The Future of Iraq’s Oil and Gas Industry*

*Natiq K. al-Bayati

In an interview on Iraq published by the European Energy Review (EER) in March 2012, Dr Fatih Birol, the Chief Economist at the International Energy Agency (IEA) said that if Iraq fails, it will mean trouble for all of us. He qualified that by stating that “what the world needs to keep-up with the strong global growth in energy (demand) in the coming years is two things: Iraq and Shale Gas”. He further emphasized the issue by stating that “if it does not come from Iraq, I do not see where significant production growth would come from?”

In order to achieve this objective, Dr. Birol advised the international oil industry to listen carefully to the perspective of the Government of Iraq, since, according to him the fate of the global oil market will depend to a significant extent on how Iraq will develop in the years to come.

Actually, the government perspective he refers to was defined by the production capacity target of mainly Iraq’s mega projects contracted with the NOCs and IOCs in 2009-2010 following the three Bid Rounds, plus the Iraqi self-implemented projects, with a planned production capacity of some 13.5 million bbl/d by 2017, including one million bbl/d estimate from Iraqi Kurdistan, by roughly the same date.

This ambitious target rests on a hydrocarbon potential foundation sketched by Mr Tariq Shafiq (of Petrolog & Associates) in 2010 in a paper published on Iraq Oil Forum, with some figures later updated in 2011 by the Iraqi Ministry of Oil (MoO).

According to this, Iraq has 80 discovered fields with recoverable reserves estimated by the MoO at 143 billion bbl and potential new oil estimated at 215 billion bbl. It has some 530-550 structural anomalies, only 115 of which have been drilled, while there are some 224 prospective drillable anomalies remaining. Their potential oil in place is estimated at some 694 billion bbl. As for gas, proven reserves are estimated by the MoO at 129 Tcf and the potential new gas reserves are at more than double that figure.

Clearly then there is a huge hydrocarbon resource base in Iraq to justify Dr Birol’s above statement, especially when we examine this base against those of peer oil countries.

According to Mr. Shafiq, even with a lower recoverable reserves estimate than that of the MoO, putting it at the old 115 billion bbl figure, Iraq has a resource base of some 410 billion bbl and it is at some 174 billion bbl from Peak. While Saudi Arabia’s resource base, for example, is estimated at some 471 billion bbl, with only 129 billion bbl from Peak. Iraq’s percentage historical production has been only 8% of total compared to 22.6% for Saudi Arabia. This difference could be further amplified owing to the fact that Iraq is the least explored country in the region, potentially giving rise to higher Iraqi reserves replacement ratio, particularly from the Mesozoic and older reservoirs which are estimated to potentially add to the total present national figure an amount of the order of 50 billion bbl. These geologically older reserves are gradually being confirmed through important new discoveries and developments in north Iraqi Kurdistan and, hopefully more in the rest of Iraq soon.
In the medium term, the government perspective is reflected by the MoO’s national development plan 2010-2014, which envisages taking oil production capacity to 3.4, 4.5 and 6.5 million bbl/d in 2012, 2013 and 2014 respectively, while taking the export capacity all the way to 5.6 million bbl/d by 2014. As to natural gas, the production capacity profile over the next three years is planned to go from 2.4 MMSCF/d in 2012 to 4.5 MMSCF/d in 2014, much of which is to be utilized internally for electric power generation and other industrial purposes, and the rest for export.

This is a truly ambitious plan by any standard and would require the Iraqi geoscientists, academicians and engineers, with the collaboration of colleagues working with the IOCs, to face up to the numerous challenges that confront them, in order to achieve its lofty objectives. Always remembering that the success anticipated and sought is something the world cannot do without.

Let us see now how has the progress in implementing the mega projects and the first two years of the MoO’s development plan fared? A candid answer would be: relatively slow. It is true that Iraq reached a production level of 3.0 million bbl/d by the first quarter of 2012 and would probably reach the target of 3.4 million bbl/d by year end, but the progress in executing the general contractual minimum work obligations has been below planned expectations. Many of the contracts have not executed their critical first 3-D seismic surveys and many have not yet drilled their contractual appraisal and re-appraisal wells, not to mention the numerous bottlenecks still persisting in the oil and gas evacuation system and the water injection system. This is because of the numerous technical, managerial and logistical challenges and obstacles faced by the industry.

Tackling the technical challenges, and focusing on past lessons learnt in order to help with their future redress, special attention and thought, I suggest, should be given to start with, to the 3-D seismic surveys optimization, especially for the fields that spread on agricultural and marsh terrain. As for drilling, optimizing design and logistics for slanted and horizontal wells is an issue. However, the major challenge is, and will be, achieving proper reservoirs management and optimum production profiles, especially in the predominant Iraqi environment of giant fields with multiple stacked reservoirs, some of them with a production history spanning decades. This is further complicated by widely differing grades of oil exhibiting a spectrum of gas-to-oil ratios (GOR) in the same field. Another singular issue would be to discern and evaluate the challenges of the exploration effort in the fields of the first two bid rounds specifically, and targeting specifically the Jurassic reservoirs and below. This entails high risks with the promise of high reward. Just visualize the potential bonanza of having structures as big as the Rumailas, the West Qurnas, the Zubair and the Majnoon being full to capacity in oil at the Jurassic and the Triassic reservoirs and in gas and condensates at the U.Perminian reservoirs.

We can even go further in discussing those aspects: what should be the proper reservoir management and optimum production policy for the discovered but non-producing reservoirs? Should they be developed in the ramp-up phase or should they be developed later to maintain Plateau Production Target (PPT)? We already have one example which we can learn a lesson from in the West Qurna-1 project where the contractual PPT has been increased within a period of less than a year from the effective date. Was that optimum? Or should one have waited until reaching the original contractual Plateau of 2.325 million bbl/d in a few years, before actually committing to the new Plateau of 2.825 million bbl/d?
We now know that many factors led to making that speedy decision in 2010, such as the need for West Qurna-1 to increase production from the Main Pay and Mishrif has not been quickly forthcoming owing to logistical problems with the water injection scheme, hence, the recourse to early producing the other said reservoirs, with the disadvantage of their lack of production history and consequent risk of running them at non-optimum rates. Therefore, was that really the optimum decision? What is the lesson learnt here, then, especially for the other fields in southern Iraq?

In the green fields, how quickly should we address starting production from quasi-explored deep reservoirs? Should we accelerate their development or use them partly as a back-up to the committed PPTs?

Here also many technical and economic factors could come into play and need to be analyzed thoroughly in advance: what parameters ought to be used to prioritize different reservoirs in their development and production sequence? Should we give priority to size, oil grade, investment required or completion of the infrastructure...etc?

A case in point is the Yamama (relatively deep) reservoir, both in the brown and green fields, with high gas-to-oil ratio and high H2S content. What would be an optimum policy for the development of this reservoir in Majnoon and West Qurna-2 for example? What order of priority should it be given?

As the IOCs are moving now towards fulfilling the requirements of the rehabilitation and preliminary development plans of the first phase of the contracts of the mega projects starting to prepare enhanced and final development plans for the second phase and ramping up of production towards the PPTs, many discussions arose and opinions were expressed about the need, or otherwise, for revising the PPTs downwards, increasing the time allowed to reach them, extending their durations, and even revising the remuneration fees through a renegotiation of the contracts, owing to the difficulties encountered and lessons learnt during the past two years, whether real or not.

In an interview in April 2012 Dr Hussein Al-Shahristani, the Iraqi Deputy Prime Minister for Energy, while updating the government current perspective, stated that Iraq plans only to “slightly lower” the 12 million bbl/d production capacity target so that its oil fields can pump more for decades to come. A new Plateau level is to be set at the end of 2012 and the plan is to involve the IOCs in the decision to end up with the highest recovery factor possible and to extend the Plateaus time to 2035. He also stated that it would be more prudent to maximize the ultimate recovery and assure world markets.

How does this approach fit with the exigencies of Dr Birol to provide the needed world's extra production from Iraq? I think the answer would be “it’s a good fit”. However, in order to accomplish it, all sides should collaborate in fulfilling their contractual obligations by facing up to the challenges and resolving problems together. We have all been brought up to honor contracts, not expediently revising them negatively. Then, in this collaborative paradigm, how to optimize the oil and gas evacuation systems and the water injection systems, which might constitute the major obstacles to smooth production operations, and how to maximize reserves to continually assuring the needed huge resource base, must be properly examined. There is a need to look into the former as cooperative engineering systems which would provide their functions on regional level, catering at the same time for several
existing fields in each geographic region, such as for Gharraf River, Maysan, Shatt al-Arab, South-west Basra Regions….etc.

An attempt along these lines was started in the form of a Common Sea Water Source for West Qurna-1 in South-west Basra, but the model should have wider geographical scope and implementations to assure efficiency and success. Also, there is a need to expedite the exploration campaign to deeper reservoirs in the brown and green fields and the new exploration blocks, to consolidate Proven Reserves.

The Iraqi geoscientists and engineers have a colossal task in trying to achieve the goals of the mega projects contracts and the production plans in general, therefore, we should emphasize the need for a collaborative mode of work with their international colleagues within the IOCs. We also need equally to emphasize achieving together the objectives of the contracts through cooperation, mutual learning and flexibility on all sides, always maintaining the scientific approach and bearing in mind Dr Fatih Briol’s advice: that the Iraqi new and ongoing experiment should succeed because the outcome is not going to be beneficial just for Iraq and the IOCs, but also for the whole world.

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