABRIC	32.6	INVALID	8.31	9.08
SU-088	295.42	DIAMETRAL	175	61	NA	19.06	INVALID	4.86	5.31
SU-088	296.89	IRREGULAR LUMP	80	34	NA	13.14	INVALID	8.46	7.51
SU-088	296.9	DIAMETRAL	120	61	∠ TO FABRIC	15.38	INVALID	3.92	4.29
SU-088	297.02	DIAMETRAL	140	61	∠ TO FABRIC	19.14	INVALID	4.88	5.33
SU-088	297.79	DIAMETRAL	175	61	∠ TO FABRIC	19.44	INVALID	4.95	5.42
SU-088	297.79	IRREGULAR LUMP	80	30	NA	9.69	INVALID	8.02	6.73
SU-088	299.12	IRREGULAR LUMP	90	30	NA	13.76	VALID	11.38	9.55
SU-088	300	DIAMETRAL	160	61	NA	26.14	INVALID	6.66	7.28
SU-088	300.69	DIAMETRAL	150	61	NA	16.02	INVALID	4.08	4.46
SU-088	300.7	IRREGULAR LUMP	110	30	NA	18.46	INVALID	15.27	12.81
SU-098	11.73	DIAMETRAL	150	85	NA	24.34	VALID	3.19	4.06
SU-098	17	DIAMETRAL	135	85	NA	23.12	VALID	3.03	3.85
SU-098	44.55	DIAMETRAL	165	85	NA	6.08	VALID	0.80	1.01
SU-098	51.22	DIAMETRAL	181	85	NA	17	VALID	2.23	2.83
SU-098	60	DIAMETRAL	163	85	NA	4.74	VALID	0.62	0.79
SU-098	69.66	DIAMETRAL	120	85	NA	8.6	VALID	1.13	1.43
SU-098	80	DIAMETRAL	120	85	NA	3.16	VALID	0.41	0.53
SU-098	96.84	DIAMETRAL	140	85	NA	11.72	VALID	1.54	1.95
SU-098	103.17	DIAMETRAL	140	85	NA	2.28	VALID	0.30	0.38
SU-098	114	AXIAL	85	75	NA	1.72	VALID	0.20	0.26
SU-098	128.5	DIAMETRAL	120	85	NA	2.82	VALID	0.37	0.47
SU-098	134.76	AXIAL	85	55	NA	10.24	VALID	1.63	1.98
SU-098	148.3	DIAMETRAL	185	85	NA	19.24	VALID	2.52	3.21
SU-098	154	DIAMETRAL	125	85	NA	17.98	VALID	2.36	3.00
SU-098	194.1	DIAMETRAL	204	85	NA	24.98	VALID	3.28	4.16
SU-098	197	DIAMETRAL	180	85	NA	35	VALID	4.59	5.83
SU-098	197.18	DIAMETRAL	158	85	NA	15.62	VALID	2.05	2.60
SU-098	213	DIAMETRAL	100	85	NA	23.76	VALID	3.12	3.96
SU-098	232.43	DIAMETRAL	180	85	NA	17.26	VALID	2.26	2.88
SU-098	240.67	DIAMETRAL	220	85	NA	35	VALID	4.59	5.83

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-098	248	DIAMETRAL	185	85	NA	40	VALID	5.25	6.66
SU-098	256.5	DIAMETRAL	100	85	NA	25.08	VALID	3.29	4.18
SU-098	259.8	DIAMETRAL	235	85	NA	36	VALID	4.72	6.00
SU-098	260.85	DIAMETRAL	100	85	NA	30	VALID	3.94	5.00
SU-098	260.95	DIAMETRAL	140	85	NA	33.62	VALID	4.41	5.60
SU-098	261.95	DIAMETRAL	100	85	NA	31.68	VALID	4.16	5.28
SU-098	272	DIAMETRAL	100	85	NA	37	VALID	4.85	6.16
SU-103	89.2	DIAMETRAL	110	85	NA	7.16	VALID	0.94	1.19
SU-103	94.11	DIAMETRAL	150	85	NA	15.86	VALID	2.08	2.64
SU-103	99.57	DIAMETRAL	165	85	NA	23.74	VALID	3.11	3.96
SU-103	106.67	DIAMETRAL	110	85	NA	10.84	VALID	1.42	1.81
SU-103	110.3	DIAMETRAL	200	85	NA	2.3	VALID	0.30	0.38
SU-103	112	DIAMETRAL	164	85	NA	4.48	VALID	0.59	0.75
SU-103	114.7	DIAMETRAL	185	85	NA	12.18	VALID	1.60	2.03
SU-103	117	DIAMETRAL	180	85	NA	21.28	VALID	2.79	3.55
SU-103	126	DIAMETRAL	130	85	NA	10.2	VALID	1.34	1.70
SU-251	18.17	DIAMETRAL	205	85	NA	26.28	VALID	3.45	4.38
SU-251	15.57	DIAMETRAL	250	85	NA	26.04	VALID	3.42	4.34
SU-251	31.6	DIAMETRAL	125	85	NA	42.06	VALID	5.52	7.01
SU-251	27.65	DIAMETRAL	150	85	NA	21.34	VALID	2.80	3.56
SU-251	32.8	DIAMETRAL	200	85	NA	19.82	VALID	2.60	3.30
SU-251	45.2	DIAMETRAL	194	85	NA	25.38	VALID	3.33	4.23
SU-251	44.59	DIAMETRAL	122	85	NA	33.02	VALID	4.33	5.50
SU-251	49.9	DIAMETRAL	101	85	NA	24.64	VALID	3.23	4.11
SU-251	56.6	DIAMETRAL	87	85	NA	32.54	VALID	4.27	5.42
SU-251	53.4	DIAMETRAL	141	85	NA	30.56	VALID	4.01	5.09
SU-251	60.04	DIAMETRAL	115	85	NA	39.78	VALID	5.22	6.63
SU-251	65.14	DIAMETRAL	138	85	NA	27.92	VALID	3.66	4.65
SU-251	99.6	DIAMETRAL	193	85	NA	43		5.64	7.16
SU-251	85.15	AXIAL	85	30	NA	18.84	VALID	5.50	5.83
SU-251	8.22	DIAMETRAL	235	85	NA	31.58	VALID	4.14	5.26
SU-251	2.33	DIAMETRAL	204	85	NA	20.98	VALID	2.75	3.50
SU-258	3.1	DIAMETRAL	150	85	NA	11.22	VALID	1.47	1.87
SU-258	8	DIAMETRAL	195	85	NA	11.94	VALID	1.57	1.99
SU-258	15.56	AXIAL	85	80	NA	20.92	VALID	2.29	3.03
SU-258	15.56	AXIAL	85	75	NA	30.04	VALID	3.51	4.57
SU-258	19.88	DIAMETRAL	110	85	NA	12.58	VALID	1.65	2.10

Hole ID	Sample Depth (m)	Test Type	Sample Length (mm)	Sample Width (mm)	Load Direction	Gauge Reading (MPa)	Test Quality	Is (MPa)	Is_{50} (MPa)
SU-258	29.7	DIAMETRAL	105	85	NA	10.32	VALID	1.35	1.72
SU-258	37.67	DIAMETRAL	93	85	NA	20.96	VALID	2.75	3.49
SU-258	38.5	DIAMETRAL	135	85	NA	9.68	VALID	1.27	1.61
SU-258	40.5	DIAMETRAL	100	85	NA	8.42	VALID	1.10	1.40

APPENDIX F
ROCK MASS CHARACTERIZATION



GEOTECHNICAL UNITS AND LENGTH OBSERVED

- BRUCEJACK FZ (523 m)
- VOK FZ (422 m)
- WZ FZ (89 m)
- WZ WRZ (43 m)
- VOK WRZ (656 m)
- VOK D1 (191 m)
- VOK D2 (15817 m)
- VOK D3 (47264 m)
- WZ FRESH ROCK (8230 m)

NOTES:

1. QUALITATIVE DESCRIPTIONS ARE SHOWN FOR RQD (DEERE AND DEERE, 1989) AND FRACTURE INTERCEPT (ISRM, 1981).
2. BLOCKINESS INDEX IS THE SUM OF RMR '76 RATING POINTS FOR RQD AND FRACTURE INTERCEPT.
3. DATA SOURCES INCLUDE GEOTECHNICAL SITE INVESTIGATION AND EXPLORATION DRILLING PROGRAMS FROM 2010 TO 2012.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE:	AS SHOWN
DATE:	MAY 2013
DRAWN:	HKM
DESIGNED:	HKM
CHECKED:	CJB
APPROVED:	JRT

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

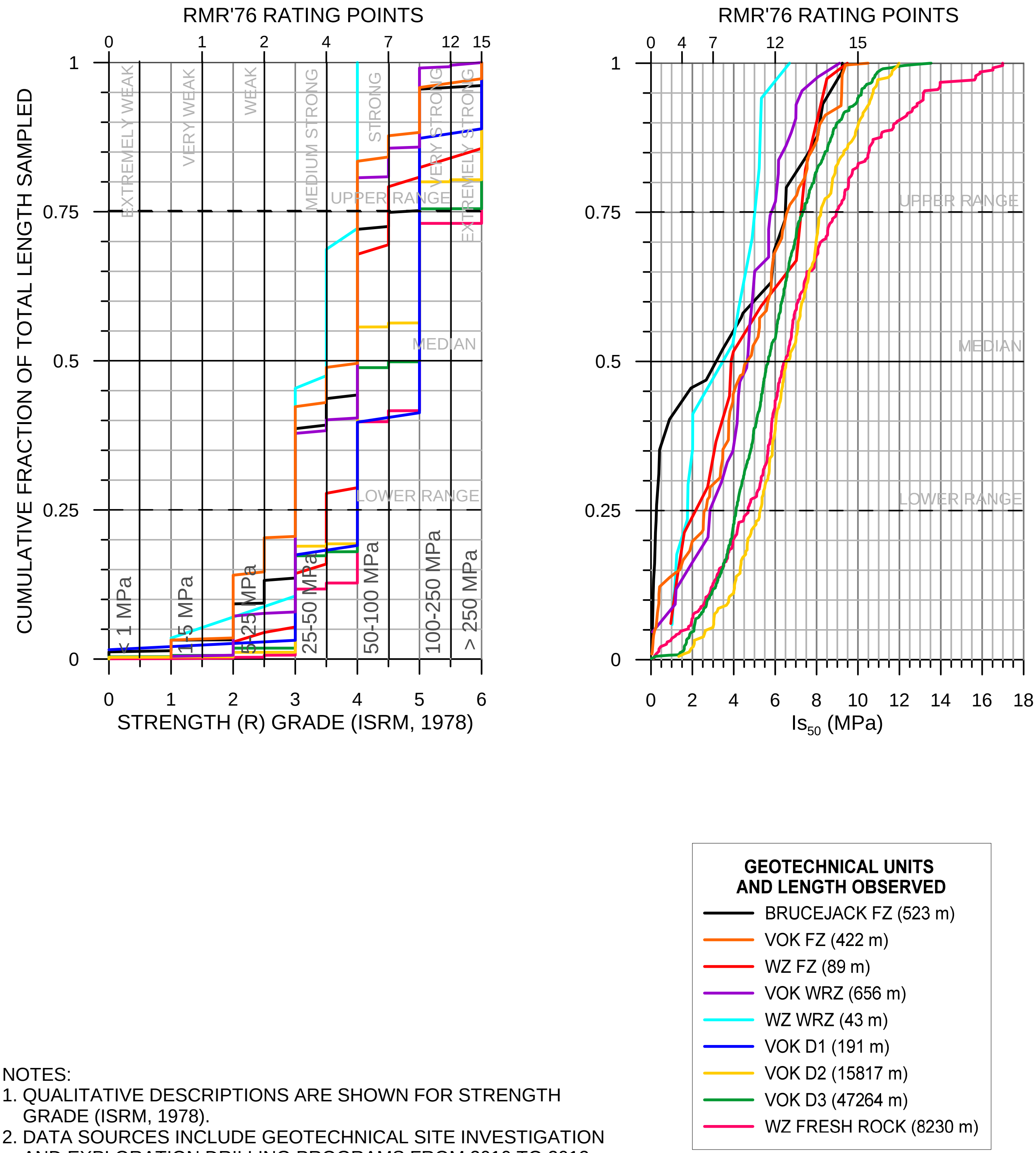
PROJECT: BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: DISTRIBUTION OF RQD, FRACTURE INTERCEPT, BLOCKINESS INDEX AND LONGEST STICK BY GEOTECHNICAL UNIT

PROJECT No.:	DWG No.:	REV.:
1008-007-002	F-01	

N:\BGC\Projects\1008 Pretium\007 Feasibility\002 UG - Office\04 Reporting and Reviews\Drawings\Cumulative Frequency Plots.pdf

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013



NOTES:
1. QUALITATIVE DESCRIPTIONS ARE SHOWN FOR STRENGTH GRADE (ISRM, 1978).
2. DATA SOURCES INCLUDE GEOTECHNICAL SITE INVESTIGATION AND EXPLORATION DRILLING PROGRAMS FROM 2010 TO 2012.

SCALE:	AS SHOWN	DESIGNED:	HKM
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	HKM	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT: BRUCEJACK FEASIBILITY STUDY UNDERGROUND

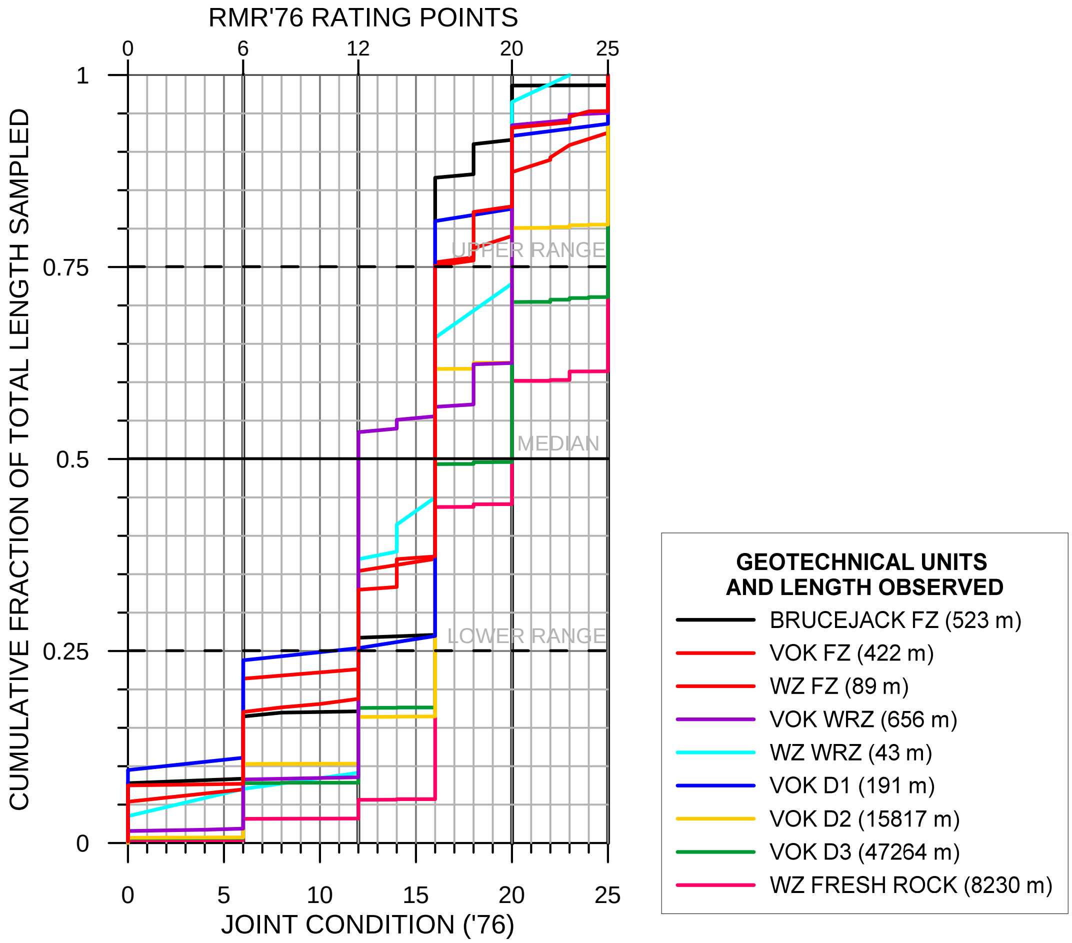
TITLE: DISTRIBUTION OF INTACT ROCK STRENGTH ESTIMATES FROM STRENGTH GRADE AND Is_{50}

CLIENT: PRETIUM RESOURCES INC.

PROJECT No.:	DWG No.:	REV.:
1008-007-002	F-02	

N:\BGC\Projects\1008 Pretium\007 Feasibility\002 UG - Office\04 Reporting and Reviews\Drawings\Cumulative Frequency Plots.pdf

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013



JC '76 RATING	CONDITION OF DISCONTINUITY	ADDITIONAL NOTES [BGC, 2010]
25	VERY ROUGH SURFACE; NOT CONTINUOUS; NO SEPERATION; UNWEATHERED (HARD) WALLS	INCLUDES INTERVALS WITH NO DISCONTINUITIES, 16≤ JRC
20	SLIGHTLY ROUGH SURFACES, SEPARATION <1 mm; SLIGHTLY WEATHERED (HARD, ≥R3) WALLS	> R3 WALL ROCK; INTERLOCKING DISCONTINUITIES WITH 8 < JRC < 14
12	SLIGHTLY ROUGH SURFACES; SEPARATION <1 mm; HIGHLY WEATHERED (SOFT, <R3) WALLS	< R3 WALL ROCK AND SLIGHTLY ROUGH OR > R3 WALL ROCK; PLANAR/SMOOTH SURFACES WITH NO INFILL
6	SLICKENSIDED SURFACES OR GOUGE <5 mm THICK OR SEPERATION 1 TO 5 mm; CONTINUOUS	VEINS ≤ R1 OR MOHS # ≤ 3 INCLUDED AS INFILLING
0	SOFT GOUGE >5 mm OR SEPERATION >5 mm; CONTINUOUS	VEINS ≤ R1 OR MOHS # ≤ 3 INCLUDED AS INFILLING

NOTES:
1. DATA SOURCES INCLUDE GEOTECHNICAL SITE INVESTIGATION AND EXPLORATION DRILLING PROGRAMS FROM 2010 TO 2012.

SCALE:	AS SHOWN	DESIGNED:	HKM
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	HKM	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

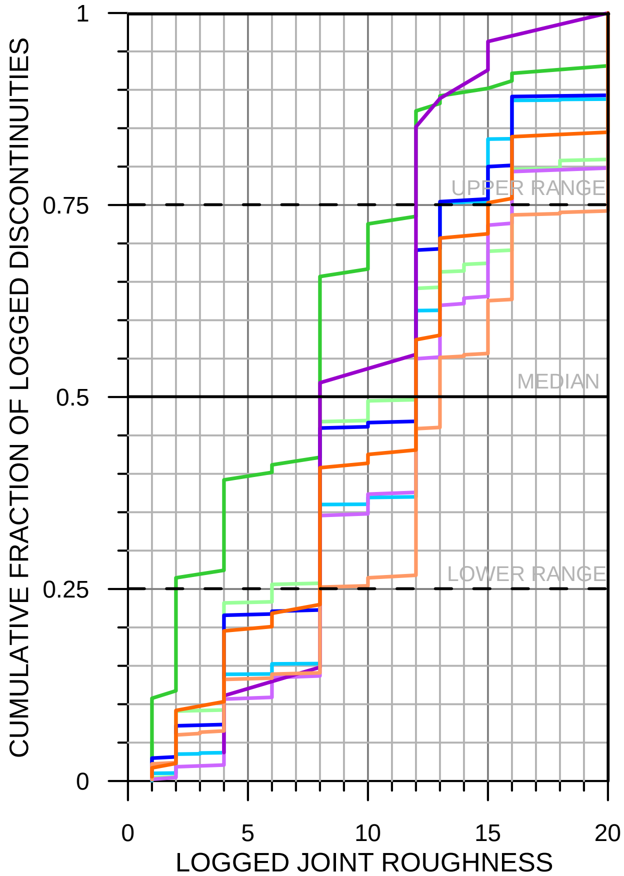
CLIENT: PRETIUM RESOURCES INC.

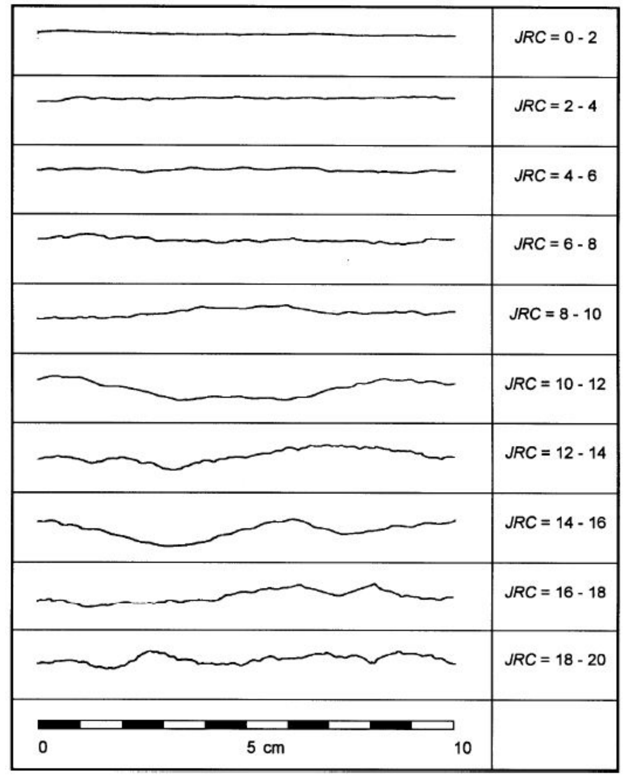
PROJECT: BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: DISTRIBUTION OF JOINT CONDITION ('76)
BY GEOTECHNICAL UNIT

PROJECT No.:	DWG No.:	REV.:
1008-007-002	F-03	

N:\BGC\Projects\1008 Pretium\007 Feasibility\002 UG - Office\04 Reporting and Reviews\Drawings\Cumulative Frequency Plots.pdf





JOINT ROUGHNESS PROFILES (BARTON & CHOUBEY, 1977)

CUMULATIVE DISTRIBUTION OF JOINT ROUGHNESS						
DISCONTINUITY		UNIT	25%	50%	75%	NUMBER OF DISCONTINUITIES
JOINT	light green line	WZ FR	6	12	16	703
FAULT/SHEAR	green line		2	8	12	102
JOINT	light blue line	VOK FR	8	12	13	2597
FAULT/SHEAR	blue line		8	12	13	570
JOINT	light purple line	WRZ	8	12	16	431
FAULT/SHEAR	purple line		8	8	12	27
JOINT	light orange line	FZ	8	13	20	582
FAULT/SHEAR	orange line		8	12	15	174

NOTES:
1. DATA SOURCES INCLUDE CORE OBSERVATIONS FROM 2010 AND 2012 GEOTECHNICAL SITE INVESTIGATIONS.
2. JOINT ROUGHNESS ESTIMATED IN FIELD USING BGC CORE TOOL BASED ON 10 cm JOINT ROUGHNESS PROFILES FROM BARTON AND CHOUBEY (1977).

SCALE:	AS SHOWN	DESIGNED:	HKM
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	HKM	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT: BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: DISTRIBUTION OF JOINT ROUGHNESS

CLIENT: PRETIUM RESOURCES INC.

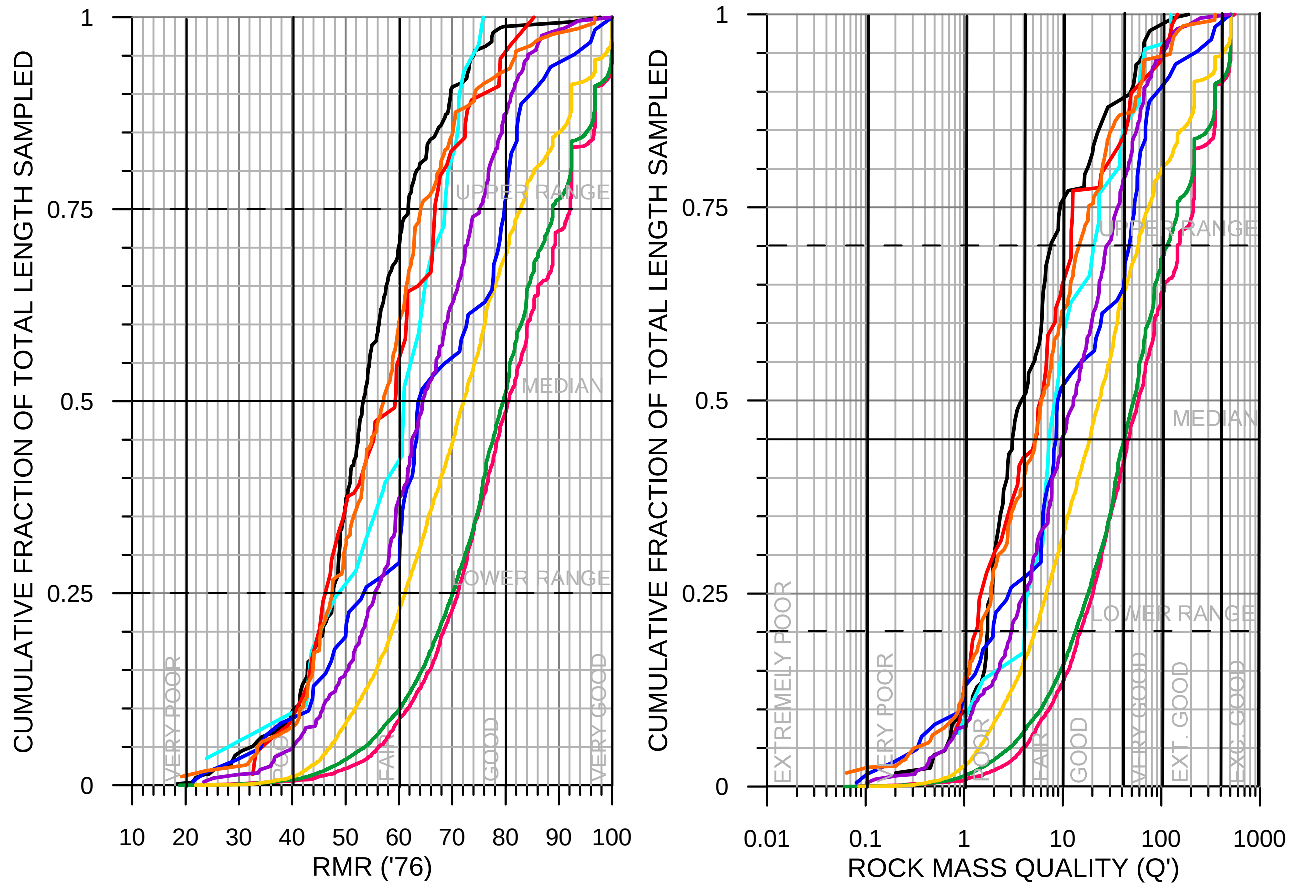
PROJECT No.: 1008-007-002

DWG No.: F-04

REV.:

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

N:\BGC\Projects\1008 Pretium\007 Feasibility\002 UG - Office\04 Reporting and Reviews\Drawings\Cumulative Frequency Plots.pdf



GEOTECHNICAL UNITS AND LENGTH OBSERVED (m)

- BRUCEJACK FZ (523 m)
- WZ FZ (89 m)
- VOK FZ (422 m)
- WZ WRZ (43 m)
- VOK WRZ (656 m)
- VOK D1 (191 m)
- VOK D2 (15817 m)
- VOK D3 (47264 m)
- WZ FRESH ROCK (8230 m)

NOTES:
1. DATA SOURCES INCLUDE GEOTECHNICAL SITE INVESTIGATION AND EXPLORATION DRILLING PROGRAMS FROM 2010 TO 2012.
2. ROCK MASS RATING (RMR) IS DERIVED FROM STRENGTH RATING, RQD RATING, FRACTURE INTERCEPT RATING, JOINT CONDITION, AND GROUND WATER RATING (BIENIAWSKI, 1976).

SCALE:	AS SHOWN	DESIGNED:	HKM
DATE:	MAY 2013	CHECKED:	CJB
DRAWN:	HKM	APPROVED:	JRT

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PROJECT: BRUCEJACK FEASIBILITY STUDY UNDERGROUND

TITLE: DISTRIBUTION OF RMR ('76) AND Q' VALUES BY GEOTECHNICAL UNIT

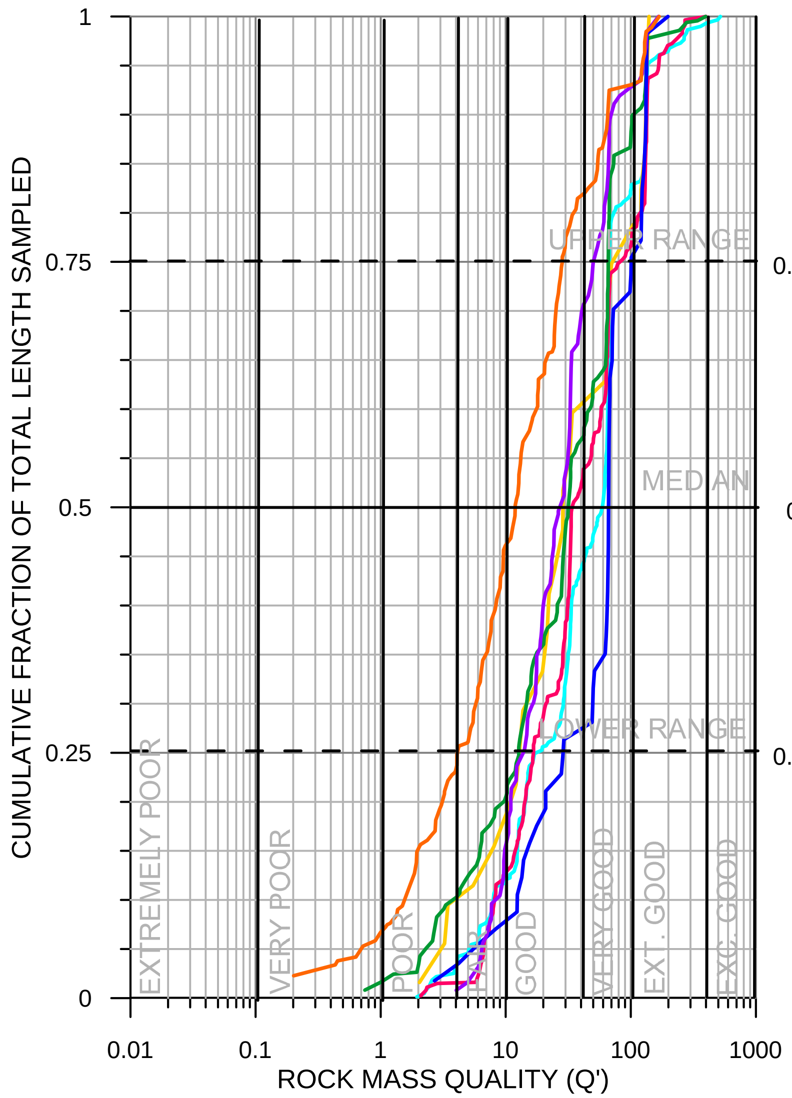
CLIENT: PRETIUM RESOURCES INC.

PROJECT No.:	DWG No.:	REV.:
1008-007-002	F-05	

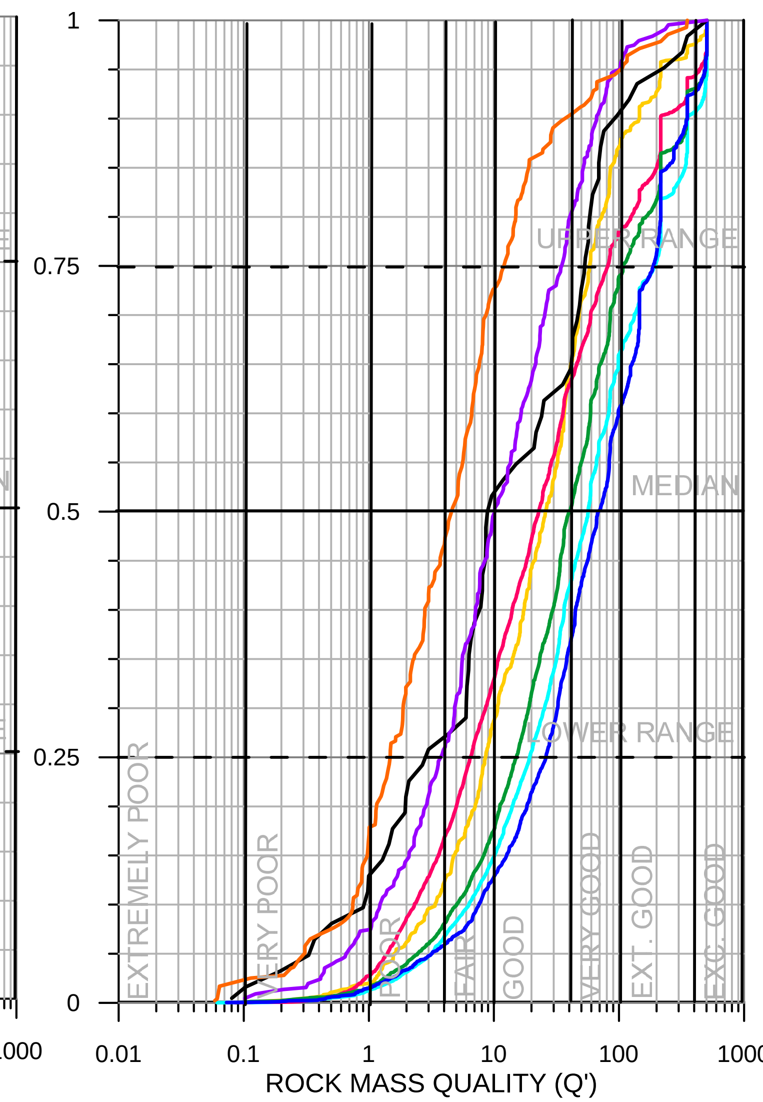
N:\BGC\Projects\1008 Pretium\007 Feasibility\002 UG - Office\04 Reporting and Reviews\Drawings\Cumulative Frequency Plots.pdf

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

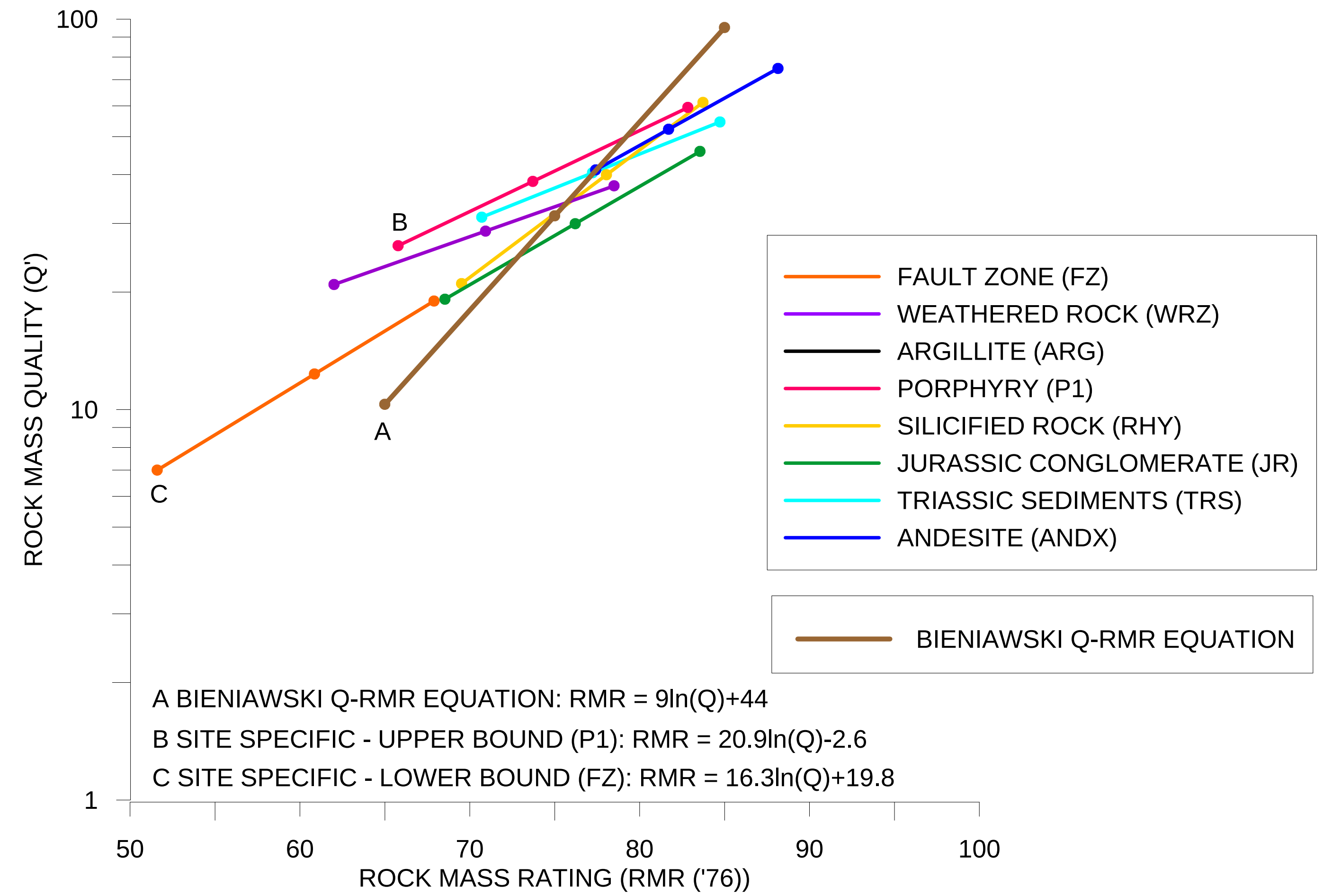
Q' CONVERSION FROM GEOTECHNICAL DATA



Q' CALCULATED FROM RMR ('76)



RELATIONSHIP BETWEEN Q' AND RMR ('76) FOR GEOTECHNICAL DRILLHOLES



MEDIAN Q' VALUES

PRETIUM UNIT	LENGTH OBSERVED ALL DRILLHOLES (m)	Q' CALCULATED FROM RMR	LENGTH OBSERVED GEOTECHNICAL DRILLHOLES	Q' DERIVED FROM GEOTECHNICAL DATA
ANDX	7654	123	174	70
TRS	27713	125	893	63
JR	12074	101	374	51
RHY	2010	56	77	54
P1	13827	79	608	62
ARG	189	47	0	No data
WRZ	663	27	190	38
FZ	424	19	275	25

NOTES:
1. ROCK MASS RATING (RMR) IS DERIVED FROM STRENGTH RATING, RQD RATING, FRACTURE INTERCEPT RATING, JOINT CONDITION, AND GROUND WATER RATING (BIENIAWSKI, 1976).
2. ROCK MASS QUALITY (Q') IS DERIVED FROM RQD, NUMBER OF JOINT SETS,JOINT ROUGHNESS, AND JOINT ALTERATION.
3. Q' VALUES FOR GEOTECHNICAL DRILL HOLES DERIVED FROM FIRST PRINCIPLES BASED ON RAW DATA COLLECTED BY BGC DURING 2010 AND 2012.
4. Q' VALUES FOR EXPLORATION DRILL HOLE DATA FROM 2010 TO 2012 ARE CALCULATED FROM RMR ('76) USING THE FORMULA: Q = e^((RMR - 44)/9)
5. POINTS PLOTTED ON Q'-RMR CONVERSION GRAPH ARE Q' VALUES FOR 25TH PERCENTILE, MEDIAN, AND 75TH PERCENTILE RMR VALUES.

REV.	DATE	REVISION NOTES	DRAWN	CHECK	APPR.

SCALE: AS SHOWN
DATE: MAY 2013
DRAWN: HKM
DESIGNED: HKM
CHECKED: CJB
APPROVED: JRT

PROFESSIONAL SEAL:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.

PROJECT: BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

TITLE: DISTRIBUTION OF RMR ('76) AND Q' VALUES BY GEOTECHNICAL UNIT

PROJECT No.: 1008-007-002
DWG No.: F-06
REV.:

DWG. TO BE READ WITH BGC REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

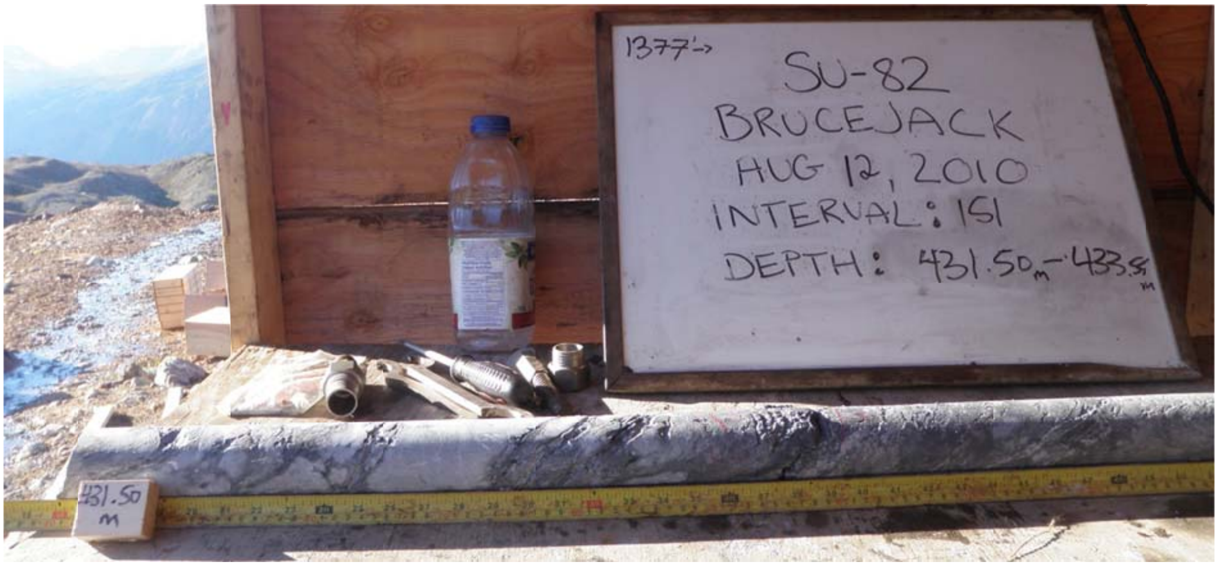
APPENDIX G
BRUCEJACK FAULT ZONE SUMMARY

Drill hole DH-BGC12-23 (SU-318) intercepts the fault-disturbed zone from 500 m to 564 m depth, and the central fault zone from 507 m to 562 m (1104 to 1053 m elevation) (Photograph G-1 and G-2). Sericite-chlorite alteration is noted throughout the Fault Zone with a uniform intensity of 4 (“moderate”) on Pretium’s alteration intensity rating scale.

Photograph G-1. Core Box Photos for DH-BGC12-23 Showing Transition from Decreasing RQD Values Beginning at 500 m Depth into Fault Zone at Approximately 507 m. Bottom Three Core Boxes are Illustrative of Typical Fault Zone Core.

Photograph G-2. Core Box Photos Showing Fault-disturbed Zone and Transition into Less Fractured Rock Below Fault Zone in DH-BGC12-23 (SU-318).

Drill hole SU-082 intercepts the fault-disturbed zone between 420 m and 482 m depth and the central fault zone between 435.19 m and 463.1 m (1178 m to 1124 m elevation). Photograph G-3 shows an example of a faulted intercept. The Fault Zone in SU-082 has sericite alteration throughout with a uniform intensity of 5 ("moderate to strong") on Pretium's alteration intensity rating scale.



Photograph G-3. First 'Worst Case' Fault Discontinuity (2 mm Fault Gouge Infill) Encountered in SU-082 at 431.96 m Depth.

In DH-BGC12-23, the Fault Zone consists of intervals of competent rock with a slightly higher number of discontinuities relative to undisturbed rock mass interspersed with lengths of broken rock (RQD <30%) and a few lengths of fault gouge and decomposed rock between 10 to 150 mm thick. A 'worst case' length of fault-disturbed rock from 512.70 m to 513.85 m depth (RQD 40%) is shown in Photograph G-4.

Photograph G-4. Example of 'Worst Case' Fault-Disturbed Rock in DH-BGC12-23 (SU-318).

The more competent sections comprise 10 to 70 cm lengths of unbroken rock in which discontinuities are mainly joints with 0.5 to 5 mm aperture with no infill, calcite infill, or 1 to 2 mm of broken rock infill. A slightly altered three metre interval in DH-BGC12-23 (544.83 m to 547.58 m) exhibiting iron staining retains RQD, joint condition, and strength grade values within the characteristic range of the D2 geotechnical unit.

Point load testing in the upper portion of the Brucejack Fault Zone (from 507 to 524 m depth) in DH-BGC12-23 yielded Is_{50} values ranging from approximately 4.5 MPa to 10 MPa, which are comparable to those recorded in the 30 m interval above the fault zone. Point load test results from the lower portion of the fault zone (525 to 550 m), yield much lower values (0.1 to 0.9 MPa), then recover to 2.5 to 6 MPa at the bottom of the fault zone. No point load tests were performed below 557.5 m depth in DH-BGC12-23.

The Fault Zone is similar in SU-082, although the lengths of broken rock are absent and the discontinuities with fault gouge are from 10 to 640 mm thick. There is a length of healed fault-disturbed rock from 454 m to 457 m depth (Photograph G-7). Point load tests above the fault-disturbed zone (from 400 to 420 m depth) yielded Is_{50} values of approximately 5 MPa. Is_{50} values in the fault-disturbed zone from 420 m to 435 m dropped to 0.1 to 1.9 MPa in the fault zone, recovering to 4.8 to 8.5 MPa directly below the fault zone.

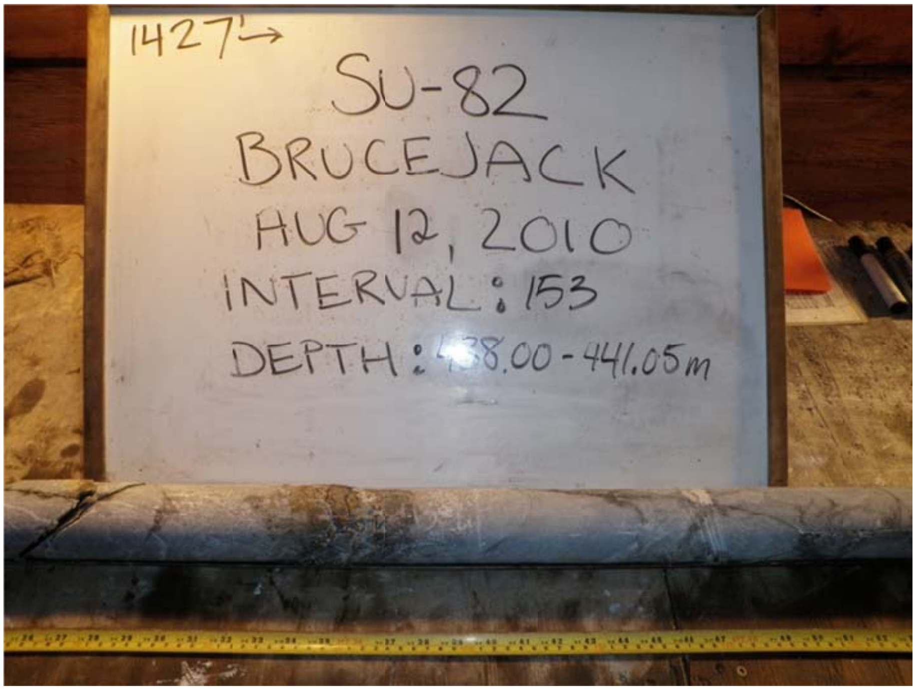
All discontinuities identified as faults with fault gouge infill, or any infill type greater than 5 mm thick are shown in SU-082 and DH-BGC12-23 downhole plots (Appendix A). 'Worst case' discontinuities in both drill holes are summarized in Table G-1 and examples of these are shown in Photograph G-5 through G-7. These photographs show short lengths of fault disturbance within mostly undisturbed rock, which is typical of the Brucejack Fault Zone.

Table G-1. Upper and Lower Boundaries of the Brucejack Fault Zone Picked from Drill Hole Data

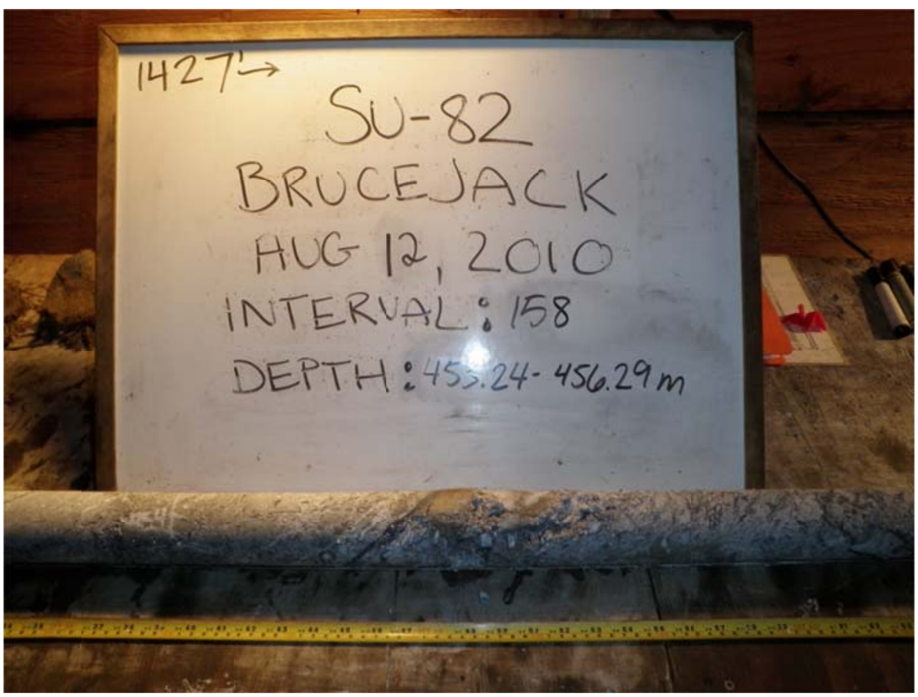
Hole ID	Fault-disturbed zone upper boundary (m)	Fault-disturbed zone lower boundary (m)	Fault zone upper boundary (m)	Fault zone lower boundary (m)
DH-BGC12-23	500	564	507	562
SU-082	419.71	483.72	431.96	463.1
SU-157	87.48	130.15	96.63	124.05
SU-161	209.41	255.11	227.7	239.88
SU-216	215.49	239.88	218.54	227.69
SU-223	398.37	434.95	404.47	413.61
SU-040	128.73	142.34		
SU-043	477	486.16		
SU-152	354.18	375.54	360.28	369.42
SU-193	136	184	157	184
SU-200	291.08	303.28	296.26	298.7
SU-208	391.67	430.68	391.67	430.68
SU-232	79.86	109.73	92.05	98.15
SU-250	440.74	455.98	449.88	452.93

Hole ID	Fault-disturbed zone upper boundary (m)	Fault-disturbed zone lower boundary (m)	Fault zone upper boundary (m)	Fault zone lower boundary (m)
SU-263	416.66	436.79	422.76	428.85
SU-251	75.29	99.67	78.33	79.24
SU-268	196.29	208.48	196.29	208.48

Photograph G-5. 'Worst Case' Fault Discontinuity at 510.06 m in DH-BGC12-23 (100 mm Fault Gouge, Crushed Rock, and Broken Rock Infill) in Relatively Undisturbed Length of Core.



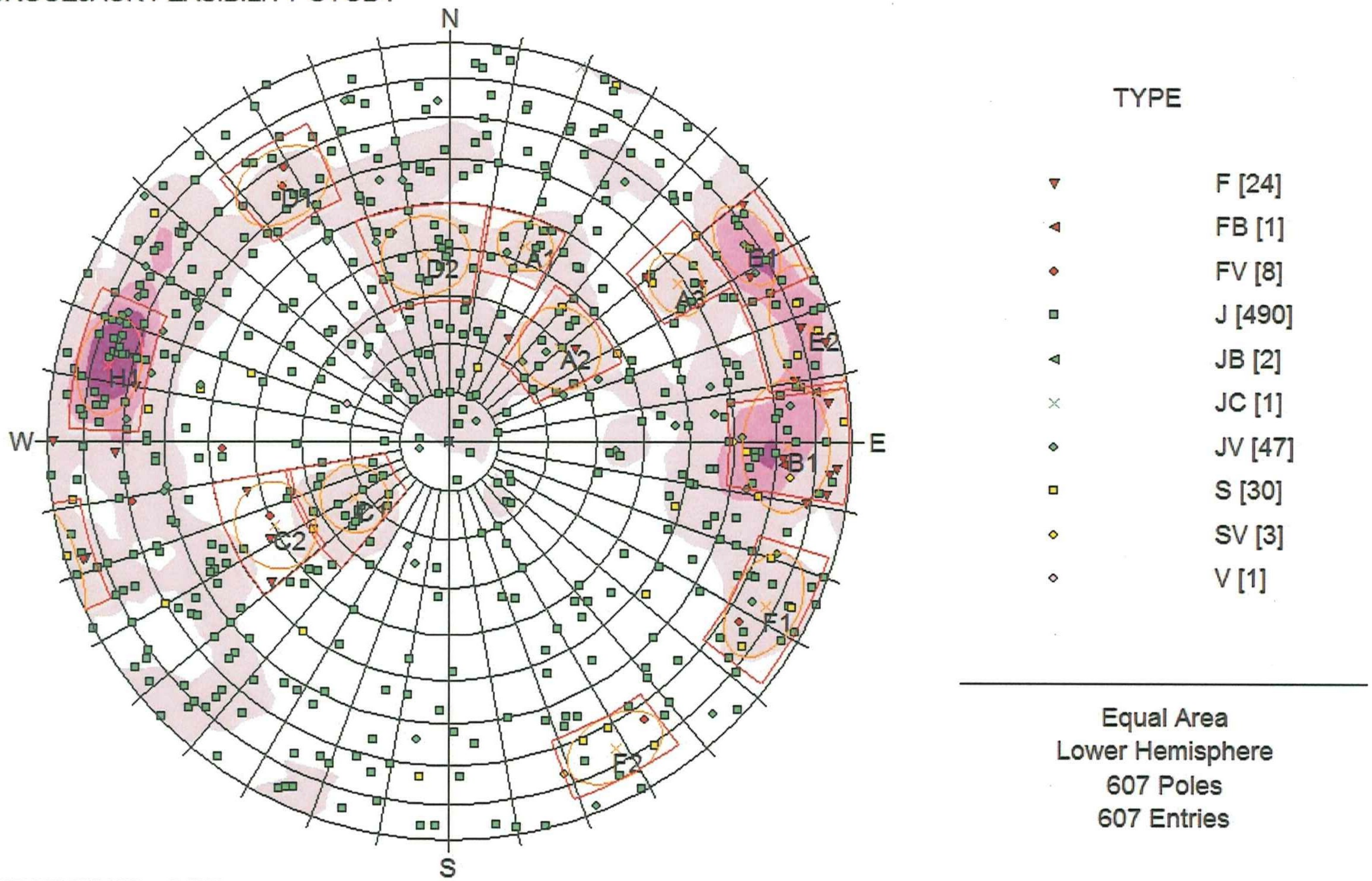
Photograph G-6. 'Worst Case' Fault Discontinuity in SU-082 at 438.85 m (40 mm Fault Gouge Infill) in Relatively Undisturbed Length of Core.



Photograph G-7. 'Worst Case' Fault Discontinuity at 454.17 m (160 mm Fault Gouge Infill) Within Section of Fault-Disturbed Core Between 454 and 457 m Depth in Drill Hole SU-082.

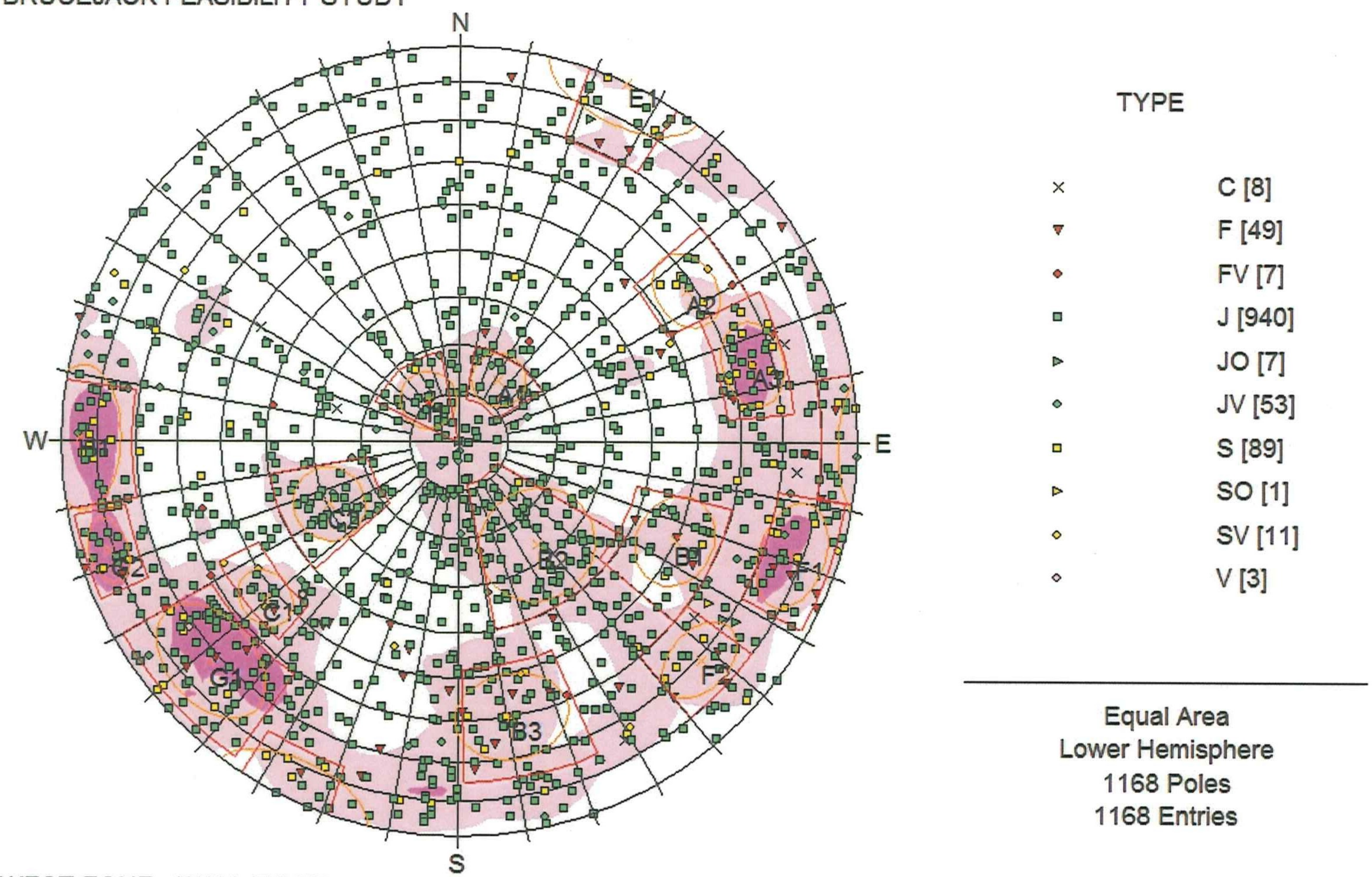
APPENDIX H
STRUCTURAL DOMAIN STEREONETS

BRUCEJACK FEASIBILITY STUDY



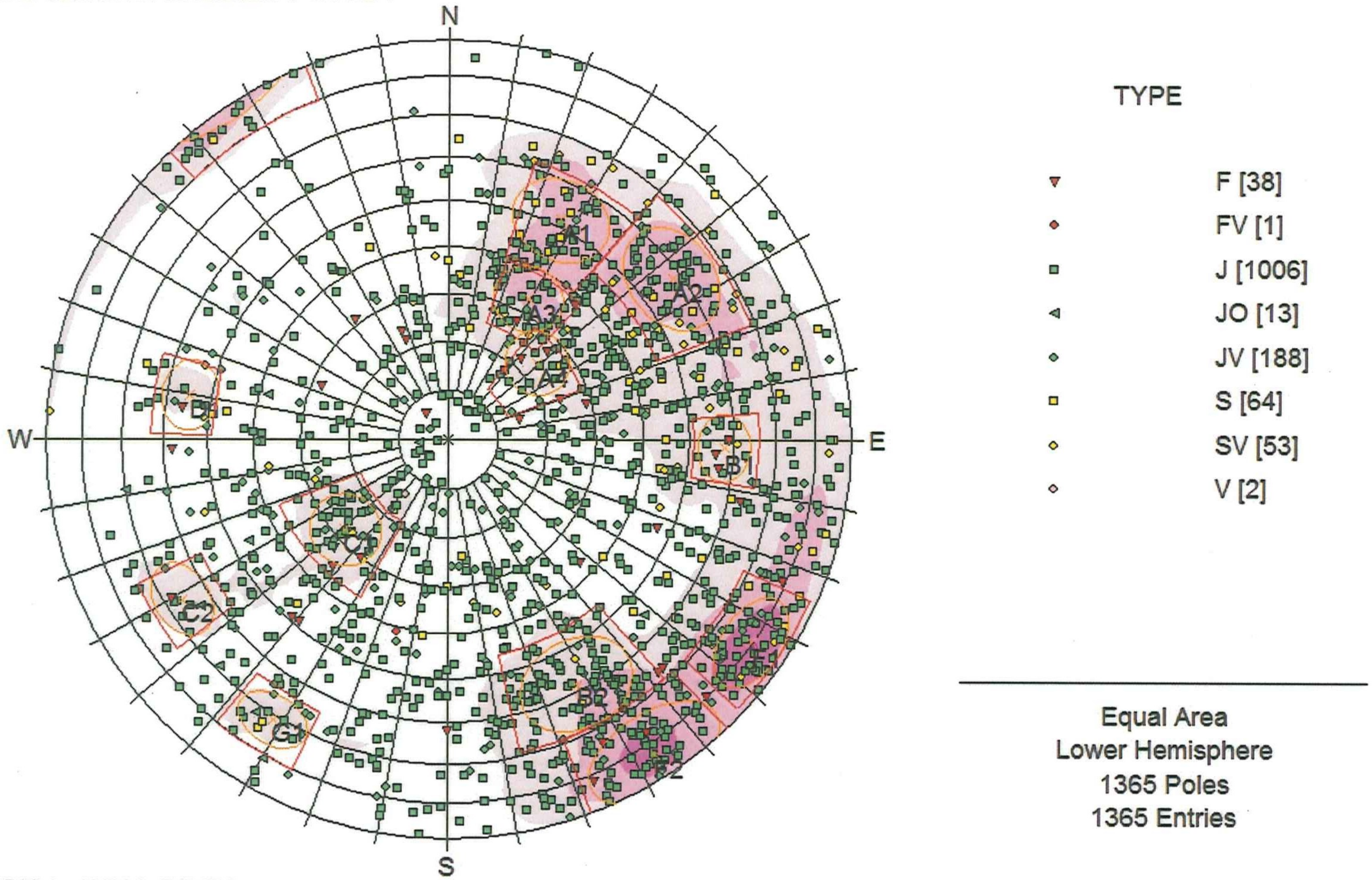
WEST ZONE - ORE

BRUCEJACK FEASIBILITY STUDY



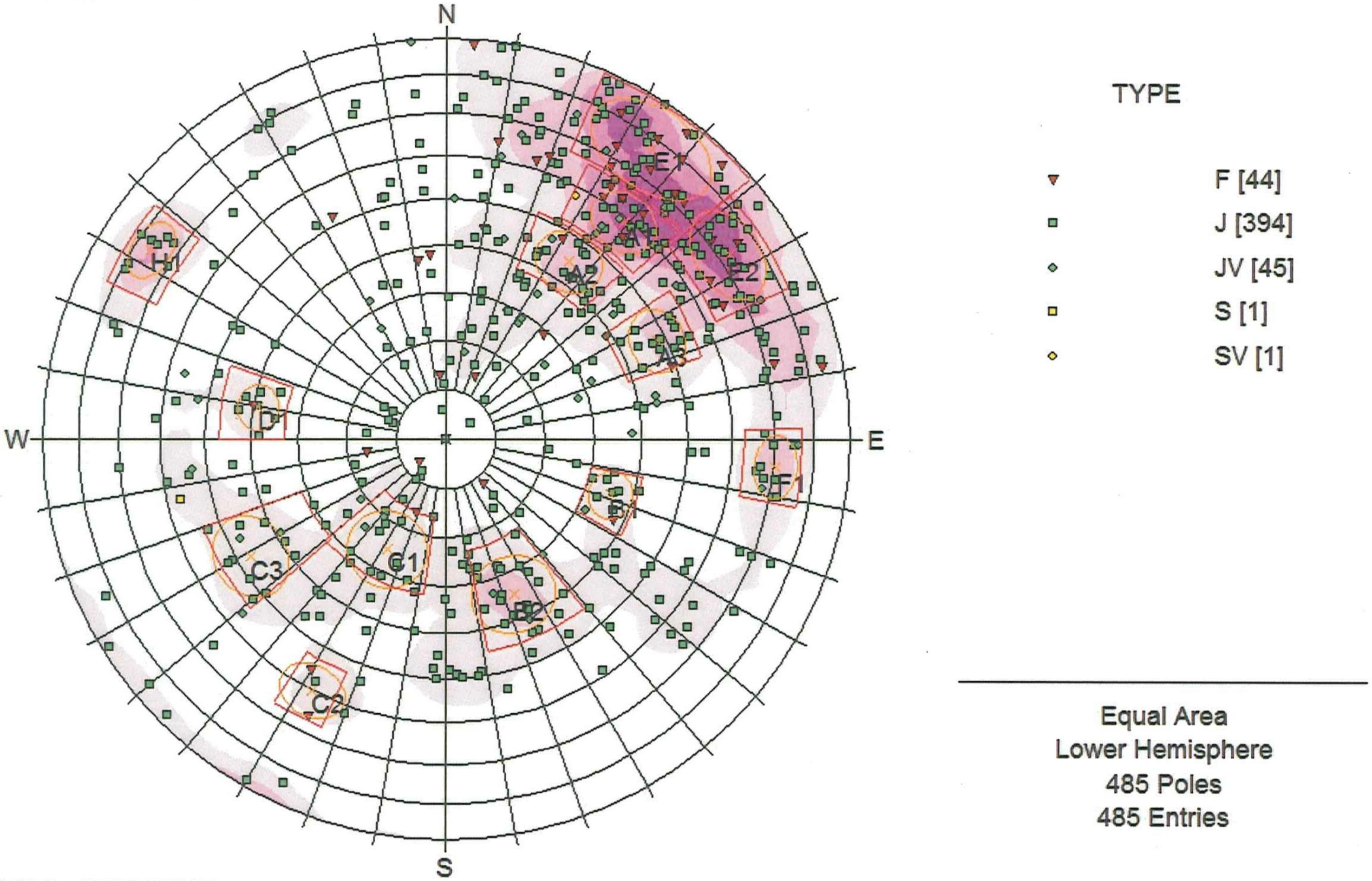
WEST ZONE - WALL ROCK

BRUCEJACK FEASIBILITY STUDY



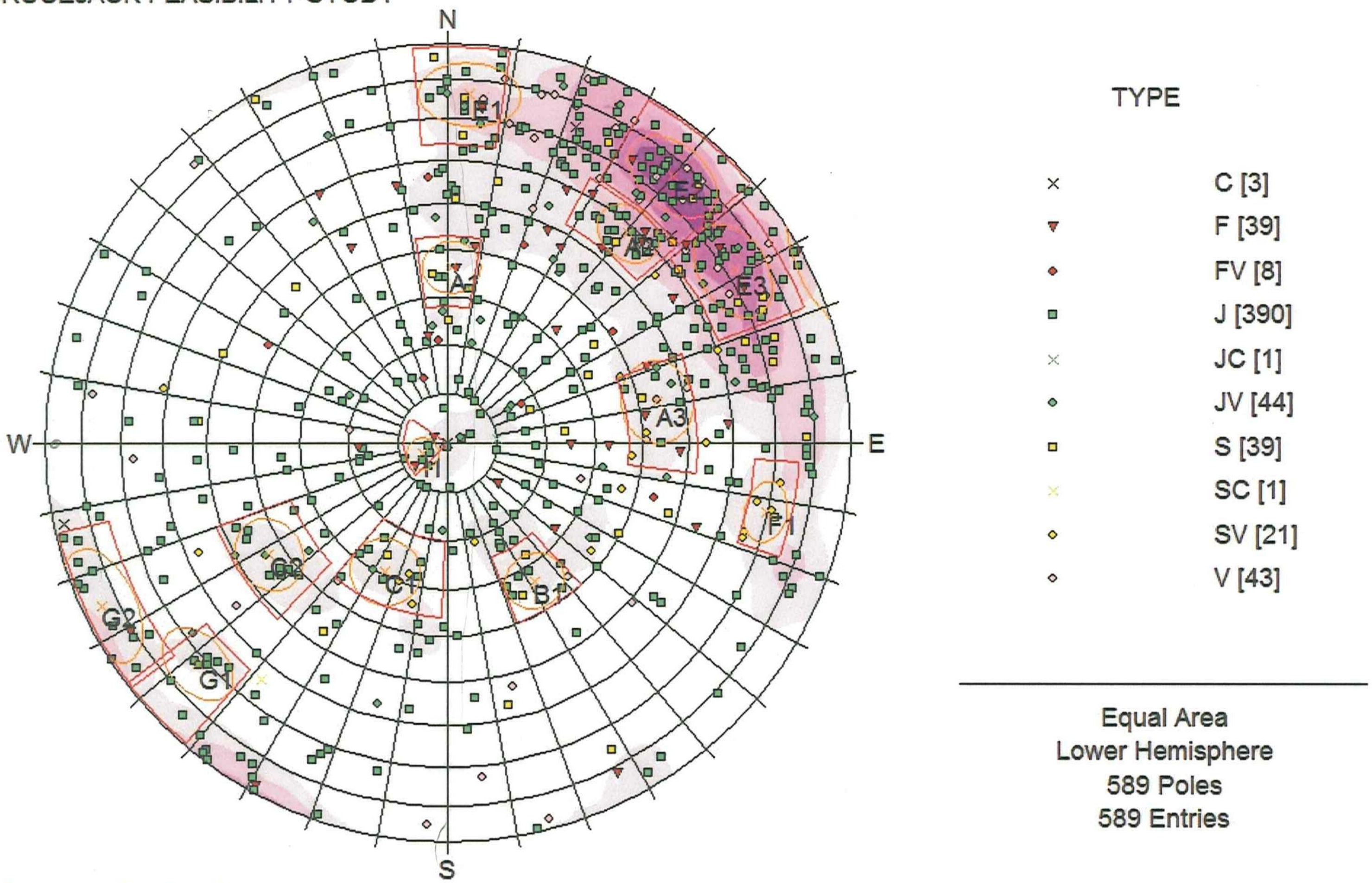
VOK 1 - WALL ROCK

BRUCEJACK FEASIBILITY STUDY



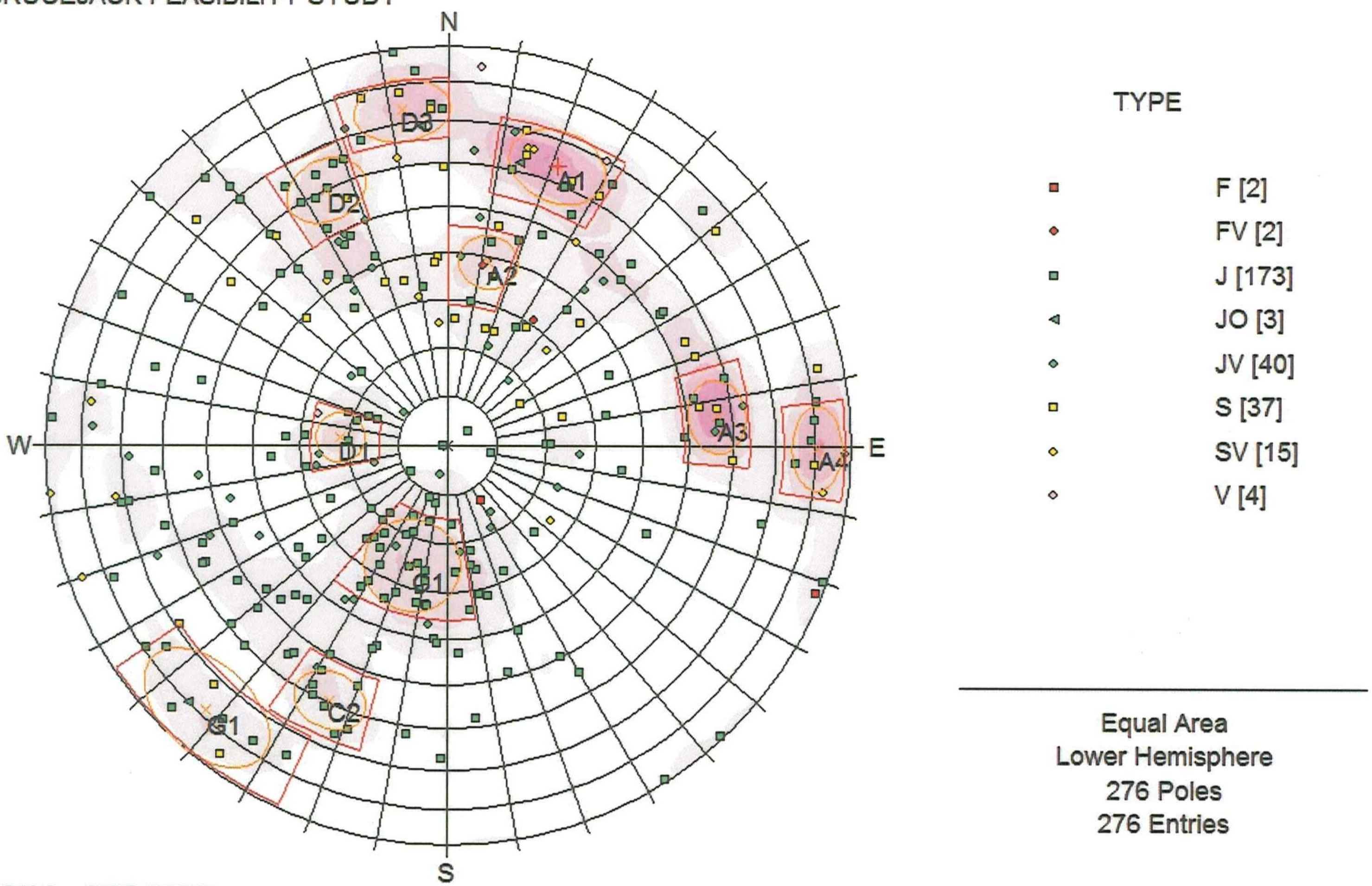
VOK 2 - ORE ZONE

BRUCEJACK FEASIBILITY STUDY



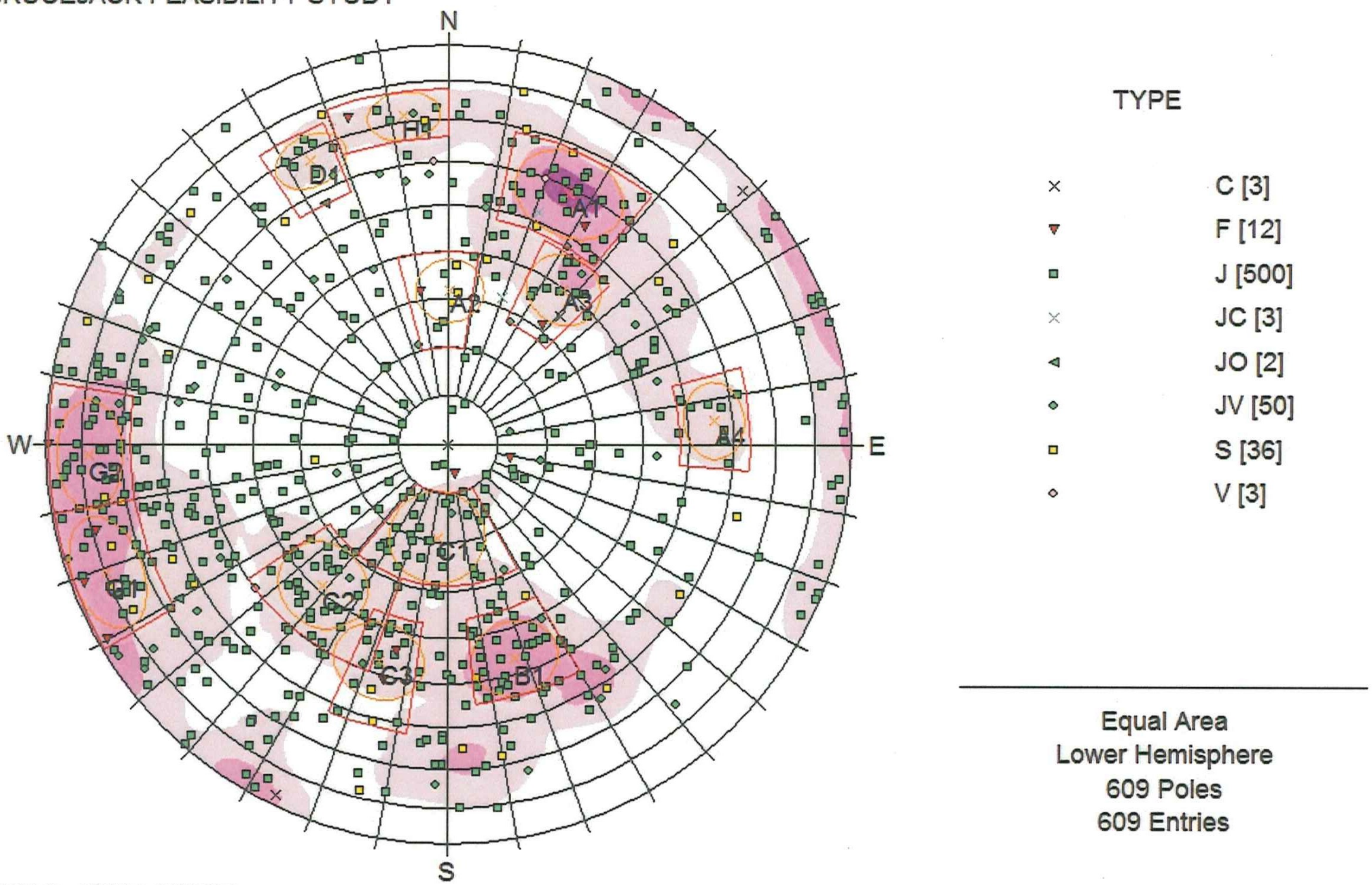
VOK 2 - WALL ROCK

BRUCEJACK FEASIBILITY STUDY



VOK 3 - ORE ZONE

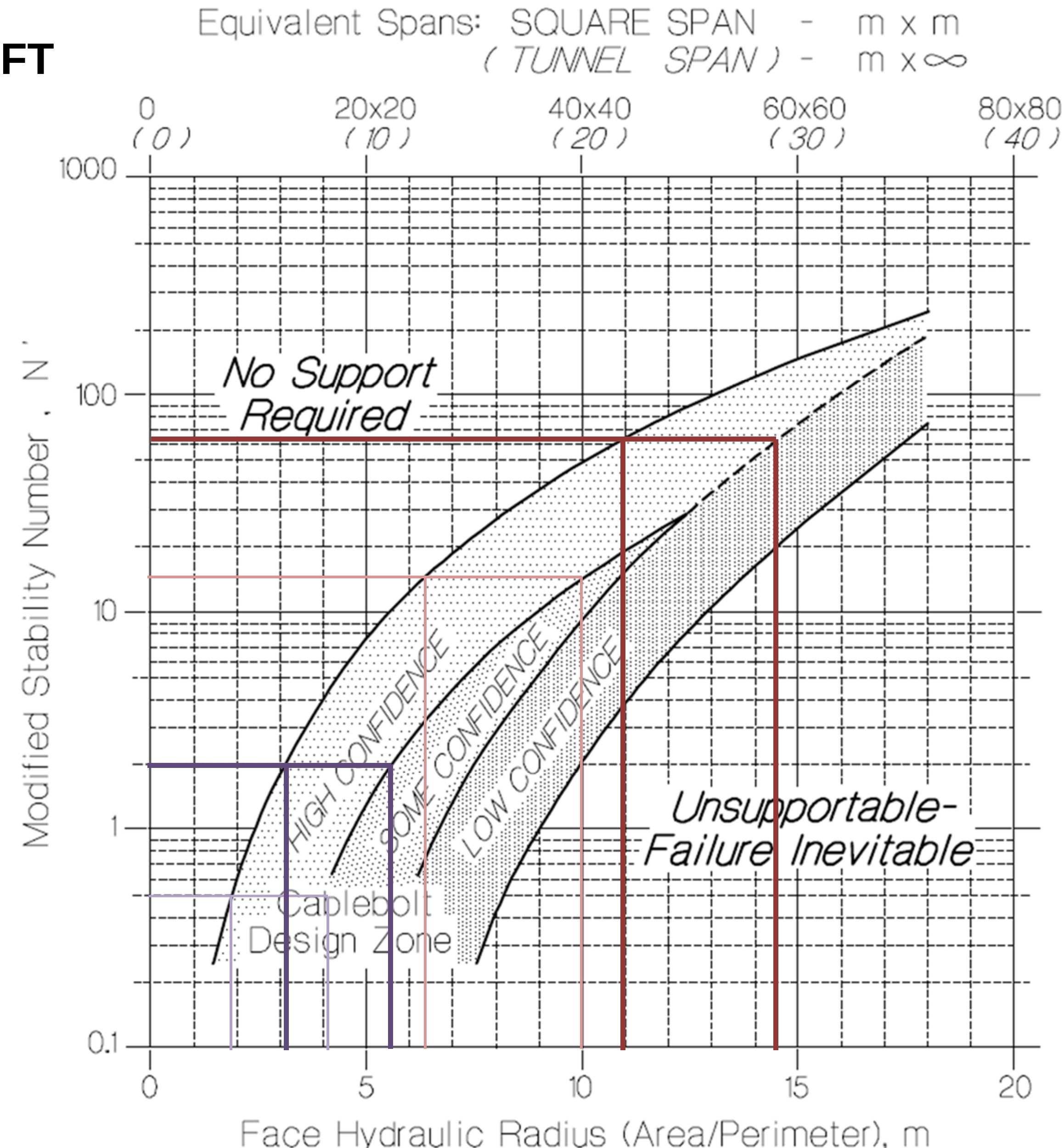
BRUCEJACK FEASIBILITY STUDY



VOK 3 - WALL ROCK

APPENDIX I
STOPE STABILITY ANALYSIS

DRAFT



MATHEW'S METHOD PARAMETERS	Q′		A	B	C	N′	
	CONSERVATIVE	BASE				CONSERVATIVE	BASE
BACK	10	40	0.12	0.2	2	0.5	2.0
HANGINGWALL	10	40	1.00	0.2	8	16.0	64.0

NOTES:

1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 400 m, 78˚, AND 30 m x 30 m x 13 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.
2. THIS CHART DOES NOT APPLY TO WEATHERED OR FAULTED ROCK. STOPES IN WEATHERED OR FAULTED ROCK SHOULD BE ASSESSED ON A CASE-BY-CASE BASIS.

HYDRAULIC RADIUS	UNSUPPORTED		SUPPORTED	
	LOW	HIGH	LOW	HIGH
BACK	1.9	3.1	4.1	5.6
HANGINGWALL	6.2	11	10	14.5

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

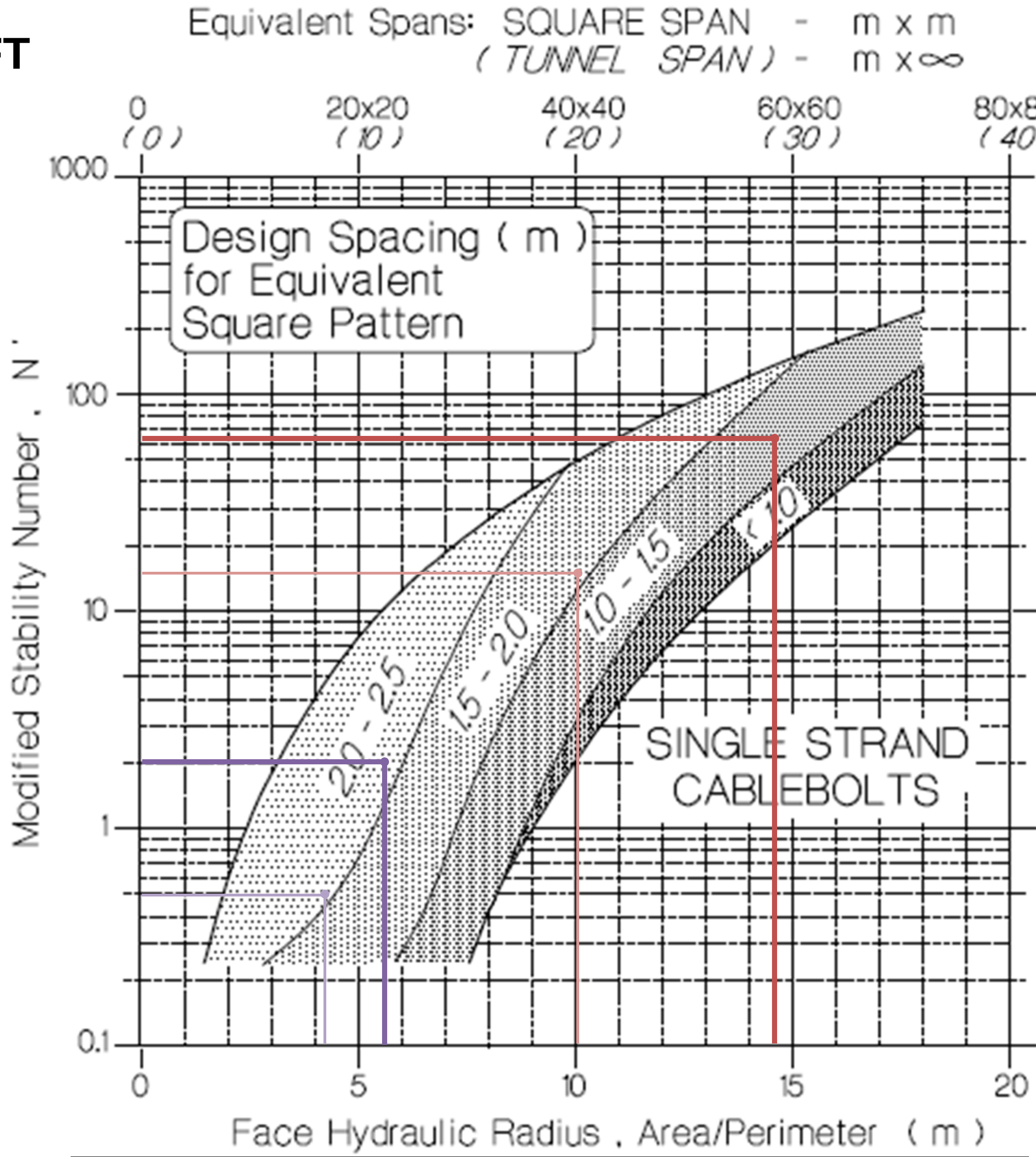
FIGURE TITLE:
STOPE DESIGNS USING THE STABILITY GRAPH METHOD

CLIENT:	PROJECT No.:	FIGURE No.:
PRETIUM RESOURCES INC.	1008-007-002	I-01

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

TO BE READ WITH REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

DRAFT



CABLEBOLT SPACING	CONSERVATIVE CASE			BASE CASE		
	N'	HR	BOLT SPACING (m)	N'	HR	BOLT SPACING (m)
BACK	0.5	4.1	2.0 m – 2.5 m	2.0	5.6	2.0 m – 2.5 m
HANGINGWALL	16.0	10.0	1.5 m - 2.0 m	64.0	14.5	1.0 m x 1.5 m

NOTES:

1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 400 m, 78˚, AND 30 m x 30 m x 13 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.
2. SPECIFIED CABLEBOLT SPACING IS FOR A SQUARE PATTERN.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

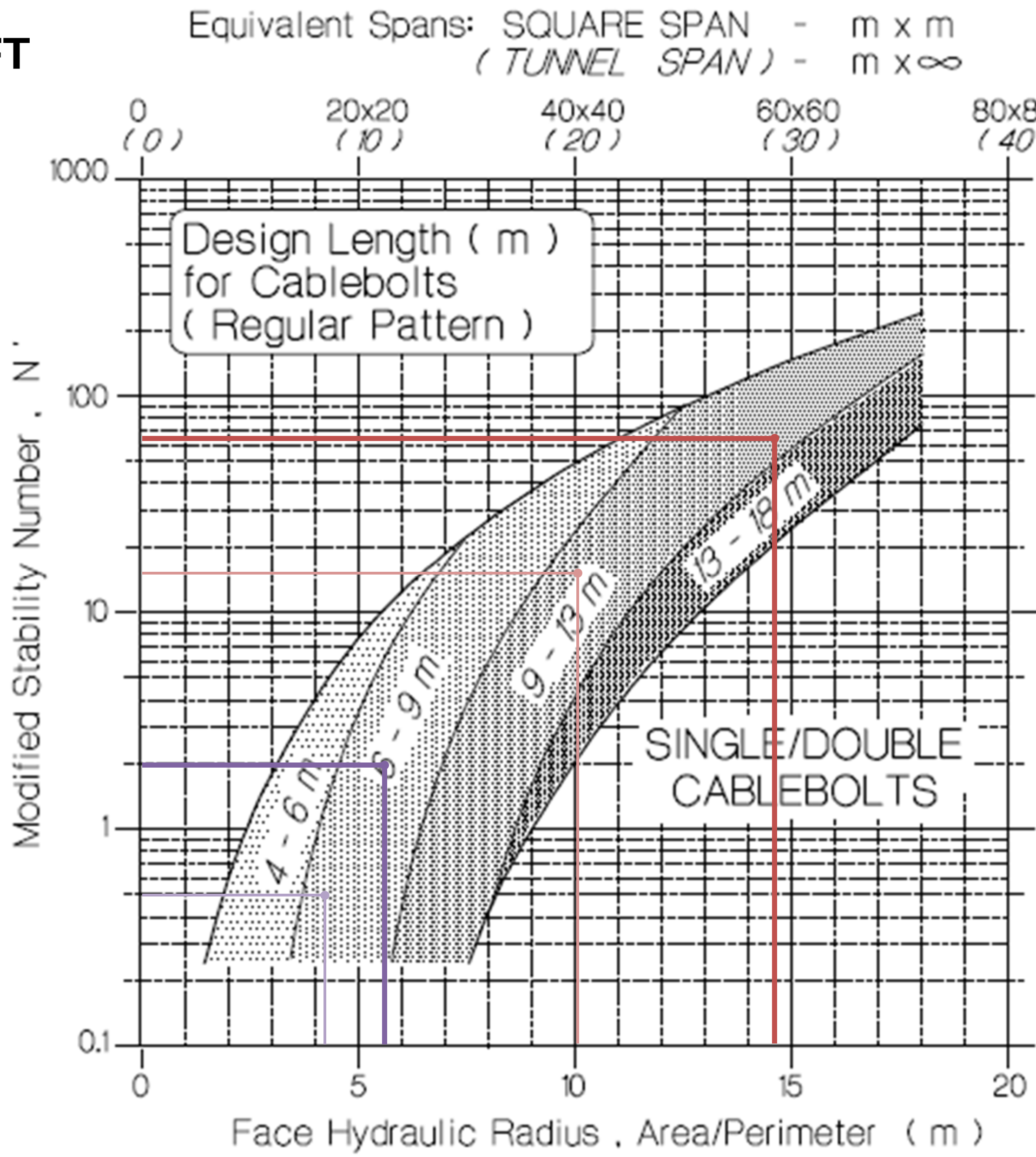
FIGURE TITLE:
STOPE CABLEBOLT SPACING

CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.:
1008-007-002

FIGURE No.:
I-02

DRAFT



CABLEBOLT LENGTH	CONSERVATIVE CASE			BASE CASE		
	N'	HR	BOLT LENGTH (m)	N'	HR	BOLT LENGTH (m)
BACK	0.5	4.1	6.0 m – 9.0 m	2.0	5.6	6.0 m – 9.0 m
HANGINGWALL	16.0	10.0	9.0 m – 13.0 m	64.0	14.5	9.0 m – 13.0 m

NOTES:

1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 400 m, 78˚, AND 30 m x 30 m x 13 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.
2. THIS CHART DOES NOT APPLY TO WEATHERED OR FAULTED ROCK. STOPES IN WEATHERED OR FAULTED ROCK SHOULD BE ASSESSED ON A CASE-BY-CASE BASIS.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

FIGURE TITLE:
STOPE CABLEBOLT LENGTH

CLIENT:
PRETIUM RESOURCES INC.

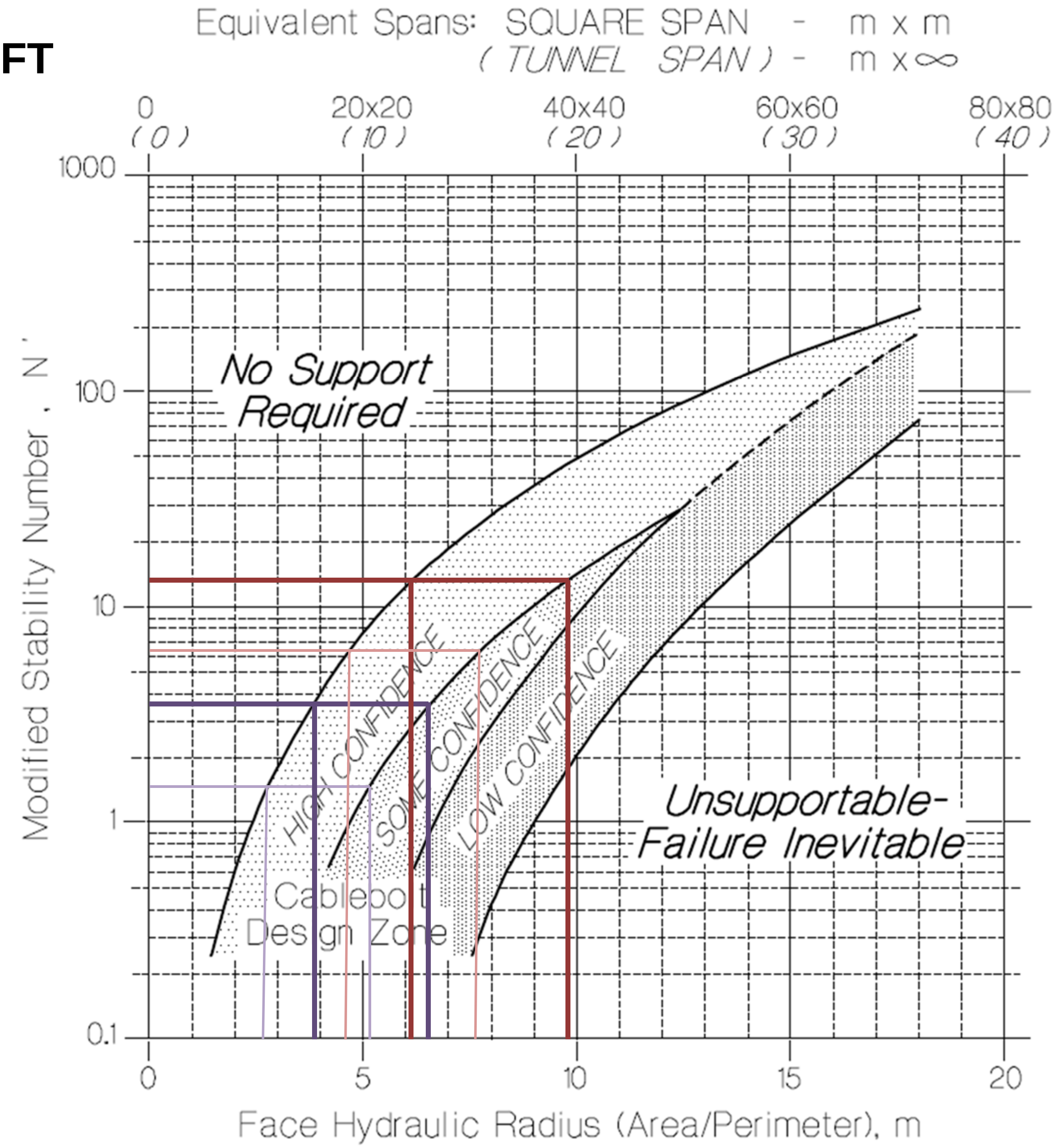
PROJECT No.:
1008-007-002

FIGURE No.:
I-03

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

TO BE READ WITH REPORT TITLED "BRUCEJACK PROJECT FEASIBILITY STUDY – UNDERGROUND ROCK MECHANICS ASSESSMENT" DATED MAY 2013

DRAFT



MATHEW'S METHOD PARAMETERS	Q'		A	B	C	N'	
	CONSERVATIVE	BASE				CONSERVATIVE	BASE
BACK	4	9	1.00	0.2	2	1.6 ●	3.6 ●
HANGINGWALL	4	9	1.00	0.2	8	6.4 ●	14.4 ●

NOTES:

1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 30 m, 68˚, AND 30 m x 30 m x 12 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.

HYDRAULIC RADIUS	UNSUPPORTED		SUPPORTED	
	LOW	HIGH	LOW	HIGH
BACK	2.7	3.9	5.1	6.5
HANGINGWALL	4.6	6.1	7.6	9.9

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

FIGURE TITLE:
WEST ZONE WEATHERED ROCK STOPE DESIGNS USING THE STABILITY GRAPH METHOD

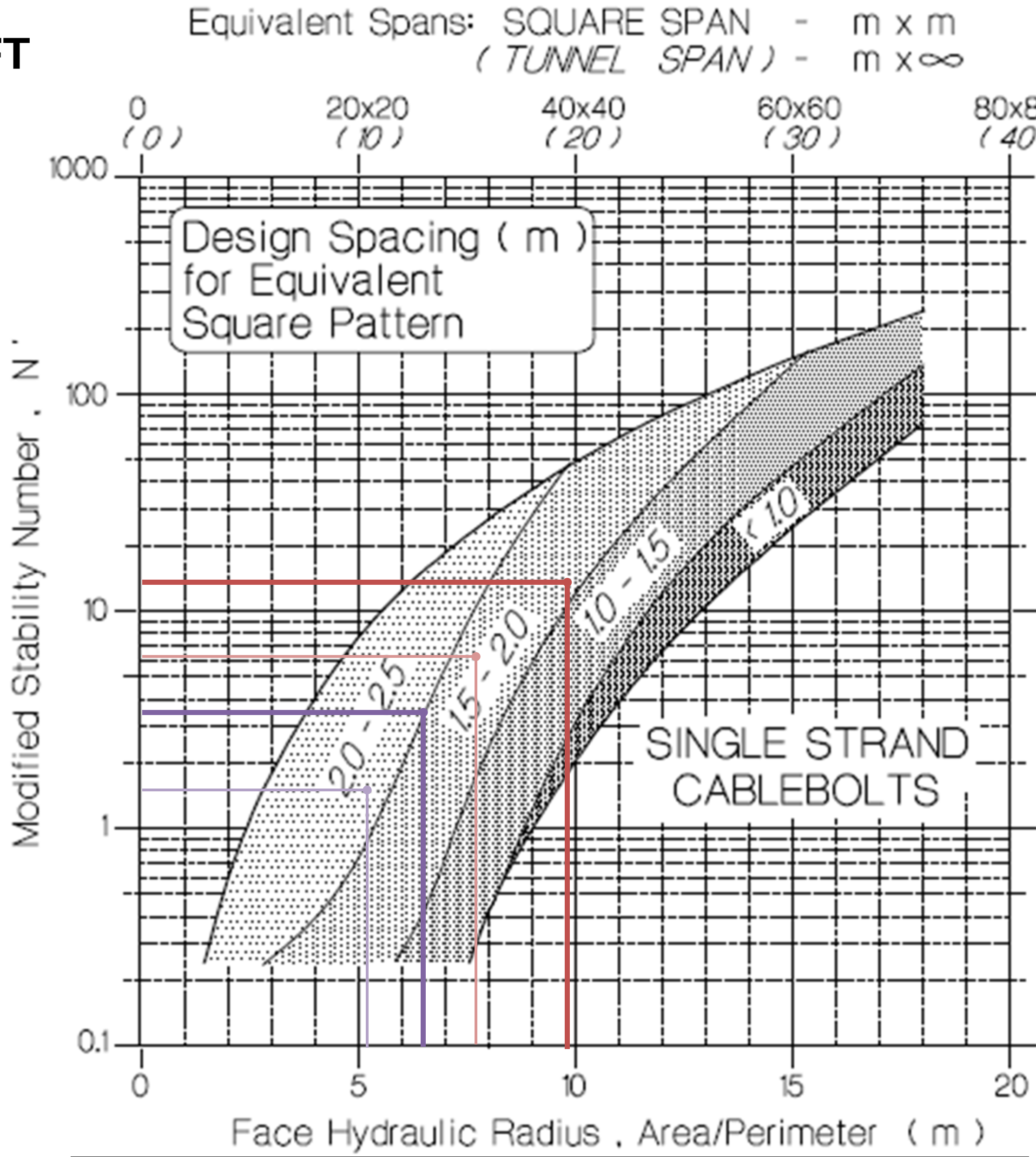
CLIENT: PRETIUM RESOURCES INC.

PROJECT No.: 1008-007-002

FIGURE No.: I-04

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

DRAFT



CABLEBOLT SPACING	CONSERVATIVE CASE			BASE CASE		
	N'	HR	BOLT SPACING (m)	N'	HR	BOLT SPACING (m)
BACK	1.6	5.1	2.0 m – 2.5 m	3.6	6.5	2.0 m – 2.5 m
HANGINGWALL	6.4	7.6	1.5 m – 2.0 m	14.4	9.9	1.5 m – 2.0 m

NOTES:
1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 30 m, 68˚, AND 30 m x 30 m x 12 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.
2. SPECIFIED CABLEBOLT SPACING IS FOR A SQUARE PATTERN.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE: BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT

FIGURE TITLE: WEST ZONE WEATHERED ROCK STOPE CABLEBOLT SPACING

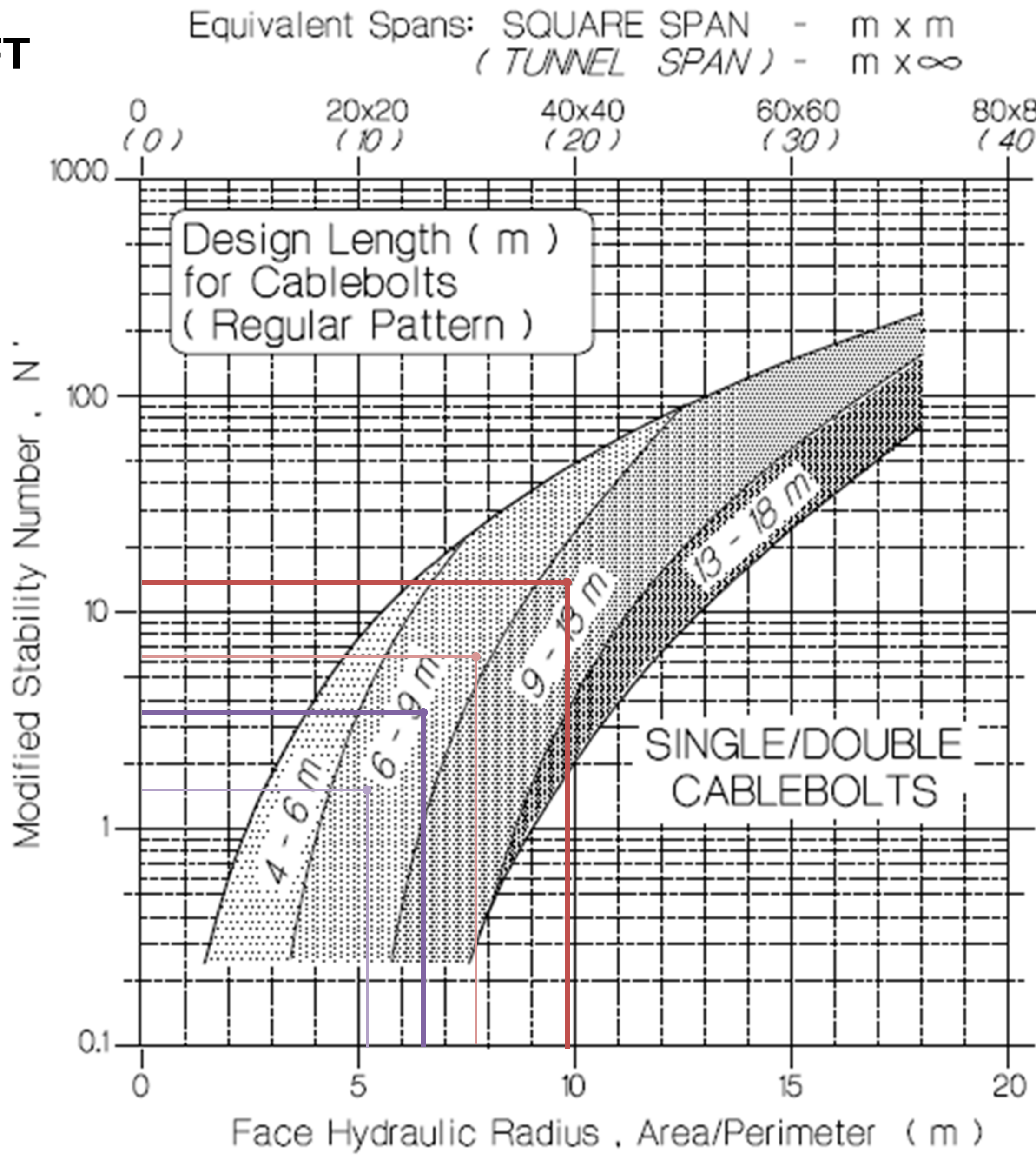
CLIENT: PRETIUM RESOURCES INC.

PROJECT No.: 1008-007-002

FIGURE No.: I-05

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

DRAFT



CABLEBOLT LENGTH	CONSERVATIVE CASE			BASE CASE		
	N'	HR	BOLT LENGTH (m)	N'	HR	BOLT LENGTH (m)
BACK	1.6	5.1	6.0 m – 9.0 m	3.6	6.5	6.0 m – 9.0 m
HANGINGWALL	6.4	7.6	6.0 m – 9.0 m	14.4	9.9	9.0 m – 13.0 m

NOTES:

1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 30 m, 68˚, AND 30 m x 30 m x 12 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

FIGURE TITLE:
WEST ZONE WEATHERED ROCK STOPE CABLEBOLT LENGTH

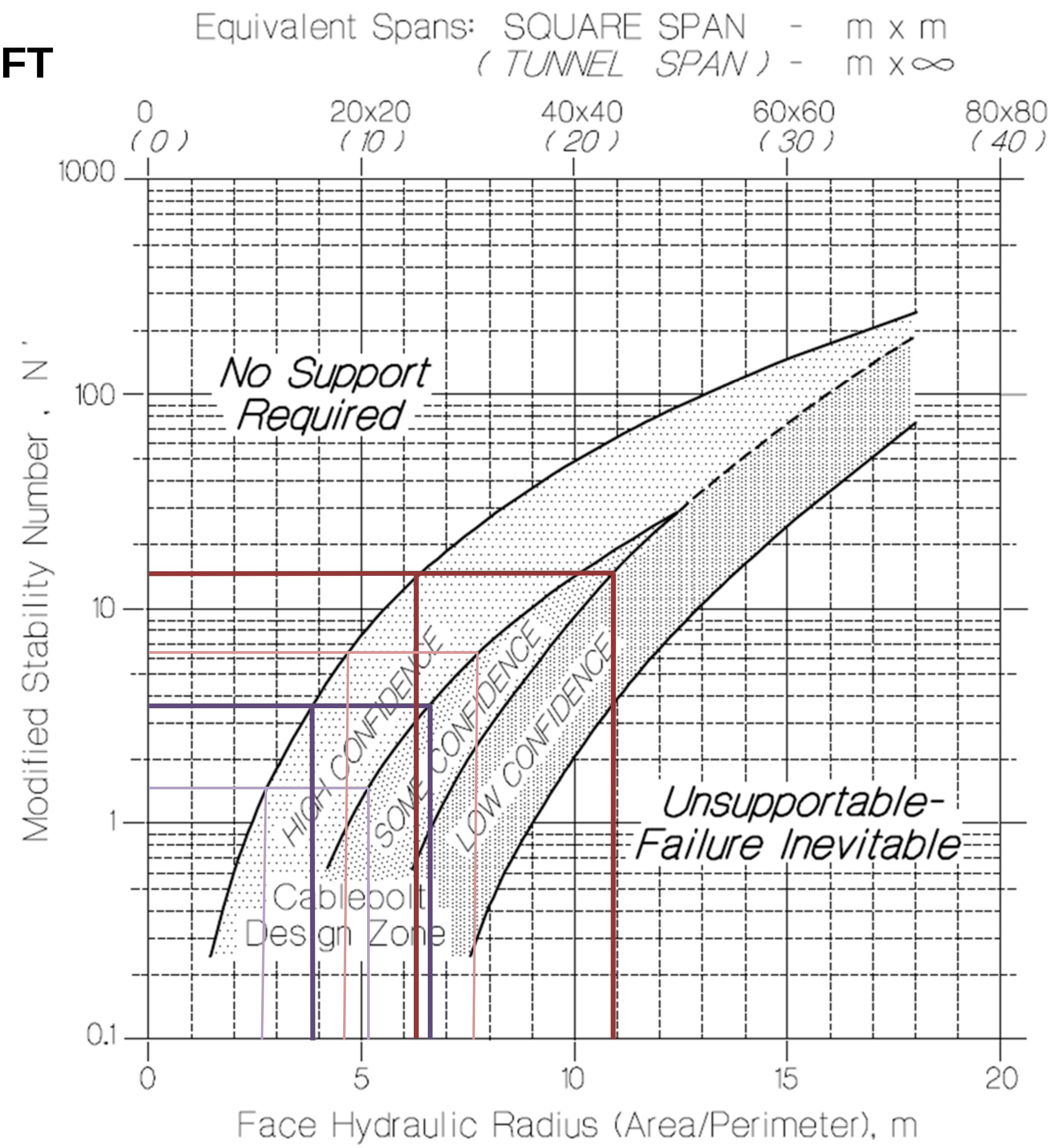
CLIENT: PRETIUM RESOURCES INC.

PROJECT No.: 1008-007-002

FIGURE No.: I-06

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

DRAFT



MATHEW'S METHOD PARAMETERS	Q′		A	B	C	N′	
	CONSERVATIVE	BASE				CONSERVATIVE	BASE
BACK	4	13	1.00	0.2	2	1.6 ●	3.6 ●
HANGINGWALL	4	13	1.00	0.2	8	6.4 ●	14.4 ●

NOTES:
1. STOPE DEPTH AND INCLINATION 30 m AND 78˚ WERE ASSUMED.
2. THESE RECOMMENDATIONS BASED ON A MAXIMUM STOPE SPAN OF 10 M IS REQUIRED FOR CROWN PILLAR STABILITY.

HYDRAULIC RADIUS	UNSUPPORTED	SUPPORTED
BACK	3.3	4.3
HANGINGWALL	6.1	7.2

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

FIGURE TITLE:
WEATHERED ROCK STOPE DESIGNS USING THE STABILITY GRAPH METHOD

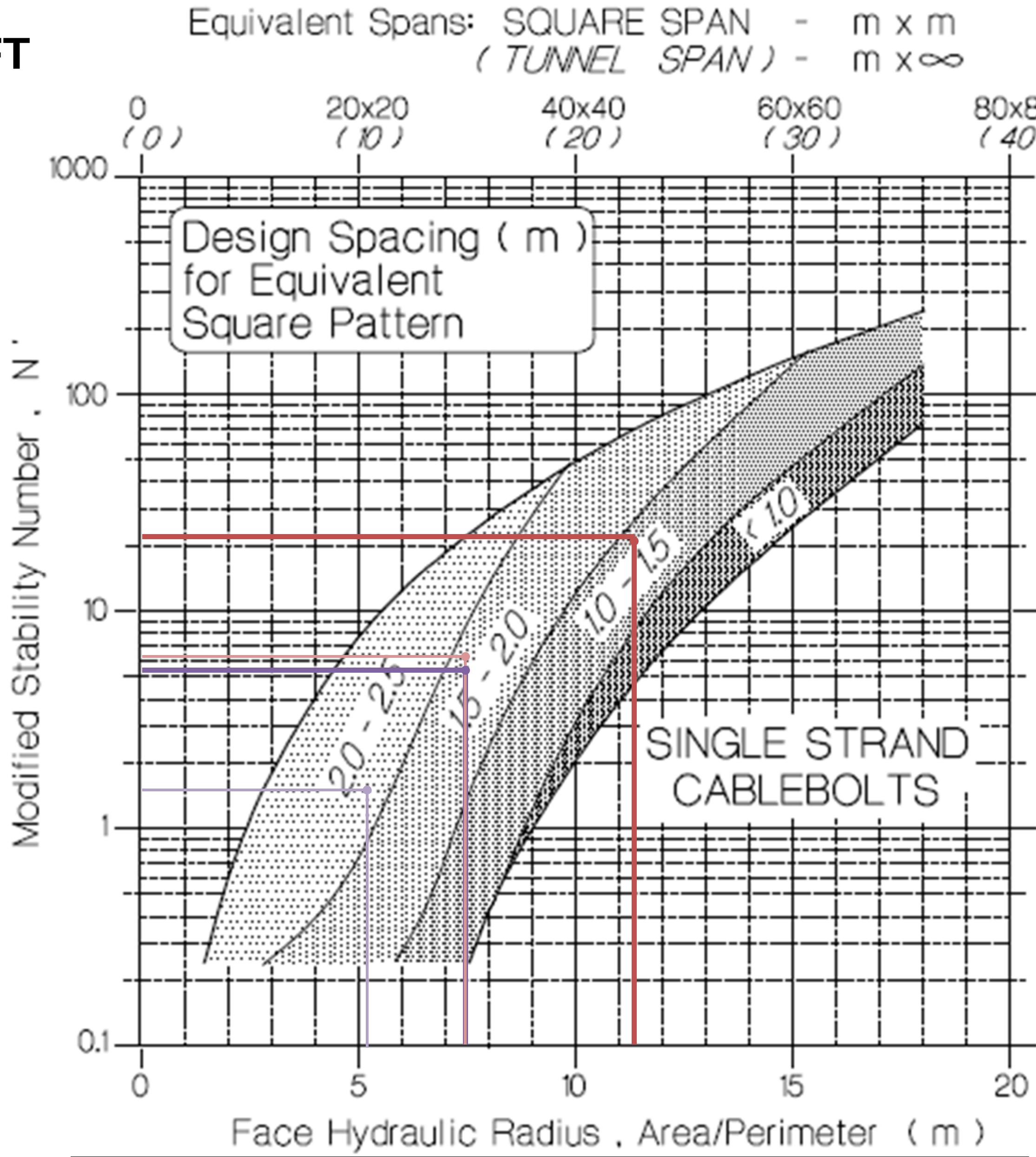
CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.:
1008-007-002

FIGURE No.:
I-07

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

DRAFT



CABLEBOLT SPACING	CONSERVATIVE CASE			BASE CASE		
	N'	HR	BOLT SPACING (m)	N'	HR	BOLT SPACING (m)
BACK	1.6	5.1	2.0 m – 2.5 m	5.2	7.4	1.5 m – 2.0 m
HANGINGWALL	6.4	7.4	1.5 m – 2.0 m	20.8	11.2	1.0 m – 1.5 m

NOTES:

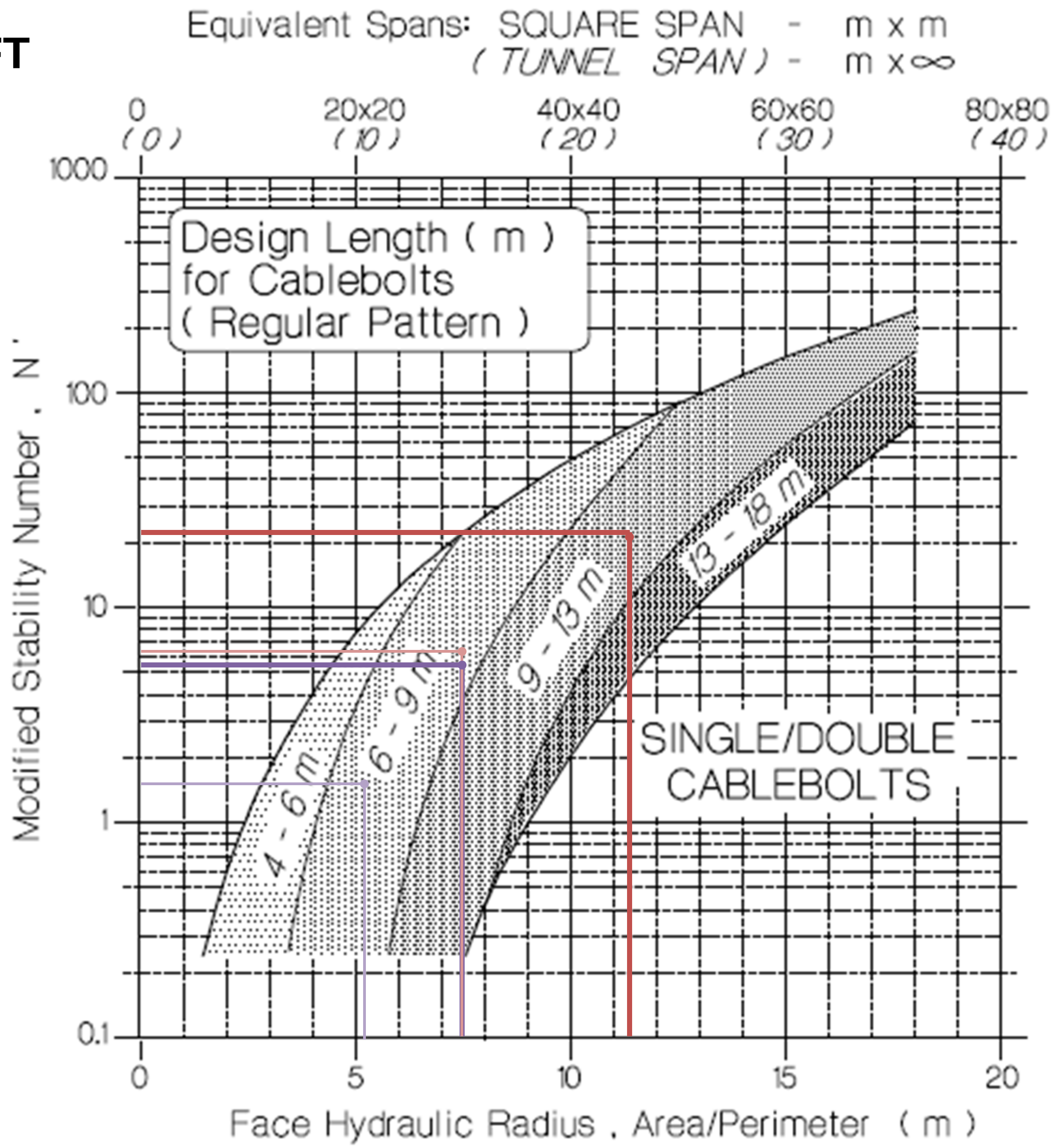
1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 30 m, 78˚, AND 30 m x 30 m x 25 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.
2. SPECIFIED CABLEBOLT SPACING IS FOR A SQUARE PATTERN.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

CLIENT: PRETIUM RESOURCES INC.	REPORT TITLE: BRUCEJACK FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
	FIGURE TITLE: VALLEY OF KINGS WEATHERED ROCK STOPE CABLEBOLT SPACING
	PROJECT No.: 1008-007-002 — FIGURE No.: I-08

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

DRAFT



CABLEBOLT LENGTH	CONSERVATIVE CASE			BASE CASE		
	N'	HR	BOLT LENGTH (m)	N'	HR	BOLT LENGTH (m)
BACK	1.6	5.1	6.0 m – 9.0 m	5.2	7.4	6.0 m – 9.0 m
HANGINGWALL	6.4	7.4	6.0 m – 9.0 m	20.8	11.2	9.0 m – 13.0 m

NOTES:

1. STOPE DEPTH, INCLINATION, AND DIMENSIONS OF 30 m, 78˚, AND 30 m x 30 m x 25 m RESPECTIVELY WERE ASSUMED FOR DESIGN AND MEASURED FROM A REPRESENTATIVE STOPE IN THE PEA MINE PLAN PROVIDED BY AMC ON MARCH 18, 2012.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:
BRUCEJACK FEASIBILITY STUDY
UNDERGROUND ROCK MECHANICS ASSESSMENT

FIGURE TITLE:
VALLEY OF KINGS WEATHERED ROCK STOPE CABLEBOLT LENGTH

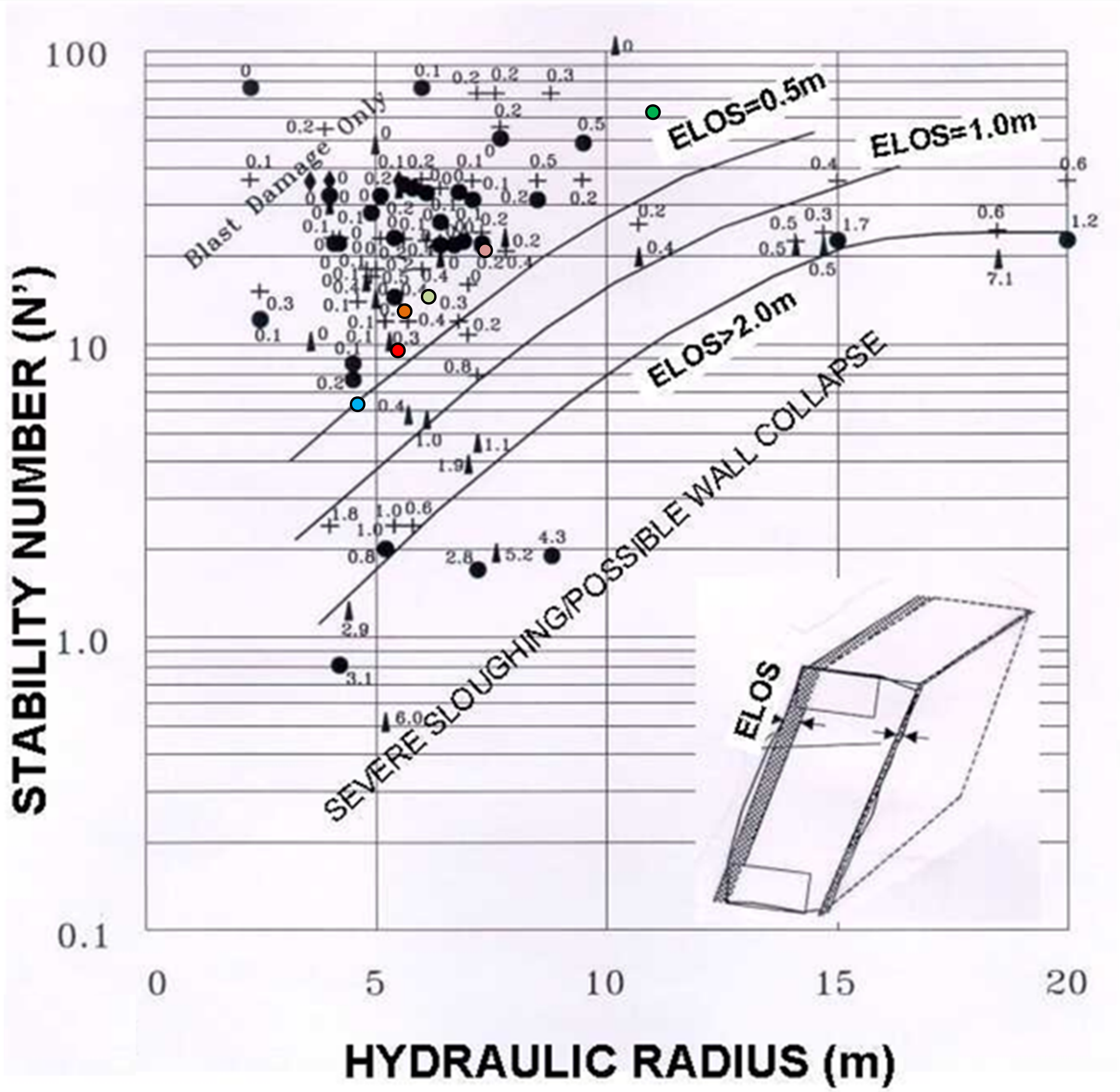
CLIENT:
PRETIUM RESOURCES INC.

PROJECT No.:
1008-007-002

FIGURE No.:
I-09

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\06 STOPES - STABILITY GRAPH METHOD\STABILITY CHARTS

APPENDIX J
ESTIMATED LINEAR OVERBREAK-SLOUGH



UNSUPPORTED HANGINGWALL	CASE	N'	HYDRAULIC RADIUS (m)
FRESH ROCK	CONSERVATIIVE (light green)	16	6.2
	BASE (green)	64	11.0
FAULTED ROCK	CONSERVATIIVE (blue)	6.4	4.5
	BASE (red)	9.6	5.5
WZ WEATHERED ROCK	CONSERVATIIVE (blue)	6.4	4.6
	BASE (orange)	14.4	6.1
VOK WEATHERED ROCK	CONSERVATIIVE (blue)	6.4	4.5
	BASE (pink)	20.8	7.4

NOTES:
1. ELOS determination follows methodology proposed by Clark, 1995.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

REPORT TITLE:	BRUCEJACK PROJECT FEASIBILITY STUDY UNDERGROUND ROCK MECHANICS ASSESSMENT
FIGURE TITLE:	EQUIVALENT LINEAR OVERBREAK SLOUGH ESTIMATES FOR AN UNSUPPORTED HANGINGWALL
CLIENT:	PRETIUM RESOURCES INC.
PROJECT No.:	1008-007-002
FIGURE No.:	J-01

N:\BGC\PROJECTS\1008 PRETIUM\007 FEASIBILITY\002 UG - OFFICE\02 DESIGN TASKS\11 OVERBREAK