April 8, 1996:

Shut-in for temperature survey.

April 9, 1996:

Pulled packer. Using Cornish Wireline, ran Delta Temperature Survey, tagged bottom at 706'. Fluid level at 392'. Most of water leaving wellbore through perforated interval. Extreme anomaly appears at depth of 675' (fracture?). This well is channeled Well No. H-15, as confirmed by well test and spreadsheet data.

Ran same string of 1" tubing and Bolt packer and set packer at 640' in tension. Resumed injection.

June 14, 1996:

Moved Company pump truck to well and connected to 1" packer string. Pressure was 0 PSI on the 1" packer string and when the injection was stopped it was on a vacuum.

Started pumping into 1" packer string at a rate of one barrel per minute. Pressure increased to 100 lbs. and fluid surfaced after pumping 20 gallons. Fluid flow immediately increased from the 2 7/8" casing. Pressure increased to 300 lbs. PSI and a total of one barrel of fluid was pumped down the 1" packer string. The pump truck was shut down and disconnected.

Rigged up Company pulling unit and pulled up 1" packer string releasing the 2 7/8" packer. Installed a Skinner stuffing pack off unit and a 1" valve to control or monitor pressure changes between the 1" and 2 7/8". Resest the 2 7/8" packer and closed in the annulus.

Resumed injection at a rate of 30 barrels. The wellhead pressure was 0 PSI and there was no pressure on the annulus.

CHANNELBLOCK 6/25-27

Time Started Injection (1st batch):	8:10 p.m., 6/25/96
Time Finished Injection (1st batch):	8:20 p.m., 6/27/96
Initial Pressure (Polymer Injection):	Vacuum
Final Pressure (Polymer Injection):	50 PSI
Polymer Injection Rate:	20-70 BPD
Volume of Treatment:	100 Bbl.
pH Solution:	5.5-6.0
Viscosity:	28-45 cp
# Polymer Alcoflood 935	100 bbls.-194 lbs.
# Sodium Dichromate	100 bbls.- 13 "
# Sodium Thiosulfate	100 bbls.-12.7 "
# Sodium Chloride	100 bbls.-167 "
# Calcium Chloride	100 bbls.-95.2 "

July 5, 1996:

Wellhead pressure 0 PSI, but not on vacuum. Placed well on injection at 9:25 a.m. at an approximate rate of 20 barrels per day. After 20 gallons injection, wellhead pressure was 100 PSI. Pressure gradually decreased to 25 PSI at 2:15 p.m.

Offset producers No. H-13 and No. H-15 were placed on production at 10:30 a.m. Wellhead samples were tested for polymer by the bleach method at 11:30 a.m. and 1:30 p.m. The gunbarrel produced fluid was also checked. All tests were negative.

July 6, 1996:

24.52 barrels in 22 hrs. @ 25 PSI. Well No. H-15 hitting 1/2 head.

July 8, 1996:

Injection stabilized at 32 barrels per day, 0 PSI.

July 9, 1996:

Offset well tests:

#H-15 - 1.7 oil, 66.8 water
#H-13 - 0.6 oil, 41.1 water
#H-16 - 2.8 oil, 22.8 water
#H-22 - 2.2 oil, 39.9 water

CHANNELBLOCK 6/25-28

July 5, 1996:

Wellhead pressure 0 PSI, but not on vacuum. Placed well on injection at 9:25 a.m. at an approximate rate of 20 barrels per day. After 20 gallons injection, wellhead pressure was 100 PSI. Pressure gradually decreased to 25 PSI at 2:15 p.m.

Offset producers No. H-13 and No. H-15 were placed on production at 10:30 a.m. Wellhead samples were tested for polymer by the bleach method at 11:30 a.m. and 1:30 p.m. The gunbarrel produced fluid was also checked. All tests were negative.

July 6, 1996:

24.52 barrels in 22 hrs. @ 25 PSI. Well No. H-15 hitting 1/2 head.

July 8, 1996:

Injection stabilized at 32 barrels per day, 0 PSI.

July 9, 1996:

Offset well tests:

#H-15 - 1.7 oil, 66.8 water
#H-13 - 0.6 oil, 41.1 water
#H-16 - 2.8 oil, 22.8 water
#H-22 - 2.2 oil, 39.9 water

CHANNELBLOCK 7/30-8/2

August 9, 1996:

Placed well on injection.

August 10, 1996:

B/D = 35 Wellhead Pressure = 320

August 11, 1996:

B/D = 8 Wellhead Pressure = 240

August 12, 1996;

B/D = 41 Wellhead Pressure = 250

August 13, 1996:

B/D = 29 Wellhead Pressure = -

August 14, 1996:

B/D = 16 Wellhead Pressure = 160

August 15, 1996:

B/D = 20 Wellhead Pressure = 160

August 16, 1996:

B/D = 30 Wellhead Pressure = 290

CHANNELBLOCK 7/30-8/2

Time Started Injection (2nd batch): 3:10 p.m., 7/30/96
Time Finished Injection (2nd batch): 4:20 a.m., 8/2/96
Initial Pressure (Polymer Injection): 40 PSI
Final Pressure (Polymer Injection): 375 PSI
Polymer Injection Rate: 40-90 BPD
Volume of Treatment: 145 Bbl.
pH Solution: 5.5-6.0
Viscosity: 18-40 cp

# Polymer Alcoflood 935	145 bbls.-313 lbs.
# Sodium Dichromate	145 bbls.-30.6 "
# Sodium Thiosulfate	145 bbls.-25.1 "
# Sodium Chloride	145 bbls.-239 "
# Calcium Chloride	145 bbls.-147 "

- Volume of Post Slug for both batches - 85 gallons of water
- Producing wells tested with results
- Status of producing wells during treatment - No polymer show
- Status of producing wells post tretament - No polymer show

August 6, 1996:

Placed offset producers H-13 and H-22 on production.

August 7, 1996:

Placed offset producers H-15 on production.

August 8, 1996:

Placed offset producer H-16 on production. (after riser leak was fixed).

August 9, 1996:

Placed well on injection.

August 10, 1996:

B/D = 35 Wellhead Pressure = 320

August 11, 1996:

B/D = 8 Wellhead Pressure = 240

August 19, 1996:
B/D = 93 (3 days) Wellhead Pressure = 290

August 20, 1996
B/D = 31 Wellhead Pressure = 290

August 21, 1996:
B/D = 30 Wellhead Pressure = 290

August 22, 1996
B/D = 29 Wellhead Pressure = 310

August 23, 1996:
B/D = 33 Wellhead Pressure = 330

August 24, 1996:
B/D = 35 Wellhead Pressure = 360

August 25, 1996:
B/D = 41 Wellhead Pressure = 360

August 26, 1996:
B/D = 43 Wellhead Pressure = 360

August 27, 1996:
B/D = 22 Wellhead Pressure = 220

August 12, 1996;
B/D = 41 Wellhead Pressure = 250
August 13, 1996:
B/D = 29 Wellhead Pressure = -
August 14, 1996:
B/D = 16 Wellhead Pressure = 160
August 15, 1996:
B/D = 20 Wellhead Pressure = 160
August 16, 1996:
B/D = 30 Wellhead Pressure = 290
August 19, 1996:
B/D = 93 (3 days) Wellhead Pressure = 290
August 20, 1996
B/D = 31 Wellhead Pressure = 290
August 21, 1996:
B/D = 30 Wellhead Pressure = 290
August 22, 1996
B/D = 29 Wellhead Pressure = 310
August 23, 1996:
B/D = 33 Wellhead Pressure = 330
August 24, 1996:
B/D = 35 Wellhead Pressure = 360
August 25, 1996:
B/D = 41 Wellhead Pressure = 360
August 26, 1996:
B/D = 43 Wellhead Pressure = 360
August 27, 1996:
B/D = 22 Wellhead Pressure = 220

To Abilene, Toep. Field 9-5-96

July 3, 1998:

Set up A & A Well Service's pump truck. Hooked up to 1" pipe. Pumped 50 gallons acid, one gallon Goldtreat, one gallon ESA-96, one quart ESA-91, one pint ESA-50 down 1" and chased with four barrels injection water. Let set over weekend.

July 6, 1998:

Repeated above procedure. Hooked up to injection system. Placed back on injection.

Pumping pressure on first procedure: 850 lbs.
Pumping pressure on second procedure: 780 lbs.

July 11, 1998:

18 bbls. @ 670 lbs.

July 12, 1998:

25 bbls. @ 670 lbs.

July 13, 1998:

23 bbls. @ 670 lbs.

November 18, 1998:

Injection pressure remained high, 670/680 PSI. Set up Company pulling unit. Pulled 1" and 2 1/2" packer. Ran Cornish Delta Temperature Log. High bottom at 680.7'. No good indication of water entry. Ran same pipe. Washed well down to 714'. Pulled up to 696' and dropped 1/2" ball. Jetted perforations from 696' to 678' catching samples of polymer, iron sulfide and scale. Jetted clean and pulled out. Ran back in with 1" and 2 1/2" packer to depth of 632.5'. Put on 64' of 1" stinger below packer to get acid on bottom of perforations. Using lubricator, spotted first treatment of 50 gallons 28% acid, one gallon ESA-96, one gallon Goldtreat, one pint ESA-50, and one quart ESA-91 on perforations and displaced with three barrels of injection fluid. Pump treating pressure: Start: 800 PSI Finish: 650 PSI) Shut in overnight.

November 20, 1998:

Repeated above treatment using lubricator and chased with four barrels injection fluid. Hooked up to injection system.

November 23, 1998:

35 bbls. @ 660 lbs.

November 24, 1998:

31 bbls. @ 670 lbs.

To Abilene, TORP
McCune
10/29/97

Nelson H-14

September 9, 1997: TO CHANNELBLOCK WELL

Offset Producing Well Tests:

H-13	Well shut-in with 175 PSI tbg. pressure, annulus pressure 165 PSI
H-15	Trace of oil, 89.1 bbls. water
H-16	2.8 bbls. oil, 18.8 bbls. water
H-22	3.4 bbls. oil, 47.9 bbls. water

NOTE: The subject well is equipped with 1" tubing and packer set at 640'.

The Halliburton meter and data logger were connected to the wellhead prior to channelblocking. Ran short pressure fall-off test prior to treatment.

Using Chanute city water delivered by Consolidated, mixed a 60-barrel channelblock batch. Added salts and thiosulfate to the batch while agitating and hydrating polymer. The sodium bichromate was added continuously during the treatment at a concentration from 650-750 ppm.

Starting injecting polymer at 3:24 p.m. Finished injection at 9:12 a.m., September 10, 1997.

Initial Pressure	450 PSI
Maximum Pressure	662 PSI
Final Pressure	620 PSI
Average Pressure	625 PSI
Polymer Injection Rate	3.64 BPH
Volume of Treatment	60 Bbls.
pH Solution	5.8-6.3
Viscosity	36.0-43.5 cp
Temperature	26.5-29.5° c
#Polymer Alcoflood 935	137.5 lbs.
#Sodium Dichromate	14.2 lbs.
#Sodium Thiosulfate	10.5 lbs.
#Sodium Chloride	100.0 lbs.
#Calcium Chloride	65.0 lbs.

The treatment was displaced with one barrel injection water; wellhead pressure of 540 PSI.

Annulus pressure increased from 350-400 PSI after thirty minutes injection, and was bled to 0. Pressure gradually increased during the treatment to a maximum of 380 PSI.

After 2 1/2 hours injection, at 5:55 p.m., September 9, 1997, the status of offset producer H-13 was changed. Pressures at that time: tubing - 170 PSI, annulus - 120 PSI. Tubing was opened to the flow line in order to sample the well. The annulus pressure was bled to 0.

Ran long pressure fall-off test following treatment

Offset producers H-13, H-15, H-16, and H-22 were sampled for polymer throughout the test. Samples were tested by both the bleach and clay flocculation methods and all results were negative. Did not shut-in any producers following treatment.

NOTE: A field report with detailed readings is maintained in the files.

Paul

Nelson H-14 Channelblock

September 17, 1997:

Placed well back on injection at 3:00 p.m.

September 21, 1997:

Injection Rate - 21 BPD, 535 PSI.

September 22, 1997:

Injection Rate: 25 BPD, 540 PSI.

September 23, 1997:

Injection Rate: 24 BPD, 540 PSI.

October 20, 1997: TO CHECK WATER PATH BY TRACER

Mixed 400 lbs. of sodium nitrate in 100 gallons of injection water. Injected solution in one hour and ten minutes at injection pressure 550-600 PSI, using the small triplex on pump truck. Injected at a rate of 49 barrels per day. The pressure was unsteady due to belt slippage. The well was returned to normal injection rate immediately following nitrate injection and injected at a rate of 29 barrels per day while offset producers H-15 and H-16 were being sampled. The tracer was detected in No. H-15 after 23 hours injection, and in No. H-16 after 24 1/2 hours injection. The test was conducted and analyzed by Mike Michnick of TORP. Details of the test are contained in Memo from Michnick, dated 10/23/97.