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#### ABSTRACT

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### **Domestic Gas Exploration in North Sumatra**

The deliberate search for gas to fuel the growing domestic market is a relatively new phenomenon in Indonesia. To date established markets for domestic gas exist in West and East Java, South Sumatra, South Sulawesi and the Medan/Pangkalan Brandan area of North Sumatra. Of these, the Medan/Pangkalan Brandan region faces perhaps the biggest challenge with existing supply from onshore fields in steep decline and growth projections for future energy needs showing a significant shortfall in supply by 2006 even using modest growth projections. In order to satisfy this demand in this, Indonesia's third largest metropolitan centre, gas will need to be found and found quickly. The Offshore Asahan PSC and Glagah Kambuna TAC lie approximately 20-50 kilometres offshore of the Medan/Pangkalan Brandan region. These contract areas were last significantly explored in the 1980's when no market for domestic gas existed and exploration efforts focused exclusively on finding oil. Despite three out of nine exploration wells having tested gas in the past (NSO-1S, Kambuna-1, Glagah-1) the general view is that gas for the Medan/Pangkalan Brandan market will be delivered from South Sumatra via the construction of a costly 500 kilometre long pipeline. Clearly, if significant gas resources exist offshore then this plan would appear quite illogical.

With this commercial driver in mind Serica has undertaken a complete reassessment of the petroleum system in the offshore area. This work reveals the presence of two major half graben kitchens within the confines of the Offshore Asahan PSC. These kitchens lie in the western part of the PSC and trend approximately north-south into the onshore area. They are flanked by two extensive basement high trends, the Glagah and Pakol Highs. Three play types are interpreted to exist: (i) combination structural/stratigraphic pinch-out traps within the late syn-rift/early post rift section adjacent to the basement highs, (ii) structural traps in the post-rift section above the basement highs and (iii) three-way fault defined traps in the post rift/sag succession along the western flank of the Pakol graben. Of these play types the first has been drilled with success along the Glagah High (Glagah-1 & Kambuna-1 wells) whereas the other two remain undrilled at the present time.

Restricting attention to the area of the mapped petroleum system in the western part of the PSC has revealed the presence of nine prospects with an unrisks mean reserve potential in excess of 3 tcf of gas and 180 mmb of condensate. In 2005 appraisal/development wells will be drilled on the existing NSO-1S (Tanjung Perling)

and Kambuna-1 discoveries. These wells are aimed to increase reserves on both fields in order to confirm rapid commerciality. If successful the development of both fields will proceed with first gas targeted in late 2006. In addition, the Togar-1 exploration well will also be drilled in early 2005. This well is targeting a well defined, "flat spot" enhanced, and fault defined structural closure in the northwestern part of the PSC above the Pakol Graben. This flat spot together with seismic phase reversals and bright spots (seen also on 1987 vintage data) has added an extra dimension to the exploration potential of the area. Unfortunately, the volume of post-1987 seismic data is limited within the PSC/TAC and consequently complete assessment of the true DHI supported potential remains uncertain at the present time. However, if the Togar-1 well proves successful, then additional high resolution seismic data will be obtained over the western part of the PSC and along the DHI trend. It is hoped that this data will further reduce the risk of exploration drilling and add considerably to the prospect inventory and reserves potential on both the PSC and TAC.