The Tollgate 4 in the instrument construction project

Antonio Bianchi
NSS Installation Co-ordinator
NSS Project Division

www.europeanspallationsource.se

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Tollgate 4 – main reference documents (1/2)

- **Technical Annex**;
- **ESS-0051706** - Process for Neutron Instrument Design and Construction;
- **ESS-0194761 -** NSS Guideline for Instrument Construction Projects - Tollgate 4 Review and Decision;
- **ESS-0099061** - Neutron Instrument Design and Construction - Phase 4 Technical Data Package Specification

Tollgate 4 – main reference documents (2/2)

- **ESS 0115727** - Information requirements on instrument projects for integration and verification activities. → *Install. Readiness Review, Binders, Installation Packages*
- **ESS-0115143** - NSS Instrument Project Schedule Guideline → *Installation Plan*

Documents already mentioned in the TG3 preparation, to provide an outlook about the installation process

Purpose IRR

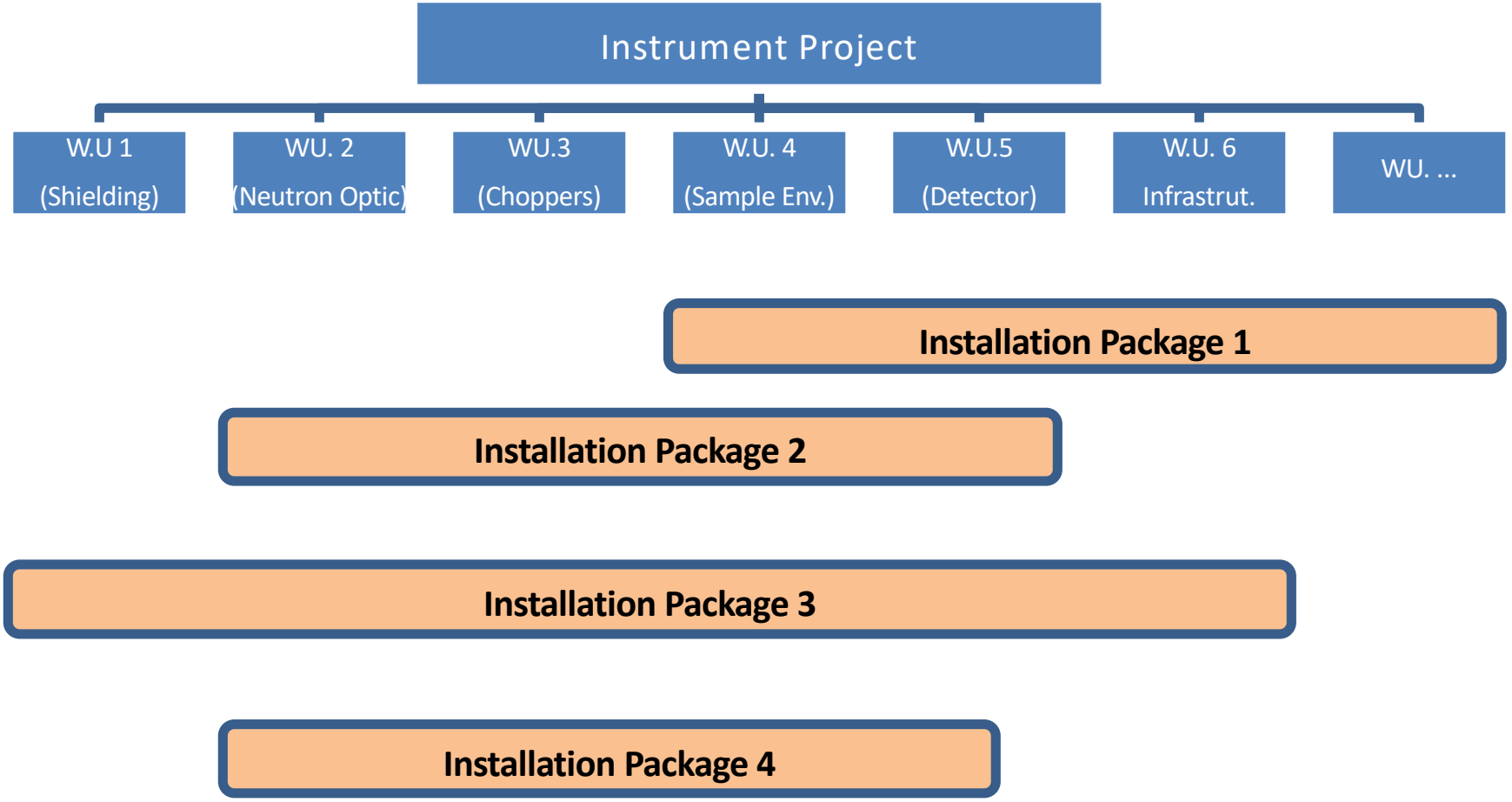
The purpose with **Installation Readiness Review** is to make necessary preparations have been performed and the supporting documentation are in place for the upcoming installation package.

An **Installation Package** is manageable discreet piece of the complete installation (size of package depending on many factors).

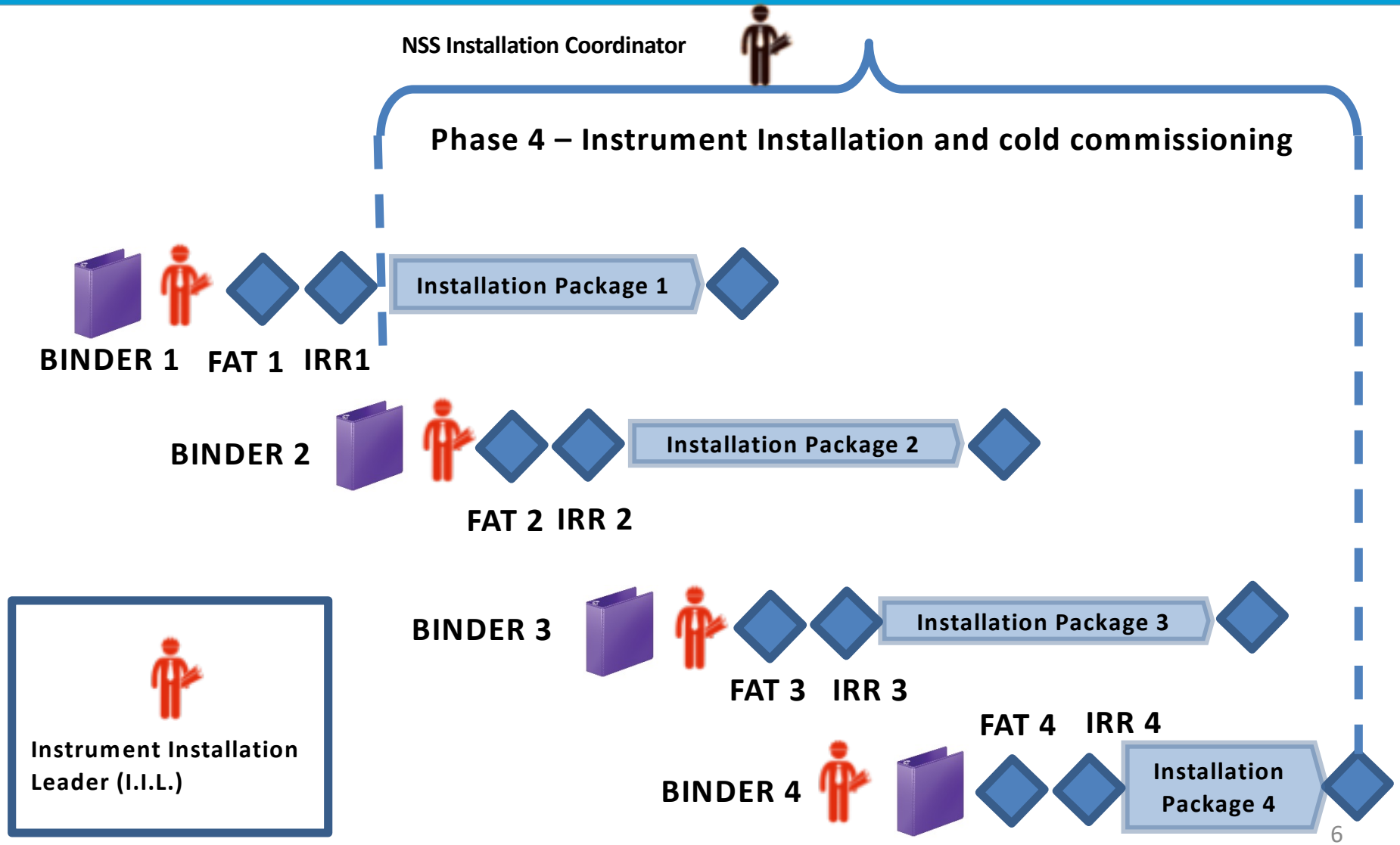
Each installation package shall require NSS approval before the installation can take place.

IRR 

Work Units vs. Installation Packages (I.P.)



Process: Binders and Installation Packages

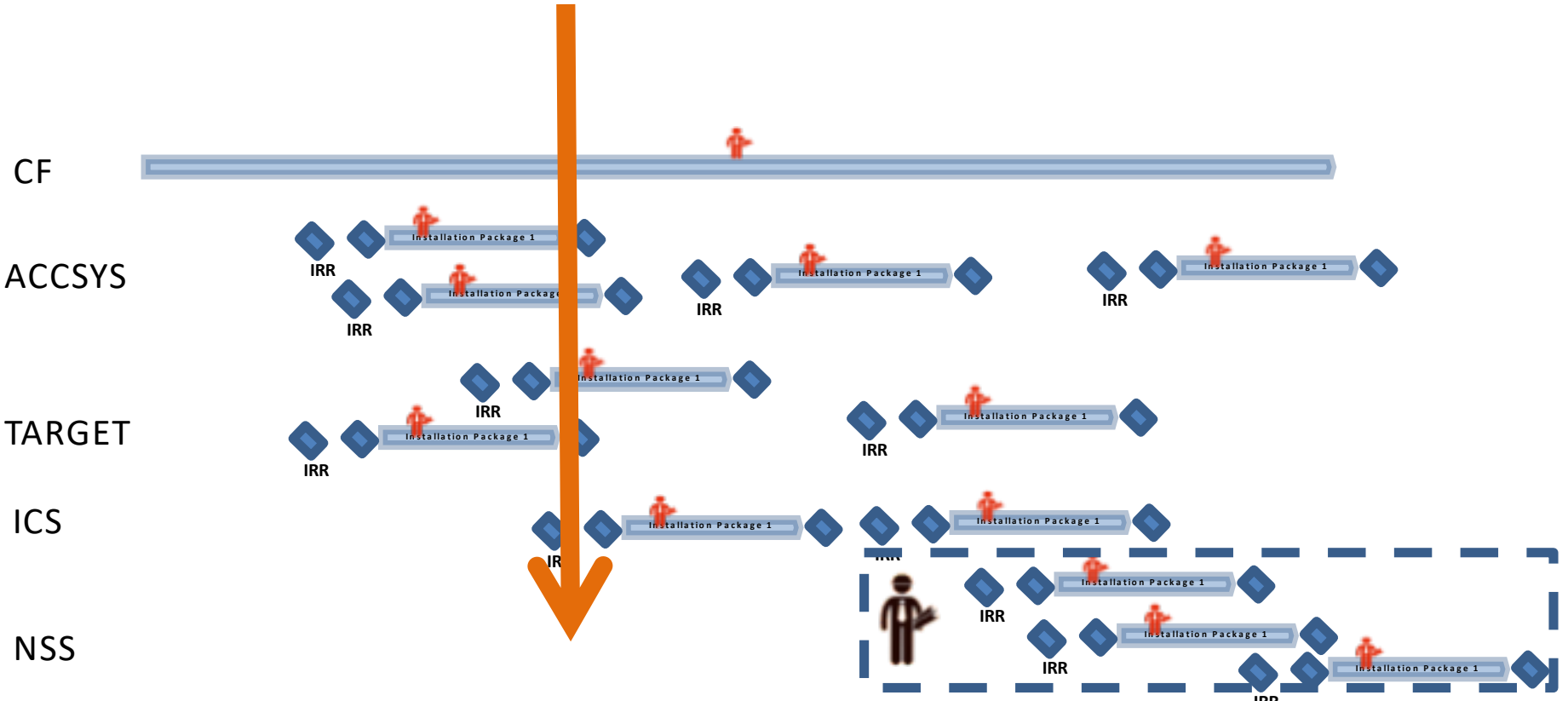


Process – ESS Installation Manager

ESS Installation Manager

Responsible for:

- Coordinating installation between projects, incl resolving conflicts and make prioritizations
- Coordinate support needs
- Help drive development of installation process



Roles and Resposibilities (1/2)

ESS Installation Manager

- Overall Site Coordinator

NSS Installation Coordinator

- Coordinates NSS installation works

Instrument Installation Leader (Lead Engineer/Lead Scientist)

- 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 actual installation on site for that package
- The installation follow rules and regulations
- Safety and Health during installation

Installation Binder

Purpose : Control of installation Documentation.

Each binder refers to a specific I.P.

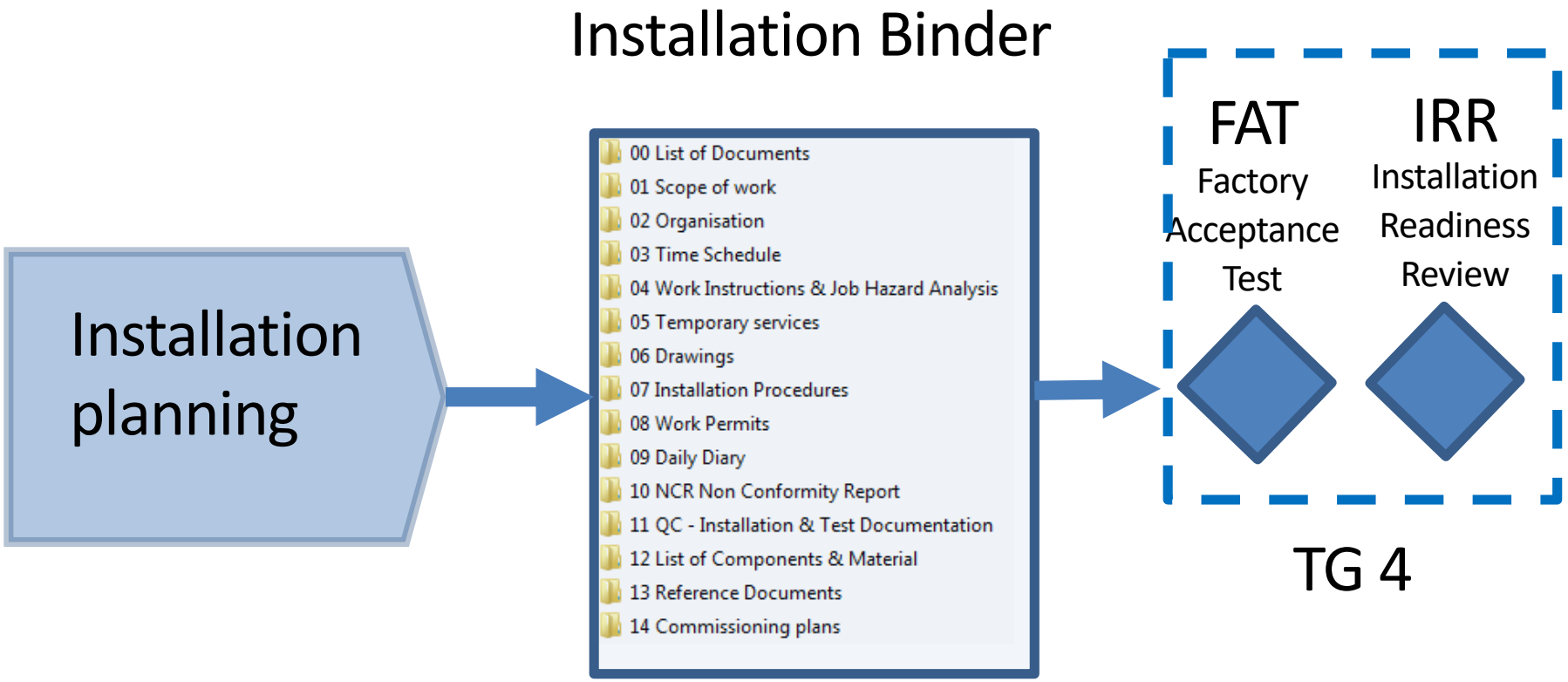
- 00 List of Documents
- 01 Scope of work
- 02 Organisation
- 03 Time Schedule
- 04 Work Instructions & Job Hazard Analysis
- 05 Temporary services
- 06 Drawings
- 07 Installation Procedures
- 08 Work Permits
- 09 Daily Diary
- 10 NCR Non Conformity Report
- 11 QC - Installation & Test Documentation
- 12 List of Components & Material
- 13 Reference Documents
- 14 Commissioning plans

Manufacturing & Preparation for Installation Phase

Installation Phase

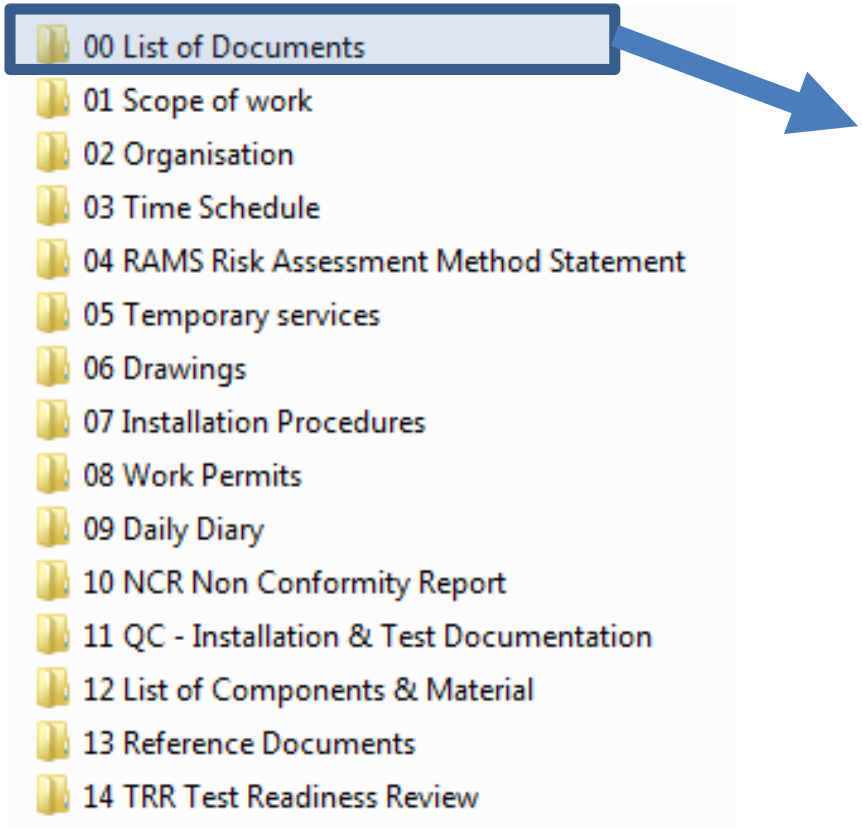
CDR **IRR** **TRR**

Installation Readiness Review & Installation Binder



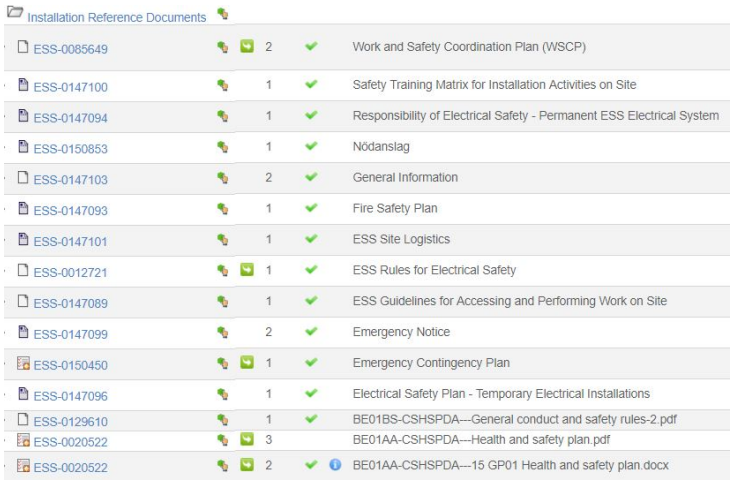
- **Necessary Documentation before installation starts**
- **Collected in one placed and maintained during the installation**

Installation Binder



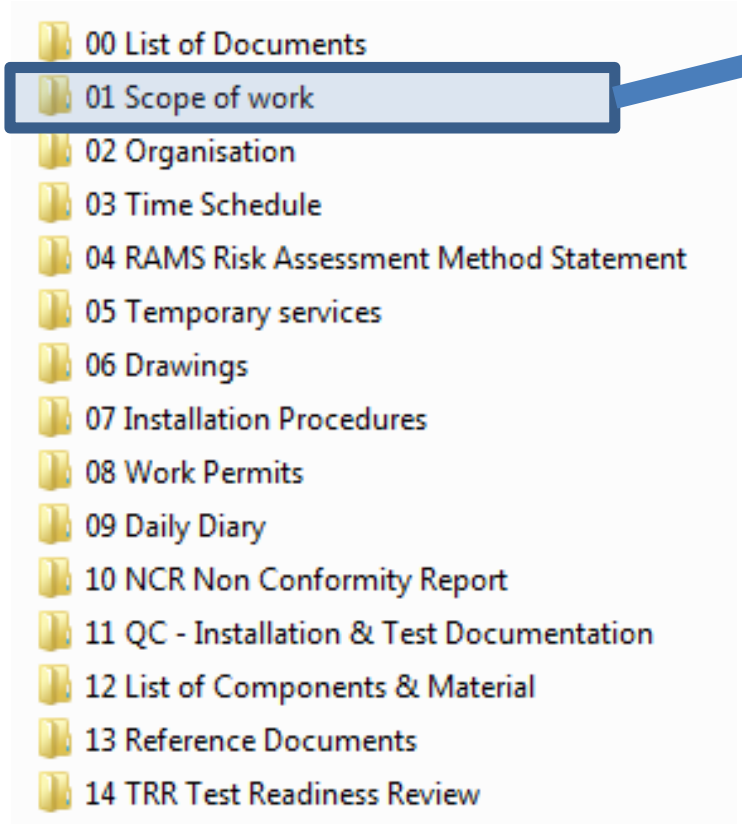
00. List of Documents

- Issuer: Installation Lead Engineer/Scientist
- Reviewer: TG 4 Commitee
- Release: TG 4 Commitee
- Table of content including document revision



ESS 0115727 – paragraph 6 (Information requirements on instrument projects for integration and verification activities)

Installation Binder



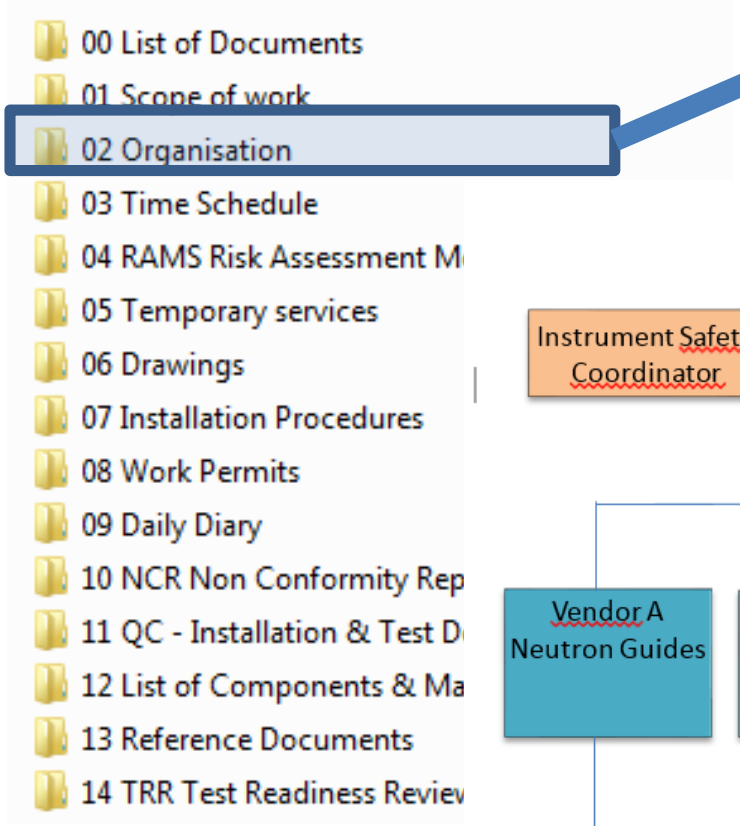
01. Scope of work

Description of work.

Interfaces.

Boundaries (baseplates, light shutter installaled, instrument power available…..)

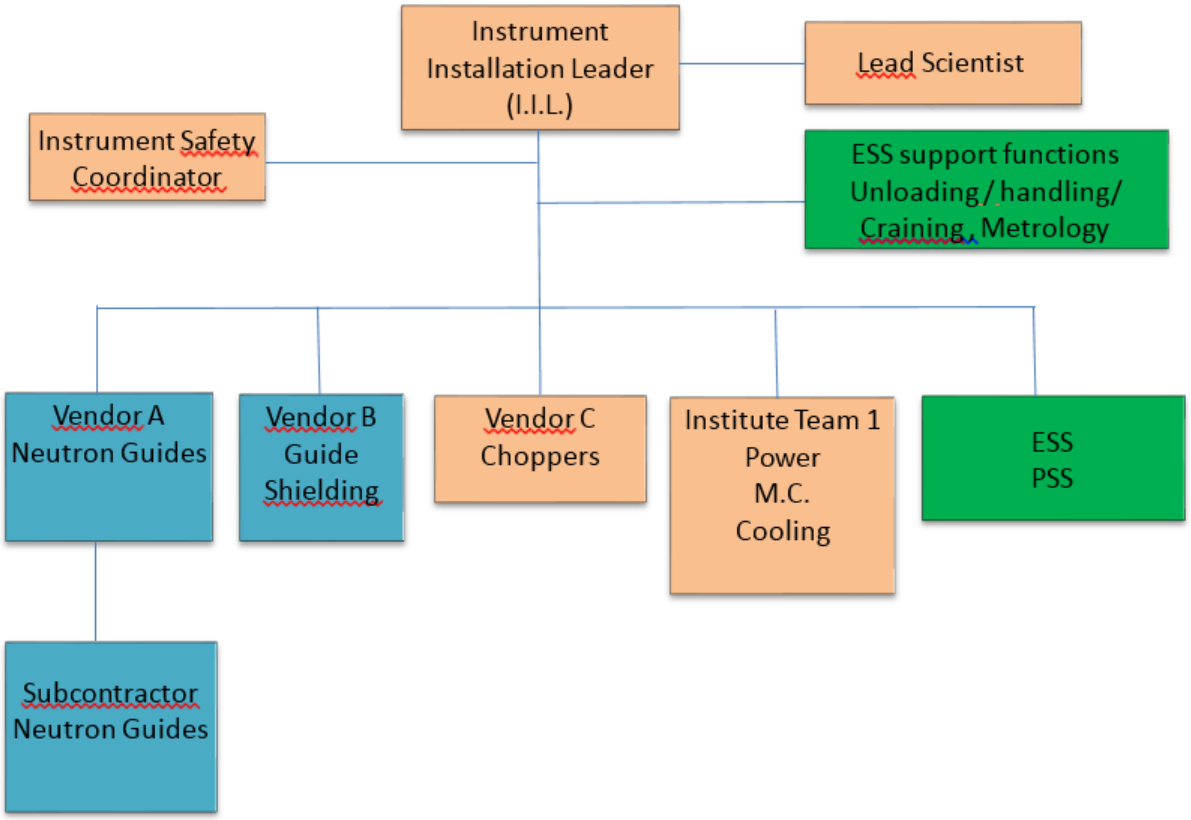
Installation Binder



02. Organisation / List of Contact

In-kind/Contractor Site Organisation

Telephone / mail list to all site



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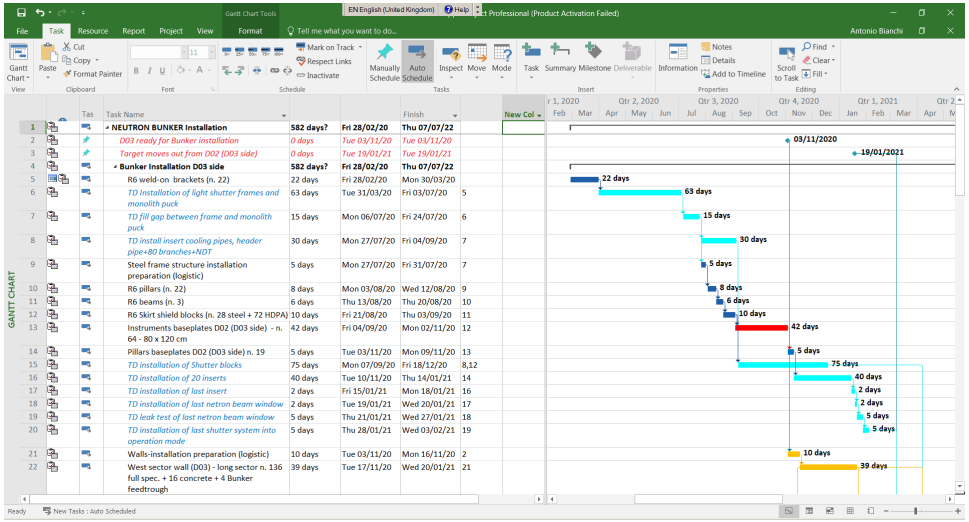
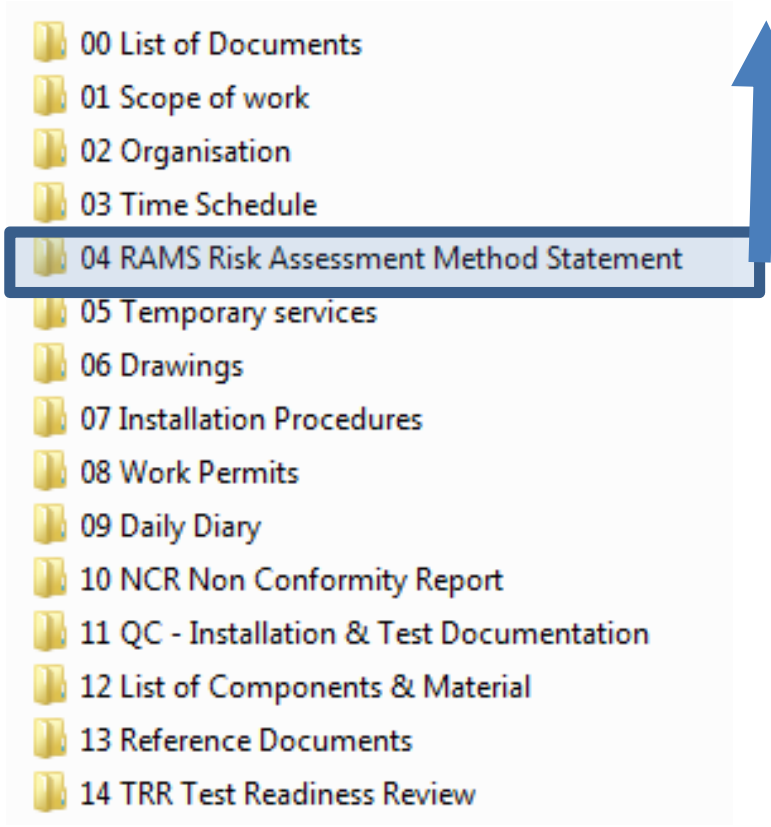
03. Time Schedule (Instrument Installation plan)

Installation plan will be specifically updated with reference to the specific Installation Package



ESS-0115143 - NSS Instrument Project Schedule Guideline

Installation Binder



04. Risk Assessment and Method Statement **(RAMS)**

- Installation sequence
- Transportation route interference check
- Job Hazard Analysis
- Equipment & resources
- Etc.

Template available (more details in the specific session)

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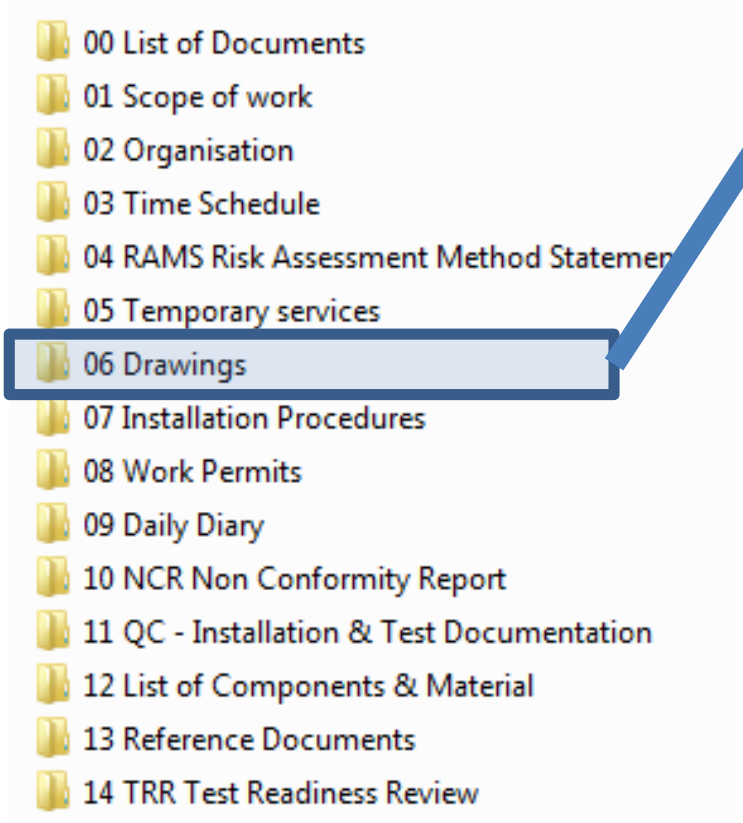
05. Temporary Services

- Scaffolding;
- Laydown Areas (Storage)
- Site logistics;
- Lifting;
- Temporary Power and fluids;
- ESS workshop support;

Installation Binder



06. Drawings

Only installation drawings!

- Cave drawings;
- Neutron guides and shielding;
- Choppers;
- Detector;
- Cable layout;
- P&ID
- Etc.

- **They will be linked to CHESS !!**

Installation Binder

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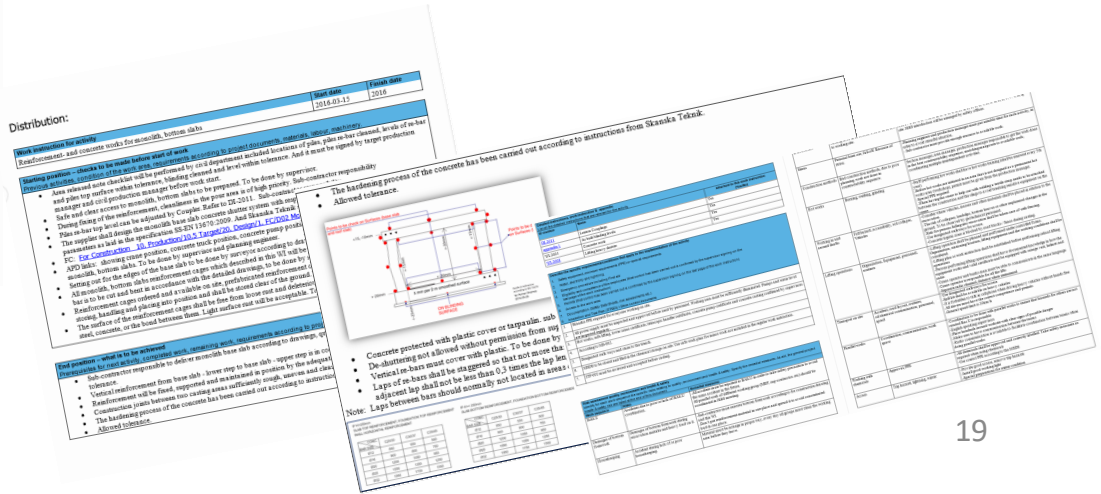
07. Installation Procedurers

- Welding Procedure Specifications;
- Electrical procedures;
- Anchor bolt installation procedures;
- Etc.



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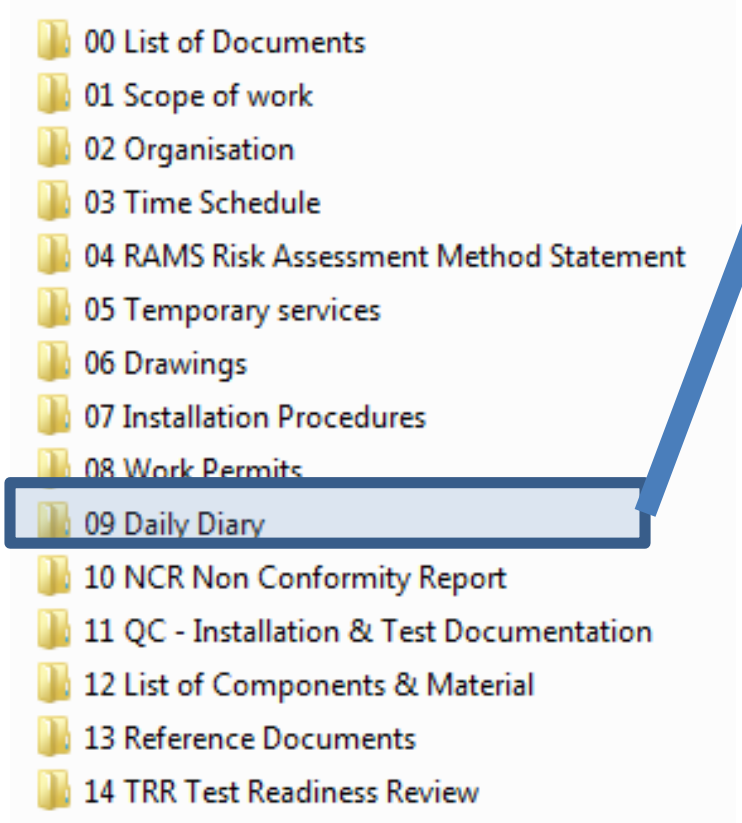
08. Work Permits

- Certificates
  - Hot work
  - Fork lift
  - Electrical
  - Etc.
- Permits
  - Hot work
  - Electrical work
  - Ladder
  - Etc.

Installation Binder



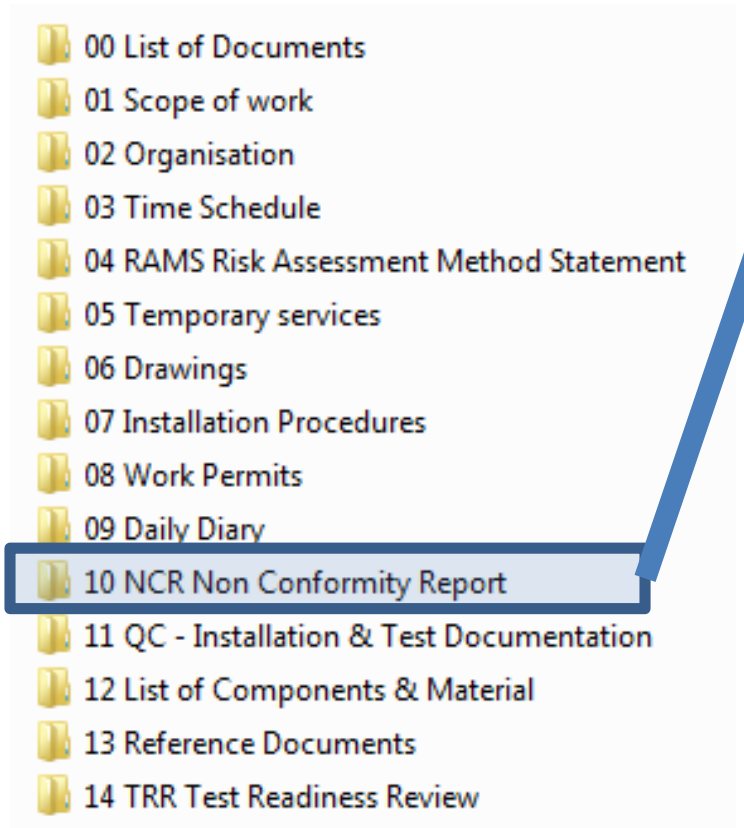
09. Daily diary

When the installation is on-going……

Daily diary will track the on-going work from the kick-off meeting up to the end of the I.P.

This section will became relevant when the installation take place.

Installation Binder



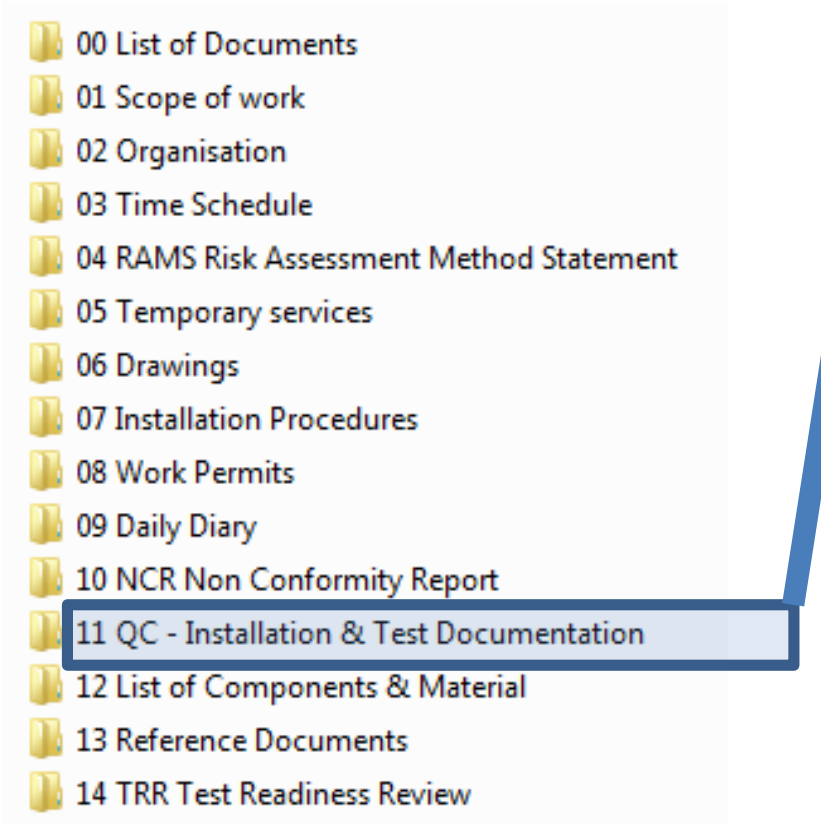
10. NCR Non Conformity Report

- Non conformity reports;
- Follow up list;

When the installation is on-going…….

The section will store the non-conformities. NSS Technology Groups and ESS Quality Division will be involved in this section. During the planning phase the section is not relevant.

Installation Binder

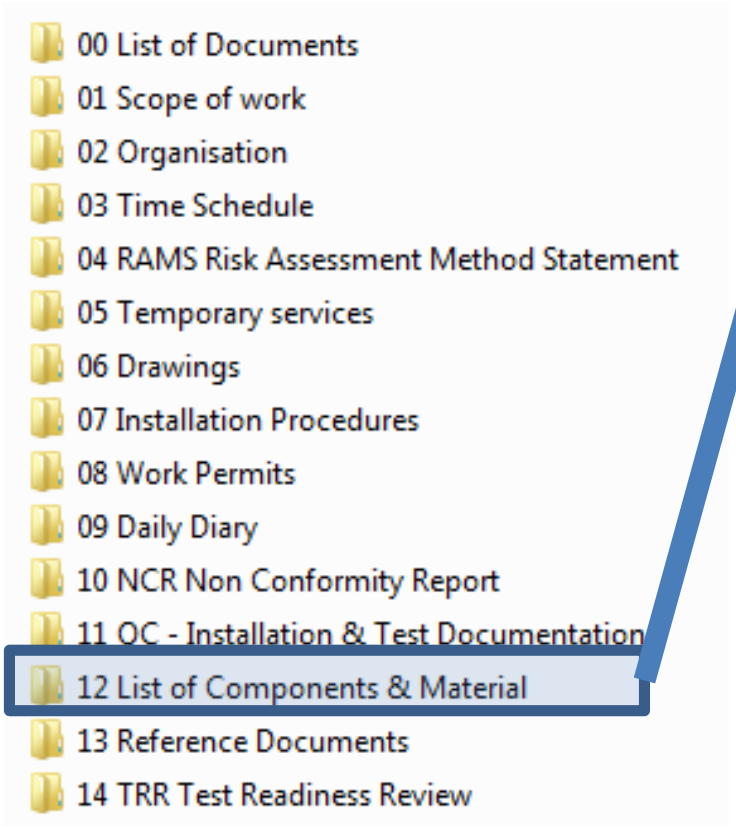


11. *QC - Installation & Test documentation*

- **Factory Acceptance Test and CE declaration of conformities** for the applicable components/systems will be collected into this section.
- The section will include further relevant documentations about all the planned test/quality control to be execute in the I.P. from the instrument team.

  - Inspection plans
    - Mechanical installations
    - Electrical installations
    - Pressure Test Programs
  - Protocols
    - Welding protocol
    - X-ray Protocol
    - Pressure test report
    - Anchor installation protocol
    - Visual inspection protocol
    - Marking Identification
  - FAT and CE

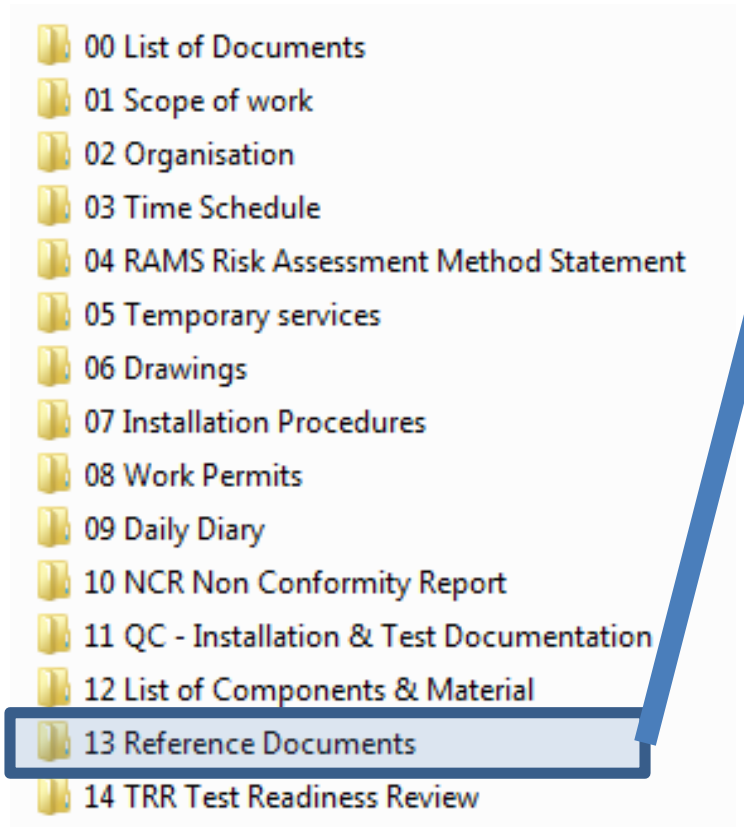
Installation Binder



12. List of components & material

- List of Materials;
- Valve list;
- Cable list;
- Etc.

Installation Binder

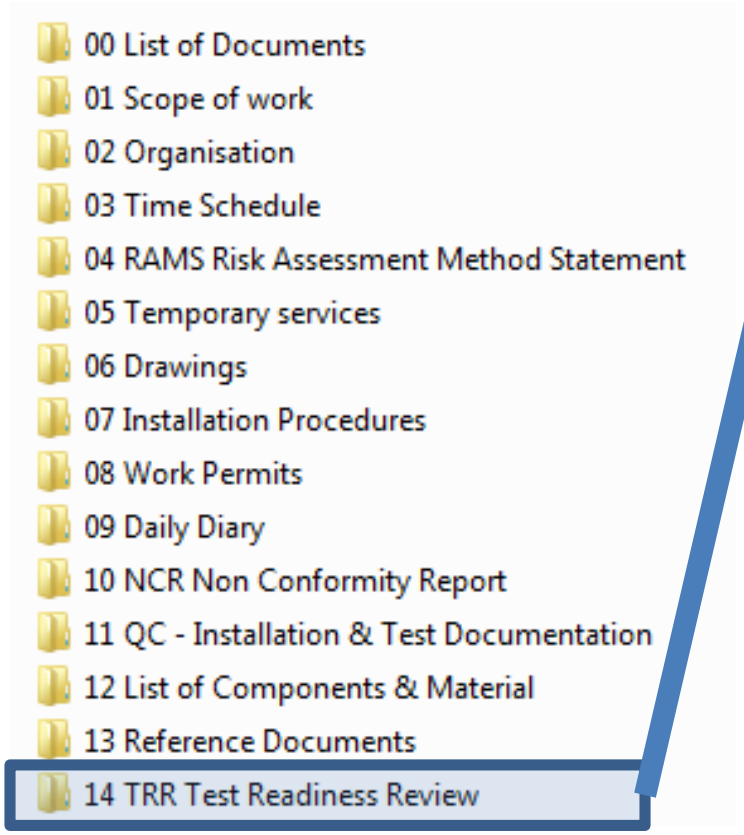


13. Reference Documents

- Sketches;
- Manuals;
- Data sheets;

Supporting/reference documents, needed during installation

Installation Binder



14. Cold Commissioning Plans

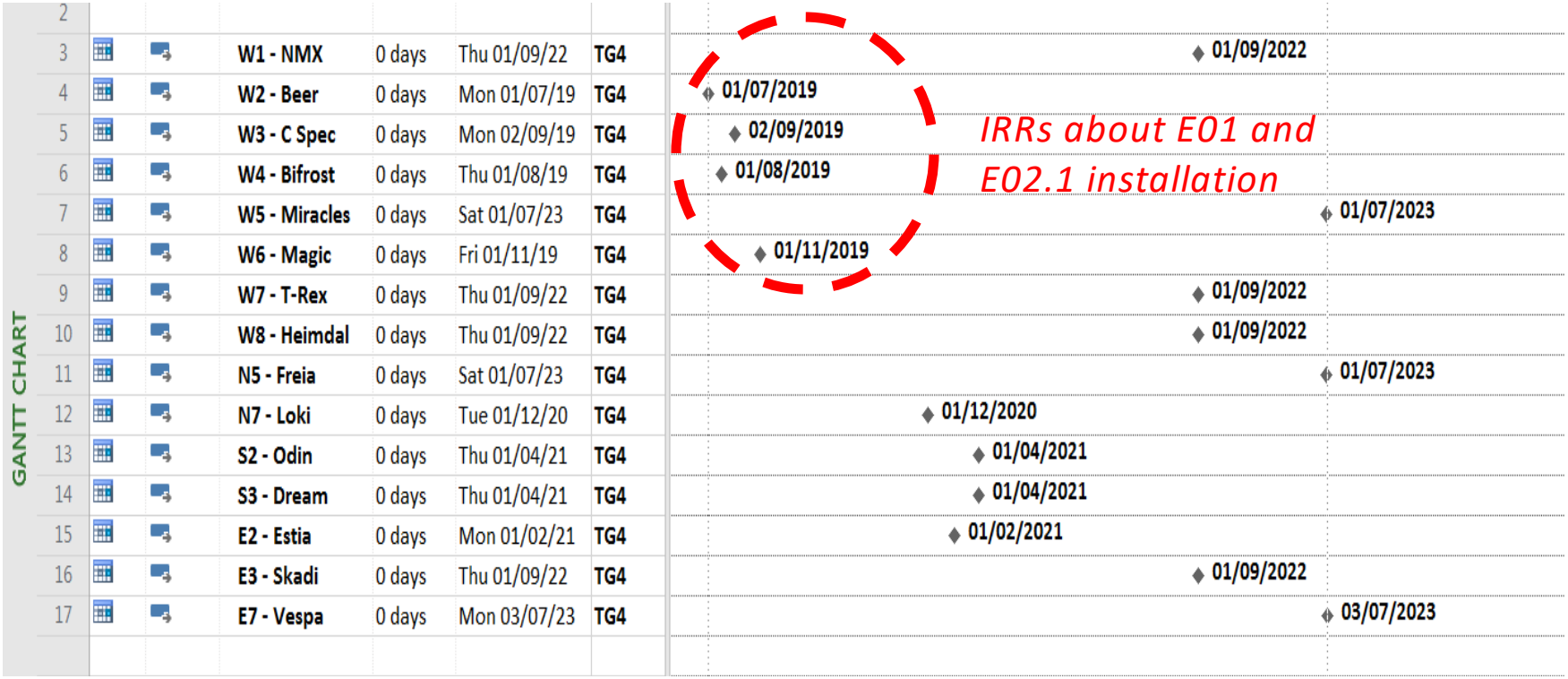
This section is relevant to describe the planned cold commissioning plans able to demonstrate the components/systems will be able to transit in the Phase 5 (hot commissioning).

- Functional tests;
- System tests;
- Integrated system tests;

IRR Timing

Typically **about 2 months** before the installation starts

- Too early, preparations and documentation not in place
- Too late, potential issues can not be addressed in time



Who participates at an IRR?

Typical **candidates** to participate:

- Installation Coordinator;
- Instrument Installation Leader (Lead Engineer);
- Instrument Lead Scientist;
- Instruments Commercial Partners/Suppliers;
- Technology groups representatives;
- ESS Metrology group;
- ICS/DMCS representatives;
- ES&H representative;

TG4 Committee

Mandatory members:

- NSS Project Leader;
- 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;
- DMSC Division Responsible/Representative;
- ICS/PSS Division Responsible/Representative;

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

- ESS Installation Manager;
- EH&S Division Responsible/Representative;
- ESS Quality Division Representative;
- ESS metrology group;

Outcomes of an IRR

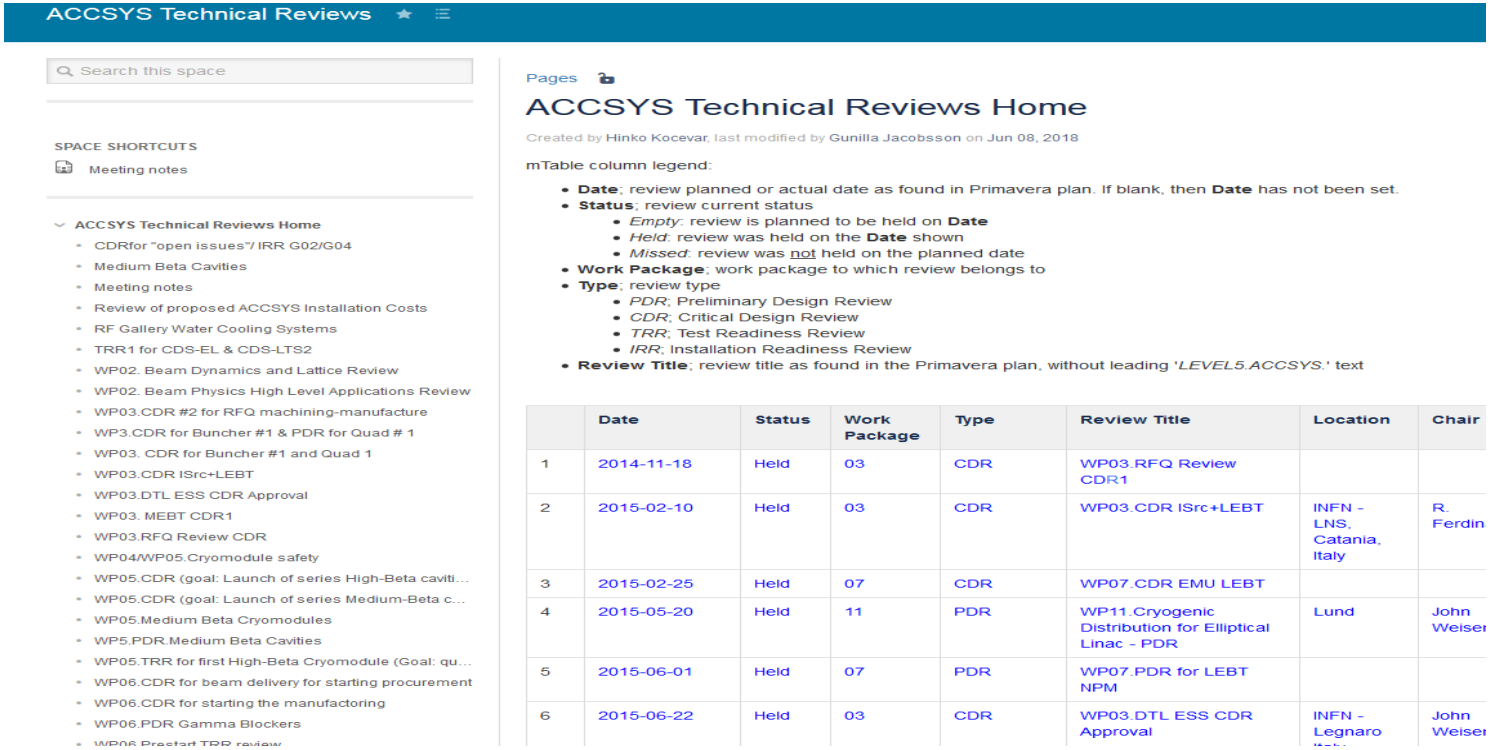
Examples of outcomes:

1. **Good shape** – Proceed
2. **Minor things** to fix before start – Keep start date
3. **Only part of the Package is approved**– Split package
4. **IRR** has to be rescheduled,

The IRR outcome will be documented with a checklist with comments saved (linked/attached to IRR web page)

Upcoming IRRs

- Upcoming IRRs (coming 3 months) visible
  - Web page where upcoming IRRs are visible
  - Link to reference documentation (ie to the Installation binder)



ACCSYS Technical Reviews

Search this space

SPACE SHORTCUTS

Meeting notes

ACCSYS Technical Reviews Home
- CDRfor "open issues"/ IRR G02/G04
- Medium Beta Cavities
- Meeting notes
- Review of proposed ACCSYS Installation Costs
- RF Gallery Water Cooling Systems
- TRR1 for CDS-EL & CDS-LTS2
- WP02. Beam Dynamics and Lattice Review
- WP02. Beam Physics High Level Applications Review
- WP03.CDR #2 for RFQ machining-manufacture
- WP3.CDR for Buncher #1 & PDR for Quad # 1
- WP03. CDR for Buncher #1 and Quad 1
- WP03.CDR ISrc+LEBT
- WP03.DTL ESS CDR Approval
- WP03. MEBT CDR1
- WP03.RFQ Review CDR
- WP04/WP05.Cryomodule safety
- WP05.CDR (goal: Launch of series High-Beta caviti...
- WP05.CDR (goal: Launch of series Medium-Beta c...
- WP05.Medium Beta Cryomodules
- WP5.PDR.Medium Beta Cavities
- WP05.TRR for first High-Beta Cryomodule (Goal: qu...
- WP06.CDR for beam delivery for starting procurement
- WP06.CDR for starting the manufactoring
- WP06.PDR Gamma Blockers
- WP06.Prestart TRR review

Pages

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Created by Hinko Kocevar, last modified by Gunilla Jacobsson on Jun 08, 2018

mTable column legend:
- **Date**; review planned or actual date as found in Primavera plan. If blank, then **Date** has not been set.
- **Status**; review current status
  - *Empty*: review is planned to be held on **Date**
  - *Held*: review was held on the **Date** shown
  - *Missed*: review was not held on the planned date
- **Work Package**; work package to which review belongs to
- **Type**; review type
  - *PDR*; Preliminary Design Review
  - *CDR*; Critical Design Review
  - *TRR*; Test Readiness Review
  - *IRR*; Installation Readiness Review
- **Review Title**; review title as found in the Primavera plan, without leading '*LEVEL5.ACCSYS.*' text

	Date	Status	Work Package	Type	Review Title	Location	Chair
1	2014-11-18	Held	03	CDR	WP03.RFQ Review CDR1		
2	2015-02-10	Held	03	CDR	WP03.CDR ISrc+LEBT	INFN - LNS, Catania, Italy	R. Ferdin
3	2015-02-25	Held	07	CDR	WP07.CDR EMU LEBT		
4	2015-05-20	Held	11	PDR	WP11.Cryogenic Distribution for Elliptical Linac - PDR	Lund	John Weise
5	2015-06-01	Held	07	PDR	WP07.PDR for LEBT NPM		
6	2015-06-22	Held	03	CDR	WP03.DTL ESS CDR Approval	INFN - Legnaro	John Weise

Work Orders

Purpose with Work Orders : Operational control of work at site

Registering the work
Installation Coordinator + Others

Approving the work
Installation Coordinator (ONLY)
Based on coordination & maturity (documentation status, availability of material etc)

Starting the work
Installation Coordinator after coordinating with Area coordinator
Based on coordination

Closing the work
Installation Coordinator after coordinating with NSS Division

The Installation Guide