Form 3160-3
(July 1992)

New Mexico Oil Conservation Division

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

66A 515

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK
DRILL [X] DEEPEN [ ]

b. TYPE OF WELL
OIL WELL [X] GAS WELL [ ] OTHER SINGLE ZONE [X] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR
Altura Energy Ltd. Attn: Mark Stephens, Rm. 338-B, WL2

3. ADDRESS AND TELEPHONE NO.
P.O. Box 4294, Houston, TX 77210-4294 (281) 552-1158

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
At surface
1450' FSL & 469' FWL
At proposed prod. zone
L

SUBJECT TO LIKE APPROVAL BY STATE

5. LEASE DESIGNATION AND SERIAL NO.
LC-032233(A)

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
North Hobbs G/SA Unit

8. FARM OR LEASE NAME, WELL NO.
813

9. API WELL NO.
30-025-34871

10. FIELD AND POOL, OR WILDCAT
Hobbs; Grayburg - San Andres

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 29, T-18-S, R-38-E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
1 mile West of Hobbs, NM

12. COUNTY OR PARISH
Lea Co.

13. STATE
NM

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)
13,171' FNL

16. NO. OF ACRES IN LEASE
10,649.53

17. NO. OF ACRES ASSIGNED TO THIS WELL
40

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.
937'

19. PROPOSED DEPTH
4500'

20. ROTARY OR CABLE TOOLS
Rotary Tools

21. ELEVATIONS (Show whether DF,RT, GR, etc.)
3644' GR

22. APPROX. DATE WORK WILL START*

23. PROPOSED CASING AND CEMENTING PROGRAM

CAPITAN CONTROLLED WATER BASIN

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
18	14	Conductor	40	50 sx C
12-1/4	8-5/8, J-55	24	1650	775 sx C
7-7/8	5-1/2, J-55	15.5	4500	750 sx C

WITNESS

A 14" conductor will be set and cemented to surface with 50 sx. cement. A 12-1/4" hole will be drilled from surface to approximately 1700'. This will allow for protection of all water zones and casing off of the Red Beds. A full string of 8-5/8", 24#, J-55 surface casing will be run and set 25' into the top of the Rustler Anhydrite with cement circulated to surface. The cement will be allowed to set for a minimum of eight (8) hours (minimum 500# compressive strength) and will then be tested to 1500 psi for 30 minutes before drilling resumes. After the casing is run and cemented, weld on 8-5/8" X 11" 3M casinghead housing and nipple up BOP stack (3000# Ram Preventer).

A 7-7/8" hole will be drilled out from surface casing point (1650') to +/- 4500' TVD. A full string of 5-1/2", 15.5#, J-55 production casing will be run to TD and cemented to surface (casing test to 1500 psi will be done by the completion rig).

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED Mark Stephens Business Analyst (SG) DATE March 22, 2000

(This space for Federal or State office use)

PERMIT NO. —

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

CONDITIONS OF APPROVAL, IF ANY:

OPERATOR NO. 151984
PROPERTY NO. 19520
POOL CODE 31920
EFF. DATE 5-10-00
API NO. 30-025-34871

APPROVED BY — TITLE Acting Assistant Field Manager, Lands And Minerals DATE —

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

SCS

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025-34871	31920	HOBBS: GRAYBURG - SAN ANDRES

Property Code	Property Name	Well Number
~~19520~~ ~~25878~~ 19520	NORTH HOBBS G/SA UNIT	813

OGRID No.	Operator Name	Elevation
~~157984~~ ~~162821~~ 157984	ALTURA ENERGY LTD.	3644

Surface Location

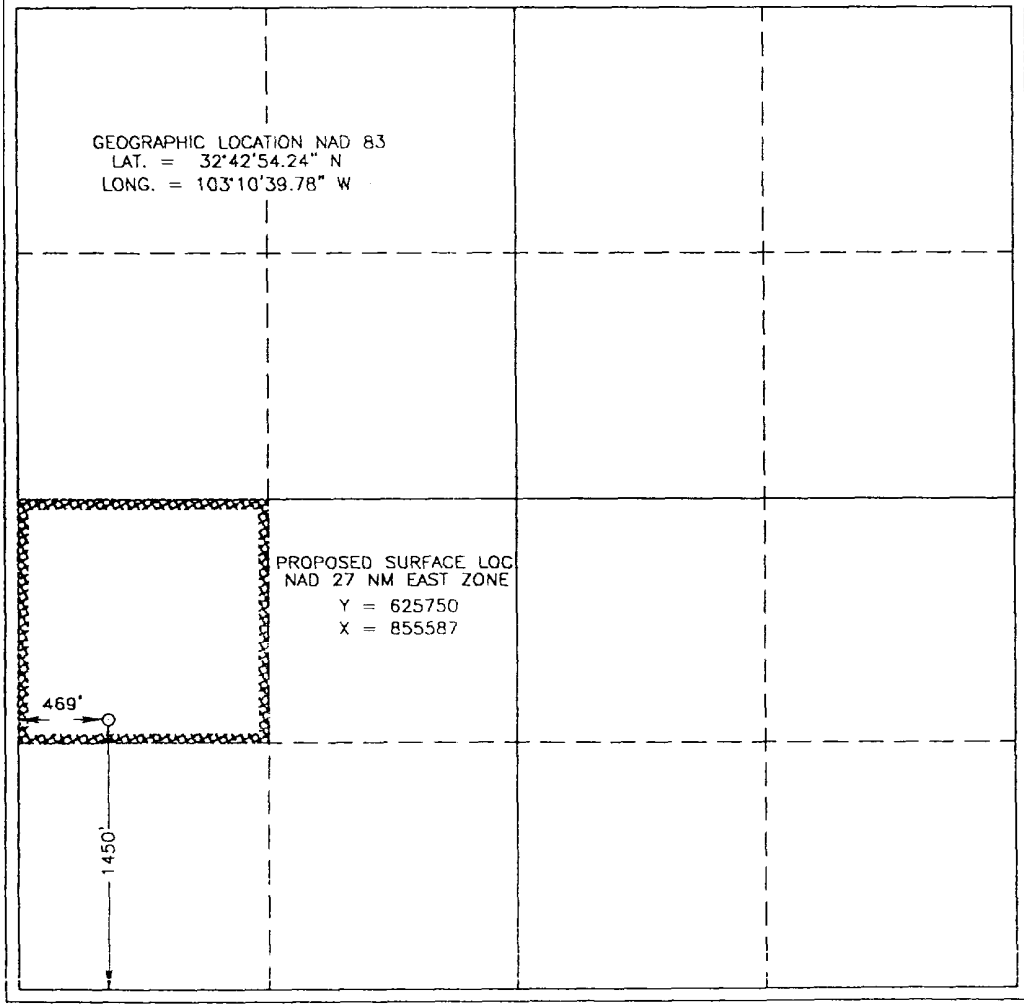
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	29	18 S	38 E		1450	SOUTH	469	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40	I	U	

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Mark Stephens
Signature

Mark Stephens
Printed Name

Business Analyst (SG)
Title

March 17, 2000
Date

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.

JANUARY 12, 2000
Date Surveyed DC

Signature & Seal of Professional Surveyor

Gary L. Eidson 2/28/2000

99-11-1099

Certificate No. RONALD J. EIDSON 3239
GARY EIDSON 12641
MACON McDONALD 12185

Altura
ENERGY LTD

DRILLING PROGNOSIS

NORTH HOBBS UNIT
GRAYBURG/SAN ANDRES

Lea County, New Mexico
13 Well Package

LONG SURFACE CASING PROGRAM

INTRODUCTION

The year 2000 San Andres drilling program consists of 12 wells in the North Hobbs Unit and 1 in the South Hobbs Unit in Lea County, New Mexico within the city of Hobbs. These wells will have production casing set through the Queen, Grayburg and San Andres formations.

Rig Key #27 has been contracted to drill these wells starting about February 17th 2000 on an incentive based contract. Drilling operations should take approximately 6 days per well, with logging, to a TD of about 4400' MD.

The **drilling order** is as well as other specific and legal information is listed on the following pages.

The long surface casing design is being used to to protect fresh water zones, and eliminate potential red bed sloughing problems. The production casing will set at TVD of ±4400'.

H_2S POTENTIAL

H2S can be expected during drilling operations. Offset wells producing out of the San Andres, operated by Altura produce a concentration of 45,000 to 65,000 ppm. An H2S Drilling Operations Plan will be in place (see attachment). This plan addresses training, well control procedures and equipment, safety procedures and equipment and drilling operations.

ESTIMATED FORMATION TOPS

Red beds			265′
Rustler (est.)	Top	Bottom	1550′- 1650′
NHU 29-544	1550′	1620′	
NHU 33-521	1580′	1650′	
Yates			2815′
Seven Rivers			3035′
Queen			3570′
Grayburg			3900′
San Andres			4020′

POTENTIAL PROBLEMS

1. **Sloughing of the Red Beds:** The Red Beds are shales that are sensitive to water. Their exposure will be limited by setting the surface casing to 1550′to 1650′ based on drilling time.
2. **Lost circulation in the Grayburg/ San Andres Formations:** – Partial loss of circulation is possible and probable and has been reported during drilling operations. LCM pills have restored circulation in the past. If LCM pills are ineffective a cement plug can be used as an option using the following recipe formulated by Halliburton and spotted with drill pipe:

PREMIUM PLUS 200 SK Plug
3% CACL2
1/2# FLOCELE
SLURRY DENSITY: 14.8 LBS/GAL
MIXING WATER: 6.3 GAL/SK
SLURRY YIELD: 1.32 CUFT/SK

Note the details of any flows or loss encountered on these wells on IADC and MORNIMG REPORT for future reference.

DRILLING PROCEDURE ⇒ Long Surface Casing Program

A 12¼" hole will be drilled from surface to around 1550'-1650'. This will allow protection of all water zones, and casing off of the Red Beds. A full string of 8-5/8" 24.0# surface casing will be run and set 25' into the top of the Rustler Anhydrite with cement circulated to the surface. The cement will be allowed to set for a minimum of eight (8) hours, (minimum 500# compressive strength) the casing will than be tested to 1500 PSI for 30 minuets before drilling resumes. (NOTE: A drop of 150 PSI in 30 minutes is considered failed.) After the casing is run and cemented, weld-on the 8-5/8" X 11" 3M casing head housing and nipple-up the BOP stack (3000# ram preventer).

A 7-7/8" hole will be drilled out from surface casing point (1550'-1650') to ±4400' TVD. A full string of 5½" 15.5# production casing will be run to TD, and cemented to surface, (casing test to 1500 PSI will be done by the completion rig.)

CASING PROGRAM

Hole Size	Interval	Csg OD	Wt	Grd	Thread	Tension	Burst	Collapse
18'	0 - 40'	14'						
12 ¼"	0 – 1550'	8 5/8	24#	J55	STC	244,000	2950	1370
7 7/8"	1550' – 4400'	5 ½	15.5#	J55	LTC	217,000	4810	4040

A 14" conductor will be set and cemented to surface with 50 sx . Casing will be new and meet API standards and minimum design criteria.

WELL DEVIATION

All vertical wells will require inclination surveys taken at 500' intervals to TD (final survey at TD). If excessive inclination becomes a problem, (surveys greater than 4 degrees) confer with the Altura DHS prior to taking corrective action.

CEMENTING PROCEDURE: **8-5/8" Surface Casing @ 1550' (1-Stage)**

Shoe Type: Texas Pattern Shoe
Collar Type: Float Collar, 1 joint above shoe
Centralizers: 11 ⇒ 10' above shoe, one at float collar joint then every forth joint to surface
Flag Joints: None required
Other Equip: Stop clamp (1), pipe lock (bottom 2 joints, including top/bottom of float collar), one rubber plug.
Reciprocate: Not required
Preflush: 25 bbls fresh water @ 10 bbls/minute

Lead Slurry: **550 sx** ⇒Permain Basin Critical Zone Class C Cement
.25lb/sk flocele (Lost Circulation)
12.80 ppg , 1.88 cu.ft./sx , 10.26 gal water/sx
1034 ft^3 cement volume

Tail Slurry: **225 sx** => Permain Basin Critical Zone Class C Cement
13.50 ppg , 1.63 ft^3/sx , 8.37 gal water/sx
367 ft^3 cement volume

Volume Based: 1998 & 1999 HISTORICAL SURFACE CEMENT DATA

Well #	Casing		Pumped	Circ In Hole
		ft3	ft3	ft3
32-531	1553	1391	146	1245
32-542	1583	1391	96	1295
33-523	1560	1391	154	1237
33-534	1564	1391	38	1353
33-545	1550	1391	280	1111
29-544	1565	1282	135	1147
33-521	1565	1409	442	967

Displacement: Fresh water @ 8-10 bbl/minute.

Press. Limit: does not circulate we are required to 1"cement to surface.

Special Note:
1. Report the following on the morning report:
   * casing size, grade, weight, depth set, hole size
   * approximate temperature of cement slurry when mixed
   * estimated minimum formation temperature in zone of interest (76 to 78 degrees F at 1700 ft per NMOCD rules.)
   * estimate of cement strength at time of casing test (900 lbs.)
   * actual time cement in place prior to starting test
2. WOC for 8 hours prior to testing casing.
3. Test casing to 1500 PSI for 30 minutes
4. Nipple up BOPE and test per requirements

***CEMENTING PROCEDURE:* 5½" Prod Csg 4400' (1-Stage, 2 batches, Foam)**

Shoe Type:	Float Shoe.
Collar Type:	Regular Float Collar, 1 joint above shoe
Centralizers:	8 ⇒ 5' above shoe, one at float collar joint then every other joint thereafter to 3900' (700' of centralization).
Flag Joint:	3800'
Other Equip:	Pipe lock (bottom 2 joints, including top/bottom of float collar), one stop clamp, one rubber plug.
Reciprocate:	Reciprocate during circulation and cementing, limit 126 Mlbs with 15.5# J-55 STC.
Preflush:	25 bbls fresh water @ 10 bbls/minute
Lead Slurry:	**550 sx** ⇒ Premium Plus Class "C " (basis for foam) 14.80 ppg , 1.32 ft^3/sx , 6.29 gal/sx 33% foam quality
Tail Slurry:	**200 sx** ⇒ Premium Plus Class "C " Cement .4% CFR-3 (Dispersant), .5% LAP-1 (Fluid Loss) 14.85 ppg , 1.32 ft^3/sx , 6.17 gal/sx 264 ft^3 cement volume
True Hole:	**Between 8 5/8"- 5 1/2"** 1700' x .1926 ft^3/ft = 327.42 ft^3
Volume	**Between 7 7/8"- 5 1/2"** 2700' x .1733 ft^3/ft = 467.91 ft^3
	795.33 ft^3

Above cement design therefore is 101 % over true hole volume.

Vol. Based: ***Actual volume to be determined by fluid caliper survey run 100' from TD.***

Press. Limit:	3600 psi ⇒ 75% of burst of 5.5" 15.5# J-55 STC
Temp. Svy:	Run 12 hrs after bumping plug if cement not circulated.
Special Note:	1. Report fluid caliper survey results on IADC.
	2. Report casing size and grade, weight, depth set, hole size and top of cement on morning report
	3. Displace cement at maximum rate.
	4. Report any circulation problems on morning report.

MUD PROGRAM ⇒ Long Surface Casing Program

The mud system on these two wells will incorporate conventional pits. All cuttings will be removed and disposed of at an Altura approved site, which is Sundance Services (Parabo Facility) located .25 miles North of Highway 18 & 176 intersection, Lea County.

SURFACE - 1700' (Surface Casing Point):

Size:	12¼" hole
Mud type:	Spud mud (30 bags Aqua-Gel, 1 bag lime), fresh water
Viscosity:	40 - 45 sec/qt, (once in red beds 32 – 34)
Mud weight:	8.5 - 9.0 ppg
Fluid loss:	No control
Chlorides:	N/A
PH:	no control
Problems:	Possible loss of circulation, seepage, hole cleaning
Program:	Use fresh water additions and solids control equipment to Control the viscosity. Maintain the viscosity at 32-34 sec/qt. for hole cleaning and stability. **Circulate a minimum of 30 minutes (or longer if using only one pump) prior to tripping for casing.**

SURFACE CASING POINT TO TD @ 4400':

Size:	7-7/8" hole
Mud type:	salt saturated brine water
Viscosity:	28-30 sec/qt. .
Mud weight:	10.0 - 10.5 PPG
Fluid loss:	none to 3900' ft, 10 cc or less after 3900'
Chlorides:	188,000 ppm
PH:	10 or greater (control with lime and caustic)
Problems:	H_2S, seepage, lost circulation, differential sticking

Program: Use paper to control seepage. Use fluid loss control only if needed to control drilling problems. Use solids control equipment as required to keep solids under control. Keep pH high and treat with ZnCl to control H2S. Viscous sweeps for hole cleaning. (Lo-Loss: 1 bag in 30 gal diesel)

Notes:

1) A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH

2) Maintain a sufficient quantity of Zinc Lignosulfonate H_2S scavenger on location to neutralize any H_2S that may be encountered.

3) Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times

EVALUATION PROGRAM

Open hole wireline logs will be run on some of these wells. Logging suite to follow.

TELEPHONE REFERENCES

NMOCD – Hobbs, NM. **Call at Spud, and cementing of each casing string.**
OFF: (505) 393-6161 FAX: (505) 393-0720

		OFFICE #	HOME #
Drilling Team Leader	Randy Pennington	(281) 552-1215	
	Pager	(888) 859-8568	
	Cellular	(281) 639-1566	
		(915) 631-1345	
Drilling Engineer	Phil DeNitto	(806) 229-9473	(806) 894-2513
	Cellular	(806) 638-6670	
	Fax	(806) 229-9573	
Production Engineer	David Nelson	(505) 397-8211	
	Cellular	(505) 390-4704	
	Fax	(505) 397-8204	
Operations Specialist	BJ Kennedy	(806) 229-9469	(806) 894-7944
	Cellular	(806) 638-1951	
	Fax	(806) 229-9573	
Operations Specialist	Ron Pulliam	(915) 385-3135	(915) 550-9813
	Cellular	(915) 631-1620	
	Fax	(915) 385-3106	
Cement:			
Halliburton Services, Hobbs, NM		(800) 844-8451	
	Gary Long		
	Altura office	(806) 592-6305	
	Cellular	(505) 390-1077	
	Fax	(505) 592-9035	
	Home	(505) 396-6710	
	Pager	(888) 327-8581	

Recommended: **Phil J. DeNitto**

Approved

Attachment 1
SURFACE USE AND OPERATING PLAN

ra Energy, Ltd.
h Hobbs G/SA Unit Well No. 29-813
) FSL & 469 FWL
Letter L, Section 29, T-18-S, R-38-E
County, New Mexico

Existing Roads:

A. Access road to the location and elevation contours of area are shown in Attachment 2.
B. The well site survey plat for the proposed well is shown in Attachment 3.
C. Directions to location: From corner of Hwy 62/180 and West County Rd. Turn north on West County Rd. and go 1.5 miles to Mahan St. Turn west on Mahan and go 1/4 mile. Turn south on the lease road and go 1/4 mile to reach the well pad.

Location of Existing Wells:

Attachment 4 shows existing unit wells within a one-mile radius of this well operated by Altura Energy, Ltd.

Location of Existing and/or Proposed Facilities:

The well will be connected to an existing facilities located approximately 1600 feet west of this proposed site by a flowline installed according to API specifications.

Location and Type of Water Supply:

The well will be drilled with a combination of brine and fresh water mud systems as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to the location by transport truck over the existing and proposed roads shown in Attachment 2. No water well will be drilled on the location.

Source of Construction Material:

All caliche required for construction of the drill pad and to maintain the access roads will be obtained from an approved caliche pit. All roads and pads will be constructed of 6 inches of rolled and compacted caliche.

Methods of Handling Waste Disposal:

A. Drill cuttings will be disposed of into the reserve pit.

B. Drilling fluids will be contained in steel mud tanks. The reserve pit will contain any excess drilling fluid or flow from the well during drilling, cementing, and completion operations.

1. The reserve pit will be an earthen pit, approximately 150 feet x 125 feet x 6 feet deep and fenced. The pit will be plastic-lined (5-7 mil thickness) to minimize loss of drilling fluids and saturation of the ground with brine water. The pit will be divided into two separate pits, one being for fresh water cuttings, and the other for brine water cuttings. At the completion of the well the pits will be allowed to dry, the brine cuttings will be removed and taken to a licensed disposal site, and the fresh water cuttings will be buried on site.

the reserve pit or a steel tank. After the well is permanently placed on production, produced water will be collected in existing facilities.

D. A portable chemical toilet will be provided on the location for human waste during the drilling and completion operations.

E. Garbage and trash produced during drilling and completion operations will be collected in a screened-in trailer. All waste material will be contained to prevent scattering by the wind. After drilling operations are complete the trash will be disposed of in a nearby landfill.

F. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. No adverse materials will be left on the location. The reserve pit will be completely fenced and kept closed until it has dried. In the event of a dry hole, only a dry hole marker will remain.

7. Ancillary Facilities:

No airstrip, campsite, or other facilities will be built as a result of the operations on this well.

8. Well Site Layout:

Attachment 5 shows the planned orientation for the rig and associated drilling equipment, reserve pit, and pipe racks. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

9. Plans for Restoration of the Surface:

A. Upon completion of the proposed operations, if the well is abandoned, the caliche will be removed from the location and road and returned to the pit from which it was taken. The pit area, after allowing to dry, will be broken out and leveled. The original topsoil will be returned to the entire location that will be leveled and contoured to as nearly the original topography as possible. Pit lining material will be buried or hauled away in order to leave the location in an aesthetically pleasing condition. All pits will be filled and the location leveled within 120 days after abandonment.

B. The disturbed surface area will be restored per agreement with surface owners.

10. Surface Ownership:

The well site and lease is located entirely on Fee surface.

11. Operator's Representative:

An Altura representative responsible for assuring compliance with the surface use plan is as follows:

Drill Site Compliance:
Dusty Weaver
1017 W. Stanolind
Hobbs, NM 88240
Work Phone 806-894-8307

Well and Facilities Operations:
David Nelson
1017 W. Stanolind
Hobbs, NM 88240
Work Phone 505-397-8211

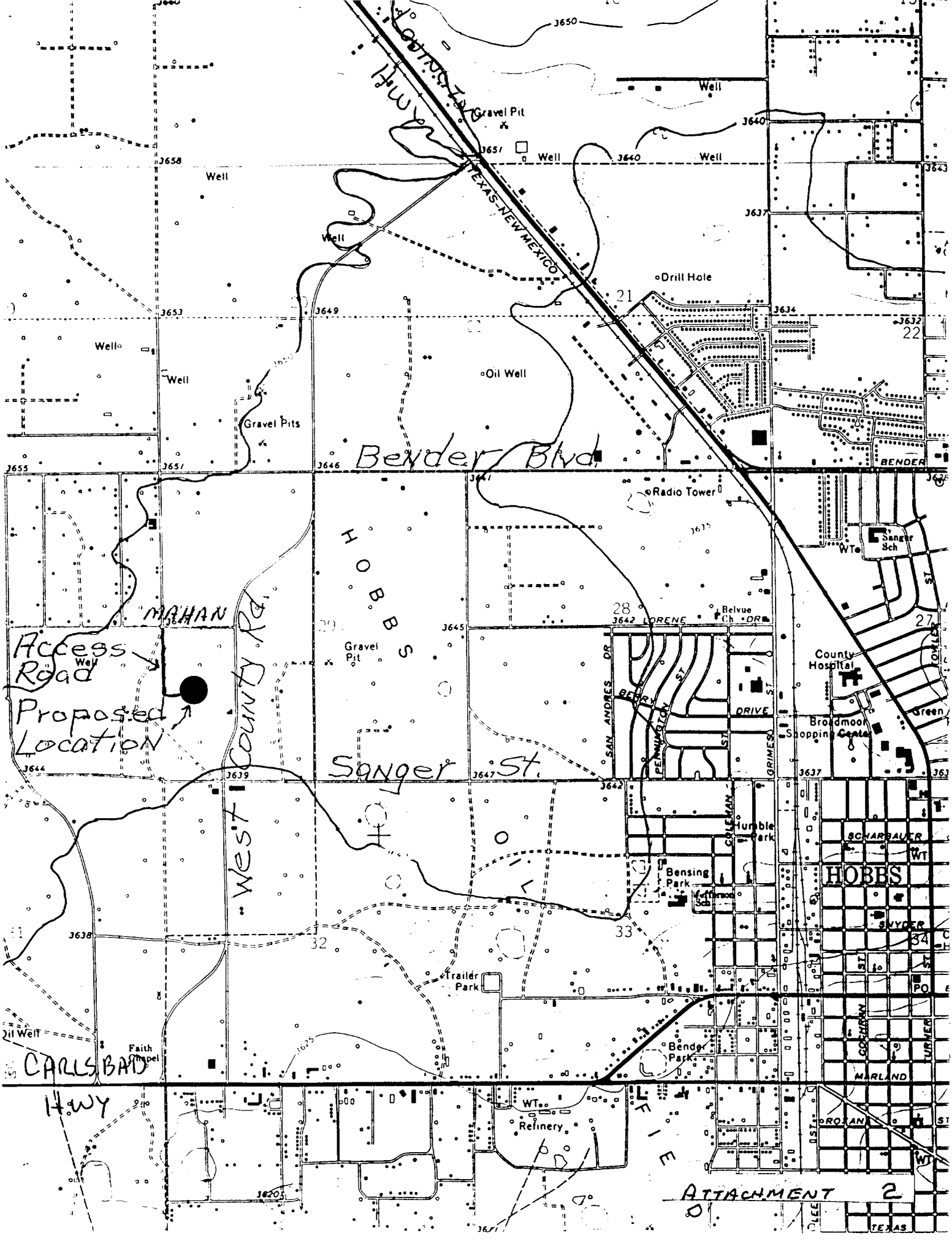
Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this plan are to best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed by Altura Energy, Ltd. and its contractors and subcontractors in conformity with this plan and the terms and conditions which is in approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date: 3/6/2000

Signed: Gary Bullock

Gary Bullock
Hobbs FMT Team Leader


Access Road
Proposed Location
MAHAN
West County Rd.
Bender Blvd
Sanger St.
HOBBS OIL FIELD
HWY
CARLSBAD
HWY
TEXAS-NEW MEXICO
Gravel Pit
Well
Drill Hole
Oil Well
Gravel Pits
Radio Tower
Sanger Sch
Belvue Ch
LORENE
DRIVE
County Hospital
Broadmoor Shopping Center
Humble Park
Bensing Park
Jefferson Sch
HOBBS
SCHARBAUER
SNYDER
Trailer Park
Bender Park
Refinery
Faith Chapel
MARLAND
TEXAS
ATTACHMENT 2

NOTES REGARDING THE BLOWOUT PREVENTERS

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.

2. Wear bushing to be properly installed in head.

3. Blowout preventer (BOP) and all fittings must be in good condition, 3000 psi WP minimum. BOP, choke manifold and all related equipment will be suitable for H2S service as per 43 CFR Part 3160 4c.

4. All fittings to be flanged.

5. Safety valve must be available on rig floor at all times with proper connections, valve to be full bore 3000 psi WP minimum.

6. All choke and kill lines to be securely anchored, especially ends of choke lines.

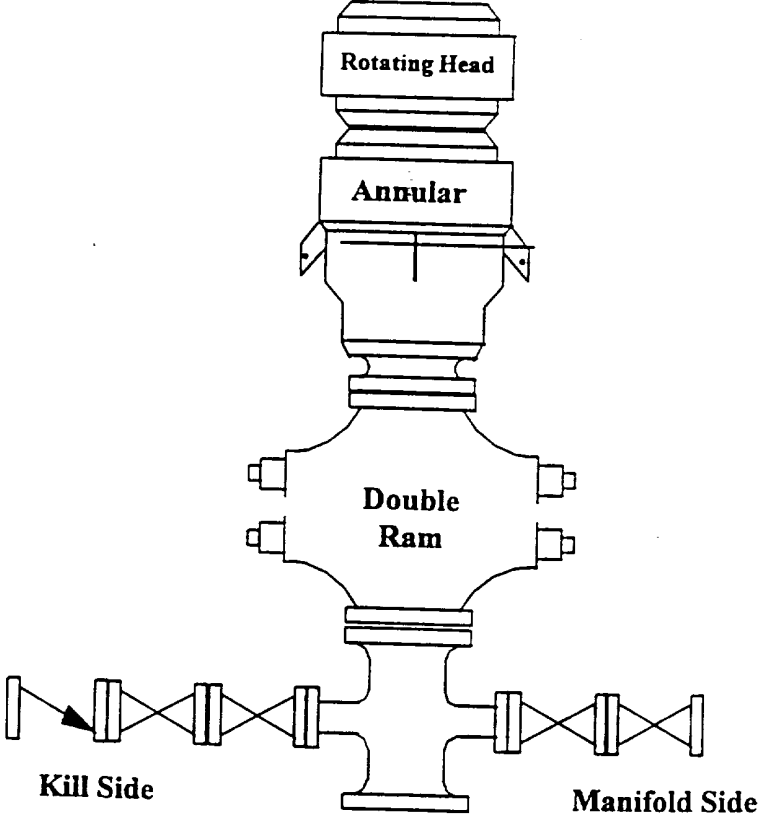
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.

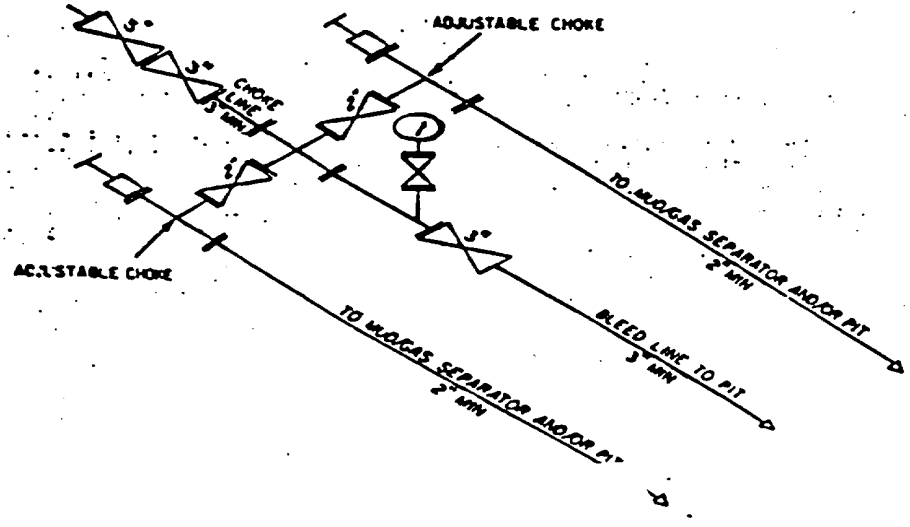
8. Kelly cock on kelly.

9. Extension wrenches and hand wheels to be properly installed.

10. Blow out preventer control to be located as close to driller's position as feasible.

11. BOP closing equipment to meet 43 CFR Part 3160 'OGO #2' IIIA, and any other parts, paragraphs or sections that may apply.


Rotating Head
Annular
Double
Ram
Kill Side
Manifold Side


ADJUSTABLE CHOKE
CHOKE LINE 3" MIN
TO MUDGAS SEPARATOR AND/OR PIT 2" MIN
BLEED LINE TO PIT 3" MIN
TO MUDGAS SEPARATOR AND/OR PIT 2" MIN

Altura
ENERGY LTD

H2S DRILLING OPERATIONS PLAN

NORTH HOBBS UNIT
GRAYBURG/SAN ANDRES

Lea County, New Mexico

12 Well Package

INTRODUCTION

Altura Energy LTD. plans to drill and complete 12 San Andres wells in the North Hobbs Unit in Lea County, New Mexico in close proximity to Hobbs. Altura Energy operates offset wells producing out of the San Andres formation and has provided information on H2S, a concentration of 45,000 to 65,000-ppm H2S is a typical *production* rate for wells. The amounts of H2S and gas encountered during drilling operations are expected to be significantly lower.

TRAINING

All personnel shall receive proper training in H2S drilling and contingency procedures in accordance with the general training requirements outlined in the American Petroleum Institute's (API) Recommended Practice (RP) 49 (April 15, 1987 or subsequent editions) for Safe Drilling of Wells Containing Hydrogen Sulfide, Section 2. All training will be completed ***before*** any drilling operations commence. In addition to the requirements of API RP-49, a minimum of an initial training session and weekly H2S and well control drills for all personnel in each working crew shall be conducted. The initial training session for each well shall include a review of the site specific H2S Drilling Operations Plan . All service company personnel will be required to have proper H2S training and be briefed on the site-specific plan before commencing operations.

WELL SITE DIAGRAMS – posted at the start of each well

Each attached well site diagram will contain the following information:

- Drill rig orientation
- Prevailing wind direction
- Location of all briefing areas
- Location of access road(s)
- Location of flare line(s) and pit(s)
- Location of caution and/or danger signs
- Location of wind direction indicators

WELL CONTROL EQUIPMENT

Due to the shallow depth of the wells and that no abnormal pressures are expected during drilling operations, a 5M (5000 PSI) BOPE system will be installed and tested prior to drilling out from under surface casing. This will include a hydraulic accumulator and rotating head along with the following equipment.

Two rams with one being blind and one being a pipe ram (blind rams on top)
- Kill line (2-inch minimum)
- 1 kill line valve (2 inch minimum)
- 1 choke line valve
- 2 manual chokes, (Refer to diagram in Attachment 1)
- Upper kelly cock valve with handle available
- Safety valve and subs to fit all drill strings in use
- Pressure gauge on choke manifold
- 2 inch minimum choke line
- Fill-up line above the uppermost preventer

Pipe rams and blind rams will be functionally tested each time pipe is tripped out of the hole.

PROTECTIVE EQUIPMENT FOR ESSENTIAL PERSONNEL

There shall be a safety trailer, located on location, with 300 cubic foot cylinders located inside and approximately 8 hours worth of grade "D" breathing air available. Hoses shall be plumbed to the rig floor to allow for emergency control of the well.

Stored inside the trailer shall be 4 (SAR) workline units with egress capability to be used under IDLH conditions.

There shall be 2-SCBA, designed to last approximately 30 minutes duration for use in rescue or emergency conditions located at briefing areas 90° opposing sides of location. These will be stored in hard plastic cases and sealed against weather conditions. Also 2-SCBA designated as backup shall be stored in the safety trailer making a total of four (4).

There will be 4 emergency escape units with approximately 5 minutes duration stored on the rig floor in the top dog house ready for emergency evacuation purposes. One unit will be placed with the derrick man during pipe tripping operations.

- All units shall be maintained and inspected monthly and after each use. Periodic rig checks shall include visual inspection of all breathing apparatus to insure emergency readiness.
- Communication while wearing breathing apparatus can be performed by normal speech through the speaking diaphragm, but if the noise level succeeds in "drowning out" speech, than communication shall alternately be performed through hand signals agreed upon.

H2S DETECTION AND MONITORING EQUIPMENT

A stationary H2S monitor shall be stationed in the top dog house (the recognized communications center) with remote audible and visual alarm located on the rig floor high enough up so as not to obscure being seen or heard readily. There shall be three H2S detecting sensors (1) located on the rig floor, (2) located at the bell nipple and (3) located at the flow line/steel pits (where applicable) that are calibrated with the monitor prior to assembly at the rig and calibrated/checked weekly.

Sensors for the stationary monitor shall be either electro-chemical (EC) cell and/or Metal oxide (MOS).

A portable tri-range monitor (H2S, O2, LEL) (EC) and a portable SO2 (EC) monitor shall be located in the safety trailer.

VISUAL WARNING SYSTEMS

Wind direction indicators will be visible at all times, a windsock will be attached to the rig floor, high enough to be seen from anyplace on location. In addition streamers will be attached to all guide wires at eye level.

Warning sign(s) will be placed at each entrance to the location at a minimum of 200' and a maximum of 500' from the well site. Each sign will read DANGER – POISON GAS – HYDROGEN SULFIDE, and employ a three flag (green = safe, yellow = caution, red = danger) warning system to alert personnel to the hazard level on location. A red flag will be displayed when H2S in excess of 10 ppm is detected at any sensing point.

MUD PROGRAM

The mud system will utilize a conventional pit system, solids control will be maintained by circulating the reserve pits. The mud system will be fresh water/brine water with additions of Lime and Caustic soda to maintain a pH level of 10 or greater. A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH. A sufficient quantity of Zinc Lignosulfonate H_2S scavenger on location to neutralize any H_2S that may be encountered. Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times

METALLURGY

Metallurgical Equipment. All equipment that has the potential to be exposed to H2S shall be suitable for H2S service. Equipment which shall meet these metallurgical standards include the drill string, casing, wellhead, blowout preventer assembly, casing head and spool, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separators, drill-stem test tools, test units, tubing, flanges, and other related equipment.

To minimize stress corrosion cracking and/or H2S embrittlement, the equipment shall be constructed of material whose metallurgical properties are chosen with consideration for both an H2S working environment and the anticipated stress. The metallurgical properties of the materials used shall conform to the current National Association of Corrosion Engineers (NACE) Standard MR 0175-90, Material Requirement, Sulfide Stress Cracking Resistant Metallic Material for Oil Field Equipment.

A drill fluid treatment and corrosion inhibitor program as per API's RP-49,§ 6.2.2. will be in use.

MEANS OF COMMUNICATION FROM THE WELL SITE.

A telephone will be on location at all times, this will be either cellular, radio, or satellite connection. Key Rig #39 (806) 893-6396

PLANS FOR WELL TESTING

Testing shall be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately operate the test

equipment. No drill stem testing will be conducted on any of these wells. At this time the well test will be conducted through the completed surface facilities.

EMERGENCY PROCEDURES

In the event of detection of H2s the following procedures will be in use. (Excerpt from the Altura Reaction Plan)

Emergency Procedures

Emergency Reaction Steps

	Drilling	Tripping
All Personnel	1. On alarm don escape unit and report to upwind briefing area.	Same
	2. Check status of personnel (buddy system)	Same
	3. Secure breathing equipment and shut well in.	Same
	4. Await orders from Supervisor.	Same
Altura Representative	1. Report to upwind briefing area.	Same
	2. Don breathing equipment and return to point of release with Pusher or Driller (buddy system)	Same
	3. Determine H2S concentration.	Same
	4. Assess situation and take control measures.	Same
Tool Pusher	1. Report to upwind briefing area.	Same
	2. Don breathing equipment and return to point of release with Altura Rep or driller. (buddy system)	Same
	3. Determine H2S concentration	Same
	4. Assess situation and take control measures.	Same
Driller	1. Don escape unit.	Same
	2. Check monitor for point of release.	Same
	3. Report to briefing area.	Same
	4. Check status of personnel: (in an attempted rescue use buddy system)	Same
	5. Assign least essential person to notify Altura Rep and Tool Pusher by quickest means in the case of their absence.	Same
	6. Assume the responsibilities of the Altura Rep and Tool Pusher until they arrive should they be absent.	Same

Emergency Reaction Steps

	Drilling	Tripping
Derrick Man **Floor Man #1** Floor Man #2	1. Remain in briefing area until instructed by supervisor.	Same
Mud Engineer	1. Report to briefing area. 2. When instructed, begin check of mud for Ph and H2S levels. (Garnett Gas Train)	Same
Safety Personnel	1. Mask up and check status of same for all personnel and secure operations as instructed by Altura Rep.	Same

Taking A Kick

When taking a kick during an H2S emergency, all personnel will follow standard BOP Procedures after reporting to briefing area and masking up.

Open Hole Logging

All unnecessary personnel off the floor Altura Representative and Safety Personnel should monitor condition, advise status and determine the need for use of emergency equipment.

Running Casing or Plugging

Following the same procedures as above. Altura Representative and Safety Personnel should determine if all personnel have access to protective equipment.

Notes:

- Warning System Response. When H2S is detected in excess of 10 ppm at any detection point, all non-essential personnel shall be moved to a safe area and essential personnel (i.e., those necessary to maintain control of the well) shall wear pressure-demand type protective breathing apparatus. Once accomplished, operations may proceed.

a "buddy system" will be used, under no circumstances should any rescue or emergency operations be undertaken without backup personnel.

EMERGENCY PHONE NUMBERS

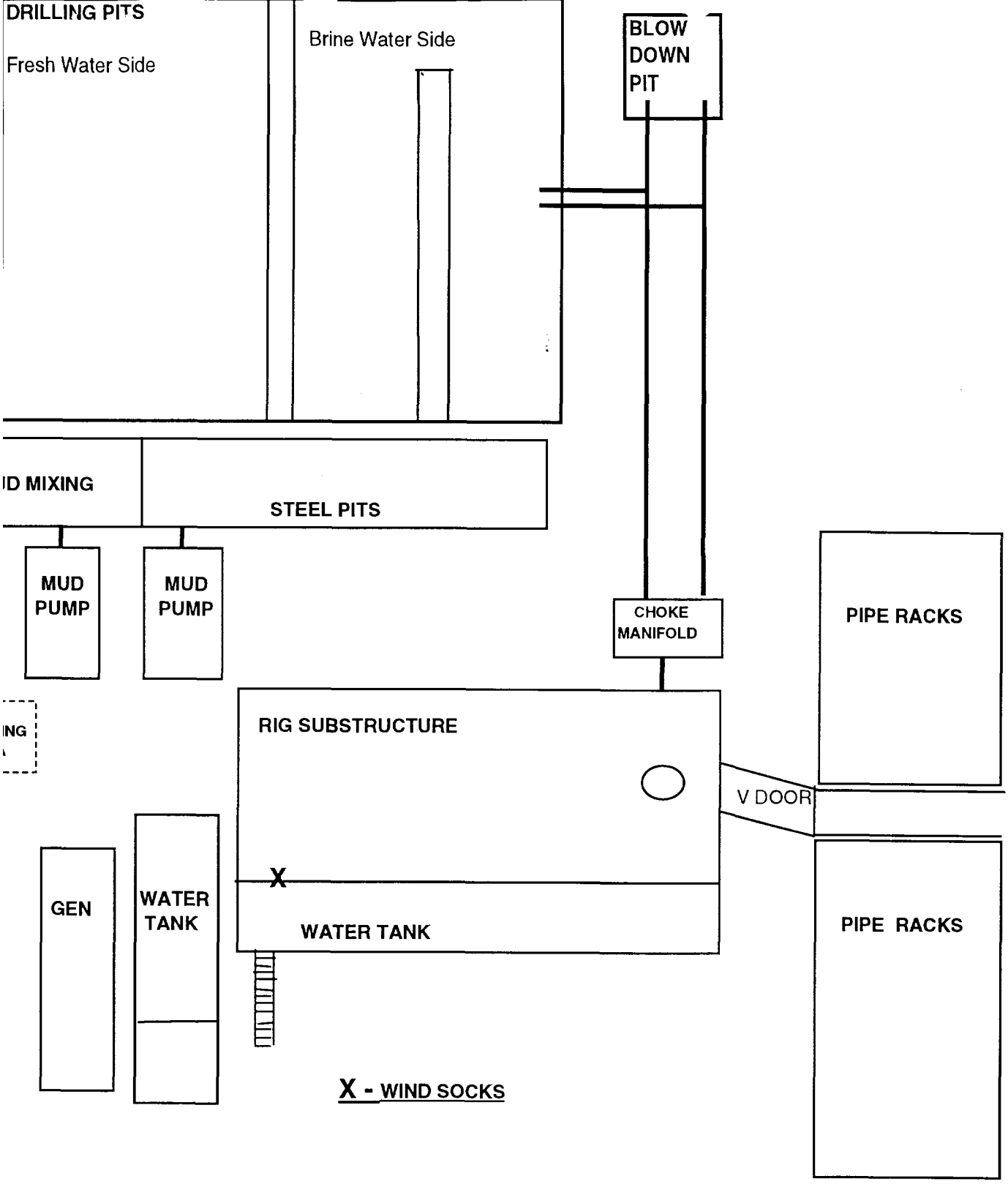
	FIRE	AMBULANCE	POLICE	SHERRIFF	STATE POLICE	HOSPITAL
	911	911	911	911	911	
Hobbs	505-397-9308	505-397-9308	505-397-9265	505-393-2515	505-392-5588	505-392-6581

NMOCD Hobbs - OFFICE: (505) 393-6161 FAX: (505) 393-0720

Downhole Services Team Leader Randy Pennington 281-552-1215

Team Leader - Hobbs Gary Bullock 505-397-8203

(A complete list of all emergency contacts will be posted on the rig board)


DRILLING PITS
Fresh Water Side
Brine Water Side
BLOW DOWN PIT
ID MIXING
STEEL PITS
MUD PUMP
MUD PUMP
CHOKE MANIFOLD
PIPE RACKS
ING
RIG SUBSTRUCTURE
V DOOR
GEN
WATER TANK
X
WATER TANK
PIPE RACKS
X - WIND SOCKS
BRIEFING AREA
LEASE ROAD ON TO LOCATION
CAUTION SIGNS

N

13,171' FNL OF UNIT

15,433' FEL OF UNIT

937'

469'

1450'

T18S-R37E T18S-R38E

T19S-R37E T19S-R38E

NEW DRILL - WELL NO. 813
1450' FSL x 469' FWL Section 29
T-18-S, R-38-E, Lea Co.
WELL DATA - NAD 27, NM(E)
X= 855,587; Y= 625,750
NAD 83
Lat.= 32°42'54.24"N Long.= 103°10'39.78"W
Ground Elevation: 3644'
Total Unit Acres = 10649.53 Ac
Approx. 1 mile west of Hobbs, NM

UNIT BOUNDARY

PRODUCING WELL

INJECTION WELL

WELL LOCATIONS

PROPOSED CONVERSION WELL

Altura ENERGY, LTD. **Altura Energy Ltd.**

Unit Plat

NORTH HOBBS (GRAYBURG SAN ANDRES) UNIT

Well No. 813

Hobbs: Grayburg - Scn Andres Field
Lea County, New Mexico

Scale: 1"= 1000' 02-16-2006 nm38a01.dgn - 10
Plat prepared by Ed Fratten, Inc.