

## Neutron Optics and Shielding Group TG2 Summary FREIA Instrument

### Review

Date  
23 January 2017

2018 TG2 Round for ESS Instruments

Technical Reviewer:  
Phil Bentley

Input received from

#### Preamble

This document is the review summary of the instrument's optical and shielding system preliminary design. Systems outside of this scope have not been considered, except where they significantly impact on optics and shielding.

#### 1. Executive Summary

The reviewer considers that from the *perspective of optics and shielding systems* the concept of the design is sufficiently complete and mature. However, there are significant deficiencies in working practice and risk assessments.

#### 2. Proposal Grading

The proposal is graded as a whole and by subcategory.











For each item, a grade is given for the preliminary system design *as it stands now* (column "NOSG status"),

"GREEN": All aspects of the criterion have been addressed satisfactorily to permit endorsement by the NOSG to the detailed design phase.

"ORANGE": Some aspects of the criterion have not been addressed satisfactorily. However, if additional information is supplied, NOSG endorsement of the instrument to the detailed design phase may be possible.

"RED": Some aspects of the criterion have not been addressed satisfactorily and there are reasons to doubt they can be achieved without changes. Currently it is not recommended to proceed.

Grades are indicated as traffic lights:  = green,  = orange,  = red.

Criterion	NOSG Status	Comments
Has adequate planning been done to move the project into Phase 2?		
Is the proposed budget consistent with the proposed scope?		
Does the preliminary design satisfy the requirements?		
Is the presented baseline technically sound?		
Has anything been forgotten or neglected?		The full scope of work defined in ESS-0059811 has not been completed.
In case where several In-kind partners are collaborating – are roles and responsibilities adequately defined and agreed?		Skype meeting on 22 <sup>nd</sup> January resolved almost all questions.
Have safety-related aspects in accordance with ESS-0043330 ref [6] been appropriately considered?		Ref. [6] is "NSS Instrument Design Guide, Draft"; NOSG is not sure what this is.
To what extent have appropriate connections been made with the critical project interfaces, such as software, data storage hardware and sample environment?	NA	
Has the instrument context been appropriately considered in terms of physical interfaces, such as bunker, beam extraction, ICS etc?		There are activities waiting for the prerequisites in the bunker project to complete.
To what extent have available engineering standards been implemented appropriately?		
Are the cost and duration estimates reasonable?		This was not reviewed in detail due to the outstanding questions as indicated above.
To what extent has the team planned appropriately for the risks, both technical and otherwise?		The full scope of work defined in ESS-0059811 has not been completed.

### **3. Currently identified issues**

The hand calculations on shielding definition are fine for a broad budget estimation and conceptual design, but the checklist as described in ESS-0059811 has not been completed. Due to this, and the fact that some of the neutronics work is waiting for bunker prerequisites in order to not duplicate effort, the larger questions on backgrounds etc. probably cannot be answered at present.

### **4. Detailed/other comments**

#### **Addition During Meeting**