RECOMMENDED GUIDELINES:

Common model for Safe Job Analysis (SJA)

Contents

1 Introduction

1.1 Purpose and scope

The objective of this procedure is to establish a common practice for the use of Safe Job Analysis (SJA) on fixed and floating production installations on the Norwegian continental shelf. The document describes how to carry out a SJA. In addition, general requirements are given regarding when to use SJA. Apart from that, the document is based on the individual operating companies having more specific requirements as regards when to use SJA.

The subject document is a translation from the original Norwegian document.

1.2 Publication and follow up

The subject document is issued and maintained by the Norwegian Oil Industry Association (OLF). Further development and improvement through experience-transfer, learning and improvement will be handled by a dedicated group of representatives from operating- as well as contracting companies. Suitable mechanisms will be put in place in order to secure an efficient handling of feedback and proposals from the users.

Exceptions from the document will be handled according to guidelines in the individual operating companies. Such exceptions shall also be considered as input when revising and updating the document.

2 Abbreviations, definitions and terminology

2.1 Abbreviations

WP	Work Permit
SJA	Safe Job Analysis

2.2 Safe Job Analysis

A safe job analysis is a systematic and stepwise review of all risk factors prior to a given work activity or operation, so that steps can be taken to eliminate or control the identified risk factors during preparation and execution of the work activity or operation.

The term risk factor includes all aspects that directly or indirectly may influence the risk of loss or damage to personnel, the environment or financial assets.

2.3 Organisation and roles related to SJA

Each installation has its own organisational model with associated functions and work descriptions. Through the use of standard roles in association with SJA, the subject procedure has been made independent of such organisational descriptions. The procedure does not address the organisation of the installations, but it requires that the roles defined in the procedure are taken care of and executed within the individual organisational models.

The following roles have been defined in association with the handling of SJA:

Person responsible for SJA
There must be a person in charge whenever SJA is to be carried out. This may be the person in charge of the execution of the actual work or operation, the area/operations supervisor or someone that is appointed for this role in the particular case. The person responsible for SJA shall make necessary preparations and invite relevant personnel to the SJA meeting. He shall chair the meeting, ensure that the analysis and name of the participants is documented and that responsibility for execution of the identified controls and measures are agreed. Further he shall ensure that a short experience summary is recorded on completion of the actual work or operation. In general, he shall ensure that the SJA is planned and carried out according to the subject document.

Responsible for execution of the work
This is the person responsible for the execution of the actual work.

Executing personnel
Everyone involved in execution of the actual work.

Responsible for measures
The individual persons who are given responsibility for carrying out the identified and documented measures in the SJA.

Area/Operations Supervisor
The management function with operational responsibility over the area or the actual part of the plant or facility that the work will affect, and who therefore will be involved in approval of the work. If the area and operational responsibility is divided between two different positions, both will take part in the performance of this role.

Area Technician
The technician who operates and is responsible for the area or plant where the work is taking place. If the area and operational responsibility is divided between two different positions, both will take part in the performance of this role

The SJA group
This is the personnel that participate in the SJA. This will normally be all personnel actively involved in the preparation and execution of the work and may include:

- Person responsible for SJA (must always take part in the SJA meeting)

- Responsible for execution of the work
- Area/Operations Supervisor or a person appointed by him/her
- Area Technician(s)
- Executing personnel
- Relevant safety delegates
- Personnel with specialist knowledge relevant to the analysis

3 Method and requirements when planning and performing SJA

3.1 Identify need for SJA

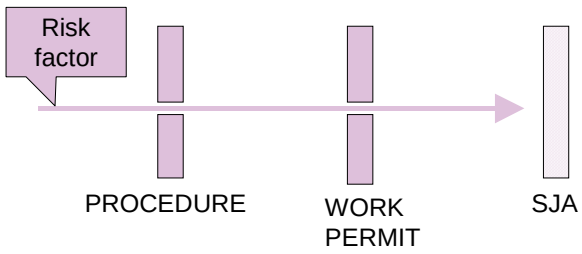
Evaluation of the need for SJA should be done in all phases of the work from the planning stage and all the way through the actual execution. It is a duty of everyone involved in the planning, approval and execution of work activities or work permits to evaluate the need for SJA.

When a need for SJA is identified, a person responsible for SJA must be appointed.

3.2 Requirements for use of SJA

General
A safe job analysis is required when risk factors are present or may arise and these factors are not sufficiently identified and controlled through relevant procedures or an approved work permit (WP) associated with the actual work.

This is illustrated in the figure below:



Typical factors to take into account when evaluating the need for SJA:

- Is the work described in procedures and routines or does it require exceptions from such procedures or routines?
- Are all risk factors identified and controlled through the work permit?
- Has this type of work been prone to incidents/accidents?
- Is the work considered risky, complex or does it involve several disciplines or departments?
- Are new types of equipment or methods used that are not covered by procedures or routines?
- Have the personnel involved experience with the actual work or operation?

3.3 Method

Operational personnel use the SJA-method to identify and document that the risk factors are under control. If the risk factors are not under control or the potential consequences are very serious, one has to go further and make a more detailed risk analysis.

The performance of a Safe Job Analysis is based on the following stepwise method:

- Break down the work into basic steps allowing each step and the sequence of the work to be understood by the involved personnel
- Identify the risk factors and hazards of each step
- Evaluate the likelihood and severity of the consequences, i.e. the risk in each step
- Identify measures that eliminate or control the hazards
- Evaluate and accept the remaining risk
- Involve the personnel who are part of or influenced by the work in the SJA so that communication and information sharing is facilitated
- Involve safety delegates and personnel with relevant skills in the analysis
- Take previous experience into consideration
- Document the results of the SJA, including identified measures, person responsible for measures and participation in the analysis
- Review of the SJA when new personnel, who did not participate in the initial SJA, are involved in the work

3.4 Planning and performing SJA

3.4.1 Preparing for SJA

The person responsible for SJA will make necessary preparations prior to the SJA meeting. This includes among other activities to:

- Gather information, drawings, previous experience and any available risk analyses for the actual work

- Pick up the SJA form and make a preliminary break-down of the work in steps and sequence
- Evaluate if there are special requirements/preconditions for the work
- Define the participation in the SJA meeting
- Call the SJA meeting

The degree and extent of the preparations will depend on the nature of the actual work. For extensive work activities, material will often be prepared well in advance of the actual execution of the work and often by the onshore organisation. A new SJA must be prepared for each individual job (even if a SJA has been performed for a similar type of job at an other point in time), but the use of experience from previous SJA is appropriate and useful to achieve experience transfer.

3.4.2 Performing SJA

The analysis will take place in the SJA meeting
The SJA will be prepared by the SJA group. It is important that all participants get the opportunity to give input and that the analysis is understood by all the involved personnel. Good communication and dialogue in the meeting, ensures that all relevant issues are considered and that the expertise and knowledge of the participants are used to identify the steps of the work, the hazards involved and the arrival at good solutions.

The SJA form in appendix E is to be used for the analysis in the SJA meeting.

Review of the work and preconditions
The person responsible for SJA ensures that the following aspects are reviewed:

- The actual work to be done
- The requirements and preconditions to carry out the work
- Available and relevant preparatory material.

Work site inspection
In most cases it will be necessary to carry out an inspection on the work site as part of the SJA. The SJA meeting will evaluate the need and carry out such an inspection.

Divide the work into basic steps and identify the sequence
Break down the complete task into its basic steps, describing what is to be done. Use words describing actions like “TAKE”, “REMOVE” or “OPEN”.

Identify risk factors and hazards
Identify possible incidents and conditions that can lead to hazardous situations for personnel, the environment or financial assets for each basic task.

Evaluate likelihood and severity
Evaluate for each hazard or risk factor the potential consequences. If the risk factors can give unacceptable consequences, the likelihood is evaluated. The participants

have to use their experience and make sound evaluations. (A risk matrix is often used as an aid in this phase of the analysis. An example of such a matrix is given in appendix B.)

Identify measures and controls
Measures and controls that can prevent potential incidents from occurring are preferred instead of measures involving increased emergency response.

Use of the checklist
Use a ”checklist for SJA” as an aid to ensure that potential risk factors, hazards, consequences and measures have been considered. A standard checklist is given in appendix C. This checklist may be supplemented with additional checkpoints or keywords.

Allocate the responsibility for measures
The names of the persons who are responsible for carrying out the identified measures are noted on the SJA form. Those responsible for measures will follow up the work and make sure that the identified measures are carried out.

Evaluate remaining risk and conclude the analysis
Finally the SJA group will make a complete evaluation of the work and draw a conclusion as to whether the work can be carried out or not. It is the opinion of the group that decides whether the remaining risk associated with the work is acceptable.

Document and sign the SJA-form
The SJA is documented in the SJA form and signed by the person responsible for SJA on behalf of the SJA group. The checklist and signed participation list is attached to the SJA form. A standard SJA participant list is provided in appendix D.

3.4.3 Recommendation and approval of the SJA

The SJA-form must be reviewed and recommended by the person responsible for execution of the work and approved by the Area/Operations supervisor. Information about SJA jobs will be given in the daily meeting for coordinating simultaneous activities and work permits on the installation.

3.4.4 Executing the work

Pre-job talk
Unless the SJA meeting was conducted immediately prior to the work, the involved personnel gather to review the work immediately prior to starting the job.

Verify that requirements and preconditions are fulfilled
The person responsible for the work must ensure that requirements and preconditions are satisfied prior to and during the work.

Verify that all measures have been completed
The person responsible for the work must prior to and during the work, ensure that planned measures identified in the SJA are carried out.

Unexpected situations/changes during the course of the work
Should changes arise that are not in accordance with the SJA, the work must be suspended and a new evaluation performed.

Change of personnel
If the responsible for execution of the work leaves the installation, he must appoint a new responsible person for execution and inform involved personnel.

If there are changes of personnel executing the work prior to or during the work, the person responsible for execution of the work will ensure that a detailed review is prepared together with the new personnel. Review of the SJA with new personnel must be documented in the SJA participant list.

3.4.5 Experience transfer, learning and improvement

Evaluate the outcome of the work against the SJA
After completion of the work, the person responsible for SJA will briefly summarise the experiences and record these in the SJA form (Did the requirements/preconditions change? Did unexpected hazards or dangers occur? Did external conditions or interfaces influence the work in ways that were not considered in the SJA?).

Filing SJA-documents
The SJA documentation should be filed according to requirements in the individual operating companies.

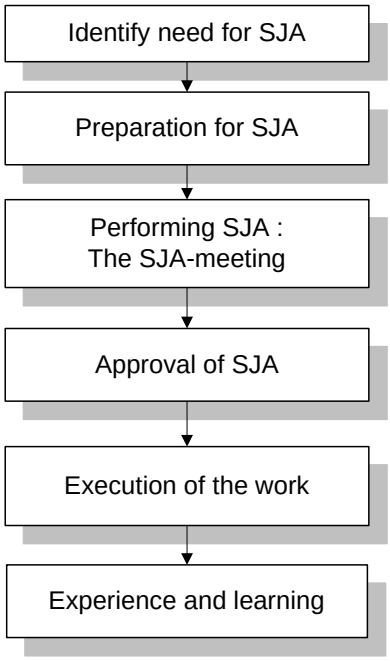
Experience transfer, learning and improvement
Experience from work that requires SJA should be used as input when preparing and improving procedures and for future similar work activities according to the requirements in the individual operating companies.

3.5 Qualification and training

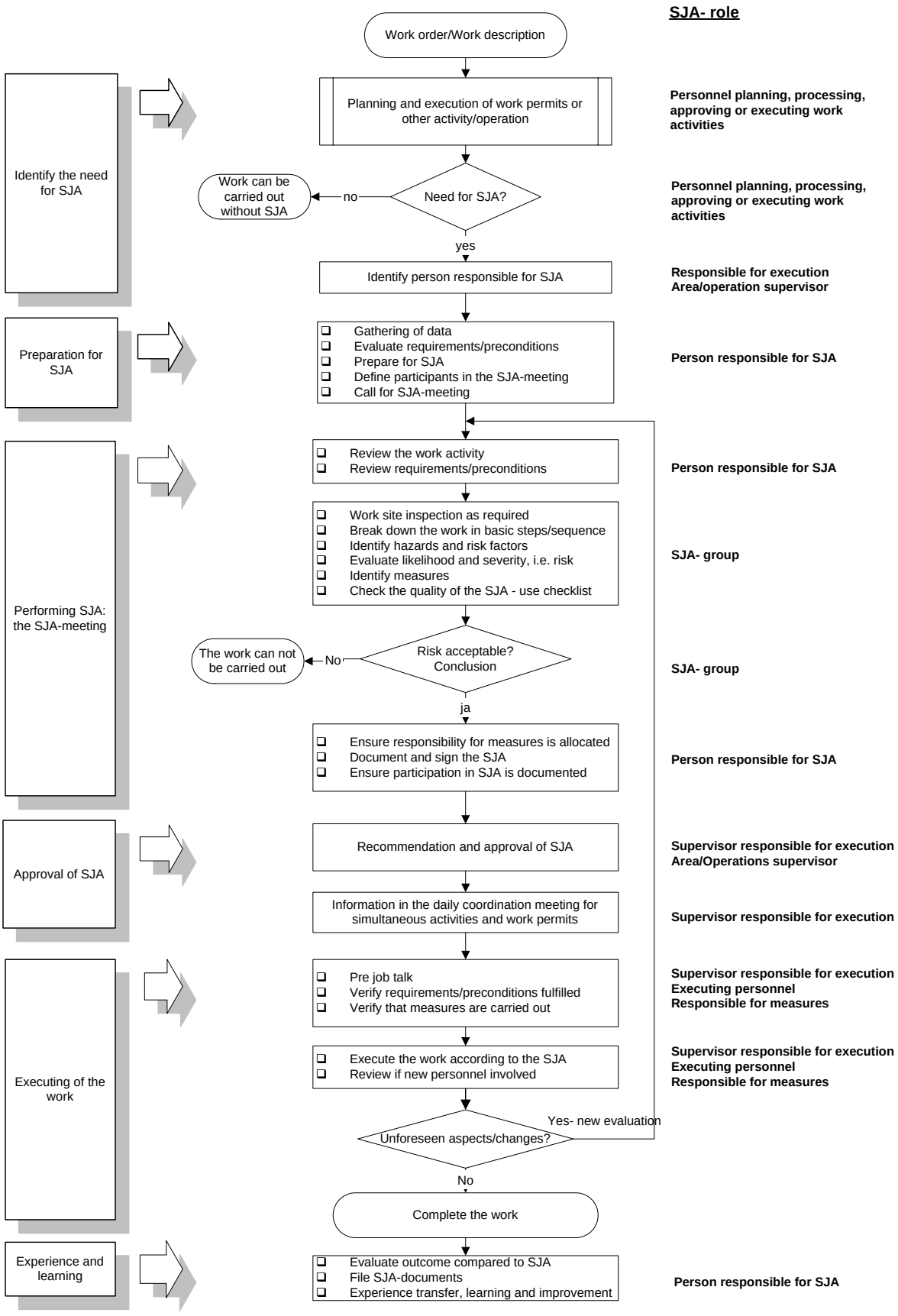
Platform management must ensure that personnel working on the installation have the necessary knowledge about SJA, in accordance with the role they will have during work activities that require SJA. Including SfS interactive e-learning course for SJA.

4 Work process for planning and performing SJA

SJA is planned and carried out according to the main steps in the flow diagram below.



A detailed process flow is shown on the next page.


SJA- role
Work order/Work description
Identify the need for SJA
Planning and execution of work permits or other activity/operation
Personnel planning, processing, approving or executing work activities
Work can be carried out without SJA
no
Need for SJA?
Personnel planning, processing, approving or executing work activities
yes
Identify person responsible for SJA
Responsible for execution
Area/operation supervisor
Preparation for SJA
Gathering of data
Evaluate requirements/preconditions
Prepare for SJA
Define participants in the SJA-meeting
Call for SJA-meeting
Person responsible for SJA
Performing SJA: the SJA-meeting
Review the work activity
Review requirements/preconditions
Person responsible for SJA
Work site inspection as required
Break down the work in basic steps/sequence
Identify hazards and risk factors
Evaluate likelihood and severity, i.e. risk
Identify measures
Check the quality of the SJA - use checklist
SJA- group
The work can not be carried out
No
Risk acceptable? Conclusion
SJA- group
ja
Ensure responsibility for measures is allocated
Document and sign the SJA
Ensure participation in SJA is documented
Person responsible for SJA
Approval of SJA
Recommendation and approval of SJA
Supervisor responsible for execution
Area/Operations supervisor
Information in the daily coordination meeting for simultaneous activities and work permits
Supervisor responsible for execution
Executing of the work
Pre job talk
Verify requirements/preconditions fulfilled
Verify that measures are carried out
Supervisor responsible for execution
Executing personnel
Responsible for measures
Execute the work according to the SJA
Review if new personnel involved
Supervisor responsible for execution
Executing personnel
Responsible for measures
Yes- new evaluation
Unforeseen aspects/changes?
No
Complete the work
Experience and learning
Evaluate outcome compared to SJA
File SJA-documents
Experience transfer, learning and improvement
Person responsible for SJA

App A Guidelines for completion and use of the SJA forms

A.1 Introduction

This guideline is written to assist the user in completion and use of the SJA form.

A.2 Preparing for SJA

The person responsible for SJA uses the standard SJA form, appendix E and completes the top section:

Standard SJA form – top section	**Identification/description of the job and preconditions**
SJA Title	Short title describing the work
SJA No.	A number identifying the SJA if used by the company
Department/Discipline	The department or discipline that will carry out the work
Person responsible for SJA	Name of the person responsible for SJA
Description of the work	Short description of the work
Installation	The name of the installation where the work is taking place
Area/Module/Deck	Name of Area/Module/Deck
Tag. /line no	Tag or line number of equipment or lines to be worked on
Requirements/Preconditions	Specify special preconditions for the work, if any
WP/WO No.	Reference to work permit/work order no.
Number of attachments	Specify the number of attachments

It will often be useful that the person responsible for SJA makes a preliminary breakdown of the job in basic steps and fill in the relevant information in the SJA-form.

A.3 Performing SJA

The person responsible for SJA chairs the SJA meeting and uses the total expertise of the group to carry out the analysis that is documented in the SJA form (the number of lines in the form may be adjusted according to the actual job):

Standard SJA form – middle section	**Breakdown in basic steps, identification of hazards, consequences, measures and responsible for measures**
No	Serial number for that step
Basic steps	A short description of each basic step. • The job is broken down in logical steps • Every step tells what is to be done (not how) • Hazards or safety measures are not described in this phase, that comes later on • Basic steps are given in the normal sequence • Every step starts with an action word like ”Take”, ”Remove”, ”Open” • Normally only a few words are used to describe each step • Avoid too detailed steps or too extensive steps
Hazard/cause	List the hazards, the causes for potential unwanted incidents that may occur for each step.
Potential consequence	List potential consequences for each hazard/cause. In this phase a risk

Standard SJA form – middle section	Breakdown in basic steps, identification of hazards, consequences, measures and responsible for measures
	matrix like the one in appendix B may be helpful as an aid when doing the risk evaluation.
Measures	For each consequence when it is considered necessary based on risk, measures are listed.
Person responsible for measures	The name of the person responsible for each measure is noted.

At the end of this part of the process, a checklist is used to aid in the assurance that potential hazards and consequences for each step have been considered. The standard checklist for SJA is given in appendix C. Record in the SJA form that the checklist has been used.

On completion of the SJA, the group evaluates whether the remaining risk is acceptable and concludes the analysis. The lower part of the SJA form is used as described below:

Standard SJA form – lower section	Conclusion and approval of the analysis
Is the total risk acceptable (Yes/No)?	Complete with yes or no
Conclusion/comments	Fill inn short conclusion of the analysis
Approval: Date/signature	Fields for signatures
Person responsible for SJA	Signature by person responsible for SJA on behalf of the SJA group

Documentation of participation in the SJA is done in the standard SJA participant form, appendix D.

A.4 Recommendation and approval of the SJA

Standard SJA form – lower section	Conclusion and approval of the analysis
Approval: Date/signature	Fields for signatures
Responsible for execution of the work	Signature for recommendation by person responsible for execution of the work
Area/Operation supervisor	Approval signature by Area/Operation supervisor
Other position	Approval signature by other position

A.5 Execution of the work

Prior to start of the work it must be verified that identified measures have been taken care of.

A.6 Summary of experience and learning

After completion of the work, the person responsible for SJA will briefly summarise the experiences and record in the relevant section of the SJA form (Did the requirements/preconditions change? Did unexpected hazards or dangers occur? Did external conditions or interfaces influence the work in ways that were not considered in the SJA?).

In this way it will be easy to retrieve and use the experience later or when making improvements to routines and procedures.

App B Example risk matrix

Assessing hazards – likelihood and severity
In some cases it may be beneficial for the SJA group to use a risk matrix to assess the risks associated with a hazard, i.e. the likelihood of a hazard happening and the severity of the consequences. Such assessments can be used to clarify the need for measures and to prioritise actions to be taken.

The assessment is a rough approximation. High-risk hazards identified could be subject to a more detailed assessment later.

Using the risk matrix
A risk matrix is used to assess the risk by plotting the probability or likelihood on one axis and the consequences or severity on the other. This is done for each step or task, as listed in the SJA form. If the combination of likelihood and severity, according to the matrix, is medium or high, measures will be required.

The individual operating companies will normally have their own matrix used in risk analysis, but a simplified matrix like the one given below with three levels of likelihood and three levels of severity, may be useful when performing SJA.

	Likelihood		
Severity	**Low**	**Medium**	**High**
Low	**L**	**L**	**M**
Medium	**L**	**M**	**H**
High	**M**	**H**	**H**

Severity:

High	Fatality, major injury or illness, significant pollution, significant equipment damage, significant amount of deferred production, significant gas-/oil leak, impairment of the safety integrity of the installation or part of the installation
Medium	Lost-time injury or minor injury, minor pollution, minor equipment damage, minor amount of deferred production, minor gas-/oil leak, impairment of the safety integrity of a part of the installation (like a module)
Low	No injury, superficial equipment damage or pollution, insignificant amount of deferred production, insignificant gas-/oil leak, local or negligible impairment to the safety integrity of the installation

Likelihood:

High	Probable, likely to occur several times during a year
Medium	Possible, could occur sometimes, the incident has occurred on the installation
Low	Remote likelihood, unlikely though conceivable, the incident has occurred in the industry

App C Standard SJA-checklist

No	Checklist for SJA No: SJA Title:	Taken care off?			Comments
		Yes	No	Not Applic.	
A	**Documentation and experience**				
1	Is this a familiar work operation for the crew?				
2	Is there an adequate procedure/instruction/work package?				
3	Is the group aware of experiences/ incidents from similar activities/SJA?				
B	**Competence**				
1	Do we have the necessary personnel and skills for the job?				
2	Are there other parties that should participate in the SJA meeting?				
C	**Communication and coordination**				
1	Is this a job where several units/crews must be coordinated?				
2	Is good communications and suitable means of communication in place?				
3	Are there potential conflicts with simultaneous activities (system/area/ installation)?				
4	Has it been made clear who is in charge for the work?				
5	Has sufficient time been allowed for the planning of the activities?				
6	Has the team considered handling of alarm/emergency situations and informed emergency functions about possible measures/actions?				
D	**Key physical safety systems**				
1	Are barriers, to reduce the likelihood of unwanted release/leakage maintained intact (safety valve, pipe, vessel, control system etc.)?				
2	Are barriers, to reduce the likelihood of the ignition of a HC leakage maintained intact (detection, overpressure protection, isolation of ignition sources etc.)?				
3	Are barriers to isolate leakage sources/lead hydrocarbons to safe location maintained intact (process/emergency shutdown system, blowdown system, x-mas tree, drains etc.)?				
4	Are barriers to extinguish or limit extent/spread of fire/explosion maintained intact (detection/ alarm, fire pump, extinguishing system/equipment etc.)?				
5	Are barriers to provide safe evacuation of personnel maintained intact (emergency power/lightning, alarm/PA, escape-ways, lifeboats etc.)?				
6	Are barriers that provide stability to floating installations maintained intact (bulkheads/doors, open tanks, ballast pumps etc.)?				
E	**Equipment worked on/involved in the job**				
1	Is the necessary isolation from energy provided (rotation, pressure, electrical voltage etc.)?				
2	May high temperature represent a danger?				
3	Is there sufficient machinery protection/shields?				
F	**Equipment for the execution of the job**				
1	Is lifting equipment, special tools, equipment/material for the job available, familiar to the users, checked and found in order?				
2	Do the involved personnel have proper and adequate protective equipment?				
3	Is there danger of uncontrolled movement/rotation of equipment/tools?				
G	**The area**				
1	Is it necessary to make a worksite inspection to verify access, knowledge about the working area working conditions etc.?				
2	Has work at heights/at several levels above each other/falling objects been considered?				
3	Has flammable gas/liquid/material in the area been considered?				
4	Has possible exposure to noise, vibration, poisonous gas/liquid, smoke, dust, vapour, chemicals, solvents or radioactive substances been considered?				
H	**The workplace**				
1	Is the workplace clean and tidy?				
2	Has the need for tags/signs/barriers been considered?				
3	Has the need for transportation to/from the workplace been considered?				
4	Has the need for additional guards/watches been considered?				
5	Has weather, wind, waves, visibility and light been considered?				
6	Has access/escape been considered?				
7	Have difficult working positions, potential for work related diseases been considered?				
I	**Additional local questions**				

App D Standard SJA participant list

SJA PARTICIPANT LIST			***SJA TITLE:***			***SJA NO:***	
SJA Meeting Date: _____ Time: _____ Place: _____ SJA-responsible:				Signature when changing personnel etc.			
Name (Block letters)	Dep/Discipline	Date	Signature	Name (Block letters)	Dep/Discipline	Date	Signature

App E Standard SJA form

SJA title:		**SJA No.:**		**Department/Discipline:**	**Person responsible for SJA:**
Description of the work:				**Installation:**	**Tag/line no.:**
				Area/Module/Deck:	
Requirements/Preconditions:				**WP/WO no.:**	**Number of attachments:**
No	**Basic steps**	**Hazard/cause**	**Potential consequence**	**Measures**	**Person responsible for measures**
Is the total risk acceptable: (Yes/No)?		**Approval**	**Date/Signature**	**Checklist for SJA applied –tick off**	
		Person responsible for SJA	(Recom.)	**Summary of experience after completion of the work:**	
Conclusion/comments:		Responsible for execution	(Recom.)		
		Area/Operations supervisor	(Appro.)		
		Other position	(Appro.)		