LINAC UPGRADE

Atsushi ENOMOTO (Accelerator Laboratory)

[1] Overview

[2] Upgrade in FY 1997

[3] Linac Schedule forward the KEKB Commissioning

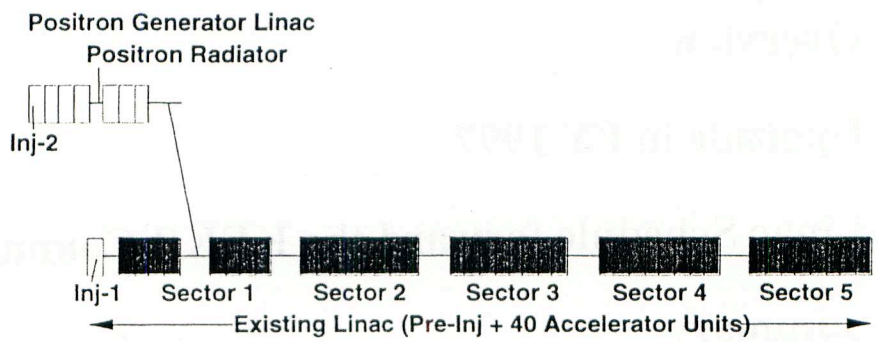
[4] Summary

[1] Overview

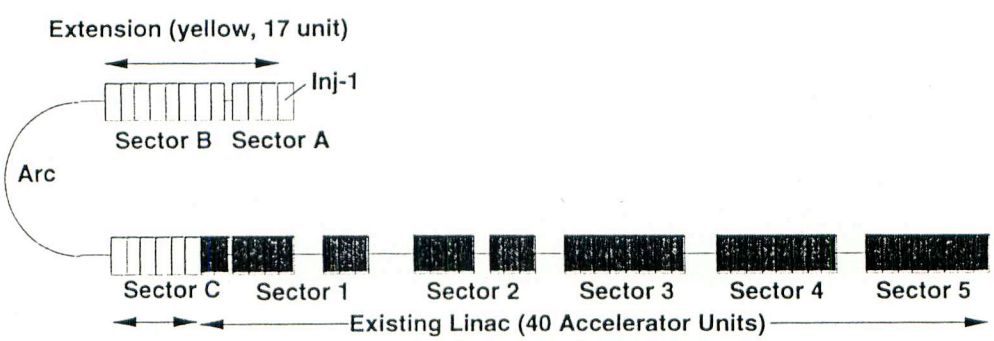
Main Goal 1: Energy Upgrade

from 2.5 to 8 GeV

->(1) Upgrade of the Existing 40 Accelerator Units



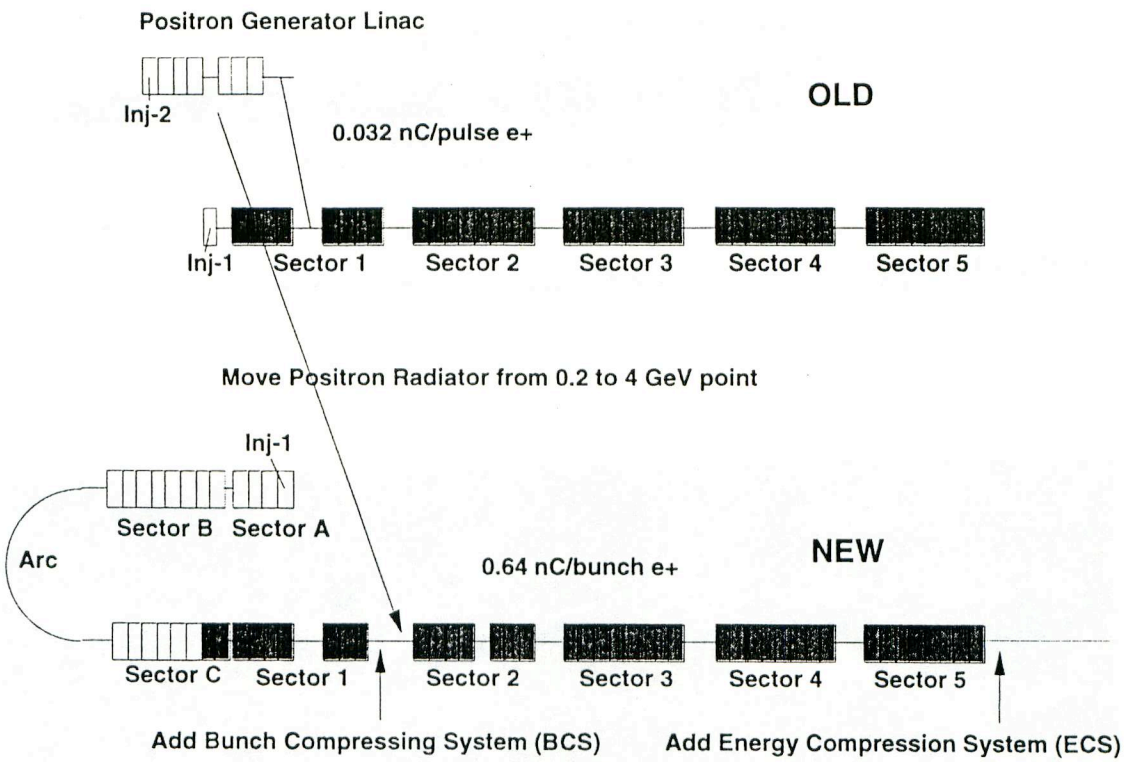
->(2) Extension of the Linac with 17 more Units



Main Goal 2: Positron Increase with Enough Quality

form 0.32 nC, $\sigma_E/E = 0.25\%$
to 0.64 nC, $\sigma_E/E = 0.125\%$

->(1) Increase Primary Electron Energy from 0.2 to 3.7

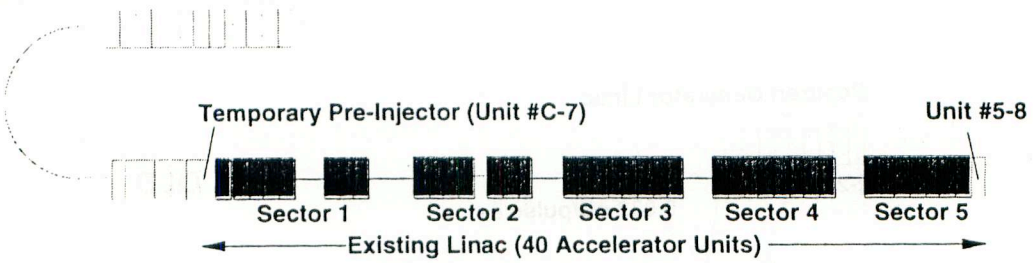


->(2) Employ Enough Monitors, Bunch Compression System (BCS), and Energy Compression System (ECS)

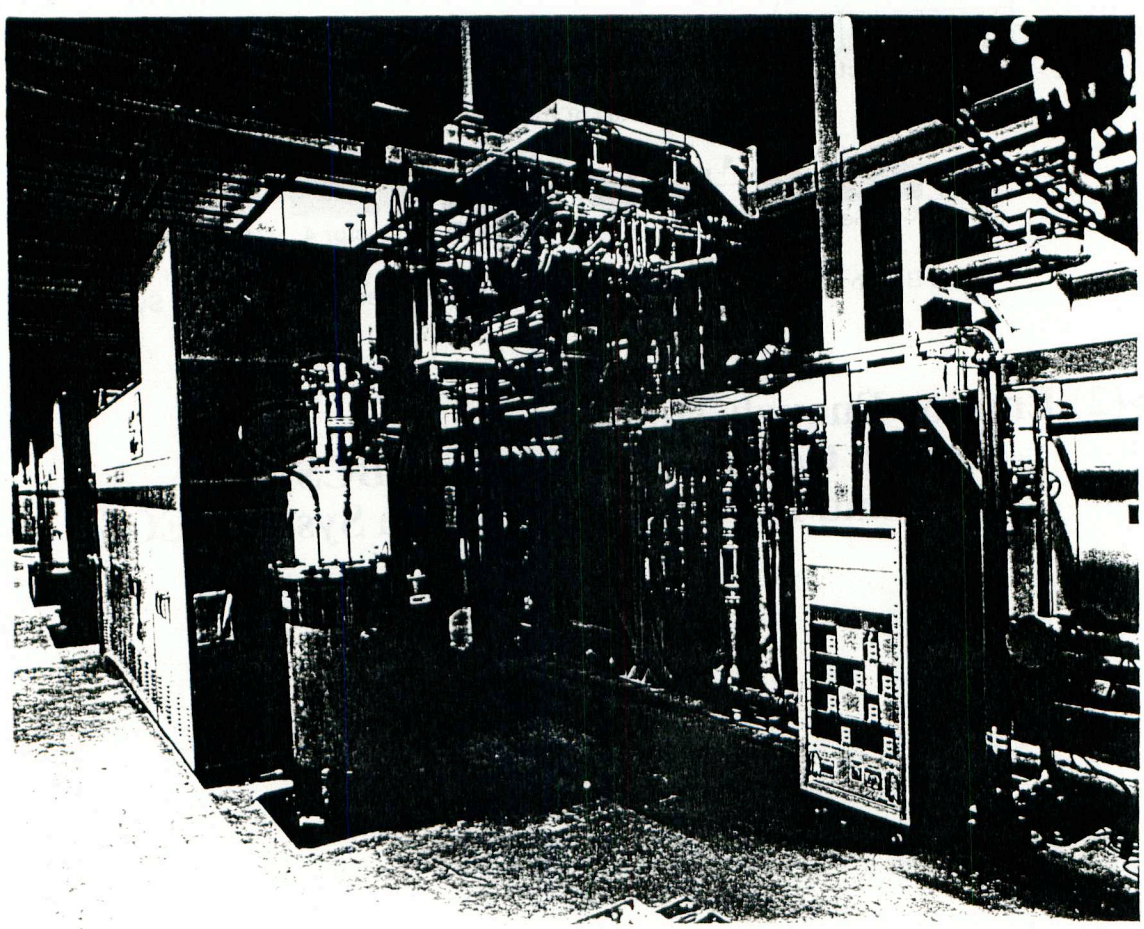
[2] Upgrade in FY 1997

By the Beginning of FY 97

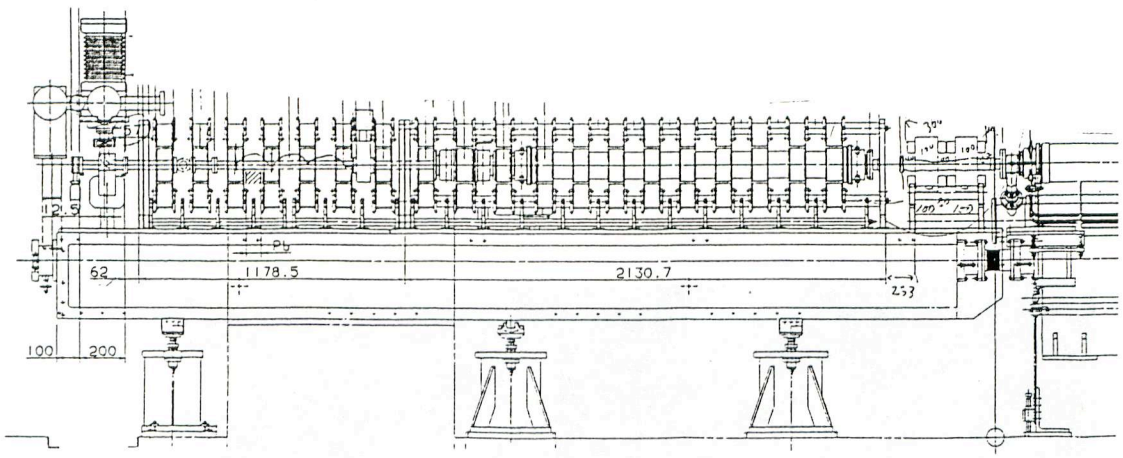
Reconstruction of Existing 40 Units Almost Finished

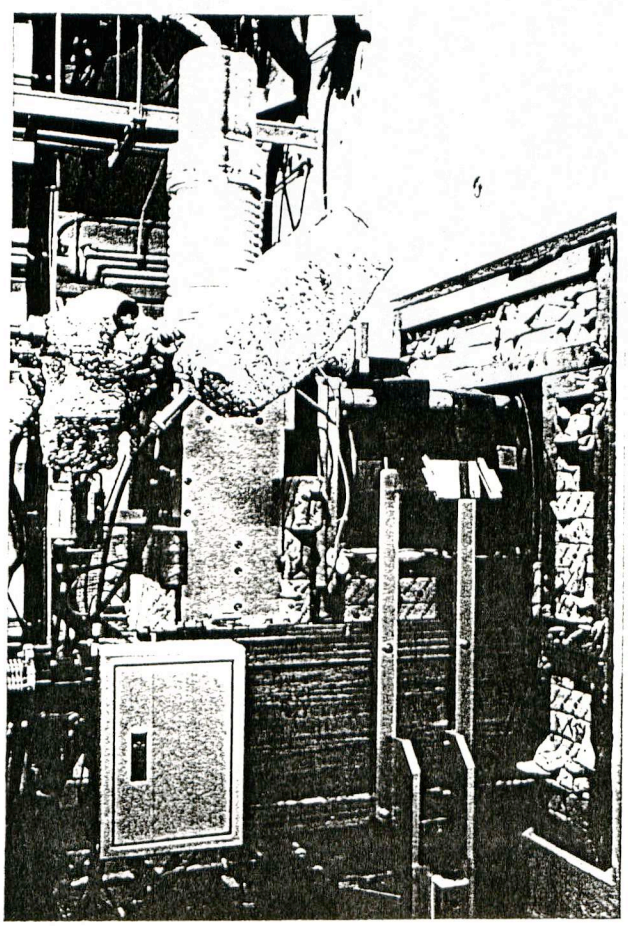


***38 Units Upgraded with SLEDs and New Klystrons**

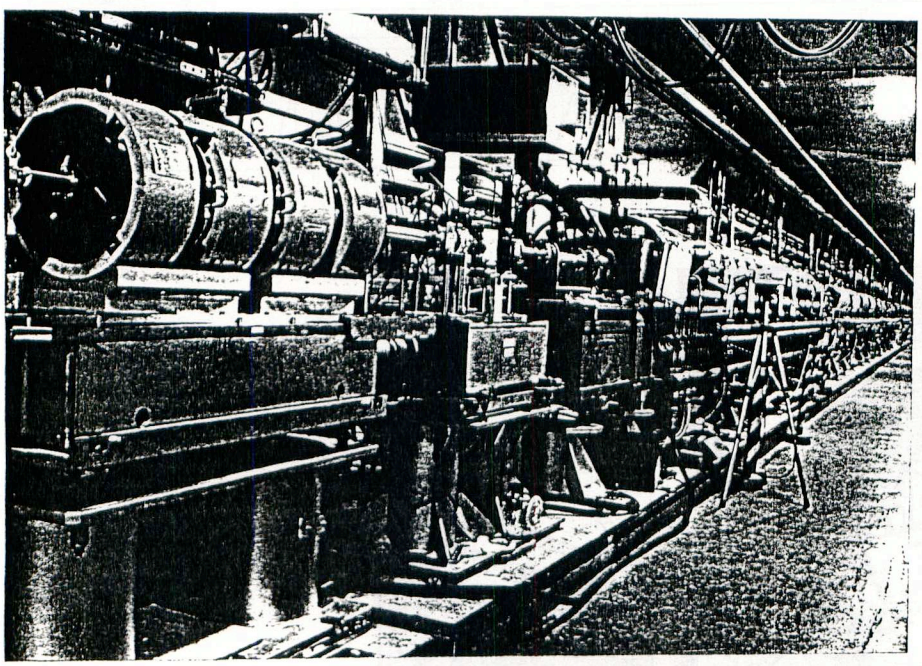


*Temporary Pre-injector for Photon Factory Installed

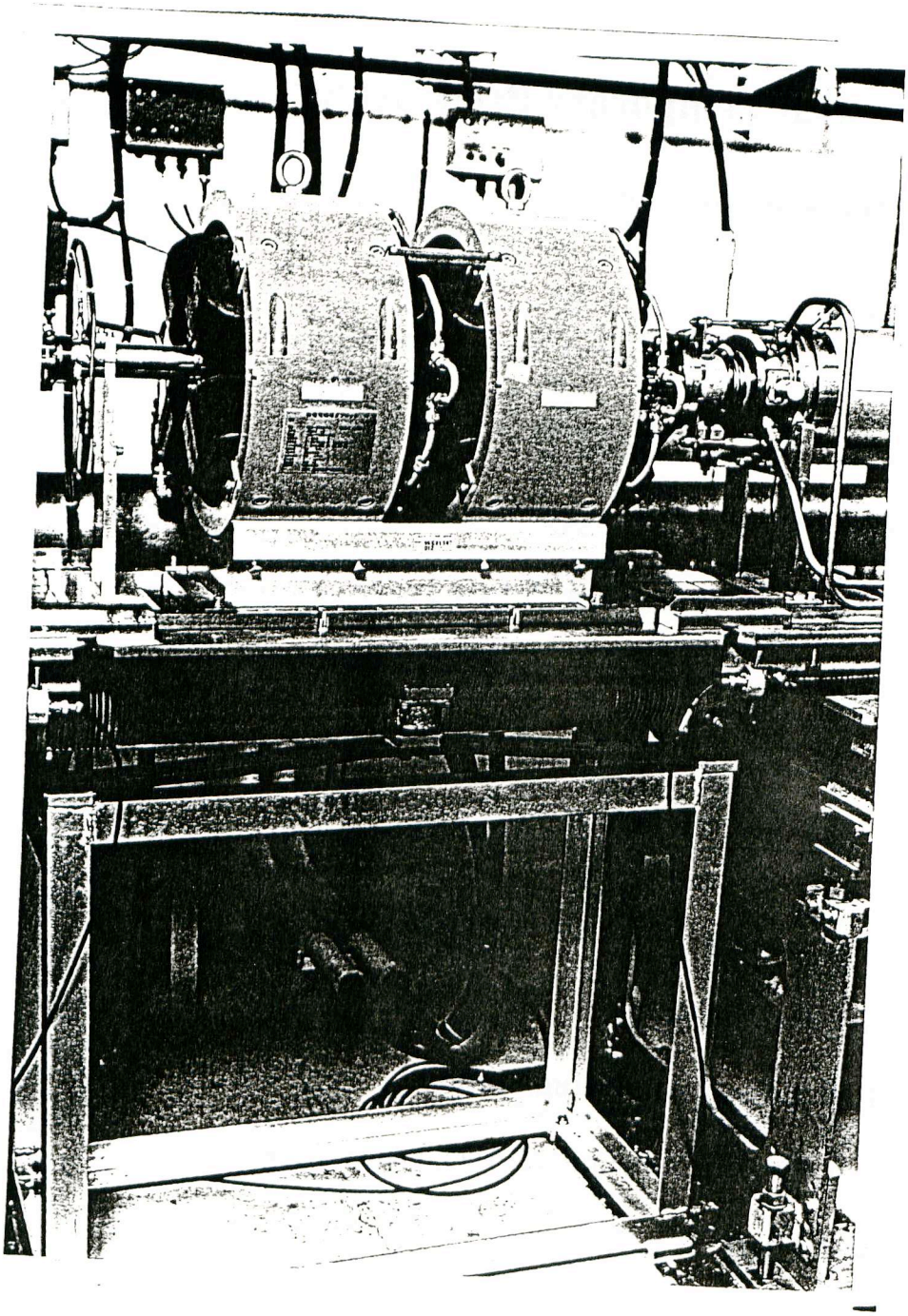




***Positron Generator Moved and Improved**



*Beam Transport Upgraded for High-Energy e-/e+ Beams



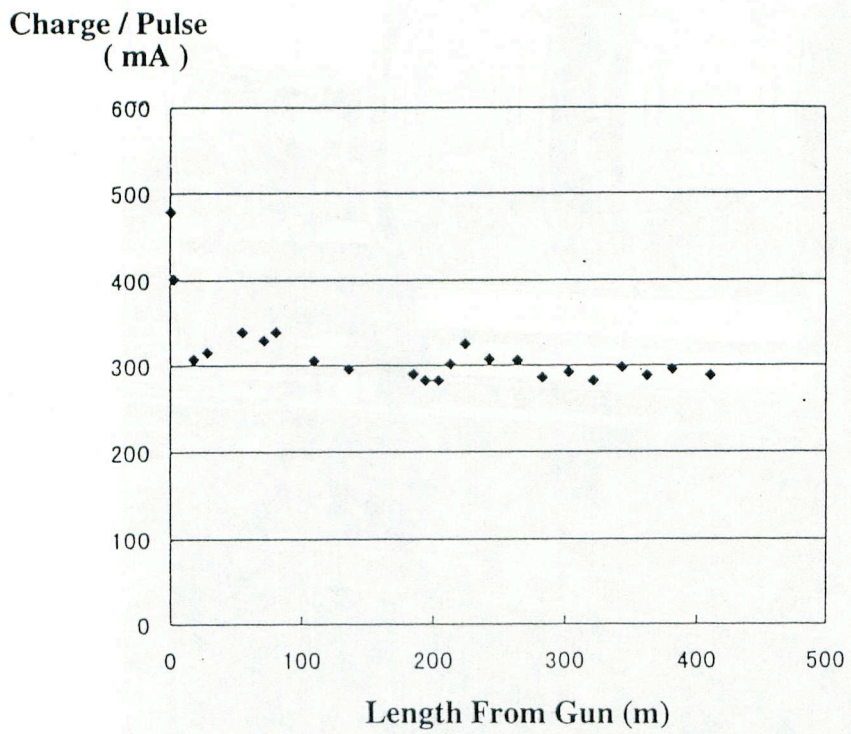
May - June

Accelerator Units Conditioned to High-Power (av. 40 MW)

July

Beam Tests with Temporary Pre-Injector

(1) Enough Beam Transmission



(2) Enough Accelerator Gain

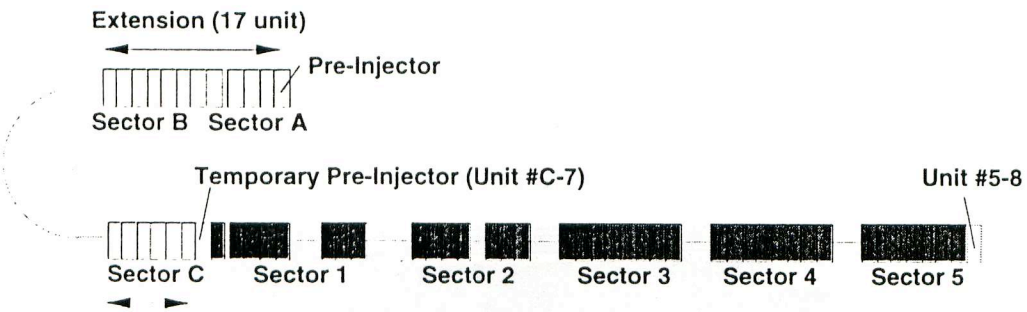
At Sector-2 End Energy Analyzing Station

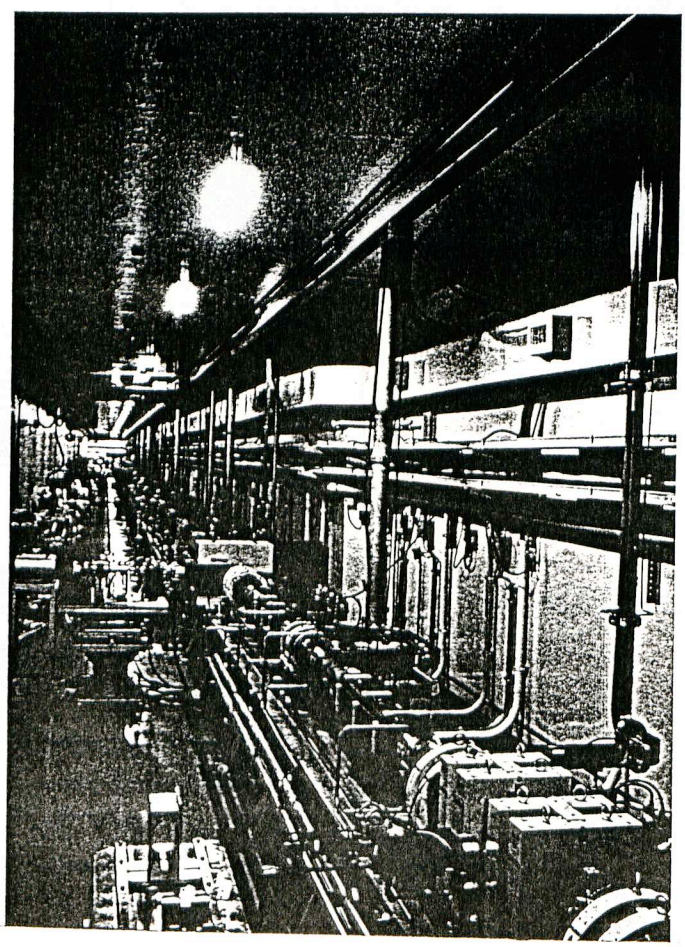
2160 MeV by A Pre-Injector and 13 Accelerator Units

~ 160 MeV / Unit

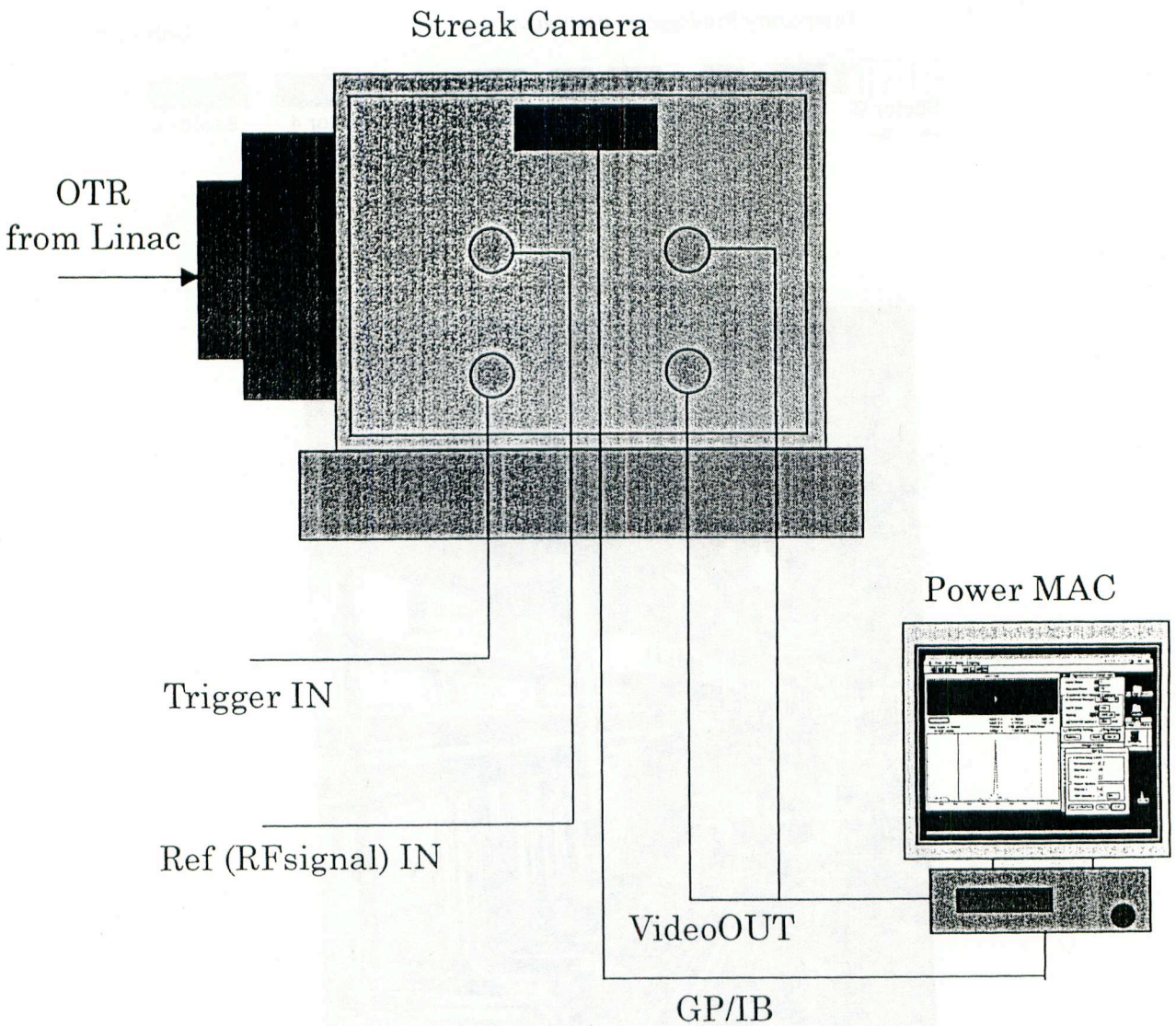
April - October

Construction of New Pre-Injector and Extended 17 Units

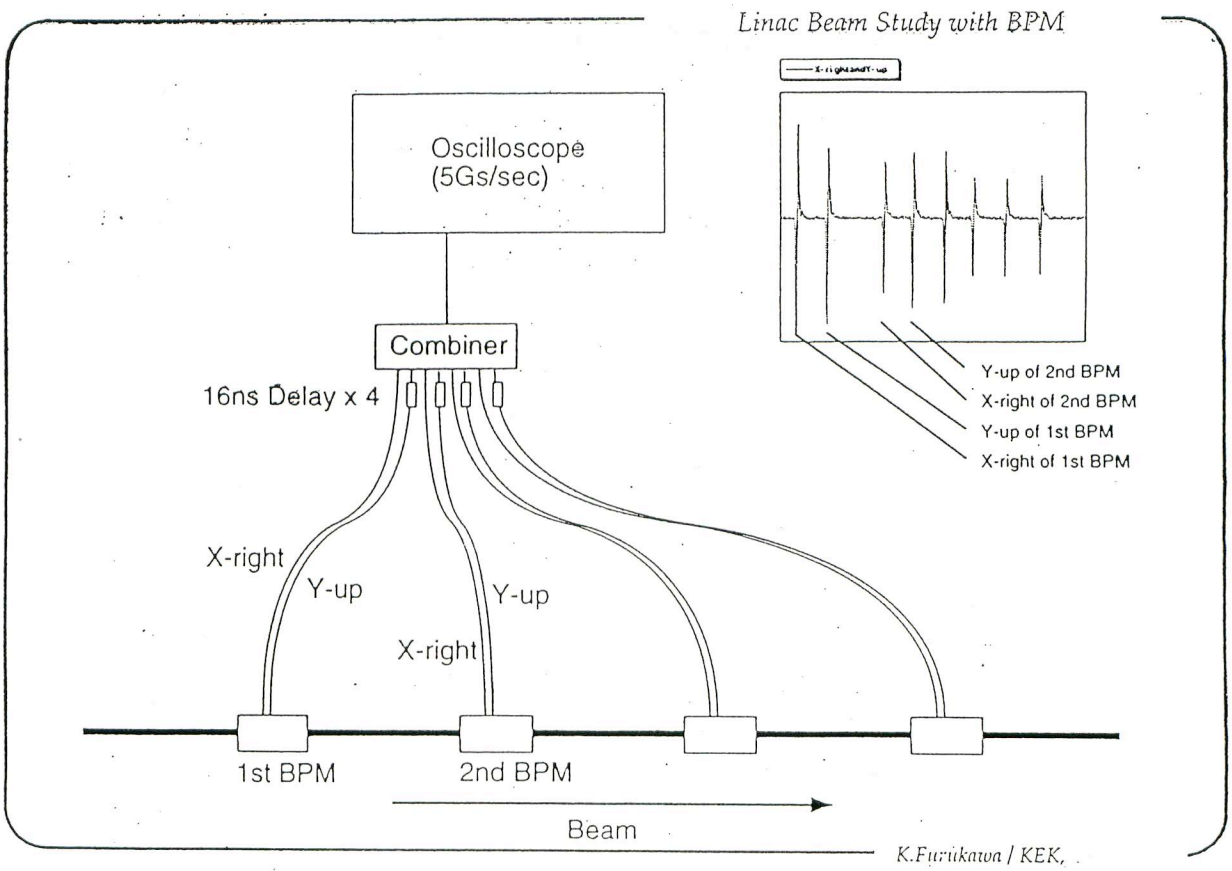


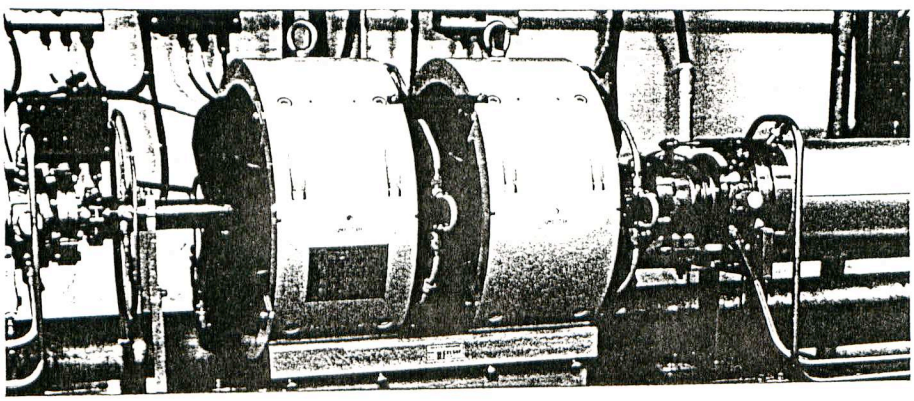


***Improved Streak-Camera System**



*Beam Position Monitors (BPMs) Installed at Every Location of Quadlepoles





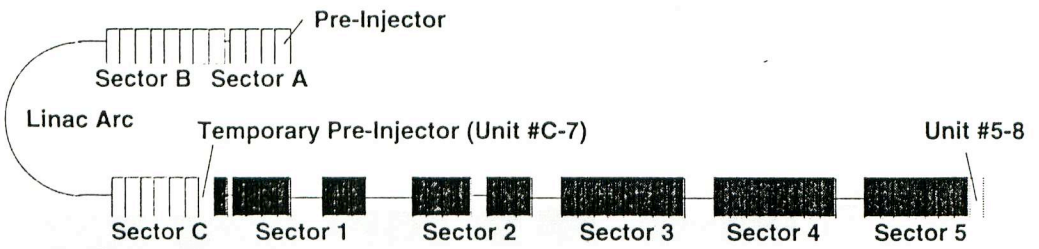
October - December

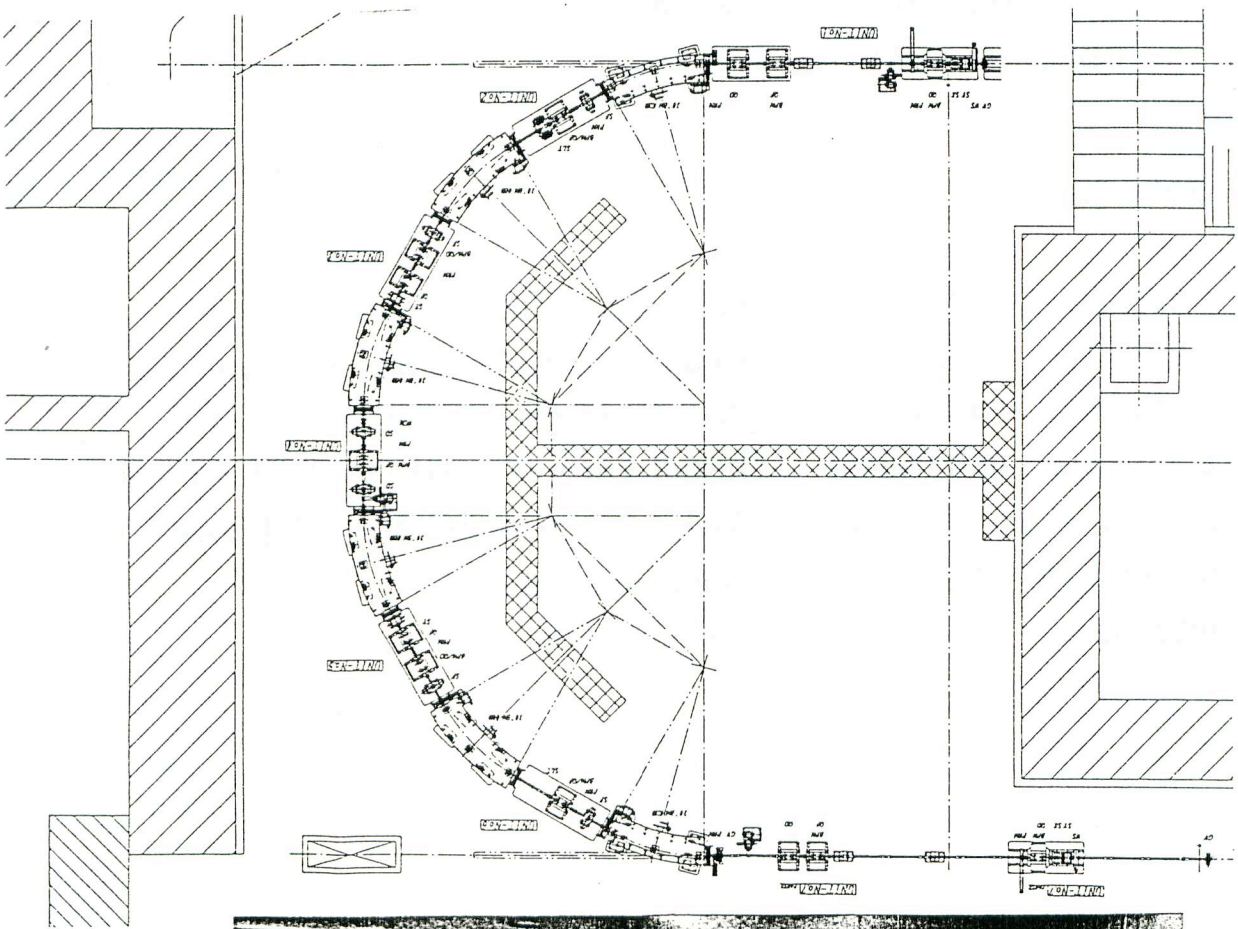
Commissioning of High-Intensity Beams Up To 1.5 GeV

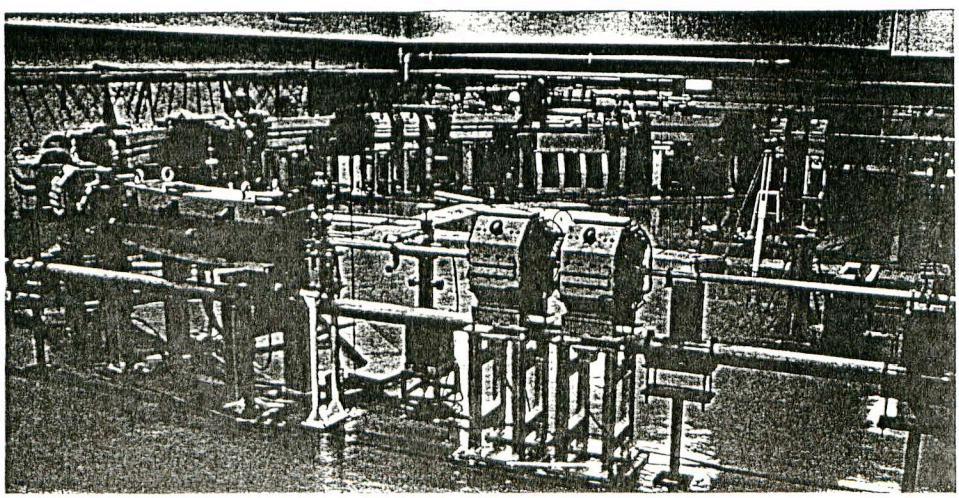
Reported Separately by Next Talk (Y. Ogawa)

January - February

Construction of Linac Arc

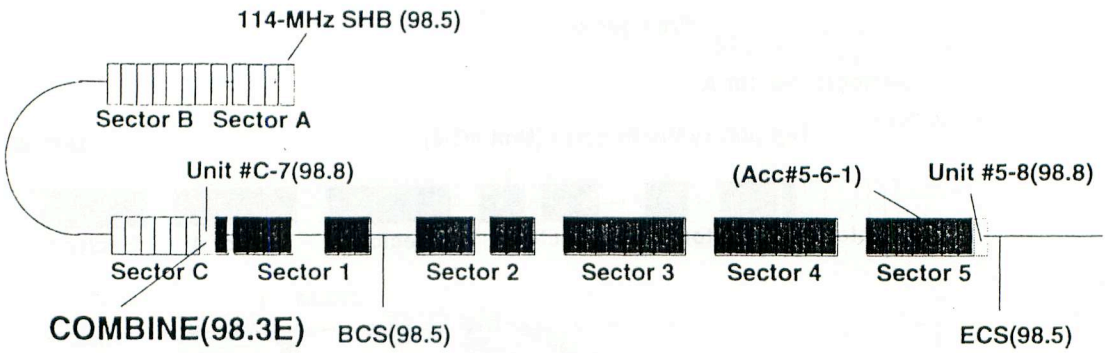






[3] Linac Schedule forward the KEKB Commissioning

The Rest to be constructed



Schedule

03/02(mon) - 03/23(mon)	Beam Test of Linac Arc
03/23(mon) - 03/30(mon)	Combine Extended and Existing Linac
03/30(mon) - 04/27(mon)	Beam Test through the Entire Linac.
04/27(mon) - 05/11(mon)	Install a new 114-MHz SHB, BCS and ECS.
05/11(mon) - 06/29(mon)	**Full Commissioning of Linac**
06/29(mon) - 09/28(mon)	Summer shutdown.
09/28(mon)	Linac Startup

[4] Summary

(1) Upgrading of the existing linac were almost completed and an accelerator gain of more than 160 MeV (20 MeV/m) was obtained by beam test.

(2) Construction of the extended linac was also almost completed and conditioned to high-power rf. At Sector A and B, a 10-nC single bunch could be accelerated and enough accelerator gain was also obtained.

(3) The extended and existing linac are to be combined as the KEKB injector and fully commissioned on schedule.