

NTNU		Prepared by		Number	Date
HSE		HSE section		HMSRV2601E	09.01.2013
		Approved by			Replaces
		The Rector			01.12.2006

Hazardous activity identification process

Unit: Department of Energy and Process engineering

Date: 13/03-2018

Line manager:

Trine Brath

Participants in the identification process (including their function): **Trine Brath (student), Vegard Ulvan (student)**

Short description of the main activity/main process: Energy (temperature and velocity) measurements at Ylja Power Station

Is the project work purely theoretical? (YES/NO): No

Answer "YES" implies that supervisor is assured that no activities


requiring risk assessment are involved in the work. If YES, briefly describe the activities below. The risk assessment form need not be filled out.

Signatures: Responsible supervisor:

Student:

*Trine Brath
Vegard Ulvan*

ID nr.	Activity/process	Responsible person	Existing documentation	Existing safety measures	Laws, regulations etc.	Comment
01	Activities at the power station.	Trine Brath		Required protective equipment		
02	Customize measuring equipment on site.	Trine Brath		Required protective equipment		
03	Work in the turbine outlet; assembly/disassembly of the measuring frame.	Trine Brath		Required protective equipment		
04	Setting up measuring equipment.	Trine Brath		Required protective equipment		
05	Activities near the turbines outlet while the turbine is running.	Trine Brath		Required protective equipment. Fence		
06	Installation/dismantling of measurements equipment and other measurements while turbine is in stand-still.	Trine Brath		Safety protocols for work on a turbine.	Eidsiva and Rainpower HMS regulations	

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HSE/KS		Approved by		Replaces		01.12.2006	
Risk assessment		The Rector					

Unit: Department of Energy and Process engineering

Date:

Line manager:

Eivind Skjerve

Participants in the identification process (including their function): Trine Brath (student), Vegard Ulvan (student)



Short description of the main activity/main process: Energy (temperature and velocity) measurements at Yija Power Station

Signatures: Responsible supervisor:

Student:

Trine Brath
Vegard Ulvan

Activity from the identification process form	Potential undesirable incident/strain	Likelihood:			Consequence:			Risk Value (human)	Comments/status Suggested measures
		Likelihood (1-5)	Human (A-E)	Environment (A-E)	Economy/material (A-E)				
Activities at the power station.	Falling object	2	B	A	B			2B	- Wear helmet, safety shoes and work clothes at all time.
Customize measuring equipment on site.	Cut injuries, burns	3	A	A	A			3A	- Wear protective goggles, gloves, work clothes
Work in the turbine outlet; assembly/disassembly of the measuring frame.	Cut injuries, fall injuries	3	A	A	A			3A	- Wear protective gloves and helmet.
Setting up measuring equipment.	Cut injuries, crush injuries	3	A	A	A			3A	- Wear protective gloves
Activities near the turbines outlet while the turbine is running.	Fall into the water channel	3	D	A	A			3D	- Do not do measurements alone
Installation/dismantling of measurements equipment and other measurements while turbine is stopped.	Falling from height. Accidental opening of MIV. Accidental rotation of the turbine. Accidental maneuvering of	3	E	A	A			3E	- Wear straps if no fence exist. - MIV is closed and manually locked from automatic opening. - Generator disconnected

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		The Rector					

Risk assessment

deflectors and injectors								-	Keep fingers and hands clear from deflectors and injectors.
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- Likelihood, e.g.:**
- Minimal
 - Low
 - Medium
 - High
 - Very high
- Consequence, e.g.:**
- Safe
 - Relatively safe
 - Dangerous
 - Critical
 - Very critical
- Risk value (each one to be estimated separately):**
- Human = Likelihood x Human Consequence
- Environmental = Likelihood x Environmental consequence
- Financial/material = Likelihood x Consequence for Economy/material

Potential undesirable incident/strain

Identify possible incidents and conditions that may lead to situations that pose a hazard to people, the environment and any materiel/equipment involved.


Criteria for the assessment of likelihood and consequence in relation to fieldwork

Each activity is assessed according to a worst-case scenario. Likelihood and consequence are to be assessed separately for each potential undesirable incident. Before starting on the quantification, the participants should agree what they understand by the assessment criteria:

Likelihood	Minimal 1	Low 2	Medium 3	High 4	Very high 5
	Once every 50 years or less	Once every 10 years or less	Once a year or less	Once a month or less	Once a week

Consequence

Grading	Human	Environment	Financial/material
E Very critical	May produce fatality/ies	Very prolonged, non-reversible damage	Shutdown of work > 1 year.
D Critical	Permanent injury, may produce serious serious health damage/sickness	Prolonged damage. Long recovery time.	Shutdown of work 0.5-1 year.
C Dangerous	Serious personal injury	Minor damage. Long recovery time	Shutdown of work < 1 month
B Relatively safe	Injury that requires medical treatment	Minor damage. Short recovery time	Shutdown of work < 1week

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Risk assessment								

A Safe	Injury that requires first aid	Insignificant damage. Short recovery time	Shutdown of work < 1 day



The unit makes its own decision as to whether opting to fill in or not consequences for economy/materiel, for example if the unit is going to use particularly valuable equipment. It is up to the individual unit to choose the assessment criteria for this column.

Risk = Likelihood x Consequence

Please calculate the risk value for "Human", "Environment" and, if chosen, "Economy/materiel", separately.

About the column "Comments/status, suggested preventative and corrective measures":

Measures can impact on both likelihood and consequences. Prioritise measures that can prevent the incident from occurring; in other words, likelihood-reducing measures are to be prioritised above greater emergency preparedness, i.e. consequence-reducing measures.

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HSE/KS		Risk matrix		Rector	4 of 4	9 February 2010
						

MATRIX FOR RISK ASSESSMENTS at NTNU

CONSEQUENCE		LIKELIHOOD				
Extremely serious	E1	E2	E3	E4	E5	
Serious	D1	D2	D3	D4	D5	
Moderate	C1	C2	C3	C4	C5	
Minor	B1	B2	B3	B4	B5	
Not significant	A1	A2	A3	A4	A5	
	Very low	Low	Medium	High	Very high	

Principle for acceptance criteria. Explanation of the colours used in the risk matrix.

Colour	Description
Red	Unacceptable risk. Measures must be taken to reduce the risk.
Yellow	Assessment range. Measures must be considered.
Green	Acceptable risk Measures can be considered based on other considerations.