

#	Requirements	Comments
1	Niobium material samples according to Section 3.2	Material samples to be sent to CERN
2	Material certificates and quality control of raw materials (including RRR measurements)	
3	Material certificates of welding consumables (whenever applicable)	
4	Functional and manufacturing drawings (with tolerances)	
5	Design reports demonstrating that welds are designed to withstand the specified load cases (refer to Section 3.6.1)	
6	Welding plan including:	See next clarification of acronyms

- Clarification about the means of the welding acronyms, and the steps order to make the documents:
 - 1st- WPQR: Welding Procedure Qualification Record, and BPQR: Brazing Procedure Qualification Record
 - 2nd- WPS: Welding Procedure Specification, and BPS: Brazing Procedure Specification
 - 3rd- WPQ/WOPQ: Welder Performance Qualification / Welding Operator Performance Qualification, and BPQ/BOPQ: Brazers performance qualifications/Brazing Operator Performance Qualification. (According to ASME this is represented by only one document called BPQ).

#	Requirements	Comments on documentation from Niowave	
6	Welding plan including: Welding maps	<u>Brazing</u>	<u>Welding</u> Ok for identification on drawings. Please take into account the following remarks: i) avoid using the same ID for different welds (see attached 13-0017-0150-A73-MODIFIED.pdf) ii) the name of the final WPS, instead of the datasheet, should be indicated (see remarks for WPS below) iii) remember to keep trace of the welds also in a welding book (see attached 13-0017-0150-A73-MODIFIED.pdf and Comments to Manufacturing QA documentation_141114.ppt)
	Welding and brazing procedure qualification record including CERN acceptance criteria in Section 4.2 (WPQR and BPQR)	Missing The document sent (NWV-BRZ-001) is a BPQ. See BPQR.pdf for the BPQR template	Missing NWV-EBW-001; NWV-EBW-002; NWV-EBW-003; NWV-EBW-004 and NVW-EBW-005 are not WPQR. Please, see attached WPQR template according to ASME (WPQR ASME EXAMPLE.pdf)
	Welding and brazing procedure specification (WPS and BPS)	Ok by document NWV-BPS-001. Just a correction on page 2: you should say that "BPQRs supported by this WPS".	Ok
	Welders performance qualification (GTAW), Welding and Brazing Operators Performance Qualifications (electron-beam welding and vacuum brazing) - WPQ, WOPQ and BOPQ	The document NWV-BRZ-001 is a BPQ, but was sent as a BPQR. The title should be corrected accordingly (see NWV-BRZ-001_modified.pdf)	Missing



#	Requirements	Comments on documentation from Niowave
7	Manufacturing procedures (whenever required by Annex 6.3)	<ul style="list-style-type: none"> i) Methanol is very toxic and should be handled with extreme care. A test for replacing methanol with ethanol would be advantageous in our opinion ii) Niobium Handling and Machining Processes: According to engineering specification "The protecting niobium oxide layer is damaged at temperatures above 150 °C." (not 200°) iii) For your information we use for deburring SiC based tools (here-attached CRATEX product)
8	Test procedures (whenever required by Annex 6.3)	Just a remark on 100-RT-001(Rev8): the procedure is correct and in compliance with ASME V. It should be noted that the mentioned procedure has to follow also CERN engineering specifications (EDMS N°1389669, pg. 11, table 6)
9	EB welded and vacuum brazed samples according to the requirements specified in Section 3.8.4	
10	NDT personnel qualifications	Leak detection Operator Qualification & Leak check certification: qualifications according to ISO 9712 or SNT-TC-1A, and written procedure in compliance with EN13885 or ASME V are requested. These documents do not meet neither ISO nor ASME requirements.
11	Manufacturing and inspection plan (MIP) - list of all manufacturing and quality control operations	It would be useful to issue an overall MIP document, instead of a MIP for each part. Please see the example attached Comments to Manufacturing QA documentation.ppt.