Verification Report- Well Expertise

Marine Traffic Surveillance Center – Implementation, Testing and Service Deliverables

AUDITEE				
Well Expertise				
AUDIT NO.				
Wellesley - KALL-WLSLY-S-RA-0110, Faroe FP-010520				
APPROVAL				
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00	18/04/2018	T.Gravem I. Anfinsen	C.Smyth S. Tonning	Draft for review
01	23/04/2018	T.Gravem I. Anfinsen	C.Smyth S. Tonning	Final for signatures

Contents

1. Introduction

One of the key Norwegian regulations relating to health, safety and the environment (HSE) in the offshore petroleum industry is the **Framework HSE regulation** (Rammeforskriften).

Section 57	**Monitoring of safety zones** The operator shall monitor all activity inside safety zones. The operator shall also monitor what happens outside the zone when such activity can result in a safety risk for the petroleum activities
	Guideline To fulfil the obligation in this section, the operator shall have equipment available for monitoring, but the provision does not bind the operator as regards the choice or placement of equipment. Activities carried out in or outside safety zones, will be different. The operator shall therefore itself set requirements for equipment and procedures necessary to monitor the safety zones.
Section 58	**Warning and notification in connection with entry into safety zones** The operator shall alert a vessel that is in the process of entering a safety zone when it is not authorised to enter such area. The operator shall also alert vessels outside a safety zone if the vessels could constitute a safety risk to the petroleum activities. If an object could constitute a safety risk to the petroleum activities, the operator shall alert the party responsible for the object, if possible. The operator shall alert the Joint Rescue Coordination Centre and the Petroleum Safety Authority Norway in the event of situations as mentioned in the first and second subsections, and which can result in a serious safety risk for the petroleum activities. The Ministry of Labour and Social Affairs can stipulate warning procedures. The operator shall also report violation of safety zones to the appropriate police authority and the Petroleum Safety Authority Norway according to procedures stipulated by the Ministry of Labour and Social Affairs.
	Guideline The provision's intent is to prevent accidents and harmful effects and protect facilities. The notification can take place in different manners, e.g. via radio, audio or light, and shall be included in the operator's emergency response scheme. The intention of the second subsection is to have the party responsible for the object personally take necessary action. If the operator cannot notify the responsible party, and the object enters a safety zone or in some other manner constitutes a risk to the petroleum activities, Section 9-5 of the Petroleum Act is used. The purpose of the third subsection is that public institutions shall have as much time as possible to implement necessary measures, which can contribute to reducing the risk. With regards to the fourth subsection, reference is made to the Regulations relating to police districts (in Norwegian only), which states what is the correct police authority. See also the

	Guidelines regarding Section 29 in the supplementary Management Regulations, which states what is the correct police authority.

In addition the **Norsk Olje og Gass - Guideline 064 'Etablering av områdeberedskap'** defines a set of performance requirements (effektivitetskrav) for DSHA #4 Ship Collision.

https://www.norskoljeoggass.no/contentassets/221ddcedebe340b0b78801e62f556776/064-etablering-av-omradeberedskap.pdf

Historically on the Norwegian Continental Shelf various types of surveillance have been used. The most common one is Statoil Marine (today called Statoil Operasjon) that handles surveillance for most operators. The surveillance equipment/system used by Statoil is Vissim.

During 2013, Statoil did not have spare capacity for smaller operators and other solutions had to be used.

Currently Well Expertise is developing, in cooperation with Raytheon Anschutz, an autonomous surveillance system for offshore units. Traditionally the surveillance has been handled manually. Raytheon Anschutz, has developed and programmed the autonomous system to meet the requirements on NCS. The system is called Smartblue

Wellesley intend to use the Well Expertise Marine Surveillance Centre during the 2018 drilling campaign.

1.1. Objectives

The following objectives were intended for the Well Expertise verification:

1. Ensure Well Expertise Marine Surveillance Centre (MSC) meets regulatory requirements.

2. Ensure the MSC service deliverables are clearly defined, that procedures and systems are in place, roles, responsibilities and interfaces are defined and captured in the plans

3. Ensure a plan for implementation and familiarisation is in place

The audit was based on the following documents:

- MSC presentation - Initial Meeting Feb 2018.pdf
- FDS7009 - Well Expertise Portable REWS_Issue1a_16-02-18.pdf
- Marine Surveillance Center Manual.pdf
- MSC Duty Handover and Log.pdf
- MSC Duty Induction.pdf
- MSC Duty personnel job description.pdf
- MSC presentation øvelse 10.04.18.pdf
- SMARTBLUE User Guide_Iss8_06-05-17.pdf
- Specific Surveillance info.pdf
- TELchart ECS Manual EN rev 1_32.pdf

1.2. Deviations

The verification was performed as planned.

1.3. Warrant

The verification is warranted in the Wellesley, KSGW project audit plan for 2018.

1.4. Participants

Role	Name	Position	Company
Ops&HSE Auditor	Trond Gravem	HSE/Ops Advisor	Wellesley Petroleum
Ops Auditor	Callum Smyth	Ops&HSEQ Manager	Wellesley Petroleum
Ops Auditor	Stein Tonning	Drilling Manager	Faroe Petroleum
Ops Auditor	Grethe Lønø	Sr. Drilling Engineer	Faroe Petroleum
HSE Auditor	Ingvild Anfinsen	Sr. HSE Coordinator	Faroe Petroleum
Auditee	Rune Smenes	Marine Manager	Well Expertise
Auditee	Mike Simpson	CEO	Well Expertise
Auditee	Karen Maria Thaule-Pedersen	HSEQ Advisor	Well Expertise
Auditee	Silje Gjøse	HSEQ Manager	Well Expertise

1.5. Audit Process

Short description of process:

- Notification – sent Jan 2018
- Initial Verification Meeting and Presentation of MSC – Well Expertise Office in Randaberg Feb 27th 2018 09:00 – 11:00
- Summary verbal feedback – immediately after initial meeting
- ER table top and verification – April 10th
- Document Review
- Final acceptance test and readiness review at WE MSC – April 13th , participants list in attachment
- Report – issued April 25th 2018.

2. Findings

As the Well Expertise marine surveillance service and the Smartblue system is new to offshore rig marine surveillance, some actions is deemed more important and is required to be implemented and closed out prior to service start-up

The following observations/improvement items were identified:

2.1.1. Acceptance test plan

- The acceptance test plan should be finished prior to 1st Wellesley well
- A detailed plan with scope, including installation of system should be established
- 1 week trial (in Åmøyfjorden ?) prior to start-up, review historical AIS data vs. alarm/notifications should be executed
- Plans for thorough and frequent health checks and system status should be established

2.1.2. Familiarisation and introduction plan

- The plan is not finalised
- A bridging document between rig-standby vessel – MSC should be established and implemented
- Roles, communication, alerts, interfaces should be defined
- Levels of introduction needed for key roles – MSC duty, rig OIM/barge master, standby vessels captains, others and how to brief them should be defined and executed
- Document assessment of PSV & SBV roles handover routines

2.1.3. MSC Risk Assessment

- Perform and document a risk assessment for MSC deliverables
- Scenario-based risk assessment covering what if in higher risk operations (well test, reservoir drilling), the total Smartblue system not functioning, Satelite link between rig and onshore MSC is down, etc?

2.1.4. MSC Draft Manual

- Evaluate creating a 'How WE…'-type procedure to describe deliverables and requirements. This to harmonise with overall WE management system.
- Cross reference to 'How WE Resource Project' to cover training and familiarisation of MSC duty and to the MSC job description

2.1.5. Performance Review after 1st Wellesley well

- Implementation and system verification, incl. GDPS for future location verification
- Notifications and alerts during well, location specific history
- Learnings for well 2

2.1.6. Offshore Drilling Engineer Role

- Evaluate experiences with including offshore DE's in running the system
- Health checks, system and hardware knowledge (offshore and onshore)

2.1.7. NOFO Familiarisation

- For a possible future inclusion of oil spill radar signals and detection, present system and the possibilities to NOFO

2.1.8. Smartblue vs Vissim/Statoil Marine

- Perform a GAP analysis to document comparison exercise

3. Summary

The verification has been organised over a period of 3 months and based on a series of meetings. The verification activities are based on presentations, examples and a dialogue-approach where feedback has been given during and after each meeting. Initial meeting to go through plans for system implementation and testing held in February 2018. In the meeting verbal feedback and improvement suggestions were given from auditors.

An initial verification of interface, communication and roles in a ship collision case was conducted through a ER table top with WE marine operations manager, Wellesley 3rd line representatives, 2nd line ER OFFB representatives, Transocean rig OIM and 2 stability section leads and standby vessel captain was conducted April 10th.

Agenda for ER table top

TIME	TOPIC	RESPONSIBLE
0830–0845	Welcome/HSE/Presentation participants/Objectives	Wellesley/OFFB
0845–0900	Presentation of Wellesley (organization, ERO organization 3rd line)	Wellesley
0900-0915	Presentation of upcoming drilling campaign, Wellesley	Wellesley
0915-0925	Presentation of Wellesley 2nd line (ERO)	OFFB/Pål
0925-0940	Break	
0940-1000	Presentation of Transocean (rig, 1st line, ERO onshore)	Transocean
1000-1015	Presentation of Well Expertise	Well Expertise
1015-1030	Introduction of New Autonomous Marine Surveillance System	Well Expertise
1030-1115	Case – "Ship on collision course" Visualise scenario on the Smartblue screen	Pål/Well Expertise
1115-1130	Summary/Evaluation	OFFB/Wellesley
1130	Lunch	Well Expertise

In addition to familiarisation with the MSC and introduction of the new marine surveillance system, Smartblue, the table top was used to visualise and step-by-step talk through a 'ship on collision course' scenario. The roles and interaction between rig, standby-vessel, the ship on collision course, the marine surveillance center, ER 2nd line was and ER 3rd line was discussed in an evolving scenario.

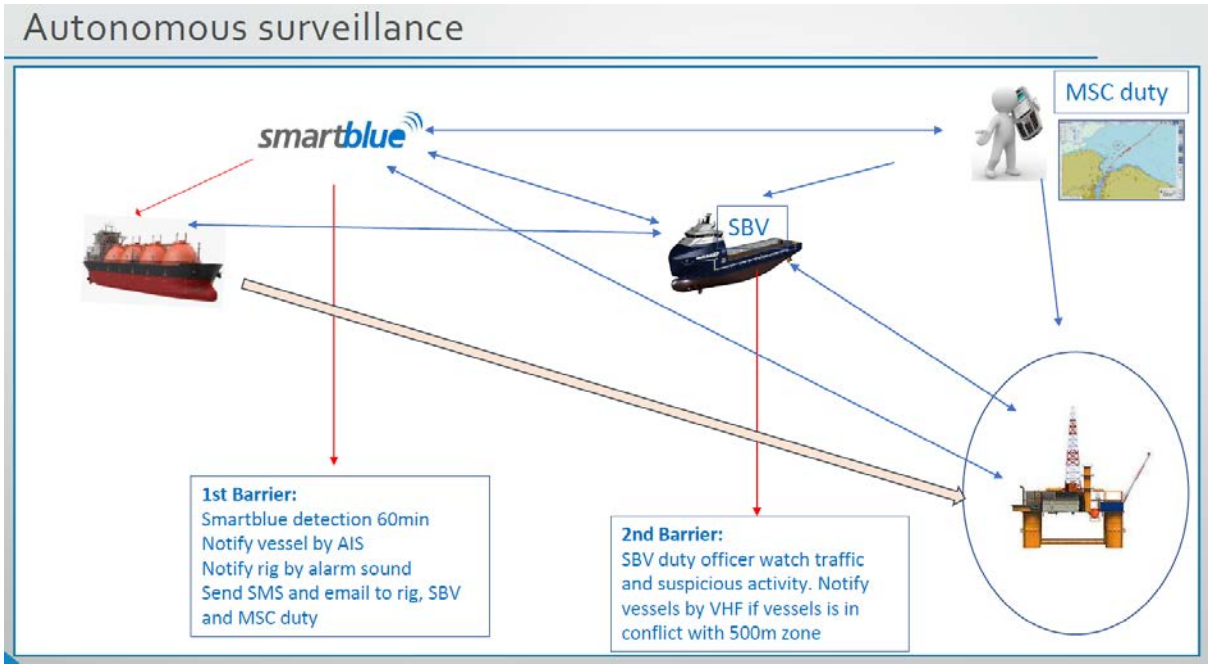
In addition to familiarisation with the Marine Surveillance Center and introduction of the new marine surveillance system, Smartblue, the table top was used to visualise and step-by-step talk through a 'ship on collision course' scenario. The roles and interaction between rig, standby-vessel, the ship on collision course, the marine surveillance center, ER 2nd line was and ER 3rd line was discussed in an evolving scenario.

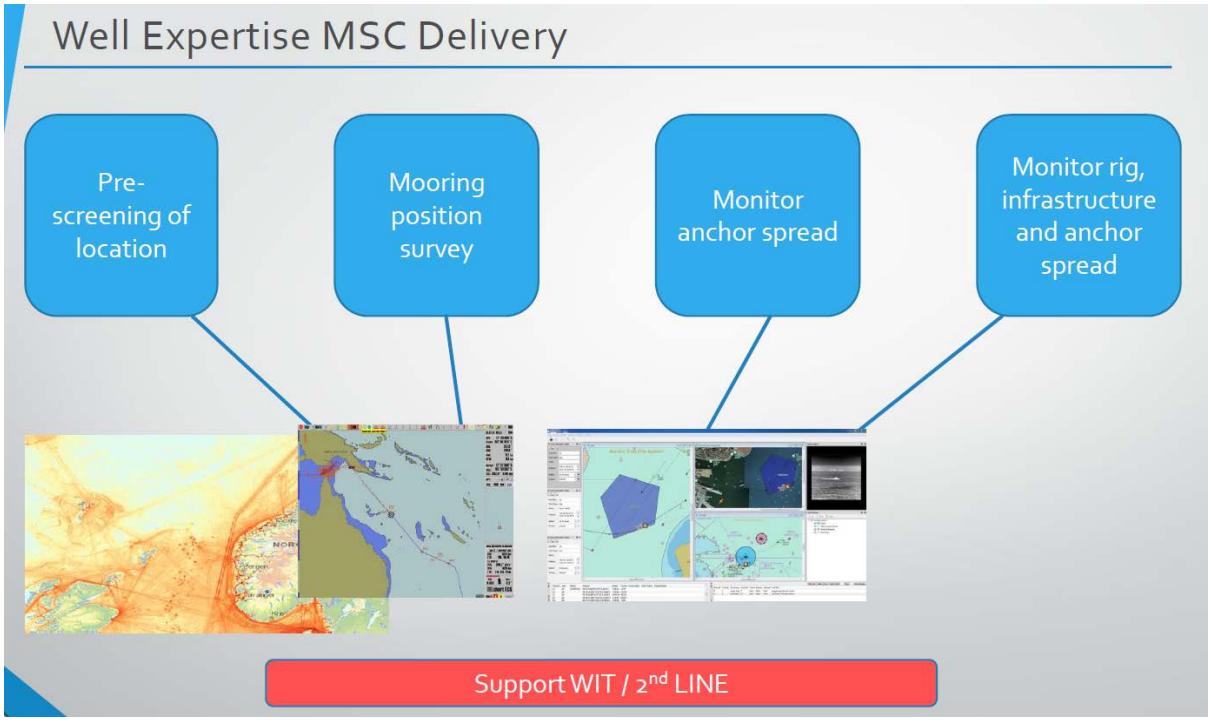
Final readiness review at WE MSC were conducted April 13th. Participants were from Well Expertise, Faroe Petroleum and Wellesley Petroleum. The scope was to check readiness status based on the overall audit objectives.

3 activities are deemed required to perform prior to start-up of Wellesley's 1st well.

Ref. chapter 2 Findings

1. Detailing an acceptance test plan (2.2.1)
2. Make a familiarisation and introduction plan (2.2.2)
3. Perform MSC Risk Assessment (2.2.3)





Information related to the MSC is available and accessible to all MSC personnel independently of location (web-based access to all procedures, training documents, checklists and support documentation).

4. Appendices

Appendix No.	Description
1	Participants List – Acceptance and Readiness Review April 13th 2018
2	Participants List – ER Table TOP April 10th

4.1. App. 1 Participants List – MSC Verification Meeting April 13th

Meeting: MSC Verification
Location: Harestadveien 77
Date: 13.04.18

WELLESLEY PETROLEUM

Participants

Name	Role	Company	Mail
TROND GRAVEM	LEAD AUDITOR SR. OPS HSEQ ADVISOR	WELLESLEY	trond.gravem@wellesley.no
STEIN TONNING	GROUP D&W MANAGER	FAROE	sat@fp.fo
MIKE SIMPSON	OPERATIONS MANAGER	WELL EXPERTISE	mike@wellexpertise.com
KAREN M. THAULAND-PEDERSEN	QHSE ADVISOR	WELL EXPERTISE	KPEDERSEN@WELLEXPERTISE.COM
GEETHE LOND	DRILLING ENG.	FAROE	glond@faroe-petroleum.com
INGVILD ANFINSEN	HSEQ	FAROE	ia@fp.fo
RUNE A SMENES	Marine Ops Manager	Well Expertise	rune@wellexpertise.com
Silje Gjøse	QHSE Manager	Well Expertise	silje@wellexpertise.com

Faroe

4.2. App. 2 Participants List ER Table Top April 10th

Meeting: Table top – Marine Surveillance Center

Location: Well Expertise Office, Randaberg

Date: 10.04.18

WELLESLEY PETROLEUM

Participants

Name	Role	Company	Mail
[illegible]	[illegible]	[illegible]	[illegible]
Vidar Fríestad	Geologist	Wellesley	vidar.friestad@lyse.net
JØRAN MANNES	BARGE SUPERVISOR	TRANSOCEAN	joran.mannes@deepwater.com
BJØRN STEIN	Beredskapsleder	OFFB	bjorn.stein@offb.no
RUNE ASMUNDES	Marine Operations Manager	Well Expertise	rune@wellexpertise.com
Paal Erland	Stabsleder	offb	paal.erland@offb.no
Leif Birger Bø	Loggistikk	offb	leif.birger.bo@lyse.net
LUDVIG ANDREASEN	STABSSJEF	TRANSOCEAN	LUDVIG.ANDREASEN@DEEPWATER.com
S. Grieve	HSE Coordn	Well Ex.	silje@wellexpertise.com
MORTEN HEDEMARK	OPS. MNGR.	CONCEDO	morten@concedo.no
Stig Seland	Rig Intake Lead	WellExpertise	stig@wellexpertise.com
Mike Simpson	Duty Syst	Well Expertise	mike@wellexpertise.com
KARI L ØSTHUS	Country Manager	Wellesley	kari.osthus@wellesley.no
SIGNE HAUGLAND	Finance Mng	— " —	signe.haugland@wellesley.no
LARS LILLEDAL	Drl. Advisor	— " —	lars.lilledal@wellesley.no
ODDH NJÆRHEIM	CAPT. North Crews	GULFMARK	captain.crew@gulfmark.com
TROND GRAVEN	OPSMGR ETL 3rd Line	WELLESLEY	trond.graven@wellesley.no
JAN TORE PAULSEN	OPERSJEF ETL 3rd line	"	jan.tore.paulsen@wellesley.no
Bjørn Hauknes	DIM	TRANSOCEAN	bjorn.hauknes@deepwater.com
[illegible]			
ØYSTEIN M. THAULE-PEDERSEN	QHSE ADVISOR		OYSTEIN@WELLEXPERTISE.COM