STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

October 12, 1990

BHP Petroleum
5847 San Felipe
Suite 3600
Houston, TX 77057

Attention: Chuck Williams

Administrative Order NSL-2890

Dear Mr. Williams:

Reference is made to your application dated September 5, 1990 for a non-standard gas well location for your **Gallegos Canyon Unit Well No. 503** to be located 1265 feet from the South line and 1850 feet from the East line **(Unit O) of Section 18, Township 29 North, Range 12 West**, NMPM, Undesignated West Kutz Pictured Cliffs Pool, San Juan County, New Mexico. Lots 11 and 12 and the W/2 SE/4 (SE/4 equivalent) of said Section 18 shall be dedicated to the well forming a 158.44-acre gas spacing and proration unit for said pool.

By the authority granted me under the provisions of General Rule 104F.I. the above-described unorthodox gas well location is hereby approved.

Sincerely,

William J. LeMay
Director

WJL/MES/ag

cc: Oil Conservation Division - Aztec

RECEIVED
OCT 17 1990
OIL CON. DIV.
DIST. 3

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

GARREY CARRUTHERS
GOVERNOR

Date: 10-3-90

Attn: M. Stogner

Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

Re: Proposed NC_____
Proposed DHC_____
Proposed NSL X
Proposed SWD_____
Proposed WFX_____
Proposed PMX_____

Gentlemen:

I have examined the application dated 9-12-90

for the B.H.P. PET. (AMERICAS) INC. G. G. U. #503
Operator Lease & Well No.

O-18-29N-12W and my recommendations are as follows:
Unit, S-T-R

Approve

Yours truly,

Ernie Busch

5847 San Felipe Suite 3600
Houston, Texas 77057
Telephone: (713) 780-5000
Fax (713) 780-5273
Telex 9108813603

9/11/90
Attn: E. Busch

September 5, 1990

BHP Petroleum (Americas) Inc

State of New Mexico
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
SEP12 1990
OIL CON. DIV.
DIST. 3

RE: Unorthodox Location, Administrative Approval Request
Gallegos Canyon Unit #503
SW 1/4 SE 1/4 Sec. 18 T29N R12W
San Juan County, New Mexico

Gentlemen:

BHP Petroleum respectfully requests that a non standard location be administratively approved to allow the GCU #503 well to be drilled 1265' FSL and 1850' FEL to be completed in the Pictured Cliffs formation.

The non standard location is requested due to topographical reasons. A standard location is not possible due to steep terrain and an existing gravel mining operation.

The subject well is immediately adjacent to the existing Amoco well location #96 producing from the Dakota formation.

BHP Petroleum is the operator of all offsetting proration units.

Ernie Busch visited the subject location with J. C. Harris and myself on August 10, 1990 and concurred that the subject location was the most feasible.

For both economic and mechanical reasons BHP doesn't think that directionally drilling the proposed well to a standard location is feasible. Economically it is not feasible based on the extra expense of drilling a directional hole compared to the anticipated production. Our experience has shown that a rod pump will have to be installed to remove excess water form the well bore and a directionally drilled hole would greatly hinder or prohibit that.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Chuck Williams

Chuck Williams
Field Services Administrator

CHACRA

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

SEP 12 1990

OIL CON. DIV.
DIST. 3

Form C-101
Revised 1-1-89

API NO. (assigned by OCD on New Wells)

5. Indicate Type of Lease STATE ☐ FEE ☒

6. State Oil & Gas Lease No.

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL ☒ RE-ENTER ☐ DEEPEN ☐ PLUG BACK ☐

b. Type of Well:
OIL WELL ☐ GAS WELL ☒ OTHER SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. Lease Name or Unit Agreement Name
Gallegos Canyon Unit

2. Name of Operator
BHP Petroleum (Americas) Inc.

8. Well No. 503

3. Address of Operator
5847 San Felipe Ste 3600 Houston TX 77057-3005

9. Pool name or Wildcat
W. Kutz Pictured Cliffs

4. Well Location
Unit Letter O : 1265 Feet From The South Line and 1850 Feet From The East Line

Section 18 Township 29N Range 12W NMPM San Juan County

10. Proposed Depth	11. Formation	12. Rotary or C.T.
1581'	Pictured Clfifs	Rotary

13. Elevations (Show whether DF, RT, GR, etc.)	14. Kind & Status Plug. Bond	15. Drilling Contractor	16. Approx. Date Work will start
5524'	Blanket	Unknown	Fall 1990

17.
PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
8 3/4"	20#	7"	± 130'	50 sx (57.5 cu.ft.)	surface
6 1/4"	10.5#	4 1/2"	±1581'	200 sx (247 cu.ft.)	surface

It is proposed to drill the subject well to 1581' with primary production anticipated in the Pictured Cliff.

The proposed location is staked at an unorthodox location due to its proximity to the interior 1/4 1/4 lines. It was necessary to stake it at the submitted location due to gravel mining operations in the vicinity. A request for administrative approval will be submitted.

Estimated Formation Tops:

Ojo Alamo	66'
Kirtland	156'
Fruitland	1103'
Basal Fruitland Coal	1396'
Pictured Cliffs	1431'
TD	1581'

BOPE will consist of 2000# Reagen Bladder type BOP, pipe rams & blind rams BOP.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

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

SIGNATURE Chuck Williams TITLE Field Services Administrator DATE 7/26/90

Chuck Williams
TYPE OR PRINT NAME (713) 780-5448 TELEPHONE NO.

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
BHP Petroleum (Americas) Incorparated	Gallegos Canyon Unit	503

Unit Letter	Section	Township	Range	County
O	18	29N	12W NMPM	San Juan

Actual Footage Location of Well:
1265 feet from the South line and 1850 feet from the East line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
5524'	Pictured Cliffs	W. Kutz Pictured Cliffs	160 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

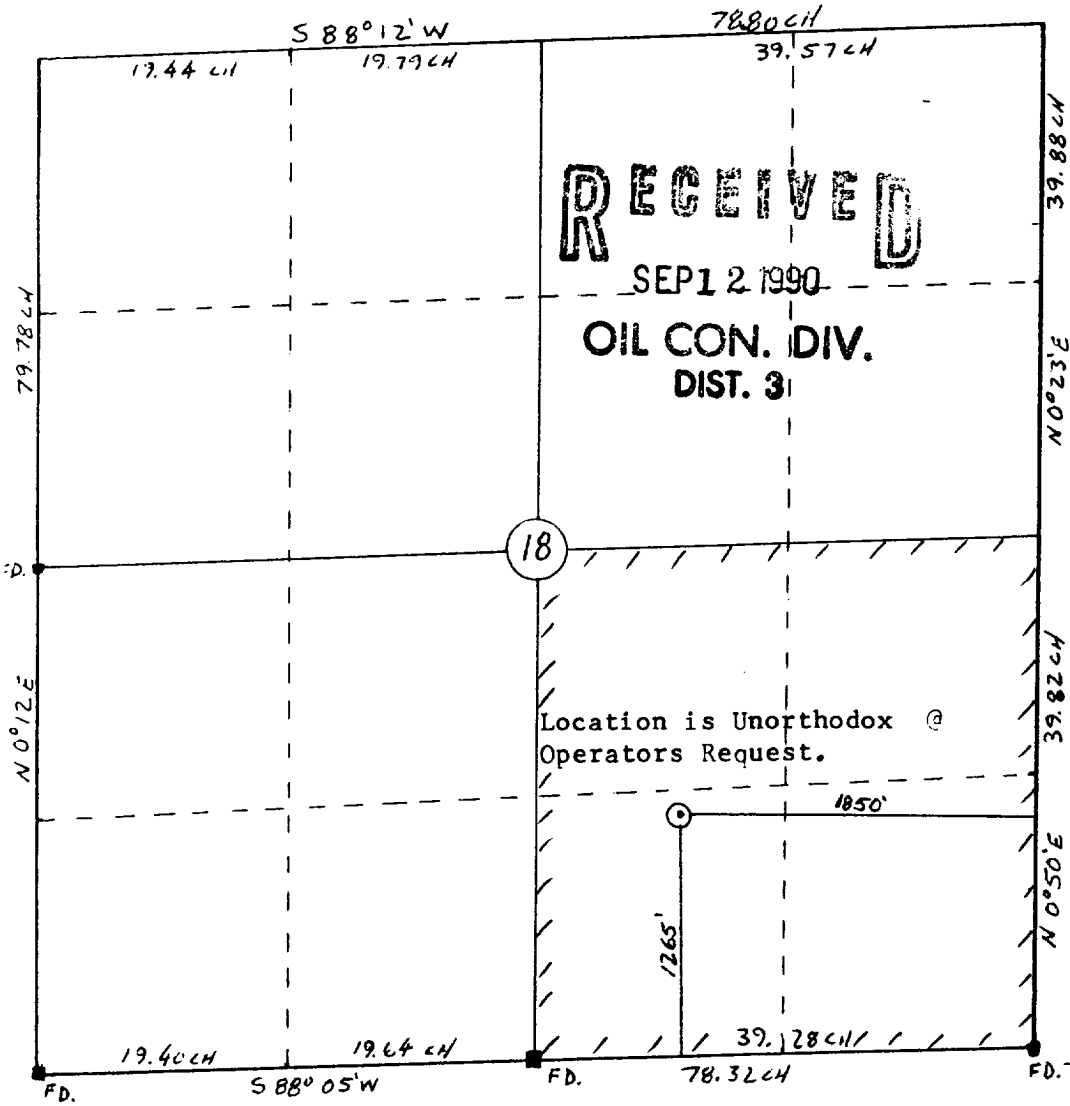
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☐ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if neccessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

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

Signature: Chuck Williams
Printed Name: Chuck Williams
Position: Field Services Administrator
Company: ~~BHP Petroleum (Americas)~~
Date: July 30, 1990

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 knowledge and belief.

6-28-90
Date Surveyed: Roy A. Rush
Signature & Seal of Professional Surveyor: ROY A. RUSH NEW MEXICO 8894 REGISTERED PROFESSIONAL LAND SURVEYOR
Certificate No. 8894

BHP PETROLEUM (AMERICAS) INC.
GALLEGOS CANYON UNIT NO. 503
1265' FSL & 1850' FEL SECTION 18 T29N-R12W
SAN JUAN COUNTY, NEW MEXICO
TEN POINT PROGRAM

1. **Surface Formation:** Nacimiento or valley fill

2 &
3. **Estimated Formation Tops:**

Formation	Top	Expected Production
Ojo Alamo	66	
Kirtland	156	
Fruitland	1103	
Basal Fruitland Coal	1396	Gas
Pictured Cliffs	1431	Gas
Total Depth	1581	

4. **Casing and Cementing Program:** A string of 7" 20# K-55 casing with ST&C couplings is to be set at ±130' in an 8 3/4" hole and cemented to the surface in a single stage with 50 sx Class 'H' cement (yield = 1.15 ft^3/sx) containing 3 % $CaCl_2$ and ¼ #/sx celloflake. Slurry volume assumes a 100 percent excess over calculated hole volume. Centralizers will be run on the bottom two joints as long as boulders are not encountered while drilling the surface hole. If boulders are encountered while drilling the surface hole, no centralizers will be run as it has been BHP P(A)'s experience centralizers have a tendency to knock off boulders and hang up the casing while running in the hole. Minimum clearance between collars and hole is 1.094". Prior to drilling out shoe, casing and BOPE will be tested to a minimum of 2000 psi. Safety factors utilized in the design of this casing string were: Burst = 1.1, Collapse = 1.125, and Tension = 1.8 or 100,000# overpull whichever was greater.

A production string of 4½" 10.5# K-55 casing with ST&C couplings will be run from the surface to total depth in a 6¼" hole. This string will be cemented to the surface with a minimum of 150 sx of 50-50 pozmix containing 2 % gel, 0.5 % fluid loss additive and ¼ #/sx celloflake (yield = 1.26 ft^3/sx) followed by 50 sx of Class 'G' cement containing low fluid loss additives (yield = 1.15 ft^3/sx). Slurry volume assumes a 50 percent excess over calculated hole volume. Cement

volume is subject to change after review and recalculation of hole volume from the open hole calipers. Centralizers will be spaced such that a minimum of two are located above and two are located below the Basal Fruitland Coal; and, if any Ojo Aloma is present in the open hole section at the top of the hole, a minimum of one centralizer will be run just below the base and another into the base of Ojo Alamo. Minimum clearance between collars and hole is 1.25". Prior to perforating the casing for any attempted completion, the casing will be tested to a minimum of 2500 psi. Safety factors utilized in the design of this casing string were: Burst = 1.1, Collapse = 1.125, and Tension = 1.8 or 100,000# overpull whichever was greater.

A chronological log following the completion of the cementing operations detailing the pump rate, pump pressure, slurry density, and slurry volume for each job will be submitted in a Sundry Notice.

5. **Pressure Control Equipment:** (See attached schematic diagrams) A minimum of a 2M BOPE well control system will be utilized. BOP's and choke manifold will be installed and pressure tested before drilling out under surface casing and then will be checked daily as to mechanical operation condition. Ram type preventors will be tested to 70 percent of the internal yield pressure of the casing. The annular preventor will be tested to 50 percent of its working pressure.

A full opening internal blowout preventor or drill pipe safety valve will be on the drilling floor at all times and will be capable of fitting all connections.

6. **Mud Program:** A fresh water Low Solids, Non-Dispersed mud system will be used to drill this well. Sufficient materials will be on location at all times to maintain mud properties and to control any unforeseen lost circulation problems or abnormal pressures in the Farmington Sands of the Kirtland Formation. All drilling fluids will be contained in a steel pit. At the completion of drilling, the drilling fluid will be hauled off to be used for another well. The remaining accumulation of solids in the pit will be dumped into a small earthen pit beside the steel pit. As soon as this pit dries up, it will be covered up.

Mud program summary is as follows:

Interval (feet)	Mud Weight (#/gal)	Viscosity (sec/qt)
0 - 1000	8.4 or less	30 - 38
1000 - TD	9.3 or less	40 - 55

7. **Auxiliary Equipment:**
An upper Kelly Cock will be utilized. At a minimum, a flow sensor will be installed in the system and the mud volume constantly be visually monitored.

8. **Logging Program:** SP-DIL and GR-FDC-CNL logs will be run from TD to surface casing shoe.

Coring Program: No cores are planned.

Testing Program: No tests are planned.

Stimulation Program: Perf the Basal Fruitland Coal with 2 JSPF and frac with 50,000 gals of either a 70 quality nitrogen foam or a crosslinked-gelled water containing a minimum of 50,000 lbs of 20-40 mesh sand.

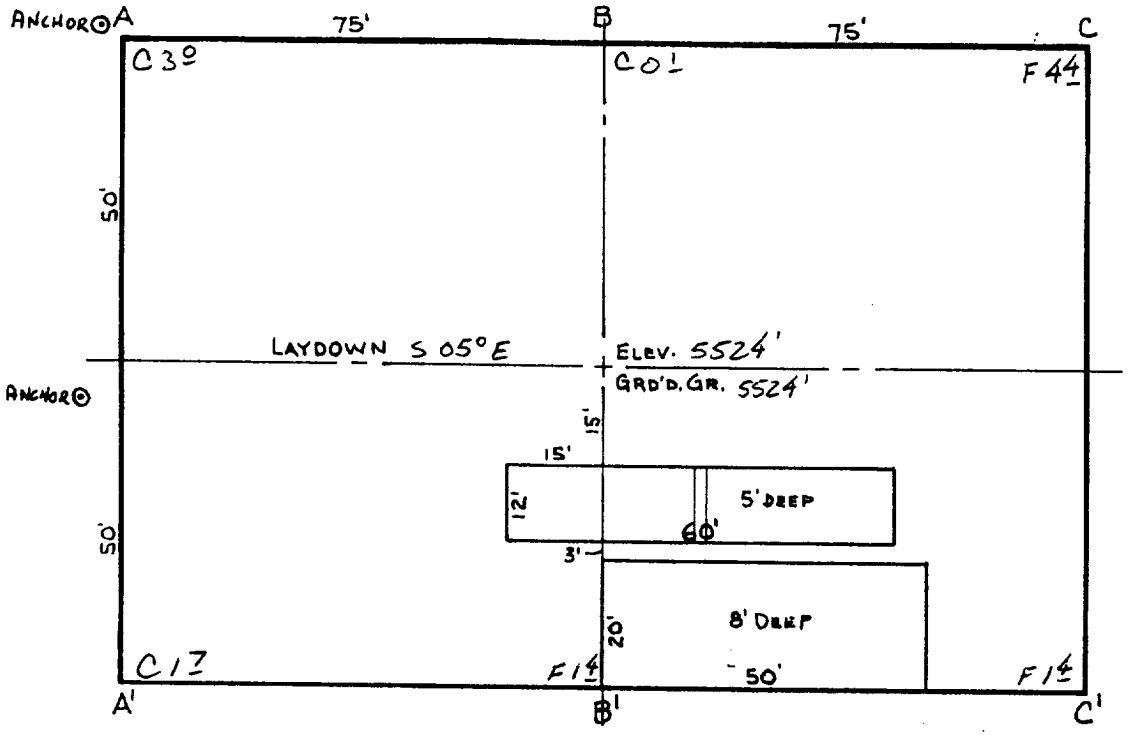
9. **Abnormal Pressure:** Although not expected, abnormal pressures are possible in the Farmington Sands of the Kirtland Formation.

Estimated Bottom Hole Pressure: 400 psi.

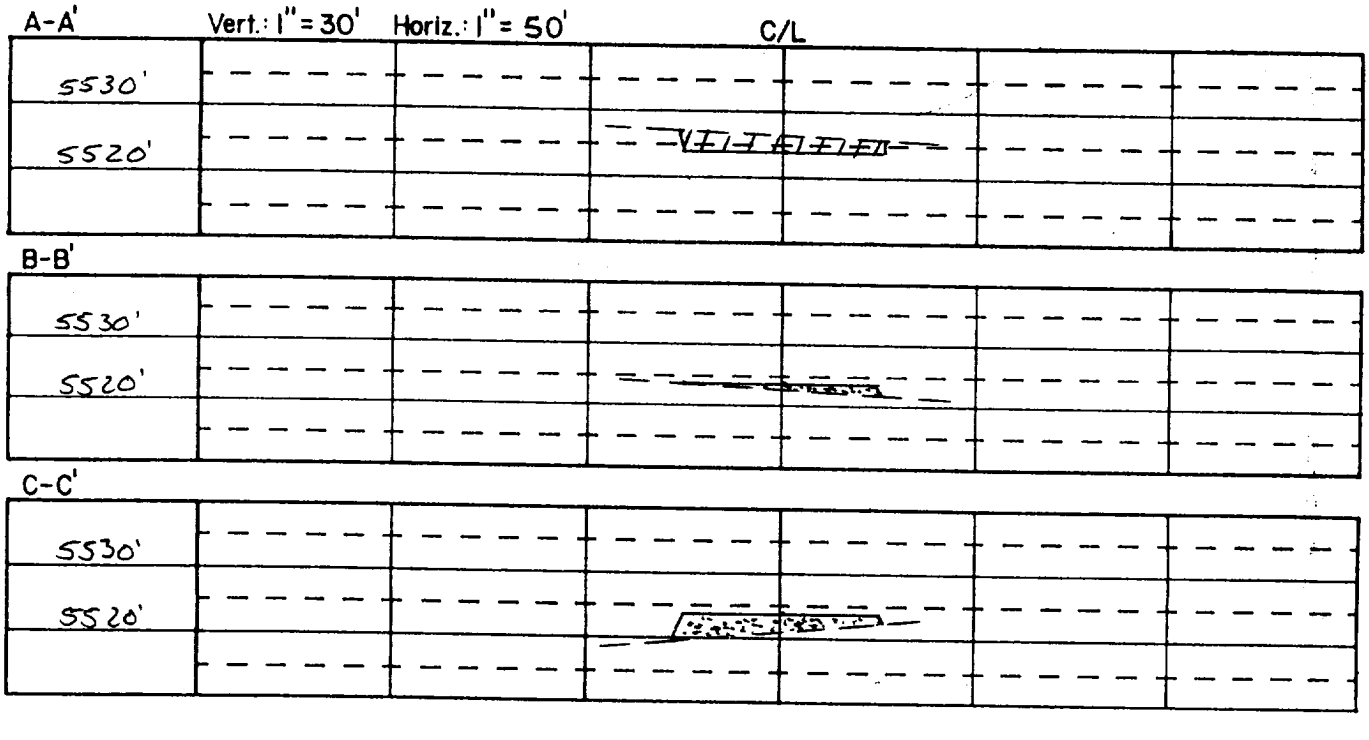
10. **Anticipated Starting Date:** As soon as all required approvals are received.

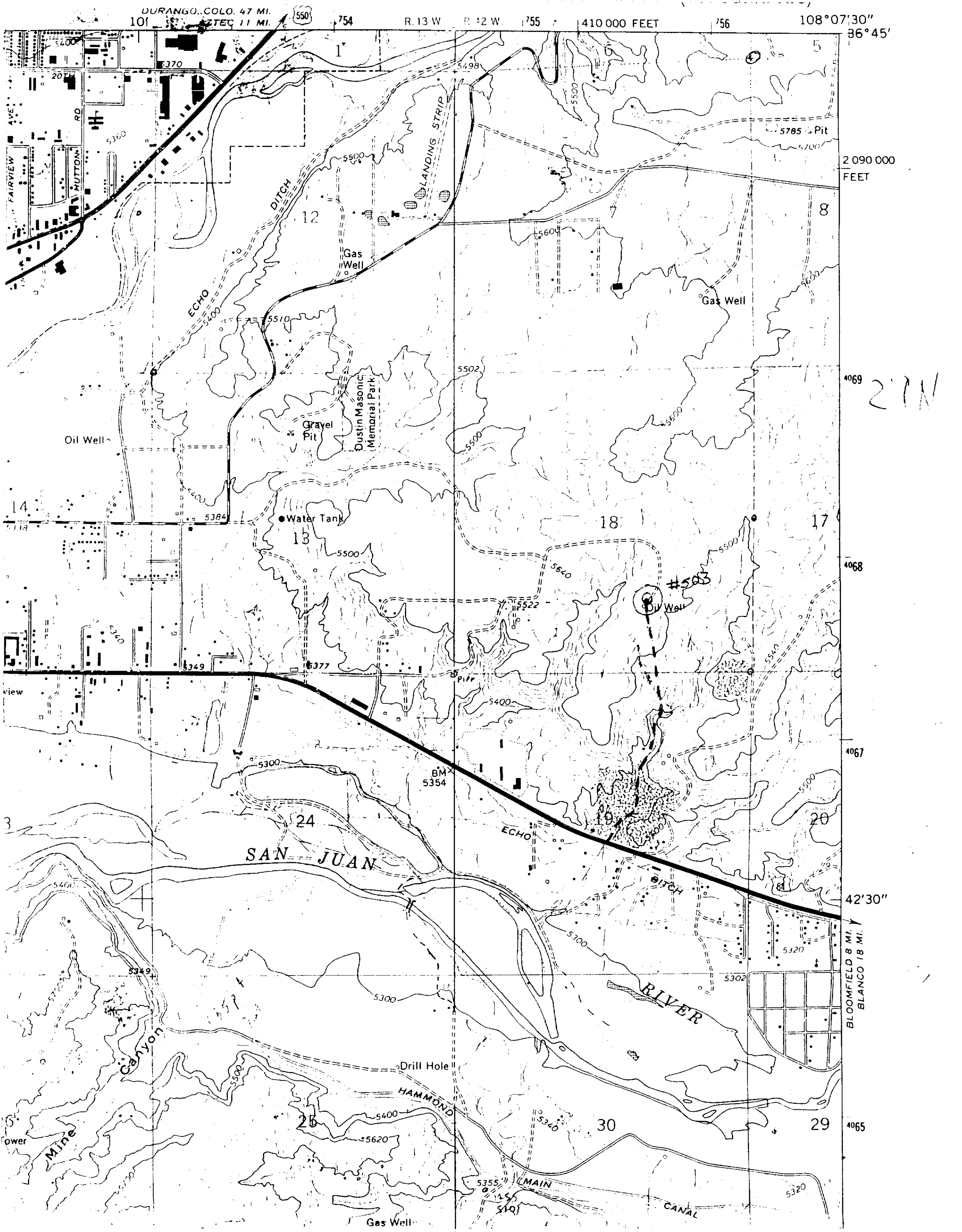
Duration of Operation: It is anticipated a total of 4 days will be required for drilling operations and 5 days for completion operations.

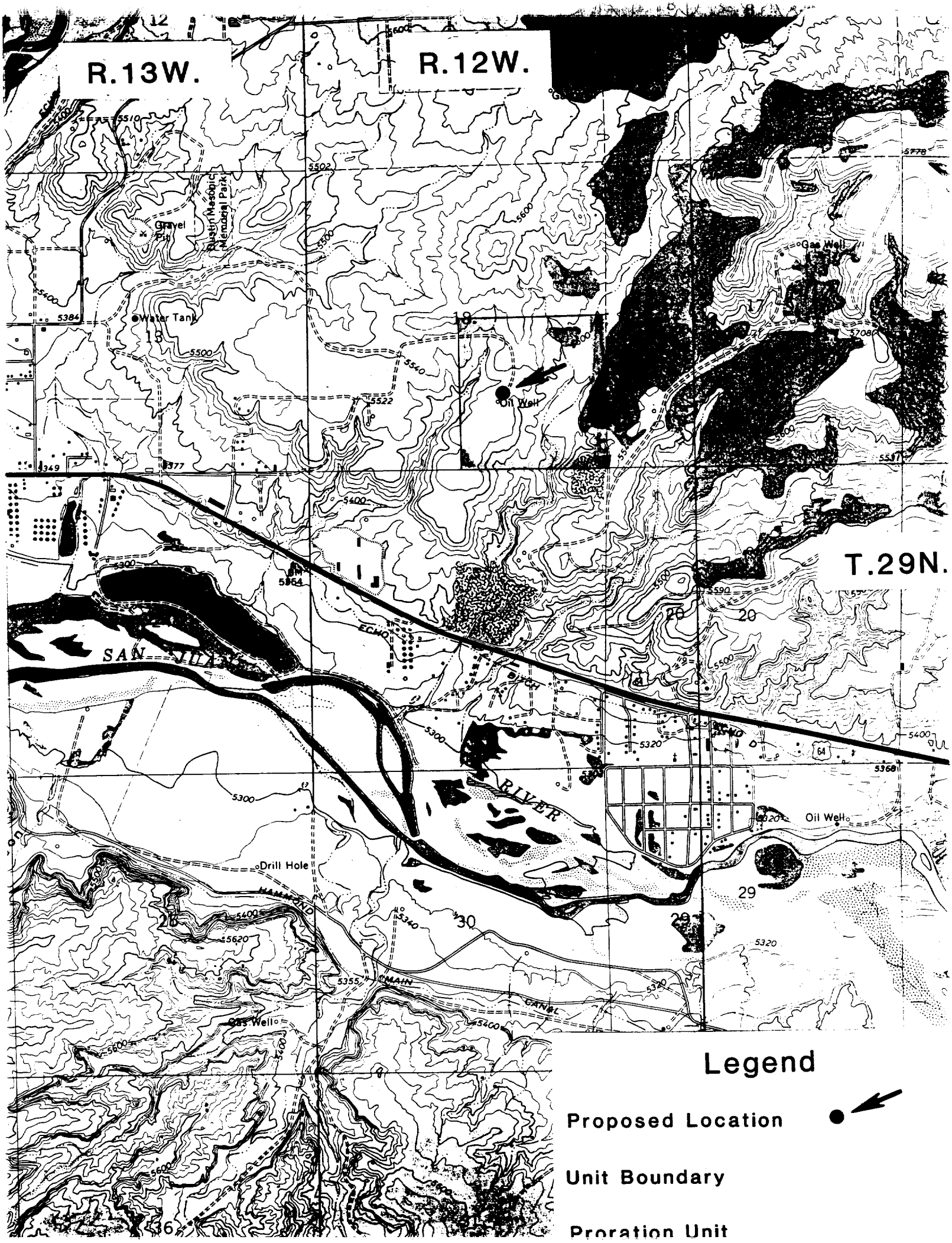
BHP Petroleum (Americas) Inc.
Gallegos Canyon Unit #503
1265'FSL & 1850'FEL
Sec.18, T29N, R12W
San Juan Co., NM



SCALE: 1" = 30'




DURANGO, COLO. 47 MI.
AZTEC 11 MI.
550
R. 13 W.
R. 12 W.
410 000 FEET
108°07'30"
36°45'
2 090 000 FEET
ECHO DITCH
LANDING STRIP
Gas Well
Gravel Pit
Dustin Masonic Memorial Park
Oil Well
Water Tank
#503
Oil Well
BM 5354
ECHO DITCH
SAN JUAN RIVER
42'30"
BLOOMFIELD 8 MI.
BLANCO 18 MI.
Drill Hole
HAMMOND
MAIN CANAL
Mine Canyon
Gas Well
Tower
FAIRVIEW AVE
HUTTON RD
2 N


R.13W.
R.12W.
T.29N.
Gravel Pit
Austin Masonic Memorial Park
Water Tank
Oil Well
Gas Well
Oil Well
Drill Hole
Gas Well
SAN JUAN
RIVER
ECHO
HAMMOND
MAIN
CANAL
Legend
Proposed Location
Unit Boundary
Proration Unit