CAMECO RESOURCES
CROW BUTTE OPERATION

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

(308) 665-2215
(308) 665-2341 – FAX

January 18, 2010

Mr. Keith I. McConnell, Deputy Director
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
Mail Stop T8-F5
Washington D.C. 20555-0001

Re: Annual Report of Changes, Tests, or Experiments
License No. SUA-1534
Docket No. 40-8943

Dear Mr. McConnell:

Crow Butte Resources, Inc. (CBR) is providing this annual report summarizing the changes, tests or experiments made under License Condition 9.4 of SUA-1534 during calendar year 2009. This report is made in accordance with the reporting requirements contained in License Condition 9.4 (E).

CBR's source material license was renewed on March 4, 1998. The renewed license contained Performance Based License Conditions (PBLC). In a PBLC, CBR is allowed to make changes or conduct tests and experiments under certain conditions. These changes, tests, and experiments must be reviewed and approved by the CBR Safety and Environmental Review Panel (SERP). During 2009, the CBR SERP approved seven changes.

The following materials are attached to provide the required summary information and documentation required by License Condition 9.4 (E).

- SERP Evaluation Index, which summarizes each SERP Action and tracks any modifications to an approved action affected by subsequent SERP actions.

- A copy of the text of each approved SERP Evaluation. These evaluations describe the change or test approved and the safety and environmental evaluation performed by the SERP. Supporting documentation is maintained on site for NRC review.

If you have any questions or require further information, please do not hesitate to contact me at (308) 665-2215 ext 114.

Sincerely,
CAMECO RESOURCES

Larry Teahon

Larry Teahon
Manager of Health, Safety and Environmental Affairs

Enclosures: As Stated

cc: Mr. Ron Burrows
Project Manager
Office of Federal and State Materials and
Environmental Management Programs
US Nuclear Regulatory Commission
Mail Stop T8-F5
Washington, DC 20555-0001

2009 SERP Evaluation Index

CAMECO RESOURCES
CROW BUTTE OPERATION

Safety and Environmental Review Panel

2009 SERP Index

SERP Evaluation Number	Date	Action Taken	Modifications to Previous SERP Actions
SERP 08-09	19-May-09	Start-up of R.O. Upgrade	None
SERP 09-01	17-Feb-09	Experiment to remove uranium and vanadium from the commercial evaporation ponds	None
SERP 09-02	14-Apr-09	Start-up of the South Booster Pump Station	None
SERP 09-03	21-May-09	Wellhouse 29A Review and Approval	None
SERP 09-04	09-Jul-09	Wells added to Wellhouses 23, 48 & 51	None
SERP 09-05	23-Jul-09	Well added to Wellhouse 47	None
SERP 09-06	2-Oct-09	Wellhouse 52 Review and Approval	None

SERP 08-09 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 08-09

Reverse Osmosis (R.O.) Upgrade Approval to Operate

November 18, 2008

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve operation of the Reverse Osmosis Upgrade at the Crow Butte Uranium Project.

The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Jim Stokey	Mine Manager	Management
Larry Teahon	Manager of Environmental, Health and Safety	Environmental
Doug Pavlick	Operations Superintendent	Operations
Rhonda Grantham	Radiation Safety Officer	Radiation Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Steven Boeselager	Restoration Foreman	Restoration

Dr. Stokey is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

The purpose of this evaluation by the CBR SERP was to review and approve the start up and operation of the reverse osmosis upgrade with a flow increase from 375 GPM to 600 GPM though fifteen reverse osmosis tubes (five units) located in the R.O. Building.

SERP 08-09

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the Reverse Osmosis Upgrade startup checklists and supporting documentation and evaluated this information as compared with the requirements of the licensing basis, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 23 dated May 12, 2008;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;
- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2008 was reviewed for specific requirements related to approval and operation of the Reverse Osmosis circuit.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements. Section 3.3 also discusses instrumentation, including wellhouse injection and production instrumentation and wet building alarms for wellhouses. Section 7.2.3 of the LRA requires that leak tests be performed on all wellfield piping before placing the system into production operations.

The SERP reviewed the Start-up Checklist for the R.O. circuit. This checklist was developed by the Restoration Foreman to document completion of all required actions before initiating operations in the R.O. circuit. Some of these actions are required by regulatory and licensing requirements, while some were developed over the course of mining experience at Crow Butte.

A copy of the R.O. Upgrade Start-Up Checklist is attached to this SERP Evaluation. Some items on the list require flow through the system in order to test the components. Final sign off of the SERP review will be done once all of the items have successfully passed their initial testing.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed change could cause substantive safety or environmental impacts. The increase in R.O. capacity will have no substantive safety or environmental impact.

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 08-09

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides that Crow Butte is authorized to recover uranium from the ore body, at a maximum rate of 5000 GPM, (increased to 9000 GPM by Amendment 22 to SUA-1534 dated November 30, 2007) exclusive of restoration flow, using a lixiviant composed of native groundwater, with added sodium carbonate/bicarbonate and oxygen or hydrogen peroxide. The R.O. upgrade is not specifically addressed in this report.

Technical Evaluation Reports

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. The Technical Evaluation Report dated April 11, 2008 (Docket No. 40-8943) specifically provides NRC staff review of costs associated with groundwater restoration and the efficiency of adding addition R.O. capacity. The NRC staff determined that the cost associated with groundwater restoration was acceptable.

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that startup of the R.O. circuit will not degrade the safety and environmental commitments.

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves startup and operation of the Reverse Osmosis Upgrade.

Approved this 18th day of November, 2008.

5-19-09

Jim Stokey, Mine Manager
SERP Chairman

Doug Pavlick, Operations Superintendent

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 08-09

Larry Teahon 4/27/09
Larry Teahon, Manager of Environmental, Health and Safety
SERP Secretary

Rhonda Grantham 4/27/09
Rhonda Grantham, Radiation Safety Officer

Bob Tiensvold 5/19/2009
Bob Tiensvold, Maintenance Superintendent

Steven Boeselager 4-30-09
Steven Boeselager, Restoration Foreman

R.O. Plant Start-UP Checklist

Item	Description	Person	Task Completed
1	Fill IX- C&D	Boeselager	x
2	Resolve pressire issues with IX C & D	Boeselager/Pavlick	x
3	Pipe sump effluent to plant and tie into waste tank	T. Lemmon	x
4	Pressure test piping from RO plant	T. Lemmon	x
5	Order and install 6" check valve	T. Lemmon	x
6	Purchase remaining filter membranes	Boeselager	x
7	Wire control panel for 100 gallon tank	Tiensvold	x
8	Control screens	Hagman	x
9	Order PL-3 seal and interconnector lube	Boeselager	x
10	Order CC103 Biocide for membrane tubes	Boeselager	x
11	Verify that we have anti-scalent	Boeselager	x
12	Determine antiscalent feed rate	Boeselager/Pavlick	x
13	Verify reductant mixer workds	Boeselager	x
14	ORC meeting		x
15	SERP meeting		x
16	Operate under standing radiation work permint	Grantham	x
17	removal of old membranes	Boeselager	x
18	Pressure test columns and piping to operating pressure	T. Lemmon	Pending Operation
19	Apply PL-3 to membrane seals and interconnectors	T. Lemmon	x
20	Insert membranses in top 3 tubes	T. Lemmon	x
21	Other membranes will be added as needed	Boeselager/T.Lemmon	Add as Needed.
22	Locate Halliburton hand held meter	Boeselager	x

23	Install water blocks	Boeselager/Operators	x
24	End water blocks will be added as needed	Boeselager	As Needed
25	Notify plant operators of start-up	Boeselager/Pavlick	x
26	Place brine in commercial evaporation ponds	Boeselager/Pavlick	x
27	Start system	Boeselager/Pavlick	x
28	Operate during the day for minimum of one week	Boeselager/Pavlick	x
29	Re-evalute system and update SOP once the system is running	Boeselager/Pavlick	Updated as operation Continues.
30	Determine reductant feed rate	Boeselager	x
31	Move reductant feed tank	Boeselager/T.Lemmon	x
32	Confirm reductant level indicator is hooked up	Tiensvold	x Calibrate
33	Will need to move level indicator wire when tank is moved	Tiensvold	x
34	Install filter bags	T. Lemmon	x
35	Install perm and brine spool pieces	T. Lemmon	x
36	Wire up ph meter	Tiensvold	x
37	Confirm waste line flow meter works (after startup)	Hagman	x
38	Confirm RO flow meter works (after startup)	Hagman	x
39	Confirm Perm line flow meter works (after startup)	Hagman	x
40	Get filter DP switch hooked up and alarms at the plant	Tiensvold	x
41	Make sure reductant pump is hooked up	Tiensvold	x
42	Check correct valve positioning for the system	Boeselager/T.Lemmon	x
43	Label control panel (what bank goes with which set of tubes)	T. Lemmon	x
44	Check operation of PRV's	Boeselager/T.Lemmon	Checked on Start-Up
45	replace 1/4 ball valves on tube ends (need to be lockable)	Boeselager/T.Lemmon	x
46	replace hingelock victaulics	Boeselager/T.Lemmon	x
47	re-route sump and bleed flows to alternate piping	Boeselager/T.Lemmon	x

48	Install CO2 stripper and associated pipeing	Contractor	x
49	move perm pump	Contractor	x
50	install 4th booster pump and new VFD	B.Lemmon	x
51	pipe plant injection water to RO line and install new meter	Boeselager	x
52	add new injection line from RO to MU 3 and install new meter	Wellfield Construction	x
53	re-build RO 3	Wellfield Construction	x
54	add new MU 2 trunklines	Wellfield Construction	x
55	move reductand tank vent fan and associated pipeing	Boeselager	x

Date: 4-27-09

Initial: SB

Signature: Steven Boeselager

This sheet replaced w/ New attached check-off list.

R.O. Plant Start-Up Checklist

Item	Description		Person		Comments	2008 Date Completed	Initial
1	Fill IX-A, B, C & D	✓	Boeselager	Boe			SM
2	Resolve pressure issues with IX C & D system	✓	T. Lemon/Boeselager	Boe			
3	Pipe sump effluent to plant and tie into waste tank	✓	T.Lemon	Boe		7-Jul	x
4	Pressure test piping from RO to plant	✓	Boeselager/T.Lemon	Boe		8-Jul	x
5	~~Re-pipe the witches hats~~ NOT Before START		T.Lemon	Boe			
6	Order 6 inch check valve	✓	B. Tinsvold/Boeselager	Boe			DB
7	Install 6 inch check valve	✓	T.Lemon	Boe		8-19-08	TL
8	Purchase Membranes for 1 set (3) Tubes	✓	Boeselager	Boe		7-Jul	x CB
9	Wire & control panel for 100 gallon tank	✓	Tinsvold	Boe		2-Jul	x CM
10	Control Screens	✓	Hagman	Boe			TH
11	Test/Calibrate Flow Meter ✓	✓	Boeselager	Boe		7-Jul	x DUPLICATE CB
12	Order PL-3 seal & interconnector lube	✓	Boe	Boe	Received	7-Jul	x CCB
13	Order CC103 Biocide to disinfect tubes during pressure te	✓	Boe	Boe	Received	7-Jul	x CCB
14	Check MSDS for Biocide	✓	Pavlick	Boe		8-Jul	x C.N.
15	Provide Safety MSDS Sheets	✓	Herrick	Boe		8-Jul	x R.H.
16	Verify have Pre-treat Plus 0100 anti-scalent	✓	Boeselager/Boe	Boe	2 - 55 gal. drums	7-Jul	x CCB
17	Determine antiscalent feed rate	✓	Boeselager/Boe	Boe	Have conc. need flow.		
	Verify mixer for reductant feed works	✓	Boeselager	Boe		7/4	DB
19	Operations Review Committee (ORC) meeting	✓	Boe	Boe		7-Jul	CCB
20	Safety & Environmental Review Panel (SERP) meeting	✓	Boe	Boe		9/1	
21	Operate Under ~~Standard~~ STANDING Radiation Work Permit	✓	Grantham	Boe		7-Jul	
22	Radiation safety to ~~clear~~ REMOVE old membranes	✓	Boeselager/Grantham/T. Lemon	Boe		7/2	DB
23	Dispose of old membranes in super sacks	✓	Boeselager/Grantham/T. Lemon	Boe		7/3	DB
24	Disinfect columns using CC103 biocide during pressure test	✓	Boeselager/T. Lemon	Boe			
25	Pressure test columns & Piping ~~>15% over~~ TO op. pressure		Boeselager/T. Lemon	Boe			
26	Apply PL-3 to membrane seals & interconnectors	✓	Boeselager/T. Lemon	Boe			
27	Insert membranes in top 3 R.O. columns (#5)	✓	Boeselager/T. Lemon	Boe			
28	Close valves to all other R.O. columns NOT IN USE & LOCK OUT		Boeselager/T. Lemon	Boe			
29	Locate and test Halliburton hand-held flow meter.	✓	Boeselager	Boe		7/7	DB
30	Install water-blocks		Boeselager	Boe			
31	Notify plant operators of start-up (coordination)		Boeselager/Boe	Boe		9/2	
32	Place brine in commercial evaporation ponds		Pavlick	Boe			
33	Start system		Boeselager	Boe		9/2	
34	Update SOP, as necessary		Boeselager/Boe	Boe			
35	Operate during day only for a minimum of one week		Boeselager/Boe	Boe		9/9	
36	Re-evaluate system		Boeselager/Boe	Boe			

SERP 09-01 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 09-01

Test to Remove Uranium from the Commercial Evaporation Ponds

February 17, 2009

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve a limited test in the Commercial Processing Plant (CPP) to remove uranium from the commercial evaporation ponds.

The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Jim Stokey	General Manager	Management
Larry Teahon	Manager of Health, Safety, and Environmental Affairs	Safety
Doug Pavlick	Operations Manager	Operations
Rhonda Grantham	Radiation Safety Officer	Radiation Safety
Ron Herrick	Safety Supervisor	Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Steven Boeselager	Restoration Foreman	Restoration

Dr. Stokey is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-01

The purpose of this evaluation by the CBR SERP is to review and approve a test in the CPP that will assess the effectiveness of removing uranium from the commercial evaporation ponds with ultimate disposal of the waste water down the deep disposal well.

The test utilizes filtration, pH adjustment using HCL, ion exchange (IX) with resin, elution of the resin with strong HCL solution, followed by uranium recovery.

Test design:

- Bulk holding tank.
- Upflow column with 5cuft of resin specifically engineered to be eluted with HCL.
- Conditioning tank for adjusting the pH of the pond water.
- Elution vessel.
- Filtration unit.
- System vented through the bead shaker deck.

Test process:

- Water used in the test will be hauled with a Water Truck from the Commercial Evaporation Pond #1 to the bulk holding tank.
- The water will be conditioned in the bulk holding tank by adding HCL from the feed system in the plant until the pH is lowered to 4.0 to 5.0.
- The conditioned water will then be filtered and passed through the upflow column at a rate of 5 GPM.
- Resin samples will be collected hourly to monitor the loading of the resin.
- Loaded resin will be eluted with 7% HCL.
- Waste water will overflow into a small tank and then transferred to the waste disposal tank.
- Repeat test if necessary.

The design and process documents are attached as part of the SERP assessment. Final assessment of the test(s) will also be attached to this SERP.

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);

ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the supporting documentation and evaluated this information as compared with the requirements of the licensing basis, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 23 dated May 12, 2008;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;
- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2008 was reviewed for requirements related to conducting tests and experiments. It was determined that this test meets the requirements as outlined in the amendment.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements.

A description of the materials used in this test is attached to this SERP report.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed test could cause substantive safety or environmental impacts.

The proposed test, if successful, will have a positive impact on the environment in that a potential source of contamination will be removed from the evaporation ponds.

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides that Crow Butte is authorized to recover uranium from the ore body, at a maximum rate of 5000 GPM, (increased to 9000 GPM by Amendment 22 to SUA-1534 dated November 30, 2007) exclusive of restoration flow, using a lixiviant composed of native groundwater, with added sodium carbonate/bicarbonate and oxygen or hydrogen peroxide. The SERP determined that the test will have no impact on CBR's ability to continue to meet the commitments cited in the SER.

A Job Hazard Analysis of this test is attached to this SERP assessment.

Technical Evaluation Reports

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-01

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. This test has not been addressed by any prior TERs.

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that conducting this test will not degrade the safety and environmental commitments.

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves the start up of the test to evaluate the removal of uranium from the commercial evaporation ponds.

Approved this 17th day of February, 2009.

2/21/09
Jim Stokey, General Manager and SERP Chairman

2/17/09
Doug Pavlick, Operations Manager

2/17/09
Larry Teahon, Manager of Health, Safety and Environmental Affairs
SERP Secretary

2/17/09
Rhonda Grantham, Radiation Safety Officer

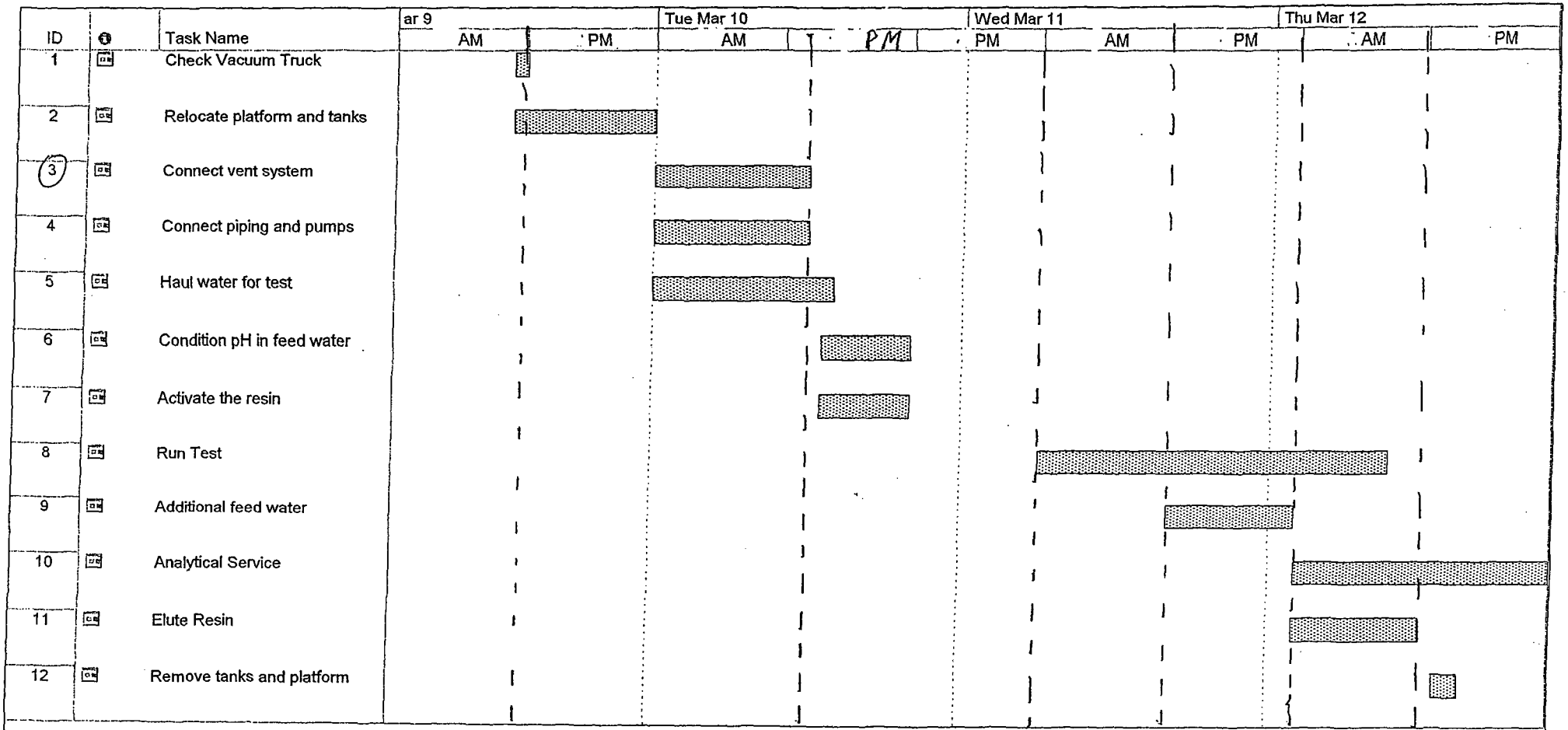
2/17/2009
Bob Tiensvold, Maintenance Superintendent

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-01

Steven Boeselager 2-21-09
Steven Boeselager, Restoration Foreman

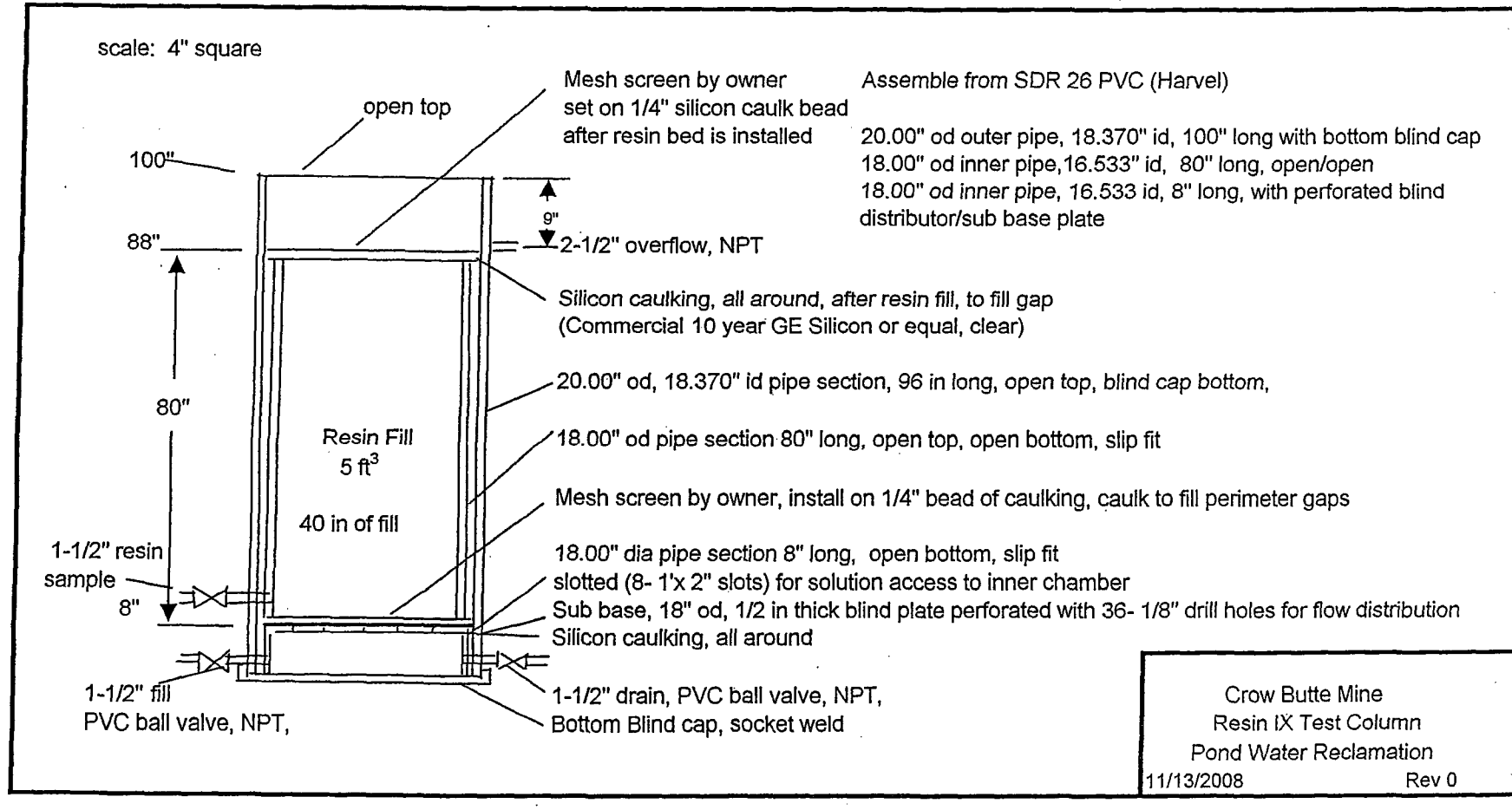
Ron Herrick 2-17-09
Ron Herrick, Safety Supervisor



Project: Pilot Plant Operation2
Date: Wed 3/4/09

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

PRI CB Pond Water Resin IX vessel from piping



PRI CB Pond Water Recovery using IDA IX Resin produced by Lewatit MonoPlus TP 207 Resin

Pond Data for Test

				Pond 1	Pond 3	Pond 4	
Resin Loading:	80 gpl			8,586,000	11,124,000	4,655,000	
	4.99 # U3O8 /cu ft of resin			395	297	773	
Rate	5 gpm			5	5	5	gpm, pilot test rate
Pond water				1.0	0.7	1.9	lb/hr U3O8 at 5 gpm
				23.7	17.8	46.4	lb/day U3O8 at 5 gpm
Pond water pH adjustment with HCl				4.5	4.5	4.5	pH
Resin loading	24 hrs	5 cuft	Target	4.99	4.99	4.99	lb/cu ft loading
Uranium (U3O8) in pond solution				28285	27554	30010	lb U3O8
Elution: Use one batch of 10 ft3 (2-BV) of 7% HCl soultion				95	71	186	% loading / day on 5 cu ft
Plant Cost:	1.19 $ / gallon						
Uranium recovered in 24 hour run,				23.5			lb U3O8
Research Center report of 99% rec.							

HCl 7% solution Make-up

1. Objective: Make-up 10 ft3 (2 BV) of 7% HCl solution to eluate 5 ft3 of TP-207 resin, loaded with U
2. Strong HCl: Calculate this mix presuming that the plant will obtain 35% commercial HCl: 35% HCl sg = 1.18
3. 7% HCl sg =1.035 sg
4. HCl for elution: Calculate: 10 ft3 =74.8 gallons of 7% acid solution = 74.8 gal. x 8.34 # / g x 1.035 sg = 646 lb total and contains 45 lb HCl
5. HCl 45 lb in 35% solution at 1.18 sg: 45 lb /.35% = 128 lb HCl solution. 128 lb sol./(8.34x1.18) =13.0 gallons of 35% solution
6. *Quantity Required: 1-55 gal drum of 35% acid will provide for 4+batches of 13.0 gallons each. 1st elution 13.0 gal., 2nd elution 13.0 gal.*

Mix 7% HCL solution using 35% HCl stock

6. Add water to 100 gal tank : Use 74.8 -13.0 = 61.8 gallons of water: Add the 61.8 gallons using predetermined visual level line on tank
7. Use chemical safety clothing , breathing, and eye protection gear.
8. *Start mixer. Slowly add 13.0 gallons of 35% HCl to agitated water: Agitate for 1 minute after completion of addition.*
   Combined volume will be approximately 74.8 gallons, good for one elution of 2 BV batch to strip 5 cu ft of resin. Complete elution cycle.
9. Repeat elution with 2nd batch.
10. Clean area and containers..

Test Procedure:

1. Set up pilot plant equipment in the RO building, and charge the IX vessel with the test resin. Check equipment for readiness.
2. Collect and transport pond water from pond no.1 to the 8000 gal feed tank in the RO building to have a full day's supply of water
3. Plan staffing of operations to run the test for 24 hours, maintaining continuous operation.
4. Plan sampling to take samples at hours 0, 6, 12, 16 18,19,20,21,22,23, and 24. See Sampling plan below.
5. Adjust pH of feed to 4.5 using HCl. Circulate mix with a pump to blend.
6. Start test run and control flow rate and pH at the prescribed gpm (per the flow meter output)
7. Complete 24 hour test run. After completion drain and rinse the IX vessel, returning all pond waters and rinse waters back into the pond. Complete the sampling collection.
8. Start *Elution Run.* Make up *barren* eluant with HCl to a 7 % eluate solution. Measure pH.
9. Transfer barren eluant into the IX resin vessel, using 2BV relative to resin charge.
10. Allow the resin to contact the eluant for 60 minutes. Drain the eluant into the following eluate holding tank.
11. Collect the samples of solution and resin according to the Flowsheet
12. 2nd stage elution: Complete the elution with a 2nd elution cycle. Repeat 7,8,9,& 10 above.
13. Recover the pregnant eluate by transporting to the MPP the eluant collected from the 1st and 2nd elution cycles
14. Discharge the test eluant solutions into the MPP Pregnant eluate tank, recovering the captured U3O8.

Resin Preparation Procedure

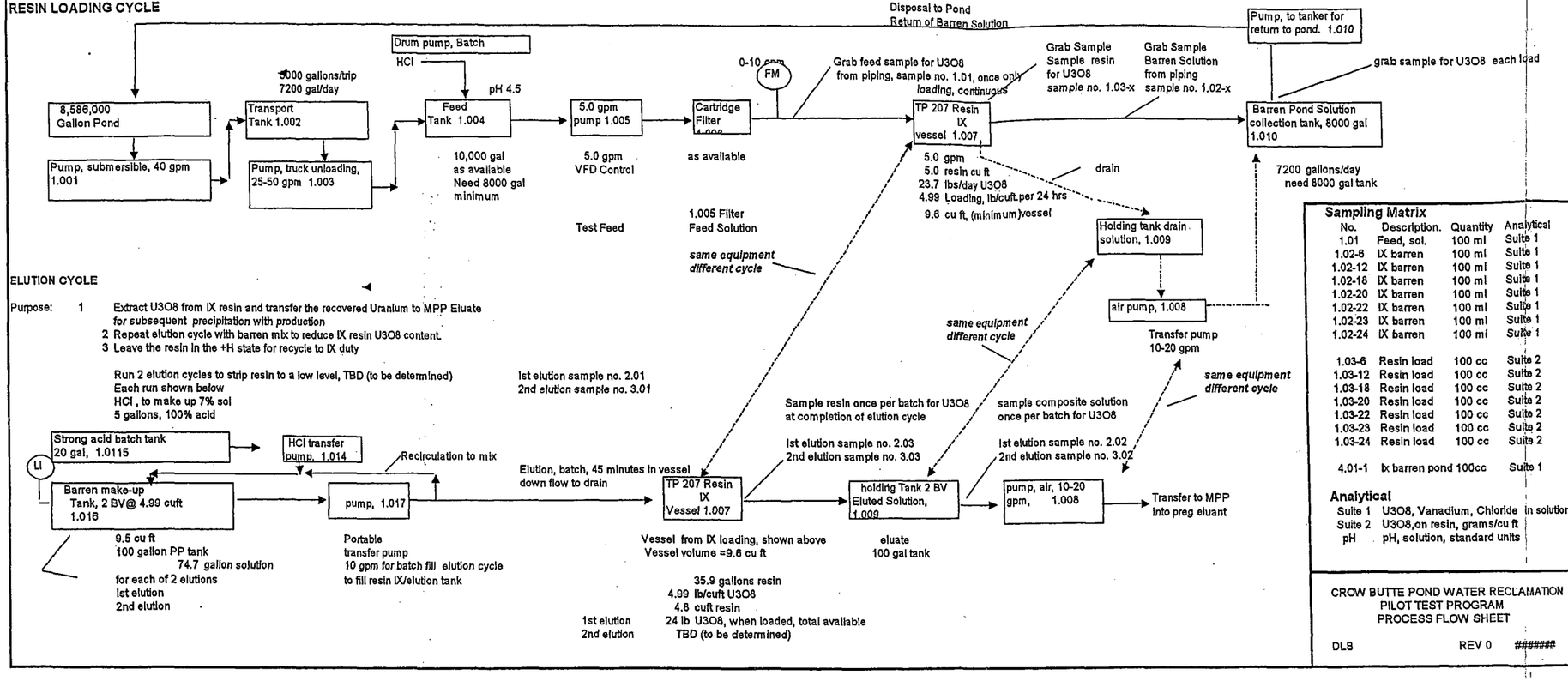
1. The TP 207 resin as received is in the +Na state.
2. IX loading of U from pond water requires the resin be converted to the +H state
3. *The equipment described by the flowsheet below can be used for the resin conversion.*

Conversion steps

4. Manually load the resin into the selected IX vessel, on top of a 50% full water cushion.
   Drain water from vessel
5. Prepare a 7% HCl acid solution in the 100 gallon PP tank using procedure described previously
6. Pump the 7% HCl solution into the bottom of the IX vessel, filling the vessel with 2 BV.
7. Allow 45 minutes for the conversion to take place.
   The 7% acid solution will react with the resin +Na form to convert to resin +H form, and release NaCl to the aqueous solution
   After 45 minutes the conversion is complete and the resin is in the H+ form , ready to capture Uranium.
   After 45 minutes the conversion is complete and the resin is in the H+ form , ready to capture Uranium.
8. Drain the IX column to an available tank, discard the spent solution to the pond transport equipment

FLOWSHEET OF RESIN TEST PILOT PROGRAM

RESIN LOADING CYCLE



ELUTION CYCLE

Purpose: 1 Extract U3O8 from IX resin and transfer the recovered Uranium to MPP Eluate for subsequent precipitation with production
2 Repeat elution cycle with barren mix to reduce IX resin U3O8 content.
3 Leave the resin in the +H state for recycle to IX duty

Run 2 elution cycles to strip resin to a low level, TBD (to be determined)
Each run shown below
HCl , to make up 7% sol
5 gallons, 100% acid

Sampling Matrix

No.	Description.	Quantity	Analytical
1.01	Feed, sol.	100 ml	Suite 1
1.02-6	IX barren	100 ml	Suite 1
1.02-12	IX barren	100 ml	Suite 1
1.02-18	IX barren	100 ml	Suite 1
1.02-20	IX barren	100 ml	Suite 1
1.02-22	IX barren	100 ml	Suite 1
1.02-23	IX barren	100 ml	Suite 1
1.02-24	IX barren	100 ml	Suite 1
1.03-6	Resin load	100 cc	Suite 2
1.03-12	Resin load	100 cc	Suite 2
1.03-18	Resin load	100 cc	Suite 2
1.03-20	Resin load	100 cc	Suite 2
1.03-22	Resin load	100 cc	Suite 2
1.03-23	Resin load	100 cc	Suite 2
1.03-24	Resin load	100 cc	Suite 2
4.01-1	Ix barren pond	100cc	Suite 1

Analytical

Suite 1	U3O8, Vanadium, Chloride in solution, ppm,
Suite 2	U3O8,on resin, grams/cu ft
pH	pH, solution, standard units

CROW BUTTE POND WATER RECLAMATION
PILOT TEST PROGRAM
PROCESS FLOW SHEET

DLB REV 0 #######

Equipment List (Available from CB Inventory?)

CB has following equipment available.
Vac truck, 3000 gal capacity
2 FRP columns, 10 ft hi x 4 ft dia
1 steel column, 5 ft hi x 3 ft dia
2 Brown FRP tanks 8 ft hi x 7'9" dia
1-1/2 " piping
1-1/2" flow meter
VFD and 5 gpm pump
Rosedalefilters. Will order 20 micron bags
HCl acid from plant storage tank

1.001	Pond water pump, submersible, 40 gpm, plastic construction, US Plastic # 102003 Large volume Chemical & Submersible Pump			Available on hand
1.002	Transport, truck pond water to RO Building, 1500gal Standard 5 ton flatbed truck with 1500 gal water tank, Purchase Polyethylene tank from Plasti C-Mart 130" x 81 " x 44", No. 41392			Available on hand
1.003	Pump, truck unloading adjustable output, double diaphragm, 25 gpm sand piper type discharging from truck tank to existing 10' x 10' feed tank			
1.004	Tank, feed to test program, Use existing 10 x 10 FPR tank in RO building as feed tank, approx 6000 gallons capacity			Available on hand
1.014	Pump, drum, 10 gpm, strong HCL tpH adjustmen	cost	900	
	US Plastic Lutz chemical pump	add on	100	
	115 V 640 watt to HCl batch tank	shipping	200	
1.005	Pump, feed, adjustable output, double diaphragn	cost	900	
	sand piper type discharging from feed tank to test	add on	100	
	circuit IX at 5.0 gpm	Shipping	300	
Inst	Flow meter., 2 to 14gpm range, 5.0 gpm set point, 4-20 ma output, used to set test throughput			Available on hand
Inst.	pH meter, in line 4-20 ma output			Available on hand
1.006	Filter, Cartridge, 12 sq ft cap, 50 micron , 15 gpm rating, PVC	Filters		Available on hand
1.007	Vessel, IX, Adapt			surplus
	Modification	add-on	2000	
	Piping adaption	add-on	2000	
	Contain 5 cu ft resin			
	Design to be advised (upflow/downflow)			
	Resin 5 cu ft TP-207 buy 7 cu ft 1-container	cost	1645	
		shipping	300	

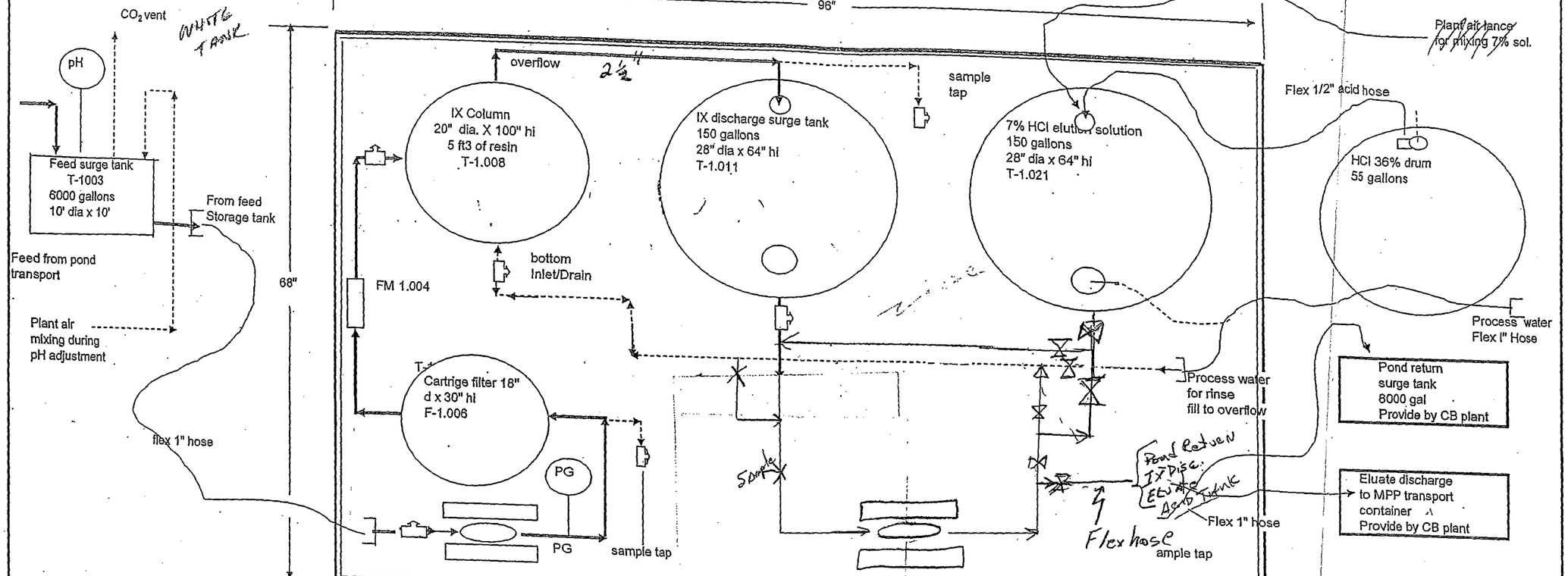
1.009	Tank, IX drain, pp, 100 gal	cost	300
	Plasti C-mart100 gal. vert. Poly Storage 1.	add on	200
	VT0100-28 28" dia x 45" high	Shipping	100
1.008	Pump, barren solution IX drain elution transfer 20-40 gpm		available
1.01	Tank, day discharge, to pond, find plant surplus 8000 gal or multiple of 1500 gal truck tank capacity to return to pond	cost add on	available 1000
1.011	Pump, barren solution IX transfer to tansport tank, 20-40 gpm		
1.014	Pump, drum, 10 gpm, strong HCL transfe	Also used as drum	
	US Plastic Lutz chemical pump	pump for pH adjustment	
	115 V 640 watt to HCl batch tank		
1.015	Tank,HCl batch volumr feed, pp, 20 gal	cost	200
	Plasti C-mart 20 gal. vert. Poly Storage	add on	100
	VT0100-28 28" dia x 45" high	shipping	100
1.016	Tank, Barren eluate Make-up of HCl 7% ,	cost	300
	Plasti C-mart100 gal. vert. Poly Storage 1.	add on	200
	VT0100-28 28" dia x 45" high	Shipping	100
1.017	Pump, batch transfer of 7% acid to IX / Elution vessel	cost	900
		add on	100
		Shipping	300

CROW BUTTE POND WATER RECLAMATION
PILOT TEST PROGRAM

DLB REV 0 #######

FINAL 2/13

PILOT PLANT TEST SKID ARRANGEMENT



Flow meter 0-10 gpm 4-20 ma F-1.004	pump, air 0-10 gpm P-1.005	Filter, cartridge 1-1/2" F-1.006 PG 1-006 0-20 psig	T-1.011 level observation in translucent tank wall	pump, air 0-10 gpm P-1.008	pump, air 0-10 gpm P-1.017	T-1021 level observation in translucent tank wall

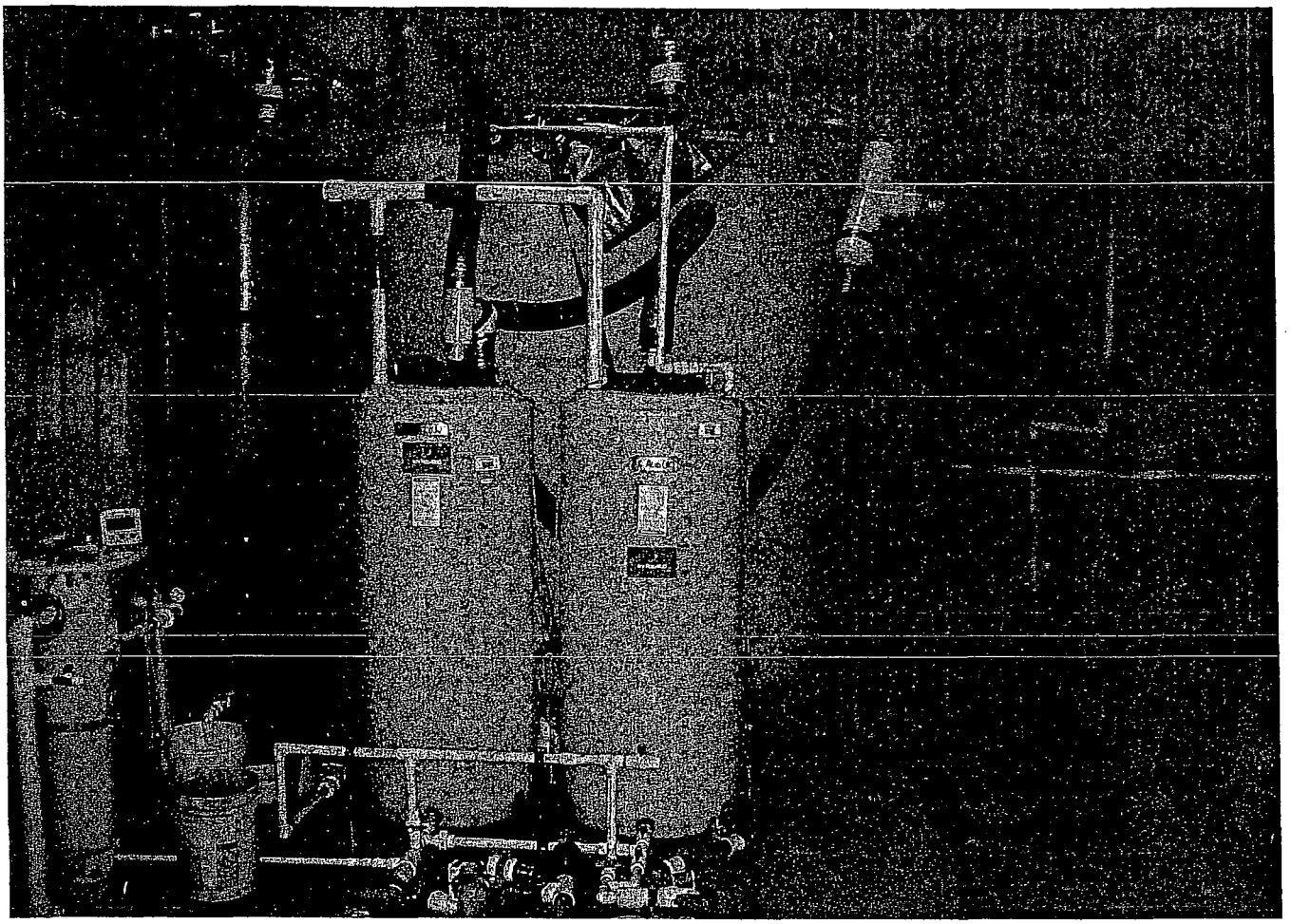
HCL acid drum
w/ Lutz drum pump
0-10 gpm
P-1.014

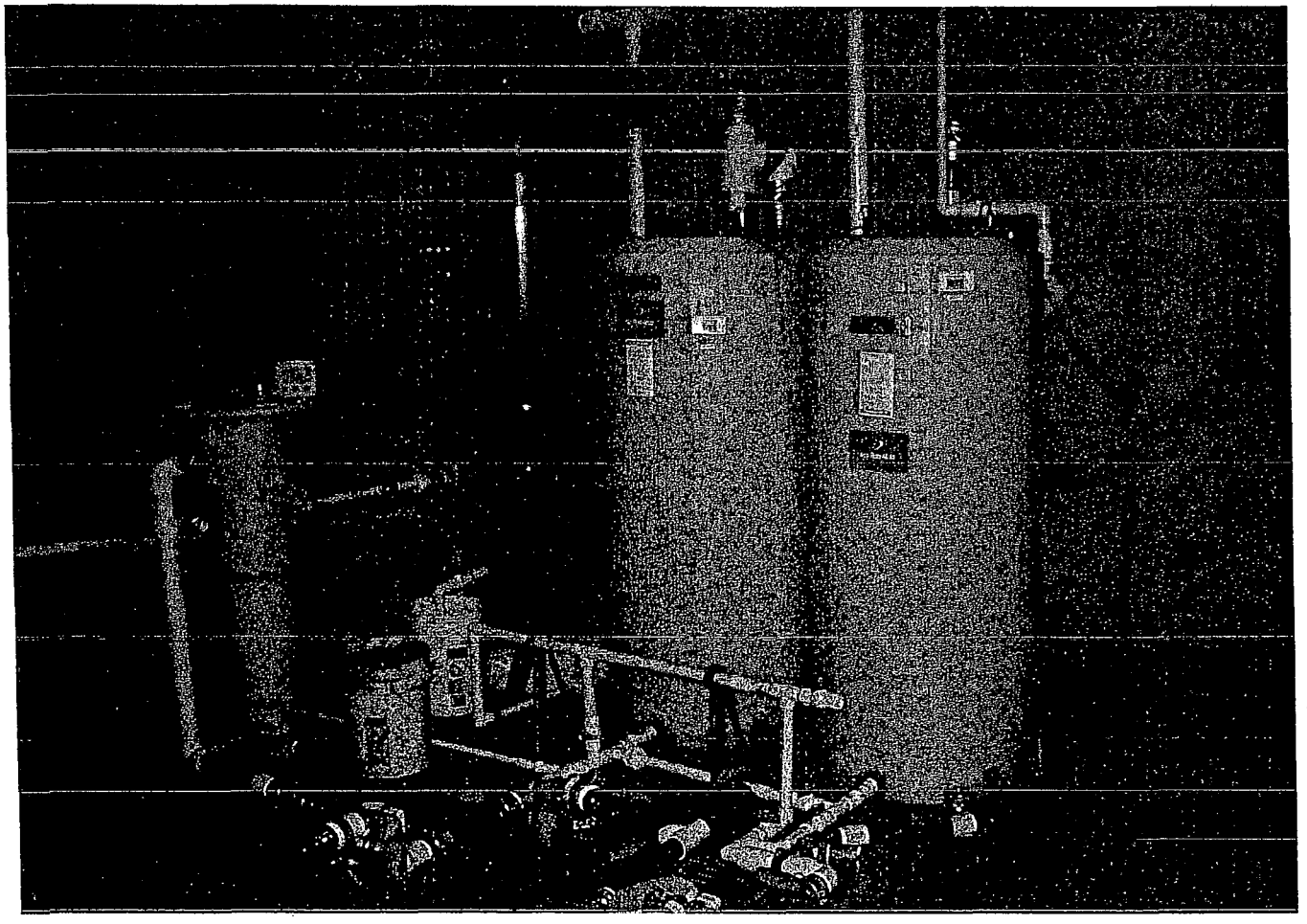
NOTES:

1. All skid piping to be 1" CPVC plastic pipe, socket weld and NPT connections provide pipe supports between each vessel/pump, with additional supports no less than every 2 ft.
2. Flex Hose connections to be class 125 camlock or equal
3. Each vessel on skid to be firmly supported for possibility of road transport
4. Pumps to be firmly mounted to base plates
5. Process valves to be 1" socket weld CPVC ball valves with neoprene elastomer of equal
6. Air pump inlet/outlet connections are 1/2" FNPT
7. Sample tap valves to be 1/2" socket weld CPVC
8. Air pumps: Provide 1/4" NPT supply to ea pump, 3/8" NPT exhaust
9. Air header piping: Use 1/2" NPT header, 1/4" NPT laterials, galvanized steel pipe, valves, and fittings.
   Connect to plant air with a Flex air hose and QD connectors

POND SOLUTION IX TREATMENT
PILOT PLANT TEST SKID ARRANGEMENT
CROW BUTTE -CAMECO

DRAWING G-1.001 Rev A 12/04/2008





JOB HAZARD ANALYSIS

Step 1. JOB INFORMATION

Job to be Analyzed: TEST TO TREAT POND WATER TO REMOVE URANIUM + VANADIUM.

Facilitator: DENNIS KERSTENS Department Responsible: ENGINEER

Date of JHA: 2-19-09

Was a Previous JHA Done for this Job? Yes ☐ No ☒ If Yes: Date of Previous JHA:

Step 2: BASIC JOB STEPS	Step 3: HAZARDS / RISKS	Step 4: CONTROLS
PUTTING HCL ACID INTO FEED TANK — SODIUM SULFIDE IN SUMP.	WILL CREAT A POISONOUS GAS EF WE HAVE AN ACID LEAK.	DOUBLE LINED ACID TANK. H_2S GAS DETECTOR.
PUT WATER FROM TRUCK BACK INTO POND.	HURT LENER EF DROPPED ONTO LENER	FLEX HOSE TO KEEP FROM FALLING TO FAST ON LENER.
PUT ACID INTO POND STORAGE AREA.	RADONS WELL BE RESING.	VENT THE WATER TANK.
DECIDED TO MOVE		
TEST TO PLANT.		

Health, Safety, and Radiation Risk Assessment Checklist

Exposure to cold weather (surface)	☐
Exposure to brine (freeze system)	☐
Exposure to compressed gas (oxygen, nitrogen, acetylene)	☐
Falling through ice	☐
Exposure to cold (underground)	☐
Sun exposure	☐
Forest Fires - exposure to heat	☐
Exposure to refrigerants (a/c)	☐
Contact with hot metal (welding,op.equip., pipe,etc)	☐
Exposure to fire (burning building, scoops)	☐
Contact with open flame (welding torch, propane burners)	☐
Contact with steam (batch plant)	☐
Contact with hot steam, burners, hot water, (Kitchen, pressure washers,	☐
Contact with hot fluid (hydraulics, coolant)	☐

Contact with sewage (RBC Plant, process)	☐
Contact with medical waste	☐
Ingestion of contaminated water	☐
Contact with infectious disease	☐
Food contamination	☐
Contact with infected animals (rabies, hantavirus, west nile)	☐
Airborne particles, forest fire smoke, asthmatic irritants.	☐
Poor hygiene	☐

Excessive noise from tools	☐
Blast vibration (concussion from devt round)	☐
Vibration from hand tools	☐
Vibration from equipment	☐
Excessive noise from equipment	☐

Attack from animal (bear, wolf)	☐
Vehicle collision (moose etc)	☐
Plane collision with birds, animals	☐
Allergic reaction to bites/stings	☐

Sitting at computer for long periods	☐
Operating mobile equipment	☐
Operating remote equipment	☐
Welding on equipment in cramped positions	☐
Working on equipment in tight confines	☐
Installing ground support, scaling	☐

Lifting chuck wrench on raise drill, moving pumps	☐
Moving materials/supplies	☐
Changing d/drill rods, core trays	☐
Shovelling concrete/snow	☐
Dragging hydraulic hoses/jumbo cable	☐
Installing electrical cable	☐
Manual handling of materials in shop. (Door size,	☐
Manual handling of tools	☐

Inhalation of process chemical fumes (barium chloride, ferric, lime, welding etc)	☐
Ingestion of process chemicals (barium chloride, ferric, lime etc)	☐
Contact with process chemicals (barium chloride, ferric, lime etc)	☐
Injection, inhalation of illicit drugs	☐
Inhalation of diesel/gas fumes	☐
Inhalation of blasting fumes	☐
Inhalation of cigarette smoke	☐
Inhalation of fire generated smoke	☐
Injection of high pressure fluids	☐
Ingestion of contaminated potable water	☒
Inhalation of dust (silica, chemicals, cement,fly ash) maintenance activities.	☐
Oxygen deficiency	☐
Explosion due to flammable gas, chemical reaction	☐
Accidental/Intentional poisoning, chemical mixing, cleaning supplies, Hazardous products.	☒
Accidental detonation of explosives	☐

Welding Flash	☐
Sunburn	☐
Exposure to gamma source	☐
Exposure to radon gas & progeny	☐
Exposure to LLRD	☐

Contact with live conductors	☐
Lightning	☐
Collision with electrical equipment	☐
Static buildup causing ignition	☐
Shock from welder	☐

Release of air/water/concrete/oil/sand from lines	☐
Injection of high pressure air	☐
Release of high pressure ground water	☐
Rupture of pressure vessels, boilers, cylinders	☐
Rupture of tires/split rims	☐
Uncontrolled movement of lines under pressure	☐
Cleaning/Pigging lines	☐
Crush by hydraulic equipment pivot point	☐
Rockburst	☐
Pinch by hydraulic press	☐
Vaccuum Pressure,atmospheric pressure, Suck Truck	☒
Uncontrolled movement of equipment (vent doors)	☐

Slips due to icy conditions	☐
Falling while working in scoop bucket	☐
Fall while working in elevating platform, scaffolding	☐
Fall from ladder, stairs, platforms, tanktops	☐
Falling into open hole (vent raise, shaft)	☐
Slips due to wet surfaces	☐
Slips due to uneven, rough surface (muckpile)	☐
Tripping due to poor housekeeping	☐
Dismounting equipment	☐

Struck by light/heavy equipment	☐
Struck by remote equipment	☐
Struck by runaway equipment	☐
Thrown from moving equipment	☐
Struck by suspended load	☐
Rollover of equipment	☒
Pinch between equipment	☐
Loss of control pulling and moving equipment that is out of service.	☐
Collision while operating equipment.	☐

Caught in rotating equipment (high speed fans, motors, pumps)	☐
Caught in conveyor roller/belt, auger	☐
Falling into crusher	☐
Caught in rotating equipment (low speed drills)	☐
Struck by overhead doors	☐
Caught by ropes/cables (tuggers,crane)	☐
Struck by shaft conveyance	☐
Sudden stop/ free fall of shaft conveyance (overspeed)	☐
Fall into tank/lake/pond	☐

Caught in rotating equipment (high speed drills eg diamond drill)	☐
Caught in rotating equipment (low speed drills eg jumbo drill)	☐
Injury from cutting tool (power saws, grinders, drills)	☐
Injury from porta-pak operation	☐
Injury from hand tools (axe, hammer, wrench slippage)	☐
Contact with high pressure water.(pressure washer)	☐
Injury from sheet metal (fabrication, installation)	☐
Injury from firearms	☐
Pinned/pinched by jackleg	☐

Ice falling from buildings	☐
Rockfall (loose)	☐
Equipment falling from jack/blocks/hoist	☐
Grinding discs disintegrating	☐
Objects falling in shaft	☐
Release of concrete from slickline	☐
Flyrock, airblast from blasting (unexpected b/through)	☐
Extraneous material from grinding	☐
Failure of suspended load	☐
Hot slag from welding/cutting	☐
Dropping of objects (tools, supplies)	☐
Run of muck in raise/pass (sloughing)	☐
Backfill plug failure	☐
Inrush of water	☐
Dropping of objects (equipment, materials)	☐
Collapse of stockpile face	☐
Cave-in of trench	☐
failure of dam wall/berm	☐
Structural failure of infrastructure (building, bridge, crane)	☐
Moving materials and loads with mobile equipment.	☒
Material sliding off truck tray	☐

Environmental Aspects Risk Assessment Checklist

Attracting animals from domestic wastes (food)	☐
Disturbing land from construction of roads or trails	☐
Distrubing land from off-road activities	☐
Disturbing animals from noise generation	☐
Contaminated materials being stored outside contained areas.	☐
Damaging a containment liner (asphalt, waste pad & pond liners, concrete floor)	☐
Contaminted waters in a pad or pond, escaping containment	☒
Generating runoff and erosion	☐
Water will need to be used	☒
Propane, diesel, gasoline being used	☐
Local resources (sand, gravel, land) will be used	☐
New or existing chemicals will be used	☒

Discharging effluent with a limit	☐
Changing the quality of water reporting for treatment	☒
Increasing contaminant loading to the environment	☐
Impacting the performance of treatment facilities	☐
Release of a refrigerant (freon, halocarbons, etc.) to the air	☐
Generating greenhouse gases (combustion products)	☐
Generating noxious or nuisance odours / vapours	☒
Generating smoke and / or dust	☐
An uncontrolled inflow of water to the mine	☐

Fuels and Hazardous Chemicals	
Release while transporting fuel from one location to another	☐
Release while transferring fuels to a storage tank	☐
Spill while transferring fuel to equipment	☐
Fuels and hazardous chemicals storage	☐
Spill while transporting hazardous chemicals from one location to another	☐
Water, Effluent, Sewage, Other	
Leaks from a pipeline containg sewage, effluent, or contaminated waters	☐
Spilled or leaking material could enter a waterbody (creek, river, lake)	☐
Generating contaminated debris or equipment (underground debris, equipment	☐
Generating industrial wastes (construction waste)	☐
Generating recyclable materials (paper, cardboard, pails, drums)	☐
Generating hazardous materials (batteries, waste oil)	☐
Waste rock will be generated	☐

Hierarchy of Hazard Controls

The "Hierarchy of hazard control" below are listed in priority order ie., the most effective is listed first, with less effective options listed lower. The highest practical levels of risk control should be chosen. A combination of higher and lower level risk controls is usually desirable.

Best

Elimination — Eliminate or remove the task that causes the risk or hazard.
Question - Does the task need to be done?

Substitution — Replace the hazard with something less hazardous eg., substitute a toxic substance with another that is non-toxic.
Question - Can something else be used to reduce the risk?

Engineering Controls — Use mechanical devices or equipment to reduce the risk. eg. Local exhaust ventilation, isolation, guarding, lighting, rearrange the work area, provide containment, etc.
Question - Can we install something to reduce the risk?

Administrative Controls — Use of practices, work instructions or training to reduce the risk eg. Work permits, checklists, procedures, training.
Question - Are we using our Cameco procedures and instruction to reduce the risk?

Personal Protective Equipment — Use of Personal Protective Equipment to reduce the risk and making sure workers are familiar with and trained to properly use the equipment eg. Gloves, faceshield, hearing protection, chemical suits
Question - What PPE should be used to reduce the risks of this job task?

Least Preferred

	Yes	No
Has the risk of the job decreased with controls in place?	☐	☐
Are the risks being controlled properly to protect worker health, safety and radiation and protection of the environment?	☒	☐

IMPORTANT

While the job proceeds, constant supervision and evaluation of the job and controls must take place.

If during the work the job tasks change, or the controls cannot be implemented, the Job MUST BE STOPPED, the Cameco Supervisor contacted and the JHA reassessed.

Comments (if required):

ALL THE TANKS MUST BE VENTED.
AFTER DISCUSSIONS, THE PLAN IS TO MOVE IT TO THE PLANT AREA.
NEED TO MEET AGAIN ON THIS PROJECT.

JHA Team Names and Signatures

NAME (print)	SIGNATURE
SIM	
BOB	
STEVE	
DOUG	
DENNIS	
RHONDA	
LARRY	
RON	

Please make a photocopy of this JHA for your records.
Forward the original to the QMS Administrator

JOB HAZARD ANALYSIS

Step 1. JOB INFORMATION

Job to be Analyzed: TREATMENT OF POND WATER TO REMOVE URANIUM AND VANADIUM

Facilitator: DENNIS KERSTEENS Department Responsible: PLANT

Date of JHA: 3-4-09

Was a Previous JHA Done for this Job? Yes [X] No [ ] If Yes: Date of Previous JHA: 2-19-09

Step 2: BASIC JOB STEPS	Step 3: HAZARDS / RISKS	Step 4: CONTROLS
CHECK VACUUM TRUCK	FALLS - DRIVING POSSIBLE CONTAMINATION	TRAINING LICENSE WASH (IF NECESSARY) CERTIFIED DRIVER
RELOCATE PLATFORM AND TANKS.	USING FORKLIFT	TRAINING ON FORKLIFT
CONNECT VENT SYSTEM	USING LADDERS/FALL	LADDER TRAINING
CONNECT PIPING AND PUMPS	LADDER USE	" "
HAUL WATER FOR TEST.	WORKING AROUND POND LINERS. HOSE PRESSURE. DRIVING	POND/LINER TRAINING. CONTROLLING HOSE TRUCK LICENSE/ WATER CERTIFIED
CONDITION PIT IN FEED WATER-	HYDROCHLORIC ACID/ VALVES NOT SET CORRECTLY	CHEMICAL SAFE GOGGLES RAINSUIT, RUBBER BOOTS, CHEMICAL SAFE GLOVES. EXPERIENCED OPERATORS. WELL SET VALVES
RUN TEST	VALVES NOT SET CORRECTLY. HIGH RADONS	EXPERIENCED OPERAT WELL CONTROL FLOW. FANS USED TO VENT
ELUTE RESIN	7% HYDROCHLORIC ACID RADON BUILDUP	PROPER PPE FANS TO VENT OUTSIDE
REMOVE SYSTEM TO RESTRICTED AREA	USING FORKLIFT	CERTIFIED FORK LIFT DRIVER.

Health, Safety, and Radiation Risk Assessment Checklist

Exposure to cold weather (surface)	☐
Exposure to brine (freeze system)	☐
Exposure to compressed gas (oxygen, nitrogen, acetylene)	☐
Falling through ice	☐
Exposure to cold (underground)	☐
Sun exposure	☐
Forest Fires - exposure to heat	☐
Exposure to refrigerants (a/c)	☐
Contact with hot metal (welding,op.equip., pipe,etc)	☐
Exposure to fire (burning building, scoops)	☐
Contact with open flame (welding torch, propane burners)	☐
Contact with steam (batch plant)	☐
Contact with hot steam, burners, hot water, (Kitchen, pressure washers,	☐
Contact with hot fluid (hydraulics, coolant)	☐

Contact with sewage (RBC Plant, process)	☐
Contact with medical waste	☐
Ingestion of contaminated water	☒
Contact with infectious disease	☐
Food contamination	☐
Contact with infected animals (rabies, hantavirus, west nile)	☐
Airborne particles, forest fire smoke, asthmatic irritants.	☐
Poor hygiene	☐

Excessive noise from tools	☐
Blast vibration (concussion from devt round)	☐
Vibration from hand tools	☐
Vibration from equipment	☐
Excessive noise from equipment	☐

Attack from animal (bear, wolf)	☐
Vehicle collision (moose etc)	☐
Plane collision with birds, animals	☐
Allergic reaction to bites/stings	☐

Sitting at computer for long periods	☐
Operating mobile equipment	☒
Operating remote equipment	☐
Welding on equipment in cramped positions	☐
Working on equipment in tight confines	☐
Installing ground support, scaling	☐

Lifting chuck wrench on raise drill, moving pumps	☐
Moving materials/supplies	☒
Changing d/drill rods, core trays	☐
Shovelling concrete/snow	☐
Dragging hydraulic hoses/jumbo cable	☐
Installing electrical cable	☐
Manual handling of materials in shop. (Door size,	☐

Inhalation of process chemical fumes (barium chloride, ferric, lime, welding etc) A.L.F.D	☒
Ingestion of process chemicals (barium chloride, ferric, lime etc)	☐
Contact with process chemicals (barium chloride, ferric, lime etc)	☒
Injection, inhalation of illicit drugs	☐
Inhalation of diesel/gas fumes	☐
Inhalation of blasting fumes	☐
Inhalation of cigarette smoke	☐
Inhalation of fire generated smoke	☐
Injection of high pressure fluids	☐
Ingestion of contaminated potable water	☒
Inhalation of dust (silica, chemicals, cement,fly ash) maintenance activities.	☐
Oxygen deficiency	☐
Explosion due to flammable gas, chemical reaction	☐
Accidental/Intentional poisoning, chemical mixing, cleaning supplies, Hazardous products.	☐
Accidental detonation of explosives	☐

Welding Flash	☐
Sunburn	☐
Exposure to gamma source	☐
Exposure to radon gas & progeny	☒
Exposure to LLRD	☐

Contact with live conductors	☐
Lightning	☐
Collision with electrical equipment	☐
Static buildup causing ignition	☐
Shock from welder	☐

Release of air/water/concrete/oil/sand from lines	☒
Injection of high pressure air	☐
Release of high pressure ground water	☐
Rupture of pressure vessels, boilers, cylinders	☐
Rupture of tires/split rims	☐
Uncontrolled movement of lines under pressure	☐
Cleaning/Pigging lines	☐
Crush by hydraulic equipment pivot point	☐
Rockburst	☐
Pinch by hydraulic press	☐
Vaccuum Pressure,atmospheric pressure, Suck Truck	☒
Uncontrolled movement of equipment (vent doors)	☐

Slips due to icy conditions	☐
Falling while working in scoop bucket	☐
Fall while working in elevating platform, scaffolding	☐
Fall from ladder, stairs, platforms, tanktops	☒
Falling into open hole,(vent raise, shaft)	☐
Slips due to wet surfaces	☒
Slips due to uneven, rough surface (muckpile)	☐
Tripping due to poor housekeeping	☐

Struck by light/heavy equipment	☐
Struck by remote equipment	☐
Struck by runaway equipment	☐
Thrown from moving equipment	☐
Struck by suspended load	☐
Rollover of equipment	☒
Pinch between equipment	☐
Loss of control pulling and moving equipment that is out of service.	☐
Collision while operating equipment.	☐

Caught in rotating equipment (high speed fans, motors, pumps)	☐
Caught in conveyor roller/belt, auger	☐
Falling into crusher	☐
Caught in rotating equipment (low speed drills)	☐
Struck by overhead doors	☐
Caught by ropes/cables (tuggers,crane)	☐
Struck by shaft conveyance	☐
Sudden stop/ free fall of shaft conveyance (overspeed)	☐
Fall into tank/lake/pond	☐

Caught in rotating equipment (high speed drills eg diamond drill)	☐
Caught in rotating equipment (low speed drills eg jumbo drill)	☐
Injury from cutting tool (power saws, grinders, drills)	☐
injury from porta-pak operation	☐
Injury from hand tools (axe, hammer, wrench slippage)	☐
Contact with high pressure water.(pressure washer)	☐
Injury from sheet metal (fabrication, installation)	☐
Injury from firearms	☐
Pinned/pinched by jackleg	☐

Ice falling from buildings	☐
Rockfall (loose)	☐
Equipment falling from jack/blocks/hoist	☐
Grinding discs disintegrating	☐
Objects falling in shaft	☐
Release of concrete from slickline	☐
Flyrock, airblast from blasting (unexpected b/through)	☐
Extraneous material from grinding	☐
Failure of suspended load	☐
Hot slag from welding/cutting	☐
Dropping of objects (tools, supplies)	☐
Run of muck in raise/pass (sloughing)	☐
Backfill plug failure	☐
Inrush of water	☐
Dropping of objects (equipment, materials)	☐
Collapse of stockpile face	☐
Cave-in of trench	☐
failure of dam wall/berm	☐
Structural failure of infrastructure (building, bridge, crane)	☐
Moving materials and loads with mobile equipment..	☒

Environmental Aspects Risk Assessment Checklist

Attracting animals from domestic wastes (food)	☐
Disturbing land from construction of roads or trails	☐
Distrubing land from off-road activities	☐
Disturbing animals from noise generation	☐
Contaminated materials being stored outside contained areas.	☐
Damaging a containment liner (asphalt, waste pad & pond liners, concrete floor)	☐
Contaminted waters in a pad or pond, escaping containment	☒
Generating runoff and erosion	☐
Water will need to be used	☐
Propane, diesel, gasoline being used	☐
Local resources (sand, gravel, land) will be used	☐
New or existing chemicals will be used	☐

Discharging effluent with a limit	☐
Changing the quality of water reporting for treatment	☐
Increasing contaminant loading to the environment	☐
Impacting the performance of treatment facilities	☐
Release of a refrigerant (freon, halocarbons, etc.) to the air	☐
Generating greenhouse gases (combustion products)	☐
Generating noxious or nuisance odours / vapours	☒
Generating smoke and / or dust	☐
An uncontrolled inflow of water to the mine	☐

Fuels and Hazardous Chemicals	
Release while transporting fuel from one location to another	☐
Release while transferring fuels to a storage tank	☐
Spill while transferring fuel to equipment	☐
Fuels and hazardous chemicals storage	☐
Spill while transporting hazardous chemicals from one location to another	☐
Water, Effluent, Sewage, Other	
Leaks from a pipeline containg sewage, effluent, or contaminated waters	☐
Spilled or leaking material could enter a waterbody (creek, river, lake)	☐
Generating contaminated debris or equipment (underground debris, equipment	☐
Generating industrial wastes (construction waste)	☐
Generating recyclable materials (paper, cardboard, pails, drums)	☐
Generating hazardous materials (batteries, waste oil)	☐
Waste rock will be generated	☐

Hierarchy of Hazard Controls

The "Hierarchy of hazard control" below are listed in priority order ie., the most effective is listed first, with less effective options listed lower. The highest practical levels of risk control should be chosen. A combination of higher and lower level risk controls is usually desirable.

Best

Elimination — Eliminate or remove the task that causes the risk or hazard.
Question - Does the task need to be done?

Substitution — Replace the hazard with something less hazardous eg., substitute a toxic substance with another that is non-toxic.
Question - Can something else be used to reduce the risk?

Engineering Controls — Use mechanical devices or equipment to reduce the risk. eg. Local exhaust ventilation, isolation, guarding, lighting, rearrange the work area, provide containment, etc.
Question - Can we install something to reduce the risk?

Administrative Controls — Use of practices, work instructions or training to reduce the risk eg. Work permits, checklists, procedures, training.
Question - Are we using our Cameco procedures and instruction to reduce the risk?

Personal Protective Equipment — Use of Personal Protective Equipment to reduce the risk and making sure workers are familiar with and trained to properly use the equipment eg. Gloves, faceshield, hearing protection, chemical suits
Question - What PPE should be used to reduce the risks of this job task?

Least Preferred

	Yes	No
Has the risk of the job decreased with controls in place?	X	☐
Are the risks being controlled properly to protect worker health, safety and radiation and protection of the environment?	X	☐

IMPORTANT

While the job proceeds, constant supervision and evaluation of the job and controls must take place.

If during the work the job tasks change, or the controls cannot be implemented, the Job MUST BE STOPPED; the Cameco Supervisor contacted and the JHA reassessed.

Comments (if required):

ALL CONSTRUCTION FOR THIS TEST MUST BE REMOVED. NO VALVES + PIPING WILL BE LEFT.

JHA Team Names and Signatures

NAME (print)	SIGNATURE
BOB TIENSUOLD	Bob
WALT NELSON	Walter D. Nelson
DENNIS KERSTIENS	
STEVE BOESELAGER	
RON HERRICK	
LARRY TEAHON	
JIM STOKEY	
RHONDA GRANTHAM	
Doug Pavlick	

Please make a photocopy of this JHA for your records.
Forward the original to the QMS Administrator

CAMECO RESOURCES
RESTORATION AND PONDWATER TREATMENT PROJECT

CROW BUTTE POND WATER IX TREATMENT PROCESS DESCRIPTION

INTRODUCTION

The existing Crow Butte Plant manages the overall process water balance by discharging plant waste water to one of the three (3) evaporation ponds. The evaporation ponds provide the function of evaporating the water away from the dissolved constituents, reducing the solution volume, while concentrating the contained compounds.

The Pond Water IX Treatment process is being added to give the plant the ability to treat and dispose of the water contained in the evaporation ponds. The goal of treating the pond water is to empty the ponds. Also, the Pond Water IX Treatment process is to be able to treat the and dispose of the waste water from yellowcake (YC) thickener overflow, which now flows into the evaporation ponds, should evaporation pond usage be minimized in the future.

The Pond Water Treatment system utilizes filtration, pH adjustment using HCl, ion exchange (IX) with resin, elution of the resin with strong HCL solution, followed by uranium recovery in the existing plant precipitation and yellowcake thickening circuit. The discharge streams will be an IX discharge stream with reduced U3O8 and Vanadium (meeting the deep well disposal criteria), and a strong eluate stream rich in U3O8 and vanadium to be sent to the existing plant precipitation circuit for U3O8 recovery. The pond water will be filtered in a multimedia filter, with the captured sediment and algae being backwashed into the existing evaporation ponds.

The YC Thickener Overflow solution now flows into the evaporation ponds. This is an intermittent operation. In order to eliminate this source of pond water, the stream may be directed to the Deep Disposal Well Surge Tank and co mingled with the plant low level waste water streams before discharging to the DDW. The DDW feed stream is sampled on a routine schedule and the results are compiled to report against the established criteria.

Should U_3O_8 recovery be indicated, or vanadium removal be desired, the YC Thickener Overflow stream may be redirected to the Pond Water Treatment system. This stream contains excess hydrogen peroxide which could react with the treatment system IX resin, oxidizing and destroying the resin. To prevent resin destruction by the excess peroxide, a multimedia filter containing sand and manganese dioxide is shown. [It is known that hydrogen peroxide, after contact with manganese dioxide, will become unstable and undergo rapid decomposition] This is a catalytic reaction such that the manganese dioxide is not consumed.

The above unit operations in the Pond Water IX Treatment process are tabulated below:
Pond multimedia filtration,
YC thickener overflow multimedia filter contactor (to reduce peroxide),
Feed pH conditioning (using HCl)

Ion exchange (IX),
Elution of the loaded resin with strong HCL solution,

Following the above operations the now barren pond water discharge will be sent to the DDW Surge tank for deep well disposal, and the pregnant eluate containing the recovered U3O8 and Vanadium will be sent to the CPP YC precipitation circuit.

These unit operations are adaptations of the processes currently in use by the existing plant.

EQUIPMENT LIST

Pump, submersible at the pond, 100 gpm, 3 required, 1 each pond
Filter, multimedia, 100 gpm, containing sand and garnet, to filter the transferred pond water, backwash to the pond
Filter, multimedia, 20 gpm. containing sand and manganese dioxide, to trigger peroxide decomposition, backwash to the YC thickener
Tank, conditioning, HDPE, 2 each 10,000 gal capacity for feed surge and conditioning
Pump, acid resistant, feed tank circulation during conditioning, 100 gpm, for feed pH conditioning and peroxide destruction
Mixer, inline, mixing HCl into feed solution to condition feed pH
Pump, Metering, 12 gpm 7% HCl, base to rapidly approach desired pH target
Pump, Metering, 1.2 gpm 7% HCl, trim to hit desired pH target
Pump, Metering, 1.2 gpm 5% NaOH, pH reversal used if pH becomes too acidic
Tank, NaOH dilution,50% to 5%, polypropylene, 50 gallon
Pump, centrifugal, acid resistant, 45 gpm feed to IX column
Filter, duplex bag filter, PVC, to capture suspended solids in IX feed solution
Column, IX, 3 required, PVC, ea 4 ft dia x 11 ft hi, w/90 ft3 TP-207 resin, to capture U3O8 and Vanadium
Filter, single bag , PVC, resin trap
Pump, air diaphragm, PVC, 4 req'd, 45 gpm, IX 1, 2, 3, elution, rinse, and drain
Tank, 2 req'd, Eluate, HDPE, 2800 gal, 7 ft dia x 10 ft hi.
Mixer, in-line, PVC, makeup eluate mixing 35% HCl to 7% HCl
Pump, sump, portable air diaphragm, 45 gpm, PVC

PROCESS DESCRIPTION

POND FEED

Pond water from pond 1 is pumped at the rate of 100 gpm to one of the 2 10,000 gal. Pond Water Treatment conditioning tanks to be located in the new Restoration and Pond Water Treatment building. The water is filtered using a sand/garnet mixed media filter to remove +40 micron suspended solids and algae before flowing into the conditioning tank.

This feed cycle will be slightly less than 100 minutes at 100 gpm to fill the conditioning tank to the operating level, then will be shut down until the second tank is emptied and valves positioned to receive new pond feed.

Pond inventory control between pond 1, pond 3, and pond 4 will be managed separately to assure a continuous source of blended pond water feed from pond 1.

YC THICKENER FEED (an optional stream)
A 2nd stream, the YC thickener overflow, may be introduced. If this option is selected the stream will be pumped into the pond water feed line discharging into the conditioning tank.

This stream contains excess hydrogen peroxide as previously noted which is undesirable as it could react with the IX resin in the subsequent loading columns, destroying the resin.

In order to minimize this possibility, the YC thickener overflow is piped through a multimedia filter, with backwash capability. The filter contains a mixed media bed of manganese dioxide mixed with coarse sand. The sized coarse sand provides permeability. The dispersion of natural manganese dioxide provides maximum surface area for solution contact with the manganese dioxide. A catalytic reaction is triggered when peroxide contacts manganese dioxide, starting a rapid decomposition of the peroxide, producing H_2O and O_2. (Safety note: At the low ppm concentration of peroxide in the YC thickener overflow the resulting exothermic reaction of decomposition is totally adsorbed by the mass of the flowing stream) This reaction was tested in CB laboratory and again in the plant test No. 5 on YC thickener overflow.

The combined feed streams charge the selected conditioning tank in less than 2 hours, then are shut down, until the next fill cycle.

FEED CONDITIONING

Feed conditioning is started early during the filling cycle. Filling will continue until the high level of the conditioning tank is reached. The feed pH is expected to be above 7.5.

The tank content is blended for uniformity by operating a 100 gpm recirculation pump, moving the recirculation stream through a static pipe-line mixer and into the conditioning tank during the conditioning period. Acid addition is controlled using pH control and is injected just ahead of an in-line mixer to rapidly obtain uniform pH. The target pH is 4.0 to 4.5.

Should the pH become to low, NaOH may be added to raise the pH to the target level.

During the conditioning period (approximately 3.7 hours) the excess peroxide in the YC stream, previously exposed to manganese dioxide to trigger decomposition, has time to decompose to an acceptable level.

The circulation will continue until the 2nd conditioning tank is empty of IX feed, then the function of the tanks will be switched and the full tank of conditioned feed will become the source of feed to the IX circuit.

The feed filling and conditioning cycle will be repeated, approximately every 3.7 hours. Pond water and YC thickener overflow pumps will be restarted and the empty tank will begin to fill.

IX FEED

The IX feed pump will be switched to draw from the conditioned tank. The IX circuit feed rate will be controlled at the design rate of 45 gpm. The feed pump is started, pressurizing the system to 60 psig. The feed, under pressure, passes through a polishing bag filter to the IX columns, finally discharging in the DDW surge tank. The IX column flow will be in series, 1st stage, 2nd stage, 3rd stage. During startup the pH between IX 1 and IX 2 will be monitored for a potential drop in pH, observed during the plant test program. The barren discharge from the 3rd stage will be piped through a resin trap filter to hold any resin escaping from a screen break in any of the IX columns. Periodic barren analytic samples will be taken as experience dictates. Loading of the three IX columns will continue until the concentration of either uranium or vanadium in the total cumulative barren solution nears the observed level (determined by operating experience and analytical analysis) to not exceed the DDW feed sample regulatory criteria.

At this point the entire circuit is shut down for elution. Feed condition of the full feed tank may continue. The nearly empty feed tank will be held at the near empty level in readiness to receive spent rinse solution from the 1st stage IX column elution process.

The 3rd stage and the 2nd stage IX columns are drained of residual feed water which is directed forward to the DDW Surge Tank.

The 1st stage residual feed water, approximately 800 gallons, is directed back to the idle feed conditioning tank, to limit the amount of feed solution heel remaining in the IX column.

BARREN DISCHARGE

The barren discharge of the IX treatment now contains acceptable low levels of U3O8 and vanadium, allowing the stream to be discharged to the plant DDW Surge Tank. In the surge tank the barren discharge mixes with other DDW acceptable waste waters from the plant.

The discharge from the DDW Surge Tank to the DDW will continue to be sampled at specific times to provide a cumulative sample history for compliance DDW discharge criteria.

ELUTION

Eluate is made up in the eluate makeup tank by adding water and HCl to the make up tank in the following mix ratios

Water added 1st into the makeup eluate tank	1987 gallons, (83% by volume)
35% HCl at 1.17 SG added next into the tank	425 gallons, (17% by volume)
Tank content of 7% acid at 1.035 SG will be	2400 gallons (3 BV)

The makeup eluate tank now contains approximately 3 bed volumes (BV) of eluate. The makeup eluate discharge pump is started, pumping the makeup eluant into the 3rd column, stripping the uranium and vanadium from the resin. The solution flows through the column by gravity. The discharge of No. 3 IX is then picked up by switching the IX train valving to countercurrent flow through No. 3 IX, No. 2 IX, and discharging into the empty pregnant eluate tank. The loading on the 3rd and 2nd IX column resin is light, therefore one countercurrent pass of 3 BV is indicated.

The discharge from the 3rd column will be a weak eluant, and will continuously be pumped into the 2nd column. Again, as in the 3rd column, only one pass of 3 BV through the 2nd column is indicated, producing an intermediate eluate.

The discharge from the 2nd column will continuously be pumped into the pregnant eluate tank. The pregnant eluate tank will be pumped into the 1st column, and circulated back into the pregnant eluate tank using IX 1 drain pump. Circulation of the 3 BV moved into the pregnant eluate tank will continue until six (6) BV have been circulated through the heavily loaded 1st column resin bed, stripping the resin and producing the final 3 BV of strong pregnant eluate.

The elution system will be shut down as the drain pumps complete the emptying cycle.

After draining, each IX column will be rinsed in a countercurrent flow using the barren water from the DDW Surge Tank. The rinse will require 2-3 BV of rinse water (1600 to 2400 gallons), will be fed countercurrent through IX No. 3, picked up by the No. 3 IX drain pump, pumped into IX No. 2, picked up by the No. 2 drain pump, then be pumped into IX No. 1. The rinse will drain through No. 1, be collected in No. 1 drain pump, and pumped into the idle feed conditioning tank.

In the feed tank new feed will be added, pH adjusted, the spent rinse acid content will be utilized, and the combined feed solution processed back through the IX system during the subsequent process cycle.

Elution is complete. The feed to the IX column will be resumed and the process cycle repeated.

URANIUM RECOVERY

The strong pregnant eluant from the pond water treatment system will be transferred to the CPP, mixing with the existing pregnant stream. The predicted elution cycle is one elution every 2nd day of IX loading. The ratio of this mix, considering down time for elution, is in the range of 1000 gallons per day of pregnant eluant from the pond water treatment, containing approximately 180 gallons of 35% HCl, to be added to 20,000 to 40,000 gallons per day of eluate from normal plant elution operations. The strong acid content of the eluate from pond water treatment will reduce the requirement for new acid in the CPP precipitation process.

End

SERP 09-02 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 09-02

Approval to Operate South Booster Pump Station

April 14, 2009

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve the operation of an injection line booster pump station for injection into Mine Units 9 and 11.

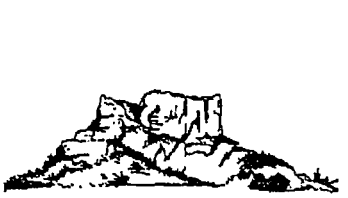
The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Jim Stokey	General Manager	Management
Doug Pavlick	Operations Manager	Operations
Larry Teahon	Manager of Health, Safety, and Environmental Affairs	Safety
Rhonda Grantham	Radiation Safety Officer	Radiation Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Tate Hagman	Administrative Supervisor	Instrumentation

Mr. Stokey is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

The purpose of this evaluation by the CBR SERP is to review and approve the operation of a booster pump station for Mine Units 9 and 11.



SERP 09-02

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the licensing requirements, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 23 dated May 12, 2008;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;
- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2008 was reviewed for specific requirements related to approval and operation of the booster pump station.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements. Section 3.3 also discusses instrumentation, including wet building alarms for wellhouses. Section 7.2.3 of the LRA requires that leak tests be performed on all wellfield piping before placing the system into production operations.

The SERP reviewed the Booster Pump Station checklist and Pressure Testing sheets. These checklists were developed by the Wellfield Construction staff to document completion of all required actions before initiating operation of this booster pump station. Some of these actions are required by regulatory and licensing requirements, while some were developed over the course of mining experience at Crow Butte. Construction activities are governed by EHSMS Volume III, *Operations Manual*, Procedure P-15, *Installation of Wellfield Pipelines*. The Maintenance Superintendent reviewed these items and stated that all had been completed and the appropriate controls were in place.

A copy of the testing sheets and support documentation is attached to this SERP Evaluation.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed change could cause substantive safety or environmental impacts.

Section 3.3.1 discusses leak testing of wellfield piping. The SERP reviewed the completion of pressure testing for piping systems associated with this booster pump station and found that they meet the intent of the EA.

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-02

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides the basis for worker safety at Crow Butte and does not specifically address the issues related to approval of startup of booster pump station.

Technical Evaluation Reports

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. None of the TERs prepared since license renewal directly address issues related to approval of a booster pump station for operation.

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that start up of this booster pump station will not degrade the safety and environmental commitments.

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves start up and operation of the booster pump station.

Approved this 14th day of April, 2009.

4/21/09

Jim Stokey, General Manager
SERP Chairman

Larry Teahon 4/21/09

Larry Teahon, Manager of Health, Safety, and Environmental Affairs
SERP Secretary

CAMECO RESOURCES
CROW BUTTE OPERATION

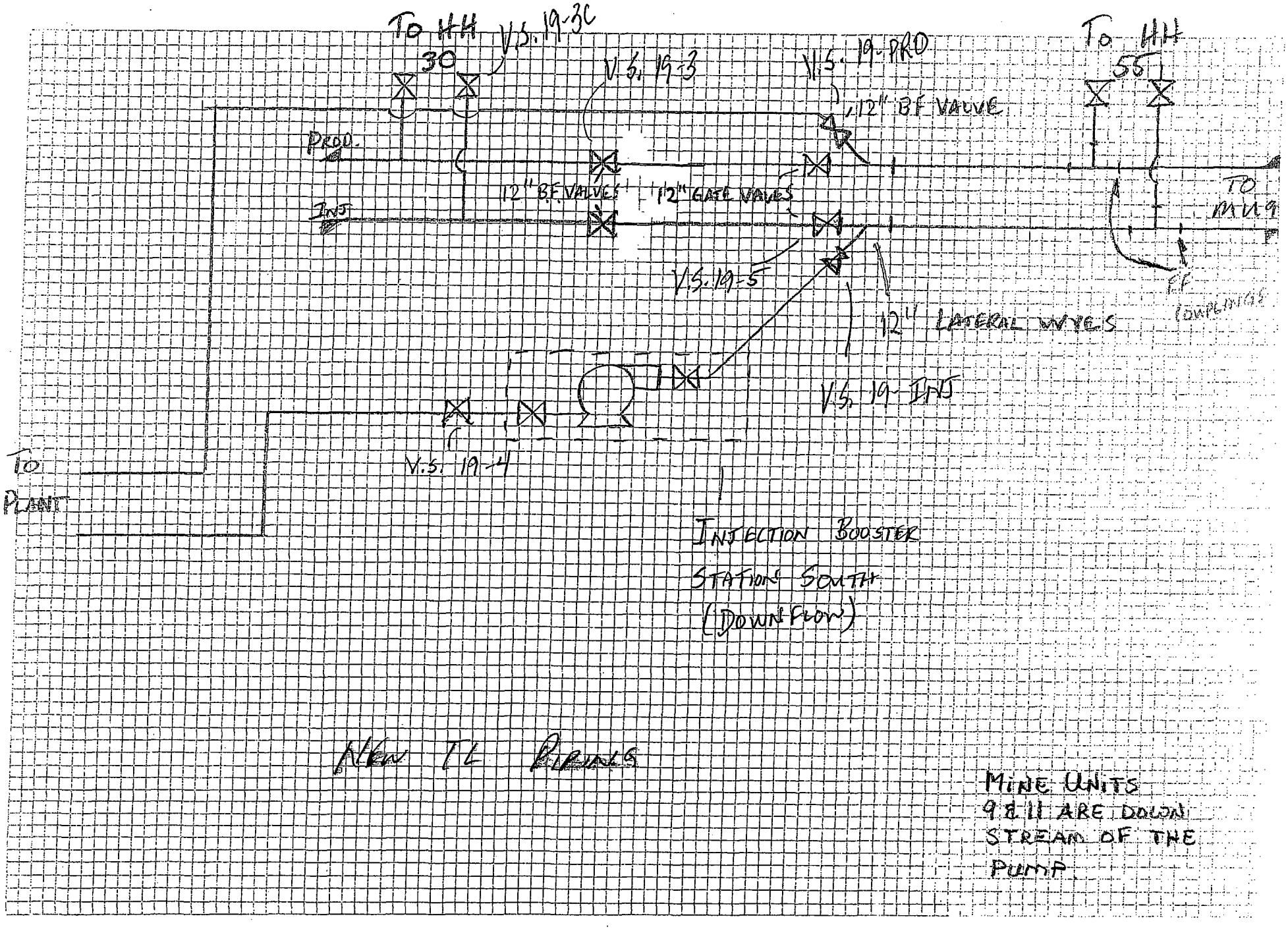
SERP 09-02

Rhonda Grantham 4/21/09
Rhonda Grantham, Radiation Safety Officer

4/21/09
Doug Paylick, Operations Manager

Bob Tiensvold 4/21/2009
Bob Tiensvold, Maintenance Superintendent

Tate Hagman 4-21-09
Tate Hagman, Administrative Supervisor


To HH 30
V.S. 19-3C
V.S. 19-3
V.S. 19-PRO
To HH 55
12" BF VALVE
PROD.
INJ.
12" BF VALVES
12" GATE VALVES
TO MW9
V.S. 19-5
12" LATERAL WYES
V.S. 19-INJ
V.S. 19-4
To PLANT
INJECTION BOOSTER STATION SOUTH (DOWNFLOW)
NEW TL RUNS
MINE UNITS 9 & 11 ARE DOWN STREAM OF THE PUMP.

SERP check list for Injection Booster Station South (Down Flow)

		Date	Initials	
New TL piping installed		4/21	BT	
Pressure gauges installed		4/13	BT	
Pressure test complete		4/13	BT	
Operational lockouts installed		4/21	BT	— POWER OFF TO VFD's
Instrumentation installed		4/13	BT	
Instrumentation operation checked		4/13	BT	
Wet building alarm installed		4/13	BT	
Wet valve station alarm installed		4/13	BT	
Wet alarms checked for alarm at plant		4/13	BT	
Non-service lines locked out		N/A		
Communication wire installed		3/09	BT	
Communications checked		3/09	BT	
Ground continuity check		4/13	BT	
VFD's installed and programmed		4/21	BT	
Processor installed and programmed		3/09	TH	
UPS installed		3/09	BT	
RSView screens installed		3/09	TH	
PLC programmed		3/09	TH	
Visually inspect entire system to plant		4/21	BT	
As built drawings complete		4/21	BT	— ROUGH DRAFTS TO GEOLOGY DEPT
I/O book complete		4/21	BT	

CROW BUTTE RESOURCES, INC.
86 Crow Butte Road
P. O. Box 169
Crawford, Nebraska 69339-0169

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

GROUND RESISTANCE TEST RECORD

TEST SET USED: AEMC Model 3711 Ground Resistance Tester

GROUND TEST RESULTS: Injection Booster Station South (Down Flow)
OHMS: 1/Rt = 1/6.5 + 1/1.8 = 1.16 OHMS

CONCLUSIONS:

THE TEST RESULTS ARE SATISFACTORY

TEST PERFORMED BY:

CROW BUTTE RESOURCES, INC.

Bob Tiensvold

Date: April 13, 2009

Booster Pump Ground Continuity Checks:

Pump 1 - .6 Ω
Pump 2 - .6 Ω
Pump 3 - .5 Ω
Pump 4 - .6 Ω
Pump 5 - N/A
Pump 6 - N/A
SLC Cab - 1.1 Ω
Lighting Panel - .9 Ω
Building Frame - .2 Ω

Fluke Meter Model 336
Performed By:
Bob

CROW BUTTE RESOURCES, INC.

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

(308) 665-2215
(308) 665-2341 – FAX

MEMORANDUM

TO: File

FROM: Kirk McDowell

DATE: March 31, 2009

SUBJECT: Injection Booster Pump Station

Pressure-check verification for injection booster pump station.

On March 21, 2009, the new injection line of booster pump station was pressure-tested from Plant to Valve Station 19 - INJ:

Start – 125 psi

60 minutes

Stop – 122 psi

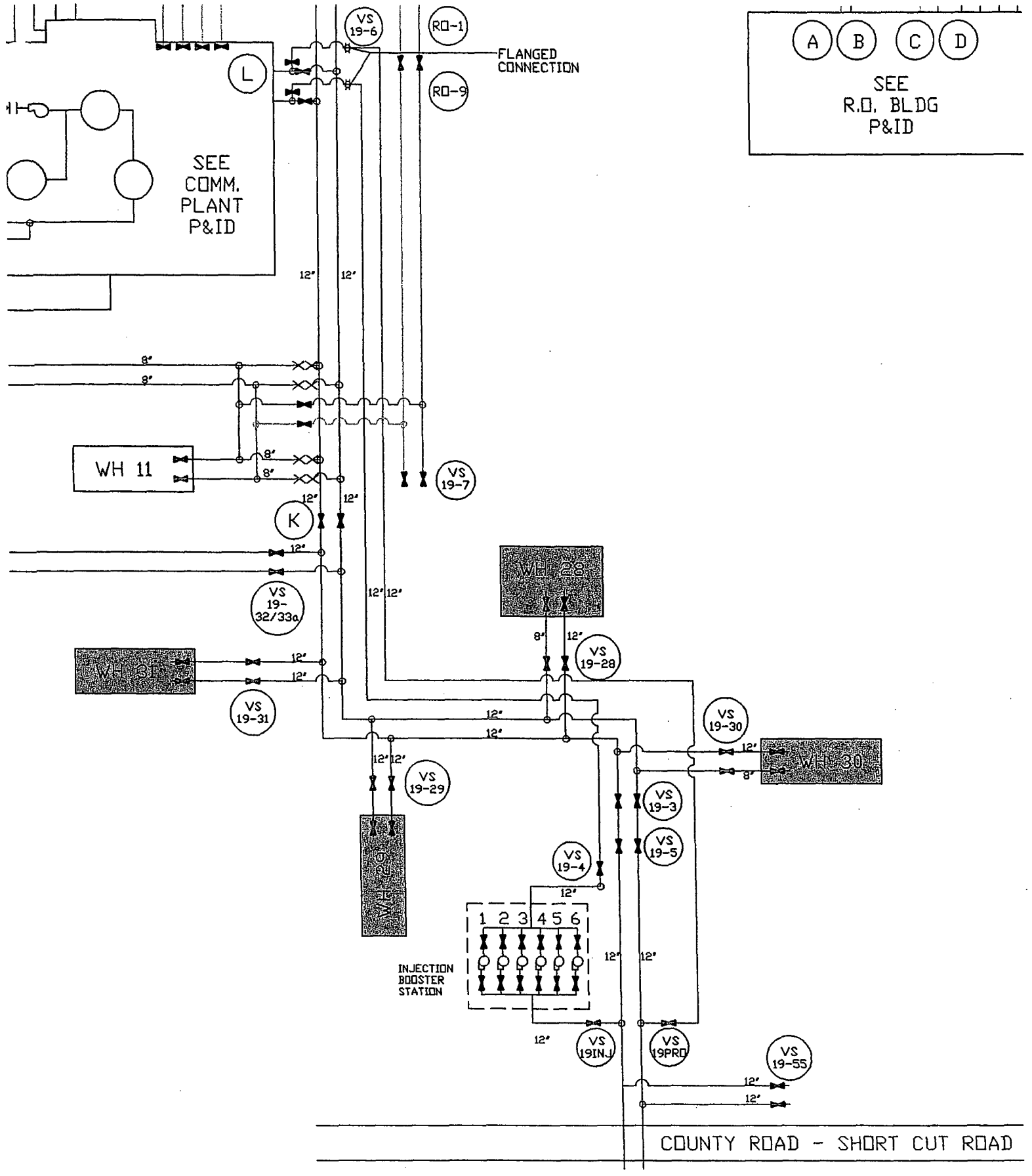
On March 27, 2009, the new production line was pressure-tested from the Plant to Valve Station 19 - PRO.

Start – 125 psi

60 minutes

Stop – 123 psi

Kirk McDowell
Wellfield Construction Foreman


VS 19-6
RO-1
FLANGED CONNECTION
RO-9
L
SEE COMM. PLANT P&ID
A
B
C
D
SEE R.O. BLDG P&ID
12"
8"
WH 11
VS 19-7
K
WH 28
VS 19-28
VS 19-32/33a
WH 31
VS 19-31
VS 19-30
WH 30
VS 19-29
VS 19-3
VS 19-5
VS 19-4
1 2 3 4 5 6
INJECTION BOOSTER STATION
VS 19INJ
VS 19PRO
VS 19-55
COUNTY ROAD - SHORT CUT ROAD

SERP 09-03 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 09-03

Wellhouse 29A Approval to Operate

May 21, 2009

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve operation of Wellhouse 29A in Mine Unit 7 at the Crow Butte Uranium Project.

The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Jim Stokey	General Manager	Management
Larry Teahon	Manager of Health, Safety and Environmental Affairs	Environmental
Doug Pavlick	Operations Manager	Operations
Ron Herrick	Safety Supervisor	Radiation Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Wade Beins	Senior Geologist	Well Construction
Tate Hagman	Administrative Supervisor	Instrumentation

Dr. Stokey is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

The purpose of this evaluation by the CBR SERP was to review and approve Wellhouse 29A for operation. Additional wells were drilled in Mine Unit 7 to recover some low

grade ore that exists in this area. Some of these wells have been plumbed into existing Wellhouse 29. The new wells associated with this wellhouse are designated as Wellhouse 29A.

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the Wellhouse startup checklists and supporting documentation and evaluated this information as compared with the requirements of the licensing basis, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 21 dated January 29, 2007;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;

- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2009 was reviewed for specific requirements related to approval and operation of a wellhouse.

Mine Unit 7 was previously approved by a CBR SERP (see SERP 99-02 dated July 8, 1999). Therefore, no review of monitor well location, installation or baseline sampling and Upper Control Limit determination is required for approval of Wellhouse 29A.

License Condition 10.2: This License Condition requires that CBR construct all wells in accordance with the methods contained in the Section 3.1.2 of the approved License Renewal Application (LRA). License Condition 10.2 also requires that CBR perform mechanical integrity tests (MIT) for all injection and production wells.

The well construction methods in use for Wellhouse 29A are the same as those described in the LRA and contained in EHSMS Volume III, *Operations Manual*, Procedure P-25, *Well Installation.* MITs were performed in accordance with EHSMS Volume III, *Operations Manual*, Procedure P-23, *Mechanical Integrity Test (MIT).* All MIT data sheets were contained in the Notice of Intent to Operate Wellhouse 29A (or in the original Mine Unit 7 Notice of Intent) that was submitted to the NDEQ. These MIT data sheets were provided by the Senior Geologist and reviewed by the SERP. The records indicate that the MITs performed in Wellhouse 29A met the requirements.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements. Section 3.3 also discusses instrumentation, including wellhouse injection and production instrumentation and wet building alarms for wellhouses. Section 7.2.3 of the LRA requires that leak tests be performed on all wellfield piping before placing the system into production operations.

The SERP reviewed the Wellhouse Start-up Checklist for Wellhouse 29A. This checklist was developed by the Wellfield Construction staff to document completion of all required actions before initiating operations in a wellhouse. Some of these actions are required by regulatory and licensing requirements, while some were developed over the course of mining experience at Crow Butte. Construction activities are governed by EHSMS Volume III, *Operations Manual*, Procedure P-15, *Installation of Wellfield Pipelines*. The Maintenance Superintendent reviewed these items and stated that all had been completed and the appropriate controls were in place.
A copy of the Wellhouse Start-Up Checklist is attached to this SERP Evaluation. Supporting documentation in the form of pressure tests and ground continuity checks are also attached. Because this is an existing wellhouse, not all items on the Start-Up Checklist would apply. These items were covered in the initial start-up of the wellhouse.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed change could cause substantive safety or environmental impacts.

Well construction and testing as described in the EA has been completed for the wells associated with Wellhouse 29A.

Section 3.3.1 discusses leak testing of wellfield piping. The SERP reviewed the completion of pressure testing for piping systems associated with Wellhouse 29A and found that they meet the intent of the EA.

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides the basis for worker safety at Crow Butte and does not specifically address the issues related to approval of Wellhouse 29A.

Technical Evaluation Reports

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-03

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. None of the TERs prepared since license renewal directly address issues related to approval of a new Wellhouse for operation.

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that startup of Wellhouse 29A in Mine Unit 7 will not degrade the safety and environmental commitments.

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves startup and operation of Wellhouse 29A in Mine Unit 7.

Approved this 21st day of May, 2009.

Jim Stokey, General Manager
SERP Chairman

Doug Pavlick, Operations Manager

Larry Teahon, Manager of Health, Safety and Environmental Affairs
SERP Secretary

Ron Herrick, Safety Supervisor (Radiation Safety Designee)

Bob Tiensvold, Maintenance Superintendent

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-03

Wade Beins, Senior Geologist

Tate Hagman, Administrative Supervisor

Well House Start-Up Checklist

Well House # 29A

Item	Description	Person	Comments	Date Completed	Initial
1	Permit To Operate	Beins / Tiensvold / Stokey		5/21/09	WB
2	Complete Pressure Testing (Trunkline and House)	McDowell / Tiensvold / Stokey	LATERALS	5/19	BJ
3	Pipelines checked for leaks	McDowell / Tiensvold / Stokey		5/19	BJ
4	Pipelines buried	McDowell / Tiensvold / Stokey		5/20	BJ
5	Pressure gauge on injection manifold	McDowell / Tiensvold / Stokey	N/A		BJ
6	Injection lines equipped with totalizing flow meters	McDowell / Tiensvold / Stokey		5/19	BJ
7	Injection and Production total flows can be measured	Hagman / Tiensvold / Stokey		5/19	TH
8	Unused trunkline locked out by two separate means	McDowell / Tiensvold / Stokey	N/A		BJ
9	Isolation valves are closed and chained	McDowell / Tiensvold / Stokey	N/A		BJ
10	Map of 2" lines in house	McDowell / Beins / Tiensvold / Stokey		5/21	BJ
11	Well-field Layout map in house	McDowell / Beins / Tiensvold / Stokey		5/21	BJ
12	Check berms	Teahon / Tiensvold / Stokey	EXISTING OK	5/21	BJ
13	Pressure check oxygen lines	Roberts / McDowell / Tiensvold / Stokey	N/A		BJ
14	Continuity check on producers	Tiensvold / Stokey		5-20-09	
15	Ground fault check	REA / Tiensvold / Stokey	N/A		BJ
16	Communications wire check	Hagman / Tiensvold / Stokey		5-20-09	
	'eater size check	Tiensvold / Stokey	BUCKETS BEING INSTALLED	5/20/2009	BJ
18	.-rocessor installed well house	Hagman / Tiensvold / Stokey	N/A		BJ
19	UPS installed and operational	Hagman / Tiensvold / Stokey	N/A		BJ
20	Wet house alarm installed	Tiensvold / Stokey	N/A		BJ
21	Wet house alarm checked	Hagman / Tiensvold / Stokey	N/A		BJ
22	Oxygen solenoid checked	Hagman / Tiensvold / Stokey	N/A		BJ
23	Check fuses in control panel	Tiensvold / Stokey	N/A		BJ
24	Program MMI	Tiensvold / Stokey		5/20	TH
25	Program PLC	Tiensvold / Stokey		5/20	TH
26	Set Scalar Card 'K' Factors	P. Dunn / K. Forbes / Tiensvold / Stokey		5/21	TH
27	Off tags and lockouts	Tiensvold / Stokey	BUCKETS NOT INSTALLED	5/21	BJ
28	Contaminated and uncontaminated cans	P. Dunn / K. Forbes / Tiensvold / Stokey	N/A		BJ
29	Complete 2" lateral inspection	McDowell / Tiensvold / Stokey		5/20/2009	BJ
30	Visually inspect entire system to plant	Tiensvold / Stokey		5/20/2009	BJ
31	Labels on Monitor Wells	McDowell / Tiensvold / Stokey	N/A		BJ
32	Valve Station Covers and Stairs Built	R. Roberts / Tiensvold / Stokey	N/A		BJ
33	Manifold Pressure Switches installed	Tiensvold / Stokey	N/A		BJ
34	Injection Filter installed	McDowell / Tiensvold / Stokey	N/A		BJ
35	Filter instrumentation and gauges installed	Tiensvold / Stokey	N/A		BJ
	ctronic door lock installed	Tiensvold / Stokey	N/A		BJ

Crow Butte Resources

Pump Continuity

Wellhouse 0

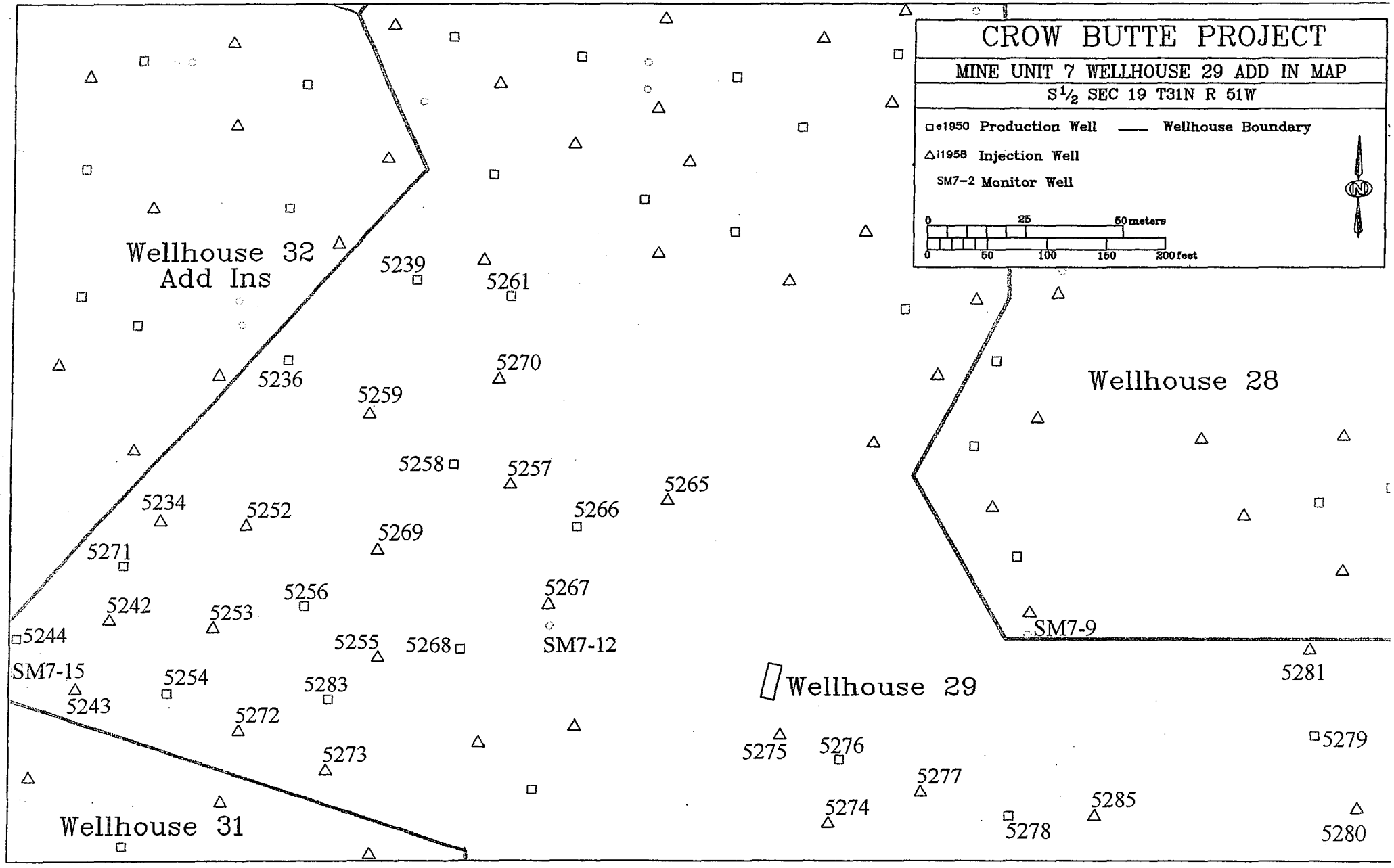
Date: 5-20-09

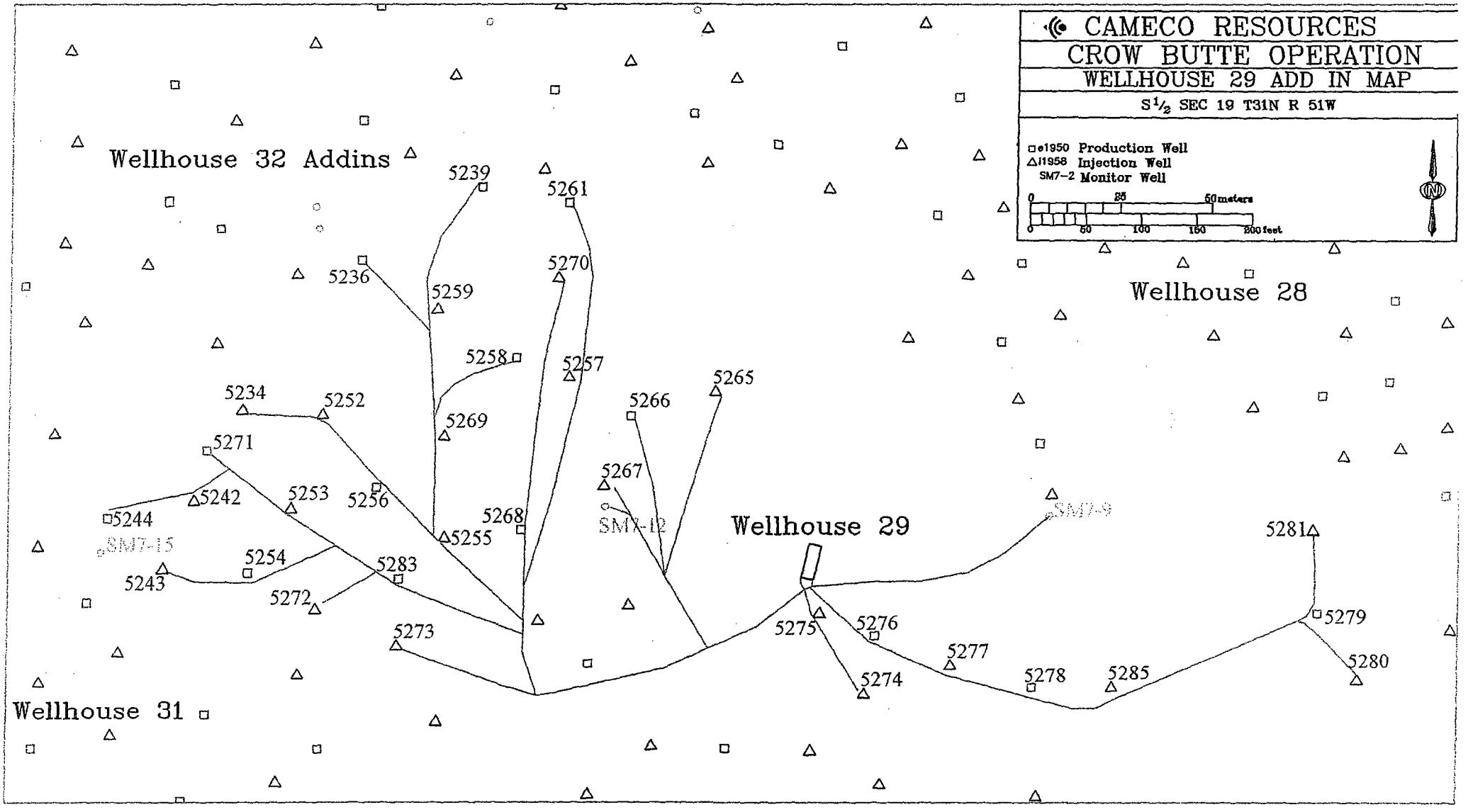
Technician: Gabe Scoggan/Bob Tiensvold

Non-Service Lines Locked-Out: (Yes) No

Item #	Well #	Initial	Meter Reading		Comments
1	P 5236	BT	1.8	Ohms	
2	P 5239	BT	1.9	Ohms	
3	P 5244	BT	1.9	Ohms	
4	P 5254	BT	1.6	Ohms	
5	P 5256	BT	1.4	Ohms	
6	P 5258	BT	1.7	Ohms	
7	P 5261	BT	1.8	Ohms	
8	P 5266	BT	1.0	Ohms	
9	P 5268	BT	1.2	Ohms	
10	P 5271	BT	1.7	Ohms	
11	P 5276	BT	.5	Ohms	
12	P 5278	BT	.8	Ohms	
13	P 5279	BT	1.4	Ohms	
14	P 5283	BT	1.3	Ohms	
15				Ohms	
16				Ohms	
17				Ohms	
18				Ohms	
19				Ohms	

Item #	Well #	Initial	Meter Reading		Comments
20				Ohms	
21				Ohms	
22				Ohms	
23				Ohms	
24				Ohms	
25				Ohms	
26				Ohms	
27				Ohms	
28				Ohms	
29				Ohms	
30				Ohms	
				Ohms	
				Ohms	
				Ohms	
				Ohms	
				Ohms	
				Ohms	


CROW BUTTE PROJECT
MINE UNIT 7 WELLHOUSE 29 ADD IN MAP
S½ SEC 19 T31N R 51W
e1950 Production Well
Wellhouse Boundary
i1958 Injection Well
SM7-2 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
Wellhouse 32
Add Ins
Wellhouse 28
Wellhouse 29
Wellhouse 31
5239
5261
5236
5270
5259
5258
5257
5265
5234
5252
5266
5269
5271
5256
5267
5242
5253
5244
5255
5268
SM7-12
SM7-15
5254
5283
5243
5272
5273
5275
5276
5277
5274
5278
5285
5279
5280
5281
SM7-9


CAMECO RESOURCES
CROW BUTTE OPERATION
WELLHOUSE 29 ADD IN MAP
S½ SEC 19 T31N R 51W
e1950 Production Well
i1958 Injection Well
SM7-2 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
N
Wellhouse 32 Addins
Wellhouse 28
Wellhouse 29
Wellhouse 31
5239
5261
5236
5270
5259
5258
5257
5234
5252
5265
5266
5269
5271
5267
5242
5253
5256
5244
SM7-15
5268
SM7-12
SM7-9
5254
5283
5281
5243
5255
5272
5273
5275
5276
5279
5277
5280
5274
5278
5285

Crow Butte Resources

Final Inspection of Piping Wellhead to Plant

Wellhouse: 0

Review of Pressure Test Data Complete: BT

Date: 5-19-09

Mine Manager:

W.F.C. Foreman: Bob Dunn

Non-Service Lines Locked-Out: Yes (BT)

Item #	Well #	Initialed by	Comments
1	P 5236	JT ok	Need wired
2	P 5239	JT ok	Need wired.
3	P 5244	JT ok	Need wired
4	P 5254	JT ok	Need wired
5	P 5256	JT ok	Need wired.
6	P 5258	JT ok	Need wired.
7	P 5261	JT ok	Need wired.
8	P 5266	JT ok	Need wired
9	P 5268	JT ok	Need wired
10	P 5271	JT ok	Need wired
11	P 5276	JT ok	Need wired
12	P 5278	JT ok	Need wired
13	P 5279	JT ok	Need wired.
14	P 5283	JT ok	Need wired.
15			
16			
17			
18			
19			

Item #	Well #	Initialed by	Comments
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

Item #	Well #	Initialed by	Comments
1	I 5234	JT	ok
2	I 5242	JT	OK
3	I 5243	JT	ok
4	I 5252	JT	ok
5	I 5253	JT	OK
6	I 5255	JT	ok
7	I 5257	JT	OK
8	I 5259	JT	OK
9	I 5265	JT	ok
10	I 5267	JT	ok
11	I 5269	JT	ok
12	I 5270	JT	OK
13	I 5272	JT	ok
14	I 5273	JT	ok
15	I 5274	JT	ok
16	I 5275	JT	ok
17	I 5277	JT	OK
18	I 5280	JT	ok
19	I 5281	JT	OK

Item #	Well #	Initialed by	Comments
20	I 5285	JT	ok
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			

Item #	Well #	Initialed by	Comments
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

Well House Pressure Check Verification

Pressure check for Well House 29A. Date: 1/19/2009

Injection:
On 5/14 — 5/18 the injection lines and 2" laterals were pressured to 100 psi. This was done using a centrifugal pump and potable water. The time interval was as follows:

Start: 100 psi at ~~AM / PM~~ 5 minutes
Stop: 95 psi at ~~AM / PM~~

~~The section of trunk line checked was from valve station to the well field in~~

EACH LINE WAS CHECKED INDIVIDUALLY.

Production:
On 5/14 — 5/18 the production trunk lines and 2" laterals were pressured to 100 psi. This was done using a centrifugal pump and potable water. The pressure and time interval was as follows:

Start: 100 psi at ~~AM / PM~~ 5 minutes
Stop: 95 psi at ~~AM / PM~~

The section of trunk line was from valve station _____ to the well field in

EACH LINE WAS CHECKED INDIVIDUALLY.

Oxygen:
On _____ the oxygen line was pressured to _____ psi. The pressure and time interval was as follows:

Start: _____ psi at _____ AM / PM
Stop: _____ psi at _____ AM / PM N/A

The section of trunk line checked was from valve station _____ to the well field in

_____.

_____
Well Field Construction Foreman

Bob [illegible] - WFC Supervisor

CROW BUTTE RESOURCES, INC.

MEMORANDUM

TO: File

FROM: Bob Tiensvold BT

DATE: 5/20/2009

SUBJECT: HH 29A lateral lines pressure check

On May 14, 15, and 18, 2009 the lateral production and injection lines installed in HH 29A from the header house to the individual well heads were pressure checked. The pressure check included the poly pipe to gorilla hose weld fittings as well as the gorilla hoses themselves. All lines were pressure checked individually by being pumped up to 100 psi using a centrifugal pump while not losing more than 5 psi in 5 minutes. All lines passed the pressure check. Listed below are the individual lines tested.

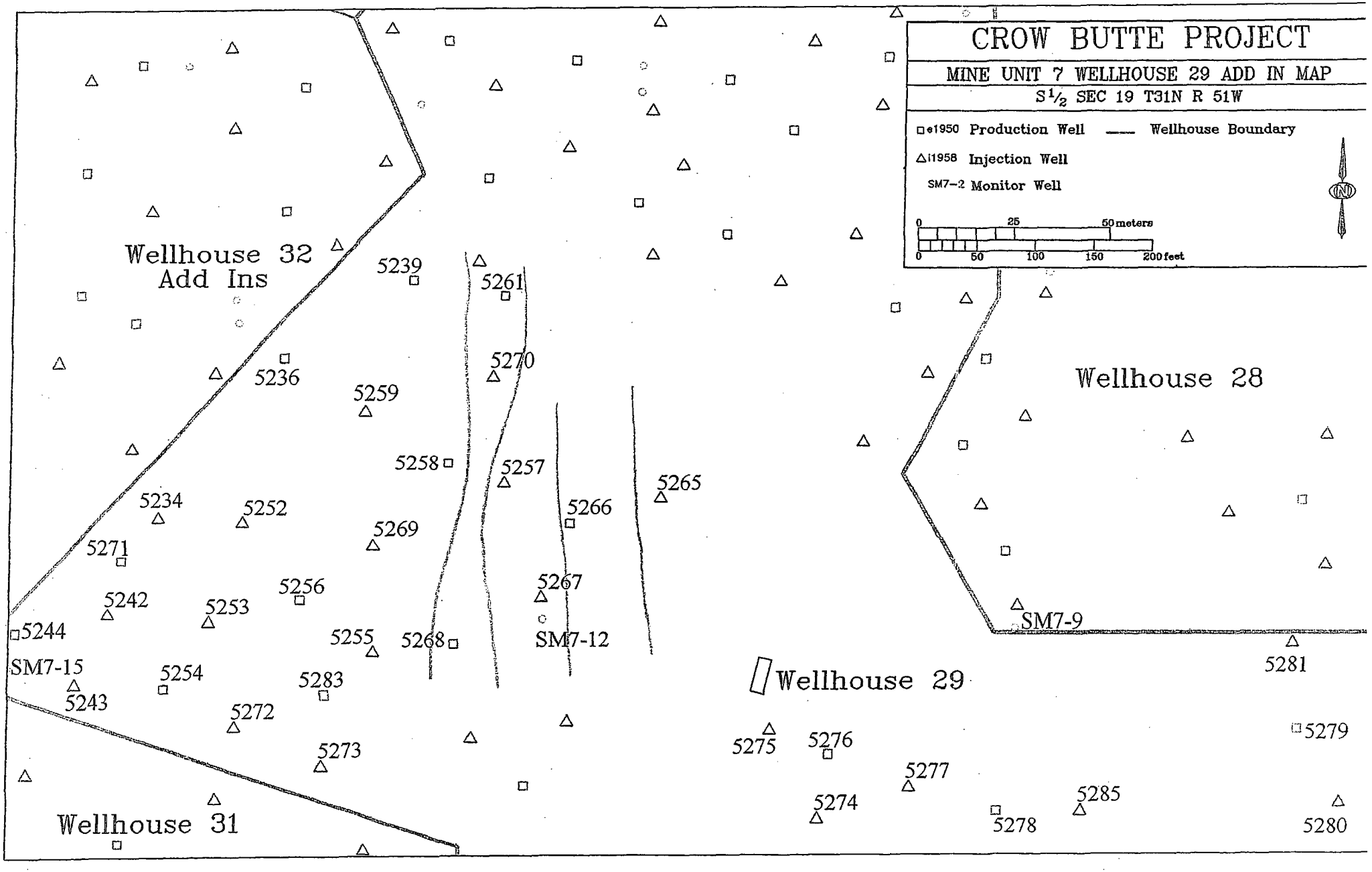
Producers:

5236, 5239, 5244, 5254, 5256, 5258, 5261, 5266, 5268, 5271, 5276, 5278, 5279, 5283

Injectors:

5234, 5242, 5243, 5252, 5253, 5255, 5257, 5259, 5265, 5267, 5269, 5270, 5272, 5273, 5274, 5275, 5277, 5280, 5281, 5285

TERRACES


CROW BUTTE PROJECT
MINE UNIT 7 WELLHOUSE 29 ADD IN MAP
S 1/2 SEC 19 T31N R 51W
1950 Production Well
Wellhouse Boundary
1958 Injection Well
SM7-2 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
Wellhouse 32 Add Ins
Wellhouse 28
Wellhouse 29
Wellhouse 31
5239
5261
5236
5270
5259
5258
5257
5265
5234
5252
5266
5269
5271
5256
5267
5242
5253
5244
5255
5268
SM7-12
SM7-9
5281
SM7-15
5254
5283
5243
5272
5273
5275
5276
5279
5277
5274
5285
5278
5280

SERP 09-04 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 09-04

Approval to Operate Additional Wells in Wellhouses 23 and 48
and
Replacement Well 5319A in Wellhouse 51

July 9, 2009

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve in Mine Unit 10 the replacement of a well in Wellhouse 51 and in Mine Unit 6 the addition of a new well to Wellhouse 48 and the addition of three new wells to Wellhouse 23.

The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Doug Pavlick	Operations Manager	Management (designee)
Larry Teahon	Manager of Health, Safety, and Environmental Affairs	Safety
Rhonda Grantham	Radiation Safety Officer	Radiation Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Wade Beins	Senior Geologist	Well Construction

Mr. Pavlick is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

The purpose of this evaluation by the CBR SERP was to review and approve the operation of replacement well 5319A in Wellhouse 51 and the addition of one new well (5640) in Wellhouse 48 and three new wells (1921, 1922, and 1923) in Wellhouse 23.

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the licensing requirements, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 23 dated May 12, 2008;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;
- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;

- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2008 was reviewed for specific requirements related to approval and operation of additional wells.

Mine Unit 10 was previously approved by SERP 07-01 dated April 10, 2007. Therefore, no review of monitor well location, installation or baseline sampling and Upper Control Limit determination is required for this approval. The start up of Wellhouse 51 was approved by SERP 08-03 dated May 9, 2007, the start up of Wellhouse 48 was approved by SERP 07-01 date April 10, 2007, and the start up of Wellhouse 23 was approved by SERP 01-98 date March 4, 1998.

License Condition 10.2: This License Condition requires that CBR construct all wells in accordance with the methods contained in the Section 3.1.2 of the approved License Renewal Application (LRA). License Condition 10.2 also requires that CBR perform mechanical integrity tests (MIT) for all injection and production wells.

The well construction methods in use for Wellhouses 51, 48 and 23 are the same as those described in the LRA and contained in EHSMS Volume III, *Operations Manual*, Procedure P-25, *Well Installation.* MITs were performed in accordance with EHSMS Volume III, *Operations Manual*, Procedure P-23, *Mechanical Integrity Test (MIT)*. The MIT data sheets were provided by the Senior Geologist and reviewed by the SERP. The records indicate that the MITs performed in Wellhouses 51, 48 and 23 met the requirements.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements. Section 3.3 also discusses instrumentation, including wellhouse injection and production instrumentation and wet building alarms for wellhouses. Section 7.2.3 of the LRA requires that leak tests be performed on all wellfield piping before placing the system into production operations.

The SERP reviewed the Final Inspection of Piping Wellhead to Plant and Pressure Testing sheets. These checklists were developed by the Wellfield Construction staff to document completion of all required actions before initiating operations of these wells. Some of these actions are required by regulatory and licensing requirements, while some were developed over the course of mining experience at Crow Butte. Construction activities are governed by EHSMS Volume III, *Operations Manual*, Procedure P-15, *Installation of Wellfield Pipelines*. The Maintenance Superintendent reviewed these items and stated that all had been completed and the appropriate controls were in place. A copy of the testing sheets is attached to this SERP Evaluation.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed change could cause substantive safety or environmental impacts.

Well construction and testing as described in the EA has been completed for the wells associated with Wellhouses 51, 48 and 23.

Section 3.3.1 discusses leak testing of wellfield piping. The SERP reviewed the completion of pressure testing for piping systems associated with Wellhouses 51, 48 and 23 and found that they meet the intent of the EA.

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides the basis for worker safety at Crow Butte and does not specifically address the issues related to approval of startup of new wells.

Technical Evaluation Reports

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. None of the TERs prepared since license renewal directly address issues related to approval of new wells for operation.

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-04

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that startup of these wells will not degrade the safety and environmental commitments.

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves startup and operation the replacement well in Wellhouse 51, one new well in Wellhouse 48, and three new wells in Wellhouse 23.

Approved this 9th day of July, 2009.

7-13-09
Doug Pavlick, Operations Manager
SERP Chairman

7/9/09
Larry Teahon, Manager of Environmental, Health and Safety
SERP Secretary

7/13/09
Rhonda Grantham, Radiation Safety Officer

7/9/2009
Bob Tiensvold, Maintenance Superintendent

7-9-09
Wade Beins, Senior Geologist

6341>
NE0122611
MU 10 P1

Dave Heineman
Governor

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

NOV 19 2008

Mr. Steve Collings
Crow Butte Resources, Inc.
141 Union Boulevard, Suite 330
Lakewood, Colorado 80228

Dear Mr. Collings:

On November 13, 2008 the Nebraska Department of Environmental Quality received a submittal of information from Crow Butte Resources, Inc. The submittal serves as a Notice of Intent to Operate and contains a Well Completion Report and a Casing Integrity Test Report for the recently installed well (5319A) in Mine Unit 10, Well House 51.

The Department has reviewed the information submitted and determined that it is adequate and complete. Upper Control Limits and Restoration Values established for Mine Unit 10 have already been submitted and approved. Approval of the additional well in Well House 51 of Mine Unit 10 will not alter those values. The Department hereby approves the Notice of Intent to Operate the additional well in Mine Unit 10.

If you have any questions concerning this matter, please contact Jennifer Abrahamson of my staff at (402) 471-4290.

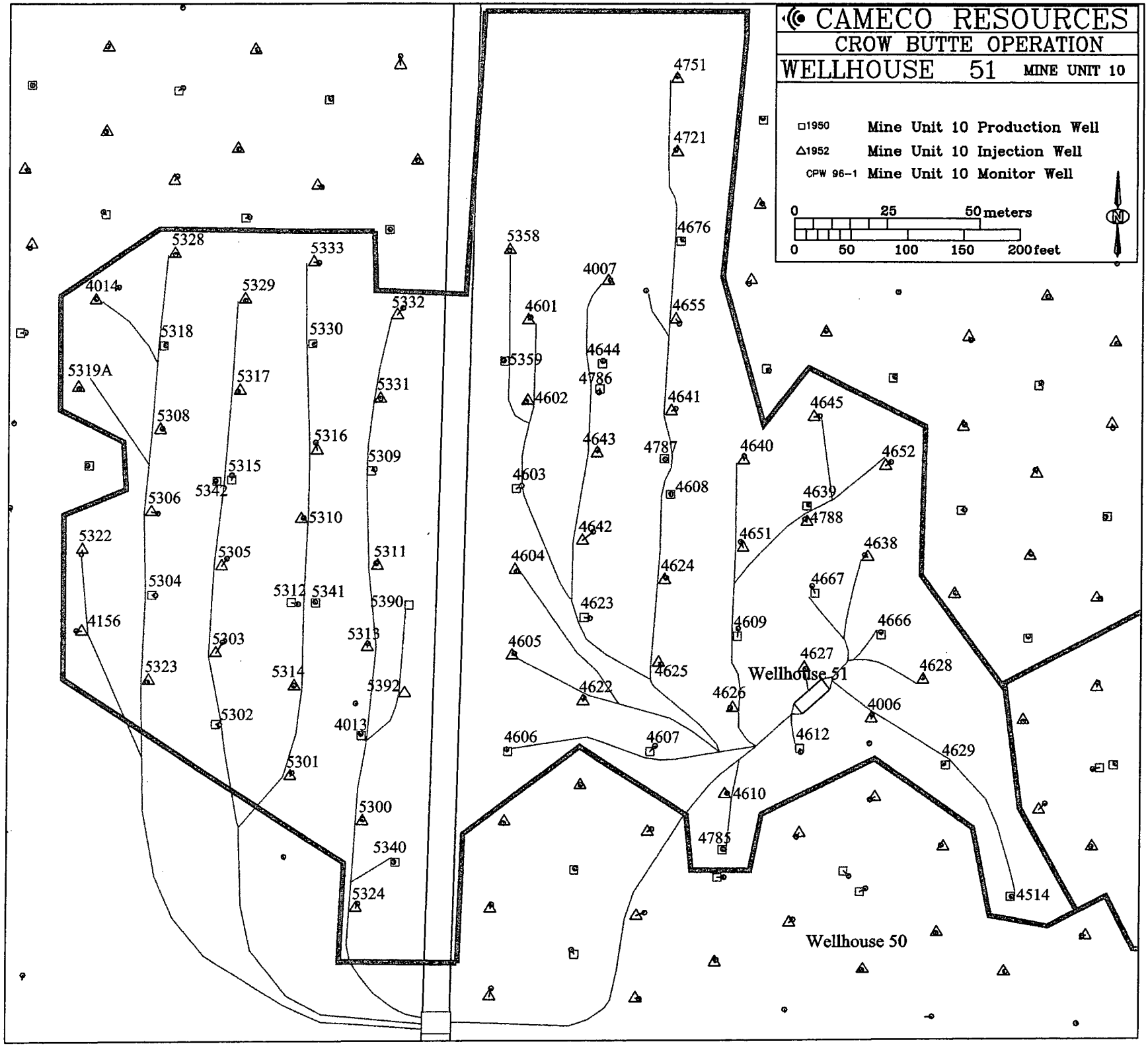
Sincerely,

Michael J. Linder
Director

ML/jla
word/CBR/letter/NOI_MU10_WH51_5319A.doc

Cc: Dave Carlson, NDEQ
Jim Stokey, CBR

20080080635


CAMECO RESOURCES
CROW BUTTE OPERATION
WELLHOUSE 51 MINE UNIT 10
1950 Mine Unit 10 Production Well
1952 Mine Unit 10 Injection Well
CPW 96-1 Mine Unit 10 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
N
Wellhouse 51
Wellhouse 50
4751
4721
4676
5358
4007
4655
4601
5359
4644
4786
4602
4641
4645
4643
4787
4640
4652
4603
4608
4639
4788
4642
4651
4638
4604
4624
4667
4623
4609
4666
4605
4627
4628
4625
4622
4626
4006
4606
4607
4612
4629
4610
4785
4514
5328
5333
4014
5329
5332
5318
5330
5319A
5317
5331
5308
5316
5315
5309
5342
5306
5310
5322
5305
5311
5304
5312
5341
5390
4156
5313
5303
5323
5314
5392
5302
4013
5301
5300
5340
5324

HH 51

Item #	Well #	Initialed by	Comments
39	I 5319	JT	Meter #2P/U
40	I 5322	JT	OK
41	I 5323	JT	OK
42	I 5324	JT	OK
43	I 5328	JT	OK
44	I 5329	JT	OK
45	I 5331	JT	OK
46	I 5332	JT	OK
47	I 5333	JT	OK
48	I 5358	JT	Needs support + label
49	I 5391		Not in this house
50	I 5392	JT	OK

7/2/09
Installed + Hooked up - BT

Well House Pressure Check Verification

Pressure check for Well House 51. Date: 5-5-08

Injection:
On 5-1-08 the injection lines and 2" laterals were pressured to 120 psi. This was done using a centrifugal pump and potable water. The time interval was as follows:

Start: 120 psi at _____ AM / PM 25 minutes
Stop: 119 psi at _____ AM / PM

The section of trunk line checked was from valve station 12-1 to the well field in ~~12-51~~ 11-1 and all of WH51.

Production:
On 5-1-08 the production trunk lines and 2" laterals were pressured to 125 psi. This was done using a centrifugal pump and potable water. The pressure and time interval was as follows:

Start: 125 psi at _____ AM / PM 25 minutes
Stop: 121 psi at _____ AM / PM

The section of trunk line was from valve station 12-1 to the well field in ~~12-51~~ 11-1 all of WH51.

Oxygen:
On 5-2-08 the oxygen line was pressured to 125 psi. The pressure and time interval was as follows:

Start: 125 psi at 09:00 AM / PM
Stop: 125 psi at 09:30 AM / PM

The section of trunk line checked was from valve station WH49 to the well field in WH51 MW10.

Kirk McDowell
Well Field Construction Foreman

Dave Heineman
Governor

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

OCT 2 1 2008

Mr. Steve Collings
Crow Butte Resources, Inc.
141 Union Boulevard, Suite 330
Lakewood, Colorado 80228

Dear Mr. Collings:

On October 6, 2008 the Nebraska Department of Environmental Quality received a submittal of information from Crow Butte Resources, Inc. The submittal serves as a Notice of Intent to Operate and contains a Well Completion Report and a Casing Integrity Test Report for the recently installed well (5640) in Mine Unit 10, Well House 48.

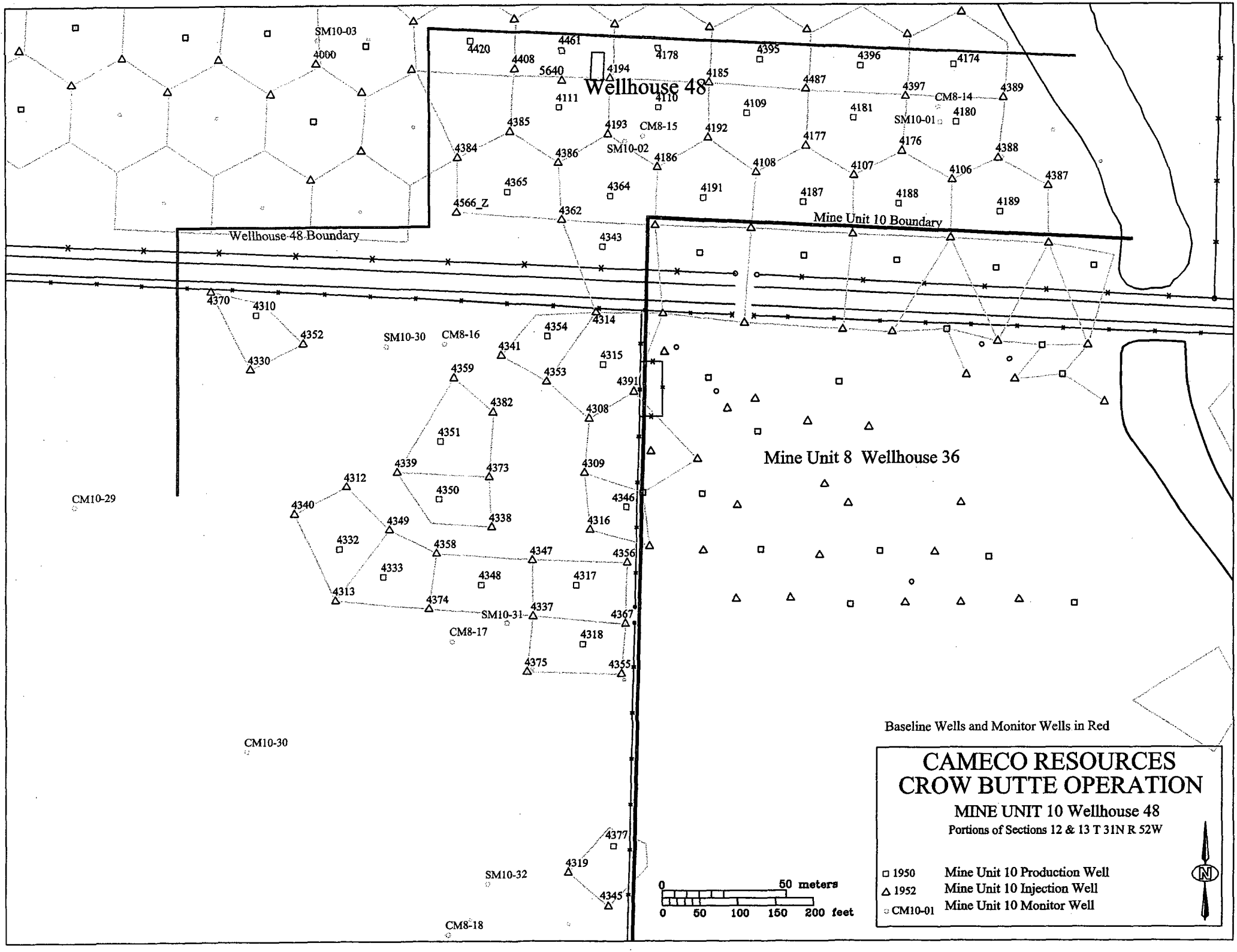
The Department has reviewed the information submitted and determined that it is adequate and complete. Upper Control Limits and Restoration Values established for Mine Unit 10 have already been submitted and approved. Approval of the additional well in Well House 48 of Mine Unit 10 will not alter those values. The Department hereby approves the Notice of Intent to Operate the additional well in Mine Unit 10.

If you have any questions concerning this matter, please contact Jennifer Abrahamson of my staff at (402) 471-4290.

Sincerely,

Michael J. Linder
Director

ML/jla
word/CBR/letter/NOI_MU10_WH48_5640
Cc: Dave Carlson, NDEQ
Jim Stukey, CBR


Wellhouse 48
Wellhouse 48 Boundary
Mine Unit 10 Boundary
Mine Unit 8 Wellhouse 36
SM10-03
SM10-01
SM10-02
SM10-30
SM10-31
SM10-32
CM8-14
CM8-15
CM8-16
CM8-17
CM8-18
CM10-29
CM10-30
4000
4420
4461
4408
5640
4194
4178
4395
4396
4174
4185
4487
4397
4389
4111
4110
4109
4181
4180
4385
4193
4192
4177
4176
4388
4384
4386
4186
4108
4107
4106
4387
4365
4364
4191
4187
4188
4189
4566_Z
4362
4343
4370
4310
4352
4330
4354
4314
4341
4315
4359
4353
4391
4382
4308
4351
4339
4373
4309
4312
4350
4346
4340
4349
4338
4316
4332
4358
4347
4356
4333
4348
4317
4313
4374
4337
4367
4318
4375
4355
4377
4319
4345
Baseline Wells and Monitor Wells in Red
CAMECO RESOURCES
CROW BUTTE OPERATION
MINE UNIT 10 Wellhouse 48
Portions of Sections 12 & 13 T 31N R 52W
1950 Mine Unit 10 Production Well
1952 Mine Unit 10 Injection Well
CM10-01 Mine Unit 10 Monitor Well
0 50 meters
0 50 100 150 200 feet
N

Crow Butte Resources

Final Inspection of Piping Wellhead to Plant

Wellhouse: 48

Review of Pressure Test Data Complete: 7-9-09

Date: 7/9/2009

Mine Manager: [signature] 7-9-09

W.F.C. Foreman: Bob [signature] - WFC Supvr.

Non-Service Lines Locked-Out: N/A

Item #	Well #	Initialed by	Comments
1	P 5640	CE	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

Item #	Well #	Initialed by	Comments
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

Well House Pressure Check Verification

Pressure check for Well House 48.   Date: 7-9-09

Injection ☒ Production ☐
On IS640 the 2" laterals were pressured to 86 psi. This was done using injection manifold pressure and injection water. The time interval was as follows:

Start: 86 psi at 1250 AM/PM (PM circled)
Stop: 81 psi at 1300 AM/PM (PM circled)

[signature]   7-9-09
Wellfield Operator performing test   Date

Injection ☐ Production ☐
On ______________ the 2" laterals were pressured to __________psi. This was done using injection manifold pressure and injection water. The time interval was as follows:

Start: __________ psi at ______________ AM/PM
Stop: __________ psi at ______________ AM/PM

______________________________   ________________
Wellfield Operator performing test   Date

Injection ☐ Production ☐
On ______________ the 2" laterals were pressured to __________psi. This was done using injection manifold pressure and injection water. The time interval was as follows:

Start: __________ psi at ______________ AM/PM
Stop: __________ psi at ______________ AM/PM

______________________________   ________________
Wellfield Operator performing test   Date

Injection ☐ Production ☐
On ______________ the 2" laterals were pressured to __________psi. This was done using injection manifold pressure and injection water. The time interval was as follows:

Start: __________ psi at ______________ AM/PM
Stop: __________ psi at ______________ AM/PM

______________________________   ________________
Wellfield Operator performing test   Date

Dave Heineman
Governor

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

NOV 14 2008

Mr. Steve Collings
Crow Butte Resources, Inc.
141 Union Boulevard, Suite 330
Lakewood, Colorado 80228

Dear Mr. Collings:

On November 7, 2008 the Nebraska Department of Environmental Quality received a submittal of information from Crow Butte Resources, Inc. The submittal serves as a Notice of Intent to Operate and contains a Well Completion Report and a Casing Integrity Test Report for three recently installed wells (1921, 1922, and 1923) in Mine Unit 6, Well House 23.

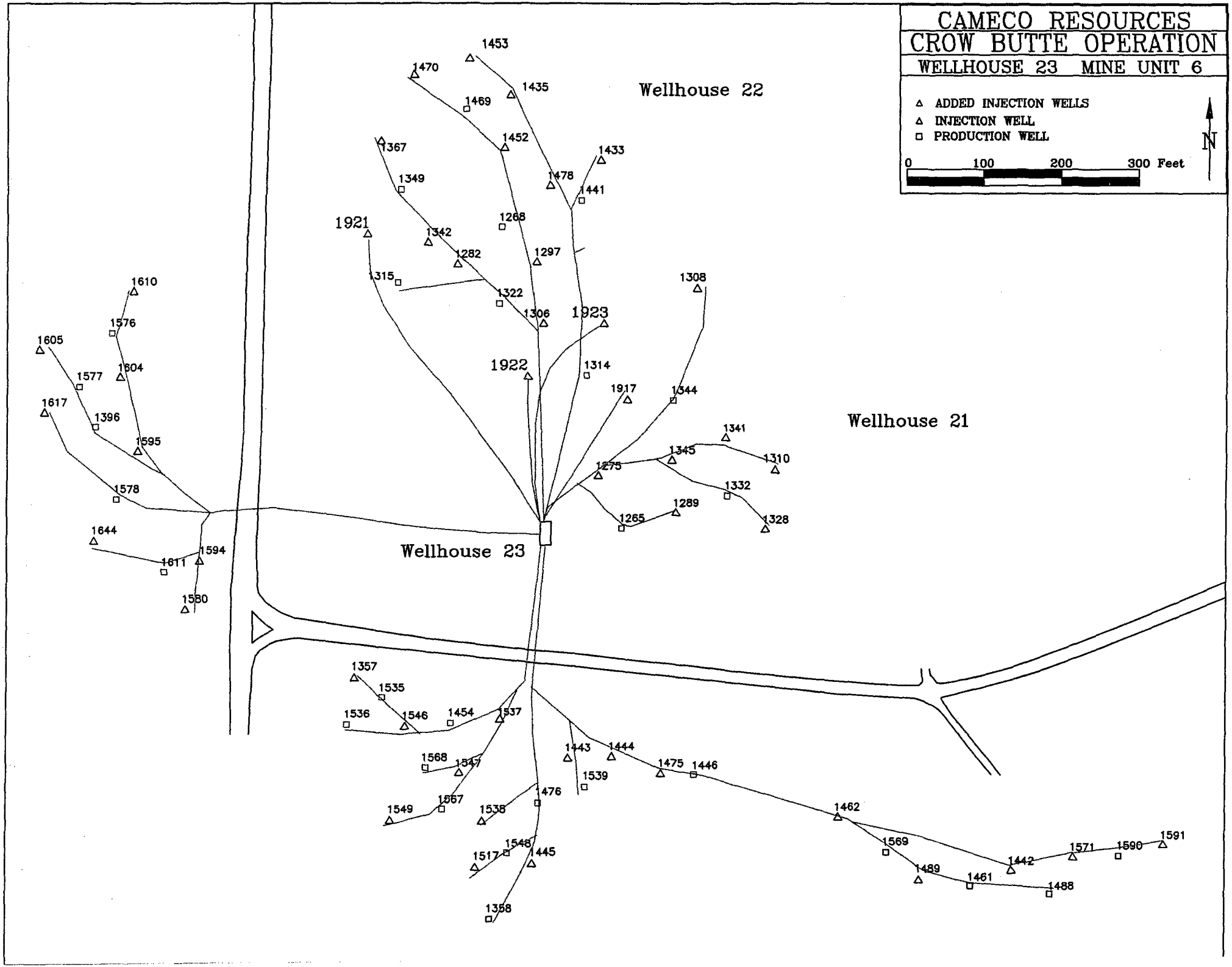
The Department has reviewed the information submitted and determined that it is adequate and complete. Upper Control Limits and Restoration Values established for Mine Unit 6 were submitted on January 23,1998 and approved. Approval of the additional wells in Well House 23 of Mine Unit 6 will not alter those values. The Department hereby approves the Notice of Intent to Operate the three additional wells in Mine Unit 6, Well House 23.

If you have any questions concerning this matter, please contact Jennifer Abrahamson of my staff at (402) 471-4290.

Sincerely,

Michael J. Linder
Director

ML/jla
word/CBR/letter/NOI_MU6_WH23wells.doc
Cc: Dave Carlson, NDEQ
Jim Stokey, CBR


CAMECO RESOURCES
CROW BUTTE OPERATION
WELLHOUSE 23 MINE UNIT 6
ADDED INJECTION WELLS
INJECTION WELL
PRODUCTION WELL
0 100 200 300 Feet
N
Wellhouse 22
Wellhouse 21
Wellhouse 23
1453
1470
1435
1469
1452
1433
1367
1478
1349
1441
1921
1268
1342
1297
1282
1315
1322
1306
1923
1308
1922
1314
1917
1344
1341
1345
1310
1275
1332
1289
1265
1328
1610
1576
1605
1577
1604
1617
1396
1595
1578
1644
1611
1594
1580
1357
1535
1536
1546
1454
1537
1568
1547
1443
1444
1475
1446
1539
1549
1567
1538
1476
1548
1517
1445
1358
1462
1569
1442
1571
1590
1591
1489
1461
1488

Crow Butte Resources

Final Inspection of Piping Wellhead to Plant

Wellhouse: 23

Review of Pressure Test Data Complete: BT

Date: 7-9-09

Mine Manager: [signature]

W.F.C. Foreman: [signature]

Non-Service Lines Locked-Out: N/A

Item #	Well #	Initialed by	Comments
1	I 1921	[signature]	OK
2	I 1922	[signature]	OK
3	I 1923	[signature]	OK
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

Item #	Well #	Initialed by	Comments
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

On June 29, 2009, three new wells in WH23 were pressure-checked to 100 psi.

1921
Start 100 psi 5 minutes
End 98 psi

1922
Start 100 psi 5 minutes
End 97 psi

1923
Start 100 psi 5 minutes
End 98 psi

Kirk McDowell
June 29, 2009

SERP 09-05 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 09-05

Approval to Operate Replacement Well 3979A in Wellhouse 47

July 23, 2009

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve in Mine Unit 9 the replacement of a well in Wellhouse 47.

The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Jim Stokey	General Manager	Management
Doug Pavlick	Operations Manager	Operations
Larry Teahon	Manager of Health, Safety, and Environmental Affairs	Safety
Rhonda Grantham	Radiation Safety Officer	Radiation Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Wade Beins	Senior Geologist	Well Construction

Mr. Stokey is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

The purpose of this evaluation by the CBR SERP was to review and approve the operation of replacement well 3979A in Wellhouse 47 in Mine Unit 9.

SERP 09-05

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the licensing requirements, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 23 dated May 12, 2008;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;
- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2008 was reviewed for specific requirements related to approval and operation of additional wells.

Mine Unit 9 was previously approved by SERP 03-05 dated October 22, 2003. Therefore, no review of monitor well location, installation or baseline sampling and Upper Control Limit determination is required for this approval. The start up of Wellhouse 47 was approved by SERP 06-06 dated December 1, 2006.

License Condition 10.2: This License Condition requires that CBR construct all wells in accordance with the methods contained in the Section 3.1.2 of the approved License Renewal Application (LRA). License Condition 10.2 also requires that CBR perform mechanical integrity tests (MIT) for all injection and production wells.

The well construction methods in use for Wellhouse 47 are the same as those described in the LRA and contained in EHSMS Volume III, *Operations Manual*, Procedure P-25, *Well Installation.* MITs were performed in accordance with EHSMS Volume III, *Operations Manual*, Procedure P-23, *Mechanical Integrity Test (MIT).* The MIT data sheet was provided by the Senior Geologist and reviewed by the SERP. The records indicate that the MIT performed on well 3979A in Wellhouses 47 met the requirements.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements. Section 3.3 also discusses instrumentation, including wellhouse injection and production instrumentation and wet building alarms for wellhouses. Section 7.2.3 of the LRA requires that leak tests be performed on all wellfield piping before placing the system into production operations.

The SERP reviewed the Final Inspection of Piping Wellhead to Plant and Pressure Testing sheets. These checklists were developed by the Wellfield Construction staff to document completion of all required actions before initiating operations of this well. Some of these actions are required by regulatory and licensing requirements, while some were developed over the course of mining experience at Crow Butte. Construction activities are governed by EHSMS Volume III, *Operations Manual*, Procedure P-15,

Installation of Wellfield Pipelines. The Maintenance Superintendent reviewed these items and stated that all had been completed and the appropriate controls were in place. A copy of the testing sheets is attached to this SERP Evaluation.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed change could cause substantive safety or environmental impacts.

Well construction and testing as described in the EA has been completed for this well.

Section 3.3.1 discusses leak testing of wellfield piping. The SERP reviewed the completion of pressure testing for piping systems associated with Wellhouse 47 and found that they meet the intent of the EA.

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides the basis for worker safety at Crow Butte and does not specifically address the issues related to approval of startup of new wells.

Technical Evaluation Reports

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. None of the TERs prepared since license renewal directly address issues related to approval of new wells for operation.

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that startup of this well will not degrade the safety and environmental commitments.

CAMECO RESOURCES
CROW BUTTE OPERATION

SERP 09-05

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves startup and operation the replacement well in Wellhouse 47.

Approved this 23rd day of July, 2009.

07/23/09
Jim Stokey, General Manager
SERP Chairman

Larry Teahon 7/23/09
Larry Teahon, Manager of Health, Safety, and Environmental Affairs
SERP Secretary

7-23-09
Doug Pavlick, Operations Manager

Rhonda Grantham 7/23/09
Rhonda Grantham, Radiation Safety Officer

Bob 7/23/2009
Bob Tiensvold, Maintenance Superintendent

7-23-09
Wade Beins, Senior Geologist

Dave Heineman
Governor

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

JUL 16 2009

Mr. Steve Collings
Crow Butte Resources, Inc.
141 Union Boulevard, Suite 330
Lakewood, Colorado 80228

Dear Mr. Collings:

On July 13, 2009 the Nebraska Department of Environmental Quality received a submittal of information from Crow Butte Resources, Inc. The submittal serves as a Notice of Intent to Operate and contains a Well Completion Report and a Casing Integrity Test Report for the recently installed well (3979A) in Mine Unit 9, Well House 47.

The Department has reviewed the information submitted and determined that it is adequate and complete. Upper Control Limits and Restoration Values established for Mine Unit 9 have already been submitted and approved. Approval of the additional well in Well House 47 of Mine Unit 9 will not alter those values. The Department hereby approves the Notice of Intent to Operate the additional well in Mine Unit 9.

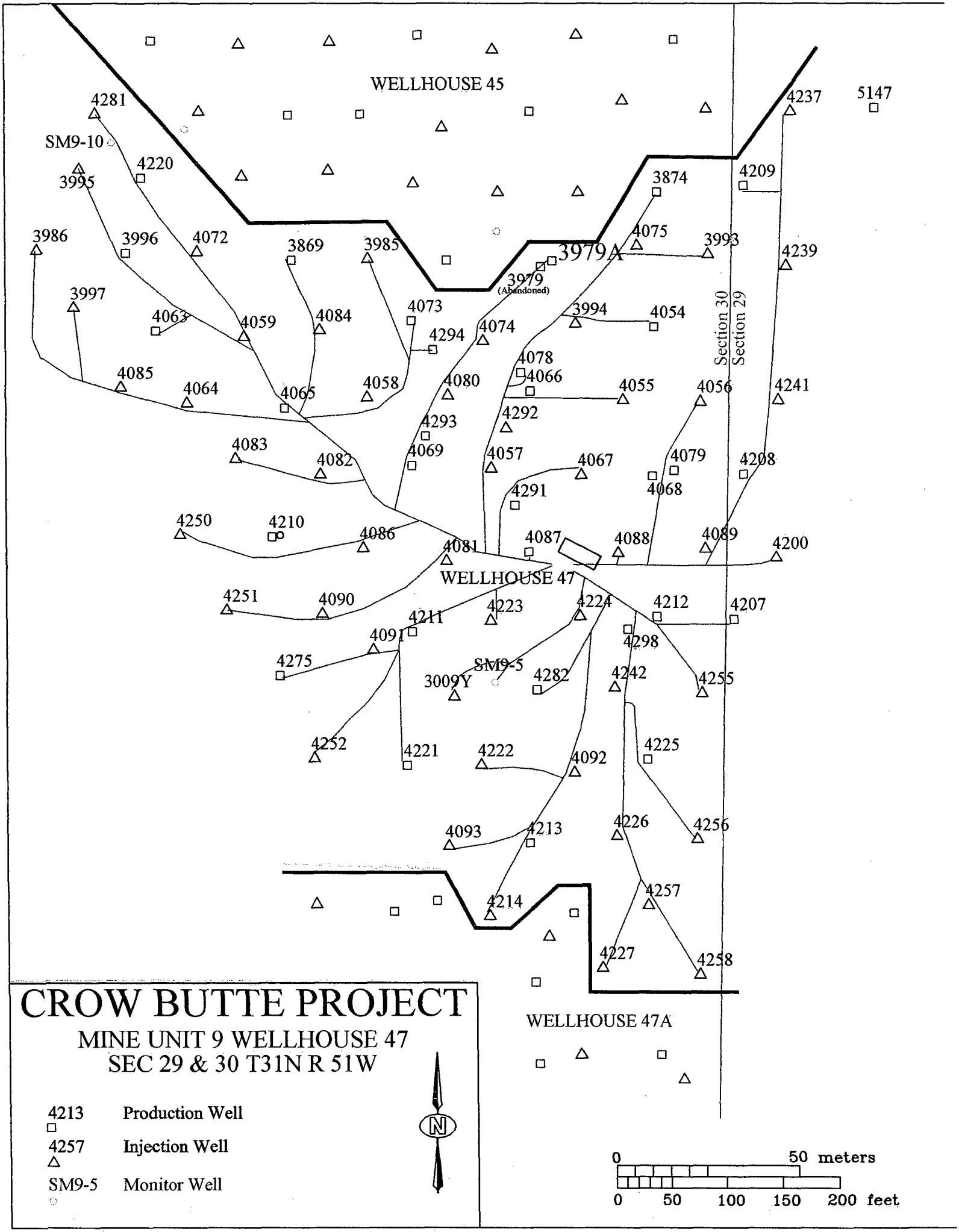
If you have any questions concerning this matter, please contact Jennifer Abrahamson of my staff at (402) 471-4290.

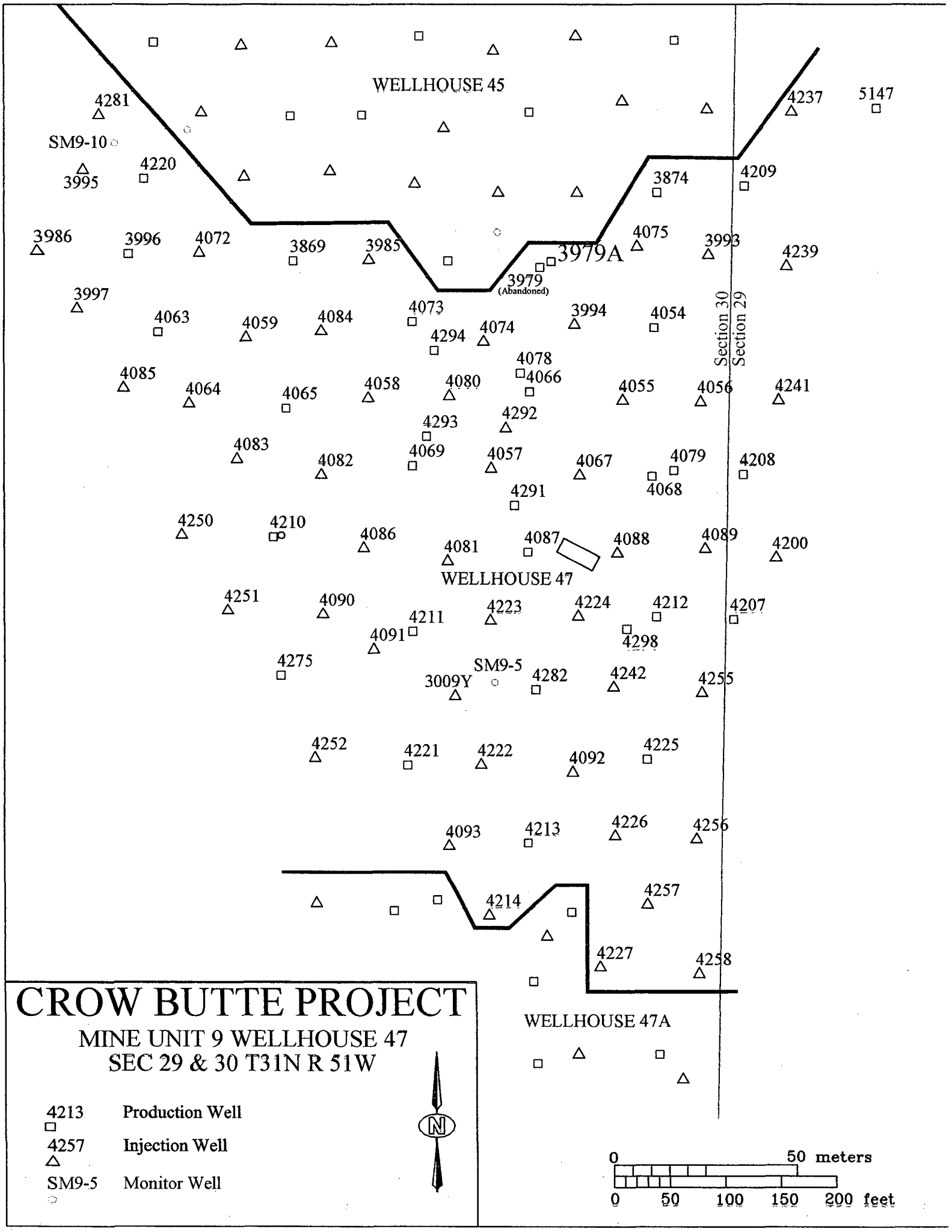
Sincerely,

Michael J. Linder
Director

ML/jla
word/CBR/letter/NOI_MU9_WH47_3979A.doc

Cc: Dave Carlson, NDEQ
Jim Stokey, CBR


WELLHOUSE 45
4281
SM9-10
4220
3995
3986
3996
4072
3869
3985
3979A
3979
(Abandoned)
3874
4075
3993
4237
5147
4209
4239
3997
4063
4059
4084
4073
4294
4074
3994
4054
Section 30
Section 29
4085
4064
4065
4058
4080
4078
4066
4055
4056
4241
4292
4293
4069
4083
4082
4057
4067
4079
4208
4291
4068
4250
4210
4086
4081
4087
4088
4089
4200
WELLHOUSE 47
4251
4090
4211
4223
4224
4212
4207
4091
4298
4275
SM9-5
3009Y
4282
4242
4255
4252
4221
4222
4092
4225
4093
4213
4226
4256
4214
4257
4227
4258
WELLHOUSE 47A
CROW BUTTE PROJECT
MINE UNIT 9 WELLHOUSE 47
SEC 29 & 30 T31N R 51W
4213 Production Well
4257 Injection Well
SM9-5 Monitor Well
N
0 50 meters
0 50 100 150 200 feet


WELLHOUSE 45
4281
SM9-10
3995
4220
4237
5147
4209
3874
3986
3996
4072
3869
3985
3979A
4075
3993
4239
3979
(Abandoned)
3997
4063
4059
4084
4073
3994
4054
4294
4074
Section 30
Section 29
4078
4085
4066
4064
4065
4058
4080
4055
4056
4241
4292
4293
4083
4069
4057
4067
4079
4208
4082
4068
4291
4250
4210
4086
4087
4088
4089
4200
4081
WELLHOUSE 47
4251
4090
4223
4224
4212
4207
4211
4091
4298
4275
SM9-5
3009Y
4282
4242
4255
4252
4221
4222
4092
4225
4093
4213
4226
4256
4214
4257
4227
4258
WELLHOUSE 47A
CROW BUTTE PROJECT
MINE UNIT 9 WELLHOUSE 47
SEC 29 & 30 T31N R 51W
4213 Production Well
4257 Injection Well
SM9-5 Monitor Well
N
0 50 meters
0 50 100 150 200 feet

Nebraska Department of Environmental Quality

Casing Integrity Test Report

Company: CBR Permit No: UIC0122611

Project: Crow Butte Well No: 3979A

Casing Type: Whitewater Diameter: 4.5

Hole Depth: 740' Casing Depth: 719'

Screened Interval(s): 684'-712'

Depth to K-packer: 672 Depth to Test Packer(s) Top ground level
Bottom ~~668~~ 663

Comments: Work Over

TIME	ELAPSED TIME (Min)	PRESSURE (PSIG)
1:00	0	125
1:05	5	122
1:10	10	119
1:15	15	116
1:20	20	114

Test Performed By: Justin Didier

Date: 7-9-09

Calibration Performed By: JD

Date: 7-6-09

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on inquiry of those individuals immediately responsible for obtaining information, I believe the information is true, accurate, and complete. Further, I certify awareness that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

By Wade Beins — Senior Geologist
PRINTED NAME OF PERSON SIGNING — TITLE

By Wade Beins — 7-10-09
SIGNATURE — DATE

Well House Start-Up Checklist

Well House # 47

Item	Description	Person	Comments	Date Completed	Initial
1	**Permit To Operate**	Brost / Pile / Stokey		9/11/06	WB
2	Complete Pressure Testing (Trunkline and House)	McDowell / Pile / Stokey		9.5.06	
3	Pipelines checked for leaks	McDowell / Pile / Stokey		9.5.06	
4	Pipelines buried	McDowell / Pile / Stokey		10-26-06	
5	Pressure gauge on injection manifold	R. Roberts / Pile / Stokey		11/30	BT
6	Injection lines equipped with totalizing flow meters	R. Roberts / Pile / Stokey		11/29	BT
7	Injection and Production total flows can be measured	H. Douthit / Pile / Stokey		11/29	BT
8	Unused trunkline locked out by two separate means	McDowell / Pile / Stokey		9.5.06	
9	Isolation valves are closed and chained	McDowell / Pile / Stokey		9.5.06	
10	Map of 2" lines in house	McDowell/Beins / Pile / Stokey		11-29-06	WB
11	Well-field Layout map in house	McDowell/Beins / Pile / Stokey		10.26.06	
12	Check berms	Griffin / Pile / Stokey		12/1/06	
13	Pressure check oxygen lines	McDowell / Pile / Stokey		11/30/06	
14	Continuity check on producers	B. Tiensvold / Pile / Stokey		9/19/06	BT
15	Ground fault check	REA/B. Tiensvold / Pile / Stokey		11/30	BT
16	Communications wire check	B. Tiensvold / Pile / Stokey		11/29	BT
17	Heater size check	B. Tiensvold / Pile / Stokey		11/29	BT
18	Processor installed well house	Pile / Stokey		11/28	BT
19	UPS installed and operational	B. Pile/B. Tiensvold / Pile / Stokey		11/28	BT
20	Wet house alarm installed	B. Tiensvold / Pile / Stokey		11/29	BT
21	Wet house alarm checked	P. Dunn/J. Douthit / Pile / Stokey		11/30	BT
22	Oxygen solenoid checked	P. Dunn/J. Douthit / Pile / Stokey		11/30	BT
23	Check fuses in control panel	B. Tiensvold / Pile / Stokey		11/29	BT
24	Program MMI	Pile / Stokey		11/28	BT
25	Program PLC	Pile / Stokey		11/28	BT
26	Switch on for alarming	P. Dunn/J. Douthit / Pile / Stokey		11-27	JD.
27	Set Scalar Card 'K' Factors	P. Dunn/J. Douthit / Pile / Stokey		11-27	JD.
28	Fire extinguisher w/placard	McDowell / Pile / Stokey	N/A	9.5.06	
29	Off tags and lockouts	B. Tiensvold/Dunn/J.Douthit / Pile / Stokey		12-1	JD
30	Contaminated and uncontaminated cans	P. Dunn/J. Douthit / Pile / Stokey		12-1	JD.
31	Complete 2" lateral inspection	McDowell / Pile / Stokey		10-26-06	
32	Visually inspect entire system to plant	McDowell / Pile / Stokey		10-26-06	
33	Labels on Monitor Wells	McDowell / Pile / Stokey		9.5.06	
34	Valve Station Covers and Stairs Built	R. Roberts / Pile / Stokey		11-30	RR
35					
36					
37					

Crow Butte Resources

Final Inspection of Piping Wellhead to Plant

Wellhouse: 47

Review of Pressure Test Data Complete: _____

Date: 10-27-06

Mine Manager: _____

W.F.C. Foreman: Kurt McDowell

Non-Service Lines Locked-Out: _____

Item #	Well #	Initialed by	Comments
1	P P3869	KM	OK
2	P P3874	KM	OK Line needs hooked
3	P P3979	KM	OK
4	P P3996	KM	OK
5	P P4054	KM	OK Line need hooked up
6	P P4063	KM	OK
7	P P4065	KM	Need Hose hooked up
8	P P4066	KM	OK
9	P P4068	KM	OK
10	P P4069	KM	OK
11	P P4073	KM	OK
12	P P4078	KM	OK
13	P P4079	KM	OK
14	P P4087	KM	OK
15	P P4207	KM	OK
16	P P4208	KM	OK
17	P P4209	KM	OK Trash around well
18	P P4210	KM	OK
19	P P4211	KM	OK
20	P P4212	KM	OK
21	P P4213	KM	OK
22	P P4220	KM	OK
23	P P4221	KM	OK
24	P P4225	KM	OK
25	P P4275	KM	OK
26	P P4282	KM	OK
27	P P4291	KM	OK
28	P P4293	KM	OK
29	P P4294	KM	OK
30	P P4298	KM	OK

Item #	Well #	Initialed by	Comments
1	I 13009	KM	OK
2	I 13985	KM	OK
3	I 13986	KM	OK
4	I 13993	KM	OK
5	I 13994	KM	OK
6	I 13995	KM	OK
7	I 13997	KM	OK
8	I 14055	KM	OK Fred's New Garage
9	I 14056	KM	OK
10	I 14057	KM	OK
11	I 14058	KM	OK
12	I 14059	KM	OK
13	I 14064	KM	OK
14	I 14067	KM	OK
15	I 14072	KM	OK
16	I 14074	KM	OK
17	I 14075	KM	OK
18	I 14080	KM	OK
19	I 14081	KM	OK

Item #	Well #	Initialed by	Comments
20	I 14082	KM	OK
21	I 14083	KM	OK
22	I 14084	KM	OK
23	I 14085	KM	OK
24	I 14086	KM	OK
25	I 14088	KM	OK
26	I 14089	KM	OK
27	I 14090	KM	OK
28	I 14091	KM	OK
29	I 14092	KM	OK
30	I 14093	KM	OK
31	I 14200	KM	OK
32	I 14214	KM	OK
33	I 14222	KM	OK
34	I 14223	KM	OK
35	I 14224	KM	OK
36	I 14226	KM	OK
37	I 14227	KM	OK
38	I 14237	KM	OK

Item #	Well #	Initialed by	Comments
39	I 14239	KM	O/C
40	I 14241	KM	O/C
41	I 14242	KM	O/C
42	I 14250	KM	O/C
43	I 14251	KM	O/C
44	I 14252	KM	O/C
45	I 14255	KM	O/C
46	I 14256	KM	O/C
47	I 14257	KM	O/C
48	I 14258	KM	O/C K Needs Barrel
49	I 14281	KM	O/C
50	I 14292	KM	O/C

Crow Butte Resources

Pump Continuity

Wellhouse 47

Date: 9/19/06

Technician: Bob Tiensvold

Non-Service Lines Locked-Out: Yes No

Item #	Well #	Initial	Meter Reading	Comments
1	P P3869	BT	1.9 Ohms	
2	P P3874	BT	2.2 Ohms	
3	P P3979	BT	2.6 Ohms	
4	P P3996	BT	1.7 Ohms	
5	P P4054	BT	2.0 Ohms	
6	P P4063	BT	1.4 Ohms	
7	P P4065	BT	1.9 Ohms	
8	P P4066	BT	1.4 Ohms	
9	P P4068	BT	1.1 Ohms	
10	P P4069	BT	1.2 Ohms	
11	P P4073	BT	2.4 Ohms	
12	P P4078	BT	1.7 Ohms	
13	P P4079	BT	1.7 Ohms	
14	P P4087	BT	1.0 Ohms	
15	P P4207	BT	1.1 Ohms	
16	P P4208	BT	1.2 Ohms	
17	P P4209	BT	2.2 Ohms	
18	P P4210	BT	3.5 Ohms	
19	P P4211	BT	1.6 Ohms	

Item #	Well #	Initial	Meter Reading	Comments
20	P P4212	BT	.7 Ohms	
21	P P4213	BT	1.8 Ohms	
22	P P4220	BT	1.4 Ohms	
23	P P4221	BT	2.9 Ohms	
24	P P4225	BT	1.1 Ohms	
25	P P4275	BT	2.1 Ohms	
26	P P4282	BT	1.2 Ohms	
27	P P4291	BT	.8 Ohms	
28	P P4293	BT	2.2 Ohms	
29	P P4294	BT	1.9 Ohms	
30	P P4298	BT	.8 Ohms	
			Ohms	
			Ohms	
			Ohms	
			Ohms	
			Ohms	
			Ohms	
			Ohms	
			Ohms	

CROW BUTTE RESOURCES, INC.
86 Crow Butte Road
P. O. Box 169 **(308) 665-2215**
Crawford, Nebraska 69339-0169 **(308) 665-2341 - FAX**

GROUND RESISTANCE TEST RECORD

TEST SET USED: AEMC Model 3711 Ground Resistance Tester

GROUND TEST RESULTS: Wellhouse 47 OHMS: .7, 107, 20.6 = .67 OHMS

CONCLUSIONS: $R_T = 1 / \left(\frac{1}{.7} + \frac{1}{107} + \frac{1}{20.6} \right)$

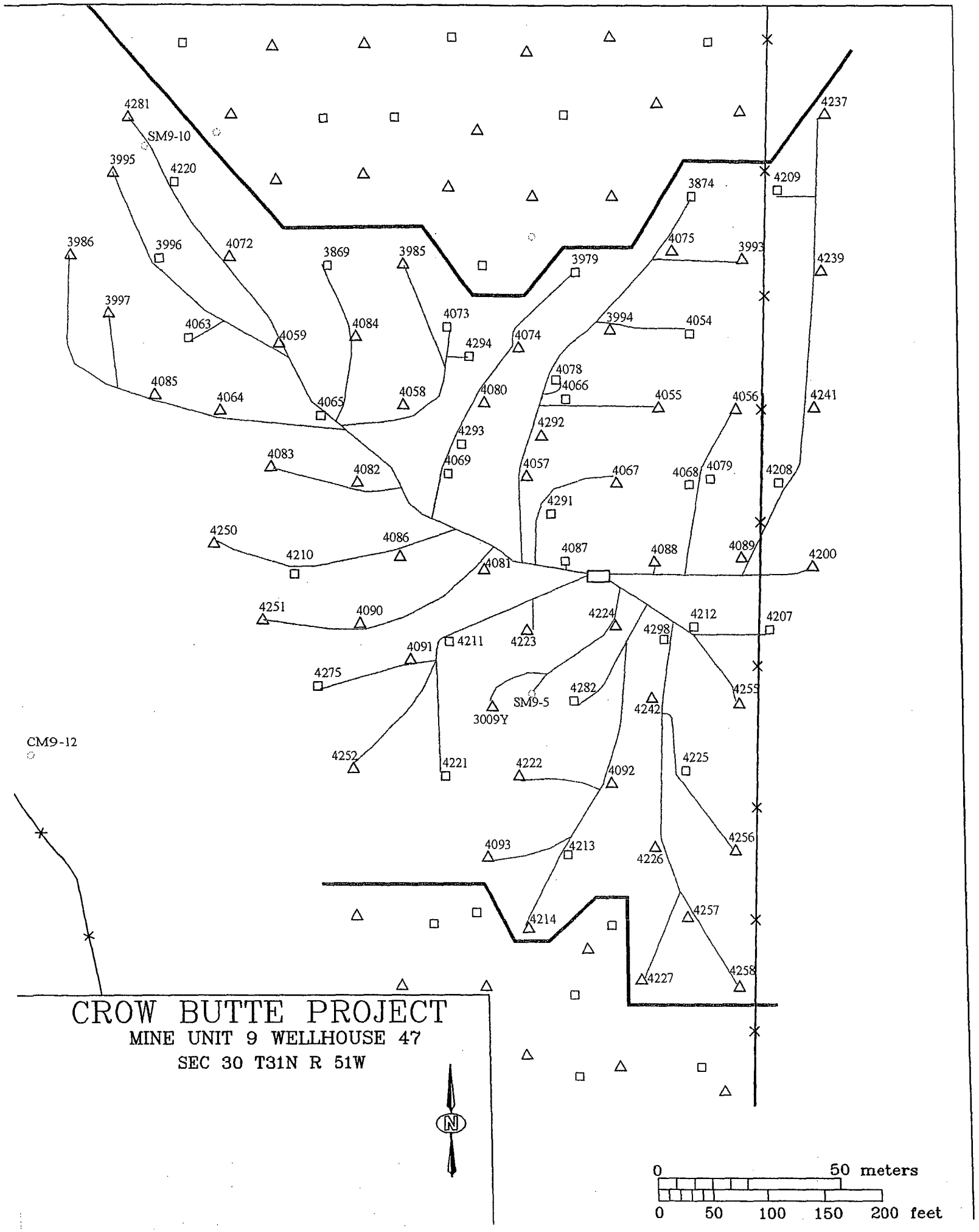
THE TEST RESULTS ARE SATISFACTORY

TEST PERFORMED BY:

CROW BUTTE RESOURCES, INC.

Robert Tiensvold

Date: December 1, 2006


4281
SM9-10
3995
4220
4237
4209
3874
3986
3996
4072
3869
3985
3979
4075
3993
4239
3997
4063
4059
4084
4073
4294
4074
3994
4054
4085
4064
4065
4058
4080
4078
4066
4055
4056
4241
4292
4293
4069
4083
4082
4057
4067
4068
4079
4208
4291
4250
4086
4210
4087
4088
4089
4200
4081
4251
4090
4224
4212
4207
4298
4091
4211
4223
4275
4282
4255
SM9-5
3009Y
4242
CM9-12
4252
4221
4222
4092
4225
4256
4093
4213
4226
4214
4257
4227
4258
CROW BUTTE PROJECT
MINE UNIT 9 WELLHOUSE 47
SEC 30 T31N R 51W
N
0
50 meters
0
50
100
150
200 feet

Well House Pressure Check Verification

Pressure check for Well House 47. Date: 9-5-06

Injection:
On 8-25-06 the injection lines and 2" laterals were pressured to 100 psi. This was done using a centrifugal pump and potable water. The time interval was as follows:

Start: 100 psi at _____ AM / PM 30 minutes
Stop: 97 psi at _____ AM / PM

The section of trunk line checked was from valve station 30-7 to the well field in WH 47.

Production:
On 8.28.06 the production trunk lines and 2" laterals were pressured to 100 psi. This was done using a centrifugal pump and potable water. The pressure and time interval was as follows:

Start: 100 psi at _____ AM / PM 30 minutes
Stop: 98 psi at _____ AM / PM

The section of trunk line was from valve station 30-7 to the well field in WH 47.

Oxygen:
On 10-15-06 the oxygen line was pressured to 125 psi. The pressure and time interval was as follows:

Start: 125 psi at 9:00 (AM) PM
Stop: 125 psi at 11:00 (AM) PM

From WH# 45 to WH# 47 RR

The section of trunk line checked was from valve station _____ to the well field in _____.

Well Field Construction Foreman

Cameco

Task Complete ☑

Ready for Service ☑

Crow Butte Operation

Pulling Unit Work Order

WH # 47 Date: 7-22-09 Work Order # 2009-263

Well # P3979A Operator(s): DH FH Work Completed: 7/22/2009

	New	Used
Wet End # 18-23		✓
Motor Hp: 3 Hp	✓	

Top of Screen: _____ Ft.

Sleeve Location / Length: _____ Ft.

Volts: 480 v Phase: 3 ø Stinger / Motor Depth: 660 poly Ft.

Ground Continuity: To House 2.6 Ohms Wire Reel 1.3 Ohms Meter Leads .2 Ohms

Pull for MIT:		Pull for Swab:		Upgrade/Restart:	
Install after MIT:		Swab:		New Installation:	✓
Maintenance:		Install after Swab:		Pressure Check:	

Wellhead Inspected:	✓	Lateral Inspected:	✓	Control Room Notified:	
Bleed Valve Checked:	✓	Tagged Out:	✓	Limits Are Set:	
Splines:	✓	Lock Out Installed:	✓	Added to Night List:	
Meter Run Inspected:	✓	Lock Out Removed:	✓		

Description of Work Needed: put new poly in and wire

Additional Information: Butt welded lateral over from old well to new well, changed to victaulic Cages the wire over to new well.

This Work is Complete:

Signed: Fred Hamm

For SERP of P3979A 7/23/2009.

Crow Butte Resources

Final Inspection of Piping Wellhead to Plant

Wellhouse: 47

Review of Pressure Test Data Complete: Bob [signature]

Date: 7/23/2009

Mine Manager:

W.F.C. Foreman: Bob [signature] WR Super.

Non-Service Lines Locked-Out: N/A.

Item #	Well #	Initialed by	Comments
1	P		
2	P		
3	P 3979A	BT	Press. Check to be completed upon
4	P		start-up. Approx. 20 feet of poly
5	P		pipe added to P3979.
6	P		
7	P		
8	P		
9	P		
10	P		
11	P		
12	P		
13	P		
14	P		
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

2.2.3.2 The small diameter HDPE pipes may be pressure checked using a pressure-checking manifold or they may be pressure checked along with the large diameter trunkline piping. When pressure checking the small HDPE lines separately, install a pressure-checking unit and fill each line with water. Pressure each line to 100 psig or in some cases depending on the location, pressure each line to 125 psig and record the date, the length of time pressure is applied and the starting pressure.

DANGER: Never pressurize PVC pipe with compressed air.

2.2.3.3 When the lines have been pressurized for at least 5 minutes, check the pressure. If there is a pressure loss of 10 percent or more, check the line for leaks and repair or replace the line as needed.

2.2.3.4 After the line has held pressure for at least 5 minutes without a loss of 10 percent of the starting pressure, record the ending pressure, the pressure loss (if any), and then initial the record. Any lines that do not pass the pressure test should be repaired or replaced and tested again. A record of the pressure test results will be kept on site.

2.2.3.5 To pressure check the small diameter HDPE along with the large diameter trunkline piping, see section 2.2.5.

2.2.3.6 Occasionally some amount of pipeline must be installed after the initial construction of the wellfield or wellhouse. This is generally in the form of smaller diameter HDPE pipe that may be added when wells are reversed or a new well is added to an existing wellhouse. In this situation, the line or lines will be placed into service, brought up to normal operating pressures and conditions, and then visually monitored for leaks. If required, the line may be back-filled once the visual observation is complete and has been documented.

2.2.4 Pressure Testing Gorilla Hose

2.2.4.1 Gorilla Hose may be pressure checked using a pressure-checking manifold and/or they may be pressure checked along with the small diameter HDPE piping. When pressure checking gorilla hose separately, install a pressure-checking unit and fill each hose with water. Pressure each line to 115 psig.

CROW BUTTE RESOURCES, INC.

MEMORANDUM

TO: SERP File

FROM: Bob Tiensvold

DATE: 7-24-2009

SUBJECT: P3979A – 47 visual pressure check

In order to complete the SERP requirements for P3979A in HH 47, a visual pressure check was performed on the lateral piping at the well head when it was started at approximately 1430 hrs on 7/23/2009. All new piping was in a trench and exposed for inspection. The well was started by Pete Dunn and inspected by myself until it reached operating pressure and flow. It was then placed on the night well field operators' inspection list. At shift change this morning, I spoke to Lauren Yada, the night operator, and he stated that everything was inspected and that he had nothing to report.

SERP 09-06 Evaluation

Crow Butte Resources, Inc.

Safety and Environmental Review Panel

Evaluation Report – SERP 09-06

Wellhouse 52 Approval to Operate

October 2, 2009

The Crow Butte Resources, Inc. (CBR) Safety and Environmental Review Panel (SERP) met to review and approve operation of Wellhouse 52 in Mine Unit 10 at the Crow Butte Uranium Project.

The SERP appointed for this evaluation consisted of the following members:

Name	Title	Area of Expertise
Jim Stokey	Mine Manager	Management
Larry Teahon	Manager of Health, Safety and Environmental Affairs	Environment
Doug Pavlick	Operations Manager	Operations
Rhonda Grantham	Radiation Safety Officer	Radiation Safety
Bob Tiensvold	Maintenance Superintendent	Construction
Wade Beins	Senior Geologist	Well Construction
Tate Hagman	Administrative Supervisor	Instrumentation

Dr. Stokey is the SERP Chairman. Mr. Teahon was appointed SERP Secretary for this evaluation.

Purpose of SERP Evaluation

SERP 09-06

The purpose of this evaluation by the CBR SERP was to review and approve Wellhouse 52 for operation.

License Condition 9.4 allows CBR to make changes in the facility or procedures or conduct tests or experiments that are not presented in the approved application if such changes do not:

i. Result in any appreciable increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
ii. Result in any appreciable increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
iii. Result in any appreciable increase in the consequences of an accident previously evaluated in the license application (as updated);
iv. Result in any appreciable increase in the consequences of a malfunction of an SSC previously evaluated in the license application (as updated);
v. Create a possibility for an accident of a different type that any previously evaluated in the license application (as updated);
vi. Create a possibility for a malfunction of an SSC with a different result than previously evaluated in the license application (as updated);
vii. Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA) or the technical evaluation reports (TERs) or other analysis and evaluations for license amendments.
viii. For the purposes of SERP evaluations, SSC means any SSC which has been referenced in a staff SER, TER, EA, or environmental impact statement (EIS) and supplements and amendments.

The SERP evaluation was conducted in accordance with the instructions contained in the Environmental, Health, and Safety Management System (EHSMS) Volume II, *Management Procedures*, EHS-6, *Managing Change*. The SERP reviewed the Wellhouse startup checklists and supporting documentation and evaluated this information as compared with the requirements of the licensing basis, including the following documents:

- Title 10, Code of Federal Regulations;
- Source Materials License SUA-1534, Amendment No. 23 dated May 12, 2008;
- *Application for Renewal of USNRC Radioactive Source Materials License SUA-1534*, Crow Butte Resources, Inc. December 1995;
- *Environmental Assessment for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;

- *Safety Evaluation Report for Renewal of Source Materials License No. SUA-1534*, USNRC February 1998;
- Technical Evaluation Reports issued in support of amendments to SUA-1534.

Title 10 Code of Federal Regulations

The proposed change will have no impact on CBR's ability to meet all applicable NRC regulations.

Source Materials License SUA-1534 Requirements

Amendment 23 to SUA-1534 dated May 12, 2008 was reviewed for specific requirements related to approval and operation of a wellhouse.

Mine Unit 10 was previously approved by a CBR SERP (see SERP 07-01 dated April 10, 2007). Therefore, no review of monitor well location, installation or baseline sampling and Upper Control Limit determination is required for approval of Wellhouse 52.

License Condition 10.2: This License Condition requires that CBR construct all wells in accordance with the methods contained in the Section 3.1.2 of the approved License Renewal Application (LRA). License Condition 10.2 also requires that CBR perform mechanical integrity tests (MIT) for all injection and production wells.

The well construction methods in use for Wellhouse 52 are the same as those described in the LRA and contained in EHSMS Volume III, *Operations Manual*, Procedure P-25, *Well Installation.* MITs were performed in accordance with EHSMS Volume III, *Operations Manual*, Procedure P-23, *Mechanical Integrity Test (MIT).* All MIT data sheets were contained in the Notice of Intent to Operate Wellhouse 52 (or in the original Mine Unit 10 Notice of Intent) that was submitted to the NDEQ. These MIT data sheets were provided by the Senior Geologist and reviewed by the SERP. The records indicate that the MITs performed in Wellhouse 52 met the requirements.

License Condition 9.3: This License Condition requires that CBR conduct operations in accordance with the representations contained in the LRA. Section 3.1.3 of the LRA discusses construction materials, instrumentation, and monitoring requirements. Section 3.3 also discusses instrumentation, including wellhouse injection and production instrumentation and wet building alarms for wellhouses. Section 7.2.3 of the LRA requires that leak tests be performed on all wellfield piping before placing the system into production operations.

The SERP reviewed the Wellhouse Start-up Checklist for Wellhouse 52. This checklist was developed by the Wellfield Construction staff to document completion of all required actions before initiating operations in a wellhouse. Some of these actions are required by regulatory and licensing requirements, while some were developed over the course of mining experience at Crow Butte. Construction activities are governed by EHSMS Volume III, *Operations Manual*, Procedure P-15, *Installation of Wellfield Pipelines*. The Maintenance Superintendent reviewed these items and stated that all had been completed and the appropriate controls were in place.
A copy of the Wellhouse Start-Up Checklist is attached to this SERP Evaluation. Supporting documentation in the form of pressure tests and ground continuity checks are also attached.

Environmental Assessment

The SERP reviewed the contents of the Environmental Assessment (EA) prepared by NRC in February 1998 to determine whether the proposed change could cause substantive safety or environmental impacts.

Well construction and testing as described in the EA has been completed for the wells associated with Wellhouse 52.

Section 3.3.1 discusses leak testing of wellfield piping. The SERP reviewed the completion of pressure testing for piping systems associated with Wellhouse 52 and found that they meet the intent of the EA.

Financial Surety

The proposed change is covered in the NRC-approved financial surety maintained by CBR and approved by Amendment 23 to SUA-1534 in the amount of $25,207,672.

Safety Evaluation Report

The Safety Evaluation Report (SER) principally provides the basis for worker safety at Crow Butte and does not specifically address the issues related to approval of Wellhouse 52.

Technical Evaluation Reports

The SERP reviewed the Technical Evaluation Reports (TERs) prepared by NRC staff to support amendments made to SUA-1534 since renewal in 1998. None of the TERs

prepared since license renewal directly address issues related to approval of a new Wellhouse for operation.

Degradation of Essential Safety or Environmental Commitment

SUA-1534 allows CBR to make changes as long as they do not degrade the essential safety or environmental commitments made in the application. The SERP determined that safety commitments made in the LRA and discussed in the EA have been met and that startup of Wellhouse 52 in Mine Unit 10 will not degrade the safety and environmental commitments.

Based upon this evaluation of the licensing basis, the CBR SERP hereby approves startup and operation of Wellhouse 52 in Mine Unit 10.

Approved this 2nd day of October, 2009.

10-02-2009
Jim Stokey, Mine Manager
SERP Chairman

10-2-09
Doug Pavlick, Operations Manager

10/2/09
Larry Teahon, Manager of Health, Safety and Environmental Affairs
SERP Secretary

10/2/09
Rhonda Grantham, Radiation Safety Officer

10/2/2009
Bob Tiensvold, Maintenance Superintendent

10-2-09
Wade Beins, Senior Geologist

10-2-09
Tate Hagman, Administrative Supervisor

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

JAN 2 2 2009

Mr. Steve Collings
Crow Butte Resources, Inc.
141 Union Boulevard, Suite 330
Lakewood, Colorado 80228

Dear Mr. Collings:

On January 2, 2009 the Nebraska Department of Environmental Quality received a submittal of information from Crow Butte Resources, Inc. The submittal serves as a Notice of Intent to Operate and contains Well Completion Reports and Casing Integrity Test Reports for the wells in Mine Unit 10, Well House 52. Upon review of this submittal, it was noted that during the initial Mechanical Integrity Test (MIT), the test packer for one of these wells (well 4716) was located in the apatite sand zone, approximately two (2) feet above the red clay and 16 feet above the top of the formation to be mined. This well passed a deeper re-test for mechanical integrity on January 12, 2009 and the Casing Integrity Test Report for this re-tested well was received by the Department that same day.

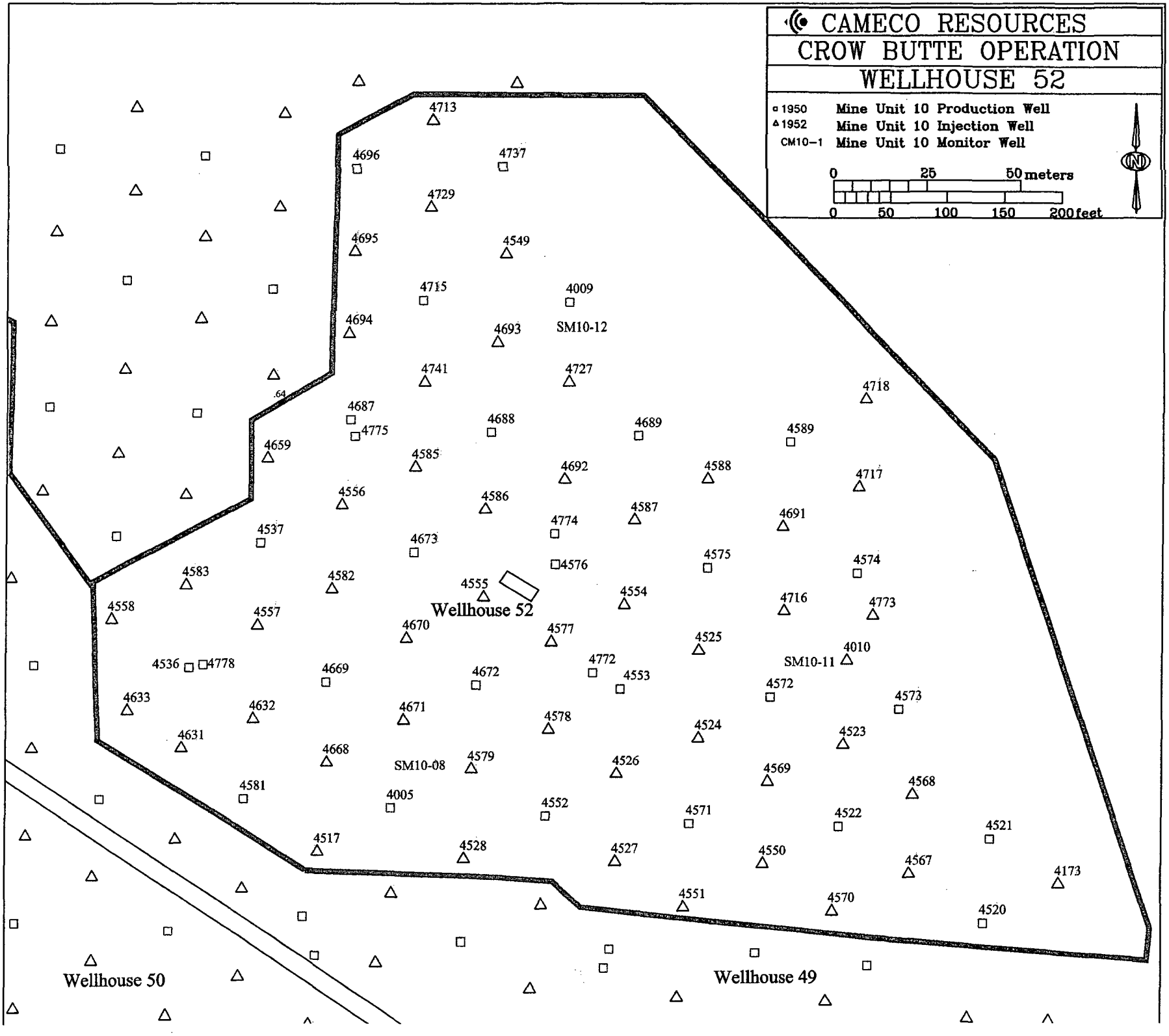
The Department has reviewed the information submitted and determined that it is adequate and complete. Upper Control Limits and Restoration Values established for Mine Unit 10 have already been submitted and approved. Approval of the wells in Well House 52 of Mine Unit 10 will not alter those values. The Department hereby approves the Notice of Intent to Operate the wells in Well House 52 in Mine Unit 10.

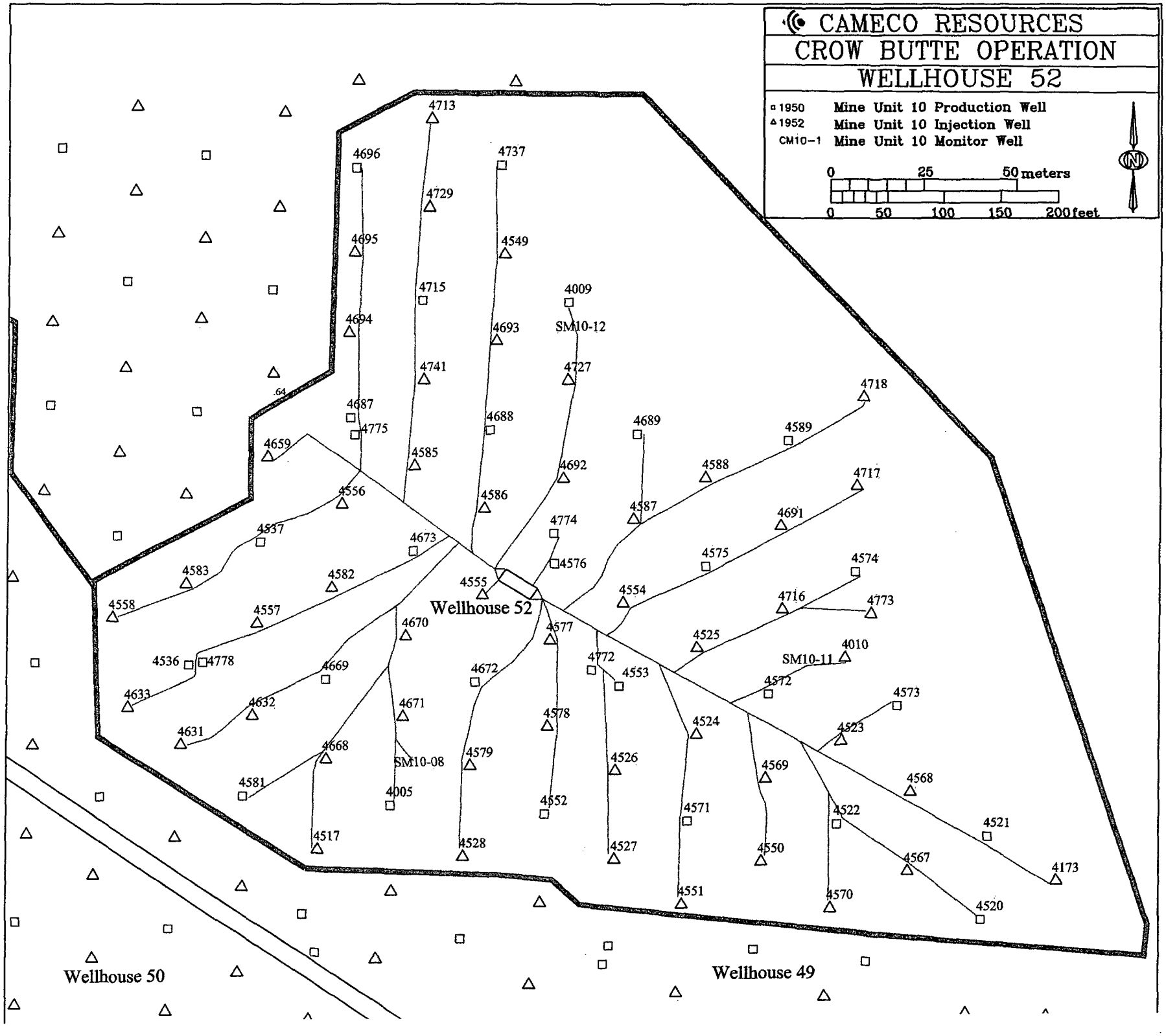
If you have any questions concerning this matter, please contact Jennifer Abrahamson of my staff at (402) 471-4290.

Sincerely,

Michael J. Linder
Director

ML/jla
word/CBR/letter/NOI_MU10_WH52.doc
Cc: Dave Carlson, NDEQ
Jim Stokey, CBR


CAMECO RESOURCES
CROW BUTTE OPERATION
WELLHOUSE 52
1950 Mine Unit 10 Production Well
1952 Mine Unit 10 Injection Well
CM10-1 Mine Unit 10 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
N
4713
4696
4737
4729
4695
4549
4715
4009
4694
4693
SM10-12
4741
4727
4718
.64
4687
4775
4688
4689
4589
4659
4585
4692
4588
4717
4556
4586
4587
4691
4774
4537
4673
4576
4575
4574
4583
4582
4555
4554
4716
4773
4558
4557
Wellhouse 52
4670
4577
4525
4010
4536
4778
4669
4672
4772
4553
SM10-11
4572
4633
4632
4671
4573
4578
4524
4631
4523
4668
SM10-08
4579
4526
4569
4581
4568
4005
4552
4571
4522
4521
4517
4528
4527
4550
4567
4173
4551
4570
4520
Wellhouse 50
Wellhouse 49


CAMECO RESOURCES
CROW BUTTE OPERATION
WELLHOUSE 52
1950 Mine Unit 10 Production Well
1952 Mine Unit 10 Injection Well
CM10-1 Mine Unit 10 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
N
4713
4696
4737
4729
4695
4549
4715
4009
4694
4693
SM10-12
4741
4727
4718
.64
4687
4775
4688
4689
4589
4659
4585
4692
4588
4717
4556
4586
4587
4691
4537
4673
4774
4583
4582
4575
4574
4555
4576
4554
4716
4773
4558
4557
Wellhouse 52
4577
4525
4010
4670
4772
SM10-11
4536
4778
4669
4672
4553
4572
4633
4632
4671
4573
4578
4524
4631
4523
4668
4579
4526
4569
SM10-08
4568
4581
4005
4552
4571
4522
4521
4517
4528
4527
4550
4567
4173
4551
4570
4520
Wellhouse 50
Wellhouse 49

Well House Start-Up Checklist

Well House # 52

Item	Description	Person		Comments	Date Completed	Initial
1	Permit To Operate	Beins/	Stokey		1-22-09	WB
2	Complete Pressure Testing (Trunkline and House)	McDowell/Tiensvold/	Stokey		9-29	
3	Pipelines checked for leaks	McDowell/Tiensvold/	Stokey		9-29	
4	Pipelines buried	McDowell/Tiensvold/	Stokey		9-29	
5	Pressure gauges manifolds	McDowell/Tiensvold/	Stokey		9-29	
6	Injection lines equipped with totalizing flow meters	McDowell/Tiensvold/	Stokey		9-29	
7	Injection and Production total flows can be measured	McDowell/Tiensvold/	Stokey		9-29	
8	Unused trunkline locked out by two separate means	McDowell/Tiensvold/	Stokey		9-29	
9	Isolation valves are closed and chained	McDowell/Tiensvold/	Stokey		9-29	
10	Map of 2" lines in house	McDowell/Beins/Tiensvold/	Stokey		10-1	
11	Well-field Layout map in house	McDowell/Beins/Tiensvold/	Stokey		10-1	
12	Check berms	Teahon/Tiensvold/	Stokey		10/1	BT
13	Pressure check oxygen lines	Roberts/Tiensvold/	Stokey	O.K. 125psi 30min	9.24.09	R.R.
14	Continuity check on producers	Scoggan/Tiensvold/	Stokey		10-1	
15	Ground fault check	Scoggan/Tiensvold/	Stokey		10-1	
16	Communications wire check	Hagman/Tiensvold/	Stokey		9/28	BT
17	Heater size check	Scoggan/Tiensvold/	Stokey		10-1	
	rocessor installed well house	Hagman/Tiensvold/	Stokey		9/28	TH
19	UPS installed and operational	Scoggan/Tiensvold/	Stokey		9/28	BT
20	Wet house alarm installed	Scoggan/Tiensvold/	Stokey		10-1	
21	Wet house alarm checked	Scoggan/Tiensvold/	Stokey		10/1	BT
22	Oxygen solenoid checked	Hagman/Tiensvold/	Stokey		10/1	BT
23	Check fuses in control panel	Scoggan/Tiensvold/	Stokey		10-1	
24	Program MMI	Hagman/Tiensvold/	Stokey		9/30	TH
25	Program PLC	Hagman/Tiensvold/	Stokey		9/30	TH
26	Set Scalar Card 'K' Factors	K. Forbes/P. Dunn/Tiensvold/	Stokey		8-1-09	KF
27	Off tags and lockouts	K. Forbes/P. Dunn/Tiensvold/	Stokey		10-1	
28	Contaminated and uncontaminated cans	K. Forbes/P. Dunn/Tiensvold/	Stokey		8-1-09	KF
29	Complete 2" lateral inspection	McDowell/Tiensvold/	Stokey		9-29	
30	Visually inspect entire system to plant	McDowell/Tiensvold/	Stokey		9-29	
31	Labels on Monitor Wells	McDowell/Tiensvold/	Stokey		9-29	
32	Valve Station Covers and Stairs Built	Roberts/Tiensvold/	Stokey		9-29	
33	Manifold Pressure Switches Installed	Scoggan/Tiensvold/	Stokey		10-1	
34	Injection Filter Installed	McDowell/Tiensvold/	Stokey		9-29	
35	Filter instrumentation and gauges installed	McDowell/Tiensvold/	Stokey		9/29	BT
	lectric door lock installed	Scoggan/Tiensvold/	Stokey		10-1	
	pdate Daily Walk Through Inspection form EHS 4-1	Teahon/Tiensvold/	Stokey		10-2	

WELLHOUSE #52

#12 ft. Lim. 700

	WELL #	AIR LIFT FLOW GPM	Number of Injectors	Target flow for injectors	DISTANCE FT	PIPE DIAMETER	STRINGER DEPTH	TOTAL LENGTH	SURFACE #12 WIRE	SURFACE #10 WIRE	SURFACE+DOWNHOLE #12 WIRE	SURFACE+DOWNHOLE #10 WIRE
1	P 4005	7	6	1.2	226	2"	300	526	226	0	526	
2	P 4009	15	3	5.0	271	2"	300	571	271	0	571	
3	P 4520	20	2	10.0	462	2"	300	762	0	462		762
4	P 4521	25	3	8.3	426	2"	300	726	0	426		726
5	P 4522	20	6	3.3	311	2"	300	611	311	0	611	
6	P 4536	20	6	3.3	337	2"	300	637	337	0	637	
7	P 4537	20	6	3.3	270	2"	300	570	270	0	570	
8	P 4552	15	6	2.5	179	2"	300	479	179	0	479	
9	P 4553	25	6	4.2	88	2"	300	388	88	0	388	
10	P 4571	15	6	2.5	217	2"	300	517	217	0	517	
11	P 4572	20	6	3.3	201	2"	300	501	201	0	501	
12	P 4573	15	4	3.8	306	2"	300	606	306	0	606	
13	P 4574	25	4	6.3	257	2"	300	557	257	0	557	
14	P 4575	30	6	5.0	132	2"	300	432	132	0	432	
15	P 4576	20	6	3.3	46	2"	300	346	46	0	346	
16	P 4581	15	6	2.5	320	2"	300	620	320	0	620	
17	P 4589	5	4	1.3	248	2"	300	548	248	0	548	
18	P 4669	10	6	1.7	210	2"	300	510	210	0	510	
19	P 4672	20	6	3.3	98	2"	300	398	98	0	398	
20	P 4673	20	6	3.3	141	2"	300	441	141	0	441	
21	P 4687	25	6	4.2	254	2"	300	554	254	0	554	
22	P 4688	25	6	4.2	173	2"	300	473	173	0	473	
23	P 4689	25	4	6.3	169	2"	300	469	169	0	469	
24	P 4696	15	6	2.5	433	2"	300	733	0	433		733
25	P 4715	30	6	5.0	303	2"	300	603	303	0	603	
26	P 4737	20	4	5.0	394	2"	300	694	394	0	694	
27	P 4772	10	5	2.0	60	2"	300	360	60	0	360	
28	P 4774	20	6	3.3	71	2"	300	371	71	0	371	
29	P 4775	10	6	1.7	242	2"	300	542	242	0	542	
30	P 4778	10	6	1.7	316	2"	300	616	316	0	616	
					7161			16161	5840.0	1321	13940.0	2221.0

WELLHOUSE #52

Kirk's Sheet

	Injector Well #	1"	1-1/4"	1-1/2"	2"
1	I 4010	4010			
2	I 4173			4173	
3	I 4517	4517			
4	I 4523		4523		
5	I 4524	4524			
6	I 4525		4525		
7	I 4526		4526		
8	I 4527		4527		
9	I 4528	4528			
10	I 4549		4549		
11	I 4550		4550		
12	I 4551		4551		
13	I 4554	4554			
14	I 4555	4555			
15	I 4556		4556		
16	I 4557	4557			
17	I 4558		4558		
18	I 4567			4567	
19	I 4568			4568	
20	I 4569	4569			
21	I 4570		4570		
22	I 4577	4577			
23	I 4578	4578			
24	I 4579	4579			
25	I 4582	4582			
26	I 4583		4583		
27	I 4585		4585		
28	I 4586	4586			
29	I 4587		4587		
30	I 4588		4588		
31	I 4631		4631		
32	I 4632		4632		
33	I 4633		4633		
34	I 4659		4659		
35	I 4668	4668			
36	I 4670	4670			
37	I 4671	4671			
38	I 4691		4691		
39	I 4692		4692		
40	I 4693		4693		
41	I 4694			4694	
42	I 4695		4695		
43	I 4713		4713		
44	I 4716		4716		
45	I 4717	4717			
46	I 4718	4718			
47	I 4727		4727		
48	I 4729		4729		
49	I 4741		4741		
50	I 4773		4773		
51	I 0				
		18	28	4	0

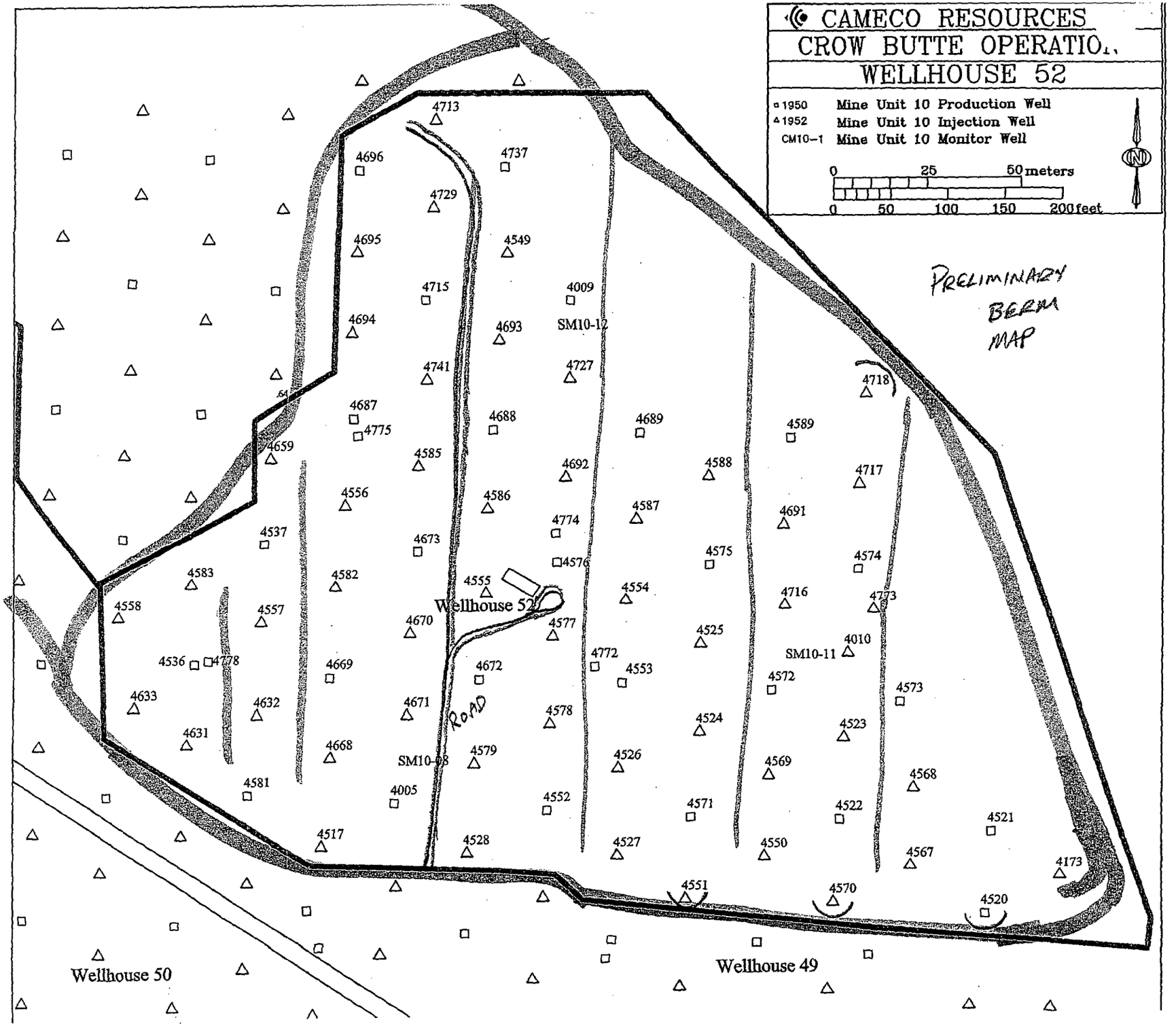
Prod Well #	Wire AWG
P 4005	12
P 4009	12
P 4520	10
P 4521	10
P 4522	12
P 4536	12
P 4537	12
P 4552	12
P 4553	12
P 4571	12
P 4572	12
P 4573	12
P 4574	12
P 4575	12
P 4576	12
P 4581	12
P 4589	12
P 4669	12
P 4672	12
P 4673	12
P 4687	12
P 4688	12
P 4689	12
P 4696	10
P 4715	12
P 4737	12
P 4772	12
P 4774	12
P 4775	12
P 4778	12

Straight Line Pipe Lengths

Size	Length
1"	3342
1 1/4"	7395
1 1/2"	1542
2"	7161

WELLHOUSE #52

WELL#	WIRE
P4005	#12
P4009	#12
P4520	#10
P4521	#10
P4522	#12
P4536	#12
P4537	#12
P4552	#12
P4553	#12
P4571	#12
P4572	#12
P4573	#12
P4574	#12
P4575	#12
P4576	#12
P4581	#12
P4589	#12
P4669	#12
P4672	#12
P4673	#12
P4687	#12
P4688	#12
P4689	#12
P4696	#10
P4715	#12
P4737	#12
P4772	#12
P4774	#12
P4775	#12
P4778	#12


CAMECO RESOURCES
CROW BUTTE OPERATION
WELLHOUSE 52
1950 Mine Unit 10 Production Well
1952 Mine Unit 10 Injection Well
CM10-1 Mine Unit 10 Monitor Well
0 25 50 meters
0 50 100 150 200 feet
N
PRELIMINARY BERM MAP
Wellhouse 52
Wellhouse 50
Wellhouse 49
ROAD
SM10-12
SM10-11
SM10-08
4713
4696
4737
4729
4695
4549
4715
4009
4694
4693
4741
4727
4718
4687
4775
4688
4689
4589
4659
4585
4692
4588
4717
4556
4586
4587
4691
4537
4774
4673
4575
4574
4583
4582
4555
4576
4554
4716
4773
4558
4557
4670
4577
4525
4010
4536
4778
4669
4672
4772
4553
4572
4633
4632
4671
4578
4573
4524
4631
4523
4668
4579
4526
4569
4581
4005
4552
4571
4568
4522
4521
4517
4528
4527
4550
4567
4173
4551
4570
4520

CROW BUTTE RESOURCES, INC.
86 Crow Butte Road
P. O. Box 169
Crawford, Nebraska 69339-0169

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

GROUND RESISTANCE TEST RECORD

TEST SET USED: AEMC Model 3711 Ground Resistance Tester

GROUND TEST RESULTS: Wellhouse 52
OHMS: Resistance Total (Rt) = 2.23 OHMS

R1 is NRPPD pole ground rod, R2 and R3 are the ground rods installed at the header house

$$Rt = \frac{1}{(1/R1 + 1/R2 + 1/R3)}$$

$$Rt = \frac{1}{(1/7.5 + 1/7.4 + 1/5.6)}$$

Rt = 2.23 Ohms

CONCLUSIONS:

THE TEST RESULTS ARE SATISFACTORY

TEST PERFORMED BY:

CROW BUTTE RESOURCES, INC.

Gabe Scoggan

Date: September 29, 2009

Crow Butte Resources

Pump Continuity

Wellhouse 52

Date: 9/29/2009

Technician: Gabe Scoggin

Non-Service Lines Locked-Out: Yes No

Item #	Well #		Initial	Meter Reading		Comments
1	P	4005		1.3	Ohms	
2	P	4009		1.3	Ohms	
3	P	4520		1.5	Ohms	
4	P	4521		1.4	Ohms	
5	P	4522		1.7	Ohms	
6	P	4536		1.4	Ohms	
7	P	4537		1.2	Ohms	
8	P	4552		1.2	Ohms	
9	P	4553		1.0	Ohms	
10	P	4571		1.6	Ohms	
11	P	4572		1.3	Ohms	
12	P	4573		1.7	Ohms	
13	P	4574		1.6	Ohms	
14	P	4575		1.3	Ohms	
15	P	4576		.6	Ohms	
16	P	4581		1.4	Ohms	
17	P	4589		1.4	Ohms	
18	P	4669		1.1	Ohms	
19	P	4672		1.0	Ohms	

Item #	Well #		Initial	Meter Reading		Comments
20	P	4673		.6	Ohms	
21	P	4687		1.1	Ohms	
22	P	4688		.8	Ohms	
23	P	4689		1.2	Ohms	
24	P	4696		1.2	Ohms	
25	P	4715		1.3	Ohms	
26	P	4737		1.5	Ohms	
27	P	4772		.9	Ohms	
28	P	4774		.6	Ohms	
29	P	4775		1.0	Ohms	
30	P	4778		1.3	Ohms	
	SM-10-11			1.1	Ohms	
	SM-10-8			.9	Ohms	
	SM-10-12			.9	Ohms	
					Ohms	
					Ohms	
					Ohms	
					Ohms	
					Ohms	

Crow Butte Resources

Final Inspection of Piping Wellhead to Plant

Wellhouse: 52

Review of Pressure Test Data Complete: 9-25-09

Date: 9-25-09

Mine Manager: _____

W.F.C. Foreman: [signature]

Non-Service Lines Locked-Out: [signature]

Item #	Well #	Initialed by	Comments
1	P	4005	OK
2	P	4009	OK
3	P	4520	OK
4	P	4521	OK
5	P	4522	OK
6	P	4536	OK
7	P	4537	OK
8	P	4552	OK
9	P	4553	OK
10	P	4571	OK
11	P	4572	OK
12	P	4573	OK
13	P	4574	OK
14	P	4575	OK
15	P	4576	OK
16	P	4581	OK
17	P	4589	OK
18	P	4669	OK
19	P	4672	OK
20	P	4673	OK
21	P	4687	OK
22	P	4688	OK
23	P	4689	OK
24	P	4696	OK
25	P	4715	OK
26	P	4737	OK
27	P	4772	OK
28	P	4774	OK
29	P	4775	OK
30	P	4778	OK

Item #	Well #	Initialed by	Comments
1	I	4010	OK
2	I	4173	OK
3	I	4517	OK
4	I	4523	OK
5	I	4524	OK
6	I	4525	OK
7	I	4526	OK
8	I	4527	OK
9	I	4528	OK
10	I	4549	OK
11	I	4550	OK
12	I	4551	OK
13	I	4554	OK
14	I	4555	OK
15	I	4556	OK
16	I	4557	OK
17	I	4558	OK
18	I	4567	OK
19	I	4568	OK

Item #	Well #	Initialed by	Comments
20	I	4569	OK
21	I	4570	OK
22	I	4577	OK
23	I	4578	OK
24	I	4579	OK
25	I	4582	OK
26	I	4583	OK
27	I	4585	OK
28	I	4586	OK
29	I	4587	OK
30	I	4588	OK
31	I	4631	OK
32	I	4632	OK
33	I	4633	OK
34	I	4659	OK
35	I	4668	OK
36	I	4670	OK
37	I	4671	OK
38	I	4691	OK

Item #	Well #	Initialed by	Comments
39	I	4692	OK
40	I	4693	OK
41	I	4694	OK
42	I	4695	OK
43	I	4713	OK
44	I	4716	OK
45	I	4717	OK
46	I	4718	OK
47	I	4727	OK
48	I	4729	OK
49	I	4741	OK
50	I	4773	OK

Well House Pressure Check Verification

Pressure check for Well House 52. Date: 9-30-09

Injection:
On 9-24-09 the injection lines and 2" laterals were pressured to 125 psi. This was done using a centrifugal pump and potable water. The time interval was as follows:

Start: 125 psi at ~~AM / PM~~ 30 minutes
Stop: 121 psi at ~~AM / PM~~

The section of trunk line checked was from valve station 12-52 to the well field in WH 52.

Production:
On 9-25 the production trunk lines and 2" laterals were pressured to 125 psi. This was done using a centrifugal pump and potable water. The pressure and time interval was as follows:

Start: 125 psi at ~~AM / PM~~ 30 minutes
Stop: 122 psi at ~~AM / PM~~

The section of trunk line was from valve station 12-52 to the well field in WH 52.

Oxygen:
On 9-24-09 the oxygen line was pressured to 125 psi. The pressure and time interval was as follows:

Start: 125 psi at ~~AM / PM~~ 30 minutes
Stop: 125 psi at AM / PM

The section of trunk line checked was from valve station 12-53 to the well field in WH 52.

Kenneth McDowell
Well Field Construction Foreman

CAMECO RESOURCES
CROW BUTTE OPERATION

CROW BUTTE OPERATION

Daily Walk-Through Inspection

For theWeek of_____ through_____

Main Plant	SUN	MON	TUE	WED	THU	FRI	SAT
Ventilation							
Visible Yellowcake							
Spills							
General Housekeeping							
Electrical Hazards							
Shift Logs Reviewed							
Bulk Chemical Storage							
Other Hazards							
Potable Water Pressure Reading If < 20 psi; contact Plant Foreman	psi	psi	psi	psi	psi	psi	psi
Inspected By:							
R.O. Building							
Ventilation							
General Housekeeping							
Electrical Hazards							
Inspected By:							
Wellfield and Wellhouses							
MU 2 Wellfield & WH# 3-5							
MU 3 Wellfield & WH# 6-8							
MU 4 Wellfield & WH# 9-13							
MU 5 Wellfield & WH# 14-20							
MU 6 Wellfield & WH# 21-27							
MU 7 Wellfield & WH# 28-33							
MU 8 Wellfield & WH# 34-40, 46							
MU 9 Wellfield & WH# 41-45, 47							
MU 10 Wellfield & WH# 48-56							
Inspected By:							
Booster Pump House -Production							
Booster Pump House - Injection							
Inspected By:							
Deep Well Building							
Inspected By:							
Fuel Storage Area							
Inspected By:							
√ = Inspected and no action needed						* = See Comments on Back of Form	