# Progress on the Sea Launch Failure Investigation

Sea Launch reports significant progress in the investigation of the launch failure on March 12. Preliminary investigations indicate off-nominal operation of the second stage propulsion system. All other systems appear to have performed as expected.

Liftoff of the third flight of Sea Launch, carrying the ICO F-1 communications satellite, occurred on schedule at 6:49 a.m. (PST), March 12, from the equatorial launch site at 154 degrees West Longitude. An anomaly occurred just prior to second stage separation. The ICO spacecraft did not reach orbit.

As a result of the off-nominal flight operations, an on-board automatic flight termination command was issued approximately 8 minutes after liftoff, near the end of the second stage burn. A solid telemetry link was maintained for 15 seconds after flight termination and intermittent data was received for an additional 5 minutes. During the entire flight phase, good quality and complete telemetry was received through both the line-of-sight systems and the Tracking and Data Relay Satellite System (TDRSS).

A core team of Boeing experts has heard strong evidence and supporting rationale indicating the root cause of the failure is related to a ground software logic error. Sea Launch partners Yuzhnoye and Energia detected the error during post-launch data review and probable cause investigation. Initial review of the flight telemetry supports this root cause scenario.

The logic error would appear to have failed to command a valve to close in the second stage pneumatic system. This system performs several functions, including operation and actuation for the steering engine. Data indicates this system had lost more than 60% of its pressure. Continued pressure loss reduced the capability of the engine, ultimately leading to a significant deviation in attitude, triggering the automatic flight termination system.

Each of the Sea Launch partners continues to conduct independent investigations, looking beyond the immediate concern to address the overall system, to ensure potential failure points do not exist elsewhere. Beginning in April, the full Sea Launch Failure Review Oversight Board - with representatives from customer companies as well as from the satellite and aerospace industries - will review and validate the results of each investigation to assess the root cause of the anomaly and corrective action required. Following this process, a return-to-flight program will be initiated.

Based on current progress, Sea Launch anticipates the investigation can be completed by mid-May, with a return to flight this summer. The Sea Launch partners - Boeing Commercial Space Group, RSC Energia, KB Yuzhnoye/PO Yuzhmash and the Anglo-Norwegian Kvaerner Group - remain committed to the program and to working together to resolve this anomaly in a timely fashion.

For additional information, visit the Sea Launch website at:www.sea-launch.com

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For further information:
Paula Korn
(562) 951-7348
paula.korn@sea-launch.com