

Megascorlies

Operation	HAZID	No	Cause	Consequence	Existing Controls	Base Level	Likelihood	Severity	Risk	Action	By Who	Closure	Residual Level	Likelihood	Severity	Risk
Well design	Shallow gas	1	Shallow gas under existing cement plug	Unpermitted flow of gas up well due to proximity to surface	Note - low probability of occurring due to presence of second cement plug	2	2	5	10	10	UP		2	2	5	10
	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, handheld detector, Century ERP	2	2	5	10	10	Century rig manager / meeting on H2S, Century to run drill		2	2	5	10
	Shallow lost circulation	3	Well location, proximity to lake, not properly.	Underground and surface pollution to lake, precipitation	Clay mud, cement heel, use of LCM	2	2	1	2	2			2	2	1	2
	Oil in slump	4	Oil returns to surface	Oil returns to unlined mud pits and slumps	Soil samples are taken after operation	5	2	2	10	10	Oil to be stemmed from surface of mud pits, use of pit frame, discussion with crew to make them aware		5	2	2	10
Casing design	Corrosion / drill out damage to casing	5	Exposure to mud pit in well - stringiness of hole,	No / reduced well integrity	Pressure test - FIT, use magnet to pick up metal fragments in string	2	2	5	10	10			2	2	5	10
Site preparation	Access and egress	6	Existing lease byroad	Safety issues - restricted truck and crane movement		2	2	3	6	6			2	2	3	6
	Civil works	7	Excavation and site preparation	Injury to personnel, damage to property		2	2	3	6	6	Review byroad design - slump location, bore pit, guidelines, truck access		2	2	3	6
	Flare pit location	8	Existing lease byroad	Failure to meet DPI regulations, inadequate separation distances		2	2	3	6	6	Review byroad design, consultation with DPI		2	2	3	6
	Cement and mud prologues	9	Existing lease byroad	Safety issues - restricted truck and crane movement		2	2	3	6	6	Review byroad design, consultation with DPI		2	2	3	6
	Chemicals storage	10	Existing lease byroad	Environmental impacts from spills		2	2	3	6	6	Review byroad design, consultation with DPI		2	2	3	6
	Sewerage	11	All sewerage will be directed to bank and taken off site for disposal	Equipment damage		1	1	1	1	1			1	1	1	1
	Working around guidelines	12	Trucks movement, use of cranes on site	Equipment damage	High visibility lines and anchors, if required	2	2	3	6	6	Consider using temporary fencing		2	2	3	6
	Working around power lines	13	Trucks movement, use of cranes on site	Equipment damage, potential electrocution		2	2	5	10	10	Consider de-energizing power lines while working around		2	2	5	10
	Placement of emergency escape line (century)	14	Placement of line	Escape route	Marked line, line cannot be run across equipment	1	1	1	1	1	Review lease byroad design		1	1	1	1
	Access to BPS rocks	15	Restricted lease byroad	Injury to personnel, damage to equipment		2	2	3	6	6	Review lease byroad design		2	2	3	6
	Camp location	16	Located 50m away from well site	Driving hazards		3	3	4	12	12	Dedicated boat drive and bus to transfer personnel to and from drill site		3	3	4	12
	Sewerage from camp site	17	All sewerage will be directed to bank and taken off site for disposal			2	2	3	6	6			2	2	3	6
	Rainforms site lights	18	High movement of heavy vehicles, local traffic	Traffic safety	Traffic control signage, informing signs, following pvt procedures, designated routes for heavy loads	2	2	3	6	6			2	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	3	12	12	Consider installing residential external and / or noise attenuation barriers		4	3	3	12
	Unauthorized access to site	20	Locals / tourists stopping on edge of road	Security, safety issues	Signage, traffic management plan	2	6	12	18	18	Review security and access arrangements during site preparation		2	6	12	18
	Existing vehicle	21	Locals / tourists accessing site	Security, safety issues	License preparation - fill in the holes	1	1	1	1	1			1	1	1	1
	Dropped Objects	22	Falling / trip hazards - these need to be filled in and new holes cut marked	Safety - Major Injury - Temp. Injury + Equip. Damage + Environmental Damage	Certified lifting equipment and trained personnel, JSA and S&D, following procedures, maintenance by	2	5	10	18	18			2	5	10	18
		23	General lifting activities			2	5	10	18	18			2	5	10	18
		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	18	18			2	5	10	18
	Manual Handling	25	Heavy loads / Equipment / Materials, lifting & handling equipment failure, operator error, incorrect rig up, poor lifting technique, inadequate fit rated equipment, poor communication	Major Injury Temp. injury - Medical treatment + Equip. Damage	Induction training, PPE, JSA review	4	3	12	18	18			4	3	12	18
	Use of cranes	26	Use of cranes instead of which trucks, which is a non-standard operation	Unlikelihood, possible injury to personnel, damage to equipment	Review of Century rig move operational plan, consider to supply cranes, dropper and crane driver	2	4	8	16	16	Ensure rig crew training is provided for Century awareness of using crane		2	4	8	16
	Use of cranes to lift carrier into position	27	Restricted layout may require use of cranes to lift carrier into position, manual operation involves loading carrier up to position	Unlikelihood, possible injury to personnel, damage to equipment, multiple collisions, heavy loads	This operation is not normally undertaken	2	4	8	16	16	If crane is used, ensure appropriate procedures for heavy lifts and personnel awareness		2	4	8	16
Rigging up	Weather conditions	28	Personnel working at heights, rigging up during bad weather	Injury to personnel from slipping, falling from heights	Used ladders for catwalks, provision of PPE	3	3	9	27	27	UP / Century		3	3	9	27

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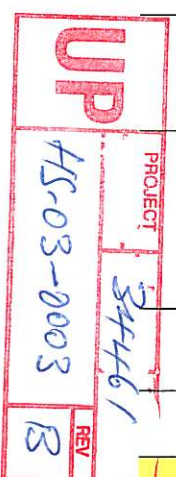
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Operation	HAZID	No Cause	Consequence	Existing Controls	Likelihood	Severity	Risk	Action	By Who	Closeout	Residual Level
	Lease by-pod	29 Working with heights, lifting heavy loads.	Injury to personnel from slipping, falling from heights	SOA, JSA's	2	3	6	Ensure personnel are aware of heights and regulations for working with heights	Century		
	Unauthorized access to private property	30 Personnel wandering around neighboring farm estate	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	Unlabeled, possible injury to personnel, damage to equipment	Review of Century rig move operational plan, contractor to supply crane, digger and crane driver	2	4	8	Ensure rig crew training is provided for Century 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 failure 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 DPL, performance and incident statistics for rig provided to DPL	UP / Century	UP to carry out initial inspection next week, another inspection immediately prior to spud date	
	Equipment modifications	33 New fuel tank - double wall, bonded - 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 Ride - 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 first aid training to cover site specific issues, Century to provide list of personnel and their experience to UP	UP / Century		
	Overseas crew	36 Potential communication issues		Literacy and numeracy 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				
Wellbore logging	Uncontrolled well	38 Well control situation with wellbore tools in well	Uncontrolled gas escaping from well		2	5	10	Monitor well for extended period to ensure well control prior to wellbore logging, monitor well while logging, prepare well control plan and provide to DPL	UP / Century / Schlumberger		
	Personnel experience	39 Inexperienced personnel used on drill campaign. Not included correctly and not due to drilling	Injury to personnel, damage to equipment	Training matrix, personnel competency, 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 radioactive 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	Fatal - Major Injury - Minor Injury + Equipment Damage	Licensed certified explosives handler, operating procedures, JSA's, toolbox talks, trained personnel, gun loading procedures and practices, secure site, exclusion zone, signage	2	5	10				
Grouting	(Nose control, cement unit)	42 Use of newer model - nose 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 bonded or stored within designated area	Environmental impacts from leakage or incorrect storage of chemicals. Contamination of beds and surrounding area	Bonded storage area	2	3	6				
Mud	Running centrifuge	44 Rig crew not used to turning centrifuges	Unlabeled, injury to personnel, damage to property		2	3	6	Century to provide training for crew for Century use of centrifuge if required	Century		
	See action for this item	45 Note - 4 other service providers			2	3	6	Other service providers - directional drilling, DST, cement, 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				



Operation	HAZID	No	Cause	Consequence	Existing Controls	Likelihood	Severity	Risk	Action	By Who	Closure	Residual Level
Rig operations	HAZID	47	Note - conventional system, use of standard operating procedures		SOP's, experienced crew	2	3	6				
	Pressure release	48	Unlatching with mud pumps	Injury to personnel		3	4	12	Crew to receive training with experienced personnel who have previously worked with the pumps, review SOP's	Century		1
	Machine lugging	49	Note - covered by standard operating SOP's			2	3	6				
	Smallscale operations	50	Moving casing areas and during wellbore operations	Injury to personnel, damage to equipment	Provide clear access to rig floor from wellbore area, SOP's	2	5	10				
	Coring	51	Note - conventional coring		Existing SOP's, USA's, Crew experience with coring	2	3	6	Ensure rig crew are aware of coring operations	Century		
	Laying down case	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 beltring	2	5	10				
	Wellbore coring	53	Core stuck in barrel	Air pressure used to push core out from barrel (standard practice), possibility of applying too much pressure	Standard SOP's	2	5	10				
	Unlatched safe space	54	Restricted safe by-lay						Review safe layout	UP / Halliburton		
	Disposal of chemicals	55	Inappropriate disposal of chemicals	Environmental impacts		2	3	6	Provide industrial bins for disposal, buried areas to store chemicals	UP / Halliburton		2
	Chemicals & Fuel	56	Inappropriate storage, equipment failure, improper handling equipment & pipe	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		3
	Hazardous chemicals	57		Injury to personnel, environmental impacts	HSCOs 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				
	Experienced personnel	60	Note - crew are familiar with conducting DST's									
	Flammability	61	Natural flow of produced oil / gas	Uncontrolled release, possible fire	Use of shute to control flow, keep ignition sources away, pressure test all flowlines,				Program to be written on DST blowback	UP		
	HC stored on location in bank	62										
	Oil in fibre pit	63		Environmental impact								
	Mud logging unit location	64	Site by-lay						Review safe by-lay design	UP		
	Man-riding	65	Inefficient training provided to crew	Injury to personnel	Training, permit to work, system tested monthly, noted to 150kg							
	General	67										
	Working in hot weather	67		Injury to personnel, may affect during / testing on total fire ban days	Provide heat exhaustion training, PPE, extra fluids	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		
	Allegies	69	Hay cutting season, other irritants in the air during this time of year	Hay fever, asthma	Antihistamines, crew selection	2	3	6				
	Working Black 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				
	Competency levels of personnel	71	Lack of resources / skills shortage	Potential causes or escalation of an incident due to lack of competency, Fatality - Major Injury + Equip. Damage + Environmental damage		2	5	10	Contractors and third parties to be evaluated for competency	IB		1
	Drugs / Alcohol	72	Substance abuse, prescribed drugs, working under influence of drugs	Cause of accident / Hazard leading to Fatality - Major Injury - Temp. Injury + Equip. Damage + Environmental damage	Drug and alcohol policy, induction training	2	5	10				
	Excavations	73	Slips trips falls, ground collapses	Major / Minor injury, medical treatment	Induction training, PPE, area fenced off	3	3	9	Ensure Dist before dig to be consulted, ensure no underground services in area	Century		2
	Slips, Trips & Falls	74	Uneven base / ground, slippery surfaces, unbalanced / open pits, mouse / rat holes, visibility, weather	Major Injury Temp. injury - Medical Treatment	Induction training, PPE, USA, experienced personnel, hazard register, house keeping	4	2	8				4

