	JOB SAFETY ANALYSIS (JSA) **TANK MODIFICATION AND REPAIR WORK**	

JSA Number:		**JSA Title:**			
Area:		**Activity:**	**Scaffolding erection dismantling and modification work including inside Tanks**	**Date**	
Task Description	**SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK**				

			Uncontrolled Risk				**Residual Risk**		
Step	**Activity**	**Hazard**	**H**	**M**	**L**	**Control Measures**	**H**	**M**	**L**
1.	Site preparation	Poor communication between work parties. Inexperience persons / lack of safety awareness Heat stress Noise Vehicles Movement		M		DESCON employees shall have mandatory training. Work permit from the client, with all concurring parties signatures approval must be obtained prior to start of work and display at site Safety requirements stated on the work permit must be available on site and strictly followed Toolbox talk shall be conducted to all personnel on site & documented before start of work. Appropriate PPE shall be worn by all personnel at site. Assigned trained dedicated Banks man for job with reflective jacket. No water no work policy shall be followed. Work Schedule according to heat Index Ear protection shall be worn where required. Noise meter will be made available at site. Maintenance of equipment on regular basis. Use of Approved/Trained license drivers.			L

						Vehicle movements on site shall be controlled by banks man Appropriate signage to be provided.			

	JOB SAFETY ANALYSIS (JSA) **TANK MODIFICATION AND REPAIR WORK**	

JSA Number:		**JSA Title:**			
Area:		**Activity:**	**Scaffolding erection dismantling and modification work including in side Tanks**	**Date**	**04/12/2012**
Task Description	**SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK**				

			Uncontrolled Risk				**Residual Risk**		
Step	**Activity**	**Hazard**	**H**	**M**	**L**	**Control Measures**	**H**	**M**	**L**

2.	Transportation of material / shifting of scaffolding By Using Crane ,Trailer, Boom Truck Pickup etc	● Failure of equipment /crane /Trailer/ Pickup/ Truck etc ● Road traffic accident during transportation of Tanks shell plates, pipe spools/ supports and other material. ● Body part injury during loading and unloading operation ● Pinch point.		M		● Conduct toolbox talk and LMRA prior to start of work at the specific location. ● Ensure the condition of equipment, inspected, sticker Placed and for appropriate color code. ● All rigging gear shall be certified. ● Synthetic belt or nylon sling shall be used instead of steel wire rope for holding of material. ● Ensure crane operators and riggers fully understand all work tasks and hazards. ● Load shall be secured on the trailer bed to prevent accidental fall. ● Crane operator shall have the third party, certified and applicable license. ● Use proper tag line during loading /off loading material. ● Access route shall be surveyed before transporting the Shell Plates ,pipes & support material etc. ● Barricade with appropriate sign board on the effective area. Riggers shall be experienced and third party certified. ● Use leather gloves for hand protection. ● Keep away body parts (hand, feet, head, e.t.c) from the line of fire (LOF). ● Suitable length of trailer shall be arranged according to length of Shell Plates, pipe spools, supports etc.		2	L

	JOB SAFETY ANALYSIS (JSA) **TANK MODIFICATION AND REPAIR WORK**	

JSA Number:		**JSA Title:**			
Area:		**Activity:**	**Scaffolding erection dismantling and modification work including in side Tanks**	**Date**	**04/12/2012**
Task Description	**SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK**				

			Uncontrolled Risk				**Residual Risk**		
Step	**Activity**	**Hazard**	**H**	**M**	**L**	**Control Measures**	**H**	**M**	**L**
3.	Scaffolding erection dismantling including Material Storage: ,	• Simops		M		• Conduct 'TBT' before start of activity. • Prepare, develop and conduct toolbox talk based on JSA and specific job site requirements Obtain PTW, review and communicate to all involved in the task. • Participate and communicate with area management to ensure no adverse interface impact or hazard. • Install correct warning signage and barricading for the observation by other parties			L
		• Segregation and Stacking Failure		M		• Follow recommended maximum stacking guidelines. • All scaffold materials shall be stacked and segregated safely and by type. • Stacking and storage guidelines shall be prominently signposted in easy visual display. • Shelving/racking shall be stable and appropriate; pallets when used shall be in good condition without defect. • Pipes and/or tubular components shall be adequately chocked.			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date 04/12/2012
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		• Incorrect Manual Handling • Pinch point		M		• All scaffold personnel shall have attended and passed project 'Manual Handling' training programs. • Weight and packaging shall be checked and evaluated prior to handling. • PINCH POINTS shall be identified and hands shall not be placed in the 'Line of Fire' between unsecured items or under loads being raised or landed.			L
		• Eye Injury		M		• Eye protection shall be worn dust particle injury. • Eye wash facilities shall be provided and First Aid equipment and personnel shall be available			L
		• Fire		M		• Scaffold personnel shall be trained in the use of fire extinguisher and/or other firefighting equipment (blankets, etc). • Emergency numbers and fire hazard signage shall be prominently displayed.			L
		• Slips, Trips and Falls		M		• The work areas shall be maintained with good housekeeping. • Access ways and Scaffolds are clear and free of obstruction.			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
						• Access Scaffolds shall be confirmed by all personnel as green tagged prior to use. • All Scaffold personnel above 1.8 mtr shall comply with 100% tie-off requirement and shall wear an approved harness. • Storage areas shall be clearly marked. • Housekeeping within lifting and movement zones shall be in good order. • All personnel shall attend and pass the project 'Work at Height' and 'harness' training.			
		• Lack of knowledge by scaffolders regards correct erection and SWL, wind speeds, scaffold ties incorrect, etc.		M		• Determine at PTW and Toolbox talk stage what type of scaffold is required (BASIC, ADVANCED, SUPPORT, DESIGN required)			L
		• Incorrect or no supervision at the work site		M		• Supervisor or foreman present at the work area to oversee the work site.			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		● Not up to standard. Do not conform to BS		M		● Meet all BS/EN requirements. ● Are inspected before delivery to site.			L
		● Not inspected leading to failure. Not sufficient for the purpose or task.		M		● All lifting equipment inspected regularly as per site procedure.			L
		● Injury to persons through incorrect mechanical or manual handling. ● Musculoskeletal damage, dropped objects, pinch points.		M		● Manual handling techniques, inspected cranes, forklifts, ancillary equipment, etc. ● Materials to be stored in a safe manner ● Do not stack to high to prevent collapse.			L
		● Lack of competence		M		● Third party training. ● Ensure all have experience, theoretical and practical training before commencing the scaffold work.			L
		● Dropped objects		M		● Ensure barricades, multi-language warning signs, warning tape, flagman (where applicable) are in place before the work commences ● Ensure Gin Wheel areas are barricaded.			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		● Lack of warning tom other trades and notification of men working overhead.		M		● Place correct warning signage 'men working overhead'. ● Adequate Gin Wheel and Lifting bag signage is displayed.			L
		● People entering danger zone		M		● A flagman placed preventing entry to high risk area.			L
		● Dropped tools, work carried out incorrectly		M		● PPE hall be worn at all times. ● Tools shall be of the correct type and secured with lanyards at height.			L
		● Lack of experience. ● Incorrect sequence of work		M		● Competent scaffolders with knowledge of basic scaffolding. ● Ensure the base is adequate to support the scaffold.			L
		● Incorrect Couplers used. ● Lack of training in manual handling techniques.		M		● Ensure correct sequence of erection and that all components meet the BS EN criteria. ● Joints in standards to be diagonally opposed with no more than 2 joints per bay.			L
		● Incorrect Couplers used. ● Lack of training in manual handling techniques.		M		● Ensure correct sequence of erection and that all components meet the BS EN criteria. ● Joints in standards to be diagonally opposed with no more			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
						than 2 joints per bay.			
		● Falls through access openings placed centrally without handrails		M		● Joints in standards tobe diagonally opposed with no more than 2 joints per bay.			L
		● Incorrect erection procedure		M		● Ensure correct sequence of erection and that all components meet the BS criteria ● Joints in standards to be diagonally opposed with no more than 2 joints per bay.			L
		● Does not meet SWL or there is a potential for the scaffold to fall over if not tied.		M		● Follow the PRL procedure on scaffolds.			L
		● Potential falls of end users and scaffolders.		M		● Ensure correct ladder access is placed with ladders at a 75 degree angle or 1 in 4			L
		● Likelihood scaffold will fall over at the early stages if the height to base ratio is exceeded or		M		● Ensure ties are placed and are not removed throughout the scaffolds ‘life’. ● Any adaptions (removal of ties) should be undertaken by advanced scaffolder or under the direct supervision from			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		if ties are removed				the foreman			
		• Scaffold has a high potential to fall over		M		• Competent scaffolders, Third Party Certified, with knowledge and experience of erecting scaffold towers (mobile and static)			L
		• Scaffold falling over causing serious injury or asset damage		M		• Remove the SCAFFTAG, bring people off and away from the scaffold.			L
		• No design. • No competent person. • Lack of supervision • No experience. • Use of two systems. • Use of incompatible material. • Supporting structure inadequate. • Use of inferior materials.		M		• Full design drawings and calculations available • Competent scaffolders with knowledge of Advanced scaffolding. • Ensure the existing structure is adequate to support the suspended scaffold. • Follow the TG20:2008 and JGC procedure on scaffolds.			L
		• Potential falls of		M		• Ensure correct fall arrest equipment is used for the			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		scaffolders and end users.				particular job e.g. safety harness, inertia reel and have been inspected and in proper working condition. ● Inertia reel to have valid test certificate and be correctly color coded.			
		● Not fit for purpose.		M		● Follow BS EN requirement, lift to be no more than 2 m vertically.			L
		● Incorrect couplers used. ● Lack of training in manual techniques.		M		● Ensure correct sequence of erection and that all components meet the BS EN criteria.			L
		● Incorrect erection procedure.		M		● Joints in standards to be diagonally opposed with no more than 2 joints per bay.			L
		● Likelihood that scaffold will fall over at an early stage.		M		● Ensure ties are placed and are not removed throughout the scaffolds life. ● Any adaptions (removal of ties) should be undertaken by an advanced scaffolder or under the direct supervision from the foreman.			L
		● Not fit for purpose.		M		● Communication between the scaffolding supervisor and the end user supervisor to ensure the scaffold is fit for the			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
						purpose intended.			
		● Incorrect couplers used. ● Lack of training in manual handling techniques.		M		● Ensure correct sequence of erection and that all components meet the BS EN criteria.			L
		● Joints in same bay.		M		● Ensure sleeves are used and staggered. ● Joints in different bays at each level of the scaffolding to ensure 'sound' construction method.			L
4.	**Confined space entry.**	● Lake of Communication ● Ventilation. ● Damage material ● Oxygen deficiency accumulation of toxic gases	H			All personnel working in confined space must have confined space training. PRL confined space procedure shall be followed. Hole watcher is attentive all the time during confined space activity. Lighting provided in CSE to be 24V. Easy communication between hole watcher and supervisor is established all the time. Ensure that passage and transport rout is clear during confined space activities. Proper access/agrees should be maintained.			L

						Gas test to be done by AGT prior to entering into the			

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		● Physical hazards ● Improper stacking of material ● Unauthorized entrant				confined space. ● A trained and qualified individual should outside the tank with the responsibility of ensuring the safety of authorized entrants (Fabricator, Fitter, Welder e.tc) through the performance pre-entry briefing, checking and inspecting PPE, equipment and tools and performing regular monitoring in ensuring person working inside pipe remains safe for entry and occupation. ● A written rescue plan that has provision for conducting a timely rescue of individuals working inside the pipe (Confined Space) should be kept on site. Raising the alarm in the event of an emergency using the radio/mobile phones provided to them. ● Ensure effective communication systems for the entry are tested. ● Proper light should be provided less than 25v. ● All material stack proper and category wise. ● Rescue arrangement shall be made while working more than five meter inside large bore size.			

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	Activity	Hazard	H	M	L	Control Measures	H	M	L
		● Lack of oxygen /oxygen/ air deficiency				● PRL SHE&S Procedure shall be followed. ● Close supervision required while working inside. ● Execute the work under close supervision and presence of hole watcher. ● Proper air supply to be provided or air mover will be provided. ● Proper ventilation shall be there. ● Working crew shell be trained for confined space working.			
5	Extended hour/night Works (Actual works will be the same as day work)	● Inadequate lighting in and around work areas, causing shadows or poorly lit work areas that could result in unsafe acts and injuries taking place		M		● Adequate lighting at work area and Access/Egress area. Emergency route to muster point to be clearly illuminated. ● Proper cable management ● Use clear safety glass for night work for good visibility. ● Warning Lights and sign boards. ● Trained Flag man for equipment movement provided with signal torch. ● Close supervision required while working in night shift.			L
6	Emergency	● Poor Communication		M		● Educate the workforce about Emergency Procedure.			L

JSA Number:		JSA Title:		
Area:		Activity:	Scaffolding erection dismantling and modification work including in side Tanks	Date
Task Description	SCAFFOLDING ERECTION DISMANTLING AND MODIFICATION WORK			

			Uncontrolled Risk				Residual Risk		
Step	**Activity**	**Hazard**	**H**	**M**	**L**	**Control Measures**	**H**	**M**	**L**
	Procedure / Response	• Improper Access/ Egress				• All safety sign board shall be displayed properly at site. • In case of any Emergency all work will be stopped, Shut down all running equipment & Machineries and reported to Muster Point • Proper Access & Egress shall be available. • All Workforces shall know the Muster Point location. • PRL Emergency Procedure to be followed. • Emergency # 00000000 • PRL Medical # 00000000			
7.	House keeping	• Trips and fall • Sharp Objects • Equipment damage		M		• All waste generated shall be contained and disposed off in designated waste skips. • Do not store materials/equipments inside the plant area. • Use Proper Personal protective equipment for handling of waste. • All materials shall be removed from the site to a safe storage location immediately after the work.			L

Approved

	Signature	Print	Date
Performing Party	_____	_____	_____
	Signature	**Print**	**Date**