Traveler Title	LCLS-HE Cryomodule Acceptance Testing in the LERF			
Traveler Abstract	LCLS-HE Cryomodule Testing. This traveler covers testing of the cryomodule after installation in the Low Energy Recirculator Facility. Assumes that the CM is cold at 2K.			
Traveler ID	L2HE-LERF-CM-ACTS			
Traveler Revision	R1			
Traveler Author	M. Drury			
Traveler Date	23-Sep-21			
NCR Informative Emails	areilly,drury,kwilson			
NCR Dispositioners	drury,fischer,forehand,powen,huque,hannesv,hogan			
D3 Emails	hogan,kwilson,drury,hogan			
Approval Names	M. Drury	G. Ciovati	J. Vennekate	J. Hogan
Approval Signatures				
Approval Dates				
Approval Title	Author	Reviewer	Reviewer	Project Manager

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.			
	Accelerator Operations Directive	OSP LCLS-II Acceptance Testing in the LERF	Minimum Acceptance Criteria	

Revision Note	
R1	Initial release of this Traveler.

The boxes below indicate which acceptance criteria is being met in PPU-202-TA0002 R1 Cavity Vertical Test Acceptance Criteria

Step No.	Instructions	Data Input
1	Record the Cryomodule serial number	[[CMSN]] <<CMSN>>
2	Record the Cavity SN's for each cavity position. (Note: Cavity 1-Supply side, Cavity 8-Return side)	[[CavSN1]] <<CAVSN>> [[CavSN2]] <<CAVSN>> [[CavSN3]] <<CAVSN>> [[CavSN4]] <<CAVSN>> [[CavSN5]] <<CAVSN>> [[CavSN6]] <<CAVSN>> [[CavSN7]] <<CAVSN>> [[CavSN8]] <<CAVSN>> [Pull the CAVSNs from the CST ASSY traveler]] <<NOTE>> [[IDsRecordedBy]] <<SRF>> [[TimeIDsRecorded]] <<TIMESTAMP>> [[TravOpenDate]] <<TIMESTAMP>> [[TravOpenBy]] <<SRF>> [[TestSummaries]] <<FILEUPLOAD>>

Step No	Instructions	Data Inputs
3	Record the Insulating Vacuum pressure as displayed in epics. Note any problems or concerns relating to the insulating vacuum in the comment block.	[[InsulatingVacInspector]] <<SRF>> [[InsulatingVacPreTestTime]] <<TIMESTAMP>> [[InsulatingVacPreTest]] <<SCINOT>> Step 22-2 [[InsulatingVacComments]] <<COMMENT>>
4	Record the Beam Line Vacuum pressure as displayed in epics. Note any problems or concerns relating to the beamline vacuum in the comment block.	[[BLVacInspector]] <<SRF>> [[BLVacPreTestTime]] <<TIMESTAMP>> [[BLVacPreTest]] <<SCINOT>> Step 22-1 [[BLVacComments]] <<COMMENT>>
5	Record the Coupler Vacuum Pressure as displayed in epics. Note any problems or concerns relating to the waveguide vacuums in the comment block.	[[CplrVacInspector]] <<SRF>> [[CplrVacPreTestTime]] <<TIMESTAMP>> [[CplrVac1PreTest]] <<SCINOT>> Step 22-3 [[WGVacComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
6	**Insulating Vacuum Leak Check:** Isolate the insulating vacuum from the pumping station after the cool down is complete and the cryomodule is stable in terms of pressure and liquid level. Monitor the insulating vacuum pressure for at least 1 week. Record start time, completion time and the vacuum pressure (in torr) at start and finish. **If, at the end of this test, the insulating Vacuum pressure is higher than 1E-6 torr, generate an NCR.**	[[InsVacTech1]] <<SRF>> [[InsVacLeakTstStartTime]] <<TIMESTAMP>> [[InsVacLeakTstStartPress]] <<SCINOT>> (torr) [[InsVacTech2]] <<SRF>> [[InsVacLeakTstStopTime]] <<TIMESTAMP>> [[InsVacLeakTstFinalPress]] <<SCINOT>> (torr) [[ElapseTimeInsVacLeakTst]] <<FLOAT>> (days) [[InsVacDelta]] <<SCINOT>> [[InsVacLeakTestComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
	High Power Checklist	
7	**Inspect all waveguide connections in the test cave.** All waveguide / sections must be in place with all connections secured. All bolt-holes on waveguide flanges must be secured. Each leg of the 1300 MHz system must be connected to an SSA output on the upstream end and to a FPC on the downstream end. Note any problems in the comment box. ****No waveguide that is capable of delivering RF power into the cave may be open. Waveguide must be terminated either by connection to cryomodule or by shorting plate or an appropriate load.** **The Vault must not be safed unless this step has been completed.****	[[WGInspector]] <<SRF>> [[WGInspectComp]] <<TIMESTAMP>> [[WGComments]] <<COMMENT>> [[WaveguideInspectPassed]] <<YESNO>>
8	**Inspect all RF heliax cable connections.** A proper connection means at least hand tightened and connected to the appropriate connector. Note any problems in the comment block. • All eight Ptrans cables are properly connected to the appropriate field probe connectors. • All RF Heliax cables hanging from RF patch panels 1A, 2A, 3A, 4A are properly connected. • All eight pairs of cable coming from the directional couplers are properly connected. • **** The Vault must not be safed until this inspection has been successfully completed.****	[[RFCableInspector]] <<SRF>> [[RFCableInspectComp]] <<TIMESTAMP>> [[RFCableComments]] <<COMMENT>> [[RFCableInspectPassed]] <<CHECKBOX>>
9	Verify that Decarad chassis is in place and connected Ensure that Geiger-Mueller tubes are connected and correctly positioned around cryomodule. Verify that all Decarad signals are live and updating in epics.	[[DecaRadInspector]] <<SRF>> [[DecaRadTime]]<<TIMESTAMP>> [[DecaRadComments]] <<COMMENT>>

	Stanndard arrangement for this type of cryomodule: • Channel 1 at Coupler for Cavity 1 • Channel 2 at Coupler for Cavity 2 • Channel 3 at Coupler for Cavity 3 • Channel 4 at Coupler for Cavity 4 • Channel 5 at Coupler for Cavity 5 • Channel 6 at Coupler for Cavity 6 • Channel 7 at Coupler for Cavity 7 • Channel 8 at Coupler for Cavity 8 • Channel 9 at Supply Side of Beamline as close to beam pipe as possible. • Channel 10 at Return Side of Beamline as close to beam pipe as possible..	
10	Record the **Cable, Coupler and Other Attenuation** values listed on the SRF Signal Calibration Screens for each cavity at the beginning of HPRF testing on a given cavity in a spreadsheet. Include Total Attenuation and Final Calibration Scale Factor. Revisit at any time a cavity is powered up. If any values change, record changes with dates	[[RFCableCalTech]] <<SRF>> [[RFCableCalComplete]] <<TIMESTAMP>> [[RFCableCalComments]] <<COMMENT>> [[RFCableCalibrationFile]] <<FILEUPLOAD>>

Step No	Instructions	Data Inputs
	High Power Checklist	
11	**Test Arc Detectors for Cavities 1-8.** Verify that each detector generates a fault and disables RF. Record whether the interlock is working correctly **(Good)** or not **(No)**. Note any problems in the Comment block ****Do Not Attempt to Supply High Power RF to Cavity if the Arc Detector and Interlock are not Functioning Correctly!****	[[ArcDetectorInspector]] <<SRF>> [[ArcDetectorTime]] <<TIMESTAMP>> [[Cav1ArcDetectorIntlkPassed]] <<YESNO>> [[Cav2ArcDetectorIntlkPassed]] <<YESNO>> [[Cav3ArcDetectorIntlkPassed]] <<YESNO>> [[Cav4ArcDetectorIntlkPassed]] <<YESNO>> [[Cav5ArcDetectorIntlkPassed]] <<YESNO>> [[Cav6ArcDetectorIntlkPassed]] <<YESNO>> [[Cav7ArcDetectorIntlkPassed]] <<YESNO>> [[Cav8ArcDetectorIntlkPassed]] <<YESNO>>
12	Use the Comment block to list any problems associated with Arc Detectors.	[[ArcDetectorIntlkComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
	High Power Checklist	
13	Test the Beamline Vacuum Interlock. Verify that a fault is generated and RF is disabled. Record whether the interlock is working correctly **Good (Yes)** or not **(No)**. **** Do Not Attempt to Supply High Power RF to any Cavity if the Beamline Vacuum Interlock is Not Working Properly ****	[[BLVacIntlkInspector]] <<SRF>> [[BLVacIntlkInspectTime]] <<TIMESTAMP>> [[BLVacIntlkPassed]] <<YESNO>>
14	Test the Coupler Vacuum Interlock. Verify that a fault is generated and RF is disabled. Record whether the interlock is working correctly **Good (Yes)** or not **(No)**. **** Do Not Attempt to Supply High Power RF to Cavity if the Waveguide Vacuum Interlock is Not Working Properly ****	[[CplrVacIntlkInspector]] <<SRF>> [[CplrVacIntlkInspectTime]] <<TIMESTAMP>> [[CplrVacIntlkPassed]] <<YESNO>>
15	Use the Comment block to list any problems associated with vacuum interlocks.	[[VacuumIntlkComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
	High Power Checklist	
16	**Test the Stepper Motor Temperature Interlocks** for Cavities 1-8. . Insure that each temperature sensor is functioning correctly. Verify that each interlock will generate a fault and disable tuner operation. Check off each working coupler temp interlock. **If any RTD is determined to be non functional, generate an NCR.** ****Do Not Attempt to operate a mechanical tuner if the temperature sensor and Interlock are not functioning correctly!****	[[StpMotorTempInspector]] <<SRF>> [[StpMtrTempIntlkChkTime]] <<TIMESTAMP>> [[C1StpMtrTempIntlkPassed]] <<YESNO>> [[C2StpMtrTempIntlkPassed]] <<YESNO>> [[C3StpMtrTempIntlkPassed]] <<YESNO>> [[C4StpMtrTempIntlkPassed]] <<YESNO>> [[C5StpMtrTempIntlkPassed]] <<YESNO>> [[C6StpMtrTempIntlkPassed]] <<YESNO>> [[C7StpMtrTempIntlkPassed]] <<YESNO>> [[C8StpMtrTempIntlkPassed]] <<YESNO>>
17	Use the Comment block to list any problems associated with the stepper motor temperature interlocks.	[[StpMtrTempIntlkComments]] <<COMMENT>>
18	**Test the Fundamental Power Coupler Temperature Interlocks** for Cavities 1-8. Insure that each temperature sensor is functioning correctly. Verify that each of the two interlock channels will generate a fault and disables RF. Check off each working coupler temp interlock. Note any problems in the comment block. **If any RTD is determined to be non functional, generate an NCR.** ****Do Not Attempt to Supply High Power RF to a cavity unless at least one of the Temperature Interlocks are functioning correctly!****	[[FPCTempInspector]] <<SRF>> [[CplrTempIntlkChkTime]] <<TIMESTAMP>> [[CplrTempIntlkComments]] <<COMMENT>> [[C1CplrTemp1IntlkPassed]] <<YESNO>> [[C1CplrTemp2IntlkPassed]] <<YESNO>> [[C2CplrTemp1IntlkPassed]] <<YESNO>> [[C2CplrTemp2IntlkPassed]] <<YESNO>> [[C3CplrTemp1IntlkPassed]] <<YESNO>> [[C3CplrTemp2IntlkPassed]] <<YESNO>> [[C4CplrTemp1IntlkPassed]] <<YESNO>> [[C4CplrTemp2IntlkPassed]] <<YESNO>> [[C5CplrTemp1IntlkPassed]] <<YESNO>> [[C5CplrTemp2IntlkPassed]] <<YESNO>>

		[[C6CplrTemp1IntlkPassed]] <<YESNO>> [[C6CplrTemp2IntlkPassed]] <<YESNO>> [[C7CplrTemp1IntlkPassed]] <<YESNO>> [[C7CplrTemp2IntlkPassed]] <<YESNO>> [[C8CplrTemp1IntlkPassed]] <<YESNO>> [[C8CplrTemp2IntlkPassed]] <<YESNO>>
19	Use the Comment block to list any problems associated with the Coupler temperature interlocks.	[[CplrTempIntlkProbComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
20	Complete the **Mechanical Tuner Range and Hysteresis** test for Cavities 1-8. Note any problems in the comment blocks. Verify that the mechanical tuner for cavity 1will tune through the range, **1.3 GHz +/- 20 kHz (cavity 1).** Verify that the mechanical tuners for cavities 2 – 8 will tune through the range, from **1299.535 MHz to 1300.020 MHz.** Record the frequency for each cavity at the beginning of test. Record minimum and maximum frequencies for each cavity Record any limit switch activation. Record final tuned frequency **If any cavity cannot be tuned through the specified ranges, create an NCR.**	[[C1StepperTestTech]] <<SRF>> [[C1StepperTestCompTime]] <<TIMESTAMP>> [[C2StepperTestTech]] <<SRF>> [[C2StepperTestCompTime]] <<TIMESTAMP>> [[C3StepperTestTech]] <<SRF>> [[C3StepperTestCompTime]] <<TIMESTAMP>> [[C4StepperTestTech]] <<SRF>> [[C4StepperTestCompTime]] <<TIMESTAMP>> [[C5StepperTestTech]] <<SRF>> [[C5StepperTestCompTime]] <<TIMESTAMP>> [[C6StepperTestTech]] <<SRF>> [[C6StepperTestCompTime]] <<TIMESTAMP>> [[C7StepperTestTech]] <<SRF>> [[C7StepperTestCompTime]] <<TIMESTAMP>> [[C8StepperTestTech]] <<SRF>> [[C8StepperTestCompTime]] <<TIMESTAMP>>
21	Use the Comment block to list any problems associated with the mechanical tuners	[[StepperTestComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
22	Record the requested information from the **Mechanical Tuner Range Test** in the table below.This data must also be recorded in the paper logbook. Use comment block on preceding page for details. Add NCR statement.	Criteria 14. Min and Max from table below. Note, different for Cav 1 and Cavs 2-8.

Cavity	Initial Frequency (MHz)	Min Frequency (MHz)	Low Limit Switch Activated?	Max Frequency (MHz)	High Limit Switch Activated?	Tuner Range (kHz)	Final Frequency (MHz)	File Upload
1	[[C1InitFreq]] <<FLOAT>>	[[C1StepMinFreq]] <<FLOAT>>	[[C1StepLoLimit]] <<YESNO>>	[[C1StepMaxFreq]] <<FLOAT>>	[[C1StepHiLimit]] <<YESNO>>	[[C1StepRange]] <<FLOAT>>	[[C1StepFinalFreq]] <<FLOAT>>	[[C1StepFile]] <<FILEUPLOAD>>
2	[[C2InitFreq]] <<FLOAT>>	[[C2StepMinFreq]] <<FLOAT>>	[[C2StepLoLimit]] <<YESNO>>	[[C2StepMaxFreq]] <<FLOAT>>	[[C2StepHiLimit]] <<YESNO>>	[[C2StepRange]] <<FLOAT>>	[[C2StepFinalFreq]] <<FLOAT>>	[[C2StepFile]] <<FILEUPLOAD>>
3	[[C3InitFreq]] <<FLOAT>>	[[C3StepMinFreq]] <<FLOAT>>	[[C3StepLoLimit]] <<YESNO>>	[[C3StepMaxFreq]] <<FLOAT>>	[[C3StepHiLimit]] <<YESNO>>	[[C3StepRange]] <<FLOAT>>	[[C3StepFinalFreq]] <<FLOAT>>	[[C3StepFile]] <<FILEUPLOAD>>
4	[[C4InitFreq]] <<FLOAT>>	[[C4StepMinFreq]] <<FLOAT>>	[[C4StepLoLimit]] <<YESNO>>	[[C4StepMaxFreq]] <<FLOAT>>	[[C4StepHiLimit]] <<YESNO>>	[[C4StepRange]] <<FLOAT>>	[[C4StepFinalFreq]] <<FLOAT>>	[[C4StepFile]] <<FILEUPLOAD>>
5	[[C5InitFreq]] <<FLOAT>>	[[C5StepMinFreq]] <<FLOAT>>	[[C5StepLoLimit]] <<YESNO>>	[[C5StepMaxFreq]] <<FLOAT>>	[[C5StepHiLimit]] <<YESNO>>	[[C5StepRange]] <<FLOAT>>	[[C5StepFinalFreq]] <<FLOAT>>	[[C5StepFile]] <<FILEUPLOAD>>

6	[[C6InitFreq]] <<FLOAT>>	[[C6StepMinFreq]] <<FLOAT>>	[[C6StepLoLimit]] <<YESNO>>	[[C6StepMaxFreq]] <<FLOAT>>	[[C6StepHiLimit]] <<YESNO>>	[[C6StepRange]] <<FLOAT>>	[[C6StepFinalFreq]] <<FLOAT>>	[[C6StepFile]] <<FILEUPLOAD>>
7	[[C7InitFreq]] <<FLOAT>>	[[C7StepMinFreq]] <<FLOAT>>	[[C7StepLoLimit]] <<YESNO>>	[[C7StepMaxFreq]] <<FLOAT>>	[[C7StepHiLimit]] <<YESNO>>	[[C7StepRange]] <<FLOAT>>	[[C7StepFinalFreq]] <<FLOAT>>	[[C7StepFile]] <<FILEUPLOAD>>
8	[[C8InitFreq]] <<FLOAT>>	[[C8StepMinFreq]] <<FLOAT>>	[[C8StepLoLimit]] <<YESNO>>	[[C8StepMaxFreq]] <<FLOAT>>	[[C8StepHiLimit]] <<YESNO>>	[[C8StepRange]] <<FLOAT>>	[[C8StepFinalFreq]] <<FLOAT>>	[[C8StepFile]] <<FILEUPLOAD>>

Step No	Instructions	Data Inputs
23	Complete the **Piezo Tuner Range and Hysteresis Test.** Record results in logbook. **If any piezo tuner is demonstrated to have a tuning range of less than 500 Hz, an NCR must be generated.**	[[C1PztTestTech]] <<SRF>> [[C1PztTestCompleteTime]] <<TIMESTAMP>> [[C1PztTestRange]] <<FLOAT>> (Hz) Criteria 15. For each cavity. [[C2PztTestTech]] <<SRF>> [[C2PztTestCompleteTime]] <<TIMESTAMP>> [[C2PztTestRange]] <<FLOAT>> (Hz) [[C3PztTestTech]] <<SRF>> [[C3PztTestCompleteTime]] <<TIMESTAMP>> [[C3PztTestRange]] <<FLOAT>> (Hz) [[C4PztTestTech]] <<SRF>> [[C4PztTestCompleteTime]] <<TIMESTAMP>> [[C4PztTestRange]] <<FLOAT>> (Hz) [[C5PztTestTech]] <<SRF>> [[C5PztTestCompleteTime]] <<TIMESTAMP>> [[C5PztTestRange]] <<FLOAT>> (Hz) [[C6PztTestTech]] <<USERNAME>> [[C6PztTestCompleteTime]] <<TIMESTAMP>> [[C6PztTestRange]] <<FLOAT>> (Hz) [[C7PztTestTech]] <<SRF>> [[C7PztTestCompleteTime]] <<TIMESTAMP>> [[C7PztTestRange]] <<FLOAT>> (Hz) [[C8PztTestTech]] <<SRF>> [[C8PztTestCompleteTime]] <<TIMESTAMP>> [[C8PztTestRange]] <<FLOAT>> (Hz) [[PztTestFile]] <<FILEUPLOAD>>

24	Use the Comment block to list any problems associated with the piezo tuners.	[[PztTunerTestComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
25	**Tune each of the Fundamental Power Coupler Qext's to 6E7.** Verify that the tunable range for each coupler is **1E7 – 8E7**, then tune to 6E7. **This measurement must be completed only after the Mechanical Tuner Range and Hysteresis Test is complete.** **If any FPC cannot be tuned to 6E7 or the range is less than specified above, an NCR must be generated.**	[[FPCTuneTech]] <<SRF>> [[TunedQextComplete]] <<TIMESTAMP>> [[TunedQextComments]] <<COMMENT>>

		CAV1	CAV2	CAV3	CAV4	CAV5	CAV6	CAV7	CAV8
	FPC Qext Minimum	[[FPCQEXT1L]] <<SCINOT>>	[[FPCQEXT2L]] <<SCINOT>>	[[FPCQEXT3L]] <<SCINOT>>	[[FPCQEXT4L]] <<SCINOT>>	[[FPCQEXT5L]] <<SCINOT>>	[[FPCQEXT6L]] <<SCINOT>>	[[FPCQEXT7L]] <<SCINOT>>	[[FPCQEXT8L]] <<SCINOT>>
	FPC Qext Maximum	[[FPCQEXT1U]] <<SCINOT>>	[[FPCQEXT2U]] <<SCINOT>>	[[FPCQEXT3U]] <<SCINOT>>	[[FPCQEXT4U]] <<SCINOT>>	[[FPCQEXT5U]] <<SCINOT>>	[[FPCQEXT6U]] <<SCINOT>>	[[FPCQEXT7U]] <<SCINOT>>	[[FPCQEXT8U]] <<SCINOT>>
	FPC Qext Final	[[FPCQEXT1F]] <<SCINOT>>	[[FPCQEXT2F]] <<SCINOT>>	[[FPCQEXT3F]] <<SCINOT>>	[[FPCQEXT4F]] <<SCINOT>>	[[FPCQEXT5F]] <<SCINOT>>	[[FPCQEXT6F]] <<SCINOT>>	[[FPCQEXT7F]] <<SCINOT>>	[[FPCQEXT8F]] <<SCINOT>>

26	Measure the **Cold Cavity Passband Frequencies** (in MHz). Measure the frequencies and Qext's for all nine passbands after tuning of the FPC Qext's. Record the frequency and Qext data in the logbook and in a spreadsheet. Upload the spreadsheet here. **This measurement should be completed only after the Mechanical Tuner Range and Hysteresis Test is complete and after the FPC's are tuned.**	[[PassBandTech]] <<SRF>> [[ColdTunedPassbandComp]] <<TIMESTAMP>> [[ColdTunedPassbandFile]] <<FILEUPLOAD>> [[ColdTunedPassbandComm]] <<COMMENT>>

Step No	Instructions	Data Inputs
27	**Complete the Electrical Verification of the Beam Position Monitor (BPM)** Check off each step as completed. Create a file containing test results and upload the file. **If any shorts or opens are detected, an NCR must be generated.** **If the difference in S21 between electrodes is> 1dB, an NCR must be generated.** Revise text to match Criteria 21.	[[BPMTestTech]] <<SRF>> [[BPMTestHiPotPassed]] << [[BPMTestTDRPassed]] << Mike D to review and possibly delete. [[S21TopBottomPassed]] <<YESNO>> [[S21TopRightPassed]] <<YESNO>> [[S21TopLeftPassed]] <<YESNO>> [[S21RightLeftPassed]] <<YESNO>> [[S21RightBottomPassed]] <<YESNO>> [[S21BottomLeftPassed]] <<YESNO>> Criteria 21 [[BPMTestComplete]] <<TIMESTAMP>> [[BPMTestFile]] <<FILEUPLOAD>> [[BPMTestComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
28	**Verify that the Magnets are without Shorts or Opens**. Hipot at 500V with <1uA under insulating vacuum, <5uA in ambient pressure. **An NCR must be generated for any magnet that does not pass this test.**	[[MagnetHipotTech]] <<SRF>> [[MagnetTestHiPotPass]] <<YESNO>> Step 20 [[MagnetTestHiPotComments]] <<COMMENT>>
29	**Complete the Magnet Test Procedure for the Quad, XCOR and YCOR magnets.** Check off each step as completed. Record the elapsed time for the 20A soak. Note any problems in the comment block **An NCR must be generated for any magnet that does not complete a one hour soak at 20A.**	[[MagnetTestTech]] <<SRF>> [[QuadMagSoak20AOneHrComp]] <<YESNO>> Step 20 [[XCorMagSoak20AOneHrComp]] <<YESNO>> [[YCorMagSoak20AOneHrComp]] <<YESNO>> [[QuadSoakTime20A]] <<FLOAT>> (hrs) [[XCorSoakTime20A]] <<FLOAT>> (hrs) [[YCorSoakTime20A]] <<FLOAT>> (hrs) [[MagnetTestComplete]] <<TIMESTAMP>> [[MagnetTestFile]] <<FILEUPLOAD>> [[MagnetTestComments]] <<COMMENT>>

Cavity 1		
Step No	**Instructions**	**Data Inputs**
30	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 1. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav1QextOperator]] <<SRF>> [[Cav1QextMeasTime]] <<TIMESTAMP>> [[Cav1QextFPC]] <<SCINOT>> [[Cav1QextFP]] <<SCINOT>> [[Cav1QextHOM1]] <<SCINOT>> Criteria 19 [[Cav1QextHOM2]] <<SCINOT>> [[Cav1QextMeasGradient]] <<FLOAT>>
31	Record the Maximum Gradient (Emax) for Cavity 1 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav1EmaxOperator]] <<SRF>> [[Cav1EmaxMeasTime]] <<TIMESTAMP>> [[Cav1Emax]] <<FLOAT>> (MV/m) [[Cav1EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
32	Record the gradient at which a successful One Hour Run was completed for Cavity 1. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav1OneHourRunOperator]] <<SRF>> [[Cav1OneHourRunTime]] <<TIMESTAMP>> [[Cav1Emaxop]] <<FLOAT>> (MV/m) [[Cav1OneHourRunFile]] <<FILEUPLOAD>> New yes/no field for >20.8 Criteria 4
33	Record the Field Emission Onset gradient for Cavity 1. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav1FEOperator]] <<SRF>> [[Cav1FEMeasTime]] <<TIMESTAMP>> [[Cav1FEOnset]] <<FLOAT>> (MV/m) [[Cav1FE50mR]] <<FLOAT>> [[Cav1FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav1FEFile]] <<FILEUPLOAD>>
34	The Maximum Useable Gradient is the highest available gradient that meets ~~one or more~~ of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient NCR statement. Add FE criteria.	[[Cav1MaxUseGradient]] <<FLOAT>> Critiera 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 1 using measurments made in the above steps. **An NCR must be generated for any cavity that has a Maximum Useable Gradient lower than 16 MV/m.**	
35	After completing the Q_0 measurement sequence for Cavity 1, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. Criteria 8 is for average. Remove this NCR statement. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav1QoOperator]] <<SRF>> [[Cav1QoMeasTime]] <<TIMESTAMP>> [[Cav1QoDesignGradient]] <<SCINOT>> [[Cav1RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav1QoMaxUseable]] <<SCINOT>> [[Cav1RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav1QoFile]] <<FILEUPLOAD>>
36	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav1PressureSensOperator]] <<SRF>> [[Cav1PressureSensTime]] <<TIMESTAMP>> [[Cav1PressureSensitivity]] <<FLOAT>> [[Cav1PressureSensFile]] <<FILEUPLOAD>>
37	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav1StaticLorentzOperator]] <<SRF>> [[Cav1StaticLorentzTime]] <<TIMESTAMP>> [[Cav1StaticLorentzCoeff]] <<FLOAT>> [[Cav1StaticLorentzFile]] <<FILEUPLOAD>>
38	Upload files containing any microphonics measurements for Cav 1. Add NCR statement.	[[Cav1MicrophonicsO Add yes/no field >> [[Cav1MicrophonicsT TAM Criteria 11 [[Cav1MicrophonicsFile]] <<FILEUPLOAD>>
39	Use the comment box to list any problems or anything unusual about the performance of Cavity 1.	[[Cav1HPRFComments]] <<COMMENT>>

Cavity 2		
Step No	**Instructions**	**Data Inputs**
40	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 2. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav2QextOperator]] <<SRF>> [[Cav2QextMeasTime]] <<TIMESTAMP>> [[Cav2QextFPC]] <<SCINOT>> [[Cav2QextFP]] <<SCINOT>> [[Cav2QextHOM1]] <<SCINOT>> [[Cav2QextHOM2]] <<SCINOT>> [[Cav2QextMeasGradient]] <<FLOAT>>
41	Record the Maximum Gradient (Emax) for Cavity 2 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav2EmaxOperator]] <<SRF>> [[Cav2EmaxMeasTime]] <<TIMESTAMP>> [[Cav2Emax]] <<FLOAT>> (MV/m) [[Cav2EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
42	Record the gradient at which a successful One Hour Run was completed for Cavity 2. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav2OneHourRunOperator]] <<SRF>> [[Cav2OneHourRunTime]] <<TIMESTAMP>> [[Cav2Emaxop]] <<FLOAT>> (MV/m) [[Cav2OneHourRunFile]] <<FILEUPLOAD>>
43	Record the Field Emission Onset gradient for Cavity 2. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav2FEOperator]] <<SRF>> [[Cav2FEMeasTime]] <<TIMESTAMP>> [[Cav2FEOnset]] <<FLOAT>> (MV/m) [[Cav2FE50mR]] <<FLOAT>> [[Cav2FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav2FEFile]] <<FILEUPLOAD>>
44	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav2MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 2 using measurments made in the above steps.	
45	After completing the Q_0 measurement sequence for Cavity 2, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav2QoOperator]] <<SRF>> [[Cav2QoMeasTime]] <<TIMESTAMP>> [[Cav2QoDesignGradient]] <<SCINOT>> [[Cav2RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav2QoMaxUseable]] <<SCINOT>> [[Cav2RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav2QoFile]] <<FILEUPLOAD>>
46	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav2PressureSensOperator]] <<SRF>> [[Cav2PressureSensTime]] <<TIMESTAMP>> [[Cav2PressureSensitivity]] <<FLOAT>> [[Cav2PressureSensFile]] <<FILEUPLOAD>>
47	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav2StaticLorentzOperator]] <<SRF>> [[Cav2StaticLorentzTime]] <<TIMESTAMP>> [[Cav2StaticLorentzCoeff]] <<FLOAT>> [[Cav2StaticLorentzFile]] <<FILEUPLOAD>>
48	Upload files containing any microphonics measurements for Cavity 2.	[[Cav2MicrophonicsOperator]] <<SRF>> [[Cav2MicrophonicsTime]] <<TIMESTAMP>> [[Cav2MicrophonicsFile]] <<FILEUPLOAD>>
49	Use the comment box to list any problems or anything unusual about the performance of Cavity 2.	[[Cav2HPRFComments]] <<COMMENT>>

Cavity 3		
Step No	**Instructions**	**Data Inputs**
50	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 3. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav3QextOperator]] <<SRF>> [[Cav3QextMeasTime]] <<TIMESTAMP>> [[Cav3QextFPC]] <<SCINOT>> [[Cav3QextFP]] <<SCINOT>> [[Cav3QextHOM1]] <<SCINOT>> [[Cav3QextHOM2]] <<SCINOT>> [[Cav3QextMeasGradient]] <<FLOAT>>
51	Record the Maximum Gradient (Emax) for Cavity 3 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav3EmaxOperator]] <<SRF>> [[Cav3EmaxMeasTime]] <<TIMESTAMP>> [[Cav3Emax]] <<FLOAT>> (MV/m) [[Cav3EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
52	Record the gradient at which a successful One Hour Run was completed for Cavity 3. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav3OneHourRunOperator]] <<SRF>> [[Cav3OneHourRunTime]] <<TIMESTAMP>> [[Cav3Emaxop]] <<FLOAT>> (MV/m) [[Cav3OneHourRunFile]] <<FILEUPLOAD>>
53	Record the Field Emission Onset gradient for Cavity 3. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav3FEOperator]] <<SRF>> [[Cav3FEMeasTime]] <<TIMESTAMP>> [[Cav3FEOnset]] <<FLOAT>> (MV/m) [[Cav3FE50mR]] <<FLOAT>> [[Cav3FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav3FEFile]] <<FILEUPLOAD>>
54	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav3MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 3 using measurments made in the above steps.	
55	After completing the Q_0 measurement sequence for Cavity 3, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav3QoOperator]] <<SRF>> [[Cav3QoMeasTime]] <<TIMESTAMP>> [[Cav3QoDesignGradient]] <<SCINOT>> [[Cav3RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav3QoMaxUseable]] <<SCINOT>> [[Cav3RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav3QoFile]] <<FILEUPLOAD>>
56	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav3PressureSensOperator]] <<SRF>> [[Cav3PressureSensTime]] <<TIMESTAMP>> [[Cav3PressureSensitivity]] <<FLOAT>> [[Cav3PressureSensFile]] <<FILEUPLOAD>>
57	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav3StaticLorentzOperator]] <<SRF>> [[Cav3StaticLorentzTime]] <<TIMESTAMP>> [[Cav3StaticLorentzCoeff]] <<FLOAT>> [[Cav3StaticLorentzFile]] <<FILEUPLOAD>>
58	Upload files containing any microphonics measurements for Cavity 3.	[[Cav3MicrophonicsOperator]] <<SRF>> [[Cav3MicrophonicsTime]] <<TIMESTAMP>> [[Cav3MicrophonicsFile]] <<FILEUPLOAD>>
59	Use the comment box to list any problems or anything unusual about the performance of Cavity 3.	[[Cav3HPRFComments]] <<COMMENT>>

Cavity 4		
Step No	**Instructions**	**Data Inputs**
60	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 4. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav4QextOperator]] <<SRF>> [[Cav4QextMeasTime]] <<TIMESTAMP>> [[Cav4QextFPC]] <<SCINOT>> [[Cav4QextFP]] <<SCINOT>> [[Cav4QextHOM1]] <<SCINOT>> [[Cav4QextHOM2]] <<SCINOT>> [[Cav4QextMeasGradient]] <<FLOAT>>
61	Record the Maximum Gradient (Emax) for Cavity 4 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav4EmaxOperator]] <<SRF>> [[Cav4EmaxMeasTime]] <<TIMESTAMP>> [[Cav4Emax]] <<FLOAT>> (MV/m) [[Cav4EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
62	Record the gradient at which a successful One Hour Run was completed for Cavity 4. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav4OneHourRunOperator]] <<SRF>> [[Cav4OneHourRunTime]] <<TIMESTAMP>> [[Cav4Emaxop]] <<FLOAT>> (MV/m) [[Cav4OneHourRunFile]] <<FILEUPLOAD>>
63	Record the Field Emission Onset gradient for Cavity 4. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav4FEOperator]] <<SRF>> [[Cav4FEMeasTime]] <<TIMESTAMP>> [[Cav4FEOnset]] <<FLOAT>> (MV/m) [[Cav4FE50mR]] <<FLOAT>> [[Cav4FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav4FEFile]] <<FILEUPLOAD>>
64	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav4MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 4 using measurments made in the above steps.	
65	After completing the Q_0 measurement sequence for Cavity 4, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav4QoOperator]] <<SRF>> [[Cav4QoMeasTime]] <<TIMESTAMP>> [[Cav4QoDesignGradient]] <<SCINOT>> [[Cav4RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav4QoMaxUseable]] <<SCINOT>> [[Cav4RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav4QoFile]] <<FILEUPLOAD>>
66	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav4PressureSensOperator]] <<SRF>> [[Cav4PressureSensTime]] <<TIMESTAMP>> [[Cav4PressureSensitivity]] <<FLOAT>> [[Cav4PressureSensFile]] <<FILEUPLOAD>>
67	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav4StaticLorentzOperator]] <<SRF>> [[Cav4StaticLorentzTime]] <<TIMESTAMP>> [[Cav4StaticLorentzCoeff]] <<FLOAT>> [[Cav4StaticLorentzFile]] <<FILEUPLOAD>>
68	Upload files containing any microphonics measurements for Cavity 4.	[[Cav4MicrophonicsOperator]] <<SRF>> [[Cav4MicrophonicsTime]] <<TIMESTAMP>> [[Cav4MicrophonicsFile]] <<FILEUPLOAD>>
69	Use the comment box to list any problems or anything unusual about the performance of Cavity 4.	[[Cav4HPRFComments]] <<COMMENT>>

Cavity 5		
Step No	**Instructions**	**Data Inputs**
70	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 5. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav5QextOperator]] <<SRF>> [[Cav5QextMeasTime]] <<TIMESTAMP>> [[Cav5QextFPC]] <<SCINOT>> [[Cav5QextFP]] <<SCINOT>> [[Cav5QextHOM1]] <<SCINOT>> [[Cav5QextHOM2]] <<SCINOT>> [[Cav5QextMeasGradient]] <<FLOAT>>
71	Record the Maximum Gradient (Emax) for Cavity 5 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav5EmaxOperator]] <<SRF>> [[Cav5EmaxMeasTime]] <<TIMESTAMP>> [[Cav5Emax]] <<FLOAT>> (MV/m) [[Cav5EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
72	Record the gradient at which a successful One Hour Run was completed for Cavity 5. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav5OneHourRunOperator]] <<SRF>> [[Cav5OneHourRunTime]] <<TIMESTAMP>> [[Cav5Emaxop]] <<FLOAT>> (MV/m) [[Cav5OneHourRunFile]] <<FILEUPLOAD>>
73	Record the Field Emission Onset gradient for Cavity 5. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav5FEOperator]] <<SRF>> [[Cav5FEMeasTime]] <<TIMESTAMP>> [[Cav5FEOnset]] <<FLOAT>> (MV/m) [[Cav5FE50mR]] <<FLOAT>> [[Cav5FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav5FEFile]] <<FILEUPLOAD>>
74	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav5MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 5 using measurments made in the above steps.	
75	After completing the Q_0 measurement sequence for Cavity 5, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav5QoOperator]] <<SRF>> [[Cav5QoMeasTime]] <<TIMESTAMP>> [[Cav5QoDesignGradient]] <<SCINOT>> [[Cav5RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav5QoMaxUseable]] <<SCINOT>> [[Cav5RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav5QoFile]] <<FILEUPLOAD>>
76	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav5PressureSensOperator]] <<SRF>> [[Cav5PressureSensTime]] <<TIMESTAMP>> [[Cav5PressureSensitivity]] <<FLOAT>> [[Cav5PressureSensFile]] <<FILEUPLOAD>>
77	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav5StaticLorentzOperator]] <<SRF>> [[Cav5StaticLorentzTime]] <<TIMESTAMP>> [[Cav5StaticLorentzCoeff]] <<FLOAT>> [[Cav5StaticLorentzFile]] <<FILEUPLOAD>>
78	Upload files containing any microphonics measurements for Cavity 5.	[[Cav5MicrophonicsOperator]] <<SRF>> [[Cav5MicrophonicsTime]] <<TIMESTAMP>> [[Cav5MicrophonicsFile]] <<FILEUPLOAD>>
79	Use the comment box to list any problems or anything unusual about the performance of Cavity 5.	[[Cav5HPRFComments]] <<COMMENT>>

Cavity 6		
Step No	**Instructions**	**Data Inputs**
80	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 6. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav6QextOperator]] <<SRF>> [[Cav6QextMeasTime]] <<TIMESTAMP>> [[Cav6QextFPC]] <<SCINOT>> [[Cav6QextFP]] <<SCINOT>> [[Cav6QextHOM1]] <<SCINOT>> [[Cav6QextHOM2]] <<SCINOT>> [[Cav6QextMeasGradient]] <<FLOAT>>
81	Record the Maximum Gradient (Emax) for Cavity 6 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav6EmaxOperator]] <<SRF>> [[Cav6EmaxMeasTime]] <<TIMESTAMP>> [[Cav6Emax]] <<FLOAT>> (MV/m) [[Cav6EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
82	Record the gradient at which a successful One Hour Run was completed for Cavity 6. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav6OneHourRunOperator]] <<SRF>> [[Cav6OneHourRunTime]] <<TIMESTAMP>> [[Cav6Emaxop]] <<FLOAT>> (MV/m) [[Cav6OneHourRunFile]] <<FILEUPLOAD>>
83	Record the Field Emission Onset gradient for Cavity 6. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav6FEOperator]] <<SRF>> [[Cav6FEMeasTime]] <<TIMESTAMP>> [[Cav6FEOnset]] <<FLOAT>> (MV/m) [[Cav6FE50mR]] <<FLOAT>> [[Cav6FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav6FEFile]] <<FILEUPLOAD>>
84	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav6MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 6 using measurments made in the above steps.	
85	After completing the Q_0 measurement sequence for Cavity 6, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav6QoOperator]] <<SRF>> [[Cav6QoMeasTime]] <<TIMESTAMP>> [[Cav6QoDesignGradient]] <<SCINOT>> [[Cav6RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav6QoMaxUseable]] <<SCINOT>> [[Cav6RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav6QoFile]] <<FILEUPLOAD>>
86	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav6PressureSensOperator]] <<SRF>> [[Cav6PressureSensTime]] <<TIMESTAMP>> [[Cav6PressureSensitivity]] <<FLOAT>> [[Cav6PressureSensFile]] <<FILEUPLOAD>>
87	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav6StaticLorentzOperator]] <<SRF>> [[Cav6StaticLorentzTime]] <<TIMESTAMP>> [[Cav6StaticLorentzCoeff]] <<FLOAT>> [[Cav6StaticLorentzFile]] <<FILEUPLOAD>>
88	Upload files containing any microphonics measurements for Cavity 6.	[[Cav6MicrophonicsOperator]] <<SRF>> [[Cav6MicrophonicsTime]] <<TIMESTAMP>> [[Cav6MicrophonicsFile]] <<FILEUPLOAD>>
89	Use the comment box to list any problems or anything unusual about the performance of Cavity 6.	[[Cav6HPRFComments]] <<COMMENT>>

Cavity 7		
Step No	**Instructions**	**Data Inputs**
90	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 7. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav7QextOperator]] <<SRF>> [[Cav7QextMeasTime]] <<TIMESTAMP>> [[Cav7QextFPC]] <<SCINOT>> [[Cav7QextFP]] <<SCINOT>> [[Cav7QextHOM1]] <<SCINOT>> [[Cav7QextHOM2]] <<SCINOT>> [[Cav7QextMeasGradient]] <<FLOAT>>
91	Record the Maximum Gradient (Emax) for Cavity 7 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav7EmaxOperator]] <<SRF>> [[Cav7EmaxMeasTime]] <<TIMESTAMP>> [[Cav7Emax]] <<FLOAT>> (MV/m) [[Cav7EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
92	Record the gradient at which a successful One Hour Run was completed for Cavity 7. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav7OneHourRunOperator]] <<SRF>> [[Cav7OneHourRunTime]] <<TIMESTAMP>> [[Cav7Emaxop]] <<FLOAT>> (MV/m) [[Cav7OneHourRunFile]] <<FILEUPLOAD>>
93	Record the Field Emission Onset gradient for Cavity 7. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav7FEOperator]] <<SRF>> [[Cav7FEMeasTime]] <<TIMESTAMP>> [[Cav7FEOnset]] <<FLOAT>> (MV/m) [[Cav7FE50mR]] <<FLOAT>> [[Cav7FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav7FEFile]] <<FILEUPLOAD>>
94	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav7MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 7 using measurments made in the above steps.	
95	After completing the Q_0 measurement sequence for Cavity 7, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav7QoOperator]] <<SRF>> [[Cav7QoMeasTime]] <<TIMESTAMP>> [[Cav7QoDesignGradient]] <<SCINOT>> [[Cav7RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav7QoMaxUseable]] <<SCINOT>> [[Cav7RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav7QoFile]] <<FILEUPLOAD>>
96	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav7PressureSensOperator]] <<SRF>> [[Cav7PressureSensTime]] <<TIMESTAMP>> [[Cav7PressureSensitivity]] <<FLOAT>> [[Cav7PressureSensFile]] <<FILEUPLOAD>>
97	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav7StaticLorentzOperator]] <<SRF>> [[Cav7StaticLorentzTime]] <<TIMESTAMP>> [[Cav7StaticLorentzCoeff]] <<FLOAT>> [[Cav7StaticLorentzFile]] <<FILEUPLOAD>>
98	Upload files containing any microphonics measurements for Cavity 7.	[[Cav7MicrophonicsOperator]] <<SRF>> [[Cav7MicrophonicsTime]] <<TIMESTAMP>> [[Cav7MicrophonicsFile]] <<FILEUPLOAD>>
99	Use the comment box to list any problems or anything unusual about the performance of Cavity 7.	[[Cav7HPRFComments]] <<COMMENT>>

Cavity 8		
Step No	**Instructions**	**Data Inputs**
100	Record QextFPC, QextFP, QextHOM1, and QextHOM2 for Cavity 8. Record the gradient at which these measurements were completed. **An NCR must be generated if either HOM coupler has a Qext lower than 2E11.**	[[Cav8QextOperator]] <<SRF>> [[Cav8QextMeasTime]] <<TIMESTAMP>> [[Cav8QextFPC]] <<SCINOT>> [[Cav8QextFP]] <<SCINOT>> [[Cav8QextHOM1]] <<SCINOT>> [[Cav8QextHOM2]] <<SCINOT>> [[Cav8QextMeasGradient]] <<FLOAT>>
101	Record the Maximum Gradient (Emax) for Cavity 8 and the gradient limiting condition. **An NCR must be generated for any cavity that has a Maximum gradient lower than 16 MV/m.**	[[Cav8EmaxOperator]] <<SRF>> [[Cav8EmaxMeasTime]] <<TIMESTAMP>> [[Cav8Emax]] <<FLOAT>> (MV/m) [[Cav8EmaxLimit]] {{Admin Limit,Quench,FE related,Arc Fault,Window Temp Fault,BL Vacuum Fault,Coupler Vacuum Fault,RF Power,Heat Load,End Group Quench }} <<SELECT>>
102	Record the gradient at which a successful One Hour Run was completed for Cavity 8. Upload spreadsheet containing data on the One Hour run. **An NCR must be generated for any cavity that cannot complete a One Hour Run at or above 16 MV/m.**	[[Cav8OneHourRunOperator]] <<SRF>> [[Cav8OneHourRunTime]] <<TIMESTAMP>> [[Cav8Emaxop]] <<FLOAT>> (MV/m) [[Cav8OneHourRunFile]] <<FILEUPLOAD>>
103	Record the Field Emission Onset gradient for Cavity 8. Upload the file containing Field emission data. **An NCR must be generated for any cavity that has a FE Onset gradient lower than 16 MV/m.**	[[Cav8FEOperator]] <<SRF>> [[Cav8FEMeasTime]] <<TIMESTAMP>> [[Cav8FEOnset]] <<FLOAT>> (MV/m) [[Cav8FE50mR]] <<FLOAT>> [[Cav8FEMaxDoseRate]] <<FLOAT>> (R/hr) [[Cav8FEFile]] <<FILEUPLOAD>>
104	The Maximum Useable Gradient is the highest available gradient that meets one or more of the following criteria: • Cavity can operate in a stable manner for at least one hour. • Cavity is operating at least 0.5 MV/m below any quench gradient	[[Cav8MaxUseGradient]] <<FLOAT>> Criteria 1

	• Radiation is less than 50 mR/hr during individual cavity operation. Determine and record the Maximum Useable Gradient for Cavity 8 using measurments made in the above steps.	
105	After completing the Q_0 measurement sequence for Cavity 8, record the values of Q_0 at 20.8 MV/m or at the Maximum Useable Gradient. Upload the Q_0 measurement file. **An NCR must be generated for any cavity that has a Q_0 lower than 2.7E10 at either 20.8 MV/m or at the Maximum Useable Gradient.**	[[Cav8QoOperator]] <<SRF>> [[Cav8QoMeasTime]] <<TIMESTAMP>> [[Cav8QoDesignGradient]] <<SCINOT>> [[Cav8RFHeatDesignGradient]] <<FLOAT>> (W) [[Cav8QoMaxUseable]] <<SCINOT>> [[Cav8RFHeatMaxUseable]] <<FLOAT>> (W) [[Cav8QoFile]] <<FILEUPLOAD>>
106	Record the Pressure Sensitivity data collected during the Q_0 measurement sequence.	[[Cav8PressureSensOperator]] <<SRF>> [[Cav8PressureSensTime]] <<TIMESTAMP>> [[Cav8PressureSensitivity]] <<FLOAT>> [[Cav8PressureSensFile]] <<FILEUPLOAD>>
107	Record the Static Lorentz coefficient calculated from data gathered during field emission measurements or other automated gradient ramping exercise.	[[Cav8StaticLorentzOperator]] <<SRF>> [[Cav8StaticLorentzTime]] <<TIMESTAMP>> [[Cav8StaticLorentzCoeff]] <<FLOAT>> [[Cav8StaticLorentzFile]] <<FILEUPLOAD>>
108	Upload files containing any microphonics measurements for Cavity 8.	[[Cav8MicrophonicsOperator]] <<SRF>> [[Cav8MicrophonicsTime]] <<TIMESTAMP>> [[Cav8MicrophonicsFile]] <<FILEUPLOAD>>
109	Use the comment box to list any problems or anything unusual about the performance of Cavity 8.	[[Cav8HPRFComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
110	**Eight Cavity Extended Run:** Set up and operate all eight cavities at either 20.8 MV/m or at the Maximum Usable Gradient, if lower. Operate all eight cavities in SELAP mode until $\Delta T / \Delta t$ for all coupler temperatures is 1 K / hr or less. Record the requested information in the table below. Record the maximum operating gradients set for each ca…he Extended Run. Record the maximum temperature indicated by either of the two RTD's that measure coupler temperatures. • Extended Run begins when all eight cavities are in RF ON at the desired gradients. • Extended Run ends when all Coupler Temperatures have reached their maximum temperatures. **It is expected that the set up and execution of the Extended Run will require up to two shifts to complete.**	[[ExtendedRunOperator1]] <<SRF>> [[ExtendedRunStartTime]] <<TIMESTAMP>> [[ExtendedRunTotalRunTime]] <<FLOAT>> (hours) [[ExtendedRunFiles]] <<FILEUPLOAD>>

Revise text to match Criteria 7. Add NCR statement for Criteria 7 and 17.

New yes/no box.
New comment box.

Criteria 7

Criteria 17. Applies to Coupler 1 and 2.

Cavity	Gradient (MV/m)	Forward Power (kW)	Maximum Coupler 1 Temperature (K)	Maximum Coupler 2 Temperature (K)
1	[[Cav1EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav1EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav1EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav1EightCavCplr2MaxTemp]] <<FLOAT>> (K)
2	[[Cav2EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav2EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav2EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav2EightCavCplr2MaxTemp]] <<FLOAT>> (K)
3	[[Cav3EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav3EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav3EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav3EightCavCplr2MaxTemp]] <<FLOAT>> (K)
4	[[Cav4EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav4EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav4EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav4EightCavCplr2MaxTemp]] <<FLOAT>> (K)
5	[[Cav5EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav5EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav5EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav5EightCavCplr2MaxTemp]] <<FLOAT>> (K)
6	[[Cav6EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav6EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav6EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav6EightCavCplr2MaxTemp]] <<FLOAT>> (K)
7	[[Cav7EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav7EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav7EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav7EightCavCplr2MaxTemp]] <<FLOAT>> (K)

8	[[Cav8EightCavGradient]] <<FLOAT>> (MV/m)	[[Cav8EightCavFwdPwr]] <<FLOAT>> (kW)	[[Cav8EightCavCplr1MaxTemp]] <<FLOAT>> (K)	[[Cav8EightCavCplr2MaxTemp]] <<FLOAT>> (K)
111	Record the maximum **Dark Currents** as measured using the Faraday Cups at either end of the cryomodule during the Eight Cavity Run. **If the dark current seen at either Faraday Cup exceeds 30 nA, generate an NCR.**			[[ExtendedRunOperater2]] <<SRF>> [[SupplyEndDarkCurrent]] <<FLOAT>> (nA) [[ReturnEndDarkCurrent]] <<FLOAT>> (nA) Criteria 5
112	Use the comment block to document any problems or unusual behavior encountered in completing the Extended Run. Explain any reductions in gradient from what is specified for this test.			[[ExtendedRunComments]] <<COMMENT>>

Step No	Instructions	Data Inputs
113	Record the **Total Integrated Voltage** for this cryomodule. This is the sum of the Maximum Useable Gradients multiplied by the cavity length (1.038 m). Any reductions in gradient that were necessary in order to complete the Extended Run and that were due to cavity performance issues should be taken into consideration. **An NCR must be generated if theTotal Integrated Voltage is less than 173 MV.**	[[CMTotalVoltage]] <<FLOAT>> (MV) Criteria 3 New step between 113 and 114 for average Q0. Matches criteria 8. Include NCR statement.
114	Record the **Static Heat Load** (in Watts) to the primary (2K) helium circuit. The average heat load is calculated across all of the measurements made during the Qo measurement procedure. Upload the data in a spreadsheet file. Enter any requested information to the right. **Specification: 7 Watts Nominal** Add NCR statement.	[[StaticHeatLoadCalcDate]] <<TIMESTAMP>> [[StaticHeatLoadComments]] <<COMMENT>> [[StaticHeatLoad]] <<FLOAT>> (W) Criteria 9 [[StaticHeatLoadFile]] <<FILEUPLOAD>>

Step No	Instructions	Data Inputs
115	Record the **beamline vacuum**, **coupler vacuum,** and the **insulating vacuum** (in torr) prior to beginning warm up. Note any problems in comment block. Minimum Acceptance Criteria for Vacuums: Cryomodule Beamline Vacuum at 2K – 1E-9 torr Cryomodule Insulating Vacuum at 2K – 1E-6 torr Cryomodule Coupler Vacuum at 2K – 5E-8 torr **If, at the end of Acceptance Testing, the vacuum pressure for a vacuum space exceeds its listed value above, generate an NCR.**	[[VacTech]] <<SRF>> [[FinalVacCheckComplete]] <<TIMESTAMP>> [[FinalVacCheckComments]] <<COMMENT>> [[FinalInsVac]] <<SCINOT>> (torr) Criteria 22-5 [[FinalBeamLineVac]] <<SCINOT>> (torr) Criteria 22-4 [[FinalCplrVac]] <<SCINOT>> (torr) Criteria 22-6 New step between 115 and 116 for thermometry, level sensors, cryo valves, and heaters. Matches Criteria 10 12, 13, 16. Add NCR statement.
116	Detune all cavities using the mechanical tuners. Detune to approximate initial untuned frequencies. Check off each cavity that has been detuned. Enter requested information.	[[Det [[DetuneComplete]] <<TIMESTAMP>> [[DetuneComments]] <<COMMENT>> [[C1Detuned]] <<YESNO>> [[C2Detuned]] <<YESNO>> [[C3Detuned]] <<YESNO>> [[C4Detuned]] <<YESNO>> [[C5Detuned]] <<YESNO>> [[C6Detuned]] <<YESNO>> [[C7Detuned]] <<YESNO>> [[C8Detuned]] <<YESNO>>
117	Begin the cryomodule warm up procedure. Record the start time for the warm up to the right.	[[WarmUpCryoOperator]] <<SRF>> [[WarmStartTime]] <<TIMESTAMP>> [[WarmUpComments]] <<COMMENT>>
118	Record any additional information and notes from cryomodule testing.	[[ReportFiles]] <<FILEUPLOAD>> [[ReportComments]] <<COMMENT>>