IMPACT OF TELIKOM TRAINING CENTRE ON ECONOMIC DEVELOPMENT OF PAPUA NEW GUINEA.

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Introduction

Telecommunication Training Centre of Post and Telegraphs Department of Papua New Guinea was established at Lae in 1978 under an ITU/UNDP Project. The Training Centre was formally opened on the United Nations Day, October 23, 1978 by the then Deputy Prime Minister, Mr Julius Chan.

The UNDP Project document for establishing this training Centre observed in its Project Justification statement [4]:

An efficient telecommunication network is an essential pre-requisite for economic development of a country. To maintain such a network, highly trained Papua New Guinea Staff, well skilled in modern installation, maintenance and operating techniques is required.

The World Bank, which had funded the modernisation of PNG's telecommunications network through development loans had also expressed keen interest in the P&T Staff training plans and implementation of Training Centre Project. The objective of this project was completely in line with the Government's Eight Point National Improvement Plan and its drive for self-reliance.

This paper aims to show that aspirations expressed in the justification statement have been largely fulfilled and that the Training Centre has made significant contribution to the Government's plans for localisation of technical positions in an orderly manner by following a well-designed Human Resource Development Programme. This has in turn contributed to wider economic progress of the nation.

Manpower development envisaged in the TTC Project.

To examine this point, we shall look at the statistical information provided in the above UNDP Project document [4], "Background and Support Information". In the main technical categories the figures for actual and predicted positions were:

Information Services
National Centre for Vocational Education Research
Level 11, 33 King William Street
Adelaide SA 5000
It must be remembered that the above figures for 1975 (base figures for Project planning) were the actual established positions. Majority of these positions were filled in by employing Expatriate Contract staff from overseas countries such as Australia, New Zealand, U.K. and Philippines. Many positions were vacant and only a few were held by PNG Nationals. Expatriate labour was obviously very expensive as the expat. salaries, children's education expenses and leave/repatriation airfares etc formed quite a large portion of annual budget starving other developmental requirements.

**Teletechnician Training (T.T.C. project phase 1)**

The first phase of Training Centre Project was to introduce Teletechnician Training Scheme. This training scheme envisaged a three year training programme involving Foundation Studies for the first year and specialized training in separate streams such as Switching, Radio & Transmission, Telegraph & Data and Customer Equipment for the following two years. Entry level to this training programme was set at Grade 12 with high passes in Mathematics, Science and English.

The first batch of Teletechnician trainees was selected from the four National High Schools in the Country. Selection was done on the basis of screening tests, aptitude tests, Headmaster's recommendations and physical fitness.

The training commenced in 1980. Training courses were in modular form and each module was developed on the basis of extensive task analysis, which were further validated by interviews with field supervisors. The first batch of Teletechnicians graduated in March 1983 and these were then inducted into field positions to counterpart selected expatriate staff.

From the Graduates of the first batch in Radio & Transmission area, we can trace the career path of a few given below:

1) A. Buassi
   (topper of the batch)
   Major Radio Bearers STO3

2) Francis N'Dramei
   Engineering Construction STO3

3) Atikus Abraham
   Joined Philips - TMC

4) Joe Ginisi
   Radio Systems Manager

5) John Kingstone
   Joined Wormald (Radio Officer)
In Switching, Hangi has become Switching Systems Manager. In short all of the first batch trainees are now holding very important positions in the field or in private enterprise.

Advanced Level Training (T.T.C. Project Phase 2)

After successful launching of Teletechnician Training Scheme in 1980, culminating in graduation of the first batch in 1983, a need for Advanced Training in all fields of Telecommunications became obvious. The Statistical information from ITU Project Manager’s report of 7 April 1981, [5] is quite revealing and is reproduced in Appendix 1. This will only make it clear that with the network expansion and modernisation, the need for professionally trained staff increased many times and the shortfall had to be met by employing expatriate contract officers for the Technical Officer and higher professional level positions. It therefore became imperative that the training of PNG Nationals be addressed effectively to fill up the higher professional jobs. This was when the Advanced Level Training phase of the Training centre was planned under the UNDP/ITU assistance.

The aim of Advanced Level Training was to produce well trained Technical Officer grade staff to further localise T.O. and S.T.O. positions in a progressive manner. The success of the scheme can be judged by the fact that presently all field positions including Network Managers and Supervisors in all areas of Telecom such as Radio & Transmission, Switching, Telegraph & Data and Customer Equipment are held by competent P.N.G. National Officers.

Addressing Technology Changes

In the late 80's and early 90's, digitalisation of Transmission network and Switching exchanges in PNG had commenced, bringing in its stride, challenges thrown by technology changes. In order to effectively address these challenges, a fresh and critical look at the existing training courses was necessary. This was mainly to identify shortcomings and inadequacies in the curriculum and to weed out obsolete information. Also re-vamping of all courses, introduction of new topics covering digital principles and techniques in both switching and transmission areas, Stored Programme Control (SPC) concepts and Digital Microwave Radio ( DMR) techniques etc had to be addressed speedily. Microprocessors, Microwave Field Effect Transistors ( FET’s), Plesiochronous Digital Hierarchy ( PDH) and Time Division Multiplexing Techniques (TDM) became order of the day and Synchronous Digital Hierarchy (SDH) was looming large on the horizon. At this stage, a decision was taken to introduce London based City & Guilds Telecommunications and Electronics Engineering Scheme leading to Technicians Certificates at T1 to T5 levels and Full Technician Certificates. First batch under this scheme consisting of 20 Grade 12 leavers was recruited in 1992. Of these, 9 have now fully qualified to receive Full Tech Certificates after completing all required subjects from T1 to T5 and satisfactory field experience for at least one year. One of the students was awarded Gold Medal in “Radio” subject giving a great boost to the morale of students and instructors alike. Second batch consisting of 24 students, selected from National High Schools was recruited in 1993. Of
these, 20 reached T5 level. At the T-5 examinations in June 1996, 12 students scored distinction in Microwave & Satellite Communications paper and 2 students received distinction in all the T5 subjects. The City & Guilds training is further consolidated by giving Product Training in all areas of Telecommunication activities.

Product Training

Product training consists of training courses developed on specific telecommunication equipment forming an essential part of PNG Telecommunication Network. For example, the product training will include modules on Alcatel System 12 Switching exchanges, NEC Digital Microwave Systems from 4 Mb/s to 140 Mb/s, Digital Multiplexing equipment, Package Switching etc. The aim is to produce a well qualified Technical Officer with competence and confidence to work on Telecommunication equipment in the network. The training also includes External Plant work practices as well as Tower Rigger Training modules, manual skills training and vehicle driving training. Familiarisation with word processing and other capabilities of Personal Computers forms an essential part of their training.

Presently, upgrading of computer laboratory is in progress. Fifteen P.C.'s will be networked in a LAN. These have Windows 95 Operating System and other latest software packages. Other laboratories at the TTC are also well equipped. Digital Transmission Laboratory has NEC 4 Mb, 8 Mb, 34 Mb & 140 Mb D.M.R. systems in 1 + 1 configuration. 34 & 140 Mb Optical Fibre Systems working on 1 km, monomode stepped index optical fibres etc. Sophisticated test instruments such as O.T.D.R., Digital Radio Link Analysers, Spectrum Analyser and Constellation Monitor form a major part of testing set up.

Switching Laboratory has Alcatel System 12 training exchange with other training accessories. Customer equipment laboratory has Ericsson, Philips and other PABX's for training purposes. Package Switching equipment and other Data training facilities exist in Telegraph & Data Lab. With such well equipped lab facilities, practical training can be handled in very meaningful manner and students can get confidence by gaining hands-on experience without disturbing a traffic carrying live system.

Co-operation with industry and institutions of higher learning:

The training centre has training facilities and course development capabilities which have also been used for the benefit of other organisation in PNG. In 1994, Chevron Niugini approached the TTC to suggest possible solutions to the problems they encountered with their newly installed Digital Microwave Link which carries servo circuits to operate their 300 km long pipeline. In discussions, it emerged that the problem could be addressed by properly training their technical personnel to operate and maintain Digital Microwave and Digital multiplex systems which were state of art systems.
An agreement was signed to develop and conduct courses for 4 American and 4 Papua New Guinean technical staff. Chevron paid K30,000/- for the entire exercise. Copy of the letter from a satisfied customer, Chevron is at Appendix II.

Similar co-operation exists with many other organisations. Summer Institute of Linguistics had their Telecom staff trained at TTC earlier this year. OK Tedi Mining Co had also sent 4 staff members on D.M.R. Training.

Earlier this year, a Memorandum of Understanding was signed with the University of Technology, Lae for co-operation in staff sharing as well as use of TTC Lab facilities for Research purposes by the Unitech Academic staff and Postgraduate students. Such sharing of resources and assets will benefit both organisations and the country as a whole.

The PTC Management attaches great importance to the Telikom Training Centre. The facility at Lae consist of four teaching buildings with classroom and laboratory facilities, five dormitory blocks which can accommodate over 200 trainees, mess and recreational facilities, 91 housing units for staff, a clinic, a security office, the conference hall and a library. To operate and maintain the training centre, the corporation provides annual budget of K2.5 million.

**Regional and International Activities of TTC**

In recent years, this training centre has played a significant role in regional co-operation in the South Pacific region. A training course in Solar Power/Diesel Hybrid Telepower system was developed and conducted at the request of Vanuatu Telecom in Port Vila under Commonwealth Secretariat funding as a CCCA activity.

Another training course will be conducted at TTC Lae from 4th to 15th November under the auspices of South Pacific Forum with the funding from European Community as Lome III Pacific Regional Energy Programme activity. Both the courses were developed and conducted by PNG Instructors and Engineers.

**Conclusion**

In conclusion, it can be said that over the years, Telikom Training Centre has performed an important role in manpower development and in doing so, played a significant part in the economic development of Papua New Guinea. Since its inception, this training centre has trained more than 700 teletechnicians, technical officers, line officers and riggers. The major economic activity in P.N.G. in mining and Energy sector is heavily dependent on reliable telecommunication network. By creating a pool of competent technical personnel over the years, this institution has performed a major role of providing reliable communication links to this vital industry and has acted as a catalyst in the industrial and economic development of the nation.
References


2. Isbister, F.: Assessment of the effectiveness of technical training, TTC report, 1982


4. UNDP/ITU: UNDP/ITU Telecommunications Training Project of the government of Papua New Guinea. PNG/75/014/C/01/20

5. UNDP/ITU: UNDP/ITU Advanced Level Training Centre Project, PNG/81/002/C/01/02

6. UNDP/ITU: Terminal Report on UNDP/ITU project, PNG/81/02/C/01/12
## TELECOM DIVISION
### SUMMARY OF TECHNICAL STAFF
#### ENGINEERS AND TECHNICAL STAFF

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### TABLE 1
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### TABLE 2

Source: Project Document PNG/81/002/A/01/20
Mr. Avosa,

Now that the Microwave training courses attended by our technicians have concluded, we would like to extend our appreciation and gratitude to PTC, and particularly, to you and your staff, for entering into this arrangement with Chevron. From initial contact to the conclusion of this training, the entire venture went very smoothly. We are convinced that the quality of the training that our people received in this area wouldn't have been available elsewhere. All of our objectives and expectations for this training were either met or exceeded. The greatest benefit of this training, is that our technicians are now much more capable of maintaining this sophisticated equipment, resulting in reduced down time and a more efficient operation.

Please pass our gratitude on to Bill Hurley and Subhash Sukthankar. We would especially like to acknowledge Subhash's effort and diligence in this venture. From developing a quality training course that was designed to meet our specific needs, to arranging escort for our people from the airport, Subhash made every effort to insure that our needs were met and that we were satisfied with the progression of this training. As each of our technicians returned from attending the courses, they had nothing but the highest praise for the training facilities at the Training College, the staff and the quality of the training.

As this was obviously a highly successful venture, we would very much like to continue in this arrangement with PTC. I would like to enquire about enrolling our technicians into some of your scheduled courses. Specifically, we have a definite development need in the area of the Ericson MD110 switch. A couple of other areas that we also have training needs in are: Cabling Practices and Radiolines/Rigging. If you find this agreeable, please have Bill Hurley contact us and we can commence with the arrangements.

Best Regards,

Craig Hodges
Maintenance Training Coordinator

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