

IKON 15 - Instruments installation

Introduction to all the sessions

Antonio Bianchi
NSS Installation Co-ordinator
NSS Project Division

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12th September 2018

Installation day – main topics

Process

Relevant TG 4 documents, roles and responsibilities, Installation Readiness Review, FATs, Installation Packages, Installation Binder, work order...

Planning with Ms Project

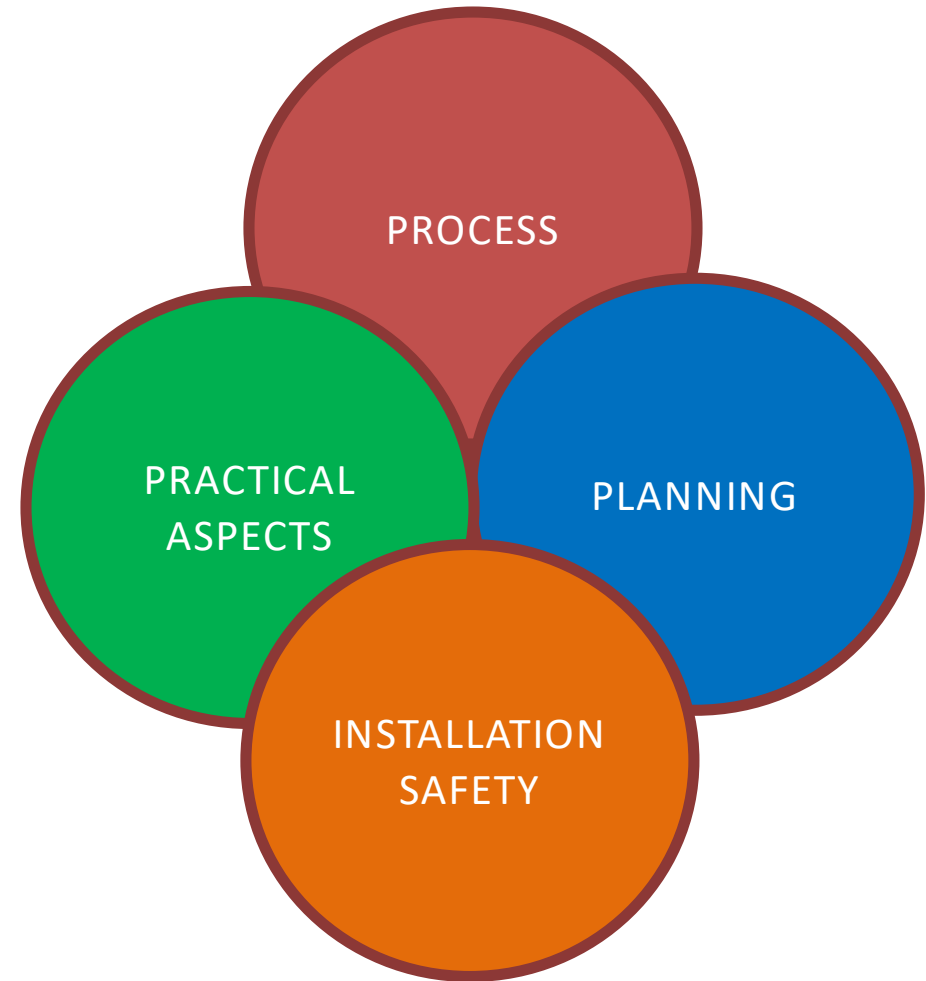
Improvements about integrated installation and resource plan with MS project

Installation safety

Risk assessment and method statement, roles/responsibilities in a practical example.

Practical aspects

Installation of neutron guides, instruments installation at ISIS, amount of “FTEs” required to carry out the Phase 4



Process, planning, safety, practical aspects



1	9.00 – 9.45	Process	The Tollgate 4 (IRR) in the instrument construction project	Antonio Bianchi (NSS)
2	9.45 – 10.30	Planning	NSS integrated installation and resource plan with Ms Project;	Antonio Bianchi (NSS)
3	13.30 – 14.15	Installation safety	Installation safety (RAMS)	Helen Boyer (EH&S) and Helena Ramsing (NSS)
4	14.15 – 15.30	Practical aspects	Challenges to face in the installation of the instruments neutron guides;	Iain Sutton (NSS)
5	16.00– 16.30	Practical aspects	Practical aspects in the instruments installation at ISIS	John Crawford (ISIS)
6	16.30-17.00	Practical aspects	Resources prediction required to carry out the instruments installation and cold commissioning phase (Phase 4)	Antonio Bianchi (NSS)

The Tollgate 4 in the instrument construction project

Antonio Bianchi
NSS Installation Co-ordinator
NSS Project Division

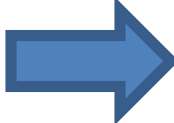
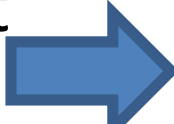
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Tollgate 4 – main reference documents (1/2)



- **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

- **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

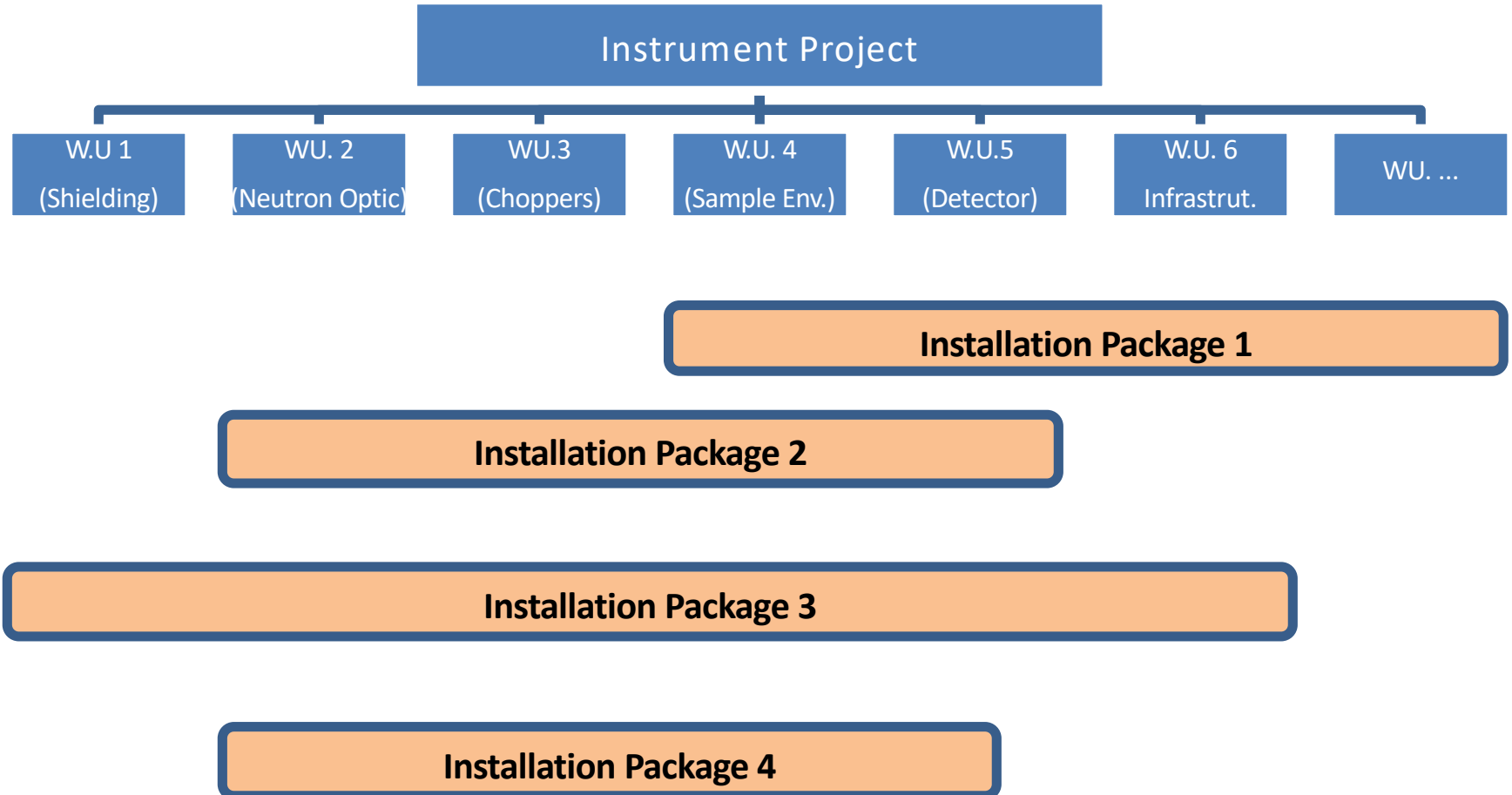
The purpose with **Installation Readiness Review** is to make necessary preparations have been performed and the supporting documentation are in place for the upcoming installation package.

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.



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

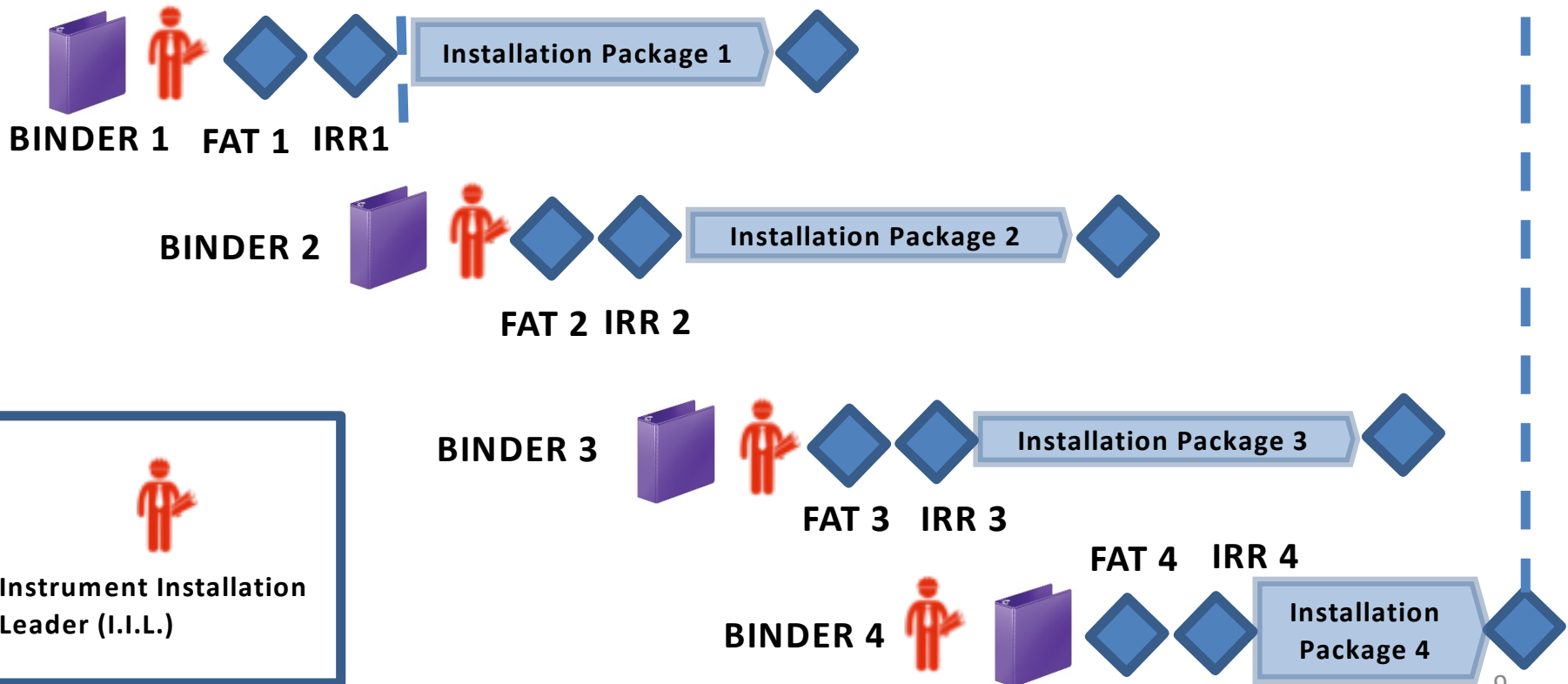


Process: Binders and Installation Packages

NSS Installation Coordinator



Phase 4 – Instrument Installation and cold commissioning



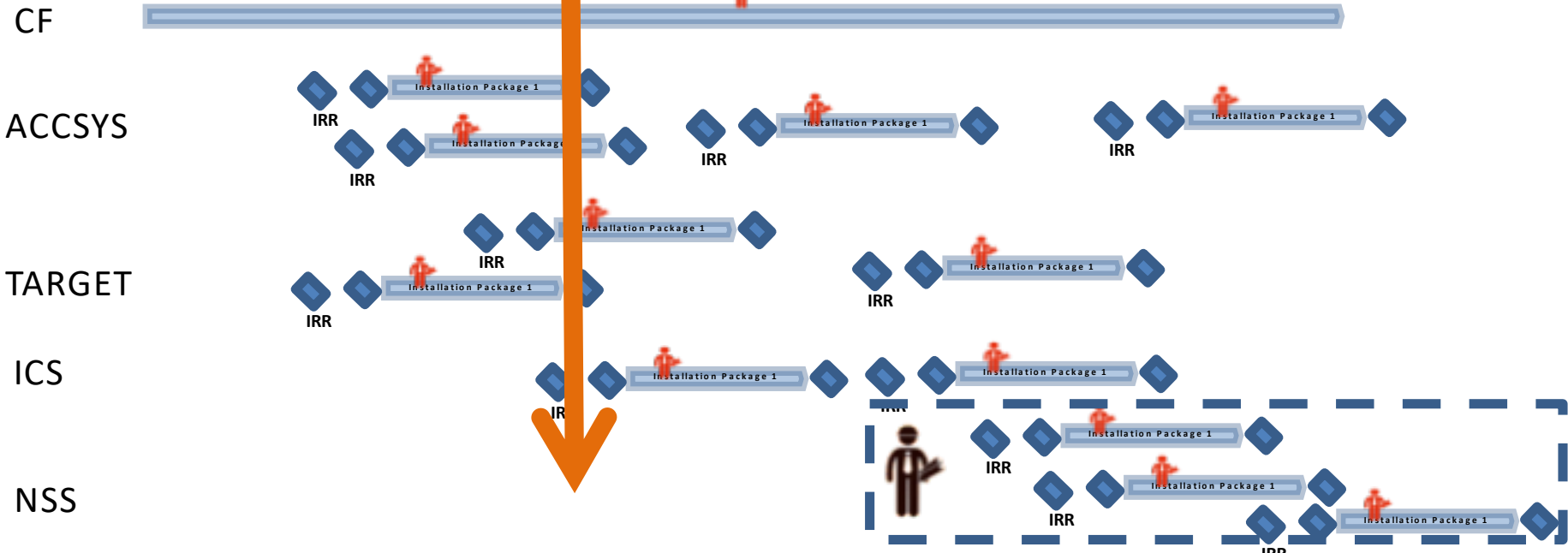
Process – ESS Installation Manager

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 Responsibilities (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.



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 health 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

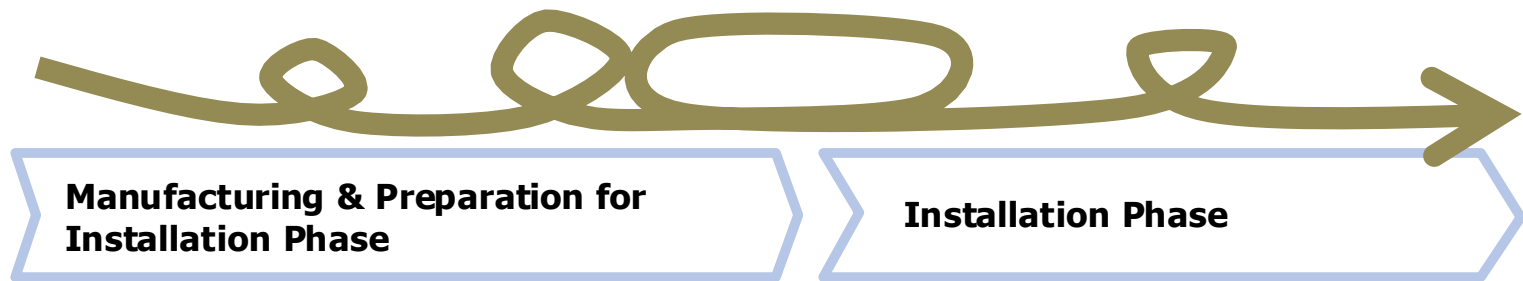
Installation Binder

Purpose : Control of installation Documentation.

Each binder refers to a specific I.P.

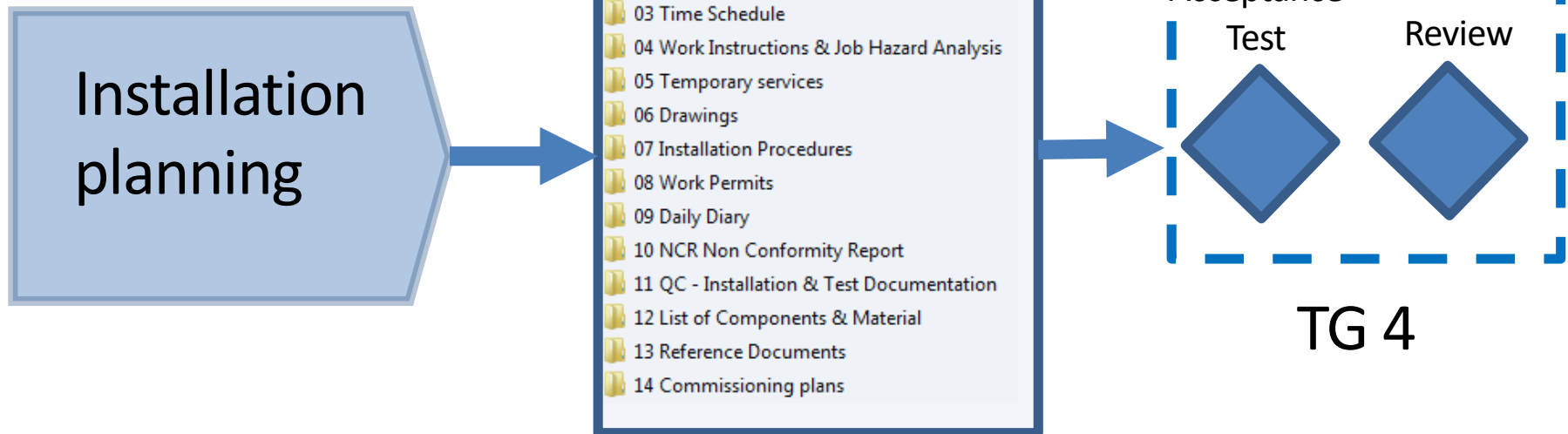


- 00 List of Documents
- 01 Scope of work
- 02 Organisation
- 03 Time Schedule
- 04 Work Instructions & Job Hazard Analysis
- 05 Temporary services
- 06 Drawings
- 07 Installation Procedures
- 08 Work Permits
- 09 Daily Diary
- 10 NCR Non Conformity Report
- 11 QC - Installation & Test Documentation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



Installation Readiness Review & Installation Binder

Installation Binder



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

Installation Binder

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- 14 TRR Test Readiness Review

00. List of Documents

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

Installation Reference Documents			
ESS-0085649	2	✓	Work and Safety Coordination Plan (WSCP)
ESS-0147100	1	✓	Safety Training Matrix for Installation Activities on Site
ESS-0147094	1	✓	Responsibility of Electrical Safety - Permanent ESS Electrical System
ESS-0150853	1	✓	Nödanslag
ESS-0147103	2	✓	General Information
ESS-0147093	1	✓	Fire Safety Plan
ESS-0147101	1	✓	ESS Site Logistics
ESS-0012721	1	✓	ESS Rules for Electrical Safety
ESS-0147089	1	✓	ESS Guidelines for Accessing and Performing Work on Site
ESS-0147099	2	✓	Emergency Notice
ESS-0150450	1	✓	Emergency Contingency Plan
ESS-0147096	1	✓	Electrical Safety Plan - Temporary Electrical Installations
ESS-0129610	1	✓	BE01BS-CSHSPDA—General conduct and safety rules-2.pdf
ESS-0020522	3	✓	BE01AA-CSHSPDA—Health and safety plan.pdf
ESS-0020522	2	✓	BE01AA-CSHSPDA—15 GP01 Health and safety plan.docx

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

Installation Binder

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01. Scope of work

Description of work.

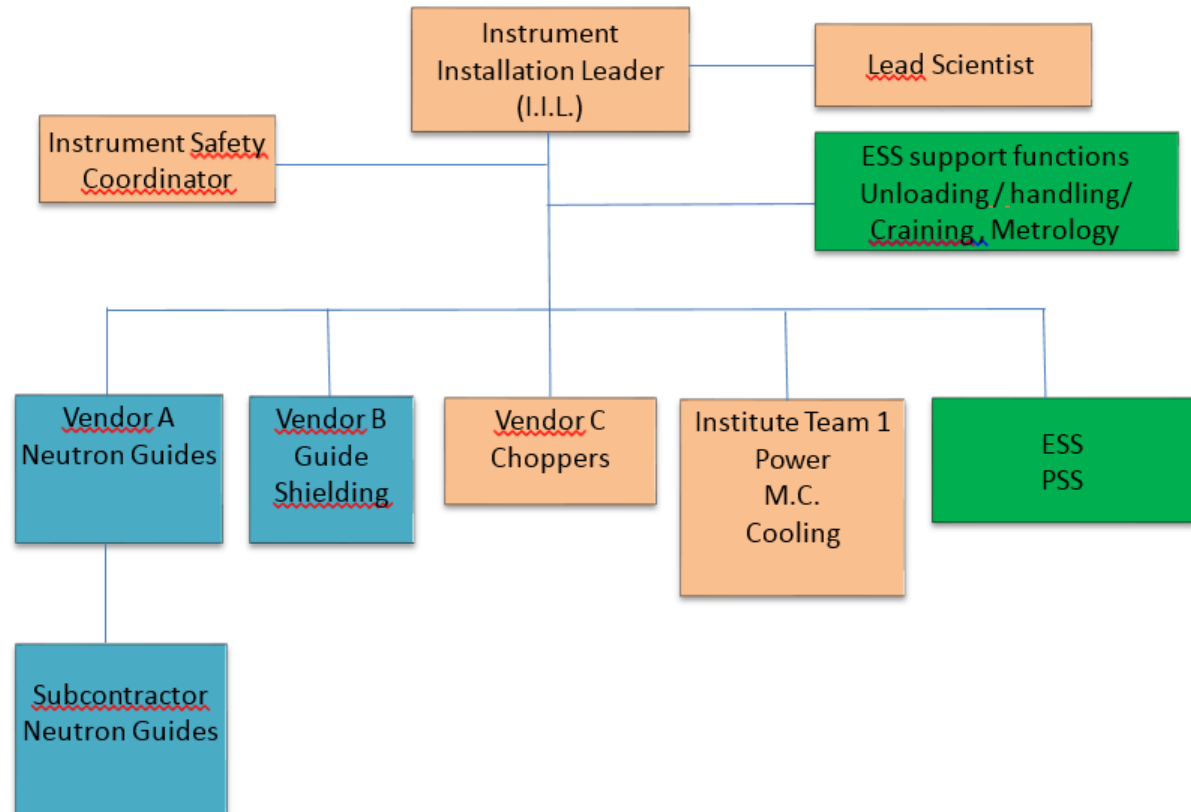
Interfaces.

Boundaries (baseplates, light shutter installed, instrument power available.....)

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02. Organisation / List of Contact

In-kind/Contractor Site Organisation
Telephone / mail list to all site

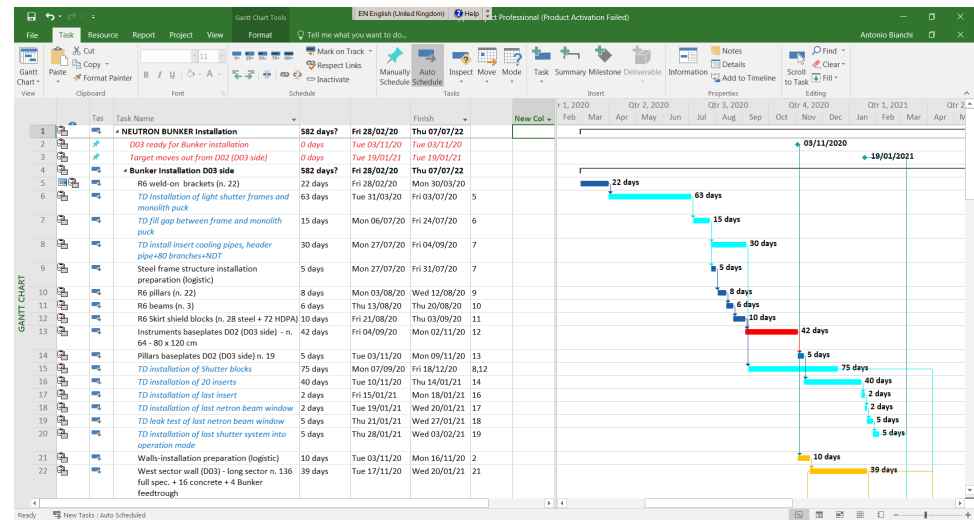


Installation Binder

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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

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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;



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06. Drawings

Only installation drawings!

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

– **They will be linked to CHES !**

Installation Binder

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08. Work Permits

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

Safety Training Matrix

Training Purpose	Training provided by ESS Mandate on site											
	HS site induction	Site orientation training at gate	Safe lifting (slings/ RIGGING)	Hot work training	Fall protection and rescue training (swish business)	Electrical safety instructions (EIA, I&L, etc. site ID certificate)	Electrical safety training (EIA, I&L, etc. site ID certificate)	MWP (Swedish, Danish, Russian site)	First Aid course including Electrical injuries	Forklift training	Crane operation training for specific crane	Training and medical examination
Estimated cost (SEK/person)	-	-	2000	5200	2200	6000	-	2500	2000/yr.	3000	5200	4000
Access to site	x								x			
Work on site (general)	x								x			
Access to site with vehicle/transport		x										
Performing hot work	x			x								
Performing lifting and coupling work	x		x									
Work on site (accessing energized areas, performing electrical work)	x								x			
Accessing energized areas, performing electrical work	x					x	x		x			
Working on MWP	x				x			x				
Operating forklift	x									x		
Operating cranes	x		x								x	
Working with explosives or other allergenic chemical												x
VALIDITY of courses (duration)	-	-	Swedish certificate	3 years (Danish certificate)	3 years (Swedish certificate)	3 years	3 years	3 years (EIA I&L/ID certificate)	3 years	Swedish EFA or TFA evaluation	Swedish EFA or TFA evaluation	Swedish certificate 3 years

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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 become relevant when the installation takes place.

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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.

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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

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12. List of components & material

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

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13. Reference Documents

- Sketches;
- Manuals;
- Data sheets;

Supporting/reference documents,
needed during installation

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14. Cold Commissioning Plans

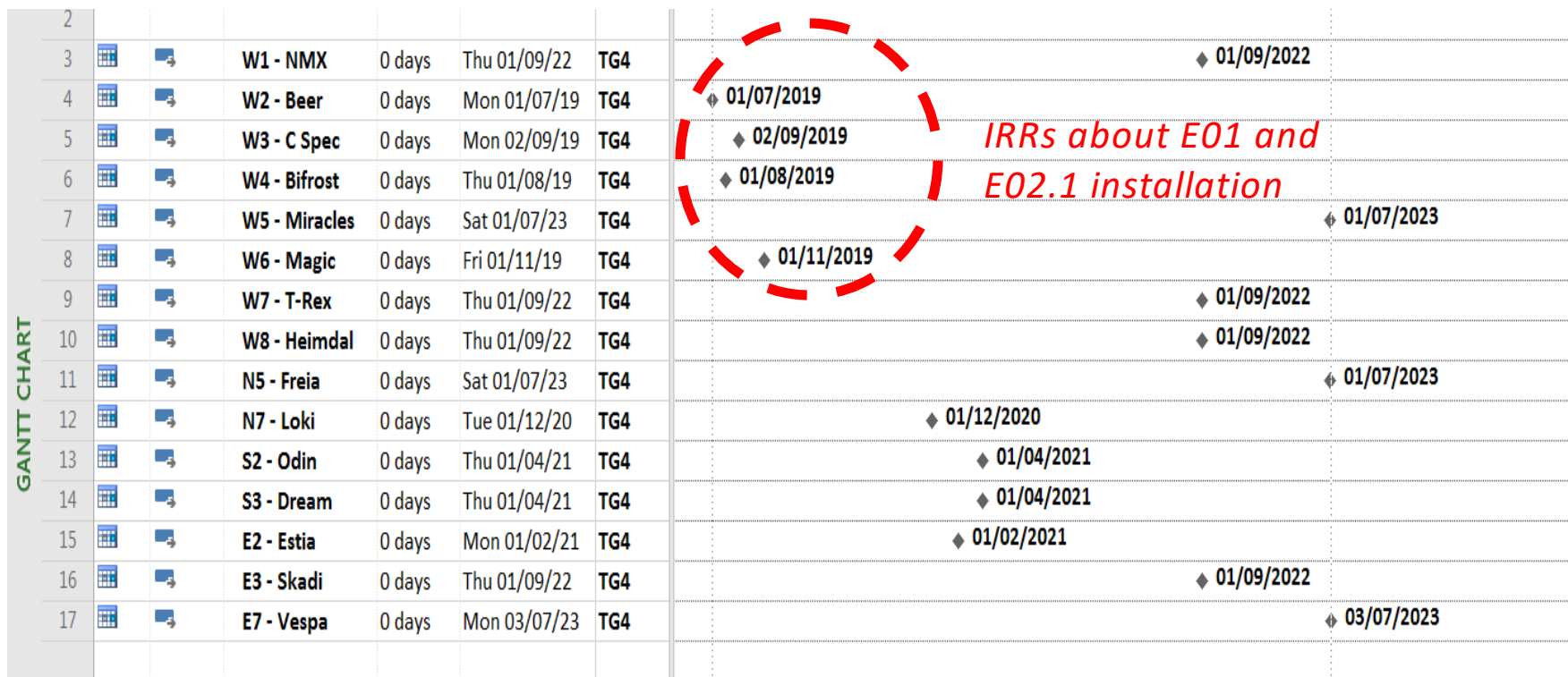
This section is relevant to describe the planned cold commissioning plans able to demonstrate the components/systems will be able to transit in the Phase 5 (hot commissioning).

- 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;

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

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 cavitil...
 - 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 manufacturing
 - WP06.PDR Gamma Blockers
 - WP06.Prelim TRR review

Pages

ACCSYS Technical Reviews Home

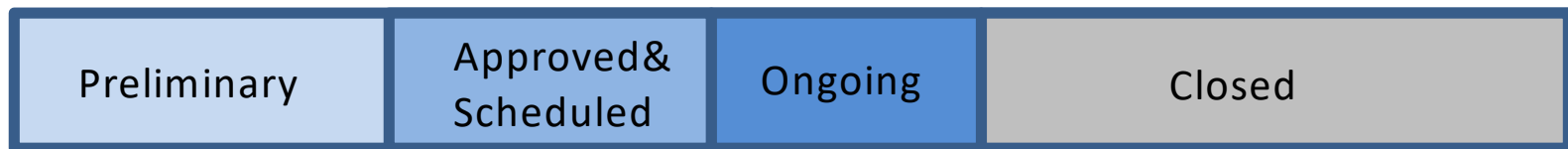
Created by Hinko Koccevar, last modified by Gunilla Jacobsson on Jun 08, 2018

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 Weiser
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 Weiser

Purpose with Work Orders : Operational control of work at site



Registering the work

Installation Coordinator + Others



Starting the work

*Installation Coordinator after coordinating with Area coordinator
Based on coordination*



Approving the work

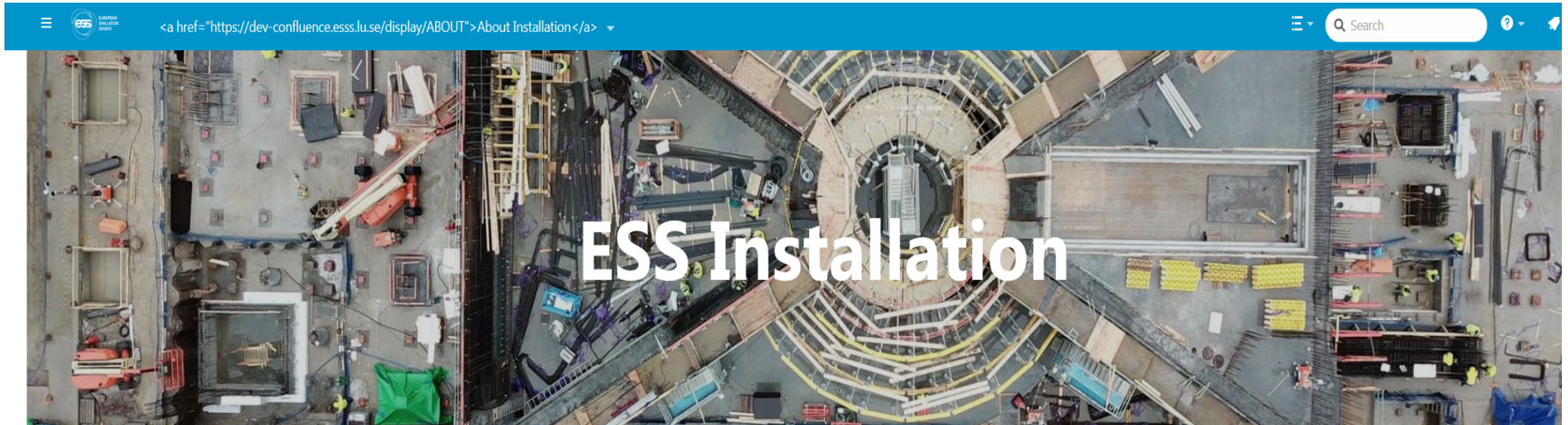
*Installation Coordinator (ONLY)
Based on coordination & maturity
(documentation status, availability
of material etc)*



Closing the work

*Installation Coordinator after
coordinating with NSS Division*

The Installation Guide



About Installation

What we talk about when we talk about ESS Installation. And why it matters.

[Read more](#)



How we work

For each step of the Installation workflow, we tell you everything you need to know and do to help us facilitate your work, in a safe and sustainable way.

[Find out more](#)



ESS Services

Browse the portfolio to request engineering, logistics or other services that we have place to support your work.

[Browse](#)

NSS integrated installation plan with Ms Project

Antonio Bianchi
NSS Installation Coordinator
NSS Project Division

www.europeanspallationsource.se

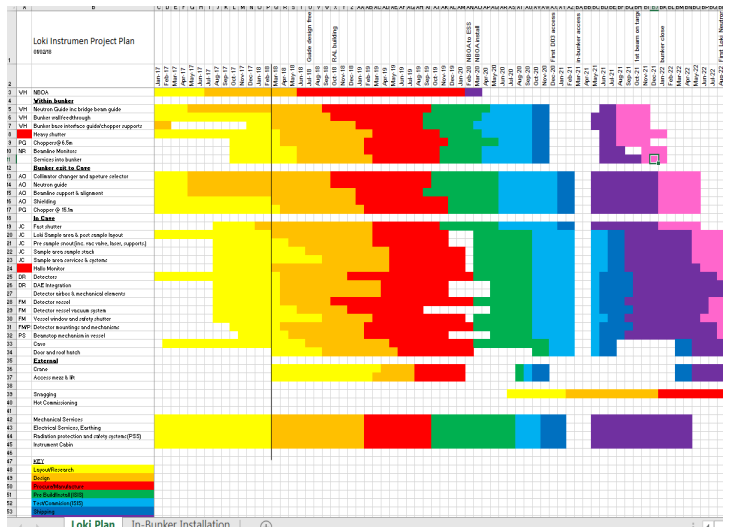
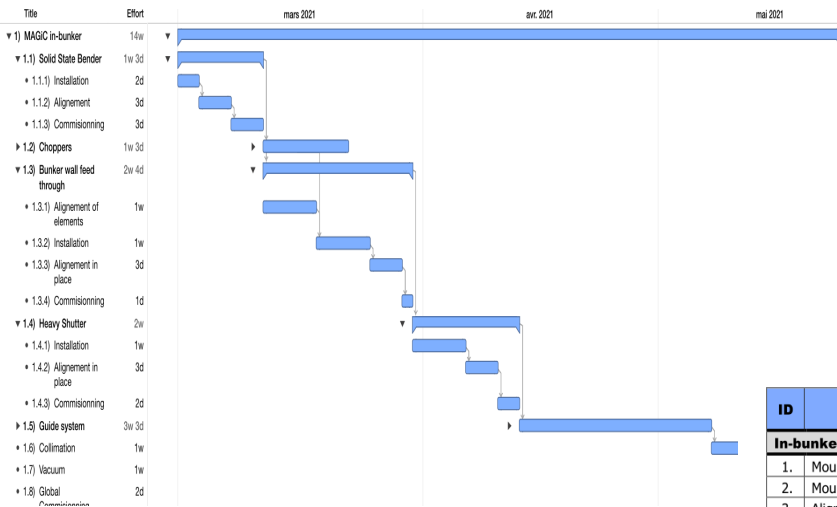
12th September 2018

NSS integrated installation plan



- The document ***ESS 0115143 (NSS Project schedule guideline)*** defines a common strategy to develop the Project Schedule by each Instrument team. The DRAFT plan is already required in the documentation included in the TG 3 process.
- Draft Installation plans have been provided from the first 8 instruments in order to evaluate the compatibility with the current NSS Master Schedule (approved re-baseline schedule);
- In the current stage most of the instruments plans are still very general and they are not resources loaded;

Instruments project schedule – previous work



Task	Start	End	Resources
Installation			
Mounting of supports			
Alignment of BTCS			
Connection to Vacuum 1st Test			
Chopper Disc Installation			
Vacuum Test (all components)			
Remote Handling Test			
Connectivity Test			

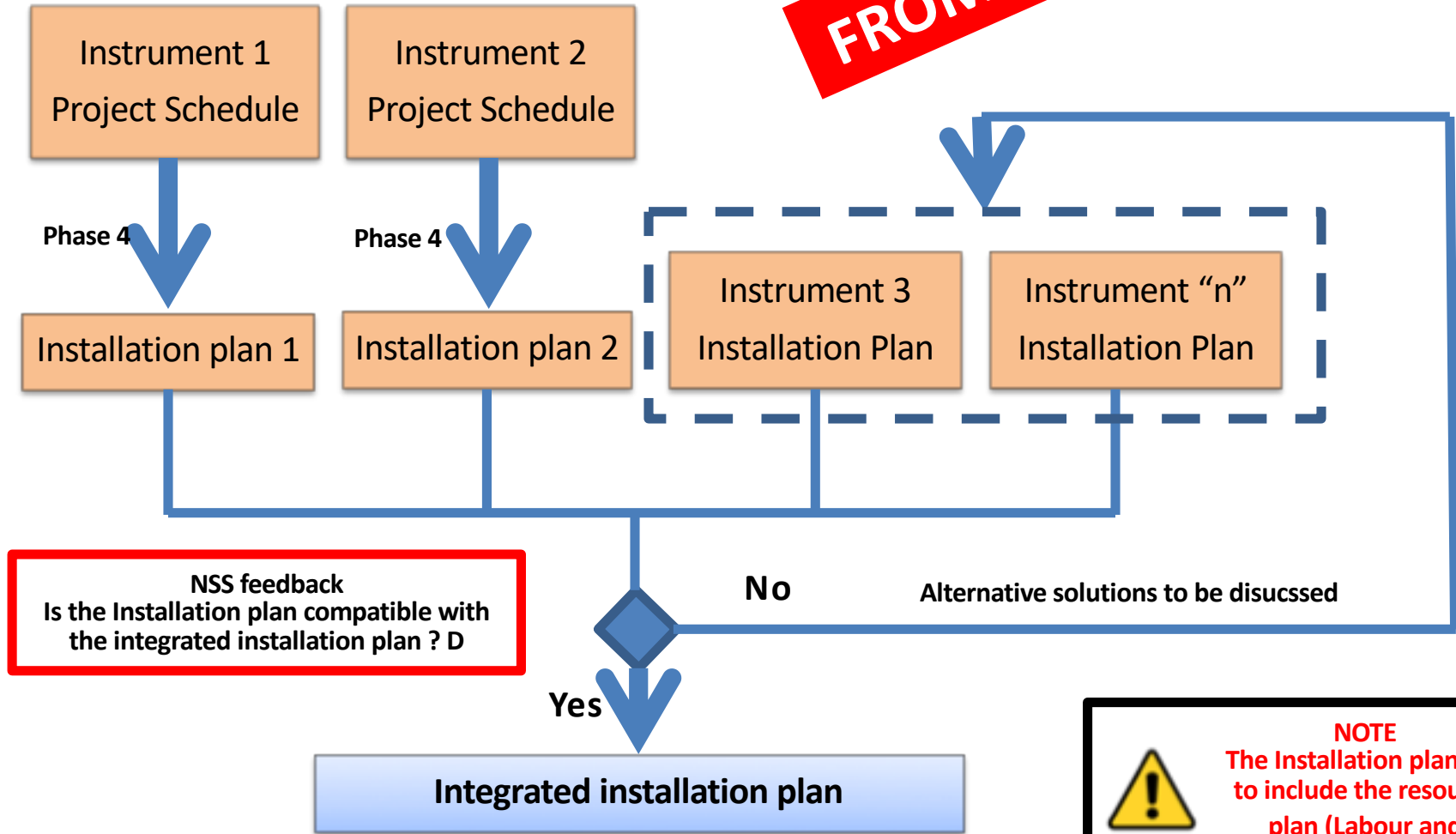
ID	Task	Start	End	Resources
In-bunker installation (Access date 03. May 2021): 3 May – 07 Sept. 2021				
1.	Mounting of supports	31/5-25/6/21	20	Forklift, Crane
2.	Mounting of BTCS	28/6-09/7/21	10	Metrology
3.	Alignment of BTCS	19/7-21/7-21	2	Vacuum
4.	Connection to Vacuum 1st Test	21/7-27/7/21	5	Forklift Crane
5.	Chopper Disc Installation	29/7-02/8/21	3	Vacuum Group
6.	Vacuum Test (all components)	03/8-31/8/21	21	Forklift, Crane, Vacuum
7.	Remote Handling Test	01/9-07/9/21	5	Motion Control, Chopper, Vacuum, ES&H
8.	Connectivity Test			
Ex-bunker installation (Access date 03. May 2021): 3 May – 07 Sept. 2021				
1.	Mounting of supports	03/5-14/5/21	10	Forklift, Crane
2.	Mounting of BTCS	17/5-28/5/21	20	Forklift, Crane
3.	Alignment of BTCS	12/7-16/7/21	5	Metrology
4.	Connection to Vacuum 1st Test	19/7-21/7/21	3	Vacuum
5.	FOC 5 Disc Installation	22/7-22/7/21	1	
6.	Vacuum Test (all components)	23/7-27/7/21	3	Vacuum
7.	Shielding Work	03/5-27/7/21	62	Forklifts, Crane (Metrology)
8.	Control Hutch	28/7-17/8/21	15	Forklift, ICS
9.	Connectivity Tests	18/8-07/9/21	15	Motion Control, Chopper, ICS, ES&H ...

Task	Start	End	Resources
8	PSS Installation		
9	Remote access services umbilical		
10	Connection to ESS services/systems		
11	Remote access checks		
12	Systems checks (e.g. motion)		
13	Expected Overtun		
14	Snagging		

Month	Jun	July	August	ESS core resource	Installation resource
31/05/21					
06/21					
05/21					
02/08/21					
09/08/21					
16/08/21					
23/08/21					
Out of bunker installation activities					
Out of bunker installation activities					

Integrated installation plan

FROM IKON 14



NSS feedback
Is the Installation plan compatible with the integrated installation plan? D

No Alternative solutions to be discussed

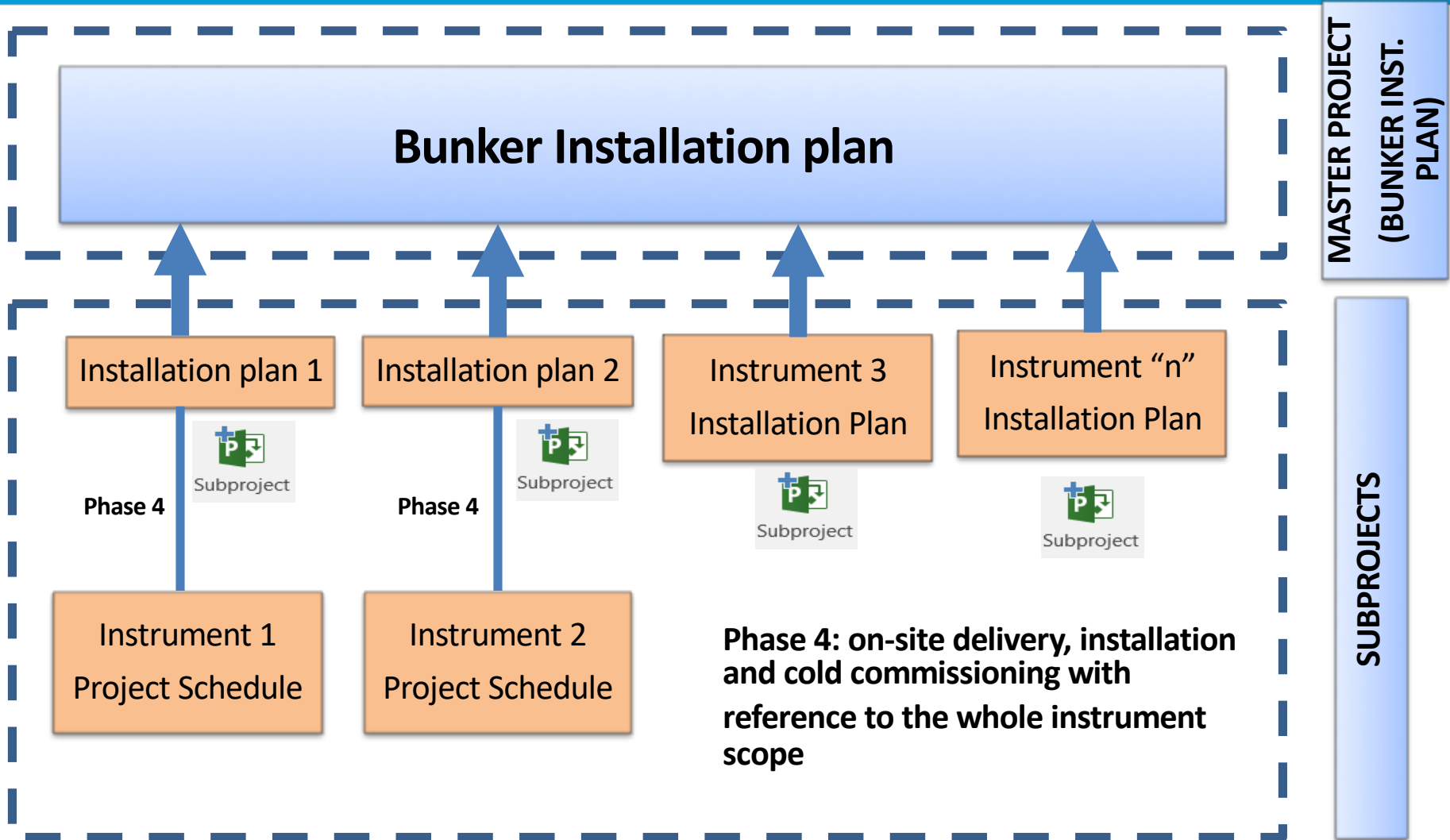
Yes

Integrated installation plan

NOTE
The Installation plan has to include the resource plan (Labour and Equipment) for each task



NSS Integrated installation plan



Bunker installation tasks

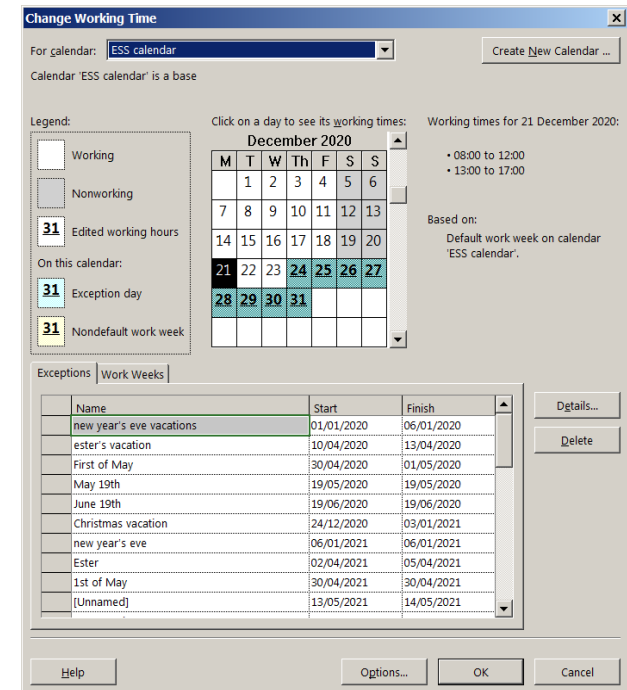
- Light shutters and NBEX installations (Target Division);
- Instruments baseplates installation;
- Bunker wall inserts sequences (ESS or In Kind resources t.b.d.);
- Specific bunker walls progress;
- Utilities in the bunker;
- Bunker time-frame for in-bunker components (as already identified in the Master Schedule);

Integrated Calendar

- First of all, the subprojects have to share the same **Installation Calendar (ESS calendar)**

The ESS calendar is already defined in the Bunker Installation plan and it can be imported into any instrument installation plan

It is required for the ESS on-site tasks



Change Working Time

For calendar: ESS calendar

Calendar 'ESS calendar' is a base

Legend:

- Working
- Nonworking
- 31 Edited working hours

On this calendar:

- 31 Exception day
- 31 Nondefault work week

Click on a day to see its working times:

December 2020

M	T	W	Th	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Working times for 21 December 2020:

- 08:00 to 12:00
- 13:00 to 17:00

Based on:
Default work week on calendar 'ESS calendar'.

Exceptions | Work Weeks

Name	Start	Finish
new year's eve vacations	01/01/2020	06/01/2020
ester's vacation	10/04/2020	13/04/2020
First of May	30/04/2020	01/05/2020
May 19th	19/05/2020	19/05/2020
June 19th	19/06/2020	19/06/2020
Christmas vacation	24/12/2020	03/01/2021
new year's eve	06/01/2021	06/01/2021
Ester	02/04/2021	05/04/2021
1st of May	30/04/2021	30/04/2021
(Unnamed)	13/05/2021	14/05/2021

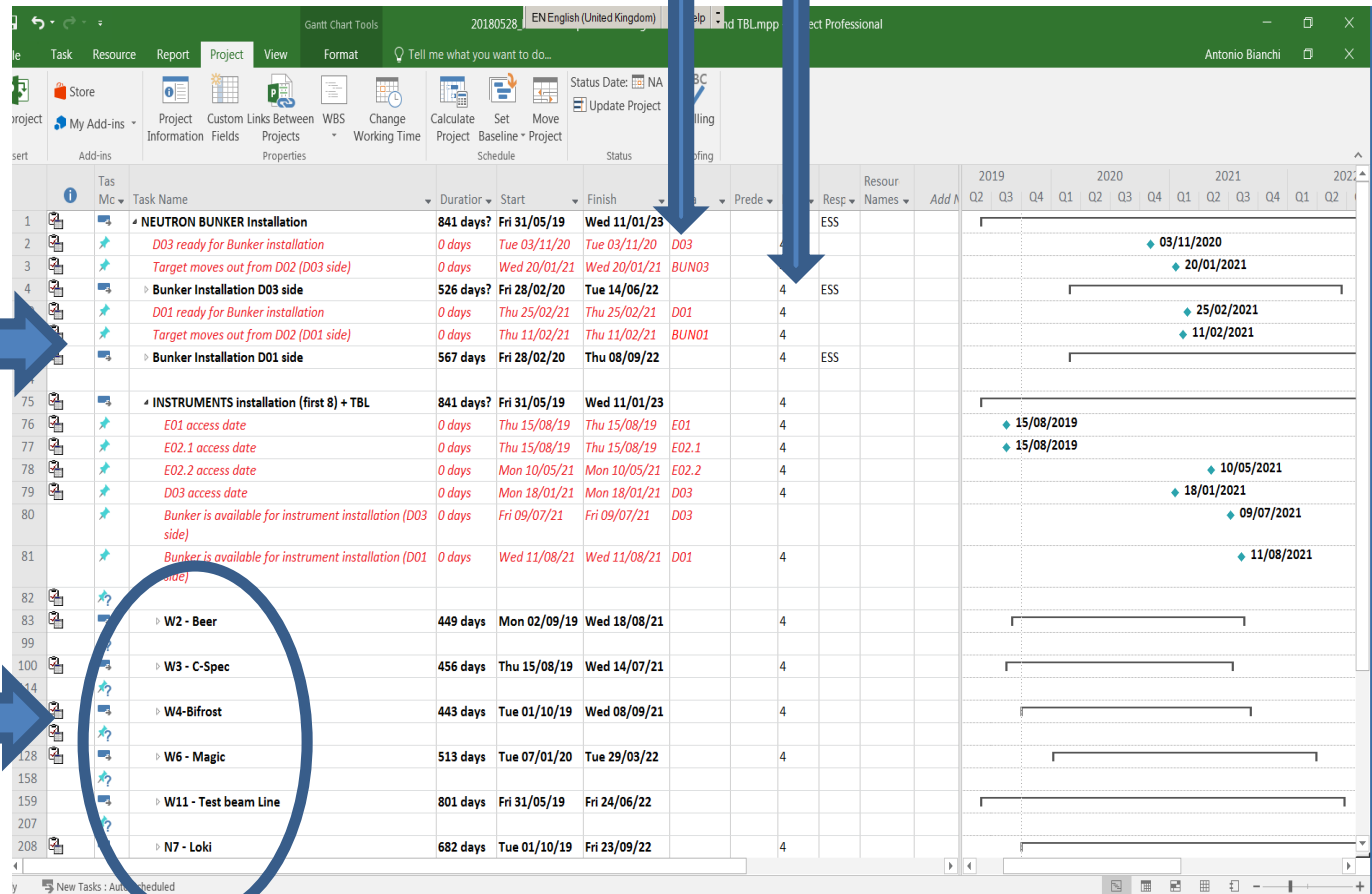
Buttons: Help, Options..., OK, Cancel

Integrated bunker and inst. plan

The Bunker installation and resource plan is the Master Project !!

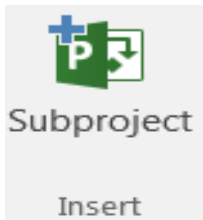
AREA

Phase 4: on-site delivery, installation and cold commissioning



ESS milestones

Subprojects:
Each instrument installation plan



Resource tasks

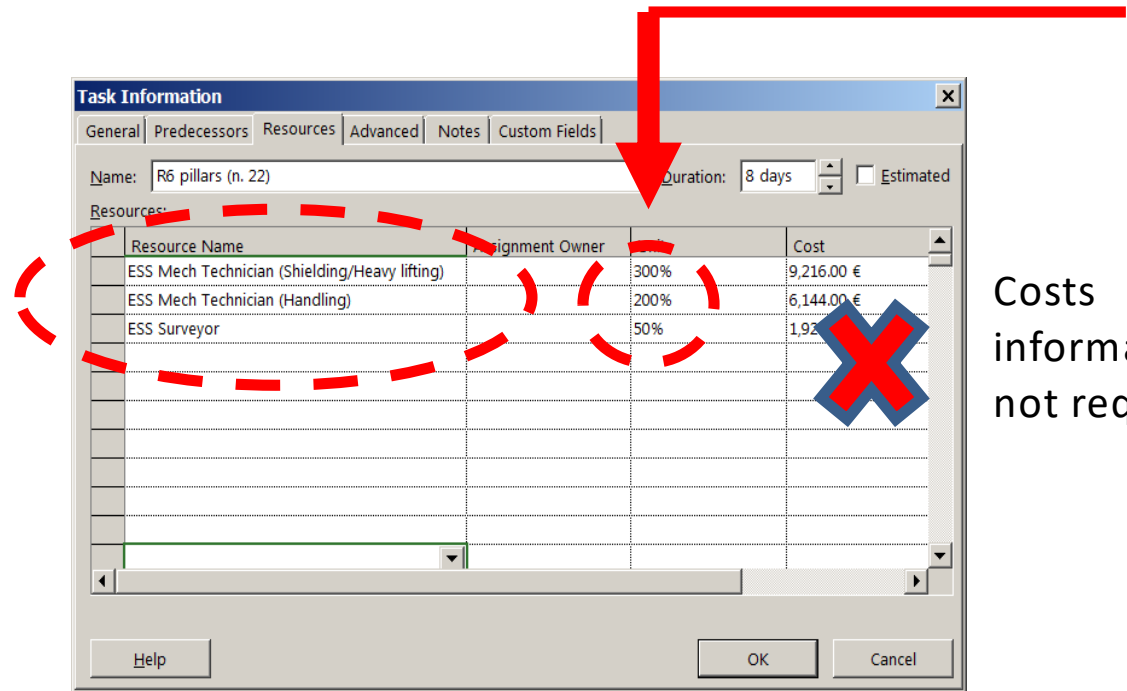
Define the resource plan task by task, from on-site delivery up to c.c.



Amount of resources is essential !!

Standard resource sheet (labour) provided from NSS.

The task information defines if the resources have to be ESS or by the instrument team



Resource Name	Assignment Owner	Cost
ESS Mech Technician (Shielding/Heavy lifting)	300%	9,216.00 €
ESS Mech Technician (Handling)	200%	6,144.00 €
ESS Surveyor	50%	1,920.00 €

Costs information not required

ESS and the Instruments Teams have to agree about the amount of resources to comply with the installation schedule

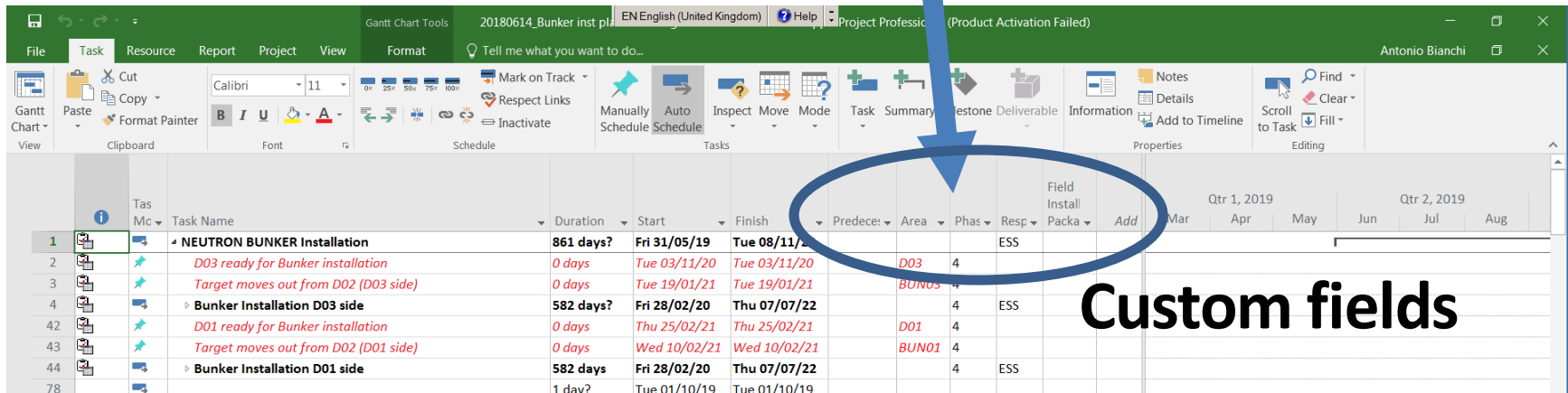
Project features (custom fields)

Integration of the instruments installation plans require **n. 4** custom fields:

- Area:
- Project Phase:
- Responsible Institute (Partner):
- Installation package:

text 27
text 28
text 29
text 30

It is compulsory to respect the represented text “n”.



Tas	Task Name	Duration	Start	Finish	Precedence	Area	Phas	Resp	Field Install Packa	Add	Qtr 1, 2019	Qtr 2, 2019				
1	NEUTRON BUNKER Installation	861 days?	Fri 31/05/19	Tue 08/11/20				ESS			Mar	Apr	May	Jun	Jul	Aug
2	D03 ready for Bunker installation	0 days	Tue 03/11/20	Tue 03/11/20		D03	4									
3	Target moves out from D02 (D03 side)	0 days	Tue 19/01/21	Tue 19/01/21		BUN03	4									
4	Bunker Installation D03 side	582 days?	Fri 28/02/20	Thu 07/07/22			4	ESS								
42	D01 ready for Bunker installation	0 days	Thu 25/02/21	Thu 25/02/21		D01	4									
43	Target moves out from D02 (D01 side)	0 days	Wed 10/02/21	Wed 10/02/21		BUN01	4									
44	Bunker Installation D01 side	582 days	Fri 28/02/20	Thu 07/07/22			4	ESS								
78		1 day?	Tue 01/10/19	Tue 01/10/19												

Custom fields

ESS Standard Resource names (1/3)



N.	Resource Name	Description
1	ESS Mech. Technician (Handling)	Resources involved in unloading, move components into the facility, including driving equipment whenever necessary (equipment not included)
2	ESS Mech. Technician (Shielding/Heavy lifting)	Required resources to carry out heavy lifting works like the construction of experimental caves and control hutches.
3	ESS Civil Tech. (Cast in place Shielding, Caves)	Carpenters, metalworkers, all personnel required to cast concrete on site in order to build experimental caves and/or other concrete structures to be casted in place.
4	ESS Surveyor	Surveying and metrology works required to carry out the specific tasks described in the plan. Surveying network already provided from ESS.
5	ESS Crane driver Bunker D01	Resource required to manage the facility crane
6	ESS Crane driver D01 Hall	Resource required to manage the facility crane
7	ESS Crane driver Bunker D03	Resource required to manage the facility crane
8	ESS Crane driver D03 hall	Resource required to manage the facility crane
9	ESS Crane driver E01 hall	Resource required to manage the facility crane
10	ESS Rigger	All tasks requiring heavy lifting (generally with resource n. 5,6,7.8.9)
11	ESS Mech. Technician (Neutron Optic)	Resources involved in the mechanical installation of neutron guides and the mechanical assembly between the neutron optics and the vacuum housing

Each one cannot be more than 100% (the equipment is implicitly included)

resources 5,6,7,8,9 compulsory only ESS

ESS Standard Resource names (2/3)



N.	Resource Name	Description
12	ESS Mech. Technician (Chopper)	Installation of the chopper system including support structures (chopper-pits to be considered part of the shielding installation team)
13	ESS Tech (Detector)	Resources involved in the installation of Detector systems and beam monitors. Detector vessels can be considered as heavy lifting installation (resource names n. 2)
14	ESS Tech (Piping/Gases)	All piping installation from the building delivery outlet, except those more specifically indicated
15	ESS Tech (Vacuum System)	Instrument vacuum system installation (except everything in charge on the ESS vacuum team)
16	ESS Electr. Technician (Power/Lighting)	Resources involved in the installation of the instruments power (including grounding), lighting, electrical cabinets, cable trays, with the only exception of the MCA system
17	ESS Tech (MCA)	Resources involved in all MCA installation and cold commissioning works.
18	ESS Tech (Cooling/Deionized water)	Cooling/Deionized water pipes installation from the building outlet up to the instrument/component (cave, hutch, chopper), according to the specific tasks.
19	ESS Tech (Compressed air)	Compressed air pipes installation/c.c. from the building outlet provided from CF/NSS up to the instrument/component (cave, hutch, chopper), according to the specific task described
20	ESS Tech (ICS)	Installation of the instrument control system network (ICS), from the control cabinet/outlet point up to the specific instrument component (according to the task description).
21	ESS Tech (PSS system)	Required resources to install and test the instrument PSS system (according to the task description)

ESS Standard Resource names (3/3)



N.	Resource Name	Description
22	ESS Tech (Sample Environment)	Technical staff required to install and c.c. of instrument sample environment (as described in the relevant task)
23	ESS Tech (DMSC)	Required resources to install and test the instrument DMSC system (only if required for the instrument scope).
24	ESS Workshop staff	Required workshop activities to be executed in the ESS workshop
25	ESS Mobile crane 10 t	ESS equipment
26	ESS Gantry crane (10 t)	ESS Equipment
27	ESS Forklift (10 t)	ESS Equipment
28	ESS Forklift (5 t)	ESS Equipment

- Standards In Kind resource names are useful to keep “readable” the integrated schedule;
- Instruments resources will come mainly from:
- Institutes (PSI, TUM, LLB) and Commercial Partners involved in manufacturing and installation;

{Resource Name (Instrument name)}

- Example *{MEC-TUM (Odin)}*

- The resource sheet in the “Master Project” (the bunker installation plan) includes all the available ESS resource with standard name;
- It includes ESS and Instrument team resources, with reference to instrument scope;
- Instrument team resources are defined specifying the instruments name in brackets;
- Modifications in the resource sheet have to be agreed beforehand between ESS and the Instrument Team;

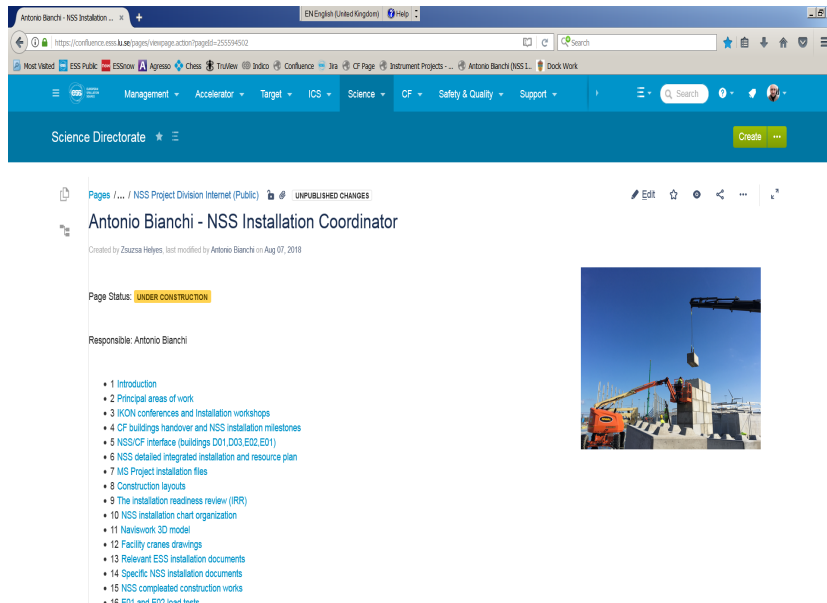
- Instruments installation plans (BEER, C SPEC, BIFROST, MAGIC) completely resources loaded with reference to **E01** and **E02.1** installation tasks
- **Deadline: end of October 2018**
- First 8 instruments installation plan completely resource loaded
- **Deadline: June 2019**

Results to share and discuss in the next Installation workshop....

- ***Workshop proposal on Tuesday 30th of October;***
- Some of the topics.....
- Integration between Bunker and instruments installation plans;
- Required resources to carry out the Instruments Installation (general estimation in today's final session);
- ESS resources to support instruments installation ;
- Others.....

NSS installation coordination

Confluence page about NSS Installation coordination



NSS Project Division



Information about specific NSS instruments installation

Questions

