

MARKWEST RESOURCES INC.
FULLERTON FED. 11 #23 GD

Field: Basin FRTC **Elevation:** 6118' GL **TD:** 6670'
Spud Date: 2/5/99 KB=14' **PBTD:** 6550'
South Kutz Gallup Completion Date: 4/9/99
Basin Dakota Completion Date: 6/5/00

<u>Hole Size</u>	<u>Csg Size</u>	<u>Wt. & Grade</u>	<u>Depth Set</u>	<u>Cement</u>	<u>TOC</u>
12-1/4"	8-5/8"	24# J-55	325'	213 sx	Circ. 45 sx Cmt
7-7/8"	4-1/2"	11.6# J-55	6670'	450 sx	Circ. 20 bbls Cmt
		DV Tool @	5005'	1185 sx	Circ. 90 bbls Cmt

2-3/8" 4.7# J-55 6413' (Notched collar & SN on bottom)

Ojo Alamo	816'	Mesaverde	3502'
Kirtland	910'	Gallup	5450'
Fruitland	1615'	Dakota	6357'
Pictured Cliffs	1900'		

Stimulation: Ran CBL 6478'-4950' – very good cmt bond. Perf Burro Canyon @ 6558'-61' w/4-0.44" spf. Swab well dry – no gas. Set 4-1/2" CIBP @ 6550'.

Set 4-1/2" CIBP @ 5900'. Perf Gallup @ 5794'-5810' w/3 spf. Total 48 holes.
Frac Gallup w/70,000# 20/40 Brady sand in 70Q foam. Ave. 30 BPM @ 2700 psi. Ran
tbq & complete as single Gallup well.

Production History: Gallup 1st delivery = 11/99. DK 1st delivery = 6/00. Gallup cum = 35 MMCF & 1090 BO. DK cum = 13 MMCF. Current commingled capacity = 110 MCF/D & 2 BOPD & 2 BWPD. Piston production. DHC-2379; Allocation: Gallup-56% oil & 81% gas; DK-44% oil & 19% gas.

Reasons for Commingle: Exploit a marginal (very thin coals) FRTC drilling block without drilling. Use the FRTC gas to lift the high fluid producing Gallup/DK which is having problems sustaining production due to fluid build-up.

MARKWEST RESOURCES INC.
FULLERTON FED. 11 #23 GD
K Sec. 11 – T27N – R11W, San Juan County, New Mexico
1850' FSL & 1850 FWL

FRTC RECOMPLETION & COMMINGLE W/GAL/DK

GENERAL

* Prior to rig-up and commencement of operations, review the attached general wellsite stipulations.

* All information concerning the workover operations of this well shall remain **confidential** and shall not be released without the written consent of MarkWest Resources.

1. MOL & RU, test anchors, set pump, 2 frac tanks & equipment.
2. If necessary, kill well w/ water. **All water to be 2% KCL or filtered produced FRTC water.**
3. If necessary, kill well or set blanking plug in SN @ 6413'. ND WH, NU BOP. TOH w/2-3/8" tbg. TIH w/4-1/2" csg scraper to 2010'. TOH.
4. TIH w/2-3/8" tbg & set 4-1/2" CIBP @ 2000'. Load hole w/2% KCL water & pressure test to 2000 psi. TOH. Run CBL from 2000' to surface & CNL from 2000' to 1500'. Correlate to attached open hole Induction log.
5. Using log, perf about 30' of FRTC (about 1702'-1895'). Perf 4-0.45" spf w/15 gr jets in 3-1/8" HSC guns which give a penetration of 11.19" in concrete.
6. Install MBIT type wellhead protector & prepare to foam frac.
7. Bullhead 1500 gal 15% HCL acid ahead of pad. Frac FRTC down 4-1/2" csg w/ 75,000 gals of 70 quality foam using 30# gel as the base fluid and 150,000# 20/40 Brady sand. Pump @ 50 BPM. Max. pressure is 3800 psi. Tag sand w/3 RA tracers. Treat per the following schedule:

<u>STAGE</u>	<u>Foam Vol.</u> <u>(Gals.)</u>	<u>Gel Vol.</u> <u>(Gals.)</u>	<u>Sand Vol.</u> <u>(lbs.)</u>
PAD	15,000	4,500	0#
1.0 ppg	15,000	4,500	15,000#
2.0 ppg	15,000	4,500	30,000#
3.0 ppg	15,000	4,500	45,000#
4.0 ppg	15,000	4,500	60,000#
Flush (estimated)	<u>(1140)</u>	<u>(342)</u>	<u>0#</u>
	75,000 gals	22,500 gals	150,000#

MARKWEST RESOURCES INC.
FULLERTON FED. 11 #23 GD
K Sec. 11 – T27N – R11W, San Juan County, New Mexico
1850' FSL & 1850 FWL

Shut well in after frac for 4 hours in an attempt to allow the gel to break. Treat frac fluid with the following additives per 1000 gallons:

- * 30# J-48 (Guar Gel mix in full tank – 16,000 gal)
- * 1.0 gal. Aqua Flow (Non-ionic surfactant mix in full tank)
- * 1.0# GVW-3 (Enzyme Breaker mix on fly)
- * 1.0# B-5 (Breaker mix on fly)
- * 5.0 gal Fracfoam 1 (Foamer mix on fly)
- * 0.38# FracCide 20 (Bacteriacide mix in full tank)

8. Open well through choke manifold and monitor flow. Flow @ 20 bbl/hr, or less if sand is observed. Start on 1/4" choke.
9. TIH w/3-7/8" bit on 2-3/8" tbg. Blow & CO FRTC frac w/air/mist to 4-1/2" CIBP @ 2000'. When well is stable TOH & run Pro-Technics after frac GR log from 2000'-1500'.
10. TIH w/3-7/8" bit on 2-3/8" tbg & CO to CIBP @ 2000'. When well is stable, drill BP @ 2000' & CO to PBTD 6550'. TOH.
11. Rabbit IH w/2-3/8" 4.7# J-55 EUE tbg w/standard SN one jt off open ended bottom & again CO to PBTD 6550'. When wellbore is sufficiently clean, land tbg @ 6440'.
12. ND BOP & NU wellhead & tree. RDSU.
13. Complete as a commingled FRTC/Gallup/DK well.

EQUIPMENT & VENDORS LIST

ITEM:	VENDOR	PHONE #
RIG:	KEY ENERGY SERVICES	970-563-9053 505-327-0416
PETR. ENGR. 4573	MIKE PIPPIN	505-327- 505-330-0495
RIG SUPERVISOR:	MIKE CONFER	505-599-7461 505-330-2022
STIMULATION COMPANY:	AMERICAN ENERGY	505-325-4192
CASED WIRELINE:	BASIN	505-327-5244

**MARKWEST RESOURCES INC.
FULLERTON FED. 11 #23 GD**

**K Sec. 11 – T27N – R11W, San Juan County, New Mexico
1850' FSL & 1850 FWL**

DOWNHOLE TOOLS:	BAKER	505-325-0216
TRUCKING:	SUNCO	505-327-0416
WELLHEAD	CAMERON	505-327-3402
FRAC TANKS	LTR	505-327-3330

WELLBORE DIAGRAM

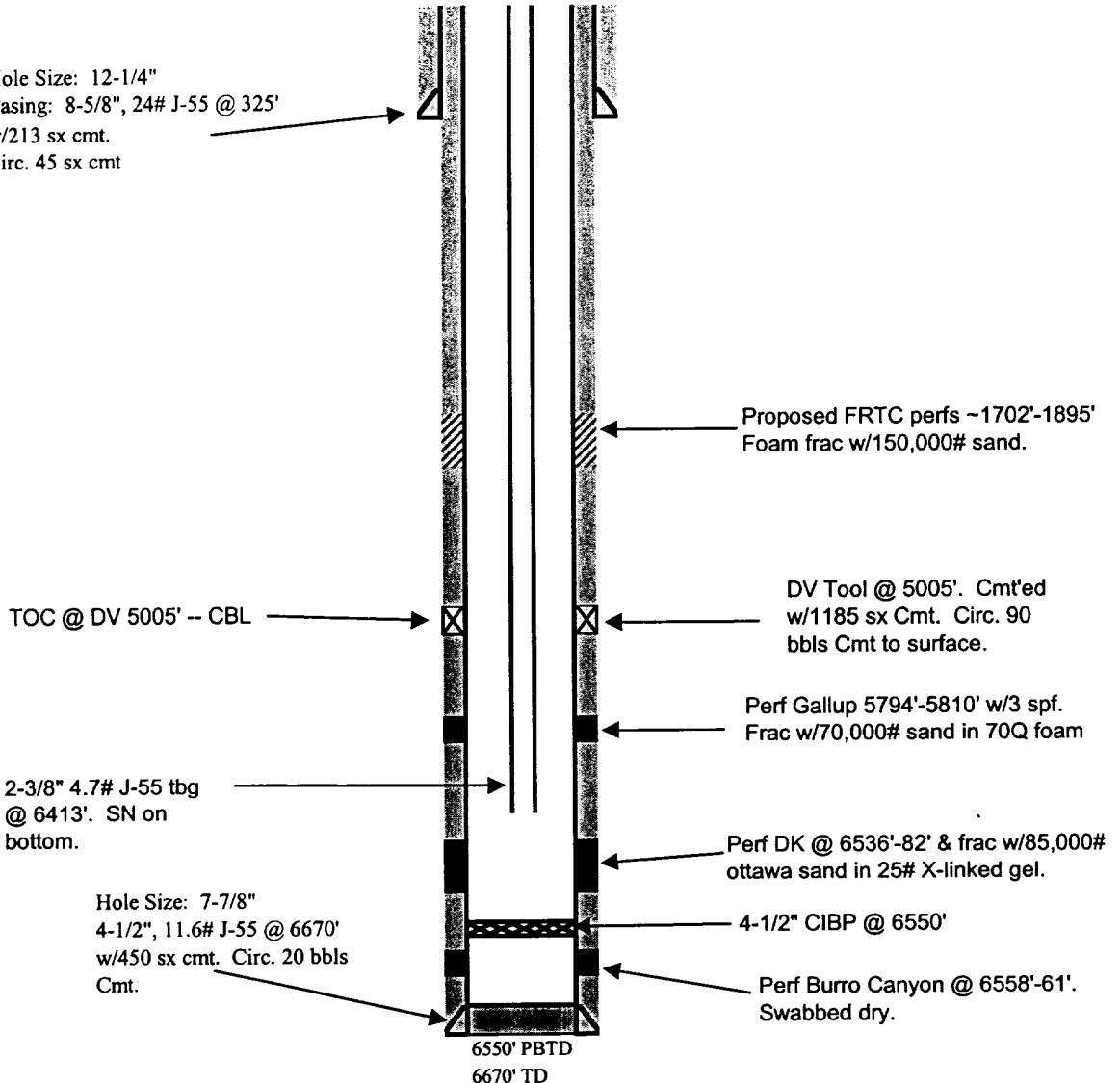
PROPOSED FRTC RECOMPLETION

AND COMMINGLE W/GALLUP/DAKOTA

FULLERTON FEDERAL 11 #23 GD

1850' FSL & 1850' FWL (K) Sec. 11 T-27N, R11W
 Basin Dakota & South Kutz Gallup & Basin Fruitland Coal
 San Juan County, New Mexico
 PMP 5/29/01

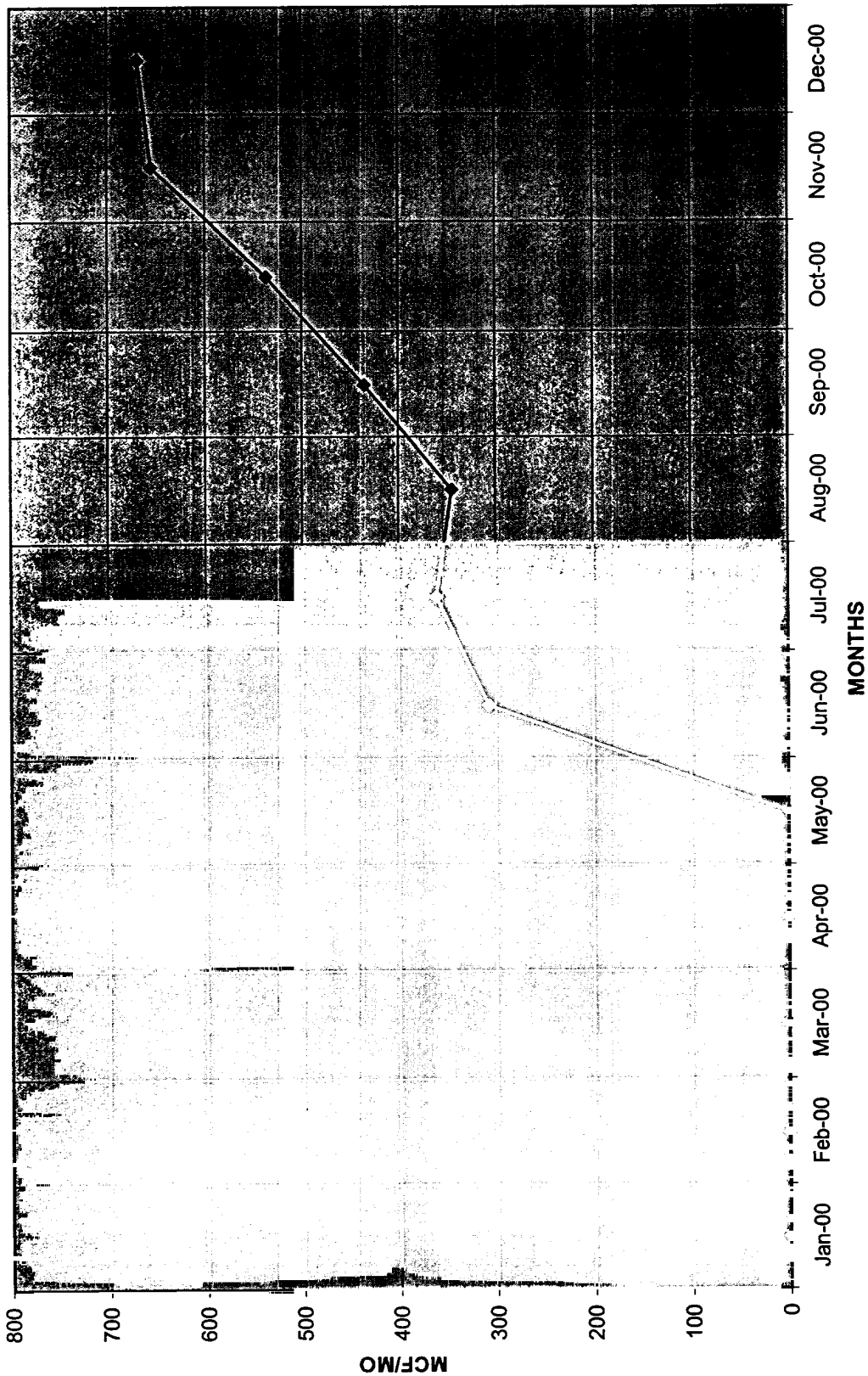
Hole Size: 12-1/4"
 Casing: 8-5/8", 24# J-55 @ 325'
 w/213 sx cmt.
 Circ. 45 sx cmt



FULLERTON FEDERAL GD 11 #32 DK

CUM = 13 MMCF

DAKOTA K 11 27 11



MARKWEST RESOURCES, INC.
155 INVERNESS DRIVE WEST, SUITE 200
ENGLEWOOD, COLORADO 80112

PROSPECT : ANGEL PEAK
WELL NAME : FULLERTON FED. 11 #23 GD
COUNTY : San Juan
STATE : New Mexico
LOCATION :K Sec.24 T27N R11W
OPERATOR : MarkWest

AFE #
WELL #: 11 #23 GD
PROPOSED DEPTH 6670' FT
OBJECTIVE : FRUITLAND COAL
DATE : 5/29/01
COMMENCEMENT DATE : 6/1/01

OVERALL PLAN: RECOMPLETE TO FRTC & COMMINGLE W/GALLUP/DK

STEPS

- 1 PULL TUBING & RUN CNL ACROSS FRTC
- 2 PERF FRTC & FRAC W/150,000# SAND IN FOAM
- 3 CLEAN OUT TO 6550'

- 4 RUN 2-3/8" TBG
- 5 COMPLETE AS A COMMINGLED FRTC/GAL/DK WELL

CURRENT FRTC PRODUCTION
ESTIMATED FRTC UPLIFT:

110 MCF/D
200 MCF/D

INCREMENTAL ECONOMICS
RATE OF RETURN
PAYOUT
P/I (\$/N @10%)

SUMMARY OF ESTIMATED COSTS

1980	INTANGIBLE WORKOVER COSTS	FRUITLAND COAL
101	LOCATION	\$3,000
103	LABOR (WELDING, ETC.)	\$2,000
104	ACIDIZING	\$3,000
106	CASING CREW	
108	CEMENT	
109	PIPE INSPECTION	
201	WATER DISPOSAL	\$1,000
202	WORKOVER RIG (11 Days \$3,000/day)	\$33,000
203	PERFORATIONS	\$2,200
203	CASED HOLE LOGS	\$3,800
204	FUEL & WATER	\$1,000
205	FRAC WATER	\$2,000
206	FRAC	\$67,700
207	EQUIPMENT & TOOL RENTAL	\$3,000
209	FLOW TESTING	\$2,000
210	TRANSPORTATION	\$2,000
212	COMPANY SUPERVISION	\$4,500
	COMPRESSION	\$13,050
217	ROUSTABOUT LABOR	\$2,000
218	MISC. (bits, float, strippers)	\$1,500
220	BATTERY CONSTRUCTION	
328	CONTINGENCIES (20%)	\$29,350
	SUBTOTAL INTANGIBLE WORKOVER	\$176,100
1910	TANGIBLE WORKOVER COSTS	
102	TUBING 200' OF 2-3/8" 4.7# J-55 EU @\$2.10/FT	\$410
102	TUBING 2950' FO 3-1/2" 9.2# J-55 NUE @ \$3.85/FT	
152	WELLHEAD & VALVES	\$500
208	DOWNHOLE VALVES & NIPPLES	
210	TREATER/SEPARATOR	
211	TANK BATTERY	
212	METERS	
213	SURFACE FITTINGS & FLOW LINE	
214	BUILDINGS	
215	FENCES-CATTLE GUARD	
216	OTHER (80 HP Wellhead Compressor)	\$80,000
217	ANCHORS	
	CONTINGENCIES (15%)	\$12,137
	SUBTOTAL TANGIBLE WORKOVER	\$93,047
	TOTAL WORKOVER COSTS	\$269,147
	TOTAL AFE	\$269,147

PMP

APPROVALS:

MARKWEST RESOURCES, INC.

TITLE

MARKWEST RESOURCES, INC.

TITLE

MARKWEST HYDROCARBON, INC.

TITLE