



## “Shale Oil Cliff And New Undertakings, SOCANU” (With Technology) +Comments By Mike Cleary (11-11-2013)

After quiet observation/interaction w/activities over past decades, it may be time to discuss real issues/opportunities & try to reorient thinking (on all aspects). RES started a revolution (**30yrs ago, 1983**), by providing critical tools & driving better understanding (w/software & field instrumentation, unique in early 80s), honestly leading to massive transfers of properties/wealth. But confusion has returned & a proliferation of vendors exploits this to sell whatever idea is popular. RES'/clients' success came (not from popularity or tools we created but) by driving **better production (at lower cost)**, allowing many small (now bigger) clients to **acquire properties** (e.g. from inefficient majors) & convert to large profits. Shale Oil/Gas activities now offer **converse** (& also similar) scenarios: **opportunities are even greater** (more critical) & brief comments here are meant only as opening “appetizer” (for some, opposite for others), to lay out the challenge.

### 1. Real recovery (vs. EUR) from current strategies: a small % of target (typical lateral drains ~10m equivalent).

Such basic conclusions (supported by troves of data) run risks of eliciting strong reactions (from older (legacy) actors). And some (who claim they do better) **present data that are ominous**: we see big questions (e.g. in strange assertive papers, like SPE 166479). We know other folk are sincere & want them to be successful (prefer to make + comments). Credibility & honesty, our enduring policy, create long-term national wealth (& vice-versa); all must challenge spurious claims: e.g., **Water-Cut** as key parameter (**long vs short-term production realities**). Many claims eventually may be moot, e.g. **undermining** types of completion/fracs being extolled as superior: **W-C (only 1 of many issues)** might be less harmful (even w/poor fracs) in “conventional” reservoirs, but seems a **bad “omen” in Bakken** (& Shale) context. For operators (w/objectives) to sell early, buyers will need plans (**caveat emptor**) re remainders' recovery (**high W-C**). Good luck in finding suitable buyers: IOCs &/or NOCs may be needed, to fund implementation of effective technology.

### 2. One quick reaction (“drill more wells”) requires more thought also, re. total (real) costs & drainage patterns

Drainage is not uniform (e.g., 10m radius) but extremely variable, especially w/current strategies: such additional wells only may tap the same regions; all kinds of strategies have been invoked (like “zipper-fracs”) but most miss key points (In Shale Gas reservoirs, poor ideas may be tolerable; for Shale Oil, possibly/likely they can generate real disaster (4))

### 3. ‘Modeling’ proliferates (again), mostly wrong or (worse) irrelevant, reminiscent of ‘80s but ignoring lessons

that were learned by careful interpretation of extensive credible data: modeling should not be Hollywood, reality is key. One tool we developed on contract (‘Fracpro’) was hijacked to sell vendors' products, e.g. show long “contained” fracs -typically by resetting/rename parameters' values that decades' work (field data) established. Our **FIELDPRO** retains original Fracpro capabilities (detecting other version manipulations), confirmed w/**realistic production matching: few credibly** close such loops (**Reservoir>Frac>Production**), despite rampant **PrettyPowerPoints** (PPPs) of Workflows (expect Pixar movies anytime soon). Adults will not be welcome in some rooms, until/unless legacy & ultimate owners see critical problems. At SPE, courtesy ‘Carbo (buy our proppant) Fracpro’, **star (TV) performer was a “PickPocket”**. **Theft as art is a media creation**: brand-abuse is 1 facet of globalization. Finagling Fracpro (now old) is a ‘fixable’ issue; except (lost) credibility & resurrected baseless ideas (PPPs); current reality requires **systems** (like FIELDPRO).

### 4. Parameters are central to discussions: O&G is not (like) Aerospace or Mechanical (even Civil) Engineering.

(Working in all those areas, we emphasize the criticality of precision there: serious errors can cause real catastrophe). O&G also has disaster potential, ranging from Macondo (penny-wise, pound-foolish) to **national security** (e.g. failure to produce reserves): such disasters are not avoided by increasing refinement of irrelevant (or wrong) parameters, but by **PRACTICALITY**. There's an array of potentially powerful (e.g. (Micro)Seismic) tools: they must be used in practical ways. Vendors (of tools/services etc) have proliferated: few have ability or interest to **“Do IT Right”** (e.g. **Integration**).

### 5. More important than all these (theoretical) tools are methodologies employed (e.g. D&C) in field operations.

The folk we admire most are those who work (in the field), doing their best with what they're given (hence FIELDPRO, (w/honest analysis) to **connect all (E&P)** involved, office & field, w/practical integrated rapid feedback capabilities, for real improvement). Various techniques (&/or ideas) have helped to get (& keep) **“The Shale Wagon”** rolling (for now): however, as in 1, so far, our evaluations suggest that **“Sprinters Will Not Make It But Marathoners Have Better Odds”**. As long as Technology mainly is paid lip-service (e.g. 3), it drives misallocation of resources, especially in Operations.

The greatest potential lies in this aspect (**D&C/Operations**). To make discussion simple, let's consider: **we may need N(order 10)-fold more well/laterals**, each one recovering comparable/better than indicated (in 1, w/o water problems at least until good overall/field % has been recovered). Additional challenges: laterals should cost much less (than the \$10\*\*7 (total) now common) & should be relatively trouble-free to operate (in all aspects, not least re “political sense”). Sounds like a threat to existing vendors, just like the 80s as we pushed for (16x) more wells: in fact, it's an opportunity. As we explained then (recovered our “popularity”), 16x25% (cost of well) meant 4-fold **increase in revenues** (overall). Eventually, there may be even more wells, when new technology matures (the objective C), but let's go “step by step”:

**A. Improve what's done now, with better understanding; B. Apply (new) technology; C. Revolutionize process**

**Adversity is opportunity: not only can the “Shale Oil Cliff” be avoided (e.g., N.America, if “Undertaker” means (not guys we associate with cemeteries but) real Value-Creators who provide long-term employment & Technologies); new tech could be exported to countries where great resistance exists (politically/economically/cost etc). Jobs could expand many-fold w/varied popular activity, attracting more talent. As in A., “each journey starts with 1 (big) step”. (Mike's comment: unlike self-glorifying treatises, we credit those who did the work, when missions are accomplished).**