a-TAC16 Recommendations and replies

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| **Heading** | **Comments and recommendation** | **Replies** |
| **ARR-106**  **Scope of definition of an integration review** | **Findings** • It is suggested to have integration reviews on a regular basis. An example is given with session 3 of the TAC. **Comments** • For the accelerator systems, most integration issues are already being addressed during the PDR, CDR, and IRR. The target systems are not yet as mature and may benefit from integration reviews on specific topics with specific goals. • For spatial integration a new lightweight approach is being implemented that allows for rapid interference checks. **Recommendations** 1. Hold integration reviews flexibly, according to needs but avoid the introduction of yet another formal review series. | This is being done as appropriate via the system review process. 2 such reviews have been held so far, the particle free vacuum assembly review and the cryomodule testing review. System safety reviews and Installation readiness reviews also serve as integration reviews. |
| **ARR-107**  **ESS engineering handbook and process** | **Findings** • Seems to be a very detailed and complete approach. **Comments** • For TAC it is impossible to check all details and involved processes during this meeting. The Handbook will serve as an excellent reference for engineering work at ESS. **Recommendations** 2. Handbook and processes should be reasonably applied. Complicated, critical and complex items will need full application of all processes. For simpler items, only the core «meaning» may be applied. Where equivalent processes already exist at contractors or in-kind contributors, it may be preferable to keep their procedures. | We follow the ESS engineering hand book to the extent is possible and applicable. We work close with the new infrastructure installation project and with EIS to assure that we follow the right procedures.  This is ongoing work and the use of this handbook with the infrastructure installation project will be valuable experience in applying these procedures. |
| **ARR-108**  **Functional integration and ESS software’s tools and functionality to support the integration** | **Findings** • Facility Breakdown Structure as a functional breakdown describes system, sub-systems, and components. It has interfaces to the ICS. Interface requirements and/or interface control documents exist. • A Location Breakdown Structure and an EBOM add to the tools. • The Installation Structure (IS) as an asset management system handles serialized parts. It complements the EBOM and replaces an additional MBOM. **Comments** • The existing tools should offer documentation of all PED relevant information; the same holds for eventually required certificates etc. **Recommendations** 3. Insist on as-built drawings and specs, (already requested by Spatial integration) | We follow this recommendation and work hard with IK partners to assure that we have the as built drawings and the necessary documentation.  This is being carried out via the tunnel and gallery integration meetings and is checked during both Installation Readiness Reviews and Site Safety Reviews. This approach helps to assure that all is place before we start beam commissioning. |
| **ARR-109**  **Spatial integration** | **Findings** • The complete and light 3D model of the entire ESS facility is an important and ‘simple’ tool that can be used by collaborators and within ESS to plan any interventions / modifications in the future and will allow for the quick clash analysis and changes tracing along the entire life cycle of the machine. **Comments** • The basic civil construction of the ESS facility is nearly completed. Implementation of a new tool(s) for spatial integration at this stage might looks excessive, unless it simplifies and streamlines the process. **Recommendations** 4. Central spatial integration is strongly recommended to have one global vision of all facilities and to have one central reference for volume allocations and 3D interfaces. The present approach is comprehensive but may need streamlining to be sustainable throughout the installation phase. | We are working with EIS to assure that we have streamlined process for spatial integration. EIS has the overall responsibility but we provide base lien design in 3D for our areas. Anders Sunesson is responsible for the integration work and the baseline design in the RF gallery, Philipp Arnold assure this for cryogenic building and John Weisend assure this for the tunnel.  This is and will be for the foreseeable future an ongoing effort. Integration of detailed designs into the CATIA model is ongoing and is carried out in support of the clash checking being done via the solid model at the gallery and tunnel integration meetings. Progress is being made though in some cases, lack of sufficient detailed design resources means we have to adjust priorities and use stay clear zones for clash control. The overriding goal remains having solid models with fully detailed as built components by the end of the project. We are on the right track to accomplishing this. |
| **ARR-110**  **Staffing level** | 5. We strongly recommend to keep the nominally foreseen staffing level to avoid delays of the installation and commissioning phase and to avoid shortcomings in QA/QC and documentation. | This is what we are planning for today. Hiring of operators is delayed with a year as installation work in the re-baselining is late. We also take on additional contracted staff for installation work. |
| **ARR-111**  **From a-TAC15: Some local capability for UHV and particle-free cleaning should be foreseen** | **Reply:** The Vacuum section has planned a small clean room for assembling instrumentation as ISO Class 4-5 with capability to clean small parts and portable clean rooms for two specific tasks: tunnel installation of the LWUs (x3 set of rooms) and instrumentation installation at the Vacuum assembling area to install instrumentation on LWUs outside tunnel. No provision of UHV particle free capability for the SRF facility to handle cryo-modules are planned. | The budget for SRF clean room capability is part of initial operation and the planning for this has started. |
| **ARR-112**  **Proposed topics for a-TAC17:** | Progress and status reports from all major accelerator components | This is the topic of the main aTAC session for aTAC17 and there is also a poster session to permit IK partners to present the status of their work. |
| **ARR-113**  **Proposed topics for a-TAC17:** | Report on overall schedule including risks for potential delays | This will be presented in the aTAC plenary talk and in the main aTAC session. |