

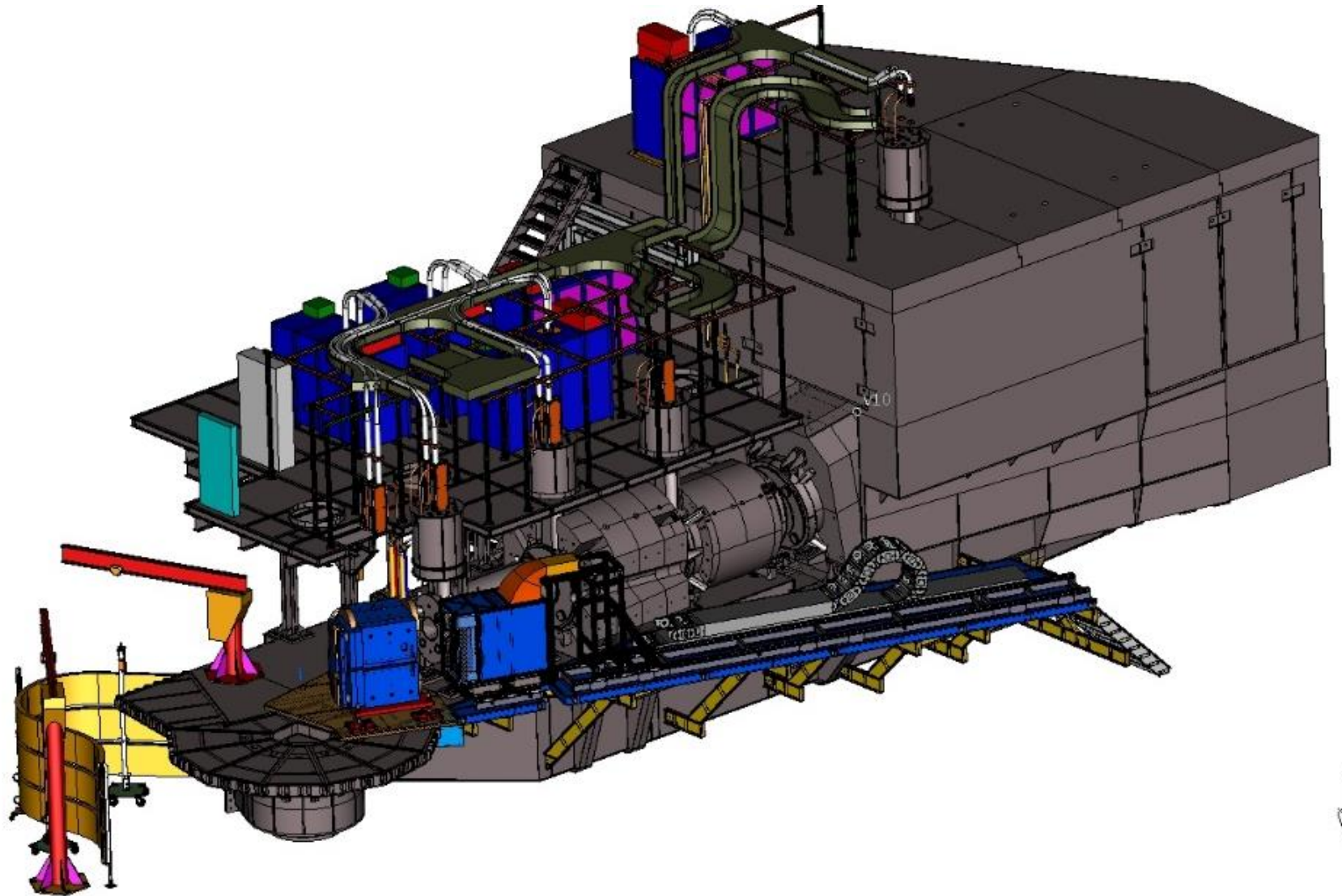
# NPS Status

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Jan 28, 2021

Paulo M, Steve L

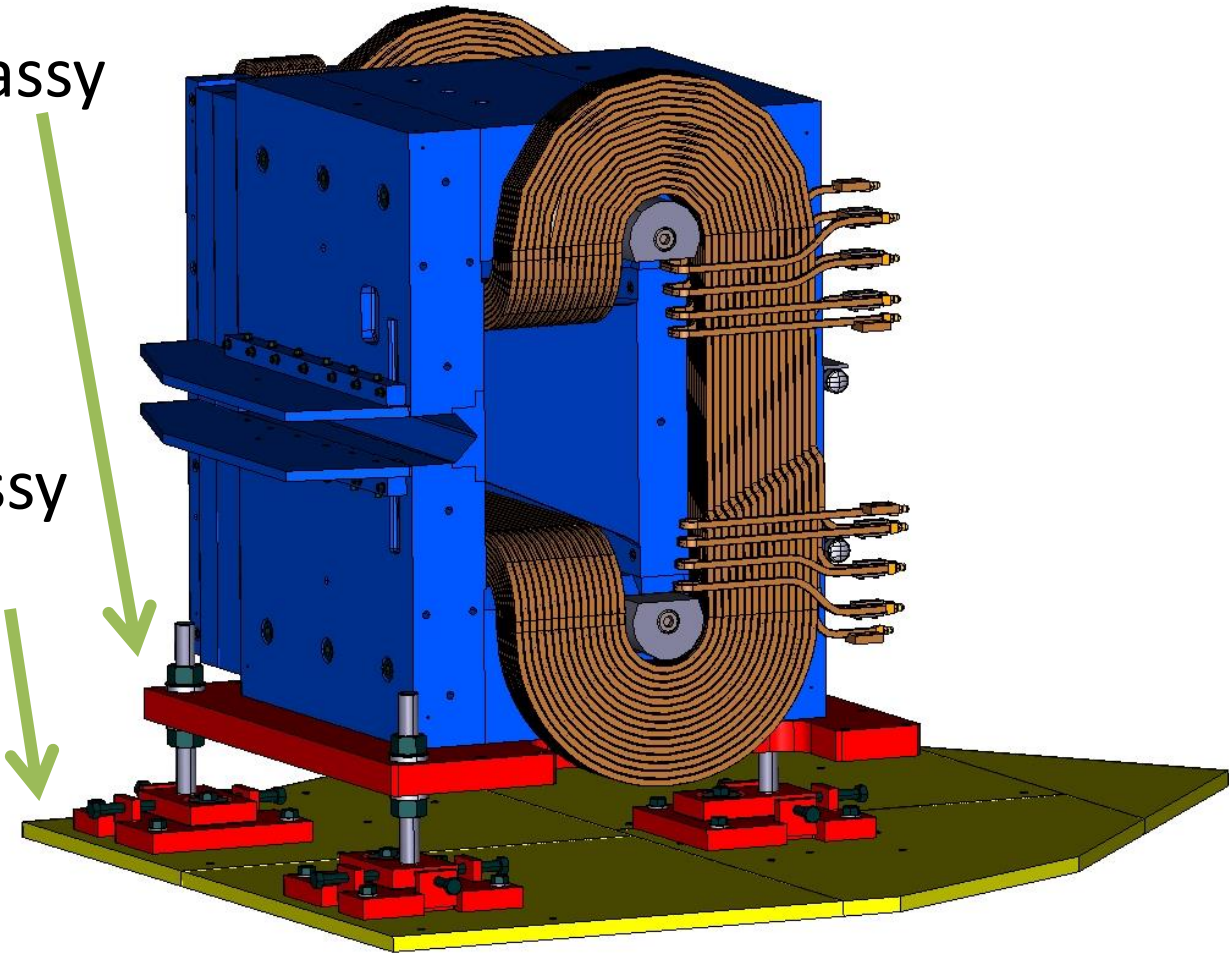
# NPS design & purchasing status



# NPS design & purchasing status (cont)

## Sweeper supporting structure

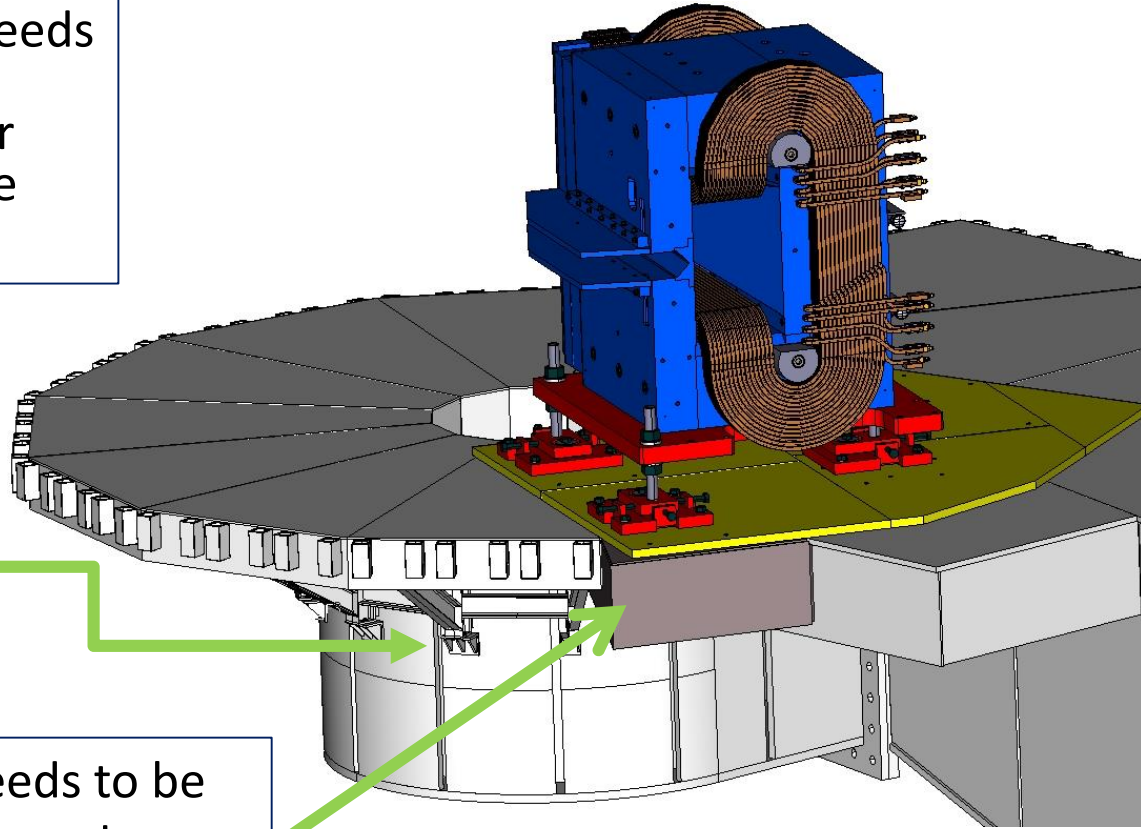
- Sweeper support assy delivered.
- Base/slide plate assy in design phase (80% completion).



# NPS design & purchasing status (cont)

## Sweeper supporting structure (cont)

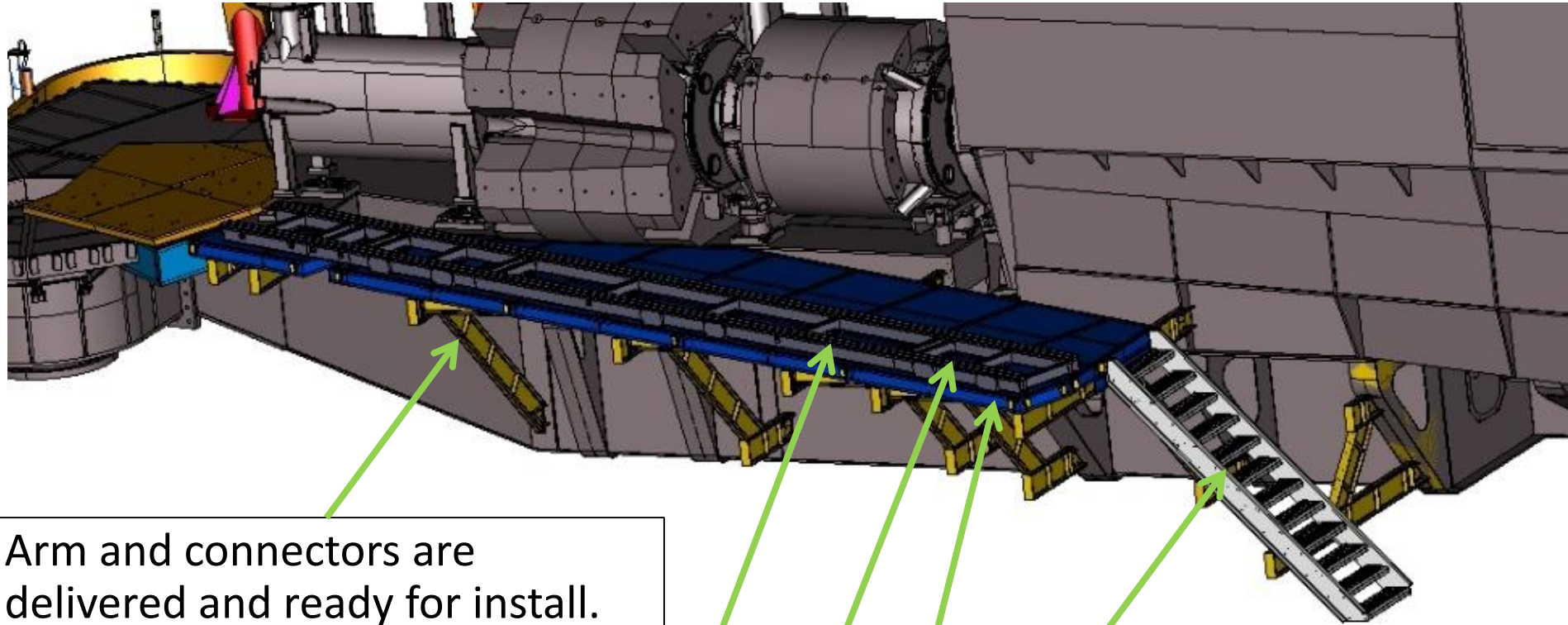
Target access platform support needs to be removed and replaced with larger and heavier duty section or reinforce existing. In design phase (10% completion).



Target access platform section needs to be removed and replaced with larger and heavier duty section. New section delivered.

# NPS design & purchasing status (cont)

## Detector supporting structure



Arm and connectors are delivered and ready for install.

Rail base weldments are delivered.

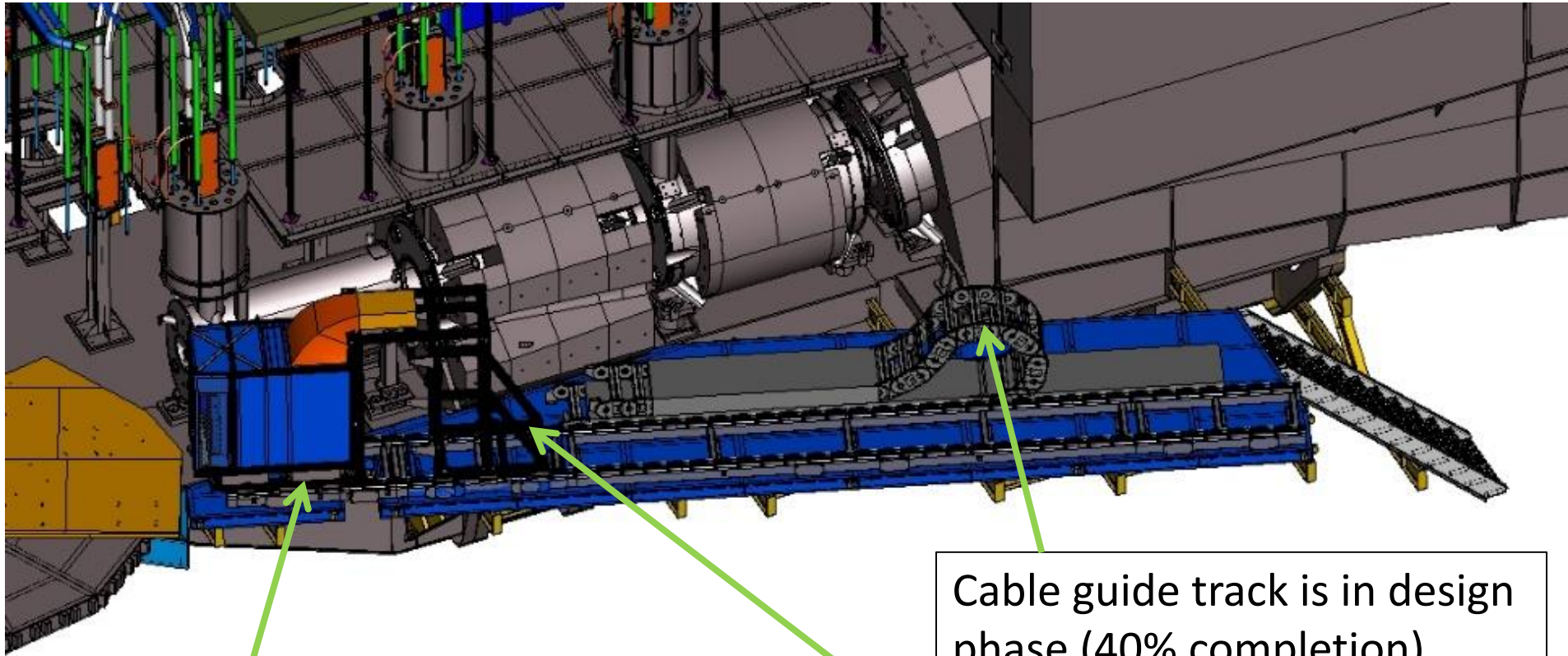
Rails and slides need to be refurbished.

Platform weldments are delivered and ready for install.

Staircase in design phase (50% completion).

# NPS design & purchasing status (cont)

## Detector supporting structure (cont)



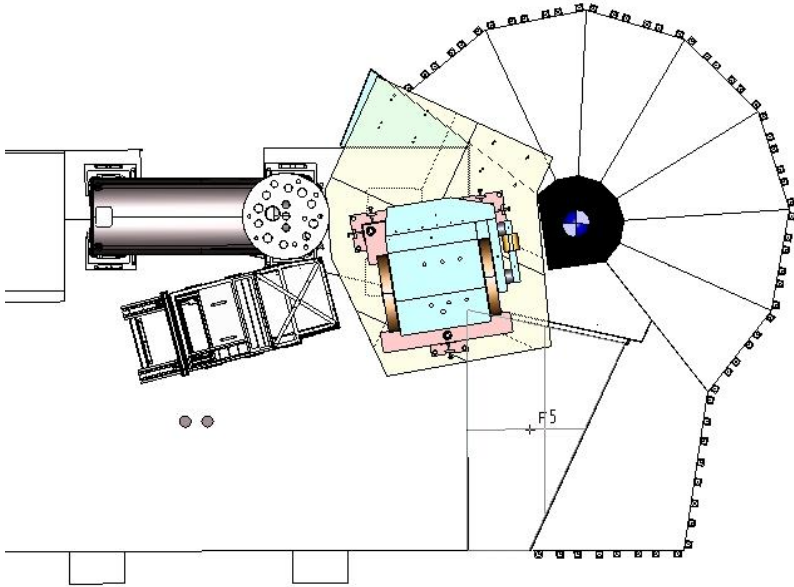
Detector slide cart is in design phase (75% completion).

Cable guide track is in design phase (40% completion).

Cable slide cart is in design phase (75% completion).

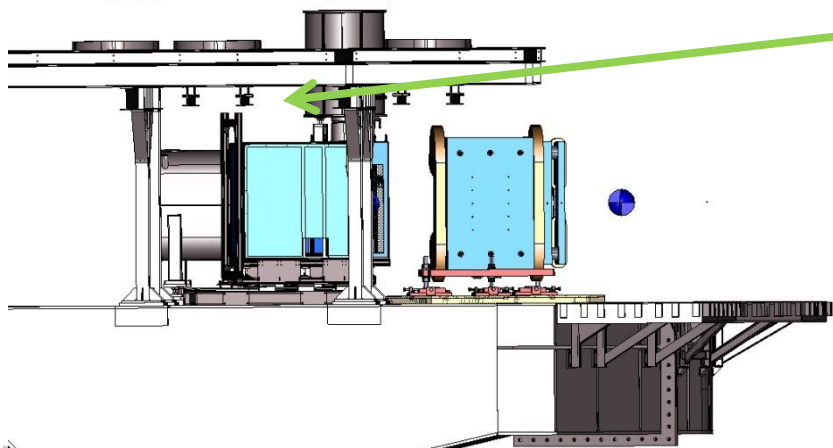
# NPS design & purchasing status (cont)

## Detector supporting structure (cont)



Detector on SHMS left will be kept on a rail section and cart used to position detector in place.

Cables will be supported by underside of SHMS platform. In design phase (30% completion).



# NPS design & purchasing status (cont)

- Sweeper base/slide plate in design phase (80%).
- Target access platform reinforcement in design phase (10%).
- Platform access staircase in design phase (50%).
- Detector slide cart in design phase (75%).
- Cable slide cart in design phase (75%).
- Beam line (both setups) need to be reviewed and design complete (50%).
- Corrector in design phase (40%).
- Cable layout and support structure in design phase (20%).



# NPS design & purchasing status (cont)

## Out standing tasks

- Complete designs for various components (8 weeks based on 50% of Designer time).
- Create/complete drawings for various components (8 weeks based on 50% of Designer time).
- Procure components and materials (4 weeks based on 50% of Designer time).
- Fabrication estimated to take 8 weeks after all items awarded.

# NPS Installation

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- Installation for first setup (SHMS right setup) expected to take 4 weeks.
- Moving detector in different setups using same side setup will take a day with survey support.
- Moving Sweeper magnet in same side setup will take a day with survey support.
- Relocating magnet and detector to SHMS left side setup, will take 3 days and 4<sup>th</sup> day to make connections.

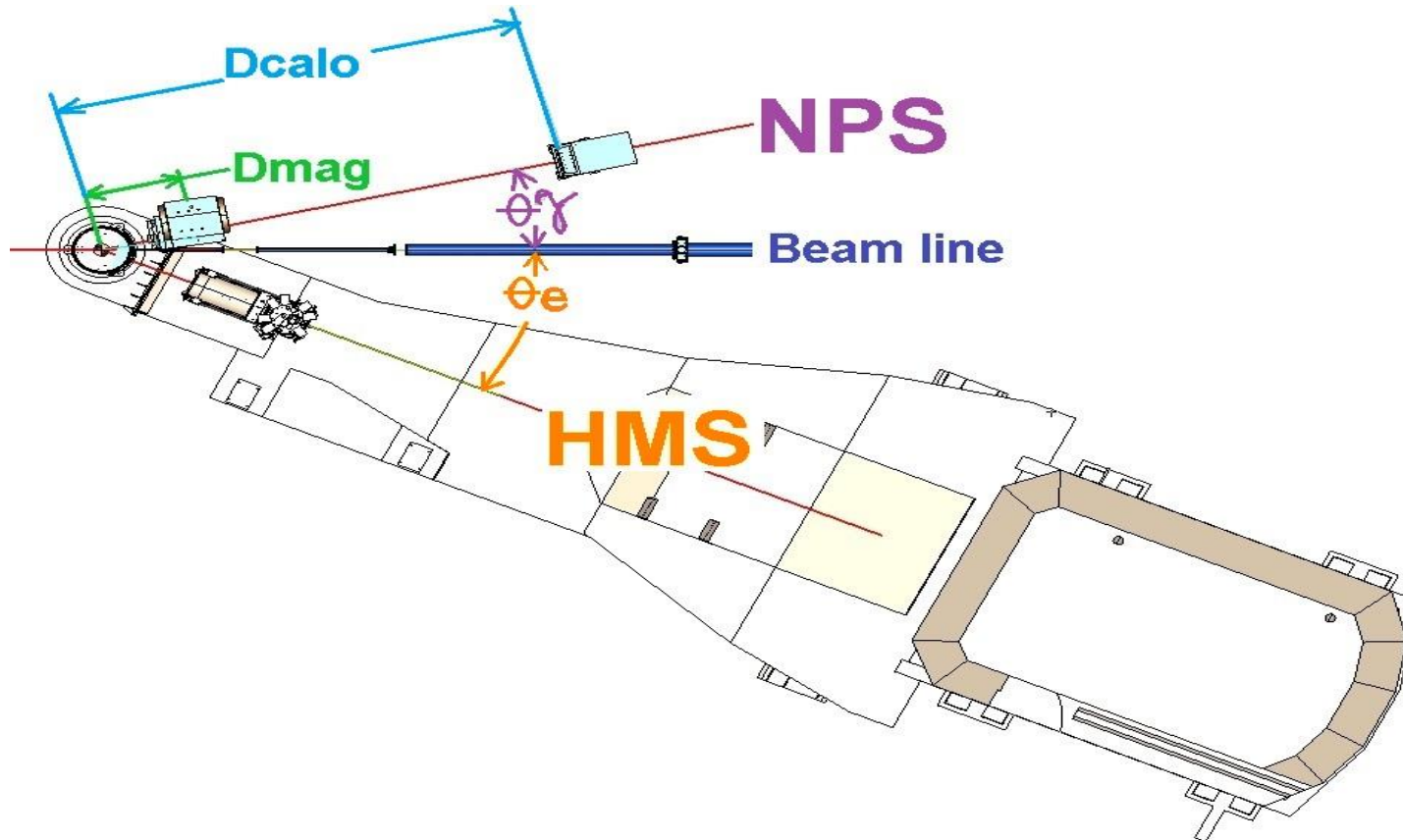
# NPS Layout configurations

$\theta_\gamma$  = angle between beam and NPS

$\theta_e$  = angle between beam and HMS

$D_{mag}$  = distance between target center and sweeper center

$D_{calo}$  = distance between target center and detector face



# NPS Layout configurations<sub>(cont)</sub>

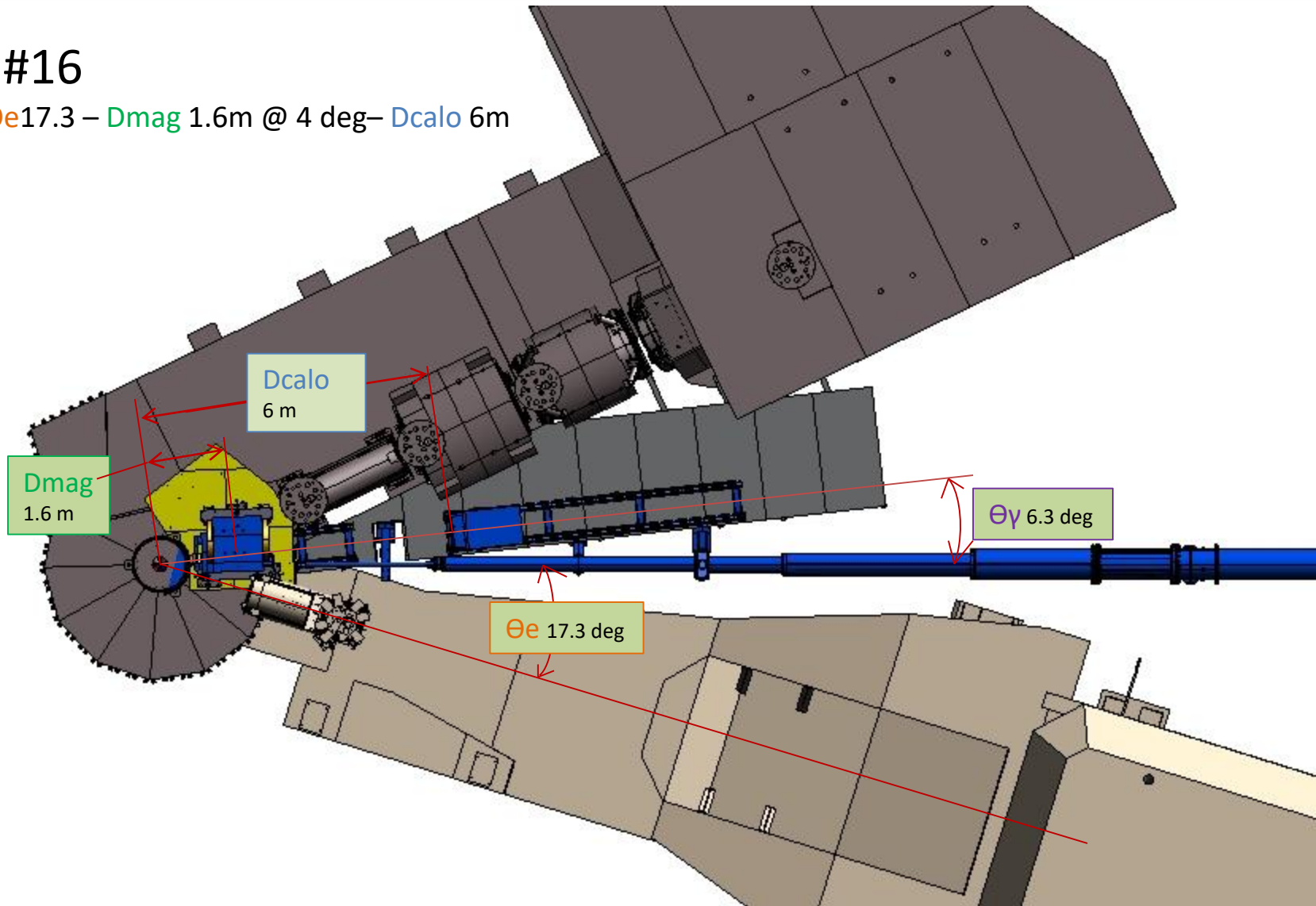
SETTING	NPS location	NPS angle (deg)	HMS angle (deg)	D magnet (m)	D calorimeter (m)	Magnet angle (deg)	Beam energy (GeV)	Beam current (uA)	Time (hours)
7	SHMS right	21.7	11.7	1.6	3.0	5.5	11	28.0	48
11	SHMS right	19.8		1.6	3.0	5.5	11	28.0	120
12F	SHMS right	17.2	17.84	1.6	6.0	4.0 or 5.5	11	28.0	240
8E	SHMS right	16.6	15.65	1.6	3.0	5.5	11	28.0	120
3B	SHMS right	16.2	11.7	1.6	3.0	5.5	11	28.0	96
5C	SHMS right	12.4	15.30	1.6	3.0	5.5	11	28.0	72
15A	SHMS right	10.6		1.6	4.0	4.0 or 5.5	11	50.0	24
17D	SHMS right	7.9	24.15	1.6	3.0	5.5	11	50.0	120
13	SHMS right	6.3	27.90	1.6	6.0	4.0	11	11.0	24
16	SHMS right	6.3	17.30	1.6	6.0	4.0	11	11.0	24
6	SHMS right	20.2		1.6	3.0	5.5	8.8	28.0	72
10	SHMS right	17.8		1.6	3.0	5.5	8.8	28.0	24
2	SHMS right	14.7		1.6	3.0	5.5	8.8	28.0	96
4	SHMS right	10.3		1.6	4.0	4.0 or 5.5	8.8	50.0	24
14	SHMS right	9.2		1.6	4.0	4.0 or 5.5	8.8	5.0	24
9	SHMS right	13.8		1.6	3.0	5.5	6.6	28.0	120
1	SHMS right	11.7		1.6	3.0	5.5	6.6	28.0	24

# NPS Layout configurations<sub>(cont)</sub>

SETTING	NPS location	NPS angle (deg)	HMS angle (deg)	D magnet (m)	D calorimeter (m)	Magnet angle (deg)	Beam energy (GeV)	Beam current (uA)	Time (hours)
4A	SHMS right	14.2	40.1	1.6	9.0	4.0 or 5.5	8.8	5	20
4B	SHMS right	17.9	33.7	1.6	7.0	4.0 or 5.5	8.8	15	20
4C	SHMS right	22.5	27.8	1.6	5.0	4.0 or 5.5	8.8	30	20
5A	SHMS right	11.0	41.7	1.6	11.0	4.0 or 5.5	11	20	15
5B	SHMS right	13.8	35.3	1.6	8.0 (9.0?)	4.0 or 5.5	11	30	20
5C	SHMS right	16.9	30.0	1.6	7.5	4.0 or 5.5	11	60	20
5D	SHMS right	19.7	26.3	1.6	6.0	4.0 or 5.5	11	60	40
4E	SHMS left	34.0	18.9	1.6	4.0	5.5	8.8	60	50
5E	SHMS left	29.9	17.8	1.6	4.0	5.5	11	60	120
4D	SHMS left	26.9	23.7	1.6	4.0	5.5	8.8	60	30
	E12-06-114	Larger @ 2.2GeV/pass	Smaller @ 2.2GeV/pass				2.1 GeV/pass		
48_J1	SHMS right	13.79	18.83	1.6	3.0	?	10.617	30	70
60_J1	SHMS right	11.76	33.17	1.6	3.0	?	8.517	30	200
60_J2	SHMS right	14.76	21.64	1.6	3.0	?	10.617	30	170
60_J3	SHMS right	6.41	57.77	1.6	4.0	?	8.517	50	300

# NPS Layout configurations<sub>(cont)</sub>

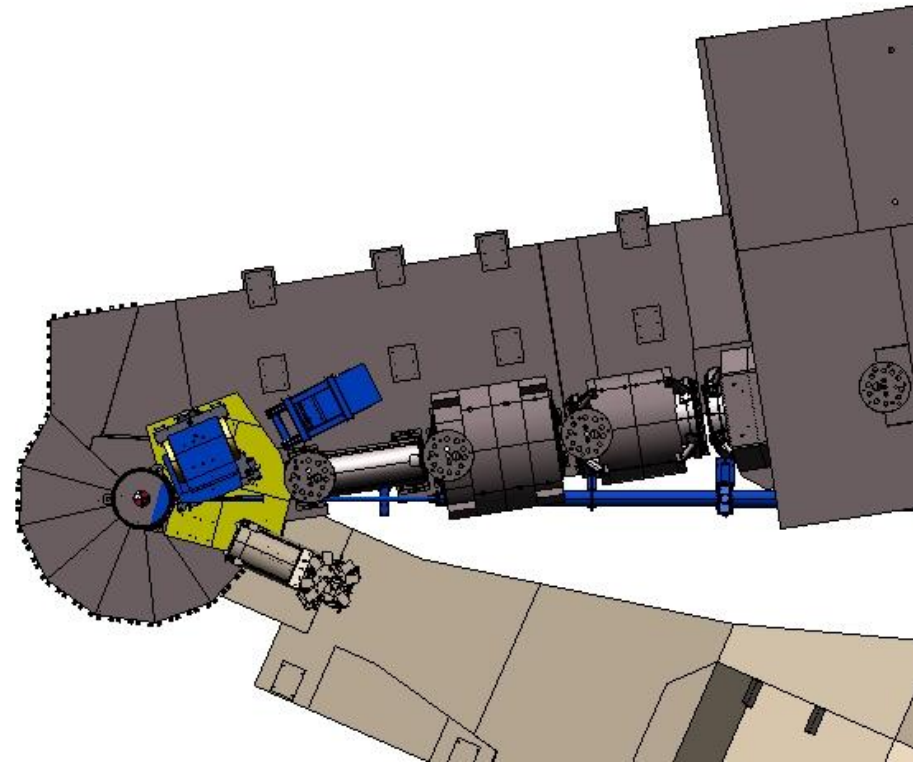
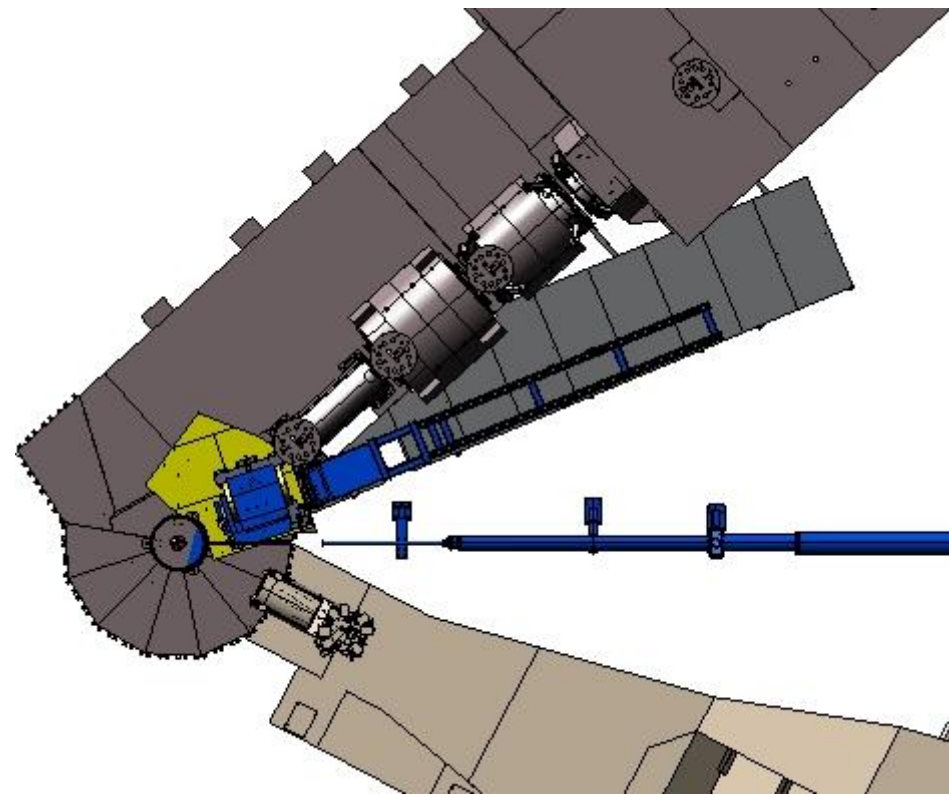
- DVCS #16
- $\Theta\gamma 6.3$  –  $\Theta e 17.3$  –  $D_{mag} 1.6\text{m @ } 4\text{ deg}$  –  $D_{calo} 6\text{m}$



# NPS Layout configurations<sub>(cont)</sub>

- WACS/PION #4C
- $\Theta\gamma 22.5 - \Theta e 27.8 - D_{mag} 1.6m @ 4 \text{ or } 5.5 \text{ deg}$   
 $D_{calo} 3m$

- WACS/PION #4D
- $\Theta\gamma 26.9 - \Theta e 23.7 - D_{mag} 1.6m @ 5.5 \text{ deg}$   
 $D_{calo} 4m$



# NPS Layout configurations<sub>(cont)</sub>

- WACS/PION #4E
- $\Theta\gamma 34.0 - \Theta e 18.9 - D_{mag} 1.6m @ 5.5 \text{ deg}$   
Dcalo 4m

- WACS/PION #5A
- $\Theta\gamma 11.0 - \Theta e 41.7 - D_{mag} 1.6m @ 4 \text{ or } 5.5 \text{ deg}$   
Dcalo 11m

