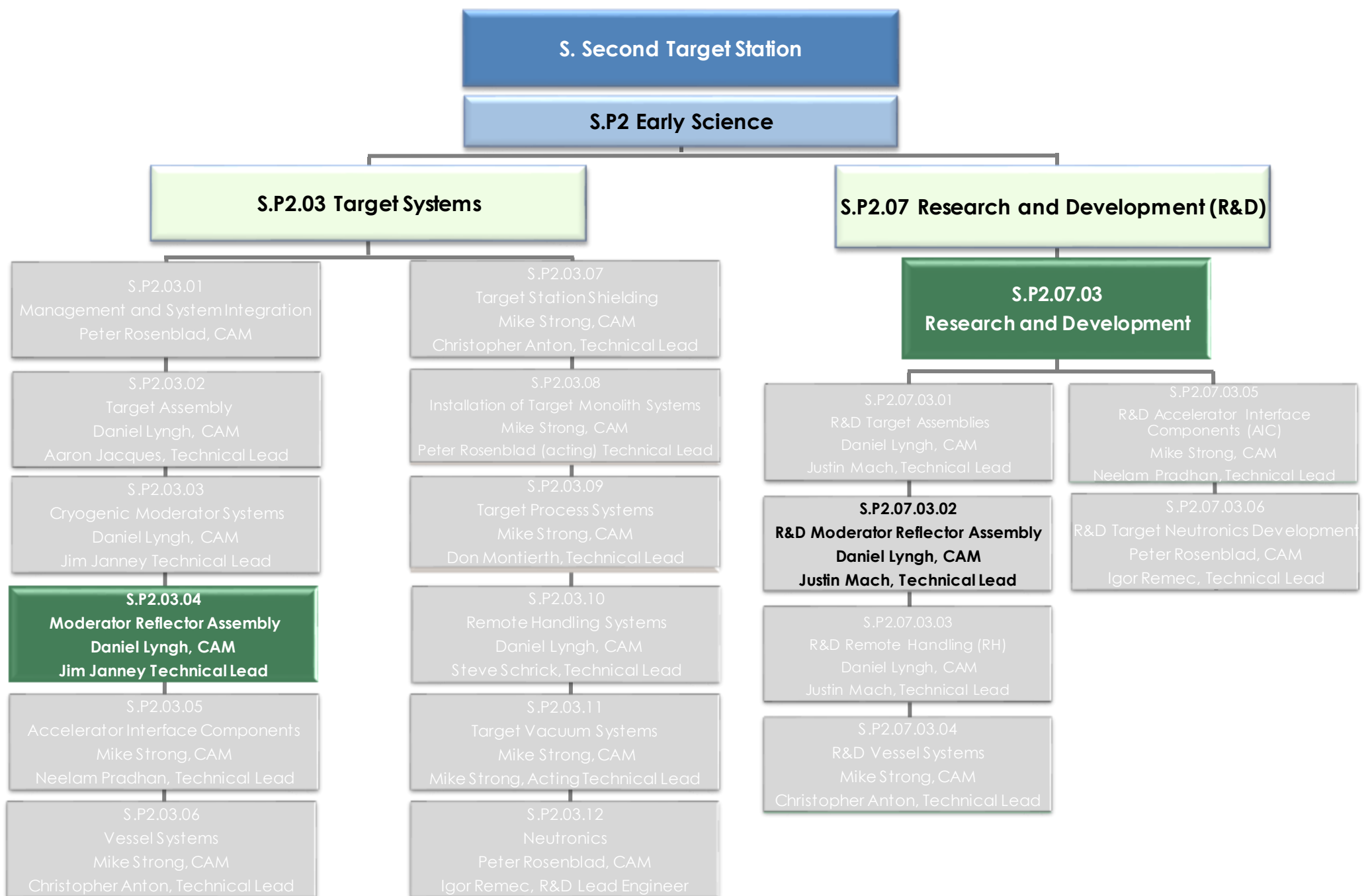


Moderator Reflector Assembly Project

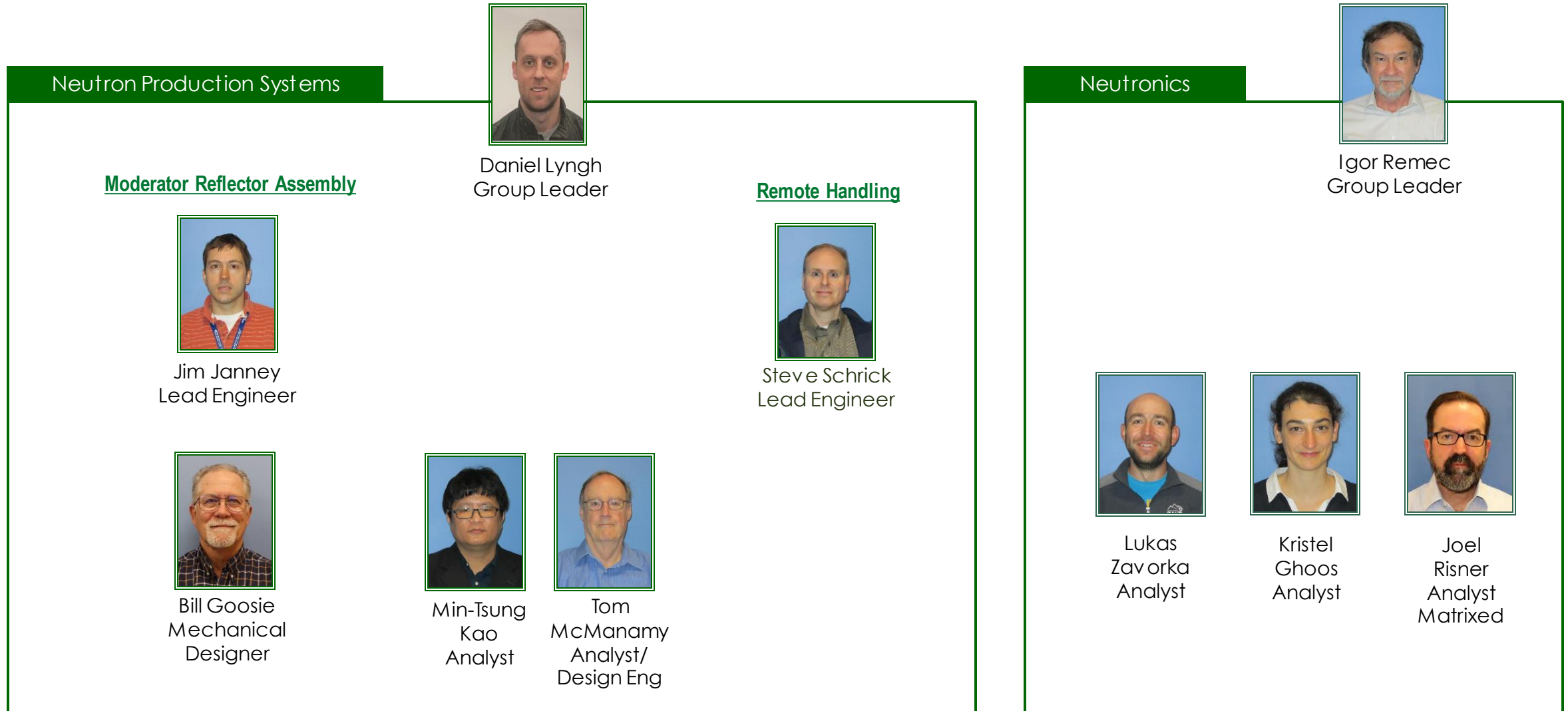
Jim Janney
MRA Lead Engineer

March 26, 2024

ORNL is managed by UT-Battelle, LLC for the US Department of Energy



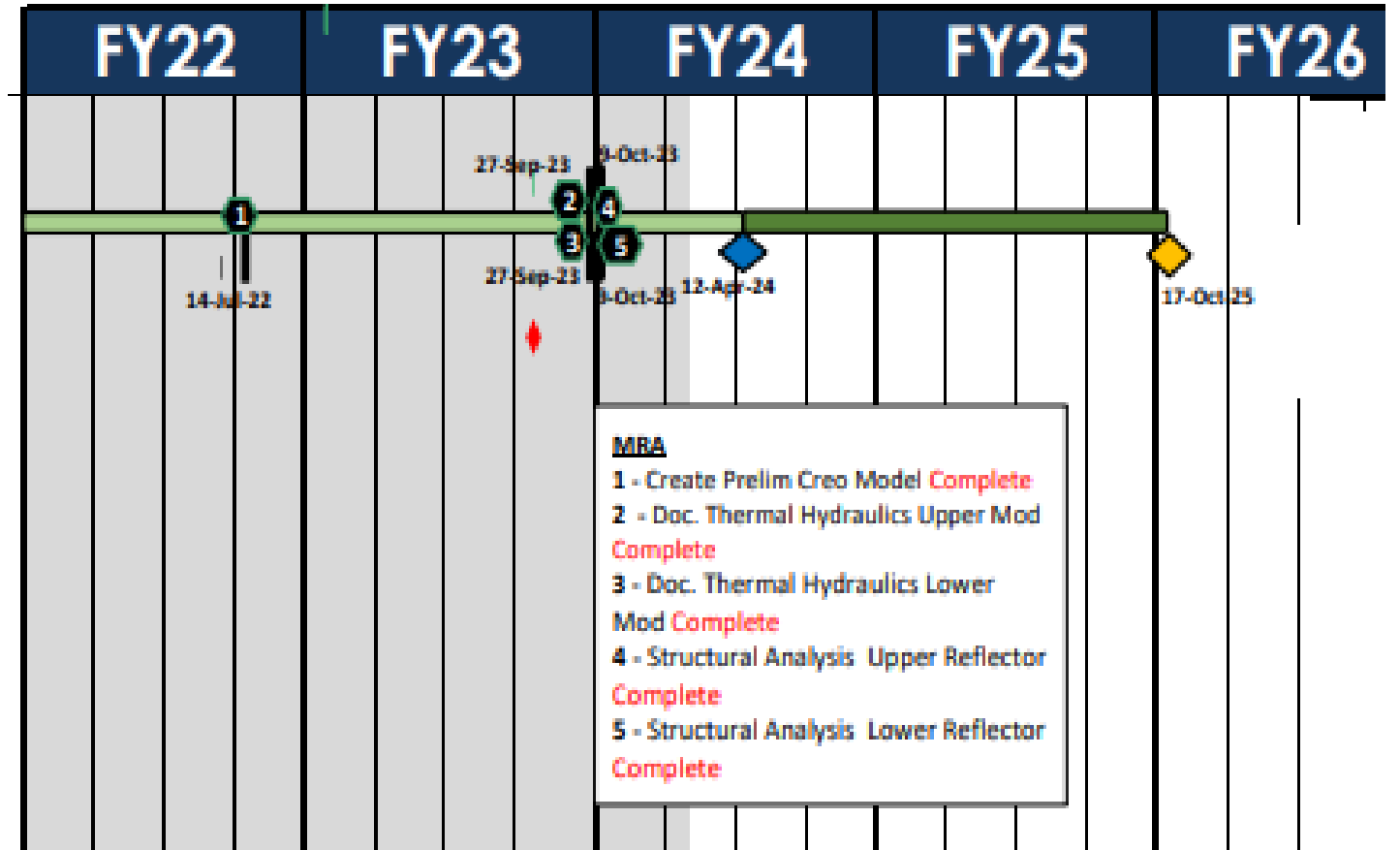
Organization



Design Schedule

S.03.04 - MRA

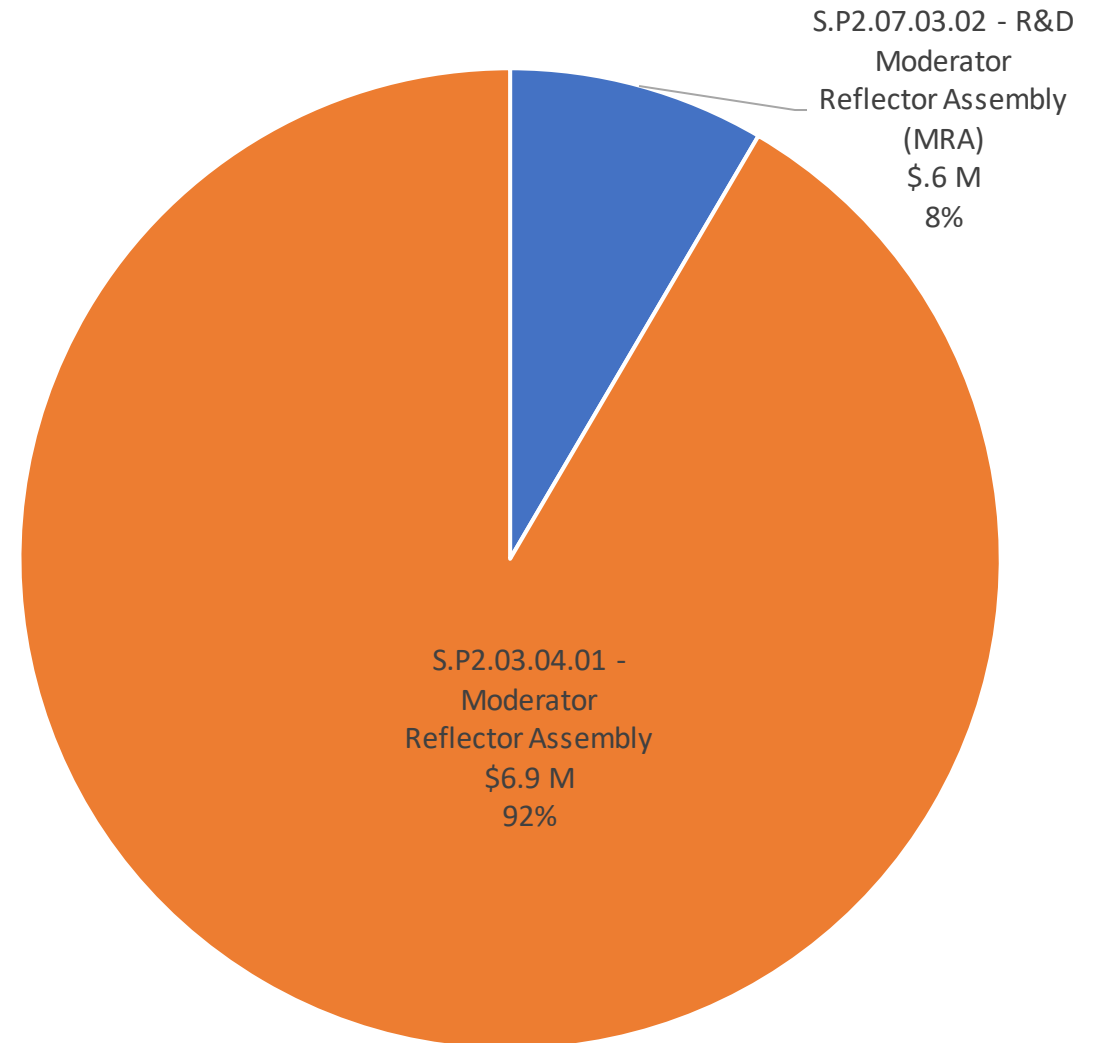
S.03.04.01 - MRA



S.P2.03.04 - Moderator Reflector Assembly (MRA)

WBS	Spent	Estimate
OPC	\$.9 M	\$.6 M
S.P2.07.03.02 - R&D Moderator Reflector Assembly (MRA)	\$.9 M	\$.6 M
TEC	\$.9 M	\$6.9 M
S.P2.03.04.01 - Moderator Reflector Assembly	\$.9 M	\$6.9 M
Total	\$1.8 M	\$7.5 M

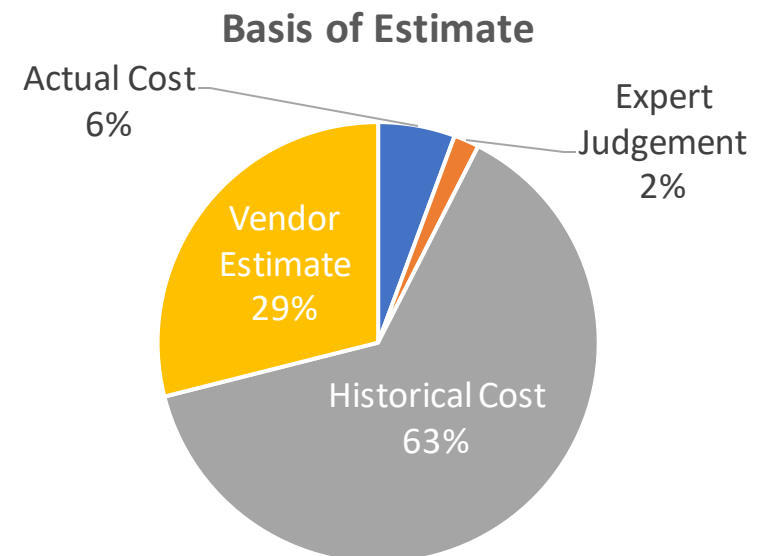
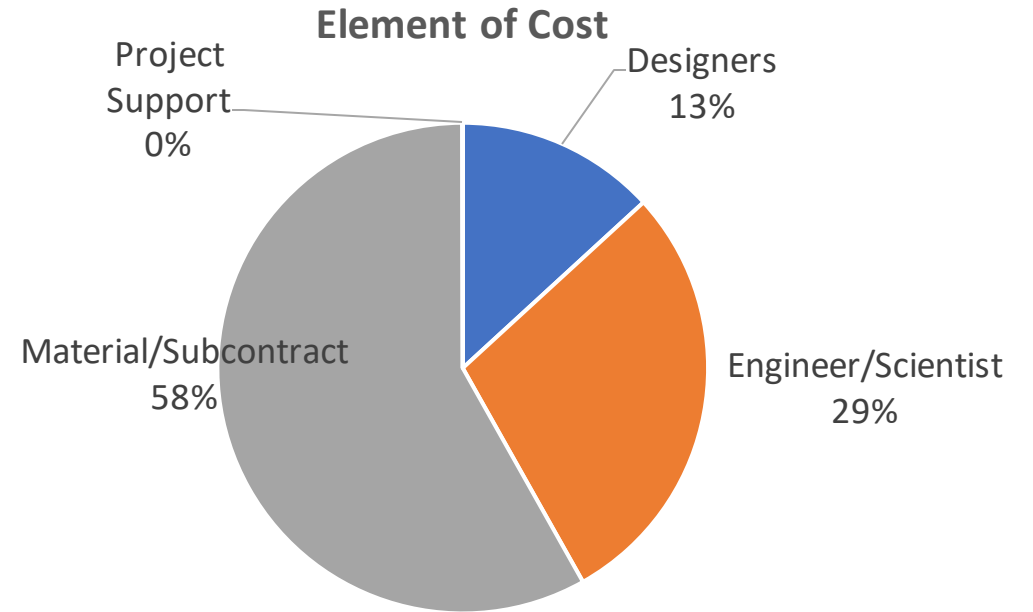
MRA estimated project cost reduced ~\$4 M due to design simplifications in preliminary design



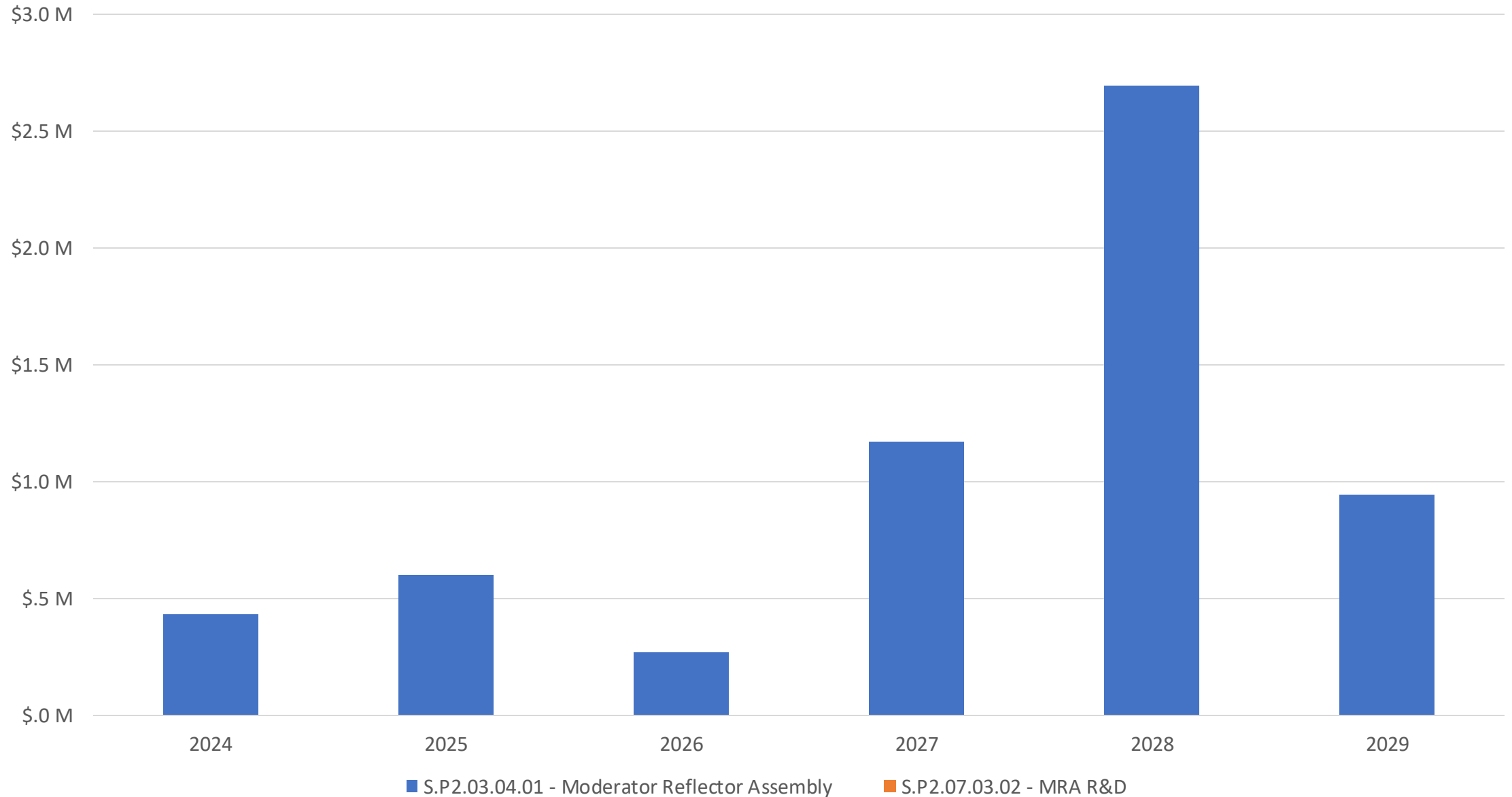
S.P2.03.04 - Moderator Reflector Assembly (MRA)

WBS	Estimate
Designers	\$1.0 M
Engineer/Scientist	\$2.1 M
Material/Subcontract	\$4.4 M
Project Support	\$0.0 M
Total	\$7.5 M

WBS	Estimate
Actual Cost	\$0.2 M
Expert Judgement	\$0.1 M
Historical Cost	\$2.8 M
Vendor Estimate	\$1.3 M
Total	\$4.4 M



S.P2.03.04 - Moderator Reflector Assembly (MRA)



MRA Related Risk Registry Entries

Risk ID	Risk Description	Status
14	If target systems moderator engineering design degrades moderator performance below performance goals during preliminary design, then need to redesign moderators, and potentially utility systems and scattering instruments, resulting in additional time and cost.	Retired
15	If moderator performance parameters are not agreed to with instrument systems by February 2022 , then redesign will be required resulting in schedule delay and additional redesign costs.	Retired
30	If a critical target system component (MRA, target, core vessel, etc.) is damaged late in manufacturing, shipping, installation, then repair or replacement would be required resulting in additional costs and schedule.	Active
35	If prototype development activities of the MRA are not successful, then additional design and development may be required resulting in additional costs and schedule delays.	Retired
36	If safety basis analysis drives certification requirements for target, moderators, core vessels, etc., then the available pool of vendors will be very small, resulting in increased cost and schedule delays.	Retired
102	If the facility safety basis process produces requirements out of sync with the design development process, then redesign will be required resulting in increased cost and schedule	Active