

Space and Life Sciences Directorate
Flight Readiness Review
STS-112/ISS-9A

C. L. Fischer

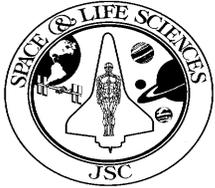
Date: September 17, 2002

STS-112/ISS-9A

Flight Readiness Review

Space and Life Sciences Directorate





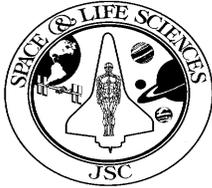
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Space and Life Sciences Mission Activities

- **Crew Health**
- **Open Items and In-flight Anomalies (IFAs)**
- **Radiation and Dosimetry Support**
 - **STS-112 Radiation Prediction**
- **Readiness Statement**



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Crew Health

- **All Crew Physicals will be completed prior to flight**
 - **Applicable flight rules are in place**

STS-112 Crew Surgeon

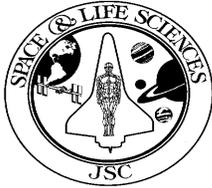
STS-112 Deputy Crew Surgeon

Russian Surgeon

Jim Locke, M.D.

Rainer Effenhauser, M.D.

Alexander Vasin, M.D.



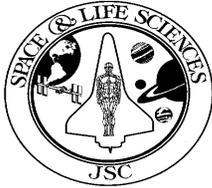
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STS-112 Open Items and Inflight Anomalies (IFAs)

- **All remaining open work is planned and scheduled**
 - **Open items for STS-112**
 - **Crew Physicals**
 - **L-3 day Space Weather Analysis**
- **Exercise Countermeasures are in place**
- **Shuttle Water Quality is within specifications**
- **No open SSP IFAs or constraints**



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Radiation Analysis and Dosimetry Support

STS-112 Flight Specific Predictions – Within Acceptable Limits

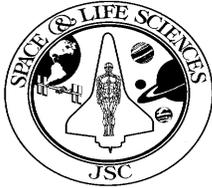
- **Nominal mission (10 d 22 hr 10 m) IV crew exposure projection**
 - **Mission Exposure** 149 mrad (360 mrem)
 - **Daily Average Exposure:** 13.6 mrad/day (33 mrem/day)

EVA EXPOSURES (additional skin exposure):

	<u>1 Hour early</u>	<u>Nominal</u>	<u>1 Hour late</u>
EVA1 (start MET 002/18:50)	4 mrad/6 mrem	38 mrad/38 mrem	38 mrad/38 mrem
EVA2 (start MET 004/18:50)	22 mrad/22 mrem	57 mrad/57 mrem	75 mrad/75 mrem
EVA3 (start MET 006/18:50)	61 mrad/61 mrem	67 mrad/67 mrem	81 mrad/81 mrem

Worst case EVA additional skin exposure:

- **4 hr EVA** 348 mrad/431 mrem
- **6.5 hr EVA** 440 mrad/521 mrem



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Radiation Analysis and Dosimetry Support (*cont.*)

STS-112 Flight Specific Information

- **Onboard Radioactivity (experiment name (# sources) – isotope – activity)**
 - **Fire detectors (all flights) -- orbiter (9) -- Am-241 ==> 6.12 μ Ci**
 - **Operational TEPC (1) -- Cm-244 ==> 1.0 μ Ci**
 - **ISS TEPC (1) -- Cm-244 ==> 1.0 μ Ci**

SPACE WEATHER FORECAST

- **High risk of additional exposure from solar particle events and trapped outer electron belt enhancements. Space Radiation Analysis Group will provide an updated forecast at L-7 days**



Certification of Flight Readiness Statement

The activities required to support Flight 9A/STS-112 have been accomplished except open work as identified. Space and Life Sciences Directorate (SLSD) is ready to support Flight 9A/STS-112.

There are no constraints to proceeding with the planned Flight 9A/STS-112 pending completion of scheduled open work.

J. P. Locke, M.D.
STS-112 Lead Crew Surgeon

**C. L. Fischer M.D., Chief Space Medicine
and Health Care Systems Office**

C. M. Stegemoeller,
Associate Director, Technical

Jeffrey R. Davis, M.D., Director
Space and Life Sciences Directorate