

# Scientific and Technical Advisory Panel (STAP) Report for BEER and ODIN October 19-21, 2020

Panel Members:  
Sven Vogel (Chair), LANSCE  
Javier Santisteban, CNEA  
Francesco Grazzi, CNR  
Stephen Hall, Lund University  
Nikolay Kardjilov, HZB

Zoom meeting with all five STAP members and  
representatives of ESS, HZG & NPI, TUM & PSI participating

# BEER Crisis Alert

- The contract situation between ESS, HZG and NPI is still not resolved leading to a delay of ~18 months per STAP Management Q&A Oct 2020
- Delay may cause
  - Additional delays of delivery of key components as BEER's slot in the manufacturing queue of e.g. guides may be lost
  - Additional delays as hiring of support engineer for instrument design & construction on hold
  - Additional delays as access to bunker is prevented by first ESS BOT and related installation periods
  - Falling out of the first eight ESS instruments may lead to needed ESS resources being assigned elsewhere (common infrastructure etc.)
  - Loss of engagement from industry (purchase of Gleeble testing rig), academia (heating option for furnaces), and user community ⇒ threatens early science
  - Key personnel (e.g. detector development) will not be able to continue beyond January 31, 2021, without contract resulting likely in further delays if knowledge cannot be transferred

**The BEER project is getting close to a risk of collapse if IKCA/TA problem is not solved immediately**

# Charge 1/2

- Comment on the progress of the instrument projects in the context of their schedule:
  - ODIN: On track for operation as one of the first three ESS instruments
  - BEER: Situation is critical, see previous slide
- Provide advice on early science for the instruments:
  - Early science was not discussed this time, but discussions in previous meetings make the STAP confident that both instruments are on good path to accomplish early science.

# Charge 2/2

- Provide feedback to the instrument teams on their progress and actions to be taken:
  - Few STAP suggestions communicated to instrument teams at meeting.
  - Suggested to BEER and Sample Environment teams to conduct workshop on stress rigs to provide information on available solutions to inform design decision
- Provide feedback to the Science Director on the progress of the instrument class and any management actions that are needed to support the instrument projects:
  - See report and this presentation, in particular action items for ESS

# Action Items for ESS

- BEER contract issue is the overarching issue threatening the entire project
- STAP was made aware that starting January 1, 2021, visitors working in Sweden for more than 45 days per year or 15 consecutive days will have to pay taxes.
  - Would affect e.g. subcontractors or staff from the partner institutions involved in construction, commissioning
  - ESS should provide information and possibly a solution
- BEER & ODIN: Strategy to scope transfer (participation in common projects) from the partner institutions to ESS should be implemented in a timely manner (now) to avoid delays.
  - Strategy should not involve lengthy processes to avoid delays.

# ODIN & BEER

- Besides contract situation for BEER:
  - Both projects appear to be on a good path towards commissioning & early science
  - Major components (hutch, choppers, shielding, detectors etc.) on track
  - Few minor delays to be expected for such projects but nothing critical
- Søren Schmidt joined as data scientist for both team
  - Liaison between both instruments and DMSC
  - Developing data processing pipelines, goal is to complete basic version by end of 2021, then build upon that
  - Goal is to provide real time data quality assessment and help early users with data processing

# Sample Environments

- Discussed load frames/stress rigs for BEER & ODIN
- One rig exists at NPI, two designs exist
- Software control integration, mechanical integration into ESS standard mounts, and CE certification are significant tasks
- One rig located now at ESS (inherited from Robin) used as test case for integration and certification (CE)
- Some design decisions and ancillary equipment (extensometers, furnaces, DIC) could be informed by workshop  
⇒ STAP recommends to hold workshop centered around loading to vet design, engage community, survey options etc.

# ODIN 1/2

- Shifting BOT shrunk hot commissioning
- Installation engineer started at TUM
- Excellent communication and program management between TUM, PSI, ESS
  - Procurements, shielding etc.
  - Communication both ways
- All major components on track except
  - Cave: Issue with floor loading of ODIN cave design proposed by supplier Mirrotron requires approval which may cause delays, may need management attention (same issue as occurred for LOKI)
  - PSS & IHA not done but path forward exists, no concerns
- Installation timeline is very tight, not much slack to absorb delays
  - Any delays might trigger additional delays due to very tight timeline
- Team is preparing installation



# ODIN 2/2

- DMSC reassured ODIN team during DMSC STAP meeting that the WFM mode and associated data reduction will be available for the Day One experiments.
  - Demo before BOT would reassure users of the reliability and function of this essential ODIN operation mode.
- DMSC also stated that remote data processing and analysis will be possible for the users.
- The STAP stresses the importance of both of these items.
- TOF imaging detectors will allow only one platform/type since several different detector types would be challenging for the ESS integration team
  - This might be a bottleneck in case new technologies arise after start of operation
  - Chosen technology should be fully supported by DMSC, Søren as interface will be valuable
- Significant developments for TOF imaging detectors ongoing right now
  - ODIN team is following and participating in these developments
  - Decision for ODIN detector technology will be delayed to obtain best possible technology
  - Communicating with DMSC to manage integration
  - Period between decision and hot commissioning is deemed feasible for integration
  - STAP concurs that best possible policy should be selected and time for integration is sufficient
  - Decision expected in 2021

# BEER

- Greatly suffering from limbo caused by contract situation:
  - NPI staff will soon be unable to continue moving the project since e.g. procurements, hiring, installation etc. are halted
  - HZG staff essentially on hold at this time
  - Delaying without major progress beyond 2022 puts NPI personnel funding at risk including lead instrument scientist
- Prior progress:
  - Detectors tested, detector housing mechanics tested
  - Neutron tests at a reactor are inhibited by Covid travel ban
  - Project was on track but contract situation will halt it very soon
- No science case for neutron polarization was identified, STAP agrees

# STAP team

- Winfried Kockelmann (ISIS) and Luise Theil Kuhn (DTU) left the Imaging & Engineering Diffraction STAP
- Remaining members:
  - Grazzi/CNR – diffraction & imaging
  - Hall/Lund University – diffraction & imaging
  - Kardjilov/HZB – imaging
  - Santisteban/CNEA – diffraction & imaging
  - Vogel/LANL – diffraction & imaging
- STAP suggests approaching
  - Current or past instrument scientist to provide experience with commissioning
  - Ideally a person also helping to recruit users
  - Ideally someone in a time zone already represented to not further complicate meetings
  - Possibly a diffraction expert to balance the STAP
- STAP suggested names and will help to identify suitable candidates -