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Transmitted herewith is Project Evaluation Report No. PER-12 on Indian Institute of Technology, Kanpur, as requested in refair.

~~ABERNATHY~~

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Project Title and Number: Indian Institute of Technology, Kanpur
386-W-66-AB 386-11-660-150

1. The Background Situation

A. After independence, the Government of India recognized the need for industrialization and began planning an ambitious program for developing engineering education. During the first two Five Year Plans a number of new engineering colleges were established and existing institutions were expanded. This growth is reflected in the following table which also includes the targets of the Third Plan:

Engineering colleges and polytechnics, admission capacity and outturn:

Year	Degree Courses			Diploma Courses		
	No. of Insts.	Admission Capacity	Outturn	No. of Insts.	Admission Capacity	Outturn
1950-51	49	4120	2200	86	5900	2480
1955-56	65	5890	4020	114	10480	4500
1960-61	100	13860	5700	196	25570	8000
1965-66	117	19140	12000	263	37390	19000

Source: India's Third Five-Year Plan, p.608

B. Soon after independence the GOI appointed a committee under the chairmanship of N. R. Sarkar. Its Report (1948) observed that "...the existing facilities for higher technical education in India are inadequate both in quality and quantity to satisfy India's post-war need for high grade technologists." It recommended that four national higher technological institutes be established--one each in north, south, east and west India. These institutes would be expected to (a) provide a large number of additional places for students, and (b) set the standard for engineering institutions throughout India in terms of the need to improve engineering education.

Three Indian Institutes of Technology were started prior to 1960: at Kharagpur in 1951 with help from UNESCO and Colombo Plan, at Bombay in 1958 with UNESCO help using largely Soviet technicians and equipment, and at Madras in 1959 with help from the Federal Republic of Germany.

The Sarkar Committee recommended a fourth to be established at Kanpur. The GOI accepted the location and approached the Mission for assistance.

In December 1958, the Mission brought out a survey team of six engineering professors assembled by the American Society for Engineering Education to advise and counsel on the establishment of an IIT at Kanpur. They visited engineering

institutes and industries for six weeks and submitted a report in two parts which supported the idea. In addition the report indicated the broad outlines of the type of institution which should be developed at Kanpur.

The project loomed so large and complex that the greater part of 1959 and 1960 were consumed in getting it into the programming process. Both Indians and Americans wanted it to be a truly high-level institution of the Massachusetts Institute of Technology type.

C. So much time passed that American delays in decision making began to be embarrassing. The GOI decided to go ahead with or without American aid. AID/W explored with Massachusetts Institute of Technology its interest in taking on the responsibility. A team of three from Massachusetts Institute of Technology under a Ford Foundation grant surveyed the situation, supported the idea, but said that M.I.T. should not undertake the project. Eventually other universities were approached and finally the consortium idea was evolved. Nine universities collaborating on other projects under the title of Educational Services Incorporated sent out a team of seven from member universities to explore further; and one technician devoted four months to preparation of a list of equipment to be purchased. A contract was signed February 21, 1962. No other foreign or international agency is assisting with this project.

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II. Objectives

A. Short Range Objectives

1. To build a new high-level technical institute or engineering college from the ground up.

2. To provide additional seats for undergraduate engineering students.

3. To provide high-quality graduate engineering programs.

4. To create a strong institution well balanced in its offerings in both research and teaching.

B. Long Range Objectives

1. To develop a leading technological institute characterized by
   a. A science-based, largely non-specialized, undergraduate program with specialization primarily at the post-graduate level.
   b. Industry-oriented research.

2. To set the standard for up-to-date functional engineering education throughout India.

3. To demonstrate the best in American engineering education suitably adapted to Indian needs including American instructional and student-assessment methods.

4. To prepare teachers for other engineering colleges and high-level people for scientific, technological, and engineering work.

III. Resources Committed

A. The GOI secured a campus and is erecting buildings. The teaching program began on August 9, 1960 with one hundred first year students who were housed in a portion of a nearby technical college. Up to February 1963, the GOI has committed Rs.13,807,000 for recurring expenditures.

Beginning November 11, 1960, the U.S. provided a four-month consultant on equipment and commodities. AID/I was asked to provide a consultant on campus planning and early operational problems but slow U.S. procedures made it inadvisable for the Mission to try to do so by the date desired.

The U.S. has agreed to provide 105 man-years of technician services, 90 man-months of participant training and equipment worth $4.2 million. In addition the U.S. agreed to pay an amount of $4 million as the costs of land development, buildings, and indigenous equipment to supplement limited Indian funds available.

The Ford Foundation brought out a M.I.T. team of three, mentioned above, to look into the proposal.

In early fall of 1961 the Mission Technical Education Advisor, the Joint Secretary of the Ministry of Scientific Research and Cultural Affairs, and the Director of the IIT Kanpur spent more than a month in the U.S. conferring individually and collectively with consortium members.

B. U.S. Funds Obligated

	Dollars	Local Currency (U.S. Owned Sec.402)	PL 480
Total through 6/30/62	4,265,373.71	$430,000	$ 940,000
FY 63 (Projected)	1,824,000.00	70,000	1,671,000
	6,089,373.71	$500,000	$2,611,000

Total $9,200,373.71

IV. Factors Accelerating or Inhibiting Progress

A. On Host Country Side

1. Major difficulties encountered

a. Some delays occured in selection of instructional and research personnel. Delay was mainly due to non-expansion of buildings to start new classes. Now that the construction work has started the selection of research and instructional personnel is well underway.

b. Participant selection has been delayed largely because of slow staff selection. It is planned to send 90 participants by the end of program each for a period of 12 man-months.

c. Cement shortage due to the national emergency in January 1963 caused building construction to slow up. The problem is at least temporarily solved now (March).

2. Factors accelerating progress

a. The Institute of Technology at Kanpur is a creature of the Central government and avoids the complexities of Center-State relationships.

b. The GOI continues to give the IIT high priority.

c. The GOI has simplified some of the procedures normally required in other projects.

d. Enthusiasm has built up; willingness and insight were accentuated by the visit to the United States of the Director and the Joint Secretary. There they became acquainted with some of the attitudes, outlooks, and practices prevalent in American engineering education.

e. The IIT Director is one of the most competent and dynamic among Indian administrators and leaders of men in engineering education. His full control of expenditures on his own campus avoids delays often found in bureaucracies.

B. On U.S.Side

1. Specific devices or tactics facilitating progress

a. AID/W officials seemed reluctant to make a decision on this

project until support, by way of the M.I.T. President and the Science Advisor to the President, reached J.F. Kennedy who made a public announcement supporting it.

b. The consortium idea provides a sufficient institutional base from which top U.S. professors can be drawn.

c. The consortium has provided an able and enthusiastic group leader and, to date, has provided able technicians as rapidly as they could be recruited.

d. The Mission has streamlined some procedures in acceptance of technicians and procurement of commodities.

e. Relaxation of the "two-year requirement" on technicians enables institutions to release more high quality men for shorter periods.

2. How might performance have been improved?

a. AID/W officials might have recognized immediately that a project of this size would be too big for any single American institution to handle. No engineering staff could afford to keep 20 of its top men in India at once.

b. AID/W might have accepted the consortium idea the first time it was mentioned as a practical possibility instead of delaying several months.

c. Decision making on the whole idea might have been hastened if the people involved had pushed harder for a decision.

V. Accomplishments

A. The GOI has secured 1200 acres for a campus and engaged a firm of architects to prepare building plans. Construction is proceeding apace. About 50 classrooms and laboratories, 100 staff quarters, and hostel rooms for 300 students have been built.

B. A director and about 24 staff members have been working for three years. An undergraduate teaching program began in August 1960, with 100 first-year students housed in another technical institute in Kanpur. Classes of similar size were admitted in 1961 and 1962.

C. About 35 new top and intermediate instructional staff members have been selected recently in addition to those employed earlier to

teach the undergraduates. Most of them have had training in the U.S. though not under this project. New staff will be joining in the next few months and start developing post-graduate instruction and research programs.

D. One participant has been sent to the U.S. under this project for study, observation, and experience.

E. Eleven technicians are working at Kanpur; this number is all that were expected as of February 28, 1963.

F. A short-term consultant has worked out the overall plan for library services and sketched out the layout and location of the new library building.

G. Another short-term consultant has developed plans for the IIT to include a balanced program of education in the humanities.

H. Specifications for extensive lists of equipment have been prepared and commodities are being ordered.

INDIAN INSTITUTE OF TECHNOLOGY, KANPUR
WORKSHEET - STATUS OF DEVELOPMENT

COMPONENTS	1960 (BEFORE)	1963 (NOW)
Basic Law Governing	Act of Parliament to declare certain institutions of technology to be institutions of national importance such as IIT Kharagpur, Bombay, and Madras.	President gave assent to the Act in the development of IIT Kanpur to be established in the pattern of U.S. educational methods suitably adapted to Indian needs
Building	Housed in a portion of a technological institute.	Secured 1200 acres of land. About 90 classrooms and laboratories, 100 staff quarters and hostel rooms for 300 students have been built and further construction is proceeding.
Faculty	1 Director; 5 Assistant Professors; 16 Lecturers and 2 Assistant Lecturers. There was a delay in selection of staff which was mainly due to non-expansion of building to start new classes.	One Deputy Director has been added. Thirtyfive top instructional staff members have been selected. With the progress of further construction, selection of research and instructional personnel is well underway.
Curriculum and Admission	Five year integrated course leading to a Bachelor's Degree. One hundred students were admitted in the first year. No procedure was set up for selection of students.	Undergraduate studies leading to degree in Chemical, Civil, Electrical, Mechanical, Metallurgical engineering. A limited number of research students have been admitted in Physics and Mathematics for post-graduate and doctorate studies. A set of procedures has been laid down for admission and selection is made on the basis of the Joint Entrance Examination of all the Institute of Technology held in May every year. Three hundred students were enrolled up to 1962. When fully developed it will accommodate 1600 undergraduates and 400 post-graduates.
Instructors Sent to the U.S.	None	One participant left for 12 months training. It is planned to send 90 participants by close of program.

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VI. Appraisal by Reporting Technical Division

A. Once the contract was signed, the contractor moved ahead on schedule. A full quota of 20 technicians is expected within a few months. Participants are a few months behind schedule but this is not serious when related to the campus development and staff recruitment. Contractor is keeping in step with campus developments. Commodity pipelines are filling up and first deliveries will be made soon after building space is ready.

B. Technicians have been at Kanpur less than a year. The Project is still very young. However, the IIT, Kanpur, gives every promise of becoming the, or at least one of the four, top IIT's in India. It is fully expected to blaze new trails in engineering education in India. It will carry a heavy American imprint and should, in time, provide the guide lines for and much influence on engineering education in this nation. The organizational pattern, policies, practices, and instructional and research methods are expected to have a continuing multiplier effect on Indian engineering education for decades to come.

C. The IIT, Kanpur, is demonstrating the virtues of a sound consortium approach to large technical assistance projects which could well be emulated in other similar situations.

VII. Mission Director's Concurrence or Comment

The Mission Director concurs.