

Back to Oil!

NOCs & the Indies' agrarian art of production



Back to Oil ! is an elegy devoted to the oilman's works and days on the ground, in a world where digitalization makes reality abstract. Excellence comes from the simplicity of concrete gestures and the agrarian rites of oil production. The perpetuity of the National Oil Companies facing maturity depends on the art of cultivating their fields. The American Independent Producers' operating model, at the historic origin of the Oil & Gas industry, can be in this context a source of inspiration.

"Ladies and gentlemen, I do my own drillin', and the fellers that work for me are fellers I know. I make it my business to be there and see to their work; I don't lose my tools in the hole, and spend months a-fishin'; I don't botch the cementin' off, and let water not the hole, and ruin the whole lease. And let me tell, I'm fixed right now like no other man or company in this field. Because my Lobos River well has jist come in, I got a string of tools all ready to put to work. I can load a rig onto trucks, and have them here in a week. I've got business connections, so I can get the lumber for the derrick – such things go by friendship, in a rush like this. That's why I can guarantee to start drillin', and put up the cash to back my word. I assure you whatever the others promise to do, when it comes to the showdown, they won't be there."

Oil! Upton SINCLAIR, 1926

Hydrocarbon nationalisation in the second half of the twentieth century merged private operators to create a State-owned monopoly in charge of domestic Oil & Gas production. Hydrocarbon nationalisation gave the State control of giant petroleum fields marking the rise of National Oil Companies. Hydrocarbon nationalisation happened at the eruptive stage of reservoir developments.

However, after fifty years of operations, most of these reservoirs are today in decline; National Oil Companies are looking for a new model to manage the maturity of their assets and the

renewal of their resources. Reservoir management has become more complex; water injection floods field areas, with increasing water-cut and gas volumes indicating rapidly advancing field maturity. Generally, these issues require an upgrading of treatment facilities. The major, founding fields have matured as National Oil Companies age, usually resisting their inevitable production decline through secondary and tertiary recovery programs.

Nevertheless, in spite of all the clear signs of maturity, regulatory authorities continue to demand an increase in production rates, citing State budget requirements. Annual production forecasts and middle & long-term strategies together form a theatre where Regulatory Authorities confront NOCs to politically reformulate operational constraints, choreographing a balance of power that shapes, over time, the behaviour of reservoirs towards their extinction. NOCs' perpetuity depends on a moving point of equilibrium between political directions and operating conditions¹. The fate of Indonesia, a crude importer since the 2000s, illustrates the fall of a significant oil power at the birth of production sharing contracts, due to political pressures prevailing over industrial reason. Hydrocarbon nationalisation has fostered the creation of monopolies, producing new oil & gas that is increasingly difficult to extract, especially for organisations perceived as bureaucratic anachronisms driven by political directives. National Oil Companies will live as long as their fields; a life cycle affected by national agenda ambitions

and governance models that inter-twine Regulatory Bodies and operators. Nationalised production is currently at the end of a cycle. Reforms in Mexico, revised hydrocarbon laws in Algeria, and enhanced service agreements with international operators in Kuwait are all trying to create alternatives, or at least to defer, the obsolescence of a fifty-year-old nationalisation model.

What to do? What to do? Ask the leaders of national monopolies at the asymptote.

How to perpetuate national revenue from the petroleum industry? Consultants and symbolic analysts² have all proposed the privatisation of production, the optimisation of existing resources, or the introduction of commercial performance criteria that question State-owned companies' *raison d'être*. But, do such measures value the historic mandate of National Oil Companies as industrial champions, safeguarding their existence and the development of their nations? What to do? What to do? Ask the leaders of national monopolies at the asymptote. Do they try to reverse their company's decline in the form of an energy transition? Some, ground down by the national agenda double-bind, would rather separate state imperatives and industrial necessities to protect the conduct of operations from any political intrusion. This secularisation trivialises the importance of the National Oil Companies, transforming them into common actors on the stage of international competition. Such change, in favour of strict economic performance, underestimates the role they play in their respective national economies.

The investments that National Oil Companies have continued to make in the Middle East, despite the last five years' unprecedented crisis, have reinforced their place in the oil ecosystem. NOCs have provided the framework within which the recent confrontation with American independent producers has taken place. Today, national operators asymmetrically face a myriad of competitors in Texas, Oklahoma or Colorado, all of whom have benefited from the shale oil & gas revolution by focusing on short-term profit goals, far from the constraints of regulation or international institutions.

The competitive landscape is changing: IOCs now present themselves to State monopolies as partners in the energy transition and as new technology providers for knowledge transfer. In this manner, they encroach upon the traditional businesses of service companies, who in turn respond by being ready to invest in integrated operatorship. This new competitive asymmetry should be a source of learning and innovation for National Oil Companies, who are more accustomed to binary

logic (International operators *versus* national operators) and not to the fast-changing dynamics of much more agile actors.

"These wells are my fruit trees!"

In 2015, US independent producers represented 54% of domestic crude oil production and more than 85% of domestic gas production. Their development plans accounted for 90% of the wells drilled in the US³. Independent companies are businesses, often family-owned or with a narrow shareholder base, that are focused on the exploration & production of hydrocarbons⁴. From Alaska to the Gulf of Mexico, whether specialised in secondary recovery for mature fields or driving drilling factories on shale gas sweet spots, they testify to American supremacy in the Oil & Gas sector.

Speaking at a conference sponsored by *America's Independent Oil & Gas Producers* in 2017, Melville Poe, an owner of twenty-seven wells in Wyoming with a combined daily output of 5,900 barrels, laid out the golden rules of an American producer. "In 2007 I received nineteen producing wells, as an inheritance from my father. Some of my wells are still in operation after thirty years of activity. After two thwarted attempts in 2009, I successfully drilled eight new wells in the Ordovician layer. These wells are my fruit trees; I inspect them every day and test them every month, just as my father did all his life. I still respect the five golden rules he taught me: 1) Each well is a profit-and-loss account and is to be considered as a business, 2) Time is money, 3) Optimise any type of service company intervention by managing them with rigor, 4) Chronicle the memory of a well from birth, 5) In case of discrepancy, decide on the spot." For Melville Poe, producing is first and foremost a matter of looking after the wells, just as an arborist would, over the seasons, place his hand on the bark of his trees. A producer ages with his field, on a continuous learning curve from drilling to last oil.

Wyoming's oilman reminds me of the production engineer I knew at Sonatrach from Tin Fouyé Tabankort; he used to go out every week in the desert of Illizi to raise the Barton chart of his wells, scattered over tens of kilometers. These two men, listening to specific wells, practice the same profession; linked by the deep geology of the Ordovician layer. They devote their entire lives to the same field, and over decades, their daily work has shaped the operating conditions and the surrounding landscape, streaking it with truck tracks. Their community of practice resides here, in clear contrast with IOC expatriate rotating assignments that migrate from one country to the next, usually after only a few years on a field.

² See the *Work of Nations* by Robert R. Reich, 1992

³ See <https://www.ipaa.org>

⁴ The definition given by the *Independent Petroleum Association of America* is: "The U.S. Internal Revenue Code section 613A(d) defines an independent producer as a producer who does not have more than \$5 million in retail sales of oil and gas in a year or who does not refine more than an average of 75,000 barrels per day of crude oil during a given year. There are about 9,000 independent oil and natural gas producers in the United States. These companies operate in 33 states and the offshore and employ an average of just 12 people." <https://www.ipaa.org/independent-producers>

The Indies' roots of production excellence

It was only once the 2014 oil price crisis had hit that OPEC (re)discovered how American independent producers could maintain, and even increase their level of production despite the price freefall and a backdrop of complex operating conditions. Some went bankrupt, but others resisted and capitalised on the shale oil revolution. Driven by an ancestral sense of entrepreneurship worthy of the oil industry's early days in Oklahoma or California, American producers drastically optimised their operating costs and steepened their learning curve. They revised their E&P operating model, restoring the global reach of the US hydrocarbon school built around wells management and operations excellence. Their firm control on operations, performed with a flexibility that accounts for the smallest reservoir signals, should be a source of inspiration for National Oil Companies who have been inclined to admire the perceived excellence of IOCs and their processes. New technologies are certainly decisive in improving the recovery of mature fields, but they will never replace the practical day-to-day intelligence of a field operator in well maintenance, rigorously testing his or her equipment and production flows.

The drop in oil prices fueled a return to prominence of independent companies to the United States, where they focused on optimising operating costs and strengthening their learning curve. Thanks to the flexibility of their business conditions, the service company ecosystem, and the availability of oil & gas infrastructures in Texas, Colorado, or Oklahoma, they have freed themselves from the regulatory and industrial obligations that plagued their activities in Asia or the Middle East. By focusing on well performance, they have been able to achieve unprecedented excellence in operations, inventing the "drilling factory" that lies at the heart of the shale oil & gas revolution. Independents have become, in the last ten years, a source of innovation; not in the development of new technologies - the traditional levers of IOCs and their service company competitors - but in terms of know-how and operational control. They have perfected the industrial organisation of their production.

NOCs' mature fields – a greenhouse for the Indies?

Most of the fields that started producing during nationalisation are now mature or in decline. If hydrocarbon nationalisation had happened today in Algeria or Kuwait, it would be much more complex to implement because of the multitude of factors and issues to integrate and control. Production from Hassi Messaoud or Burgan, for example, now depends on increasingly complex partnerships, both in terms of technology requirements and in terms of the distribution of roles and responsibilities, in a web of regulatory, technical, cultural, and commercial factors.

When IOCs negotiate their own service contract offering, they propose proprietary technologies deployed to leverage petro-technical data obtained from NOCs. This creates complex situations that border on a conflict of interest. IOCs and service companies are now in direct competition: relations are blurred, conflicts fester, and misunderstandings accumulate, exposing the obsolescence of contractual schemes that are not adapted to current national agendas.

National Oil Companies would undoubtedly benefit from a wholesale review of their partnership strategy to consider specialised operators, for example in managing mature fields or exploring unconventional resources. These specialised operators are independent players renowned for their risk management model (at the heart of their core business), their unique technical skills related to the nature of their portfolio, and their pragmatism. They are E&P companies that buy their technologies on the market, focusing on the profitability of their investments, the performance of their projects, and the efficiency of their operations. They favor technical impact over political influence. Their industrial culture and *modus operandi* could be, in this context, an interesting experience for NOCs looking at alternatives to the competition between IOCs and service companies. These specialised operators do not have the scale of the majors and will not be the international champions to lead an energy transition, but they have acquired operating know-how at the source of operational excellence. The challenge for producing nations should now be to offer these operators sufficiently attractive conditions that are adapted to their model: regulatory and fiscal stability, advantageous remuneration for the exploration risk or the production optimisation, and a clear scope of intervention defined around limited but precise objectives, protecting operations from any form of politically-driven intrusion.

Such partnerships require contractual creativity, developed outside the usual E&P license framework. For example, pilot projects could be designed to manage production masterplans for five-year periods; a form of delegated management entrusting a paid operator based on production impact. This delegated management of an asset on a controlled scale - between fifty and one hundred wells - would put a field and its industrial chain into an incubator, generating best production practices from reservoir to tank. The ultimate objective would be for the National Oil Company to entrust the complete conduct of its operations in this manner without renouncing its sovereignty. It would still be responsible for investments and would remain the owner of production, rewarding the operator-partner according to a predefined mechanism based on the level of production, thus respecting the legislative framework. The operator would manage the field, developing the workforce of the National Oil Company without resorting to proprietary technologies or practices, as an IOC or service company would.

A partnership between a National Oil Company and an independent operator could certainly generate significant tensions, due to the asymmetries and differences in industrial practices, opposing managerial cultures and the independents' real-time management approach that contradicts the budgetary cycle of a State monopoly. However, such a contractual framework must protect the *raison d'être* of the delegated operations scheme, which is to restore the *savoir-faire* of the independent operator on the ground, with all the technical perfection that it implies. The National Oil Company can thus restore the production engineer's original intelligence, and rid themselves of unnecessary artefacts and filters, new commercial technologies, screens and standards, all of which skew the practical knowledge of the field. The return to essential actions - reducing the flow of a gas compressor, driving a scraper through a pipe, forcing the flow of crude oil through an online regulator at the separator, ... - improves real operations performance, from the realisation of tests to the calculation of forecasts.

E&P taps into time worked on the rock. Oil is an industry of memory; it explores organic deposits within stratigraphic structures accumulated over millions over years, sheltered in folds of geological eras. It deciphers a landscape and its outcrops by erecting infrastructures that age with the fields beneath them. Facilities interrogate and conserve the measurements generated during operations, analysing conditions over time to enhance the extraction of oil and gas. The development of new technologies, since the first wells in Pennsylvania, has not replaced the practical expertise of operators carved by the geology of mother rock and forged in steel mills. The operator's hand monitoring his wells is one of the sources of his operational excellence. *Back to Oil!* is a call to National Companies to perpetuate the agrarian art of oil production, unearthing the geological memory of the landscape and the industrial engineering of man in his first gesture: reaping the fruits of his labour.

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