

At Permitting

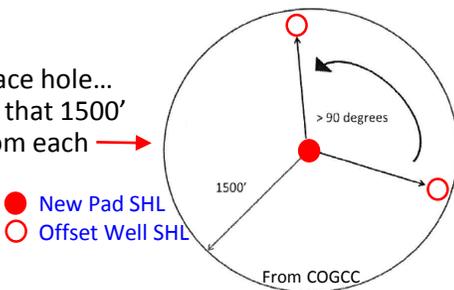
- Operations Geologists will be asked to determine offset log verifications for shallow logging on proposed wells, by pad.
- Request will come from Well Engineering-Engineering Techs or Regulatory.

Offset Log Verification (COGCC Operator Guidance Rule 317.p: Requirement to Log a Well packet).

- 1) In Petra, measure 750' from any proposed surface hole and find one well within that 750' that meets the following requirement: EITHER a vertical well with Resistivity/Induction and Gamma Ray from surface casing to the base of the deepest interval planned on the proposed pad, OR a horizontal well with Resistivity/Induction and Gamma Ray from surface casing to kick off point (KOP)-*verbal approval by COGCC in person at COGCC office, 11/8/2016.*
- 2) Make sure the Res/Ind and GR logs are legible (older logs may be poorly imaged copies, look for tool failure: straight line or missing section).
- 3) Find the log on the COGCC website (open the log file on the website to verify), find the Doc # on the website for that log (if we have the log and the COGCC doesn't, find an alternate well that meets the criteria or send a copy of the log to the COGCC).
- 4) Report offset well verbiage to Denver Regulatory and WE Engineering Techs in an email, and paste the same information in to Generwell: the offset well name, API #, COGCC Doc #, distance in feet from the new pad, and direction (N, NE, etc.) from the new pad.

-If there is no well fitting such requirements within 750' of a permitting surface hole...

- 1) Measure 1500' from a permitting surface hole and find two wells within that 1500' that meet #1 above, AND these two wells must be more than 90 degrees from each other in reference to the new pad.
- 2) Repeat 3 & 4 from above.



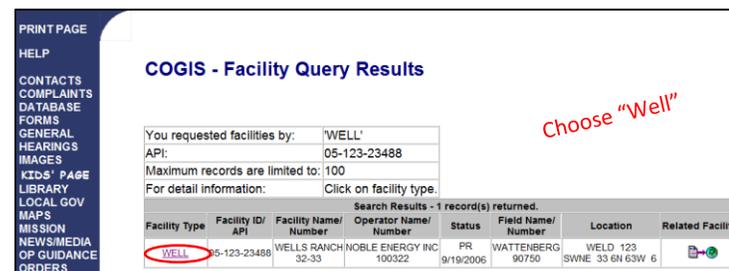
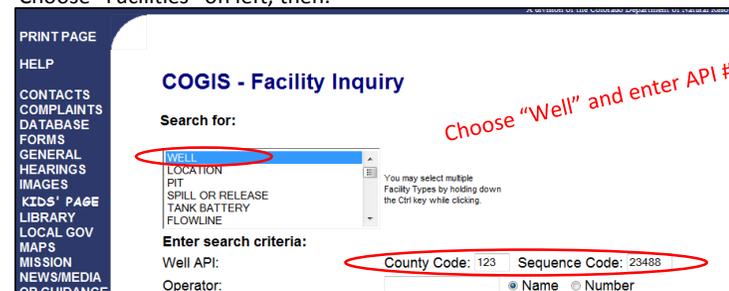
-If either case above is met, we may run one Cased-Hole Neutron log on the new pad, rather than an Open-Hole Resistivity log on the new pad.

-If neither case above is met, we are required to run one Open-Hole Resistivity log on the new pad.

Offset Log Verification Reporting

- Send offset verbiage (see below) to Denver Regulatory and the WE Engineering Techs.
- Put the identical verbiage for every well in to Generwell on the Geology/Directional Request tab, and check the identical required log type for every well on the pad. (The logged well will be chosen at logging time by drilling or the field. At that time, all other wells will be deselected in Generwell, by the WE Engineering Techs, because only one well per pad will be logged, Cased-Hole Neutron or Open-Hole Resistivity.

http://cogcc.state.co.us/
 Choose "Data" on top of page
 Choose "Facilities" on left, then:



Document Identifier	Class	Document Number	Document Name
12323488	Well Logs	700017325	LAS-IND-DENS-NEU
12326231	Wells	1224849	Change of Operator (Form 10)
12323488	Well Logs	1383479	GR/CCL CEMENT BOND VDL
12323488	Well Logs	1383423	COMPENSATED DENSITY COMPENSATED NEUTRON MICROLOG
12323488	Well Logs	1383424	DUAL INDUCTION GUARD LOG GAMMA RAY

Noble Generwell: Geology Tab > General Tab:

