

NCSX Management, Budgets, Plans, and Summary

G. H. Neilson
NCSX Project Manager

NCSX Physics Validation Review
Princeton, NJ
March 27, 2001

We Are Prepared to Carry Out Conceptual Design

- Sound physics basis
- A proven collaborative management approach.
- Strong, well organized national team.
- Enthusiastic institutional support.
- A robust, affordable machine concept.
- Good technical plans.

NCSX Is Using a Proven Project Management Approach

Features:

- Clearly defined technical requirements and work scopes.
- Centralized budgeting, planning, and work authorization.
- Emphasis on communication: frequent meetings, issues debated.
- Internal and external peer reviews.
- Strong project organization within Lab structure.

Approach Has Been Successful in Previous Fusion Projects

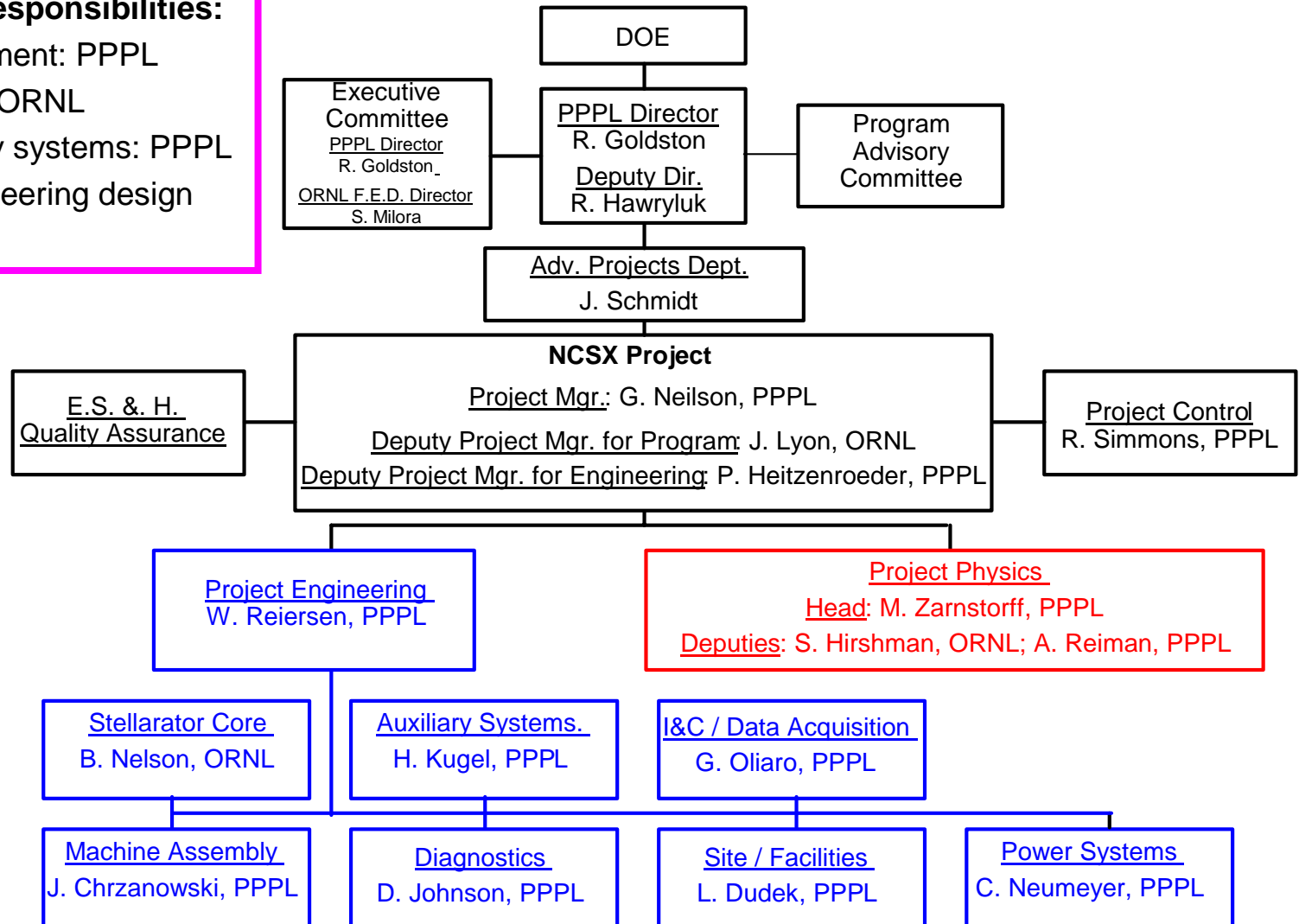
- NSTX machine and NBI: on-cost, ahead of schedule
- TFTR D&D project: proceeding ahead of schedule

Follows DOE project management guidelines and orders.

The Project is Well Organized for Design & Construction

Key leadership responsibilities:

- Overall management: PPPL
 - Stellarator core: ORNL
 - Site and ancillary systems: PPPL
- Physics and engineering design developed jointly.



National Team Approach Works to the Project's Benefit

- Integrated team led by PPPL and ORNL, with numerous collaborators.
Collaboration opportunities:
 - Design & construction: primarily project physics, diagnostics.
 - Physics research: all areas. Leadership opportunities available.
 - Facilitates tool sharing, international collaboration, broad participation.
 - Combines the best talents and experience of multiple institutions.
 - Outstanding people.
 - Upper-management attention to critical issues.
 - Interest and support from key departments (e.g., theory, engineering)
 - National committee advises on technical matters, strongly influences project directions.
- ⇒ Project will continue national team approach through all phases, building on successful models.**

The Facility Can Be Built At an Affordable Cost

Sound preconceptual costing methodology has been used:

- Responsible engineer identified for each system.
- Requirements, work scopes, interfaces defined for each system.
- Extensive internal review to promote completeness and consistency.
- Estimates based on best available information for each system
 - Manufacturer input for key components.
 - Actual cost data from NSTX, for similar worksopes (e.g., controls, diagnostics).
 - Compared modular coils with other stellarators to check reasonableness.
- Contingency estimated based on risk factors for each system. (Overall contingency 27% included in estimate).

Projected cost: \$55M in FY-1999 dollars.

(\$65M as-spent over 4 years, FY2003-06)

Plans

Office of Science Construction Mgt. division (D. Lehman) will review cost and schedule status in May, '01.

Conceptual Design will proceed after PVR.

- Priorities have been established.
- Update requirements and machine configuration for CDR by Sept., '01.
- Conceptual Design Review (CDR) in April, '02.

Project Validation by CM division in May, '02.

Start Title I Design in Oct., '02; start fabrication in Oct., '03.

Overall Summary

- The NCSX is an exciting opportunity for unique fusion science.
 - Stabilize high- β modes, prevent disruptions with 3D shaping.
 - Low-collisionality transport in quasi-axisymmetric system.
- It provides innovative solutions to make magnetic fusion more attractive.
 - Combine tokamak and stellarator benefits.
- It has strong linkages with all of magnetic fusion science, complementing other toroidal confinement research programs.
- National PoP program will develop the physics needed for 10-year goal to assess compact stellarator attractiveness. NCSX is key.
- The physics basis for NCSX is sound.
- It can be built at an affordable cost.
- Good plans are in place for going forward.