

F. W. MORGAN

Geologist

BOX 8162 MUNGER STATION

WICHITA, KANSAS 67208

TELEPHONE (316) 744-2261

April 12, 1972

Mr. Jimmy Razook
2101 E. 21st. St.
Wichita, Kansas

Re: Rework on No. 1-A Razook
Sec. 10-27S-4E
Butler County, Kansas

Dear Sir:

Following is the procedure followed, etc., on the workover:

- 4-10-72 Moved in C. & S. Well Service double drum unit and pulled tubing and rods. Gyp scale was so bad on rods and inside of tubing that it was necessary to strip rods out. Two rods had to be replaced. Ran Jenkins line and found TD in casing at 2970', fluid level 1,400 feet from top of casing (measured 5 feet above ground level. Perforated 5 shots 90 gm. (3/4" holes) 2500 - 2502. Dumped 4 100 lb. sacks of sand in casing, waited 2 hours and ran the HOWCO measuring line. Bottom was found at 2543'. It should have been at 2525, but probably all the sand had not settled to bottom. Ran tubing to 2480 with Baker packer on bottom, attempted to circulate through annulus and fill tubing; did not fill. Set packer and filled tubing. Started to pump gelled, treated water down tubing to break down Simpson sand formation and dropped 5 1 1/4" plastic balls to plug old perforations; formation broke down at 1700#, added two more balls in 200 gal. acid, got another break. Treated formation with 3,500# of sand at about 1300# and flushed with 1,000 gallons of water. Pressure dropped when pumps stopped to 750# and went to 500# in 15 minutes.
- 4-11-72 Found fluid 1,300' from top, started to swab through the tubing. After three pulls were swabbing 500 feet per pull, off bottom of tubing, 5 pulls per hour. Slight show of oil after 3rd. pull. Slight show of gas and increase in oil after 18 pulls. Good show of oil and slight show of gas by 4:30 PM when about 110 barrels out of 170 used had been recovered. Unseated packer, came out of hole with tubing. Put on mud anchor, perforated nipple, working barrel, ran tubing, pump, and rods back in well and started it to pump.

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Razook 1-A
page 2.

This 2 $\frac{1}{2}$ " tubing was set at 2474 feet, a total of 81 joints. In addition there is a 10' working barrel, 2' perforated nipple added, bringing the depth to 2476 feet. The mud anchor is 30' additional, or a total of 2516 feet overall. Theoretically the sand plug back is 2525, leaving a clearance of 9 feet.

The pump is an O'Bannon 8 cup, 1 $\frac{1}{4}$ ring approximately 4 feet long. There are 100 25' 3/4" rods in the well and 1 four foot pony rod below the polish rod. A standing valve was dropped in the tubing ahead of the pump with a 7 foot gas anchor on it.

Three extra joints of tubing, a bent rod, a used rod, and a cut off rod were left on the location.

Sincerely,



F. W. Morgan

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Geologist

BOX 8162 MUNGER STATION

WICHITA, KANSAS 67208

TELEPHONE (316) 744-2261

June 10, 1972

Mr. Jimmy Razook
2101 E. 21st. St.
Wichita, Kansas

Re: Rework on No. 1 Razook -A
Sec. 10-27S-4E
Butler County, Kansas

Dear Sir:

Following is the procedure followed, etc., on this well:

- 6- 5-72 C. & S. moved on well, rigged up, pulled rods and tubing, found sand plug at 2545, sand pumped to top of bridge plug at 2070½', drilled up about 1 foot of plug.
- 6- 6-72 C. & S. drilled about another foot of cast iron plug, could get no deeper, moved off, and White & Ellis cable tools moved on location.
- 6- 7-72 White and Ellis drilled about 3 feet of plug and cement. Found 700 feet of fluid in hole, swabbed out, filled up 350 feet in 1 hour.
- 6- 8-72 Found 700 feet of fluid in hole, drilled to 2577, perforated 5 90 gm holes 2573½ to 2575½, found 700 feet of fluid in hole, tested 1½ hours, 350 to 400 foot fill-up each half hour. Drilled to 2579½.
- 6- 9-72 Tore down cable tools, rigged up C. & S., ran tubing with packer, set packer at 2509, dumped 200 gallons of acid and attempted to break down perforations to frac. Went to 4,000#, could not break down., lowered tubing and packer to 2572, pumped 300 gallons of acid,; after holding pressure for about 2 hours started to feed. Raised packer to 2538, pumped another 300 gallons of acid into hole. After about 30 minutes formation broke and acid went through perforations. Treated at 1850# with about 2,500# sand. Flushed and shut down.
- 6-10-72 Pulled packer, tubing, etc., ran tubing, pump, and rods back in to exactly same place as before and put well on pump.

Sincerely,





HALLIBURTON SERVICES

410 UNION CENTER BUILDING, WICHITA, KANSAS 67202

J. B. McALLA, JR.
DIVISION MANAGER
WICHITA DIVISION

April 6, 1972

FRACTURING PROPOSAL

FOR: Mr. F. W. Morgan, Geologist
P. O. Box 8162; Munger Station
Wichita, Kansas 67208

RE: Jimmy Razook
Razook A #1
Simpson Sand Formation
Sec. 10 Twp. 27S, Rge. 4E
Butler County, Kansas

The purpose of this analysis is to suggest a re-stimulation procedure for the above captioned zone in this well, and to provide a cost estimate of that procedure.

WELL DATA:

4 1/2", 9.5#/ft. cemented @ 2590'.

Kansas City perfs open @ 2074' - 92' (not to be treated again)

Simpson Sand perfs open @ 2500' - 2503'

This sand zone has previously been treated using TLC-80;
subsequently squeezed with 50 sks.; reperforated using five (5)
90 gram jet charges (3/4" holes).

Acidized 450 gal. acid at approx. 12000 psi

Drillable bridge plug knocked loose which now may be found at 2571'.

Additional perfs @ 2573.5' to 76.5'.

Drillable bridge plug @ 2582'.

Some open hole below casing shoe.

RECOMMENDATIONS:

The only zone presently requiring re-stimulation is the Simpson Sand @ 2500' to 2503'.

We recommend that this zone be treated with 5000 gallons of sand-laden gelled water to provide increased effective permeability relatively near the bore hole. Only 35 sks. of 20-40 sand are to be used (see following job details under "Job Procedure" section), and an injection rate of 8 to 12 BPM is all that is required. This zone did previously produce an excessive amount of water. We believe that by using small volumes of gelled water, sand, and a

low treating rate, that the possibilities of getting beyond the squeezed off area without causing excessive water production may be possible.

JOB PROCEDURE:

1. Dump 4 sks. 20-40 sand down the casing while adding a 1" stream of water. Allow sand to settle for 2 hours before checking sand fillup. Four (4) sks. should fill from top of bridge plug (2571') back to approximately 4527'. This sand plug should prevent treating fluids from entering the perforations at 2573.5' to 76.5'.
2. Run 4 1/2" RTTS packer on 2 7/8" tubing. Set packer at approximately 2470' after loading the hole with water. If hole will not load due to Kansas City perms taking fluid, annulus is to be left open (but packed off) so as to provide any indication of communication back on top of packer.
3. Treat down tubing as follows:

650 gallons. Water to load tubing
420 gallons. Gelled water breakdown
1000 gal. Gelled water frac. 1/2# sd/gal
1000 gal. " " " 3/4# sd/gal
3000 gal. " " " 1# sd/gal
650 gal water -- tubing capacity
420 gal. " -- overdisplacement

If possible, obtain Simpson water for entire job. If this is not possible, use fresh water treated with 2% potassium chloride.

Use 30# WG-6/1000 gal. in the 5000 gal.
Use 1 gal. non-emulsifying chemical in all water.
Use 20# WAC-9 in the 5000 gal.
Use 15# CW-1 in the 5000 gal.

4. After frac, wait until all surface pressure bleeds off into formation before swab testing through tubing.
5. After swabbing desired amount, pull RTTS tool.
6. Clean out sand.
7. POP.

COST ESTIMATE:

Pumps (1000 psi @ 10 BPM = 250 HHP; min. pumping charge	\$ 375.00
Blender - 10 BPM	165.00
39 sks. 20-40 sand	67.90
Sand drayage for 12 miles @ 25¢/ton/mile	15.00
150# WG-6	157.50
100# WAC-9	20.00
75# CW-1	26.25
7 gal mon-emulsifying chemical	59.50
Approx. Total	\$ 886.15*

Optional items; if necessary:

2% KCl in 7000 gal. (1200#)	79.20
10,000 gal. storage tank	107.00

Approx. Total -- with optional items \$1,072.35*

*Applicable taxes not included in these approx. totals.

The above prices are estimates only, based on published prices subject to change in field operations or other factors.

Services will be coordinated through our Eldorado District office.

Mr. Larry Perkins is our District Superintendent, Area Code 316 321-4200.

Mr. Morgan, we appreciate the opportunity to submit this procedure for your consideration. Halliburton Services earnestly solicits the service work on this well.

Submitted by: M. L. Klein

M. L. Klein
Division Engineer

MLK:es

cc - Mr. Jimmy Razook
Mr. J. B. McCalla, Jr.
Mr. Larry Perkins

ADDENDUM

Should it become desirable to divert the fracturing fluids, 1 1/4" balls will be required. It is understood that the 90 gram perforating charge results in a 3/4" diameter hole. It is further understood that a total of 10 such perforations will be in the Simpson zone.

Under the above circumstances, it is recommended that one ball be dropped after each 700 gallons of sand-laden fluid. If the pressure rises due to the balls is excessive, it is further recommended that the sand concentration be decreased during the course of the fracturing at the descretion of the personnel on location.

The ~~addi~~additional charges to be anticipated for the ball injector and 1 1/4" balls are as follows:

Ball Injector	\$ 48.00
Each 1 1/4" ball	\$ 1.05/ball

M. L. Klein

F. W. MORGAN

Geologist

BOX 8162 MUNGER STATION

WICHITA, KANSAS 67208

TELEPHONE (316) 744-2261

Nov. 3, 1971

Mr. Jimmy Razook
2101 E. 21st. St.
Wichita, Kansas

Re: Your No. 1 Razook "A"
Sec. 10-27S-4E
Butler County, Kansas

Dear Sir:

Enclosed is my geological log on your well. Plotted on the log is drilling time to scale, formation tops, lithology, porosity zones, shows of oil, and drill stem test results and intervals.

Below are listed from the bottom up the zones or intervals which appear to have merit for completion as oil zones from the appearance of the samples, drill stem results, or both.

Arbuckle

2589 - 2591 Dolomite, tan, cherty, dense, with fair vugular porosity and odor, fluorescence, show of oil

Simpson

2570 - 2578 Sand, coarse, rounded, clear, porous, odor, fluorescence, show of oil in samples.

2496 - 2505 Sand, fine, clear, round, porous, odor, fluorescence, show of oil. The upper part (5') seems to be shaley. 2501-02 is not porous. All of zone to 2504 was tested in DST No. 4. (see log).

2505 - 2509 Dolomite, brown, sandy, slightly porous, odor, fluorescence, show of oil. This is a continuation of the zone described above.

Kansas City

2077 - 2089 Limestone, white, dense, cherty, vugular porosity (slight) show of oil, fluorescence, odor. Tested in Drill Stem Test No. 3. (See log).

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Razook
page 2.

It should be remembered that the lower Simpson and Arbuckle zones were not tested and are described as possibly commercial by sample description and drilling time log only. The structural position of this well is quite low on the east flank of the pool. Because of this the Simpson was much thicker than wells to the west where it occurred, and some of the sand zones may not even be present to the west. This can cause an excellent trap of a stratigraphic nature and produce a lot of oil.

The zone in the Kansas City gave up very little actual oil and was a very low pressure zone. For these reasons it will be a small producer only.

Sincerely,

A handwritten signature in black ink, appearing to read 'F. W. Morgan', with a stylized flourish at the end.

F. W. Morgan

Razook No. 1-A Razook

Sec. 10-27S-4E

Butler County, Kansas

Record of Daywork (circulating and testing)

<u>Date</u>	<u>hrs.</u>	<u>min.</u>	<u>totals</u>
Oct. 29, 1971	0	15	15 m.
Oct. 30, 1971	6 1 2	2 27 50	10 h. 39 m.
Oct. 31, 1971	1 6	42 35 32	2 8 h. 49 m.
Nov. 1, 1971	4 7	33 18	11 h. 51 m.
Nov. 2, 1971	5 1	3 54	6 h. 57 m.
TOTALS	38	11	- 38 h. 11 m.

Record of Drilling Mud Used:

Gel.	87 sacks
Soda Ash	2 sacks
Caustic Soda	2 sacks
Hulls	5 sacks
Lignite	2 sacks