**Introduction**

The TPS booster orbit feedback system will be monitored by 60 BPMs with turn-by-turn capability. The electron beam sizes and divergence measured at the location of the high beta function will be provided. The booster orbit will be monitored with 60 BPMs with turn-by-turn capability. The beam trajectory will be monitored with BPM equipped with Libera Brilliance Single-Pass, its functionality for single pass measurement.

The T-VAC GS scintillator fluorescence screen will provide information of beam position, and profile. The OTR screen are also considered to be used for high precision of beam emittance and energy spread measurement. The X-ray pinhole camera imaging the electron beam from bending magnets will be measured. The electron beam sizes and divergence measured at the location of the high beta function will be provided. The booster orbit will be monitored with 60 BPMs with turn-by-turn capability. The beam trajectory will be monitored with BPM equipped with Libera Brilliance Single-Pass, its functionality for single pass measurement.

The photon diagnostics for the TPS storage ring will utilize visible and X-ray synchrotron radiation generated in a bending magnet. Visible light beamline will be used to measure various beam parameters by streak camera, CCD camera and interferometer.

**Linac and Transport Line Diagnostics**

TPS 150 MeV linac has been contract to RI Research Instruments GmbH. The schedule for delivery and commissioning is early in 2011 at test site. The linac will move to the TPS building after TPS building available.

All diagnostics of the linac system is provided by the vendor.

- **X-ray pinhole camera**: Imaging the electron beam from bending magnets will be measured.
- **Sensor**: Visible synchrotron light diagnostic system, imaging and beam profiles.
- **Scan speed**: 2 Hz or less

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**Linac**

- **Monitor**: Electron beam parameters
- **Beam profile**: Beam profile
- **Loss**: Beam loss

**Control Network**

- **TPS**: 150 MeV linac
- **Transport Line**: Diagnostics
- **Linac**

**Storage Ring Diagnostics**

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**Booster Ring Diagnostics**

- **Fluorescent screens will be installed at injection and extraction section and at the other location to facilitate booster commissioning.**
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- **Booster orbit will be monitored with 60 BPMs with turn-by-turn capability.**
- **Circulating current will be measured with NPCF, while bunch pattern will be monitored with FCT.**

**Booster Synchrotron Radiation**

- **Spectrum of undulator light**: 2 GeV (60–120 Hz)
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**Storage Ring**

- **Control Network**
- **TPS**: 150 MeV linac
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The resolution of 10 kHz data could be achieved 0.2 \( \mu \)m in rms.

The new FOFB is promoted to suppress noise of FOFB status.

Then choosing the proper correctors for FOFB.

There are several kinds of photon BPMs with different electronics and data acquisition installed at beamline front-ends at the TLS. To provide a better integration and efficient usage of the photon BPMs, integrated solution is in study. Evaluate of the Libera Photon is on going.

Excellent results were achieved. Seamless integration with control system are foreseeable.

The beam orbit motions at 120 Hz caused by one problem corrector power supply.

The right figures show two cleaned out bunches patterns.

Weibull distribution function is employed to measure system response and latency and then choosing the proper correctors for FOFB.

The orbit distortion caused by septum leakage before and after chamber shielding. The excursion is improved by reduction of one half after chamber shielding.

The left figures show two cleaned out bunches patterns.

The overall RMS orbit stability could be submicron from DC to 50 Hz.

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The right figures show two cleaned out bunches patterns.

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Effect of the FOFB to suppress orbit excitation due to phase change of EPUS6.