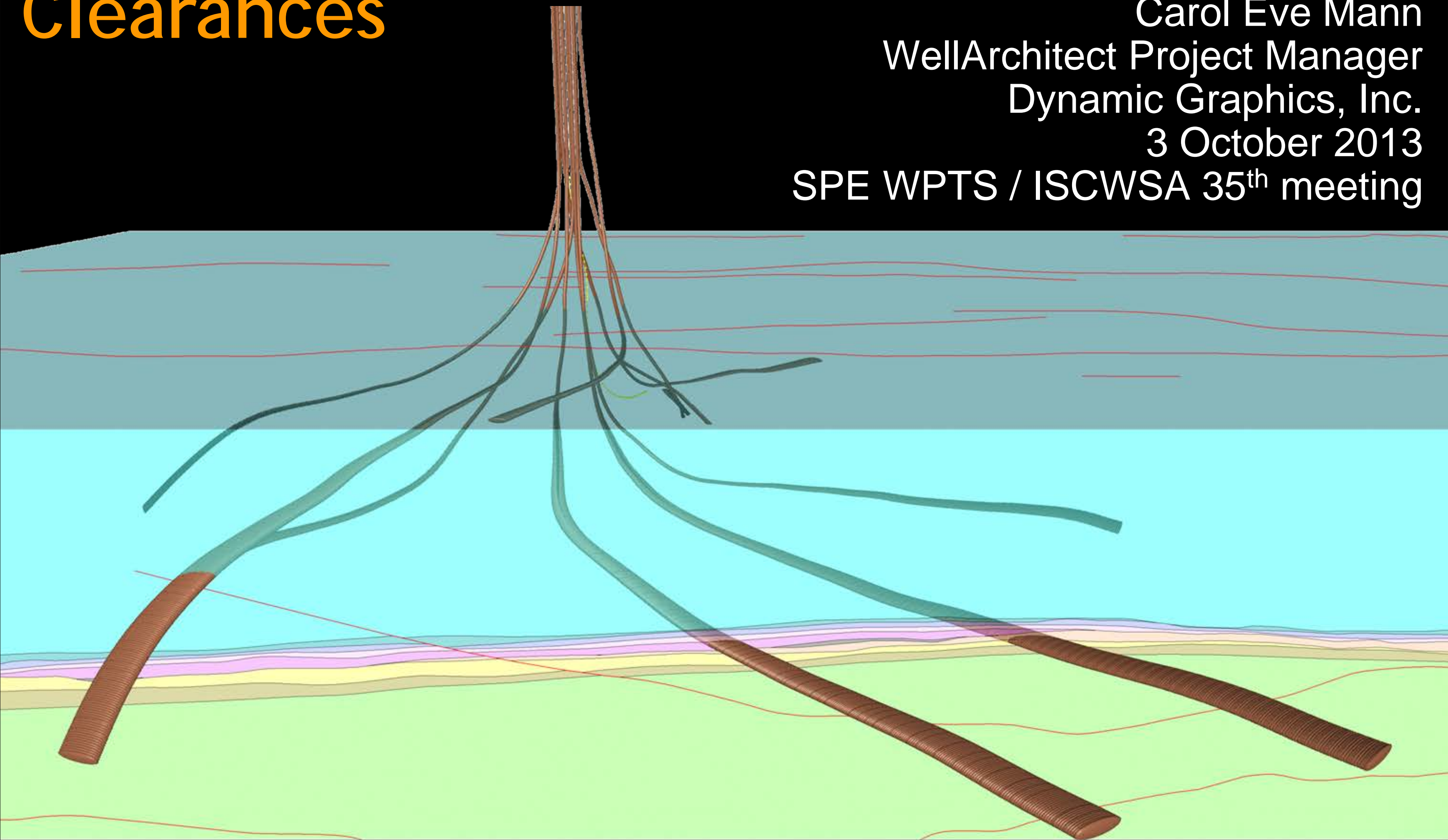


Automated Look-Ahead Clearances

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SPE WPTS / ISCWSA 35th meeting



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WellArchitect[®]

Integrate. Visualize. Analyze.

Why Talk About Automated Clearance Calculations?

At ISCWSA / SPE WPTS meetings, we strive to

- Ensure that factors associated with positional uncertainty are defined and described
- Raise awareness of, among other things, the role positional uncertainty plays in safety-critical work being done in the industry

Why Talk About Automated Clearance Calculations?

But even with raised awareness, the “human factor” always remains

- Are the calculations run?
- Are they run with the correct rules?
- Are they run ***every time*** or only when someone “feels” it’s necessary

The Current Process

After entering a survey station:

- Locations **may** be plotted on a traveling cylinder plot
- Distance to plan **may** be calculated
- A project ahead plan **may** be created
- A clearance calculation **may** be run using an Anti-Collision Rule (ACR)

Why Automation?

Ameinfo.com, United Arab Emirates; September 24, 2009:

“Human error and unsafe behaviour accounts for almost 90% of all accidents, including those caused by inexperienced and unskilled workers.”

Spot focus on offshore safety: the human factor, Offshore Technology, 26 March 2012, Elisabeth Fischer:

“Studies have shown that up to 90% of accidents are attributable to some degree to human failures. ... The topics range from broad, high-level issues such as staff competence, to those covering specific subjects like fatigue risks and *alarm handling*.”

Why Automation?

Simple answer is:

- Because we, as an industry, know that we have safety-critical procedures in place that sometimes do not get followed, for whatever reason
 - “Clearance calculations are for the well planner in town to run”
 - “I’m too busy”
 - “I’m drilling the plan, and the plan cleared the clearance calculation” (He was off plan, btw, and the hole had to be cemented over.)

These quotes were made despite policies being to run a clearance calculation after every survey

What Are Automated Look-Ahead Clearances?

While entering surveys:

- **Automated:**

A clearance calculation is run in the background as each survey station is entered....

- **Look-ahead:**

...on an extension of the survey...

- **Clearances:**

...using the Anti-Collision Rule (ACR)

The Process

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath Clearance Hazards Distance from Plan Traveling Cylinder Comments

Wellpath: D_ACL RV/1 Definitive Wellbore: Demo AWB Fulfilled Plan: Demo - alternate kick off rev 1 - TD azi 80, inc

Wellpath Survey Log

Create Add Edit Remove

Log Name	Used From	Used To
Rev 1 Survey Log [Demo AWB]	30.00	1920.00
MWD log (ACL) [Demo AWB]	1940.00	2670.00

Local Coordinate References

N / E Slot TVD Rig MD Rig

Rig: Rig on Demo (RT) Schematic

Cross Section Reference

N 0.00 E 0.00 Az 47.75 (from plan) Set

Projection To Bit

Trend (last 4) Sensor offset 20 m

Project Ahead Edit Survey

Create Edit Auto-append Auto-increment MD

Wellpath Points

	MD (m)	CL (m)	Inc (deg)	Az (GN) (deg)	TVD (m)	Local N (m)	Local E (m)	DLS (°/30m)	TFace (deg)	VS (m)
83	2340.00	30.00	71.899	29.494	2083.00	456.46	316.69	2.93	-143.30	541.33
84	2349.36	9.36	71.288	29.013	2085.96	464.21	321.03	2.44	-3.46	549.75
85	2370.00	20.64	75.062	28.777	2091.93	481.50	330.57	5.49	1.10	568.45
86	2400.00	30.00	80.547	28.883	2098.27	507.18	344.71	5.49	-9.21	596.17
87	2424.36	24.36	81.682	28.697	2102.03	528.27	356.30	1.42	-45.54	618.93
88	2430.00	5.64	82.459	27.899	2102.81	533.19	358.95	5.89	2.68	624.20
89	2460.00	30.00	83.011	27.925	2106.60	559.49	372.88	0.55	20.93	652.20
90	2490.00	30.00	83.294	28.034	2110.18	585.79	386.85	0.30	31.13	680.23
91	2520.00	30.00	83.783	28.331	2113.55	612.07	400.93	0.57	29.74	708.32
92	2550.00	30.00	84.072	28.497	2116.73	638.31	415.13	0.33	10.51	736.46
93	2580.00	30.00	84.587	28.593	2119.69	664.53	429.39	0.52	5.40	764.66
94	2610.00	30.00	84.998	28.632	2122.41	690.76	443.70	0.41	74.97	792.88
95	2640.00	30.00	85.017	28.703	2125.03	716.98	458.04	0.07	102.99	821.13
96	2670.00	30.00	85.000	28.777	2127.64	743.19	472.41	0.08	23.94	849.38
Bit	2690.00	20.00	85.092	28.818	2129.36	760.65	482.00	0.15	8.00	877.63

The Process

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath Clearance Hazards Distance from Plan Traveling Cylinder Comments

Wellpath: D_ACL RV/1 Definitive Wellbore: Demo AWB Fulfilled Plan: Demo - alternate kick off rev 1 - TD azi 80, inc

Wellpath Survey Log

Create Add Edit Remove

Log Name	Used From	Used To
Rev 1 Survey Log [Demo AWB]	30.00	1920.00
MWD log (ACL) [Demo AWB]	1940.00	2670.00

Local Coordinate References

N / E Slot TVD Rig MD Rig

Rig: Rig on Demo (RT) Schematic

Cross Section Reference

Set

Projection To Bit: Trend (last 4) Sensor offset: 20 m

None
Trend (last 4)
Build/Turn
DLS/TF
Tangent
Inc/Az

Local E (m) DLS (°/30m) TFace (deg) VS (m)

MD (m)	CL (m)	Inc (deg)	Az (GN) (deg)	TVD (m)	Local N (m)	Local E (m)	DLS (°/30m)	TFace (deg)	VS (m)
83	2340.00	30.00	71.899	2083.00	456.4	286.83	2.93	-133.24	486.76
84	2349.36	9.36	71.288	2085.96	464.2	302.08	2.93	-132.68	513.93
85	2370.00	20.64	75.062	2091.93	481.5				
86	2400.00	30.00	80.547	2098.27	507.18	344.71	5.49	-9.21	596.17
87	2424.36	24.36	81.682	2102.03	528.27	356.30	1.42	-45.54	618.93
88	2430.00	5.64	82.459	2102.81	533.19	358.95	5.89	2.68	624.20
89	2460.00	30.00	83.011	2106.60	559.49	372.88	0.55	20.93	652.20
90	2490.00	30.00	83.294	2110.18	585.79	386.85	0.30	31.13	680.23
91	2520.00	30.00	83.783	2113.55	612.07	400.93	0.57	29.74	708.32
92	2550.00	30.00	84.072	2116.73	638.31	415.13	0.33	10.51	736.46
93	2580.00	30.00	84.587	2119.69	664.53	429.39	0.52	5.40	764.66
94	2610.00	30.00	84.998	2122.41	690.76	443.70	0.41	74.97	792.88
95	2640.00	30.00	85.017	2125.03	716.98	458.04	0.07	102.99	821.13
96	2670.00	30.00	85.000	2127.64	743.19	472.41	0.08	23.94	850.00
Bit	2690.00	20.00	85.092	2129.36	760.65	482.00	0.15		879.00

Offset Wells List
Platform D definitive offsets

Primary ACR
R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev: 3.00 w/Surface Uncert $R=(D-HC)/PU$

Alternate ACR
None

Path Look Ahead
Use Extension of projection to bit to look ahead 100 m from the bit to MD 2790.0 m

Note
In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Paths to List in Table
 Failing paths
 All paths

Notes and Warnings
ACR needs casing size but no casing found for reference path
All offset paths passed for the specified ACR

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Look Ahead 100.0 m from 2690.0 to 2790.0 m					
		ACR Available Space	N/A	ACR Available Space	N/A	ACR Min Sep Ratio: 1.0			Alt ACR (Not specified)		
						Ref MD	Available Space	Sep Ratio	N/A	N/A	N/A

Offset Wells List

Platform D definitive offsets



Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev:3.00 w/Surface Uncert $R=(D-HC)/PU$



Alternate ACR



None

Path Look Ahead

Use Extension of projection to bit to look ahead 100 m from the bit to MD 2790.0 m

Paths to List in Table

- Failing paths
- All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path
All offset paths passed for the specified ACR

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Ref M
		ACR Available Space	N/A	ACR Available Space	N/A	

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev:3.00 w/Surface Uncert $R=(D-HC)/PU$

Alternate ACR

None

None

E-type Travelling Cylinder w/Hole&Csg Limit:0, StdDev:3.00 w/Surface Uncert 1% Cone of Safety Capped at 10m

R-type Start Clearance Monitoring, Closest Approach w/Hole&Csg Limit: 1.5, StdDev:3.00 w/Surface Uncert $R=(D-H&C)/PU$

R-type Stop Drilling, Closest Approach w/Hole&Csg Limit: 1.0, StdDev:3.00 w/Surface Uncert $R=(D-H&C)/PU$

ABC Service Company Stop Drilling

XYZ Operator R-type Start Clearance Monitoring

Paths to List in Table

Failing paths

All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path
All offset paths passed for the specified ACR

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Ref M
		ACR Available Space	N/A	ACR Available Space	N/A	



Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev:3.00 w/Surface Uncert R=(D-HC)/PU

Alternate ACR

None

Path Look Ahead

Use

Extension of projection to bit

to look ahead

100

m from the bit to



Extension of projection to bit

Tangent

Trend (last 4)

Paths:

Failing paths

All paths

ACR needs casing size but no casing found for reference path
All offset paths passed for the specified ACR

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Ref M
		ACR Available Space	N/A	ACR Available Space	N/A	

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev:3.00 w/Surface Uncert R=(D-HC)/PU

Alternate ACR

None

Path Look Ahead

Use Extension of projection to bit to look ahead 100 m from the bit to MD 2790.0 m

Paths to List in Table

- Failing paths
- All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path
 1 paths passed for the specified ACR

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Ref M
		ACR Available Space	N/A	ACR Available Space	N/A	

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev: 3.00 w/Surface Uncert R=(D-HC)/PU

Alternate ACR

None

Path Look Ahead

Use Extension of projection to bit to look ahead 100 m from the bit to MD 2790.0 m

Note

In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Paths to List in Table

- Failing paths
- All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path
All offset paths passed for the specified ACR.

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Look Ahead 100.0 m from 2690.0 to 2790.0 m								
		ACR Available Space	N/A	ACR Available Space	N/A	ACR Min Sep Ratio: 1.0			Alt ACR (Not specified)					
						Ref MD	Available Space	Sep Ratio	N/A	N/A	N/A			

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev: 3.00 w/Surface Uncert $R=(D-HC)/PU$

Alternate ACR

None

Path Look Ahead

Use Extension of projection to bit to look ahead 100 m from the bit to MD 2790.0 m

Note

In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Paths to List in Table

- Failing paths
- All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path
All offset paths passed for the specified ACR.

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2670.0 m		Projection to Bit at MD 2690.0 m		Look Ahead 100.0 m from 2690.0 to 2790.0 m					
		ACR Available Space	N/A	ACR Available Space	N/A	ACR Min Sep Ratio: 1.0			Alt ACR (Not specified)		
						Ref MD	Available Space	Sep Ratio	N/A	N/A	N/A
130/60A-D06Z [130/60A-D06Z]	PASS	92.26	---	81.29	---	2790.00	27.66	1.48	---	---	---
130/60A-D04Z [130/60A-D04Z]	PASS	105.93	---	108.06	---	2760.00	117.29	2.94	---	---	---
130/60A-D04 [130/60A-D04]	PASS	217.93	---	226.22	---	2690.00	226.22	4.97	---	---	---
130/60A-D06 [130/60A-D06]	PASS	409.28	---	423.93	---	2690.00	423.93	11.14	---	---	---
130/60A-D01 [130/60A-D01]	PASS	1066.92	---	1085.80	---	2690.00	1085.80	107.38	---	---	---
130/60A-D09 [130/60A-D09]	PASS	1204.23	---	1221.37	---	2715.00	1224.81	39.49	---	---	---
130/60A-D02 [130/60A-D02]	PASS	1206.86	---	1225.20	---	2690.00	1225.20	124.47	---	---	---
130/60A-D08 [130/60A-D08]	PASS	1227.78	---	1245.41	---	2690.00	1245.41	126.34	---	---	---
130/60A-D03 [130/60A-D03]	PASS	1242.72	---	1260.75	---	2715.00	1263.60	42.46	---	---	---
130/60A-D07 [130/60A-D07]	PASS	1260.72	---	1278.24	---	2715.00	1280.83	44.51	---	---	---
130/60A-D05 [130/60A-D05]	PASS	1295.43	---	1312.47	---	2715.00	1316.66	44.73	---	---	---

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath Clearance Hazards Distance from Plan Traveling Cylinder Comments

Wellpath Definitive Wellbore Fulfilled Plan

Wellpath Survey Section Logs

Create Add Edit Remove

Log Name	Used From	Used To
Rev 1 Survey Log [Demo AWB]	30.00	1920.00
MWD log (ACL) [Demo AWB]	1940.00	2700.00

Local Coordinate References

N / E Slot TVD Rig MD Rig

Rig Schematic

Cross Section Reference

N 0.00 E 0.00 Az 47.75 (from plan) Set

Projection To Bit

Trend (last 4) Sensor offset m

Project Ahead Edit Survey

Create Edit Auto-append Auto-increment MD

Wellpath Points

	MD (m)	CL (m)	Inc (deg)	Az (GN) (deg)	TVD (m)	Local N (m)	Local E (m)	DLS (°/30m)	TFace (deg)	VS (m)
84	2349.36	9.36	71.288	29.013	2085.96	464.21	321.03	2.44	-3.46	549.75
85	2370.00	20.64	75.062	28.777	2091.93	481.50	330.57	5.49	1.10	568.45
86	2400.00	30.00	80.547	28.883	2098.27	507.18	344.71	5.49	-9.21	596.17
87	2424.36	24.36	81.682	28.697	2102.03	528.27	356.30	1.42	-45.54	618.93
88	2430.00	5.64	82.459	27.899	2102.81	533.19	358.95	5.89	2.68	624.20
89	2460.00	30.00	83.011	27.925	2106.60	559.49	372.88	0.55	20.93	652.20
90	2490.00	30.00	83.294	28.034	2110.18	585.79	386.85	0.30	31.13	680.23
91	2520.00	30.00	83.783	28.331	2113.55	612.07	400.93	0.57	29.74	708.32
92	2550.00	30.00	84.072	28.497	2116.73	638.31	415.13	0.33	10.51	736.46
93	2580.00	30.00	84.587	28.593	2119.69	664.53	429.39	0.52	5.40	764.66
94	2610.00	30.00	84.998	28.632	2122.41	690.76	443.70	0.41	74.97	792.88
95	2640.00	30.00	85.017	28.703	2125.03	716.98	458.04	0.07	102.99	821.13
96	2670.00	30.00	85.000	28.777	2127.64	743.19	472.41	0.08	52.63	849.38
97	2700.00	30.00	85.121	28.936	2130.22	769.36	486.83	0.20	67.90	877.66
98	2730.00		85.329	29.112						
Bit	2720.00	20.00	85.148	29.004	2131.91	786.80	496.48	0.11		896.53

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath **Clearance** Hazards Distance from Plan Traveling Cylinder Comments

Offset Wells List
Platform D definitive offsets

Primary ACR
R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev: 3.00 w/Surface Uncert $R=(D-HC)/PU$

Alternate ACR
None

Path Look Ahead
Use Extension of projection to bit to look ahead 100 m from the bit to MD 2850.0 m


Paths to List in Table Notes and Warnings
 Failing paths
 All paths

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2730.0 m		Projection to Bit at MD 2750.0 m		Ref
		ACR Available Space	N/A	ACR Available Space	N/A	
130/60A-D06Z [130/60A-D06Z]	FAIL	59.23	---	48.42	---	28


Note
In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Clearance Failed

 An automated clearance calculation has been run using a 100.0 m look ahead. The following ACR(s) failed:

Primary ACR FAILED

Alternate ACR FAILED 

Running a clearance scan for an up-to-date Project Ahead is strongly recommended!

By checking here, and clicking OK,

I acknowledge that I have read the above information.

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath Clearance Hazards Distance from Plan Traveling Cylinder Comments

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev: 3.00 w/Surface Uncert R=(D-HC)/PU

Alternate ACR

None

Path Look Ahead

Use Extension of projection to bit to look ahead 100 m from the bit to MD 2850.0 m

Paths to List in Table

Failing paths

All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path

Note

In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2730.0 m		Projection to Bit at MD 2750.0 m		Look ahead 100.0 m from 2750.0 to 2850.0 m			Alt ACR (Not specified)		
		ACR Available Space	N/A	ACR Available Space	N/A	Min Sep Ratio: 1.0	Available Space	Sep Ratio	N/A	N/A	N/A
130/60A-D06Z [130/60A-D06Z]	FAIL	59.23	---	48.42	---	2850.00	-7.02	0.90	---	---	---

“Available Space” – Essentially the C-C distance minus the MASD

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/HoleCsg Limit: 1.0, StdDev: 3.00 w/Surface Uncert $R=(D-HC)/PU$

Alternate ACR

None

Path Look Ahead

Use Extension of projection to bit to look ahead 100 m from the bit to MD 2850.0 m

Note

In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Paths to List in Table

- Failing paths
- All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2730.0 m		Projection to Bit at MD 2750.0 m		Look Ahead 100.0 m from 2750.0 to 2850.0 m					
		ACR Available Space	N/A	ACR Available Space	N/A	ACR Min Sep Ratio: 1.0			Alt ACR (Not specified)		
						Ref MD	Available Space	Sep Ratio	N/A	N/A	N/A
130/60A-D06Z [130/60A-D06Z]	FAIL	59.23	---	48.42	---	2850.00	-7.02	0.90	---	---	---

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath Clearance Hazards Distance from Plan Traveling Cylinder Comments

Offset Wells List
Platform D definitive offsets
Primary ACR
R-type Sto
Alternate A
None
Path Look A
Use Ex
Paths to L
 Failing p
 All path

Note
In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

CoViz 4D Viewer: pid (12628), ipc (7537)

File Edit View Window Display Query Tools Help

130/60A-DO

d 100.0 m from 2750.0 to 2850.0 m			
o: 1.0		Alt ACR (Not specified)	
e	Sep Ratio	N/A	N/A
2	0.90	---	-

0.5 Az 188.5 Z exag 1.0 Pan

Actual Wellpath Editor: D_ACL RV/1 [Demo AWB]

File Edit View Coordinate mode Columns Formats Outputs Help

Details Wellpath Clearance Hazards Distance from Plan Traveling Cylinder Comments

Offset Wells List
Platform D definitive offsets
Primary ACR
R-type Sto
Alternate A
None
Path Look A
Use Ex
Paths to L
 Failing p
 All path

Note
In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

CoViz 4D Viewer: pid (12628), ipc (7537)

File Edit View Window Display Query Tools Help

130/60A-DO

d 100.0 m from 2750.0 to 2850.0 m			
o: 1.0	Alt ACR (Not specified)		
e	Sep Ratio	N/A	N/A
2	0.90	---	---

ZM
Inc
1.5 Az 186.5 Z exag 1.0 Pan

Offset Wells List

Platform D definitive offsets

Primary ACR

R-type Stop Drilling, Closest Approach w/Hole Limit: 1.0, StdDev:3.00 w/Surface Uncert R=(D-HC)/PU

Alternate ACR

None



Note

In the clearance calculations presented below, positional uncertainty for the projection-to-bit and look-ahead stations is calculated using the current survey tool model.

In all clearance calculations elsewhere, the "blind drilling" survey tool model is used for the projection-to-bit station.

Path Look Ahead

Use to look ahead m from the bit to MD 2850.0 m

Paths to List in Table

- Failing paths
- All paths

Notes and Warnings

ACR needs casing size but no casing found for reference path

Offset Wellpath Name as "Wellpath [Wellbore]" (Left click name to highlight in viewer)	Status	Last Survey Point at MD 2730.0 m		Projection to Bit at MD 2750.0 m		Look Ahead 100.0 m from 2750.0 to 2850.0 m					
		ACR Available Space	N/A	ACR Available Space	N/A	ACR Min Sep Ratio: 1.0			Alt ACR (Not specified)		
						Ref MD	Available Space	Sep Ratio	N/A	N/A	N/A
130/60A-D06Z [130/60A-D06Z]	FAIL	59.23	---	48.42	---	2850.00	-7.02	0.90	---	---	---

Reference Planned Path

- Fulfilled plan: Demo - alternate kick off rev 1 - TD azi 80, inc 90 - Demo Auto CL [
- Active projection: (none)

Update from DB

Coordinate Mode and References

N/E are in local coordinates referenced to Slot
 TVD from Rig on Demo (RT)
 MD from Rig on Demo (RT)

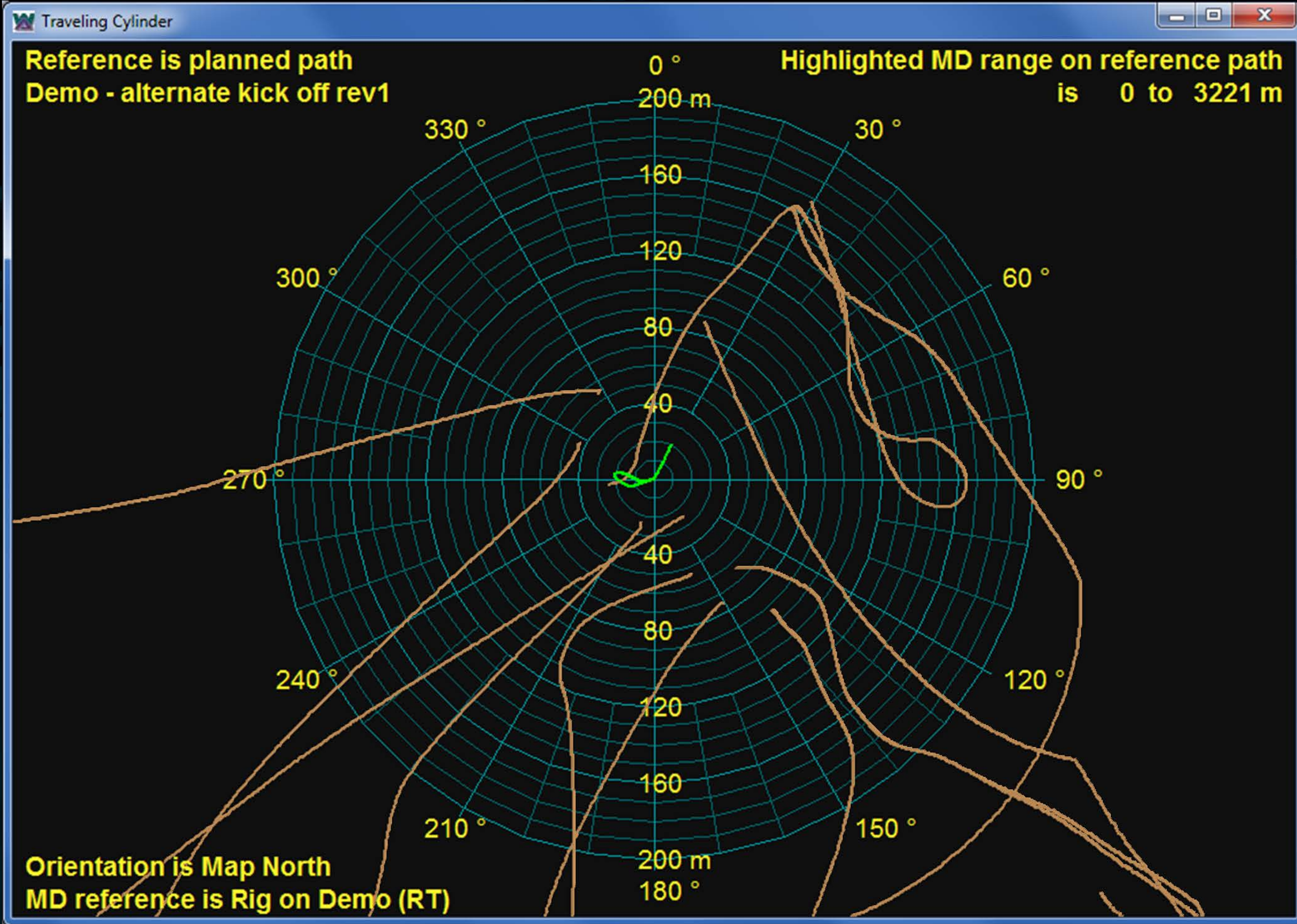
Display the last stations on actual path

Show coordinates of actual

Highlight distances greater than m

Traveling Cylinder Offset from Plan to Actual

	Actual MD (m)	Plan MD (m)	Plan TVD (m)	Plan Northing (m)	Plan Easting (m)	TC Bearing from N (deg)	Highside Angle (deg)	Trav Cyl Distance (m)	Above or Below (-) Plan (m)	Right or Left (-) of Plan (m)	Delta INC (deg)	Delta AZ (deg)
85	2370.00	2360.63	2092.58	481.34	330.42	33.559	4.782	0.68	0.68	0.06	3.774	-0.000
86	2400.00	2390.42	2102.13	506.07	344.00	29.958	1.181	4.08	4.08	0.08	9.259	0.106
87	2424.36	2414.42	2109.83	526.00	354.95	29.400	0.623	8.24	8.24	0.09	10.394	-0.080
88	2430.00	2419.97	2111.61	530.60	357.47	29.041	0.264	9.30	9.30	0.04	11.171	-0.878
89	2460.00	2449.37	2121.04	555.01	370.88	27.250	-1.527	15.25	15.25	-0.41	11.723	-0.852
90	2490.00	2478.72	2130.46	579.38	384.26	26.581	-2.196	21.43	21.41	-0.82	12.006	-0.743
91	2520.00	2508.27	2139.81	603.70	398.19	27.107	-4.153	27.70	27.63	-2.01	11.870	-2.929
92	2550.00	2537.84	2148.80	627.38	413.44	26.199	-8.049	33.92	33.59	-4.75	11.359	-5.751
93	2580.00	2567.24	2157.33	650.22	429.86	24.244	-12.949	40.27	39.25	-9.02	11.035	-8.600
94	2610.00	2596.33	2165.36	672.06	447.32	21.706	-18.376	46.98	44.58	-14.81	10.576	-11.449
95	2640.00	2625.01	2172.85	692.79	465.66	18.864	-24.039	54.13	49.44	-22.05	9.701	-14.200
96	2670.00	2653.16	2179.77	712.32	484.70	15.910	-29.742	61.82	53.67	-30.67	8.774	-16.874
97	2700.00	2680.67	2186.10	730.59	504.28	13.032	-35.285	70.22	57.32	-40.56	7.975	-19.381
98	2730.00	2707.47	2191.86	747.55	524.21	10.383	-40.510	79.50	60.45	-51.64	7.262	-21.781
Bit	2750.00	2724.90	2195.37	758.12	537.61	8.777	-43.782	86.22	62.25	-59.66	6.720	-23.356



Conclusions

- Although policies are in place, often clearance calculations are not run upon entering survey stations
- Automating a process to provide an alert can be useful
- The alert may trigger a user to proceed with other safety critical activities
- At a minimum, users have acknowledged the warning and, to some extent, accepted responsibility

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