ESS CM EXPERIENCE LESSONS LEARNED

***Lesson learned from the ESS CM testing activities, technical commissioning and initial operation***

1. LINAC PARAMETERS
	* + - 1. Particle
				2. RF power
				3. Current
				4. Repetition Rate
				5. Beam energy
	1. CAVITY PARAMETERS
		* + 1. Operating Temperature
				2. Eacc / Qo
2. LINAC CONFIGURATION
	1. SEGEMENTED
		* 1. Focusing magnets
			2. Beam diagnostics
			3. Cryogenics distribution concept
3. CM DESIGN
	1. TYPES
	2. FOCUS ON ELL (HIGH BETA)
		1. Design
			1. General
				1. Cavity

Design considerations

Peak values

* + - * 1. Tunning system
				2. Power Coupler
			1. Cryogenics design
				1. Circuits Temperature /pressure

Helium supply cold mass (cavities)

Helium return cold mass (cavities)

Thermal shield supply

Thermal shield return

Power couplers supply

Auxiliar circuits (safety, purge, etc)

Pressure safety scale and devices

* + - 1. Interfaces
				1. Jumper (cryogenics distribution)
				2. Beam vacuum
				3. Isolation vacuum
				4. RFDS
				5. Instrumentations/diagnostics/
			2. Cavity alignment/ support system
1. CM INSTALLATION
2. Installation considerations
3. Transportation considerations
4. Testing
	1. Acceptance Criteria
5. Operation
6. Maintenance/ Repair Considerations
7. Lessons Leaned