

## Economic and Scientific Justifications for the Large Space Telescope

For a number of years the scientific community has spoken of the value of a large telescope orbiting outside of the earth's atmosphere. NASA has reflected this interest by contracting preliminary design and program planning studies to scientific companies, among them ITEK of the ~~5th~~ 5th district. In its FY 1977 budget, NASA requested 12 million dollars for first-year development of hardware; ~~OMB~~ OMB cut this funding out of the NASA budget. Rep. Don Fuqua, chairman of the Subcommittee on Space Science and Applications, restored \$3 million for instrument development. This money, however, will not involve optical work (ITEK'S interest), nor will any of the money be contracted outside of NASA. The benefits of a fully-funded LST to the advancement of scientific knowledge and to the Massachusetts economy are enormous.

The scientific credentials of LST are, in a word, impeccable. The telescope's impact will prove revolutionary, according to the most respected ~~scientists~~ scientists in the field. Scheduled for launch ca. 1982-83 as part of the space shuttle, LST will have a 2.4 meter (8 feet) diameter primary mirror that will permit unprecedented scientific research. With this size telescope orbiting outside of the earth's atmosphere, astronomers will be able to view the universe with greater precision and greater ~~range~~ range. Scientists predict that by escaping the deleterious effects of the earth's atmosphere, the LST will be able to observe objects 50 times fainter than those ~~observable~~ observable by the 200 inch ~~telescope~~ telescope at Mt. Palomar. In addition, the LST will be able to resolve fine detail 10 times better than Mt. Palomar, and will improve spectral analysis 100 times. These improvements may well establish facts about the origins and future of the universe unverifiable by any earth-based telescope. Close, <sup>clear</sup> and ~~clear~~ observation and analysis of the ~~tremendous~~ tremendous energy-emissions of quasars and pulsars may provide important keys to advances in the energy field.

Another advantage of the LST is that it will remain in orbit gathering valuable scientific data for at least a decade, probably more. ~~Astronauts~~ Astronauts from the space shuttle will be able to service the telescope and keep it working for over 10 years. Thus, the initial costs of launching the LST will be amortized over many years of operation.

The economic impact of the LST on Massachusetts will be highly beneficial. The total cost of the program is estimated at about \$300 million (CY 1975 dollars), ~~x~~ of which the telescope and instruments would ~~x~~ cost about \$100 million. Initial estimates of \$400-500 million were scaled down in response to congressional direction.

Because of its involvement with NASA for more than 5 years on this program, ITEK stands in an excellent position to be awarded the contract to design and construct the ~~xx~~ telescope. The company estimates the contract will ~~amount to~~ amount to \$60 million over 8 years. Seventy to eighty per cent of this money will be spent in Massachusetts. Into a depressed economy, the contract would directly inject 600 jobs. (ITEK alone estimates ~~it will~~ <sup>it will</sup> would hire 100-200 workers.) The secondary effects of this award are likely to mean another 1000 jobs. Thus, Massachusetts would benefit by approximately 1600 jobs.

In the longer run, the LST contract could help to arrest the ~~decline~~ <sup>decline</sup> in employment in ITEK's Optical Division ~~for~~ <sup>from</sup> its peak of about 2500 in 1969 to its current level of about 800. The strengthening and revitalization of such a large employer as ITEK would be a ~~xxx~~ strong antidote to the ailing Massachusetts economy. In addition, the design and construction of the telescope in Massachusetts would benefit the state's colleges and universities by bringing them into the research and development of the telescope at a time when many of them are ~~experiencing~~ experiencing financial difficulties.