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| Traveler Title | CEBAF Girder Assembly and Leak Check | | | |
| Traveler Abstract | This traveler outlines the steps necessary to assemble and leak check the warm region vacuum girder assembly. It captures component serial #’s during the assembly for the girder rework. Work within this traveler is to be performed by trained and authorized personnel ONLY. All girder components and materials shall be kept together and contained until they have been surveyed and released by RADCON.  **\*\*Radiological controls are a critical component of the girder rework disassembly and assembly process. Dose rate, as well as contamination surveys (where seals are present) shall be performed and analyzed, with information communicated to all involved personnel. Results will be recorded at traveler hold points. RW-II training will be required where contamination is identified.\*\*** | | | |
| Traveler ID | CEBAF—CLNRM-GIRDER-ASSY | | | |
| Traveler Revision | R1 | | | |
| Traveler Author | Ganey | | | |
| Traveler Date | Click or tap to enter a date. | | | |
| NCR Informative Emails | Forehand, DiPette, Drury | | | |
| NCR Dispositioners | Palczewski, Valente-Feliciano, Ganey | | | |
| D3 Emails | Forehand, DiPiette, Drury, Palczewski, Valente-Feliciano, Ganey | | | |
| Approval Names | T. Ganey | D. Forehand | A. Palczewski | M. Drury |
| Approval Signatures |  |  |  |  |
| Approval Dates |  |  |  |  |
| Approval Title | Author | Reviewer | Reviewer | Project Manager |

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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. | | | |
| [11131-D-0137](https://misportal.jlab.org/jlabDocs/docDownload/5979) – Linac Beam Transport Warm Region Beam Tube Assembly QD Girders | [11230-D-0019](https://misportal.jlab.org/jlabDocs/docDownload/126084) – Beam Transport Warm Region 45 degree Pump Drop Upgraded Assembly | [ACC1200120-0159](https://misportal.jlab.org/jlabDocs/docDownload/47040) – ACC Girders Girder Assembly VIP-VRV-DB/H-BPM-QB Warm GRD Assy | [ACC1200120-0185](https://misportal.jlab.org/jlabDocs/docDownload/47043) – ACC Girders Girder Assemblies Warm Region Interface Drawing | [VAC5555000-0231](https://misportal.jlab.org/jlabDocs/docDownload/112103) – ACC Girders Girder Assemblies Warm Region Vacuum Assy |
| [VAC5555000-0233](https://misportal.jlab.org/jlabDocs/docDownload/125391) – VAC Tubes and Chambers Tubes and Assemblies 12 GeV Warm Region Pump Drop | [22634-S-001](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-61925/22634-S-001%5b1%5d.pdf) – Helium Leak Test Procedure for Ultra High Vacuum Components | EES-PR-02-002 - BPM Cavity Acceptance Test | [SRF-19-83800-OSP](https://mis.jlab.org/mis/apps/mis_forms/operational_safety_procedure_form.cfm?entry_id=83800) - OSP for Safe Operations in the Production Chemistry Room | [Alconox User’s Manual](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-73545/Alconox-UserManual.pdf)- User’s manual for Alconox detergents |
| [Chemistry Cleaning Procedures](https://jlabdoc.jlab.org/docushare/dsweb/View/Collection-2654?sort=Date) | [CP-L2PRD-CLN-PUMP](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-136323/CP-L2PRD-CLN-PUMP.docx) – Clean Room Production Pump System Operation |  |  |  |

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

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| Step No. | Instructions | Data Input |
| \*Note: | 1. During the girder re-work process, there will be some items labeled as “Radioactive Material”. **Radioactive Material (RAM)** is defined in the RadCon manual as any activated material, equipment or system component with radiation levels distinguishable from background. The following guidelines are to be adhered to when handling RAM in order to follow Radcon requirements:   * There are no requirements for dosimetry for Radioactive Material Areas unless otherwise notified by a member of the RCD. * Persons must be Radiation Worker I qualified to handle RAM. * The RAM tag must accompany the item at all times with the following exceptions. Cleaning, heating or any process in which the tag will impede that process or the tag could be potentially damaged or destroyed. * When performing processes listed above, the tag is to be removed by personnel performing the task and placed on the RAM tag board located in the area. * Each component removed from the girder needs to be tagged with a Radcon coupon, recorded on the dedicated list. * All hardware (bolts, nuts, gaskets…) needs to be gathered in a Rad waste bag. * Once task is complete, the tag is to be placed back on the material/equipment. * Eating, drinking or smoking is not permitted in Radioactive Material Areas. * Remove all tags prior to installation of cryomodule in the Accelerator   **Tasks associated with this traveler will be performed in the designated area of the clean room.**  **2 .The girder needs to be maintained upright in the same orientation it had on the beamline. Do not flip over, topple, …** |  |

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| **Step No** | **Instructions** | **Data Inputs** |
| 1 | Enter the girder serial #. | [[GirderSN]] <<GirderSN>>  [[InitialTech]] <<SRFCVP>>  [[IntialDate]] <<TIMESTAMP>>  [[InitialComment]] <<COMMENT>> |
| 2 | Record the girder style. | [[GirderStyle]] <<TEXT>> |

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| **Step No** | **Instructions** | | | **Data Inputs** | |
| 3 | Record the Standardized Serial Numbers of each component to be assembled on the girder being worked. Print and record all existing component data on the Girder assembly drawing. Any component that has been tagged as RAM shall be noted in the “Part RAM?” column.  If a listed component is not required for the girder being worked, select No in the “Part Present?” column and leave the “Standardized Serial Number” and “Part RAM?” columns blank.  Record the time stamp for this step once all components for this girder have been identified and are ready for assembly.  Upload a scan of the girder assembly drawings and / or parts list. | | | All components for this girder have been identified, are ready for assembly, and are present in the cleanroom area.  [[ComponentsReadyTech]] <<SRFCVP>>  [[ComponentsReadyDate]] <<TIMESTAMP>>  [[GirderDiagram]] <<FILEUPLOAD>>  [[PartsList]] <<FILEUPLOAD>>  [[ComponentsReadyComment]] <<COMMENT>> | |
| **Part** | | **Standardized Serial Number** | **Part RAM?** | | **Part Present?** |
| Pump drop | | [[PumpDropSN]] <<PMPDRPSN>> | [[PumpDropRAM]] <<YESNO>> | | [[PumpDropPresent]] <<YESNO>> |
| BPM chamber | | [[BPMSN]] <<BPMSN>> | [[BPMRAM]] <<YESNO>> | | [[BPMPresent]] <<YESNO>> |
| Ion Pump | | [[IonPumpSN]] <<IONPMPSN>> | [[IonPumpRAM]] <<YESNO>> | | [IonPumpPresent]] <<YESNO>> |
| Gate valve | | [[GateValveSN]] <<GateValveSN>> | [[GateValveRAM]] <<YESNO>> | | [[GateValvePresent]] <<YESNO>> |
| Gauge on double sided 2.75” CF | | [[Gauge]] <<GAUGESN>> | [[GaugeRAM]] <<YESNO>> | | [[GaugePresent]] <<YESNO>> |
| 90 angle all-metal valve (AMUV) | | [[AMUV ]] <<AMUVSN>> | [[AMUVRAM]] <<YESNO>> | | [[AMUVPresent]] <<YESNO>> |
| Beam Viewer assembly | | [[BeamViewerSN]] <<BeamViewerSN>> | [[BeamViewerRAM]] <<YESNO>> | | [[BeamViewerPresent]] <<YESNO>> |
| QD beamtube assembly A | | [[QDASN]] <<QDASN>> | [[QDARAM]] <<YESNO>> | | [[QDAPresent]] <<YESNO>> |
| QD beamtube assembly B | | [[QDBSN]] <<QDBSN>> | [[QDBRAM]] <<YESNO>> | | [[QDBPresent]] <<YESNO>> |
| 2.75” CF A | | [[CFASN]] <<CFASN>> | [[CFARAM]] <<YESNO>> | | [[CFAPresent]] <<YESNO>> |
| 2.75” CF B | | [[CFBSN]] <<CFBSN>> | [[CFBRAM]] <<YESNO>> | | [[CFBPresent]] <<YESNO>> |
| Viewport or 2.75” CF C | | [[ViewportSN]] <<ViewportSN>>  [[CFCSN]] <<CFCSN>> | [[ViewportRAM]] <<YESNO>>  [[CFCRAM]] <<YESNO>> | | [[ViewportPresent]] <<YESNO>>  [[CFCPresent]] <<YESNO>> |
| Bellow A | | [[BellowASN]] <<BellowASN>> | [[BellowARAM]] <<YESNO>> | | [[BellowAPresent]] <<YESNO>> |
| Bellow B | | [[BellowBSN]] <<BellowBSN>> | [[BellowBRAM]] <<YESNO>> | | [[BellowBPresent]] <<YESNO>> |
| 2.75” CF (AMUV side) | | [[AMUVCFSN]] <<AMUVCFSN>> | [[AMUVCFRAM]] <<YESNO>> | | [[AMUVCFPresent]] <<YESNO>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 4 | Set the girder in the cleanroom designated area.  Ensure the area and girder are adequately clean.  Gather and prepare items (wipers, supplies, tools, etc.) required for assembly and leak check.  Let the cleanroom area recover. | The cleanroom area and girder components are ready for assembly and leak check.  [[PrepareAreaTechSRFCVP]] <<SRFCVP>>  [[PrepareAreaDate]] <<TIMESTAMP>>  [[PrepareAreaComment]] <<COMMENT>> |
| 5 | Assemble all components marked as “Present” in step 3 for the girder assembly in accordance with the procedure CEBAF-CLNRM-GIRDER-ASSY, Girder Clean Assembly and Leak Check Procedure.  Use caution when handling delicate items such as the BPM chamber and beam viewer.  Store all fasteners for later use or disposal. | All components for this girder have been assembled in accordance with the assembly procedure.  [[AssyTechSRFCVP]] <<SRFCVP>>  [[AssyDate]] <<TIMESTAMP>>  [[AssyComment]] <<COMMENT>> |
| 6 | Once the girder is fully assembled, leak check the girder assembly in accordance with the procedure CEBAF-CLNRM-GIRDER-ASSY, Girder Clean Assembly and Leak Check Procedure. | The girder assembly has passed leak check in accordance with the leak check procedure.  [[LeakCheckTechSRFCVP]] <<SRFCVP>>  [[LeakCheckDate]] <<TIMESTAMP>>  [[LeakCheckRate]] <<SCINOT>>  [[LeakCheckComment]] <<COMMENT>> |
| 7 | Coordinate with RadCon for surveying and moving parts from Cleanroom to RMA area or to accomplish the next task. | [[RadTechRAD]] <<RAD>>  [[RadDate]] <<TIMESTAMP>>  [[RadComment]] <<COMMENT>> |
| 8 | Ensure that all RAM tagged parts are placed in an appropriate RMA. | [[RAMSRFCVP]] <<SRFCVP>>  [[RAMDate]] <<TIMESTAMP>>  [[RAMComment]] <<COMMENT>> |