

UTAH OIL AND GAS CONSERVATION COMMISSION

REMARKS: WELL LOG ELECTRIC LOGS WATER SANDS LOCATION INSPECTED SUB. REPORT/abd.

970818 LA'D *lff.* 6/30/95:

DATE FILED FEBRUARY 15, 1994

LAND: FEE & PATENTED STATE LEASE NO. PUBLIC LEASE NO. USA U-72127 INDIAN

DRILLING APPROVED: AUGUST 4, 1994

SPUDDED IN:

COMPLETED: 6.30.95 LA'D PUT TO PRODUCING:

INITIAL PRODUCTION:

GRAVITY A.P.I.

GOR:

PRODUCING ZONES:

TOTAL DEPTH:

WELL ELEVATION:

DATE ABANDONED: June 30, 1997 LA'D

FIELD: WILDCAT FIELD

UNIT: NA

COUNTY: MILLARD

WELL NO. BLACK ROCK FEDERAL 1-17 API NO. 43-027-30031

LOCATION 2497' FNL FT. FROM (N) (S) LINE, 2598' FEL FT. FROM (E) (W) LINE. SW NE 1/4 - 1/4 SEC. 17

TWP.	RGE.	SEC.	OPERATOR	TWP.	RGE.	SEC.	OPERATOR
				20S	9W	17	CHEVRON USA PROD CO



February 11, 1994

**BLACK ROCK EXPLORATORY WELL
FEDERAL #1-17
USA U-72127
MILLARD COUNTY, UTAH**

Chevron U.S.A. Production Company
Western Exploration Division
P.O. Box 1635
Houston, TX 77251

Utah Board of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Gentlemen:

The purpose in this correspondence is to submit for State approval the Application for Permit to Drill the subject well. The following items are submitted herewith in duplicate for the above proposed location. We request that this information remain confidential.

1. State of Utah APD Form 3
2. Federal APD Form 3160-3
3. Geologic Program
4. Drilling Program
5. Surface Use Plan
6. Surveyed Plats:
 - Exhibit A - Vicinity Map
 - Exhibit B - Location Plat
 - Exhibit C - Map showing Pad Layout and Access Road
 - Exhibit D - Map showing Well Pad Cross Section
 - Exhibit E - Map showing Road Construction Details
 - Exhibit F - Tentative Rig/Facilities Location Plat

Chevron anticipates commencement of operations on or about April 1, 1994 and expects the duration of the operations to be approximately 225 days.

It was recently determined that H₂S may be encountered in the Paleozoic section. In that event, an H₂S contingency plan will be implemented. A plan is being developed and will be submitted to you at a later date for review and consideration. The permits/applications for road use and a water well, once available, will also be submitted to the State.

Your review of Chevron's plans consistent with pertinent State regulations and procedures would be appreciated. If you have any questions in this regard, please do not hesitate to contact me. (713)754-7659.

Sincerely,

A. Bak
Landman, Thrust Belt District
Western Exploration Division

ab

RECEIVED

FEB 15 1994

DIVISION OF
OIL GAS & MINING

ROCKY MOUNTAIN OIL JOURNAL

ESTABLISHED IN 1921 AS THE MONTANA OIL JOURNAL • PUBLISHED WEEKLY



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Volume 74 No. 7

February 18, 1994-February 24, 1994

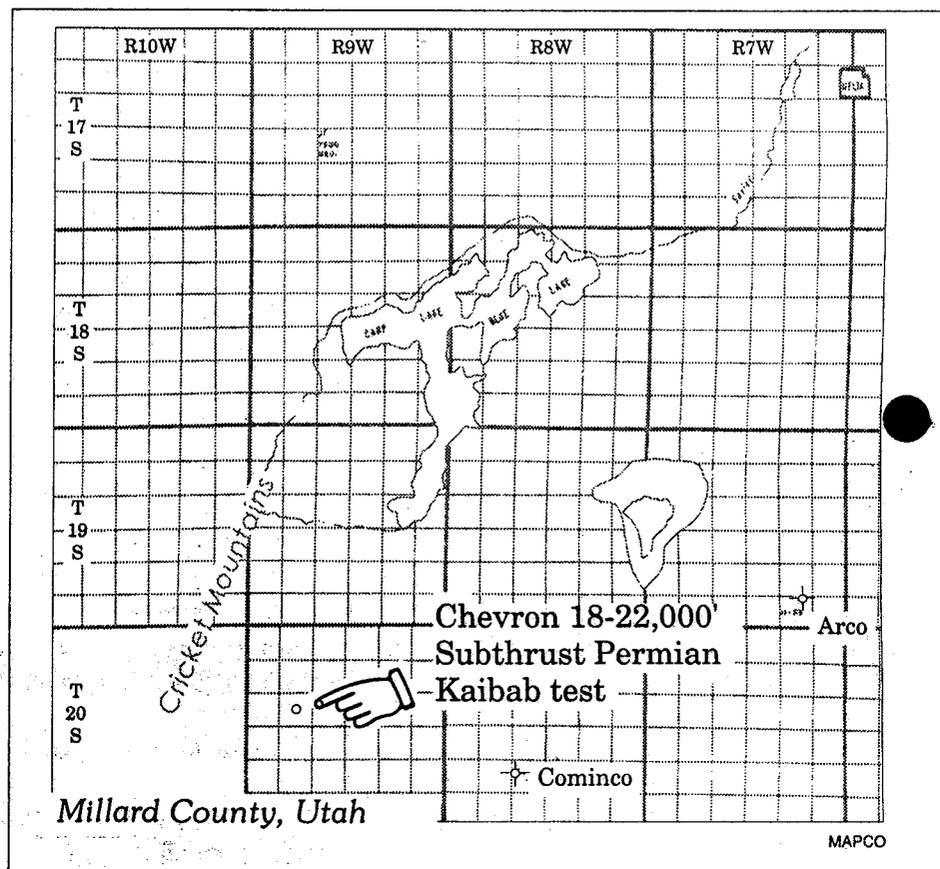
ISSN 0047-7

Chevron rumored planning remote subthrust test in Millard County Utah

With no official confirmation by Chevron, field sources have indicated that the company is in the process of putting together a 18-22,000' Subthrust Permian Kaibab test locating some 21 miles southwest of Delta and about 100 miles west of established gas production at Ferron field. Reportedly, this remote wildcat will locate near section 17 of 20s-9w Millard County Utah. Approximately seven miles southeast of the rumored Chevron location, Cominco American Inc. drilled the #2 Beaver River swnw 28-20s-8w. This test bottomed in the Quartzite at a depth of 13,193' with no cores or tests conducted. Log tops include the Pleistocene @ 1000', Miocene @ 1480', Unconformity @ 2000', Pre-Cambrian @ 2480', Fault @ 8390', Ajax @ 8450', Ophir Shale @ and the Quartzite came in at 12,590'.

This test was abandoned in 1980. Other interesting tests to be drilled in this sparsely explored area of Utah include one by Arco in the nwne 35-19s-7w. Scaling some 15 miles to the northeast, the #1 Pavant Butte achieved a total depth of 11,133'. Although details are sketchy on this dry hole, Arco did production test the Tertiary from 7228'-56'. Apparently the results were negligible and this test was plugged in 1981.

The only well drilling in this sector of Utah is a deep test operated by Hunt Oil in Beaverhead County. The #1-25 USA neww 25-27n-16w is projected to a depth of 18,500'. Industry sources have indicated that Hunt may be close to reaching total depth however it will be somewhat shallower than the proposed TD. Hunt has not released any information on this "tite" hole. □



MAPCO

Basin Exploration taking assignments in

STATE OF UTAH

Operator: CHEVRON USA	Well Name: BLACK ROCK FED. 1-17
Project ID: 43-027-30031	Location: SEC. 20 - T20S - R09W

Design Parameters:

Mud weight (10.50 ppg) : 0.545 psi/ft
 Shut in surface pressure : 7039 psi
 Internal gradient (burst) : 0.165 psi/ft
 Annular gradient (burst) : 0.000 psi/ft
 Tensile load is determined using buoyed weight
 Service rating is "Sweet"

Design Factors:

Collapse : 1.125
 Burst : 1.00
 8 Round : 1.80 (J)
 Buttress : 1.60 (J)
 Other : 1.50 (J)
 Body Yield : 1.50 (B)

*** WARNING *** Design factor for joint strength exceeded in design!

Chevron used 1.6 for 8rd. instead of 1.8

	Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost
1	3,500	7.000	29.00	P-110	Buttress	3,500	6.059	
2	5,000	7.000	29.00	S-95	LT&C	8,500	6.059	
3	5,000	7.000	32.00	S-95	LT&C	13,500	6.000	
4	5,000	7.000	35.00	S-95	LT&C	18,500	5.879	

	Load (psi)	Collapse Strgth (psi)	S.F.	Burst Load (psi)	Min Int Strgth (psi)	Yield S.F.	Load (kips)	Tension Strgth (kips)	S.F.
1	1909	6784	3.553	7616	11220	1.47	488.14	955	1.96 J
2	4636	7820	1.687	8441	9690	1.15	402.94	692	1.72 J
3	7364	9817	1.333	9266	10760	1.16	281.22	779	2.77 J
4	10091	11600	1.150	10091	10970	1.09	146.90	865	5.89 J

Prepared by : FRM, Salt Lake City, UT
 Date : 08-05-1994
 Remarks :

WILDCAT
 MILLARD COUNTY

Minimum segment length for the 18,500 foot well is 1,000 feet.
 SICP is based on the ideal gas law, a gas gravity of 0.65, and a mean gas temperature of 167°F (Surface 74°F, BHT 259°F & temp. gradient 1.000°/100 ft.)
 The mud gradient and bottom hole pressures (for burst) are 0.545 psi/ft and 10,091 psi, respectively.

NOTE: The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - Collapse (with evacuated casing), 1.0 - Burst, 1.8 - 8 Round Tension, 1.6 - Buttress Tension, and 1.5 - Body Yield. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser. Costs for this design are based on a 1987 pricing model. (Version 1.06)

STATE OF UTAH

Operator: CHEVRON USA	Well Name: BLACK ROCK FED. 1-17
Project ID: 43-027-30031	Location: SEC. 17 - T20S - R09W

Design Parameters:

Mud weight (8.50 ppg) : 0.442 psi/ft
 Shut in surface pressure : 442 psi
 Internal gradient (burst) : 0.000 psi/ft
 Annular gradient (burst) : 0.000 psi/ft
 Tensile load is determined using buoyed weight
 Service rating is "Sweet"

Design Factors:

Collapse : 1.000
 Burst : 1.00
 8 Round : 1.80 (J)
 Buttress : 1.60 (J)
 Other : 1.50 (J)
 Body Yield : 1.50 (B)

Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost		
1	1,000	13.375	61.00	K-55	ST&C	1,000	12.359		
	Collapse Load (psi)	Strgth (psi)	S.F.	Burst Load (psi)	Min Int Strgth (psi)	Yield S.F.	Tension Load (kips)	Strgth (kips)	S.F.
1	442	1540	3.488	442	3090	7.00	53.07	633	11.93 J

Prepared by : FRM, Salt Lake City, UT
 Date : 08-05-1994
 Remarks :

WILDCAT
 MILLARD COUNTY

Minimum segment length for the 1,000 foot well is 1,000 feet.

Surface/Intermediate string:

Next string will set at 1,000 ft. with 8.50 ppg mud (pore pressure of 442 psi.) The frac gradient of 1.000 psi/ft at 1,000 feet results in an injection pressure of 1,000 psi Effective BHP (for burst) is 442 psi.

NOTE: The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - Collapse (with evacuated casing), 1.0 - Burst, 1.8 - 8 Round Tension, 1.6 - Buttress Tension, and 1.5 - Body Yield. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser. Costs for this design are based on a 1987 pricing model. (Version 1.06)



Chevron

February 10, 1994

Chevron U.S.A. Production Company
Western Exploration Division
P.O. Box 1635
Houston, TX 77251

**BLACK ROCK EXPLORATORY WELL
FEDERAL #1-17 - USA U-72127
MILLARD COUNTY, UTAH**

Bureau of Land Management
Richfield District Office
150 East 900 North
Richfield, Utah 84701

Attention: Mr. Michael Jackson

Gentlemen:

The purpose of this correspondence is to submit for BLM approval the Application for Permit to Drill the subject well. The following items are submitted herewith in triplicate for the above location. We request that this information be kept confidential.

1. APD Form 3160-3
2. Evidence of Bond coverage
3. Geologic Program
4. Drilling Program
5. Surface Use Plan
6. Class III Cultural Resource/Archaeological Inventory
7. Surveyed Plats:
 - Exhibit A - Vicinity Map
 - Exhibit B - Location Plat
 - Exhibit C - Map showing Pad Layout and Access Road
 - Exhibit D - Map showing Well Pad Cross Section
 - Exhibit E - Map showing Road Construction Details
 - Exhibit F - Tentative Rig/Facilities Location Plat

As previously discussed with Mr. Michael Jackson and representatives in the Warm Springs Resource Area, Chevron's exploratory plans were to drill a well on one of three locations. Chevron has determined that the most geologically, geophysically and technically feasible location for exploration operations is the Section 17 location.

We are targeting April 1, 1994 as the anticipated start date for exploration operations and estimate the duration of the operation to be approximately 225 days.

The Class III Cultural Resource/Archaeological Inventory for the three locations and access is complete; as you know, no cultural resources were found and the proposed well location will have no effect on any National Register eligible properties.

As agreed at the on-site, pre-operational inspection, this location, **Federal #1-17**, was re-located approximately 150 feet north of the initial center stake to reduce the excavation required.

It has recently been determined that H₂S may be encountered in the Paleozoic section. In that event, an H₂S contingency plan will be implemented. A plan will be submitted to you at a later date for review and consideration.

The mitigations (items 1-21) listed as an attachment to your correspondence of December 22, 1993 have been addressed in the APD. Your immediate review of Chevron's plans consistent with pertinent regulations and procedures would be appreciated.

If you have any questions regarding the above Application, please do not hesitate to contact me. (713)754-7659.

Sincerely,

A. Bak
Landman
Thrust Belt District

ab
encls

cc: Mr. Rody Cox
Warm Springs Resource Area

✓ State of Utah
Division of Oil, Gas and Mining

Mr. J. Bailey
Rangely Profit Center

Mr. R. D. Lambert

Mr. L. W. Stavert

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

5. Lease Designation and Serial Number: USA U-72127

6. If Indian, Allottee or Tribe Name: N/A

7. Unit Agreement Name: N/A

8. Farm or Lease Name: BLACK ROCK FEDERAL

9. Well Number: 1-17

10. Field and Pool, or Wildcat: WILDCAT

11. Ctr/Ctr, Section, Township, Range, Meridian: CENTER OF SECTION SEC 17 - T20S - R9W

12. County: MILLARD 13. State: UTAH

14. Distance in miles and direction from nearest town or post office: SEE VICINITY MAP (EXH. A)

15. Distance to nearest property or lease line (feet): 2497' FNL (LEASE LINE)

16. Number of acres in lease: 9034.44 AC

17. Number of acres assigned to this well: 160

18. Distance to nearest well, drilling, completed, or applied for, on this lease (feet): N/A

19. Proposed Depth: 18,500'

20. Rotary or cable tools: ROTARY

21. Elevations (show whether DF, RT, GR, etc.): 4987.9' GR

22. Approximate date work will start: 4/1/94

CONFIDENTIAL
SW & NE 1/4

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
26"	20"	96#	100'	TO SURFACE
17.5"	13 3/8", K-55	61#	1000'	TO SURFACE
12.25"	9 5/8", N-80	53.5#	12,285'	TO SURFACE
8.5"	7", P-110	29#	3,500'	TO SURFACE
8.5"	7", S-95	29#	8,500'	3,500'

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

8.5"	7", S-95	32#	13,500'	8,500'
8.5"	7", S-105	35#	18,500'	13,500'

Be advised that Chevron U.S.A. Production Company is considered to be the Operator of Chevron Black Rock Federal #1-17, Millard Co., Utah, Lease USA U-72127, and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by Nationwide Bond No. U-89-75-81-34 (Standard Oil) Company of California and its wholly owned subsidiary Chevron U.S.A. Inc., as co-principals) via surety consent as provided for in 43 CFR 3104.2.

RECEIVED

FEB 15 1994

24. Name & Signature: *A. BAK* Title: LANDMAN APPROVED 2/11/94

DIVISION OF OIL, GAS & MINING
OF UTAH
DATE: 8/4/94
BY: *M. Matthews*
WELL SPACING: R649-3-3

space for State use only
API Number Assigned: 43-007-30031

Approval:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK
 DRILL DEEPEN

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 CHEVRON U.S.A. PRODUCTION COMPANY, a division of CHEVRON U.S.A. Inc.

3. ADDRESS AND TELEPHONE NO.
 P.O. BOX 1635, HOUSTON, TX 77251 (713) 754-7659

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
 At surface: 2497' FNL, 2598' FEL
 At proposed prod. zone: 2497' FNL, 2598' FEL

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 SEE VICINITY MAP (EXHIBIT A)

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any) (LEASE LINE)
 2497' FNL

16. NO. OF ACRES IN LEASE
 9034.44 AC

17. NO. OF ACRES ASSIGNED TO THIS WELL
 160 AC

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

19. PROPOSED DEPTH
 18,500'

20. ROTARY OR CABLE TOOLS

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
 4987.9' GR

22. APPROX. DATE WORK WILL START*
 4/1/94

5. LEASE DESIGNATION AND SERIAL NO.
 USA U-72127

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARMOR LEASE NAME, WELL NO.
 BLACK ROCK FEDERAL 1-17

10. FIELD AND POOL, OR WILDCAT
 WILDCAT

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
 17-T20S-R9W

12. COUNTY OR PARISH
 MILLARD

13. STATE
 UTAH

SW 1/4 NE 1/4

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
26"	20"	96#	100'	TO SURFACE
17.5"	13 3/8", K-55	61#	1000'	TO SURFACE
12.25"	9 5/8", N-80	53.5#	12,285'	TO SURFACE
8.5"	7", P-110	29#	3,500'	TO SURFACE
8.5"	7", S-95	29#	8,500'	3,500'
8.5"	7", S-95	32#	13,500'	8,500'
8.5"	7", S-105	35#	18,500'	13,500'

RECEIVED

15 1994

DIVISION OF OIL GAS & MINING

Be advised that Chevron U.S.A. Production Company is considered to be the Operator of Chevron Black Rock Federal #1-17, Millard Co., Utah, Lease USA U-72127, and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by Nationwide Bond No. U-89-75-81-34 (Standard Oil Company of California and its wholly owned subsidiary Chevron U.S.A. Inc., as co-principals) via surety consent as provided for in 43 CFR 3104.2.

CONFIDENTIAL

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

24. SIGNED: [Signature] TITLE: LANDMAN DATE: 2/11/94

(This space for Federal or State office use)

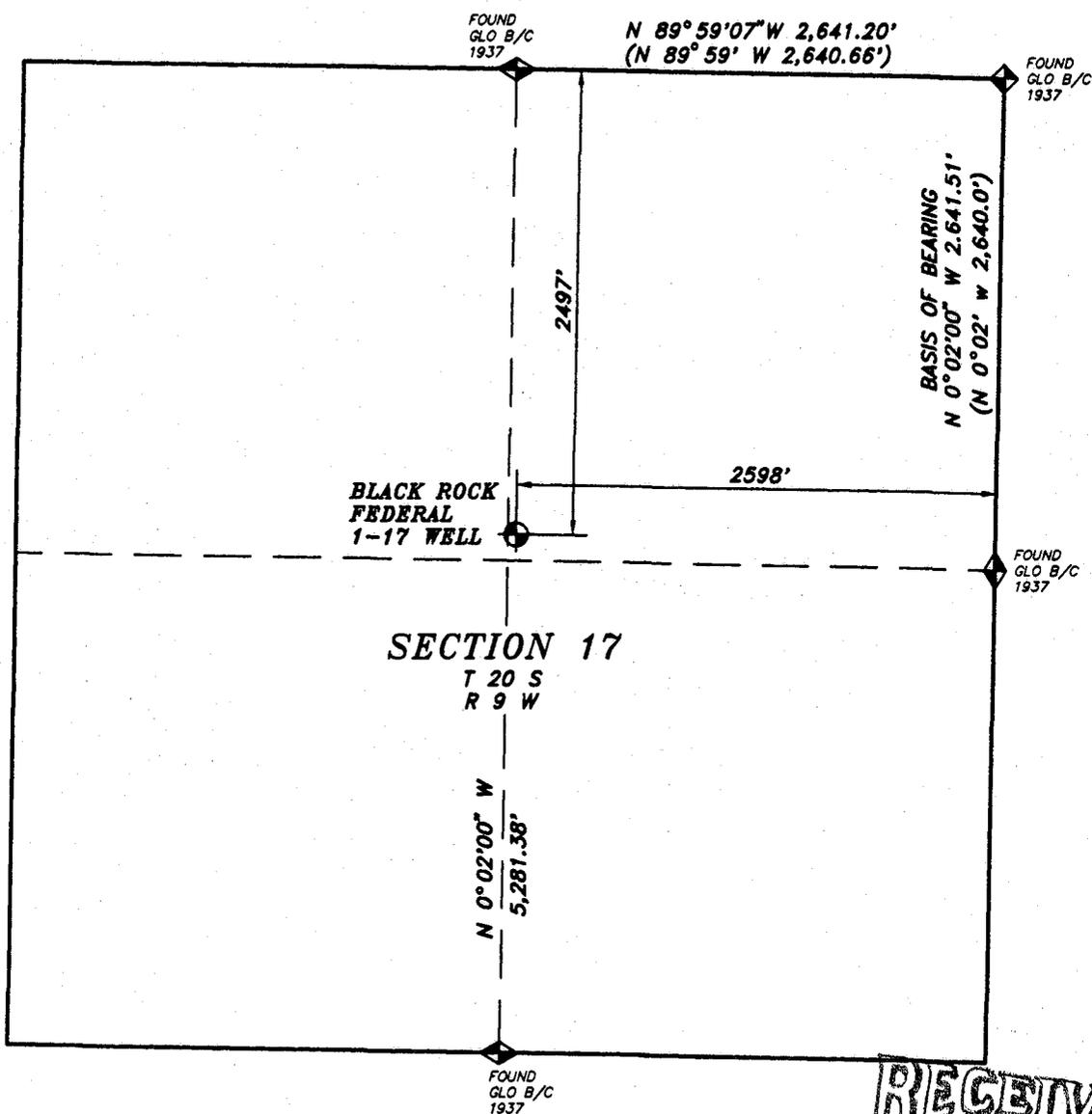
PERMIT NO. _____ APPROVAL DATE: _____

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

CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY: _____ TITLE: _____ DATE: 8/4/94 BY: [Signature] WELL SPACING: P649-3-3

*See Instructions On Reverse Side



LOCATION MAP

RECEIVED
 FEB 15 1994

DIVISION OF
 OIL GAS & MINING

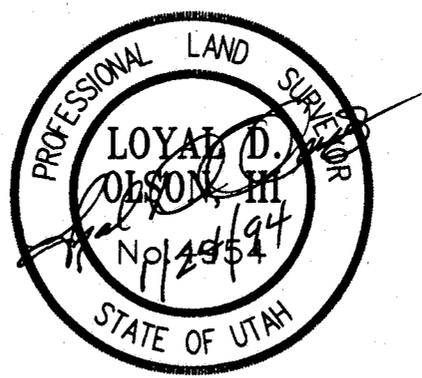
$N 89^{\circ} 15' 12'' E 2,640.12'$ = MEASURED BEARING AND DISTANCE
 $(N 89^{\circ} 12' E 2,640.0')$ = RECORD BEARING AND DISTANCE



MAGNETIC DELINATION = 15.6° EAST
 GRID = UTAH STATE PLANE
 CENTRAL ZONE (4302) NAD27

0 500 1000 1500

SCALE: 1" = 1000'
 U.S. SURVEY FOOT



SURVEYED UNDER MY DIRECTION

**MAP TO ACCOMPANY
 APPLICATION FOR PERMIT
 TO DRILL
 CHEVRON PRODUCTION CO.
 BLACK ROCK FEDERAL
 1-17 WELL
 2,497' FNL 2,598' FEL
 CENTER OF SECTION 17
 T.20 S., R.9 W., SLB&M
 MILLARD COUNTY, UTAH**

REDCON INC.
 655 EAST MEDICAL DRIVE, SUITE 150
 BOUNTIFUL, UTAH 84010
 (801) 298-2401 FAX (801) 298-2024

Drawn By: LDO III	Date:
Revised:	Date:

Safety Precautions:

H₂S is not anticipated.

Logs and Surveys:

DIL/SP/GR

BHC/GR/Cal

FDC/CNL/GR/Cal

SHDT/GR

Check shot

Base Conductor to TD (run GR to grassroots)

Base conductor to TD

Base conductor to TD

Base conductor to TD

At TD

Mud Logging:

Surface to TD.

Cores:

Two 60' cores are planned for this well.

Drill Stem Tests:

One drill stem test, in the Navajo Sandstone, has been programmed for this well.

**GEOLOGIC PROGRAM
1-17 FEDERAL
JANUARY 25, 1994**

Well Classification:

New Field Wildcat

Surface Location:

2497' FNL, 2598' FEL Section 17, T20S R9W, Millard County, Utah.

Bottom-Hole Location:

2497' FNL, 2598' FEL Section 17, T20S R9W, Millard County, Utah.

Depth:

18,500' from Ground Level.

Elevation:

Estimated Ground Level: 4987.9"
Estimated Kelly Bushing: 5017'

Objectives:

Primary

Jurassic Navajo Sandstone at 13,735' (gas with some condensate)
No H2S is anticipated.

Secondary

Permian Kaibab Limestone at 18,000' (gas only). No H2S is anticipated.

Estimated Formation Tops:

Tertiary Valley Fill
Precambrian Quartzite
Canyon Range Thrust Fault
Cambrian Limestone and Dol.
Cambrian Pioche Shale
Cambrian Tintic Quartzite
Pavant Thrust Fault
Jurassic Carmel Fm.
Jurassic Navajo Sandstone
Triassic Chinle Fm.
Triassic Moenkopi Fm.
Permian Kaibab Limestone

Depth:

Surface
200'
7785'
7785'
11,485'
12,185'
13,485'
13,485'
13,735'
14,935'
15,535'
18,000' to TD.

Possible Drilling Problems:

Lost circ., fresh water.
Lost circulation

Poss. gas with condensate.

Shale, anhydrite.
Gas with condensate.
Siltstone, shale.
Siltstone, shale.
Gas.

Western Exploration Business Unit Drilling Program

Field: Wildcat	Rig Type: Land
Well: #1-17 Federal - Blackrock Prospect	Rig Name: N/A
Location: 2497' FNL, 2598' FEL, Sec. 17, T20S, R9W Millard County., Utah	AFE# N/A

1) DIRECTIONAL / STRAIGHT HOLE

Explor/Devel:	Exploratory	GLE:	+/- 4987'	KBE:	+/- 5017'
Drill/Deepen:	Drill				
Proposed MD:	18,500'				
Proposed TVD:	18,500'				
KOP:	N/A				
Build:	N/A				
Max Angle:	N/A				
Avg. Angle:	N/A				
Target Loc.:	Same as Surface. No Target Restraints.				

**WELL WILL BE DRILLED
CONTROLLED NATURAL
DRIFT.**

2) CONDUCTOR HOLE

Hole Size:	26"
Proposed MD:	+/- 100'
Proposed TVD:	+/- 100'

MUD PROGRAM	TYPE	MW	FV	WL	OTHER
	N/A	N/A	N/A	N/A	N/A

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
	20"	N/A	96#	Welded	+/- 100'

Cemented to Surface w/ Redi-mix.

3) SURFACE HOLE

Hole Size:	17.5"	Csg Test (psi):	N/A psi / 30min
Proposed MD:	+/- 1000'	Shoe Test (ppg):	N/A ppg
Proposed TVD :	+/- 1000'	BOPE:	None

DRILL STRING DESIGN

BHA: Bit, float sub, SS, 2-10" DC, IBS, 1-10" DC, IBS, 16 - 8" DC, Jars, 4 - 8" DC.

DP: Premium used designed for 100,000 lbs overpull per API-RP 7G

MUD PROGRAM	TYPE	MW	FV	WL
100' - 1000'	FW/Polymer/gel	+/-8.5 ppg.	32-40	N/C

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
Surface - 1,000'	13-3/8"	K-55	61#	ST&C	1,000'

CEMENT PROGRAM	Lead Slurry:	N/A
	Tail Slurry:	Class H + Additives
	WOC Time(hrs):	12 Cement to Surface

Potential Hazards:	Lost Circulation. Possible Fresh Water Flows.
Elec. Logging Prog:	DIL/SP/GR, BHC/GR/CAL, FDC/CNL/GR/CAL, SHDT/GR
Core/DST Program:	None

4) INTERMEDIATE HOLE

Hole Size: 12.25" Csg Test (psi): 1,500 psi / 30min
 Proposed MD: 12,285' Shoe Test (ppg): N/A ppg
 Proposed TVD: 12,285' BOPE: 13-5/8", 5M Class IV

DRILL STRING DESIGN BHA: Bit,float sub, SS, 2-10" DC, IBS, 1-10" DC, IBS, 16 - 8" DC, Jars, 4 - 8" DC., 15 jts HWDP
 DP: Premium used designed for 100,000 lbs overpull per API-RP 7G

MUD PROGRAM	TYPE	MW	FV	WL
1000' - 12285'	FW/Polymer/gel	+/-8.5 ppg	32 - 40	NC

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
Surface - 12,285'	9-5/8"	N-80	53.5#	LT&C	12,285'

CEMENT PROGRAM Lead Slurry: Class H + 16% gel + 3% salt
 Tail Slurry: Class H + Additives
 WOC Time(hrs): 12 hrs. TOC TO +/- 10,000'

Potential Hazards: Lost circulation in Precambrian Quartzite.
Elec. Logging Prog: DIL/SP/GR, BHC/GR/CAL, FDC/CNL/GR/CAL, SHDT/GR
Core/DST Program: None.

5) OIL STRING

Hole Size: 8.5" Csg Test (psi): 2,800 psi / 30min
 Proposed MD: 18,500' Shoe Test (ppg): 12 PPG EMW
 Proposed TVD: 18,500' BOPE: 13-5/8", 10M Class IV

DRILL STRING DESIGN BHA: Bit,float sub, SS, 2 - 6-3/4" DC, IBS, 1 - 6-3/4" DC, IBS, 16 - 6-3/4" DC, Jars, 4 - 6-3/4" DC., 15 jts HWDP.
 DP: Premium used designed for 100,000 lbs overpull per API-RP 7G

MUD PROGRAM	TYPE	MW	FV	WL
12,285' - 18,500'	FW/Polymer/gel	+/-10.50 ppg	32 - 40	5 - 10

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
Surface - 3,500'	7"	P-110	29#	BT&C	3,500'
3,500 - 8,500'	7"	S-95	29#	LT&C	5,000'
8,500 - 13,500'	7"	S-95	32#	LT&C	5,000'
13,500 - 18,500'	7"	S-105	35#	LT&C	5,000'

CEMENT PROGRAM Lead Slurry: Class H + 16% gel + 3% salt
 Tail Slurry: Class H + Additives
 WOC Time(hrs): 12 . Est. TOC @ 500' ABOVE UPPER **MOST PRODUCTIVE HYDROCARBON INTERVAL**

Potential Hazards: Hydrocarbon Gas.
Elec. Logging Prog: DIL/SP/GR, BHC/GR/CAL, FDC/CNL/GR/CAL, SHDT/GR, Check Shot.
Core/DST Program: Possible DST in Navajo Sandstone at +/- 13,735'.
 1-60' core in both the Navajo Sandstone at +/- 13,735' and Kaibab Limestone at +/- 18,000.

6) AUXILIARY EQUIPMENT

Mud Logging Unit @	1000'	Rotating Head @	N/A
Geolograph @	Spud	Degasser @	1000'
Visulogger @	1000'	Desilter @	Spud
Adj. Choke @	1000'	Centrifuge @	Spud
PVT & Flowmeter @	Spud	Desander @	Spud
Trip Tank @	Spud	H2S Safe Equip @	N/A

Other: Upper & Lower Kelly Cock Valves, IBOP, Full Opening
Safety Valve @ Spud to match DP & DC's.

7) OTHER INFORMATION

Inspect BHA After:	<u>+/- 200</u>	Rotating Hrs
Inclination Surveys Every:	<u>+/- 500</u>	Feet (in straight hole)
Gyro Surveys:	<u>As Required</u>	
Check Drlg Breaks Below:	<u>1000</u>	Feet For Flow
Fill Drill Pipe Every:	<u>30</u>	Stds With Float
Fill Csg Every:	<u>1</u>	Jt/Jts.

8) GENERAL REMARKS

See attached Information.

9) GEOLOGIC PROGRAM

See attached Information.

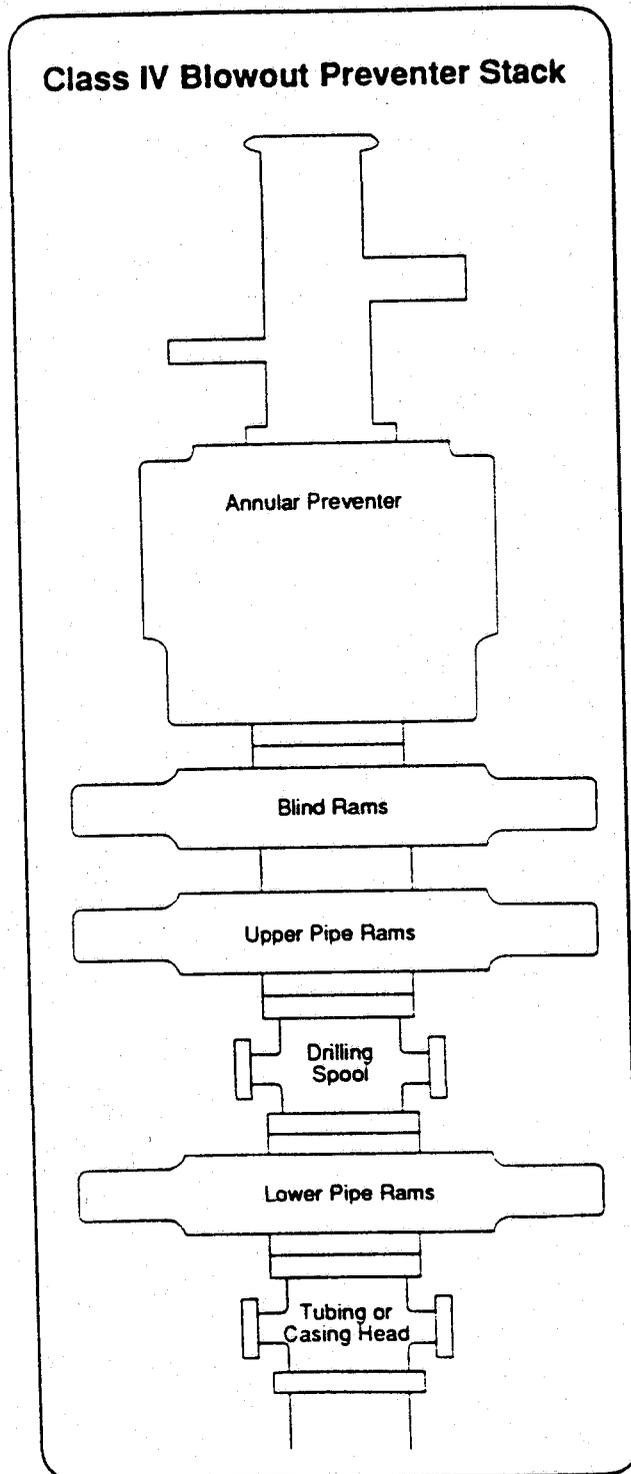
Prepared By: Stephen L. Ice

Drlg Supt: A.D. Lambert

Date: January 14, 1994

Date: 1.17.94

CLASS IV BLOWOUT PREVENTER STACK:

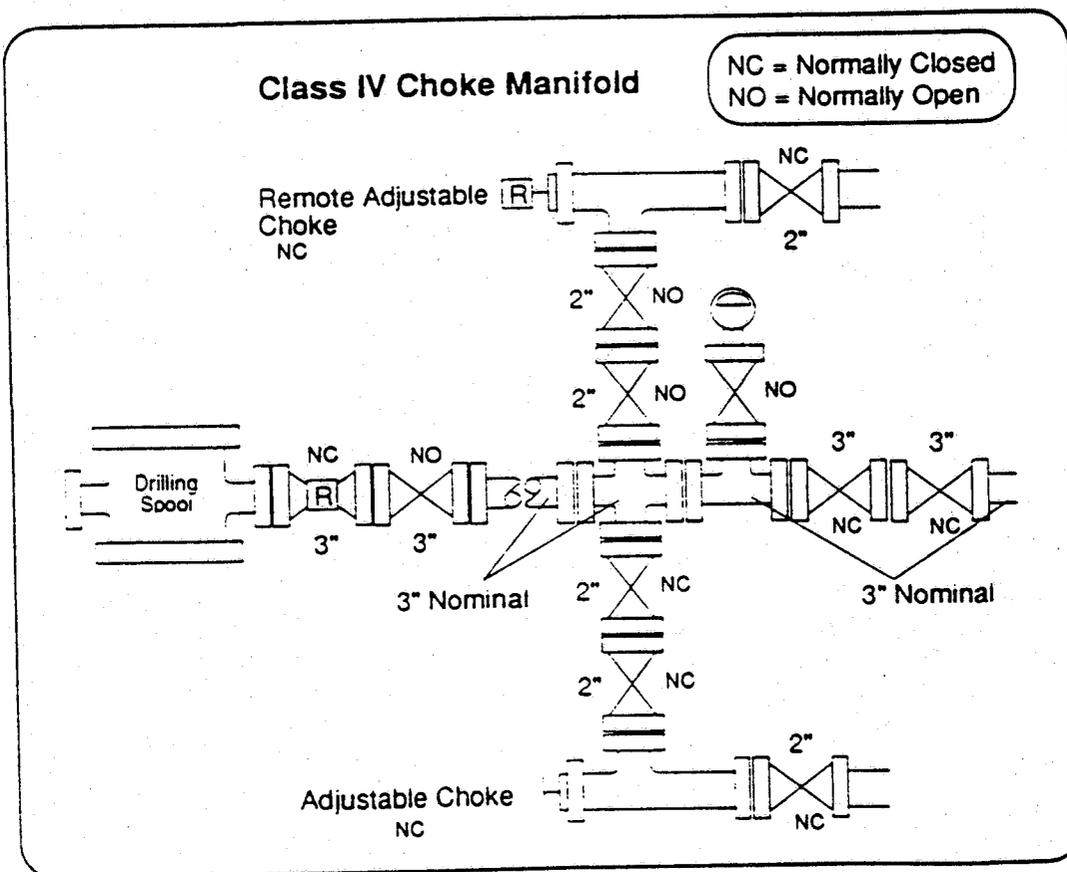


The Class IV preventer stack is designed for drilling or workover operations. It is composed of a single hydraulically operated annular preventer on top, then a blind ram preventer, a single upper pipe ram preventer, a drilling spool, and a single lower pipe ram preventer on bottom. The choke and kill lines are installed onto the drilling spool and must have a minimum internal diameter of 3". All side outlets on the preventers or drilling spool must be flanged, studded, or clamped. An emergency kill line may be installed on the wellhead. A double ram preventer may be used for the blind rams and upper pipe rams in all instances if a drilling spool is being used. If this stack is used in conjunction with a tapered drillstring, a set of variable bore pipe rams should be installed in the upper pipe ram preventer and large pipe rams should be installed in the lower pipe ram preventer. The Class IV blowout preventer stack is shown to the left in Figure 11J.5.

CLASS IV CHOKE MANIFOLD

The Class IV choke manifold is suitable for Class IV and Class V workovers and drilling operations. The standard Class IV choke manifold is shown below in Figure 11J.9. Specific features of the Class IV manifold include:

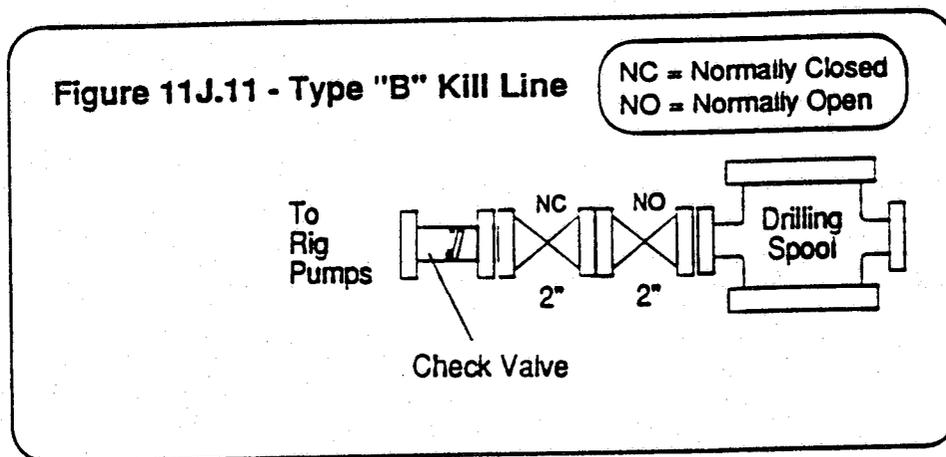
1. The manifold is attached either to a drilling spool or to the pipe ram side outlet which would be located immediately above the drilling spool if it was in use.
2. The minimum internal diameter is 3" (nominal) for the choke line, choke line valves, manifold cross, and blooey line. The minimum internal diameter is 2" (nominal) for the drilling chokes and for all valves installed within the choke manifold that are not part of the blooey line.
3. Includes two 3" steel gate valves in the choke line located at the drilling spool outlet. The inside choke line valve is remotely controlled (HCR).
4. Includes one manually adjustable choke and one hydraulically operated choke which are installed on either side of the manifold cross. Two 2" steel isolation gate valves are installed between both chokes and the manifold cross.
5. Includes one 3" blooey line running straight through the cross which is isolated by two 3" steel gate valves.



TYPE "B" KILL LINE — CLASS III

The type B kill line described below in Figure 11J.11 is the minimum recommended hookup for installation on all Class III, Class IV and Class V wells. Specific design features of the type B kill line include:

1. The preferred kill line connection to the well is at the drilling spool, however, a preventer side outlet may be used when space restrictions exclude the use of a drilling spool. In all cases, the kill line must be installed below the uppermost blind rams so the well can be pumped into with no pipe in the hole.
2. The arrangement includes two - 2" (nominal) gate valves installed at the drilling spool and an upstream fluid cross. The outside valve may be hydraulically remote controlled.



DRILLING PROGRAM ATTACHMENT

GENERAL REMARKS

1. Applicable Federal and State Regulations will be adhered to during the drilling of this well.
2. The drilling rig is to be level and the kelly centered over the hole before drilling operations commence. Check periodically during the drilling of the well to insure the rig stays level.
3. Prior to spud insure all toolpushers, drillers and crews are thoroughly familiar with and understand the Chevron procedure for handling well kicks.

In H₂S environments Chevron's contingency plan for your location is to be read, understood and adhered to. All personnel are to be thoroughly familiar with the use of air packs, the air supply system, locations of air packs and what to do in the vent of sour gas to surface.

4. Test BOPE before drilling out and at least once every thirty days thereafter. Perform low pressure test (200 psi) and high pressure test. High pressure test should be 70% of BOPE working pressure or 70% of burst of last casing string, whichever is less. Record BOP tests on Tour Reports. Notify applicable Federal and State Regulatory Agencies 24 hours in advance of BOPE tests and record notification and names on Tour Reports.
5. Do not reuse ring gaskets. Replace with new Rx or Bx ring gaskets.
6. Separate full opening safety valves and inside BOP's are required for each size drill pipe in use. Test with BOPE.
7. Run full open valve below kelly that can be run in the hole if necessary. Do not use this valve as a mud saver sub.
8. BOP controls are to remain in the open position during drilling operations.
9. Hold pit drills for each crew at least once every seven days and record on Tour Reports.
10. On trips fill the annulus before hydrostatic pressure drops 75 psi or every 5 stds of drill pipe, whichever is first. Use trip tanks to measure hole fill-up and monitor at all times.
11. Use drill pipe floats at all times unless your supervisor instructs otherwise.

12. Have wear ring installed in wellhead before tripping or rotating. Remember to remove wear ring before running casing or when testing BOPE.
13. Run pilot and thickening time tests with rig mixing water for all cement slurries prior to cementing operations.
14. Casing should be tested to 1,500 psi or 0.2 psi/ft., whichever is greater, prior to drilling out and record on Tour Reports. Discuss the test pressure with your supervisor and reference DM-49 before testing.
15. Do not drill with hardbanded pipe inside of casing.
16. Do not run full gauge stabilizers. Run stabilizers 1/16" to 1/8" undergauge. Gauge before running and on every trip.
17. When necessary to work pipe, keep pipe moving up and down. Rotating alone is not considered sufficient.
18. Install and test full lubricator on all logging runs unless instructed otherwise by supervisor.
19. Fully describe damaged or lost equipment on Tour Reports.

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
01/13/94 11.46

DESIGN WILL BE BASED ON.....
PRICES AND/OR SPECIFICATIONS FOR A. O. SMITH-LONE STAR STEEL: 08/30/1988

TITL SURFACE CASING DESIGN BLACKROCK PROSPECT

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION			
OPTS 1	0	0	0			
* CASING SIZE	DEPTH	MIN SEGMENT				
* INCHES	FT	LENGTH, FT				
CSG1 13.375	1000.	1000.				
----- FLUID WEIGHTS, LBS/GAL-----						
* FORMATION	EXTERNAL	INTERNAL	EXTERNAL (FOR BUOYANCY)	% FLUID IN HOLE	FRACTURE PRES. PSI (AT SHOE)	
* PRES. PSI (AT SHOE)						
CSG2 442.	8.50	0.00	8.80	0.00	612.	
* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL			
CSG3 5430.	12285.	0.650	0.00			
----- DESIGN FACTORS-----						
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.
SFAC 1.00	1.20	1.50	1.80	1.50	1.80	1000.
			PRESSURE (PSIG)	FLUID WEIGHT (PPG)	DEPTH OF PRESSURE (FEET)	
EXTC-EXTERNAL PRESSURE FOR COLLAPSE			0.	8.50	0.	
INTC-INTERNAL PRESSURE FOR COLLAPSE			0.	0.00	0.	
EXTB-EXTERNAL PRESSURE FOR BURST			0.	8.50	0.	
* SEGMENT GRADE	THREAD TYPE	WEIGHT LBS/FT	SETTING DEPTH, FT			
DSGN K55	S	61.0	1000.			

SURFACE CASING DESIGN BLACKROCK PROSPECT

CASING SIZE, INCHES = 13.375

DEPTH	CASING INFORMATION						WEIGHT		
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	0	1000	1000	61.0	K55	S	61000	61000	52798

SEG #	COLLAPSE			BURST			INTER DIA			
	RATED (PSI)	REDUCED RATING (PSI)	COLLAPSE LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREASED RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	1540.	1540.	442.	3.484	3090.	3090.	730.	4.235	12.515	12.359

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	730.	876.
1000.	442.	442.	170.	204.

SEG #	TENSION				COST PER SEGMENT (\$)	MASP (PSI)					
	BODY RATED (1000 LBS)	CALC D.F.	CONN RATED (1000 LBS)	CALC D.F.		AVERAGE GAS GRADIENT	BUOYANCY FACTOR	MAX. ALLOW. PULL (LBS)	MAX. COLLAR O.D (IN.)	MAX. BIT SIZE (IN.)	
1	962.	18.210	633.	11.980	25752	730	-.1177	0.8655	351667	14.375	12.359
TOTAL COST \$ 25752											

DESIGN FACTORS

COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.
1.00	1.20	1.50	1.80	1.50	1.80	1000.

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
01/13/94 12.29

DESIGN WILL BE BASED ON.....
PRICES AND/OR SPECIFICATIONS FOR A. O. SMITH-LONE STAR STEEL: 08/30/1988

TITLE INTERMEDIATE CASING DESIGN BLACKROCK PROSPECT 60% VOID

OPTS	CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION			
1	0	0	1				
CSG1	CASING SIZE INCHES	DEPTH FT	MIN SEGMENT LENGTH, FT				
9.625	12285.	12285.					
CSG2	FORMATION PRES. PSI (AT SHOE)	EXTERNAL	INTERNAL	EXTERNAL (FOR BUOYANCY)	% FLUID IN HOLE	FRACTURE PRES. PSI (AT SHOE)	
5430.	8.80	8.80	8.80	33.00	10742.		
CSG3	PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL			
11180.	21500.	0.650	0.00				
SFAC	-----DESIGN FACTORS-----						
1.00	COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.
1.20	1.50	1.80	1.50	1.80	12285.		
EXTC-EXTERNAL PRESSURE FOR COLLAPSE	0.	FLUID WEIGHT (PPG)	8.80	DEPTH OF PRESSURE (FEET)	0.		
INTC-INTERNAL PRESSURE FOR COLLAPSE	0.	0.00	0.				
EXTB-EXTERNAL PRESSURE FOR BURST	0.	8.80	0.				
DSGN	SEGMENT GRADE	THREAD TYPE	WEIGHT LBS/FT	SETTING DEPTH, FT			
N80	L	53.5	12285.				

INTERMEDIATE CASING DESIGN BLACKROCK PROSPECT 60% VOID

CASING SIZE, INCHES = 9.625

DEPTH	CASING INFORMATION							WEIGHT	
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	0	12285	12285	53.5	N80	L	657247	657247	568878

SEG #	COLLAPSE			BURST			INTER DIA			
	REDUCED RATED (PSI)	COLLAPSE RATING (PSI)	COLLAPSE LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREASED RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	6620.	6620.	5622.	1.178	7930.	7930.	6198.	1.280	8.535	8.379

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	6198.	7437.
12285.	5622.	5622.	2056.	2468.

SEG #	TENSION				COST PER SEGMENT (\$)	MASP (PSI)					
	BODY RATED (1000 LBS)	CALC D.F.	CONN RATED (1000 LBS)	CALC D.F.		AVERAGE GAS GRADIENT	BUOYANCY FACTOR	MAX. ALLOW. PULL (LBS)	MAX. COLLAR O.D (IN.)	MAX. BIT SIZE (IN.)	
1	244.	2.187	1062.	1.867	359314	6198	0.1205	0.8655	590000	10.625	8.379
					TOTAL COST \$	359314					

DESIGN FACTORS

COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.
1.00	1.20	1.50	1.80	1.50	1.80	12285.

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
01/13/94 12.00

DESIGN WILL BE BASED ON.....
PRICES AND/OR SPECIFICATIONS FOR A. O. SMITH-LONE STAR STEEL: 08/30/1988

TITL PRODUCTION CASING BLACKROCK PROSPECT

OPTS	2	1	0	0
CSG1	7.000	18500.	5000.	
CSG2	9620.	10.50	0.00	10.50
CSG3	0.	18500.	0.650	8.60
SFAC	1.00	1.20	1.40	1.60
EXTC-EXTERNAL PRESSURE FOR COLLAPSE				0.
INTC-INTERNAL PRESSURE FOR COLLAPSE				0.
EXTB-EXTERNAL PRESSURE FOR BURST				0.
DSGN	S105	L	35.0	18500.
DSGN	S95	L	32.0	13500.
DSGN	S95	L	29.0	8500.
DSGN	P110	B	29.0	3500.

PRODUCTION CASING BLACKROCK PROSPECT

CASING SIZE, INCHES = 7.000

DEPTH	CASING INFORMATION						WEIGHT		
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	13500	18500	5000	35.0	S105	L	175000	175000	146925
2	8500	13500	5000	32.0	S95	L	160000	335000	281256
3	3500	8500	5000	29.0	S95	L	145000	480000	402994
4	0	3500	3500	29.0	P110	B	101500	581500	488211

SEG #	COLLAPSE			BURST			INTER DIA			
	RATED (PSI)	REDUCED RATING (PSI)	COLLAP LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREAS RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	12780.	12780.	10101.	1.265	10970.	10970.	6018.	1.823	6.004	5.879
2	10400.	9429.	7371.	1.279	10760.	10760.	6512.	1.652	6.094	5.969
3	9200.	7155.	4641.	1.542	9690.	9690.	7006.	1.383	6.184	6.059
4	8530.	6055.	1911.	3.169	11220.	11220.	7352.	1.526	6.184	6.059

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	7352.	8822.
18500.	10101.	10101.	5524.	6629.

SEG #	TENSION				COST PER SEGMENT (\$)	MASP (PSI)				
	BODY RATED (1000 LBS)	CALC D.F. (LBS)	CONN RATED (1000 LBS)	CALC D.F. (LBS)		AVERAGE GAS GRADIENT	BUOYANCY FACTOR	MAX. ALLOW. PULL (LBS)	MAX. COLLAR O.D (IN.)	MAX. BIT SIZE (IN.)
1	966.	6.575	901.	6.132	115200	7352	0.1226	517717	7.656	5.879
2	885.	3.147	779.	2.770	99463		0.8396			
3	803.	1.993	692.	1.717	90887					
4	929.	1.903	955.	1.956	72818					
TOTAL COST \$						378368				

DESIGN FACTORS

COLLAPSE	BURST	BODY	CONNECTOR	BODY	CONNECTOR	DEPTH
----------	-------	------	-----------	------	-----------	-------

MULTIPOINT SURFACE USE PLAN
Black Rock Exploratory Wells
Federal #1-17

1. Proposed Facilities

- A. Installation of production facilities will be addressed at a later date if the well is a producer.
- B. A blooie pit 15' x 20' x 10' deep will be constructed approximately 150' from the center hole. A line will be placed on the surface from the center hole to the burn pit. The pit will be fenced on four sides to protect livestock.

This pit will not be lined.

2. Location and Type of Water Supply

- A. A water well will be drilled in the immediate vicinity of the exploratory well. A temporary water use permit for this operation will be obtained from the State of Utah.

3. Methods for Handling Waste Disposal

- A. Cuttings will be settled out in the reserve pit. The reserve pit will be lined with a bentonite liner. The pit will be fenced in accordance with Bureau standards.
- B. Drilling fluids will be retained in reserve tanks utilizing maximum recirculation during drilling operations. Following drilling, the liquid waste will be evaporated, then the reserve pit will be backfilled and returned to grade.
- C. Sewage will be disposed of in fiberglass insulated holding tanks which will be placed in the vicinity of the trailers. The sewage will be hauled to an approved disposal site. Less than 5000 gallons of waste water per day will be hauled and treated. The appropriate sanitation permits will be obtained from the Six County Sanitation and Health Dept.
- D. Trash will be contained in a portable metal container and hauled periodically to an approved landfill.

4. Ancillary Facilities

- A. Four trailers will be placed on the drilling location to house the tool pusher, drilling rep, mud logger and geologist. Refer to Exhibit "F" for rig/layout facilities detail.

5. Wellsite Layout

- A. The top eight inches of topsoil will be removed from the location and stockpiled. Location of mud tanks, reserve and burn pits, pipe racks, living facilities and soil stockpiles are shown on the attachments marked Exhibits "C", "D" and "F".
- B. Burn pit will not be lined.
- C. Access to the well pad will be as indicated on Exhibits "A" and "C".
- D. The location will be bermed to prevent runoff over the edge.

6. Plans for Restoration of Surface

- A. All surface areas not required for producing operations will be graded to as near to the original condition as possible and contoured to maintain possible erosion to a minimum. Any rock encountered in excavation will be disposed of beneath backfill to return the surface to its present appearance and provide soil for seed growth.
- B. The topsoil will be evenly distributed over the disturbed areas and reseeded.
- C. Pits and any other area that would present a hazard to wildlife or livestock will be fenced off when the rig is released and removed.
- D. Any oil accumulation on the pit will be removed or overhead flagged as dictated by then existing conditions.
- E. Rehabilitation will commence following completion of the well. If the wellsite is to be abandoned, all disturbed areas will be recontoured to the natural contour as is possible.

7. Existing Roads

- A. The AT&T right of way road from the paved State highway will not be upgraded, widened or improved. Some minor maintenance will be necessary. Chevron will obtain the appropriate written agreements and/or permits as necessary to use existing roads or authorized rights of way. Documentation will be submitted prior to APD approval.
- B. An access road will be constructed from the existing AT&T right of way road onto the proposed well site as indicated on Exhibits "A" and "C".
- C. We do not plan to change, alter or improve upon any State or County roads.

8. Topsoil Salvaging

As required by BLM, Chevron will strip topsoil and stockpile topsoil separately from spoils storage. All available topsoil will be salvaged. During topsoil salvaging at least six inches and up to twelve inches of topsoil will be salvaged.

9. Erosion and Sediment Controls

- A. **Revegetation, Erosion and Sediment Control.** During reclamation of the right-of-way, Chevron will be responsible for assuring compliance with all reclamation requirements. Chevron will use the reclamation and erosion control procedures that are outlined in this plan and according to BLM requirements. However, because field conditions encountered during construction and reclamation cannot be precisely predicted, this plan could be modified to accommodate field conditions and local features encountered.
- B. **Recontouring.** All graded areas will be recontoured to blend into the surrounding landscape and to reestablish the natural drainage patterns. Emphasis during recontouring will be to return the entire right-of-way to its original contour, to stabilize slopes, to control surface drainage and to provide a more aesthetic appearance. Ruts and other scars will be filled.
- C. **Scarification.** Prior to respreading, the right-of-way will be scarified by ripping or chiseling to loosen areas compacted by equipment traffic. Scarifying the subsoil will also promote water infiltration, better soil aeration and root penetration. In sloping areas, scarification is important to provide a rough interface between the topsoil and subsoil to reduce the potential for soil slippage.
- D. **Soil Replacement.** All topsoil salvaged will be uniformly spread over the portions of the right-of-way from where the soil was salvaged. If compaction occurs during this operation, the compacted area will be scarified. Topsoil spreading will not occur during wet periods when soils are easily compacted and the construction contractor will prohibit all travel over retopsoiled areas.
- E. **Erosion Controls.** Waterbars will be used on slopes to reduce erosion from concentrated surface runoff. Waterbars will be spaced depending on soil type and slope grade and other site-specific conditions such as proximity to streams. However, a general spacing guideline will be according to the following criteria:

Grade (%)	Interval (feet)
< 5	none
5-10	150

11-20	100
21-30	75
> 30	50

Waterbars will also be installed at significant grade changes and other appropriate areas along with areas requested by the land management agency. Waterbars will be constructed to drain at approximately a 2 percent grade, be cut to a minimum of 12 inches in depth below the surface and will originate and end in stable vegetated areas.

If warranted, diversion dikes will be installed at the top of slopes to divert runoff away from slopes. These dikes will be constructed to a height of 1.5 feet or greater, have a top width of two feet, have side slopes flatter than 2:1 and should be compacted to 85 percent of maximum density. Discharge from these dikes will be to vegetated areas or other stable areas or drainage system.

Another important component of erosion and sediment control is to scarify the right-of-way to relieve any compaction and to promote infiltration by reducing runoff. Mulching will also be used on all steep slopes to reduce erosion potential.

Straw bales, silt fences or earth dikes will be placed on the stream-side of the right-of-way where it is adjacent to an intermittent or perennial drainage. Where trenches are constructed across intermittent drainages with the potential to carry sediment to perennial waters, silt catchment dams will be installed. Where necessary, permanent trench breakers would be installed on steep slopes.

- F. **Final Reclamation.** The reclamation practices outlined in this section will occur on all areas to be seeded. The areas of the right-of-way to be seeded included all graded areas and scalped portions of the right-of-way. Chevron and/or BLM may require seeding of other areas where the vegetative cover has been reduced to a level that may result in erosion or weed invasion.
- G. **Seedbed Preparation.** Seedbed preparation will be conducted immediately prior to seeding to prepare a firm seedbed conducive to proper seed placement and moisture retention. Seedbed preparation will be performed to break up surface crusts and to eliminate weeds which may have developed between initial reclamation and seeding. In most areas chisel plowing will be used to achieve this surface.
- H. **Fertilization.** In general, fertilizers will not be added to the right-of-way. If fertilizers are applied, they will be applied during the maintenance period as determined by a professional agronomist. Fertilizers will not be applied to mulched areas within 100 feet of a drainage.

- I. **Seed Mixtures.** Seed mixtures would be approved by the BLM. Seeding rates will be based on pure live seed. To the extent possible, local sources will be used to supply the seed. Where appropriate, shrub species will be incorporated into seed mixes. Native species of vegetation will also be reestablished by topsoil salvaging.
- J. **Seeding Timing.** Seeding is anticipated to occur prior to prolonged ground frost, depending on field moisture conditions. Seeding is to be accomplished late enough in the fall so that seeds do not germinate until the following spring. If field conditions in the fall are not conducive for seeding, spring seeding will occur. Spring seeding will be accomplished as early as possible to allow equipment operation without soil damage. If spring seeding is to occur, every effort will be made to prepare the area in the fall so that seeding is not delayed. Mulching will take place in the fall so that disturbed surfaces are protected from erosion during the winter and spring.
- K. **Seeding Methods.** Drill seeding will occur on all areas except on slopes having greater than 33 percent grades on soils having significant surface rock. Drilling will be done on the contour as much as possible. In areas where erosion control and water conservation are required or where drilling on the contour is not feasible, broadcast seeding will be used. The seeding rate will be doubled where broadcast and the seed will be lightly covered by dragging with a chain or by hand raking.
- Where drill seeding methods are used, rice hulls will be added to the seed to prevent separation. A rangeland type drill will be used, equipped with depth bands and packer wheels. Drill row spacing will be from 7 to 12 inches. The drill will also be properly calibrated so that seed is distributed according to the rates specified for each seed mix.
- L. **Mulching.** A weed free straw or hay mulch will be applied to the soils at an application rate of two tons per acre to reduce erosion and to enhance seedling establishment on required slopes.
- To reduce sedimentation at streams and drainages, matting on each bank will occur for approximately 100 feet or as necessary based on site-specific conditions. A jute thatching or bonded fiber blankets or mats will be used to stabilize seeded areas. These mats will be securely anchored with pegs or staples. If construction is completed more than 30 days prior to seeding, these areas will be mulched immediately after construction for temporary erosion control.
- M. **Temporary Erosion Control.** Temporary sediment barriers, such as silt fences made from geotextile fabric or straw bales, will be erected during construction at

the base of slopes at the stream crossings. These structures and temporary waterbars or slope breakers will be constructed where appropriate as determined by the BLM. If needed, spacing of waterbars will occur at the following intervals:

Slope (%)	Spacing (feet)
5 to 15	300
16 to 30	200

Erosion control structures will be repaired on a daily basis during construction and will be maintained until revegetation efforts prove successful.

10. Materials Handling and Spill Prevention, Containment and Control

A. Introduction

It is Chevron's intent to minimize the potential for a spill and to contain any spillage to the smallest area possible and to protect areas which are considered environmentally sensitive (i.e., in the vicinity of drainages, groundwater wells). It is the policy of Chevron to comply with all environmental and safety laws and regulations and to provide training and equipment designed to prevent pollution. It is Chevron's intent that everything practicable be done to minimize the potential for and consequences of a spill during construction activities.

B. Hazardous Materials Used During Construction and Spill Prevention Measures.

Potential spills from construction are limited primarily to: 1) diesel used to fuel construction equipment; and 2) lubricating oils used by construction equipment.

To prevent these materials from reaching waterways, hazardous substances, chemicals, fuels and lubricating oils will not be stored within 100 feet of drainages, stream banks or wetlands. No construction equipment refueling or maintenance will be allowed within 100 feet of any drainage, stream bank or wetland. In addition, areas within 200 feet of groundwater wells would not be utilized for these activities.

Any fuel storage tanks will be located inside earthen diked berms designed to hold 1.5 times the capacity of the largest tank within the berm. The diked area will incorporate a compacted clay or artificial liner in its design. The tank will be set directly on the liner. Non-abrasive padding may be used under the tank to provide stability as long as the integrity of the liner is not compromised. The purpose of this liner is to protect soils located under the tank or used in dike construction

from contamination. Any spilled materials located on the liner will be removed prior to dismantling the tank and dike.

Prior to their use, the construction contractor will visually inspect fuel storage tanks for cracks, excessive corrosion or other flaws which may compromise the integrity of the tank. Hoses and valves will be similarly inspected. If the construction contractor determines that the equipment is in good mechanical condition, it may be moved onto the construction right-of-way. Otherwise, the equipment will be rejected and alternative equipment in good condition employed. Each tank will be similarly inspected as it is moved down the construction right-of-way. The construction contractor will keep a written record of tank and associated equipment inspections onsite during construction. At the completion of construction, the tank inspection records will be provided to Chevron.

In addition, the construction contractor will inspect the integrity of all dikes and the liner at least twice daily and repair the dikes or replace the liner immediately if they become breached or torn. Catch basins will be installed at each of the refueling locations to collect residual materials which may drain from hoses used to fuel the construction equipment. Materials collected in the catch basin or spillage collected in the liner will be disposed at a state approved disposal facility or recycled. It is preferable to locate these catch basins within the bermed dike, however, they need to be protected from overflow from storm water.

Precipitation in the region is relatively low. However, if storm water accumulates it may be necessary to drain it from within the diked area containing fuel storage tanks. If the storm water has been contaminated with diesel fuel or other pollutants, all water will be removed by vacuum truck or similar means and hauled to a disposal facility approved by the State of Utah. However, if no oil sheen is present and there are no other visible signs of pollution, the storm water may be left to evaporate within the dike after the tank has been removed. Under no circumstances will the construction contractor allow the surface discharge or other release of water contained within the diked area without the prior approval of the environmental representative of Chevron.

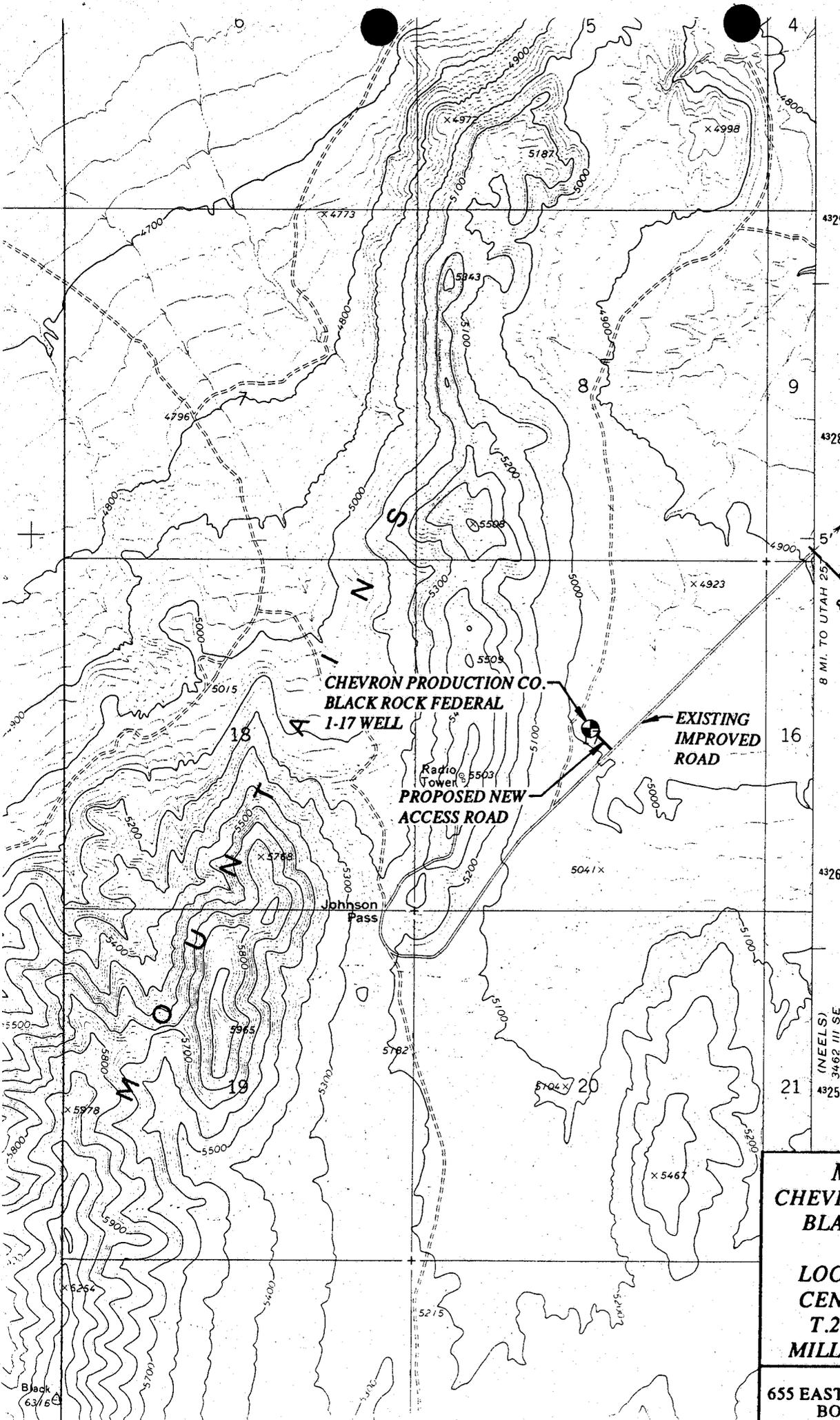
Construction equipment maintenance requiring the draining and replacement of fluids will occur only on areas of the right-of-way approved by Chevron. Before lubricants are drained from the construction equipment, a layer of at least 12-mil plastic liner will be placed under the equipment to collect any spilled material. Spilled material will be drained from the liner and disposed with the fluids removed from the construction equipment. Under no circumstances will the construction contractor allow material from the liner to spill on the ground surface.

Any soils contaminated by fuels, lubricating oils or other hazardous materials will be cleaned up, removed from the right-of-way and either treated by an approved contractor or hauled to an approved disposal site.

If necessary, Chevron would collect samples of soil strata below the spill to assure that all hydrocarbon contaminated soils have been removed from the site. All materials used to clean up the spill will be double bagged and inspected prior to removal from the spill site. All vegetation contaminated by the spilled material will be similarly collected, bagged and disposed at an approved disposal facility.

11. Final Stabilization and Maintenance

Implementation of measures described earlier, are designed to assure that final stabilization and minimization of off-site discharges and sedimentation is achieved. If reseeding is judged to be necessary, this plan will be reviewed for any necessary changes needed to improve revegetation success. Maintenance of all temporary and permanent erosion control structures or procedures will occur annually where needed and until revegetation is deemed successful. If rills develop that are greater than six inches in depth, they will be filled and the area will be reseeded and mulched. Additional erosion control structures or procedures will also be implemented if erosion problems exist that are not properly treated with existing practices.



8 MI. TO UTAH 25
8 MI. TO UTAH 25

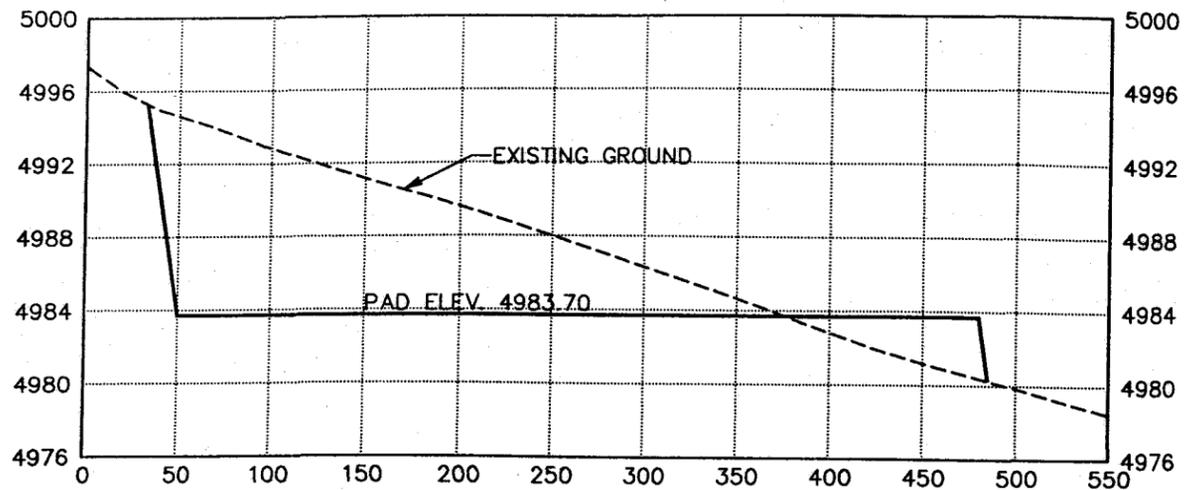
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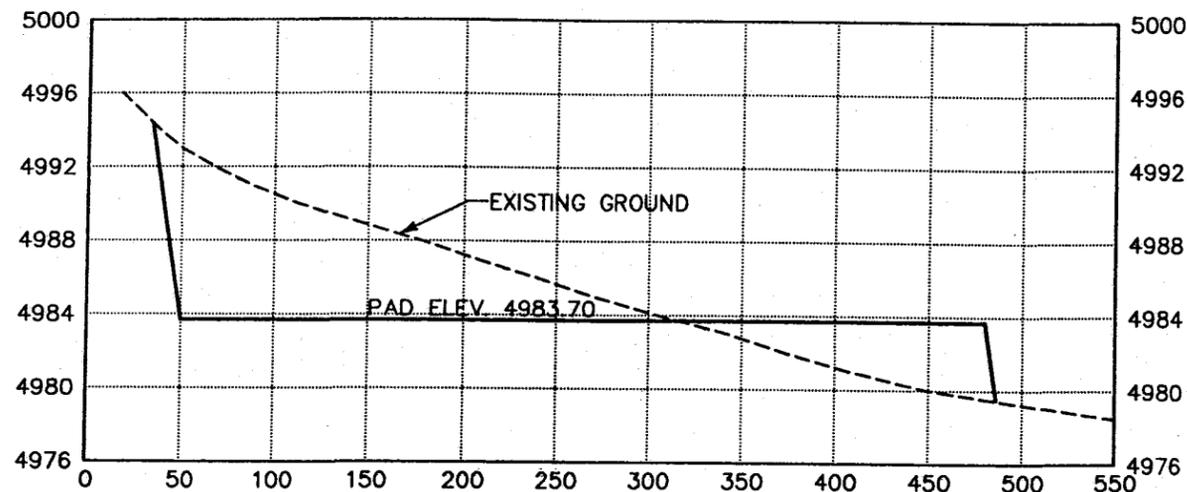
DIVISION OF
OIL GAS & MINING

MAP SHOWING
CHEVRON PRODUCTION CO.
BLACK ROCK FEDERAL
1-17 WELL
LOCATION AND ACCESS
CENTER OF SECTION 17
T.20 S., R.9 W., SLB&M
MILLARD COUNTY, UTAH

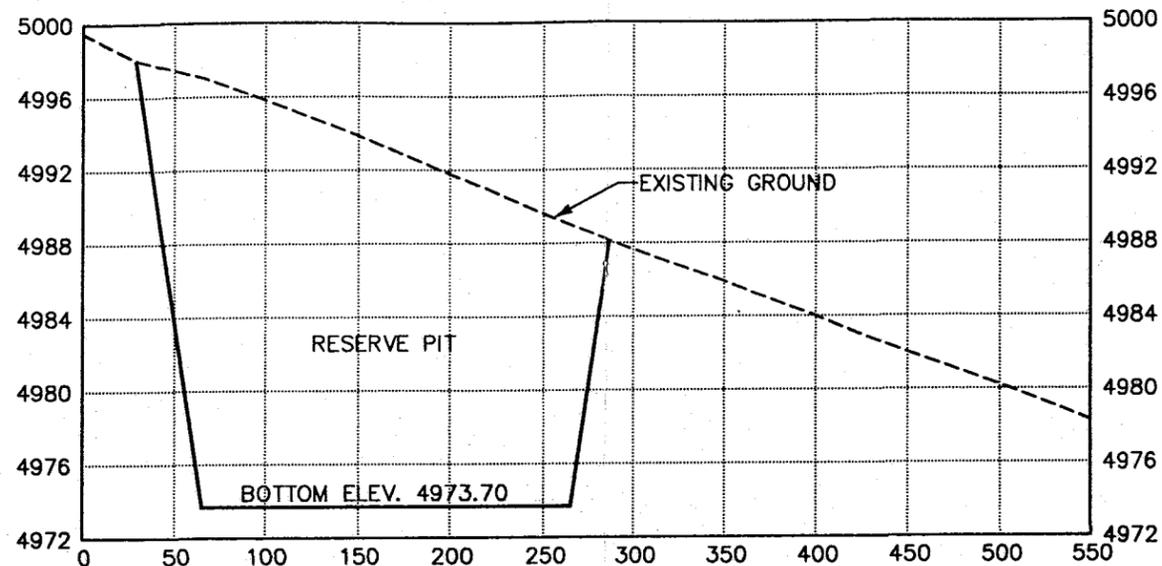
REDCON INC.
655 EAST MEDICAL DRIVE, SUITE 150
BOUNTIFUL, UTAH 84010
(801) 298-2401 FAX (801) 298-2024



2+50



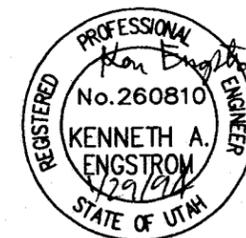
1+00



3+80

SCALE:
 HORIZONTAL: 1" = 100'
 VERTICAL: 1" = 10'

ALL CUT & FILL SLOPES ARE 1.5 : 1



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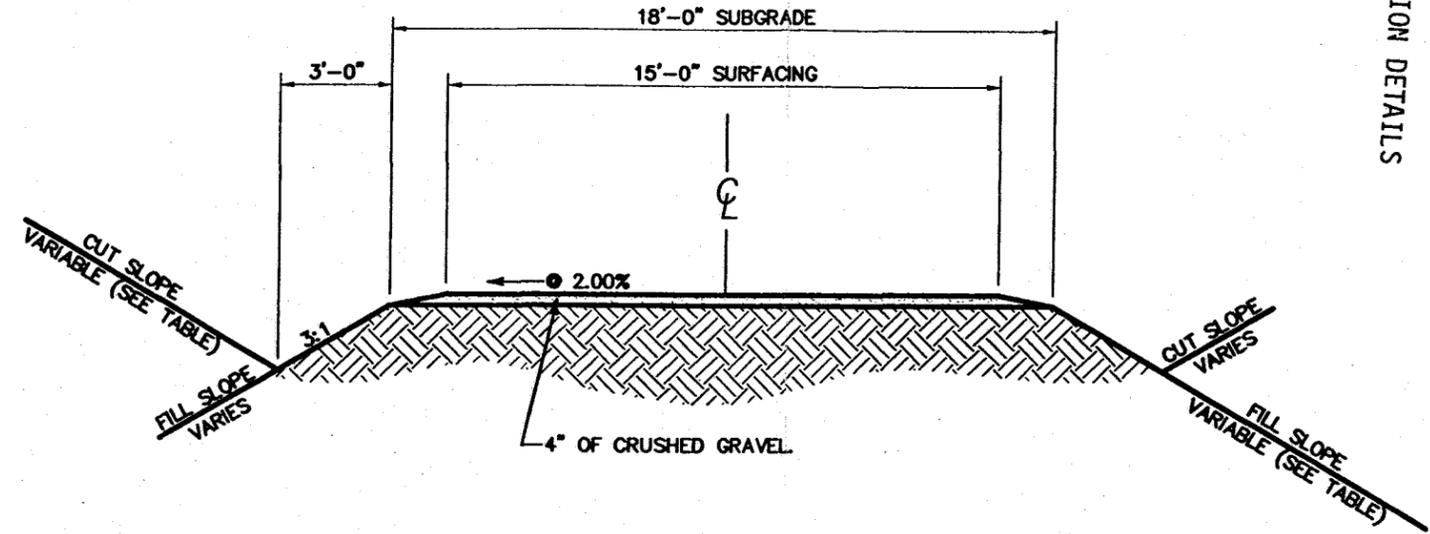
MAP SHOWING
 CHEVRON PRODUCTION CO.
 BLACK ROCK FEDERAL 1-17 WELL
 WELL PAD CROSS SECTION
 MILLARD COUNTY, UTAH

REDCON INC.
 655 EAST MEDICAL DRIVE, SUITE 150
 BOUNTIFUL, UTAH 84010
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 (801) 298-2024 FAX

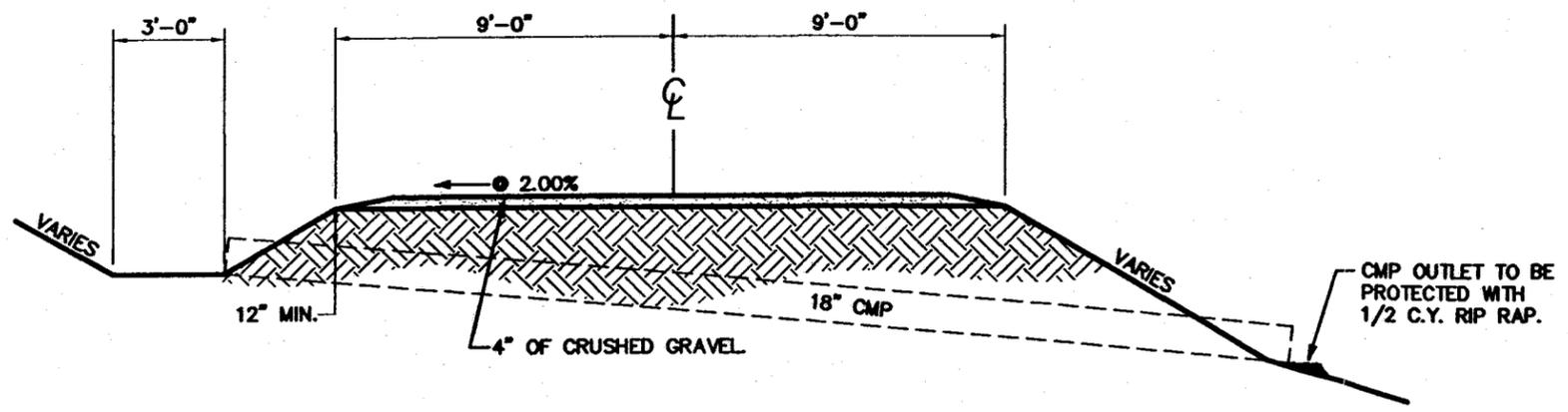
DATE: 1-21-94
 FILE: C:\TOPO\S17-SEC.DWG
 DRAWN: K. GREEFF
 JOB NO: U/534/AE-8

CUT/FILL TABLE	
CUT/FILL	SLOPE RATIO
0' TO 4'	4 : 1
4' TO 10'	3 : 1
OVER 10'	2 : 1

- NOTE:
1. CRUSHED GRAVEL TO BE UTAH D.O.T. SECTION 301, 1" MINUS GRAVEL COMPACTED TO 4" THICKNESS TO 95% AASHTO T-99 DENSITY.
 2. EARTH FILL AND TOP ONE FOOT SUBGRADE COMPACTED TO 95% AASHTO T-99 DENSITY IN 8" MAXIMUM LOOSE LIFTS.



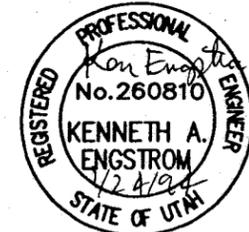
TYPICAL ROADWAY SECTION



TYPICAL CULVERT SECTION

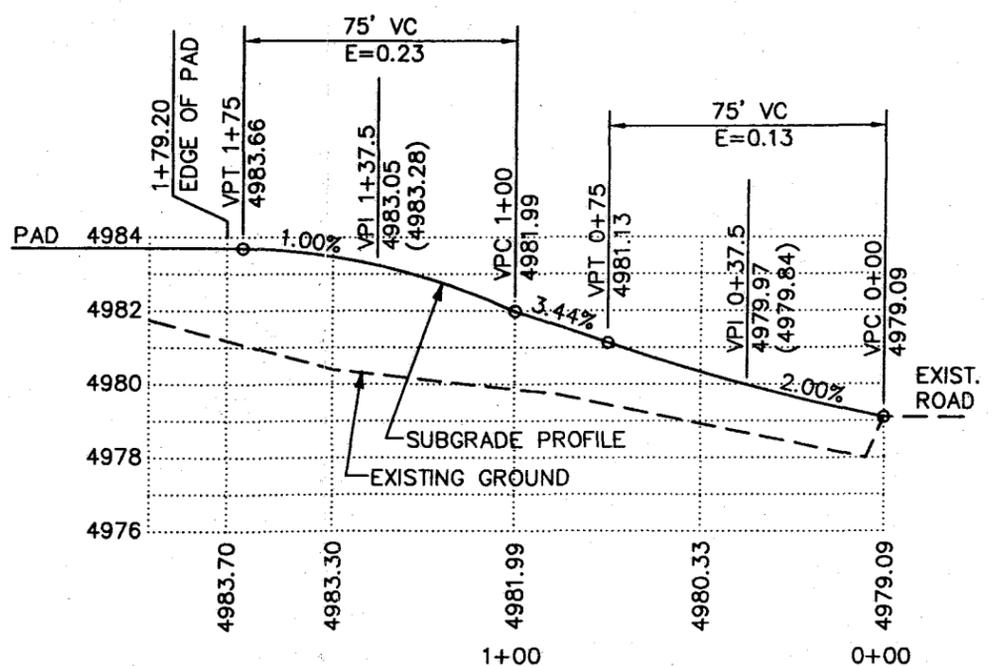
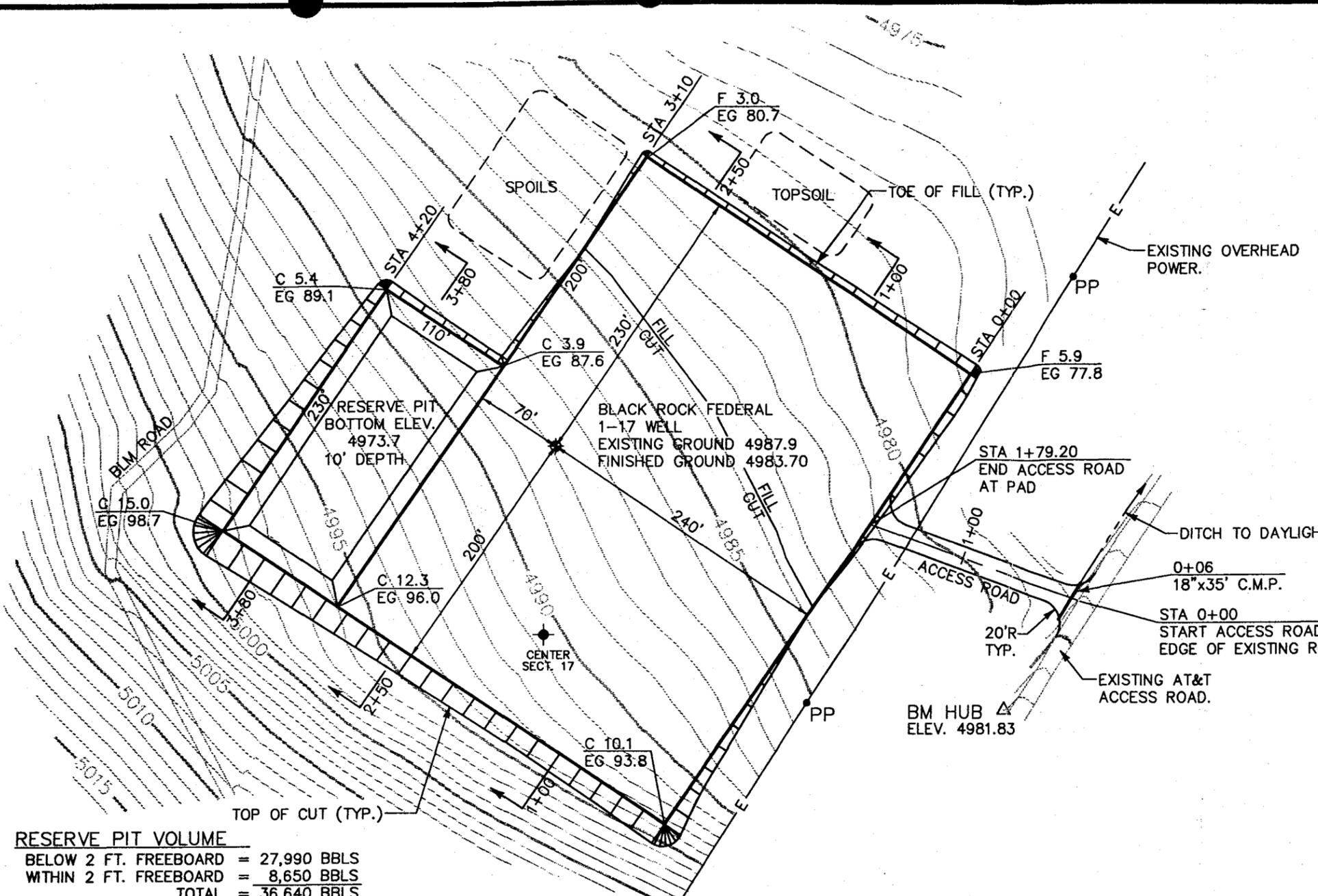
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 BLACK ROCK FEDERAL 1-17 WELL
 ROAD CONSTRUCTION DETAILS
 MILLARD COUNTY, UTAH



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 BOUNTIFUL, UTAH 84010
 (801) 298-2401
 (801) 298-2024 FAX
 DATE: 1-21-94
 FILE: C:\TOPO\SEC17-D.DWG
 DRAWN: K. GREEFF
 JOB NO: U/534/AE-8



PROFILE ACCESS ROAD

SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL

RESERVE PIT VOLUME
 BELOW 2 FT. FREEBOARD = 27,990 BBLs
 WITHIN 2 FT. FREEBOARD = 8,650 BBLs
 TOTAL = 36,640 BBLs

BASIS OF ELEVATION
 USGS BM 129 HLS 1970
 4565.0 AS DESCRIBED BY USGS DESERET
 No. 3 (184) BOOK PV 806 1971

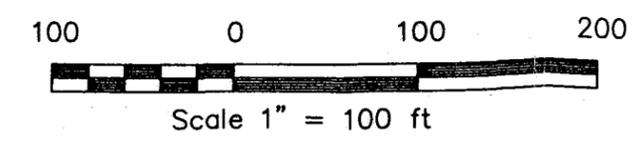
FINISHED PAD ELEVATION TO BE 4983.70'

QUANTITIES
 EXCAVATION INCLUDING PIT = 32,550 CY
 FILL = 5,200 CY
 EXCESS CUT = 27,350 CY
 TOPSOIL (6" THICK) = 3,350 CY

FILL CONSTRUCTION
 COMPACT TO 95% OF AASHTO T-99 DENSITY IN
 8" MAXIMUM LOOSE LIFTS
 ALL CUT AND FILL SLOPES ARE 1.5:1



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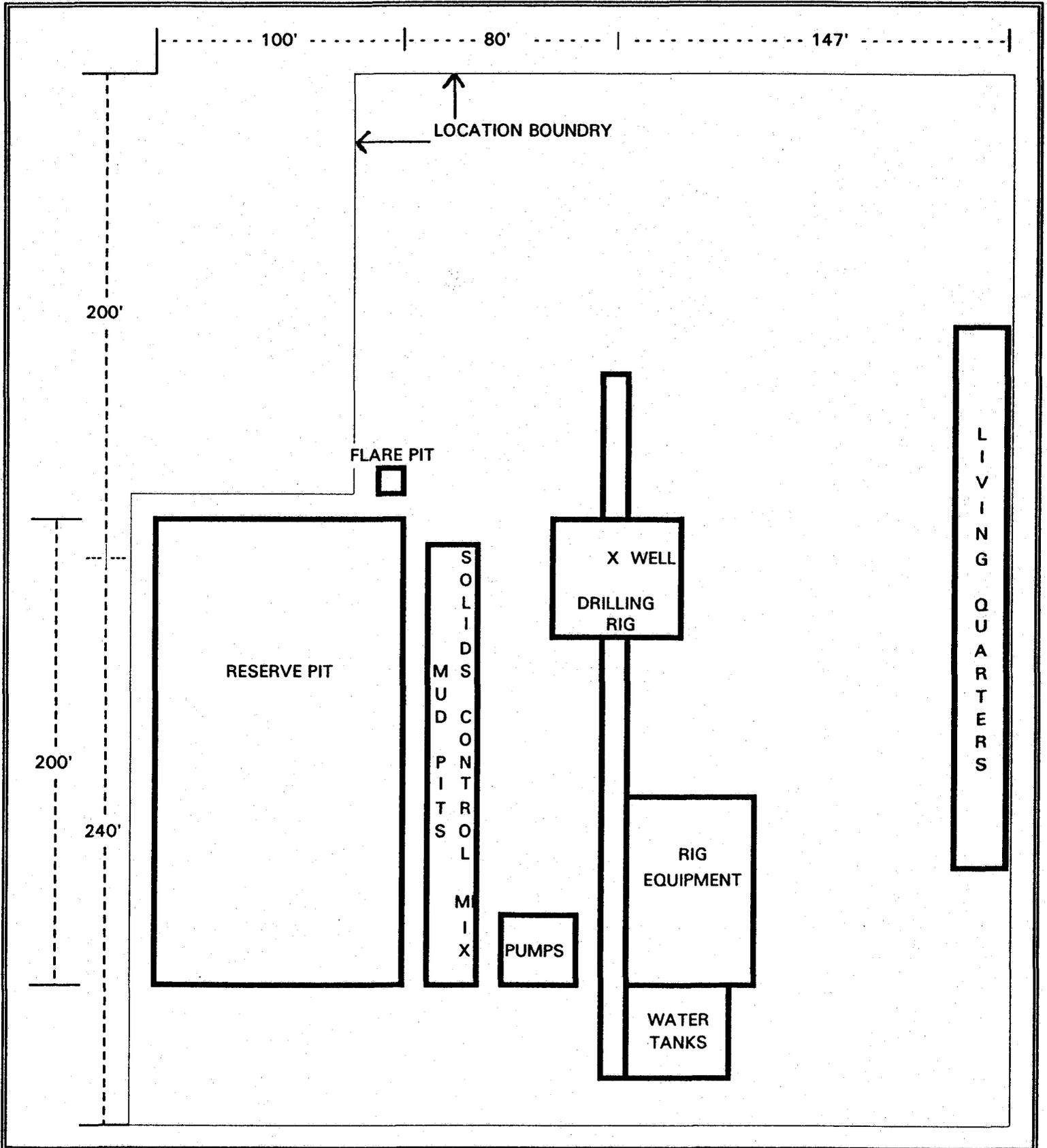
DIVISION OF
OIL GAS & MINING

**MAP SHOWING
 CHEVRON PRODUCTION CO.
 BLACK ROCK FEDERAL 1-17 WELL
 PAD LAYOUT AND ACCESS ROAD
 CENTER OF SECTION 17
 T.20 S., R.9 W., SLB&M
 MILLARD COUNTY, UTAH**

**REDCON INC.
 655 EAST MEDICAL DRIVE, SUITE 150
 BOUNTIFUL, UTAH 84010
 (801) 298-2401
 (801) 298-2024 FAX**

DATE: 1-27-94
 JOB NO.: U/534/AE-8
 FILE: C:\TOPO\SEC17.DWG
 DRAWN: K. ENGSTROM

EXHIBIT "C"
 MAP SHOWING
 PAD LAYOUT & ACCESS ROAD
 FEDERAL #1-17



Western Exploration Business Unit Drilling Program

Field: Wildcat	Rig Type: Land
Well: #1-17 Federal - Blackrock Prospect	Rig Name: N/A
Location: 2497' FNL, 2598' FEL, Sec. 17, T20S, R9W Millard County., Utah	AFE# N/A

1) DIRECTIONAL / STRAIGHT HOLE

Explor/Devel:	Exploratory	GLE:	+/- 4987'	KBE:	+/- 5017'
Drill/Deepen:	Drill				
Proposed MD:	18,500'				
Proposed TVD:	18,500'				
KOP:	N/A				
Build:	N/A				
Max Angle:	N/A				
Avg. Angle:	N/A				
Target Loc.:	Same as Surface. No Target Restraints.				

WELL WILL BE DRILLED
CONTROLLED NATURAL
DRIFT

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2) CONDUCTOR HOLE

Hole Size:	26"
Proposed MD:	+/- 100'
Proposed TVD:	+/- 100'

MUD PROGRAM	TYPE	MW	FV	WL	OTHER
	N/A	N/A	N/A	N/A	N/A

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
	20"	N/A	96#	Welded	+/- 100'

Cemented to Surface w/ Redi-mix.

3) SURFACE HOLE

Hole Size:	17.5"	Csg Test (psi):	N/A psi / 30min
Proposed MD:	+/- 1000'	Shoe Test (ppg):	N/A ppg
Proposed TVD :	+/- 1000'	BOPE:	None

DRILL STRING DESIGN

BHA: Bit, float sub, SS, 2-10" DC, IBS, 1-10" DC, IBS, 16 - 8" DC, Jars, 4 - 8" DC.

DP: Premium used designed for 100,000 lbs overpull per API-RP 7G

MUD PROGRAM	TYPE	MW	FV	WL
100' - 1000'	FW/Polymer/gel	+/-8.5 ppg.	32-40	N/C

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
Surface - 1,000'	13-3/8"	K-55	61#	ST&C	1,000'

CEMENT PROGRAM

Lead Slurry:	N/A
Tail Slurry:	Class H + Additives
WOC Time(hrs):	12 <u>Cement to Surface</u>

Potential Hazards: Lost Circulation. Possible Fresh Water Flows.

Elec. Logging Prog: DIL/SP/GR, BHC/GR/CAL, FDC/CNL/GR/CAL, SHDT/GR

Core/DST Program: None

4) INTERMEDIATE HOLE

Hole Size: 12.25" Csg Test (psi): 1,500 psi / 30min
 Proposed MD: 12,285' Shoe Test (ppg): N/A ppg
 Proposed TVD: 12,285' BOPE: 13-5/8", 5M Class IV

DRILL STRING DESIGN BHA: Bit, float sub, SS, 2-10" DC, IBS, 1-10" DC, IBS, 16 - 8" DC, Jars, 4 - 8" DC., 15 jts HWDP
 DP: Premium used designed for 100,000 lbs overpull per API-RP 7G

MUD PROGRAM	TYPE	MW	FV	WL
1000' - 12285'	FW/Polymer/gel	+/-8.5 ppg	32 - 40	NC

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
Surface - 12,285'	9-5/8"	L-80	53.5#	LT&C	12,285'

CEMENT PROGRAM Lead Slurry: Class H + 16% gel + 3% salt
 Tail Slurry: Class H + Additives
 WOC Time(hrs): 12 hrs. TOC TO +/- 10,000'

Potential Hazards: Lost circulation in Precambrian Quartzite.
Elec. Logging Prog: DIL/SP/GR, BHC/GR/CAL, FDC/CNL/GR/CAL, SHDT/GR
Core/DST Program: None.

5) OIL STRING

Hole Size: 8.5" Csg Test (psi): 2,800 psi / 30min
 Proposed MD: 18,500' Shoe Test (ppg): 12 PPG EMW
 Proposed TVD: 18,500' BOPE: 13-5/8", 10M Class IV

DRILL STRING DESIGN BHA: Bit, float sub, SS, 2 - 6-3/4" DC, IBS, 1 - 6-3/4" DC, IBS, 16 - 6-3/4" DC, Jars, 4 - 6-3/4" DC., 15 jts HWDP.
 DP: Premium used designed for 100,000 lbs overpull per API-RP 7G

MUD PROGRAM	TYPE	MW	FV	WL
12,285' - 18,500'	FW/Polymer/gel	+/-10.50 ppg	32 - 40	5 - 10

CASING PROGRAM	Size	Grade	Weight	Thread	Sect. Length
Surface - 11,785'	7"	T-95	32#	GBT&C	11785'
18500' - 11,785'	7"	P-110	35#	GBT&C	6,715'

P-110 casing to be ran as a liner, T-95 has same properties as C-95 but is rated for H₂S Service and will be ran as a tie-back string.

CEMENT PROGRAM Lead Slurry: Class H + 16% gel + 3% salt
 Tail Slurry: Class H + Additives
 WOC Time(hrs): 12 . Est. TOC @ 500' ABOVE UPPER **MOST PRODUCTIVE HYDROCARBON INTERVAL**

Potential Hazards: Hydrocarbon Gas. H₂S Gas in Permian Age Formations
Elec. Logging Prog: DIL/SP/GR, BHC/GR/CAL, FDC/CNL/GR/CAL, SHDT/GR, Check Shot.
Core/DST Program: Possible DST in Navajo Sandstone at +/- 13,735'.
 1-60' core in both the Navajo Sandstone at +/- 13,735' and Kaibab Limestone at +/- 18,000.

6) AUXILIARY EQUIPMENT

Mud Logging Unit @	1000'	Rotating Head @	N/A
Geograph @	Spud	Degasser @	1000'
Visulogger @	1000'	Desilter @	Spud
Adj. Choke @	1000'	Centrifuge @	Spud
PVT & Flowmeter @	Spud	Desander @	Spud
Trip Tank @	Spud	H2S Safe Equip @	15000'

Other: Upper & Lower Kelly Cock Valves, IBOP, Full Opening Safety Valve @ Spud to match DP & DC's.

7) OTHER INFORMATION

Inspect BHA After:	<u>+/- 200</u>	Rotating Hrs
Inclination Surveys Every:	<u>+/- 500</u>	Feet (in straight hole)
Gyro Surveys:	<u>As Required</u>	
Check Drlg Breaks Below:	<u>1000</u>	Feet For Flow
Fill Drill Pipe Every:	<u>30</u>	Stds With Float
Fill Csg Every:	<u>1</u>	Jt/Jts.

8) GENERAL REMARKS

See attached Information.

9) GEOLOGIC PROGRAM

See attached Information.

Prepared By: Stephen L. Ice

Drlg Supt: *A. D. Lambert*

Date: February 10, 1994

Date: 2-10-94

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**GEOLOGIC PROGRAM
1-17 Federal
February 9, 1994**

Well Classification:

New Field Wildcat

Surface Location:

2497' FNL, 2598' FEL Section 17, T20S R9W, Millard County, Utah .

Bottom-Hole Location:

2497' FNL, 2598' FEL Section 17, T20S R9W, Millard County, Utah .

Depth:

18,500' from Ground Level.

Elevation:

Estimated Ground Level: 4987.9'

Estimated Kelly Bushing: 5017'

Objectives:

Primary

**Jurassic Navajo Sandstone at 13,735' (gas with some condensate)
No H2S is anticipated.**

Secondary:

**Permian Kaibab Limestone at 18,000' (gas only). Possible H2S is
anticipated.**

<u>Estimated Formation Tops:</u>	<u>Depth:</u>	<u>Possible Drilling Problems:</u>
Tertiary Valley Fill	Surface	Lost circ., fresh water.
Precambrian Quartzite	200'	Lost circulation.
Canyon Range Thrust Fault	7785'	
Cambrian Limestone and Dol.	7785'	Poss. gas with condensate.
Cambrian Pioche Shale	11,485'	
Cambrian Tintic Quartzite	12,185'	
Pavant Thrust Fault	13,485'	
Jurassic Carmel Fm.	13,485'	Shale, anhydrite.
Jurassic Navajo Sandstone	13,735'	Gas with condensate.
Triassic Chinle Fm.	14,935'	Siltstone, shale.
Triassic Moenkopi Fm.	15,535'	Siltstone, shale.
Permian Kaibab Limestone	18,000' to TD.	Gas, possible H2S.

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Safety Precautions:

H₂S may be encountered in the Paleozoic section. An H₂S contingency plan will be implemented.

Logs and Surveys:

DIL /SP/GR

Base conductor to TD (run GR to grassroots)

BHC/GR/Cal

Base conductor to TD

FDC/CNL/GR/Cal

Base conductor to TD

SHDT /GR

Base conductor to TD

Check shot

At TD

Mud Logging:

Surface to TD.

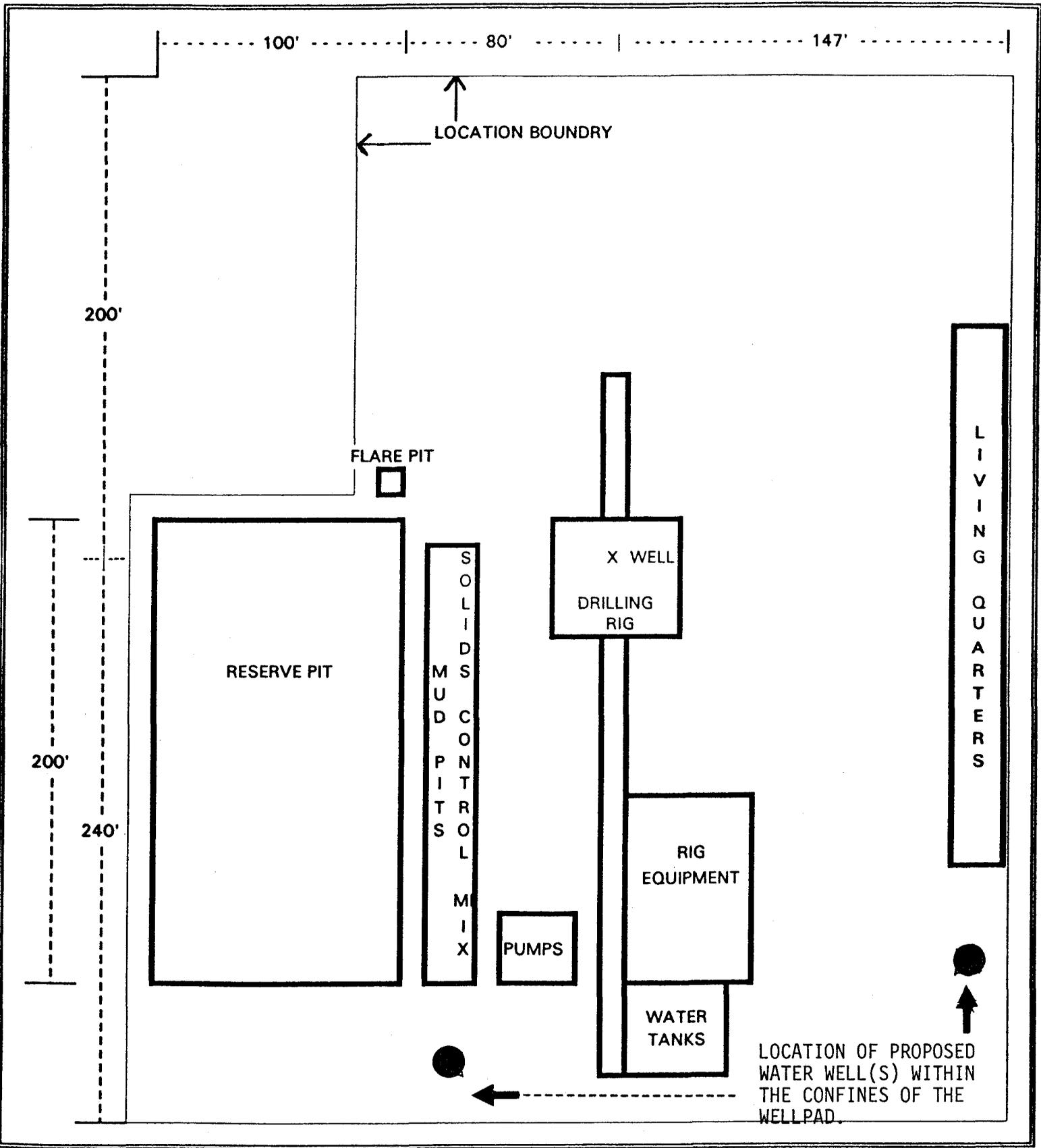
Cores:

Two 60' cores are planned for this well.

Drill Stem Tests:

One drill stem test, in the Navajo Sandstone, has been programmed for this well.

A. CASING SIZE(IN)	13.375	9.625	7.000
B. SETTING DEPTH(TVD)	1000	12285	18500
C. MUD WT.REQUIRED AT CASING SHOE	9.0	9.0	11.0
D. DEPTH TO NEXT CASING(TVD)	12285	18500	18500
E. MAXIMUM MUD WEIGHT AT TD(PPG)	9.0	11.0	11.0
F. SPECIFIC GRAVITY OF GAS(AIR = 1)	0.65	0.65	0.65
G. MAXIMUM FORMATION PRESSURE AT TD(PPG)	8.5	10.5	10.5
H. MAXIMUM FORMATION PRESSURE AT TD(Psi)	5430	10101	10101
I. SURFACE PRESSURE NEGLECTING SHOE(Psi)	4070	7803	7803
J. FRACTURE PRESSURE AT SHOE(PPG)	11.8	16.8	18.6
K. FRACTURE GRADIENT AT SHOE(Psi/FT)	0.61	0.87	0.97
L. FRACTURE PRESSURE AT SHOE(Psi)	612	10742	17856
M. AVG GAS GRADIENT F/ TD TO SURFACE(Psi/FT)	0.111	0.124	0.124
N. SURFACE PRESSURE WHEN SHOE BREAKS DOWN(Psi)	729	9056	15081
O. AVG GAS GRADIENT F/ SHOE TO SURFACE(Psi/FT)	-0.118	0.137	0.150
P. MAXIMUM ANTICIPATED SURFACE PRESSURE(Psi)	729	7803	7803



LISTING OF USER'S INPUT DATA:

TITL, SURFACE CASING DESIGN BLACKROCK PROSPECT
OPTS, 1, 0, 0, 0
CSG1, 13.375, 1000, 1000
CSG2, 442.8.5, 0.8.8, 0, 612
CSG3, 5430, 12285, .65, 0
SFAC, 1, 1.2, 1.5, 1.8, 1.5, 1.8, 1000
DSGN, K55.S, 61, 1000

THERE WERE 0 FATAL ERRORS AND 0 WARNING MESSAGES

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CASING PROGRAM (PE302), VERSION 3 (01/29/90)
 01/13/94 11.14

DESIGN WILL BE BASED ON.....
 PRICES AND/OR SPECIFICATIONS FOR A. O. SMITH-ONE STAR STEEL: 08/30/1988

TITLE SURFACE CASING DESIGN BLACKROCK PROSPECT

*	CASING TYPE	PACKER	BIAXIAL LOAD	EVAUATION			
*		OPTION	OPTION	OPTION			
OPTS	1	0	0	0			
*	CASING SIZE	DEPTH	MIN SEGMENT				
*	INCHES	FT	LENGTH, FT				
CSG1	13.375	1000.	1000.				
*	---- FLUID WEIGHTS, LBS/GAL----						
*	FORMATION			EXTERNAL	% FLUID	FRACTURE	
*	PRES. PSI	EXTERNAL	INTERNAL	(FOR BUOYANCY)	IN HOLE	PRES. PSI	
*	(AT SHOE)					(AT SHOE)	
CSG2	442.	8.50	0.00	8.80	0.00	612.	
*	PORE	NEXT SETTING	GAS	COMPLETION FLUID			
*	PRES. PSI	DEPTH	GRAVITY	DENSITY, LB/GAL			
CSG3	5430.	12285.	0.650	0.00			
*	-----DESIGN FACTORS-----						
*	COLLAPSE	BURST	BODY	CONNECTOR	BODY	CONNECTOR	STARTING
*			TENSION	TENSION	MAXIMUM	MAXIMUM	DEPTH
*					ALLOWABLE	ALLOWABLE	FT.
*					PULL	PULL	
SFAC	1.00	1.20	1.50	1.80	1.50	1.80	1000.
*				PRESSURE	FLUID WEIGHT	DEPTH OF	
*				(PSIG)	(PPG)	PRESSURE (FEET)	
	EXTC-EXTERNAL	PRESSURE FOR COLLAPSE		0.	8.50	0.	
	INTC-INTERNAL	PRESSURE FOR COLLAPSE		0.	0.00	0.	
	EXTB-EXTERNAL	PRESSURE FOR BURST		0.	8.50	0.	
*	SEGMENT	THREAD	WEIGHT	SETTING			
*	GRADE	TYPE	LBS/FT	DEPTH, FT			
DSGN	K55	S	61.0	1000.			

SURFACE CASING DESIGN BLACKROCK PROSPECT

CASING SIZE, INCHES = 13.375

DEPTH	CASING INFORMATION							WEIGHT	
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	0	1000	1000	61.0	K55	S	61000	61000	52798

SEG #	COLLAPSE			BURST			INTER DIA			
	RATED (PSI)	REDUCED RATING (PSI)	COLLAP LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREAS RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	1540.	1540.	442.	3.484	3090.	3090.	730.	4.235	12.515	12.359

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	730.	876.
1000.	442.	442.	170.	204.

SEG #	TENSION				COST PER SEGMENT (\$)	MASP (PSI)					
	BODY RATED (1000 LBS)	CALC D.F.	CONN RATED (1000 LBS)	CALC D.F.		AVERAGE GAS GRADIENT	BOYANCY FACTOR	MAX. ALLOW. PULL (LBS)	MAX. COLLAR O.D (IN.)	MAX. BIT SIZE (IN.)	
1	962.	18.220	633.	11.989	25752	730	- .1177	0.8655	351667	14.375	12.359
					TOTAL COST \$	25752					

DESIGN FACTORS

COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.
1.00	1.20	1.50	1.80	1.50	1.80	1000.

LISTING OF USER'S INPUT DATA:

TITL, FILENAME BLKRKI CASING A
TITL, INT. CASING DESIGN BLACKROCK 67% VOID W/LINER & TIEBACK
TITL, 21500' TD & MD 10.5 PPG RESERVOIR PRESSURE 11 PPG MUD
TITL, NO INCREASE IN BURST DUE TO TENSION
WARNING: ONLY 3 TITL LINES ALLOWED, THE ABOVE LINE WAS DISCARDED
OPTS,1,0,0,1
CSG1,9.625,12285,4000
CSG2,5430,9,11,9,33,10742
CSG3,11739,21500,65,0
SFAC,1,1,2,1.5,1.8,1.5,1.8,12285
DSGN,L80,L,53.5,12285

THERE WERE 0 FATAL ERRORS AND 1 WARNING MESSAGES

CONFIDENTIAL

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
 02/11/94 10.47

DESIGN WILL BE BASED ON.....
 SOUR SERVICE CASING GRADES (ALL TEMPERATURES)

TITLE FILENAME BLKRKI CASING A
 TITLE INT. CASING DESIGN BLACKROCK 67% VOID W/LINER & TIEBACK
 TITLE 21500' TD & MD 10.5 PPG RESERVOIR PRESSURE 11 PPG MUD

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION
OPTS 1	0	0	1

* CASING SIZE INCHES	DEPTH FT	MIN SEGMENT LENGTH, FT
CSG1 9.625	12285.	4000.

* FORMATION PRES. PSI (AT SHOE)	EXTERNAL	INTERNAL	EXTERNAL (FOR BUOYANCY)	% FLUID IN HOLE	FRACTURE PRES. PSI (AT SHOE)
CSG2 5430.	9.00	11.00	9.00	33.00	10742.

* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL
CSG3 11739.	21500.	0.650	0.00

* -----DESIGN FACTORS-----						
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.
SFAC 1.00	1.20	1.50	1.80	1.50	1.80	12285.

* EXTC-EXTERNAL PRESSURE FOR COLLAPSE	INTC-INTERNAL PRESSURE FOR COLLAPSE	EXTB-EXTERNAL PRESSURE FOR BURST	PRESSURE (PSIG)	FLUID WEIGHT (PPG)	DEPTH OF PRESSURE (FEET)
			0.	9.00	0.
			0.	0.00	0.
			0.	9.00	0.

* SEGMENT GRADE	THREAD TYPE	WEIGHT LBS/FT	SETTING DEPTH, FT
DSGN LBG	L	53.5	12285.

FILENAME BLKRKI CASING A
 INT. CASING DESIGN BLACKROCK 67% VOID W/LINER & TIEBACK
 21500 TD & MD 10.5 PPG RESERVOIR PRESSURE 11 PPG MUD
 CASING SIZE, INCHES = 9.625

DEPTH		CASING INFORMATION					WEIGHT		
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	0	12285	12285	53.5	L80	L	657247	657247	566869

COLLAPSE			BURST			INTER DIA				
SEG #	RATED (PSI)	REDUCED RATING (PSI)	COLLAPSE LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREASED RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	6620.	6620.	5749.	1.151	7930.	7930.	5961.	1.330	8.535	8.379

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
G. 12285.	G. 5749.	G. 5749.	5961. 1678.	7153. 2014.

TENSION					COST	MASP (PSI)	
SEG #	BODY RATED (1000 LBS)	CALC D.F.	CONN RATED (1000 LBS)	CALC D.F.	COST PER SEGMENT (\$)	AVERAGE GAS GRADIENT	5961
1	1244.	2.195	1047.	1.847	404477	0.1194	
						BUOYANCY FACTOR	0.8625
						MAX. ALLOW. PULL (LBS)	581667
						MAX. COLLAR O.D. (IN.)	10.625
						MAX. BIT SIZE (IN.)	8.379
						TOTAL COST \$	404477

DESIGN FACTORS

COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.
1.00	1.20	1.50	1.80	1.50	1.80	12285.

LISTING OF USER'S INPUT DATA:

TITL, FILENAME BLKRK12 CASING A
TITL, INT. CASING DESIGN BLACKROCK 100% VOID W/LINER & TIEBACK
TITL, 2'500' TD & MD 10.5 PPG RESERVOIR PRESSURE 11 PPG MUD
TITL, N3 INCREASE IN BURST DUE TO TENSION
WARNING: ONLY 3 TITL LINES ALLOWED, THE ABOVE LINE WAS DISCARDED
OPTS,1.0.0.0
CSG1,9.625,12285,4000
CSG2,5430.9.0.9.0,10742
CSG3,11739,21500,.65,0
SFAC,1.1.2,1.5,1.8,1.5,1.8,12285
DSGN,L80,L.53.5,12285

THERE WERE 0 FATAL ERRORS AND 1 WARNING MESSAGES

CONFIDENTIAL

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
 02/11/94 10.51

DESIGN WILL BE BASED ON.....
 SOUR SERVICE CASING GRADES (ALL TEMPERATURES)

TITLE FILENAME BLKRK12 CASING A
 TITLE INT. CASING DESIGN BLACKROCK 100% VOID W/LINER & TIEBACK
 TITLE 21500' TD & MD 10.5 PPG RESERVOIR PRESSURE 11 PPG MUD

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION
OPTS	1	0	0

* CASING SIZE INCHES	DEPTH FT	MIN SEGMENT LENGTH FT
CSG1	9.625	12285. 4000.

* FORMATION PRES. PSI (AT SHOE)	---- FLUID WEIGHTS, LBS/GAL----				FRACTURE PRES. PSI (AT SHOE)	
	EXTERNAL	INTERNAL	EXTERNAL (FOR BUOYANCY)	% FLUID IN HOLE		
CSG2	5430.	9.00	0.00	9.00	0.00	10742.

* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL	
CSG3	11739.	21500.	0.650	0.00

-----DESIGN FACTORS-----							
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.	
SFAC	1.00	1.20	1.50	1.80	1.50	1.80	12285.

* EXTC-EXTERNAL PRESSURE FOR COLLAPSE	INTC-INTERNAL PRESSURE FOR COLLAPSE	EXTB-EXTERNAL PRESSURE FOR BURST	PRESSURE (PSIG)	FLUID WEIGHT (PPG)	DEPTH OF PRESSURE (FEET)
			0.	9.00	0.
			0.	0.00	0.
			0.	9.00	0.

* SEGMENT GRADE	THREAD TYPE	WEIGHT LBS/FT	SETTING DEPTH, FT	
DSGN	L80	L	53.5	12285.

FILENAME BLKRK12 CASING A
 INT. CASING DESIGN BLACKROCK 100% VOID W/LINER & TIEBACK
 21500' TD & MD 10.5 PPG RESERVOIR PRESSURE 11 PPG MUD
 CASING SIZE, INCHES = 9.625

		DEPTH	CASING INFORMATION					WEIGHT	
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	0	12285	12285	53.5	L80	L	657247	657247	566869

		COLLAPSE			BURST			INTER DIA		
SEG #	RATED (PSI)	REDUCED RATING (PSI)	COLLAPSE LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREASED RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	6620.	6620.	5749.	1.151	7930.	7930.	9027.	0.879	8.535	8.379

DESIGN LOADS				
DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	9027.	10832.
12285.	5749.	5749.	4827.	5792.

TENSION					COST			
SEG #	BODY RATED (1000 LBS)	CALC D.F.	CONN RATED (1000 LBS)	CALC D.F.	COST PER SEGMENT (\$)	MASP (PSI)	9027	
1	1244.	2.195	1047.	1.847	404477	AVERAGE GAS GRADIENT	0.1262	
						BUOYANCY FACTOR	0.8625	
						MAX. ALLOW. PULL (LBS)	581667	
						MAX. COLLAR O.D (IN.)	10.625	
						MAX. BIT SIZE (IN.)	8.379	
						TOTAL COST	\$ 404477	

DESIGN FACTORS							
COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.	
1.00	1.20	1.50	1.80	1.50	1.80	12285.	

LISTING OF USER'S INPUT DATA:

TITLE,FILENAME IS BLKRKLD CASING A FOR DEEP LINER
TITLE,PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 21500'
TITLE,DESIGN IS FOR LINER SECTION ONLY.DISREGUARD DATA ABOVE 11500'.BHT>3
OPTS,2,0,0,0
CSG1,7,21500,10000
CSG2,11739,11,0,11,0,20969
CSG3,0,21500,.65,8.7
SFAC,1,1.2,1.4,1.6,1.4,1.6
DSGN,P110,L,35,21500

THERE WERE 0 FATAL ERRORS AND 0 WARNING MESSAGES

CONFIDENTIAL

CASING PROGRAM (PE302). VERSION 3 (01/29/90)
 02/11/94 11.15

DESIGN WILL BE BASED ON.....
 PRICES AND/OR SPECIFICATIONS FOR A. O. SMITH-LONE STAR STEEL: 08/30/1988

TITLE FILENAME IS BLKRKLD CASING A FOR DEEP LINER
 TITLE PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 21500'
 TITLE DESIGN IS FOR LINER SECTION ONLY.DISREGUARD DATA ABOVE 11500'.BHT

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION
OPTS 2	0	0	0

* CASING SIZE	DEPTH FT	MIN SEGMENT LENGTH, FT
CSG1 7.000	21500.	10000.

* FORMATION	---- FLUID WEIGHTS, LBS/GAL----			% FLUID	FRACTURE
* PRES. PSI	EXTERNAL	INTERNAL	(FOR BUOYANCY)	IN HOLE	PRES. PSI
* (AT SHOE)					(AT SHOE)
CSG2 11739.	11.00	0.00	11.00	0.00	20969.

* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL
CSG3 0.	21500.	0.650	8.70

-----DESIGN FACTORS-----							
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.	
SFAC	1.00	1.20	1.40	1.60	1.40	1.60	21500.

* EXT	INTERNAL PRESSURE FOR COLLAPSE	EXTERNAL PRESSURE FOR COLLAPSE	INTERNAL PRESSURE FOR COLLAPSE	EXTERNAL PRESSURE FOR BURST	DEPTH OF PRESSURE (FEET)
EXTC	0.	11.00	0.	0.	0.
INTC	0.	0.00	0.	11.00	0.
EXTB	0.	11.00	0.	0.	0.

* SEGMENT GRADE	THREAD TYPE	WEIGHT LBS/FT	SETTING DEPTH, FT
DSGN P110	L	35.0	21500.

LISTING OF USER'S INPUT DATA:

TITLE,FILENAME IS BLKRKLS CASING A FOR SHALLOW LINER
TITL.PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 18500'
TITL.DESIGN IS FOR LINER SECTION ONLY:DISREGUARD DATA ABOVE 11500'.BHT>3
OPTS.2.0.0.0
CSG1.7.18500.7000
CSG2.10101.11.0.11.0.17856
CSG3.0.18500.65.8.7
SFAC.1.1.2.1.4.1.6.1.4.1.6
DSGN.P110.L.35.18500

THERE WERE 0 FATAL ERRORS AND 0 WARNING MESSAGES

CONFIDENTIAL

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
 02/11/94 11.25

DESIGN WILL BE BASED ON.....
 PRICES AND/OR SPECIFICATIONS FOR A. O. SMITH-LONE STAR STEEL: 08/30/1988

TITL FILENAME IS BLKRKLS CASING A FOR SHALLOW LINER
 TITL PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 18500'
 TITL DESIGN IS FOR LINER SECTION ONLY.DISREGUARD DATA ABOVE 11500'.BHT>

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION
OPTS 2	0	0	0

* CASING SIZE INCHES	DEPTH FT	MIN SEGMENT LENGTH, FT
CSG1 7.000	18500.	7000.

* FORMATION PRES. PSI (AT SHOE)	---- FLUID WEIGHTS, LBS/GAL----		% FLUID IN HOLE	FRACTURE PRES. PSI (AT SHOE)
	EXTERNAL	INTERNAL		
CSG2 10101.	11.00	0.00	11.00	17850.

* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL
CSG3 0.	18500.	0.650	8.70

-----DESIGN FACTORS-----						
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.
SFAC 1.00	1.20	1.40	1.60	1.40	1.60	18500.

* EXTC-EXTERNAL PRESSURE FOR COLLAPSE	INTC-INTERNAL PRESSURE FOR COLLAPSE	EXTB-EXTERNAL PRESSURE FOR BURST	PRESSURE (PSIG)	FLUID WEIGHT (PPG)	DEPTH OF PRESSURE (FEET)
0.	0.	0.	0.	11.00	0.
			0.	0.00	0.
			0.	11.00	0.

* SEGMENT GRADE	THREAD TYPE	WEIGHT LBS/FT	SETTING DEPTH, FT
DSGN P110	L	35.0	18500.

FILENAME IS BLKRKLS CASING A FOR SHALLOW LINER
 PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 18500'
 DESIGN IS FOR LINER SECTION ONLY. DISREGUARD DATA ABOVE 11500'.BHT>
 CASING SIZE, INCHES = 7.000

DEPTH		CASING INFORMATION					WEIGHT		
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)
1	0	18500	18500	35.0	P110	L	647500	647500	538676

COLLAPSE			BURST			INTER DIA			
SEG #	REDUCED RATED (PSI)	COLLAPSE RATING (PSI)	COLLAPSE LOAD (PSI)	CALC D.F.	INCREASED RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	13020.	13020.	10582.	1.230	12700.	12700.	7803.	1.628	5.879

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	7803.	9364.
18500.	10582.	10582.	-481.	-577.

TENSION					COST	MASP (PSI)	
SEG #	BODY RATED (1000 LBS)	CALC D.F.	CONN RATED (1000 LBS)	CALC D.F.	COST PER SEGMENT (\$)	AVERAGE GAS GRADIENT	7803
1	1119.	2.077	996.	1.849	431786	0.1242	
						BUOYANCY FACTOR	0.8319
						MAX. ALLOW. PULL (LBS)	622500
						MAX. COLLAR O.D (IN.)	7.656
						MAX. BIT SIZE (IN.)	5.879
						TOTAL COST \$	431786

DESIGN FACTORS

COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.
1.00	1.20	1.40	1.60	1.40	1.60	18500.

LISTING OF USER'S INPUT DATA:

TITLE,FILENAME IS BLKRKTBS CASING A FOR SHALLOW TIEBACK DESIGN
TITLE,PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 18500'
TITLE,DESIGN IS FOR TIEBACK ONLY.PRODUCTION HAS H2S & CO2 IN UNKNOWN AMTS
OPTS,2,1,0,0
CSG1,7,12285,4000
CSG2,10101,11,0,11,0,17856
CSG3,0,12285,.65,8,7
SFAC,1,1,2,1,4,1,6,1,4,1,6

THERE WERE 0 FATAL ERRORS AND 0 WARNING MESSAGES

CONFIDENTIAL

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
 02/11/94 11.47

DESIGN WILL BE BASED ON.....
 SOUR SERVICE CASING GRADES (ALL TEMPERATURES)

TITLE FILENAME IS BLKRKTBS CASING A FOR SHALLOW TIEBACK DESIGN
 TITLE PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 18500'
 TITLE DESIGN IS FOR TIEBACK ONLY. PRODUCTION HAS H2S & CO2 IN UNKNOWN AMT

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION
OPTS 2	1	0	0

* CASING SIZE INCHES	DEPTH FT	MIN SEGMENT LENGTH, FT
CSG1 7.000	12285.	4000.

* FORMATION PRES. PSI (AT SHOE)	EXTERNAL	INTERNAL	EXTERNAL (FOR BUOYANCY)	% FLUID IN HOLE	FRACTURE PRES. PSI (AT SHOE)
CSG2 10101.	11.00	0.00	11.00	0.00	17856.

* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL
CSG3 0.	12285.	0.650	8.70

-----DESIGN FACTORS-----							
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.	
SFAC	1.00	1.20	1.40	1.60	1.40	1.60	12285.

* EXT-EXTERNAL PRESSURE FOR COLLAPSE	INT-INTERNAL PRESSURE FOR COLLAPSE	EXT-EXTERNAL PRESSURE FOR BURST	PRESSURE (PSIG)	FLUID WEIGHT (PPG)	DEPTH OF PRESSURE (FEET)
			0.	11.00	0.
			0.	0.00	0.
			0.	11.00	0.

LISTING OF USER'S INPUT DATA:

TITLEFILENAME IS BLKRKTBD CASING A FOR DEEP TIEBACK DESIGN. BRST W/TEN.
TITLE.PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 21500'
TITLE.DESIGN IS FOR TIEBACK ONLY.PRODUCTION HAS H2S & CO2 IN UNKNOWN AMTS
OPTS.2.1.1.0
CSG1.7.12285.4000
CSG2.11739.11.0.11.0.20969
CSG3.0.12285..65.8.7
SFAC.1.1.2.1.4.1.6.1.4.1.6

THERE WERE 0 FATAL ERRORS AND 0 WARNING MESSAGES

CASING PROGRAM (PE302), VERSION 3 (01/29/90)
 02/11/94 11.40

DESIGN WILL BE BASED ON.....
 SOUR SERVICE CASING GRADES (ALL TEMPERATURES)

TITLE FILENAME IS BLKRKTBD CASING A FOR DEEP TIEBACK DESIGN. BRST W/TEN.
 TITLE PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 21500'
 TITLE DESIGN IS FOR TIEBACK ONLY. PRODUCTION HAS H2S & CO2 IN UNKNOWN AMT

* CASING TYPE	PACKER OPTION	BIAXIAL LOAD OPTION	EVACUATION OPTION
OPTS 2	1	1	0

* CASING SIZE INCHES	DEPTH FT	MIN SEGMENT LENGTH, FT
CSG1 7.000	2285.	4000.

* ----- FLUID WEIGHTS, LBS/GAL-----					
* FORMATION PRES. PSI (AT SHOE)	EXTERNAL	INTERNAL	EXTERNAL (FOR BUOYANCY)	% FLUID IN HOLE	FRACTURE PRES. PSI (AT SHOE)
CSG2 11739.	11.00	0.00	11.00	0.00	20969.

* PORE PRES. PSI	NEXT SETTING DEPTH	GAS GRAVITY	COMPLETION FLUID DENSITY, LB/GAL
CSG3 0.	12285.	0.650	8.70

* -----DESIGN FACTORS-----						
* COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	STARTING DEPTH FT.
SFAC 1.00	1.20	1.40	1.60	1.40	1.60	12285.

* EXT-C-EXTERNAL PRESSURE FOR COLLAPSE	INT-C-INTERNAL PRESSURE FOR COLLAPSE	EXT-B-EXTERNAL PRESSURE FOR BURST	PRESSURE (PSIG)	FLUID WEIGHT (PPG)	DEPTH OF PRESSURE (FEET)
			0.	11.00	0.
			0.	0.00	0.
			0.	11.00	0.

FILENAME IS BLKRRKTD CASING A FOR DEEP TIEBACK DESIGN. BRST W/TEN.
 PRODUCTION CASING DESIGN FOR BLACKROCK PROSPECT TO 21500'
 DESIGN IS FOR TIEBACK ONLY. PRODUCTION HAS H2S & CO2 IN UNKNOWN AMT
 CASING SIZE, INCHES = 7.000

DEPTH		CASING INFORMATION					WEIGHT			
SEG #	TOP (FT)	BOTTOM (FT)	FEET	WEIGHT (LB/FT)	GRADE	THREAD	SECTION (LBS)	CUMULATIVE (LBS)	BUOYED (LBS)	
1	0	12285	12.85	32.0	C95	L	393120	393120	327049	

COLLAPSE			BURST			INTER DIA				
SEG #	RATED (PSI)	REDUCED RATING (PSI)	COLLAP LOAD (PSI)	CALC D.F.	RATED (PSI)	INCREAS RATING (PSI)	BURST LOAD (PSI)	CALC D.F.	I.D. INCHES	DRIFT INCHES
1	9750.	9750.	7027.	1.388	10760.	12182.	9991.	1.219	6.094	5.969

DESIGN LOADS

DATUM	COLLAPSE (PSI)	COLLAPSE WITH D.F. (PSI)	BURST (PSI)	BURST WITH D.F. (PSI)
0.	0.	0.	9991.	11989.
12285.	7027.	7027.	8522.	10226.

TENSION					COST	MASP (PSI)	
SEG #	BODY RATED (1000 LBS)	CALC D.F. (LBS)	CONN RATED (1000 LBS)	CALC D.F. (LBS)	COST PER SEGMENT (\$)	AVERAGE GAS GRADIENT	BUOYANCY FACTOR
1	885.	2.706	768.	2.348	273643	0.1423	0.8319
						MAX. ALLOW. PULL (LBS)	480000
						MAX. COLLAR O.D (IN.)	7.656
						MAX. BIT SIZE (IN.)	5.969
						TOTAL COST \$	273643

DESIGN FACTORS

COLLAPSE	BURST	BODY TENSION	CONNECTOR TENSION	BODY MAXIMUM ALLOWABLE PULL	CONNECTOR MAXIMUM ALLOWABLE PULL	DEPTH FT.
1.00	1.20	1.40	1.60	1.40	1.60	12285.

HYDROGEN SULFIDE CONTINGENCY PLAN

CHEVRON U.S.A. PRODUCTION COMPANY

BLACK ROCK FEDERAL #1-17

MILLARD COUNTY, UTAH

CONFIDENTIAL

PURPOSE OF PROGRAM

It is Chevron U.S.A. Production Company practice to provide for the safety of its employees and contractor's employees at the job site, and to provide for the protection of the environment in accordance with applicable laws and regulations.

The primary purpose of this contingency plan is to guide location personnel in the responses expected of them in the event that hydrogen sulfide (H₂S) is liberated during the drilling program.

Hydrogen Sulfide is extremely hazardous to normal oil field operations due to its capability (1) of destroying life at very low concentrations, and (2) of causing instantaneous failure of high strength metals. Drilling and producing operations of hydrocarbons containing toxic gases can, however, be performed safely and without incident when the necessary precautions are taken and the outlined safety procedures are followed. It is imperative that sulfide resistant materials be used, that the proper safety equipment be used, that this equipment be properly maintained, and that all safety regulations be complied with.

The procedures outlined are for your safety and the safety of all others; therefore, it is mandatory that each individual give his one hundred percent cooperation.

RESPONSIBILITIES AND DUTIES

ALL PERSONNEL

1. It is the responsibility of all personnel on location to familiarize themselves with the safety procedures.
2. All personnel will attend to their personal safety first.
3. Help anyone who may be injured or overcome by toxic gases. The Drilling Representative will assign someone to administer first aid to unconscious person(s).
4. Report to the designated "SAFE BRIEFING AREA" and follow the instructions of the Drilling Representative.

DRILLING REPRESENTATIVE

1. It is the responsibility of the Drilling Representative to see that these safety and emergency procedures are observed by all personnel on location.
2. The Drilling Representative will advise the Safety Specialist whenever the procedures as specified herein are complied with or cannot followed.
3. The Drilling Representative will notify the Safety Specialist at least two weeks before the safety equipment specified herein is needed.
4. The Drilling Representative will keep the number of personnel on location to a minimum during hazardous operations.

5. The Drilling Representative is responsible for designating the "SAFE BRIEFING AREA". This "SAFE BRIEFING AREA" will change depending upon wind direction and must be redesignated as soon as a wind change occurs.
6. If an unexpected emergency occurs or the H₂S alarm sounds, the Drilling Representative will assess the situation and will advise all personnel what condition exists.
7. When it is necessary to secure the location, the access road to location will be blocked, personnel from the rig crew will be used to guard same.

TEMPORARY SERVICE PERSONNEL

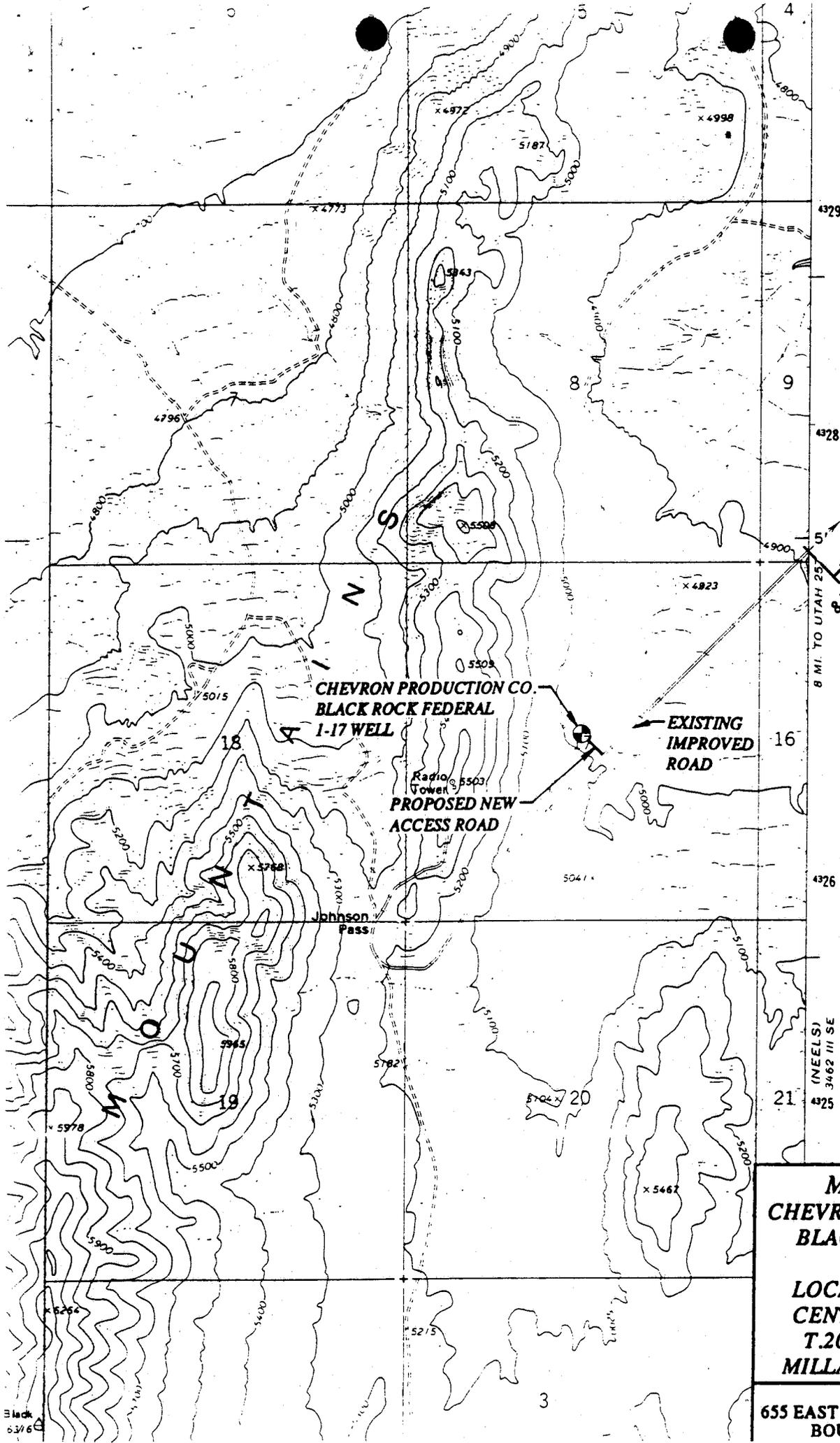
All service personnel, such as cementing crews, logging crews, specialists, mechanics, and welders will furnish their own safety equipment as required to comply with OSHA and the contract requirements of Chevron U.S.A. Production Company.

VISITORS

1. VISITORS will be restricted when Hydrogen Sulfide might be encountered, unless accompanied by the DRILLING REPRESENTATIVE for Chevron U.S.A. Production Company.
2. Visitors and non-essential personnel will be prohibited from remaining in or entering contaminated areas where Hydrogen Sulfide concentration in the atmosphere exceeds 10 ppm.

NOTE: WHEN HYDROGEN SULFIDE MIGHT BE ENCOUNTERED, NO PERSONNEL ON LOCATION WILL BE PERMITTED TO SLEEP IN VEHICLES.

FIGURE #1
LOCAL AREA MAP



8 MI. TO UTAH 25
8 MILES TO UTAH 257

**MAP SHOWING
CHEVRON PRODUCTION CO.
BLACK ROCK FEDERAL
1-17 WELL
LOCATION AND ACCESS
CENTER OF SECTION 17
T.20 S., R.9 W., SLB&M
MILLARD COUNTY, UTAH**

**REDCON INC.
655 EAST MEDICAL DRIVE, SUITE 150
BOUNTIFUL, UTAH 84010**

THE DRILL SITE

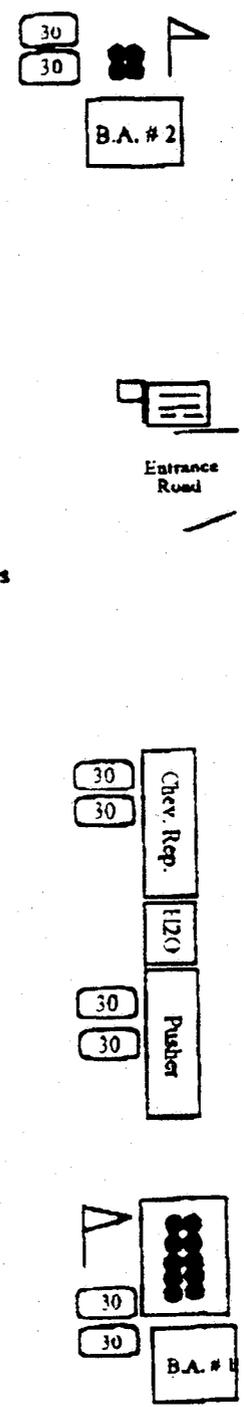
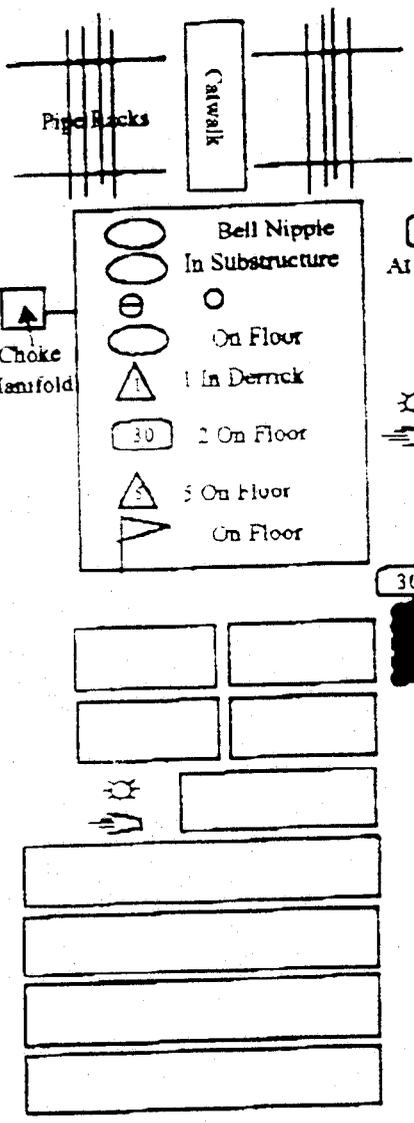
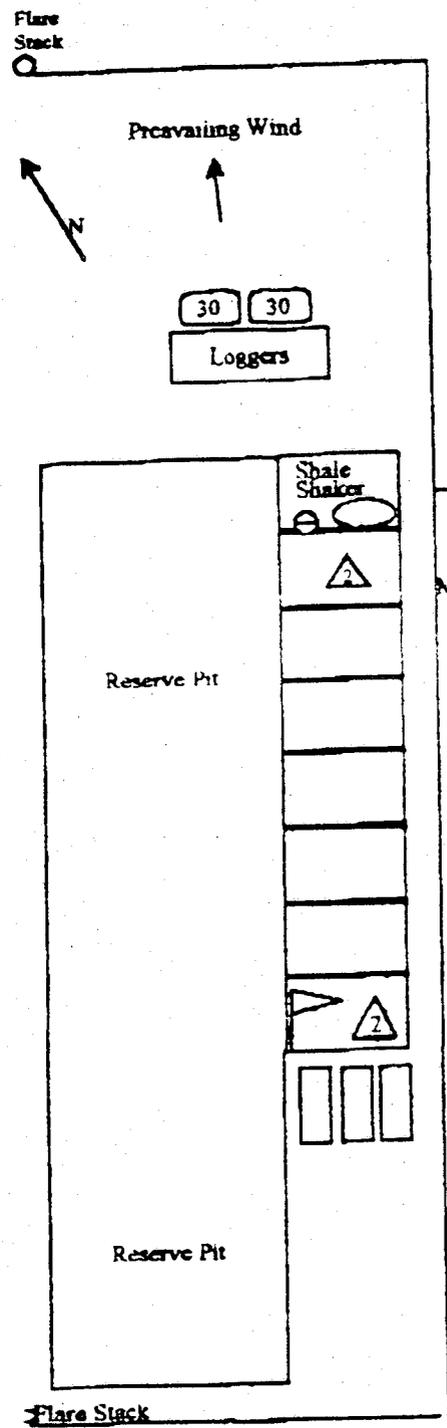
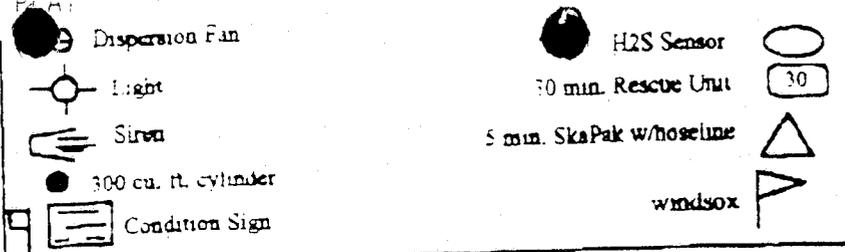
The location as shown in Figure 2 is planned in order to obtain the maximum safety benefits consistent with the rig configuration, well depth, and prevailing winds.

1. Through the use of several maps, the area within a two-mile radius of the location has been surveyed and contacts with all permanent residents have been made. Except in a dead calm and a tremendous release of high concentration gases, the probability of lethal dosages beyond one mile is extremely unlikely. Note on the rig layout plat, Figure 2, the direction of the prevailing winds.
2. The location of houses, schools, roads, and anything where people may be present and who might need to be warned or evacuated in a crisis have been surveyed. This information with names and telephone numbers are keyed and listed on page 8 and Figure 3 for use if evacuation might be necessary should an emergency develop.
3. The drilling rig, see Figure 2, should be situated at such a location that prevailing winds blow across the rig toward the flare pit.
4. Two (2) SAFE BRIEFING AREAS will be established not less than 100 feet from the wellhead and in locations so that at least one SAFE BRIEFING AREA will be up-wind of the well at all times.
5. Protective equipment will be stored in strategic locations around the wellsite and each of the SAFE BRIEFING AREAS. Such equipment will include Self-Contained Breathing Apparatus (SCBA), First Aid Kits, Eye Wash Station, Stretchers, Hydrogen Sulfide Hand-Operated Detectors and Resuscitators. In the event of an emergency, personnel should assemble at the up-wind SAFE BRIEFING AREA for instructions from their supervisor.
6. Windsocks or streamers will be utilized to give wind directions at several elevations; i.e., tree top, derrick floor level, and 6 to 8 feet above ground level. PERSONNEL SHOULD DEVELOP THE PRACTICE OF ROUTINE OBSERVATION OF WIND DIRECTION.
7. Windbreakers and rig curtains can be removed from around the derrick floor and monkey board, if hazardous amount of H₂S are encountered.
8. Explosion proof ventilating fans (bug blowers) can be positioned to ensure adequate circulation at the derrick floor, cellar area and any other location where hydrogen sulfide is accumulating and needs to be dispersed.
9. When approaching a depth where Hydrogen Sulfide may be encountered, the MUD WILL BE MAINTAINED IN AN OVER-BALANCED CONDITION TO PRECLUDE THE ENTRY OF FORMATION FLUIDS INTO THE WELLBORE and thereby restrict the Hydrogen Sulfide to be treated to that contained in the formation drilled.
10. When approaching a depth where Hydrogen Sulfide may be encountered, appropriate warning signs will be posted.
11. When available, 24-hour radio or telephone communication will be provided at the rig. Emergency telephone numbers will be prominently posted: SHERIFF'S DEPARTMENT, AMBULANCE, HOSPITALS, DOCTORS, AND OPERATORS' SUPERVISORY PERSONNEL.

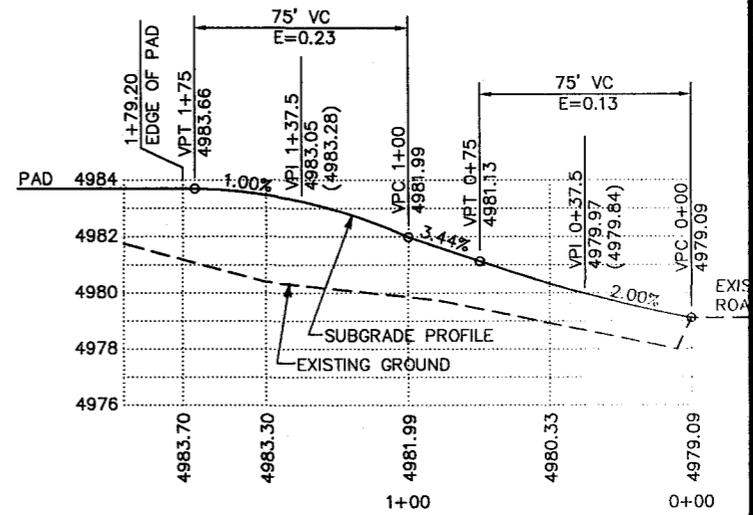
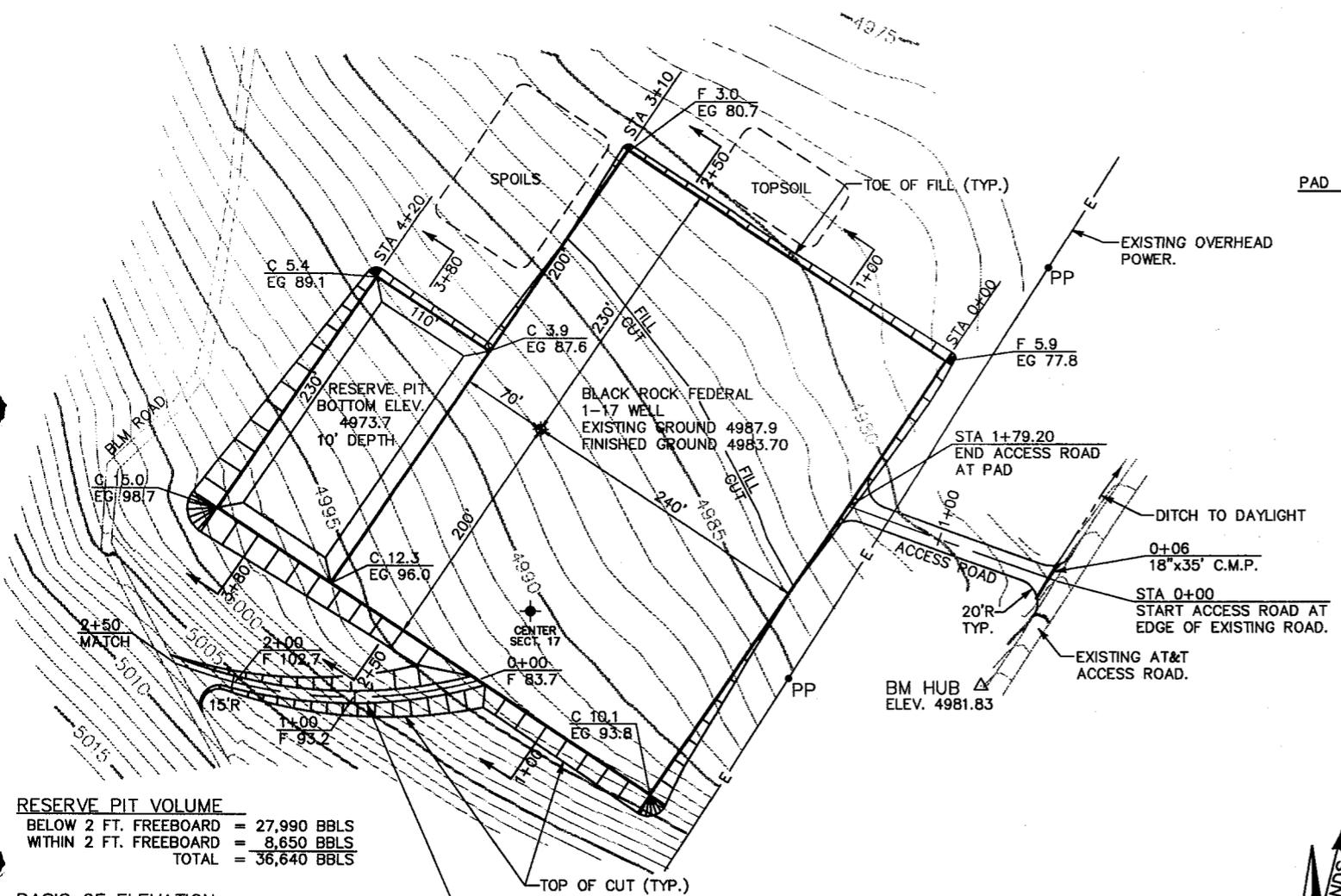
12. Filter-type gas masks are not suitable for use on drilling rigs. Pressure demand, SCBA's will be provided for use in any Hydrogen Sulfide concentration. They are not physically exhausting to use, are rugged and dependable, and require little maintenance.
13. SCBA's will be stored on racks and protected from the weather. Rig crew equipment will be located at a readily accessible location on the rig floor. For hygienic reasons, SCBA's are to be cleaned and sterilized at regular intervals. Employees working derricks will be equipped with a connection through a quick-disconnect from his system of breathing air so that if he must evacuate the derrick, he will have a full air bottle with his SCBA. A six-outlet air supply manifold will be installed on the rig floor for continuous use by crews and supervisory personnel working in a "masks-on" situation. The multi-bottle supply cylinder is to be located at approximately 150 feet from the well. A minimum of 3,600 cu. ft. of compressed breathing air will be on location at all times.
14. An alarm system which can be heard during operations and which can be activated from several points if gas is detected will be installed. When the alarm is sounded, personnel must assemble at the BRIEFING AREA.
15. There will be NO SMOKING on rig floor or near wellhead. Designated Smoking Areas will be provided by the Rig Supervisor.
16. Safety meetings and training sessions will be held at frequent intervals by the Safety Specialist, or the Drilling Representative. All persons required to work on location will be thoroughly familiar with the use, care and servicing of the following: Personal protective equipment, resuscitation equipment, and gas detection equipment.
17. All electric lighting, wiring, and electrical devices within 100 feet of the well will be put in vapor-proof condition to minimize the possibility of explosion.
18. Blowout preventers should meet or exceed the recommendations for hydrogen sulfide service (API RP 53). Choke manifolds will be of similar materials.
19. Inspection of installation, operation, and testing of blowout preventers, choke manifolds, etc., dressed for Hydrogen Sulfide services, will be conducted as required by Oil and Gas Order #6.
20. An accurate bottomhole location by use of single shot directional surveys will be maintained so that the well can be intercepted if it becomes necessary.
21. Every person involved in the operation will be informed of the characteristics of Hydrogen Sulfide and its dangers, safe procedures to use when it is encountered and recommended first aid procedures. This will be done through frequent safety talks and training sessions.
22. Personnel are required to have H₂S/SCBA certification and must be clean shaven to provide a safe seal of the respiratory equipment.

FIGURE =2 RIG LAYOUT PLAT

Chevron USA
 Black Rock Fed # 1-17
 Millard County, Utah



/ Escape /
 / Road /
 *SEE ATTACHED SURVEYED PLAT FOR
 DETAIL OF EMERGENCY ESCAPE ROUTE



PROFILE ACCESS ROAD
 SCALE: 1" = 50' HORIZONTAL
 1" = 5' VERTICAL

RESERVE PIT VOLUME
 BELOW 2 FT. FREEBOARD = 27,990 BBLS
 WITHIN 2 FT. FREEBOARD = 8,650 BBLS
 TOTAL = 36,640 BBLS

BASIS OF ELEVATION
 USGS BM 129 HLS 1970
 4565.0 AS DESCRIBED BY USGS DESERET
 No. 3 (184) BOOK PV 806 1971

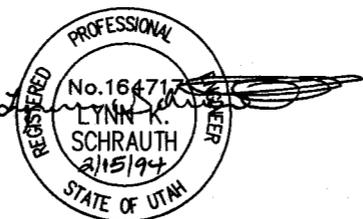
FINISHED PAD ELEVATION TO BE 4983.70'

QUANTITIES
 EXCAVATION INCLUDING PIT = 32,550 CY
 FILL = 5,200 CY
 EXCESS CUT = 27,350 CY

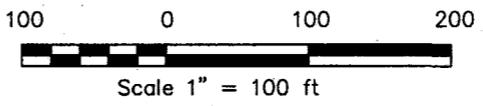
TOPSOIL (6" THICK) = 3,350 CY

FILL CONSTRUCTION
 COMPACT TO 95% OF AASHTO T-99 DENSITY IN
 8" MAXIMUM LOOSE LIFTS

EMERGENCY ESCAPE ROAD
 - 10' TOP WIDTH
 - 250' LENGTH
 - 9.5% GRADE
 - 385'R @
 - 4" CRUSHED GRAVEL SURFACING
 - ROADWAY SECTION TYPICAL
 OF PAD ACCESS ROAD



NOT VALID UNLESS SIGNED

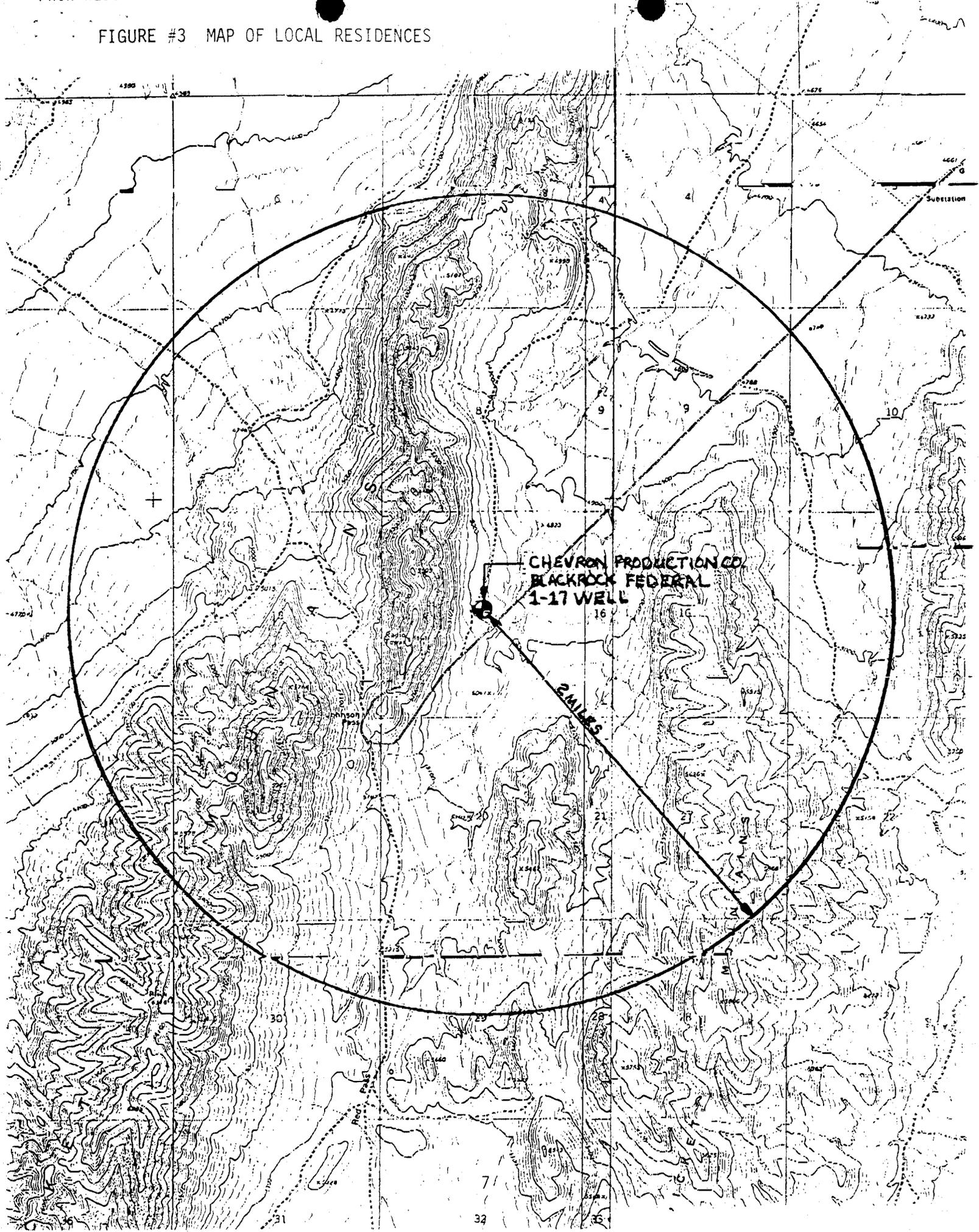


**MAP SHOWING
 CHEVRON PRODUCTION CO.
 BLACK ROCK FEDERAL 1-17 WELL
 PAD LAYOUT AND ACCESS ROAD
 CENTER OF SECTION 17
 T.20 S., R.9 W., SLB&M
 MILLARD COUNTY, UTAH**

REDCON INC.
 655 EAST MEDICAL DRIVE, SUITE 150
 BOUNTIFUL, UTAH 84010
 (801) 298-2401
 (801) 298-2024 FAX

DATE: 2-15-94
 JOB NO.: U/534/AE-8
 FILE: C:\TOPO\SEC17.DWG
 DRAWN: K. ENGSTROM

FIGURE #3 MAP OF LOCAL RESIDENCES



RESIDENCES WITHIN TWO MILE RADIUS OF BLACK ROCK FEDERAL #1-17

MAP REFERENCE NO.	NAME OF RESIDENT	NUMBER OF PERSONS	AREA CODE & TELEPHONE NO.
Figure 3	None	0	Not Apply

NAMES AND DUTIES OF PERSONS WITH PRIME RESPONSIBILITIES

A. CHEVRON PRODUCTION COMPANY

(713) 754-2000

Name: R. D. Lambert

Drilling Project Manager

Business Phone:

(713) 754-5079

Names: TO BE SUPPLIED AT SPUD

Drilling Representatives

Business Phone:

B. DRILLING CONTRACTOR

TO BE SELECTED LATER

Name

Address

Business Phone

Name/Title

C. SAFETY CONTRACTOR

TO BE SELECTED LATER

Name

Address

Business Phone

Name/Title

**BLACK ROCK TREND
EMERGENCY
PHONE NUMBERS**

AMBULANCE	Delta	911
HOSPITAL	Delta Community Medical Ctr Fillmore Community Medical	(801)864-5591 (801)743-5591
MEDICAL HELICOPTER	SLC - Life Flight	(801)321-1234
LAW ENFORCEMENT	Millard County Sheriff - Delta - Fillmore	911 (801)864-2755 (801)743-5302
FIRE	Delta	911
CHEVRON SAFETY ENGINEER	Monty Hewett	(303)675-3735
CHEVRON ENVIRONMENTAL SPECIALIST	Robin Smith	(713)754-5046
BLM - OIL & GAS	Rex Rolle	(801)743-6811
BURN CENTER	University Utah - SLC	(800)581-2340
POISON CONTROL	Salt Lake City	(800)456-7707
NATIONAL RESPONSE CENTER	Oil & Toxic Chemical Spills	(800)424-8802

PHYSICAL AND CHEMICAL PROPERTIES

OF HYDROGEN SULFIDE (H₂S)

1. Extremely toxic (almost as toxic as Hydrogen Cyanide and 5 to 6 times as toxic as Carbon Monoxide).
2. Colorless.
3. Offensive odor, often described as that of rotten eggs.
4. Heavier than air - specific gravity 1.189 (Air = 1.000 @ 60°F). Vapors may travel considerable distance to a source of ignition and flash back.
5. Forms an explosive mixture with a concentration between 4.3 and 46 percent by volume with auto-ignition occurring at 500°F.
6. Burns with a blue flame and produces Sulfur Dioxide (SO₂), which is less toxic than Hydrogen Sulfide but very irritating to eyes and lungs and causes serious injury.
7. Soluble in both water and liquid hydrocarbons.
8. Produces irritation to eyes, throat and respiratory system.
9. Threshold Limit Value (TLV) - Maximum of eight hours exposure at 10 ppm.
10. Corrosive to all electrochemical series metals.
11. Boiling Point (-79°F).
12. Melting Point (-177°F).

PHYSICAL EFFECTS OF HYDROGEN SULFIDE POISONING

THE PRINCIPAL HAZARD IS DEATH BY INHALATION. When the amount of gas absorbed into the blood stream exceeds that which is readily oxidized, systemic poisoning results, with a general action on the nervous system. Labored respiration occurs shortly, and respiratory paralysis may follow immediately at concentrations of 700 ppm and above. This condition may be reached almost without warning as the originally detected odor of Hydrogen Sulfide may have disappeared due to olfactory paralysis. Death then occurs from asphyxiation unless the exposed person is removed immediately to fresh air and breathing stimulated by artificial respiration. Other levels of exposure may cause the following symptoms individually or in combinations:

- a. Headache
- b. Dizziness
- c. Excitement
- d. Nausea or gastro-intestinal disturbances
- e. Dryness and sensation of pain in nose, throat and chest
- f. Coughing
- g. Drowsiness

All personnel should be alerted to the fact that detection of Hydrogen Sulfide solely by smell is highly dangerous as the sense of smell is rapidly paralyzed by the gas.

H2S TOXICITY TABLE

1 ppm = .0001%	(1/10,000 of 1%)	Can smell
10 ppm = .001%	(1/1000 of 1%)	Allowable for .8 hours' exposure. OVER THE ALLOWABLE CONCENTRATION, PROTECTIVE EQUIPMENT WILL BE NECESSARY.
100 ppm = .01%	(1/100 of 1%)	Kills smell in 3 to 15 minutes. May burn eyes and throat.
200 ppm = .02%	(2/100 of 1%)	Kills smell rapidly. Burns eyes and throat.
500 ppm = .05%	(5/100 of 1%)	Looses sense of reasoning and balance. Respiratory disturbance in 2 to 15 minutes. Needs prompt artificial resuscitation.
700 ppm = .07%	(7/100 of 1%)	Will become unconscious quickly. Breathing will stop and death result if not rescued promptly. Immediate artificial resuscitation.
1,000 ppm = .10%	(1/10 of 1%)	Unconscious at once. PERMANENT BRAIN DAMAGE MAY RESULT UNLESS RESCUED PROMPTLY.

ppm = Parts of gas per million parts of air by volume.

1% = 10,000 ppm

RESUSCITATION CHART

DID YOU KNOW ?

THERE IS NO TIME TO WASTE
WHEN BREATHING STOPS!

ARTIFICIAL RESUSCITATION MUST BE STARTED IMMEDIATELY!!!

After Breathing is Stopped for:

The Chances for Life are:

1 Minute	98	out of	100	
2 Minutes	92	out of	100	
3 Minutes	72	out of	100	
4 Minutes	50	out of	100	
5 Minutes	25	out of	100	*
6 Minutes	11	out of	100	*
7 Minutes	8	out of	100	*
8 Minutes	5	out of	100	*
9 Minutes	2	out of	100	*
10 Minutes	1	out of	100	*
11 Minutes	1	out of	1,000	*
12 Minutes	1	out of	10,000	*

* Irreparable brain damage starts at about the fifth minute.

COOL-HEADED ACTION IN RESCUE IS CRITICAL

TREATMENT FOR HYDROGEN SULFIDE POISONING

INHALATION

As Hydrogen Sulfide in the blood oxidizes rapidly, symptoms of acute poisoning pass off when inhalation of the gas ceases. It is important, therefore, to get the victim of poisoning to fresh air as quickly as possible. He should be kept at rest and chilling should be prevented. If respiration is slow, labored, or impaired, artificial respiration may be necessary. Most persons overcome by Hydrogen Sulfide may be revived if artificial respiration is applied before the heart action ceases. Victims of poisoning should be under the care of a physician as soon as possible. Irritation due to sub-acute poisoning may lead to serious complications such as pneumonia. Under those conditions, treatment by the physician necessarily would be symptomatic. The patient should be kept in fresh air, and hygienic conditions should be watched carefully.

CONTACT WITH EYES

Eye contact with liquid and/or gas containing Hydrogen Sulfide will cause painful irritation (conjunctivitis). Keep patient in a darkened room, apply ice compresses to eyes, put ice on forehead, and send for a physician. Eye irritation caused by exposure to Hydrogen Sulfide requires treatment by a physician, preferably an eye specialist. The progress to recovery in these cases is usually good.

CONTACT WITH SKIN

Skin absorption is very low. Skin discoloration is possible after contact with liquids containing Hydrogen Sulfide. If such skin contact is suspected, the area should be thoroughly washed.

EFFECTS OF HYDROGEN SULFIDE ON METAL

Hydrogen Sulfide dissolves in water to form a weak acid that can cause some pitting, particularly in the presence of oxygen and/or carbon dioxide. However, the most significant action of H_2S is its contribution to a form of hydrogen embrittlement known as sulfide stress cracking. Sulfide stress cracking is a result of metals being subjected to high stress levels in a corrosive environment where H_2S is present. The metal will often fail catastrophically in a brittle manner. Sulfide stress cracking of steel is dependent upon and determined by:

- a. Strength (hardness) of the steel - the higher the strength, the greater the susceptibility to sulfide stress cracking. Steels having yield strengths up to 95,000 psi and hardness up to Rc22 are generally resistant to sulfide stress cracking. These limitations can be extended slightly higher for properly quenched and tempered materials.
- b. Total member stress (load) - the higher the stress level (load) the greater the susceptibility to sulfide stress cracking.
- c. Corrosive environment - corrosive reactions, acids, bacterial action, thermal degradation, or low PH fluid environment.

Use as protection against sulfide stress cracking, all casing, BOP and safety equipment should be of H_2S resistant material.

CASING GRADES ACCEPTABLE FOR H₂S SERVICE

<u>CASING GRADE</u>	<u>H₂S SERVICE</u>	<u>COMMENTS**</u>
H-40	YES
K-55	YES
C-75	YES
N-80	CONDITIONAL (Tempered)	ABOVE 200° F
L-80	YES
MN-80	YES
C-90	YES
C-95	YES
S-95	NO	ABOVE 200° F
S00-95	NO	ABOVE 200° F
SS-95	YES	ABOVE 200° F
S-105	NO	ABOVE 200° F
S00-90	YES	ABOVE 200° F
P-110	NO	ABOVE 200° F
S-135	NO	ABOVE 200° F
V-150	NO	ABOVE 200° F

* Service conditions for any H₂S environment.

** Denotes usable grades above 200° F.

DRILL PIPE GRADES FOR H₂S SERVICE

<u>GRADE</u>	<u>H₂S SERVICE</u>
D	YES
E	YES
X-95	YES
G-105	NO
S-135	NO
ALUMINUM	YES

DRILL STEM TEST

Open hole DST's will not be conducted in known H₂S intervals.

H₂S SAFETY EQUIPMENT ON LOCATION

(PROVIDED BY SAFETY SPECIALIST)

1. Safety Trailer with a cascade system of 10-300 cu. ft. bottles of compressed breathing air complete with high pressure regulator, providing five men approximately 7 hours of breathing air.
2. Low Pressure Air Line (Approximately 1,000 feet depending on location). Equipped with quick connects.
3. One low pressure manifold system with six outlets.
4. Ten Scott Pressure Pac IIA, 30 minute pressure demand breathing apparatus NIOSH, MESA and USGS approved.
5. Six airline breathing apparatus c/w 7 cu. ft. egress cylinders.
6. Emergency Escape Unit (Robert Shaw) - optional.
7. "TAC" H₂S 3-Channel Monitor for multiple point continuous detection, each monitoring point is capable of activating remote audio and visual alarm system.
8. One Bendix Gastec, portable hand operated pump type detector with low and high range H₂S detector tubes.
9. One OW2 Portable Oxygen Resuscitator.
10. One 24 Unit First Aid Kit.
11. One stretcher (Ferro Folding).
12. One Eye Wash Station.
13. Three Wind Socks with poles.
14. One High Pressure Compressed Air Refill Hose.
15. One H₂S Condition Sign w/Flags.
16. One Fire Blanket.
17. One Light Explosion Proof.
18. One Siren Explosion Proof.
19. Traffic Cones as needed.
20. Two 300 cu. ft. bottles with Briefing Area Stand.

NOTE: MORE EQUIPMENT WILL BE ADDED IF WELL CONDITIONS REQUIRE.

IGNITING THE WELL

RESPONSIBILITY

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF THE DRILLING REPRESENTATIVE. In the event he is incapacitated, it becomes the responsibility of the Rig Tool Pusher. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. No hope exists for controlling the blowout under prevailing conditions at the well.

Notify the Denver ESF&H Staff, if time permits, but do not delay if human life is in danger. Initiate first phase of evacuation plan.

INSTRUCTIONS FOR IGNITING THE WELL

1. Two people are required for the actual igniting operation. They must wear self-contained breathing units and have a safety rope attached. One man will check the atmosphere for explosive gases with the Explosimeter. The other man is responsible for igniting the well.
2. Primary method to ignite: Meteortype Flare Gun.
3. Ignite upwind and do not approach any closer than is warranted.
4. Select the ignition site which is best for protection.
5. Select area for hasty retreat.
6. BEFORE FIRING, check regarding combustible gases.
7. Since Hydrogen Sulfide converts to Sulfur Dioxide, the area is not safe after igniting the well.
8. After igniting, continue emergency action and procedure as before.
9. All unassigned personnel will limit their actions to only those directed by the Drilling Representative.

REMEMBER: AFTER WELL IS IGNITED, HYDROGEN SULFIDE WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC. DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.

BLOWOUT PREVENTION EQUIPMENT

1. A kill line of ample strength and length will be laid to a safe point to allow pumping into the well in an emergency situation.
2. The closing unit should be located a safe distance from the wellbore and positioned for maximum utilization based on the prevailing wind direction.
3. BOP equipment will be tested as required by Onshore Order #2.
4. All equipment should be H₂S trimmed for service in sour gas environments.

SPECIAL EQUIPMENT

1. If a MUD-GAS SEPARATOR is installed, it will be installed with one or more flare lines.
2. Flare lines should be as long as practical and securely staked.
3. An automatic Hydrogen Sulfide monitor will be installed with a combination visual and audible alarm system located where it can be seen and/or heard throughout the drilling location. This system will have the capabilities of being activated from several points, which are the rig floor, cellar, and shale shaker.
4. The automatic monitor should be set to trigger the drilling location visual/audible alarms when the Hydrogen Sulfide concentration in the atmosphere reaches 10 ppm. Explosion proof lights and sirens will be provided at or near the rig floor and such that all personnel will be subject to visual and audible warning.

MUD ADDITIVES

DRILLING FLUID RECOMMENDATION

MUD TYPE

An overbalance mud should be used to drill potential pay zone with necessary additives for all stabilization.

In the event of H₂S contamination of the mud system, Hydrogen Sulfide scavengers should be added to the mud.

Quantities of zinc carbonate or ironite sponge can be stored on location should H₂S neutralizer be necessary.

EMERGENCY DRILLS

Hydrogen Sulfide Alarm Drills

The Safety Specialist will conduct frequent H₂S emergency drills for each crew by manually activating the H₂S detector. When the lights flash, all personnel on location will assemble at the Upwind Briefing Area. A head count will be taken at this time to determine if rescue operations are indicated. The Safety Specialist must be notified if more personnel are on location than during normal operations. A "Masks On" policy will prevail until the all clear is sounded. These drills will be implemented as frequently as required to familiarize all personnel with the procedures to be followed in the event an actual emergency occurs.

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 02/15/94

API NO. ASSIGNED: 43-027-30031

WELL NAME: BLACK ROCK FEDERAL 1-17
OPERATOR: CHEVRON U.S.A PRODUCTION (N0210)

PROPOSED LOCATION:
SWNE 17 - T20S - R09W
SURFACE: 2497-FNL-2598-FEL
BOTTOM: 2497-FNL-2598-FEL
MILLARD COUNTY
WILDCAT FIELD (001)

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

LEASE TYPE: FED
LEASE NUMBER: USA U-72127

PROPOSED PRODUCING FORMATION: KBAB

RECEIVED AND/OR REVIEWED:

Plat

Bond: Federal State Fee
(Number U-89-75-81-34)

Potash (Y/N)

Oil shale (Y/N)

Water permit
(Number WATER WELL)

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: _____

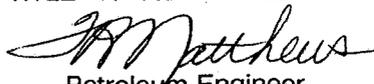
COMMENTS: APD APPROVED BY BLM JUNE 30, 1994

STIPULATIONS: _____

BLM / Richfield District

STATE ACTIONS

Mail to:
RDCC Coordinator
116 State Capitol
Salt Lake City, Utah 84114

-
1. ADMINISTERING STATE AGENCY
OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
2. STATE APPLICATION IDENTIFIER NUMBER:
(assigned by State Clearinghouse)
-
3. APPROXIMATE DATE PROJECT WILL START:
March 1, 1994
-
4. AREAWIDE CLEARING HOUSE(S) RECEIVING STATE ACTIONS:
(to be sent out by agency in block 1)
Six County Commissioners Organization
-
5. TYPE OF ACTION: Lease Permit License Land Acquisition
 Land Sale Land Exchange Other _____
-
6. TITLE OF PROPOSED ACTION:
Application for Permit to Drill
-
7. Chevron U.S.A. Production Company proposes to drill the Black Rock Federal 1-17 well (wildcat) on federal lease U-72127 in Millard County, Utah. This action is being presented to RDCC for consideration of resource issues affecting state interests. The U.S. Bureau of Land Management is the primary administrative agency in this action and must issue approval before operations commence.
-
8. LAND AFFECTED (site location map required) (indicate county)
SW/4 NE/4, Section 17, Township 20 South, Range 9 West, Millard County, Utah
-
9. HAS THE LOCAL GOVERNMENT(S) BEEN CONTACTED?
-
10. POSSIBLE SIGNIFICANT IMPACTS LIKELY TO OCCUR:
See Attachment
-
11. NAME AND PHONE NUMBER OF DISTRICT REPRESENTATIVE FROM YOUR AGENCY NEAR PROJECT SITE, IF APPLICABLE:
-
12. FOR FURTHER INFORMATION, CONTACT: Frank R. Matthews
PHONE: 538-5340
13. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL:

DATE: 02/16/94 Petroleum Engineer

WOI187

CONFIDENTIAL



Chevron

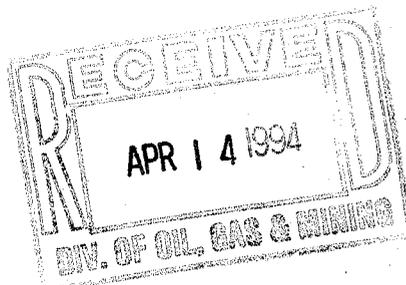
April 5, 1994

Chevron U.S.A. Production Company
Western Exploration Division
P.O. Box 1635
Houston, TX 77251

**BLACK ROCK FEDERAL 1-17
FEDERAL USA U-72127
T 20 S - R 9 W - SECTION 17
MILLARD COUNTY, UTAH**

93-027-30091

Bureau of Land Management
Richfield District Office
150 East 900 North
Richfield, UT 84701



Attention: Mr. Michael Jackson

Gentlemen:

In order to proceed with completion of the permitting process for the proposed subject well, Chevron hereby submits the following information for your review as requested in your correspondence of March 1, 1994.

- Gravel materials required for proposed new access road construction will not be extracted from Federal lands, but will be obtained from Dutson Supply in Delta, Utah and transported to the drillsite location area at 20 tons/truckload.
- Proposed water well(s) shall be drilled by a local licensed water well driller to an approximate depth of 1500 feet to produce 100 gallons water/minute. The permitted well(s) will be located on the exploratory well pad as shown on the attached plat. Water quality reports will be submitted to the BLM upon completion of drilling operations. BLM may assume control and ownership of the water well(s) based on analysis of the reports, or Chevron will take the appropriate steps to plug the well(s) in accordance with State regulations.
- No chemicals in quantities of 10,000 pounds or greater annually, and no extremely hazardous substances, as described in Title III, Superfund Amendments and Reauthorization Act of 1986 Consolidated List and 40 CFR 355 Extremely Hazardous Chemicals list, will be used, produced, stored, transported or disposed by the operator during drilling operations of the subject well.
- In the event H₂S or SO₂ is encountered during drilling operations, we are submitting herewith a Contingency Plan that addresses any changes to the well site layout, as well as any other changes that may be necessary to contend with this potential situation. For this purpose, find enclosed a revised Drilling Program, revised Geologic Program and revised Casing Design Program.

- To clarify, the right-of-way mentioned in Items 9 and 10 of the Surface Use Plan refers to the access road that will be constructed from the existing AT&T right of way road onto the proposed wellsite as described in Exhibits "A" and "C" plats.

The above should address and administratively complete the points of concern identified by the Richfield District office with regard to our proposed drilling operations. Please review the APD incorporating the statements made herein as well as the enclosed materials and advise this office when we can anticipate permit approval. As before, Chevron requests that the BLM maintain confidential the information submitted herewith.

If you have any questions with regard to this filing, please do not hesitate to contact me. (713)754-7659.

Sincerely,

Annette Bak
Landman, Thrust Belt District
Western Exploration Division

encls

cc: Mr. Rody Cox, BLM - Warm Springs Resource Area
State of Utah, Division of Oil, Gas & Mining
Mr. J. Bailey, Mr. U. F. Dixon - Rangely Profit Center
Mr. R. D. Lambert



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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

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)

August 4, 1994

Chevron U.S.A. Production Company
P.O. Box 1635
Houston, Texas 77251

Re: Black Rock Federal 1-17 Well, 2497' FNL, 2598' FEL, SW NE, Sec. 17, T. 20 S., R. 9 W., Millard County, Utah

Gentlemen:

Pursuant to Utah Admin. R. 649-3-3, Exception to 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.



Page 2

Chevron U.S.A. Production Company
Black Rock Federal 1-17 Well
August 4, 1994

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 43-027-30031.

Sincerely,



R.J. Eirth
Associate Director

ldc

Enclosures

cc: Millard County Assessor

Bureau of Land Management, Richfield District Office

WOI1

PHONE CONVERSATION DOCUMENTATION FORM

This is the original form or a copy

Route this form to:

WELL FILE Black Rock Federal 1-17
Chevron

SUSPENSE

OTHER

Return date _____

To: initials _____

Section 17 Township 205 Range 9W
API number 43-027-30031

Date of phone call: 8/6/97 Time: 8:45 Am

DOG M employee (name) Don Staley Initiated call?

Spoke with:

Name Patty Ramstetter (539-4048) Initiated call?

of (company/organization) BLM - SLC office Phone no.

Topic of conversation: Status of Permit

Highlights of conversation:
Per Patty, permit was approved by BLM
on 6/30/94,
AND
Expired one year later (6/30/95).