

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL						1. WELL NAME and NUMBER IDRAS 1							
2. TYPE OF WORK DRILL NEW WELL <input checked="" type="checkbox"/> REENTER P&A WELL <input type="checkbox"/> DEEPEN WELL <input type="checkbox"/>						3. FIELD OR WILDCAT WILDCAT							
4. TYPE OF WELL Test Well Coalbed Methane Well: NO						5. UNIT or COMMUNITIZATION AGREEMENT NAME							
6. NAME OF OPERATOR DOSECC EXPLORATION SERVICES, LLC						7. OPERATOR PHONE 801 538-2150							
8. ADDRESS OF OPERATOR 2075 S. Pioneer Rd., Salt Lake City, UT, 84104						9. OPERATOR E-MAIL dnielson@dosecc.com							
10. MINERAL LEASE NUMBER (FEDERAL, INDIAN, OR STATE) private			11. MINERAL OWNERSHIP FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>			12. SURFACE OWNERSHIP FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>							
13. NAME OF SURFACE OWNER (if box 12 = 'fee') Kennecott Utah Copper, LLC						14. SURFACE OWNER PHONE (if box 12 = 'fee') 801-204-2756							
15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee') 4700 Daybreak Parkway, Suite 3 South, ,						16. SURFACE OWNER E-MAIL (if box 12 = 'fee') John.Birkinshaw@riotinto.com							
17. INDIAN ALLOTTEE OR TRIBE NAME (if box 12 = 'INDIAN')			18. INTEND TO COMMINGLE PRODUCTION FROM MULTIPLE FORMATIONS YES <input type="checkbox"/> (Submit Commingling Application) NO <input checked="" type="checkbox"/>			19. SLANT VERTICAL <input checked="" type="checkbox"/> DIRECTIONAL <input type="checkbox"/> HORIZONTAL <input type="checkbox"/>							
20. LOCATION OF WELL		FOOTAGES		QTR-QTR		SECTION		TOWNSHIP		RANGE		MERIDIAN	
LOCATION AT SURFACE		1400 FSL 100 FWL		NWSW		17		1.0 N		2.0 W		S	
Top of Uppermost Producing Zone		1400 FSL 100 FWL		NWSW		17		1.0 N		2.0 W		S	
At Total Depth		1400 FSL 100 FWL		NWSW		17		1.0 N		2.0 W		S	
21. COUNTY SALT LAKE			22. DISTANCE TO NEAREST LEASE LINE (Feet) 0			23. NUMBER OF ACRES IN DRILLING UNIT 0							
			25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed) 0			26. PROPOSED DEPTH MD: 984 TVD: 984							
27. ELEVATION - GROUND LEVEL 4207			28. BOND NUMBER 4741			29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE municipal							
Hole, Casing, and Cement Information													
String	Hole Size	Casing Size	Length	Weight	Grade & Thread	Max Mud Wt.	Cement	Sacks	Yield	Weight			
Cond	8	6.625	0 - 50	75.0	J-55 Buttress	0.0	Class A	5	0.27	15.4			
ATTACHMENTS													
VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES													
<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER						<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN							
<input checked="" type="checkbox"/> AFFIDAVIT OF STATUS OF SURFACE OWNER AGREEMENT (IF FEE SURFACE)						<input type="checkbox"/> FORM 5. IF OPERATOR IS OTHER THAN THE LEASE OWNER							
<input type="checkbox"/> DIRECTIONAL SURVEY PLAN (IF DIRECTIONALLY OR HORIZONTALLY DRILLED)						<input checked="" type="checkbox"/> TOPOGRAPHICAL MAP							
NAME Dennis L. Nielson				TITLE President				PHONE 801 538-2150					
SIGNATURE				DATE 02/02/2016				EMAIL dnielson@dosecc.com					
API NUMBER ASSIGNED 43035000020000				APPROVAL  Permit Manager									

 <p>DOSECC Exploration Services <small>Diamond Core Drilling</small></p>	DRILLING PLAN – IDRAS 1 HOLE	01/25/2016
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**DOSECC Exploration Services, LLC
Drilling Plan**

**IDRAS 1 Test Hole
Salt Lake County, Utah**

**DOSECC Exploration Services, LLC
2075 South Pioneer Road, Suite B
Salt Lake City, UT 84104**

Presented to:

**Utah Division of Oil, Gas, and Mining
1594 N Temple, #1210
Salt Lake City, UT 84116**

February 2, 2016

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General Information

Surface Owner Contact Information

Kennecott Utah Copper, LLC
Attn: John Birkenshaw
Principal Advisor, Land Management
Rio Tinto
4700 Daybreak Parkway, Suite 3 South
South Jordan, UT 84095
John.Birkenshaw@riotinto.com
801 204- 2756 office

Location Plat

See Exhibit A

Drilling Pad Layout

No pad construction is anticipated. The drill site will be laid out as shown in Exhibit B along an existing road at the site.

Well Objectives

IDRAS 1 is intended to function as a test hole to operate and evaluate the performance of tooling developed for application in conjunction with the IDRAS project. IDRAS is an acronym that stands for International Drilling to Recover Aquifer Sands. The International Continental Scientific Drilling Program (ICDP) defines the purpose of the IDRAS project as follows:

“IDRAS seeks to identify the limited set of parameters that need to be considered in order to make meaningful predictions about the vulnerability of a low-As aquifer. Elevated groundwater arsenic (As) concentrations impact the health of over 100 million villagers across Pakistan, Nepal, India, Bangladesh, Myanmar, Cambodia, Vietnam, and China who rely on tube wells as their main source of drinking water. As a first step, a new tool to recover uncompromised core samples (freeze-shoe sampler) will be tested in Utah scheduled for February 2016.”

The tooling to be tested includes two configurations. The first is the Hydraulic Piston Core Freeze Shoe sampler (HPC FS), which will be able to sample at depths of up to 100 m (328 ft.). The other configuration is the Alien Freeze Shoe sampler (ALN FS) which will sample at depths from the surface to about 300 meters. With the IDRAS 1 test hole, DOSECC plans to collect core samples at three depths with the HPC FS, and three depths with the ALN FS.

General Procedure

The drilling system will be a standard diamond core drilling system with wireline core sampling capabilities. DOSECC will drill at the edge of the road to minimize the impact of the drilling project to the surrounding environment.

To provide a core sample for the UGS, DOSECC will drill an initial 5.5” diameter pilot hole with a face centered Non-Coring Assembly (NCA) bit. This hole will be approximately two to three feet below the ground surface, to attain enough depth to clear any existing road bed material. DOSECC will collect a core sample of undisturbed material with a standard HPC coring tool. The core for this sample will begin

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at whatever depth is attained at the bottom of the initial 5.5” diameter pilot hole, and the depth at which the standard HPC can no longer penetrate. The maximum length will be approximately 10 feet.

After collecting the initial core sample for the UGS, DOSECC will begin drilling the test hole. The test hole will be drilled at an 8 inch diameter, to a depth of 10 feet below the surface. After reaching a depth of 10 feet, a 6-5/8” steel casing will be placed in the hole, and the base of the casing will be cemented. The annular space between the steel casing and the wall of the drilled hole will be filled with Bentonite granules. After setting the casing in the initial 10 feet of the hole, the drilling will proceed with a 5.5” face centered drill bit from 10 feet below the surface to the final depth that can be reached for the test hole. The planned maximum depth for the test hole is 300 meters (984 ft.) +/- 6 m (20 ft.).

The drilling with the face centered 5.5” diameter bit will halt whenever a sample is to be collected with the HPC FS tool core sampling system. The HPC FS system will be exchanged for the face centered bit by wireline. The HPC FS system will collect a core sample following a hybrid process that combines a thoroughly established process for deployment, actuation, and retrieval of the HPC FS tooling, with a new method for core capture. The HPC FS will freeze the fluids entrained in the base of the core sample, and leave the fluids in the portion of the core above the base of the core sample undisturbed. This will preserve the fluids in the core in-situ with the solids.

When the hole reaches a depth at which the HPC FS is determined to be ineffective due to the type of rock and lithology encountered, the team will test the ALN FS. The ALN FS has a different type of coring functionality than the HPC FS. The ALN FS will also collect a core sample following a hybrid process that combines a thoroughly established process for deployment, and retrieval of the ALN FS tooling, with a new method for core capture. The ALN FS will freeze the fluids in the base of the core sample.

Hole Survey Procedures

The IDRAS 1 test hole will be surveyed by having the driller collect cuttings every 5 feet. The drill cuttings will help the tool development team determine the time at which the lithology of the test hole may be conducive to the successful deployment of the new tooling to collect a core sample.

After the completion of the hole to the planned maximum depth of 300 meters (984 ft.), or the depth allowed by drilling conditions if the planned maximum depth cannot be attained, a second team is expected to support the drilling crew and tooling test team with collecting additional information on the drilled hole. The logging tools will be provided by the Utah Geological Survey (UGS). The logging process will include three tools if they are available during the planned test. The UGS has the capability to log the hole using caliper, sonic with gamma, and SP with resistivity tools.

Development Tooling Test Plan

The extent of these tests on the IDRAS 1 hole at the Goggin Drain site will be to evaluate the functionality of tools that are developed to support the IDRAS project. The two tools are the HPC FS (Hydraulic Piston Core Freeze Shoe) and ALN FS (Alien Freeze Shoe). These tools are newly developed core collection tools that extend the capabilities of the standard HPC and standard ALN tools that were designed for collecting geologic core samples in modern lakes. The primary technological enhancement on the HPC FS and ALN FS is the addition of an electro-mechanical system that will supply a cooling fluid to the tip of the core sample to freeze approximately 4-6” of the tip of the core sample. The cooling fluid is inert liquid Carbon Dioxide (CO₂). By freezing the core sample base, the new sampling technology seals the core in the core tube (a polycarbonate liner) and preserves the liquid portion of the core sample in situ. The IDRAS 1 test hole will be drilled to depths that are anticipated necessary for the functional application of the HPC FS and ALN FS at the drill sites in Asia where the data for the project

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will be collected for analysis. To validate the HPS FS and ALN FS under drilling conditions, a hole of approximately 300 m depth is required to simulate the fluid backpressure on the sampling tool, the wireline trip time during which the core tip should remain frozen, the approximate thermodynamic conditions and heat transfer conditions for an ambient temperature test at depth, and the general functionality of the system such as water tight seals, battery duration, and data acquisition limits. We may also be afforded an opportunity to adjust the operating algorithm in the electrical system that deploys the CO₂. Current testing capabilities at the DES facility cannot simulate all of these down hole conditions effectively to enable DES to complete a comprehensive test of the new tools functionality prior to deployment on the drilling sites in Asia.

In conjunction with the HPC FS and ALN FS sampling technology, a mobile geomicrobiology laboratory will be utilized in the full scale project in Asia. The lab is capable of measuring a suite of labile sediment and groundwater properties. The mobile geomicrobiology laboratory is under development, and will not be available to test any of the geologic properties of the core samples collected during the 'IDRAS 1' hole drilling, core sampling, and hole completions.

The overall goal of the IDRAS project is to develop technologies that will assist in documenting the elevated groundwater arsenic (As) concentrations in areas of Pakistan, Nepal, India, Bangladesh, Myanmar, Cambodia, Vietnam, and China. The current funding is focusing on drilling efforts in Vietnam and Bangladesh. New data collected with the HPS FS and ALN FS will shed light on the release of As to groundwater caused by the reductive dissolution of iron (Fe) oxyhydroxides, a process that is mediated by micro-organisms involved in the mineralization of reactive organic carbon.

The HPC FS relies on hydraulic pressure to actuate the sampler and extend the sample collection tube into the ground below the bottom of a drilled hole. The precise depth at which the team will choose to test the tool to validate the tool functionality will be dependent on the survey data for the hole that is collected as the hole is drilled by evaluating the drill cuttings. A generalized test plan has the goal of testing the HPC FS at depths of 10.0 meters (32.8 ft.) +/- 1.0 m (+/- 3.3 ft.), 30.0 m (98.4 ft.) +/- 1.5 m (+/- 4.9 ft.), and 70.0 m (229.6 ft.) +/- 2.0 m (6.5 ft.). Each test will consist of these steps:

1. Stop the face centered bit drilling process.
2. Retract the drill string to the closest tubular joint.
3. Retrieve the Non-Coring Assembly (NCA) bit using wireline.
4. Lower the sampling tool (HPC FS) down the center of the drill tubular with the wireline system to the bottom of the hole.
5. Apply hydraulic pressure on the fluid in the drill tubular above the HPC FS to actuate the coring tool.
6. Apply additional pressure until the hydraulic pressure on the fluid in the drill tubular has reached the limit available based on the capacity of the fluid circulation pump (1000 psi +/- 100 psi).
7. Wait for the HPC FS to freeze the tip of the core sample.
8. Retract the HPC FS from the hole using the wireline system.
9. Remove the HPC FS from the drilling tubular when it has reached the surface to process the core and evaluate the tool function in collecting a core.
10. Remake the drilling tubulars on the drill string.
11. Lower the NCA bit to the bottom of the hole and resume drilling.
12. Re package the HPC FS as needed to prepare for the next sampling test.

The ALN FS relies on an inner coring bit that operates at the same time as the 5.5" diameter outer drill bit. Due to how the ALN FS functions from a drilling perspective, it can be deployed at any depth

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between the surface and the maximum depth reached for the test hole. The new feature of the ALN FS that requires freezing the base of the core sample, will vary in performance as a function of the hole depth. As the depth of the hole increases, and the amount of drilling fluid within the hole increases the back pressure on the ALN FS system fluid vent, the efficacy of the tool may degrade. DOSECC has completed some theoretical calculations to predict the range of the ALN FS and estimate the maximum depth for freezing capability. The complexity of the downhole conditions of temperature, pressure, and other variables prevents predicting the exact range of the tool with a high degree of accuracy. Field testing in the IDRAS 1 test hole to a depth of 300 m will allow DOSECC to validate some of the tool performance models and collect field data on the tool function in certain temperature and pressure combinations.

When drilling with the face centered bit has reached a zone where the team determines that the ALN FS should be tested, the following steps will take place:

1. Stop the face centered bit drilling process.
2. Retract the drill string to the closest tubular joint.
3. Retrieve the Non-Coring Assembly (NCA) bit using wireline.
4. Assemble and deploy the ALN FS down the drilling string using the wireline coring system.
5. The drill crew will resume drilling with the face centered drill bit and the coring drill operating simultaneously. The 5.5" diameter outer drill bit will advance and open the outer diameter of the hole to allow the drilling bottom hole assembly and drill string tools to advance the hole depth. The 3.8" diameter diamond coring tool will extend slightly beyond the face of the 5.5" diameter outer bit, and collect the core sample from the center of the hole as the bottom hole assembly advances the hole depth.
6. A preset control timer on the ALN FS will determine when the drilling with the two drill bits should pause. At the expiration of the timer, the rotation of the drill bits, and the circulation of the drilling fluid will pause. The ALN FS will actuate the system designed to freeze the material at the tip of the core sample.
7. At the completion of the time necessary to ensure the core tip is frozen, the ALN FS sample assembly will be retracted using the wireline coring system.
8. Lower the NCA face-centered bit to the bottom of the hole and resume drilling.
9. The drilling process with the 5.5" diameter drill will continue to advance the hole depth.
10. The ALN FS sampler and coring tool will be disassembled to process the core sample and prepare the tool for the next sampling test.

Estimated Geologic Markers and Zones

All the depth drilled is expected to be in the Quarternary valley-fill deposits. Based on evaluation of nearby Saltair oil and gas tests (1 and 2) the boundary between the Quaternary and Tertiary (Salt Lake Formation) is between 335.3 m (1,100 ft.) and 396.2 m (1,300 ft.). The total planned depth of this well is above the depth where the Tertiary (Salt Lake Formation) is located.

Briny ground water is likely to be encountered in the first 121.9 m (400 feet) of drilling. From nearby shallow ground water drilling, these zones should present no major problems to drilling of the test hole. Between 121.9 m (400 feet) to the planned total depth 300.0 m (984 ft.), previous ground water drilling has encountered small artesian flows of water fresh enough to be used for stock watering. Similar zones may be encountered in the deeper portion of the test hole. Since the flows are above hydrostatic, there is no potential for damage from co-mingled waters entering these aquifers.

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A gas show was encountered in the Saltair #2 at a depth of 518 m (1700 ft.). This is well below the current planned depth of 300 m (984 ft.) for this test hole. The gas show on the Saltair #2 hole was tested and gas was noted at the surface, but at volumes too small to meter. A DST encountered flowing pressures of 90 psi from the zone.

Water Rights Approval

No water rights approval plan is required. DOSECC will purchase water from Magna City and haul the water required for the project to the site by truck.

Pressure Control Equipment

BOPE configuration

No oil and gas is anticipated in the zone drilled. The drilling site and drilling plan have been reviewed by a professional geologist. Due to a site review for the location of the planned test hole, the review of the planned drilling efforts, and review of the drilling results for holes in the vicinity of this test hole, Blow Out Prevention Equipment (BOPE) is not necessary. No BOP is planned for use on the hole, to support the process of drilling this hole, testing the downhole core sampling tools, or to support the general plug and abandonment efforts when the drilling is completed.

Choke Manifold Equipment

This equipment is only required if a BOP is required.

Accumulator

This equipment is only required if a BOP is required.

Well Control Drills

The operations for drilling the IDRAS 1 test hole will be conducted using two shifts of drill operating crews. This will allow DOSECC to drill the test hole continuously, minimize trip times of tooling up and down the hole incurred by idling the drill for more than several hours, and minimize the time to complete the hole. No well control drills are planned at this time, as the drilling effort is not expected to exceed several days in duration.

Monitoring Equipment

No monitoring equipment is applied to this drilling effort. The standard process for monitoring the drilling fluid circulation used in diamond core drilling and sampling will be employed. The driller will monitor the volume of mud in the mud mixing tank by observing the tank level. The rate of drilling mud consumption will be determined based on the amount premixed in the tank, the tank level, and the speed of the circulation pump. The approximate speed in revolutions per minute of the circulation pump, and the pump's standard operating characteristics, will enable the driller to approximate the gallon per minute rate of drilling fluid consumption.

Miscellaneous Information

No miscellaneous information pertains to this hole drilling plan.

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Casing Program

Cementing Program

This is a short term hole and DOSECC Exploration Services does not anticipate it being open for more than a few days, which will be long enough to complete the objectives associated with validating functionality of the new core sampling tools, and to complete the logging surveys. A sanitary seal of bentonite chips will be installed behind the casing. The hole will be plugged and abandoned with a bentonite chips fill and a neat cement plug to a depth of 20 feet.

Portland Cement, ASTM Type 1 or API Class A & B – Portland Cement, is a mixture of lime, alumina, magnesia, and sulfur trioxide. It forms a hard rock-like seal around the casing which will not wash out from ground water flow in the formation. A curing time of 24 hours is required before resuming drilling. As the water to cement ratio increases, the compressive strength of the cement will decrease and shrinkage during curing and permeability of the cement will increase. When the cement is mixed with water, a number of chemical reactions take place. As the mixture cures and changes from a liquid mixture to a solid, heat is given off. The exothermic reaction is referred to as the “heat of hydration” and will result in an increase of the temperature of the casing and the surrounding soil. The amount of heat given off is dependent upon several factors, such as cement composition, use of additives, and the thickness of the grouting envelope. The American Petroleum Institute (API) recommends a water to cement ratio of 0.46 by weight of 5.2 gallons of water per 94 lb. sack of cement (5.2 gal of water x 8.33 lb./gal = 43.3 lbs. water / 94 lbs. of cement = 0.46).

Surface Casing

A surface casing / conductor that is a 6-5/8” buttress or SWT will be used in the first 10 to 50 feet of the hole to stabilize the surface sediments. If conditions require, the drilling operations crew is prepared to install a maximum of 50 feet to establish the hole.

Intermediate Casing

No intermediate casing is planned for this test hole. The core samples and downhole tests are intended to be completed while the drill string is down hole. The drill string will be removed from the hole when the hole reaches planned maximum depth and the logging / survey team is ready to proceed with surveying and logging the hole. After the hole is logged, the hole will be plugged and abandoned.

Mud Program

This is a shallow exploration hole that will use bentonite mud with a water (H₂O) solution, soda ash for pH balance, and possibly some food grade polymer if needed. The system will consist of an above ground tank and mixing hopper that will deliver a 7.6 lb./gal mud to a W-1122 Bean pump circulating in the range of 20-30 gpm for flow rate in the 5.5” diameter hole with 4.5” diameter rods. The mud and cuttings will debut into a concrete box sump and be lifted to another tank outfitted with a shaker and de-silter. The mud will be allowed to settle, and then be used as makeup fluid that is circulated back to the mixing tank.

Evaluation Program

No formation testing is planned. The hole will be logged while drilling by making observations and collection of the drill cuttings. Spot cores will be made at zones of interest based on the observations of the drill cuttings, drill crew observations while operating the drill, and the needs of the test plan for validating the functionality of the new tools. The hole will be surveyed using the UGS suite of logging

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tools after drilling is completed to the planned maximum depth. Logging after drilling will be subject to the stability of the hole and hole conditions after the drill string is withdrawn.

Abnormal Conditions

No abnormal temperatures or pressures are anticipated. No hydrogen sulfide has been encountered or known to exist from previous drilling in the area.

Wellbore Diagram

See attached Exhibit C that was supplied with the hole permitting application.

Bond

A bond has been posted with the Division and awaits API number designation, as per discussions with Rachel Madina, on January 20, 2016.

Affidavit of Surface Agreement

The affidavit is completed and attached. Access to site is granted by the private landowner via a Limited Access Agreement, executed on January 11, 2016.

Exception Location Application

This is a stratigraphic test, hence spacing rules do not apply.

Anticipated Starting Dates and Notification of Operations

Construction Date: end of January 2016 to beginning of February 2016

Drilling Date: end of January 2016 to beginning of February 2016

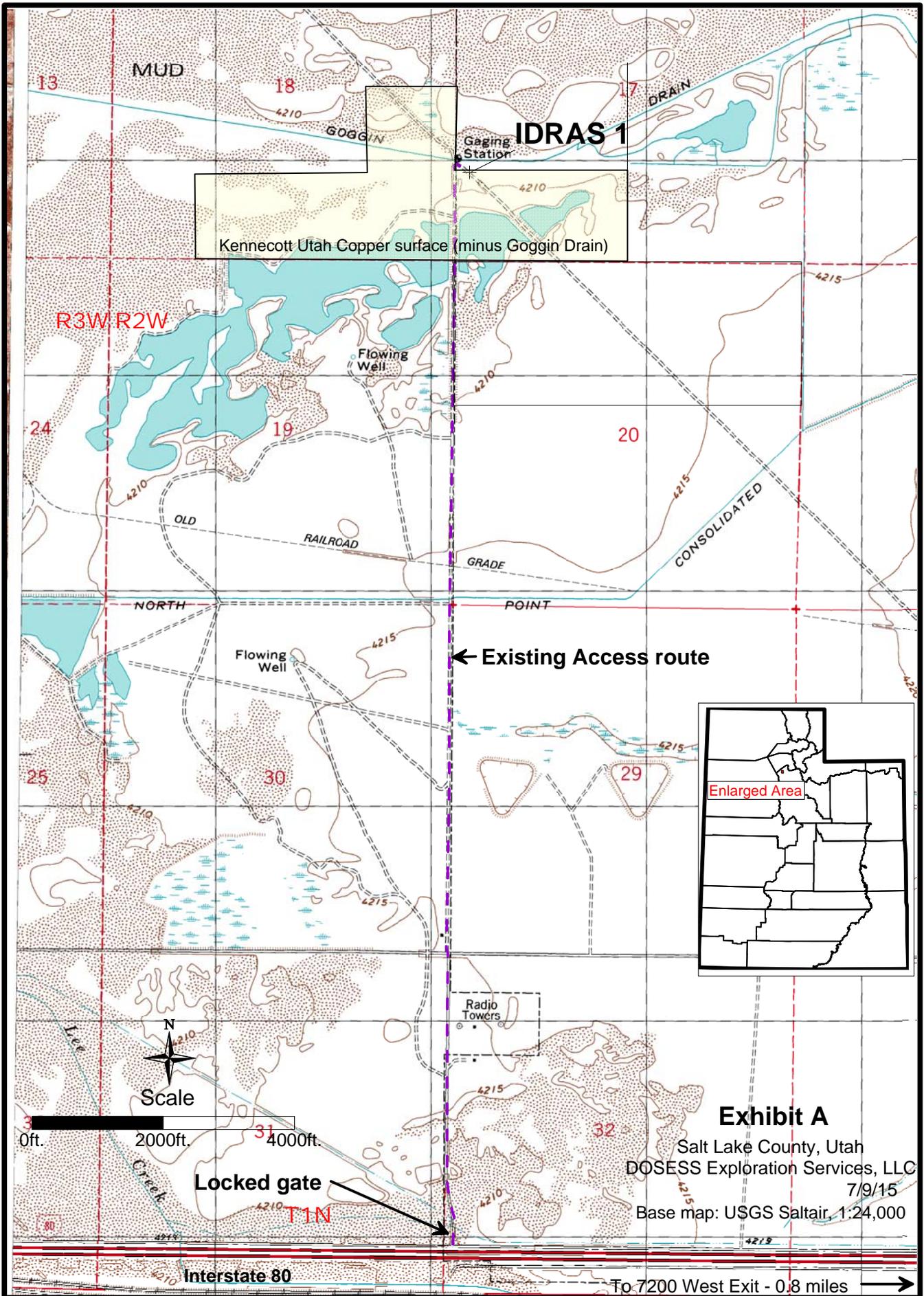
No location will be constructed or moved, no well will be plugged and no drilling work over equipment will be removed from a well to be placed in a suspended status without the prior approval of the Division of Oil Gas and Mining. If operations are to be suspended, prior approval will be obtained and notification given before resumption of operations.

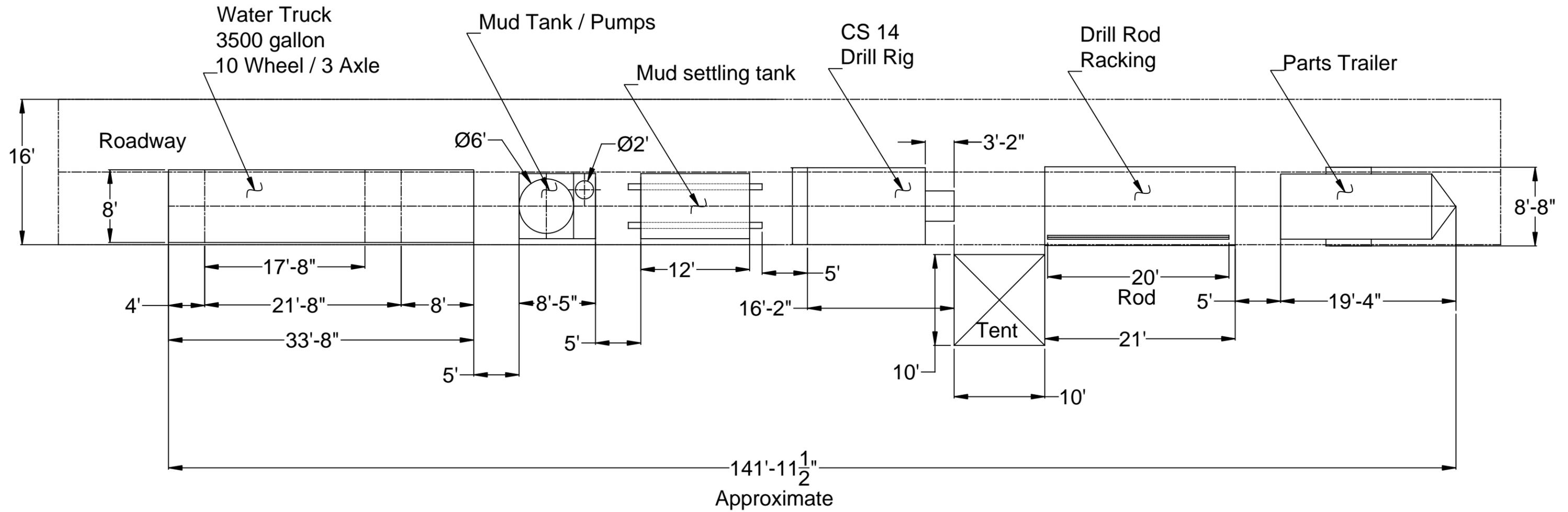
The DOGM will be notified by telephone or email of the intent to drill 72 hours prior to the commencement of drilling.

If a replacement rig is contemplated, a Sundry Notice will be submitted to the DOGM for prior approval and all conditions of the approved plan are applicable during all operations conducted with the replacement rig.

Spills, blowouts, fires, leaks, accidents or any other unusual drilling occurrence shall be promptly reported to the DOGM in accordance with the DOGM requirements.

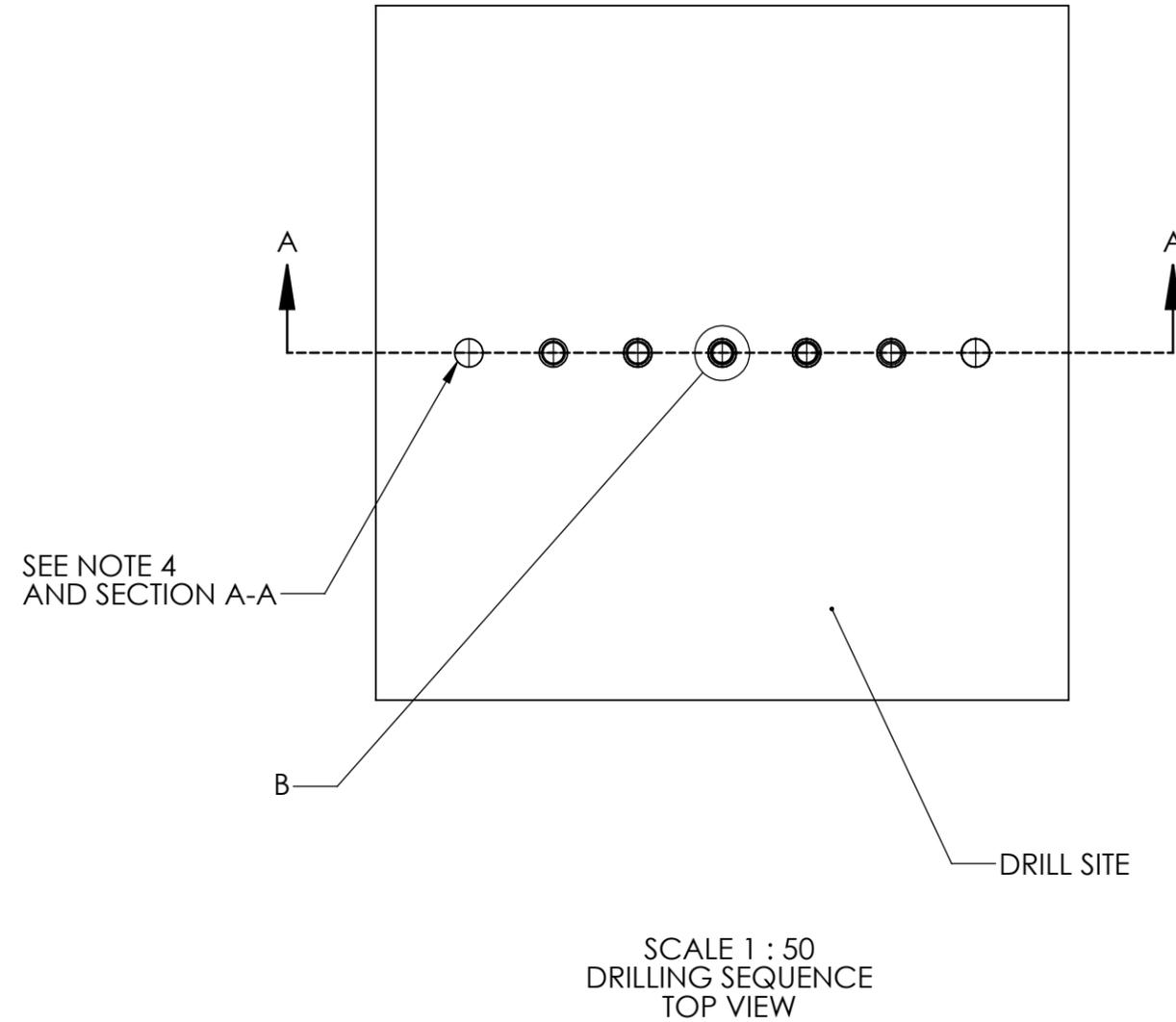
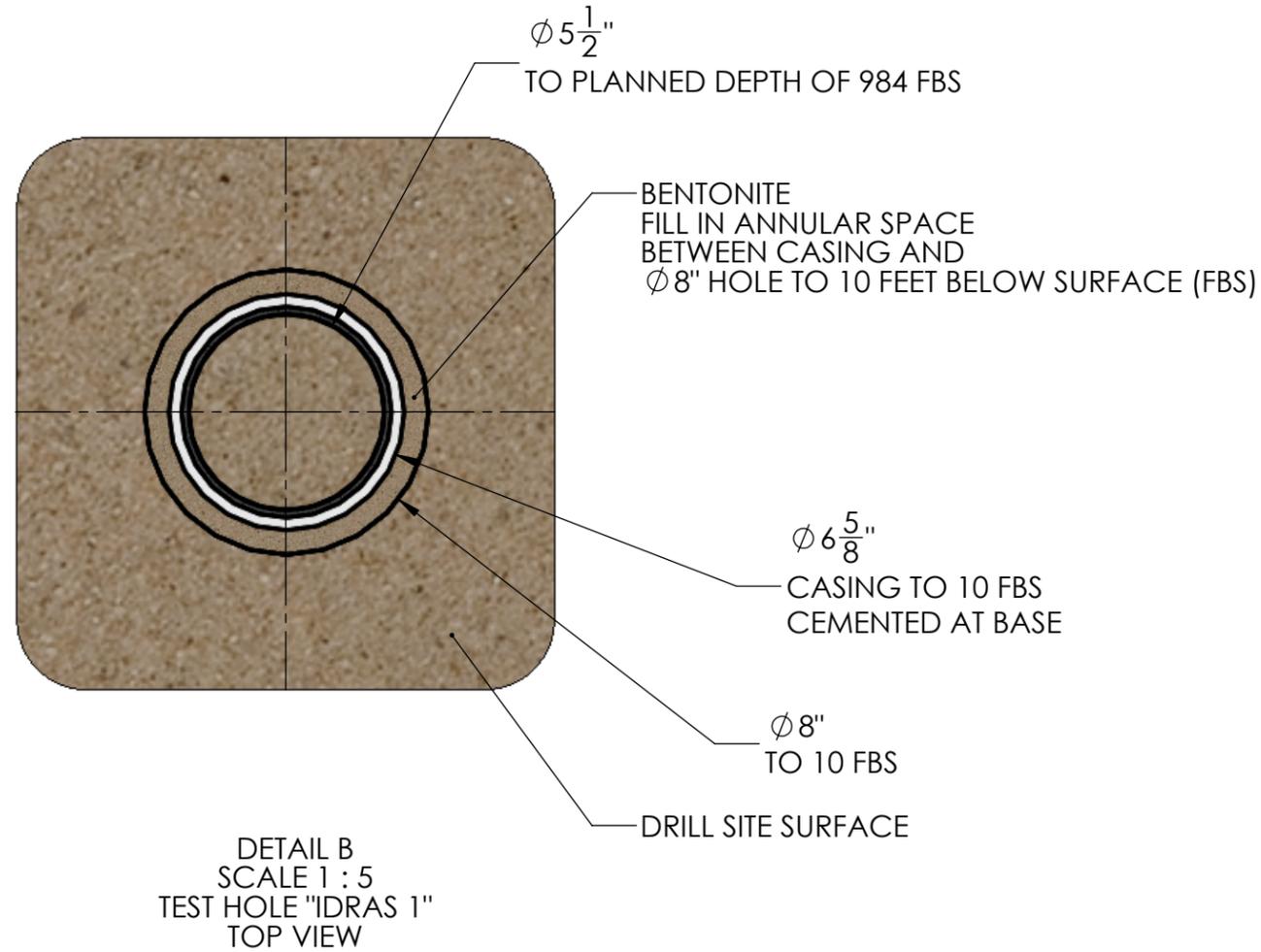
When the test hole is completed, the DOGM will be notified when the hole is plugged and abandoned.





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	102344	CASING, API, 6 5/8" OD X 5.921" ID, 24 LBS/FT	1
2	102355	PLUG, CEMENT, BOTTOM, CASING	1
3	102345	BENTONITE, GRANULES, PERMIT, HOLE	1
4	102346	BENTONITE, PLUG, PERMIT, HOLE	1
5	102347	CONCRETE, PLUG, HOLE, PERMIT	1

EXHIBIT C - PAGE 1 OF 2



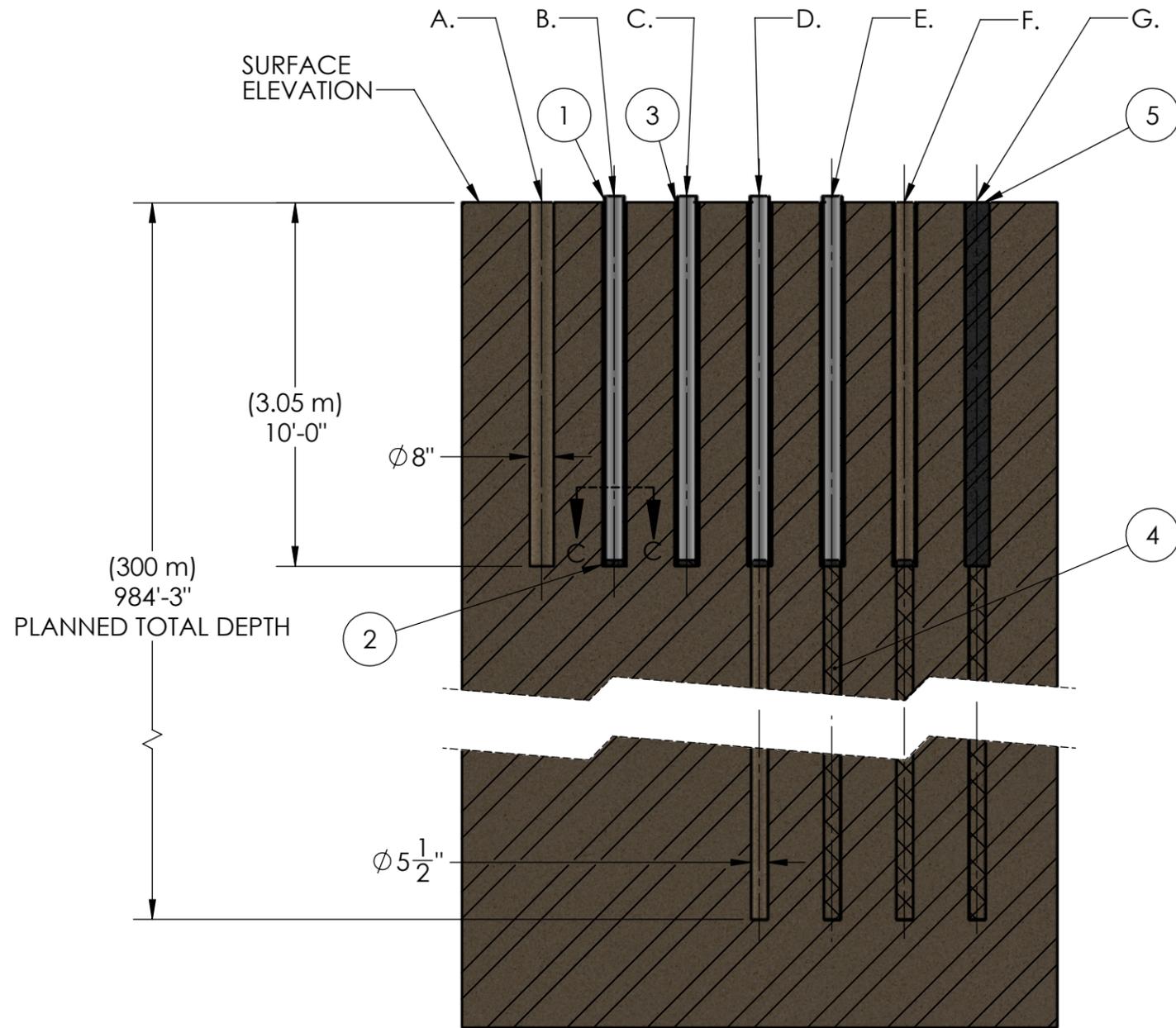
NOTES:

1. ASSEMBLY BILL OF MATERIAL FOR PLANNING PURPOSES FOR DRILLING OPERATIONS.
2. CROSS SECTION A-A SHOWS SEQUENCE OF DRILLING FOR HOLE IDRAS 1 FOR PERMITTING APPLICATION. SEE PERMIT APPLICATION FOR ADDITIONAL DETAILS.
3. TEST HOLE IS TO BE IDENTIFIED AS "IDRAS 1" WHEN STAKING ON SITE.
4. ONLY ONE HOLE SHALL BE DRILLED, THIS DIAGRAM SHOWS THE SEQUENCE OF STEPS FOR THE DRILLING OPERATIONS.

ECO: -	DESIGNED BY bgrzybowski	PROJECT IDRAS	DESCRIPTION ASM, HOLE, TEST, FIELD, IDRAS1
CHANGE NOTES: -		TOLERANCE UNLESS OTHERWISE SPECIFIED TOLERANCES ARE .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ± 1° SURFACE FINISH: 63 µin RA PER ASME Y14.5M-1994	MATERIAL SEE BOM
		APPROVED FOR PUBLIC RELEASE AS PART OF DRILLING PLAN PERMITTING PROCESS.	WEIGHT N/A
			DWG NO 102348
			REV X1
APPROVED BY bshaw 01/25/2016	DRAWN BY bgrzybowski 01/25/2016		DOSECC Exploration Services 2075 S Pioneer Rd, STE. B Salt Lake City, UT 84104 Tel: +1 (801) 583-2150 www.dosecc-ex.com
		DIMENSIONS ARE IN INCHES	SIZE B
			SCALE 1:100
			STATUS PROTOTYPE
			SHEET 1 OF 2

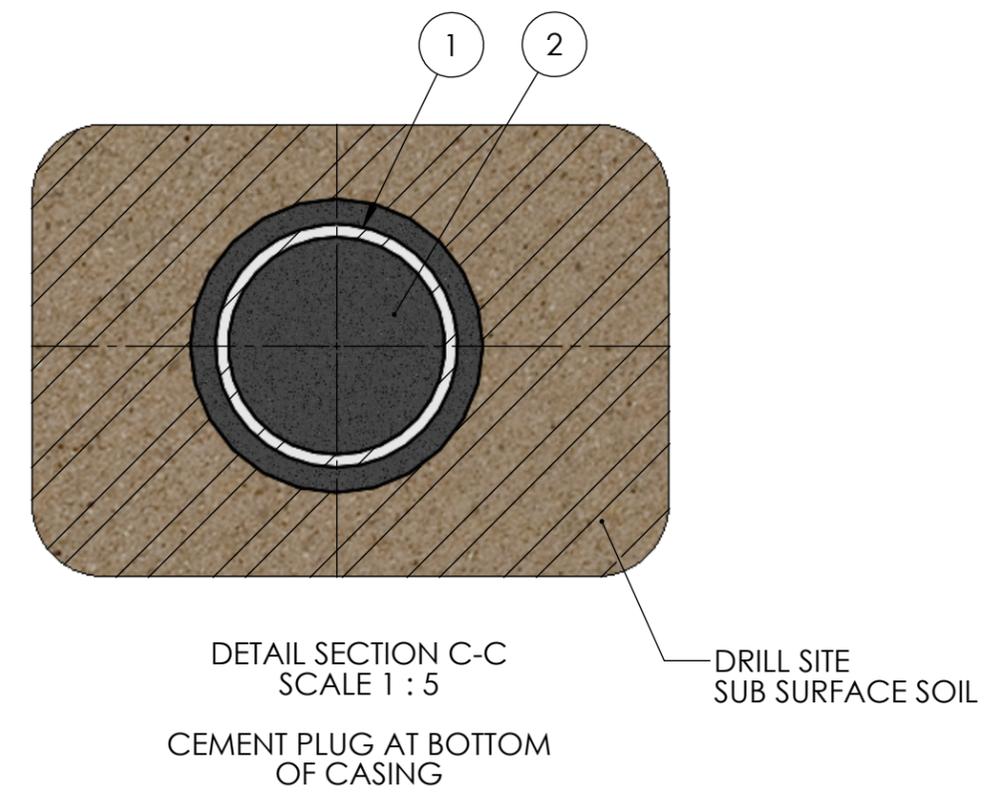
EXHIBIT C - PAGE 2 OF 2

PROJECT: IDRAS
 PERMITTED HOLE NAME: IDRAS1
 HOLE PLAN IDRAS: SALT LAKE COUNTY, UTAH
 OPERATOR: DOSECC EXPLORATION SERVICES, LLC
 HOLE TYPE: SCIENTIFIC
 DESIGN DATE: 07/22/2015
 INSTALLATION DATE: 02/2016
 LOCATION COORDINATES: N40° 48.975'; W112° 06.037' OR
 N40.8162500; W112.100616667



SECTION A-A
 SCALE 1 : 50
 DRILLING SEQUENCE
 CROSS SECTION OF "IDRAS 1"
 AT SEVEN DRILLING SEQUENCE STEPS
 SEE NOTE 4

- A. OPEN HOLE TO 8.0" TO 10'-0" BELOW SURFACE.
- B. SET 6 - 5/8" CASING TO 10'-0" AND CEMENT BOTTOM.
- C. INSTALL BENTONITE GRANULES IN ANNULAR SPACE.
- D. DRILL 5 1/2" HOLE TO 984' (300 m), COLLECTING CORE SAMPLE.
- E. PLUG AND ABANDON HOLE WITH BENTONITE.
- F. REMOVE 6 - 5/8" CASING.
- G. CEMENT FINAL 10'-0".



APPROVED FOR PUBLIC RELEASE AS PART OF DRILLING PLAN PERMITTING PROCESS.		DOSECC Exploration Services 2075 S Pioneer Rd, Suite B Salt Lake City, UT 84104 Tel: +1 (801) 583-2150 www.dosecc-ex.com	
SIZE B	DWG NO 102348	REV X1	
MATERIAL SEE BOM	WEIGHT N/A	SCALE 1:100	STATUS PROTOTYPE
		SHEET 2 OF 2	

RECEIVED: February 02, 2016

AFFIDAVIT OF LIMITED SITE ACCESS AGREEMENT

Dennis L. Nielson, the Affiant herein, is President of DOSECC Exploration Services, LLC, a Utah company, with an office located at 2075 S. Pioneer Road, Suite B, Salt Lake City, UT 84104, being of lawful age and duly sworn upon his oath and being duly authorized to make this affidavit on behalf of said company hereby deposes and states to the best of his knowledge as follows:

That DOSECC Exploration Services, LLC has a LIMITED SITE ACCESS AGREEMENT, which covers surface damage, signed by the current surface owner covering the following described property, hereinafter referred to as the Land:

TOWNSHIP 1 NORTH, RANGE 2 WEST, SLB&M

Section 17, SW1/4, SW1/4, NW1/4, SW1/4, along an existing road.

Affiant further states said LIMITED SITE ACCESS AGREEMENT GRANTS, and CONVEYS unto DOSECC Exploration Services, LLC an easement for ingress and egress to, along with a right to use, that portion of the herein described property as may be necessary to assemble, use, and maintain a well site for the drilling of a scientific test well on the herein described Land. Affiant further states said LIMITED SITE ACCESS AGREEMENT GRANTS, and CONVEYS unto DOSECC Exploration Services, LLC the right to ingress and egress to access said Land to drill, log, properly abandoned, and reclaim said Land.

Executed and effective as of this 25th day of January, 2016.

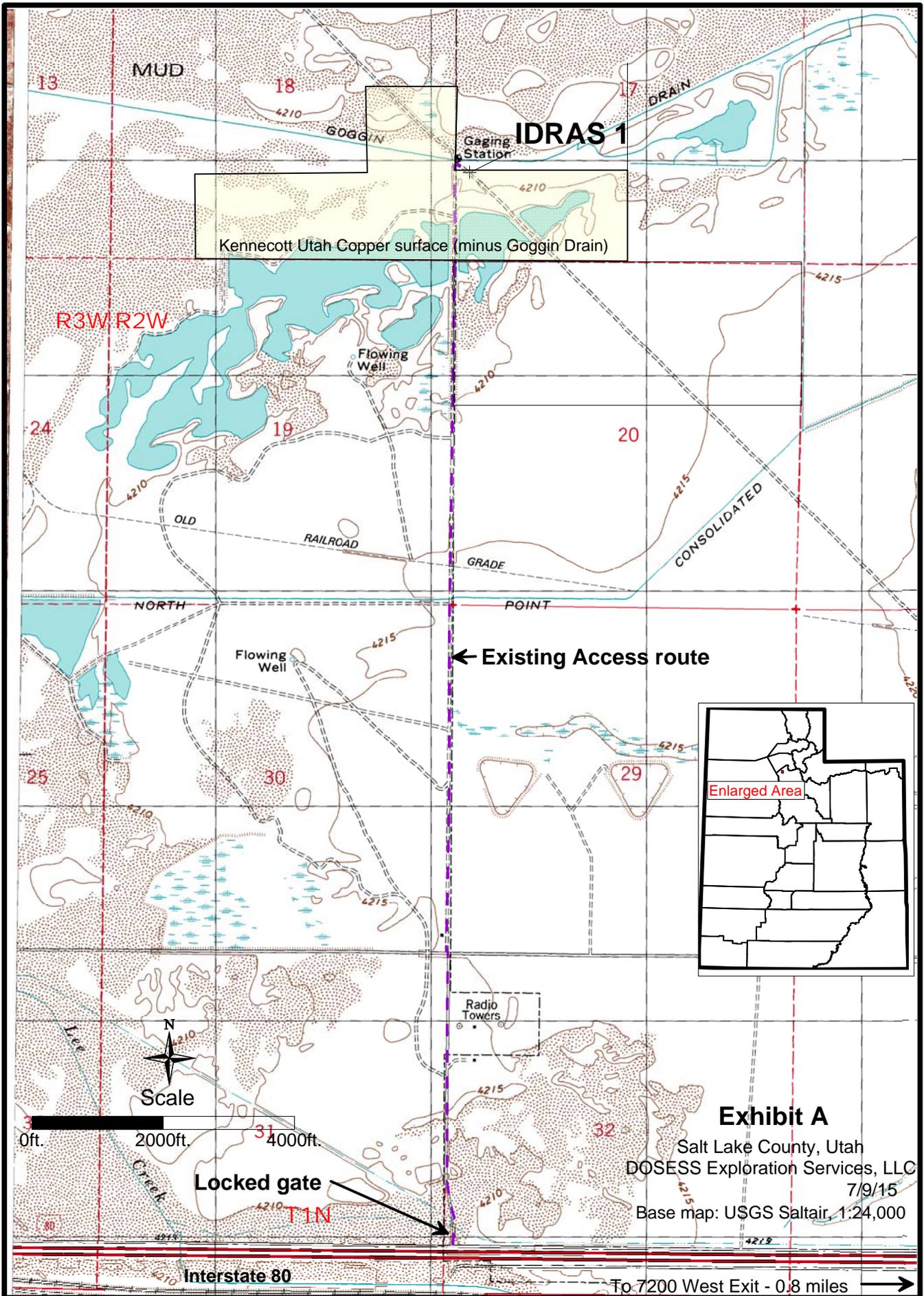
DOSECC Exploration Services, LLC

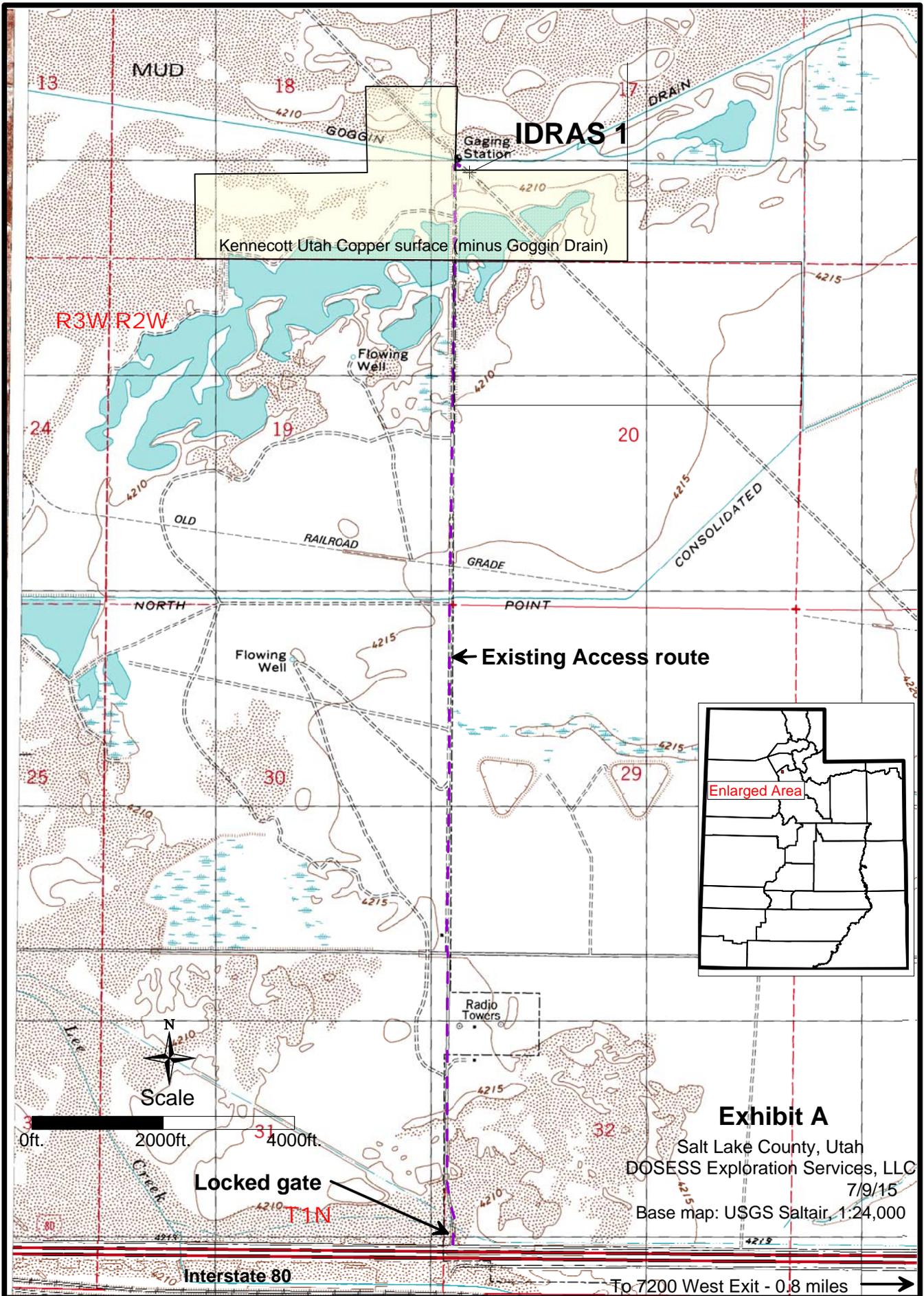
By:  _____

Dennis L. Nielson

AMENDED WASTE MANAGEMENT PLAN
DOSECC Exploration Services, LLC
IDRAS 1 scientific test hole
Section 17, T 1 N, R 2 W, SLB&M,
Salt Lake County, Utah
February 2, 2016

The drilling of this hole will be performed with a small portable coring rig equipped with a tank-contained drilling mud system. At the completion of the drilling and upon abandonment of the hole, the drilling fluids in the hole will be displaced with bentonite-fill. The displaced drilling mud will be discharged into a tank onsite. At the end of operations this tank will be emptied by Badger Daylighting Ltd., Salt Lake City, UT 801-520-7062 (Jamie). Disposal will be in one of several clean-fill disposal sites in the valley. US West Regional Office is at uswest@badger-corp.com, phone 303-709-1956.





AFFIDAVIT OF LIMITED SITE ACCESS AGREEMENT

Dennis L. Nielson, the Affiant herein, is President of DOSECC Exploration Services, LLC, a Utah company, with an office located at 2075 S. Pioneer Road, Suite B, Salt Lake City, UT 84104, being of lawful age and duly sworn upon his oath and being duly authorized to make this affidavit on behalf of said company hereby deposes and states to the best of his knowledge as follows:

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TOWNSHIP 1 NORTH, RANGE 2 WEST, SLB&M

Section 17, SW1/4, SW1/4, NW1/4, SW1/4, along an existing road.

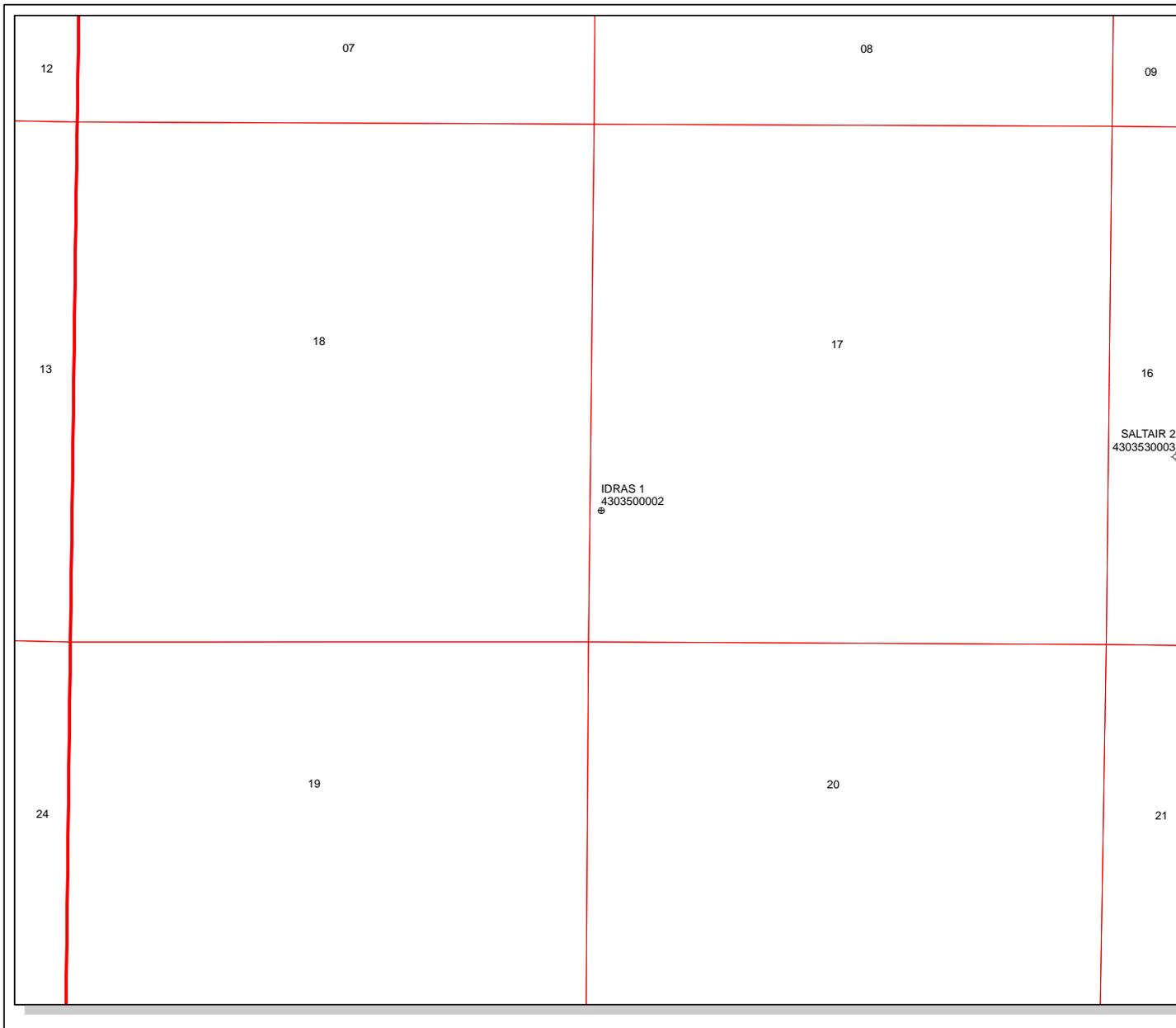
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Executed and effective as of this 25th day of January, 2016.

DOSECC Exploration Services, LLC

By:  _____

Dennis L. Nielson



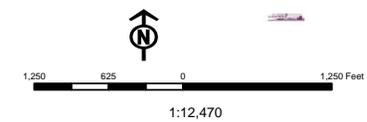
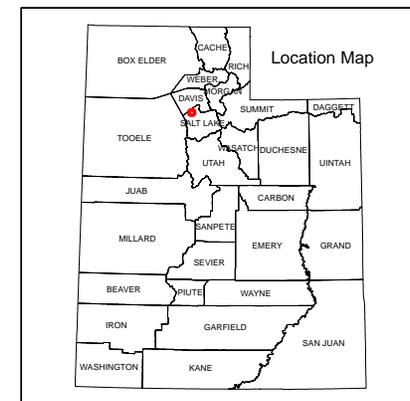
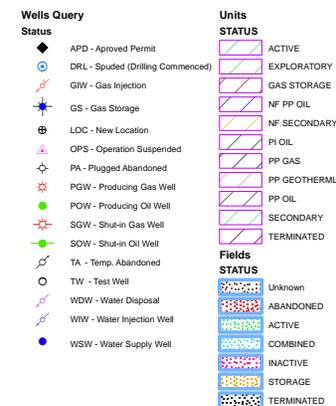
API Number: 4303500002

Well Name: IDRAS 1

Township: T01.0N Range: R02.0W Section: 17 Meridian: S

Operator: DOSECC EXPLORATION SERVICES, LLC

Map Prepared: 2/11/2016
Map Produced by Diana Mason





State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
*Lieutenant
Governor*

Office of the Governor
PUBLIC LANDS POLICY COORDINATING OFFICE

KATHLEEN CLARKE
Director

February 26, 2016

Sent via electronic mail: DIANA.WHITNEY@utah.gov

Diana Mason
Petroleum Specialist
Department of Natural Resources, Division of Oil Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, UT 84114-5801

Subject: Application for Permit to Drill
RDCC Project No. 52602

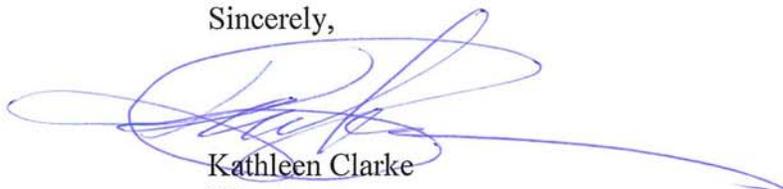
Dear Ms. Mason:

The Public Lands Policy Coordinating Office received the following comments from the Utah Division of Air Quality (DAQ). DOSECC Exploration Services, LLC, proposes to drill the IDRAS 1 well (Wildcat) on private lease in Salt Lake County.

The proposed project will be subject to Utah Air Quality Rules R307-500 series. These rules apply to all oil and natural gas exploration and production operations, well production facilities, natural gas compressor stations, and natural gas processing plants. The proposed project will also be subject to the fugitive dust rule R307-309.

Thank you for the opportunity to review and comment on the proposed action to help mitigate impacts to air quality. Please direct any questions regarding this correspondence to the Public Lands Policy Coordinating Office at the address below, or call to discuss any questions or concerns.

Sincerely,



Kathleen Clarke
Director

ON-SITE PREDRILL EVALUATION

Utah Division of Oil, Gas and Mining

Operator DOSECC EXPLORATION SERVICES, LLC
Well Name IDRAS 1
API Number 43035000020000 **APD No** 11458 **Field/Unit** WILDCAT
Location: 1/4,1/4 NWSW **Sec** 17 **T w** 1.0N **Rng** 2.0W 1400 FSL 100 FWL
GPS Coord (UTM) **Surface Owner** Kennecott Utah Copper, LLC

Participants

A.McDonald (DOGM); P. Anderson (DOSECC)

Regional/Local Setting & Topography

The proposed location is situated on the Alkali Mud Flats on the southern shore of The Great Salt Lake of northern Utah. The surrounding area is used for wildlife conservation and grazing livestock. Interstate 80 is approximately 3 miles south of the proposed location and is approximately 2 miles from of the shores of The Great Salt Lake. Proposed location is approximately 10 miles west of Salt Lake City. Altitude of the site is approximately 4,210' above sea-level.

Surface Use Plan

Current Surface Use

Grazing
Wildlfe Habitat

New Road Miles	Well Pad	Src Const Material	Surface Formation
0	Width 141 Length 12		ALLU

Ancillary Facilities N

Waste Management Plan Adequate? Y

Environmental Parameters

Affected Floodplains and/or Wetlands Y

Flora / Fauna

Flora: greasewood and salt grasses
Fauna: birds and mammals

Soil Type and Characteristics

Erosion Issues N

Sedimentation Issues N

Site Stability Issues Y

Drainage Diverson Required? N

Berm Required? N

Erosion Sedimentation Control Required? N**Paleo Survey Run? N Paleo Potential Observed? N Cultural Survey Run? N Cultural Resources? N****Reserve Pit**

Site-Specific Factors		Site Ranking
Distance to Groundwater (feet)		20
Distance to Surface Water (feet)		20
Dist. Nearest Municipal Well (ft)	>5280	0
Distance to Other Wells (feet)	300 to 1320	10
Native Soil Type	Mod permeability	10
Fluid Type	Fresh Water	5
Drill Cuttings	Normal Rock	0
Annual Precipitation (inches)	10 to 20	5
Affected Populations		
Presence Nearby Utility Conduits	Unknown	10
	Final Score	80 1 Sensitivity Level

Characteristics / Requirements**Closed Loop Mud Required? Y Liner Required? Liner Thickness Pit Underlayment Required?****Other Observations / Comments**

A pre-site was conducted at 9:00am on February 24, 2016. The soils in the area have a high alkali and salt content. The principle vegetation observed was greasewood and salt grasses. The area is habitat for antelope, small birds, livestock, and water fowl. The selected location for this well is suitable for drilling.

Ammon McDonald
Evaluator

2/24/2016
Date / Time

**Application for Permit to Drill
Statement of Basis
Utah Division of Oil, Gas and Mining**

APD No	API WellNo	Status	Well Type	Surf Owner	CBM
11458	43035000020000	LOCKED	TW	P	No
Operator	DOSECC EXPLORATION SERVICES, LLC		Surface Owner-APD	Kennecott Utah Copper, LLC	
Well Name	IDRAS 1		Unit		
Field	WILDCAT		Type of Work	DRILL	
Location	NWSW 17 1N 2W S 1400 FSL (UTM) 407154E 4518953N		100 FWL GPS Coord		

Geologic Statement of Basis

DOSECC Exploration Services, proposes to drill the well to a total depth of 984' and plans to set surface casing from 0'-50'. The surface string will be drilled using a freshwater based mud. Within a mile of the proposed well location there are two underground water rights on file; with the water well depths at 450' below the ground surface. Several surface water rights are also in the area. The proposed well will be spud in soils made from Great Salt Lake sediments which consist of Quaternary fluvial sands, silts, and mud lake deposits, which are exposed at the surface at this location. The sediments do contain useable groundwater within the subsurface and the operator should be aware of the likelihood of water saturated sediments and to respond to protecting these zones by extending the surface casing as necessary. Proposed surface casing should adequately isolate any shallow zones containing water.

Ammon McDonald
APD Evaluator

2/24/2016
Date / Time

Surface Statement of Basis

DOSECC Inc. will use a fresh water and bentonite mud drilling program. All drill cuttings and drilling fluids will be handled and disposed of properly once the well is completed. Fresh water source will be purchased from Magna City. Access to the site will be from the North Temple Frontage Road. No road improvements will be necessary prior to drilling. There is one PA well, API #4303530003, approximately 1.1-miles to the east, there are no other oil & gas wells within one mile of the proposed well. Photos are located in the well file.

Ammon McDonald
Onsite Evaluator

2/24/2016
Date / Time

Conditions of Approval / Application for Permit to Drill

Category	Condition
Pits	A closed loop mud circulation system is required for this location.

WORKSHEET APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 2/2/2016

API NO. ASSIGNED: 43035000020000

WELL NAME: IDRAS 1

OPERATOR: DOSECC EXPLORATION SERVICES, LLC (N4170)

PHONE NUMBER: 801 538-2150

CONTACT: Dennis L. Nielson

PROPOSED LOCATION: NWSW 17 010N 020W

Permit Tech Review:

SURFACE: 1400 FSL 0100 FWL

Engineering Review:

BOTTOM: 1400 FSL 0100 FWL

Geology Review:

COUNTY: SALT LAKE

LATITUDE: 40.81634

LONGITUDE: -112.10092

UTM SURF EASTINGS: 407154.00

NORTHINGS: 4518953.00

FIELD NAME: WILDCAT

LEASE TYPE: 4 - Fee

LEASE NUMBER: private

PROPOSED PRODUCING FORMATION(S): SALT LAKE

SURFACE OWNER: 4 - Fee

COALBED METHANE: NO

RECEIVED AND/OR REVIEWED:

- PLAT
- Bond: STATE/FEE - 4741
- Potash
- Oil Shale 190-5
- Oil Shale 190-3
- Oil Shale 190-13
- Water Permit: municipal
- RDCC Review: 2016-02-26 00:00:00.0
- Fee Surface Agreement
- Intent to Commingle

Commingle Approved

LOCATION AND SITING:

- R649-2-3.
- Unit:
- R649-3-2. General
- R649-3-3. Exception
- Drilling Unit
- Board Cause No: R649-3-3
- Effective Date:
- Siting:
- R649-3-11. Directional Drill

Comments: Presite Completed

Stipulations: 1 - Exception Location - dmason
5 - Statement of Basis - bhill
21 - RDCC - dmason
23 - Spacing - dmason
27 - Other - ddoucet



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. HAZA
Division Director

Permit To Drill

Well Name: IDRAS 1

API Well Number: 43035000020000

Lease Number: private

Surface Owner: FEE (PRIVATE)

Approval Date: 2/29/2016

Issued to:

DOSECC EXPLORATION SERVICES, LLC, 2075 S. Pioneer Rd., Salt Lake City, UT 84104

Authority:

Pursuant to Utah Code Ann. 40-6-1 et seq., and Utah Administrative Code R649-3-1 et seq., the Utah Division of Oil, Gas and Mining issues conditions of approval, and permit to drill the listed well. This permit is issued in accordance with the requirements of R649-3-3. The expected producing formation or pool is the SALT LAKE Formation(s), completion into any other zones will require filing a Sundry Notice (Form 9). Completion and commingling of more than one pool will require approval in accordance with R649-3-22.

Duration:

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date

Exception Location:

Appropriate information has been submitted to DOGM and administrative approval of the requested exception location is hereby granted.

General:

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

Conditions of Approval:

The Application for Permit to Drill has been forwarded to the Resource Development Coordinating Committee for review of this action. The operator will be required to comply with any applicable recommendations resulting from this review. (See attached)

This proposed well is located in an area for which drilling units (well spacing patterns) have not been established through an order of the Board of Oil, Gas and Mining (the "Board"). In order to avoid the possibility of waste or injury to correlative rights, the operator is requested, once the well has been drilled, completed, and has produced, to analyze geological and engineering data generated

therefrom, as well as any similar data from surrounding areas if available. As soon as is practicable after completion of its analysis, the operator is requested to seek an appropriate order from the Board establishing drilling and spacing units in conformance with such analysis by filing a Request for Agency Action with the Board.

Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis (copy attached).

Top cement plug for P&A should be spotted below surface casing (~75') and brought back to surface (A minimum of 10 sx).

Additional Approvals:

The operator is required to obtain approval from the Division of Oil, Gas and mining before performing any of the following actions during the drilling of this well:

- Any changes to the approved drilling plan - contact Dustin Doucet
- Significant plug back of the well - contact Dustin Doucet
- Plug and abandonment of the well - contact Dustin Doucet

Notification Requirements:

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- Within 24 hours following the spudding of the well - contact Alexis Huefner
OR
submit an electronic sundry notice (pre-registration required) via the Utah Oil & Gas website
at <http://oilgas.ogm.utah.gov>
- 24 hours prior to testing blowout prevention equipment - contact Dan Jarvis
- 24 hours prior to cementing or testing casing - contact Dan Jarvis
- Within 24 hours of making any emergency changes to the approved drilling program
- contact Dustin Doucet
- 24 hours prior to commencing operations to plug and abandon the well - contact Dan Jarvis

Contact Information:

The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voicemail message if the person is not available to take the call):

- Alexis Huefner 801-538-5302 - office
- Dustin Doucet 801-538-5281 - office
801-733-0983 - after office hours
- Dan Jarvis 801-538-5338 - office
801-231-8956 - after office hours

Reporting Requirements:

All reports, forms and submittals as required by the Utah Oil and Gas Conservation General Rules will be promptly filed with the Division of Oil, Gas and Mining, including but not limited to:

- Entity Action Form (Form 6) - due within 5 days of spudding the well
- Monthly Status Report (Form 9) - due by 5th day of the following calendar

month

- Requests to Change Plans (Form 9) - due prior to implementation
- Written Notice of Emergency Changes (Form 9) - due within 5 days
- Notice of Operations Suspension or Resumption (Form 9) - due prior to implementation
- Report of Water Encountered (Form 7) - due within 30 days after completion
- Well Completion Report (Form 8) - due within 30 days after completion or plugging

Approved By:

A handwritten signature in black ink, appearing to read "John Rogers", written in a cursive style.

For John Rogers
Associate Director, Oil & Gas

STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		FORM 9	
SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		5. LEASE DESIGNATION AND SERIAL NUMBER: private	
		6. IF INDIAN, ALLOTTEE OR TRIBE NAME:	
1. TYPE OF WELL Test Well		7. UNIT or CA AGREEMENT NAME:	
		8. WELL NAME and NUMBER: IDRAS 1	
2. NAME OF OPERATOR: DOSECC EXPLORATION SERVICES, LLC		9. API NUMBER: 43035000020000	
3. ADDRESS OF OPERATOR: 2075 S. Pioneer Rd. , Salt Lake City, UT, 84104	PHONE NUMBER: 801 538-2150 Ext	9. FIELD and POOL or WILDCAT: WILDCAT	
4. LOCATION OF WELL FOOTAGES AT SURFACE: 1400 FSL 0100 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWSW Section: 17 Township: 01.0N Range: 02.0W Meridian: S		COUNTY: SALT LAKE	
		STATE: UTAH	
11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA			
TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> NOTICE OF INTENT Approximate date work will start: <input type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion: <input checked="" type="checkbox"/> SPUD REPORT Date of Spud: 3/16/2016 <input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER: <input style="width: 100px;" type="text"/>
12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.			
<p>We will starting the hole tomorrow, 03/16/2016. Max depth 1000'. This will be done with an Atlas Copco CS14 core drilling rig. For immediate contact please call the onsite supervisor, Chris Jensen, 801-243-8048.</p> <p style="text-align: center;">Thank you</p> <div style="text-align: right;"> <p>Accepted by the Utah Division of Oil, Gas and Mining</p> <p>FOR RECORD ONLY</p> <p>March 15, 2016</p> </div>			
NAME (PLEASE PRINT) Dennis L. Nielson	PHONE NUMBER 801 538-2150	TITLE President	
SIGNATURE N/A		DATE 3/15/2016	

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

AMENDED REPORT FORM 8
(highlight changes)

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. TYPE OF WELL: OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> OTHER <u>TEST WELL</u>		5. LEASE DESIGNATION AND SERIAL NUMBER:
b. TYPE OF WORK: NEW WELL <input checked="" type="checkbox"/> HORIZ. LATS. <input type="checkbox"/> DEEP-EN <input type="checkbox"/> RE-ENTRY <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> OTHER _____		6. IF INDIAN, ALLOTTEE OR TRIBE NAME
2. NAME OF OPERATOR: DOSECC EXPLORATION SERVICES, LLC		7. UNIT or CA AGREEMENT NAME
3. ADDRESS OF OPERATOR: 2075 S. Pioneer Rd CITY Salt Lake City STATE UT ZIP 84104		8. WELL NAME and NUMBER: IDRAS 1
PHONE NUMBER: (801) 538-2150		9. API NUMBER: 4303500002
4. LOCATION OF WELL (FOOTAGES) AT SURFACE: 1400 FSL 100 FWL AT TOP PRODUCING INTERVAL REPORTED BELOW: AT TOTAL DEPTH:		10. FIELD AND POOL, OR WILDCAT WILDCAT
11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: NWSW 17 1N 2W S		12. COUNTY SALT LAKE
		13. STATE UTAH

14. DATE SPUDDED: 3/17/2016	15. DATE T.D. REACHED: 3/25/2016	16. DATE COMPLETED: 3/30/2016	ABANDONED <input checked="" type="checkbox"/> READY TO PRODUCE <input type="checkbox"/>	17. ELEVATIONS (DF, RKB, RT, GL): 4207 GL
18. TOTAL DEPTH: MD 665 TVD 665	19. PLUG BACK T.D.: MD 665 TVD	20. IF MULTIPLE COMPLETIONS, HOW MANY? *	21. DEPTH BRIDGE MD PLUG SET: TVD	
22. TYPE ELECTRIC AND OTHER MECHANICAL LOGS RUN (Submit copy of each) E-LOG Temperature-Magnetic Susceptibility			23. WAS WELL CORED? NO <input type="checkbox"/> YES <input checked="" type="checkbox"/> (Submit analysis) WAS DST RUN? NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> (Submit report) DIRECTIONAL SURVEY? NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> (Submit copy)	

24. CASING AND LINER RECORD (Report all strings set in well)

HOLE SIZE	SIZE/GRADE	WEIGHT (#/ft.)	TOP (MD)	BOTTOM (MD)	STAGE CEMENTER DEPTH	CEMENT TYPE & NO. OF SACKS	SLURRY VOLUME (BBL)	CEMENT TOP **	AMOUNT PULLED
8"	6/58"		0	20					20

25. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)

26. PRODUCING INTERVALS					27. PERFORATION RECORD			
FORMATION NAME	TOP (MD)	BOTTOM (MD)	TOP (TVD)	BOTTOM (TVD)	INTERVAL (Top/Bot - MD)	SIZE	NO. HOLES	PERFORATION STATUS
(A)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(B)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(C)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>
(D)								Open <input type="checkbox"/> Squeezed <input type="checkbox"/>

28. ACID, FRACTURE, TREATMENT, CEMENT SQUEEZE, ETC.

WAS WELL HYDRAULICALLY FRACTURED? YES NO IF YES -- DATE FRACTURED: _____

DEPTH INTERVAL	AMOUNT AND TYPE OF MATERIAL

29. ENCLOSED ATTACHMENTS: <input checked="" type="checkbox"/> ELECTRICAL/MECHANICAL LOGS <input checked="" type="checkbox"/> SUNDRY NOTICE FOR PLUGGING AND CEMENT VERIFICATION	<input type="checkbox"/> GEOLOGIC REPORT <input type="checkbox"/> CORE ANALYSIS	<input type="checkbox"/> DST REPORT <input type="checkbox"/> OTHER: _____	<input type="checkbox"/> DIRECTIONAL SURVEY	30. WELL STATUS: P&A
---	--	--	---	--

31. INITIAL PRODUCTION

INTERVAL A (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL B (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL C (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

INTERVAL D (As shown in item #26)

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

32. DISPOSITION OF GAS (Sold, Used for Fuel, Vented, Etc.)

33. SUMMARY OF POROUS ZONES (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

34. FORMATION (Log) MARKERS:

Formation	Top (MD)	Bottom (MD)	Descriptions, Contents, etc.	Name	Top (Measured Depth)
valley-fill	185		Artesian flow-not measured		

35. ADDITIONAL REMARKS (Include plugging procedure)

Plugged and abandoned on 3/30/2016..see Sundry Notice for details.

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

NAME (PLEASE PRINT) Brian Grzybowski TITLE Project Engineer
 SIGNATURE *Brian Grzybowski* DATE 5/18/2016

This report must be submitted within 30 days of

- completing or plugging a new well
- drilling horizontal laterals from an existing well bore
- recompleting to a different producing formation
- reentering a previously plugged and abandoned well
- significantly deepening an existing well bore below the previous bottom-hole depth
- drilling hydrocarbon exploratory holes, such as core samples and stratigraphic tests

* ITEM 20: Show the number of completions if production is measured separately from two or more formations.

** ITEM 24: Cement Top – Show how reported top(s) of cement were determined (circulated (CIR), calculated (CAL), cement bond log (CBL), temperature survey (TS)).

Send to: Utah Division of Oil, Gas and Mining Phone: 801-538-5340
 1594 West North Temple, Suite 1210
 Box 145801 Fax: 801-359-3940
 Salt Lake City, Utah 84114-5801



DOSECC Exploration Services Drillers Log

CLIENT ICDP DATE 3-16-16
 Job # IDRAS Hole # IDRAS 1
 Location Goggin Drain Site Angle -90°
 Shift DAY/NIGHT Rig # CS-14
 Started 800 (AM/PM) Driller Curt, Will
 Ended 630 (AM/PM) Helpers Mike, AJ

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
8:00	10:00						Load Legacy + bubble trailer Haul out to site + unload Drive back to DOS Shop Load second Legacy load + hook up for trailer Haul to site + unload Go back to DOS Load up mud trailer + prep. water truck Haul to site + unload Chase parts + go back to DOS Load + hook up to parts trailer Haul to site + unload Travel back to shop, load final items, prep for 3/17 Curt - 10.5 Will - 10.5 Mike - AJ -	
10:00	11:00							
11:00	12:00							
12:00	12:30							
12:30	1:30							
1:30	2:00							
2:00	3:00							
3:00	4:00							
4:00	5:00							
5:00	5:30							
5:30	6:30							
6:30	7:00							
TOTALS:							% Recovered	

BITS / REAMERS / SHOES / TRICONES
 Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED
 Bentonite _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash _____

EQUIPMENT USAGE
 Rig Hours: _____
 Next Service Due: _____

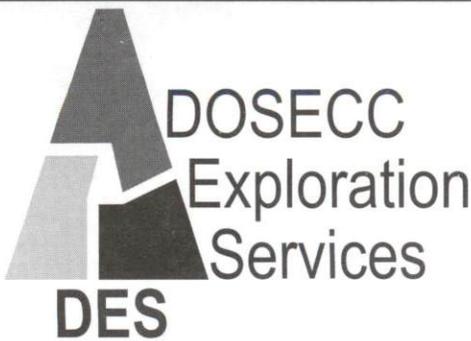
LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water _____
 Polyswell _____
 Other _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED
~~Seat covers, Drapers, spill kits (2) First aid kits (3), locks for LOTO (6)~~
 Regular locks for parts trailer, gloves (oil riggers, strippers, fuzzy ducks), Signage (master, 5 available)
 confined space, non-pettable, pre-shirts
 Legacy had two loads of equipment 8 AM - 12 PM
 (Oil & Fork lift)

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3-17-16
 Job # IDRAS Hole # 1
 Location Kennecott Angle 90°
 Shift DAY/NIGHT Rig # CS14
 Started 6 AM PM Driller Curt
 Ended 6 AM PM Helpers Will, Mike

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
600								Site prep
								Set up rig over hole
								Set up mud system & hoses
								set up light plant
								set up parts trailer
								set up rod rack
								set up coring tools
								install plastic oil containment under all engines
								dig out piss ditch to pump out mud back into tanks
								1 water run - had issue with where to get water from resolved with magna city
400								
400	430							Safety meeting on drill plan and rig functions
430	600	1	Ø	3m	3m	1.58	Gravel/lay ALN	
TOTALS:					3m			% Recovered

BITS / REAMERS / SHOES / TRICONES
 Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED
 Bentonite 6 _____ LCM-Other _____
 Polymer _____ Mag Fiber _____
 PAC 1 _____ Paper _____
 Veg Oil _____ Core Tube _____
 Rod Grease _____ Water 1 _____
 Rod Ease _____ Polyswell _____
 Soda Ash 1 _____ Other _____

EQUIPMENT USAGE
 Rig Hours: _____
 Next Service Due: _____

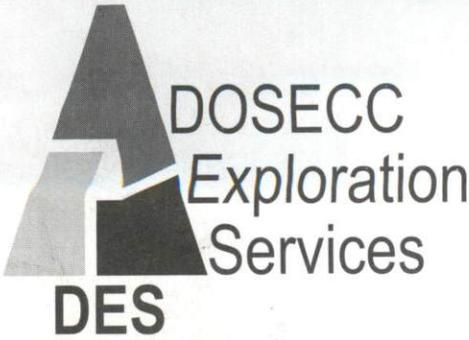
MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED
Constant - 1.55m
CB - 448m

SUPERVISOR: [Signature]

DOSECC Exploration Services Drillers Log



CLIENT Columbia University DATE 3/18/16
 Job # FDAS Hole # 1
 Location Kennecott Angle 90°
 Shift DAY NIGHT Rig # CS14
 Started 6 AM PM Driller Curt
 Ended 6 AM PM Helpers Will, Mike

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
		2	3m	4m	1m	.20	clay/sand	ALN
		3	4m	5.5m	1.5m	.46	clay/sand	ALN run to core
1100								Trip out to set casing
	1200							casing length is 5.8m
1200								Run Trip-cone down to 5.5m
	115							Trip out +
115	150							Run in bullhead casing to 5.8m
150		4	5.02	6.52	1.30	1.79	clay	Fill CO2 Start data logger
								HPC ROD 1 w/1.0m ↑
								Tool stuck in CB let sit 30min
	430							for it to thaw enough to pull out. There was damage on tank of tool pics taken
430	700							Assemble ALN tool
TOTALS:					3.52			% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

EQUIPMENT USAGE

Rig Hours: _____
 Next Service Due: _____

MUDS / MATERIALS USED

Bentonite _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash _____

LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water _____
 Polyswell _____
 Other _____

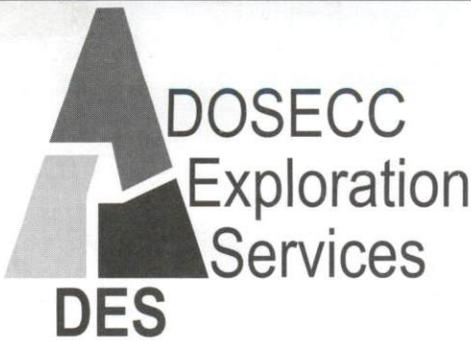
MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.52m

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3/19/16
 Job # JDRAS Hole # 1
 Location Kennecott Angle 90°
 Shift DAY NIGHT Rig # CS14
 Started 7 AM PM Driller Curt
 Ended 7 AM PM Helpers AJ, Mike

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
700	730						Site inspection + Safety meeting	
			6.52				Red 1 w/ 1m ↑	
730	1030						NCA from 6.52m to 30.42 took sample bags every 1.5m	
1030	1230						Stand by for Brian to arrive to run ALN. Clean up site	
1230	1250	5	30.42				ALN - Overshot would not latch on NCA Trip out to CB and retrieve NCA	
1250	130						Sand caked on the inside of reds 1/2" thick, pics taken.	
130	230						Trip back in to bottom	
230	330	5	30.42	31.92	1.50	1.05	clay	
330	700	6	31.92		0		ALN HPC Trouble with tool till 6pm Tool didn't fire off neck 1/2" gauge	
700	800						Budger Vac truck on site to pump mud tank. 8" of cuttings still in tank. Need another truck.	
TOTALS:					25.4			% Recovered

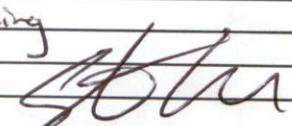
BITS / REAMERS / SHOES / TRICONES	MUDS / MATERIALS USED
Bits: PQ / HQ / NQ _____	Bentonite _____
Reamer: PQ / HQ / NQ _____	Polymer _____
Non-Coring Bit: _____	PAC _____
	Veg Oil _____
EQUIPMENT USAGE	Rod Grease _____
Rig Hours: _____	Rod Ease _____
Next Service Due: _____	Soda Ash _____
	LCM-Other _____
	Mag Fiber _____
	Paper _____
	Core Tube _____
	Water _____
	Polyswell _____
	Other _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.52
 water swivel spindle extension brass housing packing


 SUPERVISOR:

DOSECC Exploration Services Drillers Log



DOSECC
Exploration
Services

CLIENT	<u>Columbia University</u>	DATE	<u>3/20/16</u>
Job #	<u>IDRAS</u>	Hole #	<u>1</u>
Location	<u>Kennecott</u>	Angle	<u>90°</u>
Shift	<u>DAY/NIGHT</u>	Rig #	<u>CS14</u>
Started	<u>7</u> <small>AM / PM</small>	Driller	<u>Curt</u>
Ended	<u>7</u> <small>AM / PM</small>	Helpers	<u>A.J, Mike</u>

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
<u>700</u>	<u>730</u>							<u>Site inspection + Safety Meeting</u>
<u>730</u>	<u>800</u>							<u>Vac truck on site to finish sucking out cuttings from mud tank</u>
<u>800</u>								<u>Mix mud - Will come in to do a water run in water truck.</u>
	<u>1130</u>							<u>Lex + Brian work on HPC together.</u>
<u>1130</u>	<u>1250</u>	<u>6</u>	<u>31.92</u>	<u>31.97</u>	<u>.05</u>	<u>.05</u>	<u>Gravel</u>	<u>HPC</u>
<u>1250</u>	<u>200</u>		<u>31.97</u>	<u>39.57</u>				<u>Refill CO² in HPC</u>
<u>200</u>	<u>445</u>							<u>NCA - take cutting samples every 1.5m</u>
<u>445</u>	<u>530</u>	<u>7</u>	<u>39.57</u>					<u>HPC - CO² on HPC would not fill. Circulate and rotate on hole. - NCA to 51.77</u>
<u>530</u>	<u>630</u>		<u>39.57</u>	<u>47.77</u>	<u>51.77</u>			
<u>630</u>		<u>8</u>	<u>51.77</u>	<u>53.27</u>	<u>1.50</u>	<u>Ø</u>		<u>ALN - Shoe did not freeze. Problems with the mechanics of it. Work on fixing the problem</u>
	<u>800</u>							
TOTALS:					<u>21.35</u>			% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite 6 _____ LCM-Other _____
 Polymer _____ Mag Fiber _____
 PAC _____ Paper _____
 Veg Oil _____ Core Tube _____
 Rod Grease _____ Water 1 _____
 Rod Ease _____ Polyswell _____
 Soda Ash _____ Other _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.52 Lex on site.

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3/21/16
 Job # IDRAS Hole # 1
 Location Kennebec Angle 90°
 Shift DAY / NIGHT Rig # CS14
 Started 7 AM / PM Driller Curt
 Ended 7 AM / PM Helpers AJ, Will

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
700	730							
730		9	53.27	56.27	3.0	25	Gravel	Site inspection + Safety meeting HPL-Standard - Rod got stuck during test. Pull tool out get rods to rotate and pump.
	930							
930								
	1010							
1010	1030	10	56.27					Return back down to bottom and advance the 3m. to 56.27 with NCA HPL-Standard - Sand coming in on rods not able to get back to bottom
1030			56.27					NCA - Cant pump past tool, sand in rods on top of latch head trip out to clean out. Vac truck on site to pump out tanks (1200) off site (1230)
	1230							
230								Water run, mix mud trip in to bottom - Adam with UGS on site to collect core. Had to ream last 25m. Artesian flow returned
445	445		56.27	70.07				NCA - Advance to 70.07m 3000 gal.
545	715	11	70.07	71.57	1.50	1.50	Clay	ALN -
730	840							Vac truck on site.
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite 13 LCM-Other _____
 Polymer 1 Mag Fiber _____
 PAC 1 Paper _____
 Veg Oil _____ Core Tube _____
 Rod Grease _____ Water 1
 Rod Ease _____ Polyswell _____
 Soda Ash _____ Other _____

EQUIPMENT USAGE

Rig Hours: _____
 Next Service Due: _____

MATERIALS LEFT IN HOLE

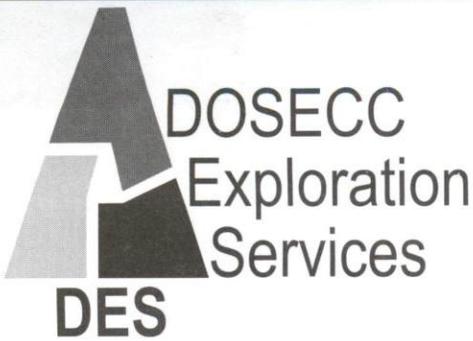
SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.52 Lex on site

SUPERVISOR:

DOSECC Exploration Services Drillers Log



CLIENT	<u>Columbia University</u>	DATE	<u>3/22/16</u>
Job #	<u>FDRAS</u>	Hole #	<u>1</u>
Location	<u>Kennecott</u>	Angle	<u>90°</u>
Shift	<u>DAY / NIGHT</u>	Rig #	<u>CS14</u>
Started	<u>6</u> <small>AM / PM</small>	Driller	<u>Curt</u>
Ended	<u>6</u> <small>AM / PM</small>	Helpers	<u>AJ, Will</u>

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
<u>600</u>	<u>630</u>							<u>Site inspection + safety meeting</u> <u>Refill 6 CO₂ tanks</u>
<u>630</u>	<u>300</u>		<u>71.57</u>	<u>124.97</u>	<u>1.50</u>	<u>1.50</u>	<u>Clay sand</u> <u>Did not freeze</u>	<u>NCH - take bag samples every 1.5m</u>
<u>300</u>	<u>545</u>	<u>12</u>	<u>124.97</u>	<u>126.47</u>				<u>ALN</u>
<u>545</u>	<u>615</u>							<u>Pump down heavy mud to stabilize hole overnight.</u>
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite 9 _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash 1 _____

LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water 2 _____
 Polyswell _____
 Other _____

EQUIPMENT USAGE

Rig Hours: _____
 Next Service Due: _____

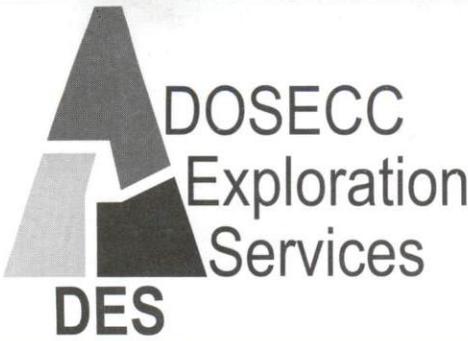
MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.58m

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3/23/16
 Job # IDRAS Hole # 1
 Location Kennecott Angle 90°
 Shift DAY / NIGHT Rig # CS14
 Started 6 AM / PM Driller Curt
 Ended 6 AM / PM Helpers AJ, Will

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
600	630						Site inspection + Safety meeting	
630	930	13	126.47	127.97	1.5	1.5	clay ALN - Froze outer portion of shoe	
930	1200		127.97	152.42			NCA sample bags taken every 1.5m	
1200	200	14	152.42	153.92	1.5	0.76	clay ALN	
200	415		153.92	179.87			NCA sample bags taken every 1.5m	
415	745	15	179.87	181.37	1.5	1.5	clay ALN - Had to pull out 70ft due to mud rings inside rods. Veg truck too busy to come out was told thru morning.	
TOTALS:							% Recovered	

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash _____

LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water 1 _____
 Polyswell _____
 Other _____

EQUIPMENT USAGE

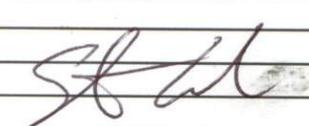
Rig Hours: _____
 Next Service Due: _____

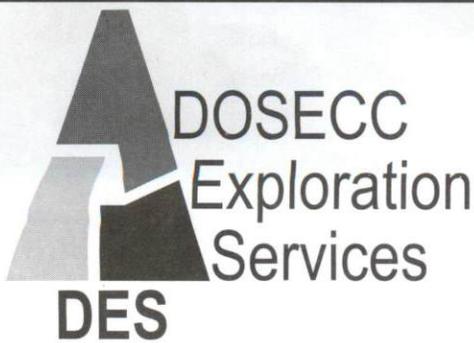
MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.52
constant - 1.55

SUPERVISOR: 



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3/24/10
 Job # IRAS Hole # 1
 Location Kennecott Angle 90°
 Shift DAY/NIGHT Rig # CS14
 Started 6 AM PM Driller Curt
 Ended 6 AM PM Helpers AJ, Will

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
6:00	6:30							Site inspection + Safety Meeting
9:00			179.87 181.37					Rod 59 w/ 1.5 ↑ Work on fixing valve on ALN tool Valve is in a bind. Go to log yard to pick up 2 bundles of PQ Rods, stop by yard and grab 6 pq rods.
	1:00							
9:00	1:00	16	181.37	182.87	1.50	1.50	Clay	ALN Rod 59 #1 Work on ALN tool
1:00	5:00							Suck out mud tanks, Mix mud 2 vac trucks
5:00	7:00	17	182.87	184.37	1.50	1.50	Clay + sand	ALN Rod 60 1.5 ↑
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite 9 _____ LCM-Other _____
 Polymer _____ Mag Fiber _____
 PAC _____ Paper _____
 Veg Oil _____ Core Tube _____
 Rod Grease _____ Water _____
 Rod Ease _____ Polyswell _____
 Soda Ash _____ Other _____

EQUIPMENT USAGE

Rig Hours: _____
 Next Service Due: _____

MATERIALS LEFT IN HOLE

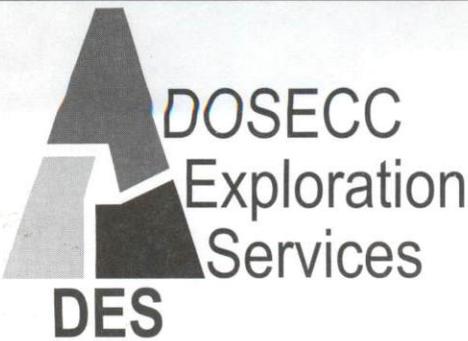
2 vac trucks

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

CB-4.52
 constant - 1.55
 Rods - 3.05
 Water swivel, 1-brass housing, 1-packing set

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3/25/16
 Job # IDRAS Hole # 1
 Location Kennecott Angle 90°
 Shift DAY/NIGHT Rig # CS14
 Started 6 AM / PM Driller Curt
 Ended 6 AM / PM Helpers Will, Jordan

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
6:00	6:30						Site inspection + Safety Meeting	
6:30	8:15		184.37				Water Run, Ream	
8:15	9:00						Mix mud	
9:00	10:00						Pump out Kill mud	
10:00	1:00		184.37	198.095			Rod 60 1.5' NCA	
				201.145			11:00am Brian on site to set up tool	
							Rod 61, 62, 63, 64, 65	
1:00	2:31		198.095				⊗ Tried pulling NCA sand in rods	
			201.145				Tripped out 14 rods & washed each	
							one out, with the pressure washer.	
2:31	3:45						Trip back in, Ream by the last 30'	
							to get back to bottom.	
3:45	5:00	18	201.145	202.67	1.50	0.0	Sand	
							ALW	
							Rod 66 1.5'	
5:00	7:00						Sand caving in. Backream, Rods stuck	
TOTALS:					% Recovered			

BITS / REAMERS / SHOES / TRICONES
 Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED
 Bentonite 20 _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash _____

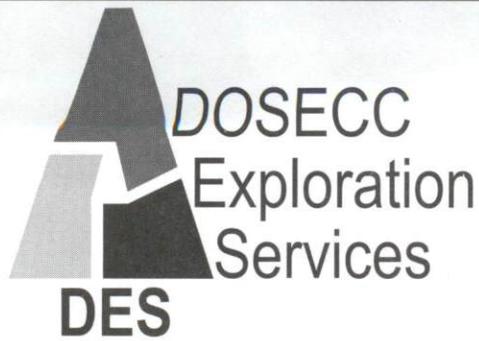
LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water 2 _____
 Polyswell _____
 Other Platinum Pack 2 _____

MATERIALS LEFT IN HOLE 1 Vac Truck

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED
C.B. 4.52
Constant 1.55
Rods - 3.05
Vac truck on site at 2:00pm

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT Columbia University DATE 3-26-16
 Job # _____ Hole # _____
 Location Kennecott Angle -90°
 Shift DAY/NIGHT Rig # 15-40
 Started 6 AM / PM Driller Curt, Chris
 Ended 6 AM / PM Helpers Will

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
6:00								Work stuck rods - round up a string of HQ rods + tools needed to cut PQ.
	12:00							
12:00								Change over tools to run cutter on HQ rod string
	1:30							
1:30								Cut PQ casing and make a crossover sub for cutter
	3:00							
3:00								Trip in with cutter + cut @ 580'
	6:00							Trip out cutter.
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES
 Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite	<u>2</u>	LCM-Other	_____
Polymer	_____	Mag Fiber	_____
PAC	_____	Paper	_____
Veg Oil	_____	Core Tube	_____
Rod Grease	_____	Water	_____
Rod Ease	_____	Polyswell	_____
Soda Ash	_____	Other	_____

EQUIPMENT USAGE
 Rig Hours: _____
 Next Service Due: _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED
1 - Cutting log

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT IDRAS DATE 3/27/2016
 Job # _____ Hole # 1
 Location Kennercot Angle 90°
 Shift (DAY/NIGHT) Rig # CS14
 Started 7 AM / PM Driller Curt M., Chris J.
 Ended 7 AM / PM Helpers AT

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
7:00	7:30							Preshift check & Safety
7:30								Finish running rods out of hole, hook up bowen spear try to work rods free. Not working. Weld PA rod back on, pump on hole try to work rods, not working
	11:30							
11:30								Run back in with HQ Rods & cutter, make a cut @ 155 meters, Water dropped in casing. Pull out of hole with cutter
	1:00							
1:00	2:00							hook up to PA with Bowen spear & try to work rods free. Not working.
2:00								Run back in hole with cutter & make a cut @ 125 m. Water in casing dropped. Pull cutter out
	4:00							
4:00								hook up to PA with Bowen spear & work Rods Free. Rods are extremely tight but Free. Continue to work Rods & Clean hole in prep for logging
	7:00							
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite _____ LCM-Other _____
 Polymer _____ Mag Fiber _____
 PAC _____ Paper _____
 Veg Oil _____ Core Tube _____
 Rod Grease _____ Water _____
 Rod Ease _____ Polyswell _____
 Soda Ash _____ Other _____

EQUIPMENT USAGE

Rig Hours: _____
 Next Service Due: _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

2 cutter logs
 20 PA Rods left down the hole Landing Ring & stabilizer
 1 Lake tool core barrel left down the hole 1 Lake tool Locking coupling
 1 ADT/D Lake tool core bit left down the hole 1 Lake tool Adapter coupling
 1 ADT Lake tool Reamer 1 SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT JORAS DATE 3/28/16
 Job # _____ Hole # 1
 Location Kennecott Angle 90°
 Shift DAY / NIGHT Rig # CS 14
 Started 7 AM / PM Driller Curt, Will, AJ,
 Ended 2 AM / PM Helpers Rich

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
7:00			work	Rods			Clean	Hole until logger Shaved
	10:00		up					
10:00	2:00 AM		logger	unable to				get tool down the hole. Trip in
			& log	hole in				Section 9
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES
 Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED
 Bentonite 6 _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash _____

LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water _____
 Polyswell _____
 Other _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

SUPERVISOR:



DOSECC Exploration Services Drillers Log

CLIENT TORAS DATE 2/29/16
 Job # _____ Hole # 1
 Location Kennecott Angle 90°
 Shift DAY / NIGHT Rig # CS14
 Started 7 AM / PM Driller Will AJ
 Ended 12:00 AM / PM Helpers Rich

TIME		CORE RUN #	DEPTH		FTG CORED	FTG RCVRD	ROCK TYPE	ACTIVITY / PURPOSE / COMMENTS / OBSERVATIONS
FROM	TO		FROM	TO				
7:00	2:00		Run rods in the hole to perform suspension HPC Freeze test. Freeze test worked					
2:00	10:00 pm		Pull Rods out of hole & abandon in two lifts. Hole tight, work rods, continue abandoning					
10:00 pm	12:00 AM		Cement top 60' of hole					
TOTALS:								% Recovered

BITS / REAMERS / SHOES / TRICONES

Bits: PQ / HQ / NQ _____
 Reamer: PQ / HQ / NQ _____
 Non-Coring Bit: _____

MUDS / MATERIALS USED

Bentonite _____
 Polymer _____
 PAC _____
 Veg Oil _____
 Rod Grease _____
 Rod Ease _____
 Soda Ash _____

20 Bags of abandonite
12 Bags of cement

LCM-Other _____
 Mag Fiber _____
 Paper _____
 Core Tube _____
 Water _____
 Polyswell _____
 Other _____

EQUIPMENT USAGE

Rig Hours: _____
 Next Service Due: _____

MATERIALS LEFT IN HOLE

SAFETY CONCERNS / NEAR MISS

REPAIRS, PARTS, AND SUPPLIES NEEDED

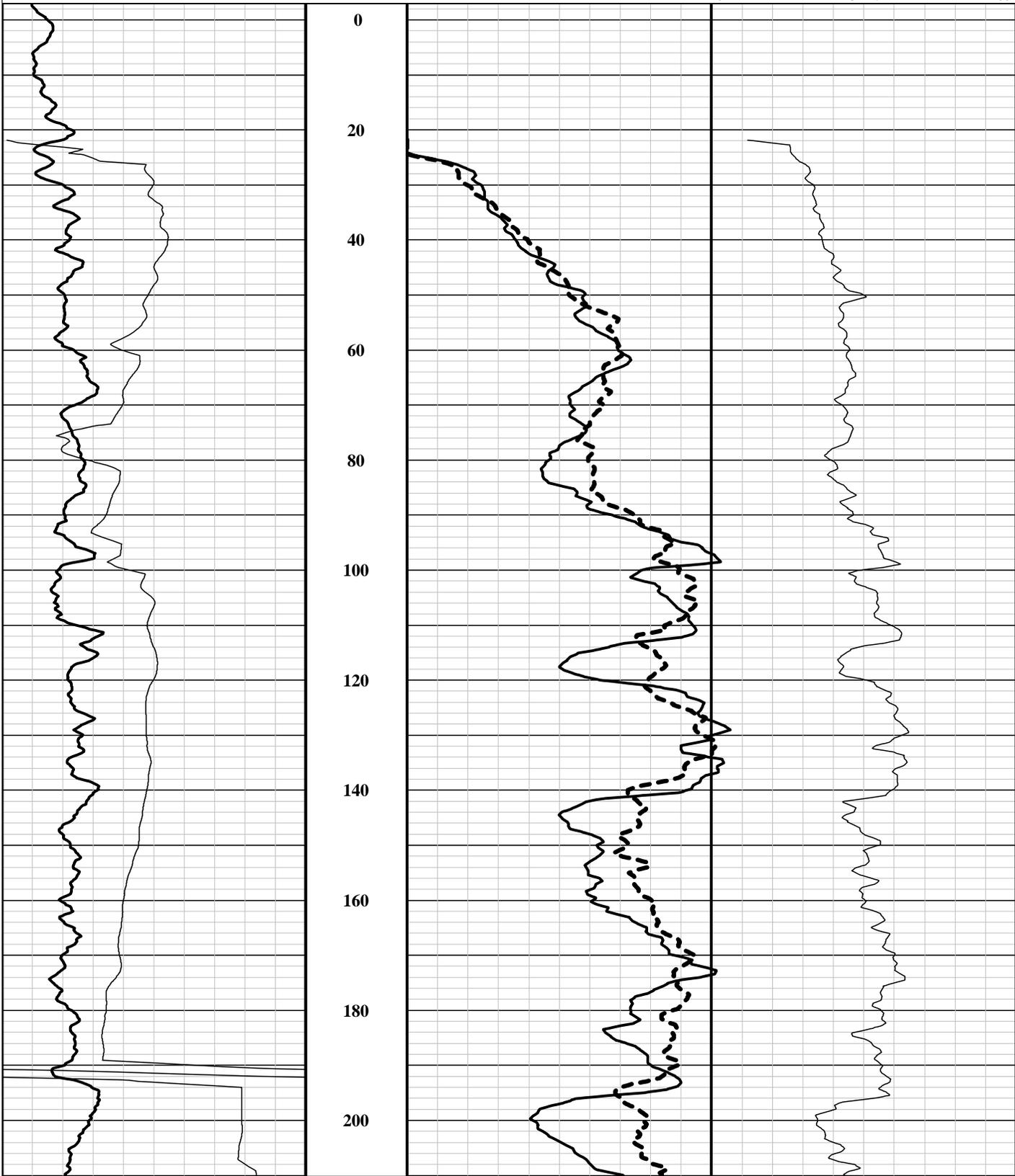
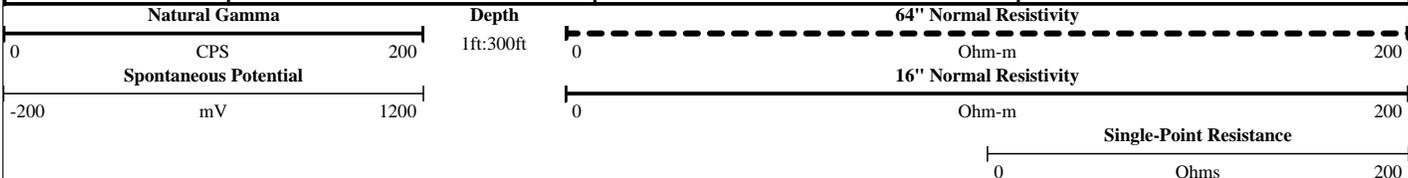
1 load of water

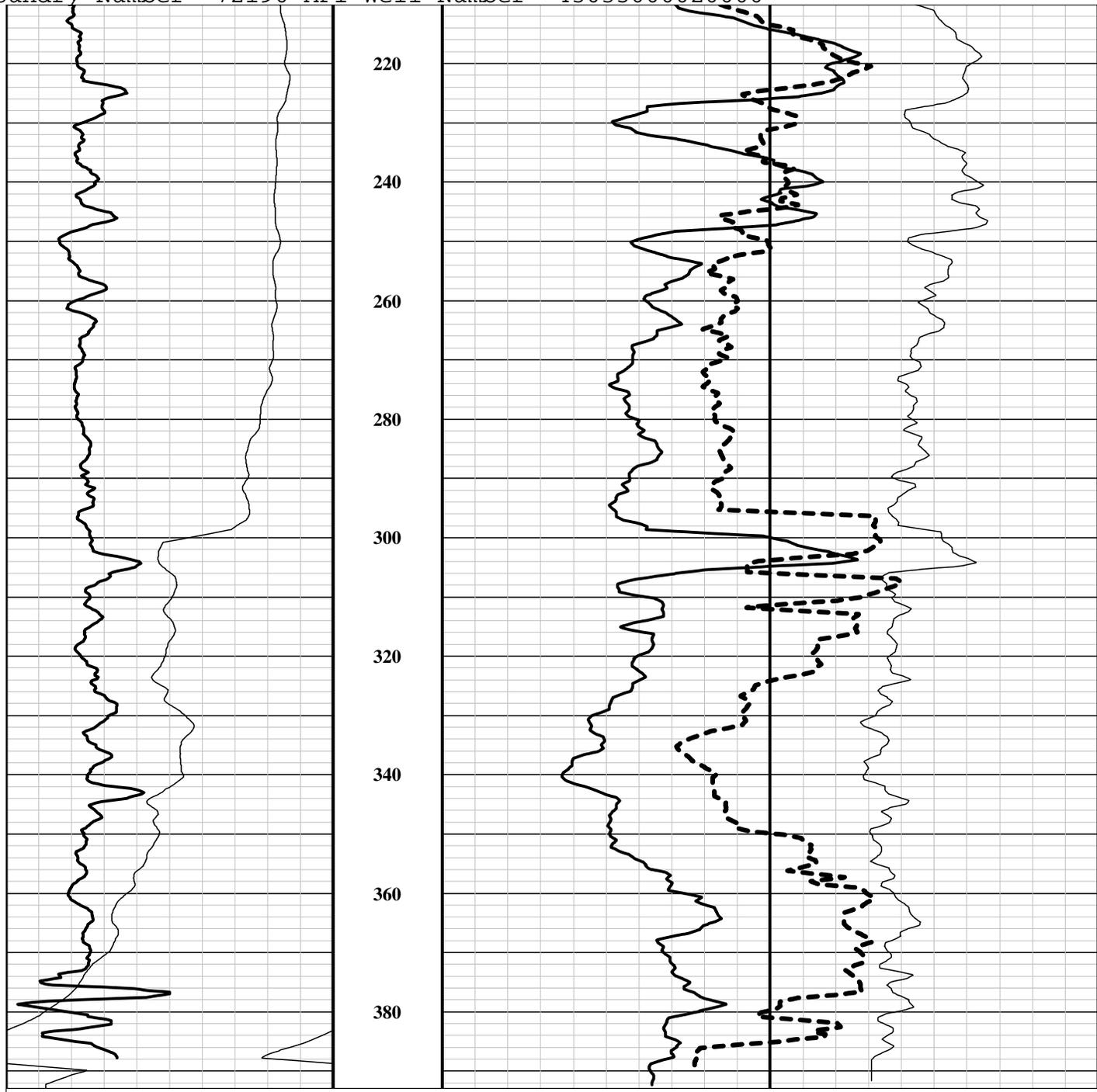
SUPERVISOR: _____



Electric Log	
COMPANY: Dosec	PROJECT: Idras
DATE LOGGED: 28 March 2016	WELL: Idras-1

Colog, Inc.
 810 Quail Street, Suite E, Lakewood, CO 80215
 Phone: (303) 279-0171, Fax: (303) 278-0135
 www.colog.com







Geophysical Summary Plot

COMPANY: Dosec

PROJECT: Idras

DATE LOGGED: 28 March 2016

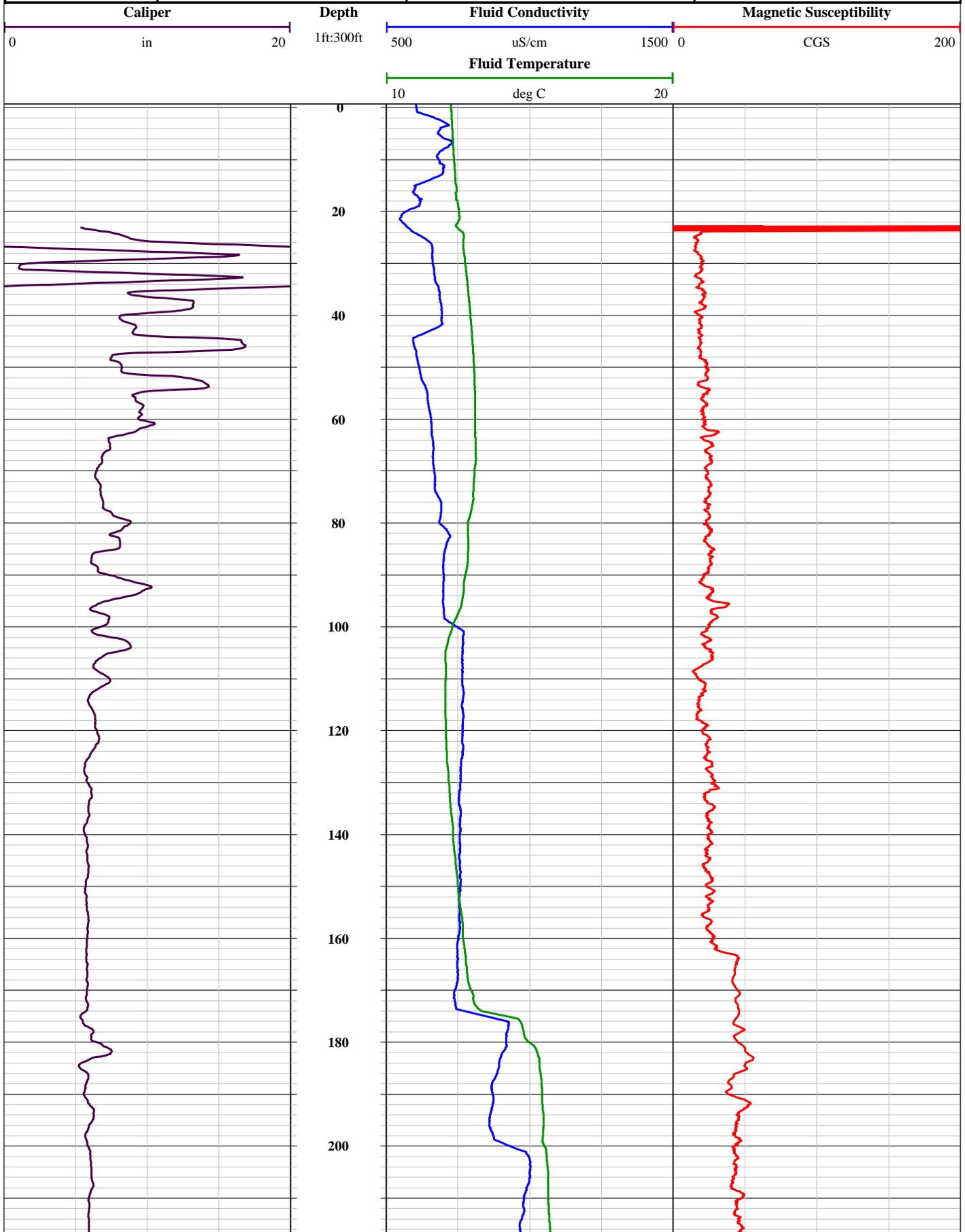
WELL: Idras-1

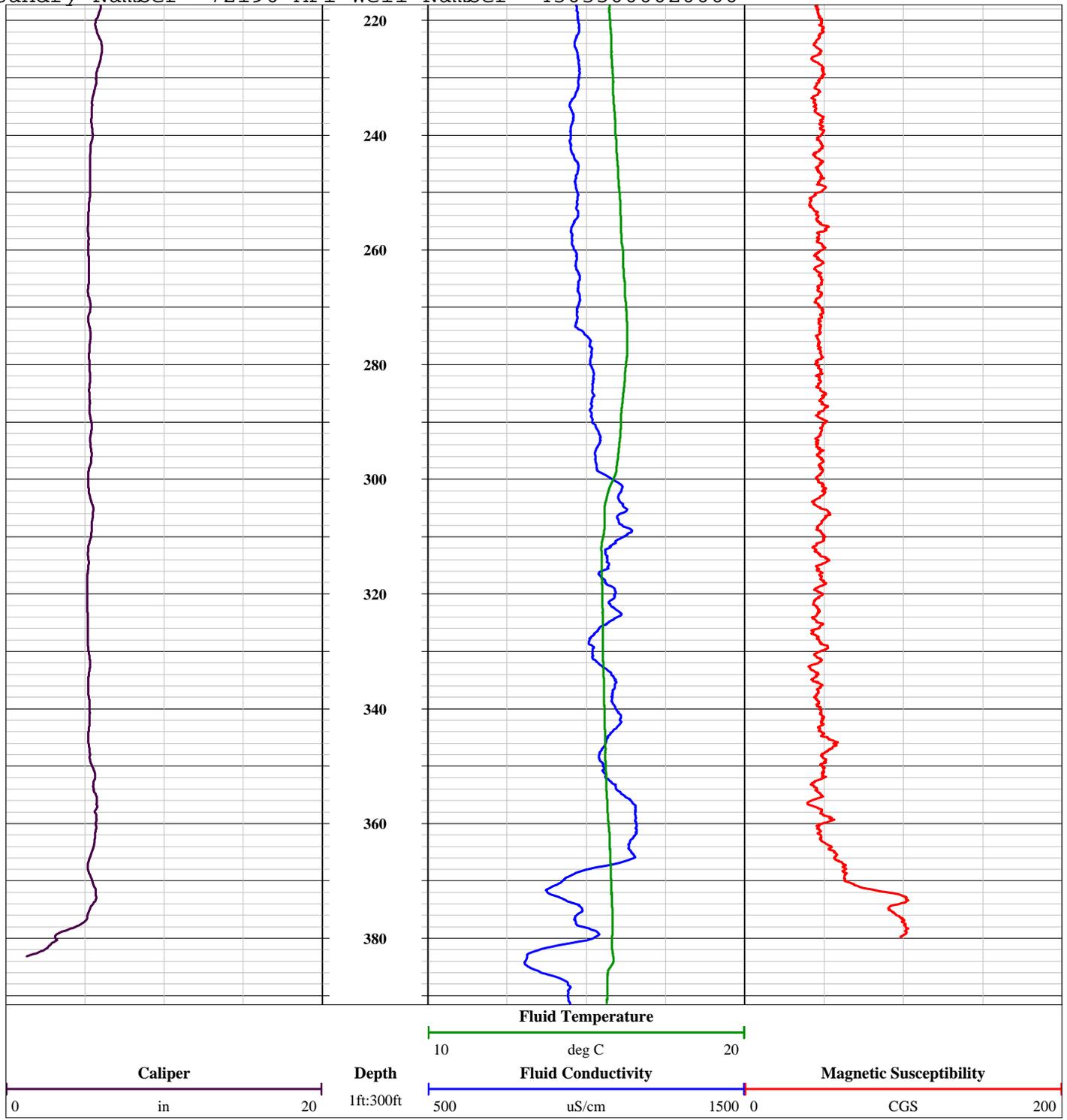
Colog, Inc.

810 Quail Street, Suite E, Lakewood, CO 80215

Phone: (303) 279-0171, Fax: (303) 278-0135

www.colog.com





STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		FORM 9
SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		5. LEASE DESIGNATION AND SERIAL NUMBER: private
		6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
1. TYPE OF WELL Test Well		7. UNIT or CA AGREEMENT NAME:
2. NAME OF OPERATOR: DOSECC EXPLORATION SERVICES, LLC		8. WELL NAME and NUMBER: IDRAS 1
3. ADDRESS OF OPERATOR: 2075 S. Pioneer Rd. , Salt Lake City, UT, 84104		9. API NUMBER: 43035000020000
PHONE NUMBER: 801 538-2150 Ext		9. FIELD and POOL or WILDCAT: WILDCAT
4. LOCATION OF WELL FOOTAGES AT SURFACE: 1400 FSL 0100 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWSW Section: 17 Township: 01.0N Range: 02.0W Meridian: S		COUNTY: SALT LAKE
		STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> NOTICE OF INTENT Approximate date work will start:	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input checked="" type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion: 3/30/2016	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> SPUD REPORT Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input checked="" type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER: <input style="width: 100px;" type="text"/>

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

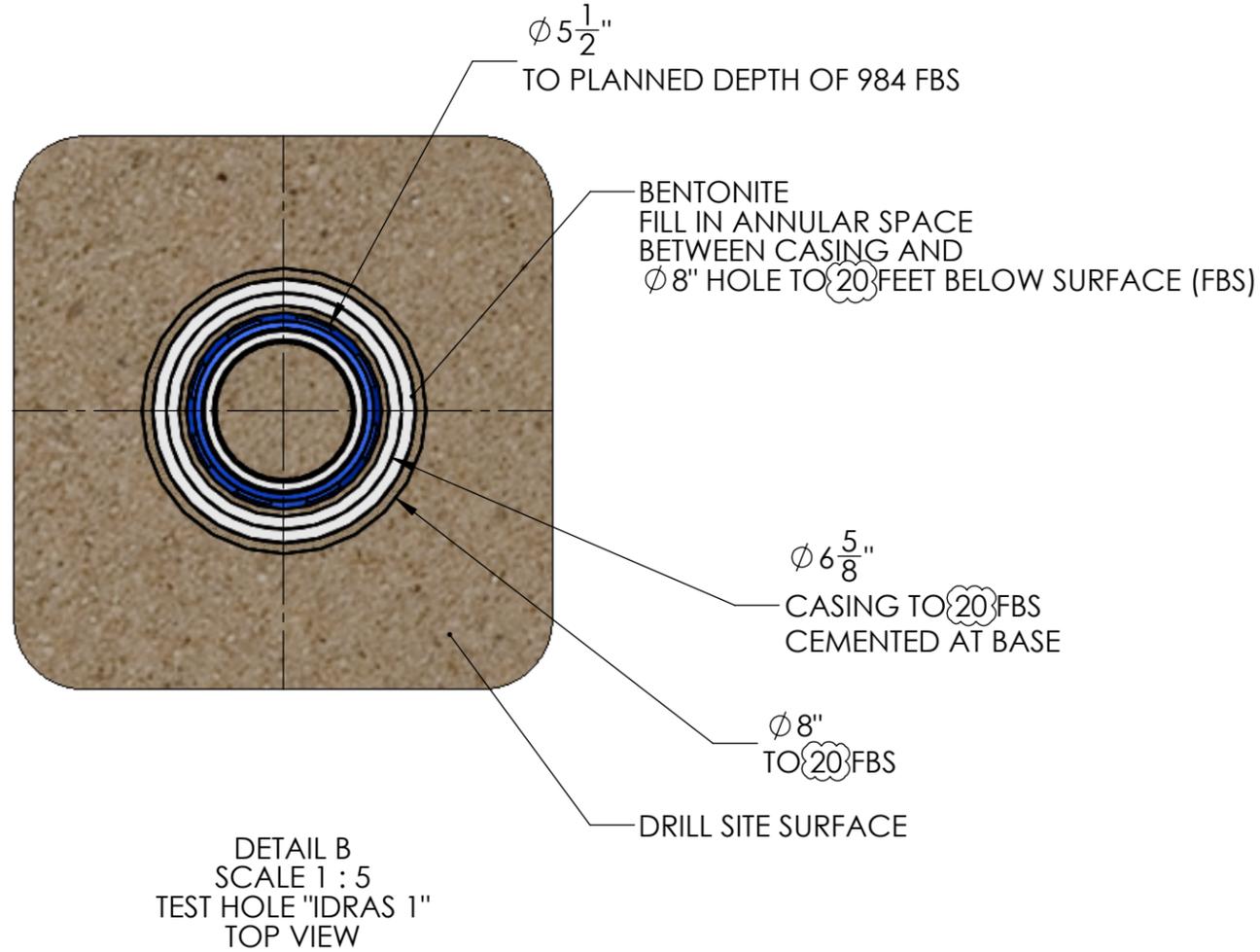
Drilled to 665 feet. Stuck the coring assembly in the hole. Unable to recover and cut back the drill pipe to a depth of 410 feet. On abandonment the hole was filled with cavings to 290 feet. Plugged the next 227 feet with two stage grout plug (13 bags of grout (bentonite/abondonite) and 17 bags of bentonite), then 1 foot of separation filler cap of paper bags, then a 2 foot bentonite grout cap. Pulled the 20 feet of surface casing, followed by a 60 foot neat cement plug to surface (11 bags of neat cement). Completed abandonment at midnight on 3/30/16, witnessed by Ammon MacDonald, DOGM. See attachment

**Accepted by the
Utah Division of
Oil, Gas and Mining
FOR RECORD ONLY
June 13, 2016**

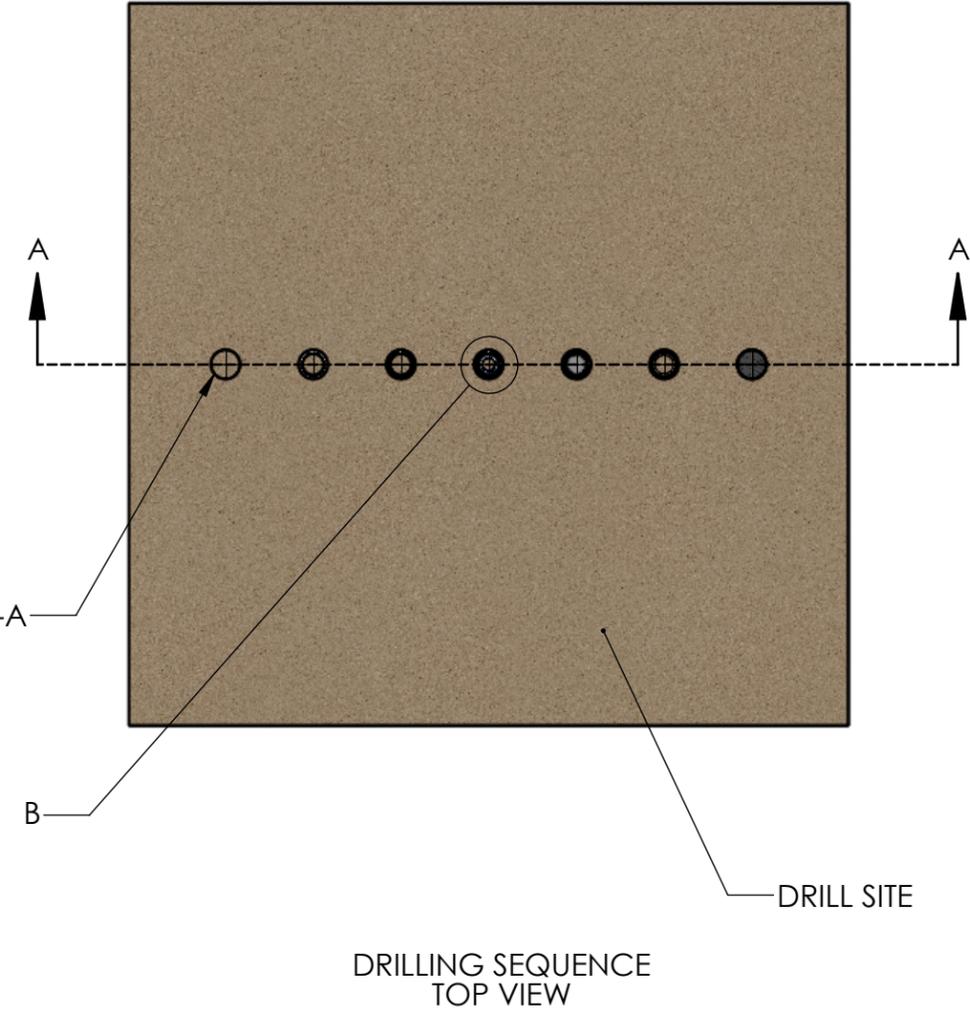
NAME (PLEASE PRINT) Dennis L. Nielson	PHONE NUMBER 801 538-2150	TITLE President
SIGNATURE N/A	DATE 5/17/2016	

EXHIBIT C - PAGE 1 OF 2

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	102344	CASING, API, 6 5/8" OD X 5.921" ID, 24 LBS/FT	1
2	102345	BENTONITE, GRANULES, PERMIT, HOLE	1
3	102346	BENTONITE, PLUG, PERMIT, HOLE	1
4	102347	NEAT CEMENT, PLUG, PERMIT, HOLE	1
5	102495	ASM, TOOLING, DOWNHOLE, ABANDONDED	1
6	102497	SAND, COLLAPSED MATERIAL, HOLE, IDRAS1	1
7	102498	GROUT, THERMAL, BH20, PLUG, HOLE, IDRAS 1	1



SEE NOTE 4 AND SECTION A-A

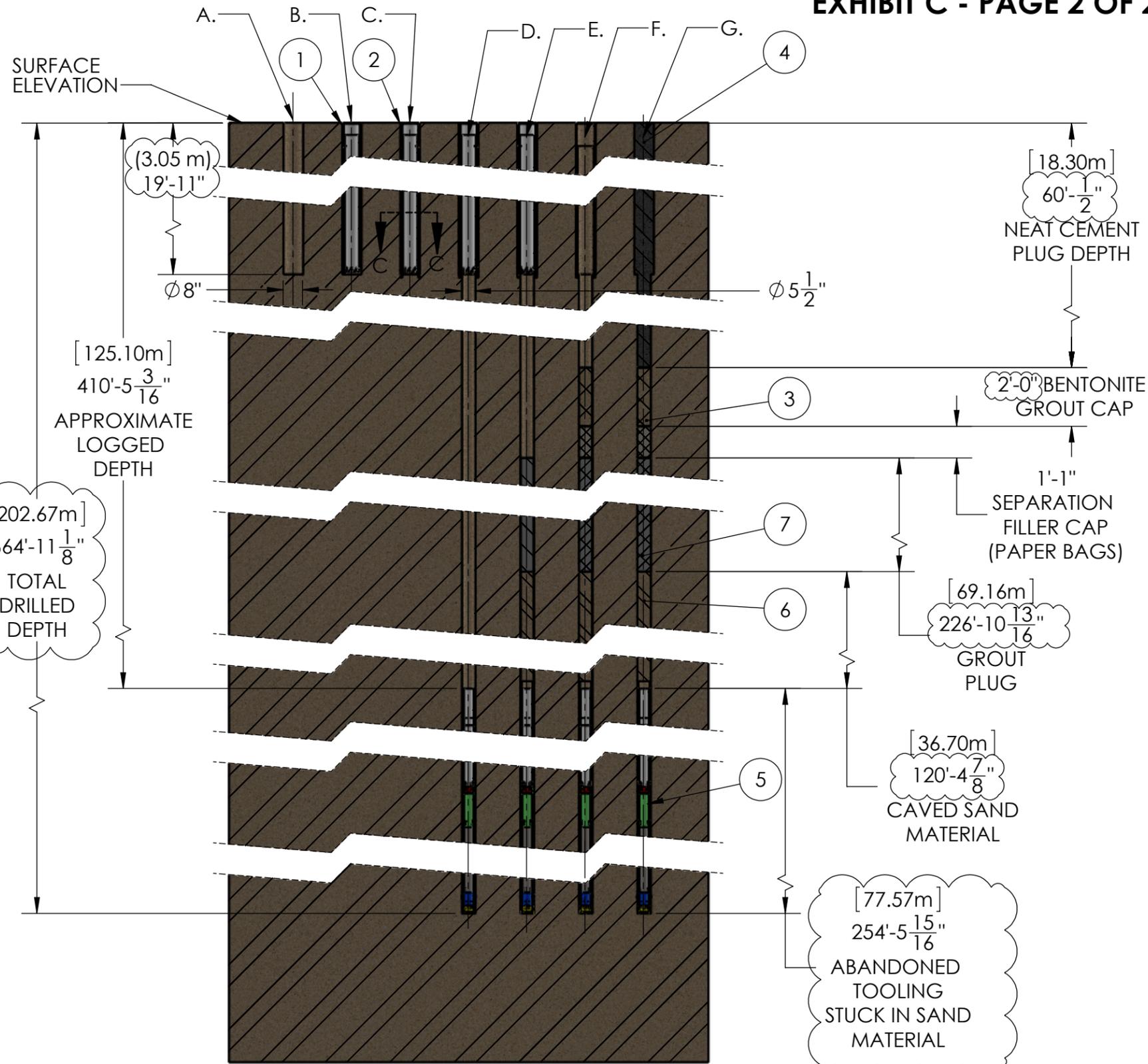


NOTES:

1. ASSEMBLY BILL OF MATERIAL FOR PLANNING PURPOSES FOR DRILLING OPERATIONS.
2. CROSS SECTION A-A SHOWS SEQUENCE OF DRILLING FOR HOLE IDRAS 1 FOR PERMITTING APPLICATION. SEE PERMIT APPLICATION FOR ADDITIONAL DETAILS.
3. TEST HOLE IS TO BE IDENTIFIED AS "IDRAS 1" WHEN STAKING ON SITE.
4. ONLY ONE HOLE SHALL BE DRILLED, THIS DIAGRAM SHOWS THE SEQUENCE OF STEPS FOR THE DRILLING OPERATIONS.

ECO: -	DESIGNED BY bgrzybowski	PROJECT IDRAS	DESCRIPTION ASM, HOLE, TEST, FIELD, IDRAS1
CHANGE NOTES: -		TOLERANCE UNLESS OTHERWISE SPECIFIED TOLERANCES ARE .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ± 1° SURFACE FINISH: 63 µin RA PER ASME Y14.5M-1994	MATERIAL SEE BOM
		APPROVED FOR PUBLIC RELEASE AS PART OF DRILLING PLAN PERMITTING PROCESS.	WEIGHT N/A
			DWG NO 102348
			REV X2
APPROVED BY bshaw 04/08/2016	DRAWN BY bgrzybowski 01/25/2016	DIMENSIONS ARE IN INCHES	DOSECC Exploration Services 2075 S Pioneer Rd, STE. B Salt Lake City, UT 84104 Tel: +1 (801) 583-2150 www.dosecc-ex.com
			SIZE B
			SCALE 1:50
			STATUS PROTOTYPE
			SHEET 1 OF 2

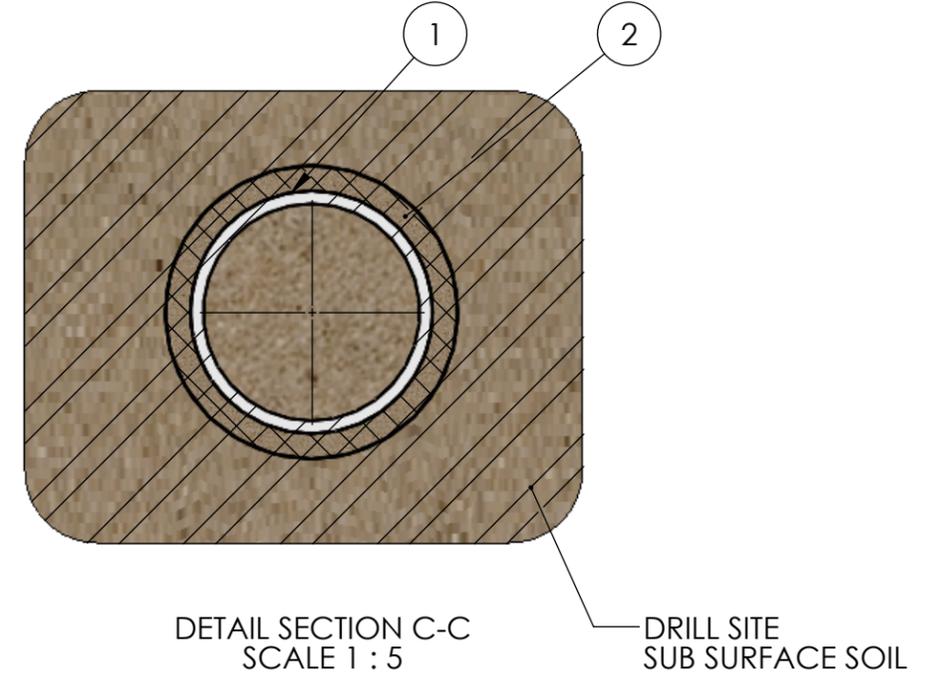
EXHIBIT C - PAGE 2 OF 2



PROJECT: IDRAS
PERMITTED HOLE NAME: IDRAS1
HOLE PLAN: IDRAS
OPERATOR: DOSECC EXPLORATION SERVICES, LLC
HOLE TYPE: SCIENTIFIC
DESIGN DATE: 07/22/2015

INSTALLATION DATE: 03/2016
LOCATION COORDINATES: NAD 83, N40° 48.962'; W112° 06.022', EL 4203 OR UTM, 040.7198 mE, 4518920 mN, Zone 12

- A.** OPEN HOLE TO 8.0" TO 20'-0" BELOW SURFACE.
- B.** SET 6 - 5/8" CASING TO 20'-0"
- C.** INSTALL BENTONITE HOLE PLUG CHIPS IN ANNULAR SPACE.
- D.** DRILL 5 1/2" HOLE TO 984' (300 m), COLLECTING CORE SAMPLE.
- E.** PLUG AND ABANDON HOLE WITH GROUT AND BENTONITE.
- F.** REMOVE 6 - 5/8" CASING.
- G.** CEMENT FINAL 60'-0"



SECTION A-A
 DRILLING SEQUENCE CROSS SECTION OF "IDRAS 1"
 AT SEVEN DRILLING SEQUENCE STEPS
 SEE NOTE 4

APPROVED FOR PUBLIC RELEASE AS PART OF DRILLING PLAN PERMITTING PROCESS.		DOSECC Exploration Services		2075 S Pioneer Rd, Suite B Salt Lake City, UT 84104 Tel: +1 (801) 583-2150 www.dosecc-ex.com	
SIZE B	DWG NO 102348	SCALE 1:50	STATUS PROTOTYPE	REV X2	SHEET 2 OF 2
MATERIAL SEE BOM	WEIGHT N/A				