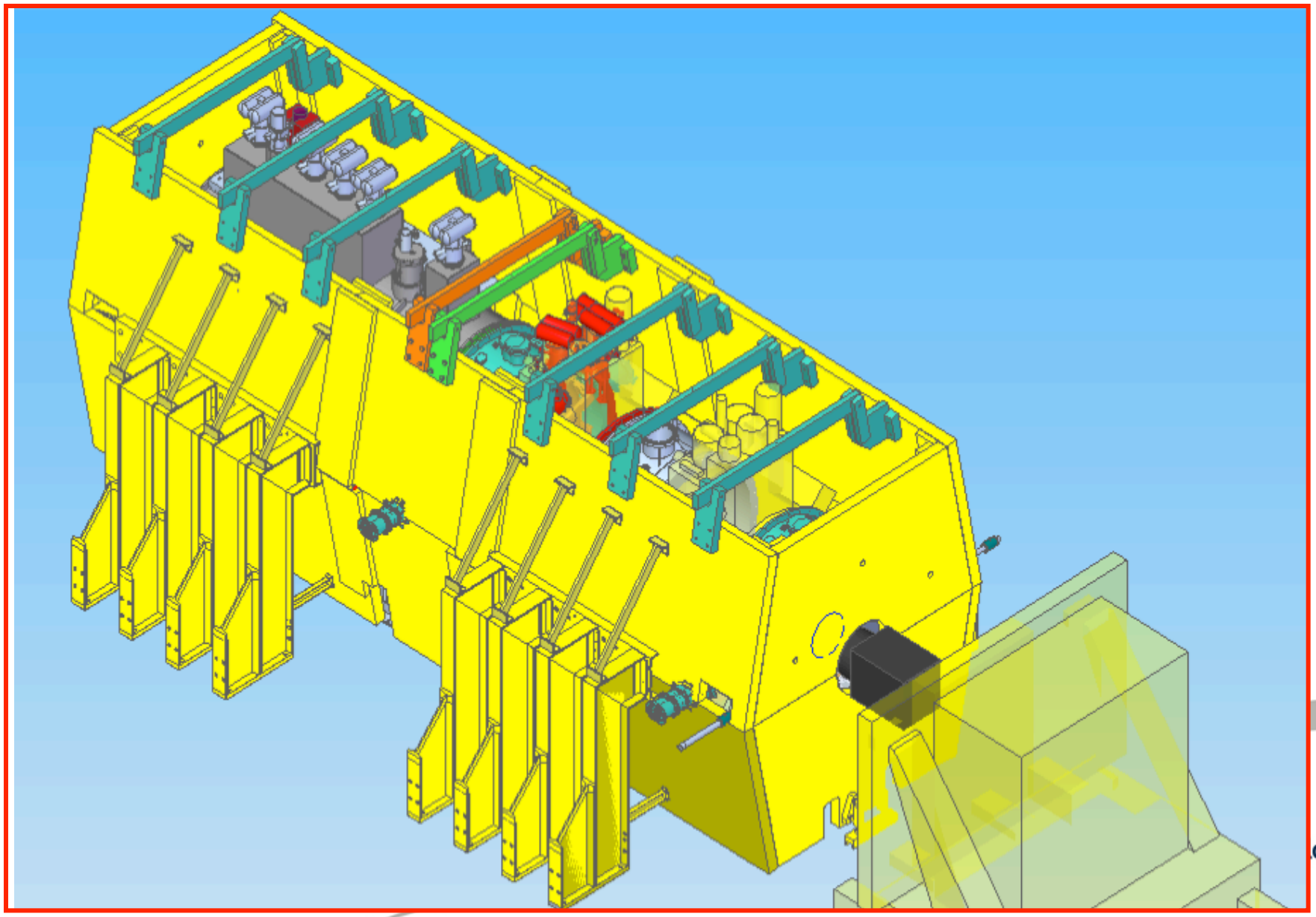
CM 46

October 7th 2016

Cooling Demonstration

Cooling Demonstration



ogy

Cooling Demonstration

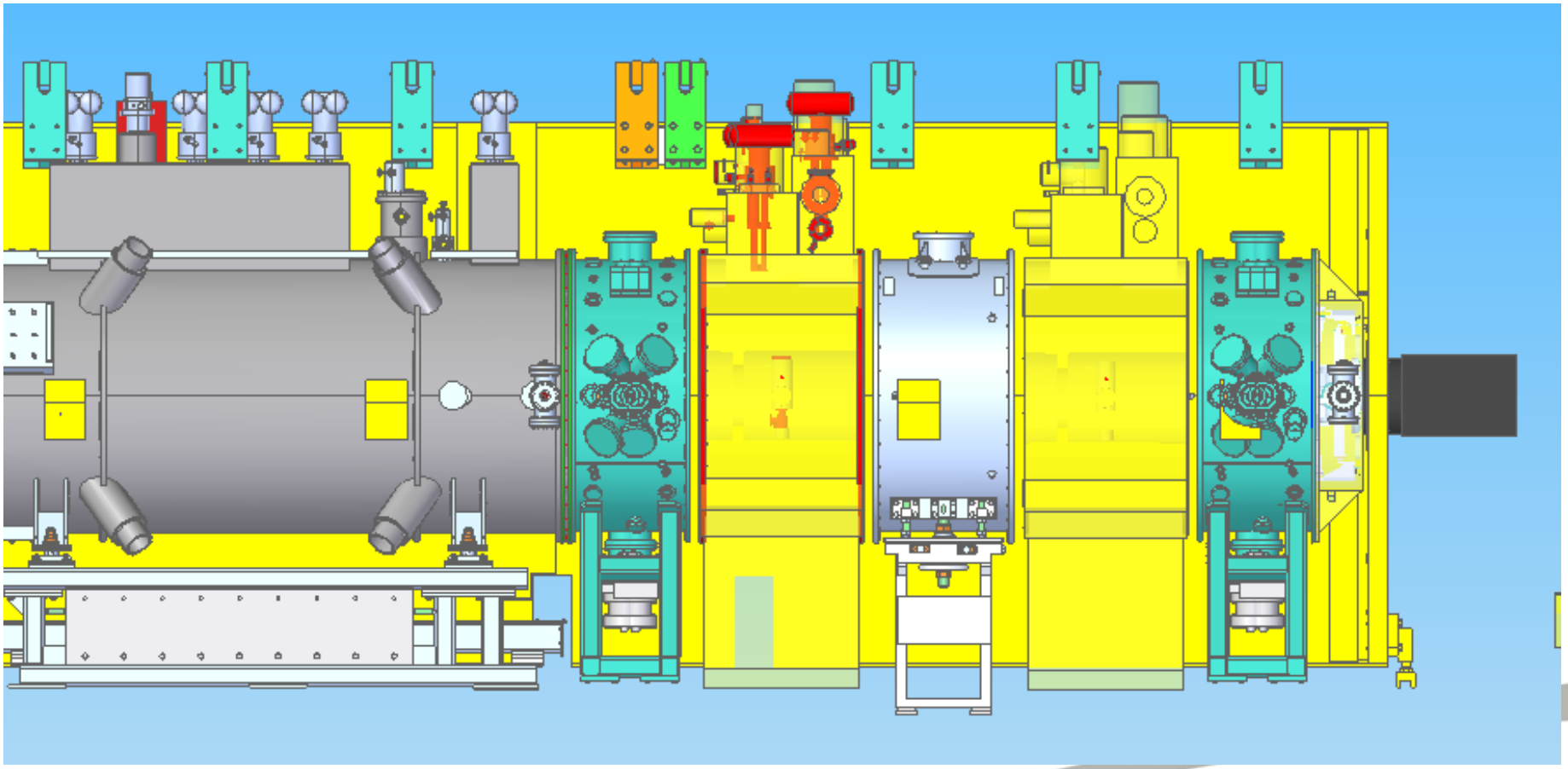
- Magnetic forces much reduced over Step IV
- Fits inside existing PRY
  - no need to move PRY supports
  - time saving.
- Possible ‘escape route’ should SSD fail
  - Install RF cavity modules sans input co-ax and windows (no water jetting of PRY required)
- LiH only – no Liquid H2.

Science & Technology Facilities Council

Cooling Demonstration

- RF-FC-Absorber-FC-RF
- RF cavity modules ‘ready’ on ‘end 2016 to early 2017’ timescale
- ‘MICE’ LLRF currently operating in ISIS.
- Absorber design ‘rough-work’ complete – detail still outstanding.
  - LiH mounted on ‘door’ mechanism – reduced downtime of absorber changes.
  - FC-Absorber-FC lifted in as assembly – do not disturb PRY uprights
- Re-use existing components designed and built for previous incarnation
  - Translation stages re-purposed for EMR/ToF2
  - FC translation stage used for RF1.

Cooling Demonstration



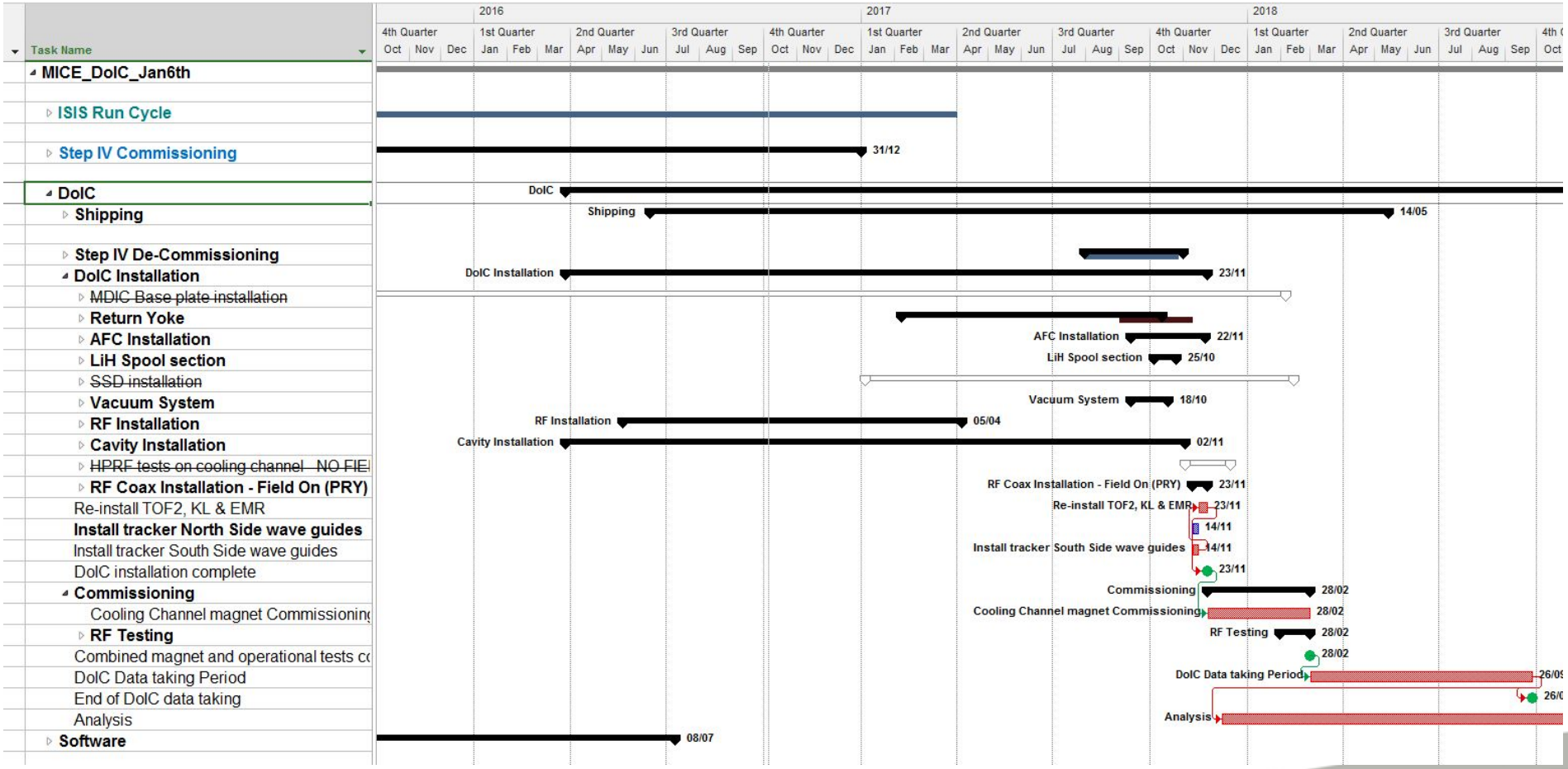
Science & Technology Facilities Council

Cooling Demonstration

Major Components.

- RF cavity modules – inc water/vac
- RF power – inc water.
- Muon timing – clock?
- Tracker re-configuration.
- Primary/secondary absorbers - vacuum.

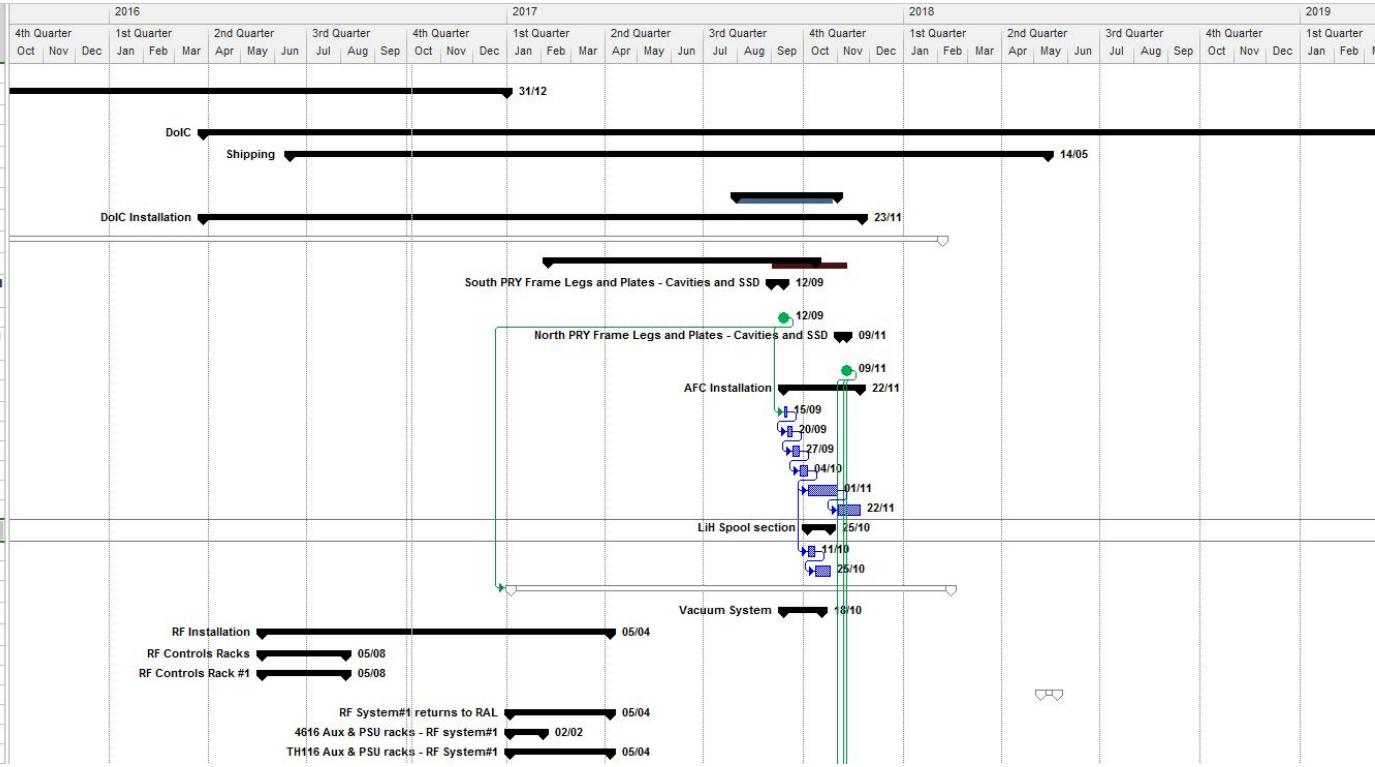
Cooling Demo



Science & Technology Facilities Council

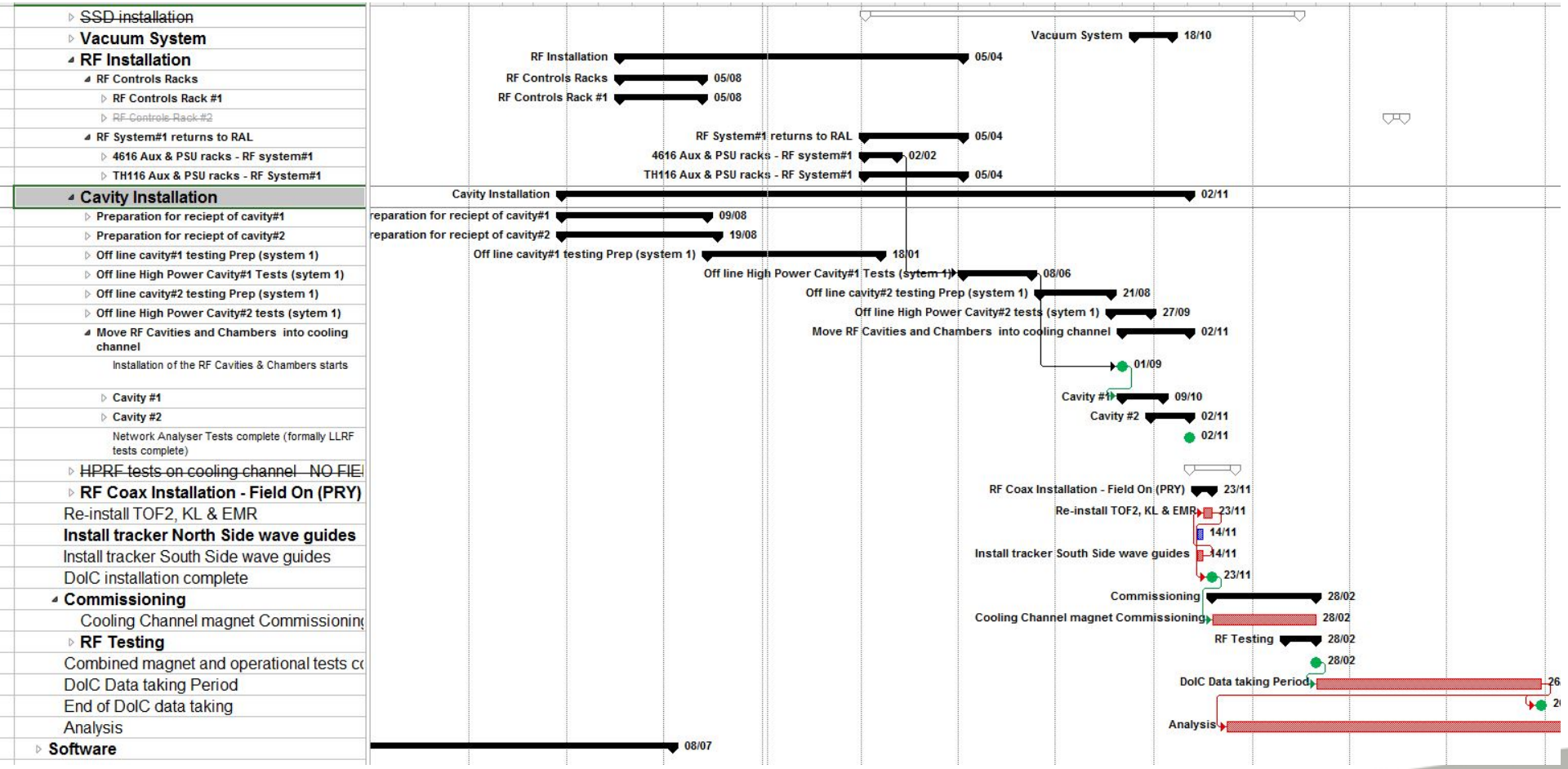
Cooling Demo – Channel

	% Cor	WBS	Task Name
16			
17	23%	2	Step IV Commissioning
92			
93	0%	3	DoIC
94	0%	3.1	Shipping
111			
112	0%	3.2	Step IV De-Commissioning
152	0%	3.3	DoIC Installation
153	0%	~~3.3.1~~	~~MDIC Base plate installation~~
175	0%	3.3.2	Return Yoke
176	0%	3.3.2.1	South PRY Frame Legs and Plates - Cavities and SSD
184	0%	3.3.2.2	South PRY Installation complete
185	0%	3.3.2.3	North PRY Frame Legs and Plates - Cavities and SSD
192	0%	3.3.2.4	North Side PRY Installation complete
193	0%	3.3.3	AFC Installation
194	0%	3.3.3.1	Install AFC #2 rail system
195	0%	3.3.3.2	Install AFC #2supports to floor
196	0%	3.3.3.3	Install Focus Coil #2 and align
197	0%	3.3.3.4	Install Focus Coil #1 and align
198	0%	3.3.3.5	Cooldown AFC #2 & #1
199	0%	3.3.3.6	AFC magnet test period
200	0%	3.3.4	LiH Spool section
201	0%	3.3.4.1	Installation of the LiH Spool section
202	0%	3.3.4.2	Pump down the spool section
203	0%	~~3.3.5~~	~~SSD installation~~
207	0%	3.3.6	Vacuum System
211	0%	3.3.7	RF Installation
212	0%	3.3.7.1	RF Controls Racks
213	0%	3.3.7.1.1	RF Controls Rack #1
220	0%	~~3.3.7.1.2~~	~~RF Controls Rack #2~~
225	0%	3.3.7.2	RF System#1 returns to RAL
226	0%	3.3.7.2.1	4616 Aux & PSU racks - RF system#1
241	0%	3.3.7.2.2	TH116 Aux & PSU racks - RF System#1



Science & Technology Facilities Council

Cooling Demo - RF



Science & Technology Facilities Council

Cost

Deliberately vague at present

- must be substantially <£3.6M.
- RF power £0.8M+
- Project plan extends
  - Experiment +15 months (3 months past current end of analysis)
  - Analysis + ?? months to be decided.
- Current estimates ~ £2½M+ uplift

Science & Technology Facilities Council

Cooling Demonstration

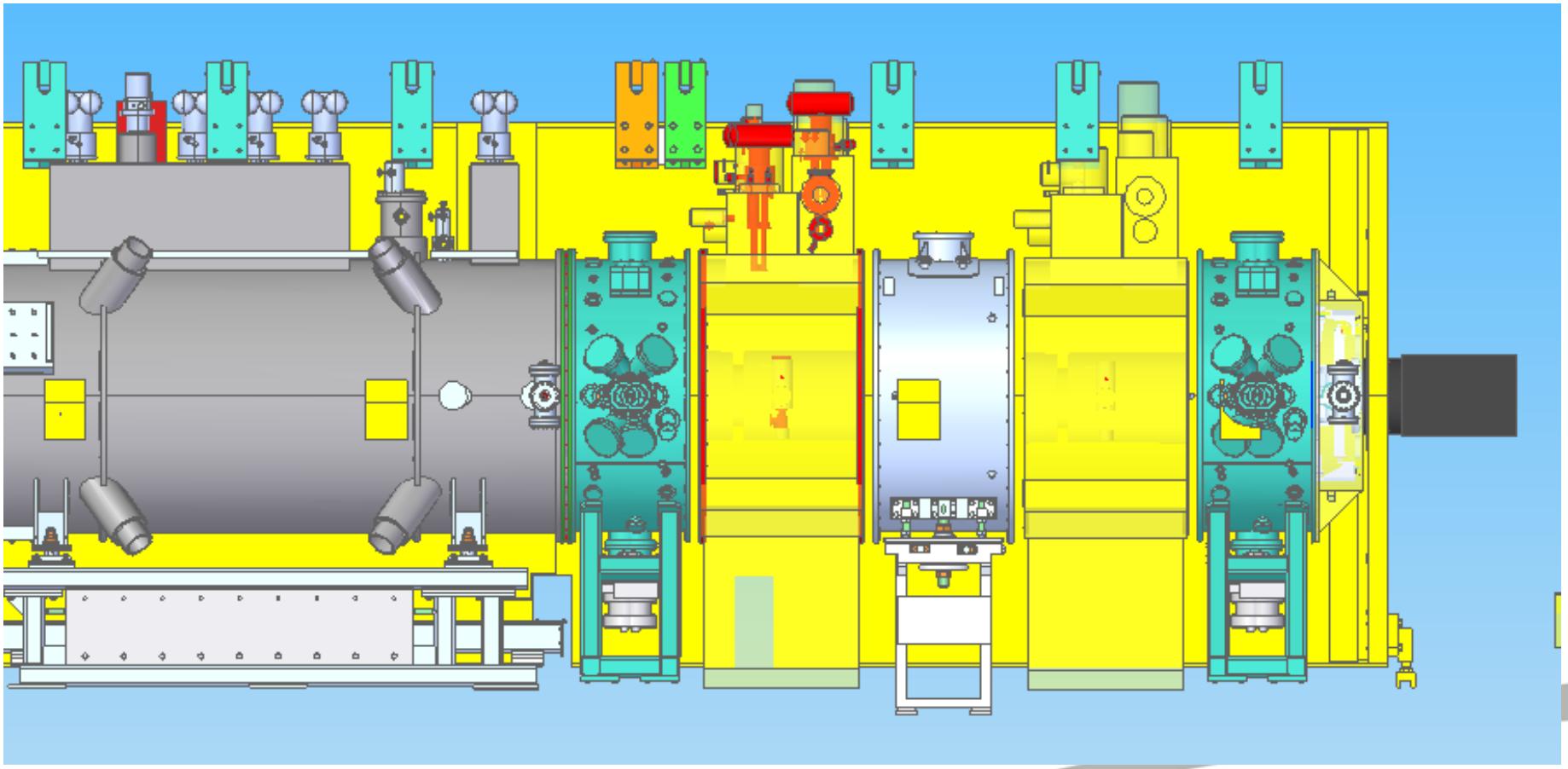
Project plan

- Start Aug 2017
- Build complete Q4 2017
- Data taking start Q1 2018
- Data complete Q4 2018

Staging possible

- 1st without RF
- Add RF
- Liquid Hydrogen?

Cooling Demonstration



Science & Technology Facilities Council