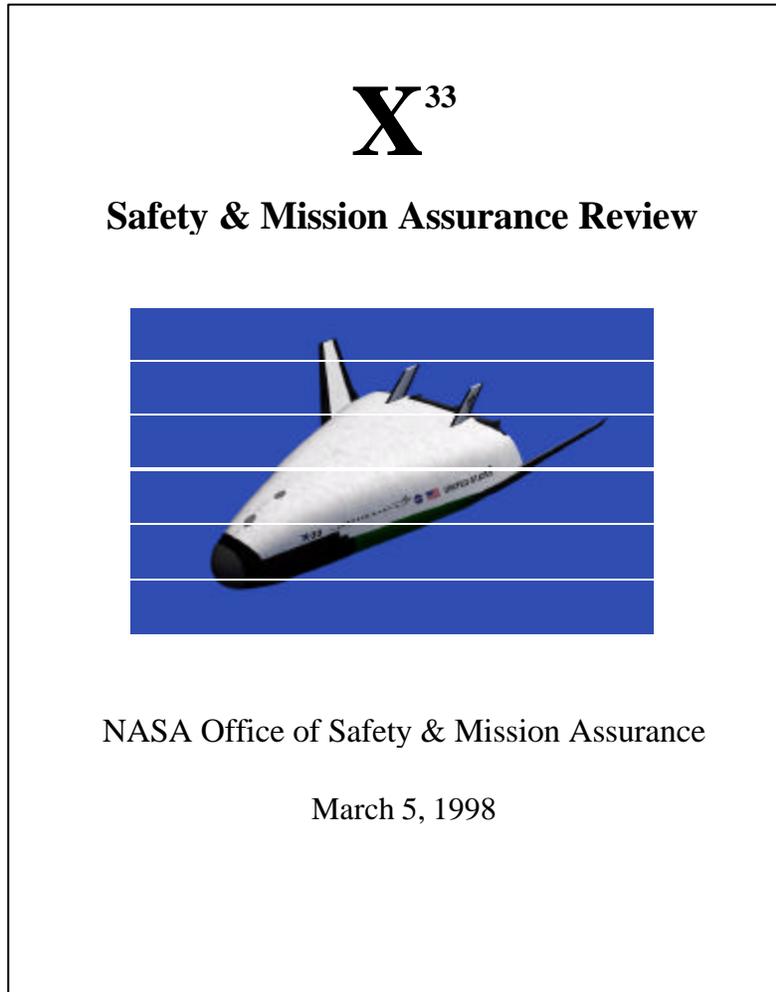


- Excerpt of Full Report -

This document contains excerpts from the X-33 Independent Assessment Report (title page shown below). Only those sections which relate to the PBMA element **Program Management** are displayed.

The complete report is available through the PBMA web site, Program Profile tab.



## 3.2 Risk Management Process

### Risk Management Plan Assessment

Overall, the X-33 Risk Management Plan is impressive. There is certainly evidence of a comprehensive risk management process that has been in existence for some time (at least back to 1996). The steps in their process are: Identification, Quantification, Mitigation (Planning / Implementation), Execution, and Tracking. These steps are similar to the steps that we would consider to constitute a good risk management process. The X-33 project appears to have a good risk management organizational structure, including a Risk Management Board that meets monthly to assess and prioritize risks and approve and review the status of risk mitigation plans. The project has identified a significant number of X-33 risks and ranked them based on estimated (qualitative) probability and consequences. (In the material sent to the review team, there were 27 risks rated high or medium; the total number of risks is approximately 1100).

The project's descriptions of the identified risks are somewhat lacking—they tend to state the condition that is of concern for each risk but usually do not clearly state what the undesired consequence might be. Also, there is not enough information in the risk management plan to determine exactly how they assign values between 0 and 1 to probability and consequence, but this is being done successfully, presumably detailed guidance exists elsewhere.

The X-33 program concentrates its risk management efforts on the high and medium risks. They have a risk tracking form that leads to risks being entered into a database. There is a risk database containing all of the identified risks (some of which have been closed in the past, accounting for the gaps in the risk numbering). In addition to high and medium risks in the database, they also maintain records of low risks. Some risks do not have ratings in the database. The review team assumes that none of the unrated risks are actually high or medium. Safety is not among the areas explicitly addressed in the X-33 Risk Management Plan or process. Safety risks are, for the most part, handled separately in a parallel process. Only when a particular safety risk might compromise program success does it become a member of the program's list of top risks. It would be somewhat more satisfying if safety risks were included under the risk management umbrella (NASA's risk management process explicitly includes safety risks along with the other types), but the program has chosen to handle them separately and this arrangement appears to be working well.

The X-33 project tracks risks for changes over time, i.e., "waterfall" trend charts as well as status reports in the database. Risks are periodically reviewed as evidenced by a September 1996 status report and a December 1997 Quarterly Status report. Risks are reviewed monthly. There is evidence in the database of mitigation planning and follow-up on many of the high and medium risks.