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| Traveler Title | FPC Port Tube Traveler |
| Traveler Abstract | Outlines the inspection and fabrication steps for the FPC port flange for the EIC 197Mhz Crab Cavity  |
| Traveler ID | EIC197-FAB-FPCT-ASSY |
| Traveler Revision  | R1 |
| Traveler Author | J. Cox |
| Traveler Date | 6-Sep-24 |
| NCR Informative Emails | AREILLY,GEORGED,GROSE,KDAVIS |
| NCR Dispositioners | BLUMER,BUTTLES,HUQUE |
| D3 Emails | AREILLY,GEORGED,BUTTLES,GROSE,KDAVIS,BLUMER,HUQUE |
| Approval Names | J. COX | G. GROSE | BUTTLES | N. HUQUE |
| Approval Signatures |  |  |  |  |
| Approval Dates |  |  |  |  |
| Approval Title | Author | Reviewer | Group Leader | 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. |
| [JL0130461](https://misportal.jlab.org/jlabDocs/documents/179220/download) | [JL0149924](https://misportal.jlab.org/jlabDocs/documents/185354/download) | [JL0134072](https://misportal.jlab.org/jlabDocs/documents/179219/download) | [JL0141299](https://misportal.jlab.org/jlabDocs/documents/179222/download) | [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download) |
| [JL0141300](https://misportal.jlab.org/jlabDocs/documents/179223/download) | [JL0136178](https://misportal.jlab.org/jlabDocs/documents/180704/download) | [11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download) | [FPCPortTubeFabricationPlan](https://jeffersonlab.sharepoint.com/%3Ap%3A/r/sites/EICPartnerProject-TJNAF/Accelerator/RF%20Systems/Cryomodules/197%20MHz%20DVC/Cavity%20Fabrication%20Files/Fabrication%20Plans/FPC%20Port%20Tube%20Fabrication%20Plan.pptx?d=wa2642731cc734de7b6af2fdc9a2195a6&csf=1&web=1&e=AcduDD) | [CP-AUP-CAV-CHEM-ACID](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-260914/CP-AUP-CAV-CHEM-ACID-R2%282%29.pdf) |
| [EIC-BPS-JL0141297](https://misportal.jlab.org/jlabDocs/documents/205059/download) |  |  |  |  |

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

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| Step No. | Instructions | Data Input |
| WORK CENTER |
| 0 | Enter Serial Number of Finished Part

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| **Steps** | **Work Center Areas** | **Actions** |
| 1 | INSP | Initial Dimensional Inspection |
| 2 | CHEM | BCP and DEGR |
| 3-4 | FURN | Heat treat and Braze |
| 5 | INSP | Verify perpendicularity |
| 6 | MACHSHOP | Slug Removal |
| 7 | CMA | Leak Check |
| 8 | TR | Shipping and PR |
| 9 | UT | Ultrasonic Inspection |
| 10 | CHEM | BCP and DEGR Weld Prep  |
| 11 | EBW | Weld transition |
| 12 | CMA | Leak Check |
| 13 | MACHSHOP | Machine transition and knife edge |
| 14 | CMA | Leak Check |
| 15 | INSP | Final Dimensional Inspection |
| 16 | INV | Return to INV |

 | [[FPCTSN1]] <<FPCTSN>>[[New part SN dropdown]] <<NOTE>> |

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| Step No. | Instructions | Data Input |
| DIMENSIONAL INSPECTION |
| 1 | Verify dimensions in red on [JL0130461](https://misportal.jlab.org/jlabDocs/documents/179220/download) (FPC PORT FLANGE)Diagram, schematic  Description automatically generated | [[FPCPFSN1]] <<FPCPFSN>>[[New part SN dropdown]] <<NOTE>>[[InsTech]] <<SRF>>[[InsTime]] <<TIMESTAMP>>[[InsComm]] <<COMMENT>>[[InsFile]] <<FILEUPLOAD>> |
| Verify dimensions in red on [JL0149924](https://misportal.jlab.org/jlabDocs/documents/185354/download) (6" FLANGE SLUG)Shape, circle  Description automatically generated | [[InsTech2]] <<SRF>>[[InsTime2]] <<TIMESTAMP>>[[InsComm2]] <<COMMENT>>[[InsFile2]] <<FILEUPLOAD>> |
| Verify dimensions in red on [JL0134072](https://misportal.jlab.org/jlabDocs/documents/179219/download) (FPC PORT TUBE)Diagram  Description automatically generated | [[FPCPSN1]] <<FPCPSN>>[[New part SN dropdown]] <<NOTE>>[[InsTech3]] <<SRF>>[[InsTime3]] <<TIMESTAMP>>[[InsComm3]] <<COMMENT>>[[InsFile3]] <<FILEUPLOAD>> |
| Verify dimensions in red on [JL0141299](https://misportal.jlab.org/jlabDocs/documents/179222/download) (FPC PORT TRANSITION ROUGH MACHINING)Diagram, engineering drawing  Description automatically generated | [[FPCPTRSN]] <<FPCPTRSN>>[[New part SN dropdown]] <<NOTE>>[[InsTech4]] <<SRF>>[[InsTime4]] <<TIMESTAMP>>[[InsComm4]] <<COMMENT>>[[InsFile4]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| CHEMISTRY |
| 2a | Degrease [JL0130461](https://misportal.jlab.org/jlabDocs/documents/179220/download), [JL0149924](https://misportal.jlab.org/jlabDocs/documents/185354/download), [JL0134072](https://misportal.jlab.org/jlabDocs/documents/179219/download) and [JL0141299](https://misportal.jlab.org/jlabDocs/documents/179222/download)According to [CP-AUP-CAV-CHEM-ACID](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-260914/CP-AUP-CAV-CHEM-ACID-R2%282%29.pdf) Acid Etching ProceedureUpload any relevant photos and/or comments. | [[ChemTech]] <<SRFCVP>>[[ChemTime]] <<TIMESTAMP>>[[ChemComm]] <<COMMENT>>[[ChemFile]] <<FILEUPLOAD>> |
| 2b | SS Etch [JL0130461](https://misportal.jlab.org/jlabDocs/documents/179220/download) and [JL0149924](https://misportal.jlab.org/jlabDocs/documents/185354/download) and BCP to a depth of 15 microns [JL0134072](https://misportal.jlab.org/jlabDocs/documents/179219/download) and [JL0141299](https://misportal.jlab.org/jlabDocs/documents/179222/download)According to [CP-AUP-CAV-CHEM-ACID](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-260914/CP-AUP-CAV-CHEM-ACID-R2%282%29.pdf) Acid Etching ProceedureUpload any relevant photos and/or comments. | [[ChemTech2]] <<SRFCVP>>[[ChemTime2]] <<TIMESTAMP>>[[ChemComm2]] <<COMMENT>>[[ChemFile2]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| FURNACE |
| 3 | Heat Treat [JL0130461](https://misportal.jlab.org/jlabDocs/documents/179220/download) 2 hours at 950C Heat Treat [JL0149924](https://misportal.jlab.org/jlabDocs/documents/185354/download) 2 hours at 950CUpload relevant photos and/or comments | [[HeatTreatTech]] <<SRF>>[[HeatTreatTime]] <<TIMESTAMP>>[[HeatTreatComm]] <<COMMENT>>[[HeatTreatFile]] <<FILEUPLOAD>> |
| 4 | Braze as per JLab [EIC-BPS-JL0141297](https://misportal.jlab.org/jlabDocs/documents/205059/download)Enter serial number of brazementUpload relevant photos and/or comments | [[BrazeTech]] <<SRF>>[[BrazeTime]] <<TIMESTAMP>>[[BrazeComm]] <<COMMENT>>[[BrazeFile]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| DIMENSIONAL INSPECTION |
| 5 | Verify perpendicularity on [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download)Upload Inspection reportDiagram, engineering drawing  Description automatically generated | [[BrazeInsTech]] <<SRF>>[[BrazeInsTime]] <<TIMESTAMP>>[[BrazeInsComm]] <<COMMENT>>[[BrazeInsFile]] <<FILEUPLOAD>>[[BrazeInsMail]] {{BLUMER}} <<EMAIL>>[[BrazeInsMail]] {{Pansophy: FPC Port Assy has finished preliminary inspection.}} <<EMAILSUBJ>> |

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| Step No. | Instructions | Data Input |
| MACHINE SHOP |
| 6 | Remove slug and machine tube to final ID as per [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download)Include job number | [[MachTech]] <<SRF>>[[MachTime]] <<TIMESTAMP>>[[MachJobNumber]] <<INTEGER>>[[MachComm]] <<COMMENT>> |

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| Step No. | Instructions | Data Input |
| LEAK CHECK |
| 7 | Leak check the assembly in accordance with [11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download) Vendor Standard Helium Leak Check ProcedureUpload any relevant images/comments | [[BrazeVacTech]] <<SRF>>[[BrazeVacTime]] <<TIMESTAMP>>[[BrazeVacPass]] <<YESNO>>[[BrazeVacComm]] <<COMMENT>>[[BrazeVacFile]] <<FILEUPLOAD>>[[BrazeVacMail]] {{BLUMER}} <<EMAIL>>[[BrazeVacMail]] {{Pansophy: Field Probe Port Assy has finished preliminary leak check.}} <<EMAILSUBJ>> |

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| Step No. | Instructions | Data Input |
| TECHNICAL REPRESENTATIVE |
| 8 | Enter SRF OPS Shipping form number and Purchase Requisition number for ultrasonic testing. | [[TechRep]] <<SRF>>[[ShippingFormNumber]] <<INTEGER>>[[PurchaseRequestNumber]] <<INTEGER>> |

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| Step No. | Instructions | Data Input |
| ULTRASONIC INSPECTION |
| 9 | Ultrasonic inspection of the braze as per EN ISO 18279 Level B,and no discontinuities over a length ≥20% of the nominal length of the joint.Upload inspection report | [[UtTech]] <<SRF>>[[UtTime]] <<TIMESTAMP>>[[UtPass]] <<YESNO>>[[UtComm]] <<COMMENT>>[[UtFile]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| CHEMISTRY |
| 10a | Degrease [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download).According to [CP-AUP-CAV-CHEM-ACID](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-260914/CP-AUP-CAV-CHEM-ACID-R2%282%29.pdf) Acid Etching ProceedureUpload any relevant photos and/or comments. | [[WeldChemTech]] <<SRFCVP>>[[WeldChemTime]] <<TIMESTAMP>>[[WeldChemComm]] <<COMMENT>>[[WeldChemFile]] <<FILEUPLOAD>> |
| 10b | BCP [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download) weld region to a depth of 15 microns. Diagram  Description automatically generatedAccording to [CP-AUP-CAV-CHEM-ACID](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-260914/CP-AUP-CAV-CHEM-ACID-R2%282%29.pdf) Acid Etching ProceedureUpload any relevant photos and/or comments. | [[WeldChemTech2]] <<SRFCVP>>[[WeldChemTime2]] <<TIMESTAMP>>[[WeldChemComm2]] <<COMMENT>>[[WeldChemFile2]] <<FILEUPLOAD>> |
| 10c | USC [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download) and [JL0141299](https://misportal.jlab.org/jlabDocs/documents/179222/download) for EBW weld prep.  | [[WeldChemTech3]] <<SRFCVP>>[[WeldChemTime3]] <<TIMESTAMP>>[[WeldChemComm3]] <<COMMENT>>[[WeldChemFile3]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| ELECTRON BEAM WELDING |
| 11 | Weld [JL0141299](https://misportal.jlab.org/jlabDocs/documents/179222/download) (FPC PORT TRANSITION ROUGH MACHINING) to [JL0141297](https://misportal.jlab.org/jlabDocs/documents/179221/download) FPC Brazement as per [JL0141300](https://misportal.jlab.org/jlabDocs/documents/179223/download).Engrave SN onto OD of flangeUpload any relevant photos/comments | [[FPCTSN2]] <<FPCTSN>>[[WeldTech]] <<SRF>>[[WeldTime]] <<TIMESTAMP>>[[WeldComm]] <<COMMENT>>[[WeldFile]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| LEAK CHECK |
| 12 | Leak check the assembly in accordance with [11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download) Vendor Standard Helium Leak Check ProcedureUpload any relevant images/comments | [[WeldVacTech]] <<SRF>>[[WeldVacTime]] <<TIMESTAMP>>[[WeldVacPass]] <<YESNO>>[[WeldVacComm]] <<COMMENT>>[[WeldVacFile]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| MACHINE SHOP |
| 13 | Machine Transition and Knife Edge as per [JL0136178](https://misportal.jlab.org/jlabDocs/documents/180704/download)Include Job number | [[KnifeMachTech]] <<SRF>>[[KnifeMachTime]] <<TIMESTAMP>>[[KnifeMachJobNumber]] <<INTEGER>>[[KnifeMachComm]] <<COMMENT>> |

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| Step No. | Instructions | Data Input |
| LEAK CHECK |
| 14 | Leak check the assembly in accordance with [11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download) Vendor Standard Helium Leak Check ProcedureUse a copper seal to validate knife edgeUpload any relevant images/comments | [[KnifeVacTech]] <<SRF>>[[KnifeVacTime]] <<TIMESTAMP>>[[KnifeVacPass]] <<YESNO>>[[KnifeVacComm]] <<COMMENT>>[[KnifeVacFile]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| DIMENSIONAL INSPECTION |
| 15 | **Verify all dimensions on** [JL0136178](https://misportal.jlab.org/jlabDocs/documents/180704/download)**Take knife edge profile on FormTracer****Upload inspection report** | [[KnifeInsTech]] <<SRF>>[[KnifeInsTime]] <<TIMESTAMP>>[[KnifeInsPass]] <<YESNO>> [[KnifeInsComm]] <<COMMENT>>[[KnifeInsFile]] <<FILEUPLOAD>>[[KnifeInsMail]] {{BLUMER}} <<EMAIL>>[[KnifeInsMail]] {{Pansophy: FPC Port Assy has finished final inspection.}} <<EMAILSUBJ>> |

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| Step No. | Instructions | Data Input |
| LOGISTICS |
| 16a | Upload pictures of finished assembly | [[FPCTSN3]] <<FPCTSN>>[[LogTime]] <<TIMESTAMP>>[[LogFile]] <<FILEUPLOAD>> |
| 16b | Return to inventory | [[LogTech]] <<SRF>>[[LogComm]] <<COMMENT>> |