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The Gifts of Aphrodite: A Shift to Competitive Pragmatism in Cypriot Gas Strategy

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The results of the first exploratory drilling (Cyprus-A) on the Aphrodite prospect in December 2011 that came up with an estimate of 5-8 tcf (trillion cubic feet) were greeted in Cyprus with unprecedented enthusiasm. The success of the initial drilling followed three years of astonishing achievements for Noble and its Israeli partners in the Exclusive Economic Zone of Israel that had led to the discovery of two major fields in Tamar and Leviathan. Aphrodite was considered by many as the "natural" continuum of these discoveries that would in turn herald the emergence of Cyprus as a major exporter of natural gas to Europe and beyond. Elaborate and not so elaborate multibillion $ projects were immediately presented as the most competitive monetization options lobbied for by a plethora of "experts" who had very little or no understanding of the fundamental risk parameters of the upstream (exploration and production) sector in the oil & gas industry.

Initial estimates of an unproven resource basis were considered as final proven reserves that could well exceed the 8 tcf of the initial estimate, although something like that was mathematically quite unlikely. When a range of potential reserves is announced such as the 5-8 tcf of the Cyprus-A drilling, the statistical possibility of a final reserve basis of 5 tcf is 75%, the mean estimate of 6 tcf has a statistical possibility of 50% and the highest estimate of 8 tcf is only 25% statistically possible. This means that anything higher than 8 tcf would have a statistical possibility close to 10%-15% of being verified. Yet, what was even more important from the facts which were missing from the public debate of 2011-2012 was that a resource becomes a reserve only when it is 90% certain that it could be economically developed under the current prices and with the current technology. 90% of commercial probability (P90%) turns *possible reserves* to *actual or proven* reserves.

More impressively, the initial results of a single exploratory drilling were not only misinterpreted but were also extrapolated for the entire EEZ of Cyprus. Undrilled estimates based on non-exclusive 2D and 3D seismic studies were presented as near certain reserves of natural gas that would have even justified advanced planning of an LNG export facility. Several "experts" even went so far so as to criticize the "delay" in the beginning of an LNG construction or founded entire conspiracy theories on the postponement of a FID (Final Investment Decision) on the Vassilikos facility. According to their understanding let's start building the facility and we will most certainly find the reserves on the way, although some of them acknowledged that Aphrodite's initial reserves estimates were not enough by themselves to justify an economically viable two-trains LNG facility that needs at least 8-10 tcf or proven reserves in order to become bankable.

Bankable is a key word. 70%-80% of project finance in all mega-infrastructure projects, such as LNG terminals or for that matter pipelines and any other export oriented facilities, is provided by private banks, international financial institutions and government controlled export credit and political risk insurance and re-insurance agencies that would ask any potential applicant the three following questions: (a) what is your 90% proven reserves estimate and what is the concomitant field development plan, (b) where are your final Sales and Gas Purchasing Agreements and (c) what is your monetization/export option? These questions were beyond the comprehension of the proponents of an early LNG solution or any other monetization plan and are still impossible to answer today since (a) we do not yet have a final reserves estimate for Aphrodite, although we know that Noble and Delek have announced in November 2014 a 50% reserve estimate of 4,5 tcf by so notifying the Tel Aviv Stock Exchange, (b) we are just beginning the negotiations on how to proceed with a Field Development Plan for Aphrodite with the Noble/Delek consortium and (c) we have not yet started to negotiate a sales and gas purchase agreement because we do not yet have the answers on the two abovementioned questions. The negotiation of a sales agreement is not a matter of weeks or months, but probably a matter of years.

The second (Cyprus-B) appraisal well drilled on the Aphrodite discovery in September 2013 re-evaluated the potential reserves to a range of 3-6 tcf with a mean average of 5 tcf which was closer to the Noble/Delek P50% probability estimate of 4,5 tcf announced in the Tel Aviv Stock Exchange last November. In addition this misfortune, the hopes of a major discovery on the Onasagoras prospect in December 2014 were disappointed when the ENI/Kogas exploration came up with a dry hole while in late January 2015 Total announced that it had not found enough evidence to support the cost of drilling an exploratory well. These events were all significant setbacks but these setbacks are the norm of the upstream industry where the global success rate for exploratory well is between 20%-30%, even in relatively mature provinces. It would be safe to say that the bonanza-mentality of the early years in the Cypriot gas experience is over. The era of over-optimism is finished.

Nevertheless these negative developments do not in any way justify the shift to an equally damaging sense of over-pessimism. There are several reasons why we should not go down this self-destructive path in spite of Turkey's climaxing aggressiveness. There are several reasons why we need to shift from an era or irrational exuberance to an era of competitive pragmatism:

(1) Even if the P90% estimate of Aphrodite proves to be close to 3 tcf, a P50% estimate of 4, 5 tcf is quite encouraging. What needs to be made clear is that these P90% and P50% estimates are of a dynamic nature. You can go from the low P90% estimate to a higher P50% estimate by investing in more appraisal wells once your revenue streams would permit it so as maximize the use of your reserves. This cannot happen automatically and it would take time but such an eventuality is within the macro-economic logic of project development in upstream oil and gas investment that is phased over a period of at least 10-15 years.

(2) A 3tcf-4,5 tcf reserve may not be enough for an LNG facility but it is a very sizeable reserve basis that can cover the domestic gas needs of the Republic of Cyprus for the next 20-30 years and still export significant volumes to Egypt and potentially Jordan. No export option to either Egypt or Jordan should materialize **without the simultaneous** arrival of gas to Cyprus for the covering of its domestic energy needs. This is should not be negotiable for any Cypriot government.

(3) The combined profits from the direct sales of gas to regional markets for Cyprus and the substitution of its oil import products for electricity generation amount to several billion EUR over a decade, which under specific pricing conditions could surpass the EUR10 billion of the ECB/IMF bail-out loan Cyprus got in 2013. Oil import savings and direct sales profits could in the long-run amount to more than 50% of the country's current GDP. This will happen even in the unlikely event that no more gas is

discovered in the Cypriot EEZ.

(4) The development of the domestic gas market in Cyprus would generate thousands of direct and indirect jobs especially during the phase of construction of the import infrastructure and the national and regional distribution network of pipelines, compressor stations, metering stations and domestic use applications. This development will also boost the entire services sector of the Cypriot economy by helping transform Cyprus into a regional hub for oil & gas services companies. This will happen even in the unlikely event that no more gas is discovered in the Cypriot EEZ.

(5) ENI's exploration programme is only 25% complete at this point. It still has 3 more planned exploration wells to drill and no one can or should pre-judge their outcome, especially if the prejudgment is motivated by political reasons.

(6) Total will remain engaged in continuous exploration in the Cypriot EEZ until 2016 and could actually move to areas, such as Block 7 and Block 8 that were outside its original mandate of Blocks 10 and 11. The data it will collect and their interpretation may reverse its original decision to not move forward with an exploratory drilling well in 2015.