## Estia Toll Gate 2 meeting update of high-level schedule

Authors: Artur Glavic, Sven Schütz (PSI) Date: 25. 11. 2016

Since the submission of the TG2 documentation ESS has announced changes to the major construction mile stones that impact the instrument construction in a non-trivial manner. The instrument team has therefore prepared two scheduling scenarios with different risks and advantages that should be discussed during the TG2 meeting on 29. 11. 2016.

## Sub-Projects / Work Packages 2016 2017 2018 2019 2020 2021 2022 WP\_01 ESTIA R&D Project SP 02 In-Bunker Beam Transport SP\_03 Fundaments SP\_04 Shielding WP\_05 Selene Guides WP 06 Support Infrastructure WP\_07 Middle Focus SP\_08 Vacuum WP\_09 Bunker Feedthrough WP\_10 Control Hutch & Sample Preparation Are WP\_11 Experimental Cave WP\_12 In-Cave Optics WP 13 Sample Exposure System & Detector MS ESS Bunker Access $\diamond$ MS ESS Instrument Hall Access MS ESTIA BL-Shielding Ready For 1. Beam MS ESTIA Ready for SSM Review MS ESTIA TG4 $\diamond$ <> <> <>

## Scenario 1: Instrument finished as soon as possible

Estimated advantages:

- Earliest stage for instrument to move into hot commissioning
- Instrument shielding will be advanced enough to allow first beam on target in beginning of 2020 without the need to build and rebuild systems
- Full installation of all in-bunker and close to bunker components before first neutron production
- Enough time for hot commissioning before user operation, which is especially needed for the novel Estia concept to succeed

Foreseen risks:

- Very tight schedule with little room for delays of any sort
- Need for support by a large number of ESS staff at once to be able to perform parallel installations
- Some work packages might need to move to fast to follow the ESS procedural guidelines
- Issues with the Swedish Radiation Authority (SSM) will instantly delay the TG4

Additional cost compared to initial planning:

• Fast and parallel installation at ESS site will only be possible with additional assistance from PSI personal. This will likely produce cost increases of 300-500 k€

## Scenario 2: Relaxed schedule with reduced risk

	Sub-Projects / Work Packages	2016		<b>2017</b>	04	01	20 02	018 03	Q4	01	20 02	19 03	Q4	01	20	0 <b>20</b>	Q4	01	20	21 03	Q4	01	2022	
NP_01	ESTIA R&D Project																							
P_02	In-Bunker Beam Transport		1.1	1			-					-												
P_03	Fundaments			1. A.	1.0																			
P_04	Shielding						6 - C					1												
VP_05	Selene Guides				1.1																			
VP_06	Support Infrastructure																							
VP_07	Middle Focus						6 - C																	
P_08	Vacuum																							
P_09	Bunker Feedthrough																							
/P_10	Control Hutch & Sample Preparation Area																							
P_11	Experimental Cave											1		1.1										
P_12	In-Cave Optics																	1						
NP_13	Sample Exposure System & Detector																	- I						
	MS ESS Bunker Access MS ESS Instrument Hall Access MS ESTIA BL-Shielding Ready For 1. Beam MS ESTIA Ready for SSM Review MS ESTIA TG4											<>		~		<>							\$	~

Estimated advantages:

- Scheduling of design WPs can be streamlined
- Limited number of parallel efforts to be coordinated by instrument team
- Enough room to manage procurement delays and perform adequate testing

Foreseen risks:

- Issues with work in activated areas as installations near and inside the bunker will be carried out after the first beam on target
- Delay of user operation to at least Q3 of 2023
- Insufficient hot commissioning before begin of user operation
- Swiss expectation of internal beamtime during hot commissioning will likely not be met

Additional cost compared to initial planning:

- The delayed installation of shielding components outside the bunker wall and the bunker feedthrough will produce additional work load due to build/re-build tasks (~100 k€)
- Unanticipated elongation of the project will require 1-2 additional Person\*Years from the instrument core team (150-300 k€)