CesrTA Machine Studies Task Overview

I. Experiment Description

Experimental Topic	Low emittance tuning studies	
Classification[*]	LET	
Coordinator/ Experimenters	JSh	JSh, DLR, DCS, SW
Primary Goals	Detailed work on establishing low-emittance conditions.	
Description[†]	• In each set of conditions where we desire low emittance, perform low-emittance tuning procedure. [assume 2hr pre-shift for initial tune-up] • In nominal 2.1GeV conditions, further detailed work on low-emittance conditions. (Time estimates assume nominal low-emittance conditions have already been achieved) 1. Recalibrate steerings and skew quadrupoles; save a new calibrations file with exact, machine-measured values. [2hr] 2. Development of xBSM bump with zero energy shift [2hr] 3. Explore using alternate four-stage correction, and determine if results are any better than nominal 3-stage correction: Orbit; Phase+coupling; Orbit+dispersion; Dispersion+coupling [2hr] 4. Sextupole characterization: Chromatic beta measurements (RFFM, take phase); also take TBT data (ensure all BPMs enabled) [1hr] 5. 300k-turn TBT BPM + xBSM data sets at I < 1mA [2hr] 6. Very low-current xBSM measurements (I < 0.1mA) [2hr]	
Special Needs/Requests	• Diagnose existing sk_q48w calibration issues (problems when using this skew quad during corrections; repeatable in April ’12 and Oct. ’12) • xBSM must be functional (e+ or e-) • CESR conditions must be recovered in relevant routes	
Prerequisites[‡]	**Personnel**	**Description**
xBSM operational	NTR/DPP et al.	xBSM (either e+ or e-) must be operational
CESR condx recov’d	MJF et al.	CESR condx must be recovered
Time Requested[§]	**No. Shifts**	**Principal Tasks**
N x 2hr	N	3-hour pre-shift for emittance tuning in any route requiring low emittance. This could be merged with machine studies requests for BPM tilt / zero-corrector characterization.
8hr	1	Items 1-4
4hr	1	Items 5-6

[*] 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

[‡] 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**

[**] 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