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| Traveler Title | VHOM Waveguide.Fabrication Traveler |
| Traveler Abstract | Stamping and welding Niobium parts to make EIC 197 Crab Prototype VHOM Waveguide |
| Traveler ID | EICCRB-FAB-VHOM-EBW |
| Traveler Revision  | R1 |
| Traveler Author | SHANMUGASUNDARAM,SHYAMALA |
| Traveler Date | 11-Feb-25 |
| NCR Informative Emails | SHANMUG, AREILLY, MOSBY,KDAVIS |
| NCR Dispositioners | HUQUE, SHANMUG, BUTTLES |
| D3 Emails | HUQUE, SHANMUG, BUTTLES, KDAVIS, GEORGED,MOSBY, AREILLY |
| Approval Names | S. SHANMUGASUNDARAM | K. DAVIS | J. 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. |
| [JL0140290](https://misportal.jlab.org/jlabDocs/documents/versions/197302/download) | [JL0136184](https://misportal.jlab.org/jlabDocs/documents/versions/178317/download) | [JL0140929](https://misportal.jlab.org/jlabDocs/documents/versions/197302/download) | [JL0140289](https://misportal.jlab.org/jlabDocs/documents/versions/177140/download) | [JL0136185](https://misportal.jlab.org/jlabDocs/documents/versions/178324/download) |
| [JL0129149](https://misportal.jlab.org/jlabDocs/documents/versions/185651/download) | [JL0135207](https://misportal.jlab.org/jlabDocs/documents/versions/180558/download) | [JL0141208](https://misportal.jlab.org/jlabDocs/documents/versions/179414/download) | [JL0141209](https://misportal.jlab.org/jlabDocs/documents/versions/176866/download) | [JL0136186](https://misportal.jlab.org/jlabDocs/documents/versions/184198/download) |
| [JL0140820](https://misportal.jlab.org/jlabDocs/documents/versions/188420/download) | [JL0148688](https://misportal.jlab.org/jlabDocs/documents/versions/189099/download) | [11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download) | [JL0127968](https://misportal.jlab.org/jlabDocs/documents/versions/165233/download) | [JL0132924](https://misportal.jlab.org/jlabDocs/documents/versions/184471/download) |
| [JL0171267](https://misportal.jlab.org/jlabDocs/documents/versions/201766/download) | [JL0171268](https://misportal.jlab.org/jlabDocs/documents/versions/201735/download) | [Fabrication Plan](https://jeffersonlab.sharepoint.com/%3Ap%3A/r/sites/EICPartnerProject-TJNAF/Accelerator/RF%20Systems/Cryomodules/197%20MHz%20DVC/Cavity%20Fabrication%20Files/Fabrication%20Plans/VHOM%20Waveguide%20Fabrication%20Plan.pptx?d=w0a11fca551c04807bf613a55a81b8aee&csf=1&web=1&e=dychDT) | [SRF-MSPR-CHEM-NB-ACID-R1](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-261723/SRF-MSPR-CHEM-NB-ACID-R1.pdf) | [SRF-MSPR-CHEM-FBH-DEGR-R1](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-261899/SRF-MSPR-CHEM-FBH-DEGR-R1.pdf) |

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

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

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| **STEPS** | **WORK CENTER AREAS** | **ACTIONS** |
| 1 | MACHSHOP | Part Forming |
| 2 | MACHSHOP | Part Machining |
| 3 | CHEM | BCP |
| 4 |  |  |
| 5 | EBW | EBW |
| 6 | CMA | Leak Check |
| 7 | MACHSHOP | Part Machining |
| 8 | MACHSHOP | Part Machining |
| 9 | CHEM | DEGR |
| 10 | INSP | CMM |
| 11 | CHEM | BCP |
| 12 | CHEM | BCP |
| 13 | CHEM | BCP |
| 14 | CHEM | BCP |
| 15 | EBW | EBW |
| 16 | CMA | Leak Check |
| 17 | CHEM | BCP |
| 18 | EBW | EBW |
| 19 | CMA | Leak Check |
| 20 | MACHSHOP | Part Machining |
| 21 | CHEM | DEGR |
| 22 | INSP | CMM |
| 23 | INSP | Acceptance Check |

 | [[VWGFASN]] <<SN>> |
| 1 | Form two units of JL0140290 and two units of JL0140289 using JL0127968 as the forming die. Use 4.17mm Nb Sheet of appropriate dimension.Upload any relevant images/files. | [[VWGFormTech]] <<SRF>>[[VWGFormTime]] <<TIMESTAMP>>[[VWGFormComment]] <<COMMENT>>[[VWGFormFile]] <<FILEUPLOAD>> |

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| Step No. | Instructions | Data Input |
| 2 | Use machining fixture JL0132924 to machine weld preps on JL0140290 and JL0140289.Upload any relevant images/files. | [[VWGFormMachTech]] <<SRF>>[[VWGFormMachTime]] <<TIMESTAMP>>[[VWGFormMachComment]] <<COMMENT>>[[VWGFormMachFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 3 | Perform 15 Microns BCP on both stamped pieces of JL0140290 and JL0140289.Upload any relevant images/files. | [[VWGFormBCPTech]] <<SRF>>[[VWGFormBCPTime]] <<TIMESTAMP>>[[VWGFormBCPComment]] <<COMMENT>>[[VWGFormBCPFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 4 | EBW two units of JL0140290 to make JL0136184 using JL0140820 as the EBW fixture.Upload any relevant images/files. | [[VWGINSN]] <<SN>>[[VWGInEBWTech]] <<SRF>>[[VWGInEBWTime]] <<TIMESTAMP>>[[VWGInEBWComment]] <<COMMENT>>[[VWGInEBWFile]] <<FILEUPLOAD>> |
| 5 | EBW two units of JL0140289 to make JL0136185 using JL0140820 as the EBW fixture.Upload any relevant images/files. | [[VWGOUTSN]] <<SN>>[[VWGOutEBWTech]] <<SRF>>[[VWGOutEBWTime]] <<TIMESTAMP>>[[VWGOutEBWComment]] <<COMMENT>>[[VWGOutEBWFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 6 | Perform intermediate leak check of JL0136184 and JL0136185 using the Vendor Standard Helium Leak Check Procedure ([11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download)).Describe the results of the leak check.Upload any relevant images/files. | [[VWGInOutLeakTech]] <<SRF>>[[VWGInOutLeakTime]] <<TIMESTAMP>>[[VWGInOutLeakComment]] <<COMMENT>>[[VWGInOutLeakFile]] <<FILEUPLOAD>> |
|  | Email the TR to move the welded parts to the machine shop for further machining. | [[EmailTRMoveVWGInOutWeld]] {{SHANMUG}} <<EMAIL>>[[EmailTRMoveVWGInOutWeld]] {{Attention: VHOM Traveler Request}} <<EMAILSUBJ>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 7 | Using machining fixture JL0171267, machine weld preps for both sides of JL0136184. Enter Job Number in the traveler.Upload any relevant images/files. | [[VWGInMachTech]] <<SRF>>[[VWGInMachTime]] <<TIMESTAMP>>[[VWGInMachJobNumber]] <<INTEGER>>[[VWGInMachComment]] <<COMMENT>>[[VWGInMachFile]] <<FILEUPLOAD>> |
| 8 | Using machining fixture JL0171268, machine weld preps for both sides of JL0136185. Enter Job Number in the traveler.Upload any relevant images/files. | [[VWGOutMachTech]] <<SRF>>[[VWGOutMachTime]] <<TIMESTAMP>>[[VWGOutMachJobNumber]] <<INTEGER>>[[VWGOutMachComment]] <<COMMENT>>[[VWGOutMachFile]] <<FILEUPLOAD>> |
|  | Email TR to send machined part to CMM.  | [[Email TR VWGInOutWeldments CMM Move]] {{SHANMUG}} <<EMAIL>>[[Email TR VWGInOutWeldments CMM Move]] {{Attention: VHOM Traveller Machine Shop to CMM Move}} <<EMAILSUBJ>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 9 | Degrease JL0136184and JL0136185 using the procedure SRF-MSPR-CHEM-FBH-DEGR-R1. | [[VWGInOutWeldmentsDgrsTech]] <<SRF>>[[VWGInOutWeldmentsDgrsTime]] <<TIMESTAMP>>[[VWGInOutWeldmentsDgrsComm]] <<COMMENT>>[[VWGInOutWeldmentsDgrsFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 10 | Perform intermediate CMM on JL0136184 and JL0136185.Upload any relevant images/files. | [[VWGInOutWeldmentsCMMTech]] <<SRF>>[[VWGInOutWeldmentsCMMTime]] <<TIMESTAMP>>[[VWGInOutWeldmentsCMMComment]] <<COMMENT>>[[VWGInOutWeldmentsCMMFile]] <<FILEUPLOAD>> |
|  | Send part to BCP. |  |

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| **Step No** | **Instructions** | **Data Inputs** |
| 11 | Perform 15 Micron BCP (on weld regions only) on JL0136184 and JL0136185. Upload any relevant images/files. | [[VWGInOutWeldmentsBCPTech]] <<SRF>>[[VWGInOutWeldmentsBCPTime]] <<TIMESTAMP>>[[VWGInOutWeldmentsBCPComment]] <<COMMENT>>[[VWGInOutWeldmentsBCPFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 12 | Perform 15 Micron BCP on JL0140929 (weld regions only) using the SRF-MSPR-CHEM-NB-ACID-R1 procedure. Upload any relevant images/files. | [[VWGTransitionBCPTech]] <<SRF>>[[VWGTransitionBCPTime]] <<TIMESTAMP>>[[VWGTransitionBCPComment]] <<COMMENT>>[[VWGTransitionBCPFile]] <<FILEUPLOAD>> |
| 13 | Perform 15 Micron BCP on part JL0129149 using the SRF-MSPR-CHEM-NB-ACID-R1 procedure. Upload any relevant images/files. | [[VWGFlangeBCPTech]] <<SRF>>[[VWGFlangeBCPTime]] <<TIMESTAMP>>[[VWGFlangeBCPComment]] <<COMMENT>>[[VWGFlangeBCPFile]] <<FILEUPLOAD>> |
| 14 | Perform 15 Micron BCP on part JL0135207 using the SRF-MSPR-CHEM-NB-ACID-R1 procedure. Upload any relevant images/files. | [[VWGDishTransitionBCPTech]] <<SRF>>[[VWGDishTransitionBCPTime]] <<TIMESTAMP>>[[VWGDishTransitionBCPComment]] <<COMMENT>>[[VWGDishTransitionBCPFile]] <<FILEUPLOAD>> |
|  | Send the three parts to EBW. |  |

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| **Step No** | **Instructions** | **Data Inputs** |
| 15 | EBW JL0136185, JL0129149 and JL0135207 to make weldment JL0141208.Use JL0148688 as the welding fixture for this weldment. Upload any relevant images/files. | [[VWGFIRSTSN]] <<SN>>[[VWGFirstStageEBWTech]] <<SRF>>[[VWGFirstStageEBWTime]] <<TIMESTAMP>>[[VWGFirstStageEBWComment]] <<COMMENT>>[[VWGFirstStageEBWEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFirstStageEBWEmail]] {{VHOM Traveler First Stage EBW Update}} <<EMAILSUBJ>>[[VWGFirstStageEBWFile]] <<FILEUPLOAD>> |
|  | Send welded part for intermediate leak check. |  |

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| **Step No** | **Instructions** | **Data Inputs** |
| 16 | Perform intermediate leak check of JL0141208 using the Vendor Standard Helium Leak Check Procedure ([11141-S-0033](https://misportal.jlab.org/jlabDocs/documents/70285/download)).Describe the results of the leak check.Upload any relevant images/files. | [[VWGFirstStageLeakTech]] <<SRF>>[[VWGFirstStageLeakTime]] <<TIMESTAMP>>[[VWGFirstStageLeakComment]] <<COMMENT>>[[VWGFirstStageLeakEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFirstStageLeakEmail]] {{VHOM Traveler Leak Check First Stage Update}} <<EMAILSUBJ>>[[VWGFirstStageLeakFile]] <<FILEUPLOAD>> |
|  | Send part for BCP. |  |

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| **Step No** | **Instructions** | **Data Inputs** |
| 17 | Do BCP on JL0141208 (weld regions only).Upload any relevant images/files. | [[VWGFirstStageBCPTech]] <<SRF>>[[VWGFirstStageBCPTime]] <<TIMESTAMP>>[[VWGFirstStageBCPComment]] <<COMMENT>>[[VWGFirstStageBCPFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 18 | EBW JL0136184, JL0140929 and JL0141208 to make weldment JL0141209.Use JL0148688 as welding fixture for this weldment.Upload any relevant images/files. | [[VWGFINALSN]] <<SN>>[[VWGFinalStageEBWTech]] <<SRF>>[[VWGFinalStageEBWTime]] <<TIMESTAMP>>[[VWGFinalStageEBWComment]] <<COMMENT>>[[VWGFinalStageEBWEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFinalStageEBWEmail]] {{VHOM Traveler Final Stage EBW Update}} <<EMAILSUBJ>>[[VWGFinalStageEBWFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 19 | Perform final leak check on JL0141209.Upload any relevant images/files. | [[VWGFinalStageLeakTech]] <<SRF>>[[VWGFinalStageLeakTime]] <<TIMESTAMP>>[[VWGFinalStageLeakComment]] <<COMMENT>>[[VWGFinalStageLeakFile]] <<FILEUPLOAD>> |
|  | Email TR to move part to machine shop for machining.Upload any relevant images/files. | [[VWGFinalStageEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFinalStageEmail]] {{Attention: VHOM Traveler Move}} <<EMAILSUBJ>>[[VWGFinalStageFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 20 | Machine transition piece to end dish per drawing no. JL0136186.Upload any relevant images/files. | [[VWGFinalStageMachTech]] <<SRF>>[[VWGFinalStageMachTime]] <<TIMESTAMP>>[[VWGFinalStageMachComment]] <<COMMENT>>[[VWGFinalStageMachEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFinalStageMachEmail]] {{VHOM Traveler Final Machining Update}} <<EMAILSUBJ>>[[VWGFinalStageMachFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 21 | Degrease JL0136186 using the procedure SRF-MSPR-CHEM-FBH-DEGR-R1. | [[VWGFinalStageDgrsTech]] <<SRF>>[[VWGFinalStageDgrsTime]] <<TIMESTAMP>>[[VWGFinalStageDgrsComment]] <<COMMENT>>[[VWGFinalStageDgrsFile]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 22 | Perform final CMM on JL0136186.Upload any relevant images/files. | [[VWGFinalStageCMMTech]] <<SRF>>[[VWGFinalStageCMMTime]] <<TIMESTAMP>>[[VWGFinalStageCMMComment]] <<COMMENT>>[[VWGFinalStageCMMEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFinalStageCMMEmail]] {{VHOM Traveller Final CMM Update}} <<EMAILSUBJ>>[[VWGFinalStageCMMEmail]] <<FILEUPLOAD>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 23 | Check Acceptance of Part.Upload any relevant images/files. | [[VWGFinalComment]] <<COMMENT>>[[VWGFinalEmail]] {{SHANMUG}} <<EMAIL>>[[VWGFinalEmail]] {{VHOM Traveller Final Update}} <<EMAILSUBJ>>[[VWGFinalEmail]] <<FILEUPLOAD>> |