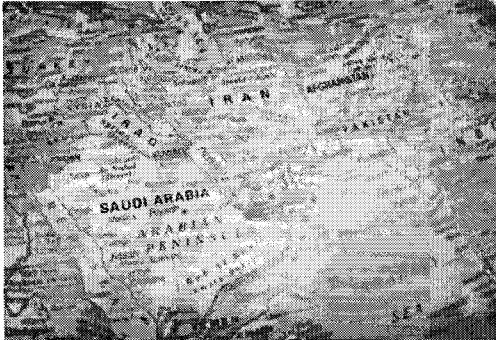




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Future Global Need For The Increase In Iraq's Oil Production

By Editorial Team 0

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TEXT SIZE

By Ali Hussain

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Recently and as shown in the table below, Iraq has signed a number of contracts with major oil companies with a view to increasing its oil production from 2.5mn b/d to around 12mn b/d in 2017.

Iraqi Upstream Awards

Area	Winning Consortium	Remuneration Fee (\$Bn)	Current Production (B/D)	Plateau Production Commitment (B/D)	Plateau Duration (Years)	Oil Initially In Place (Bn barrels)	Signature Bonus (\$Mn)
Project Round 1							
Rumaila	BP (50.67%) CNPC (49.33%)	2.00	1,066,000	2,850,000	7		500
West Qurna-1	ExxonMobil (80%) Shell (20%)	1.90	258,505	2,325,000	7	40	400

	Eni (43.75%)						
Zubair	Oxy (31.25%)	2.00	195,000	1,125,000	7		300
Project Round 2	Kogas (25%)						
	Shell (60%)						
Majnoun	Petronas (40%) CNPC (50%)	1.39	45,900	1,800,000	10	37.96	150
Halfaya	Petronas (25%)	1.40	3,100	535,000	13	16.079	150
Qayara	Total (25%) Sonangol (100%)	5.00	0	120,000	9	5.4	100
West Qurna-2	Lukoil (75%) Statoil (25%) Gazprom (40%)	1.15	0	1,800,000	13	31	150
Badra	TPAO (10%) Kogas (30%)	5.50	0	170,000	7	1.203	
Gharaf	Petronas (20%) Petronas (60%)	1.49	0	230,000	13	2.878	100
Najma	Japex (40%) Sonangol (100%)	6.00	0	110,000	9	5.7	100
Total Net Increment			9,606,000				

The targeted increase in Iraq's oil production is supported by the large Iraqi proven oil reserves of 143.1bn barrels. In fact, according to the Iraqi Ministry of Oil, this figure is very conservative and may increase substantially in the future.

This targeted increase in Iraq's oil production will certainly be needed to fulfill the future global requirements for oil, due mainly to two important factors as depicted below.

Expected Increase In The Future Global Demand For Oil

It is very likely that the future global demand for oil will witness a significant increase and is predicted by the International Energy Agency (IEA) to rise from the current level of 86mn b/d to 106mn b/d by 2030 (with demand having already grown by 2mn b/d since August 2009). This is expected to be driven by the following factors:

- The world population is expected to increase from the present 6.5 billion to around 8 billion in the next 30 years, underpinning increased demand for oil.
- The continuing relatively high annual economic growth rates in China of 10% and India of 8% as well as in many other South East Asian countries will spur ongoing increased demand for oil.
- According to IEA estimates, globally the number of cars will increase from the current level of 800 million to 1.6 trillion by 2035.

Expected Constraints On Future Global Oil Supply

Although global oil demand is expected to rise markedly in the future, this increase will be accompanied by a number of constraints on global oil supply:

- Globally and due to depletion, old oil fields are losing 3mn b/d of production annually, which must be replaced by new capacity.
- It is expected that non-OPEC oil production will decline during the period 2010-15 by 2.2mn b/d.
- It is also expected that due to the increase in global oil demand, OPEC surplus production capacity will decline from 5.4mn b/d in 2010 to 2.5mn b/d in 2012.
- A relatively high increase in OPEC's internal demand for oil will limit the amount of OPEC's oil exports. For example, in Saudi Arabia during the period 2000-09 oil demand increased by 1mn b/d.
- From 2005 to 2030, it is estimated there will be big global financial requirements for oil and gas exploration, which will reach a total of \$12.7 trillion.
- One of the most important factors which will limit the global supply of oil will be global 'peak oil', which means that sooner or later global oil supply will reach a peak and will then start to decline. The peak oil concept is a reality. It started to happen in the US in the early 1970s and happened recently in the UK North Sea and Indonesia. It is expected to happen in Mexico, Norway, Algeria and other major oil producing countries. In its recent World Energy Outlook 2010 the IEA indicates that peak oil is inevitable and states that total oil production including unconventional oil and natural gas liquids is expected to peak at around 96mn b/d after 2035.

OPEC And The Increase In Iraq's Oil Production

There has been a lot of debate regarding the effect of Iraq's oil production increase on OPEC. Some have said that such an increase in Iraqi oil production may lead to the collapse of the organization, because it may flood the market and lead to a large decline in international oil prices and so on.

This concern is highly exaggerated and it is not anticipated to happen due to the following factors:

- All OPEC countries have since 1980 benefited from the decline in Iraq's oil production. It is only fair that Iraq is compensated for this loss.
- There will be a gradual increase in Iraq's oil production and many Iraqi oil experts believe it may take Iraq more than seven years to reach 12mn b/d due to the fact Iraq needs a lot of investment and time to rebuild its oil infrastructure.
- Even if the international oil market does not absorb the entire increase in Iraq's oil production, Iraq can still have surplus production capacity. This capacity can be used to supply the international oil market in times of disruption from some major oil producers. In addition, Iraq may benefit significantly from this capacity during periods of increased global oil demand and higher oil prices. This is what happened to Saudi Arabia, which kept surplus production capacity even when during the period 2000-08 global oil demand increased by 8.8mn b/d and oil prices reached \$147/B in 2008.
- OPEC as an organization has proved throughout its entire history that its members always cooperate with each other to stabilize the international oil market and prices and protect their interests.

It is very obvious from all the factors mentioned above that perhaps most if not all of the increase in Iraq's oil production will be absorbed by the international oil market and in fact this increase will probably be needed to help the growth of the world economy.

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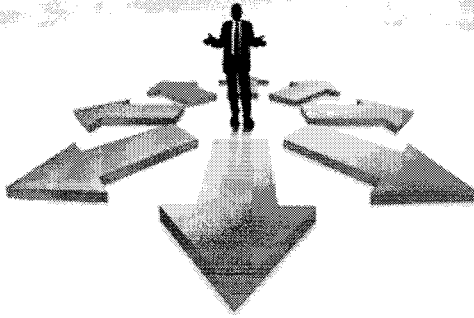
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Reflections On The New Estimate Of Oil Proven Reserves In Iraq

By Editorial Team 0

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TEXT SIZE

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On 4 October Minister of Oil Husain al-Shahristani, announced an increase of Iraq's proven reserves from 110bn barrels to 143bn barrels, apparently attributing such increase to the ministry's use of "3D seismic surveys to update its oil reserves data." These increases mostly come from two oil fields, West Qurna and Zubair, as reported by Iraqi and international media. This announcement raised many eyebrows, triggering questions and prompting a need for clarification, as many Iraqi oil specialists expressed opinions on the timing and justifications of the event.

At the outset I must confirm that most technical studies on the subject matter would suggest Iraq could have oil proven reserves higher than 115bn barrels (the officially confirmed figure, not 110bn barrels as stated recently Dr Shahristani. However, he told reporters in March that Iraq plans to raise its proven oil reserves estimate from its current level of 115bn barrels, but he did not then put a figure on the new reserves estimate, as shall be discussed hereafter).

There is an almost a consensus and there have been official claims that Iraq has proven oil reserves of 115bn barrels since 2001. However, there are diverse views with regard to estimation of the probable/potential reserves and oil in place (OIP). Tariq Shafiq (in a 2008 publication) brings Iraq's total reserves to 380bn barrels, with additional probable/potential reserves. In April 2007, oil industry consultants IHS estimated a potential additional 100bn barrels in largely unexplored western areas, over the current proven reserves. The US Geological Survey's median estimate for additional oil reserves in Iraq is approximately 45bn barrels. In August 2004, Iraq's then oil minister Thamir Ghadhban stated that Iraq had 'unconfirmed or potential reserves' of 214bn barrels (cited 2007).

Historically, Iraq's proven oil reserves have been estimated at 100bn barrels (1987-95), 112.5bn barrels (1996-2000) and finally 115bn barrels (2001-October 2010). The increase of 28bn barrels or 24.3% over the previous 115bn barrels estimate came, according to Dr Shahristani, from the West Qurna and Zubair oil fields. Let us examine this first.

West Qurna And Zubair

From the documents and information relating to these oil fields provided for the first and second bid rounds it appears that West Qurna-1 has 8.6bn barrels, and West Qurna-2 has 12.9bn barrels, giving a total for West Qurna of 21.5bn barrels. Today West Qurna has 43bn barrels, representing an increase of 21.5bn barrels (a 100% increase!). The questions are: when the "3D seismic surveys to update its oil reserves data" took place; by which of the two different consortiums (ExxonMobil/Shell for West Qurna-1 and Lukoil/Statoil for West Qurna-2); and when and by whom the collected data were gathered, analyzed, interpreted, verified and finally approved.

My database tells me that on West Qurna-2 the Russian energy company Lukoil and partner Norway's Statoil have issued a tender for seismic surveys at West Qurna Phase 2, according to a statement released on 1 September, inviting companies to bid for carrying out 3D field seismic surveys at the oil field. A deadline of 26 September was given in the statement, published in

the government's *Assabah* newspaper. The seismic surveys would only take place after mine clearance was completed. Lukoil awarded on 17 September a mine clearing contract to G4S Risk Management, a division of the London-based G4S Ordnance Management, Lukoil said in a statement sent to *Dow Jones* in 'Amman.

As for West Qurna-1, I searched through the folder on this field for "3D" but found nothing. The US supermajor ExxonMobil and its partner Shell plan to more than double the number of new wells, from its current 370 wells in West Qurna-1, to reach its projected production target, as ExxonMobil Iraq Vice-President James Adams told *Reuters* on 27 September. There was no mention of 3D seismic surveys.

As for Zubair oil field, the official proven reserves estimate was 4.1bn barrels. Eni, which leads the consortium with Occident and Kogas, estimated in June that the field holds 6.5bn barrels. If one accepts Eni's figure of 6.5bn barrels, this represents a 2.4bn barrels increase. However, *Iraq Oil Report* cited a figure of 7.8bn barrels as the Ministry of Oil's new proven reserves figure for this oil field.

While in London and Istanbul recently attending three conferences on Iraqi oil, I learned that Eni has in fact had problems in commencing its seismic work, and Lukoil has just awarded a contract for a 3D seismic survey. This sheds doubt once again on the story of the concluded "3D seismic surveys" as a reason for the revision. Even if the above figures are accurate, then new combined reserves for West Qurna and Zubair becomes 49.6bn barrels, representing an increase of 23.4bn barrels. But if we consider the reduction in Rumaila and Majnoun (see below), the net increase would be 21.4bn barrels and not 28bn barrels, unless the ministry tells us more.

It is worth recalling at this juncture my earlier study (*MEES*, 26 July), which demonstrates that West Qurna-1 and Zubair oil fields would be depleted before the end of the 20 years of the contract initial period if production targets are attained as stipulated in their related contracts and no improvement takes place to enhance the recovery factor. As for West Qurna-2, the depletion would be 80%.

Moreover, the announcement by Dr Shahrstani does not provide explanation of why the new proven reserves for Rumaila and Majnoun are now lower than recently declared figures. The new figure for Rumaila (17bn barrels) was less than that of 17.9bn barrels given in June 2009, and new reserves for Majnoun of 11bn barrels compare with 12.6bn barrels given in December 2009 for the second bid round. This gives a reduction of 2.5bn barrels for these two fields. Why this reduction? Furthermore, does Badra oilfield still have 100mn barrels of proven reserves, as declared previously by the ministry, or not? If yes, this field would be depleted before the plateau period even starts! Is there any explanation on this oil field by the Ministry of Oil?

Reaction To The Reserves Announcement

Since the announcement by Dr Shahrstani, many commentaries and direct e-mails were exchanged among the Iraqi oil experts and veterans who have extensive professional and technical experience in the field. I would summarize the feedback (mostly *verbatim*) I received as follows:

- Iraq has three seismic crews now (3D). The only 3D seismic work done was on Gharraf field and the crew moved to Nahrawan and is there for the time being. The other two are now at 'Akkaz and Nasiriya field. West Qurna 3D seismic bids are being analyzed for the time being. It is known that no exploration or development wells were drilled, and no prospects have been added to the known ones. The increase announced may be less than what is expected, but still there is no solid scientific basis for the announcement (which was not based on approved industry standards.)
- It seems there was a reason for the Ministry of Oil to underestimate Iraq's proven reserves, but now the real reserves should be revealed so that OPEC's quota for Iraq would be increased accordingly.
- It would be unfortunate to make such announcements purely for political reasons, with the intention of adding to the assumed achievements of an outgoing government, or for personal reasons, as Dr Shahrstani attempts to add this upgrading of reserves to his legacy.
- The present Ministry of Oil announcement of increased reserves need not go further than 're-assessing the recovery factor in light of suggestions from IOCs over the recent long term service contracts. This view implies using 'assumed' higher recovery factors for the related oil fields.
- The minister based his announcement of a 30% increment in the proven oil reserve on the availability of new data made available to the ministry as most of the IOCs had memorandums of understanding (MOUs) with the ministry and were involved in reservoir studies and evaluating production data made available to them, using their new technologies, even before the signature of the services contracts. One can understand why most IOCs bid for higher production plateaus. The Iraqi oil minister has reiterated that these figures are not final and not fixed, but are subject to further studies, including the unexploited fields. We all know it can reach much higher than 143bn barrels. This last view is obviously supportive to the announcement.

The 30% increase in proven reserves announced by Dr Shahrstani was a product of comparing 143bn barrels with 110bn barrels. But in March Dr Shahrstani confirmed that Iraq's proven reserves are 115bn barrels. If we accept his two figures of 115bn barrels in March and 110bn barrels on 4 October that would mean Iraq had produced 5bn barrels in six months at a rate of 33.3mn b/d on average. Obviously, this is not possible.

On the other hand the 115bn barrels estimate proven reserves was adopted officially as from end-2001. Accumulated oil production from 1 January 2002 to 1 October 2010 exceeds 5bn barrels. Hence, Dr Shahrstani was correct in stating the 110bn

barrels only if we assume that no revisions to the proven reserves had been done until the date of his latest announcement on 4 October. Is that possible?

Outstanding Issues

The Ministry of Oil concluded during 2004-08 some 40 memorandums of cooperation/understanding with many IOCs to provide support in three major activities: joint technical studies, training and development, and technical consultancy. IOCs covered all costs related to these MOUs. If these MOUs had resulted in reserves re-estimation, why were these new estimates not included in the information packages for the oil fields offered for first bid round prior to 30 June 2009 and for the oil fields offered for second bid round prior to 10 December 2009?

One could argue that IOCs used estimates based on those studies to bid for higher plateau targets in Iraq's licensing rounds of last year, and the same estimates could have been used again to draw up preliminary development plans for the awarded oil fields. The question now is how come IOCs used these studies to bid for high plateau targets while the ministry did not, as was evidenced by the fact that the ministry's total expected plate targets for the contracts concluded under the two bid rounds were less than 45% of those offered by IOCs?

Moreover, the joint management committees (JMCs) for the brownfield developments (offered under first bid round contracts) were established and work programs were concluded at least for 2010. Thus one would expect that if there were new estimates for proven reserves, they should have surfaced and been discussed during JMC meetings.

Furthermore, according to Article 6.1 (b and c) of the model contract, IOCs are obliged as part of their minimum work obligations to conduct seismic surveys, including processing and interpretation, and conduct detailed geological and reservoir engineering studies, including 3D simulation. However, these obligations have to be met no later than 36 months from the date of approving the Rehabilitation Plan and according to the provisions set out in Annex E of the contract. Obviously and expectedly, it is rather early to assume such activities had been done and produced results permitting solid grounds for reserves upgrading.

Finally, oil proven reserves are and should be understood as a dynamic volume/quantum depending on new discoveries, new methodologies, technologies and new data on the plus side and accumulated production on the minus side. Furthermore, conceptually one needs to be aware of different terminologies in this respect: probable reserves, potential reserves, oil in place, and initial oil in place. What we are talking about here is proven oil reserves.

Most likely the new estimate of Iraq's proven oil reserves and the timing of the announcement will trigger further reaction, follow-up and analysis inside Iraq as well as outside. Probably we will observe very soon a domino effect when other OPEC members begin, one after the other, announcing new estimates of their own reserves. We have seen something similar to that when Dr Shahrastani announced in March 2010 that Iraq's proven reserves are higher than 115bn barrels, though he did not elaborate more then.

It would be appropriate and very much appreciated if the Iraqi Ministry of Oil posted on its website a detailed report providing full information, preferably for each of the major oil fields, with technical notes on the adopted methods used for the re-estimation of the proven reserves. This would provide a good opportunity for us to discuss the issue based on good and sufficient official data.

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