



**ENGINEERING  
ENVIRONMENTAL  
HEALTH & SAFETY**



## **Infinis Energy Services Ltd.**

Bryn Pica Landfill Site

Retro Drilling of Gas Wells

Construction Quality Assurance Report

December 2017

**Infinis Energy Services Ltd.**

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Retro Drilling of Gas Wells

**Construction Quality Assurance Report**

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**Infinis Energy Services Ltd.**  
**Bryn Pica Landfill Site**  
**Retro-Drilling of Gas Wells**  
**Construction Quality Assurance Report**

**December 2017**

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**Prepared for**  
**Infinis Energy Services Ltd.**

**Prepared by**  
**Egniol Environmental Ltd.**  
**Llys Onnen**  
**Ffordd y Llyn**  
**Parc Menai**  
**Bangor**  
**Gwynedd**  
**LL57 4DF**

**Document Review**

| <b>Version No.</b> | <b>Date of Review</b> | <b>Prepared By</b> | <b>Reviewed By</b> | <b>Approved By</b> |
|--------------------|-----------------------|--------------------|--------------------|--------------------|
| 1.0                | 07/12/2017            | Richard Furniss    | Russell Pearson    | Richard Furniss    |
| 2.0                | 13/12/2017            | Richard Furniss    | Jason Buckley      | Richard Furniss    |

## **1.0 INTRODUCTION**

- 1.1** Egniol Environmental Ltd. (Egniol) of Llys Onnen, Ffordd y Llyn, Parc Menai, Bangor, Gwynedd have been appointed by Infinis Energy Services Ltd. (Infinis) as Construction Quality Assurance (CQA) Consultants for the Retro-Drilling of gas wells at Bryn Pica Landfill Site.
- 1.2** The appointment required the professional services of Egniol for the provision of a CQA Inspector. The CQA Inspector was required to monitor the progress and report upon completion of the works, with regard to quality assurance and compliance with the approved CQA Plan for the works (Egniol document: *Bryn Pica Landfill Site, Retro Drilling of Gas Wells, Construction Quality Assurance Plan, v2.0, August 2017*).
- 1.3** In accordance with this appointment, Egniol have produced this report which covers the retro drilling of gas wells at Bryn Pica Landfill Site.

## **2.0 SITE LOCATION AND ADDRESS**

### **2.1 Site Location**

Bryn Pica Landfill Site is located 3.2 miles west of the town of Merthyr Tydfil in the county of Glamorgan.

### **2.2 Site Address**

Bryn Pica Landfill Site,  
Merthyr Road,  
Llwydcoed,  
Aberdare,  
Mid Glamorgan  
CF44 0BX

### 3.0 BRIEF DESCRIPTION AND TIMING OF WORKS

#### 3.1 Description of Works

In accordance with the approved CQA Plan (Egniol document: *Bryn Pica Landfill Site, Retro Drilling of Gas Wells, Construction Quality Assurance Plan, v2.0, August 2017*), 6no. landfill gas extraction wells were to be installed to the uncapped waste surface at Bryn Pica Landfill Site by means of Retro-Drilling. All 6no. wells were installed during the works.

The Works commenced on 30<sup>th</sup> October 2017 and were completed on 3<sup>rd</sup> November 2017.

The proposed locations were supplied by Infinis, following checking and approval by AMGEN Cymru (the Site Permit Holder) prior to the Works commencing. These locations were surveyed and marked with the erection of a wooden peg. Each peg was labeled with its own identification number.

Due to the proximity of the capped and restored areas to the proposed location of Well R1306 causing accessibility issues, the plan for this well to be direct re-drill of the existing Well 1306 was abandoned. Prior to drilling, a new location was identified approximately 1m from the original location and the originally proposed depth confirmed by the Site Permit Holder as being suitable to maintain sufficient stand off from the basal lining system.

**Table 1 – Well Location and Drill Depth Information**

| CQA Plan Well ID | As Installed Well ID | Easting    | Northing   | Proposed Drill Depth (mBGL) | Actual Drill Depth (mBGL) | Theoretical Stone Installation Volume (m <sup>3</sup> ) | Actual Stone Installation Volume (m <sup>3</sup> ) |
|------------------|----------------------|------------|------------|-----------------------------|---------------------------|---------------------------------------------------------|----------------------------------------------------|
| BPGW1701         | BYPW1701             | 300997.731 | 204932.832 | 37.0                        | 20.5                      | 1.849                                                   | 1.85                                               |
| BPGW1702         | BYPW1702             | 301010.646 | 204846.211 | 29.5                        | 27.0                      | 2.743                                                   | 2.74                                               |
| BPGW1703         | BYPW1703             | 301046.717 | 204836.642 | 29.5                        | 27.0                      | 2.743                                                   | 2.74                                               |
| BPGW1704         | BYPW1704             | 301039.803 | 204865.980 | 20.0                        | 16.0                      | 1.431                                                   | 1.43                                               |
| BPGW1705         | BYPW1705             | 301028.599 | 204890.046 | 31.0                        | 24.0                      | 2.386                                                   | 2.39                                               |
| R1306            | BYPW1706             | 300965.495 | 204905.965 | 29.0                        | 28.8                      | 2.958                                                   | 2.96                                               |

Well Locations are as supplied by Infinis via email dated on 20<sup>th</sup> November 2017.

All stone installation volumes are based on actual drill depths.

**Table 2 – Well Casing Installation Information**

| CQA Plan Well ID | As Installed Well ID | Plain Casing BGL (m) | Plain Casing AGL (m) | Total Plain Casing (m) | Perforated Casing (m) |
|------------------|----------------------|----------------------|----------------------|------------------------|-----------------------|
| BPGW1701         | BYPW1701             | 5.0                  | 1.0                  | 6.0                    | 15.5                  |
| BPGW1702         | BYPW1702             | 4.5                  | 1.5                  | 6.0                    | 22.5                  |
| BPGW1703         | BYPW1703             | 4.0                  | 1.0                  | 5.0                    | 23.0                  |
| BPGW1704         | BYPW1704             | 4.0                  | 1.0                  | 5.0                    | 12.0                  |
| BPGW1705         | BYPW1705             | 4.0                  | 1.0                  | 5.0                    | 20.0                  |
| R1306            | BYPW1706             | 4.3                  | 1.7                  | 6.0                    | 24.5                  |

## **4.0 CONSTRUCTION QUALITY ASSURANCE**

### **4.1 Specification**

The pipework installed consisted of 225mm diameter HDPE SDR11 pipe with a solid upper section and a lower perforated section. The upper section of solid pipework had a minimum of 4.0m installed below ground level and a minimum of 1.0m above ground level.

Sections of pipework were connected using butt fusion welding methods. The base of the perforated pipework was fitted with a securely fitted push end cap. The solid pipework was fitted with a push fit air-tight end cap to await installation of the gas well headworks and connection to the landfill gas extraction system.

The annulus between the HDPE pipe and waste was backfilled with 20-40mm non-calcareous smooth gravel to a minimum depth of 4.0m below ground level. The remaining annulus was sealed using a pre-mixed hydrated bentonite slurry seal to ground level following the installation of two bags of dry bentonite to above the gravel to act as a blinding layer.

All pipework was measured by the CQA Inspector to verify the length of solid and perforated pipe prior to being installed within the borehole.

The CQA Inspector checked the delivered pipework, stone and bentonite against the specification before their use in the works. A record of these checks is enclosed in the Daily Reports in Appendix 1.

### **4.2 Gas Well Details**

The following are presented in the order of well installation.

#### Gas Well BYP1701

Gas Well BYPW1701 was drilled with a target depth of 37.0m Below Ground Level (BGL). Drilling advanced to a depth of 20.5m, where no waste arisings could be recovered due to the presence of very wet waste; Infinis were informed and instructed that the well casing be installed at the achieved depth.

The 225mm HDPE pipework consisted of 15.5m of perforated casing and 6.0m of solid casing, with 1.0m AGL. Gravel was installed to a depth of 5.0m BGL; approximately 1.85m<sup>3</sup> was installed. The remaining portion of the annulus was backfilled with a hydrated bentonite which was mixed outside and poured into the annulus to form a seal to ground level following the installation of dry bentonite to the annulus to act as a blinding layer.

#### Gas Well BYPW1706

Gas Well BYPW1706 was drilled with a target depth of 29.0m BGL. Drilling advanced to 200mm from the target depth, reaching 28.8m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were



informed and instructed that the well casing was to be installed at the achieved depth.

The 225mm HDPE pipework consisted of 24.5m of perforated casing and 6.0m of solid casing, with 1.7m AGL. Gravel was installed to a depth of 4.0m BGL; approximately 2.96m<sup>3</sup> was installed. The bentonite seal was reduced from the proposed 5.0m to allow for maintaining of the stand-off between the top of the perforated pipework section and the base of the bentonite seal.

The remaining portion of the annulus was backfilled with a hydrated bentonite which was mixed outside and poured into the annulus to form a seal to ground level following the installation of dry bentonite to the annulus to act as a blinding layer.

#### Gas Well BYPW1702

Gas Well BYPW1702 was drilled with a target depth of 29.5m BGL. Drilling advanced to a depth of 27.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.

The 225mm HDPE pipework consisted of 22.5m of perforated casing and 6.0m of solid casing, with 1.5m AGL. Gravel was installed to a depth of 4.0m BGL; approximately 2.74m<sup>3</sup> was installed. The remaining portion of the annulus was backfilled with a hydrated bentonite which was mixed outside and poured into the annulus to form a seal to ground level following the installation of dry bentonite to the annulus to act as a blinding layer.

#### Gas Well BYPW1704

Gas Well BYPW1704 was drilled with a target depth of 20.0m BGL. Drilling advanced to a depth of 16.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.

The 225mm HDPE pipework consisted of 12.0m of perforated casing and 5.0m of solid casing, with 1.0m AGL. Gravel was installed to a depth of 4.0m BGL; approximately 1.43m<sup>3</sup> was installed. The remaining portion of the annulus was backfilled with a hydrated bentonite which was mixed outside and poured into the annulus to form a seal to ground level following the installation of dry bentonite to the annulus to act as a blinding layer.

#### Gas Well BYPW1703

Gas Well BYPW1703 was drilled with a target depth of 29.5m BGL. Drilling advanced to a depth of 27.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.

The 225mm HDPE pipework consisted of 23.0m of perforated casing and 5.0m of solid casing, with 1.0m AGL. Gravel was installed to a depth of 4.0m BGL; approximately 2.74m<sup>3</sup> was installed. The remaining portion of the annulus was backfilled with a hydrated bentonite which was mixed outside

and poured into the annulus to form a seal to ground level following the installation of dry bentonite to the annulus to act as a blinding layer.

#### Gas Well BYPW1705

Gas Well BYPW1705 was drilled with a target depth of 31.0m BGL. Drilling advanced to a depth of 24.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.

The 225mm HDPE pipework consisted of 20.0m of perforated casing and 5.0m of solid casing, with 1.0m AGL. Gravel was installed to a depth of 4.0m BGL; approximately 2.39m<sup>3</sup> was installed. The remaining portion of the annulus was backfilled with a hydrated bentonite which was mixed outside and poured into the annulus to form a seal to ground level following the installation of dry bentonite to the annulus to act as a blinding layer.

### **4.3 Contract Particulars**

During the drilling of the gas extraction wells the verticality of the borehole was regularly checked at approximately 5.0m intervals.

When moving the drilling rig between locations, it was ensured that the route had been walked to establish the most suitable access route and to check for services or penetrations along the way. The area of drilling was also cleared of any obstruction that could prevent the drilling rig from carrying out the Works.

All waste arisings excavated as a result of the drilling works were disposed of to the active tip face of site. Details of the waste arisings can be found in the CQA Inspectors drilling logs enclosed in Appendix 2 of this CQA Report.

The CQA Inspector ensured, by way of liaison with the Main Contractor that all the gas wells local to the vicinity of where the drilling was taking place were switched off.

Prior to commencement of the works the CQA Inspector ensured that the Drilling Sub-Contractor was aware of the proposed drill depths. The CQA Inspector also liaised with the Drilling Sub-Contractor to ensure that drilling commenced at the correct locations.

The CQA Inspector observed the number of extension bars and their respective lengths to ensure that the specified drill depths were achieved. The CQA Inspector was present during the drilling to confirm the achievement of the target drill depths.

## **5.0 ISSUES ENCOUNTERED**

- 5.1** Well BYPW1701 was drilled with a target depth of 37.0m. Drilling advanced to a depth of 20.5m, where no waste arisings could be recovered due to the presence of very wet waste; Infinis were informed and instructed that the well casing be installed at the achieved depth.
- 5.2** Well BYPW1706 was drilled with a target depth of 29.0m. Drilling advanced to 200mm from the target depth, reaching 28.8m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.
- 5.3** Well BYPW1702 was drilled with a target depth of 29.5m. Drilling advanced to a depth of 27.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.
- 5.4** Well BYPW1704 was drilled with a target depth of 20.0m. Drilling advanced to a depth of 16.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.
- 5.5** Well BYPW1703 was drilled with a target depth of 29.5m. Drilling advanced to a depth of 27.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.
- 5.6** Well BYPW1705 was drilled with a target depth of 31.0m. Drilling advanced to a depth of 24.0m, where no waste arisings could be recovered due to the presence of wet waste; Infinis were informed and instructed that the well casing was to be installed at the achieved depth.
- 5.7** No further issues were encountered during the period of these works.

## **6.0 CONCLUSIONS**

- 6.1** From the observations and measurements made by the CQA Inspector, to the best of our knowledge, 6no. gas extraction wells were installed at Bryn Pica Landfill Site to a satisfactory standard and in accordance with the previously approved CQA Plan.

**Infinis Energy Services Ltd.**

Bryn Pica Landfill Site

Retro Drilling of Gas Wells

Construction Quality Assurance Report

1. CQA Inspectors Daily Logs

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                                                                                                                | 30/10/2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Weather<br>(include Wind<br>Direction &<br>Strength during<br>Drilling Works)                                       | Previous Night<br>a.m<br>p.m<br>Cool, damp<br>Sunny, dry. Light southerly breeze.<br>Sunny, dry. Light southerly breeze.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Site Hours:<br>Contractors Arrival Time:<br>CQA Arrival Time:<br>Contractors Departure Time:<br>CQA Departure Time: | 08.00 – 17.00<br>7.30<br>7.30<br>17.00<br>17.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Contractors Plant /<br>Resources Utilised                                                                           | <b>Dragon Drilling</b><br>Commachio MC3000S Hill Climber Rig<br>Telehandler<br>Mini-dumper                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Contract Works<br>Undertaken                                                                                        | <b>Dragon Drilling</b><br>Site inductions and pre-start meeting with site walkover before drilling started.<br>Began drilling Well 1701, with target depth of 37.0m<br>Drilling advanced to 17m with very wet waste present. Got to 20.5m, no further waste recovered. Was instructed to install well at 20.5m.<br>Well installation at 20.5m, pipework installed.<br>Stone installed around pipe, approx. 1.85m <sup>3</sup><br>Dry bentonite added to top of gravel layer.<br>Bentonite slurry mixed and poured into hole, 5m seal installed.<br>Well completed. |
| Testing Undertaken                                                                                                  | Verticality checks on rig mast<br>Photographic Records                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Meetings/<br>Correspondence                                                                                         | Pre start meeting and site walkover with Infinis and Dragon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Health and Safety                                                                                                   | Site induction.<br>No issues                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Visitors to Site                                                                                                    | George Augood (Infinis)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Issues Encountered<br>(and Remedial Actions<br>Taken)                                                               | Well 1701 drilled to 17m, where waste was very wet. Well stopped at 20.5m due to no recovery. Well installed at 20.5m.                                                                                                                                                                                                                                                                                                                                                                                                                                             |

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|          |                                                                                      |
|----------|--------------------------------------------------------------------------------------|
| Comments | Well 1704 has been moved upslope for access, original depth of 20.0m still to apply. |
|----------|--------------------------------------------------------------------------------------|

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                                                                                     |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                                                                                                                |                                 | 31.10.17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Weather<br>(include Wind<br>Direction &<br>Strength during<br>Drilling Works)                                       | Previous<br>Night<br>a.m<br>p.m | Cool, damp<br><br>Slightly overcast, light wind from north west<br>Slightly overcast, light wind from north west                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Site Hours:<br>Contractors Arrival Time:<br>CQA Arrival Time:<br>Contractors Departure Time:<br>CQA Departure Time: |                                 | 08.00 – 17.00<br>7.30<br>7.30<br>17.00<br>17.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Contractors Plant /<br>Resources Utilised                                                                           |                                 | <b>Dragon Drilling</b><br>Commachio MC3000S Hill Climber Rig<br>Telehandler<br>Mini-dumper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Contract Works<br>Undertaken                                                                                        |                                 | <b>Dragon Drilling</b><br><br>Moved rig to well 1706, target depth 29.0m<br><br>Drilling advanced to 21m with very wet waste present. Got to 28.8m, no further waste recovered due to being very wet. Was instructed to install well at 28.8m.<br><br>Well installation at 28.8m, pipework installed.<br>Stone installed around pipe, approx. 2.96m <sup>3</sup><br>Dry bentonite added to top of gravel layer.<br>Bentonite slurry mixed and poured into hole, 4m seal installed.<br><br>Well completed.<br><br>Moved rig to well 1702, target depth 29.5m<br><br>Drilling advanced to 24m with saturated waste present. Got to 27.5m, no further waste recovered due to being very wet. Well dipped and depth recorded as 27.0m. Was instructed to install well at 27.0m.<br><br>Well installation at 27.0m, pipework installed.<br>Stone installed around pipe, approx. 2.74m <sup>3</sup><br>Dry bentonite added to top of gravel layer.<br>Bentonite slurry mixed and poured into hole, 4m seal installed.<br><br>Well completed. |
| Testing Undertaken                                                                                                  |                                 | Verticality checks on rig mast<br>Photographic Records                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Meetings/<br>Correspondence                                                                                         |                                 | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

For Egniol Environmental Ltd: Nur El-Sobky



## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                       |                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Health and Safety                                     | No issues                                                                                                                                                                                                                                                                                            |
| Visitors to Site                                      | None                                                                                                                                                                                                                                                                                                 |
| Issues Encountered<br>(and Remedial Actions<br>Taken) | Well 1706 stopped short of target due to wet waste at base.<br>4m bentonite seal installed to maintain stand off from top of perforated<br>pipework, due to reduced installation depth.<br><br>Well 1702 installed to 27m due to saturated waste at base of borehole preventing<br>further drilling. |
| Comments                                              | None                                                                                                                                                                                                                                                                                                 |

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                                                                                                                | 01.11.17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Weather<br>(include Wind<br>Direction &<br>Strength during<br>Drilling Works)                                       | Previous Night<br>a.m<br>p.m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                     | Cool, damp<br>Slightly overcast, light wind from north west<br>Slightly overcast, light wind from north west                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Site Hours:<br>Contractors Arrival Time:<br>CQA Arrival Time:<br>Contractors Departure Time:<br>CQA Departure Time: | 08.00 – 17.00<br>7.30<br>7.30<br>17.00<br>17.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Contractors Plant /<br>Resources Utilised                                                                           | <b>Dragon Drilling</b><br>Commachio MC3000S Hill Climber Rig<br>Telehandler<br>Mini-dumper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Contract Works<br>Undertaken                                                                                        | <b>Dragon Drilling</b><br><br>Moved rig to well 1704, target depth 20.0m<br><br>Drilling advanced to 15.5m with saturated waste present. Got to 16.0m, no further waste recovered due to being very wet. Well dipped and depth recorded as 16.0m. Was instructed to install well at 16.0m.<br><br>Well installation at 16.0m, pipework installed.<br>Stone installed around pipe, approx. 1.43m <sup>3</sup><br>Dry bentonite added to top of gravel layer.<br>Bentonite slurry mixed and poured into hole, 4m seal installed.<br><br>Well completed.<br><br>Moved rig to well 1703, target depth 29.5m<br><br>Drilling advanced to 18m with saturated waste present. Got to 27.0m, no further waste recovered due to being very wet. Was instructed to install well at 27.0m.<br><br>Well installation at 27.0m, pipework installed.<br>Stone installed around pipe, approx. 2.74m <sup>3</sup><br>Dry bentonite added to top of gravel layer.<br>Bentonite slurry mixed and poured into hole, 4m seal installed.<br><br>Well completed. |
| Testing Undertaken                                                                                                  | Verticality checks on rig mast<br>Photographic Records                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Meetings/<br>Correspondence                                                                                         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                       |                                                                                                                                                                                |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Health and Safety                                     | No issues                                                                                                                                                                      |
| Visitors to Site                                      | None                                                                                                                                                                           |
| Issues Encountered<br>(and Remedial Actions<br>Taken) | Well 1704. Very wet waste at depth stopped rig from getting to target depth.<br>Well installed to 16m.<br><br>Well 1703 drilled to 27m, very wet waste. Well installed to 27m. |
| Comments                                              | None.                                                                                                                                                                          |

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date                                                                                                                | 02.11.17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Weather<br>(include Wind<br>Direction &<br>Strength during<br>Drilling Works)                                       | Previous Night<br>a.m<br>p.m<br>Cool, damp<br>Slightly overcast, no wind<br>Slightly overcast, no wind                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Site Hours:<br>Contractors Arrival Time:<br>CQA Arrival Time:<br>Contractors Departure Time:<br>CQA Departure Time: | 08.00 – 17.00<br>7.30<br>7.30<br>17.00<br>17.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Contractors Plant /<br>Resources Utilised                                                                           | <b>Dragon Drilling</b><br>Commachio MC3000S Hill Climber Rig<br>Telehandler<br>Mini-dumper                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Contract Works<br>Undertaken                                                                                        | <b>Dragon Drilling</b><br><br>Moved rig to well 1705, target depth 31.0m<br><br>Drilling advanced to 19.5m before issues with slurry/very wet waste slowed progress. Well was redrilled and cleaned out to 24.0m before same wet waste issue. Was instructed to install well at 24.0m.<br><br>Well installation at 24.0m, pipework installed.<br>Stone installed around pipe, approx. 2.39m <sup>3</sup><br>Dry bentonite added to top of gravel layer.<br>Bentonite slurry mixed and poured into hole, 4m seal installed.<br><br>Well completed. |
| Testing Undertaken                                                                                                  | Verticality checks on rig mast<br>Photographic Records                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Meetings/<br>Correspondence                                                                                         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Health and Safety                                                                                                   | No issues                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Visitors to Site                                                                                                    | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Issues Encountered<br>(and Remedial Actions<br>Taken)                                                               | Well 1705. Very wet waste at depth, couldn't get past 24m due to this. Well installed to 24m.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|          |      |
|----------|------|
| Comments | None |
|----------|------|

For Egniol Environmental Ltd: Nur El-Sobky

## CQA Inspector's Daily Report

Site Name: Bryn Pica Landfill

Project: Gas Well Drilling

|                                                                               |                                 |                                                                                            |
|-------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------|
| Date                                                                          |                                 | 03.11.17                                                                                   |
| Weather<br>(include Wind<br>Direction &<br>Strength during<br>Drilling Works) | Previous<br>Night<br>a.m<br>p.m | Cool, damp<br><br>Slightly overcast, no wind<br>Slightly overcast, no wind                 |
| Site Hours:                                                                   |                                 | 08.00 – 17.00                                                                              |
| Contractors Arrival Time:                                                     |                                 | 7.30                                                                                       |
| CQA Arrival Time:                                                             |                                 | 7.30                                                                                       |
| Contractors Departure Time:                                                   |                                 | 17.00                                                                                      |
| CQA Departure Time:                                                           |                                 | 17.00                                                                                      |
| Contractors Plant /<br>Resources Utilised                                     |                                 | <b>Dragon Drilling</b><br>Commachio MC3000S Hill Climber Rig<br>Telehandler<br>Mini-dumper |
| Contract Works<br>Undertaken                                                  |                                 | <b>Dragon Drilling</b><br><br>Returned to site to dip wells.<br><br>Project finished.      |
| Testing Undertaken                                                            |                                 | Well dipping                                                                               |
| Meetings/<br>Correspondence                                                   |                                 | None                                                                                       |
| Health and Safety                                                             |                                 | No issues                                                                                  |
| Visitors to Site                                                              |                                 | None                                                                                       |
| Issues Encountered<br>(and Remedial Actions<br>Taken)                         |                                 | None                                                                                       |
| Comments                                                                      |                                 | None                                                                                       |

For Egniol Environmental Ltd: Nur El-Sobky

**Infinis Energy Services Ltd.**

Bryn Pica Landfill Site

Retro Drilling of Gas Wells

Construction Quality Assurance Report

2. CQA Inspectors Drill Logs



| DRILLING REPORT                      |              |              |                           |                                  | Well Number: Well 1701              |                  |                |
|--------------------------------------|--------------|--------------|---------------------------|----------------------------------|-------------------------------------|------------------|----------------|
| CQA INSPECTOR:- Nur El-Sobky         |              |              |                           |                                  | Site: Bryn Pica Landfill            |                  |                |
| CLIENT: Infinis Energy Services      |              |              |                           |                                  | Peg Level (mAOD):                   |                  |                |
| Date: 30.10.17                       |              |              | Installation Details      |                                  |                                     |                  |                |
| Drilling Rig type: Commaccio MC3000S |              |              | Solid AGL (m): 1.00       |                                  | Actual Depth (m): 20.50             |                  |                |
| Extruder Dimensions:                 |              |              | Solid BGL (m): 5.00       |                                  | Dip Level (mBGL): 20.50             |                  |                |
| Auger Dimensions: 450mm              |              |              | Perforated BGL (m): 15.50 |                                  | Dip Level (mBGL) after 24hrs: 12.90 |                  |                |
| Casing Dimensions:                   |              |              | Bentonite (m): 5.00       |                                  | HDPE Casing Dimensions: 225mm       |                  |                |
|                                      |              |              | Gravel (m): 15.50         |                                  |                                     |                  |                |
| Depth From (m)                       | Depth To (m) | Interval (m) | DESCRIPTION               |                                  |                                     | STRATA           |                |
|                                      |              |              | m                         |                                  | m                                   |                  |                |
| Peg Level (mAOD)                     | +1.0         | 1            | +1                        |                                  | +0.5                                |                  |                |
|                                      | 0.0          | 0            | 0                         |                                  |                                     |                  |                |
| 0.0                                  | 1.0          | 1            | 0                         | Cover Soils                      |                                     | GL               | GL             |
| 1.0                                  | 2.0          | 1            | 1                         | Damp Waste                       | 0.5                                 | Damp Waste       | Bentonite Seal |
| 2.0                                  | 3.0          | 1            | 2                         | Damp Waste                       | 1.5                                 |                  |                |
| 3.0                                  | 4.0          | 1            | 3                         | Damp Waste                       | 2.5                                 |                  |                |
| 4.0                                  | 5.0          | 1            | 4                         | Damp Waste                       | 3.5                                 |                  |                |
| 5.0                                  | 6.0          | 1            | 5                         | Damp Waste                       | 4.5                                 |                  |                |
| 6.0                                  | 7.0          | 1            | 6                         | Damp Waste                       | 5.5                                 |                  |                |
| 7.0                                  | 8.0          | 1            | 7                         | Damp Waste                       | 6.5                                 |                  |                |
| 8.0                                  | 9.0          | 1            | 8                         | Damp Waste                       | 7.5                                 |                  |                |
| 9.0                                  | 10.0         | 1            | 9                         | Damp Waste                       | 8.5                                 |                  |                |
| 10.0                                 | 11.0         | 1            | 10                        | Damp Waste                       | 9.5                                 |                  |                |
| 11.0                                 | 12.0         | 1            | 11                        | Damp Waste                       | 10.5                                |                  |                |
| 12.0                                 | 13.0         | 1            | 12                        | Damp Waste                       | 11.5                                |                  |                |
| 13.0                                 | 14.0         | 1            | 13                        | Damp Waste                       | 12.5                                |                  |                |
| 14.0                                 | 15.0         | 1            | 14                        | Damp Waste                       | 13.5                                |                  |                |
| 15.0                                 | 16.0         | 1            | 15                        | Damp Waste                       | 14.5                                |                  |                |
| 16.0                                 | 17.0         | 1            | 16                        | Damp Waste                       | 15.5                                |                  |                |
| 17.0                                 | 18.0         | 1            | 17                        | Damp Waste                       | 16.5                                |                  |                |
| 18.0                                 | 19.0         | 1            | 18                        | Very wet waste                   | 17.5                                | Wet Waste        | Joint          |
| 19.0                                 | 20.0         | 1            | 19                        | Very wet waste                   | 18.5                                |                  |                |
| 20.0                                 | 21.0         | 1            | 20                        | Very wet waste                   | 19.5                                |                  |                |
| 21.0                                 | 22.0         | 1            | 21                        | Very wet waste                   | 20.5                                |                  |                |
| 22.0                                 | 23.0         | 1            | 22                        | No recovery between 20.5 and 22m | 21.5                                |                  |                |
| 23.0                                 | 24.0         | 1            | 23                        |                                  | 22.5                                | Push Fit End Cap |                |
| 24.0                                 | 25.0         | 1            | 24                        |                                  | 23.5                                |                  |                |
| 25.0                                 | 26.0         | 1            | 25                        |                                  | 24.5                                |                  |                |
| 26.0                                 | 27.0         | 1            | 26                        |                                  | 25.5                                |                  |                |
| 27.0                                 | 28.0         | 1            | 27                        |                                  | 26.5                                |                  |                |
| 28.0                                 | 29.0         | 1            | 28                        |                                  | 27.5                                |                  |                |
| 29.0                                 | 30.0         | 1            | 29                        |                                  | 28.5                                |                  |                |
| 30.0                                 | 31.0         | 1            | 30                        |                                  | 29.5                                |                  |                |
| 31.0                                 | 32.0         | 1            | 31                        |                                  | 30.5                                |                  |                |
|                                      |              |              |                           |                                  | 31.5                                |                  |                |



| DRILLING REPORT                      |              |                           |             |                                     | Well Number: Well 1706   |                            |
|--------------------------------------|--------------|---------------------------|-------------|-------------------------------------|--------------------------|----------------------------|
| CQA INSPECTOR:- Nur El-Sobky         |              |                           |             |                                     | Site: Bryn Pica Landfill |                            |
| CLIENT: Infinis Energy Services      |              |                           |             |                                     | Peg Level (mAOD):        |                            |
| Date: 31.10.17                       |              | Installation Details      |             |                                     | Target Depth (m): 29.00  |                            |
| Drilling Rig type: Commaccio MC3000S |              | Solid AGL (m): 1.70       |             | Actual Depth (m): 28.80             |                          |                            |
| Extruder Dimensions:                 |              | Solid BGL (m): 4.30       |             | Dip Level (mBGL): 28.80             |                          |                            |
| Auger Dimensions: 450mm              |              | Perforated BGL (m): 24.50 |             | Dip Level (mBGL) after 24hrs: 16.50 |                          |                            |
| Casing Dimensions:                   |              | Bentonite (m): 4.00       |             | HDPE Casing Dimensions: 225mm       |                          |                            |
|                                      |              | Gravel (m): 24.80         |             |                                     |                          |                            |
| Depth From (m)                       | Depth To (m) | Interval (m)              | DESCRIPTION |                                     | STRATA                   |                            |
|                                      |              |                           | m           |                                     | m                        |                            |
| Peg Level (mAOD)                     | +1.0         | 1                         | +1          |                                     |                          | 1.7m stick up              |
|                                      | 0.0          | 0                         | 0           |                                     | +0.5                     |                            |
| 0.0                                  |              |                           | 0           |                                     |                          | GL                         |
|                                      | 1.0          |                           |             | Cover Soils                         |                          | Cover Soils                |
| 1.0                                  | 2.0          | 1                         | 1           | Cover Soils                         | 0.5                      |                            |
|                                      |              |                           |             | Dry Waste                           |                          |                            |
| 2.0                                  | 3.0          | 1                         | 2           | Dry Waste                           | 1.5                      | Dry Waste                  |
|                                      |              |                           |             | Dry Waste                           |                          | Bentonite Seal             |
| 3.0                                  | 4.0          | 1                         | 3           | Dry Waste                           | 2.5                      |                            |
|                                      |              |                           |             | Dry Waste                           |                          |                            |
| 4.0                                  | 5.0          | 1                         | 4           | Dry Waste                           | 3.5                      |                            |
|                                      |              |                           |             | Dry Waste                           |                          |                            |
| 5.0                                  | 6.0          | 1                         | 5           | Dry Waste                           | 4.5                      |                            |
|                                      |              |                           |             | Dry Waste                           |                          | Joint                      |
| 6.0                                  | 7.0          | 1                         | 6           | Damp Waste                          | 5.5                      |                            |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 7.0                                  | 8.0          | 1                         | 7           | Damp Waste                          | 6.5                      | Damp Waste                 |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 8.0                                  | 9.0          | 1                         | 8           | Damp Waste                          | 7.5                      |                            |
|                                      |              |                           |             | Damp Waste                          |                          | Gravel Pack Approx. 2.96m3 |
| 9.0                                  | 10.0         | 1                         | 9           | Damp Waste                          | 8.5                      |                            |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 10.0                                 | 11.0         | 1                         | 10          | Damp Waste                          | 9.5                      |                            |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 11.0                                 | 12.0         | 1                         | 11          | Damp Waste                          | 10.5                     |                            |
|                                      |              |                           |             | Damp Waste                          |                          | Joint                      |
| 12.0                                 | 13.0         | 1                         | 12          | Damp Waste                          | 11.5                     |                            |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 13.0                                 | 14.0         | 1                         | 13          | Wet Waste                           | 12.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 14.0                                 | 15.0         | 1                         | 14          | Damp Waste                          | 13.5                     | Wet Waste                  |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 15.0                                 | 16.0         | 1                         | 15          | Damp Waste                          | 14.5                     |                            |
|                                      |              |                           |             | Damp Waste                          |                          |                            |
| 16.0                                 | 17.0         | 1                         | 16          | Damp Waste                          | 15.5                     |                            |
|                                      |              |                           |             | Damp Waste                          |                          | Joint                      |
| 17.0                                 | 18.0         | 1                         | 17          | Wet Waste                           | 16.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 18.0                                 | 19.0         | 1                         | 18          | Wet Waste                           | 17.5                     | Wet Waste                  |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 19.0                                 | 20.0         | 1                         | 19          | Dry Waste                           | 18.5                     |                            |
|                                      |              |                           |             | Dry Waste                           |                          |                            |
| 20.0                                 | 21.0         | 1                         | 20          | Wet Waste                           | 19.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 21.0                                 | 22.0         | 1                         | 21          | Wet Waste                           | 20.5                     | Wet Waste                  |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 22.0                                 | 23.0         | 1                         | 22          | Wet Waste                           | 21.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          | Joint                      |
| 23.0                                 | 24.0         | 1                         | 23          | Wet Waste                           | 22.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 24.0                                 | 25.0         | 1                         | 24          | Wet Waste                           | 23.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 25.0                                 | 26.0         | 1                         | 25          | Wet Waste                           | 24.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 26.0                                 | 27.0         | 1                         | 26          | Wet Waste                           | 25.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 27.0                                 | 28.0         | 1                         | 27          | Wet Waste                           | 26.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 28.0                                 | 29.0         | 1                         | 28          | Wet Waste                           | 27.5                     |                            |
|                                      |              |                           |             | Wet Waste                           |                          |                            |
| 29.0                                 | 30.0         | 1                         | 29          | Wet Waste                           | 28.5                     | Push fit end cap           |
|                                      |              |                           |             |                                     |                          |                            |
| 30.0                                 | 31.0         | 1                         | 30          |                                     | 29.5                     |                            |
|                                      |              |                           |             |                                     |                          |                            |
| 31.0                                 | 32↓          | 1                         | 31          |                                     | 30.5                     |                            |
|                                      |              |                           |             |                                     |                          |                            |
|                                      |              |                           |             |                                     | 31.5                     |                            |

| DRILLING REPORT                      |              |              |                      |                        |      | Well Number:                  | Well 1702          |
|--------------------------------------|--------------|--------------|----------------------|------------------------|------|-------------------------------|--------------------|
| CQA INSPECTOR:- Nur El-Sobky         |              |              |                      |                        |      | Site:                         | Bryn Pica Landfill |
| CLIENT: Infinis Energy Services      |              |              |                      |                        |      | Peg Level (mAOD):             |                    |
| Date: 31.10.17                       |              |              | Installation Details |                        |      | Target Depth (m):             | 29.50              |
| Drilling Rig type: Commaccio MC3000S |              |              | Solid AGL (m):       |                        |      | Actual Depth (m):             | 27.00              |
| Extruder Dimensions:                 |              |              | Solid BGL (m):       |                        |      | Dip Level (mBGL):             | 27.00              |
| Auger Dimensions: 450mm              |              |              | Perforated BGL (m):  |                        |      | Dip Level (mBGL) after 24hrs: | 12.50              |
| Casing Dimensions:                   |              |              | Bentonite (m):       |                        |      | HDPE Casing Dimensions:       | 225mm              |
|                                      |              |              | Gravel (m):          |                        |      |                               |                    |
|                                      |              |              |                      |                        |      |                               |                    |
| Depth From (m)                       | Depth To (m) | Interval (m) | DESCRIPTION          |                        |      | STRATA                        |                    |
|                                      |              |              | m                    |                        | m    |                               |                    |
| Peg Level (mAOD)                     | +1.0         | 1            | +1                   |                        | +0.5 | 1.5m stick up                 |                    |
|                                      | 0.0          | 0            | 0                    |                        |      | GL                            | GL                 |
| 0.0                                  | 1.0          | 1            | 0                    | Cover Soils            | 0.5  | Cover Soils                   |                    |
| 1.0                                  | 2.0          | 1            | 1                    | Damp Waste             | 1.5  | Damp Waste                    |                    |
| 2.0                                  | 3.0          | 1            | 2                    | Damp Waste             | 2.5  |                               | Bentonite seal     |
| 3.0                                  | 4.0          | 1            | 3                    | Damp Waste             | 3.5  |                               |                    |
| 4.0                                  | 5.0          | 1            | 4                    | Damp Waste             | 4.5  |                               | Joint              |
| 5.0                                  | 6.0          | 1            | 5                    | Damp Waste             | 5.5  |                               |                    |
| 6.0                                  | 7.0          | 1            | 6                    | Wet Waste              | 6.5  | Wet Waste                     |                    |
| 7.0                                  | 8.0          | 1            | 7                    | Wet Waste              | 7.5  |                               | Gravel Pack        |
| 8.0                                  | 9.0          | 1            | 8                    | Wet Waste              | 8.5  |                               | Approx. 2.74m3     |
| 9.0                                  | 10.0         | 1            | 9                    | Wet Waste              | 9.5  |                               |                    |
| 10.0                                 | 11.0         | 1            | 10                   | Wet Waste              | 10.5 |                               | Joint              |
| 11.0                                 | 12.0         | 1            | 11                   | Wet Waste              | 11.5 |                               |                    |
| 12.0                                 | 13.0         | 1            | 12                   | Damp Waste             | 12.5 | Damp Waste                    |                    |
| 13.0                                 | 14.0         | 1            | 13                   | Damp Waste             | 13.5 |                               |                    |
| 14.0                                 | 15.0         | 1            | 14                   | Damp Waste             | 14.5 |                               |                    |
| 15.0                                 | 16.0         | 1            | 15                   | Damp Waste             | 15.5 |                               |                    |
| 16.0                                 | 17.0         | 1            | 16                   | Damp Waste             | 16.5 |                               | Joint              |
| 17.0                                 | 18.0         | 1            | 17                   | Damp Waste             | 17.5 |                               |                    |
| 18.0                                 | 19.0         | 1            | 18                   | Wet Waste              | 18.5 | Wet Waste                     |                    |
| 19.0                                 | 20.0         | 1            | 19                   | Wet Waste              | 19.5 |                               |                    |
| 20.0                                 | 21.0         | 1            | 20                   | Damp Waste             | 20.5 | Damp Waste                    |                    |
| 21.0                                 | 22.0         | 1            | 21                   | Damp Waste             | 21.5 |                               |                    |
| 22.0                                 | 23.0         | 1            | 22                   | Damp Waste             | 22.5 |                               | Joint              |
| 23.0                                 | 24.0         | 1            | 23                   | Damp Waste             | 23.5 |                               |                    |
| 24.0                                 | 25.0         | 1            | 24                   | Wet Waste              | 24.5 | Wet Waste                     |                    |
| 25.0                                 | 26.0         | 1            | 25                   | Wet Waste              | 25.5 |                               |                    |
| 26.0                                 | 27.0         | 1            | 26                   | Wet Waste              | 26.5 |                               | Push fit end cap   |
| 27.0                                 | 28.0         | 1            | 27                   | No recovery past 27.0m | 27.5 |                               |                    |
| 28.0                                 | 29.0         | 1            | 28                   |                        | 28.5 |                               |                    |
| 29.0                                 | 30.0         | 1            | 29                   |                        | 29.5 |                               |                    |
| 30.0                                 | 31.0         | 1            | 30                   |                        | 30.5 |                               |                    |
| 31.0                                 | 32↓          | 1            | 31                   |                        | 31.5 |                               |                    |

| DRILLING REPORT                      |              |                     |             |                      | Well Number: <b>Well 1704</b>      |                            |
|--------------------------------------|--------------|---------------------|-------------|----------------------|------------------------------------|----------------------------|
| CQA INSPECTOR:- Nur El-Sobky         |              |                     |             |                      | Site: Bryn Pica Landfill           |                            |
| CLIENT: Infinis Energy Services      |              |                     |             |                      | Peg Level (mAOD):                  |                            |
| Date: 01.11.17                       |              |                     |             |                      | Target Depth (m): 20.00            |                            |
| Installation Details                 |              |                     |             |                      | Actual Depth (m): 16.00            |                            |
| Drilling Rig type: Commaccio MC3000S |              | Solid AGL (m):      |             | 1.00                 | Dip Level (mBGL): 16.00            |                            |
| Extruder Dimensions:                 |              | Solid BGL (m):      |             | 4.00                 | Dip Level (mBGL) after 24hrs: 8.92 |                            |
| Auger Dimensions: 450mm              |              | Perforated BGL (m): |             | 12.00                | HDPE Casing Dimensions: 225mm      |                            |
| Casing Dimensions:                   |              | Bentonite (m):      |             | 4.00                 |                                    |                            |
|                                      |              | Gravel (m):         |             | 12.00                |                                    |                            |
| Depth From (m)                       | Depth To (m) | Interval (m)        | DESCRIPTION |                      | STRATA                             |                            |
|                                      |              |                     | m           |                      | m                                  |                            |
| Peg Level (mAOD)                     | +1.0         | 1                   | +1          |                      | +0.5                               |                            |
|                                      | 0.0          | 0                   | 0           |                      |                                    |                            |
| 0.0                                  | 1.0          | 1                   | 1           | Cover Soils          | 0.5                                | GL                         |
| 1.0                                  | 2.0          | 1                   | 2           | Dry Waste            | 1.5                                | GL                         |
| 2.0                                  | 3.0          | 1                   | 3           | Dry Waste            | 2.5                                |                            |
| 3.0                                  | 4.0          | 1                   | 4           | Dry Waste            | 3.5                                | Bentonite seal             |
| 4.0                                  | 5.0          | 1                   | 5           | Dry Waste            | 4.5                                | Joint                      |
| 5.0                                  | 6.0          | 1                   | 6           | Dry Waste            | 5.5                                |                            |
| 6.0                                  | 7.0          | 1                   | 7           | Damp Waste           | 6.5                                |                            |
| 7.0                                  | 8.0          | 1                   | 8           | Damp Waste           | 7.5                                | Gravel Pack Approx. 1.43m3 |
| 8.0                                  | 9.0          | 1                   | 9           | Damp Waste           | 8.5                                |                            |
| 9.0                                  | 10.0         | 1                   | 10          | Wet Waste            | 9.5                                |                            |
| 10.0                                 | 11.0         | 1                   | 11          | Wet Waste            | 10.5                               | Joint                      |
| 11.0                                 | 12.0         | 1                   | 12          | Wet Waste            | 11.5                               |                            |
| 12.0                                 | 13.0         | 1                   | 13          | Wet Waste            | 12.5                               |                            |
| 13.0                                 | 14.0         | 1                   | 14          | Wet Waste            | 13.5                               |                            |
| 14.0                                 | 15.0         | 1                   | 15          | Wet Waste            | 14.5                               |                            |
| 15.0                                 | 16.0         | 1                   | 16          | Wet Waste            | 15.5                               | Push fit end cap           |
| 16.0                                 | 17.0         | 1                   | 17          | No recovery past 16m | 16.5                               |                            |
| 17.0                                 | 18.0         | 1                   | 18          |                      | 17.5                               |                            |
| 18.0                                 | 19.0         | 1                   | 19          |                      | 18.5                               |                            |
| 19.0                                 | 20.0         | 1                   | 20          |                      | 19.5                               |                            |
| 20.0                                 | 21.0         | 1                   | 21          |                      | 20.5                               |                            |
| 21.0                                 | 22.0         | 1                   | 22          |                      | 21.5                               |                            |
| 22.0                                 | 23.0         | 1                   | 23          |                      | 22.5                               |                            |
| 23.0                                 | 24.0         | 1                   | 24          |                      | 23.5                               |                            |
| 24.0                                 | 25.0         | 1                   | 25          |                      | 24.5                               |                            |
| 25.0                                 | 26.0         | 1                   | 26          |                      | 25.5                               |                            |
| 26.0                                 | 27.0         | 1                   | 27          |                      | 26.5                               |                            |
| 27.0                                 | 28.0         | 1                   | 28          |                      | 27.5                               |                            |
| 28.0                                 | 29.0         | 1                   | 29          |                      | 28.5                               |                            |
| 29.0                                 | 30.0         | 1                   | 30          |                      | 29.5                               |                            |
| 30.0                                 | 31.0         | 1                   | 31          |                      | 30.5                               |                            |
| 31.0                                 | 32↓          | 1                   | 32          |                      | 31.5                               |                            |



| DRILLING REPORT                      |              |              |                           |                      | Well Number: Well 1703              |             |                  |
|--------------------------------------|--------------|--------------|---------------------------|----------------------|-------------------------------------|-------------|------------------|
| CQA INSPECTOR:- Nur El-Sobky         |              |              |                           |                      | Site: Bryn Pica Landfill            |             |                  |
| CLIENT: Infinis Energy Services      |              |              |                           |                      | Peg Level (mAOD):                   |             |                  |
| Date: 01.11.17                       |              |              | Installation Details      |                      |                                     |             |                  |
| Drilling Rig type: Commaccio MC3000S |              |              | Solid AGL (m): 1.00       |                      | Actual Depth (m): 27.00             |             |                  |
| Extruder Dimensions:                 |              |              | Solid BGL (m): 4.00       |                      | Dip Level (mBGL): 27.00             |             |                  |
| Auger Dimensions: 450mm              |              |              | Perforated BGL (m): 23.00 |                      | Dip Level (mBGL) after 24hrs: 12.75 |             |                  |
| Casing Dimensions:                   |              |              | Bentonite (m): 4.00       |                      | HDPE Casing Dimensions: 225mm       |             |                  |
|                                      |              |              | Gravel (m): 23.00         |                      |                                     |             |                  |
| Depth From (m)                       | Depth To (m) | Interval (m) | DESCRIPTION               |                      |                                     | STRATA      |                  |
|                                      |              |              | m                         |                      | m                                   |             |                  |
| Peg Level (mAOD)                     | +1.0         | 1            | +1                        |                      | +0.5                                |             |                  |
|                                      | 0.0          | 0            | 0                         |                      |                                     | GL          | GL               |
| 0.0                                  |              |              | 0                         | Cover Soils          |                                     | Cover Soils |                  |
| 1.0                                  | 1.0          | 1            | 1                         | Dry Waste            | 0.5                                 |             |                  |
| 2.0                                  | 2.0          | 1            | 2                         | Dry Waste            | 1.5                                 | Dry Waste   | Bentonite seal   |
| 3.0                                  | 3.0          | 1            | 3                         | Dry Waste            | 2.5                                 |             |                  |
| 4.0                                  | 4.0          | 1            | 4                         | Dry Waste            | 3.5                                 |             | Joint            |
| 5.0                                  | 5.0          | 1            | 5                         | Dry Waste            | 4.5                                 |             |                  |
| 6.0                                  | 6.0          | 1            | 6                         | Dry Waste            | 5.5                                 |             |                  |
| 7.0                                  | 7.0          | 1            | 7                         | Damp Waste           | 6.5                                 | Damp Waste  | Gravel Pack      |
| 8.0                                  | 8.0          | 1            | 8                         | Damp Waste           | 7.5                                 |             | Approx. 2.74m3   |
| 9.0                                  | 9.0          | 1            | 9                         | Damp Waste           | 8.5                                 |             |                  |
| 10.0                                 | 10.0         | 1            | 10                        | Damp Waste           | 9.5                                 |             | Joint            |
| 11.0                                 | 11.0         | 1            | 11                        | Damp Waste           | 10.5                                |             |                  |
| 12.0                                 | 12.0         | 1            | 12                        | Damp Waste           | 11.5                                |             |                  |
| 13.0                                 | 13.0         | 1            | 13                        | Wet Waste            | 12.5                                | Wet Waste   |                  |
| 14.0                                 | 14.0         | 1            | 14                        | Wet Waste            | 13.5                                |             |                  |
| 15.0                                 | 15.0         | 1            | 15                        | Damp Waste           | 14.5                                | Damp Waste  |                  |
| 16.0                                 | 16.0         | 1            | 16                        | Damp Waste           | 15.5                                |             | Joint            |
| 17.0                                 | 17.0         | 1            | 17                        | Damp Waste           | 16.5                                |             |                  |
| 18.0                                 | 18.0         | 1            | 18                        | Damp Waste           | 17.5                                |             |                  |
| 19.0                                 | 19.0         | 1            | 19                        | Wet Waste            | 18.5                                | Wet Waste   |                  |
| 20.0                                 | 20.0         | 1            | 20                        | Wet Waste            | 19.5                                |             |                  |
| 21.0                                 | 21.0         | 1            | 21                        | Wet Waste            | 20.5                                |             |                  |
| 22.0                                 | 22.0         | 1            | 22                        | Wet Waste            | 21.5                                |             | Joint            |
| 23.0                                 | 23.0         | 1            | 23                        | Wet Waste            | 22.5                                |             |                  |
| 24.0                                 | 24.0         | 1            | 24                        | Wet Waste            | 23.5                                |             |                  |
| 25.0                                 | 25.0         | 1            | 25                        | Wet Waste            | 24.5                                |             |                  |
| 26.0                                 | 26.0         | 1            | 26                        | Wet Waste            | 25.5                                |             |                  |
| 27.0                                 | 27.0         | 1            | 27                        | Wet Waste            | 26.5                                |             | Push fit end cap |
| 28.0                                 | 28.0         | 1            | 28                        | No recovery past 27m | 27.5                                |             |                  |
| 29.0                                 | 29.0         | 1            | 29                        |                      | 28.5                                |             |                  |
| 30.0                                 | 30.0         | 1            | 30                        |                      | 29.5                                |             |                  |
| 31.0                                 | 31.0         | 1            | 31                        |                      | 30.5                                |             |                  |
| 32↓                                  |              |              |                           |                      | 31.5                                |             |                  |

| DRILLING REPORT                             |              |              |             |                      | Well Number: <b>Well 1705</b>              |                  |
|---------------------------------------------|--------------|--------------|-------------|----------------------|--------------------------------------------|------------------|
| CQA INSPECTOR:- Nur El-Sobky                |              |              |             |                      | Site: Bryn Pica Landfill                   |                  |
| CLIENT: Infinis Energy Services             |              |              |             |                      | Peg Level (mAOD):                          |                  |
| Date:                                       |              |              |             |                      | Target Depth (m): <b>31.00</b>             |                  |
| Installation Details                        |              |              |             |                      | Actual Depth (m): <b>24.00</b>             |                  |
| Drilling Rig type: <b>Commaccio MC3000S</b> |              |              |             |                      | Solid AGL (m): <b>1.00</b>                 |                  |
| Extruder Dimensions:                        |              |              |             |                      | Solid BGL (m): <b>4.00</b>                 |                  |
| Auger Dimensions: <b>450mm</b>              |              |              |             |                      | Dip Level (mBGL): <b>24.00</b>             |                  |
| Casing Dimensions:                          |              |              |             |                      | Dip Level (mBGL) after 24hrs: <b>16.50</b> |                  |
|                                             |              |              |             |                      | HDPE Casing Dimensions: <b>225mm</b>       |                  |
|                                             |              |              |             |                      | Bentonite (m): <b>4.00</b>                 |                  |
|                                             |              |              |             |                      | Gravel (m): <b>20.00</b>                   |                  |
| Depth From (m)                              | Depth To (m) | Interval (m) | DESCRIPTION |                      | STRATA                                     |                  |
|                                             |              |              | m           |                      | m                                          |                  |
| Peg Level (mAOD)                            | +1.0         | 1            | +1          |                      | +0.5                                       |                  |
|                                             | 0.0          | 0            | 0           |                      |                                            |                  |
| 0.0                                         | 1.0          | 1            | 0           | Cover Soils          | 0.5                                        | GL               |
| 1.0                                         | 2.0          | 1            | 1           | Dry Waste            | 1.5                                        | Dry Waste        |
| 2.0                                         | 3.0          | 1            | 2           | Dry Waste            | 2.5                                        |                  |
| 3.0                                         | 4.0          | 1            | 3           | Dry Waste            | 3.5                                        | Bentonite seal   |
| 4.0                                         | 5.0          | 1            | 4           | Damp Waste           | 4.5                                        | Joint            |
| 5.0                                         | 6.0          | 1            | 5           | Damp Waste           | 5.5                                        |                  |
| 6.0                                         | 7.0          | 1            | 6           | Damp Waste           | 6.5                                        | Gravel Pack      |
| 7.0                                         | 8.0          | 1            | 7           | Damp Waste           | 7.5                                        | Approx. 2.39m3   |
| 8.0                                         | 9.0          | 1            | 8           | Damp Waste           | 8.5                                        |                  |
| 9.0                                         | 10.0         | 1            | 9           | Damp Waste           | 9.5                                        | Joint            |
| 10.0                                        | 11.0         | 1            | 10          | Damp Waste           | 10.5                                       |                  |
| 11.0                                        | 12.0         | 1            | 11          | Wet Waste            | 11.5                                       | Wet Waste        |
| 12.0                                        | 13.0         | 1            | 12          | Wet Waste            | 12.5                                       |                  |
| 13.0                                        | 14.0         | 1            | 13          | Wet Waste            | 13.5                                       |                  |
| 14.0                                        | 15.0         | 1            | 14          | Damp Waste           | 14.5                                       | Damp Waste       |
| 15.0                                        | 16.0         | 1            | 15          | Damp Waste           | 15.5                                       | Joint            |
| 16.0                                        | 17.0         | 1            | 16          | Wet Waste            | 16.5                                       | Wet Waste        |
| 17.0                                        | 18.0         | 1            | 17          | Wet Waste            | 17.5                                       |                  |
| 18.0                                        | 19.0         | 1            | 18          | Wet Waste            | 18.5                                       |                  |
| 19.0                                        | 20.0         | 1            | 19          | Wet Waste            | 19.5                                       |                  |
| 20.0                                        | 21.0         | 1            | 20          | Wet Waste            | 20.5                                       |                  |
| 21.0                                        | 22.0         | 1            | 21          | Wet Waste            | 21.5                                       | Joint            |
| 22.0                                        | 23.0         | 1            | 22          | Wet Waste            | 22.5                                       |                  |
| 23.0                                        | 24.0         | 1            | 23          | Wet Waste            | 23.5                                       | Push fit end cap |
| 24.0                                        | 25.0         | 1            | 24          | No recovery past 24m | 24.5                                       |                  |
| 25.0                                        | 26.0         | 1            | 25          |                      | 25.5                                       |                  |
| 26.0                                        | 27.0         | 1            | 26          |                      | 26.5                                       |                  |
| 27.0                                        | 28.0         | 1            | 27          |                      | 27.5                                       |                  |
| 28.0                                        | 29.0         | 1            | 28          |                      | 28.5                                       |                  |
| 29.0                                        | 30.0         | 1            | 29          |                      | 29.5                                       |                  |
| 30.0                                        | 31.0         | 1            | 30          |                      | 30.5                                       |                  |
| 31.0                                        | 32↓          | 1            | 31          |                      | 31.5                                       |                  |

**Infinis Energy Services Ltd.**

Bryn Pica Landfill Site

Retro Drilling of Gas Wells

Construction Quality Assurance Report

3. Butt Fusion Welding Tickets

# Joint Record

https://www.jointmanager.com

|                        |                                                           |            |
|------------------------|-----------------------------------------------------------|------------|
| Status                 | COMPLETE                                                  |            |
| Account                | _SHELFMCA                                                 |            |
| Uploaded               | 26/10/2017                                                | 16:40:04   |
| Uploader               | mholloway                                                 |            |
| Joint Identification   |                                                           |            |
| Joint                  | 1                                                         |            |
| Reference              | 11795924                                                  |            |
| Created                | 03/10/2017                                                | 11:01:35   |
| Operator               | STUART HOUSE                                              |            |
| Location & Environment |                                                           |            |
| Location               | BRYN PICA                                                 |            |
| Project Details        |                                                           |            |
| Machine                |                                                           |            |
| Model                  | Gator2                                                    |            |
| Serial Number          | GTR200797                                                 |            |
| Plant Number           | G250/70BB                                                 |            |
| Owner                  | MCA FUSION HIRE                                           |            |
| Software version       | 2.0                                                       |            |
| Operating Voltage      | 110V                                                      |            |
| Ambient Temp           | 14.7 °C                                                   |            |
| Pipe Selected          | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                                                           |            |
| Welding Parameters     |                                                           |            |
| Standard               | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters        | Peak Drag                                                 | 13.8 (bar) |
|                        | Dynamic Drag                                              | 13.8 (bar) |
|                        | TARGET                                                    | ACTUAL     |
| Energy (kJ)            | -                                                         | -          |
| Voltage (V)            |                                                           |            |
| Dwell Time (s)         | 4.0                                                       | 2.0        |
| Heater Temp (°C)       | 233.0                                                     | 231.6      |
| Bead Pressure (bar)    | [13.8]+33.0                                               | 46.4       |
| Bead Distance (µm)     | 500.0                                                     | 500.0      |
| Soak Pressure (bar)    | 0                                                         | 0          |
| Soak Time (s)          | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)  | [13.8]+33.0                                               | 47.1       |
| Cool Time (s)          | 290.0                                                     | 290.0      |
| Final Bead OK          | Yes                                                       |            |

# Joint Record

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|                        |                                                           |            |
|------------------------|-----------------------------------------------------------|------------|
| Status                 | COMPLETE                                                  |            |
| Account                | _SHELFMCA                                                 |            |
| Uploaded               | 26/10/2017                                                | 16:40:04   |
| Uploader               | mholloway                                                 |            |
| Joint Identification   |                                                           |            |
| Joint                  | 2                                                         |            |
| Reference              | 11795923                                                  |            |
| Created                | 03/10/2017                                                | 11:18:03   |
| Operator               | STUART HOUSE                                              |            |
| Location & Environment |                                                           |            |
| Location               | BRYN PICA                                                 |            |
| Project Details        |                                                           |            |
| Machine                |                                                           |            |
| Model                  | Gator2                                                    |            |
| Serial Number          | GTR200797                                                 |            |
| Plant Number           | G250/70BB                                                 |            |
| Owner                  | MCA FUSION HIRE                                           |            |
| Software version       | 2.0                                                       |            |
| Operating Voltage      | 110V                                                      |            |
| Ambient Temp           | 14.3 °C                                                   |            |
| Pipe Selected          | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                                                           |            |
| Welding Parameters     |                                                           |            |
| Standard               | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters        | Peak Drag                                                 | 15.3 (bar) |
|                        | Dynamic Drag                                              | 15.3 (bar) |
|                        | TARGET                                                    | ACTUAL     |
| Energy (kJ)            | -                                                         | -          |
| Voltage (V)            |                                                           |            |
| Dwell Time (s)         | 4.0                                                       | 1.0        |
| Heater Temp (°C)       | 233.0                                                     | 231.4      |
| Bead Pressure (bar)    | [15.3]+33.0                                               | 48.0       |
| Bead Distance (µm)     | 500.0                                                     | 500.0      |
| Soak Pressure (bar)    | 0                                                         | 0          |
| Soak Time (s)          | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)  | [15.3]+33.0                                               | 48.5       |
| Cool Time (s)          | 290.0                                                     | 290.0      |
| Final Bead OK          | Yes                                                       |            |

# Joint Record

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|                        |                                                           |            |
|------------------------|-----------------------------------------------------------|------------|
| Status                 | E18: Abort During BEADUP                                  |            |
| Account                | _SHELFMCA                                                 |            |
| Uploaded               | 26/10/2017                                                | 16:40:03   |
| Uploader               | mholloway                                                 |            |
| Joint Identification   |                                                           |            |
| Joint                  | 3                                                         |            |
| Reference              | 11795922                                                  |            |
| Created                | 03/10/2017                                                | 11:44:29   |
| Operator               | STUART HOUSE                                              |            |
| Location & Environment |                                                           |            |
| Location               | BRYN PICA                                                 |            |
| Project Details        |                                                           |            |
| Machine                |                                                           |            |
| Model                  | Gator2                                                    |            |
| Serial Number          | GTR200797                                                 |            |
| Plant Number           | G250/70BB                                                 |            |
| Owner                  | MCA FUSION HIRE                                           |            |
| Software version       | 2.0                                                       |            |
| Operating Voltage      | 110V                                                      |            |
| Ambient Temp           | 16.5 °C                                                   |            |
| Pipe Selected          | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                                                           |            |
| Welding Parameters     |                                                           |            |
| Standard               | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters        | Peak Drag                                                 | 18.5 (bar) |
|                        | Dynamic Drag                                              | 18.4 (bar) |
|                        | TARGET                                                    | ACTUAL     |
| Energy (kJ)            | -                                                         | -          |
| Voltage (V)            |                                                           |            |
| Dwell Time (s)         | 4.0                                                       | 0.0        |
| Heater Temp (°C)       | 233.0                                                     | 231.2      |
| Bead Pressure (bar)    | [18.5]+33.0                                               | 0.0        |
| Bead Distance (µm)     | 500.0                                                     | 0.0        |
| Soak Pressure (bar)    | 0                                                         | 0          |
| Soak Time (s)          | 35.0                                                      | 0.0        |
| Fusion Pressure (bar)  | [18.4]+33.0                                               | 0.0        |
| Cool Time (s)          | 290.0                                                     | 0.0        |
| Final Bead OK          | No                                                        |            |
| Advisories             | Incomplete Weld                                           |            |

# Joint Record

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|                        |                                                           |            |
|------------------------|-----------------------------------------------------------|------------|
| Status                 | E18: Abort During BEADUP                                  |            |
| Account                | _SHELFMCA                                                 |            |
| Uploaded               | 26/10/2017                                                | 16:40:03   |
| Uploader               | mholloway                                                 |            |
| Joint Identification   |                                                           |            |
| Joint                  | 4                                                         |            |
| Reference              | 11795921                                                  |            |
| Created                | 03/10/2017                                                | 11:51:36   |
| Operator               | STUART HOUSE                                              |            |
| Location & Environment |                                                           |            |
| Location               | BRYN PICA                                                 |            |
| Project Details        |                                                           |            |
| Machine                |                                                           |            |
| Model                  | Gator2                                                    |            |
| Serial Number          | GTR200797                                                 |            |
| Plant Number           | G250/70BB                                                 |            |
| Owner                  | MCA FUSION HIRE                                           |            |
| Software version       | 2.0                                                       |            |
| Operating Voltage      | 110V                                                      |            |
| Ambient Temp           | 17 °C                                                     |            |
| Pipe Selected          | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                                                           |            |
| Welding Parameters     |                                                           |            |
| Standard               | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters        | Peak Drag                                                 | 19.9 (bar) |
|                        | Dynamic Drag                                              | 19.6 (bar) |
|                        | TARGET                                                    | ACTUAL     |
| Energy (kJ)            | -                                                         | -          |
| Voltage (V)            |                                                           |            |
| Dwell Time (s)         | 4.0                                                       | 0.0        |
| Heater Temp (°C)       | 233.0                                                     | 231.3      |
| Bead Pressure (bar)    | [19.9]+33.0                                               | 0.0        |
| Bead Distance (µm)     | 500.0                                                     | 0.0        |
| Soak Pressure (bar)    | 0                                                         | 0          |
| Soak Time (s)          | 35.0                                                      | 0.0        |
| Fusion Pressure (bar)  | [19.6]+33.0                                               | 0.0        |
| Cool Time (s)          | 290.0                                                     | 0.0        |
| Final Bead OK          | No                                                        |            |
| Advisories             |                                                           |            |
| Incomplete Weld        |                                                           |            |

# Joint Record

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|                        |                                                           |            |
|------------------------|-----------------------------------------------------------|------------|
| Status                 | DUMMY JOINT COMPLETE                                      |            |
| Account                | _SHELFMCA                                                 |            |
| Uploaded               | 26/10/2017                                                | 16:40:03   |
| Uploader               | mholloway                                                 |            |
| Joint Identification   |                                                           |            |
| Joint                  | 5                                                         |            |
| Reference              | 11795920                                                  |            |
| Created                | 03/10/2017                                                | 14:02:16   |
| Operator               | STUART HOUSE                                              |            |
| Location & Environment |                                                           |            |
| Location               | BRYN PICA                                                 |            |
| Project Details        |                                                           |            |
| Machine                |                                                           |            |
| Model                  | Gator2                                                    |            |
| Serial Number          | GTR200797                                                 |            |
| Plant Number           | G250/70BB                                                 |            |
| Owner                  | MCA FUSION HIRE                                           |            |
| Software version       | 2.0                                                       |            |
| Operating Voltage      | 110V                                                      |            |
| Ambient Temp           | 16.6 °C                                                   |            |
| Pipe Selected          | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                                                           |            |
| Welding Parameters     |                                                           |            |
| Standard               | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters        | Peak Drag                                                 | 16.9 (bar) |
|                        | Dynamic Drag                                              | 16.6 (bar) |
|                        | TARGET                                                    | ACTUAL     |
| Energy (kJ)            | -                                                         | -          |
| Voltage (V)            |                                                           |            |
| Dwell Time (s)         | 4.0                                                       | 0.0        |
| Heater Temp (°C)       | 233.0                                                     | 231.4      |
| Bead Pressure (bar)    | [16.9]+33.0                                               | 49.8       |
| Bead Distance (µm)     | 500.0                                                     | 500.0      |
| Soak Pressure (bar)    | 0                                                         | 0          |
| Soak Time (s)          | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)  | [16.6]+33.0                                               | 0.0        |
| Cool Time (s)          | 290.0                                                     | 0.0        |
| Joint Simulated        | Yes                                                       |            |
| Final Bead OK          | No                                                        |            |

# Joint Record

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|                        |                                                           |            |
|------------------------|-----------------------------------------------------------|------------|
| Status                 | COMPLETE                                                  |            |
| Account                | _SHELFMCA                                                 |            |
| Uploaded               | 26/10/2017                                                | 16:40:03   |
| Uploader               | mholloway                                                 |            |
| Joint Identification   |                                                           |            |
| Joint                  | 6                                                         |            |
| Reference              | 11795919                                                  |            |
| Created                | 03/10/2017                                                | 14:07:28   |
| Operator               | STUART HOUSE                                              |            |
| Location & Environment |                                                           |            |
| Location               | BRYN PICA                                                 |            |
| Project Details        |                                                           |            |
| Machine                |                                                           |            |
| Model                  | Gator2                                                    |            |
| Serial Number          | GTR200797                                                 |            |
| Plant Number           | G250/70BB                                                 |            |
| Owner                  | MCA FUSION HIRE                                           |            |
| Software version       | 2.0                                                       |            |
| Operating Voltage      | 110V                                                      |            |
| Ambient Temp           | 16.8 °C                                                   |            |
| Pipe Selected          | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                                                           |            |
| Welding Parameters     |                                                           |            |
| Standard               | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters        | Peak Drag                                                 | 17.1 (bar) |
|                        | Dynamic Drag                                              | 16.9 (bar) |
|                        | TARGET                                                    | ACTUAL     |
| Energy (kJ)            | -                                                         | -          |
| Voltage (V)            |                                                           |            |
| Dwell Time (s)         | 4.0                                                       | 2.0        |
| Heater Temp (°C)       | 233.0                                                     | 231.4      |
| Bead Pressure (bar)    | [17.1]+33.0                                               | 49.7       |
| Bead Distance (µm)     | 500.0                                                     | 500.0      |
| Soak Pressure (bar)    | 0                                                         | 0          |
| Soak Time (s)          | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)  | [16.9]+33.0                                               | 50.1       |
| Cool Time (s)          | 290.0                                                     | 290.0      |
| Final Bead OK          | Yes                                                       |            |



# Joint Record

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|                                   |                              |            |
|-----------------------------------|------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>              |            |
| Account                           | _SHELFMCA                    |            |
| Uploaded                          | 26/10/2017                   | 16:40:03   |
| Uploader                          | mholloway                    |            |
| <b>Joint Identification</b>       |                              |            |
| Joint                             | 7                            |            |
| Reference                         | 11795918                     |            |
| Created                           | 03/10/2017                   | 14:24:32   |
| Operator                          | STUART HOUSE                 |            |
| <b>Location &amp; Environment</b> |                              |            |
| Location                          | BRYN PICA                    |            |
| <b>Project Details</b>            |                              |            |
| <b>Machine</b>                    |                              |            |
| Model                             | Gator2                       |            |
| Serial Number                     | GTR200797                    |            |
| Plant Number                      | G250/70BB                    |            |
| Owner                             | MCA FUSION HIRE              |            |
| Software version                  | 2.0                          |            |
| Operating Voltage                 | 110V                         |            |
| Ambient Temp                      | 17.5 °C                      |            |
| <b>Pipe Selected</b>              |                              |            |
|                                   | PE80 225mm SDR 11.0 Black    |            |
|                                   | <----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                              |            |
| <b>Welding Parameters</b>         |                              |            |
| Standard                          | Fusion FW Landfill [05/1999] |            |
| Drag Parameters                   | Peak Drag                    | 15.9 (bar) |
|                                   | Dynamic Drag                 | 15.8 (bar) |
|                                   |                              |            |
|                                   | TARGET                       | ACTUAL     |
| Energy (kJ)                       | -                            | -          |
| Voltage (V)                       |                              | -          |
| Dwell Time (s)                    | 4.0                          | 1.0        |
| Heater Temp (°C)                  | 233.0                        | 231.9      |
| Bead Pressure (bar)               | [15.9]+33.0                  | 48.7       |
| Bead Distance (µm)                | 500.0                        | 500.0      |
| Soak Pressure (bar)               | 0                            | 0          |
| Soak Time (s)                     | 35.0                         | 35.0       |
| Fusion Pressure (bar)             | [15.8]+33.0                  | 49.0       |
| Cool Time (s)                     | 290.0                        | 290.0      |
|                                   |                              |            |
| Final Bead OK                     | Yes                          |            |

# Joint Record

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|                        |                              |            |
|------------------------|------------------------------|------------|
| Status                 | COMPLETE                     |            |
| Account                | _SHELFMCA                    |            |
| Uploaded               | 26/10/2017                   | 16:40:03   |
| Uploader               | mholloway                    |            |
| Joint Identification   |                              |            |
| Joint                  | 8                            |            |
| Reference              | 11795917                     |            |
| Created                | 03/10/2017                   | 14:39:59   |
| Operator               | STUART HOUSE                 |            |
| Location & Environment |                              |            |
| Location               | BRYN PICA                    |            |
| Project Details        |                              |            |
| Machine                |                              |            |
| Model                  | Gator2                       |            |
| Serial Number          | GTR200797                    |            |
| Plant Number           | G250/70BB                    |            |
| Owner                  | MCA FUSION HIRE              |            |
| Software version       | 2.0                          |            |
| Operating Voltage      | 110V                         |            |
| Ambient Temp           | 19.3 °C                      |            |
| Pipe Selected          |                              |            |
|                        | PE80 225mm SDR 11.0 Black    |            |
|                        | <----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                              |            |
| Welding Parameters     |                              |            |
| Standard               | Fusion FW Landfill [05/1999] |            |
| Drag Parameters        | Peak Drag                    | 22.3 (bar) |
|                        | Dynamic Drag                 | 22.3 (bar) |
|                        | TARGET                       | ACTUAL     |
| Energy (kJ)            | -                            | -          |
| Voltage (V)            |                              |            |
| Dwell Time (s)         | 4.0                          | 1.0        |
| Heater Temp (°C)       | 233.0                        | 231.5      |
| Bead Pressure (bar)    | [22.3]+33.0                  | 55.1       |
| Bead Distance (µm)     | 500.0                        | 500.0      |
| Soak Pressure (bar)    | 0                            | 0          |
| Soak Time (s)          | 35.0                         | 35.0       |
| Fusion Pressure (bar)  | [22.3]+33.0                  | 55.5       |
| Cool Time (s)          | 290.0                        | 290.0      |
| Final Bead OK          |                              |            |
|                        | Yes                          |            |

# Joint Record

https://www.jointmanager.com

|                        |                              |                |        |
|------------------------|------------------------------|----------------|--------|
| Status                 | COMPLETE                     |                |        |
| Account                | _SHELFMCA                    |                |        |
| Uploaded               | 26/10/2017                   | 16:40:03       |        |
| Uploader               | mholloway                    |                |        |
| Joint Identification   |                              |                |        |
| Joint                  | 9                            |                |        |
| Reference              | 11795916                     |                |        |
| Created                | 03/10/2017                   | 14:56:11       |        |
| Operator               | STUART HOUSE                 |                |        |
| Location & Environment |                              |                |        |
| Location               | BRYN PICA                    |                |        |
| Project Details        |                              |                |        |
| Machine                |                              |                |        |
| Model                  | Gator2                       |                |        |
| Serial Number          | GTR200797                    |                |        |
| Plant Number           | G250/70BB                    |                |        |
| Owner                  | MCA FUSION HIRE              |                |        |
| Software version       | 2.0                          |                |        |
| Operating Voltage      | 110V                         |                |        |
| Ambient Temp           | 21.5 °C                      |                |        |
| Pipe Selected          |                              |                |        |
|                        | PE80                         | 225mm SDR 11.0 | Black  |
|                        | <---->                       | 225mm SDR 11.0 | <----> |
| Pipe/Fitting Details   |                              |                |        |
| Welding Parameters     |                              |                |        |
| Standard               | Fusion FW Landfill [05/1999] |                |        |
| Drag Parameters        | Peak Drag                    | 16.9           | (bar)  |
|                        | Dynamic Drag                 | 16.9           | (bar)  |
|                        | TARGET                       | ACTUAL         |        |
| Energy (kJ)            | -                            |                |        |
| Voltage (V)            | -                            |                |        |
| Dwell Time (s)         | 4.0                          | 2.0            |        |
| Heater Temp (°C)       | 233.0                        | 231.3          |        |
| Bead Pressure (bar)    | [16.9]+33.0                  | 49.6           |        |
| Bead Distance (µm)     | 500.0                        | 500.0          |        |
| Soak Pressure (bar)    | 0                            | 0              |        |
| Soak Time (s)          | 35.0                         | 35.0           |        |
| Fusion Pressure (bar)  | [16.9]+33.0                  | 50.0           |        |
| Cool Time (s)          | 290.0                        | 290.0          |        |
| Final Bead OK          |                              |                |        |
|                        | Yes                          |                |        |

# Joint Record

https://www.jointmanager.com

|                        |                              |            |  |
|------------------------|------------------------------|------------|--|
| Status                 | COMPLETE                     |            |  |
| Account                | _SHELFMCA                    |            |  |
| Uploaded               | 26/10/2017                   | 16:40:03   |  |
| Uploader               | mholloway                    |            |  |
| Joint Identification   |                              |            |  |
| Joint                  | 10                           |            |  |
| Reference              | 11795915                     |            |  |
| Created                | 03/10/2017                   | 15:20:01   |  |
| Operator               | STUART HOUSE                 |            |  |
| Location & Environment |                              |            |  |
| Location               | BRYN PICA                    |            |  |
| Project Details        |                              |            |  |
| Machine                |                              |            |  |
| Model                  | Gator2                       |            |  |
| Serial Number          | GTR200797                    |            |  |
| Plant Number           | G250/70BB                    |            |  |
| Owner                  | MCA FUSION HIRE              |            |  |
| Software version       | 2.0                          |            |  |
| Operating Voltage      | 110V                         |            |  |
| Ambient Temp           | 20.2 °C                      |            |  |
| Pipe Selected          |                              |            |  |
|                        | PE80 225mm SDR 11.0 Black    |            |  |
|                        | <----> 225mm SDR 11.0 <----> |            |  |
| Pipe/Fitting Details   |                              |            |  |
| Welding Parameters     |                              |            |  |
| Standard               | Fusion FW Landfill [05/1999] |            |  |
| Drag Parameters        | Peak Drag                    | 26.8 (bar) |  |
|                        | Dynamic Drag                 | 26.8 (bar) |  |
|                        | TARGET                       | ACTUAL     |  |
| Energy (kJ)            | -                            |            |  |
| Voltage (V)            |                              | -          |  |
| Dwell Time (s)         | 4.0                          | 1.0        |  |
| Heater Temp (°C)       | 233.0                        | 232.5      |  |
| Bead Pressure (bar)    | [26.8]+33.0                  | 59.5       |  |
| Bead Distance (µm)     | 500.0                        | 500.0      |  |
| Soak Pressure (bar)    | 0                            | 0          |  |
| Soak Time (s)          | 35.0                         | 35.0       |  |
| Fusion Pressure (bar)  | [26.8]+33.0                  | 60.1       |  |
| Cool Time (s)          | 290.0                        | 290.0      |  |
| Final Bead OK          | Yes                          |            |  |

# Joint Record

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|                                   |                              |            |
|-----------------------------------|------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>              |            |
| Account                           | _SHELFMCA                    |            |
| Uploaded                          | 26/10/2017                   | 16:40:03   |
| Uploader                          | mholloway                    |            |
| <b>Joint Identification</b>       |                              |            |
| Joint                             | 11                           |            |
| Reference                         | 11795914                     |            |
| Created                           | 03/10/2017                   | 15:40:13   |
| Operator                          | STUART HOUSE                 |            |
| <b>Location &amp; Environment</b> |                              |            |
| Location                          | BRYN PICA                    |            |
| <b>Project Details</b>            |                              |            |
| <b>Machine</b>                    |                              |            |
| Model                             | Gator2                       |            |
| Serial Number                     | GTR200797                    |            |
| Plant Number                      | G250/70BB                    |            |
| Owner                             | MCA FUSION HIRE              |            |
| Software version                  | 2.0                          |            |
| Operating Voltage                 | 110V                         |            |
| Ambient Temp                      | 21.7 °C                      |            |
| <b>Pipe Selected</b>              |                              |            |
|                                   | PE80 225mm SDR 11.0 Black    |            |
|                                   | <----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                              |            |
| <b>Welding Parameters</b>         |                              |            |
| Standard                          | Fusion FW Landfill [05/1999] |            |
| Drag Parameters                   | Peak Drag                    | 26.3 (bar) |
|                                   | Dynamic Drag                 | 26.3 (bar) |
|                                   | TARGET                       | ACTUAL     |
| Energy (kJ)                       | -                            | -          |
| Voltage (V)                       | -                            | -          |
| Dwell Time (s)                    | 4.0                          | 2.0        |
| Heater Temp (°C)                  | 233.0                        | 231.7      |
| Bead Pressure (bar)               | [26.3]+33.0                  | 59.1       |
| Bead Distance (µm)                | 500.0                        | 500.0      |
| Soak Pressure (bar)               | 0                            | 0          |
| Soak Time (s)                     | 35.0                         | 35.0       |
| Fusion Pressure (bar)             | [26.3]+33.0                  | 59.5       |
| Cool Time (s)                     | 290.0                        | 290.0      |
| Final Bead OK                     | Yes                          |            |

# Joint Record

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|                        |                              |            |
|------------------------|------------------------------|------------|
| Status                 | COMPLETE                     |            |
| Account                | _SHELFMCA                    |            |
| Uploaded               | 26/10/2017                   | 16:40:03   |
| Uploader               | mholloway                    |            |
| Joint Identification   |                              |            |
| Joint                  | 12                           |            |
| Reference              | 11795913                     |            |
| Created                | 03/10/2017                   | 15:54:30   |
| Operator               | STUART HOUSE                 |            |
| Location & Environment |                              |            |
| Location               | BRYN PICA                    |            |
| Project Details        |                              |            |
| Machine                |                              |            |
| Model                  | Gator2                       |            |
| Serial Number          | GTR200797                    |            |
| Plant Number           | G250/70BB                    |            |
| Owner                  | MCA FUSION HIRE              |            |
| Software version       | 2.0                          |            |
| Operating Voltage      | 110V                         |            |
| Ambient Temp           | 22.6 °C                      |            |
| Pipe Selected          |                              |            |
|                        | PE80 225mm SDR 11.0 Black    |            |
|                        | <----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                              |            |
| Welding Parameters     |                              |            |
| Standard               | Fusion FW Landfill [05/1999] |            |
| Drag Parameters        | Peak Drag                    | 25.8 (bar) |
|                        | Dynamic Drag                 | 25.8 (bar) |
|                        |                              |            |
|                        | TARGET                       | ACTUAL     |
| Energy (kJ)            | -                            | -          |
| Voltage (V)            |                              |            |
| Dwell Time (s)         | 4.0                          | 2.0        |
| Heater Temp (°C)       | 233.0                        | 231.7      |
| Bead Pressure (bar)    | [25.8]+33.0                  | 58.6       |
| Bead Distance (µm)     | 500.0                        | 500.0      |
| Soak Pressure (bar)    | 0                            | 0          |
| Soak Time (s)          | 35.0                         | 35.0       |
| Fusion Pressure (bar)  | [25.8]+33.0                  | 58.9       |
| Cool Time (s)          | 290.0                        | 290.0      |
| Final Bead OK          | Yes                          |            |

# Joint Record

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|                        |                              |                |        |
|------------------------|------------------------------|----------------|--------|
| Status                 | COMPLETE                     |                |        |
| Account                | _SHELFMCA                    |                |        |
| Uploaded               | 26/10/2017                   | 16:40:03       |        |
| Uploader               | mholloway                    |                |        |
| Joint Identification   |                              |                |        |
| Joint                  | 13                           |                |        |
| Reference              | 11795912                     |                |        |
| Created                | 03/10/2017                   | 16:10:51       |        |
| Operator               | STUART HOUSE                 |                |        |
| Location & Environment |                              |                |        |
| Location               | BRYN PICA                    |                |        |
| Project Details        |                              |                |        |
| Machine                |                              |                |        |
| Model                  | Gator2                       |                |        |
| Serial Number          | GTR200797                    |                |        |
| Plant Number           | G250/70BB                    |                |        |
| Owner                  | MCA FUSION HIRE              |                |        |
| Software version       | 2.0                          |                |        |
| Operating Voltage      | 110V                         |                |        |
| Ambient Temp           | 22.5 °C                      |                |        |
| Pipe Selected          |                              |                |        |
|                        | PE80                         | 225mm SDR 11.0 | Black  |
|                        | <---->                       | 225mm SDR 11.0 | <----> |
| Pipe/Fitting Details   |                              |                |        |
| Welding Parameters     |                              |                |        |
| Standard               | Fusion FW Landfill [05/1999] |                |        |
| Drag Parameters        | Peak Drag                    | 29.9           | (bar)  |
|                        | Dynamic Drag                 | 29.9           | (bar)  |
|                        | TARGET                       | ACTUAL         |        |
| Energy (kJ)            | -                            |                |        |
| Voltage (V)            |                              | -              |        |
| Dwell Time (s)         | 4.0                          | 2.0            |        |
| Heater Temp (°C)       | 233.0                        | 231.5          |        |
| Bead Pressure (bar)    | [29.9]+33.0                  | 62.7           |        |
| Bead Distance (µm)     | 500.0                        | 500.0          |        |
| Soak Pressure (bar)    | 0                            | 0              |        |
| Soak Time (s)          | 35.0                         | 35.0           |        |
| Fusion Pressure (bar)  | [29.9]+33.0                  | 63.1           |        |
| Cool Time (s)          | 290.0                        | 290.0          |        |
| Final Bead OK          |                              |                |        |
|                        | Yes                          |                |        |

# Joint Record

https://www.jointmanager.com

Status

Account

Uploaded

Uploader

COMPLETE

\_SHELFMCA

26/10/2017 16:40:03

mholloway

Joint Identification

Joint

Reference

Created

Operator

14

11795911

03/10/2017 16:25:20

STUART HOUSE

Location & Environment

Location

BRYN PICA

Project Details

Machine

Model

Serial Number

Plant Number

Owner

Software version

Operating Voltage

Ambient Temp

Gator2

GTR200797

G250/70BB

MCA FUSION HIRE

2.0

110V

22.1 °C

Pipe Selected

PE80 225mm SDR 11.0 Black

<----> 225mm SDR 11.0 <---->

Pipe/Fitting Details

Welding Parameters

Standard

Drag Parameters

Fusion FW Landfill [05/1999]

Peak Drag 13.0 (bar)

Dynamic Drag 13.0 (bar)

TARGET

ACTUAL

Energy (kJ)

Voltage (V)

Dwell Time (s)

Heater Temp (°C)

Bead Pressure (bar)

Bead Distance (µm)

Soak Pressure (bar)

Soak Time (s)

Fusion Pressure (bar)

Cool Time (s)

-

-

4.0

233.0

[13]+33.0

500.0

0

35.0

[13]+33.0

290.0

2.0

231.5

45.7

500.0

0

35.0

45.9

290.0

Final Bead OK

Yes

# Joint Record

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|                        |                              |            |
|------------------------|------------------------------|------------|
| Status                 | COMPLETE                     |            |
| Account                | _SHELFMCA                    |            |
| Uploaded               | 26/10/2017                   | 16:40:03   |
| Uploader               | mholloway                    |            |
| Joint Identification   |                              |            |
| Joint                  | 15                           |            |
| Reference              | 11795910                     |            |
| Created                | 04/10/2017                   | 09:20:59   |
| Operator               | STUART HOUSE                 |            |
| Location & Environment |                              |            |
| Location               | BRYN PICA                    |            |
| Project Details        |                              |            |
| Machine                |                              |            |
| Model                  | Gator2                       |            |
| Serial Number          | GTR200797                    |            |
| Plant Number           | G250/70BB                    |            |
| Owner                  | MCA FUSION HIRE              |            |
| Software version       | 2.0                          |            |
| Operating Voltage      | 110V                         |            |
| Ambient Temp           | 11.9 °C                      |            |
| Pipe Selected          |                              |            |
|                        | PE80 225mm SDR 11.0 Black    |            |
|                        | <----> 225mm SDR 11.0 <----> |            |
| Pipe/Fitting Details   |                              |            |
| Welding Parameters     |                              |            |
| Standard               | Fusion FW Landfill [05/1999] |            |
| Drag Parameters        | Peak Drag                    | 36.2 (bar) |
|                        | Dynamic Drag                 | 36.2 (bar) |
|                        |                              |            |
|                        | TARGET                       | ACTUAL     |
| Energy (kJ)            | -                            | -          |
| Voltage (V)            |                              |            |
| Dwell Time (s)         | 4.0                          | 1.0        |
| Heater Temp (°C)       | 233.0                        | 232.0      |
| Bead Pressure (bar)    | [36.2]+33.0                  | 68.3       |
| Bead Distance (µm)     | 500.0                        | 500.0      |
| Soak Pressure (bar)    | 0                            | 0          |
| Soak Time (s)          | 35.0                         | 35.0       |
| Fusion Pressure (bar)  | [36.2]+33.0                  | 69.5       |
| Cool Time (s)          | 290.0                        | 290.0      |
| Final Bead OK          |                              |            |
|                        | Yes                          |            |

# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 16                                                        |            |
| Reference                         | 11795909                                                  |            |
| Created                           | 04/10/2017                                                | 09:38:25   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 14.4 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 27.4 (bar) |
|                                   | Dynamic Drag                                              | 27.3 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 2.0        |
| Heater Temp (°C)                  | 233.0                                                     | 232.0      |
| Bead Pressure (bar)               | [27.4]+33.0                                               | 60.2       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [27.3]+33.0                                               | 60.5       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 17                                                        |            |
| Reference                         | 11795908                                                  |            |
| Created                           | 04/10/2017                                                | 09:55:50   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 18.2 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 18.2 (bar) |
|                                   | Dynamic Drag                                              | 18.2 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.6      |
| Bead Pressure (bar)               | [18.2]+33.0                                               | 50.8       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [18.2]+33.0                                               | 51.3       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 18                                                        |            |
| Reference                         | 11795907                                                  |            |
| Created                           | 04/10/2017                                                | 10:11:14   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 19.8 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 29.1 (bar) |
|                                   | Dynamic Drag                                              | 29.1 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.5      |
| Bead Pressure (bar)               | [29.1]+33.0                                               | 61.8       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [29.1]+33.0                                               | 62.1       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

https://www.jointmanager.com

|                                   |  |                                |                       |
|-----------------------------------|--|--------------------------------|-----------------------|
| <b>Status</b>                     |  | <b>E32: Abort During DWELL</b> |                       |
| Account                           |  | _SHELFMCA                      |                       |
| Uploaded                          |  | 26/10/2017                     | 16:40:03              |
| Uploader                          |  | mholloway                      |                       |
| <b>Joint Identification</b>       |  |                                |                       |
| Joint                             |  | 19                             |                       |
| Reference                         |  | 11795906                       |                       |
| Created                           |  | 04/10/2017                     | 10:26:47              |
| Operator                          |  | STUART HOUSE                   |                       |
| <b>Location &amp; Environment</b> |  |                                |                       |
| Location                          |  | BRYN PICA                      |                       |
| <b>Project Details</b>            |  |                                |                       |
| <b>Machine</b>                    |  |                                |                       |
| Model                             |  | Gator2                         |                       |
| Serial Number                     |  | GTR200797                      |                       |
| Plant Number                      |  | G250/70BB                      |                       |
| Owner                             |  | MCA FUSION HIRE                |                       |
| Software version                  |  | 2.0                            |                       |
| Operating Voltage                 |  | 110V                           |                       |
| Ambient Temp                      |  | 19.7 °C                        |                       |
| <b>Pipe Selected</b>              |  |                                |                       |
|                                   |  | PE80                           | 225mm SDR 11.0 Black  |
|                                   |  | <---->                         | 225mm SDR 11.0 <----> |
| <b>Pipe/Fitting Details</b>       |  |                                |                       |
| <b>Welding Parameters</b>         |  |                                |                       |
| Standard                          |  | Fusion FW Landfill [05/1999]   |                       |
| Drag Parameters                   |  | Peak Drag                      | 11.2 (bar)            |
|                                   |  | Dynamic Drag                   | 11.2 (bar)            |
|                                   |  | TARGET                         | ACTUAL                |
| Energy (kJ)                       |  | -                              | -                     |
| Voltage (V)                       |  | -                              | -                     |
| Dwell Time (s)                    |  | 4.0                            | 0.0                   |
| Heater Temp (°C)                  |  | 233.0                          | 231.6                 |
| Bead Pressure (bar)               |  | [11.2]+33.0                    | 44.1                  |
| Bead Distance (µm)                |  | 500.0                          | 500.0                 |
| Soak Pressure (bar)               |  | 0                              | 0                     |
| Soak Time (s)                     |  | 35.0                           | 35.0                  |
| Fusion Pressure (bar)             |  | [11.2]+33.0                    | 0.0                   |
| Cool Time (s)                     |  | 290.0                          | 0.0                   |
| Final Bead OK                     |  | No                             |                       |
| <b>Advisories</b>                 |  |                                |                       |
| Incomplete Weld                   |  |                                |                       |

# Joint Record

https://www.jointmanager.com

|                                   |  |                              |                       |
|-----------------------------------|--|------------------------------|-----------------------|
| <b>Status</b>                     |  | <b>COMPLETE</b>              |                       |
| Account                           |  | _SHELFMCA                    |                       |
| Uploaded                          |  | 26/10/2017                   | 16:40:03              |
| Uploader                          |  | mholloway                    |                       |
| <b>Joint Identification</b>       |  |                              |                       |
| Joint                             |  | 20                           |                       |
| Reference                         |  | 11795905                     |                       |
| Created                           |  | 04/10/2017                   | 10:32:20              |
| Operator                          |  | STUART HOUSE                 |                       |
| <b>Location &amp; Environment</b> |  |                              |                       |
| Location                          |  | BRYN PICA                    |                       |
| <b>Project Details</b>            |  |                              |                       |
| <b>Machine</b>                    |  |                              |                       |
| Model                             |  | Gator2                       |                       |
| Serial Number                     |  | GTR200797                    |                       |
| Plant Number                      |  | G250/70BB                    |                       |
| Owner                             |  | MCA FUSION HIRE              |                       |
| Software version                  |  | 2.0                          |                       |
| Operating Voltage                 |  | 110V                         |                       |
| Ambient Temp                      |  | 20.3 °C                      |                       |
| <b>Pipe Selected</b>              |  |                              |                       |
|                                   |  | PE80                         | 225mm SDR 11.0 Black  |
|                                   |  | <---->                       | 225mm SDR 11.0 <----> |
| <b>Pipe/Fitting Details</b>       |  |                              |                       |
| <b>Welding Parameters</b>         |  |                              |                       |
| Standard                          |  | Fusion FW Landfill [05/1999] |                       |
| Drag Parameters                   |  | Peak Drag                    | 11.1 (bar)            |
|                                   |  | Dynamic Drag                 | 11.1 (bar)            |
|                                   |  | TARGET                       | ACTUAL                |
| Energy (kJ)                       |  | -                            |                       |
| Voltage (V)                       |  | -                            |                       |
| Dwell Time (s)                    |  | 4.0                          | 2.0                   |
| Heater Temp (°C)                  |  | 233.0                        | 231.6                 |
| Bead Pressure (bar)               |  | [11.1]+33.0                  | 44.0                  |
| Bead Distance (µm)                |  | 500.0                        | 500.0                 |
| Soak Pressure (bar)               |  | 0                            | 0                     |
| Soak Time (s)                     |  | 35.0                         | 35.0                  |
| Fusion Pressure (bar)             |  | [11.1]+33.0                  | 44.0                  |
| Cool Time (s)                     |  | 290.0                        | 290.0                 |
| <b>Final Bead OK</b>              |  |                              |                       |
|                                   |  | Yes                          |                       |

# Joint Record

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|                                   |  |                              |            |
|-----------------------------------|--|------------------------------|------------|
| <b>Status</b>                     |  | <b>COMPLETE</b>              |            |
| Account                           |  | _SHELFMCA                    |            |
| Uploaded                          |  | 26/10/2017                   | 16:40:03   |
| Uploader                          |  | mholloway                    |            |
| <b>Joint Identification</b>       |  |                              |            |
| Joint                             |  | 21                           |            |
| Reference                         |  | 11795904                     |            |
| Created                           |  | 04/10/2017                   | 10:55:02   |
| Operator                          |  | STUART HOUSE                 |            |
| <b>Location &amp; Environment</b> |  |                              |            |
| Location                          |  | BRYN PICA                    |            |
| <b>Project Details</b>            |  |                              |            |
| <b>Machine</b>                    |  |                              |            |
| Model                             |  | Gator2                       |            |
| Serial Number                     |  | GTR200797                    |            |
| Plant Number                      |  | G250/70BB                    |            |
| Owner                             |  | MCA FUSION HIRE              |            |
| Software version                  |  | 2.0                          |            |
| Operating Voltage                 |  | 110V                         |            |
| Ambient Temp                      |  | 20 °C                        |            |
| <b>Pipe Selected</b>              |  |                              |            |
|                                   |  | PE80 225mm SDR 11.0 Black    |            |
|                                   |  | <----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |  |                              |            |
| <b>Welding Parameters</b>         |  |                              |            |
| Standard                          |  | Fusion FW Landfill [05/1999] |            |
| Drag Parameters                   |  | Peak Drag                    | 21.6 (bar) |
|                                   |  | Dynamic Drag                 | 21.6 (bar) |
|                                   |  | TARGET                       | ACTUAL     |
| Energy (kJ)                       |  | -                            |            |
| Voltage (V)                       |  | -                            |            |
| Dwell Time (s)                    |  | 4.0                          | 1.0        |
| Heater Temp (°C)                  |  | 233.0                        | 232.1      |
| Bead Pressure (bar)               |  | [21.6]+33.0                  | 54.3       |
| Bead Distance (µm)                |  | 500.0                        | 500.0      |
| Soak Pressure (bar)               |  | 0                            | 0          |
| Soak Time (s)                     |  | 35.0                         | 35.0       |
| Fusion Pressure (bar)             |  | [21.6]+33.0                  | 54.6       |
| Cool Time (s)                     |  | 290.0                        | 290.0      |
| <b>Final Bead OK</b>              |  |                              |            |
|                                   |  | Yes                          |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 22                                                        |            |
| Reference                         | 11795903                                                  |            |
| Created                           | 04/10/2017                                                | 11:11:21   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 20.2 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 30.2 (bar) |
|                                   | Dynamic Drag                                              | 30.2 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 2.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.8      |
| Bead Pressure (bar)               | [30.2]+33.0                                               | 63.0       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [30.2]+33.0                                               | 63.2       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 23                                                        |            |
| Reference                         | 11795902                                                  |            |
| Created                           | 04/10/2017                                                | 11:28:09   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 20.5 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 29.3 (bar) |
|                                   | Dynamic Drag                                              | 29.3 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.3      |
| Bead Pressure (bar)               | [29.3]+33.0                                               | 62.0       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [29.3]+33.0                                               | 62.5       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 24                                                        |            |
| Reference                         | 11795901                                                  |            |
| Created                           | 04/10/2017                                                | 11:52:32   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 20.8 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 44.0 (bar) |
|                                   | Dynamic Drag                                              | 44.0 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 233.8      |
| Bead Pressure (bar)               | [44]+33.0                                                 | 76.9       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [44]+33.0                                                 | 77.1       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 25                                                        |            |
| Reference                         | 11795900                                                  |            |
| Created                           | 04/10/2017                                                | 12:22:28   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 21.1 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 35.3 (bar) |
|                                   | Dynamic Drag                                              | 35.3 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.9      |
| Bead Pressure (bar)               | [35.3]+33.0                                               | 68.0       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [35.3]+33.0                                               | 68.4       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 26                                                        |            |
| Reference                         | 11795899                                                  |            |
| Created                           | 04/10/2017                                                | 12:46:11   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 20.9 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 25.6 (bar) |
|                                   | Dynamic Drag                                              | 25.6 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 2.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.8      |
| Bead Pressure (bar)               | [25.6]+33.0                                               | 58.7       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [25.6]+33.0                                               | 58.8       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

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|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 27                                                        |            |
| Reference                         | 11795898                                                  |            |
| Created                           | 04/10/2017                                                | 13:01:43   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 21.7 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 29.3 (bar) |
|                                   | Dynamic Drag                                              | 29.3 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.4      |
| Bead Pressure (bar)               | [29.3]+33.0                                               | 62.2       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [29.3]+33.0                                               | 62.5       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 28                                                        |            |
| Reference                         | 11795897                                                  |            |
| Created                           | 04/10/2017                                                | 13:18:46   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 22 °C                                                     |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 11.0 (bar) |
|                                   | Dynamic Drag                                              | 11.0 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       | -                                                         | -          |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.4      |
| Bead Pressure (bar)               | [11]+33.0                                                 | 43.8       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [11]+33.0                                                 | 43.9       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 29                                                        |            |
| Reference                         | 11795896                                                  |            |
| Created                           | 04/10/2017                                                | 13:36:53   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 21.7 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 12.6 (bar) |
|                                   | Dynamic Drag                                              | 12.6 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       | -                                                         | -          |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.8      |
| Bead Pressure (bar)               | [12.6]+33.0                                               | 45.6       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [12.6]+33.0                                               | 45.5       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 30                                                        |            |
| Reference                         | 11795895                                                  |            |
| Created                           | 04/10/2017                                                | 13:52:38   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 21.4 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 14.1 (bar) |
|                                   | Dynamic Drag                                              | 14.1 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       | -                                                         | -          |
| Dwell Time (s)                    | 4.0                                                       | 2.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.4      |
| Bead Pressure (bar)               | [14.1]+33.0                                               | 47.2       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [14.1]+33.0                                               | 47.0       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |



# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 31                                                        |            |
| Reference                         | 11795894                                                  |            |
| Created                           | 04/10/2017                                                | 14:09:14   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 23.1 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 18.8 (bar) |
|                                   | Dynamic Drag                                              | 18.8 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.7      |
| Bead Pressure (bar)               | [18.8]+33.0                                               | 51.7       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [18.8]+33.0                                               | 51.9       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 32                                                        |            |
| Reference                         | 11795893                                                  |            |
| Created                           | 04/10/2017                                                | 14:24:44   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | BRYN PICA                                                 |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 23.3 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 225mm SDR 11.0 Black<br><----> 225mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 25.5 (bar) |
|                                   | Dynamic Drag                                              | 25.5 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 1.0        |
| Heater Temp (°C)                  | 233.0                                                     | 231.8      |
| Bead Pressure (bar)               | [25.5]+33.0                                               | 58.3       |
| Bead Distance (µm)                | 500.0                                                     | 500.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 35.0                                                      | 35.0       |
| Fusion Pressure (bar)             | [25.5]+33.0                                               | 58.6       |
| Cool Time (s)                     | 290.0                                                     | 290.0      |
| Final Bead OK                     | Yes                                                       |            |

# Joint Record

https://www.jointmanager.com

|                                   |                                                           |            |
|-----------------------------------|-----------------------------------------------------------|------------|
| <b>Status</b>                     | <b>COMPLETE</b>                                           |            |
| Account                           | _SHELFMCA                                                 |            |
| Uploaded                          | 26/10/2017                                                | 16:40:03   |
| Uploader                          | mholloway                                                 |            |
| <b>Joint Identification</b>       |                                                           |            |
| Joint                             | 33                                                        |            |
| Reference                         | 11795892                                                  |            |
| Created                           | 10/10/2017                                                | 09:59:32   |
| Operator                          | STUART HOUSE                                              |            |
| <b>Location &amp; Environment</b> |                                                           |            |
| Location                          | DEEPMOOR                                                  |            |
| <b>Project Details</b>            |                                                           |            |
| <b>Machine</b>                    |                                                           |            |
| Model                             | Gator2                                                    |            |
| Serial Number                     | GTR200797                                                 |            |
| Plant Number                      | G250/70BB                                                 |            |
| Owner                             | MCA FUSION HIRE                                           |            |
| Software version                  | 2.0                                                       |            |
| Operating Voltage                 | 110V                                                      |            |
| Ambient Temp                      | 13.4 °C                                                   |            |
| <b>Pipe Selected</b>              | PE80 160mm SDR 11.0 Black<br><----> 160mm SDR 11.0 <----> |            |
| <b>Pipe/Fitting Details</b>       |                                                           |            |
| <b>Welding Parameters</b>         |                                                           |            |
| Standard                          | Fusion FW Landfill [05/1999]                              |            |
| Drag Parameters                   | Peak Drag                                                 | 11.6 (bar) |
|                                   | Dynamic Drag                                              | 11.4 (bar) |
|                                   |                                                           |            |
|                                   | TARGET                                                    | ACTUAL     |
| Energy (kJ)                       | -                                                         | -          |
| Voltage (V)                       |                                                           |            |
| Dwell Time (s)                    | 4.0                                                       | 2.0        |
| Heater Temp (°C)                  | 233.0                                                     | 230.5      |
| Bead Pressure (bar)               | [11.6]+17.0                                               | 28.5       |
| Bead Distance (µm)                | 300.0                                                     | 300.0      |
| Soak Pressure (bar)               | 0                                                         | 0          |
| Soak Time (s)                     | 30.0                                                      | 30.0       |
| Fusion Pressure (bar)             | [11.4]+17.0                                               | 28.5       |
| Cool Time (s)                     | 230.0                                                     | 230.0      |
| Final Bead OK                     | Yes                                                       |            |

**Infinis Energy Services Ltd.**

Bryn Pica Landfill Site

Retro Drilling of Gas Wells

Construction Quality Assurance Report

4. Photographic Log

### PHOTO LOG

| Plate No. | Description                                                               |
|-----------|---------------------------------------------------------------------------|
| 1         | Drilling rig over proposed location for Well 1701                         |
| 2         | Pipework with securely taped-on push fit end cap for Well 1706            |
| 3         | Installation of HDPE Pipework at Well 1701                                |
| 4         | Gas Well 1705, post stone installation, pre bentonite slurry installation |
| 5         | Completed Gas Well 1706 with Temporary End Cap and 1.7m stick up          |

**Plate 1**



**Plate 2**





**Plate 3**



**Plate 4**



**Plate 5**



**Infinis Energy Services Ltd.**

Bryn Pica Landfill Site

Retro Drilling of Gas Wells

Construction Quality Assurance Report

5. Updated Well Location Plan







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