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NONCAPITAL PROJECT PAPER

East Asia Regional

Project No. 498-11-680-198.2

Submission date: August 29, 1969 Original X Revision No. \_\_\_\_\_

Project Title: Regional Education Development  
(Regional Center for Science and Mathematics)

U.S. Obligation Span: FY 67 through FY 74

Physical Implementation Span: FY 68 through FY 74\*

Gross life-of-project financial requirements:

U.S. dollars-----	\$4,126,000
U.S. owned local currency-----	
Cooperating country cash contribution----- (in \$ equivalent, current exchange rate)	*
Other donor-----	*

\* While USG financing is scheduled to terminate in FY 73, agreements have been reached whereby the GOM will continue the project for as long as SEAMES exists and determines the project is necessary.

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SUMMARY

RECSAM will assist member countries of SEAMES to improve the teaching of Science and Mathematics at the elementary and secondary levels by selecting activities which will bring maximum benefit to the countries and which could most economically and efficiently be offered at RECSAM. Educators trained at RECSAM would, upon completing their training, act as "catalysts" to train additional personnel within their countries. RECSAM will accomplish this general objective primarily through training and research courses but also through information and clearing house activities.

The first sixteen months of the interim operations which began July 1967 were primarily devoted to developing the Five Year Development Plan including a detailed syllabus for the five disciplines (Biology, Chemistry, Elementary Science, Mathematics and Physics). During the past year RECSAM has been conducting selected training courses in the temporary facilities (including office space) provided by the Malayan Teachers College in Penang. The USG has provided RECSAM financial support for these interim operational programs; some additional supporting services have been provided by the GOM.

Preparations have begun for the five year operational phase which begins July 1, 1970. A Memorandum of Understanding was signed between the USG, the GOM and SEAMES outlining the general responsibilities of these parties during the five year operational period. The A and E work has been completed for Phase One construction of a 60 man hostel, a temporary administration building, and some staff quarters which total \$557,000 by the Public Works Department in Penang. It is anticipated that the obligating Letter of Agreement will be signed in October, 1969. The A and E for the Phase Two construction should be completed by the end of FY 1970, and construction (administration building, teaching blocks, hostels and workers quarters) costing \$1,513,000 should begin in FY 1971. [A.I.D. will provide two consultants to supplement RECSAM's staff for the next five fiscal years.] [An additional three consultants will be provided by the UK.]

Meanwhile, sixty-one participants from SEAMES countries will attend five training courses during FY 1970, and thirty-six will attend four research courses. Several key staff members will be on board by January 1970. RECSAM's five year operational phase will begin July 1970 and shortly thereafter it should be operating at full schedule which would involve 350-400 participants, and information and clearing house activities.

### PLANNED TARGETS, RESULTS AND OUTPUT

#### Objectives

The broad objective of the Center, as approved by SEAMEC, is: "To help participating countries in improving teaching of science and mathematics in the Region in order to lay the foundations for meeting the technically and scientifically trained manpower requirements of the Region. It is proposed to start initially at the elementary and secondary levels and to involve teacher-training institutions and Colleges of Education, Faculties of Mathematics and Science and other Faculties as may be necessary in implementing the programs." The Center will not duplicate but instead complement the efforts and programs of existing educational, academic and research centers in the member countries. It is important that these national centers develop in parallel with the Regional Center and gather strength and momentum through close articulation and coordination with it. Program priorities of the Center, therefore, should be given to selective activities which will bring maximum benefit to as many member countries as possible, and which could most economically and efficiently be offered at the Center. Educators returning from training at the Center will act as "catalysts" to train additional personnel required in the various member countries.

Improving the teaching of Science and Mathematics at the elementary and secondary levels will involve two broad programs which would improve (1) subject content through syllabus revisions and (2) the technique for transmitting this content to the student.

The latter includes exposing educators to subjects such as (a) the proper design and use of instructional materials and other modern technological aids, and (b) the inquire teaching method and its relation to the learning process (including how this process varies with individual students). The above two broad programs will be implemented through three major functional areas within the Center when it becomes fully operational, namely: (1) Training; (2) Research and Development and (3) Information and Special Services. The objective of these three functional areas of the Center as described below are based on the needs of member countries in the region, as expressed in six national seminars and one regional seminar, and as evaluated by a Task Force of educators and consultants.

### 1. Training

The various National Seminar groups in each subject field recognized the existence and value of the new techniques and teaching methods, most of which have been developed in the more industrialized and advanced countries outside the region, namely, the U.S.A., UK, Japan, Australia, etc. They also recognized that the number of teachers qualified to utilize these techniques in their respective countries were far below their needs. They have asked for assistance and advice in improving the capabilities of their teachers in these modern techniques, in disseminating the latest advances and researches in curriculum development, teaching aids, evaluation, learning and teaching processes and even content matter in these special fields. Therefore, it is planned to hold five seminars and 43 courses during the first five operational years (July, 1970 to June, 1975) for the training of 1,122 key personnel. These will include subjects such as teaching methods, curriculum development, evaluation methods, use of modern audio visual aids for more effective science and mathematics teaching, laboratory work, and administration problems which are inherent in the implementation of more effective methods of teaching.

### 2. Research and Development

There is a direct linkage in all developing and developed countries between research and development in education and economic development of the country. It is necessary that the

research and development in education is geared towards national, economic goals and planned in concert with Universities, Ministries of Education and economic and manpower planning groups.

The Center, can, by bringing together a nucleus of key personnel professionals in various scientific disciplines, create a multi-disciplined educational research function and develop a broad scientific base for both fundamental as well as action research in the educational problems of the region.

There is also an urgent need to educate key personnel in the various member countries in tools and methods of research and an understanding of how research results can be applied to enhance national development. One of the most urgent needs is to ensure through applied research that the content in the various subject areas is geared to the national needs of the member countries.

It is planned to hold 59 courses for 1,152 key personnel during the five year period. They will include areas such as analyzing of science and mathematics talent and requirements of each participating country, development of suitable teaching units in Ecology, Population, Biology and Conservation, development of prototype syllabi in chemistry and physics from tested materials available from developed countries, evaluation of techniques in secondary science, curriculum research and development in elementary science and primary and secondary math, and development of prototype apparatus for science teaching and primary science kits from locally available resources.

### 3. Information and Special Services

The major functions of this division are:

- 1) making the expert knowledge of the Center staff and its consultants available to participating member countries to solve their local problems, and
- 2) assuming responsibility for the regional distribution

of bulletins and newsletters relating to (i) activities connected with the Center and its member countries, and (ii) international projects outside the region.

The following continuous programs have been planned.

- a) Facilities Consultant Services
- b) Regional Lecture Bureau
- c) Exchange and Fellowship Office
- d) Regional Textbook Project (Prototype)
- e) Regional Journal Project
- f) Regional Newsletter and Bulletin Services -  
Science and Mathematics Education Materials Bulletin
- g) Regional Science Education Film
- h) Science - Mathematics Library Bibliographic and  
Abstract Services
- i) Regional Bibliography of Biological Research

#### BACKGROUND

History of the Center dates back to when SEAMES appointed a feasibility team to determine the feasibility of establishing a regional center for Education in Science and Mathematics in SE Asia. The report of the feasibility team was examined at the technical workshop held in Kuala Lumpur, Malaysia in July, 1966 and further discussed by a Select Committee of Permanent Secretaries of the Ministries of Education of SEAMES countries in Bangkok during October 1966. This report, together with reports on nine other various SEAMES projects, was presented to the Second Conference of the Ministries of Education held in Manila during November 1967 and the Regional Education Center for Science and Mathematics (RECSAM) was one of the five regional centers approved under SEAMES at this conference.

In May 1967, the Steering Committee for the proposed RECSAM, composed of two delegates from each of the six participating countries, held its first meeting in Penang, Malaysia. At this meeting, the Steering Committee developed a budget to carry out

certain pre-project activities thereby enabling it to identify the problems of teaching Science and Mathematics in this region and to prepare a Plan of Operations for the Regional Center. As a result of a request made to the U.S. Government through SEAMES for the necessary funds to carry out pre-project activities, the first Letter of Agreement was signed on the 30th of June 1967 between the Minister of Education, Malaysia, and the U.S. Ambassador to Malaysia, obligating US\$50,000 toward financing the pre-project activities of the Regional Center for the interim phase, July to December 1968.

A Task Force, composed of top-level educators from the member countries, representing the five subject areas of Biology, Chemistry, Elementary Science, Mathematics and Physics met for the first time in Singapore during June 1967 to draw up guidelines for National Seminars in Science and Mathematics to be held in all member countries. As a result, six such seminars were held between July 20 and August 15, 1967.

The first sixteen months of the interim operation which began July 1967 were devoted to developing the Five Year Development Plan including a detailed syllabus for each of the five disciplines (Biology, Chemistry, Elementary Science, Mathematics and Physics) through the Task Force mentioned above. Temporary office space was provided by the GOM through the Malayan Teachers College at Penang. In addition to the office space, the College also offered laboratories, classrooms and the use of a new library. Supporting staff have been provided by the Ministry of Education which also assisted in funding training courses opened to SEAMES participants held during August 1968.

In addition to drawing up the Five Year Development Plan, the Center has conducted and is continuing to conduct some training courses and to carry out some of its Information and Clearing House activities. During August 1968, twenty participants attended courses in Scottish Integrated Science and Nuffield "O" level science with assistance from the United Kingdom which provided lecturers and course material. In April 1969, twenty participants attended a High School Teachers Refresher Course, followed in May by a BSCS Adaptation Course held for twenty-three participants.

Also in May, a Primary Science Planning Workshop was held in Manila in collaboration with the Department of Education of the Government of the Philippines attended by sixteen participants, which was followed by a Primary Mathematics Workshop held in Penang involving twenty-four persons. Additional courses in Nuffield "O" level science and Scottish Integrated Science, again supported by the UK, were held in August 1969. The first training course under the Five Year Development Plan will begin in April 1970. As in the case of the above mentioned courses and seminars, facilities offered by the Teachers College will be utilized for this long term training course.

The Center will enter the Five Year Operational Plan on July 1, 1970. The physical facilities and the five year operational cost for RECSAM is estimated at approximately \$5,487,000 (exclusive of Special Funds). [The U.S. has agreed to finance the cost of the physical facilities and some special equipment totaling approximately \$2,374,000 as its share of the project,] [while the GOM has agreed to underwrite the five year operational costs which begins July 1, 1970, and some additional equipment which totals \$2,195,000. Total contributions by the GOM including A and E services by Penang's FWD and facilities provided by the Malayan Teachers College is estimated at \$2,443,000.]

The staff of the Center will consist of the Director, Deputy Director, three heads of divisions, twenty professional officers, a Librarian, an Audio Visual Aids specialist and Information Officer, a Registrar and five consultants. There will be eighteen professional officers from SEAMES countries, twelve from Malaysia, two consultants from the U.S. and three from the U.K. The support staff numbering sixty-three will be both technical and general services personnel.

#### COURSE OF ACTION

Interim Phase -- July 1, 1967 to June 30, 1970. The U.S. and the GOM jointly have provided support to the Center during its interim operations. [The U.S. has provided a total of \$334,140 from July 1, 1967 through June 30, 1969 for operational

expenses such as salaries, office supplies, staff travel, and travel and per diem for participants attending training courses sponsored by the Center. An additional \$10,000 was provided in FY 1968 in order to obtain outside assistance for Penang's Public Works Office which is doing the A and E for the Center. The U.S. has funded one U.S. consultant who has assisted the Center since June 1967. Additional consultants to assist in specific training courses or regional meetings have been provided when required.

The Government of Malaysia, through the Malayan Teachers College in Penang, has provided support services and facilities as mentioned previously. The equivalent cost of the facilities is estimated at \$37,000 annually. Supporting services provided by the College and the Ministry of Education are approximately \$4,000 annually for a total GOM contribution to the Center in services and facilities of between \$45,000 and \$50,000 annually. In addition, Penang's PWD services in providing the A and E work for the Center totals \$205,000. The United Kingdom occasionally has provided lecturers and consultants for training courses, and books and equipment for a total in equivalent U.S. dollars of \$20,000.

A Memorandum of Understanding signed in June, 1969 between the USG, the GOM, and SEAMES outlines the general responsibilities of these parties for the operation of RECSAM during its five year operational period beginning July 1, 1970. The signing of the Memorandum paves the way for the signing of the Letter of Agreement during October, 1969 which will be the obligating document through which [The U.S. will provide \$557,000 for the costs of the physical facilities for Phase One construction. These funds will finance a hostel for 60 persons, a dining block (which will also serve as temporary administration offices and contain some classrooms), and staff housing. Phase One construction should begin by February 1970 and be completed in six months.] Penang's PWD will undertake the A and E work for the Phase Two which should be completed by the end of FY 1970.

*NOT  
Cited*

[A.I.D. has programmed an additional \$35,000 in order to obtain outside A and E assistance for FWD if required.] During the finalization of these drawings, [A.I.D. will enter into negotiations with the GOM for the Letter of Agreement which will provide funding for the Phase Two construction. The Letter of Agreement may be signed during FY 1971, obligating approximately \$1,513,000 for the construction of an administration building, and information and exhibition center, two additional hostels for 60 persons each (capable of handling 120 on a two person per room basis), a laboratory block and some additional staff housing.] This construction should be completed by mid-1972.

RECSAM will continue to conduct training courses in the temporary facilities provided by the Malayan Teachers College during the period the Phase One buildings are being constructed. There are five training courses scheduled from August, 1969 through June 30, 1970, two of which are regular six month courses which have been approved within the Five Year Development Plan. Sixty-one participants from SEAMES countries will attend the five courses. Four research courses are planned from August, 1969 through February, 1970 which also appear in the Development Plan. They will involve subjects such as administrative techniques for project implementation, requirements analysis, and prototype syllabus pilot studies for chemistry and physics. Thirty-six participants will be involved in these courses. A.I.D. probably will provide several consultants to assist RECSAM in the training and research courses.

By January 1970, RECSAM should receive the services of the Training and Information officers who will be seconded from the Ministry of Education. Moreover, the permanent Director of the Center should be approved by the Steering Committee which meets in October, 1969. These three additional RECSAM officers will complete the staffing pattern until the Center becomes fully operational in July, 1970.

July 1, 1970 - June 30, 1975 - Five Year Operational Phase.  
The GOM will finance all the operational costs during the five year operational phase (excluding Special Funds). These

operational expenditures should approximate one half million U.S. dollars annually including approximately \$54,000 for three consultants provided each year by the UK. The GOM also will procure some special equipment for the Center totaling \$141,000. The GOM financial responsibilities during the five year period will be approximately \$2,298,000. The first of this financing will begin in July, 1970, when the Center begins its five year operational phase.

The major financial responsibility for the U.S., aside from the \$1,513,000 for the Phase Two construction as previously mentioned, is the Special Funds requirement of the Center. SEAMES is responsible for fifty per cent through fund raising efforts within the region. [Special Funds will be used to especially finance training and research scholarships for participants attending the Center.] An average of approximately \$208,000 annually will be provided by both the U.S. and SEAMES during the five year operational period. It must be noted that the category Special Funds is undergoing an intensive review to determine what costs can be considered Special Fund costs. It is expected that this intensive review will result in reducing the USG requirement for Special Funds.

## NONCAPITAL PROJECT FUNDING (OBLIGATIONS IN \$000)

Table 2

Page 1 of 2

COUNTRY: Malaysia

Project Title: Regional Center  
for Science and Mathematics

PROP DATE Mo/Day/Yr

Original : 9 15 69

Project #: 498-11-680-198

Fiscal Years	Ap	L/G	Total	Personnel Serv.			Commodities		Other Costs	
				AID	PASA	CONT.	Dir. U.S. Ag	CONT	Dir & US Ag.	CONT
Prior through Act. FY69	TC	G	320							320
Oper. FY 70	TC	G	865			54				811
Budg. FY 71	TC	G	392			70		60		262
B + 1 FY 72	TC	G	1,788			70		114		1,604
B + 2 FY 73	TC	G	418			70		65		283
B + 3 FY 74	TC	G	343			70		65		208
Total Life			4,126			334		304		3,488

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Fiscal Years	Other Cash Contribution Cooperating Country	Other Donor Funds (\$ Equivalent)
Prior through Act. FY 69	125	20
Oper. FY 70	45	25
Budg. FY 71	526	258
B + 1 FY 72	506	258
B + 2 FY 73	500	258
B + 3 FY 74	504	258
Total Life	*	*

\* Government of Malaysia will continue the project for as long as SEAMES exists and determines the project is necessary.

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AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT AUTHORIZATION

1. PROJECT NUMBER <b>58-11-590-198.2</b>	3. COUNTRY <b>East Asia Regional</b>	202
2. PROJECT TITLE <b>Regional Education Development Subproject - SEAMEC Regional Center for Education in Science and Mathematics (RECSAM)</b>		5. AUTHORIZATION DATE <b>3/12/70</b>
4. TYPE OF PROJECT <b>a. Number of Years of Funding: <u>8</u> Starting FY 19 <u>67</u>; Terminal FY 19 <u>74</u></b>		6. PROP. DATE <b>November 22, 1969</b>

b. Estimated Duration of Physical Work  
After Last Year of Funding (in Months):

7. FUNDING BY FISCAL YEAR (in U.S. \$000 or \$ equivalent)	DOLLARS		P.L. 480 CCC + FREIGHT	LOCAL CURRENCY		
	GRANT	LOAN		Exchange Rate: \$1 =		JOINT PROGRAM
				U.S. OWNED		
			GRANT	LOAN		
Phase through FY 69	320					
Operational FY 70	865					
FY 71	392					
FY 72	1,788					
FY 73	418					
FY 74	343					
Subsequent FY's						
<b>TOTAL</b>	<b>4,126</b>					

8. SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIMITATIONS ON ANY P.L. 480 COMMODITIES

Phase \$984 thousand FY 70, including costs of short term advisory work (through and related equipment for interim operational training course, and higher level 2nd phase A and E contract advisers. CP also shows \$2,018 thousand in FY 70 for 2nd phase A and E contract advisers (70), equipment (114) and Special Funds (284). Phase 2000 estimate subject to change.

9. CONDITIONS OF APPROVAL OF PROJECT

Subject to annual review for OYB purposes, and for consistency with overall SEAMEC project for matching of funds as agreed or planned, and for continued consistency with testimony given to the Congress.

(Use continuation sheet if necessary)

10. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
 SIGNATURE	EA/RD, LMDurso	3/24/70
	EA/I, AShakow	3/25/70
	EA/TECH, WWilliams	3/25/70