



Kerr-McGee Oil & Gas Onshore LP  
1999 Broadway, Suite 3700  
Denver, CO 80205

November 20, 2008

Mrs. Diana Mason  
Division of Oil, Gas and Mining  
P.O. Box 145801  
Salt Lake City, UT 84114-6100

Re: Directional Drilling R649-3-11  
NBU 1022-3C1S  
T10S-R22E  
Section 3: NWNE/NENW  
Surface: 1040' FNL, 1787' FEL  
Bottom Hole: 380' FNL, 2354' FWL  
Uintah County, Utah

Dear Mrs. Mason:

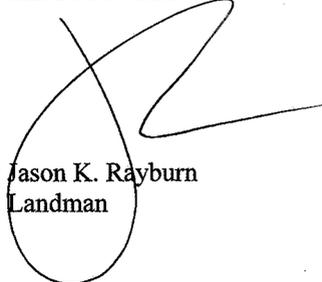
Pursuant to the filing of Kerr-McGee Oil & Gas Onshore LP's (Kerr-McGee) Application for Permit to Drill regarding the above referenced well, we are hereby submitting this letter in accordance with Oil & Gas Conservation Rule R649-3-11 pertaining to the Exception to Location and Siting of Wells.

- Kerr-McGee's NBU 1022-3C1S is located within the Natural Buttes Unit area.
- Kerr-McGee is permitting this well as a directional well in order to minimize surface disturbance. Locating the well at the surface location and directionally drilling from this location, Kerr-McGee will be able to utilize the existing road and pipelines in the area.
- Furthermore, Kerr-McGee certifies that it is the sole working interest owner within 460 feet of the entire directional well bore.

Therefore, based on the above stated information Kerr-McGee Oil & Gas Onshore LP requests the permit be granted pursuant to R649-3-11.

Sincerely,

KERR-MCGEE OIL & GAS ONSHORE LP



Jason K. Rayburn  
Landman

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DIV. OF OIL, GAS & MINING

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No. UTU-01191	
6. If Indian, Allottee or Tribe Name N/A	
7. If Unit or CA Agreement, Name and No. 891008900A	
8. Lease Name and Well No. NBU 1022-3C1S	
9. API Well No. 4304740437	
1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER	10. Field and Pool, or Exploratory Natural Buttes Field
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone	11. Sec., T. R. M. or Blk. and Survey or Area Sec. 3, T 10S, R 22E
2. Name of Operator Kerr-McGee Oil & Gas Onshore, LP	12. County or Parish Uintah
3a. Address P.O. Box 173779, Denver, CO 80217-3779	13. State UT
3b. Phone No. (include area code) 720.929.6226	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWNE 1040' FNL & 1787' FEL LAT 39.982444 LON -109.422378 (NAD 27) At proposed prod. zone NENW 380' FNL & 2354' FWL, Sec. 3, T10S, R22E	
14. Distance in miles and direction from nearest town or post office* 26.1 miles northeast of Ouray, Utah	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 380'	16. No. of acres in lease 1041.78
17. Spacing Unit dedicated to this well Unit Well	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20'	20. BLM/BIA Bond No. on file WYB000291
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 4966' GL	22. Approximate date work will start*
	23. Estimated duration 10 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature 	Name (Printed/Typed) Kevin McIntyre	Date 11/18/2008
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Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed) BRADLEY G. HILL	Date 12-08-08
Title Officer ENVIRONMENTAL MANAGER		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

\*(Instructions on page 2)

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Surf

BHL

Federal Approval of this  
Action is Necessary

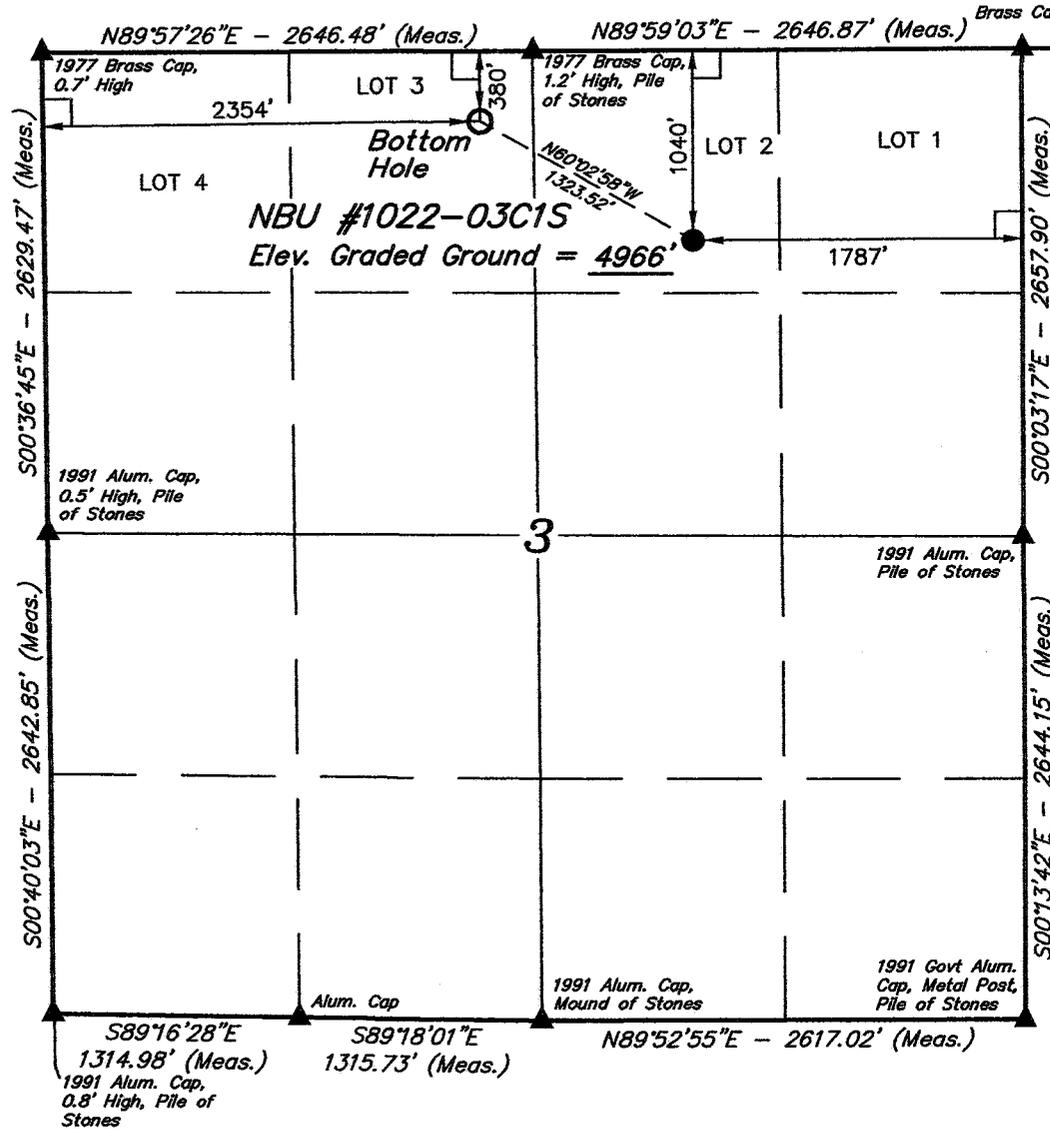
634710X  
44267764  
39.982316  
-109.422342

634358X  
44269734  
39.984146  
-109.426415

# T10S, R22E, S.L.B.&M.

## Kerr-McGee Oil & Gas Onshore LP

Well location, NBU #1022-03C1S, located as Shown in the NW 1/4 NE 1/4 of Section 3, T10S, R22E, S.L.B.&M., Uintah County, Utah.

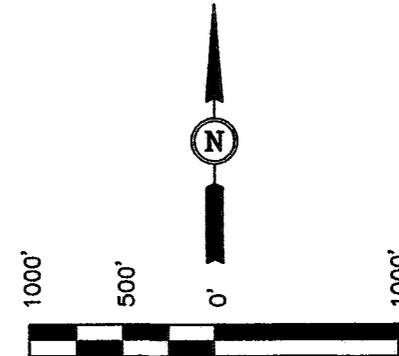


### BASIS OF ELEVATION

BENCH MARK (20EAM) LOCATED IN THE SE 1/4 OF SECTION 35, T8S, R21E, S.L.B.&M. TAKEN FROM THE OURAY SE QUADRANGLE, UTAH, UTAH COUNTY, 7.5 MINUTE SERIES (TOPOGRAPHICAL MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 4697 FEET.

### BASIS OF BEARINGS

BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



SCALE

CERTIFICATE

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

ROBERT KAY  
REGISTERED LAND SURVEYOR  
REGISTRATION NO. 161319  
STATE OF UTAH

**UINTAH ENGINEERING & LAND SURVEYING**  
85 SOUTH 200 EAST - VERNAL, UTAH 84078  
(435) 789-1017

### LEGEND:

- └─┘ = 90° SYMBOL
- = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.

NAD 83 (TARGET BOTTOM HOLE)		NAD 83 (SURFACE LOCATION)	
LATITUDE = 39°59'03.21" (39.984225)	LONGITUDE = 109°25'37.74" (109.427150)	LATITUDE = 39°58'56.68" (39.982411)	LONGITUDE = 109°25'23.02" (109.423061)
NAD 27 (TARGET BOTTOM HOLE)		NAD 27 (SURFACE LOCATION)	
LATITUDE = 39°59'03.33" (39.984258)	LONGITUDE = 109°25'35.28" (109.426467)	LATITUDE = 39°58'56.80" (39.982444)	LONGITUDE = 109°25'20.56" (109.422378)

SCALE 1" = 1000'	DATE SURVEYED: 08-19-08	DATE DRAWN: 09-10-08
PARTY L.K. K.R. C.C.	REFERENCES G.L.O. PLAT	
WEATHER HOT	FILE Kerr-McGee Oil & Gas Onshore LP	

**NBU 1022-3C1S  
Twin to NBU #229  
NWNE Sec. 3, T10S,R22E  
UINTAH COUNTY, UTAH  
UTU-01191**

**ONSHORE ORDER NO. 1**

***DRILLING PROGRAM***

**1. Estimated Tops of Important Geologic Markers:**

<u>Formation</u>	<u>Depth</u>
Uinta	0- Surface
Green River	1152'
Bird's Nest	1391'
Mahogany	1920'
Wasatch	4238'
Mesaverde	6624'
MVU2	7547'
MVL1	8097'
TVD	8800'
TD	9108'

**2. Estimated Depths of Anticipated Water, Oil, Gas, or Mineral Formations:**

<u>Substance</u>	<u>Formation</u>	<u>Depth</u>
	Green River	1152'
	Bird's Nest	1391'
	Mahogany	1920'
Gas	Wasatch	4238'
Gas	Mesaverde	6624'
Gas	MVU2	7547'
Gas	MVL1	8097'
Water	N/A	
Other Minerals	N/A	

**3. Pressure Control Equipment (Schematic Attached)**

*Please see the Natural Buttes Unit Standard Operating Procedure (SOP).*

**4. Proposed Casing & Cementing Program:**

*Please see the Natural Buttes Unit SOP. See attached drilling diagram.*

**5. Drilling Fluids Program:**

*Please see the Natural Buttes Unit SOP.*

6. **Evaluation Program:**

*Please see the Natural Buttes Unit SOP.*

7. **Abnormal Conditions:**

Maximum anticipated bottomhole pressure calculated at 9108' TD, approximately equals 5647 psi (calculated at 0.62 psi/foot).

Maximum anticipated surface pressure equals approximately 3643 psi (bottomhole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/foot).

8. **Anticipated Starting Dates:**

*Drilling is planned to commence immediately upon approval of this application.*

9. **Variances:**

*Please see Natural Buttes Unit SOP Onshore Order #2 – Air Drilling Variance  
Kerr-McGee Oil & Gas Onshore LP (KMG) respectfully requests a variance to several requirements associated with air drilling outlined in Onshore Order 2*

- *Blowout Prevention Equipment (BOPE) requirements;*
- *Mud program requirements; and*
- *Special drilling operation (surface equipment placement) requirements associated with air drilling.*

*This Standard Operating Practices addendum provides supporting information as to why KMG current air drilling practices for constructing the surface casing hole should be granted a variance to Onshore Order 2 air drilling requirements.*

*The reader should note that the air rig is used only to construct a stable surface casing hole through a historically difficult lost circulation zone. A conventional rotary rig follows the air rig, and is used to drill and construct the majority of the wellbore.*

*More notable, KMG has used the air rig layout and procedures outlined below to drill the surface casing hole in approximately 675 wells without incident of blow out or loss of life.*

*Background*

*In a typical well, KMG utilizes an air rig for drilling the surface casing hole, an interval from the surface to surface casing depths, which varies in depth from 1,700 to 2,800 feet.*

*The air rig drilling operation does not drill through productive or over pressured formations in KMG field, but does penetrate the Uinta and Green River Formations. The purpose of the air drilling operation is to overcome the severe loss circulation zone in the Green River known as the Bird's Nest while creating a stable hole for the surface casing. The surface casing hole is generally drilled to approximately 500 feet below the Bird's Nest.*

*Before the surface air rig is mobilized, a rathole rig is utilized to set and cement conductor pipe through a competent surface formation. Generally, the conductor is set at 40 feet. In some cases, conductor may be set deeper in areas that the surface formation is not found competent. This rig also drills the rat and mouse holes in preparation for the*

*surface casing and production string drilling operations.*

*The air rig is then mobilized to drill the surface casing hole by drilling a 12-1/4 inch hole to just above the Bird's Nest interval with an air hammer. The hammer is then tripped and replaced with a 12-1/4 inch tri-cone bit. The tri-cone bit is used to drill to the surface casing point, approximately 500 feet below the loss circulation zone (Bird's Nest). The 9-5/8 inch surface casing is then run and cemented in place, thereby isolating the lost circulation zone.*

*KMG fully appreciates Onshore Order 2 well control and safety requirements associated with a typical air drilling operations. However, the requirements of Onshore Order 2 are excessive with respect to the air rig layout and drilling operation procedures that are currently in practice to drill and control the surface casing hole in KMG Fields.*

#### *Variance for BOPE Requirements*

*The air rig operation utilizes a properly lubricated and maintained air bowl diverter system which diverts the drilling returns to a six-inch blooie line. The air bowl is the only piece of BOPE equipment which is installed during drilling operations and is sufficient to contain the air returns associated with this drilling operation. As was discussed earlier, the drilling of the surface hole does not encounter any over pressured or productive zones, and as a result standard BOPE equipment should not be required. In addition, standard drilling practices do not support the use of BOPE on 40 feet of conductor pipe.*

#### *Variance for Mud Material Requirements*

*Onshore Order 2 also states that sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring adequate well control. Once again, the surface hole drilling operations does not encounter over pressured or productive intervals, and as a result there is not a need to control pressure in the surface hole with a mud system. Instead of mud, the air rigs utilize water from the reserve pit for well control, if necessary. A skid pump which is located near the reserve pit (see attachment) will supply the water to the well bore.*

#### *Variance for Special Drilling Operation (surface equipment placement) Requirements*

*Onshore Order 2 requires specific safety distances or setbacks for the placement of associated standard air drilling equipment, wellbore, and reserve pits. The air rigs used to drill the surface holes are not typical of an air rig used to drill a producing hole in other parts of the US. These are smaller in nature and designed to fit a KMG location. The typical air rig layout for drilling surface hole in the field is attached.*

*Typically the blooie line discharge point is required to be 100 feet from the well bore. In the case of a KMG well, the reserve pit is only 45 feet from the rig and is used for the drill cuttings. The blooie line, which transports the drill cuttings from the well to the reserve pit, subsequently discharges only 45 feet from the well bore.*

*Typically the air rig compressors are required to be located in the opposite direction from the blooie line and a minimum of 100 feet from the well bore. At the KMG locations, the air rig compressors are approximately 40 feet from the well bore and approximately 60 feet from the blooie line discharge due to the unique air rig design. The air compressors (see attachment) are located on the rig (1250 cfm) and on a standby trailer (1170 cfm). A booster sits between the two compressors and boosts the output from 350 psi to 2000 psi.*

*The design does put the booster and standby compressor opposite from the blooie line.*

*Lastly, Onshore Order 2 addresses the need for an automatic igniter or continuous pilot light on the blooie line. The air rig does not utilize an igniter as the surface hole drilling operation does not encounter productive formations.*

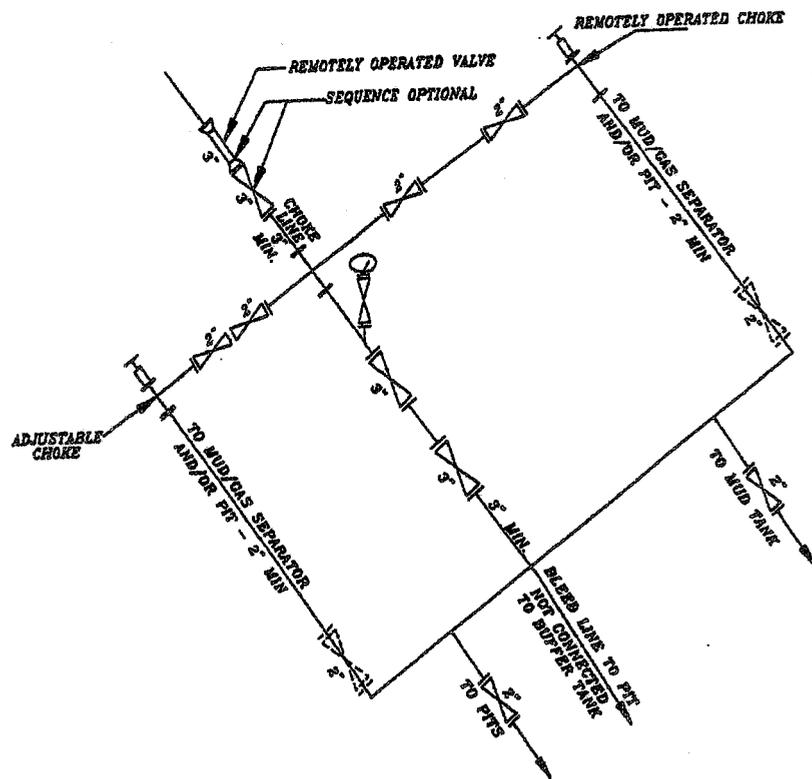
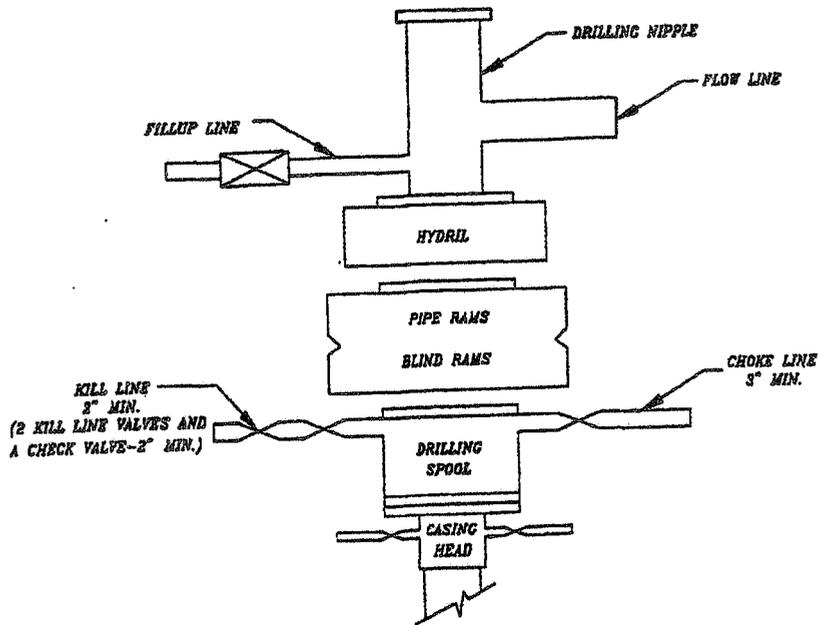
*Conclusion*

*The air rig operating procedures and the attached air rig layout have effectively maintained well control while drilling the surface holes in KMG Fields. KMG respectfully requests a variance from Onshore Order 2 with respect to air drilling well control requirements as discussed above..*

**10. Other Information:**

*Please see Natural Buttes Unit SOP.*

EXHIBIT A



**SCHEMATIC DIAGRAM OF 5,000 PSI BOP STACK**

NBU 1022-3C1S  
Twin to NBU #229  
NWNE Sec. 3 ,T10S,R22E  
UINTAH COUNTY, UTAH  
UTU-01191

ONSHORE ORDER NO. 1

***MULTI-POINT SURFACE USE & OPERATIONS PLAN***

1. **Existing Roads:**

Refer to the attached location directions.

Refer to Topo Maps A and B for location of access roads within a 2-mile radius.

2. **Planned Access Roads:**

Approximately 80' +/- of new access road is proposed. In addition, a road re-route of 210' is proposed. Refer to Topo Map B.

*Existence of pipelines; maximum grade; turnouts; major cut and fills, culverts, or bridges; gates, cattle guards, fence cuts, or modifications to existing facilities were determined at the on-site.*

*Please see the Natural Buttes Unit Standard Operating Procedure (SOP).*

3. **Location of Existing Wells Within a 1-Mile Radius:**

Please refer to Topo Map C.

4. **Location of Existing & Proposed Facilities:**

*Please see the Natural Buttes Unit SOP.*

Refer to Topo Map D for the location of the proposed pipelines.

**A right-of-way is required for the pipeline. The pipeline is approximately 8,650' in length and 30' in width. A 8" surface steel pipeline will be constructed utilizing existing disturbance where possible. The pipeline will be butt-welded together and pulled into place with a rubber tired tractor.**

**Variations to Best Management Practices (BMPs) Requested:**

Approximately 8,650' of 8" steel pipeline will be installed on surface within the access corridor for the well location. As a Best Management Practice (BMP), the pipeline would be buried within the access road corridor if possible. The construction of pipelines requires the corridor of 30 feet.

This exception to the BMP should be granted by the BLM Authorized Officer because indurated bedrock, such as sandstone, is at or within 2 feet of the surface and the soil has a poor history for successful rehabilitation.

All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded. The requested color is Shadow gray (2.5Y 6/2), a non-reflective earthtone.

**Interim Surface Reclamation Plan:**

This exception is requested due to the current twin and multi-well program. If determined that this well will not be a candidate for either twinning &/or multi-well the operator shall spread the topsoil pile on the location up to the rig anchor points. The location will be reshaped to the original contour to the extent possible. The operator will reseed the area using the BLM recommended seed mixture and reclamation methods.

**5. Location and Type of Water Supply:**

*Please see the Natural Buttes SOP.*

**6. Source of Construction Materials:**

*Please see the Natural Buttes SOP.*

**7. Methods of Handling Waste Materials:**

*Please see the Natural Buttes SOP.*

A plastic reinforced liner is to be used as discussed during on-site inspection. It will be a minimum of 20 mil thick and felt, with sufficient bedding used to cover any rocks. The liner will overlap the pit walls and be covered with dirt and/or rocks to hold it in place. No trash or scrap that could puncture the liner will be disposed of in the pit.

Any produced water from the proposed well will be contained in a water tank and will then be hauled by truck to one of the pre-approved disposal sites: RNI, Sec. 5, T9S, R22E, NBU #159, Sec. 35, T9S R21E, Ace Oilfield, Sec. 2, T6S, R20E, MC&MC, Sec. 12, T6S, R19E, Pipeline Facility Sec. 36, T9S, R20E, Goat Pasture Evaporation Pond SW/4 Sec. 16, T10S, R22E, Bonanza Evaporation Pond Sec. 2, T10S, R23E (*Request is in lieu of filing Form 3160-5, after initial production*).

8. **Ancillary Facilities:**

*Please see the Natural Buttes SOP.*

9. **Well Site Layout:** (See Location Layout Diagram)

The attached Location Layout Diagram describes drill pad cross-sections, cuts and fills, and locations of the mud tanks, reserve pit, flare pit, pipe racks, trailer parking, spoil dirt stockpile(s), and surface material stockpile(s).

Please see the attached diagram to describe rig orientation, parking areas, and access roads.

Location size may change prior to the drilling of the well due to the current rig availability. If the proposed location is not large enough to accommodate the drilling rig. The location will be re-surveyed and a form 3160-5 will be submitted.

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

*Please see the Natural Buttes SOP.*

Upon reclamation of the pit the following seed mixture will be used. A total of 12 lbs/acre will be used if the seeds are drilled (24 lbs/acre if the seeds are broadcast). The per acre requirements for *drilled* seed are:

Crested Wheatgrass      12 lbs.

Operator shall call the BLM for the seed mixture when final reclamation occurs.

11. **Surface/Mineral Ownership:**

United States of America  
Bureau of Land Management  
170 South 500 East  
Vernal, UT 84078  
(435)781-4400

12. **Stipulations/Notices/Mitigation:**

There are no stipulations or notices for this location.

13. **Other Information:**

A Class III archaeological survey and a paleontological survey have been performed and will be submitted.

This location is not within 460' from the boundary of the Natural Buttes Unit, nor is it within 460' of any non-committed tract lying within the boundaries of the Unit.

14. **Lessee's or Operator's Representative & Certification:**

Kevin McIntyre  
Regulatory Analyst  
Kerr-McGee Oil & Gas Onshore LP  
P.O. Box 173779  
Denver, CO 80217-3779  
(720) 929-6226

Randy Bayne  
Drilling Manager  
Kerr-McGee Oil & Gas Onshore LP  
1368 South 1200 East  
Vernal, UT 84078  
(435) 781-7018

Certification: All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, Onshore Oil and Gas Orders, the approved Plan of Operations, and any applicable Notice to Lessees.

Kerr-McGee Oil & Gas Onshore LP is considered to be the operator of the subject well. Kerr-McGee Oil & Gas Onshore LP agrees to be responsible under the terms and conditions of the lease for the operations conducted upon leased lands.

The Operator will be fully responsible for the actions of its subcontractors. A complete copy of the approved "Application for Permit to Drill" will be furnished to the field representative(s) to ensure compliance and shall be on location during all construction and drilling operations.

Bond coverage pursuant to 43 CFR 3104 for lease activities is being provided by Bureau of Land Management Nationwide Bond #WYB000291.

I hereby certify that I, or persons under my supervision, have inspected the proposed drill site and access route, that I am familiar with the conditions that currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed by the Operator, its contractors, and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

  
Kevin McIntyre

11/18/2008  
Date

Kerr-McGee Oil & Gas Onshore LP  
NBU #1022-O3A3S, #1022-03B4T,  
#1022-03B2S & #1022-03C1S  
SECTION 3, T10S, R22E, S.L.B.&M.

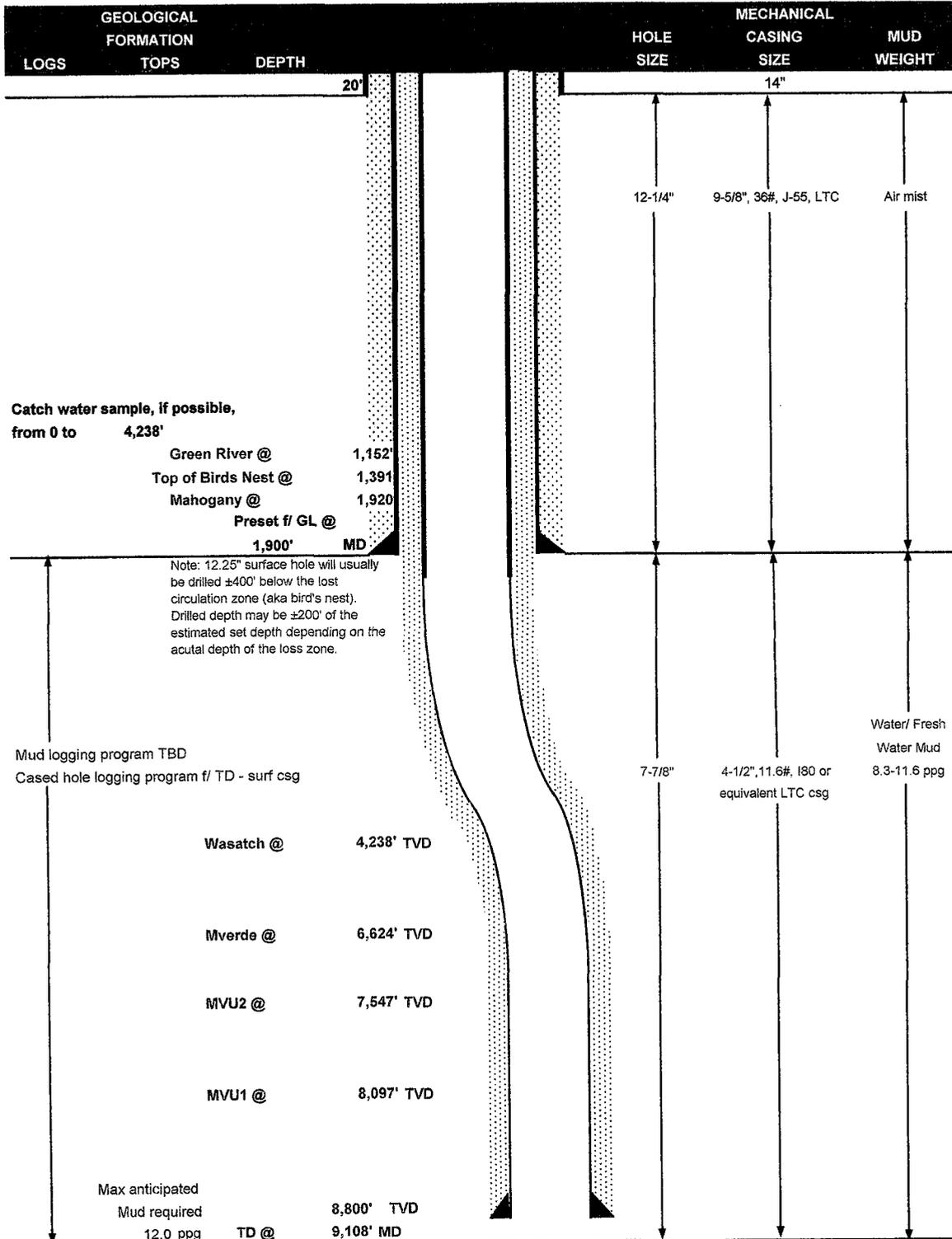
PROCEED IN A WESTERLY DIRECTION FROM VERNAL, UTAH ALONG U.S. HIGHWAY 40 APPROXIMATELY 14.0 MILES TO THE JUNCTION OF STATE HIGHWAY 88; EXIT LEFT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 17.0 MILES TO OURAY, UTAH; PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 11.2 MILES ON THE SEEP RIDGE ROAD TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 8.9 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE NORTHEAST; TURN LEFT AND PROCEED IN AN NORTHEASTERLY DIRECTION APPROXIMATELY 3.9 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE NORTH; TURN LEFT AND PROCEED IN A NORTHERLY DIRECTION APPROXIMATELY 1.0 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE NORTHEAST; TURN RIGHT AND PROCEED IN A NORTHEASTERLY, THEN NORTHERLY, THEN SOUTHERLY DIRECTION APPROXIMATELY 1.1 MILES TO THE BEGINNING OF THE PROPOSED ROAD RE-ROUTE TO THE SOUTHWEST; FOLLOW ROAD FLAGS IN A SOUTHWESTERLY DIRECTION APPROXIMATELY 210' TO THE BEGINNING OF THE PROPOSED ACCESS TO THE SOUTHEAST; FOLLOW ROAD FLAGS IN A SOUTHEASTERLY DIRECTION APPROXIMATELY 80' TO THE EXISTING WELL #239 AND THE PROPOSED LOCATION.

TOTAL DISTANCE FROM VERNAL, UTAH TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 57.1 MILES.



# KERR-McGEE OIL & GAS ONSHORE LP DRILLING PROGRAM

COMPANY NAME KERR-McGEE OIL & GAS ONSHORE LP DATE November 18, 2008  
 WELL NAME NBU 1022-3C1S TD 9,108' TVD 8,800' MD  
 FIELD Natural Buttes COUNTY Uintah STATE Utah ELEVATION 4,966' GL KB 4,981'  
 SURFACE LOCATION NWNE 1040' FNL & 1787' FEL, Sec. 3, T 10S R 22E  
 Latitude: 39.982444 Longitude: -109.422378 NAD 27  
 BTM HOLE LOCATION NENW 380' FNL & 2354' FWL, Sec. 3, T 10S R 22E  
 Latitude: 39.984258 Longitude: -109.426467 NAD 27  
 OBJECTIVE ZONE(S) Wasatch/Mesaverde  
 ADDITIONAL INFO Regulatory Agencies: BLM (Surface & Minerals), UDOGM, Tri-County Health Dept.





# KERR-McGEE OIL & GAS ONSHORE LP DRILLING PROGRAM

## CASING PROGRAM

	SIZE	INTERVAL	WT.	GR.	CPLG.	DESIGN FACTORS		
						BURST	COLLAPSE	TENSION
CONDUCTOR	14"	0-40'						
SURFACE	9-5/8"	0 to 1900	36.00	J-55	LTC	3520	2020	453000
						0.99	2.27	8.43
PRODUCTION	4-1/2"	0 to 8800	11.60	I-80	LTC	7780	6350	201000
						2.19	1.16	2.26

- 1) Max Anticipated Surf. Press. (MASP) (Surface Casing) = (Pore Pressure at next csg point - 0.22 psi/ft - partial evac gradient x TVD of next csg point)
- 2) MASP (Prod Casing) = Pore Pressure at TD - (.22 psi/ft - partial evac gradient x TD)
- (Burst Assumptions: TD = 12.0 ppg) .22 psi/ft = gradient for partially evac wellbore
- (Collapse Assumption: Fully Evacuated Casing, Max MW) (Tension Assumptions: Air Weight of Casing \* Buoy. Fact. of water)
- MASP 3643 psi

## CEMENT PROGRAM

		FT. OF FILL	DESCRIPTION	SACKS	EXCESS	WEIGHT	YIELD
SURFACE Option 1	LEAD	500	Premium cmt + 2% CaCl + .25 pps flocele	215	60%	15.60	1.18
	TOP OUT CMT (1)	200	20 gals sodium silicate + Premium cmt + 2% CaCl + .25 pps flocele	50		15.60	1.18
	TOP OUT CMT (2)	as required	Premium cmt + 2% CaCl	as req.		15.60	1.18
SURFACE Option 2	LEAD	1500	NOTE: If well will circulate water to surface, option 2 will be utilized 65/35 Poz + 6% Gel + 10 pps gilsonite + .25 pps flocele + 3% salt BWOW	360	35%	12.60	1.81
	TAIL	500	Premium cmt + 2% CaCl + .25 pps flocele	180	35%	15.60	1.18
	TOP OUT CMT	as required	Premium cmt + 2% CaCl	as req.		15.60	1.18
PRODUCTION	LEAD	3,730'	Premium Lite II + 3% KCl + 0.25 pps celloflake + 5 pps gilsonite + 10% gel + 0.5% extender	360	40%	11.00	3.38
	TAIL	5,070'	50/50 Poz/G + 10% salt + 2% gel +.1% R-3	1240	40%	14.30	1.31

\*Substitute caliper hole volume plus 0% excess for LEAD if accurate caliper is obtained  
\*Substitute caliper hole volume plus 10% excess for TAIL if accurate caliper is obtained

## FLOAT EQUIPMENT & CENTRALIZERS

SURFACE	Guide shoe, 1 jt, insert float. Centralize first 3 joints with bow spring centralizers. Thread lock guide shoe.
PRODUCTION	Float shoe, 1 jt, float collar. Centralize first 3 joints & every third joint to top of tail cement with bow spring centralizers.

## ADDITIONAL INFORMATION

Test casing head to 750 psi after installing. Test surface casing to 1,500 psi prior to drilling out.

BOPE: 11" 5M with one annular and 2 rams. Test to 5,000 psi (annular to 2,500 psi) prior to drilling out. Record on chart recorder & tour sheet. Function test rams on each trip. Maintain safety valve & inside BOP on rig floor at all times. Kelly to be equipped with upper & lower kelly valves.

Drop Totco surveys every 2000'. Maximum allowable hole angle is 5 degrees.

Most rigs have PVT System for mud monitoring. If no PVT is available, visual monitoring will be utilized.

DRILLING ENGINEER: \_\_\_\_\_  
Brad Laney

DATE: \_\_\_\_\_

DRILLING SUPERINTENDENT: \_\_\_\_\_  
Randy Bayne

DATE: \_\_\_\_\_

# Kerr McGee Oil & Gas Onshore LP

**NBU #1022-03A3S, #1022-03B4T, 1022-03B2S & #1022-03C1S**

**LOCATED IN UINTAH COUNTY, UTAH**

**SECTION 3, T10S, R22E, S.L.B.&M.**



**PHOTO: VIEW FROM CORNER #5 TO LOCATION STAKE**

**CAMERA ANGLE: NORTHWESTERLY**



**PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS**

**CAMERA ANGLE: SOUTHWESTERLY**



- Since 1964 -



**Uintah Engineering & Land Surveying**

85 South 200 East Vernal, Utah 84078  
(435) 789-1017 \* FAX (435) 789-1813

**LOCATION PHOTOS**

**08 19 08**  
MONTH DAY YEAR

**PHOTO**

TAKEN BY: L.K.

DRAWN BY: J.J.

REV: 09-25-08 Z.L.

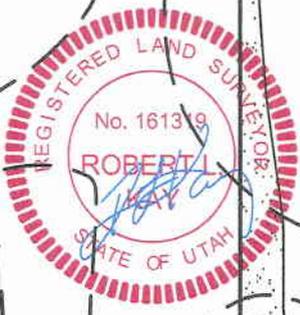
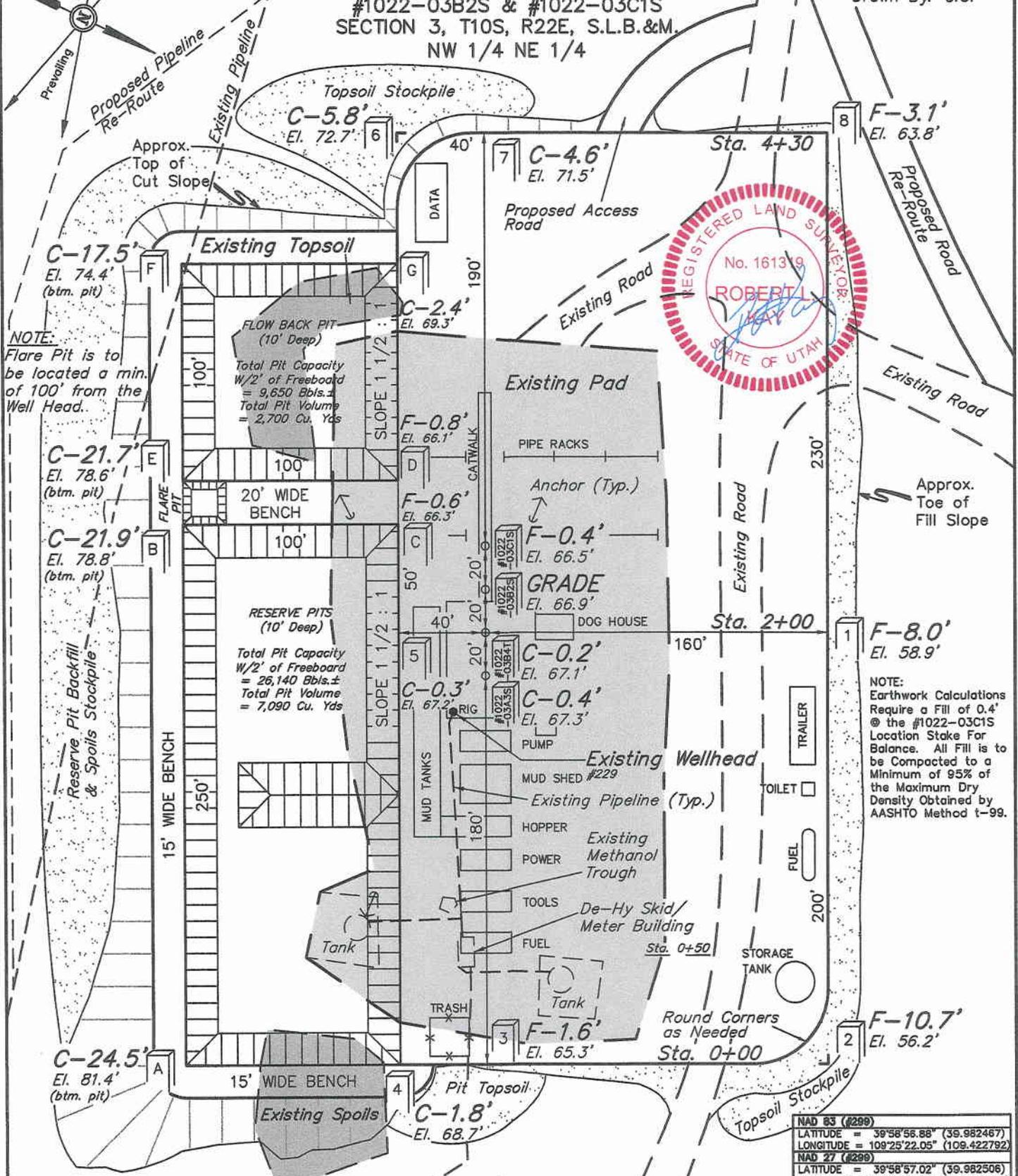
# Kerr-McGee Oil & Gas Onshore LP

## LOCATION LAYOUT FOR

NBU #1022-03A3S & #1022-03B4T,  
#1022-03B2S & #1022-03C1S  
SECTION 3, T10S, R22E, S.L.B.&M.  
NW 1/4 NE 1/4

**FIGURE #1**

SCALE: 1" = 60'  
DATE: 08-15-08  
Drawn By: C.C.



**NOTE:**  
Flare Pit is to be located a min. of 100' from the Well Head.

**NOTE:**  
Earthwork Calculations Require a Fill of 0.4' @ the #1022-03C1S Location Stake For Balance. All Fill is to be Compacted to a Minimum of 95% of the Maximum Dry Density Obtained by AASHTO Method t-99.

Elev. Ungraded Ground at #1022-03B4T Location Stake = 4967.1'  
Elev. Graded Ground at #1022-03B4T Location Stake = 4966.9'

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<b>NAD 83 (#299)</b>
LATITUDE = 39°58'58.88" (39.982467)
LONGITUDE = 109°25'22.05" (109.422792)
<b>NAD 27 (#299)</b>
LATITUDE = 39°58'57.02" (39.982506)
LONGITUDE = 109°25'19.50" (109.422083)

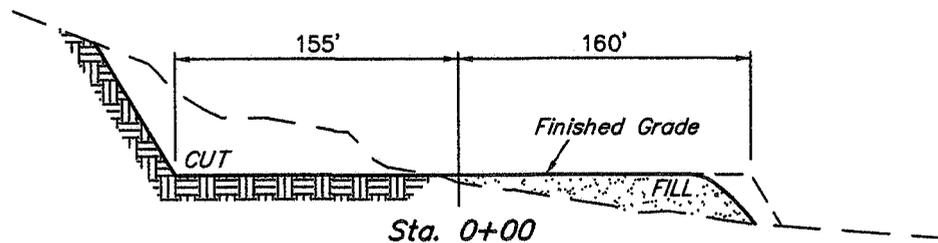
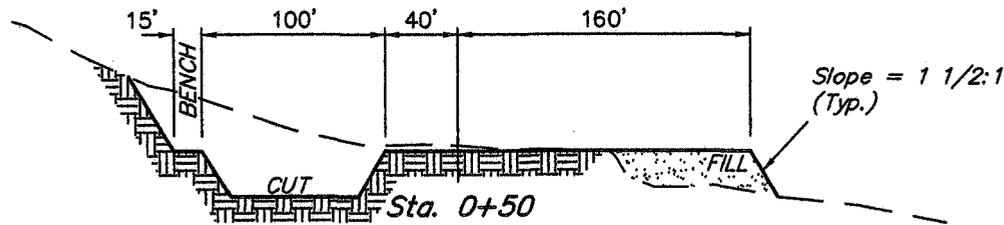
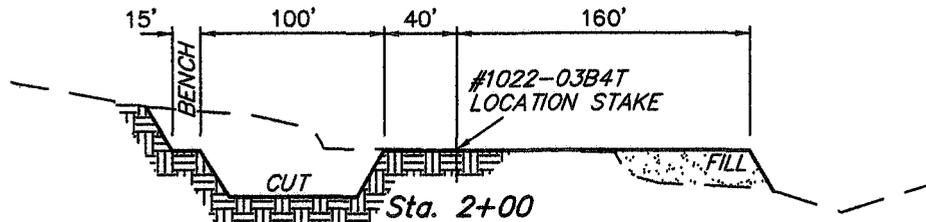
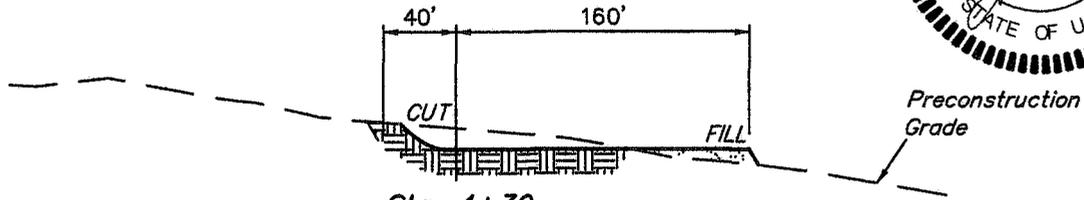
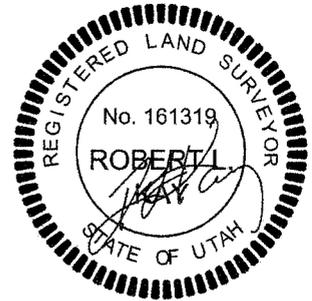
# Kerr-McGee Oil & Gas Onshore LP

FIGURE #2

1" = 40'  
X-Section Scale  
1" = 100'

DATE: 08-15-08  
Drawn By: C.C.

TYPICAL CROSS SECTIONS FOR  
NBU #1022-03A3S & #1022-03B4T,  
#1022-03B2S & #1022-03C1S  
SECTION 3, T10S, R22E, S.L.B.&M.  
NW 1/4 NE 1/4



**NOTE:**

Topsoil should not be Stripped Below Finished Grade on Substructure Area.

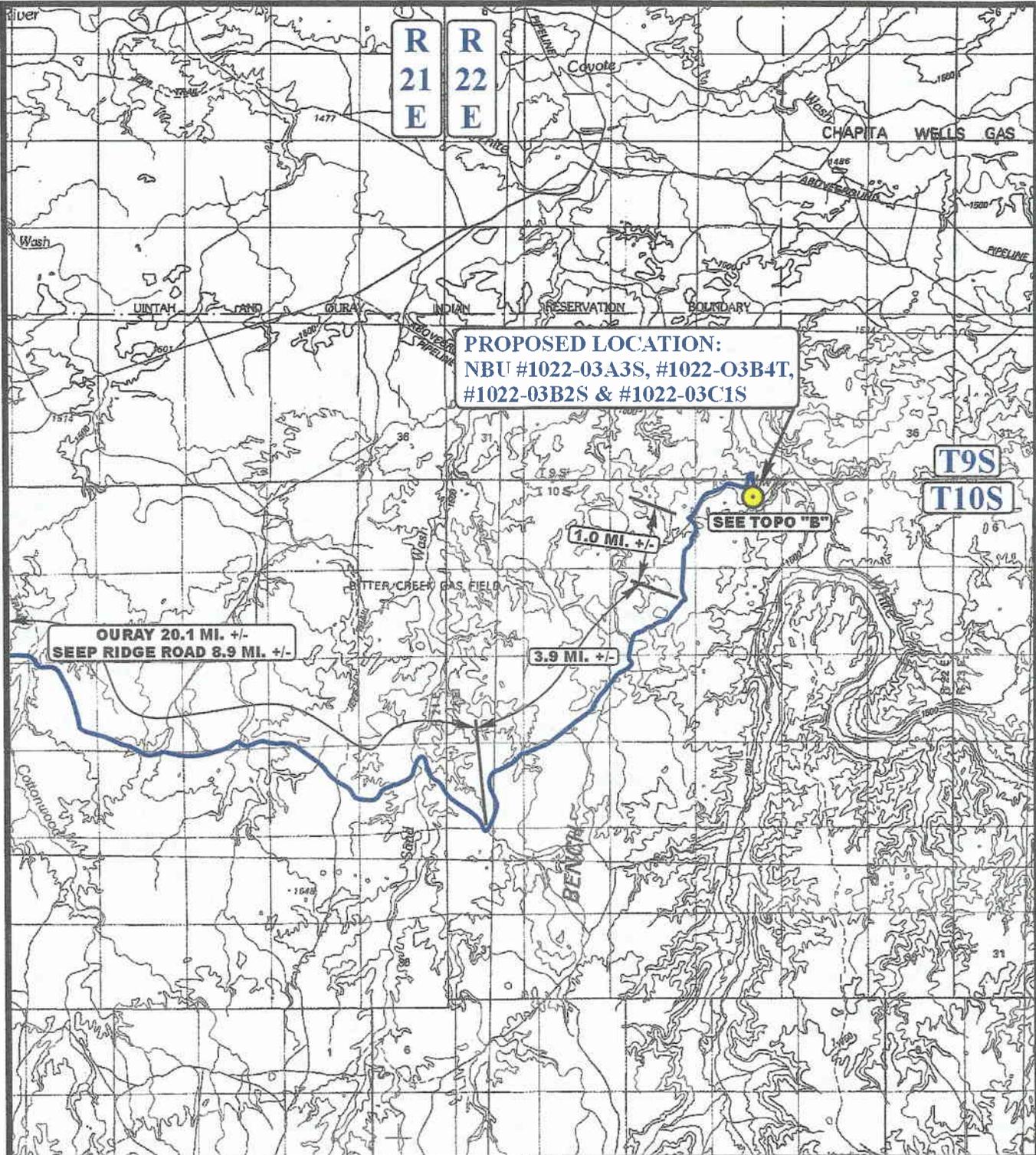
\* NOTE:  
FILL QUANTITY INCLUDES 5% FOR COMPACTION

**APPROXIMATE YARDAGES**

(6") Topsoil Stripping (New Construction Only)	=	1,550 Cu. Yds.
Remaining Location	=	22,160 Cu. Yds.
<b>TOTAL CUT</b>	<b>=</b>	<b>23,710 CU.YDS.</b>
<b>FILL</b>	<b>=</b>	<b>10,690 CU.YDS.</b>

EXCESS MATERIAL	=	13,020 Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol.)	=	6,450 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	=	6,570 Cu. Yds.

UINTAH ENGINEERING & LAND SURVEYING  
85 So. 200 East \* Vernal, Utah 84078 \* (435) 789-1017



**PROPOSED LOCATION:**  
 NBU #1022-03A3S, #1022-03B4T,  
 #1022-03B2S & #1022-03C1S

**OURAY 20.1 MI. +/-**  
**SEEP RIDGE ROAD 8.9 MI. +/-**

**1.0 MI. +/-**

**3.9 MI. +/-**

**SEE TOPO "B"**

**LEGEND:**

 PROPOSED LOCATION

**Kerr McGee Oil & Gas Onshore LP**

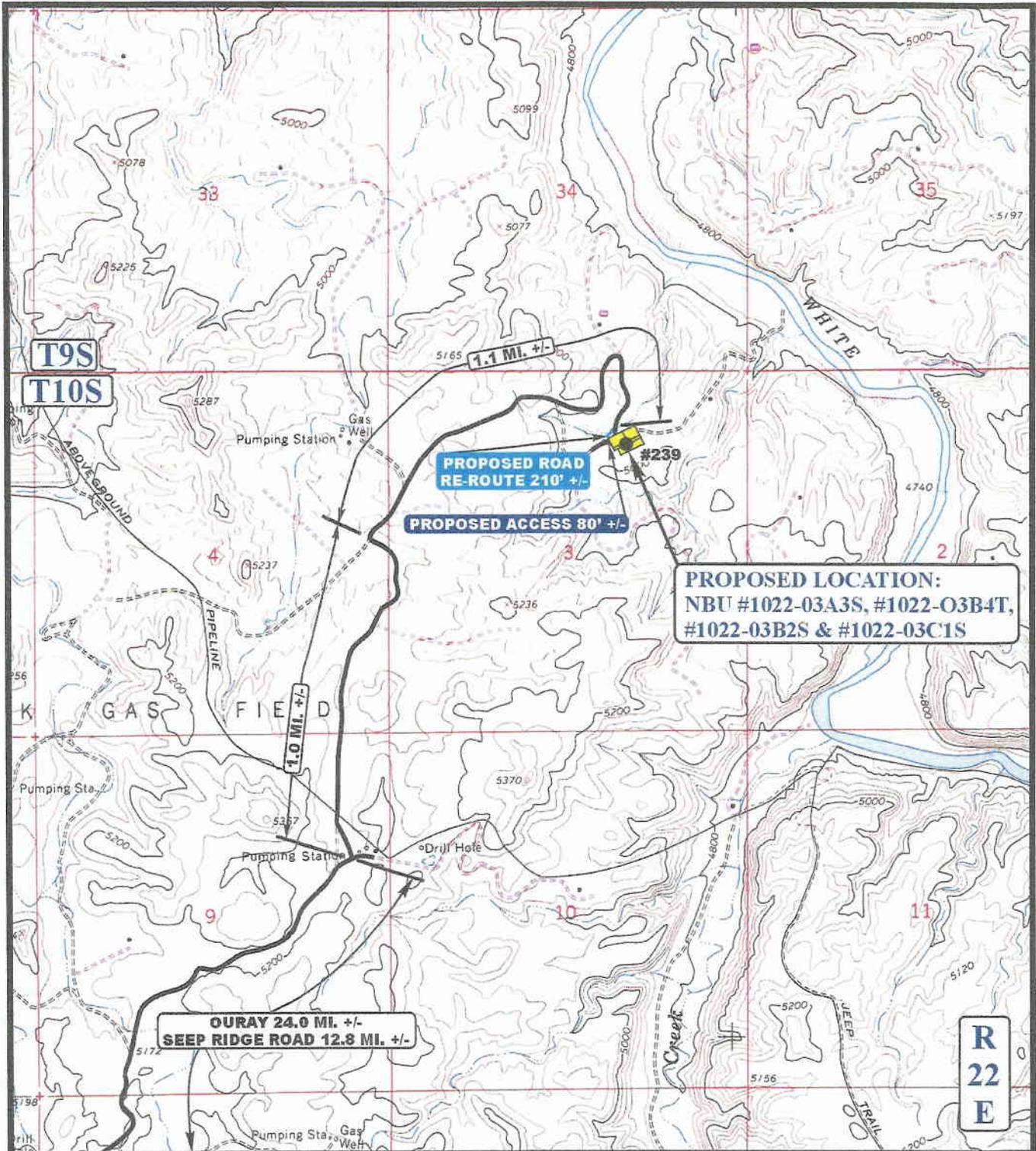
NBU #1022-03A3S, #1022-03B4T,  
 #1022-03B2S & #1022-03C1S  
 SECTION 3, T10S, R22E, S.L.B.&M.  
 NW 1/4 NE 1/4

**UEIS** Uintah Engineering & Land Surveying  
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 (435) 789-1017 \* FAX (435) 789-1813



**TOPOGRAPHIC MAP** **08 19 08**  
 MONTH DAY YEAR  
 SCALE: 1:100,000 DRAWN BY: J.J. REV: 09-25-08 Z.L.





**PROPOSED LOCATION:**  
 NBU #1022-03A3S, #1022-03B4T,  
 #1022-03B2S & #1022-03C1S

**OURAY 24.0 MI. +/-**  
**SEEP RIDGE ROAD 12.8 MI. +/-**

**LEGEND:**

-  EXISTING ROAD
-  PROPOSED ACCESS ROAD



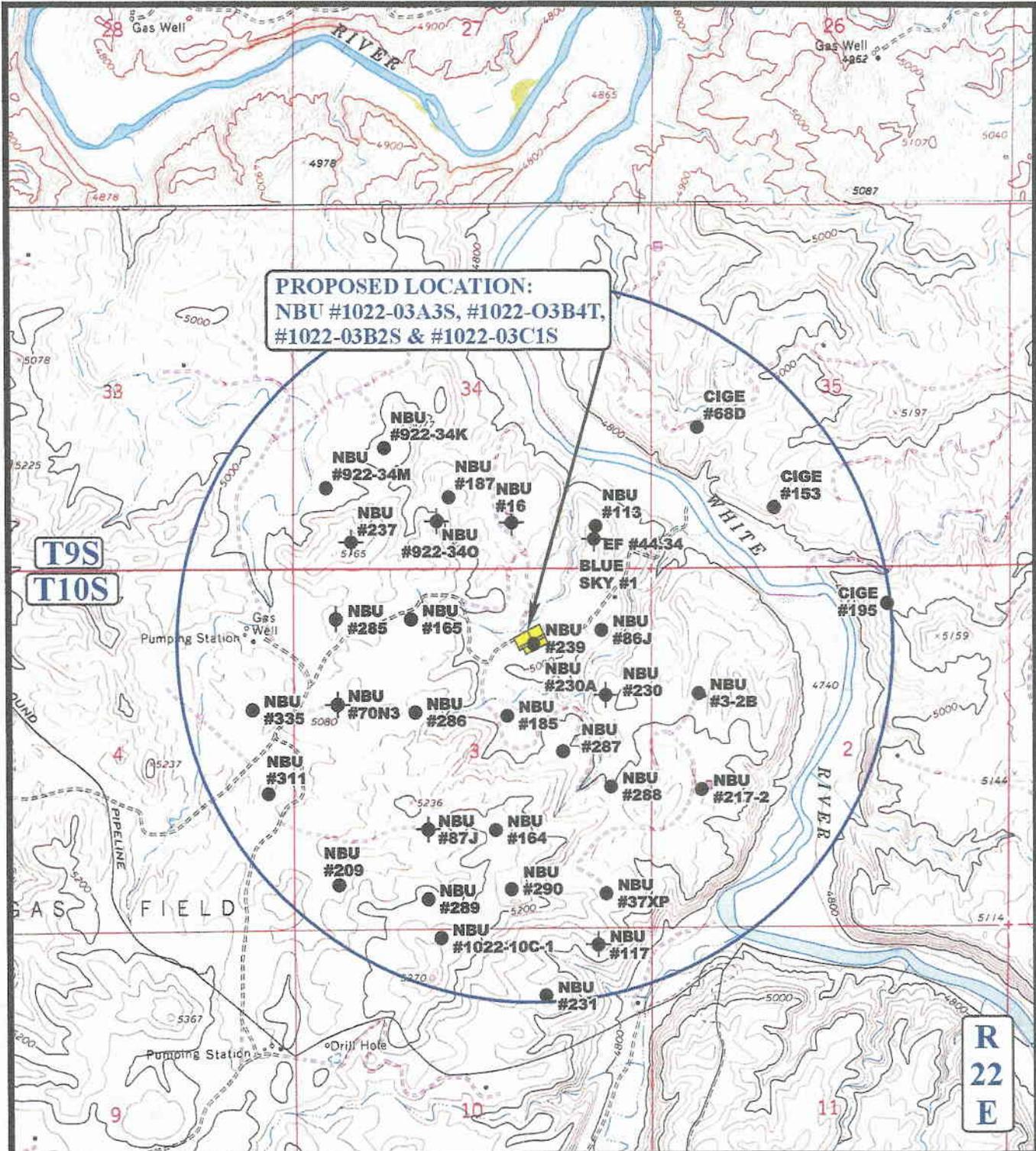
**Kerr McGee Oil & Gas Onshore LP**

NBU #1022-03A3S, #1022-03B4T,  
 #1022-03B2S & #1022-03C1S  
 SECTION 3, T10S, R22E, S.L.B.&M.  
 NW 1/4 NE 1/4

**UEIS**  
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**TOPOGRAPHIC MAP** 08 19 08  
 MONTH DAY YEAR  
 SCALE: 1" = 2000' DRAWN BY: J.J. REV: 09-25-08 Z.L.

**B**  
 TOPO



**LEGEND:**

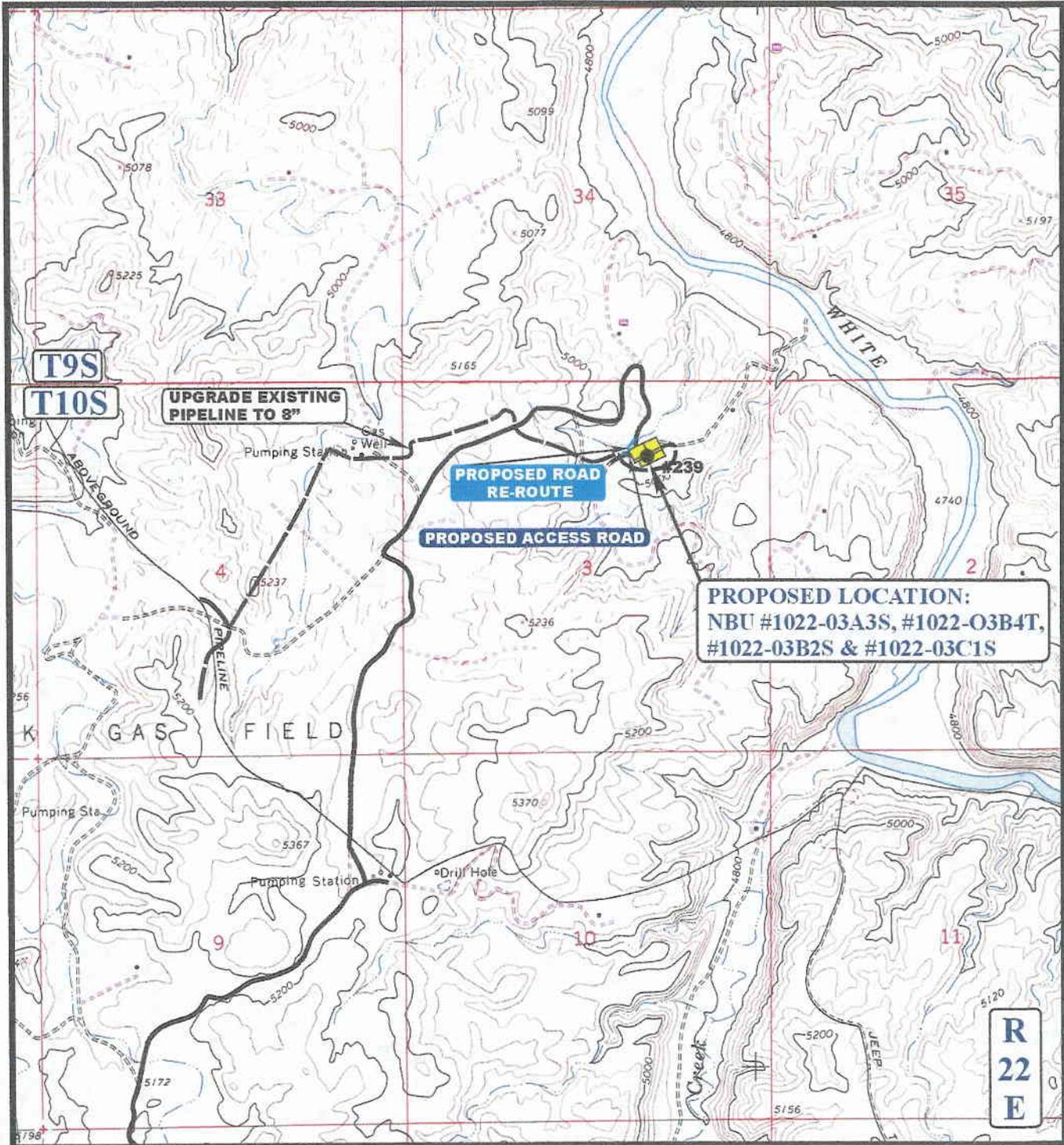
- ◊ DISPOSAL WELLS
- ⊕ WATER WELLS
- PRODUCING WELLS
- ⊖ ABANDONED WELLS
- SHUT IN WELLS
- ⊖ TEMPORARILY ABANDONED

**Kerr McGee Oil & Gas Onshore LP**

NBU #1022-03A3S, #1022-03B4T,  
 #1022-03B2S & #1022-03C1S  
 SECTION 3, T10S, R22E, S.L.B.&M.  
 NW 1/4 NE 1/4

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**TOPOGRAPHIC MAP** 08 19 08  
 MONTH DAY YEAR  
 SCALE: 1" = 2000' DRAWN BY: J.J. REV: 09-25-08 Z.L. **TOPO**



**APPROXIMATE TOTAL PIPELINE DISTANCE = 8,650' +/-**

**LEGEND:**

-  EXISTING ROAD
-  PROPOSED ACCESS ROAD



**Kerr McGee Oil & Gas Onshore LP**

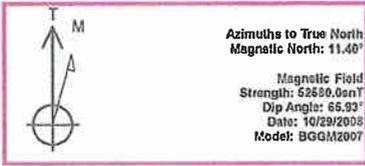
NBU #1022-03A3S, #1022-03B4T,  
 #1022-03B2S & #1022-03C1S  
 SECTION 3, T10S, R22E, S.L.B.&M.  
 NW 1/4 NE 1/4

**UEIS** Uintah Engineering & Land Surveying  
 85 South 200 East Vernal, Utah 84078  
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**TOPOGRAPHIC MAP** 08 19 08  
 MONTH DAY YEAR  
 SCALE: 1" = 2000' DRAWN BY: J.J. REV: 09-25-08 Z.L. **D TOPO**



Project: UTAH COUNTY, UTAH (nad 27)  
 Site: NBU 1022-3B PAD  
 Well: NBU 1022-03C1S  
 Wellbore: NBU 1022-03C1S  
 Design: Design #1  
 Latitude: 39° 58' 56.800 N  
 Longitude: 109° 25' 20.560 W  
 GL: 4966.90  
 KB: WELL @ 4984.90ft (Original Well Elev)



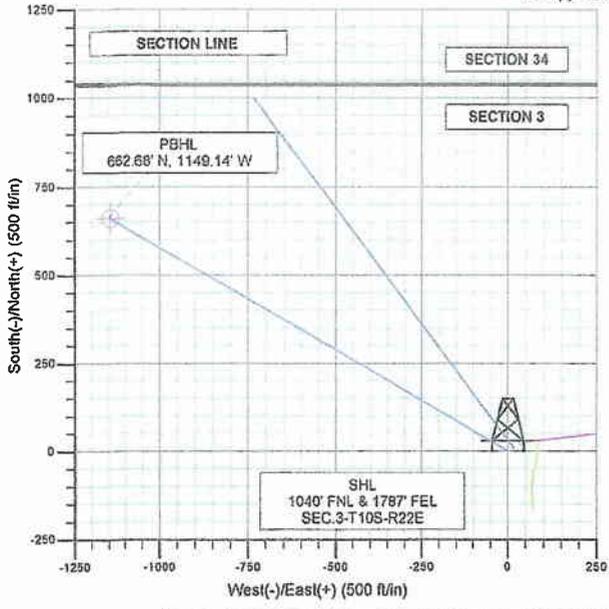
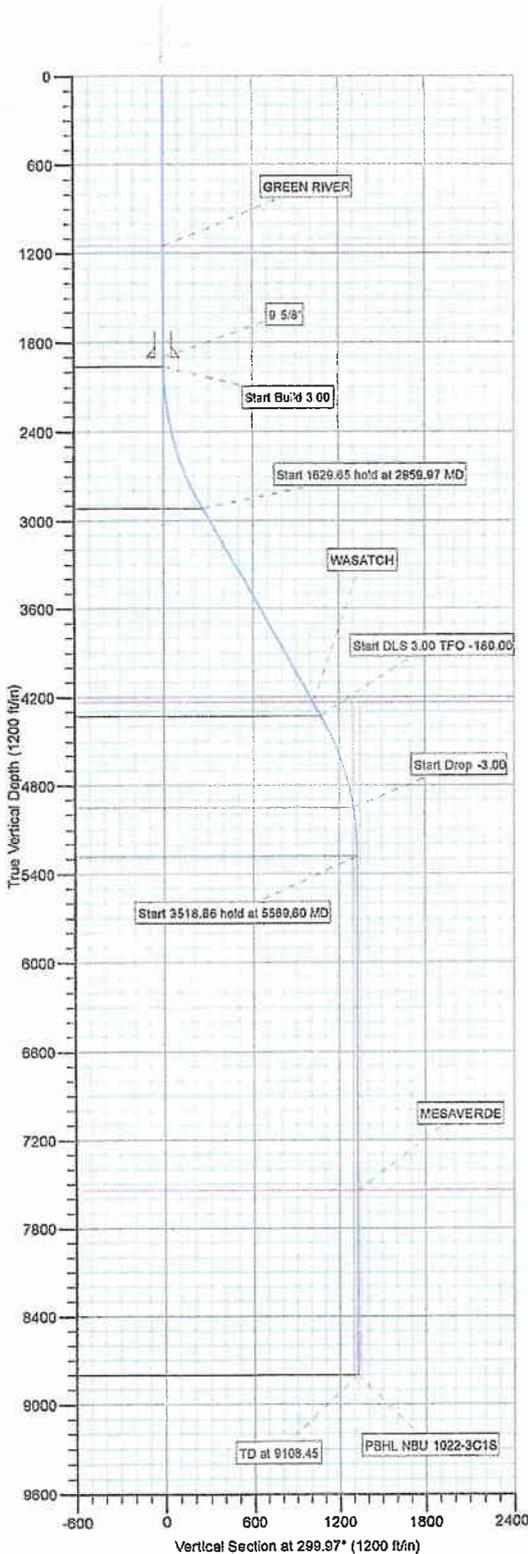
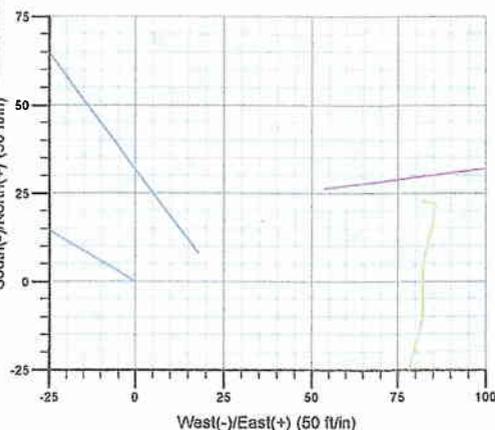
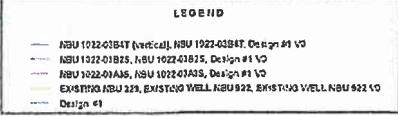
WELL DETAILS: NBU 1022-03C1S						
+N/-S	+E/-W	Northing	Ground Level:	4966.90	Latitude	Longitude
0.00	0.00	14523561.94	Easting	2082385.85	39° 58' 56.800 N	109° 25' 20.560 W

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL NBU 1022-03C1S	8800.00	660.67	-1145.65	39° 58' 3.330 N	109° 25' 35.280 W	Circle (Radius: 25.00)

SECTION DETAILS									
MD	inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1960.00	0.00	0.00	1960.00	0.00	0.00	0.00	0.00	0.00	Start Build 3.00
2959.97	30.00	299.97	2914.91	127.82	-221.64	3.00	299.97	265.86	Start 1629.85 hold at 2959.97 MD
4589.62	30.00	299.97	4326.24	634.87	-927.49	0.00	0.00	1070.66	Start DLS 3.00 TFO -180.00
5256.26	16.00	299.97	4949.50	648.19	-1124.00	3.00	-180.00	1297.61	Start Drop -3.00
5589.60	0.00	0.00	5281.14	652.68	-1149.14	3.00	180.00	1326.52	Start 3518.86 hold at 5589.60 MD
9108.45	0.00	0.00	8800.00	682.68	-1149.14	0.00	0.00	1326.52	TD at 9108.45

CASING DETAILS				
TVD	MD	Name	Size	
1900.00	1900.00	9 5/8"	9-5/8"	

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	
1162.00	1162.00	GREEN RIVER	
4238.00	4487.74	WASATCH	
7647.00	7855.45	MESAVERDE	



Plan: Design #1 (NBU 1022-03C1S/NBU 1022-03C1S)  
 Created By: TRACY WILLIAMS Date: 10:26, October 29 2008



**Weatherford™**

**Drilling Services**

---

**Proposal**

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**ANADARKO PETROLEUM**

NBU 1022-O3C1S  
FILE: PLAN 1  
OCTOBER 29, 2008

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**Weatherford International Ltd.**  
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+1.307.235.3958 Fax  
[www.weatherford.com](http://www.weatherford.com)



# **ANADARKO PETROLEUM CORP.**

**UINTAH COUNTY, UTAH (nad 27)**

**NBU 1022-3B PAD**

**NBU 1022-03C1S**

**NBU 1022-03C1S**

**Plan: Design #1**

## **Standard Planning Report**

**29 October, 2008**



**Weatherford®**



**Weatherford International Ltd.**  
Planning Report



<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well NBU 1022-03C1S
<b>Company:</b>	ANADARKO PETROLEUM CORP.	<b>TVD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Project:</b>	UINTAH COUNTY, UTAH (nad 27)	<b>MD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Site:</b>	NBU 1022-3B PAD	<b>North Reference:</b>	True
<b>Well:</b>	NBU 1022-03C1S	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	NBU 1022-03C1S		
<b>Design:</b>	Design #1		

<b>Project</b>	UINTAH COUNTY, UTAH (nad 27).		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 - Western US		
<b>Map Zone:</b>	Zone 12N (114 W to 108 W)		

<b>Site</b>	NBU 1022-3B PAD				
<b>Site Position:</b>		<b>Northing:</b>	14,523,589.20ft	<b>Latitude:</b>	39° 58' 57.060 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,082,419.08ft	<b>Longitude:</b>	109° 25' 19.870 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	"	<b>Grid Convergence:</b>	1.01 °

<b>Well</b>	NBU 1022-03C1S					
<b>Well Position</b>	<b>+N/-S</b>	-26.30 ft	<b>Northing:</b>	14,523,561.94 ft	<b>Latitude:</b>	39° 58' 56.800 N
	<b>+E/-W</b>	-53.70 ft	<b>Easting:</b>	2,082,365.85 ft	<b>Longitude:</b>	109° 25' 20.560 W
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,966.90ft

<b>Wellbore</b>	NBU 1022-03C1S				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2007	10/29/2008	11.40	65.93	52,580

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	8,800.00	0.00	0.00	299.97

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,960.00	0.00	0.00	1,960.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,959.97	30.00	299.97	2,914.91	127.82	-221.64	3.00	3.00	0.00	299.97	
4,589.62	30.00	299.97	4,326.24	534.87	-927.49	0.00	0.00	0.00	0.00	
5,256.26	10.00	299.97	4,949.50	648.19	-1,124.00	3.00	-3.00	0.00	-180.00	
5,589.60	0.00	0.00	5,281.14	662.68	-1,149.14	3.00	-3.00	0.00	180.00	
9,108.45	0.00	0.00	8,800.00	662.68	-1,149.14	0.00	0.00	0.00	0.00	0.00 PBHL NBU 1022-3/

Database: EDM 2003.21 Single User Db  
 Company: ANADARKO PETROLEUM CORP.  
 Project: UTAH COUNTY, UTAH (nad 27)  
 Site: NBU 1022-3B PAD  
 Well: NBU 1022-03C1S  
 Wellbore: NBU 1022-03C1S  
 Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>GREEN RIVER</b>									
1,152.00	0.00	0.00	1,152.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 3.00</b>									
1,960.00	0.00	0.00	1,960.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	1.20	299.97	2,000.00	0.21	-0.36	0.42	3.00	3.00	0.00
2,100.00	4.20	299.97	2,099.87	2.56	-4.44	5.13	3.00	3.00	0.00
2,200.00	7.20	299.97	2,199.37	7.52	-13.05	15.06	3.00	3.00	0.00
2,300.00	10.20	299.97	2,298.21	15.08	-26.15	30.18	3.00	3.00	0.00
2,400.00	13.20	299.97	2,396.12	25.21	-43.71	50.46	3.00	3.00	0.00
2,500.00	16.20	299.97	2,492.83	37.88	-65.69	75.83	3.00	3.00	0.00
2,600.00	19.20	299.97	2,588.09	53.07	-92.03	106.23	3.00	3.00	0.00
2,700.00	22.20	299.97	2,681.62	70.73	-122.64	141.58	3.00	3.00	0.00
2,800.00	25.20	299.97	2,773.18	90.80	-157.46	181.77	3.00	3.00	0.00
2,900.00	28.20	299.97	2,862.51	113.25	-196.38	226.69	3.00	3.00	0.00
<b>Start 1629.65 hold at 2959.97 MD</b>									
2,959.97	30.00	299.97	2,914.91	127.82	-221.64	255.86	3.00	3.00	0.00
3,000.00	30.00	299.97	2,949.57	137.82	-238.98	275.87	0.00	0.00	0.00
3,100.00	30.00	299.97	3,036.17	162.79	-282.29	325.87	0.00	0.00	0.00
3,200.00	30.00	299.97	3,122.78	187.77	-325.61	375.87	0.00	0.00	0.00
3,300.00	30.00	299.97	3,209.38	212.75	-368.92	425.87	0.00	0.00	0.00
3,400.00	30.00	299.97	3,295.98	237.73	-412.23	475.87	0.00	0.00	0.00
3,500.00	30.00	299.97	3,382.59	262.70	-455.54	525.87	0.00	0.00	0.00
3,600.00	30.00	299.97	3,469.19	287.68	-498.86	575.86	0.00	0.00	0.00
3,700.00	30.00	299.97	3,555.79	312.66	-542.17	625.86	0.00	0.00	0.00
3,800.00	30.00	299.97	3,642.40	337.64	-585.48	675.86	0.00	0.00	0.00
3,900.00	30.00	299.97	3,729.00	362.62	-628.80	725.86	0.00	0.00	0.00
4,000.00	30.00	299.97	3,815.60	387.59	-672.11	775.86	0.00	0.00	0.00
4,100.00	30.00	299.97	3,902.21	412.57	-715.42	825.86	0.00	0.00	0.00
4,200.00	30.00	299.97	3,988.81	437.55	-758.73	875.86	0.00	0.00	0.00
4,300.00	30.00	299.97	4,075.41	462.53	-802.05	925.86	0.00	0.00	0.00
4,400.00	30.00	299.97	4,162.02	487.50	-845.36	975.85	0.00	0.00	0.00
<b>WASATCH</b>									
4,487.74	30.00	299.97	4,238.00	509.42	-883.36	1,019.72	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well NBU 1022-03C1S
<b>Company:</b>	ANADARKO PETROLEUM CORP.	<b>TVD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Project:</b>	UINTAH COUNTY, UTAH (nad 27)	<b>MD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Site:</b>	NBU 1022-3B PAD	<b>North Reference:</b>	True
<b>Well:</b>	NBU 1022-03C1S	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	NBU 1022-03C1S		
<b>Design:</b>	Design #1		

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.00	30.00	299.97	4,248.62	512.48	-888.67	1,025.85	0.00	0.00	0.00
<b>Start DLS 3.00 TFO -180.00</b>									
4,589.62	30.00	299.97	4,326.24	534.87	-927.49	1,070.66	0.00	0.00	0.00
4,600.00	29.69	299.97	4,335.24	537.45	-931.96	1,075.83	3.00	-3.00	0.00
4,700.00	26.69	299.97	4,423.37	561.04	-972.88	1,123.06	3.00	-3.00	0.00
4,800.00	23.69	299.97	4,513.85	582.30	-1,009.74	1,165.61	3.00	-3.00	0.00
4,900.00	20.69	299.97	4,606.43	601.16	-1,042.45	1,203.37	3.00	-3.00	0.00
5,000.00	17.69	299.97	4,700.87	617.58	-1,070.92	1,236.24	3.00	-3.00	0.00
5,100.00	14.69	299.97	4,796.89	631.51	-1,095.07	1,264.11	3.00	-3.00	0.00
5,200.00	11.69	299.97	4,894.24	642.90	-1,114.83	1,286.92	3.00	-3.00	0.00
<b>Start Drop -3.00</b>									
5,256.26	10.00	299.97	4,949.50	648.19	-1,124.00	1,297.51	3.00	-3.00	0.00
5,300.00	8.69	299.97	4,992.66	651.74	-1,130.15	1,304.61	3.00	-3.00	0.00
5,400.00	5.69	299.97	5,091.86	657.99	-1,140.99	1,317.12	3.00	-3.00	0.00
5,500.00	2.69	299.97	5,191.58	661.63	-1,147.32	1,324.42	3.00	-3.00	0.00
<b>Start 3518.86 hold at 5589.60 MD</b>									
5,589.60	0.00	0.00	5,281.14	662.68	-1,149.14	1,326.52	3.00	-3.00	0.00
5,600.00	0.00	0.00	5,291.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
5,700.00	0.00	0.00	5,391.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
5,800.00	0.00	0.00	5,491.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
5,900.00	0.00	0.00	5,591.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,000.00	0.00	0.00	5,691.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,100.00	0.00	0.00	5,791.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,200.00	0.00	0.00	5,891.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,300.00	0.00	0.00	5,991.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,400.00	0.00	0.00	6,091.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,500.00	0.00	0.00	6,191.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,600.00	0.00	0.00	6,291.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,700.00	0.00	0.00	6,391.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,800.00	0.00	0.00	6,491.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
6,900.00	0.00	0.00	6,591.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,000.00	0.00	0.00	6,691.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,100.00	0.00	0.00	6,791.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,200.00	0.00	0.00	6,891.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,300.00	0.00	0.00	6,991.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,400.00	0.00	0.00	7,091.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,500.00	0.00	0.00	7,191.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,600.00	0.00	0.00	7,291.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,700.00	0.00	0.00	7,391.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,800.00	0.00	0.00	7,491.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
<b>MESAVERDE</b>									
7,855.45	0.00	0.00	7,547.00	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
7,900.00	0.00	0.00	7,591.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,000.00	0.00	0.00	7,691.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,100.00	0.00	0.00	7,791.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,200.00	0.00	0.00	7,891.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,300.00	0.00	0.00	7,991.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,400.00	0.00	0.00	8,091.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,500.00	0.00	0.00	8,191.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,600.00	0.00	0.00	8,291.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,700.00	0.00	0.00	8,391.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,800.00	0.00	0.00	8,491.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00
8,900.00	0.00	0.00	8,591.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well NBU 1022-03C1S
<b>Company:</b>	ANADARKO PETROLEUM CORP.	<b>TVD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Project:</b>	UINTAH COUNTY, UTAH (nad 27)	<b>MD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Site:</b>	NBU 1022-3B PAD	<b>North Reference:</b>	True
<b>Well:</b>	NBU 1022-03C1S	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	NBU 1022-03C1S		
<b>Design:</b>	Design #1		

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,000.00	0.00	0.00	8,691.55	662.68	-1,149.14	1,326.52	0.00	0.00	0.00	
<b>PBHL NBU 1022-3C1S</b>										
9,108.45	0.00	0.00	8,800.00	662.68	-1,149.14	1,326.52	0.00	0.00	0.00	

**Design Targets**

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL NBU 1022-3C1	0.00	0.00	8,800.00	660.67	-1,145.65	14,524,202.24	2,081,208.69	39° 59' 3.330 N	109° 25' 35.280 W
- plan misses target center by 4.03ft at 9108.45ft MD (8800.00 TVD, 662.68 N, -1149.14 E)									
- Circle (radius 25.00)									

**Casing Points**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,900.00	1,900.00	9 5/8"	9-5/8	12-1/4

**Formations**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,152.00	1,152.00	GREEN RIVER		0.00	
4,487.74	4,238.00	WASATCH		0.00	
7,855.45	7,547.00	MESAVERDE		0.00	

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
1,960.00	1,960.00	0.00	0.00	Start Build 3.00
2,959.97	2,914.91	127.82	-221.64	Start 1629.65 hold at 2959.97 MD
4,589.62	4,326.24	534.87	-827.49	Start DLS 3.00 TFO -180.00
5,256.26	4,949.50	648.19	-1,124.00	Start Drop -3.00
5,589.60	5,281.14	662.68	-1,149.14	Start 3518.86 hold at 5589.60 MD
9,108.45	8,800.00	662.68	-1,149.14	TD at 9108.45



# **ANADARKO PETROLEUM CORP.**

**UINTAH COUNTY, UTAH (nad 27)**

**NBU 1022-3B PAD**

**NBU 1022-03C1S**

**NBU 1022-03C1S**

**Design #1**

## **Anticollision Report**

**29 October, 2008**



**Weatherford®**



**Weatherford International Ltd.**  
Anticollision Report



<b>Company:</b>	ANADARKO PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well NBU 1022-03C1S
<b>Project:</b>	UINTAH COUNTY, UTAH (nad 27)	<b>TVD Reference:</b>	WELL @ 4984.90R (Original Well Elev)
<b>Reference Site:</b>	NBU 1022-3B PAD	<b>MD Reference:</b>	WELL @ 4984.90ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NBU 1022-03C1S	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	NBU 1022-03C1S	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

<b>Reference</b>	Design #1
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria
<b>Interpolation Method:</b>	Stations
<b>Depth Range:</b>	Unlimited
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00ft
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
<b>Error Model:</b>	ISCWSA
<b>Scan Method:</b>	Closest Approach 3D
<b>Error Surface:</b>	Elliptical Conic

Survey Tool Program                      Date 10/29/2008

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	9,108.45	Design #1 (NBU 1022-03C1S)	MWD	MWD - Standard

**Summary**

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
NBU 1022-3B PAD						
EXISTING NBU 229 - EXISTING WELL NBU 922 - EXIS	346.88	346.93	85.19	83.83	62.918	CC
EXISTING NBU 229 - EXISTING WELL NBU 922 - EXIS	2,000.00	2,001.04	85.92	78.02	10.871	ES
EXISTING NBU 229 - EXISTING WELL NBU 922 - EXIS	2,100.00	2,101.08	88.49	80.23	10.709	SF
NBU 1022-03A3S - NBU 1022-03A3S - Design #1	1,960.00	1,960.00	59.80	51.25	6.998	CC, ES
NBU 1022-03A3S - NBU 1022-03A3S - Design #1	2,000.00	1,998.84	60.42	51.70	6.933	SF
NBU 1022-03B2S - NBU 1022-03B2S - Design #1	1,960.00	1,960.00	19.65	11.10	2.299	CC
NBU 1022-03B2S - NBU 1022-03B2S - Design #1	2,000.00	2,000.09	19.80	11.08	2.270	ES, SF
NBU 1022-03B4T (vertical) - NBU 1022-03B4T - Design	1,960.00	1,960.00	39.72	31.17	4.648	CC, ES
NBU 1022-03B4T (vertical) - NBU 1022-03B4T - Design	2,000.00	2,000.00	39.96	31.24	4.581	SF

Offset Design      NBU 1022-3B PAD - EXISTING NBU 229 - EXISTING WELL NBU 922 - EXISTING WELL NBU 922														Offset Site Error:	0.00ft
Survey Program: 100-NS-GYRO-MS														Offset Well Error:	0.00ft
Reference	Offset			Semi Major Axis			Distance				Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
0.00	0.00	0.00	0.00	0.00	0.00	74.80	22.26	82.50	85.45						
100.00	100.00	100.00	100.00	0.09	0.11	74.90	22.26	82.50	85.45	85.25	0.20	425.156			
200.00	200.00	200.00	200.00	0.32	0.37	74.90	22.26	82.50	85.45	84.76	0.69	123.627			
300.00	300.00	300.29	300.29	0.54	0.60	74.81	22.34	82.30	85.28	84.13	1.14	74.494			
346.88	346.88	346.93	346.93	0.65	0.71	74.72	22.45	82.18	85.19	83.83	1.35	62.918	CC		
400.00	400.00	400.00	400.00	0.77	0.82	74.61	22.63	82.19	85.24	83.65	1.59	53.566			
500.00	500.00	500.00	500.00	0.99	1.08	74.49	22.83	82.27	85.38	83.31	2.07	41.301			
600.00	600.00	599.73	599.73	1.22	1.33	74.39	23.02	82.38	85.54	83.00	2.54	33.654			
700.00	700.00	700.00	700.00	1.44	1.45	74.41	23.00	82.42	85.57	82.68	2.89	29.596			
757.90	757.90	757.85	757.85	1.57	1.48	74.54	22.79	82.42	85.51	82.45	3.05	27.996			
800.00	800.00	799.76	799.75	1.67	1.51	74.63	22.68	82.52	85.58	82.41	3.17	26.973			
900.00	900.00	900.00	900.00	1.89	1.68	74.74	22.56	82.71	85.73	82.15	3.57	23.988			
1,000.00	1,000.00	999.71	999.70	2.12	1.87	74.83	22.48	82.91	85.90	81.91	3.99	21.540			
1,100.00	1,100.00	1,099.68	1,099.68	2.34	2.03	75.00	22.33	83.32	86.26	81.89	4.37	19.758			
1,200.00	1,200.00	1,199.64	1,199.63	2.56	2.23	75.04	22.37	83.72	86.66	81.86	4.79	18.076			
1,300.00	1,300.00	1,299.63	1,299.62	2.79	2.47	74.99	22.56	84.11	87.09	81.83	5.26	16.571			
1,400.00	1,400.00	1,399.74	1,399.73	3.01	2.65	75.23	22.29	84.57	87.46	81.79	5.67	15.432			
1,500.00	1,500.00	1,499.27	1,499.25	3.24	2.84	75.56	21.95	85.25	88.04	81.96	6.08	14.486			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company: ANADARKO PETROLEUM CORP.  
 Project: UTAH COUNTY, UTAH (nad 27)  
 Reference Site: NBU 1022-3B PAD  
 Site Error: 0.00ft  
 Reference Well: NBU 1022-03C1S  
 Well Error: 0.00ft  
 Reference Wellbore: NBU 1022-03C1S  
 Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at 2.00 sigma  
 Database: EDM 2003.21 Single User Db  
 Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - EXISTING NBU 229 - EXISTING WELL NBU 922 - EXISTING WELL NBU 922													Offset Site Error:	0.00ft															
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.00ft															
Reference	Offset	Semi Major Axis		Distance		Reference		Offset		Azimuth		Offset Wellbore		Centre		Between		Between		Minimum		Separation		Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	from North (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	
1,600.00	1,800.00	1,800.07	1,600.06	3.46	3.01	75.76	21.75	85.72	88.43	81.95	6.48	13.657																	
1,700.00	1,700.00	1,700.38	1,700.37	3.69	3.13	76.16	21.10	85.63	88.19	81.38	6.81	12.943																	
1,800.00	1,800.00	1,800.86	1,800.83	3.91	3.25	77.21	19.37	85.33	87.50	80.34	7.16	12.217																	
1,900.00	1,900.00	1,900.83	1,900.76	4.14	3.39	78.83	16.78	84.94	86.59	79.05	7.53	11.501																	
1,960.00	1,960.00	1,960.96	1,960.87	4.27	3.48	79.80	15.23	84.66	86.02	78.26	7.76	11.091																	
1,986.65	1,986.65	1,987.66	1,987.57	4.33	3.52	80.31	14.55	84.49	85.88	78.03	7.85	10.936																	
2,000.00	2,000.00	2,001.04	2,000.94	4.36	3.54	80.62	14.22	84.40	85.92	78.02	7.90	10.871 ES																	
2,100.00	2,099.87	2,101.08	2,100.94	4.57	3.71	84.21	11.49	83.59	88.49	80.23	8.26	10.709 SF																	
2,200.00	2,199.37	2,200.00	2,199.81	4.80	3.88	89.52	8.34	82.94	95.99	87.37	8.62	11.135																	
2,300.00	2,298.21	2,299.21	2,298.97	5.04	4.07	95.10	5.40	82.28	108.87	99.90	8.96	12.145																	
2,400.00	2,396.12	2,395.08	2,394.80	5.31	4.26	100.10	2.80	82.08	127.78	118.49	9.29	13.756																	
2,500.00	2,492.83	2,492.78	2,492.47	5.63	4.46	104.35	0.06	82.19	152.64	143.04	9.60	15.897																	
2,600.00	2,588.09	2,586.58	2,588.23	6.01	4.65	107.72	-2.53	81.99	182.69	172.81	9.89	18.481																	
2,700.00	2,681.62	2,679.53	2,679.14	6.48	4.87	110.38	-5.36	82.12	218.46	208.31	10.15	21.519																	
2,800.00	2,773.18	2,769.99	2,769.54	7.04	5.07	112.48	-8.34	82.15	259.34	248.94	10.40	24.964																	
2,900.00	2,862.51	2,860.42	2,859.90	7.72	5.27	114.21	-11.88	81.88	305.11	294.49	10.62	28.732																	
2,959.97	2,914.91	2,913.88	2,913.32	8.19	5.39	115.10	-14.06	81.22	334.46	323.71	10.74	31.134																	
3,000.00	2,949.57	2,948.00	2,947.41	8.53	5.47	115.61	-15.44	80.77	354.59	343.67	10.92	32.466																	
3,100.00	3,036.17	3,033.46	3,032.80	9.40	5.66	116.62	-18.74	79.87	405.12	393.74	11.38	35.585																	
3,200.00	3,122.78	3,119.37	3,118.64	10.31	5.86	117.42	-22.14	78.97	455.81	443.94	11.87	38.412																	
3,300.00	3,209.38	3,205.12	3,204.31	11.26	6.05	118.08	-25.68	78.02	506.59	494.23	12.36	40.986																	
3,400.00	3,295.88	3,288.93	3,288.03	12.23	6.25	118.61	-29.24	77.26	557.61	544.75	12.87	43.338																	
3,500.00	3,382.59	3,372.35	3,371.38	13.22	6.45	119.04	-32.83	76.83	609.01	595.63	13.39	45.511																	
3,600.00	3,469.19	3,458.26	3,457.20	14.23	6.66	119.41	-36.70	76.53	660.64	646.73	13.91	47.489																	
3,700.00	3,555.79	3,545.69	3,544.51	15.25	6.87	119.80	-41.18	75.69	712.10	697.85	14.45	49.272																	
3,800.00	3,642.40	3,629.97	3,628.64	16.27	7.08	120.18	-46.11	74.36	763.44	748.45	14.99	50.913																	
3,900.00	3,729.00	3,708.19	3,706.63	17.31	7.27	120.57	-51.89	73.02	815.39	799.86	15.53	52.498																	
4,000.00	3,815.60	3,785.38	3,783.49	18.36	7.46	120.98	-58.94	71.70	868.15	852.07	16.07	54.007																	
4,100.00	3,902.21	3,866.22	3,863.89	19.40	7.67	121.41	-67.27	70.41	921.54	904.91	16.64	55.395																	
4,200.00	3,988.81	3,947.83	3,945.05	20.46	7.87	121.79	-75.72	69.33	975.22	958.01	17.20	56.683																	
4,300.00	4,075.41	4,031.14	4,027.91	21.52	8.09	122.14	-84.33	68.47	1,029.13	1,011.34	17.78	57.870																	
4,400.00	4,162.02	4,118.16	4,114.52	22.58	8.31	122.43	-92.70	67.80	1,082.93	1,064.56	18.37	58.937																	
4,500.00	4,248.62	4,205.28	4,201.31	23.65	8.54	122.66	-100.26	67.37	1,136.53	1,117.56	18.97	59.920																	
4,569.62	4,328.24	4,279.61	4,275.40	24.60	8.73	122.80	-108.27	67.23	1,184.53	1,165.04	19.49	60.768																	
4,600.00	4,335.24	4,288.23	4,283.99	24.70	8.75	122.82	-105.95	67.23	1,190.07	1,170.48	19.58	60.766																	
4,700.00	4,423.37	4,372.67	4,368.18	25.65	8.97	122.96	-113.45	67.42	1,241.05	1,220.63	20.42	60.765																	
4,800.00	4,513.85	4,463.62	4,458.89	26.31	9.21	123.09	-120.06	67.90	1,287.49	1,266.27	21.22	60.672																	
4,900.00	4,606.43	4,559.14	4,554.20	26.98	9.45	123.22	-126.42	68.41	1,328.96	1,308.99	21.97	60.501																	
5,000.00	4,700.87	4,653.38	4,648.26	27.58	9.70	123.34	-132.20	68.94	1,365.36	1,342.72	22.64	60.302																	
5,100.00	4,796.89	4,746.70	4,741.40	28.05	9.94	123.45	-137.86	69.57	1,396.93	1,373.68	23.25	60.092																	
5,200.00	4,894.24	4,846.24	4,840.76	28.46	10.20	123.58	-143.84	70.33	1,423.53	1,399.74	23.79	59.825																	
5,256.26	4,949.50	4,906.42	4,900.84	28.65	10.36	123.66	-147.29	70.62	1,436.06	1,411.98	24.08	59.633																	
5,300.00	4,992.66	4,953.53	4,947.88	28.78	10.48	123.72	-149.89	70.72	1,444.54	1,420.25	24.29	59.473																	
5,400.00	5,091.66	5,057.19	5,051.40	29.03	10.75	123.87	-155.29	70.68	1,459.86	1,435.17	24.70	59.111																	
5,500.00	5,191.58	5,157.90	5,152.00	29.20	11.01	124.00	-160.08	70.77	1,469.87	1,444.85	25.02	58.752																	
5,589.60	5,281.14	5,247.96	5,241.97	29.29	11.25	124.12	-164.04	70.99	1,474.36	1,449.12	25.24	58.421																	
5,600.00	5,291.55	5,258.38	5,252.37	29.29	11.28	124.13	-164.50	71.02	1,474.63	1,449.35	25.28	58.330																	
5,700.00	5,381.55	5,300.00	5,293.96	29.38	11.38	124.19	-166.31	71.12	1,478.44	1,452.88	25.56	57.840																	
5,800.00	5,491.55	5,300.00	5,293.96	29.47	11.38	124.19	-166.31	71.12	1,488.39	1,462.66	25.73	57.845																	
5,900.00	5,691.55	5,300.00	5,293.96	29.56	11.38	124.19	-166.31	71.12	1,504.93	1,479.03	25.90	58.101																	
6,000.00	5,891.55	5,300.00	5,293.96	29.65	11.38	124.19	-166.31	71.12	1,527.85	1,501.78	26.07	58.596																	
6,100.00	5,791.55	5,300.00	5,293.96	29.75	11.38	124.19	-166.31	71.12	1,556.87	1,530.62	26.25	59.313																	

Company: ANADARKO PETROLEUM CORP.  
 Project: UTAH COUNTY, UTAH (nad 27)  
 Reference Site: NBU 1022-3B PAD  
 Site Error: 0.00ft  
 Reference Well: NBU 1022-03C1S  
 Well Error: 0.00ft  
 Reference Wellbore: NBU 1022-03C1S  
 Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 2.00 sigma  
 Database: EDM 2003.21 Single User Db  
 Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - EXISTING NBU 229 - EXISTING WELL NBU 922 - EXISTING WELL NBU 922													Offset Site Error:	0.00ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.00ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,200.00	5,991.55	5,300.00	5,293.96	29.84	11.38	124.19	-166.31	71.12	1,591.65	1,565.23	26.42	60.236		
6,300.00	5,991.55	5,300.00	5,293.96	29.94	11.38	124.19	-166.31	71.12	1,631.83	1,605.23	26.60	61.346		
6,400.00	6,091.55	5,300.00	5,293.96	30.03	11.38	124.19	-166.31	71.12	1,677.02	1,650.24	26.78	62.626		
6,500.00	6,191.55	5,300.00	5,293.96	30.13	11.38	124.19	-166.31	71.12	1,726.82	1,699.87	26.96	64.057		
6,600.00	6,291.55	5,300.00	5,293.96	30.23	11.38	124.19	-166.31	71.12	1,780.85	1,753.72	27.14	65.623		
6,700.00	6,391.55	5,300.00	5,293.96	30.33	11.38	124.19	-166.31	71.12	1,838.74	1,811.42	27.32	67.308		
6,800.00	6,491.55	5,300.00	5,293.96	30.44	11.38	124.19	-166.31	71.12	1,900.12	1,872.62	27.50	69.091		
6,900.00	6,591.55	5,300.00	5,293.96	30.54	11.38	124.19	-166.31	71.12	1,964.69	1,937.00	27.69	70.965		
7,000.00	6,691.55	5,300.00	5,293.96	30.64	11.38	124.19	-166.31	71.12	2,032.12	2,004.25	27.87	72.915		
7,100.00	6,791.55	5,300.00	5,293.96	30.75	11.38	124.19	-166.31	71.12	2,102.15	2,074.09	28.06	74.929		
7,200.00	6,891.55	5,300.00	5,293.96	30.86	11.38	124.19	-166.31	71.12	2,174.52	2,146.28	28.24	76.997		
7,300.00	6,991.55	5,300.00	5,293.96	30.97	11.38	124.19	-166.31	71.12	2,249.01	2,220.58	28.43	79.109		
7,400.00	7,091.55	5,300.00	5,293.96	31.08	11.38	124.19	-166.31	71.12	2,325.42	2,296.80	28.62	81.259		
7,500.00	7,191.55	5,300.00	5,293.96	31.19	11.38	124.19	-166.31	71.12	2,403.56	2,374.75	28.81	83.437		
7,600.00	7,291.55	5,300.00	5,293.96	31.30	11.38	124.19	-166.31	71.12	2,483.27	2,454.27	29.00	85.640		
7,700.00	7,391.55	5,300.00	5,293.96	31.42	11.38	124.19	-166.31	71.12	2,564.40	2,535.21	29.19	87.859		
7,800.00	7,491.55	5,300.00	5,293.96	31.53	11.38	124.19	-166.31	71.12	2,646.82	2,617.44	29.38	90.092		
7,900.00	7,591.55	5,300.00	5,293.96	31.65	11.38	124.19	-166.31	71.12	2,730.42	2,700.84	29.57	92.333		
8,000.00	7,691.55	5,300.00	5,293.96	31.77	11.38	124.19	-166.31	71.12	2,815.08	2,785.32	29.76	94.578		
8,100.00	7,791.55	5,300.00	5,293.96	31.88	11.38	124.19	-166.31	71.12	2,900.73	2,870.77	29.96	96.825		
8,200.00	7,891.55	5,300.00	5,293.96	32.00	11.38	124.19	-166.31	71.12	2,987.26	2,957.11	30.15	99.070		
8,300.00	7,991.55	5,300.00	5,293.96	32.12	11.38	124.19	-166.31	71.12	3,074.61	3,044.26	30.35	101.311		
8,400.00	8,091.55	5,300.00	5,293.96	32.25	11.38	124.19	-166.31	71.12	3,162.71	3,132.17	30.54	103.546		
8,500.00	8,191.55	5,300.00	5,293.96	32.37	11.38	124.19	-166.31	71.12	3,251.50	3,220.76	30.74	105.773		
8,600.00	8,291.55	5,300.00	5,293.96	32.49	11.38	124.19	-166.31	71.12	3,340.93	3,309.99	30.94	107.990		
8,700.00	8,391.55	5,300.00	5,293.96	32.62	11.38	124.19	-166.31	71.12	3,430.93	3,399.80	31.14	110.195		
8,800.00	8,491.55	5,300.00	5,293.96	32.74	11.38	124.19	-166.31	71.12	3,521.48	3,490.15	31.33	112.388		
8,900.00	8,591.55	5,300.00	5,293.96	32.87	11.38	124.19	-166.31	71.12	3,612.53	3,580.99	31.53	114.567		
9,000.00	8,691.55	5,300.00	5,293.96	33.00	11.38	124.19	-166.31	71.12	3,704.03	3,672.30	31.73	116.731		
9,108.45	8,800.00	5,300.00	5,293.96	33.14	11.38	124.19	-166.31	71.12	3,803.76	3,771.81	31.96	119.060		



**Weatherford International Ltd.**  
Anticollision Report



Company: ANADARKO PETROLEUM CORP.  
 Project: UINTAH COUNTY, UTAH (nad 27)  
 Reference Site: NBU 1022-3B PAD  
 Site Error: 0.00ft  
 Reference Well: NBU 1022-03C1S  
 Well Error: 0.00ft  
 Reference Wellbore: NBU 1022-03C1S  
 Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 2.00 sigma  
 Database: EDM 2003.21 Single User Db  
 Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - NBU 1022-03A3S - NBU 1022-03A3S - Design #1													Offset Site Error:	0.00ft
Survey Program: 0-MVWD													Offset Well Error:	0.00ft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	63.90	26.30	53.70	59.80					
100.00	100.00	100.00	100.00	0.09	0.09	63.90	26.30	53.70	59.80	59.62	0.18	324.455		
200.00	200.00	200.00	200.00	0.32	0.32	63.90	26.30	53.70	59.80	59.17	0.63	94.345		
300.00	300.00	300.00	300.00	0.54	0.54	63.90	26.30	53.70	59.80	58.72	1.08	55.198		
400.00	400.00	400.00	400.00	0.77	0.77	63.90	26.30	53.70	59.80	58.27	1.53	39.011		
500.00	500.00	500.00	500.00	0.99	0.99	63.90	26.30	53.70	59.80	57.82	1.98	30.165		
600.00	600.00	600.00	600.00	1.22	1.22	63.90	26.30	53.70	59.80	57.37	2.43	24.589		
700.00	700.00	700.00	700.00	1.44	1.44	63.90	26.30	53.70	59.80	56.92	2.88	20.753		
800.00	800.00	800.00	800.00	1.67	1.67	63.90	26.30	53.70	59.80	56.47	3.33	17.952		
900.00	900.00	900.00	900.00	1.89	1.89	63.90	26.30	53.70	59.80	56.02	3.78	15.818		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	63.90	26.30	53.70	59.80	55.57	4.23	14.137		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	63.90	26.30	53.70	59.80	55.12	4.68	12.779		
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	63.90	26.30	53.70	59.80	54.67	5.13	11.659		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	63.90	26.30	53.70	59.80	54.22	5.58	10.719		
1,400.00	1,400.00	1,400.00	1,400.00	3.01	3.01	63.90	26.30	53.70	59.80	53.77	6.03	9.920		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	63.90	26.30	53.70	59.80	53.32	6.48	9.232		
1,600.00	1,600.00	1,600.00	1,600.00	3.46	3.46	63.90	26.30	53.70	59.80	52.87	6.93	8.632		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	63.90	26.30	53.70	59.80	52.42	7.38	8.108		
1,800.00	1,800.00	1,800.00	1,800.00	3.91	3.91	63.90	26.30	53.70	59.80	51.97	7.83	7.641		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	63.90	26.30	53.70	59.80	51.52	8.28	7.226		
1,980.00	1,960.00	1,960.00	1,960.00	4.27	4.27	63.90	26.30	53.70	59.80	51.25	8.55	6.998 CC, ES		
2,000.00	2,000.00	1,998.84	1,998.83	4.36	4.36	64.36	26.35	54.10	60.42	51.70	8.71	6.933 SF		
2,100.00	2,099.87	2,095.35	2,095.24	4.57	4.55	68.87	28.88	58.46	67.60	58.48	9.12	7.415		
2,200.00	2,199.37	2,189.96	2,189.41	4.80	4.75	75.76	27.95	67.43	83.63	74.12	9.51	8.793		
2,300.00	2,298.21	2,281.44	2,279.92	5.04	4.97	82.29	29.52	80.50	109.16	99.27	9.89	11.042		
2,400.00	2,398.12	2,385.71	2,385.60	5.31	5.19	87.44	31.49	96.96	144.08	133.84	10.24	14.072		
2,500.00	2,492.83	2,450.93	2,445.54	5.63	5.43	91.30	33.78	116.01	187.80	177.23	10.57	17.766		
2,600.00	2,588.09	2,527.45	2,519.14	6.01	5.69	94.20	36.27	136.79	239.57	228.69	10.88	22.010		
2,700.00	2,681.62	2,600.00	2,588.09	6.48	5.97	96.43	38.95	159.18	298.64	287.44	11.19	26.684		
2,800.00	2,773.18	2,661.98	2,648.28	7.04	6.26	98.31	41.49	180.36	364.22	352.73	11.49	31.702		
2,800.00	2,862.51	2,719.73	2,699.86	7.72	6.55	99.86	44.06	201.77	435.62	423.80	11.82	36.868		
2,959.97	2,914.91	2,751.35	2,728.90	8.19	6.73	100.69	45.55	214.17	480.94	468.91	12.03	39.991		
3,000.00	2,949.57	2,771.46	2,747.27	8.53	6.84	101.19	46.52	222.31	511.90	499.69	12.21	41.913		
3,100.00	3,036.17	2,819.65	2,790.91	9.40	7.14	102.24	48.95	242.58	590.42	577.73	12.69	46.509		
3,200.00	3,122.78	2,865.05	2,831.55	10.31	7.45	103.06	51.36	262.67	670.44	657.23	13.20	50.781		
3,300.00	3,209.38	2,900.00	2,882.51	11.26	7.89	103.83	53.29	278.78	751.84	738.13	13.71	54.821		
3,400.00	3,295.98	2,948.22	2,904.71	12.23	8.07	104.27	56.07	301.94	834.35	820.08	14.26	58.501		
3,500.00	3,382.59	2,998.32	2,948.12	13.22	8.48	104.59	59.05	326.78	917.75	902.93	14.82	61.923		
3,600.00	3,469.19	3,053.31	2,895.74	14.23	8.96	104.80	62.32	354.08	1,001.22	985.83	15.39	65.052		
3,700.00	3,555.79	3,108.29	3,043.36	15.25	9.44	104.98	65.59	381.38	1,084.70	1,068.73	15.97	67.931		
3,800.00	3,642.40	3,163.28	3,090.97	16.27	9.95	105.13	68.87	408.67	1,168.18	1,151.62	16.56	70.551		
3,900.00	3,729.00	3,218.26	3,138.59	17.31	10.46	105.26	72.14	435.97	1,251.67	1,234.52	17.15	72.963		
4,000.00	3,815.60	3,273.25	3,186.21	18.36	10.98	105.37	75.41	463.27	1,335.17	1,317.40	17.76	75.174		
4,100.00	3,902.21	3,328.23	3,233.83	19.40	11.51	105.48	78.69	490.56	1,418.66	1,400.29	18.37	77.210		
4,200.00	3,988.81	3,383.22	3,281.45	20.46	12.04	105.56	81.96	517.86	1,502.17	1,483.17	18.99	79.089		
4,300.00	4,075.41	3,438.20	3,329.06	21.52	12.59	105.65	85.23	545.16	1,585.67	1,566.05	19.62	80.821		
4,400.00	4,162.02	3,493.19	3,376.68	22.58	13.13	105.72	88.51	572.46	1,669.17	1,648.93	20.25	82.429		
4,500.00	4,248.62	3,548.17	3,424.30	23.65	13.68	105.78	91.78	599.75	1,752.68	1,731.80	20.89	83.914		
4,589.62	4,326.24	3,597.45	3,466.98	24.80	14.18	105.84	94.71	624.22	1,827.53	1,805.07	21.46	85.161		
4,600.00	4,335.24	3,603.18	3,471.94	24.70	14.24	105.84	95.05	627.06	1,836.18	1,814.65	21.53	85.302		
4,700.00	4,423.37	3,660.59	3,521.66	25.55	14.82	105.86	98.47	655.56	1,918.04	1,895.86	22.17	86.501		
4,800.00	4,513.85	3,721.92	3,574.77	26.31	15.45	105.81	102.12	686.01	1,997.00	1,974.14	22.86	87.343		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



**Weatherford International Ltd.**  
Anticollision Report



Company: ANADARKO PETROLEUM CORP.  
 Project: UINTAH COUNTY, UTAH (nad 27)  
 Reference Site: NBU 1022-3B PAD  
 Site Error: 0.00ft  
 Reference Well: NBU 1022-03C1S  
 Well Error: 0.00ft  
 Reference Wellbore: NBU 1022-03C1S  
 Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 2.00 sigma  
 Database: EDM 2003.21 Single User Db  
 Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - NBU 1022-03A3S - NBU 1022-03A3S - Design #1													Offset Site Error:	0.00ft
Survey Program: 0-MWD													Offset Well Error:	0.00ft
Reference		Offset		Semi Major Axis			Distance				Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipse (ft)	Minimum Separation (ft)	Separation Factor	Warning	
4,900.00	4,606.43	4,806.49	4,606.43	26.98	20.82	103.02	136.07	969.09	2,064.61	2,038.81	25.81	80.002		
5,000.00	4,700.87	4,900.92	4,700.87	27.56	20.92	103.28	136.07	969.09	2,096.07	2,069.51	26.56	78.909		
5,100.00	4,796.89	4,996.95	4,796.89	28.05	21.02	103.50	136.07	969.09	2,122.79	2,095.54	27.24	77.920		
5,200.00	4,894.24	5,094.30	4,894.24	28.46	21.13	103.67	136.07	969.09	2,144.67	2,116.83	27.84	77.027		
5,266.26	4,949.50	5,149.55	4,949.50	28.65	21.19	103.75	136.07	969.09	2,154.83	2,126.69	28.14	76.563		
5,300.00	4,992.66	5,192.71	4,992.66	28.78	21.24	103.80	136.07	969.09	2,161.65	2,133.29	28.36	76.220		
5,400.00	5,091.86	5,291.91	5,091.86	29.03	21.35	103.89	136.07	969.09	2,173.67	2,144.88	28.79	75.491		
5,500.00	5,191.58	5,391.63	5,191.58	29.20	21.46	103.95	136.07	969.09	2,180.69	2,151.54	29.14	74.827		
5,599.60	5,281.14	5,481.20	5,281.14	29.29	21.57	103.96	136.07	969.09	2,182.71	2,153.32	29.38	74.283		
5,600.00	5,291.55	5,491.60	5,291.55	29.29	21.58	103.96	136.07	969.09	2,182.71	2,153.29	29.42	74.201		
5,700.00	5,391.55	5,591.60	5,391.55	29.38	21.70	103.96	136.07	969.09	2,182.71	2,152.97	29.74	73.390		
5,800.00	5,491.55	5,691.60	5,491.55	29.47	21.82	103.96	136.07	969.09	2,182.71	2,152.64	30.07	72.589		
5,900.00	5,591.55	5,791.60	5,591.55	29.56	21.94	103.96	136.07	969.09	2,182.71	2,152.31	30.40	71.798		
6,000.00	5,691.55	5,891.60	5,691.55	29.65	22.06	103.96	136.07	969.09	2,182.71	2,151.97	30.74	71.017		
6,100.00	5,791.55	5,991.60	5,791.55	29.75	22.18	103.96	136.07	969.09	2,182.71	2,151.64	31.07	70.246		
6,200.00	5,891.55	6,091.60	5,891.55	29.84	22.31	103.96	136.07	969.09	2,182.71	2,151.30	31.41	69.486		
6,300.00	5,991.55	6,191.60	5,991.55	29.94	22.44	103.96	136.07	969.09	2,182.71	2,150.95	31.75	68.736		
6,400.00	6,091.55	6,291.60	6,091.55	30.03	22.57	103.96	136.07	969.09	2,182.71	2,150.61	32.10	67.997		
6,500.00	6,191.55	6,391.60	6,191.55	30.13	22.70	103.96	136.07	969.09	2,182.71	2,150.26	32.45	67.268		
6,600.00	6,291.55	6,491.60	6,291.55	30.23	22.83	103.96	136.07	969.09	2,182.71	2,149.91	32.80	66.549		
6,700.00	6,391.55	6,591.60	6,391.55	30.33	22.96	103.96	136.07	969.09	2,182.71	2,149.56	33.15	65.841		
6,800.00	6,491.55	6,691.60	6,491.55	30.44	23.10	103.96	136.07	969.09	2,182.71	2,149.20	33.51	65.144		
6,900.00	6,591.55	6,791.60	6,591.55	30.54	23.23	103.96	136.07	969.09	2,182.71	2,148.84	33.86	64.457		
7,000.00	6,691.55	6,891.60	6,691.55	30.64	23.37	103.96	136.07	969.09	2,182.71	2,148.48	34.22	63.780		
7,100.00	6,791.55	6,991.60	6,791.55	30.75	23.51	103.96	136.07	969.09	2,182.71	2,148.12	34.58	63.114		
7,200.00	6,891.55	7,091.60	6,891.55	30.86	23.65	103.96	136.07	969.09	2,182.71	2,147.76	34.95	62.457		
7,300.00	6,991.55	7,191.60	6,991.55	30.97	23.79	103.96	136.07	969.09	2,182.71	2,147.39	35.31	61.811		
7,400.00	7,091.55	7,291.60	7,091.55	31.08	23.93	103.96	136.07	969.09	2,182.71	2,147.03	35.68	61.175		
7,500.00	7,191.55	7,391.60	7,191.55	31.19	24.08	103.96	136.07	969.09	2,182.71	2,146.66	36.05	60.548		
7,600.00	7,291.55	7,491.60	7,291.55	31.30	24.22	103.96	136.07	969.09	2,182.71	2,146.29	36.42	59.932		
7,700.00	7,391.55	7,591.60	7,391.55	31.42	24.37	103.96	136.07	969.09	2,182.71	2,145.91	36.79	59.325		
7,800.00	7,491.55	7,691.60	7,491.55	31.53	24.52	103.96	136.07	969.09	2,182.71	2,145.54	37.17	58.727		
7,900.00	7,591.55	7,791.60	7,591.55	31.65	24.66	103.96	136.07	969.09	2,182.71	2,145.16	37.54	58.139		
8,000.00	7,691.55	7,891.60	7,691.55	31.77	24.81	103.96	136.07	969.09	2,182.71	2,144.79	37.92	57.560		
8,100.00	7,791.55	7,991.60	7,791.55	31.88	24.97	103.96	136.07	969.09	2,182.71	2,144.41	38.30	56.990		
8,200.00	7,891.55	8,091.60	7,891.55	32.00	25.12	103.96	136.07	969.09	2,182.71	2,144.03	38.68	56.429		
8,300.00	7,991.55	8,191.60	7,991.55	32.12	25.27	103.96	136.07	969.09	2,182.71	2,143.64	39.06	55.877		
8,400.00	8,091.55	8,291.60	8,091.55	32.25	25.42	103.96	136.07	969.09	2,182.71	2,143.26	39.45	55.334		
8,500.00	8,191.55	8,391.60	8,191.55	32.37	25.58	103.96	136.07	969.09	2,182.71	2,142.88	39.83	54.799		
8,600.00	8,291.55	8,491.60	8,291.55	32.49	25.74	103.96	136.07	969.09	2,182.71	2,142.49	40.22	54.273		
8,700.00	8,391.55	8,591.60	8,391.55	32.62	25.89	103.96	136.07	969.09	2,182.71	2,142.10	40.60	53.755		
8,800.00	8,491.55	8,691.60	8,491.55	32.74	26.05	103.96	136.07	969.09	2,182.71	2,141.71	40.99	53.246		
8,900.00	8,591.55	8,791.60	8,591.55	32.87	26.21	103.96	136.07	969.09	2,182.71	2,141.32	41.38	52.744		
9,000.00	8,691.55	8,891.60	8,691.55	33.00	26.37	103.96	136.07	969.09	2,182.71	2,140.93	41.77	52.250		
9,108.45	8,800.00	8,900.05	8,700.00	33.14	26.39	103.96	136.07	969.09	2,185.00	2,143.00	42.00	52.027		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company: ANADARKO PETROLEUM CORP.  
Project: UINTAH COUNTY, UTAH (nad 27)  
Reference Site: NBU 1022-3B PAD  
Site Error: 0.00ft  
Reference Well: NBU 1022-03C1S  
Well Error: 0.00ft  
Reference Wellbore: NBU 1022-03C1S  
Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
MD Reference: WELL @ 4984.90ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at 2.00 sigma  
Database: EDM 2003.21 Single User Db  
Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - NBU 1022-03B2S - NBU 1022-03B2S - Design #1													Offset Site Error:	0.00ft
Survey Program: 0-MWD													Offset Well Error:	0.00ft
Reference	Offset	Semi Major Axis		Distance		Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.00	0.00	0.00	0.00	0.00	0.00	65.67	8.09	17.90	19.65					
100.00	100.00	100.00	100.00	0.09	0.09	65.67	8.09	17.90	19.65	19.46	0.18	106.593		
200.00	200.00	200.00	200.00	0.32	0.32	65.67	8.09	17.90	19.65	19.01	0.63	30.995		
300.00	300.00	300.00	300.00	0.54	0.54	65.67	8.09	17.90	19.65	18.56	1.08	18.134		
400.00	400.00	400.00	400.00	0.77	0.77	65.67	8.09	17.90	19.65	18.11	1.53	12.816		
500.00	500.00	500.00	500.00	0.99	0.99	65.67	8.09	17.90	19.65	17.66	1.98	9.910		
600.00	600.00	600.00	600.00	1.22	1.22	65.67	8.09	17.90	19.65	17.21	2.43	8.078		
700.00	700.00	700.00	700.00	1.44	1.44	65.67	8.09	17.90	19.65	16.76	2.88	6.818		
800.00	800.00	800.00	800.00	1.67	1.67	65.67	8.09	17.90	19.65	16.31	3.33	5.898		
900.00	900.00	900.00	900.00	1.89	1.89	65.67	8.09	17.90	19.65	15.87	3.78	5.197		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	65.67	8.09	17.90	19.65	15.42	4.23	4.644		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	65.67	8.09	17.90	19.65	14.97	4.68	4.198		
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	65.67	8.09	17.90	19.65	14.52	5.13	3.830		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	65.67	8.09	17.90	19.65	14.07	5.58	3.522		
1,400.00	1,400.00	1,400.00	1,400.00	3.01	3.01	65.67	8.09	17.90	19.65	13.62	6.03	3.259		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	65.67	8.09	17.90	19.65	13.17	6.48	3.033		
1,600.00	1,600.00	1,600.00	1,600.00	3.46	3.46	65.67	8.09	17.90	19.65	12.72	6.93	2.836		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	65.67	8.09	17.90	19.65	12.27	7.38	2.663		
1,800.00	1,800.00	1,800.00	1,800.00	3.91	3.91	65.67	8.09	17.90	19.65	11.82	7.83	2.510		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	65.67	8.09	17.90	19.65	11.37	8.28	2.374		
1,960.00	1,960.00	1,960.00	1,960.00	4.27	4.27	65.67	8.09	17.90	19.65	11.10	8.55	2.299 CC		
2,000.00	2,000.00	2,000.00	2,000.00	4.38	4.38	65.47	8.43	17.65	19.80	11.08	8.72	2.270 ES, SF		
2,100.00	2,099.87	2,100.29	2,100.16	4.57	4.58	63.39	12.20	14.79	21.51	12.37	9.15	2.352		
2,200.00	2,199.37	2,200.40	2,199.77	4.80	4.81	59.97	20.13	8.77	25.20	15.62	9.58	2.631		
2,300.00	2,298.21	2,300.35	2,298.56	5.04	5.05	56.41	32.20	-0.37	30.04	20.90	10.04	3.081		
2,400.00	2,398.12	2,400.09	2,398.21	5.31	5.32	53.40	48.32	-12.60	38.76	28.20	10.56	3.669		
2,500.00	2,492.83	2,499.56	2,492.41	5.63	5.63	51.10	68.42	-27.84	48.64	37.46	11.17	4.353		
2,600.00	2,588.09	2,598.69	2,586.85	6.01	6.00	49.47	92.40	-46.02	60.54	48.63	11.91	5.085		
2,700.00	2,681.62	2,697.46	2,679.27	6.48	6.44	48.36	120.14	-67.06	74.42	61.62	12.79	5.818		
2,800.00	2,773.18	2,795.80	2,769.38	7.04	6.97	47.66	151.51	-90.84	90.21	76.35	13.86	6.509		
2,900.00	2,862.51	2,893.69	2,858.94	7.72	7.60	47.26	186.37	-117.26	107.87	92.74	15.13	7.127		
2,959.97	2,914.91	2,952.17	2,908.14	8.19	8.03	47.13	208.88	-134.33	119.33	103.33	16.00	7.456		
3,000.00	2,949.57	2,991.35	2,942.08	8.53	8.33	46.97	224.48	-148.16	127.21	110.58	16.63	7.650		
3,100.00	3,036.17	3,089.39	3,026.99	9.40	9.13	46.60	263.53	-175.77	146.90	128.64	18.26	8.045		
3,200.00	3,122.78	3,187.42	3,111.89	10.31	9.98	46.32	302.59	-205.36	166.60	146.62	19.97	8.341		
3,300.00	3,209.38	3,285.46	3,186.80	11.26	10.85	46.10	341.64	-235.00	186.30	164.55	21.75	8.566		
3,400.00	3,295.98	3,383.50	3,281.70	12.23	11.75	45.92	380.70	-264.61	206.00	182.43	23.57	8.739		
3,500.00	3,382.59	3,481.53	3,366.61	13.22	12.66	45.77	419.76	-294.22	225.71	200.28	25.44	8.874		
3,600.00	3,469.19	3,579.57	3,451.51	14.23	13.60	45.64	458.81	-323.83	245.42	218.09	27.33	8.980		
3,700.00	3,555.79	3,677.61	3,536.42	15.25	14.54	45.54	497.87	-353.45	265.13	235.88	29.25	9.068		
3,800.00	3,642.40	3,775.65	3,621.33	16.27	15.50	45.45	536.92	-383.06	284.84	253.66	31.18	9.135		
3,900.00	3,729.00	3,873.68	3,706.23	17.31	16.46	45.37	575.98	-412.67	304.55	271.42	33.14	9.191		
4,000.00	3,815.60	3,971.72	3,791.14	18.36	17.43	45.30	615.04	-442.28	324.27	289.16	35.10	9.238		
4,100.00	3,902.21	4,069.76	3,876.04	19.40	18.40	45.24	654.09	-471.90	343.98	306.90	37.08	9.277		
4,200.00	3,988.81	4,167.79	3,960.95	20.46	19.39	45.18	693.15	-501.51	363.69	324.62	39.07	9.309		
4,300.00	4,075.41	4,265.83	4,045.85	21.52	20.37	45.13	732.20	-531.12	383.41	342.34	41.07	9.337		
4,400.00	4,162.02	4,363.87	4,130.76	22.58	21.36	45.09	771.26	-560.73	403.12	360.05	43.07	9.360		
4,500.00	4,248.62	4,463.55	4,217.39	23.65	22.31	45.01	810.55	-590.53	422.76	377.71	45.03	9.387		
4,589.82	4,326.24	4,554.55	4,298.32	24.60	23.03	45.28	843.69	-615.65	439.77	393.11	46.66	9.426		
4,600.00	4,335.24	4,565.07	4,307.81	24.70	23.11	45.34	847.32	-618.40	441.70	394.87	46.83	9.432		
4,700.00	4,423.37	4,666.58	4,400.54	25.55	23.80	45.92	880.20	-643.33	459.33	411.00	48.33	9.505		
4,800.00	4,513.85	4,768.17	4,485.41	26.31	24.42	46.51	909.13	-665.27	475.21	425.65	49.65	9.571		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



**Weatherford International Ltd.**  
Anticollision Report



Company: ANADARKO PETROLEUM CORP.  
 Project: UINTAH COUNTY, UTAH (nad 27)  
 Reference Site: NBU 1022-3B PAD  
 Site Error: 0.00ft  
 Reference Well: NBU 1022-03C1S  
 Well Error: 0.00ft  
 Reference Wellbore: NBU 1022-03C1S  
 Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at 2.00 sigma  
 Database: EDM 2003.21 Single User Db  
 Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - NBU 1022-03B2S - NBU 1022-03B2S - Design #1													Offset Site Error:	0.00ft
Survey Program: 0-MWD													Offset Well Error:	0.00ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (ft)	+E/-N (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,900.00	4,606.43	4,899.81	4,592.12	26.98	24.96	47.11	934.01	-684.13	489.27	438.47	50.81	9.630		
5,000.00	4,700.87	4,971.43	4,690.33	27.56	25.41	47.74	954.75	-699.86	501.48	449.70	51.78	9.685		
5,100.00	4,796.89	5,072.97	4,789.72	28.05	25.79	48.40	971.29	-712.40	511.80	459.22	52.59	9.733		
5,200.00	4,894.24	5,174.38	4,889.93	28.46	26.08	49.09	983.59	-721.72	520.21	467.01	53.21	9.777		
5,266.26	4,949.50	5,231.35	4,946.55	28.65	26.21	49.49	988.63	-725.54	524.10	470.61	53.48	9.799		
5,300.00	4,992.66	5,275.58	4,990.62	28.78	26.30	49.81	991.62	-727.81	526.69	473.03	53.66	9.815		
5,400.00	5,091.86	5,376.51	5,091.43	29.03	26.44	50.57	995.38	-730.66	531.23	477.28	53.95	9.846		
5,500.00	5,191.58	5,476.66	5,191.58	29.20	26.53	51.28	995.69	-730.90	533.85	479.73	54.12	9.864		
5,589.60	5,281.14	5,568.23	5,281.14	29.29	26.62	51.47	995.69	-730.90	534.62	480.36	54.26	9.853		
5,600.00	5,291.55	5,576.63	5,291.55	29.29	26.63	51.47	995.69	-730.90	534.62	480.34	54.28	9.850		
5,700.00	5,391.55	5,676.63	5,391.55	29.38	26.72	51.47	995.69	-730.90	534.62	480.16	54.46	9.816		
5,800.00	5,491.55	5,776.63	5,491.55	29.47	26.82	51.47	995.69	-730.90	534.62	479.97	54.65	9.783		
5,900.00	5,591.55	5,876.63	5,591.55	29.56	26.91	51.47	995.69	-730.90	534.62	479.78	54.84	9.749		
6,000.00	5,691.55	5,976.63	5,691.55	29.65	27.01	51.47	995.69	-730.90	534.62	479.58	55.03	9.714		
6,100.00	5,791.55	6,076.63	5,791.55	29.75	27.11	51.47	995.69	-730.90	534.62	479.39	55.23	9.680		
6,200.00	5,891.55	6,176.63	5,891.55	29.84	27.21	51.47	995.69	-730.80	534.62	479.19	55.43	9.646		
6,300.00	5,991.55	6,276.63	5,991.55	29.94	27.32	51.47	995.69	-730.90	534.62	478.99	55.63	9.610		
6,400.00	6,091.55	6,376.63	6,091.55	30.03	27.42	51.47	995.69	-730.90	534.62	478.78	55.84	9.574		
6,500.00	6,191.55	6,476.63	6,191.55	30.13	27.53	51.47	995.69	-730.90	534.62	478.57	56.05	9.539		
6,600.00	6,291.55	6,576.63	6,291.55	30.23	27.63	51.47	995.69	-730.90	534.62	478.36	56.26	9.503		
6,700.00	6,391.55	6,676.63	6,391.55	30.33	27.74	51.47	995.69	-730.90	534.62	478.15	56.47	9.467		
6,800.00	6,491.55	6,776.63	6,491.55	30.44	27.85	51.47	995.69	-730.90	534.62	477.93	56.69	9.431		
6,900.00	6,591.55	6,876.63	6,591.55	30.54	27.96	51.47	995.69	-730.90	534.62	477.71	56.91	9.394		
7,000.00	6,691.55	6,976.63	6,691.55	30.64	28.08	51.47	995.69	-730.90	534.62	477.49	57.13	9.358		
7,100.00	6,791.55	7,076.63	6,791.55	30.75	28.19	51.47	995.69	-730.90	534.62	477.26	57.36	9.321		
7,200.00	6,891.55	7,176.63	6,891.55	30.86	28.31	51.47	995.69	-730.90	534.62	477.04	57.58	9.284		
7,300.00	6,991.55	7,276.63	6,991.55	30.97	28.42	51.47	995.69	-730.90	534.62	476.81	57.81	9.247		
7,400.00	7,091.55	7,376.63	7,091.55	31.08	28.54	51.47	995.69	-730.90	534.62	476.57	58.05	9.210		
7,500.00	7,191.55	7,476.63	7,191.55	31.19	28.66	51.47	995.69	-730.90	534.62	476.34	58.28	9.173		
7,600.00	7,291.55	7,576.63	7,291.55	31.30	28.78	51.47	995.69	-730.90	534.62	476.10	58.52	9.136		
7,700.00	7,391.55	7,676.63	7,391.55	31.42	28.91	51.47	995.69	-730.90	534.62	475.86	58.76	9.098		
7,800.00	7,491.55	7,776.63	7,491.55	31.53	29.03	51.47	995.69	-730.90	534.62	475.62	59.00	9.061		
7,900.00	7,591.55	7,876.63	7,591.55	31.65	29.15	51.47	995.69	-730.90	534.62	475.37	59.25	9.024		
8,000.00	7,691.55	7,976.63	7,691.55	31.77	29.28	51.47	995.69	-730.90	534.62	475.12	59.49	8.986		
8,100.00	7,791.55	8,076.63	7,791.55	31.88	29.41	51.47	995.69	-730.90	534.62	474.87	59.74	8.948		
8,200.00	7,891.55	8,176.63	7,891.55	32.00	29.53	51.47	995.69	-730.90	534.62	474.62	60.00	8.911		
8,300.00	7,991.55	8,276.63	7,991.55	32.12	29.66	51.47	995.69	-730.90	534.62	474.37	60.25	8.873		
8,400.00	8,091.55	8,376.63	8,091.55	32.25	29.79	51.47	995.69	-730.90	534.62	474.11	60.51	8.836		
8,500.00	8,191.55	8,476.63	8,191.55	32.37	29.92	51.47	995.69	-730.90	534.62	473.85	60.77	8.798		
8,600.00	8,291.55	8,576.63	8,291.55	32.49	30.06	51.47	995.69	-730.90	534.62	473.59	61.03	8.760		
8,700.00	8,391.55	8,676.63	8,391.55	32.62	30.19	51.47	995.69	-730.90	534.62	473.33	61.29	8.723		
8,800.00	8,491.55	8,776.63	8,491.55	32.74	30.32	51.47	995.69	-730.90	534.62	473.08	61.56	8.685		
8,900.00	8,591.55	8,876.63	8,591.55	32.87	30.46	51.47	995.69	-730.90	534.62	472.79	61.82	8.647		
9,000.00	8,691.55	8,976.63	8,691.55	33.00	30.60	51.47	995.69	-730.90	534.62	472.52	62.09	8.610		
9,108.45	8,800.00	9,086.08	8,800.00	33.14	30.75	51.47	995.69	-730.90	534.62	472.23	62.39	8.569		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Weatherford International Ltd.  
Anticollision Report



Company: ANADARKO PETROLEUM CORP.  
Project: UINTAH COUNTY, UTAH (nad 27)  
Reference Site: NBU 1022-3B PAD  
Site Error: 0.00ft  
Reference Well: NBU 1022-03C1S  
Well Error: 0.00ft  
Reference Wellbore: NBU 1022-03C1S  
Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
MD Reference: WELL @ 4984.90ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: EDM 2003.21 Single User Db  
Offset TVD Reference: Reference Datum

Offset Design NBU 1022-3B PAD - NBU 1022-03B4T (vertical) - NBU 1022-03B4T - Design #1														Offset Site Error:	0.00ft
Survey Program: 0-MWD														Offset Well Error:	0.00ft
Reference	Offset	Semi Major Axis		Distance		Warning									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
0.00	0.00	0.00	0.00	0.00	0.00	64.34	17.20	35.80	39.72						
100.00	100.00	100.00	100.00	0.09	0.09	64.34	17.20	35.80	39.72	39.53	0.18	215.505			
200.00	200.00	200.00	200.00	0.32	0.32	64.34	17.20	35.80	39.72	39.09	0.63	62.665			
300.00	300.00	300.00	300.00	0.54	0.54	64.34	17.20	35.80	39.72	38.64	1.08	36.663			
400.00	400.00	400.00	400.00	0.77	0.77	64.34	17.20	35.80	39.72	38.19	1.53	25.911			
500.00	500.00	500.00	500.00	0.99	0.99	64.34	17.20	35.80	39.72	37.74	1.98	20.036			
600.00	600.00	600.00	600.00	1.22	1.22	64.34	17.20	35.80	39.72	37.29	2.43	16.332			
700.00	700.00	700.00	700.00	1.44	1.44	64.34	17.20	35.80	39.72	36.84	2.88	13.784			
800.00	800.00	800.00	800.00	1.67	1.67	64.34	17.20	35.80	39.72	36.39	3.33	11.924			
900.00	900.00	900.00	900.00	1.89	1.89	64.34	17.20	35.80	39.72	35.94	3.78	10.506			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	64.34	17.20	35.80	39.72	35.49	4.23	9.390			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	64.34	17.20	35.80	39.72	35.04	4.68	8.488			
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	64.34	17.20	35.80	39.72	34.59	5.13	7.744			
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	64.34	17.20	35.80	39.72	34.14	5.58	7.120			
1,400.00	1,400.00	1,400.00	1,400.00	3.01	3.01	64.34	17.20	35.80	39.72	33.69	6.03	6.589			
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	64.34	17.20	35.80	39.72	33.24	6.48	6.132			
1,600.00	1,600.00	1,600.00	1,600.00	3.46	3.46	64.34	17.20	35.80	39.72	32.79	6.93	5.734			
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	64.34	17.20	35.80	39.72	32.34	7.38	5.394			
1,800.00	1,800.00	1,800.00	1,800.00	3.91	3.91	64.34	17.20	35.80	39.72	31.89	7.83	5.075			
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	64.34	17.20	35.80	39.72	31.44	8.28	4.799			
1,960.00	1,960.00	1,960.00	1,960.00	4.27	4.27	64.34	17.20	35.80	39.72	31.17	8.55	4.648	CC, ES		
2,000.00	2,000.00	2,000.00	2,000.00	4.38	4.38	64.84	17.20	35.80	39.96	31.24	8.72	4.581	SF		
2,100.00	2,099.87	2,099.87	2,099.87	4.57	4.59	70.01	17.20	35.80	42.82	33.67	9.15	4.680			
2,200.00	2,199.37	2,199.37	2,199.37	4.80	4.81	78.80	17.20	35.80	49.80	40.23	9.56	5.207			
2,300.00	2,298.21	2,298.21	2,298.21	5.04	5.03	88.04	17.20	35.80	61.99	52.04	9.95	6.231			
2,400.00	2,396.12	2,396.12	2,396.12	5.31	5.25	95.75	17.20	35.80	79.92	69.62	10.30	7.758			
2,500.00	2,492.83	2,492.83	2,492.83	5.63	5.47	101.52	17.20	35.80	103.58	92.96	10.62	9.749			
2,600.00	2,588.09	2,588.09	2,588.09	6.01	5.68	105.68	17.20	35.80	132.77	121.85	10.92	12.157			
2,700.00	2,681.62	2,681.62	2,681.62	6.48	5.89	108.67	17.20	35.80	167.24	155.05	11.19	14.943			
2,800.00	2,773.18	2,773.18	2,773.18	7.04	6.10	110.85	17.20	35.80	206.80	195.36	11.44	18.075			
2,900.00	2,862.51	2,862.51	2,862.51	7.72	6.30	112.47	17.20	35.80	251.26	239.59	11.67	21.531			
2,959.97	2,914.91	2,914.91	2,914.91	8.19	6.42	113.25	17.20	35.80	280.21	268.41	11.80	23.751			
3,000.00	2,949.57	2,949.57	2,949.57	8.53	6.50	113.70	17.20	35.80	300.09	288.11	11.98	25.047			
3,100.00	3,036.17	3,036.17	3,036.17	9.40	6.69	114.59	17.20	35.80	349.83	337.38	12.45	28.098			
3,200.00	3,122.78	3,122.78	3,122.78	10.31	6.89	115.27	17.20	35.80	399.64	386.71	12.93	30.899			
3,300.00	3,209.38	3,209.38	3,209.38	11.26	7.08	115.79	17.20	35.80	449.49	436.06	13.43	33.472			
3,400.00	3,295.98	3,295.98	3,295.98	12.23	7.28	116.21	17.20	35.80	499.37	485.43	13.93	35.838			
3,500.00	3,382.59	3,382.59	3,382.59	13.22	7.47	116.55	17.20	35.80	549.27	534.82	14.45	38.017			
3,600.00	3,469.19	3,469.19	3,469.19	14.23	7.66	116.83	17.20	35.80	599.18	584.22	14.97	40.027			
3,700.00	3,555.79	3,555.79	3,555.79	15.25	7.86	117.08	17.20	35.80	649.11	633.62	15.50	41.894			
3,800.00	3,642.40	3,642.40	3,642.40	16.27	8.05	117.28	17.20	35.80	699.05	683.02	16.03	43.604			
3,900.00	3,729.00	3,729.00	3,729.00	17.31	8.25	117.46	17.20	35.80	749.00	732.43	16.57	45.200			
4,000.00	3,815.60	3,815.60	3,815.60	18.36	8.44	117.62	17.20	35.80	798.95	781.84	17.11	46.682			
4,100.00	3,902.21	3,902.21	3,902.21	19.40	8.64	117.76	17.20	35.80	848.91	831.25	17.66	48.063			
4,200.00	3,988.81	3,988.81	3,988.81	20.46	8.83	117.88	17.20	35.80	898.88	880.66	18.21	49.350			
4,300.00	4,075.41	4,075.41	4,075.41	21.52	9.03	117.99	17.20	35.80	948.84	930.08	18.77	50.553			
4,400.00	4,162.02	4,162.02	4,162.02	22.58	9.22	118.09	17.20	35.80	998.82	979.49	19.33	51.679			
4,500.00	4,248.62	4,248.62	4,248.62	23.65	9.42	118.18	17.20	35.80	1,048.79	1,028.90	19.89	52.735			
4,589.62	4,326.24	4,326.24	4,326.24	24.60	9.59	118.25	17.20	35.80	1,098.58	1,073.19	20.39	53.627			
4,600.00	4,335.24	4,335.24	4,335.24	24.70	9.61	118.26	17.20	35.80	1,098.74	1,078.26	20.48	53.647			
4,700.00	4,423.37	4,423.37	4,423.37	25.55	9.81	118.33	17.20	35.80	1,145.95	1,124.66	21.29	53.826			
4,800.00	4,513.85	4,513.85	4,513.85	26.31	10.01	118.39	17.20	35.80	1,188.48	1,166.44	22.04	53.915			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



**Weatherford International Ltd.**  
Anticollision Report



**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (nad 27)  
**Reference Site:** NBU 1022-3B PAD  
**Site Error:** 0.00ft  
**Reference Well:** NBU 1022-03C1S  
**Well Error:** 0.00ft  
**Reference Wellbore:** NBU 1022-03C1S  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-03C1S  
**TVD Reference:** WELL @ 4984.90ft (Original Well Elev)  
**MD Reference:** WELL @ 4984.90ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Reference Datum

Offset Design NBU 1022-3B PAD - NBU 1022-03B4T (vertical) - NBU 1022-03B4T - Design #1														Offset Site Error:	0.00 ft
Survey Program: 0-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance				Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Azimuth from North (°)	Offset Wellbore +N-S (ft)	Centre +E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
4,900.00	4,606.43	4,606.43	4,606.43	26.98	10.22	118.44	17.20	35.80	1,226.23	1,203.50	22.74	53.929			
5,000.00	4,700.87	4,700.87	4,700.87	27.56	10.43	118.48	17.20	35.80	1,259.09	1,235.72	23.37	53.882			
5,100.00	4,796.89	4,796.89	4,796.89	28.05	10.65	118.51	17.20	35.80	1,286.95	1,263.02	23.93	53.783			
5,200.00	4,894.24	4,894.24	4,894.24	28.46	10.87	118.54	17.20	35.80	1,309.76	1,285.34	24.42	53.637			
5,256.26	4,949.50	4,949.50	4,949.50	28.65	10.99	118.55	17.20	35.80	1,320.34	1,295.68	24.66	53.538			
5,300.00	4,992.66	4,992.66	4,992.66	28.78	11.09	118.56	17.20	35.80	1,327.44	1,302.60	24.83	53.452			
5,400.00	5,091.86	5,091.86	5,091.86	29.03	11.31	118.57	17.20	35.80	1,339.94	1,314.77	25.17	53.228			
5,500.00	5,191.58	5,191.58	5,191.58	29.20	11.54	118.58	17.20	35.80	1,347.24	1,321.81	25.43	52.989			
5,569.60	5,281.14	5,281.14	5,281.14	29.29	11.74	118.58	17.20	35.80	1,349.34	1,323.74	25.60	52.707			
5,600.00	5,291.55	5,291.55	5,291.55	29.29	11.76	118.58	17.20	35.80	1,349.34	1,323.70	25.64	52.626			
5,700.00	5,391.55	5,391.55	5,391.55	29.38	11.99	118.58	17.20	35.80	1,349.34	1,323.31	26.03	51.829			
5,800.00	5,491.55	5,491.55	5,491.55	29.47	12.21	118.58	17.20	35.80	1,349.34	1,322.91	26.43	51.053			
5,900.00	5,591.55	5,591.55	5,591.55	29.56	12.44	118.58	17.20	35.80	1,349.34	1,322.52	26.83	50.297			
6,000.00	5,691.55	5,691.55	5,691.55	29.65	12.68	118.58	17.20	35.80	1,349.34	1,322.12	27.23	49.561			
6,100.00	5,791.55	5,791.55	5,791.55	29.75	12.98	118.58	17.20	35.80	1,349.34	1,321.72	27.63	48.843			
6,200.00	5,891.55	5,891.55	5,891.55	29.84	13.11	118.58	17.20	35.80	1,349.34	1,321.32	28.03	48.144			
6,300.00	5,991.55	5,991.55	5,991.55	29.94	13.33	118.58	17.20	35.80	1,349.34	1,320.91	28.43	47.462			
6,400.00	6,091.55	6,091.55	6,091.55	30.03	13.56	118.58	17.20	35.80	1,349.34	1,320.51	28.83	46.797			
6,500.00	6,191.55	6,191.55	6,191.55	30.13	13.78	118.58	17.20	35.80	1,349.34	1,320.11	29.24	46.149			
6,600.00	6,291.55	6,291.55	6,291.55	30.23	14.01	118.58	17.20	35.80	1,349.34	1,319.70	29.65	45.517			
6,700.00	6,391.55	6,391.55	6,391.55	30.33	14.23	118.58	17.20	35.80	1,349.34	1,319.29	30.05	44.900			
6,800.00	6,491.55	6,491.55	6,491.55	30.44	14.46	118.58	17.20	35.80	1,349.34	1,318.88	30.46	44.298			
6,900.00	6,591.55	6,591.55	6,591.55	30.54	14.68	118.58	17.20	35.80	1,349.34	1,318.47	30.87	43.710			
7,000.00	6,691.55	6,691.55	6,691.55	30.64	14.91	118.58	17.20	35.80	1,349.34	1,318.06	31.28	43.137			
7,100.00	6,791.55	6,791.55	6,791.55	30.75	15.13	118.58	17.20	35.80	1,349.34	1,317.65	31.69	42.577			
7,200.00	6,891.55	6,891.55	6,891.55	30.86	15.36	118.58	17.20	35.80	1,349.34	1,317.24	32.10	42.030			
7,300.00	6,991.55	6,991.55	6,991.55	30.97	15.58	118.58	17.20	35.80	1,349.34	1,316.83	32.52	41.496			
7,400.00	7,091.55	7,091.55	7,091.55	31.08	15.81	118.58	17.20	35.80	1,349.34	1,316.41	32.93	40.974			
7,500.00	7,191.55	7,191.55	7,191.55	31.19	16.03	118.58	17.20	35.80	1,349.34	1,316.00	33.35	40.464			
7,600.00	7,291.55	7,291.55	7,291.55	31.30	16.26	118.58	17.20	35.80	1,349.34	1,315.58	33.76	39.965			
7,700.00	7,391.55	7,391.55	7,391.55	31.42	16.48	118.58	17.20	35.80	1,349.34	1,315.16	34.18	39.479			
7,800.00	7,491.55	7,491.55	7,491.55	31.53	16.71	118.58	17.20	35.80	1,349.34	1,314.75	34.60	39.002			
7,900.00	7,591.55	7,591.55	7,591.55	31.65	16.93	118.58	17.20	35.80	1,349.34	1,314.33	35.01	38.537			
8,000.00	7,691.55	7,691.55	7,691.55	31.77	17.16	118.58	17.20	35.80	1,349.34	1,313.91	35.43	38.081			
8,100.00	7,791.55	7,791.55	7,791.55	31.88	17.38	118.58	17.20	35.80	1,349.34	1,313.49	35.85	37.636			
8,200.00	7,891.55	7,891.55	7,891.55	32.00	17.60	118.58	17.20	35.80	1,349.34	1,313.07	36.27	37.200			
8,300.00	7,991.55	7,991.55	7,991.55	32.12	17.83	118.58	17.20	35.80	1,349.34	1,312.65	36.69	36.773			
8,400.00	8,091.55	8,091.55	8,091.55	32.25	18.05	118.58	17.20	35.80	1,349.34	1,312.23	37.12	36.355			
8,500.00	8,191.55	8,191.55	8,191.55	32.37	18.28	118.58	17.20	35.80	1,349.34	1,311.81	37.54	35.947			
8,600.00	8,291.55	8,291.55	8,291.55	32.49	18.50	118.58	17.20	35.80	1,349.34	1,311.38	37.96	35.546			
8,700.00	8,391.55	8,391.55	8,391.55	32.62	18.73	118.58	17.20	35.80	1,349.34	1,310.96	38.38	35.154			
8,800.00	8,491.55	8,491.55	8,491.55	32.74	18.95	118.58	17.20	35.80	1,349.34	1,310.54	38.81	34.771			
8,900.00	8,591.55	8,591.55	8,591.55	32.87	19.18	118.58	17.20	35.80	1,349.34	1,310.11	39.23	34.394			
9,000.00	8,691.55	8,691.55	8,691.55	33.00	19.40	118.58	17.20	35.80	1,349.34	1,309.69	39.66	34.026			
9,108.45	8,800.00	8,700.00	8,700.00	33.14	19.42	118.58	17.20	35.80	1,353.04	1,313.15	39.89	33.917			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company: ANADARKO PETROLEUM CORP.  
 Project: UINTAH COUNTY, UTAH (nad 27)  
 Reference Site: NBU 1022-3B PAD  
 Site Error: 0.00ft  
 Reference Well: NBU 1022-03C1S  
 Well Error: 0.00ft  
 Reference Wellbore: NBU 1022-03C1S  
 Reference Design: Design #1

Local Co-ordinate Reference: Well NBU 1022-03C1S  
 TVD Reference: WELL @ 4984.90ft (Original Well Elev)  
 MD Reference: WELL @ 4984.90ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 2.00 sigma  
 Database: EDM 2003.21 Single User Db  
 Offset TVD Reference: Reference Datum

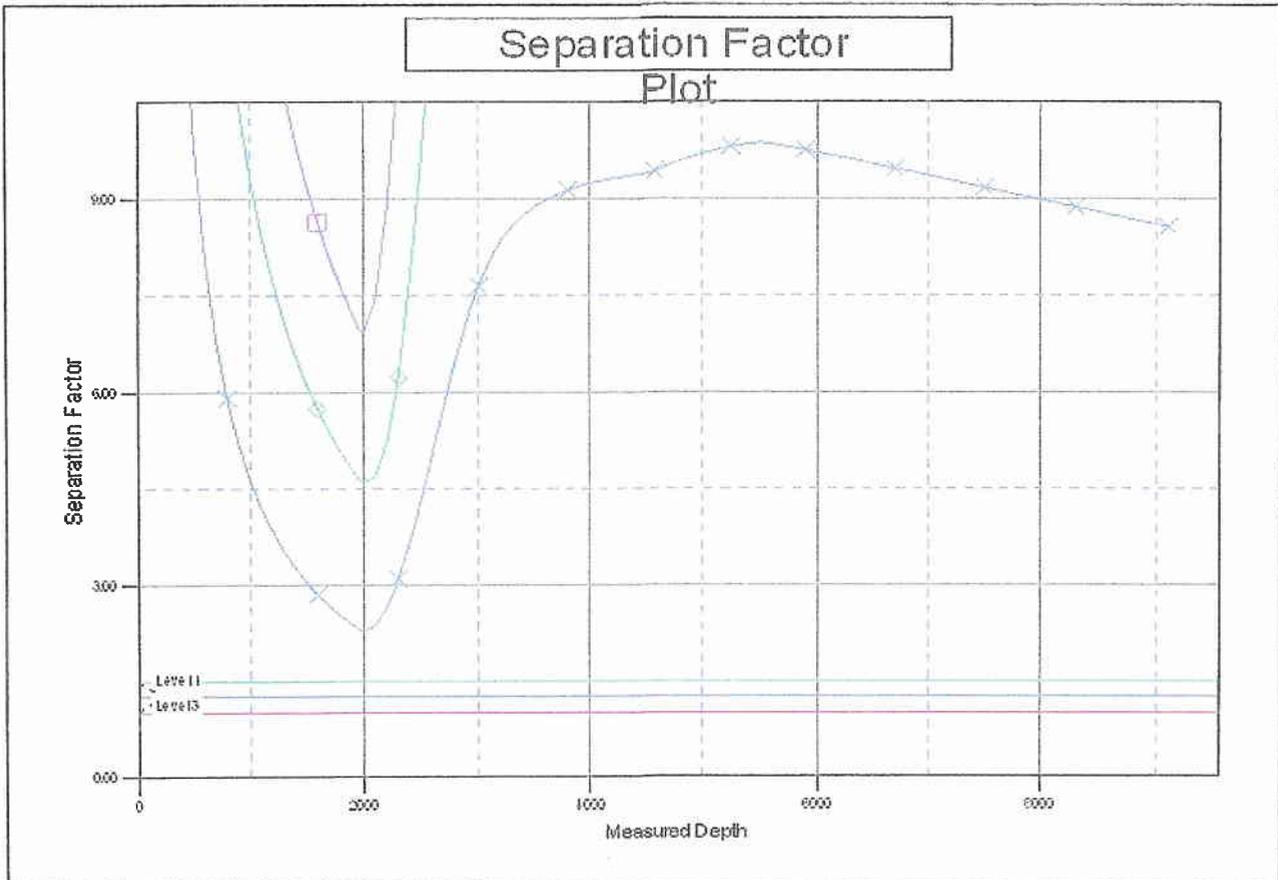
Reference Depths are relative to WELL @ 4984.90ft (Original Well Elev)  
 Coordinates are relative to: NBU 1022-03C1S  
 Offset Depths are relative to Offset Datum  
 Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 12N  
 Central Meridian is 111° 0' 0.000 W °  
 Grid Convergence at Surface is: 1.01°



**Company:** ANADARKO PETROLEUM CORP.  
**Project:** UINTAH COUNTY, UTAH (nad 27)  
**Reference Site:** NBU 1022-3B PAD  
**Site Error:** 0.00ft  
**Reference Well:** NBU 1022-03C1S  
**Well Error:** 0.00ft  
**Reference Wellbore:** NBU 1022-03C1S  
**Reference Design:** Design #1

**Local Co-ordinate Reference:** Well NBU 1022-03C1S  
**TVD Reference:** WELL @ 4984.90ft (Original Well Elev)  
**MD Reference:** WELL @ 4984.90ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** EDM 2003.21 Single User Db  
**Offset TVD Reference:** Reference Datum

Reference Depths are relative to WELL @ 4984.90ft (Original Well Elev) Coordinates are relative to: NBU 1022-03C1S  
 Offset Depths are relative to Offset Datum Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 12N  
 Central Meridian is 111° 0' 0.000 W° Grid Convergence at Surface is: 1.01°



**LEGEND**

IT, Design #1 VD  
 n# 1 VD

- x— NBU 1022-03A3S, NBU 1022-03A3S, Design #1 VD
- o— EXISTING NBU 229, EXISTING WELL NBU 922, EXISTING WELL NBU 922 VD

## **Paleontological Reconnaissance Survey Report**

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**Survey of Kerr McGee's Proposed Twin Wells "NBU #1022-3A2T,  
#1022-3B4T, NBU #1022-3C1S, NBU #1022-3B2S,  
NBU #1022-3AS3, #1022-3H2T, #1022-3JIT,  
#1022-3L2T, #1022-3J3T, #1022-3N4T,  
#1022-3O3T, & #1022-3P4T"  
(Sec. 3, T 10 S, R 22 E)**

Archy Bench  
Topographic Quadrangle  
Uintah County, Utah

October 6, 2008

Prepared by Stephen D. Sandau  
Paleontologist for  
Intermountain Paleo-Consulting  
P. O. Box 1125  
Vernal, Utah 84078

## INTRODUCTION

At the request of Raleen White of Kerr McGee Oil & Gas Onshore LP and authorized by the BLM Vernal Field Office, a paleontological reconnaissance survey of Kerr McGee's proposed twin wells "NBU #1022-3A2T, #1022-3B4T, NBU #1022-3C1S, NBU #1022-3B2S, NBU #1022-3AS3, #1022-3H2T, #1022-3JIT, #1022-3L2T, #1022-3J3T, #1022-3N4T, #1022-3O3T, & #1022-3P4T" (Sec. 3, T 10 S, R 22 E) was conducted by Stephen Sandau and Dan Burk on September 20, 2008. The reconnaissance survey was conducted under the Utah BLM Paleontological Resources Use Permit #UT08-006C. This survey to locate, identify and evaluate paleontological resources was done to meet requirements of the National Environmental Policy Act of 1969 and other State and Federal laws and regulations that protect paleontological resources.

## FEDERAL AND STATE REQUIREMENTS

As mandated by the US Department of the Interior Bureau of Land Management, paleontologically sensitive geologic formations in BLM lands that are considered for exchange or may be impacted due to ground disturbance require paleontological evaluation. This requirement complies with:

- 1) The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321.et. Seq., P.L. 91-190);
- 2) The Federal Land Policy and Management Act (FLPMA) of 1976 (90 Stat. 2743, 43 U.S.C. § 1701-1785, et. Seq., P.L. 94-579);

The new Potential Fossil Yield Classification (PFYC) System (October, 2007) replaces the Condition Classification System from Handbook H-8270-1. Geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential.

- **Class 1 – Very Low.** Geologic units (igneous, metamorphic, or Precambrian) not likely to contain recognizable fossil remains.
- **Class 2 – Low.** Sedimentary geologic units not likely to contain vertebrate fossils or scientifically significant non-vertebrate fossils. (Including modern eolian, fluvial, and colluvial deposits etc...)
- **Class 3 – Moderate or Unknown.** Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.
  - **Class 3a – Moderate Potential.** The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.
  - **Class 3b – Unknown Potential.** Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but

little information about the paleontological resources of the unit or the area is known.

- **Class 4 – High.** Geologic units containing a high occurrence of vertebrate fossils or scientifically significant invertebrate or plant fossils, but may vary in abundance and predictability.
  - **Class 4a** – Outcrop areas with high potential are extensive (greater than two acres) and paleontological resources may be susceptible to adverse impacts from surface disturbing actions.
  - **Class 4b** – Areas underlain by geologic units with high potential but have lowered risks of disturbance due to moderating circumstances such as a protective layer of soil or alluvial material; or outcrop areas are smaller than two contiguous acres.
- **Class 5 – Very High.** Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils.
  - **Class 5a** - Outcrop areas with very high potential are extensive (greater than two acres) and paleontological resources may be susceptible to adverse impacts from surface disturbing actions.
  - **Class 5b** - Areas underlain by geologic units with very high potential but have lowered risks of disturbance due to moderating circumstances such as a protective layer of soil or alluvial material; or outcrop areas are smaller than two contiguous acres.

It should be noted that many fossils, though common and unimpressive in and of themselves, can be important paleo-environmental, depositional, and chronostratigraphic indicators.

## LOCATION

Kerr McGee's proposed twin wells "NBU #1022-3A2T, #1022-3B4T, NBU #1022-3C1S, NBU #1022-3B2S, NBU #1022-3AS3, #1022-3H2T, #1022-3JIT, #1022-3L2T, #1022-3J3T, #1022-3N4T, #1022-3O3T, & #1022-3P4T" (Sec. 3, T 10 S, R 22 E) are on land managed by the BLM in the Bitter Creek area of East Bench, on the west bank of the White River, approximately 15.5 miles southeast of Ouray, Utah. The project area can be found on the Archy Bench 7.5 minute U. S. Geological Survey Quadrangle Map, Uintah County, Utah.

## PREVIOUS WORK

The basins of western North America have long produced some of the richest fossil collections in the world. Early Cenozoic sediments are especially well represented throughout the western interior. Paleontologists started field work in Utah's Uinta Basin as early as 1870 (Betts, 1871; Marsh, 1871, 1875a, 1875b). The Uinta Basin is located in the northeastern corner of Utah and covers approximately 31,000 sq. km (12,000 sq. miles) ranging in elevation from 1,465 to 2,130 m (4,800 to 7,000 ft) (Marsell, 1964; Hamblin et al., 1987). Middle to late Eocene time marked a period of dramatic change in the climate, flora, (Stucky, 1992) and fauna (Black and Dawson, 1966) of North America.

## GEOLOGICAL AND PALEONTOLOGICAL OVERVIEW

Early in the geologic history of Utah, some 1,000 to 600 Ma, an east-west trending basin developed creating accommodation for 25,000 feet of siliclastics. Uplift of that filled-basin during the early Cenozoic formed the Uinta Mountains (Rasmussen et al., 1999). With the rise of the Uinta Mountains the asymmetrical synclinal Uinta Basin is thought to have formed through the effects of down warping in connection with the uplift. Throughout the Paleozoic and Mesozoic deposition fluctuated between marine and non-marine environments laying down a thick succession of sediments in the area now occupied by the Uinta Basin. Portions of these beds crop out on the margins of the basin due to tectonic events during the late Mesozoic.

Early Tertiary Uinta Basin sediments were deposited in alternating lacustrine and fluvial environments. Large shallow lakes periodically covered most of the basin and surrounding areas during early to mid Eocene time (Abbott, 1957). These lacustrine sediments show up in the western part of the basin, dipping 2-3 degrees to the northeast and are lost in the subsurface on the east side. The increase of cross-bedded, coarse-grained sandstone and conglomerates preserved in paleo-channels indicates a transition to a fluvial environment toward the end of the epoch.

Four Eocene formations are recognized in the Uinta Basin: the Wasatch, Green River, Uinta and Duchesne River, respectively (Wood, 1941). The Uinta Formation is subdivided into two lithostratigraphic units namely: the Wagonhound Member (Wood, 1934), formerly known as Uinta A and B (Osborn, 1895, 1929) and the Myton Member previously regarded as the Uinta C.

Within the Uinta Basin in northeast Utah, the Uinta Formation in the western part of the basin is composed primarily of lacustrine sediments inter-fingering with over-bank deposits of silt and mudstone and westward flowing channel sands and fluvial clays, muds, and sands in the east (Bryant et al, 1990; Ryder et al, 1976). Stratigraphic work done by early geologists and paleontologists within the Uinta Formation focused on the definition of rock units and attempted to define a distinction between early and late Uintan faunas (Riggs, 1912; Peterson and Kay, 1931; Kay 1934). More recent work focused on magnetostratigraphy, radioscopic chronology, and continental biostratigraphy (Flynn, 1986; Prothero, 1996). Well-known for its fossiliferous nature and distinctive mammalian fauna of mid-Eocene Age, the Uinta Formation is the type formation for the Uintan Land Mammal Age (Wood et al, 1941).

The Duchesne River Formation of the Uinta Basin in northeastern Utah is composed of a succession of fluvial and flood plain deposits composed of mud, silt and sandstone. The source area for these late Eocene deposits is from the Uinta Mountains indicated by paleocurrent data (Anderson and Picard, 1972). In Peterson's (1931c) paper, the name "Duchesne Formation" was applied to the formation and it was later changed to the "Duchesne River Formation" by Kay (1934). The formation is divided up into four members: the Brennan Basin, Dry Gulch Creek, LaPoint, and Starr Flat (Anderson and Picard, 1972). Debates concerning the Duchesne River Formation, as to whether its age was late Eocene or early Oligocene, have surfaced throughout the literature of the last century (Wood et al., 1941; Scott 1945). Recent paleo-magnetostratigraphic work (Prothero, 1996) shows that the Duchesne River Formation is late Eocene in time.

## **FIELD METHODS**

In order to determine if the proposed project area contained any paleontological resources, a reconnaissance survey was performed. An on-site observation of the proposed areas undergoing surficial disturbance is necessary because judgments made from topographic maps alone are often unreliable. Areas of low relief have potential to be erosional surfaces with the possibility of bearing fossil materials rather than surfaces covered by unconsolidated sediment or soils.

When found within the proposed construction areas, outcrops and erosional surfaces were checked to determine if fossils were present and to assess needs. Careful effort is made during surveys to identify and evaluate significant fossil materials or fossil horizons when they are found. Microvertebrates, although rare, are occasionally found in anthills or upon erosional surfaces and are of particular importance.

## **PROJECT AREA**

The project area is situated in the Wagonhound Member (Uinta A & B) of the Uinta Formation. The following list provides a description of the individual wells and their associated pipelines and access roads.

### **NBU #1022-3A2T**

The proposed well is a twin of "NBU #86J" located in the NE/NE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located on top of a hill near the White River covered in colluvium and weathered tan sandstone outcrops. No fossils were found.

### **NBU #1022-3B4T, NBU #1022-3C1S, NBU #1022-3B2S, & NBU #1022-3AS3**

The proposed multi-well expansion is on the existing well pad for "NBU #229" located in the NW/NE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). Immediately adjacent to the well pad is a 1-2m thick outcrop of tan sandstone interbedded with a weaker layer possibly maroon siltstone which has no visible outcrop. No fossils were found.

**NBU #1022-3H2T**

The proposed well is a twin of "NBU #230A" located in the SE/NE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located on top of a colluvium covered hill derived from the underlying tan, medium-grained sandstone. No fossils were found.

**NBU #1022-3J1T**

The proposed well is a twin of "NBU #287" in the SW/NE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located on the side of a hill with a 0.5-1m thick maroon siltstone interbedded with a 2-3m thick tan sandstone and a 1-2m thick green mudstone. No fossils were found.

**NBU #1022-3L2T**

The proposed well is a twin of "NBU #288" located in the NW/SW quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located on tan, medium-grained sandstone interbedded with green mudstone. No fossils were found.

**NBU #1022-3J3T**

The proposed well is a twin of "NBU #164" located in the NW/SE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located near the top of a hill on interbedded green mudstone and tan sandstone. No fossils were found.

**NBU #1022-3N4T**

The proposed well is a twin to "NBU #289" located in the SE/SW quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). Immediately adjacent to the well pad are 2m thick outcrops of tan, medium-grained sandstone with green mudstone above and below. No fossils were found.

**NBU #1022-3O3T**

The proposed well is a twin of "NBU #290" located in the SW/SE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located at the top of a hill underlain by tan, medium-grained sandstone. No fossils were found.

**NBU #1022-3P4T**

The proposed well is a twin of "NBU #37XP" located in the SE/SE quarter-quarter section of Sec. 3, T 10 S, R 22 E (Figure 1). The well pad is located on tan, medium-grained sandstone interbedded with maroon siltstone. Trace fossil burrows were found in the sandstone.

**SURVEY RESULTS**

<b>PROJECT</b>	<b>GEOLOGY</b>	<b>PALEONTOLOGY</b>
"NBU #1022-3A2T" (Sec. 3, T 10 S, R 22 E)	The well pad is located on top of a hill near the White River covered in colluvium and weathered tan sandstone outcrops.	No fossils were found. <b>Class 3a</b>

<p>“NBU #1022-3B4T”, “NBU #1022-3C1S”, “NBU #1022-3B2S”, &amp; “NBU #1022-3AS3” (Sec. 3, T 10 S, R 22 E)</p>	<p>Immediately adjacent to the well pad is a 1-2m thick outcrop of tan sandstone interbedded with a weaker layer possibly maroon siltstone which has no visible outcrop.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3H2T” (Sec. 3, T 10 S, R 22 E)</p>	<p>The well pad is located on top of a colluvium covered hill derived from the underlying tan, medium-grained sandstone.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3J1T” (Sec. 3, T 10 S, R 22 E)</p>	<p>The well pad is located on the side of a hill with a 0.5-1m thick maroon siltstone interbedded with a 2-3m thick tan sandstone and a 1-2m thick green mudstone.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3L2T” (Sec. 3, T 10 S, R 22 E)</p>	<p>The well pad is located on tan, medium-grained sandstone interbedded with green mudstone.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3J3T” (Sec. 3, T 10 S, R 22 E)</p>	<p>The well pad is located near the top of a hill on interbedded green mudstone and tan sandstone.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3N4T” (Sec. 3, T 10 S, R 22 E)</p>	<p>Immediately adjacent to the well pad are 2m thick outcrops of tan, medium-grained sandstone with green mudstone above and below.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3O3T” (Sec. 3, T 10 S, R 22 E)</p>	<p>The well pad is located at the top of a hill underlain by tan, medium-grained sandstone.</p>	<p>No fossils were found. <b>Class 3a</b></p>
<p>“NBU #1022-3P4T” (Sec. 3, T 10 S, R 22 E)</p>	<p>The well pad is located on tan, medium-grained sandstone interbedded with maroon siltstone.</p>	<p>Trace fossil burrows were found in the sandstone. <b>Class 3a</b></p>

## RECOMMENDATIONS

A reconnaissance survey was conducted for Kerr McGee's proposed twin wells "NBU #1022-3A2T, #1022-3B4T, NBU #1022-3C1S, NBU #1022-3B2S, NBU #1022-3AS3, #1022-3H2T, #1022-3JIT, #1022-3L2T, #1022-3J3T, #1022-3N4T, #1022-3O3T, & #1022-3P4T" (Sec. 3, T 10 S, R 22 E). The twin wells covered in this report showed no signs of vertebrate fossils. Therefore, we recommend that no paleontological restrictions should be placed on the development of the projects included in this report.

Buried pipeline will encounter Uinta formational sediments along most of the staked pipeline corridors yet indications from surface fossils predict that little if any vertebrate fossils will be disturbed.

**Nevertheless, if any vertebrate fossil(s) are found during construction within the project area, Operator (Lease Holder) will report all occurrences of paleontological resources discovered to a geologist with the Vernal Field Office of the BLM. The operator is responsible for informing all persons in the areas who are associated with this project of the requirements for protecting paleontological resources. Paleontological resources found on the public lands are recognized by the BLM as constituting a fragile and nonrenewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage. These resources are afforded protection under 43 CFR 3802 and 3809, and penalties possible for the collection of vertebrate fossils are under 43 CFR 8365.1-5.**

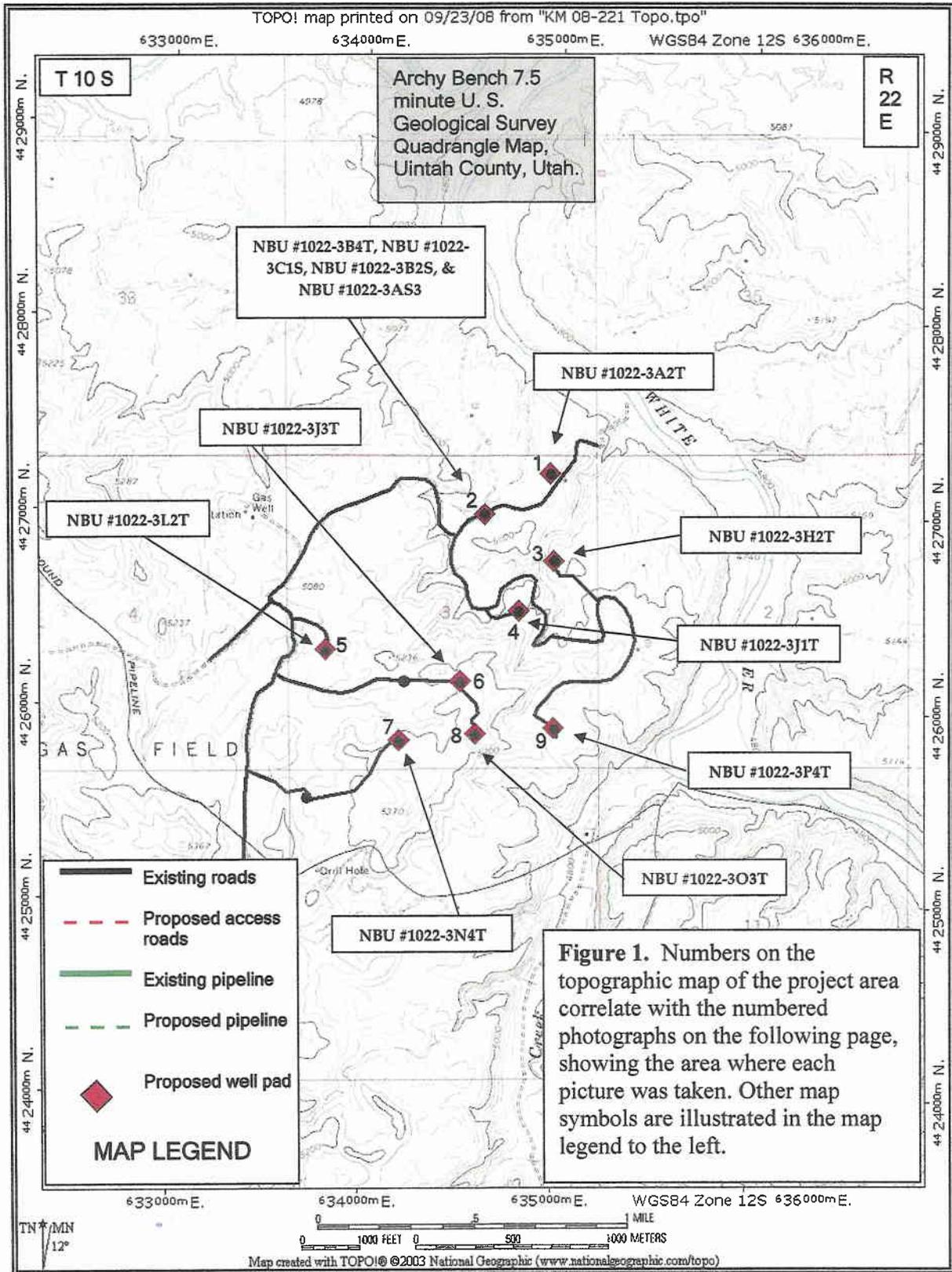
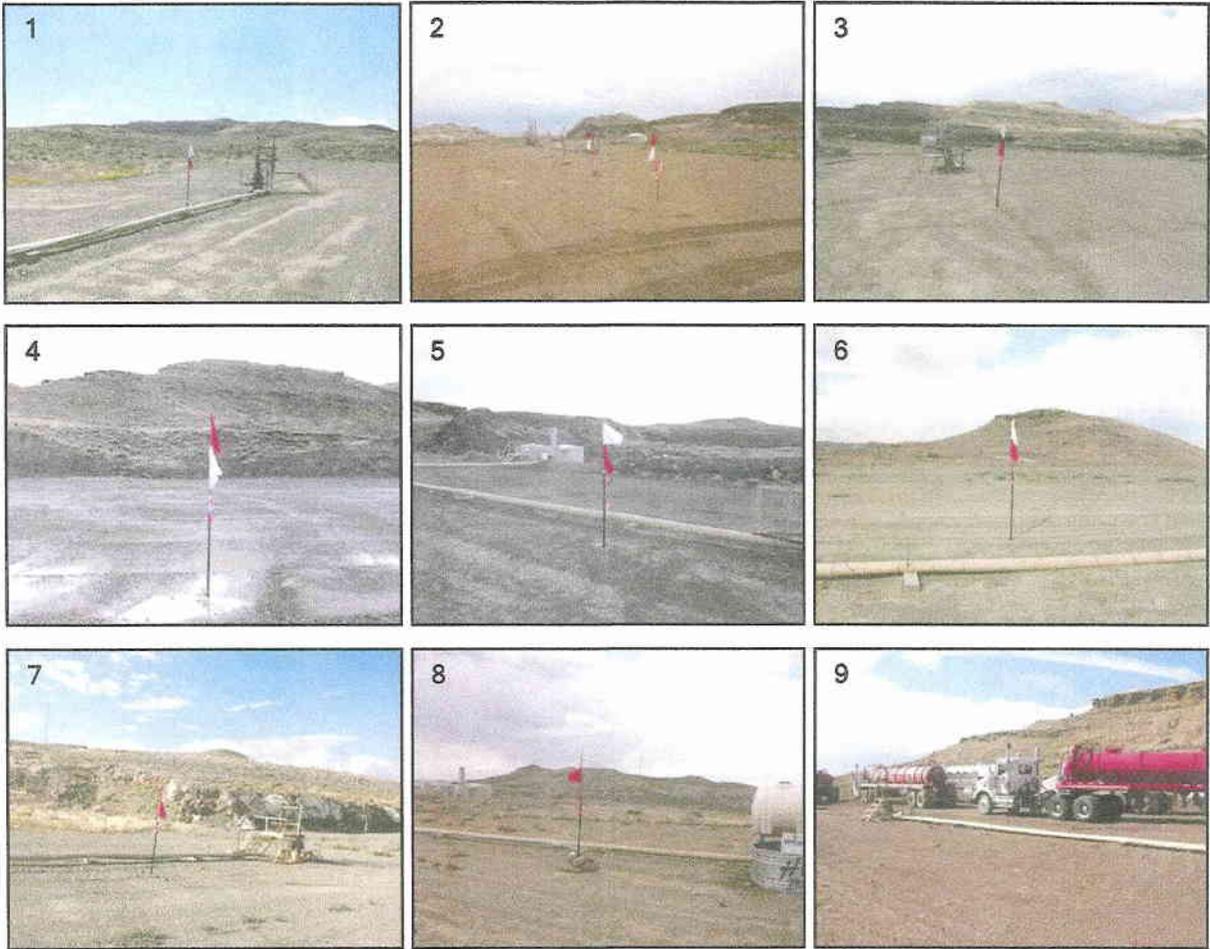


Figure 1. continued...



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**CLASS I REVIEW OF KERR-MCGEE OIL AND GAS  
ONSHORE LP'S 73 PROPOSED NBU WELL LOCATIONS  
IN TOWNSHIP 10S, RANGE 22E  
UINTAH COUNTY, UTAH**

**CLASS I REVIEW OF KERR-MCGEE OIL AND GAS  
ONSHORE LP'S 73 PROPOSED NBU WELL LOCATIONS  
IN TOWNSHIP 10S, RANGE 22E  
UINTAH COUNTY, UTAH**

**By:**

**Jacki A. Montgomery**

**Prepared For:**

**Bureau of Land Management  
Vernal Field Office  
and  
School and Institutional  
Trust Lands Administration**

**Prepared Under Contract With:**

**Kerr-McGee Oil and Gas Onshore LP  
1368 South 1200 East  
Vernal, Utah 84078**

**Prepared By:**

**Montgomery Archaeological Consultants, Inc.  
P.O. Box 219  
Moab, Utah 84532**

**MOAC Report No. 08-268**

**October 16, 2008**

**United States Department of Interior (FLPMA)  
Permit No. 08-UT-60122**

**Public Lands Policy Coordination Office  
Archaeological Survey Permit No. 117**

## INTRODUCTION

A Class I literature review was completed by Montgomery Archaeological Consultants, Inc. (MOAC) in October 2008 of Kerr-McGee Onshore's 73 proposed NBU well locations in Township 10S, Range 22E. The project area is situated south of the White River and southeast of the Ouray, Uintah County, Utah. The wells are designated NBU 1022-1I, 1022-1J, 1022-1N, 1022-1P, 1022-2A2T, 1022-2A3S, 1022-2A4S, 1022-2B2S, 1022-2D, 1022-2F, 1022-2J1T, 1022-2J2S, 1022-2J3S, 1022-2O2S, 1022-03A2T, 1022-03A3S, 1022-03B2S, 1022-03B4T, 1022-03C1S, 1022-04H2CS, 1022-04H3BS, 1022-03H2T, 1022-03L4BS, 1022-03L3DS, 1022-03M1DS, 1022-03M2DS, 1022-03J3T, 1022-03L2T, 1022-03N4T, 1022-03P4T, 1022-03O3T, 1022-04K3S, 1022-04M1S, 1022-05H2BS, 1022-05H2CS, 1022-05E4S, 1022-05F2S, 1022-05K1S, 1022-05L1S, 1022-05IT, 1022-06DT, 1022-06ET, 1022-06FT, 1022-06I3AS, 1022-06J4CS, 1022-06O1BS, 1022-06P1CS, 1022-7AT, 1022-7A4BS, 1022-7A4CS, 1022-7B2DS, 1022-08GT, 1022-08IT, 1022-09AT, 1022-11F4S, 1022-11J3S, 1022-11K1T, 1022-11K2S, 1022-11K3S, 1022-11L2S, 1022-11L3S, 1022-11M1S, 1022-13H, 1022-24O, 1022-24O2S, 1022-24P2S, 1022-24P4S, 1022-25H, 1022-32B3S, 1022-32D1S, 1022-32D4AS, 1022-32D4DS, and 1022-35M.

The purpose of this Class I review is to identify, classify, and evaluate the previously conducted cultural resource inventories and archaeological sites in the project area in order to comply with Section 106 of 36 CFR 800, the National Historic Preservation Act of 1966 (as amended). Also, the inventory was implemented to attain compliance with a number of federal and state mandates, including the National Environmental Policy Act of 1969, the Archaeological and Historic Conservation Act of 1972, the Archaeological Resources Protection Act of 1979, the American Indian Religious Freedom Act of 1978, and the Utah State Antiquities Act of 1973 (amended 1990).

The project area in which Kerr-McGee Onshore's 73 proposed NBU well locations occur was previously inventoried by MOAC in 2007 for the Class III inventory of Township 10 South, Range 22 East (Montgomery 2008; U-07-MQ-1438b,s,p). A file search was completed by consulting MOAC's Class I existing data review of 459 square miles (293,805 acres) covering the Greater NBU study area between Bonanza and Ouray in Uintah County, northeastern Utah (Patterson et al. 2008). Kerr-McGee Oil & Gas Onshore LP proposes to explore and develop oil and natural gas resources throughout the area. Record searches were performed for this Class I project by Marty Thomas at the Utah State Historic Preservation Office (SHPO) on various dates between June 14, 2006 and January 27, 2007. The results of this Class I data review and Class III inventory indicated that no previously recorded sites occur in the current project area.

## DESCRIPTION OF THE PROJECT AREA

The project area is situated west of the White River and both sides of Bitter Creek in the Uinta Basin. The legal description is Township 10S, Range 22E, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 24, 25, 32, 36; Township 11S, Range 22E, Sections 1 and 2 (Figures 1, 2 and 3; Table 1). Land status is public land administered by the Bureau of Land Management (BLM) Vernal Field Office and School and Institutional Trust Lands Administration (SITLA) property.

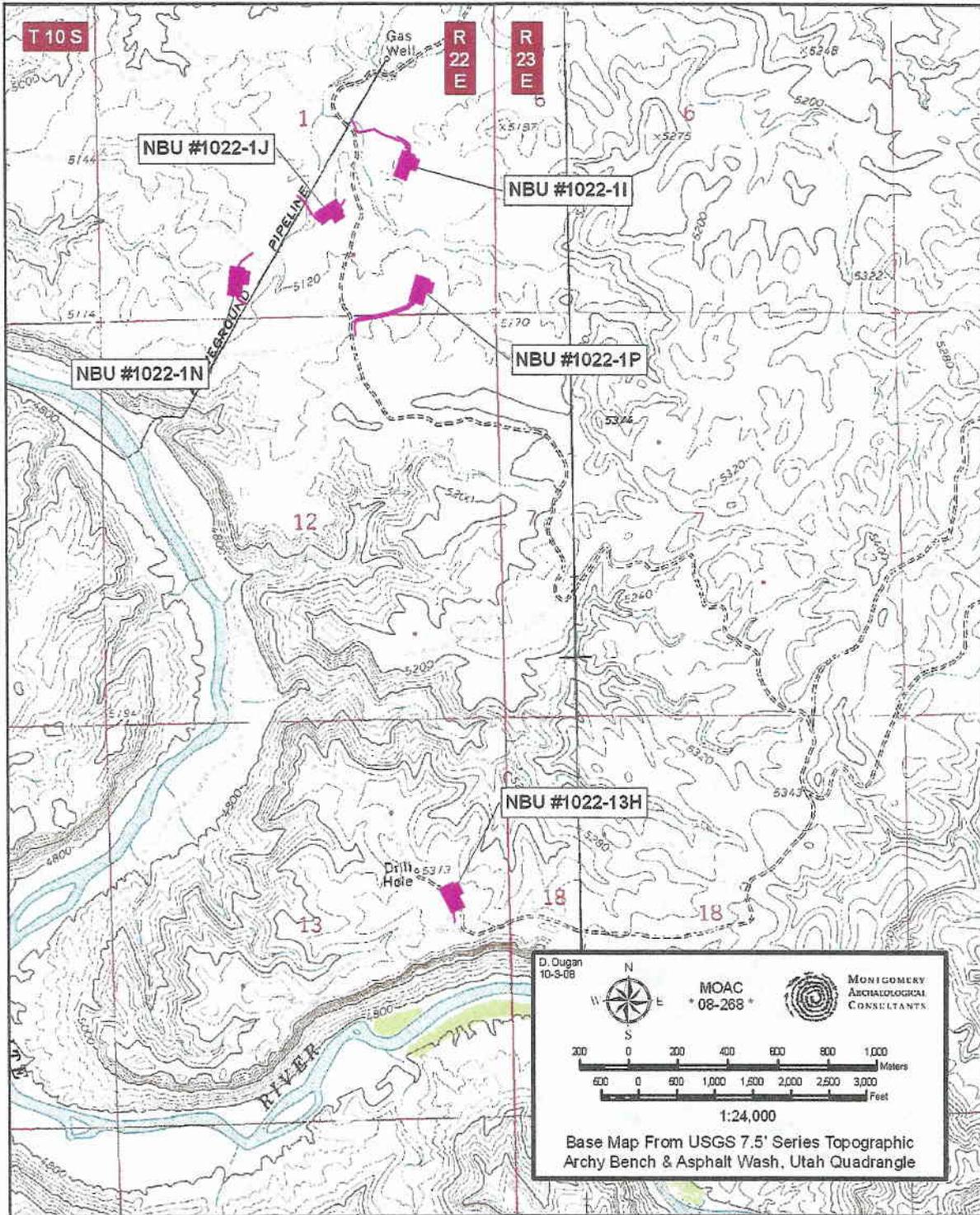
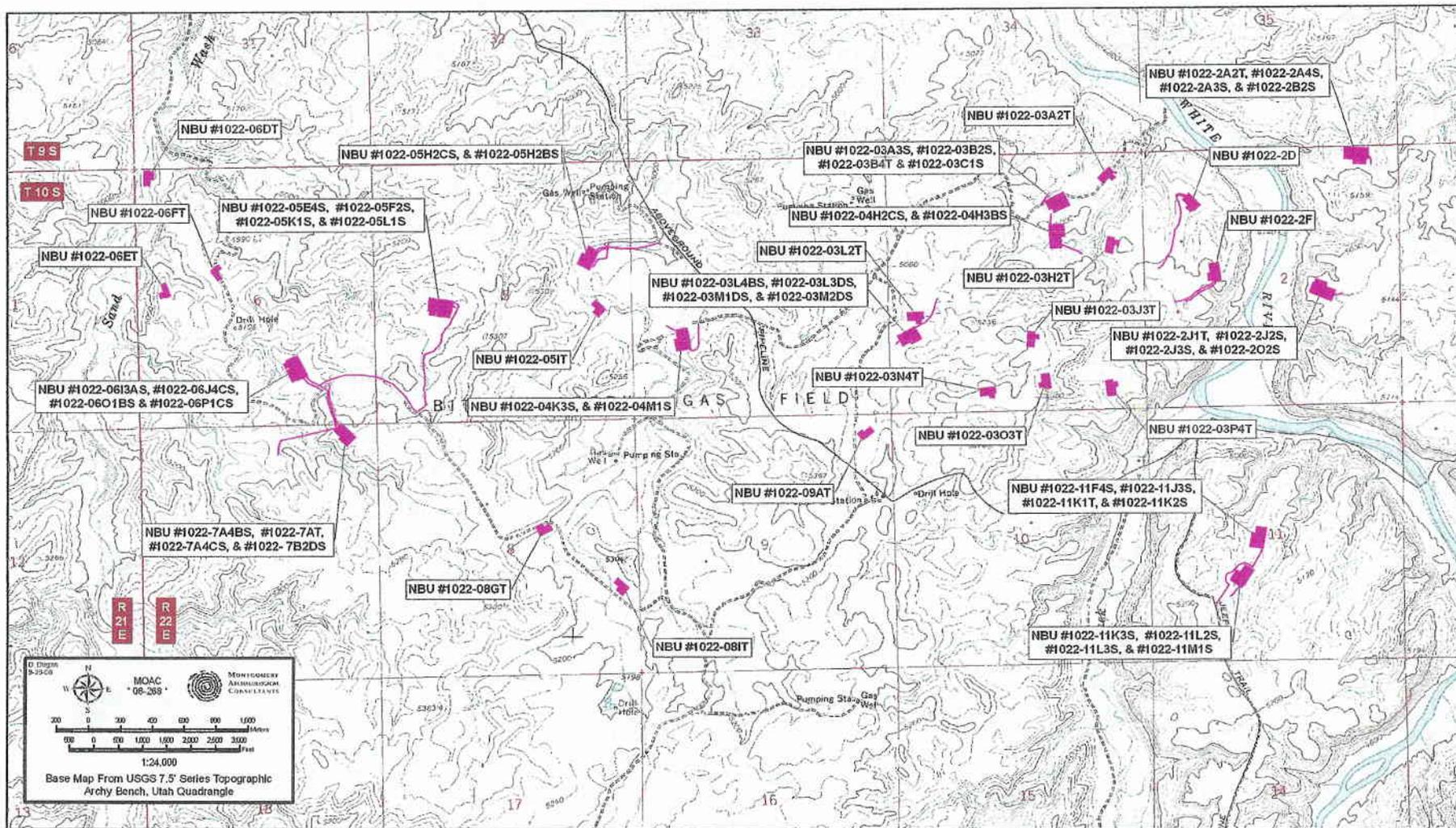


Figure 1. Location of Kerr-McGee Onshore's Well Pads in T10S, R22E.



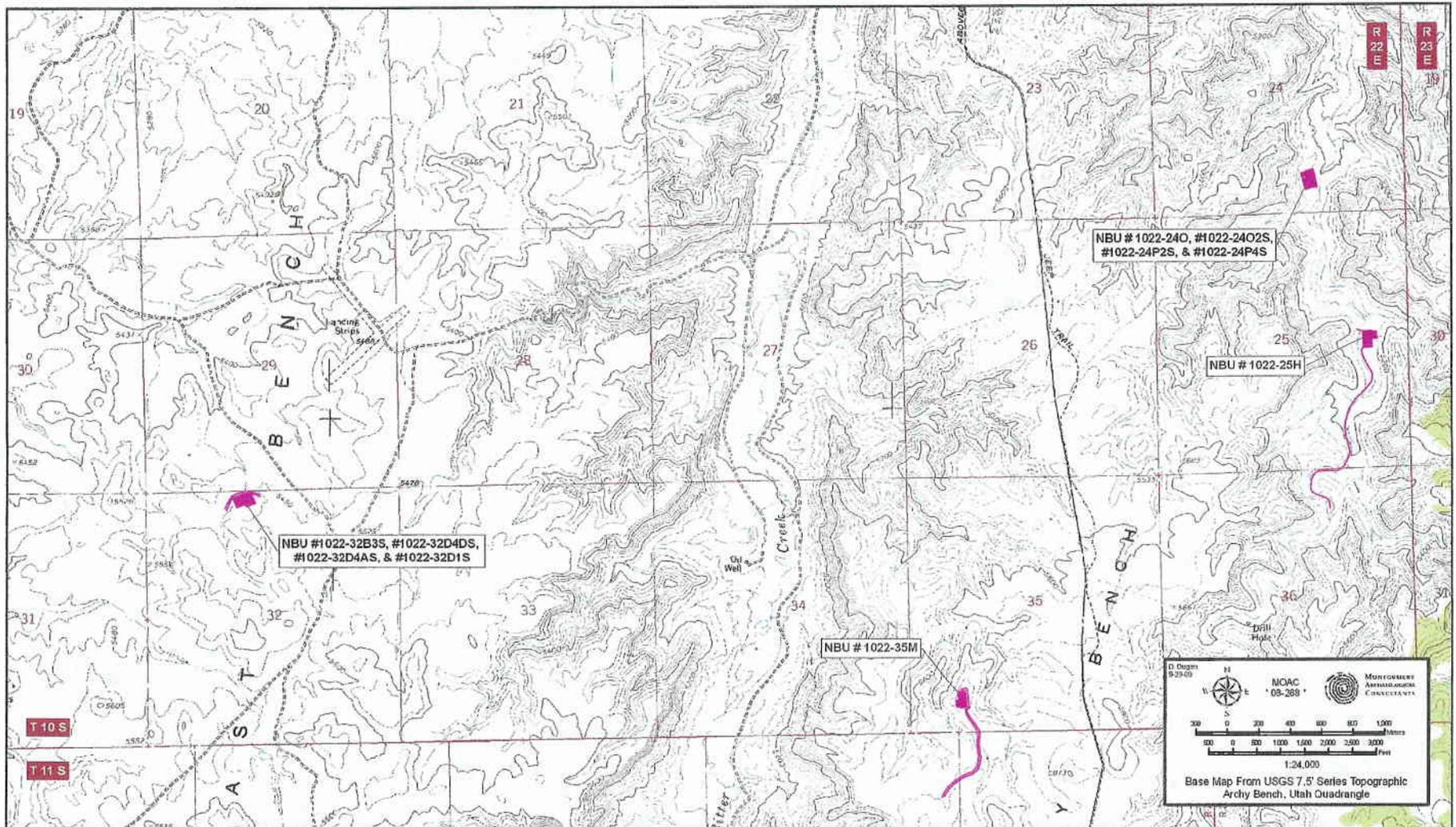


Table 1. Kerr-McGee Onshore's 73 NBU Well Locations.

Well Designation	Legal Description	Access/Pipeline Corridor	Cultural Resources
NBU 1022-1I	T10S, R22E, Sec. 1 NE/SE	Pipeline: 1000 ft Access: 200 ft	None
NBU 1022-1J	T10S, R22E, Sec. 1 NW/SE	Pipeline: 400 ft Access: 50 ft	None
NBU 1022-1N	T10S, R22E, Sec. 1 SE/SW	Pipeline: 150 ft Access: 200 ft	None
NBU 1022-1P	T10S, R22E, Sec. 1 SE/SE	Pipeline: 1050 ft Access: 1000 ft	None
NBU 1022-2A2T, 1022-2A4S 1022-243S, 1022-2B2S	T10S, R22E, Sec. 2 NE/NE	Access: 200 ft	None
NBU 1022-2D	T10S, R22E, Sec. 2 NW/NW	Pipeline: 1600 ft	None
NBU 1022-2F	T10S, R22E, Sec. 2 SE/NW	Pipeline: 800 ft Access: 1000 ft	None
NBU 1022-2J1T, 1022-2J2S, 1022-2J3S, 1022-202S	T10S, R22E, Sec. 2 NW/SE	Pipeline: 200 ft	None
NBU 1022-03A2T	T10S, R22E, Sec. 3 NE/NE	None	None
NBU1022-03A3S, 1022-03B2S 1022-03B4T, 1022-03C1S	T10S, R22E, Sec. 3 NW/NE	None	None
NBU 1022-04H2CS 1022-04H3BS	T10S, R22E, Sec. 3 SW/NE	Pipeline: 450 ft Access: 200 ft	None
NBU 1022-03H2T	T10S, R22E, Sec. 3 SE/NE	None	None
NBU 1022-03J3T	T10S, R22E, Sec. 3 NW/SE	None	None
NBU 1022-03L2T	T10S, R22E, Sec. 3 NW/SW	None	None
NBU 1022-03L4BS, 1022-03L3DS 1022-03M1DS, 1022-03M2DS	T10S, R22E, Sec. 3 NW/SW	Pipeline: 800 ft Access: 100 ft	None
NBU 1022-03N4T	T10S, R22E, Sec. 3 SE/SW	None	None
NBU 1022-03O3T	T10S, R22E, Sec. 3 SW/SE	None	None
NBU 1022-03P4T	T10S, R22E, Sec. 3 SE/SE	None	None

Well Designation	Legal Description	Access/Pipeline Corridor	Cultural Resources
NBU 1022-04K3S, 1022-04M1S	T10S, R22E, Sec. 4 NW/SW	Pipeline: 200 ft Access: 600 ft	None
NBU 1022-05H2CS, 1022-05H2BS	T10S, R22E, Sec. 5 SE/NE	Pipeline: 800 ft Access: 1200 ft	None
NBU 1022-05E4S, 1022-05F2S 1022-05K1S, 1022-05L1S	T10S, R22E Sec. 5 NE/SW	Pipeline: 4800 ft Access: 100 ft	None
NBU 1022-05IT	T10S, R22E, Sec. 5 NE/SE	None	None
NBU 1022-06DT	T10S, R22E, Sec. 6 NW/NW	None	None
NBU 1022-06ET	T10S, R22E, Sec. 6 SW/NW	None	None
NBU 1022-06FT	T10S, R22E, Sec. 6 SE/NW	None	None
NBU 1022-06I3AS, 1022-06J4CS 1022-06O1BS, 1022-06P1CS	T10S, R22E, Sec. 6 SW/SE	Pipeline: 1400 ft Access: 450 ft	None
NBU 1022-7A4BS, 1022-7AT 1022-7A4CS, 1022-7B2DS	T10S, R22E, Sec. 7 NE/NE	Pipeline: 1300 ft Access: 1000 ft	None
NBU 1022-08GT	T10SS, R22E, Sec. 8 SW/NE	None	None
NBU 1022-08IT	T10S, R22E, Sec. 8 NE/SE	None	None
NBU 1022-09AT	T10S, R22E, Sec. 9 NE/NE	None	None
NBU 1022-11F4S, 1022-11J3S, 1022-11K1T, 1022-11K2S	T10S, R22E, Sec. 11 NE/SW	Pipeline: 1600 ft	None
NBU 1022-11K3S, 1022-11L2S, 1022-11L3S, 1022-11M1S	T10S, R22E, Sec. 11 NE/SW	Pipeline: 500 ft Access: 250 ft	None
NBU 1022-13H	T10S, R22E, Sec. 13 SE/NE	Pipeline: 100 ft	
NBU 1022-24O, 1022-24O2S 1022-24P2S, 1022-24P4S	T10S, R22E, Sec. 24 SW/SE	None	None
NBU 1022-25H	T10S, R22E, Sec. 25 SE/NE	Pipeline: 4000 ft	None

Well Designation	Legal Description	Access/Pipeline Corridor	Cultural Resources
NBU 1022-32B3S, 1022-32D4DS 1022-3-2D4AS, 1022-32D1S	T10S, R22E, Sec. 32 NE/NW	Pipeline: 900 ft Access: 800 ft	None
NBU 1022-35M	T10S, R22E, Sec. 35 SW/SW	Pipeline: 2750 ft Access: 2200 ft	None

### Environmental Setting

The study area lies within the Uinta Basin physiographic unit, a distinctly bowl-shaped geologic structure (Stokes 1986:231). The Uinta Basin ecosystem is within the Green River drainage, considered to be the northernmost extension of the Colorado Plateau. The geology is comprised of Tertiary age deposits, which include Paleocene age deposits and Eocene age fluvial and lacustrine sedimentary rocks. The Uinta Formation, which is predominate in the project area, occurs as eroded outcrops (formed by fluvial deposited, stream laid interbedded sandstone and mudstone), and is known for its prolific paleontological localities. Specifically, the inventory area is situated south of the White River and on both sides of Cottonwood Wash. Elevation ranges from 5080 to 5680 ft asl. The project occurs within the Upper Sonoran Desert Shrub Association which includes sagebrush, shadscale, greasewood, mat saltbush, snakeweed, rabbitbrush, and prickly pear cactus. Modern disturbances include livestock grazing, roads, and oil/gas development.

### CLASS I RESULTS AND RECOMMENDATIONS

The Class I literature review of Kerr-McGee Onshore's 73 proposed NBU well locations and associated pipeline/access corridors in Township 10S, Range 22E resulted in the location of no cultural resources. Based on the findings, a determination of "no adverse impact" is recommended for the undertaking pursuant to Section 106, CFR 800.

### REFERENCES CITED

Montgomery, J. A.

2007 Cultural Resource Management Report for Kerr-McGee Oil and Gas Onshore LP's Greater NBU Blocks in Township 10 South, Range 22 East, Uintah County, Utah. Montgomery Archaeological Consultants, Moab, Utah. Report No. U-07-MQ-1438bsp.

Patterson, J. J., J. Fritz, K. Lower-Eskelson, R. Stash and A. Thomas

2008 NBU Class I Existing Data Review for Kerr-McGee Oil & Gas Onshore LP, Uintah County, Utah. Montgomery Archaeological Consultants, Moab, Utah.

Stokes, W. L.

1986 *Geology of Utah*. Utah Museum of Natural History and Utah Geological and Mineral Survey, Salt Lake City.

**WORKSHEET  
APPLICATION FOR PERMIT TO DRILL**

APD RECEIVED: 12/01/2008

API NO. ASSIGNED: 43-047-40437

WELL NAME: NBU 1022-3C1S

OPERATOR: KERR-MCGEE OIL & GAS ( N2995 )

PHONE NUMBER: 720-929-6226

CONTACT: KEVIN MCINTYRE

PROPOSED LOCATION:

NWNE 03 100S 220E

SURFACE: 1040 FNL 1787 FEL

*NEW* BOTTOM: 0380 FNL 2354 FWL

COUNTY: UINTAH

LATITUDE: 39.98232 LONGITUDE: -109.4223

UTM SURF EASTINGS: 634710 NORTHINGS: 4426776

FIELD NAME: NATURAL BUTTES ( 630 )

INSPECT LOCATN BY: / /		
Tech Review	Initials	Date
Engineering		
Geology		
Surface		

LEASE TYPE: 1 - Federal

LEASE NUMBER: UTU-01191

PROPOSED FORMATION: WSMVD

SURFACE OWNER: 1 - Federal

COALBED METHANE WELL? NO

RECEIVED AND/OR REVIEWED:

- Plat
- Bond: Fed[1] Ind[] Sta[] Fee[]  
(No. WYB000291 )
- Potash (Y/N)
- Oil Shale 190-5 (B) or 190-3 or 190-13
- Water Permit  
(No. 43-8496 )
- RDCC Review (Y/N)  
(Date: \_\_\_\_\_ )
- Fee Surf Agreement (Y/N)
- Intent to Commingle (Y/N)

LOCATION AND SITING:

- R649-2-3.
- Unit: NATURAL BUTTES
- R649-3-2. General
- Siting: 460' From Qtr/Qtr & 920' Between Wells
- R649-3-3. Exception
- Drilling Unit
- Board Cause No: 17314
- Eff Date: 12-2-1999
- Siting: 460' fr Wbdry? uncomm. Tracts
- R649-3-11. Directional Drill

COMMENTS: \_\_\_\_\_

STIPULATIONS: \_\_\_\_\_

*1 Section Approved  
2-OIL SHALE*



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Utah State Office  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155

IN REPLY REFER TO:  
3160  
(UT-922)

December 5, 2008

### Memorandum

To: Assistant District Manager Minerals, Vernal District

From: Michael Coulthard, Petroleum Engineer

Subject: 2008 Plan of Development Natural Buttes Unit Uintah County, Utah.

Pursuant to email between Diana Whitney, Division of Oil, Gas and Mining, and Mickey Coulthard, Utah State Office, Bureau of Land Management, the following wells are planned for calendar year 2008 within the Natural Buttes Unit, Uintah County, Utah.

API #	WELL NAME	LOCATION
(Proposed PZ Wasatch/MesaVerde)		
43-047-40444	NBU 921-10G4S	Sec 10 T09S R21E 1937 FNL 1931 FWL
	BHL	Sec 10 T09S R21E 2158 FNL 1441 FEL
43-047-40445	NBU 921-10F2S	Sec 10 T09S R21E 1877 FNL 1927 FWL
	BHL	Sec 10 T09S R21E 1373 FNL 1959 FEL
43-047-40446	NBU 921-10E3S	Sec 10 T09S R21E 1917 FNL 1929 FWL
	BHL	Sec 10 T09S R21E 2080 FNL 0406 FWL
43-047-40447	NBU 921-10F3T	Sec 10 T09S R21E 1897 FNL 1928 FWL
43-047-40448	NBU 922-29D1T	Sec 29 T09S R22E 0571 FNL 1009 FWL
43-047-40423	NBU 921-10CT	Sec 10 T09S R21E 0811 FNL 1792 FWL
43-047-40428	NBU 921-13CT	Sec 13 T09S R21E 0655 FNL 1920 FWL
43-047-40435	NBU 1022-3B4T	Sec 03 T10S R22E 1022 FNL 1751 FEL
43-047-40434	NBU 1022-2A2T	Sec 02 T10S R22E 0203 FNL 0896 FEL
43-047-40424	NBU 921-10G2S	Sec 10 T09S R21E 0835 FNL 1824 FWL
	BHL	Sec 10 T09S R21E 1340 FNL 2462 FEL
43-047-40425	NBU 921-10D2S	Sec 10 T09S R21E 0799 FNL 1776 FWL

BHL Sec 10 T09S R21E 0543 FNL 0648 FWL

Page 2

43-047-40426 NBU 921-10B4S Sec 10 T09S R21E 0823 FNL 1808 FWL  
BHL Sec 10 T09S R21E 0705 FNL 1929 FEL

43-047-40427 NBU 921-13G2S Sec 13 T09S R21E 0655 FNL 1940 FWL  
BHL Sec 13 T09S R21E 1372 FNL 2523 FEL

43-047-40429 NBU 921-13B2S Sec 13 T09S R21E 0655 FNL 1960 FWL  
BHL Sec 13 T09S R21E 0488 FNL 2541 FEL

43-047-40430 NBU 921-13D4S Sec 13 T09S R21E 0655 FNL 1900 FWL  
BHL Sec 13 T09S R21E 0682 FNL 0912 FWL

43-047-40431 NBU 1022-2B2S Sec 02 T10S R22E 0202 FNL 0916 FEL  
BHL Sec 02 T10S R22E 0065 FNL 2075 FEL

43-047-40432 NBU 1022-2A3S Sec 02 T10S R22E 0206 FNL 0857 FEL  
BHL Sec 02 T10S R22E 0680 FNL 0820 FEL

43-047-40433 NBU 1022-2A4S Sec 02 T10S R22E 0207 FNL 0836 FEL  
BHL Sec 02 T10S R22E 1175 FNL 0315 FEL

43-047-40436 NBU 1022-3A3S Sec 03 T10S R22E 1013 FNL 1734 FEL  
BHL Sec 03 T10S R22E 0904 FNL 0822 FEL

43-047-40437 NBU 1022-3C1S Sec 03 T10S R22E 1040 FNL 1787 FEL  
BHL Sec 03 T10S R22E 0380 FNL 2354 FWL

43-047-40438 NBU 1022-3B2S Sec 03 T10S R22E 1031 FNL 1769 FEL  
BHL Sec 03 T10S R22E 0048 FNL 2516 FEL

43-047-40439 NBU 1022-24O2S Sec 24 T10S R22E 0684 FSL 2016 FEL  
BHL Sec 24 T10S R22E 0830 FSL 0690 FEL

43-047-40440 NBU 1022-24P4S Sec 24 T10S R22E 0625 FSL 2002 FEL  
BHL Sec 24 T10S R22E 0400 FSL 0635 FEL

43-047-40441 NBU 1022-25G2S Sec 25 T10S R22E 1768 FNL 1502 FEL  
BHL Sec 25 T10S R22E 1900 FNL 2025 FEL

43-047-40442 NBU 1022-25G4S Sec 25 T10S R22E 1758 FNL 1443 FEL  
BHL Sec 25 T10S R22E 2615 FNL 1955 FEL

43-047-40443 NBU 1022-25G3S Sec 25 T10S R22E 1765 FNL 1482 FEL  
BHL Sec 25 T10S R22E 2250 FNL 2065 FEL

This office has no objection to permitting the wells at this time.

/s/ Michael L. Coulthard

bcc: File – Natural Buttes Unit  
Division of Oil Gas and Mining  
Central Files  
Agr. Sec. Chron  
Fluid Chron

MCoulthard:mc:12-5-08



JON M. HUNTSMAN, JR.  
Governor

GARY R. HERBERT  
Lieutenant Governor

# State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA  
Division Director

December 8, 2008

Kerr-McGee Oil & Gas Onshore, LP  
P O Box 173779  
Denver, CO 80217-3779

Re: NBU 1022-3C1S Well, Surface Location 1040' FNL, 1787' FEL, NW NE, Sec. 3,  
T. 10 South, R. 22 East, Bottom Location 380' FNL, 2354' FWL, NE NW, Sec. 3,  
T. 10 South, R. 22 East, Uintah County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. § 40-6-1 *et seq.*, Utah Administrative Code R649-3-1 *et seq.*, and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-047-40437.

Sincerely,

Gil Hunt  
Associate Director

pab  
Enclosures

cc: Uintah County Assessor  
Bureau of Land Management, Vernal Office



Operator: Kerr-McGee Oil & Gas Onshore, LP  
Well Name & Number NBU 1022-3C1S  
API Number: 43-047-40437  
Lease: UTU-01191

Surface Location: NW NE      Sec. 3      T. 10 South      R. 22 East  
Bottom Location: NE NW      Sec. 3      T. 10 South      R. 22 East

### Conditions of Approval

#### 1. General

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

#### 2. Notification Requirements

Notify the Division with 24 hours of spudding the well.

- Contact Carol Daniels at (801) 538-5284.

Notify the Division prior to commencing operations to plug and abandon the well.

- Contact Dustin Doucet at (801) 538-5281 office      (801) 733-0983 home

#### 3. Reporting Requirements

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. State approval of this well does not supersede the required federal approval, which must be obtained prior to drilling.
5. In accordance with Utah Admin. R.649-3-11, Directional Drilling, the operator shall submit a complete angular deviation and directional survey report to the Division within 30 days following completion of the well.
6. In accordance with Order in Cause No. 190-5(b) dated October 28, 1982, the Operator shall comply with requirements of Rules R649-3-31 and R649-3-27 pertaining to Designated Oil Shale Areas. Additionally, the operator shall ensure that the surface and/or production casing is properly cemented over the entire oil shale interval as defined by Rule R649-3-31. The Operator shall report the actual depth the oil shale is encountered to the Division.

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>  <b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> UTU-01191
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>  <b>7. UNIT or CA AGREEMENT NAME:</b> NATURAL BUTTES
<b>1. TYPE OF WELL</b> Gas Well	<b>8. WELL NAME and NUMBER:</b> NBU 1022-3C15
<b>2. NAME OF OPERATOR:</b> KERR-MCGEE OIL & GAS ONSHORE, L.P.	<b>9. API NUMBER:</b> 43047404370000
<b>3. ADDRESS OF OPERATOR:</b> P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779	<b>PHONE NUMBER:</b> 720 929-6007 Ext
<b>4. LOCATION OF WELL</b> <b>FOOTAGES AT SURFACE:</b> 1040 FNL 1787 FEL <b>QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:</b> Qtr/Qtr: NWNE Section: 03 Township: 10.0S Range: 22.0E Meridian: S	<b>9. FIELD and POOL or WILDCAT:</b> NATURAL BUTTES  <b>COUNTY:</b> UINTAH  <b>STATE:</b> UTAH

**11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

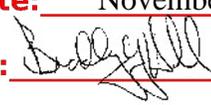
TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start: 11/30/2009	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input checked="" type="checkbox"/> <b>APD EXTENSION</b>
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> OTHER	OTHER: _____

**12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.**

Kerr-McGee Oil & Gas Onshore, L.P. (Kerr-McGee) respectfully requests an extension to this APD for the maximum time allowed. Please contact the undersigned with any questions and/or comments. Thank you.

**Approved by the Utah Division of Oil, Gas and Mining**

**Date:** November 30, 2009

**By:** 

<b>NAME (PLEASE PRINT)</b> Danielle Piernot	<b>PHONE NUMBER</b> 720 929-6156	<b>TITLE</b> Regulatory Analyst
<b>SIGNATURE</b> N/A	<b>DATE</b> 11/24/2009	



**The Utah Division of Oil, Gas, and Mining**

- State of Utah  
- Department of Natural Resources

Electronic Permitting System - Sundry Notices

**Request for Permit Extension Validation Well Number 43047404370000**

**API:** 43047404370000

**Well Name:** NBU 1022-3C1S

**Location:** 1040 FNL 1787 FEL QTR NWNE SEC 03 TWNP 100S RNG 220E MER S

**Company Permit Issued to:** KERR-MCGEE OIL & GAS ONSHORE, L.P.

**Date Original Permit Issued:** 12/8/2008

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision. Following is a checklist of some items related to the application, which should be verified.

- If located on private land, has the ownership changed, if so, has the surface agreement been updated?  Yes  No
- Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location?  Yes  No
- Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well?  Yes  No
- Have there been any changes to the access route including ownership, or rightof- way, which could affect the proposed location?  Yes  No
- Has the approved source of water for drilling changed?  Yes  No
- Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation?  Yes  No
- Is bonding still in place, which covers this proposed well?  Yes  No

**Approved by the  
Utah Division of  
Oil, Gas and Mining**

**Signature:** Danielle Piernot

**Date:** 11/24/2009

**Title:** Regulatory Analyst **Representing:** KERR-MCGEE OIL & GAS ONSHORE, L.P.

**Date:** November 30, 2009

**By:** 

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>  <b>5. LEASE DESIGNATION AND SERIAL NUMBER:</b> UTU-01191
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	<b>6. IF INDIAN, ALLOTTEE OR TRIBE NAME:</b>  <b>7. UNIT or CA AGREEMENT NAME:</b> NATURAL BUTTES
<b>1. TYPE OF WELL</b> Gas Well	<b>8. WELL NAME and NUMBER:</b> NBU 1022-3C1S
<b>2. NAME OF OPERATOR:</b> KERR-MCGEE OIL & GAS ONSHORE, L.P.	<b>9. API NUMBER:</b> 43047404370000
<b>3. ADDRESS OF OPERATOR:</b> P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779	<b>PHONE NUMBER:</b> 720 929-6007 Ext
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11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> Approximate date work will start: 12/8/2010  <input type="checkbox"/> <b>SUBSEQUENT REPORT</b> Date of Work Completion:  <input type="checkbox"/> <b>SPUD REPORT</b> Date of Spud:  <input type="checkbox"/> <b>DRILLING REPORT</b> Report Date:	<input type="checkbox"/> ACIDIZE <input type="checkbox"/> CHANGE TO PREVIOUS PLANS <input type="checkbox"/> CHANGE WELL STATUS <input type="checkbox"/> DEEPEN <input type="checkbox"/> OPERATOR CHANGE <input type="checkbox"/> PRODUCTION START OR RESUME <input type="checkbox"/> REPERFORATE CURRENT FORMATION <input type="checkbox"/> TUBING REPAIR <input type="checkbox"/> WATER SHUTOFF <input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> ALTER CASING <input type="checkbox"/> CHANGE TUBING <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS <input type="checkbox"/> FRACTURE TREAT <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> RECLAMATION OF WELL SITE <input type="checkbox"/> SIDETRACK TO REPAIR WELL <input type="checkbox"/> VENT OR FLARE <input type="checkbox"/> SI TA STATUS EXTENSION <input type="checkbox"/> OTHER	<input type="checkbox"/> CASING REPAIR <input type="checkbox"/> CHANGE WELL NAME <input type="checkbox"/> CONVERT WELL TYPE <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> PLUG BACK <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION <input type="checkbox"/> TEMPORARY ABANDON <input type="checkbox"/> WATER DISPOSAL <input checked="" type="checkbox"/> APD EXTENSION OTHER: <input style="width: 100px;" type="text"/>

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Kerr-McGee Oil & Gas Onshore, L.P. (Kerr-McGee) respectfully requests an extension to this APD for the maximum time allowed. Please contact the undersigned with any questions and/or comments. Thank you.

**Approved by the  
Utah Division of  
Oil, Gas and Mining**

Date: 12/13/2010  
 By: 

<b>NAME (PLEASE PRINT)</b> Danielle Piernot	<b>PHONE NUMBER</b> 720 929-6156	<b>TITLE</b> Regulatory Analyst
<b>SIGNATURE</b> N/A		<b>DATE</b> 12/8/2010



The Utah Division of Oil, Gas, and Mining

- State of Utah
- Department of Natural Resources

Electronic Permitting System - Sundry Notices

Request for Permit Extension Validation Well Number 43047404370000

API: 43047404370000

Well Name: NBU 1022-3C1S

Location: 1040 FNL 1787 FEL QTR NWNE SEC 03 TWP 100S RNG 220E MER S

Company Permit Issued to: KERR-MCGEE OIL & GAS ONSHORE, L.P.

Date Original Permit Issued: 12/8/2008

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision. Following is a checklist of some items related to the application, which should be verified.

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• Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well?
• Have there been any changes to the access route including ownership, or rightof- way, which could affect the proposed location?
• Has the approved source of water for drilling changed?
• Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation?
• Is bonding still in place, which covers this proposed well?

Approved by the Utah Division of Oil, Gas and Mining

Signature: Danielle Piernot

Date: 12/8/2010

Title: Regulatory Analyst Representing: KERR-MCGEE OIL & GAS ONSHORE,

Date: 12/13/2010
By: [Signature]

# United States Department of the Interior



## BUREAU OF LAND MANAGEMENT

Green River District-Vernal Field Office

170 South 500 East

Vernal, UT 84078

(435) 781-4400 Fax: (435) 781-4410

<http://www.blm.gov/ut/st/en/fo/vernal.html>

**JAN 18 2011**



IN REPLY REFER TO:  
3160 (UTG011)

Julie Jacobson  
Kerr McGee Oil & Gas Onshore LP  
PO Box 173779  
Denver, CO 80217-3779

Re: Request to Return APD  
Well No. NBU 1022-3C1S  
Lot 2, Sec. 3, T10S, R22E  
Uintah County, Utah  
Lease No. UTU-01191  
Natural Buttes Unit

43 047 40437

Dear Ms. Jacobson:

The Application for Permit to Drill (APD) for the above referenced well received in this office on December 1, 2008, is being returned unapproved per your request to this office in an email message received on January 4, 2011. Your message requested that a list of six pending APDs be returned unapproved (rescinded). If you intend to drill at this location at a future date, a new APD must be submitted.

If you have any questions regarding APD processing, please contact Cindy Severson at (435) 781-4455.

Sincerely,

James H. Sparger  
Acting Assistant Field Manager  
Lands & Mineral Resources

Enclosures

cc: UDOGM

**RECEIVED**

**FEB 08 2011**

**DIV. OF OIL, GAS & MINING**



GARY R. HERBERT  
Governor

GREGORY S. BELL  
Lieutenant Governor

# State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA  
Division Director

December 16, 2011

Danielle Piernot  
Kerr McGee Oil & Gas Onshore, L.P.  
P.O. Box 173779  
Denver, CO 80217

43 0A7 40A37  
NBU 1022-3015  
10S 22E 3

Re: APDs Rescinded for Kerr McGee Oil & Gas Onshore, L.P.  
Uintah County

Dear Ms. Piernot:

Enclosed find the list of APDs that you requested to be rescinded. No drilling activity at these locations has been reported to the division. Therefore, approval to drill these wells is hereby rescinded, effective December 16, 2011.

A new APD must be filed with this office for approval prior to the commencement of any future work on the subject location.

If any previously unreported operations have been performed on this well location, it is imperative that you notify the Division immediately.

Sincerely,

  
Diana Mason  
Environmental Scientist

cc: Well File  
Bureau of Land Management, Vernal



43-047-40567	NBU 920-33D
43-047-38813	BONANZA 1023-12C
43-047-40416	NBU 677-26E
43-047-40417	NBU 692-06E
43-047-40418	NBU 712-35E
43-047-50185	NBU 920-29A
43-047-50186	NBU 920-29D
43-047-50187	NBU 920-29E
43-047-50188	NBU 920-29F
43-047-50189	NBU 920-29G
43-047-50190	NBU 920-29H
43-047-38879	TABEE 34-197
43-047-39829	NBU 922-18P3S
43-047-39831	NBU 922-18N2S
43-047-40444	NBU 921-10G4S
43-047-40445	NBU 921-10F2S
43-047-40446	NBU 921-10E3S
43-047-40447	NBU 921-10F3T
→ 43-047-40437	NBU 1022-3C1S
43-047-38913	BONANZA 1023-7E-4
43-047-40567	NBU 920-33D