CESR TA Machine Studies Task Overview

I. Experiment Description

Experimental Topic	Electron Cloud Stability Studies	
Classification*	EC	
Coordinator/ Experimenters	Billing/Dugan	Billing, Dugan, Sonnad, Ramirez, Forster
Primary Goals	Measure beam instabilities with trains of bunches and associated tune shifts of bunches within trains of bunches	

Description†	**Setup** 1. Take reference measurement a. 30 bunch train 14 nsec spacing 0.75 mA/b **Instability/Damping Measurements (INST/DAMP)** 1. Study Head-tail instability (INST) a. 2 GeV lowest emittance (Big D) b. 30 bunches c. Current per bunch i. 0.75 mA/b d. Positrons/Electrons e. Different Tunes for bunch 1 i. fh/fv = 222.5/238.5 kHz f. Concurrent xBSM bunch-by-bunch data g. Low Feedback h. Vary emittance – 3 values i. CSR COUPLING #8 & 9 = 0, 600, 1200cu i. Bunch spacing 4, 14, 24 ns	
Special Needs/Requests		
Prerequisites‡	**Personnel**	**Description**
	Billing, Forster,	Establish stored beams
	Ramirez, Billing,	Software testing of 1. Swept frequency shaking (TUNE)

* Machine Studies Classifications:
- EC - Electron Cloud
- LET - Optics Correction and Low Emittance Tuning
- 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 time)

† Attach additional pages for experimental description if needed

‡ Indicate other machine work that is required in preparation for this machine studies experiment.

	Sikora	2. Instability spectra (INST) 3. Damping measurements (DAMP)
	Rider et al	xBSM set up
Time Requested[§]	**No. Shifts**	**Principal Tasks**
1-2 (1 hour blocks)		Measurement setup for train-head tail instabilities 1.a.
9*(3/4) = 7 hours (at least)	1	Measurement of train-head tail instabilities 1.h.

II. Machine Studies Assignments

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

Notes:

[§] Indicate the principal shift topics and estimated number of shifts required

[**] 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