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| Traveler Title | P1 Cryomodule Final Assembly Traveler | | | |
| Traveler Abstract | This document outlines the necessary steps to be taken to complete the P1 Cryomodule. It begins with a finished Vacuum Vessel /End Can Assembly, and ends with a completed Cryomodule. Upon completion of this traveler, the Cryomodule will be located in the CMTF with the secondary waveguides and all instrumentation in place, ready for U-tube installation. | | | |
| Traveler ID | P1-CMAWS4-CM-ASSY | | | |
| Traveler Revision | R1 | | | |
| Traveler Author | J. Fischer | | | |
| Traveler Date | 26-Jan-21 | | | |
| NCR Informative Emails | areilly,drury | | | |
| NCR Dispositioners | fischer,worland | | | |
| D3 Emails | areilly,drury,fischer,worland | | | |
| Approval Names | J. Fischer | K. Worland | A. Reilly | Dave Hamlette |
| Approval Signatures |  |  |  |  |
| Approval Dates |  |  |  |  |
| Approval Title | Author | Reviewer | Project Manager | RADCON Review |

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| References | List and Hyperlink all documents related to this traveler. This includes, but is not limited to: safety (THAs, SOPs, etc), drawings, procedures, and facility related documents. | | | |
| [CRM1207075-0003 RT SPOOL ASSY](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64342/RIGHT%20SIDE%20WAVEGUIDE%20SPOOL%20ASSY.pdf) | [CRM1207075-0004 LEFT SPOOL ASSY](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64343/LEFT%20SIDE%20WAVEGUIDE%20SPOOL%20ASSY.pdf) | [CRM1207075-0008 LEFT WAVEGUIDE SPOOL](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64344/LEFT%20WAVEGUIDE%20SPOOL.pdf) | [CRM1207075-0010 RT WAVEGUIDE SPOOL](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64345/RIGHT%20WAVEGUIDE%20SPOOL.pdf) | [CRM1207075-0036 RF WINDOW INSTALLATION](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64346/RF%20WINDOW%20INSTALLATION.pdf) |
| [CRM1207075-0040 LEFT WAVEGUIDE SPOOL](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64347/LEFT%20WAVEGUIDE%20SPOOL%202.pdf) | [CRM1207075-0041 RT WAVEGUIDE SPOOL](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64348/RIGHT%20WAVEGUIDE%20SPOOL%202.pdf) | [CRM1207075-0047 WAVEGUIDE PLATING DWG](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64349/WAVEGUIDE%20CU%20PLATING.pdf) | [CRM1207075-0053 RT SIDE WAVEGUIDE SPOOL ASSY](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64350/RIGHT%20SIDE%20WAVEGUIDE%20SPOOL%20ASSY%2045.pdf) | [CRM1207075-0054 LEFT SIDE WAVEGUIDE SPOOL ASSY](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64351/LEFT%20SIDE%20WAVEGUIDE%20SPOOL%20ASSY%2045.pdf) |
| 115800-1006 Center Left  Spool Assy  115800-1005 Center Right  Spool Assy | 115800-1000  P1 Cryomodule Assembly | 115800-1001 thru 1014 P1 Waveguides, flanges, and spools. | 115800-1015 thru 1018 P1 Topahts and back plates. | Secondary Waveguide Installation Procedure |

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| Revision Note |  |
| R1 | Initial release of this Traveler. |

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| Step No. | Instructions | Data Input |
| 1 | Verify the "P1 Vacuum Vessel and End Can AssemblyTraveler " is complete. | [[LeadTechnician1]] <<SRFCMP>>  [[Date1]] <<TIMESTAMP>>  [[Comment1]] <<COMMENT>> |
| 2 | Request "Final Cryomodule" kit from inventory and inspect kit for completeness. | [[KitTechnician2]] <<SRF>>  [[Date2]] <<TIMESTAMP>>  [[Comment2]] <<COMMENT>> |
| 3 | Transfer Cryomodule from the Assembly room into the CMTF. Use procedure "[Relocating a Cryomodule into the CMTF](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64352/CP-C100-CM-MOVE-CMTF.pdf)" to perform the task.   * Record beamline vacuum level before and after the move. | [[CMSN]] <<CMSN>>  [[TransferTechnician3]] <<SRFCMP>>  [[TransDate3]] <<TIMESTAMP>>  [[TransComment3]] <<COMMENT>>  [[BeamlineVacBeforeMove]] <<TEXT>>  [[BeamlineVacAfterMove]] <<TEXT>>  [[Comment3]] <<COMMENT>> |
| 4 | Position the Cryomodule in the Test Cave on floor plates.   * Drop plumb bobs from centerline of primary bayonets, both supply and return, to foil targets on floor to orient the Cryomodule. | [[PosTechnician4]] <<SRFCMP>>  [[PosDate4]] <<TIMESTAMP>>  [[PosComment4]] <<COMMENT>>  [[IsCryomodulePositioned]] <<YESNO>> |
| 5 | Prep tophat area 8 for secondary waveguide installation. Return end.   * Wipe down surrounding area with alcohol and lint free wipes. * Blow off area with Nitrogen. * Install portable flowhood over work area, activate. | [[VacuumTechnician5]] <<USERNAME>>  [[VacDate5]] <<TIMESTAMP>>  [[VacComment5]] <<COMMENT>> |

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| Step No. | Instructions | Data Input |
| 6 | Install secondary waveguide, rf window, support structure, and ion pump assembly. Use "[CP-C100-CM-INST-WGSP](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64353/CP-C100-CM-INST-WGSP-R1.docx)" to perform this work.   * Evacuate and leak check the assembly. Record findings. * Repeat process for all eight waveguides. Record findings.   Use drawings:  CRM1207075-0003  CRM1207075-0004  CRM1207075-0053  CRM1207075-0054  115800-1005  115800-1006  115800-1013  115800-1014  **\*\*\*It is acceptable to install the Secondary Waveguides in the Cryomodule Assembly area as well using same clean practices. The Cryomodule would be placed in the CMTF afterwards.\*\*\*** | [[WGTechnician6]] <<SRFCMP>>  [[WGDate6]] <<TIMESTAMP>>  [[WGComment6]] <<COMMENT>>  [[WaveguideSN8]] <<TEXT>>  [[RFWindowSN8]] <<TEXT>>  [[LeakCheckUpload8]] <<FILEUPLOAD>>  [[WaveguideSN7]] <<TEXT>>  [[RFWindowSN7]] <<TEXT>>  [[LeakCheckUpload7]] <<FILEUPLOAD>>  [[WaveguideSN6]] <<TEXT>>  [[RFWindowSN6]] <<TEXT>>  [[LeakCheckUpload6]] <<FILEUPLOAD>>  [[WaveguideSN5]] <<TEXT>>  [[RFWindowSN5]] <<TEXT>>  [[LeakCheckUpload5]] <<FILEUPLOAD>>  [[WaveguideSN4]] <<TEXT>>  [[RFWindowSN4]] <<TEXT>>  [[LeakCheckUpload4]] <<FILEUPLOAD>>  [[WaveguideSN3]] <<TEXT>>  [[RFWindowSN3]] <<TEXT>>  [[LeakCheckUpload3]] <<FILEUPLOAD>>  [[WaveguideSN2]] <<TEXT>>  [[RFWindowSN2]] <<TEXT>>  [[LeakCheckUpload2]] <<FILEUPLOAD>>  [[WaveguideSN1]] <<TEXT>>  [[RFWindowSN1]] <<TEXT>>  [[LeakCheckUpload1]] <<FILEUPLOAD>> |
| 7 | Position and weld the RF waveguide support tabs.   * Mock up each section using an RF sweep and first section of waveguide. * Attach brackets and support structure, positioning support tabs. * Tack weld items to the vacuum vessel. Finish waveguide installation.   Use drawings:  CRM1207001-1000 - C100 Cryomodule Assembly  CRM1027001-0001 - R100 Cryomodule Assembly | [[Welder7]] <<SRFCMP>>  [[WeldDate7]] <<TIMESTAMP>>  [[WeldComment7]] <<COMMENT>>  [[WaveguideInstallationComplete]] <<YESNO>> |
| 8 | Prepare the Cryomodule for Cooldown.  Use "[Cryomodule Related Operations in the CMTF](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-64354/Cryomodule%20Related%20Operations%20in%20the%20CMTF.docx)" to complete this work.   * Position the Cryomodule * Install and set the JT actuator * Clean Cryomodule circuits * Utube prep and install * Cooldown * Post testing warmup | [[PrepTechnician8]] <<SRFCMP>>  [[PrepDate8]] <<TIMESTAMP>>  [[PrepComment8]] <<COMMENT>>  [[VacuumEstablished]] <<YESNO>>  [[GasReturningToCTF]] <<YESNO>>  [[UtubesInstalled]] <<YESNO>>  [[CryomoduleReadyForCooldown]] <<YESNO>> |