

DR_{opped} O_{bject} P_{revention} S_{cheme}

DROPS Forum Aberdeen

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Topics

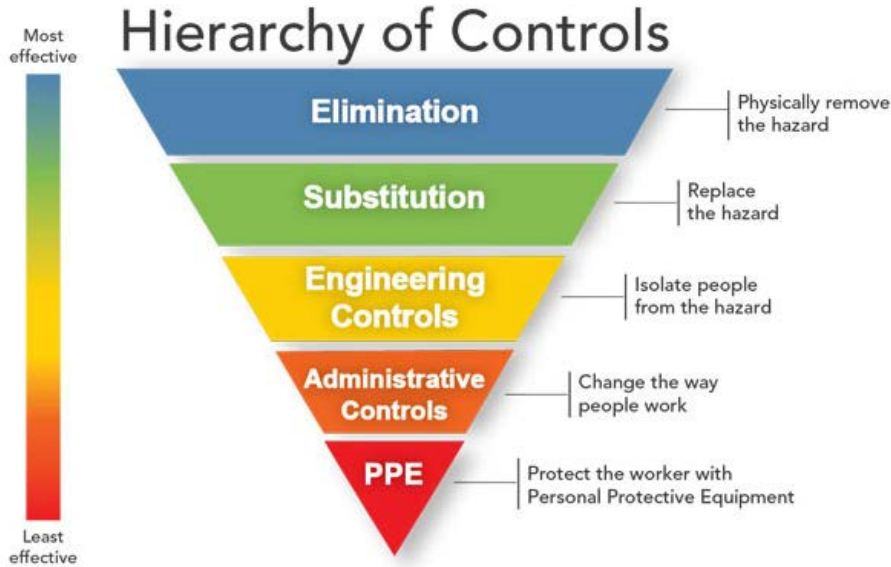
- **Design for DROPS prevention;**
 - Borematch*
 - Wireline guide*
 - Wireline guide rigging*
 - OEM Product modifications*
- **DROPS** (Design guide D441000342) notation in COC and DOPP+
- **NOV DROPS Key Performance Indicators**

Design for DROPS prevention



Design for DROPS prevention

Realize that:



Most effective dropped object prevention can be accomplished by minimizing number of parts,

which may become a dropped object!!!!!!

Design guidelines that helps fulfilling this philosophy:

- As few parts as possible,
- Parts assembled inside an enclosed housing,
- Use securing methods allowing visual inspection for integrity,
- Secure the best way possible,
- Expect the impossible to happen,



Using these guidelines will bring your safety level up and cost down!

Borematch (10710179-001)

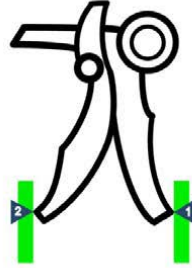
Developed to eliminate incidents caused by mismatched TJ dimensions/ shape with elevator bore.

Profile Gauge (10146201-001)



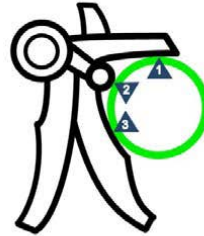
ID MEASUREMENT:

1. Insert "BoreMatch" tool into bore.
2. Spread the "BoreMatch" tool legs until the two outer tips with arrow marking make contact to bore.
3. Gently remove the "BoreMatch" tool from the bore and read the "ID".



OD MEASUREMENT:

1. Extend the "BoreMatch" tool around the pipe.
2. Push the "BoreMatch" tool against the pipe until the two legs and the center tip with arrow marking make contact with the pipe.
3. Gently remove the "BoreMatch" tool from the pipe and read the "OD".



MATCHING PIPE example:



Measure elevator bore (ID) with 2-point measurement. Readout 6 1/8".



Measure pipe body (OD) with 3-point measurement. Readout 6".
The pipe matches with the bore.

MATCHING TOOL JOINT example:



Measure elevator TJ-Bore (ID) with 2-point measurement. Readout 8 1/4".

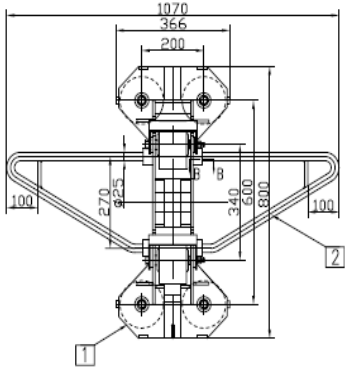


Measure pipe TJ-Diameter (OD) with 3-point measurement. Readout 8".
The tool joint matches with the bore.

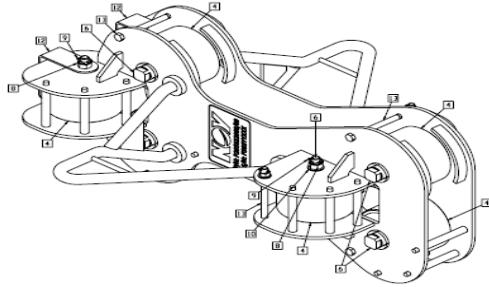
FEATURES AND BENEFITS:

- Proper elevator selection with specific pipe, as a result reduced risk of dropped pipe incidents
- Not sensitive to dirt (i.e. mud)
- Wear indicator for reliable measurement
- Accuracy up to 1/16 inch or 1.5mm
- Light weight — plastic components eliminate the risk of down time when dropped in hole
- Graphics recessed and applied by laser to minimize risk contrast loss
- Contrasting surface roughness to ease dimension reading
- Part Number: 10710179-001

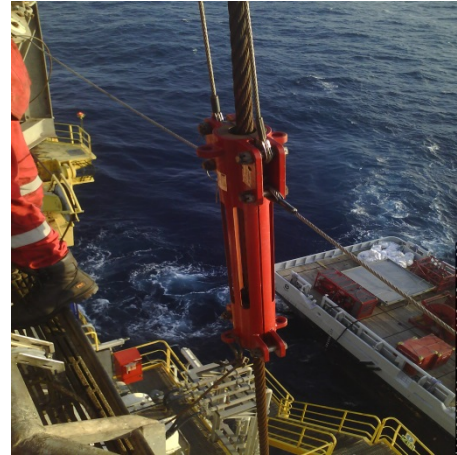
Wireline guide history



Original design 85 parts



DROPS compliant design 89 parts



35 parts reduced of which 16 captured in housing a **reduction of 60%**. What about cost?

Focus Moved to next “weakness”- the Spring assembly and Stabilizer rigging



1. Closed spring ends do not allow the end connectors to be pulled off.
2. Compression spring when pushed solid does not result in failure/break - worst case some strength loss.
3. Compression spring allows the use of a scale (engraved in a bar) to read the load when tensioned.
4. Other?

OEM product modifications

- Identify OEM parts that do not comply to guidelines and standards,
- Open discussion with OEM to get to solution,
- NOV and customers to work together convincing OEM's,
- Show market expectations is driving the change,
- Result new market potential for OEM's.



DROPS (Design guide D441000342) notation in COC and DOPP+





DROPS notation in COC and DOPP+

NOV Secondary retention guide D441000342

Starting to add notation in COC related to the NOV secondary retention guide.

In addition getting requests to comply to DOPP (Approval on board drops prevention management to the ABS guide), and DOPP+ (includes certification of equipment), both ABS driven whereby NOV is one of the co-writers of the ABS guide.

Document: NL47348960.pdf

 Certificate of Conformance Declaration of Incorporation of Partly Completed Machinery	
Manufacturer	National Oilwell Varco (Varco B.J. B.V.)
Address	Nijverheidsweg 45 4879 AP Etten-Leur The Netherlands
Part Number	17777389-001 (Ref. Part Number 10023608-001)
Legacy Part	NA
Description and Identification	Power Slip: PS30; For National: 49.1/2"; Rating 750 sTon/ 680.4 tonne per API 7K fifth edition and 400 sTon/ 340 tonne per API 8C latest edition
Serial Number	NL47348960 (Ref. Serial Number NL17055425)
Notified Body for ISO 9001:2015 certification	DNV-GL Zwolsseweg 1 2994 LB Barendrecht The Netherlands
TC-file lodged with	Lloyds Register Nederland B.V. Weena-Zuid 170 3000 AS Rotterdam The Netherlands
Fulfills the provisions of the following Directives	2006/42/EC 94/9/EC
Fulfills the provisions of the harmonized standards	EN 12100:2010 EN 13463-5:2011 Constructional ISO EN 4414:2010 EN 13463-1:2009 Generic EN 1127-1:2011
Fulfills the provisions of the technical standards	API 7K 5th Edition API 8C PSL-1 Latest Edition
Fulfills the provisions of the equipment	 II 2 G c T4 Tamb 55 °C
Fulfills the provisions of NOV's Design guideline	Secondary retention and prevention of dropped objects D441000342-SPC-001
Essential requirements acc. to 2006/42/EC applied and fulfilled	Annex 1, Section: 1.1, 1.3, 1.4, 1.5, 1.6, 1.7
The assembly was proof load tested, prior to receiving its final MPI and functional testing. A test load, simulating the same manner as in actual service, was applied and held for a minimum period of 5 minutes.	
Rated Load Capacity	750.00 STON : Rating per API 7K fifth edition 400.00 STON : Rating per API 8C latest edition
Proof Load Capacity	1125.00 STON

NOV DROPS Key Performance Indicators

Monitored KPI's

DROPS related indicators:

- number of Customers reported incidents (inflow)
- number of Customers resolved incidents (outflow)
- case backlog
- response time/ average lifetime

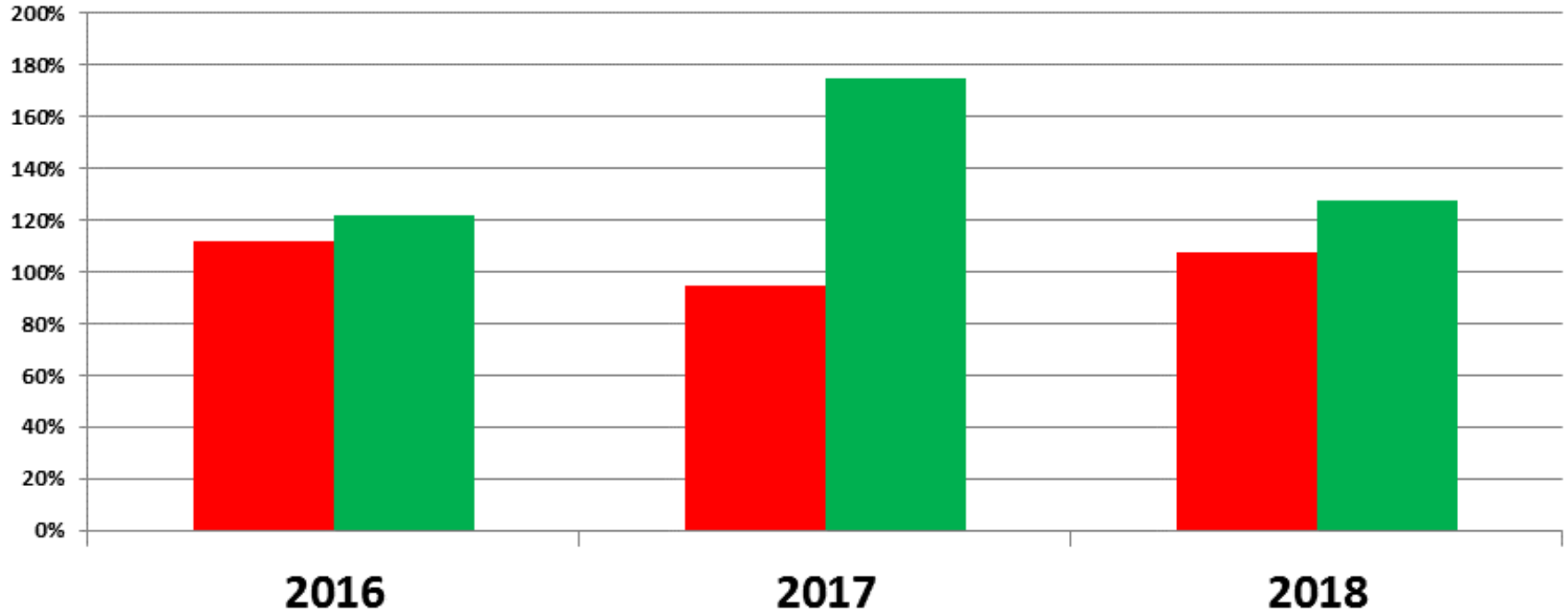


Internally KPI available for all NOV at DROPS intranet pages

Monthly report & summary handed over to NOV Upper Management

Attention and follow up directed where needed based on report

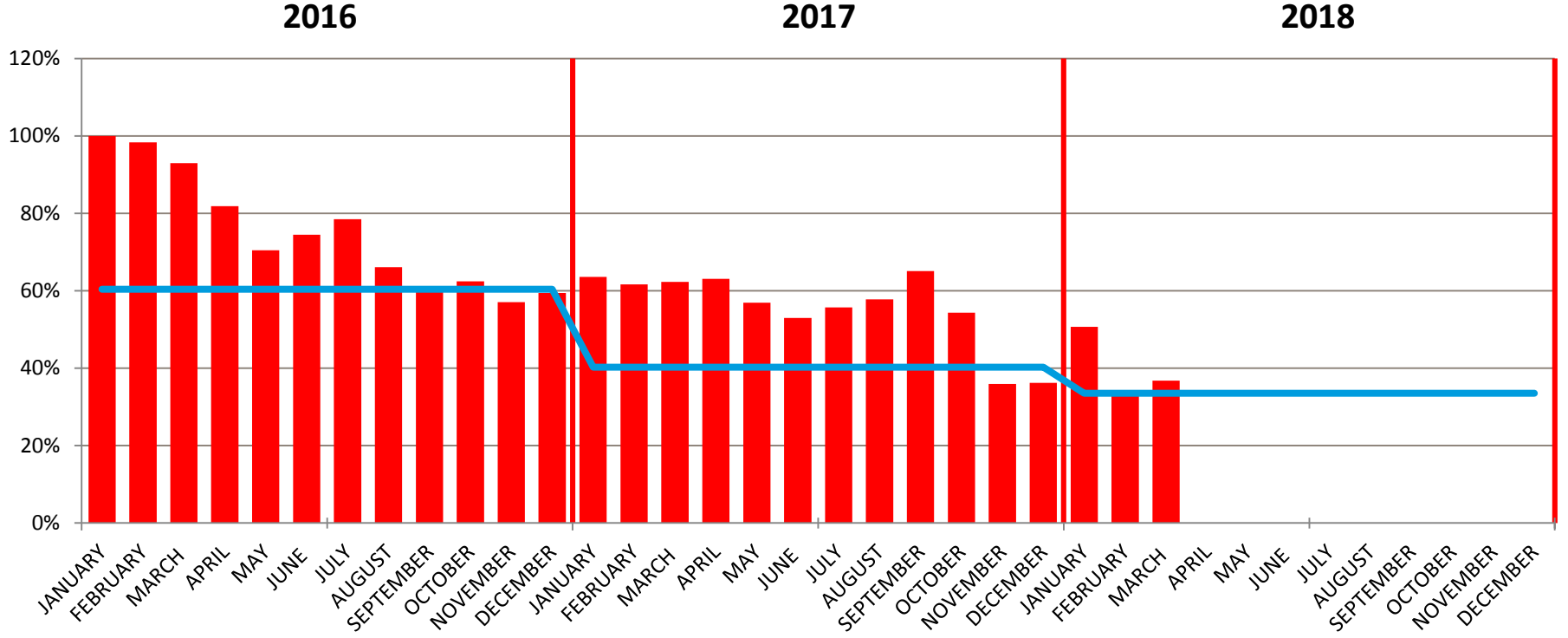
Customers Reports



Note: Opening January 2016 = 100%

■ opening (inflow) ■ closing (outflow)

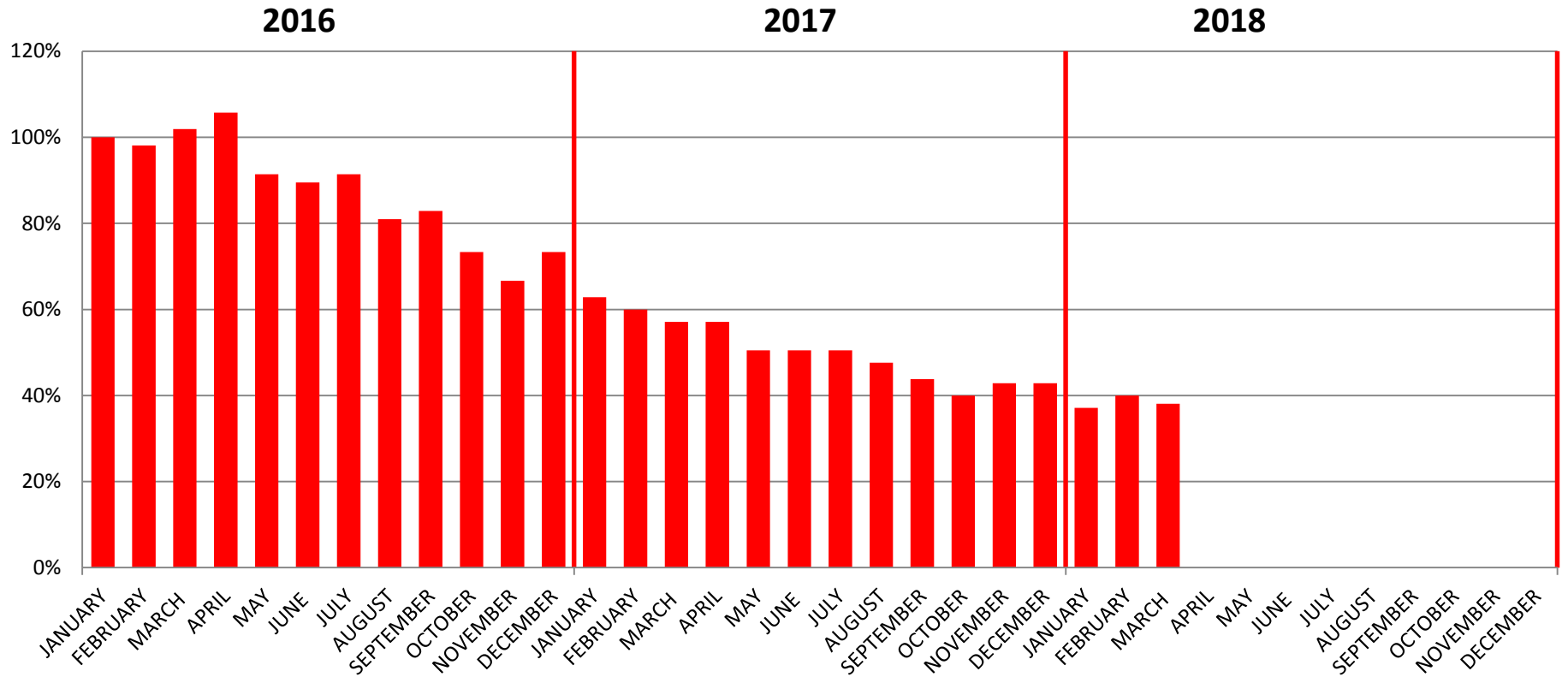
Case Lifetime[days]



Note: January 2016 = 100%

█ CASE AGE — TARGET

Case Backlog



Note: January 2016 = 100%

Questions?





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