CesrTA Machine Studies Task Overview

I. Experiment Description

Experimental Topic	Beam stability studies	
Classification[*]	LET	
Coordinator/ Experimenters	JSh, MGB	JSh, MGB, DLR, MGS
Primary Goals	Study effects of disabling various components on beam stability (specifically, beam centroid motion at betatron tunes)	

Description[†]	• The below list is essentially the same as what was studied in the October '12 machine studies week. The objective is to confirm some of those findings in a more systematic fashion, in addition to acquiring valid data to determine the effects of disconnecting the shaker amplifiers at 23E.
	
	• Correct optics (orbit, phase/coupling) using all steerings, quadrupoles, and skew quadrupoles
	• Scan over vertical closed-orbit bumps in RF cavities
	• The following studies are cumulative. After enacting the condition stated, BPMs will be timed in and two 300k-turn TBT BPM data sets will be taken back-to-back. If the change in RMS orbit jitter due to enacting an item in the list is significant, revisit previous items on the list to see if their impact was being masked by that item.
	  1. Power off separators
	  2. Power off synchrotron
	  3. Set DIMTEL feedbacks to shift gain 0
	  4. Disconnect DIMTEL feedback amplifiers
	  5. Turn off and disable tune tracker power supplies
	  6. RF power supplies: (if time; not as critical)
	    a. Power down two of the four RF cavities, detuning away from peak
	    b. Reduce RF voltage in remaining cavities
	  7. Node off and disable all vertical steerings
	  8. Node off and disable all sextupoles
	  9. Node off and disable all skew quadrupoles
	  10. Node off and disable all horizontal steerings
	    • Pay attention to signal at f_s; choppers operate at ~17kHz
	  11. Turn off and disable transfer line elements:
	    • Final transfer bend
	    • Transfer quad 5	

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[*] Machine Studies Classifications:
- EC – Electron Cloud
- LET – Optics Correction and Low Emittance Tuning
- IBS – Intra-beam scattering studies
- xBSM – x-ray Beam Size Monitor
- INST – Instrumentation (BPM development, RFA development, other)
- MDEV – Machine Development (includes injection configuration, injection tuning, custom orbit setup, instrumentation preparation, etc.)
- MREC – Machine Startup (recovering conditions after down period or access)

[†] Attach additional pages for experimental description if needed

Description[‡] (continued)	•
Special Needs/Requests	2.1GeV operating conditions, with damping wigglers (CTA_2085_DMTL_NORM), positrons. This set of experiments should be performed early in the CesrTA run.

Prerequisites[§]	Personnel	Description
2.1GeV optics recovery	MJF/JSh	Recover optics in desired route; correct CESR optics

Time Requested[**]	No. Shifts	Principal Tasks
8hr	1	All items stated above

[‡] Attach additional pages for experimental description if needed
[§] Indicate other machine work that is required in preparation for this machine studies experiment.
[**] Indicate the principal shift topics and estimated number of shifts required

II. Machine Studies Assignments

Reserved for Project Management Team Use		
Topic ID		
Priority††		
Shift Assignments	**Date**	**Shift**

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†† Priority Scale:
1. Critical – results are necessary for preparation for subsequent down/run periods
2. Very high – results are strongly desired for achieving program milestones or in preparation for subsequent down/run periods
3. High – results are of immediate interest but not require
4. Moderate – results should be pursued at the first convenient opportunity
5. Low – results are not presently a high priority for either project milestones or planning