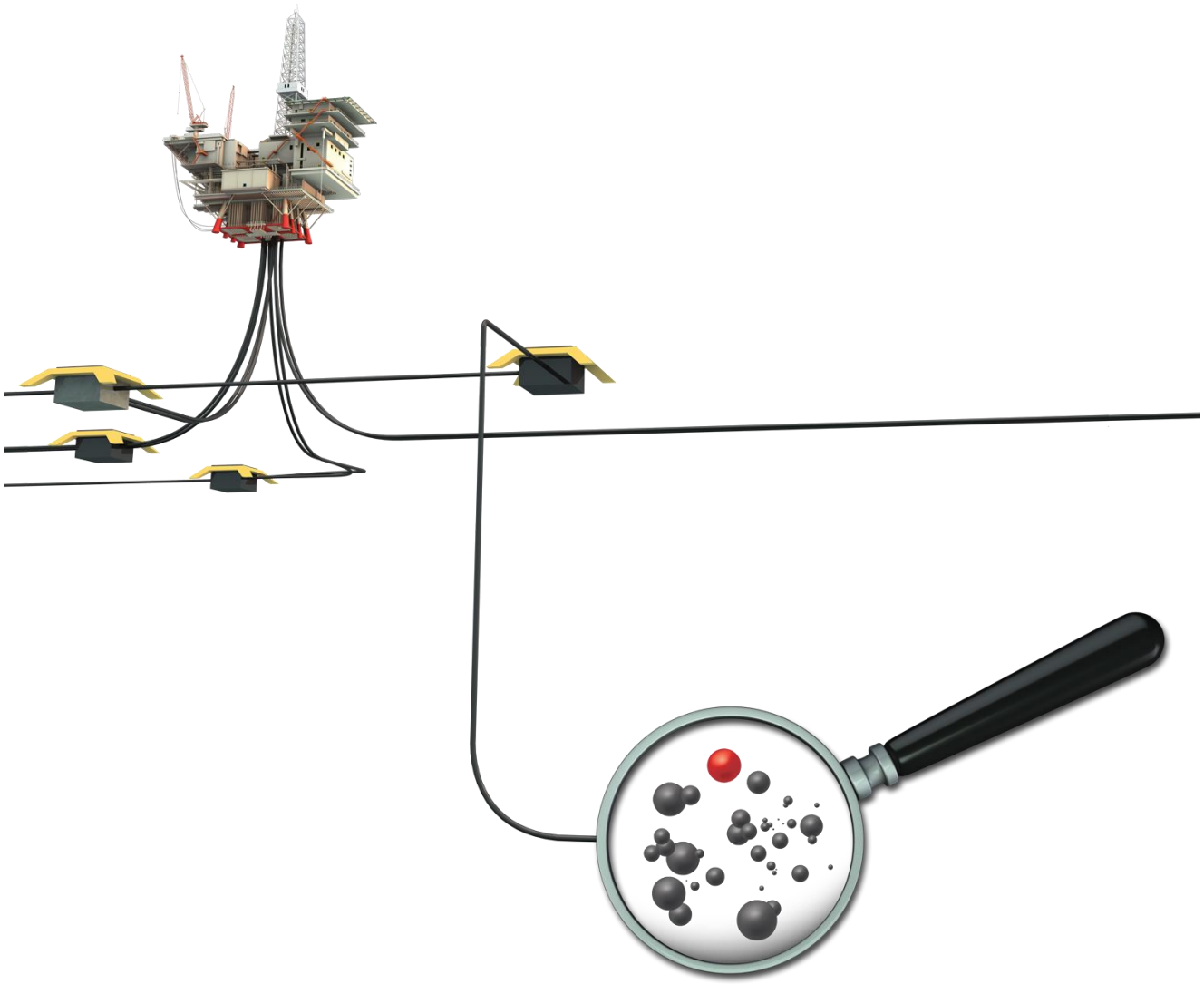
RESMAN®
WIRELESS RESERVOIR SURVEILLANCE



RESMAN Project Quality Plan – Project Name

Prepared by:

Revision no._____ Revision date: [Publish Date]

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1. General

A Project Quality Assurance Plan (QAP) is presented as a matrix of quality activities ensuring that the principles of ISO 10005:2005, is covered. It describes the activities, responsibilities, requirements and criteria we use in order to ensure a good quality process, as described in Section 5 – Project Quality Assurance Matrix.

The following terms is used in the table below to describe the different functions for the different parties.

- **Hold** – Review of documentation/activity which needs approval to proceed.
- **Witness** – A position where the party is invited to observe an activity.
- **Review** – Review of documentation for information.
- **Approval** – Documents are sent for approval to the relevant party.

2. Project Quality Objectives

The following project objectives have been defined:

- All project work shall be in accordance with RESMAN Management System and project requirements,
- All performed work shall comply with national and international legislation and according to the principles in ISO 9001:2015 and contract requirements.
- Project delivery shall be in accordance with contract, agreed scope of work (SOW), on schedule and within the budget.

Give necessary information and training to ensure that the project personnel understand and work in accordance with relevant procedures and instructions.

3. Project Improvement and Incidents

Observations of possible improvements, incidents or nonconformities shall be reported, treated and followed up as described in the RESMAN Management System.

The Project Quality Responsible shall, in cooperation with relevant personnel, evaluate and handle registered incidents. Actions with economical, operational and/or schedule consequences shall be discussed with the Project Engineer. All follow-up activities shall be carried out according to the RESMAN Management System.

4. Project Audits

Quality audits may be carried out in order to ensure conformity with documented routines and project requirements. All conditions related to the project QA system can be made subject to project audits and evaluations. Quality audits will be identified in the Audit Program. Quality audits of subcontractors shall be considered continuously and shall be carried out in cooperation with the Project Engineer and Project Quality Responsible

5. Project Quality Assurance Matrix - IWTT

No	Project Activities	Responsible	Requirement Reference • Authority • Client • Company • Supplier	Documentation Type	Inspection (H-Hold / W-Witn Client
1.	**Project Management**				
1.1	Contract Review	Both Parties	Contract/ Scope of Work (SOW)	Order Confirmation	A
1.2	Project Risk Assessments	RESMAN	RESMAN Risk Assessment Procedure	RESMAN Internal Project Risk Assessment	
2	**Document and Data Control**				
2.1	Project Document Control	RESMAN	RESMAN Management System	Project Documents	
3.	**Quality Assurance**				
3.1	Audits	RESMAN	RESMAN Internal Audit	Report	
3.2	Control of Nonconformity	RESMAN	RESMAN Non Conformance	Report	R
3.3	Corrective and Preventive Actions	RESMAN	RESMAN Corrective Actions and RESMAN Preventive Actions	Report	R
4	**Environmental Control**				
4.1	Product Approval Evaluation	RESMAN	National/ International Legal Compliance	Relevant Legal Authority Approval	
4.2	Environmental Country Approval	Client	Information input from RESMAN	Discharge Application	H
4.3	Safety Data Sheet (SDS)	RESMAN	According to REACH-standard	SDS	
5	**Tracer Design Control**				
5.1	Tracer Design	RESMAN	RESMAN Management System and Client input parameters	Internal Tracer Design	

5.2	Quality Control	RESMAN	National/ International Legal Compliance	Internal RESMAN Document	
6	**Solution Preparation**				
6.1	Solution Preparation	RESMAN	RESMAN Management System	Internal database	
6.2	Quality Control	RESMAN	RESMAN Management System	Analytical Certificate	
7.	**Logistics**				
7.1	Ordering pumps and injection equipment	RESMAN	RESMAN Management System	e-mail documentation	
7.2	Packing	RESMAN	RESMAN Management System	Shipment Documents	
7.3	Shipment according to agreed terms	Client/ RESMAN	Contract/ Incoterm	According to Contract and shipment documents	
8.	**Tracer injection**				
8.1	Rigging of injection equipment	RESMAN	RESMAN management system	Checklist	W
8.2	Quality control of injection setup	RESMAN	RESMAN management system/Equipment specification	Checklist	H
8.3	Tracer injection	RESMAN	RESMAN management system	Checklist, injection report	W
9.	**Demobilising equipment**				
9.1	Shipment of equipment	RESMAN/Client	Contract/ Incoterm	According to Contract and shipment documents	
10.	**Sampling**				
10.1	Issue of Sampling Programs	RESMAN	RESMAN Management System	Internal Checklist and Sampling Programs	(A)
10.2	Sampling	RESMAN/ Client/ Subcontractor	RESMAN Management System	Field Samples and Log	A
10.3	Sampling Logistics	Client	Contract/ Incoterm	According to contract and shipment documents.	A

11.	**Analysis**				
11.1	Selection of Field Samples	RESMAN/ Client	RESMAN Management System	Sample Selection List	(A)
11.2	Analysis of Field Samples	RESMAN	RESMAN Management System	Checklist (Internal) and Log	
11.3	Reporting of analytical results	RESMAN	RESMAN Management System	Analytical report/registration in internal database	R
12	**Modelling and Interpretation**				
12.1	Well Injection and Production Data	Client	RESMAN Management System	Injection and Production Logs	
12.2	RTD Interpretation	RESMAN	RESMAN Management System	Interpetation Presentation and Report	R

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Version history: Updated to reflect roles and responsibilities

1 INTENT

The intent of the RESMAN competency assurance program is to assure that each individual employee have the right knowledge, skills, abilities, and behavioral attributes to perform his/her work consistently, precisely and reliably.

Through the competency assurance program RESMAN will:

- Provide expectations so that employees know what is needed to be successful in their job
- Focus on QHSSE awareness
- Define standards for minimum, and best practices
- Secure a skilled workforce based on defined standards
- Identify gaps in knowledge, skills and abilities
- Increase productivity

Commitment by all stakeholders is crucial for the success of our competency assurance program.

- Management commitment to support the program and its processes
- Administrators commitment to follow the processes (e.g. QHSE, Human resources, Discipline leads)
- Employees and other stakeholder's commitment to work within and comply to the program.

In order for the program to be successful is it is important that this commitment is communicated to all employees.

2 TARGET GROUP

All employees

3 SPECIFICATIONS

3.1 Roles and responsibilities

Supervisors:

- Shall ensure all employees meet job competency requirements and complete training identified in the training matrix.
- Shall ensure that any hazardous work must be completed by an employee who is competent to do the work.
- Shall ensure all employees have sufficient experience to safely perform work without supervision or with only a minimal degree of supervision.

Employees:

- Attend and follow requirements of quality, safety and health management training.

3.2 Competence framework

The competence framework in RESMAN is Role/Position-based, meaning that the competencies are defined by job roles/positions and each set of competencies are applied to individual employees based on their role and position.

3.3 Defining competencies

The following information should be considered when defining competencies:

- Industry and regularity requirements/standards
- RESMAN policies and procedures
- Knowledge and skill requirements for the role (equipment, location/site specific)
- Criteria's related to tasks including criticality, complexity, frequency, importance etc.
- Environmental factors

3.3.1 Job descriptions

An overall organization chart is defined for the company identifying the different jobs in the company. Each position in the company must have a job description outlining job scope, qualifications, roles and responsibilities. Minimum qualification requirements and necessary training is defined based on this.

3.3.2 Generic induction

All employees in RESMAN shall participate in a generic company induction program. In addition, the need for a basic industry induction will be evaluated based on the background of the individual employees.
New employees will during their first period of work have a mentor appointed that will be follow-up and support.

3.3.3 Job specific training programs

New hires and employees entering a new position in the company shall go through a job specific training program. The initial training programs are developed for 6 months training and contains:

- Theoretical training
- On the job training
- Internal Certification (Two-Point competence rating system)
- Regularity and industry training/certification
  e.g. basic safety training, offshore medical, Environmental training

The employees line manager has the overall responsibility for ensuring that the training is performed as planned. The execution of the training for and individual employee can be delegated to discipline lead or a senior employee within the discipline that is deemed competent in the subject.

3.3.4 Health examinations

All employees performing work exposure them to chemicals will perform a health checks upon employment. Annual health checks is performed for the same group of employees.

3.4 Competence mapping

Competence is a combination of knowledge, understanding and skill, and the appropriate level of competence cannot be acquired simply by attending a training session. The understanding and skill are acquired by experience. For individuals involved in exposure to HSE hazards and risks, experience and training are essential. The following components are to be considered:

- Experience
- Level of Knowledge
- Capability to perform

Competence mapping is divided into 3 stages;

3.4.1 Identify competence needs

The company and management team will continuously assess, and review competence needs that aligns with the business plans and strategy. Then some key questions will be reviewed, and actions taken accordingly.

Training could be performed through internal capacities or external capacities.

3.4.2 Identification and mapping of existing competency in the company

The company track inhouse competency through a competency matrix where all competencies needed to fill a role is defined. Employees filling such roles are then evaluated on their competency level for each competency and graded according to the following system

Level	Description
Aware	Able to describe and understand the basic concepts related to the competency Able to recognize how and where competences are relevant to own job Skill under development with supervision and mentoring
Capable	Able to describe and understand the basic concepts related to the competency Able to recognize how and where competences are relevant to own job Skill under development with supervision and mentoring
Skilled	Able to perform the majority of activities related to competency without supervision Able to guide and advise peers on aspects related to competency Has significant working experience
Expert	Able to perform all practices related to the competency without assistance Able to optimize systems and processes for area of expertise Able to solve complex, non-routine problems in area of expertise
Master	Skill developed to high international standard Recognized as expert within the company within the subject Drives innovation and maintain high technical level of expertise on subject

An employee holding the level of Expert can QC competency level and rate colleagues up to the level of Expert. An employee can only be rated at level Master after being assessed by another Master within the discipline or the discipline lead.

3.4.3 Identify competency gaps

Is there any key competence missing in the company? If yeas, how can we get hold of this competence?
Is there any competence missing in specific roles? If yes, how can we transfer this competence from other internal resources?

3.5 Assessing competency

3.5.1 Evaluating competency

Our process of competency assurance involves the continuous assessment of training and development needs against a person's responsibilities, abilities and critical activities. This process enables the continuous

improvement loop that feeds back into training and development activities that ensures competency assurance is an ongoing career cycle process.
Competency is verified before employees are permitted to perform tasks independently. A competent person (supervisor, lead hand, instructor, etc.) must verify that an employee is competent to perform their roles and responsibilities before being allowed to work independently.

3.5.2 Employee evaluations during first 6 months of employment

To ensure that all new employees is followed up and given the required support during their trial period the line manager is responsible for ensuring that the employee is called into a minimum of two formal evaluation meetings. The manager should schedule 2 hours for these meetings to ensure there is enough time available for the employee to bring up any issues he/she might want to discuss.

The main focus for the meeting should be

- Is the employee performing according to expectations?
- Is the employee getting sufficient training and support to perform his/her duties?
- Is there a gap between employee expectations and actual role?
- Is the employee satisfied with the role he/she is given in the organization?
- Other issues that the employee might wish to bring up

3.5.3 Evaluation of competency and competency gaps when change in role or responsibilities

When there is a change in an employee's role (e.g. promotion or change to other position/department) the employee's competency shall be evaluated. Gaps that are identified must be filled through training development programs. Such evaluations are individual and an individual training/development program must be developed.

3.5.4 Re-assessment of competency

The following events will tripper a need for re-assessment of competency

- Change in industry/regularity requirements
- Change in defined competencies
- Equipment upgrades/changes
- Change in operating procedures
- Outcome of risk assessments
- Other events that can trigger reassessment

3.5.5 Appraisal talks

All employees are called for appraisal talks twice a year. The following should be addressed during the appraisal talks:

H1 appraisal talk

- Performance summary previous year
- Setting personal objectives for the year
- Individual career plan
- Identification of competence development needs
- Review and update of CV

H2 appraisal talk

- Status objectives and performance year to date
- Feedback from employee on own/department performance and expectations
- Feedback from employees regarding management follow-up

3.6 Closing Competency Gaps

The employees in RESMAN shall be offered an opportunity for development and reassessment whenever a competency gap is identified. Opportunities for development may include on-the-job training, tuition, coaching, computer-based training, hands on instruction etc. A plan and timeline for reassessing the candidate must be recorded to move the employee toward achieving or maintaining competence.

3.7 Evaluation of this competency assurance program

The competency assurance program will be reviewed and evaluated in a continuous cycle. In addition, this can also be audited as a part of the company's audit program.

3.8 Data and information management

3.8.1 Record keeping and documented Management System

Data and information management system for storing competence documentation. Currently BambooHR.

- Competence resource and process management solution
- Tracking, reporting, and analysis of organizational competence data
- Document management system
- Systematically identify personnel's levels of competence and their degree of competence achievement.
- Develop reports to systematically identify competence gaps across specific role or tasks, allowing focus to be put on these areas to develop competence.

RESMAN laboratory is located at RESMAN's headquarters in Trondheim, Norway. It is certified to ISO:45001:2018 (HSE Management system), standard NS-EN ISO 9001:2015 and NS-EN ISO 14001:2015.

RESMAN's QHSE management system involves all processes within the company and is developed to satisfy in addition to the ISO regulations, internal control regulations and requirement and regulations of systematic HSE work (health, safety, and environment).

RESMAN is also qualified in the Magnet JQS for suppliers to the Oil Industry in Norway, Denmark and Achilles in the UK.

The laboratory is providing sample preparation and analysis for Inflow tracers and Injection tracers.
The inflow tracers are analysed using the LC-MS/MS technique. The interwell tracers are analysed using HPLC, GCMS and/or GC-MS/MS.

Liquid and gas chromatography separate mixtures with multiple components, and mass spectrometry provides structural identity of the individual components with high molecular specificity and detection sensitivity. All instruments provide reliable detection of tracers down to ppt (part per trillion (10^{-12}) level). In the table below our instruments are listed.
All processes and descriptions are detailed in our QHSE Management System.

The Field Sample Analysis Process is visualized in Figure 1.

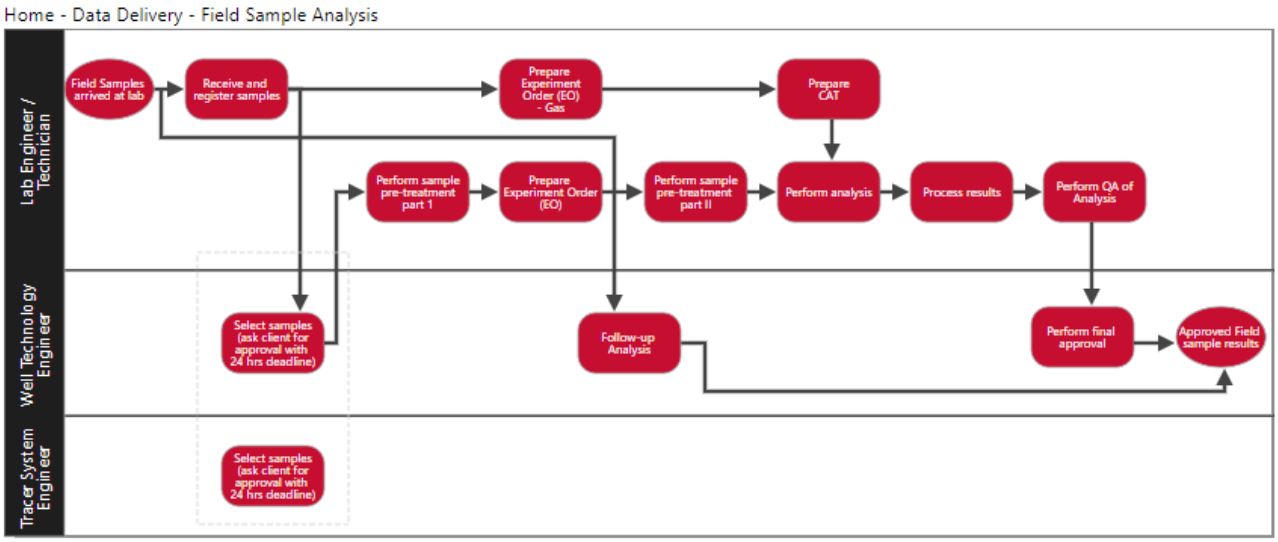


Figure 1: Field Sample Analysis Process

All processes have activity tables. The main activities for the Field Sample Analysis Process are listed below:

Activities
Receive and register samples
Select samples (ask client for approval with 24hrs deadline)
Perform sample pre-treatment part 1
Prepare experiment order (EO)
Perform sample pre-treatment, part II
Perform analysis
Process results
Perform QA of analysis

All related procedures and work descriptions are available in the Field sample Analysis Process online. This is proprietary information.

Maintenance
Preventable maintenance and necessary service agreements is described in our QHSE Management System.

Table 1. List of analytical instruments for tracer analysis.

Item no.	Analytical instrument	Quantity	Capacity (samples/ day)
1	GC-MS/MS system (water tracer), Thermo	2	~ 40
2	HPLC-FLD- systems (water tracer)	2	~ 40 (per instrument)
3	ATD- GC-MS, Agilent (gas tracers)	2	~ 10 (per instrument)
4	LC-MS/MS, Agilent (oil & water tracer)	6	~ 25 (per instrument)

Laboratory description
The laboratory is located in 2 buildings: one for Inflow and one for Interwell. Both locations consist of goods and sample reception, sample preparation unit, a balance room, an instrument room, consumable storage, and sample and chemical storage. See figure 1-5 for further details.



Figure 1. Interwell laboratory with robotic sample preparation.



Figure 2. Inflow Laboratory with robotic sample preparation

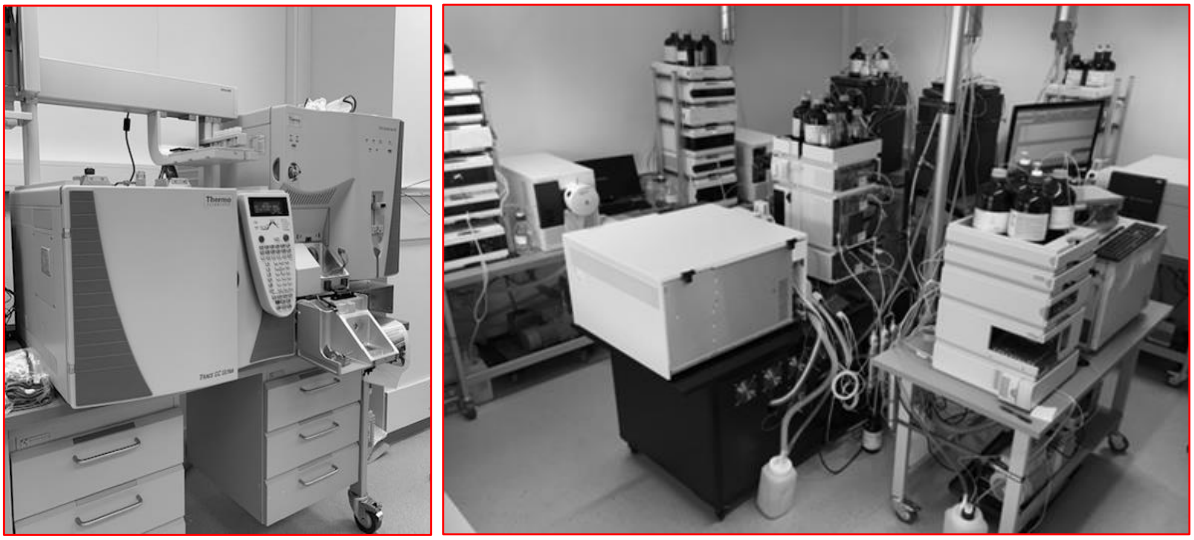


Figure 3. GC-MS/MS for interwell tracer analysis and LC-MS/MS for inflow tracer analysis



Figure 4. XR-GC-MS for interwell gas tracer analysis and the balance room for preparation of standard solutions for water tracer analysis.



Figure 5. Internal storage facility for water field samples.