Linc Energy Operations, Inc.
3000 "C" Street, Suite #103
Anchorage, Alaska 99503

August 22, 2011

Alaska Oil and Gas Conservation Commission
333 West 7th Ave., Suite 100
Anchorage, Alaska 99501

RE: Application for Permit to Drill
Well: KEEX 02 (Underground Coal Gasification Stratigraphic Test Core)
TRS: SESE, T12N, R13W, Section 25, Seward Meridian

Dear Chairman Seamount,

Linc Energy Operations Inc. hereby applies for a Permit to Drill an onshore Underground Coal Gasification stratigraphic test well on the west side of Cook Inlet approximately 8 miles northwest of the town of Old Tyonek and 7 miles north of Trading Bay. The well will be cored on Alaska Mental Health Trust Land under the authority of a current Underground Coal Gasification (UCG) Exploration License (Kenai License MHT#9200462) held by Linc Energy Operations Inc. and governed by the Coal Regulatory Group at the Department of Natural Resources.

Linc plans to commence operations on approximately November 28th, 2011, employing the Tester Simco 4000 Drilling rig to drive conductor casing to approximately 300', and the Boart Longyear coring rig to core approximately 3500'. A diverter system will be installed on the Boart Longyear coring rig per Alaska Oil and Gas Conservation Commission ("AOGCC") well safety requirements.

Please find attached information as required by 20 AAC 25.005 (a) and (c) for your review. Pertinent information attached to this application includes the following:

1) Form 10-401 Application for Permit to Drill
2) A plat showing the surface location of the well
3) Geologic Discussion, Anticipated Formation Tops

4) Shallow Gas Hazard Evaluation
5) General Well Prognosis, Waste Management, Logging Program
6) Proposed Operations Summary
7) Drilling Time versus Depth Plot
8) Proposed Wellbore Diagram
9) Description of the Well Control Equipment to be Used
10) Description of Rig Layout & Pit System
11) Drilling Fluid Program

The following are Linc Energy designated contacts for reporting responsibilities to the Commission:

1) Completion Report (20 AAC 25.070)	Corri Feige, Alaska Project Manager (907) 868-8660
2) Geologic Data and Logs (20 AAC 25.071)	Corri Feige, Alaska Project Manager (907) 868-8660

The AOGCC is requested to treat as confidential all information in the Application for Permit to Drill (except the Public Information Copy) as information in these documents is drawn from research and data proprietary to Linc.

If you have any questions or require further information, please contact either Corri Feige, General Manager – Alaska at (907.868.8660) or Nick Scales, Drilling Operations Manager at (907.868.8660).

Sincerely,

Corri A. Feige
Alaska General Manager

STATE OF ALASKA
ALASKA OIL AND GAS CONSERVATION COMMISSION

PERMIT TO DRILL

20 AAC 25.005

1a. Type of Work: Drill ☑ Redrill ☐ Re-entry ☐	1b. Current Well Class: Stratigraphic Test ☑ Exploratory ☐ Service ☐ Multiple Zone ☐ Development Oil ☐ Development Gas ☐ Single Zone ☐		1c. Specify if well is proposed for: Coalbed Methane ☐ Gas Hydrates ☐ Shale Gas ☐
2. Operator Name: **Linc Energy Operations, Inc.**		5. Bond: Blanket ☑ Single Well ☐ Bond No. **number pending**	11. Well Name and Number: **KEEX 02**
3. Address: **3000 C Street, Suite 103, Anchorage, AK 99503**		6. Proposed Depth: **MD: 3500' TVD: 3500'**	12. Field/Pool(s): **Exploratory**
4a. Location of Well (Governmental Section): Surface: **359' FSL, 1044' FEL, Sec 25-12N-13W, Seward Meridian** Top of Productive Horizon: Total Depth: **3500'**		7. Property Designation: **Alaska Mental Health Trust**	
		8. Interior Region UGC Exploratory License: **MHT#9400462**	13. Approximate Spud Date: **11/28/2011**
		9. Acres in Property: **82,122.70 acres**	14. Distance to Nearest Property: **1044 ft**
4b. Location of Well (State Base Plane Coordinates): Surface: AKSP Lat: 2595175.668 AKSP Long: 1375914.450 Zone 4		10. KB Elevation (Height above GL): **675 feet**	15. Distance to Nearest Well ~~Within Pool:~~ **3188 ft**
16. Deviated wells: Kickoff depth: Maximum Hole Angle: **0** degrees		17. Maximum Anticipated Pressures in psig (see 20 AAC 25.035) Downhole: Surface:	

18. Casing Program:

Hole	Casing	Weight	Grade	Coupling	Length	Top - Setting Depth - Bottom MD	TVD	MD	TVD	Cement Quantity, c.f. or sacks (including stage data)
driven	**6"**	**18.97**	**A53**	**BW**	**300'**	**0'**	**0'**	**300'**	**300'**	**driven**
3.77"	**na**				**3500'**	**0'**	**0'**	**3500'**	**3500'**	

19. **PRESENT WELL CONDITION SUMMARY** (To be completed for Redrill and Re-Entry Operations)

Total Depth MD (ft):	Total Depth TVD (ft):	Plugs (measured):	Effect. Depth MD (ft):	Effect. Depth TVD (ft):	Junk (measured):

Casing	Length	Size	Cement Volume	MD	TVD
Conductor/Structural					
Surface					
Intermediate					
Production					
Liner					

Perforation Depth MD (ft): Perforation Depth TVD (ft):

20. Attachments: Filing Fee ☐ BOP Sketch ☐ Drilling Program ☑ Time v. Depth Plot ☑ Shallow Hazard Analysis ☑ Property Plat ☐ Diverter Sketch ☑ Seabed Report ☐ Drilling Fluid Program ☑ 20 AAC 25.050 requirements ☐

21. Verbal Approval: Commission Representative: Date

22. I hereby certify that the foregoing is true and correct. Contact **Corri Feige 907.868.8660**

Printed Name **Corri Feige** Title **General Manager - Alaska**

Signature Corri C. Feige Phone **(907) 868-8660** Date 8/25/11

Commission Use Only

Permit to Drill Number:	API Number: 50-	Permit Approval Date:	See cover letter for other requirements.

Conditions of approval If box is checked, well may not be used to explore for, test, or produce coalbed methane, gas hydrates, or gas contained in shales: ☐

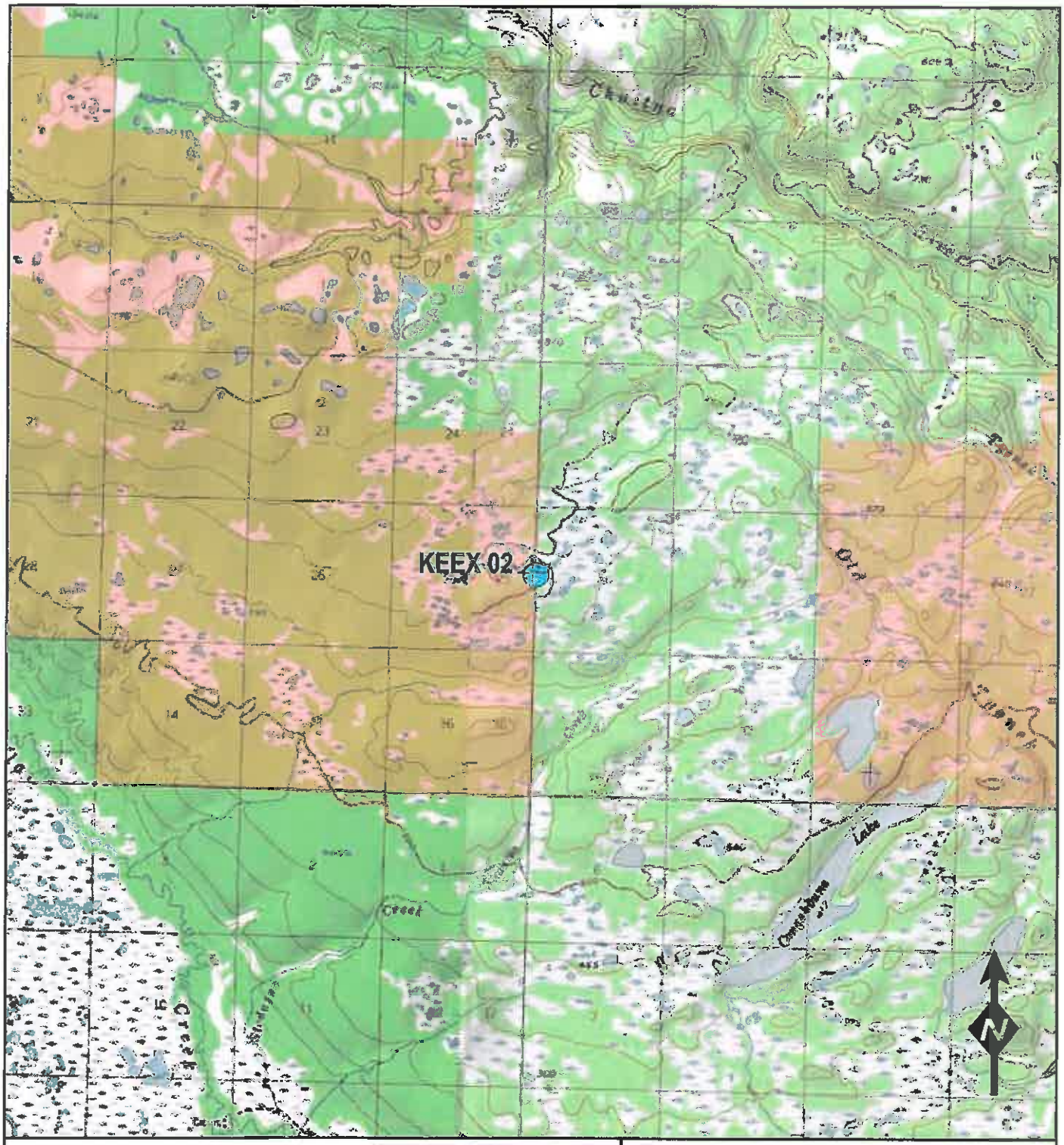
Other:

Samples req'd: Yes ☐ No ☐ Mud log req'd: Yes ☐ No ☐

H_2S measures: Yes ☐ No ☐ Directional svy req'd: Yes ☐ No ☐

APPROVED BY THE COMMISSION

DATE: , COMMISSIONER



State Plane, Alaska Zone 4, NAD83
Seward Meridian
USGS Quads: Tyonek A-4, A-5

LINC ENERGY

Drill Site Location

Water Source

LINC UCG Exploration License Acreage

KENAI LICENSE AREA
DRILLSITE AND WATER
SOURCE LOCATION

SCALE:
0 0.3 0.6 1.2 Mi
0 0.45 0.9 1.8 Km

FIGURE:
2

LINC: sc0011.mxd 07/19/2011, R02

Exploration Drill Hole KEEX02

Linc Energy Operations Inc.

Area Geologic Description

KEEXO2 is located approximately in the center of Sec.25, T12N, R13W, of the Seward Principal Meridian. The Tertiary sedimentary rocks, which can host the coal seams of potential Underground Coal Gasification (UCG) interest, are continental in origin derived from alluvial fans that deposited sediments into the forearc basin. These Tertiary sedimentary rocks belong to the Kenai Group which are subdivided into various formations. From top to bottom they include the Sterling Formation, Beluga Formation, Tyonek Formation, Hemlock Conglomerate and West Foreland Formation.

The contact between unconsolidated Quaternary sediments and the underlying Sterling Formation is difficult to recognize as is the basal contact of the Sterling Formation. The Sterling Formation is uppermost Miocene to Pliocene in age consisting of weakly lithified massive sandstone, conglomeratic sandstone and interbedded siltstone and claystone. The unit includes interbedded lignitic coals typically less than 3 feet thick in its upper part, but may be as much as 10 feet thick in its lower part. However, a review of oil and gas well logs within the Cook Inlet basin suggests that individual coals in the order of 40 feet thick might occur in the Sterling Formation.

The Miocene Beluga Formation consists of nonmarine, interbedded, weakly lithified sandstone, siltstone, carbonaceous shale, coal and minor volcanic ash. According to some, a distinctive feature of the Beluga Formation is the lack of massive bedded sandstones and thick coal beds that characterize the underlying Tyonek Formation. However, lignitic to subbituminous coal seams as much as 13 feet thick can occur in the upper part of the unit.

The uppermost Oligocene to middle Miocene Tyonek Formation consists of massive bedded sandstones, siltstone and coal. The Tyonek Formation is characterized by the massive bedded sandstone beds and numerous lignitic to subbituminous coal beds, some of which are as much as 50 to 60 feet thick. Because of the thick nature of the coals the Tyonek Formation is the main exploration target. Contact with the overlying Beluga Formation is believed to be a disconformity where sandstone beds and coal beds become markedly thinner. Its basal contact is considered conformable with the underlying Hemlock Conglomerate. The West Foreland Formation occurs beneath the Hemlock Conglomerate.

Volcanic rocks affecting Tertiary coal-bearing units span from Eocene through Holocene age. Quaternary volcanic rocks exist in portions of the Cook Inlet Basin, many derived from historically active volcanoes. Similarly, Tertiary volcanic rocks occur within or in proximity of the Exploration Concessions and have been intercepted in some oil and gas wells.

Drill hole Geologic Description

It is anticipated that KEEX02 will encounter unconsolidated Quaternary sediments, the Beluga and Tyonek Formations. Coal seams of interest will be encountered in the Tyonek Formation. The Hemlock Formation will not be penetrated.

Anticipated Coal Targets

Anticipated coals of interest are based on Stedatna Creek #1, API No. 50283100070000 located 1 mile east of KEEX02 in Sec. 30, T12N, R12W and W. Tyonek #1, API No. 5028320340000 located approximately 3 miles south of KEEX02 in Sec. 7, T11N, R12W. Data was also obtained from Nicolai Creek #3 API No. 50283200030000 and Nicolai Creek No. 5, API 5028320036000050 both located in Sec.7 T11N, R12W approximately 5 miles south-southeast of KEEX02. Based on the offsets the following table describes the tops and thicknesses of the coals anticipated in Linc Energy Operations Inc. TYEX01.

Linc Energy Operations Inc. KEEX02 anticipated coal tops	
Anticipated Seam Depth (FTBGS)	**Anticipated Seam thickness (FT)**
1581	15
1730	24
2083	15
2793	17
3237	18
3500	Estimated Total Depth

FTBGS -Feet below ground surface
FT - Feet

Shallow Gas Hazard Analysis

Based on the mudlogs of Nicolai Creek #3, Nicolai Creek #5, and records from Stedatna Creek #1 all drilling was conducted with mud weights not exceeding 8.4 Total gas based on 100 units equaling the equivalent of 2 percent methane had a high reading of approximately 100 units.

KEEX 02 General Prognosis

Well Name:	KEEX 02
Surface Location:	Section 25, T12N, R13W, SM
Bottom hole Location:	Same (vertical hole)
Planned TD:	3,500' MD / TVD

Well Summary

A 6" conductor will be driven to 300' prior to the coring rig moving in. The cellar will be grouted with concrete to stabilize the conductor casing. Rotary coring operations will cut approximately 3,500' of 2.50" core using a 10' wireline retrievable core barrel with a 3.77" OD core bit.

Drilling Fluid Management

A gel freshwater mud system provided by MISWACO will be used for the coring operations from 300' to TD. At the end of coring operations the settling pit will be reclaimed in accordance with the Alaska Surface Coal Mining Control and Reclamation Act AS 27.21.

Waste Management

All waste including drill cuttings will be handled in accordance with the Alaska Surface Coal Mining Control and Reclamation Act AS 27.21 as governed by the Coal Regulatory Group of the Alaska Department of Natural Resources.

Well Trajectory and Deviation Survey

The KEEX 02 is planned to be a vertical well.

Formation Tops and Casing Depths

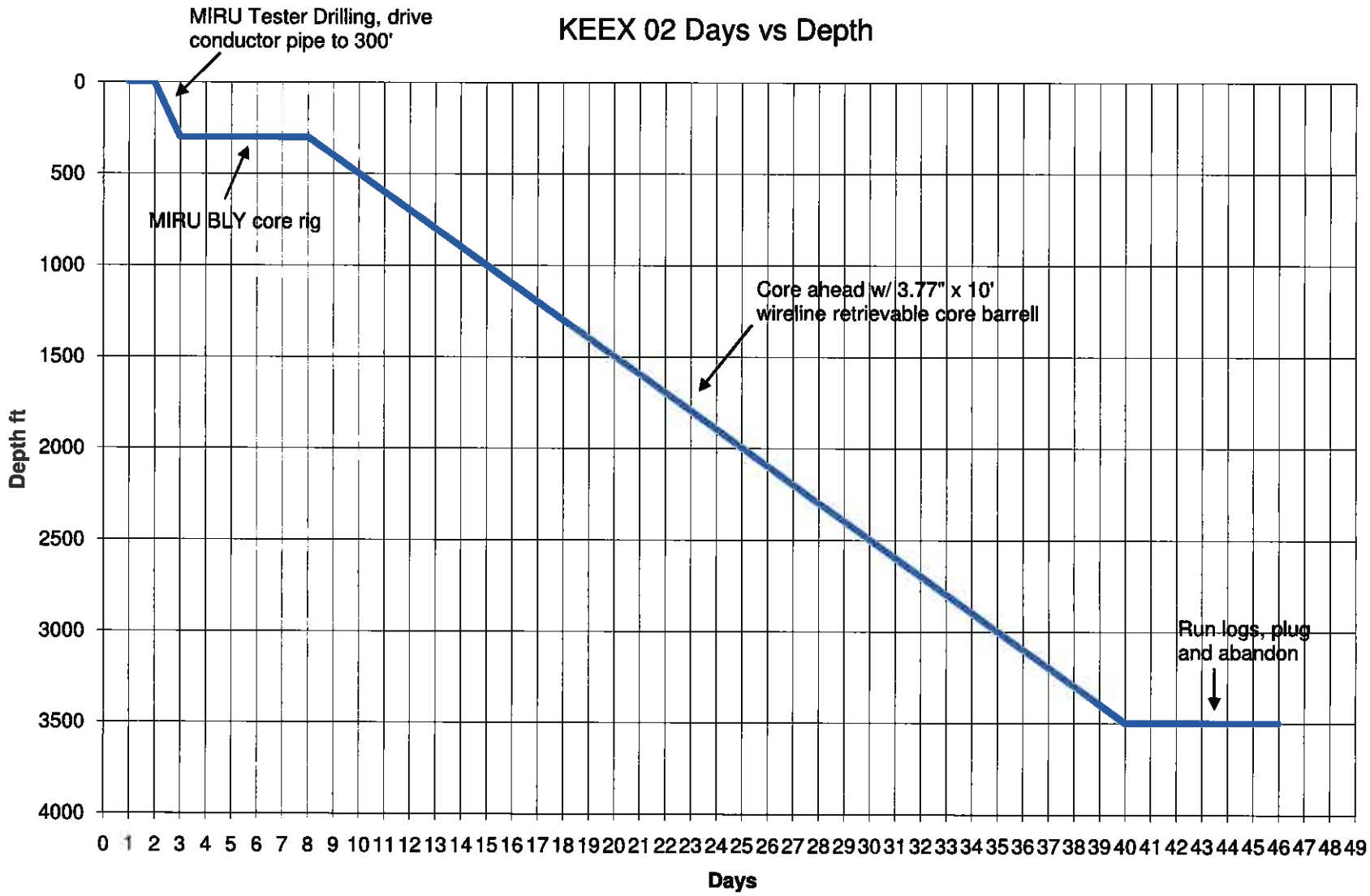
See attached geologic summary. No production casing is planned at this time.

Logging Program

0' – 300'	No open-hole logs
300' – 3500'	GR/Resistivity/Neutron Density/Sonic

Proposed Operations Summary

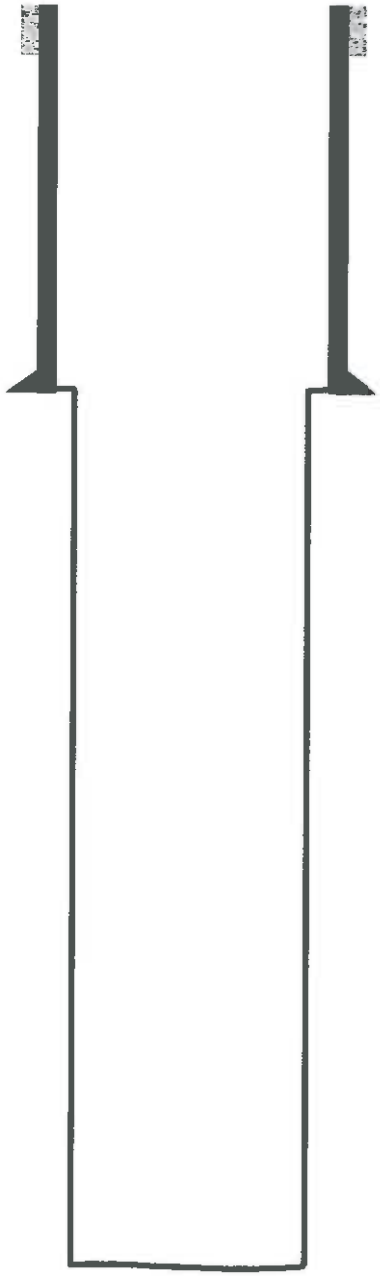
1. MIRU Tester Simco Drilling conductor rig
2. Drive 6" conductor pipe to +/-300'
3. Hand mix cement and grout conductor cellar to stabilize conductor pipe at surface
4. RDMO Tester Drilling conductor rig
5. MIRU Boart Longyear coring rig, dig settling pit
6. Notify AOGCC of start up, perform diverter drill
7. MU 3.77" core bit, 2.50" coring assembly
8. Core ahead using 10' wireline retrievable core barrel assembly from 300' to 3500'
9. RU wireline, run open hole logs including GR/Resistivity/Neutron Density/Sonic
10. Plug and abandon per AOGCC requirements, RDMO core rig


KEEX 02 Days vs Depth
MIRU Tester Drilling, drive conductor pipe to 300'
MIRU BLY core rig
Core ahead w/ 3.77" x 10' wireline retrievable core barrell
Run logs, plug and abandon
Depth ft
0
500
1000
1500
2000
2500
3000
3500
4000
Days
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

PROPOSED WELLBORE DIAGRAM
KEEX 02 Section 25-12N-13W, SM API #: _____
Linc Energy Operations, Inc.

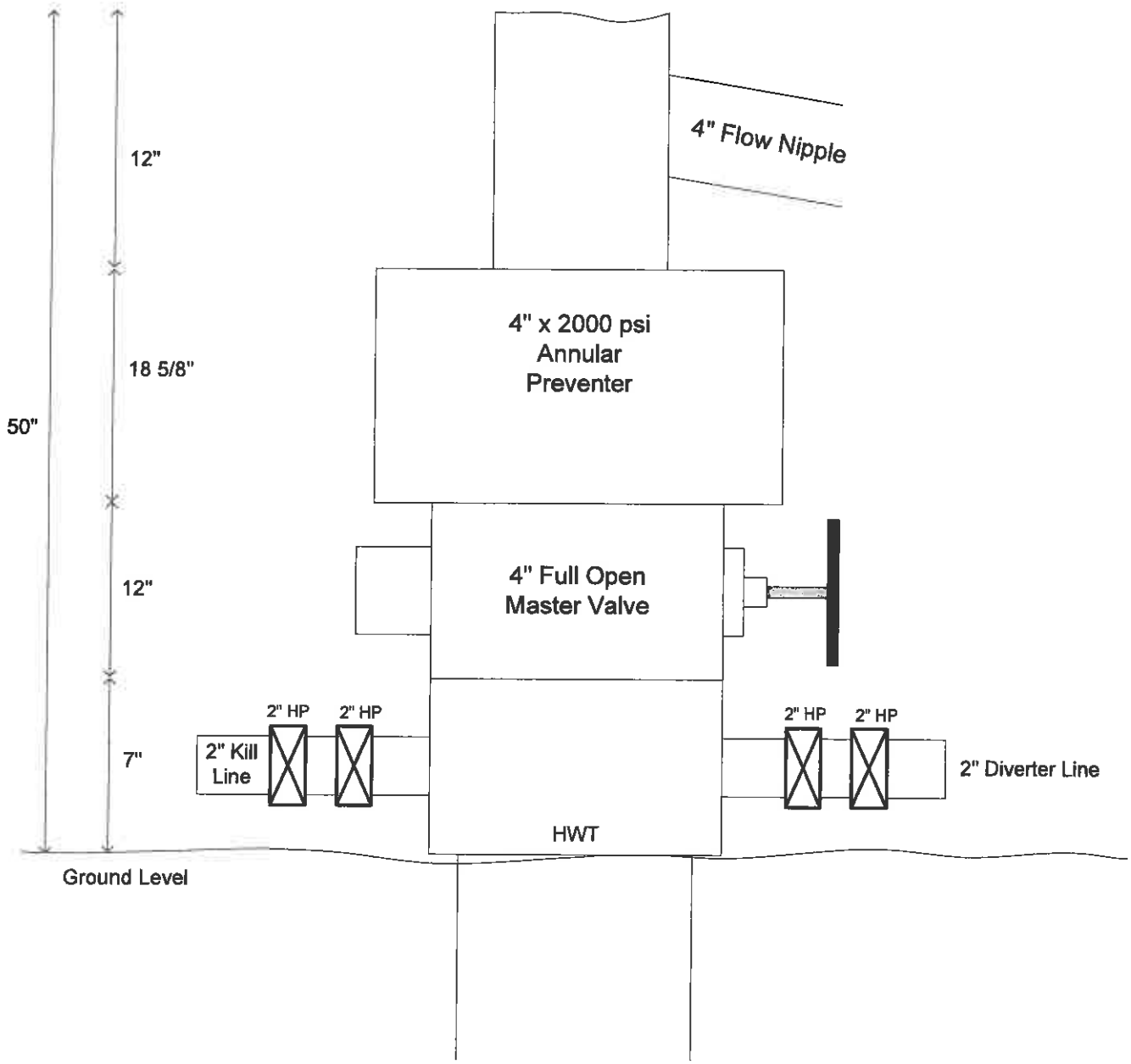
Cellar & conductor annulus grouted at surface to stabilize conductor pipe

6" conductor casing driven to refusal @ +/-300'



3.77" Core Hole to +/- 3500'
* 2.50" x 10' Core Barrel

Proposed Diverter Layout



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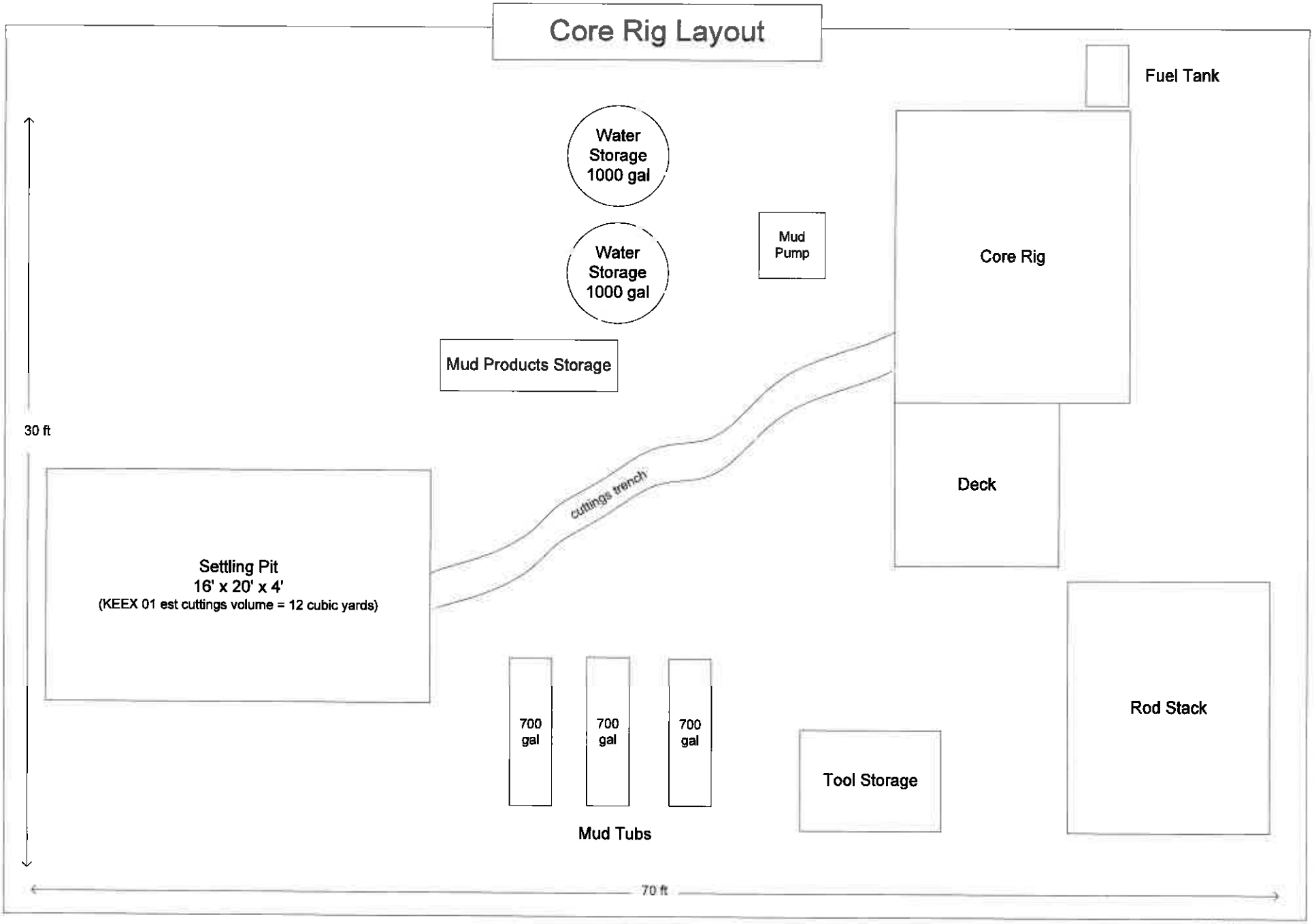
Core Rig Layout



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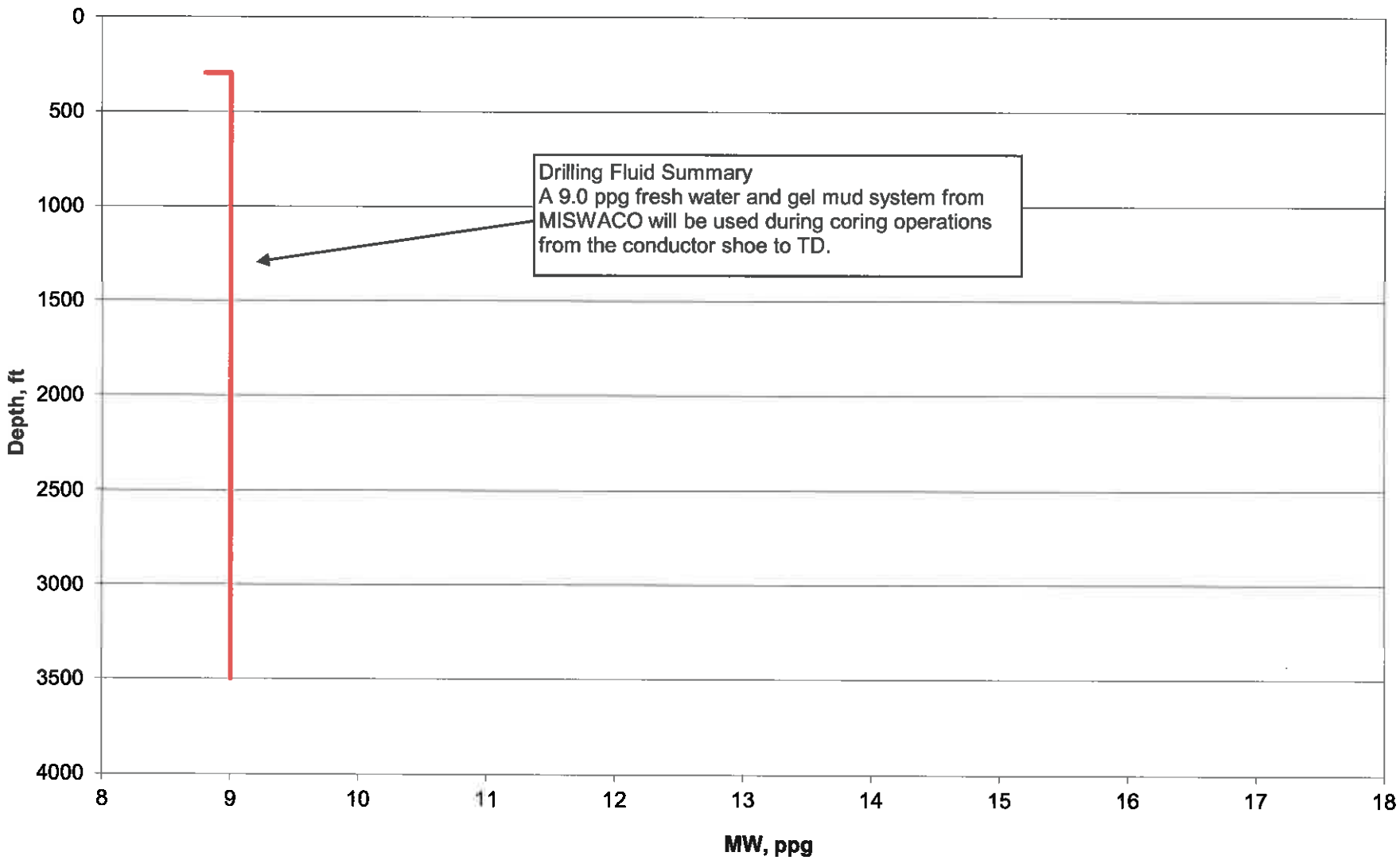
KEEX 02 Proposed Drilling Fluid Program