				На	azar	d An	naly	sis an	d Risk Control Record	d				
Doc ref:			Task/l	Proc	ess	Asse	esse	d:	Fit up swages					
Revision:			Locat	ion:										
Date:			A		4.7	•								
			Asses	ssme	ent i	eam:								
Operation:			Appro	ved	by:									
Activity Steps	HAZAR	D		INI	TIAL	RISK			CONTROL M	/IEA	SURES	RES	SIDUAI	L RISK
	Hazard Description	_	oss egory/	L i	s	R		List all	Current and Planned Control Contributing and E		easures, taking into Account all lating Factors	L !	S	Ri
	and Worst Case Consequences with no Prevention or Mitigation Measures in Place		ulation ected	k e l i h o d	e v e r i t	s k L e v e I			and Planned Prevention res to reduce Likelihood		Current and Planned Mitigation Measures to reduce Severity	e I i h o o	e v e r i t	s k L e v
1. Operating Overhead Konecrane	Load drop causing asset damage & injuries to personnel	Assets Person		P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	slings, certifie within capacit Operate lifting l operate Crane is use Toolbo daily pl involve Hazards	sek lifting gears such as spreader bars, shackles are d & in good condition and the lifting load handling y prior to use or to be trained in mechanical level 1 before permitted to the overhead crane or to check that the overhead in good condition prior to the arms and work intention to all the downker is identified in the HARC briefed to progretate the progretation of the spreader the s	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, safety glasses & leather gloves	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Lifting swages to the grinding machine	Load drop causing asset damage & injuries to personnel Hand injuires	Assets Personnel	Possible (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check lifting gears such as slings, spreader bars, shackles are certified & in good condition and within the lifting load handling capacity prior to use Weight of load to be established & does not exceed safe working load Load to be fully fastened & secured & well balanced before the lifting operation Lifting plan available & readily accessible on site Watch out surface pinch or nib point on their working equipment, tools and table and to avoid position their hands thereon Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, safety glasses & leather gloves	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Moving swages using the overhead crane	Load drop causing asset damage & injuries to personnel Hand injuires	Assets Personnel	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Ensure the path of the load is freed of obstruction No personnel allow entry into the lifting work zone area when moving is in progress. Pre check lifting gears & accessories prior to using them Load to be move at appropriate clear safe height. Pre plan lifting journey Only trained personnel is permitted to use the mobile crane. Watch out surface pinch or nib point on their working equipment, tools and table and to avoid position their hands there Hazards identified in the HARC briefed to all the operators to create awareness		First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, safety glasses & leather gloves	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Unloading swages to the grinding machine using konecrane	Load drop causing asset damage & injuries to personnel Hand injuries	1	si bl e	aj or (-	Un des irab le (-9)	•	Lower the load smoothly and slowly Operator to keep his hands, fingers & fit away from the load during the loading process Check & ensure the unloading area is free of obstruction during unloading Watch out surface pinch or nib point on their working equipment ,tools and table and to avoid position their hands there Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, safety glasses & leather gloves	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)	umk erge r Priv ate
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Swages grinding using air grinder Hand injuries Hand injuries	Personnel	Posible (3)	M aj or (-3)	Un des irab le (-9)		Pre check grinding machine electrical cord & connection for signs of loose exposed or crushed wiring prior to use Check & ensure the ventilation system is In working condition Check & ensure that the pressure hose connection is firmly attached to the grinding unit prior to use Pre check & ensure that guards are implaced & grinding units such as tail stock, steady rest are locked down before commencing the grinding activity Check & ensure no oil nor water spill at site prior to commencing grinding activity No bunks no part container shall be placed at site in a manner obstructing the equipment nor grinding activity Grinding wheel shall be hold by the inside and tap around the inside of the wheel while listening for ringing sound Stop all grinding activity if a thud or dull sound is heard Jewelry, loose clothing and long unkept prohibited for operator operating the grinding machine All cracked or broken shields or disc shall be replaced immediately Use approved wheel surfacing tool to grind on the working edge Never attempt to surface the side of the grinding stone Readjust tool to 1/8 inch or closer to the grinding surface of the stone after stone is surfaced Ensure that the gap between the work rest and grinding stone is not more than 1/8 inch Pre check and ensure the grinding stone is RPM rated Ring test new stone by suspending on handle of screw driver and tap it lightly with a small wrench Get supervisor to verify the new stone if light ringing sound is not heard Stop all grinding activity if a strong vibration is generated Never attempt to slow down grinder by forcing material into the grinding stone or by hard brushing Never grind the side of the stone. Always grind at the working edge	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, face shield, leather gloves, ear plugs and fire retardant coverall. Fire extinguisher readily accessible & available on site	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)	erge r Priv ate
					•	forcing material into the grinding stone or by hard brushing Never grind the side of the stone. Always					

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Operator trained on the correct procedure to guard & start up the processes.	mb
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Operators to adopt SIPP techniques	
during the grinding process.	
	Operator trained on the correct procedure to guard & start up the processes Operator to be trained in workshop safety level 1 before they can operate the grinding machine Pre check and ensure ventilation system is in working condition Safety signage displayed to warn operator not to lean against unit to be grinded Operators to adopt SIPP techniques during the grinding process.

Waldina	Fire Hazards	Personnel					Only trained personnel can perform the	•	First aid kit available & readily	LIN	Lic	Acce	So
Velding,	File nazalus	Asset				•	Only trained personnel can perform the job	•	accessible on site	Unl ikel	Lig ht	ptabl	ur
orching	Hand injuries	Asset					Pre work station survey to ensure it is free	•	Mandatory PPE such as hard	y	(-2)	e (-4)	er
	Triand injunes					`	from combustible material		helmet, safety shoes , face	(2)	()	,	
						•	Pre-check on the welding & cutting		shield, leather gloves, ear plugs	` ´			Р
							equipment and ensure that it is in good		and fire retardant coverall.	1			а
							condition prior to use	•	Fire extinguisher readily	1			
						•	Ensure the ventilation system is in good		accessible & available on site	1			
							working condition	•	Worker familiar with the fire				
						•	Ensure the electrode holder & ground		emergency exit	1			
							clamp is not in contact with one another						
						•	Pre check & ensure the welding rod barrel is free of trash						
							Pre check & ensure that the grinding			1			
						•	machine is set up in the correct position			1			
							prior to commencing welding						
						•	Pre check connection leakage using			1			
							soapy water			1			
						•	Guide marker on the acetylene & oxygen				1		
							pressure gauge setting of 5 & 25 PSI						
						١.	respectively Ensure tank restraint chains are in placed			1			
						•	on the torch cart and the torch body						
							valves are shut off						
		Do not attempt to change a tool when											
			P machine tool is working os M Un Never attempt to handle the										
		si aj des oxy-acetylene equipment with oily hands											
			bl or irab as such combination is explosive										
				e (- le									
)	"	(-3)		bare hands						
			ľ			•	Watch out surface pinch or nib point on						
							their working equipment ,tools and table						
							and to avoid position their hands there						
						•	Pre check & ensure the ground clamp is						
							firmly attached to the unit to be welded						
						•	Safety signage displayed to warn						
							operator not to lean against unit to be welded						
						١.	Safety signage to warn operator to use						
							only dry leather glove during welding						
						•	Perform welding & cutting in the						
							designated hot work permitted area						
						•	Fire retardant PVC curtain installed to						
							contain fire spread						
						•	Mandatory fire watch at work area for 1 hr						
							after work completion followed by 3 hr fire				1		
							watch Adopt SIPP Technique on all welding				1		
						•	activities				1		
		activities Toolbox meeting to communicate the											
						1	work intention to all involved workers				1		
						•	Switch off the welding equipment upon				1		
							job completion				1		
						•	Mandatory 1 hr & 3 hr fire watch upon job						
	1	1	- 1	1	1	1	completion			1	1	1	

						 Ensure the ventilation system is in good working condition prior to welding activity Check & ensure the electrode holder & clamp is not in contact with one another Ensure the welding rod barrel is free of trash Safety signage to warn operator not to lean against the unit to be welded Safety signage to warn operator to use only dry leather glove for welding activity Hazards identified in the HARC briefed to all the operators to create awareness 			
Operating the torch a)Position torch tip b)Turn on tanks c)Oxygen & acetylene gas pressures	Injuries to personnel - Hand injuries - Burns Damaged to property -fire	Personnel Asset	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	 Always face torch tip away from body and tank assembly when lighted Always turn on the acetylene tank lst followed by the oxygen tank Purge oxygen & acetylene gas pressure individually before lighting the torch Turned on acetylene first then the oxygen knob on torch handle before lighting the torch Pre check and ensure the oxy-acetylene equipment & its accessories are free of pinch points and hidden traps Operators trained on the emergency evacuation procedures Operators trained on how to use fire extinguisher Always kept the lighted torch away from oxygen & acetylene tank 	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Turning off the torch	Injuries to personnel - Hand injuries - Burns Damaged to property -fire	Personnel Asset	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	 When turning off the torch face the torch tip away from body and oxygen & acetylene tank Turn torch body valves off , acetylene lst followed by turning the tank valves off followed by turning off the acetylene Coil hose neatly around cart handle Pre check and ensure the oxy-acetylene equipment & its accessories are free of pinch points and hidden traps Operators trained on the emergency evacuation procedures Operators trained on how to use fire extinguisher Always kept the lighted torch away from oxygen & acetylene tank 	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Changing tank on cart a)Tanks b)Regulator c)Check connection after changing	Injuries to personnel - Hand injuries - Burns Damaged to property -fire	Personnel Asset	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Change the tank whenever the working pressure begin to fall Tank valve caps must be in placed on tanks before releasing the restraining chains Replacement tanks must be chained to torch cart Blow out cylinder valves using low pressure before attaching the regulator to cylinder valve Release adjusting screws on the regulator before opening the cylinder valve Purge oxygen & acetylene gas pressure individually Do not stand facing the valve when turning on fresh oxygen tank for the lst time Check tank regulator connection using only soapy water	accessible on site Mandatory PPE such as hard	Jnl kel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Moving cart out of designated area	Injuries to personnel - Hand injuries - Burns Damaged to property -fire	Personnel Asset	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Always remove the regulators and install caps on the bottles before moving the cart out of the shopfloor Ensure the bottle restraint are in placed Operator trained on the correct technique to move cart out Pre check cart, regulators and bottle caps for signs of pinch points and hidden traps Operator trained on the use of fire extinguisher	accessible on siteMandatory PPE such as hard	Jnl kel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Inspect work station	Injuries to personnel -slipping -tripping -electrical shock	Personnel	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Perform 5s by removing unwanted items & tripping hazards from the work station Cleaned all visible spills at work station Pre check all electrical cables & connection prior to using the electrical equipment Stay focus on task Hazards identified in the HARC briefed to all the operators to create awareness	accessible on siteMandatory PPE such as hard	Jnl kel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Position mandrel body on the swage fitter	Injuries to personnel -hand & feet injuries	Personnel	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check lifting gears such as slings, spreader bars, shackles are certified & in good condition and within the lifting load handling capacity prior to use Weight of load to be established & does not exceed safe working load Load to be fully fastened & secured & well balanced before the lifting operation Lifting plan available & readily accessible on site Watch out surface pinch or nib point on their working equipment, tools and table and to avoid position their hands thereon Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves & ear plugs	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Tack weld lower & upper swage	Injuries to personnel -eyes injuries -burns -mashed fingers & feet	Personnel	P os si bl e (3	M aj or (- 3)	Un des irab le (-9)	•	Pre check the welding equipment and its accessories & ensure the electrical cables & connections is in good condition prior to use Pre check the welding equipment, its accessories & the mandrel for signs of pinch points & hidden traps Only trained operator can perform the job Mandatory SIPP Level 2 training for operators Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves & ear plugs & face shield Workers familiar with the emergency exits Fire extinguisher is readily available & accessible on site	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Remove fitted bar from vessel assembly	Injuries to personnel -hands injuries - feet injuries	Personnel	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check the vessel assembly & the fitted bar for signs of pinch point & hidden traps Operator trained to adopt the correct transfer technique Mandatory SIPP Level 2 training for all operators Operator to adopt SIPP Technique during the transferring process Only trained operator can performed the job Ensure the intended transport path is free of obstruction & spills Pre check the crane & its lifting accessories & ensure they are in good condition prior to use Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves & ear plugs	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Transfer vessel from swage fitting station to the staging rack	Injuries to personnel -hands injuries - feet injuries	Personnel	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check the vessel & fitting station for signs of pinch point & hidden traps Operator trained to adopt the correct transfer technique Mandatory SIPP Level 2 training for all operators Operator to adopt SIPP Technique during the transferring process Only trained operator can performed the job Ensure the intended transport path is free of obstruction & spills Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves & ear plugs	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Inspect robot & its accessories	Injuries to personnel -electrical shock - hand injuries	Personnel	P os si bl e (3	M aj or (- 3)	Un des irab le (-9)	•	Pre check the robot & its accessories for signs of pinch points & hidden traps prior to use Report any loose wiring to supervisor immediately if detected Mandatory Electrical Level 1 training for all operators Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves & ear plugs	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Load fixture & clamp part	Injuries to personnel -electrical shock - hand injuries	Personnel Asset	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	 Pre check the fixture & its accessories as well as clamp for signs of pinch points and hidden traps Operator to adopt SIPP Level 2 Technique during loading Ensure the clamping station is free of obstacle & spills. Pre check all electrical & control cables for signs of expose or crushed wiring Mandatory SIPP Level 2 training & Electrical Level 1 training Only trained operator can perform the job Operator trained on the correct technique to load & clamp the mandrel Hazards identified in the HARC briefed to all the operators to create awareness 	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Turn on controls for robot & related equipment	Injuries to personnel - Electrical shock Damaged to asset -fire	Personnel Asset	Possible (3)	M aj or (- 3)	Un des irab le (-9)	 Pre check the robot & its related equipment for signs of pinch points & hidden traps Pre check the connection and wiring for signs of exposed or crushed phenomena Only trained operator can perform the job Working voltage of the robot & its related equipment clearly displayed on equipment Mandatory training on electrical Level 1 & LOTO Level 1 for operators Hazards identified in the HARC briefed to all the operators to create awareness First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves & ear plugs Workers familiar with the emergency exits Fire extinguisher readily accessible & available on site 	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)

Engaging Robot	Injuries to personnel -trip due to existing concrete steps -eyes	Personnel	Possible (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check the robot & its related equipment for signs of pinch points & hidden traps Pre check the connection and wiring for signs of exposed or crushed phenomena Only trained operator can perform the job Working voltage of the robot & its related equipment clearly displayed on equipment Mandatory training on electrical Level 1 & LOTO Level 1 for operators Safety signage displayed at site to alert operator on existing concrete steps	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves, ear plugs & face shield	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)	Schl umb erge r Priv ate
						•	alert operator on existing concrete						

Remove cut- out from the mandrel vessel from the mandrel vessel mandrel vessel with the mandrel vessel was accessories & ensure the vessel was the dender of the mandrel vessel was accessories & ensure the vessel was the mandrel vessel was accessories & ensure the vessel was accessories & ensure the vessel was the mandrel vessel was accessories & ensure the vessel

Remove vessel assembly from	Injuries to personnel -hand injuries due to	Personnel		Τ		•	Pre check the overhead hoist and its accessories and ensure they are within	•	First aid kit available & readily accessible on site	Unl	Lig ht	Acce ptabl	Schl
robot fixture and place on fit up fixture	min ala mainta		Possible (3)	M aj or (- 3)	Un des irab le (-9)	•	the validity period & are in good physical condition prior to use. Pre check vessel assembly & robot fixture for signs of pinch points and hidden traps prior to removal Operators shall tucked in their working clothing at all times Operator trained on the correct technique On vessel removal from robot fixture & positioning on fit up fixture Only trained operator are allowed to perform the job Operator to adopt SIPP level 2 technique during the entire removing & positioning process Ensure the work station is free of spills & obstacles Mandatory SIPP level 2 & Workshop safety level 1 training for all operators Safe working load of the overhead hoist prominently displayed at site No one allowed to be under or near the lifted load No access to unauthorized personnel; during the lifting operations Hazards identified in the HARC briefed to all the operators to create awareness	•	Mandatory PPE such as hard helmet, safety shoes , leather gloves & ear plugs	y (2)	(-2)	e (-4)	erge r Priv ate

Grind all slag	Injuries to personnel	Personnel				•	Pre check the grinding machine	•	First aid kit available & readily	Unl	Lig	Acce	Sour
nd scale from	-hand injuries due to						connections and ensure there is no		accessible on site	ikel	ht	ptabl	er
uts-out	pinch points						crushed or exposed wiring phenomena	•	Mandatory PPE such as hard	y (2)	(-2)	e (-4)	
	-tripping					•	Operator to maintain a safe distance during the grinding process		helmet, safety shoes, leather gloves, ear plugs and face shield	(2)			Р
	-clothing entrapped grinding machine						Operator shall tucked in their working		gioves ,ear plugs and race silicia				a
	-feet injuries due to						clothing at all times						
	fallen object					•	Operator to stop all work if any unusual						
	-eyes injuries due to						sound is reported form the grinding						
	flying fragments						machine Ensure the cuts-out is secured prior to						
	-hearing loss due to					•	grinding them						
	noise generated -burns due to contact to freshly grinded area					•	Operator trained on the correct procedure						
							to guard and start up processes						
						•	Never attempt to position blowing fan						
							facing directly the operator face Pre check and ensure guards are						
							implaced & grinding unit such as tail						
							stock, steady rest are locked down prior						
							to grinding activity						
						•	Grinding wheel shall be hold from the inside & tap around the inside of the						
							wheel while listening for a ringing sound.						
			Р			•	Stop all grinding activity if a thud or dull						
			os	M	Un		sound is heard						
			si bl	aj or (- 3)	des irab le (-9)	•	Nothing is to be positioned near the						
			е				grinding unit in a manner obstructing the grinding unit control & activity						
			(3			•	Jewelry & long unkept hair are prohibited						
)				when operating the grinding machine						
						•	Never handle shavings with bare hands						
						•	Never attempt to change the tooling insert						
							when the machine tool is working Ensure the grinding machine is setup in						
						•	the correct position prior to use						
						•	Operator trained on the correct technique						
							to grind all slag & scale						
						•	Only trained operators are allowed to perform the job						
							Safety signage on potential burns to alert						
							operators prominently displayed at site						
						•	Only trained operators can perform the						
							job						
						•	Operator to adopt SIPP technique and						
							ensure that he is always working in his green zone.						
						•	Mandatory training on Workshop Safety						
							Level 1 & SIPP level 2 for all operators						
						•	Unauthorised personnel prohibited form						
							entry during the grinding process						
	1	1	- [•	Hazards identified in the HARC briefed to			1	1		

Fit the pocket to the vessel	Injuries to personnel -hand injuries due to pinch points -tripping -feet injuries due to fallen objects	Personnel	P os si bl e (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check the pocket & the vessel for signs of pinch points & hidden traps prior to fitting Pre check the overhead hoist & its lifting accessories & ensure it is within its validity date & in good physical condition prior to use Ensure the transported path is free of obstruction & spills Only trained operator are allowed to operate the overhead hoist Operator trained on the correct technique to fit the pocket Operator to adopt SIPP level 2 technique during the entire hoisting process Mandatory training on Workshop Safety level 1 & SIPP Level 2 for all operators No one is allowed to be under or near the lifted load Unauthorised personnel prohibited from access during the lifting operation Safe working load of the overhead hoist prominently displayed at sight Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes, leather gloves &ear plugs	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)
Remove part from fitup fixture and place them in staging rack	Injuries to personnel -hand injuries due to pinch points -tripping -feet injuries due to fallen objects	Personnel	Possible (3)	M aj or (- 3)	Un des irab le (-9)	•	Pre check mandrel, fit up fixture & staging rack I for signs of pinch points & hidden traps prior to fitting Pre check the overhead hoist & its lifting accessories & ensure it is within its validity date & in good physical condition prior to use Ensure the transported path is free of obstruction & spills Only trained operator are allowed to operate the overhead hoist Operator trained on the correct technique for parts removal Operator to adopt SIPP level 2 technique during the entire hoisting process Mandatory training on Workshop Safety level 1 & SIPP Level 2 for all operators No one is allowed to be under or near the lifted load Unauthorised personnel prohibited from access during the lifting operation Safe working load of the overhead hoist prominently displayed at sight Hazards identified in the HARC briefed to all the operators to create awareness	•	First aid kit available & readily accessible on site Mandatory PPE such as hard helmet, safety shoes , leather gloves &ear plugs	Unl ikel y (2)	Lig ht (-2)	Acce ptabl e (-4)