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Mr. Duane Gaither, II Chief Executive Officer Atlas Petroleum Exploration Worldwide, Ltd. 18000 Groschke Road Building A-1, Suite 200 Houston, Texas 77084-5642

# Independent Review: Sfax Offshore Exploration Permit

Dear Mr. Gaither:

At the request of Atlas Petroleum Exploration Worldwide, Ltd. (APEx), Gaffney, Cline & Associates, Inc. (GCA) has conducted an independent review of APEx's exploration permit offshore Sfax in Tunisia (the red bordered area titled "Sfax Offshore Permit" below). This review included all discoveries, prospects and leads with the exception of the Ras El Besh (REB) development area.



On the basis of the information provided to GCA by APEx and underlying assumptions described in this letter, GCA provides the following summaries:

# Summary of Contingent Resources as of September 30, 2007

Area	Reservoir	Most Likely Resource Volume (MMBO)	NPV-10* US\$MM	
Jawahara	Douleb/Bireno	33.8	199	
**Salloum	Douleb/Bireno	-	-	

\* NPV-10 is Net Present Value discounted at 10% for 100% working interest, if the accumulation is developed, as discussed further below.

\*\* Salloum-1 discovered oil in the Bireno limestones. After acidizing the well flowed 1800 bopd on a <sup>1</sup>/<sub>2</sub>" choke. GCA was not able to assign volumes to this discovery due to a lack of data. APEx has recently acquired a 3D seismic survey that should allow for the definition of Contingent Resources at Salloum in the near future. It may also allow certain other leads covered by the survey to be upgraded to prospect status.

# Summary of Prospects

Area	Reservoir	GCoS1	Currently Mapped Area (acres)
JAW 2 NE	Douleb/Bireno	70%	930
JAW N U/T	Douleb/Bireno	50%	2,430
JAW N-SW	Douleb/Bireno	50%	310
JAW N NW	Douleb/Bireno	15%	580

# Summary of Leads

		Current			
Area	Reservoir	Area (acres)	Comment		
Kerkennah Banks	Kerkennah Banks				
Ras El Besh North	El Garia	4,068	Lead is down-dip to the Soliman high, but is closer to the perceived hydrocarbon source. Careful consideration should be given as to which lead should be drilled first. Information acquired during the drilling of the Ras EI Besh field, and the interpretation of the recent 3D seismic survey may have an influence on which prospect should be tested first. Area is covered by New Kerkennah Banks 3D Survey (7/2007) which is not yet available for interpretation.		
Ras El Besh North	Reineche	9,122	This would be a secondary up-hole test if a well is drilled to test the El Garia section.		
Soliman	El Garia	2,439	Down-dip and structurally separated from the Gharbi- 1 that had 10 m with So=65% and Por=15%. This well was not tested. Area is covered by New Kerkennah Banks 3D Survey (7/2007) which is not yet available for interpretation.		
Soliman SW	El Garia	1,403	One NW/SE 2D line shows a possible structure but that is the only data available to GCA. Area is covered by New Kerkennah Banks 3D Survey		

Area	Reservoir	Current Area	Comment		
			(7/2007) which is not yet available for interpretation.		
Soliman NE	El Garia	940	Soliman NE is down-dip/off structure to Soliman ar would come after a test of crestal location. Area is covered by New Kerkennah Banks 3D Survey (7/2007) which is not yet available for interpretation		
Zitouna	Reineche	11,816	GCA had insufficient data to verify maps or Reineche reservoir section.		
Satellites					
Rouget	El Garia	2,186	Poor seismic coverage/data. As mapped, Rouget El Garia is structurally separated but low to Naravas wells to the south which were non-productive in the El Garia.		
Meninx SW	El Garia	309	MNX-1 well, 2 kilometers east of this location found no El Garia reservoir.		
Sidi Selam East I	El Garia	577	No clear cut closure. Reservoir risk based on MNX-1 well to the NE that encountered no El Garia.		
Sidi Selam East II	El Garia	401	No clear cut closure. Reservoir risk based on MNX-1 well to the NE that encountered no El Garia.		
Sidi Selam West	El Garia	698	No clear cut closure. Reservoir risk based on MNX-1 well to the NE that encountered no El Garia.		
Tarf El Ma	El Garia	759	Structurally separated and lower than Ashtart with uncertain closure the NW.		
Tarf El Ma East	El Garia	354	Structurally separated and lower than Ashtart with uncertain closure to the NW.		
Extension Area					
Salloum South	Douleb/ Bireno	791	Location not well defined. GCA could not appraise due to a lack of data/interpretation.		
Thyna	Douleb/ Bireno	680	S/SE of El Hajeb-1 and Guebiba-1 wells. No interpretation provided to GCA.		
Thyna South	Douleb/ Bireno	1,046	Pop up/horst structure down-dip from Chaffar-1 dry hole.		
Anadarko Southern					
Ashtart West	El Garia	5,906	Low amplitude roll on N/S 2D data but not on W/E seismic. Structurally separated and lower than Ashtart.		
Pinch-out	El Garia	7,592	Pinch-out is possible on the limited available 2D in the Metloui section. More data required to take to prospect status.		

The preceding evaluation was based on information provided by APEx to GCA. All questions that arose during GCA's evaluation of these assets were resolved to GCA's satisfaction. There was a great deal of new 3D seismic in processing in the area to the northwest of the Jawahara prospects and over the Salloum-1 discovery at the time this report was being prepared. The evaluation of this new data is expected to have a large impact on a number of the leads mentioned above and on the Salloum-1 discovery. The areas of the new 3D Seismic surveys and their relationship to the prospects and leads discussed herein are shown in the map below.



# **PROJECT DESCRIPTION**

At the request of APEx, GCA undertook an independent technical review and evaluation of APEx's Tunisian assets. The project kick-off included a comprehensive presentation of the Tunisian assets to GCA by APEx. Following this presentation, APEx provided their most current copies of all relevant data and APEx's interpretation of those data on two hard drives. GCA

completed an independent review of these data in its Houston offices. During this review APEx was open and cooperative with regard to answering GCA's questions on the project.

## **GCA REVIEW**

GCA reviewed all technical data provided to it by APEx. This included well information; seismic volumes both 2D and 3D; and the interpretation of those data.

- Well Data: GCA completed a random spot-check of the log data and the analysis of those data. It is GCA's opinion that the analysis of those data by APEx is reasonable. GCA used its own petrophysical analysis for the relevant wells in each area to calculate estimates for in-place hydrocarbons.
- Seismic Data: The Sfax Offshore Permit is a large area with multiple vintages of both 2D and 3D seismic. Due to the acoustic nature of the subsurface, both in a structural and a stratigraphic sense, this is not an area where high quality seismic is readily acquired. APEx made a good effort with their most recent 3D survey which was acquired using a high density-high definition design over the Ras El Besh Field area and the Jawahara prospects. Although the data can be interpreted at the Cretaceous/ Douleb/Bireno level in the Jawahara area, the acquisition results were less than optimal, and subject to more than one interpretation.

Anadarko are in the process of acquiring and processing a new 3D survey to the northwest of the Jawahara area that should elevate a number of currently defined leads to prospect status. APEx has also recently acquired a new 3D survey in the Salloum area that should provide a much better picture of the trap associated with the Salloum-1 discovery. Unfortunately, neither of these data sets were available to GCA and their results are not incorporated into this report. GCA has been advised that APEx does intend to incorporate these data once available.

- Area Reviews: Each of the areas listed in the earlier tables was reviewed by GCA. This review was conducted by analyzing APEx's maps and the well and seismic interpretation associated with those maps. GCA's detailed review can be found in the slide presentation that is included as an attachment to this letter. The following are brief comments on each group.
- Contingent Resources (CR): CR are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulation through a development project. Based on the results of the JAW 1 well which penetrated 40 feet of oil in the Douleb/Bireno section, the accumulation known by APEx as JAW 1 can be classified as a CR. On a high side or maximum limit for this accumulation the possible hydrocarbons in JAW 1 NE have been included. Converting these CRs to a reserve category would require an approved development plan that will most probably include delineation wells.

The Salloum-1 well drilled by British Gas in 1991 tested 1,800 bopd with no water from the Douleb/Bireno carbonates. APEx have just finished acquiring a 3D survey in this area to better define the Salloum structure. Unfortunately, the results from this data were not available to GCA for use in this report. For that reason GCA did not assign volumes to the Salloum-1 discovery. The remaining potential in the Salloum area has not been defined to a point that GCA can comment.

Prospects: The Jawahara structure is a relatively large north-south anticlinal feature that has been successfully tested by the JAW 1 well. The JAW 2 well drilled approximately 2.5 kilometers to the north of JAW 1 and up-dip did not encounter a reservoir section. It is APEx's interpretation that the D/B reservoir section seen at JAW 1 was faulted out of the JAW 2 well. GCA has reviewed the seismic and well data in the area and agrees that a fault of the level of the magnitude that could fault out the D/B is possible. It is also possible that the reservoir has altered stratigraphically and this interpretation needs to be considered.

As noted above, the seismic data in this area is open to more than one interpretation. The interpretation presented by APEx for the prospect to the north of JAW 2 well and to the east of the main bounding fault is possible. There is risk in each of these that either the reservoir section is not present or there is a lack of structural closure. A detailed explanation of GCA's evaluation for each feature is presented in the attached slide presentation. GCA has assigned what it considers to be appropriate exploration risk levels to each Jawahara prospect based on current knowledge. As more work is done and information gathered, these risks will be altered. The drilling of additional wells will add greatly to the understanding of this area. The one prospect in the Jawahara area that is considered high risk is JAW N-NW. This prospect is on the west side of the bounding fault and requires critical dip to the west that can not be validated on the current seismic volume.

Leads: Outside the areas of Jawahara and Salloum, APEx have mapped 18 separate closures that GCA has classified as leads. Leads are defined as potential accumulations that are currently poorly defined and require more data acquisition and/or evaluation in order to be classified as a prospect. In the case of APEx's Sfax concession leads, it is the lack of additional data. 3D seismic is currently being acquired and interpreted to the northwest of the Jawahara prospects and over the Salloum discovery. When these data are available and interpreted, a number of the current leads in the Kerkennah Banks area will probably be elevated to prospect status. It is thought that a substantial area around the Salloum-1 discovery will be elevated to CR status based on an interpretation of the new seismic in that area.

#### Jawahara Production Estimation

Production forecasts were calculated for the Jawahara CR area using GCA calculated low, most likely, and maximum in-place volumes. Well production forecasts used the Ashtart field as an analog due to its close proximity and similar reservoir depth (Ashtart produces from the El Gueria and Jawahara would produce from the older Douleb/Bireno. Both reservoirs are carbonate). Scaling factors were applied by varying thickness between the two areas and for variations such as horizontal wells.

Recovery factors, decline rates, and drainage areas (primary and water flooding) were also tied to the Ashtart field and again scaled with in limits considered reasonable by GCA. The results of this work are presented as an attachment to this report.

## **Cases Considered**

The minimum case was for JAW 1 area only. This area was developed with a drilling program including 5 vertical wells. This was primary depletion only and had a recovery factor of 15% to realize a EUR of 9 MMBO.

The most likely case was for the JAW 1 area and half of the JAW 1 NE area (the geologic model for this scenario has the reservoir deteriorating to the north toward the JAW 2 well). The development scheme used 6 horizontal wells; 2 vertical well; and 4 injectors. Recovery Factor was increased due to water flooding to 25% allowing for a EUR of 34 MMBO.

The maximum case takes all of the JAW 1 and JAW 1 NE areas into account (the geologic model considers the reservoir at JAW 2 to be absent due to faulting). The development scheme for the maximum case uses water flooding; has 9 horizontal wells; 2 vertical; and 6 injectors. The Recovery Factor is increase to 30% allowing for a EUR of 63 MMBO.

The following table outlines the key points for each of the cases under consideration:

Case	Wells			OOIP	DE%	EUR
	Vertical	Horizontal	Injectors	MMstb	IXI 70	MMstb
Minimum	5	0	0	58	15	8.7
Most Likely	2	6	4	135	25	33.8
Maximum	2	9	6	211	30	63.3

# **Economic Variables**

The development model for the Jawahara development used the following key variables:

- Production was into a leased FSO and MOPU. Lease rate was held constant at US\$70,000/day.
- Water processing and injection costs vary between US\$0.5 to 1.16/bbl of oil.
- Injection rate was held constant at 5,000 bwpd/well.

#### Net Present Value (NPV)

GCA has calculated NPVs based on a matrix combining the before-mentioned development scenarios with ranges of CAPEX, OPEX, and oil prices (in each case the CAPEX, OPEX, and oil price are held constant). An initial oil price of US\$63/bbl supplied by APEx was used to define the base case NPVs. Based on a positive valuation for the minimum field size, GCA has not added a risk factor to the economic valuation, though it should be noted that in any project of this magnitude technical risk does exist.

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Thank you for the opportunity of assisting APEx in this review. We would be pleased to address any questions that you may have.

Very truly yours,

# GAFFNEY, CLINE & ASSOCIATES, INC.

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