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5270101/68

SUBJECT - Loan N°527-L-028, Tarapoto-Rio Nieva Road

REFERENCE -

Attached is the Loan Completion Report of subject loan.

SILAUDENAN

PAGE PAGES

1 OF 1

DRAFTED BY	OFFICE	PHONE NO.	DATE	APPROVED BY:
LDlotte	PROG	160	4/10/79	PROG: LFSmucker <i>LS</i>

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PROJECT EVALUATION SUMMARY (PES) – PART I

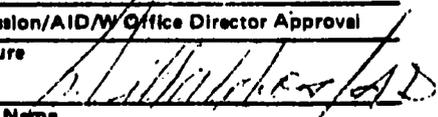
Report Symbol U-447

1. PROJECT TITLE <p style="text-align: center;">Tarapoto-Rio Nieva Road</p>	2. PROJECT NUMBER Loan 527-L-028	3. MISSION/AID/W OFFICE USAID/Peru
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) _____ <input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION		

5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY _____ B. Final Obligation Expected FY _____ C. Final Input Delivery FY _____	6. ESTIMATED PROJECT FUNDING A. Total \$ <u>47,130,000</u> B. U.S. \$ <u>12,100,000</u>	7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>Loan Completion</u> To (month/yr.) <u>Report</u> Date of Evaluation Review _____
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8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR		
A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAR, PIO, which will present detailed request.) <p style="text-align: center;">See item VI, B, Recommendations, pg. 14</p>	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>_____</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____											

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles) <p style="text-align: center;">Mario Quiroga, Project Manager Engineering Office USAID/Peru</p>	12. Mission/AID/W Office Director Approval Signature:  Typed Name: <u>F. O. Leonard Yaeger</u> Date: _____
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AGENCY FOR INTERNATIONAL DEVELOPMENT
UNITED STATES A.I.D. MISSION TO PERU

146

LOAN COMPLETION REPORT

OF

LOAN Nº 527-L-028

TARAPOTO - RIO NIEVA ROAD

PREPARED BY: Mario Quiroga, Project Manager

APPROVED BY:

[Handwritten Signature]
FOR Leonard Yaeger, Director

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LOAN COMPLETION REPORT

Lima - Peru -- January 1979
AID Loan Nº 527-L-028
Tarapoto - Rio Nieva Road

I - BASIC DATA

1. Borrower : Government of Peru (GOP)
2. Guarantor : Government of Peru (GOP)
3. Executing Agency : Ministry of Transportation and Communications (MTC) (Formerly: Ministerio de Fomento y Obras Públicas)
4. Monitoring responsibility: Brown and Root Inc.: From 1965 through 1968. USAID/Peru/Engineering Office from 1975 through 1977.
5. Construction of road : Morrison and Knudsen (EMKAY) from: 1965 through 1968.
MTC by Force Account from: 1969 through 1977.
6. Total Project Cost:

AID Loan

- Authorized \$12,100,000
- Disbursements through July 1968: \$2,250,031.
- Disbursements from January 1975 through December 1977: \$9,849,969

TOTAL AMOUNT DISBURSED: \$ 12,100,000

Eximbank Credit Nº 2155 signed June 25, 1964

- Authorized \$23,000,000
- Disbursements through August 1968: \$13,661,000 (the balance was deobligated)
- Amendment Nº 1 signed June 17, 1975:
Authorized \$3,000,000
Disbursed through December 1977: \$ 3,000,000

TOTAL AMOUNT DISBURSED: \$ 16,661,000

vienen..... \$ 28,761,000

GOP Counterpart

Expenditures made by MTC:

- From 1969 through 1974 \$14,791,000
- From 1975 through 1977 \$ 2,778,000
- From January through May 1978 \$ 800,000

TOTAL AMOUNT OF GOP CONTRIBUTION \$ 18,369,000

TOTAL COST OF PROJECT: \$ 47,130,000

As is indicated above, the GOP contribution to the project was of 39%.

7. Terms and Conditions of AID Loan:

- Date authorized : March 3, 1964
- Date of Loan Agreement : May 19, 1964
- Original TDD : December 31, 1971
- Date of Reactivation of Loan Agreement (Amendment No. 1) : January 10, 1975
- USAID Monitoring Plan Approved: January 21, 1975
- Terminal Commitment Date : September 30, 1977
- Terminal Disbursement Date : December 31, 1977

- Repayments: Borrower shall repay the Principal to A.I.D. in sixty-one (61) equal semi-annual installments. The first installment to be due and payable nine and one-half (9-1/2) years after the first interest payment is due.

- Interest: Interest on the first six million dollars (\$6,000,000) disbursed under the loan shall accrue at a rate of three-quarters of one (3/4 of 1) percent per annum for ten (10) years after the first disbursement, and two (2) percent per annum thereafter. Interest on the balance of the loan shall accrue at a rate of three and one-half (3-1/2) percent per annum.

8. Status of Repayment of A.I.D. Loan:

As of December 28, 1978 the GOP has repaid the following amounts:

Interest:	\$ 902,038.58
Principal:	\$ 1,021,968.88

II - PURPOSE OF THE LOAN:

The Loan was made to assist the Government of Peru in financing the local and foreign costs of equipment, materials and services necessary to construct 238 Kms. (148 miles) of an all-weather gravel road, in the Peruvian jungle, between the city of Tarapoto and the Rio Nieva River. The new road is connected through a 100 Kms. segment built by the Army Battalion military engineers, and an existing 400 Kms. penetration road with the coastal Pan American highway.

III - HISTORY OF PROJECT:

As originally planned the project would consist of a 278 Kms. (173 miles) all-weather, asphalt surfaced Peruvian class II highway, between the cities of Tarapoto and Pomacocha.

Bids opened in 1964 produced a low of approximately \$58 million. This was much more than the total amount available for constructing the project. Several modifications were then made in the design of the highway to bring project costs within available financing.

The asphalt surfacing of the highway was eliminated, saving about \$3.5 million. The GOP agreed, by countersigning Implementation Letter N° 4 dated April 1, 1965, to build 40 Kms. (25 miles) of the road between the Rio Nieva River and the city of Pomacocha using the Peruvian 6th Army Battalion. This saved an additional \$ 7.8 million.

On April 7, 1965 the GOP signed the contract for Engineering Supervision with the U.S. firm of Brown & Root Overseas Inc. of Houston, Texas, covering a period of 100 months and payable on a cost reimbursement basis.

With A.I.D. Loan financing approved (\$12,100,000) and the EXIMBANK credit opened (\$23,000,000), plus the GOP contribution (\$11,700,000) the project was readvertised for new bidding, with only prequalified firms. The bids were as follows:

	<u>With Taxes</u>	<u>Without Taxes</u>
- R.B. Potashnick	\$ 49,522,889	\$ 44,422,891
- Grove Shepherd Wilson & Kruge and Zachry International Inc.	60,992,582	57,150,119
- Perini Corporation	55,503,617	52,352,516
- Constructora Emkay S.A.	46,274,710	43,355,233

Constructora Emkay S.A. (Morison & Knudsen) in a joint venture with several Peruvian firms, was selected and a contract was signed on August 25, 1965. This association was later known as Consorcio de la Selva (CONSELVA).

The GOP exonerated Emkay from most of the tax payments and on November 10, 1965 a notice was issued to Emkay to proceed with the work.

Construction moved along well until early 1967. At that date Brown and Root monthly reports indicated that land slides had become a problem. The consulting engineers would not approve for payment many of the Contractor's slide claims, arguing that most of the slides were caused by poor construction practices, such as improper construction of access roads, uncontrolled blasting and undercutting of slopes during excavation.

In order to substantiate its claim, Emkay hired the services of a firm of Consulting Geologists, Woodward, Clyde and Associates to investigate the problem. Their report, dated November 1967 absolved the Contractor of most of the charges made by the Consulting Engineer.

In September 1968 the top managements of Emkay and the Consulting Engineers came to Peru and conferred for several days in Tarapoto. As a result of this conference and investigation made by a geologist of Brown & Root, they, Brown & Root, reversed their position, indicating that Emkay was not to be blamed for most of the slides and they should, therefore, be paid for earth moved. Neither USAID nor the GOP were consulted about the decision to pay for slide removal. The problem came to a head in October 1968 with the submittal of the September valorizations which included payment for removing most of the slide material.

At that particular time there were no formal relations between the United States and Peru due to the October, 1968 Military Coup. This change in the political situation in Peru made an early solution of the problem almost impossible.

Mr. C. Tyler Wood, Special Emissary of the AID Administrator, came to Peru 3 times in an attempt to resolve these project problems. However, the Minister of Transportation refused to accept the efforts of Mr. Wood to mediate the problem and insisted that the matter was in the hands of the Peruvian Courts.

As a result the Contractor was compelled to stop Contract work in January 1969. However, it continued to work under a force account agreement with the GOP until finally withdrawing in February 1970.

When Emkay left the job, the roadway was completed through Km. 57, from Tarapoto with the exception of one bridge near Km. 35. Culverts and Drainage were completed to Km. 90 and the sub-base was put down to Km. 80. The sub-grade work was accomplished to Km. 104.

From here on the Ministry of Transportation and Communications took over the job using all of the remaining equipment, shop and camp facilities, and logistic support. Also, many of the Emkay and Brown & Root men were retained by the MTC.

On February 19, 1974 an inter-governmental agreement was reached between Peru and the United States which included, among many other major items, provisions for disposing of the project claims and counter-claims of the GOP; Emkay and Brown & Root. Shortly thereafter the GOP approached A.I.D. to explore ways by which the remaining A.I.D. Loan balance of \$9.49 million could be made available for completing the highway.

An AID/W Team came to Peru in May 1974 and a joint MTC-AID/W-AID/Lima inspection of the road and all facilities was performed. A Supplement to the Loan Capital Assistance Paper was prepared recommending the reactivation of the Loan Authorization and the Loan Agreement amendments necessary to provide for the utilization of the remaining \$9.49 million.

From the date of authorization (March 3, 1964) through 1968 a total of \$2,610,000 from AID loan funds were expended by the then construction contractor Morrison & Knudsen (EMKAY), and the engineering firm, Brown & Root.

Amendment No 1 to the Loan Agreement was signed January 10, 1975. It was agreed that the MTC was to continue construction of the road by force account, using the undisbursed balance of the AID Loan Agreement reimbursing construction expenditures starting October 15, 1974. AID using Loan funds, was to inspect and monitor the job. The \$9,490,000 remaining under the loan were budgeted as follows:

- \$8,110,000 for direct construction costs
- 1,110,000 for procurement of spare parts
- 270,000 for USAID monitoring purposes

The office of Engineering of USAID/Peru was responsible for monitoring the project. The AID Monitoring Plan was approved by the MTC on January 21, 1975. The monitoring staff contracted by the Mission to assist it in this regard was composed of two civil engineers, one controller of work, one accountant and one secretary.

The duration period of the USAID Monitoring was 36 months.

By Implementation Letter N°16 a revolving fund of S/.40,000,000 (\$922,084 at the exchange rate of S/.43.38 per US\$ 1.00) was established early in 1975 for financing local currency costs.

Parallel to the AID reactivation of Loan funds, the GOP negotiated a new credit with EXIMBANK for \$3,000,000 for financing the procurement of U.S. heavy construction equipment.

Following the rainy season of 1974/1975 the MTC gave maximum attention to opening a trail in the alignment which would at first be traversable only by tractors and construction equipment. The need for better communications and the movement of equipment from the Venceremos (western) front to the Rioja (eastern) front fully justified such priority. The two fronts were connected in April 1976.

By December 1977, all of Loan funds were fully disbursed and the construction work was almost completed. MTC with GOP funds finished the remaining works by May 1978.

IV - LOAN EVALUATION

1. Inputs:

A) Project Expenditures:

- A.I.D. Loan Funds: Originally \$12,100,000 of which \$2,610,000 were used prior to suspension of Loan disbursements in 1968; the balance of \$9,490,000 was allocated in the CAP supplement and approved by countersigning the Amendment N°1 to the Loan Agreement.

- EXIM Credit funds: \$23,000,000 of which \$13,661,000 were used prior to suspension of disbursements. A new credit for \$3,000,000 was authorized on June 17, 1975.

- GOP Counterpart contribution: In 1964, the GOP contribution was originally estimated at the equivalent of \$11,700,000. As a result of MTC assuming all construction starting in 1969, through 1974 the GOP had contributed with the equivalent of \$14,791,000.

In reactivating the A.I.D. loan in late 1974, the GOP committed itself to provide budget resources needed in addition to Loan funds

to complete the project. In the CAP supplement, this GOP counterpart was allocated to construction activities (including salaries and operating expenses) and minor equipment and spare parts procurement, and was expected to be approximately \$2,000,000.

From January 1975 through December 1977, the GOP counterpart contribution was of S/.92,350,000 (approximately \$2,000,000) in budgetary resources to cover expenses not eligible for loan financing and S/.72,000,000 (approx. \$111,000) for minor equipment and spare parts from MTC's mechanical services division. In addition, the GOP financed the construction and installation of two-80 mts. special steel bridges for the project constructed by SIMA (Industrial Service of the Peruvian Navy) for a total of S/.30,000,000 (approx. \$667,000). Other GOP financial inputs are the costs of MTC's maintenance of the finished portion of the road, the supplement construction support which provided by the Army Construction Battalion, which worked on a section of the road beginning from Venceremos Camp toward the MTC work forces and the S/.120,000,000 (approx. \$800,000) allocated by the GOP in MTC's 1978 budgetary resources to complete the road.

B) Procurement of Goods and Services:

In 1966 EMKAY achieved a remarkable task in logistics by having \$13,661,000 of the EXIMBANK Credit, worth of heavy construction equipment, tools and supplies shipped from the U.S. to Tarapoto via the Amazon River and its tributaries to the river port of Yurimaguas, where everything was unloaded and then trucked 133 kms. to Tarapoto.

When the AID loan was reactivated, \$1,110,000 was budgeted for the procurement of spare parts from the U.S. in order to rehabilitate part of the existing equipment. Six Letters of Commitment were opened which at the end represented a total expenditure of \$681,371.65. Direct purchase was also made for a total amount of \$20,429.25.

For the utilization of the \$3,000,000 of the EXIMBANK Credit the GOP called for an International Bid Contest. The Information for Bidders, Technical Specifications and the award system were made following normal Peruvian procedures.

In both cases, the procurement of spare parts (A.I.D.) and in the purchase of the new equipment (EXIM) the GOP encountered unreasonable bureaucratic delays within their central offices. The MTC lost much time in getting the documents necessary for procurement through the GOP bureaucracy such that the needed spare parts

arrived Peru a year behind schedule and the equipment started arriving Peru late in 1977 when the job was almost completed. The field construction work had to manage with old equipment supported by rented equipment. Nevertheless, as it was anticipated in the CAP Supplement Paper, it was intended that MTC will continue with the follow-on work for improvements and in maintenance operations of the road after completion of the work financed under the loan.

C) GOP Staffing Obligations:

After 1968, MTC was totally responsible for the administration and construction of the project.

Early in 1975 the USAID field contract monitor called attention to field problems resulting from poor project management from the MTC Chief of Project and insufficient engineering personnel on the job. It was not until September 1975 that the MTC decided to change the Chief of Project and to contract 3 Civil Engineers. The change of the MTC Chief of Project and the increase in their engineering staff made a major difference in construction accomplishments.

D) AID/W Backstopping Support:

In general AID/W was quite helpful, nevertheless some delays were experienced in authorizing the Peruvian Army Construction Company to work on a section of the road starting from the Venceremos Camp.

Also in early April 1975, at MTC's request through USAID, AID/W agreed to send a heavy equipment specialist to Peru to assist in defining more precisely the project's spare parts and new equipment needs. It took 3 months and the naming of 3 nominees before Mr. Owen Beckner finally arrived in Lima late in June 1975.

E) Training:

There was no scheduled training provided for under the project. However, it is appropriate to note that when the loan was signed the project area was isolated from the rest of the country and its only way of communication was by air or through river navigation. Both EMKAY and Brown & Root had to train many local natives to use them as mechanics, equipment operators, warehousemen and had to bring to the project site engineers and technicians. Many of these skilled workers and laborers stayed with the project until the very end playing key roles.

2. Outputs:

A) Technical Soundness of Construction:

In general, it can be stated that, road construction procedures were adequate and consistent with jungle conditions and that the final product conforms to approved specifications and design standards. All of the materials used in the construction of the road were controlled by MTC's soils and Laboratory Division following normal engineering testing methods. Care was taken in blasting with well-controlled quantities of explosives so as not to aggravate future slide problems. Monthly reports from the USAID Contract Monitoring staff, plus periodic inspection by USAID/Peru engineers and Project Manager, confirm this.

In September 1978 the AID Project Manager made the final inspection of the road. He noted that the road was passable all the way but that four short sections between Tarapoto and Moyobamba were in poor condition. At that time due to financial problems, the GOP had considerably reduced the amount assigned for the maintenance of that portion.

B) Project Cost:

As mentioned before in section I.6 the approximate total cost of the project was of \$47,130,000. For 238 Kms. this amount represents approximately \$198,000 per Kilometer. Considering that the final construction cost was only 10% higher than the original contract amount determined in 1965, the immediate conclusion is that considerable savings were obtained by completing the road by force account. The inaccessibility of the project area contributed to the higher initial costs. All heavy equipment, spare parts, and construction materials, such as reinforcing steel bars and cement had to be transported to the area via the Amazon river or had to be flown in by cargo planes. It was not until mid 1976, when the MTC made a passable road trail connecting the isolated city of Tarapoto with the road coming from the coast, that construction materials could be transported by trucks from the coast, thus reducing the cost of certain elements by more than 50%.

C) Characteristics of the road:

The cross section proposed by the design engineers (Brown & Root) for the 1964 bidding was modified in April 1965 in order to reduce construction costs. The Double Bituminous Surface Treatment and the 15 cms. base course were eliminated leaving only the sub-base course.

The MTC working by force account improved the cross section by capping the 15 cm. sub-base with additional stabilized material. This resulted in a net sub-base and cap thickness of at

least 20 cms. The roadway surface was also modified by narrowing the shoulders from 75 cms. to 45 cms. This allowed for a 8.00 m. roadway platform width at the level of the sub-grade and side slopes on the sub-base material less steep than 2 to 1. These dimensions meet the normal design standards for Peruvian class II roads. Nevertheless, it should be noted that while reducing these widths does represent a saving in construction costs, it increases maintenance costs in order to prevent the shoulders from eroding into the roadway.

West of Moyobamba the alignment went through many kilometers of swampy area. This required the removal of large quantities of unsuitable material to get down to mineral soils to construct the sub-grade. This section has gone through several wet seasons and there is no evidence of failure in the roadbed.

For the section of road built by the Peruvian Army Construction Battalion from Pomacocha to Rio Nieva and on to Venceremos and for a few kilometers more towards Tarapoto the roadway section meet the design standards for Peruvian Class II roads providing for minimum 5.60 meter roadway surface approaching single-lane utility for mountainous terrain. Where practicable, narrow shoulders as well as wider zones for passing were provided. Construction included a sub-base of coarse compacted material and a base course, each 15 cms. thick.

Both the MTC and the Army removed all organic and undesirable materials, before the earthwork or sub-grade material were placed. The sub-grade materials used were stream gravels and mixture of rock and clay from quarries.

The road as it is today will have two average velocities, during the year. From November through April (rainy season) the average velocity for a car will be between 35 to 40 kms./hour and 20 to 25 Kms./hour for heavy trucks. A car should cover the 238 kms. in 6 hours and the trucks in 8-1/2 hours.

From May through October the average velocity for a car should be between 50 to 55 Kms./hour and for trucks from 30 to 35 Kms./hours. The time for a car to cover the distance should be 4-1/2 hours and 6-1/2 hours for trucks.

D) Quality of Executing Agency Personnel and Management Practices:

Good leadership by the MTC's Chief of Project along with a good staff of engineers was an important factor in keeping the project moving along well in spite of old equipment and spare shortages.

The backstopping support provided by the MTC Lima

Headquarters offices was unfortunately less than satisfactory. The MTC's Director of Construction frequently vacillated in making decisions because he was unable to communicate on a timely basis with his superior, the Director General of Land Transportation.

From the reactivation of the A.I.D. Loan through December 1977, the USAID Project Manager recalls 3 minor strikes with total lost time of less than two weeks. Wage increase requests were the reasons for the strikes.

E) Technical Assistance to the Project:

The Loan Agreement does not have a Technical Assistance program as such. However, it should be noted that the USAID contracted monitoring staff and the USAID/Peru Engineering Office contributed significantly in providing technical advice on matters such as: (1) solution to geological problems, (2) improving blasting efficiency utilizing fertilizer and fuel oil (ANFO), as prime explosives, and (3) General project management and organization.

F) Quality and Utility of Studies:

The MTC Division of Special Studies carried out satisfactory investigations for bridge foundations at 3 sites where the existing conditions presented potential problems for concrete abutments.

Landslides were always a serious hazard in various sections of the road. The USAID monitoring staff made a preliminary study of six (6) slide areas. The MTC Division of Special Studies sent two of their geologists to the area and confirmed the USAID's Monitors conclusions and recommendations. Unfortunately, in only 3 of these areas the MTC changed the alignment and performed the necessary work to prevent landslides. The other 3 areas were never corrected but having the study on hand, it is likely that MTC will do the job with its maintenance crews in 1979.

G) Construction Progress:

Construction progress achieved by the contractor EMKAY was considered satisfactory.

From 1969 through 1974 the GOP through the Ministry of Transportation and Communications (MTC) continued construction work on a small budget. The amount of work accomplished during this period was limited, but of satisfactory quality. MTC priority focused on opening of passable road, deferring work on bridges and in many cases the completion of the sub-base.

One of the major problems that MTC initially had

was the lack of funding for purchasing spare parts for the heavy construction equipment. With A.I.D. funds available for spare parts, a rehabilitation program was made in order to repair 14 units of Caterpillar tractors and front-end-loaders, Euclid dump trucks, Ingersoll Rand Compressors and other needed pieces of equipment.

Although the rehabilitation program was not concluded until late 1976, and the new equipment did not arrive until late 1977 taking into account the remoteness of the project construction site, the construction progress achieved from the reactivation of the A.I.D. loan is considered to be satisfactory.

H) Environmental Impact of Project:

Considerable spontaneous colonization has taken place along road construction. Migration of farm families into the area from other parts of Peru became in 1975 a real problem for the GOP. The "slash and burn" method used by the new settlers was causing erosion. Early in 1976 the Agrarian Reform Office of the Ministry of Agriculture opened an office in the city of Rioja and started a program to sub-divide the land and to protect it from erosion. At that time an extensive area along the road, between the city of Rioja and the Venceremos Camp was declared as National Park. Nevertheless, the A.I.D. Project Manager noted in his final inspection visit some sports where slash and burn had been used (see photograph N° 3).

I) Adherence to Project Implementation Schedule:

The construction of the road started on 1966 and was partially opened to the traffic on May 1978.

The controversies among EMKAY, Brown & Root and the GOB; the discontinuation of A.I.D. and EXIMBANK disbursements, the limited funds that the MTC had to continue the job and the GOP bureaucratic delays for purchasing new equipment were important factors that delayed the termination of the road.

V - CONSTRUCTION ACCOMPLISHMENTS:

When EMKAY left the project early in 1970 they had a completed roadway from Tarapoto to Km. 57 with the exception of one bridge near Km. 25. They had culverts and drainage complete to Km. 90 and sub-base placed to Km. 80. The sub-grade work was done to Km. 104. Center line surveying was complete to Km. 150, the service road was opened to Km. 140 and the clearing of trees and bush advanced to around Km. 135.

After taking over in February 1970 the MTC, together with the

Army Construction Battalion working from the west, concentrated on opening a passable road deferring work on bridges and the completion of the sub-base.

As of January 1975, when the A.I.D. Loan was reactivated, the MTC/Army had accomplished the following: They had culverts and drainage complete from Kms. 90 to Kms. 135. Sub-grade work was accomplished by MTC from Km. 104 to Km. 195, and by the Army from Km. 238 to Km. 228. The service road was opened to Km. 205 and land had been cleared to Km. 208. Meanwhile, on the western side the Army had advanced to Km. 225 with their service road and to Km. 223 with the clearing. The remaining 15 Km. portion between the two fronts was one of the most difficult sections of the road and required deep rock cuts of more than 30 meters.

The road from the city of Tarapoto to the Rio Nieva River has a total of 23 bridges, of which 20 are made of concrete, 2 are metallic and 1 of pre-stressed concrete. EMKAY completed the following bridges: (1) Cumbasa (72 meters), (2) Mayo, (125 meters), (3) Cachiyacu (78 meters), (4) Picaycasa (18 meters), (5) Huarpiya (18 meters) and (6) Quiscarrumi (17 meters).

From 1970 through 1974 the MTC completed the following bridges: (1) Jera (70 meters), (2) Inchoche (72 meters), (3) Tonchiman (72 meters), (4) Uquiguz (28 meters), (5) Romero (21 meters), (6) Negro (35 meters) and (7) Yuracyacu (80 meters). When the Loan was reactivated in 1975 the MTC completed the following bridges: (1) Soritor (30 meters), (2) Naranjillo (100 meters), (3) Tumbaro (30 meters), (4) Naranjos (75 meters), (5) Rio Seco (30 meters), (6) Aguas Claras (50 meters), (7) Rio Blanco (90 meters), (8) Serranoyacu (80 meters), (9) Afluente (20 meters), and (10) Rio Nieva (20 meters).

The Rio Blanco and the Serranoyacu bridges were both made by SIMA (Industrial Service of the Peruvian Navy) having a metallic structure which was transported by trucks to the project area and assembled and installed by a private Peruvian company, under a contract with MTC, with GOP funds.

The Rio Seco bridge is the only one made with pre-stress concrete beans using the Freysinett system.

VI - SUMMARY AND RECOMMENDATIONS:

A. Conclusion:

The project objectives have been fulfilled, and Tarapoto and the rich Huallaga Valley are now linked to the coast. All of the project

permanent bridges are completed and the road is serviceable for limited loading all year round.

As a result of the completion of this road a Loan for \$19,000,000 was authorized by AID/W to develop the agricultural potential of the Huallaga Valley.

The section of the road between Rioja and Rio Nieva, built by the MTC by force account during the period 1975 - 1978 has been completed in accordance with approved plans and specifications and as of the date of the final inspection visit was in good condition. However, the section of road constructed in the late 1960's and early 1970's (largely the sector between Tarapoto and Rioja) has not been resurfaced in the manner agreed in the supplement to the Capital Assistance Paper prepared in September 1974. This considered the rehabilitation of the sub-base and the placing of selected gravel material where necessary.

The resurfacing was not done and the road section deteriorated due to the following reasons:

- i) Poor road maintenance;
- ii) Extremely heavy rainy season of late 1976 and early 1977;
- iii) Delays in rehabilitating project equipment; and
- iv) Delays in receiving EXIMBANK financed equipment.

It is now imperative for the GOP to proceed with the resurfacing during CY 1979.

B) Recommendations:

1. Amendment Nº 1 to the Loan Agreement, Section 9, specifies that the Borrower shall submit to AID a plan for maintenance of the road for at least five years after the completion of construction. The plan was presented and approved by AID. It is recommended the USAID/Peru Engineers make a detailed inspection of the road, annually from 1979 through 1982, and thereafter upon request by the AID/Peru Director. Written reports of the findings of each of these inspections will be submitted to the AID/Peru Director.

2. A meeting should be held with MTC's Director General of Land Transportation and a follow-up letter sent to GOP representatives to explain the need for:

- i) investing as much as possible of the existing funds available in their 1979 budget on rehabilitating the Tarapoto to Rioja section as soon as possible, and
- ii) parallel with this, the GOP and MTC should be advised of the necessity of including within the 1980 budget the funds necessary

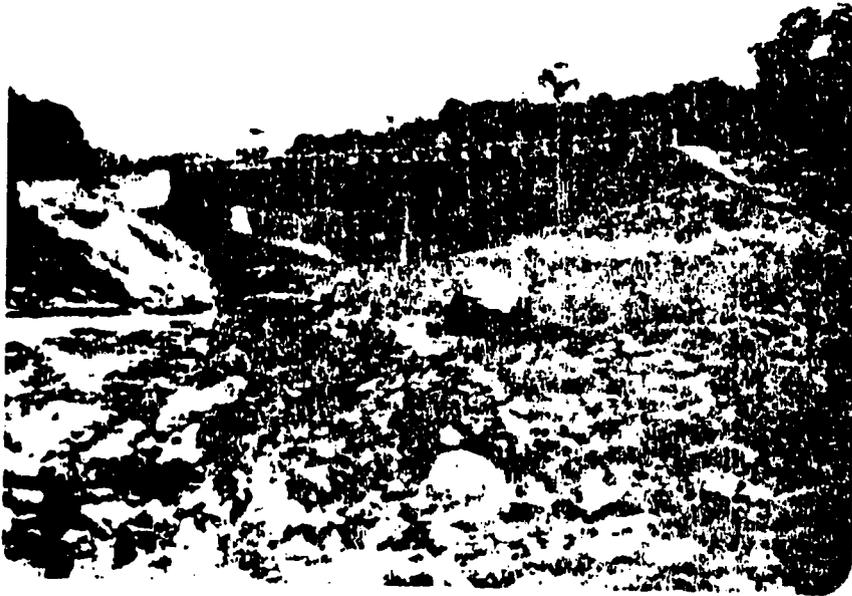
to complete the resurfacing of the Tarapoto to Rioja road section.

3. It is recommended that a final Implementation Letter closing this Loan Agreement be prepared and sent to the several responsible authorities associated with this Project.



PHOTOGRAPH # 1

The Project's largest concrete bridge over the NARANJILLO RIVER
(Km. 175)



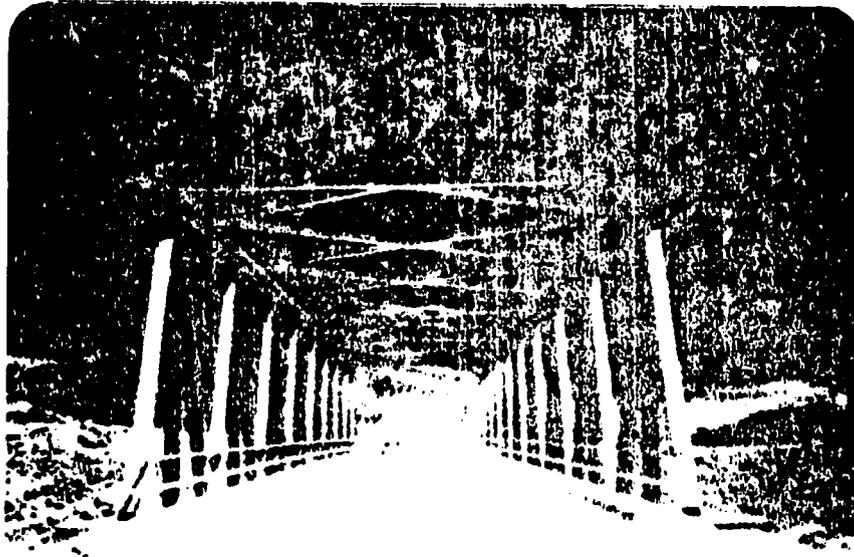
PHOTOGRPH # 2

Concrete Bridge over the AGUA CLARAS RIVER (Km. 199)



PHOTOGRAPH # 3

"SLASH AND BURN" practices by the spontaneous
colonization along the road (Km. 199)



PHOTOGRAPH # 4

RIO BLANCO BRIDGE (Km. 208)

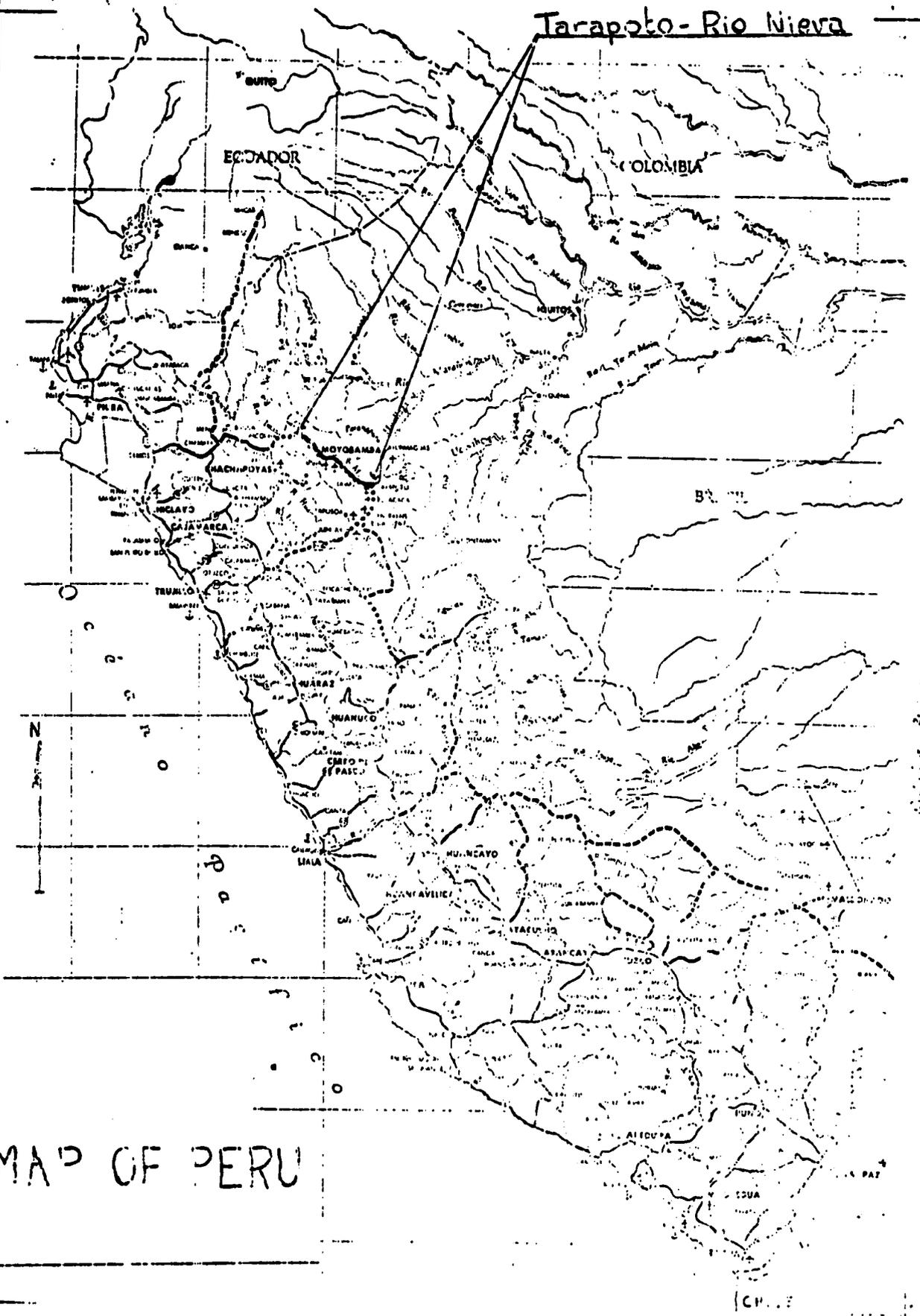


PHOTOGRAPH # 5

Corrugated Plate Culvert at Km. 216

ANNEX "A"

Tarapoto-Rio Nieva



MAP OF PERU

ANNEX "B"

