PHASE 2 INITIAL BOREHOLE DRILLING AND TESTING AT IG_BH04/05/06, IGNACE AREA

WP09 Data Report - Westbay Monitoring System Installation for IG_BH06

APM-REP-01332-0365 **November 2023**

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REPORT

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WP09 Data Report - Westbay Monitoring System Installation for IG_BH06

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WP09 DATA REPORT
WESTBAY MONITORING SYSTEM INSTALLATION FOR IG_BH06

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1.0 INTRODUCTION

The Initial Borehole Drilling and Testing project in the Wabigoon Lake Ojibway Nation (WLON) – Ignace Area, Ontario is part of Phase 2 Geoscientific Preliminary Field Investigations of the Nuclear Waste Management Organization's (NWMO) Adaptive Phased Management Site Selection Phase. This project includes the drilling and testing of six deep boreholes at the Revell site, as well as additional on-going studies, located within the northern portion of the Revell batholith.

This project involves testing of deep borehole IG_BH04 and the drilling and testing of deep boreholes IG_BH05 and IG_BH06 in the Revell site within the identified Potential Repository Area (PRA) as shown on Figure 1. The work comprises a total of eleven work packages and was carried out by a team led by WSP Canada Inc. (WSP) on behalf of the NWMO. The IG_BH06 program is described in a Borehole Characterization Plan (BCP) for IG_BH06.

This data report describes the methodology, activities, and results for Work Package 9 (WP09): Westbay Monitoring System Installation For IG_BH06.

2.0 BACKGROUND INFORMATION

2.1 Geological Setting

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

IG_BH06 is located within an investigation area of approximately 19 km^2 in size, situated in the northern portion of the Revell batholith. Bedrock exposure in the area is generally very good due to minimal overburden, few water bodies, and relatively recent logging activities. Ground elevations generally range from 400 to 450 m above sea level. The ground surface broadly slopes towards the northwest as indicated by the flow direction of the main rivers in the area. Local water courses tend to flow to the southwest towards Mennin Lake (Figure 1).

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

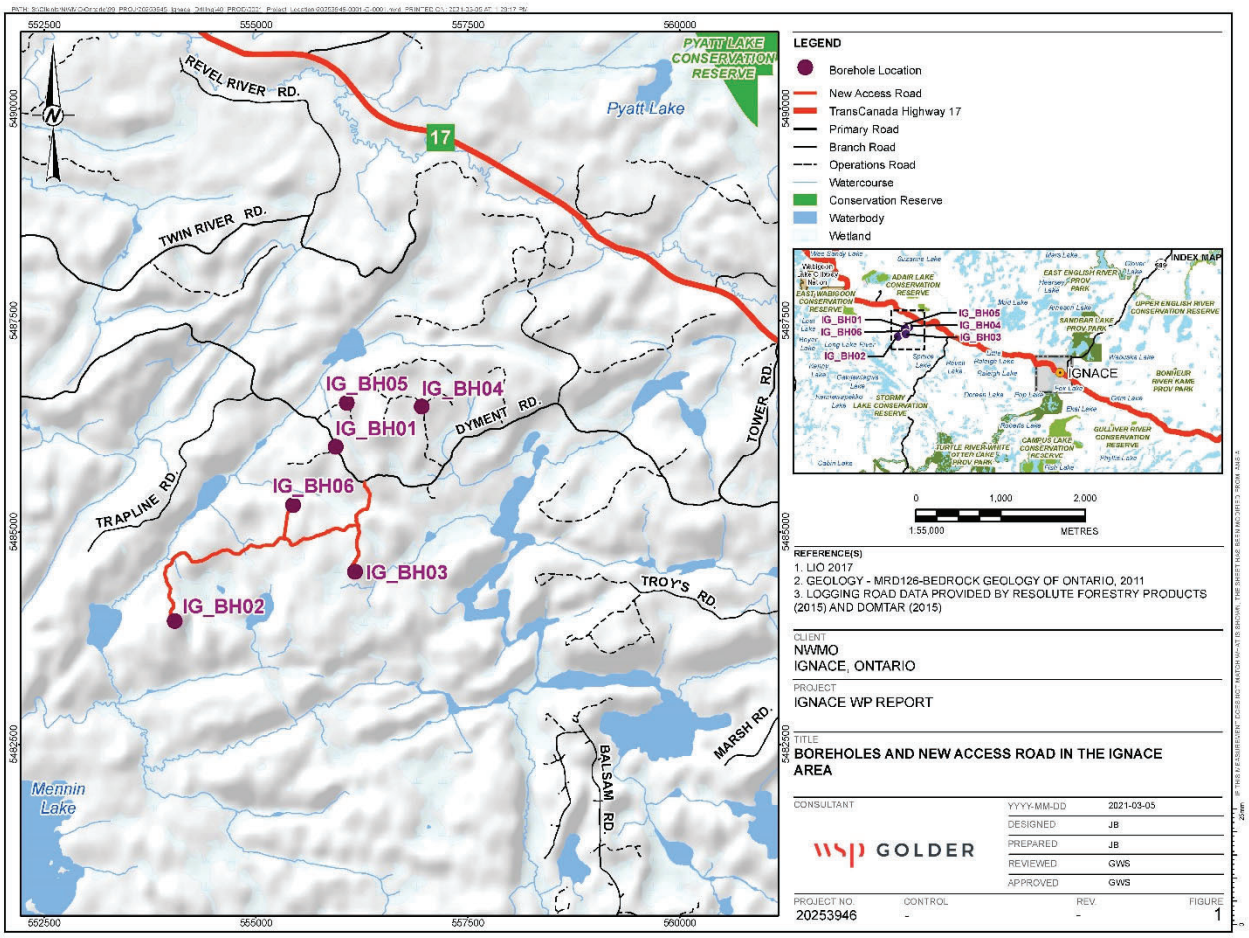


Figure 1: Location of IG_BH06 in relation to the Revell site

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

the Revell batholith (Figure 2). One sample of coarse-grained, pink, massive K-feldspar megacrystic biotite granite produced a U-Pb age of 2694.0+/-0.9 Ma (Stone et al. 2010).

The bedrock surrounding IG_BH06 is composed mainly of massive to weakly foliated felsic intrusive rocks that vary in composition between granodiorite and tonalite, and together form a relatively homogeneous intrusive complex. Bedrock identified as tonalite transitions gradationally into granodiorite and no distinct contact relationships between these two rock types are typically observed (SRK and Golder 2015; Golder and PGW 2017). Massive to weakly foliated granite is identified at the ground surface to the northwest of the feldspar-megacrystic granite. The granite is observed to intrude into the granodiorite-tonalite bedrock, indicating it is distinct from, and younger than, the intrusive complex (Golder and PGW 2017).

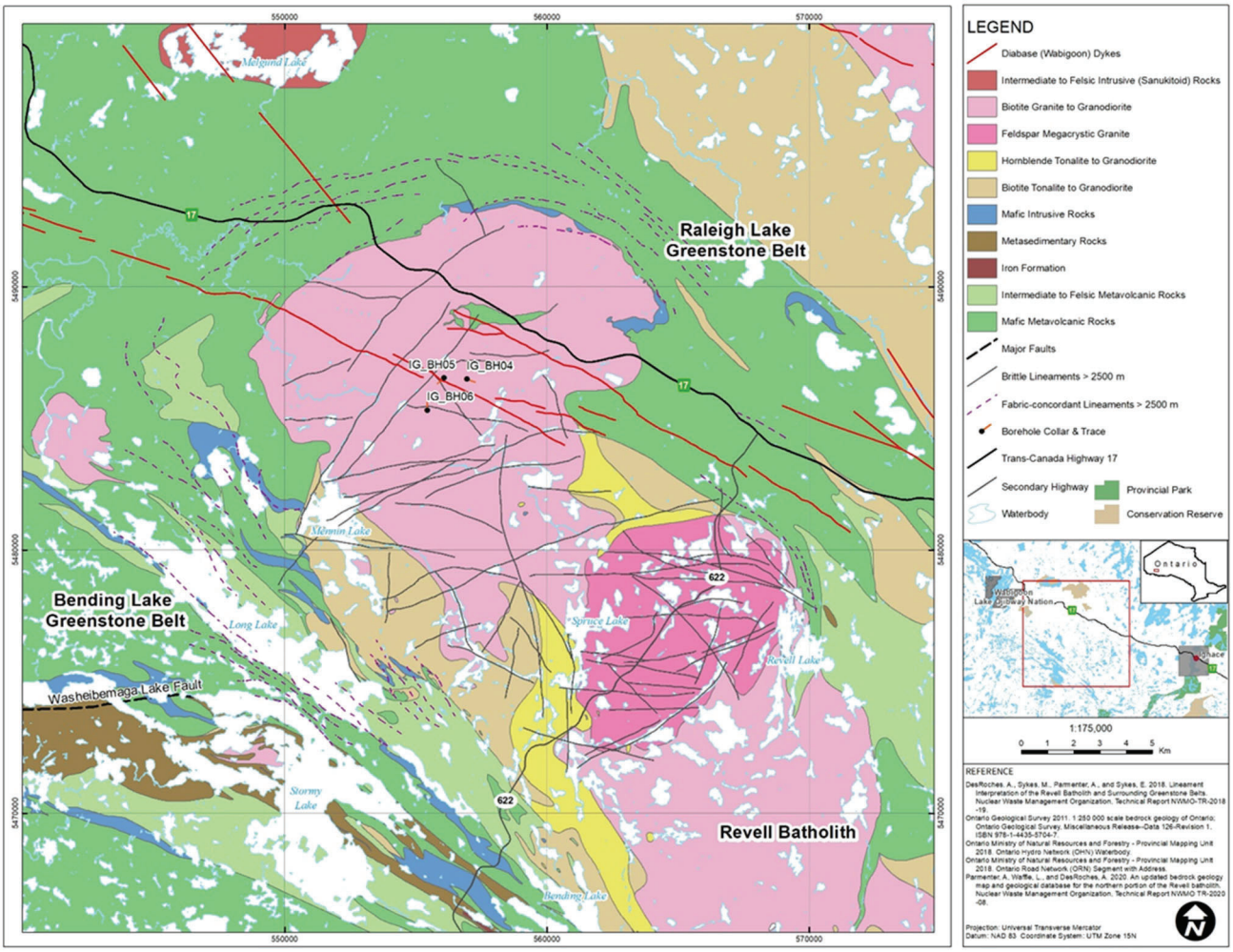


Figure 2: Geological setting and location of boreholes IG_BH04, IG_BH05 and IG_BH06 in the northern portion of the Revell batholith

West-northwest trending mafic dykes interpreted from aeromagnetic data extend across the northern portion of the Revell batholith and into the surrounding greenstone belts. One mafic dyke occurrence, located to the northeast of IG_BH06, is approximately 15-20 m wide (Figure 2). All of these mafic dykes have a similar character and are interpreted to be part of the Wabigoon dyke swarm. One sample from the same Wabigoon swarm

produced a U-Pb age of 1887+/-13 Ma (Stone et al. 2010), indicating that these mafic dykes are Proterozoic in age. It is assumed based on surface measurements that these mafic dykes are sub-vertical (Golder and PGW 2017).

Long, narrow valleys are located along the western and southern limits of the investigation area (Figure 1). These local valleys host creeks and small lakes that drain to the southwest and may represent the surface expression of structural features that extend into the bedrock. A broad valley is located along the eastern limits of the investigation area and hosts a more continuous, un-named water body that flows to the south. The linear and segmented nature of this waterbody's shorelines may also represent the surface expression of structural features that extend into the bedrock.

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

2.2 Technical Objectives

The Westbay MP38 system is designed to isolate specific depth intervals within the inclined IG_BH06 borehole and includes 22 monitoring zones to a depth of 929.3 metres below ground surface (mBGS) or 1000.80 m downhole. The Westbay system can be used for measurement of hydraulic pressures and collection of groundwater samples. The MP38 system can also be used to perform hydraulic tests in the isolated zones.

3.0 DESCRIPTION OF ACTIVITIES

Permission to drill was obtained from the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) on September 24, 2019 and formal notification given to Golder from the NWMO on February 11, 2021 with the understanding that the drilling would begin in May 2021 at IG_BH05 and continue at IG_BH06 immediately afterwards. Drilling of IG_BH06 commenced immediately following completion of WP01 (site infrastructure setup) activities at IG_BH06. The borehole was drilled at a nominal diameter of 96 mm (HQ size) by diamond coring methods at an initial (surveyed) azimuth and dip of approximately 360˚/-70˚with no corrections made for deviation as the drilling progressed. Drilling of IG_BH06 commenced on September 4, 2021 and was completed on November 5, 2021.

Borehole flushing was carried out on IG_BH06 with 100 ppb fluorescein traced fresh water from the Town of Ignace Municipal supply on two occasions. The first flush was conducted on September 8 and 9, 2021, prior to installing the surface casing. Approximately 4,000 litres of traced water, with flocculant, were flushed through the borehole on September 8, 2021 and then left to settle. An additional 4,000 litres of traced water were then flushed through the borehole on September 9, 2021, which at that point had been advanced to approximately 100.86 m downhole. Following flushing, optical and acoustic televiewer surveys were completed within the upper 100 m of the borehole to identify features which should be cased and cemented to seal them from the rest of the borehole. A PQ sized surface casing was advanced to a depth of 80.54 m downhole and cemented in place.

Once the PQ sized surface casing was cemented in place, the borehole was cored to its final depth of 929.3 mBGS, or 1000.8 m downhole. A second flush was carried out at the completion of drilling from November 6 to 7, 2021. Approximately 69,000 litres of traced water were flushed through the borehole, equivalent to just over 9 borehole volumes. Geophysical logging, hydraulic testing and vertical seismic profiling (VSP) was then completed in the borehole. Installation of Westbay MP38 multilevel monitoring casing was carried out from February 12 to 25, 2022 by staff of Westbay Instruments with support provided by Golder and Rodren Drilling Ltd. (Rodren), in accordance with planned installation procedures. Installation of the MP38 casing involved the following activities:

- Preparation and review of a Westbay MP38 system design.
- Layout, numbering and visual inspection of all MP38 casing components at an off-site location and at the well head, including measurement of the length of each Westbay casing section.
- Installation of an HQ guide tube downhole to protect the casing string during installation.
- Lowering and testing of MP38 casing components into the borehole in the sequence indicated on the approved Westbay Completion Log.
- Pre-inflation pressure profiling.
- Packer inflation and guide tube removal.
- Wellhead completion and post-installation pressure profiling.

These activities are described in greater detail in the following subsections.

3.1 Westbay System Components

The Westbay system consists of modular casing, packers, couplings, abrasion protectors, measurement ports, hydraulic pumping ports and magnetic location collars. Fluid samples and in-situ fluid pressures are obtained using an electronic probe that is lowered inside the casing to access the valved ports. Westbay system components are illustrated on Figure 3.



Figure 3: Westbay MP38 System Components
1 - MP38 Casing; **2 -** MP38 Packer – 74 mm (1.5 m); **3 -** MP38 Measurement Port; **4** - MP38 Hydraulic Pumping Port; **5** - MP38 Regular Coupling; **6** - Magnetic Location Collar; **7 -** MP38 End Cap; **8 -** MP38 Monopod Attachment Bracket; **9 –** MP38 Abrasion Protector.

3.2 Preparation of the Monitoring Well Design

Test intervals within the Westbay MP38 system were selected to either target specific zones in the borehole where increased frequency of structures or hydraulic flows were observed, or to broadly monitor the evolution of hydraulic pressures and groundwater chemistry in regularly spaced intervals of the rock mass with increasing depth in the borehole. The length of a test interval is defined as the distance between the bottom of the upper packer and the top of the lower packer. The selected interval lengths were a function of the characteristics of specific zones and the purpose of the planned testing for that interval. Similar to the approach used at IG_BH05, but in contrast to previous Westbay installations at the Ignace PRA, a number of additional test intervals were created in IG_BH06 that were minimized in length. These shorter test intervals have reduced interval volumes which facilitate targeted groundwater sample collection activities.

Generally, a measurement port was placed a uniform distance below each packer to allow for pressure measurements and to permit squeeze relief venting during packer inflation. Magnetic locating collars were placed 0.6 m below measurement ports in all intervals. Pumping ports were located within intervals where hydrogeologic conditions suggested the collection of groundwater samples would be possible. These intervals typically corresponded to observed inflows during flow logging. Abrasion protectors were used to centralize the installation in the inclined borehole and to prevent abrasion of system components against the sides of the borehole during installation. The abrasion protectors were clamped to the outside of the Westbay casing near the following components:

- One abrasion protector above and below each MP38 Packer;
- One abrasion protector above each MP38 Pumping Port;
- Two abrasion protectors at the bottom of the Westbay casing assembly.

In addition to the use of two abrasion protectors at the bottom of the Westbay casing assembly, a special tapered end plug was attached to the bottom of the assembly.

The results of drilling (WP02), core logging (WP03), geophysical logging (WP05) and hydraulic testing (WP06) were used to finalize test interval selection. A summary of the installed test intervals with their associated selection rationale is provided in Table 1 below.

Table 1: Westbay MP38 Test Intervals and Selection Rationale

Interval No.	Depth Interval (bottom of upper packer to top of lower packer)				Test Interval Selection Rationale
	Top (m down hole)	Bottom (m down hole)	Top (mBGS)	Bottom (mBGS)	
IG_BH06_INT_022	78.56	143.19	73.2	133.4	Isolate upper BH and seal bottom of surface casing
IG_BH06_INT_021	144.09	155.46	134.2	144.8	Isolate fracture zone
IG_BH06_INT_020	156.36	210.32	145.7	195.8	Isolate potential flow zone
IG_BH06_INT_019	211.22	274.33	196.7	255.3	Isolate low flow zone
IG_BH06_INT_018	275.23	364.24	256.1	338.8	Isolate low flow zone
IG_BH06_INT_017	365.14	406.91	339.6	378.4	Isolate low flow zone

Interval No.	Depth Interval (bottom of upper packer to top of lower packer)				Test Interval Selection Rationale
	Top (m down hole)	Bottom (m down hole)	Top (mBGS)	Bottom (mBGS)	
IG_BH06_INT_016	407.81	460.25	379.2	427.9	Isolate fracture / dyke zone
IG_BH06_INT_015	461.15	484.63	428.7	450.5	Isolate fracture / dyke zone
IG_BH06_INT_014	485.53	510.54	451.4	474.6	Isolate fracture / dyke zone
IG_BH06_INT_013	511.44	563.87	475.4	524.1	Isolate fracture zone
IG_BH06_INT_012	564.77	624.91	525.0	580.8	Isolate fracture / dyke zone
IG_BH06_INT_011	625.81	682.81	581.7	634.6	Isolate low flow zone
IG_BH06_INT_010	683.71	698.05	635.4	648.7	Isolate low flow zone
IG_BH06_INT_009	698.95	714.89	649.5	664.3	Isolate fracture / dyke zone
IG_BH06_INT_008	715.79	734.78	665.1	682.8	Isolate fracture / dyke zone
IG_BH06_INT_007	735.68	792.69	683.6	736.4	Isolate fracture / dyke zone
IG_BH06_INT_006	793.59	823.78	737.3	765.2	Isolate low flow zone
IG_BH06_INT_005	824.68	848.16	766.1	787.8	Isolate fracture / dyke zone
IG_BH06_INT_004	849.06	903.02	788.7	838.6	Isolate fracture / dyke zone
IG_BH06_INT_003	903.92	944.17	839.5	876.8	Isolate low flow zone
IG_BH06_INT_002	945.07	986.00	877.6	915.6	Isolate fracture / dyke zone
IG_BH06_INT_001	986.90	1000.83	916.4	929.3	Isolate fracture / dyke zone - isolate lower part of BH

Following test interval selection, the depth of packer placement was refined using data from downhole caliper logs, core logs, and televiewers to ensure packers were located in sections of borehole having a sparse fracture frequency and consistent diameter. In addition to the primary function of creating a borehole annular seal between adjacent monitoring intervals, the Westbay packers also support the weight of the Westbay completion, and loads imposed by long-term or short-term hydraulic gradients across packers. The maximum distance between packers should be less than 100 m for load-sharing reasons.

The well design is comprised of the test interval selection and packer placement, and was used to prepare a Westbay Completion Log, which specifies the installation details of the Westbay System components in the well including serial numbers for each packer, pumping port and measurement port coupling. A copy of the Westbay Completion Log is included in the Westbay Completion Report provided in Appendix A.

3.3 Layout of Westbay Casing Components

A pre-installation layout of Westbay casing components was carried out at an offsite warehouse in Ignace, Ontario. The required MP38 components (casing, couplings, magnetic location collars, etc.) were laid out on a

raised rack. Each component was numbered and measured, beginning with the lowermost, as an aid to confirming the proper sequence of components. The appropriate Westbay System couplings were attached to each casing section according to the Westbay Completion Log, and magnetic location collars were attached 0.6 m below the top of the measurement port couplings in the monitoring intervals. To prevent damage to the equipment during assembly into the inclined borehole, two abrasion protectors were installed at the bottom of the Westbay casing assembly, and single abrasion protectors were also added above and below each packer, and above each pumping port (see Figure 4). The serial numbers for each packer, pumping port and measurement port coupling were recorded on the Westbay Completion Log.

Following pre-installation layout, the components were re-sealed in their respective plastic bags, labelled, and re-packaged for transportation to the drill site.



Figure 4: Photo of packer assembly on left, and abrasion protector on right. Abrasion protectors were installed directly above and below each packer, to prevent damages during assembly.

3.4 Lowering of Westbay Casing Components

Upon delivery to the IG_BH06 drill site, the MP38 System components were arranged in sequence on layout racks located within the core logging trailer and checked against the Westbay Completion Log. A temporary guide tube of steel HQ drill rods was lowered into the borehole to a depth of 783.84 m downhole to protect the Westbay components from materials that could dislodge from the borehole wall during installation. The inside of each guide tube length was checked during installation to confirm that it was free of obstructions and smooth.

Each section of Westbay casing was visually inspected to confirm that the inside was clear and that the joint anchor wires were properly installed before attachment of a section of Westbay casing to the downhole casing string. The Westbay casing weight, differential pressure (both inside to outside, and outside to inside) and the

buoyancy force on the casing bottom were maintained within operating limits through the regular addition of fluorescein-traced water (100 ppb) to the inside of the Westbay casing.

Each connection in the Westbay casing was pressure tested using the MP38 Joint Test Tool and the test results recorded on the Westbay Completion Log. A photo of the Joint Test Tools is provided on Figure 5. A minimum test pressure of 690 kPa and a minimum test duration of 1 minute was used for the joint testing with the test pass criteria of no observable water leakage. A record of each successful joint test and the placement of each component was noted on the Westbay Completion Log.



Figure 5: Photograph of joint testing and packer inflation tool

After the Westbay System string was lowered into the borehole, the water level inside the Westbay casing was monitored under a negative gradient (approximately 131 m) for 30 minutes, which confirmed the hydraulic integrity of the completion. Hydraulic integrity measurements are available in Appendix A.

3.5 Pre-inflation Pressure Profile

Prior to inflating the packers, a pre-inflation pressure profile was carried out on February 19, 2022 to confirm the operation of all pressure measurement ports downhole and to establish the open hole pressure profile. These measurements were carried out using the MOSDAX pressure profile tool and are provided in Appendix B.

Figure 6 illustrates the pre-inflation pressure profile and estimated piezometric levels in formations outside measurement ports for IG_BH06 assuming fresh water. As shown, the head increases linearly with depth over the entire length of the installation. This linear increase would be expected considering that the packers had not yet been inflated, and that the water within the borehole annulus was introduced during the drilling process and is not expected to contain density variations that would be observed with the native groundwaters.

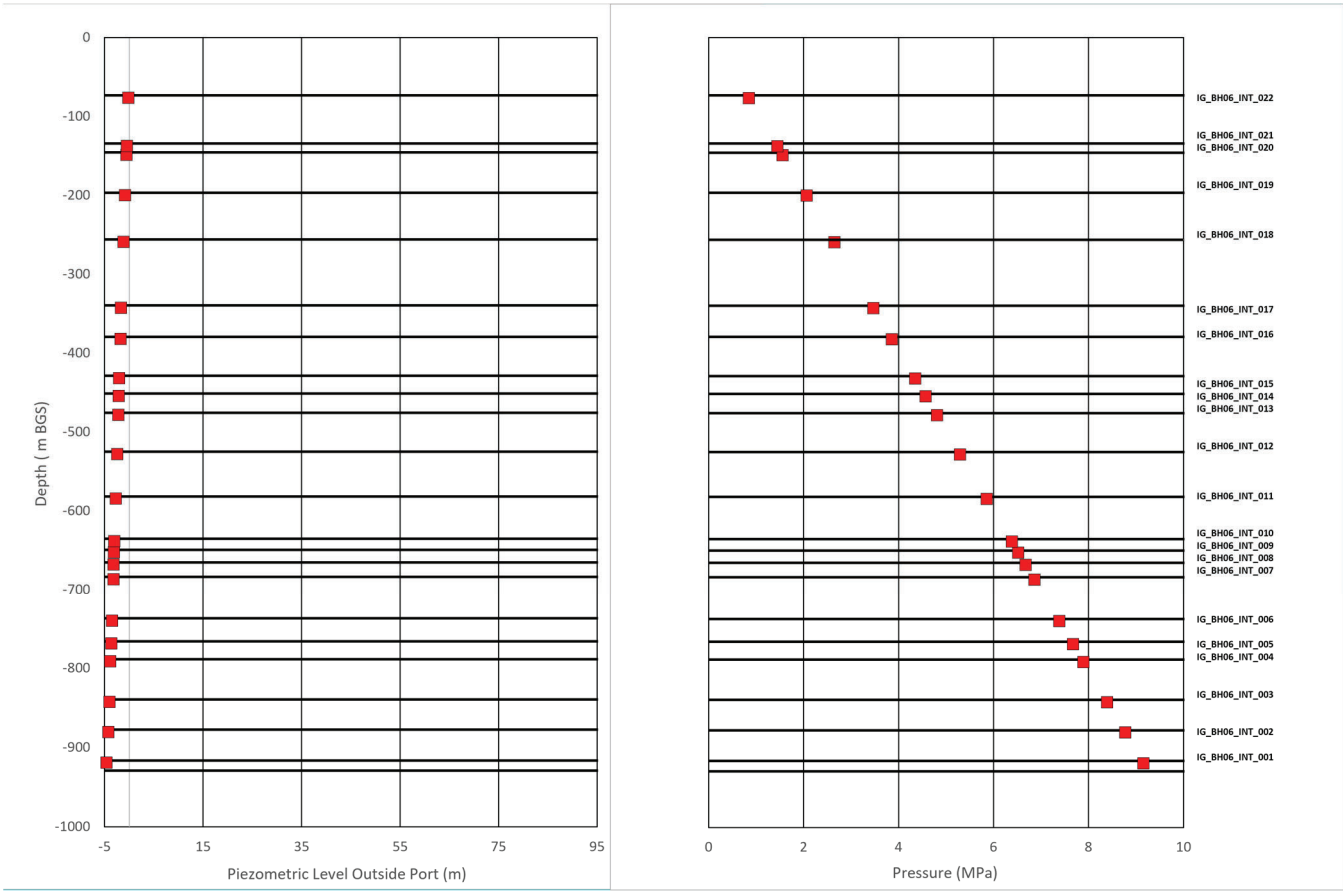


Figure 6: IG_BH06 Pre-Inflation Pressure Profile

Temperature profile measurements were made concurrently during the pre-inflation pressure profiling. With the exception of the first two (deepest) temperature readings, the temperature profile data (Figure 7) showed a nearly linear increase in temperature with depth from approximately 5.6 ^{0}C at 77 mbgs to 13.0 ^{0}C at 843 mbgs.

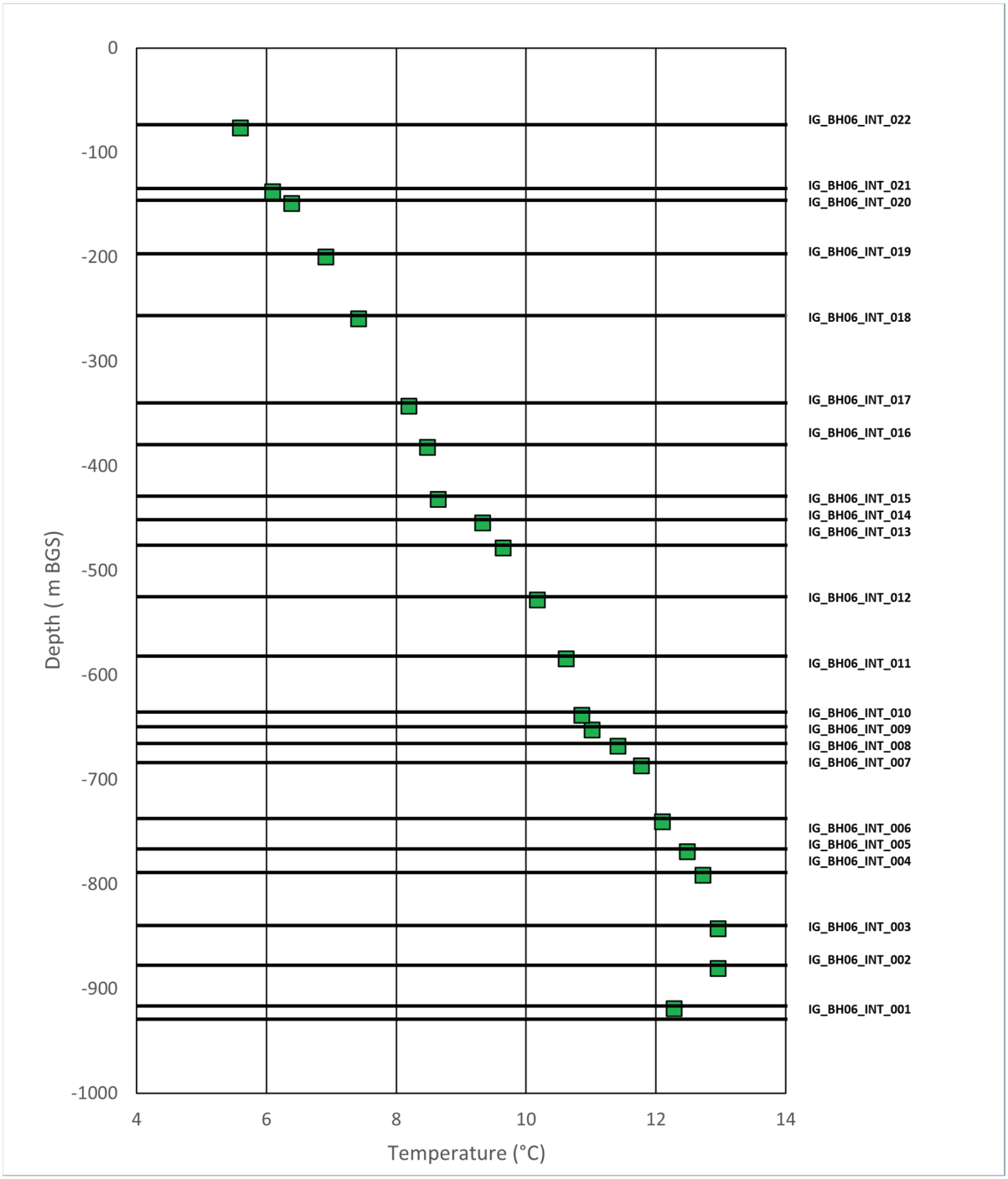


Figure 7: IG_BH06 Pre-Inflation Temperature Profile

3.6 Packer Inflation

Packers were inflated with fluorescein-traced water using the Westbay Model No. 6055 vented inflation tool, previously shown on Figure 5. The packer inflations took place from February 20 to 25, 2022 in four stages as summarized in Table 2, and was coordinated with the progressive removal of the guide tube, which was initially installed to a depth of 783.84 m downhole, which left the lowermost six packers initially exposed for inflation.

Table 2: Summary of Packer Inflation Steps

Inflation Step	Inflation Date	Guide Tube Depth (m downhole)	Packers Inflated
1	Feb. 20 2022	783.84	1 to 6 (6)
2	Feb. 21 2022	618.84	7 to 11 (5)
3	Feb. 22 2022	450.84	12 to 15 (4)
4	Feb. 25 2022	All retrieved	16 to 22 (7)

The six packers exposed below the base of the guide tube at Stage 1 were inflated in sequence beginning with the lowest. Injection pressure (packer element pressure) and pumped volume were measured at intervals (typically one reading for each 0.5 litres pumped) and manually recorded in the Packer Inflation Field Records provided in Appendix C. Subsequent inflation stages followed using the same procedure after each time the guide tube was raised.

3.7 Westbay Casing Stretch and Separation Incidents

On the morning of February 13, 2022 when attempting to lower the Westbay casing string from component #24 it was discovered that the casing string was stuck and would not lower down the borehole. Based on temperature observations and the borehole water level known to be near ground surface it was deemed likely that the water in the borehole had frozen. Forced air heaters were used to warm up the installation working area and the top of the borehole steel casing and after about an hour the Westbay casing was moving freely again. The Westbay casing string was partially retrieved so that the upper few metres of the casing string that was exposed to freezing could be inspected for damage. No damage was found and the installation work resumed.

On the morning of February 15, 2022 a similar situation was encountered when attempting to lower the Westbay casing string from component #224. One of the heaters used to keep the wellhead area warm was reported to have stopped working early in the morning and the water in the sump around the borehole was observed to be frozen. Once the wellhead had been thawed and the Westbay casing was again freely moving, it was observed that the water level in the Westbay casing was slowly falling. The water level was monitored over the next few hours as discussions took place between the Golder and Westbay project teams. Before continuing with the Westbay installation, the Westbay casing was partially retrieved to inspect the area that had been frozen and thawed.

During this inspection it was observed that the lower part of component #223 had become slightly stretched (about 3 cm longer than measured during component layout). The section of casing that stretched had been located at about the height of the outer steel borehole casing where heaters had been directed in order to thaw the frozen water in the borehole. The decision was made by Golder and Westbay to retrieve the Westbay casing string back to component #130 for inspection since that was the component that had been at the top of the casing string the night before and had potentially also been exposed to excessive heating.

The following day, the Westbay casing string was retrieved back to component #129 and each piece that was retrieved was inspected and measured for length. Component #222 was also found to be slightly stretched and both components #222 and #223 were replaced with new components. All other components that were inspected

were found to be in good condition and a casing integrity test was performed in the remaining Westbay casing string consisting of component #221 to component #1. Installation of the Westbay casing was resumed the next day with procedures put in place for heater duct positioning, regular checks of heater operation overnight and a check of the upper Westbay casing components before resuming installation work each day.

When the Westbay installation crew arrived at site on February 23, 2022, during packer inflation activities, it was discovered that the Westbay casing string had separated near the surface at the connection between components #358 and #359. The top of the Westbay casing string in the borehole was found to be about 0.15 m below the top of the borehole surface casing. The Westbay casing string had been hung in the borehole under tension overnight as standard procedure to alleviate stress on the upper packers while installation was in progress. The cause of the separation was assessed to be exposure of the Westbay casing to excessive heat due to mispositioning of the forced air heating ducts directed towards the drill head and borehole casing overnight. The excessive heat would have “softened” the PVC casing material and allowed the connection to slip past the lock wire.

After assessing the situation, a conference call was held with representatives from NWMO, Golder and Westbay in attendance to discuss the plan for recovery of the Westbay casing string. A staged recovery plan with escalating recovery efforts was drafted by Golder and Westbay and approved for implementation by NWMO. A copy of the recovery plan is included in the Westbay MP38 Completion Report (Appendix A). On February 24, 2022 the recovery plan was carried out and a combination of removing the guide tube rods, raising the borehole water level, and lifting the Westbay casing string with the inflation tool mini-packers successfully allowed the Westbay casing string to be recovered and reconnected to the working section at surface.

Out of an abundance of caution, all permanent pieces of the Westbay casing string from the connector of component #357 up to the top were replaced with new pieces. A hydraulic integrity test and a partial pressure profile were carried out to confirm the integrity of the Westbay installation below the separation point. Following this, packer inflation, final testing and pressure profiling continued as planned.

3.8 Final Testing / Post-emplacement Profiling

Following the packer inflation and final measurements of the Westbay MP38 component string, a post-emplacement pressure profile was performed on February 26, 2022. The Westbay MOSDAX pressure probe was used to measure formation pressures in the packer-isolated borehole intervals outside the Westbay casing. Pressures measured by this equipment are total, or absolute pressures, which include groundwater pressure and atmospheric pressure. The atmospheric pressure component is removed from the formation pressure by measuring the atmospheric pressure with the probe at ground level and subtracting the atmospheric pressure (at the time of measurement) from the formation pressure. These pressure measurements are reported in Appendix B while a graphical presentation of the results is shown on Figure 8.

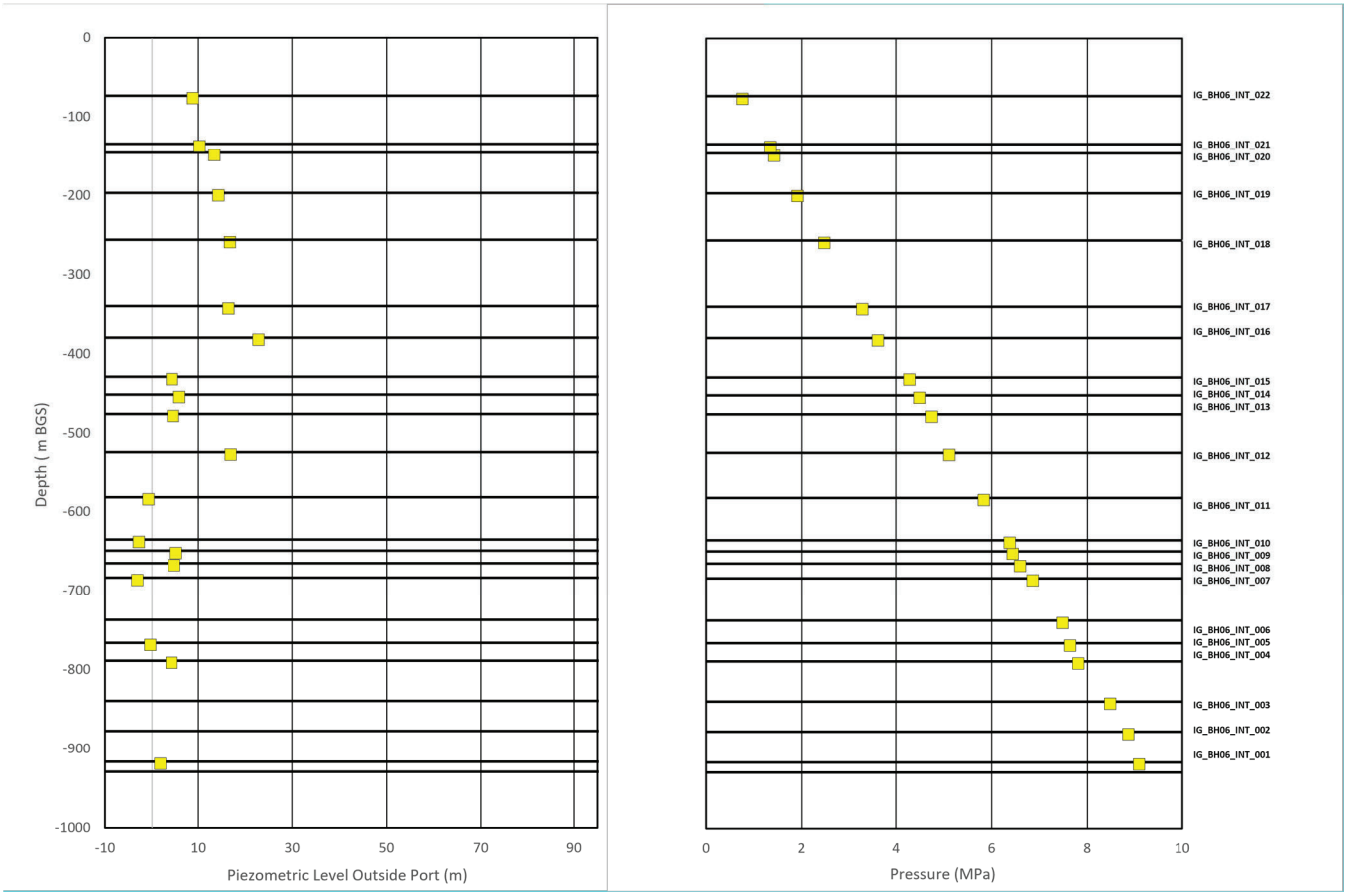


Figure 8: IG_BH06 Post-Inflation Pressure Profile from February 26, 2022

The post-inflation pressures shown above shows changes from open-hole pressures previously shown in Figure 6. These pressures were likely affected by testing and installation procedures and are not considered to be representative of equilibrium conditions. Long-term formation pressure conditions will develop over time as packer-isolated test intervals re-equilibrate from drilling and testing disturbances. Subsequent post-emplacement pressure profile measurements were collected on March 10, 2022. A plot showing the measured interval pressures over time is provided on Figure 9, and the measurements are reported in Appendix B.

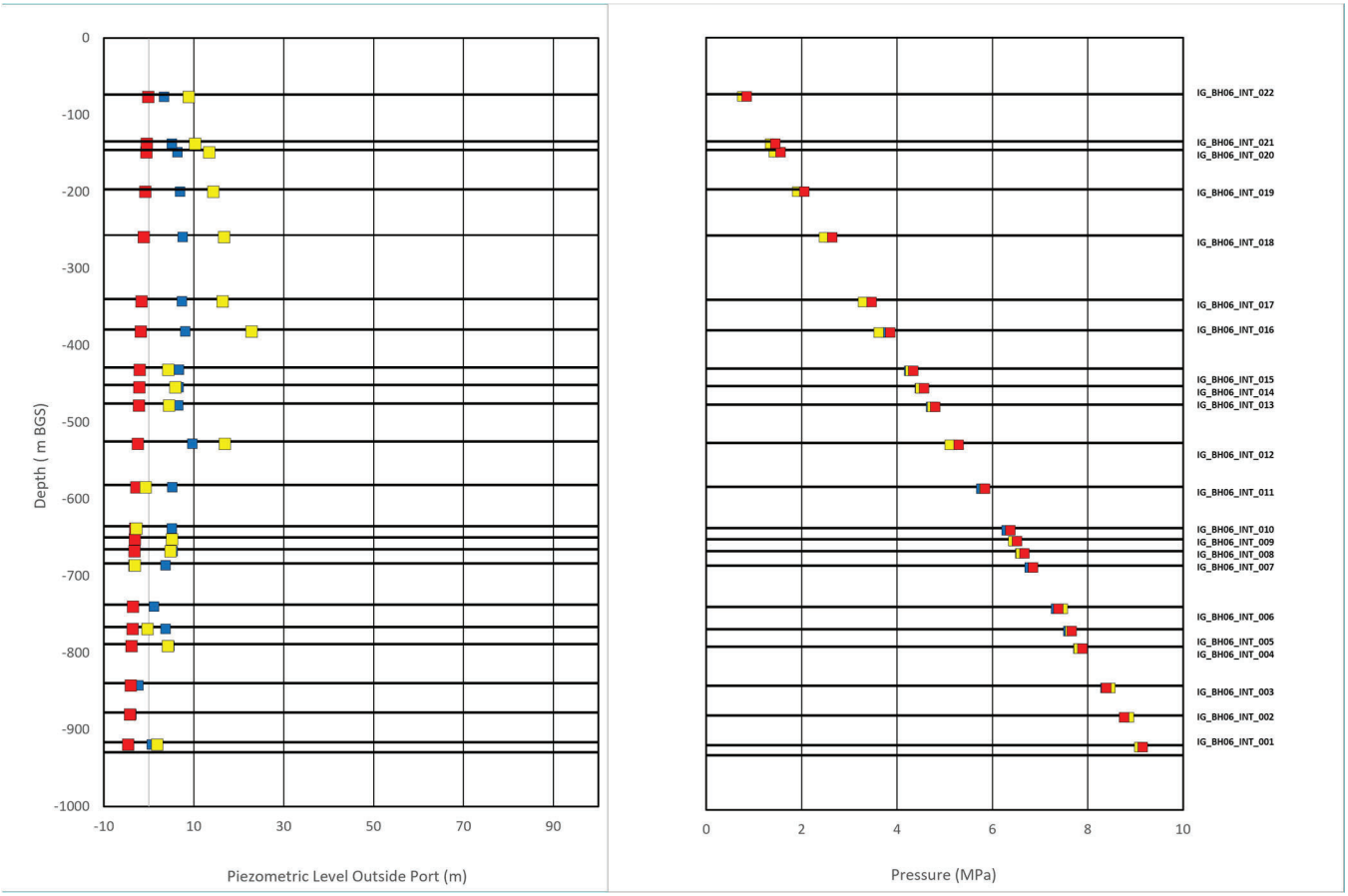


Figure 9: Changes in Pressures at IG_BH06, Pre and Post Packer Inflations, February – March 2022

Pressures measured on: February 19, 2022 (Prior to packer inflation) February 26, 2022 (Post Packer Inflation); March 10, 2022 (2 weeks Post Packer inflation).

The thermal gradients from the pre- and post-emplacement are shown on Figure 10 below and generally showed a slight decrease in temperature over time, with the exception of the lowermost two intervals where the temperature increased as the intervals approached the overall linear trend of increasing temperature with depth.

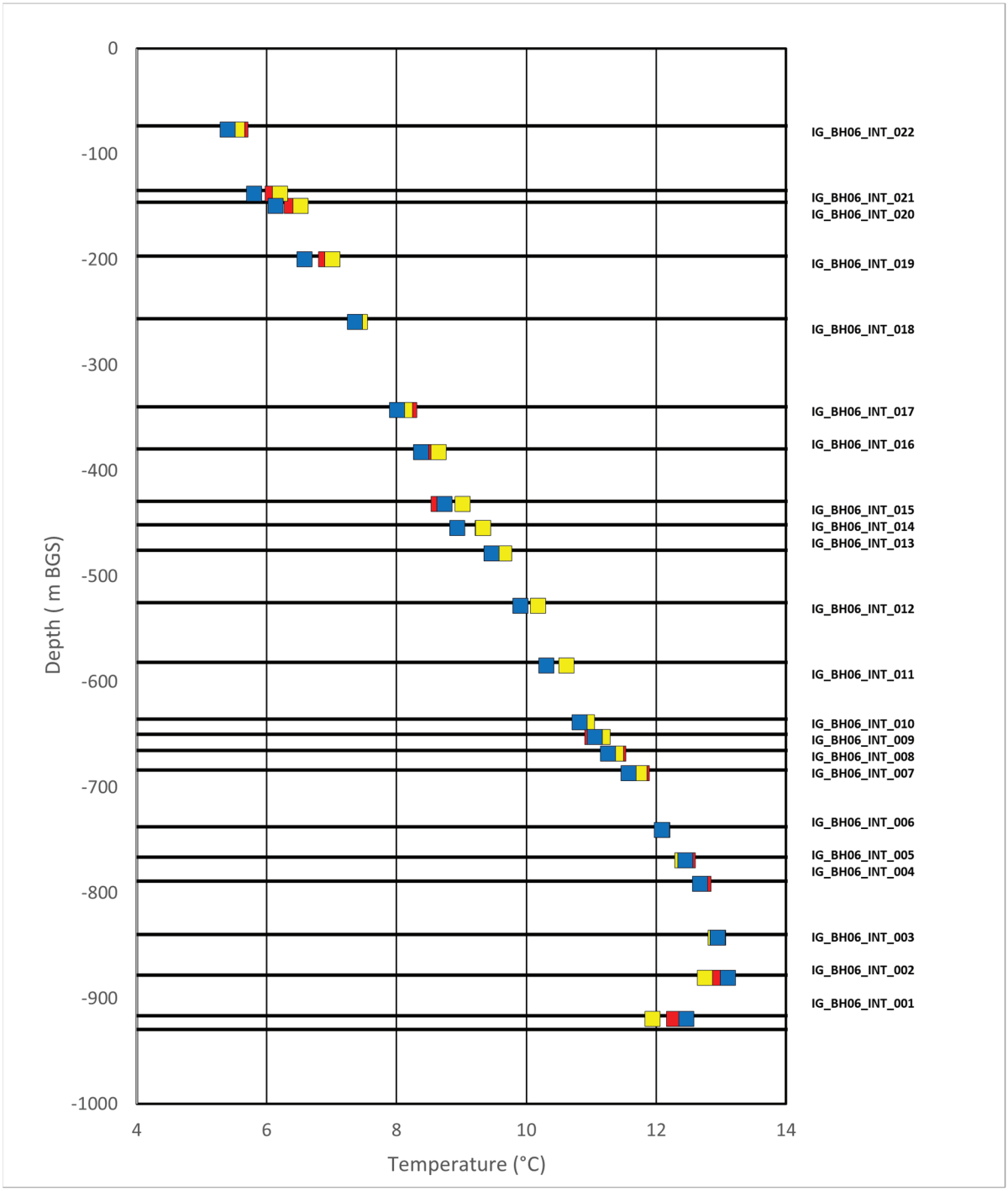


Figure 10: Changes in Temperatures at IG_BH06, Pre and Post Packer Inflations in February – March 2022

Temperatures measured on: February 19, 2022 (Prior to packer inflation) February 26, 2022 (Post Packer Inflation) March 10, 2022 (2 weeks Post Packer inflation).

3.9 Wellhead Completion

Following the MP38 installation and initial post-inflation pressure profile on February 26, 2022, the wellhead was completed by extending the Westbay MP38 riser pipe by 0.42 m, adding a Westbay MP38 cap, and threading on a steel HWT surface casing extension (0.403 m long) with a locking cap and monopod bracket (Figure 11). The final post-inflation pressure profile was collected on March 10, 2022 with these wellhead modifications in place. In addition, to facilitate access for the Westbay monitoring, the HWT surface casing extension was rotated approximately 180 degrees (so that the monopod bracket faced south) which had the effect of raising the top elevation of the HWT surface casing by 0.0028 m.



Figure 11: IG_BH06 Wellhead with protective casing and monopod bracket installed – March 10, 2022.

The as-built borehole installation was surveyed on March 2, 2022 by Rugged Geomatics Inc., and the as-built coordinates of IG_BH06 with the surface casing extension in place (high side) are presented in Table 3. The survey data was used to calculate the “ground surface” reference elevation (Point D) used during drilling and installation of the Westbay MP38 based on the surveyed elevation “Point C” of the top of the original HWT surface

casing, the original Westbay stick-up of 0.44 m, and the measured orientation of the borehole at surface. The reference points are illustrated on Figure 12 below.

Table 3: IG_BH06 Final Surveyed Collar and Casing Coordinates

Point	Easting (m)	Northing (m)	Elevation (masl)	Comment
A – Top of HWT surface casing with casing extension added	555440.44	5485327.84	418.55	As surveyed
B - Top of Westbay casing with riser pipe extension added	555440.44	5485327.77	418.65	As surveyed
C - Top of original HWT surface casing (prior to extension added)	555440.36	5485327.95	418.17	As surveyed
D - “Ground Surface” reference elevation datum used during drilling and Westbay installation	555440.35	5485328.11	417.74	Calculated

Note: Elevations are Geodetic and referred to the CGVD2013 Datum and coordinates are referred to UTM Zone 15, NAD 83 (CSRS).

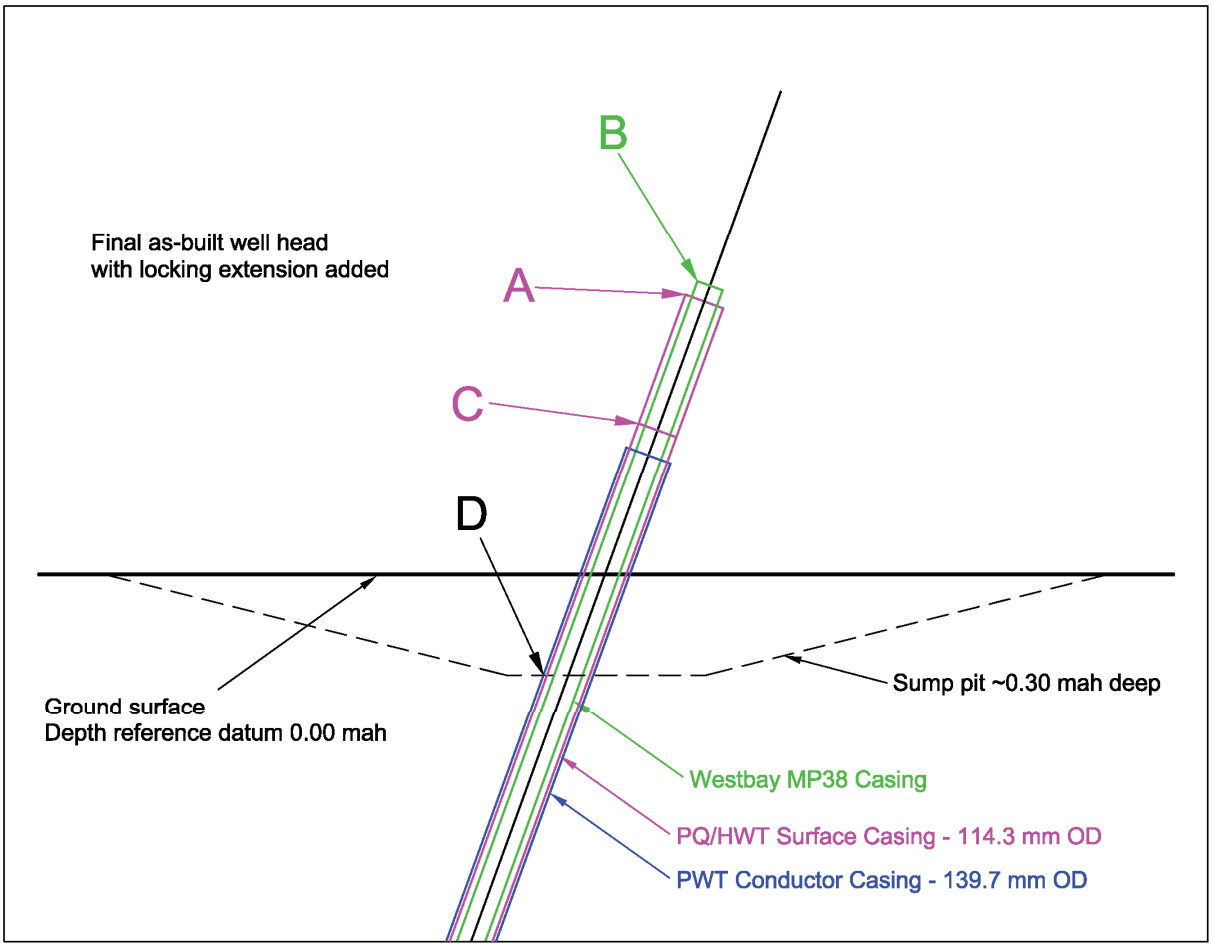


Figure 12: Survey Reference Points for IG_BH06

4.0 DATA QUALITY AND USE

Data presented in this report describe the installation and completion of Westbay MP38 multilevel monitoring casings in borehole IG_BH06 as well as the rationale for selection of multilevel monitoring intervals. Initial post-inflation pressure data obtained from these completions support the conclusion that the MP38 casing systems are operating as intended.

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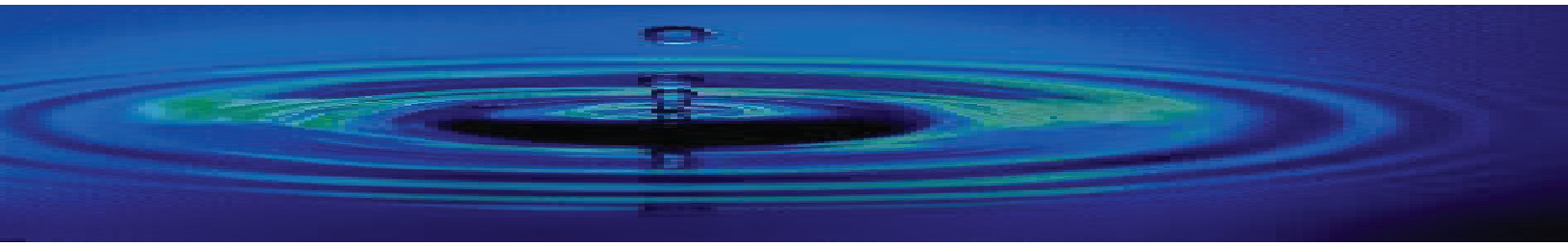
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APPENDIX A

Westbay MP38 Completion Report

Completion Report

Well Name: IG_BH06



August 29, 2022

Completion Report

Well Name: IG_BH06

Project Number: WB981

Prepared for:

Golder Associates Ltd.

Prepared by:

Westbay Instruments
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B	Westbay Completion Log (field copy)
C	Summary Completion Log
D	Tubing Summary (field copy)
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1. Introduction

This report and the attached Appendices document the technical services carried out by Westbay Instruments (Westbay) under Golder Associates Ltd. (Golder) W.O. 20253946-023 dated September 13, 2021. A Westbay System completion was installed in borehole IG_BH06 at a site near Ignace, ON, Canada.

Westbay technical services representatives Mr. Mark Lessard and Mr. Tony Kim were on site for installation of the Westbay System from February 3 to 26, 2022. Golder representative Mr. Matthew Bowman was on-site to supervise the installation of the Westbay System.

This report documents the installation tasks and related Quality Assurance (QA) checks.

2. Pre-Installation Activities

The borehole was drilled/cored at a nominal diameter of 96 mm (HQ-size) by wireline coring methods. The borehole was drilled about 70 degrees inclined from horizontal. Water labeled with 100 ppb fluorescein was used as a lubricant during coring. An HWT surface casing (nominal 114.3 mm OD) was advanced to 81meters in the borehole.

Borehole logging, packer testing, flow logging and vertical seismic profiling were performed prior to the installation of the Westbay System. The borehole logging included Fluid Temperature / Resistivity, Mechanical Caliper, Optical Televiewer, Acoustic Televiewer, Natural Gamma, Electromagnetic Induction (Apparent Conductivity), Magnetic Susceptibility, Neutron, Gamma-Gamma, Full Waveform Sonic, Normal Resistivity, Spontaneous Potential and Single Point Resistance, Heat-Pulse Flowmeter, Spectral Gamma, and Borehole Deviation. Flow logging was carried out using the Posiva Flow Log - Difference flow method which records fluid flow, electrical conductivity and temperature, hydraulic head, and rock resistivity. For the packer testing, slug and pulse tests were performed. High-resolution vertical seismic profiling was carried out using multiple downhole receivers and multi-offset/multi-azimuth swept impact source locations.

(Note: all depths discussed in this report are with respect to ground surface measured along the inclined borehole. Monitoring well reference elevations were not available at the time of writing).

3. Installation

Westbay Instruments technical services representatives Mr. Lessard and Mr. Kim, and Mr. Bowman of Golder were on site to install the Westbay System in IG_BH06 as indicated below in Table 1.

(Note: Monitoring well ground level reference elevation was 417.74 masl. Depths are measured along the borehole axis and not corrected for borehole angle).

Table 1: Summary of Westbay System Installation

Well Name.	Field Installation Dates	Total Depth (m)	MP38 Tubing Length (m)	No. Monitoring Zones
IG_BH06	February 3 to 26, 2022	1000.83	994.9	22

The Westbay System in IG_BH06 was installed according to the procedure described below. A summary of the QA checks conducted during the installation, including the dates for each task is documented on the Westbay Field QA Summary Form in Appendix A.

3.1 Preparation of Westbay System Design

Packer depths for the borehole were provided to Westbay by Golder. A well design was created based on these depths. The well design was used to prepare a Westbay Completion Log, which specifies the location of the Westbay System components in the well. This log was reviewed and approved in the field by Golder prior to installation of the Westbay System. The Westbay Completion Log as approved was used as an installation guide in the field. A field copy of the log is in Appendix B.

A measurement port coupling was included in 22 monitoring zones to measure groundwater formation pressures and collect groundwater formation samples. A Model 0206 hydraulic pumping port coupling was included in 5 selected zones to provide purging and hydraulic conductivity testing capabilities. Golder requested that optional geotextile filters (made of Polyethylene Terephthalate [PET] fabric) were to be installed over the measurement port couplings.

A summary of the installed Westbay System components is shown on Table 2 below. (also in the Summary Completion Log Legend in Appendix C).

Table 2: Summary of Installed Westbay System Components

Well Name	Packers (0238)	Measurement Ports (0205)	Pumping Ports (0206)
IG_BH06	22	22	5

3.2 Layout of Westbay System Tubing Components

Prior to the installation, the Westbay System components were set out in a heated warehouse according to the sequence indicated on the Westbay Completion Log. Data collected during the layout were recorded on the Tubing Summary (field copy) in Appendix D and the Summary Completion Log (field copy) in Appendix E. Each tubing length was numbered and measured beginning with the lowermost as an aid to confirming the proper sequence of components. The appropriate Westbay System couplings were attached to each casing section. Magnetic location collars were attached 0.6 meter below the top of the measurement port couplings in the monitoring intervals.

Since the borehole is inclined at 70 degrees from horizontal, abrasion protectors were used to protect the packers and pumping ports from damage during deployment inside the guide tube and lower section of the open borehole. The abrasion protectors are clamped to the outside of the Westbay tubing at specified positions. There are 2 abrasion protectors per packer, 1 abrasion protector per pumping port, and 2 abrasion protectors for the bottom section of Westbay tubing. In addition, a special tapered end plug is attached to the bottom of the Westbay tubing.

The components were re-sealed in their plastic protective covers and re-boxed for transport to the site. Once on site, the components were arranged on racks in a heated trailer.

Each component was visually inspected. Serial numbers for each packer, pumping port and measurement port coupling were recorded on the Westbay Completion Log (field copy) in Appendix B and Summary Completion Log (Field Copy) in Appendix E. The component layout was confirmed with the log before the components were lowered into the borehole.

3.3 Lowering of Westbay System Components

Steel HQ drill rods (guide tube) were lowered into the borehole to a depth of 783.84 meters to provide temporary protection from materials dislodged from the borehole wall during installation of the Westbay tubing string. The Westbay System components were lowered into the guide tube by hand up to component number 223 on February 13 and 14. The Westbay component numbers are in reference to the MP38 casing lengths and the associated (top) couplings attached, as documented in the Westbay Completion Log (field copy) in Appendix B.

On the morning of February 15, it was noticed that the HQ drill rod in the drill rig's head was notably warm, likely from heat applied at the rig floor for overnight freezing protection from nominal overnight air temperatures of about -35 to -40 ° C. The Westbay tubing string was lifted for inspection of component number 223. Deformation (stretching) of the MP38 casing section was observed, consistent with exposure to temperature greater than the specified maximum operating limit of +40 °C. After discussions with Golder, it was decided to retrieve up to component number 130 for inspection as there was a possibility that this item may also have been exposed to elevated overnight temperatures from similar overnight freeze protection heating on the night of February 13. The retrieval activities are summarized in Table 3 below.

Table 3: Summary of the MP38 Components Retrieval Activities

Date (2022)	Activity	Notes
February 15	• Component # 223 was retrieved from the well	Length check of #223 Before: 3.047 meter After deformed: 3.073 meter
February 16	• Component # 222 was retrieved from the well • Open the P-Port on component # 150 • Retrieved to component #129 • Cleaned and inspected the seal surfaces and O-rings of component #221 to 129 • Replace components # 222 and 223 with new parts • All components set on the layout rack in preparation for lowering	Length check of # 222 Before: 3.047 meter After deformed: 3.053 meter
February 17	• Component #128 was lifted and checked OK • Confirmed with Golder that the installation procedure could be proceed.	

On February 17, lowering of the Westbay components was resumed with a hoist on the rig.

During lowering, each assembled joint was tested with a minimum internal hydraulic pressure of 150-psi for one minute to confirm hydraulic seals. A record of each successful joint test and the placement of each component are noted by check marks on the Westbay Completion Log. Fluorescein-traced drill water

supplied by Golder was added to the Westbay System when necessary to counter buoyancy effects while components were lowered into the borehole and was also used for the tests of joint seals during lowering.

3.4 Hydraulic Integrity Testing

On February 19, 2022, after the Westbay System string was lowered into the borehole, the water level inside the Westbay System completion was monitored at a depth different from the open borehole water level for a minimum period of thirty minutes to confirm hydraulic integrity of the completion. The data from the hydraulic integrity test are shown on the third page of the Westbay Completion Log (field copy) in Appendix B and in Table 4 below.

Table 4: Hydraulic Integrity Test

Well Name	February 19, 2022	Fluid Levels	
	Time	Inside Tubing	Outside Tubing
IG_BH06	09:33	131.642m	*~0.00 m
	09:40	131.631m	
	09:50	131.628m	
	10:00	131.626m	
	10:10	131.625m	
	10:20	131.624m	
	10:30	131.624m	
	10:40	131.624m	
	10:50	131.624m	

*Borehole water level was measured near ground level on February 11, 2022, just prior to lowering Westbay System. Water was displaced from the borehole during lowering of the Westbay components, thus a fluid level near ground level was maintained.

3.5 Positioning of Westbay System Completion

After the completion of hydraulic integrity testing, the Westbay System was positioned as illustrated on the Westbay Completion Log (field copy) in Appendix B. The Westbay System was supported in this position from the surface with mechanical grips while the packers were inflated. The positioning of the Westbay System components is based on the "nominal" lengths of Westbay System components. The positioning calculations do not include allowances for borehole temperature or deviation effects.

Figure 1, entitled “MOSDAX Transducer Position” illustrates how the position of the MOSDAX transducer position is correlated to the reference position at the top of a measurement port. Figure 2, titled “Dimensions of Packer Seals and Monitoring Zones” outlines the calculations used to determine the packer depths and length of each monitoring zone.

3.6 Pre-inflation Profile

On February 19, 2022, a pre-inflation pressure profile was performed prior to inflating the packers in order to confirm the proper position and operation of measurement ports and magnetic collars. All measurement ports and magnetic collars were confirmed to be operating properly and correctly positioned within the borehole. A plot of the Pre-inflation Piezometric levels in all zones is shown on Figure 3. Note that the plot includes a reference to 'equivalent depth to water' which is the calculated piezometric level as defined on the Westbay Piezometric Pressures/Levels Field Data and Calculation Sheet completed for each pressure profile. The apparent port depths are based on distance along the borehole from ground surface and are not corrected for borehole angle. The field data calculation sheets for the pre-inflation pressure profile are provided in Appendix F.

3.7 Inflation of Westbay System Packers

The Westbay System packers were inflated sequentially beginning at the bottom of the well using fluorescein-traced drill water provided by Golder. The packer inflation was coordinated with removal of the temporary guide tube. The guide tube was initially positioned to at a depth of 783.84 meters below ground level, allowing the lower six packers to be exposed in the open borehole. The string of short lengths of the Westbay tubing (component #362 to #365) was added temporarily to gain a access to the Westbay completion after each stage of the temporary guide tube removal. The bottom six packers were inflated on February 20th. On February 21 the guide tube was removed to 618.84 meters and 5 packers were inflated on February 21. A further 4 packers were inflated after the guide tube was lifted to 450.84 meters

On the morning of February 23, it was discovered that the Westbay string was disconnected at component number 358, which had been positioned at about 1.2 meters above the ground level and had been under tension overnight. MP component number 359 had pulled out of coupling of component number 358, which subsequently rested at a depth of 0.15m below the surface casing. The HQ rod in the drill head had been kept warm overnight as freezing protection from the cold air temperatures. The duration of the direct heat and the temperature were unknown. It is believed that the Westbay string in the HQ rod, particularly coupling number 358, was exposed to a temperature beyond the maximum operating temperature (+40°C)which led to decreased tensile strength, failure of the coupling, and separation of the Westbay tubing.

A conference call was convened with Westbay, Golder, and NWMO (Nuclear Waste Management Organization) to discuss further steps. The resulting MP38 Recovery plan prepared by Golder in coordination with Westbay (attached in Appendix G, draft version), was approved by NWMO. Recovery and re-connection of the Westbay string were successful with the second stage attempt as described in the plan. The components that may have been exposed to excess temperature were replaced with new parts starting with the coupling on component 357 and continuing with components 358 to 361, the sequence in length being 1-ft, 1-ft, 1-ft, and 2-ft as illustrated on Westbay Completion Log in Appendix B. Before continuing with the packer inflation, a hydraulic integrity test and a partial pressure profile were carried out and confirmed that the Westbay string was in normal condition. The Westbay string was watertight, and all the measurement ports above the inflated packers were normal. The packer inflation continued. The packer inflation activities are summarized in the Table 5.

Table 5: Summary of Packer Inflation Activities

Date (2022)	Guide Tube Depth (m)	Number of Packers Inflated	Other Activities
Feb. 20	783.84	6	
Feb. 21	618.84	5	
Feb. 22	450.84	4	
Feb. 23			• On the morning, it was found that the Westbay string was disconnected at the top part of the coupling in the component number 358. • A conference call with Golder, Westbay, and NWMO. • A MP38 Recovery plan was made by Golder and presented to NWMO. • NWMO approved the plan.
Feb. 24	All retrieved		• Implement the first stage of the recovery plan ➢ Unable to gain an access to the coupling of component number 358 by removing one HQ-rod • Implement the second stage of the recovery plan ➢ All the HQ rods were removed. ➢ The borehole water level was checked by using MX Sampler probe. The calculated depth to water in the borehole was about 150 meters. ➢ Raised the borehole water level to the ground-level. ➢ Regaining access to the coupling of the component number 358 was successful by lifting the Westbay string with the Westbay mini-packers and hose configuration. ➢ Replaced the coupling of the component number 357 as well as component number 358(1-ft), 359(1-ft), 360(1-ft), and 361(2-ft).
Feb. 25		7	• Hydraulic Integrity Test was performed and passed. • Sent the MX Sampler down to the bottom of the Westbay string to check the connections of the string. • A partial profile (from measurement port number 15 to 22) was done, and it showed the ports functioned normally. • Continued with packer inflations.

The Westbay Model No. 6055 vented inflation tool was used for packer inflation. All the packers appear to have inflated properly. The data for inflation of each packer are provided on the Westbay Packer Inflation Records included in Appendix H.

3.8 De-Stressing of Westbay System

Westbay's procedure for de-stressing the Westbay tubing was used to reduce the long-term load on the upper components. In this procedure the initial hanging weight of the Westbay string is applied in increments to selected packers after they have been inflated. In this process the top of the Westbay completion is lowered, and the positions of the shallower ports and packers are affected. Thus, after all packers have been inflated, the weight of the Westbay completion is distributed among the packers. The final clamp-off weight is supported at the well top. The depths of ports and packers are adjusted to account for the cumulative effect of the lowering. A summary of the de-stressing results is provided in Table 6. The final positions of the Westbay casing components (ports and packers) are shown on the Summary Completion Log (Appendix C) and Tables 7 and 8 (Appendix I). All positions (depths) are measured in distance along the borehole from ground level and are not corrected for borehole angle.

Table 6: Summary of De-Stressing Results

Well Name	Weight after inflating 6 packers (lb)	Final Clamp-off Weight (lb)	Total Movement at surface (m)	Beginning stick-up (m)	End stick-up (m)
IG_BH06	800	90	0.88	2.60	1.72

*Measurements of distance and weight taken from the temporary stick-up above datum before wellhead completion was built. Distance measurements are taken along the borehole axis and are not corrected for borehole angle. The weight scale output is in pounds (lb).

4. Formation Pressure Measurements

On February 26, 2022, after the completion of packer inflation, formation pressures were measured at each of the 22 measurement ports. At that time, the formation pressures may not have recovered from the pre-installation activities. Effects on formation pressures are more likely to occur in monitoring zones located in low-permeability geological formations, and longer-term monitoring may be required to establish representative fluid pressures.

A plot of the post-inflation piezometric pressure and groundwater levels is provided in Figure 4. Note that the plot includes a reference to 'equivalent depth to water' which is the calculated piezometric level as defined on the Westbay Piezometric Pressures/Levels Field Data and Calculation Sheet completed for each pressure profile. The port depths used in these calculations are not corrected for borehole angle. The field data calculation sheets for the post-inflation pressure profile are provided in Appendix J.

The post-inflation data were examined to confirm proper operation of the measurement ports and to confirm the proper operation of packer seals between monitoring zones.

Future pressure profile measurements: It should be noted that for QA purposes, the post-inflation formation pressure measurements used the same port depths as the pre-inflation pressure measurements. These do not include adjustments for the effect of the de-stressing procedure whereby the as-built depths of shallower ports are slightly deeper than the pre-inflation depths. Future pressure profile measurements and calculations should use the adjusted port depths documented in Tables 7 and 8 in Appendix I.

In conclusion, the subject Westbay System completion was installed successfully as documented in this report.

Figure 1:

MOSDAX Transducer Position

In a Westbay MP38 System Measurement Port Coupling P/N 0205

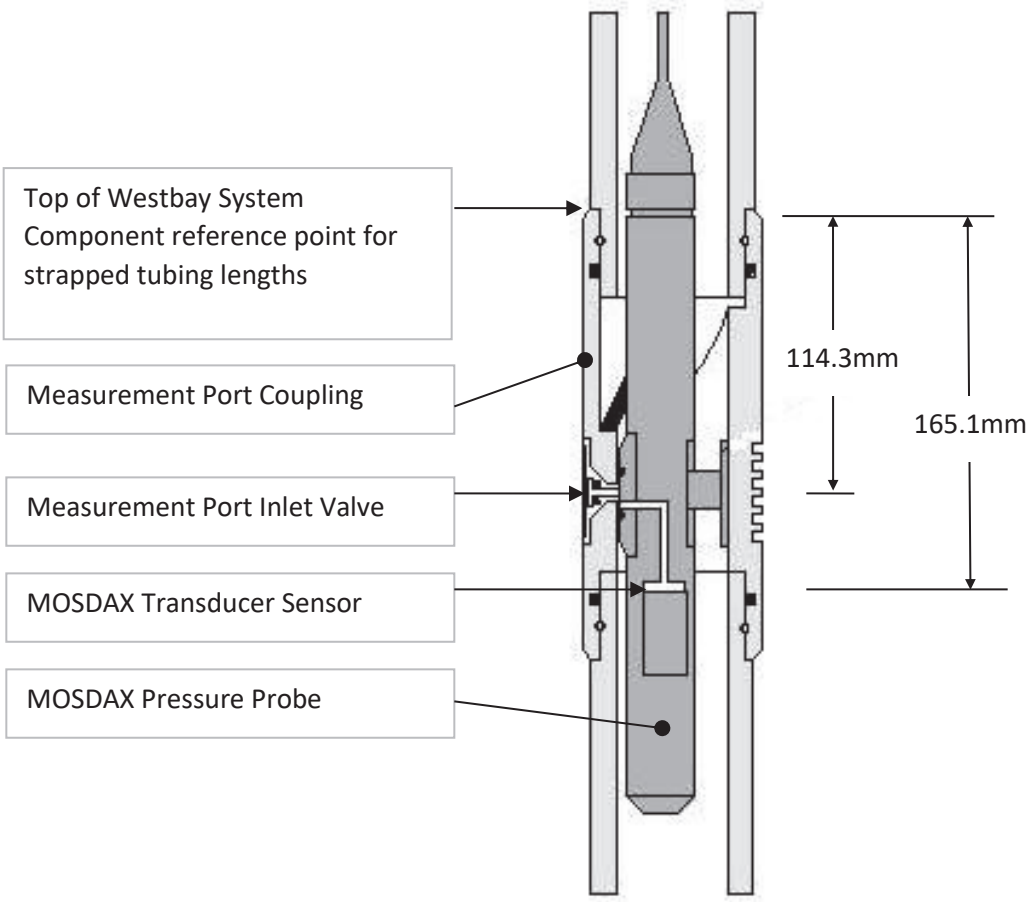
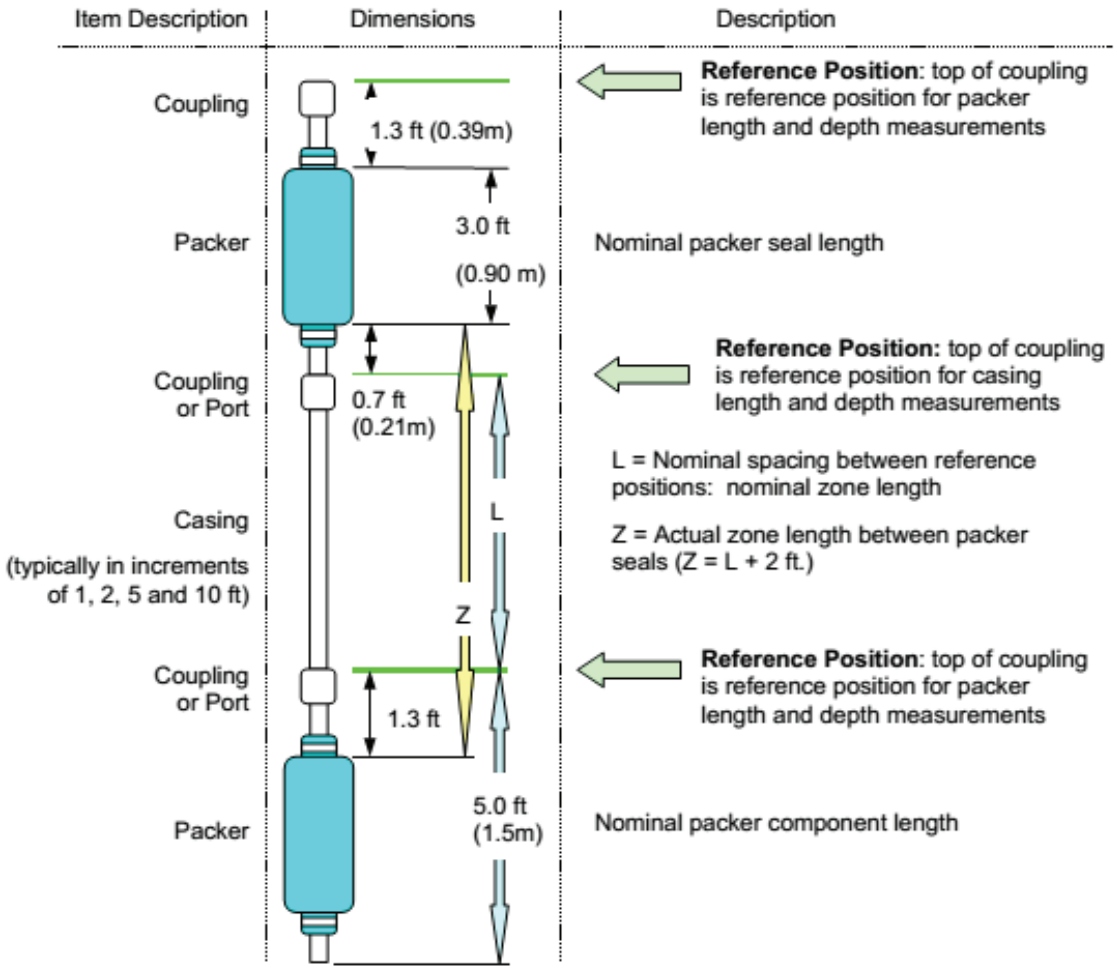


Figure 2:

Dimensions of Packer Seals and Monitoring Zones Westbay MP38 System 0238 Packers

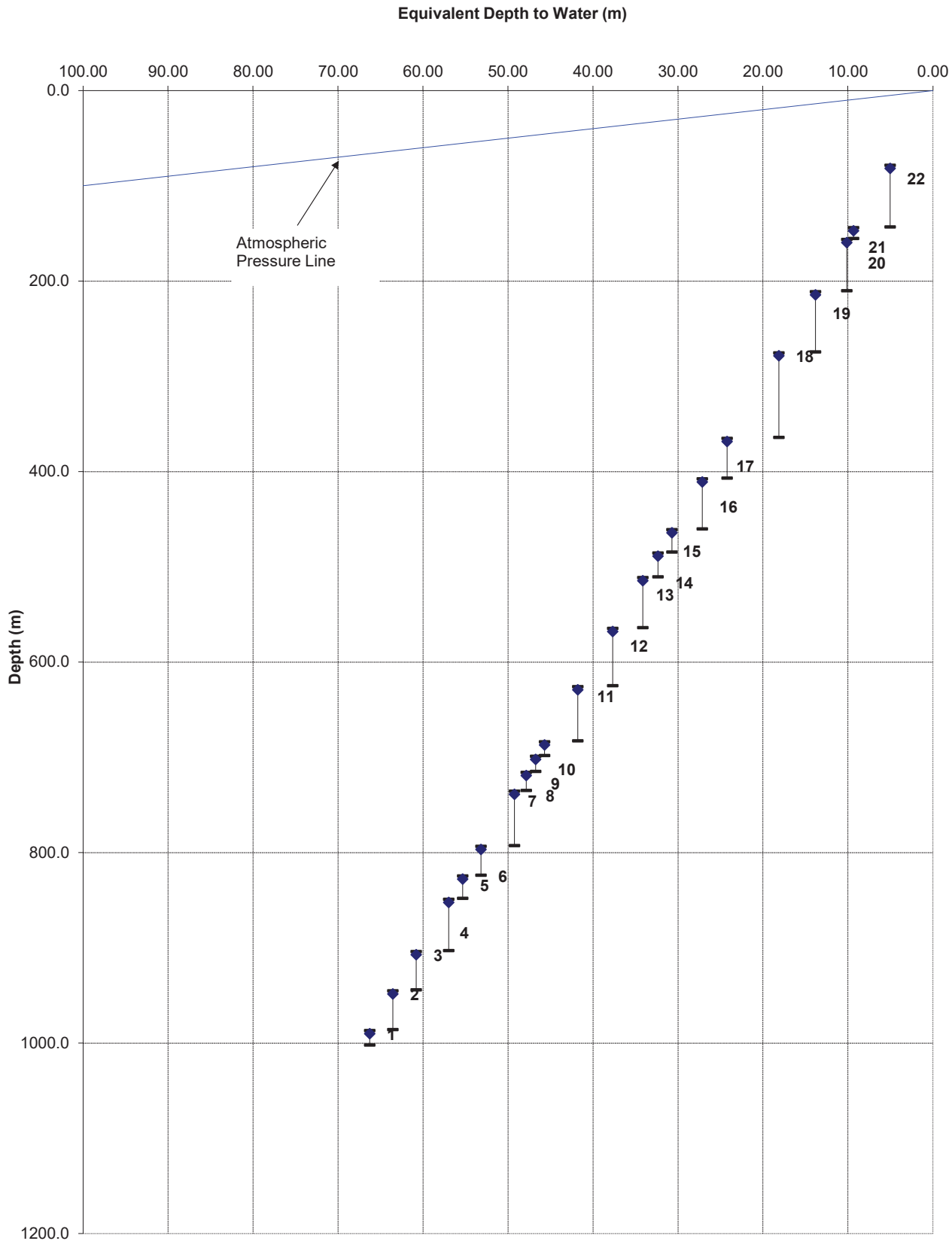


Discussion Points:

- The top of a coupling (Regular Coupling, Measurement Port or Pumping Port) is the reference point for describing nominal depths and nominal lengths. Actual positions of packer seals and zone lengths are determined with respect to the appropriate reference positions.
- Packer Position Example: A packer with a nominal depth of 50 ft (15.2m), will have a nominal packer seal position of 51.3 to 54.3 ft. (15.59 to 16.49m)
- Zone Length Example: A zone whose upper packer is at 50 ft (15.2m) and bottom packer is at 70 ft (21.3m) will have a nominal zone length of 15 ft (4.6m) and an actual zone length (between packer seals) of 15.0+1.3+0.7 = 17.0ft. (4.6 + 0.39 + 0.2 = 5.19m)
- Information on the position of Measurement Port Valve and MOSDAX Transducer sensor, used for detailed calculation of piezometric level measurements, are described separately.

Piezometric Profile:
Monitoring Well: IG_BH06

Profile Date:February 19, 2022
Comments:Pre-Inflation Profile



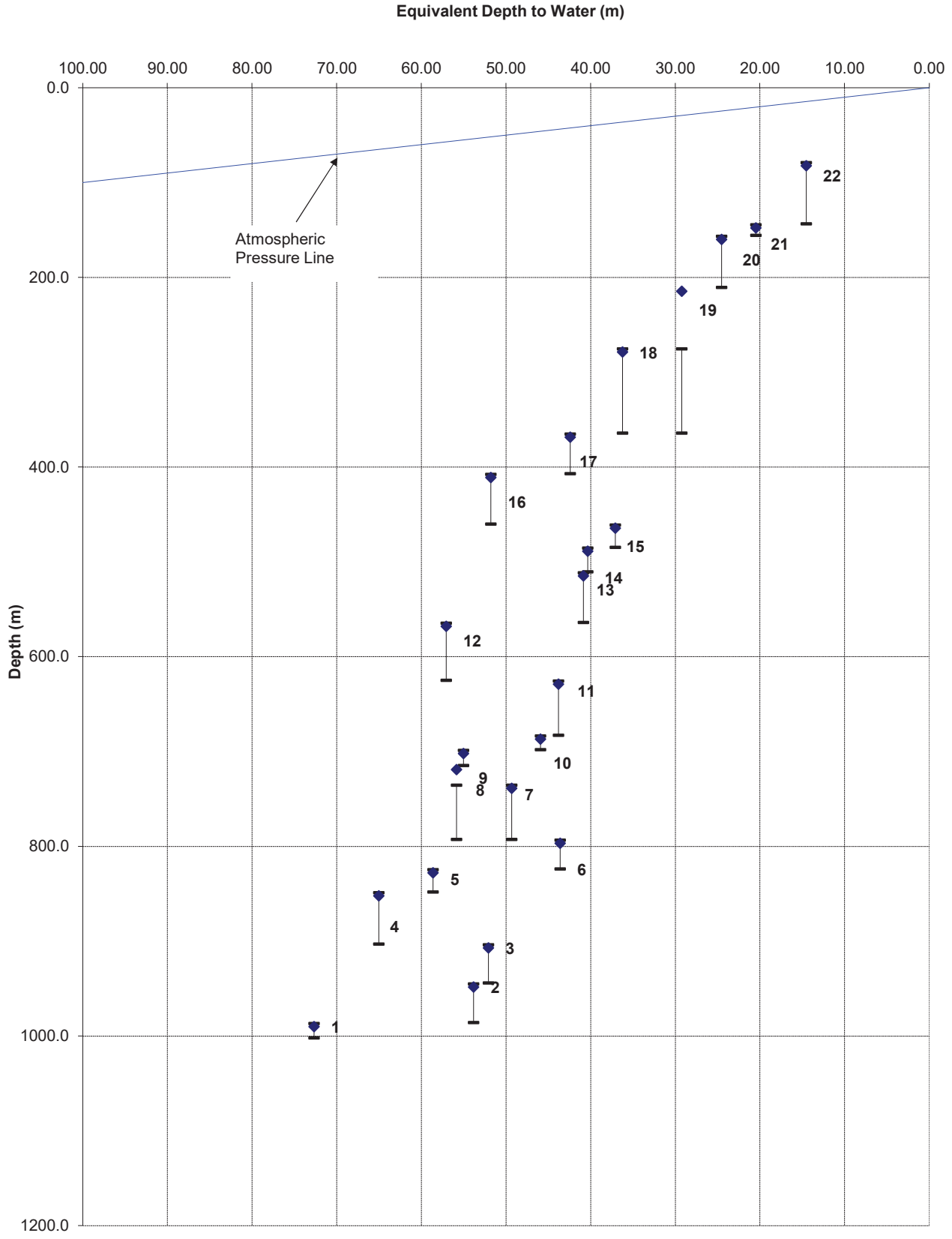
Client:Golder/NWMO
Site:Ignace, ON
Datum:Ground Level

Figure 3

Plot By:TK Date:March 23/22
Checked By:DL Date:Mar 24, 2022
Westbay Project: WB 981

Piezometric Profile:
Monitoring Well: IG_BH06

Profile Date:February 19, 2022
Comments:Post-Inflation Profile



Client:Golder/NWMO
Site:Ignace, ON
Datum:Ground Level

Figure 4

Plot By: TK Date: March 23/22
Checked By: DL Date: Mar 24, 2022
Westbay Project: WB 981

APPENDIX A
IG-BH06

WESTBAY FIELD QA SUMMARY FORM

Westbay Field QA Summary Form - 1 page

QA/QC Summary of Westbay System MP38 Installation

Client: Golder / NWMO Project: WB9181

Well: IG-BH06

			Check ✔	Initials	Date
1	**Client Data and Approvals**				
	1.1	Client design request and Borehole/Well information	✓	TK	Jan 28/22
	1.2	Client approved final design (file name: IG-BH06)	✓	TK	Feb 4/22
	1.3	Client decision on filter sleeves for Measurement Ports	✓	TK/	Feb 12/22
	1.4	Client approval to install, including well and borehole conditions	✓	TK/	Feb 12/22
Comments					
	Hold Point – Design and well information are complete				
2	**Layout of Completion Components**				
	2.1	Installation Log and Confirmation Log printed from approved design (file name: IG-BH06)	✓	TK/ML	Feb 5/22
	2.2	Components taken from inventory	✓	TK/ML	Feb 4 - Feb 14/22
	2.3	Layout completed according to log, plus copy S/N and packer data)	✓	TK/ML	Feb 4 - Feb 14/22
	2.3	Independent confirmation of layout (use Confirmation Log)	✓	TK/ML	Feb 4 - Feb 14/22
	2.4	Independent check on laid out length vs design length	✓	TK/ML	Feb 4 - Feb 14/22
Comments					
	Hold Point – Layout is good to install				
3	**Lowering of Completion String**				
	3.1	Independent staff for layout rack and installation check list	✓	MB	Feb 9 - Feb 15/22
	3.2	Components individually verified with approved log (with call-back repeat)	✓	TK/ML/MB	Feb 9 - Feb 15/22
	3.3	Pressure test tool and apparatus verified	✓	TK/ML	Feb 11 - 19/22
	3.4	Components pass pressure test	✓	TK/ML	"
	3.5	Tensile loads managed within system limits	✓	TK/ML	"
	3.6	Depth to water in Westbay tube checked and adjusted	✓	TK/ML	"
	3.7	Hydraulic integrity test is passed	✓	TK/ML	Feb 19/22
	3.8	Pre-Inflation profile is completed, analyzed and accepted	✓	TK/ML	Feb 19/22
	3.9	Top of Westbay tubing is positioned according to the approved log	✓	TK/ML	Feb 19/22
Comments					
	Hold Point – Completion is good to inflate packers				
4	**Packer Inflation**				
	4.1	Inflation tool and apparatus verified	✓	TK/ML	Feb 24 - 25/22
	4.2	Inflation data recorded on forms at time of inflation	✓	TK/ML	Feb 24 - 25/22
	4.3	Inflation V and P consistent with BH diameter and packer model	✓	TK/ML	Feb 24 - 25/22
	4.4	De-stressing procedure followed (if required)	✓	TK/ML	Feb 24 - 25/22
	4.5	All packers inflated normally	✓	TK/ML	Feb 24 - 25/22
	4.6	Post inflation profile completed, analyzed and accepted	✓	TK/ML	Feb 24 - 25/22
Comments					
	Hold Point – Packer inflation is complete				
5	**Documentation**				
	5.1	Wellhead completion sketch completed	✓	TK/ML	Feb 26/22
	5.2	Draft completion Log and pressure profile data given to client	✓	TK/ML	Feb 28/22
	5.3	Completion Report data appendix is complete	✓	TK/ML	Mar 24/22
	Installation and Documents Complete				

Signature: [signature] **Date:** March 24/22

APPENDIX B

IG-BH06

WESTBAY COMPLETION LOG (FIELD COPY)

Westbay Completion Log (field copy) - 28 pages

Westbay Completion Log

Company: Golder/NWMO
Well: IG_BH 06
Site: Ignace,ON
Project: Groundwater Characterization Study

Job No: WB981
Author: TK/DL

Well Information

Reference Datum:
Elevation of Datum: 0.00 m.
MP Casing Top: 0.00 m.
MP Casing Length: 994.98 m.

Borehole Depth: 1002.00 m.
Borehole Inclination: 70 degrees
Borehole Diameter: 98.00 mm

Well Description:
Plastic MP38 System
Other References:
Email Approval on Jan 28/22

File Information

File Name: IG_BH06.WWD
Report Date: Fri Feb 04 10:43:27 2022

File Date: Feb 04 10:38:40 2022

Comments

Zero reference is ground level
Filter socks on M-P
Borehole water level: ground surface
Guide tubes at = 983.84m below datum

Log Information

Borehole condition confirmed.	(method) geophysical logging	Date: Nov. 16, 2021
MP well design & preparation.	By: TK	Date: Feb 4, 2022
MP well design checked.	By: TK / MB	Date: Feb 5, 2022
MP well and borehole approved to install.	By: MB	Date: Feb. 12, 2022

Legend

(Qty) MP Components

(Library - WD Library 04/29/15)



(1) 0203 - MP38 End Cap

(4) 020102 - MP38 Casing 3 (2F/0.6M)

(3) 020101 - MP38 Casing 4 (1F/0.3M)

(34) 020105 - MP38 Casing 2 (5F/1.5M)

(298) 020110 - MP38 Casing 1 (10F/3M)

(22) 0238 - MP38 Packer - 74mm (5F/1.5M)

(1) 020305 - Tapered End Plug

(335) 0202 - MP38 Regular Coupling

(22) 0205 - MP38 Measurement Port

(5) 0206 - MP38 Hydraulic Pumping Port

(23) 0216 - Magnetic Location Collar

(51) 0250002C2- MP38 Abrasion Protector

Geology

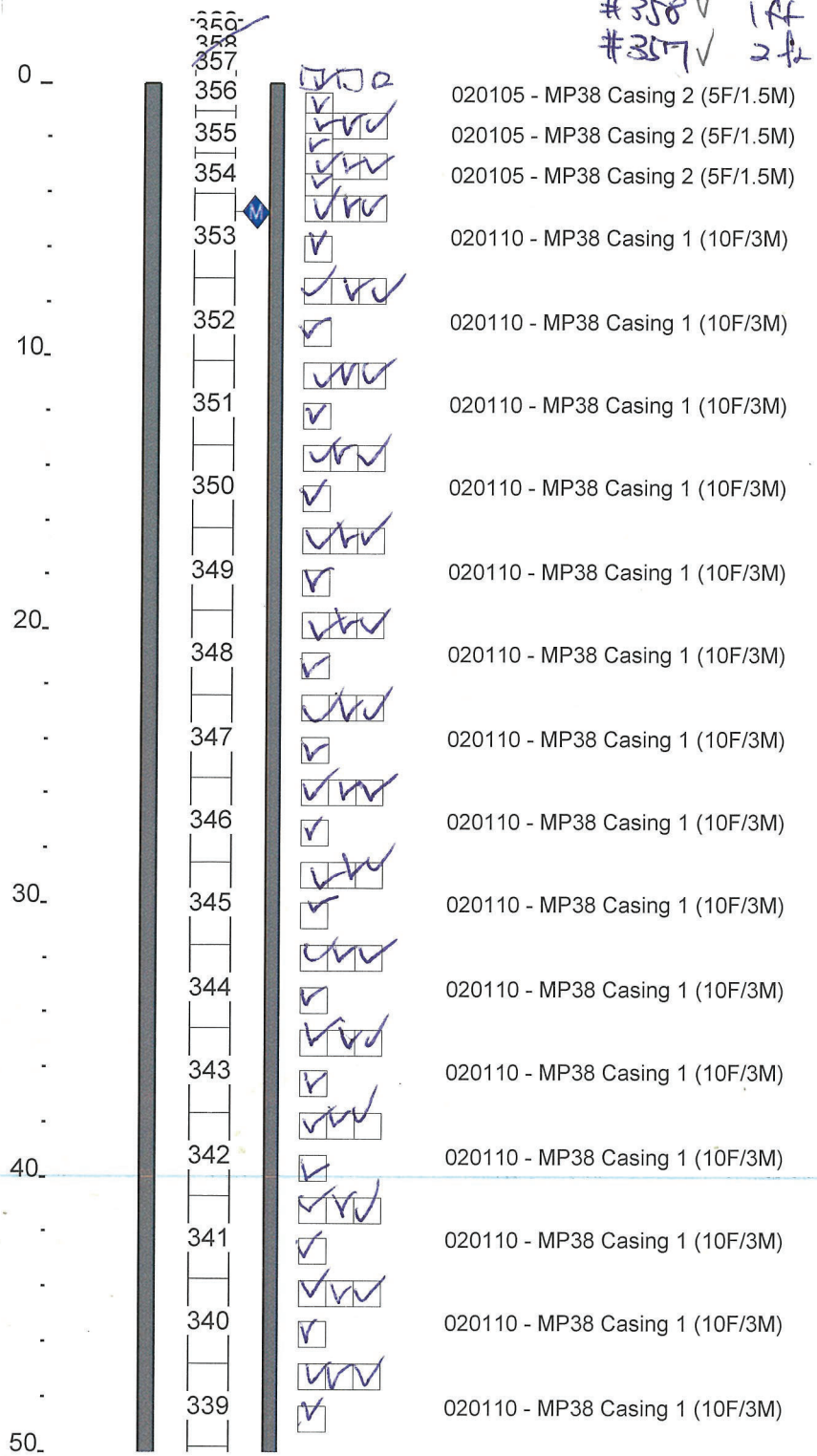
Backfill/Casing

Mild Steel

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

#361 ✓ 2ft.
#360 ✓ 1ft
#359 ✓ 1ft
#358 ✓ 1ft
#357 ✓ 2ft



finish lowering at 9:20AM Feb 19/22.

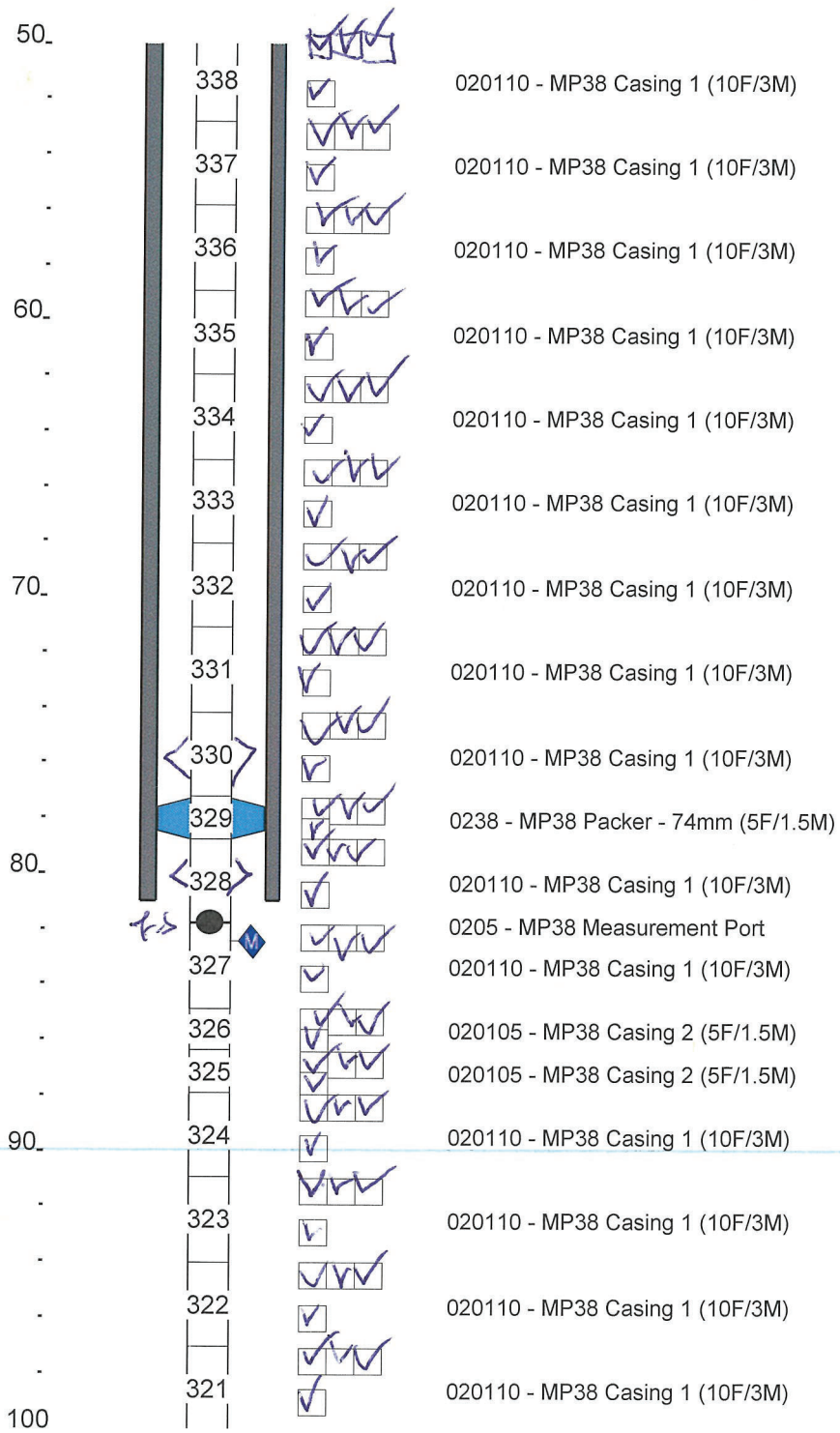
Time	DTW
9:33	131.642
9:40	131.631
9:50	131.628
10:00	131.626
10:10	131.625
10:20	131.624
10:30	131.624
10:40	131.624
10:50	131.624

Feb 19/22
WB to water tight.

Feb 19/22 Add 240 L water.
3:30 resume lowering.
#343 in the well
17:00 Feb 18/22

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



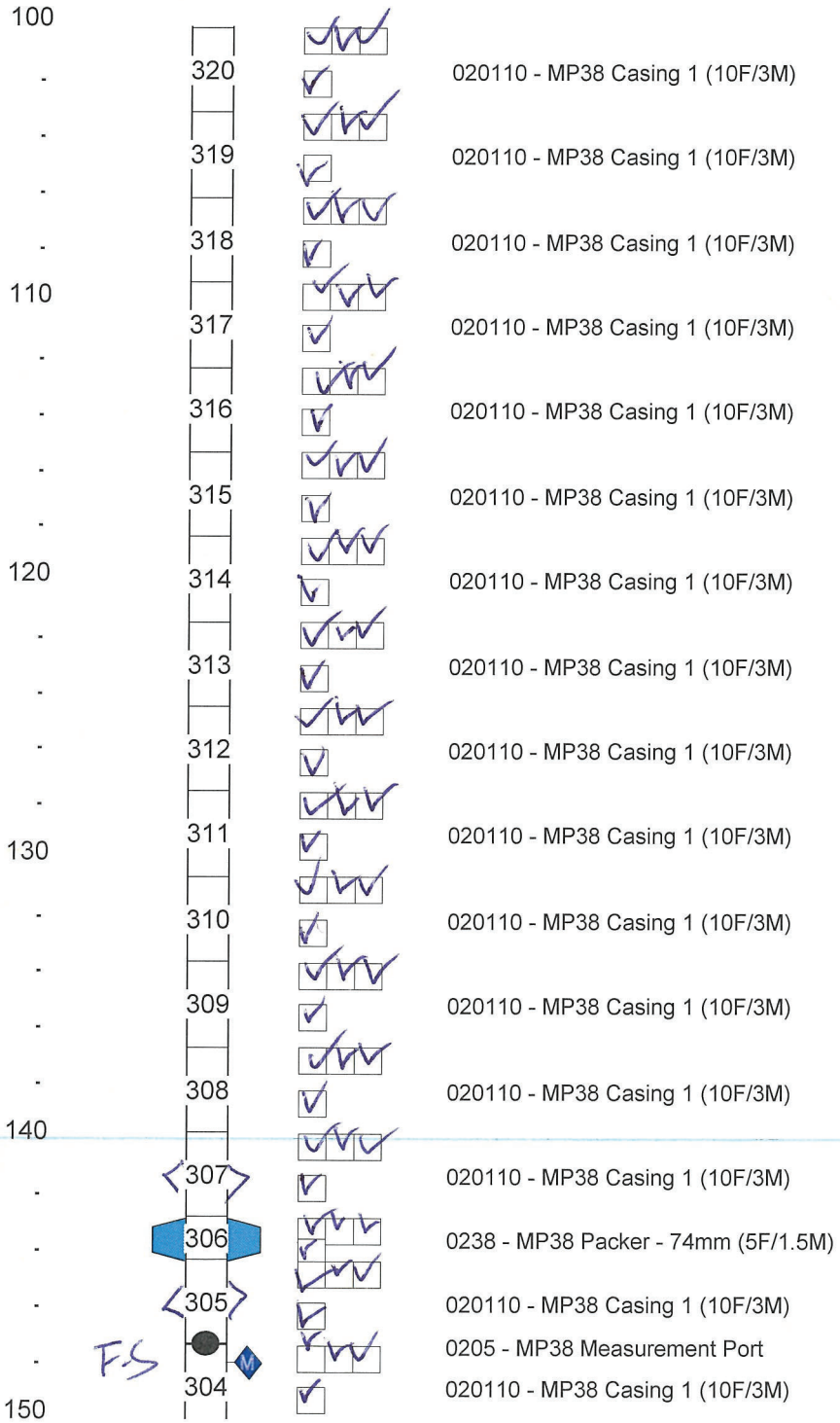
Add ~60 l water

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:02 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



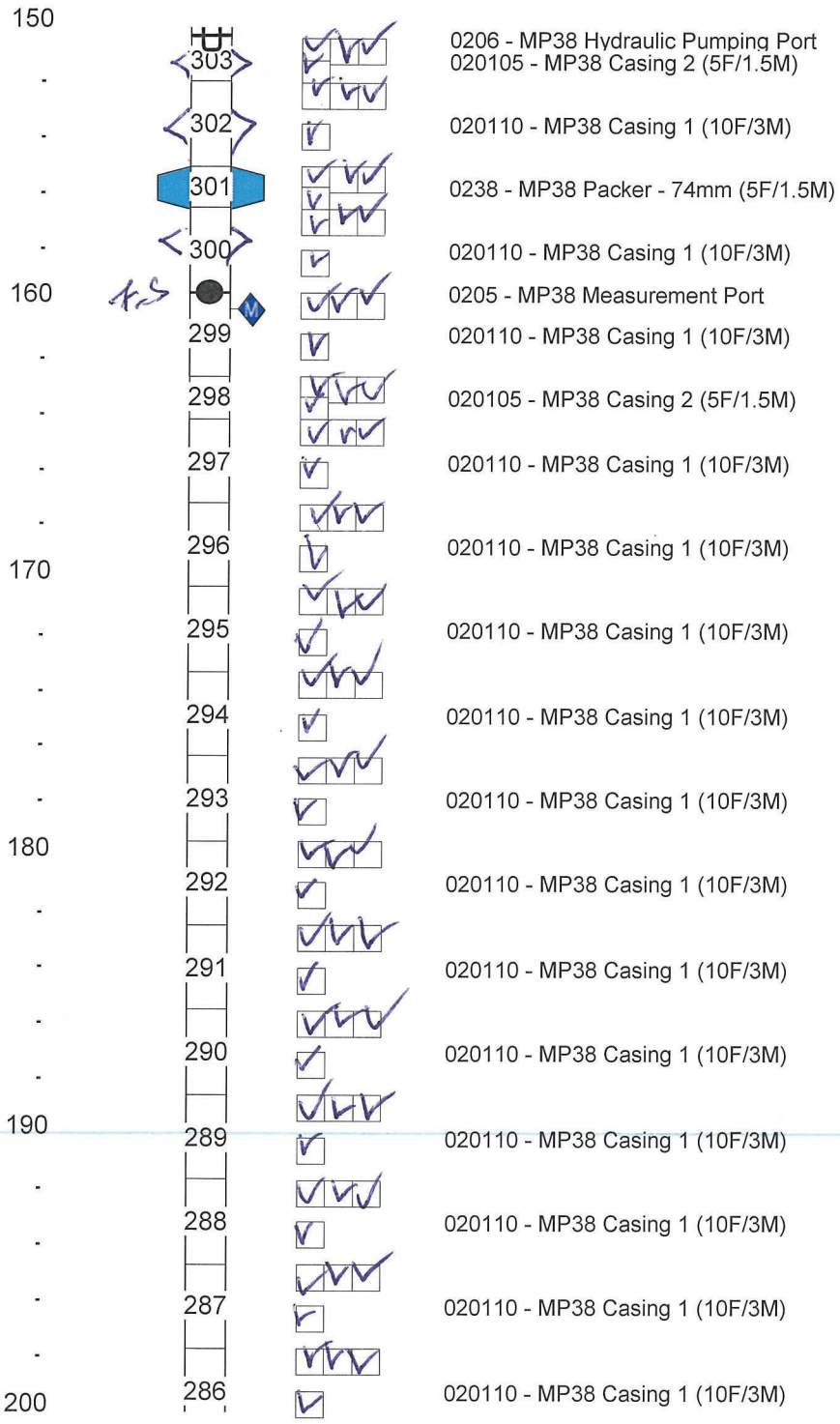
Add ~60 L wash.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:02 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



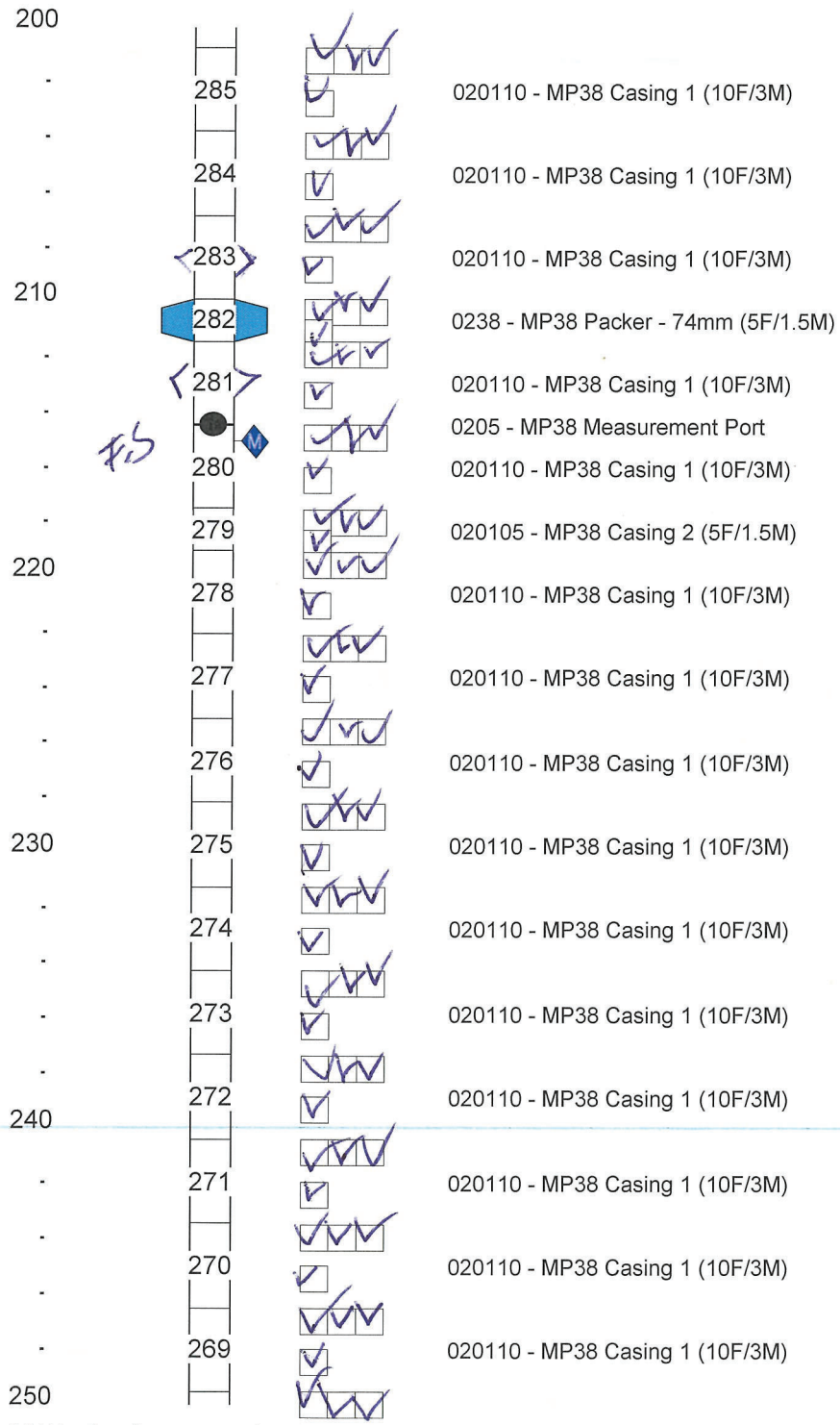
Add water ~60L.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:02 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

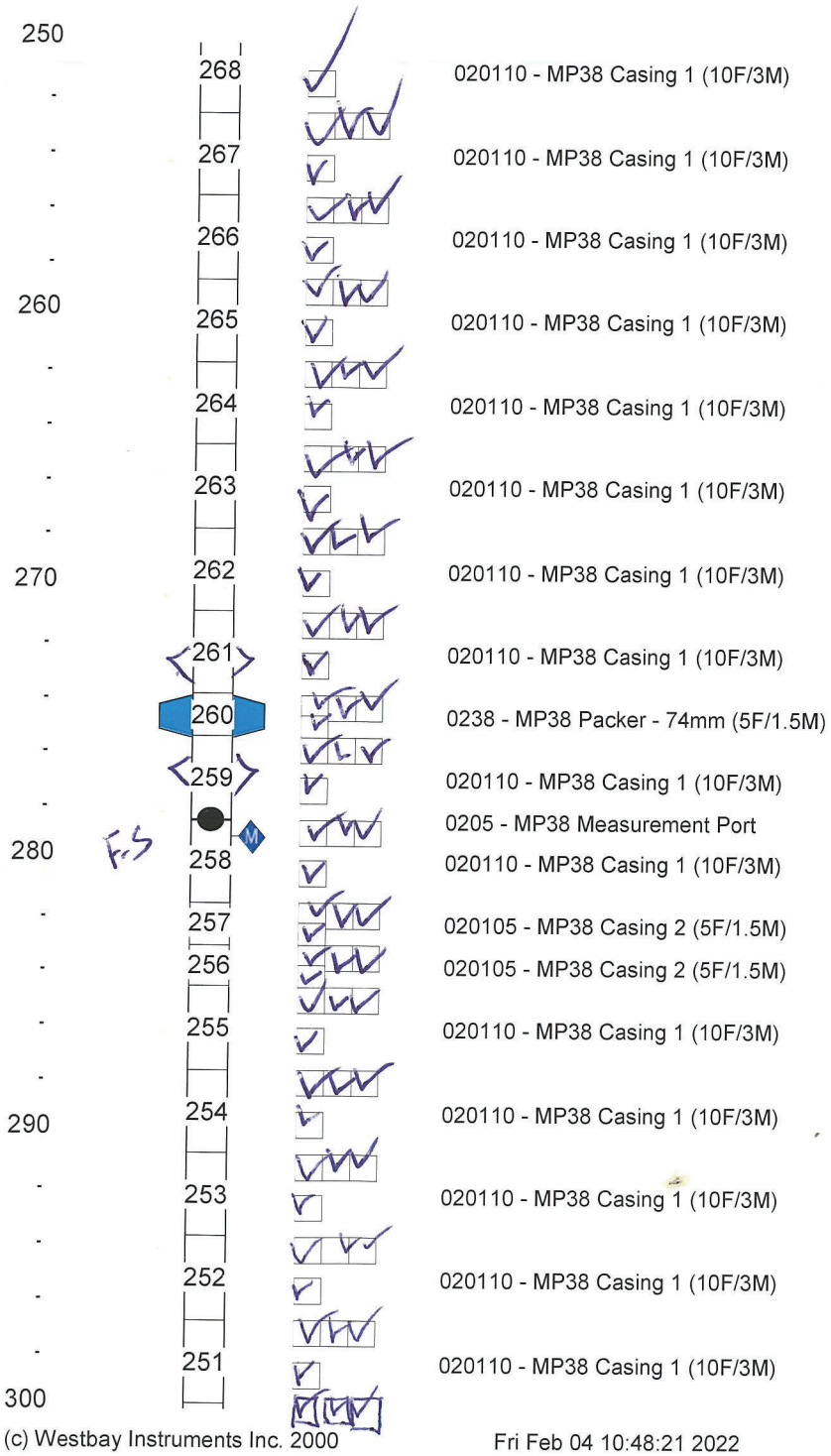


(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:02 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



Adding ~100 l of water.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

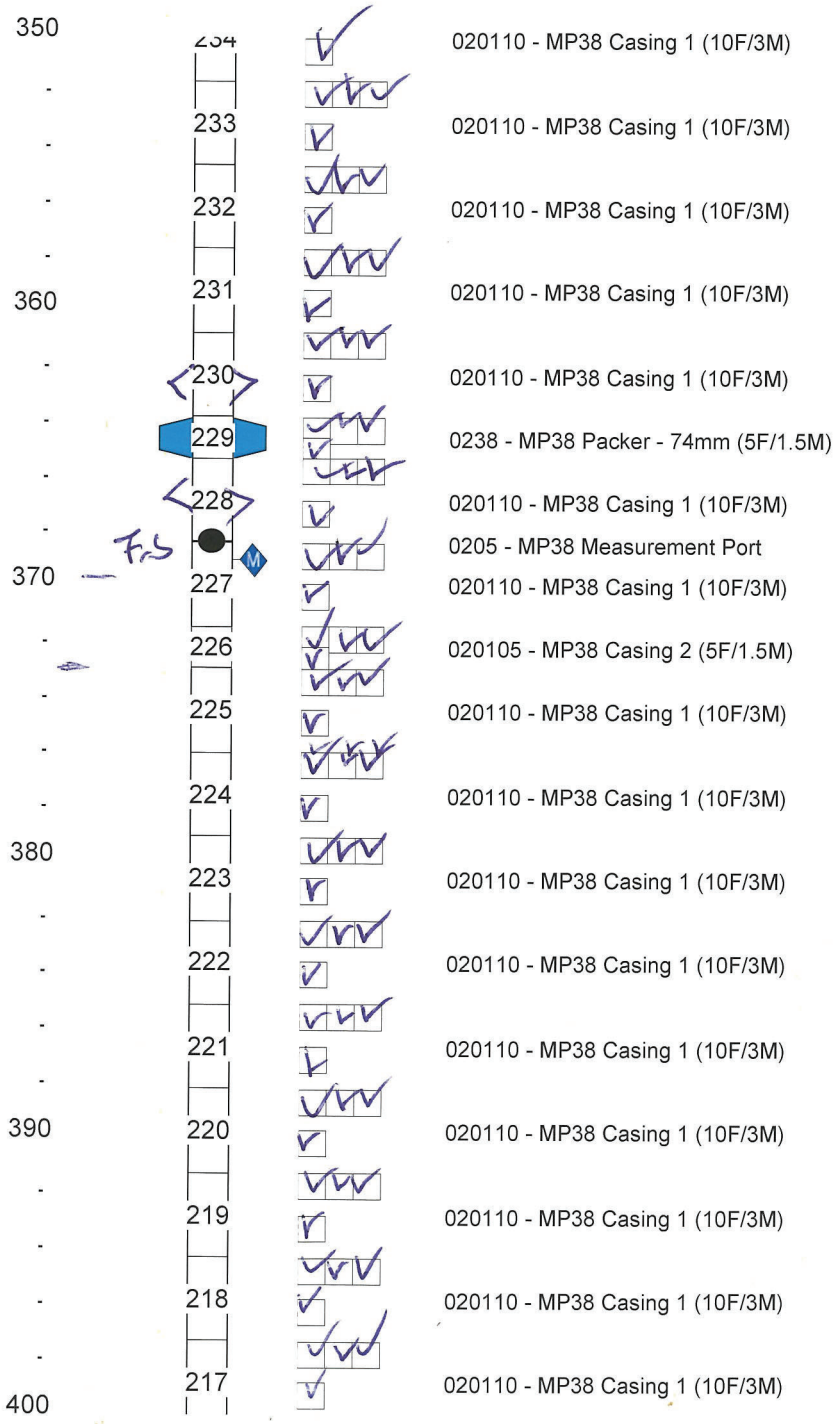
Scale Meters	Westbay Tubing	QA Tested OK	WB Tubing Description	Serial Numbers
300				
	250	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	249	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	248	☑	020110 - MP38 Casing 1 (10F/3M)	
310		☑		
	247	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	246	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	245	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
320	244	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	243	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	242	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	241	☑	020110 - MP38 Casing 1 (10F/3M)	
330		☑		
	240	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	239	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	238	☑	020110 - MP38 Casing 1 (10F/3M)	
340		☑		
	237	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	236	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
	235	☑	020110 - MP38 Casing 1 (10F/3M)	
		☑		
350				

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



#225 was lifted & checked OK
@ 3.048m (~450 lb)

Feb 18/22 8:20 AM
Adding water & resume lowering.

#225 in the well.
16:40 Feb 17/22

resumed at 16:28 Feb 17/22.

#221 in the well.
15:20 Feb 17/22.
Hydraulic integrity test. (Interim)

Time	DTW
15:25	111.212
15:35	111.190
15:45	111.186
15:50	111.186
15:55	111.185
16:00	111.185
16:05	111.184
16:10	111.183
16:15	111.183
16:20	111.183
16:25	111.183

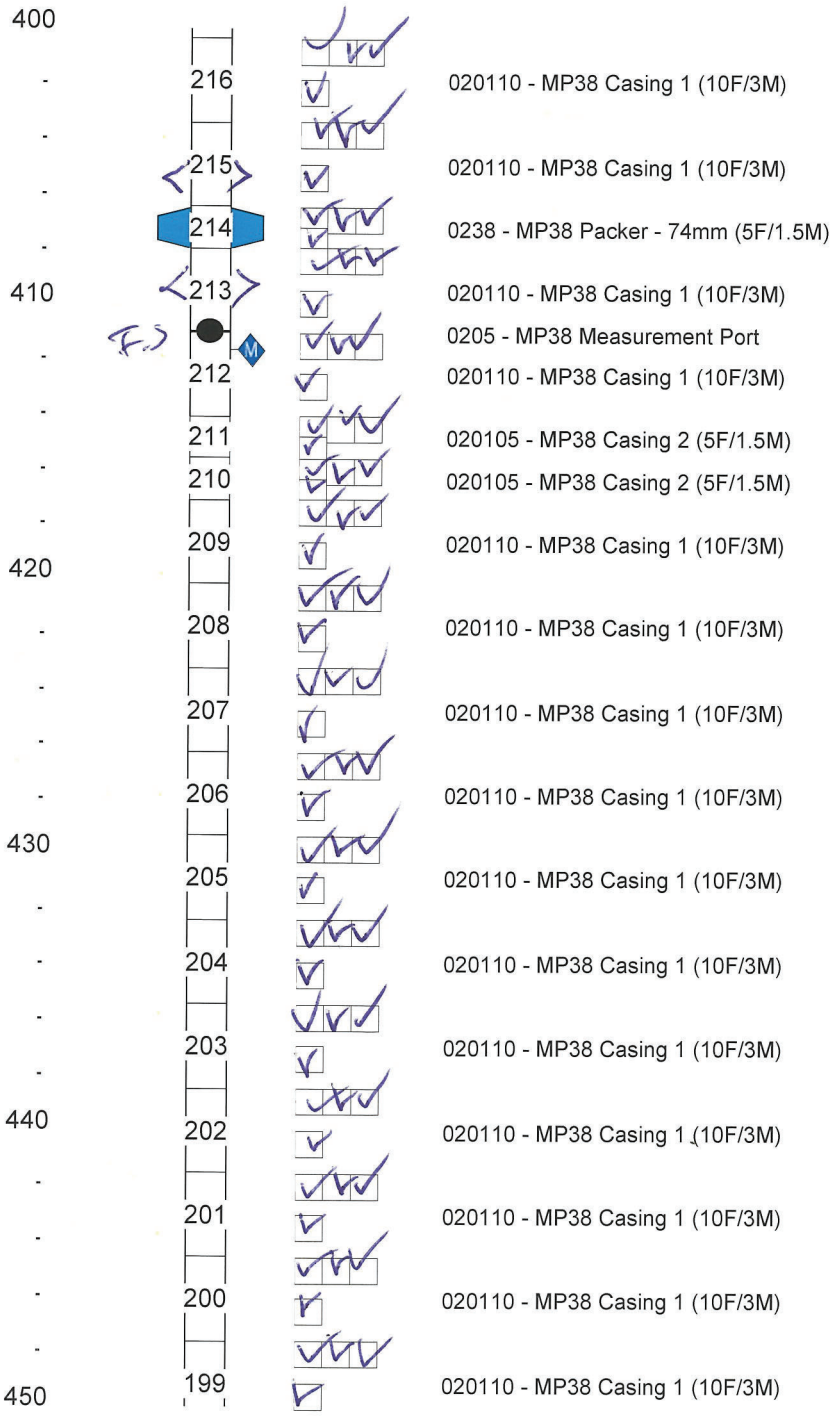
ISIP as water started

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



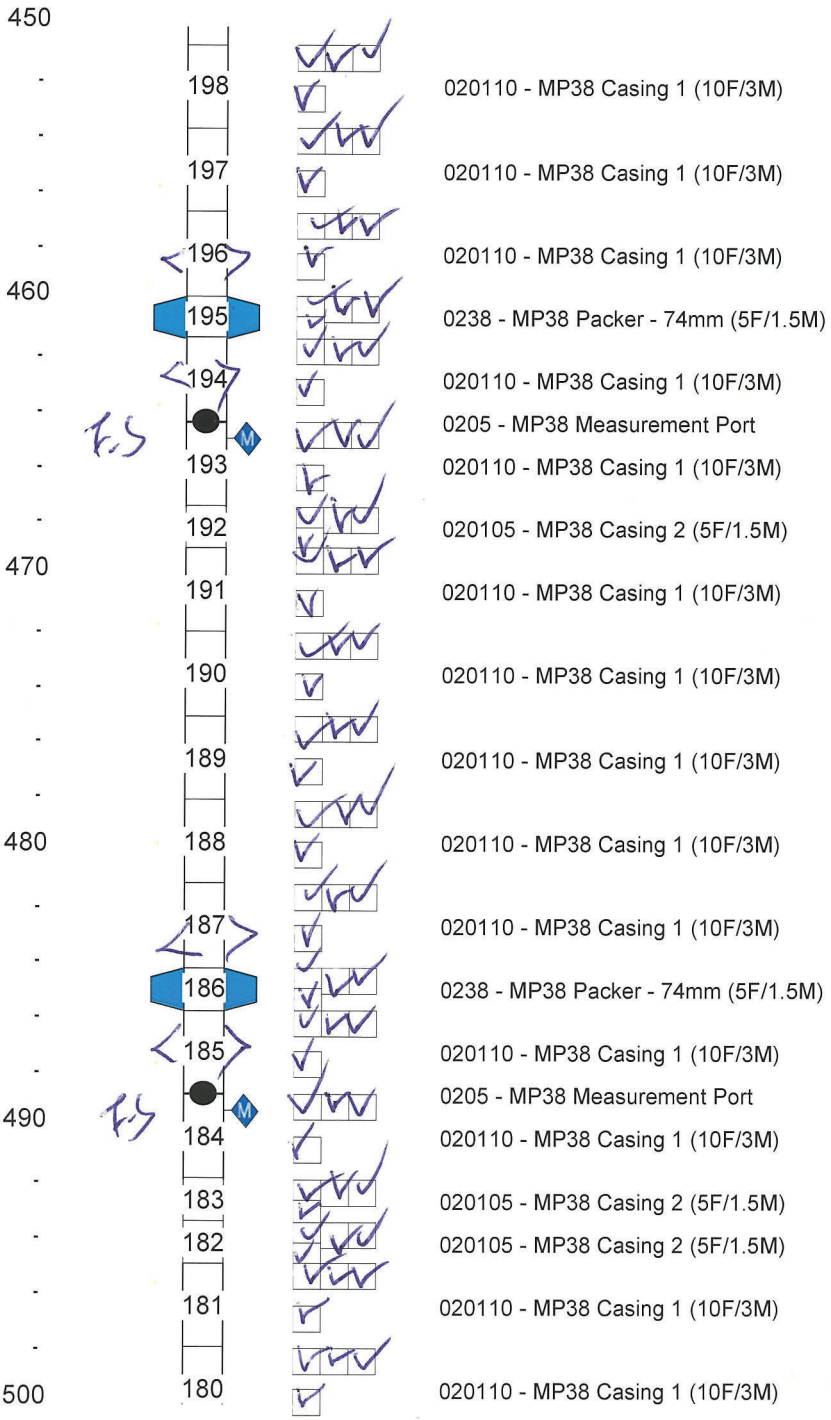
100 L.
Add water ~~100~~ L.
(#201) ~DTW ~57m.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



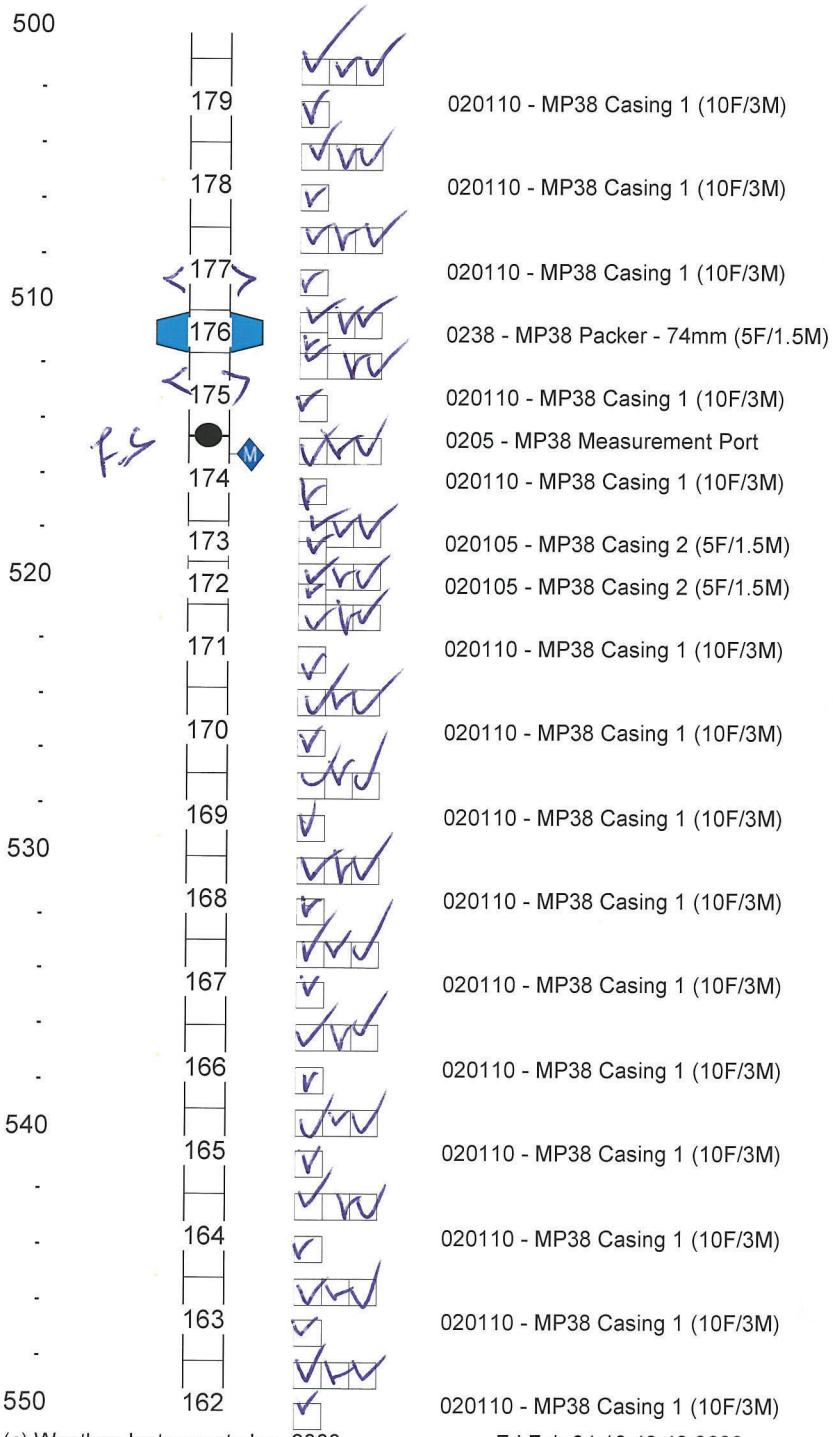
HQ. full of water

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



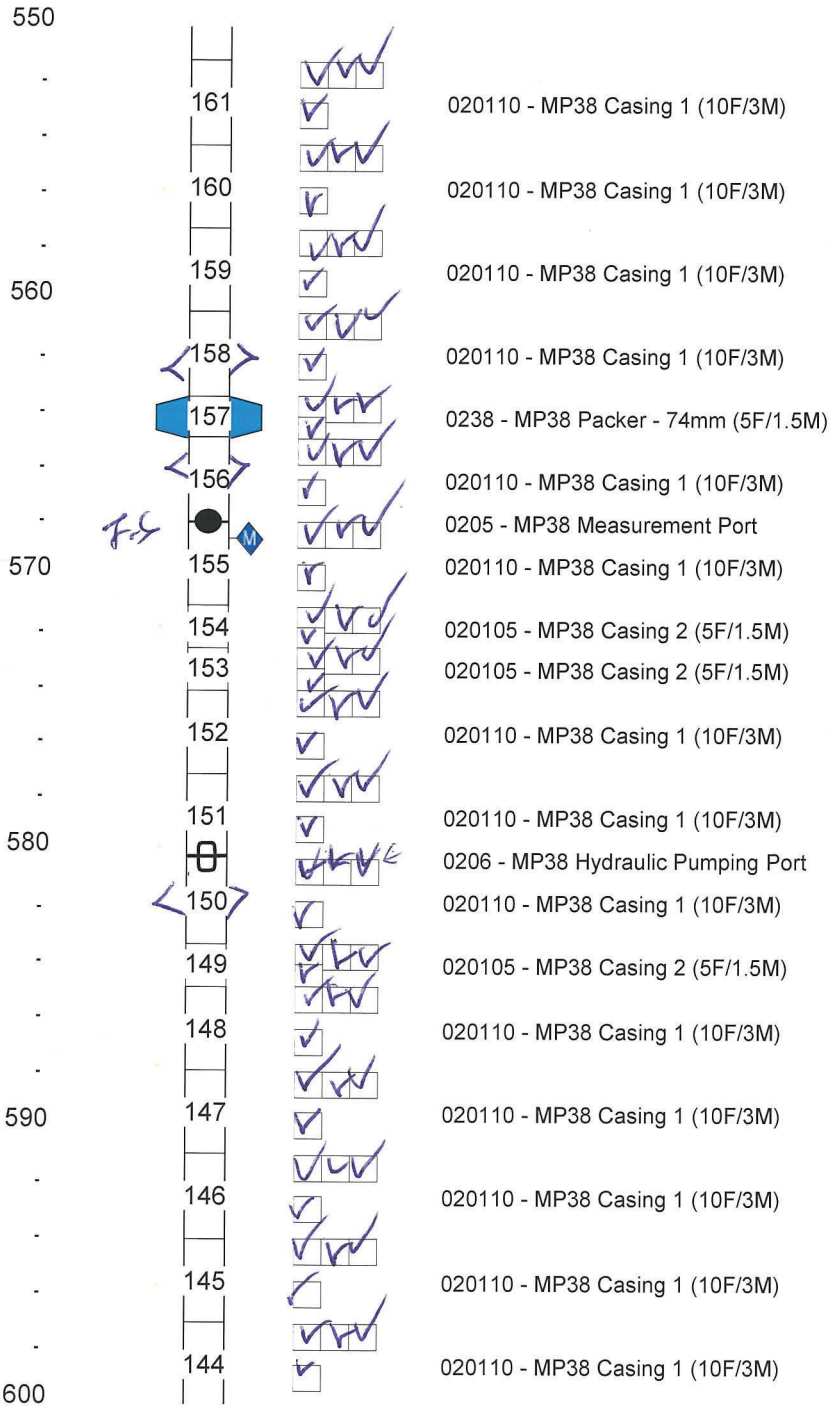
Add water ~8ml.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:43 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

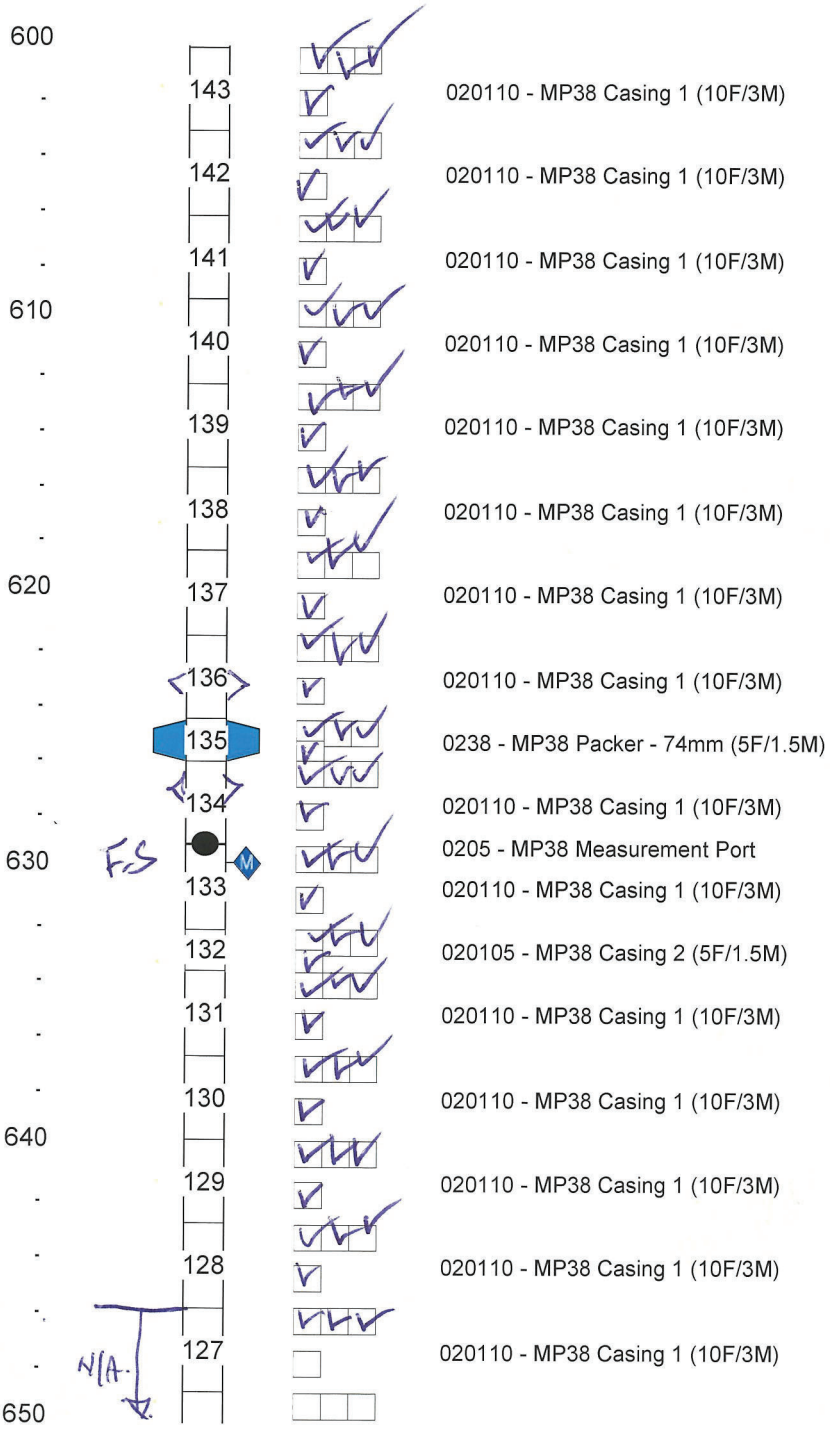


(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:43 2022

Westbay Completion Log
Golder/NWMO

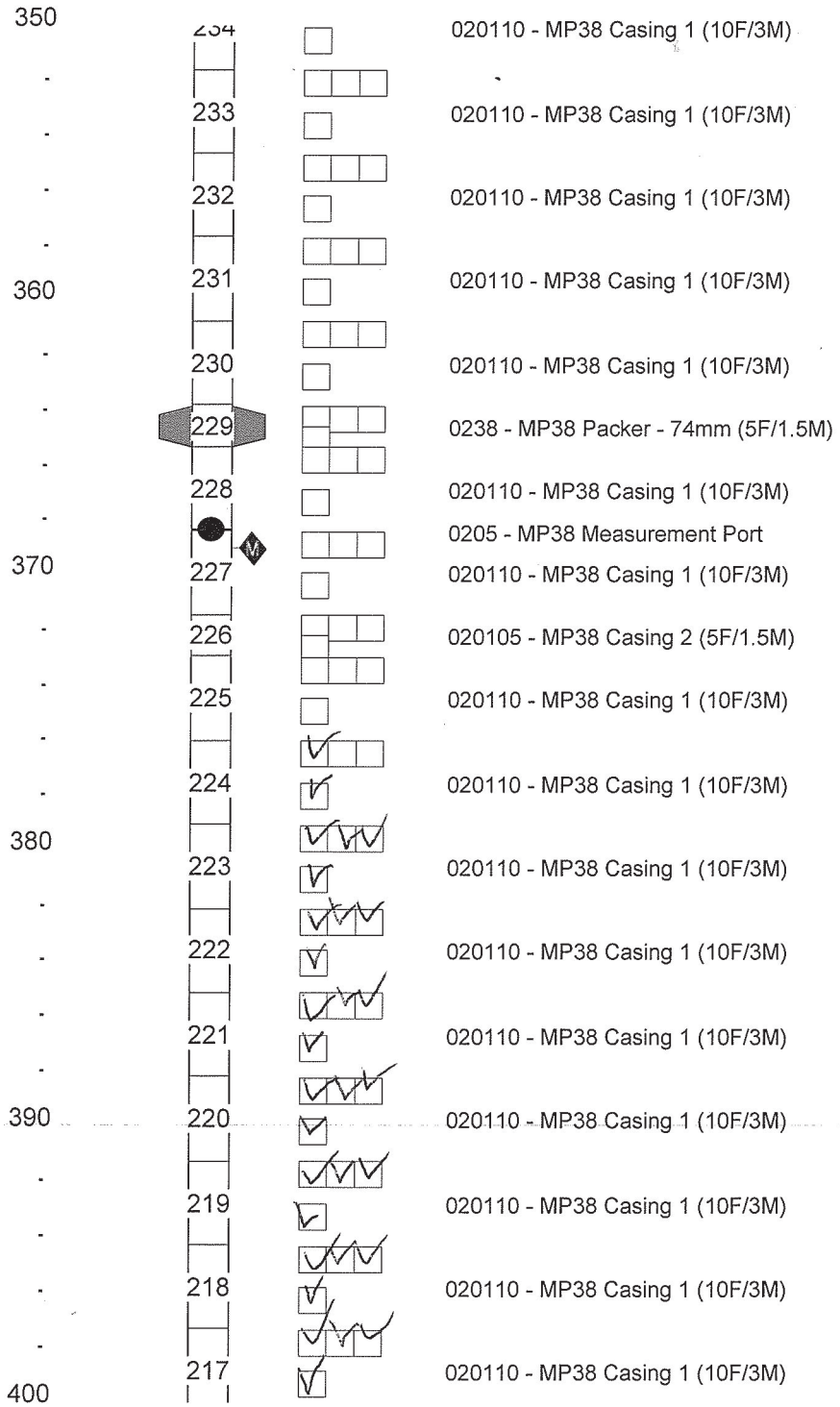
Job No: WB981
Well: IG_BH 06



start lowering with #128
Feb 17/22 8:10AM
#128 was left at well Feb 16/22.
#128 was fitted & checked.
#128 length.: 3.048

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



stopped lowering

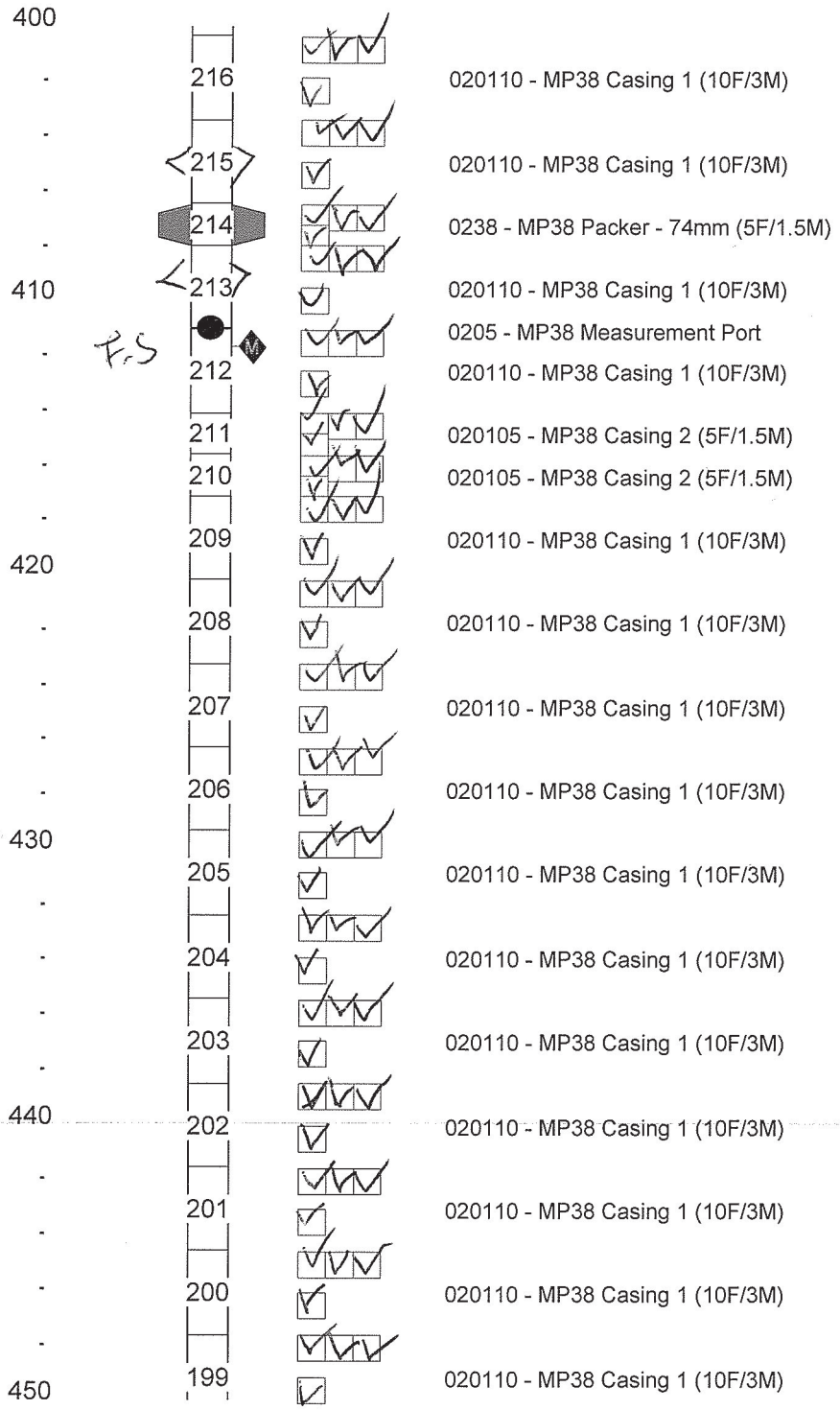
Adding water ~100L (DTW~42)

#224 resumed. Feb 15/22
rig lowering 8:45 AM.

#223 in the well.
3:50 pm Feb 14/22

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

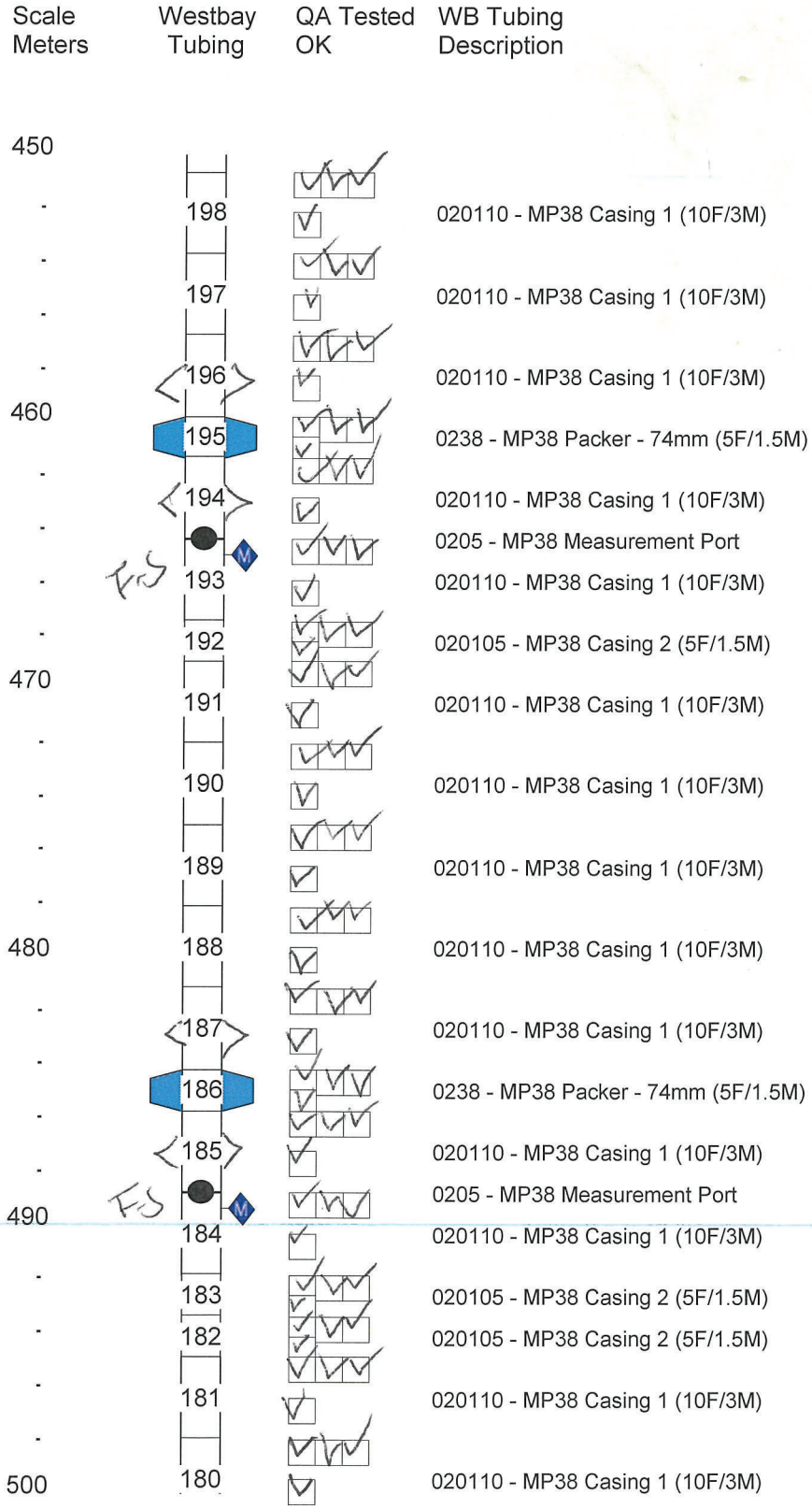


(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



Serial Numbers

Add water ~23 l.

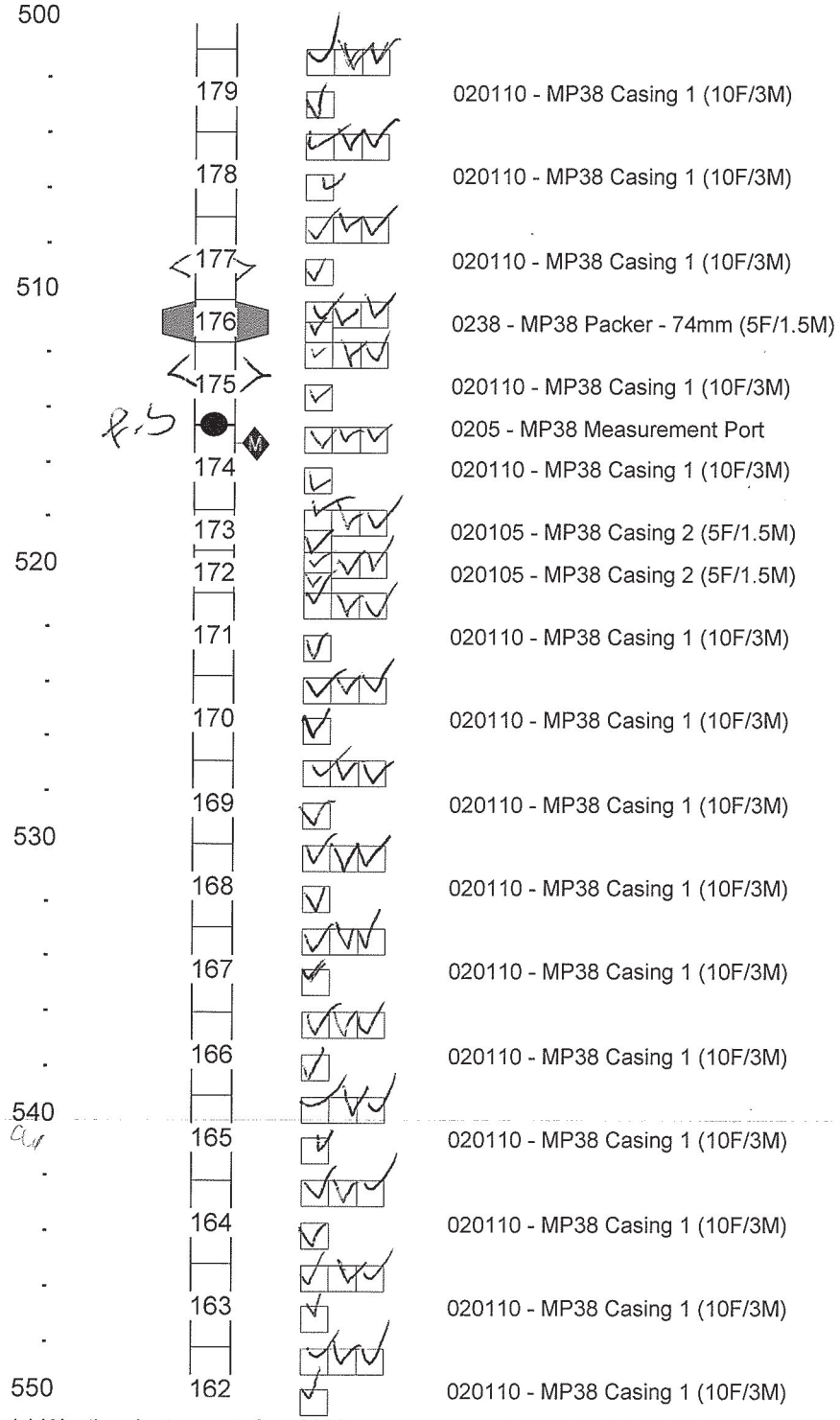
Add water ~23 l.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:21 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



Add water ~ 23l.

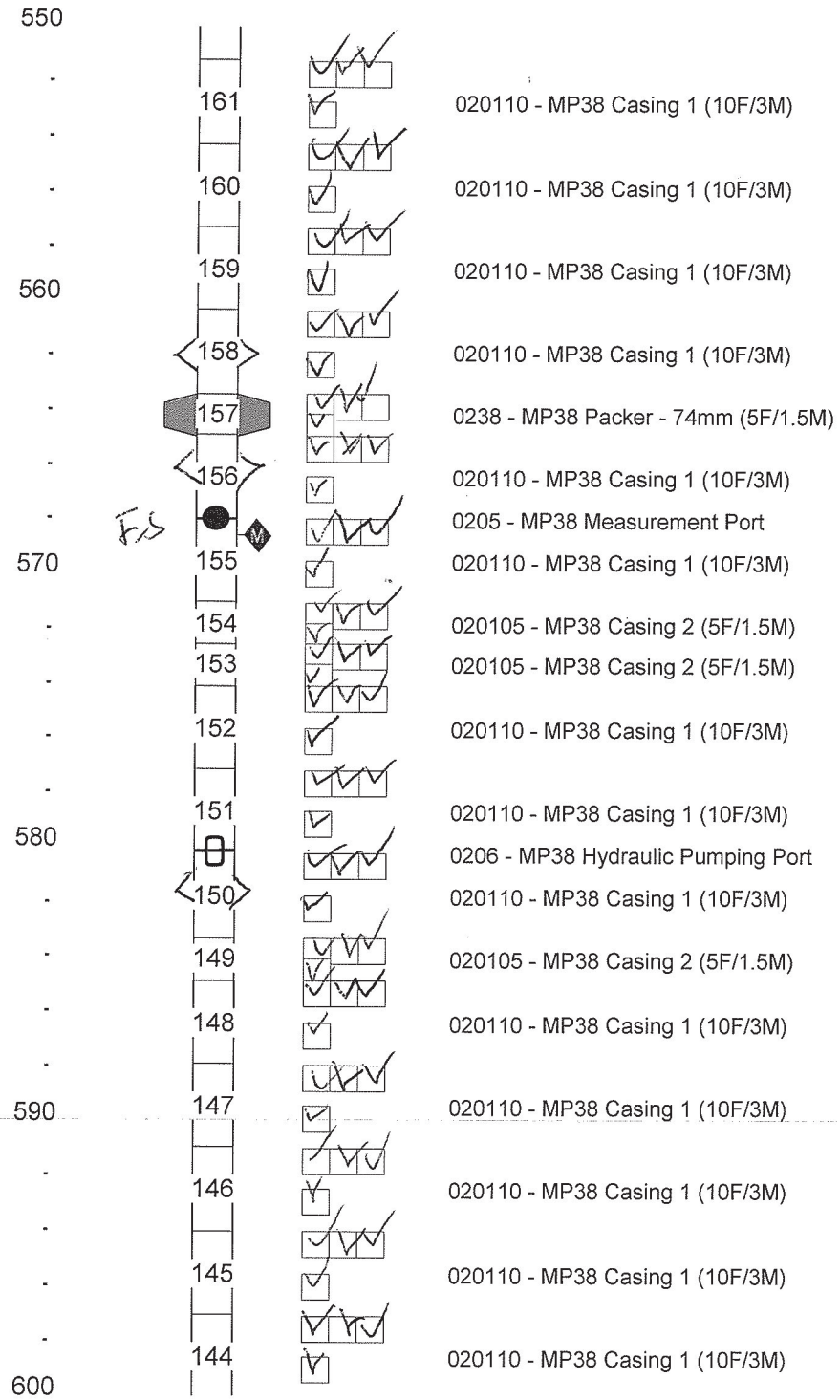
Add water ~ 23l.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:43 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



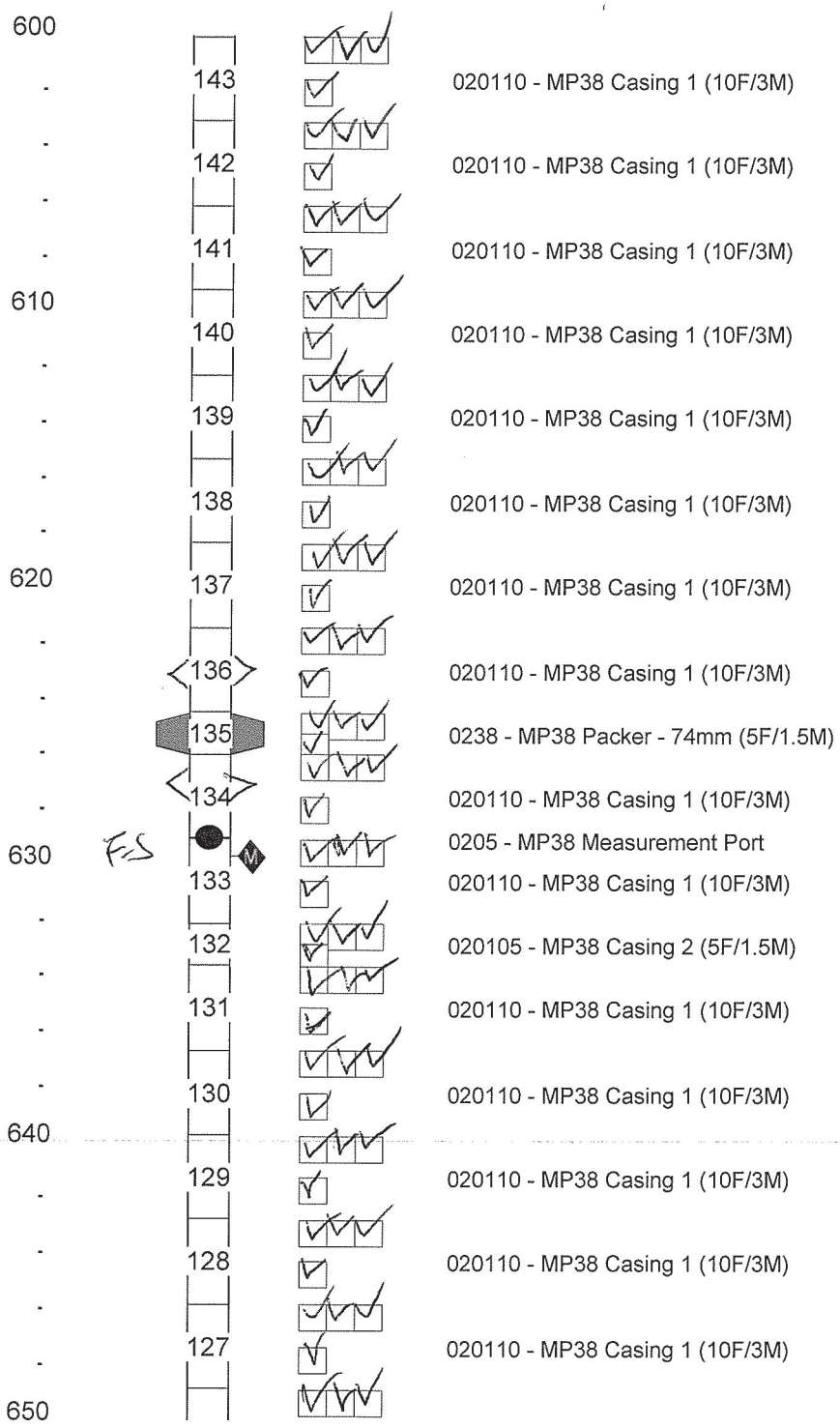
Add water ~23l.

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:48:43 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



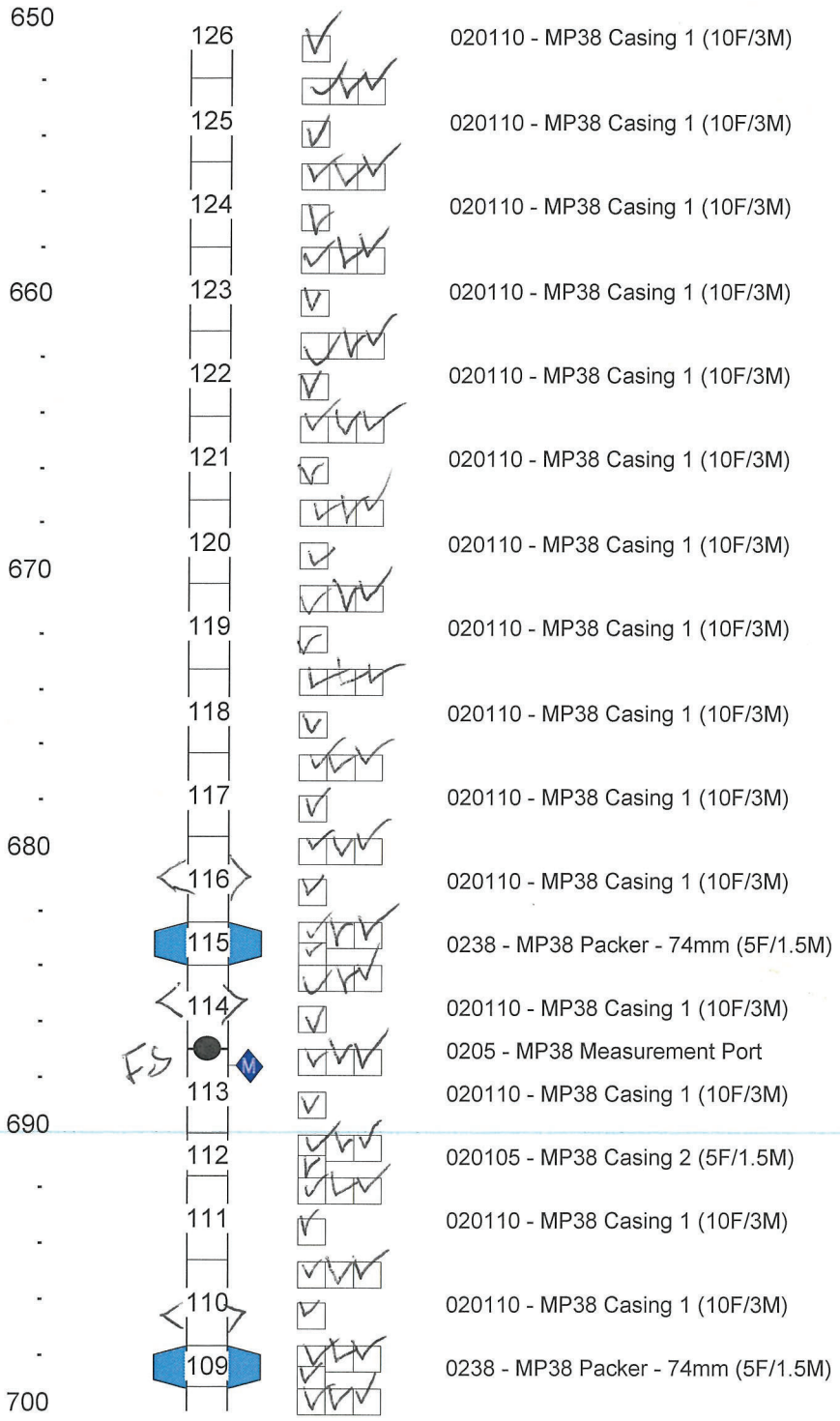
Add water ~23l.

Add water ~22l.

9:40 AM Feb 14 resume with #131
#130 in the well
5:20 pm Feb 13/22

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



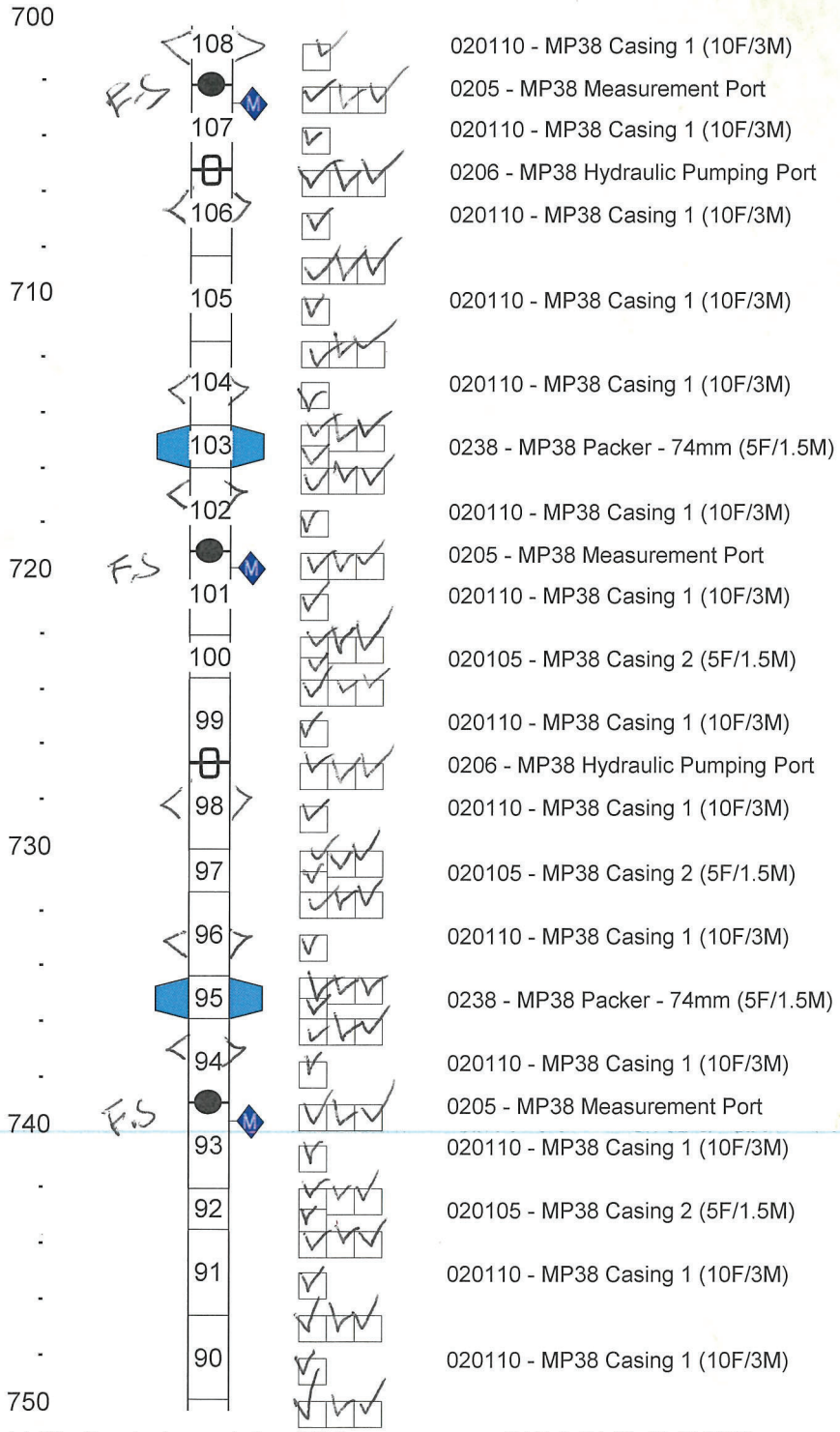
Serial Numbers

Add water ~ 23 l.

Add water ~ 23 l.

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



Add water ~10 l

Add ~ 20 l water

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

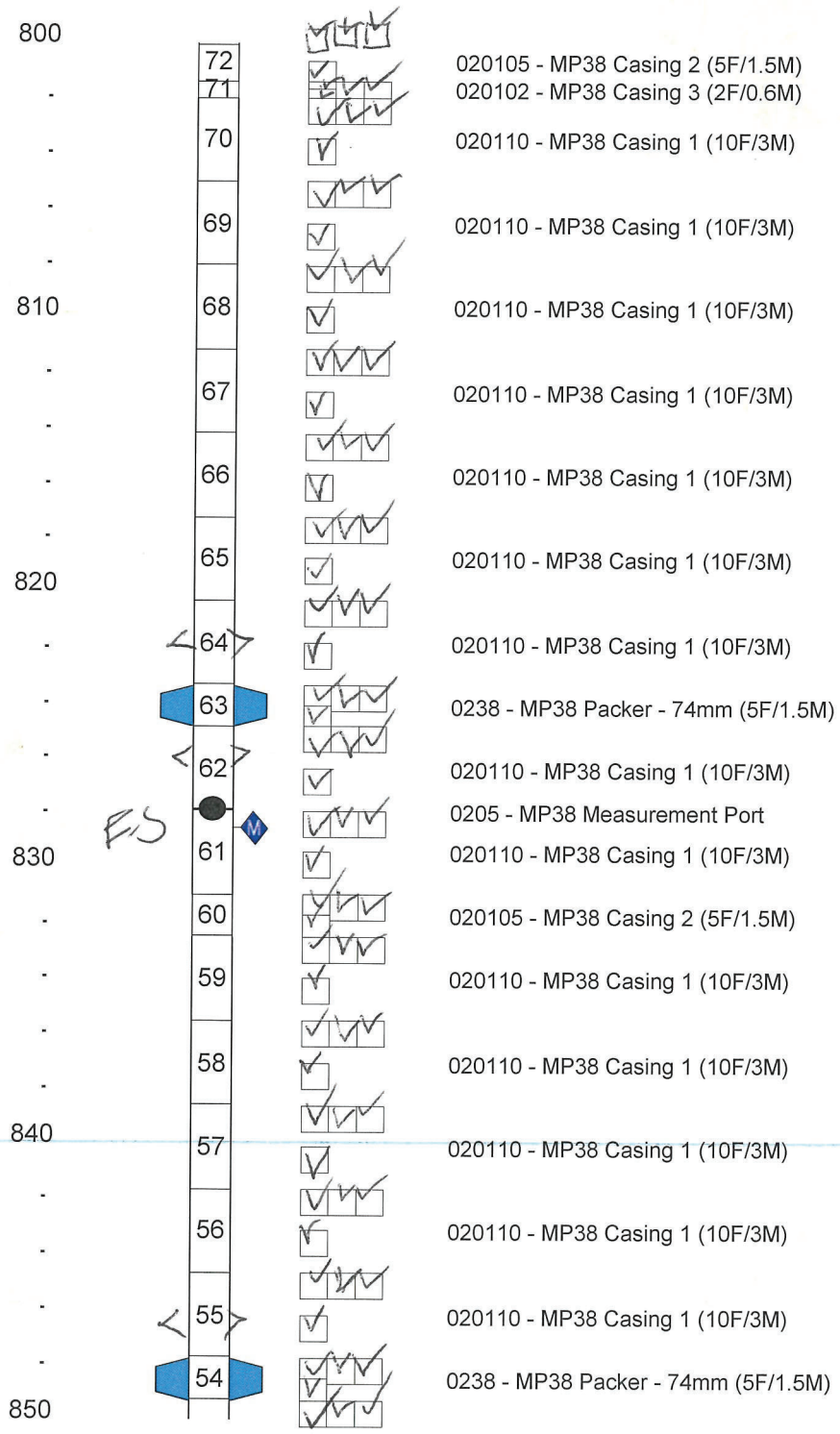
Scale Meters	Westbay Tubing	QA Tested OK	WB Tubing Description	Serial Numbers
750				
	89	✓	020110 - MP38 Casing 1 (10F/3M)	
	88	✓	020110 - MP38 Casing 1 (10F/3M)	
	87	✓	020110 - MP38 Casing 1 (10F/3M)	
760	86	✓	020110 - MP38 Casing 1 (10F/3M)	
	85	✓	020110 - MP38 Casing 1 (10F/3M)	Add water ~10 l.
	84	✓	020110 - MP38 Casing 1 (10F/3M)	
770	83	✓	020110 - MP38 Casing 1 (10F/3M)	
	82	✓	020110 - MP38 Casing 1 (10F/3M)	
	81	✓	020110 - MP38 Casing 1 (10F/3M)	
	80	✓	020110 - MP38 Casing 1 (10F/3M)	
780	79	✓	020110 - MP38 Casing 1 (10F/3M)	
	78	✓	020110 - MP38 Casing 1 (10F/3M)	Adding water ~20 l.
	77	✓	020110 - MP38 Casing 1 (10F/3M)	
790	76	✓	020110 - MP38 Casing 1 (10F/3M)	
	75	✓	0238 - MP38 Packer - 74mm (5F/1.5M)	
	74	✓	020110 - MP38 Casing 1 (10F/3M)	
	FS M	✓	0205 - MP38 Measurement Port	
	73	✓	020110 - MP38 Casing 1 (10F/3M)	
800				

(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:49:06 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

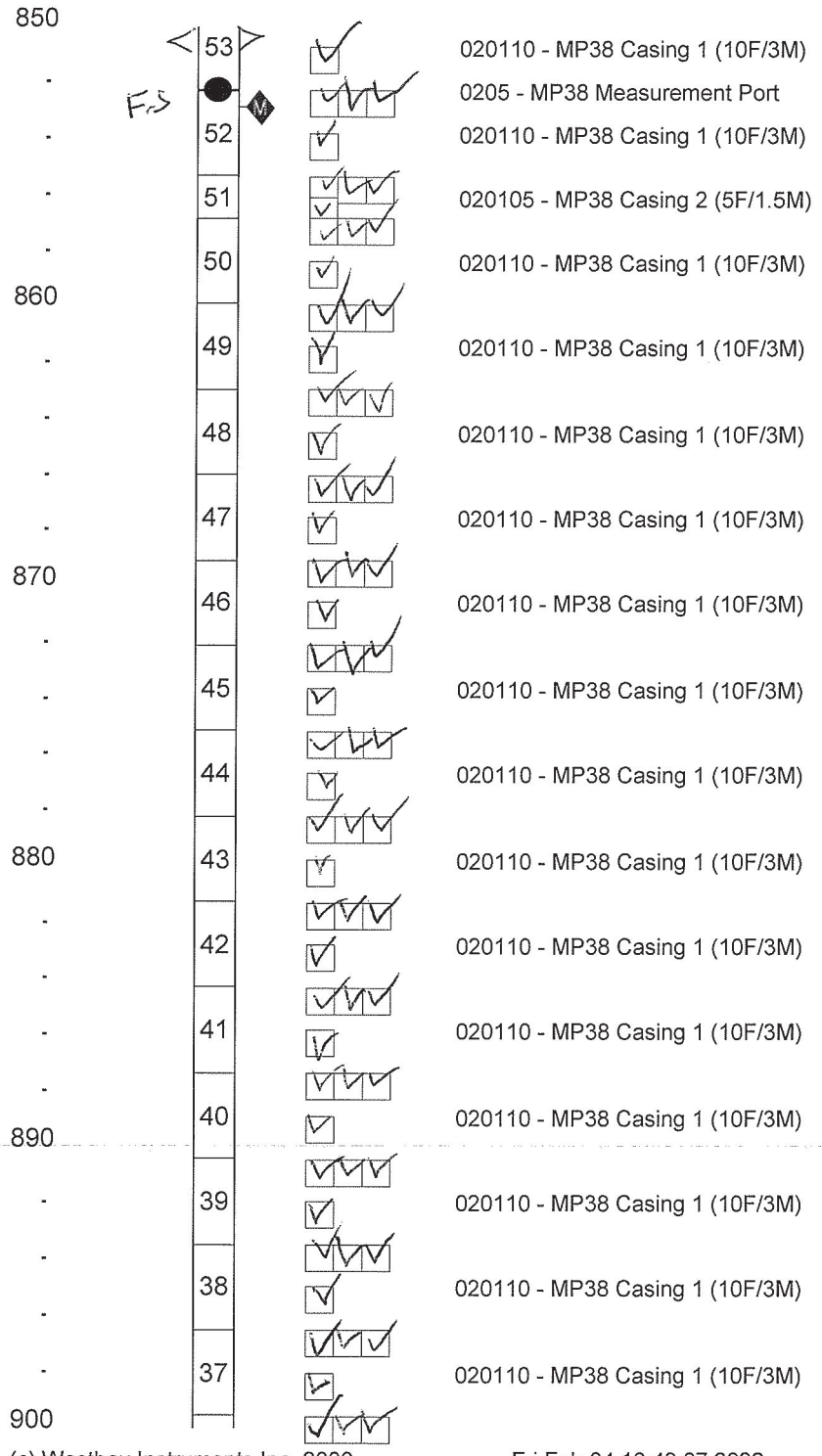


(c) Westbay Instruments Inc. 2000

Fri Feb 04 10:49:07 2022

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



#53 Add water ~15L.

Adding water ~15L, ~25L, ~30L

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

Scale Meters	Westbay Tubing	QA Tested OK	WB Tubing Description	Serial Numbers
900				
	36	☑	020110 - MP38 Casing 1 (10F/3M)	
	35	☑	0238 - MP38 Packer - 74mm (5F/1.5M)	
	34	☑	020110 - MP38 Casing 1 (10F/3M)	
	F.S M	☑	0205 - MP38 Measurement Port	
	33	☑	020110 - MP38 Casing 1 (10F/3M)	
910				
	32	☑	020110 - MP38 Casing 1 (10F/3M)	
	31	☑	020105 - MP38 Casing 2 (5F/1.5M)	
	30	☑	020105 - MP38 Casing 2 (5F/1.5M)	
	29	☑	020110 - MP38 Casing 1 (10F/3M)	
920				
	28	☑	020110 - MP38 Casing 1 (10F/3M)	
	27	☑	020110 - MP38 Casing 1 (10F/3M)	
	26	☑	020110 - MP38 Casing 1 (10F/3M)	
930				
	25	☑	020110 - MP38 Casing 1 (10F/3M)	
	24	☑	020110 - MP38 Casing 1 (10F/3M)	
	23	☑	020110 - MP38 Casing 1 (10F/3M)	
940				
	22	☑	020110 - MP38 Casing 1 (10F/3M)	
	21	☑	020110 - MP38 Casing 1 (10F/3M)	
	20	☑	0238 - MP38 Packer - 74mm (5F/1.5M)	
	19	☑	020110 - MP38 Casing 1 (10F/3M)	
	F.S M	☑	0205 - MP38 Measurement Port	
950	18	☑	020110 - MP38 Casing 1 (10F/3M)	

Add water ~ 15 l.
20 l

Adding water ~ 15 l.

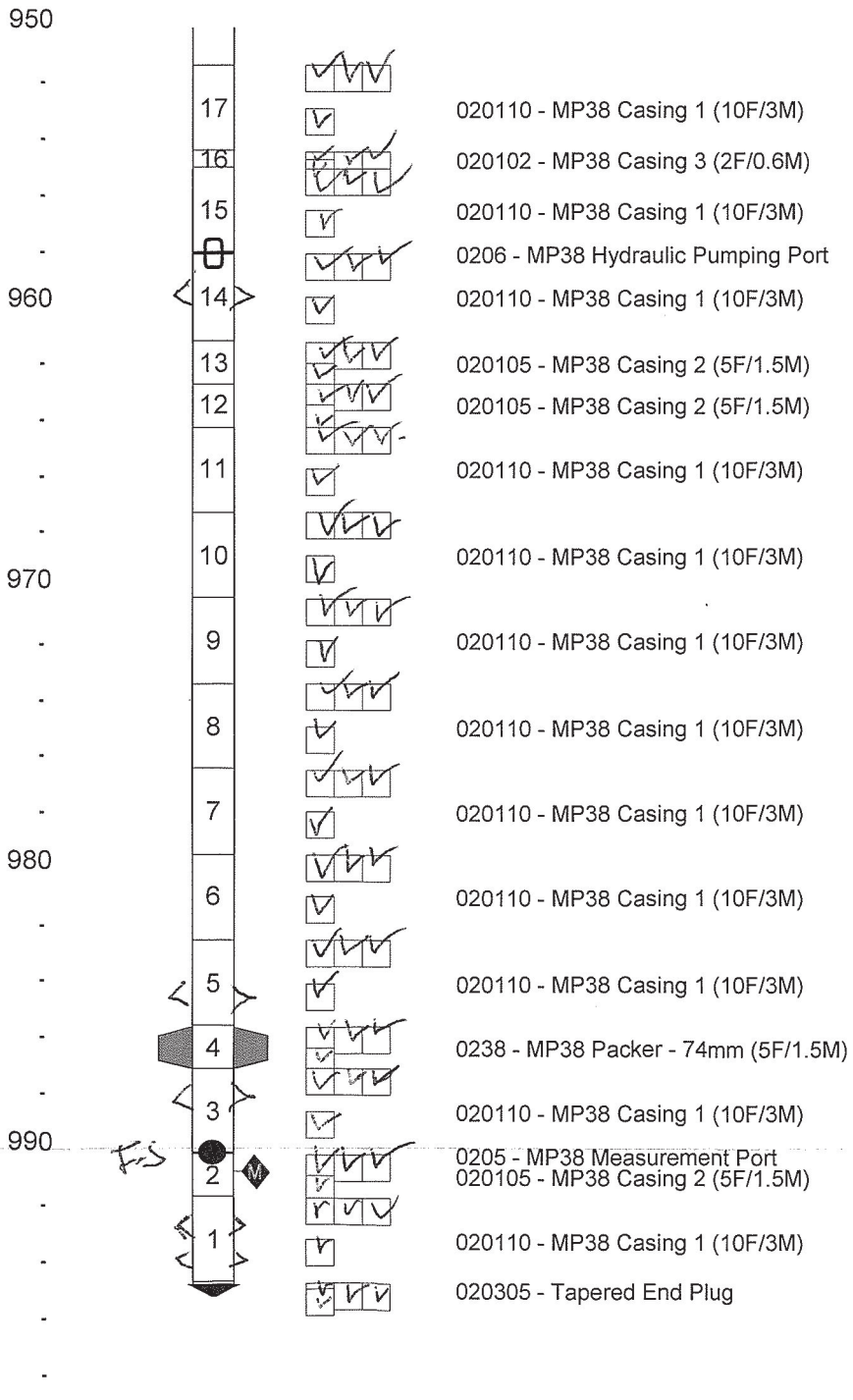
#24 in adding water ~15 l.

10:57 AM resume.
9:08 AM Feb 13/22 resume.
frozen ground
- #23 in the well
5:25 PM Feb 12/22

Adding water ~ 15 l.

Westbay Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



frozen hose.

Adding water ~ 15 l.

Adding water ~15 l.

Adding water. ~50 l
15 l.

15:10 Feb 11, 22
start lowering.

APPENDIX C

IG-BH06

SUMMARY COMPLETION LOG

Summary Completion Log - 6 pages

Summary Completion Log

Company: Golder/NWMO **Job No: WB981**
Well: IG_BH06 **Author: TK/DL**
Site: Ignace,ON
Project: Groundwater Characterization Study

Well Information

Reference Datum: Ground Surface
Elevation of Datum: 417.74 masl
MP Casing Top: 0.00 m.
MP Casing Length: 994.98 m.

Borehole Depth: 1000.83 m.
Borehole Inclination: 70 degrees
Borehole Diameter: 98.00 mm

Well Description:
Plastic MP38 System
Other References:
Email Approval on Jan 28/22

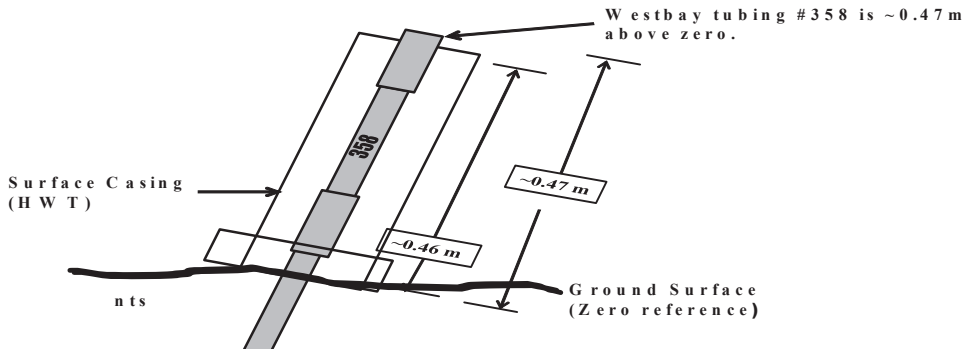
File Information

File Name: IGBH6AB.WWD
Report Date: Tue Mar 15 09:41:28 2022

File Date: Mar 07 10:38:19 2022

Sketch of Wellhead Completion

IG_BH 06 Completion Sketch



Legend

(Qty) MP Components

(Library - WD Library 04/29/15)



(1) 0203 - MP38 End Cap

(4) 020102 - MP38 Casing 3 (2F/0.6M)

(3) 020101 - MP38 Casing 4 (1F/0.3M)

(34) 020105 - MP38 Casing 2 (5F/1.5M)

(298) 020110 - MP38 Casing 1 (10F/3M)

(22) 0238 - MP38 Packer - 74mm (5F/1.5M)

(1) 020305 - Tapered End Plug

(335) 0202 - MP38 Regular Coupling

(22) 0205 - MP38 Measurement Port

(5) 0206 - MP38 Hydraulic Pumping Port

(23) 0216 - Magnetic Location Collar

(51) 0250002C2- MP38 Abrasion Protector

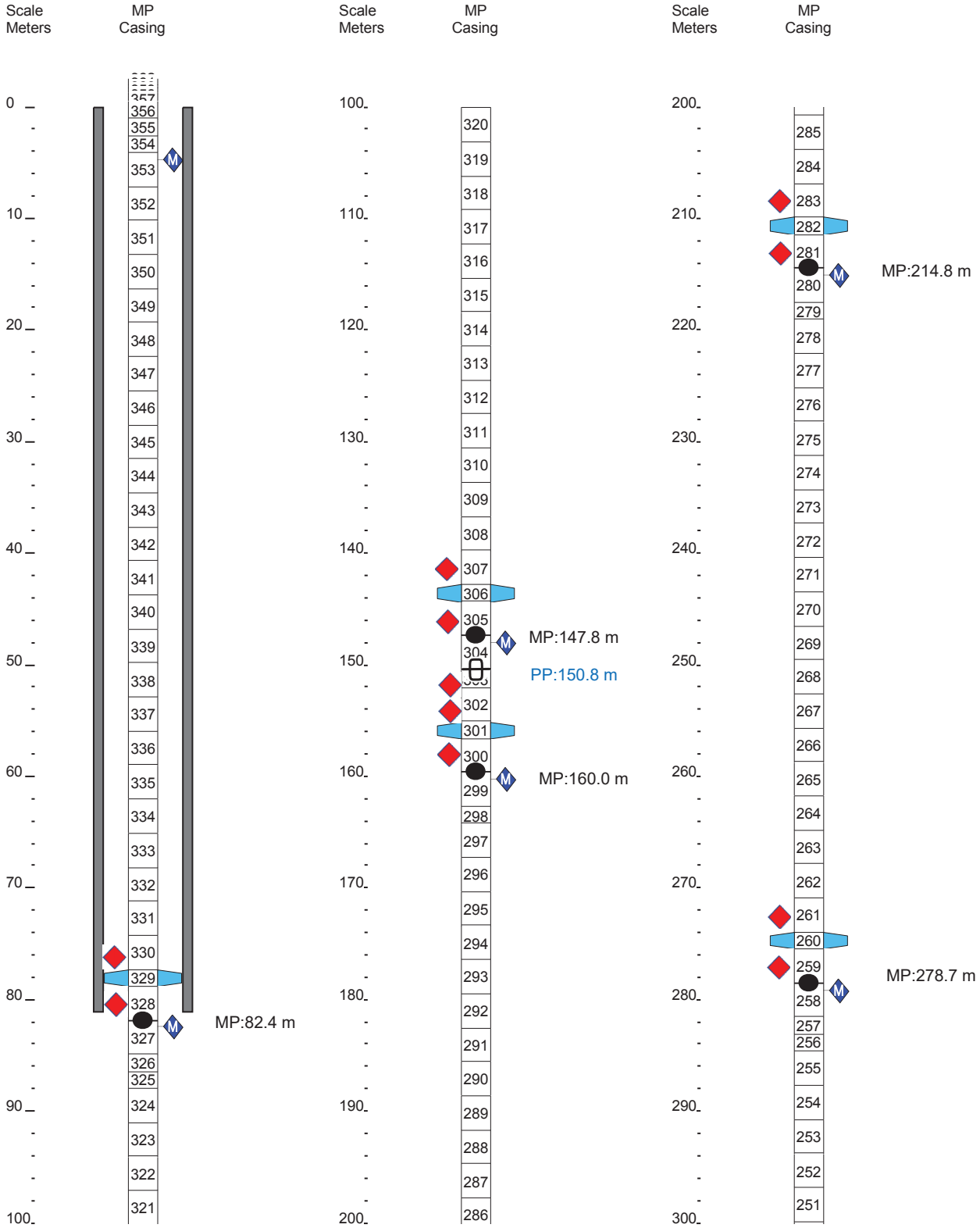
Geology

Backfill/Casing

Mild Steel

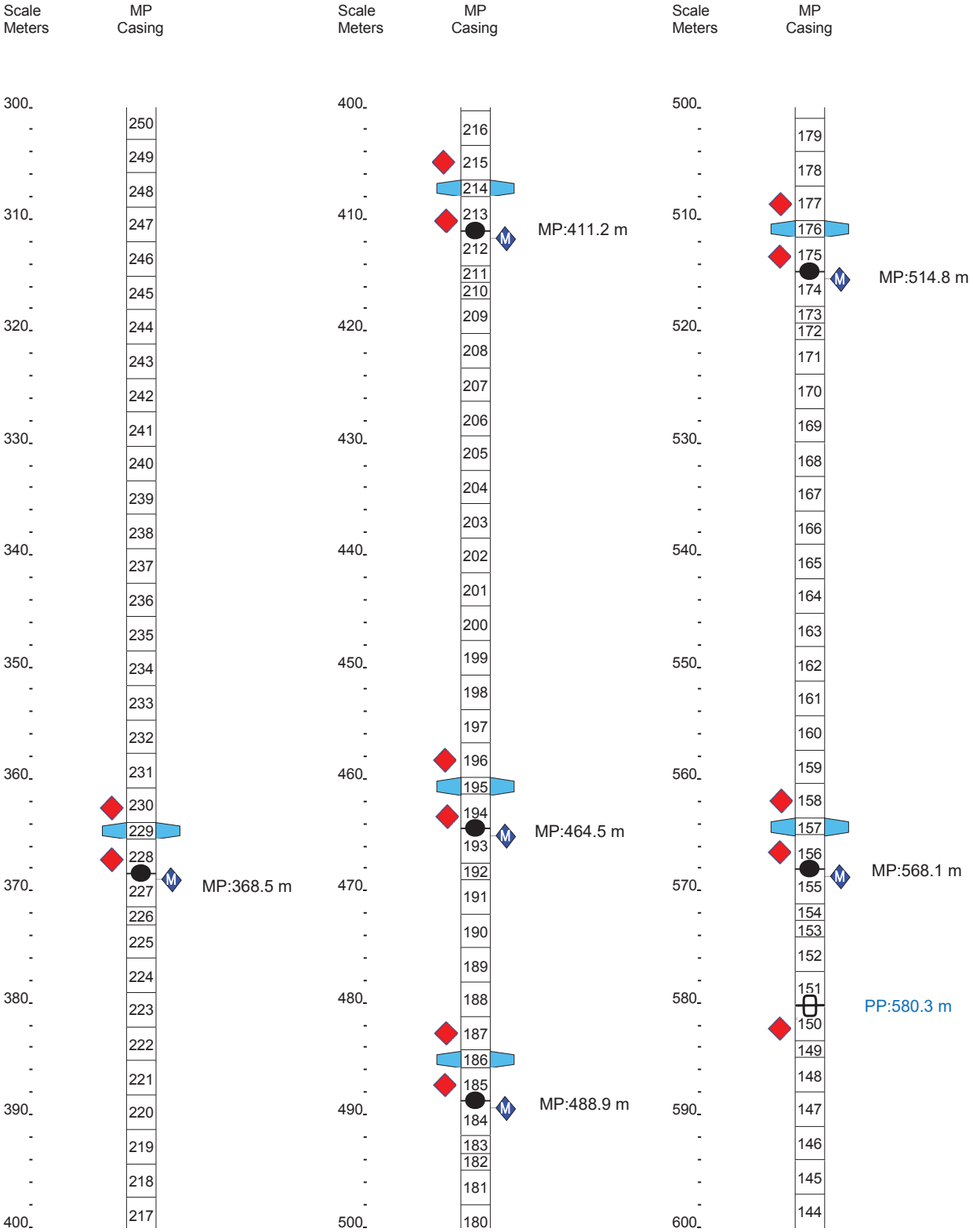
Summary Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



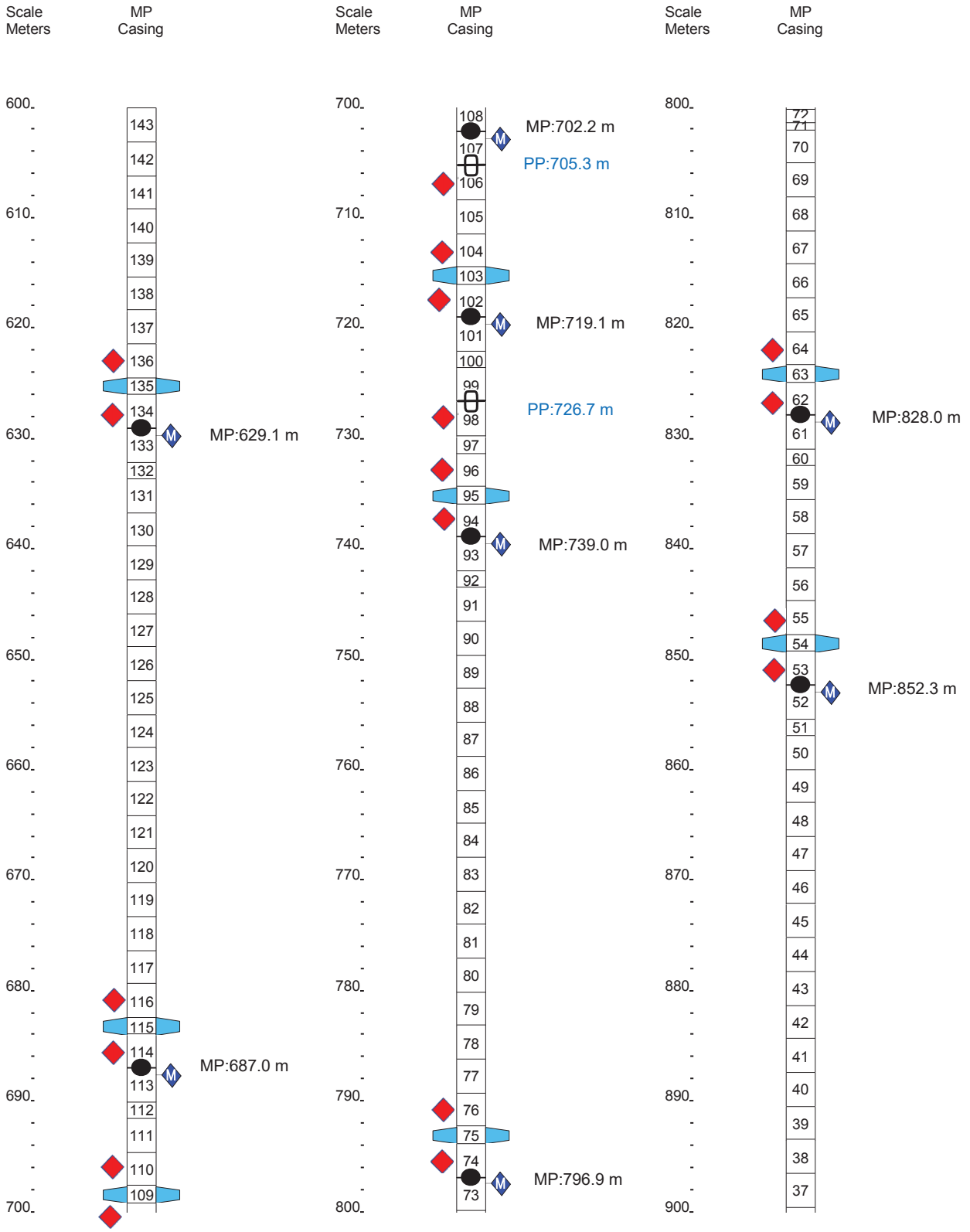
Summary Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



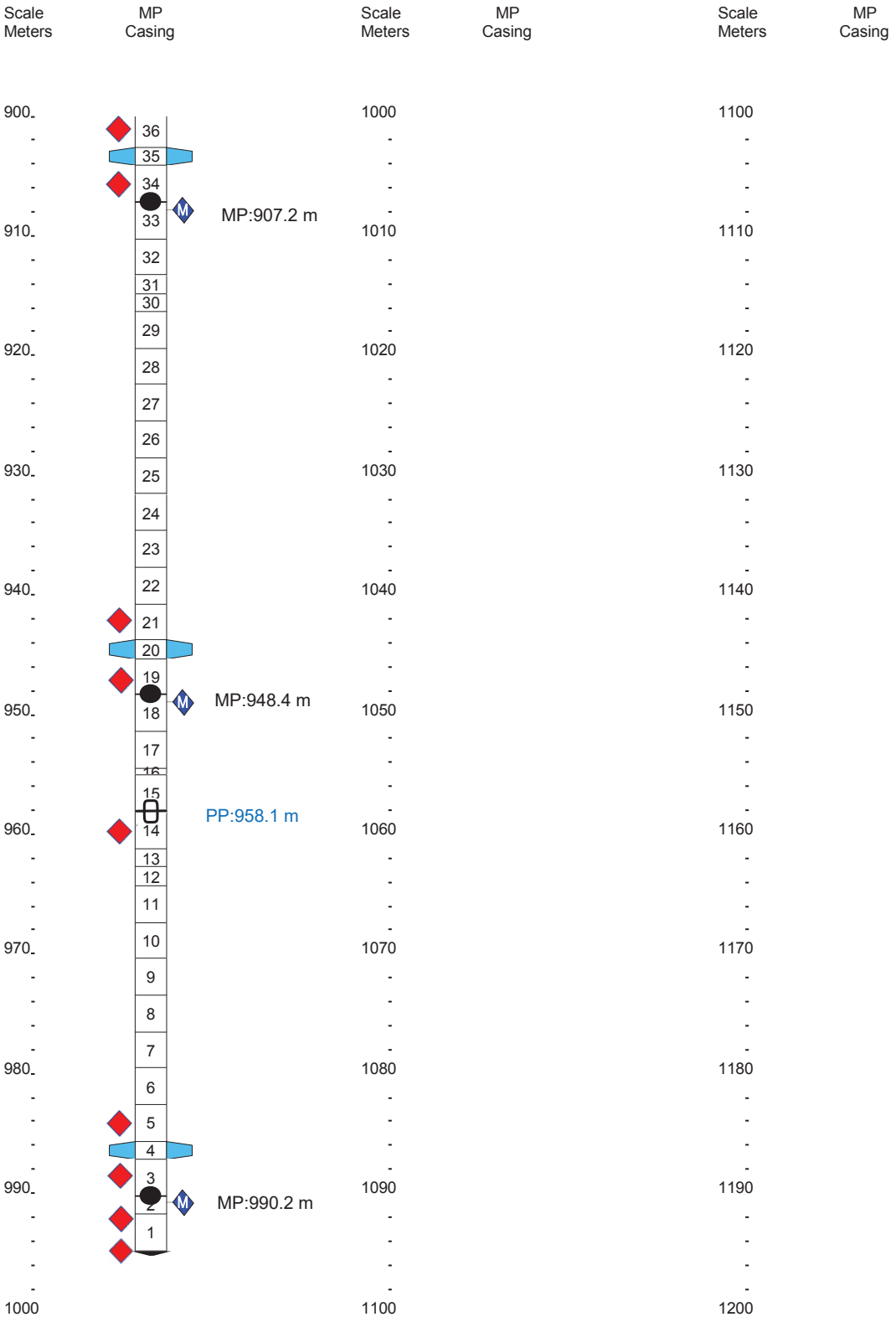
Summary Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



Summary Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



APPENDIX D

IG_BH06

TUBING SUMMARY (FIELD COPY)

Tubing Summary (field copy) - 8 pages

No	Comp.Part#	Coupling Part#	Accessory Part #	Depth (m)	Measured (m)	Packer Element	
						Top(m)	Bottom(m)
360	0203			-2.32			
359	020102	0202		-2.27			
358	020102	0202		-1.67			
357	020102	0202		-1.06			
356	020105	0202		-0.45	1.523		
355	020105	0202		1.08	1.522		
354	020105	0202		2.60	1.522		
353	020110	0202	0216	4.13	3.047		
352	020110	0202		7.17	3.047		
351	020110	0202		10.22	3.047		
350	020110	0202		13.27	3.046		
349	020110	0202		16.32	3.047		
348	020110	0202		19.37	3.047		
347	020110	0202		22.41	3.046		
346	020110	0202		25.46	3.046		
345	020110	0202		28.51	3.047		
344	020110	0202		31.56	3.046		
343	020110	0202		34.60	3.046		
342	020110	0202		37.65	3.046		
341	020110	0202		40.70	3.046		
340	020110	0202		43.75	3.046		
339	020110	0202		46.80	3.046		
338	020110	0202		49.84	3.046		
337	020110	0202		52.89	3.045		
336	020110	0202		55.94	3.046		
335	020110	0202		58.99	3.045		
334	020110	0202		62.04	3.046		
333	020110	0202		65.08	3.047		
332	020110	0202		68.13	3.046		
331	020110	0202		71.18	3.046		
330	020110	0202		74.23	3.046		
329	0238	0202		77.27	1.522	77.66	78.56
328	020110	0202		78.80	3.047		
327	020110	0205	0216	81.85	3.047		
326	020105	0202		84.89	1.523		
325	020105	0202		86.42	1.522		
324	020110	0202		87.94	3.047		
323	020110	0202		90.99	3.047		

322	020110	0202		94.04	3.046		
321	020110	0202		97.09	3.046		
320	020110	0202		100.13	3.047		
319	020110	0202		103.18	3.047		
318	020110	0202		106.23	3.046		
317	020110	0202		109.28	3.047		
316	020110	0202		112.32	3.047		
315	020110	0202		115.37	3.047		
314	020110	0202		118.42	3.047		
313	020110	0202		121.47	3.047		
312	020110	0202		124.52	3.047		
311	020110	0202		127.56	3.047		
310	020110	0202		130.61	3.047		
309	020110	0202		133.66	3.047		
308	020110	0202		136.71	3.046		
307	020110	0202		139.76	3.046		
306	0238	0202		142.80	1.522	143.19	144.09
305	020110	0202		144.33	3.046		
304	020110	0205	0216	147.37	3.047		
303	020105	0206		150.42	1.599		
302	020110	0202		152.02	3.047		
301	0238	0202		155.07	1.522	155.46	156.36
300	020110	0202		156.59	3.047		
299	020110	0205	0216	159.64	3.047		
298	020105	0202		162.69	1.523		
297	020110	0202		164.21	3.046		
296	020110	0202		167.26	3.046		
295	020110	0202		170.31	3.046		
294	020110	0202		173.36	3.046		
293	020110	0202		176.41	3.046		
292	020110	0202		179.45	3.047		
291	020110	0202		182.50	3.046		
290	020110	0202		185.55	3.046		
289	020110	0202		188.60	3.046		
288	020110	0202		191.64	3.047		
287	020110	0202		194.69	3.046		
286	020110	0202		197.74	3.047		
285	020110	0202		200.79	3.047		
284	020110	0202		203.84	3.047		
283	020110	0202		206.88	3.046		
282	0238	0202		209.93	1.522	210.32	211.22
281	020110	0202		211.46	3.046		
280	020110	0205	0216	214.50	3.047		
279	020105	0202		217.55	1.522		
278	020110	0202		219.08	3.047		
277	020110	0202		222.12	3.047		

276	020110	0202		225.17	3.047		
275	020110	0202		228.22	3.047		
274	020110	0202		231.27	3.047		
273	020110	0202		234.31	3.046		
272	020110	0202		237.36	3.047		
271	020110	0202		240.41	3.046		
270	020110	0202		243.46	3.046		
269	020110	0202		246.51	3.046		
268	020110	0202		249.55	3.047		
267	020110	0202		252.60	3.047		
266	020110	0202		255.65	3.047		
265	020110	0202		258.70	3.047		
264	020110	0202		261.75	3.046		
263	020110	0202		264.79	3.047		
262	020110	0202		267.84	3.047		
261	020110	0202		270.89	3.046		
260	0238	0202		273.94	1.522	274.33	275.23
259	020110	0202		275.46	3.046		
258	020110	0205	0216	278.51	3.047		
257	020105	0202		281.56	1.521		
256	020105	0202		283.08	1.522		
255	020110	0202		284.60	3.047		
254	020110	0202		287.65	3.046		
253	020110	0202		290.70	3.046		
252	020110	0202		293.75	3.047		
251	020110	0202		296.80	3.047		
250	020110	0202		299.84	3.047		
249	020110	0202		302.89	3.046		
248	020110	0202		305.94	3.047		
247	020110	0202		308.99	3.046		
246	020110	0202		312.03	3.047		
245	020110	0202		315.08	3.047		
244	020110	0202		318.13	3.047		
243	020110	0202		321.18	3.046		
242	020110	0202		324.23	3.047		
241	020110	0202		327.27	3.047		
240	020110	0202		330.32	3.047		
239	020110	0202		333.37	3.048		
238	020110	0202		336.42	3.047		
237	020110	0202		339.47	3.047		
236	020110	0202		342.51	3.047		
235	020110	0202		345.56	3.047		
234	020110	0202		348.61	3.047		
233	020110	0202		351.66	3.047		
232	020110	0202		354.70	3.047		
231	020110	0202		357.75	3.047		
230	020110	0202		360.80	3.047		

229	0238	0202		363.85	1.522	364.24	365.14
228	020110	0202		365.37	3.046		
227	020110	0205	0216	368.42	3.047		
226	020105	0202		371.47	1.522		
225	020110	0202		372.99	3.047		
224	020110	0202		376.04	3.048		
223	020110	0202		379.09	3.047		
222	020110	0202		382.14	3.047		
221	020110	0202		385.18	3.046		
220	020110	0202		388.23	3.047		
219	020110	0202		391.28	3.047		
218	020110	0202		394.33	3.047		
217	020110	0202		397.37	3.047		
216	020110	0202		400.42	3.046		
215	020110	0202		403.47	3.046		
214	0238	0202		406.52	1.522	406.91	407.81
213	020110	0202		408.04	3.046		
212	020110	0205	0216	411.09	3.046		
211	020105	0202		414.14	1.522		
210	020105	0202		415.66	1.522		
209	020110	0202		417.19	3.046		
208	020110	0202		420.23	3.046		
207	020110	0202		423.28	3.047		
206	020110	0202		426.33	3.047		
205	020110	0202		429.38	3.047		
204	020110	0202		432.42	3.047		
203	020110	0202		435.47	3.047		
202	020110	0202		438.52	3.047		
201	020110	0202		441.57	3.047		
200	020110	0202		444.62	3.047		
199	020110	0202		447.66	3.047		
198	020110	0202		450.71	3.047		
197	020110	0202		453.76	3.046		
196	020110	0202		456.81	3.046		
195	0238	0202		459.86	1.522	460.25	461.15
194	020110	0202		461.38	3.047		
193	020110	0205	0216	464.43	3.047		
192	020105	0202		467.48	1.522		
191	020110	0202		469.00	3.046		
190	020110	0202		472.05	3.046		
189	020110	0202		475.09	3.047		
188	020110	0202		478.14	3.046		
187	020110	0202		481.19	3.046		
186	0238	0202		484.24	1.522	484.63	485.53
185	020110	0202		485.76	3.047		
184	020110	0205	0216	488.81	3.047		

183	020105	0202		491.86	1.521		
182	020105	0202		493.38	1.521		
181	020110	0202		494.91	3.047		
180	020110	0202		497.95	3.047		
179	020110	0202		501.00	3.047		
178	020110	0202		504.05	3.046		
177	020110	0202		507.10	3.047		
176	0238	0202		510.15	1.521	510.54	511.44
175	020110	0202		511.67	3.047		
174	020110	0205	0216	514.72	3.047		
173	020105	0202		517.76	1.522		
172	020105	0202		519.29	1.521		
171	020110	0202		520.81	3.046		
170	020110	0202		523.86	3.047		
169	020110	0202		526.91	3.047		
168	020110	0202		529.96	3.047		
167	020110	0202		533.00	3.047		
166	020110	0202		536.05	3.047		
165	020110	0202		539.10	3.047		
164	020110	0202		542.15	3.047		
163	020110	0202		545.20	3.047		
162	020110	0202		548.24	3.047		
161	020110	0202		551.29	3.047		
160	020110	0202		554.34	3.047		
159	020110	0202		557.39	3.047		
158	020110	0202		560.43	3.047		
157	0238	0202		563.48	1.521	563.87	564.77
156	020110	0202		565.01	3.047		
155	020110	0205	0216	568.05	3.047		
154	020105	0202		571.10	1.521		
153	020105	0202		572.63	1.521		
152	020110	0202		574.15	3.047		
151	020110	0202		577.20	3.046		
150	020110	0206		580.25	3.123		
149	020105	0202		583.37	1.521		
148	020110	0202		584.89	3.047		
147	020110	0202		587.94	3.047		
146	020110	0202		590.99	3.047		
145	020110	0202		594.04	3.046		
144	020110	0202		597.09	3.047		
143	020110	0202		600.13	3.047		
142	020110	0202		603.18	3.047		
141	020110	0202		606.23	3.047		
140	020110	0202		609.28	3.047		
139	020110	0202		612.32	3.047		
138	020110	0202		615.37	3.047		

137	020110	0202		618.42	3.047		
136	020110	0202		621.47	3.047		
135	0238	0202		624.52	1.522	624.91	625.81
134	020110	0202		626.04	3.047		
133	020110	0205	0216	629.09	3.047		
132	020105	0202		632.14	1.521		
131	020110	0202		633.66	3.047		
130	020110	0202		636.71	3.046		
129	020110	0202		639.76	3.046		
128	020110	0202		642.80	3.046		
127	020110	0202		645.85	3.046		
126	020110	0202		648.90	3.046		
125	020110	0202		651.95	3.047		
124	020110	0202		654.99	3.047		
123	020110	0202		658.04	3.047		
122	020110	0202		661.09	3.048		
121	020110	0202		664.14	3.047		
120	020110	0202		667.19	3.047		
119	020110	0202		670.23	3.047		
118	020110	0202		673.28	3.047		
117	020110	0202		676.33	3.046		
116	020110	0202		679.38	3.047		
115	0238	0202		682.42	1.522	682.81	683.71
114	020110	0202		683.95	3.047		
113	020110	0205	0216	687.00	~~1.521~~ 3.047		
112	020105	0202		690.04	~~3.047~~ 1.521		
111	020110	0202		691.57	3.047		
110	020110	0202		694.62	3.047		
109	0238	0202		697.66	1.522	698.05	698.95
108	020110	0202		699.19	3.047		
107	020110	0205	0216	702.24	3.047		
106	020110	0206		705.28	3.124		
105	020110	0202		708.41	3.046		
104	020110	0202		711.46	3.047		
103	0238	0202		714.50	1.523	714.89	715.79
102	020110	0202		716.03	3.047		
101	020110	0205	0216	719.08	3.047		
100	020105	0202		722.12	1.522		
99	020110	0202		723.65	3.047		
98	020110	0206		726.70	3.123		
97	020105	0202		729.82	1.521		
96	020110	0202		731.34	3.047		
95	0238	0202		734.39	1.522	734.78	735.68
94	020110	0202		735.91	3.046		
93	020110	0205	0216	738.96	3.047		
92	020105	0202		742.01	1.521		

91	020110	0202		743.53	3.046		
90	020110	0202		746.58	3.046		
89	020110	0202		749.63	3.046		
88	020110	0202		752.68	3.047		
87	020110	0202		755.73	3.045		
86	020110	0202		758.77	3.046		
85	020110	0202		761.82	3.046		
84	020110	0202		764.87	3.047		
83	020110	0202		767.92	3.046		
82	020110	0202		770.97	3.047		
81	020110	0202		774.01	3.047		
80	020110	0202		777.06	3.047		
79	020110	0202		780.11	3.047		
78	020110	0202		783.16	3.047		
77	020110	0202		786.20	3.046		
76	020110	0202		789.25	3.047		
75	0238	0202		792.30	1.521	792.69	793.59
74	020110	0202		793.82	3.047		
73	020110	0205	0216	796.87	3.047		
72	020105	0202		799.92	1.521		
71	020102	0202		801.44	0.608		
70	020110	0202		802.05	3.046		
69	020110	0202		805.10	3.047		
68	020110	0202		808.15	3.047		
67	020110	0202		811.20	3.046		
66	020110	0202		814.24	3.046		
65	020110	0202		817.29	3.047		
64	020110	0202		820.34	3.046		
63	0238	0202		823.39	1.522	823.78	824.68
62	020110	0202		824.91	3.047		
61	020110	0205	0216	827.96	3.047		
60	020105	0202		831.01	1.521		
59	020110	0202		832.53	3.047		
58	020110	0202		835.58	3.046		
57	020110	0202		838.63	3.046		
56	020110	0202		841.68	3.046		
55	020110	0202		844.72	3.047		
54	0238	0202		847.77	1.522	848.16	849.06
53	020110	0202		849.29	3.047		
52	020110	0205	0216	852.34	3.047		
51	020105	0202		855.39	1.521		
50	020110	0202		856.91	3.046		
49	020110	0202		859.96	3.047		
48	020110	0202		863.01	3.046		
47	020110	0202		866.06	3.047		
46	020110	0202		869.11	3.046		

45	020110	0202		872.15	3.046		
44	020110	0202		875.20	3.046		
43	020110	0202		878.25	3.047		
42	020110	0202		881.30	3.047		
41	020110	0202		884.35	3.047		
40	020110	0202		887.39	3.046		
39	020110	0202		890.44	3.046		
38	020110	0202		893.49	3.046		
37	020110	0202		896.54	3.047		
36	020110	0202		899.58	3.047		
35	0238	0202		902.63	1.522	903.02	903.92
34	020110	0202		904.16	3.047		
33	020110	0205	0216	907.20	3.047		
32	020110	0202		910.25	3.047		
31	020105	0202		913.30	1.521		
30	020105	0202		914.82	1.522		
29	020110	0202		916.35	3.047		
28	020110	0202		919.40	3.047		
27	020110	0202		922.44	3.047		
26	020110	0202		925.49	3.046		
25	020110	0202		928.54	3.047		
24	020110	0202		931.59	3.046		
23	020110	0202		934.63	3.046		
22	020110	0202		937.68	3.046		
21	020110	0202		940.73	3.046		
20	0238	0202		943.78	1.523	944.17	945.07
19	020110	0202		945.30	3.047		
18	020110	0205	0216	948.35	3.046		
17	020110	0202		951.40	3.046		
16	020102	0202		954.45	0.608		
15	020110	0202		955.06	3.046		
14	020110	0206		958.10	3.125		
13	020105	0202		961.23	1.524		
12	020105	0202		962.75	1.522		
11	020110	0202		964.28	3.046		
10	020110	0202		967.32	3.046		
9	020110	0202		970.37	3.046		
8	020110	0202		973.42	3.046		
7	020110	0202		976.47	3.046		
6	020110	0202		979.51	3.047		
5	020110	0202		982.56	3.047		
4	0238	0202		985.61	1.522	986.00	986.90
3	020110	0202		987.13	3.047		
2	020105	0205	0216	990.18	1.522		
1	020110	0202		991.71	3.047		
0	020305	0202		994.75	0.22		

APPENDIX E

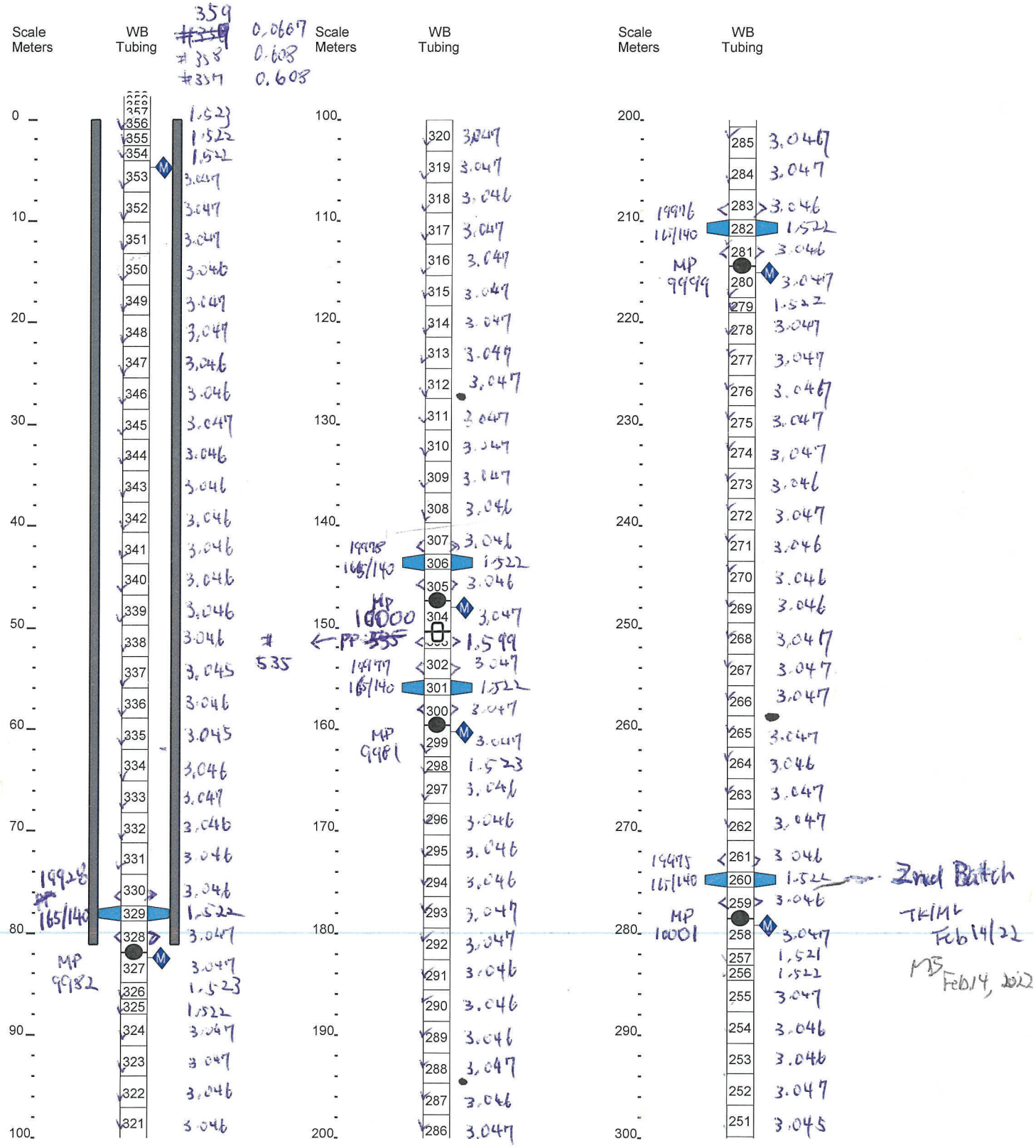
IG-BH06

SUMMARY COMPLETION LOG (FIELD COPY)

Summary Completion Log (field copy) - 4 pages

Summary Completion Log
Golder/NWMO

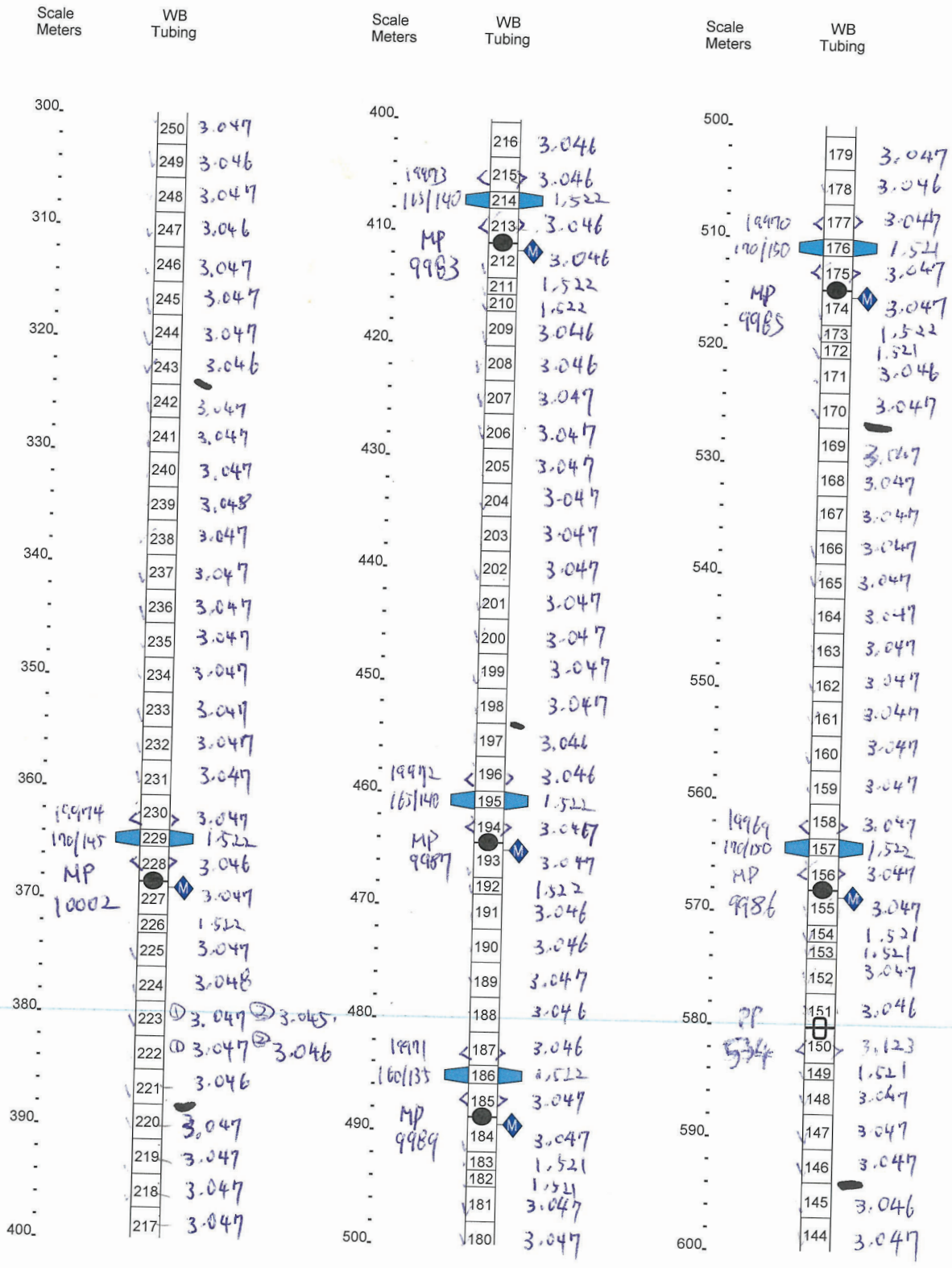
Job No: WB981
Well: IG_BH 06



TK/ML Feb 14/22
MB Feb 15, 2022

Summary Completion Log
Golder/NWMO

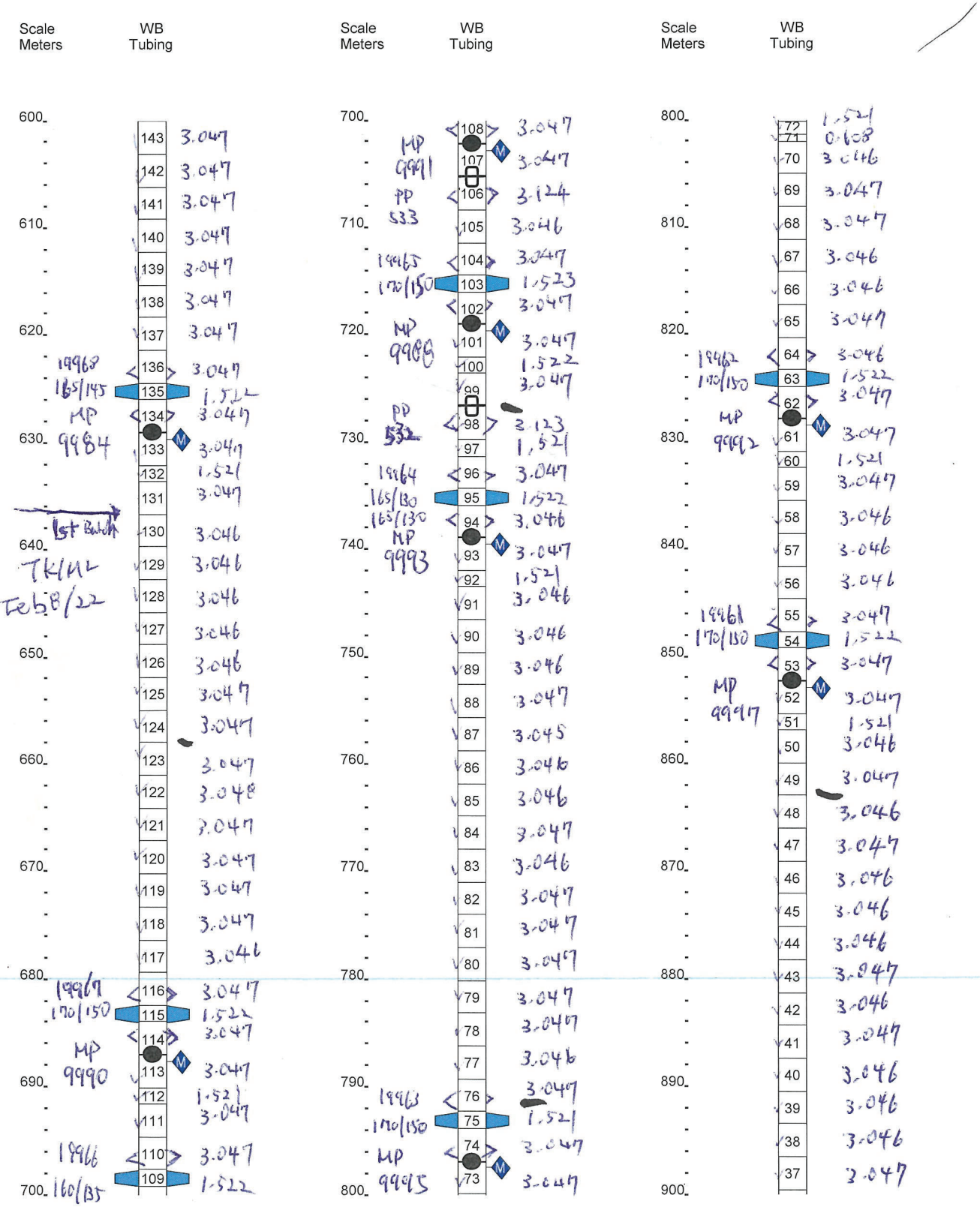
Job No: WB981
Well: IG_BH 06



(c) Westbay Instruments Inc. 2000

Summary Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06

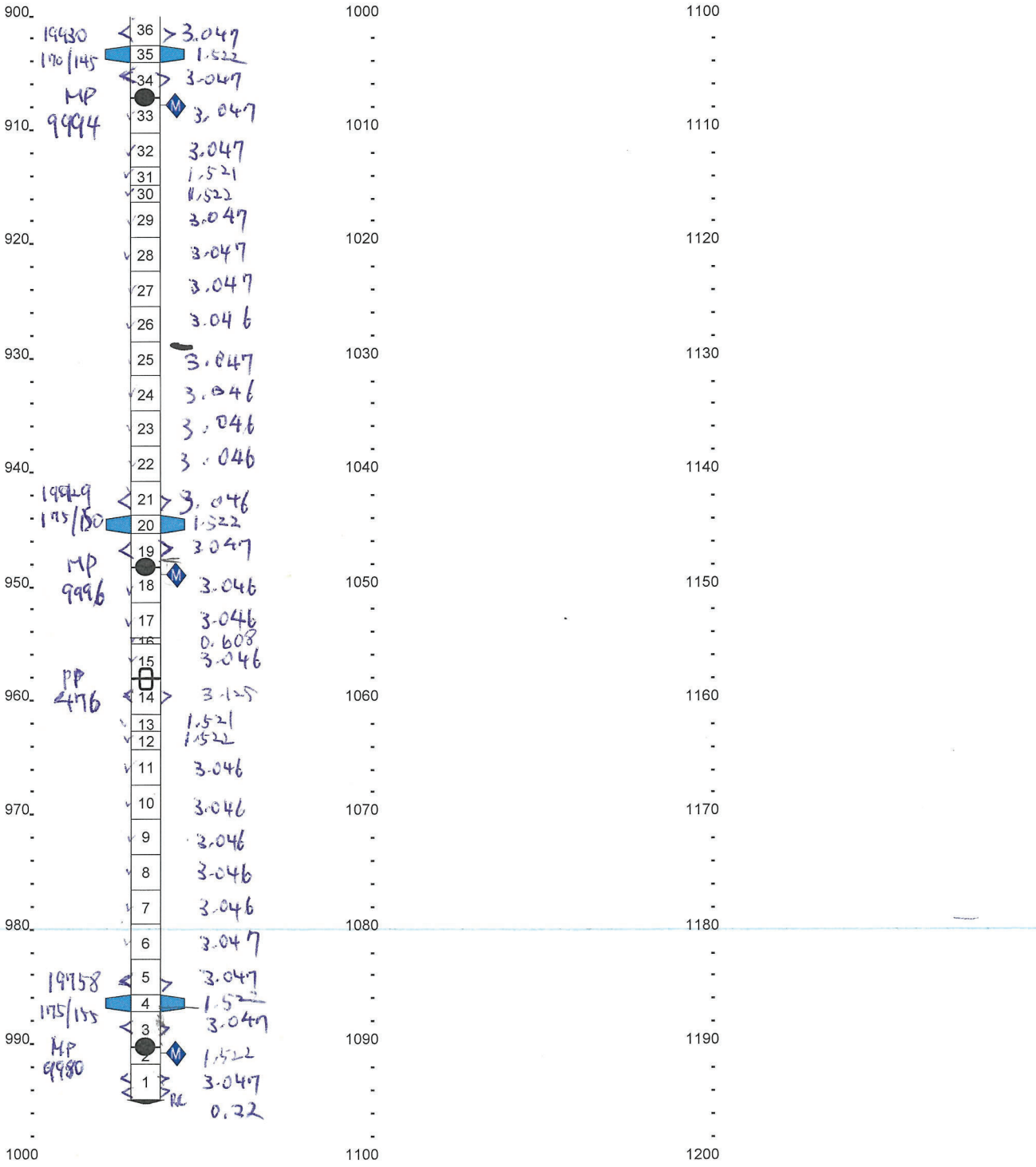


WB Feb. 9/22

TK/ML Feb 8/22

Summary Completion Log
Golder/NWMO

Job No: WB981
Well: IG_BH 06



APPENDIX F
IG-BH06

PRE-INFLATION PRESSURE PROFILE

Pre-Inflation Field Data and Calculation Sheet (February 19, 2022) - 2 pages

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Pre-Initiation. 1/2.

Well No.: IGBH-06
Datum: Ground level
Elev. G.S.: N/A
Heigh: of Westbay above G.S.: N/A
Elev. top of Westbay Casing: N/A
Reference Elevation: N/A
Borehole angle: 70°

Probe Type: O/C sampler
Serial No.: EMS 5288
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: closed

Date: Feb 19/22
Client: Golder / NWMO
Job No.: WB981
Location: Ignace, ON
Weather: Sunny / slow.
Operator: TK/ML

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Ambient Reading (P_{atm}) (pressure, temperature, time)

Start: Pressure 14.32. Finish:
Temp 20.07
Time 11:05

P_{atm} 14.32 psi

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments M.C (Mas. collar) Rot.
1	990.18	984.6		1163.10	1328.12	11:45.	12.28	1163.09	923.91	66.27	MC=984.6 ROT=16
2	948.35	942.4		1107.22	1272.50	11:53	12.96	1107.22	884.80	63.55.	MC=942.4 ROT=16
3	907.20	901.5.		1052.27	1217.93	11:57	12.96	1052.33	846.42	60.78	MC=901.5 ROT=16
4	852.34	847.0		979.16	1145.33	12:03	12.73	979.16	795.37	56.97	MC=847.0 ROT=16
5	827.96	822.7		946.67	1113.02	12:08	12.49	946.68	772.64	55.32	MC=822.7 ROT=16
6	796.87	791.9		905.29	1071.85	12:12	12.10	905.29	743.69	53.18	MC=791.9 ROT=16
7	738.96	734.4		828.17	995.13	12:18	11.78	828.18	689.74	49.22	MC=734.4 ROT=16
8	719.08	714.5		801.58	968.84.	12:22	11.42	801.58	671.25	47.83	MC=714.5 ROT=16 (Eschene blocks slide down)
9	702.24	699.8		779.13	946.46	12:29	11.02	779.19.	655.51	46.73	MC=699.8 ROT=16
10	687.08	684.6		758.86	926.27	12:33	10.86	758.86	641.32	45.68	MC=684.6 ROT=16
11	629.09.	626.9		681.58	849.49	12:37	10.62.	681.64	587.32	41.87	MC=626.9 ROT=16
12	568.05	566.4		600.14.	768.54	12:43	10.18	600.15	530.39	37.66	MC=566.4 ROT=16
13	514.72	513.3		529.01	697.74	12:49	9.65.	529.02	480.60	34.12	MC=513.3 ROT=16
14	488.81	487.5		494.47	663.43	12:52	9.33	494.47	456.48	32.33	MC=487.5 ROT=16
15.	464.43	463.2		461.95.	631.08	13:29	8.65.	461.96	433.73	30.70.	MC=463.2 ROT=16

Notes: w = 0.4335 psi/ft (1.422psi/m) of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Pre-Inflation 2/2

Well No.: IGBH-06
Datum: Ground Level
Elev. G.S.: N/A
Height of Westbay above G.S.: N/A
Elev. top of Westbay Casing: N/A
Reference Elevation: N/A
Borehole angle: 70°

Probe Type: O/C Sampler
Serial No.: EMS 5288
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: Closed

Date: Feb 19/22.
Client: Golder / NWMO
Job No.: WB981
Location: Ignace, ON
Weather: Sunny / slow
Operator: TK / ML.

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Ambient Reading (P_{atm}) (pressure, temperature, time)

		Finish:
Start: Pressure		14.09
Temp		5-53
Time		14=07

P_{atm} 14.32 psi

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments
16	411.09	410.2		390.81	560.33	13=34	8.48	390.82	383.97	27.12	MC = mg collar, ROT. MC=410.2 ROT=16
17	368.42	367.7		333.93	503.80	13=38	8.20	333.94	344.22	24.20	MC=367.7 ROT=16
18	278.51	278.2		214.02	384.59	13=45	7.42	214.04	260.39	18.12	MC=278.2 ROT=16
19	214.50	214.5		128.67	299.71	13=50	6.92	128.62	200.69	13.80	MC=214.5 ROT=16
20	159.64	159.8		55.38	226.92	13=55	6.39	55.40	149.51	10.13	MC=159.8 ROT=16
21	147.37	147.5		38.99	210.60	13=57	6.10	38.99	138.03	9.34	MC=147.5 ROT=16
22	81.85	82.3		14.25	123.56	14=03	5.6	14.26	76.82	5.03	MC=82.3 ROT=16

Notes: w = 0.4335 psi/ft (1.422psi/m) of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port

APPENDIX G
IG-BH06

MP38 RECOVERY PLAN

WP06 Draft MP38 Recovery Plan (February 23, 2022) - 1 page

MP38 Recovery Plan (draft for review)

Golder / Westbay is proposing a staged approach, where retrieval methods are “escalated” as may be required, based on the outcome of earlier steps. This staged approach is intended to balance level of effort, risk and complexity during the retrieval operation.

Basic Retrieval Plan

- Lower mini-packer on a hose line into the MP38 casing and inflate the mini-packer to “grip” the Westbay pipe. Note – this was tested today and a lifting force of ~135 kg (300 lbs) was achieved – this is “proof of concept”.
- Pull the MP38 casing up via the hose / mini-packer while monitoring the force applied with the lifting scale (probably ~90 kg (200 lbs) max force).
- If the MP38 casing can be raised above the top of rods, clamp it, remove the mini-packer, remove coupling #358, inspect component #357, and then replace upper components (starting from #357 or #358 and higher).

First Stage Attempt

- Move the top rod joint of the guide tube to just above the drill foot clamp and remove the top rod. The MP38 casing would then only have to be raised to just above the top of the rods (~0.9 m).

Second Stage Attempt (if first stage is unsuccessful)

- Remove all drill rods comprising the guide tube and attempt to raise the MP38 casing to just above the top of the steel surface casing.
- Upper sections of MP38 casing with cap would be left sitting on top of the separated MP38 casing string as a “cap” while pulling the rods (i.e., removing the guide tube).
- Top of MP38 casing may drop as rods are removed.
- Additional annular space around MP38 casing once rods are removed may allow for deploying a “lasso” type retrieval method if an alternative lifting method is required.

Third Stage Attempt (if second stage unsuccessful)

- Temporarily reinstall one rod for protection of the MP38 casing and then cut off the steel surface casing as low as practical.
- Remove the rod to access and reattach the MP38 casing sections or perform the above retrieval method to attempt to raise the MP38 casing to just above the top of the cut-off steel surface casing.

APPENDIX H
IG-BH06

WESTBAY SYSTEM PACKER INFLATION RECORDS

Westbay System Packer Inflation Records - 23 pages

Sheet 1 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: TK/ML. | Date Inflated: Feb 20/22

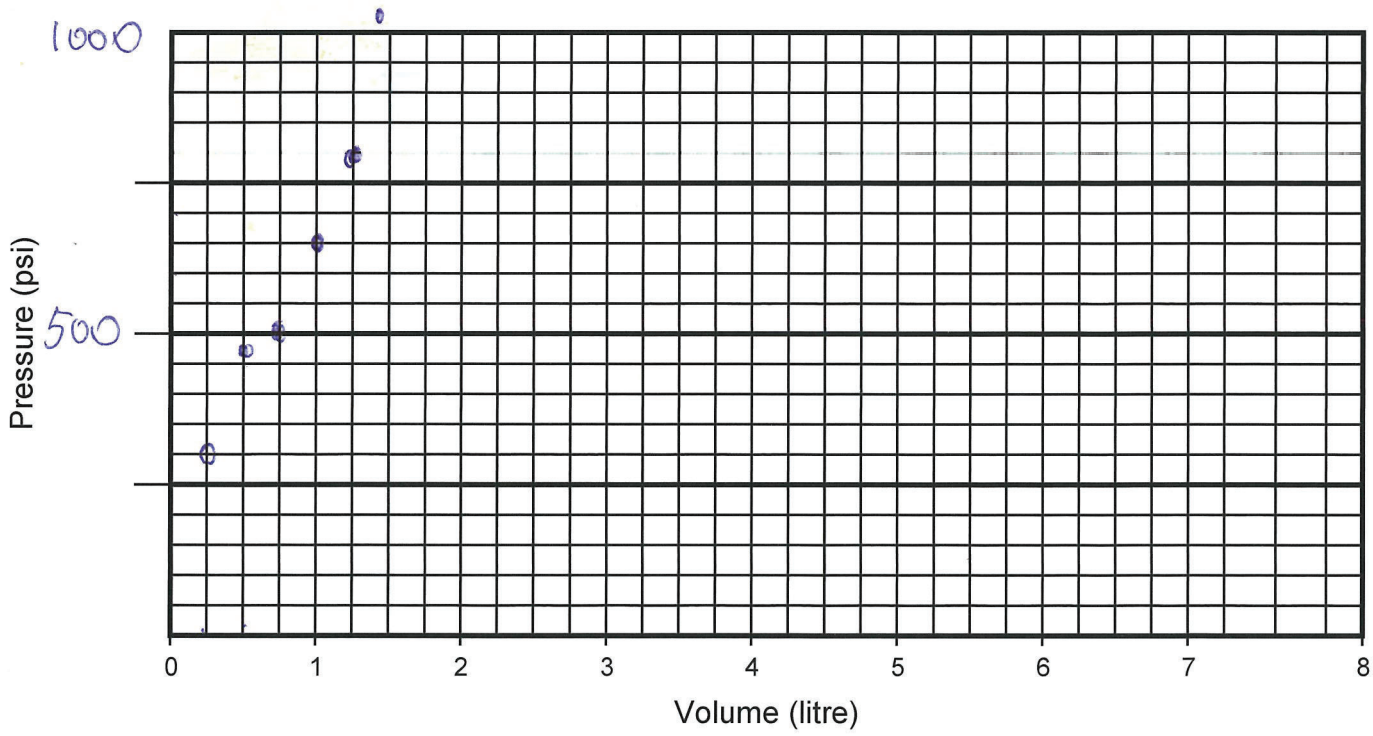
Packer No. BLANK WALL | Depth (m): ~928 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: N/A psi | Final Line Pressure, P_L: 1040 psi | Tool Pressure, P_T: 610 psi

Borehole Water Level: ~10 (m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = N/A. psi

Volume, litres	0.25	0.5	0.75	1.00	1.25	1.5	1.7	0.5		
Pressure, psi	300	480	500	650	800	920	1040	Ø		
Volume, litres										
Pressure, psi										



Comments: Time - 11:35

Sheet 2 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 20/22

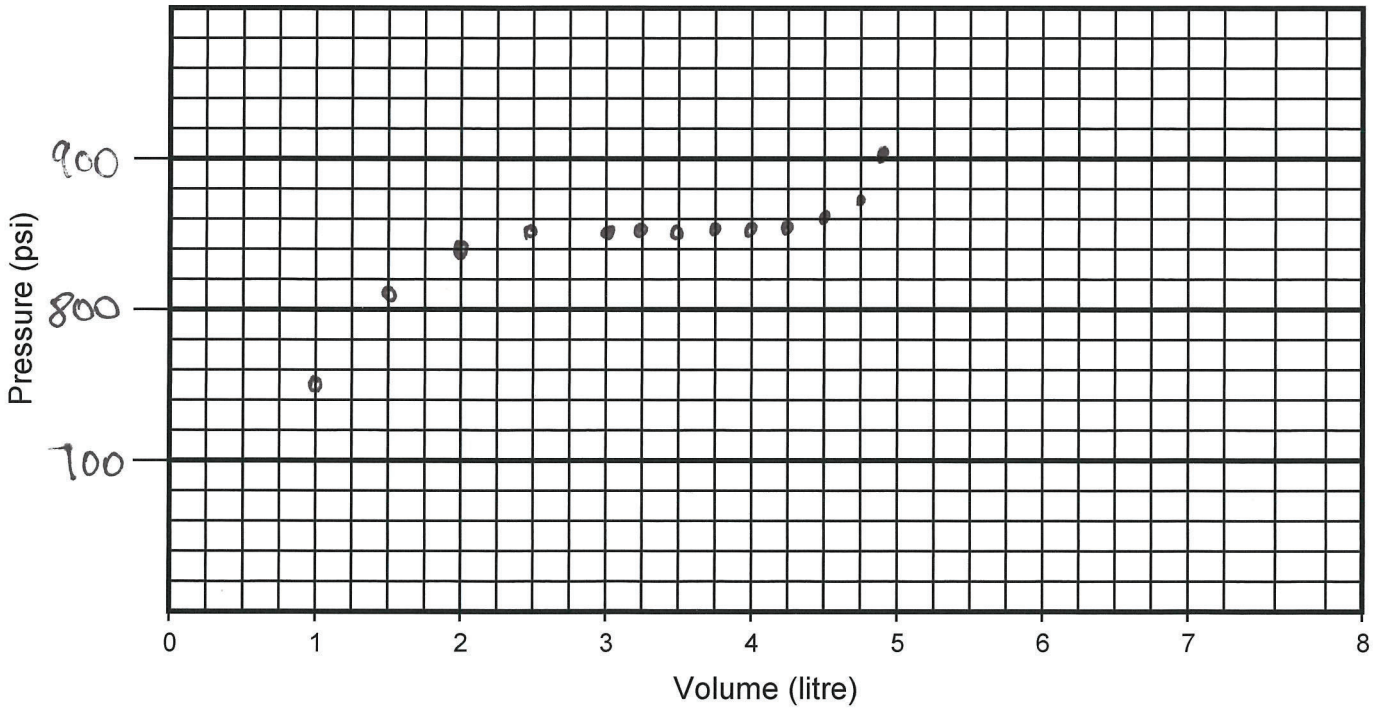
Packer No. 1, comp 4 SN# 19758 | Depth (m): 985.6 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 155 psi | Final Line Pressure, P_L: 900 psi | Tool Pressure, P_T: 610 psi

Borehole Water Level: ~10 (m) = ~15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 130 psi

Volume, litres	1.0	1.5	2.0	2.5	3.0	3.25	3.5	3.75	4.0	4.25
Pressure, psi	750	810	840	850	850	850	850	850	850	850
Volume, litres	4.5	4.6	4.75	4.8	4.85	/	3.8			
Pressure, psi	860	860	870	890	900	/	Ø			



Comments: 2.0 L 2.5L Time - 12:24 pm

1:00 @ 870 1:00 @ 900

1:30 @ 850 1:30 @ 860

2:00 @ 840 2:00 @ 850

Sheet 3 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 20/20

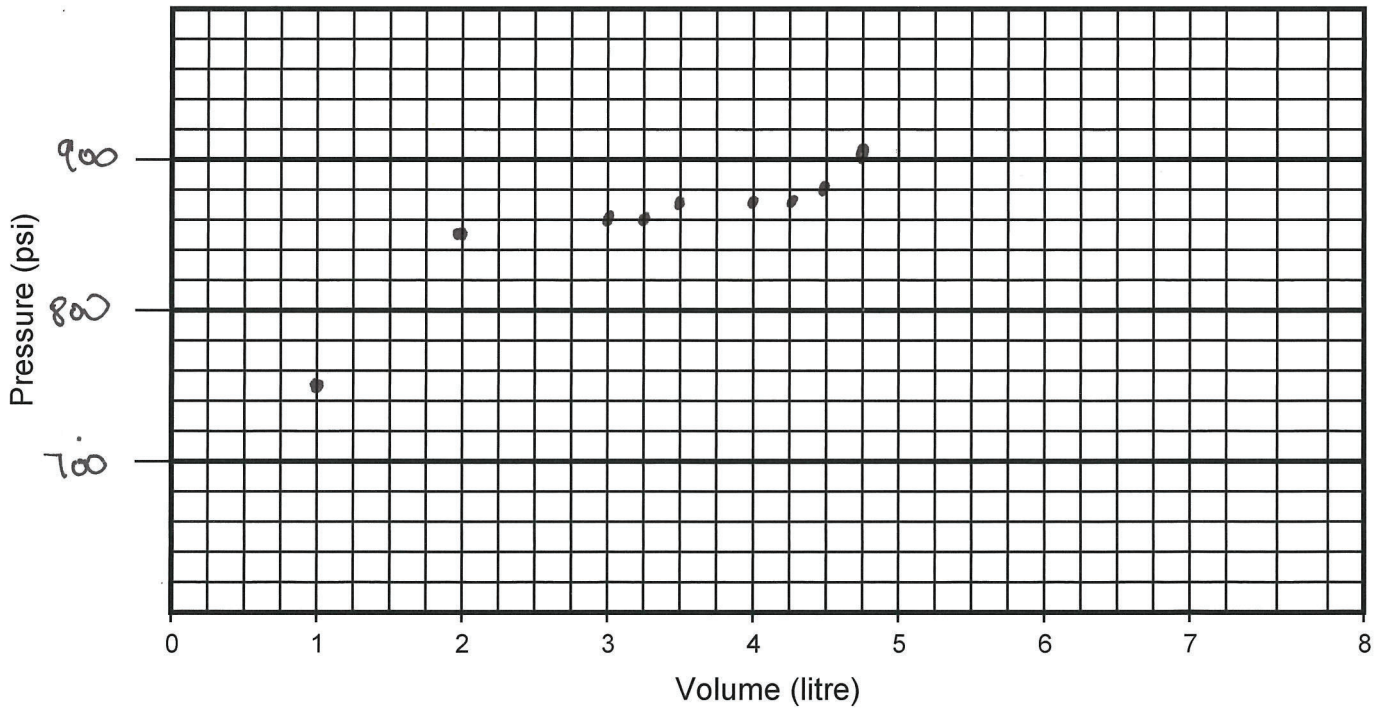
Packer No. 2, comp 20 SN# 19429 | Depth (m): 943.8 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 900 psi | Tool Pressure, P_T: 610 psi

Borehole Water Level: ~10 (m) = ~15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 135 psi

Volume, litres	1.0	2.0	2.5	3.0	3.25	3.5	3.75	4.0	4.25	4.5
Pressure, psi	750	850	850	860	860	870	870	870	870	880
Volume, litres	4.75	/	3.7							
Pressure, psi	900	/	∅							



Comments: Time - 1:42 pm

Sheet 4 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO Project No.: WB981 Well No.: IGBH-06

Location: Ignace, Ontario Corrected S/N 19930 DL Apr 26, 2022 Completed by: ML/TK Date Inflated: Feb 20/22

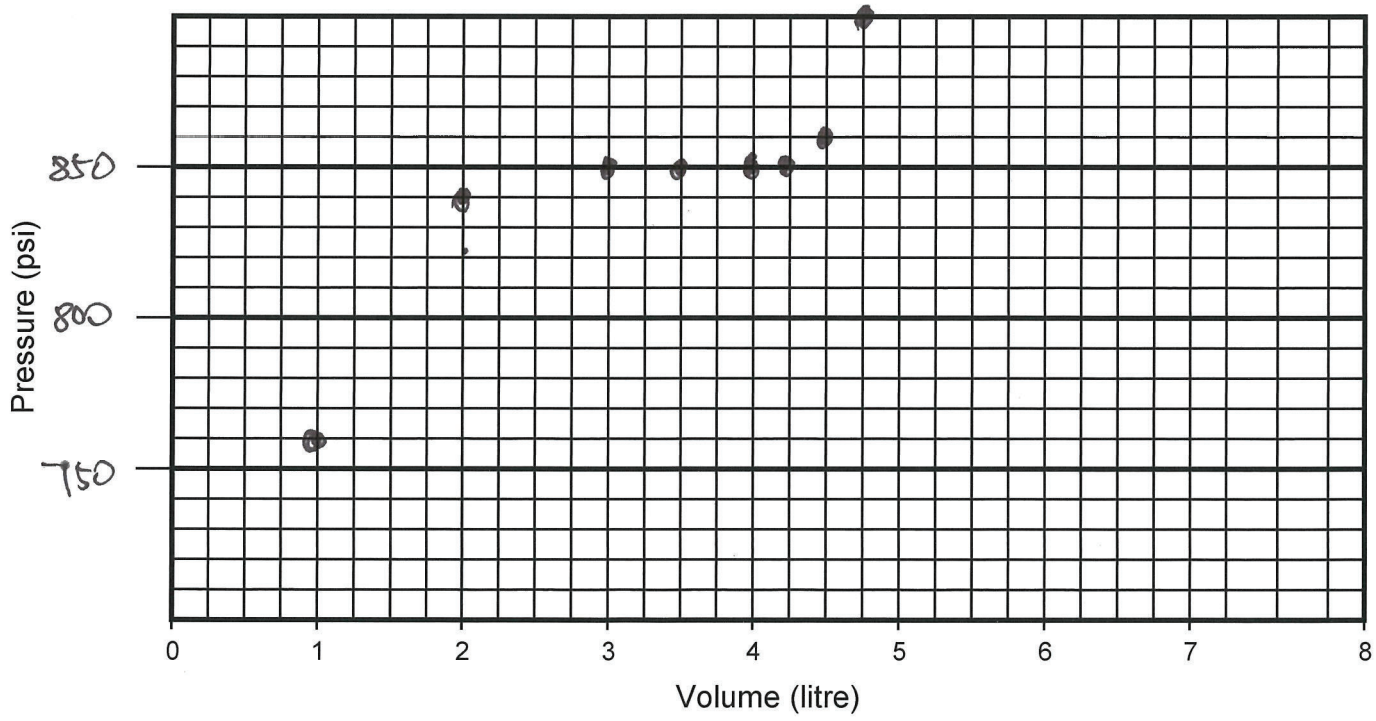
Packer No. 3, comp 35 SN# ~~19430~~ Depth (m): _____ Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 145 psi Final Line Pressure, P_L: _____ psi Tool Pressure, P_T: 660 psi

Borehole Water Level: _____ (m) = _____ psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = _____ psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.75	✓
Pressure, psi	760	840	850	850	850	850	850	860	900	✓
Volume, litres	3.7									
Pressure, psi	ø									



Comments: _____ Time - 2:22 pm

Sheet 5 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 20/22

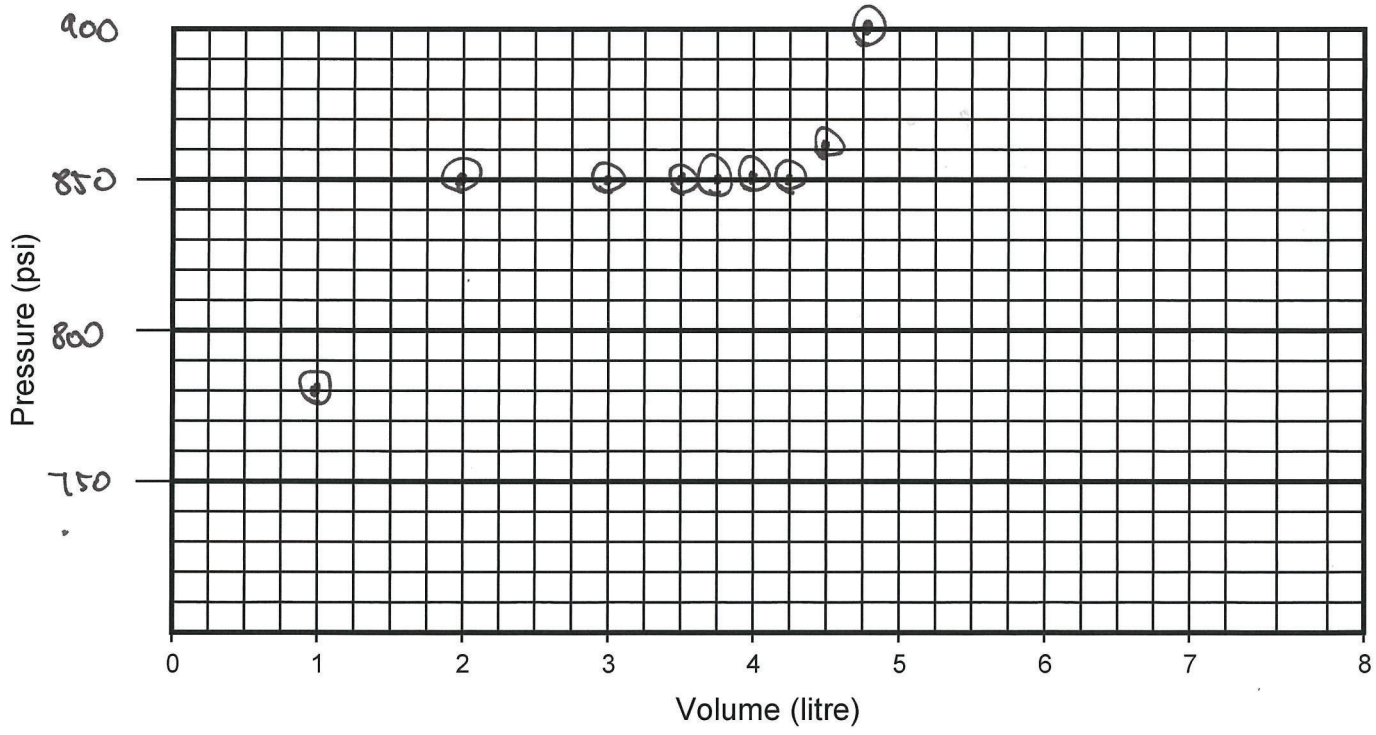
Packer No. 4" comp 54 SN# 19961 | Depth (m): 849.8 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 900 psi | Tool Pressure, P_T: 610 psi

Borehole Water Level: ~60 (m) = ~215 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 155 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.75	✓
Pressure, psi	780	850	850	850	850	850	850	860	900	✓
Volume, litres	3.7									
Pressure, psi	0									



Comments: Time - 3:03 pm

Sheet 6 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 20/22

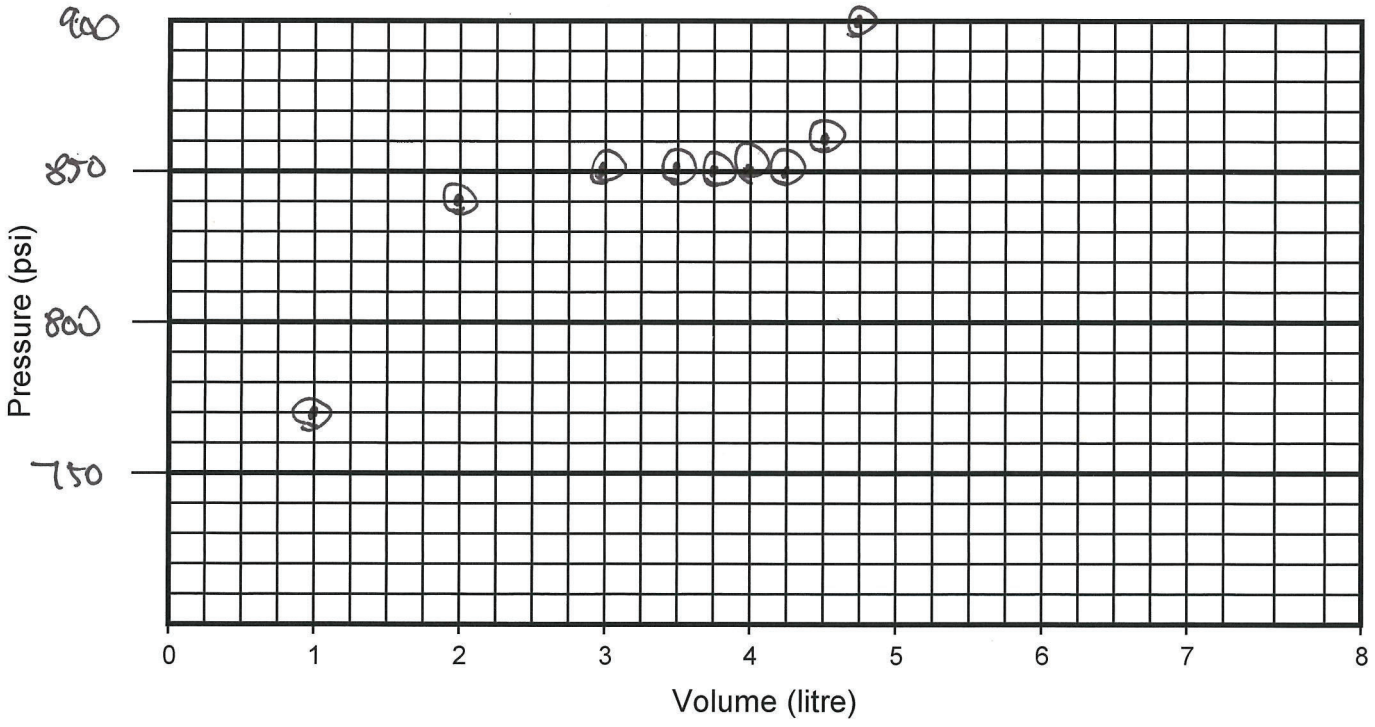
Packer No. 5, comp 63 S/N 19962 | Depth (m): 823.4 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 900 psi | Tool Pressure, P_T: 610 psi

Borehole Water Level: ~10 (m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 135 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.75	✓
Pressure, psi	770	840	850	850	850	850	850	860	900	✓
Volume, litres	3.7									
Pressure, psi	∅									



Comments: Time - 3:37 pm

Sheet 7 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: MC/TK | Date Inflated: Feb 20/22

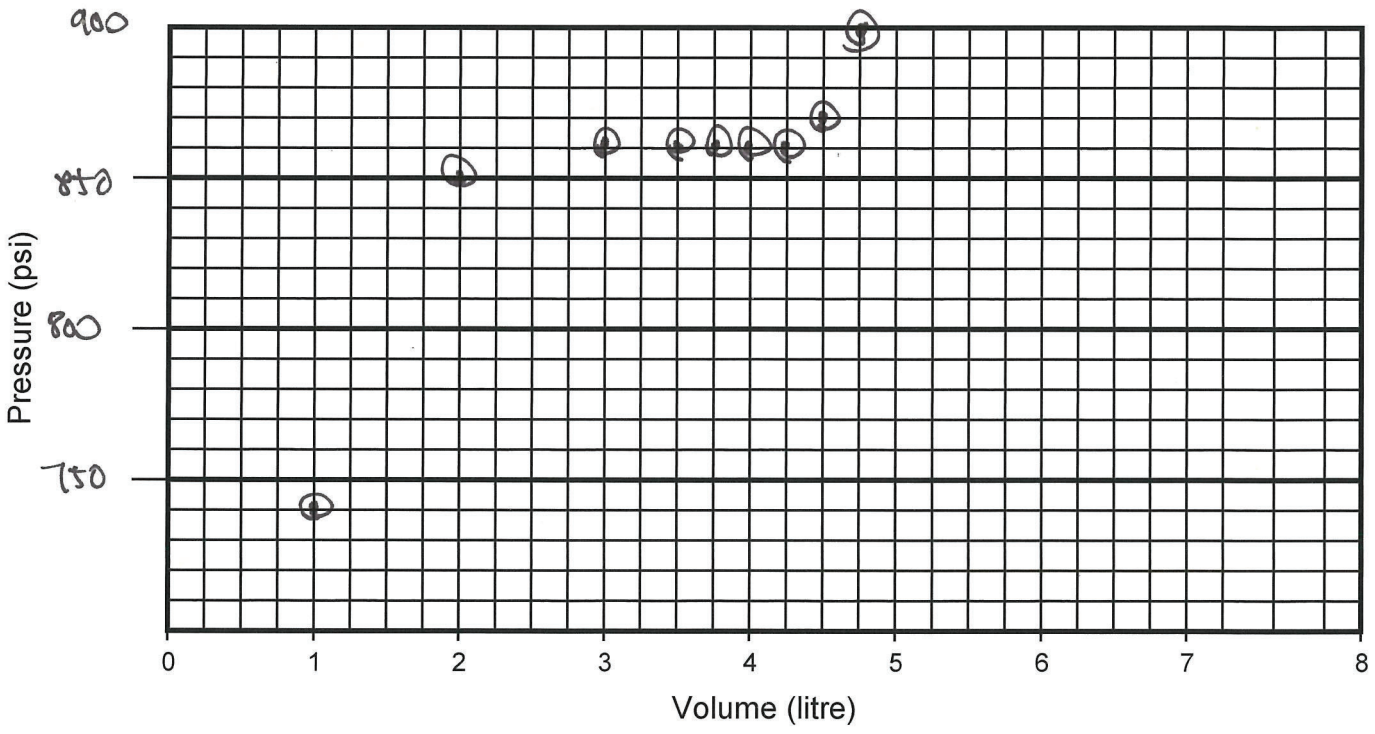
Packer No. 6, comp 75 S/N 19963 | Depth (m): 792.3 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 900 psi | Tool Pressure, P_T: 610 psi

Borehole Water Level: ~40 (m) = ~155 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 155 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.75	/
Pressure, psi	740	850	860	860	860	860	860	870	900	/
Volume, litres	3.75									
Pressure, psi	0									



Comments: Time - 4:11 pm

Sheet 8 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 21/22

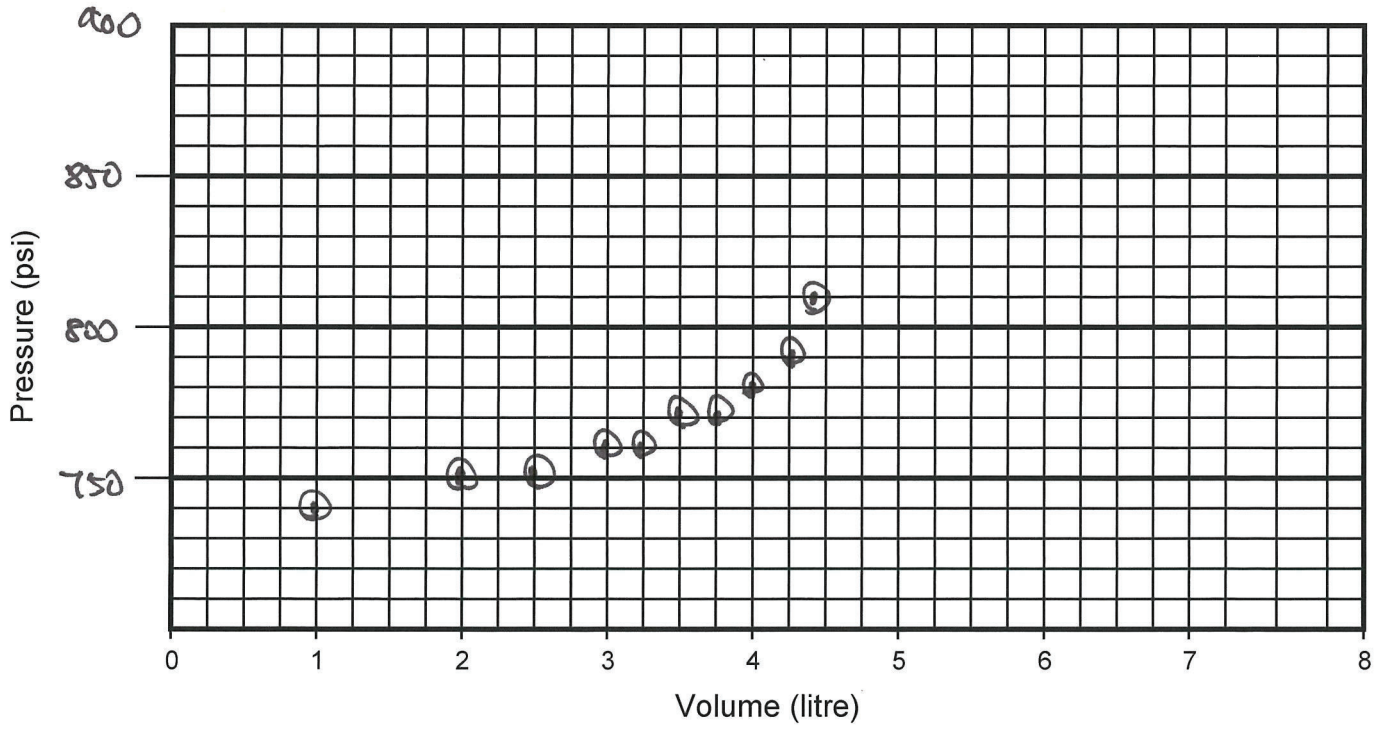
Packer No. 7, comp 95, S/N 19964 | Depth (m): 734.4 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 130 psi | Final Line Pressure, P_L: 810 psi | Tool Pressure, P_T: 600 psi

Borehole Water Level: ~~[illegible]~~ (m) = 60 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 140 psi

Volume, litres	1.0	2.0	2.5	3.0	3.25	3.5	3.75	4.0	4.25	4.3
Pressure, psi	740	750	750	760	760	770	770	780	790	810
Volume, litres	✓	3.6								
Pressure, psi	✓	∅								



Comments: P_W = based on P at packer activation. Time - 2:21 pm

Sheet 9 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 21/22

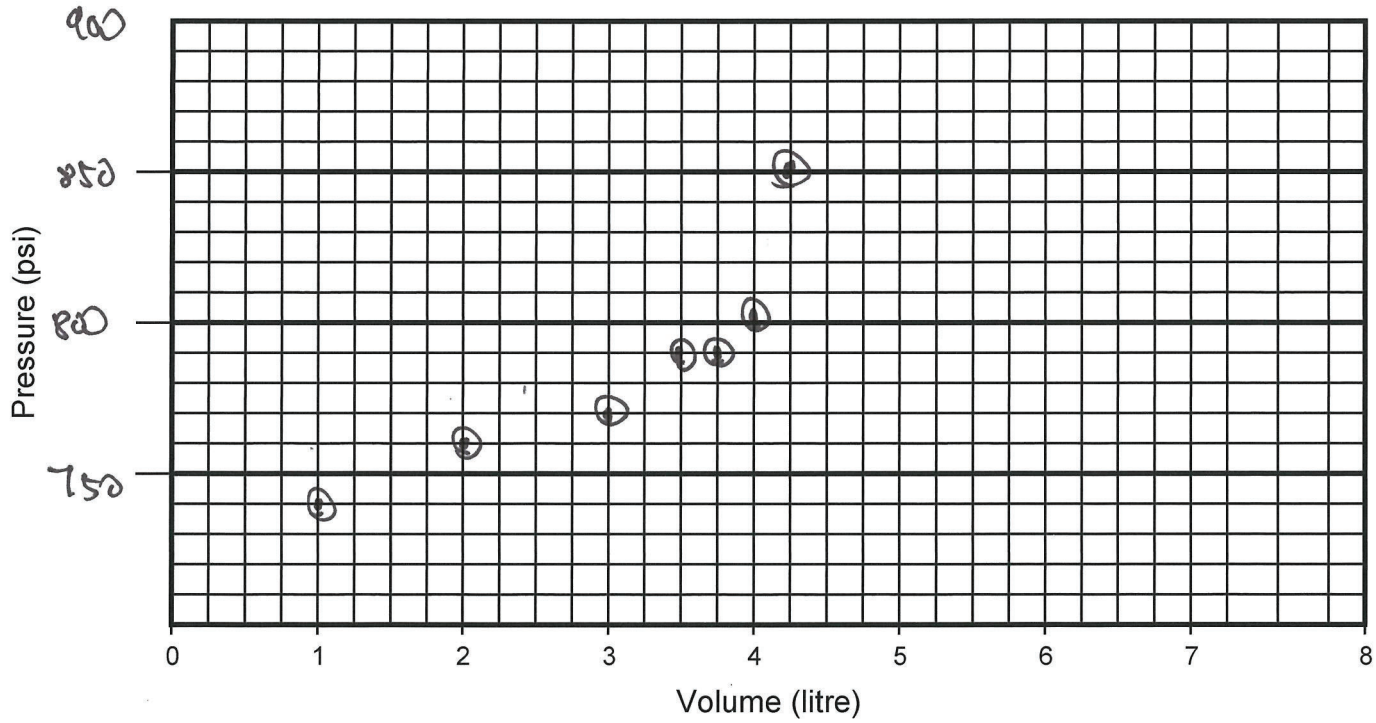
Packer No. 8" comp 103, SN 19965 | Depth (m): 714.50 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 850 psi | Tool Pressure, P_T: 600 psi

Borehole Water Level: ~45 (m) = 60 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 160 psi

Volume, litres	1.0	2.0	3.0	3.5	3.6	3.75	4.0	4.25	/	3.5
Pressure, psi	740	760	770	790	790	790	800	850	/	ø
Volume, litres										
Pressure, psi										



Comments: P_W is based on packer inflation pressure. Time - 2:55 pm

Sheet 10 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 21/22

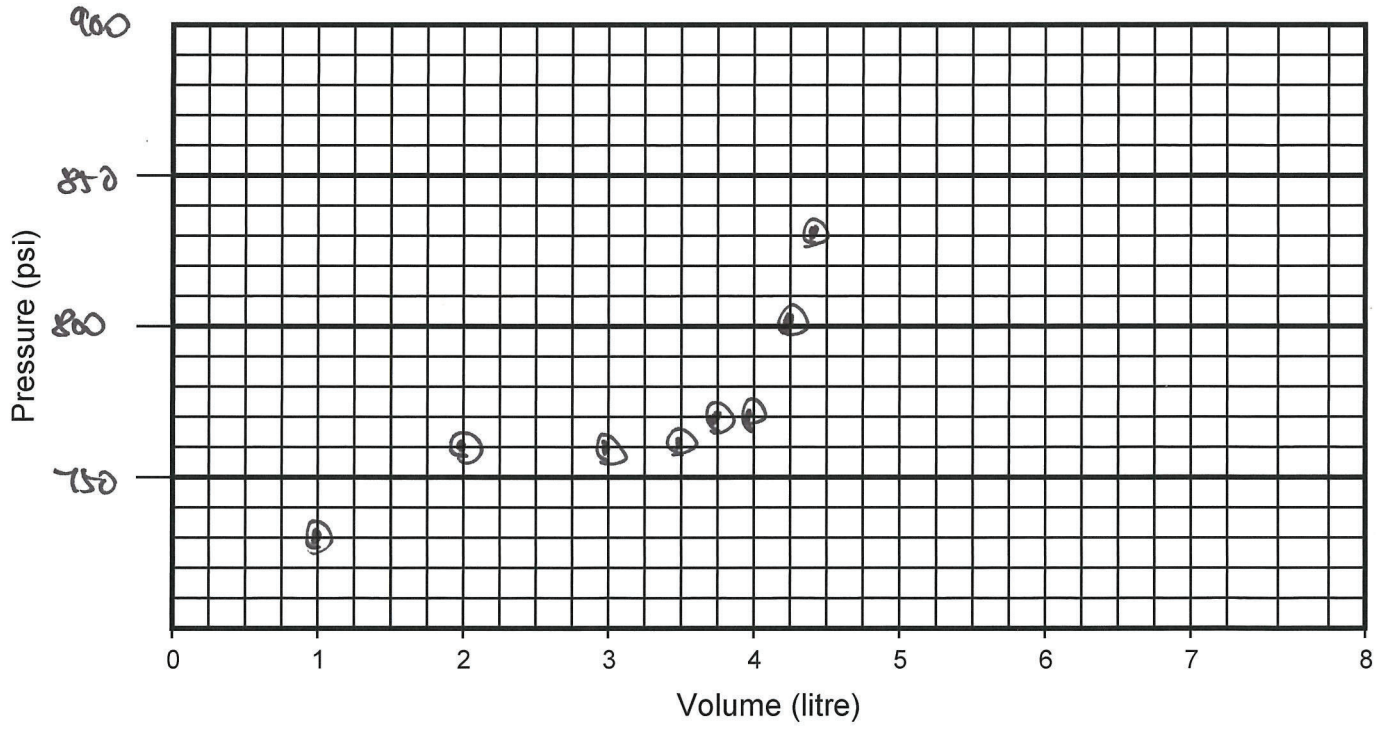
Packer No. 9comp109 , SN 19966 | Depth (m): 697.7 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 135 psi | Final Line Pressure, P_L: 830 psi | Tool Pressure, P_T: 600 psi

Borehole Water Level: 245 (m) = 60 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 155 psi

Volume, litres	1.0	2.0	3.0	3.5	3.76	4.0	4.25	4.3	/	3.6
Pressure, psi	730	760	760	760	770	770	800	830	/	Ø
Volume, litres										
Pressure, psi										



Comments: Pw is based on packer inflation pressure. Time - 3:24 pm

Sheet 11 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: MC/TK | Date Inflated: Feb21/22

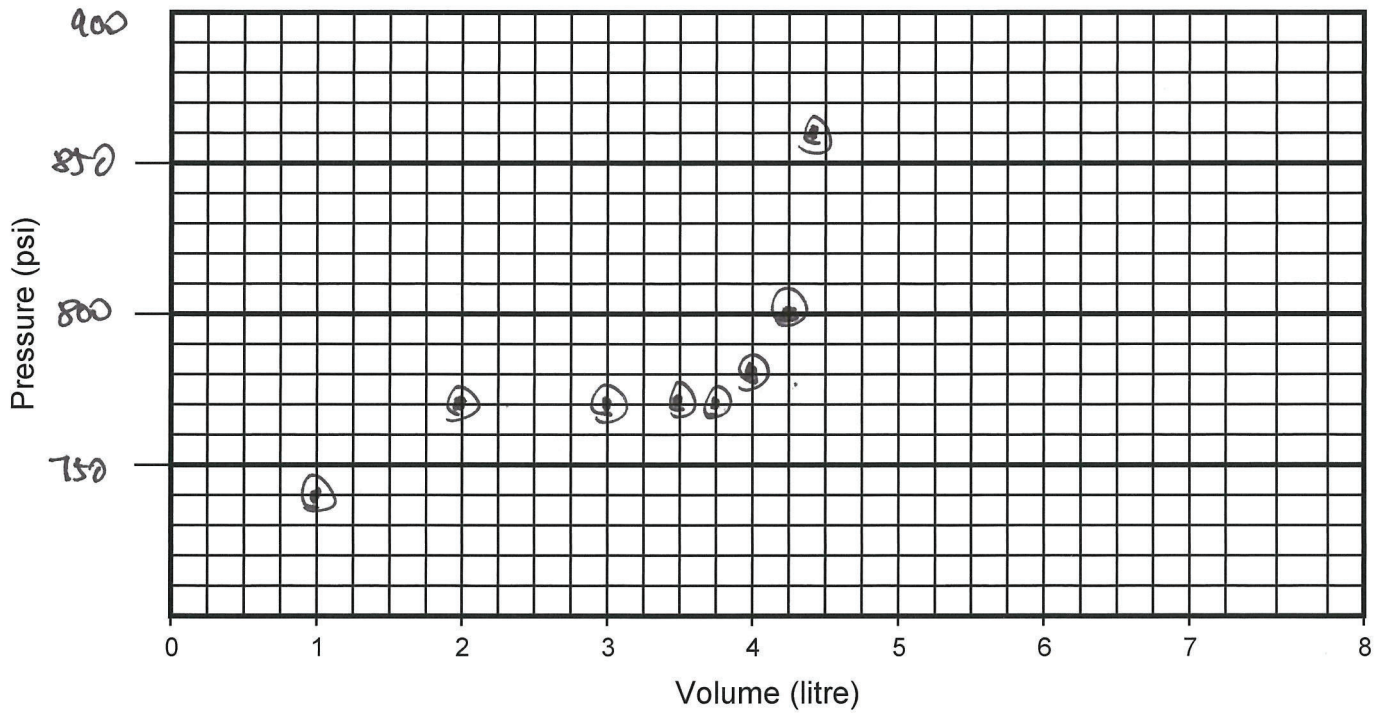
Packer No. 10, comp 115, SN 19967 | Depth (m): 682.42 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 860 psi | Tool Pressure, P_T: 600 psi

Borehole Water Level: ~45 (m) = 60 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 170 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.3	/	3.6
Pressure, psi	740	770	770	770	770	780	800	860	/	Ø
Volume, litres										
Pressure, psi										



Comments: PW is based on packer inflation pressure. Time - 3:51 pm

Sheet 12 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 21/22

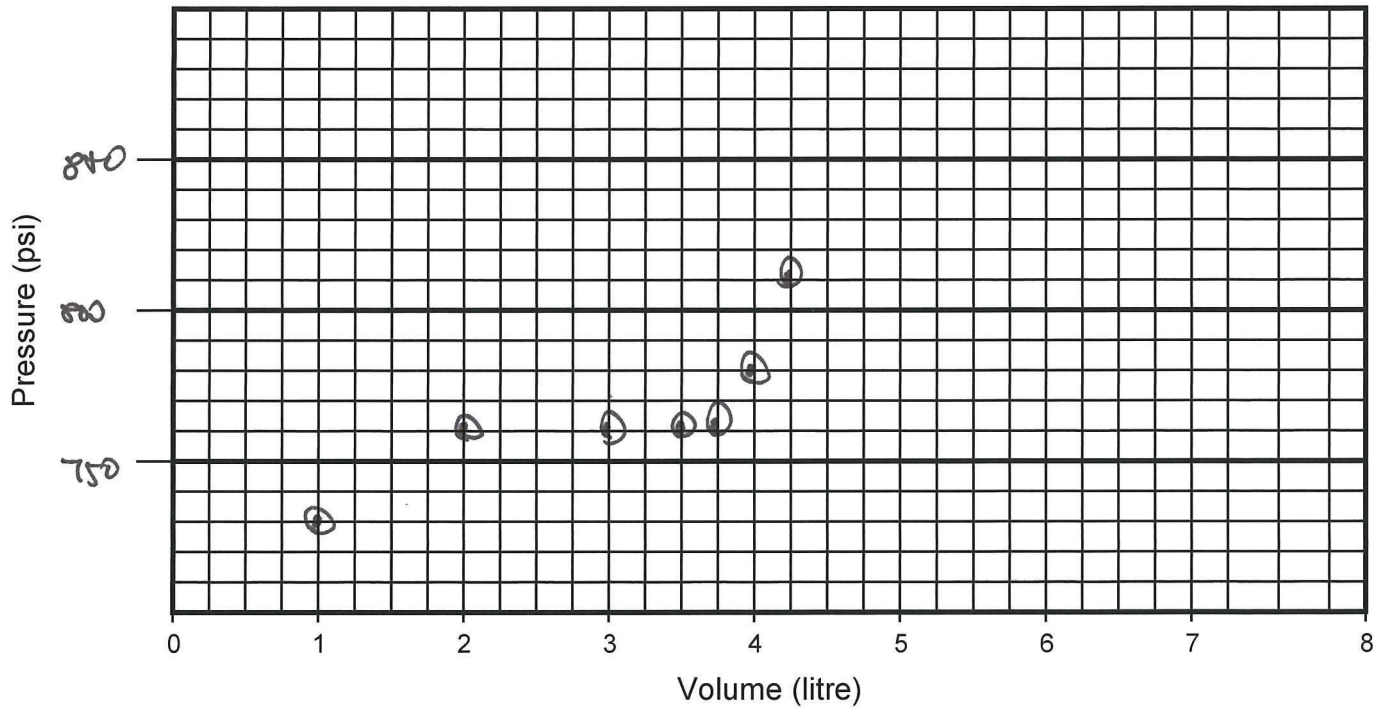
Packer No. II, comp 135, SN 19968 | Depth (m): 624.5 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 145 psi | Final Line Pressure, P_L: 810 psi | Tool Pressure, P_T: 600 psi

Borehole Water Level: 245 (m) = 60 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 125 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	/	3.6	
Pressure, psi	730	760	760	760	760	770	810	/	ø	
Volume, litres										
Pressure, psi										



Comments: Pw is based on packer inflation pressure. Time - 4:55 pm

Sheet 13 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML / TK | Date Inflated: Feb 22/22

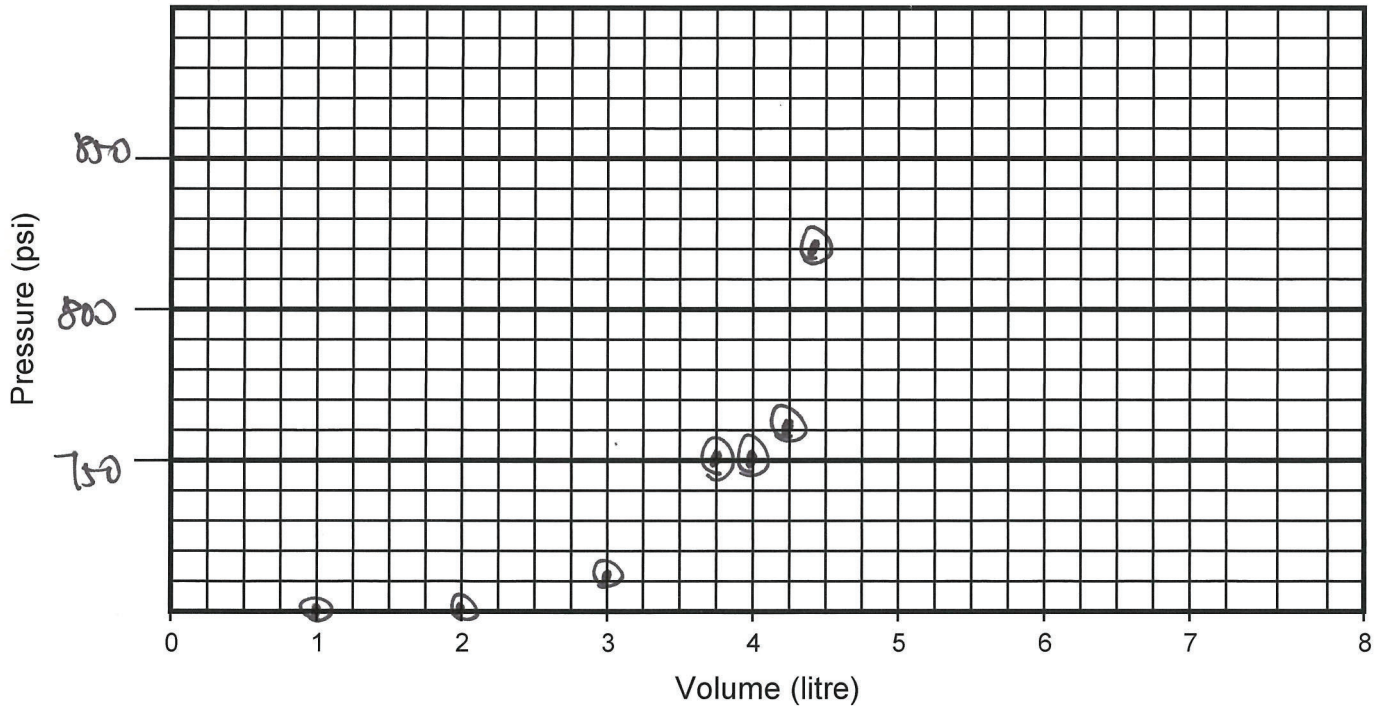
Packer No. 12, comp 157, SN 19989 | Depth (m): 563.5 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 820 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~55 (m) = 80 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = ~180 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.35	/	3.7
Pressure, psi	700	700	710	750	750	750	760	820	/	Ø
Volume, litres										
Pressure, psi										



Comments: P_W is based on packer inflation pressure. Time - 12:04 pm

Sheet 14 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 22/22

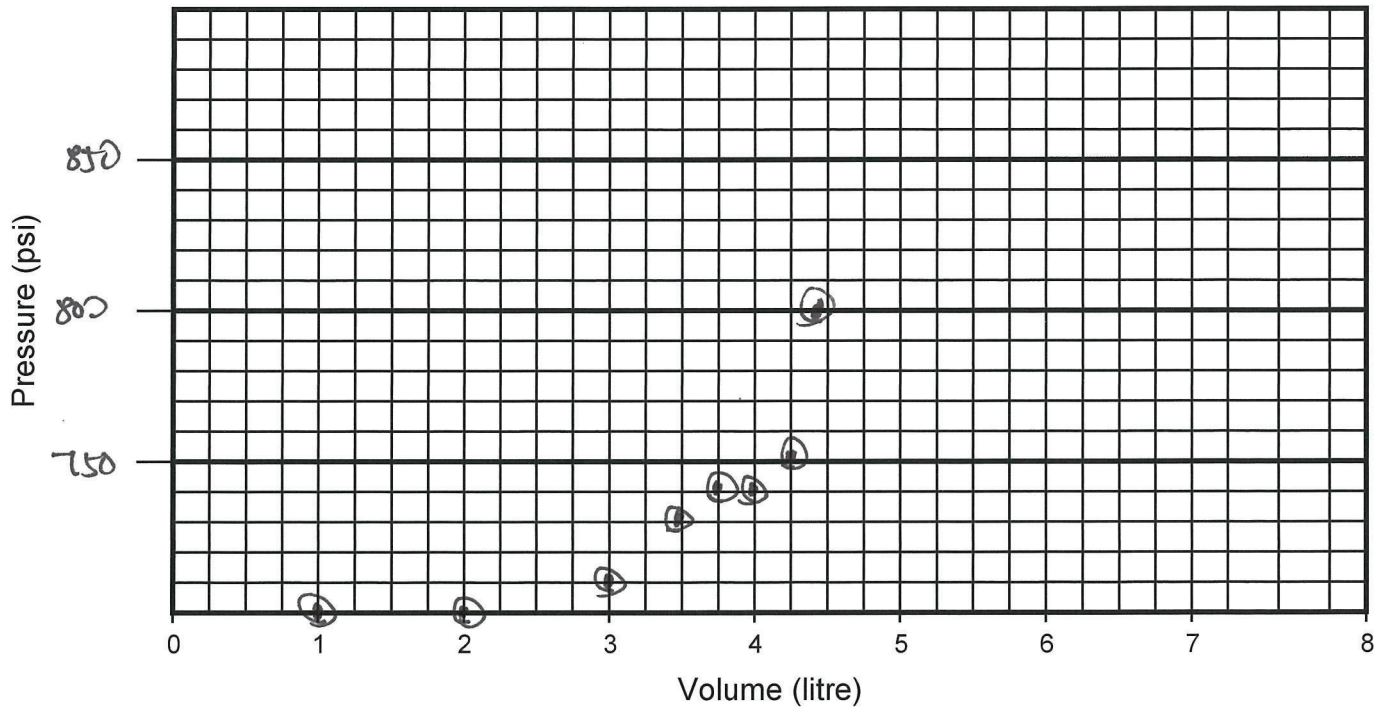
Packer No. 13, comp 176, SN 19970 | Depth (m): 510.2 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 880 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~55 (m) = 80 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 160 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.15	4.25	4.35	✓
Pressure, psi	700	700	710	730	740	740	740	750	800	✓
Volume, litres	3.7									
Pressure, psi	∅									



Comments: Pw is based on packer inflation pressure. Time - 1:32 pm

Sheet 15 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML / TK | Date Inflated: Feb 22/22

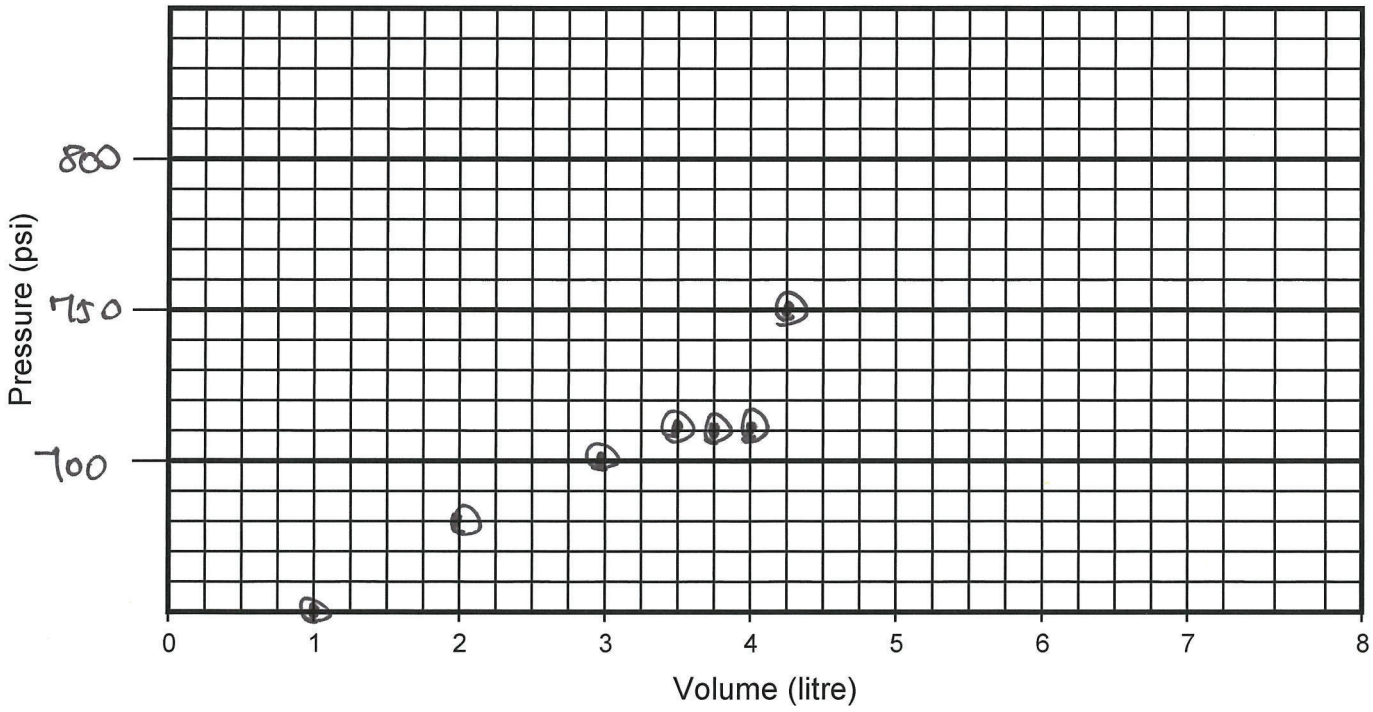
Packer No. 14, comp 186, SN 19971 | Depth (m): 484.3 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 135 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level 53.0 (m) = 80 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 125. psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	/	3.6	
Pressure, psi	650	680	700	710	710	710	750	/	ø	
Volume, litres										
Pressure, psi										



Comments: Pw is based on packer inflation pressure. Time - 1:59 pm

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: MC / TK | Date Inflated: Feb 22/22

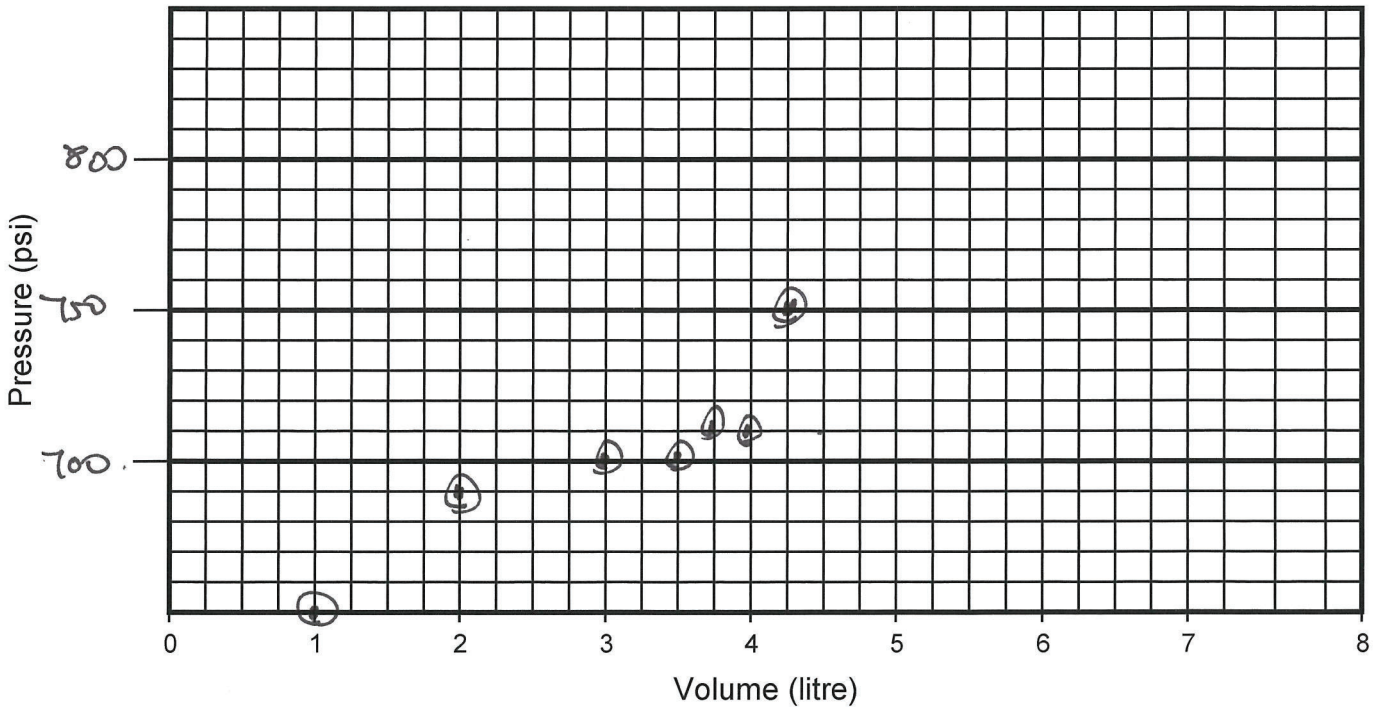
Packer No. 15, comp 195, SN 19972 | Depth (m): 459.9 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~55 (m) = 80 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 120 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.1	4.25	/	3.6
Pressure, psi	650	690	700	700	710	710	720	750	/	ø
Volume, litres										
Pressure, psi										



Comments: P_W is based on packer inflation pressure. Time - 2:34 pm

Sheet 17 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 25/22

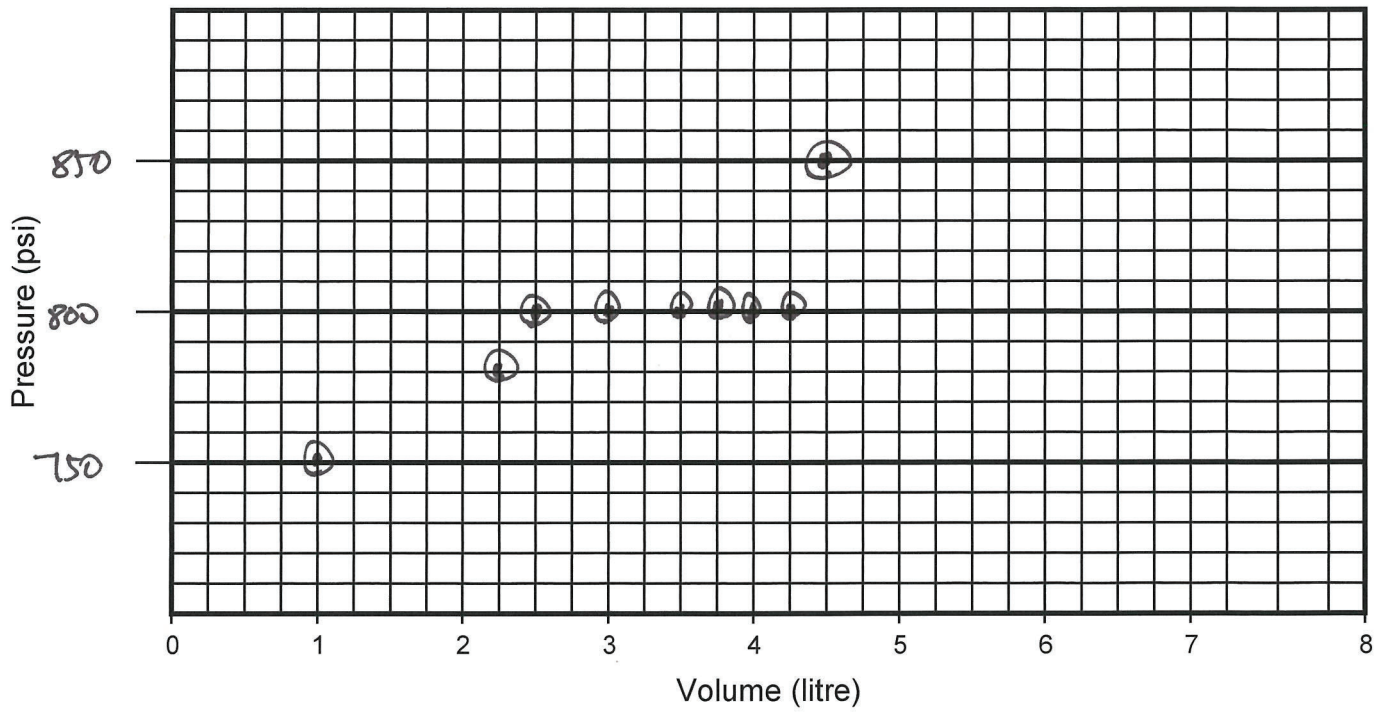
Packer No. 16, comp 214, 19973 | Depth (m): 406.6 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 850 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~60 (m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 155 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.5	✓
Pressure, psi	750	780	800	800	800	800	800	800	850	✓
Volume, litres	3.7									
Pressure, psi	0									



Comments: Time - 12:58 pm

Sheet 18 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 25/22

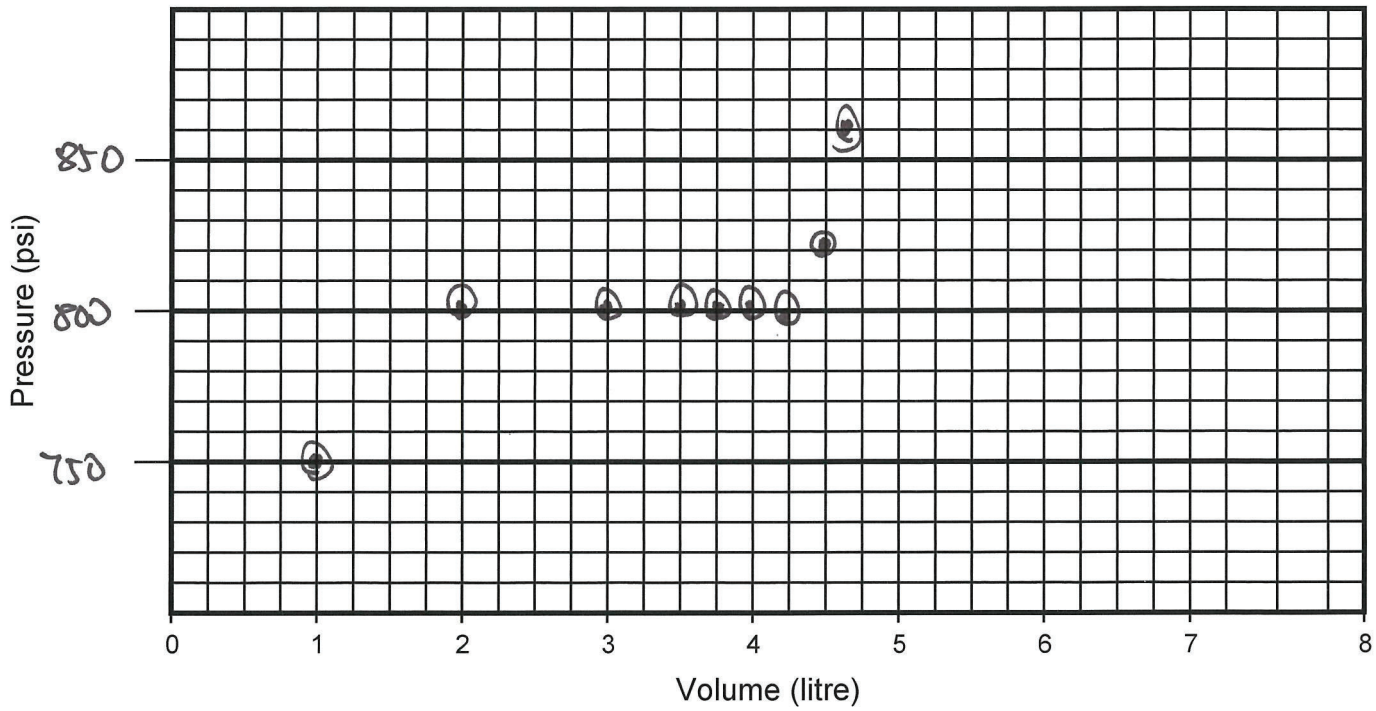
Packer No. 17, comp 229, SN 19974 | Depth (m): 363.9 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 145 psi | Final Line Pressure, P_L: 860 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~10 (m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 160 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.6	✓
Pressure, psi	750	800	800	800	800	800	800	820	860	✓
Volume, litres	3.75									
Pressure, psi	∅									



Comments: 1:12

Time - 1:57 pm

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 25/22

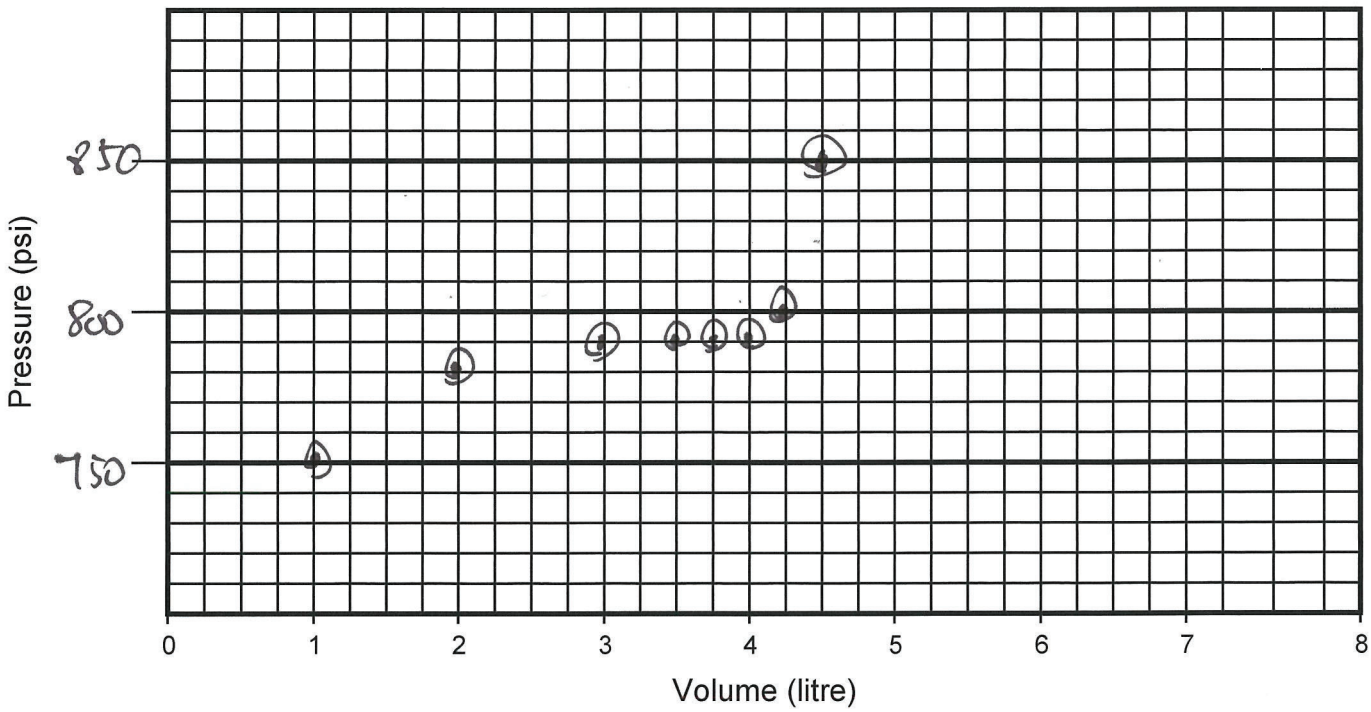
Packer No. 18, comp 260, SN 19975 | Depth (m): -74.2 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 850 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: 210 (m) = 315 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 155 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	/	3.7
Pressure, psi	750	790	790	790	790	790	800	850	/	Ø
Volume, litres										
Pressure, psi										



Comments: Time - 2:48pm

Sheet 20 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 25/22

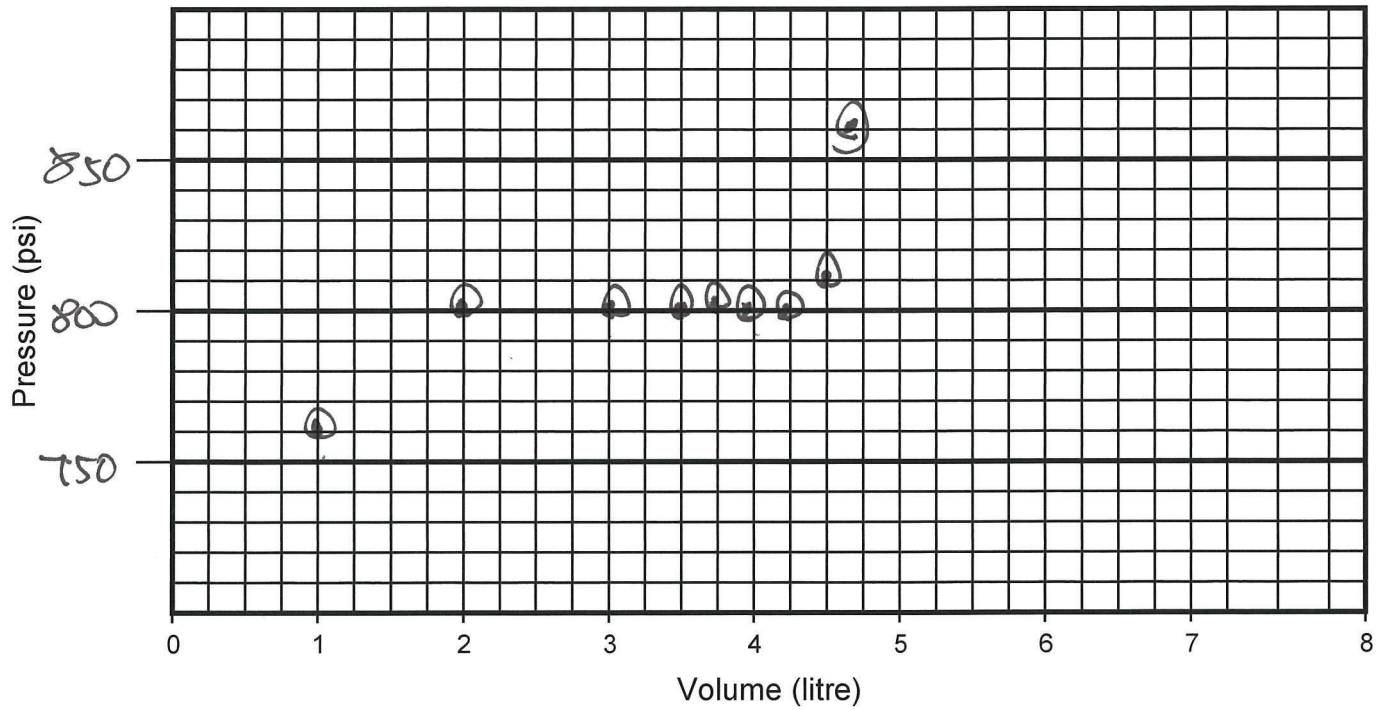
Packer No. 19, comp 882, SN 19976 | Depth (m): 210.23 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 860 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~10 (m) = ~15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 165 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.6	✓
Pressure, psi	760	800	800	800	800	800	800	810	860	✓
Volume, litres	3.8									
Pressure, psi	0									



Comments: Time - 3:21 pm

Sheet 21 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 25/22

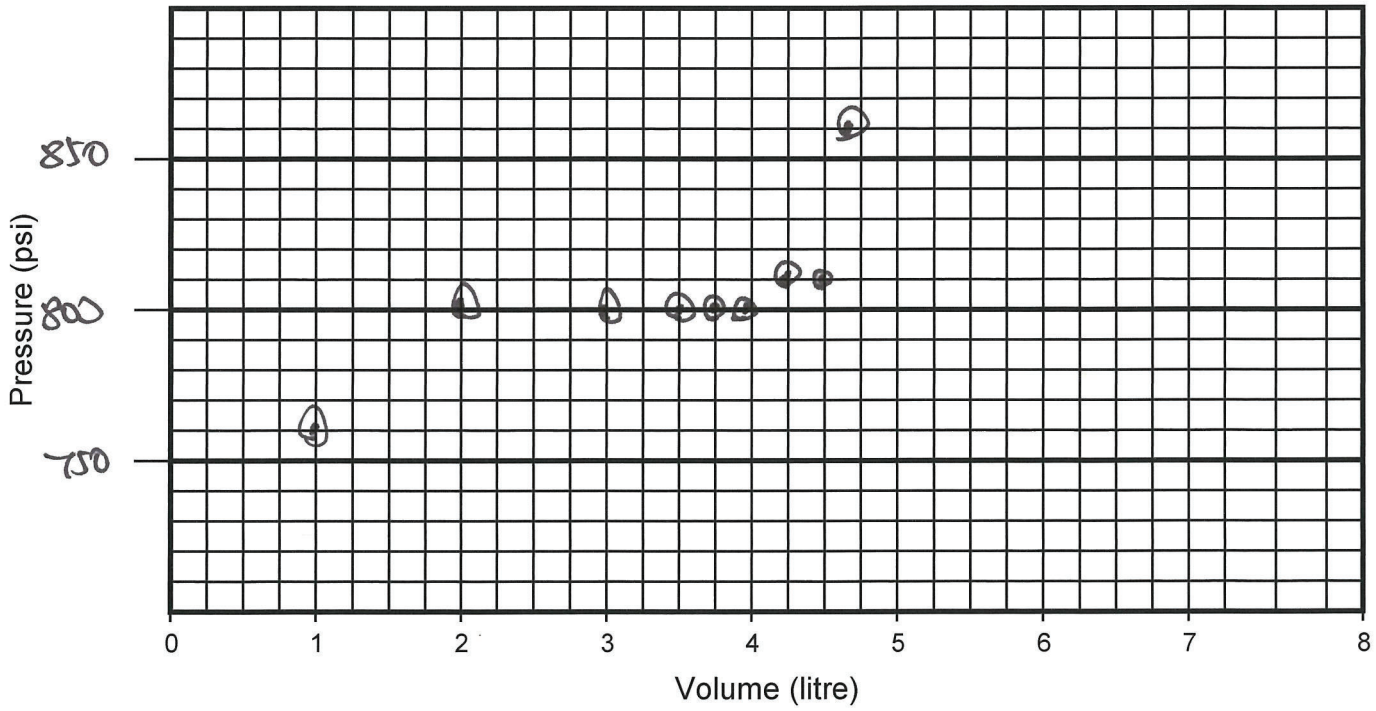
Packer No. 20, comp 301, SN 19977 | Depth (m): 155.5 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 860 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: 10 (m) = ~15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 165 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.6	✓
Pressure, psi	760	800	800	800	800	800	810	810	860	✓
Volume, litres	3.8									
Pressure, psi	∅									



Comments: Time - 4:12 pm

Sheet 22 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: MLITK | Date Inflated: Feb 25/22

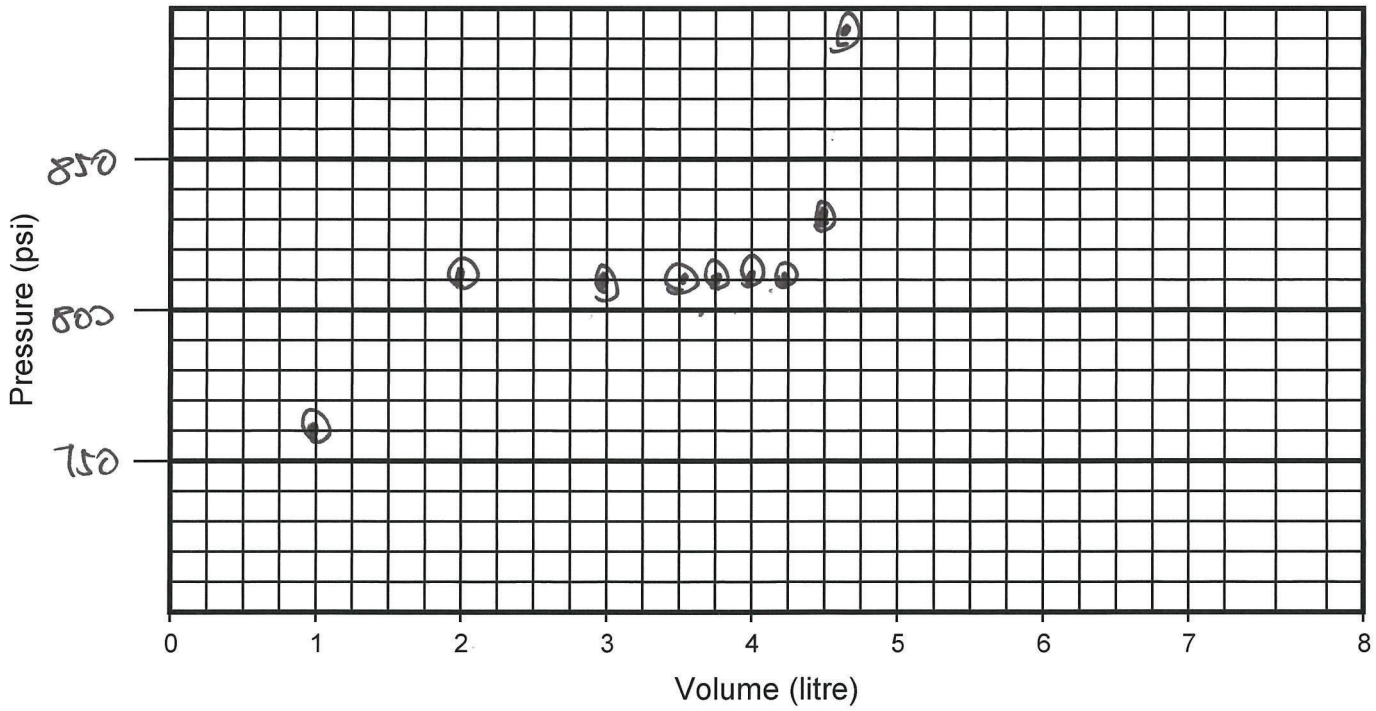
Packer No. 2A, comp 306, SN 19978 | Depth (m): 1432 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 890 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~10 (m) = ~15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 195 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.6	✓
Pressure, psi	760	810	810	810	810	810	810	830	890	✓
Volume, litres	3.75									
Pressure, psi	0									



Comments: Time - 4:35pm

Sheet 23 of 23

Westbay Packer Inflation Record

Project: Golder / NWMO | Project No.: WB981 | Well No.: IGBH-06

Location: Ignace, Ontario | Completed by: ML/TK | Date Inflated: Feb 25/22

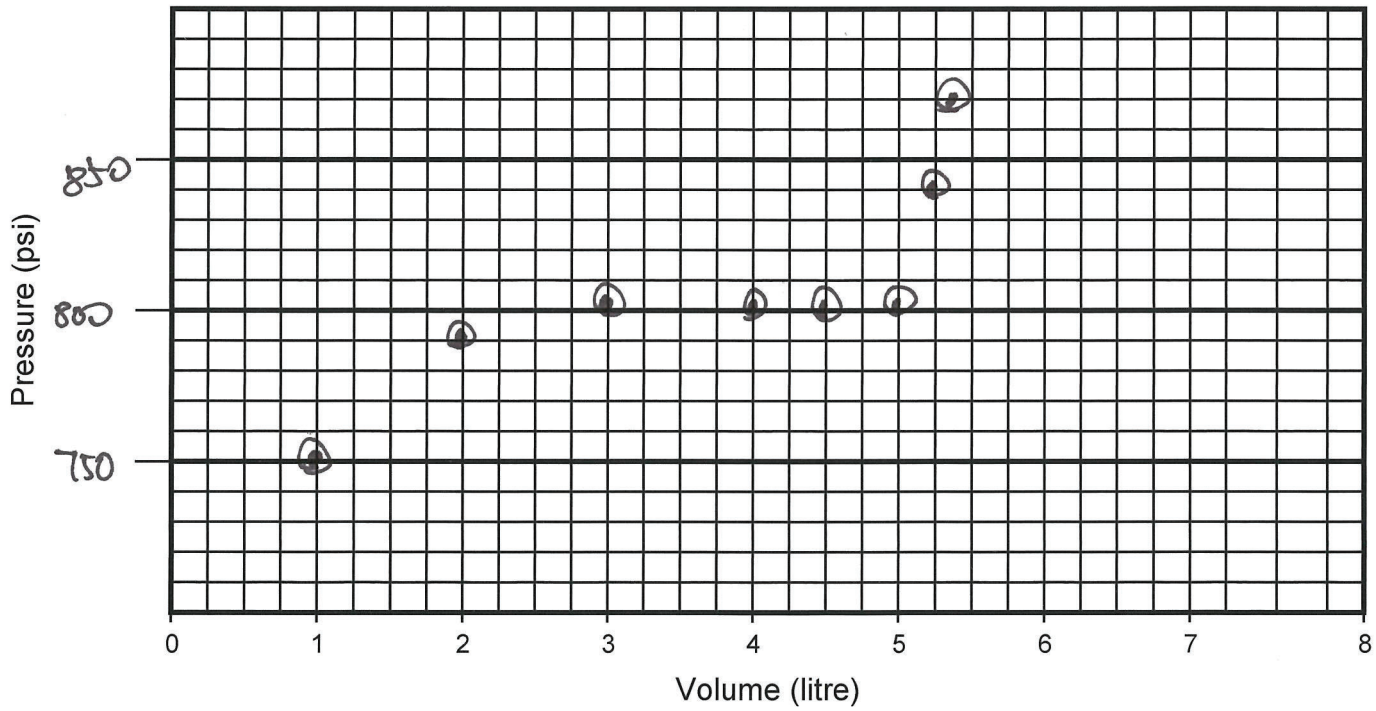
Packer No. 22, comp 329, SH/9920 | Depth (m): 77.8 | Inflation Tool No.: TIW3197

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 870 psi | Tool Pressure, P_T: 570 psi

Borehole Water Level: ~10 (m) = ~15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 175 psi

Volume, litres	1.0	2.0	3.0	4.0	4.5	5.0	5.25	5.3	/	4.5
Pressure, psi	750	790	800	800	800	800	840	870	/	ϕ
Volume, litres										
Pressure, psi										



Comments: In surface casing. Time - 5:45 pm

APPENDIX I
IG-BH06

AS-BUILT TABLES 7 AND 8

As-Built Packer and Port Summary (Table 7)	- 1 page
As-Built Tubing Summary (Table 8)	- 7 pages

TABLE 7
As-Built Packer and Port Summary

Interval No.	Measurement Port Depth (m)	Pumping Port Depth (m)	Magnetic Collar Depth (m)	Top of Interval (m)	Bottom of Interval (m)	Comments
1	990.2		990.8	986.9	1002.0	
2	948.4	958.1	949.0	945.1	986.0	
3	907.2		907.8	903.9	944.2	
4	852.3		852.9	849.1	903.0	
5	828.0		828.6	824.7	848.2	
6	796.9		797.5	793.6	823.8	
7	739.0		739.6	735.7	792.7	
8	719.1	726.7	719.7	715.8	734.8	
9	702.2	705.3	702.8	699.0	714.9	
10	687.0		687.6	683.7	698.1	
11	629.1		629.7	625.8	682.8	
12	568.1	580.3	568.7	564.8	624.9	
13	514.8		515.4	511.5	563.9	
14	488.9		489.5	485.6	510.6	
15	464.5		465.1	461.2	484.7	
16	411.2		411.8	407.9	460.3	
17	368.5		369.1	365.3	407.0	
18	278.7		279.3	275.5	364.4	
19	214.8		215.4	211.5	274.6	
20	160.0		160.6	156.8	210.6	
21	147.8	150.8	148.4	144.5	155.9	
22	82.4		83.0	79.1	143.6	

Note 1: All depth measurements are not corrected for borehole angle.
Note 2: All depth measurements in meters below ground surface along the borehole axis.
Note 3: All depth measurements use 'Nominal' casing lengths.
Note 4: Not corrected for borehole deviation or borehole temperature effects.
Note 5: All Westbay Port depth measurements to upper edge of coupling item.
Note 6: Depths for top and bottom of zone based on packer seal position.

IG_BH 06 As-Built Tubing Summary										
Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
362	0203						-2.63		N/A	
361	020102		0202				-2.58	0.61	N/A	-1.71
360	020101		0202				-1.97	0.30	N/A	-1.10
359	020101		0202				-1.67	0.30	N/A	-0.80
358	020101		0202				-1.36	0.30	N/A	-0.50
357	020102		0202				-1.06	0.61	N/A	-0.19
356	020105		0202				-0.45	1.52	1.523	0.41
355	020105		0202				1.08	1.52	1.522	1.93
354	020105		0202				2.60	1.52	1.522	3.45
353	020110		0202		0216		4.13	3.05	3.047	4.97
352	020110		0202				7.17	3.05	3.047	8.00
351	020110		0202				10.22	3.05	3.047	11.03
350	020110		0202				13.27	3.05	3.046	14.07
349	020110		0202				16.32	3.05	3.047	17.10
348	020110		0202				19.37	3.05	3.047	20.14
347	020110		0202				22.41	3.05	3.046	23.17
346	020110		0202				25.46	3.05	3.046	26.21
345	020110		0202				28.51	3.05	3.047	29.24
344	020110		0202				31.56	3.05	3.046	32.28
343	020110		0202				34.60	3.05	3.046	35.31
342	020110		0202				37.65	3.05	3.046	38.35
341	020110		0202				40.70	3.05	3.046	41.38
340	020110		0202				43.75	3.05	3.046	44.42
339	020110		0202				46.80	3.05	3.046	47.45
338	020110		0202				49.84	3.05	3.046	50.49
337	020110		0202				52.89	3.05	3.045	53.52
336	020110		0202				55.94	3.05	3.046	56.56
335	020110		0202				58.99	3.05	3.045	59.59
334	020110		0202				62.04	3.05	3.046	62.63
333	020110		0202				65.08	3.05	3.047	65.66
332	020110		0202				68.13	3.05	3.046	68.70
331	020110		0202				71.18	3.05	3.046	71.73
330	020110		0202				74.23	3.05	3.046	74.77
329	0238	19928	0202				77.27	1.52	1.522	77.80
328	020110		0202				78.80	3.05	3.047	79.32
327	020110		0205	9982	0216		81.85	3.05	3.047	82.36
326	020105		0202				84.89	1.52	1.523	85.41
325	020105		0202				86.42	1.52	1.522	86.93
324	020110		0202				87.94	3.05	3.047	88.45
323	020110		0202				90.99	3.05	3.047	91.49
322	020110		0202				94.04	3.05	3.046	94.54
321	020110		0202				97.09	3.05	3.046	97.58
320	020110		0202				100.13	3.05	3.047	100.62
319	020110		0202				103.18	3.05	3.047	103.66
318	020110		0202				106.23	3.05	3.046	106.71
317	020110		0202				109.28	3.04	3.047	109.75
316	020110		0202				112.32	3.05	3.047	112.79
315	020110		0202				115.37	3.05	3.047	115.83
314	020110		0202				118.42	3.05	3.047	118.88
313	020110		0202				121.47	3.05	3.047	121.92
312	020110		0202				124.52	3.04	3.047	124.97
311	020110		0202				127.56	3.05	3.047	128.00
310	020110		0202				130.61	3.05	3.047	131.05
309	020110		0202				133.66	3.05	3.047	134.09
308	020110		0202				136.71	3.05	3.046	137.14

IG_BH 06 As-Built Tubing Summary										
Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
307	020110		0202				139.76	3.04	3.046	140.18
306	0238	19978	0202				142.80	1.53	1.522	143.22
305	020110		0202				144.33	3.04	3.046	144.74
304	020110		0205	10000	0216		147.37	3.05	3.047	147.78
303	020105		0206	535			150.42	1.60	1.599	150.82
302	020110		0202				152.02	3.05	3.047	152.42
301	0238	19977	0202				155.07	1.52	1.522	155.47
300	020110		0202				156.59	3.05	3.047	156.98
299	020110		0205	9981	0216		159.64	3.05	3.047	160.03
298	020105		0202				162.69	1.52	1.523	163.07
297	020110		0202				164.21	3.05	3.046	164.59
296	020110		0202				167.26	3.05	3.046	167.64
295	020110		0202				170.31	3.05	3.046	170.68
294	020110		0202				173.36	3.05	3.046	173.73
293	020110		0202				176.41	3.04	3.047	176.77
292	020110		0202				179.45	3.05	3.047	179.81
291	020110		0202				182.50	3.05	3.046	182.85
290	020110		0202				185.55	3.05	3.046	185.90
289	020110		0202				188.60	3.04	3.046	188.94
288	020110		0202				191.64	3.05	3.047	191.97
287	020110		0202				194.69	3.05	3.046	195.02
286	020110		0202				197.74	3.05	3.047	198.06
285	020110		0202				200.79	3.05	3.047	201.11
284	020110		0202				203.84	3.04	3.047	204.15
283	020110		0202				206.88	3.05	3.046	207.19
282	0238	19976	0202				209.93	1.53	1.522	210.23
281	020110		0202				211.46	3.04	3.046	211.76
280	020110		0205	9999	0216		214.50	3.05	3.047	214.80
279	020105		0202				217.55	1.53	1.522	217.85
278	020110		0202				219.08	3.04	3.047	219.37
277	020110		0202				222.12	3.05	3.047	222.41
276	020110		0202				225.17	3.05	3.047	225.46
275	020110		0202				228.22	3.05	3.047	228.50
274	020110		0202				231.27	3.04	3.047	231.55
273	020110		0202				234.31	3.05	3.046	234.59
272	020110		0202				237.36	3.05	3.047	237.63
271	020110		0202				240.41	3.05	3.046	240.68
270	020110		0202				243.46	3.05	3.046	243.72
269	020110		0202				246.51	3.04	3.046	246.77
268	020110		0202				249.55	3.05	3.047	249.81
267	020110		0202				252.60	3.05	3.047	252.85
266	020110		0202				255.65	3.05	3.047	255.90
265	020110		0202				258.70	3.05	3.047	258.95
264	020110		0202				261.75	3.04	3.046	261.99
263	020110		0202				264.79	3.05	3.047	265.03
262	020110		0202				267.84	3.05	3.047	268.07
261	020110		0202				270.89	3.05	3.046	271.12
260	0238	19975	0202				273.94	1.52	1.522	274.17
259	020110		0202				275.46	3.05	3.046	275.69
258	020110		0205	10001	0216		278.51	3.05	3.047	278.73
257	020105		0202				281.56	1.52	1.521	281.78
256	020105		0202				283.08	1.52	1.522	283.30
255	020110		0202				284.60	3.05	3.047	284.81
254	020110		0202				287.65	3.05	3.046	287.86
253	020110		0202				290.70	3.05	3.046	290.91
252	020110		0202				293.75	3.05	3.047	293.95
251	020110		0202				296.80	3.04	3.045	297.00
250	020110		0202				299.84	3.05	3.047	300.04

IG_BH 06 As-Built Tubing Summary										
Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
249	020110		0202				302.89	3.05	3.046	303.08
248	020110		0202				305.94	3.05	3.047	306.13
247	020110		0202				308.99	3.04	3.046	309.18
246	020110		0202				312.03	3.05	3.047	312.21
245	020110		0202				315.08	3.05	3.047	315.26
244	020110		0202				318.13	3.05	3.047	318.30
243	020110		0202				321.18	3.05	3.046	321.35
242	020110		0202				324.23	3.04	3.047	324.40
241	020110		0202				327.27	3.05	3.047	327.43
240	020110		0202				330.32	3.05	3.047	330.48
239	020110		0202				333.37	3.05	3.048	333.53
238	020110		0202				336.42	3.05	3.047	336.57
237	020110		0202				339.47	3.04	3.047	339.62
236	020110		0202				342.51	3.05	3.047	342.65
235	020110		0202				345.56	3.05	3.047	345.70
234	020110		0202				348.61	3.05	3.047	348.75
233	020110		0202				351.66	3.04	3.047	351.79
232	020110		0202				354.70	3.05	3.047	354.83
231	020110		0202				357.75	3.05	3.047	357.88
230	020110		0202				360.80	3.05	3.047	360.92
229	0238	19974	0202				363.85	1.52	1.522	363.97
228	020110		0202				365.37	3.05	3.046	365.49
227	020110		0205	10002	0216		368.42	3.05	3.047	368.54
226	020105		0202				371.47	1.52	1.522	371.58
225	020110		0202				372.99	3.05	3.047	373.10
224	020110		0202				376.04	3.05	3.048	376.15
223	020110		0202				379.09	3.05	3.047	379.20
222	020110		0202				382.14	3.04	3.047	382.25
221	020110		0202				385.18	3.05	3.046	385.28
220	020110		0202				388.23	3.05	3.047	388.33
219	020110		0202				391.28	3.05	3.047	391.38
218	020110		0202				394.33	3.04	3.047	394.43
217	020110		0202				397.37	3.05	3.047	397.47
216	020110		0202				400.42	3.05	3.046	400.51
215	020110		0202				403.47	3.05	3.046	403.56
214	0238	19973	0202				406.52	1.52	1.522	406.61
213	020110		0202				408.04	3.05	3.046	408.13
212	020110		0205	9983	0216		411.09	3.05	3.046	411.18
211	020105		0202				414.14	1.52	1.522	414.22
210	020105		0202				415.66	1.53	1.522	415.74
209	020110		0202				417.19	3.04	3.046	417.27
208	020110		0202				420.23	3.05	3.046	420.31
207	020110		0202				423.28	3.05	3.047	423.36
206	020110		0202				426.33	3.05	3.047	426.40
205	020110		0202				429.38	3.04	3.047	429.45
204	020110		0202				432.42	3.05	3.047	432.49
203	020110		0202				435.47	3.05	3.047	435.54
202	020110		0202				438.52	3.05	3.047	438.59
201	020110		0202				441.57	3.05	3.047	441.63
200	020110		0202				444.62	3.04	3.047	444.68
199	020110		0202				447.66	3.05	3.047	447.72
198	020110		0202				450.71	3.05	3.047	450.77
197	020110		0202				453.76	3.05	3.046	453.82
196	020110		0202				456.81	3.05	3.046	456.86
195	0238	19972	0202				459.86	1.52	1.522	459.86
194	020110		0202				461.38	3.05	3.047	461.43
193	020110		0205	9987	0216		464.43	3.05	3.047	464.48
192	020105		0202				467.48	1.52	1.522	467.53

IG_BH 06 As-Built Tubing Summary										
Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
191	020110		0202				469.00	3.05	3.046	469.05
190	020110		0202				472.05	3.04	3.046	472.10
189	020110		0202				475.09	3.05	3.047	475.14
188	020110		0202				478.14	3.05	3.046	478.18
187	020110		0202				481.19	3.05	3.046	481.23
186	0238	19971	0202				484.24	1.52	1.522	484.28
185	020110		0202				485.76	3.05	3.047	485.80
184	020110		0205	9989	0216		488.81	3.05	3.047	488.85
183	020105		0202				491.86	1.52	1.521	491.90
182	020105		0202				493.38	1.53	1.521	493.42
181	020110		0202				494.91	3.04	3.047	494.95
180	020110		0202				497.95	3.05	3.047	497.99
179	020110		0202				501.00	3.05	3.047	501.04
178	020110		0202				504.05	3.05	3.046	504.09
177	020110		0202				507.10	3.05	3.047	507.14
176	0238	19970	0202				510.15	1.52	1.521	510.19
175	020110		0202				511.67	3.05	3.047	511.71
174	020110		0205	9985	0216		514.72	3.04	3.047	514.75
173	020105		0202				517.76	1.53	1.522	517.79
172	020105		0202				519.29	1.52	1.521	519.32
171	020110		0202				520.81	3.05	3.046	520.84
170	020110		0202				523.86	3.05	3.047	523.89
169	020110		0202				526.91	3.05	3.047	526.94
168	020110		0202				529.96	3.04	3.047	529.99
167	020110		0202				533.00	3.05	3.047	533.03
166	020110		0202				536.05	3.05	3.047	536.08
165	020110		0202				539.10	3.05	3.047	539.13
164	020110		0202				542.15	3.05	3.047	542.18
163	020110		0202				545.20	3.04	3.047	545.23
162	020110		0202				548.24	3.05	3.047	548.27
161	020110		0202				551.29	3.05	3.047	551.31
160	020110		0202				554.34	3.05	3.047	554.36
159	020110		0202				557.39	3.04	3.047	557.41
158	020110		0202				560.43	3.05	3.047	560.45
157	0238	19969	0202				563.48	1.53	1.522	563.50
156	020110		0202				565.01	3.04	3.047	565.03
155	020110		0205	9986	0216		568.05	3.05	3.047	568.07
154	020105		0202				571.10	1.53	1.521	571.12
153	020105		0202				572.63	1.52	1.521	572.65
152	020110		0202				574.15	3.05	3.047	574.17
151	020110		0202				577.20	3.05	3.046	577.22
150	020110		0206	534			580.25	3.12	3.123	580.27
149	020105		0202				583.37	1.52	1.521	583.39
148	020110		0202				584.89	3.05	3.047	584.91
147	020110		0202				587.94	3.05	3.047	587.96
146	020110		0202				590.99	3.05	3.047	591.01
145	020110		0202				594.04	3.05	3.046	594.06
144	020110		0202				597.09	3.04	3.047	597.11
143	020110		0202				600.13	3.05	3.047	600.15
142	020110		0202				603.18	3.05	3.047	603.19
141	020110		0202				606.23	3.05	3.047	606.24
140	020110		0202				609.28	3.04	3.047	609.29
139	020110		0202				612.32	3.05	3.047	612.33
138	020110		0202				615.37	3.05	3.047	615.38
137	020110		0202				618.42	3.05	3.047	618.43
136	020110		0202				621.47	3.05	3.047	621.48
135	0238	19968	0202				624.52	1.52	1.522	624.53
134	020110		0202				626.04	3.05	3.047	626.05

IG_BH 06 As-Built Tubing Summary										
Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
133	020110		0205	9984	0216		629.09	3.05	3.047	629.10
132	020105		0202				632.14	1.52	1.521	632.15
131	020110		0202				633.66	3.05	3.047	633.67
130	020110		0202				636.71	3.05	3.046	636.72
129	020110		0202				639.76	3.04	3.046	639.77
128	020110		0202				642.80	3.05	3.046	642.81
127	020110		0202				645.85	3.05	3.046	645.86
126	020110		0202				648.90	3.05	3.046	648.91
125	020110		0202				651.95	3.04	3.047	651.96
124	020110		0202				654.99	3.05	3.047	655.00
123	020110		0202				658.04	3.05	3.047	658.04
122	020110		0202				661.09	3.05	3.048	661.09
121	020110		0202				664.14	3.05	3.047	664.14
120	020110		0202				667.19	3.04	3.047	667.19
119	020110		0202				670.23	3.05	3.047	670.23
118	020110		0202				673.28	3.05	3.047	673.28
117	020110		0202				676.33	3.05	3.046	676.33
116	020110		0202				679.38	3.04	3.047	679.38
115	0238	19967	0202				682.42	1.53	1.522	682.42
114	020110		0202				683.95	3.05	3.047	683.95
113	020110		0205	9990	0216		687.00	3.04	3.047	687.00
112	020105		0202				690.04	1.53	1.521	690.04
111	020110		0202				691.57	3.05	3.047	691.57
110	020110		0202				694.62	3.04	3.047	694.62
109	0238	19966	0202				697.66	1.53	1.522	697.66
108	020110		0202				699.19	3.05	3.047	699.19
107	020110		0205	9991	0216		702.24	3.04	3.047	702.24
106	020110		0206	533			705.28	3.13	3.124	705.28
105	020110		0202				708.41	3.05	3.046	708.41
104	020110		0202				711.46	3.04	3.047	711.46
103	0238	19965	0202				714.50	1.53	1.523	714.50
102	020110		0202				716.03	3.05	3.047	716.03
101	020110		0205	9988	0216		719.08	3.04	3.047	719.08
100	020105		0202				722.12	1.53	1.522	722.12
99	020110		0202				723.65	3.05	3.047	723.65
98	020110		0206	532			726.70	3.12	3.123	726.70
97	020105		0202				729.82	1.52	1.521	729.82
96	020110		0202				731.34	3.05	3.047	731.34
95	0238	19964	0202				734.39	1.52	1.522	734.39
94	020110		0202				735.91	3.05	3.046	735.91
93	020110		0205	9993	0216		738.96	3.05	3.047	738.96
92	020105		0202				742.01	1.52	1.521	742.01
91	020110		0202				743.53	3.05	3.046	743.53
90	020110		0202				746.58	3.05	3.046	746.58
89	020110		0202				749.63	3.05	3.046	749.63
88	020110		0202				752.68	3.05	3.047	752.68
87	020110		0202				755.73	3.04	3.045	755.73
86	020110		0202				758.77	3.05	3.046	758.77
85	020110		0202				761.82	3.05	3.046	761.82
84	020110		0202				764.87	3.05	3.047	764.87
83	020110		0202				767.92	3.05	3.046	767.92
82	020110		0202				770.97	3.04	3.047	770.97
81	020110		0202				774.01	3.05	3.047	774.01
80	020110		0202				777.06	3.05	3.047	777.06
79	020110		0202				780.11	3.05	3.047	780.11
78	020110		0202				783.16	3.04	3.047	783.16
77	020110		0202				786.20	3.05	3.046	786.20
76	020110		0202				789.25	3.05	3.047	789.25

IG_BH 06 As-Built Tubing Summary										
Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
75	0238	19963	0202				792.30	1.52	1.521	792.30
74	020110		0202				793.82	3.05	3.047	793.82
73	020110		0205	9995	0216		796.87	3.05	3.047	796.87
72	020105		0202				799.92	1.52	1.521	799.92
71	020102		0202				801.44	0.61	0.608	801.44
70	020110		0202				802.05	3.05	3.046	802.05
69	020110		0202				805.10	3.05	3.047	805.10
68	020110		0202				808.15	3.05	3.047	808.15
67	020110		0202				811.20	3.04	3.046	811.20
66	020110		0202				814.24	3.05	3.046	814.24
65	020110		0202				817.29	3.05	3.047	817.29
64	020110		0202				820.34	3.05	3.046	820.34
63	0238	19962	0202				823.39	1.52	1.522	823.39
62	020110		0202				824.91	3.05	3.047	824.91
61	020110		0205	9992	0216		827.96	3.05	3.047	827.96
60	020105		0202				831.01	1.52	1.521	831.01
59	020110		0202				832.53	3.05	3.047	832.53
58	020110		0202				835.58	3.05	3.046	835.58
57	020110		0202				838.63	3.05	3.046	838.63
56	020110		0202				841.68	3.04	3.046	841.68
55	020110		0202				844.72	3.05	3.047	844.72
54	0238	19961	0202				847.77	1.52	1.522	847.77
53	020110		0202				849.29	3.05	3.047	849.29
52	020110		0205	9997	0216		852.34	3.05	3.047	852.34
51	020105		0202				855.39	1.52	1.521	855.39
50	020110		0202				856.91	3.05	3.046	856.91
49	020110		0202				859.96	3.05	3.047	859.96
48	020110		0202				863.01	3.05	3.046	863.01
47	020110		0202				866.06	3.05	3.047	866.06
46	020110		0202				869.11	3.04	3.046	869.11
45	020110		0202				872.15	3.05	3.046	872.15
44	020110		0202				875.20	3.05	3.046	875.20
43	020110		0202				878.25	3.05	3.047	878.25
42	020110		0202				881.30	3.05	3.046	881.30
41	020110		0202				884.35	3.04	3.047	884.35
40	020110		0202				887.39	3.05	3.046	887.39
39	020110		0202				890.44	3.05	3.046	890.44
38	020110		0202				893.49	3.05	3.046	893.49
37	020110		0202				896.54	3.04	3.047	896.54
36	020110		0202				899.58	3.05	3.047	899.58
35	0238	19930	0202				902.63	1.53	1.522	902.63
34	020110		0202				904.16	3.04	3.047	904.16
33	020110		0205	9994	0216		907.20	3.05	3.047	907.20
32	020110		0202				910.25	3.05	3.047	910.25
31	020105		0202				913.30	1.52	1.521	913.30
30	020105		0202				914.82	1.53	1.522	914.82
29	020110		0202				916.35	3.05	3.047	916.35
28	020110		0202				919.40	3.04	3.047	919.40
27	020110		0202				922.44	3.05	3.047	922.44
26	020110		0202				925.49	3.05	3.046	925.49
25	020110		0202				928.54	3.05	3.047	928.54
24	020110		0202				931.59	3.04	3.046	931.59
23	020110		0202				934.63	3.05	3.046	934.63
22	020110		0202				937.68	3.05	3.046	937.68
21	020110		0202				940.73	3.05	3.046	940.73
20	0238	19929	0202				943.78	1.52	1.522	943.78
19	020110		0202				945.30	3.05	3.047	945.30
18	020110		0205	9996	0216		948.35	3.05	3.046	948.35

IG_BH 06 As-Built Tubing Summary

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	**Final Depth (mah) (m)
17	020110		0202				951.40	3.05	3.046	951.40
16	020102		0202				954.45	0.61	0.608	954.45
15	020110		0202				955.06	3.04	3.046	955.06
14	020110		0206	476			958.10	3.13	3.125	958.10
13	020105		0202				961.23	1.52	1.521	961.23
12	020105		0202				962.75	1.53	1.522	962.75
11	020110		0202				964.28	3.04	3.046	964.28
10	020110		0202				967.32	3.05	3.046	967.32
9	020110		0202				970.37	3.05	3.046	970.37
8	020110		0202				973.42	3.05	3.046	973.42
7	020110		0202				976.47	3.04	3.046	976.47
6	020110		0202				979.51	3.05	3.047	979.51
5	020110		0202				982.56	3.05	3.047	982.56
4	0238	19758	0202				985.61	1.52	1.522	985.61
3	020110		0202				987.13	3.05	3.047	987.13
2	020105		0205	9980	0216		990.18	1.53	1.522	990.18
1	020110		0202				991.71	3.04	3.047	991.71
0	020305		0202				994.75		0.22	994.75

Depths are with respect to the ground level.

****The final depth measurements are not corrected for the borehole angle. Mah:meter along hole**

* Component positions are referenced to the top of the subject Westbay System coupling.

* Packer positions are referenced to the top Westbay System coupling on the packer.

Monitoring zone dimensions are determined as described on the attached “Dimensions of Packer Seals and Monitoring Zones”.

The position of a MOSDAX Transducer in a Measurement Port is illustrated in the attached “MOSDAX Transducer Position”.

This information may be used in calculating piezometric levels.

The item numbers 359 to 362 were removed after installation.

APPENDIX J
IG-BH06

POST INFLATION PRESSURE PROFILE

Post-Inflation Field Data and Calculation Sheet (February 26, 2022) - 2 pages

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Post- Inflation. 1/2

Well No.: IGBH-06
Datum: G.L
Elev. G.S.: N/A
Height of Westbay above G.S.: "
Elev. top of Westbay Casing: "
Reference Elevation: "
Borehole angle: 70°

Probe Type: o/c sampler
Serial No.: EMS 5288
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: closed

Date: Feb 26/22
Client: Golder / NWMO
Job No.: WB981
Location: Ignace, ON
Weather: overcast
Operator: TK/ML/MO

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Ambient Reading (P_{atm}) (pressure, temperature, time)

Start: Pressure 14.29 Finish:
Temp 16.35
Time 8:00

P_{atm} 14.29 psi

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments: M.C = Mag. caller Ref.
1	990.18	986.00		1284.54	1318.99	8=27	11.95	1284.60	917.51	72.67	M.C = 986.00 Ref = 16
2	948.35	943.7		1228.65	1256.32	8=32	12.75	1228.71	894.54	53.81	M.C = 943.7 Ref = 16 * wireline creps down, adjust wireline
3	907.20	903.2		1173.69	1230.31	8=40	12.92	1173.69	855.15	52.05	M.C = 903.2 Ref = 16
4	852.34	848.6		1100.54	1133.85	8=45	12.68	1100.54	787.31	65.03	M.C = 848.6 Ref = 16
5	827.96	824.3		1068.01	1108.29	8=50	12.41	1068.07	769.34	58.62	M.C = 824.3 Ref = 16
6	796.87	793.3		1026.56	1085.46	8=54	12.09	1026.51	75328	43.59	M.C = 793.3 Ref = 16
7	738.96	735.6		949.17	994.95	9=00	11.74	949.23	689.63	49.33	M.C = 735.6 Ref = 16
8	719.08	715.8		922.66	957.44	9=04	11.38	922.66	663.26	55.82	M.C = 715.8 Ref = 16
9	702.24	699.0		900.17	934.65	9=07	11.18	900.17	647.23	55.01	M.C = 699.0 Ref = 16
10	687.00	683.9		879.99	925.91	9=11	10.94	879.87	641.08	45.92	M.C = 683.9 Ref = 16
11	629.09	626.2		802.54	846.60	9=15	10.62	802.55	585.31	43.78	M.C = 626.2 Ref = 16
12	568.05	565.3		720.93	740.96	9=20	10.18	720.88	511.02	57.03	M.C = 565.3 Ref = 16
13	514.72	512.2		649.64	688.20	9=25	9.66	649.59	473.92	40.80	M.C = 512.2 Ref = 16
14	488.81	486.2		614.93	652.07	9=30	9.34	615.06	448.51	40.30	M.C = 486.2 Ref = 16
15	464.43	461.9		582.47	622.06	9=33	9.02	582.42	427.41	37.02	M.C = 461.9 Ref = 16

Notes: w = 0.4335 psi/ft (1.422psi/m) of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Post Inflation 2/2

Well No.: IGBH-06
Datum: G.L
Elev. G.S.: N/A
Height of Westbay above G.S.: "
Elev. top of Westbay Casing: "
Reference Elevation: "
Borehole angle: 70°

Probe Type: O/C sampler
Serial No.: EMS 5388
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: closed

Date: Feb 26/22
Client: Golder / NWMO
Job No.: WB981
Location: Ignace, ON
Weather: overcast
Operator: TK/ ML/ MO

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Ambient Reading (P_{atm}) (pressure, temperature, time)

Start: Pressure
Temp
Time

Finish: 14-11
5.29
10= 10

P_{atm} 14.29 psi

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings					Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments
				Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)			M.C = mag. collar Ref
16	411.09	408.9		511.36	525.35	9=38	8.65	511.37	359.39	51.69	M.C=408.9 Ref=16
17	368.42	366.4		454.64	478.07	9=43	8.13	454.64	326.15	42.27	M.C=366.4 Ref=16
18	278.51	277.0		334.79	359.13	9=49	7.44	334.80	242.50	36.01	M.C.=277.00 Ref=16
19	214.50	213.2		249.37	278.19	9=53	7.02	249.38	185.58	28.92	M.C=213.2 Ref=16
20	159.64	158.6		176.21	209.00	9=57	6.53	176.22	135.52	24.12	M.C=158.6 Ref=16
21	147.37	146.4		159.79	195.32	9=59	6.21	159.80	127.31	20.06	M.C=146.4 Ref=16
22	81.85	81.2		72.27	85.08	10=03	5.75				M.C. 81.2 Ref=20 reland.
				72.29	110.76	10=05	5.55	72.30	67.84	14.01	Ref=16

Notes: w = 0.4335 psi/ft (1.422psi/m) of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port


Westbay
Instruments

APPENDIX B

Pressure Measurement Records

GOLDER
MEMBER OF WSP

NWMO IGNACE DRILLING
WESTBAY SYSTEM
PIEZOMETRIC PRESSURES/LEVELS

Project No.:
20253946

IG_BH06 - Pre-Inflation Pressure Profile

Datum: Ground Level
Elev. G.S.: 417.74
Height of Westbay above G.S.: 0.91
Elev. Top of Westbay Casing: 418.65
Reference Elevation: 417.74
Borehole angle: 70

Probe Type: O/C Sampler
Serial No.: EMS 5288
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: Closed

Weather: Sunny
Operator: TK/ML
Date: 19-Feb-22
Ambient Reading (P_{atm}) (pressure, temperature, time)
Start: Pressure 98.73
Temp. 20.07
Time 11:05

Finish: Pressure 97.15
Temp. 5.53
Time 14:07

P_{atm} 97.94

Company: Golder

Specific wt. of water (kN/m3) 9.804
Gravitational Acceleration (m/s^2) 9.8065

Note:
"Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1) (psi)	Inside Casing (P1) (kPa)	Outside Casing (P2) (psi)	Outside Casing (P2) (kPa)	Time (H:M:S)	Probe Temp. (°C)	Inside Casing (P1) (psi)	Inside Casing (P1) (kPa)	Pressure Head Outside Port (m) H=(P2-Patm)/w	Piezo Level Outside Port (m) Dz = Dp-H	Comments		Avg. Water Density (kg/m3)	Env Head (m)	Z: Elev of pressure measurement port (mASL)	Freshwater Head (mASL)
1	990.20	984.6	919.47	1163.10	8019.30	1328.12	9157.07	11:45:00	12.28	1163.09	8019.23	924.02	-4.55			Not Available	Not Availat	-501.73	422.29
2	948.40	942.4	880.72	1107.22	7634.02	1272.50	8773.58	11:53:00	12.96	1107.22	7634.02	884.91	-4.19			Not Available	Not Availat	-462.98	421.93
3	907.20	901.5	842.52	1052.27	7255.15	1217.93	8397.34	11:57:00	12.96	1052.33	7255.56	846.53	-4.01			Not Available	Not Availat	-424.78	421.75
4	852.30	847.0	791.66	979.16	6751.07	1145.33	7896.78	12:03:00	12.73	979.16	6751.07	795.47	-3.81			Not Available	Not Availat	-373.92	421.55
5	828.00	822.7	769.15	946.67	6527.06	1113.02	7674.01	12:08:00	12.49	946.68	6527.13	772.75	-3.60			Not Available	Not Availat	-351.41	421.34
6	796.90	791.9	740.34	905.29	6241.76	1071.85	7390.15	12:12:00	12.10	905.29	6241.76	743.80	-3.46			Not Available	Not Availat	-322.60	421.20
7	739.00	734.4	686.67	828.17	5710.03	995.13	6861.18	12:18:00	11.78	828.18	5710.10	689.85	-3.17			Not Available	Not Availat	-268.93	420.91
8	719.10	714.5	668.21	801.58	5526.70	968.84	6679.92	12:22:00	11.42	801.58	5526.70	671.36	-3.14			Not Available	Not Availat	-250.47	420.88
9	702.20	699.8	652.54	779.13	5371.91	946.46	6525.61	12:29:00	11.02	779.19	5372.33	655.62	-3.08			Not Available	Not Availat	-234.80	420.82
10	687.00	684.6	638.44	758.86	5232.16	926.27	6386.41	12:33:00	10.86	758.86	5232.16	641.42	-2.98			Not Available	Not Availat	-220.70	420.72
11	629.10	626.9	584.71	681.58	4699.33	849.49	5857.03	12:37:00	10.62	681.64	4699.74	587.42	-2.72			Not Available	Not Availat	-166.97	420.46
12	568.10	566.4	528.06	600.14	4137.82	768.54	5298.90	12:43:00	10.18	600.15	4137.89	530.49	-2.43			Not Available	Not Availat	-110.32	420.17
13	514.80	513.3	478.56	529.02	3647.47	697.74	4810.75	12:49:00	9.65	529.02	3647.47	480.70	-2.14			Not Available	Not Availat	-60.82	419.88
14	488.90	487.5	454.51	494.47	3409.25	663.43	4574.19	12:52:00	9.33	494.47	3409.25	456.57	-2.07			Not Available	Not Availat	-36.77	419.81
15	464.50	463.2	431.83	461.95	3185.03	631.08	4351.15	13:29:00	8.65	461.96	3185.10	433.82	-1.99			Not Available	Not Availat	-14.09	419.73
16	411.20	410.2	382.33	390.81	2694.54	560.33	3863.34	13:34:00	8.48	390.82	2694.61	384.07	-1.73			Not Available	Not Availat	35.41	419.47
17	368.50	367.7	342.71	333.93	2302.37	503.80	3473.58	13:38:00	8.20	333.94	2302.44	344.31	-1.61			Not Available	Not Availat	75.03	419.35
18	278.70	278.2	259.36	214.02	1475.62	384.59	2651.66	13:45:00	7.42	214.04	1475.75	260.48	-1.12			Not Available	Not Availat	158.38	418.86
19	214.80	214.5	199.99	128.67	887.15	299.71	2066.43	13:50:00	6.92	128.62	886.80	200.78	-0.79			Not Available	Not Availat	217.75	418.53
20	160.00	159.8	149.04	55.38	381.83	226.92	1564.56	13:55:00	6.39	55.40	381.97	149.59	-0.55			Not Available	Not Availat	268.70	418.29
21	147.80	147.5	137.69	38.99	268.83	210.60	1452.04	13:57:00	6.10	38.99	268.83	138.12	-0.43			Not Available	Not Availat	280.05	418.17
22	82.40	82.3	76.80	14.25	98.25	123.56	851.92	14:03:00	5.60	14.26	98.32	76.90	-0.11			Not Available	Not Availat	340.94	417.85

Golder Senior Reviewer & Approver Sign-off
Reviewed by:

Signature — 2022-08-29 Date

Approved by:

Signature — 2022-08-29 Date

D: NWMO-IGNACE-20253946-WP09-F005R

GOLDER
MEMBER OF WSP

NWMO IGNACE DRILLING
WESTBAY SYSTEM
PIEZOMETRIC PRESSURES/LEVELS

Project No.:
20253946

IG_BH06 - Initial Post-Inflation Pressure Profile

Datum: Ground Level
Elev. G.S.: 417.74
Height of Westbay above G.S.: 0.91
Elev. Top of Westbay Casing: 418.65
Reference Elevation: 417.74
Borehole angle: 70

Probe Type: O/C Sampler
Serial No.: EMS 5288
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: Closed

Weather: Overcast
Operator: ML/TK/MB
Date: 26-Feb-22
Ambient Reading (P_{atm}) (pressure, temperature, time)
Start: Pressure 98.53
Temp. 16.35
Time 8:00

Finish: Pressure 97.29
Temp. 5.29
Time 10:10

P_{atm} 97.91

Company: Golder

Specific wt. of water (kN/m3) 9.804
Gravitational Acceleration (m/s^2) 9.8065

Note:
"Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1) (psi)	Inside Casing (P1) (kPa)	Outside Casing (P2) (psi)	Outside Casing (P2) (kPa)	Time (H:M:S)	Probe Temp. (°C)	Inside Casing (P1) (psi)	Inside Casing (P1) (kPa)	Pressure Head Outside Port (m) H=(P2-Patm)/w	Piezo Level Outside Port (m) Dz = Dp-H	Comments		Avg. Water Density (kg/m3)	Env Head (m)	Z: Elev of pressure measurement port (mASL)	Freshwater Head (mASL)
1	990.20	986.0	919.47	1284.54	8856.60	1318.99	9094.12	8:27:00	11.95	1284.60	8857.01	917.61	1.87			Not Available	Not Availat	-501.73	415.87
2	948.40	943.7	880.72	1228.65	8471.25	1286.32	8868.87	8:32:00	12.75	1228.71	8471.66	894.63	-13.91			Not Available	Not Availat	-462.98	431.65
3	907.20	903.2	842.52	1173.69	8092.31	1230.31	8482.69	8:40:00	12.92	1173.69	8092.31	855.24	-12.72			Not Available	Not Availat	-424.78	430.46
4	852.30	848.6	791.66	1100.54	7587.96	1133.85	7817.62	8:45:00	12.68	1100.54	7587.96	787.40	4.26			Not Available	Not Availat	-373.92	413.48
5	828.00	824.3	769.15	1068.01	7363.67	1108.29	7641.39	8:50:00	12.41	1068.07	7364.09	769.43	-0.28			Not Available	Not Availat	-351.41	418.02
6	796.90	793.3	740.34	1026.56	7077.88	1085.46	7483.99	8:54:00	12.09	1026.51	7077.54	753.37	-13.03			Not Available	Not Availat	-322.60	430.77
7	739.00	735.6	686.67	949.17	6544.30	994.95	6859.94	9:00:00	11.74	949.23	6544.71	689.72	-3.05			Not Available	Not Availat	-268.93	420.79
8	719.10	715.8	668.21	922.66	6361.52	957.44	6601.32	9:04:00	11.38	922.66	6361.52	663.34	4.87			Not Available	Not Availat	-250.47	412.87
9	702.20	699.0	652.54	900.17	6206.46	934.65	6444.19	9:07:00	11.18	900.17	6206.46	647.32	5.22			Not Available	Not Availat	-234.80	412.52
10	687.00	683.9	638.44	879.99	6067.32	925.91	6383.93	9:11:00	10.94	879.87	6066.49	641.17	-2.73			Not Available	Not Availat	-220.70	420.47
11	629.10	626.2	584.71	802.54	5533.32	846.60	5837.10	9:15:00	10.62	802.55	5533.39	585.39	-0.69			Not Available	Not Availat	-166.97	418.43
12	568.10	565.3	528.06	720.93	4970.64	740.96	5108.74	9:20:00	10.18	720.88	4970.29	511.10	16.96			Not Available	Not Availat	-110.32	400.78
13	514.80	512.2	478.56	649.64	4479.11	688.20	4744.97	9:25:00	9.66	649.59	4478.77	474.00	4.57			Not Available	Not Availat	-60.82	413.17
14	488.90	486.2	454.51	614.93	4239.79	652.07	4495.87	9:30:00	9.34	615.06	4240.69	448.59	5.92			Not Available	Not Availat	-36.77	411.82
15	464.50	461.9	431.83	582.47	4015.99	622.06	4288.95	9:33:00	9.02	582.42	4015.65	427.48	4.35			Not Available	Not Availat	-14.09	413.39
16	411.20	408.9	382.33	511.36	3525.70	525.35	3622.16	9:38:00	8.65	511.37	3525.77	359.47	22.86			Not Available	Not Availat	35.41	394.88
17	368.50	366.4	342.71	454.64	3134.63	478.07	3296.18	9:43:00	8.13	454.64	3134.63	326.22	16.48			Not Available	Not Availat	75.03	401.26
18	278.70	277.0	259.36	334.79	2308.30	359.13	2476.12	9:49:00	7.44	334.80	2308.37	242.58	16.79			Not Available	Not Availat	158.38	400.95
19	214.80	213.2	199.99	249.37	1719.35	278.19	1918.05	9:53:00	7.02	249.38	1719.42	185.65	14.34			Not Available	Not Availat	217.75	403.40
20	160.00	158.6	149.04	176.21	1214.93	207.00	1427.22	9:57:00	6.53	176.22	1214.99	135.59	13.45			Not Available	Not Availat	268.70	404.29
21	147.80	146.4	137.69	159.79	1101.71	195.32	1346.68	9:59:00	6.21	159.80	1101.78	127.37	10.32			Not Available	Not Availat	280.05	407.42
22	82.40	81.2	76.80	72.29	498.42	110.76	763.66	10:05:00	5.55	72.30	498.49	67.91	8.89			Not Available	Not Availat	340.94	408.85

Golder Senior Reviewer & Approver Sign-off
Reviewed by:

Signature — Date: 2022-08-29

Approved by:

Signature — Date: 2022-08-29

D: NWMO-IGNACE-20253946-WP09-F005R

GOLDER
MEMBER OF WSP

NWMO IGNACE DRILLING
WESTBAY SYSTEM
PIEZOMETRIC PRESSURES/LEVELS

Project No.:
20253946

IG_BH06 - Initial Post-Inflation Pressure Profile

Datum: Ground Level
Elev. G.S.: 417.74
Height of Westbay above G.S.: 0.91
Elev. Top of Westbay Casing: 418.65
Reference Elevation: 417.74
Borehole angle: 70

Probe Type: O/C Sampler
Serial No.: EMS 5288
Probe Range: 2000 psi
Westbay Casing Type: MP38
Sampler Valve Position: Closed

Weather: -15C Partly Cloudy
Operator: MB/KS
Date: 10-Mar-22
Ambient Reading (P_{atm}) (pressure, temperature, time)

Company: Golder

Start: Pressure	97.97	Finish: Pressure	97.35
Temp.	6.3	Temp.	5.21
Time	13:00	Time	16:16
Depth to water (m BTOC)	40.70	Depth to water (m BTOC)	41.08
P_{atm}	97.66		

Specific wt. of water (kN/m3) 9.804
Gravitational Acceleration (m/s^2) 9.8065

Note:
"Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1) (psi)	Inside Casing (P1) (kPa)	Outside Casing (P2) (psi)	Outside Casing (P2) (kPa)	Time (H:M:S)	Probe Temp. (°C)	Inside Casing (P1) (psi)	Inside Casing (P1) (kPa)	Pressure Head Outside Port (m) H=(P2-Patm)/w	Piezo Level Outside Port (m) Dz = Dp-H	Comments		Avg. Water Density (kg/m3)	Env Head (m)	Z: Elev of pressure measurement port (mASL)	Freshwater Head (mASL)
1	990.20	987.3	919.47	1283.95	8852.53	1320.59	9105.15	13:52:00	12.47	1283.95	8852.53	918.76	0.72			Not Available	Not Availat	-501.73	417.02
2	948.40	945.6	880.72	1228.00	8466.77	1271.91	8769.51	14:00:00	13.11	1228.00	8466.77	884.52	-3.80			Not Available	Not Availat	-462.98	421.54
3	907.20	904.7	842.52	1173.04	8087.83	1215.44	8380.17	14:08:00	12.95	1173.04	8087.83	844.81	-2.29			Not Available	Not Availat	-424.78	420.03
4	852.30	850.0	791.66	1099.89	7583.48	1133.32	7813.97	14:14:00	12.68	1099.89	7583.48	787.06	4.61			Not Available	Not Availat	-373.92	413.13
5	828.00	825.7	769.15	1067.36	7359.19	1102.43	7600.99	14:19:00	12.45	1067.36	7359.19	765.33	3.82			Not Available	Not Availat	-351.41	413.92
6	796.90	794.8	740.34	1025.85	7072.99	1065.11	7343.68	14:25:00	12.09	1025.91	7073.40	739.09	1.26			Not Available	Not Availat	-322.60	416.48
7	739.00	737.2	686.67	948.57	6540.16	985.14	6792.30	14:32:00	11.58	948.58	6540.23	682.85	3.83			Not Available	Not Availat	-268.93	413.91
8	719.10	717.3	668.21	922.01	6357.04	956.73	6596.42	14:38:00	11.26	922.01	6357.04	662.87	5.35			Not Available	Not Availat	-250.47	412.39
9	702.20	700.4	652.54	899.58	6202.39	934.47	6442.95	14:42:00	11.06	899.58	6202.39	647.21	5.32			Not Available	Not Availat	-234.80	412.42
10	687.00	685.3	638.44	879.22	6062.01	914.64	6306.22	14:48:00	10.82	879.22	6062.01	633.27	5.17			Not Available	Not Availat	-220.70	412.57
11	629.10	627.6	584.71	801.90	5528.91	838.11	5778.57	14:58:00	10.31	801.90	5528.91	579.45	5.26			Not Available	Not Availat	-166.97	412.48
12	568.10	566.7	528.06	720.29	4966.23	751.22	5179.48	15:04:00	9.91	720.29	4966.23	518.34	9.72			Not Available	Not Availat	-110.32	408.02
13	514.80	513.5	478.56	649.06	4475.11	685.32	4725.12	15:11:00	9.47	649.08	4475.25	472.00	6.57			Not Available	Not Availat	-60.82	411.17
14	488.90	487.6	454.51	614.41	4236.21	650.90	4487.80	15:20:00	8.94	614.42	4236.28	447.79	6.71			Not Available	Not Availat	-36.77	411.03
15	464.50	463.4	431.83	581.84	4011.65	618.60	4265.10	15:25:00	8.74	581.84	4011.65	425.07	6.76			Not Available	Not Availat	-14.09	410.98
16	411.20	410.3	382.33	510.84	3522.12	546.16	3765.64	15:32:00	8.38	510.84	3522.12	374.13	8.20			Not Available	Not Availat	35.41	409.54
17	368.50	367.7	342.71	453.99	3130.15	490.94	3384.91	15:38:00	8.01	454.00	3130.22	335.30	7.41			Not Available	Not Availat	75.03	410.33
18	278.70	278.2	259.36	334.20	2304.23	372.15	2565.88	15:45:00	7.36	334.21	2304.30	251.76	7.60			Not Available	Not Availat	158.38	410.14
19	214.80	214.5	199.99	248.80	1715.42	288.53	1989.35	15:52:00	6.59	248.81	1715.49	192.95	7.04			Not Available	Not Availat	217.75	410.70
20	160.00	159.9	149.04	175.58	1210.58	216.98	1496.03	15:58:00	6.14	175.60	1210.72	142.63	6.41			Not Available	Not Availat	268.70	411.33
21	147.80	147.6	137.69	159.22	1097.78	202.54	1396.46	16:02:00	5.81	159.24	1097.92	132.48	5.21			Not Available	Not Availat	280.05	412.53
22	82.40	82.4	76.80	71.71	494.42	118.43	816.55	16:10:00	5.40	71.72	494.49	73.33	3.47			Not Available	Not Availat	340.94	414.27

Golder Senior Reviewer & Approver Sign-off
Reviewed by:

Signature — Date: 2022-08-29

Approved by:

Signature — Date: 2022-08-29

D: NWMO-IGNACE-20253946-WP09-F005R

APPENDIX C

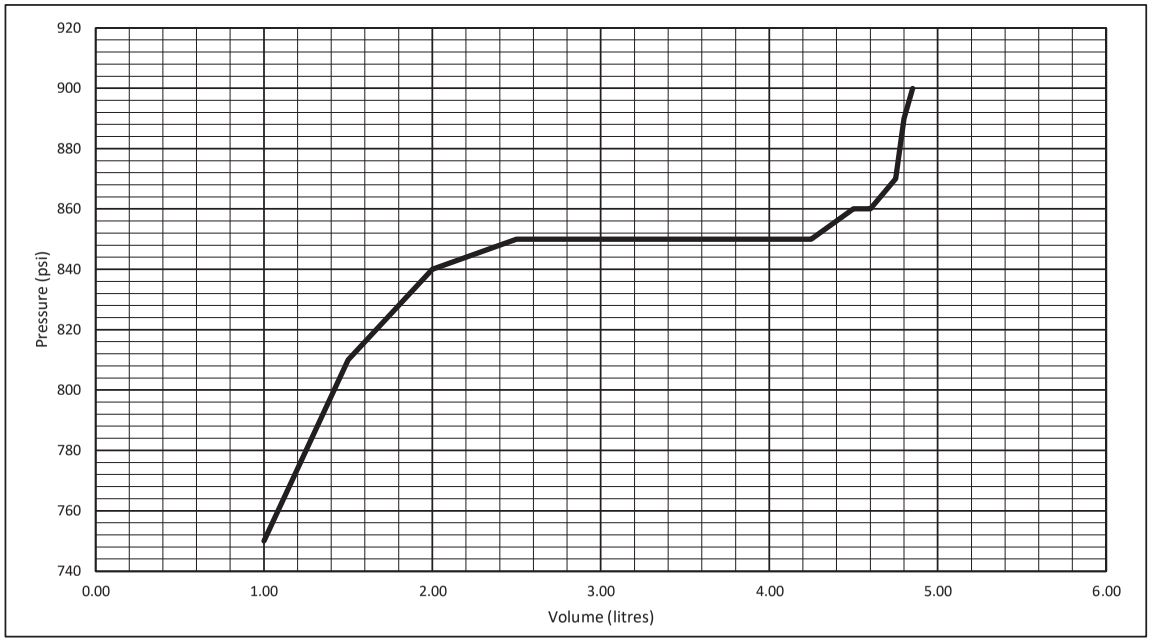
Packer Inflation Records

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_001

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	01 s/n 19758	155.0	900.0	610.0	10.0	14.2	149.2	*20-Feb-22 12:24*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	750
1.50	810
2.00	840
2.50	850
3.00	850
3.25	850
3.50	850
3.75	850
4.00	850
4.25	850
4.50	860
4.60	860
4.75	870
4.8	890
4.85	900



Golder Senior Reviewer & Approver Sign-off

Reviewed by:

Signature — Date: 2022-06-21

Approved by:

Signature — Date: 2022-06-21

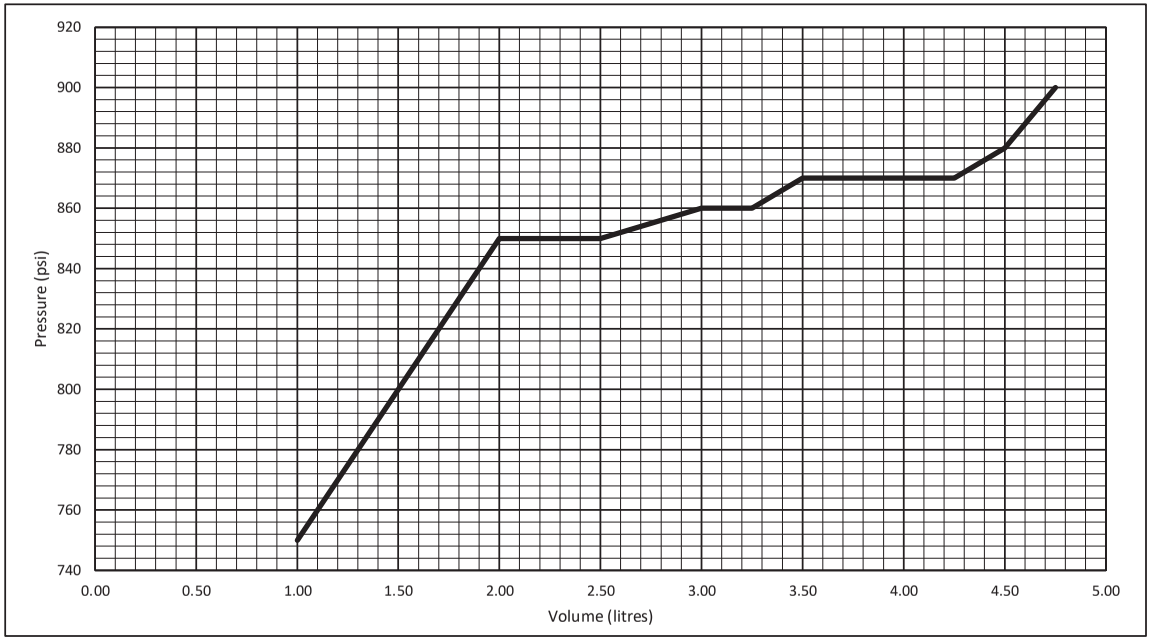
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_002

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	02 s/n 19929	150.0	900.0	610.0	10.0	14.2	154.2	*20-Feb-22 13:42*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	750
2.00	850
2.50	850
3.00	860
3.25	860
3.50	870
3.75	870
4.00	870
4.25	870
4.50	880
4.75	900



Golder Senior Reviewer & Approver Sign-off

Reviewed by:

Signature — Date: 2022-06-21

Approved by:

Signature — Date: 2022-06-21

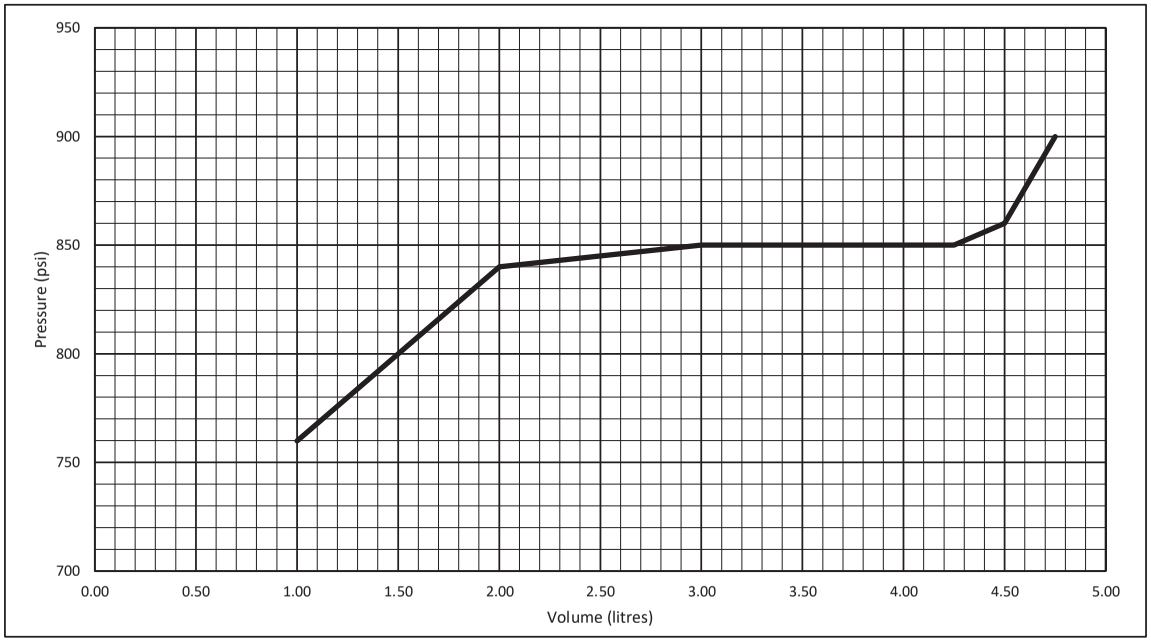
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_003

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	03 s/n 19930	145.0	900.0	610.0	10.0	14.2	159.2	*20-Feb-22 14:22*	*TK/ML*
Other (explain)	Note - Pw and Pe are calculated in this sheet			Note - s/n on paper inflation record is a typo					

Volume (L)	Pressure (psi)
1.00	760
2.00	840
3.00	850
3.50	850
3.75	850
4.00	850
4.25	850
4.50	860
4.75	900



Golder Senior Reviewer & Approver Sign-off

Reviewed by:

Signature — Date: 2022-06-21

Approved by:

Signature — Date: 2022-06-21

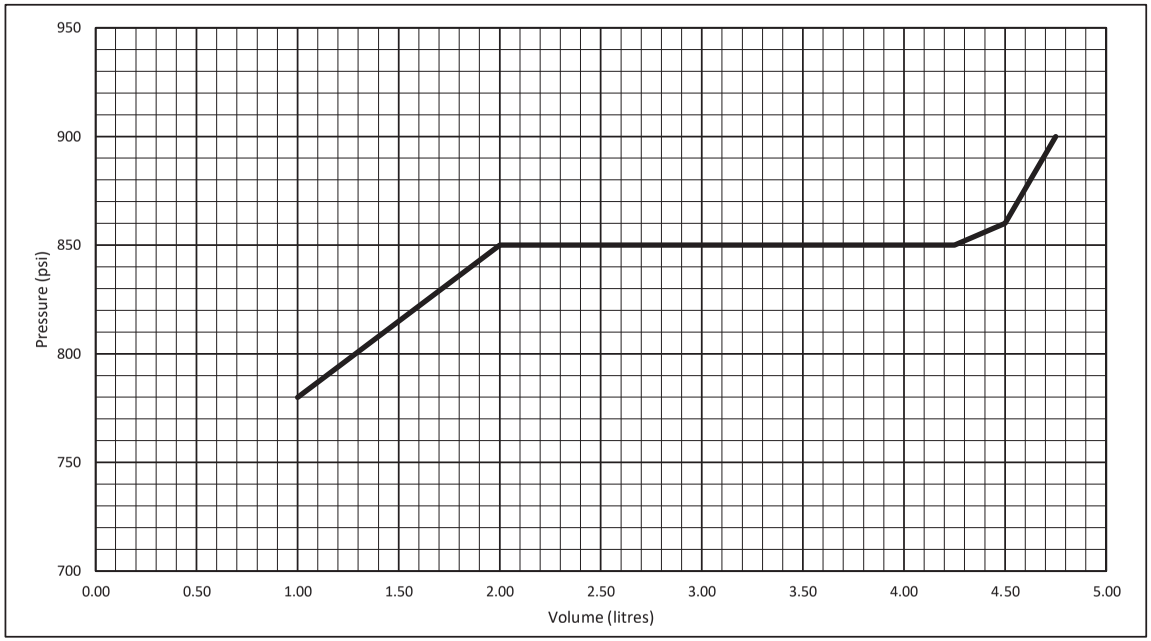
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_004

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	04 s/n 19961	150.0	900.0	610.0	10.0	14.2	154.2	*20-Feb-22 15:03*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	780
2.00	850
3.00	850
3.50	850
3.75	850
4.00	850
4.25	850
4.50	860
4.75	900



Golder Senior Reviewer & Approver Sign-off

Reviewed by:

2022-06-21

Signature Date

Approved by:

2022-06-21

Signature Date

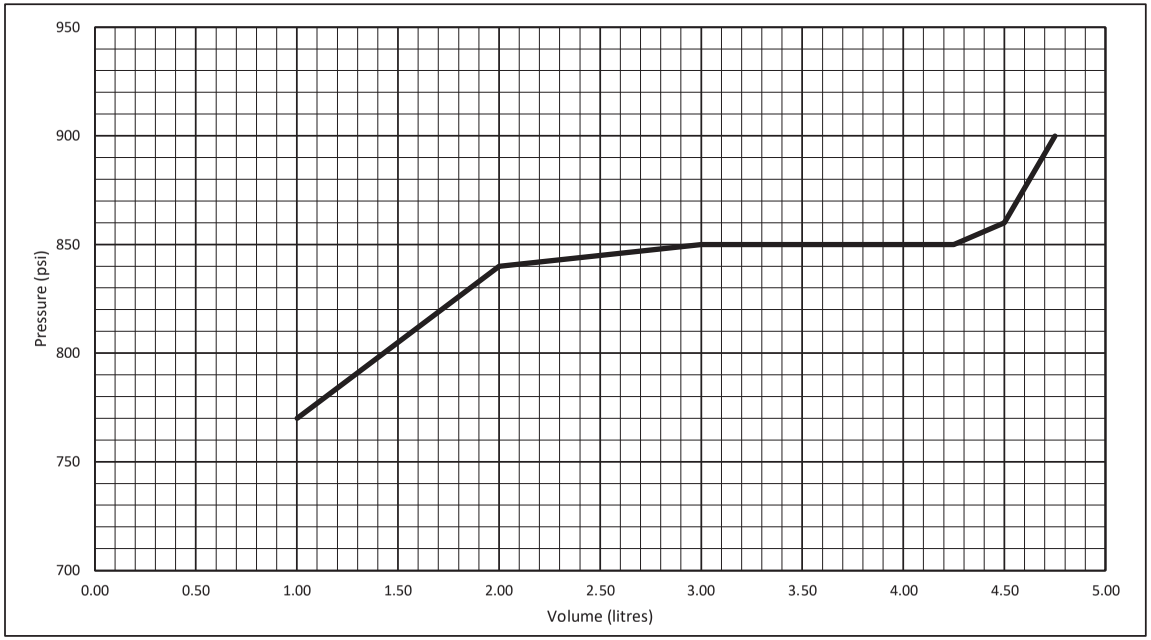
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_005

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	05 s/n 19962	150.0	900.0	610.0	10.0	14.2	154.2	*20-Feb-22 15:37*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	770
2.00	840
3.00	850
3.50	850
3.75	850
4.00	850
4.25	850
4.50	860
4.75	900



Golder Senior Reviewer & Approver Sign-off

Reviewed by:

	2022-06-21
Signature	Date

Approved by:

	2022-06-21
Signature	Date

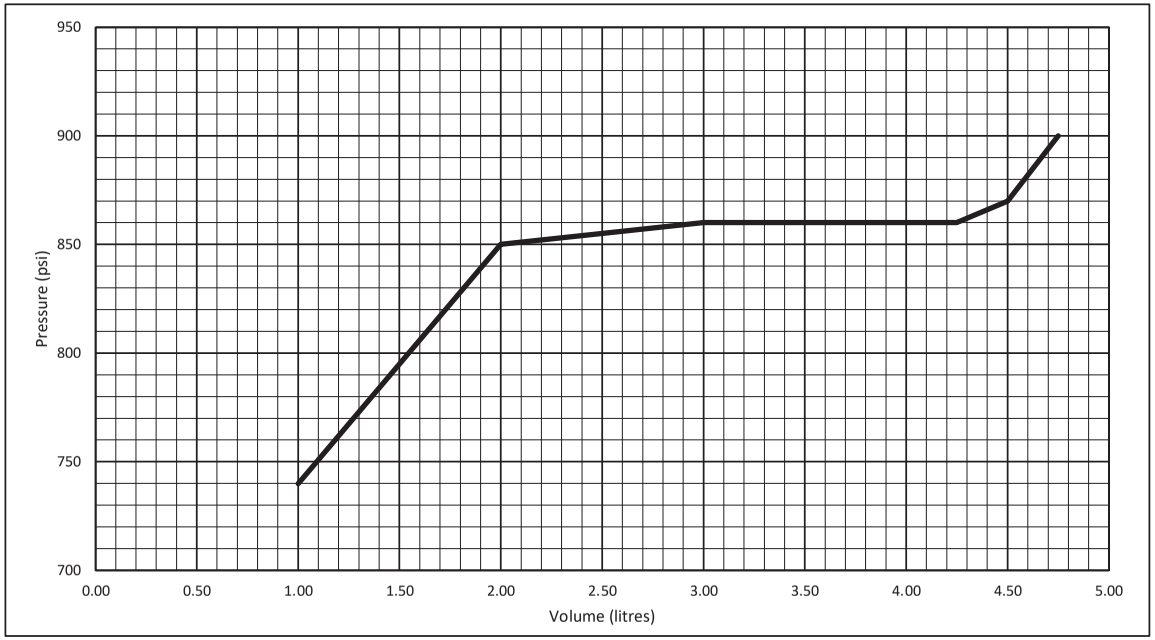
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_006

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	06 s/n 19963	150.0	900.0	610.0	10.0	14.2	154.2	*20-Feb-22 16:11*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	740
2.00	850
3.00	860
3.50	860
3.75	860
4.00	860
4.25	860
4.50	870
4.75	900



Golder Senior Reviewer & Approver Sign-off

Reviewed by:

	2022-06-21
Signature	Date

Approved by:

	2022-06-21
Signature	Date

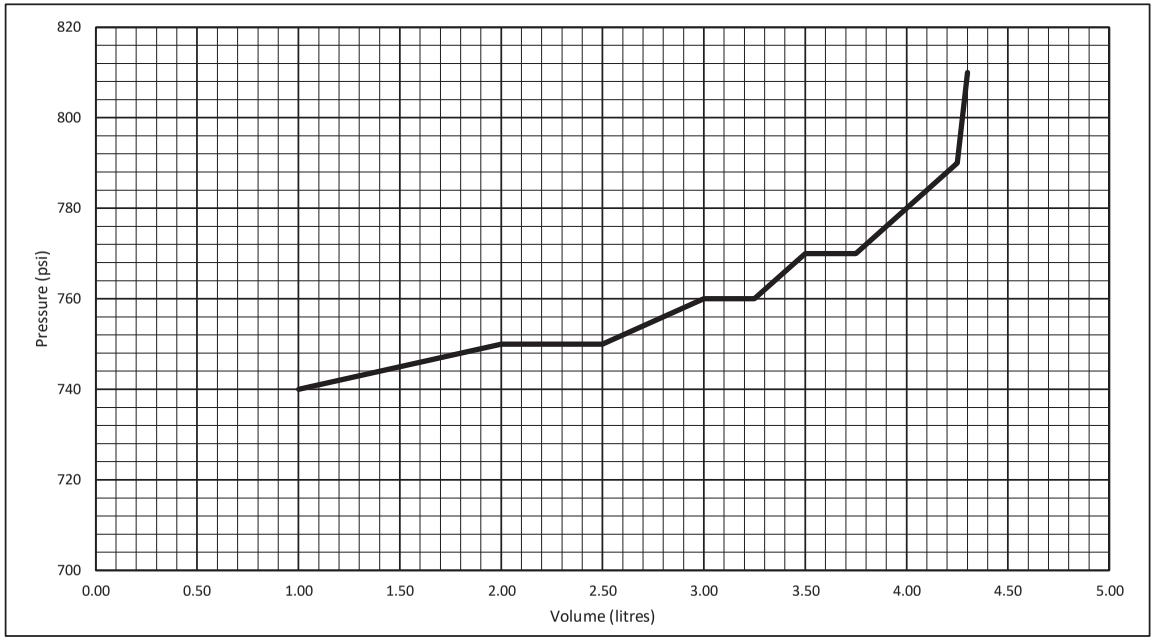
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_007

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	07 s/n 19964	130.0	810.0	600.0	45.0	64.0	144.0	*21-Feb-22 14:21*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	740
2.00	750
2.50	750
3.00	760
3.25	760
3.50	770
3.75	770
4.00	780
4.25	790
4.30	810



Golder Senior Reviewer & Approver Sign-off

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	2022-06-21
Signature	Date

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	2022-06-21
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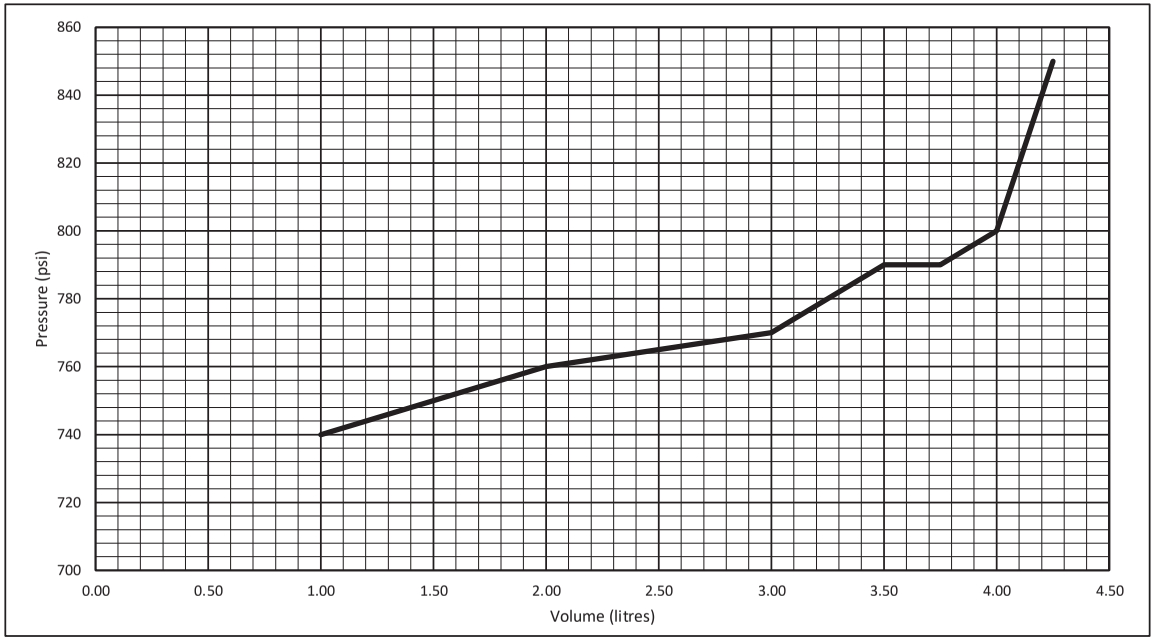
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_008

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	08 s/n 19965	150.0	850.0	600.0	45.0	64.0	164.0	*21-Feb-22 14:55*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	740
2.00	760
3.00	770
3.50	790
3.60	790
3.75	790
4.00	800
4.25	850



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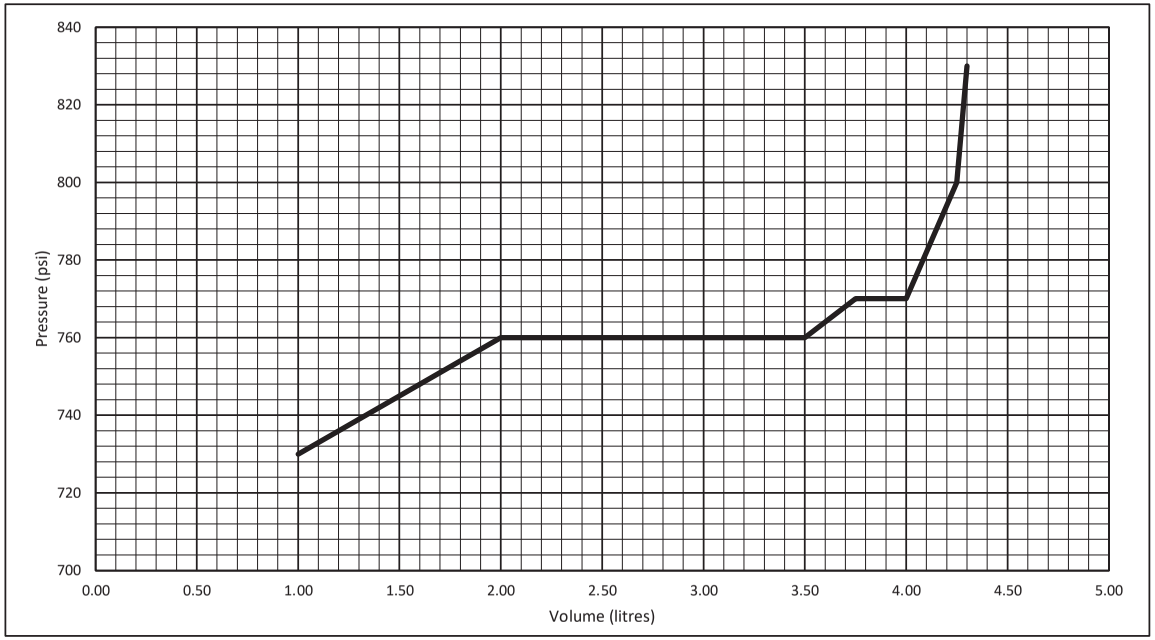
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_009

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	09 s/n 19966	135.0	830.0	600.0	45.0	64.0	159.0	*21-Feb-22 15:24*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	730
2.00	760
3.00	760
3.50	760
3.75	770
4.00	770
4.25	800
4.30	830



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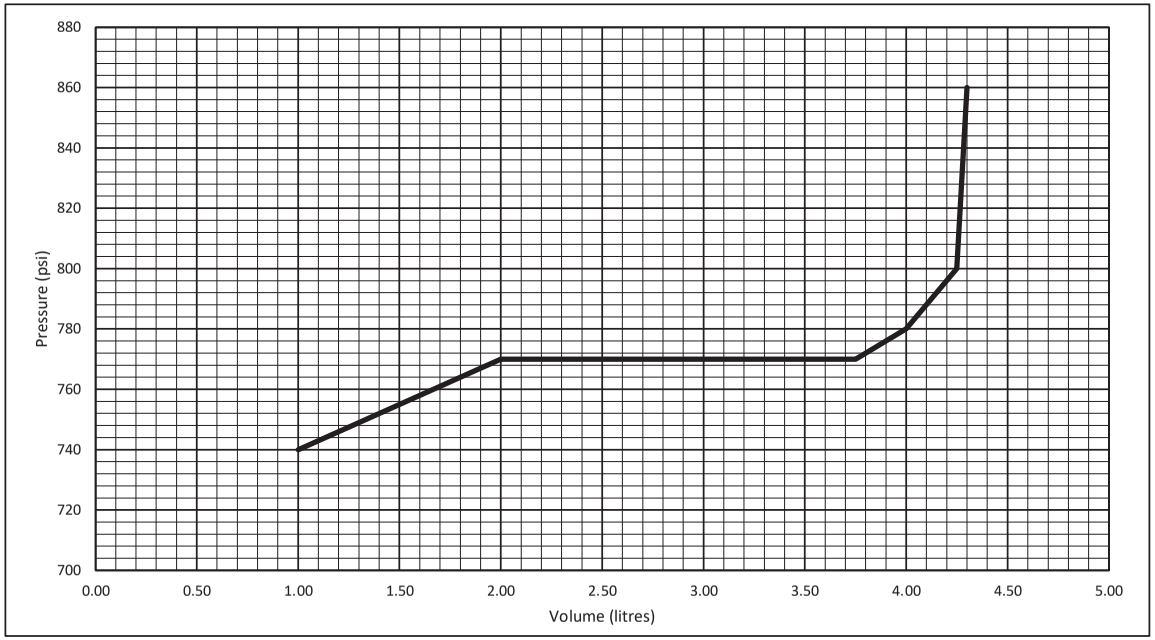
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_010

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	10 s/n 19967	150.0	860.0	600.0	45.0	64.0	174.0	*21-Feb-22 15:51*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	740
2.00	770
3.00	770
3.50	770
3.75	770
4.00	780
4.25	800
4.30	860



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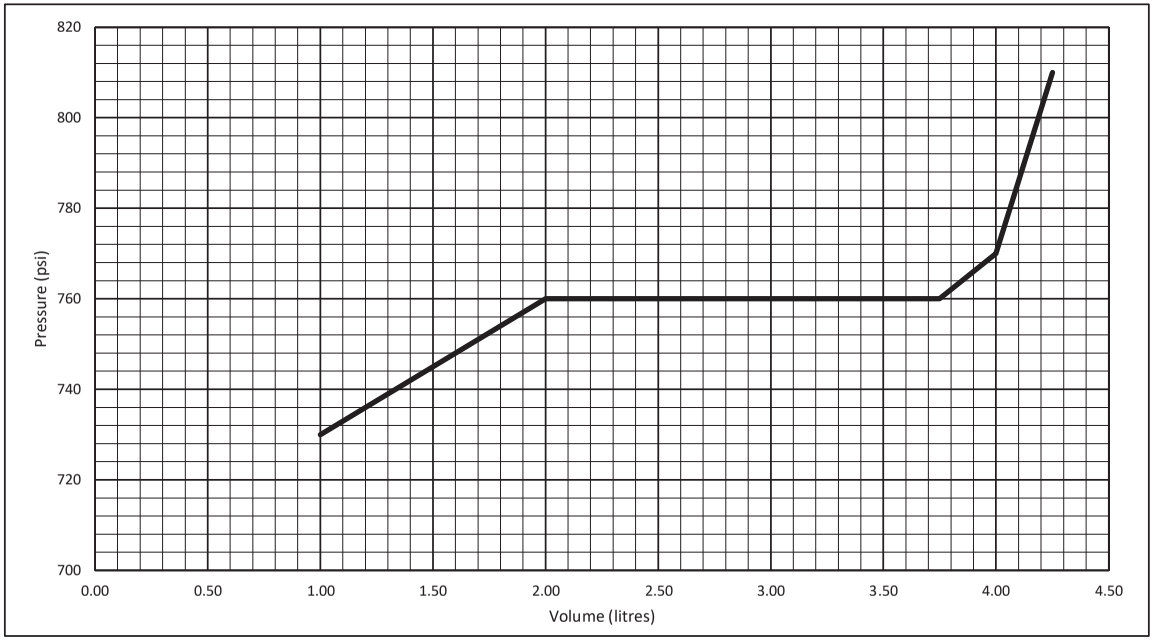
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_011

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	11 s/n 19968	145.0	810.0	600.0	45.0	64.0	129.0	*21-Feb-22 16:55*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	730
2.00	760
3.00	760
3.50	760
3.75	760
4.00	770
4.25	810



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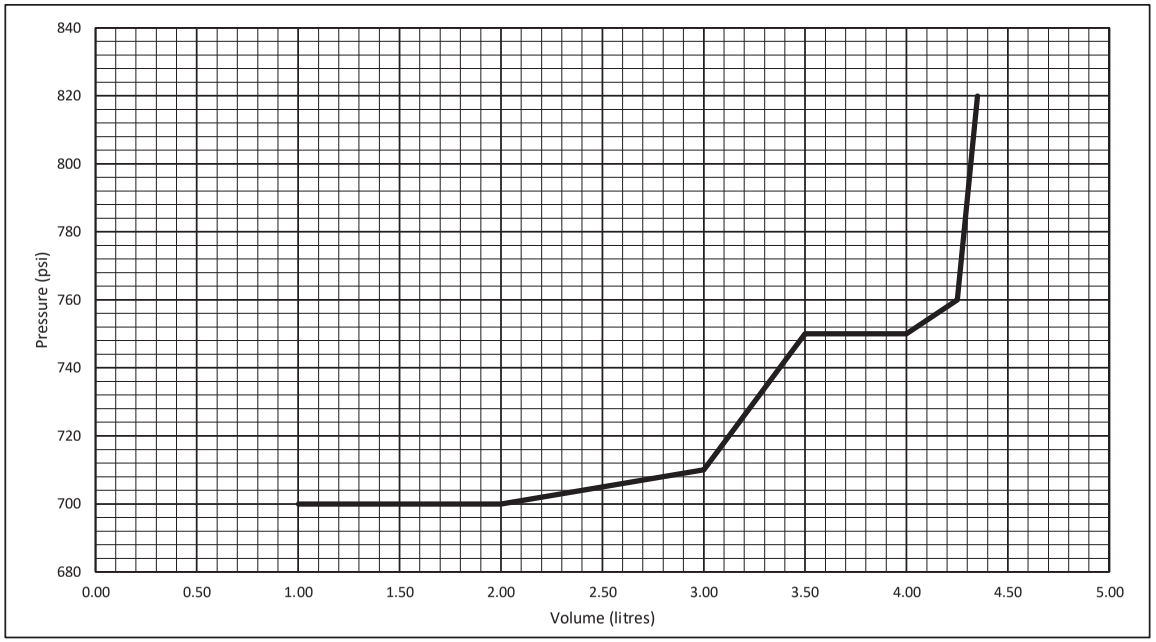
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_012

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	12 s/n 19969	150.0	820.0	570.0	55.0	78.2	178.2	*22-Feb-22 12:04*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	700
2.00	700
3.00	710
3.50	750
3.75	750
4.00	750
4.25	760
4.35	820



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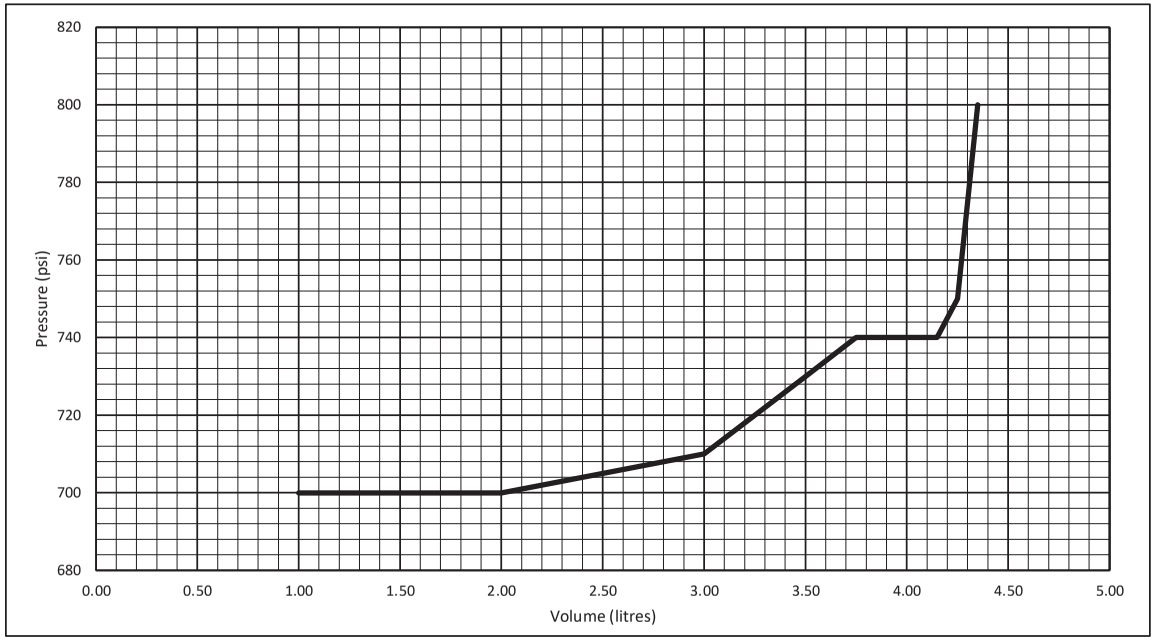
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_013

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	13 s/n 19970	150.0	800.0	570.0	55.0	78.2	158.2	*22-Feb-22 13:32*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	700
2.00	700
3.00	710
3.50	730
3.75	740
4.00	740
4.15	740
4.25	750
4.35	800



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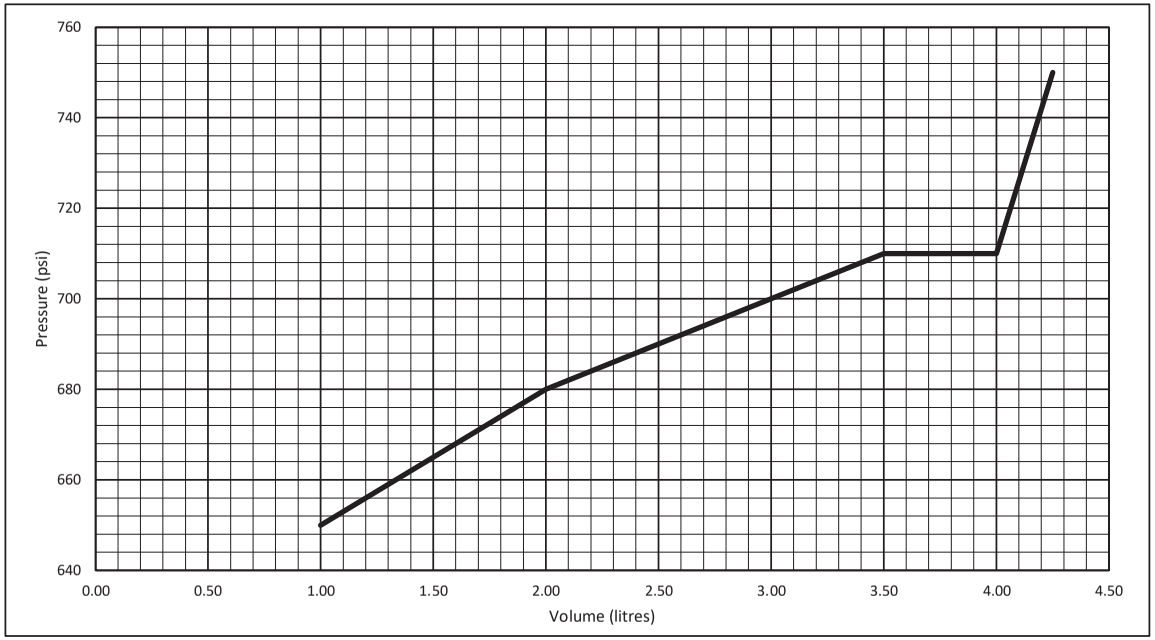
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_014

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	14 s/n 19971	135.0	750.0	570.0	55.0	78.2	123.2	*22-Feb-22 13:59*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	650
2.00	680
3.00	700
3.50	710
3.75	710
4.00	710
4.25	750



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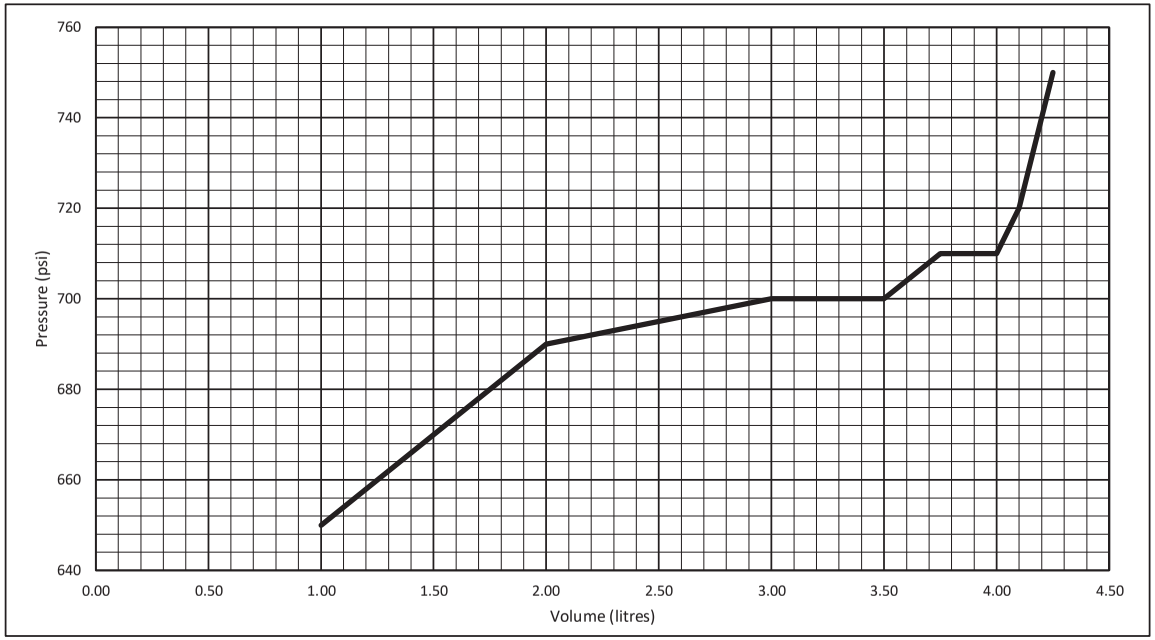
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_015

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	15 s/n 19972	140.0	750.0	570.0	55.0	78.2	118.2	*22-Feb-22 14:34*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	650
2.00	690
3.00	700
3.50	700
3.75	710
4.00	710
4.10	720
4.25	750



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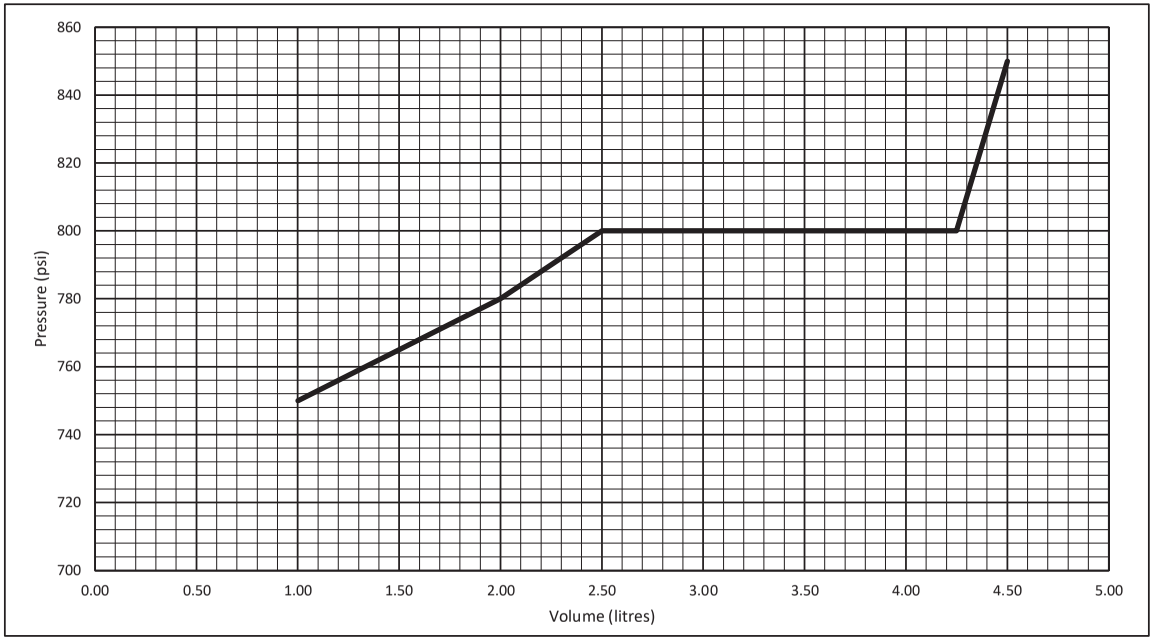
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_016

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	16 s/n 19973	140.0	850.0	570.0	10.0	14.2	154.2	*25-Feb-22 12:58*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	750
2.00	780
2.50	800
3.00	800
3.50	800
3.75	800
4.00	800
4.25	800
4.50	850



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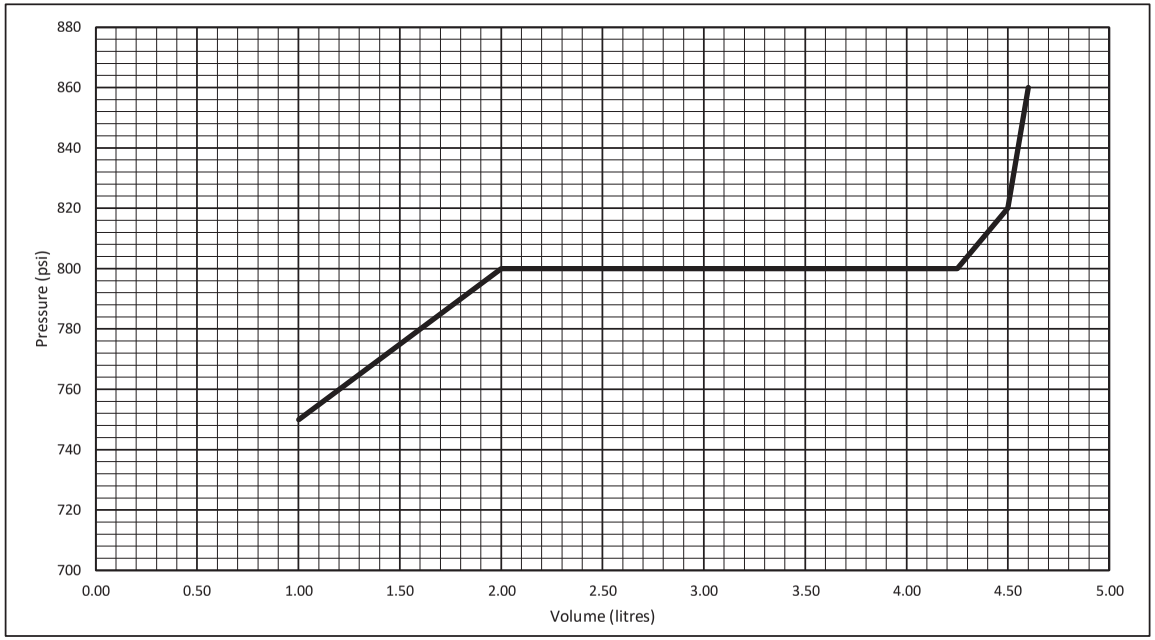
Form ID: NWMO-IGNACE-20253946-WP09-F004

GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_017

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	17 s/n 19974	145.0	860.0	570.0	10.0	14.2	159.2	*25-Feb-22 13:57*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	750
2.00	800
3.00	800
3.50	800
3.75	800
4.00	800
4.25	800
4.50	820
4.60	860



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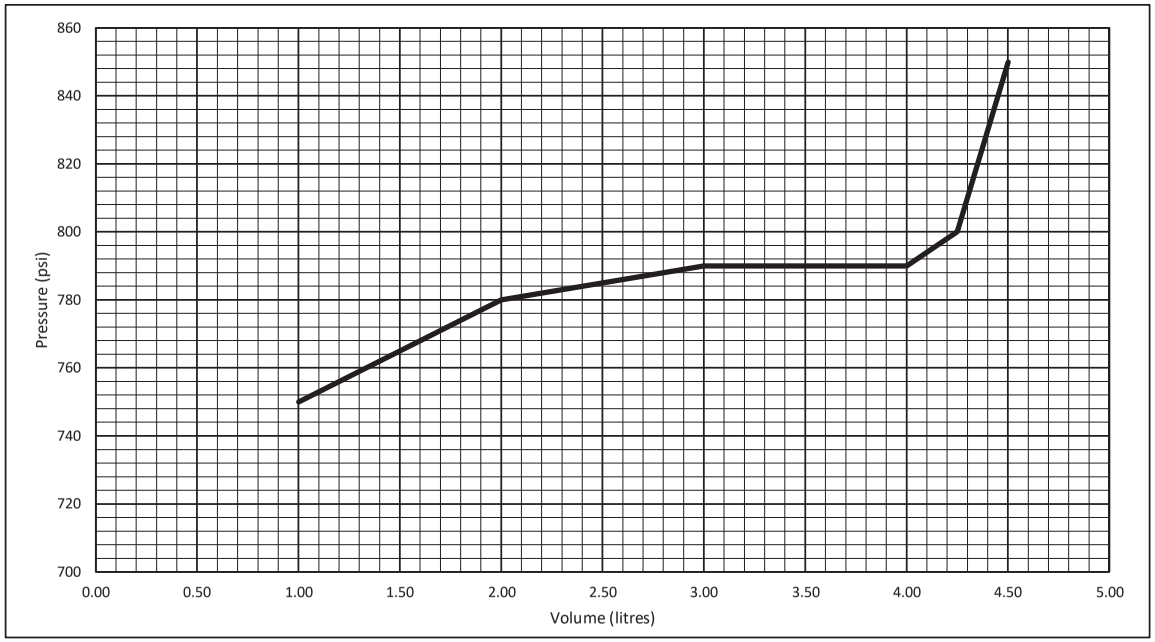
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_018

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	18 s/n 19975	140.0	850.0	570.0	10.0	14.2	154.2	*25-Feb-22 14:48*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	750
2.00	780
3.00	790
3.50	790
3.75	790
4.00	790
4.25	800
4.50	850



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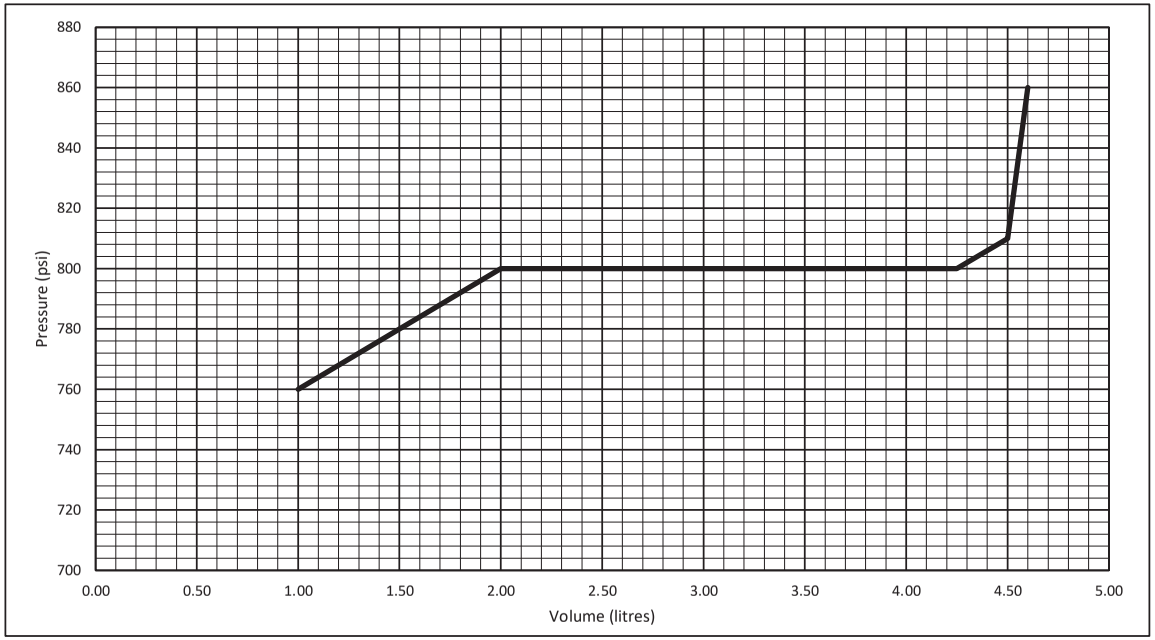
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_019

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	19 s/n 19976	140.0	860.0	570.0	10.0	14.2	164.2	*25-Feb-22 15:21*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	760
2.00	800
3.00	800
3.50	800
3.75	800
4.00	800
4.25	800
4.50	810
4.60	860



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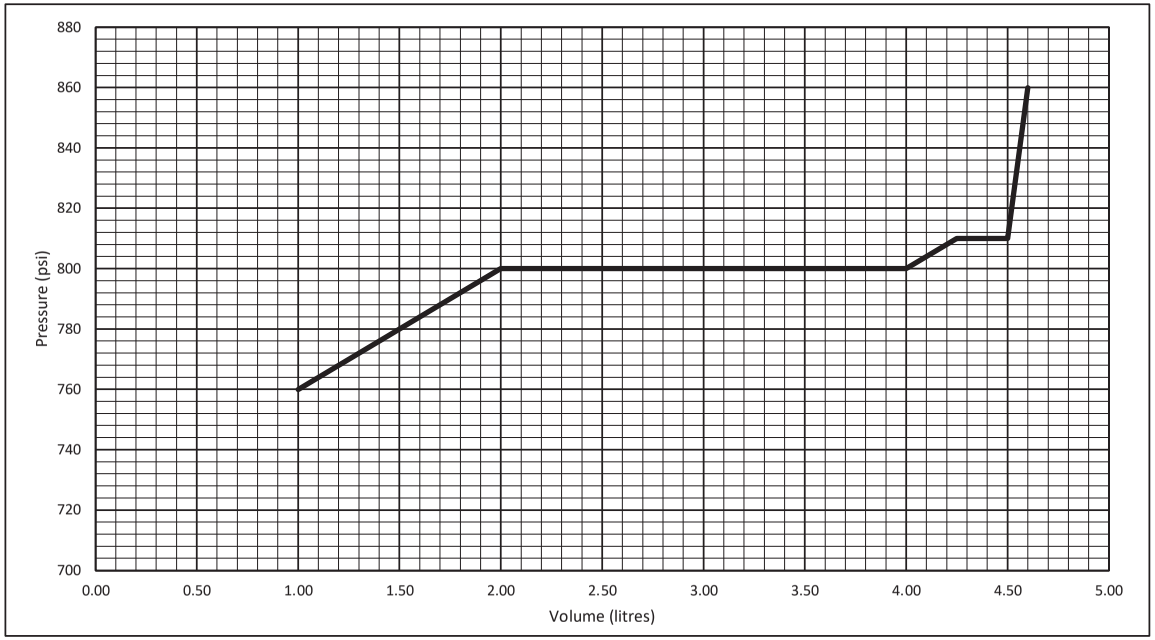
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_020

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	20 s/n 19977	140.0	860.0	570.0	10.0	14.2	164.2	*25-Feb-22 16:12*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	760
2.00	800
3.00	800
3.50	800
3.75	800
4.00	800
4.25	810
4.50	810
4.60	860



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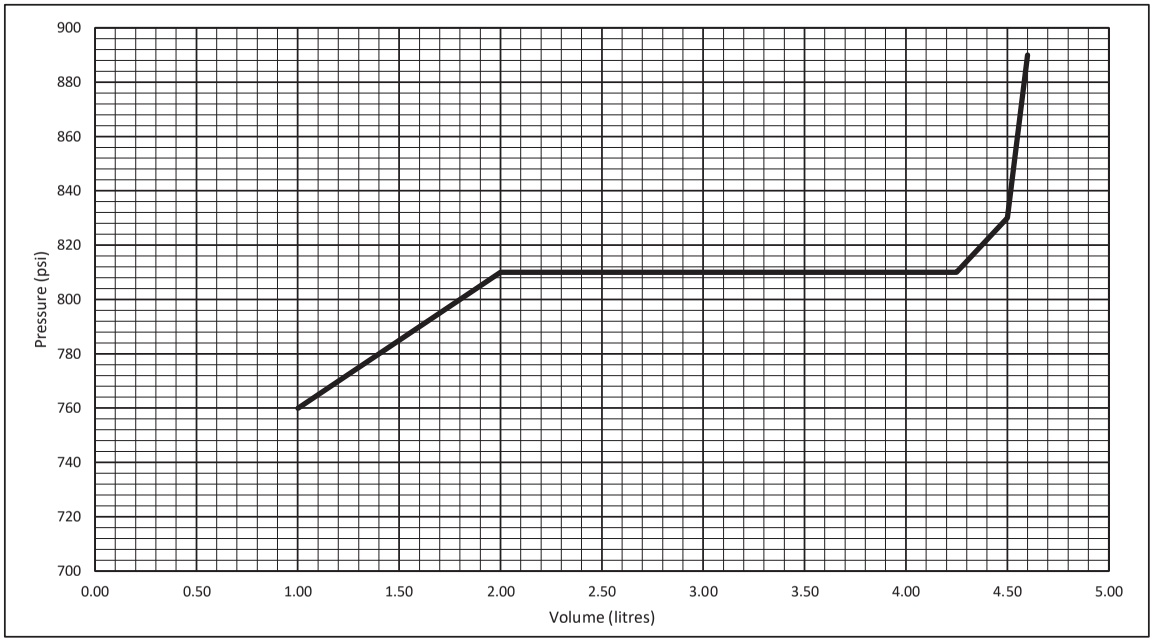
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_021

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	21 s/n 19978	140.0	890.0	570.0	10.0	14.2	194.2	*25-Feb-22 16:35*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	760
2.00	810
3.00	810
3.50	810
3.75	810
4.00	810
4.25	810
4.50	830
4.60	890



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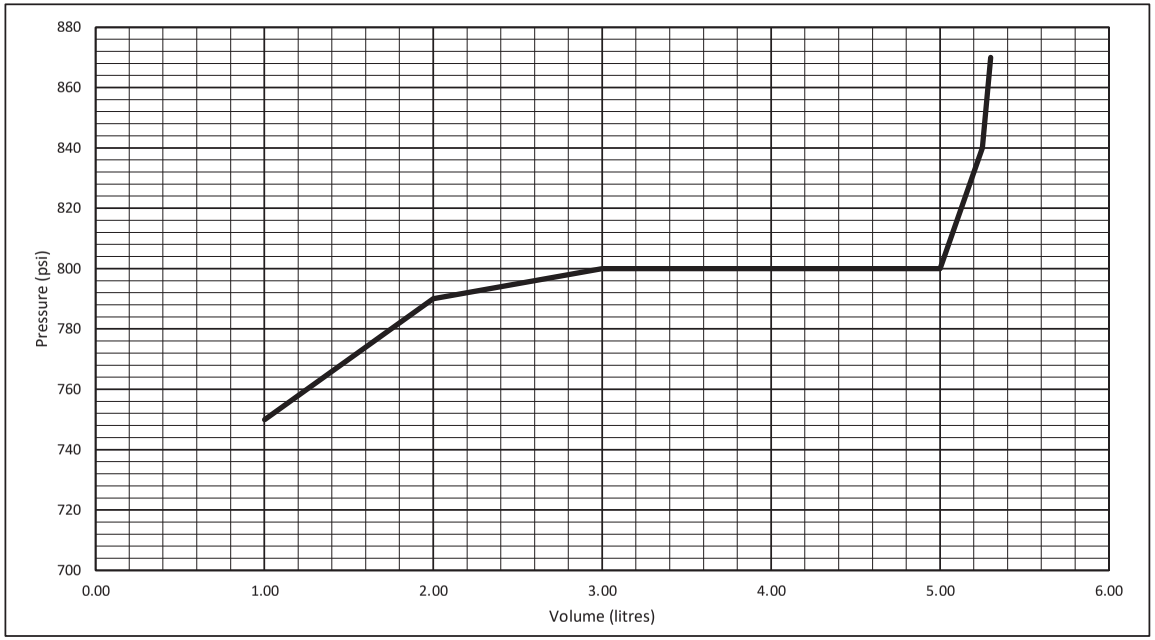
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GOLDER MEMBER OF WSP	**WP09 - Westbay MP38 Casing Installation** **Record of Packer Inflation**	**Project No.:** **20253946**

Test #	IG_BH06_HT_022

	Packer No.	Packer Valve Pressure, P_V (psi)	Final Line Pressure, P_L (psi)	Tool Pressure, P_T (psi)	Borehole Water Level (m)	Equivalent Borehole Pressure, P_W (psi)	Calc. Packer Element Pressure $P_E = P_L + P_W - P_V - P_T$ (psi)	Date and Time	Initials
Packers and Inflation Line	22 s/n 19928	140.0	870.0	570.0	10.0	14.2	174.2	*25-Feb-22 17:45*	*ML/TK*
Other (explain)	Note - Pw and Pe are calculated in this sheet								

Volume (L)	Pressure (psi)
1.00	750
2.00	790
3.00	800
4.00	800
4.50	800
5.00	800
5.25	840
5.30	870



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Form ID: NWMO-IGNACE-20253946-WP09-F004



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