We evaluated our patient in-vivo dosimetry for four sites:
head-&-neck, breast, lung, and pelvis. All patients have diode dosimetry during first day of treatment and on a weekly-basis. Acceptability criteria: ±5% between measured and calculated doses. Approximately 10,000 entrance/exit dose measurements have been made since interfacing our diode system with RMS and database inception. Analysis by linac indicates the therapist's performance quality, and by treatment site depict inherent difficulties associated with each treatment technique. Diodes, as with any other dosimeter, have limitations:
1. Diodes must be positioned on the skin, directly over the point
of reference dose calculation. Steep slope makes proper positioning difficult; this problem is frequent in head-&-neck and breast treatments and is enhanced if wedges are used. 2. Exit doses are small numbers: small deviations in dose led to higher percentage deviations. Diode correction factors, measured in uniform phantoms, might be inadequate when large amounts of lung or bones are in the path of the beam. Deviations of ±6-7% or even greater can be expected.
Entrance dose is most often accurately measured. Our best
agreement was for 3D-prostate and pelvic fields.
Although diodes are reliable for clinical use, there is a learning
curve. Interfacing with the RMS computer was a major factor in making it possible to provide in-vivo dosimetry for all patients. Our most striking examples of error detection by diodes on first treatment day are a missing wedge and incorrect SSD.