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T/14P part 3*

CUE MINERALS N.L.

EMERGENCY RESPONSE PLAN

OFFSHORE DRILLING

for

T.14P

CENTRAL BASS PROJECT

AREA

TASMANIA

Report No. 701/4

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FOREWORD

This plan is submitted to the Tasmanian Mines Department to illustrate the safety and emergency procedures that Cue will carry out for any drilling activities within its permits. This plan is a typical "Emergency Response Plan" prepared for oil well drilling and is in accordance with good oilfield practice.

Prior to any drilling, Cue will ensure that copies of Rig Safety Manuals, Marine Safety Manuals (supply boats) and a specific Emergency Response Plan and Operations Sequences Manual are sent to the Mines Department.

Full insurance with respect to Cost of Control of Well - including containment, pollution and seepage, clean up and re-drilling expenses will be taken out in accordance with good oilfield practice prior to commencement of drilling operations. Cover in the vicinity of US\$25,000,000 for any one occurrence is envisaged.

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GENERAL SAFETY AND FIRE PREVENTIONA. HELICOPTERS

The following precautions for boarding, flying, and disembarking are listed:

1. Be on time to board your helicopter as scheduled.
2. Do not approach the aircraft until you receive a signal from the pilot or ground crew. Always approach or leave the helicopter via the front, never under the tail boom, or around the rear.
3. Don your life vest and adjust fastening straps to fit you snugly. The air cartridge will inflate the vest sufficiently to float its wearer. Do not tamper with or remove the air cartridges from the vest. Never inflate your vest while inside the aircraft.
4. Take the seat assigned to you by the pilot; he will seat you to give proper weight distribution for correct balance of the aircraft. Fasten your seat safety belt tightly. Do not loosen your belt during the flight nor attempt to change seats.
5. Smoking is absolutely prohibited in or around the aircraft except with permission of the pilot, because of the probability of flammable vapors being present.
6. Do not throw any material from the windows of the aircraft while in flight. It might become entangled in tail rotor.
7. Do not loosen your safety belt until the aircraft has landed and you receive a signal from the pilot.
8. When disembarking, fold your life vest neatly and place on the seat. Do not throw on the floor or seat. Remember that these vests are a lifesaving piece of equipment.

IN THE EVENT OF AN EMERGENCY LANDING

9. remain in your seat with your safety belt fastened tightly. If the passenger belts are removed the motion of manoeuvring for a landing may throw all passengers to one part of the cabin, and cause the pilot to lose control. The pilot will furnish any necessary evacuation instructions if it becomes necessary to abandon the aircraft over the water.

B. WELDING

Welding is one of the most critical operations off shore due to the numerous operations occurring simultaneously and the limited area in which such work can be performed.

The following safety regulations will be complied with:

1. An inspection of the area surrounding each location where any burning, welding or other ignition-creating activity is expected to be conducted shall be made by the supervisor in charge before any work begins. The supervisor and welder are responsible to see that no sparks, flame or hot slag will be blown or fall upon any combustible material or equipment.
2. In either open or confined areas where there is a possibility of combustible vapors being present, the supervisor shall make a gas test before giving his approval to begin the work and shall retest for vapors during the time work is in progress.
3. The welder will first obtain a signed "hot work" permit from the Drilling Supervisor or Toolpusher in charge of the rig before performing any welding operations. A supervisor will remain in the area of the welding on the rig until operation is completed.
4. Adequate fire watch will be assigned to assist the welder during all welding and burning operations. A minimum of one is required on each location.
5. Adequate fire extinguishers will be kept within reach of all welding and burning operations.
6. If burning or welding must be performed on equipment, tanks or other vessels, the supervisor in charge must determine that this equipment has been thoroughly cleaned and is gas free before work begins.
7. Proper type goggles will be worn by the welder and anyone assisting him.
8. Persons in the vicinity of welding should never look directly or indirectly at a welding arc without protective goggles.
9. Special caution shall be exercised in welding or burning of bronze, brass, galvanised iron, cadmium plating, other alloys or paint which might produce harmful fumes which cause acute poisoning. Adequate ventilation will be provided while the work is in progress.

C. CRANES

The cranes will be operated only by competent operators.

Personnel shall stay clear of the area under the crane while the crane is operating and rotating.

There shall always be a signal man present, using a standard signal system whenever the crane operator does not have a full view of his whole operation.

Crane booms, cable, all rigging and foundation mountings shall be inspected by the crane operator each day before starting operations.

There shall always be at least two wraps of cable on the drum at all times of operation.

All rotating or moving parts of equipment shall be guarded. All guards removed to make repairs, lubrication or adjustments shall be replaced immediately after completion of repairs and adjustments.

Stops shall be provided on all booms to prevent same from over topping.

Platforms, walkways, steps, handholds, guard rails and toe boards shall be provided on the cranes to assure safe footing.

When transferring personnel or material from or to a vessel, the crane operator shall raise the load only high enough off the deck to clear all obstructions, swing the load out over the water, then raise or lower the load to a position slightly above the landing deck level, swing the load over the lading area, and gently lower it to the deck. If the crane operator cannot, for some reason, swing a load clear of a vessel beneath, the vessel must be moved out from under the load until the load reaches the level of the vessel or the landing deck.

All personnel must be clear of loads before they are picked up or landed and must remain clear at all times. Personnel shall never be under suspended loads.

Loads may be guided by hand only as long as the load can be reached without removing the feet from a flat position on the deck.

Slings, their fittings and fastenings, when in use, shall be inspected daily by the crane operator for evidence of excessive wear or damage and if found defective, removed from service.

All loads to be lifted by a crane offshore should, if possible, have the weight of the load clearly marked on the load before the load leaves the shore base, as a precaution against overloading of the cranes.

D. SMOKING

"No Smoking" signs will be posted in a clear visible location on all walkways, the derrick floor, under the derrick floor, the cellar deck and around the heliport.

Smoking will be confined to:

1. The living quarters on mobile rigs.
2. Additional areas designated by the rig supervisor.
3. If you are not positive that your immediate area is safe for smoking, DO NOT SMOKE.

E. HOUSEKEEPING

Good housekeeping is a must on offshore operations due to the restricted area and the type of material and equipment utilised and to be stored, much of which must be immediately accessible. Particular emphasis should be placed on the area around the rig floor and moon pool. Paints and flammable materials will be isolated and stored in one remote place. Care should be exercised in storing mud, chemicals and cement. Caustic soda, calcium chloride and zinc chloride are particularly hazardous.

All permanent or temporary openings or holes in or on structure decks shall have guarding facilities around them at all times when they are in use.

All such openings shall be properly closed when not in use. Removed or missing guard rails shall be immediately replaced upon completion of an operation.

All tools and equipment not in immediate use shall be kept, picked up and sorted in their proper storage area.

Passageways shall be kept clear at all times. Oil spills shall be cleaned up immediately. No washing down will be done while loading or unloading equipment or personnel. Hydrocarbons and flammable fluids will be used for cleaning only at the discretion of the Toolpusher. Oily rags and other substances that present a fire hazard will be disposed of in such a manner so as not to violate pertinent pollution regulations.

Radio equipment will be isolated from drilling equipment, but in an area as accessible as possible.

First aid kits, fully equipped, will be available at all times and the material therein kept up to date at all times.

FIRE PROTECTION, PREVENTION AND EQUIPMENT

The following regulations will be followed:

1. Adequate fire fighting equipment as determined by the SSDC safety supervisor, will be provided and shall be utilised only for fire prevention.
2. The supervisor in charge will inspect fire fighting equipment each tour. Such inspections will be recorded on the drilling report.
3. All fire extinguishers will be checked every six months and a tag attached showing the date checked and the initials of that person performing the check. All fire extinguishers will be immediately refilled after being used.
4. All fire hose will be pressure tested to normal working pressure once each six months. Such inspection will be recorded on the drilling report.

5. Minimum oil storage tanks will be permitted on platforms for testing purposes, only as long as necessary. All test tanks should be immediately and completely filled with water. All such tanks will be adequately and safely vented and have flame arrestors.
6. Gauge hatches on tanks will be closed at all times, except when actually gauging the tank.
7. Spark arrested engine exhausts will be installed on all engines.

OFFSHORE DRILLING OPERATIONS IN THE PRESENCE OF H₂S

Few, if any, offshore drilling rigs are equipped to handle H₂S. Sulfide susceptible BOP's, enclosed mud pits and pump rooms, limited space, etc., essentially negate the possibility of safely handling any large volume of H₂S. Development of offshore fields producing significant quantities of sour gas will require drilling rigs specially designed for hydrogen sulfide service.

Given the presently available equipment, the best that can be done is to prevent any unexpected flow of H₂S. Both the Logging Engineer and the Mud Engineer must be advised of the possibility of H₂S occurrence on the well even if this is remote. The mud logging unit will be equipped with a continuous H₂S monitor. This monitor should be checked and calibrated frequently. The Mud Engineer should make a HACH H₂S determination as a part of the routine mud check. This test is especially important when high pH mud is used or when no H₂S monitor is available. The Drilling Supervisor will be notified immediately when H₂S is detected.

If H₂S is detected unexpectedly, all drilling operations should stop. Higher authority must be notified immediately. Call the standby boat and the helicopter. Evacuate the pump room. Hold briefing meeting. Alert everyone on board. Move the off duty crew to the most upwind location available. Stop circulation. Pull the drill pipe into the casing. Secure the well and wait on orders.

In the event of a well kick with H₂S, stop killing operations when H₂S is detected. Do not circulate the kick out. Secure the well. Prepare to evacuate the rig. Do not hesitate to order abandonment if casing pressure approaches the bursting range. Remember, the usable strength of sulfide susceptible materials is much lower than their rated strength.

Extreme care must be exercised in abandoning a well producing H₂S. If the well is under control, the best abandonment technique would be to set a wire line bridge plug. Cement can be spotted on top of the bridge plug with a dump bailer. If the well is pressured up, cement should be bullheaded down the drill pipe. THE THING TO REMEMBER IS THAT CIRCULATION IS TO BE AVOIDED.

If it is decided to drill ahead, drilling operations should be suspended until the following steps are taken:

1. Obtain sufficient safety equipment to supply every man on board.
2. Check BOP bodies for hardness and trim for sulfide service.
3. Stockpile in adequate supply of a H_2S scavenger for the mud.
4. Thoroughly train each crew in H_2S safety procedures.
5. Check choke and kill lines for hardness. Make all replacements necessary.
6. Vent the mud-gas separator and the degasser to the flare line.
7. Ventilate the pump room and the mud pits.
8. Rig the flare in the most downwind location available.

KICK CONTROLA. General

1. Circulating pressures at low pump rates approximately equal to 1/4, 1/2 and 3/4 of anticipated pump rate while drilling will be determined and recorded at each 200 metres of hole, at depth of each new bit and at depths at which hole configuration, drill stem assembly or mud properties are changed. Remainder of the Well Control Data Sheet will be completed at the same time.
2. Pit drills will be conducted at least once per week for each crew.
3. Active pit volume will be maintained at the minimum required for the hole size being drilled.
4. Barite mixing facilities, pit level recorders, flow recorders, penetration rate recorders, temperature recorders, shale density measuring devices, hydraulic choke and degasser will be checked daily. Blowout preventors and choke assembly are to be tested with clear water once each week.
5. If, while drilling or circulating, a decrease in pump pressure, increase in pump strokes, increase in mud flow rate or a gain in the pits is observed, the well is to be shut-in.
 - a) Stop pumps and pick kelly up.
 - b) Open choke and all valves in the choke line.
 - c) Close bag-type preventor.
 - d) Close well in on the choke.

Exception: Until after 13-3/8" casing is cemented, the well is not to be closed in completely. In the event of a kick above this casing point, the bag-type preventor is to be closed with the choke line fully open. Flow from the choke line is to be diverted overboard. Kick containment in this case will be conducted by pumping weighted mud at a rate greater than the fluid influx rate.
6. Read and record shut-in casing pressure and pit gain. Pump into drill pipe with two or three pump strokes at a time until float opens. Observe drill pipe pressure. Bleed casing pressure and observe stabilised drill pipe pressure. Record closed-in drill pipe pressure. Reciprocate drill pipe, bearing in mind that well control is the primary consideration in all cases.
7. Complete Well Control Data Sheet, weight up mud, start degasser, open choke, start pumping and kill kick with the Constant Drill Pipe Pressure Method. See also "Barite Plug".
8. If a kick occurs on a trip, attempt to run the drill pipe back in the hole to as near bottom as time and safety will permit.

KICK CONTROL (Continued)

- a) If the pipe can be returned to bottom, close the well in and diagnose the problem by taking shut-in drill pipe and casing pressures. Then proceed to control the well in accordance with steps previously outlined.
 - b) If the pipe cannot be returned to bottom, the action to be taken will depend on the particular situation; i.e., the distance the pipe is off bottom, the amount of fluid gained and the pressures encountered, the frac gradients of the formation and the condition of the casing. Pumping into the annulus is one possible approach to reduce the pressure to a point where pipe can be stripped back to bottom but precautions must be taken to prevent bursting the casing down hole or losing circulation. If the drill pipe can be returned close enough to bottom so that there is a reasonable chance to kill the well by circulating, proceed with the killing operation as previously outlined.
9. If, while completely out of the hole, the well starts flowing, attempt to run as much pipe back into the hole as time and safety will permit. If it is possible to get the pipe back into the hole (stripping if necessary), proceed with the killing operation as previously outlined. If it is not possible to start the drill pipe in the hole, close the blind rams and shut the well in. Attempt to alternately bleed off gas and pump in mud to lower the pressure to where pipe can be stripped in the hole.

B. Barite Plug

A barite plug, properly mixed and placed, can seal off a high pressure zone which could otherwise be controlled only with great difficulty. The technique is particularly of assistance in controlling a high pressure zone below a potential or actual zone of lost circulation. In setting a plug, a barite slurry weighing 20 to 22 lb/gal. is mixed with fresh water and a phosphate to facilitate rapid settling. Some advantages of a barite plug are: increased hydrostatic head, low cost, ease of placement, minimum amount of hole loss with plug, ease of drillability, materials can be made readily available on location and the plug can be placed through a bit or through open-ended drill pipe. Disadvantages are: requires special mixing and pumping equipment, salt water contamination will prevent settling, and improper spotting methods may plug the drill string.

Recommendations for mixing and placing a barite plug:

1. Mix barite slurry through cement hopper.
2. Calculate volume for a minimum of 50 metres of settled barite. Allow for hole washout. Remember that settled volume will be about half the slurry volume. Consideration of a 100% excess is not unreasonable (i.e., a calculated length of 100 metres may result in only 50 metres of settled barite).

3. Mix 0.7 lb. SAPP per barrel fresh water in mixing tank.
4. Adjust pH of fresh water by caustic soda to 9.
(Estimated requirement: 0.25 lb. caustic soda per barrel of water).
5. Mix barite at 20 to 22 lb/gal.
6. Underdisplace to avoid contamination.
7. Quickly pull string up above slurry and circulate, if possible for several hours. (Plug should be settled in less than one hour).

Note:

Pilot test Barite on hand for settling characteristics prior to actual use of Barite plug.

WELL CONTROL - CREW SAFETY RESPONSE

Well control provisions, prior to setting the 13-3/8" casing, are designed for crew safety response. This brief will define same.

If the well begins to flow, the rig floor will immediately notify the Drilling Supervisor and Toolpusher. These men will take the following action, in order:

1. Notify the Barge Engineer to prepare to abandon.
2. Notify the radio operator to prepare to abandon.
3. Awaken all off-duty personnel, and advise them to prepare to abandon.

Crew response will be as follows:

1. Senior rig personnel will take charge of all abandonment preparations, (i.e., to include off-duty personnel).
2. Radio operator will call the standby boat to come alongside or stand-off near the rig, depending on the weather. Radio operator will then proceed to his abandon ship station.
3. The Toolpusher will take charge of on-duty personnel from the rig floor station.
4. The Drilling Supervisor will advise the Toolpusher regarding well conditions and procedures from a rig floor station.
5. All off-duty personnel will dress, put on their life jackets, and proceed to their abandon ship stations.
6. Survival capsules will be readied, but not lowered.
7. Off-duty personnel will remain on standby at their abandon ship stations until advised "All Clear" or "Abandon Ship" in the prescribed manner.

The last statement above is re-emphasised. No further abandon ship action shall be taken by any personnel until the "Abandon Ship" alarm is sounded. The Toolpusher will sound the alarm if the well gets completely out of control and/or if he observes that physical survival of the rig is actually in question. Other personnel shall sound the alarm only in the absence of the Toolpusher and only in the extreme (i.e., fire, uncorrectable interior flooding, etc.).

FIRE AND BOAT DRILLS (ABANDON SHIP)

Station Bills for both Fire and Abandon Ship action are prominently displayed throughout the rig. Emergency type drills must be held at least once a week, and more frequently if either the operator or contractor supervisors believe same to be warranted. Weather permitting, at least one survival capsule should be put in the water and motored about each month. The standby boat should be included in each drill. Alert time and the "alongside" time for the standby boat should be recorded on each drill. Drills should be clearly announced as drills. There should NEVER be any question in any crew member's mind that a drill is in progress. Maximum participation in Fire and Boat drills by all personnel aboard the drill vessel is Stirling policy. An actual emergency situation affects both on-duty and off-duty personnel, therefore on-duty and off-duty personnel should participate in drills.

RIG SHUT-DOWN IN ROUGH WEATHER

Weather conditions which damage or endanger rig equipment are usually obvious. The authority to shut down operations because of weather conditions hazardous to personnel and equipment is with the Drilling Supervisor and/or Toolpusher.