

ORIGINAL : ENGLISH

SOUTH PACIFIC COMMISSION

SEVENTEENTH REGIONAL TECHNICAL MEETING ON FISHERIES  
(Noumea, New Caledonia, 5-9 August 1985)

FINAL REPORT -- SPC/UNDP REGIONAL  
REFRIGERATION ASSESSMENT TRAINING PROJECT

Reference: UNDP Project Document RAS/84/208/01/99

I. INTRODUCTION

1. To meet the immediate requirements of SPC member governments for technical assistance in the important area of refrigeration, a two-phase project, entitled 'Regional Refrigeration Assessment and Training Project,' was formulated jointly by SPC and the FAO/UNDP South Pacific Regional Fisheries Development Project. This proposal was endorsed by the Sixteenth Regional Technical Meeting on Fisheries and subsequently approved by the 1984 South Pacific Conference in Noumea. Further background information and a summary outline of the project are presented in Working Paper 2 (section 2), which reports in detail the findings of phase 1 of this project--a comprehensive review of refrigeration equipment and facilities in the SPC area. This study will be considered in detail under agenda item 5.

2. This document primarily concerns phase 2 of this project, a 19-week refrigeration training course for fisheries sector technicians, and critically reviews major activities undertaken in relation to this course with a view to informing governments of progress made with respect to stated course objectives. Drawing on experience gained during both the phase 1 survey and the training course itself, future training needs are briefly addressed to facilitate discussion of possible follow-up activities which may be required by governments.

II. PRESENTATION AND ADMINISTRATION OF THE COURSE

3. This course was a regional cooperative exercise in the truest sense of the word, with many national and international organisations pooling their resources to good effect. The project as a whole was funded by UNDP drawing on discretionary funds from the Australian Development Assistance Bureau. While administered by the South Pacific Commission, substantial additional support and assistance was provided by the FAO/UNDP South Pacific Regional Fisheries Development Programme initially by Mr. H. Sperling, and subsequently by Mr. K. Meecham. The host government, Cook Islands, through its Ministry of Marine Resources Development, contributed generously with excellent training facilities made available at

no cost, and further manpower and logistical support provided as required. The Senior Course Instructor, Mr. M. Vincent, was funded in part through the United Nations Volunteer Programme, while the Australian Maritime College released Senior Tutor Mr. John Seaton for six weeks to assist with course planning and implementation of the early stages of the course.

- (i) TIMING: the 19-week course was held in Rarotonga from 25 February to 5 July 1985.
- (ii) PERSONNEL: training and administration staff involved with the course are listed below.

Senior Instructor	Mr. M. Vincent	UNV Refrigeration Engineer
Instructor	Mr. J. Naslynd	Consultant (RAS/85/004)
Instructor	Mr. J. Seaton	Senior Tutor Australian Maritime College
Technical Assistant	Mr. W. Powell	SPC/UNDP
Toolroom Technician	Mr. R. Moate	Ministry of Marine Resources Development

FAO/UNDP Project RAS/85/006 covered all expenses associated with consultative tutorial assistance and funded 1985 costs for the UNV Senior Instructor.

- (iii) EQUIPMENT: a comprehensive list of tools, refrigeration and electrical equipment was drawn up in consultation with the Senior Instructor Mr. Vincent and Mr. Sperling. Quotes for all items were obtained from a minimum of three wholesale supply companies, and orders placed having regard both as to cost and to the limited time available for supply, although preference was given to Australian sources where possible.

A complete inventory has been maintained with careful stock control exercised on all tools and equipment, including disposition details of all expendible items. A wide variety of second-hand refrigeration equipment, both domestic and commercial units, were donated by the Rarotongan community to provide material for practical class sessions. The premises made available by the Cook Islands government contained a number of large commercial refrigeration units, which were also utilized for training purposes.

With the completion of the present course, all tools and equipment were serviced under the supervision of tutorial staff, greased/oiled as necessary, and locked away for longterm storage, pending a decision on future refrigeration training activities. The Cook Islands government has provided a night watchman to safeguard the training facilities and stored equipment in the interim.

- (iv) SYLLABUS: a comprehensive syllabus was developed by the Senior Instructor, Mr. Vincent, in collaboration with consultant tutor Mr. John Seaton, drawing on experience gained during the phase 1 survey, which provided guidelines as to the most appropriate training approach and the material to be covered in the course. The need to adapt the course structure to meet the requirements of the students both as a group and individually was always accepted, and in practice this earlier syllabus has been substantially revised.
- (v) SELECTION OF TRAINEES: the Savingsgram calling for country nominations to the course specified applicants with "a good mechanical background, ideally with practical trade experience in refrigeration or allied fields." The course was directed towards fisheries sector technicians in government service or working for government-associated companies. All candidates were required to complete a detailed application form, and while allowance was made for the special needs of the smaller island countries, priority was given to applicants with the specified technical background. In addition, the phase 1 survey team, Mr. G. Preston and Mr. M. Vincent, made every effort to identify and interview possible candidates to the course, which not only assisted with the selection process, but also provided valuable information on the number and calibre of potential candidates for refrigeration training in each country visited.

A total of 14 trainees from 11 countries were selected for the course, who were joined at later stages of the course by two private students from the Cook Islands. A list of students attending the course is presented below.

<u>Names</u>	<u>Country</u>
Vincent Kelimana	Solomon Islands (Honiara)
Peepee Va'a	Western Samoa
Petesa Sionetuato	Niue
Siotame Taunahalo	Tonga
Paul Moabi	Papua New Guinea
Tiroi Uriam	Kiribati (Tarawa)
Dewan C. Harak	Fiji
Gilbert Helgen	FSM (Ponape)
Truman Silk	Marshall Islands
Tiim Anterea	Kiribati (Christmas Island)
William Morris	Vanuatu
Moses Bariri	Solomon Island (Gizo)
Bill T. Marsters	Cook Islands (Palmerston)
Lal Narayan	Cook Islands (Rakahanga)

Private Students

Rere Kaiaruna	Cook Islands (Rarotonga Hospital)
Lance Simiona	Cook Islands (Rarotonga)

### III. COURSE OUTLINE AND TRAINING APPROACH

4. This intensive 19-week course was novel in its approach, in that it integrated classroom and laboratory training elements with supervised field service and shop repair experience, involving both domestic and commercial refrigeration equipment. Throughout the course, the emphasis was placed on applied training, with the students learning by actually working with their hands on assigned laboratory or field service tasks. Theory elements were presented as an adjunct to such practical sessions, and as far as possible lectures on theoretical aspects were followed immediately by laboratory or workshop periods to reinforce their practical application. The course outline presented below illustrates the practical nature of the training provided.

<u>Period</u>	<u>Training Activity</u>
Weeks 1-6	Theory and basic training presentation of refrigeration and electrical theory through classroom and laboratory sessions. Theory and practice of welding and other essential trade skills (e.g., piping, wiring, etc.) for gas refrigeration systems, working mainly with domestic units. Towards the end of this period, students were separated into teams with several of the more advanced students in each team to assist the slower students.
Weeks 7-19	Applied training in repair and service of refrigeration equipment. The training during this second stage of the course approximated the operation of a commercial refrigeration workshop, with the students involved in supervised field service calls to commercial installations in Rarotonga, and working on all aspects of workshop repair involving a wide variety of domestic and commercial equipment. Laboratory demonstrations and practical sessions supplemented field service and repair work as required.

### IV. ASSESSMENT OF STUDENTS

5. Written tests were completed by the students each week based on material covered in classroom and practical sessions, supplemented by oral examinations two or three times each week on subjects covered by set reading material. This regular monitoring of student progress, combined with the high levels of personal contact between tutors and students, enabled learning difficulties and in some cases personal problems to be quickly identified and remedied.

6. The students were a diverse group both in terms of natural abilities as well as educational and work history backgrounds. Trainees with previous refrigeration experience, and particularly those with electrical trade qualifications, had a decided advantage over the other students and generally progressed to higher levels of competence. Of the 14 students selected for the course, seven were considered to have reached the standard required for a qualified refrigeration technician. A further three students attained a high level of technical skill but still require further supervised work experience to gain full confidence and competence with commercial units. The remaining four students were handicapped by the lack of previous experience with refrigeration and electrical systems, and consequently found difficulty with elements of the course, particularly the more complicated electrical circuits associated with commercial units. Several of the students in this latter category showed excellent potential and warrant consideration for further training to bring them up to the desired standard.

#### V. EVALUATION OF THE COURSE

7. The course could only be described as an outstanding success. The students responded very positively to the training provided and all returned home with a greater understanding of, and increased ability to cope with, refrigeration problems in their own countries. The course was structured for individuals with previous refrigeration work experience, and trainees in this category, for the most part, achieved high skill levels and should be capable of working confidently with any commercial units utilized in the fisheries sector. Perhaps the clearest indicator of the high levels of technical skill attained by the students is given by the large number of successful repairs to privately owned domestic and commercial refrigeration systems completed by the students, working either jointly or individually with minimal supervision. In addition, a number of commercial systems were designed, built, and installed by the students themselves.

8. A major oversight in planning was the omission of a provision to supply students with a personal tool kit of commonly used specialist refrigeration tools. Many of the students expressed the concern that when they returned to their home countries they would face difficulty using their new-found skills to full effect because many of the specialist tools required would not be available. A number of possible options are being examined to remedy this situation.

#### VI. FUTURE TRAINING ACTIVITIES

9. The training of 14 individuals from 11 countries obviously falls well short of meeting the total demand for specialist fisheries refrigeration training in all 22 SPC member countries. This further country demand combined with the success of the present course argues strongly for a continuation of this activity to meet at least the minimum training requirements of individual governments in this vital field.

10. While accepting the difficulty of placing an accurate figure on the actual demand for refrigeration training in each country, discussions on the topic during the 1983 and 1984 RTMF meetings and more recent feedback obtained from fisheries officials and industry personnel during both phases of the Regional Refrigeration Assessment and Training Project would suggest a minimum requirement of two trained refrigeration mechanics in each country, with the possible exception of one or two of the smaller countries.

11. The task of maintaining and repairing the range of refrigeration equipment now installed in most countries of the region is beyond the resources of one technician, and a back-up mechanic would be required to provide essential support and assistance, and also to ensure some continuity of service during any periods of prolonged absence of one individual. In addition, countries with major refrigeration installations situated in remote locations with limited communication services would require additional technicians to enable staff to be permanently assigned to maintain such equipment. To meet this minimum country requirement, it is estimated that an additional 28-30 technicians, trained to the same high standard, would be required.

12. The possibility of UNDP funding assistance for a continuation of this training activity was envisaged in the original UNDP project document, with any such consideration subject to strong country demand for further courses of this nature. Assuming this will be the case, several options for repeat courses were examined in consultation with Mr. K. Meecham, Programme Director RAS/85/004, and the preliminary planning documents drafted. These will be discussed in more detail during the Technical Meeting. The Cook Islands Government has indicated its interest in hosting additional courses, and many factors support the retention of Rarotonga as the future training venue.