September 23, 1980

Milestones
Cyclotron Fast Neutron Therapy Facility Team

The Cyclotron was constructed by General Electric as a turn key project and turned over to NACA for operations in 1956 as a 60 inch fixed energy machine capable of accelerating Deuterons to 21 MEV and Alpha particles to 42 MEV.

The original machine was shut down and disposed of in 1971 except for the 300 ton steel yokes, some copper coils and power supplies. The cyclotron was replaced with a new design that provided a varying energy field capability.

After the modifications the new cyclotron was operated for a rather short time period as a research tool for calibration of particle detectors for spacecraft, radiation damage to solar cells and materials. It was also used in a cooperative research effort for the food and drug administration. When nuclear energy programs were cancelled, NASA decided to keep the cyclotron intact. Some small efforts were conducted on isotope production and medical uses were being investigated. 1973 to 1975

In 1975, discussions with the Cleveland Clinic Foundation on a cooperative program between NASA Lewis Research Center and the CCF for use of the cyclotron in neutron therapy treatment of cancer cells were conducted.

Active program planning for the Cyclotron Fast Neutron Therapy Facility commenced on June 30, 1976.

In January, 1977 active scheduling and hardware fabrication had been started.

In April 1977, a contractor selected by the Cleveland Clinic broke ground for the new additions required for the treatment facility.

In June of 1977 all basic construction on the new additions had been completed except for minor punch lists.

From June through August the beam lines, magnets, controls & shielding were being fabricated and installed.

By September 1977, Calibration of equipment and acceptance by CCF and NCI had begun.

In October, 1977 the NASA computer program for patient treatment had been integrated with the CCF and NASA control room computers.

ON November 17, 1977 the first patient had received neutron therapy treatment using the newly installed equipment.

From November 1977 until September 1980, patients have been treated each Tuesday and Thursday, with a total number of 305 patients receiving the series of Fast Neutron radiation therapy. In all we have assisted the Cleveland Clinic in treatment of 117 Horizontal treatment patients, 188 vertical treatment patients, and 15 instant mixed beam treatments (instant mixed beam is Neutrons and Cobalt exposures within minutes of each other) a total of 6,452 ports have been administered. (a port is the number of times the beam stops have been opened to permit patient treatment).

In January, 1981 the Cleveland Clinic is scheduled to continue operations using the NASA Cyclotron via a grant from the National Cancer Institute for a period of five years. At that time NASA will withdraw from cyclotron operations and be involved on an as needed basis for emergencies and extended machine repairs.