# **ASX** Release



4 September 2019

# Iecea Mica-1 Well –Increase in Well Pressure and Hydrocarbon Gas Indications resulting in Well Control Incident.

# **SUMMARY OF REPORT (DAY 31 since spud date)**

@ 1.00 PM 3<sup>rd</sup> of September 2019 Eastern European Summer Time (EESC)

- A highly over-pressured zone encountered with a rapid increase in drilling rate at 2407 meters Measured Depth (MD) - indicating formation porosity and permeability accompanied by an increase in mud gas shows and 3% hydrocarbon trip gas.
- A major inflow (or kick) from the formation was experienced in the well time in the 6" hole.
- The pressure in the well increased to 387 Bar (5611 psi) accompanied by fluid losses of approximately 20 cubic meters.
- The well has been bought under control with no harm to rig personnel or property.
- Recent operations include:
  - Pull bottom hole drilling assembly up to casing shoe and circulated to avoid getting stuck-in hole
  - Increased mud weight and prepared Lost Circulation Material ("LCM")
  - Prepare new mud system to 1.92 specific gravity ("SG") and LCM pills to cure losses
- Future operations Restore well to pressure equilibrium ("kill the well") with 1.92 SG heavy weight mud system and cure losses with LCM when required. Prepare to drill ahead.

ADX Energy Ltd (ASX Code: **ADX**), is pleased to advise that it has quickly controlled a potential blow out zone at 2407 meters MD in the lecea Mica-1 well.

The highly over-pressured kick zone is associated with a strong drilling break indicating formation porosity and permeability. The kick was associated with hydrocarbons from an increase in mud gas shows and 3% trip gas. The severe mud losses experienced subsequently indicate open fractures in the formation.

At the time of writing this release, the kick zone was still able to flow into the well bore and preparations for a kill operation are ongoing. The ability to control the well has been enhanced by the decision to set the casing shoe just above the potential overpressure zone, and increase mud weight to 1.5 SG prior to deepening the well and invest in a specially fabricated 10,000 psi well head and utilisation of a 10,000 psi blow out preventer. The Board of ADX took the decision to undertake a trading halt until the repercussions of the potentially unpredictable and serious well control incident could be assessed and bought safely under control.

The kick, classified as Level 2 well incidence control issue, was reported to Boots & Coots (Well Control company with extensive Iraq War well kill operations). It was however not necessary to call them out for service since ADX drilling management always had the well under control so that the risk of an uncontrolled blow out was very low.

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The first returns to surface indicate a mixture of hydrocarbon gas, CO2 and brine, although it is not fully clear yet whether the brine is formation water or disintegrated mud due to CO2, or both. The planned total depth of approximately 2500 meters in the fractured basement play target has not yet been reached. Similar over pressured zones have been encountered in the basin which are associated with deeper hydrocarbon discoveries in fractured basement.

The lecea Mica-1 well has already intersected at least two (Pa IV & Pa V zones) and potentially three (Pa III zones) hydrocarbon pay intervals which are behind casing. These zones are planned to be production tested in the future. A further analysis of the abovementioned intervals will be provided in the near future following the receipt of a third party petrophysical analysis.

ADX will provide a further well report once the well kill operations are successfully completed and forward well operations can be made.

## Asset Ownership Structure

ADX holds a 63% shareholding in Danube Petroleum Limited (Danube). The remaining shareholding in Danube is held by Reabold Resources Plc. Danube via its' Romanian subsidiary, ADX Panonia, holds a 100% interest in the Parta Exploration license (including a 100% interest in the Parta Appraisal Sole Risk Project) and a 100% interest in the lecea Mare Production license.

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### **IECEA MICA-1 PRE-DRILL WELL SUMMARY**

### **Key Points**

- The upper 2350 metres of lecea Mica-1 (IM-1) appraisal well is effectively a redrill of a historic discovery well drilled in the 1980's.
- o IM-1 will evaluate multiple gas zones mapped on 3D seismic including a flow tested gas zone and a deeper uncontrolled gas flow in the historic discovery well.
- The Contingent Resources based on an Independent Experts Report of well data with recently acquired 3D seismic is 6.1 Bcf 2C and Prospective Gas Resources are 13 Bcf Best Estimate. Note 1

**Prospective Resources** are those estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) related to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further explorations appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

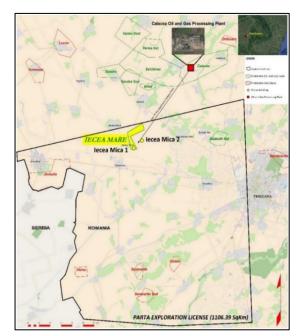
- The well will be deepened to a depth of 2600 meters to evaluate larger untested exploration potential which is a proven Oil play in other fields in the basin ("Basement Play").
- The Best Case Prospective Resource for the deeper exploration upside potential accessible by the well is 16 Bcf (for a gas success case) and 2 MMBBLS (for an oil success case) Note 1.
- o If the deeper exploration target is successful it is expected to de-risk several follow up prospects with good upside potential which ADX has identified both on 3D and 2D seismic.
- The well has the additional benefit of being proximal to infrastructure for both gas, oil and electricity enabling low cost, highly profitable commercialisation.

**Note 1**: Refer to ASX announcement 20/3/2019, ADX confirms that it is not aware of any new information or data that materially affects the information included in that market announcement and that all the material assumptions and technical parameters underpinning the estimates in that market announcement continue to apply and have not materially changed.

#### Well Overview

ADX together with Danube's 37% shareholder, Reabold have elected IM-1 as the first drilling candidate for the two well Parta Appraisal Program. IM-1 is located in the lecea Mare Production License which is within the Parta Exploration License in the Panonian Basin, onshore Romania.





Location Map – Showing IM-1 Well location, lecea Mare Production License and Parta License Well Prognosis and Resource Potential

IM-1 is a structural trap targeting multiple (Pliocene to Miocene) pay zones including established appraisal potential from historic wells drilled in the 1980's that were tested but never produced as well as deeper not tested exploration potential defined on recently acquired 3D seismic. The independently assessed contingent and prospective resource potential of IM-1 is summarised in the following table extracted from the ERC Equipoise Independent Report (ERCE). This evaluation excludes deeper exploration potential which can be accessed by the IM-1 well. The first proven, previously flow tested gas reservoir section is the Pa IV sand in the IM-1 well. That zone is expected to be encountered at a depth of ca. 1940 meters TVDSS.

**ERCE Independent Resource Estimates\* for Parta Appraisal Program** 

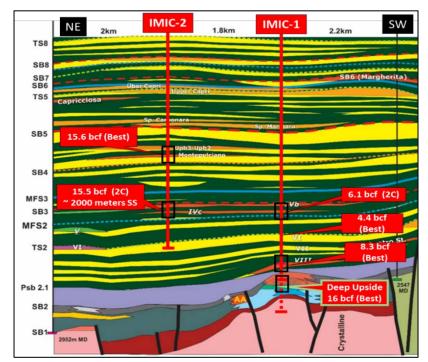
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Recoverable Hydrocarbon Volumes			ERCE Estimates		
Prospect	Target	PRMS	P90	P50	P10
-	Reservoir	Category	(bscf)	(bscf)	(bscf)
IM-1	Pa IV	Contingent 1	2.0	6.1	16
IM-1	Pa VI	Prospective <sup>2</sup>	2.4	4.4	7.3
IM-1	Pa VIII inf.	Prospective	2.7	8.3	21.3
IM-2	PsB4.3	Prospective	5.4	15.6	39.1
IM-2	Pa IV	Contingent	4.8	15.5	43
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Total Program		Contingent	6.8	21.6	59.0
Total Program		Prospective	10.5	28.3	67.7

<sup>\*</sup> Refer to ASX announcement 11 July 2018, ADX confirms that it is not aware of any new information or data that materially affects the information included in that market announcement and that all the material assumptions and technical parameters underpinning the estimates in that market announcement continue to apply and have not materially changed.

<sup>1.</sup> **Contingent Resources** are those quantities of petroleum estimated, as at a given date, to be potentially recoverable from known accumulations but, for which the applied project(s) are not yet considered mature enough for commercial development due to one or more contingencies. 1C, 2C, 3C Estimates: in a probabilistic resource size distribution these are the estimates that have a respectively 90% (P90), 50% (P50) and 10% (P10) probability that the quantities actually recovered will be exceeded



2. **Prospective Resources** are those estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) related to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further explorations appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

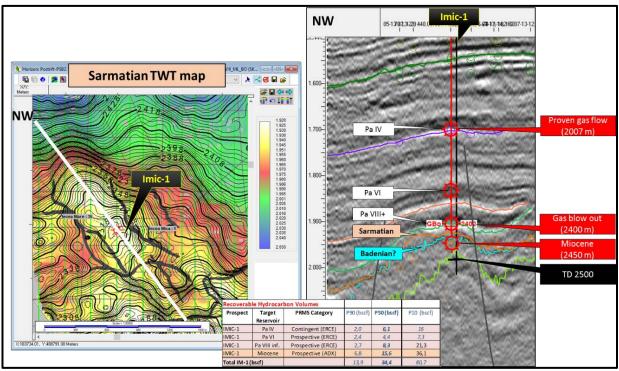


A Simplified Stratigraphic X section through IM-1 and IM-2 showing the potential deeper Badenian (Miocene) build up carbonate play or the alternate fractured basement play.

In addition to the ERCE independently assessed Contingent and Prospective Resource volumes shown in the previous table, IM-1 offers a larger deeper exploration potential which was not included in ERCE's estimates that can be reached within the current planned 2500 meters TD of the IM-1 well. It is predicted that the well will test a Badenian (Miocene) calcareous sandstone and/or a proven fractured basement play which has been successful in the Satchinez and Calacea fields 12km to the north of IM-1 well location. The Miocene Badenian age carbonate build up play is proven by gas discoveries to the East. Either one of, both of, or none of the deeper upside exploration plays may be present.

The Pa IV (Pannonian – Pliocene) horizon intersected in the original exploration discovery well tested at a rate of 1 MMSCFPD in 1989. It is expected the IM-1 well, with modern drilling and completion practices, will achieve significantly higher rates from this zone. Depending on which hydrocarbon charge model is assumed for the previously undrilled, deeper exploration plays there is also potential for an oil discovery at basement level. It should be noted that the previous lecea Mare production license operator assessed the potential of the for the basement play to be in excess of 2 mmbbls of recoverable oil. ADX estimates 16 bscf for a best case recoverable prospective gas resource, assuming the intersection of a Miocene Badenian age (Miocene) calcareous sandstone is encountered as a gas bearing reservoir in a deeper exploration play success case. Based on nearby well data the intersection of potential basement reservoir is considered the most likely outcome.



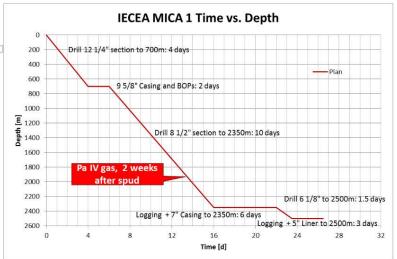


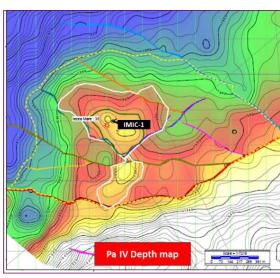
IM-1 Map and 3D Seismic Section through IM-1 well location

The above 3D seismic section through the IM-1 well location highlights the various currently identified reservoir targets and their respective depths. Note that the original exploration well only had electric logs down to the Pa VIII reservoir. The well was deepened further but experienced a major kick and overpressure around 2400 meters TVD that was not able to be tested. This is described as an uncontrolled flow in some old well reports for the discovery well.

#### Well Design

Due to expected overpressure starting around 2400 meters ("the historic well blow out reservoir") 7" casing is programmed to be run to a depth of 2350 meters TVDSS. The well will then be drilled through the overpressure zone in a smaller 6 % hole size and will reach TD around 2600 meters.





The most likely well cost estimate for the well is approximately US\$3 million, including evaluation, logging and running casing. The above mentioned cost estimate does but not include well testing operations



which are planned to be undertaken with a much smaller and cheaper work over unit. Included in the well cost estimate is a well head and production tubing which has already been purchased.

The IM-1 well is designed to enable the evaluation of an over pressured zone encountered in the original discovery well as well as highly prospective and potentially material deeper exploration targets not reached previously. These deeper exploration targets which are now mapped on 3D seismic are particularly exciting due to their materiality and the fact they can potentially be reached at minimal incremental cost.

**End of Release**