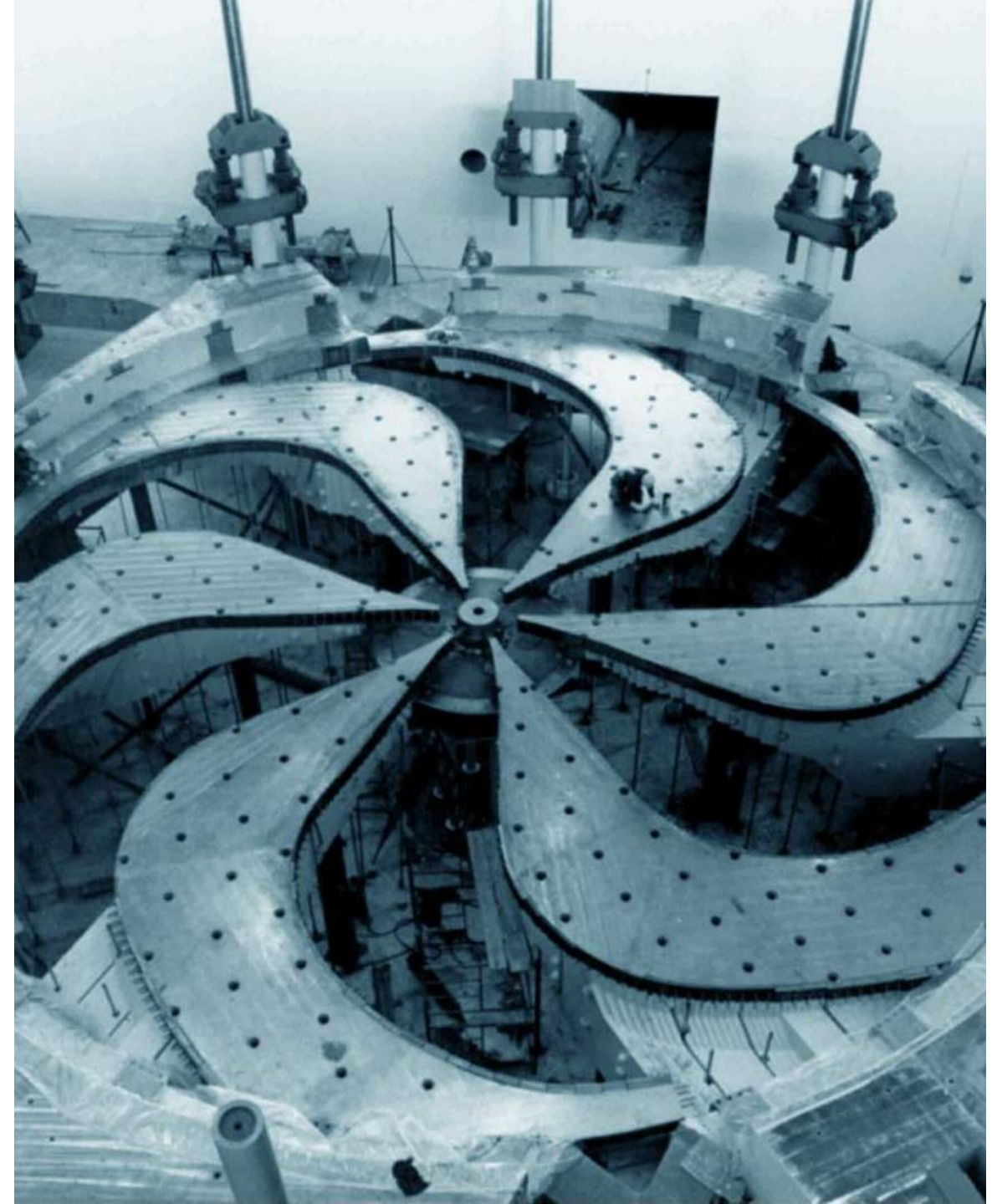


# Hi-Lumi RFD CM Project P455 at TRIUMF

Bob Laxdal

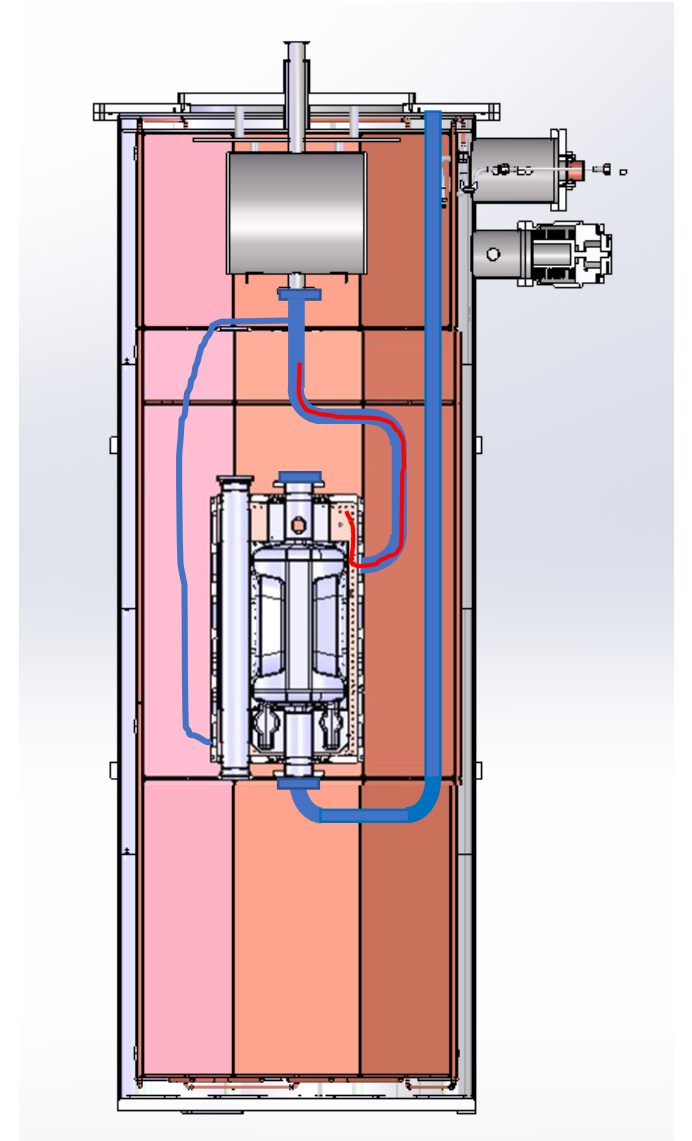
TRIUMF Hi-Lumi Technical Coordinator

Oct. 23, 2020



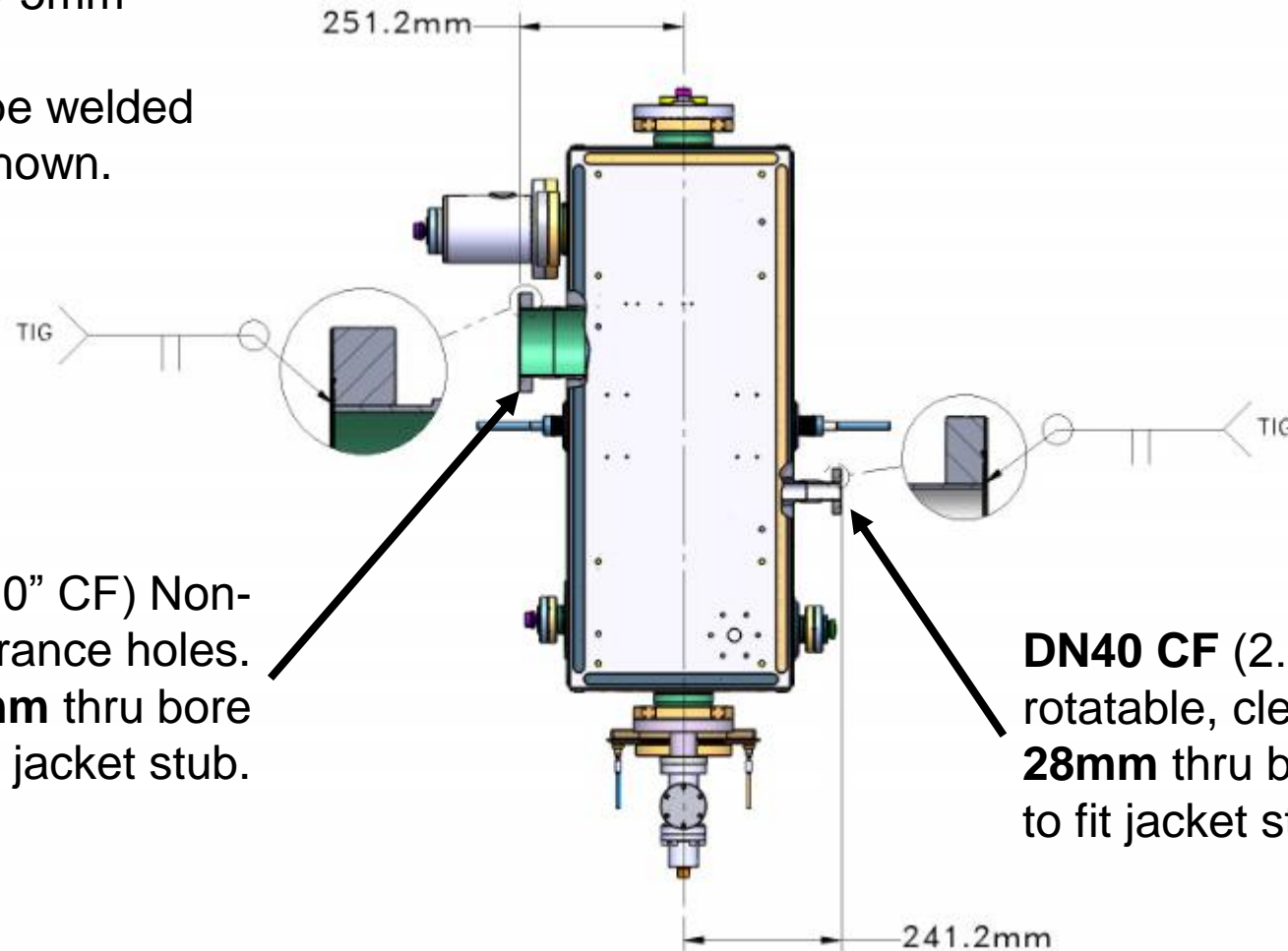
## Our status –

- TRIUMF is now in Phase 3 CV-19 protocols – technical staff on site at 80% level – work on CM work is ramping up – we have one CM in the pipeline before we start Hi-Lumi TCM-0
- We are preparing clean room and cryostat for Hi-Lumi testing
- Student designer will start in January for more fixture design
- Preparing for Gate 3A



# Proposed Design Changes

1. Helium tube stubs are to be lengthened by 5mm
2. CF Flanges will be welded to the stubs as shown.



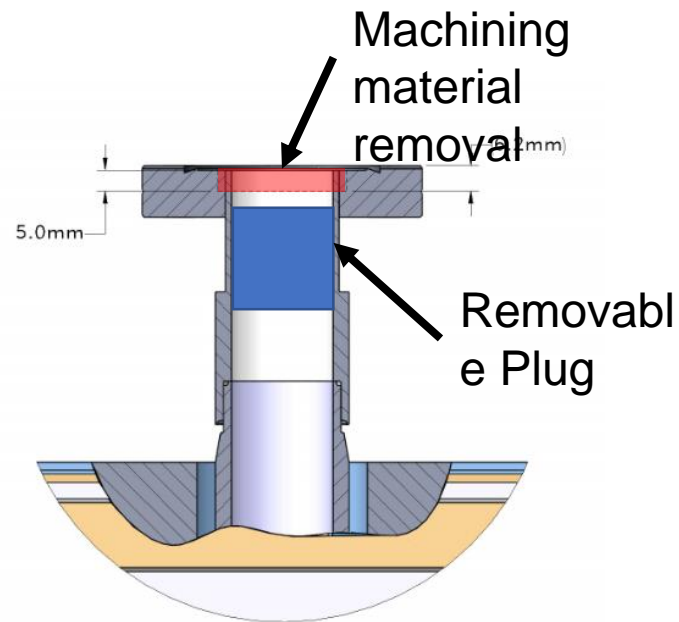
**DN100 CF (6.0" CF)** Non-rotatable, clearance holes. **104mm** thru bore machined to fit jacket stub.

**DN40 CF (2.75" CF)** Non-rotatable, clearance holes. **28mm** thru bore machined to fit jacket stub.

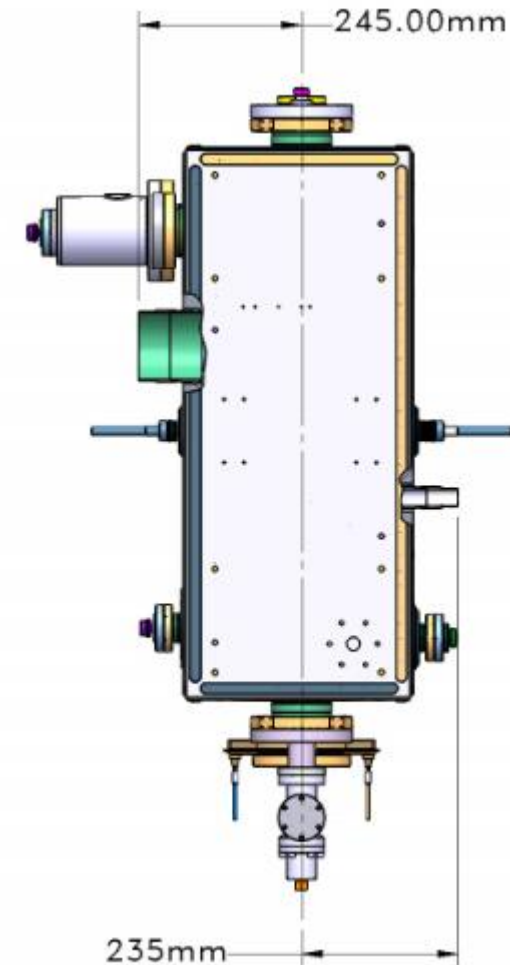
# Manufacturing to be Completed at TRIUMF

Once the cold test has been completed, 5mm will be machined from tube stubs. This will remove the welds and release the flanges, effectively returning the cavity to its original design state.

A removable plug will be used to ensure machining debris and coolant will not contaminate the helium space.



*Typical both flanges*



# MOU- Addendum

P095/A5

Addendum No. 5

to

THE 2009 PROTOCOL P095

to

THE 1996 CO-OPERATION AGREEMENT

between

TRIUMF (CANADA)

and

THE EUROPEAN ORGANIZATION  
FOR NUCLEAR RESEARCH (CERN)

In witness hereof, the duly authorized representative of each Party agrees to the provisions of this Addendum No. 5.

Done in two (2) copies in the English language.

For TRIUMF

For the European Organization  
for Nuclear Research (CERN)

.....

*Fabiola Gianotti*  
.....

Dr Jonathan Bagger  
Director

Dr Fabiola Gianotti  
Director-General

Signed on .....2020

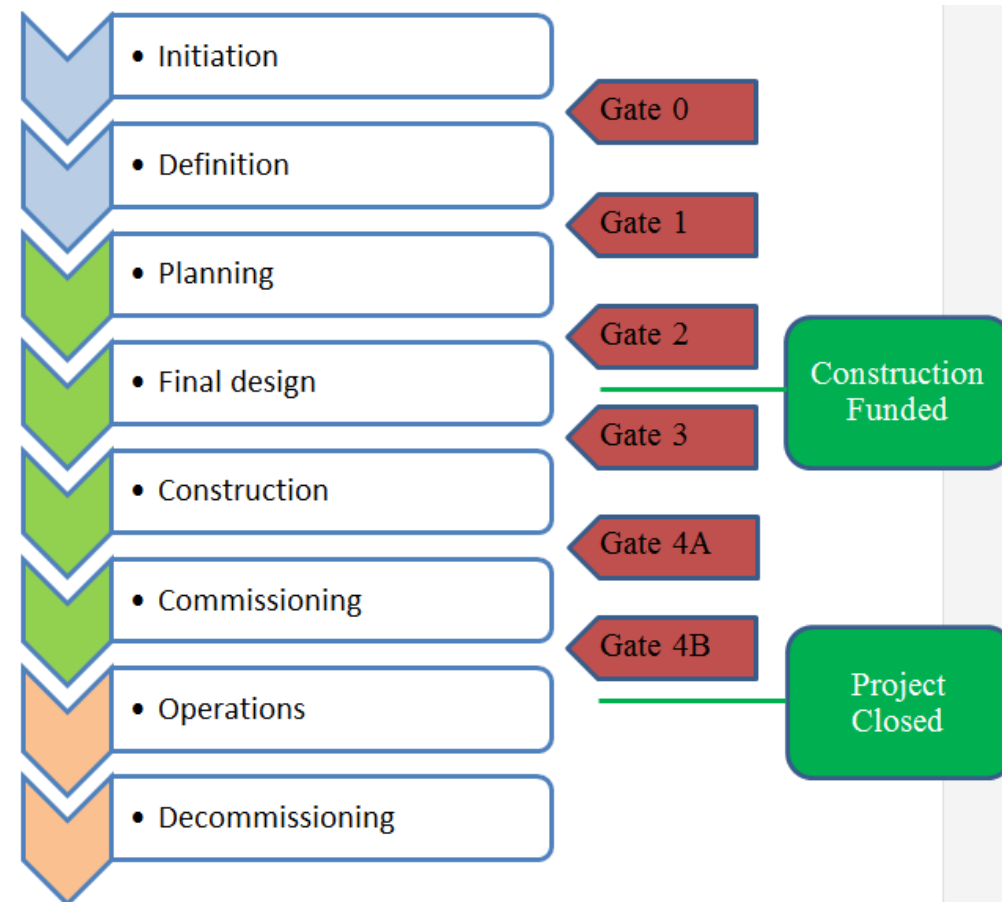
Signed on 20<sup>th</sup> October 2020

DG has signed – Courier package sent to TRIUMF  
for TRIUMF signing

# TRIUMF Project milestones

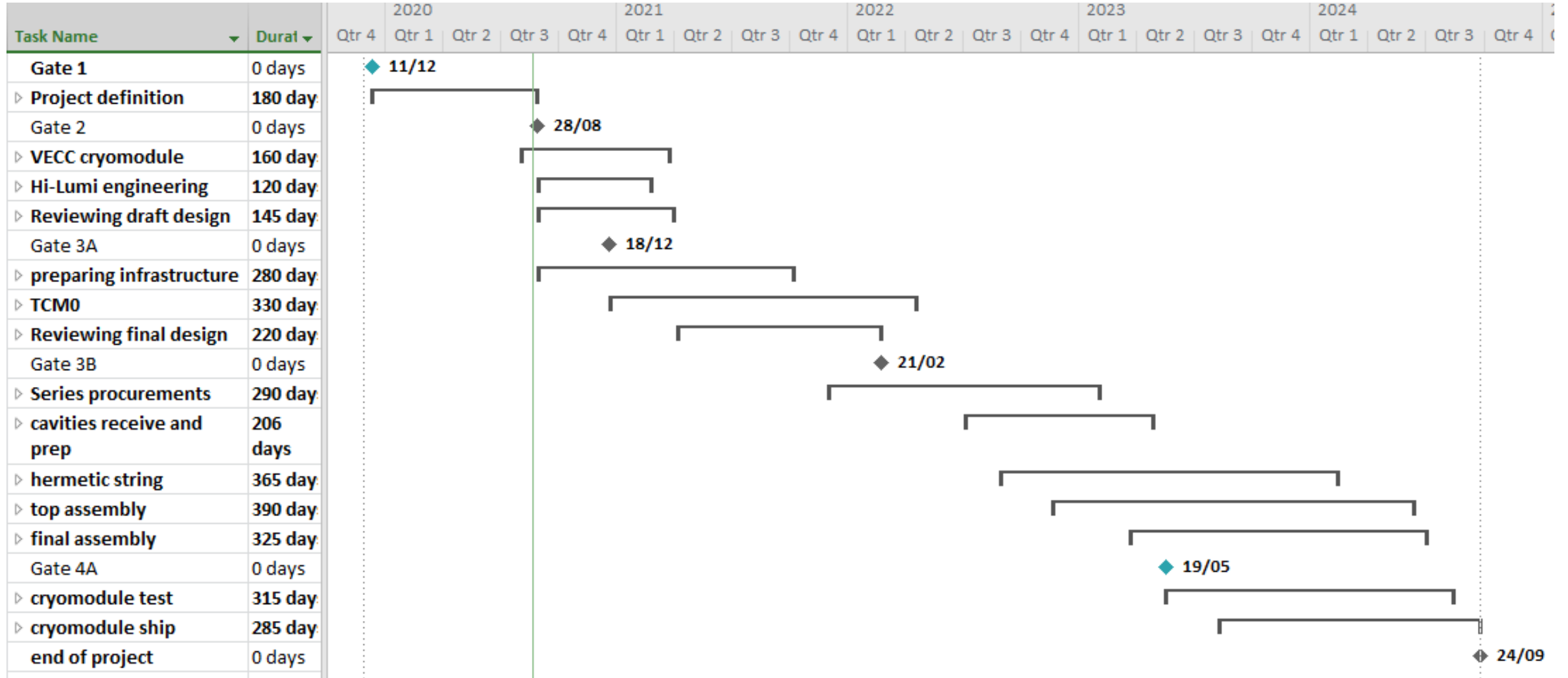
- The project has now completed Gate 2 within TRIUMF project planning
- We would like to get to Gate 3 before standard procurements. The prototype TCM0 could be considered in a Gate 3A – need to have released drawings and specifications from CERN

Project Milestone	Proposed date	Hi-Lumi input
Gate 1 ✓	Dec 2019	Conceptual design review, preliminary scope def'n
Gate 2 ✓	Aug. 2020	Final scope def'n, detailed budget
Gate 3A TCM0	Dec 2020	TCM0 design review, released drawings and specifications
Tech review	Dec. 2021	Launch long lead procurements
Gate 3B TCM1-4	Feb. 2022	Final design review, released drawings and specifications





# Level 1 WBS – as of Gate 2



# Delivery Dates

	Planned Delivery Date (CERN Master Schedule)	"Known" COVID Effects							Agreed Delivery Dates
Cavities 01 & 02	Jun-22								Jun-23
Cavities 03 & 04	Sep-22	Dec-22							Sep-23
Cavities 05 & 06	Nov-22		Mar-23						Dec-23
Cavities 07 & 08	Jan-23			Jun-23					Feb-24
Cavities 09 & 10	Mar-23			Aug-23					May-24

## Deliveries to TRIUMF:

Deliveries are still within the agreed “window”, but we are experiencing delays of up to 5 months for the last delivery, with respect to “early” delivery dates.

Accumulated additional 2-3 months of delay since last coordination meeting in August, as we included the forecasted impact up to end of October 2020.

Additional delays could result if COVID impacts stretch beyond Oct 2020, and/or if string-assembly (mech. Validation) at CERN is delayed beyond Oct 2021.



# Summary

- CV-19 update (now in Phase 3)
  - Technical staff now in 80% occupancy
  - Professional staff to 25% occupancy
- Working on clean room equipment for cavity testing and handling
- CM Tooling and handling fixtures
  - Student starts in Jan 2021
- MOU-Addendum
  - Signed by DG

