United States Department of the Interior

IN REPLY REFER TO:

Nationwide Bond
3104 (943C-3 ar)

BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE
Post Office and Federal Building
P.O. Box 1449
Santa Fe, New Mexico 87504-1449

MAY 20 1988

May 17, 1988

Mr. Kevin F. Conneighton
BHP Petroleum (Americas) Inc.
5847 San Felipe, Suite 3600
Houston, TX 77057

Dear Mr. Conneighton:

The following oil and gas bond rider is accepted effective May 13, 1988, the date filed in this office.

Bond No: 681094

Amount: $150,000.00

Principal: BHP Petroleum (Americas) Inc.

Surety: Seaboard Surety Company

Lease No: All oil and gas leases

The rider is designed to extend coverage to all oil and gas leases where the principal is a designated operator.

Sincerely,

Dolores L. Vigil

Dolores L. Vigil
Chief, Lands and Oil and Gas Unit

cc:
Seaboard Surety Company

BHP Petroleum

1360 POST OAK BLVD. STE. 500
HOUSTON, TEXAS 77056-3020
TELEPHONE (713) 961-8500
FAX: (713) 961-8464
TELEX: 9108813603 BHP P(A)

FAX TRANSMISSION FORM

DATE: 4/22/94

TO: Mike Hebertson

COMPANY: Division of Oil, Gas and Mining

MAIN TELE NO: (801) 538-5340

FAX: (801) 359-3940

FROM: Carl Kolle

EXT: x8423

NUMBER OF PAGES (INCLUDING THIS PAGE): 2

MESSAGE: Mike, Sorry for the delay. My oversight. A hard copy is in the mail to your attention. Thanks, Carl

IF YOU SHOULD HAVE ANY PROBLEMS, PLEASE CONTACT PAMELA MOODY AT (713) 961-8407.

API# - 43-017-30138

Form 3160-3
(November 1983)
(formerly 9-331C)

- SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

DEPT OF NATURAL RESOURCES
DEC - 2 1993
DIVISION OF OIL, GAS & MINING

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

BUREAU OF LAND MANAGEMENT
ESCALANTE RESOURCE AREA

5. LEASE DESIGNATION AND SERIAL NO.	UTU-68523
6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
7. UNIT AGREEMENT NAME	
8. FARM OR LEASE NAME	Federal 28
9. WELL NO.	1
10. FIELD AND POOL, OR WILDCAT	Cambrian
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA	Section 28, T-33-S, R-7-E
12. COUNTY OR PARISH	Garfield
13. STATE	Utah

b. TYPE OF WELL
DRILL XX DEEPEN ☐ PLUG BACK ☐
OIL WELL XX GAS WELL ☐ OTHER SINGLE ZONE XX MULTIPLE ZONE ☐

2. NAME OF OPERATOR
BHP Petroleum (Americas) Inc.

3. ADDRESS OF OPERATOR
5847 San Felipe, Suite 3600, Houston, Texas 77057

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface 715' FSL & 1845' FEL

At proposed prod. zone

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
± 25 miles southeast of Boulder

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	715'	16. NO. OF ACRES IN LEASE 3360.00	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.		19. PROPOSED DEPTH 7100'	20. ROTARY OR CABLE TOOLS Rotary
21. ELEVATIONS (Show whether DF, RT, GR, etc.) 6583'			22. APPROX. DATE WORK WILL START* As soon as approved

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
36"	30"	-	0-90'	Preset & cmt. w/dryhole digger
17-1/2"	13-3/8"	54.5#	0-900'	650 lead w35/65 Poz G cmt. + 2% CaCl2+ 0.5#/sk celloflakes + 6% gel + 10#/sk Kolite 250 tail 25/75 Poz G cmt. + 2% CaCl2 + 0.5#/sk celloflakes

****

Proposed to spud well and drill to 7100' to test the Cambrian Formation. Will drill a 17-1/2" hole to a TD of 900'. Run and cement surface casing (13-3/8"). WOC 12 hours. Test to 1000# for 30 minutes. Drill a 8-3/4" hole to a TD of 7100' using fresh water mud. No abnormal pressures or poisonous gases are anticipated. Run logs at TD. Run and cement production casing (5-1/2"). WOC 12 hours. Move out drilling rig and move in completion unit. Pressure test to 2500#/30 minutes prior to perforating. Run cased hole correlation logs. Perforate the Tapeats. No stimulation treatments are planned.

Permit to use county road will be obtained from Garfield County. (Burr Trail Road) 1-1/2 miles of new access road will be built for this exploratory well.

Designation of Operator is included with this APD. Surface ownership is BLM.

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. 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 Carl Kolbe TITLE Regulatory Affairs Rep. DATE 11/30 93

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY Gordon R. Staker TITLE District Manager DATE April 18, 1994
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

FINDING OF NO SIGNIFICANT IMPACT

E.A. No: 040-93-004

Circle Cliffs Well No. 1

ENVIRONMENTAL COMPLIANCE

The analysis of the potential environmental impacts and mitigating measures in the attached environmental assessment indicates that the proposed action or alternatives would not result in significant impacts to the human environment. Therefore, an Environmental Impact Statement is not required to further analyze the environmental effects of the proposed action or the alternatives.

Approved by: _____ 3/14/94

Area Manager Date

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ESCALANTE RESOURCE AREA
P.O. BOX 225
Escalante, Utah 84726
(801) 826-4291

3165.3
UT-048

MAR 14 1994

BHP Petroleum (Americas) Inc.
c/o Carl Kolbe
1360 Post Oak Boulevard
Suit 500
Houston, TX 77056-3020

Dear Mr. Kolbe:

Enclosed is a copy of the Circle Cliffs No. 1 EA. The comment period ends on April 13, 1994.

If you have any questions or if we can be of further service please contact our office.

Sincerely,

A.J. Martinez
Area Manager

Enc:

CEDAR CITY DISTRICT
BUREAU OF LAND MANAGEMENT
ENVIRONMENTAL ASSESSMENT COVER SHEET

EA Number:Ut-040-93-004

Date: March 14, 1994

Escalante Resource Area
P.O. Box 225
Escalante, Utah 84726

Project Title: Circle Cliffs Well #1
Project Type: Oil and Gas Exploration Well

Applicant:
BHP Petroleum (Americas) Inc.

Location:

Salt Lake Meridian
Township 33 South, Range 7 East, Section 29.

INTRODUCTION

An Application for Permit to Drill (APD) an oil and gas well on Federal Oil & Gas Lease U-5691 was submitted by BHP Petroleum (Americas) Inc. (BHP) on June 2, 1993. An Environmental Assessment (EA) was completed, however on September 17, 1993, the Southern Utah Wilderness Alliance (SUWA) requested a State Director Review (SDR) of the EA. The SDR UT-93-14 issued on October 26,1993 set aside and remanded the EA to the District for further analysis. On December 2, 1993 BHP submitted an APD for an alternate site, to drill on Federal Oil & Gas Lease UTU-68523, in the event the proposed Circle Cliffs #1 well is not permitted.

Need for Proposed Action

The purpose and need of the proposed action is to allow BHP to exercise their rights as a lease holder to drill an exploratory oil and gas well. The regulations under which approval for the APD is either granted or denied are contained within 43 CFR § 3160. These regulations also govern operations associated with the exploration, development, and production of oil and gas leases and are administered under the direction of the Bureau of Land Management (BLM).

The proposed well is an exploration well. This EA will discuss the drilling of the proposed well and production of the well should oil be found. If the well encounters sufficient oil and it is determined to drill additional wells or go into field development, further environmental analysis and authorizations will be necessary. If oil field development is proposed an environmental impact statement would be prepared to analyze the impacts.

Conformance with Land Use Plan.

The Escalante Management Framework Plan has been reviewed. The proposed action has not been specifically addressed, however it is in conformance because it is not in conflict with, and does not change the uses, goals or management outlined. The area where drilling has been proposed is in oil and gas lease category 1, which is open to leasing with no special stipulations.

PROPOSED ACTION AND ALTERNATIVES

Alternative A - Proposed Action

The proposed action, as outlined in the APD submitted by BHP, is to drill an oil and gas exploration well to a depth of approximately 7,000 feet, using a diesel/electric, rotary drilling rig. The proposed well would be located in Township 33 South, Range 7 East 695′ FSL & 805′ FEL, ($SE\frac{1}{4}SE\frac{1}{4}$) Section 29. The APD consists of two parts; a confidential drilling plan relating to the specific aspects of drilling the hole, and a surface use plan regarding all

of the disturbance created by the proposed action. The drilling plan has been reviewed by BLM Geologist and Engineers (Attachment 1), the surface use plan is included (Attachment 2).

If the APD is approved, the drilling would start as early as March 1994, or as soon as possible after the APD is approved. Drilling operations are expected to last approximately 45 days.

The proposed well site is located approximately 15 miles east of Boulder, Utah, 3 miles west of Capitol Reef National Park and about 2 miles south of the Burr Trail Road. An existing 4 wheel drive road, leading from the Burr Trail Road, provides access to the proposed well site (see map in Attachment 3). This road is rough as it crosses several small canyons near the Burr Trail Road and is relatively flat further to the south. During the Notice of Staking onsite visit it was determined that road construction disturbance could be minimized and gentler terrain could be crossed if the access route were changed. Access from the Burr Trail Road is proposed south along an existing pipeline for about 2,100 feet, then southwest along a former seismic line for about 1,500 feet to its' intersection with an existing jeep trail, and then continuing west until it intersects the aforementioned 4 wheel drive road leading to the proposed well site. Access will require upgrading about 4,500 feet of existing 10 foot wide 4 wheel drive roads to a 20 foot travel way and construction of 1,500 and 2,100 feet of new road with a 20 foot travel way along the former seismic line and pipeline, respectively. Local material would be used for road construction, no road base, or gravel would be used. The application requests a total road width of 24 feet to accommodate construction activity for the road and drainage. A gate or cattleguard will be installed where the proposed road crosses the fence, depending upon presence or absence of cattle in the area during the drilling process or if the well goes into production. There are no major cuts or fills along the proposed access route. Placement of five 18-24 inch diameter culverts may be installed during road construction to prevent road wash outs and to minimize soil erosion.

The proposed drill pad is approximately 300 feet by 210 feet. The drill pad would be ripped and leveled using conventional grading equipment, however, because of the rocky nature of the terrain minimal amounts of explosives could be necessary to construct the reserve pit. All topsoil removed during construction of the drill pad would be stockpiled for rehabilitation of the site. The facilities proposed for the drill site are shown on Attachment 4.

Approximately 300-500 barrels of water per day will be obtained from an existing pipeline with its source in Stair Canyon, a tributary to the Gulch. A Temporary Application, Number 97-2011 (T67144), has been issued to BHP, by the Utah Department of Natural Resources Division of Water Rights, to divert and use water from Deer Creek, The Gulch, or Stair Canyon (Attachment 5).

All cuttings and drilling fluids produced during the drilling operation would be placed into a lined reserve pit. During drilling operations the reserve pit would be fenced on three sides with woven wire. Upon completion of the drilling operation the fourth side would be fenced. The pit would remain fenced until it is dry enough to be backfilled and covered.

Reclamation would commence when drilling is completed. Completion of the rehabilitation work would depend upon weather conditions, the time of the year that the drilling is completed and the amount of time necessary to allow the reserve pit to dry.

All surface disturbance would be re-contoured to blend with the surrounding terrain. All berms would be pulled in and the access route scarified. Any trees removed from the access route and drill pad would be lopped, limbed and scattered over the access route and drilling pad. The disturbed areas would be reseeded with the following mixture:

Indian Ricegrass	2 lbs/acre
Sand Dropseed	1 lbs/acre
Galleta Grass	2 lbs/acre
Antelope Bitterbrush	1 lbs/acre
Wyoming Big Sagebrush	1 lbs/acre

The access route would be water barred to prevent undue erosion and to block vehicle traffic. All washes or drainages filled during construction of the access road would be re-opened to allow natural flows to continue Any culverts that are used during road construction would be removed.

If the well is put into production all surface areas not needed for operation of the well would be contoured to blend with the existing topography, topsoil re-spread, and seeded with the prescribed seed mixture. Aboveground tanks would be used for the storage of all produced oil during testing and production. Oil would be retained in tanks until it could be heater treated, on site, and sold. Produced water would also be stored in reserve pit. An earthen dike will be constructed around all production storage tanks to contain fluids should any of the tanks leak or rupture.

A description of anticipated production equipment and facilities are listed in Attachment 6. Produced oil would be hauled by tanker truck from the well site. The size and number of the trucks to transport the oil would depend upon the amount of oil that the well produces. This could range from one truck load per month to 3 or 4 trucks per day.

Alternative B

An APD was filed for this alternative site by BHP on December 2, 1993. This alternative, as outlined in the APD, is to drill a 7,100 foot oil and gas exploration well using a diesel/electric drilling rig. The alternative well site is located approximately 15 miles east of Boulder, Utah in Township 33 South, Range 7 East, 715' FSL & 1845' FEL, (SE¼SW¼) Section 28. The well site is approximately 1 mile east of the proposed site (Alternative A), 2 miles west of Capitol Reef National Park and about 1½ miles south of the Burr Trail Road (Attachment 7).

Access would be from the Burr Trail Road south along an existing pipeline for approximately 2,500 feet. A new road would then be constructed to the west for about 1,100 feet to the drill site. The proposed access route would have a total width of 24 feet , with a 20 foot travel way. Approximately 3,600 feet of new road construction would be required.

The drill pad would be approximately 400 feet square. All other aspects of the drilling operation would be approximately the same as with the proposed action. Reclamation and production activities would also be the same as with the proposed action.

Alternative C - No Action

Under this alternative both APD's submitted by BHP would be denied.

Other Alternatives

Other alternatives to the proposed action and alternatives B & C are: 1) drilling at other sites, 2) slant drilling, 3) using helicopters to fly equipment to the site and 4) drilling on State lands. The slant drilling alternative and drilling at locations not listed above, would create approximately the same surface disturbance and are therefore not further analyzed. The helicopter alternative was also discussed but was eliminated because of high costs and therefore will not be addressed in this EA. The alternative of drilling on State Lands is a viable alternative but is not analyzed in detail in this EA because the BLM has no control over drilling activities on State Lands. State Lands could be accessed and used for drilling without the approval of BLM.

DESCRIPTION OF THE AFFECTED ENVIRONMENT

Vegetation

The proposed and alternative drilling sites are located on a semi-desert stony loam ecological site. The major vegetation consists of Wyoming big sagebrush, Utah juniper, pinyon pine, four winged-saltbush, cliffrose, and ephedra, with a sparse understory of Indian ricegrass, sand dropseed and galleta grass.

No threatened or endangered plants are found on the potential project sites (Attachment 8).

Soils

The soil on both sites is a shallow stony loam with rock out cropping. Soil depth is shallow to moderate; the erosion potential is low to moderate.

Geology

The proposed and alternate well sites are within the Circle Cliffs subdivision of the Colorado Plateau Physiographic Province. The well would test Pre-Cambrian age formations. There is little or no information on drilling in the formations and a well would be considered "rank wildcat". The surface formation is the Moenkopi. The Operator has requested that specific drilling and geologic information be kept confidential in accordance with 43 CFR 3162.8, and, therefore, details are not included in this document. Anticipated geologic tops (the top of geologic formations) expected to be encountered during drilling are included with the APDs and appear to be reasonable, based on BLM geologist reviews. An engineering review of the drilling program is contained in BLM files and is considered confidential. Geologic hazards are not known to exist in the area.

Wildlife

The major wildlife species which inhabit this area are mule deer, blacktailed jackrabbit, coyote and various birds, small mammals, and reptiles. A complete listing of species that use this area is found in the Escalante Planning Unit, Unit Resource Analysis (URA).

No threatened or endangered animal species have been identified on the area of the proposed or the alternative sites (Attachment 9).

The area of the proposed well and the alternative sites are not categorized by the BLM as critical or high value winter or summer, range for any big game species. A review of digitized information submitted to BLM from the Utah Division of Wildlife Resources (DWR) confirms these classifications.

Air Quality

Air quality in the area is usually good due to the rural character of the area and the lack of any nearby major pollution sources. The area has been designated as Class II under the Prevention of Significant Deterioration Regulations (PSD). Capitol Reef National Park, 3 miles to the east, is designated as a Class I area, where practically any deterioration of air quality would be considered significant. Increases in pollution levels beyond the PSD Class I increments cannot be allowed.

Noise

Noise sources in the area are primarily natural, including wind, birds, insects and noise generated by off-road vehicles and by vehicle use on area roadways. The ambient noise levels are believed to vary widely depending upon the season and the amount of traffic on the Burr Trail Road. The noise levels are generally low and are probably between 16 and 20 decibels, a-weighted (dBA) for most of the area.

Due to the character of the vegetation and the complex topography in the area the distance that sound travels varies significantly from one location to another.

Water

The proposed and alternative sites do not contain surface water. The proposed water source for drilling is from a pipeline originating in Stair Canyon a tributary to the Gulch. The upper section of the Gulch is a perennial stream, however, the stream diminishes in the lower section and water reaches the Escalante River only during periods of high flow. This water source was used during construction of the Burr Trail Road and has proven capable of supplying 300 to 500 barrels of water per day required for drilling. The Bureau of Land Management has a diligence right for livestock water on both Stair Canyon and the Gulch. A temporary use permit has been issued to BHP for water from either Deer Creek, The Gulch, or Stair Canyon (attachment 5).

There is little information on groundwater in the area of the proposed or alternative sites. The surface rocks in the vicinity are older than the water bearing Navajo, Entrada, and Wingate Sandstones. There is a possibility of encountering fresh water in the White Rim and Cedar Mesa Formations. An intended water well was drilled to a depth of approximately 600 feet about a ½ mile south and 1½ miles east of the proposed well site; no water was encountered. There are no springs in the immediate area.

Wilderness

The proposed access road and drill pad are not located within a Wilderness Area or BLM Wilderness Study Area. The proposed action would occur in the White Canyon drainage northwest of the Studhorse Peaks region of the Circle Cliffs. According to digitized information on file with the BLM Utah State Office, the existing 4 wheel drive access road and the drill pad at the proposed site are located in an area of the Circle Cliffs proposed by the Utah Wilderness Coalition (UWC) to be designated as wilderness in HR 1500 (102nd Congress).

The HR 1500 Wilderness proposal was developed by the UWC and was originally introduced to Congress by former Utah Congressman Wayne Owens. It was subsequently revised by the UWC and was introduced to the 102nd Congress by Congressman Hinchey of New York. The

Secretary of Interior has indicated that he wants to ensure that BLM management decisions which may affect wilderness values on lands outside WSA's in Utah are carefully considered. However there is not a moratorium on taking discretionary action in non WSA's such as the portion of the HR 1500 proposal outside of the official BLM WSA's.

The BLM inventoried the proposed project area for wilderness characteristics between 1977 and 1980 and found that the area lacked naturalness and outstanding opportunities for solitude or primitive recreation.

The alternate site and its access route are not located in any Wilderness Area, BLM Wilderness Study Area, or in an area proposed in HR 1500.

Visual Resources

The proposed and alternative sites are in an area classified as visual resource management (VRM) Class III. In a management Class III area, management activities may be apparent to the observer, but remain subordinate to the landscape character and repeat those naturally established characteristics.

Cultural Resources

A cultural resources clearance has been conducted by Intersearch International Learning & Research, Inc. (Attachment 10). The survey area included 2 miles of 100 feet wide along the proposed access road and an area 700 feet by 800 feet at the drill site. The survey was conducted under Utah State Antiquities Permit No. U-93-IG-201b. The survey encountered one site, 42Ga3699, a prehistoric lithic scatter. This site has been determined to be a significant cultural resource judged eligible for the National Register, and it was recommended that BHP realign the proposed access route. The realignment consists of using a portion of a previously cleared seismic line. The seismic line was also cleared by Intersearch International Learning & Research, Inc., under Utah State Antiquities Permit No. 92-IG-529b and no sites were encountered (attachment 10). The pipeline route was cleared by a BLM archaeologist, and no sites were encountered along this section of the proposed road (attachment 10).

Cultural clearances for the alternate drill pad and the access route have been conducted by Sagebrush Consultants. The survey was conducted under Utah State Antiquities Permit No. 93-UT-54630. Three lithic scatter sites were recorded on the drill pad during this survey. All three lithic scatter sites were recommended as not eligible for the National Register.

The BLM and the State Historic Preservation Office (SHPO) have reviewed the clearances and concur with the report's recommendations.

Other Values

The project area is not an ACEC; nor does it contain prime or unique farmland, or a wild and scenic river. Native American Religious concerns are not an issue for this project, and no hazardous or solid wastes have been found in the area.

The locations of the proposed action and the alternative site are not within any wetland, riparian area, or floodplain.

ENVIRONMENTAL CONSEQUENCES

Alternative A - Proposed Action

Vegetation

Impacts would be greatest on the vegetation. Approximately 3.3 acres of new surface disturbance on the drill pad and access route would occur. Most vegetation will be removed along the access route and on the drill pad. Approximately 35 pinyon and juniper trees would be removed from the drill site and access road.

Soils

The drill pad would not require substantial excavation; there would be no major cuts or fills on the proposed access route. However some erosion can be expected as a result of short duration high intensity summer storms. But because of the gentle slopes and soil type serious erosion problems are not anticipated.

Geology

The drilling, casing, cementing and blowout preventer programs of the proposed well were designed and would be implemented in accordance with Bureau requirements. Minimal impacts to and from subsurface resources would be expected. Any unknown or unexpected usable quality water or prospectively valuable minerals encountered below the surface casing could be affected by wellbore communication with formation fluids and would require protection and isolation by appropriate adjustments to the casing and cementing programs. If this well is drilled plugging the well according to BLM requirements at abandonment would protect and/or isolate usable quality water and valuable minerals by isolating various aquifers, hydrocarbon zones and other minerals with cement plugs.

Wildlife

Wildlife would avoid the project site during drilling operations and while there is human activity at the site. However, there are thousands of acres of additional habitat in the Circle Cliffs area. Wildlife populations and densities are low in the area, therefore loss of wildlife as a result of this project would not be a concern.

Air Quality

Construction and drilling activities would temporarily increase the amounts of fugitive dust produced. However, these amounts would be less than the threshold level of 250 tons/per year established by the State of Utah. Activities producing less than 250 ton/per year are generally exempt from regulatory review. Air quality impacts would be highly localized around the proposed well site and access road. Construction related emissions would last approximately 7 days. Emissions from combustion engines during drilling would last approximately 45 days and are expected to be minimal. Due to occasionally high amounts of background total suspended particulate levels from natural sources of fugitive dust, the additional dust generated would result in slight increases of total suspended particulates for short periods of time,, but the increases would be well under the allowable PSD increments and would not exceed the NAAQS.

During testing, and if necessary, oil production, natural gas would be flared. Gas flared during testing would last less than 30 days and would not result in long-term air quality impacts. Flaring beyond the test period would require a written request to the Utah Department of Natural Resources and the BLM. Wellhead production emissions or gas flaring may require an air quality permit from the Utah Department of Health, Bureau of Air Quality. Permits would not be issued unless the air emissions comply with all applicable air quality regulations.

Noise

Noise levels would be near 64 decibels, a-weighted (DBA) at 400 feet from the drilling rig and 25 DBA at 2,000 feet from the drilling rig. The noise level at 400 feet would exceed the Environmental Protection Agencies (EPA) standard of 55 dba "for out door areas where people spend widely varying amounts of time in which quiet is a basis for use." A diesel/electric drilling rig would be used to minimize noise impacts. Because increases in noise levels would be temporary and the intervening terrain and vegetation the proposed drill would not result in significant impact to wildlife that inhabit the area.

There are no residences or campgrounds within 1 mile of the location of the proposed well site. There is only occasional human visitation to the area, therefore the anticipated increase in noise levels would have no effect on humans.

In the event the well goes into production, noise levels would diminish to less than 55 dBA, and the EPA standard would be met.

Water

The use of 300 to 500 barrels of water per day for 45 days from the Stair Canyon pipeline would reduce water flows in the Gulch by less than 1 percent. Therefore, there would be sufficient water to meet all wildlife and livestock needs.

The proposed action would take place below the known water producing geological formations. Some minor pollution of ground water systems could occur with the introduction of drilling fluids (filtrate) into an aquifer. This is normal and unavoidable during drilling operations but would occur only in the immediate vicinity of the wellbore. There would be a potential for communication, contamination and commingling of formation fluids via the wellbore. However, the drilling program and adherence to BLM plugging requirements would prevent this and contamination of ground water is not expected. This technology has proven to be successful and no impacts to groundwater aquifers or drinking water supplies would be expected from drilling the proposed well. Lining the reserve pit would also protect any groundwater from contamination.

Wilderness

No wilderness area or BLM wilderness study area would be impacted. Any future legislative proposal for wilderness designation of the proposed well site area could be influenced if an oil or gas discovery were made. Congress would weigh the value of the mineral resources against the wilderness values of the area as they consider wilderness designation for BLM lands in Utah.

If production does not occur, legislative proposals for wilderness designation would be affected only during the time required for reclamation of the propose project site to a natural appearance.

Visual Resources

This project would meet VRM Class III standards. The proposed drill site would not be visible from the Burr Trail Road, however during drilling operations the derrick may be visible at night from head of Long Canyon and a few places on Highway 12. The project is screened from any major or well known view points. The edge of the Horse Canyon along King Bench is the only place where the drill pad would be visible from a distance. The proposed well site cannot be seen from any overlook or key observation point within Capitol Reef National Park. Reduction in visual quality during drilling would be of a temporary nature, lasting approximately 45 days.

If the proposed well were to go into production the primary visual impact would be the access road. The key observation point of the access road would be from the Burr Trail Road. The angle of observation would allow only a brief glimpse of the access road because it would be screened by the native vegetation. If flaring of natural gases is necessary during testing or production, the glow from flaring would be visible from a few places on Highway 12,

the head of Long Canyon, and from King Bench.

Cultural Resources

The proposed access road as would not cross any known cultural sites. Therefore, cultural values would not be affected.

Economics

The proposed well would have short-term socioeconomic effects associated mainly with the construction and drilling phases. The effects would be evident mainly in the towns of Boulder and Escalante, Utah. Local contractors would be used to build and reclaim the proposed drill pad and access road. The proposed well would employ approximately 30 people. Several local people could be employed during the drilling of the well. The largest population impacts would be expected in the town of Escalante where most employees would likely stay during the life span of the project.

Alternative B

Vegetation

Impacts on the vegetation and soils would be approximately the same as with the proposed action except the drill pad is larger and more vegetation would be removed. Approximately 4.7 acres of new surface disturbance on the drill pad and access route would occur. Approximately 45 pinyon and juniper trees would be removed from the drill pad and access road.

Soils

The slopes on this site are about 3 to 5 percent with a east aspect. The soil type is a shallow stony loam with rock outcropping. There is less surface stoniness on this site than on the proposed site. Because of the gentle slopes and soil type there would be only a slight increase in erosion until the disturbed areas are re-vegetated (approximately 5 years).

Geology

Impacts to subsurface resources would be the same as with the proposed action because the drilling would encounter the same geological formations.

Wildlife

The affects on wildlife would be approximately the same as with the proposed action. The disturbance would occur in the same habitat type. However 4.7 acres of habitat would be disturbed as compared to 3.3 acres for the proposed action.

Air Quality

Increases in fugitive dust and total suspended particulates would be approximately the same as at the proposed site. Although there would be more surface disturbance in this alternative the access road would be shorter and less dust would be created by vehicle travel.

Noise

Noise generated from drilling activities would be more noticeable to visitors along the Burr Trail Road because the alternative site would be 1 mile closer to the Burr Trail road. However, there are no campgrounds or points of interest in the area where visitors are likely to stop.

Water

Potential for ground and surface water contamination would be the same as with the proposed action because drilling would encounter the same aquifers as at the proposed drill pad. Water requirements for drilling would be the same as with the proposed action.

Wilderness

No wilderness area or BLM wilderness study area would be impacted. The alternative drill pad and access road are not within the proposal made in HR 1500.

Visual Resources

If the well were drilled at the alternative site, VRM Class III standards would be met. The alternative drill site would not be visible from the Burr Trail Road, however, during drilling operations the upper half of the derrick would be visible from the Burr Trail Road and would be noticeable to visitors to the area during the 45 day drilling period. All other impacts would be the same as with the proposed action.

Cultural Resources

Three lithic scatter sites have been recorded on the alternative drill pad. The three lithic scatter sites are not eligible for the National Register they would be destroyed.

Economics

The socioeconomic impacts would be approximately the same with this alternative as with the proposed action.

Alternative C - No Action

Under this alternative the activities stated in alternative A (proposed action) or alternative B would not occur. Therefore, there would not be additional surface disturbance resulting in loss of vegetation or increases in erosion, fugitive dust production, or destruction of cultural sites. Resource conditions would remain as at present. The short-term economic benefits to the local residents would be lost.

CUMULATIVE IMPACTS

Proposed Action

Vegetation

All of the proposed new access is along previously disturbed areas. The only newly disturbed area would be the drill pad itself which covers less than 2 acres. Total new disturbance would be 3.3 acres. Since the proposed action includes reclamation and re-vegetation of these areas after exploration/production activities are completed, the proposed action would not add to cumulative impacts to vegetative resources in the long term.

Soils

Approximately 3.3 acres of new surface disturbance is proposed. This would result in a increase in soil loss of approximately .4 tons per acre per year. Reclamation and re-vegetation is expected within 5 years. The proposed action would not add cumulative impacts to the soil resource.

Geology

No cumulative impacts are expected.

Wildlife

The major impacts to wildlife would be slight reductions in population resulting from disturbance and displacement. These would be short-term impacts but would be cumulative to other activities in the resource area such as roads, fencing, additional oil and gas exploration, and livestock grazing. At this time, none of these impacts are expected to be significant because no additional disturbance is expected from activities ongoing in the vicinity.

Air Quality

Minor impacts to air quality would result from emissions from flared gases, if flaring is necessary.

Noise

No cumulative impacts are anticipated. Once the well is drilled noise levels will revert back to the original levels unless the well goes into production. If production occurs noise from the pump jack and vehicle traffic would be cumulative with the existing and expected increase in vehicle traffic along the Burr Trail Road.

Water

There is no surface water at the proposed site and it is not expected that any ground water would be encountered. The removal of 300 to 500 barrels of water a day for 45 day from the Gulch would not have any cumulative impacts to water resources are anticipated.

Wilderness

With the exception of the existing 4WD road, there are no other known past, present, or reasonably foreseeable future activities in the area proposed by HR 1500 as wilderness which would affect naturalness or opportunities for solitude or primitive recreation the area.

Visual Resources

After reclamation, the project would not affect visual resources because the form, line, color and texture of the area would be restored to pre-project conditions.

Cultural Resources

No cultural sites would be effected. Therefore, there would be no cumulative impacts to cultural resources.

Economic

There would no cumulative impacts to the local economy because no additional sources of employment are expected during the drilling or potential production period.

Alternative B

Cumulative impacts are approximately the same with this alternative and the proposed action. The cumulative impacts that differ would be the loss of the cultural sites.

Alternative C - No Action

No resource would be impacted under this alternative. The existing environment would continue with no cumulative impacts.

MITIGATION MEASURES

1. Surface disturbance and clearing will be held to an absolute minimum to maintain vegetative screening of the road and drill pad. The trees cleared from the pad area and road shall be limited to those whose presence would be significantly detrimental to the safety of the operation. Trees shall not be cut along the access route where limbing would produce sufficient clearance.

2. The access route will be constructed in accordance with this stipulation and the Surface Operations Standards for Oil and Gas Exploration and Development. The access road shall be constructed where flagged with a total surface disturbance for the road bed and drainage confined a maximum of 18 feet. Drainage across the road, including culverts shall be provided for at such intervals as to prevent gullying on the down slope side of the road. Road berms shall be pulled in. The road grade shall be rolled with the surface of the ground as much as possible to provide natural drainage. Additional specific construction procedures may be provided by the BLM representative during construction.

3. Surface disturbance at the drill pad will not exceed that shown for the drill pad layout, i.e., 300 feet x 260 feet or 400 feet by 400 feet depending which site is selected.

4. Topsoil from the drilling pad shall be removed to 6 inches deep and stockpiled in a manner to minimize soil loss to wind and water erosion. Stockpiles shall be rounded off and located so that soil is not contaminated or compacted.

5. When the site is abandoned, disturbed areas, including drill pad, mud pits, and the access road, shall be reclaimed to a condition as close as possible to preconstruction conditions unless other wise directed by the authorized officer. Reclamation shall include contouring of disturbed areas to blend with the surrounding terrain. All berms will be pulled in and the new access road scarified and seeded. All slopes 5 percent or greater will be water barred.

6 If the well proves to be a dry hole, reclamation of the site shall start immediately. Topsoil shall be redistributed and the area will be seeded. Trees that are removed from the disturbed areas will be lopped, limbed and scattered over the access route. Seeding shall be accomplished during the period October to December. The disturbed areas will be reseeded with the following mixture:

Indian Ricegrass	2 lbs/acre
Sand Dropseed	1 lbs/acre
Galleta Grass	2 lbs/acre
Antelope Bitterbrush	1 lbs/acre
Wyoming Big Sagebrush	1 lbs/acre

7. Unauthorized vehicle use will be blocked along all new access routes.

8. All washes or drainages that are filled in to allow access will be re-opened to allow natural flows to continue. All culverts that are installed will be removed.

9. Any production facilities will be painted a single, low gloss, pastel color that will blend with the color of soil, rock or vegetation. Color will be approved by the BLM.

10. If usable quality water or prospectively valuable minerals are encountered below the surface casing, the cementing programs for the 5½ inch casing would be adjusted to protect and or isolate any such zone. If the 5½ inch casing is run and cemented in place, a cement bond log (CBL) or cement evaluation tool (CET) would be run to determine the depth of the cement plug top and the quality of the cement bond.

PERSONS OR AGENCIES CONSULTED

BHP Petroleum Company Inc.
Ken Rait - Southern Utah Wilderness Association
Norm McKee - Utah Division of Wildlife Resources
Nation Park Service - Capitol Reef National Park
Utah Division of Oil, Gas and Mining
Brian Bremner - Garfield County Engineer

LIST OF PREPARERS

Prepared By:

Paul Carter - Geologist, Cedar City District Office

Gregg Christensen - Natural Resource Specialist, Escalante Resource Area

Participating Staff:

Larry Royer - Outdoor Recreation Planner, Cedar City District Office

Steve Hedges - Wildlife Biologist, Cedar City District Office

George Diwachak - Environmental Scientist, Utah State Office

Max Hodson - Soil Scientist, Cedar City District Office

Craig Sorenson - Outdoor Recreation Planner, Escalante Resource Area

Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: UTU-68523

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [XX] GAS WELL [ ] OTHER — SINGLE ZONE [XX] MULTIPLE ZONE [ ]

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: BHP Petroleum (Americas) Inc.

8. FARM OR LEASE NAME: Federal 28

3. ADDRESS OF OPERATOR: 5847 San Felipe, Suite 3600, Houston, Texas 77057

9. WELL NO.: 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 715' FSL & 1845' FEL
At proposed prod. zone: SW SE

RECEIVED
APR 1 1994
DIV. OF OIL, GAS & MINING

10. FIELD AND POOL, OR WILDCAT: ~~Cambrian~~ Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Section 28, T-33-S, R-7-E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: ± 25 miles southeast of Boulder

12. COUNTY OR PARISH: Garfield | 13. STATE: Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 715'

16. NO. OF ACRES IN LEASE: 3360.00

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.:

19. PROPOSED DEPTH: 7100'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 6583'

22. APPROX. DATE WORK WILL START*: As soon as approved

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
36"	30"	-	0-90'	Preset & cmt. w/dryhole digger
17-1/2"	13-3/8"	54.5#	0-900'	650 lead w35/65 Poz G cmt. + 2% CaCl2+ 0.5#/sk celloflakes + 6% gel + 10#/sk Kolite 250 tail 25/75 Poz G cmt. + 2% CaCl2 + 0.5#/sk celloflakes

****

Proposed to spud well and drill to 7100' to test the Cambrian Formation. Will drill a 17-1/2" hole to a TD of 900'. Run and cement surface casing (13-3/8"). WOC 12 hours. Test to 1000# for 30 minutes. Driil a 8-3/4" hole to a TD of 7100' using fresh water mud. No abnormal pressures or poisonous gases are anticipated. Run logs at TD. Run and cement production casing (5-1/2"). WOC 12 hours. Move out drilling rig and move in completion unit. Pressure test to 2500#/30 minutes prior to perforating. Run cased hole correlation logs. Perforate the Tapeats. No stimulation treatments are planned.

Permit to use county road will be obtained from Garfield County. (Burr Trail Road) 1-1/2 miles of new access road will be built for this exploratory well.

Designation of Operator is included with this APD. Surface ownership is BLM.

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. 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 Carl Kolbe TITLE Regulatory Affairs Rep. DATE 11/30 93

(This space for Federal or State office use)

PERMIT NO. 43-017-30138 APPROVAL DATE

APPROVED BY TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 4/20/94
BY:
WELL SPACING: R615-2-2.

*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.

COMPANY [redacted] PETROLEUM (AMERICAS) INC.

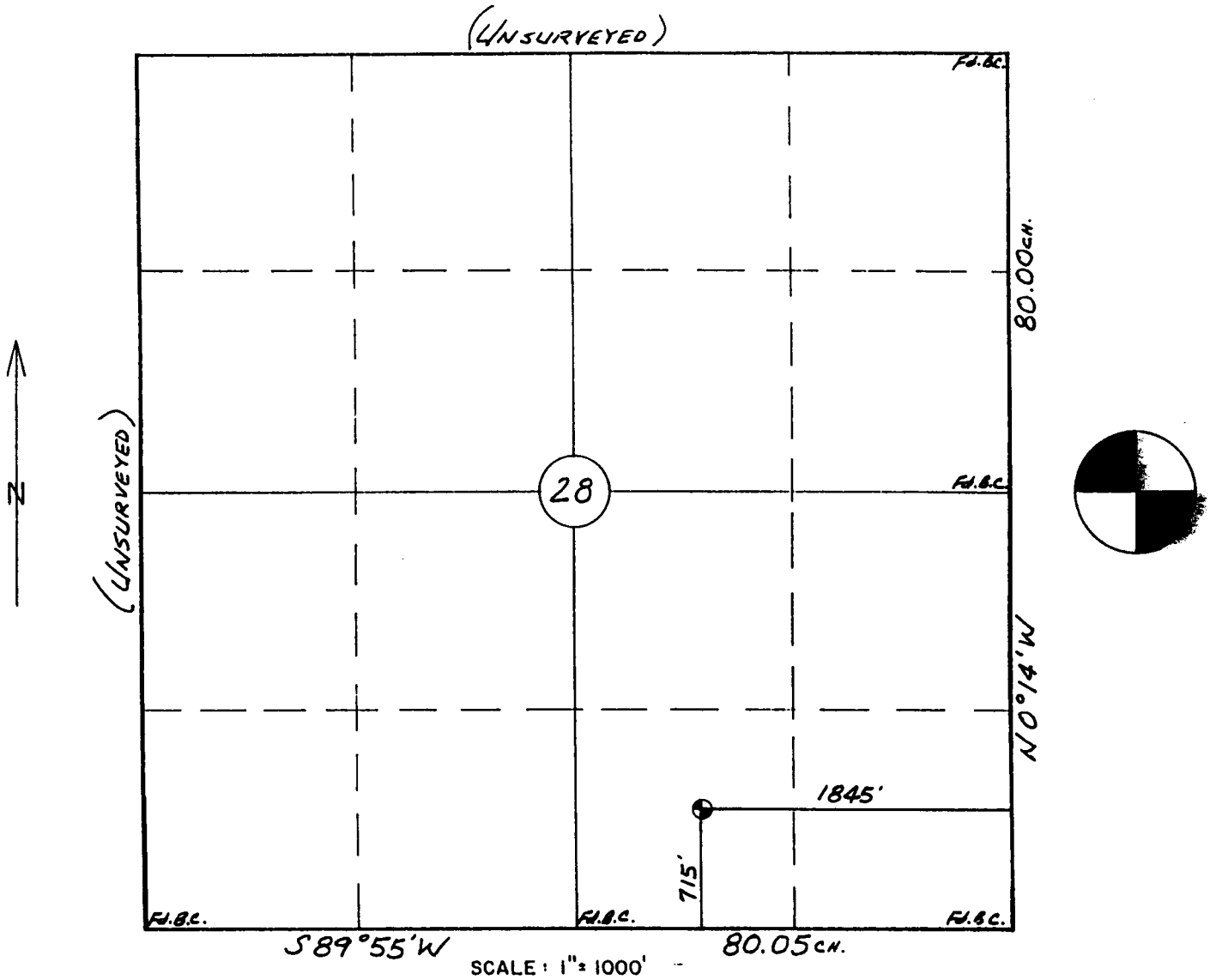
LEASE FEDERAL 28 WELL NO. 1

SEC. 28, T. 33 S, R. 7 E, SLB & M

COUNTY Garfield STATE Utah

LOCATION 715'FSL & 1845'FEL

ELEVATION 6583



SCALE: 1" = 1000'

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SEAL: WILLIAM E. MAHNKE II NEW MEXICO #8466 REGISTERED PROFESSIONAL LAND SURVEYOR

WILLIAM E. MAHNKE II
NEW MEXICO P.L.S. Nº 8466

SURVEYED 10 Nov., 19 93

BHP PETROLEUM (AMERICAS) INC.
FEDERAL 28 NO. 1
715' FSL & 1,845' FEL (SW/SE)
SECTION 28, T-33-S, R-7-E
GARFIELD COUNTY, UTAH

TEN POINT PROGRAM

1. Surface Formation: Triassic Moenkopi

2. Estimated Formation Tops:

3. Elevation: 6,583' ungraded ground level

FORMATION	TOP	EXPECTED PRODUCTION
Triassic Moenkopi	Surface	
Permian Kaibab White Rim Organ Rock Cedar Mesa	200' 260' 660' 860'	
Pennsylvanian Hermosa Molas	2,420' 3,105'	
Mississippian	3,225'	
Devonian	3,900'	
Cambrian Bright Angel Tapeats	4,415' 5,245' 5,915'	 Oil
Precambian	6,115'	
PTD	7,100'	

4. Casing Program

Casing	Interval	Size	Weight	Grade	Conn.	Length (ft)	Burst SF	Collapse SF	Tension SF
Conductor	0-90'	30"	---	---	---	---	---	---	---
Surface	0-900'	13.375"	54.5#	K-55	STC	900'	2,730/ 2.19	1,107/ 2.49	547,000/ 11.15
Production	0-6,600'	5.5"	15.5#	K-55	LTC	6,500'	4,810/ 1.63	4,040/ 1.24	239,000/ 2.34

Cementing Program

Hole Size	Casing Size	Est. sx	Fill & Excess	Cement Blend	Water gal/sx	Weight ppg	Yield ft^3/sx	Notes
17.5"	13.375" @ 900'	650 Lead	760' 100%	35/65 (Poz/G) cement + 2% $CaCl_2$ + 0.5 lb/sx cello-flakes + 6% gel + 10 lbs/sk Kolite	7.506	13.4	1.565	Float shoe & collar. Top off down annulus w/1" pipe, if required
		250 Tail	140' 100%	25/75 (Poz/G) cement + 2% $CaCl_2$ + 0.5 lb/sx cello-flakes	4.349	15.4	1.106	
8.75"	5.5" @ 6,600'	400 Tail	2,000' 30%	G + 10% RFC Thixotropic additive + 10% Kolite + 0.5% retarder	7.537	14.2	1.662	Float shoe & roller, 10 bow spring centralizers

5. Pressure Control Equipment: A minimum of 3,000 psi BOP equipment will be utilized. BOPE and choke manifold will be installed and pressure tested before drilling out under surface casing and then will be rechecked daily as to mechanical integrity. Ram type preventors and choke manifold will be tested to full working pressure. The annular BOP will be tested to 70% of working pressure.

6. Mud Program

Interval	Mud Weight	Viscosity	PV	YP	Filtrate (API)	Treatment
0'-900'	8.5-8.7 (as low as possible)	30-35	3-7	8-10	N/C	FW/Gel/Hi-Vis & LCM Sweeps or Air/Air Mist
900'-7,100'	8.7-9.0 (as low as possible)	32-36	5-8	8-10	25-6	Air/Air Mist or LSND/Gel/Caustic, Lignite, Pac, LCM

7. Auxiliary Equipment

Upper Kelly Cock
Inside BOP
PVT
Flow-Show
Rotating Head
Blooie Line & stands
Remote adjustable choke
Hydraulic drilling jars
Continuous circulating trip tank
Dart float and string float
Mud cleaner with LCM saver

8. Logging Program: DIL/BHC Sonic/CNL-FDC/GR/SP/Caliper/Dipmeter from base of surface casing to TD. RFT for Tapeats pressure data and formation water sample. Checkshot survey at TD.

NOTE: Actual logging tool selection will be subject to change, depending on anticipated drilling fluids medium and conditions.

Coring Program: 60' conventional core in Cambrian Tapeats.

Testing Program: No tests are planned.

Stimulation Program: No stimulation treatments are planned.

9. Abnormal Pressures/H_2S: No abnormal pressures or H_2S are expected.

Estimated Bottomhole Pressure: 1,700 psi

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

Duration of Operation: 40 dryhole drilling days and 12 completion days.

SURFACE USE PLAN

Operator: BHP Petroleum (Americas) Inc.
Lease Name: Federal 28 #1
Lease Number: UTU-68523
Location: 715' FSL & 1845' FEL, Section 28, T-33-S, R-7-E
Garfield County, Utah

1. **Existing Roads:**
   A. See attached Vicinity Map.
   B. Follow State Highway 12 1/2 mile south from Boulder to Burr Trail Road. Turn left and go + - 25 miles to newly constructed access road and turn right approximately 1.5 miles to location.
   C. This well will require 1.5 miles of new access road.
   D. Exploratory Well - All existing roads are shown on the attached Vicinity Map.
   E. Development Well - N/A
   F. Plans for improvement and maintenance - Existing county road is paved and will be maintained by the county. Any other existing roads used by BHP during the drilling and completion of this well will be upgraded by BHP to be consistent with the specifications of the new access road. (See 2A. Access Road)

2. **Access Road:**
   A. Width: 20' running surface. 24' of total ROW is requested to accomodate construction activity for the road and drainage.
   B. Maximum Grade: Less than 5%.
   C. Turnouts: As per BLM operating standards.
   D. Drainage Design: As per BLM operating standards.
   E. Upgrade Existing Road: Consistent with new access road specifications.
   New Construction: 24'
   F. Location and size of culverts: 5 / 18-24 inch diameter.
   G. Major cuts and fills: None.
   H. Surface Materials: Gates - 1. Cattleguards - 1
   Fence cuts - 1. Road base - None.
   I. Centerline Flagging: The proposed access road is centerline flagged from the existing road to the proposed location.

3. **Location of Existing Wells:**
   This is an exploratory well location. There are no existing wells within a one mile radius.

4. **Location of Existing and Production Facilities:**
   A. Existing facilities: N/A
   B. Proposed facilities: The actual equipment used and it's configuration will be determined after the well is completed.
   C. Plans for rehabilitation of the surface: All surface

areas not needed for operation of the well will be recontoured to blend with the existing topography and seeded with a mixture specified by the surface managing agency. All pits will be fenced until they are covered.

5. **Location and Type of Water Supply:**
   A. Location: On wellsite.
   B. Supply : Groundwater.
   C. Method of Transportation: N/A
   D. Water wells to be drilled: 1

6. **Source of Construction Materials:**
   No construction materials are anticipated.

7. **Methods of Handling Waste Disposal:**
   A. Cuttings and Drilling Fluids: Cuttings will be placed in a lined reserve pit. Drilling fluids will be kept in the reserve pit. All cuttings will be pushed into the reserve pit and buried during the clean up operation. The drilling fluids will be allowed to dry in the reserve pit and buried during the clean up operation.
   B. Produced Fluids: Tanks will be used for the storage of all produced liquids during testing and production. Oil will be retained in the tanks until it can be treated and sold. Water from testing operations will be drained into the reserve pit. Produced water will be stored in a tank battery on the location.
   C. Sewage: Sewage will be contained in a portable latrine.
   D. Garbage: Garbage will be contained in a Trash cage. This This will be hauled to the nearest dump facility and disposed of during and upon completion of the well.
   E. Wellsite Clean Up: Upon completion of the drilling operation, all trash will be gathered and placed in the trash cage. The pits will be fenced with a woven wire material on three sides during drilling. The fourth side will be fenced upon completion of the drilling operation. The pits will remain fenced until the pits have dried enough to backfill.

8. **Ancillary Facilities:** None

9. **Wellsite Layout:** Cuts and fills, location of pits and drilling equipment and orientation are shown on the attached Wellsite Layout and Cut/Fill section. Due to the rocky nature of the terrain, minimal use of explosives may be necessary to properly construct the reserve pit. The rest of the drilling pad will be ripped and levelled with conventional grading equipment.

10. **Plans for Restoration of the Surface:**

A. Backfilling of the pits will be done as soon as they dry sufficiently. Contouring will be done in conjunction with the backfilling. Waste disposal will commence as soon as the drilling is complete. Topsoil will be stripped from the location when appropriate and stockpiled in the construction buffer for use during the rehabilitation of the location.
B. Revegitation will be done during the appropriate season. This will be conducted using BLM specified seed mixtures and planting times. All areas not necessary for production operations will be seeded.
C. All drilling pits will be fenced until they are covered. Any oil accumulation will be removed or overhead flagging installed to protect waterfowl.
D. Rehabilitation will commence when drilling is completed. Completion of rehabilitation depends on the weather and the time it takes the pits to dry.

11. **Other Information:**
A. Surface vegetation is mainly Utah Juniper and Sagebrush.
B. Surface Use and Ownership: Grazing - Federal (BLM).
C. Proximity of water, dwellings, etc:
Nearest water - 15.5 miles NW, The Gulch.
Nearest dwelling - 29 miles

12. **Lessee or Operators' Field Representative:**
Mr. Fred Lowery
BHP Petroleum (Americas) Inc.
P.O. Box 977
Farmington, New Mexico 87499
(505) 327-1639

13. **Certification:**
I hereby certify that I, or persons under my supervision, have inspected the proposed drillsite; that I am familiar with the conditions which presently exist; that the statements in this plan are, to the best of my knowledge, true and correct; and that the work associated with the proposed operations herein will be performed by BHP Petroleum (Americas) Inc. and it's contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

11/30/93
Date

Carl Kolbe
Carl Kolbe

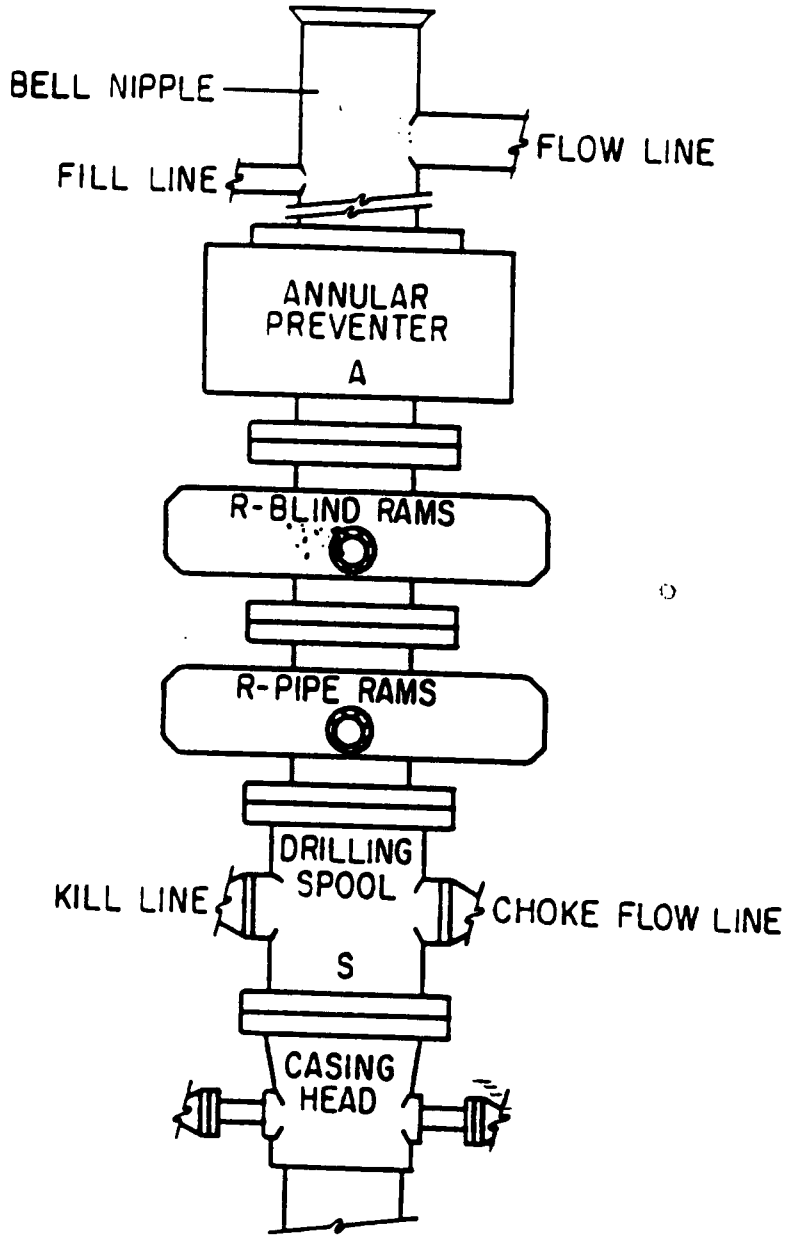
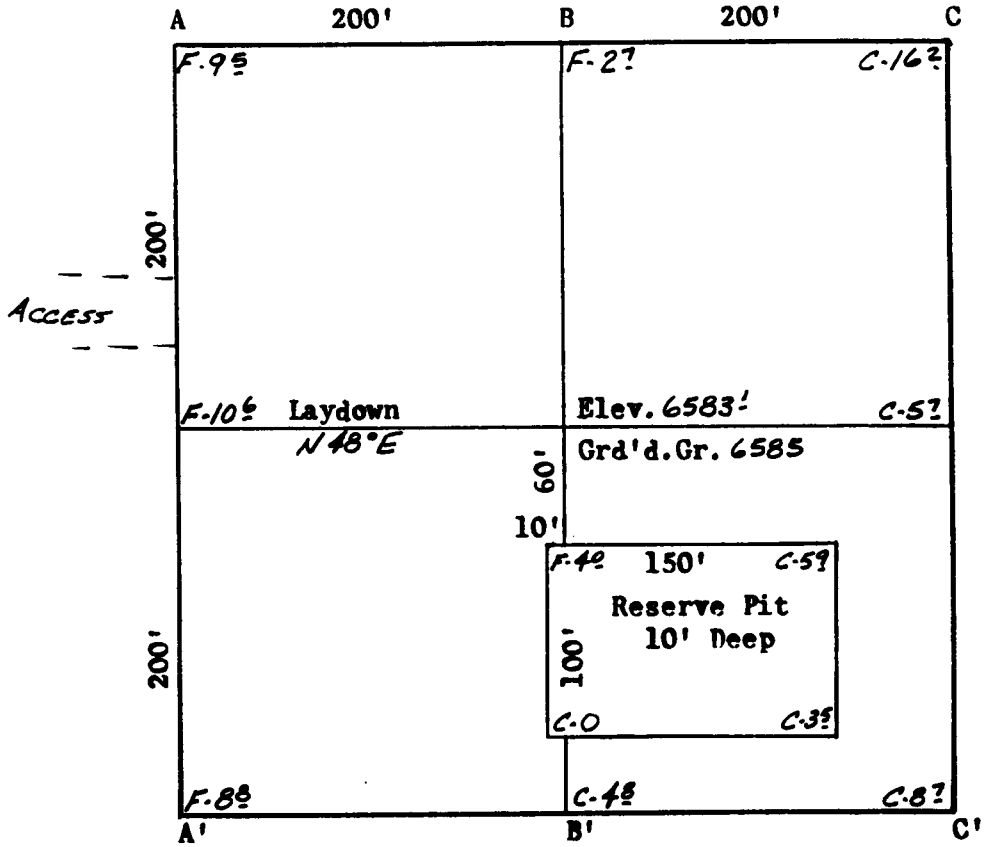
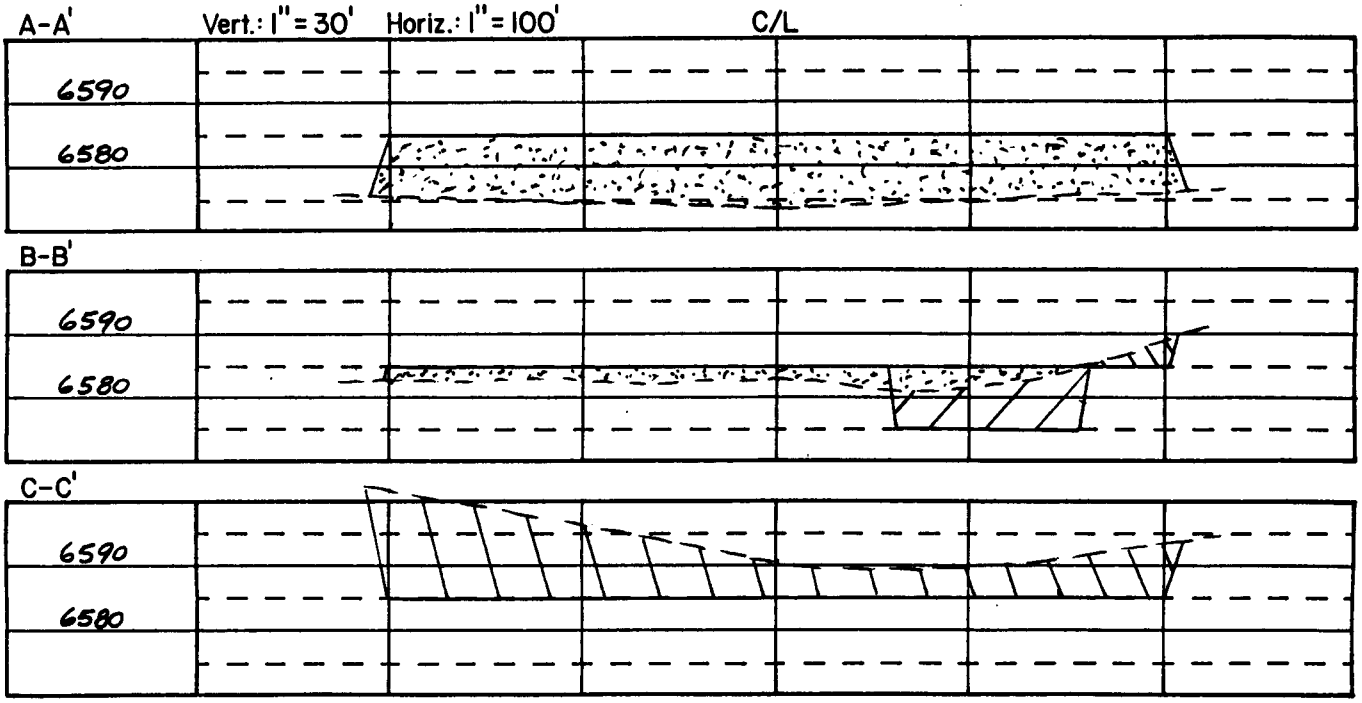


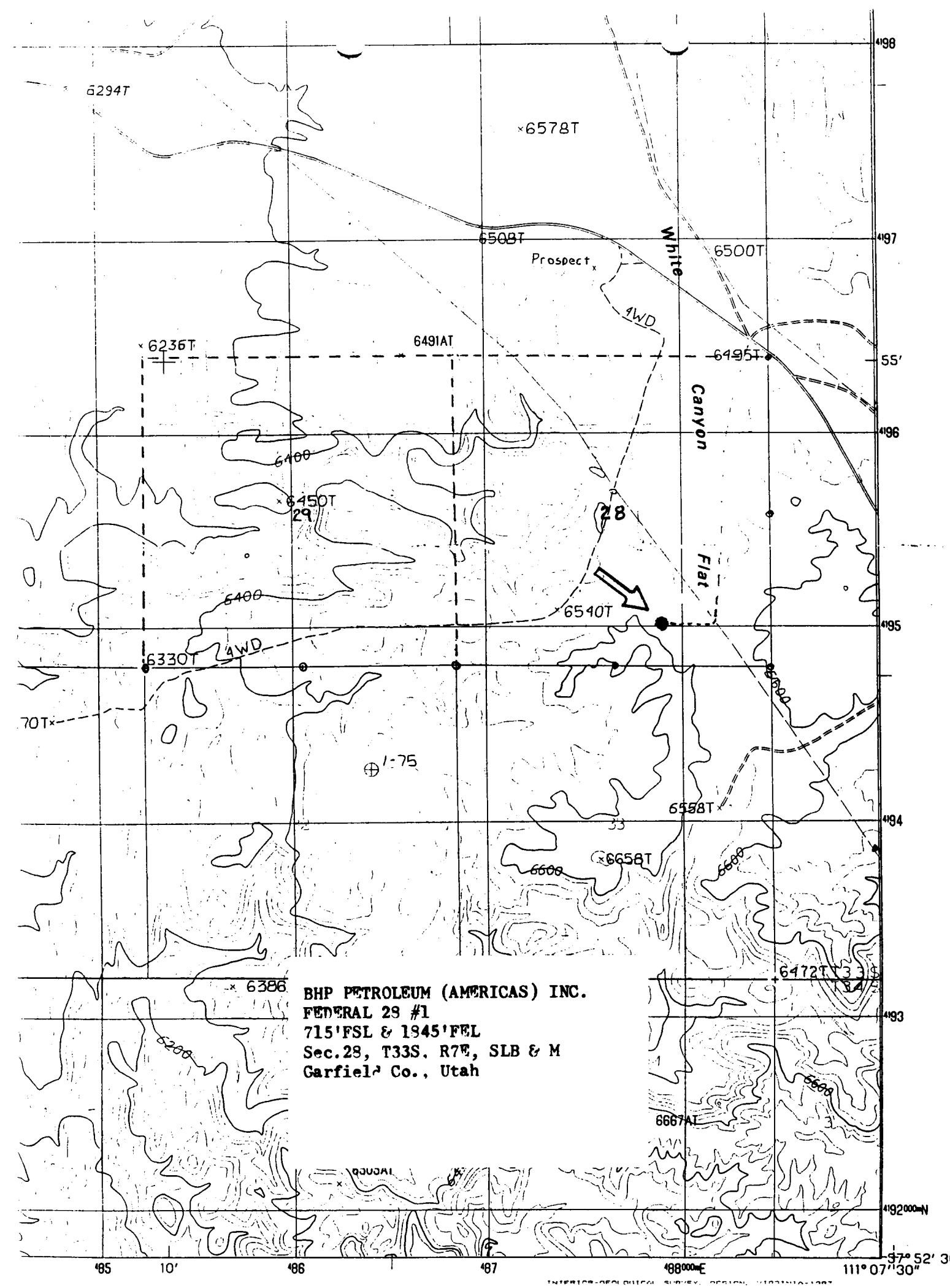
Figure 5-1. Typical two-ram blowout-preventer stack arrangement.[4]

BHP PETROLEUM (AMERICAS) INC
FEDERAL 28 #1
715'FSL & 1945'FEL
Sec.28, T33S, R7E, SLB & M
Garfield Co., Utah



Scale : 1"=100'





BHP PETROLEUM (AMERICAS) INC.
FEDERAL 28 #1
715'FSL & 1945'FEL
Sec.28, T33S, R7E, SLB & M
Garfield Co., Utah

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 04/01/94

API NO. ASSIGNED: 43-017-30138

WELL NAME: FEDERAL 28 # 1
OPERATOR: BHP PETROLEUM (AMERICAS) (N0390)

PROPOSED LOCATION:
SWSE 28 - T33S - R07E
SURFACE: 1845-FEL-0715-FSL
BOTTOM: 1845-FEL-0715-FSL
✓ GARFIELD COUNTY
✓ WILDCAT FIELD (001)

LEASE TYPE: FED
LEASE NUMBER: UTU-68523

INSPECT LOCATION BY: / /		
TECH REVIEW	Initials	Date
Engineering		
Geology		
Surface		

RECEIVED AND/OR REVIEWED:

Y Plat
Y Bond: Federal[✓] State[] Fee[]
(Number 681094)
N Potash (Y/N)
N Oil shale (Y/N)
N Water permit
(Number _____)
___ RDCC Review (Y/N)
(Date: _____)

LOCATION AND SITING:

___ R649-2-3. Unit: _____

✓ R649-3-2. General.

___ R649-3-3. Exception.

___ Drilling Unit.
Board Cause no: _____
Date: _____

COMMENTS: Cambrian (Tapeats) test.

STIPULATIONS: 1. WATER SOURCE AND PERMIT NO. WILL BE SUPPLIED BY OPERATOR PRIOR TO SPUD.

Form 3160-5
June 1990

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED
APR 1 1994
DIV. OF OIL, GAS & MINING

5. Lease Designation and Serial No.
UTU-68523

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

Type of Well
— Oil — Gas —
X Well — Well — Other

8. Well Name and No.
Federal 28 - #1

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

9. API Well No.

3. Address and Telephone No.
5847 San felipe, Suite 3600, Houston, Texas 77057 (713)780-5000

10. Field and Pool, or Exploratory Area
Cambrian

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL of Section 28, T-33-S, R-7-E

11. County or Parish, State
Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[X] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[ ] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Designation of Operator	[ ] Dispose Water

Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

This sundry notice is submitted as application to designate BHP Petroleum (Americas) Inc. as operator of Federal Lease UTU-68523 covering 640 acres being all of Section 28, T-33-S R-7-E of the Salt Lake Meridian ni Garfield County, Utah. BHP Petroleum (Americas) Inc. will abide by the terms and conditions of the oil and gas lease, and provide the BLM with a copy of BHP's nationwide bond number. (see attached).

14. I hereby certify that the foregoing is true and correct

Signed Carl Kolbe Title Regulatory Affairs Representative Date 11/18/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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.

*See Instruction on Reverse Side

NOTICE OF STAKING
(Not to be used in place of
Application to Drill Form 9–331–C)

RMOGA
5/5/82

5. Lease Number

U68523

1. Oil Well [XX] Gas Well [ ] Other

6. If Indian, Allottee or Tribe Name

7. Unit Agreement Name

2. Name of Operator

BHP Petroleum (Americas) Inc.

8. Farm or Lease Name

Federal 28

3. Address of Operator or Agent

5847 San Felipe, Suite 3600, Houston, Texas 77057

9. Well No.

1

4. Surface Location of Well
(Governmental 1/4 or 1/4 1/4)

2200 FEL & 700 FSL SW/SE

10. Field or Wildcat Name

Attach: Topographical or other acceptable map showing location, access road, and lease boundaries.

11. Sec., T., R., M., or
Blk and Survey or Area

Sec. 28, T-33-S, R-7-E

14. Formation Objective(s)	15. Estimated Well Depth	12. County or Parish	13. State
Tapeats	7000'	Garfield	Utah

16. To Be Completed by Operator Prior to Onsite

a. Location must staked

b. Access Road Flagged

c. Sketch and/or map of location, showing road, pad dimensions, reserve pit, cuts, and fills
(To be provided at onsite)

17. To Be Considered By Operators Prior to Onsite

a. H_2S Potential

b. Private Surface Ownership

c. Cultural Resources (Archaeology)

d. Federal Right of Way

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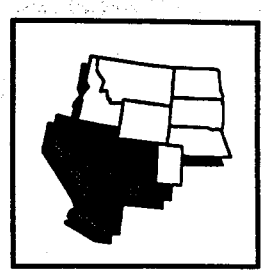
APR 1 1994
DIV. OF OIL, GAS & MINING

18. Additional Information

19. Signed Carl Kolbe Title Regulatory Affairs Rep Date 11-4-93

ROCKY MOUNTAIN

REGION REPORT



FOUR CORNERS EDITION

Vol. 67, No. 62
3-30-94

BLM Completes EA for Remote Wildcat in Southern Utah's Garfield County

Remote Horizontal Wildcat to be Drilled in Paradox Basin

THE UTAH State Office of the Bureau of Land Management has completed an Environmental Assessment (EA) for a remote southern Utah wildcat planned by Houston-based BHP Petroleum (Americas) Inc on the Circle Cliffs Uplift approximately 25 miles east-northeast of Escalante.

If approved, the 2 Circle Cliffs-Federal, **sw se 28-33s-7e**, northeastern Garfield County, will be drilled to about 7000 ft to evaluate the lower Cambrian Tapeats sandstone and the source potential of the Precambrian Chuar Group. The proposed site is in an undrilled township west of Capitol Reef National Park.

A spokesman with the BLM reported that a public-comment period on the EA expires on Wednesday, April 13, and that if no significant comments are received, a Record of Decision on the EA and approval of BHP's Application for Permit to Drill the 2 Circle Cliffs-Federal would be granted the following day.

Half a mile west of the 2 Circle Cliffs-Federal, BHP has plans to drill the 1 Circle Cliffs-Federal in se se 29-

(Please see Utah, Page 2)

Red Willow, Vastar Complete Production Trade Agreement

IGNACIO, COLORADO-BASED Red Willow Production Co, the Southern Ute Indian Tribe's oil and gas operating company, has completed a production trade agreement involving wells on the Southern Ute Indian Reservation in southwestern Colorado with Vastar Resources Inc, a wholly owned and separately incorporated subsidiary of Atlantic Richfield Co.

In its largest energy acquisition to date, Red Willow acquired 69 conventional Mesaverde, Dakota and Pictured Cliffs gas wells from Vastar, in exchange for Fruitland coalbed methane properties. The Southern Utes cannot use federal income tax credits arising from coalbed methane production. The agreement transferred some tax credit-bearing royalties to Vastar, which can use the cred-

(Please see Southern Ute, Page 4)

Petroleum Information Corporation

P.O. Box 2612, Denver, CO 80201-2612, 303/740-7100

(Utah, continued from Page 1)

33s-7e, another as-yet unpermitted 7000-ft test of Tapeats (PI 5-5 & 6-28-93).

Approval of federal drilling permits for both ventures was held up last year by appeals from the Southern Utah Wilderness Alliance on behalf of the Utah Wilderness Coalition. The BLM last summer completed an EA of the area and gave public notice that it planned to grant BHP permission to drill. The environmental group appealed the findings of the EA to the director of the BLM's Utah State Office, who subsequently ruled that the EA was to be revised to reflect the coalition's concerns.

The proposed drillsite for BHP's 1 Circle Cliffs-Federal falls within the boundaries of an area that the environmental group wants designated as wilderness. The area is included in a federal wilderness bill, HR 1500, that was introduced in the U.S. House of Representatives earlier this year. That bill has not yet been passed out of committee for a vote on the House floor.

According to BLM officials, BHP, the BLM and the environmental coalition have settled on the 2 Circle Cliffs-Federal location as the most likely site to be drilled, since it is outside the boundaries proposed for HR 1500. The 1 Circle Cliffs-Federal site is geologically the better site, according to BHP, which informed the BLM that it could still test its theory at the 2 Circle Cliffs-Federal location.

Late last year, BHP was granted a state drilling permit for a 7350-ft Tapeats test in the area on a state lease at the 1 State-2 in sw se 2-34s-7e (PI 12-2-93). No activity has been reported at that site. The state location would only be drilled if both proposed federal ventures are not approved, according to the BLM.

The area is approximately 36 miles east-northeast of the northern Kaiparowits Basin's Upper Valley field, which produces oil from the Permian Kaibab limestone.

Meanwhile, Meridian Oil Inc has been granted BLM approval to drill a remote horizontal Cane Creek (Paradox) test in the northern Paradox Basin 13 miles north-northwest of Monticello, Utah.

Plans call for the northern San Juan County wildcat, the 22-31H Peridot-Federal, to be spudded from a surface location 2000 ft from the north line and 1620 ft from the west line (se nw) of 31-31s-23e. The proposed bottom-hole location has not been disclosed. Total measured depth will be about 9900 ft; true vertical depth is estimated at 6700 ft.

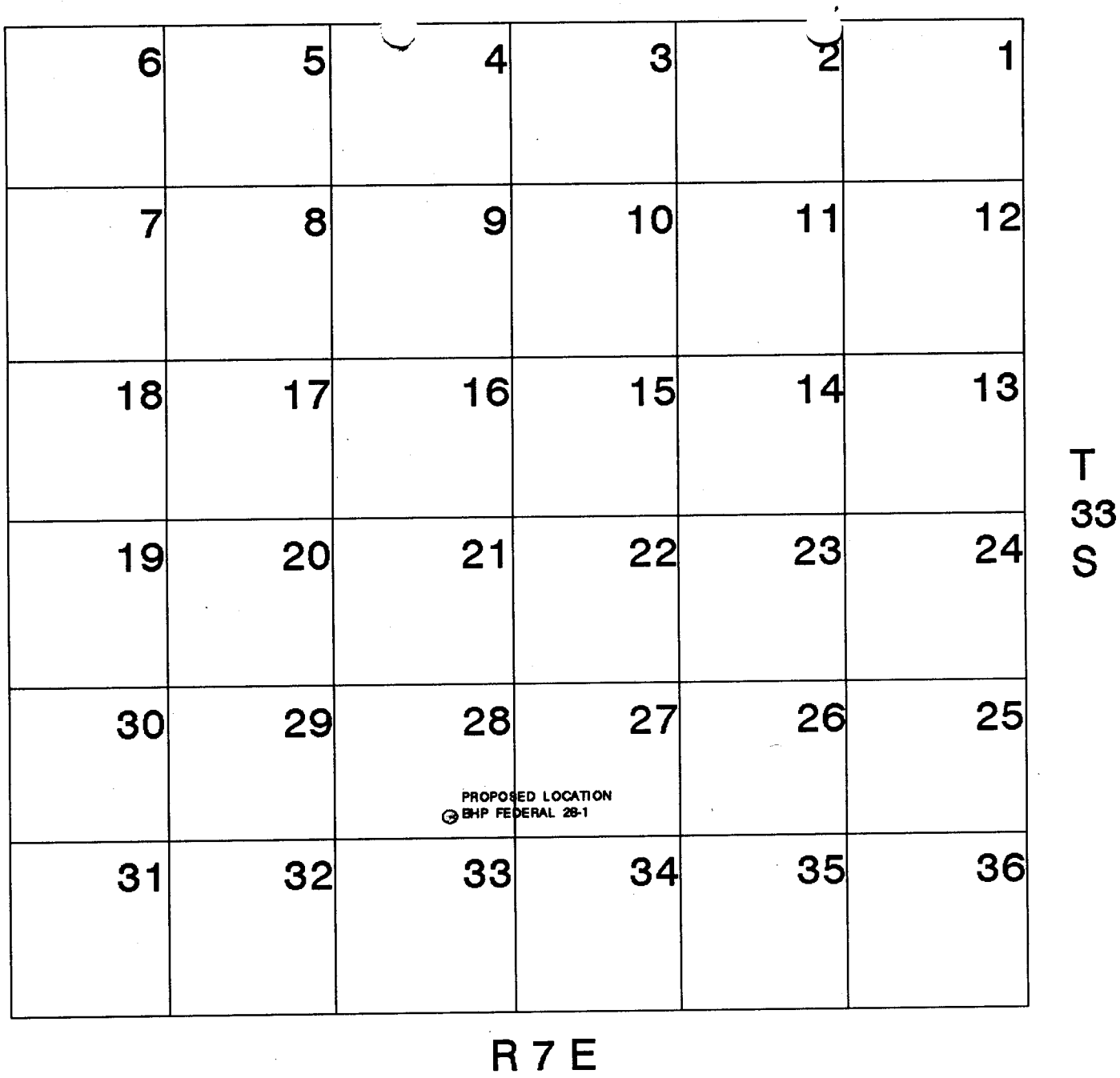
Meridian anticipates a horizontal displacement of about 2600 ft with a 2000-ft lateral in Cane Creek.

Anticipated formation tops include Hermosa at 2893 ft, Ismay 4200, salt 4524, Akah 5334, Cane Creek "A" 6572, Cane Creek "B" 6599, Cane Creek "C" 6625 and Leadville at 7229 ft. Ground elevation at the site is 6251 ft. Potential oil- and gas-bearing zones include the Cane Creek "B" and Ismay.

The horizontal wildcat is 12 miles southwest of Leadville (Mississippian) oil production in Lisbon field and approximately 40 miles southeast of the current main focus of horizontal Cane Creek exploration along the San Juan/Grand County line.

Meridian first proposed drilling this horizontal wildcat in 1991. The company was granted state and federal approval to drill the venture in early 1992 as the obligation well for the Peridot Federal Unit (PI 2-3-92). However, the company let those state and federal permits lapse. Late last year, the company informed both the state and the BLM that it wanted to drill the 22-31H Peridot-Federal after all and reapplied for the required drilling permits. Meridian received state approval for the well last December and only recently was granted a permit by the BLM.

Rocky Mountain Region Report (USPS 113-170). Price: $1644 per year. "Northern Edition" Price: $1392 per year. "Wyoming Edition" Price $1392 per year. "Four Corners-Intermountain Edition" Price $1008 per year. "Southeastern Edition" Price $1008 per year. "Newsletter Edition" Price $936 per year. Published by Petroleum Information Corporation, Monday through Friday except Presidents' Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and the day after, and Christmas Day and the day after, 4100 East Dry Creek Road, Littleton, CO 80122. Second class postage paid at Littleton, CO 80122 and additional mailing offices. Postmaster: Send address changes to: Rocky Mountain Region Report, P.O. Box 2612, Denver, CO 80201.



GARFIELD COUNTY

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

April 20, 1994

BHP Petroleum (Americas) Inc.
5847 San Felipe, Suite 3600
Houston, Texas 77057

Re: Federal 28 #1 Well, 715' FSL, 1845' FEL, SW SE, Sec. 28, T. 33 S., R. 7 E., Garfield County, Utah

Gentlemen:

Pursuant to Utah Admin. R. 649-3-2, Location and Siting of Wells and Utah Admin. R. 649-3-4, Permitting of Wells to be Drilled, Deepened or Plugged-Back, approval to drill the referenced well is hereby granted.

In addition, the following specific actions are necessary to fully comply with this approval:

1. Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules.

2. Notification to the Division within 24 hours after drilling operations commence.

3. Submittal of Entity Action Form, Form 6, within five working days following commencement of drilling operations and whenever a change in operations or interests necessitates an entity status change.

4. Submittal of the Report of Water Encountered During Drilling, Form 7.

5. Prompt notification prior to commencing operations, if necessary, to plug and abandon the well. Notify Frank R. Matthews, Petroleum Engineer, (Office) (801)538-5340, (Home) (801)476-8613, or K. Michael Hebertson, Reclamation Specialist, (Home) (801)269-9212.

6. Compliance with the requirements of Utah Admin. R. 649-3-20, Gas Flaring or Venting, if the well is completed for production.

This approval shall expire one year after date of issuance unless substantial and continuous operation is underway or a request for an extension is made prior to the approval expiration date. The API number assigned to this well is 43-017-30138.

Sincerely,

R.J. Firth
Associate Director

ldc
Enclosures
cc: Garfield County Assessor
Bureau of Land Management, Cedar City District Office
WOI1

Form 3160-3
(November 1983)
(formerly 9-331C)

DEPT OF NATURAL RESOURCES
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DEC - 2 1993
DIVISION OF OIL, GAS & MINING

BUREAU OF FOREST MANAGEMENT
ESCALANTE RESOURCE AREA

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

APR 21 1994

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: UTU-68523
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:

DRILL ☒ DEEPEN ☐ PLUG BACK ☐

1a. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ OTHER — SINGLE ZONE ☒ MULTIPLE ZONE ☐

8. FARM OR LEASE NAME: Federal 28

2. NAME OF OPERATOR: BHP Petroleum (Americas) Inc.

9. WELL NO.: 1

3. ADDRESS OF OPERATOR: 5847 San Felipe, Suite 3600, Houston, Texas 77057

10. FIELD AND POOL, OR WILDCAT: Cambrian

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 715' FSL & 1845' FEL
At proposed prod. zone:

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Section 28, T-33-S, R-7-E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: ± 25 miles southeast of Boulder

12. COUNTY OR PARISH: Garfield — 13. STATE: Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 715'

16. NO. OF ACRES IN LEASE: 3360.00

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.:

19. PROPOSED DEPTH: 7100'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 6583'

22. APPROX. DATE WORK WILL START*: As soon as approved

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
36"	30"	-	0-90'	Preset & cmt. w/dryhole digger
17-1/2"	13-3/8"	54.5#	0-900'	650 lead w35/65 Poz G cmt. + 2% CaCl2+ 0.5#/sk celloflakes + 6% gel + 10#/sk Kolite 250 tail 25/75 Poz G cmt. + 2% CaCl2 + 0.5#/sk celloflakes

****

Proposed to spud well and drill to 7100' to test the Cambrian Formation. Will drill a 17-1/2" hole to a TD of 900'. Run and cement surface casing (13-3/8"). WOC 12 hours. Test to 1000# for 30 minutes. Drill a 8-3/4" hole to a TD of 7100' using fresh water mud. No abnormal pressures or poisonous gases are anticipated. Run logs at TD. Run and cement production casing (5-1/2"). WOC 12 hours. Move out drilling rig and move in completion unit. Pressure test to 2500#/30 minutes prior to perforating. Run cased hole correlation logs. Perforate the Tapeats. No stimulation treatments are planned.

Permit to use county road will be obtained from Garfield County. (Burr Trail Road) 1-1/2 miles of new access road will be built for this exploratory well.
Designation of Operator is included with this APD. Surface ownership is BLM.

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. 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 Carl Kolbe — TITLE Regulatory Affairs Rep. — DATE 11/30 93

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY Gordon R. Staker — TITLE District Manager — DATE April 18, 1994

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

NAME OF COMPANY: BHP AMERICAS

WELL NAME: FEDERAL 28-1

API NO. 43-017-30138

Section 28 Township 33S Range 7E County GARFIELD

Drilling Contractor PARKER

Rig # 233

SPUDDED: Date 5/7/94

Time 6:00 AM

How ROTARY

Drilling will commence _____

Reported by BOBBIE PATRICK

Telephone # 1-713-961-8323

Date 5/10/94 SIGNED MKH

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

ENTITY ACTION FORM - FORM 6

MAY 16 1994

OPERATOR BHP Petroleum (Americas) Inc.

ADDRESS 1360 Post Oak Blvd., Suite 500
Houston, Texas 77056-3020

OPERATOR ACCT. NO. N 0390

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION QQ	SC	TP	RG	COUNTY	SPUD DATE	EFFECTIVE DATE
A	99999	11636	43-017-30138	Federal 28 #1	SW/SE	28	33-S	7-E	Garfield	05/09/94	05/09/94

WELL 1 COMMENTS:
THIS IS A NEW WELL ON FEDERAL LAND NOT PART OF ANY DESIGNATED UNIT. THIS IS A WILDCAT WELL.
Entity added 5-18-94. Lee

WELL 2 COMMENTS:

WELL 3 COMMENTS:

WELL 4 COMMENTS:

WELL 5 COMMENTS:

ACTION CODES (See instructions on back of form)
- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

Carl Kolbe
Signature

Regulatory Affairs Rep. 05/11/94
Title Date

Phone No. (713) 961-8423

BHP PETROLEUM (AMERICAS), INC.

LEASE : FEDERAL

WELL NO.: 28-1

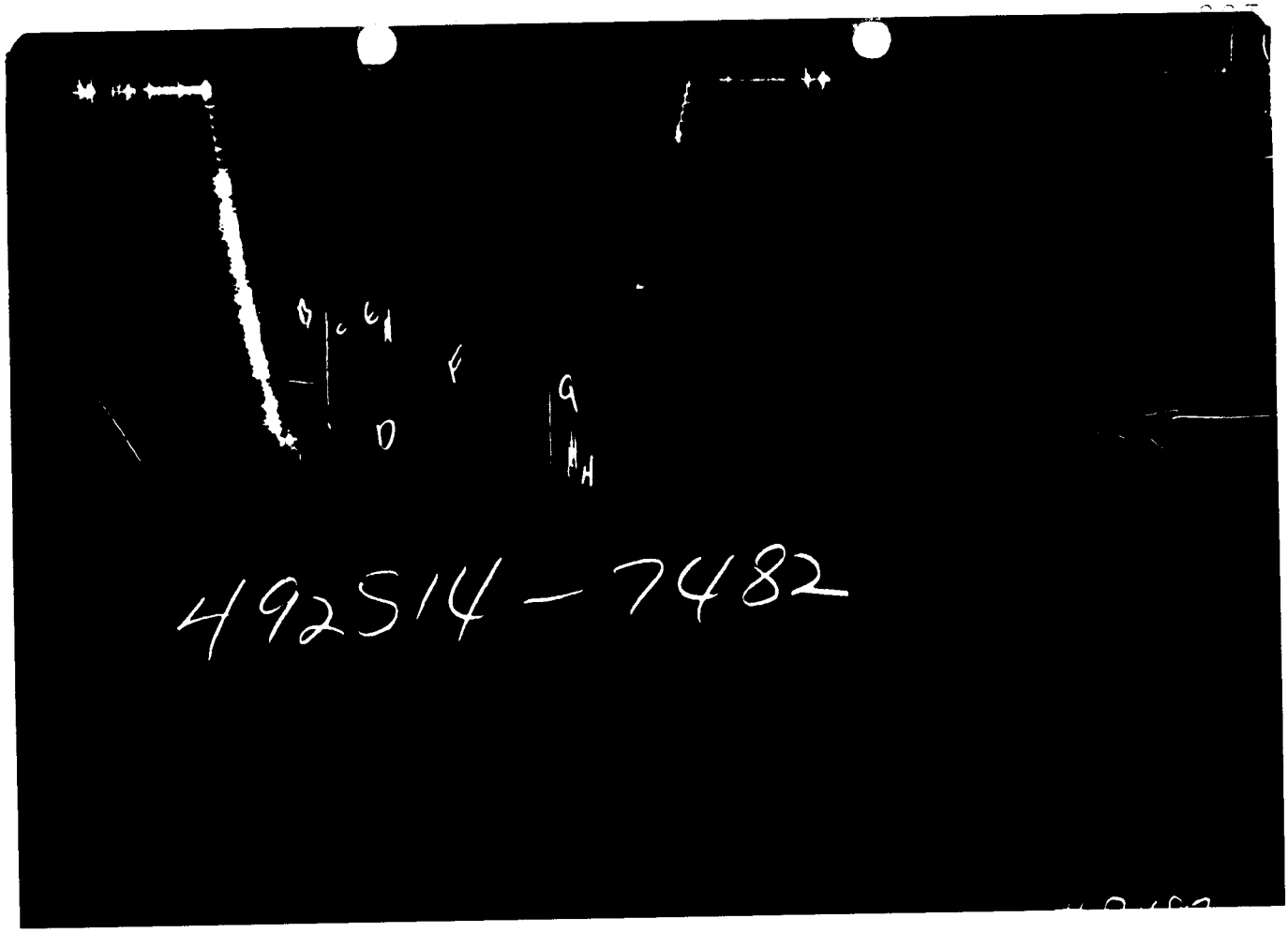
TEST NO.: 1

TICKET NO. 49251400
21-JUN-94
CASPER

DST REPORT PRODUCED BY HRS
A DIVISION OF HALLIBURTON COMPANY

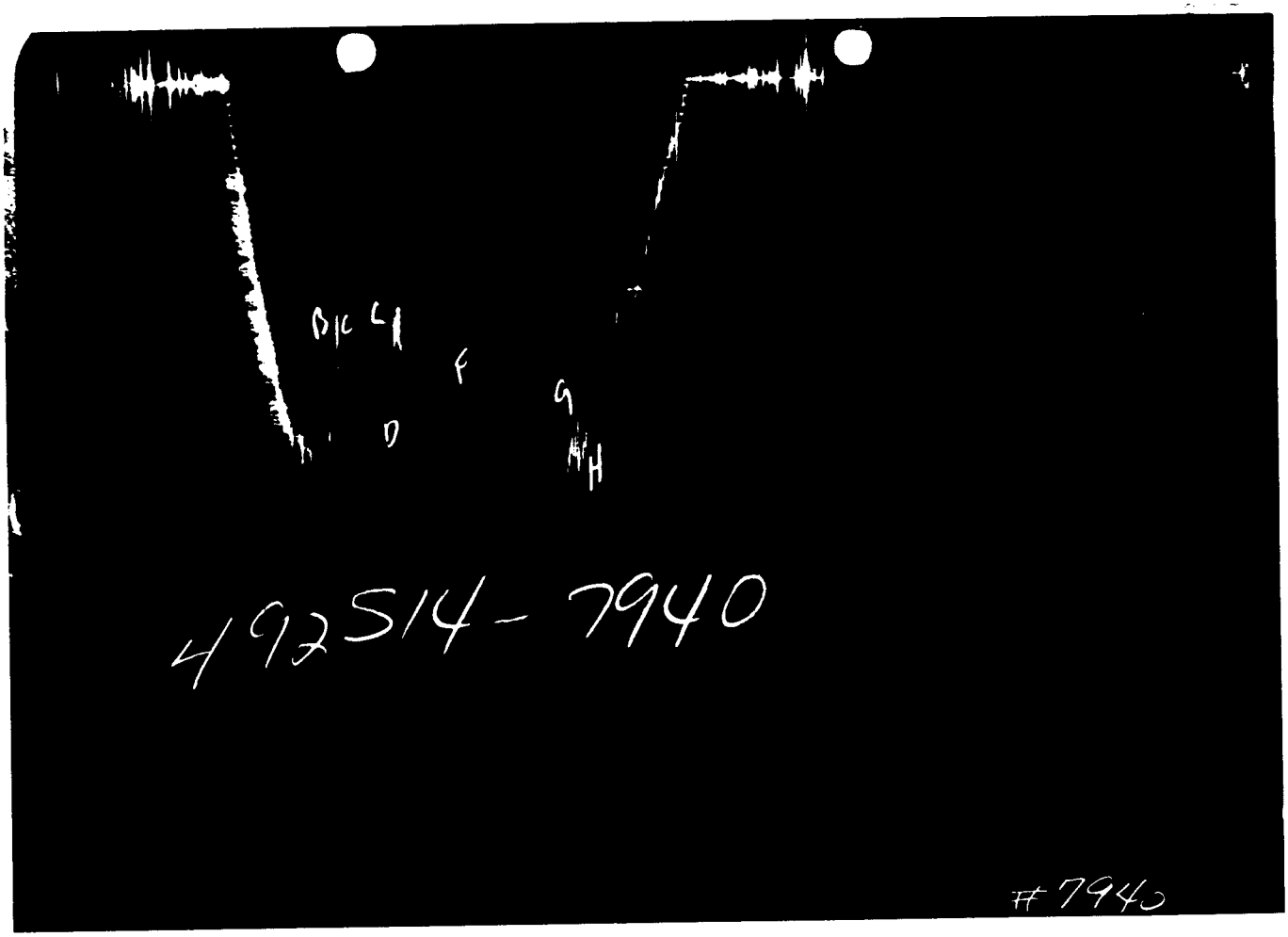
LEASE NAME: FEDERAL	WELL NO.: 28-1	TEST NO.: 1	LEASE OWNER/COMPANY NAME: BHP PETROLEUM (AMERICAS), INC.
LEGAL LOCATION SEC. - TWP. - RNG.: 28 - 33 S - 7 E	FIELD AREA: WILDCAT	COUNTY: GARFIELD	STATE: UTAH

TESTED INTERVAL: 5950.0 - 6185.0



GAUGE NO: 7482 DEPTH: 5933.5 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1896	1916.7			
B	INITIAL FIRST FLOW	1123	1176.8	2.0	2.0	F
C	FINAL FIRST FLOW	1203	1330.0			
C	INITIAL FIRST CLOSED-IN	1203	1330.0	67.0	67.3	C
D	FINAL FIRST CLOSED-IN	1776	1768.3			
E	INITIAL SECOND FLOW	1203	1273.3	68.0	67.0	F
F	FINAL SECOND FLOW	1643	1644.7			
F	INITIAL SECOND CLOSED-IN	1643	1644.7	126.0	126.6	C
G	FINAL SECOND CLOSED-IN	1776	1771.6			
H	FINAL HYDROSTATIC	2163	2154.6			



GAUGE NO: 7940 DEPTH: 5967.6 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1973	1936.5			
B	INITIAL FIRST FLOW	1360	1257.0	2.0	2.0	F
C	FINAL FIRST FLOW		1340.2			
C	INITIAL FIRST CLOSED-IN		1340.2	67.0	67.3	C
D	FINAL FIRST CLOSED-IN	1866	1789.2			
E	INITIAL SECOND FLOW	1360	1344.9	68.0	67.0	F
F	FINAL SECOND FLOW	1733	1667.5			
F	INITIAL SECOND CLOSED-IN	1733	1667.5	126.0	126.6	C
G	FINAL SECOND CLOSED-IN	1866	1788.3			
H	FINAL HYDROSTATIC	2253	2179.1			

EQUIPMENT & HOLE DATA

FORMATION TESTED: TAPEATS
NET PAY (ft):
GROSS TESTED FOOTAGE: 235.0 PACKER TO T.D.
ALL DEPTHS MEASURED FROM: R.K.B.
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 8.750
ELEVATION (ft): 6500.0 (APPROX.)
TOTAL DEPTH (ft): 6185.0
PACKER DEPTH(S) (ft): 5950
FINAL SURFACE CHOKE (in): 0.75000
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 8.50
MUD VISCOSITY (sec): 44
ESTIMATED HOLE TEMP. (°F): 100
ACTUAL HOLE TEMP. (°F): ___ @ _____ ft

TICKET NUMBER: 49251400

DATE: 06-15-94 TEST NO: 1

TYPE DST: OPEN HOLE

FIELD CAMP: CASPER

TESTER: TOM EATON / SHANE AILPORT

WITNESS: JOHN SINDELAR

DRILLING CONTRACTOR: PARKER

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY		CHLORIDES
PIT	____ @ ____	°F	450 ppm
	____ @ ____	°F	____ ppm
	____ @ ____	°F	____ ppm
	____ @ ____	°F	____ ppm
	____ @ ____	°F	____ ppm
	____ @ ____	°F	____ ppm

SAMPLER DATA

Psig AT SURFACE: 840.0
cu.ft. OF GAS: 6.020
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): _____ @ ___ °F
GAS/OIL RATIO (cu.ft. per bbl): _____
GAS GRAVITY: 0.620 EST.

CUSHION DATA

TYPE	AMOUNT	WEIGHT

RECOVERED:

GAS TO THE SURFACE
APPROXIMATELY 200 FT. OF VERY HEAVILY GAS CUT RAT HOLE MUD OR DRILLING FLUID

MEASURED FROM TESTER VALVE

REMARKS:

35 GALLONS OF CORROSION INHIBITOR WAS DUMPED DOWN PIPE PRIOR TO TEST.

THE HOLE WOULD NOT STAY FULL PRIOR TO RUNNING THE TEST DUE TO LOST CIRCULATION. FLUID LEVEL WAS APPROXIMATED AT 3500 FT.

TYPE & SIZE MEASURING DEVICE: 6" CERAMIC CHOKE					TICKET NO: 49251400
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
06-15-94					
1230					ON LOCATION
1300					MADE UP TOOLS
1400					STARTED IN THE HOLE
1700					RIGGED UP SURFACE EQUIPMENT
1731					SET WEIGHT ON TOOLS (DIR = 125000 LBS.)
1740	B.H.				TOOL OPENED WITH STRONG BLOW
1742					CLOSED TOOL
1849	B.H.				OPENED TOOL WITH STRONG BLOW
1851	1/4	150	243.0		OPENED THRU 1/4" CHOKE
1856	1/4	300	463.9		
1858	3/8	390	1377.2		CHANGED TO 3/8" CHOKE
1910	3/4	450	6742.2		CHANGED TO 3/4" CHOKE; GAS TO SURFACE
1915	3/4	280	4277.3		
1925	3/4	320	4857.3		
1940					SAMPLE #1 FROM MANIFOLD (350 PSI)
1945	3/4	330	5002.3		STARTED FREEZING OFF NEEDLE VALVES
1945					SAMPLE #2 & #3 FROM MANIFOLD (350 PSI)
1957					CLOSED TOOL
2203					OPENED BYPASS
06-16-94					
0230					OUT OF HOLE TO TOOLS
0300					GAS SAMPLE FROM SAMPLER (840 PSI)
0430					TOOLS LOADED; JOB COMPLETED

TICKET NO: 49251400

CLOCK NO: 4095 HOUR: 24

GAUGE NO: 7482

DEPTH: 5933.5

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
FIRST FLOW						
B	1	0.0	1176.8			
C	2	2.0	1330.0	153.2		
FIRST CLOSED-IN						
C	1	0.0	1330.0			
	2	1.0	1742.9	412.9	0.7	0.486
	3	2.0	1750.3	420.3	1.0	0.305
	4	3.0	1753.9	423.9	1.2	0.224
	5	4.0	1756.5	426.5	1.3	0.178
	6	5.0	1758.4	428.4	1.4	0.145
	7	6.0	1759.7	429.8	1.5	0.125
	8	7.0	1761.1	431.1	1.6	0.109
	9	8.0	1761.7	431.8	1.6	0.097
	10	9.0	1762.8	432.8	1.6	0.087
	11	10.0	1763.2	433.2	1.7	0.079
	12	12.0	1764.2	434.2	1.7	0.067
	13	14.0	1765.1	435.1	1.8	0.058
	14	16.0	1765.8	435.8	1.8	0.051
	15	18.0	1766.0	436.0	1.8	0.046
	16	20.0	1766.0	436.0	1.8	0.041
	17	22.0	1766.0	436.0	1.8	0.038
	18	24.0	1766.0	436.0	1.8	0.035
	19	26.0	1766.3	436.3	1.9	0.032
	20	28.0	1766.4	436.4	1.9	0.030
	21	30.0	1766.6	436.6	1.9	0.028
	22	35.0	1766.6	436.6	1.9	0.024
	23	40.0	1767.1	437.1	1.9	0.021
	24	45.0	1767.1	437.1	1.9	0.019
	25	50.0	1767.6	437.6	1.9	0.017
	26	55.0	1767.6	437.6	1.9	0.016
	27	60.0	1767.9	437.9	1.9	0.014
D	28	67.3	1768.3	438.3	1.9	0.013
SECOND FLOW						
E	1	0.0	1273.3			
	2	5.0	1369.6	96.3		
	3	10.0	1441.4	71.8		
	4	15.0	1487.9	46.5		
	5	20.0	1532.4	44.5		
	6	25.0	1552.7	20.3		
	7	30.0	1569.2	16.4		
	8	35.0	1580.7	11.5		
	9	40.0	1595.2	14.6		
	10	45.0	1607.1	11.9		
	11	50.0	1619.4	12.3		
	12	55.0	1630.0	10.6		
	13	60.0	1635.5	5.5		
F	14	67.0	1644.7	9.2		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
SECOND CLOSED-IN						
F	1	0.0	1644.7			
	2	1.0	1761.1	116.4	1.0	1.834
	3	2.0	1763.7	119.1	1.9	1.551
	4	3.0	1765.6	120.9	2.8	1.385
	5	4.0	1766.3	121.6	3.7	1.265
	6	5.0	1767.1	122.4	4.6	1.174
	7	6.0	1767.8	123.1	5.5	1.100
	8	7.0	1768.4	123.7	6.4	1.034
	9	8.0	1768.6	123.9	7.2	0.985
	10	9.0	1769.0	124.3	7.9	0.939
	11	10.0	1769.1	124.4	8.7	0.898
	12	12.0	1769.2	124.5	10.2	0.830
	13	14.0	1769.2	124.5	11.6	0.774
	14	16.0	1769.2	124.5	13.0	0.724
	15	18.0	1769.8	125.1	14.2	0.685
	16	20.0	1769.9	125.2	15.5	0.648
	17	22.0	1769.8	125.1	16.7	0.617
	18	24.0	1770.2	125.5	17.8	0.588
	19	26.0	1770.3	125.6	18.9	0.562
	20	28.0	1770.4	125.7	19.9	0.540
	21	30.0	1770.8	126.1	20.9	0.518
	22	35.0	1771.0	126.3	23.2	0.473
	23	40.0	1771.0	126.3	25.3	0.435
	24	45.0	1771.0	126.3	27.2	0.404
	25	50.0	1771.0	126.3	29.0	0.377
	26	55.0	1771.1	126.4	30.6	0.353
	27	60.0	1771.2	126.5	32.1	0.332
	28	70.0	1771.2	126.5	34.8	0.298
	29	80.0	1771.2	126.5	37.1	0.270
	30	90.0	1771.2	126.5	39.1	0.247
	31	100.0	1771.2	126.5	40.8	0.228
	32	110.0	1771.6	126.9	42.4	0.211
G	33	126.6	1771.6	126.9	44.7	0.189

REMARKS:

TICKET NO: 49251400
CLOCK NO: 20138 HOUR: 24

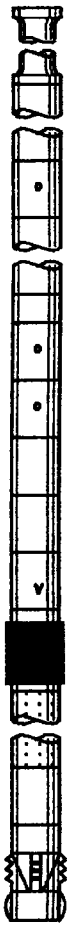
GAUGE NO: 7940
DEPTH: 5967.6

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			FIRST FLOW			
B	1	0.0	1257.0			
C	2	2.0	1340.2	83.2		
			FIRST CLOSED-IN			
C	1	0.0	1340.2			
	2	1.0	1770.7	430.5	0.7	0.466
	3	2.0	1777.1	436.9	1.0	0.305
	4	3.0	1779.4	439.2	1.2	0.224
	5	4.0	1781.4	441.2	1.3	0.178
	6	5.0	1782.8	442.7	1.4	0.147
	7	6.0	1784.0	443.9	1.5	0.125
	8	7.0	1784.7	444.5	1.6	0.109
	9	8.0	1785.4	445.2	1.6	0.097
	10	9.0	1785.9	445.7	1.6	0.087
	11	10.0	1786.6	446.4	1.7	0.079
	12	12.0	1787.2	447.1	1.7	0.067
	13	14.0	1787.5	447.3	1.7	0.058
	14	16.0	1787.6	447.5	1.8	0.051
	15	18.0	1787.6	447.5	1.8	0.046
	16	20.0	1787.6	447.5	1.8	0.041
	17	22.0	1788.0	447.9	1.8	0.038
	18	24.0	1788.0	447.9	1.8	0.035
	19	26.0	1788.2	448.0	1.9	0.032
	20	28.0	1788.6	448.4	1.9	0.030
	21	30.0	1788.6	448.4	1.9	0.028
	22	35.0	1788.6	448.4	1.9	0.024
	23	40.0	1788.6	448.4	1.9	0.021
	24	45.0	1788.6	448.4	1.9	0.019
	25	50.0	1788.6	448.4	1.9	0.017
	26	55.0	1788.8	448.7	1.9	0.016
	27	60.0	1789.0	448.8	1.9	0.014
D	28	67.3	1789.2	449.1	1.9	0.013
			SECOND FLOW			
E	1	0.0	1344.9			
	2	5.0	1356.9	12.0		
	3	10.0	1441.7	84.8		
	4	15.0	1499.8	58.1		
	5	20.0	1558.5	58.7		
	6	25.0	1576.8	18.3		
	7	30.0	1593.2	16.4		
	8	35.0	1605.2	12.0		
	9	40.0	1618.7	13.5		
	10	45.0	1630.6	11.9		
	11	50.0	1642.2	11.6		
	12	55.0	1651.9	9.7		
	13	60.0	1659.3	7.3		
F	14	67.0	1667.5	8.3		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND CLOSED-IN			
F	1	0.0	1667.5			
	2	1.0	1780.8	113.3	1.0	1.853
	3	2.0	1783.2	115.7	2.0	1.545
	4	3.0	1784.2	116.6	2.9	1.384
	5	4.0	1784.7	117.2	3.8	1.260
	6	5.0	1785.1	117.6	4.7	1.168
	7	6.0	1785.4	117.8	5.5	1.100
	8	7.0	1785.5	118.0	6.4	1.035
	9	8.0	1785.5	118.0	7.2	0.983
	10	9.0	1785.6	118.1	8.0	0.939
	11	10.0	1786.0	118.5	8.7	0.898
	12	12.0	1786.0	118.5	10.2	0.831
	13	14.0	1786.0	118.5	11.7	0.772
	14	16.0	1786.4	118.9	13.0	0.725
	15	18.0	1786.7	119.2	14.3	0.685
	16	20.0	1787.2	119.7	15.5	0.649
	17	22.0	1787.2	119.7	16.7	0.616
	18	24.0	1787.2	119.7	17.8	0.588
	19	26.0	1787.2	119.7	18.9	0.563
	20	28.0	1787.2	119.7	19.9	0.539
	21	30.0	1787.2	119.7	20.9	0.519
	22	35.0	1787.2	119.7	23.2	0.473
	23	40.0	1787.6	120.1	25.3	0.436
	24	45.0	1787.6	120.1	27.2	0.404
	25	50.0	1788.0	120.5	29.0	0.377
	26	55.0	1788.0	120.5	30.6	0.353
	27	60.0	1788.0	120.5	32.1	0.333
	28	70.0	1788.0	120.5	34.8	0.298
	29	80.0	1788.0	120.5	37.1	0.270
	30	90.0	1788.0	120.5	39.1	0.247
	31	100.0	1788.2	120.6	40.8	0.228
	32	110.0	1788.2	120.6	42.4	0.212
G	33	126.6	1788.3	120.8	44.7	0.189

REMARKS:

TICKET NO. 49251400



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE	5.000	4.276	5732.9	
3	DRILL COLLARS	6.750	2.250	93.0	
152	PUMPOUT & IMPACT REVERSING SUB	6.000	3.000	1.0	5826.9
3	DRILL COLLARS	6.750	2.250	93.0	
5	CROSSOVER	6.000	2.250	0.7	
13	DUAL CIP SAMPLER	5.000	0.750	6.8	
60	HYDROSPRING TESTER	5.000	0.750	5.0	5931.4
80	AP RUNNING CASE	5.000	2.250	4.1	5933.5
15	JAR	5.000	1.750	5.0	
16	VR SAFETY JOINT	5.000	1.000	2.8	
70	OPEN HOLE PACKER	7.750	0.750	7.4	5950.0
20	FLUSH JOINT ANCHOR	5.000	2.370	15.0	
80	AP RUNNING CASE	5.000	2.250	4.1	5967.6
5	CROSSOVER	5.000	2.500	1.0	
90	SIDE WALL ANCHOR	7.500	1.620	5.5	5977.1
	TOTAL DEPTH				6185.0

EQUIPMENT DATA

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED
JUN 27 1994
DIV. OF OIL, GAS & MINING

5. Lease Designation and Serial No.
UTU-68523

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

1. Type of Well
[X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
Federal 28 #1

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

9. API Well No.
43-017-30138

3. Address and Telephone No.
1360 Post Oak Blvd., Suite 500, Houston, Texas 77056-3020 (713) 961-8500

10. Field and Pool, or Exploratory Area
Cambrian (Wildcat)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL Of Section 28, T-33-S, R-7-E

11. County or Parish, State
Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[X] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other _____	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Plugging and Abandonment procedure onthe Federal 28 #1 in Garfield County, Utah commenced on June 16, 1994 as follows:

Trip in hole with open ended drill pipe to 5920'. Rig up Dowell, set 160 sk balance plug @ 5920' above the Tapeats Sand. Displace w/30 bbl. water. Pull 15 stands, pump 15 bbl. mud to clear pipe. WOC 4 hours. TIH and tag cmt. @ 4620', set 35,000# on plug, attempted to circulate, Drill pipe plugged. POOH to PU EZSV retainer. PU Howco EZSV, trip in hole to 2680',set EZSV, set down 50,000#, pull up 35,000#, sting out and break circulation on 9-5/8" csg. Sting into EZSV, pump 150 sx cmt. below tool, left 50 sx on top. Lay down drill pipeand pump plug #3(200 sx) down 9-5/8"x13-3/8" annulus. Plug set from 1254'- 809'. Lay down drill pipe. Rig down lay down machine. Nipple down BOP's, cut off wellhead,set 45 sx cmt. plug from 94' to 4' below ground level inside 9-5/8" & 13-3/8" x 9-5/8" annulus, cmt'd. cellar. Filled shot holes w/dirt and cmt'd. top 5'. Filled water well w/dirt and cmt'd. top 5'. clean pits and cleaned up location. Installed dry hole marker. Blade roads and location.

Theron Mitchell, Cedar City BLM, was on location during plugging operations.

Prior verbal approval to plug given by Al McKee, State office.

14. I hereby certify that the foregoing is true and correct
Signed Carl Kobbe Title Regulatory Affairs Rep. Date 6/21/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.: UTU-68523

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

SUBMIT IN TRIPLICATE

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.: Federal 28 #1

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

9. API Well No.: 43-017-30138

3. Address and Telephone No.: (713) 961-8423
1360 Post Oak Blvd., Suite 500, Houston, Texas 77056-3020

10. Field and Pool, or Exploratory Area: Cambrian (Wildcat)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL of Section 28, T-33-S, R-7-E

11. County or Parish, State: Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other weekly Drilling Report	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

06/13/94 - Drill from 6066'- 6195' (TD). Rig up Schlumberger to log.
Run #1 - Dual Induction w/Gamma Ray
Run #2 - Long spaced Sonic w/ Gamma Ray
Run #3 - Density Nuetron w/Gamma Ray
Run #4 - Velocity
06/14/94 - Ran velocity shots and wait on DST equipment.
06/15/94 - Pick up single packer hook wall DST assembly. TIH w/DST #1, set @ 5950' w/25,000# on hook. POOH w/DST. Prepare to plug.
06/16 & 17/94 - Plug and Abandon per attached Sundry Notice. Final Report.

14. I hereby certify that the foregoing is true and correct
Signed Carl Kettle Title Regulatory Affairs Rep. Date 6/21/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.: UTU-68523

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

SUBMIT IN TRIPLICATE

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.: Federal 28 #1

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

9. API Well No.: 43-017-30138

3. Address and Telephone No.: 1360 Post Oak Blvd., Suite 500, Houston, Texas 77056-3020

10. Field and Pool, or Exploratory Area: Cambrian (Wildcat)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 715' FSL & 1845' FEL of Section 28, T-33-S, R-7-E

11. County or Parish, State: Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Weekly Drilling Report	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

06/06/94 - Drill from 3678' - 4608'. Survey @ 3780/2-1/4°. Intermittent lost returns.
06/07/94 - Drill from 4008' - 4408'. Survey @ 4119'/1-1/2°.
06/08/94 - Drill from 4408' - 4680'. Survey @ 4420'/1-1/2°.
06/09/94 - Drill from 4680' - 5046'. Survey @ 4984'/1-1/2°.
06/10/94 - Drill from 5046' - 5518'. Survey @ 5457'/1-1/2°.
06/11/94 - Drill from 5519' - 5895'.
06/12/94 - Drill from 5895' - 6167'. Survey @ 5881'/3/4°.

14. I hereby certify that the foregoing is true and correct

Signed Carl Kalbe Title Regulatory Affairs Rep. Date 6/13/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.: UTU-68523

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

SUBMIT IN TRIPLICATE

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.: Federal 28 #1

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

9. API Well No.: 43-017-30138

3. Address and Telephone No.: (713) 961-8500
1360 Post Oak Blvd., Suite 500, Houston, Texas 77056-3020

10. Field and Pool, or Exploratory Area: Cambrian (Wildcat)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL of Section 28,T-33-S,R-7-E

11. County or Parish, State: Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
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	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Weekly Drilling Report	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

05/30/94 - Circulate & condition hole. Pump 140 BBl. pill. Rig up Dowell and pump 20 BBL. pill @ 2500'. Set 20 BBL. plug @ 2410'. Set 20 BBL. plug @2500'. Spot 200 BBL. pill from 2100'- 2400', high vis, high LCM and POOH to run csg.

05/31/94 - Rig up and 62 jts. of 9-5/8" csg. set @ 2731'. Cmt. w/150 sx lead and 150 sx tail. Details of csg. and cmt. on Sundry notice submitted 6/1/94.

06/01/94 - Test BOP and csg. OK. Drill cmt. from 2686'- 2731'. Drill ahead from 2731'- 2786'. Lost returns @ 2826'. Pump LCM and regain returns. Survey @ 2762'- 2°.

06/02/94 - Drill from 2780'- 2984'. Intermittent lost returns. Surveys - 2935'-2-1/4°/ 2746'- 2°.

06/03/94 - Drill from 2984'- 3197'. Intermittent lost returns. Survey - 3150'- 1-3/4°.

06/04/94 - Drill from 3197'- 3419'. Intermittent lost returns.

06/05/94 - Drill from 3419'- 3678'. Intermittent lost returns.

RECEIVED
JUN 27 1994
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Signed Carl Kolle Title Regulatory Affairs Rep. Date 6/6/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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5. Lease Designation and Serial No.
UTU-68523

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
[X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
Federal 28 #1

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

9. API Well No.
43-017-30138

3. Address and Telephone No.
(713) 961-8423
1360 Post Oak Blvd.,Suite 500, Houston, Texas 77056-3020

10. Field and Pool, or Exploratory Area
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4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL of Section 28, T-33-S, R-7-E

11. County or Parish, State
Garfield, Utah

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TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
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	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Weekly Drilling Report	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

05/23/94 - Drill from 2600'- 2765'.
05/24/94 - Drill from 2765' - 3200'. Survey @ 3044' - 2°.
05/25/94 - Drill from 3200'- 3308'. Work tight hole @ 3308'.
05/26/94 - Reaming from 2423'- 2570'.
05/27/94 - Wash and Ream from 2423'- 2578'. Wash from 2578'- 2580'. Survey @ 2560' - 2-3/4°.
05/28/94 - Wash from 700'- 900'. Wash and Ream from 924'- 2450'. Some lost circulation off and on from 1320'- 2490'.
05/29/94 - Wash, Ream and Drill from 2480'- 2731'. Mix LCM in mud. Spot 140 bbl. mud. Survey @ 2654'- 1°.

14. I hereby certify that the foregoing is true and correct
Signed Carl Kolbe Title Regulatory Affairs Rep. Date 5/28/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: UTU-68523

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.: Federal 28 #1

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

9. API Well No.: 43-017-30138

3. Address and Telephone No.: (713) 961-8500
1360 Post Oak Blvd.,Suite 500, Houston, Texas 77056-3020

10. Field and Pool, or Exploratory Area: Cambrian (Wildcat)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL of Section 28, T-33-S, R-7-E

11. County or Parish, State: Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[XX] Other Weekly Drilling Report	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

05/16/94 - Pressure test head to 350 psi. Test rams, mud x valves, manifold valves,choke body, kill line valves,floor valves,upper and lower kelly valves to 3000 psi. Test hydril to 2100 psi. Test csg. to 1500 psi.

05/17/94 - Drill float collar @ 868'. hard cmt. Drill cmt. and 5' of new hole.Drilling w/mist 930'- 1200'. Survey @ 1040'-2°.

05/18/94 - Drill from 1200'- 1804'. Lost returns @ 1268' in fracture to 1350'. Partial returns @ 1350. Hole in good shape. Partial returns from 1378' - 1596'. Drill w/full return from 1596'- 1804'. Surveys - 1211'-2°/1362'-2-1/2°/1520'-2°/1634'-2-1/4".

05/19/94 - Drill from 1805'- 2380'. Surveys - 1831'-2°/1987'- 3°/2142'- 2-1/2°/2300'- 3°. Reamed tight hole rubble section from 2345'to 2380'.

05/20/94 - Ream hole and drill intermittently. Work tight hole from Hermosa rubble zone falling in. Top of Rubble @ 2345'. Cmt. from 2333' w/350 sx RFC 12-6 30/60 w/ 10# gilsonite.

05/21/94 - POOH and WOC. TIH and tag cmt @ 2333'.Cmt. w/350 sx RFC upto 2326'.POOH to WOC. Drill cmt. from 2326'- 2408'. Drill formation from 2408'- 2472'. Work tight hole. POOH for plug #3. Cmt. from 2365'-2472' w/200 sx RFC 12-3.

05/22/94 - WOC. TIH and tag cmt.@ 2359'. Drill cmt. from 2359'- 2472'. Tight connections. Drill from 2472'- 2600'. Normal conditions from 2530'- 2600'. Hole seems to be healing itself.

14. I hereby certify that the foregoing is true and correct

Signed Carl Kolbe Title Regulatory Affairs Rep. Date 6/23/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
UTU-68523

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

RECEIVED
MAY 27 1994
DIV. OF OIL, GAS & MINING

7. If Unit or CA, Agreement Designation

SUBMIT IN TRIPLICATE

1. Type of Well
[XX] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
Federal 28 #1

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

9. API Well No.
43-017-30138

3. Address and Telephone No.
1360 Post Oak Blvd., Suite 500, Houston, Texas 77056-3020 (713) 961-8500

10. Field and Pool, or Exploratory Area
Cambrian (Wildcat)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
715' FSL & 1845' FEL of Section 28, T-33-S, R-7-E

11. County or Parish, State
Garfield, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[XX] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Weekly Drilling Report	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

04/23/94-05/09/94 - Construction of drilling location. Rigging up Parker Rig #233. Ran and welded 60' of conductor pipe 5/3. Pre-spud meeting held on location 5/6.

05/09/94 - Spud well @ 0600 hrs. 82'-398'. 3 surveys run. last survey run was 1° off. Some lost circulation @ 216' and 355'. Mix lcm to regain full returns.

05/10/94 - Drilled from 398'-721'. Surveys @ 434'- 7/8°/ 552'- 1.5°. Bit trip #2.

05/11/94 - Drilled from 721'- 925'. Surveys @ 803'- 1°/ 915'- 1.75°. Start reaming 12.25"-17.5". Ream from 82'-200'.

05/12/94 - Ream 12.25"/17.25" from 204'-630'.

05/13/94 - Ream from 630'- 810'.

05/14/94 - Ream from 810'- 925'. POOH to run csg. Rig up to run csg. Run 13-3/8" csg. 909.96' 13-3/8" csg. Set @ 909.53' KB

05/15/94 - Rig up Dowell and cement 13-3/8" csg. w/607 sx 35/65 poz/g and tail w/200 sx 25/75 poz/g. Full returns throughout. WOC. Cut off 30" conductor & 13-3/8" csg. and dress. Test wellhead to 350 psi. OK.

14. I hereby certify that the foregoing is true and correct
Signed Carl Kettle Title Regulatory Affairs Rep. Date 5/16/94

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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*See Instruction on Reverse Side

FORM 7

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

REPORT OF WATER ENCOUNTERED DURING DRILLING

1. Well name and number: Federal 28 #1

   API number: 43-017-30138

2. Well Location: QQ SW/SE Section 28 Township 33S Range 7E County Garfield

3. Well operator: BHP Petroleum (Americas) Inc.

   Address: 1360 Post Oak Blvd., Suite 500, Houston, Texas 77056-3020

   Phone: (713) 961-8500

4. Drilling contractor: Parker Drilling Company

   Address: 8 East Third Street

   Tulsa, Oklahoma 74103

   Phone: (918) 585-8221

5. Water encountered (attach additional pages as needed):

DEPTH		VOLUME (FLOW RATE OR HEAD)	QUALITY (FRESH OR SALTY)
FROM	TO		
		NO WATER ENCOUNTERED DURING DRILLING	

RECEIVED
JUN 27 1994
DIV. OF OIL, GAS & MINING

6. Formation tops:

Moenkopi - Surface	Hermosa - 2434'	Tapeats - 5929'
Kaibab - 135'	Mississippian - 3239'	
White Rim - 200'	Lynch - 4429'	
Cedar Mesa- 845'	Bright Angel Shale - 5259'	

If analysis has been made of the water encountered, please attach a copy of the report to this form.

I hereby certify that this report is true and complete to the best of my knowledge. Date: 6/17/94

Name & Signature: Carl Kolbe Carl Kolbe Title: Regulatory Affairs Rep.

(7/93)

BHP

MEMORANDUM

Americas Division
BHP Petroleum

TO: PRODUCTION GROUP SUPERVISOR - VICKY CARNEY

FROM: CARL KOLBE

DATE: 9th August, 1995

OUR REF:

COPIES:

FEDERAL 28 #1, API NO. 43-017-30138 SUBMITTAL OF ELECTRIC AND RADIOACTIVITY LOGS 33S 07E 28

Enclosed, please find the requested materials. If there should be any further questions regarding this matter please contact me at (713) 961-8423. Thank you

Carl Kolbe

LONG SPACED SONIC LOG
SIMULTANEOUS COMPENSATED NEUTRON - LITHO-DENSITY
DUAL INDUCTION - SFL w/ linear correlation

Form 3160-4
(July 1992)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

RECEIVED MAY 23 1996 DIV. OF OIL, GAS & MINING

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: UTU-68523

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: ---

7. UNIT AGREEMENT NAME: ---

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other

b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other P & A

8. FARM OR LEASE NAME, WELL NO.: Federal 28 #1

2. NAME OF OPERATOR: BHP Petroleum (Americas) Inc

9. API WELL NO.: 43-017-30138

3. ADDRESS AND TELEPHONE NO.: 1360 Post Oak Blvd. Ste 500 Houston, Tx 77056 713/961-5000

10. FIELD AND POOL, OR WILDCAT: Cambrian/Wildcat

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 715' FSL & 1845' FEL of S28 T33S R7E
At top prod. interval reported below
At total depth

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: S28 T33S R7E

14. PERMIT NO. | DATE ISSUED

12. COUNTY OR PARISH: Garfield | 13. STATE: Utah

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
5/9/94	6/13/94	P&A'd 6/17/94	6585' GL	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
6195' MD & TVD			→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: NA

25. WAS DIRECTIONAL SURVEY MADE: NO

26. TYPE ELECTRIC AND OTHER LOGS RUN: DIWGR Long Spaced Sonic w/GR DN/GR 8-11-95

27. WAS WELL CORED: yes

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
30"		60'	40"	Dry hole Digger	cut 4' BGL
13 3/8 K55	54.5#	910'	17 1/2"	Surf, 1169 cu ft cmt	cut 4' BGL
9 5/8 K55	36#	2731'	12 1/4"	2400est 867 cu ft cmt	cut 4' BGL

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
NA				

30. TUBING RECORD

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

31. PERFORATION RECORD (*Interval, size and number*): na

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
na	

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
NA		P&A

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)

TEST WITNESSED BY

35. LIST OF ATTACHMENTS: Logs Drill Stem Test Report

RECEIVED MAY 23 1996 DIV. OF OIL, GAS & MINING

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

SIGNED Ron Campbell TITLE Regulatory Coordinator DATE 5/20/96

*(See Instructions and Spaces for Additional Data on Reverse Side)

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37. SUMMARY OF POROUS ZONES: (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):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Oil stain	Surface	921	more or less continuous oil stain/tar from surface to 921' samples given to USGS & Utah Geological Survey
Sinbad - Tongue Zone	110	120	Dolomite with intercrystalline porosity
Permian Kaibub Limestone	162	217	Dolomite/limestone with chert and cherty zone at the base. Intergranular porosity and, at base, fractures & lost circulation
Cutler Fm - White Rim	217	693	Sandstone with intergranular porosity, loose grains, tar, some interbeds of siltstone
Cutler Fm - Cedar Mesa	845	1940	Sandstone - loose sand gratus
Cedar Mesa Member	1940	2502	Lost circulation zone with no returns
Hermosa Zone	2820	2860	Dolomite/limestone and interbedded sand with vugular porosity in the carbonate
Mississippian Redwall zones	3194	3220	Dolomite with vugular porosity
	3340	3360	Dolomite with vugular porosity
	3440	3500	Dolomite with vugular porosity and intergranular porosity
	3520	3660	Dolomite with vugular porosity and intergranular porosity
Mississippian Osage Dolomite	3760	3800	Interbedded dolomite and shale, some dead oil stain with vugular and intergranular porosity
Meriwitica - Tongue of the Bright Angel Shale	5335	5549	Dolmite 70% of cuttings with dead oil stain USGS has samples
Tapeats Sandstone	5918	6130	Sandstone, quartz areuite, subrounded to well sorted with abundant microcrystalline dolomite
Drill stem test	5950	6185	5.5 MMCFG/D 330# FTP Open 2 minutes Max surface pressure > 400# Closed 1 hour Pressure bomb Open 1 hour Rec 6.02 cubic ft @ 840# Closed 2 hours 96.3% CO_2 (Igneous source) 3.0% N_2 .1% CH_4 .4% H_2 .015% Argon .2% He < 10ppm Neon

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Devonian - Ouray	3822	2788
Elbert	3964	2646
Cambrian Lynch	4328	2282
Bowman Hartman	4580	2030
Rampart Cave	4800	1811
Bright Angel Shale	5110	1500
Meriwitica tongue	5300	1310
Base Meriwitica tongue	5650	960
Tapeats Sandstone (Sandstone & Dolomite)	5918	692
PreCambrian Vishnu Shist	6130	480
Igneous	6184	426
Triassic Moekopi Formation	surface	6610
Sinbad tongue	82	6528
Permian Kaibab	162	6448
Cutter Fm White Rim	217	6393
Organ Rock Member	693	5917
Cedar Mesa Member	845	5765
Pennsylvanian Hermosa	2432	4168
Molas	2905	3705
Misissippian Redwall Limestone (Shaley Limestone)	3024	3586
Redwall Dolomite (Dolomite &Limestone)	3194	3416
Osage	3582	3028

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