# IKON 16
# NSS installation plans and TG4 process

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# Instruments Installation workshop November 2018

*Instruments involved: 6 of the first 8 (BEER, CSPEC, BIFROST, LOKI, ODIN, ESTIA);*

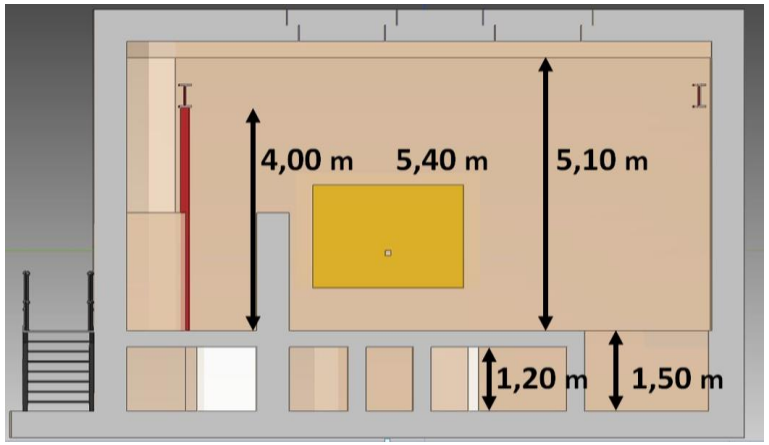
| N. | Installations start | Hall | Components |
|---|---|---|---|
| BEER | Sept 2019 | E01 | Ex. Cave structure |
| CSPEC | Sept 2019 | E02.1 | Guide System |
| BIFROST | Dec 2019 | E01 | Ex. Cave structure |
| LoKI | May 2021 | D03 | Guide system |
| ESTIA | June 2021 | D01 | Guide system |
| ODIN | June 2021 | D01 | Guide system |

*Preliminary installation plans resource loaded*

# Beer: Experimental cave structure

CURRENT ESTIMATION

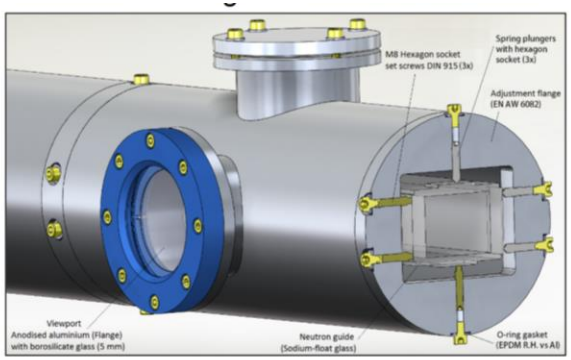
- Installation starts: September 2019
- Hall: E01 (building handover 16.08.2019)
- Material: ordinary concrete cast in situ
- Resources: Beer civil contractor, ESS support for handling, surveying, lifting;
- TG3: March 2019 (Intermediate design review already conducted)
- TG4: July 2019
- Responsible Institute: NPI

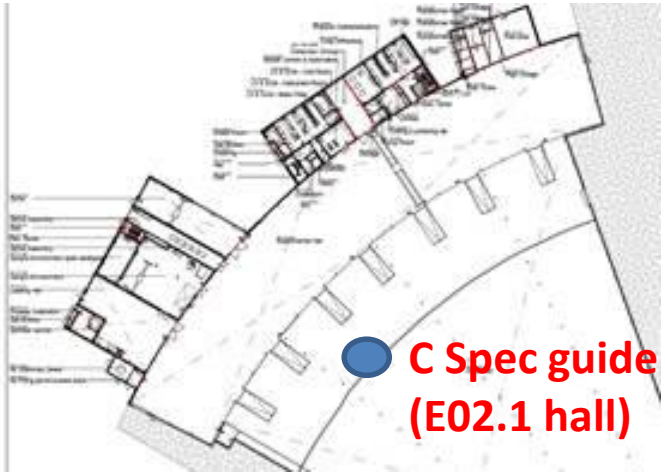



# CSpec: guide system

CURRENT ESTIMATION

- Installation starts: 12/2019
- Hall: E02.1 (building handover 16.08.2019)
- Main tasks: piles interface baseplates, guide support, vacuum housing, preliminary alignment, test leakage;
- Resources: TUM installation team, ESS support for handling and lifting, ESS vacuum;
- TG3: June 2019;
- TG4: October 2019
- Responsible Institute: TUM;



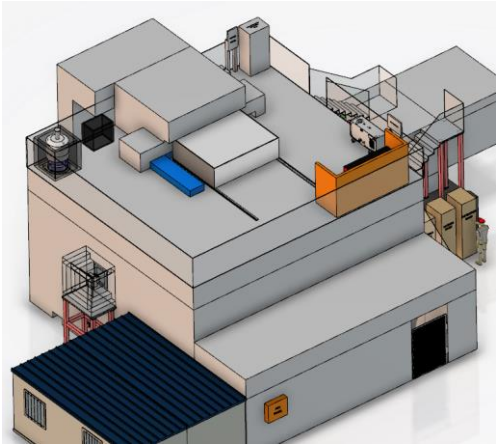




Beam interface piles according to the instrument request already prepared (130 mm above the floor level).
Interface steel plates supplied from ESS and installed from the Instrument team

# Bifrost: experimental cave structure

CURRENT ESTIMATION

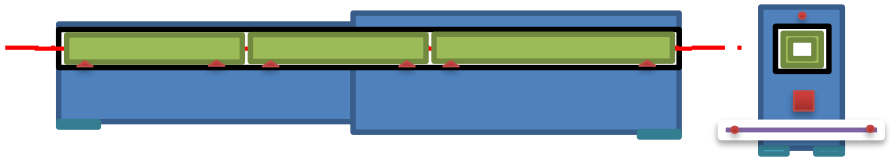
- Installation starts: December 2019
- Hall: E01 (building handover 16.08.2019)
- Structure: pre-cast concrete blocks;
- Resources: Bifrost civil contractor, ESS support for handling, surveying, lifting;
- TG3: June 2019
- TG4: October 2019
- Responsible Institute: IFE



# NBOA integration

NBOAs integration start: Q4/2019
Buildings handover (E01 August 2019)
Resources: In Kind contractors, NSS
IRR: Q3 2019
Responsible: NSS

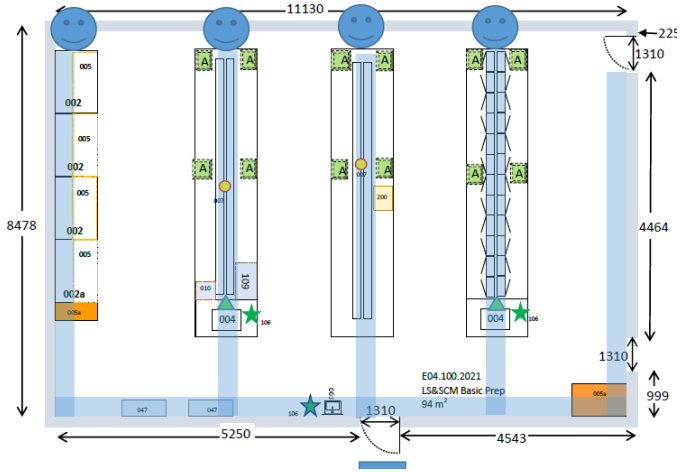
Temporary tent required



Alternatives under discussion

# E03-E04 building completion work

- Installation starts: Q1/2020
- Buildings: E04 (handover December 2019)
- Main tasks: Installation of piping above the suspended ceiling (lab gases,  power cables, fume hoods…..)
- Resources: In Kind, NSS support to clarify soon
- IRR: Q4/2019
- Responsible: NSS

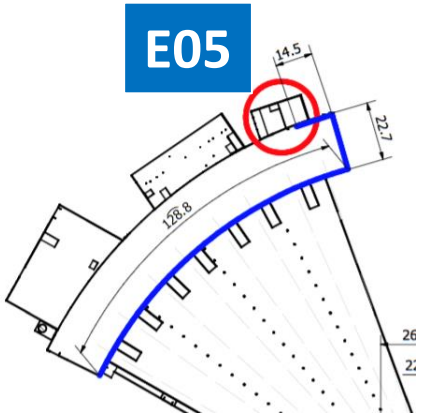




Connection point for:

-3 lab gases, compressed air
-cooling water
-DI water, tap water
-house vacuum

# E01/E02.1 electrical power distribution

- Installation starts: Q1/2020
- Buildings: E01, E02.1
- Resources: NSS (electrical framework agreement for installation  in place)
- IRR: Q4/2019
- Responsible: NSS;




Substation

CF

Instruments power panel

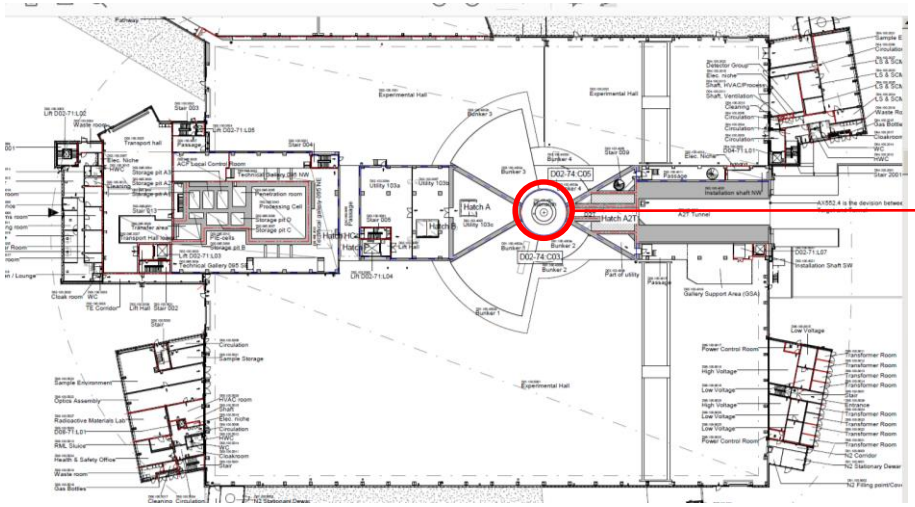
NSS

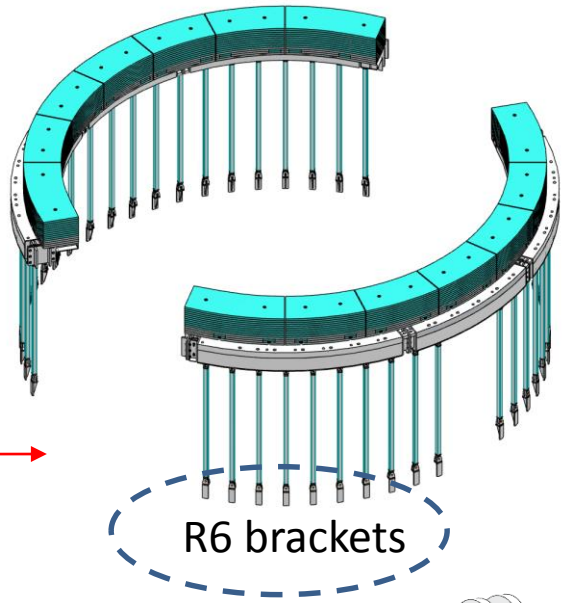
Instruments control racks

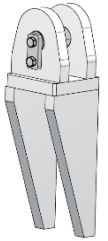
Instruments teams

# Bunker project: installation of R6 bracket

R6 brackets installation : Q1/2020 (28.02.2020)
Halls: D02 (both D01 and D03 side, two teams involved at the same time)
Resources: NSS (framework agreement)
IRR: Q4 2019
Responsible: NSS
Parallel work with SKANSKA: before building handover





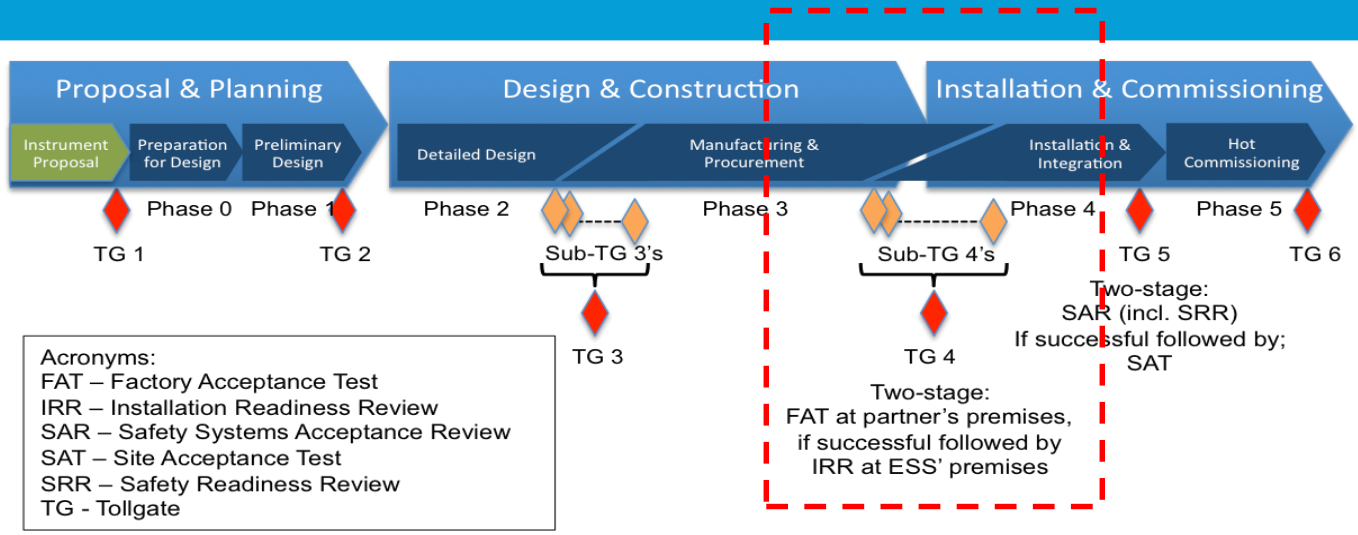



Coordination with Skanska and ESS target ongoing
Installation plan resource loaded already submitted at Bunker CDR on December 2018

# Tollgate 4 / specific documentation

| Document | Title | Note |
|---|---|---|
| **ESS-0051706** | Process for Neutron Instrument Design and Construction | NSS construction project description |
| **ESS-0099060** | Neutron Instrument Design and Construction - Phase 3 Technical Data Package Specification | Technical data package to be delivered during Phase 3 |
| **ESS-0194761** | NSS Guideline for Instrument Construction Projects - Tollgate 4 Review and Decision | This document defines timeline and process for Tollgate 4 (TG4) for Instrument Construction projects |
| **ESS-0115727** | Information requirements on instrument projects for integration and verification activities. | Relevant information about Installation packages preparation |
| **ESS-0115143** | NSS Instrument Project Schedule Guideline | How to build the installation plan with Ms Project |

# Purpose of the IRR




- The purpose with **Installation Readiness Review** is to make necessary preparations have been performed and the supporting documentation are in place for the upcoming installation package.
- Each IRR will correspond to an **Installation Package (I.P.).** The I.P. is manageable discrete piece of the complete installation.
- Relevant installation package documentation is collected into a "Binder" and shall require NSS approval before the installation can take place.

# TG4 / IRR Committee

According to the document **ESS-0194761**, An IRR Committee will be established with participants as follows:

**Mandatory members:**

- NSS Installation Coordinator and NSS Management team (including NSS safety);
- NSS technology groups (NOSG, Chopper group, Motion Control, Detectors), according to the specific components to install;

**Optional members according to the specific I.P. might be also:**

- NSS Project Leader;
- ESS Installation Manager (ESS Bas-U);
- DMSC/ICS/PSS Division Responsible/Representative;
- EH&S Division Responsible/Representative;
- ESS Quality Division Responsible/Representative;
- ESS Metrology group Responsible/Representative;

# Installation Binder

*Purpose : Control of installation Documentation.*

*Each binder refers to a specific I.P.*

- 01 List of Documents
- 02 Scope of Work
- 03 Organisation
- 04 Time Schedule
- 05 Risk Assessment Method Statement (RAMS)
- 06 Temporary Services
- 07 Drawings
- 08 Installation Procedures
- 09 Work Permits
- 10 Daily Diary
- 11 Non-Conformity Report (NCR)
- 12 QC - Installation & Test Documentation
- 13 List of Components & Material
- 14 Reference Documents
- 15 Installation Finalization

**Manufacturing & Preparation for Installation Phase**

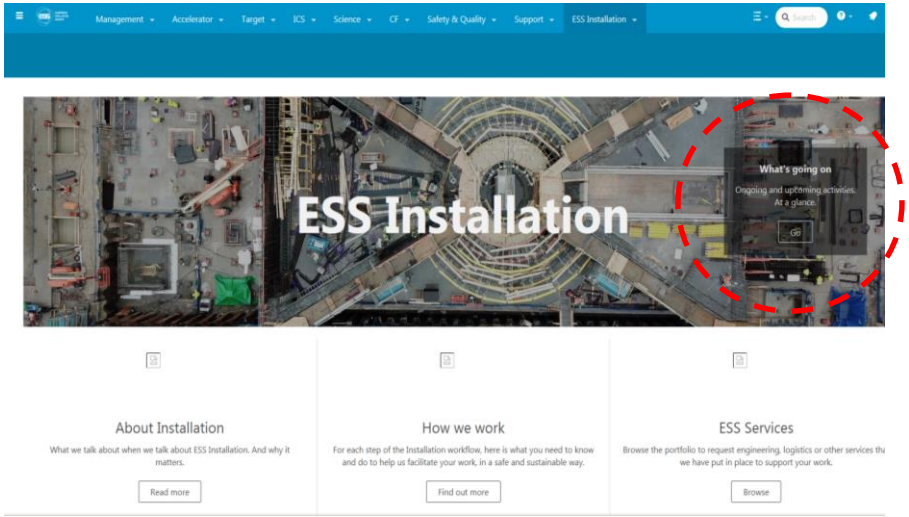
**Installation Phase**

*Already available on Confluence !*

# Installation packages (binders)

ESS Installation/What's going on/ESS Installation binder library/Create an Installation binder

**1**

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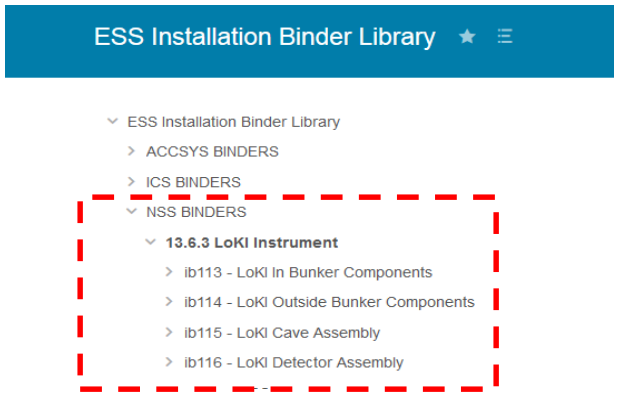


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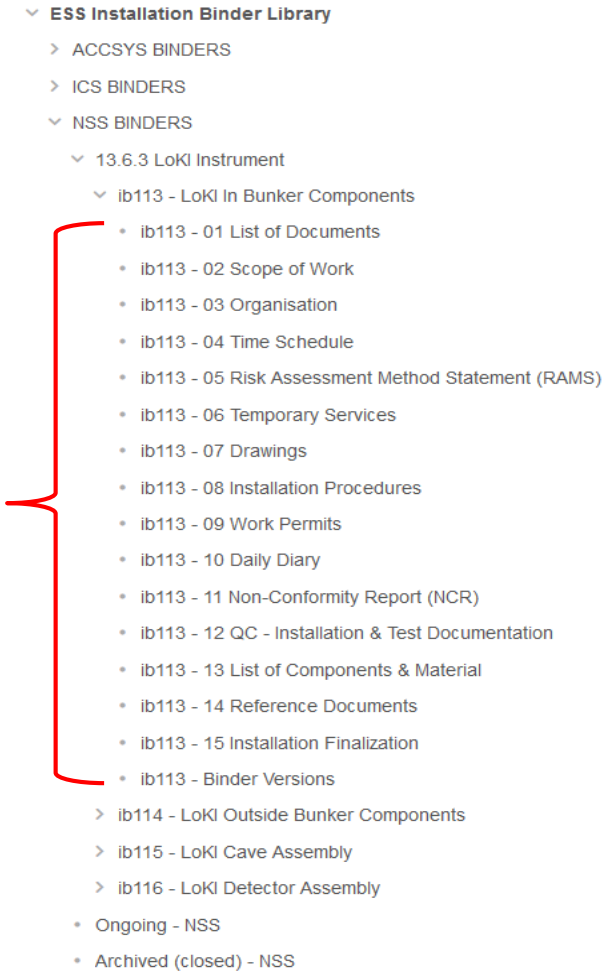

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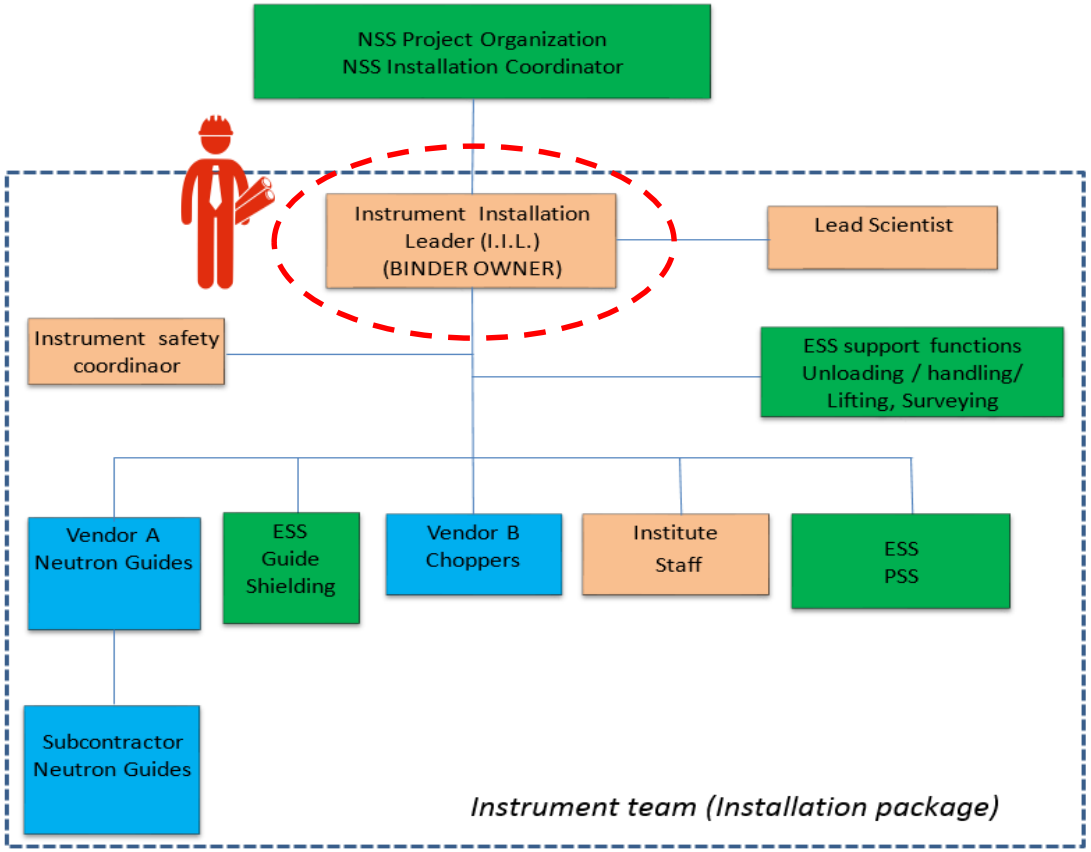
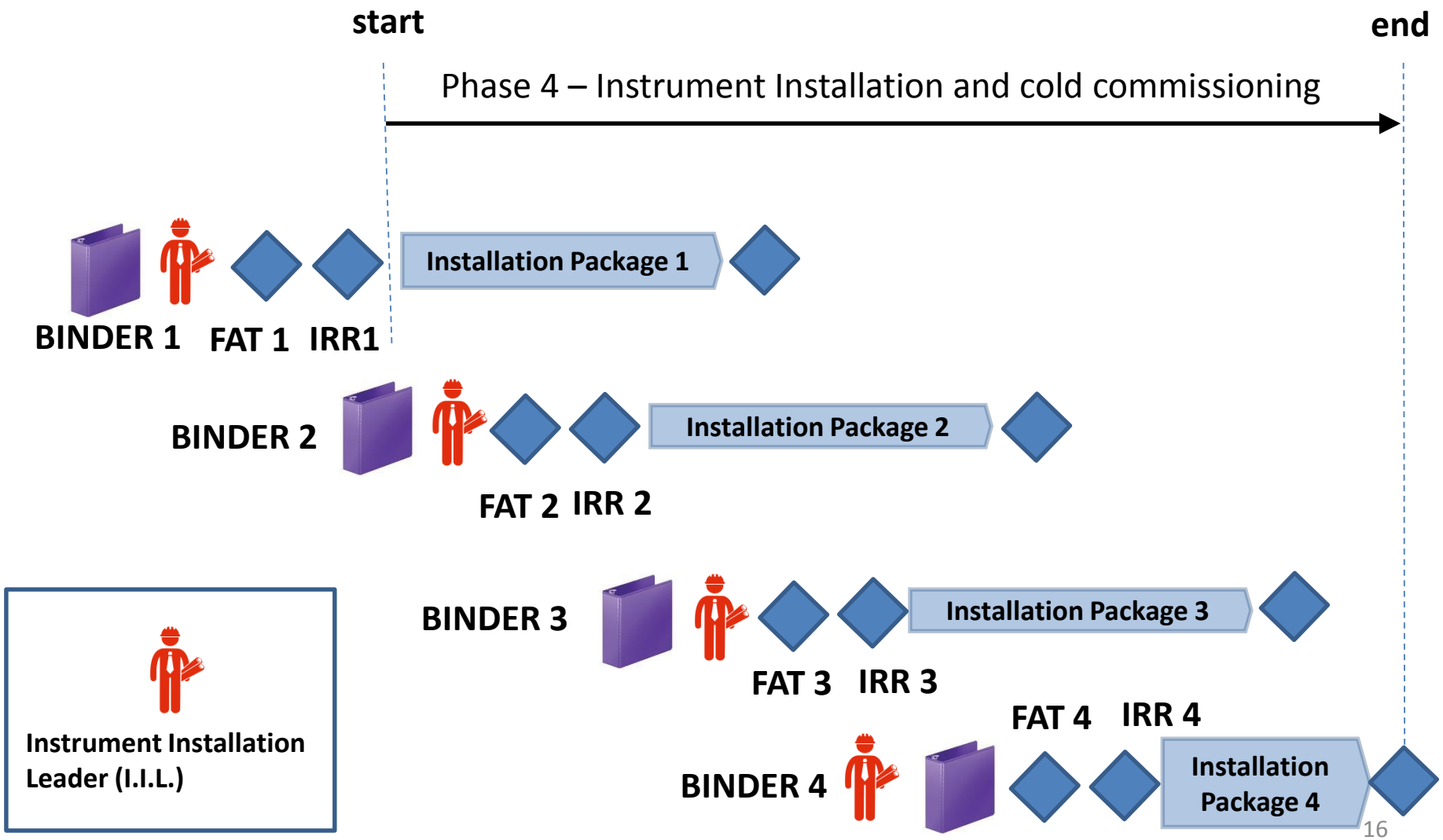
**03. Organisation / List of Contact**

In-kind/Contractor Site Organisation

Telephone / mail list to all site personell



# Instrument installation and cold commissioning (Phase 4)



# Roles and Resposibilities (1/2)

**ESS Installation Manager**

- Overall Site Coordinator

**NSS Installation Coordinator**

- Coordinates NSS installation works

**Instrument Installation Leader (Binder owner)**

- This person is appointed by the Instrument Team to lead/manage the on-site instrument installation works
- Responsible/owner of Installation binder.

**In-Kind / Contractor**

- Responsible for the installation work.
- Responsible for the contents of the installation preparation documents to include into the installation binder.

# Roles and responsibilities (2/2)

**NSS Installation Coordinator**

***Responsible for***

- An IRR is conducted and passed before installation starts for a package;
- Schedule and coordinate Installation packages within project;
- Installation Packages follow rules and regulations, including heath and safety regulations
- Coordinate support needs for installation packages;
- Resolve conflicts, including prioritize, between different installation packages within project
- Make sure there's a sign-off for the installation package (before it's regarded complete).

**Instrument Installation Leader**

***Responsible for***

- The installation binder is ready for IRR
- The on site installation for that package
- The installation follow rules and regulations
- Safety and Health during installation

# Safety during installation

SWEDISH WORK ENVIRONMENT AUTHORITY

EUROPEAN SPALLATION SOURCE

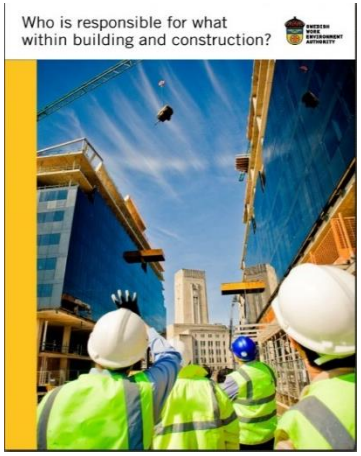
*NSS Installations have to comply with Swedish legislation of construction works and a "BAS-U" will be appointed from ESS to lead installation works in order to prevent injuries*


Reference provisions from Swedish work environment Authority:

- building-and-civil-engineering-work-provisions-afs1999-3;
- scaffolding-provisions-afs2013-04;
- use-of-lifting-devices-and-lifting-accessories-provisions-afs2006-6;
- who-is-responsible-for-what-within-building-and-construction-adi704-eng;

Web site

https://www.av.se/en/work-environment-work-and inspections/publications/foreskrifter/



# Installation coordination meeting on Wednesday 13th

***FIRST 4: BEER, C SPEC, BIFROST, MAGIC;***
***BACK UP INSTRUMENT WEST SECTOR: NMX***

1. TG3 schedule/manufacturing time and its compatibility with current installation schedule;
2. IRR (TG4) schedule and definition of each instrument Installation package (and installation package owner);
3. Utilities/Infrastructure available in the E buildings; support required from ESS (logistic services, tools and equipment, installation labor);
4. Update on instrument installation resources (and instrument installation leader to interface on-site with the NSS installation coordinator);

# Conclusion

1. *BEER, C SPEC and BIFROST have preliminary resource loaded their installation plans (E buildings);*
2. *ODIN, ESTIA preliminary resource loaded plan about the D building and LOKI with resource indications (installations start in 2021);*
3. *NSS integrated installation plan (first 8) resource loaded to be ready by June 2019;*
4. *It is necessary to create soon the first Installation packages (Binders) as described in the previous slides, with reference to the first 4 instruments in the West sector (BEER, CSPEC, BIFROST, MAGIC) and to identify the BINDER owner (INST. PACKAGE OWNER);*
5. *NSS installation works not related to instruments installation will follow the same installation process with an IRR before the on site works can start. (e.g. NBOA integration, Installation of instrument power, piping installation in the E03/E04 buildings), bunker project, test beam line etc. etc…;*

# Questions