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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-2895

Dear Mr. Williams:

Reference is made to your application dated September 5, 1990 for a non-standard coal gas well location for your Gallegos Canyon Unit Well No. 394 to be located 705 feet from the South line and 1555 feet from the West line (Unit N) of Section 30, Township 29 North, Range 12 West, NMPM, Basin Fruitland Coal (Gas) Pool, San Juan County, New Mexico. Lots 1 through 4 and the E/2 W/2 (W/2 equivalent) of said Section 30 shall be dedicated to the well forming a standard 318.24-acre gas spacing and proration unit for said pool.

By the authority granted me under the provisions of Rule 8 of the Special Rules and Regulations for the Basin-Fruitland Coal (Gas) Pool as promulgated by Division Order No. R-8768, the above-described unorthodox coal gas well location is hereby approved.

Sincerely,

[Handwritten signature of William J. LeMay]

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 HIGHWAY 66 ROAD
AZTEC, NEW MEXICO 87410
(505) 334-0178

ARREY 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 PHX _____

Gentlemen:

I have examined the application dated 9-12-90

for the BHP PET. (AMERICA) INC. G.C. 11. #394
Operator Lease & Well No.

N-30-29N-12W and my recommendations are as follows:
Unit, S-T-R

Approve

Yours truly,

Emil Bruck

9/11/90
Attn: E. Busch

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

September 5, 1990

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

RE: Unorthodox Location, Administrative Approval Request
Gallegos Canyon Unit #394
SE 1/4 SW 1/4 Sec. 30 T29N R12W
San Juan County, New Mexico



RECEIVED
SEP 12 1990
OIL CON. DIV.
DIST. 3

Gentlemen:

BHP Petroleum respectfully requests that a non standard location be administratively approved to allow the GCU #394 well to be drilled 705' FSL and 1555' FWL to be completed in the Fruitland Coal formation.

The non standard location is requested due to topographical reasons. A standard location is not possible due to steep terrain and massive rock out croppings.

The subject location is immediately adjacent to the existing Amoco well location # 187-E producing from the Dakota formation.

BHP 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 economical 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 from 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

Submit to Appropriate
District Office
State Lease - 6 copies
For Lease - 5 copies

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-101
Revised 1-1-89

OIL CONSERVATION DIVISION

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

Santa Fe, New Mexico 87504-2088

SEP 12 1990

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.

394

3. Address of Operator

5047 San Felipe Suite 3600 Houston, Texas 77057

9. Pool name or Wildcat

Basin Fruitland Coal

4. Well Location

Unit Letter N : 705 Feet From The South Line and 1555 Feet From The West Line

Section 30

Township 29N

Range 12W

NMPM San Juan

County

10. Proposed Depth

1577'

11. Formation

Fruitland Coal

12. Rotary or C.T.

Rotary

13. Elevations (Show whether DF, RT, GR, etc.)

5550' GR

14. Kind & Status Plug. Bond

Blanket

15. Drilling Contractor

Unknown

16. Approx. Date Work will start

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"	7"	20#	± 130'	50 sx (57.5cuft)	Surface
6 1/4"	4 1/2"	10.5#	± 1577'	199 sx (245cuft)	Surface

It is proposed to drill the subject well to 1577' with primary production anticipated in the fruitland Coal.

Estimated Formation Tops:	Ojo Alamo	97'
	Kirtland	197'
	Fruitland	1005'
	Basal Fruitland Coal	1396'
	Pictured Cliffs	1427'
	T.D.	1577'

B.O.P.E. will consist of 2000# Reagan Bladder type preventor, pipe rams and blind ram B.O.P.

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

8/4/90

TYPE OR PRINT NAME Chuck Williams

TELEPHONE NO. (713) 780-541

(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

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

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

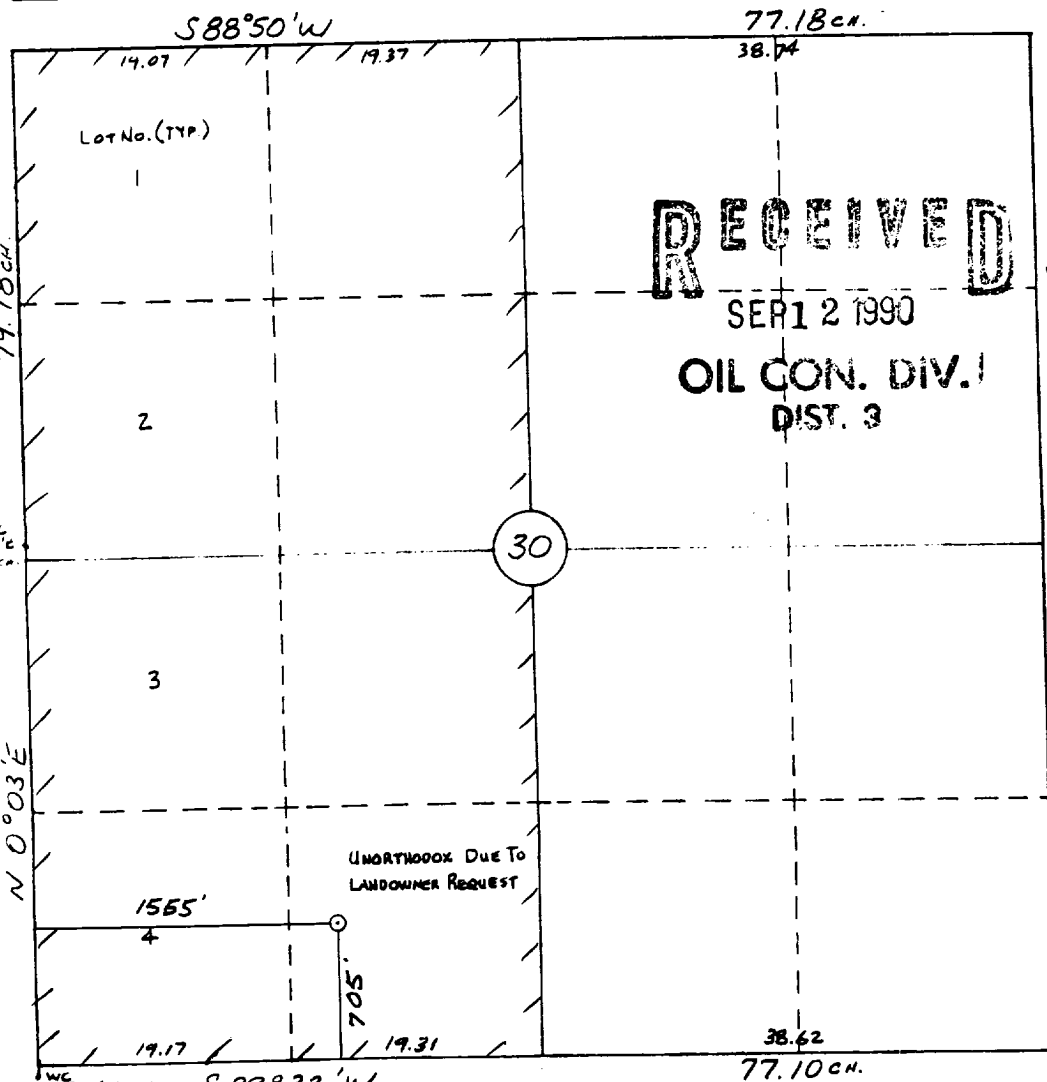
WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator BHP PETROLEUM (AMERICAS) INC.		Lease GALLEGOS CANYON UNIT		Well No. 394
Unit Letter N	Section 30	Township 29 N	Range 12 W	County San Juan
Actual Footage Location of Well: 705 feet from the South line and 1555 feet from the West line				
Ground level Elev. 5550	Producing Formation Fruitland Coal	Pool Basin Fruitland Coal	Dedicated Acreage: 320 Acres	

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure 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 communization, 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 necessary.)
No allowable will be assigned to the well until all interests have been consolidated (by communization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.

0 330 660 990 1320 1650 1980 2310 2640 2000 1800 1000 500 0



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is 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 Inc.
Date
August 4, 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 supervision, and that the same is true and correct to the best of my knowledge and belief.
7-18-90

Date Surveyed
William E. Mahnke II

Signature & Seal of Professional Surveyor

Professional Surveyor
#8466
Certificate No. **8466**

BHP PETROLEUM (AMERICAS) INC.
GALLEGOS CANYON UNIT NO. 394
705' FSL & 1555' FWL SECTION 30 T29N-R12W
SAN JUAN COUNTY, NEW MEXICO
TEN POINT PROGRAM

1. Surface Formation: Nacimiento or valley fill

2 &

3. Estimated Formation Tops:

<u>Formation</u>	<u>Top</u>	<u>Expected Production</u>
Ojo Alamo	97	
Kirtland	197	
Fruitland	1005	
Basal Fruitland Coal	1396	Gas
Pictured Cliffs	1427	Gas
Total Depth	1577	

4. Casing and Cementing Program: A string of 7" 20# K-55 casing with ST&C couplings is to be set at $\pm 130'$ in an 8 3/4" hole and cemented to the surface in a single stage with 50 sx Class 'H' cement (yield = 1.15 ft³/sx) containing 3 % CaCl₂ and 1/4 #/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 4 1/2" 10.5# K-55 casing with ST&C couplings will be run from the surface to total depth in a 6 1/4" hole. This string will be cemented to the surface with a minimum of 149 sx of 50-50 pozmix containing 2 % gel, 0.5 % fluid loss additive and 1/4 #/sx celloflake (yield = 1.26 ft³/sx) followed by 50 sx of Class 'G' cement containing low fluid loss additives (yield = 1.15 ft³/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 Alamo 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:

<u>Interval</u> <u>(feet)</u>	<u>Mud Weight</u> <u>(#/gal)</u>	<u>Viscosity</u> <u>(sec/qt)</u>
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.

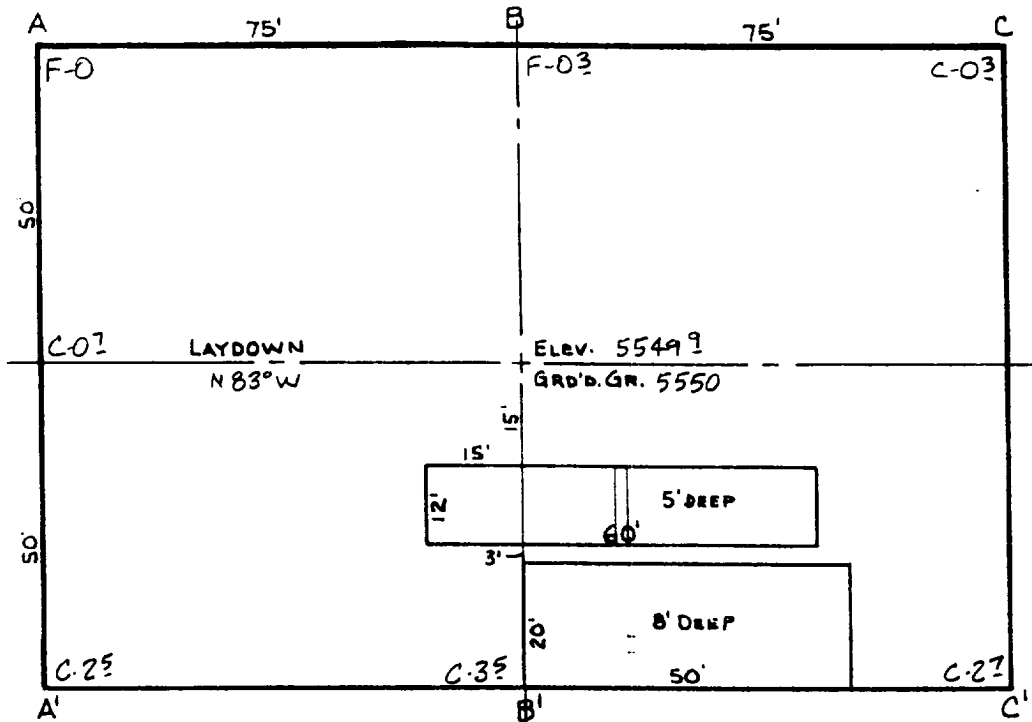
Estimated Bottom Hole Pressure: 400 psi.

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 #394
 705' FSL & 1555' FWL
 Sec. 30, T29N, R12W
 San Juan Co., N.M.

★ 187E



SCALE: 1" = 30'



A-A' Vert.: 1" = 30' Horiz.: 1" = 50'

C/L

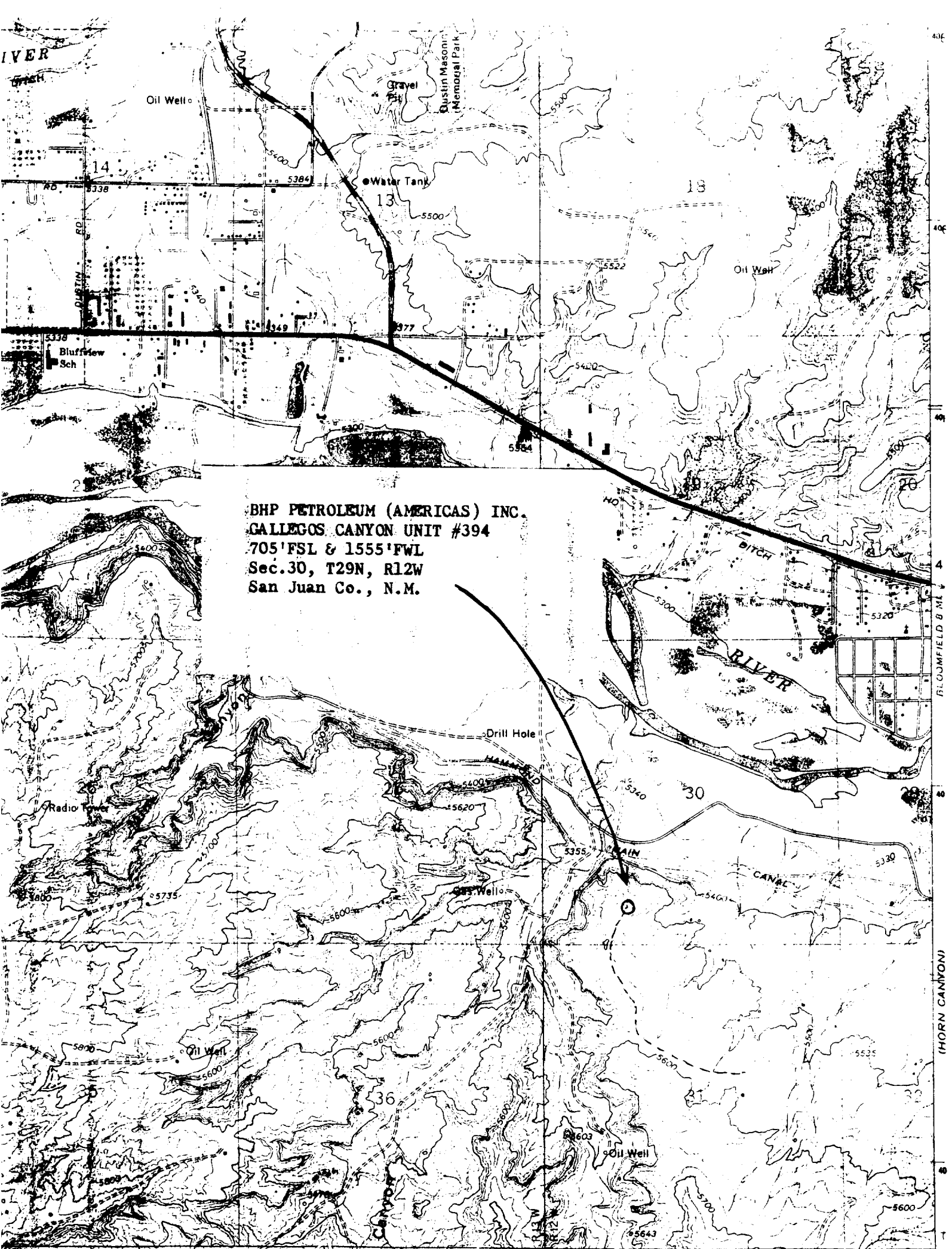
5550						
5540						

B-B'

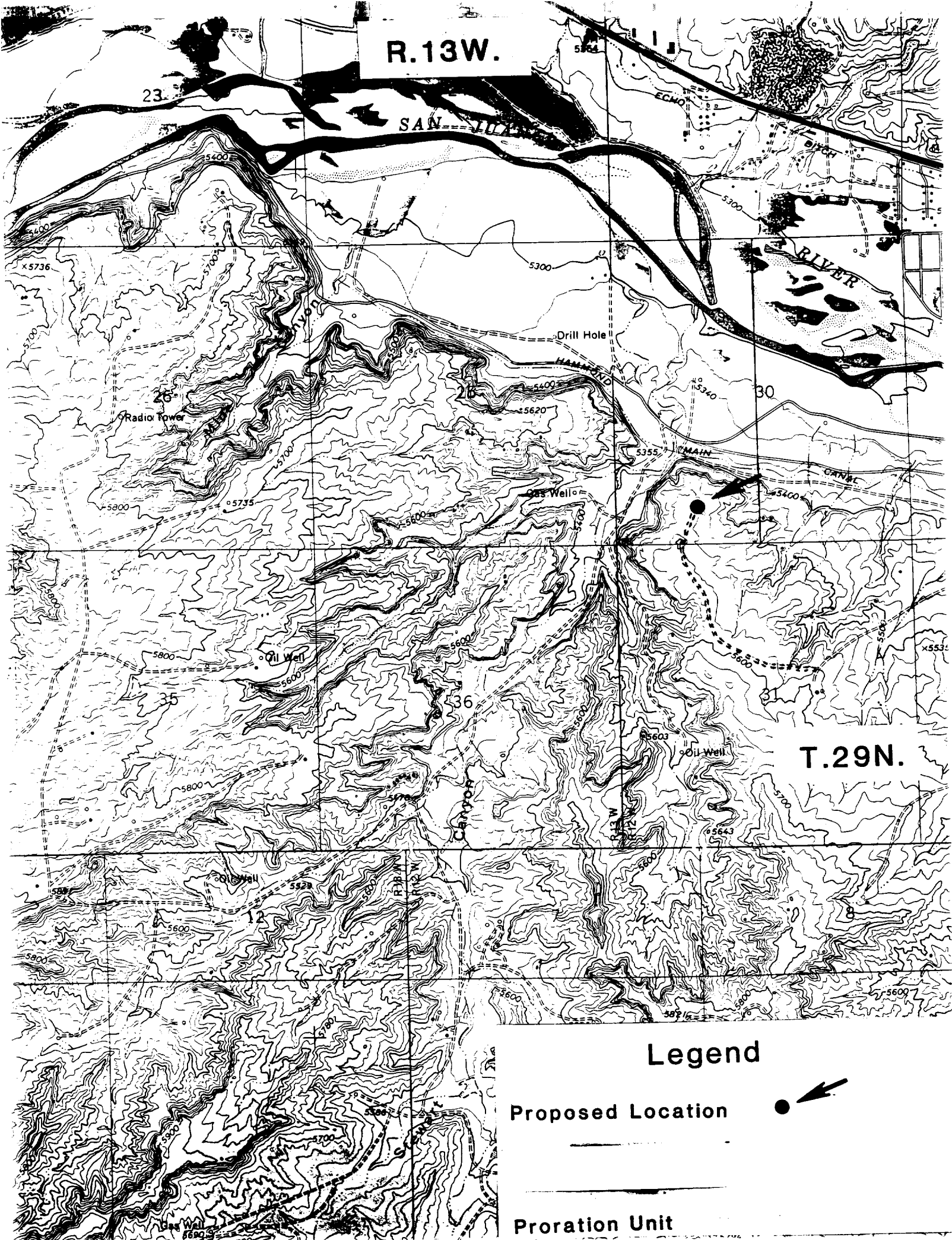
5550						
5540						

C-C'

5550						
5540						



BHP PETROLEUM (AMERICAS) INC.
GALLEGOS CANYON UNIT #394
705' FSL & 1555' FWL
Sec. 30, T29N, R12W
San Juan Co., N.M.



R.13W.

T.29N.

Legend

Proposed Location



Proration Unit