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Executive Summary—National Assessment of Oil and Gas Project: Geologic Assessment of Undiscovered Gas Hydrate Resources on the North Slope, Alaska

By U.S. Geological Survey Alaska Gas Hydrate Assessment Team

The U.S. Geological Survey (USGS) has completed the first assessment of the undiscovered technically recoverable gas-hydrate resources on the North Slope of Alaska. Using a geology-based assessment methodology, the USGS estimates that there are about 85 trillion cubic feet (TCF) of undiscovered, technically recoverable gas resources within gas hydrates in northern Alaska.

Resource Summary

For the Northern Alaska Gas Hydrate TPS, the USGS estimates that the total undiscovered natural gas resources in gas hydrate deposits range between 25.2 and 157.8 trillion cubic feet (TCF; 95-percent and 5-percent probabilities of greater than these amounts, respectively), with a mean estimate of 85.4 TCF (table 1). Of this mean estimate, (1) 24 percent (20.6 TCF) is in the Sagavanirktok Formation Gas Hydrate AU, (2) 33 percent (28.0 TCF) is in the Tuluvak-Schrader Bluff-Prince Creek Formations Gas Hydrate AU, and (3) 43 percent (36.9 TCF) is in the Nanushuk Formation Gas Hydrate AU (table 1).

U.S. Geological Survey Alaska Gas Hydrate Assessment Team

Executive Summary—Geologic Assessment of Undiscovered Gas Hydrate Resources on the North Slope, Alaska

Figure 1. The Northern Alaska Gas Hydrate Total Petroleum System (TPS) (shaded in tan), and the limit of the gas hydrate stability zone in northern Alaska (red outline).

Table 1. Alaska North Slope—Gas hydrate assessment results.

[BCFG, billion cubic feet of gas. MMBNGL, million barrels of natural gas liquids. Results shown are fully risked estimates. F95 represents a 95-percent chance of at least the amount tabulated; other fractiles are defined similarly. Fractiles are additive, assuming perfect positive correlations. NGL, natural gas liquids; TPS, total petroleum system; AU, assessment unit.]

<table>
<thead>
<tr>
<th>Total Petroleum System and Assessment Unit</th>
<th>Field type</th>
<th>Gas (BCFG)</th>
<th>NGL (MMBNGL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F95</td>
<td>F50</td>
</tr>
<tr>
<td>Northern Alaska Gas Hydrate TPS</td>
<td></td>
<td></td>
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<tr>
<td>Sagavanirktok Formation Gas Hydrate AU</td>
<td>Gas</td>
<td>6,285</td>
<td>19,490</td>
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<td>Tuluvak-Schrader Bluff-Prince Creek Formations Gas Hydrate AU</td>
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<td>26,532</td>
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<td>Nanushuk Formation Gas Hydrate AU</td>
<td>Gas</td>
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<td>Total Undiscovered Resources</td>
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<td>25,233</td>
<td>81,030</td>
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