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| Traveler Title | ER5C (CEBAF 75 MV Cryomodule Upgrade) VTA HOM Survey |
| Traveler Abstract | This traveler documents the VTA HOM survey of ER5C 5-cell cavities |
| Traveler ID | ER5C-VTA-HOM |
| Traveler Revision  | R1 |
| Traveler Author | P. Owen |
| Traveler Date | 10-Mar-2025 |
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| 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. |
| [ER5C HOM Acceeptance Criteria](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-299348/ER5C-FM-VTA-HOM-PROC-R1.xlsm) |  |  |  |  |
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| Revision Note |  |
| R1 | Initial release of this Traveler.  |

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| Step No. | Instructions | Data Input |
| 1 | Input ER5C CEBAF 5-cell cavity ID. | [[CAVSN]] <<CAVSN>>[[SpecialHandling]] <<COMMENT>> |
| 2 | Record Test Date, Dewar No, Top Plate ID. | [[TestDate]] <<TIMESTAMP>>[[Dewar]]{{3,4,5,7,8}} <<SELECT>>[[VTATSSN]]<<TEXT>> |
| 3 | Record cavity vacuum pressure, if so instrumented. If during cooling down a lambda leak of 5x10-6 mbar or greater at 2.07K is identified:* choose option No for Cavity Vacuum OK

record pertinent information in the Cavity Vacuum Comment | [[CavityVacuum]] <<SCINOT>> (mbar)[[CavityVacuumOK]] <<YESNO>>[[CavityVacuumComment]] <<COMMENT>> |
| 4 | Record Dewar helium bath liquid level, temperature and Dewar pressure. Do not continue unless Dewar LHe level is above the end group. * Start cavity testing at (29+/-0.1) Torr which correspond to about 2.07K.
 | [[DewarLHeLevelcm]] <<FLOAT>>(cm)[[DewarTempK]] <<FLOAT>>(K)[[DewarPressureTorr]] <<FLOAT>>(Torr) |
| 5 | 1. Connect a 4-port network analyzer to the cavity

Port 1 – FPCPort 2 – FP with amplifier1. Connect the analyzer to the instrument network network port.
2. Run the HOM survey LabView program from one of the production computers. Connections and instructions can be found on the front panel of the VI.
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| 6 | * At 2.07K, measure key HOM frequencies and QL per HOM Test Procedure. Pass/fail criterion: Loaded Qs (or QL externals), which are less than the listed values in the Excel template. CavID HOM Survey DD-MM-YYYY TEMPLATE.xlsx will be acceptable.
 | [[TestOperatorHOMs]] <<VTAOPS>>[[TestOperatorHOMs\_Other]] <<VTAOPS>> |
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| Step No. | Instructions | Data Input |
| 7 | Record the cavity mode frequencies at the right (passbands). Example of cavity mode frequencies: |  |
| 1\_5Pi 1454.720 MHz | [[Freq\_1\_5Pi]] <<FLOAT>>(MHz) |
| 2\_5Pi 1466.088 MHz | [[Freq\_2\_5Pi]] <<FLOAT>>(MHz) |
| 3\_5Pi 1480.413 MHz | [[Freq\_3\_5Pi]] <<FLOAT>>(MHz) |
| 4\_5Pi 1492.711 MHz | [[Freq\_4\_5Pi]] <<FLOAT>>(MHz) |
| 5\_5Pi 1497.388 MHz | [[Freq\_5\_5Pi]] <<FLOAT>>(MHz) |
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| Upload Excel file with HOMs measurement data at 2.07K using file name as CavID\_ HOM survey dd-mmm-yy.xlsx | [[HOMsFile]] <<FILEUPLOAD>> |
| 8 | Notes on HOM measurements- record information about HOM measurements, performances, limitations and other observations.Eg. Unexpected noise in the data or issues with the software | [[HOMsComment]] <<COMMENT>> |
| Upload Excel file with processed HOM data, CavID\_ HOM processed\_dd-mmm-yy.xlsxThis file is generated using both the Mathematica Polfit script, and Excel macro HOM Processed\_dd-mmm-yy.xlsm. How to process the data is covered in CP-C100-CAV-VTRF-HOM-POLFIT.  | [[HOMProcessedFile]] <<FILEUPLOAD>> |
| 9 | Does the loaded-Q of the measured HOM meet acceptance criteria? | [[HOM meet acceptance criteria?]] <<YESNO>> |