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| **Traveler Title** | Recycled Waveguide & Waveguide Window Weldment Inspection | | | |
| **Traveler Abstract** | This traveler is for inspection of the 12 GeV upgrade waveguides and waveguide window weldment. It includes a visual inspection before and after welding. Also, it includes a dimensional inspection. | | | |
| **Traveler ID** | C100R-CAV-INSP-WGD-RCYC | | | |
| **Traveler Revision** | R2 | | | |
| **Traveler Author** | Aaron DeKerlegand | | | |
| **Traveler Date** | 9-Feb-2022 | | | |
| **NCR Emails** | ganey, scott, forehand | | | |
| **Approval Names** | Aaron DeKerlegand | Scott Williams | Tiffany Ganey |  |
| **Approval Signatures** |  |  |  |  |
| **Approval Date** |  |  |  |  |
| **Approval Title** | Author | 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. | | | |
| 12 GeV Waveguide Assembly, [CRM1207070-0000](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41252/CRM1207070-0000%5B1%5D.pdf) | Large Waveguide Flange, [203047](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41253/203047%20REV.2%5B1%5D.pdf) | Small Waveguide Flange, [115120-1007](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41254/115120-1007%5B1%5D.pdf) | [Extent of Copper Plating Drawing](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41255/Copper-Plating%5B1%5D.pdf) | [Cleaning Procedure for the HTB Warm Waveguides](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41256/Cleaning%20Procedure%20for%20the%20HTB%20Warm%20Waveguides.docx) |
| Cleaning and Handling of U.H.V. Components, [22632-S-001](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41257/22632-S-001%5B1%5D.pdf) | Helium Leak Test Procedure for UHV Components, [22634-S-001](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41258/22634-S-001%5B1%5D.pdf) | Waveguide Copper Plating Specification, [115070-1001-RevD](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41259/115070-1001RevD%5B1%5D.pdf) | [JL0076419-A-C100 WELD WINDOW TO WAVEGUIDE](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-236375/JL0076419-A-C100%20WELD%20WINDOW%20TO%20WAVEGUIDE.pdf) | [JL0076778-A-MODIFIED ADAPTER WINDOW ASSEMBLY](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-236376/JL0076778-A-MODIFIED%20ADAPTER%20WINDOW%20ASSEMBLY.pdf) |

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| **Revision Note** |  |
| R1 | Initial release of this Traveler. |
| R2 | New step added. Step 4 final inspection added for window to waveguide weld assembly. Note – latest drawings JL0076419 and JL0076778 have been added as references in traveler. |

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| **Step No.** | **Instructions** | **Data Input** |
| 1 | **Note**: Follow the requirements of [22632-S-001](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-41257/22632-S-001%5B1%5D.pdf) (including wearing gloves) at all times when handling these components. Make sure that the faces of the flanges are protected from handling damage.  **Note**: For this entire traveler, if any of the inspection items in this traveler are not as they should be, please generate either a D3 or an NCR, based on the inspector's judgment.  Enter technician name:  Enter date:  Enter serial number of waveguide being inspected: | [[InspectionTech]] <<SRF>>  [[InspectionDate]] <<TIMESTAMP>>  [[WGDSN]] <<WGDSN>>  [[VisualExamStart]] <<TIMESTAMP>>  [[WGDCouponNo]] <<FLOAT>>  [[WGDRadTag]] <<FLOAT>> |
| 2 | Upon receiving of Waveguide/Window subassembly, perform a leak check according to Spec. 11141-S-0029A. Leak rate should be less than 1 x 10-10 atm cc/sec of helium. Use appropriate tooling to ensure the bellows are not crushed. Leaktest should be performed as a subassembly as removed from module, allowing technician to leaktest both window & waveguige in one setup if possible.  Note: Radcon’s involvement will be required when handling & relocating any tagged hardware. | [[LeakCheckTech]] <<SRF>>  [[LeakCheckDate]] <<TIMESTAMP>>  [[LeakCheckPassed]]<<YESNO>>  [[LeakCheckComment]] <<COMMENT>>  [[LeakCheckFiles]] <<FILEUPLOAD>>  [[LeakCheckStart]] <<TIMESTAMP>>  [[LeakCheckEnd]] <<TIMESTAMP>> |

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| **Step No.** | **Instructions** | **Data Input** |
| 3 | **INITIAL INSPECTION**  **Note – This inspection page is for waveguide only (before waveguide weld assembly).**  **After waveguide is disassembled from cryomodule a seal imprint will be present on the small flange. Small flange will require rework/machining. The small flange will be inspected on final page of traveler after rework occurs.** | [[Tech1]] <<SRF>>  [[Date1]] <<TIMESTAMP>>  [[Comment1]] <<COMMENT>>  [File1]] <<FILEUPLOAD>> |
| Check bellows for structural integrity (kinks in metal). Verify the metal is not kinked, crimped, or damaged. **Are bellows okay?** | [[bellows1]] <<YESNO>> |
| Copper plating must be continuous and uniform, without blisters, flaking, gouges or other damage. Also, there should be no foreign material (fingerprints, excessive dust, oil traces, etc) on RF-exposed surfaces. **Copper plating okay?** | [[Plating1]] <<YESNO>> |
| Check knife edge on large flange carefully. There should be no damage at all (including burrs, scratches, nicks). *Damage should be noted, but NCR is not required. This section of flange shall be welded to window assembly and re-inspected at later date.* **Knife edge okay?** | [[KnifeEdge1]] <<YESNO>> |
| Check o-ring groove on large flange for scratches, dings, or any other damage. **O-ring groove okay?** | [[oring1]] <<YESNO>> |
| There should be no unusual discoloration to the base material, especially around the welds. No unusual discoloration to copper other than minor oxidation. **Coloration okay?** | [[Coloration1]] <<YESNO>> |
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| **Step No.** | **Instructions** | **Data Input** |
| 4 | **FINAL INSPECTION – Weld Window to Waveguide assy**  **DWG # JL0076419**  Note – This traveler page is post welding adapter window assembly and after small flange rework/machining.  **\*Record serial number of modified adapter window assembly.** | [[Tech2]] <<SRF>>  [[Date2]] <<TIMESTAMP>>  [[WINSN]] <<WINSN>>  [[Comment2]] <<COMMENT>>  [File2]] <<FILEUPLOAD>> |
| Check bellows for structural integrity (kinks in metal). Verify the metal is not kinked, crimped, or damaged. **Are bellows okay?** | [[bellows2]] <<YESNO>> |
| Copper plating must be continuous and uniform, without blisters, flaking, or other damage. There should be no foreign material (fingerprints, excessive dust, oil traces, etc) on RF-exposed surfaces. **Copper plating okay?** | [[Plating2]] <<YESNO>> |
| Visually check knife edge on modified adapter window assembly for burrs, dings, dents, etc. **Knife edge okay?** | [[KnifeEdge2]] <<YESNO>> |
| Check o-ring groove on large flange for scratches, dings, or any other damage. **O-ring groove okay?** | [[oring2]] <<YESNO>> |
| There should be no unusual discoloration to the base material, especially around the welds. No unusual discoloration to copper other than minor oxidation. **Coloration okay?** | [[Coloration2]] <<YESNO>> |
| Check small flange for damage, scratches, pits etc**. Small flange okay?** | [[Smallflange2]] <<YESNO>> |
|  | Measure the small flange to check flatness with the CMM.  DWG#CRM1207070-0000 Flatness tolerance .003”  **Small flange flatness within tolerance?** | [[Measurement1]] <<FLOAT>>  [[Flatness1]] <<YESNO>> |
|  | Check surface finish of small flange with a profilometer.  DWG#CRM1207070-0000 Finish 16 u inch or smoother.  **Surface finish within tolerance?** | [[Measurement2]] <<FLOAT>>  [[Finish2]] <<YESNO>> |