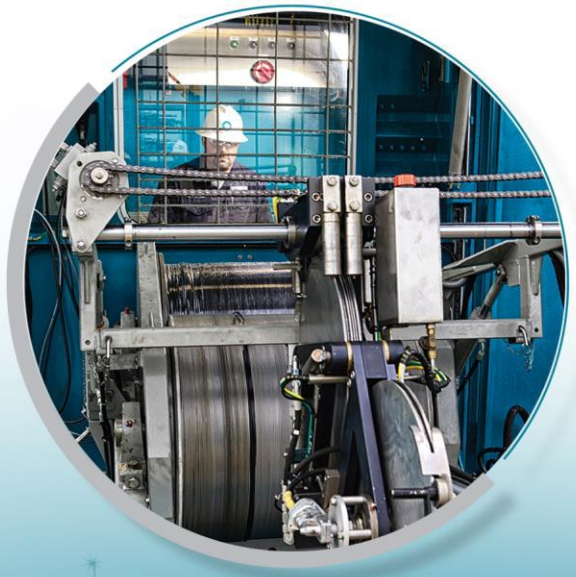
EXPRO

WELL FLOW MANAGEMENT™

Multifinger Caliper Analysis Report



Client:	**NAM**
Well No.:	**ROSSUM-WEERSELO-4**
Field:	**ROSSUM-WEERSELO**
Country:	**Netherlands**
Survey Date:	**6th November 2019**
Survey Type:	**Extended 24-Arm Caliper**
Job ID:	**DAC633**

www.exprogroup.com

Pass no.	Survey Interval (m)	Data Quality	Notes
1	1209 to surface	Good	

Rev	Description	Author	Checked by
0	Report		

© 2019 by Expro North Sea Ltd – ALL RIGHTS RESERVED

The copyright in this document, which contains information of a proprietary and confidential nature, is vested in Expro. The content of this document may not be used for purposes other than that for which it has been supplied and may not be reproduced, either wholly or in part, nor may it be used by, or its contents divulged to, any other person whosoever without written permission of Expro.

Expro **or its affiliates (including its parent company)** does not promise or guarantee the results of this report. All conditions, warranties or representations whether express or implied relating to the accuracy of the results obtained, interpretations made, conclusions drawn or any matters reported in connection with the report are hereby disclaimed.

The Expro Group Data Analysis Centre

Carnegie Building, Howe Moss Avenue, Dyce, Aberdeen, AB21 0GP

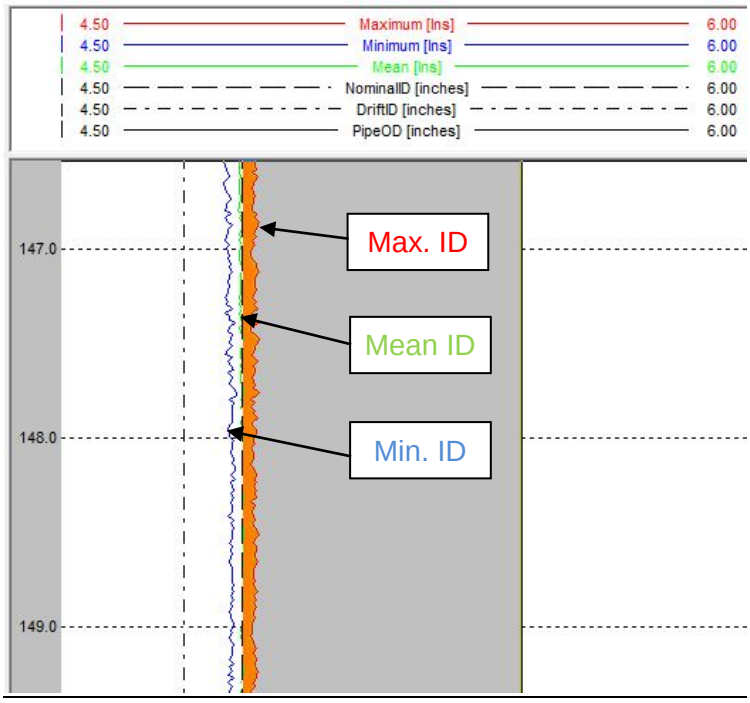
Tel:

Website: www.exprogroup.com

Definitions

Measured IDs

- Each caliper finger records a radius value at each depth sample. For the purposes of calculating metal loss, this value is multiplied by 2, creating an ID value which can be referenced against the nominal ID and OD of the tubular (all ID values quoted are 2* radius values unless otherwise indicated).
- When calculating restrictions within the tubular caused by features such as deposition or deformation, opposite arm radius values are combined to create an ID value.
- At each depth sample the Maximum ID, Minimum ID and Mean ID is recorded. These can then be plotted against the Drift ID and Nominal ID and OD.



Maximum Percentage Penetration

- The maximum percentage penetration is the maximum recorded radius x 2 value referenced against nominal ID and OD
- $Maximum\,percentage\,penetration = 100 * \frac{Max.ID - Nom.ID}{OD - Nom.ID}$

Maximum Percentage Circumferential Wall Loss

- The maximum percentage circumferential wall loss is the sum of the areal metal loss at each depth sample with reference to nominal ID and OD
- $(\frac{100}{N}) * \sum_{i=1}^{i=N}(Si^2 - Nom.ID^2) \div (OD^2 - Nom.ID^2)$
- N: is the number of caliper sensors on the tool, 24, 40, 60.
- Si: is the measured radius value x 2 for each arm.

Report Contents

1. Survey Objectives and Interpretation Summary

Survey Objectives

An extended 24-arm memory multifinger caliper was run on slickline to determine the general condition of the tubing within the ROSSUM-WEERSELO-4 well.

Data Analysis

This report highlights the main findings of the analysis. However, for a more detailed view of the tubing condition, the accompanying deliverables (which include the tool data and the MIPS client viewer) can be used to inspect the completion on a joint by joint basis.

Processing:

- Centralised
- Depth corrected – to well completion depths (MD in metres)
- Statistical analysis applied

Interpretation Summary

- The surveyed interval of 3-1/2″ tubing appears to be in moderate condition.
- The maximum recorded ID within the surveyed interval was 3.136″ (equivalent to a 37.0% penetration) at 1098.07 m.

Statistical Data Summary	2019	2018	2017	2016	2015	T.L. Max Difference
Maximum % Penetration	37.0 %	23.5 %	26.3 %	34.6 %	38.1 %	13.5 %
Maximum Penetration Depth	1098.07 m	1107.91 m	132.38 m	129.57 m	130.74 m	-
Average Maximum % Penetration	15.3 %	8.5 %	12.9 %	15.4 %	14.3 %	6.8 %
Maximum % Circumferential Wall Loss	13.2 %	7.4 %	-	-	-	-
Maximum % Circumferential Wall Loss Depth	582.74 m	149.67 m	-	-	-	-
Average Recorded Mean ID	2.957 inches	2.914 inches	2.937 inches	2.938 inches	2.943 inches	0.043 inches
Average Maximum % Circumferential Wall Loss	7.6 %	1.8 %	-	-	-	-

Note: All values from statistical analysis are based on the maximum, minimum and mean IDs per tubing or casing joint
Note: Caliper measurement tolerance is 0.03"

2. Data Interpretation

3-1/2″, 10.2 lb/ft Tubing Condition

- The surveyed interval of 3-1/2" tubing appears to be in moderate condition, with 18 of 138 joints logged found to contain maximum recorded percentage penetration values between 20 – 38% of the nominal tubing wall thickness, while the remaining 120 joints averaged 13.8% (see Figure 1, Section 3 & Max. Percentage Penetration per Joint vs. Depth Plot, Section 4).
- The maximum recorded ID within the surveyed interval was 3.136″ (equivalent to a 37.0% penetration) at 1098.07 m. This relates to an isolated pit recorded towards the low-side within the upper portion of a joint. The feature was recorded by a single caliper arm (suggesting a maximum potential width of 0.70″) and measured approximately 15 mm in length (see Figures 2 & 3, Section 3).
- The abovementioned maximum recorded ID appears to form part of a subtle track of low-side focussed metal loss, with many similar isolated pits recorded between approximately 1200 – 600 m in particular.
- The average maximum percentage circumferential wall loss within the surveyed 3-1/2″ tubing was 7.6%, with no single joint exceeding 13.3% (see Max. Percentage Circumferential Wall Loss per Joint vs. Depth Plot, Section 4).
- Despite the aforementioned pitting type metal loss present, the average mean recorded ID was 2.957″, which remains somewhat close to the manufacturer specified nominal ID of 2.922″ (see Measured ID per Joint vs. Depth Plot, Section 4).
- None of the recorded IDs within the surveyed 3-1/2″ tubing fall below the manufacturer specified drift ID of 2.797″ and there was no clear evidence of any significant deposition or restrictions.

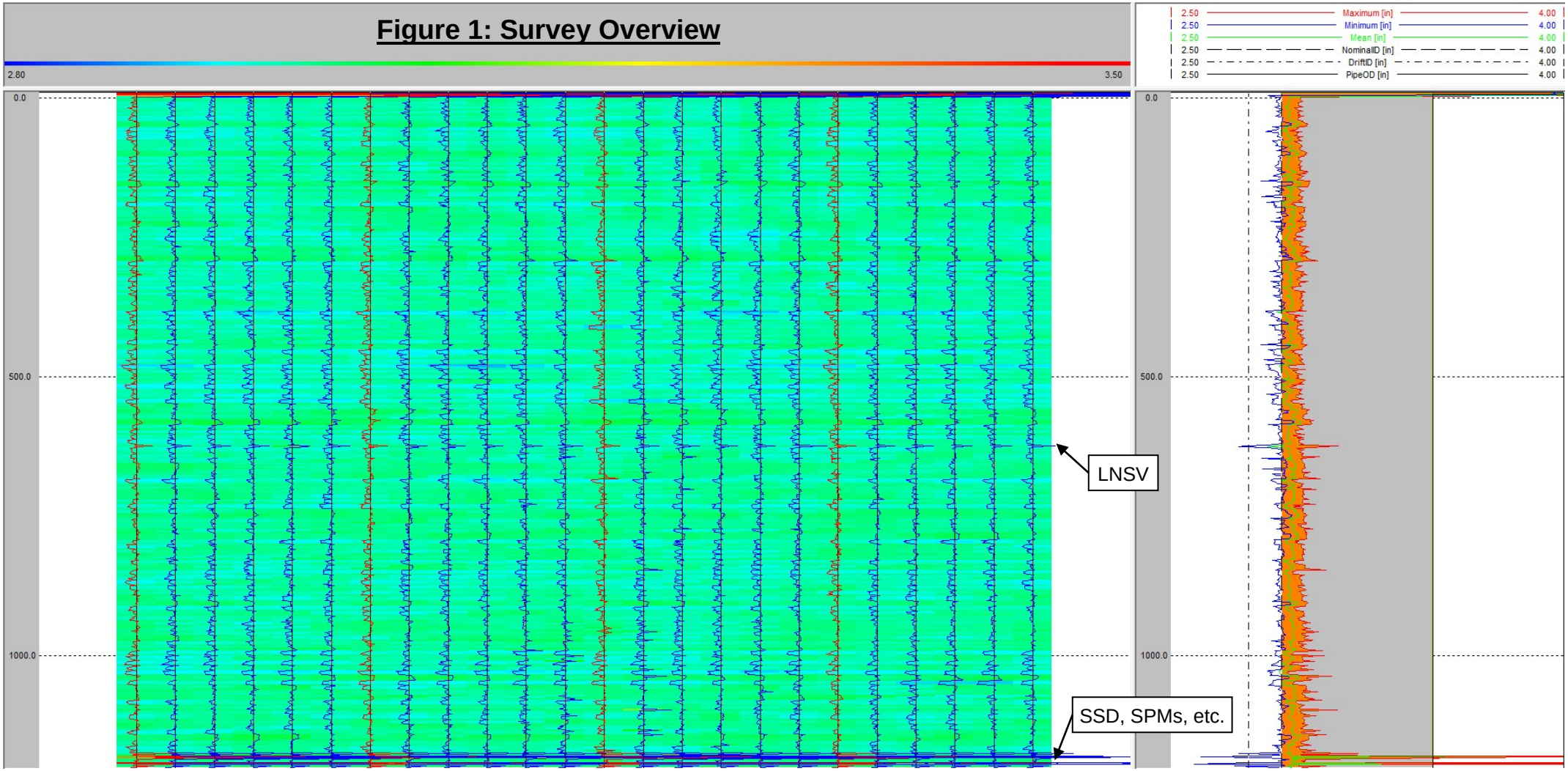
Time-lapse Analysis

- 24-arm caliper surveys have been performed 4 times previously within this well by Expro, on the 1st of September 2015, 8th of November 2016, 13th of June 2017 and the 5th of October 2018. Time-lapse analysis has been performed by comparing these previously recorded datasets with data from the current survey (see Time-lapse Plots, Section 4).
- It appears that there has been a slight increase in metal loss in certain areas throughout the 3-1/2" tubing since 2015. However, for the most part the differences in recorded IDs are within the tool measurement tolerance of 0.03".

3. Caliper Graphics

Client: NAM	Well No.: ROW-4	Field: ROSSUM-WEERSELO
Survey Date: 06/11/2019	Survey MFC-24 Extended	Job ID: DAC633

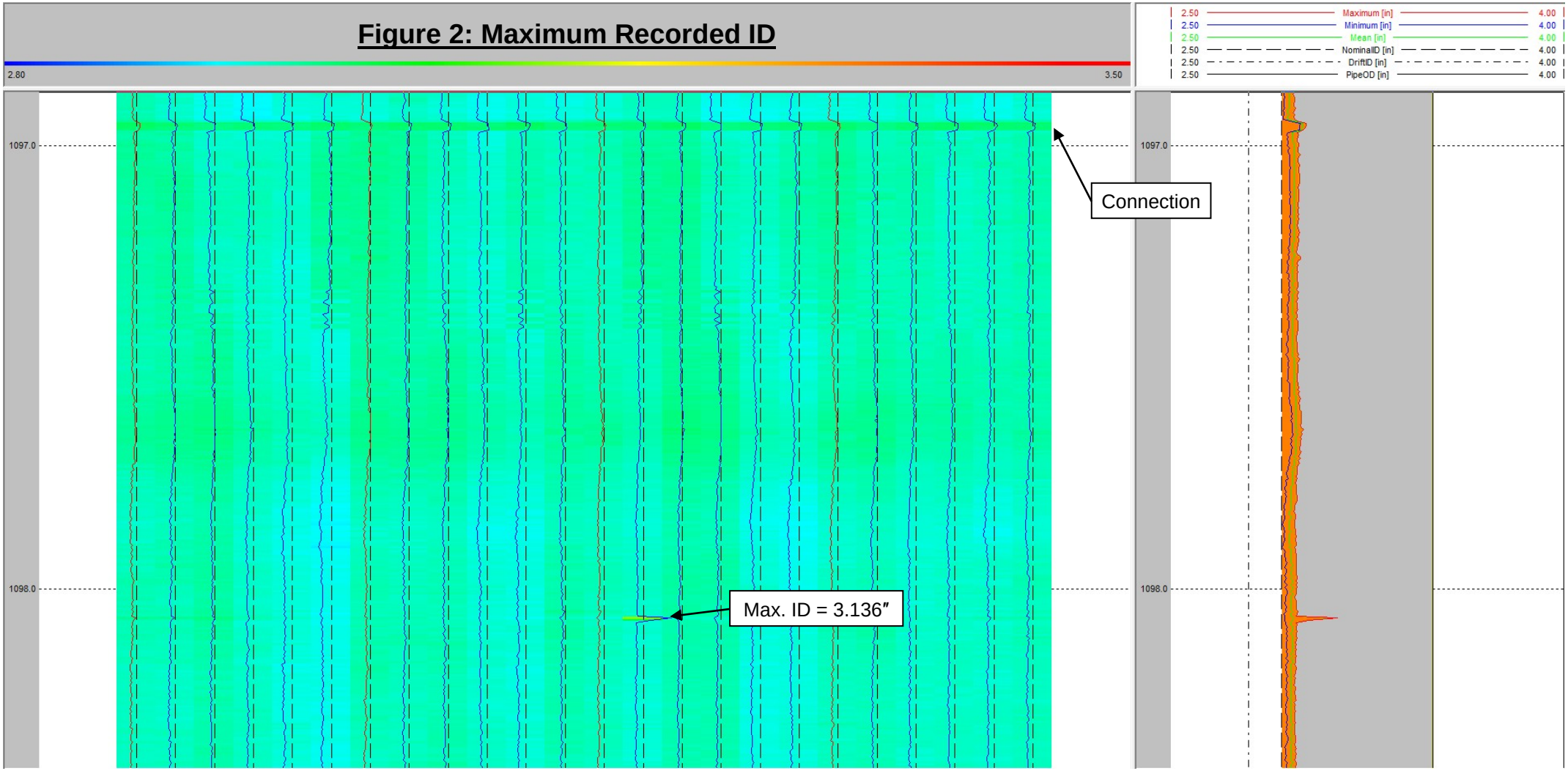
Figure 1: Survey Overview



Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

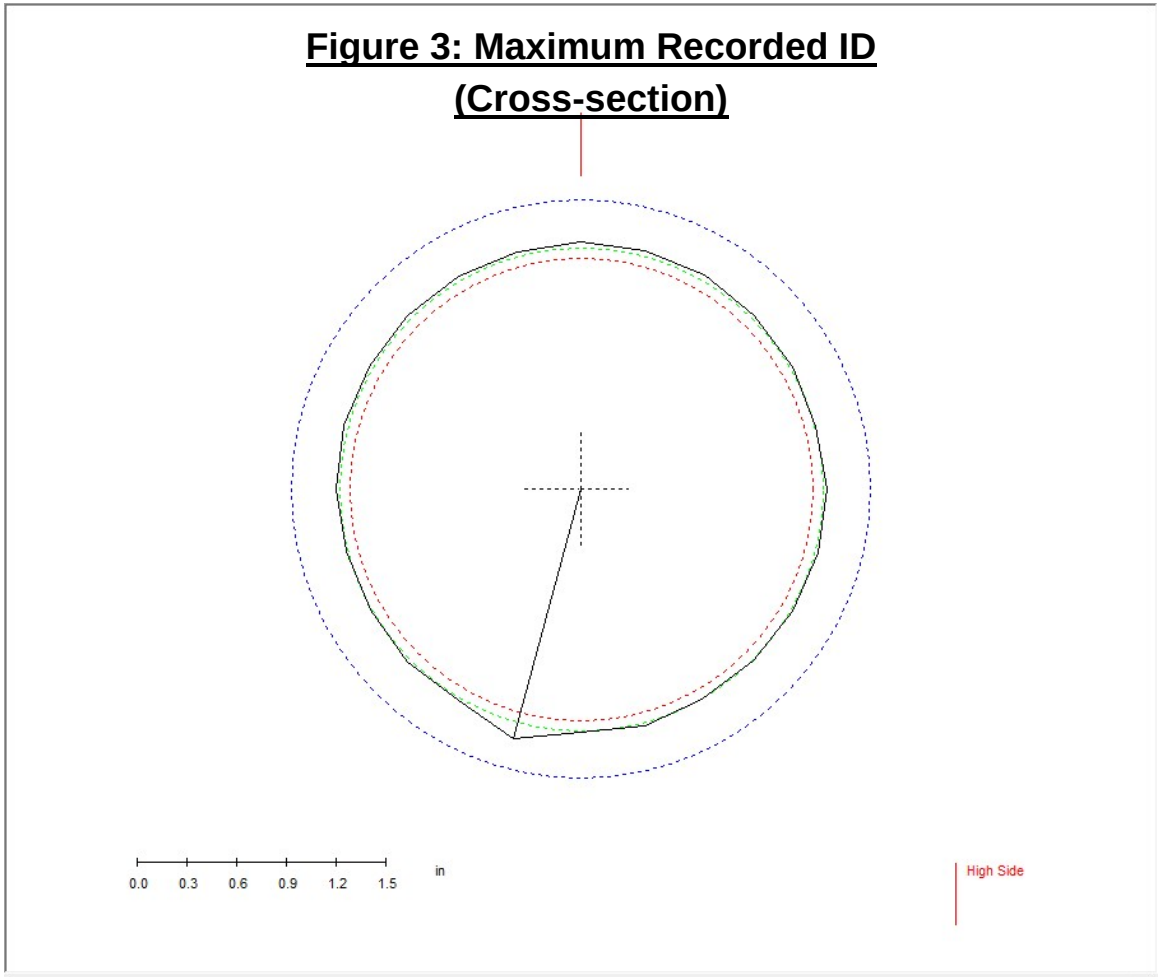
EXPRO

Figure 2: Maximum Recorded ID



EXPRO

Figure 3: Maximum Recorded ID (Cross-section)



Project: C:\DATASETS\DAC633_NAM_ROW04_MFC
Data: MFC\nam row-04 mit24 DAT\005_Orient_nam row-04 mit24 DAT_0.mip1
Layout: 3.5_10.2PPF_stats.mip3
Context: none

Swing: 0.20	Display centre ID: 2.992
SI: 5.000 mm	Reduction: Max 1
Depth: 1098.065 m	Arm Value: 3.136 in
Est. Penetration: 37.0 %	Arm Number: 14

Inner Diameter Statistics and Logs

Maximum: 3.136 in	Drift ID: 2.797 in
Minimum: 2.934 in	Nominal ID: 2.922 in
Mean: 2.969 in	Outer D: 3.500 in

4. Statistical Analysis

Max. Percentage Penetration per Joint vs. Depth Plot

Max. Percentage Circumferential Wall Loss per Joint vs. Depth Plot

Measured ID per Joint vs. Depth Plot

Time-lapse Percentage Penetration Histogram Plot

Time-lapse Max. Percentage Penetration per Joint vs. Depth Plot

Time-lapse Max. Percentage Circumferential Wall Loss per Joint vs. Depth Plot

Time-lapse Maximum ID per Joint vs. Depth Plot

Time-lapse Mean ID per Joint vs. Depth Plot

Time-lapse Minimum ID per Joint vs. Depth Plot

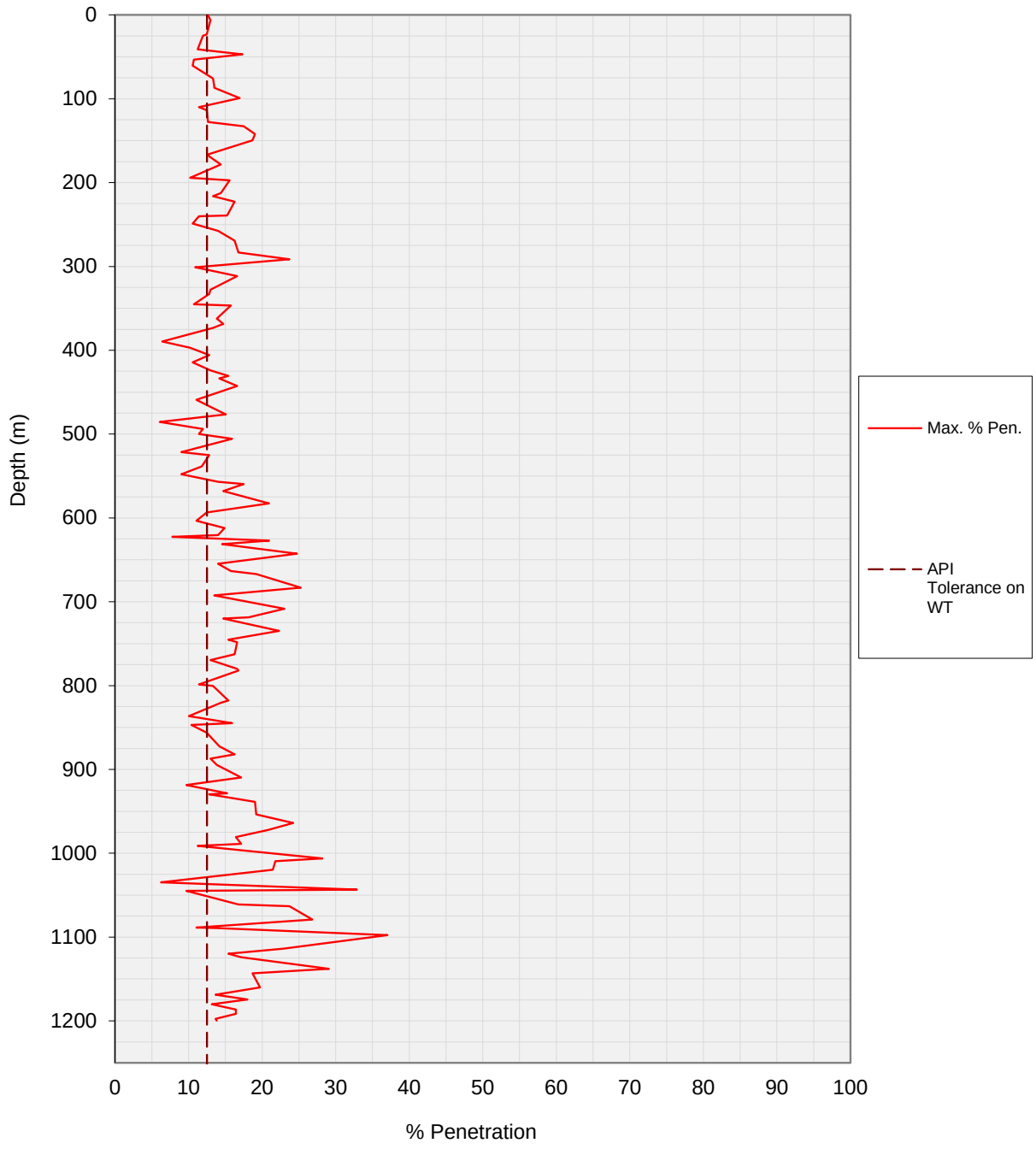
Tabulated Data

(Note: All values from statistical analysis are based on the maximum, mean & minimum recorded ID's from each tubing or casing joint)

Client: NAM	Well No.: ROW-4	Field: ROSSUM-WEERSELO
Survey Date: 06/11/2019	Survey MFC-24 Extended	Job ID: DAC633

EXPRO

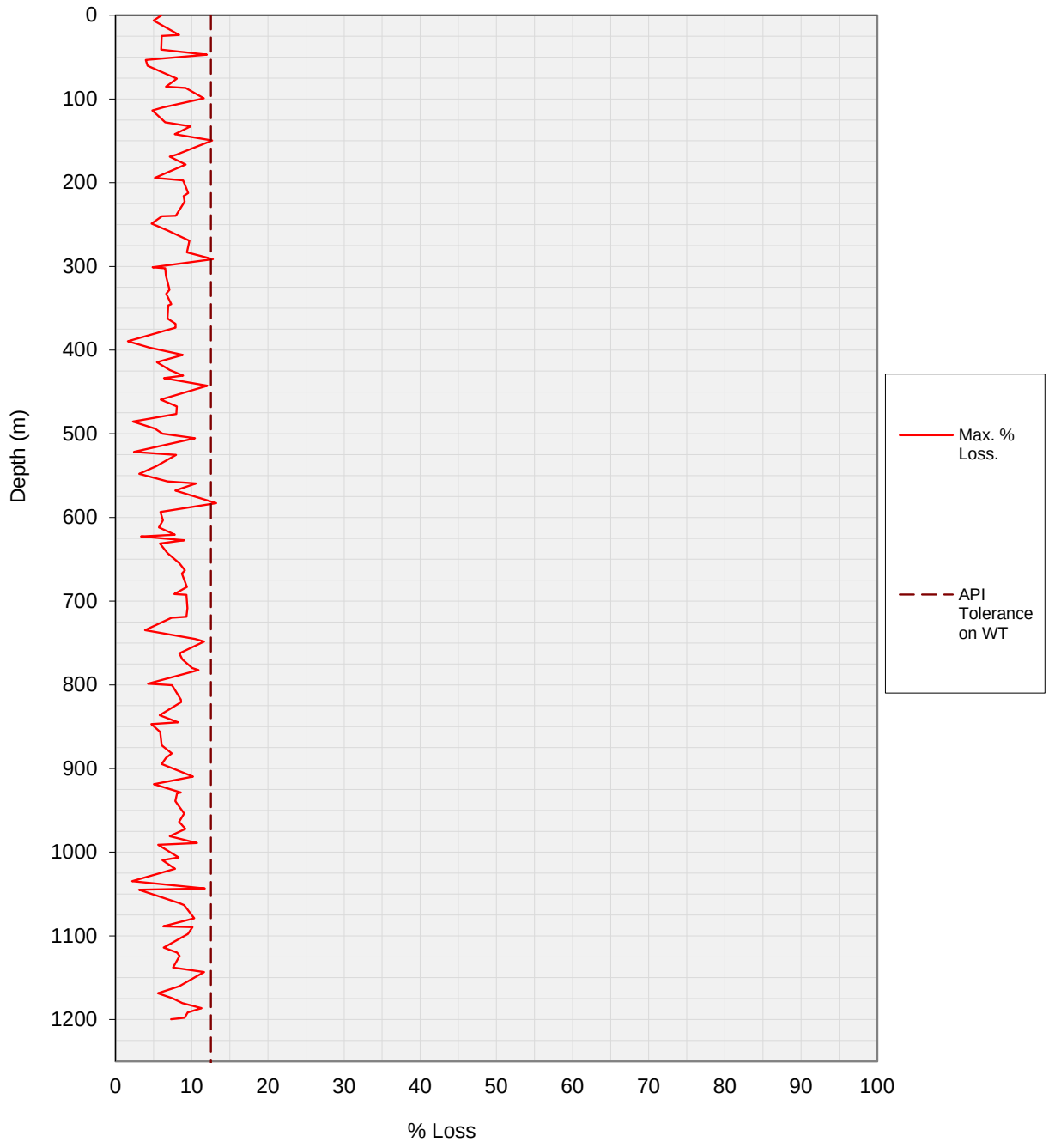
Max. Percentage Penetration per Joint vs. Depth Plot



Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

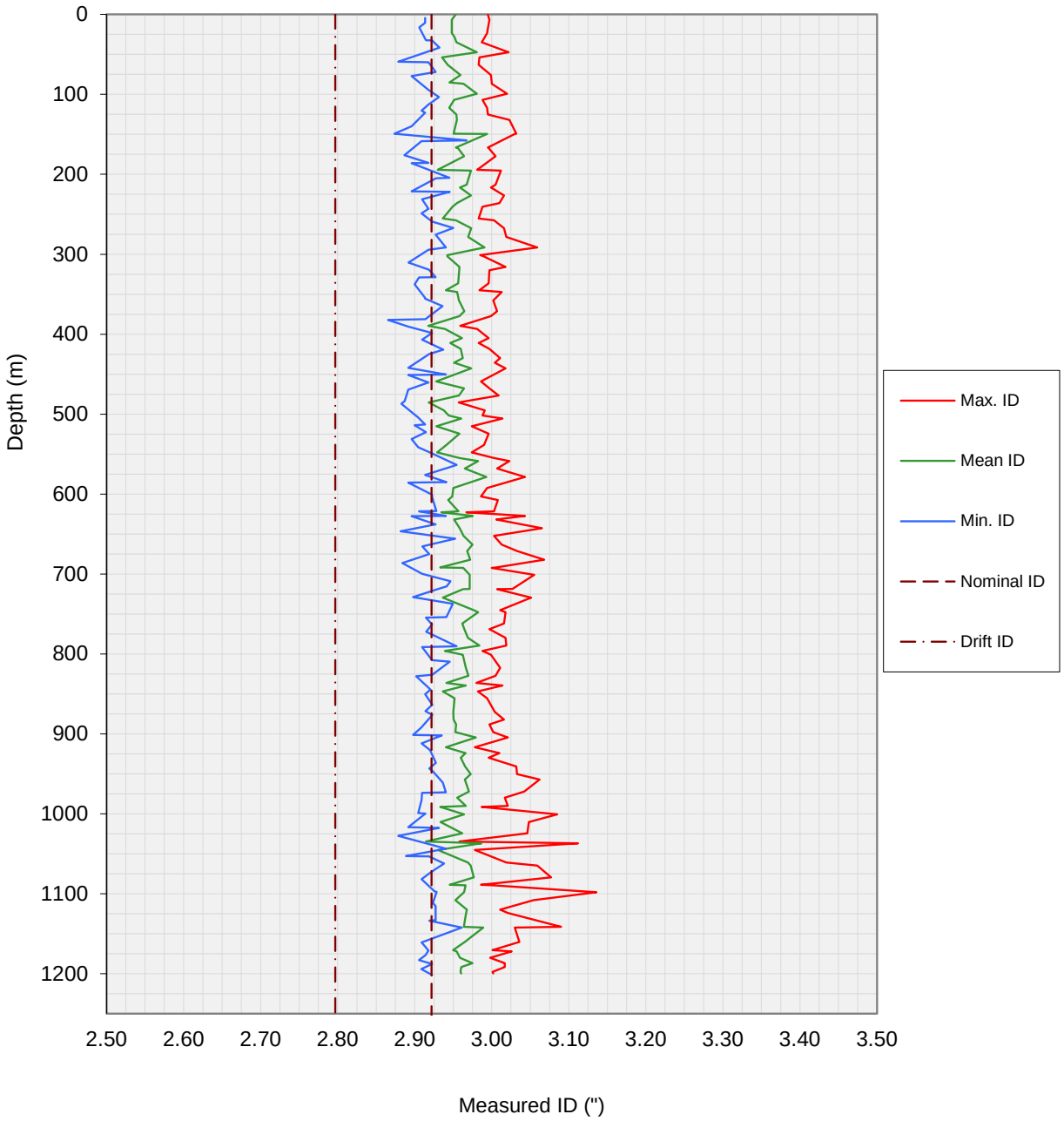
EXPRO

Max. Percentage Circumferntial Wall Loss per Joint vs. Depth Plot



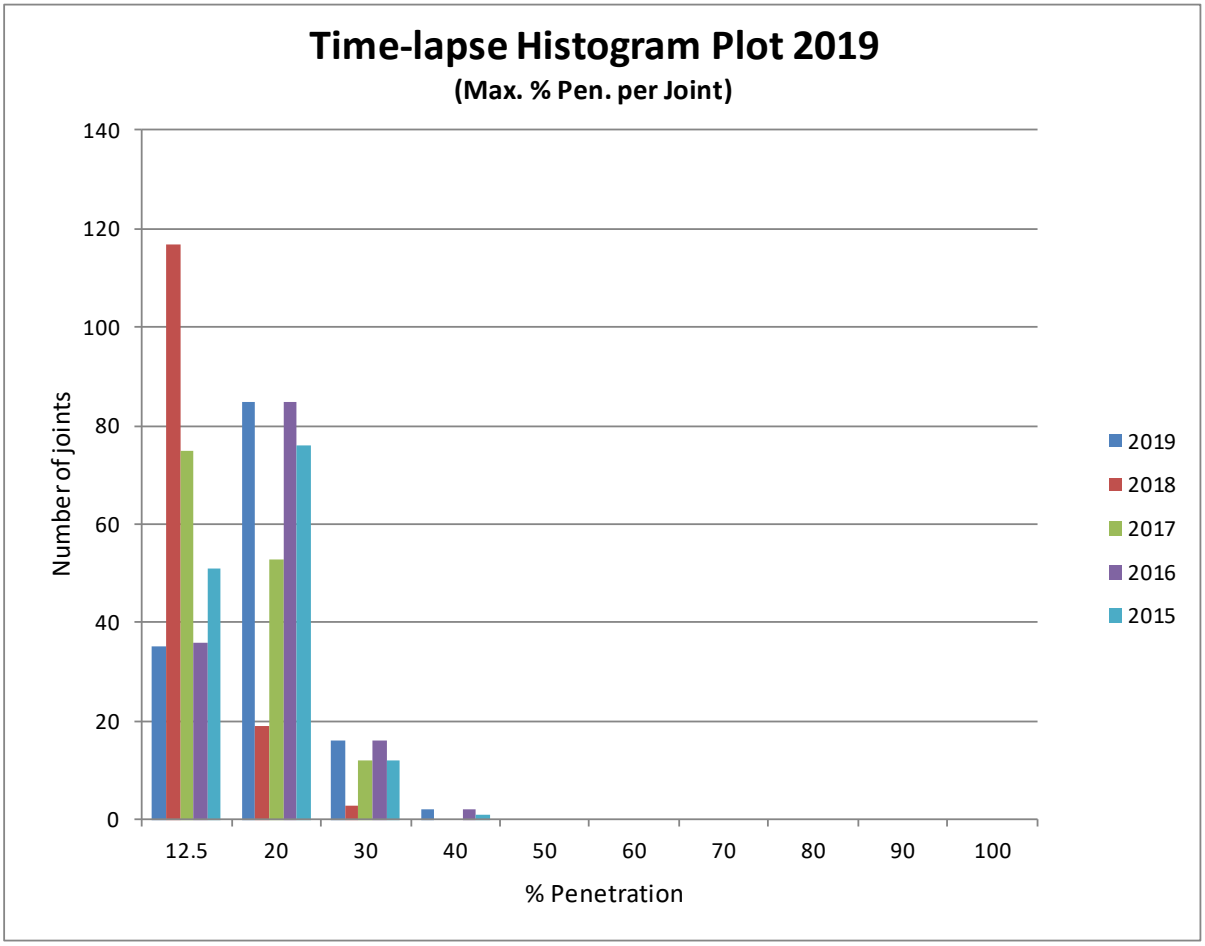
Client: NAM	Well No.: ROW-4	Field: ROSSUM-WEERSELO
Survey Date: 06/11/2019	Survey MFC-24 Extended	Job ID: DAC633

Measured ID per Joint vs. Depth Plot



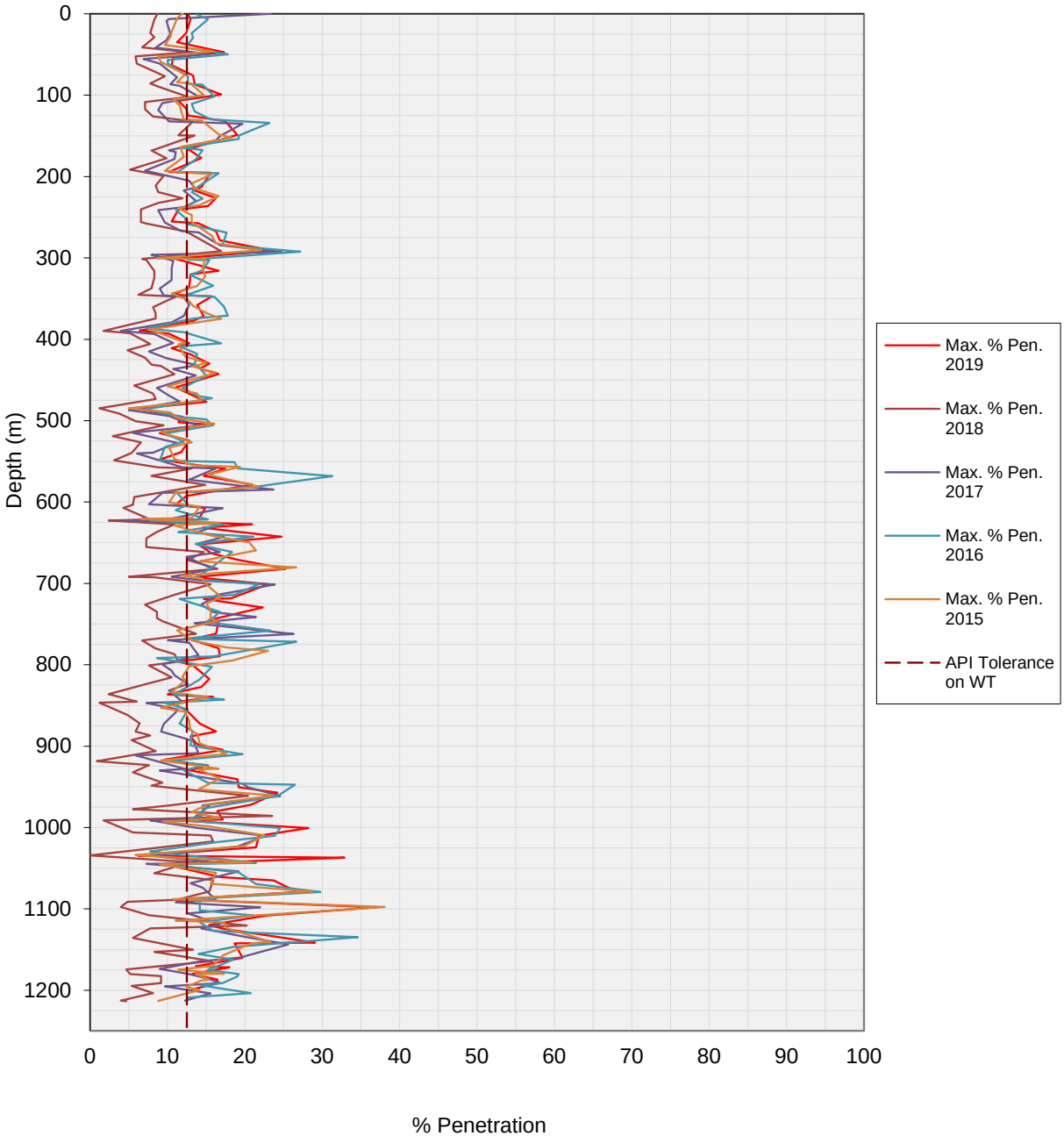
Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

Total number of joints logged: 138					
35	Joints with Max. % Penetrations Between	0	and	12.5	%
85	Joints with Max. % Penetrations Between	12.5	and	20	%
16	Joints with Max. % Penetrations Between	20	and	30	%
2	Joints with Max. % Penetrations Between	30	and	40	%
0	Joints with Max. % Penetrations Between	40	and	50	%
0	Joints with Max. % Penetrations Between	50	and	60	%
0	Joints with Max. % Penetrations Between	60	and	70	%
0	Joints with Max. % Penetrations Between	70	and	80	%
0	Joints with Max. % Penetrations Between	80	and	90	%
0	Joints with Max. % Penetrations Between	90	and	100	%



Client: NAM	Well No.: ROW-4	Field: ROSSUM-WEERSELO
Survey Date: 06/11/2019	Survey MFC-24 Extended	Job ID: DAC633

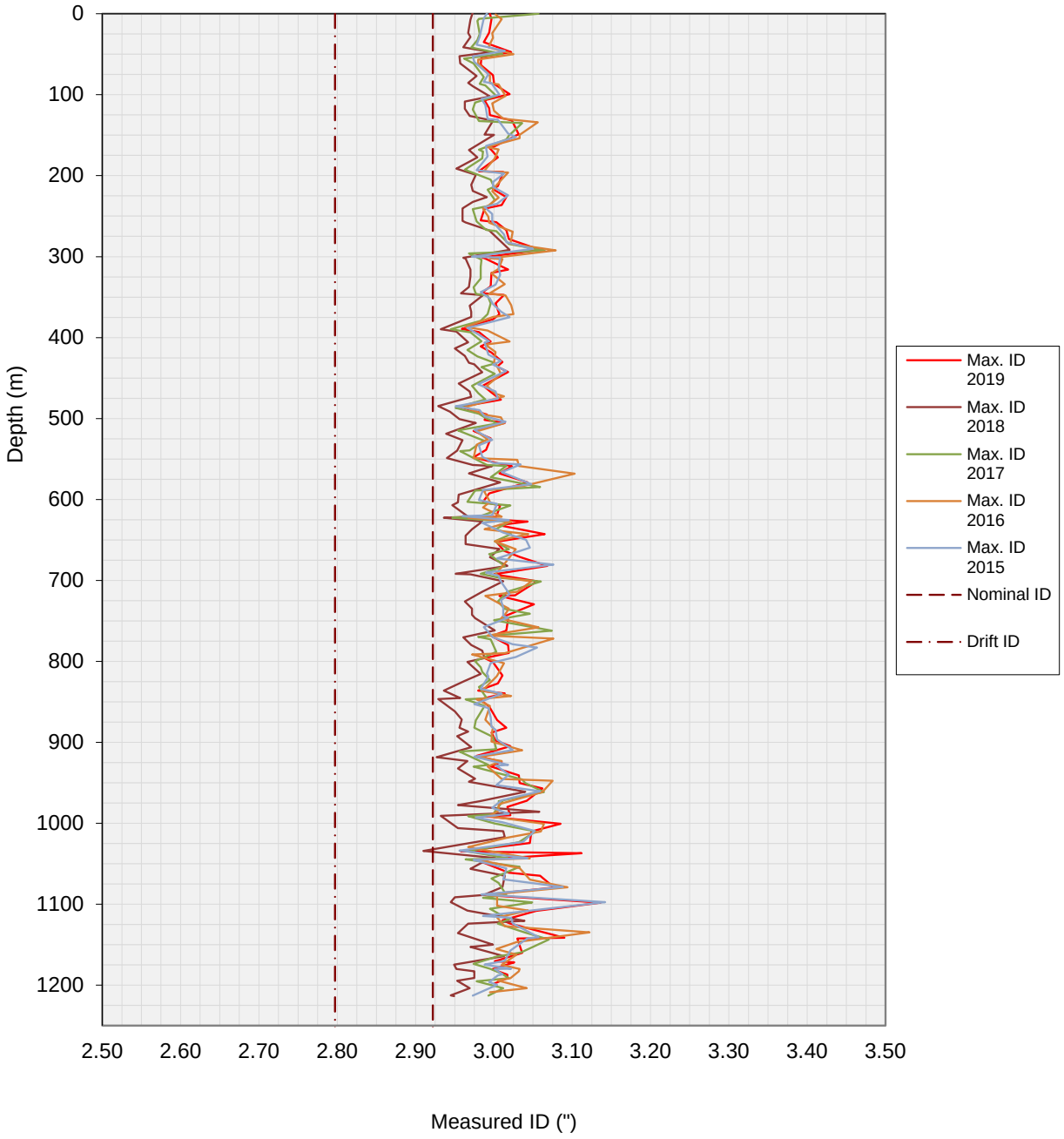
Time-lapse Max. Percentage Penetration per Joint vs. Depth Plot



Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

EXPRO

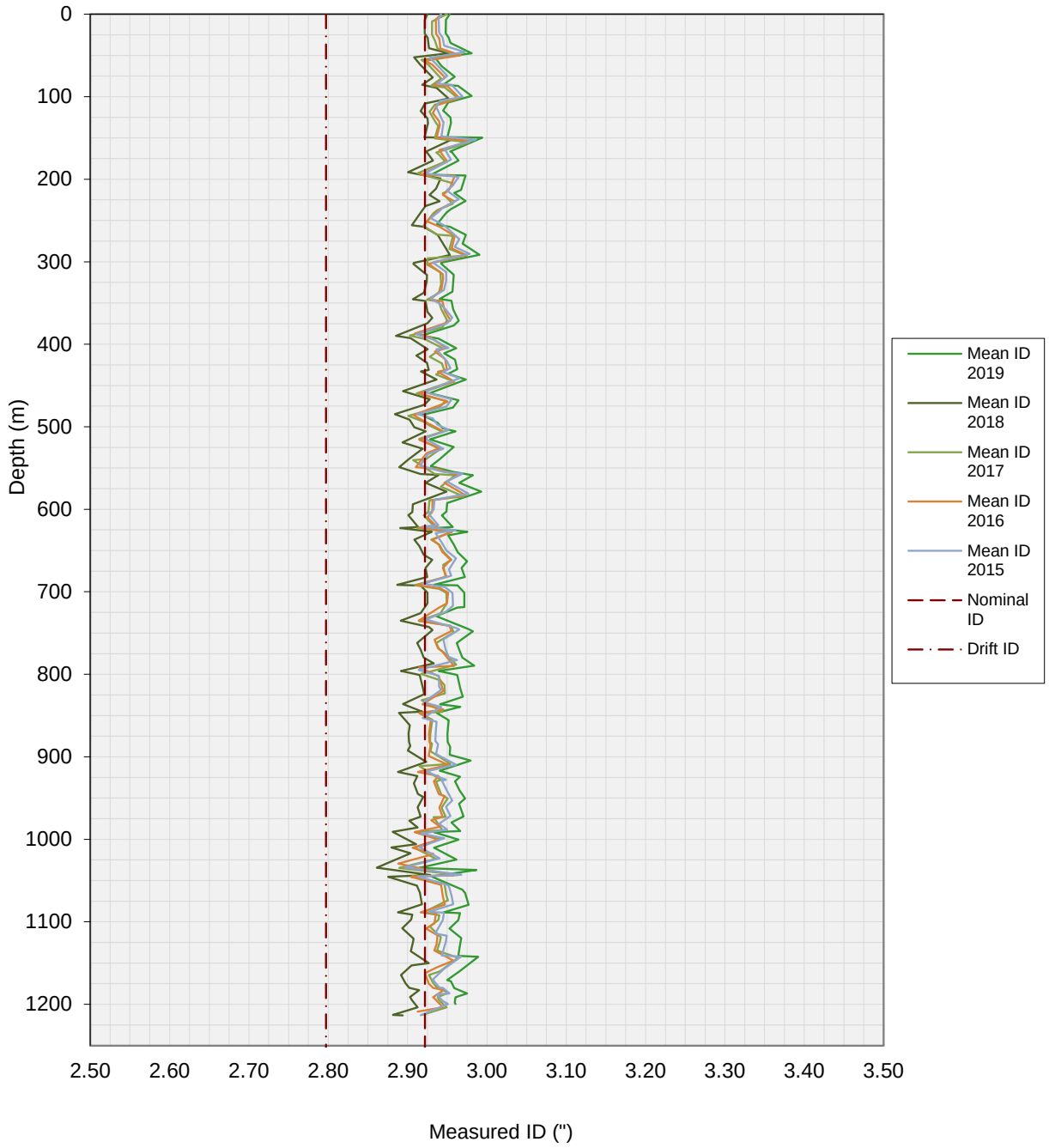
Time-lapse Maximum ID per Joint vs. Depth Plot



Client: NAM	Well No.: ROW-4	Field: ROSSUM-WEERSELO
Survey Date: 06/11/2019	Survey MFC-24 Extended	Job ID: DAC633

EXPRO

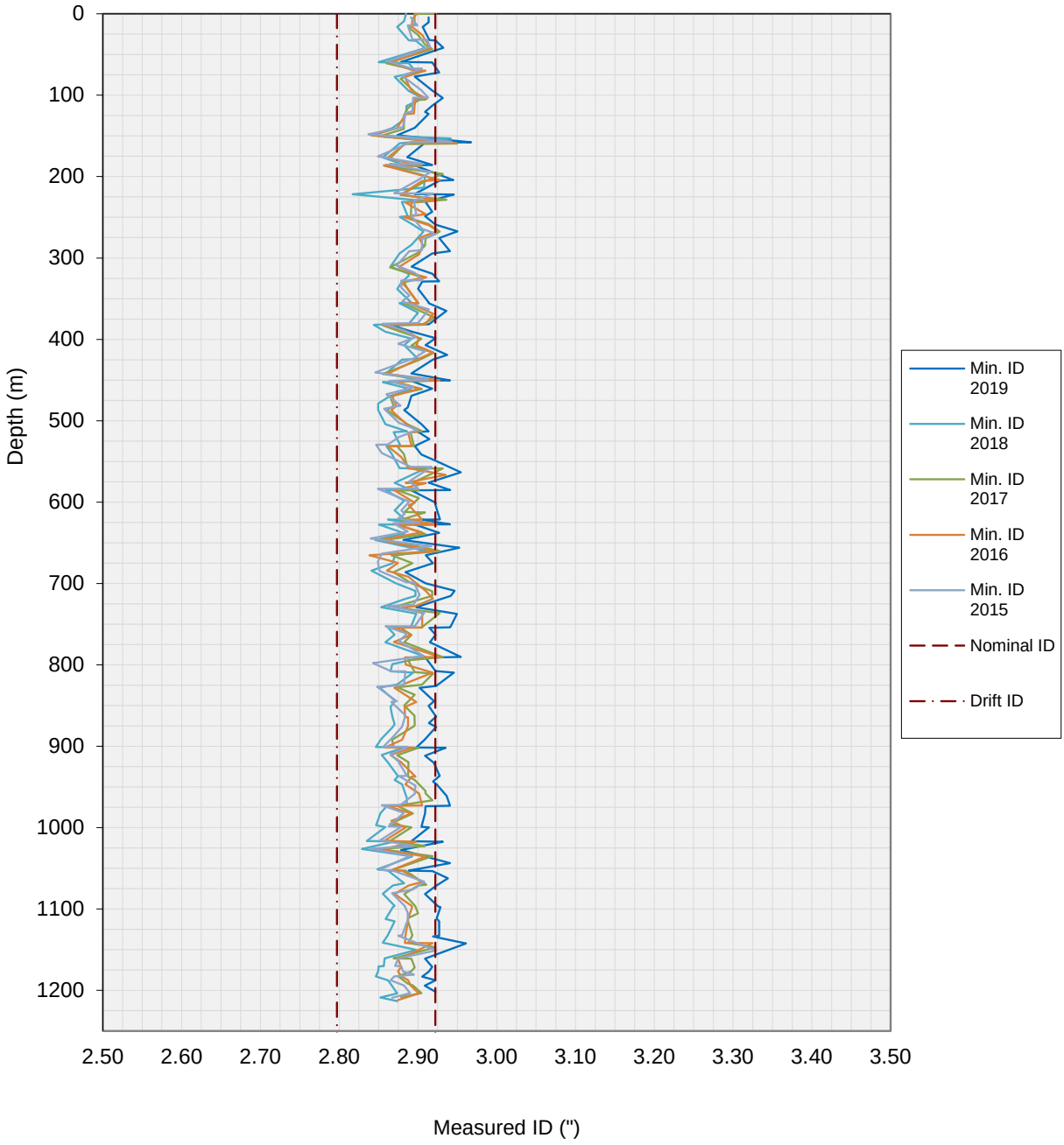
Time-lapse Mean ID per Joint vs. Depth Plot



Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

EXPRO

Time-lapse Minimum ID per Joint vs. Depth Plot



Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

EXPRO

Client: NAM
Well: ROW-4
Survey Date: 6th November 2019
Tubulars Surveyed: 3-1/2", 10.2 lb/ft **Nom. ID: 2.922** **Drift ID: 2.797** **Nom. OD: 3.500**

Max. % Penetration	0 - 20%	20 - 40%	40 - 50%	50 - 100%
Max. % Circumferential Loss	0 - 10%	10-20 %	20 - 25 %	25 - 100 %

Ref.	Top (m)	Bottom (m)	Length (m)	Max. ID (")	Dep. Max. (m)	Max. Pen. (%)	Max. Loss (%)	Min. ID (")	Dep. Min. (m)	Mean ID (")	Tubular OD (")	Completion Item
1	-3.26	5.61	8.86	2.995	0.27	12.6	6.0	2.914	4.47	2.953	3.500	
2	6.02	14.94	8.93	2.997	6.59	13.0	5.0	2.914	10.33	2.948	3.500	
3	15.36	23.46	8.10	2.994	23.22	12.5	8.3	2.906	16.11	2.948	3.500	
4	23.87	32.29	8.43	2.991	28.45	11.9	6.0	2.915	32.27	2.952	3.500	
5	32.71	41.16	8.45	2.987	34.92	11.2	6.0	2.923	32.71	2.954	3.500	
6	41.57	50.45	8.88	3.022	47.26	17.3	12.0	2.932	41.62	2.981	3.500	
7	50.86	59.34	8.49	2.984	53.61	10.7	4.0	2.879	59.07	2.935	3.500	
8	59.69	68.23	8.55	2.983	63.05	10.6	4.2	2.918	59.86	2.943	3.500	
9	68.50	76.56	8.06	2.999	75.75	13.3	8.1	2.927	72.01	2.959	3.500	
10	76.97	85.83	8.86	3.000	85.23	13.5	6.6	2.896	77.13	2.945	3.500	
11	86.24	94.53	8.29	3.000	86.72	13.5	9.2	2.918	94.33	2.963	3.500	
12	94.93	103.66	8.73	3.020	99.21	17.0	11.6	2.932	103.50	2.981	3.500	
13	104.07	113.05	8.98	2.988	106.92	11.4	6.2	2.918	112.85	2.951	3.500	
14	113.46	122.54	9.08	2.994	116.74	12.5	4.8	2.909	120.39	2.945	3.500	
15	122.96	131.39	8.43	2.995	125.04	12.6	6.5	2.914	123.03	2.954	3.500	
16	131.79	140.24	8.45	3.023	131.94	17.5	9.8	2.896	139.99	2.955	3.500	
17	140.57	149.23	8.66	3.032	149.10	19.0	7.8	2.874	149.12	2.950	3.500	
18	149.39	158.09	8.70	3.030	149.53	18.7	12.7	2.968	157.68	2.994	3.500	
19	158.49	166.69	8.19	2.995	166.50	12.6	8.0	2.909	158.54	2.954	3.500	
20	167.10	176.27	9.17	2.996	167.22	12.8	7.1	2.887	176.26	2.956	3.500	
21	176.69	185.63	8.95	3.005	177.29	14.4	9.2	2.918	185.63	2.964	3.500	
22	186.04	194.83	8.79	2.981	194.41	10.2	5.1	2.896	186.10	2.930	3.500	
23	195.22	204.37	9.16	3.012	195.40	15.6	8.9	2.945	204.37	2.973	3.500	
24	204.77	213.23	8.46	3.005	212.94	14.4	9.5	2.928	204.86	2.967	3.500	
25	213.63	221.43	7.80	2.999	216.60	13.3	8.9	2.896	221.39	2.959	3.500	
26	221.84	230.67	8.83	3.016	226.36	16.3	9.1	2.946	221.89	2.973	3.500	
27	231.07	239.63	8.56	3.010	236.13	15.2	7.9	2.910	231.14	2.955	3.500	
28	240.04	248.10	8.07	2.988	240.55	11.4	6.1	2.918	243.14	2.949	3.500	

Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

EXPRO

Ref.	Top (m)	Bottom (m)	Length (m)	Max. ID (")	Dep. Max. (m)	Max. Pen. (%)	Max. Loss (%)	Min. ID (")	Dep. Min. (m)	Mean ID (")	Tubular OD (")	Completion Item
29	248.52	257.02	8.50	2.983	255.22	10.6	4.7	2.909	248.74	2.937	3.500	
30	257.33	266.09	8.76	3.003	257.50	14.0	6.9	2.923	259.17	2.954	3.500	
31	266.47	274.59	8.12	3.016	267.37	16.3	9.7	2.950	267.31	2.973	3.500	
32	274.99	283.35	8.36	3.019	278.23	16.8	9.4	2.927	275.43	2.969	3.500	
33	283.82	292.22	8.40	3.059	291.52	23.7	12.8	2.941	291.55	2.991	3.500	
34	292.62	301.57	8.94	2.985	301.02	10.9	4.9	2.918	294.51	2.942	3.500	
35	301.98	310.55	8.57	2.989	302.39	11.6	6.5	2.892	310.55	2.942	3.500	
36	310.96	319.37	8.41	3.018	315.90	16.6	6.6	2.919	319.37	2.958	3.500	
37	319.77	328.63	8.86	2.997	320.16	13.0	7.1	2.927	328.54	2.958	3.500	
38	329.04	337.24	8.20	2.996	336.41	12.8	6.6	2.906	329.04	2.956	3.500	
39	337.65	345.62	7.97	2.984	345.13	10.7	7.3	2.900	337.66	2.940	3.500	
40	346.04	354.73	8.69	3.013	347.33	15.7	6.9	2.914	354.63	2.955	3.500	
41	355.14	363.69	8.55	3.002	357.89	13.8	6.8	2.914	355.44	2.957	3.500	
42	364.09	372.30	8.21	3.007	371.45	14.7	7.9	2.936	364.98	2.964	3.500	
43	372.70	381.47	8.78	2.999	377.30	13.3	7.9	2.914	381.32	2.958	3.500	
44	381.89	389.70	7.81	2.959	389.49	6.4	1.6	2.866	382.26	2.918	3.500	
45	390.12	398.20	8.08	2.981	393.29	10.2	4.4	2.892	390.45	2.939	3.500	
46	398.61	406.58	7.97	2.996	404.88	12.8	8.8	2.923	398.66	2.961	3.500	
47	406.98	415.33	8.35	2.983	410.99	10.6	5.4	2.910	406.98	2.946	3.500	
48	415.74	424.09	8.35	2.997	418.48	13.0	7.1	2.937	419.26	2.960	3.500	
49	424.48	432.32	7.84	3.011	430.07	15.4	8.9	2.919	424.76	2.963	3.500	
50	432.73	441.95	9.22	3.004	435.82	14.2	6.4	2.892	441.95	2.951	3.500	
51	442.35	450.71	8.35	3.018	442.66	16.6	12.0	2.941	450.31	2.973	3.500	
52	451.12	459.92	8.80	2.986	459.21	11.1	5.9	2.892	451.22	2.928	3.500	
53	460.26	468.90	8.64	2.997	467.73	13.0	8.0	2.918	460.41	2.964	3.500	
54	469.30	477.65	8.35	3.009	476.85	15.1	8.0	2.892	469.30	2.957	3.500	
55	478.06	486.35	8.29	2.957	485.48	6.1	2.3	2.887	483.81	2.918	3.500	
56	486.77	495.69	8.92	2.991	495.16	11.9	5.1	2.883	486.83	2.938	3.500	
57	496.11	504.34	8.23	2.988	501.83	11.4	6.2	2.905	504.18	2.944	3.500	
58	504.77	512.97	8.21	3.014	505.46	15.9	10.4	2.914	512.97	2.961	3.500	
59	513.38	521.97	8.59	2.974	515.24	9.0	2.4	2.900	513.82	2.928	3.500	
60	522.38	530.75	8.37	2.996	524.35	12.8	7.9	2.915	522.65	2.958	3.500	
61	531.17	539.59	8.42	2.990	538.72	11.8	5.3	2.896	531.18	2.941	3.500	
62	540.00	548.63	8.63	2.974	547.81	9.0	3.1	2.905	541.45	2.929	3.500	
63	549.10	558.11	9.01	3.003	554.85	14.0	6.8	2.923	549.10	2.958	3.500	
64	558.57	566.64	8.08	3.023	558.90	17.5	10.6	2.955	563.51	2.982	3.500	

Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

EXPRO

Ref.	Top (m)	Bottom (m)	Length (m)	Max. ID (")	Dep. Max. (m)	Max. Pen. (%)	Max. Loss (%)	Min. ID (")	Dep. Min. (m)	Mean ID (")	Tubular OD (")	Completion Item
65	567.04	576.18	9.13	3.007	567.89	14.7	7.8	2.914	576.16	2.965	3.500	
66	576.59	585.14	8.55	3.043	578.78	20.9	13.2	2.941	585.14	2.993	3.500	
67	585.54	594.48	8.94	2.994	592.52	12.5	5.9	2.892	585.59	2.950	3.500	
68	594.89	603.66	8.77	2.986	602.90	11.1	6.2	2.923	600.70	2.949	3.500	
69	604.07	612.06	7.99	3.008	607.34	14.9	5.7	2.923	604.09	2.943	3.500	
70	612.47	621.42	8.95	3.003	621.41	14.0	7.8	2.928	621.35	2.957	3.500	
71	621.70	622.69	0.99	2.967	622.68	7.8	3.3	2.906	621.70	2.934	3.500	Pup joint
72	622.83	624.45	1.62	2.918	623.67	-	-	2.878	623.74	2.891	3.500	Flow coupling
73	624.62	625.09	0.48	3.139	624.66	-	-	2.762	625.09	2.828	3.500	LNSV
74	625.26	626.85	1.59	2.925	625.73	-	-	2.878	626.85	2.890	3.500	Flow coupling
75	627.03	627.61	0.58	3.043	627.38	20.9	9.0	2.941	627.40	2.975	3.500	Pup joint
76	627.69	636.81	9.12	3.006	631.73	14.5	5.8	2.896	627.69	2.951	3.500	
77	637.22	646.20	8.98	3.065	642.71	24.7	6.8	2.927	637.87	2.958	3.500	
78	646.61	655.49	8.88	3.003	652.20	14.0	8.4	2.882	646.62	2.963	3.500	
79	655.89	664.95	9.07	3.013	663.21	15.7	9.1	2.953	655.97	2.975	3.500	
80	665.35	674.48	9.13	3.033	671.12	19.2	8.7	2.910	665.40	2.968	3.500	
81	674.89	683.35	8.46	3.068	682.06	25.3	9.4	2.919	674.92	2.972	3.500	
82	683.72	691.68	7.96	3.006	691.64	14.5	7.7	2.884	686.21	2.933	3.500	
83	692.09	700.14	8.06	3.000	692.33	13.5	9.3	2.910	699.63	2.963	3.500	
84	700.47	709.31	8.84	3.055	701.08	23.0	9.4	2.947	709.06	2.971	3.500	
85	709.69	718.69	9.00	3.027	718.56	18.2	9.3	2.942	715.30	2.971	3.500	
86	719.09	727.66	8.57	3.007	719.12	14.7	7.3	2.929	719.28	2.963	3.500	
87	728.07	736.28	8.21	3.051	729.42	22.3	3.9	2.898	729.02	2.936	3.500	
88	736.63	745.29	8.66	3.011	745.17	15.4	10.5	2.950	737.30	2.977	3.500	
89	745.69	753.92	8.23	3.018	747.77	16.6	11.6	2.941	753.82	2.982	3.500	
90	754.34	762.77	8.44	3.016	761.96	16.3	8.4	2.915	754.46	2.962	3.500	
91	763.18	771.62	8.44	2.997	768.81	13.0	8.8	2.923	763.18	2.964	3.500	
92	772.03	780.90	8.87	3.018	779.79	16.6	10.1	2.915	772.30	2.969	3.500	
93	781.31	790.44	9.13	3.019	789.61	16.8	10.9	2.955	790.36	2.984	3.500	
94	790.84	799.63	8.79	2.988	796.08	11.4	4.3	2.910	791.32	2.939	3.500	
95	799.98	809.00	9.03	2.999	800.86	13.3	7.4	2.923	807.60	2.962	3.500	
96	809.41	817.86	8.45	3.011	817.34	15.4	8.6	2.946	809.56	2.966	3.500	
97	818.32	827.28	8.96	3.005	827.21	14.4	8.6	2.923	825.90	2.970	3.500	
98	827.68	836.57	8.88	2.980	836.26	10.0	5.8	2.902	828.07	2.941	3.500	
99	836.97	845.57	8.61	3.014	839.46	15.9	8.2	2.921	844.50	2.966	3.500	
100	845.97	854.24	8.27	2.982	846.77	10.4	4.7	2.914	850.43	2.937	3.500	
101	854.64	863.70	9.05	2.994	855.63	12.5	5.9	2.923	863.53	2.952	3.500	
102	864.11	873.20	9.10	3.004	872.38	14.2	6.0	2.914	871.50	2.950	3.500	
103	873.62	882.63	9.02	3.016	881.93	16.3	7.4	2.923	876.31	2.951	3.500	
104	883.04	892.04	9.00	2.997	888.13	13.0	6.6	2.909	891.94	2.954	3.500	
105	892.32	901.50	9.18	3.002	897.66	13.8	6.0	2.898	901.46	2.953	3.500	

Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

EXPRO

Ref.	Top (m)	Bottom (m)	Length (m)	Max. ID (")	Dep. Max. (m)	Max. Pen. (%)	Max. Loss (%)	Min. ID (")	Dep. Min. (m)	Mean ID (")	Tubular OD (")	Completion Item
106	901.82	910.64	8.82	3.021	904.63	17.1	10.2	2.935	901.94	2.979	3.500	
107	911.04	919.33	8.29	2.978	916.72	9.7	5.0	2.909	911.72	2.941	3.500	
108	919.70	928.71	9.01	3.010	924.13	15.2	8.6	2.920	920.27	2.966	3.500	
109	929.11	937.21	8.10	2.996	929.68	12.8	8.1	2.928	936.29	2.960	3.500	
110	937.53	946.63	9.10	3.032	940.80	19.0	7.8	2.919	943.40	2.965	3.500	
111	947.00	956.08	9.07	3.033	950.41	19.2	9.0	2.924	947.03	2.973	3.500	
112	956.48	964.66	8.18	3.062	957.06	24.2	8.3	2.937	960.98	2.965	3.500	
113	965.06	973.09	8.03	3.042	972.21	20.8	9.2	2.941	972.98	2.970	3.500	
114	973.50	981.86	8.36	3.017	979.72	16.4	7.1	2.910	973.67	2.955	3.500	
115	982.27	990.39	8.13	3.021	990.15	17.1	10.7	2.909	982.69	2.966	3.500	
116	990.80	999.18	8.38	2.987	991.23	11.2	5.6	2.905	999.11	2.933	3.500	
117	999.52	1008.12	8.60	3.085	1000.52	28.2	8.3	2.914	999.61	2.964	3.500	
118	1008.53	1017.05	8.52	3.048	1010.23	21.8	6.2	2.892	1016.65	2.933	3.500	
119	1017.48	1026.14	8.66	3.046	1024.49	21.5	7.8	2.932	1017.56	2.962	3.500	
120	1026.55	1035.15	8.60	2.958	1034.67	6.2	2.2	2.879	1027.42	2.915	3.500	
121	1035.54	1044.30	8.76	3.112	1036.98	32.9	11.7	2.941	1043.54	2.987	3.500	
122	1044.70	1052.90	8.20	2.978	1045.18	9.7	3.1	2.889	1052.90	2.930	3.500	
123	1053.28	1061.84	8.55	3.019	1060.99	16.8	8.4	2.919	1053.32	2.969	3.500	
124	1062.24	1070.72	8.48	3.059	1064.85	23.7	9.0	2.938	1062.26	2.973	3.500	
125	1071.12	1080.27	9.15	3.077	1079.32	26.8	10.3	2.923	1071.65	2.977	3.500	
126	1080.68	1088.79	8.11	2.986	1088.61	11.1	6.3	2.909	1081.77	2.946	3.500	
127	1089.19	1096.88	7.69	3.002	1089.41	13.8	10.1	2.926	1096.79	2.966	3.500	
128	1097.17	1105.25	8.09	3.136	1098.07	37.0	9.5	2.929	1097.85	2.964	3.500	
129	1105.67	1114.87	9.21	3.054	1108.15	22.8	6.3	2.924	1111.67	2.953	3.500	
130	1115.29	1123.61	8.32	3.011	1119.91	15.4	8.1	2.927	1115.29	2.968	3.500	
131	1124.02	1133.01	9.00	3.021	1124.15	17.1	8.4	2.927	1132.88	2.967	3.500	
132	1133.30	1142.09	8.79	3.090	1141.34	29.1	7.5	2.919	1133.72	2.964	3.500	
133	1142.28	1151.54	9.26	3.030	1142.39	18.7	11.6	2.961	1142.36	2.989	3.500	
134	1151.94	1161.02	9.07	3.036	1160.21	19.7	8.4	2.909	1161.00	2.965	3.500	
135	1161.30	1170.50	9.20	3.001	1170.44	13.7	5.6	2.914	1165.97	2.950	3.500	
136	1170.91	1175.54	4.64	3.026	1171.95	18.0	7.5	2.918	1171.03	2.955	3.500	Pup joint
137	1175.62	1176.50	0.88	3.213	1175.82	-	-	2.766	1175.76	2.933	3.500	SSD
138	1176.67	1180.90	4.23	2.998	1180.22	13.1	8.8	2.914	1176.83	2.959	3.500	Pup joint
139	1181.00	1182.74	1.74	4.916	1182.12	-	-	2.936	1181.05	3.463	3.500	SPM
140	1182.90	1187.42	4.52	3.017	1186.86	16.4	11.3	2.906	1183.05	2.975	3.500	Pup joint
141	1187.59	1192.20	4.62	3.017	1191.53	16.4	9.5	2.923	1187.65	2.960	3.500	Pup joint
142	1192.35	1193.97	1.62	5.108	1193.42	-	-	2.926	1192.46	3.513	3.500	SPM
143	1194.10	1198.57	4.47	3.001	1197.70	13.7	9.1	2.909	1194.27	2.959	3.500	Pup joint
144	1198.65	1198.88	0.23	3.090	1198.73	-	-	2.753	1198.83	2.880	3.500	Nipple
145	1199.00	1201.75	2.75	3.002	1199.63	13.8	7.3	2.923	1201.72	2.960	3.500	Partially logged joint

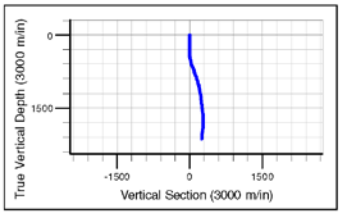
5. Well & Survey Information

Site: ROSSUM-WEERSELO-3
Well Name: ROSSUM-WEERSELO- 4
Wellbore Name: ROW- 4
Wellbore No: 01
Legal Wellbore Name: ROSSUM-WEERSELO- 4-1
Original Spud Date: 20/04/1971
Spud/Kick-off date: 20/04/1971
Tree Cap Connection: 6.875" 4G ACME
H2S Present: Y
LSA Present: N
Well Comments:
NOTE: For further detail: consult OpenWells/iWellfile

Schematic Datum: TBF @ 25.10m

Casing Assemblies

Name	Top MD(m)	Base MD(m)	Size(in)
Conductor - driven	0.50	16.60	24.000
Surface Casing	0.00	248.62	13.375
Intermediate Casing	0.00	810.38	9.625
Production Casing	-0.73	1,445.38	7.000

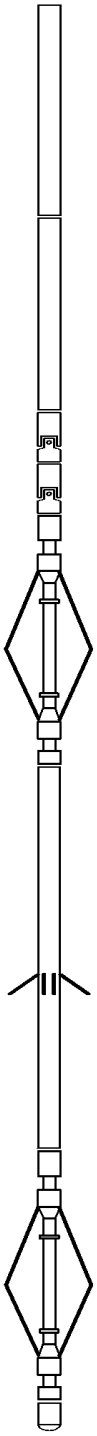


Wellbore Comments:

Top Perfo's	Casing Details	Schematic last update (01/10/2019)	Completion Details	Body ID / Min ID	HUD ORDERED AT DEPTH NOT AT DATE !!!!
			-2.34m, WLLM,4.437,10RPV44359,RPT,12600/5300,STD,+anti-vibratio o-ring, , LM3754	2.750in / 2.750in 2.875in / 2.875in	
			-2.35m, LDO TENTION TBG HGR, 2.87" S4-PROFILE, 3.1/2" - 10.2# VAM, 5.0" RAMS, CL, H1/U, ,		
	24.000", 16.60m		-2.33m, WLSF,2.750,17-BPV-0068-ISLB,BPV,3600,H2S,N, eq 6x2mm, , FV2357	0.000in / 0.000in	
			-1.79m, TBNG 3.1/2" - 10.2# VAM, L80, ,	2.922in / 2.922in	
	13.375", 248.62m		621.57m, TGPJ 3.1/2" - 10.2# VAM, L80, 4 ft, ,	2.922in / 2.922in	
			624.63m, WLLM,2.75,910XO27503,X,4300/9900,H2S, , LM2130	1.750in / 1.750in	
			622.80m, FLCP, 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.812in / 2.812in	
	9.625", 810.38m		624.64m, WLSF,2.75,22-FXE-27502,FXE,10K,2300FT,STD,E (OPD:132 ,Full 140 bar,GL 55 bar) o-ring, , FV1072	1.500in / 1.500in	
			624.62m, LNSV, 2.750" XXO-PROFILE, 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.750in / 2.750in	
			625.23m, FLCP, 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.812in / 2.812in	
			1,170.35m, TGPJ 3.1/2" - 10.2# VAM, L80, 16 ft, ,	2.922in / 2.922in	
			627.66m, TBNG 3.1/2" - 10.2# VAM, L80, ,	2.922in / 2.922in	
			1,175.22m, SLSD 2.75" XA-PROFILE, 3.1/2" - 10.2# VAM, 9Cr1Mo, SHIFT UP TO OPEN, ,	2.750in / 2.750in	
			1,176.28m, TGPJ 3.1/2" - 10.2# VAM, L80, 16 ft, ,	2.922in / 2.922in	
			1,180.77m, Camco Dummy Valve E, 1 inch, ,		
			1,180.67m, SPMA 3.1/2" - 10.2# VAM, KBUG, SOUR, 4130, BxB, , 1,182.65m, TGPJ 3.1/2" - 10.2# VAM, L80, 16 ft, PxP, ,	2.875in / 2.875in 2.922in / 2.922in	
			1,192.14m, Camco Dummy Valve E, 1 inch, ,		
			1,192.04m, SPMA 3.1/2" - 10.2# VAM, KBUG, SOUR, 4130, , 1,194.00m, TGPJ 3.1/2" - 10.2# VAM, L80, 16 ft, PxP, ,	2.875in / 2.875in 2.922in / 2.922in	
			1,198.63m, LN, 2.750" X-PROFILE, 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.750in / 2.750in	
			1,203.79m, ANCHOR SEAL, SNAT, 80DA40, KBH-22, 3.1/2" - 10.2# VAM, BU, 4140, ,	3.250in / 3.250in	
1,296.48m					
1,296.88m			1,204.23m, PACKER 7.0", 82DAB40, 5.0" - 15.0# VAM, BD, 4140, ,	3.250in / 3.250in	
1,299.58m					
1,305.28m			1,205.69m, TGPJ 5.0" - 18.0# VAM, L80, 8 ft, PxP, ,	4.276in / 4.276in	
1,306.88m			1,212.98m, FLCP, 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.812in / 2.812in	
1,310.98m					
1,316.68m			1,213.81m, LN, 2.750" X-PROFILE, 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.750in / 2.750in	
1,316.88m					
1,322.38m					
1,366.08m			1,214.13m, ENTRY GUIDE 2.75", 3.1/2" - 10.2# VAM, 9Cr1Mo, ,	2.750in / 2.750in	
1,373.38m					
1,373.38m					
1,385.38m					
1,390.68m					H 1,404.00 m 11/12/2012 00:00
1,397.18m					H 1,406.00 m 01/10/2018 15:00
1,397.38m	7.000", 1,445.38m				H 1,404.00 m 02/03/1995 00:00
					H 1,404.00 m 05/07/1994 00:00
					H 1,404.00 m 12/05/1993 00:00
					H 1,404.00 m 28/05/1990 00:00
					H 1,405.00 m 13/03/2006 00:00
					H 1,405.00 m 21/06/2006 00:00
					H 1,405.00 m 13/03/2007 00:00
					H 1,405.00 m 26/08/2009 00:00
					H 1,405.00 m 08/11/2011 00:00
					H 1,405.00 m 29/06/2015 00:00
					H 1,405.00 m 12/06/2017 13:30
					H 1,406.00 m 25/09/2014 00:00
					H 1,406.00 m 31/08/2015 00:00
					H 1,406.00 m 02/10/2009 00:00
					H 1,408.00 m 08/05/2007 00:00
					H 1,412.00 m 29/05/1997 00:00

Prepared By: EUROPE\Albert.Slim (Albert.Slim) Date: 01/10/2019
Data QA/QC'd by: Date QA/QC'd:

Client:	NAM	Well No.:	ROW-4	Field:	ROSSUM-WEERSELO
Survey Date:	06/11/2019	Survey	MFC-24 Extended	Job ID:	DAC633

Sensor	Offset (m)	Schematic	Description	Length (m)	O.D. (in)	Weight (lb
			MBH-025 (052137) Memory Battery Housing	0.71	1.69	11.60
			UMT-003 (219890) Ultrawire Memory Tool 128MB	0.65	1.69	10.60
			PKJ-013 (98631) Production Knuckle Joint	0.17	1.69	3.50
			PKJ-013 (C-1355) Production Knuckle Joint	0.17	1.69	3.50
			PRC-034 (C-1255) Production Roller Centraliser (4 Arm)	0.84	1.69	13.00
			MIT-028 (10018576) Multifinger Imaging Tool (UW 24F)	1.28	1.69	20.70
MIT	0.94					
			PRC-034 (C-1263) Production Roller Centraliser (4 Arm)	0.84	1.69	13.00
			BUL-006 (10251276) Bullnose Terminator	0.10	1.69	1.20

Dataset:	Sondex Ultrawire Memory MIT/MTT
Total length:	4.77 m
Total weight:	77.10 lb
O.D.:	1.69 in