Iridium GMDSS Provider Application to the IMO

Worldwide Navigational Warning Service (WWNWS) Subcommittee - 5

01-04 October 2013
Unique Network - Unparalleled Capabilities

• The Iridium network is comprised of a constellation of 66 cross-linked, low earth orbit (LEO) satellites
• Calls are routed from satellite-to-satellite and grounded at gateways around the world
• Iridium is the only satellite network that provides fully global coverage including Sea Areas (A1 - A4)
• The dynamic motion of the Iridium satellites provides added redundancy and network flexibility

Iridium constellation provides 100% global service area
Iridium Maritime Users

- Iridium has provided global, reliable communications to the maritime industry for ~15 years.
- Iridium provides communications for nearly all segments of the maritime industry, consisting of more than 50,000 subscribers worldwide, including 15,000 SOLAS class vessels.
- Iridium is currently utilized to provide maritime safety and regulatory communications (LRIT and VMS).

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Iridium Maritime Communications Portfolio

- Telephony
- Data Link
- Broadcast
- Broadband
Iridium Maritime Services

Telephony
• A priority-based two-way telephony service
• Utilized for routine ship-to-shore, shore-to-ship and ship-to-ship communications

Data Link
• A priority-based two-way data service
• Utilized for routine ship-to-shore, shore-to-ship communications

Broadcast
• A new, fully global, priority-based one-way data service
• Can be utilized for distribution of Maritime Safety Information (MSI)

Broadband
• A fully global two-way broadband data service, utilized for routine communications
Iridium Service Dependability

The Iridium network is one of the most robust communications networks in the world

- Consistently performs at 99.9% availability
  - Telephony Services Availability: 99.95 trailing 12 months
  - Data Link Services Availability: 99.90% trailing 12 months
- Redundant network and satellite architecture
- Only commercial satellite network with fully functional in-orbit spares
Iridium GMDSS Recognition Application

- Iridium is seeking GMDSS recognition under the process defined in Res. A. 1001 and additional guidance provided in Circ. 1414
- The proposal submitted to MSC92 was the first step in the process to seek GMDSS recognition as described in Res. A.1001 and Circ. 1414
- A detailed application will be submitted by the U.S. delegation to the Navigation, Communication, Search and Rescue (NCSR) sub-committee for verification and evaluation
- The earliest opportunity for recognition would be MSC94 but MSC95 is more likely
Transition to Iridium NEXT
Iridium Constellation Status

Current constellation remains healthy. Forecast to be viable for years to come and is supported by in-orbit spares.
Iridium NEXT

• Fully replaces the current constellation of 66 LEO satellite
• Modernized ground stations with new features and capabilities
• Will include 6 in-orbit spares and 9 ground spares
• Scheduled deployment between early 2015 and 2017
• Eight launches using SpaceX Falcon 9 Heavy and ISC Kosmotras rockets
• Significant advantages
  • Significantly increased network capacity
  • Much greater data speed capabilities
• Fully backward compatible
Planned Evolution to Iridium NEXT

• There is no greater priority for Iridium than ensuring a smooth transition to Iridium NEXT

• Implementing a continuous and methodical evolution from the current system to Iridium NEXT

• Incremental one-for-one replacement of satellites

• Backwards compatibility to all subscriber devices and solutions

• Current Iridium legacy services will be supported by the Iridium NEXT architecture

• Backward compatibility plan is critical to new services and capabilities
Iridium PRIME Overview

• Based on the success with hosted payloads on Iridium NEXT, Iridium is launching a bold new vision for hosted payloads - Iridium PRIME℠

• Hosted payloads have become essential to providing affordable options for space missions, and opportunities are expanding

• To respond to this demand, solutions need to be flexible in timing, aligned with customers’ technology and budget decision-making process.
Why Introduce Iridium PRIME Now?

• With the implementation of the Iridium NEXT infrastructure, Iridium can fly more than 66 operational satellites in our constellation

• The Iridium NEXT ground support systems are designed to fly more than 140 satellites simultaneously

• After designing and building 81 satellites as part of Iridium NEXT (operational and spares), additional satellites will have a low incremental cost

• Once Iridium NEXT is complete in 2017, we can launch additional satellites/payloads into our network when they are ready
Iridium PRIME Payload Spec Comparison

<table>
<thead>
<tr>
<th>Spec</th>
<th>Iridium NEXT</th>
<th>Iridium PRIME</th>
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</thead>
<tbody>
<tr>
<td>Weight</td>
<td>50 kg</td>
<td>265 kg</td>
</tr>
<tr>
<td>Payload Dimensions</td>
<td>30cm x 40cm  x 70cm</td>
<td>Almost Entire Nadir Deck Area!</td>
</tr>
<tr>
<td>Payload Power</td>
<td>50 Watts (200 W peak)</td>
<td>650 Watts (1100 W peak)</td>
</tr>
<tr>
<td>Payload Data Rate</td>
<td>Up to 1 Mbps</td>
<td>Up to 17 Mbps</td>
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</tbody>
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Creates a turnkey platform for hosted payloads that will cost less than 50% of the cost of creating a stand-alone satellite mission.

Available PRIME Payload Area
Summary

- **A Lasting Value Proposition For The Maritime Industry**
  - Operates a fully global satellite network providing maritime communications in all four Sea Areas (A1, A2, A3 & A4)
  - Has a long history of providing mission critical and maritime communications
  - Iridium is seeking recognition to be part of the GMDSS and will provide a comprehensive application demonstrating compliance with Res A.1001 to the NCSR sub-committee and IMSO for review
  - Current constellation is healthy and is fully compliant with GMDSS requirements
  - Iridium NEXT will provide continued service beyond 2030 and will be fully compliant with GMDSS requirements without the need to replace approved shipboard equipment
  - Iridium PRIME provides an opportunity to enhance or extend maritime communications cost effectively globally

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THANK YOU

Brian Pemberton
Director, Aviation and Maritime Products
Iridium Satellite LLC
+1.703.287.7429 (o)
+1.240.274.2867 (m)
brian.pemberton@iridium.com