

ORNL NCSP FY 2022 Budget Summary and Highlights

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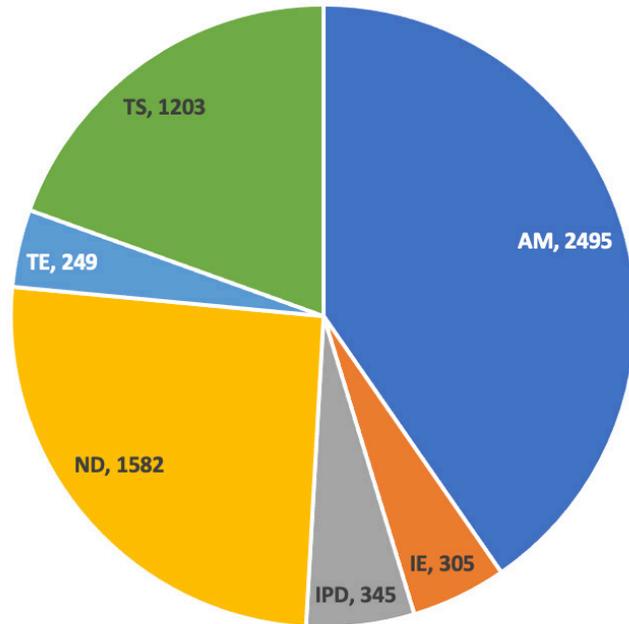
NCSP Technical Program Review

February 21, 2023

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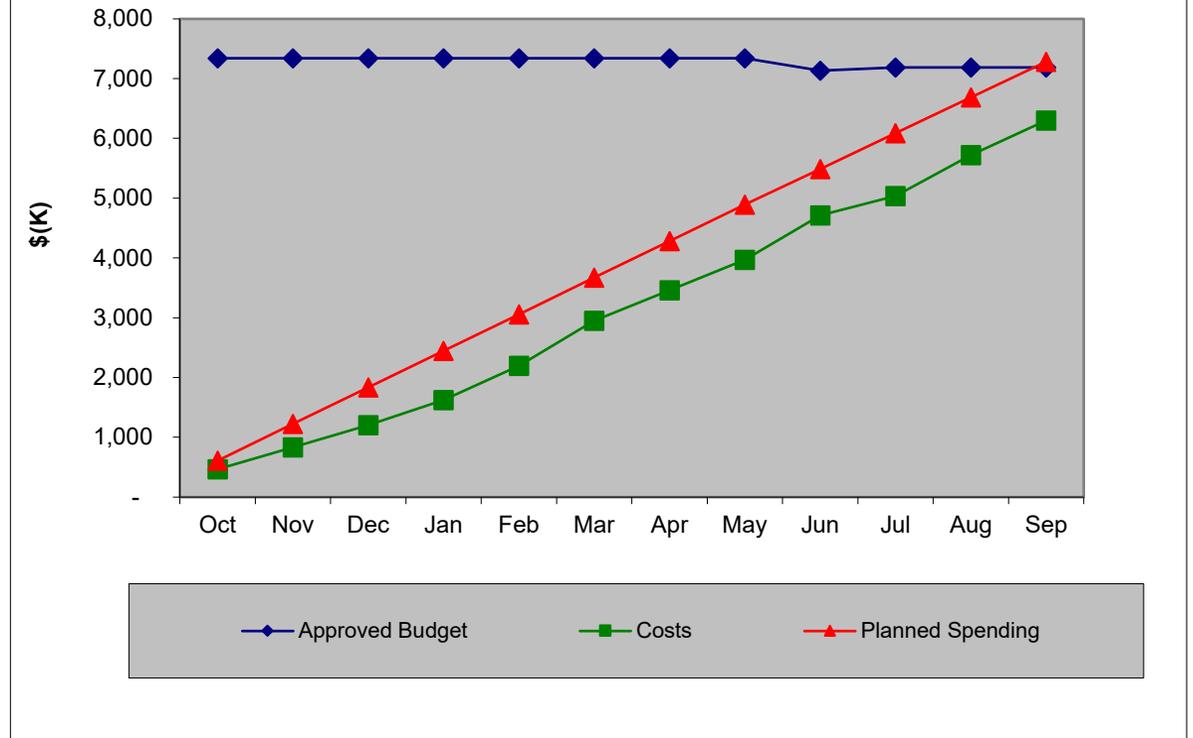
Budget and Spending

ORNL FY22 Budget TPE Breakout



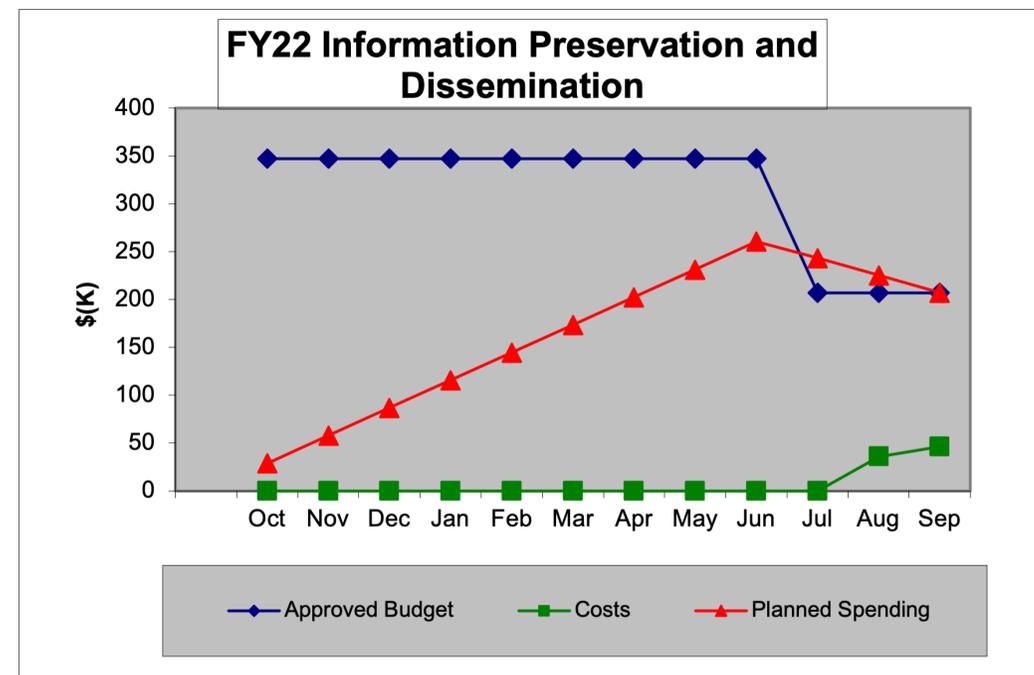
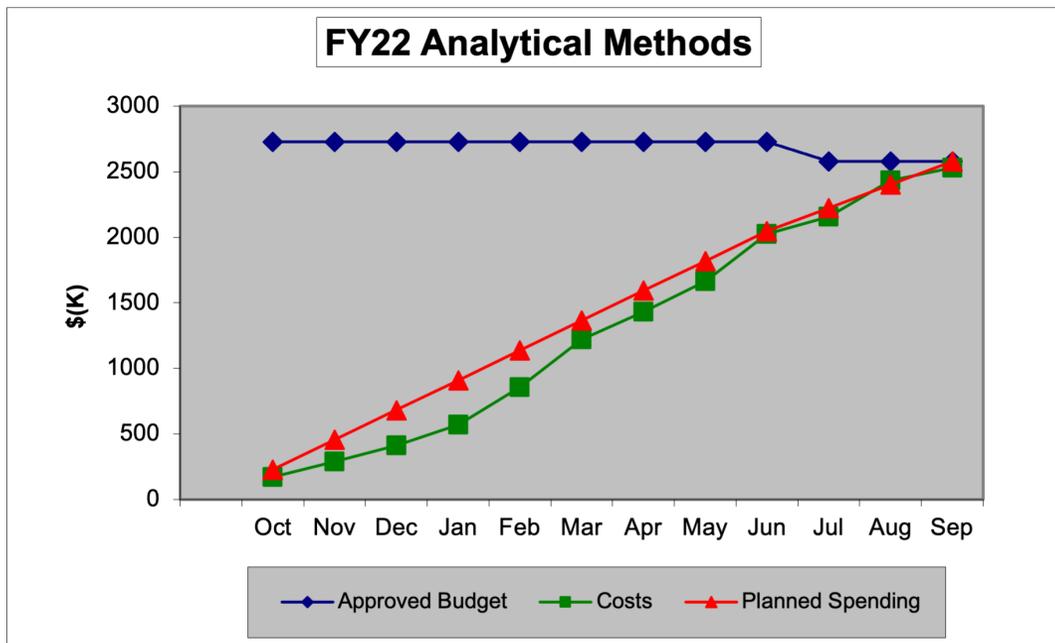
- FY 2021 Carryover: \$949K
- Final FY 2022 Budget: \$6,179K
- Spending accelerated as we went into Q2

FY22 NCSP Spending Overview



FY1 Carryover	\$949K
FY22 Approved budget (inc. C/O)	\$7,185K
Actual spending for Q1	\$1,206K
Actual spending for Q2	\$1,742K
Actual spending for Q3	\$1,762K
Actual spending for Q4	\$1,589K

Spending Details (1)



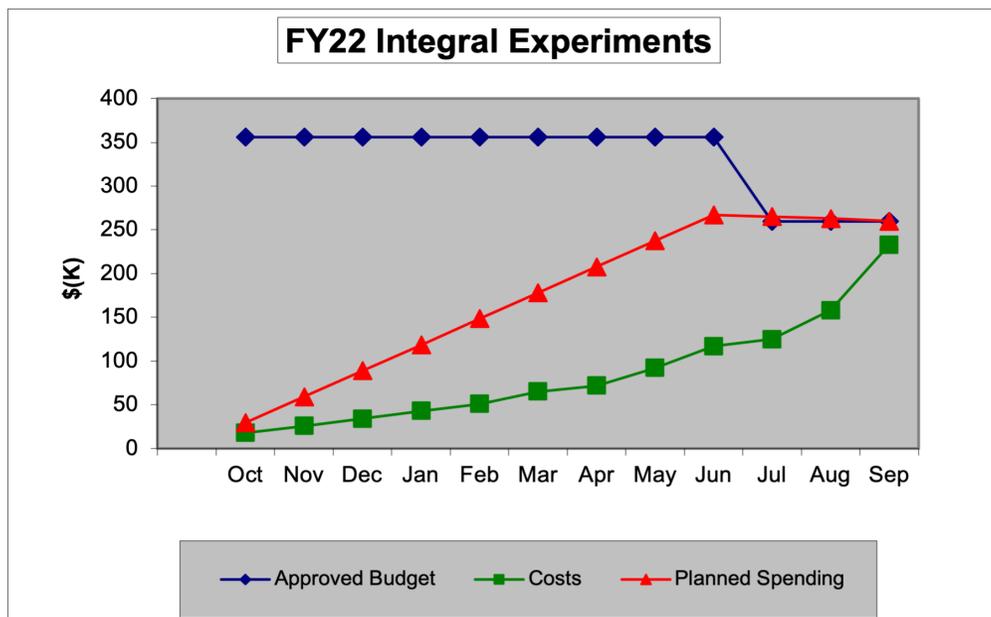
AM	2495
AMPX Maintenance & Modernization	297
Analysis of Sum-of-Fractions for Nuclide Mixtures	60
Determination of Appropriate Integral Parameters for Critical Experiment	100
Expansion of the Verified, Archived, Library of Inputs and Data (VALID)	50
Proposed Benchmark Intercomparison Study	50
Radiation Safety Information Computational Center (RSICC)	700
SCALE/KENO/Tsunami Maintenance and Support/Cross-Section Generation/Modernization/etc.	1188
Slide Rule Application	50
The Effects of Temperature on the Propagation of Nuclear Data Uncertainty in Nuclear Criticality Safety Calculations	0

FY1 Carryover	\$235K
FY22 Approved budget (inc. C/O)	\$2,580K
Actual spending for Q1	\$413K
Actual spending for Q2	\$806K
Actual spending for Q3	\$807K
Actual spending for Q4	\$505K

IPD	345
Nuclear Criticality Safety - Learning From Experience (LFE) Database	0
Nuclear Criticality Safety Repository	345
ND	1582

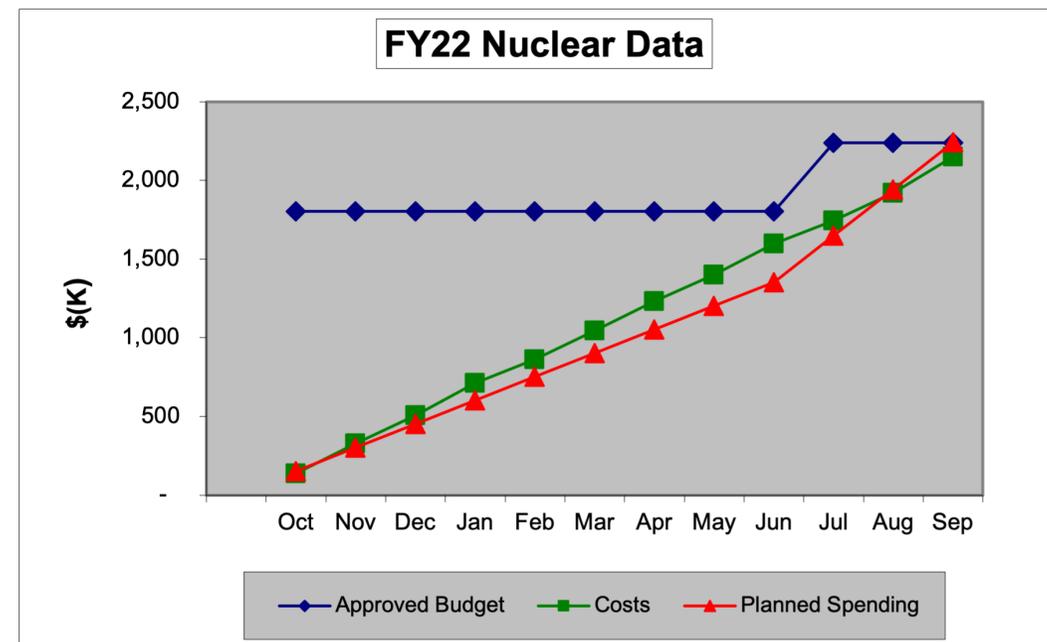
FY1 Carryover	\$2K
FY22 Approved budget (inc. C/O)	\$207K
Actual spending for Q1	\$0K
Actual spending for Q2	\$0K
Actual spending for Q3	\$0K
Actual spending for Q4	\$46K

Spending Details (2)



Category	Total (\$K)
IE	305
IE CEDT Support	190
Funding to support U-233 ZPPR plate shipments to DAF NCERC	100
Perform Programmatic Experiments	0
Provide Safety Committee Support at DAF/NCERC	15

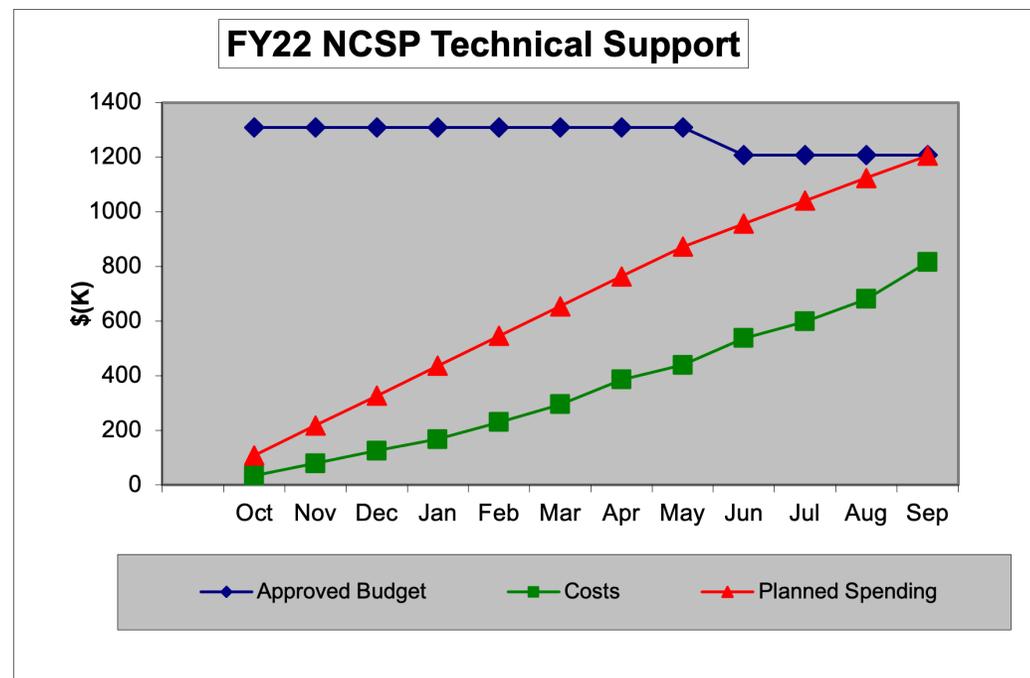
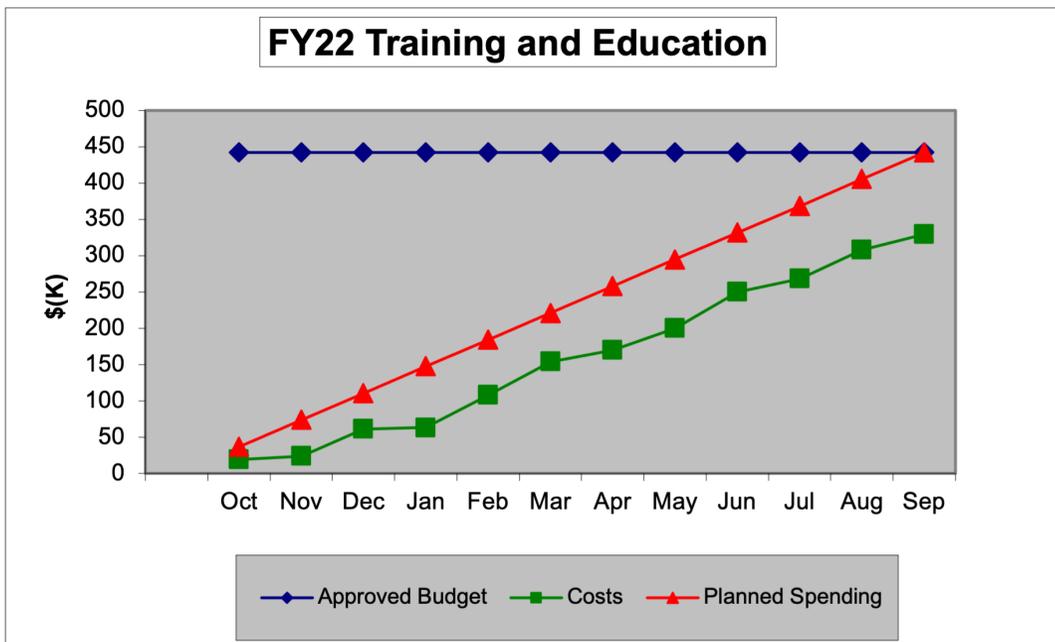
FY1 Carryover	\$51K
FY22 Approved budget (inc. C/O)	\$260K
Actual spending for Q1	\$34K
Actual spending for Q2	\$31K
Actual spending for Q3	\$52K
Actual spending for Q4	\$116K



Category	Total (\$K)
ND	1582
Evaluation of Thermal and Resolved Resonance Ranges of UO2 and PUO2	0
Isotopic Sample Leases to Support ND1 ND Measurements	50
Monte Carlo Evaluation of Differential and Integral Data	0
Nuclear Data Measurement and Evaluation	1140
SAMMY Nuclear Data Evaluation Code Modernization	392
Thermal Neutron Total Cross Section Measurements for Improvement of Criticality Calculations and Propagation of Scattering Kernel Uncertainties	0

FY1 Carryover	\$221K
FY22 Approved budget (inc. C/O)	\$2,241K
Actual spending for Q1	\$508K
Actual spending for Q2	\$537K
Actual spending for Q3	\$553K
Actual spending for Q4	\$554K

Spending Details (3)



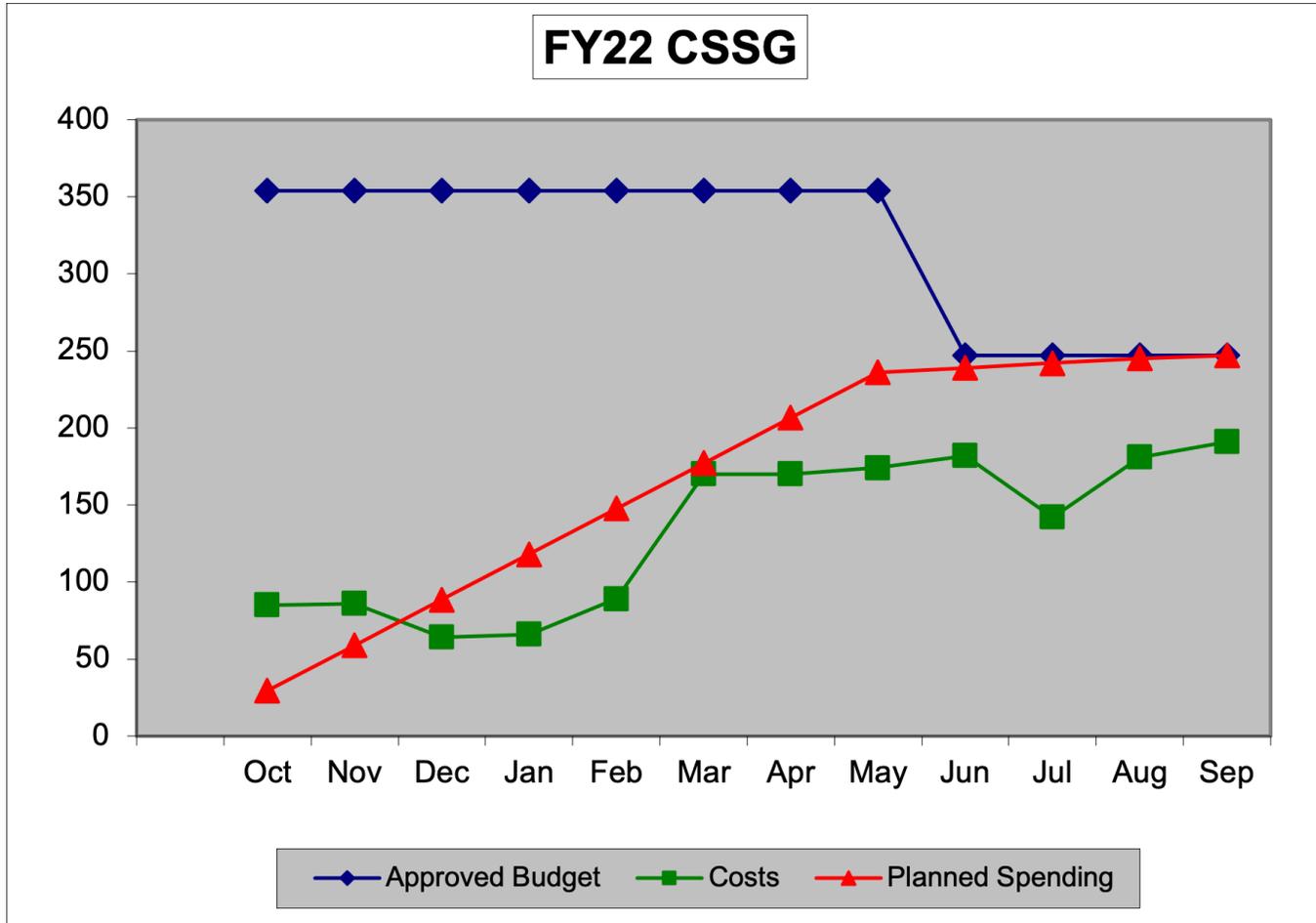
TE	249
Design of an Subcritical/Critical Assembly at ORNL for Use with the CSO/FMH Courses	0
Manage and Provide Instruction for the DOE Nuclear Criticality Safety Training & Education Program	99
Nuclear Criticality Safety Training and Pipeline Development	100
On-Site Introductory Training for the NCS Practitioner on Modern Approaches to Validation using Sensitivity and Uncertainty Analysis Tools	0
Revision of the LA-12808 Nuclear Criticality Safety Guide	50

FY1 Carryover	\$193K
FY22 Approved budget (inc. C/O)	\$442K
Actual spending for Q1	\$61K
Actual spending for Q2	\$93K
Actual spending for Q3	\$96K
Actual spending for Q4	\$79K

TS	1203
AM, ND Succession Planning	148
NCSP Program Management Tools Development	198
NDA Technical Support Group and NDA Technical Infrastructure Project	203
Technical Support	654

FY1 Carryover	\$78K
FY22 Approved budget (inc. C/O)	\$1,207K
Actual spending for Q1	\$126K
Actual spending for Q2	\$169K
Actual spending for Q3	\$242K
Actual spending for Q4	\$280K

Spending Details (4)



FY1 Carryover	\$169K
FY22 Approved budget (inc. C/O)	\$247K
Actual spending for Q1	\$64K
Actual spending for Q2	\$106K
Actual spending for Q3	\$12K
Actual spending for Q4	\$9K

Highlights

- **AM**
 - SCALE 6.3.0 ready for RSICC distribution; export control issues delayed release; SCALE 7 beta 3 released internally for testing
 - RSICC code distributions: 408 SCALE, 843 MCNP, 1,456 University Requests, and 103 NCSP direct requests
 - Criticality Slide Rule collaborations with IRSN and LLNL – 2 papers submitted to ANS NCSD Topical
 - AM15 task complete at MIT (Effects of Temp. on the Propagation of Nuclear Data Uncertainty in NCS Calculations)
- **IPD**
 - Health Physics Research Reactor shielding benchmark report defended at the ICSBEP TRP meeting in FY22Q1; next draft being presented at April 2023 TRG
 - Contract with OSTI finalized; work started in Q4 (175 documents updated with new metadata by the end of the FY)
- **ND**
 - Zr-90 capture & transmission preliminary results presented at ND2022
 - Zr-91 stable isotope measurements completed; Zr-92 ordered
 - TA-181 under review in the NNDC GitLab and Polystyrene ENDF file submitted to NNDC for inclusion into ENDF/B-VIII.1
 - Cerium $^{140,142}\text{Ce}$ resolved resonance region evaluations provided to NNDC
 - Monte Carlo Evaluation of Differential and Integral Data task completed and report issued
- **IE**
 - Dupont, Marshall, McDonnell, Celik & Cumberland provided IER team support
 - IER-554, CED-1, completed; IER Team Lead: Mathieu Dupont
- **TE**
 - ORNL successfully executed and participated in 4 NCSP 1- and 2-week training courses; 70 students completed course (31 @ Sandia and 39 @ NCERC)
 - Completed final design of a subcritical assembly; fuel shipping, criticality analysis, validation, and ORNL location initiated
 - Hand calculation Primer revision drafted with a website companion in progress nearly published
 - Contracts with Texas A&M and GA Tech Nuclear Engineering programs completed to start work on the NCS certificate program task
- **TS**
 - As in FY21, hosted the 2nd virtual NCSP Technical Program Review
 - 5-year plans published on schedule by August 6th + all related activities conducted successfully
 - Upgrades continue to be made to the IER database working with SNL, ORNL, and NNSA
 - First Uranium Holdup Measurements Course held at ORNL Sept. 12-15, 2022
 - Succession planning for NCSP support: 3 new NCS staff (Veronica Karriem, Lisa Reed, and Walid Metwally); 1 new ND staff member (Kemal Remic)



Uranium Holdup Measurements Course
September 12-15, 2022

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