

SURFACE WATERFLOW REPAIRRECOMMENDED PROCEDURE:

1. MIRU.
2. SI well, open the Bradenhead valve and relieve the 8-5/8" - 5-1/2" casing annulus pressure.
3. Connect the Bradenhead to a pump truck w/reliable pressure gauge, and connect another gauge to the tubing casing annulus.
4. Make several attempts to pump 10 Bbls fresh water between the surface - production casings at 800 psi maximum pressure, and report injection rate and pressure and any pressure increase in the tubing-casing annulus to the area engineer.
5. If fresh water is pumped between the casings at 800 psi or less, POOH w/rods and pump, run tracer survey to determine how deep the fresh water will reach behind the production casing. Contact Engineering.
6. If fresh water could not be pumped between the 8-5/8" and 5-1/2" casings at 800 psi or less, POOH w/rods and pump, install BOP, POOH w/tubing.
  - A. GIH w/5-1/2" casing scraper on workstring, and circulate well clean w/fresh water treated w/2% KCl and 1:1000 Adomall to 3300' and POOH.
  - B. GIH w/5-1/2" csg packer on workstring, set packer @ 2500', load back-side w/TFW, and pressure the tubing-casing annulus w/500 psi. Run Bradenhead tracer survey at 1000 psi maximum injection pressure. Contact Engineering.
7. Rig up and cement between the surface and the production casings at 1000 psi maximum pressure and 1 BPM if packer is used. If packer is not used, the maximum pressure is 800 psi and the injection rate is not to exceed that of the fresh water rate pumped between the casings prior to cementing.  
NOTE: This step only if tracer survey shows water is going past casing shoe.

Cement required to cement to 1233'

Between casings: 0.2009 cu. ft./ft: 247 sacks, plus 20 sacks.

Lead-in with 20 sacks Class "C" cement w/18% salt mixed with 6.3 gals. fresh water/sack.

Tail-in with 247 sx. Class "C" cement w/2%  $\text{CaCl}_2$  mixed w/6.3 gals. fresh water/sack, and slurry weights 14.8 lbs/gal

Pressure and rate should be recorded during cementing and sent to the Division Office.

8. Displace cement slurry w/fresh water through the wellhead. Do not displace cement in the casings annulus. Close the Bradenhead valve. SION.
9. Unseat packer, and POOH w/workstring and packer, only if used.
10. Run production equipment, and rig down.
11. Put well on production and report results to the Division Office.