



# EXEBENUS

▴ PULSE

REAL-TIME INSIGHT,  
FULL-TIME CONFIDENCE  
WITH VALIDATED,  
DETAILED DIGITAL  
OPERATING PROCEDURES  
FOR DRILLING AND  
COMPLETIONS





**EXEBENUS PULSE** INTRODUCES A NEW ERA OF DIGITALIZED INFORMATION EXCHANGE BETWEEN PLANNING AND EXECUTION.

## KEY BENEFITS

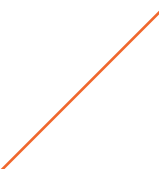
**Exebenus Pulse** reduces downtime and lowers operational costs with:

- ▲ Validated, detailed digital operating procedures
- ▲ Procedural consistency and confidence
- ▲ Embedded experience to predict risks and deploy lessons learned
- ▲ Deviation alerts so you can act in real time
- ▲ Dynamic, immediate handover between office and rig

## A CLOUD SOLUTION

A cloud solution, **Exebenus Pulse**:

- ▲ Is easily deployed in a hosted or private cloud
- ▲ Is neutral and easily integrated
- ▲ Offers an office-only, an office-rig, or a rig-only solution



**EXEBENUS PULSE** BRIDGES THE FOOTPRINT OF PAST AND CURRENT OPERATIONS. THE APPLICATION INCORPORATES APPROVED TECHNOLOGY OPTIONS AND STANDARDIZED ACTIVITIES, WELL INFORMATION AND BEST PRACTICES IN PLANNING AND EXECUTION. EXEBENUS PULSE DIGITALIZES THE INFORMATION EXCHANGE BETWEEN OFFICE AND RIG, PROVIDING ALL PARTIES WITH REAL-TIME INSIGHT AND FULL-TIME CONFIDENCE.



## STAY CURRENT. SAVE TIME AND PLAN EFFICIENTLY

---

At the heart of **Exebenus Pulse** is a customized, digital product library containing your approved equipment and tools linked to associated tasks, technical functions, operating parameters and insights from past projects.

From here, generating digital operating procedures is quick and automated. There are three ways to make it happen:

- ▲ Start with an existing procedure or template;
- ▲ Assemble a new tool string (the fastest option); or
- ▲ Start from a wellbore.

**Exebenus Pulse** replaces today's text documents with digital procedures that use standardized language to avoid misinterpretation, speed up communication and eliminate potential nonproductive time caused by misunderstanding or missing information. Updates can be quickly incorporated and communicated before and during execution.

## USE YOUR EXPERIENCE. PREDICT RISK

---

Making informed decisions requires a clear, moment-to-moment understanding of the situation. Important information may be buried in previous experiences or in real-time data.

**Exebenus Pulse** mines and incorporates your experience and lessons learned. During planning, simulations allow you to evaluate risks and prepare contingency plans that are ready for action. This goes a long way toward eliminating the hesitations that add up to invisible lost time.

During execution, machine learning agents are fed real-time data to recognize deteriorating conditions that may lead to events such as stuck pipe and well control issues. Preapproved mitigation steps can be taken to avoid downtime.

## ACT ON DEVIATIONS FROM PLAN IN REAL TIME

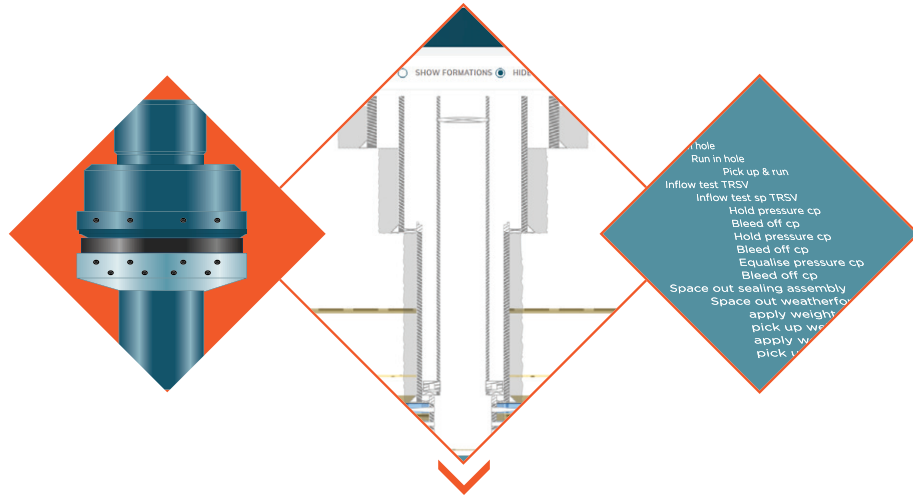
---

As real-time data start to flow, **Exebenus Pulse** recognizes and validates activity execution and flags each point of operational criteria as it is met or not. It recognizes when an activity is completed, and informs the crew of the status to avoid unnecessary waiting time.

The system alerts the crew when operations deviate from plan, and when equipment limits are reached or are near breach, to ensure activities remain within the safe operating window. Procedural updates can be made quickly and put into operation in minutes rather than hours or days.

The activity timeline is recorded and available for analysis, removing the burden of manually recording activities. Similarly, insights such as invisible lost time can be flagged and made available for continuous improvement. The insights can be shared globally or locally, depending on the severity of the situation.

# REAL-TIME INSIGHT FULL-TIME CONFIDENCE



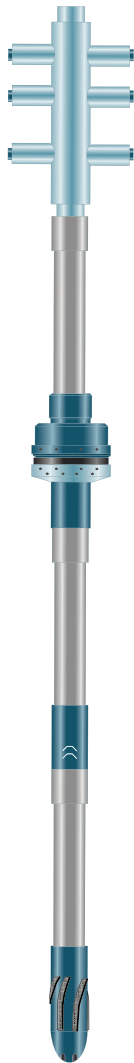
Reducing time...



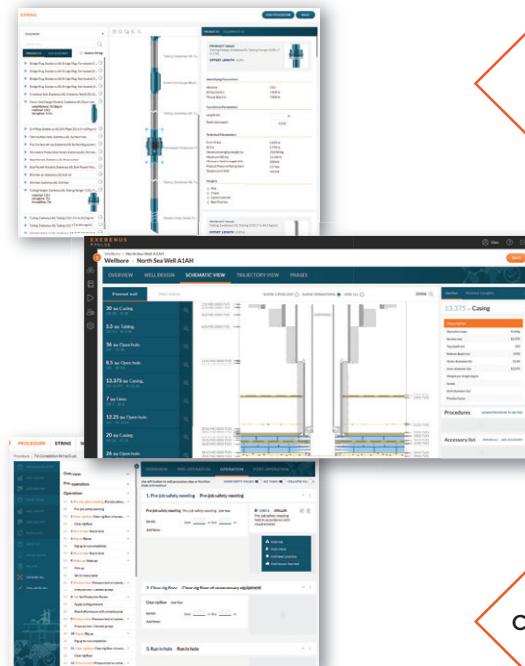
...from months...



...to days



Tools, well and activities come together in the detailed digitalized operating procedure



Risks

Lessons learned

Best practices

Checklists

Standardization and improved consistency

BUILD

EXECUTE

From days...



...to hours



**STRING** ADD PROCEDURE BACK

Completion

Search here...

PRODUCTS SUB-ASSEMBLY Generic String

- ▶ Bridge Plug, Exebenus AS, Bridge Plug, Permanent [7...]
- ▶ Bridge Plug, Exebenus AS, Bridge Plug, Permanent [9...]
- ▶ Bridge Plug, Exebenus AS, Bridge Plug, Retrievable [7...]
- ▶ Bridge Plug, Exebenus AS, Bridge Plug, Retrievable [9...]
- ▶ Crossover Sub, Exebenus AS, Crossover Sub [1-80,13...]
- ▼ Down-hole Gauge Mandrel, Exebenus AS, Down-ho...
  - weight: 34.2kg/m
  - material: 13Cr
  - stringSize: 5.5in
- ▶ Drill Pipe, Exebenus AS, Drill Pipe [1Cr,5.5 in,50 kg/m]
- ▶ Flare surface lines, Exebenus AS, Surface lines
- ▶ Frac Surface set-up, Exebenus AS, Surface Equipment
- ▶ Permanent Production Packer, Exebenus AS, Perman...
- ▶ Rope Socket, Exebenus AS, Rope socket
- ▶ Slide Pocket Mandrel, Exebenus AS, Slide Pocket Man...
- ▶ Slickline Jar, Exebenus AS, SLK Jar
- ▶ Slickline, Exebenus AS, Slickline
- ▼ Tubing Hanger, Exebenus AS, Tubing Hanger [13Cr,7 L...
  - material: 13Cr
  - stringSize: 7in
  - threadSize: 7in
- ▶ Tubing, Exebenus AS, Tubing [13Cr,5.5 in,34.2 kg/m]
- ▶ Tubing, Exebenus AS, Tubing [13Cr,7 in,46.1 kg/m]
- ▶ Mandrel, Exebenus AS, Mandrel

PRODUCTS EQUIPMENT LIST

**PRODUCT NAME**  
Tubing Hanger, Exebenus AS, Tubing Hanger [13Cr,7 in,7 in]  
**OFFSET LENGTH**: 4.39 m

**Identifying Parameters**

Material: 13Cr  
String size (in): 7.000 in  
Thread Size (in): 7.000 in

**Functional Parameters**

Length (m):  m  
Restricted speed:  0.200

**Technical Parameters**

Drift ID (in): 5.650 in  
ID (in): 5.770 in  
Maximum Hanging Weight (kg): 250000 kg  
Maximum OD (in): 13.500 in  
Minimum Yield Strength (kN): 300 kN  
Product Pressure Rating (bar): 517 bar  
Tension Limit (kN): 445 kN

**Insights**

- ⊕ Risk
- ⊕ Check
- ⊕ Lesson Learned
- ⊕ Best Practice

**PRODUCT NAME**  
Tubing, Exebenus AS, Tubing [13Cr,7 in,46.1 kg/m]  
**OFFSET LENGTH**: 4.39 m

The digital library contains the approved product options with their respective operating procedures. As the tool string is built a standardized operating procedure is assembled.

After the well schematic is built a tool string with the associated procedures is assigned to its respective phase.

Wellbore: North Sea Well A1AH

**Wellbore - North Sea Well A1AH** SAVE

OVERVIEW WELL DESIGN SCHEMATIC VIEW TRAJECTORY VIEW PHASES

Planned well

- 30 (in) Casing. OD: 30 ID: 28
- 5.5 (in) Tubing. OD: 5.5 ID: 4.78
- 36 (in) Open hole. OD: ID: 36
- 8.5 (in) Open hole. OD: ID: 8.5
- 13.375 (in) Casing. OD: 13.375 ID: 12.26
- 7 (in) Liner. OD: 7 ID: 6
- 12.25 (in) Open hole. OD: ID: 12.25
- 20 (in) Casing. OD: 20 ID: 18

Section Related Insights

**13.375 in Casing**

**Description**

Operation type	Casing
Section size	13.375
Top depth (m)	150
Bottom depth (m)	1592
Outer diameter (in)	12.26
Inner diameter (in)	12.375
Weight per length (kg/m)	
Grade	
Drift diameter (in)	
Friction factor	

**Procedures** ASSIGN PROCEDURE TO SECTION

**Accessory list** EXPAND ALL ADD ACCESSORY

**PROCEDURE** STRING WELLBORE Procedure: 7 in Completion String Draft DRAFT SAVE

Procedure: 7 in Completion String Draft

PROCEDURE STEP

- ADD ABOVE
- ADD BELOW
- FUNCTIONS
- ADD ABOVE
- ADD BELOW
- DUPLICATE
- MOVE UP
- MOVE DOWN
- DELETE
- EXPAND ALL
- COLLAPSE ALL

**Overview**

**Pre-operation**

**Operation**

- 1 Pre-job safety meeting: Pre-job safety...
- 2 Clear rig floor: Clear rig floor of unnec...
- 3 Run in hole: Run in hole
- 4 Rig up: Rig up
- Rig up to run completion
- 5 Run in hole: Run in hole
- 6 Make up: Make up
- Pick up
- Set in rotary table
- 7 Pressure test: Pressure test w/ cemen...
- Pressure test - Cement pumps
- 8 Set: Set Production Packer
- Apply tubing pressure
- Bleed off pressure with cement pump
- 9 Pressure test: Pressure test w/ cemen...
- Pressure test - Cement pumps
- 10 Rig up: Rig up
- Rig up to run completion
- 11 Clear rig floor: Clear rig floor of unnec...
- Clear rig floor
- 12 Pressure test: Pressure test w/ ceme...

OVERVIEW PRE-OPERATION OPERATION POST-OPERATION

Use left toolbar to add procedure step or function (Hide information)

**1. Pre-job safety meeting - Pre-job safety meeting**

Pre-job safety meeting: Pre-job safety meeting *Edit Text*

BIT MD Start  m End  m

Add Notes

**CHECK - DRILLER** Pre-job safety meeting held in accordance with requirements

- ➕ Add risk
- ➕ Add check
- ➕ Add best practice
- ➕ Add lesson learned

**2. Clear rig floor - Clear rig floor of unnecessary equipment**

Clear rig floor *Add Text*

BIT MD Start  m End  m

Add Notes

**3. Run in hole - Run in hole**

By opening the standardized operating procedure, you can tailor the procedure steps and their parameters as per operational requirements. Insights and lessons learned from previous operations are automatically available in context for the product or operation.

**Exebenus AS**  
Kanalsletta 2,  
4033 Stavanger,  
Norway

+47 917 63 400  
[info@exebenus.com](mailto:info@exebenus.com)



Copyright © 2020 Exebenus AS.  
**Exebenus** and **Exebenus Pulse** are  
registered trademarks of Exebenus.

[www.exebenus.com](http://www.exebenus.com)