James E. Russell Pet., Inc.

WORKOVER RECORD

Date: _____

Reason for Job:

LEASE: Nelson WELL NUMBER: RW-3

FROM CURRENT FILE

T.D.: Sand:

P.B.T.D.: 727 Perfs: 682-692

Casing: 2 7/8 " Ft. Shot: Qts.

Injection String: " Ft. Packer:

2 7/8" 626

Seating Nipple: 2 3/8" Ft. 278 Cement:

Company Equip:	Unit No.	Time	Company Man Hours	Contractor Time
9-3-86: Mini, 3 hrs.; Unit 122, 4 hrs.				

Savonburg Field
Nelson RW-3

September 3, 1986:

Reason for Job: To increase injection and lower pressure on well bore.
Current: 2 B/D @ 600 psi
Rec.: 30 B/D
4-2-86: Channelblocked with 46 bbls.

Rigged up pulling unit and company wash equipment. Ran a string of 1" 10rd pipe and small bit. Washed well to a T.D. of 715'. It felt like setting down on rubber. Washed hole clean. Pulled 1" to 692' and spotted 2 kegs of acid on the perfs. Displaced acid out of 1" and closed in. Hooked on the 2 7/8" casing and pushed the acid back into the perfs and closed in. Let well set for 2 hrs. and hooked back on the 2 7/8" casing and pumped in 2 bbls. water. Let set 30 minutes and backflowed well. There was quite a large amount of channel-block material that came back with the acid. Circulated hole clean and spotted 1 keg of acid on the perfs and displaced out of the pipe. Pulled 1" and hooked wellhead connection back up. Pumped in 2 bbls. of water and turned back on the injection line.

September 4, 1986:

48 bbls. @ 500 psi

September 5, 1986:

54 bbls. @ 510 psi

September 6, 1986:

76 bbls. @ 540 psi

September 7, 1986

71 bbls. @ 540 psi

September 3, 1986:

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48 bbls. @ 500 psi

September 5, 1986:

54 bbls. @ 510 psi

September 6, 1986:

76 bbls. @ 540 psi

September 7, 1986

71 bbls. @ 540 psi

June 3, 1987:

Reason for Job: To Lower pressure & Increase injection
Current: 42 B/D @ 560 psi
Rec.: 55 B/D

Broke down wellhead - did not backflow. Ran 1" w/ 2 7/8" bit to S.N. Pulled 1" out and changed to small bit. Ran in, set down on soft bottom at 715'. Washed & spudded to 725' getting large amount of polymer. Circulated hole clean. Pulled up to 695', spotted 1 carb. acid & displaced out of 1". Let acid set & work 40 min. Set on bottom & circulated, got back very small amount of polymer. Pulled back up & spotted 2 carb. acid. Pulled 1", hooked wellhead up & started injection at slow rate.

March 31, 1986:

Reason for Job: Profile Modification Treatment

Mixed with 50 BBls fresh water, 96 lbs. Synthetic polymer (5,500 ppm), 4.4 lbs. Sodium Dichromate (250 ppm), 17.5 lbs. Sodium Thiosulfate (1,000 ppm), 175 lbs. NaCl (1%) and 17.5 lbs. $CaCl_2$ (0.1%). Started injection at 35 B/D rate, pressure was 70 psi.

April 1, 1986:

At 8:00 a.m. only 4 BBls. had been injected due to triplex pump clogging up. Cleaned triplex pump and rate returned to 35 B/D. At 2:00 p.m. pressure was 470 psi. No show of polymer at K-32 at 2:00 p.m.

April 2, 1986:

At 9:00 a.m. total of 37 BBls. injected, pressure 410 psi. At 3:00 p.m. total of 46 BBls. injected, pressure 420 psi. At 6:00 p.m. completed channelblocking operations. Polymer did not show in K-32.

April 30, 1986:

Placed well back on injection.

May 1, 1986:

49 BBls. @ 480 psi

May 2, 1986:

26 BBls. @ 490 psi

May 3, 1986:

37 BBls. @ 500 psi

September 28, 1993:

Rigged up Company coiled tubing unit and ran to bottom. Washed clean with injection fluid. Spotted 50 gallons 28% acid on perforations and pulled coiled tubing. Hooked back up to injection system and resumed normal injection rate.

May 19, 1994:

Set up Company pulling unit. Ran with string of 1" pipe to 727'. Washed clean using Company pump truck, recovering iron and scale. Raised pipe to 692' and spotted 55 gallons 15% acid with one quart surfactant. Pulled remainder of pipe and hooked on to pump truck and pushed acid into perforations. Shut in over night and turned back on the next morning.

October 4, 1994: To Clean Well For Channelblock

Using Faith Well Service air compressor and Company pulling machine, tallied a string of 1" 10RD . Ran 1" to PBTD of 727'. Blew clean with air and soap through jet bit. Recovered black chunky scale. Pulled jet bit up to 692' and dropped ball. Jetted from 682'-692' with one quart ESA-50 and one gallon Goldtreat added to foam. Returns were brownish-gray and black scale with first batch. Second batch of one gallon ESA-96 and 15 gallons of 28% acid had returns of gray and black scale. Ran 1" back to T.D.; soaped well and blew clean. Pulled 1" and jet bit. Put on injection @ 3:30 p.m. @ 80 PSI.

October 5, 1994:

10:15 a.m. - Injection reading - Total of 52 bbls. @ 650 PSI.

October 8, 1994:

Injection rate: 25 bbls./day @ 650 PSI.

Ran steel line measurement to 691'.

Lubricated 15 gallons 28% acid, 2 gallons ESA-96, 2 gallons Goldtreat, 1 quart ESA-91, 1 pint ESA-50, 1 cup ESA-24.

October 10, 1994:

Lubricated 15 gallons 28% acid, 2 gallons ESA-96, 2 gallons Goldtreat, 1 quart ESA-91, 1 pint ESA-50, 1 cup ESA-24.

To Abilene, Weaver, Jeff 11-17-94

11-14-95 treatment

NELSON RW-3

P.B.T.D.: 727' Perfs.: 682'-692'

OBJECTIVE: To Clean, Treat and Restore Injection

April 20, 1995:

Washed well to T.D. of 727'. Had a bridge at 684'-692' of scale and channelblock material. Bridge would support 1" pipe. Dropped ball, jetted from 682'-692'. Ran to 727', washed hole clean. Pulled up to 694', spotted acid and chemical and displaced into perforations.

NOTE: Returns had a very strong H S odor and were jet black in color.

Chemicals Used: Five gallons Goldtreat in ten bbls. jet water
One gallon ESA-96; One quart ESA-91; One pint ESA-50 in 50 gallons acid; Two gallons ESA-50 in eight bbls. flush water.

Equipment Used:
Unit #59 - 3 hrs. Vacuum
Unit #120 - 3 hrs. Water Truck
Unit #121 - 1 hr. Pump
Unit #122 - 4 hrs. Pulling

NOTE: Well started taking acid at 650 PSI down to 500 PSI at two barrels per minute rate. Flushed with two gallons ESA-50 in eight bbls. lease water. Shut well in at 350 PSI.

April 21, 1995:

Spotted 100 gallons acid, two gallons ESA-96, two quarts ESA-91, one quart ESA-50 and displaced into perforations. Pressure 500 PSI down tc 450 PSI at two barrel per minute rate. Flushed with two gallons ESA-50 in eight barrels flush water. Shut down over the weekend.

April 24, 1995:

Ran 1" to 727'. Washed well clean. Pulled 1" and put on injection.

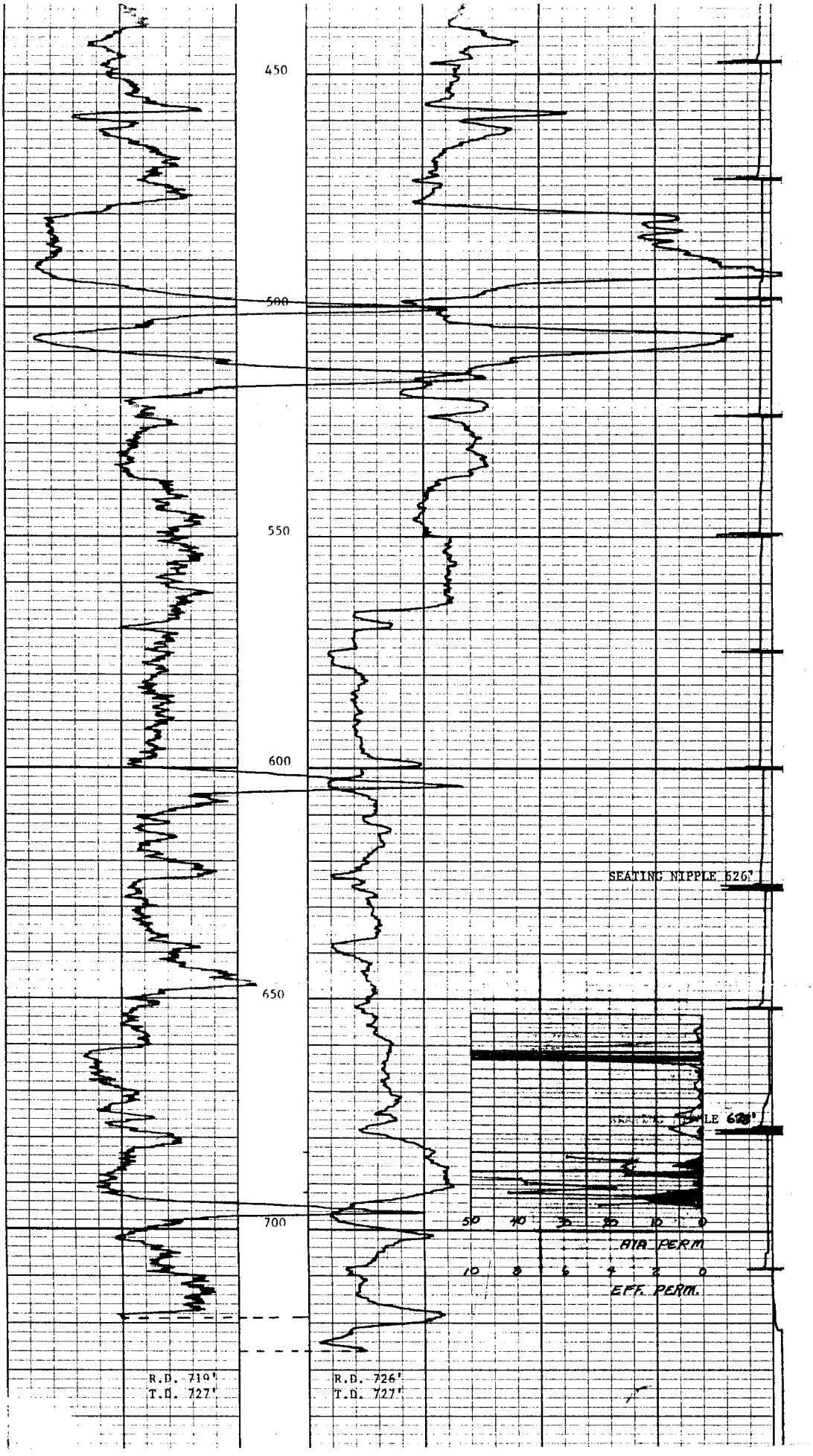
To Abilene, Tower, Weaver, Swanberg S S

November 14, 1995:

Treated well with coil tubing unit and 50 gallons 28% HCl acid, two gallons ESA-96, two gallons ESA-91, and one-half gallon ESA-50.

April 24, 1997:

Using J & K, Inc., ran MIT; well passed.


450
500
550
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650
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SEATING NIPPLE 626'
50 40 30 20 10 0
AIR PERM.
10 8 6 4 2 0
EFF. PERM.
R.D. 719'
T.D. 727'
R.D. 726'
T.D. 727'

NELS

NELSON NO. RW-3
JAMES E. RUSSELL PETROLEUM, INC.
ALLEN COUNTY, KANSAS
FEBRUARY 18, 1983

2-28-83 SBL

21-26S-21E

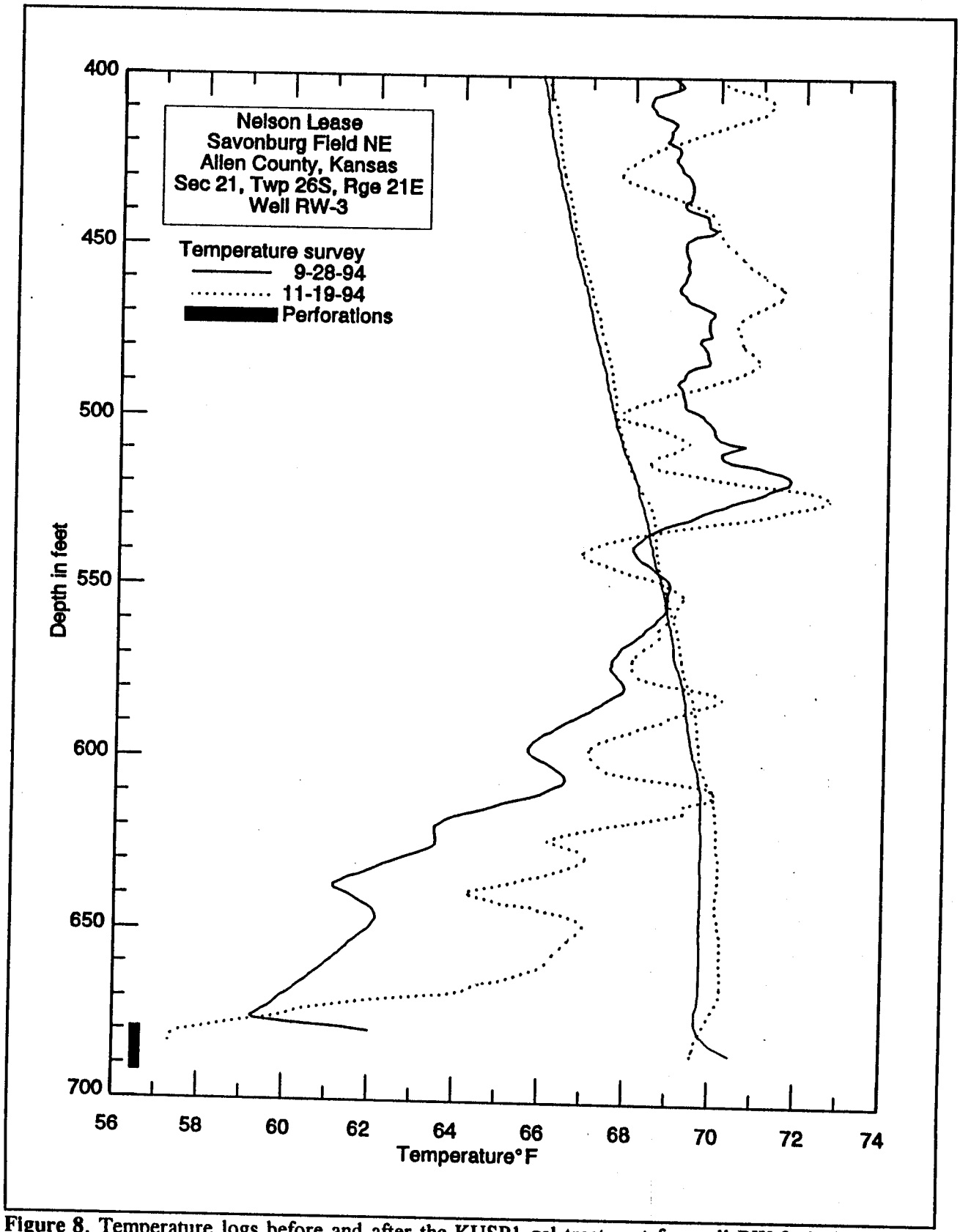
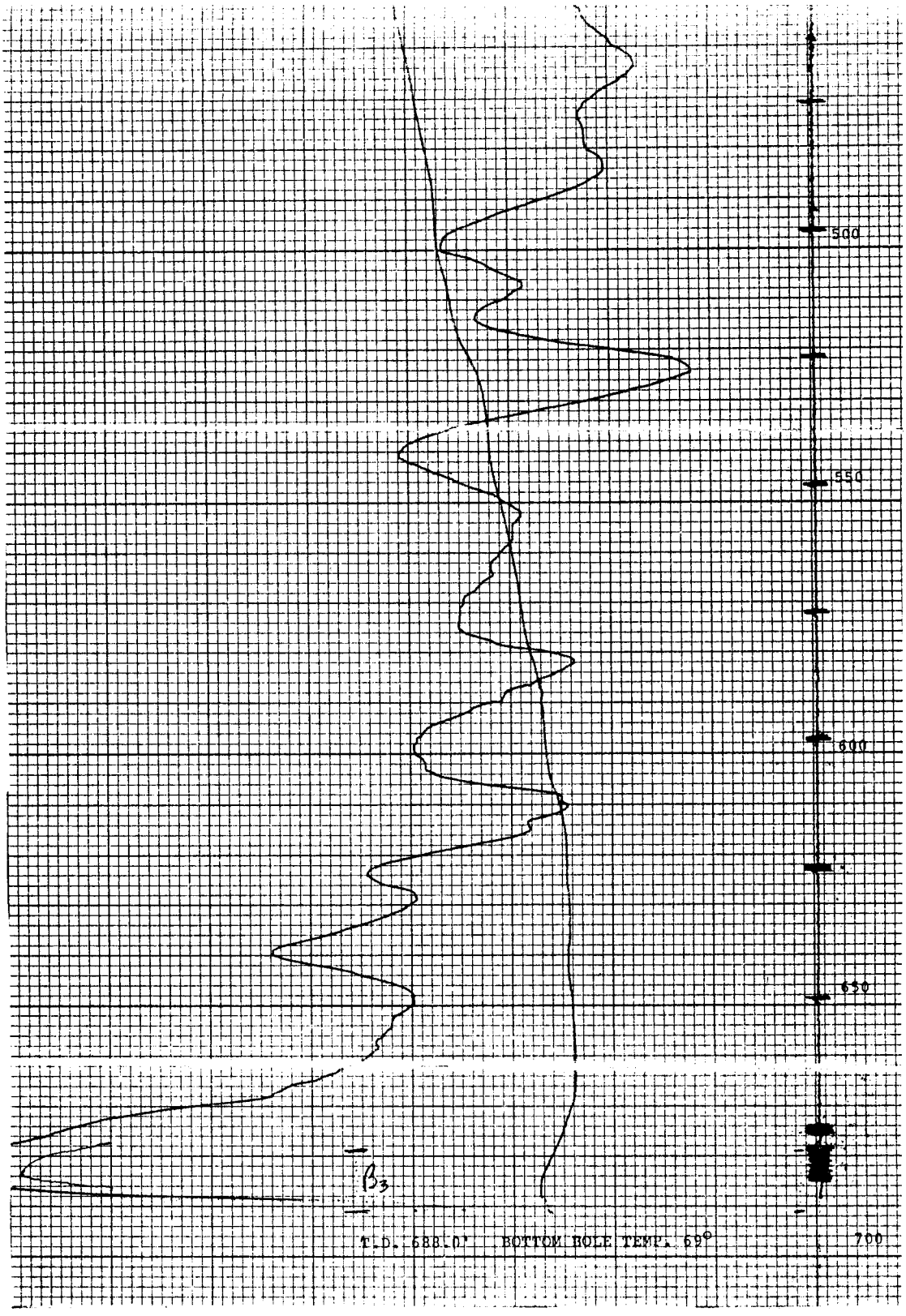


Figure 8. Temperature logs before and after the KUSP1 gel treatment for well RW-3, Nelson Lease, Savonburg Field NE, Allen County, Kansas.



NELSON # RW-3

JAMES E. RUSSELL PETROLEUM, INC.

ALLEN COUNTY, KANSAS

NOVEMBER 19, 1994

11-19-94 TEMP. SURVEY

21-26S-21E

November 14, 1995:

Treated well with coil tubing unit and 50 gallons 28% HCl acid, two gallons ESA-96, two gallons ESA-91, and one-half gallon ESA-50.

April 24, 1997:

Using J & K, Inc., ran MIT; well passed.

October 24 - October 27, 1994:

The well was treated with 125 barrels of experimental biopolymer, KUSPI. This was a channelblock application. See report entitled "Field Trial of KUSPI For Permeability Modification".

November 6, 1997:

Ran steel line measure to T.D. of 681'.

November 7, 1997:

Moved in and rigged up. Ran 1" and jet bit to 680'. Hit solid bridge and pit was head on. Washed and spudded through perforations and to T.D. of 725'. Caught bottom hole samples of wash water. Had chunks of formation, large chunks of black scale, and some fairly large pieces of gray shale. Washed well clean. Pulled up to 692' and dropped ball for jetting procedure.

Jetted lower perforations from 692' up to 682'. Jet treatment consisted of 10 barrels of field salt water mixed with one gallon of Paragold, one gallon ESA-96, and one-half gallon ESA-50. After jet treatment, spotted 100 gallons 28% HCl acid at 693'. Acid contained two gallons ESA-91, two gallons ESA-96 and one-half gallon ESA-50.

Displaced acid out of 1" with one barrel of water. Hooked head up to annulus and pushed acid into formation. Well broke at 800 lbs. Treated at 650 PSI at one barrel per three minute rate and 750 PSI at one barrel per minute rate. Used seven barrels of field salt water for displacement. Finished displacement and shut well in at 550 PSI.

Wash string left in well so acid in formation will not be disturbed.

November 10, 1997:

Pulled wash string and placed well back on injection.

November 14, 1995:

Treated well with coil tubing unit and 50 gallons 28% HCl acid, two gallons ESA-96, two gallons ESA-91, and one-half gallon ESA-50.

April 24, 1997:

Using J & K, Inc., ran MIT; well passed.

November 6, 1997:

Ran steel line measure to T.D. of 681'.

November 7, 1997:

Moved in and rigged up. Ran 1" and jet bit to 680'. Hit solid bridge and put wash head on. Washed and spudded through perforations and to T.D. of 725'. Caught bottom hole samples of wash water. Had chunks of formation, large chunks of black scale, and some fairly large pieces of gray shale. Washed well clean. Pulled up to 692' and dropped ball for jetting procedure.

Jetted lower perforations from 692' up to 682'. Jet treatment consisted of 10 barrels of field salt water mixed with one gallon of Paragold, one gallon ESA-96, and one-half gallon ESA-50. After jet treatment, spotted 100 gallons 28% HCl acid at 693'. Acid contained two gallons ESA-91, two gallons ESA-96 and one-half gallon ESA-50.

Displaced acid out of 1" with one barrel of water. Hooked head up to annulus and pushed acid into formation. Well broke at 800 lbs. Treated at 650 PSI at one barrel per three minute rate and 750 PSI at one barrel per minute rate. Used seven barrels of field salt water for displacement. Finished displacement and shut well in at 550 PSI.

Wash string left in well so acid in formation will not be disturbed.

November 10, 1997:

Pulled wash string and placed well back on injection.

November 11, 1997:

30 bbls. @ 550 PSI

November 12, 1997:

26 bbls. @ 550 PSI

November 13, 1997:

29 bbls. @ 610 PSI

November 14, 1997:

27 bbls. @ 610 PSI

November 14, 1995:

Treated well with coil tubing unit and 50 gallons 28% HCl acid, two gallons ESA-96, two gallons ESA-91, and one-half gallon ESA-50.

April 24, 1997:

Using J & K, Inc., ran MIT; well passed.

November 6, 1997:

Ran steel line measure to T.D. of 681'.

November 7, 1997:

Moved in and rigged up. Ran 1" and jet bit to 680'. Hit solid bridge and put wash head on. Washed and spudded through perforations and to T.D. of 725'. Caught bottom hole samples of wash water. Had chunks of formation, large chunks of black scale, and some fairly large pieces of gray shale. Washed well clean. Pulled up to 692' and dropped ball for jetting procedure.

Jetted lower perforations from 692' up to 682'. Jet treatment consisted of 10 barrels of field salt water mixed with one gallon of Paragold, one gallon ESA-96, and one-half gallon ESA-50. After jet treatment, spotted 100 gallons 28% HCl acid at 693'. Acid contained two gallons ESA-91, two gallons ESA-96 and one-half gallon ESA-50.

Displaced acid out of 1" with one barrel of water. Hooked head up to annulus and pushed acid into formation. Well broke at 800 lbs. Treated at 650 PSI at one barrel per three minute rate and 750 PSI at one barrel per minute rate. Used seven barrels of field salt water for displacement. Finished displacement and shut well in at 550 PSI.

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Jetted lower perforations from 692' up to 682'. Jet treatment consisted of 10 barrels of field salt water mixed with one gallon of Paragold, one gallon ESA-96, and one-half gallon ESA-50. After jet treatment, spotted 100 gallons 28% HCl acid at 693'. Acid contained two gallons ESA-91, two gallons ESA-96 and one-half gallon ESA-50.

Displaced acid out of 1" with one barrel of water. Hooked head up to annulus and pushed acid into formation. Well broke at 800 lbs. Treated at 650 PSI at one barrel per three minute rate and 750 PSI at one barrel per minute rate. Used seven barrels of field salt water for displacement. Finished displacement and shut well in at 550 PSI.

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November 13, 1997:

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November 14, 1997:

27 bbls. @ 610 PSI

March 25, 1998:

Using Cornish Wireline, ran delta temp log. Tagged bottom at 694.1'.

June 10, 1998:

Ran SLM to depth of 691.5'.

Set up Company coiled tubing unit and ran to bottom of 691'. Spotted 50 gallons 28% acid, 1 quart ESA-91, one gallon ESA-96, one pint ESA-50, and one gallon Goldtreat on perforations. Pulled coil. Hooked up to injection system and pushed acid into perforations with four barrels of injection water. Shut-in overnight.

June 11, 1998:

Repeated above procedure. Resumed normal injection rate.

March 25, 1998:

Using Cornish Wireline, ran delta temp log. Tagged bottom at 694.1'.

June 10, 1998:

Ran SLM to depth of 691.5'.

Set up Company coiled tubing unit and ran to bottom of 691'. Spotted 50 gallons 28% acid, 1 quart ESA-91, one gallon ESA-96, one pint ESA-50, and one gallon Goldtreat on perforations. Pulled coil. Hooked up to injection system and pushed acid into perforations with four barrels of injection water. Shut-in overnight.

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Set up Company coiled tubing unit and ran to bottom of 691'. Spotted 50 gallons 28% acid, 1 quart ESA-91, one gallon ESA-96, one pint ESA-50, and one gallon Goldtreat on perforations. Pulled coil. Hooked up to injection system and pushed acid into perforations with four barrels of injection water. Shut-in overnight.

June 11, 1998:

Repeated above procedure. Resumed normal injection rate. /DIST 6/17/98

December 18, 1998:

Using Company coil tubing unit, spotted 50 gallons 28% acid, one gallon Goldtreat, one gallon ESA-96, one quart ESA-91 and one pint ESA-50 on perforations.

December 19, 1998:

Placed well back on injection.

December 21, 1998:

39 bbls. @ 620 PSI

December 22, 1998:

59 bbls. @ 620 PSI