

Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

Kari Kjestveit

Project manager

NORCE – Norwegian Research Centre

Olav Hauso

Special Adviser

Petroleum Safety Authority (PSA), Norway



Time perspective for the Norwegian Petroleum Activity

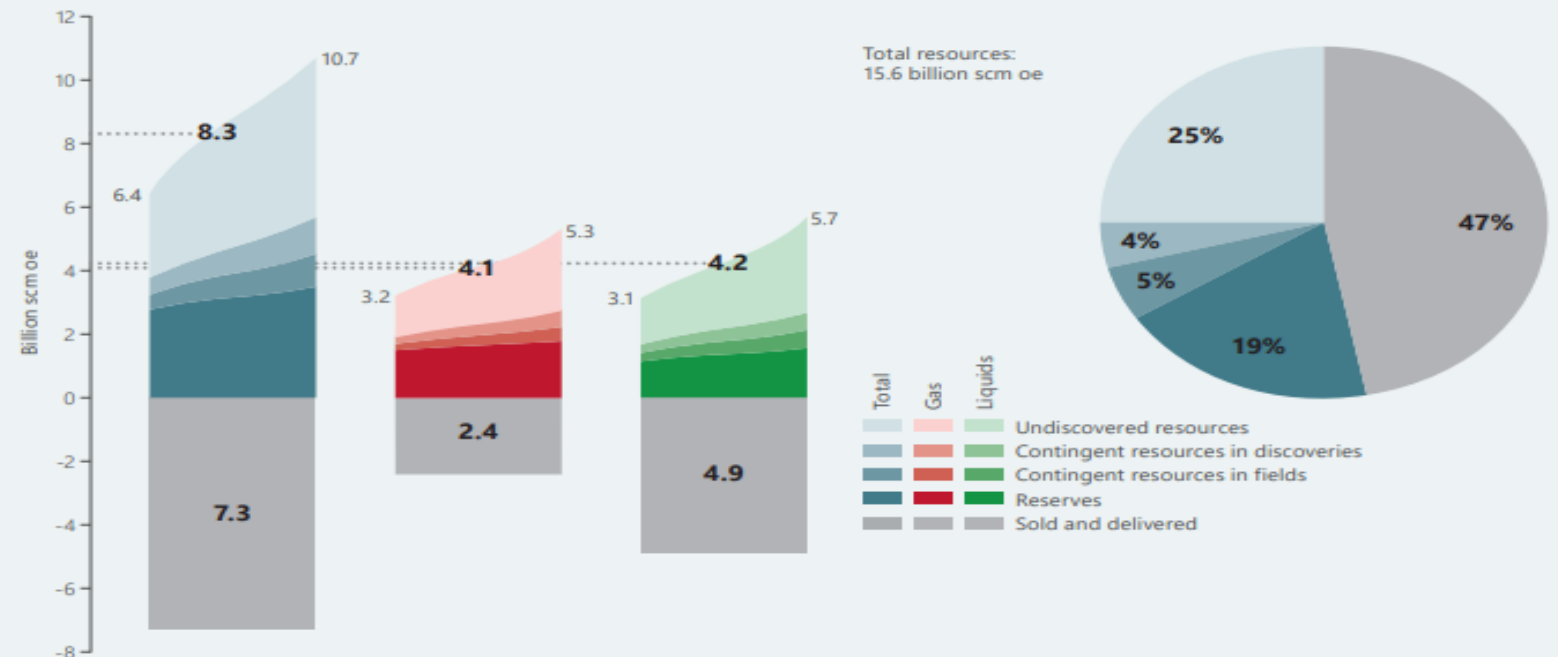
RESOURCE REPORT DISCOVERIES AND FIELDS 2019

More than half remains

The NPD presents annual resource accounts with an overview of total recoverable petroleum. These build on data reported by the operator companies, the NPD's own assessment of fields and discoveries, and its estimate of undiscovered resources.

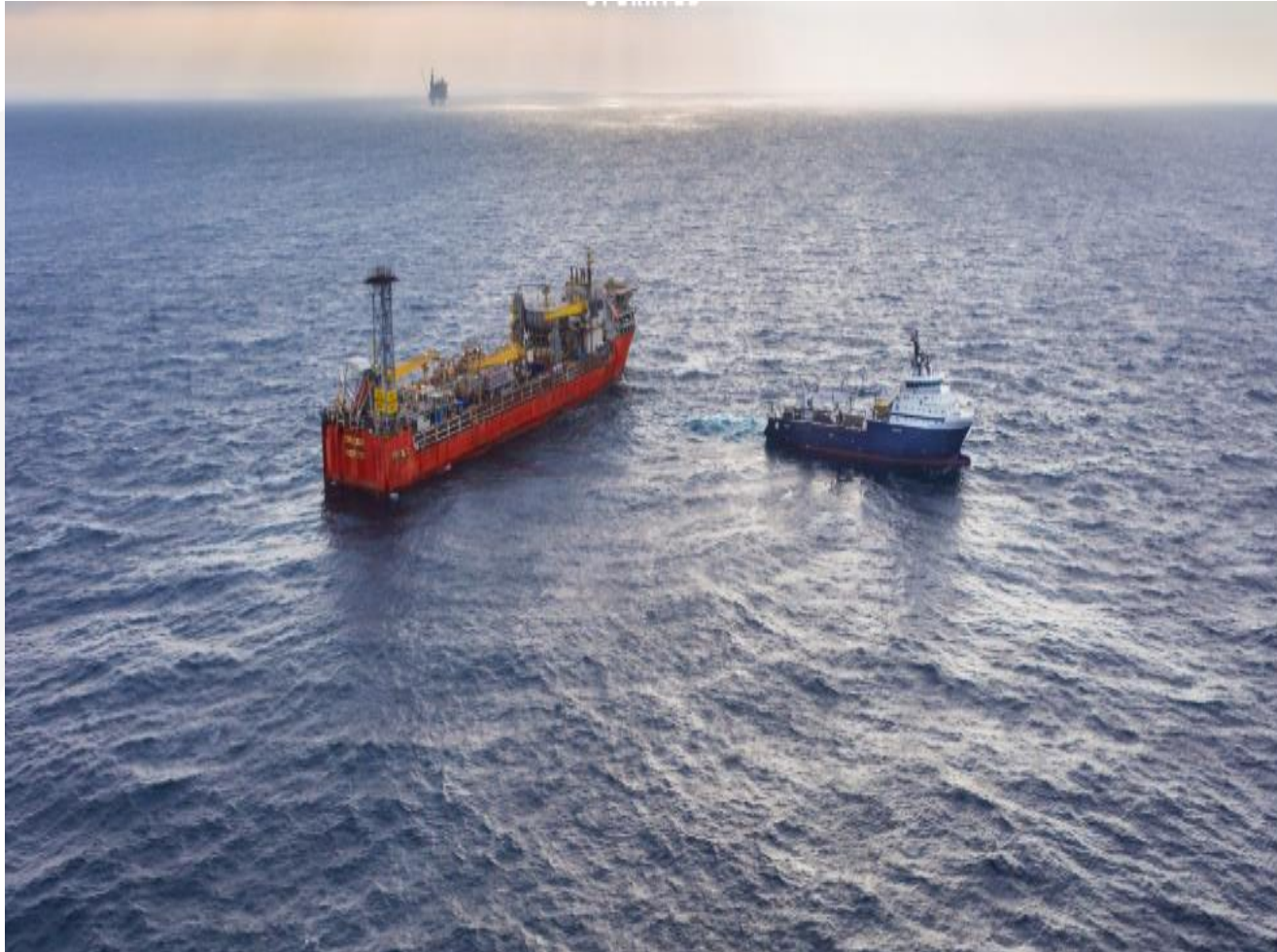
Where 2018 is concerned, the accounts show that – after almost 50 years of production – remaining

resources still exceed those already produced. At 31 December 2018, total recoverable petroleum resources were estimated at 15.6 billion scm oe. Of this, 7.3 billion scm oe had been produced and sold. The expected value for the remaining recoverable resources was 8.3 billion scm oe. It is estimated that around half of this still remains to be proven. Today's estimate for total recoverable resources is about 50 per cent higher than in 1990.



Distribution of total recoverable resources and uncertainty in the estimates at 31 December 2018

Time perspective for the Norwegian Petroleum Activity



Vår Energy home page - time perspective

Operated producing fields in the North Sea such as Balder and Ringhorne will undergo major redevelopment.

The first license awarded on the NCS in 1965, PL 001 in the Balder field area, is currently subject to an extended production horizon towards 2045.



Time perspective for the Norwegian Petroleum Activity



ConocoPhillips home page - time perspective

The total number of manned and unmanned installations that have been in operation in the Greater Ekofisk Area is close to 30.

The oldest one is from 1973, the newest one started operation in 2015. Several of the installations have been removed and disposed.

At the same time the owners have invested in re-development - and the fields are prepared for the next 40 years.



Time perspective for the Norwegian Petroleum Activity



Equinor home page - time perspective

Johan Sverdrup is one of the five largest oil fields on the Norwegian continental shelf.

With expected resources estimated at 2.7 billion barrels of oil equivalent, it is also one of the most important industrial projects in Norway in the next 50 years.

The Johan Sverdrup field in the North Sea. (Photo: Espen Rønnevik / Øyvind Gravås – Equinor ASA)



Time perspective for the Norwegian Petroleum Activity

Offshore petroleum activity (and diving?) – time perspective

➤ 2050 ?

Yes

➤ 2075 ?

Maybe

➤ 2100 ?

????? Hmmmmmmmmmmmm



Status of Offshore Diving in Norway



Modern fleet of DSVs

- Saturation depth range (25m – 180m).
- All DP3 Class vessels
- Surface depth range LDCs (0 – 30m)



Barents Sea, summer months - campaigns 2015 - 2019



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

- *Risk level investigation by use of questionnaire for offshore diving personnel (divers, supervisors) and other diving related personnel*
- *Same format and purpose as for the questionnaire for other offshore personnel*
- *For work on Norwegian sector only*
- *Period: 1. January – 31. December 2018*
- *Questionnaire sent to the diving companies, which re-distributed to the vessels*
 - *Operators were informed by the PSA*
- *Questionnaire available only in English (electronic version and paper copies)*
- *The questionnaire was administered by NORCE. Project manager: Kari Kjestveit*



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

Questionnaire

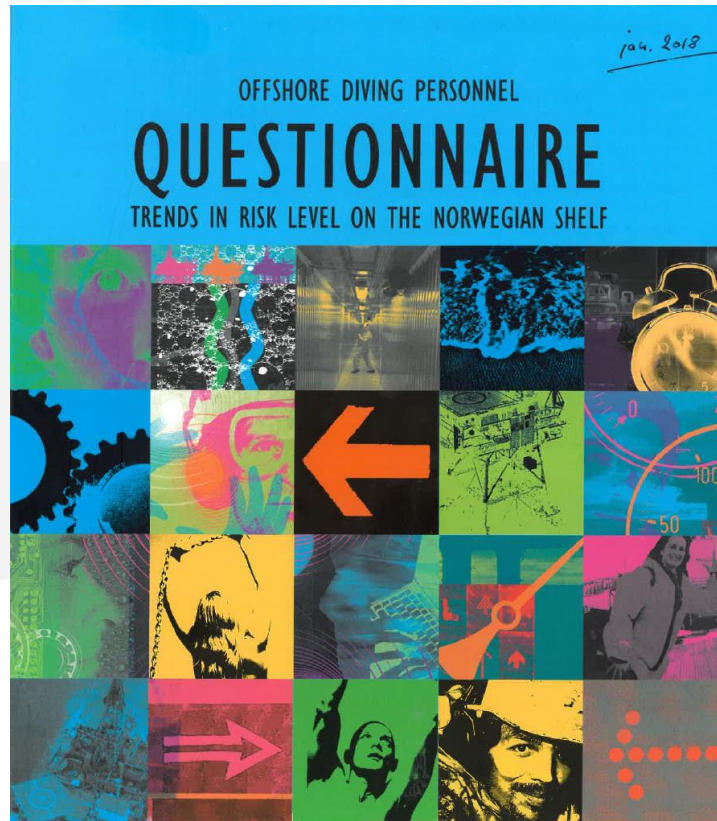
- *Based on the general questionnaire for offshore personnel, but adjusted for specific diver/supervisor related issues.*
- *References to PSA project with STAMI to develop questionnaire for diving personnel*
- *Further development of questionnaire by a tripartite group (NOROG, IE, Fellesforbundet, diving contractors (employee, employer) and PSA)*
- *Final touch in cooperation with NORCE*

Comparison of datasets possible for

- *HSE environment*
- *working environment*
- *perceived risk*
- *sleep*
- *health issues*



RNNP 2018



DSO, FELLEFORBUNDET, IE, LEDERNE, LO, NORGES REDERIFORBUND, NORSK INDUSTRI, NORSK OLJE OG GASS, SAFE, EL&IT-FORBUNDET

Trends in Risk Level in Norwegian Petroleum Activity - Offshore Diving Personnel 2018 © Petroleum Safety Authority Norway. Confidential.

QUESTIONS FOR ALL PERSONNEL

1 Age

- ☐ 20 years or younger ☐ 21-24 years ☐ 25-30 years ☐ 31-40 years
☐ 41-50 years ☐ 51-60 years ☐ 61 years or older

2 Nationality

- ☐ Norwegian ☐ British ☐ Other

3 Education

- ☐ Apprentice ☐ Unskilled ☐ University ☐ Upper secondary school (no trade certificate)
☐ Skilled with one trade certificate ☐ Skilled with more than one trade certificate

4 Approx. how much of your working time during the last year have been spent on the Norwegian Continental Shelf (NCS) or onshore facilities in Norway performing:

	None at all	1 - 24 per cent	25 - 49 per cent	50 - 74 per cent	75 - 100 per cent
Offshore diving operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other offshore operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In oil/gas-related activities onshore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In other work/education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5 How much offshore experience do you have?

- ☐ 0 - 3 mo. ☐ 4 mo. - 1 year ☐ 2 - 5 years
☐ 6 - 10 years ☐ 11 - 19 years ☐ 20 years or more

6 By which company are you employed? Please use capital letters.

7 What is the name of the vessel (DSV/LDC) where you are currently working? Please use capital letters.

8 Current position on board?

- ☐ Saturation diver ☐ Surface supplied diver ☐ Dive technician ☐ DP operator
☐ Diving supervisor ☐ Life support technician ☐ Life support supervisor ☐ ROV operator
☐ Diving superintendent ☐ Offshore manager

9 Do you have permanent or temporary employment?

- ☐ Permanent ☐ Day rate ☐ Other temporary contract

10 If day rate or other temporary employment: What is the duration of the contract?

- ☐ 1 offshore period ☐ 1-2 mo. ☐ 3-5 mo.
☐ 6 mo. - 1 year ☐ More than 1 year

11 Job experience: How long have you held your present position?

- ☐ 0 - 3 mo. ☐ 4 - 12 mo. ☐ 1 - 2 years ☐ 3 - 5 years
☐ 6 - 10 years ☐ 11 - 19 years ☐ 20 years or more



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

CHARACTERISTICS OF THE RESPONDENTS (N = 115)

37 % worked on same vessel (last 12 months)

Nationality:

- British: 67,5 %
- Norwegian: 10,5 %
- Other: 22 %

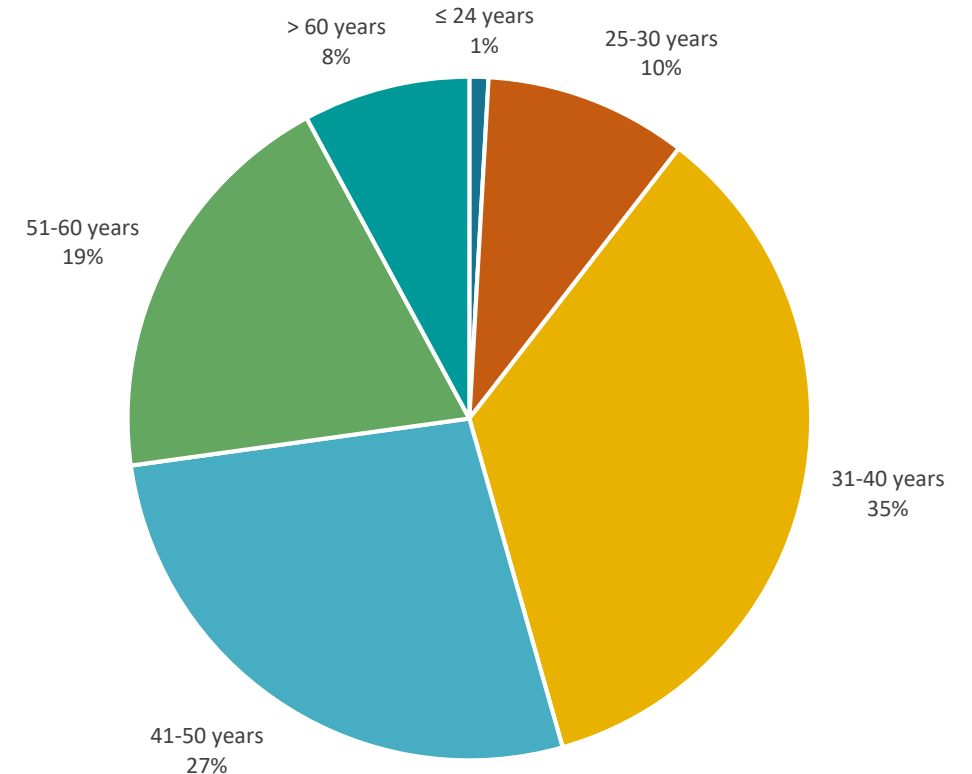
Employment:

- Permanent employee: 5 %
- Dayrate: 81 %
- Other temporary contract: 14 %

Work category:

- Diver (sat/surface): 64 %
- Supervisor (related to diving): 26 %
- Other: 10 %

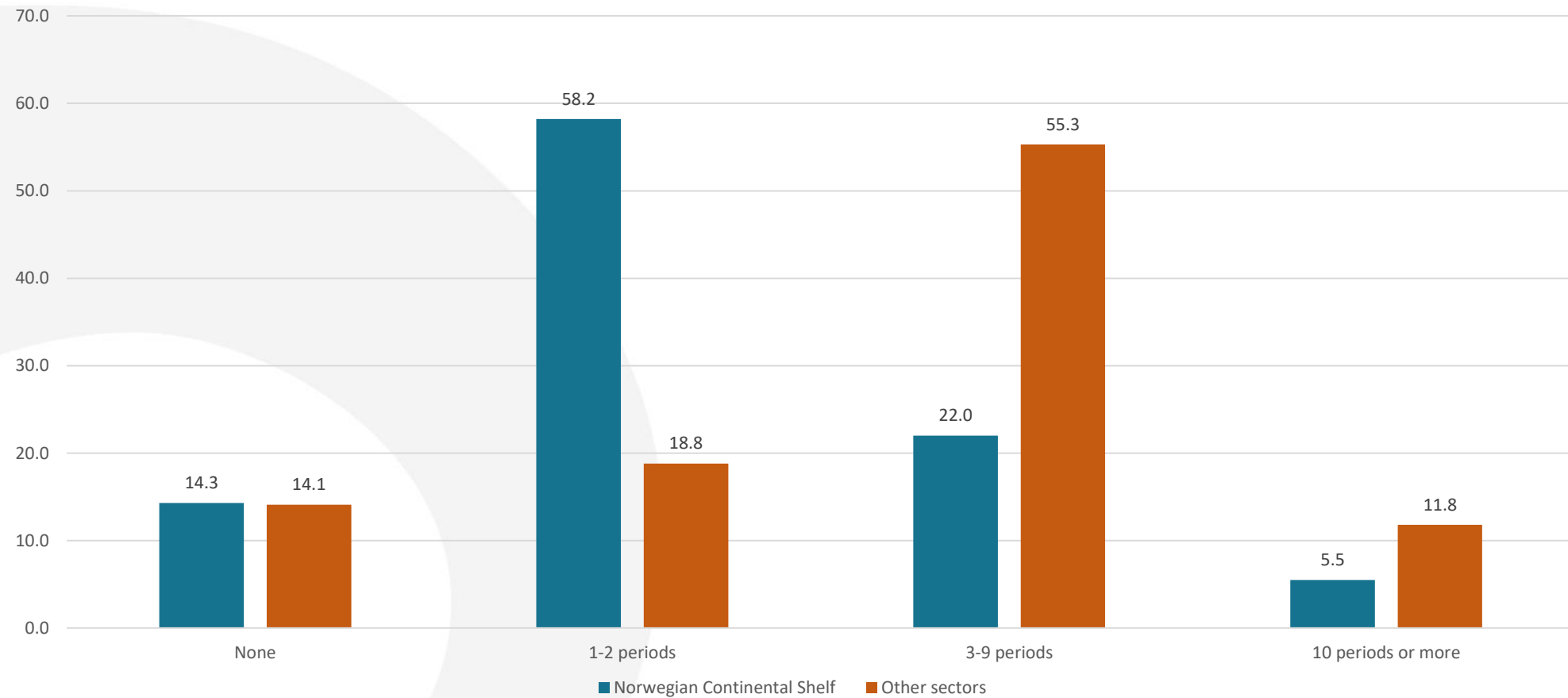
Age distribution



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

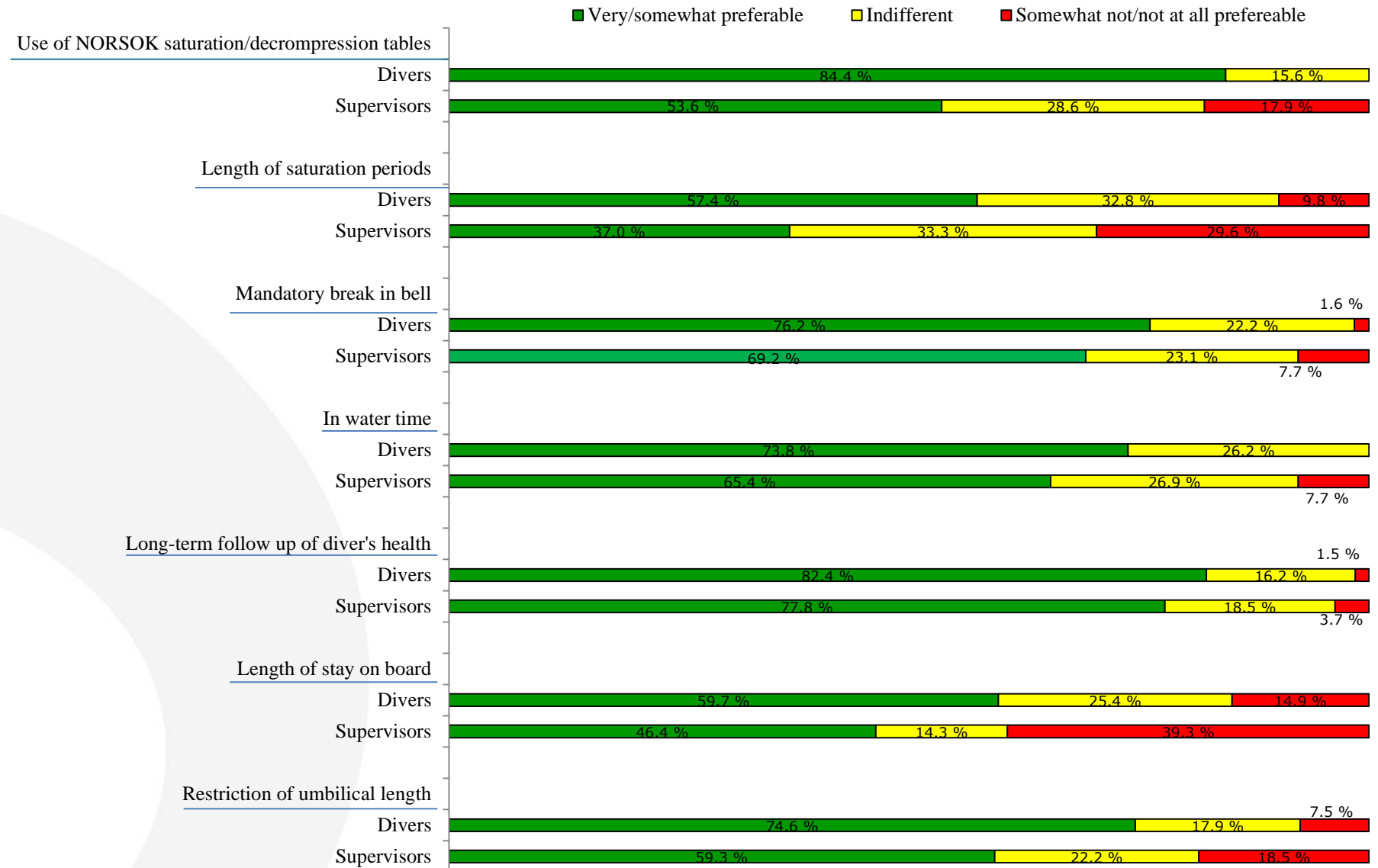
Work periods last 12 months (sectorwise),
% of divers and supervisors (n=101)



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

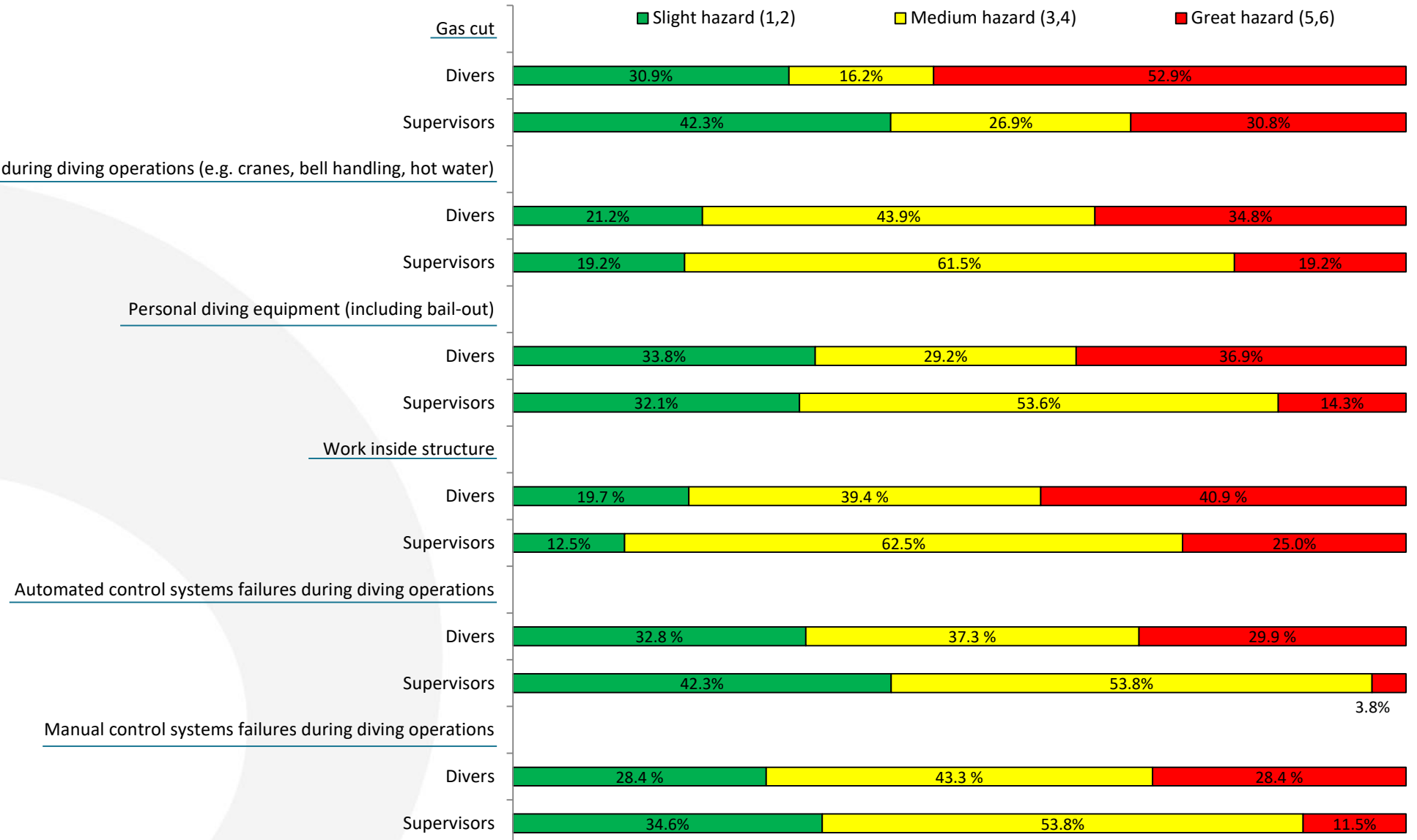
Opinion of general
work environment
factors (n = 101)



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

Perception of risk related to various elements (n = 101)



ANEERING



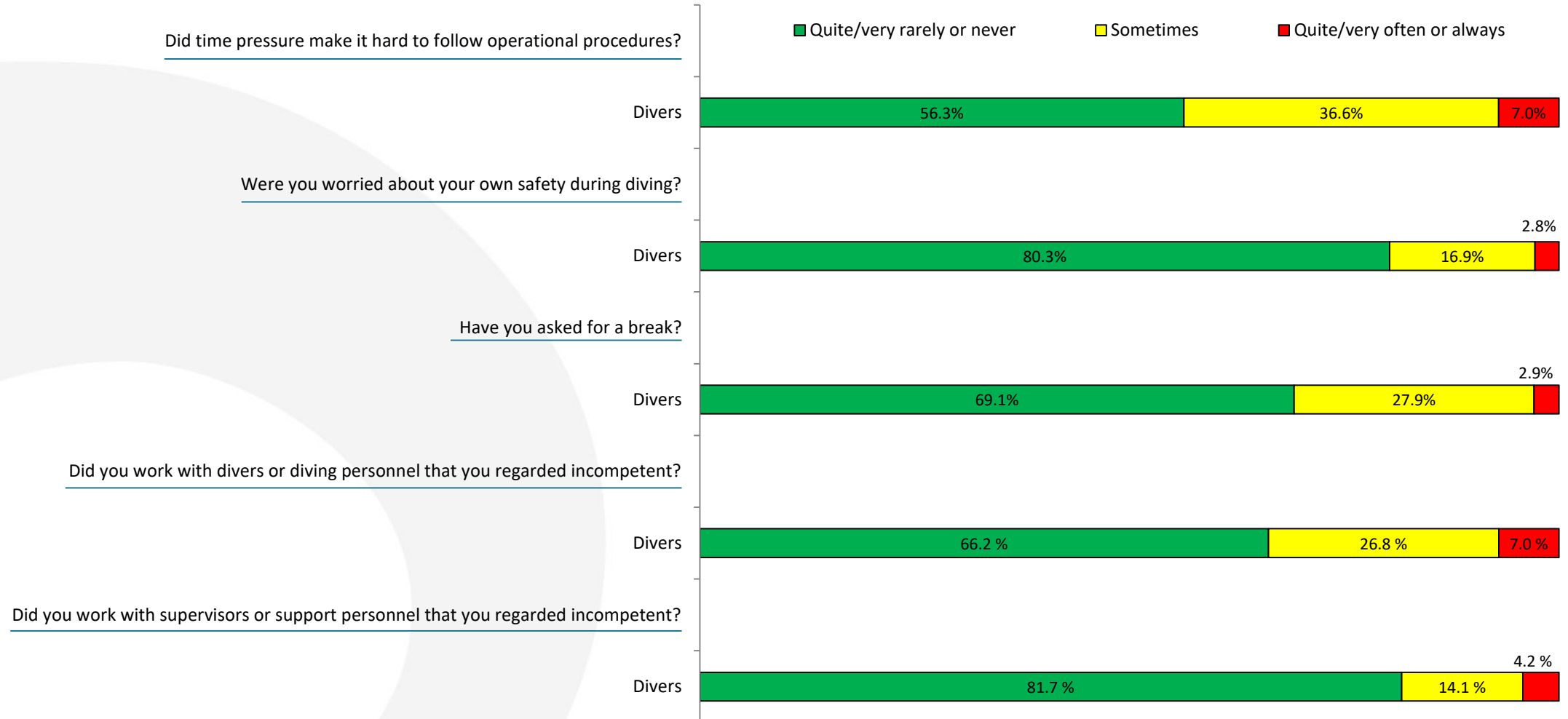
millerlow_life

Guess what this little friend can do to your finger

Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

Safety behaviour during diving (n = 72)

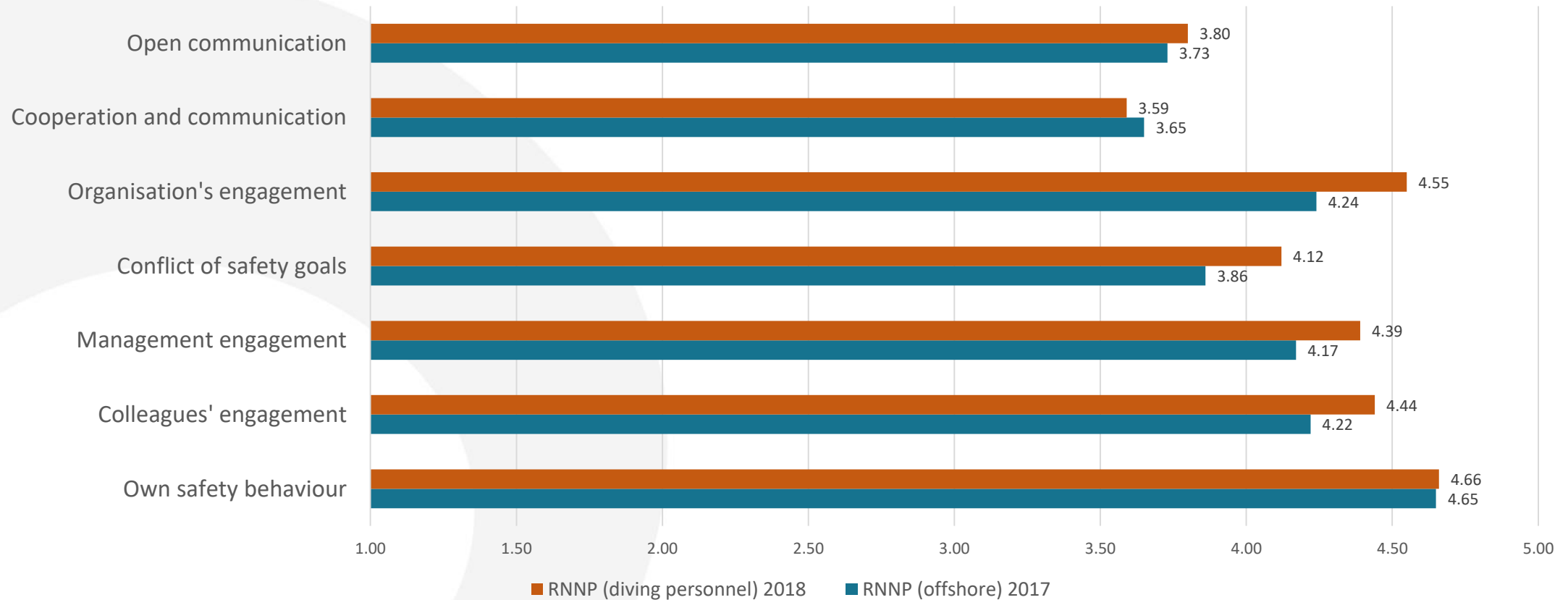


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Response and results from diving personnel questionnaire 2018

HSE climate indexes: Comparing Offshore (2017) and Diving personnel (2018)

Response scale 1-5: High value is positive



Risk Level in the Norwegian Petroleum Industry

Response and results from diving personnel questionnaire 2018

Summing up – Offshore (2017) versus Diving personnel (2018)

- Totally different samples: **6000** (offshore 2017) vs **115** (diving 2018)
- Diving personnel:
 - Have better results on most HSE climate indexes
 - Report somewhat better on general work environment
 - Report higher perceived risk on comparable situations (not diving-related)
 - Perceive lower sleeping quality (both before and after the trip)
 - Report lower sick leave and less health complaints
 - Report better general health



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Response and results from diving personnel questionnaire 2018

Summing up – diving personnel

➤ General work environment factors

- *Divers are more positive than supervisors – especially related to use of NORSOK decompression tables*
- *Least satisfied with a) length of saturation periods and b) stay onboard*

➤ Perceived risk in diving operations

- *Divers report gas-cut, human error/mechanical failure, personal diving equipment, exhaustion, and error in automated and manual control systems to represent the major contributing factors to risk in diving operations*

➤ Safety behaviour during diving

- *Divers have a positive view of their own safety behaviour*

➤ Health issues

- *Divers have less health problems than offshore workers («Healthy worker» effect?)*




Risk Level in the Norwegian Petroleum Activity.

Response and results from diving personnel questionnaire 2018

Conclusions?

- *It's a first time for everything:*
 - *2018 was the first time using RNNP questionnaire for diving personnel*
 - *Includes the diving population in the rest of the offshore workforce*
- *Number of respondents are low (n=115)*
- *Firm conclusions should be avoided!*
- *New risk level investigation questionnaire for diving personnel in 2020*



A woman wearing a red safety suit with reflective white stripes, a yellow hard hat, and blue ear protection is working inside a large, dark industrial pipe. She is looking up towards the camera. The scene is dimly lit, with a strong yellow light source creating a bright circular glow around her. The background shows the curved interior of the pipe and some structural elements.

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