

Digital Well Planning

Using DrillPlan to optimize well planning on an old giant



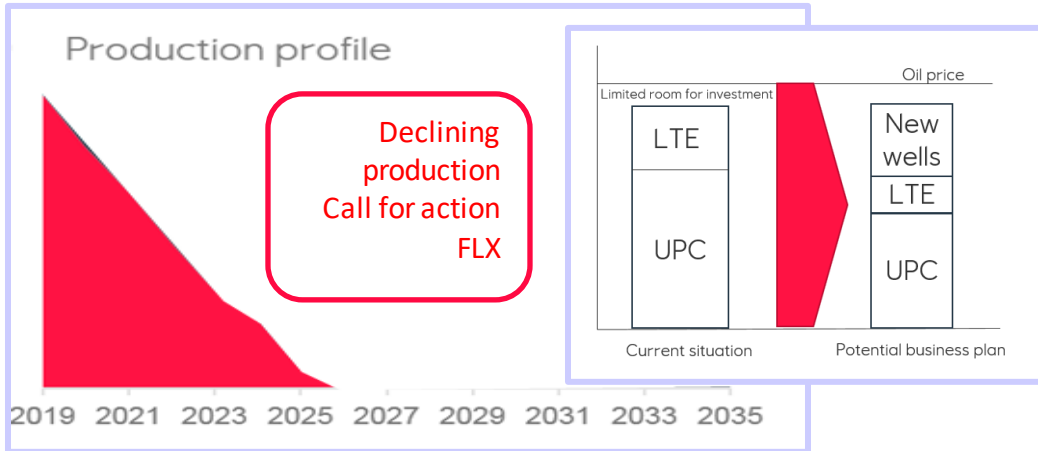
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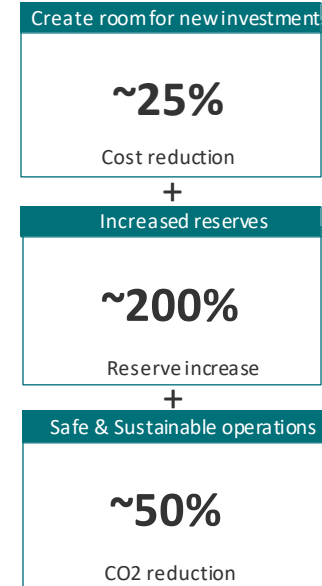
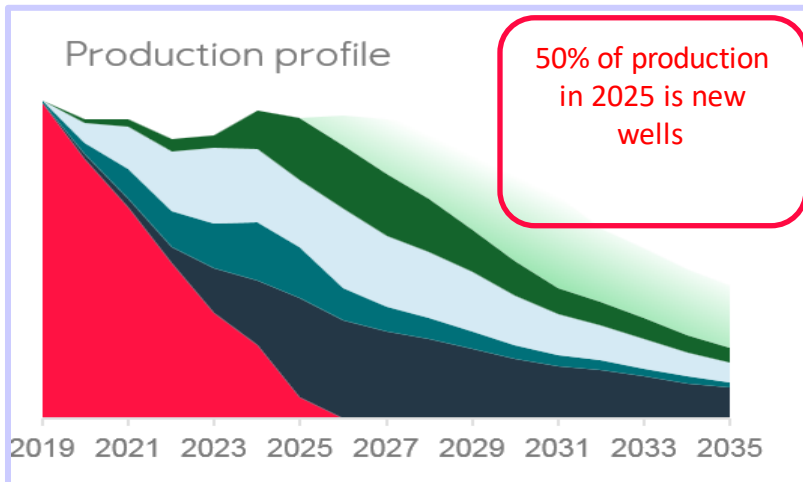


FLX Ambitions - Transforming the NCS to deliver sustainable value for decades

Create room for investment ...



... to extend lifetime



Become a lighthouse for the future on the NCS

- our safety culture
- our performance culture
- our operating model (New ways of working)
- our supplier collaboration



FLX Wells: Objectives and drivers

Operational objective

Increase number of high value wells and well interventions

Drivers



Zero Harm

One Team

Maximize production and reduce well cost

Future ways of working

Enablers

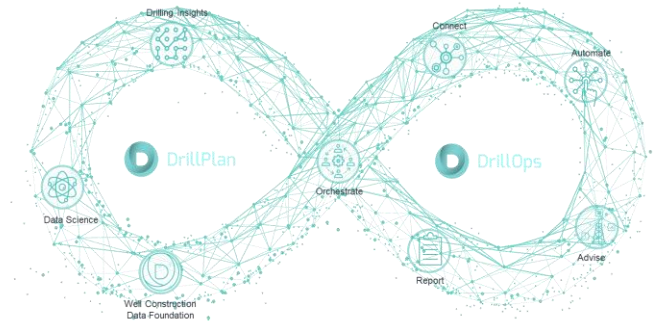
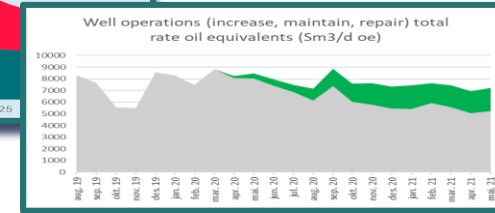
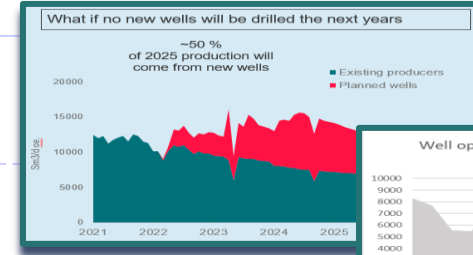


Efficient rig utilizations

Balanced barebone portfolio

Digitalization

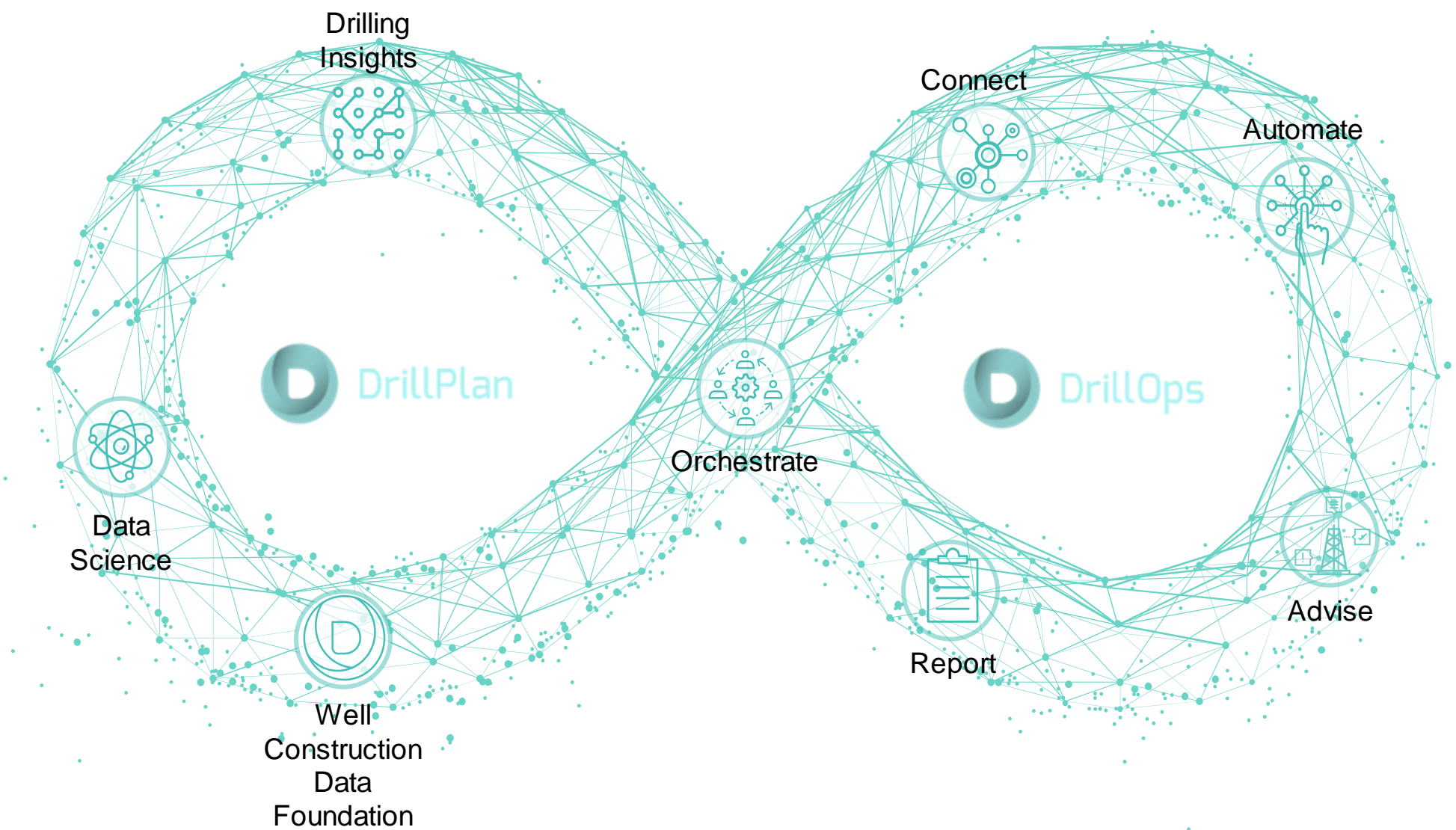
Late life work process



Always safe



The Integrated Digital Drilling Solution



Use of DrillPlan in FLX



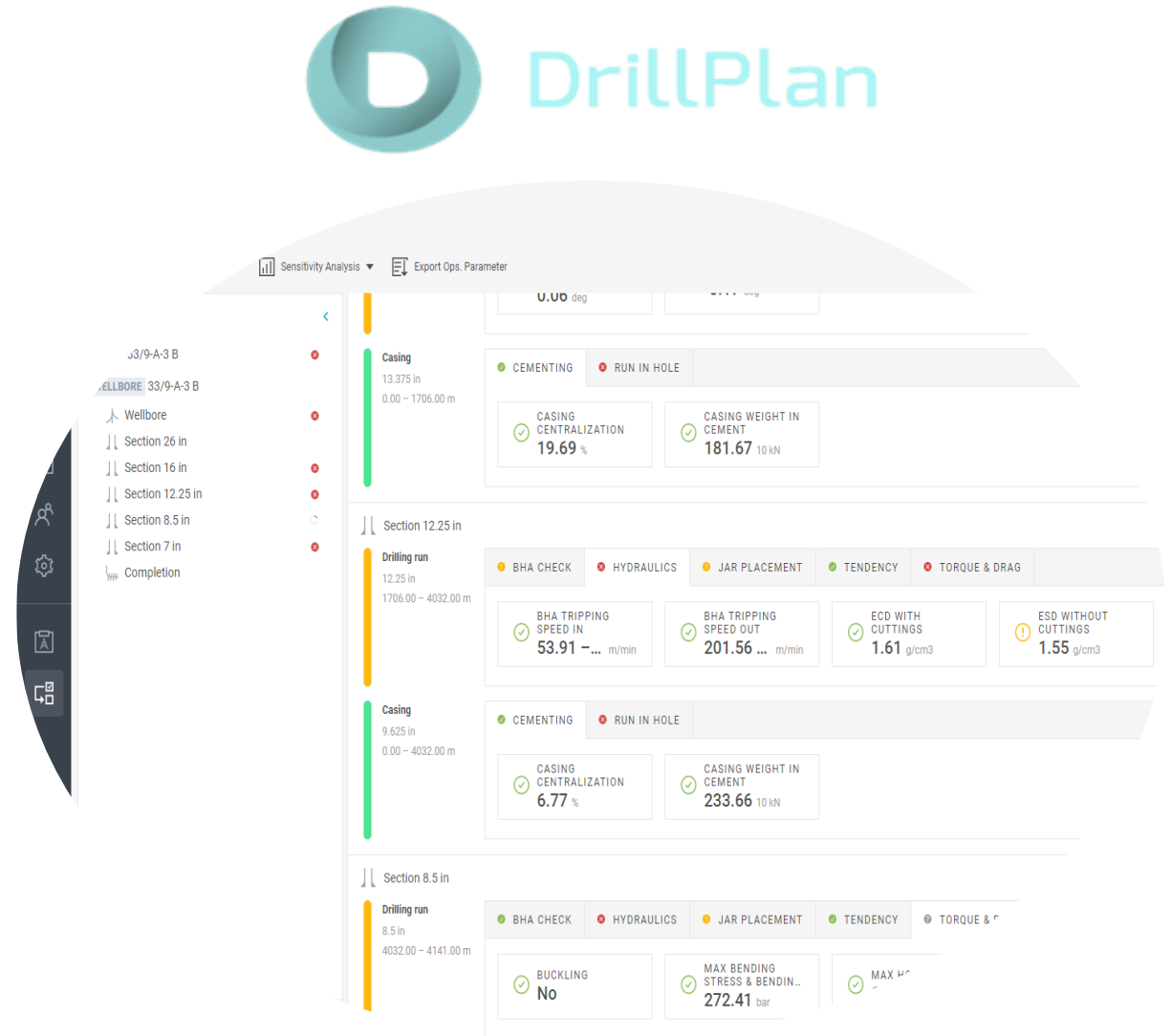
Use of DrillPlan in FLX

- Template designed for all standard well designs on Statfjord

The screenshot displays the DrillPlan software interface. At the top, the DrillPlan logo is visible. Below it, a navigation bar includes options like 'View Plan History', 'Manage Wellbores', 'Fetch Data', 'Download Data', and 'Show Design Template'. The main interface is divided into sections for 'FIELD' and 'WELL'. The 'WELL' section is titled '33/9-A-3 B' and contains a grid of task cards, each with a 'COMPLETED' status and a date. The cards are organized into two rows. The first row includes: 'Surface Location' (Oct 04 2021), 'Rig Configuration' (Nov 09 2021), 'Activity Plan' (Nov 08 2021), 'Risks' (Nov 05 2021), and 'Well Barriers' (Oct 06 2021). The second row includes: '_1P_Cement' (Oct 19 2021), 'TFM_PhA_Program' (Oct 11 2021), 'TFM_Completions_Program' (Oct 11 2021), 'Reservoir Pressures' (Oct 20 2021), and '_Cement_Program' (Oct 26 2021). A third row includes: 'Well PPFG/WBS plot' (Nov 07 2021), 'Contacts and Gradients P&A' (Nov 07 2021), and 'Fluid contacts and gradients' (Nov 07 2021). Below this, a 'WELLBORE 33/9-A-3 B' section is shown with a 'Sidetrack' and 'Edit' button. It contains a grid of task cards: 'A-3 B Preliminary Target R04 [20in kick off]' (Oct 20 2021), 'Wellbore Geometry' (Nov 09 2021), 'Formation Temperature' (Oct 04 2021), 'Pressure Window' (Oct 20 2021), and 'Formation Top' (Oct 20 2021). A final row includes: 'AUBE05_Geological' (Oct 04 2021) and 'AUBE05_Driller' (Oct 04 2021). On the left side, a vertical sidebar shows a tree view of the well design sections: 'Section 26 in', 'Section 16 in', 'Section 12.25 in', 'Section 8.5 in', 'Section 7 in', and 'Completion'.

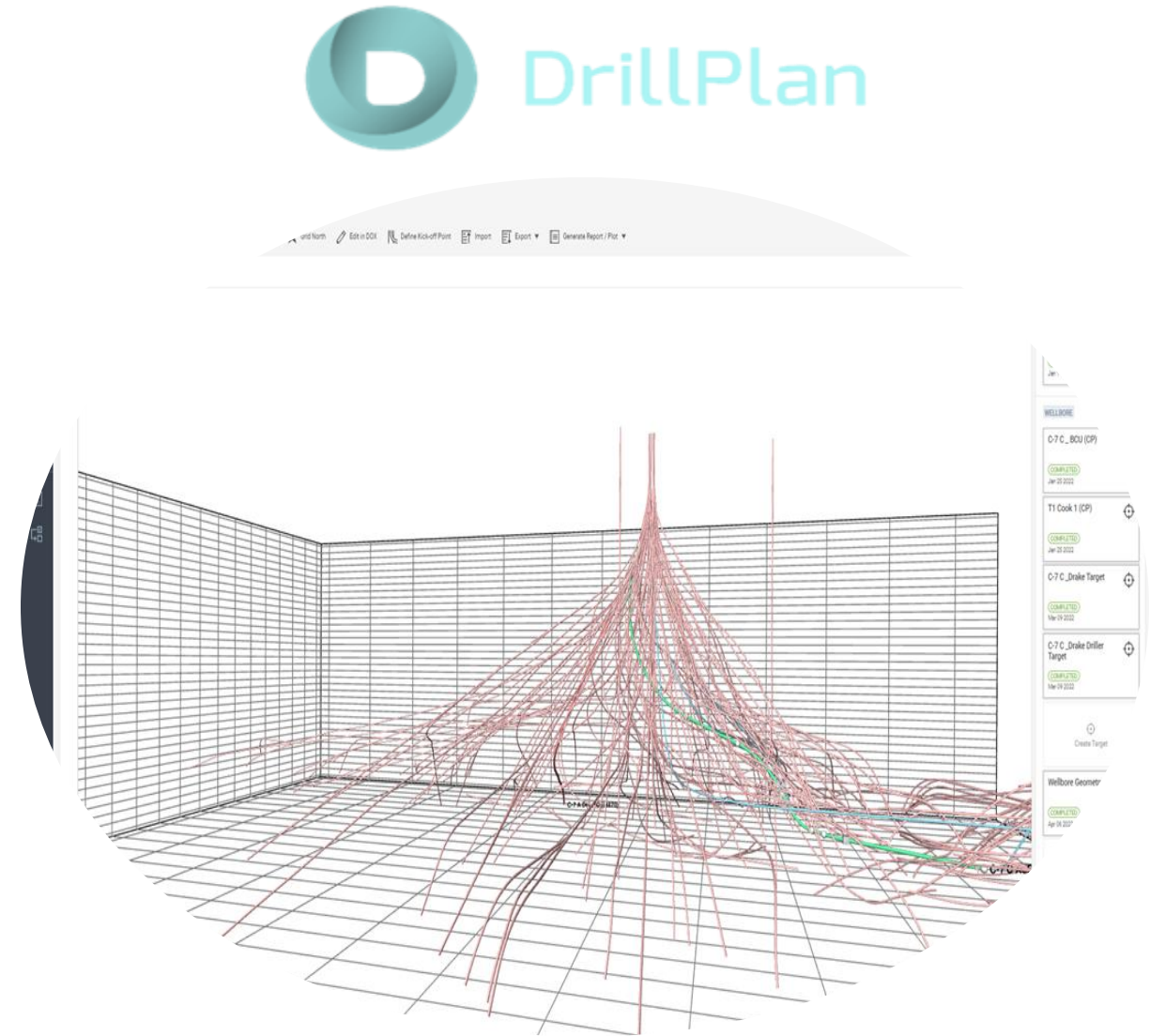
Use of DrillPlan in FLX

- Template designed for all standard well designs on Statfjord
- Quick Design validation in Well selection phase



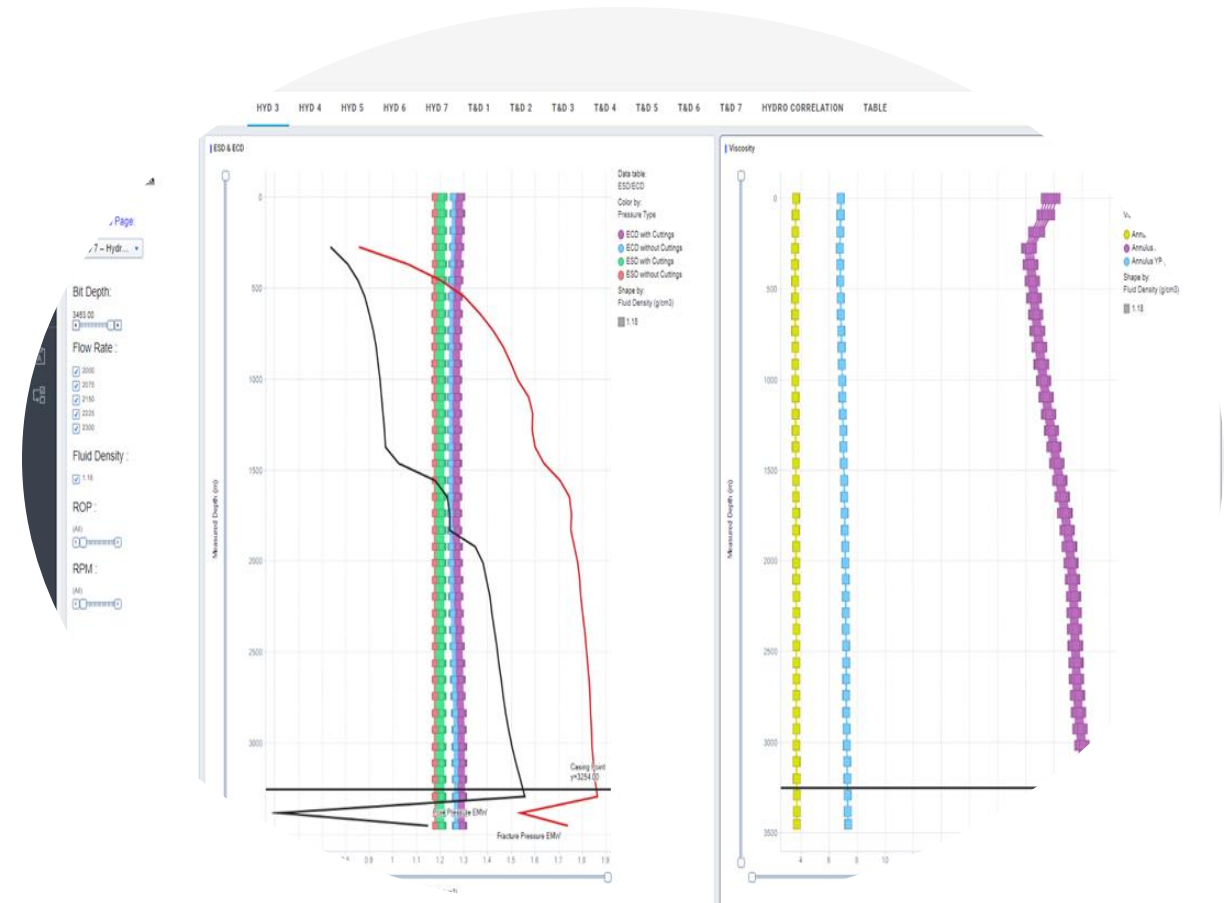
Use of DrillPlan in FLX

- Template designed for all standard well designs on Statfjord
- Quick Design validation in Well selection phase
- SLB IWC Team Internal Use of DrillPlan for Trajectory design, BHA design, Fluid Design and Completion Design



Use of DrillPlan in FLX

- Template designed for all standard well designs on Statfjord
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- SLB IWC Team Internal Use of DrillPlan for Trajectory design, BHA design, Fluid Design and Completion Design
- FLX Team use of DrillPlan for sensitivity analysis and design validation



Use of DrillPlan in FLX

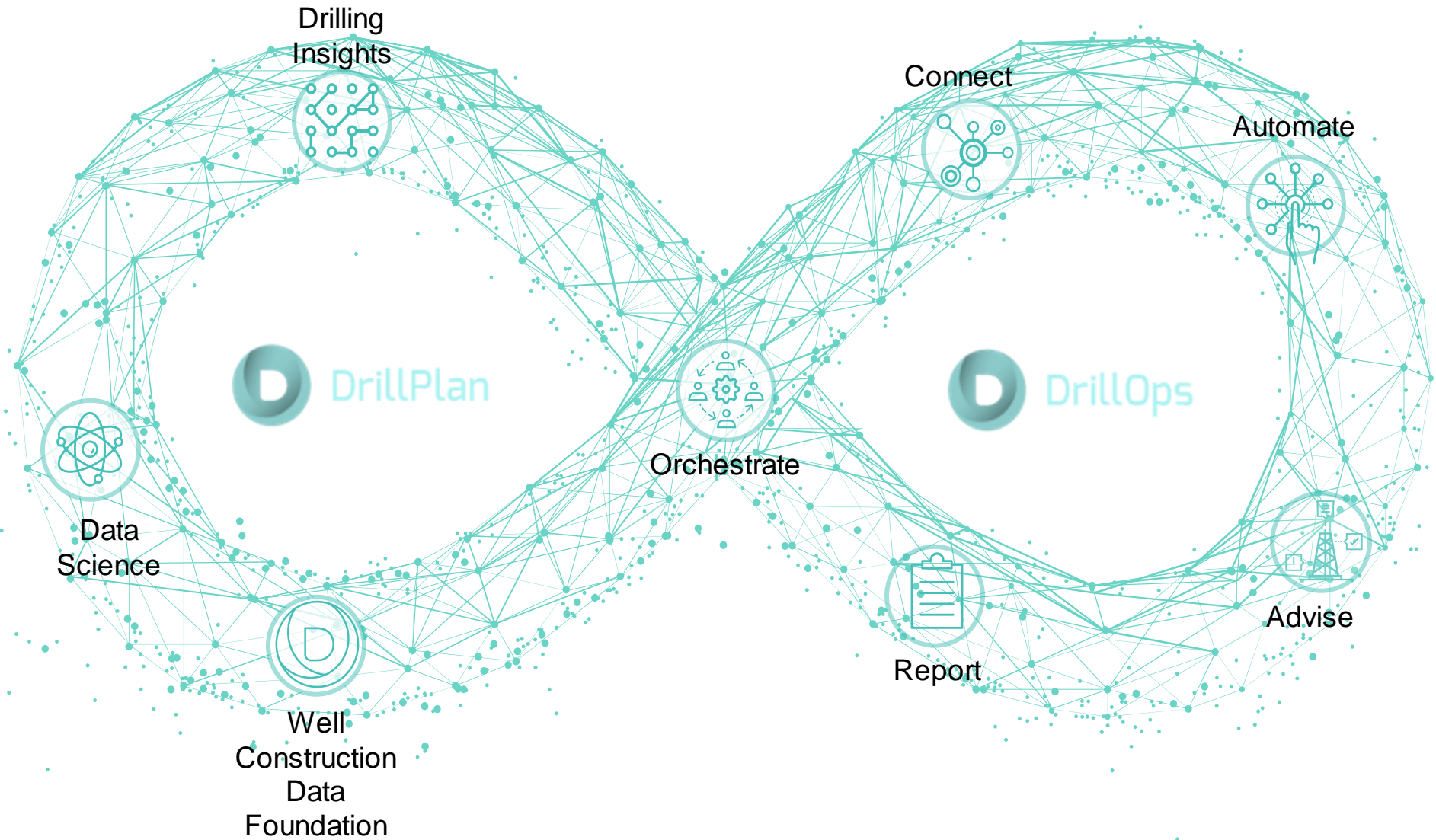


- Template designed for all standard well designs on Statfjord
- Quick Design validation in Well selection phase
- SLB IWC Team Internal Use of DrillPlan for Trajectory design, BHA design, Fluid Design and Completion Design
- FLX Team use of DrillPlan for sensitivity analysis and design validation
- FLX Team use of DrillPlan to create Activity Program

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The Integrated Digital Drilling Solution



The Integrated Digital Drilling Solution



Schlumberger-Private



Use of DrillOps in FLX

- Implementation of DrillOps Orchestrate to reduce planning time and produce high quality and structured DOP's

The screenshot displays the DrillOps software interface. At the top, the DrillOps logo is visible. Below it, there's a navigation bar with options like 'TELEMETRY', 'SBV', 'RIG STATE', and 'In Slips'. A main header shows 'Rate report' and 'Show canceled activities' with a 'Day' tab selected. The central part of the screen shows a detailed view of a drilling activity: 'Drill to depth (Drill to TD) | 12.25 in | 1653-3254 m'. This view includes sections for 'Information and Performance', 'Report Entries', and 'Operational Notes'. The 'Information and Performance' section shows a duration of 2 days 19 hours 27 minutes and a hole length of 1601.1601 meters. The 'Report Entries' section is currently empty. The 'Operational Notes' section contains two entries: '1. Perform SCR readings at 30/40 spm' and '2. Drill 12 1/4" section to TD.' Below the notes, there are recommended drilling parameters: Flow (3200-3400 LPM), On bottom (45 m/hr), WOB (0-12 ton), and RPM (120-180).

Use of DrillOps in FLX

- Implementation of DrillOps Orchestrate to reduce planning time and produce high quality and structured DOP's
- Implement DrillOps Report to automatically capture activity notes and reduce time spent offshore on reporting

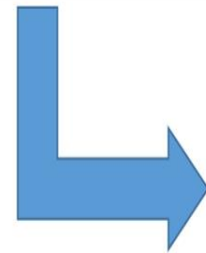


Operations Summary

...don TD circulation, FOOH to surface, RH 9.5°F Causing to Setting Depth, land, Manelli Hanger, Perform Odf

Time Summary

Hour	PH	OPN	WS	OPN	Depth (m)	NPT Level	Description
23:00	DRS	ROT	00:00	01:36	1,026.6	0	Cont. Drill 12 1/4" hole from 955m to 976 m Frisage: 331 m Average ROP: 28 m/hr Frate: 2.7 m/min WOB: 35 KdaN TDS RPM: 60 RPM Pressure on: 1000 kPa, Pressure off: 1000 kPa Torque on: 7000 kNm, Torque off: 3000 kNm LP WT: 18 KdaN Down: 18 KdaN Rotate: 17 KdaN Rotation hours: 15.20hrs Shift hours: 5 hrs Connection time: 1.5h Survey time: 1.5 hrs Planning time: 1hrs

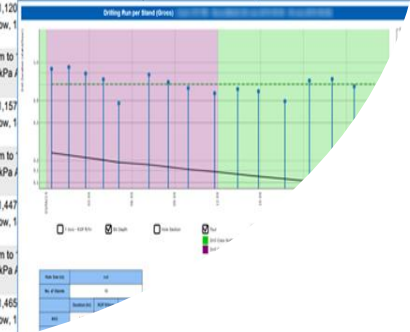


IDS Automated DDK +

Summary for Period 0000 Hrs to 2400 Hrs on 21 Nov 2019

Operations for Period 0000 Hrs to 2400 Hrs on 21 Nov 2019

PH	OPN	WS	OPN	From	To	Depth (m)	NPT Level	Description
D12	DRS	ROT	00:00	01:36	1,026.6	0	0	Drill ahead rotary (Surface) from 966.41 m to 1,026.63 m with Avg Surface 40 rpm, 2 m/min Avg Flow, 12,384 kPa Avg SPP On Bottom, 5.74 KdaN Avg WOB
D12	DRM	SLI	01:36	02:05	1,038.0	0	0	Drill ahead sliding from 1,025.29 m to 1,038.00 m with Avg Surface 8 rpm, 3 m/min Avg Flow, 13,743 kPa Avg SPP On Bottom, Avg WOB
D12	DRS	ROT	02:05	03:51	1,084.4	0	0	Drill ahead rotary (Surface) from 1,025.15 m to 1,084.43 m with Avg Surface 37 rpm, 2 m/min Avg Flow, 11,840 kPa Avg SPP On Bottom, 6.34 KdaN Avg WOB
D12	DRM	SLI	03:51	04:23	1,090.5	0	0	Drill ahead sliding from 1,081.79 m to 1,090.51 m with Avg Surface 13 rpm, 3 m/min Avg Flow, 14,099 kPa Avg SPP On Bottom, 1.12 KdaN Avg WOB
D12	DRS	ROT	04:23	05:31	1,125.8	0	0	Drill ahead rotary (Surface) from 1,080.65 m to 1,125.80 m with Avg Surface 42 rpm, 2 m/min Avg Flow, 12,988 kPa Avg SPP On Bottom, 7.11 KdaN Avg WOB
D12	DRM	SLI	05:31	05:59	1,131.7	0	0	Drill ahead sliding from 1,125.57 m to 1,131.66 m with Avg Surface 9 rpm, 3 m/min Avg Flow, 15,072 kPa Avg SPP On Bottom, 0.95 KdaN Avg WOB
D12	DRS	ROT	05:59	07:01	1,165.2	0	0	Drill ahead rotary (Surface) from 1,120 Surface 36 rpm, 2 m/min Avg Flow, 1 8.72 KdaN Avg WOB
D12	DRM	SLI	07:01	07:15	1,167.8	0	0	Drill ahead sliding from 1,162.07 m to rpm, 3 m/min Avg Flow, 15,963 kPa Avg WOB
D12	DRS	ROT	07:15	15:31	1,450.1	0	0	Drill ahead rotary (Surface) from 1,157 Surface 44 rpm, 2 m/min Avg Flow, 1 6.76 KdaN Avg WOB
D12	DRM	SLI	15:31	17:34	1,466.0	0	0	Drill ahead sliding from 1,450.04 m to rpm, 3 m/min Avg Flow, 16,200 kPa Avg WOB
D12	DRS	ROT	17:34	18:13	1,472.0	0	0	Drill ahead rotary (Surface) from 1,447 Surface 32 rpm, 2 m/min Avg Flow, 1 6.61 KdaN Avg WOB
D12	DRM	SLI	18:13	19:43	1,485.1	0	0	Drill ahead sliding from 1,464.97 m to rpm, 3 m/min Avg Flow, 16,142 kPa Avg WOB
D12	DRS	ROT	19:43	20:09	1,488.1	0	0	Drill ahead rotary (Surface) from 1,465 Surface 18 rpm, 2 m/min Avg Flow, 1 9.23 KdaN Avg WOB



Use of DrillOps in FLX

- Implementation of DrillOps Orchestrate to reduce planning time and produce high quality and structured DOP's
- Implement DrillOps Report to automatically capture activity notes and reduce time spent offshore on reporting
- Implement DrillOps Advise to mitigate quality incidents, drive procedural adherence and increase cost efficiency



FLX ambitions

Go from disrupted workflows with manual data transfers

Subsurface evaluation

Formation Tops

Drilling Targets

Mud Weight Windows

A diagram illustrating the subsurface evaluation workflow. It features a 3D geological model at the top showing different rock layers. Below it, a 2D map displays 'Drilling Targets' in various colors. To the right, a 'Mud Weight Windows' chart shows a vertical profile of mud weight ranges. A stick figure character is shown working at a computer, with speech bubbles indicating data flow between the different components.

Well Design

Trajectories

CEMENTICS

Fluids

Casing

Engineer's Desktop

Landmark

A diagram illustrating the well design workflow. It includes a 3D well trajectory visualization, a 'CEMENTICS' logo, a 'Fluids' table, a 'Casing' diagram, and 'Engineer's Desktop' software. A 'Landmark' software window is also shown. A stick figure character is shown working at a computer, with speech bubbles indicating data flow between the different components.

Operations

Lessons Learned

DOP's

Drilling Reports

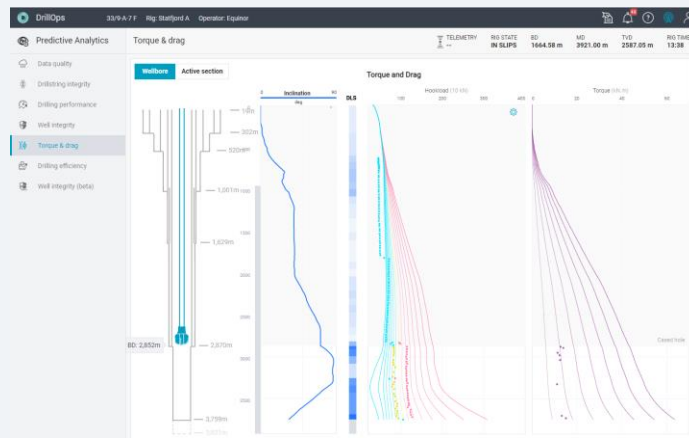
A diagram illustrating the operations workflow. It features a photograph of a worker at a control panel, a 'Lessons Learned' table, 'DOP's' (Drilling Operations Plans) diagrams, and 'Drilling Reports' tables. A stick figure character is shown working at a computer, with speech bubbles indicating data flow between the different components.

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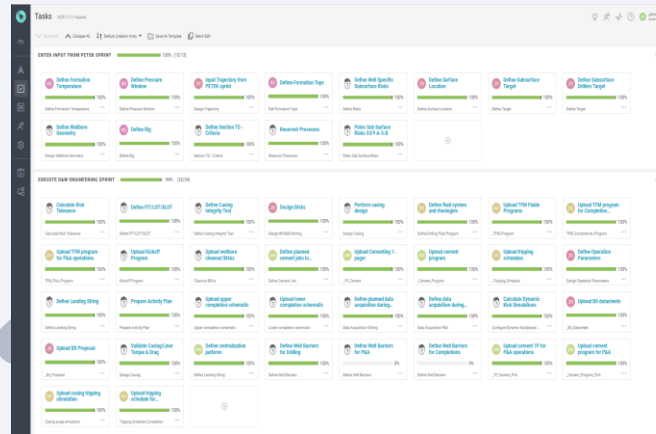
FLX ambitions

to integrated workflows with seamless data transfer

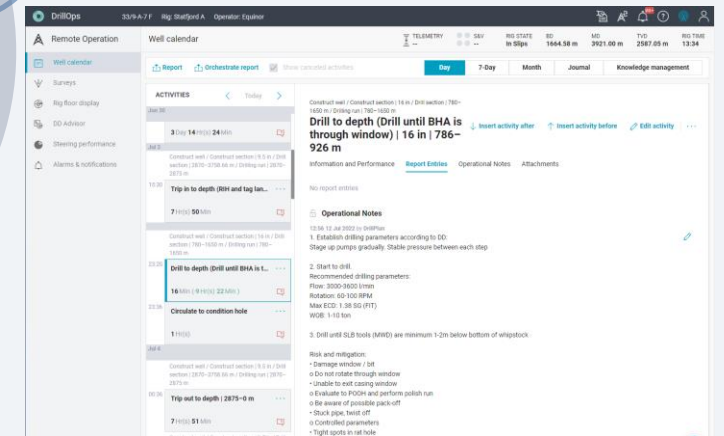
DrillOps Advise



DrillPlan



DrillOps Orchestrate and Report





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Digital Well Planning Using DrillPlan to optimize well planning on an old giant

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