

To: D. Meekins, TJNAF

From: H. L. Nigg, SRNL
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Date: 7-08-2014

(U) FY15/16 TJNAF-SRTE Tritium Experiment Activity

Statement of Work and Funding Estimates

The following is a Statement of Work (SOW) and Cost Estimate requested for FY15 and FY16 activities to be led and/or performed by SRNL (Savannah River National Laboratory) and TP (Tritium Programs), also collectively called SRTE (Savannah River Tritium Enterprise) at SRS (Savannah River Site), in collaboration with and in support of TJNAF (Thomas Jefferson National Accelerator Facility). The funding mechanism is an ICO from TJNAF with a period-of-performance (POP) 10/1/2014 through 09/15/2016.

TJNAF will use a tritium filled target in a fundamental physics experiment. SRTE will load and, after use, unload the target. The experiment (beam time) is expected to occur October 2015 – December 2015 and January 2016 – June 2016. SRTE will need to load and then ship the target to TJNAF between 2 and 4 weeks prior to the experiment. TJNAF will ship the used target to SRTE between 8 and 12 weeks after the experiment. The priority SRTE scope essentially comprises the following (not necessarily in series):

- 1) Task Technical Plan and Task Quality Assurance Plan
- 2) Consultation – TJNAF Tritium Handling
- 3) Safety Basis Input/Review
- 4) Project Planning and Coordination
- 5) Loading of TJNAF Vessel with Tritium
- 6) Installation Participation
- 7) Unloading and Disposal of TJNAF Tritium Containing Vessel

Relevant scope/activity detail is provided throughout this document. The Principal Investigators (PI) are also listed. High resolution details for each activity will be provided in the Task Technical Plan (TTP). Approved additions, deletions and modifications will be documented in subsequent revisions.

Activity 1) Task Technical and Quality Assurance Plans

TJNAF PI – Dave Meekins

TP PI – Joseph Novajosky

SRNL PI – H. Lee Nigg

SRTE will produce both a Task Technical Plan and Task Quality Assurance Plan for TJNAF's input, review and approval. The TTP will detail tasks, responsibilities, schedule, requirements and specifications for the agreed scope. The TQAP will define Quality Assurance requirements.

Activity 2) Consultation – TJNAF Tritium Handling

TJNAF PI – Dave Meekins

TP PI – T. Scott McGee

SRTE will assist TJNAF personnel with tritium handling, monitoring and decontamination equipment and process definition and review. TJNAF and SRTE personnel will present and discuss project technical details to a TJNAF team to assist with Facility safety basis review and approval. Up to 3 SRTE personnel may travel to TJNAF.

Activity 3) Safety Basis Input/Review

TJNAF PI – Dave Meekins

TP PI – T. Scott McGee

TJNAF and SRTE personnel will present and discuss project technical details to a TP team to ensure Tritium Facility safety basis incorporation and approval. TJNAF personnel will travel to SRS.

Activity 4) Project Planning and Coordination

TJNAF PI – Dave Meekins

TP PI – Joseph Novajosky

SRNL PI – H. Lee Nigg

SRTE will partner with TJNAF in project planning activities to include:

- a) loading and shipping schedule coordination
- b) installation assistance
- c) receipt schedule coordination (for unloading)

Activity 5) Loading of TJNAF Vessel with Tritium

TJNAF PI – Dave Meekins

TP PI – T. Scott McGee

SRNL PI – H. Lee Nigg

TJNAF will provide to SRTE:

- load requirements and specifications
- vessel with loading valve
- pressure rating and pressure test data
- protective cover
- schedule requirements

SRTE will provide:

- facility acceptability/compatibility requirements
- approved procedures
- schedule capability
- hardware and instrumentation
- loaded vessel (packaged and shipped)
- shipping container
- documentation of load (pressure, composition)

The actual loading and shipping should occur between late August and mid-September 2015 (CY).

Activity 6) Installation Participation

TJNAF PI – Dave Meekins

TP co-PIs – T. Scott McGee, Joseph Novajosky

SRNL PI – H. Lee Nigg

SRTE will assist TJNAF in the unpacking, handling and installation of the tritium loaded target. Up to 3 SRTE personnel may participate at TJNAF.

This activity should occur between mid-September and early October 2015(CY).

Beam-Time) TJNAF will operate the experiment October 2015 – December 2015 and January 2016 – June 2016.

Activity 7) Unloading and Disposal of TJNAF Vessel

TJNAF PI – Dave Meekins

TP PI – T. Scott McGee

TJNAF will provide to SRTE:

- used vessel (packaged and shipped)
- activation products (isotopes, radiation type, exposure values)
- estimated pressure

SRTE will provide to TJNAF

- facility acceptability/compatibility requirements
- vessel receipt
- disposal

TJNAF will package the vessel then ship to SRS once radiation exposure values meet SRTE acceptability criteria. This is anticipated at 2 months, at this time, which is about mid-August 2016.

Note that possible material property evaluation requests may result in a scope change which will be addressed in a revised Statement of Work and ICO Request: metallurgical examination of the vessel prior to disposal.

Proposed Schedule and Budget Tables

The tables below show proposed schedule and fully burdened costs for the listed scope split into TP and SRNL portions as well as FY15 vs. FY16 activities. Labor rates and overheads can and do change over the course of any FY and between each FY. Labor, materials and travel are included in the budget numbers.

Meetings and activities where personnel may travel to one location or another are indicated. The anticipated experiment (beam time) is also shown. Not that schedule changes will be addressed in a revised Statement of Work and ICO Request.

The total cost is ~ \$88.5k split: ~\$71.5K in FY15 and ~\$17.0k in FY16.

CY/FY	14/15			15/15									15/16			16/16								
Scope Schedule	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1) Task Technical Plan and Task Quality Assurance Plan																								
2) Consultation – TJNAF Tritium Handling			TJNAF Meeting									as needed												
3) Safety Basis Input/Review			SRS Meeting																					
4) Project Planning and Coordination												as needed												
5) Loading of TJNAF Vessel with Tritium												actual load/ship												
6) Installation Participation												TJNAF Activity												
Beam Time																								
7) Unloading and Disposal of TJNAF Tritium Containing Vessel																								return ship

Scope Budget	FY15	FY16	TOTAL
1) Task Technical Plan and Task Quality Assurance Plan	2623	0	2623
2) Consultation – TJNAF Tritium Handling	23672	3103	26775
3) Safety Basis Input/Review	1696	0	1696
4) Project Planning and Coordination	2098	543	2641
5) Loading of TJNAF Vessel with Tritium	22978	660	23638
6) Installation Participation	17954	7916	25870
7) Unloading and Disposal of TJNAF Tritium Containing Vessel	509	4751	5260
TOTAL	71529	16973	88502