

Discovery serious oxygen leak:(

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- *From:* "Bob Haller" <hallerb@xxxxxxx>
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<http://www.nasaspaceflight.com/content/?id=4115>

Discovery leak under investigation
12/6/2005 12:19:00 PM
By: Chris Bergin

Engineers and technicians are investigating the cause of a "huge" oxygen leak, recorded during the ascent of Discovery's launch during STS-114.

Originally classed as bad data due to the unrealistic levels recorded after Discovery's post flight processing at the Dryden Flight Research Center at Edwards Air Force base in California, analysis on the orbiter's "catch bottles" has forced Shuttle managers to believe the data is real – and are trying to find the source of the leak.

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The catch bottles are located in the Aft Fuselage of the orbiter – taking over a role of sampling anomalous levels of gas around the SSMEs (Space Shuttle Main Engines) when the Shuttle is detached from the Hazardous Gas Detection System Lines upon departure from the launch pad.

The Catch Bottles were removed from Discovery during post flight processing at Dryden. However, at that time there appeared to be no indication of the anomalous levels that are now – over four months since Discovery landed – causing such concern.

'From normal processing, we had no indications after the flight of (an) oxygen leak of the engines,' noted a recent internal report on Shuttle status, believed to have been written by Shuttle manager Wayne Hale. 'Will look at post-flight data from landing at Dryden.'

Concerns that the leak is related to the MPS (Main Propulsion System) or the SSMEs do not appear to collaborate with the ascent data from Discovery's launch during STS-114 – with a nominal MECO (Main Engine Cut Off) recorded. It is understood that a leak of such magnitude would have affected ascent data.

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'(The) leak rate is huge – about 100,000 scm (cubic meters at standard conditions). A leak that large should have been seen in the performance of the MPS or SSME,' added the report. 'Trying to figure how we could have a leak that large and not see it in any of the data.'

Evaluations on finding a cause to explain the anomaly is involving engineers and technicians who work on a number of specific areas of the orbiter. As of today, sources noted that the MPS does not appear to be the cause for the leak.

Other sections that could be responsible involve the SSMEs – although that would conflict with ascent data. A possible flexing of the Orbiter GO2 repress line from the ET (External Tank), causing a possible – yet highly unlikely – leak back into the Aft of the orbiter, which could then be caught by the catch bottles.

Another possible scenario is a leak from the PRSD Fuel Cells in the Payload Bay, which could have migrated into the Aft of the orbiter during the acceleration of launch.

Kennedy Space Center – where Discovery and her two sisters are currently being processed for 2006 missions – have currently been unable to respond to requests for an update in the status of finding a cause of the anomalous levels.

Expanded explanations of potential causes and follow ups will follow as they arrive and are cleared to use by sources.

<http://forum.nasaspaceflight.com/forums/thread-view.asp?tid=989> – Specific update thread.

- *Follow-Ups:*

- ◆ *Re: Discovery serious oxygen leak:(*

- ◇ *From:* Jorge R. Frank

- Prev by Date: *Re: Go To Mars?*

- Next by Date: *Re: The Cold Equations*

- Previous by thread: *Re: ET foam "stretch marks"?(was NASA's Space Shuttle Processing Status Report, 22-11-2005)*

- Next by thread: *Re: Discovery serious oxygen leak:(*

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