

Format No: ER 5/10- F2, JOB SAFETY ANALYSIS (JSA), IB THERMAL POWER STATION, OPGC							
Serial No.	Department	Equipment	Location	Job description:			
	Plant Civil		Main Plant area	Construction of Road along AD Line inside Main Plant Area at ITPS			
JSA performed by:	Signature	Reviewed & Approved by	Signature	Date of Issue	Date of revision		Revision No-
<b>HAZARD TEXT/TYPE ( For reference to identify the Hazard type )</b>							
PHYSICAL HAZARDS	PHYSICAL HAZARDS	PHYSICAL HAZARDS	ELECTRICAL HAZARDS	CHEMICAL/ GAS HAZARDS	EXCAVATION	OTHERS	
Noise	Fall from height	Force (Push/Pull)	Shock/ Electrocutation	Flammable/ Explosive substances	Collapse/Sliding	Fire	
Radiation	Fall (Slip/Trip)	Caught in/on or between	Static electricity	Inhalation of toxic fumes	Underground live cable damage	Heavy Wind/Rain	
Confined space	Fall down/below	Struck by/against	Arcflash/ blast	Ingestion/Absorption	ERGONOMICS	Dust exposure	
Exposure to pressurised Steam/Air	Fall of Objects from height	Extreme weather (Hot/Cold)	BIOLOGICAL HAZARDS	Body/Eye Contact	Poor Posture	Oil spill	
Contact with Hot surface	Contact with moving parts	Poor illumination	Snake/Insect bite/Virus infection	Spillage	Repeatative motion	Human factor	
<b>PPEs to be used</b>	Safety shoes, hand gloves ,safety helmet, Nose mask, Ear plug/muff, Safety goggles, reflective vest, etc.						
<b>Tools required</b>	Hoe, pick axe, spade, digging bar, measuring box, head pan, masonry trowel, circular saw, float, ladder, line and pins, measuring box, measuring tape, plumb bob, sand screen, spade,						
<b>Important Note-</b> While deciding hazard control measures, consider hierarchy of hazard control steps in order of preference.							
SEQUENCE OF BASIC STEPS	SAFETY, HEALTH & ENVIROMENT HAZARDS	SAFE JOB STEPS / HAZARD CONTROL MEASURES				Are control Measures adequate to mitigate the risk (Yes/No)	
		Elimination/ Substitution	Engineering	Administrative	PPE		
Excavation work.	Electrocution/Shock from underground/burried cables			Ensure the proper isolation and put local LOTO on the RCCB/Main switch. Ensure zero voltage before starting the job. Use insulation mat while doing isolation.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes	

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	Body injury (Slip/trip)			Have a 360 degree vision and be alert about the area of work. Use proper and healthy tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Body eye conact/ hand/leg injury while digging/manual excavation			Engage inline experienced work person, Use healthy and tested Tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Poor Posture			Take Rest in between the job. Do not overstrech your body. Keep in mind about your body limits.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Collapse/sliding of soil			Keep the excavated soil at a distance of 1 mtr from the excavated pit/trench. Barricade the area of work.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	
	Dust/Ash/fumes			Keep dust/fume mask with you. Use wherever needed.Check, whether the filters of the mask are clean before using. Use clean masks	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Fall of person inside excavated pit/trench			Barricade the working area with hard barrication. Use caution tapes and barriers wherever required.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
Backfilling/ plinth filling .	Body injury (Slip/trip)			Have a 360 degree vision and be alert about the area of work. Use proper and healthy tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes

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		Elimination/ Substitution	Engineering	Administrative	PPE	
	Body eye conact/ hand injury			Engage inline experienced work person, Use healthy and tested Tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Poor Posture			Take Rest in between the job. Do not overstrech your body. Keep in mind about your body limits.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Dust/Ash/fumes			Keep dust/fume mask with you. Use wherever needed.Check, whether the filters of the mask are clean before using. Use clean masks	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
Concrete work	Body injury (Slip/trip)			Have a 360 degree vision and be alert about the area of work. Use proper and healthy tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff, gum boots.	Yes
	Body eye conact/ hand injury			Engage inline experienced work person, Use healthy and tested Tools. Use rubber hand gloves to avoid direct contact with cement.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff, gum boots.	Yes
	Poor Posture			Take Rest in between the job. Do not overstrech your body. Keep in mind about your body limits.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff, gum boots.	Yes
Centering and shuttering work	Body injury (Slip/trip)			Have a 360 degree vision and be alert about the area of work. Use proper and healthy tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes

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		Elimination/ Substitution	Engineering	Administrative	PPE	
	Body eye conact/ hand injury			Engage inline experienced work person, Use healthy and tested Tools.Use safety goggles to avoid any foreign material to go inside your eye.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Fall of ladder/platform		Ensure that the ladder/platform should be placed on a flat and rigid surface.	Ensure healthiness of ladder and its rungs before work. The ladder/platform should be placed on a flat and rigid surface.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Poor Posture			Take Rest in between the job. Do not overstrech your body. Keep in mind about your body limits.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Falling from height of workmen		Ensure that the ladder/platform should be placed on a flat and rigid surface.	Use A-type FRP Ladder and one person must be holding the ladder at the time of climbing/decending. Have a firm grip on the ladder/platform and maintain a 3-point contact while climbing/decending on the ladder/platform. In case of scaffolding, ensure height work permit.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
M.S. Reinforcement bar cutting, binding and placing	Electrocution			Ensure the insulation of reinforcement cutting machine and its cable. Ensure that the power source is from a 30mA sensitive RCCB	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes

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		Elimination/ Substitution	Engineering	Administrative	PPE	
	Body injury (Slip/trip)			Have a 360 degree vision and be alert about the area of work. Use proper and healthy tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Body eye conact/ hand injury			Engage inline experienced work person, Use healthy and tested Tools.Use safety goggles to avoid any foreign material to go inside your eye.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Falling of Object from height			Proper supervision to be done, restrict unauthorized entry to the workplace, ensuring height work permit	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Noise from cutting machine			Use good quality ear plugs/muffs. Take rest in between the job. Do not expose yourself to continuous noise	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	
	Poor Posture			Take Rest in between the job. Do not overstrech your body. Keep in mind about your body limits.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
Loading and unloading for shifting of materials at site.	Body injury (Slip/trip)			Have a 360 degree vision and be alert about the area of work. Use proper and healthy tools.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes

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		Elimination/ Substitution	Engineering	Administrative	PPE	
	Body eye conact/ hand injury			Engage inline experienced work person, Use healthy and tested Tools.Use safety goggles to avoid any foreign material to go inside your eye.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Dust/Ash/fumes			Keep dust/fume mask with you. Use wherever needed.Check, whether the filters of the mask are clean before using. Use clean masks	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Falling of Object from height			Proper supervision to be done, restrict unauthorized entry to the workplace.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
	Poor Posture			Take Rest in between the job. Do not overstrech your body. Keep in mind about your body limits.	Safety shoes, hand gloves ,safety helmet, safety goggles, nose mask, ear plug/muff	Yes
<b>Emergency Safety Measures ( Rescue/Fire Brigade etc):</b>		<b>Emergency Contacts-Main Control Room- 222, 233,244, Fire- 777, 222257, Ambulance- 248/337, Hospital-666</b>				
<b>Overall Job Risk Category-</b>	HIGH					
<b>JSA Review during PJB:</b>						
<b>Pre Job Briefing (PJB) is applicable to all persons involved with the task.</b>						
<b>Pre Job Briefing (PJB) Acknowledgement: I undertake that the JSA is communicated to me effectively</b>						
<b>Name</b>	<b>Agency's name</b>	<b>Signature</b>				

## ORISSA POWER GENERATION CORPORATION LTD.

## HAZARD IDENTIFICATION &amp; RISK ASSESSMENT ( OCCUPATIONAL HEALTH &amp; SAFETY )

FORMAT REVISION NO: 02/00		DATE: 11.12.08		DOCUMENT REVISION STATUS : R-			DOCUMENT REVISION DATE :						
SI. NO	ACTIVITIES	OCCURRENCE OF HAZARDS	HAZARDS	RISKS	EVALUATION OF RISK							Reference	
					QUALITATIVE			QUANTITATIVE			RPN		S/NS
					LC	BC	IPC	A	B	C			
1	Cleaning activities	N	Exposure to dust	Respiratory problems	N	N	N	6	10	3	180	NS	
		AB	Exposure to micro organisms / bacteria during cleaning or repair of toilets / urinals / pipelines	Health hazards due to infection	N	N	N	6	10	3	180	NS	
2	Concreting work	AB	Fall from height	Injury	N	N	N	4	50	3	600	S	
		N	Exposure to dust	Respiratory problems	N	N	N	6	10	3	180	NS	
		N	Contact with concrete	Skin irritation	N	N	N	6	2	3	36	NS	
		N	Exposure to dust(cement)	Eye irritation	N	N	N	4	5	5	100	NS	
3	Earth excavation in foundation/ trench/ pit	AB	Collapsing of earth	Injury	N	N	N	8	2	3	48	NS	
		N	Exposure to dust	Respiratory problems	N	N	N	6	10	3	180	NS	
4	Movement of Dumpers/ Dozers/ tractors/ tankers & other heavy vehicles during working hour	AB	Exposure to noise>85db during running of vehicles	Hearing impaired	N	N	N	2	2	5	20	NS	
		N	Exposure to vehicular emission during working of heavy vehicles & machineries	Physical Discomfort, Eye injury	N	N	N	4	5	5	100	NS	
5	Performing High & Medium risk jobs	N	Hazards due to performing the jobs without JSA, Job briefing and adequate supervision	Fatality/ Injury	N	N	Y	4	50	3	600	S	
6	Stacking of construction materials at work site	AB	Road accident due to dumping of construction material and work on road	Injury	N	N	N	4	30	3	360	S	
7	Transportation of Materials	AB	Faliure of vehicle due to overloading/unsafe dtiving /mechanical failure	Accident	N	N	N	3	20	3	90	NS	