



The Future Role of Quality in Aerospace: Improving the Chances for Mission Success

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May 22, 2001**

*Protecting the Public, Astronauts and Pilots, the NASA Workforce, and
High-Value Equipment and Property*



We All Have Business Challenges

- Workforce constraints
- Budget constraints
- Schedule constraints
- Stakeholders and customers to satisfy
- Competition

No matter what type of business you're in, if you're at this conference, then you already know ... the status quo just won't cut it.



Why Use Six Sigma (or Lean, or Continuous Improvement)?

- To improve customer satisfaction?
- To improve products?
- To improve processes?
- To improve organizations?
- Zero defects?
- Zero mishaps?

What are you trying to accomplish?

What's the bottom line?

How do you define success?



NASA's Vision - What & Why

What

- ***NASA is an investment in America's future. As explorers, pioneers, and innovators, we boldly expand frontiers in air and space***

Why

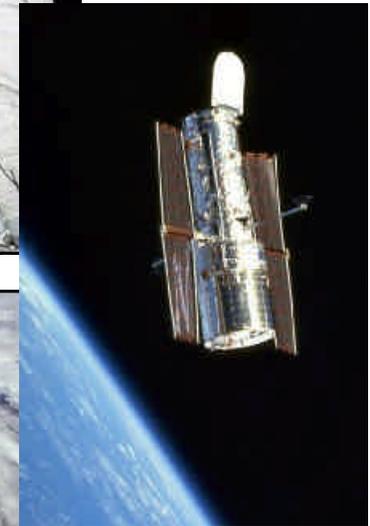
- ***To inspire and serve America and to benefit the quality of life on Earth***





NASA's Mission

- To advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe
- To advance human exploration, use, and development of space
- To research, develop, verify, and transfer advanced aeronautics and space technologies





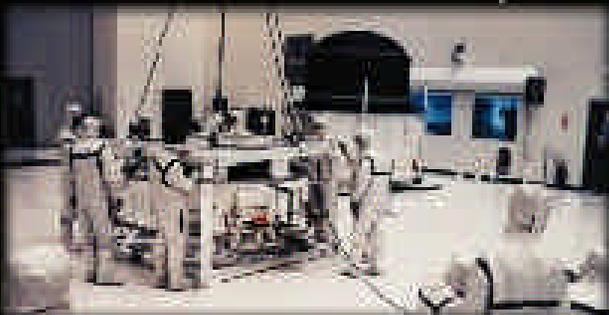
Public



Astronauts and Pilots



<http://www.hq.nasa.gov/safety>



NASA Workforce



High-Value Equipment and Property



Mission Success Starts With Safety

Human Space Flight Is Inherently Risky -- Continual Improvement Makes It Safer



- **Raising the Bar**
 - **Shuttle Safety Upgrades**

- **Understanding and Mitigating Risk**
 - **International Space Station**





**Raising the Bar: The Space Shuttle
Upgrades Program**



Space Shuttle Upgrades Program

- **The Space Shuttle will be the fundamental transportation system for the U.S participation in the assembly and maintenance of the International Space Station.**
- **Ensuring continued success requires periodic maintenance and system upgrades to improve safety.**
- **NASA's challenge-- to identify, prioritize, and implement a system upgrades program that provides the most benefit.**



Space Shuttle Upgrades: Goals and Objectives

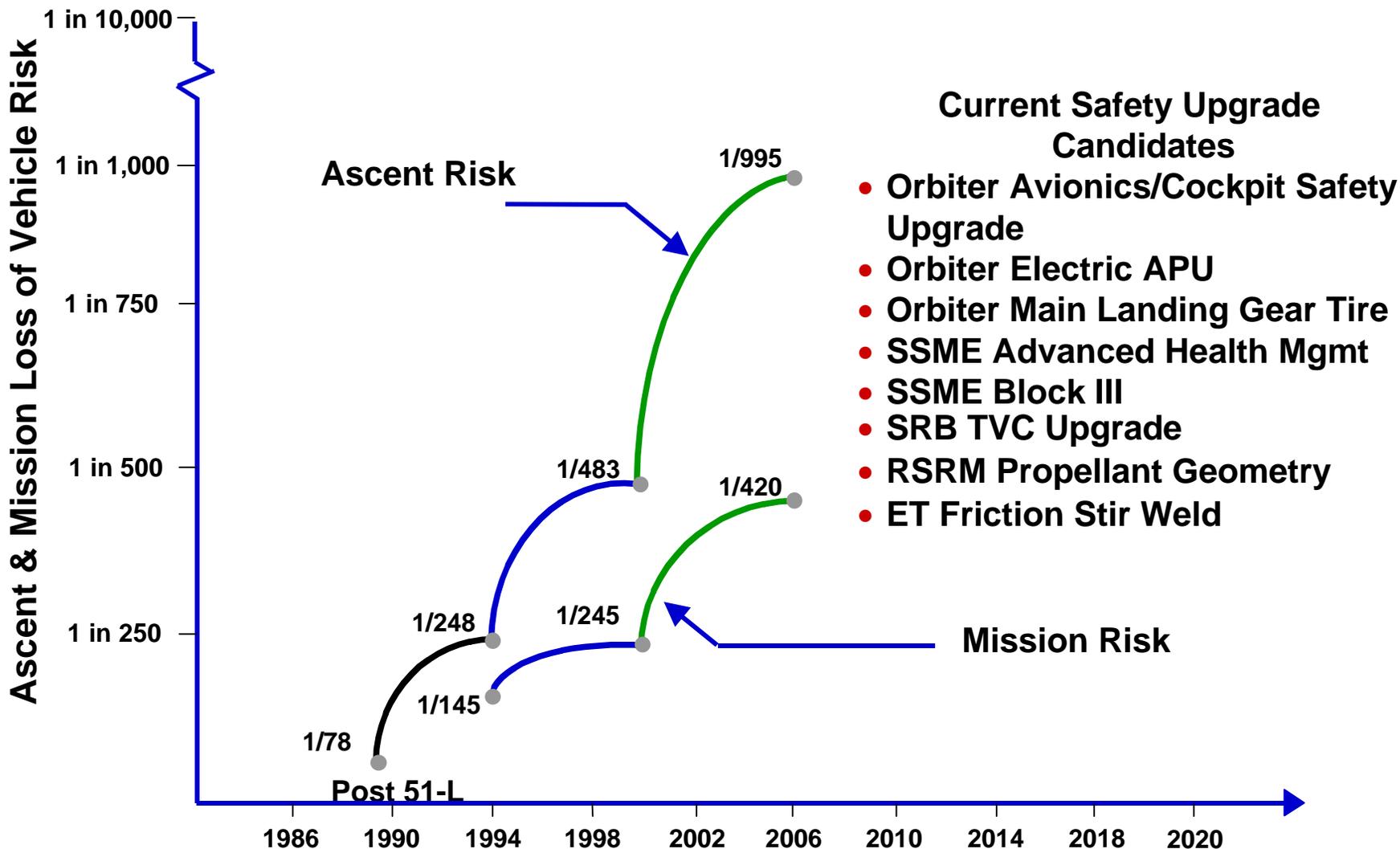
- Strategic program to keep Shuttle flying safely and efficiently until a next generation vehicle is available.
- Supports Agency commitments and goals for human access to space.

Goals and Objectives	97	02	07	12
1 Fly Safely	Current: 1 vehicle loss in 148 flights	Objective: 1 vehicle loss in 250 flights	Objective: 1 vehicle loss in 325 flights	Objective: 1 vehicle loss in 500 flights





Increased Safety Through Upgrades





**Understanding and Mitigating Risk:
The International Space Station**



What's at Stake

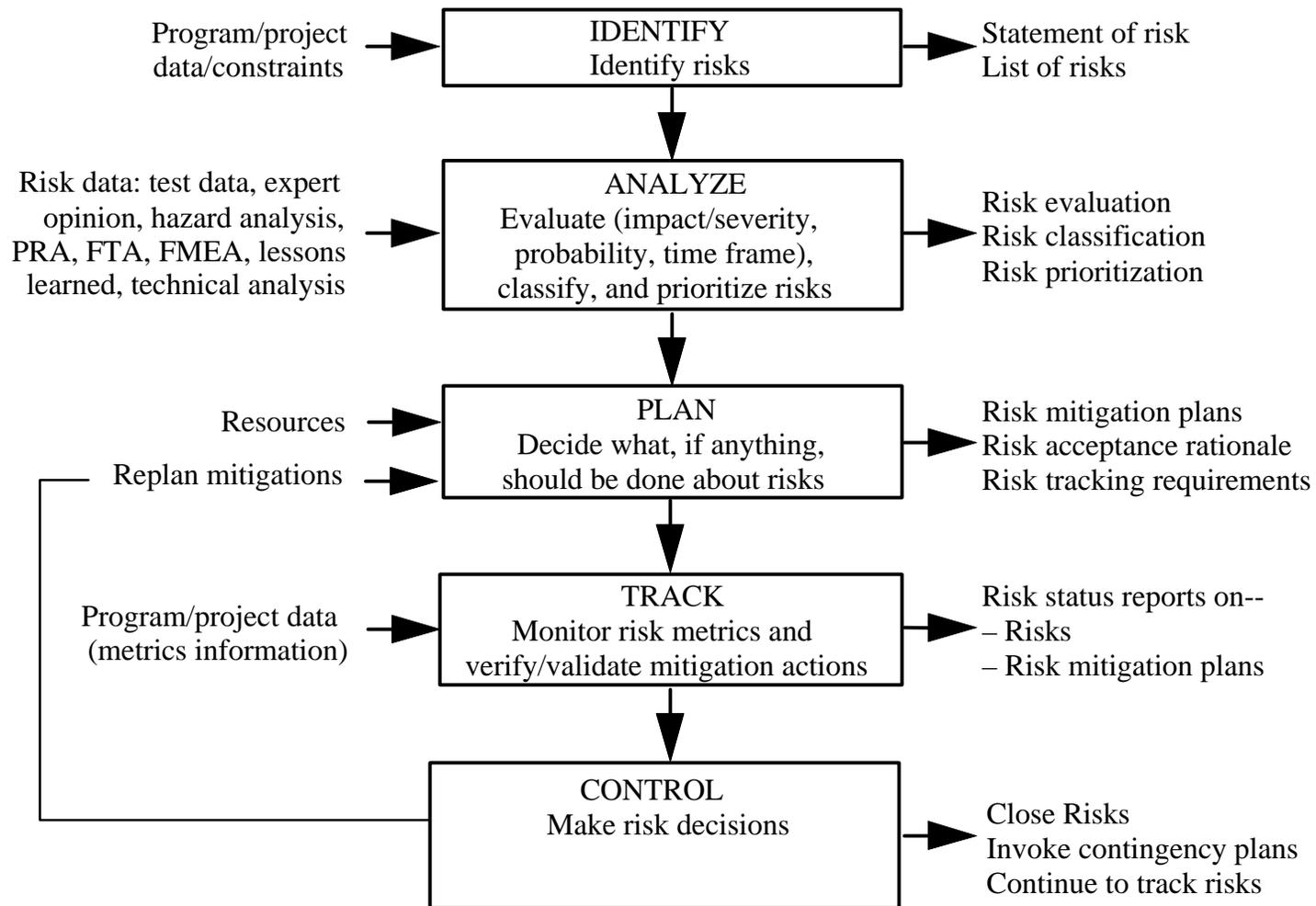
- Human life
- One-of-a-kind hardware
- Scientific knowledge
- American leadership and international cooperation in space

Living in space is risky...mission success depends on understanding and mitigating risk to an acceptable level.





Risk Management Process





Risk Mitigation Basics

- Findings from risk analysis form the basis for risk mitigation plans.
- Hazards are mitigated according to the following stated order of precedence:
 - Eliminate hazards.
 - Design for minimum hazards.
 - Incorporate safety devices.
 - Provide caution and warning devices.
 - Develop administrative procedures and training.



Summary

- In today's challenging and competitive world, the status quo just won't cut it. Continuous effort to improve performance -- *towards a defined end goal* - - must be an objective.
- One size does not fit all. Improvement efforts must be tailored to your mission success criteria.
- At NASA, safety and risk management play an important role in achieving the Agency's vision and mission.