IADC DDR Plus
Survey – Initial Review

May, 24, 2018

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Survey Background

Survey was designed by DDR Plus team to solicit information useful for defining the IADC DDR Plus project objective.

- Some questions were closed – yes / no
  - Percentage response analysis done
- Some questions were open – comment field
  - Sorted and reporting primary feedback
  - Some details still to collate as usable material
- The presentation is complete as shown
  - Additional open question details to be worked for input to updating IADC DDR

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There are no 'shocks'

- BUT very valuable feedback that can guide the most appropriate IADC DDR update for maximum industry uptake and longevity

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Demographics Survey – 134 Responses

Survey was posted by IADC with an e-mail invite

Posted on Linkedin (J deW)

In advisor role: J de W personally e-mailed many Oil co's, DC's, Service co's (approved by Mike K)
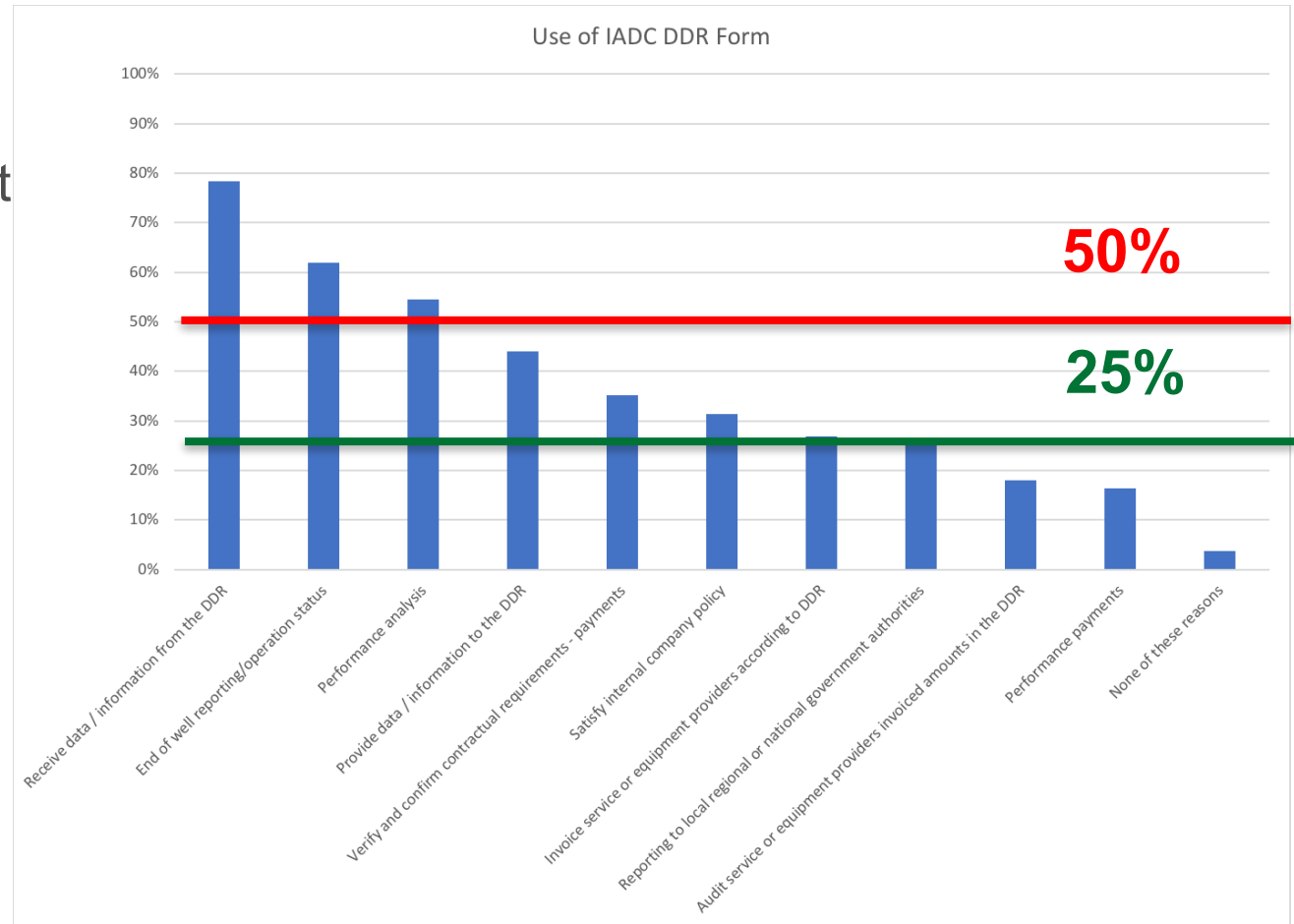
Committee members shared to their co's and suppliers

J de W / MK made target list of Drilling Data / Reporting Companies

- Drilling Contractors: 78 responses from 29 companies
- Operators: 21 responses from 17 companies
- Service companies: 16 responses from 12 companies
- OEM: 4 responses from 4 companies
- Data Acquisition companies: 3 responses from 3 companies
- Other: 11 responses from 11 companies
- NA - 1
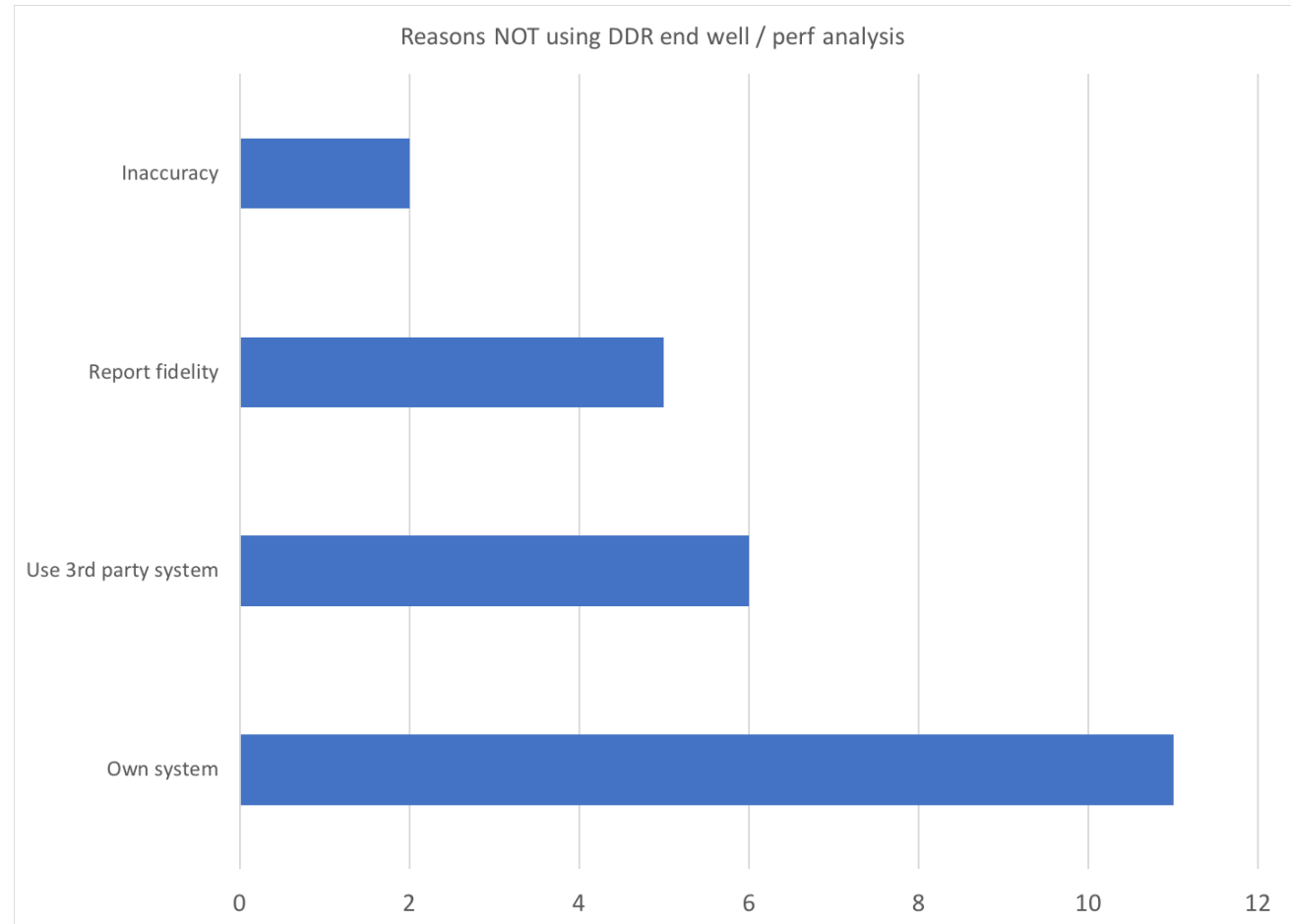
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Use of IADC DDR – using data

1. Receive data
2. End of well report
3. Performance analysis

4. Provide data
5. Verify / confirm payments
6. Satisfy internal policy
7. Invoicing providers
8. Reporting Gov't

Use of IADC DDR Form

50%

25%

Categories (x-axis):
- Receive data / information from the DDR
- End of well reporting/operation status
- Performance analysis
- Provide data / information to the DDR
- Verify and confirm contractual requirements - payments
- Satisfy internal company policy
- Invoice service or equipment providers according to DDR
- Reporting to local regional or national government authorities
- Audit service or equipment providers invoiced amounts in the DDR
- Performance payments
- None of these reasons

Reasons for NOT using the IADC DDR
for end of well / Performance analysis

Use other systems was ranked ahead of fidelity and inaccuracy

Numbers rating non use for this purpose are very low

Reasons NOT using DDR end well / perf analysis

Category	Value
Inaccuracy	2
Report fidelity	5
Use 3rd party system	6
Own system	11

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Report type most accessed
electronic ranks highest

1. Electronic

2. Both

3. Hard copy

4. Neither

VERSION MOST ACCESSED

Neither 3%

Hard copy 23%

Both 13%

Electronic 61%
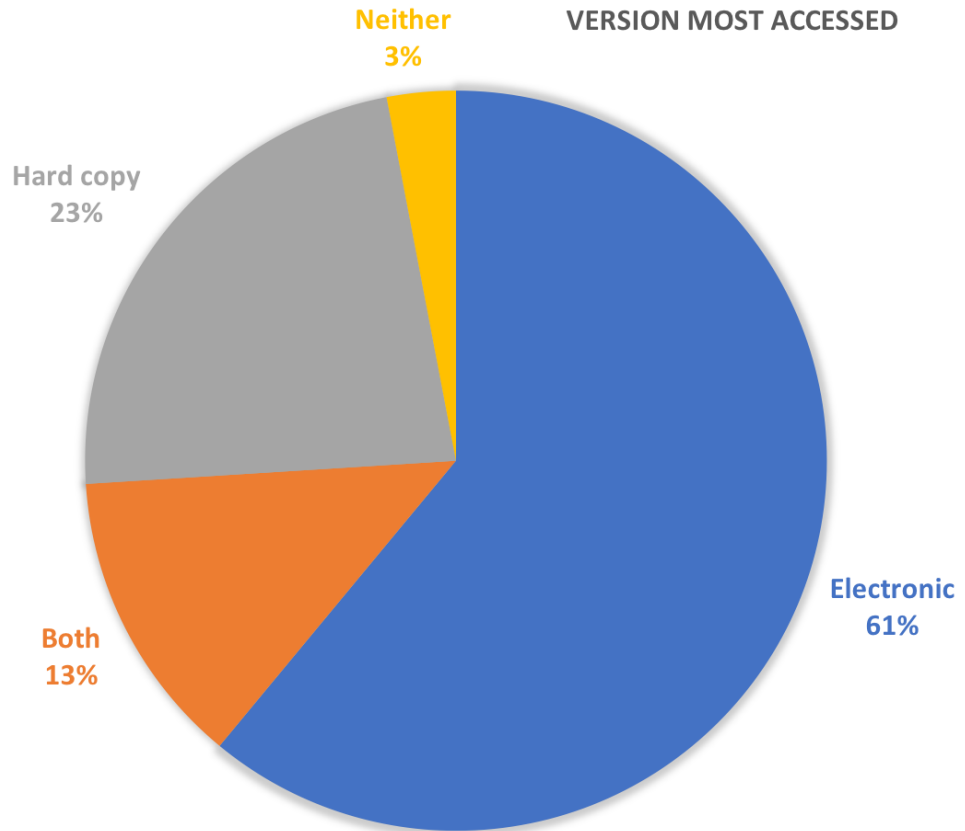
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Report Content – to keep and add

Keep BHA data
&Mud data

**Include parallel
activities**

Parallel Activities, Mud, BHA data

50%

BHA and bit info

Mud data

Parallel activities

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
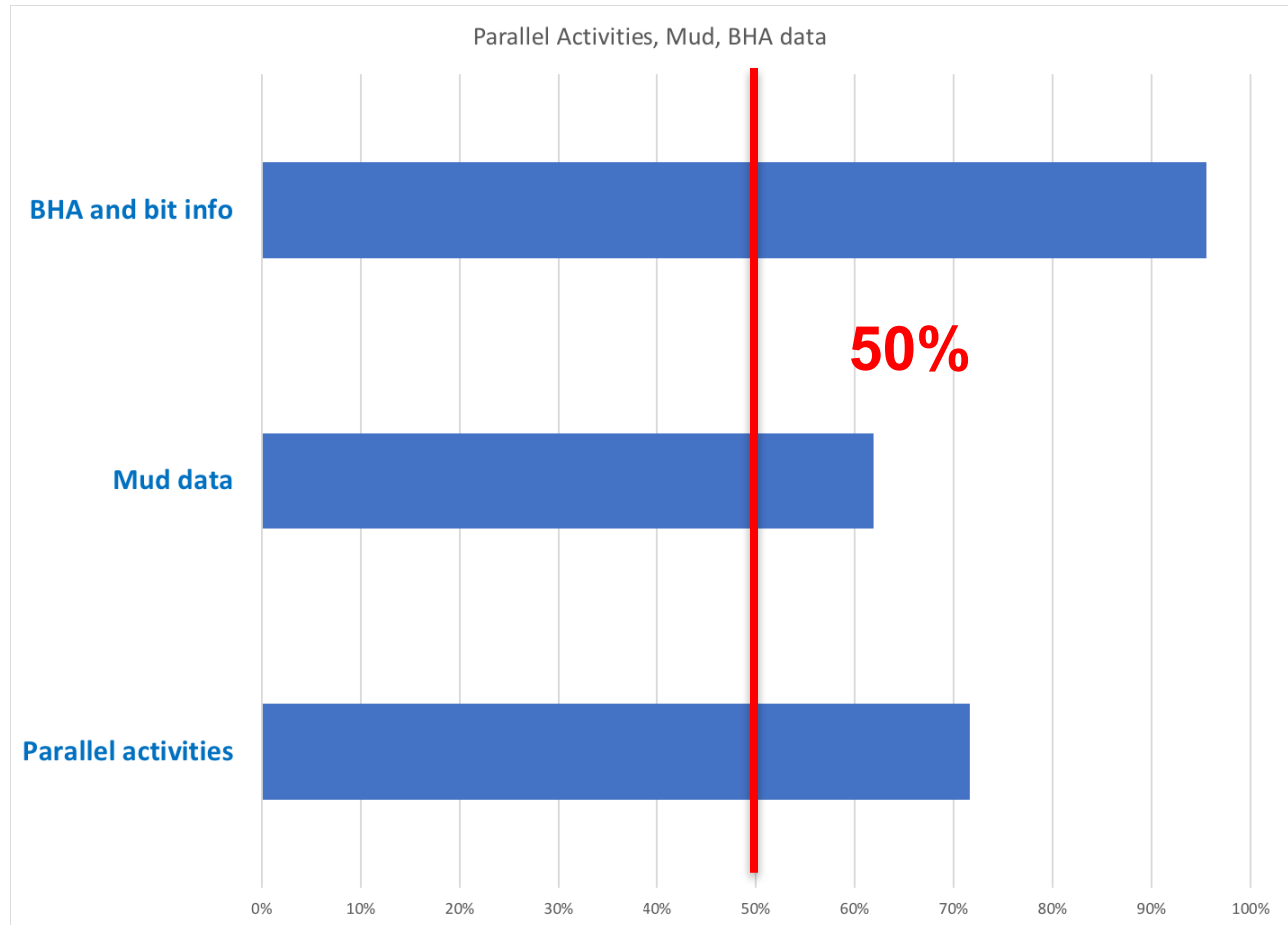
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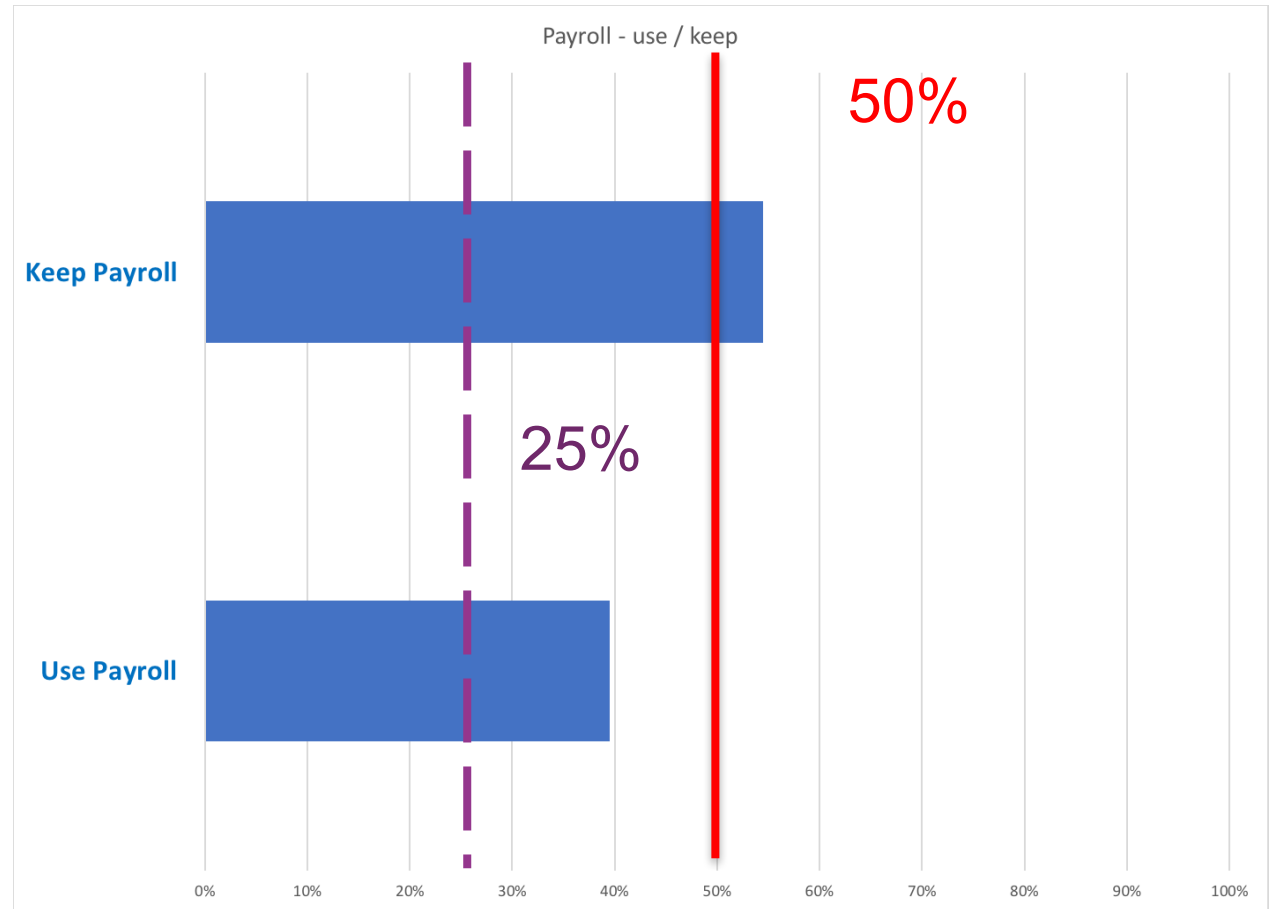
Payroll data – use and keep

More want to
keep it

Many use it

# Tracking activities is important

Connects to performance

Use DDR to track activities

No 21%

Yes 79%

Yes
No
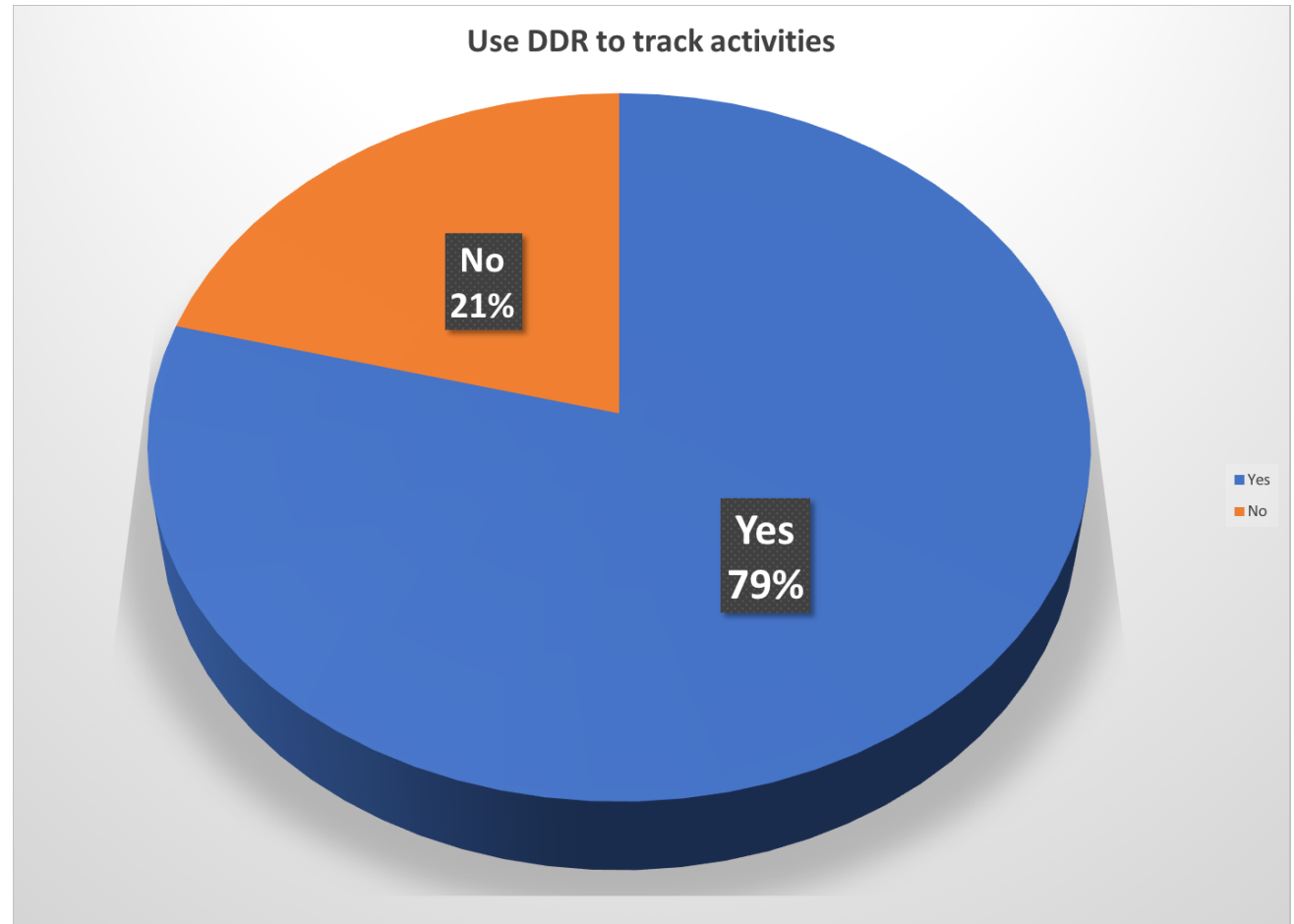
Reasonable trust in IADC DDR reporting

Target could be to move 'very accurate' to over 50%

REPORTED DATA ACCURACY

Very inaccurate 1%

Moderately inaccurate 8%

Very accurate 22%

**Moderately accurate** 69%
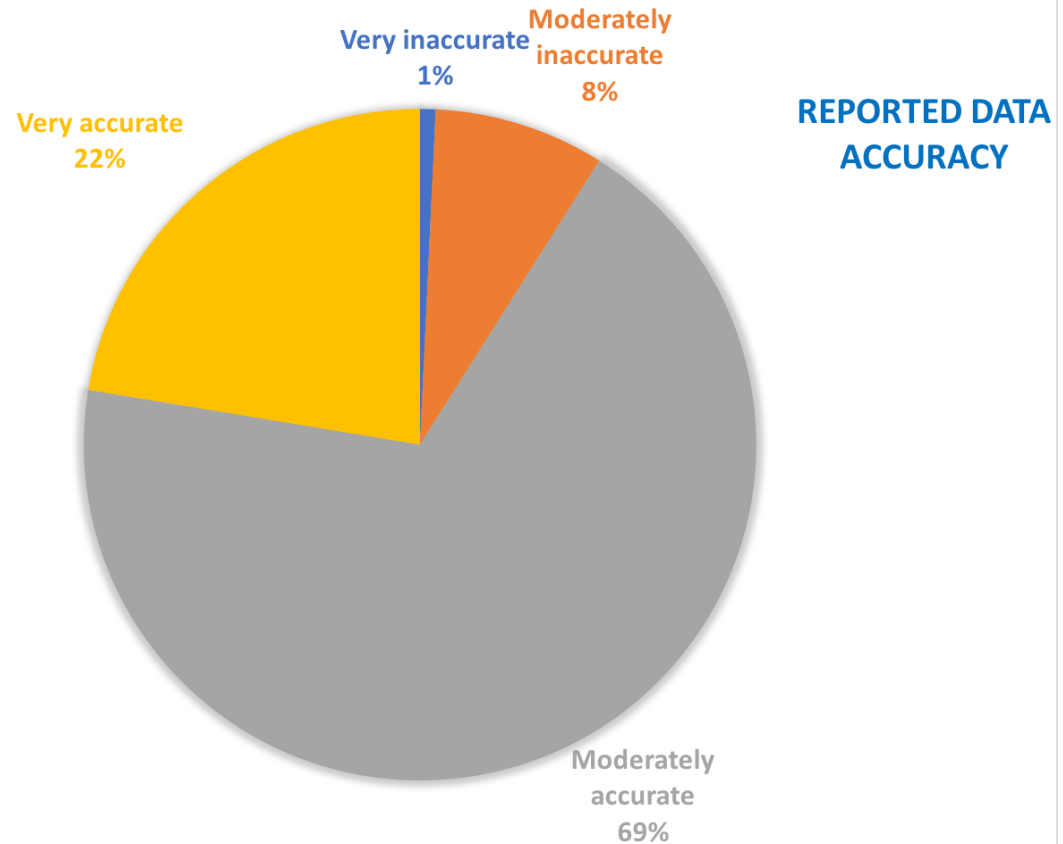
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Need to import data in standard manner

Want industry-standardized manner of importing data into IADC DDR data (structure, format, coding) for increased automated reporting

STANDARD IMPORTING MANNER

No
14%

Yes
86%
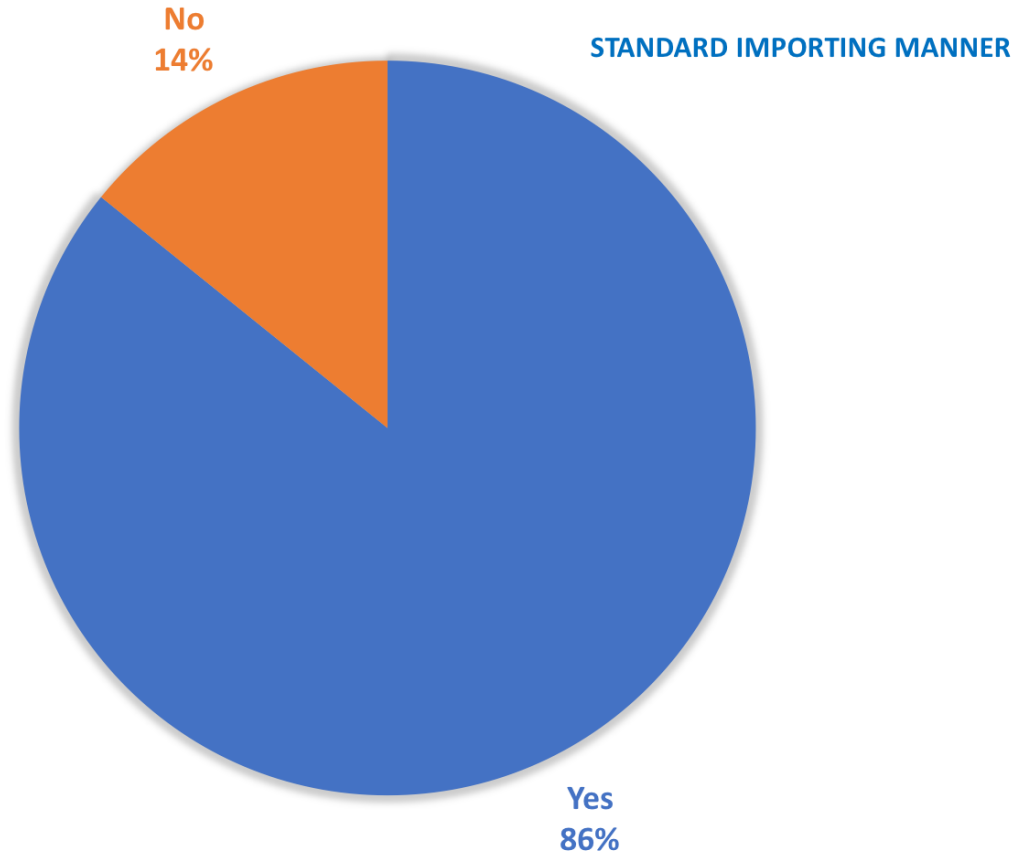
State engines should complete the data

Complete maximum content automatically

DRILLING STATE ENGINES COMPLETE CONTENT

No 22%

Yes 78%

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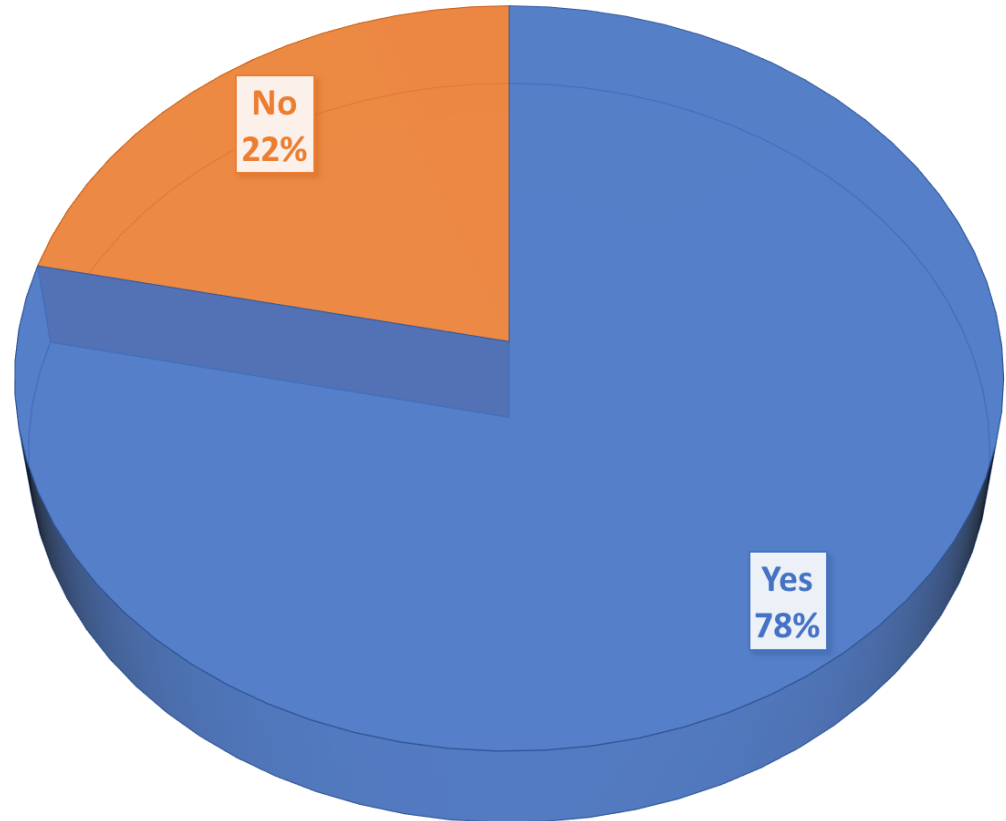
In depth, important feedback
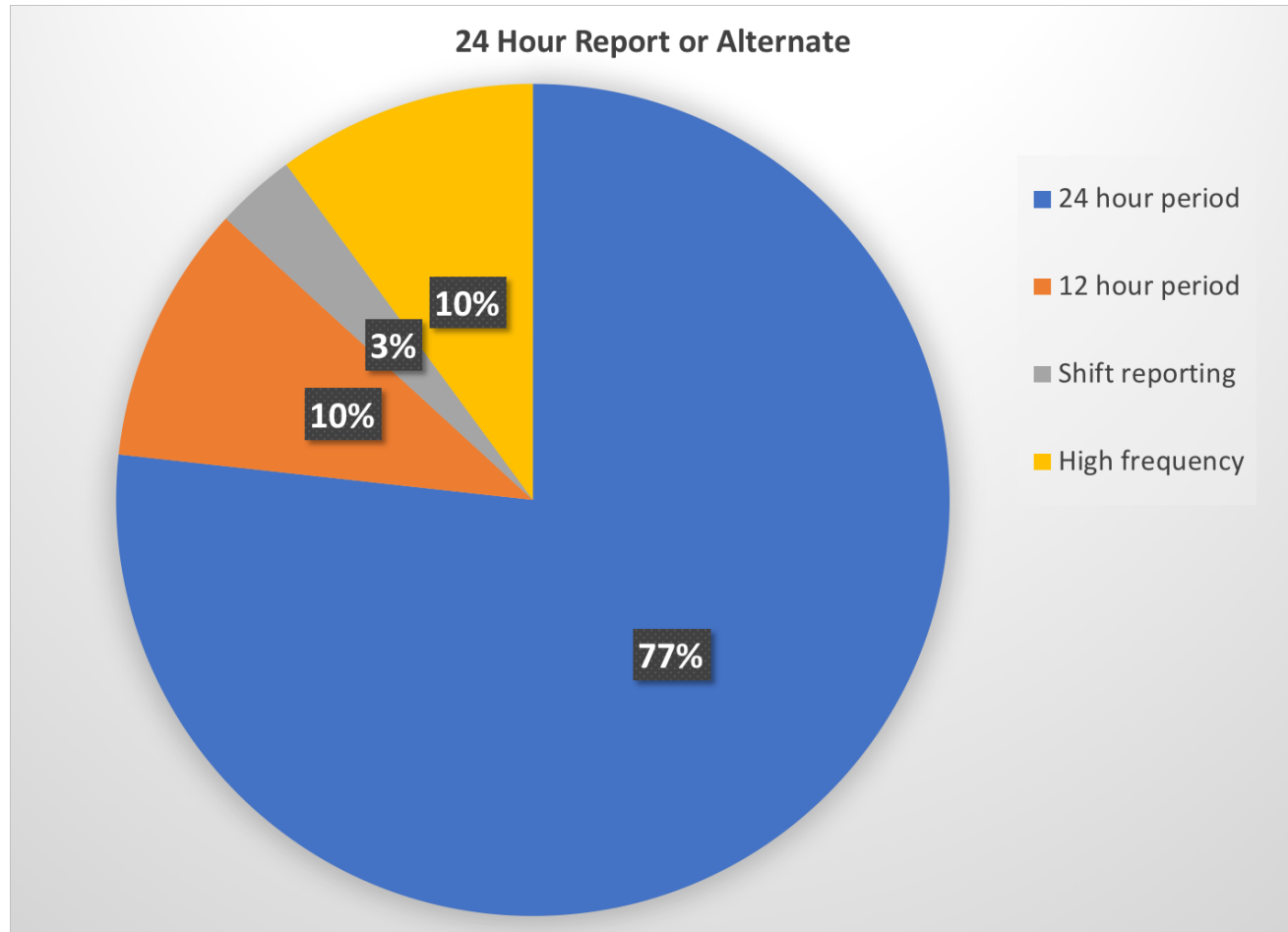## Source: very experienced DE now at major DC

- We use RIMDrill. Some drilling personnel write more complete and comprehensive (hence more useful) reports than others.

- <u>The value of each report is a function of its completeness, accuracy, and detail</u>. We have lots of issues with inaccurate and incomplete data entries for mud data, directional data, operations time breakdown description and so on.

- <u>We have no "standard" for what must be reported and how to report it.</u> We are addressing that now, but are not certain what the outcome will be. **Some in our industry think drillers are overloaded writing and entering the minimum amount of information possible. If that is a true assessment of the actual situation, we are all in trouble.**

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Desire 24 hour report
digital format / automated measurements

Definitely - <u>Official</u> report 24 hours

Possibly - Interim more frequent if automated process

24 Hour Report or Alternate

Legend:
- 24 hour period
- 12 hour period
- Shift reporting
- High frequency

77%
10%
3%
10%

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What can be safely omitted

There is <u>no consensus to make any specific change</u>. Keep content but note some comments:

- Majority – keep content as is

- POB – refine so as to only require key personnel

- Need more granularity in time to clearly identify NPT in consistent manner

- Some data also in separate reports (e.g. directional, mud)
    - Maybe structure DDR to separate reports that amalgamate instead of all in one

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Quality of reporting – guidance to assure

- I would not eliminate any fields. The existing ones need to be populated better.

- The industry in general does not derive anywhere close to the maximum possible benefit from the existing format. In some cases the information is excellent, in others, almost useless. Prior to messing with fields, I would try to **define a minimum standard on what should be written in the operation time description** and also assure that depths of open hole and casing are accurate, the mud section is completely and properly filled out. The reason for mud weight increase should always be stated in the report. The directional surveys should also be quality controlled. Transposing the inclination and azimuth is common as is entering a TVD greater than the measured depth.

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DDR obsolescence question solicited some important feedback – causes / solutions

Digitalization could overtake the current DDR

Operators implementing their own (or 3rd party) reporting systems – especially if automated (their state engines)

Drilling contractors using their own (or 3rd party) systems

Inaccurate data – manual inputs that are not correct

Changed contract format or not fitting more complex or multi well operations

- Need a solid purpose to remain relevant

- Need to accommodate partial / full automated reporting

- Need to meet contract / operations types

Analysis not yet complete

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