

WORKING HYPOTHESIS

- The ability of the space shuttle team (NASA, USA, and other contractors) to manage the space shuttle program effectively and efficiently to meet the objectives of flying safely, meeting the manifest, improving mission supportability, and improving the system has been threatened over the past decade or more by a complex combination of factors that have contributed a high degree of uncertainty to the conduct of the program. These factors could be the root causes of the STS-107 accident.

MANAGERIAL FACTORS

- Overall uncertainty within NASA as the agency is “reinvented”
- Conflicting signals about the future of the shuttle program coming from top NASA managers
- Turmoil within the shuttle program as program management shifts from NASA headquarters to Johnson Space Center as lead center, and then back again to NASA headquarters

MANAGERIAL FACTORS (CONT'D)

- Lack of full vertical (and horizontal?) communication regarding safety and other issues within the shuttle program and between it and those higher up in NASA
- The declining influence of and number of personnel assigned to the NASA safety and mission assurance offices at NASA headquarters and field centers
- NASA's lack of responsiveness to various external suggestions on shuttle improvements

BUDGETARY ISSUES

- Reductions, then lack of growth, in the shuttle program budget coupled with lack of growth in NASA's budget overall
- Pressures to reduce space shuttle operating costs to support new space transportation initiatives and to help fund the ISS

PROGRAMMATIC FACTORS

- Impacts of the design compromises made to gain political support for shuttle approval while still remaining within a fixed development budget, especially those related to inherent risks of flying the shuttle and to requirements for extensive processing by many people between flights
- Reliance on the space shuttle, still in many ways a developmental vehicle, to perform the operational tasks dictated by the requirements of the NASA human space flight program, and particularly the assembly of the ISS.
- Uncertainty regarding how long the shuttle would be needed, and thus the appropriate investment strategy for shuttle upgrades

PROGRAMMATIC FACTORS (CONT'D)

- The transition of major responsibility for shuttle operations from a series of contractors operating with detailed NASA oversight to a single shuttle operator with NASA insight into its performance
- A space flight operations contract with a potential tension between incentives for cost reduction, on-time launches, and safety assurance
- Uncertainty related to proposals for further privatization and potential commercialization of the shuttle
 - Sporadic discussions regarding transferring OV-102 to private sector management

WORKFORCE FACTORS

- Reductions in NASA and contractor shuttle workforce
- Lack of experience in the remaining workforce due to retirements and loss of skilled personnel

SOME COUNTERVAILING CONSIDERATIONS

- The strong emphasis given to safety from the NASA Administrator down as the top priority value in the shuttle program.
- Improvements in various measures of space shuttle performance (in-flight anomalies, on-time launches, etc.) over time.
- Other positive indications of program health?