C-A OPERATIONS PROCEDURES MANUAL

ATTACHMENT

6.1.10.a Measurement of Losses During the Accelerator Cycle

Text Pages 2 through 3

C-A OPM Procedures in which this Attachment is used.		
6.1.10		

Hand Processed Changes

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Approved: _____***Signature on File***_____ _____
Collider-Accelerator Department Chairman Date

P. Ingrassia

6.1.10.a Measurement of Losses During the Accelerator Cycle

In order to determine and display losses in the accelerator cycle the following instruments shall be used and calculations performed by the software. Changes to the specifications may be made as per C-A-OPM 6.1.10 paragraph 2.3.

> **Note:**
> The multiplicative constant C_6 will be set to unity so that the Accelerator Loss becomes an "Effective Accelerator Loss" numerically approximately equal to the number of full energy particles necessary to create the same activation. The C_i are proportional to weighted average kinetic energy for the particles in each interval of the cycle.

1 The Booster Injection Loss will be measured using the Booster Circulating Beam Current Transformer.

2 The Booster Accelerator loss will be defined as [booster early_I-booster_I]*C_2.

The Booster Injection Loss will be defined as:
[booster input_I - booster early_I]*C_1

3 The Booster Extraction Through AGS Injection Loss will be measured using the Booster and AGS Circulating Beam Current Transformers.

The Booster Extraction Through AGS Injection Loss will be defined as:
[booster early_I - booster late_I]*C_2 +
[booster late_I - AGS early_I]*C_3

4 The AGS Acceleration Loss will be measured using the AGS Circulating Beam Current Transformer.

The AGS Acceleration will be defined as:

[AGS early_I - AGS before trans_I]*C_4 +
[AGS before trns_I - AGS after trns_I]*C_5 +
[AGS after trns_I - AGS extract_I]*C_6 }

5 The SEB Extraction Loss will be measured using the four AGS Long Radiation Monitors (RLM) sampled during the appropriate time interval.

The SEB Extraction Loss will be defined as:
{$\sum$LRM }*C_7.

6 The FEB Extraction Loss will be measured using the four AGS long radiation monitors sampled during the appropriate time interval.

The FEB Extraction Loss will be defined as:
$\{ \sum LRM \}*C_8$.

7 The SEB Transport Loss will be measured using the Long Loss Monitors (LLM) in the SEB beamlines.

The SEB Transport Loss will be defined as:
$\{\sum LLM \}*C_9$.

8 The FEB Transport Loss will be measured using individual U line loss monitors (ULM) and V line loss monitors (VLM).

The FEB Transport Loss will be defined as:
$\{\sum ULM + \sum VLM \}*C_{10}$.