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REPUBLIC OF KOREA

K-SRI PROJECT
A. I. D. LOAN NO. 489-W-093

QUARTERLY PROGRESS REPORT

NUMBER 5

(January - March 1977)

JUN 1 1977

THE KOREA STANDARDS RESEARCH INSTITUTE

C. P. O. Box 156, SEOUL, KOREA

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May 13, 1977

Mr. Dennis P. Barrett
Representative
USAID/K, Seoul

Subject: Quarterly Progress Report No. 5
AID Loan No. 489-W-093

Dear Mr. Barrett:

Herewith submitted is K-SRI's Quarterly Progress Report for the period of January 1, through March 31, 1977, in accordance with Section VI, C.2. Implementation Letter No. 1, dated September 24, 1975.

Your continuous cooperation will be appreciated.

Sincerely yours,

for Zae-Quan Kim
President

QUARTERLY PROGRESS REPORT

(January - March 1977)

Table of Contents

		Page No.
I.	GENERAL	1
II.	CONSTRUCTION	2
III.	PROCUREMENT OF RESEARCH EQUIPMENT	4
IV.	PERSONNEL AND RECRUITMENT	7
V.	TRAINING	12
VI.	FINANCE	18
VII.	EVALUATION	20
VIII.	OTHER ACTIVITIES	23

QUARTERLY PROGRESS REPORT

(January - March 1977)

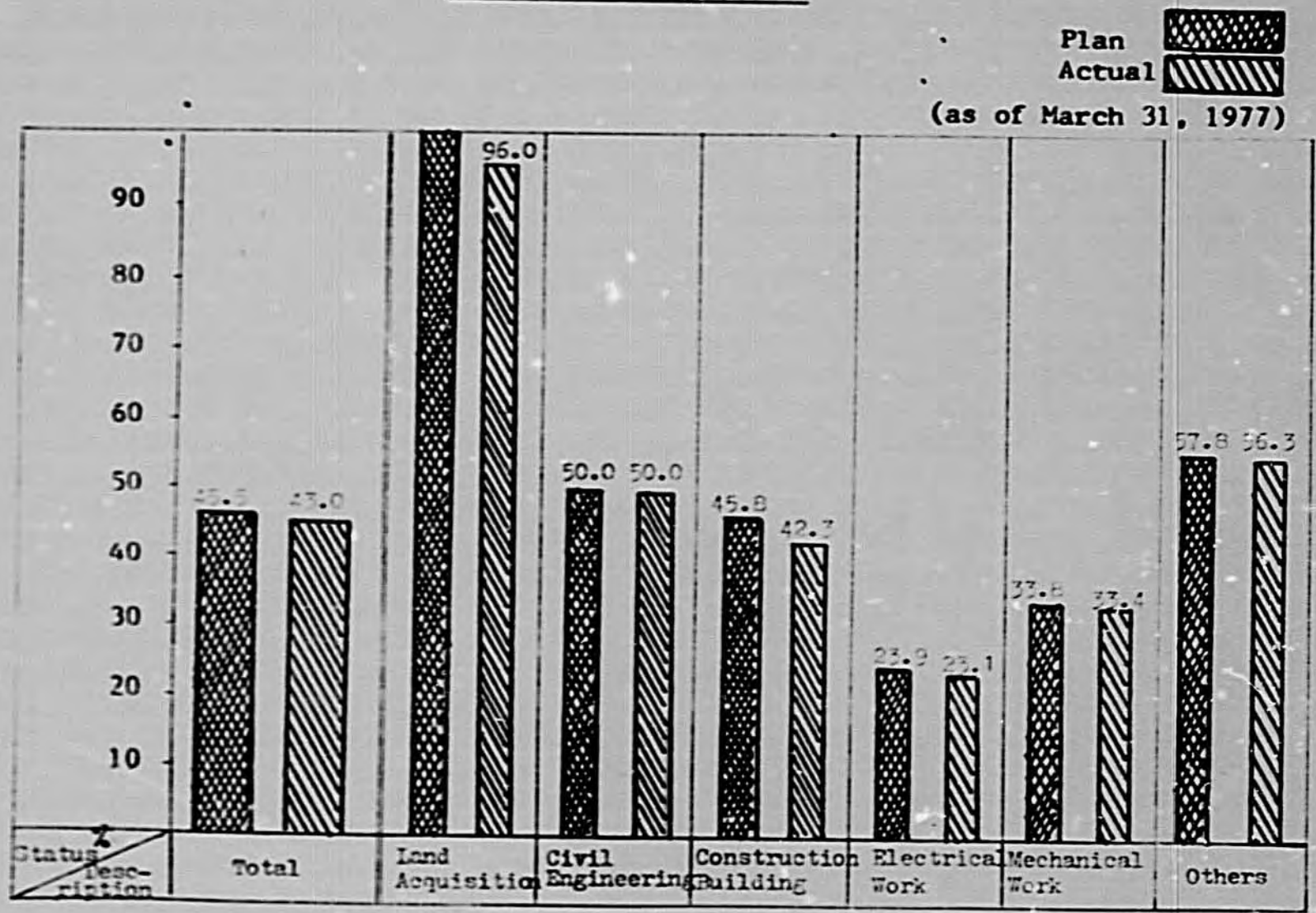
I. GENERAL

During the first quarter of 1977, K-SRI completed 95.1% of the original quarterly tasks as set forth in the general implementation plan and construction of main projects proceeded nearly on schedule without difficulty. K-SRI's overall financial status in the first quarter of 1977 showed that only 10% of the total quarter's budget was expended as a result of a carry-over from the previous quarter of funds from a prior construction contract. The Institute expects to proceed on schedule with all of its programs, thus ensuring that it will be fully operational in 1978. The procurement of research equipment, recruitment of major positions among the research staff, training at NBS and international relations and other activities are described in a more specific manner in the succeeding paragraphs.

II. CONSTRUCTION

During the first quarter of 1977, major construction projects completed to date included the second floor steel-base assembly work of the main building, first floor concrete work of research building #1, concrete form of basement for research building #2 and concrete was laid partially for the power plant. The cumulative progress at the end of this quarter represents 94.5% of the projected target. Of the funds originally alloted to construction for the first quarter, only 2% was actually spent. Again, this can be attributed to a carry-over from the previous quarter of funds from a prior construction contract. Out of a projected land purchase of 33,430 m^2 in this quarter, K-SRI has already purchased 17,370 m^2 and the remaining land area of 16,060 m^2 is planned to be purchased after all the other research institutes at the Daeduk R&D Complex have been apportioned. Residential quarters for the research staff will be built on the remaining land area.

STATUS OF CONSTRUCTION



Progress in construction in this quarter is rated at 43%. Below, in percentage ratio, is an itemization of progress achieved in construction:

a. Civil Engineering 50.0%

b. Land Acquisition 96.0%*

c. Building Construction 42.3%

d. Electrical Work 23.1%

e. Mechanical Work 33.4%

f. Others 56.3%

* Due to increase of land to acquire 10,000 m^2 for the guest house site

I. PROCUREMENT OF RESEARCH EQUIPMENT

a. Status of NBS Review for Specification: NBS has reviewed 143 specifications for K-SRI research equipment until the first quarter of 1977.

b. Procurement of Research Equipment: K-SRI has placed an order and processed through OSROK bids for 181 items of research equipment during the first quarter of 1977. In particular, small-value items valued at $300,000, comprise the remaining portion of research equipment yet to be procured and, therefore, procurement of these items will proceed as planned. It is also noted that some low priority items may not be procured due to the 30-50% inflationary rate.

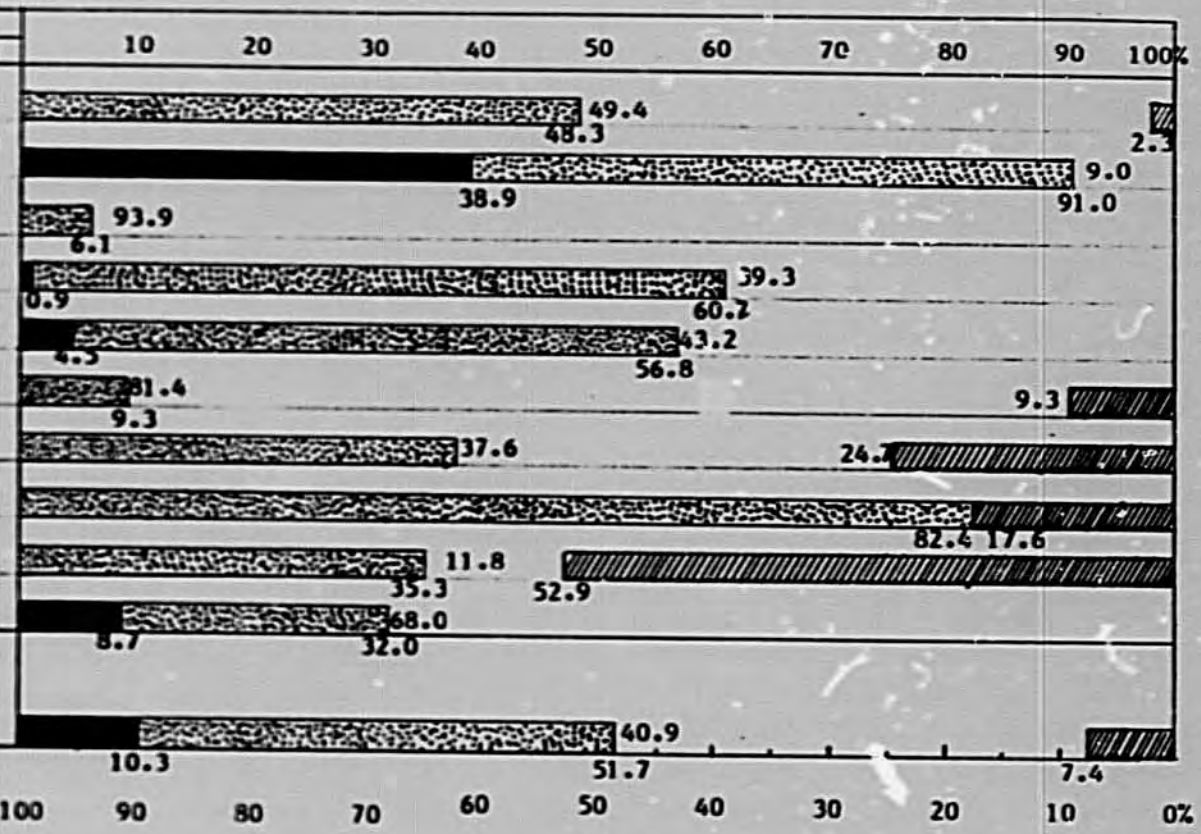
c. Specification Status of Research Equipment by Specialization Fields

Status / Major Field	No. of items to be procured by K-SRI	No. of items reviewed by NBS	No. of items requested for order	No. of items on process for bidding	Remarks
Mechanical	108	33	-	39	See footnote below
Electrical	123	85	56	36	
Acoustical	47	-	-	-	
Thermal	82	38	1	44	
Optical	22	1	1	11	
Dosimetry	43	4	-	3	
Maintenance	79	5	-	9	
Chemical	32	12	-	14	
Photographic	49	11	10	11	
Mobile Van	70	23	-	14	
Total	655	212(32.4%)	68(10.4%)	181(27.6%)	

Footnote: In some instances, one specification contains a number of similar items which can be used by several major fields. Therefore, same specification could be used in two or more different major fields. Most of the remainder belongs to small-value items category.

d. EQUIPMENT PROCUREMENT PROGRESS CHART (% OF NO. OF ITEMS)

	TEMPO V		FINISHED		
	#1	#2	#3	#4	#5
A. MECHANICAL	87	32	42	2	
B. ELECTRICAL	167	1	152		65
C. ACOUSTICS	49		3		
D. THERMAL	107		65		1
E. OPTICAL	44		25		2
F. IONIZING RADIATION	43		4	4	
G. MAINTENANCE FACILITY	77		29	19	
J. CHEMICAL	17		14	3	
K. PHOTOGRAPHY	51		18	27	
M. MOBILE VANS	103	4	33		9
TOTAL	745	37	385	55	77



#1 Purchased Items

#2 Transfered Items

#3 Completed NBS Review

#4 Small Value Items

#5 Bidding & Contract

IV. PERSONNEL AND RECRUITMENT

a. Recruitment of Research Staff Abroad

In an effort to recruit intensively, the Institute disseminated recruitment information to 594 Korean scientists in the US, 66 in West Germany, 62 in the United Kingdom, 55 in France and 1 in Switzerland. As an additional step, K-SRI President plans to make a trip to the US to interview various applicants in May, to be followed by another trip to Europe in July for the same purpose. Research staff members committed to join K-SRI during this quarter follows:

1) Dr. Nahm, Kyun (Ph. D. in Physics, 1975, Ruhr Univ.) to start work effective April 1977 as Chief, Alternating Current Standards Laboratory.
2) Dr. Moon, Hahn Gue (Ph. D. in Solid Mechanics, 1973, John Hopkins Univ.) to join effective January 1978 as Acting Chief, Materials Testing Laboratory.
3) Dr. Jo, Byeong Hyeok (Ph. D. in Chemistry, 1975, Georgia Institute of Technology Univ.) to work as senior researcher in the Chemical Analysis Laboratory, recruited from the US.

b. Staff Members Recruited in Korea During this Quarter

1) Mr. Kim, Sung Soo (M.A., Economics, 1976, Sung Kyun Kwan Univ.) to work as Program Manager for the Special Program Planning Dept. from March 1977. He worked at Korea Productivity Center as Chief, Industrial Economic Survey Dept. from December 1969 - March 1977.

2) Mr. Lee, Kyung (B.A., Statistics, 1972, Korea Univ.). Joined as a researcher in the Special Program Planning Dept. since March 1977.

3) Mr. Cha, Yong Ku (B.A., Library, 1975, Yonsei Univ.) to work as a technician in the Technical Information Dept. from March 1977.

4) Mr. Lee, Yong Sang (Applied Chemistry, Masan Engineering High School, 1964) to work as a technician in the Calibration Technology Department from March 1977. He worked at 81st Precision Measurement Equipment Laboratory, ROK Air Force from June 1974 - April 1977.

5) Mr. Pak, Dong Chul (Electronics, Taegu Kyung Sung Engineering High School, 1970) to work as a technician in the Calibration Technology Dept. from March 1977. He worked at 85th Armament and Electronics Depot, ROK Air Force from March 1971 - January 1977.

6) Mr. Kim, Chul Soo (Yung Nam Commercial High School, 1969) to work as a technician in the Calibration Technology Dept. from Feb. 1977. He worked at 85th Armament and Electronic Depot, ROK Air Force from March 1971 - January 1977.

c. Research Staff Members Committed to Join in Korea

1) Dr. Rhee, Chung Hi (Ph. D. in Physics, 1969, Brown Univ.) to join from May 1, 1977 as Chief, Temperature Standards Laboratory.

2) Mr. Do, Jin Yul (M.S., Solid State Physics, 1977, In Ha Univ.) to work as a researcher in the Mass, Volume, Density Laboratory from June 1977.

3) Mr. Hong, Kyung Chul (M.S., Fluid Physics, 1976, Seoul National Univ.) to work as a researcher in the Pressure Fluid Flow Laboratory from June 1977.

4) Mr. Koh, Jae Gui (M.S., Physics, 1974, Korea Univ.) to work as researcher in the Electro-Magnetic Laboratory from June 1977.

5) Mr. Kim, Jin Ock (M.S., Physics, 1976, Soong Chun Univ.) to work as a researcher in the Alternating Current Standards Laboratory from June 1977.

6) Mr. Kim, Dong Woo (B.A., Business Management, 1965, Sung Kyun Kwan Univ.) to work as a senior researcher in the Special Program Planning Department from April 1977. He worked at Korea Productivity Center as a researcher in the Industrial Economy Survey Department from April 1976 - February 1977.

7) Mr. Doh, Jae Hong (B.S., Physics, 1960, Seoul National Univ.) to work as a senior researcher in the Measurement Technology Laboratory from July 1977.

d. Recruitment Status of Research and Technical Staff

(As of March 31, 1977)

Status / Description	Employed			Committed			Aggregate
	In-country	Overseas	Total	In-country	Overseas	Total	
Research Staff	20	1	21	5	9	14	35
Technical Staff	9	-	9	-	-	-	9
Total	29	1	30	5	9	14	44

e. Classification of Research and Technical Staff by Education and Specialization

Education	Number
Doctorate	12
Master's Degree	20
Bachelor's Degree	9
High School	3
Total	44

Major Field	Number
Physics	24
Chemistry	7
Mechanical Engineer	2
Electrical Engineer	3
Others	8
Total	44

f. Status of K-SRI Staff

Top Management	Research Staff	Technical Staff	Administrative Staff	Others	Total
4	20	9	23	28	84

V. TRAINING

a. Status of Training

The first trainees undertook their training at NBS, and successfully completed their training during the period commencing December 4, 1976 through March 11, 1977. The detail of training activity taken by each trainee is described below:

1) Dr. LEE, Kwang Woo, Chief, Chemical Standards Lab. undertook a training in Analytical Chemistry and Standard Reference Materials and Photographic Laboratory at NBS from Dec. 4, 1976 - Mar. 2, 1977.

   (a) Analytical Chemistry Division

      (1) SRM's for Spectrophotometry (R. Mavrodineanu and R. W. Burke)

      (2) Homogeniety Test by Optical Emission Spectroscopy (J. A. Morris)

      (3) X-ray Fluorescence Analysis and Borax Bead Techniques (P. A. Pella)

      (4) Design and Basic Equipment for Chemistry Laboratory (J. K. Taylor)

      (5) SRM's for PH Measurements (R. A. Durst)

      (6) Gaseous SRM by Dynamic Dilution Pressure Blending and Gravimetric Preparation (E. E. Hughes)

(7) High-Purity Reagents by Sub-Boiling Techniques (J. R. Moody)

(8) High Precision Coulometry (G. Marienko)

(9) Clinical and Bio-organic SRM's (R. Shaffer and H. S. Hertz)

(10) Automic Absorption Techniques (T. C. Rains)

(11) Preparation of Steel SRM's (J. Schultz)

(b) Office of Standard Reference Materials

(1) Administration of OSRM (P. Cali)

(2) Establishment of SRM Production Priorities (G. A. Uriano)

(3) Preparation of Metal and Alloy SRM's (R. Michaelis)

(4) Organic SRM's (T. Mears)

(5) Trace Element SRM's (R. Alvarez)

(6) Operation of Machine Shops (W. Reed)

(c) Photographic Laboratory

(1) Design and Operation of Photo-Lab (Hale)

2) Mr. WON, Jong Wook, researcher, received training on laser application for precision measurements and industrial application of laser technology from Dec. 4, 1976 - Mar. 11, 1977. He learned how to use and/or calibrate for 34 instruments for length and angle measurements.

(a) Taking pictures of tape bench, indexing table calibration, surface place measurement with straight edge, surface plate measurement with autocollimator

(b) Copy computer programming for length and angle laboratories, surface plate measurement with laser

(c) Recording manufacturer's address and telephone numbers and books for length and angle laboratories

(d) General discussion for length and angle, laser power measurement

(e) Visit Hewlett Packard factory in Loveland, Colorado and visit the University of Colorado

3) Mr. YOO, Han Il, researcher, received training in the Solid State Chemistry Section, Heat Division, Optical Physics Division and Cryogenics Division (Boulder) from Dec 4, 1976 - Mar. 11, 1977. The details of his training are:

(a) Design of high temperature furnace

(b) Research on phase diagram of Al_2O_3-SiO_2-K_2CO_3-Fe_2O_4 system

(c) Attendance at workshop on "Applications of Phase Diagrams in Metallurgy and Ceramics" held at NBS from Jan. 10, 1977 - Jan. 12, 1977

(d) Realization of some IPTX-68 fixed points

(e) Calibration of thermocouples, liquid-in glass thermometers, standard platinum resistance thermometers and pyrometers

(f) Overview of low temperature measurement devices including acoustic thermometer, noise thermometer, gas thermometer, etc.

(g) Overview of cryogenic temperature standards with use of transition temperature of super-conduction materials

4) Mr. CHO, Yong Myung, technician, received training at NBS in the calibration of industrial instruments in all phases from Dec. 4, 1976 - March 11, 1977. The details of his training are:

(a) Maintenance of standard resistors

(b) Resistance-measurement techniques

(c) Capacity and inductibility-measurement techniques

(d) Calibration of standard capacitors and inductors

(e) Operation and maintenance of Josephson Junction System

(f) Measurement of standard cell voltages using the Josephson Junction System

(g) Maintenance and calibration of standard cells

(h) Operation and calibration of AC-DC transfer equipment

(i) Operation and calibration of watt-hour meter standards

(j) Operation and calibration

(k) Operation, maintenance and calibration of related items

(l) Overview of absolute measurement

(m) Overview of operational problems of specific laboratories

(n) Overview of dimension, mass, volume, force, fluid flow, density and pressure laboratories

(o) Overview of US Army primary laboratory

(p) Operation, maintenance and calibration of RF power measurement laboratory

(q) Visiting various factory facilities

(r) Operation, maintenance and calibration of RF microwave impedance laboratory

(s) Overview of US forces metrology training program

b. Status of Training for the Second Trainees

1) Mr. KIM, Ki Choong, senior researcher in Pressure Standards Laboratory is to receive training at NBS in

pressure measurements to strengthen working experience and guidance on the installation, operation and maintenance procedures (principles and practices) for the equipment to be used in the pressure laboratory from April 2 - June 1977.

2) Mr. SHIN, Hyun Kyoo, researcher, is to receive training at NBS in mechanical testing and mechanical wear standards to provide working experience and guidance on the installation, operation and maintenance procedures (principles and practices) for the equipment to be used in the Materials Testing and Force Standards Laboratory of K-SRI from April 2 - June 1977.

3) Mr. AHN, Chong Chan, researcher, is to receive training at NBS in electrical measurements to provide working experience and guidance on the installation, operation and maintenance procedures (principles and practices) for the equipment to be used in the Electrical Calibration Laboratory of K-SRI from April 2-June 1977.

VI. FINANCE

a. Financial Status of Loan Funds

Unit: $1,000

PROJECTS	FIRST QUARTER (Jan.-Mar.77)		CUMULATIVE (Jan.76-Mar.77)		GRAND TOTAL	
	Budget	Expenses	Budget	Expenses	Budget	Expenses
Procurement of Research Equipment	-	-	650	-	3,550	-
Overseas Training	35.4	See Note	179.4	-	530	-
Library Materials	-	-	100	-	100	
NBS Services	38	69	197	74	300	74
K-SRI Coordinator at NBS	9	14.8	30	28.4	79	24.4
Recruitment of Research Staff Abroad	-	7	115	8.4	270	8.4
Contingency	-	-	-	-	171	-
Total	82.4	90.8	1.271.4	106.8	5,000	106.8

Note: Due to the fact that invoices have not yet been received from NBS, actual expenditure by individual program can not be identified.

b. Financial Status of Domestic Funds

Unit: ₩1,000

PROJECTS	FIRST QUARTER 1977		CUMULATIVE (Jan.76-Mar.77)		
	Budget	Expenses	Budget	Expenses	%
Construction	1,049,560	19,418	2,472,935	1,392,421	56.3
Assets Acquisition	35,637	29,999	64,051	52,013	81.3
General Management	90,120	67,958	219,148	176,022	80.4
Total	1,175,317	117,375	2,765,134	1,620,456	58.6*

Note: Due to the fact that we have entered into a construction contract for the next quarter, actual funding of the domestic funds for the first quarter cannot be provided as yet.

VII. EVALUATION

a. Construction

The plan for land acquisition has been revised to expand 10,000 m^2 for the guest house site. The delay on land acquisition is inherent to the fact that the remaining portion of the land is being considered to be a common area for use by all the research staff members of various research organizations in the Daeduk R&D Complex. The location of land has not yet been decided. Despite extreme weather conditions last winter, our construction crew exerted all their efforts to successfully complete civil engineering work, building construction, electrical work and mechanical work. We are, therefore, hopeful that construction will be completed as planned.

b. Procurement of Research Equipment

The first bidding of research equipment was made on December 28, 1976 for 69 items. The second bidding for 181 items has already been initiated through OSROK. Except for research equipment which NBS recommends should be added or revised against the GE-Tempo Report, specification review process is proceeding smoothly. The remainder belonging to small-value items will be processed through separate route. The list of these parts, components and accessories is being prepared at K-SRI and NBS. It will be submitted for your prior approval.

c. Personnel and Recruitment

Recruitment campaign of research staff members have proceeded well. As a consequence of our intensive recruitment campaign, K-SRI has been successful in hiring 13 research and 4 technical staff members in the first quarter of 1977. K-SRI President plans to make recruitment trips to the US and European countries to recruit Korean scientists and engineers abroad during the second quarter of 1977. We are optimistic that in 1977 we will be able to reach our goal as planned in view of the positive attitude exhibited by the various Korean scientists' associations abroad.

d. Training

A total of 9.5 man/month training at NBS has already been conducted, and three trainees were dispatched to NBS on April 2, 1977 for a three-months training.

e. Finance

A total of 8 trainees have been trained at NBS. Based on the estimated expenses which have been reflected in the task plan so far issued, K-SRI has spent a total of $65,715 in equivalent services. During the first quarter of 1977, and with the cooperation and assistance extended by NBS in accord with the MOU, our training

objectives were sufficiently realized on schedule. However, K-SRI has not yet received the invoices which could enable us to identify the expenses involved in the training, and as a result, K-SRI is unable to show precise expenses in the loan budget. In order to settle this matter, it would be necessary for NBS to inform us of the exact amounts charged for specific services. As for the domestic funds, only 10% of total quarter's budget was spent. This is chiefly attributable to a carry-over of a construction contract to the next quarter. Based on the accomplishments for the quarter under review, it is our consensus that most, if not all, of the construction projects are proceeding as planned and in a timely manner.

f. K-SRI Evaluation Committee

As a mechanism to oversee and monitor the progress achieved by K-SRI, an evaluation committee is being organized as an internal body whose functions will be to make periodic assessments of all projects concerned. It is a matter of fact that to date, all the projects have proceeded according to established time schedules and there is no doubt that K-SRI will be in full operation by 1978. However, we consider it premature to make any concrete evaluation at this time. Thus, the commit-

tee can only make its objective evaluations based on verified indications as set forth in the Project Performance Tracking (PPT). Nonetheless, we anticipate that a substantial evaluation can be made from September 1977 as to the role that K-SRI is performing towards Korea's economic development.

The K-SRI Evaluation Committee members are composed of:

Chairman:	Dr. Zae-Quan Kim President
Vice Chairman:	Dr. Wun Jung Vice President
Committee Members:	Mr. J. S. Toh Vice President for Administration
	Mr. K. S. Choi Chief, Office of International Cooperation
	Mr. Y. S. Kim Chief, Planning Division

VIII. OTHER ACTIVITIES

a. Industrial Survey

K-SRI plans to conduct an industrial survey from July - September 1977. During the quarter under review, K-SRI finished making preliminary arrangements in preparing survey forms, compiled a list of organizations to be surveyed and held initial orientation seminars attended by the researchers who will participate in the survey. The survey will be preceeded by other programs such as an NBS consultation, a workshop and seminars.