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| Traveler Title | Recycled Waveguide Inspection - 12 GeV Upgrade Waveguides | | | |
| Traveler Abstract | This inspection traveler is for the 12 GeV Upgrade waveguides. An inspection of the waveguides shall be performed in accordance with the steps below. | | | |
| Traveler ID | P1-INSP-WGD-RCYC | | | |
| Traveler Revision | R1 | | | |
| Traveler Author | S. Williams | | | |
| Traveler Date | 2-Sep-20 | | | |
| NCR Informative Emails | areilly | | | |
| NCR Dispositioners | scott,zhao | | | |
| D3 Emails | areilly,scott,zhao | | | |
| Approval Names | S. Williams | L. Zhao | A. Reilly |  |
| Approval Signatures |  |  |  |  |
| Approval Dates |  |  |  |  |
| 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) |  |  |

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| Revision Note |  |
| R1 | Initial release of this 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 initial 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 | Enter technician name:  Enter date:  Visually check outer conductor. Verify the following: | [[OuterConductorTech]] <<SRF>>  [[OuterConductorDate]] <<TIMESTAMP>> |
| * Surface finish of part is good; i.e., interior and exterior surfaces should be smoothly finished with no gouges or burrs in material | [[SurfaceFinishOk]] <<YESNO>> |
| * Small Flange seal surface requires additional machining to rework serpentine seal surface area only, leaving all existing copper plating on face surface. (Material removal not to exceed .005”) | [[Maching Required]] <<YESNO>> |
| * Copper plating must be continuous and uniform, without blisters, flaking, gouges or other damage. Use a boroscope to inspect any questionable areas on the inside of the waveguide. | [[CopperPlatingOk]] <<YESNO>> |
| * + Note: Small flange seal surface resurfacing shall be performed using JLAB Procedure # XXXXXXXXXX | [[MachiningTech]] <<SRF>>  [[Machining]] <<TIMESTAMP>> |
| * There should be no unusual discoloration to the base material, especially around the welds. There should be no discoloration to the copper plating other than minor spots of oxidation. | [[ColorationOk]] <<YESNO>> |
| * No copper on surfaces that should not be plated | [[SurfacesOk]] <<YESNO>> |
| * Examine the knife edge on the MDC flange carefully. There should be no damage at all (including burrs, scratches, nicks, or foreign material) to the knife edge. | [[KnifeEdgeOk]] <<YESNO>> |
| * There should be no damage (including scratches, nicks, or foreign material) to sealing surface on cold flange. | [[SealingSurfaceOk]] <<YESNO>> |
| * There should be no foreign material (finger prints, excessive dust, oil traces, etc) on RF-exposed surfaces (the interior of the part and the flange faces). | [[RFSurfacesOk]] <<YESNO>> |
| * Visually inspect the bellows convolutions. Check for structural integrity (kinks in metal). Some of the bellows will have a permanent set (a reentrant shape from setting the waveguide length during fabrication). As long as the metal is not kinked, crimped, etc., bellows are okay. | [[BellowsConvolutionsOk]] <<YESNO>> |
| Make a note in the comment field for any damage. Use a boroscope and/or camera to take a picture of any damage (or questionable areas) and attach file(s). | [[DamageFiles]] <<FILEUPLOAD>>  [[DamageComment]] <<COMMENT>> |

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| Step No. | Instructions | | | | Data Input | |
| 4 | Verify the dimensions shown below. | | | | [[DimensionalTech]] <<SRF>>  [[DimensionalDate]] <<TIMESTAMP>>  [[DimensionalCheckStart]] <<TIMESTAMP>> | |
| Dimension | Nominal | Tolerance | Drawing | |  |
| Relaxed length of waveguide | 7.73 in | ± 0.3 in |  | | [[RelaxedLenDimOk]] <<YESNO>> |
| Double flange seal groove | As shown on drawing | 0.015 in | 203047 | | [[FlgSealDimOk]] <<YESNO>> |
| Small flange thickness measured at midpoint of each side | As shown on drawing | 0.050 in | 115120-1007 Rev D | | [[FlangeThickDimOk]] <<YESNO>> |
| Surface finish on small flange | As shown on drawing (16  inch) |  | CRM-120-7070-0000 | | [[SurfaceFinishFlgOk]] <<YESNO>> |
| Flatness of small flange | As shown on drawing (0.003) |  |  | | [[FlatnessOk]] <<YESNO>> |
| Describe any discrepancies in the comment field. | | | [[DimensionalComment]] <<COMMENT>>  [[CMM\_ProgramTitle]] <<COMMENT>>  [[DimensionalFiles]] <<FILEUPLOAD>>  [[DimensionalCheckEnd]] <<TIMESTAMP>> | | |
| 5 | Repackage items in QC lab placing lint free wipes and flange covers on each flange. Place assembly in heavy-duty poly bag and store in designated location. | | | [[RepackageTech]] <<SRF>>  [[RepackageDate]] <<TIMESTAMP>>  [[RepackageLocation]] <<COMMENT>>  [[RepackageFiles]] <<FILEUPLOAD>> | | |