

Megascolides

						Base Level						Residual Level		
Operation	HAZID	No	Cause	Consequence	Existing Controls	Likelihood	Severity	Risk	Action	By Who	Closeout	Likelihood	Severity	Risk
Well design	Shallow gas	1	Shallow gas under existing cement plug	Unexpected flow of gas up well due to proximity to surface	Note - low probability of occurring due to presence of second cement plug.	2	5	10	Mitigation strategy for dealing with shallow gas needs to be documented	UP				
	H2S	2	H2S in well due to anaerobic decomposition of mud	H2S released onto drill floor and mud pits while drilling	H2S monitors from mud logging system, hand-held detectors, Century ERP	2	5	10	Discussion with crew / pre-spud meeting on H2S, Century to run full H2S drill	Century rig manager / UP company man				
	Shallow lost circulation	3	Well location, proximity to lake, soil porosity,	Underground and surface pollution to lake, perception, 5bbls loss before it is picked up	Clay mud, cement hole, use of LCM	2	1	2						
	Oil in sump	4	Oil returns to surface	Oil returns to unlined mud pits and sumps	Soil samples are taken after operation	5	2	10	Oil to be skimmed from surface of mud pits, use of pit liners, discussion with crew to make them aware	Century				
Casing design	Corrosion / drill out damage to casing	5	Exposure to mud left in well / straightness of hole,	No / reduced well integrity	Pressure test - FIT, use magnet to pick up metal fragments in cuttings	2	5	10	Conduct pressure test before drilling out					
Site preparation	Access and egress	6	Existing lease layout	Safety issues - restricted truck and cranes movement		2	3	6	Review layout design - sump location, flare pit, guidelines, truck access					
	Civil works	7	Excavation and site preparation	Injury to personnel, damage to property		2	3	6						
	Flare pit location	8	Existing lease layout	Failure to meet DPI regulations, inadequate separation distances		2	3	6	Review layout design, consultation with DPI					
	Cement and mud packages	9	Existing lease layout	Safety issues - restricted truck and cranes movement		2	3	6	Review layout design, consultation with DPI					
	Chemicals storage	10	Existing lease layout	Environmental impacts from spillages		2	3	6	Review layout design, consultation with DPI					
	Sewerage	11	All sewerage will be directed to tank and taken off site for disposal			1	1	1						
	Working around guidelines	12	Trucks movement, use of cranes on site	Equipment damage	High visibility lines and anchors, if required	2	3	6	Consider using temporary fencing					
	Working around power lines	13	Trucks movement, use of cranes on site	Equipment damage, potential electrocution		2	5	10	Consider de-energizing power line while working around					
	Placement of emergency escape line (derrick)	14	Placement of line	Escape route	Marked line, line cannot be run across equipment	1	1	1	Review lease layout design					
	Access to pipe racks	15	Restricted lease layout	Injury to personnel, damage to equipment		2	3	6	Review lease layout design					
	Camp location	16	Located 5km away from well site	Driving hazards		3	6	18	Dedicated local driver and bus to transfer personnel to and from drill site			2	6	12
	Sewerage from camp site	17	All sewerage will be directed to tank and taken off site for disposal			2	3	6						
	Raniformis site traffic control	18	High movement of heavy vehicles, local traffic	Traffic safety	Traffic controls, signage, informing shires, following govt procedures, designated routes for heavy loads	2	3	6						
	Noise control	19	Noise from generators and site	Impact on local farms situated 200m to 1km away from site	Community consultation and awareness	4	3	12	Consider installing residential exhaust and / or noise attenuation barriers					
	Unauthorized access to site	20	Locals / tourists stopping on side of road	Security, safety issues	Signage, traffic management plan	2	6	12	Review security and access arrangements during site preparation					
		21	Locals / tourists accessing site	Security, safety issues		1	1	1						
	Existing rathole	22	Falling / trip hazards - these need to be filled in and new rathole, etc installed		Lease preparation - fill in the holes	1	1	1						
	Dropped Objects	23	General lifting activities	Fatality - Major Injury - Temp. Injury + Equip. Damage + Environmental damage	Certified lifting equipment and trained personnel. JSA and toolbox talks, Supervision, PPE, Std operating procedures, maintenance log	2	5	10		IB		2	5	10
	Mobile Equipment	24	Collisions, runaway equipment, equipment failure, operator error, poor communication,	Fatality - Major Injury - Minor Injury + Equipment Damage	Designated vehicle areas and parking, site access control, reversing alarms on mobile equipment,	2	5	10		PS		2	5	10
	Manual Handling	25	Heavy loads / Equipment / Materials, lifting & handling equipment failure, operator error, incorrect rig up, poor lifting technique, inadequate lift rated equipment, poor communication	Major Injury Temp. injury - Medical Treatment + Equip. Damage	Induction training, PPE, JSA review	4	3	12		PS		4	3	12
	Use of cranes	26	Use of cranes instead of winch trucks, which is a non-standard operation	Unfamiliarity, possible injury to personnel, damage to equipment	Review of Century rig move operational plan, contractor to supply crane, dogger and crane driver	2	4	8	Ensure rig crew training is provided for awareness of using crane	Century				
	Use of crane to lift carrier into position	27	Restricted layout may require use of crane to lift carrier into position (normal operation involves backing carrier up to position)	Unfamiliarity, possible injury to personnel, damage to equipment, multiple craneage, heavy loads	This operation is not normally undertaken	2	4	8	If crane is used, ensure appropriate procedures for heavy lifts and personnel awareness					
Rigging up	Weather conditions	28	Personnel working at heights, rigging up during bad weather	Injury to personnel from slipping, falling from heights	Wind limitation for craneage, provision of PPE	3	3	9	Provide procedure / JSA for working in wet weather	UP / Century				

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	Lease layout	29	Working with heights, lifting heavy loads,	Injury to personnel from slipping, falling from heights	SOPs, JSAs	2		3	6	Ensure personnel are aware of Victorian regulations for working with heights	Century			
	Unauthorized access to private property	30	Personnel wandering around neighboring farm areas	Injury to personnel, trespassing		2		3	6	Provide awareness training to personnel not to leave designated areas	Century			
	Use of cranes	31	Use of cranes instead of winch trucks, which is a non-standard operation	Unfamiliarity, possible injury to personnel, damage to equipment	Review of Century rig move operational plan, contractor to supply crane, dogger and crane driver	2		4	8	Ensure rig crew training is provided for awareness of using crane	Century			
Rig integrity / Equipment	Equipment certification	32	Use of uncertified and tested equipment.	Equipment not certified and tested for use in service may leave to failures from pressure. Lead to injury of personnel, equipment damage	All equipment complies with API standards and local state regulations, all testing and inspections are undertaken by third parties	2		3	6	Inspection reports to be submitted to DPI, performance and incident statistics for rig provided to DPI	UP / Century	UP to carry out initial rig inspection next week, another inspection immediately prior to spud date		
	Equipment modifications	33	New fuel tank - double wall, bunded - to comply with regulations	Equipment not certified and tested for use in service.	All equipment complies with API standards and local state regulations, all testing and inspections are undertaken by third parties	2		3	6					
	Switch from top drive to kelly	34	Note - new crew		All equipment complies with API standards and local state regulations, all testing and inspections are undertaken by third parties	2		3	6	Ensure new crew have been trained in use of kelly system (as changing from top drive)				
Personnel	Experienced personnel	35	Note - mobilize crew from Rig #7 to work on this rig (#11), both rigs are identical			2		3	6	Significant pre-spud meeting to cover site specific issues, Century to provide list of personnel and their experiences to UP	UP / Century			
	Overseas crew	36	Potential communication issues		Literacy and innumeracy criteria, well control certificates, training matrix	2		3	6	Provide training matrix and personnel competency to UP	Century			
	Drug / alcohol	37	Misuse of alcohol and drugs		Century have zero tolerance for drug and alcohol, which also includes third parties	2		3	6					
Wireline logging	Uncontrolled well	38	Well control situation with wireline tools in well	Uncontrolled gas escaping from well		2		5	10	Monitor well for extended period to ensure well control prior to wireline logging, monitor well while logging, prepare well control plan and provide to DPI	UP / Century / Schlumberger			
	Personnel experience	39	Inexperienced personnel used on drill campaign. Not inducted correctly and not use to drill rig	Injury to personnel, damage to equipment	Training matrix, personnel competency. Note - mobilize crew from Rig #7 to work on this rig (#11), both rigs are identical	2		3	6					
	Radioactive sources on site	40	Misuse of radio-active sources, radioactive sources not correctly stored	Medical concerns from exposure to radioactive sources	Use of qualified personnel, radioactive sources brought to site on as-needed basis. Explosive sources brought to site on as-needed basis	2		5	10					
	Explosives	41	Transportation, loading and firing of perforating equipment	Fatality - Major Injury - Minor Injury + Equipment Damage	Licensed certified explosives handler, operating procedures, JSAs, toolbox talks, trained personnel, gun loading procedures and practices, secure site, exclusion zone, signage	2		5	10			2	5	10
Cementing	Noise control (cement unit)	42	Use of newer model - noise levels have not yet been tested	Excessive exposure of personnel to noise. Exposure of residents to elevated noise levels	All equipment complies with API standards and local state regulations, all testing and inspections are undertaken by third parties	2		3	6					
	Chemicals storage	43	Inappropriate storage of chemicals, chemicals not bunded or stored within designated area	Environmental impacts from leakage or incorrect disposal of chemicals. Contamination of soils and surrounding area	Bunded storage area	2		3	6					
Mud	Running centrifuge	44	Rig crew not used to running centrifuges	Unfamiliarity, injury to personnel, damage to property		2		3	6	Century to provide training for crew for use of centrifuge if required	Century			
	See action for this item	45	Note - 4 other service providers						Other service providers - directional drillers, DST, coring, mud logging to be evaluated later and hazard data sheets to be updated	UP				
	Communication prior to mobilization	46	Excess traveling to and from site, traveling during the hours of darkness. Supplies not order with appropriate lead time thereby requiring rush delivery	Traffic accidents, injury or fatality, damage to equipment and/ or property	Third parties avoid traveling in dark, provide sufficient lead time for material supply	2		5	10					

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Rig operations	Mud system	47	Note - conventional system, use of standard operating procedures		SOP's, experienced crew	2	3	6						
	Pressure release	48	Unfamiliarity with mud pumps	Injury to personnel		3	4	12	Crew to receive training with experienced personnel who have previously worked with the pumps, review SOPs	Century		1	4	4
	Wireline logging	49	Note - covered by standard operations, SOPs			2	3	6						
	Simultaneous operations	50	Moving casing and other equipment while rigging up wireline equipment and during wireline operations	Injury to personnel, damage to equipment	Provide clear access to rig floor from wireline unit, SOPs	2	5	10						
	Coring	51	Note - conventional coring		Existing SOP's, JSA's. Crew experience with coring	2	3	6	Ensure rig crew are aware of coring operations	Century				
	Laying down core	52	Working from heights to lay down core barrels	Injury to personnel, damage to core	New system allows core barrels to be operated from ground level without need for belt-riding	2	5	10						
	Wireline coring	53	Core stuck in barrel	Air pressure used to push core out from barrel (standard practice), possibility of applying too much pressure	SOPs	2	5	10						
Cementing	Limited site space	54	Restricted site layout						Review site layout	UP / Halliburton				
	Disposal of chemicals packaging	55	Inappropriate disposal of chemicals	Environmental impacts		2	3	6	Provide industrial bins for disposal, banded areas to store chemicals	UP / Halliburton				
	Chemicals & Fuel	56	Inappropriate storage, equipment failure, improper handling equipment & PPE	Serious Temp Injury - Medical Treatment + equip loss, Limited Environmental Damage	Little requirement for chemicals, no hazardous chemicals expected, use of correct containers and PPE	2	3	6	Review requirement for spill kits and eye wash facilities	Century		2	3	6
	Hazardous chemicals	57		Injury to personnel, environmental impacts	MSDSs provided to company man, experienced personnel	2	3	6						
	Returns to surface	58	Availability in pits		Regular monitoring of pit levels	2	3	6						
	High pressure pumping	59		Injury to personnel, damage to equipment	Pre-job safety meetings conducted, pressure test equipment (typically 1000-3000psi)	2	5	10						
DST	Experienced personnel	60	Note - crew are familiar with conducting DSTs											
	Flammability	61	Natural flow of produced oil / gas	Uncontrolled release, possible fire	Use of choke to control flow, keep ignition sources away, pressure test all flowlines,									
	HC stored on location in tank	62							Program to be written on DST flowback	UP				
	Oil in flare pit	63		Environmental impact										
		64												
	Mud logging unit location	65	Site layout						Review site layout design	UP				
	Man-riding	66	Insufficient training provided to crew	Injury to personnel	Training, permit to work, system is certified and tested monthly, rated to 150kg									
General	Working in hot weather	67		Injury to personnel, may affect flaring / testing on total fire ban days	Provide heat exhaustion training, PPE, extra hands	2	3	6						
	24 hour operations	68	Lack of sufficient crew to cover 24 hour operations	Fatigue, injury to personnel	Third parties to provide extra personnel if required	2	3	6	Follow up on this with DST crew	UP				
	Allergies	69	Hay cutting season, other irritants in the air during this time of year	Hay fever, asthma	Antihistamines, crew selection	2	3	6						
	Working Stuck Pipe / Tool	70	equipment failure, operator error, poor communications, plant failure, exposure, trapped pressure.	Major Injury - Temp. Injury + Equip. Damage + Environmental damage	Monitoring and supervision, training, standard operating procedure, protected operator area closed cab	2	3	6				2	3	6
	Competency levels of personnel	71	Lack of resources / skills shortage	Potential cause or escalation of an incident due to lack of competency. Fatality - Major Injury - Temp. Injury + Equip. Damage + Environmental damage		2	5	10	Contractors and third parties to be evaluated for competency	IB		1	5	5
	Drugs / Alcohol	72	substance abuse, prescribed drugs, working under influence of drugs	Cause of another Hazard leading to Fatality - Major Injury - Temp. Injury + Equip. Damage + Environmental damage	Drug and alcohol policy, induction training	2	5	10				2	5	10
	Excavations	73	Slips trips falls, ground collapse	Major / Minor injury, medical treatment	Induction training, PPE, area fenced off	3	3	9	Ensure Dial before dig to be consulted to ensure no underground services in area	Century		2	3	6
	Slips, Trips & Falls	74	Uneven lease / ground, slippery surfaces, un-barricaded open pits, mouse / rat holes, visibility, weather	Major Injury Temp. injury - Medical Treatment	Induction training, PPE, JSA review, tool box meetings, safety observer, hazard register, house keeping	4	2	8				4	2	8