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A quantitative analysis of alteration in the Carbon Leader Reef in the West Wits Line Goldfield: an application of Shortwave Infrared Reflectance Spectroscopy

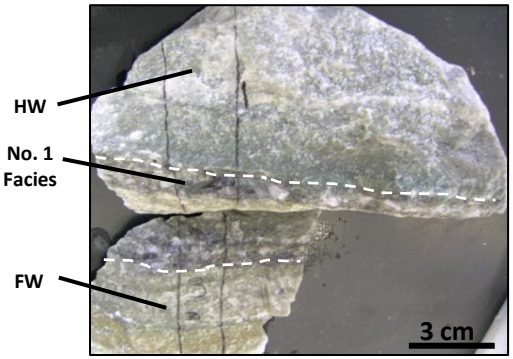
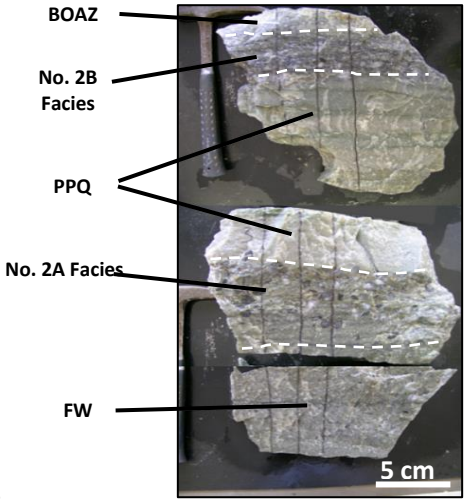
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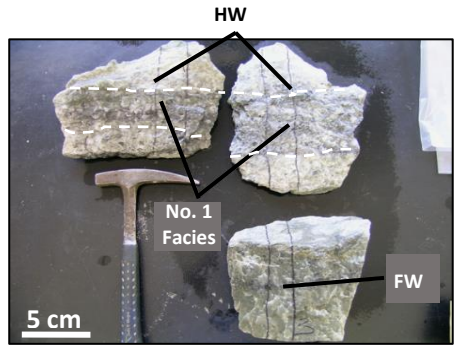
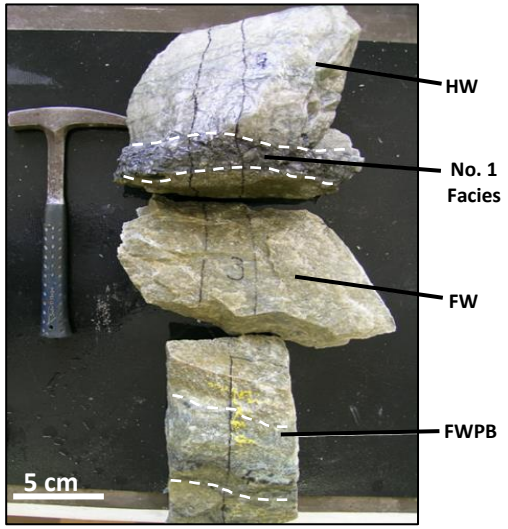
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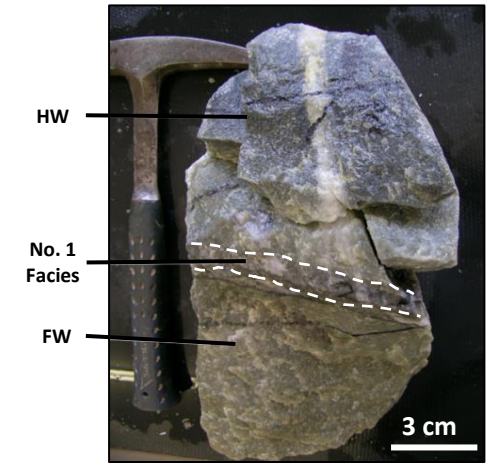
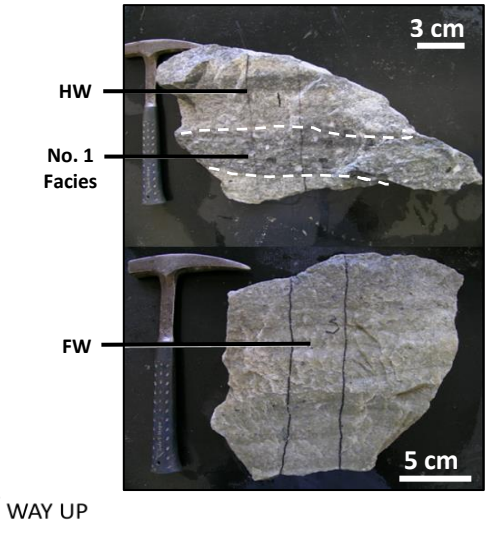
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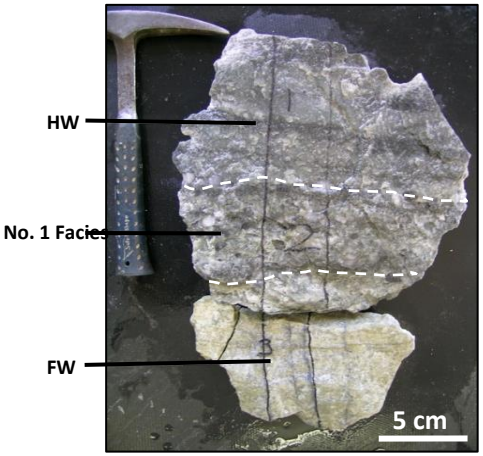
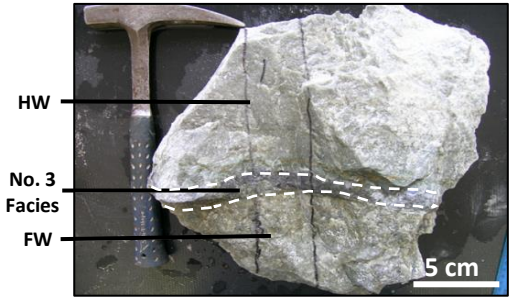
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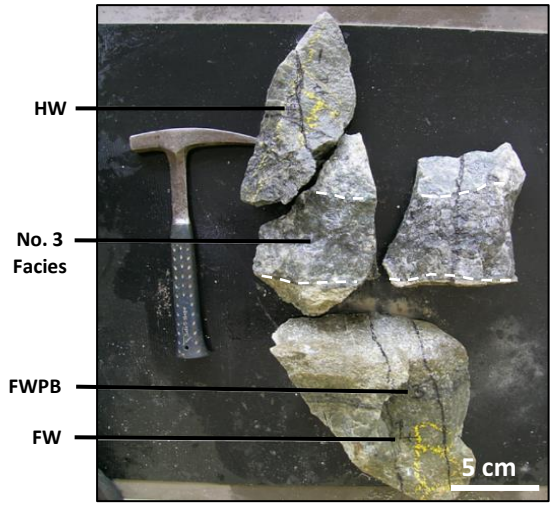
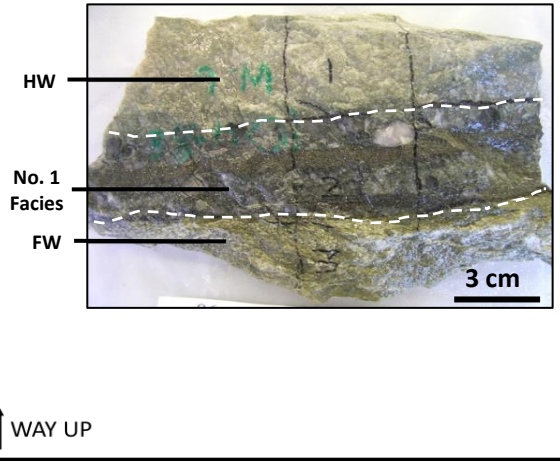
Appendix 2: Macroscopic Observations
Tombstone Samples

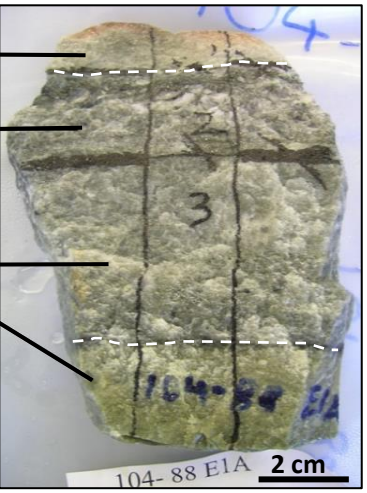
Sample ID	Descriptions					Photos
Name	Hangingwall (HW)	Reef-HW Contact	Reef	Reef-FW Contact	Footwall (FW)	Samples Before Cutting
Sample 1 94-94 E1	Light grey medium-grained siliceous quartzite. Pyrite occurs along along foresets at ±50 mm above the contact with the reef. The quartzite appears to be discoloured slightly around the pyrite foresets, displaying a greenish colour.	Sharp	No. 1 Facies: oligomictic, clast-supported conglomerate, at an average thickness of 40 mm. Clast sizes range from 2-20 mm in size, and are subrounded to rounded. The clasts are predominantly milky and smoky quartz. The matrix is made up of fine to medium grains with disseminated pyrite. Nearer to the footwall-reef contact the matrix is dark-grey, becoming greener with increasing proximity from the footwall.	Sharp	A brown-green, medium to coarse-grained, argillaceous quartzite. Small pebble bands are observed in some instances, and contain disseminated pyrite. Pyrite can be seen along fractures in the footwall quartzite.	 WAY UP
Sample 2 99-94 E2	Underground observation: A semi-siliceous, green-grey, medium-grained quartzite. Thin pyrite stringers can be seen in the hangingwall.	Gradational No. 2B Facies to Brown-Orange Argillaceous Zone (BOAZ) contact - BOAZ is an argillaceous unit, medium-grained and brownish-grey in colour with fine pyrite stringers. The No. 2B Facies is a ±60 mm thick, oligomictic, matrix-supported conglomerate. Clasts are predominantly milky and smoky quartz and are 4-20 mm in size, typically subrounded to rounded. The matrix is dark grey and consists of coarse-grained quartz alongside disseminated pyrite. The upper contact is gradational. There is a decrease in the clast density nearer to the Pale Pebbly Quartzite (PPQ) contact. Pyrite on foresets is observed near the upper contact in the PPQ. Contact between the PPQ and both reef bands is sharp. The PPQ is a clean, siliceous, medium-grained quartzite. Clasts are typically not present, but a single clast of smoky quartz was observed. No. 2A Facies is a 90 mm thick, oligomict, matrix-supported conglomerate, with subrounded to rounded clasts of smoky and milky quartz, 3-24 mm in size. Fine rounded disseminated pyrite occurs throughout, but is most abundant near the contact with the PPQ. The footwall-No. 2A Facies contact is sharp.			A coarse-grained, green-grey, slightly argillaceous, pebbly quartzite. Clasts are mostly smoky and milky quartz. Pyrite occurs along foresets.	 WAY UP

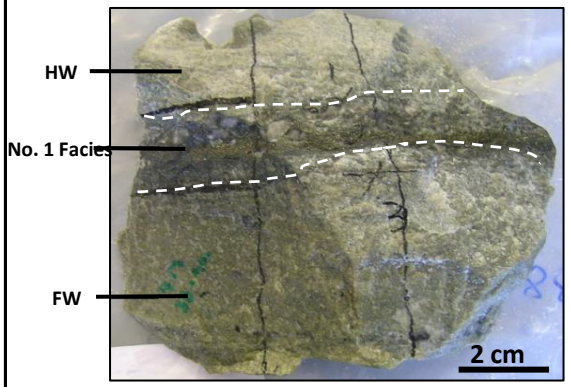
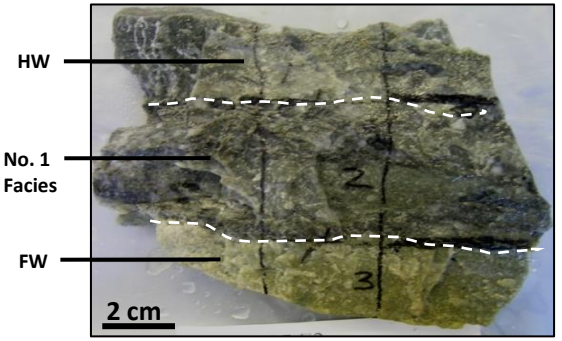
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 3 104-88 W6	Medium to coarse-grained siliceous quartzite. Minimal presence of disseminated pyrite.	Sharp	No. 1 Facies: a 140 mm thick, oligomictic, matrix-supported conglomerate with green discolouration. Clasts are subrounded to rounded, range from 4-26 mm and are mostly milky and smoky quartz clasts. The matrix is dark grey with medium-grained quartz with few rounded disseminated pyrite grains. Fine fly-speck carbon occurs at both the top and bottom contact.	Sharp	Argillaceous, medium-grained pebbly quartzite dominated with a pebble band. The pebble band is ±15 mm thick and contains subrounded pebbles of milky and smoky quartz ranging in size from 5-10 mm. Disseminated pyrite is not frequent in the sample.	 ↑ WAY UP
Sample 4 105-86 E2	Light grey, medium to coarse-grained siliceous quartzite. Occasional pyrite on foresets is observed. Cross-bedding is preserved, and appears to be trough cross-bedding.	Sharp	No. 1 Facies: a ±60 mm thick, oligomict, clast-supported conglomerate hosting clasts of 2-25 mm diameter, and are subrounded to rounded in shape. Milky and smoky quartz with lesser amounts of chert and opaline quartz clasts are present in the reef band. The matrix is dark grey and dominated by medium to coarse-grained quartz. A thin carbon seam occurs at the base of the reef and fly-speck carbon is seen within the matrix. Disseminated pyrite occurs throughout the matrix.	Sharp (with brittle zone)	Khaki-green, argillaceous coarse to very coarse-grained quartzite. Presence of footwall pebble bands (FWPB) ranging from 10-50 mm in thickness. FWPBs are matrix-supported, with the matrix consisting of rounded disseminated pyrite and medium-grained quartz. Clasts are 2-10 mm in size and are predominantly milky and smoky quartz alongside infrequent chert clasts.	 ↑ WAY UP

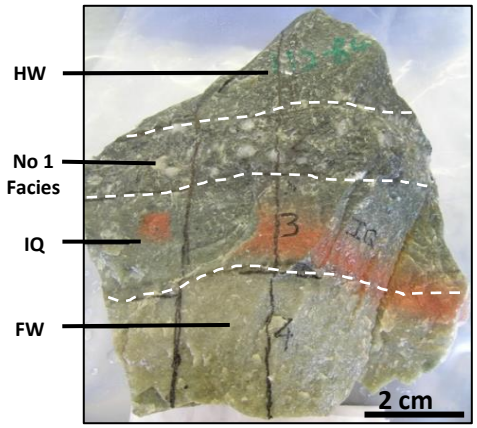
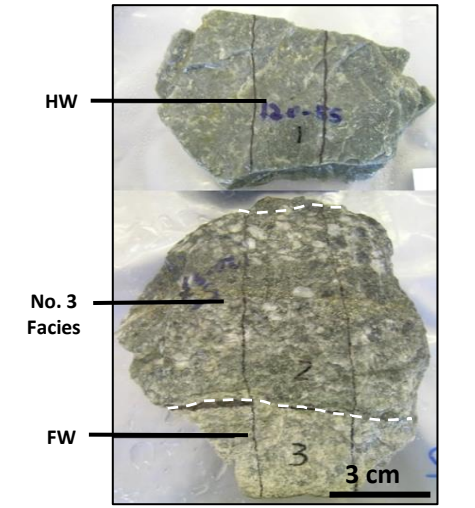
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 5 112-83 W3	Light to medium grey, medium to coarse-grained quartzite. Rounded disseminated pyrite occurs along fractures. A single 14 mm wide quartz vein cuts the hangingwall, but sulphides are not present in the vein.	Sharp, but some clasts occur in the hanging-wall closer to the contact.	No. 1 Facies: a 40 mm thick, oligomictic, light grey conglomerate. The sample is clast-supported nearer to the contacts (top and bottom) and matrix-supported in the centre of the reef. Clasts range from 8-20 mm, and are subrounded clasts of milky and smoky quartz. The matrix is dominated by medium to coarse-grained quartz with disseminated pyrite occurring in patches. Very small amounts of fly-speck carbon are present.	Sharp	Light green argillaceous, coarse to gritty-grained quartzite. Pyrite along foresets is seen as well as scattered 2-10 mm, subangular to subrounded, milky and smoky quartz clasts.	
Sample 6 112-83 W4	Light grey, siliceous medium-grained quartzite. A 40 mm wide band of dark grey quartzite is present. Scattered clasts of smoky quartz ranging from 5-15 mm in size, occur near the contact with the reef and pyrite along foresets is seen in the lighter quartzite. The darker quartzite contains rounded disseminated pyrite and pyrite foresets.	Sharp, with clasts occuring in the hanging-wall above the contact.	No. 1 Facies: an 80 mm thick, oligomictic conglomerate. The reef is clast-supported near the top and bottom contacts, but matrix-supported at the centre of the sample. The matrix is light grey and is dominated by coarse-grained quartz. Clasts are subrounded milky and smoky quartz, ranging from 2-20 mm in size. Rounded disseminated pyrite occurs in the upper portions of the reef.	Sharp, often with a distinct parting along the contact.	Light green argillaceous, coarse-grained quartzite, dominated with scattered 2-5 mm, subangular to subrounded smoky quartz clasts. The sample contains several pyrite along foresets.	

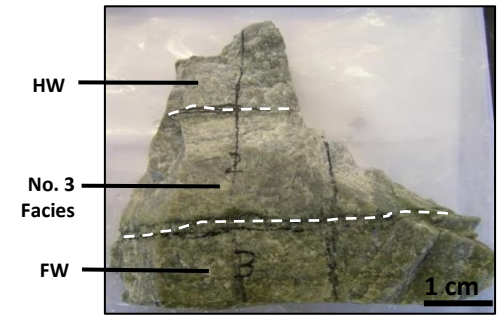
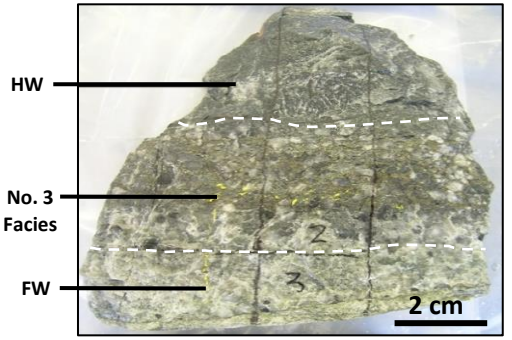
Sample ID	Descriptions					Photos
Name	Hangingwall (HW)	Reef-HW Contact	Reef	Reef-FW Contact	Footwall (FW)	Samples Before Cutting
Sample 7 114-78 E1	Light grey siliceous medium to coarse-grained quartzite with bands of medium grey quartzite, up to 20 mm thick. The medium grey quartzite bands have pyrite along foresets, with rounded disseminated pyrite seen in the lighter grey quartzite.	Sharp	No. 1 Facies: a 140 mm thick oligomictic, matrix-supported conglomerate. Subrounded to rounded smoky and milky quartz clasts 2-20 mm in size can be seen. Rounded disseminated pyrite occurs with clast-supported bands near the middle and top of the reef. A thin carbon seam can be seen at the base of the reef.	Sharp	Coarse to gritty-grained light khaki-green argillaceous quartzite. Pyrite is disseminated and also occurs along foresets.	
Sample 8 120-55 W4	Light grey, coarse-grained siliceous quartzite. The sample has pyrite occurring along foresets. The quartzite is stained green around some fractures and pyrite foresets.	Sharp	No. 3 Facies : the lower half of the reef is medium grey while the upper half has a greenish discolouration. The reef is ±20 mm thick, oligomictic, and matrix-supported. In places the reef is only a pebble lag as opposed to a developed conglomerate. Clasts are made up of milky and smoky quartz, ranging from 4-20 mm in size and are typically subrounded. A single well-rounded clast of opaline quartz was observed. The matrix is dominated by medium-grained quartz alongside disseminated pyrite which tends to concentrate near the top and bottom contacts.	Sharp	Greenish coarse to gritty-grained argillaceous quartzite, with scattered (up to 7 mm) subrounded milky quartz clasts. The grain size of the quartzite coarsens toward the contact with the reef.	

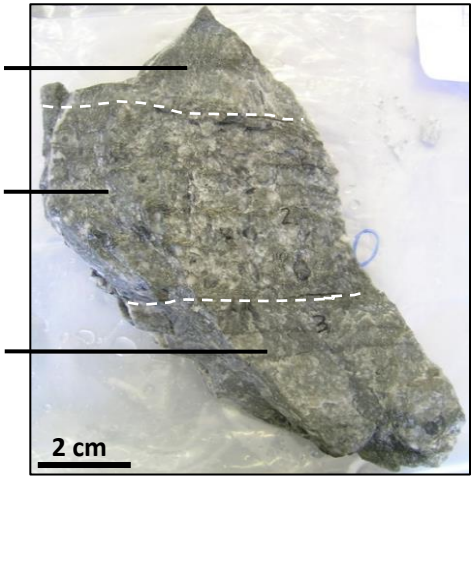
Sample ID	Descriptions					Photos
Name	Hangingwall (HW)	Reef-HW Contact	Reef	Reef-FW Contact	Footwall (FW)	Samples Before Cutting
Sample 9 120-77 S1	Light grey, fine to medium-grained siliceous quartzite. Subrounded floating clasts of smoky and milky quartz (4 - 10 mm) are seen as well as pyrite along foresets.	Sharp, although rare clasts occur in the hanging-wall.	No. 3 Facies: a 130 mm thick oligomictic matrix-supported conglomerate, which becomes clast-supported near the contact with the hangingwall. Clasts are subrounded ranging from 5-20 mm in size, and consist mainly of milky and smoky quartz, with rare chert and opaline quartz. The matrix is grey in colour, medium-grained with rounded disseminated pyrite grains.	Sharp	Green medium to gritty-grained, argillaceous quartzite containing a footwall pebble band (FWPB) 30 mm thick. Clasts are subrounded, 2-12 mm, smoky and milky quartz.	
Sample 10 96-94 E2	Light grey, medium-grained siliceous quartzite. Several pyrite stringers can be seen which occur at ±30° to the bedding. The quartz immediately around these stringers is dark grey.	Sharp transition from the upper pebbly horizon of the reef to the quartzite of the hanging-wall.	No. 1 Facies: the reef is a ±70 mm thick, matrix-supported conglomerate. At the base of the reef is a 15 mm thick horizon which is enriched in carbon and pyrite (very fine-grained and rounded). This is overlain by a 20 mm thick horizon, which contains very little carbon and pyrite. This is followed by another pyrite- and carbon-rich horizon about 10 mm thick. The top of the reef is pebbly. Clasts range from 3-25 mm in size. These clasts consist of milky and smoky quartz, and are subrounded to well-rounded. The matrix is dark green except in the pyrite- and carbon-rich horizons where the matrix is black.	Sharp transition from khaki footwall to reef.	Khaki coarse to gritty-grained argillaceous quartzite with rare disseminated pyrite.	

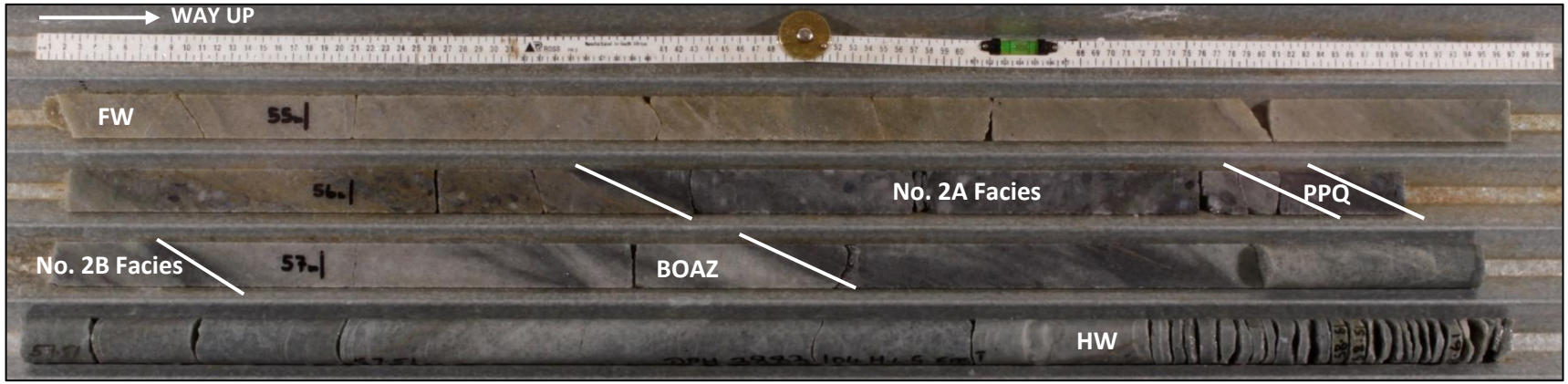
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 11 100-92 Wze	Light grey, medium-grained siliceous quartzite. Contains rounded disseminated pyrite grains up to 2 mm in size.	Sharp	No. 2A Facies: the reef is ±90 mm wide is clast-supported. The matrix is dark grey to black in colour and is medium-grained. Clasts are of milky and smoky quartz with lesser amounts of chert, and range from 2-27 mm in diameter. Most of the clasts are well-rounded, but several subangular grains were observed. The matrix is medium to coarse-grained quartz with very fine to 1 mm rounded pyrite grains.	Sharp	Medium to coarse-grained, light green to greyish sub-argillaceous quartzite with disseminated pyrite. Lesser amounts of chalcopyrite are seen. Sulphides occur on foresets.	
Sample 12 104-88 E1A	Light grey, coarse-grained, siliceous quartzite with scattered quartz clasts.	Sharp.	No. 1 Facies: the conglomerate band is ±55 mm thick. The base is matrix-supported with a matrix of light grey, coarse sand occurring above the basal pyrite stringer. In the pyrite stringer grains reach up to 1 mm in size, but most are much finer. The basal pyrite stringer overlies the thin carbon seam (3 mm) that occurs approximately 100 mm below the light grey, fine-grained internal quartzite with a pebble lag with clasts up to 7 mm in size. The upper portion of the reef is clast-supported, with clasts ranging from 2-15 mm in size. Clasts are subangular to well-rounded and consist mainly of milky quartz, although smoky quartz clasts are also present. The matrix for the top 10 mm of reef is pyrite-bearing with rare fly-speck carbon which results in a dark grey colour. Most of the pyrite observed is rounded and very fine, but occasional coarser grains are also noted.	Sharp, marked by a thin carbon seam	Below the carbon seam the footwall is coarse to gritty-grained, green-brown argillaceous quartzite.	

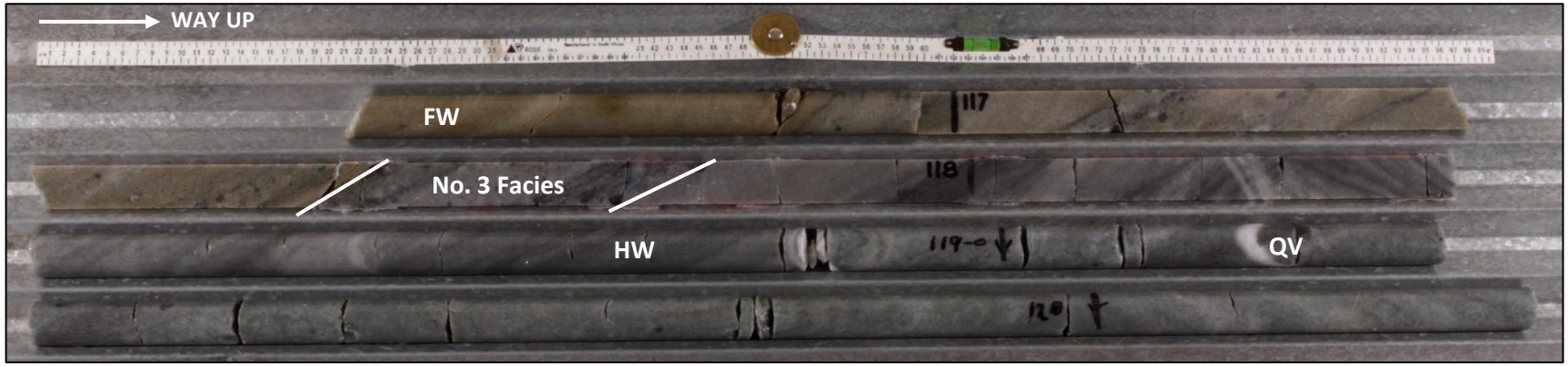
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 13 104-88 W7	Light grey, medium to coarse-grained siliceous quartzite. Appears to contain faint cross-bedding intersecting the bedding plane at a very shallow angle.	Sharp	No. 1 Facies: conglomerate band is ±75 mm thick and is matrix-supported. The matrix is dark grey and pyrite-bearing especially at the centre of the reef where there is an increase in the abundance of clasts. At the base of the reef, clasts are less and the colour of the matrix ranges from dark green to dark grey. In the centre of the reef the matrix is dark grey and pyrite-rich, with rounded disseminated pyrite ranging from very fine to 2 mm in size. Clasts become more abundant toward the top of the reef, and the matrix is dark green. Pyrite abundance also decreases. Clasts are between 5-25 mm in size and consist of subrounded milky and smoky quartz.	Sharp, marked by the basal pyrite stringer in the reef.	Grey-green, coarse-grained slightly argillaceous quartzite. Floating clasts of smoky and milky quartz up to 15 mm in size occur within the footwall quartzite.	 WAY UP
Sample 14 109-87 E2	Light grey, medium-grained siliceous quartzite. Contains scattered subrounded clasts of smoky quartz up to 20 mm in size (pebble lag immediately above the upper reef contact).	Sharp	No. 1 Facies: approximately 95 mm thick matrix-supported conglomerate. Matrix is light grey except along the top and bottom contacts. At the contacts there are ±20 mm thick bands in which clasts and rounded disseminated pyrite are more abundant. Clasts are subrounded and consist of smoky and milky quartz, and are between 5-20 mm in size.	Sharp	Khaki-green, coarse to gritty-grained argillaceous quartzite.	 WAY UP

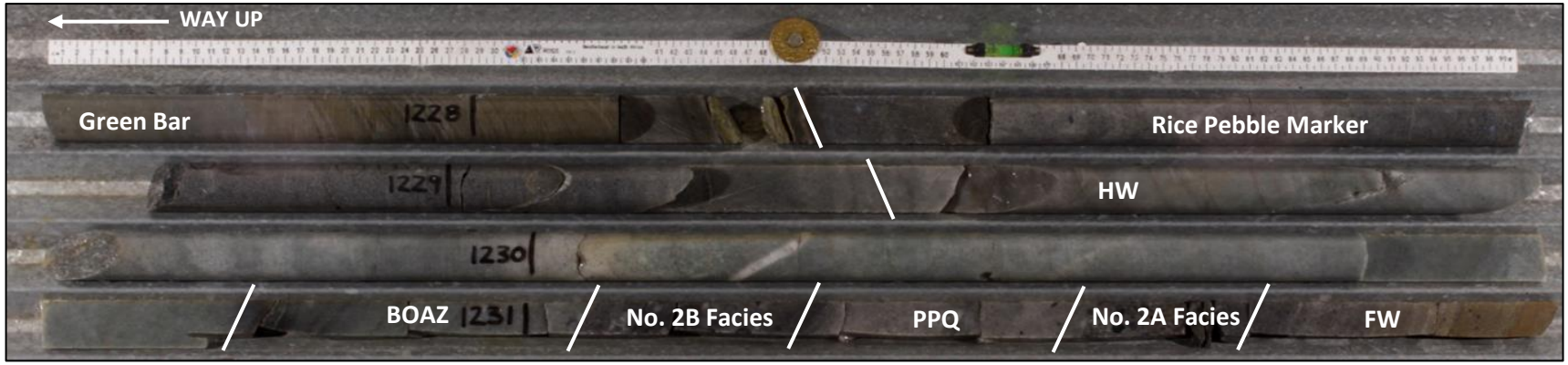
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 15 112-84 Rse	Dark grey, medium-grained sub-argillaceous quartzite. Contains fine pyrite along foresets.	Sharp	No. 1 Facies: approximately 60 mm thick clast-supported conglomerate. Clasts are of milky and smoky quartz, subangular to well-rounded, and between 4-25 mm in size. Disseminated pyrite grains up to 1 mm in size are observed. Internal quartzite (IQ) is approximately 75 mm thick and medium to coarse-grained. Light grey at the base and darkens towards the contact with the reef. Contains very fine rounded grains of disseminated pyrite.	Marked by 4 mm wide carbon seam containing rounded disseminated pyrite. A single smoky quartz clast is observed on the carbon seam.	Coarse-grained green-grey sub-argillaceous quartzite.	 WAY UP
Sample 16 120-55 NE7	Medium grey to light bluish-grey, very fine-grained. Thin pyrite along foresets are noted within the hangingwall.	Sharp	No. 3 Facies: conglomerate band is ±190 mm thick, consisting of alternating matrix-supported and clast-supported units. The lowest unit (immediately above the pyrite stringers) is light grey, medium-grained and contains very fine disseminated pyrite. This is overlain by a ±40 mm thick clast-supported unit. Clasts are subrounded, of smoky and milky quartz and range from 3-20 mm in size. The matrix is the same as the underlying matrix-supported band, but pyrite is coarser and more abundant (especially along the contact with the overlying matrix-supported band). Fly-speck carbon is present in the overlying unit which is ±30 mm thick, matrix-supported and dominated by dark grey medium grains, with up to 1 mm disseminated pyrite.	Marked by two pyrite stringers with up to 9 mm clasts of smoky and milky quartz. Both stringers appear to contain fly-speck carbon.	Coarse to gritty-grained light green-grey sub-argillaceous quartzite.	 WAY UP

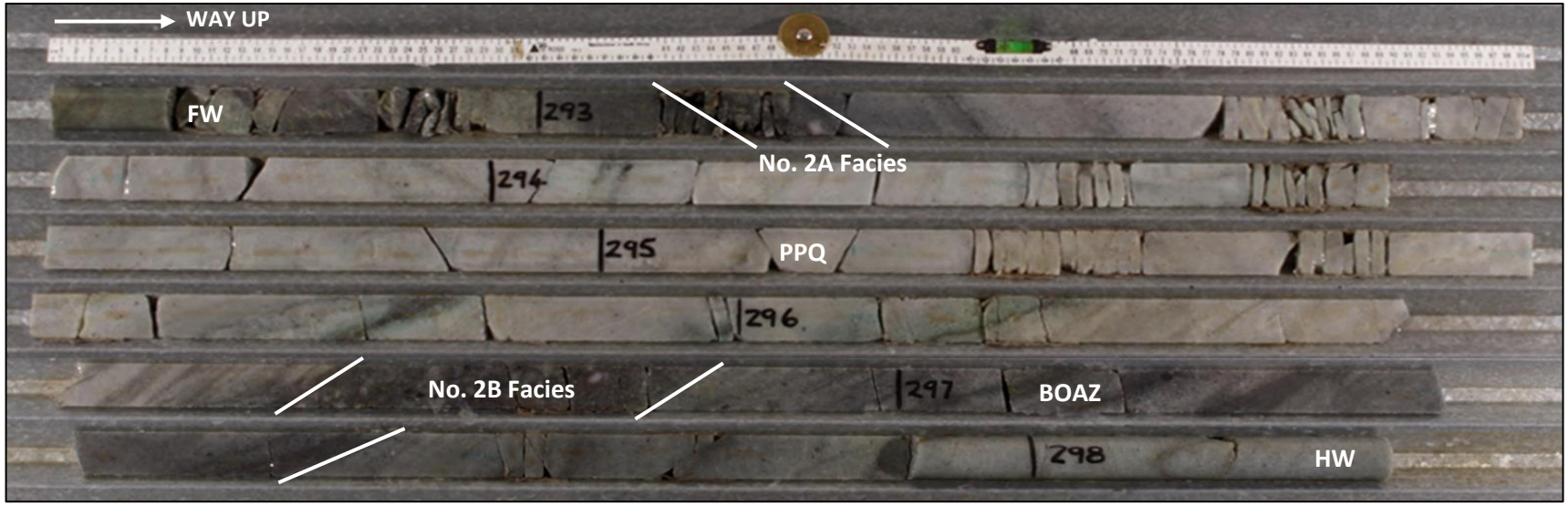
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 17 120-55 W5	Light grey, fine- to medium-grained and siliceous with pyrite along foresets.	Sharp contact marked by a fine pyrite stringer.	No. 3 Facies: light grey, medium-grained siliceous quartzite - clasts are absent. The reef is distinguished from the surrounding rock by colour, as well as the lower carbon seam and an upper pyrite stringer. Rare fly-speck carbon occurs in the reef quartzite.	Sharp, marked by a carbon seam with abundant pyrite.	Coarse-grained green-brown argillaceous quartzite cut by a fault. The fault/shear is bedding-parallel and for ±3 mm around the fault/shear the rock colour is altered to dark green.	 WAY UP
Sample 18 120-55 W7	Fine to medium grained, dark grey siliceous quartzite cut by several pyrite grains along foresets.	Sharp	No. 3 Facies: reef package is ±115 mm thick and consists of two distinct units. The lower unit is ±35 mm thick, clast-supported, with a coarse light green-grey matrix (similar to the underlying footwall). Clasts are subrounded, milky and smoky quartz, ranging from 4-16 mm in size. Pyrite is rare in this unit. The upper unit is dark green and clast-supported. The clasts are subrounded, ranging from 3-16 mm in size, consisting of milky and smoky quartz with infrequent chert. Rounded pyrite is abundant in the upper unit. Most of the pyrite grains are less than 1 mm in size.	Sharp contact marked by a pyrite stringer with fly-speck carbon.	Coarse to gritty-grained, light green grey, sub-argillaceous pebbly quartzite. Clasts are milky and smoky quartz, between 3-12 mm in size. Pyrite stringers are also seen.	 WAY UP

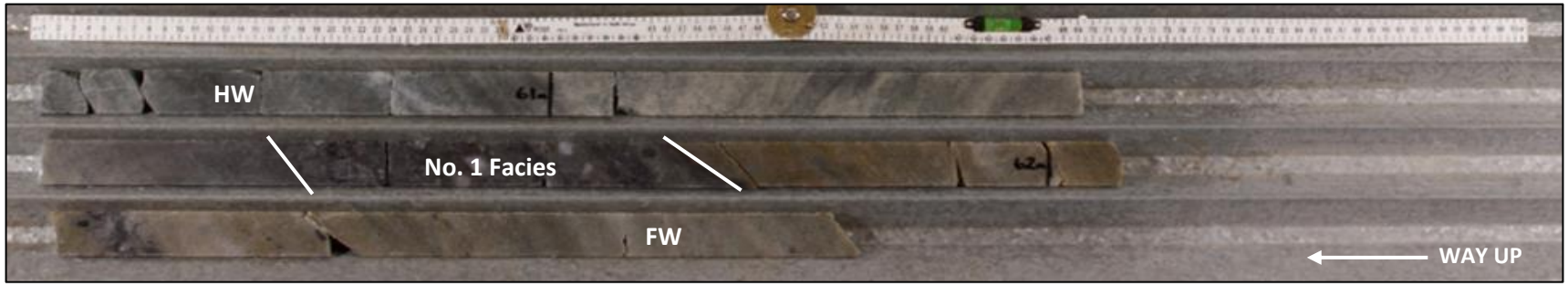
Sample ID	Descriptions					Photos
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Carbon Leader Reef**	**Reef-FW Contact**	**Footwall (FW)**	**Samples Before Cutting**
Sample 19 120-70 W1	Medium to coarse-grained, medium to dark grey quartzite. Pyrite along foresets is present. An 8 mm wide, white, vertical quartz vein is seen cutting the hangingwall, passing though the reef and terminating in the footwall.	Sharp	No. 3 Facies: approximately 170 mm thick, mostly clast-supported conglomerate. Clasts are between 4-20 mm in size, subangular to well-rounded, and consist of milky to smoky quartz. Pyrite is abundant and occurs mainly on foresets. Small amounts of fly-speck carbon are observed in the reef.	Sharp, marked by thin pyrite stringers.	Light grey, medium-grained quartzite, cut by several pyrite stringers. At the base of the stringers is a pebble band ±30 mm thick with subangular to well-rounded clasts of milky and smoky quartz. Chert and pyrite grains are also observed. Below the pebble band is a khaki green coarse to gritty-grained argillaceous quartzite.	

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 20 DPH 3883	Light grey siliceous medium-grained quartzite. Cubic pyrite (1 - 4 mm) present. Pyrite along foresets is seen. Discolouration of the hangingwall is seen alongside the pyrite foresets.	Sharp	Both the lower (No. 2A Facies) and upper (No. 2B Facies) reef portions are poorly developed. Matrix-supported with rounded to subrounded clasts; >40% disseminated pyrite concentrated around quartz and chert clasts. Average clast size 10 mm. Opalescent quartz clasts can also be seen (<10 mm in diameter). Separating the No. 2A and No. 2B Facies is Pale Pebbly Quartzite (PPQ), medium-grained semi-siliceous quartzite, pale grey in colour. Overlying the upper reef band is a Brown-Orange Argillaceous Zone (BOAZ), which is a medium-grained quartzite with a brownish-orange colour.	Sharp	Brown-green, medium to coarse-grained argillaceous quartzite. Footwall pebble bands are observed and are typically less pyrite-rich than the reef. Chloritisation is possible as there is a greenish discolouration to several milky quartz clasts in one of the footwall pebble bands. The matrix is bears a dark greenish-grey colour.
					

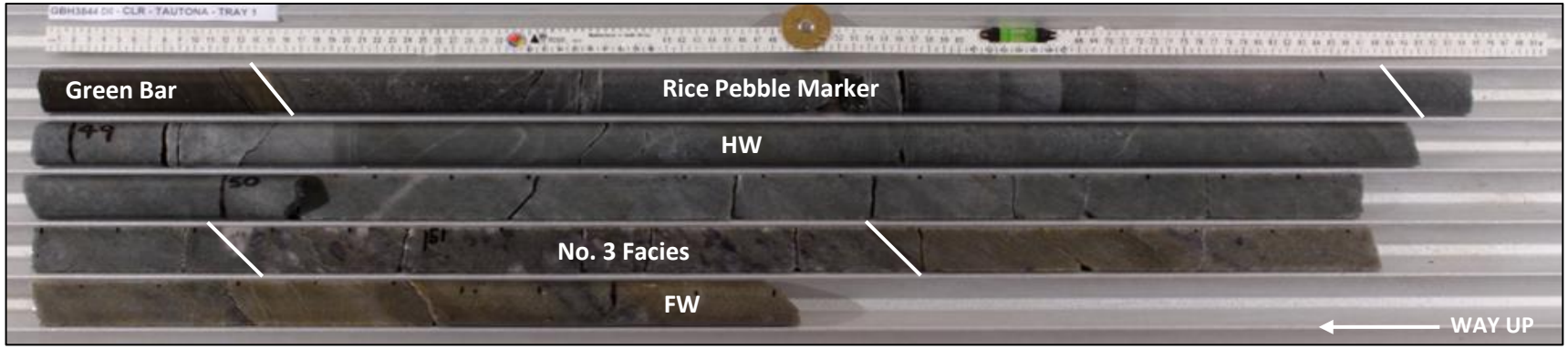
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 21 DPH 4057	Light grey siliceous quartzite, medium-grained. Rounded grains of pyrite along foresets. Dark grey banding is also seen within the hangingwall.	Sharp	No. 3 Facies is poorly developed and poorly sorted. Disseminated pyrite is minimal in the sample as well as the amount of clasts (matrix-supported). Subrounded quartz and chert clasts are seen and are less than 10 mm in diameter. Rounded pyrite along foresets is visible within the reef, and a slight greenish discolouration is seen on the edges of the pyrite foresets.	Gradual/ Sheared	Khaki-brown in colour, coarse-grained to gritty texture. Small under-developed footwall pebble bands present. Disseminated pyrite can be seen within the footwall pebble bands.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 22 GBH 1000 D6	Greenish-grey, medium to fine-grained, siliceous quartzite. Rounded pyrite along foresets present, dark grey banding aligned to bedding as well as quartz veining present.	Sharp	The reef package comprises a top reef band (No. 2B Facies), Pale Pebbly Quartzite (PPQ) and a bottom reef band (No. 2A Facies). The top reef band has rounded disseminated pyrite concentrated around milky quartz clasts (<10 mm diameter) and is clast-supported. Small fly-speck carbon can also been seen within the top reef package. The PPQ is fine to medium-grained and light greenish-grey in colour, with fine rounded pyrite along foresets. The bottom reef band is similar to the top band however with larger clasts and a greater percentage of rounded disseminated pyrite. Small chert clasts are also seen (<5 mm in diameter). Above the No. 2B Facies is a medium-grained semi-siliceous BOAZ, overlain by the hangingwall quartzite.	Sharp	Gradual colour change from the reef contact (darker khaki-green to a lighter khaki-green) onwards. Footwall is gritty in texture with small floating chert clasts (pebble lag).
					

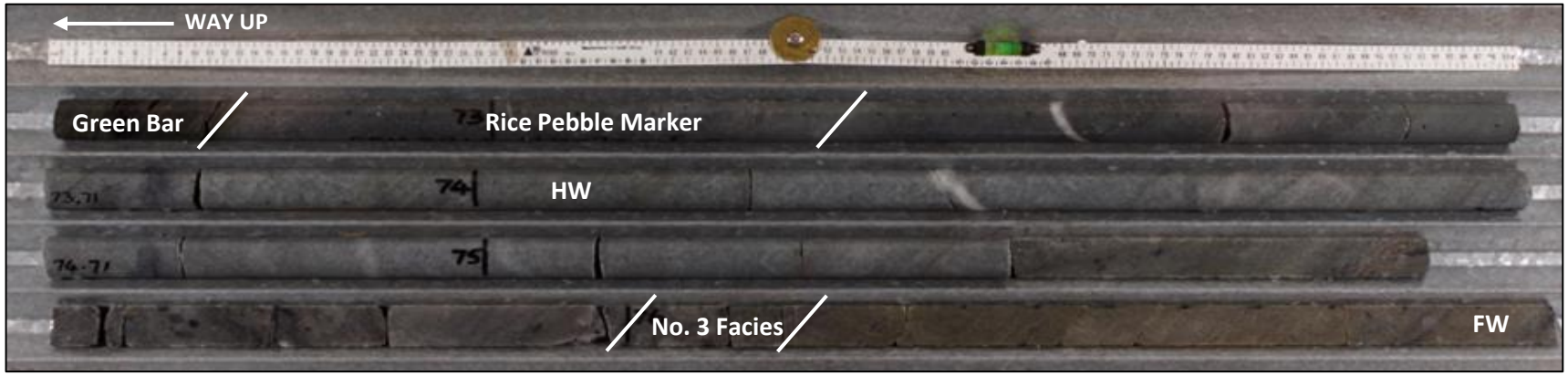
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 23 GBH 2788	Greyish-blue siliceous quartzite, fine to medium-grained, thin dark-grey banding present. Very fine rounded pyrite along foresets. Poor pebble lag present.	Sharp	Both No. 2A and No. 2B Facies are well-developed (well-sorted and well-packed). Clast-supported with majority quartz clasts and minority chert clasts. Clasts range from 2 to 10 mm in diameter. Matrix is dark-grey with disseminated pyrite concentrated around clasts. The two bands are separated by Pale Pebbly Quartzite (PPQ), that is medium to fine-grained, semi-siliceous, and pale greenish-grey in colour. Dark green is seen on the outer edges of a pyrite lag within the PPQ, possibly indicating chloritisation or oxidation of the sulphides. Overlying the No. 2B Facies is a medium-grained, semi-siliceous BOAZ. Bedding is visible. A slight discolouration is noted in the No. 2B Facies and may be due to oxidation of sulphides within the core.	Sharp	Footwall is gritty in texture, argillaceous and greenish-grey in colour. Small chert clasts can be seen at random.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 24 GBH 3763	Clean greyish-blue siliceous quartzite, fine to medium-grained. Thin dark grey bands aligned to bedding.	Gradual	No. 1 Facies is matrix-supported and poorly developed. Matrix is alternating dark grey and light grey in colour, medium-grained with rounded disseminated pyrite grains. Smoky and milky clasts are set within the matrix and are elongated, subrounded to rounded (5 - 20 mm in diameter).	Sharp	Khaki-green coloured argillaceous quartzite. Gritty to coarse-grained. Poorly developed footwall pebble bands are seen as well as small floating chert clasts (<5 mm)
					

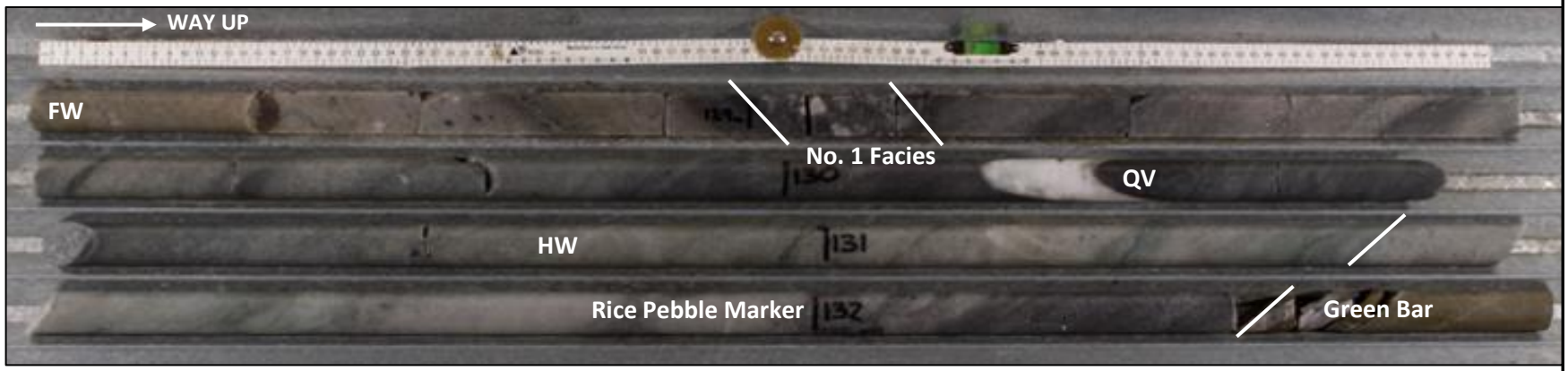
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 25 GBH 3844	Greyish-blue siliceous quartzite, medium-grained. Fine rounded pyrite along foresets present.	Gradual	No. 3 Facies is well-developed and is made up of elongated chert and quartz clasts (10 mm on the long axis) and rounded quartz clasts (up to 15 mm in diameter). Rounded disseminated pyrite is seen around the edges of the clasts and within a fine-grained matrix. Greenish discolouration of clasts as well as a greenish dark grey matrix. A thin carbon seam is seen at the base of the package.	Sharp/ Carbon Seam	Khaki-green in colour, gritty in texture with small under-developed footwall pebble bands.



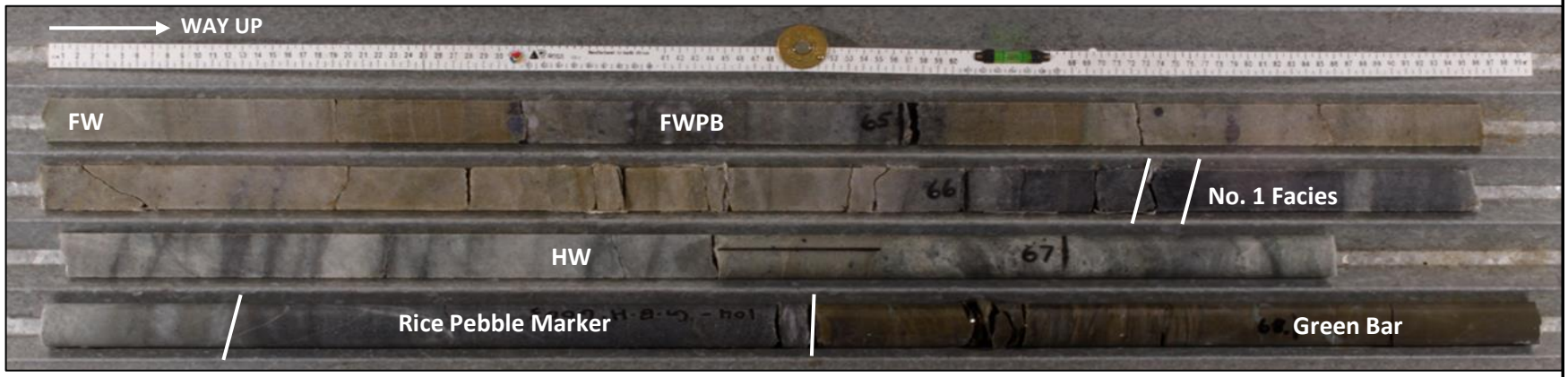
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 26 GBH 3845	Siliceous quartzite, medium-grained. Rounded disseminated pyrite is seen at random throughout the package. Small, subrounded, floating quartz clasts are also present. Quartz veining is noted within the hangingwall quartzite.	Sharp	The No. 3 Facies has a sharp contact with the footwall. The clasts are elongated and are a mixture of chert and milky quartz clasts (average 15 mm on the long axis). The elongated clasts are aligned to bedding. Rounded disseminated pyrite is dense within the reef band and is set within a dark grey matrix. Fly-speck carbon is present.	Sharp	Khaki-green gritty-textured argillaceous quartzite. Scattered chert and milky quartz clasts (average 1.5 cm in diameter) are also seen alongside darker grey banding aligned to bedding.



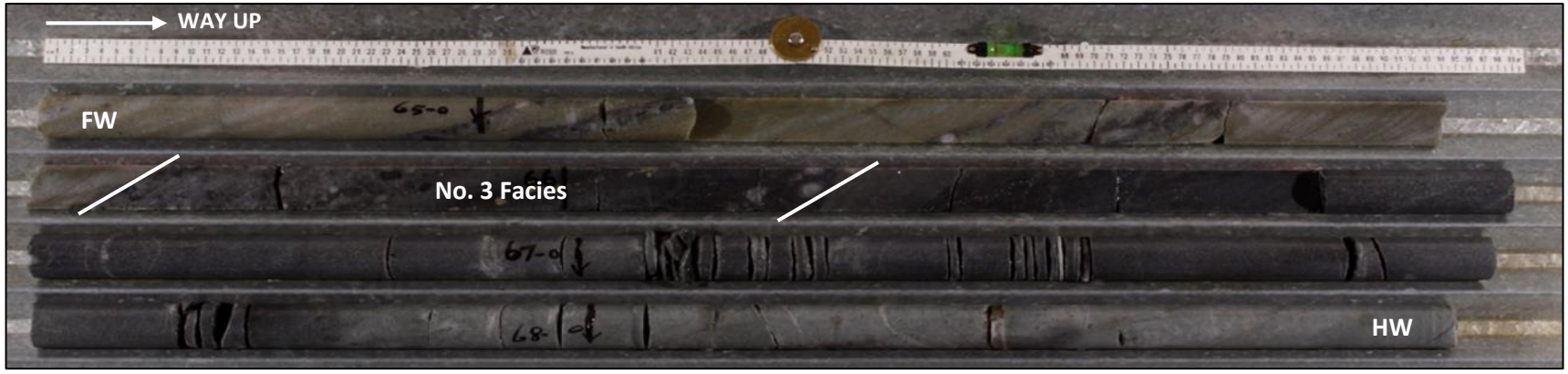
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 27 GBH 4003	Light to medium grey, medium-grained siliceous quartzite. Fine rounded pyrite along foresets is observed.	Gradual	Contacts with footwall and hangingwall are both gradual. The No. 1 Facies is well-developed with large elongated quartz clasts (average 20 mm on the long axis) set within a dark grey matrix. Disseminated rounded (2 mm diameter) pyrite is seen around the clasts. Fly-speck carbon is also present.	Gradual	Gritty to coarse-grained khaki-green argillaceous quartzite. Under-developed footwall pebble bands present. Very few sulphides seen. Small chert and smoky quartz clasts (<5 mm) scattered throughout the unit.



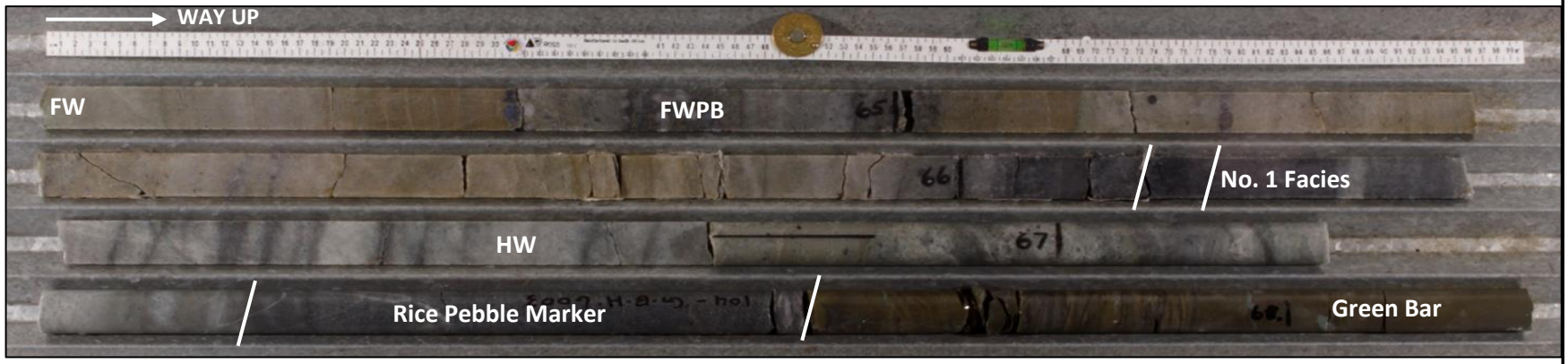
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 28 GBH 6000	Hangingwall is clean and siliceous (medium-grained). Bluish-grey in colour with rounded pyrite occuring along foresets. Chloritisation possibly present nearer to the reef.	Sharp	No. 1 Facies is under-developed with irregular clast shapes and sizes. Clasts are dominantly smoky quartz (>10 mm diameter). Rounded disseminated pyrite can be seen within a dark grey matrix.	Sharp	Khaki-green with gritty to coarse grains. Discolouration at footwall pebble band contacts (greenish alteration). Pebble bands are well-sorted with elongated quartz and chert clasts aligned to bedding. Smallest clast size 5 mm and largest 10 mm in diameter.

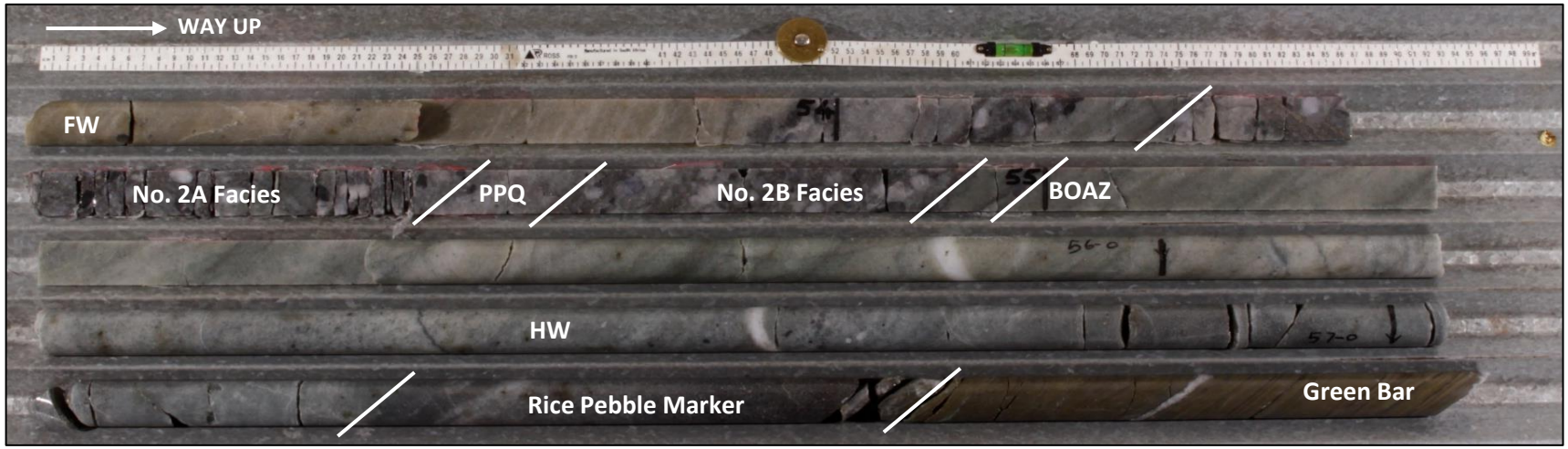


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 29 GBH 6001	Dark grey medium-grained quartzite. Rounded disseminated pyrite (1 - 2 mm diameter) scattered at random as well as clustered together.	Sharp	Poorly-developed No. 3 Facies with very few sulphides present within the matrix and around the smoky quartz clasts. The smoky quartz clasts are elongated (20 mm on the long axis) and are aligned to bedding, set within a dark grey matrix. Fly-speck carbon can be seen in the sample. Small chert clasts are present and they are subrounded to subangular in shape (10 mm diameter average).	Sharp	Gritty to coarse-grained argillaceous quartzite. Thin stringers of lighter quartzite (yellow) are seen within a greyish khaki-green quartzite. Small specks of chert also present (<2 mm).

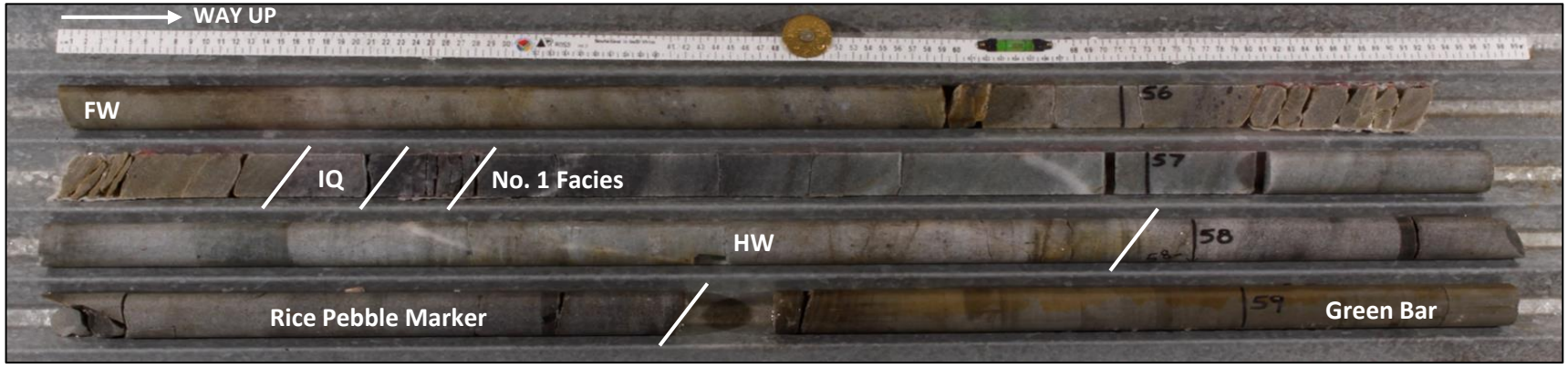


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 30 GBH 6003	Clean greyish-blue siliceous quartzite, fine to medium-grained. Thick dark grey bands aligned to bedding.	Gradual	No. 1 Facies is under-developed with very few clasts present, with the exception of the bottom of the package. Rounded disseminated pyrite is seen within the unit which is predominantly internal quartzite (siliceous, dark greyish-blue, medium to fine-grained). Clasts within the reef band include smoky quartz and chert, small in diameter (<10 mm) however they are well-rounded. Very small opalescent quartz clasts are also seen at the gradual contact between the footwall and reef.	Gradual	Gritty-textured khaki-brown argillaceous quartzite with very fine dark grey banding aligned to bedding.

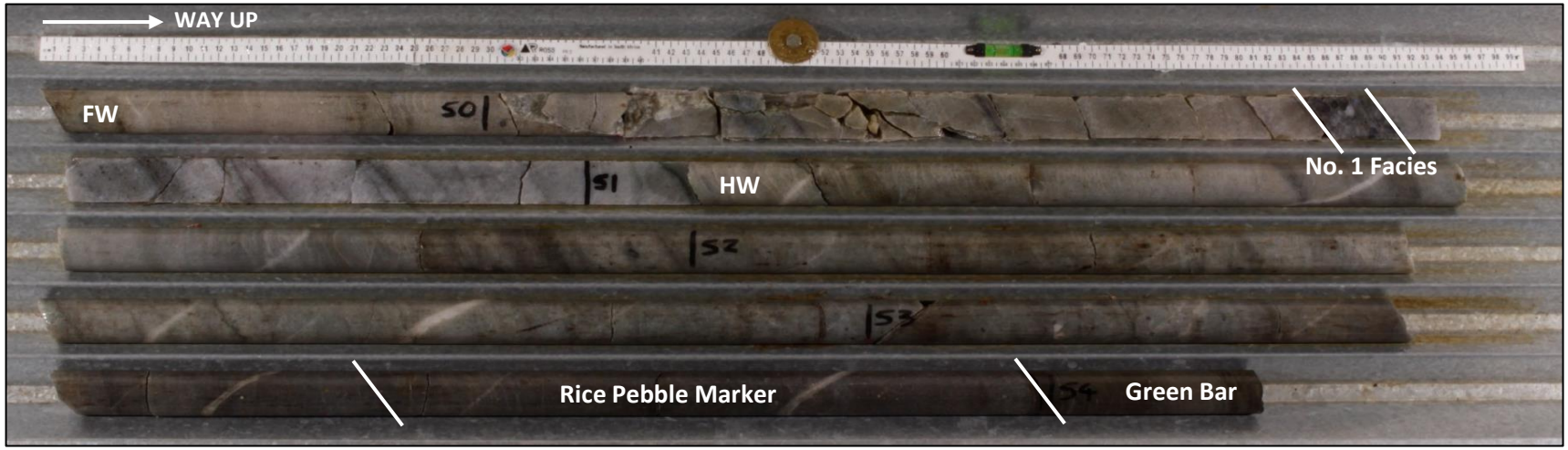


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 31 GBH 6004	Light greyish-blue siliceous quartzite, medium-grained with thin dark grey bands aligned to bedding.	Sharp	The CLR 2A and CLR 2B reef package is well-developed with large (>20 mm diameter) milky quartz clasts that are well-rounded and set within a sulphide-dominant matrix. The matrix is pyrite-rich, with disseminated as well as cubic pyrite grains present. The pyrite can be seen concentrated around the clast edges as well as in between the clasts, aligned to the bedding of the footwall and hangingwall. Small well-rounded chert clasts (<5 mm) can be seen throughout the package. Separating the two reef bands is medium to fine-grained, lightish grey, siliceous Pale Pebble Quartzite (PPQ). Immediately above the upper reef band is a Brown-Orange Argillaceous Zone (BOAZ). Greenish discolouration of the reef matrix and milky quartz clasts is seen.	Sharp	Gritty-textured khaki-brownish green, argillaceous quartzite. Well-developed footwall pebble bands present with large rounded to subrounded milky and smoky quartz clasts set within a greyish-brown matrix.
					

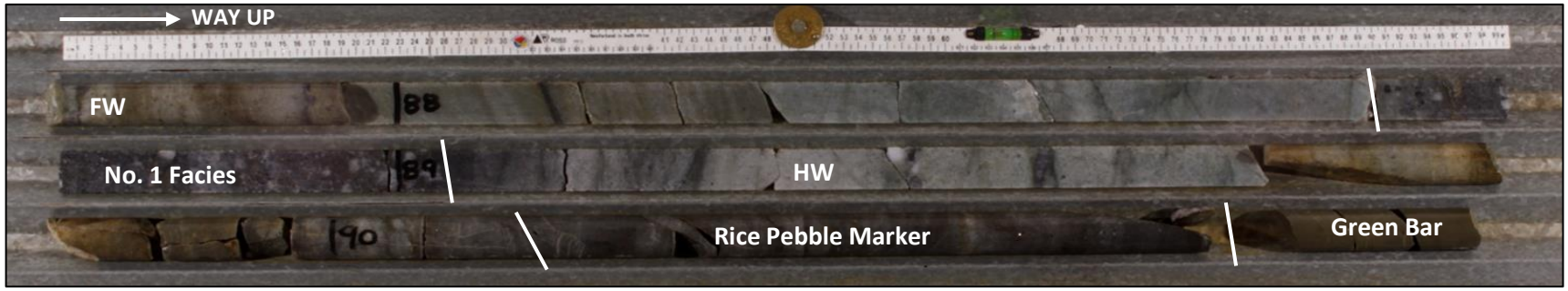
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 32 GBH 6014	Fine to medium-grained bluish-grey siliceous quartzite. Small chert specks seen throughout the hangingwall unit as well as dark grey banding aligned to bedding. Disseminated pyrite is seen alongside the dark grey banding.	Gradual	No. 1 Facies is under-developed however there is a thick carbon seam marking the footwall-reef contact (3 mm thick). The reef band has milky quartz clasts and is matrix-supported. Internal quartzite separates the reef from the footwall and is siliceous, fine-grained and light grey in colour.	Sharp/ Carbon Seam	Gritty-textured with very poorly developed footwall pebble bands. The footwall pebble bands have small chert clasts, irregular in shape, set within a medium-grained to gritty khaki-brownish green matrix.

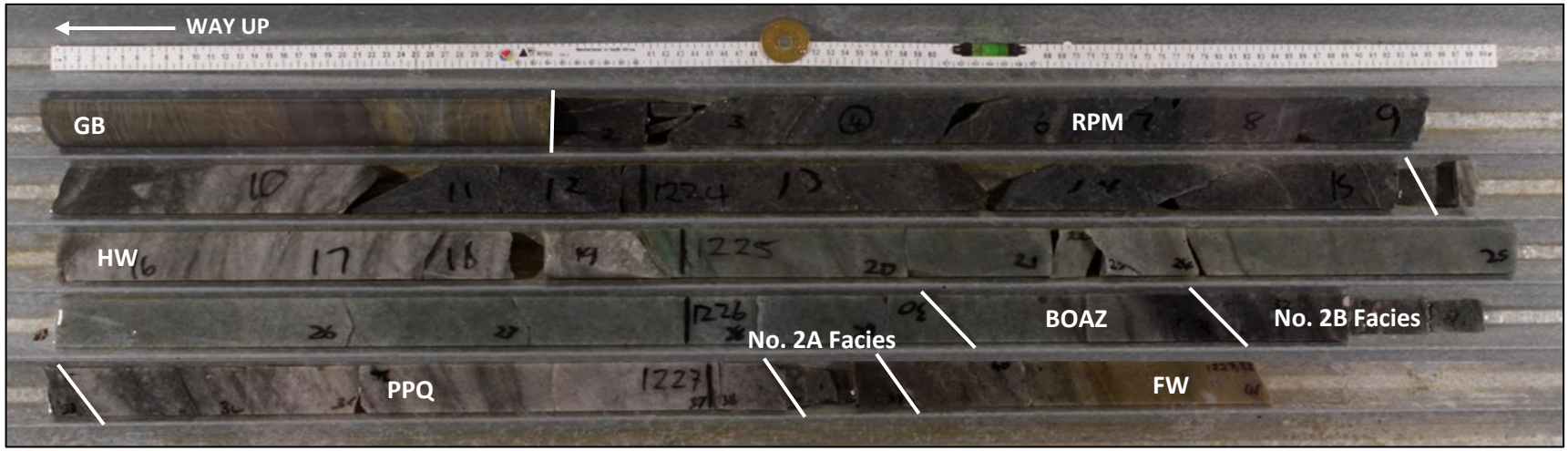


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 33 GBH 6028	Siliceous, light greyish-blue quartzite. Fine to-medium grained with thin dark grey banding aligned to bedding. Very fine chert specks are also seen.	Sharp	Thin, matrix-supported, moderately-developed No. 1 Facies with a sharp contact with the footwall. The clasts are subrounded to rounded and are a mixture of chert and milky quartz clasts (average 5 to15 mm). There are a few elongated clasts that are aligned to bedding. The matrix is medium-grained and dark greenish-grey in colour. Disseminated pyrite is seen within the matrix and concentrated around the clasts.	Sharp	Gritty-textured footwall, khaki-brown in colour, with very little to no sulphides present. Well-developed footwall pebble band is located directly below the reef (matrix colour changes from dark grey in the reef to khaki-brown in the pebble band).

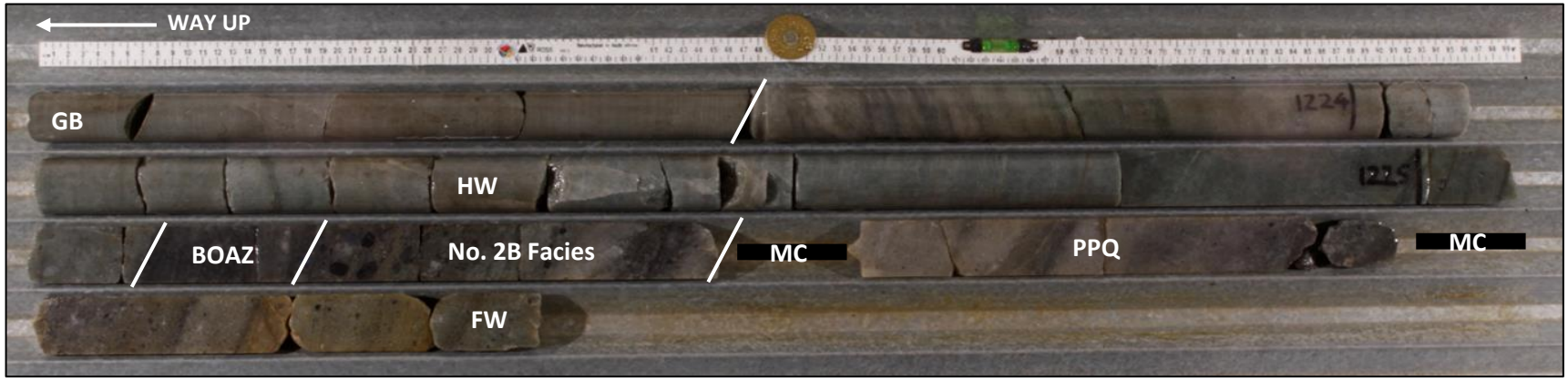


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 34 GBH 6036	Hangingwall is siliceous and clean. Medium to fine-grained with very fine dark grey banding present. Pyrite (rounded) is also present in foresets alongside the dark grey bands.	Gradual	The No. 1 Facies is dominantly matrix-supported with well-rounded clasts approximately 5 mm to 10 mm in diameter. Disseminated pyrite can be seen in the reef in the uppermost portion, and cubic and disseminated pyrite can be seen in the bottom portion.	Gradual	The footwall appears to be cleaner than usual, with a lighter khaki colour as well. The footwall is medium to fine-grained with small (<5 mm) floating chert clasts. Cubic chert clasts (10 mm) are also noted. Well developed footwall pebble band is seen further away from the No. 1 Facies package, and displays a dark green-grey matrix.

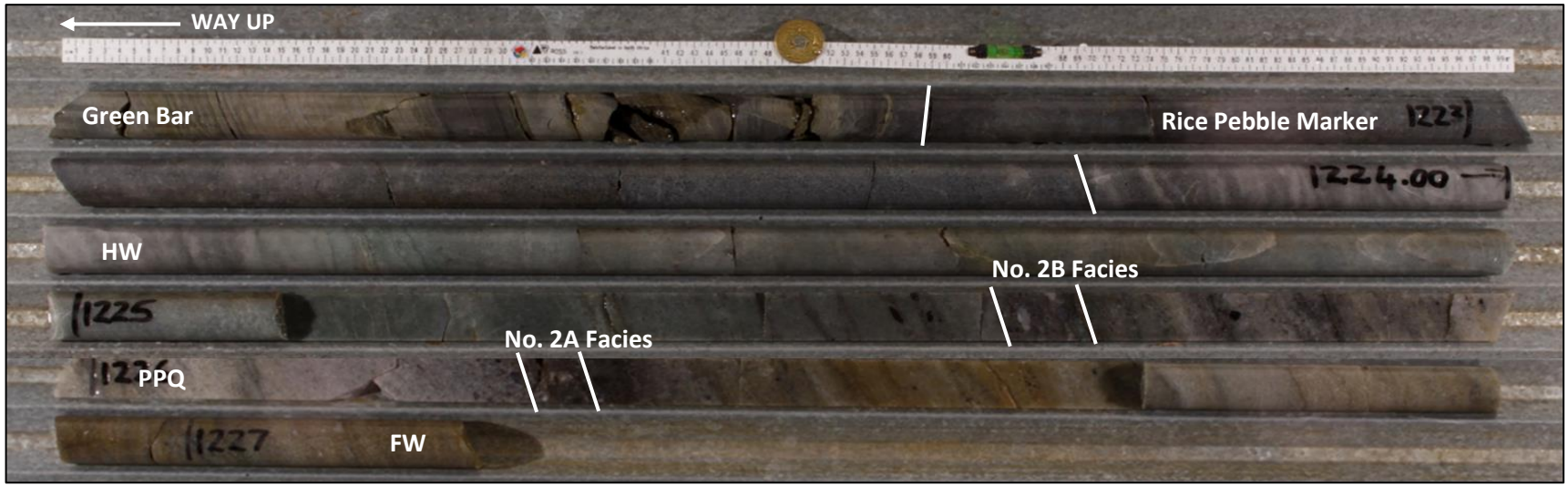


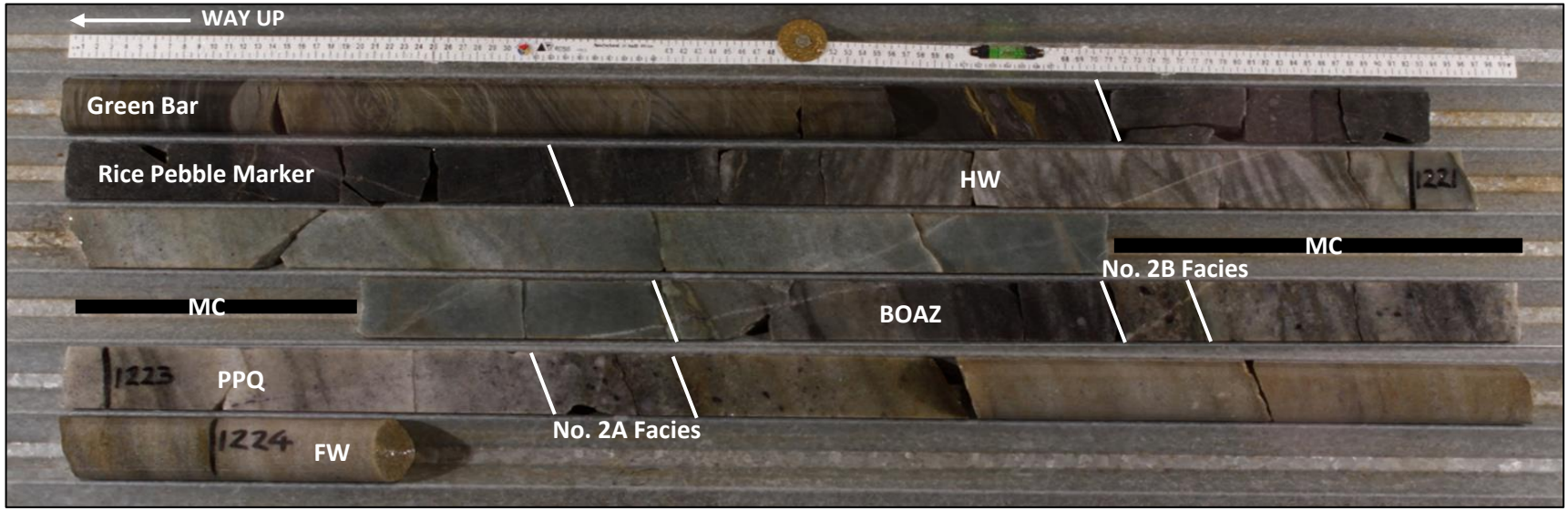
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 35 GBH 1000 D0	Light grey, siliceous, medium-grained quartzite. Very fine dark grey banding is visible and is aligned to bedding.	Sharp	The lower band (No. 2A Facies) is under-developed in comparison to the upper band. The Pale Pebbly Quartzite (PPQ) unit overlying the lower band is medium-grained and grey in colour with rounded pyrite along foresets. Small floating clasts of milky quartz are seen. The upper band (No. 2B Facies) has more quartz clasts than the lower band, with the clasts typically milky and smoky, and rounded to subrounded in shape. The matrix is dark grey, and is fine to medium-grained. The Brown-Orange Argillaceous Zone (BOAZ) overlying the No. 2B Facies is fine-grained and brownish-grey in colour further away from the No. 2B Facies and appears to be a pale grey colour nearer to the reef.	Gradual	The footwall quartzite is argillaceous, khaki-green in colour with a gritty texture. An under-developed footwall pebble band is observed a few centimetres below the reef contact with rounded to subrounded smoky quartz clasts ranging in size from 5 to 10 mm in diameter.
					

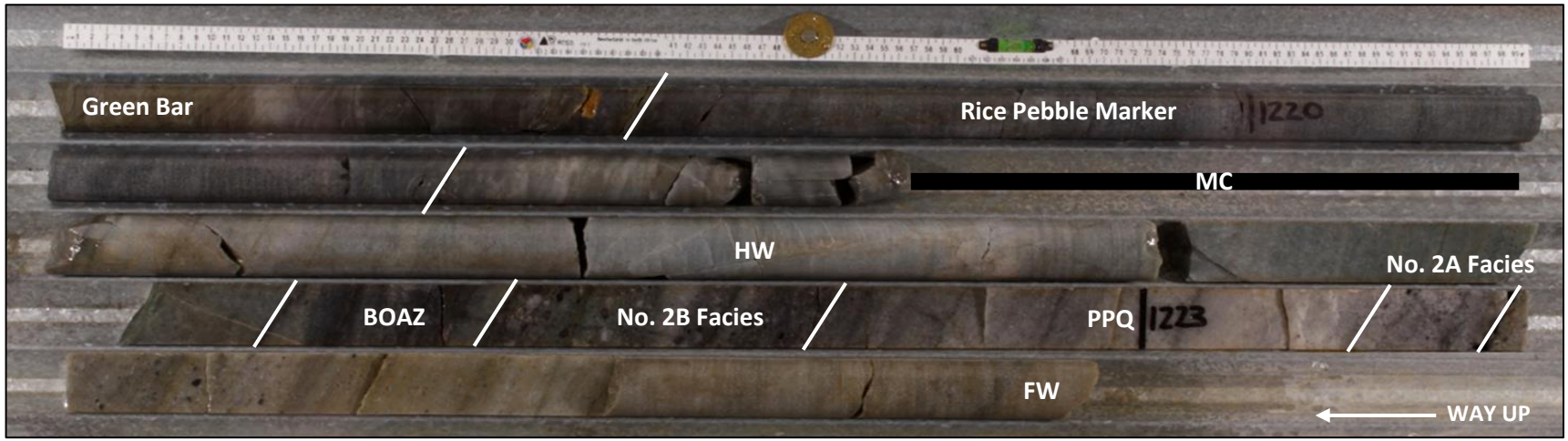
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 36 GBH 1000 D1	Siliceous quartzite, medium-grained. Very fine dark grey banding is visible and aligned to bedding. Rounded disseminated pyrite grains present nearer to the dark grey banding.	Sharp	The No. 2A Facies is absent from the borehole. The Pale Pebbly Quartzite (PPQ) unit is medium-grained and light grey with dark grey banding. Floating small subrounded milky quartz clasts are seen within the PPQ unit. The No. 2B Facies is matrix-supported, with very few smoky and milky quartz clasts. The clasts are elongated, and are aligned to bedding. The average diameter is 10 mm. Small (<5 mm) black chert clasts are present. Rounded disseminated pyrite is seen concentrated around the clast edges. Overlying the No. 2B Facies is a Brown-Orange Argillaceous Zone (BOAZ), that is fine-grained and brownish-grey to brownish-orange in colour.	Not present	The footwall quartzite is khaki-green in colour and argillaceous, with medium to gritty-grains. Scattered smoky quartz clasts present (pebble lag), and are rounded in shape (<5 mm in diameter).

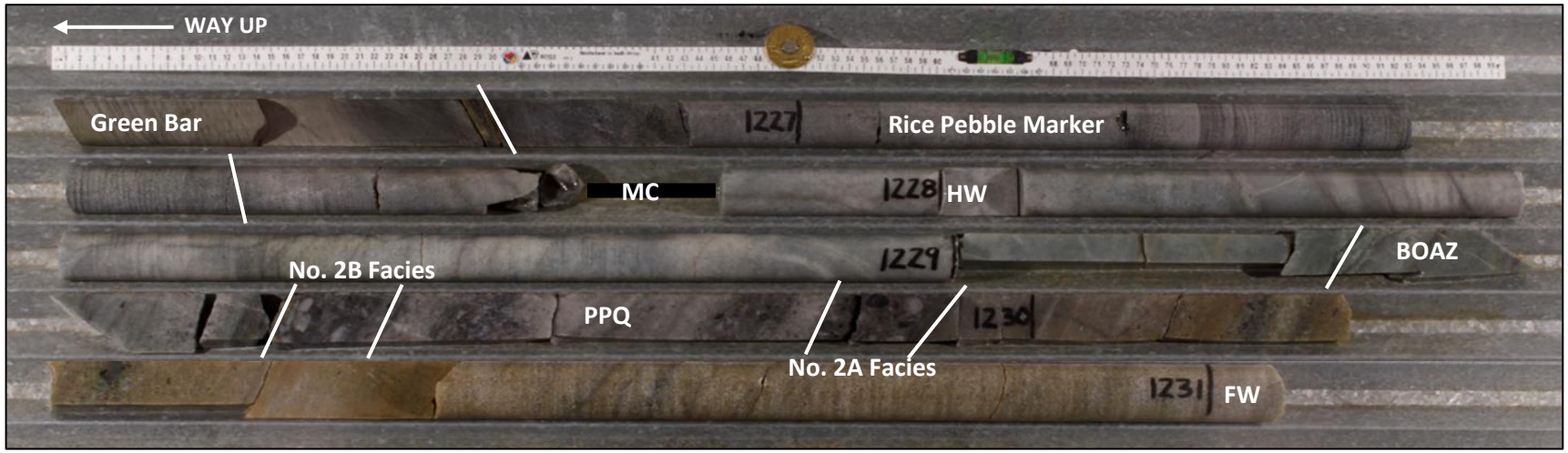


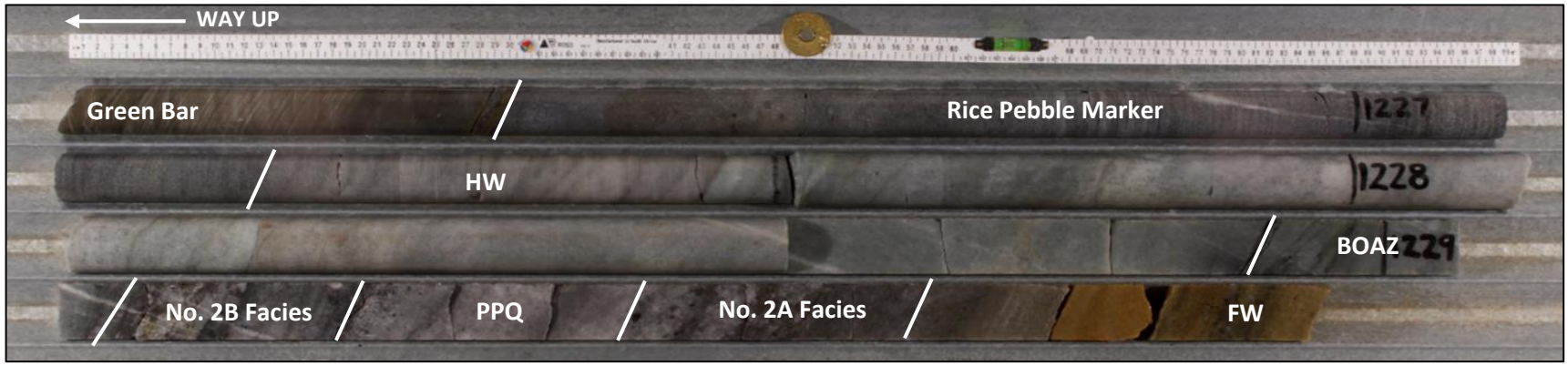
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 37 GBH 1000 D2	The hangingwall quartzite is siliceous, light grey with medium grains. Dark grey banding is visible, as well as rounded grains of disseminated pyrite.	Sharp	The No. 2A and No. 2B Facies are well-developed. The No. 2B Facies hosts larger clasts compared to the No. 2A Facies. Milky and smoky quartz clasts (ranging in size from <5 mm to 15 mm) are present in both bands and the matrix is dark grey and fine-grained. Between the two reef bands is Pale Pebbly Quartzite (PPQ), that is medium to fine-grained with small (<5 mm) floating chert and smoky quartz clasts. Pyrite (rounded) along foresets is seen in the PPQ.	Sharp	Argillaceous quartzite, medium to gritty-grained, khaki-green in colour. Small (<5 mm) smoky quartz and black chert clasts are scattered in the unit.

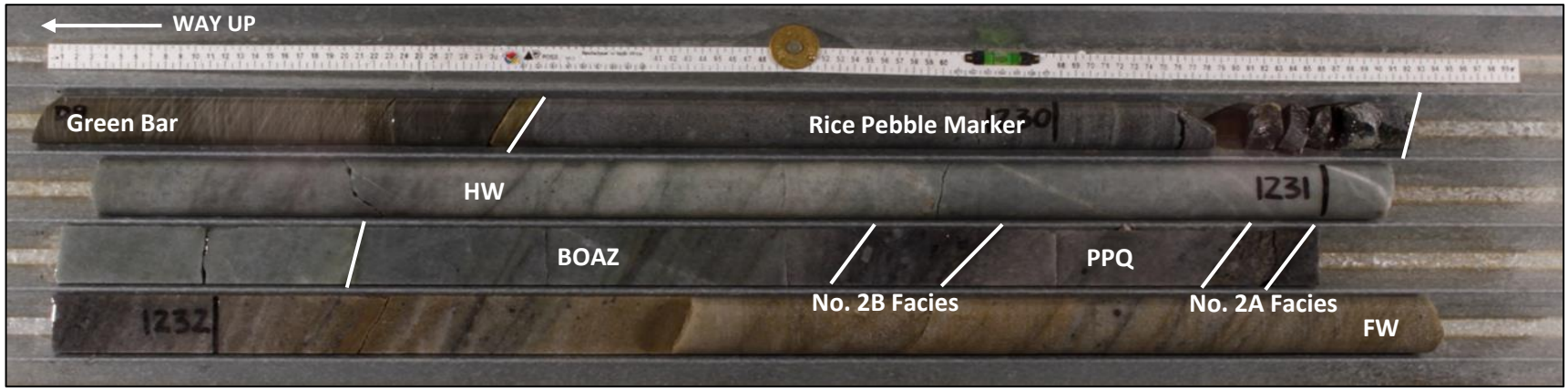


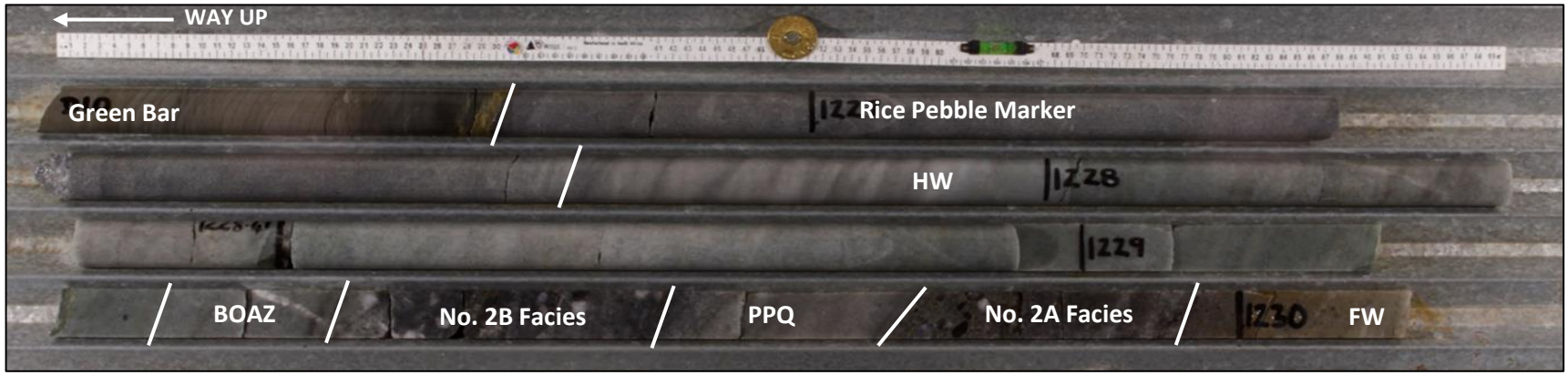
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**FW**
Sample 38 GBH 1000 D4	Medium-grained bluish-grey siliceous quartzite. Dark grey banding aligned to bedding. Rounded disseminated pyrite is seen alongside the dark grey banding. Missing core (MC) is noted within the hangingwall quartzite.	Sharp	The No. 2B Facies is well-developed, with the No. 2A Facies less developed. The No. 2B Facies is bottom-loaded with small (<5 mm) smoky and milky quartz as well as black chert clasts set within a dark grey fine-grained matrix. The No. 2A Facies has a light grey fine-grained matrix, and is matix-supported. Rounded to subrounded smoky and milky quartz clasts ranging from <5 - 8 mm are present. Rounded disseminated pyrite is seen around the edges of the clasts. Separating the two bands is Pale Pebbly Quartzite (PPQ), that is fine-grained with small floating clasts of chert and smoky quartz.	Sharp	Footwall unit is gritty-textured and khaki-green in colour. A pebble lag of small (<5 mm) smoky quartz and black chert clasts is seen below the contact of the reef.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 39 GBH 1000 D5	Siliceous, medium-grained, bluish-grey quartzite. Rounded disseminated pyrite is present. Missing core (MC) is noted within the hangingwall quartzite.	Sharp	The No. 2B Facies is well-developed and is matrix-supported. The clasts are typically small and range in size from <5 to 10 mm. Milky and smoky quartz as well as chert clasts are present. Disseminated pyrite is visible. The No. 2A Facies is less developed than the upper band, and has very few clasts. Chert and smoky quartz clasts (<5 mm) are seen at random within a light grey, fine-grained matrix. Separating the No. 2A and No. 2B Facies is Pale Pebbly Quartzite (PPQ), that is fine-grained and light grey in colour, with small (<5 mm) floating clasts of black chert and smoky quartz. Overlying the No. 2B Facies is a Brown-Orange Argillaceous Zone (BOAZ), that is fine-grained and brownish-grey to orange quartzite.	Sharp	Footwall quartzite is medium to gritty-grained, and khaki-green in colour. Small (<5 mm) and subrounded to rounded smoky quartz and chert clasts are seen in the portion closest to the reef band.
					

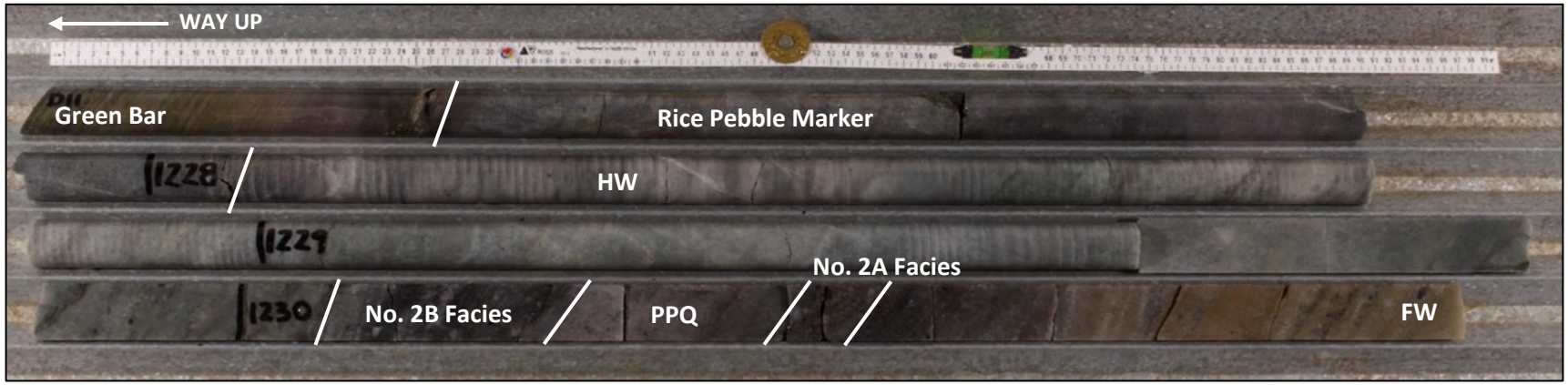
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 40 GBH 1000 D7	Light grey siliceous orthoquartzite, medium-grained. Very little disseminated pyrite is present. Missing core (MC) is noted within the hangingwall quartzite.	Sharp	The No. 2B and No. 2A Facies are well-developed. Both bands host rounded to subrounded milky and smoky quartz as well as chert clasts, ranging in size from <5 to 15 mm. The matrix is fine-grained, dark grey in the upper band (No. 2B Facies) and lighter grey in the lower band. Rounded disseminated pyrite is visible around the edges of the clasts. The Pale Pebbly Quartzite (PPQ) overlying the No. 2A Facies is medium to gritty-grained, and has elongated floating clasts of milky and smoky quartz, ranging from <5 mm up to 10 mm diameter. The Brown-Orange Argillaceous Zone (BOAZ) overlying the No. 2B Facies is greyish-brown and fine to medium-grained with floating clasts of chert and smoky quartz.	Sharp	Footwall quartzite is medium to gritty-grained, and khaki-green in colour. Small (<5 mm) and elongated smoky quartz and chert clasts are seen in an under-developed footwall pebble band below the reef.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 41 GBH 1000 D8	Siliceous, clean, light grey, medium-grained orthoquartzite. Rounded disseminated pyrite grains visible. Dark grey banding is seen however it is not prominent.	Sharp	The upper (No. 2B Facies) reef band is top-loaded, with altered milky quartz clasts set within a light grey, fine-grained matrix. A small amount of disseminated pyrite is seen in the upper reef band. The lower (No. 2A Facies) reef band is top-loaded, with very few milky and smoky quartz, and chert clasts. The clasts are set within a darker grey matrix with disseminated pyrite. The Pale Pebbly Quartzite (PPQ) unit is light grey, fine to medium-grained with small (<5 mm) clasts of smoky quartz and chert. The Brown-Orange Argillaceous Zone (BOAZ) is greyish-brown and fine-grained with quartz veining cutting the unit and stopping at the contact with the reef.	Sharp	Gritty-textured with poorly developed footwall pebble band below the reef. The footwall pebble band has small chert clasts, irregular in shape, set within a gritty khaki-brownish green matrix.
					

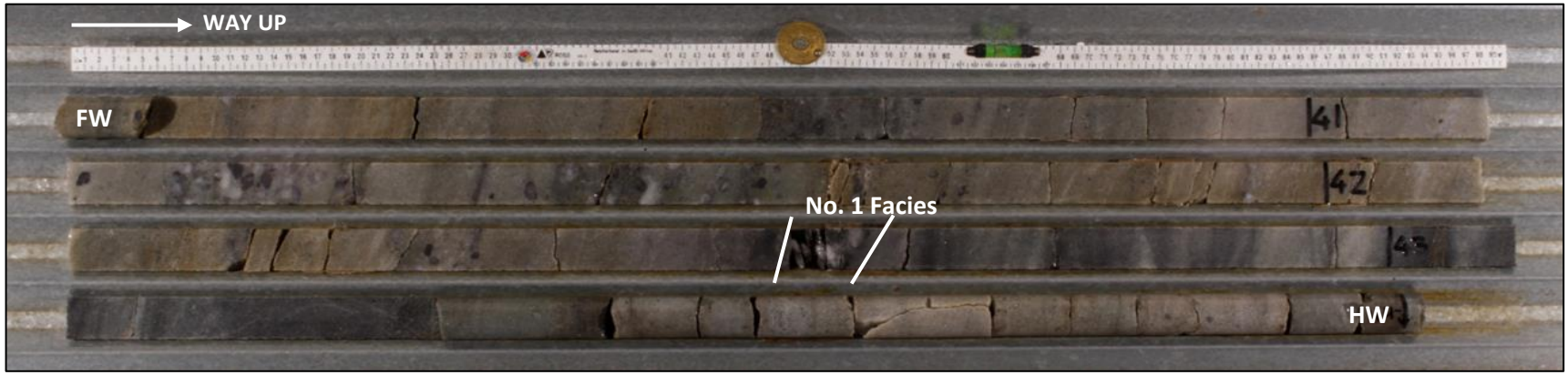
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 42 GBH 1000 D9	Hangingwall is light bluish-grey, medium-grained. Rounded disseminated pyrite grains and pyrite along foresets is visible.	Sharp	No. 2B Facies is well-developed with rounded to subrounded milky and smoky quartz, as well as black chert clasts set within a dark grey, fine-grained matrix. The No. 2A Facies is less developed than the No. 2B Facies, with a lighter grey matrix. A thin carbon seam is seen at the base of the No. 2A Facies. The Pale Pebbly Quartzite (PPQ) unit is a medium grey, with rounded to subrounded, very small (<3 mm) chert and smoky quartz clasts. Overlying the No. 2B Facies is a Brown-Orange Argillaceous Zone (BOAZ). This unit is light greyish-brown with dark grey banding aligned to bedding. Rounded disseminated pyrite is visible closer to the reef.	Sharp/ Carbon Seam	Khaki-green gritty-textured argillaceous quartzite. Floating, rounded smoky quartz and chert clasts are seen, and average at 5 mm in diameter.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 43 GBH 1000 D10	The hangingwall quartzite is siliceous, light grey with medium grains. Dark grey banding is visible, as well as disseminated pyrite and pyrite along foresets.	Sharp	The upper (No. 2B Facies) reef band is well-developed compared to the lower (No. 2A Facies) reef band, with a larger amount of clasts (milky and smoky quartz as well as chert) set within a dark grey, fine-grained matrix. The lower reef band is matrix-supported with very few milky and smoky quartz clasts. The clasts are rounded and are on average <5 mm in diameter. Disseminated pyrite is prominent in the lower reef band. The matrix is brownish-grey and fine-grained. The Pale Pebbly Quartzite (PPQ) is a medium to gritty-grained unit, light grey to dark grey (nearer the reef contacts). Very few floating clasts of smoky quartz and chert are seen.	Sharp	Argillaceous quartzite, medium to gritty-grained, khaki-green in colour.
					

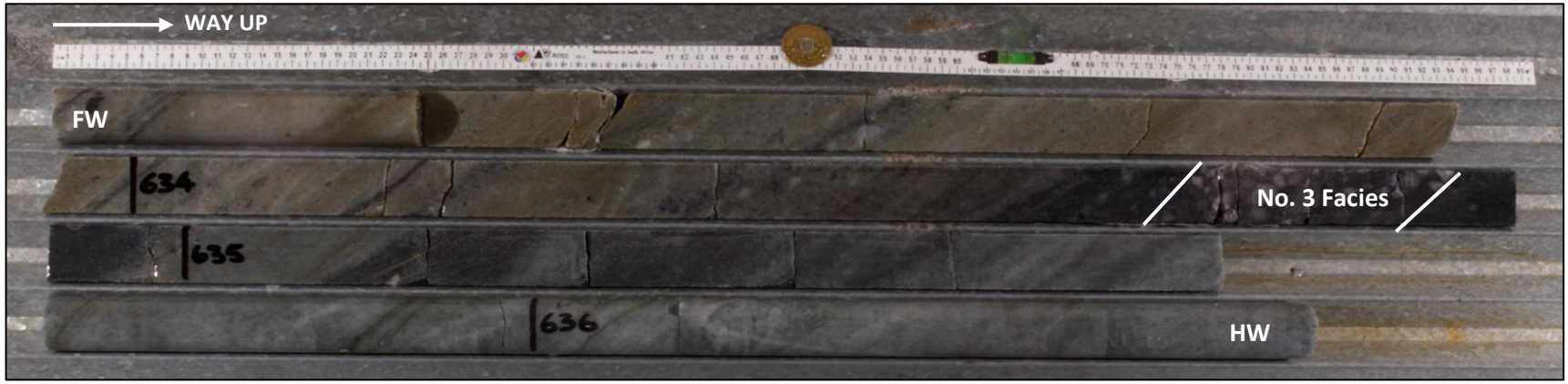
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 44 GBH 1000 D11	Hangingwall unit is a light bluish-grey, medium-grained, orthoquartzite. Minimal grey banding is seen.	Sharp	Both the No. 2B and No. 2A bands are matrix-supported, with very few clasts present. Rounded disseminated pyrite is seen within the matrix as well as concentrated around the clast edges. The matrix is dark grey and fine to medium-grained. Clasts are typically smoky and milky quartz as well as black chert clasts, ranging from <5 - 8 mm in diameter. The Pale Pebbly Quartzite (PPQ) unit is fine to medium-grained and light grey, with small angular to subrounded milky quartz and black chert clasts.	Gradual	The footwall is gritty-textured and khaki-brown to khaki-green in colour. Floating clasts of smoky quartz and black chert are seen in the footwall unit, and are well-rounded to subrounded in shape, averaging less than 5 mm in diameter. There is a discolouration in the footwall nearer to the No. 2A Facies, becoming a darker khaki-green with closer proximity to the reef. Fine rounded disseminated pyrite grains are seen within the footwall quartzite.



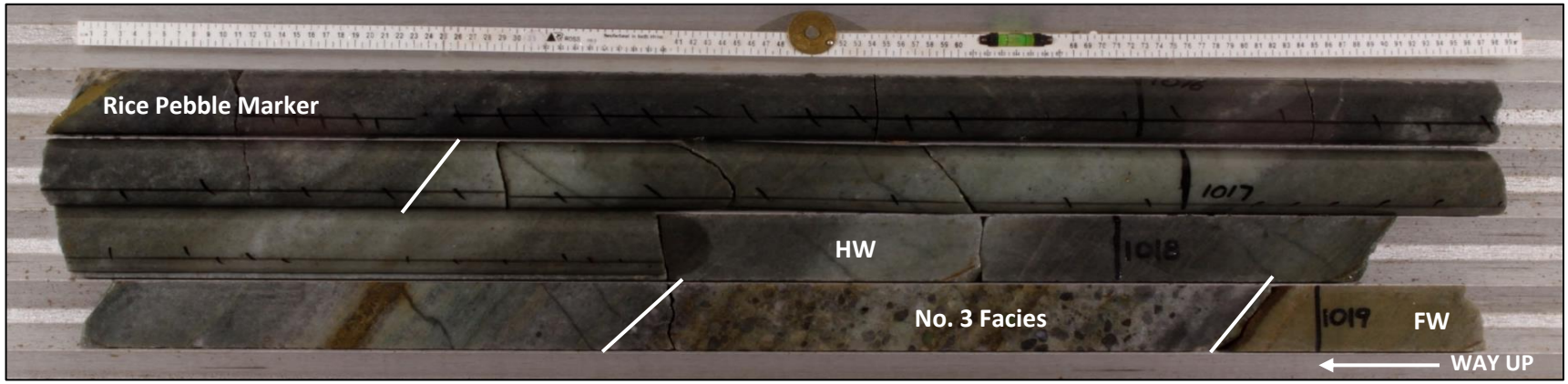
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 45 GBH 6008	The hangingwall unit is a clean, light grey, medium-grained orthoquartzite. Pyrite along foresets is visible within the hangingwall quartzite.	Broken	The No. 1 Facies is clast-supported and has a fine-grained dark grey matrix hosting rounded to subrounded milky and smoky quartz clasts (ranging from 5 mm to 20 mm diameter). Rounded disseminated pyrite is seen in the matrix.	Sharp	The footwall unit is a gritty, khaki-brown argillaceous quartzite. Footwall pebble bands are well-developed in the footwall unit. The clasts are smoky and milky quartz alongside chert clasts. The matrix is khaki-brown and medium to gritty-grained.



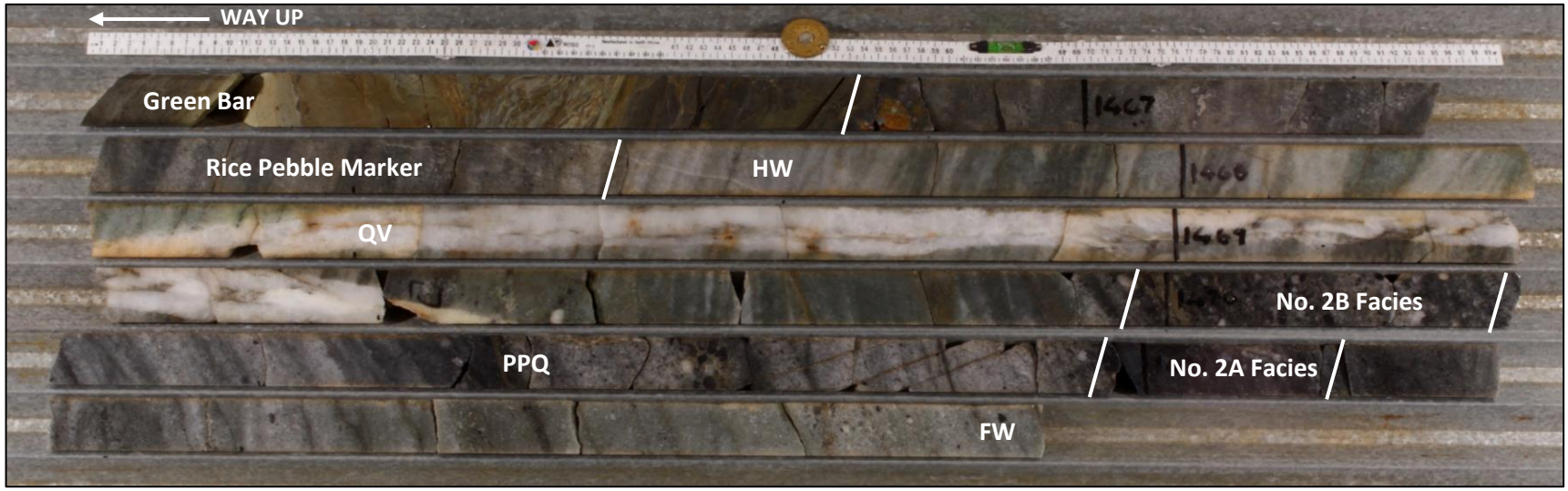
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 46 LIB 120 SW1 D0	Fine to medium-grained, clean, light grey siliceous orthoquartzite. Pyrite (rounded) along foresets is noted. Darker grey banding is seen aligned to bedding in the hangingwall unit.	Sharp	The No. 3 Facies is clast-supported with a fine-grained dark grey matrix hosting rounded to subrounded milky and smoky quartz, and chert clasts (ranging from 5 to 20 mm diameter). Disseminated pyrite is seen in the matrix and as well as concentrated around the clasts.	Sharp	Medium to gritty-grained, khaki-brown in colour. Pebble bands (with smoky quartz and black chert clasts) are seen (averaging in diameter <5 mm) in a fine to medium-grained khaki-brown matrix.



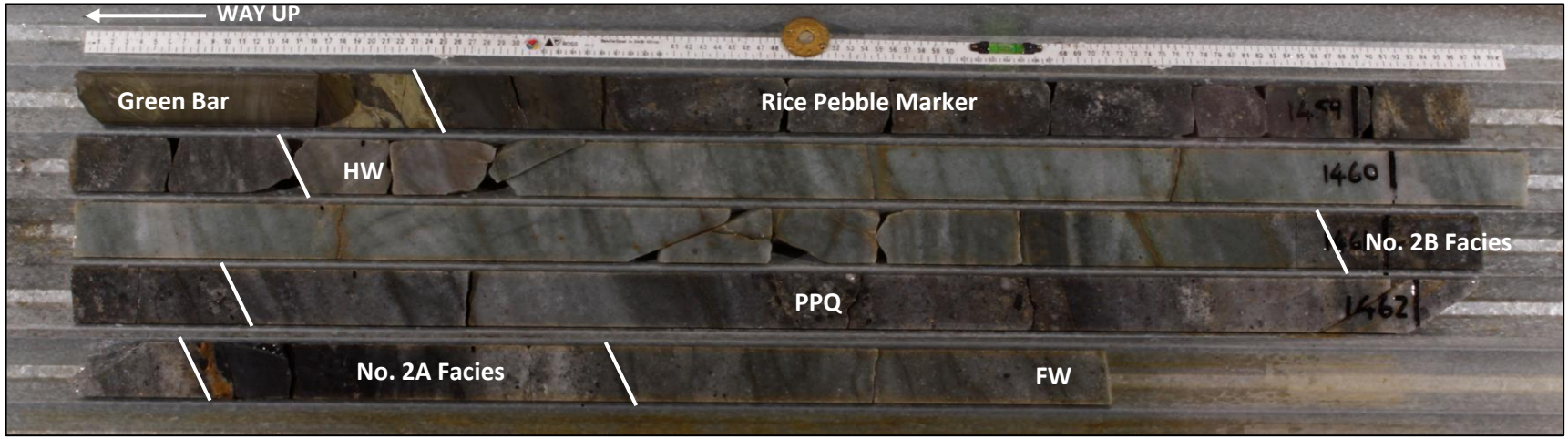
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 47 LVB 18 D0	Hangingwall unit is a light bluish-grey, fine-grained, orthoquartzite. Minimal grey banding is seen. Pyrite is seen in disseminated form and along foresets.	Sharp	The No. 3 Facies is matrix-supported, with a light grey fine-grained matrix hosting small (<5 mm to 10 mm) clasts. The clasts are typically milky and smoky quartz as well as black chert, and are rounded to subrounded. Disseminated pyrite is seen within the matrix.	Sharp	Medium to gritty-grained argillaceous quartzite, khaki-brown in colour.



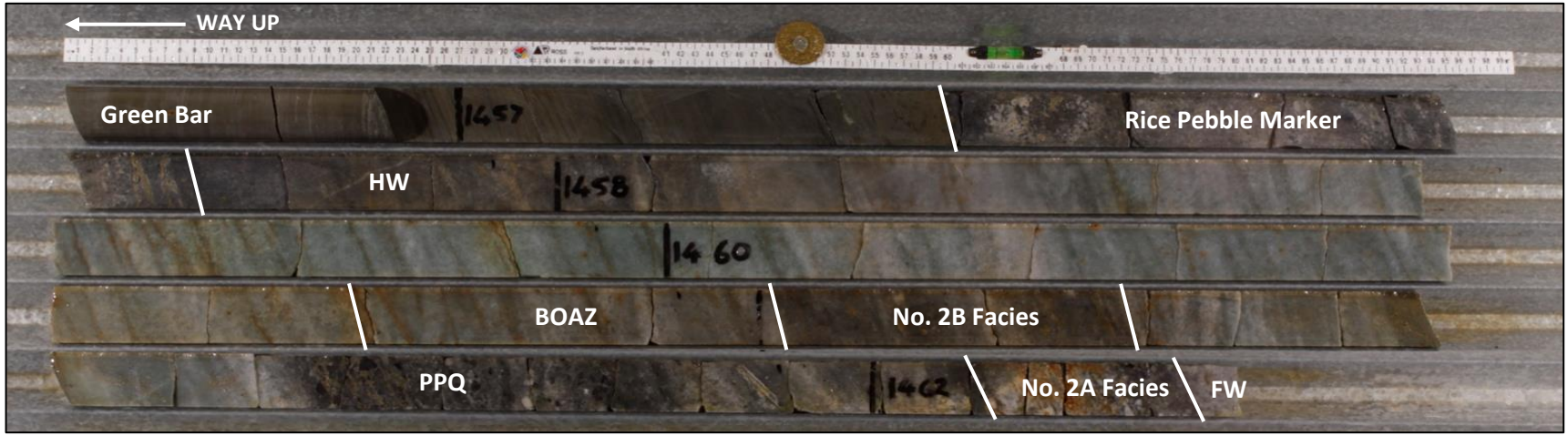
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 48 LVBI D2	Small hangingwall unit in borehole. Light grey, medium-grained, siliceous orthoquartzite. Dark grey banding is visible and is aligned to bedding. A large quartz vein (QV) is noted within the hangingwall quartzite.	Sharp	The upper (No. 2B Facies) band is more developed than the lower (No. 2A Facies) band. Both bands are matrix-supported with a fine-grained dark grey matrix. Fewer clasts are seen in the lower band. Clasts (rounded to subrounded in shape) visible in the upper band include milky and smoky quartz, as well as black chert clasts. Rounded disseminated pyrite is seen within the matrix.	Gradual	The footwall unit is a gritty-textured greyish-brown colour with a pebble lag of rounded to subrounded smoky quartz and black chert clasts, averaging <5 mm in diameter.

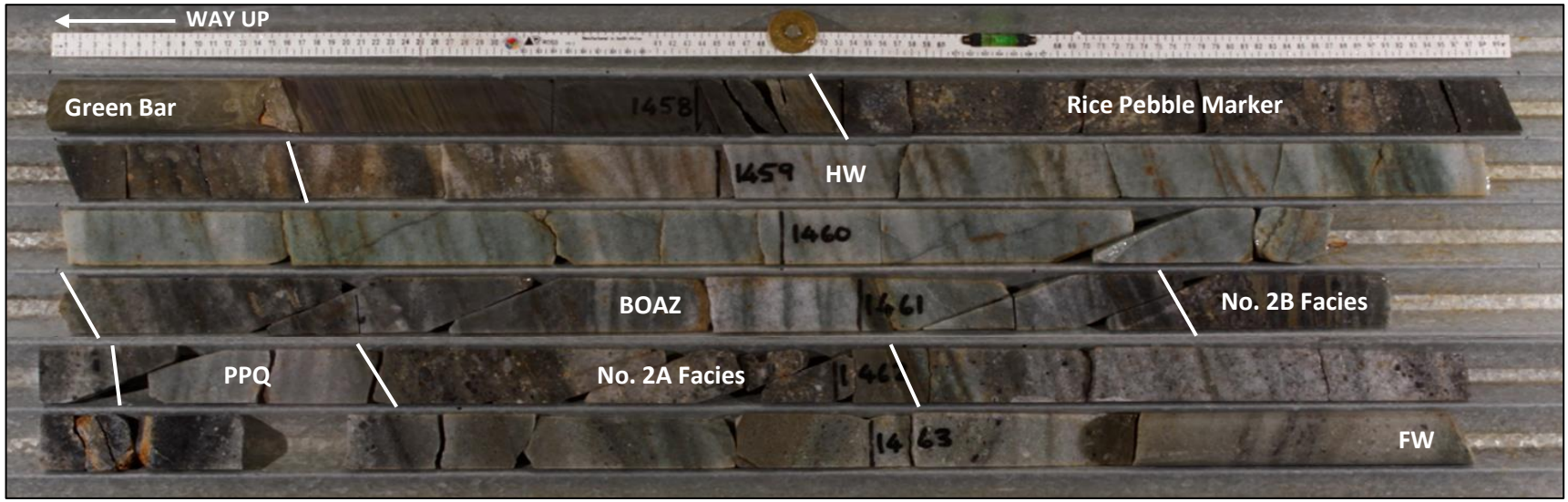


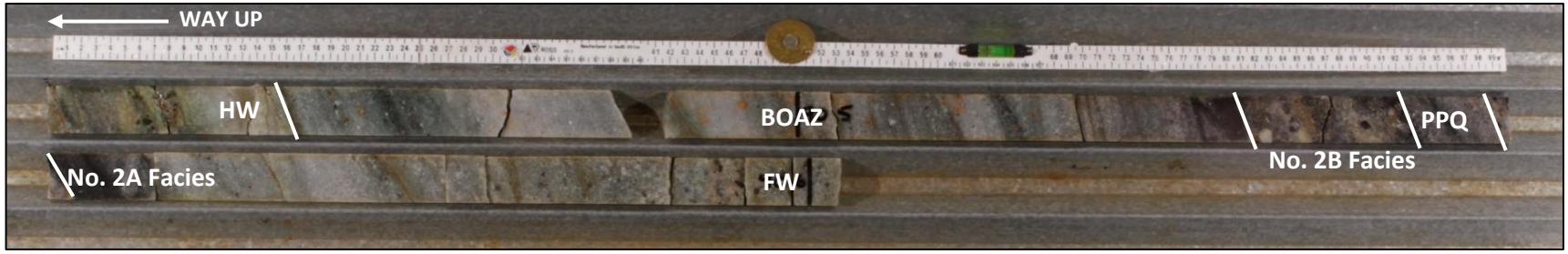
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 49 LVBI D5	The hangingwall unit is a clean bluish-grey siliceous orthoquartzite. One floating clast is present. The clast is subrounded and elongated, <5 mm in diameter, and is smoky quartz.	Sharp	The upper (No. 2B Facies) band is more developed than the lower (No. 2A Facies) band. Both bands are matrix-supported with a fine-grained dark grey matrix. Fewer clasts are seen in the lower band. Clasts (rounded to subrounded in shape) visible in the upper band include smoky and milky quartz as well as chert. Disseminated pyrite is visible within the matrix, as well as concentrated around the edges of a few of the clasts.	Sharp	Medium to gritty-grained khaki-brown argillaceous quartzite. Floating clasts of chert and smoky quartz are visible, and are well-rounded and are less than <5 mm in diameter.



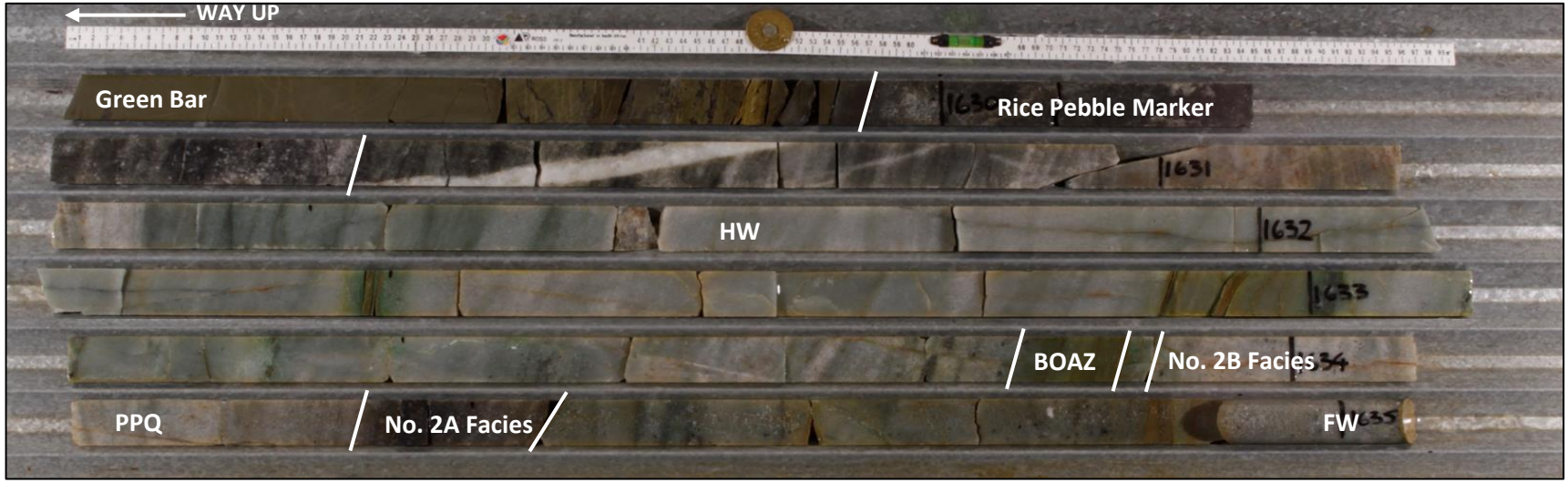
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 50 LVBI D7	Medium to dark grey, medium-grained, light grey orthoquartzite. Very little disseminated pyrite is present.	Sharp	The upper (No. 2B Facies) band is less developed than the lower (No. 2A Facies) band. Both reef bands are matrix supported, with a dark grey fine-grained matrix. Very small clasts are seen (<2 mm) up to 5 mm, and are well-rounded to rounded in shape. Chert, milky quartz as well as smoky quartz clasts are set within the matrix. Disseminated pyrite is visible within the matrix. Between the No. 2B and No. 2A Facies is Pale Pebbly Quartzite (PPQ), with angular to subrounded smoky and milky quartz clasts set within a dark grey matrix. Overlying the No. 2B Facies is a Brown-Orange Argillaceous Zone (BOAZ), that is fine to medium-grained semi-siliceous quartzite.	Sharp	The footwall unit is medium to gritty-grained, and a light shade of khaki-brown. Floating clasts are seen within the unit, typically milky quartz and chert clasts.



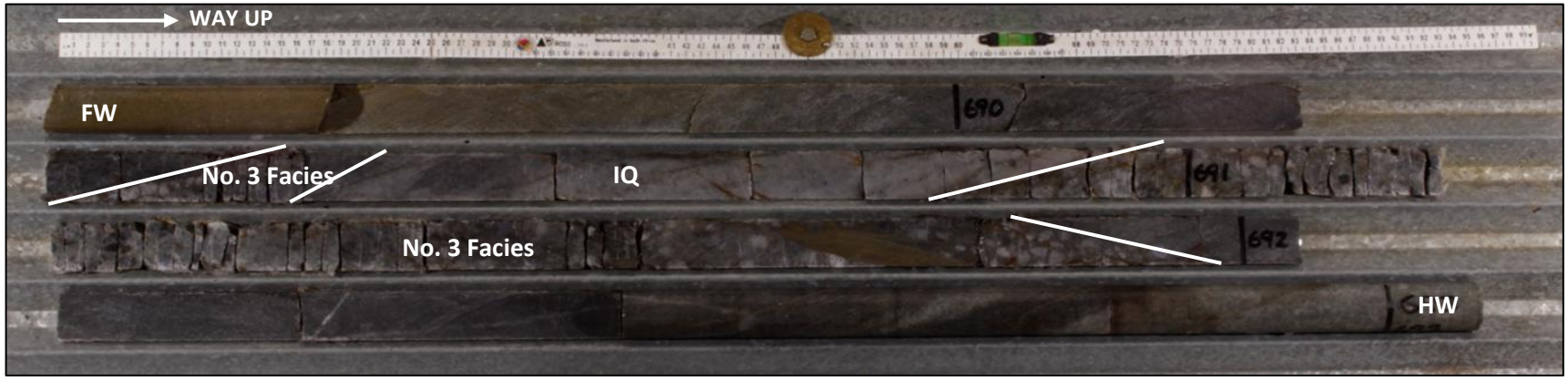
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 51 LVBI D10	Light grey, siliceous, medium-grained quartzite. Very fine dark grey banding is visible and is aligned to bedding. Disseminated pyrite as well as rounded pyrite grains along foresets are visible.	Sharp	Both the No. 2B and No. 2A Facies are matrix-supported, with very small clasts present. Disseminated pyrite is seen within the matrix as well as concentrated around the clast edges. Clasts are typically smoky and milky quartz, as well as black chert. Clasts range in size from <2 to 10 mm and are set within a dark grey, fine to medium-grained matrix. Volcanoclasts are visible in the No. 2A Facies, and are angular to subrounded. Pale Pebbly Quartzite (PPQ) lies between the No. 2A and No. 2B Facies. A Brown-Orange Argillaceous Zone (BOAZ) overlies the No. 2B Facies and is more of a grey-orange colour than what is typically seen. A few floating clasts are also present.	Sharp	Gritty textured footwall unit nearer to the reef contact, becoming medium-grained with proximity from the reef. Floating clasts are present, and are <2 mm on average. Typically the clasts are smoky quartz and chert. Disseminated pyrite is seen in the unit and appear in clusters.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 52 LVBK D3	The hangingwall quartzite is medium-grained, light grey and siliceous. Dark grey banding is present and is aligned to bedding. Disseminated pyrite is seen, as are rounded pyrite grains along foresets.	Sharp	The upper (No. 2B Facies) band is more developed than the lower (No. 2A Facies) band. The No. 2A Facies is thin in this borehole intersection. Both bands are matrix-supported with a fine-grained dark grey matrix. Clasts seen within the reef bands include black chert, as well as milky and smoky quartz. The largest clast within the reef package is 10 mm. The clasts are typically subrounded. Disseminated pyrite is visible within the matrix. Overlying the No. 2B Facies is a Brown-Orange Argillaceous Zone (BOAZ), which is fine to medium-grained quartzite with very small (<2 mm) floating clasts of chert and smoky quartz.	Sharp	The footwall quartzite is gritty to medium-grained, with small floating chert and smoky quartz clasts. The clasts are small (<5 mm) and are rounded to subrounded. Disseminated (rounded) pyrite occurs along foresets.
					

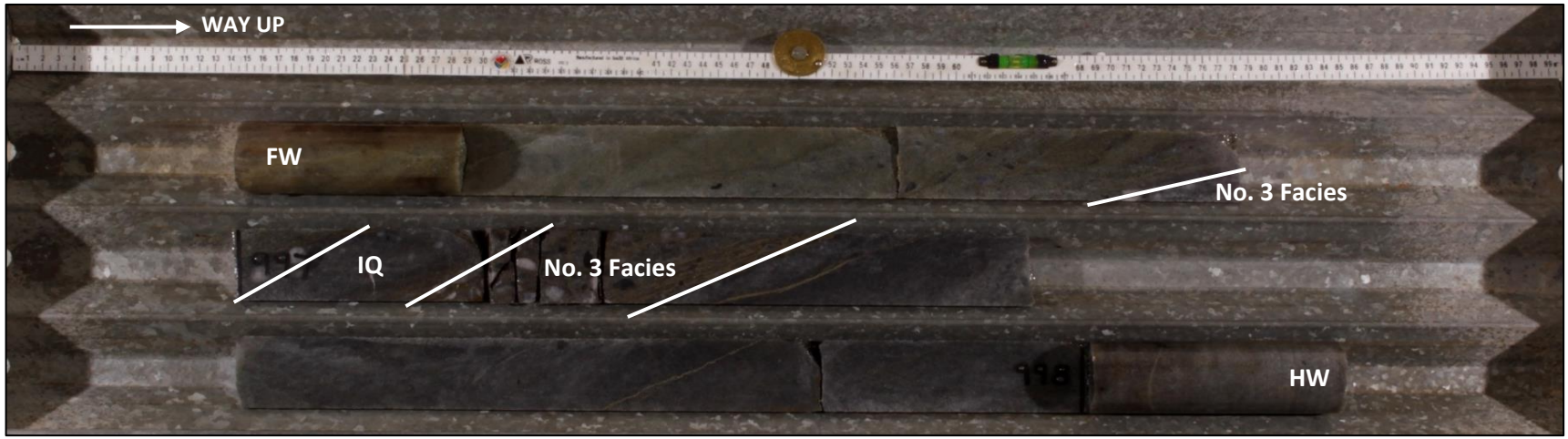
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 53 LVBL D2	The hangingwall quartzite is medium-grained, light grey and siliceous. Dark grey banding is present and is aligned to bedding. Disseminated pyrite is seen, as are rounded pyrite grains along foresets. There is a greenish discolouration of the hangingwall quartzite immediately surrounding the pyrite foresets.	Sharp	The No. 2A Facies is matrix-supported with very few clasts present. The Pale Pebbly Quartzite (PPQ) is a pale grey, fine to medium-grained quartzite with a few floating clasts of chert. The No. 2B Facies is very poorly developed and displays a greenish discolouration throughout. No clasts are present however disseminated rounded pyrite is visible. Overlying the No. 2B Facies is a Brown-Orange Argillaceous Zone (BOAZ), which has greenish alteration, as well as rounded pyrite along foresets. The greenish alteration is seen to be immediately on the edges of the pyrite foresets. The internal quartzite unit overlies the BOAZ, and is greenish-grey in colour. Small floating chert clasts are seen at random.	Sharp	The footwall is gritty-textured and khaki-brown to khaki-green in colour. Floating clasts of smoky quartz and black chert are seen in the footwall unit, and are well-rounded to subrounded in shape, averaging less than 5 mm in diameter.



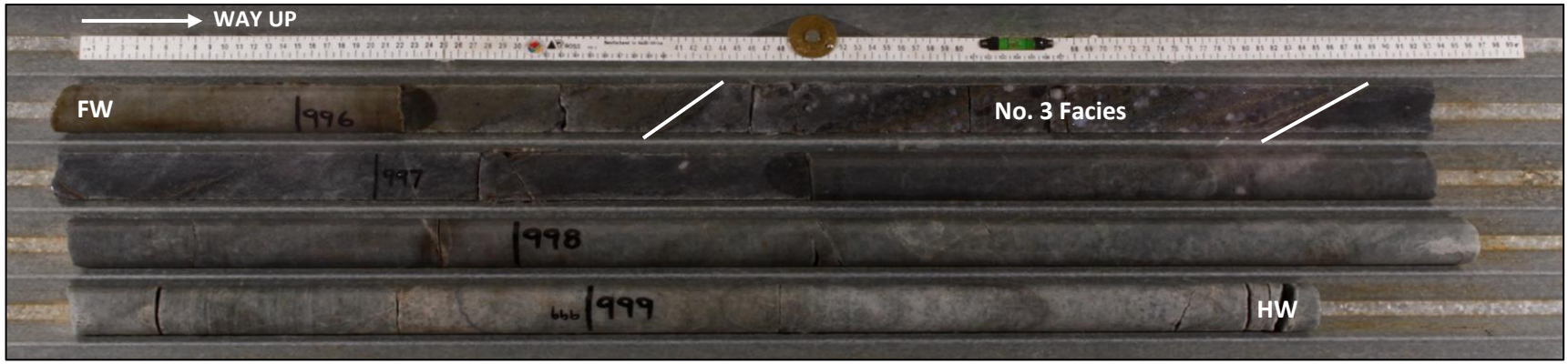
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 54 MPO LIB 2 D2	The hangingwall quartzite is a light grey, medium-grained, clean, orthoquartzite. Small grains of disseminated pyrite are visible.	Sharp	The No. 3 Facies is clast-supported, with a dark grey fine-grained matrix hosting small (<5 to 10 mm) clasts. The clasts are typically milky and smoky quartz as well as black chert, and are rounded to subrounded. Disseminated pyrite is seen within the matrix and concentrated around the clast edges. Internal quartzite separates the upper and the lower bands of the CLR 3 package, as well as overlies the CLR 3 upper reef band. The internal quartzite (IQ) is a dark grey, fine-grained quartzite. Disseminated pyrite is seen within the internal quartzite unit.	Sharp	The footwall unit is khaki-brown becoming dark grey nearer to the reef contact. The quartzite is gritty to medium-grained.

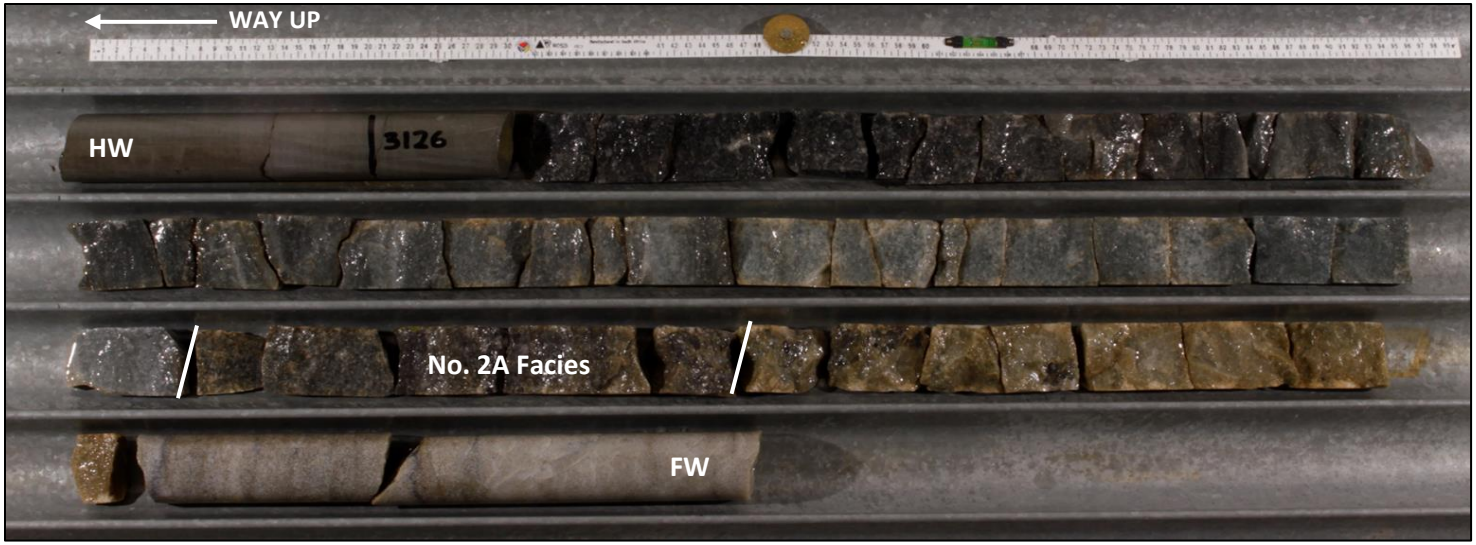


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 55 MPO LIB 3 D2	Dark grey orthoquartzite, medium-grained, disseminated pyrite present.	Sharp	The No. 3 Facies is under-developed within this intersection. Both bands are matrix-supported, with rounded to subrounded milky and smoky quartz as well as chert clasts. The clasts range from 5 to 7 mm in diameter. Disseminated rounded pyrite and pyrite (rounded) along foresets is seen throughout the upper band and continue into the internal quartzite (IQ) unit. The internal quartzite is a light grey and is fine to medium-grained. There are floating smoky quartz clasts within the internal quartzite unit.	Sharp	The footwall is gritty-textured and khaki-brown to khaki-green in colour. Floating clasts of smoky quartz and black chert are seen in the footwall unit, and are well-rounded to subrounded in shape, averaging less than 5 mm in diameter.

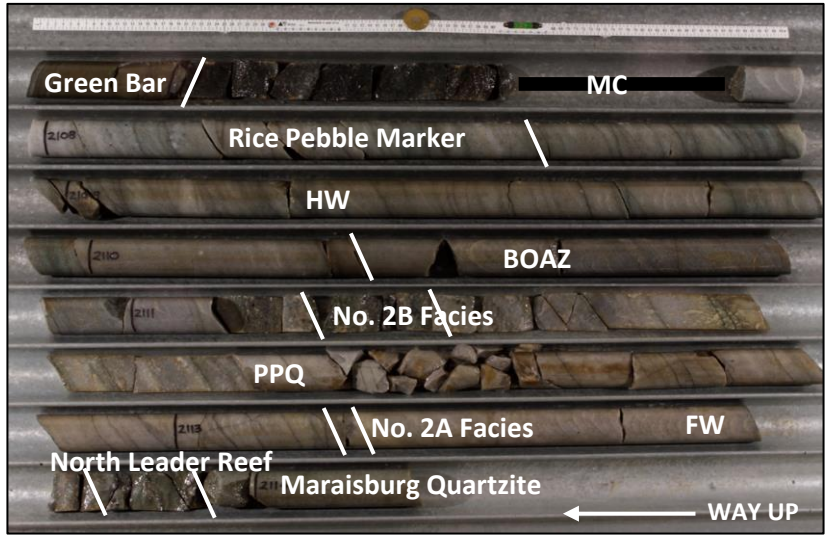


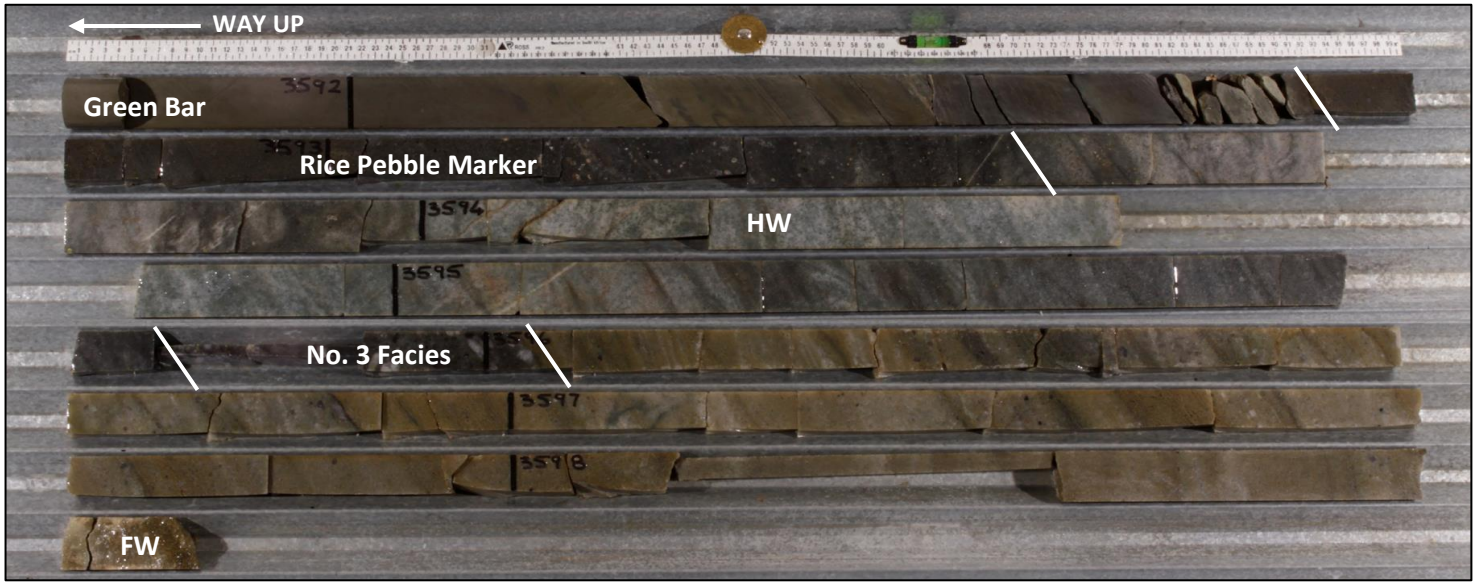
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 56 MPO LIB 3 D3	Dark to light grey, medium-grained, siliceous orthoquartzite with disseminated pyrite and rounded pyrite along foresets.	Sharp	The No. 3 Facies is well-developed and is matrix-supported. Clasts are typically milky and smoky quartz, and are rounded to subrounded. Sizes range from <5 to 10 mm in diameter. Pyrite (rounded and cubic) is present in clusters around clasts as well as along foresets.	Sharp	Gritty-textured khaki-brownish green argillaceous quartzite. Floating clasts (<5 mm) of chert and smoky quartz are seen.

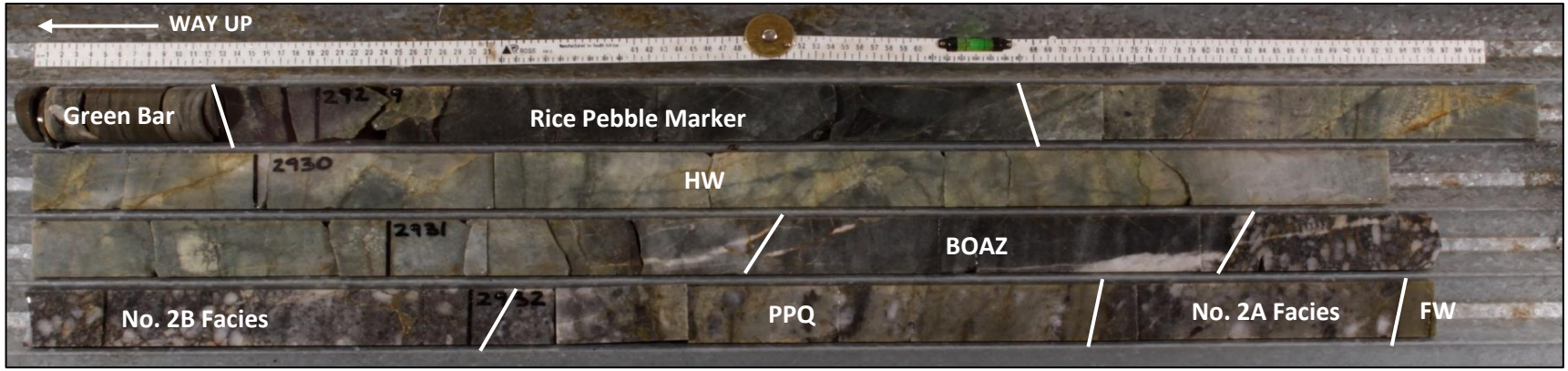


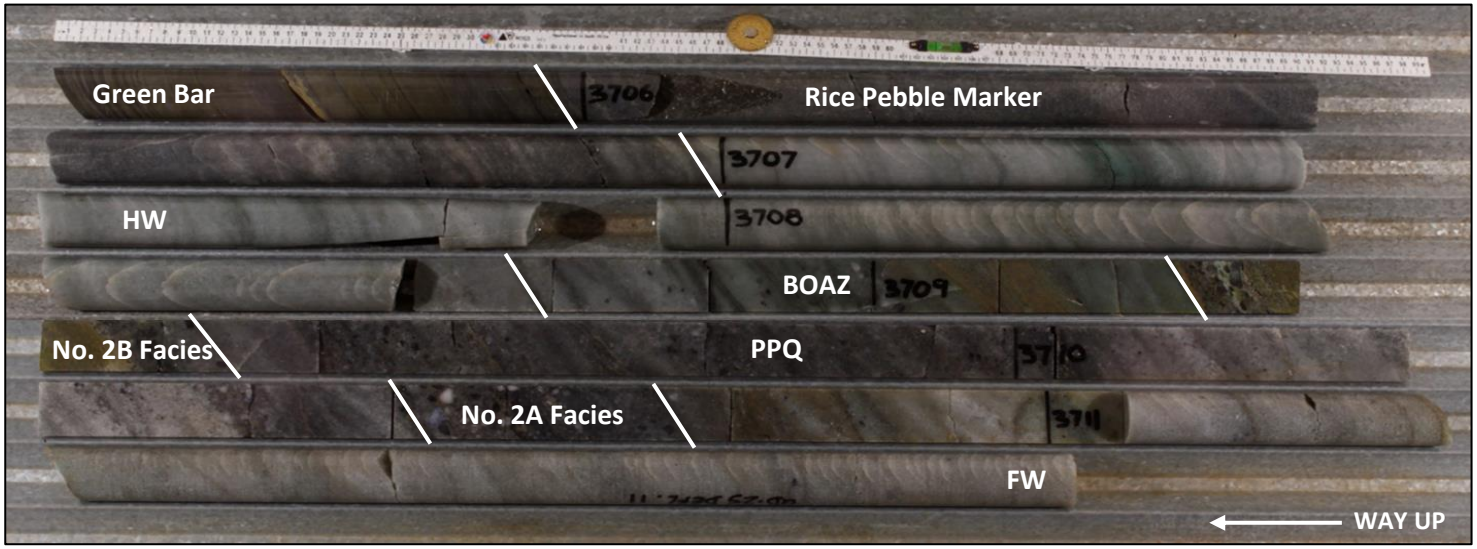
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 57 UD 2 D0	Fine to medium-grained, clean, medium to dark grey siliceous orthoquartzite. Disseminated pyrite is visible.	Broken	The No. 2A Facies is matrix-supported. The matrix is dark grey and fine-grained. Disseminated pyrite is seen within the matrix. Milky and smoky quartz clasts ranging in size from <5 to 10 mm are set within the matrix however there are very few.	Broken	Khaki-brown, medium-grained to gritty argillaceous quartzite.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 58 UD 2 D2	Light grey, fine to medium-grained, clean, siliceous orthoquartzite. Dark grey banding is present, and is aligned to bedding. Greenish discolouration is seen at 1 m above the reef band, suggesting alteration of the hangingwall unit (possibly chloritisation).	Broken	The No. 2A Facies is matrix-supported with very few smoky and milky quartz clasts present, ranging from <5 to 10 mm. The matrix varies from a dark grey nearer to the bottom and top contacts of the reef, becoming a lighter grey in the middle portion of the reef. Disseminated pyrite is visible along very fine dark grey bands present within the reef.	Broken	Footwall unit is gritty-textured and khaki-green in colour. Floating clasts of small (<5 mm) smoky quartz and black chert clasts are visible.
					

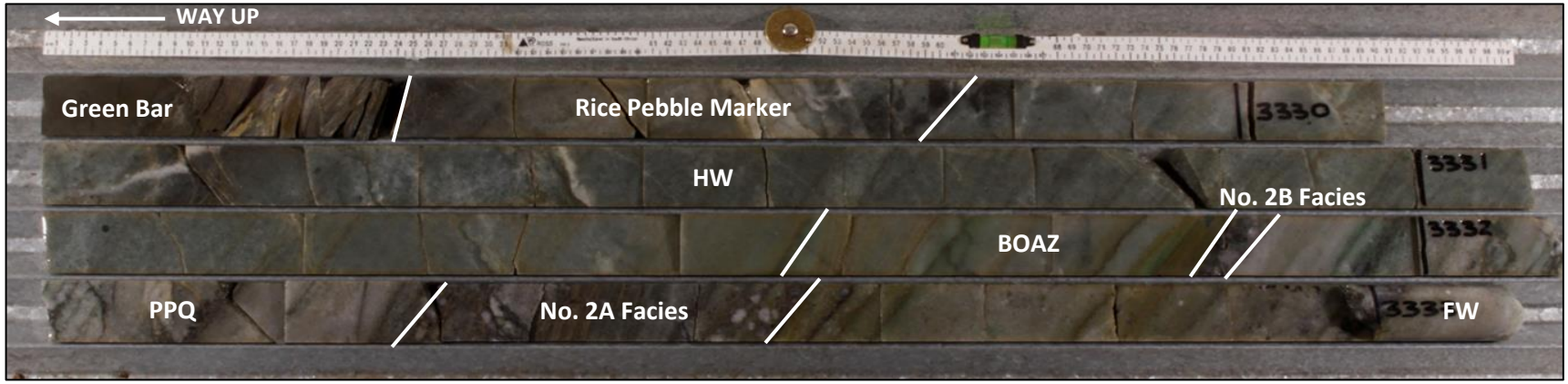
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 59 UD 5 D0	Light grey, fine to medium-grained, clean, siliceous orthoquartzite. Dark grey banding is present, and is aligned to bedding. Disseminated pyrite is visible within the hangingwall unit. Missing core (MC) is noted within the Rice Pebble Marker overlying the hangingwall quartzite.	Sharp	The upper (No. 2B Facies) and lower (No. 2A Facies) bands are poorly-developed. The No. 2A Facies has a single subrounded milky quartz clast (10 mm diameter) set within a medium-grained grey matrix. The No. 2B Facies matrix is dark grey and has undergone alteration (greenish discolouration possibly due to chloritisation). Very small, well-rounded to subrounded chert and smoky quartz clasts are seen (<2 mm). Disseminated pyrite is visible within the matrix. The Pale Pebbly Quartzite (PPQ) is medium-grained, grey in colour with very small floating clasts of chert visible.	Sharp	Footwall unit is medium-grained, khaki-brown in colour, with floating clasts of black chert and smoky quartz (<5 mm diameter).
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 60 UD 13 D0	Light bluish-grey, medium-grained, orthoquartzite. Very fine dark grey banding is visible and is aligned to bedding. Disseminated pyrite is seen along the dark grey banding.	Sharp	The No. 3 Facies is matrix-supported, with a dark grey fine-grained matrix hosting small (<5 to 10 mm) clasts. The clasts are typically milky and smoky quartz as well as black chert, and are rounded to subrounded. Disseminated pyrite is seen within the matrix and concentrated around the clast edges.	Sharp	Gritty textured, khaki-brown to khaki-green in colour. Small (<5 mm), well-rounded to subrounded floating clasts of black chert as well as smoky and milky quartz are visible. Rounded pyrite occurs along foresets.
					

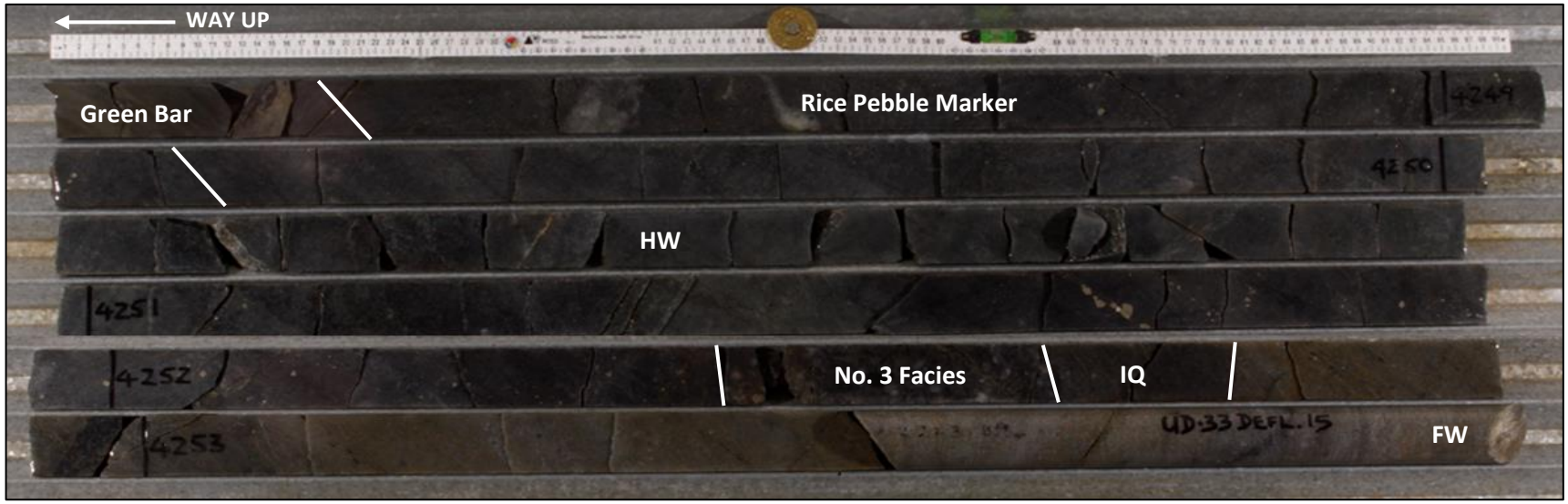
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 61 UD 15 D1	Hangingwall quartzite is light grey, fine to medium-grained and siliceous. Disseminated pyrite is visible. Darkening of the hangingwall quartzite is noted with increasing proximity to the reef.	Sharp	The upper (No. 2B Facies) band is clast-supported and the lower (No. 2A Facies) band is matrix-supported. The matrix in the upper band is dark grey and fine-grained with disseminated pyrite. Elongated (up to 20 mm length on the long axis) milky quartz clasts are seen in the upper band, as well as well-rounded to subrounded smoky quartz clasts (<5 to 10 mm). The lower band has a brownish-grey fine-grained matrix with elongated milky clasts, and subrounded smoky quartz and chert clasts. The Pale Pebbly Quartzite (PPQ) between the reef bands is a brown, gritty textured quartzite with floating milky quartz clasts. The Brown-Orange Argillaceous Zone (BOAZ) overlying the No. 2B Facies is dark grey with a slight brownish discolouration. A quartz vein cross-cuts the No. 2B Facies and BOAZ unit.	Sharp	The footwall quartzite is khaki-brown in colour and argillaceous, with medium to gritty-grains. Disseminated pyrite is seen in the footwall unit.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 62 UD 25 D11	Light bluish-grey, medium-grained, orthoquartzite. Very fine dark grey banding is visible and is aligned to bedding. Disseminated pyrite is seen along the dark grey banding.	Sharp	The lower (No. 2A Facies) band is matrix-supported, with angular to subrounded milky, smoky, opaque quartz and black chert clasts (<2 to 10 mm) set within a dark grey fine-grained matrix. The Pale Pebbly Quartzite (PPQ) is medium to gritty-grained with floating clasts of black chert and smoky quartz (<5 mm). The No. 2B Facies has a small portion of internal quartzite separating two smaller reef bands. The lower reef band has a dark grey fine-grained matrix and the upper reef band has a brownish-grey matrix with possible chloritisation between angular clasts of smoky quartz. Disseminated pyrite is visible throughout both reef packages. A series of pyrite stringers separates the No. 2B Facies with the Brown-Orange Argillaceous Zone (BOAZ). The BOAZ is fine-grained with pyrite stringers and floating chert and smoky quartz clasts.	Sharp	Medium to gritty-grained argillaceous, brownish-grey quartzite. Floating, well-rounded to subrounded chert and smoky quartz clasts (<2 mm) are visible.
					

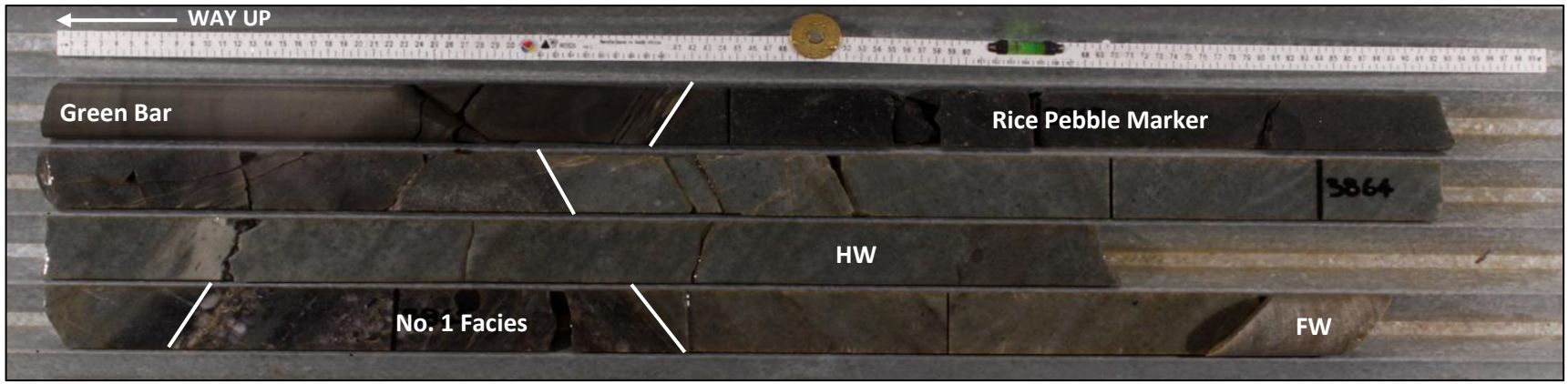
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 63 UD 32 D8	Light bluish-grey medium-grained, siliceous, orthoquartzite. Rounded pyrite along foresets is noted within the hangingwall quartzite.	Sharp	The lower (No. 2A Facies) band is matrix-supported, with angular to subrounded milky, smoky and black chert clasts (<2 to 10 mm) set within a dark grey fine-grained matrix. The Pale Pebbly Quartzite (PPQ) is medium to gritty-grained with floating clasts of black chert and smoky quartz (average 10 mm). The No. 2B Facies is clast-supported, with milky and smoky quartz clasts set within a dark grey fine-grained matrix with disseminated pyrite. The Brown-Orange Argillaceous Zone (BOAZ) overlying the No. 2B Facies is brownish-orange in colour and fine-grained. Pyrite foresets are frequent and are aligned to bedding. Greenish alteration is seen along the pyrite foresets, possibly due to chloritisation or oxidation of the sulphides.	Sharp	Medium to gritty-grained argillaceous, brownish-grey quartzite. Floating, well-rounded to subrounded chert and smoky quartz clasts (<2 mm) are visible as well as disseminated pyrite.



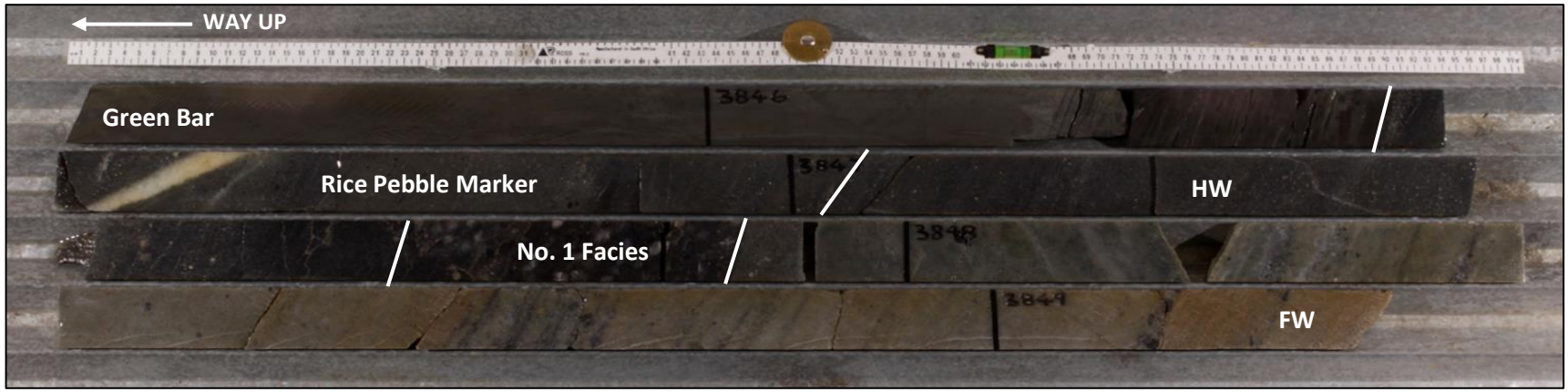
Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 64 UD 33 D15	Dark grey orthoquartzite, medium-grained, disseminated pyrite present. Very fine quartz veining cutting across bedding.	Sharp	The No. 3 Facies is matrix-supported. Milky and smoky quartz and black chert clasts are hosted within a fine-grained, dark grey matrix. Disseminated pyrite is seen within the matrix as well as concentrated around the edges of the clasts. Clasts are subrounded to well-rounded and on average <10 mm.	Sharp with the presence of very thin carbon seam	Medium to gritty-grained argillaceous, brownish-grey quartzite. Disseminated pyrite in the form of very fine stringers. Floating, well-rounded to subrounded chert and smoky quartz clasts (<2 mm) are visible. Elongated clasts are aligned to bedding.

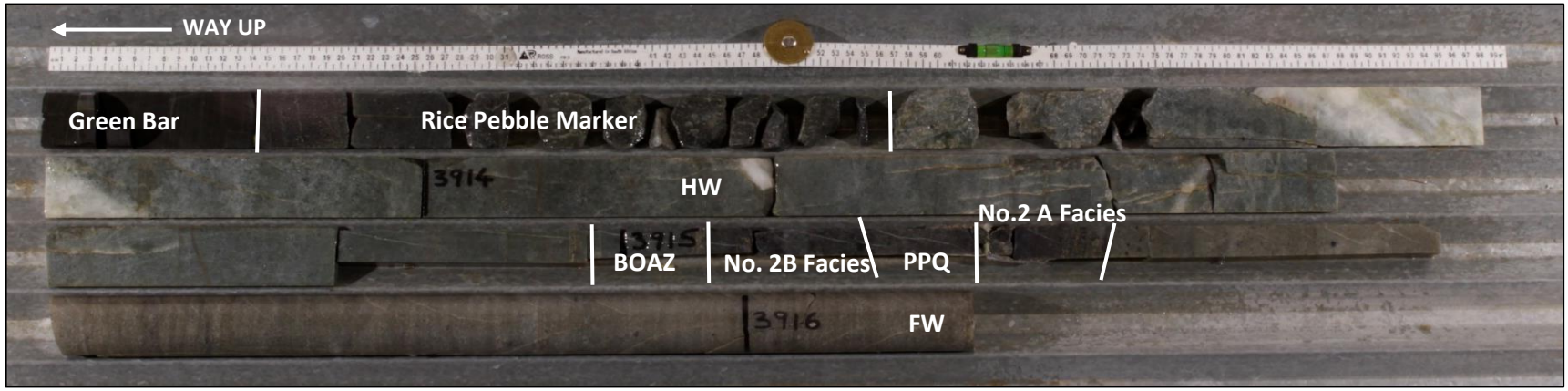


Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 65 UD 36 D4	The hangingwall is a light bluish-grey, fine to medium-grained orthoquartzite. Pyrite (rounded) along foresets is noted within the hangingwall quartzite.	Sharp	The No. 1 Facies is well-developed with a matrix-supported bottom portion, and a clast-supported middle and top portion. The matrix is dark grey, and fine-grained. The clasts are typically smoky and milky quartz, as well as black chert, and are rounded to subrounded. There are clasts from <5 mm up to 15 mm in diameter. Disseminated pyrite is seen within the matrix.	Sharp	Medium to gritty-textured, khaki-brown in colour. Floating clasts (smoky quartz and black chert) are seen (averaging in diameter <5 mm).



Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 66 UD 36 D7	The hangingwall unit is a medium-grained, dark grey orthoquartzite. Disseminated pyrite is seen in the unit.	Gradual	The No. 1 Facies is matrix-supported. The matrix is dark grey and fine-grained. Disseminated pyrite is seen within the matrix as well as concentrated around the edges of the clasts. Milky and smoky quartz clasts ranging in size from <5 to 15 mm are seen, as well as smaller black chert clasts. The clasts are rounded to subrounded and are positioned within the matrix between thin layers of internal quartzite.	Sharp	Footwall quartzite is medium-grained to gritty, and is khaki-brown to khaki-green in colour. Footwall pebble bands are seen however are not well-defined and occur as pebble lags. The clasts are smoky quartz and black chert, ranging from <5 to 8 mm in diameter. Disseminated pyrite is seen near the pebble lags.



Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 67 UD 37 D1	Clean, bluish-grey, medium-grained orthoquartzite. Quartz veining is present as well as small occurrences of disseminated pyrite.	Gradual	The No. 2B and No. 2A Facies are both poorly developed. The matrix is dark grey and fine-grained, and hosts very few smoky quartz and black chert clasts (less than 5 mm in diameter). Disseminated pyrite is present within the matrix. Pale Pebbly Quartzite (PPQ) separates the No. 2A and No. 2B bands and is fine-grained and medium to light grey in colour. A Brown-Orange Argillaceous Zone (BOAZ) overlies the No. 2B Facies and is a brownish-orange argillaceous quartzite.	Gradual	The footwall unit is a khaki-brown, medium-grained, argillaceous quartzite. Floating clasts are seen, and are less than 5 mm in diameter, typically smoky quartz.
					

Sample ID	Descriptions				
Name	**Hangingwall (HW)**	**Reef-HW Contact**	**Reef**	**Reef-FW Contact**	**Footwall (FW)**
Sample 68 UD 37 D5	The hangingwall unit is a medium-grained, light grey orthoquartzite. Disseminated pyrite is seen in the unit.	Sharp	Both the No. 2B and No. 2A Facies are well-developed, with milky and smoky quartz and black chert clasts set within a dark grey, fine-grained matrix. The clasts range from <5 to 10 mm in diameter. Disseminated pyrite is seen within the matrix as well as concentrated around the edges of the clasts. Between the No. 2A and 2B Facies is Pale Pebbly Quartzite (PPQ) that is fine-grained, medium to light grey in colour with a few scattered clasts of chert and smoky quartz less than 5 mm in diameter. A Brown-Orange Argillaceous Zone (BOAZ) overlies the No. 2B Facies and is fine- to medium-grained with a brownish colour of argillaceous quartzite.	Sharp	The footwall unit is a khaki-brown, medium-grained, argillaceous quartzite.

