

**CROW BUTTE RESOURCES, INC.**

86 Crow Butte Road  
P.O. Box 169  
Crawford, Nebraska 69339-0169

(308) 665-2215  
(308) 665-2341 - FAX

---

April 25, 1996

Mr. Joseph Holonich, Chief  
High Level Waste & Uranium Recovery Projects Branch  
Division of Waste Management  
NMSS (T-7-J9)  
U.S. Nuclear Regulatory Commission  
11545 Rockville Pike  
Rockville, MD 20850

RE: Docket No. 40-8943  
License No. SUA-1534

Dear Mr. Holonich:

Crow Butte Resources, Inc. (CBR) is required to conduct mechanical integrity testing (MIT) on all cased well: once every five years during the life of those wells. As part of that requirement, well I196-5 (Mine Unit 2) was tested on March 29, 1996 and was found to fail the MIT. Subsequent testing isolated the leak at the casing coupling 40 feet below ground level.

Mine Unit 2 has been on restoration status since January 2, 1996 and well I196-5 has not been used since that time. A review of our records showed the following for well I196-5:

injection from March, 1992 through September, 1994;  
shut in from October, 1994 through October, 1995;  
injection from November 7, 1995 through January 2, 1996;  
shut in from January 2, 1996 until the MIT of March 29, 1996.

Although the circumstance of such a leak is not specifically addressed in our license, the discussion of excursions in License Conditions 45 and 46 was used as a guide in subsequent CBR actions. Testing of the affected zone would require recompleting well I196-5 to the proper interval or drilling of a new well. Drilling of new, shallow test wells with "air" was considered the best means of minimizing wellbore damage in the horizon of interest, important with the very small pressure drawdown available for water production at 40 feet.

9605030305 960425  
PDR ADOCK 04008943  
C PDR

NWDS

Mr. Joseph Holonich, Chief

April 25, 1996

Page Two

Well 196a was drilled with "air" to 50 feet on April 16, 1996. It was left open hole (OH) and sampled with a one liter, plastic sampling device (Sampling Specialties, Inc., SGI) on April 17, 1996. The water level before sampling was at 35.5 feet below Ground Level (GL). The sample had a conductivity of 5540 micro-mhos / cm and a  $U_3O_8$  of 27.6 ppm. A confirming sample was taken on April 18, 1996 in keeping with Condition 45 of our License. The CBR lab analysis showed 4100 conductivity and 17.8 ppm  $U_3O_8$ . Mr. John McKinnon, of the USNRC 24 Hour Operations Center, was notified by telephone of this confirmation on April 18, 1996.

Well 196a was cased with 4 1/2" Yelomine and slotted pipe to 50 feet on April 18, 1996. The casing is uncemented, with bentonite pellets placed above the shale basket at five feet to prevent surface water runoff into the well. Additional shallow wells were drilled and sampled to delineate the affected area. Table 1 provides various completion information on the shallow wells drilled to date. The attached figure shows the location of these wells in relation to well 1196-5.

Table 1  
Completion Data on Shallow Test Wells in Vicinity of 1196-5

Well	Date Air Drilled	Date Cased	Description
196a	16-Apr-96	18-Apr-96	Air drilled 7 7/8" to 50 feet; cased with 4 1/2" Yelomine: 5' blank, shale basket, 20' blank, 20' slotted 4 1/2" Yelomine; bentonite pellets added in annulus.
196b	18-Apr-96	18-Apr-96	Air drilled 7 7/8" to 25 feet; cased with 4 1/2" Yelomine: 5' blank, shale basket, 15' slotted 4 1/2" Yelomine; bentonite pellets in annulus at surface.
196c	18-Apr-96	---	Air drilled 7 7/8" to 50 feet; left Open Hole (OH)
196d	18-Apr-96	---	Air drilled 7 7/8" to 50 feet; left Open Hole (OH)
196e	19-Apr-96	---	Air drilled 7 7/8" to 50 feet; left Open Hole (OH)
196f	19-Apr-96	19-Apr-96	Air drilled 7 7/8" to 25 feet; cased with 4 1/2" Yelomine: 5' blank, shale basket, 15' slotted 4 1/2" Yelomine; bentonite pellets in annulus at surface.
196g	22-Apr-96	---	Air drilled 7 7/8" to 50 feet; left Open Hole (OH)
196h	22-Apr-96	---	Air drilled 7 7/8" to 50 feet; left Open Hole (OH)
196i	24-Apr-96	---	Air drilled 7 7/8" to 45 feet; left Open Hole (OH)
196j	24-Apr-96	---	Air drilled 7 7/8" to 20 feet; left Open Hole (OH)
196k	24-Apr-96	---	Air drilled 7 7/8" to 30 feet; left Open Hole (OH)

Mr. Joseph Holonich, Chief

April 25, 1996

Page Three

Table 2 (attached) is the analyses to date of the sampled waters from the shallow wells surrounding well I196-5. Except for the samples acquired by submersible pump from well 196a on April 22 and 25, 1996, all were obtained by means of the plastic, one liter SGI samplers. Table 2 shows that the excursion does not extend to wells 196b, 196c, 196d, 196f, and 196k, but does to wells 196a, 196e, 196g and 196h. The open hole completions of wells 196i and 196j were found to be bridged during initial water sampling on April 25, 1996. Both wells will be cleaned by drilling rig, and well 196j will be cased.

Well 196a was sampled by submersible pump at a flowrate of 1.25 gpm on April 22, 1996, and at a 1-1.5 gpm for about four hours on April 25, 1996. Installation of a dedicated electric power line and recovery line for this well is planned. Recovery of the excursion can then begin.

One hundred seventy-three wells have been retested by MIT since January, 1995. All but two of those wells, IJ-36 and I196-5, demonstrated mechanical integrity. The casing in well IJ-36 was damaged during a workover with a drilling rig just prior to retesting with MIT. That well was plugged and abandoned.

Corrective action to mitigate this excursion include:

1. Continue the delineation of the problem area around well I196-5 by drilling shallow wells as needed.
2. Begin recovery of the contaminated fluid from shallow well 196a.
3. Monitor the effectiveness of the recovery efforts by sampling wells around 196a.
4. Sample well 196a weekly for the usual monitor well parameters of sodium, chloride, sulfate, alkalinity, and conductivity. Weekly, sample and analyze for conductivity the shallow wells which are known to be contaminated around well 196a.

If you need any additional information regarding this area, please contact me.

Sincerely,



Craig S. Bartels  
Wellfield Manager

Attachments

cc: Ross Scarano - Region IV  
Stephen Collings

Table 2

**Water Analysis to Date (25-Apr-96) of Shallow Test Wells  
and Shallow Monitor Wells in Vicinity of Well I196-5**

Crow Butte Resources, Inc.  
Crow Butte Project

Sample Location	Sample Date	U3O8	Na	Cl	SO4	Conductivity	Alkalinity
Squaw Creek	18-Apr-96	<0.1	15	0.8	2	350	175
SM2-1	Baseline Average	0.012	135	33.5	51.8	582	209.6
SM2-1	08-Apr-96	---	120	20	48	560	200
SM2-2	Baseline Average	0.0051	112.7	24.9	42	653	202.2
SM2-2	08-Apr-96	---	102	11	42	480	180
SM2-3	Baseline Average	0.0114	126	18.6	51.9	665	235.7
SM2-3	08-Apr-96	---	122	52	10	550	210
196a	17-Apr-96	27.8	1216	576	1198	5540	950
196a	18-Apr-96	17.8	831	422	924	4100	650
196a	22-Apr-96	6.3	358	198	372	2090	390
196a	25-Apr-96	3	243	113	221	1431	335
196b	18-Apr-96	0.1	21	1.5	13	430	215
196b	19-Apr-96	<0.1	23	1.5	18	438	215
196c	19-Apr-96	0.1	16	3.8	21	485	210
196c	25-Apr-96	<0.1	13	5	22	474	210
196d	19-Apr-96	0.1	15	1.5	13	379	175
196d	23-Apr-96	<0.1	12	3	14	381	170
196e	22-Apr-96	1.3	82	110	178	1217	290
196e	24-Apr-96	1.2	90	114	180	1243	305
196e	25-Apr-96	1.3	86	115	188	1266	300
196f	22-Apr-96	0.1	20	4.6	14	480	230
196f	23-Apr-96	<0.1	17	4	13	485	230
196g	23-Apr-96	5.4	267	225	381	2190	450
196g	25-Apr-96	5.3	275	215	387	2160	440
196h	23-Apr-96	0.8	48	252	251	1886	370
196h	25-Apr-96	0.8	47	253	245	1864	380
196k	25-Apr-96	<0.1	14	8	19	541	255

Area of 1196  
Crow Butte Project  
1" = 50 feet  
4-24-90 csb

Wellhouse 4

Squaw  
Creek

