

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MINERALS MANAGEMENT SERVICE
OIL & GAS OPERATIONS RECEIVED

5. LEASE DESIGNATION AND SERIAL NO.
U 25128 U-25466

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
Bridger Creek Unit

8. FARM OR LEASE NAME
Unit

9. WELL NO.
2-20

10. FIELD AND POOL, OR WILDCAT
wildcat - Nugget

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 20, T10N, R8E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
DRILL DEEPEN PLUG BACK

b. TYPE OF WELL
OIL WELL GAS WELL OTHER

SALT LAKE CITY, UTAH
SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
John J. Christmann

3. ADDRESS OF OPERATOR
P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)*
At surface 200' F/E 1910' F/S. Sec. 20, T10N, R8E
At proposed prod. zone (Approximate) 1180' F/W 1980' F/S Sec. 21, T10N, R8E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
8 1/2 miles East of Woodruff, Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any)
3600'

16. NO. OF ACRES IN LEASE
23,713.62

17. NO. OF ACRES ASSIGNED TO THIS WELL
493.35

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.
1800' P&A

19. PROPOSED DEPTH
7800'±

20. ROTARY OR CABLE TOOLS
Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
6503' GR

22. APPROX. DATE WORK WILL START*
October 15, 1982

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/2"	9-5/8"	36#	500'±	cement to surface
8-3/4"	7"	35#	7800'±	300sks

1. Drill 12 1/2" hole to 500'± cement 9-5/8" casing to surface.
2. Drill out with 8-3/4" hole to 7800'±.
3. Test and log any productive formations.
4. If commercial qualities of oil & gas encountered, run 7" pipe through zones of interest. Perforate and test.

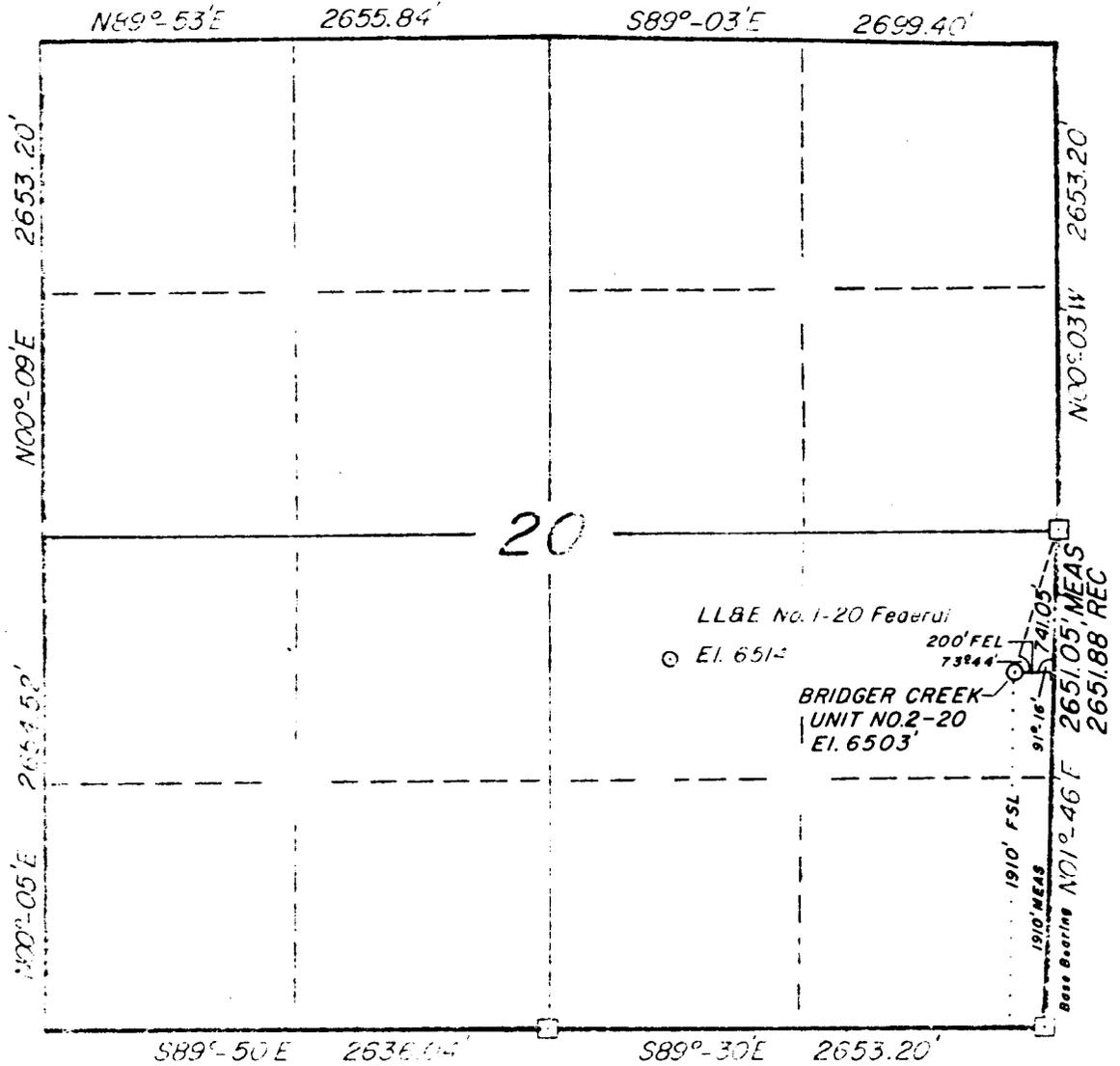
IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer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

24. SIGNED JOE C. HUGO TITLE ENGINEER DATE September 28, 1982
(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____
APPROVED BY [Signature] FOR E. W. GUYNN TITLE DISTRICT OIL & GAS SUPERVISOR DATE NOV 02 1982
CONDITIONS OF APPROVAL, IF ANY: _____

NOTICE OF APPROVAL
CONDITIONS OF APPROVAL ATTACHED TO OPERATOR'S COPY
FLARING OR VENTING OF GAS IS SUBJECT TO NTL 4-A DATED 1/1/80
State O & G

TION R8E



Scale 1"=1000'

☐ indicates a Certified Land Corner Recordation Certificate filed.

Elevation is based upon \dots in the NE 1/4 SW 1/4, Section 20, TION, R8E on the USGS WOODRUFF NARROWS, UTAH QUADRANGLE MAP.

John J. Christmann
Well No. 2-20
Section 21-10N-8E
Bridger Creek Unit
Rich County, Utah
Lease No. U-25466

Supplemental Stipulations:

1. Due to load limitations on the County road from Woodruff, loads over 20 tons should use the improved Spring Hollow road for access.
2. Sewage will be disposed according to County Permit regulations.
3. Trash burning will be allowed with proper State permits and remaining debris will be hauled to a sanitary landfill
4. No camp will be constructed on location. Only tool pusher and company representative trailers will be allowed.
5. 12 inches of topsoil will be removed and stockpiled on the west side of the location. Spoil piles will be stockpiled on the east side of the pad.
6. Upon completion of activities, topsoil will be redistributed over the recontoured pad site and seeded with the following mixture:

3 lbs/acre Bluebunch wheatgrass
3 lbs/acre Intermediate wheatgrass
1 lb/acre Small burnet
1/2 lb/acre Rambler alfalfa
1/2 lb/acre Perennial rye
1/2 lb/acre Bitterbrush

All seed is to be certified as having germination of 90% or better. Seeding is to be done in fall (September 1 to October 30) following site preparation for abandonment. Seed will be planted to a depth of 1/4 to 1/2 inch and will be repeated seasonally until a satisfactory ground cover is obtained as determined by the BLM.

7. The entire location will be fenced for a growing season to keep livestock off the seeded site.
8. If production is obtained, rehabilitation of areas not needed for use will be outlined by BLM.
9. No dogs will be allowed on location to prevent harassment of wildlife. Rig personnel will not cause any undue stress on wildlife in the area.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
 DRILL DEEPEN PLUG BACK

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

2. NAME OF OPERATOR
 John J. Christmann

3. ADDRESS OF OPERATOR
 P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)*
 At surface 200' F/E 1910' F/S. Sec. 20, T10N, R8E

At proposed prod. zone
 (Approximate) 1180' F/W 1980' F/S Sec. 21, T10N, R8E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 8 1/2 miles East of Woodruff, Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)
 3600'

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 7800' ±

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 Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
 6503' GR

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RECEIVED
 OCT 01 1982

APPROVED BY THE STATE
 OF UTAH DIVISION OF
 OIL, GAS, AND MINING
 DATE: 10/8/82
 BY: [Signature]

DIVISION OF
 OIL, GAS & MINING

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

24. SIGNED 307 367 2144 306-747-457 Joe C. Hugo TITLE ENGINEER DATE September 28, 1982

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

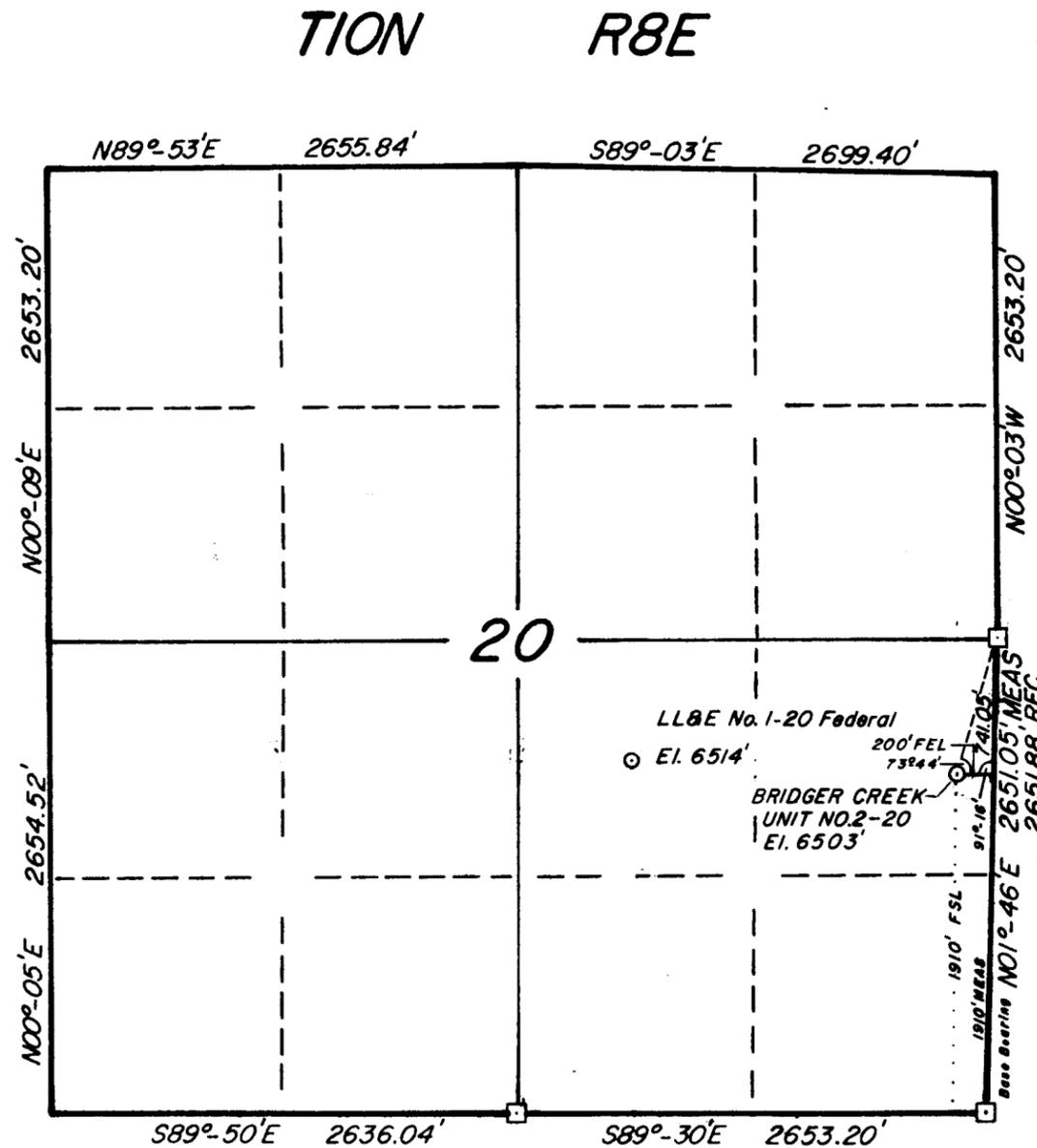
— CERTIFICATE OF SURVEYOR —

State of Wyoming)
 County of Sublette) *ss.*

I, Paul N. Scherbel of Big Piney, Wyoming hereby certify that this map was made from notes taken during an actual survey made by me or under my supervision, and that it correctly represents the location described thereon with the section dimensions of record on the official survey plat.

Paul N. Scherbel

Land Surveyor — Registration No. 164. — Utah — No. 1670.
 Date surveyed — 17 September 1982
 Surveyed by — Jesse D. Lyons
 Official plat used — Dependent Resurvey Plat of TION R8E.
 (Dated 16 April 1980)



Scale 1"=1000'

□ indicates a Certified Land Corner Recordation Certificate filed.

Elevation is based upon a knoll in the NE 1/4 SW 1/4, Section 20, TION, R8E on the USGS WOODRUFF NARROWS, UTAH QUADRANGLE MAP.

RECEIVED

OCT 07 1982

DIVISION OF
 OIL, GAS & MINING

CHRISTMANN AND ASSOCIATES

BRIDGER CREEK UNIT NO. 2-20
 NE 1/4 SE 1/4 SECTION 20 TION R8E
 SLB & M
 RICH COUNTY, UTAH

Scale 1"=1000'

TELECOM 10-5-82

Joe Hugo said he
would send plat maps

Yours

Plat received 10/7/82

OPERATOR John J. Christman DATE 10-1-82

WELL NAME Bridges Creek Unit 2-20

SEC NE SE 20 T 10 N R 8 E COUNTY Rich

43-033-30039
API NUMBER

FED
TYPE OF LEASE

POSTING CHECK OFF:

INDEX

HL

NID

PI

MAP

PROCESSING COMMENTS:

RSK, ✓

APPROVAL LETTER:

8-28-81

SPACING:

A-3 Bridges Creek
UNIT

c-3-a

CAUSE NO. & DATE

c-3-b

c-3-c

SPECIAL LANGUAGE:

Directional survey data ref 5 2 2

RECONCILE WELL NAME AND LOCATION ON APD AGAINST SAME DATA ON PLAT MAP.

AUTHENTICATE LEASE AND OPERATOR INFORMATION *FED*

VERIFY ADEQUATE AND PROPER BONDING *FED*

AUTHENTICATE IF SITE IS IN A NAMED FIELD, ETC.

APPLY SPACING CONSIDERATION

ORDER _____

UNIT *BRIDGE CREEK*

c-3-b

c-3-c

OUTSTANDING OR OVERDUE REPORTS FOR OTHER WELLS OF THE OPERATOR.

POTASH NO

October 8, 1982

John J. Christmann
P. O. Box 238
Pinedale, Wyoming 82941

RE: Well No. Bridger Creek Unit 2-20
NESE Sec. 20, T.10N, R.8E
Rich County, Utah

Dear Mr. Christmann:

Insofar as this office is concerned, approval to drill the above referred to gas well is hereby granted in accordance with Section 40-6-11, Utah Code Annotated 1953; and predicated on Rule A-3, General Rules and Regulations and Rules of Practice and Procedure.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

RONALD J. FIRTH - Engineer
Office: 533-5771
Home: 571-6068

OR

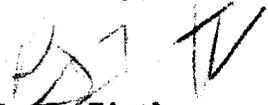
CLEON B. FEIGHT - Director
Office: 533-5771
Home: 466-4455

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (aquifers) are encountered during drilling. Your cooperation in completing this form will be appreciated.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-033-30039.

Sincerely,


R. J. Firth
Chief Petroleum Engineer

RJF/as
cc: Minerals Management Service
Enclosure

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well gas well other

2. NAME OF OPERATOR
John J. Christmann & Associates

3. ADDRESS OF OPERATOR
P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 200' F/E, 1910' F/S
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: 1180' F/W, 1980' F/S, T10N, R8E

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:

- TEST WATER SHUT-OFF
- FRACTURE TREAT
- SHOOT OR ACIDIZE
- REPAIR WELL
- PULL OR ALTER CASING
- MULTIPLE COMPLETE
- CHANGE ZONES
- ABANDON*
- (other)

SUBSEQUENT REPORT OF:

Moving in rotary tools, spudding.

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Moved in rotary tools, preparing to spud.
Sundry notice to follow when surface pipe set.

5. LEASE	U-25128 surface	
6. IF INDIAN, ALLOTTEE OR TRIBE NAME		
7. UNIT AGREEMENT NAME	Bridger Creek Unit	
8. FARM OR LEASE NAME	Unit	
9. WELL NO.	2-20	
10. FIELD OR WILDCAT NAME	wildcat Nugget	
11. SEC., T., R., M. OR BLK. AND SURVEY OR AREA	Sec. 20, T10N, R8E	
12. COUNTY OR PARISH	13. STATE	
Rich	Utah	
14. API NO.	43-033-30039	
15. ELEVATIONS (SHOW DF, KDB, AND WD)	6503' GR	

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

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

SIGNED [Signature] TITLE Engineer DATE November 19, 1982

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

John J. Christmann Associates
Bridger Creek Unit 20
200' F/E, 1910' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
Rich County, Utah
6503' GR, 6518.75' KB
Proposed 7800'-Nugget test

John J. Christmann & Associates P1
P.O. Box 238
Pinedale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

- 11/15/82 Moving in rotary tools.
- 11/19/82 Finish moving in rotary tools- Brinkerhoff-Signal Rig #2.
- 11/22/82 Day #1 drl @133'. Spud 2:00A.M. 11/22/82. Npl up hydrill & mix mud.
(Bit #1 12 $\frac{1}{4}$ " Hughes OCS3A Sn/WA228) Wt 3000 - 5000#, RMP 120. Mud:
Wt 8.6#, vis 38, WL -, Solids 1.8%, Chl 1600, ph 9.5. Stab. Bit, 2-8"d.c.,
1-6"d.c.. DC\$1,384., CC\$47,727.
- 11/23/82 Day #2 @522' rng 9-5/8" csg. drld 389' in 24hrs. (Bit #1 Hughes OCS3A 12 $\frac{1}{4}$ "
Sn/WA228) 457' in 16hrs. Bit Wt 3000# - 5000# RMP 120. Survey @148' 3/4',
@240' $\frac{1}{2}$ ', @304' 3/4', @365' 3/4', @425' 3/4', @487' 3/4'. Mud: Wt 8.9#,
vis 38, WL -, Solids 4.2%, Chl 1800, ph 9, Stab. Bit, 2-8" d.c., 6-6 $\frac{1}{2}$ "d.c.
Drld to 522' P.O.H. prep to rn 9-5/8" csg. DC\$50,685., CC\$98,912.
- 11/24/82 Day #3 npl up B.O.P. @522', 0' in 24hrs. Ran 13jnts 9-5/8" 36# K-55 LT&C
w/guide shoe & float c. & 3 centralizers. Ind @522' R.U. Dowell cmt w/350
sks class 'C' w/ $\frac{1}{4}$ # flake & 2% cacl2 cmt circ to surface. Plug d. @12:45P.M.
11/23/82 W.O.C. 8hrs. Prep to npl up B.O.P. stack. DC\$16,491., CC\$114,903.
- 11/25/82 Day #4 W.O. new B.O.P. stack, npl up B.O.P. stack, unable to make jam oper.
tear out B.O.P. stack & W.O. repl. DC\$8,121., CC\$123,024.
- 11/25/82 Day #5 Drlg @579' 57'/24hrs. (Bit #2 OSC 3 Hughes 7-7/8" Sn/RE089 in @522')
B.WT 10,000# 60RPM, Stab.: Bit, monel, 2-6 $\frac{1}{4}$ " d.c., IBS, 6d.c. Mud: Water
npl up new B.O.P. stack, Press tst B.O.P. & manifold w/yellow jacket to 3000psi
tst hydrill to 1500psi, redrl mouse hole. P.U. d.c. & dri out, tag cmt @468'
DC\$7,144., CC\$130,168.
- 11/27/82 Day #6 Drlg @1075', 479'/24hrs. (Bit #2 OSC3 Hughes 7-7/8" Sn/EE089 in @522'
160' in 3hrs. 53.3'/hr. out @682') Bit #3 Security S84F 7-7/8" in @682',
393' in 7-3/4hrs. 50.7'/hr.) B.WT 35,000# 65RPM. Stab.: Bit, monel, 2d.c,
IRS, 18d.c. Surveys: @657' 3/4' S75°W, @762' 1° N83°W, @858' 1 $\frac{1}{2}$ ° N85°W, @952'
1 $\frac{1}{2}$ ° N85°W, @1044' 1 $\frac{1}{2}$ ° N79°W. closure-TVD1043.87' Div. N89.94°W 15.15' from
surface loc. Mud: Wt 8.8#, vis 37, WL 14, Solids 3.2%, Chl 1500, Ph 10,
T.C. to mix mud, T.I. circ. hole, p.u. d.c.'s (BGG 4 Units)
DC\$12,134., CC\$142,302.
- 11/28/82 Day #7 Drlg @1950', 875'/24hrs. (Bit #3 Security S84F 7-7/8" in @682'
1278'/27hrs. 47.3'/hr.) B.WT 35,000#, 18,000#, 10,000#, 5,000# 65RPM
Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @1136' 1 $\frac{1}{2}$ ° N73°W, @1232' 2 $\frac{1}{2}$ °
S77°W, @1324' 2 $\frac{1}{2}$ ° S84°W, @1415' 3 $\frac{1}{2}$ ° S72°W @1513' 3 $\frac{1}{2}$ ° S81°W, @1635' 4-3/4°
S87°W, 1754' 6-3/4° S86°W, @1885' 8° N89°W. Mud: Wt 8/8#, vis 35, WL 12.8,
Solids 3.5%, Chl 1800, Ph 9.5 Drld 19 $\frac{1}{2}$ hrs., survey 4 $\frac{1}{2}$ hrs. (BGG 10Units)
closure md. 1885', T.V.D 1882.48', S85.24°W 71.85' from surface loc.
7,515., CC\$149,817. sample top Cretaceous @1230'
- 11/29/82 Day #8 trpg for bit @2254' 304'/24hrs. (Bit #3 Security S84F 7-7/8" in @
682' 1572' in /46hrs. 34.17'/hr. out @2254') B.Wt 5,000- 20,000# 75 RPM
Stab.: Bit, monel, 2d.c., IBS, 18 d.c. Surveys: @2013' 8 $\frac{1}{2}$ ° S85°W, @2108' 7 $\frac{1}{2}$ °
S86°W, @2202' 7 $\frac{1}{2}$ ° S86°W. Mud: Wt 8.8#, vis 35, WL10.4, Solids 3.2%, Chl 2000,
Ph 10. Drld 19hrs., survey 2 $\frac{1}{2}$ hrs. Trpd 2 $\frac{1}{2}$ hrs. (BGG 4-6Units. closure- TVD
2196.46' S85.79°W, 115.53' from surface loc. DC\$6,841., CC\$156,658.

John J. Christmann & Associates
Bridger Creek Unit 2-20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
Rich County, Utah
6503' GR, 6518.75' KB
Proposed 7800' - Nugget Test

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- 11/30/82 Day #9 Drlg @2745' 491'/24hrs. (Bit #4 J-22 7-7/8" in @2254', 491' 26.56'/hr.)
B. Wt 35,000# 65-70 RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @2296'
6-3/4' S86°W, @2422' 6° S86°W, @2547' 6° N82°W, @2706' 4½° N75°W. Mud: Wt 8.8#,
vis 42, WL 9.6, Solids 3.4%, chl 2100, Ph 10. check B.O.P. 1hr., wash to btm
w/bit #4, Drl 18½hrs., 2-3/4hrs. survey. BGG 2 Units, Trp G 265 Units
Closure: MD 2706', TVD 2697.63' S87.46°W, 168.07' from surface loc.
DC\$22,118., CC\$178,776.
- 12/01/82 Day #10 Logging @2750', 5'/24hrs. (Bit #4 J-22 7-7/8" in @2254' out @2750'
18-3/4hrs. 496' 26.45'/hr.) B. wt 35,000# 65-70RPM Stab.: Bit, monel, 2d.c.,
IBS, 18d.c. No surveys Mud: Wt 9, vis 44, WL 10.2, Solids 5%, Chl 2200, Ph 9.5
Circ for logging, T.O. to log, w.o. Schlumberger, RU & RD loggers, well flowed
water 2hrs. T.I. w/bit, circ wt up mud to kill water flow, T.O. to log,
RU loggers. ran Dip-Meter, Dual Laterolog, BHC Sonic, CNL Density. BGG 2-4 units
TG 320 units. Formation: 100% sand stone, red, green & lavender, strips of
sand stone & silt stone DC\$ 30,368., CC\$187,026.
- 12/02/82 Day #11 drlg @2873' 123' /24hrs. Bit #5 FP51-1A 7-7/8" in @2750' 123'/10hrs.
12.3'/hr.) B. wt 15,000# 120 RPM (mud water) Stab.: Bit, mud motor, 1½ bent sub,
monel, 20d.c.'s, Surveys: @2762' 4½° N30°W, @2796' 5½° N7°E Mud: wt 9, vis 43,
WL 9.2, Solids 4.6%, Chl 2400, Ph 10. drld 10hrs., fnsh up log 1hr. w.o. mud motor
& tools 5hrs. pu Baker mud motor & BHA 2½hrs. T.I. & run in w/wire line 2½hrs.
Survey. 80% sand stone, 20% shale BGG 1 unit. Closure: md 2762' TVD 2753.46'
N61.74°W, 172.46' from surface loc. DC\$32,776., CC\$219,802.
- 12/03/82 Day #12 Rm hole T.D.2984', 111'/24hrs. rmd btm 2761' to 2984' (Bit #5 FP51-1A
7-7/8" in @2750' 238'/11.7hrs w/mud motor) (Bit #6 rerun bit #4 J-22 Hughes
in @2984' rmg) B.Wt 10,000 - 12,000# 120 RPM. Stab.: Bit, monel, 2d.c., IBS,
18d.c. Surveys: @2889' 5½° N42°E, @2950' 6½° N73°E. Mud: Wt 9.1#, vis 44,
WL 10, Solids 5.5%, Chl 2700, Ph 10. Drld 10hrs., 1½hrs survey, T.O. change out
BHA, kill 3" water flow 3hrs. Raise mud to 9.1#/gal. BGG 1 unit, TG 2-4 units
Closure: MD2950', TVD 2940.71', N59.75°W, 168.21' from surface loc.
DC\$18,746., CC\$238,548.
- 12/04/82 Day #13 Drlg @3440', 456'/24hrs. (Bit #6 rerun bit #4 J-22 Hughes in @2984',
456'/21-3/4hrs., 20.96'/hr., total 952' 40½hrs. both runs) B.Wt 38,000-40,000#
65-70RPM Stab.: bit, monel, 2d.c., IBS, 18d.c. Surveys: @3050 6½° N87°E,
@3205' 7° N84°E, @3297' 7½° N82°E, @3418' 7½° N77°E. Mud: Wt 9.1#, vis 41, WL 9.6,
Solids 5.3%, Chl 2800, Ph 9.5. Rmd to btm, drl 21-3/4hrs., 1-3/4hrs. survey,
BGG 2 units, 80% shale. Closure: MD3418', TVD3405.31', N41.10°W, 136.32' from
surface loc. DC\$7,105., CC\$245,653.
- 12/04/82 Day #14 Drlg @3775', 335'/24hrs. (Bit #6 rerun bit #4 J-22 Hughes in @2984'
out @3742' 858'/36½hrs., 23.51'/hr., total 55½hrs., 1354' 24.51'/hr.) (Bit #7
rerun #5 Reed FP51-1A in @3742' 33'/1½hrs. 26.40'/hr.) B.Wt 40,000# 80RPM
Stab.: bit, monel, 2d.c., IBS, 18d.c. Surveys: @3482' 8° N67°E, @3567' 9½°
N65°E, @3670' 9-3/4° N68°E Mud: Wt 9.1#, vis 42, 16½hrs. drlg, 5½hrs trpg, 2½hrs.
survey BGG 2 units, TG 140 units. 80% shale-red Closure: MD3670', TVD 3654.38'
N24.84°W, 129.28' from surface loc. DC\$5,784., CC\$251,437.

John J. Christmann Associates
Bridger Creek unit 20
200' F/W, 1920' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
Rich County, Utah
6503' GR, 6519' KB
Proposed 7800' - Nugget test

John J. Christmann & Associates P3
P.O. Box 238
Pindale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

12/06/82 Day #15 Trpg @4120', 345'/24hrs. (Bit #7 rerun bit #5 Reed Fp51-1A in @3742' out @4120', 378'/19 $\frac{1}{2}$ hrs., 19.38'/hr total 612'/43.5hrs.) B.Wt 38,000 - 40,000# 80RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @3795' 10-3/4 $^{\circ}$ N67'E, @3951' 12 $\frac{1}{2}$ $^{\circ}$ N70 $^{\circ}$ E, @4076' 14-3/4 $^{\circ}$ N74 $^{\circ}$ E. Mud: Wt 9.1#, vis 41, WL 9.4, Solids 5.7% Chl 2900, Ph 9.5. Drl 18 $\frac{1}{2}$ hrs., T.O. 1hr. survey 2-3/4hrs. BGG 2 units 90% shale red-brown, 10% silt stone. Closure: MD 4076', TVD4051.67', N9.11 $^{\circ}$ E 148.30' from surface loc. DC\$7,747., CC\$259,211.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well gas well other

2. NAME OF OPERATOR
John J. Christmann & Associates

3. ADDRESS OF OPERATOR
P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 200' F/E, 1910' F/S
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: 1180' F/W, 1980' F/S, T10N, R8E

5. LEASE
Unit

6. IF INDIAN, ALLOTMENT OR TRIBE NAME

7. UNIT AGREEMENT NAME
Bridger Park Unit

8. FARM OR LEASE NAME
Unit

9. WELL NO.
2-20

10. FIELD OR WILDCAT NAME
wildcat

11. SEC., T., R., AND SW. 1/4 OR BLK. AND SURVEY OR AREA
Sec. 20, R8E

12. COUNTY OR PARISH
Rich

13. STATE
WY

14. API NO.
43-033-

15. ELEVATIONS (FEET, METERS, AND FEET AND INCHES)
6503' G

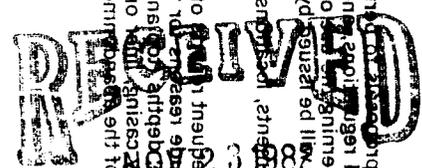
16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	<input type="checkbox"/>	Moving in rotary tools, spud.	<input checked="" type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>		<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>		<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>		<input type="checkbox"/>
PULL OR ALTER CASING	<input type="checkbox"/>		<input type="checkbox"/>
MULTIPLE COMPLETE	<input type="checkbox"/>		<input type="checkbox"/>
CHANGE ZONES	<input type="checkbox"/>		<input type="checkbox"/>
ABANDON*	<input type="checkbox"/>		<input type="checkbox"/>
(other)			

(NOTE: Report results for multiple completions in one zone change only on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, including estimated date of starting any proposed work. If well is directionally drilled, measured and true vertical depths for all markers and zones pertinent to this work.)*

Moved in rotary tools, preparing to spud.
Sundry notice to follow when surface pipe set.



Subsurface Safety Valve: Manu. and Type _____ Ft.

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

SIGNED _____ TITLE Engineer DATE Nov 1 1973

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPPLICATE*
(Other instructions on re-verse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS
(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

<p>1. OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER</p> <p>2. NAME OF OPERATOR John J. Christmann & Associates</p> <p>3. ADDRESS OF OPERATOR P.O. Box 238, Pinedale, Wyoming 82941</p> <p>4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface Sec. 20, T10N, R8E, 200' F/E, 1910' F/S @ proposed zone: Sec. 21, T10N, R8E, 1180' F/W, 1980' F/S</p>	<p>5. LEASE DESIGNATION AND SERIAL NO. U-25128 surface</p> <p>6. IF INDIAN, ALLOTTEE OR TRIBE NAME -----</p> <p>7. UNIT AGREEMENT NAME Bridger Creek</p> <p>8. FARM OR LEASE NAME Unit</p> <p>9. WELL NO. 2-20</p> <p>10. FIELD AND POOL, OR WILDCAT wildcat- Nugget</p> <p>11. SEC., T., R., M., OR BLE. AND SURVEY OR ARRA Sec. 20, T10N, R8E</p> <p>12. COUNTY OR PARISH 13. STATE Rich Utah</p>
<p>14. PERMIT NO. API# 43-033-30039</p>	<p>15. ELEVATIONS (Show whether DF, RT, GR, etc.) 6503' GR</p>

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <u>surface casing</u> <input checked="" type="checkbox"/>	

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

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Ran 13jnts 9-5/8" 36# K-55 LT&C w/guide shoe & float collar & 3 centrelizers landed @522'.
Cement w/350sks class 'G' w/1/4# flake & 2% cacl₂, cement circulate to surface
Plug down @12:45P.M. 11/23/82.
Rig up Yellow Jacket to test B.O.P. & manifold to 3000psi, hydrill to 1500psi, (test papers to follow).

RECEIVED
DEC 03 1982

DIVISION OF
OIL, GAS & MINING

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

SIGNED JOE C. HUGG TITLE ENGINEER DATE 11/29/82
(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

U-25128 surface

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

Bridger Creek

8. FARM OR LEASE NAME

Unit

9. WELL NO.

2-20

10. FIELD AND POOL, OR WILDCAT

wildcat- Nugget

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

Sec. 20, T10N, R8E

12. COUNTY OR PARISH

Rich

13. STATE

Utah

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT-" for such proposals.)

1.

OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR

John J. Christmann & Associates

3. ADDRESS OF OPERATOR

P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*

See also space 17 below.)
At surface

Sec. 20, T10N, R8E, 200' F/E, 1910' F/S

@ proposed zone: Sec. 21, T10N, R8E, 1180' F/W, 1980' F/S

14. PERMIT NO.

API# 43-033-30039

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

6503' GR

16.

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other) surface casing

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

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

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Ran 13jnts 9-5/8" 36# K-55 LT&C w/guide shoe & float collar & 3 centrelizers landed @522'.

Cement w/350sks class 'G' w/1/4# flake & 2% cacl₂, cement circulate to surface Plug down @12:45P.M. 11/23/82.

Rig up Yellow Jacket to test B.O.P. & manifold to 3000psi, hydrill to 1500psi, (test papers to follow).

RECEIVED
DEC 10 1982

DIVISION OF
OIL, GAS & MINING

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

SIGNED

JOE C. HUGO

TITLE

ENGINEER

DATE

11/29/82

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.
U-25128 surface

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
Bridger Creek

8. FARM OR LEASE NAME
Unit

9. WELL NO.
2-20

10. FIELD AND POOL, OR WILDCAT
wildcat- Nugget

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 20, T10N, R8E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals.)

1. OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR
John J. Christmann & Associates

3. ADDRESS OF OPERATOR
P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface
Sec. 20, T10N, R8E, 200' F/E, 1910' F/S
@ proposed zone: Sec. 21, T10N, R8E, 1180' F/W, 1980' F/S

14. PERMIT NO.
API# 43-033-30039

15. ELEVATIONS (Show whether DF, RT, GR, etc.)
6503' GR

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <u>notice of logging</u> <input checked="" type="checkbox"/>	

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

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

12/01/82
Logged @2750' ran Dip-Meter, Dual Laterolog, BHC Sonic, CNL Density
Logs to follow.

RECEIVED
DEC 07 1982

DIVISION OF
OIL GAS & MINING

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

SIGNED JOE C. HUGO TITLE Engineer DATE 12/2/82

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

John J. Christmann & Associates
Bridger Creek Unit
200' F/E, 1910' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
Rich County, Utah
6503' GR, 6518.75' KB
Proposed 7800'-Nugget test

John J. Christmann & Associates P1
P.O. 238
Pinedale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

- 11/15/82 Moving in rotary tools.
- 11/19/82 Finish moving in rotary tools- Brinkerhoff-Signal Rig #2.
- 11/22/82 Day #1 drl @133'. Spud 2:00A.M. 11/22/82. Npl up hydrill & mix mud. (Bit #1 12 $\frac{1}{2}$ " Hughes OCS3A Sn/WA228) Wt 3000 - 5000#, RMP 120. Mud: Wt 8.6#, vis 38, WL -, Solids 1.8%, Chl 1600, ph 9.5. Stab. Bit, 2-8" d.c., 1-6" d.c.. DC\$1,384., CC\$47,727.
- 11/23/82 Day #2 @522' rng 9-5/8" csg. drld 389' in 24hrs. (Bit #1 Hughes OCS3A 12 $\frac{1}{2}$ " Sn/WA228) 457' in 16hrs. Bit Wt 3000# - 5000# RMP 120. Survey @148' 3/4', @240' $\frac{1}{2}$ ', @304' 3/4', @365' 3/4', @425' 3/4', @487' 3/4'. Mud: Wt 8.9#, vis 38, WL -, Solids 4.2%, Chl 1800, ph 9, Stab. Bit, 2-8" d.c., 6-6 $\frac{1}{2}$ " d.c. Drld to 522' P.O.H. prep to rn 9-5/8" csg. DC\$50,685., CC\$98,912.
- 11/24/82 Day #3 npl up B.O.P. @522', 0' in 24hrs. Ran 13jnts 9-5/8" 36# K-55 LT&C w/guide shoe & float c. & 3 centralizers. Ind @522' R.U. Dowell cmt w/350 sks class 'C' w/ $\frac{1}{4}$ "# flake & 2% cacl2 cmt circ to surface. Plug d. @12:45P.M. 11/23/82 W.O.C. 8hrs. Prep to npl up B.O.P. stack. DC\$16,491., CC\$114,903.
- 11/25/82 Day #4 W.O. new B.O.P. stack, npl up B.O.P. stack, unable to make jam oper. tear out B.C.P. stack & W.O. repl. DC\$8,121., CC\$123,024.
- 11/26/82 Day #5 Drlg @579' 57'/24hrs. (Bit #2 OSC 3 Hughes 7-7/8" Sn/RE089 in @522') B.WT 10,000# 60RPM, Stab.: Bit, monel, 2-6 $\frac{1}{2}$ " d.c., IBS, 6d.c. Mud: Water npl up new B.O.P. stack, Press tst B.O.P. & manifold w/yellow jacket to 3000psi tst hydrill to 1500psi, redrl mouse hole. P.U. d.c. & dri out, tag cmt @468' DC\$7,144., CC\$130,168.
- 11/27/82 Day #6 Drlg @1075', 479'/24hrs. (Bit #2 OSC3 Hughes 7-7/8" Sn/EE089 in @522' 160' in 3hrs. 53.3'/hr. out @682') Bit #3 Security S84F 7-7/8" in @ 682', 393' in 7-3/4hrs. 50.7'/hr.) B.WT 35,000# 65RPM. Stab.: Bit, monel, 2d.c, IBS, 18d.c. Surveys: @657' 3/4' S75°W, @762' 1' N83°W, @858' 1 $\frac{1}{2}$ ' N85°W, @952' 1 $\frac{1}{2}$ ' N85°W, @1044' 1 $\frac{1}{2}$ ' N79°W. closure-TVD1043.87' Div. N89.94°W 15.15' from surface loc. Mud: Wt 8.8#, vis 37, WL 14, Solids 3.2%, Chl 1500, Ph 10, T.C. to mix mud, T.I. circ.hole, p.u. d.c.'s (BGG 4 Units) DC\$12,134., CC\$142,302.
- 11/28/82 Day #7 Drlg @1950', 875'/24hrs. (Bit #3 Security S84F 7-7/8" in @682' 1278'/27hrs. 47.3'/hr.) B.WT 35,000#, 18,000#, 10,000#, 5,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @1136' 1 $\frac{1}{2}$ ' N73°W, @1232' 2 $\frac{1}{2}$ ' S77°W, @1324' 2 $\frac{1}{2}$ ' S84°W, @1415' 3 $\frac{1}{2}$ ' S72°W @1513' 3 $\frac{1}{2}$ ' S81°W, @1635' 4-3/4' S87°W, 1754' 6-3/4' S86°W, @1885' 8' N89°W. Mud: Wt 8.8#, vis 35, WL 12.8, Solids 3.5%, Chl 1800, Ph 9.5 Drld 19 $\frac{1}{2}$ hrs., survey 4 $\frac{1}{2}$ hrs. (BGG 10Units) closure md. 1885', T.V.D 1882.48', S85.24°W 71.85' from surface loc. 7,515., CC\$149,817. sample top Cretaceous @1230'
- 11/29/82 Day #8 trpg for bit @2254' 304'/24hrs. (Bit #3 Security S84F 7-7/8" in @ 682' 1572' in /46hrs. 34.17'/hr. out @2254') B.Wt 5,000- 20,000# 75 RPM Stab.: Bit, monel, 2d.c., IBS, 18 d.c. Surveys: @2013' 8 $\frac{1}{2}$ ' S85°W, @2108' 7 $\frac{1}{2}$ ' S86°W, @2202' 7 $\frac{1}{2}$ ' S86°W. Mud: Wt 8.8#, vis 35, WL10.4, Solids 3.2%, Chl 2000, Ph 10. Drld 19hrs., survey 2 $\frac{1}{2}$ hrs. Trpd 2 $\frac{1}{2}$ hrs. (BGG 4-6Units. closure- MD 2202' TVD 2196.46' S85.79°W, 115.53' from surface loc. DC\$6,841., CC\$156,658.

John J. Christmann & Associates
Bridger Creek Unit 2-20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{2}$ SE $\frac{1}{2}$, T10N, R8E
Rich County, Utah
6503' GR, 6518.75' KB
Proposed 7800' - Nugget Test

John J. Christmann & Associates P2
P.O. Box 238, Pinedale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

- 11/30/82 Day #9 Drlg @2745' 491'/24hrs. (Bit #4 J-22 7-7/8" in @2254', 491' 26.56'/hr.)
B. Wt 35,000# 65-70 RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @2296'
6-3/4' S86°W, @2422' 6° S86°W, @2547' 6° N82°W, @2706' 4 $\frac{1}{2}$ ' N75°W. Mud: Wt 8.8#,
vis 42, WL 9.6, Solids 3.4%, chl 2100, Ph 10. check B.O.P. 1hr., wash to btm
w/bit #4, Drl 18 $\frac{1}{2}$ hrs., 2-3/4hrs. survey. BGG 2 Units, Trp G 265 Units
Closure: MD 2706', TVD 2697.63' S87.46°W, 168.07' from surface loc.
DC\$22,118., CC\$178,776.
- 12/01/82 Day #10 Logging @2750', 5'/24hrs. (Bit #4 J-22 7-7/8" in @2254' out @2750'
18-3/4hrs. 496' 26.45'/hr.) B. wt 35,000# 65-70RPM Stab.: Bit, monel, 2d.c.,
IBS, 18d.c. No surveys Mud: Wt 9, vis 44, WL 10.2, Solids 5%, Chl 2200, Ph 9.5
Circ for logging, T.O. to log, w.o. Schlumberger, RU & RD loggers, well flowed
water 2hrs. T.I. w/bit, circ wt up mud to kill water flow, T.O. to log,
RU loggers. ran Dip-Meter, Dual Laterolog, BHC Sonic, CNL Density. BGG 2-4 units
TG 320 units. Formation: 100% sand stone, red, green & lavender, strips of
sand stone & silt stone DC\$ 30,368., CC\$187,026.
- 12/02/82 Day #11 drlg @2873' 123' /24hrs. Bit #5 FP51-1A 7-7/8" in @2750' 123'/10hrs.
12.3'/hr.) B. wt 15,000# 120 RPM (mud water) Stab.: Bit, mud motor, 1 $\frac{1}{2}$ bent sub,
monel, 20d.c.'s. Surveys: @2762' 4 $\frac{1}{2}$ ' N30°W, @2796' 5 $\frac{1}{2}$ ' N7°E Mud: wt 9, vis 43,
WL 9.2, Solids 4.6%, Chl 2400, Ph 10. drld 10hrs., fash up log 1hr. w.o. mud motor
& tools 5hrs. pu Baker mud motor & BHA 2 $\frac{1}{2}$ hrs. T.I. & run in w/wire line 2 $\frac{1}{2}$ hrs.
Survey. 80% sand stone, 20% shale BGG 1 unit. Closure: md 2762' TVD 2753.46'
N61.74°W, 172.46' from surface loc. DC\$32,776., CC\$219,802.
- 12/03/82 Day #12 Rm hole T.D. 2984', 111'/24hrs. rmd btm 2761' to 2984' (Bit #5 FP51-1A
7-7/8" in @2750' 238'/11.7hrs w/mud motor) (Bit #6 rerun bit #4 J-22 Hughes
in @2984' rmg) B.Wt 10,000 - 12,000# 120 RPM. Stab.: Bit, monel, 2d.c., IBS,
18d.c. Surveys: @2889' 5 $\frac{1}{2}$ ' N42°E, @2950' 6 $\frac{1}{2}$ ' N73°E. Mud: Wt 9.1#, vis 44,
WL 10, Solids 5.5%, Chl 2700, Ph 10. Drld 10hrs., 1 $\frac{1}{2}$ hrs survey, T.O. change out
BHA, kill 3" water flow 3hrs. Raise mud to 9.1#/gal. BGG 1 unit, TG 2-4 units
Closure: MD 2950', TVD 2940.71', N59.75°W, 168.21' from surface loc.
DC\$18,746., CC\$238,548.
- 12/04/82 Day #13 Drlg @3440', 456'/24hrs. (Bit #6 rerun bit #4 J-22 Hughes in @2984',
456'/21-3/4hrs., 20.96'/hr., total 952' 40 $\frac{1}{2}$ hrs. both runs) B.Wt 38,000-40,000#
65-70RPM Stab.: bit, monel, 2d.c., IBS, 18d.c. Surveys: @3050 6 $\frac{1}{2}$ ' N87°E,
@3205' 7' N84°E, @3297' 7 $\frac{1}{2}$ ' N82°E, @3418' 7 $\frac{1}{2}$ ' N77°E. Mud: Wt 9.1#, vis 41, WL 9.6,
Solids 5.3%, Chl 2800, Ph 9.5. Rmd to btm, drl 21-3/4hrs., 1-3/4hrs. survey,
BGG 2 units, 80% shale. Closure: MD 3418', TVD 3405.31', N41.10°W, 136.32' from
surface loc. DC\$7,105., CC\$245,553.
- 12/04/82 Day #14 Drlg @3775', 335'/24hrs. (Bit #6 rerun bit #4 J-22 Hughes in @2984'
out @3742' 858'/36 $\frac{1}{2}$ hrs., 23.51'/hr., total 55 $\frac{1}{2}$ hrs., 1354' 24.51'/hr.) (Bit #7
rerun #5 Reed FP51-1A in @3742' 33'/1 $\frac{1}{2}$ hrs. 26.40'/hr.) B.Wt 40,000# 80RPM
Stab.: bit, monel, 2d.c., IBS, 18d.c. Surveys: @3482' 8° N67°E, @3567' 9 $\frac{1}{2}$ '
N65°E, @3670' 9-3/4' N68°E Mud: Wt 9.1#, vis 42, 16 $\frac{1}{2}$ hrs. drlg, 5 $\frac{1}{2}$ hrs trpg, 2 $\frac{1}{2}$ hrs.
survey BGG 2 units, TG 140 units. 80% shale-red Closure: MD 3670', TVD 3654.38'
N24.84°W, 129.28' from surface loc. DC\$5,784., CC\$251,437.

John J. Christmann & Associates
Bridger Creek unit 2
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{2}$ SE $\frac{1}{2}$, T10N, R8E
Rich County, Utah
6503' GR, 6519' KB
Proposed 7800' - Nugget test

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- 12/06/82 Day #15 Trpg @4120', 345'/24hrs. (Bit #7 rerun bit #5 Reed Fp51-1A in @3742' out @4120', 378'/19 $\frac{1}{2}$ hrs., 19.38'/hr total 612'/43.5hrs.) B.Wt 38,000 - 40,000# 80RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @3795' 10-3/4 $^{\circ}$ N67 $^{\circ}$ E, @3951' 12 $\frac{1}{2}$ $^{\circ}$ N70 $^{\circ}$ E, @4076' 14-3/4 $^{\circ}$ N74 $^{\circ}$ E. Mud: Wt 9.1#, vis 41, WL 9.4, Solids 5.7% Chl 2900, Ph 9.5. Drl 18 $\frac{1}{2}$ hrs., T.O. 1hr. survey 2-3/4hrs. BGG 2 units 90% shale red-brown, 10% silt stone. Closure: MD 4076', TVD4051.67', N9.11 $^{\circ}$ E 148.30' from surface loc. DC\$7,747., CC\$259,211.
- 12/07/82 Day #16 T.O. @4336' hole in pipe, 216'/24hrs. (Bit #8 J-44 Hughes in @4120' out @4336' 216/15-3/4hrs. 13.71'/hr.) B. Wt 15,000# - 38,000# 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Survey @4203' 16 $\frac{1}{2}$ $^{\circ}$ N82 $^{\circ}$ E Mud: Wt 9.1, vis 48, WL 9.6, Solids 5.7%, Chl 3000, Ph10. drld 216' hole in pipe, T.O. dgld 68% shale, 32% silt stone. Closure: md 4203', TVD 4174.05' N20.27 $^{\circ}$ E, 163.63' form surface loc. DC\$15,600., CC\$279.811.
- 12/08/82 Day #17 drlg @4470', 134'/24hrs. (Bit #9 J-44 Hughes in @4336' 134'/9 $\frac{1}{2}$ hrs.) B.Wt.40,000# 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., Key seat wiper. Surveys: @4332' 17 $^{\circ}$ N84 $^{\circ}$ E, @4456' 17 $\frac{1}{2}$ $^{\circ}$ N86 $^{\circ}$ E Mud: Wt 9.1, vis 41, WL 9.7, Solids 5.7%, Chl 2700, Ph 9.5. Magnaflux d.c.'s, found hole in monel collar, p.u. new collar, slip d. l. BGG 2 units, no TG drlg 60% shale, 20% silt stone, 20% sand stone. Closure: md 4456' TVD 4416.04' N38.88 $^{\circ}$ E, 207.05' from surface loc. DC\$9,470., CC\$284,281.
- 12/09/82 Day #18 drlg @4780', 310'/24hrs. (Bit #9 J-44 Hughes in @4336' 449/31-3/4hrs. 13.98'/hr.) B.Wt 40,000# 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., Key seat wiper. Surveys: @4582' 18 $\frac{1}{2}$ $^{\circ}$ N87 $^{\circ}$ E, @4708' 19 $^{\circ}$ N88 $^{\circ}$ E Mud: Wt 9.1, vis 43, WL 9.8, Solids 5.7%, Chl 2600, Ph9.5 BGG 2 units no TG drlg 60%shale, 20% silt stone, 20% sand stone. Closure: md 4708' TVD4655.40' N51.62 $^{\circ}$ E, 266.26' from surface loc. DC\$15,189., CC\$299,470.
- 12/10/82 Day #19 Drlg @5000', 220'/24hrs. (Bit #9 J-44 Hughes in @4336' out @4951' 615'/44 $\frac{1}{2}$ hrs., 13.80'/hr. Bit #10 F4 Smith 7-7/8" in @4951' 49'/2-3/4hrs.) B.Wt 40,000 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., Key seat wiper. Surveys: @4832' 20 $^{\circ}$ N87 $^{\circ}$ E, @4957' 20 $^{\circ}$ N87 $^{\circ}$ E. Mud: Wt 9.1# vis 40, WL 10, Solids 5.7%, Chl 2800, Ph 9.5 drld 15 $\frac{1}{2}$ hrs., T.O. change bit T.I. 7hrs. wash 5'fill BGG 2 units no TG Closure: md 4957' TVD 4889.74' N59.95 $^{\circ}$ E, 338.24' from surface loc. DC\$11,489., CC\$310,959.
- 12/11/82 Day #20 Drlg @5450', 450'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' 499'/24hrs. 20.36'/hr.) B.Wt 40,000# 50 - 75RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @5083' 19-3/4 $^{\circ}$ N88 $^{\circ}$ E, @5209' 21 $^{\circ}$ N90 $^{\circ}$ E, @5333' 22 $^{\circ}$ N87 $^{\circ}$ E. Mud: Wt 9.2#, vis 44, WL 9.8, Solids 6.4%, Chl 3800, Ph9.5 Drl 21-3/4hrs., 2 $\frac{1}{2}$ hrs. survey, BBG 2 - 4 units, drlg 100% limestone Closure: md5333', TVD 5241.74' N67.82 $^{\circ}$ E, 458.82' from surface loc. DC\$8,216. CC\$319,175.
- 12/12/82 Day #21 Drlg @5870', 420'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' 919'/46 $\frac{1}{2}$ hrs. 19.87/hr.) B.Wt 40,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @5459' 22 $\frac{1}{2}$ $^{\circ}$ N85 $^{\circ}$ E, @5613' 23 $\frac{1}{2}$ $^{\circ}$ N88 $^{\circ}$ E, @5771' 24 $^{\circ}$ N88 $^{\circ}$ E. Mud: Wt 9.1, vis 43, WL 9.9, Solids 5.7%, Chl 3000, Ph 9.5 Drl 21-3/4hrs., 2 $\frac{1}{2}$ hr survey BGG 2-4 units, drlg 100% limestone Closure: md5771' TVD 5645.01' N72.97 $^{\circ}$ E, 622.80' from surface loc. DC\$7,361., CC\$326,536.

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Bridger Creek Unit
200' F/E, 1920' F/S
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Rich County, Utah
6503' GR, 6519' KB
Proposed 7800' - Nugget test

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- 2/13/82 Day #22 Drlg @6175' 305'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' out @5891' 940'/46 $\frac{1}{2}$ hrs. 20.21'/hr.) Bit #11 F4 Smith 7-7/8" in @5891' 284'/14 $\frac{1}{2}$ hrs. 19.58'/hr.) B.Wt 40,000# 65RPM Stab.: Bit, Monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Mud: Wt 9.5, vis 43, WL9.8, Solids 5.7%, Chl 5200, Ph 10 T.O. for bit #11, T 6 $\frac{1}{2}$ hrs., 6' fill Survey 1-3/4hrs. BGG 2 units, TG 10 units 100% limestone Closure: md 6052' TVD 5902.13', N75.52°E, 732.40' from surface loc. DC\$11,647., CC\$338,183. Surveys: @5866' 23-3/4° N90°E, @6052' 23-3/4° N90°E
Stump 4000' datum +2519', Twin Creek 5120' datum +1399'
Salt @5040' datum +1479'
- 12/14/82 Day #23 Drlg @6620', 445'/24hrs. (Bit # F4 Smith 7-7/8" in @5891' 729'/35-3/4hrs. 20.82'/hr. B. Wt 40,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @6238' 22 $\frac{1}{2}$ ° S84°E, @6425' 22 $\frac{1}{2}$ ° S86°E Mud: Wt 9.1, vis 44, WL8, Solids 5.7%, Chl 5000, Ph 10 drld 21hrs. survey 1 $\frac{1}{2}$ hrs. rig repair 1 $\frac{1}{2}$ hrs. BGG 2 units, drlg limestone & strips of shale. Closure: md6425' TVD 6245.87', N78.54°E, 870.45' from surface loc. DC\$15,705. CC\$353,888.
**Anticipated top of Nugget @6980', anticipate running DST somewhere in top 200' depending upon porosity.
- 12/15/82 Day #24 Drlg @6912' 292'/24hrs. (Bit #11 F4 Smith 7-7/8" in @5891' 1021'/58 $\frac{1}{2}$ hrs. 17.45'/hr.) B.Wt 40,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @6612' 23° S87°E, @6802' 23 $\frac{1}{2}$ ° S85°E Mud: Wt 9.1, vis 43, WL 7.2, Solids 5.4%, Chl 5400, Ph10. Drld 22-3/4hrs., survey 1 $\frac{1}{2}$ hrs. BGG 2 - 3 units drlg 40% shale, 10% anhydrite, 50% limestone Closure: md6802' TVD6592.89' N80.72°E, 1013.34' from surface loc.
Top Gypsum Springs @6780' DC\$8,723., CC\$362,611. Survey: @6936' 23° S84°E
- 12/15/82 Day #25 drlg @7040', 128'/24hrs. (Bit #11 F4 Smith 7-7/8" in @5891' out @6951' 1060'/64 $\frac{1}{2}$ hrs., 16.43'/hr., Bit #12 F57 Smith 7-7/8" in @6951', 89'/10hrs.) B.Wt 40,000 60RPM. Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Mud: Wt 9.1, vis 44, WL 6.8, Solids 5.3%, Chl 5600, Ph 10.4 T for bit 7 $\frac{1}{2}$ hrs., 16hrs. drlg survey, 15' fill. BGG 2 - 4 units drlg 100% sandstone, white, fine grained. Closure: md6936' TVD 6716' N81.45°E, 1064.58' from surface loc. DC\$7,184., CC\$369,795.
Top Nugget @6999' datum -480'
- 12/17/82 Day #26 drlg @7152', 112'/24hrs. (Bit #12 F57 Smith 7-7/8" in @6951', out @7074', 123'/14.25hrs. 8.63'/hr., Bit #13 F9 Smith 7-7/8" in @7074', 78'/11hrs. B. Wt 40,000# 60RPM Stab.: Bit, monel, 20d.c., Jars, 3d.c., keyseat wiper Survey @7059' 21-3/4° S83°E. Mud: Wt 9.1#, vis 43, WL 7.6, Solids 5.7%, Chl 5500, Ph 10.5 T.O. rmd 40' BGG 2 units TG 6 units, drlg hard white sandstone Closure: md 7059' TVD 6829.74' N82.07°E, 1109.04' from surface loc. DC\$11,907., CC\$381,702.
- 12/18/82 Day #27 depth @7240', circ for DST #1, 88'/24hrs. (Bit #13 Smith F9 7-7/8" in @7074' out @7162', 88'/14 $\frac{1}{2}$ hrs., 6.07'/hr., Bit #14 Sec. H-100 7-7/8" in @7162' 78'/12 $\frac{1}{2}$ hrs., 6.37'/hr.) B.Wt 40,000 60RPM Stab.: bit, monel, d.c., 20d.c., Jars, 3d.c., keyseat wiper. Survey--misrun. Mud: Wt 9.1#, vis 43, WL6.4 Solids 5.8%, Chl 5600, 10Ph T.O. 7 $\frac{1}{2}$ hrs., drld 15hrs. BGG 2 units, TG 12 units drlg 100% sandstone, Drlg Break 7220' - 7229'. 3 $\frac{1}{2}$ min./ft., 10min./ft, 13min./ft DC\$21,266., CC\$402,968.

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Bridger Creek Unit 2-20
200' F/E, 1920' F/S
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6503' GR, 6519' KB, Rich Co., Utah
Proposed 7800' - Nugget test

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- 12/19/82 Day #28 T.I./DST #1, (Bit #14 Sec. H100 in @7162' out @7240', 78'/12 $\frac{1}{2}$ hrs., 6.37'/hr.) B.Wt 40,000 60 RPM. Stab.: Tst tool, 19d.c., keyseat wiper. Survey @7210' 20 $\frac{1}{2}$ ^o S85^oE. Mud: Wt 9.1#, vis 49, WL 6.4, Solids 5.8%, 5500 Chl, 10Ph. 5hrs. circ, 2 $\frac{1}{2}$ hrs short trip 25stds, 7hrs. circ & cond mud for DST #1 $\frac{1}{2}$ hr. survey, 4 $\frac{1}{2}$ hr T.O., 2 $\frac{1}{2}$ hrs. R.U. tst tools, 2 $\frac{1}{2}$ hrs. T.I./tst tool
Closure: md7210' TVD 6970.71', N82.72^oE, 1,162.45' from surface loc.
DC\$10,904., CC\$413,872.
- 12/20/82 Day #29 drlg @7258', 18'/24hrs. (Bit #15 Sec. H100 7-7/8" in @7240', 18'/8 $\frac{1}{2}$ hrs. 2.18'/hr.) B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars, 3d.c., Keyseat wiper. No surveys Mud Wt 9.2#, vis 45, WL6.7, Solids 6, Chl 5600, 10.5Ph 1 $\frac{1}{2}$ hrs. T.I.w/tst tools, 5 $\frac{1}{2}$ hrs. tstg, 4hrs. T.O. w/tst tools, 2hrs. Break down load out tst tools, 3 $\frac{1}{2}$ hrs. T.I.w/bit, 5' fill, 8 $\frac{1}{2}$ hrs. drlg, BGG 2 units, T.G. 16 units drlg 100% sandstone lt. orange, very hard & tight. DC\$23,930., CC\$437,802.
DST #1 from 7175' to 7240' 12-19-82
BHT 143^o 2nd flow 153psi to 405psi for 60min.
IH 3345psi 2nd SI 2962psi for 60min.
IF 41psi to 134psi for 10min. final Flow 405psi to 563psi for 60min.
ISI 2981psi for 30min. " SI 2990psi for 90min.
" H 3345psi
recvd 50' drlg mud, 844' of mud cut water, 360' water.
RW .16 @50^o 15,200ppm Chl
Sample 2200cc water RW .18 @52^o 14,500ppm Chl. Pressure gradient 41psi/ft.
- 12/20/82 Day #30 drlg @7314' (Bit #15 Sec. H100 in @7240' out @7272' 32'/14hrs. 2.29'/hr. Bit #16 Smith F7 7-7/8" in @7272' 42') B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars, 3d.c., Keyseat wiper. No survey. Mud: Wt 9.1#, vis 44, WL6, Solids 6.1, Chl 5600, Ph 10.5 5 $\frac{1}{2}$ hrs. drlg, 4 $\frac{1}{2}$ hrs. T.O., 1hr. rotary tork, 3/4hrs. slip cut drlg line. 4 $\frac{1}{2}$ hrs. T.I. 10' fill, 10-3/4hrs. drlg. BGG 40 units, TG 16 units drlg 100% sandstone hard & tight. DC\$12,305. CC\$450,107.
Drilling Breaks: 7284'-7288' 7 $\frac{1}{2}$ min/ft. 30 unit gas increase
7293'-7299' 7 min/ft. 40 " " "
7308-7312' 7 min/ft. 30 " " "
- 12/22/82 Day #31 T.I. w/DST #2, depth 7350', 36'/24hrs. (Bit #16 Smith F7 7-7/8" in @7272' out @7350', 78'/16 $\frac{1}{2}$ hrs. 4.8'/hr.) B.Wt 40,000# 60RPM Stab.: Bit, monel, 20d.c., Jars. 3d.c., keyseat wiper. Survey @7310' 19 S87^oE Mud: Wt 9.1#, vis 47, WL6.1, Solids 5.9%, Chl 5500, Ph 10.5 8hrs. drlg, 3-3/4hrs. c & c mud for tst $\frac{1}{2}$ survey, 3-3/4hrs. T.O., 4-3/4hrs. W.O. johnson tester, 2 $\frac{1}{2}$ hrs. P.U. tst tools, 1hr. T.I. w/tst tools. BGG 60 units. drlg 100% sandstone very hard & tight. Closure: md7310' TVD 7064.90' N83.03^oE, 1195.41' from surface loc.
Open tst tool 2 $\frac{1}{2}$ " blow to 2-3/4" blow in 4 min., in 10min. dropped to 2-1/8" blow. DC\$7,779., CC\$457,886.
- 12/23/82 Day #32 drlg @7385', 35'/24hrs. (Bit #17 Smith F57 7-7/8" in @7350' . 35'/6hrs. 5.83'/hr.) B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars 3d.c., Keyseat wiper. no survey. Mud: Wt 9.1#, vis 45, WL6, Solids 5.7%, Chl 5200, Ph 10.5 2hrs. T.I. w/tst tools, 5 $\frac{1}{2}$ hrs. tstg from 7254' to 7350', 3 $\frac{1}{2}$ hrs. T.O. w/tst tool 3hrs. break down & load out, 4hrs. T.I. w/bit wash 60' to btm. BGG 15 units (TG under surface 36 units, off btm 20 units). drlg 100% sandstone lt. orange, not so hard.

cont.

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Proposed 7800' - Nugget test

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12/23/82
cont.

DC\$15,009., CC\$472,895.
DST#2 7254' to 7350' 12/22/82

BHT 146°
IH 3360psi
IF 84psi to 183psi 10min.
ISI 3005psi 30min.
2ndF 202psi to 467psi 60min.
2ndSI 3010psi 60min.
FF 495psi to 694psi 60min.
FSI 3019psi 90min.
FH 3322psi
Recd 558' mud cut water, & 1265' water.

Sample Chamber
24cc water R.W. .30 @58°, 30,000ppm Chl

12/24/82

Day #33 drlg @7474' 89'/24hrs. (Bit #17 F57 in @7350' out @7466', 116'/19hrs. 5.94'/hr. Bit #18 Smith 7-7/8" F7 in @7466' 8'/hr.) B.Wt 40,000# 60RPM
Sta.: bit, monel, 20d.c., keyseat wiper. Survey @7451' 17-3/4" N90°E
Mud: Wt 9.1#, vis 42, WL6.2, Solids 5.7%, Chl 5500, Ph 10.5 Drl 13 1/2 hrs., T.O. 1.down jars & 3d.c., T.I. wash 40' to btm. BGG 6 - 10 units, TG 26 units.
Drlg 100% Sandstone Closure: md@7451' TVD@7198.71 N83.34°E, 1239.39' from surface loc. DC\$11,438., CC\$484,333.

12/25/82

Day #34 T.I. W/bit #19 @7585', 109'/24hrs. (Bit #18 Smith F7 7-7/8" in @7466' out @7585', 119'/17hrs., 7'/hr., Bit #19 Smith 7-7/8" F7 in @7585') B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Keyseat wiper. Survey @7570' 16-3/4" N89°E
Mud: Wt 9.1, Vis 43, WL 5.9, Solids 5.7%, Chl 5500. Ph11. drld 16hrs., T.O. 1/2 hr. Tight hole @6900' BGG 4 - 6 units, drlg Sandstone Closure: md7570' TVD 7312.36' N83.51°E, 1274.49' from surface loc. DC\$19,312., CC\$503,645.

12/26/82

Day #35 T.O. W/bit #20 @7711', 126'/24hrs. (Bit #19 Smith 7-7/8" F7 in @7585' out @7711', 126'/17hrs., 7.41'/hr.) B.Wt 40,000#, 60RPM. Stab.: Bit, monel, 20d.c., Keyseat wiper. Survey @7696' 16" S89°E Mud: Wt 9.1#. vis 44, WL 6, Solids 5.7%, Oil 5.4%, Chl 5600, PH 10.5. TI & drl to 7711', drl 17hrs. survey & T.O. 6 1/2 hrs. BGG 10 units, TG 16 units. Drlg Sandstone abrasive. Pld tight @6900'. Closure: md7696' TVD 7433.25' N83.68°E, 1309.78' from surface loc. DC\$11,201., CC\$514,846.

12/27/82

Day #36 T.O. w/bit #21 @7790', 79'/24hrs. (Bit #20 Smith 7-7/8" F57 in @7711' out @7752', 41'/6hr., 6.83'/hr. Bit #21 Smith 7-7/8" F9 in @7752' out @7790' 38'/6hr. 6.33'/hr.) B.Wt 40,000#, 60RPM. Stab.: Bit, monel, 20d.c., keyseatwiper No survey. Mud: Wt 9.1#, vis 41, WL5.6, Solids 5.7%, Oil 5.1%, Chl 5200, Ph 10.5 T.I. 2hrs., drld to 7790', T.O. slip drlg line, Drl 6 hrs., T.O. pulled tight @6900', BGG 8 units, TG 20 units, Drlg Sandstone fine grained, hard & tight. DC\$10,752., CC\$525,599.
Will LOG when bit is out.

12/28/82

Day #37 T.O. to Log T.D.@7803', 13'/24hrs. (Bit #22 Smith F45 in @7790' out @7803', 13'/5hrs. 2.6'/hr.) B.Wt 20,000# 60RPM. Stab.: Bit, sub, 8d c., jars, 3d.c., keyseat wiper. no survey. Mud: Wt 9.1#, vis 60, WL5.2, Solids 5.9%, Oil 5%, Chl 6400, 10.5Ph. 10 1/2 hrs. T., lay d. monel, 9d.c., p.u. Jars, drld 5 1/2 hrs. to T.D.. Short T. 16stnds, circ hole 2 1/2 hrs., T.O. today. BGG 6 units, TG 200 units under surface, 2 units off btm. DC\$12,269., CC\$537,868.

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12/29/82 Day #38 Logging @7805' T.D. Mud: Wt 9.1#, vis 60, WL 5.5, Oil 5%, Chl 6200, Ph 10.5. T.O., R.U. Schlumberger, ran logs 23hrs. Prep to plug.
DC\$6,850., CC\$544,718.

Log Tops:

Cretaceous	1230'
Stump - Preuss	4022'
Twin Creek	5129'
Gypsum Springs	6790'
Nugget	6998'

(Loggers T.D. @7805', Drillers T.D. @7803')

12/30/82 Day #39 Npl d. BOP's. Plug as per BLM specifications, plugged as follows:

Plug #1	100sks	50-50 poz	from 6900' - 6700'.
Plug #2	100sks	50-50 poz	from 4800' - 4600'.
Plug #3	100sks	50-50 poz	from 2000' - 1800'.
Plug #4	120sks	50-50 poz	from 600' - 400'.
Plug #5	15sks	50-50 poz	from 60' to surface.

12/29/82P.M. thru 12/30/82A.M.

1 $\frac{1}{2}$ hrs. log & r.d., 3 $\frac{1}{2}$ hrs. tun in d.c. & l.d., 2 $\frac{1}{2}$ hrs. T.I.w/drl pipe, 2hrs. thaw kelly, 2hrs. circ & r.u. Dowell, 9hrs. plg & l.d. d.c's, 4hrs. npl d. BOP's
DC\$67,008., CC\$611,726.

12/31/82 Rig release 12/31/82 @4:00P.M. CC\$630,000. est. to include clean up.
FINAL REPORT. (Plugged and Abandoned)

John J. Christmann ° Associates
Bridger Creek Unit 20
200' F/E, 1920' F/S
Sec. 20: NE½SE½, T10N, R8E
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P4

12/13/82

Day #22 Drlg @6175' 305'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' out @5891' 940'/46½hrs. 20.21'/hr.) Bit #11 F4 Smith 7-7/8" in @5891' 284'/14½hrs. 19.58'/hr.) B.Wt 40,000# 65RPM Stab.: Bit, Monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper Mud: Wt 9.5, vis 43, WL9.8, Solids 5.7%, Chl 5200, Ph 10 T.O. for bit #11, T 6½hrs., 6' fill Survey 1-3/4hrs. BGG 2 units, TG 10 units 100% limestone Closure: md 6052' TVD 5902.13', N75.52° E, 732.40' from surface loc. DC\$11,647., CC\$338,183. Surveys: @5866' 23-3/4° N90° E, @6052' 23-3/4° N90° E
✓ Stump 4000' datum +2519', ✓ Twin Creek 5120' datum +1399'
✓ Salt @5040' datum +1479'

DEC 13 1982

DIVISION OF
GAS & MINES

John J. Christmann Associates
Bridger Creek Unit 2-20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
6503' GR, 6519' KB, Rich Co., Utah
Proposed 7800' - Nugget test

John J. Christmann & Associates P5
P.O. Box 238
Pinedale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

12/19/82 Day #28 T.I./DST #1, (Bit #14 Sec. H100 in @7162' out @7240', 78'/12 $\frac{1}{2}$ hrs., 6.37'/hr.) B.Wt 40,000 60 RPM. Stab.: Tst tool, 19d.c., keyseat wiper. Survey @7210' 20 $\frac{1}{2}$ ^o S85^o E. Mud: Wt 9.1#, vis 49, WL 6.4, Solids 5.8%, 5500 Chl, 10Ph. 5hrs. circ, 2 $\frac{1}{2}$ hrs short trip 25stds, 7hrs. circ & cond mud for DST #1 $\frac{1}{2}$ hr. survey, 4 $\frac{1}{2}$ hr T.O., 2 $\frac{1}{2}$ hrs. R.U. tst tools, 2 $\frac{1}{2}$ hrs. T.I./tst tool
Closure: md7210' TVD 6970.71', N82.72^o E, 1,162.45' from surface loc.
DC\$10,904., CC\$413,872.

12/20/82 Day #29 drlg @7258', 18'/24hrs. (Bit #15 Sec. H100 7-7/8" in @7240', 18'/8 $\frac{1}{2}$ hrs. 2.18'/hr.) B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars, 3d.c., Key-seat wiper. No surveys Mud Wt 9.2#, vis 45, WL6.7, Solids 6, Chl 5600, 10.5Ph 1 $\frac{1}{2}$ hrs. T.I.w/tst tools, 5 $\frac{1}{2}$ hrs. tstg, 4hrs. T.O. w/tst tools, 2hrs. Break down load out tst tools, 3 $\frac{1}{2}$ hrs. T.I.w/bit, 5' fill, 8 $\frac{1}{2}$ hrs. drlg, BGG 2 units, T.G. 16 units drlg 100% sandstone lt. orange, very hard & tight. DC\$23,930., CC\$437,802.
DST #1 from 7175' to 7240' 12-19-82
BHT 143^o 2nd flow 153psi to 405psi for 60min.
IH 3345psi 2nd SI 2962psi for 60min.
IF 41psi to 134psi for 10min. final Flow 405psi to 563psi for 60min.
ISI 2981psi for 30min. " SI 2990psi for 90min.
" H 3345psi
recvd 50' drlg mud, 844' of mud cut water, 360' water.
RW .16 @50^o 15,200ppm Chl
Sample 2200cc water RW .18 @52^o 14,500ppm Chl. Pressure gradient 41psi/ft.

RECEIVED
DEC 23 1982

**DIVISION OF
OIL GAS & MINING**

John J. Christmann & Associates
Bridger Creek unit 20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{2}$ SE $\frac{1}{2}$, T10N, R8E
Rich County, Utah
6503' GR, 6519' KB
Proposed 7800' - Nugget test

John J. Christmann & Associates P3
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- 12/06/82 Day #15 Trpg @4120', 345'/24hrs. (Bit #7 rerun bit #5 Reed Fp51-1A in @3742' out @4120', 378'/19 $\frac{1}{2}$ hrs., 19.38'/hr total 612'/43.5hrs.) B.Wt 38,000 - 40,000# 80RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Surveys: @3795' 10-3/4 $^{\circ}$ N67 $^{\circ}$ E, @3951' 12 $\frac{1}{2}$ $^{\circ}$ N70 $^{\circ}$ E, @4076' 14-3/4 $^{\circ}$ N74 $^{\circ}$ E. Mud: Wt 9.1#, vis 41, WL 9.4, Solids 5.7% Chl 2900, Ph 9.5. Drl 18 $\frac{1}{2}$ hrs., T.O. 1hr. survey 2-3/4hrs. BGG 2 units 90% shale red-brown, 10% silt stone. Closure: MD 4076', TVD4051.67', N9.11 $^{\circ}$ E 148.30' from surface loc. DC\$7,747., CC\$259,211.
- 12/07/82 Day #16 T.O. @4336' hole in pipe, 216'/24hrs. (Bit #8 J-44 Hughes in @4120' out @4336' 216/15-3/4hrs. 13.71'/hr.) B. Wt 15,000# - 38,000# 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c. Survey @4203' 16 $\frac{1}{2}$ $^{\circ}$ N82 $^{\circ}$ E Mud: Wt 9.1, vis 48, WL 9.6, Solids 5.7%, Chl 3000, Ph10. drld 216' hole in pipe, T.O. dgld 68% shale, 32% silt stone. Closure: md 4203', TVD 4174.05' N20.27 $^{\circ}$ E, 163.63' form surface loc. DC\$15,600., CC\$279.811.
- 12/08/82 Day #17 drlg @4470', 134'/24hrs. (Bit #9 J-44 Hughes in @4336' 134'/9 $\frac{1}{2}$ hrs.) B.Wt.40,000# 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., Key seat wiper. Surveys: @4332' 17 $^{\circ}$ N84 $^{\circ}$ E, @4456' 17 $\frac{1}{2}$ $^{\circ}$ N86 $^{\circ}$ E Mud: Wt 9.1, vis 41, WL 9.7, Solids 5.7%, Chl 2700, Ph 9.5. Magnaflux d.c.'s, found hole in monel collar, p.u. new collar, slip d. L. BGG 2 units, no TG drlg 60% shale, 20% silt stone, 20% sand stone. Closure: md 4456' TVD 4416.04' N38.88 $^{\circ}$ E, 207.05' from surface loc. DC\$9,470., CC\$284,281.
- 12/09/82 Day #18 drlg @4780', 310'/24hrs. (Bit #9 J-44 Hughes in @4336' 449/31-3/4hrs. 13.98'/hr.) B.Wt 40,000# 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., Key seat wiper. Surveys: @4582' 18 $\frac{1}{2}$ $^{\circ}$ N87 $^{\circ}$ E, @4708' 19 $^{\circ}$ N88 $^{\circ}$ E Mud: Wt 9.1, vis 43, WL 9.8, Solids 5.7%, Chl 2600, Ph9.5 BGG 2 units no TG drlg 60%shale, 20% silt stone, 20% sand stone. Closure: md 4708' TVD4655.40' N51.62 $^{\circ}$ E, 266.26' from surface loc. DC\$15,189., CC\$299,470.
- 12/10/82 Day #19 Drlg @5000', 220'/24hrs. (Bit #9 J-44 Hughes in @4336' out @4951' 615'/44 $\frac{1}{2}$ hrs., 13.80'/hr. Bit #10 F4 Smith 7-7/8" in @4951' 49'/2-3/4hrs.) B.Wt 40,000 70RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., Key seat wiper. Surveys: @4832' 20 $^{\circ}$ N87 $^{\circ}$ E, @4957' 20 $^{\circ}$ N87 $^{\circ}$ E. Mud: Wt 9.1# vis 40, WL 10, Solids 5.7%, Chl 2800, Ph 9.5 drld 15 $\frac{1}{2}$ hrs., T.O. change bit T.I. 7hrs. wash 5'fill BGG 2 units no TG Closure: md 4957' TVD 4889.74' N59.95 $^{\circ}$ E, 338.24' from surface loc. DC\$11,489., CC\$310,959.
- 12/11/82 Day #20 Drlg @5450', 450'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' 499'/24hrs. 20.36'/hr.) B.Wt 40,000# 50 - 75RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @5083' 19-3/4 $^{\circ}$ N88 $^{\circ}$ E, @5209' 21 $^{\circ}$ N90 $^{\circ}$ E, @5333' 22 $^{\circ}$ N87 $^{\circ}$ E. Mud: Wt 9.2#, vis 44, WL 9.8, Solids 6.4%, Chl 3800, Ph9.5 Drld 21-3/4hrs., 2 $\frac{1}{2}$ hrs. survey, BBG 2 - 4 units, drlg 100% limestone Closure: md5333', TVD 5241.74' N67.82 $^{\circ}$ E, 458.82' from surface loc. DC\$8,216. CC\$319,175.
- 12/12/82 Day #21 Drlg @5870', 420'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' 919'/46 $\frac{1}{2}$ hrs. 19.87/hr.) B.Wt 40,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @5459' 22 $\frac{1}{2}$ $^{\circ}$ N85 $^{\circ}$ E, @5613' 23 $\frac{1}{2}$ $^{\circ}$ N88 $^{\circ}$ E, @5771' 24 $^{\circ}$ N88 $^{\circ}$ E. Mud: Wt 9.1, vis 43, WL 9.9, Solids 5.7%, Chl 3000, Ph 9.5 Drld 21-3/4hrs., 2 $\frac{1}{2}$ hr survey BGG 2-4 units, drlg 100% limestone Closure: md5771' TVD 5645.01' N72.97 $^{\circ}$ E, 622.80' from surface loc. DC\$7,361., CC\$326,536.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well gas well other

2. NAME OF OPERATOR
John J. Christmann & Associates

3. ADDRESS OF OPERATOR
P.O. Box 238, Pinedale, Wyo 82941

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1910' F/S, 200' F/E
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: 650' F/E, 2000' F/S, aprox Sec. 21

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

5. LEASE
U-25466

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
Bridger Creek Unit

8. FARM OR LEASE NAME

9. WELL NO.
2-20

10. FIELD OR WILDCAT NAME
wildcat - Nugget

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 20 T10N, R8E

12. COUNTY OR PARISH Rich 13. STATE Utah

14. API NO.
#43-033-30039

15. ELEVATIONS (SHOW DF, KDB, AND WD)
6503' GR

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	<input type="checkbox"/>		<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>		<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>		<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>		<input type="checkbox"/>
PULL OR ALTER CASING	<input type="checkbox"/>		<input type="checkbox"/>
MULTIPLE COMPLETE	<input type="checkbox"/>		<input type="checkbox"/>
CHANGE ZONES	<input type="checkbox"/>		<input type="checkbox"/>
ABANDON*	<input checked="" type="checkbox"/>		<input type="checkbox"/>
(other)	<input type="checkbox"/>		<input type="checkbox"/>

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Plug and Abandon as per BLM specifications by :

Assad Raffoul
2:10 P.M. 12/28/82
T.D.@7805'

- 1. 6900' - 6700' 100sks
- 2. 4800' - 4600' 100sks
- 3. 2000' - 1800' 100sks
- 4. Btm surface csg 600' - 400' 120sks
- 5. 15sks w/marker at surface.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

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

SIGNED IOE J. HUGO TITLE Engineer DATE Dec. 29, 1982

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____
CONDITIONS OF APPROVAL, IF ANY:

*** ACCEPTED**
APPROVED BY THE STATE
OF UTAH DIVISION OF
OIL, GAS, AND MINING

DATE: 1/15/83
BY: [Signature]

* Please note Rule D-1, Utah Division Rules & Regulations; copy attached.

**CEMENTING SERVICE REPORT
SUPPLEMENT LOG**

ML-486-L PRINTED IN U.S.A.

**DOWELL DIVISION OF DOW CHEMICALS
AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY**

TREATMENT NUMBER: **15-80-1940** DATE: **12-29-82**
STAGE: **FLORISSON, 15-80** DOWELL DISTRICT: **FLORISSON, 15-80**

WELL NAME AND NO.: **Sec 20-10N-8E**
LOCATION (LEGAL): **Sec 20-10N-8E**
FORMATION: **Permian**
COUNTY/PARISH: **Rich** STATE: **Utah** API NO.:
OWNER: **Christman & Associates**
JOB NO.: **FC Proj 238**
ADDRESS: **Franklin, Wyoming** ZIP CODE: **82941**

RIG. NAME: **Bunkerhoff - Squat #2**
WELL DATA:
BIT SIZE: **7 7/8** CSG/LINER SIZE: **6 1/2**
TOTAL DEPTH: **7500** WEIGHT: **6**
 ROT CABLE **50** TOP:
MUD TYPE: **H₂O** BOTTOM:
 BHST BHCT **135** GRADE: **Page one of two**
MUD DENSITY: THREAD: TOTAL:
MUD VISC.: CAPACITY:

SPECIAL INSTRUCTIONS: **set 5 plugs to abandon
2 @ 6700 depth, 4 @ 6000, 2 @ 5000
2 @ 4000 + 15 sk Surf down 4 1/2 D
1 4 3/8 sks 50/50 per 2 3/4 sks 3 3/8 S-1
+ 1 3/4 sk D-2. Plugs 1-3-100 sks
4-100 sks surf 15 sks**

HEAD & PLUGS: DOUBLE SINGLE SWAGE KNOCKOFF
SIZE: **4 1/2** WEIGHT: **16.6** GRADE: THREAD: **1 1/2 H**
TOOL TYPE: DEPTH: TAIL PIPE: SIZE: DEPTH:
TUBING VOLUME: CASING VOL. BELOW TOOL: TOTAL: ANNUAL VOLUME:

PRESSURE LIMIT: PSI BUMP PLUG TO: PSI
ROTATE: RPM RECIPROCATATE: FT NO. OF CENTRALIZERS:

SHOE FLOOR: TYPE: DEPTH: TYPE: DEPTH:
STAGE TOOL: TYPE: DEPTH: TYPE: DEPTH:

TIME	PRESSURE	VOLUME PUMPED BBL	JOB SCHEDULED FOR TIME	ARRIVED ON LOCATION TIME	LEFT LOCATION TIME
0001 to 2400	TBG OR D.P. CASING	INCREMENT CUM	DATE: 12-29	DATE: 12-29	DATE:

TIME	TBG OR D.P.	CASING	INCREMENT	CUM	INJECT RATE	FLUID TYPE	FLUID DENSITY	SERVICE LOG DETAIL
								PRE-JOB SAFETY MEETING
17:00	0	1	10	0	3	H ₂ O	9.34	Have wellhead meeting, rig up hold tailgate meeting
7:11			2 1/2	10	3	50/50	14.1	START 2 1/2 BBLs 50/50 @ 14.1 #
17:14			3 1/2	31 1/2	3	H ₂ O	9.34	START 3 1/2 BBLs H ₂ O
7:25			59	25	2			START 59 BBLs mud
7:50				124				Shut Down Plug Advanced Rig off stand by for 2nd Plug
								Hold tailgate meeting for 2nd Plug
19:25	3		10	0				START 10 BBLs H ₂ O
9:42	5		2 1/2	10				START 2 1/2 BBLs 50/50 @ 14.1 #
9:55	3		2 1/2	21				START 3 1/2 BBLs H ₂ O
241	3		59	25				START 59 BBLs mud
2:44				194				Shut Down Plug Advanced stand by for 3rd Plug

REMARKS:

SYSTEM CODE	NO. OF SACKS	YIELD CU. FT/SK	COMPOSITION OF CEMENTING SYSTEMS	BLURRY MIXED BBLs	DENSITY
1.	435	120	50/50 @ 2, 2 1/2 BBLs 14.1 #, 3 1/2 BBLs H ₂ O, 59 BBLs mud	93	14.1
2.					
3.					
4.					
5.					
6.					

BREAKDOWN FLUID: TYPE: VOLUME: DENSITY: PRESSURE: MAX: MIN:
 HESITATION SO. RUNNING SO. CIRCULATION LOST: YES NO CEMENT CIRCULATED TO SURF: YES NO
 BREAKDOWN: PSI FINAL: PSI DISPLACEMENT VOL: Bbls TYPE OF WELL: OIL STORAGE BRINE WATER
 GAS INJECTION WILDCAT
 PASSES THRU PERFS: YES NO TO: FT MEASURED DISPLACEMENT: WIRELINE
 PERFORATIONS: TO: TO: CUSTOMER REPRESENTATIVE: **McDermott Arthur** DOWELL SUPERVISOR: **Robbison**

John J. Christmann Associates
Bridger Creek Unit -20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
6503' GR, 6519' KB
Rich County, Utah
Proposed 7800' - Nugget test

John J. Christmann & Associates P7
P.O. Box 200
Pinedale, Wyoming 89241
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12/29/82 Day #38 Logging @7805' T.D. Mud: Wt 9.1#, vis 60, WL 5.5, Oil 5%, Chl 6200,
Ph 10.5. T.O., R.U. Schlumberger, ran logs 23hrs. Prep to plug.
DC\$6,850., CC\$544,718.
Log Tops:

Cretaceous	1230'
Stump - Preuss	4022'
Twin Creek	5129'
Gypsum Springs	6790'
Nugget	6998'

(Loggers T.D. @7805', Drillers T.D. @7803')

12/30/82 Day #39 Npl d. BOP's. Plug as per BLM specifications, plugged as follows:

Plug #1	100sks	50-50 poz	from	6900'	-	6700'.
Plug #2	100sks	50-50 poz	from	4800'	-	4600'.
Plug #3	100sks	50-50 poz	from	2000'	-	1800'.
Plug #4	120sks	50-50 poz	from	600'	-	400'.
Plug #5	15sks	50-50 poz	from	60'	to	surface.

12/29/82P.M. thru 12/30/82A.M.

1 $\frac{1}{2}$ hrs. log & r.d., 3 $\frac{1}{2}$ hrs. tun in d.c. & l.d., 2 $\frac{1}{2}$ hrs. T.L.w/drl pipe, 2hrs. thaw
kelly, 2hrs. circ & r.u. Dowell, 9hrs. plg & l.d. d.c's, 4hrs. npl d. BOP's
DC\$67,008., CC\$611,726.

12/31/82 Rig release 12/31/82 @4:00P.M. CC\$630,000. est. to include clean up.
FINAL REPORT. (Plugged and Abandoned)

AMERICAN
OIL & GAS
CORPORATION
LUBBOCK, TEXAS

John J. Christmann & Associates
Bridger Creek Unit 2-20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{2}$ SE $\frac{1}{2}$, T10N, R8E
6503' GR, 6519' KB, Rich Co., Utah
Proposed 7800' - Nugget test

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- 12/19/82 Day #28 T.I./DST #1, (Bit #14 Sec. H100 in @7162' out @7240', 78'/12 $\frac{1}{2}$ hrs., 6.37'/hr.) B.Wt 40,000 60 RPM. Stab.: Tst tool, 19d.c., keyseat wiper. Survey @7210' 20 $\frac{1}{2}$ ^o S85^oE. Mud: Wt 9.1#, vis 49, WL 6.4, Solids 5.8%, 5500 Chl, 10Ph. 5hrs. circ, 2 $\frac{1}{2}$ hrs short trip 25stds, 7hrs. circ & cond mud for DST #1 $\frac{1}{2}$ hr. survey, 4 $\frac{1}{2}$ hr T.O., 2 $\frac{1}{2}$ hrs. R.U. tst tools, 2 $\frac{1}{2}$ hrs. T.I./tst tool
Closure: md7210' TVD 6970.71', N82.72^oE, 1,162.45' from surface loc.
DC\$10,904., CC\$413,872.
- 12/20/82 Day #29 drlg @7258', 18'/24hrs. (Bit #15 Sec. H100 7-7/8" in @7240', 18'/8 $\frac{1}{2}$ hrs. 2.18'/hr.) B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars, 3d.c., Keyseat wiper. No surveys Mud Wt 9.2#, vis 45, WL6.7, Solids 6, Chl 5600, 10.5Ph 1 $\frac{1}{2}$ hrs. T.I.w/tst tools, 5 $\frac{1}{2}$ hrs. tstg, 4hrs. T.O. w/tst tools, 2hrs. Break down load out tst tools, 3 $\frac{1}{2}$ hrs. T.I.w/bit, 5' fill, 8 $\frac{1}{2}$ hrs. drlg, BGG 2 units, T.G. 16 units drlg 100% sandstone lt. orange, very hard & tight. DC\$23,930., CC\$437,802.
DST #1 from 7175' to 7240' 12-19-82
BHT 143^o 2nd flow 153psi to 405psi for 60min.
IH 3345psi 2nd SI 2962psi for 60min.
IF 41psi to 134psi for 10min. final Flow 405psi to 563psi for 60min.
ISI 2981psi for 30min. " SI 2990psi for 90min.
" H 3345psi
recvd 50' drlg mud, 844' of mud cut water, 360' water.
RW .16 @50^o 15,200ppm Chl
Sample 2200cc water RW .18 @52^o 14,500ppm Chl. Pressure gradient 41psi/ft.
- 12/20/82 Day #30 drlg @7314' (Bit #15 Sec. H100 in @7240' out @7272' 32'/14hrs. 2.29'/hr. Bit #16 Smith F7 7-7/8" in @7272' 42') B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars, 3d.c., Keyseat wiper. No survey. Mud: Wt 9.1#, vis 44, WL6, Solids 6.1, Chl 5600, Ph 10.5 5 $\frac{1}{2}$ hrs. drlg, 4 $\frac{1}{2}$ hrs. T.O., 1hr. rotary tork, 3/4hrs. slip cut drlg line. 4 $\frac{1}{2}$ hrs. T.I. 10' fill, 10-3/4hrs. drlg. BGG 40 units, TG 16 units drlg 100% sandstone hard & tight. DC\$12,305. CC\$450,107.
Drilling Breaks: 7284'-7288' 7 $\frac{1}{2}$ min/ft. 30 unit gas increase
7293'-7299' 7 min/ft. 40 " " "
7308-7312' 7 min/ft. 30 " " "
- 12/22/82 Day #31 T.I. w/DST #2, depth 7350', 36'/24hrs. (Bit #16 Smith F7 7-7/8" in @7272' out @7350', 78'/16 $\frac{1}{2}$ hrs. 4.8'/hr.) B.Wt 40,000# 60RPM Stab.: Bit, monel, 20d.c., Jars. 3d.c., keyseat wiper. Survey @7310' 19 S87^oE Mud: Wt 9.1#, vis 47, WL6.1, Solids 5.9%, Chl 5500, Ph 10.5 8hrs. drlg, 3-3/4hrs. c & c mud for tst $\frac{1}{2}$ survey, 3-3/4hrs. T.O., 4-3/4hrs. W.O. johnson tester, 2 $\frac{1}{2}$ hrs. P.U. tst tools, 1hr. T.I. w/tst tools. BGG 60 units. drlg 100% sandstone very hard & tight. Closure: md7310' TVD 7064.90' N83.03^oE, 1195.41' from surface loc.
Open tst tool 2 $\frac{1}{2}$ " blow to 2-3/4" blow in 4 min., in 10min. dropped to 2-1/8" blow. DC\$7,779., CC\$457,886.
- 12/23/82 Day #32 drlg @7385', 35'/24hrs. (Bit #17 Smith F57 7-7/8" in @7350' . 35'/6hrs. 5.83'/hr.) B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Jars 3d.c., Keyseat wiper. no survey. Mud: Wt 9.1#, vis 45, WL6, Solids 5.7%, Chl 5200, Ph 10.5 2hrs. T.I. w/tst tools, 5 $\frac{1}{2}$ hrs. tstg from 7254' to 7350', 3 $\frac{1}{2}$ hrs. T.O. w/tst tool 3hrs. break down & load out, 4hrs. T.I. w/bit wash 60' to btm. BGG 15 units (TG under surface 36 units, off btm 20 units). drlg 100% sandstone lt. orange, not so hard.
cont.

John J. Christmann ° Associates
Bridger Creek Unit 20
200' F/E, 1920' F/S
Sec. 20: NE¼SE¼, T10N, R8E
6503' GR, 6519' KB
Rich County, Utah
Proposed 7800' - Nugget test

John J. Christmann & Associates #6
P.O. Box 238
Pinedale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

12/23/82
cont.

DC\$15,009., CC\$472,895.
DST#2 7254' to 7350' 12/22/82

BHT 146°
IH 3360psi
IF 84psi to 183psi 10min.
ISI 3005psi 30min.
2ndF 202psi to 467psi 60min.
2ndSI 3010psi 60min.
FF 495psi to 694psi 60min.
FSI 3019psi 90min.
FH 3322psi
Recd 558' mud cut water, & 1265' water.

Sample Chamber
24cc water R.W. .30 @58°, 30,000ppm Chl

12/24/82

Day #33 drlg @7474' 89'/24hrs. (Bit #17 F57 in @7350' out @7466', 116'/19hrs. 5.94'/hr. Bit #18 Smith 7-7/8" F7 in @7466' 8'/hr.) B.Wt 40,000# 60RPM
Sta.: bit, monel, 20d.c., keyseat wiper. Survey @7451' 17-3/4° N90° E
Mud: Wt 9.1#, vis 42, WL6.2, Solids 5.7%, Chl 5500, Ph 10.5 Drl 13½hrs., T.O. 1.down jars & 3d.c., T.I. wash 40' to btm. BGG 6 - 10 units TG 26 units.
Drlg 100% Sandstone Closure: md@7451' TVD@7198.71 N83.34 E, 1239.39' from surface loc. DC\$11,438., CC\$484,333.

12/25/82

Day #34 T.I. W/bit #19 @7585', 109'/24hrs. (Bit #18 Smith F7 7-7/8" in @7466' out @7585, 119'/17hrs., 7'/hr., Bit #19 Smith 7-7/8" F7 in @7585') B.Wt 40,000# 60RPM. Stab.: Bit, monel, 20d.c., Keyseat wiper. Survey @7570' 16-3/4 N89 E
Mud: Wt 9.1, Vis 43, WL 5.9, Solids 5.7%, Chl 5500, Ph11. drld 16hrs., T.O ½hr. Tight hole @6900' BGG 4 - 6 units, drlg Sandstone Closure: md7570' TVD 7312.36' N83.51 E, 1274.49' from surface loc. DC\$19,312., CC\$503,645.

12/26/82

Day #35 T.O. W/bit #20 @7711', 126'/24hrs. (Bit #19 Smith 7-7/8" F7 in @7585' out @7711', 126'/17hrs., 7.41'/hr.) B.Wt 40,000#, 60RPM. Stab.: Bit, monel, 20d.c., Keyseat wiper. Survey @7696' 16° S89° E Mud: Wt 9.1#. vis 44, WL 6, Solids 5.7%, Oil 5.4%, Chl 5600, PH 10.5. TI & drl to 7711', drl 17hrs. survey & T.O. 6½hrs. BGG 10 units, TG 16 units. Drlg Sandstone abrasive. Pld tight @6900'. Closure: md7696' TVD 7433.25' N83.68 E, 1309.78' from surface loc. DC\$11,201., CC\$514,846.

12/27/82

Day #36 T.O. w/bit #21 @7790', 79'/24hrs. (Bit #20 Smith 7-7/8" F57 in @7711' out @7752', 41'/6hr., 6.83'/hr. Bit #21 Smith 7-7/8" F9 in @7752' out @7790' 38'/6hr. 6.33'/hr.) B.Wt 40,000#, 60RPM. Stab.: Bit, monel, 20d.c., keyseatwiper
No survey. Mud: Wt 9.1#, vis 41, WL5.6, Solids 5.7%, Oil 5.1%, Chl 5200, Ph 10.5
T.I. 2hrs., drld to 7790', T.O. slip drlg line, Drl 6 hrs., T.O. pulled tight @6900', BGG 8 units, TG 20 units, Drlg Sandstone fine grained, hard & tight.
DC\$10,752., CC\$525,599.
Will LOG when bit is out.

12/28/82

Day #37 T.O. to Log T.D.@7803', 13'/24hrs. (Bit #22 Smith F45 in @7790' out @7803', 13'/5hrs. 2.6'/hr.) B.Wt 20,000# 60RPM. Stab.: Bit, sub, 8d.c., jars, 3d.c., keyseat wiper. no survey. Mud: Wt 9.1#, vis 60, WL5.2, Solids 5.9%, Oil 5%, Chl 6400, 10.5Ph. 10½hrs. T., lay d. monel, 9d.c., p.u. Jars, drld 5½hrs. to T.D.. Short T. 16stnds, circ hole 2½hrs., T.O. today. BGG 6 units, TG 200 units under surface, 2 units off btm. DC\$12,269., CC\$527,868.

DIVISION OF
OIL GAS & MINING

DEC 31 1982

RECEIVED
MAY 1983

John J. Christmann Associates
Bridger Creek Unit 20
200' F/E, 1920' F/S
Sec. 20: NE $\frac{1}{4}$ SE $\frac{1}{4}$, T10N, R8E
Rich County, Utah
6503' GR, 6519' KB
Proposed 7800' - Nugget test

John J. Christmann & Associates P4
P.O. Box 236
Pinedale, Wyoming 82941
(307) 367-2144 Joe C. Hugo

1500 Broadway, Suite 800
Lubbock, Texas 79401
(806) 747-4542 Charles E. Christmann

- 12/13/82 Day #22 Drlg @6175' 305'/24hrs. (Bit #10 F4 Smith 7-7/8" in @4951' out @5891' 940'/46 $\frac{1}{2}$ hrs. 20.21'/hr.) Bit #11 F4 Smith 7-7/8" in @5891' 284'/14 $\frac{1}{2}$ hrs. 19.58'/hr.) B.Wt 40,000# 65RPM Stab.: Bit, Monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Mud: Wt 9.5, vis 43, WL9.8, Solids 5.7%, Chl 5200, Ph 10 T.O. for bit #11, T 6 $\frac{1}{2}$ hrs., 6' fill Survey 1-3/4hrs. BGG 2 units, TG 10 units 100% limestone Closure: md 6052' TVD 5902.13', N75.52° E, 732.40' from surface loc. DC\$11,647., CC\$338,183. Surveys: @5866' 23-3/4° N90° E, @6052' 23-3/4° N90° E
Stump 4000' datum +2519', Twin Creek 5120' datum +1399'
Salt @5040' datum +1479'
- 12/14/82 Day #23 Drlg @6620', 445'/24hrs. (Bit # F4 Smith 7-7/8" in @5891' 729'/35-3/4hrs. 20.82'/hr. B. Wt 40,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @6238' 22 $\frac{1}{2}$ ° S84° E, @6425' 22 $\frac{1}{2}$ ° S86° E Mud: Wt 9.1, vis 44, WL8, Solids 5.7%, Chl 5000, Ph 10 drlg 21hrs. survey 1 $\frac{1}{2}$ hrs. rig repair 1 $\frac{1}{2}$ hrs. BGG 2 units, drlg limestone & strips of shale. Closure: md6425' TVD 6245.87', N78.54° E, 870.45' from surface loc. DC\$15,705. CC\$353,888.
**Anticipated top of Nugget @6980', anticipate running DST somewhere in top 200' depending upon porosity.
- 12/15/82 Day #24 Drlg @6912' 292'/24hrs. (Bit #11 F4 Smith 7-7/8" in @5891' 1021'/58 $\frac{1}{2}$ hrs. 17.45'/hr.) B.Wt 40,000# 65RPM Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Surveys: @6612' 23° S87° E, @6802' 23 $\frac{1}{2}$ ° S85° E Mud: Wt 9.1, vis 43, WL 7.2, Solids 5.4%, Chl 5400, Ph10. Drlg 22-3/4hrs., survey 1 $\frac{1}{2}$ hrs. BGG 2 - 3 units drlg 40% shale, 10% anhydrite, 50% limestone Closure: md6802' TVD6592.89' N80.72° E, 1013.34' from surface loc.
Top Gypsum Springs @6780' DC\$8,723., CC\$362,611. Survey: @6936' 23° S84° E
- 12/16/82 Day #25 drlg @7040', 128'/24hrs. (Bit #11 F4 Smith 7-7/8" in @5891' out @6951' 1060'/64 $\frac{1}{2}$ hrs., 16.43'/hr., Bit #12 F57 Smith 7-7/8" in @6951', 89'/10hrs.) B.Wt 40,000 60RPM. Stab.: Bit, monel, 2d.c., IBS, 18d.c., Jars, 3d.c., key seat wiper. Mud: Wt 9.1, vis 44, WL 6.8, Solids 5.3%, Chl 5600, Ph 10.4 T for bit 7 $\frac{1}{2}$ hrs., 16hrs. drlg survey, 15' fill. BGG 2 - 4 units drlg 100% sandstone, white, fine grained. Closure: md6936' TVD 6716' N81.45° E, 1064.58' from surface loc. DC\$7,184., CC\$369,795.
Top Nugget @6999' datum -480'
- 12/17/82 Day #26 drlg @7152', 112'/24hrs. (Bit #12 F57 Smith 7-7/8" in @6951', out @7074', 123'/14.25hrs. 8.63'/hr., Bit #13 F9 Smith 7-7/8" in @7074', 78'/11hrs. B. Wt 40,000# 60RPM Stab.: Bit, monel, 20d.c., Jars, 3d.c., keyseat wiper Survey @7059' 21-3/4° S83° E. Mud: Wt 9.1#, vis 43, WL 7.6, Solids 5.7%, Chl 5500, Ph 10.5 T.O. rmd 40' BGG 2 units TG 6 units, drlg hard white sandstone Closure: md 7059' TVD 6829.74' N82.07° E, 1109.04' from surface loc. DC\$11,907., CC\$381,702.
- 12/18/82 Day #27 depth @7240', circ for DST #1, 88'/24hrs. (Bit #13 Smith F9 7-7/8" in @7074' out @7162', 88'/14 $\frac{1}{2}$ hrs., 6.07'/hr., Bit #14 Sec. H-100 7-7/8" in @7152' 78'/12 $\frac{1}{2}$ hrs., 6.37'/hr.) B.Wt 40,000 60RPM Stab.: bit, monel, d.c., 20d.c., Jars, 3d.c., keyseat wiper. Survey-misrun. Mud: Wt 9.1#, vis 43, WL6.4 Solids 5.8%, Chl 5600, 10Ph T.O. 7 $\frac{1}{2}$ hrs., drld 15hrs. BGG 2 units, TG 12 units drlg 100% sandstone, Drlg Break 7220' - 7229'. 3 $\frac{1}{2}$ min./ft., 10min./ft, 13min./ft DC\$21,266., CC\$402,968.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well gas well other

2. NAME OF OPERATOR
John J. Christmann & Associates

3. ADDRESS OF OPERATOR
P.O. Box 238, Pinedale, Wyoming 82941

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1910' F/S, 200' F/E, Sec. 20
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH: 650' F/E, 2000' F/S, Sec. 21

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	<input type="checkbox"/>		<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>		<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>		<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>		<input type="checkbox"/>
PULL OR ALTER CASING	<input type="checkbox"/>		<input type="checkbox"/>
MULTIPLE COMPLETE	<input type="checkbox"/>		<input type="checkbox"/>
CHANGE ZONES	<input type="checkbox"/>		<input type="checkbox"/>
ABANDON*	<input type="checkbox"/>		<input checked="" type="checkbox"/>
(other)			

5. LEASE	U-25466
6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
7. UNIT AGREEMENT NAME	Bridger Creek
8. FARM OR LEASE NAME	Unit
9. WELL NO.	2-20
10. FIELD OR WILDCAT NAME	wildcat- Nugget
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA	Sec. 20, T10N, R8E
12. COUNTY OR PARISH	Rich
13. STATE	Utah
14. API NO.	
15. ELEVATIONS (SHOW DF, KDB, AND WD)	

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Plug and abandon as per BLM specification by:

Assad Raffoul
2:10 P.M. 12/28/82
T.D. @7805'

- 1. 6900' - 6700' 100sks
- 2. 4800' - 4600' 100sks
- *3. 2000' - 1800' 100sks * incorrect on request of approval form.
- 4. BTM surface csg 600' 400' 120sks
- 5. 15sks w/marker at surface

APPROVED BY THE STATE
OF UTAH DIVISION OF
OIL, GAS, AND MINING
DATE: _____
BY: _____

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

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

SIGNED Joe C. Hugo TITLE Engineer DATE Jan. 4, 1983

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE
(See other instructions on reverse side)

Form approved. ² M 9
Budget Bureau No. 42-R355.5

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

5. LEASE DESIGNATION AND SERIAL NO.
U25466

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
Bridger Creek

8. FARM OR LEASE NAME
Unit

9. WELL NO.
2-20

10. FIELD AND POOL, OR WILDCAT
Nugget

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
20, T10N, R8E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. PERMIT NO. DATE ISSUED
API#43-033-30039

15. DATE SPUNDED 16. DATE T.D. REACHED 17. DATE COMPL. (Ready to prod.) 18. ELEVATIONS (DF, REB, RT, GR, ETC.)* 19. ELEV. CASINGHEAD
11/22/82 12/27/82 plug 12/30/82 6503' GR -----

20. TOTAL DEPTH, MD & TVD 21. PLUG, BACK T.D., MD & TVD 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY ROTARY TOOLS CABLE TOOLS
7805' MD P & A ----- XX

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
NONE

25. WAS DIRECTIONAL SURVEY MADE
Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN
Dual Laterolog, CNL-Density, BHC-Sonic-GR, Dipmeter

27. WAS WELL CORED
No

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
9-5/8"	36#	522'	12 1/2"	350sks	None

29. LINER RECORD None

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)

30. TUBING RECORD

31. PERFORATION RECORD (Interval, size and number)
None

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
	(NONE)

33.* PRODUCTION

DATE FIRST PRODUCTION NONE PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) P & A WELL STATUS (Producing or shut-in) P & A

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

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

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Chronological Report of Drilling

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

SIGNED Joe C. Hugo TITLE Engineer DATE Jan. 4, 1983

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

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either as shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments. **Items 22 and 24:** If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: "Sacks Cement": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool. **Item 33:** Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	GEOLOGIC MARKERS
Cretaceous	1230'				
Stump - Preuss	4022'				
Twin Creek	5129'				
Gypsum Springs	6790'				
Nugget	6998'				
TD 7805'					

GEOLOGICAL WELL REPORT

Christmann & Associates
Bridger Creek Federal # 2-20
200' FEL - 1910' FSL (NE/4 SE/4)
Sec. 20-T10N-R8E
Rich County, Utah

Submitted By:
H. E. Hutton
317 Goodstein Bldg.
P. O. Box 1138
Casper, Wyoming 82602
Phone: (307) 266-6108
Mobile Phone: (307) 265-4190

Harold E. Hutton
Harold E. Hutton, Consulting Geologist

RECEIVED
FEB 14 1980

DIVISION OF
OIL, GAS & MINING

I N D E X

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SUMMARY

Christmann & Associates, Bridger Creek Federal Well was drilled in minimal time with minimal drilling problems and reached T.D. at 7803' in late December 1982.

A water flow was observed when the first logging run was attempted but was quickly brought under control.

The initial log run revealed that the hole was migrating away from the proposed seismic target and directional drilling was initiated to drill to the proposed target into the Nugget sandstone.

The Nugget was tested twice but yeilded water, and after logging the hole was plugged and abandoned.

WELL DATA

Operator: Christmann & Associates
P. O. Box 238
Pinedale, Wyoming 82941

Well Name: Bridger Creek Federal # 2-20

Legal Location: 200' FEL - 1910' FSL (NE/4 SE/4)
Sec. 20-T10N-R8E

County and State: Rich County, Utah

Elevations 6503'GL 6519'K.B_

Contractor: Brinkerhoff - Signal

Equipment: Rig #2, Joe Noel - Toolpusher

Commenced: Spudded @ 02:00 November 22, 1982 (Beneath Conductor)

Conductor Pipe: At 65'/Dryhole Digger & Redi-Mix

Surface Casing: 9 5/8' - 36# - K55 @ 522 KB / 350 sxs "G", 1/4# D29;
2% CaCl; 2% D 46

Production Casing
or Plugs: Plugged

Hole Size: 12 1/4' beneath conductor to 522; 7 7/8' to T.D.

Drilling Fluid
& Contractor: IDF
LSLD

Mud Engineer: Gerald Vincent

Drill Stem Tests: DST #1: 7175'-7240'
DST #2: 7254'-7350'

Logging: Schlumberger

Mud Logging: Bronw Hydrocarbon Well Logging
Box 489, Powell, Wyoming, 82435

Cores: None

WELL DATA (continued)

Core Analysis: None

Drilling Time: Totco

Total Depth: 7803' Drilling; 7805' Logger

Ceased Drilling: 21:45 Hours; December 29, 1982

Samples Delivered: Sample Library Utah Geologic & Mineral Survey;
606 Blackhawk Way, Salt Lake City, Utah 84104

Sample Intervals: 10' Below Conductor to T.D.

Geologist: H. E. Hutton Consultant, Casper, Wyoming;
H. W. Merrell, Consultant, Moab, Utah

Company
Representative: H. D. "Duane" Arthur
Box 1186, Powell, Wyoming 82435

Status: Plugged & Abandoned

WELL HISTORY

<u>Date</u> <u>1982</u>	<u>06:00 A.M. Depth</u>	<u>Hrs. Drlg.</u>	<u>Last 24 hours Activity</u>
11/22	133	4	Drilling-spudded @ 02:00 hrs. beneath conductor.
11/23	522	12½	Drilling-surveys-C&C-Trip #1 out-run surface.
11/24	522	0	Run & cement casing-cut off-nipple up.
11/25	522	0	Nipple up-rams wouldn't close-nipple down-wait on stack.
11/26	596	1	Wait on stack-nipple up-pressure up-drill
11/27	1075	10¼	Drill-mix new mud-Trip #2 out-#3 In.
11/28	1950	19½	Drill-survey.
11/29	2254	19	Drill-survey-Trip #3 out.
11/30	2745	18½	Trip #4 in-drilling-survey-drilling.
12/1	2750	¼	Drilling-survey-SLM out to log-hole flowing water-Trip In-C&C to log-Trip Out log-logging.
12/2	2873	10	Logging-rig up to directional drill-Trip In #5-drilling with Mud Motor.
12/3	2984	10	Directional drill-Trip #5 out & Mud Motor-Trip in RR #4- C&C Water Flow-reaming.
12/4	3440	21 3/4	Drilling-surveys.
12/5	3770	16½	Drilling-Trip RR #4 Out-RR #5 In-drilling-survey-drilling.
12/6	4120	18¼	Drilling-survey-Trip #5 RR Out.
12/7	4336	15 3/4	Trip In #6-drilling-surveys-Trip #6 Out for Hole in pipe.

WELL HISTORY (continued)

<u>Date</u> <u>1982</u>	<u>06:00 A.M. Depth</u>	<u>Hrs. Drlg.</u>	<u>Last 24 hours Activity</u>
12/8	4470	9 $\frac{1}{4}$	Trip for Hole in Pipe-change BHA-Trip In #7-survey-drilling.
12/9	4780	22	Drilling-surveys.
12/10	5000	15 $\frac{1}{2}$	Drilling-surveys-Trip #7 Out-#8 In.
12/11	5450	21 $\frac{3}{4}$	Drilling-surveys.
12/12	5870	21 $\frac{3}{4}$	Drilling-surveys.
12/13	6175	15 $\frac{3}{4}$	Drilling-surveys-Trip #8 Out- #9 In-drilling.
12/14	6620	21 $\frac{1}{4}$	Drilling-surveys-repairs.
12/15	6912	22 $\frac{3}{4}$	Drilling - surveys.
12/16	7040	16	Drilling-Trip #9 Out-#10 In-drilling-surveys.
12/17	7152	13 $\frac{1}{4}$	Drilling-surveys-Trip #10 Out-#11 In-drilling.
12/18	7240	15 $\frac{3}{4}$	Trip #11 Out-#12 In-C&C DST #1.
12/19	7240	0	C&C DST #1-short trip-circulate-Trip #12 Out-DST #1 In.
12/20	7258	8 $\frac{1}{4}$	Testing-Trip DST #1 Out-#13 In-drilling.
12/21	7314	14 $\frac{1}{4}$	Drilling-Trip #13 Out-#14 In-drilling.
12/22	7350	8	Drilling-C&C DST #2-Trip #14 Out-Trip DST #2 In.
12/23	7385	6	Testing-Trip DST #2 Out-#15 In-remaining-drilling.
12/24	7474	19 $\frac{1}{4}$	Drilling-Trip #15 Out-#16 In-drilling.
12/25	7585	16	Drilling-Trip #16 Out-#17 In.
12/26	7711	17	Drilling-Trip #17 Out-#18 In.
12/27	7790	13 $\frac{1}{4}$	Drilling-Trip #18 Out-#19 In.

WELL HISTORY (continued)

<u>Date</u> <u>1982</u>	<u>06:00 A.M. Depth</u>	<u>Hrs. Drlg.</u>	<u>Last 24 hours Activity</u>
12/28	7803	5½	Drilling-Trip #19 Out-#20 In-drilling- C&C logs-Trip #20 Out to Log.
12/29	7803	0	Trip out to Log-Rig up Logger- Logging

BIT RECORD

BIT NO	MFGR	SIZE	TYPE	DEPTH OUT	FOOTAGE	HOURS	AVG. FT/HR	ROTARY RPM	1000# WEIGHT	PUMP PRESS	DULL COND			REMARKS
											T	B	G	
1	HTC	12¼	OSC3AJ	522	457	16½	27.7	120	3/5	1000	-	-	-	In beneath conductor
2	HTC	7 7/8	OSC3J	682	160	3	53.3	65	10	1350	4	3	I	Drilled Cement
3	SEC	7 7/8	S84F	2254	1572	46	34.2	65/75	5/35	1500	3	3	I	
4	HTC	7 7/8	J22	2750	496	18 3/4	26.4	65/75	35	1200/ 1500	1	1	I	Pulled to Log
5	RTC	7 7/8	FP51- 1A	2984	234	20	11.7	120	15	1200	1	1	I	
4RR	HTC	7 7/8	J22	3742	758	36½	20.8	80	38	1200	2	1	I	
5RR	RTC	7 7/8	FP51- 1A	4120	378	18¼	20.7	80	38	1200	8	8	1/8	
6	HTC	7 7/8	J33	4336	216	15 3/4	13.7	70	15/38	1200	7	4	I	
7	HTC	7 7/8	J44	4951	615	44½	13.8	70	40	1200	7	4	I	
8	STC	7 7/8	F4	5891	940	46½	20.2	65	40	1300	3	6	I	
9	STC	7 7/8	F4	6951	1060	64	16.6	65	40	1250	6	5	I	

BIT RECORD (continued)

BIT NO	MFGR	SIZE	TYPE	DEPTH OUT	FOOTAGE	HOURS	AVG FT/HR	ROTARY RPM	1000# WEIGHT	PUMP PRESS	DULL COND.			REMARKS
											T	B	G	
10	STC	7 7/8	F57	7074	123	14¼	8.6	60	40	1350	6	2	2	
11	STC	7 7/8	F9	7162	88	11	8	60	40	1300	8	4	I	
12	SEC	7 7/8	H100F	7240	78	12¼	6.4	60	40	1300	6	3	I	
13	SEC	7 7/8	H100F	7272	32	14	2.3	60	40	1350	-	-	-	
14	STC	7 7/8	F7	7350	78	16¼	4.8	60	40	1300	6	4	I	
15	STC	7 7/8	F57	7466	116	19½	5.9	60	40	1250	7	4	I	
∞ 16	STC	7 7/8	F7	7585	119	17	7	60	40	1200	8	4	I	
17	STC	7 7/8	F7	7711	126	17	7.4	60	40	1200	8	3	I	
18	STC	7 7/8	F57	7751	40	6	6.7	60	40	12	8	3	I	
19	STC	7 7/8	F9	7790	39	7¼	5.4	60	40	1200	8	2	I	
20	STC	7 7/8	F45	7803	13	5½	2.4	60	20	1200	-	-	-	

DEVIATION SURVEY

<u>DEPTH</u>	<u>DEGREES DEVIATION</u>
92'	$\frac{1}{4}^{\circ}$
148'	$\frac{3}{4}^{\circ}$
240'	$\frac{1}{2}^{\circ}$
302'	$\frac{3}{4}^{\circ}$
365'	$\frac{3}{4}^{\circ}$
425'	$\frac{3}{4}^{\circ}$
487'	$\frac{3}{4}^{\circ}$
657'	$\frac{3}{4}^{\circ}$ S75W
762'	1 $^{\circ}$ N83W
858'	1 $\frac{1}{4}^{\circ}$ N85W
952'	1 $\frac{1}{4}^{\circ}$ N85W
1044'	1 $\frac{1}{4}^{\circ}$ N79W
1136'	1 $\frac{1}{2}^{\circ}$ N73W
1232'	2 $\frac{1}{4}^{\circ}$ S77W
1324'	2 $\frac{1}{2}^{\circ}$ S84W
1415'	3 $\frac{1}{4}^{\circ}$ S72W
1513'	3 $\frac{1}{4}^{\circ}$ S81W
1635'	4 $\frac{3}{4}^{\circ}$ S87W
1754'	6 $\frac{3}{4}^{\circ}$ S86W
1885'	8 $^{\circ}$ N89W
2013'	8 $\frac{1}{2}^{\circ}$ S85W
2108'	7 $\frac{1}{2}^{\circ}$ S86W
2202'	7 $\frac{1}{4}^{\circ}$ S86W
2296'	6 $\frac{3}{4}^{\circ}$ S86W
2422'	6 $^{\circ}$ S86W
2547'	6 $^{\circ}$ S82W
2706'	4 $\frac{1}{2}^{\circ}$ N75W
2762'	4 $\frac{1}{2}^{\circ}$ N30W
2796'	5 $\frac{1}{2}^{\circ}$ N7E

DEVIATION SURVEY (continued)

<u>DEPTH</u>	<u>DEGREES DEVIATION</u>
2950'	6 $\frac{1}{4}$ ⁰ N73E
2889'	5 $\frac{1}{2}$ ⁰ N42E
3050'	6 $\frac{1}{2}$ ⁰ N87E
3205'	7 ⁰ N84E
3297'	7 $\frac{1}{4}$ ⁰ N82E
3418'	7 $\frac{1}{2}$ ⁰ N77E
3482'	8 ⁰ N67E
3576'	9 $\frac{1}{4}$ ⁰ N68E
3670'	9 $\frac{3}{4}$ ⁰ N68E
3795'	10 $\frac{3}{4}$ ⁰ N67E
3951'	12 $\frac{1}{2}$ ⁰ N70E
4076'	14 $\frac{3}{4}$ ⁰ N74E
4203'	16 $\frac{1}{4}$ ⁰ N82E
4342'	17 ⁰ N84E
4456'	17 $\frac{1}{2}$ ⁰ N86E
4582'	18 $\frac{1}{4}$ ⁰ N87E
4708'	19 ⁰ N88E
4832'	20 ⁰ N87E
4957'	20 ⁰ N87E
5083'	19 $\frac{3}{4}$ ⁰ N88E
5209'	21 ⁰ N90E
5333'	22 ⁰ N87E
5459'	22 $\frac{1}{2}$ ⁰ N85E
5613'	23 $\frac{1}{4}$ ⁰ N88E
5771'	24 ⁰ N88E
5666'	23 $\frac{3}{4}$ ⁰ N90E
6052'	23 $\frac{3}{4}$ ⁰ N90E
6238'	22 $\frac{1}{2}$ ⁰ S84E
6425'	22 $\frac{1}{2}$ ⁰ S86E
6612'	23 ⁰ S87E
6802'	23 $\frac{1}{2}$ ⁰ S85E
6936'	23 ⁰ S84E
7059'	21 $\frac{3}{4}$ ⁰ N83E

DEVIATION SURVEY (continued)

<u>DEPTH</u>	<u>DEGREES DEVIATION</u>
7210'	20 $\frac{1}{4}$ ⁰ S85E
7310'	19 ⁰ S87E
7451'	17 $\frac{3}{4}$ ⁰ S90E
7570'	16 $\frac{3}{4}$ ⁰ N89E
7696'	16 ⁰ S89E

MUD CHECKS

DATE 1982	DEPTH CHECKED	WT.	VIS.	P.V.	Y.P.	p ^H	W.L.	32nd FILTER CAKE	PPM SALT	PPM CHLORIDE	PPM CHROMATES	PPM NITRATE
11/22	133	8.6	38	--	--	9.5	N.C.	--	--	1600	--	--
11/23	522	8.9	38	--	--	9.0	N.C.	--	--	1800	--	--
11/24	Surface Casing											
11/25	Surface Casing											
11/26	Surface Casing											
11/27	1075	8.8	37	11	11	10	14	2	--	1500	--	--
11/28	1950	8.8	35	9	8	9.5	12.8	2	--	1800	--	--
11/29	2254	8.8	35	8	9	10	10.4	2	--	2000	--	--
11/30	2745	8.8	42	11	14	10	9.6	2	--	2100	--	--
12/1	2750	9.0	44	11	14	9.5	10.2	2	--	2200	--	--
12/2	2873	9.0	43	13	12	10	9.2	2	--	2400	--	--
12/3	2984	9.1	44	14	15	10	10.0	2	--	2700	--	--
12/4	3440	9.1	41	14	11	9.5	9.6	2	--	2800	--	--
12/5	3794	9.1	40	12	10	10	9.2	2	--	2800	--	--
12/6	4120	9.1	41	11	8	9.5	9.4	2	--	2900	--	--
12/7	4336	9.1	38	12	9	10	9.6	2	--	3000	--	--
12/8	4452	9.1	41	15	12	9.7	15	2	--	2400	--	--
12/9	4780	9.1	43	15	14	9.5	9.8	2	--	2600	--	--
12/10	5000	9.1	40	14	12	9.5	10	2	--	2800	--	--
12/11	5450	9.2	45	14	11	9.5	9.8	2	--	3800	--	--

MUD CHECKS (continued)

DATE 1982	DEPTH CHECKED	WT.	VIS.	P.V.	Y.P.	p ^H	W.L.	32nd FILTER CAKE	PPM SALT	PPM CHLORIDE	PPM CHROMATES	PPM NITRATE
12/12	5870	9.1	43	14	12	9.5	9.9	2	--	3800	--	--
12/13	6175	9.1	43	15	12	10	9.8	2	--	5200	--	--
12/14	6620	9.1	42	12	11	10	8	2	--	5000	--	--
12/15	6912	9.1	43	16	15	10	7.2	2	--	5400	--	--
12/16	7040	9.1	44	16	16	10.5	6.8	2	--	5600	--	--
12/17	7152	9.1	43	16	15	10.5	7.6	2	--	5500	--	--
12/18	7240	9.1	43	17	15	10.0	6.4	2	--	5600	--	--
12/19	7240	9.1	49	21	17	10	6.4	2	--	5500	--	--
12/20	7258	9.2	45	18	17	10.5	6.9	2	--	5600	--	--
12/21	7314	9.1	44	18	16	10.5	6.0	2	--	5600	--	--
12/22	7350	9.1	47	19	17	10.5	6.1	2	--	5500	--	--
12/23	7385	9.1	45	18	15	10.5	6.0	2	--	5200	--	--
12/24	7474	9.2	42	12	11	10.5	6.2	1	--	5500	--	--
12/25	7585	9.1	43	18	15	11	5.9	1	--	5500	--	--
12/26	7711	9.1	44	16	12	10.5	6.0	1	--	5600	--	--
12/27	7790	9.1	45	15	12	10.5	5.6	1	--	6200	--	--
12/28	7803	9.1	60	27	22	10.5	5.2	1	--	6400	--	--

T.D. End Mud Check Report

FORMATION TOPS

<u>SYSTEM</u>	<u>FORMATION</u>	<u>LOG DEPTH</u>	<u>DATUM (6519 KB)</u>
Tertiary	Surface	Surface	Surface

Creataceous	Fault (?)	2000	+4519

Jurassic	Press-Stump	4022	+2497
	Salt (Sample)	5040	+1479
	Twin Creek	5129	+1390
	Gypsum Springs	6790	- 271

Triassic	Nugget	6998	- 479

Logger Total Depth		7805	-1286

DRILL STEM TEST RECORD

DST # 1
Formation: Nugget
7175' - 7240' (64' Interval)
Conventional
Field Data - December 20, 1982

No Water Cushion

	<u>Minutes Duration (time)</u>	<u>Pressures</u>
IH		3345#
FH		3345#
FP #1	10 mins.	41#-134#
SIP #1	30 mins.	2981#
FP #2	60 mins.	153#-405#
SIP #2	60 mins.	2962#
FP #3	60 mins.	405#-563#
SIP #3	90 mins.	2990#
BHT		143 ⁰ F

Uphole Choke ½" Downhole Choke ½"

Bubble Hose

No Gas To Surface

#1 Flow: 2 to 3" Blow Throat Test

Pipe Recovery: 1254' Total: Consisting of:
50' Mud
844' Mud Cut Water
360' Water

Sampler Recovery: 2260 CC of Water

Sampler R.W.: 0.18 @ 52⁰ = 14500 PPM

DRILL STEM TEST RECORD

DST # 2
Formation: Nugget
7254' - 7350' (96' Interval)
Conventional
Field Data - December , 23, 1982

No Water Cushion

	<u>Minutes Duration (time)</u>	<u>Pressures</u>
IH		3326#
FH		3345#
FP #1	10 mins.	118#-202#
SIP #1	30 mins.	3037#
FP #2	60 mins.	239#-481#
SIP #2	60 mins.	3004#
FP #3	60 mins.	500#-705#
SIP #3	90 mins.	3037#
BHT		146 ⁰ F

Uphole Choke $\frac{1}{4}$ " Downhole Choke $\frac{1}{2}$ "

Bubble Hose

No Gas To Surface

#1 Flow: Open with 2" blow

#2 Flow: Open with $\frac{1}{2}$ " blow-increased to 1" in 5 min., $1\frac{1}{2}$ " in 10 min.-Began
Decreasing after 25 mins. to 1" after 60 mins.

#3 Flow: Open with $\frac{1}{2}$ " blow-increased to 1" blow-decreased to $\frac{1}{2}$ " blow

Pipe Recovery: Total 1823' Consisting of:
558' Mud
1265' Water

Sampler Recovery: 2400 CC Water

Sampler R.W.: 0.3 @ 58⁰ - Misrun PPMs

Lithologic Descriptions

Very Poor 30' Samples Begin at 630' Beneath Conductor

- 630-660 Claystone and Siltstone, light green gray-light cream, soft, sticky with some minor black and ochre; loose sand, frosted-rose pink, predominantly very fine with occasional medium grains, subangular-subround.
- 660-690 As above but predominantly loose sand +-80% and sticky clay.
- 690-750 As above 50%+- loose sand; 50%+- sticky clay with traces admixed pyrite.
- 750-900 Predominantly 80%+- claystone, green gray, soft, sticky; some loose sand, frosted, very fine most, subround-subangular; very minor shale fragment, firm, black.
- 900-930 Predominantly 85%+- claystone, light gray-light cream gray-light green gray, soft, sticky with very minor scattered shale fragment, black, firm, very slightly calcareous; loose sand, frosted-light tan, very fine most with very minor fine, subround-subangular with traces black chert.
- 930-1020 As above but with increased loose sand +-80% loose sand.
- 1020-1050 As above but becoming more consolidated; predominantly 60%+- sandstone, grading- conglomerate, predominantly light gray cement with admixed frosted-rose pink; quartz grains and black chert grains, calcareous cement, some varicolored accessory minerals, firm-friable; 40%+- claystone and siltstone; green gray, light cream, traces pink, varicolored, soft, sticky.
- 1050-1080 No Sample.
- 1080-1170 Predominantly claystone varicolored, light gray-pink, soft, sticky, 80%+- claystone; 20%+- loose sand and sandstone, pink-frosted, very fine-fine, subround-subangular, some calcareous cement, some admixed pyrite and some varicolored accessory.
- 1170-1230 As above with 50% loose sand, frosted-tan-brown, fine-medium with some coarse, subround-subangular; 50% varicolored claystone and siltstone as above.
- 1230' Change Sample Top of Cretaceous

- 1230-1290 Predominantly 90%+ shale, black-dark gray-dark brown, firm, slightly silty, fairly calcareous; minor admixed coal, black, vitreous, conchoidal.
- 1290-1320 80% shale and coal as above with admixed vaircolored claystone as above and minor sandstone, gray-tan, fine-medium, subangular-subround, very limy cement, traces dark accessory, traces mica, trace limestone, gray, cryptocrystalline.
- 1320' Change Possible Fault Gouge
- 1320-1350 85% clay, white, slightly silty, firm-soft, noncalcareous, flocculates and swells in water, bentonitic? minor sandstone, 5%+-, frosted brown, very fine-fine, subround-subangular, friable-firm, calcareous cement, dirty and trashy, poorly sorted, dark accessory, slightly salt and pepper in part.
- 1350-1380 65% sandstone, light-dark gray, salt and pepper, (frosted-black grains), very fine-fine, subround-subangular, very limy cement, hard, no visible porosity, NOSCF and shale 35%, dark gray, firm, calcareous.
- 1380-1410 As above with decreased shales.
- 1410-1440 No Sample.
- 1440-1470 95%+ shales, medium-dark gray, firm, silty, very limy part.
- 1470-1500 50% shale, as above; 45% sandstone, light-dark gray salt and pepper, (frosted-black), very fine-fine, subround-subangular, very limy cement, hard, dark accessory, trace pyrite, no visible porosity, NOSCF; coal and carbonaceous shales, black-dark gray, firm-soft.
- 1500-1530 95% shale, dark gray-black, firm, slightly silty, calcareous traces carbonaceous inclusions, traces white-light brown calcite filled fractures; traces limestone, gray-tan, cryptocrystalline; traces sandstone.
- 1530-1560 60% sandstone, light-dark gray salt and pepper, very fine-fine, subround-subangular, hard-friable, dark accessory, traces mica, some admixed quartz grains, white coarse angular; 40% shales as above with very minor traces scattered coal fragments, black, vitreous, conchoidal, firm.
- 1560-1590 As above with greatly increased shales, very carbonaceous in part and with very abundant calcite fragments and filled fractures amber-brown, resinous looking.
- 1590-1620 As above with traces pyrite.

- 1620-1650 As above with becoming slightly sandier with traces inter-laminated, fragmental coal and with very minor trace pale green claystone, slough?
- 1650-1730 As above 50% sandstone-50% shales with still some admixed minor pale green claystones.
- 1730-1760 As above with increased sandstone, 70% with traces coal and with very abundant calcite and pyrite filled fractures.
- 1760-1850 No Samples.
- 1850-1880 90% shale, dark gray, firm, fissile, slightly silty, non calcareous; 10% sandstone, tan-dark gray, fine-very fine, subround-subangular, calcareous cement dark accessory, fossiliferous, Gastropod?
- 1880-1910 As above with very slightly increased sandstone and with fragmental coals and with calcite filled fractures, white.
- 1910-1970 As above with very very abundant calcite and limestone filled fractures, white-dark brown, micro-cryptocrystalline, firm-hard; coal fragments, black, vitreous, conchoidal, pyritic.
- 1970-2000 As above with abundant admixed argillaceous siltstone, light gray, soft, varicolored.
- 2000-2060 85% siltstone and shale, varicolored, predominantly dark brick red-pink and white micromottled with minor lavender-light gray green-light gray-black-light tan with very very minor ochre; +-10% limestone and calcite filled fractures, white-gray-brown, micro-cryptocrystalline, hard, dense, +-5% sandstone, gray salt and pepper-brown, fine-very fine, sub-round-subangular, calcareous cement, dark accessory, trashy, hard, dense, tight, no visible porosity, NOSCF.
- 2060-2090 As above with very noticeable admixed slough from short trip to lay down nine joints of pipe at 2040'; Predominantly coal and sandstone slough as above.
- 2090-2120 Predominantly 75% sandstone, white-gray-black, salt and pepper, fine most, subangular-subround, calcareous, dark black-brown accessory, firm-friable, trace intercrystalline porosity, NOSCF; 20% varicolored siltstone and shale as above; 5% limestone, calcite as above; traces coal fragments as above.
- 2120' Begin 10' lagged Sample Descriptions.
- 2120-2140 Predominantly 90% varicolored siltstone and shale as above; 10% sandstone and limestone and coal as above.

- 2140-2150 Predominantly sandstone 80% white-light gray, slightly salt and pepper-frosted, fine-very fine with rare scattered coarse grains, subround-subangular, calcareous cement, some white clay filling, dark brown-black accessory, moderate sorting, hard, dense, tight, no visible porosity, NOSCF; 20% varicolored siltstone and shale, predominantly dark brick red-pink with minor lavender-light gray green-light gray-black and minor limestone dark red-brown, cryptocrystalline and calcite filled fractures.
- 2150-2160 As above decreased sandstone +-20% 80% varicolored siltstone and shale.
- 2160-2180 As above 50% sandstone-50% varicolored siltstones and shales; dirty, trashy, poorly sorted sandstone.
- 2180-2240 85% varicolored siltstone and shale as above; 15% limestone light gray-brown-dark red maroon, cryptocrystalline, hard, dense, tight; minor sandstone as above.
- 2240-2250 90% sandstone, clear-white, very fine, subangular most, varicolored, well sorted, hard, dense, tight, no porosity, NOSCF; 10% varicolored siltstone, shale and limestone as above.
- 2254' Bit Trip.
- 2250-2260 As above abundant trip slough.
- 2260-2270 50% varicolored siltstone and shale as above-50% sandstone as above.
- 2270-2280 75% siltstone-sandstone, gray-white, very fine, subangular most, very calcareous, hard, dense, tight no porosity, NOSCF.
- 2280-2290 90+- sandstone, white-gray-black, frosted-salt and pepper, very fine most with minor fine, subangular-subround, varicolored, fair sorting, dark accessory, hard, dense, tight, no visible porosity, NOSCF; 5% limestone, gray-brown, cryptocrystalline, hard, dense, tight, no porosity, NOSCF; 5% siltstone and shale, varicolored, firm-soft, silty, calcareous as above.
- 2290-2310 As above with decreased 10% sandstone and increased limestone 20%; 70% siltstone and shale, dark brown red, firm, silty, calcareous with traces light green mottled siltstone and shale and with moderate amounts of varicolored siltstone and shale as above.
- 2310-2330 As above more sandy.
- 2330-2340 80% sandstone, gray-white, frosted-salt and pepper, very fine-fine, occasional medium, subangular-subround, calcareous, moderate sorting, hard, dense, tight, no porosity, NOSCF; 15% varicolored. siltstone and shale, firm-soft, silty,

- calcareous; 5% limestone and calcite, gray-white, crypto-microcrystalline, firm.
- 2340-2360 As above with increased sandstone 95%+.
- 2360-2390 Shale, siltstone and limestone, medium gray-dark gray, firm, silty, very limy, grades from limy silty shale to shaly silty limestone.
- 2390-2410 60% very fine-fine, dark gray sandstone as above; 40% limy shale to shaly limestone as above.
- 2410-2430 Predominantly 90% sandstone, white-frosted, salt and pepper part, fine-very fine, subangular-subround, calcareous, fair sorting, hard, dense, tight, dark accessory, no porosity, NOSCF; 10% silty limy, gray, shales as above, some pyrite.
- 2430-2440 As above but becoming dark gray.
- 2440-2470 As above with quite a bit of admixed limestone, light-medium gray, cryptocrystalline, hard, dense, tight, no visible porosity, NOSCF; some pyrite.
- 2480' Begin 20' Lagged Lithologic Samples
- 2480-2500 60% shale, dark gray-black, firm, fissile-blocky, non calcareous; 35% sandstone as above; traces pyrite; some gray limestone as above with very very rare trace of admixed varicolored shales, red-lavender-green gray.
- 2500-2520 As above predominantly 90% dark gray-black shales with admixed limestone and limy shales as above and with minor admixed dark reddish brown, silty, calcareous shales.
- 2520-2540 90% siltstone and shale, dark-medium red, silty, firm-soft, calcareous; 5% shale, dark gray-black, firm, fissile-blocky, non calcareous; 5% limestone brown-red, cryptocrystalline, hard, dense, tight, no visible porosity, NOSCF.
- 2540-2580 As above with very little dark gray and black shales.
- 2580-2640 70% dark-medium red, silty, calcareous shales as above; 10% limestone, red-gray, cryptocrystalline, hard, dense, tight, with minor lavender and mottled green and red limestone, sandy in part; 20% shales, light gray-medium blue gray, firm, non calcareous mottled with red in part.
- 2640-2660 Predominantly siltstone and shales, dark red brown, very limy part as above.
- 2660-2680 Predominantly red-gray-blue gray, shales siltstones and limestone as above.

- 2680-2700 As above with admixed slough.
- 2700-2750 60% shale and siltstone, dark-medium-red with some mottled red and gray and some lavender silty, firm, calcareous-non calcareous; 30% limestone, red-gray, cryptocrystalline, hard, dense, tight; 10% sandstone, white, frosted-clear, very fine, subangular-subround; calcareous, hard, dense, tight, fair sorting, no porosity, NOSCF.
- 2750' Log Run #1.
- 2750-2780 60% sandstone, red brown-tan, very fine grained, silty, well cement clay cement, tight, sub round, no porosity, NOSCF; 20% shale, red, brown-green-brown mottled soft; 5% claystone white-dark gray, soft 10% limestone, tan, crypto-crystalline dense; trace chert, light gray, less than 5% sandstone light gray, fine grained, subround, poor cement, clean NOSCF.
- 2780-2810 40% shale, light gray, silty; 30% siltstone, light gray, shaly, tight; 20% shale, red-red brown-purple; 10% sandstone, light gray, very fine grained-fine grained, poor sorting, subround, well cement, argillaceous cement, NOSCF; trace limestone tan.
- 2810-2820 40% shale, red, purple gray, silty part; 30% siltstone, gray, shaly; 30% limestone light tan, cryptocrystalline, dense.
- 2820-2830 50% sandstone, white fine grained, subangular-subround, well sorted, poor cement, friable, clean, good porosity, NOSCF; occasional black inclusions of black mineral in sand, few black biotite fragment in sandstone; 20% limestone, light tan, cryptocrystalline, dense; 20% shale, purple, red, gray; 10% siltstone, light lavender-gray, shaly.
- 2830-2850 60% sandstone, as above; 20% shale light purple, gray, brown, silty in part; 10% limestone, light gray-light tan, cryptocrystalline, dense; 10% bentonite, white trace pyrite fragments and crystalline clusters with sand grain inclusions.
- 2850-2870 50% sandstone, white to light salmon, very fine-fine, clean, subround, friable, poor cement, well sorted, good porosity, fair sorting, NOSCF; 20% shale, red, purple, gray, brown, soft; 10% sandstone, light gray, fine-very fine, subround, poorly sorted, with few medium grains floating, dirty, NOSCF; 10% light green shale and white bentonite soft; 10% limestone, light tan, cryptocrystallines, dense.
- 2870-2880 30% sandstone, white as above; 30% sandstone, light gray, fine-very fine, poor sorted, dirty, well cement; 30% shale, red-brown; 10% limestone, light tan, cryptocrystalline, dense.

- 2880-2890 60% sandstone, light gray, fine-very fine, dirty, with coarse grain frosted sand grains, tight, well cement, poorly sorted; shale; 30% shale, red-brown, silty in part; 10% limestone as above, sandstone as above, trace chert, light gray.
- 2890-2900 80% shale, light gray-light gray green, blocky; 20% shale, light brown-light maroon.
- 2900-2920 60% shale, maroon-brown-gray, mottled in part, silty in part; 30% shale, light gray, soft, silty in part; 10% limestone, light gray cryptocrystalline, dense; trace calcite, white, veinlet.
- 2920-2930 50% shale, red brown, brown, gray mottled in part; 40% siltstone, fine, subangular, tight cement, dirty shaly; trace limestone, light tan, cryptocrystalline, dense.
- 2930-2940 70% sandstone, light cream gray, very fine, subround, well cement, quartzitic in part, grading to fair cemented, no visible porosity, NOSCF; 20% shale, red brown-brown, purple, gray, black waxy, soft; 10% siltstone, red brown, rusty, shaly in part; trace limestone, dark gray, light gray, red, cryptocrystalline; trace chert, light gray, in part fragments.
- 2940-2960 90% shale, red-brown, gray, mottled in part, gray green purple, soft; 10% siltstone, red, brown as above; trace sandstone as above; trace limestone as above.
- 2960-2980 90% shale, gray, light purple, red brown, mottled in part; 10% limestone, light gray-tan cryptocrystalline, dense; trace sandstone as above.
- 2980-3000 60% shale, red brown, gray; 20% siltstone, red, light gray, shaly in part; 10% sandstone, light gray, fine, very well cemented, tight; 10% limestone light gray-cryptocrystalline dense, fossil fragment part spiral of Gastropod?
- 3000-3030 60% siltstone, red-brown, slight calcite, limy in part, shaly in part; 30% shale red brown, purple, gray, mottled in part; 10% limestone, gray, red brown, slightly shaly in part, dense, very fine crystals; trace sandstone, white, fine-very fine, poor cement, poor sorting, dirty; trace white calcite fragments crystalline.
- 3030-3040 30% siltstone, red brown, calcite, shaly; 30% shale, red brown dark brown; 20% shale, gray-gray green-purple, mottled in part, 10% shale light orange with white clay inclusions; 10% limestone, light gray, red brown, cryptocrystalline, dense, hard, few with white crust on some fragments.

- 3040-3060 60% siltstone, red brown, slight calcareous, shaly; 30% shale dark brown, red-brown, with light gray, light purple mottled; 10% shale, light orange with white inclusions, slightly calcareous, soft; trace sandstone, light gray very fine, well sorted, well cemented calcareous, tight.
- 3060-3070 40% siltstone as above; 35% shale, red brown, purple, as above; 10% shale, light gray, soft, few black angular inclusions in part; 5% sandstone, light gray, fine, well cemented, slightly calcareous, dirty, slight salt and pepper in part, NOSCF; 10% limestone, brown, red brown-light gray, cryptocrystalline, dense.
- 3070-3100 60% shale, red brown, brown, purple, light gray, mottled in part; 20% shale, light gray, soft, few sand grains floating in part; 10% limestone, red brown, gray, cryptocrystalline, dense; 10% sandstone, light gray fine-medium, poor sorted, subround-subangular, well cemented, slightly calcareous in part, shaly in part, no visible porosity, trace shale black, carbonaceous; trace pyrite crystal clusters, trace chert light gray; trace calcite light gray crystals.
- 3100-3120 60% siltstone, red brown, shaly, calcareous, dense; 20% shale, red-brown, gray-light purple, mottled in part calcareous; 10% limestone, light tan, light gray, tan cryptocrystalline, dense; 10% shale, light orange, soft, calcareous with white inclusions of gyp (?); trace shale, black blocky, carbonaceous, trace chert, light gray and amber.
- 3120-3140 50% siltstone, red-brown, calcareous, shaly; 20% shale red brown, maroon, light gray, light purple soft; 20% limestone, red-brown, tan, gray, cryptocrystalline, dense, shaly in part; 5% shale, light orange, soft, calcareous with white inclusions of soft gyp (?); trace shale black, carbonaceous blocky; trace chert, light gray; trace claystone, light gray green very soft; trace sandstone, light gray, fine-medium, trace chert, light gray.
- 4130-3180 As above with clusters of pyrite crystals.
- 3180-3260 60% siltstone, red-brown as above; 20% shale red-brown, brown, gray, black as above; 10% limestone, tan, light brown, cryptocrystalline, dense; 10% sandstone, light gray, red brown, very fine-medium, poor sorting, well cemented, subround-subangular, dirty, shaly in part, no visible porosity, NOSCF; trace calcite with large crystals; trace pyrite, trace chert, light gray.
- 3260-3280 60% siltstone as above; 20% shale, red brown, purple, gray black; 10% claystone, light gray to light lavender, soft; 10% limestone, light gray, red brown, cryptocrystalline, dense; fossil small straight conical gastropod?; trace chert, light gray.

- 3280-3320 60% siltstone, red brown, calcareous, tight; 20% shale, varicolored, as above; 10% limestone, red brown, gray, cryptocrystalline dense; 10% shale, light gray-light purple, soft; trace chert, light gray, light tan.
- 3320-3380 50% siltstone as above; 40% shale, varicolored as above; 10% limestone, light tan, gray, red brown; trace shale, blue, carbonaceous, pyritic in part.
- 3380-3400 50% siltstone as above; 30% shale, varicolored as above; 20% limestone, red-brown, tan, cryptocrystalline, dense; trace chert, light gray; trace calcite, white crystals.
- 3400-3460 70% siltstone, red brown, calcareous, sandy, shaly, well cemented, thin calcite filled veinlets; 10% shale, red brown, gray; 10% sandstone, light gray, fine-medium, dirty; 10% limestone, light gray, light red brown, cryptocrystalline.
- 3460-3520 70% shale, red brown, brown, silty in part, soft, blocky; 10% shale, light gray, light gray green, soft; 10% limestone, light gray, tan, cryptocryst, siltstone, red brown, calcareous, very shaly, trace white calcite fragments, trace shale, black carbonaceous; trace sandstone, light gray, fine, subround, well cemented, tight, no visible porosity, clean.
- 3520-3540 60% sandstone, light gray-tan, fine-coarse, subround-subangular, poorly sorted, well cemented, siliceous cement, white clay filling voids, no visible porosity, NOSCF; 10% siltstone as above; 20% shale as above; 10% limestone, tan, light gray as above.
- 3540-3560 60% shale, red brown, brown, gray, soft, blocky; 20% siltstone, red brown, as above; 10% sandstone as above; 10% limestone as above.
- 3560-3580 50% shale, brown, gray, light gray green; 20% siltstone, red-brown, shaly, tight; 20% limestone, tan, light gray, red brown, cryptocrystalline, dense; 10% sandstone, light gray, fine-coarse, poorly sorted, tight cement, no visible porosity; trace chert, light gray, light orange; trace pyrite (small crystal clusters).
- 3580-3600 50% siltstone, red brown-brown, firm, shaly, sandy in part; 20% shale, brown, gray, mottled in part, soft; 20% limestone, light brown, gray, cryptocrystalline, dense; 10% sandstone, light gray-white, fine-medium, subround well cemented, salt and pepper in part, siliceous cemented, tight, no visible porosity, NOSCF; fossil (straight coil ammonite(?))

- 3600-3620 60% shale, brown, red brown, soft; 30% limestone, light gray, dark gray, tan, fine crystalline, shaly, dense, dolomitic; 10% siltstone, red brown, dense, tight slightly calcareous, trace chert, light gray.
- 3620-3660 60% limestone, dark tan, fine-very fine crystalline, dense, dolomitic; 30% shale, brown, light purple, light gray, soft, blocky; 10% siltstone, red brown calcareous, tight, shaly in part; trace calcite, crystal fragments, white.
- 3660-3720 60% siltstone, red brown, shaly, calcareous, tight; 30% shale, brown, maroon, red-brown, light gray, light orange, soft blocky; 10% limestone, light tan, very fine crystalline dense; trace calcite, white crystals with pyrite replacement in crystals.
- 3720-3740 40% sandstone, light gray-light pink, very fine-coarse, slightly calcareous, siliceous cement, well cemented, abundant coarse grain, subangular-subround, frosted in part; black shale inclusion well round and angular in part; no visible porosity, NOSCF; 30% shale, red brown, brown, silty in part, slightly calcareous in part, blocky; 20% shale, light-dark gray; 10% siltstone, red brown, shaly, slightly calcareous, shaly; trace limestone, light brown, tan dense, abundant chert, light orange, light gray, trace calcite white fragments.
- 3740-3780 No Samples.
- 3780-3800 70% sandstone, light gray, fine-very fine, subround, well cemented, white clay cement, siliceous in part, very slightly calcareous, tight, no visible porosity, NOSCF; 30% shale, brown, red brown, light green gray, purple, soft, silty in part; abundant chert, white, smokey, light gray; little shale, black, carbonaceous.
- 3800-3820 80% sandstone as above; abundant light orange, fine grains of chert in the sandstone; 20% shale, varicolored as above mostly brown; trace chert, light gray, light amber.
Fossil fragment, straight ammonite(?) loose.
- 3820-3860 70% shale, red brown, silty, few fracture fillings and inclusions of white calcite, very limy in part grading to limestone, very shaly; 20% siltstone, red brown, slightly calcareous, tight, floating medium grains well rounded sand grains, very shaly; 10% limestone, red-brown, very fine, dense; trace clear quartz crystals, coarse; chert, light gray, amber; abundant white calcareous fragments.
- 3860-3900 80% siltstone, red brown, siliceous, hard, very slightly calcareous, occasional white clay inclusions of rectangular or angular in shape; 10% shale, brown, siliceous, hard

- brittle; 10% limestone, red brown, very fine crystalline-cryptocrystalline, dense, with inclusion of red chert in part, siliceous in part; abundant chert, light gray, amber; abundant calcite, white as inclusions and veinlets; trace quartzite, light gray, some shale, light gray, orange, soft.
- 3900-3940 30% shale, brown, red brown, silty; 30% siltstone, red brown, shaly slightly calcareous; 30% siltstone, red brown, siliceous, hard brittle with few well rounded sandstone grains floating; 10% shale, light gray, gray, soft, trace chert, amber, light gray; trace calcite white; abundant shale, black carbonaceous; trace limestone, red, light gray, cryptocrystalline, dense.
- 3940-3960 40% sandstone, pink-lavender very siliceous, hard, dense, no visible porosity, crystalline (?) in part, (volcanic flow?); 30% shale, red brown-brown, silty in part; 20% siltstone, red brown, glassy, siliceous with few coarse well rounded grains floating; 10% shale, light gray, black, orange, soft.
- 3960-3980 70% sandstone, pink-lavender with very siliceous, glassy, with altered white clay replacements, (rectangular such as feldspars outlines); 30% shale, red brown, brown, soft and light green soft, trace calcite white crystal fragments; trace shale black, carbonaceous.
- 3980-4000 50% sandstone, pink, lavender, red brown as above; 30% shale as above; 10% sandstone, light tan, medium, subround, clay cement, tight, no visible porosity, well cemented inclusions of white clay, siliceous and clay cement.
- 4000-4020 60% shale, dark brown, blocky, silty in part, slightly calcareous, slight mica in part; 20% sandstone, pink, light orange as above; 10% shale, red brown, gray, light purple; 10% sandstone, light tan as above with trace pyrite.
- 4020-4040 70% shale, dark brown, blocky, slightly calcareous in part, silty in part; slightly micaceous; 20% sandstone, pink, light brown, fine, glassy, siliceous, (volcanic?); 10% shale, light orange, light gray green, light purple, red brown, soft.
- 4040-4060 70% shale, dark brown as above; 20% shale, light green, gray green, black, red brown, blocky-fissile, mottled in part; 10% sandstone, light brown, pink, glassy, siliceous, grading to siltstone ? tight, hard, trace chert (obsidian?) light brown.
- 4060-4080 No Samples.
- 4080-4100 60% shale, dark brown, blocky, slightly calcareous, silty in part; 20% siltstone, dark brown-shaly, tight, siliceous calcareous; 20% shale, light gray, gray green, light purple,

- mottled in part; with light calcite crystals in fracture and intergrowths in siltstone, little sandstone, light gray fine-medium, subangular, clay cement, no visible porosity.
- 4100-4140 70% sandstone, light brown-tan, medium-very fine, well rounded, well cemented, clay cement, occasional coarse well rounded sand grains, siliceous in part, slightly calcareous, no visible porosity, NOSCF; few angular fragments of chert clear, black, orange-brown; 20% shale, dark brown, red brown, blocky, silty, fissile in part, siliceous in part; shale light blue green, light gray, black, soft-blocky.
- 4140-4200 80% sandstone, light tan, medium-coarse, subangular-subround, well cemented, white clay cement, siliceous in part, slightly calcareous, white clay (inclusions?) dispersed thruout some of sandstone.
- 4200-4220 70% siltstone, light brown-tan, hard, tight, silty in part, siliceous in part; 20% shale, brown, red-brown, light gray green, mottled in part; 10% sandstone, light tan, very fine-medium, subrounded, tight, trace calcite crystal white fragments and veinlets.
- 4220-4270 80% sandstone, light tan, fine-very fine, subround, siliceous, slightly calcareous, well cemented white clay cement, no visible porosity, NOSCF; slightly salt and pepper appearance, with dark fragments in sandstone; 20% shale, dark brown, red brown, silty in part and light gray, light purple, soft; trace shale black.
- 4270-4280 60% siltstone, light orange-tan, tight, dense, sandy; 20% sandstone, tan, light brown, very fine-fine, subround, white clay cement, slightly calcareous, siliceous, no visible porosity; 20% shale, dark brown, light gray, red brown, silty in part, trace calcite ?
- 4280-4290 Siltstone as above; shale as above; traces sandstone, light tan, fine-coarse, subround with coarse well rounded frosted sandstone grains.
- 4290-4300 50% shale, dark gray, red brown; blocky, silty in part; 10% shale, light gray, white, light gray green, soft; 30% siltstone, light brown-tan, as above; 10% sandstone, gray, brown, fine-medium, subround-subangular, tight, well cemented, slightly calcareous.
- 4300-4330 70% sandstone, tan-light brown, fine, well cemented, white clay cement, slightly calcareous, tight siliceous in part, no visible porosity, NOSCF; with occasional coarse well rounded grains; 20% shale, dark brown, red-brown, blocky-fissile, silty in part; 10% shale, light gray, light gray green, soft-siliceous; trace limestone, light gray very

- fine crystalline, dense, dolomitic, trace pyritic nodules.
- 4330-4350 60% shale, dark brown, red brown, silty in part, brittle, blocky, siliceous in part; 30% sandstone as above; 10% shale, light-dark gray, soft-fissile, trace white calcite fragments.
- 4350-4400 70% sandstone, tan, light brown, fine-medium, subround, siliceous in part, tight calcareous in part, white clay cement, no visible porosity, NOSCF, grading to siltstone; 30% shale, dark-medium brown, light-dark gray.
- 4400-4430 50% siltstone, light brown-tan, firm, tight, sandy, slightly calcareous, siliceous; 30% sandstone, tan, fine-medium, salt and pepper as above; 20% shale, dark brown, red-brown, light-medium gray.
- 4430-4450 60% sandstone as above; 20% siltstone as above; 20% shale as above.
- 4450-4460 70% sandstone, tan-light brown, very fine, subangular-sub-round, tight, siliceous in part, calcareous in part, occasional coarse well rounded clear sandstone grains, few veinlets of white calcite, trace vugs filled with gypsum white crystalline; 30% shale as above, trace calcite white crystal fragments.
- 4460-4470 As above, trace sandstone, medium-coarse, subangular-sub-round, well cemented, tight, siliceous, with well rounded frosted grains.
- 4470-4500 60% sandstone, light brown, fine-medium, subround, calcareous, few calcite filled veinlets, siliceous in part, salt and pepper appearance with black well rounded grains in sandstone, occasional white clay filling and as pseudo-(re-paired) feldspar crystals; 20% shale, brown, light gray, light gray green, silty in part;
- 4500-4530 60% siltstone, light brown, tight, siliceous, slightly calcareous, shaly; 20% shale, dark brown, light gray, siliceous in part; 20% sandstone, light brown as above, occasional chert gray, light yellow; trace calcareous, white fragments.
- 4530-4570 60% shale, dark brown, silty, slightly calcareous in part, 30% siltstone as above; 10% sandstone as above.
- 4570-4590 65% sandstone, light brown, fine-medium, subround, tight, well cemented, siliceous in part, calcareous in part, no visible porosity, NOSCF; 5% sandstone, light tan, fine-coarse, well rounded, frosted in part, dirty, white clay filling pore space, no visible porosity, dirty looking; 30% shale, dark gray, light gray, gray green, purple gray, shaly.

- 4590-4660 70% sandstone, light brown, fine-medium, subround, slightly calcareous, siliceous in part, shaly, salt and pepper in part; fractures and veinlets filled with white calcite; 30% shale, dark brown, light gray, light gray purple, trace pyrite, trace calcite white, fragments.
- 4660-4690 40% sandstone, light tan-cream, fine-medium, poor sorting, subround-round, slightly calcareous, siliceous in part, tight, well cemented, some coarse well rounded frosted grains; 30% sandstone, light brown as above; 30% shale, dark brown, light gray as above, trace chert, light gray.
- 4690-4720 50% siltstone, light brown, firm, slightly calcareous, siliceous in part; 30% sandstone, sandstone, light brown, fine-medium, subround, calcareous, slightly siliceous in part, tight, no visible porosity, NOSCF; slightly salt and pepper; 20% shale as above.
- 4720-4730 60% shale, dark brown, gray, light gray, dark gray, blocky-fissile; 30% sandstone, light brown-light tan, very fine-medium, well cemented, white clay filling pore space, slightly calcareous; 10% siltstone, dark brown, tight.
- 4730-4780 70% sandstone, light tan-light brown, fine-medium, sub-well rounded, light gray, clay cement, slightly calcareous, slightly salt and pepper, NOSCF; 20% shale, dark brown, gray-light gray, light purple gray; 10% siltstone, tan brown, slightly calcareous, shaly.
- 4780-4800 50% siltstone, light brown-tan, firm, slightly calcareous, sandy, siliceous in part; 30% sandstone as above; 20% shale as above; trace limestone, dark red brown, siliceous, very hard, dense, sub lithographic.
- 4800-4810 60% sandstone, light tan, fine-medium, subround-round, few coarse, poor sorting, well cemented, white clay filling, slightly calcareous, siliceous in part, tight, no visible porosity; 30% siltstone as above; 10% shale, dark brown, gray as above; trace chert bright orange, light gray.
- 4810-4890 60% siltstone, tan-light brown, tight, cement, slightly calcareous, siliceous in part, shaly; 20% shale, dark brown, gray, dark gray, purple gray, blocky-fissile; 10% sandstone, light tan, fine-medium as above; trace anhydrite, veinlet filling in siltstone, trace chert bright orange, light gray, trace calcite white.
- 4890-4900 Sandstone, tan-light brown, fine-medium, subround-round, well cemented, siliceous in part, slightly calcareous, white clay filling of pores, slight amount white anhydrite, filling clasts, few white calcite veinlets, no visible porosity, NOSCF; shale, dark brown, gray, light gray, soft blocky; trace chert light orange.

- 4900-4920 80% siltstone, dark brown-tan, slightly calcareous, firm, shaly, sandy; 20% shale, dark brown, gray, dark gray; trace sandstone as above, trace chert bright orange and clear banded in part.
- 4920-4940 50% shale, dark brown, brown, light gray, gray green; 50% siltstone as above, trace calcite white; trace chert bright orange, trace limestone, light tan, cryptocrystalline crystalline, dense.
- 4940-4950 Trip Sample as above, more shale and abundant red siltstone and red shales (from above).
- 4950-5020 No Samples - Shale Shaker Down.
- 5020-5110 80% siltstone, light brown, calcareous, firm, sandy, shaly, few inclusions of orange chert and clear-white calcite and trace anhydrite filled inclusions; 20% shale, dark brown, light gray, gray green; trace limestone, red brown, cryptocrystalline-crystalline, dense; trace calcite with crystal fragments.
- 5110-5120 No Samples.
- 5120-5140 40% sandstone, light gray, very fine, subround, well sorted, very calcareous, slightly siliceous in part, white clay filling in pore space, with white calcite filled fracture, no visible porosity, NOSCF; 40% limestone, gray-dark gray, microcrystalline-fine crystalline, dense, white calcite filled fractures, no visible porosity or open fractures; NOSCF; 20% red brown, shale, siltstone, limestone from above.
- 5140-5180 80% limestone, gray-dark gray, very fine, microcrystalline, dense, hard, tight, blocky, few hair line fractures filled with calcite, shaly in part; with trace light bright green mineral on limestone fragments (mica in appearance), no visible porosity, NOSCF; 10% shale, dark gray, very calcareous, blocky, soft, fissile, hard; slight amount shale siltstone from above, little shale, siltstone, sandstone, limestone, brown from above; 10% sandstone, light gray very fine, very calcareous, tight, no visible porosity, NOSCF.
- 5180-5200 90% limestone, medium-dark gray, very fine microcrystalline, very dense, tight, occasional micro veinlet of calcite, platey-blocky, few fracture filled with crystals of white calcite (trace porosity between coarse crystals, no show at 5190'-5200'); NOSCF, few inclusions of tan opaque calcite; 10% limestone, light gray, very fine crystalline, very arenaceous, tight, argillaceous in part, little red shale, siltstone, limestone from above.

- 5200-5230 80% limestone, medium-dark gray, fine-microcrystalline, dense, tight, abundant fracture filled with white calcite (coarse crystals-very fine crystal), few micro veinlets of calcite, no visible porosity, NOSCF; 20% limestone, light gray, fine crystalline, very sandy, slightly pseudo oolitic in part, (with dark gray, semi flattened pseudo oolites) surrounded by limestone or calcite, no visible porosity.
- 5230-5250 100% limestone, medium gray, very fine-microcrystalline, dense, platy-blocky, dense, tight, dolomitic, brittle, few inclusions and fracture with calcite, no visible porosity, NOSCF; trace brecciated limestone and calcite tight cement; trace crinoid stem (?) 5240'-5250.
- 5250-5290 90% limestone, medium gray as above; 10% limestone, light gray, sub lithographic, slightly earthy.
- 5290-5300 As above; trace limestone, dark gray, fine crystalline, with dark gray oolites, cemented with lighter limestone; no visible porosity.
- 5300-5400 80% limestone, medium-dark gray, microcrystalline-sub lithographic, hard, dense, platy-blocky, argillaceous, micro veinlets of calcite, abundant calcite filled (crystalline) fractures, no visible porosity, NOSCF; 20% limestone, light gray, amorphous, soft-medium hard, arenaceous, banded, light and dark in part, argillaceous; trace brachiopod (?) fragment 5360'-5370; trace pyrite 5390'-5400'.
- 5440-5430 Limestone, medium-dark gray, very fine microcrystalline, dense, tight, clean, platy-blocky, micro veinlets of white calcite, fractures with white, tan calcite, no visible porosity, NOSCF; 10% limestone, dark gray, cryptocrystalline, argillaceous, tight, platy, dense, brittle; 10% limestone, light gray, amorphous, very fine crystalline, soft-medium hard, platy.
- 5430-5440 90% limestone, medium-dark gray as above; 10% limestone, gray, fine crystalline, dense, argillaceous, sandy, tight.
- 5440-5500 90% limestone, medium-dark gray as above, micro veinlets more abundant, fractures filled with slightly pink calcite and white calcite, no visible porosity, NOSCF; 10% limestone, light gray, fine crystalline, dense arenaceous, dense, hard, tight; trace fine crystalline disseminated pyrite crystals in limestone matrix at 5440'-5450.
- 5500-5550 90% limestone, medium-dark gray, very fine microcrystalline, dense, argillaceous, brittle, blocky, micro veinlets of calcite, fractures with calcite filling common, 1/2 mm wide, no visible porosity, NOSCF; 10% limestone, light gray, amorphous, soft-medium hard.

- 5550-5610 90% limestone, dark gray as above; 10% shale, light gray, silty, very calcareous, with calcite veinlets-grading into limestone, silty-shaly.
- 5610-5660 90% limestone, dark gray as above, trace pyrite disseminated in limestone, fracture filling increases from the $\frac{1}{2}$ mm to $1\frac{1}{2}$ mm in size on one piece; 10% limestone, light gray, silty, shaly as above; trace pyritic disseminations and as limestone breccia cement (one piece small); indistinct pelecypod (?) fossil at 5619'-5620'.
- 5660-5700 80% limestone, dark gray-medium gray, very fine microcrystalline as above; 10% limestone, black-dark gray; 10% limestone, light gray, very shaly; trace pyrite disseminated in limestone at 5670'-5690'.
- 5700-5790 80% limestone, medium-dark gray, very fine microcrystalline, dense, brittle argillaceous, hard, platy-blocky, micro veinlets of calcite, abundant fracture filled with white calcite, $\frac{1}{2}$ - $1\frac{1}{2}$ mm wide, coarse crystalline in part; 20% limestone, light gray amorphous, soft occasional micro veinlets of calcite, soft, shaly, silty, few pieces of coarse crystals of white calcite from fractures (?).
- 5790-5800 30% sandstone, light pale green-green, very fine, very shaly, very calcareous in part, tight, occasional medium sub-angular grains floating, with fractures ($\frac{1}{2}$ - $1\frac{1}{2}$ mm) filled with white calcite, no visible porosity, NOSCF; 30% shale light green gray, soft, very silty, very calcareous in part; 30% limestone, dark gray-dark brown, very fine crystalline, shaly, platy with calcite filled fractures; 10% limestone, light gray amorphous as above.
- 5800-5820 10% sandstone as above; 70% limestone, dark gray, dark gray brown, very fine crystalline, dense, blocky-platy, argillaceous, tight, brittle, micro veinlets with calcite, fractures filled with calcite ($\frac{1}{2}$ -2 mm wide), no visible porosity, NOSCF; 20% limestone, light gray, amorphous to crypto to crystalline, soft-medium hard, fragment fossil pelcypod (?), 5800'-5810'.
- 5820-5840 40% limestone, dark gray-dark gray brown as above; 40% limestone, dark gray, microcrystalline, dense, very argillaceous, platy, dense; 20% limestone, light gray as above.
- 5840-5860 50% siltstone, light gray-white, tight, well cemented, very calcareous, siliceous cement; no visible porosity, NOSCF; 30% limestone, light gray, fine crystalline-very fine crystalline, dense, blocky, rare fracture with white calcite filling, no visible porosity, NOSCF; 20% limestone, dark gray as above.
- 5860-5870 60% limestone, light gray-gray, very fine crystalline, dense, blocky, occasional fracture with white calcite filling (1 mm) blocky, no visible porosity, NOSCF; 20% limestone, dark gray

- microcrystalline, dense, blocky-platy, shaly; 20% limestone dark gray, microcrystalline, dense, blocky-platy.
- 5870-5890 60% limestone, dark gray as above; 20% limestone, light gray as above; 20% siltstone, light gray, very calcareous, tight.
- 5880-5890 Trip sample abundant cave from above.
- 5890-5930 70% limestone, dark gray, microcrystalline tight dense, very argillaceous, platy-blocky, abundant calcite filled fractures up to coarse crystals in size, few micro veinlets of calcite; 30% limestone, light gray, amorphous, very shaly, soft; trace pyrite crystals finely disseminated in limestone, abundant slough from above.
- 5930-5940 30% siltstone, light gray-white, very calcareous, soft, grading to limestone very sandy; 30% limestone, dark gray as above; 20% limestone, light medium gray fine crystals, dense, blocky; 20% limestone, light gray-white, amorphous, soft, no visible porosity, NOSCF.
- 5940-5950 70% siltstone, light gray as above; 30% limestone, light-medium-dark gray as above, no visible porosity, NOSCF.
- 5950-5970 70% limestone, dark-medium gray, very fine microcrystalline, dense, blocky, argillaceous, few fractures filled with white calcite, no visible porosity, NOSCF; 30% limestone, light-medium, very fine crystalline argillaceous, dense, blocky, occasional trace sucrosic white anhydrite inclusion, tight, no visible porosity; 1% siltstone as above, trace pelecypod (?) fossil 5950'-5960'.
- 5970-6000 60% limestone, dark gray, microcrystalline-very fine crystalline, dense, tight, argillaceous in part, blocky-platy, fractures filled with white calcite, no visible porosity, NOSCF; 20% limestone, light gray, very shaly, soft; 10% siltstone as above.
- 6000-6010 60% siltstone, light gray-white, very calcareous, medium-hard-soft, shaly, no visible porosity; 20% limestone, dark gray as above; 20% shale, light gray, white, soft very calcareous; trace anhydrite white sucrosic.
- 6010-6050 80% limestone, medium-dark gray, very fine crystalline-micro crystalline, dense, hard, tight, argillaceous, platy-blocky, occasional micro veinlets of calcite, abundant fractures filled with white calcite crystals, no visible porosity, NOSCF; 20% limestone, light gray, very shaly, soft, amorphous, silty in part; no visible porosity; trace anhydrite white sucrosic at 6040'-6050'.

- 6050-6100 80% limestone, medium-dark gray, dense, argillaceous tight, micro veinlets of calcite, abundant fractures filled with white calcite crystals, (very fine crystals), siliceous, no visible porosity, NOSCF; 20% limestone, light gray, very shaly amorphous, soft-medium.
- 6100-6180 70% limestone, medium gray-brown gray, microcrystalline, dense, blocky, abundant fractures with calcite filling, no visible porosity, NOSCF; 30% limestone, light gray very shaly, amorphous, soft-medium, occasional micro veinlets of oolite, trace light gray oolitic limestone with white calcareous cement surrounding oolites, no porosity at 6120'-6130'.
- 6180-6200 50% limestone, gray brown-dark gray, very fine crystalline as above; no shows, no porosity, very abundant fracture with white calcite; 50% limestone, light gray, soft amorphous shaly, as above, trace limestone, dark tan, oolitic with light gray matrix, tight.
- 6200-6250 70% limestone, gray brown, very fine crystalline-micro-crystalline, dense, siliceous, hard, blocky, with calcite micro veinlets, abundant fractures filled with white calcite, no porosity, NOSCF; 30% limestone, light gray as above, trace dark gray oolitic limestone, well cemented with matrix very dense, no porosity.
- 6250-6280 60% limestone, dark gray, brown, very fine crystalline-microcrystalline, dense, blocky; very shaly in part, few veinlets with calcite filling, fractures with white calcite filling, no porosity, NOSCF; 30% limestone, light gray-tan very fine crystalline-oolitic in part, dense, tight, no porosity; 10% limestone, light gray, very shaly, soft, trace anhydrite, sucrosic, soft, pyritic 6270'-6280'.
- 6280-6300 70% limestone, dark gray brown as above; 10% limestone, light tan, microcrystalline, dense; 20% limestone, light gray shaly, silty, anhydrite increasing to 5%+-.
- 6300-6340 70% siltstone, red brown, shaly, tight, medium-hard-soft, occasional fracture with white calcite filling; 30% shale, red brown, brown, silty in part, little limestone, dark gray from above, trace anhydrite, white, sucrosic.
- 6340-6360 40% limestone, medium-dark gray, micro-very fine crystalline, blocky, argillaceous in part, rare inclusion of white sucrosic anhydrite; 30% limestone, light gray, amorphous, soft, shaly; 30% siltstone, red brown as above.
- 6360-6380 40% limestone, dark gray, micro-very fine crystalline, blocky-platy; argillaceous, no visible porosity, NOSCF; 40% limestone, light gray, very sandy (fine), tight, dense, grading to sandstone, light gray, very fine, subround well

- sorted, very calcareous, no visible porosity, NOSCF; trace purple disseminated in limestone, abundant calcite fragments; trace anhydrite, white sucrosic.
- 6380-6410 50% limestone, dark gray as above; 20% limestone, light gray, soft, amorphous, shaly as above; 30% sandstone, light gray, very fine, subround, well cemented, (calcareous cement), no visible porosity, NOSCF.
- 6410-6450 70% limestone, dark gray-dark gray brown, microcrystalline, dense, blocky-platy, occasional micro veinlets with calcite, fractures with white calcite filling, no visible porosity, NOSCF; 30% limestone, light gray, sublithographic-amorphous, medium-hard, soft, abundant calcite fragments, white.
- 6450-6500 80% limestone, dark gray, microcrystalline, dense, platy-blocky, argillaceous, micro veinlets, calcite, fracture filled with calcite, no visible porosity, NOSCF; 20% limestone, light gray, very fine crystalline-amorphous, medium-hard-soft, no visible porosity, NOSCF, trace white calcite fragments.
- 6500-6550 As above.
- 6550-6600 As above.
- 6600-6700 Limestone, dark gray as above.
- 6700-6750 80% limestone, dark gray, microcrystalline-very fine crystalline, dense, few micro veinlets calcite filled, fractures filled with calcite, no visible porosity, NOSCF; 20% limestone, light gray amorphous, soft..
- 6750-6770 Limestone, dark gray as above; limestone light gray as above; trace pyrite 6760'-6770'; trace limestone dark gray oolitic, flattened, surrounded by light gray matrix 6760'-6770'.
- 6770-6780 40% limestone, dark gray-dark gray brown, very fine crystalline, dense, argillaceous, fractures filled with calcite, blocky-sub platy, no visible porosity; 30% shale red brown, brown, light orange, soft-medium-hard, blocky-platy, very slightly calcareous in part, silty; 30% limestone, light gray, soft, silty.
- 6780-6790 60% shale, light red brown, orange, brown, anhydritic veinlets, silty in part; 30% limestone, dark gray as above; little shale light gray subwaxy; 10% limestone, red-brown, very fine crystalline, dense; trace calcite white with orange stain on vein filling of limestone; little anhydrite white sucrosic, soft.

- 6790-6800 40% limestone, medium-dark gray, very fine crystalline, dense, tight, platy-blocky, argillaceous; 20% limestone, light gray, amorphous, soft-very shaly; 30% shale, light red-brown, orange, brown, with anhydrite inclusions and veinlets; 10% limestone, light brown, very fine crystalline, dense, little anhydrite, white, sucrosic, soft, fractures with white calcite filling.
- 6800-6830 40% shale, light-medium, firm, slightly calcareous; 30% shale, red brown, orange, light gray; 20% limestone, dark gray as above; 10% anhydrite, white, soft, sucrosic; trace pyrite 6810'-6820'.
- 6830-6860 60% shale, red brown, brown, light gray, light gray green, slightly calcareous in part, silty in part, very anhydritic as inclusions and veinlets; 30% limestone, dark gray as above; 10% anhydrite white sucrosic, soft, trace chert light gray-orange stain.
- 6860-6900 40% limestone, dark tan-dark gray, fine crystalline-micro crystalline, dense, tight, shaly, occasional fracture with white calcite; 40% shale, red brown, silty in part, anhydrite in part, with veinlets filled with white sucrosic anhydrite, few inclusions filled with anhydrite; 10% shale, light gray, soft very calcareous; 10% anhydrite, white, soft, sucrosic-crystalline.
- 6900-6910 40% siltstone, red-brown, very calcareous, hard, dense, tight cement; 30% limestone, dark tan, dark gray as above; 20% anhydrite, white, soft, sucrosic to crystalline, inter-layered and banded with light gray very fine crystalline limestone.
- 6910-6940 30% limestone, dark gray, very fine crystalline, very shaly, dense, tight, blocky; 30% shale, red, brown, silty in part, anhydritic in part (veinlets); 20% shale, light gray, very limy, very anhydritic as inclusions and as veinlets; 20% anhydrite, white, soft, sucrosic, medium crystalline; slight shale, black, calcareous, fissile in part; little limestone, light tan, very fine crystalline, dense, blocky.
- 6940-6950 50% shale, red brown, brown, silty in part, waxy in part, anhydritic in part; 20% shale, light gray, medium gray, silty; 20% limestone, dark gray, microcrystalline, dense; few fractures with calcite filling; 10% limestone, tan, very fine crystalline, dense, slight fractures with anhydrite inclusion fillings; 10% anhydrite, white, sucrosic to massive.
- 6950-6980 70% limestone, light-medium gray, very fine-microcrystalline, dense, argillaceous, hard, tight, blocky, few fractures with white calcite filling; 20% anhydrite, soft, massive to

to sucrosic; 10% shale, red-brown, gray as above; trace chert light gray with slight orange tint 6960'-6970'; trace calcite, white coarse crystal cluster.

- 6980-7000 50% limestone, light medium-dark gray brown, very fine crystalline, dense, shaly in part; interbed with light gray anhydritic shale, soft; 10% shale, light gray, soft, silty in part; 10% shale red-brown, brown, light purple, silty in part; 30% anhydrite.
- Top Nugget Sandstone Samples 6999'.
- 7000-7030 Sandstone, light salmon, very fine, subangular-subround, very well cemented with siliceous cement, quartzitic in part, well sorted, abundant very fine angular chips of orange chert scattered through the sandstone, occasional well round, medium-coarse sandstone in well sorted layers, very tight, very brittle, no visible porosity, NOSCF; little limestone dark gray and shale red brown from above.
- 7020-7030 trace fracture in very quartzitic piece with bright orange staining on 2 flat sides (about @ right angles).
- 7030-7050 90% sandstone, light salmon, fine-very fine, subangular-subround, well cemented, siliceous cement and white clay cement, less quartzitic than above, few medium grains of well round sand grains included in sand, very common specks of orange chert and black mineral dispersed thruout, occasional light gray green shale fragments included in sandstone, trace hairline fractures with thin layer of white clay on surface, tight, no porosity, NOSCF; little limestone, light-medium gray, from above and shale, red, anhydrite, white from above (cavings).
- 7050-7120 100% sandstone, white to light salmon fine-very fine, sub-round, few medium grains of well round, frosted grains, well cemented, quartzitic in part, white clay cement and siliceous cement, abundant bright orange chert (?) angular fragments in sand, occasional black and light green specks in sand, white clay filling pore space, no visible porosity, NOSCF; trace fracture surfaces with white clay film on surface at 7100'-7110'.
- 7120-7150 100% sandstone, light salmon, fine-medium, subangular-subround, well cemented well sorted, siliceous and white clay cement, quartzitic in part, abundant clear well round quartz grains medium break across grains, trace very poor quality intergranular porosity in medium sand, NOSCF.
- 7150-7210 100% sandstone, white-light salmon, fine-medium as above becoming more quartzitic, poorly sorted; no visible porosity, NOSCF.

- 7210-7230 100% sandstone, pink, light salmon, fine-medium subangular-subround, well-poor cement, clay cement, trace intergranular porosity, siliceous in part, trace dark chert and light green shale inclusions in sandstone, few medium-coarse loose grains well round, frosted in part, NOSCF;
DST #1 7175'-7240
- 7230-7260 Sandstone salmon as above, no porosity becoming well cemented, very siliceous and quartzitic, no visible porosity, NOSCF, abundant cavings.
- 7260-7280 100% sandstone, salmon, fine, subround-subangular, well cemented, clay cement, scattered light orange grains thruout, (subangular to well round), quartzitic in part, no visible porosity, NOSCF; trace quartzite clear, fine-medium, tight.
- 7280-7310 100% sandstone, light salmon-light pink, fine, subround well cemented, clay cement, occasional medium well round frosted grain floating in sandstone, interpore space filled with clay, slightly quartzitic in part, most fragments crush under pressure, trace flat surfaces that indicate possible fractures, no visible porosity, NOSCF; abundant shales, limestone, siltstone from above.
- 7310-7350 100% sandstone, salmon-white, fine-medium, subangular-subround, tight, well cemented, clay cement, no visible porosity, quartzitic in part, few loose medium well round frosted grains, no visible porosity.
DST #2 7254'-7350'
- 7350-7370 100% sandstone, salmon-light pink, fine-medium, subround-subangular, well cemented, poor sorting, clay cement, tight, quartzitic in part, no visible porosity, NOSCF; more siliceous than above very abundant caving from above up to 50%.
- 7370-7410 100% sandstone, salmon-light pink, fine-medium, subround-subangular, well cemented, siliceous and clay cement, very siliceous in part, occasional coarse, well round, frosted grains floating or in clusters, cement with clay, no visible porosity, specks of orange chert and light gray clay inclusions, poor sorting, no visible porosity, NOSCF.
- 7410-7460 100% sandstone, light pink-white, very fine-fine, subround, well cemented, fair sorting, well cemented, siliceous and clay cement, quartzitic in part, occasional medium-coarse well round frosted to clear, abundant light orange subround to angular specks in sandstone, no visible porosity, NOSCF.
- 7460-7520 100% sandstone, light salmon, very fine-fine as above, becoming less siliceous, no visible porosity, NOSCF; abundant caving from above.

- 7520-7540 No Samples.
- 7540-7570 100% sandstone, white, light salmon, very fine-medium, subround well cemented, siliceous and clay cement, no visible porosity, abundant orange fragments or specks in sandstone, fracture surface with light gray $\frac{1}{2}$ mm clay coating on sandstone fragment, 7540'-7550', no visible porosity, NOSCF; abundant cavings from above.
- 7570-7580 100% sandstone as above becoming more siliceous, very poor sample abundant cavings.
- 7580-7600 100% sandstone, light salmon, very fine-fine, subround, well cemented, siliceous and clay cement, tight, no visible porosity, slightly quartzitic in part, abundant specks of orange and black inclusions (very fine sandstone size), few medium well round frosted sandstone grains floating occasionally.
- 7600-7650 100% sandstone as above, occasional fragment white quartzite, hard, dense, fracture, open-slightly filled with gray clay at 7630'-7640', NOSCF.
- 7650-7700 100% sandstone, salmon-white, very fine-fine, subround-sub-angular, well cemented, clay and siliceous cement, abundant small specks of light orange and black inclusions in sandstone, occasional medium, well round, frosted in part, sandstone grains floating or in clusters, no visible porosity, quartzitic in part, no visible porosity, NOSCF.
- 7700-7730 100% sandstone, salmon-white, very fine-fine, subangular-subround, well cemented, clay and siliceous cement, quartzitic, in part, no visible porosity, little sandstone, white, fine-medium, subround, quartzitic, tight, no visible porosity, NOSCF in sample, abundant cave from above.
- 7730-7750 Sandstone, light salmon-white, very fine-fine, subangular, subround, well cemented, siliceous cement, very quartzitic in part, no visible porosity, NOSCF.
- 7750-7770 Sandstone, white-light salmon, very fine-fine, subround, very tight, siliceous, well cemented, abundant black specks a few orange specks in sandstone, clay and siliceous cement, no visible porosity, NOSCF.
- 7770-7803 Sandstone as above, becoming more white in color, more siliceous? no visible porosity, NOSCF; poor samples from trips and abundant cave from above Gyp Springs (?)



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February 17, 1983

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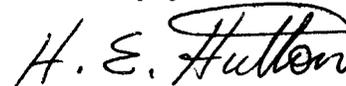
Dear Sirs:

Enclosed are your copies of the wellsite geologists field drilling time - Lithologic logs for Christmann & Associates, Bridger Creek Federal #2-20 well which is located in Section 20, T10N-R8E, Rich County, Utah.

In addition, one omission has been discovered in the geologic report which was transmitted earlier. Please add to the formation tops, a top for Undifferentiated Cretaceous at 1230' depth (+5289').

Thank you very kindly for your participation in this project.

Sincerely yours,



H. E. Hutton
Consulting Geologist

HEH/js

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OIL, GAS & MINING