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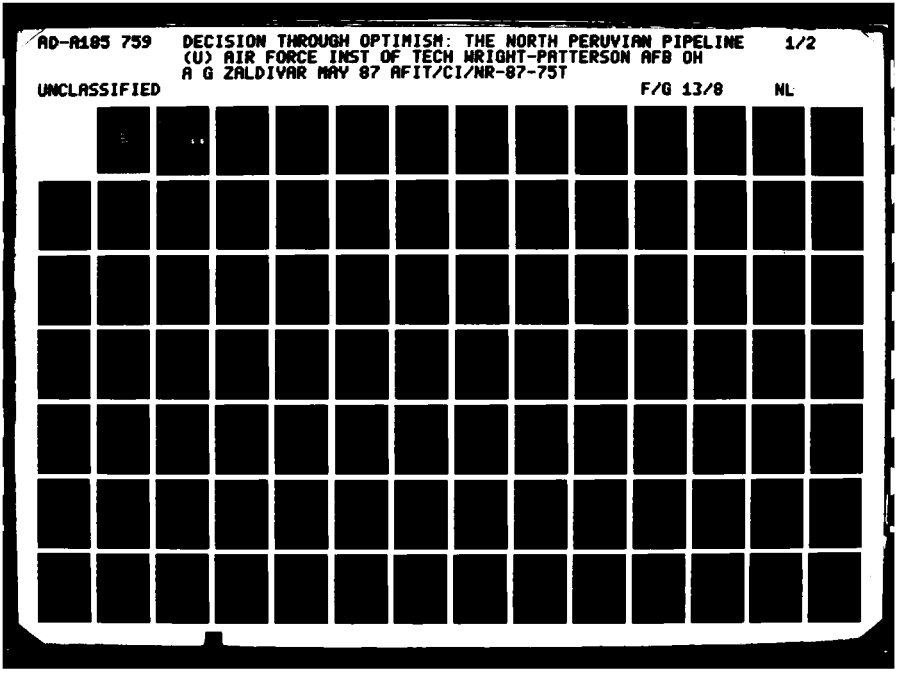

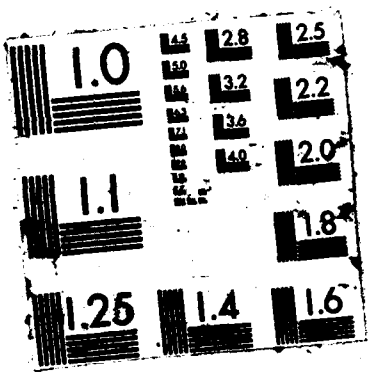
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ABSTRACT

DECISION THROUGH OPTIMISM:
THE NORTHERN PERU OIL PIPELINE

In the early 1970's the Peruvians struck oil in their Amazon region. The state oil company, PETROPERU, and the Occidental Petroleum Company (Oxy) sought to exploit their finds in this ~~most~~ remote area ~~of Peru.~~ PETROPERU's and Oxy's areas displayed immediate promise, However, they both required a pipeline to transport the crude from the fields to port. Under the terms of their contract, Oxy could build a pipeline. However, ~~before~~ Oxy's fields had developed to the point of needing a pipeline, PETROPERU decided to ~~undertake the project~~ on their own. What prompted PETROPERU to take the plunge at this time? The most significant factors were: ~~a)~~ economic pressures; ~~b)~~ a suitable advanced technology that would effectively reduce selva exploration and exploitation costs; and ~~c)~~ a new contract philosophy that embodied the revolutionary government's approach to dealing with multinational corporations. Another factor, optimism, is more intangible, but influenced the decision strongly. This paper discusses the need for, construction of, and results of building the Northern Peru Oil Pipeline. The paper reviews the "Modelo Peruano" contracts, the factors involved in making the decision, the construction effort, and financing to accomplish this endeavor. Finally, it notes Peru's oil situation after completion of the pipeline and draws conclusions to its financial and developmental effectiveness. A listing of terms and abbreviations, several tables, and a chronology of significant events relating to the pipeline follow the text to facilitate the overall view of the project.

DECISION THROUGH OPTIMISM: THE NORTH PERUVIAN PIPELINE

THE PROFESSIONALIZATION OF THE CUBAN MILITARY

by

ARTURO GILBERTO ZALDIVAR, B.A.

REPORT

Presented to the Faculty of the Graduate School of

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DEDICATION

Many people deserve credit for these reports other than the one who's name is on the title page. To my wife Sima, whose proof-reading and loving support were indispensable. To my children Sarah, Rebecca, and Matthew who were deprived of a father many times due to my work and absences. To my mother Margarita, whose sacrifices through the years make possible the successes of tomorrow. Finally, this degree fulfills the promise made years ago to my dear Aunt Zoyla, may she rest in peace.

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INTRODUCTION

THE NORTHERN PERU OIL PIPELINE

Peru's modern oil extraction industry began with strikes in the northwestern fields of Talara and Zorritos in 1863, four years after Edwin Drake drilled the first hole in Titusville, Pennsylvania. These northwestern areas continued to be intensely prospected through the next century. About 1959, Peru drilled its first offshore well. However, although several strikes showed promise in various parts of the country, the reserves never quite compensated for the post-World War Two economic and industrial boom and the resulting demand on petroleum products. As the urban population grew, mostly around Lima, the total demand outweighed total domestic supply (see Table A). Peruvian governments did not lose sight of the fact that new wells needed to be found and exploited.

The 1952 Petroleum Law 11780 spurred explorations in a relatively new area, the jungle or "selva" (Thorp and Bertram: 224). Although the Ganzo Azul Petroleum Company had discovered one small field in the selva region as early as 1938, the difficult

terrain made all types of petroleum operations extremely costly, whether they were exploratory, extractive, logistical, or processing (LACOR: 220). While oil strikes in the selva brought hopes of increasing Peru's reserves for domestic and export needs, large strikes were necessary to justify the expenses. By 1955, of 15 wells drilled only one field at Maquia produced successfully, although several concessionaires were exploring the selva region. The Maquia field only produced enough to supply the refinery at Iquitos for the local market. By 1960, the failure to find any significant fields led to three major consequences: the slowing growth of petroleum output; the withdrawal of the Peruvian private sector from the industry; and a toughening of policies toward the oil sector (Thorp and Bertram: 224-6).

Meanwhile, several companies continued exploring, and in mid-1961 Mobile Oil struck a large gas field at Aquaytia, just north of Aqua Caliente. Unfortunately, the remoteness of the area necessitated a pipeline to exploit the find. Further drilling proved less than spectacular, so Mobil did not develop the deposit (Thorp and Bertram: 227). The demand by this time exceeded output, and Peru began first

importing some petroleum products, then crude itself by 1963. Further searches in the selva were fruitless, and exploration activity slowed dramatically by 1968.

The most significant event in 1968, however, was the October takeover of the government by the military. The International Petroleum Company (IPC) lost its Talara refinery in October, then the remainder of its property in January, 1969 (Pinelo: 144-5). Peru reorganized the state oil company, Empresa Petrolera Fiscal, as PETROPERU in July 1969, and with the integration of IPC in September, PETROPERU grew in size and capability. This event is particularly significant in that PETROPERU inherited a production and distribution system as well as an efficient administration. It only lacked capital for exploration (Hunt: 335). In 1971, Occidental Petroleum (Oxy) signed a contract with PETROPERU to explore and exploit a section of selva bordering Ecuador, 150 miles south of the recently successful Ecuadorian soon-to-be-pipelined fields (PT, 25 Jun 71: 2).

The time to exploit the selva finally arrived. PETROPERU's and Oxy's areas displayed immediate promise. However, they both required a

pipeline to transport the crude from the fields to port. Under the terms of their contract, Oxy could build a pipeline. However, before Oxy's fields had developed to the point of needing a pipeline, PETROPERU decided to undertake the project on their own. What prompted PETROPERU to take the plunge at this time? The most significant factors were: a) economic pressures; b) a suitable advanced technology that would effectively reduce selva exploration and exploitation costs; and c) a new contract philosophy that embodied the revolutionary government's approach to dealing with multinational corporations. Another factor, optimism, is more intangible, but influenced the decision strongly. This paper discusses the need for, construction of, and results of building the Northern Peru Oil Pipeline. The paper reviews the "Modelo Peruano" contracts, the factors involved in making the decision, the construction effort, and financing to accomplish this endeavor. Finally, it notes Peru's oil situation after completion of the pipeline and draws conclusions to its financial and developmental effectiveness. A listing of terms and abbreviations, several tables, and a chronology of significant events relating to the pipeline follow the text to facilitate the overall view of the project.

CHAPTER 1

THE MODELO PERUANO CONTRACTS

On October 3, 1968, a military golpé brought Peru a heavily nationalist approach to administration of the state economy. The regime's first goal was to establish national control, typified by the nationalization of IPC. IPC and Peru had carried on a long-standing dispute over the subsoil rights originally conceded to the company. Although it can be argued that the nationalization was a political ploy to consolidate power through an emotional and popular action, the action terminated any further dispute, intimidated other multinational companies regarding future contracts, and established undisputed ownership of subsoil rights. Furthermore, Supreme Decree 081-68-FO stated that the state oil company was the sole owner of the petroleum products extracted from Peruvian territory and stressed the difference between a concession and a contract (see Appendix 1 [Pontoni: 39-40]).

Peru's national experience and long-standing dispute with the International Petroleum Company (IPC) undoubtedly left it with a wary mistrust of multi-

national petroleum firms. At the same time, Peru recognized that foreign investment would be a prerequisite to discovery and development of their oil resources. The Revolutionary government decided not to grant any further concessions to oil companies, as it felt that concessions denied the state control of its national resources. National control of internal resources was a primary concern throughout the military rule, and was made quite clear in the national plans published by the government (Plan, 1971: 16-18).

Meanwhile, PETROPERU's main objectives in this time frame (1969-1971) revolved around returning Peru to oil exporting status (Pontoni: 36). This involved exploration for new reserves, exploitation of those deemed of commercial value, then transport of the product to market. Also, minimizing financial risk was essential to a company with little or no investment capital. To accomplish these goals, and remain in accord with the government policies, PETROPERU implemented a new contracting approach with multinational firms. PETROPERU, with the idea of a service contract that shared output instead of profits, approached Occidental Petroleum (Oxy).

Oxy was widely reputed to be a venturesome

company willing to negotiate with developing nations, such as Libya. The contract they agreed to in Peru became known as the Modelo Peruano contract, and it was the first of 20 similar contracts, in fact, the first exploration/exploitation contract signed with a foreign oil company allowed by the Revolutionary government. The contract ran for 35 years, with a commitment to complete aerographic and seismic surveys of the area. Oxy agreed to drill a minimum of three wells, the first within 30 months and two others within four years. The contract required Oxy to drill the wells even if the preparatory studies turned out negative. If Oxy wished to remain in the area after it drilled the first three wells, it needed to drill at least one well every five months over a period of three years. The contract recognized PETROPERU as the state's concessionaire and owner of all subsoil petroleum products. PETROPERU paid Oxy for its operations with a 50/50 split of production at the wellhead. As concessionaire, PETROPERU made all payments such as inspection fees, licencing, etc. and most taxes. Oxy's share of production covered the costs of exploration, exploitation and production. The contract also contained the first written commitment for a pipeline, a necessity for cost

effective, large scale exploitation of the selva. It allowed Oxy to build as many pipelines as needed from the selva to the coast. PETROPERU had the option to participate in the construction with up to a 50% share. Regardless of the share, after 15 years the line would become the sole property of PETROPERU, with Oxy remaining as its operator through the term of the contract. It also guaranteed priority on the pipeline to Oxy and PETROPERU equally from the contract area (PT, 25 Jun 71: 2; Pontoni: 53-4).

The contract held several important features benefitting Peru and its state oil company. Under its terms, PETROPERU did not have any capital commitment and all of the risks involved were transferred to the contractor. It emphasized that PETROPERU held the concession and the petroleum flowing from the wellhead belonged to PETROPERU, who then paid Oxy 50% of the value as a service fee. The contract pushed Oxy to rapidly develop the area assigned, and within 26 months, they had struck five wildcats successfully. Their early success both encouraged further investment from abroad and spurred PETROPERU's decision to build a pipeline. However, the contract did have some weak points, most notably that the dramatic price increases after 1971 made the percentage split at the wellhead

seem too generous. The changing oil market later forced Peru to abandon this type of contract, but for its time, it must be seen as instrumental in developing the oil deposits in the selva. Of the 20 contacts signed, Oxy's was the only one to truly benefit with a substantial find. The other contractors terminated their explorations by late 1975, absorbing the losses incurred during the unsuccessful searches.

As mentioned above, Oxy's early success in the selva influenced PETROPERU's pipeline decision. The following chapter examines this factor and others which contributed to PETROPERU's decision to build.

CHAPTER 2

FACTORS INFLUENCING THE DECISION TO BUILD

Granting that many factors affect the decision-making process, this section highlights some of the more obvious. The difficulty of the terrain thwarted early efforts to exploit the selva resources. By the early 1970's available technology facilitated exploration and exploitation efforts. Meanwhile geo-political and economic interest in the Peruvian selva increased due to the Ecuadorian oil strikes of the late 1960's. The closeness of the Ecuadorian fields highlighted Peru's deteriorating domestic oil supply/demand situation and brought hope that untapped selva resources could improve the situation. PETROPERU decided to build this pipeline due to recently available advanced technology, strategic military considerations, the economic pressures of limited reserves, and the optimism which the selva strikes generated.

Technological Advances

The selva's thick foliage, heavy rainfall,

and abundant waterways have historically complicated jungle operations. The difficulty of movement and quickly changing jungle appearances, due to swollen rivers and rapid plant growth, slowed development efforts. Experience with helicopter operations and the advent of Side-Looking-Airborne-Radar (SLAR) compensated for those limitations.

An important factor in discovering and exploiting oil in remote jungle areas is the difficulty of operating in the difficult terrain. The experience in helicopter operations gained in Vietnam facilitated prospecting and drilling for oil in the most isolated areas. Helicopters could deliver men, equipment, and supplies deep in the Amazon. As the Andean Times reported in the 1974 Peru Petroleum survey:

> It's only been within the past decade or so that the big breakthrough has become technically and economically feasible in the jungle here. You can sum it up in one word: helicopters, and more specifically, reliable big load capacity helicopters (AT, 20 Sep 74: 42).

Considering the military's experience with helicopter technology (the Air Force had acquired several from the Soviet Union since 1970), their interest in expanding their helicopter fleet, and their active participation in the country's economic

affairs, PETROPERU could expect practical cooperation from the military for its exploration efforts in the selva (Stepan: 264). In fact, once committed to the pipeline venture, the Fuerza Aerea del Peru, or FAP, grew rapidly. The Andean Times Survey reported that some 60 helicopters operated in the selva in September 1974, and quoted a Bell Helicopter representative's estimate that the FAP operated the fourth or fifth largest commercial helicopter force with 35 machines in the air (AT, 20 Sep 74: 43).

To control air operations, FAP was the contact point for all air support requests. If they could not handle the job, FAP referred it to a commercial company. Prices varied according to the capacity of the machine and the number of hours required. FAP prices, however, tended to be much higher than commercial prices, some twice as high, even though Colonel Enrique Morey (director of Grupo 3) stated that the FAP was only breaking even (AT, 20 Sep 74: 43). Grupo 3 grew from a small search, rescue and salvage squadron of the transport wing Grupo 8, into a five squadron Helicopter wing. By September 74, FAP was shopping around for more helicopters, and investment that year totaled 50 million (US$). At that time the fleet already included seven MI-8, eight Bell

212 (with 14 to be delivered that year), eight Bell 205, ten Alouette III and one Alouette II (some retained in Callao for non-oil operations), and a "swarm" of Bell 47G's (AT, 20 Sep 74: 43). The helicopters supported the construction and exploration efforts by supplying remote locations not accessible overland, shortening the delivery time of supplies and equipment throughout the operating area, and in some cases, they were essential in stringing together pipeline sections in the most rugged terrain (AT, 20 Sep 74: 43). These helicopters, incidently, also proved an effective public relations tool, and PETROPERU featured them prominently in press releases and public relations campaigns.

The recent development of Side-Looking-Airborne-Radar (SLAR) also enhanced exploration and exploitation efforts. SLAR is a radar system which transmits a very narrow radar beam allowing for a high degree of imaging resolution. The reflected radar energy is encoded upon data film aboard the aircraft. Once processed photographically, the data film is run through a correlator, which in turn produces a photographic map picture at a constant scale. This imaging system can map great expanses of jungle, facilitating the delineation of borders, locating

survey points and base stations (PT, 27 Oct 72: 12-16). This contributed enormously to exploration of the selva, as did the seismic and geological surveys conducted with modern oil exploration equipment. Since the Modelo Peruano contracts required all companies to share exploration and exploitation data with PETROPERU, the state company gained some long term side benefits with those surveys, which could prove useful for future exploration projects. (Pontoni: 51-52; Del Pilar Tello, Vol. 1: 155)

The Military Considerations

The military wielded a great deal of influence in Peru's economic matters even before 1968 and the petroleum industry certainly received a great deal of attention. The military's stake revolved around three main ideas: national security, lessening dependency upon international markets, and the military's view of itself.

Most obvious in national security considerations is the protection of the country's frontiers. Historically, disagreements over the precise border delineation in the selva region created friction between Peru and Ecuador. This friction erupted twice into a war, in 1859 and 1941. Although

a treaty established the border following the 1941 fracas, Ecuador still claims portions of the Peruvian Amazon, and the friction reappears periodically, exemplified recently by the border clash in 1981. An economic presence in the immediate border area would enhance Peru's claim to the area. Therefore, the possibility that oil, a vital industrializing strategic commodity, may lie in the area served to persuade the military that the area required development. Additionally, the fact that Ecuador made large strikes in its own jungle area and built a pipeline of its own, brought out the possibility that the Ecuadorians might attempt to extend their sovereignty over the disputed selva. Indeed, Caretas voiced this concern in a 1972 article:

> A new potential horizon of riches is searched for in the north jungle. So indicates the phenomenal petroleum development of Ecuador, with which our country shares the same geographical basin. This is an urgent item. The fuel deficit grows rapidly. Our neighbor is developing in the face of territorial boundaries which have been disputed since the Protocol of Rio De Janeiro. We should create a living frontier and we need more petroleum (Caretas, 4-19 Oct 72: 9).

The military's definition of national security emerged from the Centro de Altos Estudios Militares (CAEM) and the army intelligence services in

the late 1950's and early 1960's. It became the central element of officer training. The definition placed the greatest emphasis on the link between national security and national development and the internal barriers to that development (Harari: 74; Palmer: 134; Stepan: 127-55). This included a nation less dependent upon international markets, particularly the U.S. The military government proposed to stimulate national development with ambitious projects. Self-sufficiency in oil products would go a long way in accomplishing this goal. Reflecting upon the early optimism concerning oil possibilities, George Philip writes:

> . . . the Velasco regime suffered many of the difficulties faced by earlier populist leaders in other countries; it had a policy of wealth distribution but no effective policy of wealth creation. . . . The expropriations of IPC, large landholdings and a few corrupt business empires were spectacular in their way but they did not release many resources. An efficient state capitalism would have required much more investment in these areas, not less. The main resources which did become available to the government stemmed from the world commodity boom of 1969-74, the availability of abundant international lending during this period, and the prospect (though not the reality) of an oil boom based on discoveries in the Amazon area (Philip, 1985: 287).

The military felt itself well suited for the task of guiding the country. The CAEM provided good

training in national affairs and an emphasis on professional training and education in the promotion process, getting the best person for the job. It is appropriate to note here that the man chosen to run PETROPERU during this time, Division General Marco Fernández Baca, was a civil engineer. Since all high level oil executives were foreign nationals and most left the country following the nationalization of IPC, a civil engineer may have been the next best available person. It is significant that as an civil engineer, General Fernández Baca was involved in the decision to attempt the largest construction project in Peru's history. Once promoted to full General, he militarily outranked many members of the Council of Ministers, including his nominal superior, the Minister of Energy and Mines General Fernández Maldonado (Philip, 1982: 430-2). With the enormous amount of emotional capital invested in PETROPERU following the IPC expropriation, the state company was under pressure to prove successful (Philip, 1982: 429). This pressure from the political atmosphere encouraged acceptance of the optimistic projections discussed below.

General Jorge Fernández Maldonado headed the Ministry of Energy and Mines. He allied himself with other radical military officers in support of the

revolutionary President General Juan Velasco Alvarado. In 1965 Fernández Maldonado had become a board member of EPF, resigning just prior to the 1968 coup. He then entered the revolutionary government, and by April 1969, was promoted to General and Minister of Energy and Mines. He also found a seat in the very influential presidential secretariat, Coap (Philip, 1978: 81, 93). As one of the radical officers, Fernández Maldonado had an active interest in the developmental policies and dilemmas confronting the revolutionary government, such as Philip noted (see above block quote). In any case, Fernández Baca and Fernández Maldonado certainly played key roles in the decision to go ahead with the pipeline simply by virtue of their positions.

The military's high morale stemmed from the successful counter-insurgency (COIN) operations of the early 1960's. The COIN actions also created a high social awareness within the military, through exposure to the extreme poverty in the areas of operations. This confidence of capability, along with CAEM's definition of national security and its ties with national development fortified the "can do" attitude of the revolutionary military leaders (Palmer: 134; Einaudi: 404-9).

All things considered, the new leaders of Peru viewed the construction of a pipeline from the selva with these things in mind. An economic enterprise in the region would give Peru a stronger foothold in the most remote portion of the country. The exploitation of oil would decrease the dependence of the country and the military on foreign sources. An economic presence would strategically offset Ecuadorian gains in the area. With the optimism of the moment, petroleum operations in the selva promised some answers to these concerns.

Needed Reserves

The need to discover new reserves arose as early as the late 1940's. By 1950, internal consumption increased steeply, while production of barrels per day (b/d) rose only a little more than one percent in the years 1940-1960 (LACOR: 219; Table A). Previous oil searches in the selva only produced one new field at Maquia, 160 kilometers north of the old Agua Caliente fields (see map, p. 1). Although overall reserves doubled from 1950 to 1965, this increase proved insufficient to prevent Peru from becoming an oil importer in 1963. The need to import oil products denied the government badly needed

foreign exchange, and especially so during a period of increasing oil prices. Output needed to be increased, but that required new fields.

The vast unexplored selva presented the most likely area to establish new reserves. However, in the absence of a pipeline, river barge traffic limited economical transportation of any crude oil discovered, lowering the overall cost effectiveness of a drilling operation and the time to market of the product. In the late '60s, a Texas-Gulf consortium made highly successful strikes in Ecuador's jungle region and construction began in mid-1970 for an Ecuadorian pipeline to transport the crude to market (Philip, 1982: 274). These strikes and the resulting pipeline demonstrated two important points: a) a jungle area 200 kilometers north of the Peru-Ecuador frontier contained large reserves of oil, and b) available technology made possible the construction of a pipeline out of the Amazon jungles, across the Andes, and to the coast.

Optimism

Perhaps the single most motivating factor in the decision-making process for constructing the pipeline is also the most intangible. The signing of

the first Modelo Peruano contract with Oxy and the subsequent early strikes in September 1971 by PETROPERU, led to a wave of euphoria throughout Peru. With the spectacular strikes in the Ecuadorian selva so close by, many involved felt that Peru's share could be substantial:

> Richard H. Vaughan, international exploration vice-president for Oxy, was reported by Oil and Gas Journal as saying last week that the Texaco and Gulf successes make the Andean Oriente the best land area in the free work for exploratory work.
>
> "Conditions are right for a tremendous play," Vaughan said. "Half the discoveries of Gulf and Texaco are in the billion-barrel category (PI, 22 Oct 71: 4)."

By the end of the year, both PETROPERU's and Oxy's blocks show great promise and several other multinationals are close to signing Modelo Peruano contracts. Caretas also reflected the unbridled optimism when it judged the selva oil strikes to be the news of the year (Caretas, 23 Dec 71: 19-20).

By March 1972, with two PETROPERU wells producing, a Caretas interview with Gerhard Bischoff, a German geologist advisor to the General Administration of PETROPERU, typified the prevailing optimistic view in Peru concerning the oil possibilities. He stated that the recent findings in the selva were possibly the most important economic

news in the history of the country. He estimated that in 13 years, by 1985, Peru could be extracting a million barrels a day. Based upon this optimistic view, with comparisons to the growth of the Libyan oil industry, and upon the assurance that production would reach 100,000 b/d (which he felt could be attained that year 1972), Bischoff claimed the country could construct a pipeline to the coast in two years (Caretas, 9 March 1972: 10).

In the same interview, Bischoff justified the decision of building a pipeline instead of shipping the crude down the Amazon to Brazil. Peruvian oil is of low gasoline content, and high residual content, making it of greater demand to industrialized countries like Japan. Additionally, the most economical way to transport petroleum is in supertankers, which Japan produces. The transportation price per barrel from the coast in a supertanker to Río De Janeiro around the Straits of Magellan is the same as to Japan (US$ .90 per barrel). Brazil already imports from the Middle East (oil with a higher gasoline content which it requires) at the cost of US$ .50 per barrel. To ship petroleum from Amazonia to Río in a much smaller tanker would cost US$ 1.30 per barrel (Caretas, 9 Mar 72: 10).

While Philip found that the Peruvians harbored some reservations about dealing with the Brazilians, he also stated that there was no real alternative to a pipeline if production was to be undertaken seriously (Philip, 1982: 439). Others also maintained this view, and even four years later, after the realization that the projected reserves were grossly exaggerated, most did not consider the Brazil option a cost effective alternative (AR, Apr 76: 64). The Japanese connection with the pipeline is outlined later in this paper, however, it seems that they also assessed the early selva strikes optimistically and their willingness to loan a large portion of the capital necessary to build the pipeline also encouraged Peru to commit itself to this avenue.

By mid-1972, predictions of possible reserves rose with each new strike. General Fernández Maldonado was issuing detailed estimates of future oil production as if they were certainties (Philip, 1982: 437). His 1973 estimates reflected this optimism:

> . . . in 1973 the minister of energy and mines predicted that production would be 200,000 bpd, at least, and 500,000 bpd at most in 1975 (the pipeline was originally due onstream on January 1, 1976) and 500,000 bpd up to 1,000,000 bpd in 1980 (AR, Apr 76: 64).

An Andean Times article noted the disparity between

three views of possible reserves:

> The first is represented by political statements; these are invariably over-optimistic and tend to confuse the situation. Secondly, there are those given by Petroperú officials and although these are lower than the first, they represent a consistently favorable interpretation of the available information. The third group, typically oilmen from the international companies, tends to count only the absolutely proved figures, and may therefore tend to be more pessimistic than the situation really warrants (AT, 20 Sep 74: 29).

Later, the Andean Report cited the enormous claims as strongly influencing PETROPERU and Government figures:

> The enormous claims made by the exaggerated expectations of both foreign and Peruvian oilmen, particularly during the 1972-1974 period when the 'oil boom' was at its height, encouraged the government into taking the decision to build too big a pipeline and more importantly, to decide against signing any more oil-sharing 'risk' contracts with foreign oil companies (AR, Apr 76: 64).

However, without the benefit of hindsight, things were progressing well for PETROPERU in 1972. The state company and Oxy were making sensational strikes (in fact all of the wells drilled to that time proved successful) and multinationals were lining up to sign contracts. It seemed an oil bonanza was on the horizon to bail out the economy.

Analysis

PETROPERU decided to go ahead with the pipeline possibly as early as January 1972 (PT, 21 Jan 72: 3). As discussed earlier in this paper, Oxy's 1971 contract included provisions for construction of a pipeline. However, press reports indicated PETROPERU's consideration of a pipeline as early as November 1971, although only one well was producing at that time (PT, 26 Nov 71: 5). Philip cites the Bischoff interview, stating that the initial decision came from PETROPERU. General Fernández Baca held the final approving authority for any decision originating in PETROPERU. In any case, Peru officially committed itself with the passing of Decree Law 19435 on 6 June 1972. The law declared the pipeline a national priority, and authorized the participating ministries to take the most expeditious methods necessary to complete the pipeline by 31 December 1971 (D.L. 19435). The passage of this law is significant because it released PETROPERU from many of the limiting guidelines put forth by the revolutionary government for dealing with international sources of financing and material acquisition.

By June 1971, the Revolutionary government had incorporated the Andean Pact's anti-foreign investment code, Decision 24, into its legislation

(Rose: 89). Decision 24 restricted foreign ownership and set out strict rules on technology transfers and royalty payments, profit reinvestments, and remittances. It was biased toward national investor participation in businesses previously run by foreign companies (Rose: 89). The investment code contributed to a negative investment climate, negative investor reaction, and contributed to an inordinate volume of legislation for investors to deal with (Rose: 96). Additionally, the Reglamento General de Licitaciones y Contratos de Obras Públicas, or RGLCOP, fixed procedures to be followed when purchasing goods or contracting for any public works (Saulniers: 6). The RGLCOP required competitive bidding (with only the average bid acceptable and rejecting the minimum bid) and set purchasing limits. By declaring the project a national priority, PETROPERU was able to accept competitive minimum bids from international sources in order to expedite the construction effort, releasing them from the limitations of the RGLCOP and Decision 24. As Alfred Stepan points out, the state is in a weak bargaining position to place controls on foreign capital in those sectors where foreign investment has a high priority in the states development plan AND when there is no existing foreign investment in the

sector (Stepan: 243). In this analysis then, the national priority pipeline, with PETROPERU's need for large amounts of foreign investment for selva exploration and pipeline construction, and (at least prior to Oxy's contract) the lack of foreign investment in the petroleum sector following the IPC nationalization, forced Peru to accommodate foreign capital investment.

Let us briefly review the situation as of June 1972.

1. With helicopters and modern exploration equipment available, extensive exploration of the selva was underway.
2. Development of the selva region would enhance Peru's position economically.
3. Economic activity in the region would create a permanent presence in a strategically contested area.
4. The President of PETROPERU was a senior military civil engineering officer with a great deal of influence in the Revolutionary government.
5. The Minister of Energy and Mines was caught up in the euphoria of an oil boom and he had a

vested interest in the nation's overall development plans.

6. The nation desperately needed an exportable product to generate foreign exchange.

7. While it was too early to accurately assess the possible reserves available in the selva, neither had there been any disappointments by this period, leading to nearly unrestricted optimism.

8. PETROPERU's goals were to develop the selva fields in order to increase production to the point of creating at least self-sufficiency and possibly attaining export status. Only a pipeline could handle the volume necessary to achieve those goals.

9. Ecuador was making spectacular gains in their selva region, in the same geological structure as the Oxy and PETROPERU areas of operation. Additionally, their pipeline was nearly in operational status six months ahead of schedule and in an area adjacent to Peru's selva.

The above points illustrate some factors influencing the decision to build. With those in mind, other factors not taken into consideration

highlight the decision-making process. First, the decision to build was just that, building. PETROPERU had not yet commissioned any feasibility studies, had not compiled accurate cost assessments, nor considered the available supply sources prior to the decision. PETROPERU contracted Bechtel Corporation to conduct the pre-feasibility study after the passage of D.L. 19435 (PP Annual Report 1972: 26), months after the decision to go ahead with the project. Thus, PETROPERU contracted Bechtel to show "HOW" and "WHERE" to build, skipping the question of "IS IT POSSIBLE?" and avoiding the question "IS IT COST EFFECTIVE?" Second, assessments of reserves were still highly speculative and not yet proven. This led to a speculated designed capacity much larger than necessary. Third, the pressure to rush into construction was mostly self-generated, as there were no reserves yet established which required a pipeline for cost effective transport. PETROPERU's action preceded Oxy's success and precluded the need for Oxy to consider the project as provided for in Oxy's Exploration/Exploitation contract.

The decision seems based mostly upon the hopes that Peru would equal Ecuador's success. Optimistically, with this great success in mind, they

designed the pipeline capacity accordingly, regardless of the cost. In any case, construction of a pipeline was an eventuality if anyone were to exploit the selva reserves cost effectively. In retrospect, while the decision-making process left much to be desired, the decision to build was a correct one. The greatest fault in the decision lies in the designed capabilities, detailed later in this report (also see Table B). The Peruvians built the second largest pipeline in the world after the Alaskan pipeline. Its capacity exceeded that of the Ecuadorian pipeline. Sadly, proven reserves and production never reached the great expectations of 1971-72 and through 1980, the line never operated over one half of the designed capacity. (See Tables B and C)

Despite the overly optimistic design criteria, the construction effort mounted was quite impressive for a nation of Peru's stature. The following chapter highlights this mammoth undertaking.

CHAPTER 3

BUILDING THE PIPELINE

Exploration in the selva proceeded quickly once Oxy signed the new "Modelo Peruano" contract in June 1971. Shortly thereafter, in September, PETROPERU struck oil with its first wildcat at Corrientes X-1. Union-Tenneco and Pan-Ocean Oil signed similar "Modelo Peruano" contracts, slightly modified to give PETROPERU an more advantageous split at the wellhead. The modification varied the wellhead split in the following contracts, giving PETROPERU between 50% and 56% of production (Pontoni: 60-62). By January 1972, various companies had signed a total of eight contracts, and PETROPERU announced plans for the pipeline. Oxy's first wildcat spudded in October, while Bechtel Corp. completed the pre-feasibility study by the end of the year. In March 1973, with both PETROPERU and Oxy producing from two wells, the Minister of Mines and Energy announced that pipeline construction would begin in May (PLN, Mar 73: 32). D. L. No. 19435 set the estimated pipeline completion date at January 1976 and PETROPERU secured a loan from Japanese sources to finance the construction (PT, 20

Apr 73: 1). Only in May however, did Bechtel begin the final pipeline conceptual design and engineering study (PT, 11 May 73: 2).

The oil crisis of late 1973 sharply raised the costs of oil imports, spurring the signing of the first construction contracts. Actual construction finally commenced in early 1975, despite the fact that exploration began to taper off dramatically by that time (LACOR:218). The trade journal Pipeline News published an extensive article in August 1977 outlining the project. The following is a brief summary extracted from the report.

Bechtel became the most heavily involved company in the construction efforts, providing the engineering and design studies, handling construction inspection and supervision, and awarding the construction contracts. The optimistic design criteria, shown in Table C, reflected the speculation that exploration would discover large reserves in the selva, evidenced by the designed operational capacity of 263,000 b/d for the 24 inch portion and 526,000 b/d capacity for the 36 inch line. The main trunk line length totaled 860 kilometers, with the North Branch 300 kilometers long and the Corrientes branch 270 kilometers long. It was the most difficult pipeline

building effort of its time, second only to the Alaskan pipeline. The terrain difficulties were enormous. A 150 kilometer section traversed the Sechura Desert on the west side of the Andes, through areas of sheer drop canyons and high mountain peaks, and into the Amazonian jungle rainforest. As depicted on the map on page 1, the main trunk line ran from San Jose de Saramuro, along the Marañon River to the upper selva, through Porculla Pass 2400 meters above sea level in the Andes, down the western side of the mountains, across the desert to the coastal port at Bayóvar.

The fact that materials for the eastern section were barged 4500 kilometers up the Amazon from the Atlantic Ocean to Iquitos, emphasized the logistical problems. From that point, laydown and transshipment areas were cut out of the jungle so that flat-bottom, shallow draft barges could move equipment up the Marañon River to sites along the route of the line. A new 136 kilometer road was cut from the base camp on the Marañon to connect with an old military road near the western end of the eastern section. Every pipeline camp, station, dredge, and lay barge was, by necessity, a self contained unit providing shelter, food, maintenance and fuel storage for its

operation. Helicopters totally supported some advance road crews as well as some clearing and grading crews until the road segments were tied together. Peruvian Air Force Hip helicopters assisted in the venture, which the public relations offices were careful to note, evidenced by the prominent helicopter photographs released by PETROPERU. During the latter stages of construction, a Bell 214 medium-lift helicopter was employed to string some 35 kilometers of 36 inch pipe in the most inaccessible areas. Construction continued through heavy rainfall of 15 to 25 inches per month. In sum, the problems were numerous, but not insurmountable.

The introduction of helicopters facilitated operations in the remote, inaccessible areas. The precise mapping capabilities of SLAR allowed engineers to exactly locate geographical points, geological formations and more precisely survey the construction efforts. The use of these technological advances allowed the exploration and construction efforts to be undertaken in a more cost effective, safe, and timely manner.

Various parts of the world supplied the necessary equipment, in addition to that available in Peru. The U.S. supplied a variety of items and

expertise; Japan supplied 24 inch pipe; West Germany supplied steel plate which was rolled in Peru into 36 inch pipe; and the Soviet Union supplied oil storage tanks (PLN, Aug 77: 16-21). Contractors and suppliers for the pipeline are listed on Table E.

After thirty months, the construction crews completed the line and oil began to flow from the selva on 31 December, 1976. When oil reached the Bayóvar terminal around 24 May 1977, PETROPERU declared the Northern Peruvian Pipeline operational (AR, Jun 77: 103). Due to the delay in beginning construction as projected (the reasons are unclear, but the delay was probably due to financing), the pipeline came on steam one year late. The following section reviews some of the sources PETROPERU utilized to finance the pipeline.

CHAPTER 4

FINANCING

Charts D and D1 are listings of creditors compiled from PETROPERU's yearly reports from 1971 through 1980 and data from the Instituto Nacional de Planificación. Little information was available on the specific terms for repayment besides that COFIDE guaranteed most of the loans to PETROPERU. However, some information was available from various press sources for the largest lender, the partnership Japan Peru Oil Company/Japan Petroleum Corporation (JAPECO/JPDC). 230 million (US$) of the 330 million dollar (US$) loan (plus 31.4 million US$ added later) contributed to approximately 54% of all the external financing for the pipeline, or 37.3% of the total cost (INP, 1980: 290). Under the agreement signed in August 1974 (the basic agreement was reported in April 1973), Peru was to start a ten year repayment in oil in 1979. The terms called for 60,000 b/d the first five years and 80,000 b/d the second five, split 60/40 between crude oil and petroleum products respectively (AR, Apr 76: 65; PIW, 6 Sep 78: 4).

The repayment in oil was important to Japan

due to its reliance on Middle Eastern oil markets. The OPEC oil embargo of late 1973 convinced the Japanese to look for alternative markets. They agreed to the loan for construction of the pipeline and exploration of the selva (the 100 million US$ remainder of the loan) during the optimistic early selva exploration period. In this manner, Japan attempted to guarantee itself a modest supply of oil (Rose: 419). However, after the disappointing exploration results of nearly all contracted companies, including the Japanese-owned Andes Petroleum Company, muted this optimism.

Despite the lack of success in the selva by others, Oxy's wells continued to strike oil. As reflected in Table A, with the completion of the North branch of the pipeline, Oxy's output enabled Peru first to regain self-sufficiency (PE, Mar 78: 127), then to export oil (PE, Nov 78: 489). However, there was still some doubt whether Peru would have a sufficient exportable surplus to supply Japan under the terms of the agreement.

By 1978, Japan and Peru entered into negotiations to determine a price per barrel agreeable to both parties. The uncertain world market escalated prices rapidly during 1978-1979, delaying agreement to

pay in oil. Peru opted to make the first payment of 9.9 billion yen (54.6 million US$) in cash, after selling its oil on the spot market (PE, Nov 78: 489; PE, Dec 78: 536; PIW, 6 Nov 78: 4-5). Meanwhile, Japan's major supplier, Iran, was in the midst of a revolution and Iranian oil production dropped significantly. Japan pressed once again for payment in oil, finally agreeing in December 1980 to pay the base reference price of 37.25 (US$) per barrel (PIW, 1 DEC 80: 12; 15 Dec 80: 11). The price was tied to rise with the prices of two other comparable crudes, and Peru made the first payment in oil in the first quarter of 1981 (PIW, 15 DEC 80: 11). By 1980, Peru's exportable surplus was approximately 72,000 b/d, with an expected peak at 98,000 b/d in 1981 (QER, No. 4, 1980: 14). With the agreement, Japan would be receiving the lion's share of Peru's surplus. Peru, for its part, benefitted from a higher than average price and a guaranteed client.

As mentioned earlier, very little detailed information is available on the smaller loans. However, in reviewing the INP figures shown in Charts D and D1, the remainder to finance figure of 11.5 million is suspiciously low. Some reports set the total debt for the pipeline at 900 million US$. With

INP totals for both the main line and the north branch at 818.5 million US$, and considering the aforementioned suspect figure, the 900 million figure is probably accurate. In any case, 900 million is nearly triple the early pre-feasibility study estimate of 340 million US$ (PT, 20 Apr 73:2).

CHAPTER 5

CONCLUSIONS

The March 1977 issue of the Petroleum Economist estimated the total cost of the pipeline as 670 million (US$). PETROPERU yearly reports list loans covering 533.84 million (US$), with re-investment covering the balance. The 1980 Planning Institute figures total 700 million (US$), with an additional 118.5 million including the north branch (see Table D and D1). The project drew criticism for its large price tag in light of the later exploratory disappointments. However, PETROPERU should not shoulder all the blame for the high price tag.

For the most important reason for PETROPERU's difficulties after 1973-74, Philip states:

> The agency itself was increasingly losing its independence and was more and more required to accommodate itself to various demands put forward by other interests which, in the long run at least, were very damaging to the operation of efficient public enterprise. (Philip, 1982:439)

Philip goes on to note the example of the FAP control over helicopter operations, driving up operating costs. A working committee on nationalized industries reported that PETROPERU suffered delays in receiving

import permits, and permission to proceed with projects or hire qualified personnel (Philip, 1982: 440-3). As Alfred Saulniers points out, public enterprises were limited in the 1970's by RGLCOP, and this, along with many other bureaucratic delays and requirements also inflated operating costs (Philip, 1982: 440-3, Saulniers: 6-7). A domestic pricing policy that would have limited consumption could have given Peru a larger exportable surplus and increased revenues. PETROPERU was at times liable for taxes totaling 130% on behalf of the private companies and on the crude oil it received from the companies and it was not compensated for government owed monetary compensation for its loss of domestic income or subsidies (Philip, 1982: 442, Saulniers: 10). By 1979 the company was hopeless in debt for over a billion dollars (Philip, 1982:442).

Ever so, the Andean Report suggested that the jungle venture was a success, if only a small one:

> The latest calculations made by international oilmen show that Peru is likely to become a net exporter of petroleum in the forseeable future. The figures do indicate, however, that the pipelines being laid in the northern jungle will probably turn out to be a profitable venture for Petroperu even though the margins will be unexciting, especially taking into account the huge capital outlay and amortization time (AR, Apr 76: 62).

Despite the high price, it seems that the pipeline fulfilled some immediate and short term benefits.

The immediate needs to find reserves spurred the exploration in the selva, which in turn highlighted the need for a pipeline to transport any finds economically. As shown in Table A, when Oxy and PETROPERU began exploitation of the selva in the early 1970's, Peru's total crude oil output was only a bit over 60,000 b/d. By the end of 1976, production had increased to 76,500 b/d, nearly 12,000 of which was from the selva (Table B). The logistical problems of production in the selva limited the possible output. However, when the main trunk line came on steam, production surpassed the 100,000 b/d mark (QER, No. 1, 1978: 9). The greatest boon came when the North Branch came on line, propelling Peru to oil export status after a 15 year hiatus (QER, No. 2, 1979: 8). This increased production from the selva contributes over 60% of the country's output since 1978 (Table B).

These dramatic increases in production were not possible without a pipeline. The 1979 estimated reserve-production ratio was no better than ten years (Table A), but the presence of the pipeline is an encouraging factor in drawing future exploration

projects. Since 1980, Oxy made further strikes, and Peru continued to encourage further exploration by other companies. Considering the pipeline facilitated an increase in total output, contributed to Peru's regained status as an oil exporter, and is available to service future strikes in the selva, the effort appears worthwhile. The short to medium term objectives of increased oil production and oil exporting status were achieved, though admittedly at a high price. The achievement of the long term objective of increasing and exploiting known reserves remains uncertain.

APPENDIX 1:

TERMS AND ABBREVIATIONS

AR = Andean Report.

AT = Andean Times.

b/d = barrels per day.

CAEM = Centro de Altos Estudios Militares.

COFIDE = Corporación Financiera de Desarrollo.

COIN = counter-insurgency.

Concession = In the context of this report, an arrangement between a state and a company in which the former grants the latter control over an area, generally for long periods of time, for the purpose of exploiting the area's resources in exchange for a set payment over the term of the concession. The concessionaires are recognized as owners of the resources found and extracted, and they exercise total control over the extent and frequency of the extraction.

Contract = In the context of this report, an arrangement between a state and a company in which the former allows the latter to operate in an area for the purpose of exploiting the area's resources in exchange for an agreed upon share of the wealth (profits or output). This differs from a concession in that the state retains ownership of the subsoil wealth and the state can control the extent and frequency of the extraction.

JAPECO = Japan Peru oil Company.

JPDC = Japan Petroleum Development Company.

INP = Instituto Nacional de Planificación.

IPC = International Petroleum Company.

IPE = International Petroleum Encyclopedia.

LACOR = Latin American and Caribbean Oil Report.

OPEC = Organization of Petroleum Exporting Countries.

Oxy = Occidental Petroleum Company.

PE = Petroleum Economist.

PETROPERU, PP = Petróleos del Perú; state oil company.

PIW = Petroleum Intelligence Weekly.

PLN = Pipe Line News.
PT = Peruvian Economist.

QER = Quarterly Economic Review of Oil in Latin America and the Caribbean.

selva = jungle area of Peru bordering Bolivia, Brazil, Colombia, and Ecuador to the Andes mountain range reaching 1000 meters altitude above sea level.

SLAR = Side-Looking-Airborne-Radar.

spud, spudding = early stage of drilling activity; initial underground drilling activity.

wellhead = ground level of well, point at which oil is measured for output.

wildcat = an experimentally drilled well.

APPENDIX 2

TABLE A

PERU's CRUDE OIL PRODUCTION,
CONSUMPTION and PROVEN RESERVES

YEAR	PRODUCTION B/D	CONSUMPTION B/D	RESERVES MILLIONS OF BARRELS
1920	7,700	+	+
1925	25,300	+	+
1930	34,100	+	+
1935	46,800	+	+
1940	33,100	9,000	174.7
1945	37,700	+	+
1950	41,100	24,000	154.0
1955	47,200	+	+
1960	52,600	50,000	182.2
1961	53,100	54,000	+
1962	57,900	60,000	+
1963	58,800	67,000	+
1964	63,200	77,000	+
1965	63,200	76,000	+
1966	63,100	84,000	+
1967	70,800	92,000	+
1968	76,000	95,000	+
1969	68,100	87,000	+
1970	72,000	97,000	274,5
1971	61,900	103,000	283.8
1972	64,600	105,000	329.3
1973	70,600	110,000	362.0
1974	76,900	119,000	771.1
1975	72,300	115,000	747.3
1976	76,500	130,000	727.6
1977	91,200	135,000	559.6
1978*	162,000	+	671.6
1979	195,000	+	657.0
1980	193,000	+	775.0

* = Estimated
+ = not available

Sources: Production figures 1920-1960, 1970-1980 - Twentieth Century Petroleum Statistics
Production figures 1961-1969 and consumption figures - IPE
Reserve figures - Merrill Lynch

TABLE B

PERCENTAGE OF TOTAL PRODUCTION FROM SELVA

YEAR	TOTAL PRODUCTION B/D	SELVA PRODUCTION B/D	% OF TOTAL
1973	71,061	517	.73
1974	76,077	1,403	1.84
1975	72,037	8,201	11.38
1976	76,408	11,788	15.43
1977	91,146	29,848	32.75
1978	150,880	91,525	60.66
1979	191,651	128,783	67.20
1980	194,962	127,417	65.35

Source: PETROPERU Yearly Reports

TABLE C

DESIGN CRITERIA

ESTIMATED COST - 640 Million US$

LENGTHS -

Trunk Line

534 Miles/860 Km Total

186 Miles/300 Km X 24 inches

348 Miles/560 km X 36 inches

Feeder Lines

North Branch

186 Miles/300 Km x 16 inches

Corrientes Branch

168 Miles/270 Km X 10 inches

6 PUMP STATIONS

Flow Rates	B/D
24 inch Section	
Initial system	73,700
Fully Operational	263,000
36 inch Section	
Initial system	211,000
Fully Operational	526,000

Source: Pipeline News

TABLE D

Principal Investments and Financing
1973-1977

North Peruvian Pipeline
External Financing

Lender	Amount	% of external loans	% of total loans
JAPECO	230.0	see next line	
JAPECO (additional)	31.4	54.3	37.3
Techint	37.1	7.7	5.3
Hanover	8.3	1.72	1.2
Wells Fargo	100.0	20.8	14.3
Page	2.0	0.4	0.3
J.H. Schroder	13.2	2.7	1.9
Crocker Bank	15.0	3.1	2.1
MachinoExport	5.8	1.2	0.8
CAF	20.0	4.1	2.9
City Bank	14.6	3.0	2.1
Investment Fund	4.2	0.9	0.6
(a) subtotal	481.6		

National Counterpart

Lender	Amount	% of internal loans	% of total loans
Autofinancing	4.1	2.0	.6
Capital Contributions	90.4	43.7	12.9
Public Treasury	63.7	30.1	9.1
COFIDE	6.9	3.3	1.0
ALAMBRESA	41.8	20.2	6.0
(b) subtotal	206.9		
Remainder to finance (c)	11.5		
(d) Total a+b+c	700.0		

TABLE D1

Principal Investments and Financing
1973-1977

North Branch Pipeline
External Financing

Lender	Amount	% of external loans	% of total loans
Financiera Aceptaciones S.A.	60.0	64.5	50.6
Construcciones Protexa	33.0	35.5	27.8
(e) subtotal	93.0		

National Counterpart

Lender	Amount	% of internal loans	% of total loans
Capital Contributions	4.8	55.8	4.0
COFIDE	3.1	36.0	2.6
COFIDE/DAVAL	0.7	8.2	0.7
(f) subtotal	8.6		
Remainder to finance (g)	16.9		
(h) Total e+f+g	118.5		

Total d from Chart D

700.0

Grand Total

818.5

Source: Instituto Nacional de Planificación

TABLE E

CONTRACTORS AND SUPPLIERS TO PETROPERU

1. Bechtel - Inspection and Supervision

2. Gottfeld - Line pipe inspection: Radiographic inspection of field welds

3. Mitsui-Marubeni-Itoh & ALAMBRESA - 24 and 36 inch pipe

4. M & J Valve Co. - All Mainline Valves

5. Ruston - Gas turbine driven pumping & generating units

6. Matimport - Oil Storage Tanks

7. Williams-Sedco-Horn - Spreads I and II

8. Techint - Spreads III and IV

9. Wimpey - Bayóvar Oil Jetty: Pipe Reception facility at Iquitos

10. Page - Telemetering and Control 11. Maritime Transport Oper. - Houston-Iquitos Transport

12. Cosapi - Stations 8, 9, Olmos and Bayóvar Terminal (construction): Erection of Tanks at Stations 8 & 9 and Almos Relief Station: Erection of Tanks at Bayovar Sea Terminal

13. Multispec - Coating Inspection

14. Surfcote - Coating

15. Sepipsa-ADC - Erection of Tanks at Stations 1 & 5

16. Proyectos Industriales - Erection of Tanks at Stations 6 & 7

17. Picsa - Tugs and pilot boats

18. Peruvian Air Force - Aerial Supervision and Inspection: Study, Implimentation, Operations, and Maintenance of Telemetering

Source: Pipeline News

APPENDIX 3

CHRONOLOGY

EVENTS IN THE SELVA AND OTHER RELATED INCIDENTS

1952 to 1955 - Petroleum Law 11780 spurred concession in the selva (Pontoni: 30-33; LACOR: 219).

1958 - 15 wells drilled, only one new field at Maquia, which supplied Iquitos refinery (1,100 b/d capacity) with crude for local markets (Thorp and Bertram: 224).

1958 to 1960 - Failure to find any significant fields brings change in government attitude (Thorp and Bertram: 226).

1960 - Domestic oil consumption 50,000 b/d (IPE, 1979: 375)

Mid-1961 - Mobil strikes large gas field in selva, but cannot exploit without pipeline (Thorp and Bertram: 227).

1963 - Peru loses oil export status (LACOR: 220).

1965 - Domestic oil consumption reaches 76,500 b/d

(IPE, 1979: 375).

1966 to 1968 - Mobile and Union search futilely for three years in northern selva. Three wells drilled, but dry (Thorp and Bertram: 227).

1968, August - Act of Talara signed by IPC and EPF, however, discontent with oil situation continues (Pinelo: 140-4).

1968, October - Golpe! Military junta takes over government, invalidates Act of Talara and expropriates the Talara refinery (Pinelo: 144-5; IPC: 14-6).

1968 to 1972 - Large strikes in Ecuadorian jungle spurs renews interest in Peruvian selva (LACOR: 220-1; Thorp and Bertram: 227).

1969, January - Remainder of IPC property expropriated (Pinelo: 145; IPC: 18-20).

1969, February - Government decides not to grant any further oil concessions in Peru. EPF assumes complete control of IPC operations (LACOR: 221; IPC: 22).

1969, July - Empresa Petrolera Fiscal becomes PETROPERU (IPC: 33).

Mid-1970 - Construction begins on Ecuadorian pipeline (PT, 12 Nov 71: 8).

End 1970 - Total production 72,000 b/d, domestic consumption 97,000 b/d (IPE, 1979: 375).

1971, March - PETROPERU contracts for 30 months for seismic exploration in the Tigre-Corrientes Zone, near the Ecuadorian border as part of $10 million (US) a year oil search over the next three years (PT, 5 Mar 71:3).

1971, June - Occidental Oil signs first major exploration/exploitation contract (Modelo Peruano). First written commitment for pipeline construction (Pontoni: 53-4).

1971, June - PETROPERU signs contract with Parker Drilling for exploratory wells in northeast selva (PT, 11 Jun 71: 6).

1971, September - PETROPERU spuds first wildcat at

Corrientes X-1. Union-Tenneco and Pan-Ocean Oil join exploration efforts (PT, 10 Sep 71: 1).

1971, October - Contracts signed with Union-Tenneco Similar to Oxy's, with variation in PETROPERU's favor (PT, 22 Oct 71: 5).

1971, November - Ecuadorian Pipeline is nearly half complete. PETROPERU's first wildcat begins producing, prepares to spud second wildcat, Corrientes X-2. British Petroleum signs contract (PT, 12 Nov 71: 8-9; 26 Nov 71: 4).

End 1971 - Total production 61,900 b/d. Excitement over selva strikes prompts Caretas to name the strikes "News of the Year" (Caretas, 23 Dec 71: 19-20).

1972, January - Exploration/Exploitation contracts signed with AMOCO/Shell, Atlantic Richfield, Getty-Pan Ocean-Transworld, and Phillips. PETROPERU announces plans for pipeline (PT, 21 Jan 72: 3).

1972, April - Elf-Erap and Sun Oil sign contracts (PT, 14 Apr 72: 3).

1972, May - Peruvian legal actions for the confiscatory nationalization of IPC assets completed (IPC: 41).

1972, June - Negotiations for extensive joint Side-Looking-Airborne-Radar (SLAR) survey in selva oil search area. Peruvian Air Force helicopters assist operations. Although drilling results not spectacular, Minister of Energy and Mines announces plans for pipeline continuing, with estimated completion date set at 31 Dec 1971, in accordance with the newly passed D.L. 19435. The Ecuadorian pipeline achieves operational status six months ahead of schedule (D.L. No. 19435; PT, 2 Jun 72: 7-9, 14; PT, 30 Jun 72: 2).

1972, October - Oxy's first successful wildcat (PT, 3 Nov 72: 4).

End-1972 - Bechtel Corp. completes pre-feasibility study for pipeline. Total production 64,600 b/d (PLN, Feb 73: 31).

1973, January/February - Oxy's second and third successful wildcats come in (LACOR: 221).

1973, March - Minister announces pipeline construction will begin in May '73 with projected completion January '76 (PLN, Mar 73: 32).

1973, April - PETROPERU signs basic agreement with Japan for loan of 350 Million (US$), mostly for pipeline (PT, 20 Apr 73: 1-2).

1973, May - Bechtel begins final pipeline conceptual design and engineering study for 5.45 Million (US$). Oxy announces a third successful wildcat (PT, 11 May 73: 2).

1973, May - PETROPERU outlines procedure it will follow for purchase of some 90 million (US$) worth of materials and equipment for the pipeline. PETROPERU is willing to buy from foreign companies in an effort to cut time and costs. "Selection will be made on the basis of prices and financing terms, guarantees of quality and delivery dates, and availability of spare parts and servicing (AT, 23 Nov 73: 6)."

Late-1973 - Oil Crisis raises costs of imports sharply (LACOR: 218).

End-1973 - Total production reaches 70,600 b/d (PP Annual Report 1973: 23).

1974, February - PETROPERU contracts for 146,000 tons of 36 inch pipe (PLN, May 74: 26).

1974, March - PETROPERU buys 30,000 tons of steel pipe from Nippon Steel and Kawasaki Steel. Meanwhile, there are indications that ALAMBRESA, once they begin producing pipes, will export large diameter pipes (AT, 1 Mar 74: 5).

1974, March - FAP buys 6 Bell helicopters, 6 Porter Pilatus, 2 Twin Otter hydroplanes for jungle oil operations (AT, 15 Mar 74: 4).

1974, September/October - Williams Bros., Sedco, Horn Intl., and Techint awarded contracts for construction. Completion expected mid '76 (AT, 20 Sep 74: 4; AT, 11 Oct 74: 9; PLN, Nov 74: 30).

End-1974 - Total production reaches 76,900 b/d (PP Annual Report 1974: 26).

Early-1975 - Pipeline construction begins (PLN, Jan

75: 37).

1975, May - PETROPERU orders 16 turbines for the pipeline (PLN, May 75: 47).

1975 - Union-Tenneco relinquishes area 1B after working three non-commercial fields. (AR, Dec 75: 5).

1975 - Last year of active exploration under the Modelo Peruano contracts (LACOR: 222; Gausti: 188).

End-1975 - Total production 72,300 b/d, domestic consumption 115,000 b/d (PP Annual Report 1975: 48; IPE, 1979: 375).

1976, March - Oxy announces agreement for construction and operation of northern branch, estimated cost over 100 million (US$). Also agrees upon tariff payable for use of whole pipeline, set a yearly fee of 21.8 million (US$) minimum (PLN, Mar 76: 43; PE, Mar 76: 110).

1976, December - Minister announces that main line will come on steam by end of Mar '77. Oil begins to enter the pipeline. PETROPERU signs 115 million (US$)

contract to finance northern branch. Plans announced for construction of a larger, 10,000 b/d refinery at Iquitos (PE, Dec 76: 483).

End-1976 - Total production reaches 76,500 b/d (PP Annual Report 1976: 9).

1977, February - Main pipeline completed (PE, Mar 77: 111).

1977, March - PETROPERU begins new promotion for exploring and developing in selva, with revised contract terms to foreign companies, possibly reserving the most promising areas of newly opened offshore area for those companies prepared to undertake an Amazonian venture. Andean Development Corporation lend 37 million (US$) for northern branch of pipeline and terminal at Bayóvar (PE, Mar 77: 111-2; PIW, 14 Mar 77: 8).

1977, May - Minister announces main line will come on steam in June. Oxy discovers a new field with Huayuri-1 well (PE, May 77: 202).

1977, June - Main line comes on steam. Initial flow

estimated at 30,000 barrels (AR, Jun 77: 103).

1977, September - Production exceeds 100,000 b/d, with 25,000 b/d from pipeline. Oxy's production is 12,000 b/d, with 40,000 b/d expected by end of year and 100,000 b/d by mid-'78. Oxy has now invested 200 million (US$) since 1971 and now commits an additional 100 million (US$) (PE, Nov 77: 459; PIW, 3 Oct 77: 8).

End-1977 - Total production reaches 91,200 b/d, domestic consumption 135,000 b/d (IPE, 1979: 375; QER, 1978 #2: 7).

1978, March - Northern branch feeder line comes on steam with 40,000 b/d. Total output grows to 140,000 b/d, compared to 120,000 b/d consumption;
PERU REGAINS SELF-SUFFICIENCY.
PETROPERU and Oxy predict 200,000 to 220,000 b/d output by end of year. Oxy and PETROPERU reach agreement for exploration/exploitation of block 1B, formerly held by Union-Tenneco. PETROPERU, under budgetary restraints presumably due to country's balance of payments position curtailing drilling operations, is authorized to negotiate with foreign companies for rights to block 2, formerly reserved for

the state company (PE, Mar 78: 127; PE, Apr 78: 166; QER, 1978 #2: 8).

1978, September - Oxy's output about 82,000 b/d. PERU REGAINS POSITION AS NET OIL EXPORTER. Announcement made that first repayment of Japanese loan to be made in yen, rather than crude oil and products as originally envisioned. Meanwhile, Iran slashes exports drying up spot market (PE, Nov 78: 489; PE, Dec 78: 536; PIW, 6 Nov 78: 4-5).

End-1978 - Total production at 162,000 b/d (PP Annual Report 1978: 19).

1979, January - exportable surplus expected to be 70,000 b/d for the coming year (PE, Jan 79: 39).

1979, February - Oxy strikes with first wildcat in area 1B, Oil Minister labels it a major find. Arrangements made to pay Japan in Yen pending agreement upon price per barrel (PE, Feb 79: 75; PIW, 12 Feb 79: 11).

1979, March - Total output rises to 180,000 b/d; Oxy's Selva output up to 93,000 b/d (PE, Mar 79: 130).

1979, July - Total output reaches 200,000 b/d; Oxy's selva output 117,000 b/d, of which 100,000 to 105,000 b/d goes into feeder pipeline and the remainder barged downriver (PE, Jul 79: 283-6; QER, 1979 #3: 10).

1979, November - PETROPERU estimates proven reserves at 671.6 million barrels, of which 246.9 million are in Oxy's selva fields and 174.2 million are in PETROPERU's selva fields; selva reserves estimated as 421.1, or 62.7%. Oil production estimated at 220,000 b/d (PE, Nov 79: 491; QER, 1980 #1: 9).

1979 - Iranian Revolution disrupts Japan's oil supply.

1979, December - New Law 22775 replaces the Modelo Peruano contracts used previously. Renegotiations begin, production slows. (Pontoni: 76-9; QER, 1980 #2: 4).

End-1979 - Total production 193,000 b/d (PP Annual Report 1979: 10).

1980, June - Oxy signs new contract leaving them with 9% of production after costs and obligations, down

from 30% previously (PE, Jun 80).

1980, December - Due to uncertain world supply situation, Japan presses again for repayment in crude, agrees to 37.25 (US$) per barrel (PIW, 1 Dec 80: 12).

End-1980 - Total production reaches 195,000 b/d (PP Annual report 1980: 11).

1981 - Iran/Iraq war further disrupts Japan's oil supply.

End-1981 - Total production reaches 193,000 b/d (IPE, 1985: 159).

End-1982 - Total production for year reaches 195,156 b/d, of which 124,742 b/d or 63.9 % is from selva (IPE, 1985: 159).

End-1983 - Production drops to 171,107 b/d overall, selva production 117,838 or 68.8% (IPE, 1985: 159).

End-1984 - Production up to 187,000 b/d overall, with selva production 126,300 b/d or 67.5% (IPE, 1985: 159).

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INTRODUCTION

The Cuban Armed Forces

The Cuban Revolution is now over twenty-five years old. One of its greatest and most visible achievements is the development of the Cuban armed forces. The most remarkable facet of this development is the transition of an armed revolutionary group of middle-class urban civilians into a professional military establishment capable of projecting force to another continent. This paper addresses the professionalization of the Cuban military. To say that the Cuban military has been professionalized, it must first be established that it was not so at one time, therefore, the first chapter provides a short background on the state of the Cuban military in the early years of the Revolution. To establish the criteria necessary for professionalizing a military force, the following chapter is a discussion of those criteria as viewed by several scholars and theorists. The expanding mission of the armed forces is the

subject of the third chapter, reflecting the changes occurring since the early days of the Revolution. A modern professional military force requires modern weaponry and the training to employ them successfully, hence, the fourth chapter deals with arms acquisition and its increasing sophistication, with attention to officer training, followed by a summary and conclusions. For the sake of brevity, this paper does not address certain topics in detail and assumes a general knowledge of them by the reader. Those topics are: the military involvement in the economy; mass para-military or labor organizations; specifics of political education and its relation to the Cuban Communist Party and the Fuerzas Armadas Revolucionarias.

CHAPTER 1

Background

Fidel Castro's rebel forces defeated Fulgencio Batista's government army after a mostly rural-based insurgent campaign. Batista's army, at its high point, numbered about 30,000 troops (Lieuwen: 262). U.S. military advisors trained the government troops, mostly in conventional warfare tactics. However, in the last months of the fighting, Batista hastily conscripted and trained many troops, then sent them into battle. Louis Pérez notes that internal rivalries, mutinies, corruption, and almost a total alienation from the Cuban people eventually led to the army's total collapse after Batista's flight (Pérez: 152-65). Similarly George Philip states:

> One of the main reasons for the inability of the Cuban army to combat the rebels lay in its internal divisions between such professional officers as were appointed and Batista's cronies; indeed, an anti-Batista coup attempt, led by professional officers, failed in April 1956. Following this the army was purged extensively and its military capacity even further undermined (Philip: 72).

The army surrendered to the new leaders and on 13 January 1959, the provisional revolutionary government ordered the reorganization of the armed forces and suspended the Organic Law of the Army, allowing the incumbent authorities to reshape the armed forces in a fashion consistent with the needs of the new order (Pérez: 165).

Immediately after victory, the revolutionary government saw the need for a standing army, despite early announcements of an intent to demilitarize. Fidel, now commander-in-chief of the armed forces, announced in early 1959:

> he was going to cut the traditional size of Cuba's army by one-half (from 30,000 to 15,000) as soon as practicable, and that ultimately the army would be disbanded completely and the police would then assume the task of preserving internal order (Lieuwen: 266).

This early ideal of a low level of militarism and keeping the military close to the people brought about the first rank structure in the Revolutionary Armed Forces. The highest rank attainable was Major, a country without generals and colonels (see Table A).

Castro soon felt that survival of his regime would require large defensive measures. The new revolutionary government undertook immediate steps to consolidate its power through the systematic

liquidation or control of the most powerful prerevolutionary pressure groups: the army, political parties, unions, and farmers' and professional associations (Mesa-Lago, 1978: 5). The first action necessary entailed the disarming of the rival factions, establishing the Rebel Army (predecessor of the Fuerzas Armadas Revolucionarias or FAR) as the only armed group in the country (Littlewood: 100). Once Castro suppressed the rival armed groups such as the Directorio Revolucionario, his attention turned to the Rebel Army.

By mid-59, the Castro regime completed the purge of all officers and men associated with Batista's army. According to Edwin Lieuwen the regime executed nearly 500 officers, dismissed the rest, and in their place, "...the new officer corps consisted of nothing but '26th-of-July' partisans (Lieuwen: 266)." While this number may seem high, Fidel Castro acknowledges that about 550 Batista "war criminals" were executed after summary courts-martial and special revolutionary tribunals. Included in this number are police personnel as well as military officers (Szulc: 482-3). The guerrilleros, mostly young and of urban middle-class origin, formed the nucleus of the new army. The actual numbers of guerrilleros vary with

the source. Lieuwen states the highest figures, showing a growth from 500 in May 1958 to 8,000 by December 1958 (Lieuwen: 265). Pérez uses the figures of a maximum of 300 during the spring 1958 offensive to 3,000 by the end of December (Pérez: 161,209). Andrés Suárez places the maximum number of querrilleros at 1,500 (Suárez: 33). The most commonly acceptable number seems to be 3,000, as Fidel himself has stated (Castro: 9). These numbers are significant in that even if the highest is accepted as accurate, the purges of rivals, anti-communists, and former Batistianos (many government troops defected in the last six months of the conflict) which followed the victory dropped the numbers even more. This left the new regime with a relatively small number of individuals, few if any of whom had professional military training.

In October 1959, when Raúl Castro became Minister of the Armed Forces, the militia was formed, numbering 50,000 by March 1960. By August 1960, the militia numbered nearly 200,000, and reached a high of 300,000 in the late 1960s. The immediate national security concerns were deterrence of: a) foreign intervention (direct invasion); b) foreign supported invasion of Batistiano or anti-Castro elements

(similar to the 1954 events in Guatemala); and c) internal subversion (control of internal dissent and counterinsurgency). The FAR supplied many of the officers for the reserve units; consequently, the regular officer corps needed to be enlarged and professionalized in order to fulfill its mission.

In the creation of this new officer corps, the manifestation of traditional Latin American concept of personalismo was pronounced. As M.L. Vellinga stated in 1976:

> Within the military organization, personalistic and other particularistic criteria persist in the determination of membership, rank, and assignment. A proletarian background, political loyalties, and patronage can weigh heavily in seeking admission to the military academies. Within the military elite, personal loyalty to the revolutionary leadership is decisive in determining promotion and assignment (Vellinga: 266)

This personal loyalty serves as a check on the inevitable distribution of power and authority that professionalization brought. This qualifying factor must be kept in mind throughout this report.

Simple organization and recruitment does not in itself professionalize the military. A professional military force must manage the controlled application of combat capabilities. To be considered professional, certain prerequisites must be fulfilled.

The following chapter is a discussion of these prerequisites as identified by several noted theorists.

CHAPTER 2

Professionalism

The previous section depicted the state of the officer corps of the newly organized FAR. It must be emphasized that the *guerrillero* background generally equated to that of an urban middle-class, relatively well-educated intellectual, particularly so in the case of the revolutionary elite. What military experience they possessed consisted of rural insurgent warfare or urban guerrilla warfare. The insurgent experience came into very practical use in the 1960-1965 period, when up to 179 anti-Castro insurgent bands operated in the countryside (Domínguez, 1978a: 346). With the mobilization of the militias and other para-military units, Castro committed forces against the insurrections ten times greater than what Batista had committed against him, although the level of fighting was probably the same (Domínguez, 1978a: 346). While these operations must be considered successful, only a professionalized military force provides the sophistication and expertise necessary to conduct modern conventional warfare with a mass army.

However, before discussing the armament, training, and organization indicative of the professionalized Cuban military, a review of the theories concerning the military profession is in order.

No discussion of military professionalism would be complete without reference to Samuel Huntington's work, The Soldier and The State. Huntington's three distinguishing characteristics of professionalism are expertise, responsibility, and corporateness (Huntington: 8-9). He states:

> The development of professional expertise, responsibility, and corporateness will be measured in terms of the evolution of five key institutions of the military vocation: (1) the requirements for entry into the officer corps; (2) the means of advancement within the officer corps; (3) the character of the military education system; (4) the nature of the military staff system; and (5) the general 'esprit' and competence of the officer corps (Huntington: 20).

The greatest dispute Huntington's work created stems from his supposition that a professionalized military is basically apolitical, or more specifically, non-interventionist. W.H. Morris Jones, for example, takes strong issue with Huntington on his trilogy of expertise, social responsibility, and corporateness. He agrees with the concept of corporateness, but discounts the idea of expertise and social responsibility. He particularly dislikes the idea of

an apolitical military, contending that "it is the very professionalization of the modern military officer that makes him an interventionist (Perlmutter, 1980: 51)."

Bengt Abrahamsson has a similar view of an apolitical military. Taking issue with Huntington, he states:

> Military men are not and cannot be neutral and objective servants of the state: they hold certain beliefs, have certain corporate interests and can be expected to favor and to pursue political actions that are consistent with those beliefs and interests (Abrahamsson: 17).

Abrahamsson defines the military profession as "the most professionalized part of the military occupational group, i.e., the officer corps", and he goes on to define profession as:

> . . . an occupation whose members (a) possess a high degree of 'specialized, theoretical knowledge', plus certain methods and devices for the application of this knowledge in their daily practice, (b) are expected to carry out their tasks with due attention to certain 'ethical rules' and, (c) are held together by a high degree of 'corporateness' stemming from the common training and collective attachment to certain doctrines and methods (Abrahamsson: 15).

Perlmutter and Bennett address the topic of the military profession in The Political Influence of the Military. They cite several social, political,

and military theorists in the chapter "Professionalism and Corporatism". Although Talcott Parsons does not specifically address the military as a profession, his observations are valid on this subject. Parsons delineates three core criteria for professions. He states:

> First among these criteria is the requirement of formal technical training accompanied by some institutionalized mode of validating both the adequacy of the training and the competence of trained individuals. . . . "The second criteria is that not only must the cultural tradition be mastered in the sense of being understood, but skills in some form of its use must also be developed. The third and final core criterion is that a fully fledged profession must have some institutional means of making sure that such competence will be put to socially responsible uses (Perlmutter, 1980: 29-30).

Bernard Barber, also a sociologist, has a similar focus with his comments on professional behavior:

> Professional behavior, according to Barber, is defined in terms of: (1) high degree of generalized and systematic knowledge, (2) primary orientation toward community interest, (3) high degree of self-control and internalized ethic, and (4) a system of rewards (Perlmutter, 1980: 30).

Perlmutter cites the Latinamericanist Alfred Stepan in the chapter "Latin American Praetorianism". Stepan brings a more regional outlook to the discussion of professionalism, with his concept of the 'new professionalism' present in Latin America since

World War II. Perlmutter states:

> The impact of the new professional socialization is to politicize the military and to foster military managerialism and role expansion. The new professional training emphasizes internal security rather than national defense policy and teaches skills that are extremely useful in the political and administrative arenas (Perlmutter, 1980: 280).

Stepan sees the characteristics of professional military establishments as:

> . . . relatively universalistic procedures for recruitment and promotion of officers, highly structured military schooling programs that prepare officers for passage to the next stage of their careers, highly articulated and well-disseminated military doctrines and well-programmed military-unit training cycles, all coordinated by extensive general staff systems (Perlmutter, 1980: 280).

Stepan also disputes Huntington's non-interventionist ideal, hence, he contends that:

> . . . technical and professional specialization of the military in conjunction with doctrines and ideologies of internal security will tend to lead toward military role expansion and "managerialism" in the political sphere (Perlmutter, 1980: 284).

He contrasts the old and new professionalism and perhaps most interesting in Stepan's outlook is that under the 'old professionalism' category, the military is considered apolitical.

The concept of the political/apolitical

military proposed by these theorists is difficult to address as it applies to Cuba. Most of them (if not all) made their analyses with the view of a military establishment which stages a coup d'état, such as the Peruvian military in 1968, or one which controls a civilian government, such as the Guatemalan military in the 1980s. In Cuba, there began a unique situation in which Castro totally dismantled the old military, and created a new armed force virtually from scratch, politically and economically active from the beginning. Indeed, the military in Cuba reduced its economic and political presence in Cuban society as its mission became more well-defined and specialized.

Basically then, at least three concepts indicate the presence of professionalism: expertise, corporateness, and social responsibility. The general and systematic as well as specialized theoretical knowledge, or expertise, is attained through an educational program especially conceived to train personnel at various points of their career progression in their military disciplines. Also required along with this educational system is an institutionalized method of initial recruitment, and later, identification of individuals for higher studies and greater responsibilities.

Methods of recruitment and a system of rewards (such as promotion, post-graduate studies, etc.) are concurrent indicators of the corporateness or bureaucratization of the institution. What is meant here by bureaucratization is the regulation of the functional efficiency of the military; the establishment or presence of a systematic and clearly defined chain of command with strict subordination of lower levels to upper levels. This also implies a commonality of purpose and identification of the individuals to the institution.

These concepts of expertise and corporateness established then, they must be employed in a socially responsible manner, with its primary concern the society it originates from. This report does not intend to question whether actions taken by dominating military establishments (such as a coup) are socially responsible, as social responsibility is a subjective term which is viewed in a relative manner by diverse societal groups of varying political ideologies. It does intend to focus upon indicators of professionalization in the Cuban military establishment.

This report examines the professionalization process by focusing upon certain facets of the Cuban

military, despite the dearth of information available on the FAR (Mesa-Lago, 1969; Domínguez, 1976b: 273). The most easily determined factors of professionalization in the Cuban Military are the development of its mission (its raison d'etre), and the acquisition of modern armaments coupled with the available military education system. Since the mission of a military force dictates to such a large degree what arms are acquired, it is the subject of the following chapter.

CHAPTER 3

The Mission of the FAR

The mission of the Cuban Military evolved and diversified as its capabilities increased. The numbers of men under arms naturally vary according to the perceived threat determined by the ruling elite. The mission of the FAR is essential to the Castro regime because it defends the homeland, acts as an agent of socialization, supports Castro's ideology of 'internationalist solidarity', and although limited, provides the means for projection of power beyond Cuban shores.

The most important mission of any military force is the defense of the homeland. As events developed and Cuba moved away from the influence of the U.S., the threat of foreign-supported anti-Castro insurgencies and invasions demanded some sort of military preparedness. The Castro regime met these threats primarily through the mobilization of mass organizations.

The mass army concept is certainly not a new one, the most famous case being the development of the

French Revolutionary armies of the Napoleonic era. The reference to mass is not simply a function of size. As M.D. Feld defines it:

> "Mass army" implies an armed force designed to attain the closest practical enrollment of the totality of the available manpower resources of the state in question (Feld: 192).

The creation of a mass army to confront threats to the revolution had two immediate benefits. First, it rapidly organized a large armed group of people capable of establishing an organized resistance to an opposing armed force. The major advantage of this system is the deterrent to foreign invasion, making the cost of the attack prohibitive. The higher the mobilization, the greater the deterrence. The mass army also proved useful in the counterinsurgency operations necessary in the years 1960-1965. Modern counterinsurgency tacticians state that a combat ratio of ten to one is necessary to win in an insurgent scenario. By mobilizing some 200,000 regulars and militiamen, the estimated 3,591 insurgents (San Martin: 536) were undoubtedly overwhelmed.

The second immediate benefit of a mass army is the effect upon the population. By participating in the new revolutionary structures, the people gained a sense of involvement and commonality of purpose with

the Revolution, facilitating national integration. As Feld argues:

> . . . the notion of general mobilization was designed to produce a similar sense of unity in society [similar to the sentiment of solidarity among laborers], erase individual differences, and make every inhabitant of the administered territory a citizen of the nation-state (Feld: 194).

The militia became the first large paramilitary organization, formed in October, 1959. Its strength grew to 50,000 peasants, students, and workers by March 1960 and was 200,000 strong by August 1960. According to Feld, the very nature of the mass army requires professional officers. He states:

> If the basic requirement of warfare was the most complete possible mobilization of the nation's resources, the basic leadership role had to be one of planning rather than of inspiration. Planning, moreover, involved coordination rather than heroic example (Feld: 196).

Accordingly, the regular forces, which numbered 30,000 in October 1959, began to grow in size, reaching 45,000 in August 1960, and eventually topping out at around 120,000 by the late 1960s (Domínguez, 1978a: 347-8). Note that while figures of FAR strength have been cited at 300,000 (Duncan, 1983: 140), it is most probable that the number of personnel devoted to full-time military activity has not exceeded an approximation of 160,000 as determined by The International Institute for Strategic Studies for the

year ending 1985 (IISS: 98). However, numbers alone do not make a professionalized army. The figures stated present the reader with a perspective of force size and structure. The most important development of this period concerning the professionalization of the Cuban military is the establishment of the military educational system. This provided the expertise necessary to handle the large numbers of personnel as well as the more sophisticated weaponry acquired, which is the subject of the following section. Of immediate interest to this subject is another facet of education, the military acting as an agent of socialization.

The very existence of mass military participation demanded that the military become an agent of socialization. Socialization, in this context, is the process of indoctrinating individuals with values and attitudes, in this case those necessary to create law-abiding, hard-working, and supportive citizens. The system of political socialization carried out by the military in Cuba is intended to neutralize opposition, promote and support socioeconomic change, and ensure consistency of message with other major socializing agencies. The socialization is carried out through a system of political instruction at all levels of the military, as well as in the military schools.

While an elaborate discussion on the specific methods used to socialize the troops is beyond the scope of this report, the effectiveness of the military as a socializer may be a significant factor in justifying the maintenance of a large military and reserves relative to the country's population (Jones: 379). Duncan finds that the socialization functions, which he refers to as the building of modal personality and national identity, play a key role in Cuba's development and they appear to go well beyond those in many other developing countries (Duncan, 1978: 107). In any case, while socialization may not contribute significantly to professional military training, it is a by-product of the mass mobilization and an example of the social responsibility which promotes professionalization.

One of the ideals expoused by the socialization is Castro's promotion of 'internationalist solidarity' demonstrated by the military assistance Cuba provides to the third world. As Duncan states:

> . . . Havana's military aid reflects its revolutionary ideology, which stresses an international duty to aid other people in their struggles for socialism and national liberation (Duncan, 1983: 135).

Cuban military assistance programs began as early as 1959, supporting national liberation movements in other Latin American countries. These were, on the

whole, unsuccessful, and succeeded only in alienating the Castro regime from its regional neighbors. This support diminished by the late 1960s. More significant is the military assistance given to the newly independent African nations. The following summary of Cuba's African involvement is largely derived from Cuba's Policy In Africa, 1959-1980, by William M. LeoGrande.

Cuba supplied military and medical aid to the Algerian National Liberation Front as early as 1960. After Algerian independence, Cuba established a military mission which operated until 1965, reappearing in the 1970s. It established its first military mission in Ghana in 1961 and it operated until 1966. Cuba deployed a battalion of troops to Algeria during the 1963 border clash with Morocco, the first deployment of combat troops overseas. Military missions later operated in Guinea and Congo-Brazzaville in 1966. Cuba assisted the nationalistic movements in Angola, Mozambique, Senegal, Malawi, Mali, and Eritrea in the 1960s. A slowdown in support occurred in the years 1968-1972, which LeoGrande attributes to the ten ton sugar drive of 1970 and its after-affects. When assistance was resumed after 1972, the level of assistance rose.

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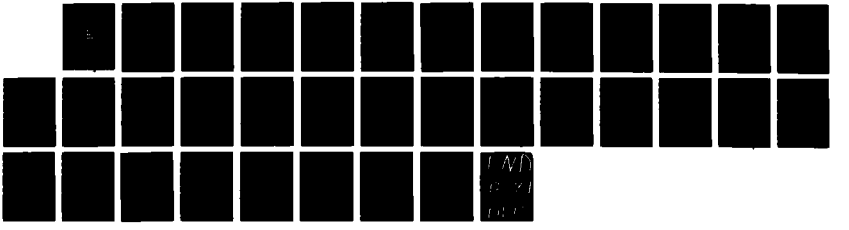

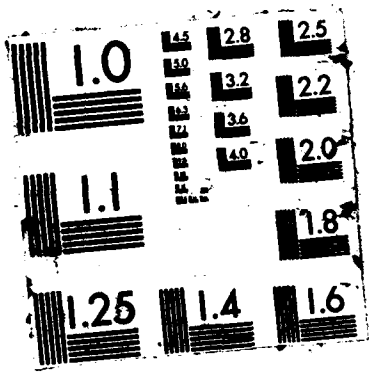
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combat troops were deployed to South Yemen (600-800) and Syria (500-750). Both these units were deployed temporarily and saw little, if any combat. Eventually, in 1975, Castro committed up to 36,000 Troops in Angola, tilting the conflict in favor of the MPLA, the marxist oriented movement. By 1977-8, Castro committed an additional 17,000 troops to Ethiopia (LeoGrande, 1980).

With the July 1979 Sandinista victory in Nicaragua, Castro once again began to support liberation movements in the western hemisphere, notably in El Salvador. Cuba established military assistance missions to Nicaragua, Grenada, Jamaica and Guyana by the late 1970s (Duncan, 1983: 139-40). With the U.S. intervention in Grenada, the change of government in Jamaica, and the deterioration of relations with Guyana, only Nicaragua retained a Cuban military mission by 1987.

The level of assistance described above demonstrates the transition from support for insurgent movements, to military assistance missions, providing military and security advice to third world regimes, as well as the deployment of troops with the purpose of engaging in combat. In the 1980's, Castro again began supporting liberation movements in the western

hemisphere. The fact that Cubans are well versed in the use of Soviet equipment, and they are considered as a fellow third world country makes their presence in third world nations more palatable to sensitive nationalists than a major power presence would be. The military assistance which the FAR offers continues to be a major contributor to Castro's internationalism. Most importantly, the deployment of combat troops across the Atlantic with Soviet assistance demonstrates the power projection capabilities of the modern FAR.

While the FAR fought against much less sophisticated forces in Angola and Ethiopia, their presence demonstrated a substantial involvement for a country of its stature and resources. The FAR executed the venture in a professional manner, typified by: a) the capability to enter a foreign theater and utilize prepositioned equipment supplied by the Soviets; b) the establishment of an effective command system which permitted continuous control of forces in the combat theater and at home; c) troop rotation, which enlarged the pool of combat-experienced troops, as well as selective mobilization of black troops in an attempt to create harmony with native forces; and d) the high use of

reserve personnel, demonstrating successful integration of reservists into active units (Bainwoll: 232).

The venture required a competent military staff system capable of managing individuals and units well trained in the application of violence. The success of Cuban intervention in Africa highlighted their professional qualities and proved the FAR had come of age as a conventional fighting force. Proficiency with modern military equipment and professional military training made this possible. The following chapter examines the nature of Cuban military equipment and their professional military education system.

CHAPTER 4

Equipment and Training

Once Castro made the decision to fortify his armed forces, two areas promising long term benefits received attention: the acquisition of arms for a standing army and militia or reserves; and the establishment of military institutions of higher education. The successful employment of sophisticated weaponry, particularly in an overseas environment, denotes a well-disciplined and efficiently led organization. This section discusses the acquisition and nature of Cuban arms, and follows with a review of the Cuban military educational structure.

ARMS ACQUISITION

The Cuban military buildup began in earnest when Raúl Castro became Minister of the Armed Forces in October 1959. To arm the new militia and army, Cuba bought 100,000 Belgian automatic rifles. By spring of 1960, the Western European arms dealers, due to U.S. pressures and the island's inability to pay, stopped sending supplies. At that point, Castro

established ties with the Soviet Union, Poland, and Czechoslovakia to procure arms. By mid-August 1960, the FAR had received 55 tanks, 60 anti-tank guns, 80 anti-aircraft guns and some early model jet aircraft (Lieuwen: 269-70). Examination of the type of equipment Cuba received in the early 1960s reveals mostly dated equipment, when compared to modern front line weapons of either East or West. The Soviets sent World War Two vintage tanks and guns. They also supplied MiG-15 and MiG-17 aircraft, first built in the late 1940s, and while still effective, not considered front line goods. The equipment, mostly Soviet, was intended to give the island a defensive capability against U.S. invasion. The most updated equipment received, the SA-2 Guideline Surface-to-Air Antiaircraft Missile (SAM) and the SS-C-2b Samlet Surface-to-Surface Coastal Defense Missile (SSM) systems reflected this defensive nature.

The overwhelming defensive nature of Cuban military might in the early 1960s is often overshadowed by the attempted Soviet deployment of the SS-4 Medium Range Ballistic Missiles (MRBM) and SS-5 Intermediate Range Ballistic Missiles (IRBM) on the island. It must be noted the Soviets retained total control of these offensive weapons throughout the

crisis. The missile crisis of October 1962 is well-documented elsewhere, and needs no elaboration here. The Soviets removed the MRBMs and IRBMs by November 1962. The Soviets also removed the other offensive weapon at issue during the confrontation, the Il-28 Beagle bombers; however, these aircraft reappeared later in the 1960s, accepted as defensive in nature.

Regardless of age, the numbers and types of equipment soon made the FAR the best equipped military in the hemisphere, after the US forces. In 1962, the Soviets delivered some 250 thousand metric tons of military goods, and by 1964, the U.S. State Department assessed that the FAR constituted the most powerful military establishment in Latin America (U.S. State Dept.: 3; San Martín and Bonachea: 532).

The defensive nature of the FAR continued throughout the 1960s, as the army's mission became more well defined and devoted to military (as opposed to economic) endeavors. By 1970, due mainly to economic reasons, Soviet influence in Cuban affairs increased, and modernization of the military began (Fontaine: 263; Duncan, 1985: 102). Carmelo Mesa-Lago describes this period (after 1970) as the stage of pragmatism and institutionalization (Mesa-Lago, 1978:

9). During this period, the FAR updated the rank structure to correspond with conventional armies.

In 1973, Cuban leaders recognized that the continuing sophistication of the FAR required a more formal, modern, and professional rank structure. The official justification for departing from the early idealistic rank structure was publicized in a full page article of Granma, dated 16 December 1973:

> The level they have reached, their efficiency in combat and political and organizational training, as well as the requirements for using the technology with which they are equipped, make necessary an adequate order of hierarchy,
> whereas:
> relations have been established and are developing with the armed forces of several countries with a system of hierarchy different from the one in effect in our own Revolutionary Armed Forces and this serves as a drawback to the customary equivalencies in these relations (Granma, 12 Dec 73: 12).

As previously mentioned, the original FAR rank structure topped out at Major. This system, however, created confusion as some majors were significantly more important than others by virtue of position. In some cases, the rank was honorary and identified rebel veterans who may or may not have been actively serving in the FAR. Fidel Castro, as Commander in Chief, also held the rank of major. The 1973 changes elevated Fidel, as Commander in Chief, to an international rank

equivalent of a five star general or marshal. As shown in Table A, all flag or general rank positions were identified as Commander, with an additional identifier to separate the levels. For example, Raúl Castro, as Minister of the Revolutionary Armed Forces, was promoted to Division Commander, leaving two ranks vacant below his brother Fidel. The Navy and Air Force adopted similar ranks, also identifying flag officers as Commanders. Mesa-Lago notes that "the new hierarchy was probably accompanied by salary increases for the top ranks and could be seen also as an economic incentive for the new military elite (Mesa-Lago, 1978: 78).

In 1976, the rank structure was further brought into line with international counterparts (see Table B). The Angolan intervention was in full swing and there may have been some confusion resulting from the six positions addressed as Commander. As Mesa-Lago noted from a December 1976 Fidel Castro speech:

> . . . Fidel stated the need for clear and universally accepted ranks, criticized the Chinese for attempting to eliminate ranks during the Cultural Revolution, and acknowledged that the previous ranking system had not worked and hence they had decided to call a general by that name (Mesa-Lago, 1978: 79).

Granma published the legislation on 5 December 1976, declaring:

> Whereas:
> the level of development reached by our Revolutionary Armed Forces during the 20 years which have passed since December 2, 1956, . . . the international relations which exist and are developing with the armed forces of other friendly nations; and the efficiency and cohesiveness demonstrated in combat and political training and in fulfillment of other tasks assigned by the Revolutionary Government indicate that this is the right time to establish a nomenclature of military rank similar to that which is used internationally and like that used by the Mambi Army [the 19th century Cuban Revolutionary Army], of whose heroic traditions the Revolutionary Armed Forces are Worthy heirs (Granma, 5 Dec 73: 12).

At this time, Raúl Castro was promoted to four star Army General, and the highest rank attainable for Navy admirals and Air Force generals became a three star equivalent. This final change completed the transition from the guerrilla rank structure to the modern professional military ranks. While the rank structure was undergoing these changes, the absolute numbers of personnel declined and more sophisticated military hardware was acquired.

The value of arms acquired after 1970 reflect the capital intensiveness of complex modern military hardware. As absolute numbers of personnel declined in the early 1970s, the value of the new arms rose.

Domínguez states:

> The military establishment was labor-intensive in the 1960s, becoming more capital-intensive in the 1970s. The rise in military expenditures in the 1970s, therefore, is explained in part by the higher costs of military professionalization and of the modernization of inventories and facilities for which Cuba is responsible (Domínguez, 1979a: 54).

The upgrade in aircraft best typifies this modernization. MiG-21 fighter aircraft appeared in Cuba as early as 1965, the first supersonic jet belonging to a Latin American nation. In the early 1970s, newer models of this MiG entered service in large numbers, eventually replacing all of the late 1940s/early 1950s vintage fighters. In 1978, the swing-wing MiG-23 and later the updated ground attack version MiG-27 entered the inventory (Andrade: 150-151). This modernization lifted the Cuban air arm to a qualitative level nearly equal to the Warsaw Pact air forces.

The increase in modern mechanized equipment also improved FAR combat capabilities. In the early 1970s the number of light, medium, and heavy tanks doubled (Domínguez, 1979a: 56). After the Angolan campaign, T-62 medium tanks, as well as newer armored personnel carriers and mechanized infantry combat vehicles improved the ground forces qualitatively,

placing FAR equipment on a par with Warsaw Pact nations. The numbers of mechanized equipment in relation to force size reflects the Soviet combat doctrine of mobility and maneuverability (Bonds: 163-171).

The development of limited offensive capabilities is the major difference between the 1960s and the 1970s modernization. The devotion of the regular forces to military training and tasks (since 1970), the well-coordinated reserve forces trained in the use of the new equipment, and all of them led by graduates of the advanced military training schools contributed to the ability of the FAR to deploy in Angola and operate the equipment placed in-country by the Soviet Union. This so, the maturing of the Cuban military educational system may be the single most important factor in the professionalization process.

MILITARY EDUCATION

Due to the nature of Cuban society, particularly in the periods from 1960-1970 and after 1977, many citizens receive some degree of military training. Indeed, at various times during the revolutionary rule, the FAR has trained mass organizations in rudimentary military skills. The

reserve forces probably receive the greatest amount of military training, as their function is primarily to augment the regular forces during hostilities. In Angola, reserve forces provided the majority of combat troops (Bainwoll: 232; Domínguez, 1979b: 88).

The key to a professional military force lies in the availability of a highly trained officer corps. As Castro relied upon his armed forces heavily from the beginning, it stands to reason that he chose the military as the first sector of society to undergo institutionalization (Valdés, 1976: 4). Hence, the Castro regime established an advanced military educational system in the early days of the revolution.

An organ of the Unión de Jóvenes Comunistas (UJC), the Unión de Pioneros Cubanos (UPC), recruits future professional officers. The UPC includes children between the ages of seven and fourteen years. San Martín and Bonachea enumerate the prerequisites:

> To qualify for an officer's school, . . ., the cadre member had to be a good communist (belong to one of the mass organizations such as the UJC, have a record of good moral conduct (homosexuals, drunkards, thieves and the like were excluded from membership in mass organizations), demonstrate absolute self-discipline and respect for military discipline, be of a responsible nature (judged by his record of militancy in the mass organization) and above all obey the

> orders of the chief (San Martín and Bonachea: 540).

In 1966, Raúl Castro ordered the establishment of the first Camilo Cienfuegos Military School, enrolling children between the ages of eleven and seventeen, and known as Camilitos. Once the Camilitos complete the pre-college education, the Centros de Estudios Militares, or CEM, absorbs them. According to San Martín and Bonachea, "the CEM is a conglomerate of military schools, the foremost of which is the Instituto Técnico Militar founded on September 16, 1966 (San Martín and Bonachea: 548)." Soviet instructors and Cubans already trained in the Soviet Union established the ITM, which enabled Cuba to train technicians in country rather than send them abroad. By 1971, the output of the Camilo Cienfuegos schools increased to the point that Camilitos made up 74 percent of the ITM students. The ITM provides basic orientation to military life, and four major technical schools: Geodesy and Construction; Mechanics; Electrical Mechanics; and Radiotechnical Mechanics. The courses last from three to five years, depending on if the student wants to become a technician or an engineer.

Other options include the General Antonio

Maceo Inter-Armas School (roughly equivalent to West Point) which includes schools of Communications and Infantry; the Máximo Gómez Military School specializing in artillery and armor; the Mariel Naval Academy (founded before the revolution); and the air force cadet program at San Antonio de los Baños specializing in flight training and air defense. The FAR set up a school for administrators of military-equipment maintenance in 1970.

Entrance requirements vary with the specialty. Air force cadets need a high school diploma to qualify, receive one year of basic training in Cuba, then go to the Soviet Union for aircrew training and additional advanced training. Engineer training also requires high school graduates and further study at the ITM for five years. Artillery, naval, and other specialized army officers must complete the tenth grade prior to being admitted to their respective schools. All other officers with command responsibilities must earn at least a ninth-grade education, and administrators need an eighth-grade education for admission. Consequently, the bulk of the Cuban officer corps consists of the equivalent to high school graduates. Therefore, it is not surprising that by 1976 in Angola, the military

engineers and air force officers comprised the best-educated group of officers (Domínguez, 1978a: 351-2).

Advanced military training is accomplished at the Máximo Gómez War College established in 1963 for the best military officers. Another avenue of post-graduate military education is attendance at the Soviet Frunze Military Academy (San Martín and Bonachea: 549-50). In 1975, the FAR began continuing-education programs for alumni of the ITM.

Systematic evaluation procedures for officers were not established in the armed forces outside of the party until 1966. Prior to that, a candidate's promotion was determined by his superior officer's opinion. Although the first general evaluation of all officers was completed in 1969, the process did not become routine until 1975. Officers are now evaluated upon commissioning, at the end of four years in the same assignment, upon change of assignment, and at retirement (Domínguez, 1978a: 372). The evaluations are the responsibility of the officer's immediate superior, supervised in each unit by a commission comprised of the chief's substitute for political work, the party's organization secretary, and personnel officer.

By 1975, the system of military schools matured to the point that the military high schools supplied 63 percent of all graduating cadets of the naval academy, artillery and general-officer schools, and the ITM. This military school system contributes greatly to the ideological coherence of the FAR, with the lower schools feeding the higher, eliminating the need to recruit untrained civilians requiring more extensive training. Additionally, consider the time sequence required for an engineer to complete course-work after high school. An eighteen year old cadet in 1966 could experience five years at the ITM, one to three years of postgraduate work, and a few years of practical field experience by 1975. Also consider that FAR officers, though generally relatively young (late twenties, early thirties), would by the early 1970s have over ten years of service. These factors demonstrate the professional development of the Cuban military. As Domínguez proposes:

> The long terms of service characteristic of the best officers, the integrated military-school system, and the autonomy of military organizations from civilian organizations for military recruitment have all since added to their stability and ideological coherence and have promoted officer loyalty to the armed forces (Domínguez, 1978a: 353).

Domínguez goes on to say:

> Professionalization has increased military autonomy because civilian technicians are less necessary, and it has added to the organizational complexity of the armed forces (Domínguez, 1978a: 353).

The FAR demonstrated this professionalization with the successful 1975-76 campaign in Angola.

CHAPTER 5

Conclusions

Fidel Castro began ruling Cuba with a ragtag assortment of guerrilleros. He had defeated a relatively insignificant, incompetent, and corrupt army alienated from the society it was created to protect. Starting with a nucleus of Rebel Army loyalists, he set about creating a new military to serve the Revolutionary Government. By 1965, the increases in men and material made the FAR a military force unequaled in its hemisphere, with the exception of the U.S. military. Professionalization of the Revolutionary Armed Forces required the development of expertise in military skills, a bureaucratized career officer corps, and employment in a socially responsible manner. This expertise was developed through the professional military educational (PME) system. As the mission of the Cuban military was more clearly delineated, the PME system also matured. It provided well-trained officers to handle the increasingly complex and sophisticated weapon systems acquired from the Soviet Union. By 1975, the

professionalization process allowed the FAR to project its power to Africa.

The system of military schools keep Cuban officers highly trained, with a strong social consciousness. It provides for institutionalized methods to control entry into a military career, combined with a system of rewards. The FAR is capable of expanding its mission beyond national defense, and has proven versatile when necessity demands the incorporation of large numbers of personnel. The equipment the FAR employs is qualitatively comparable to that used by the most loyal Warsaw Pact nation. This is a bona fide war machine, developed well beyond the level necessary to defend its borders. Sympathizers of the Revolution, such as Philip Russell, have commented upon the marked difference between Batista's Army and the Revolutionary Armed Forces as one of the best examples of how Cuban society has been transformed. No doubt about it, this is a verifiable success of the Revolution.

How does this professional military institution affect Cuba? On the positive side, the FAR is a highly visible sign of the success of the Revolution. It provides for the defence of the island and its system of government. This defense is real in

the sense of an actual fighting force, and theoretical in the sense of a deterrent force. The military acts as a agent of socialization in revolutionary Cuba and provides for social mobility and education which may not be present otherwise. The FAR's ability to project force allows Fidel Castro to act on his concept of internationalism, developing ties to other third world nations. These ties, in turn, enhance Cuba's status vis-á-vis the Soviet Union. A coincidental benefit of Cuban military aid to third world nations is its use as an exportable resource in exchange for economic resources. This is an important addition to a nation who's economy is dominated by sugar and tobacco.

On the negative side, critics point to the large military institution as a sign of the repressive revolutionary apparatus and this has also contributed to the disenchantment of early Castro supporters, such as René Dumont. The establishment of this professional military force virtually guarantees that the early revolutionary ideal of proscribing the military, as Costa Rica did in 1949, cannot be attained. The size and prestige of the FAR also guarantees resistance to any limitation or reduction of the force. Economically, the requirements of this

military force demand allocation of a large part of the nation's resources, in both capital expenditures and talented personnel. As W. Raymond Duncan noted, the uses of the military in the international arena has provoked some discontent:

> This is due in part to the redeployment of manpower from domestic economic activity to foreign projects and to the establishment of a priviledged class of high communist officials, bureaucrats, and military officers who have guided high-priority missions. As one observer put it, "many Cubans feel that a major contributing factor to economic problems is overseas military involvement (Duncan, 1983: 143)."

Additionally, Cuba relies heavily on the Soviet Union for military equipment. This emphasizes their dependence on a friendly world power for the survival of the Revolution. This military dependence, combined with their economic dependence, places doubt on Cuba's non-aligned status when dealing diplomatically with other third world non-aligned nations.

Cuban military professionalism benefits the Soviet Union in several ways. Castro's concept of internationalism accommodates Soviet foreign policy for the third world. This provides a conduit of influence into third world nations through the Cubans which may not otherwise be available. Although some western critics of Cuba's military adventurism use the

term surrogate army, it seems a mutual accommodation of foreign policy objectives is more likely. Even so, the close ties of the Soviet military to the Cuban military ensures a minimum degree of influence in Cuban affairs. Cuba's geo-strategic location at the very least forces diversion of U.S. military assets which otherwise could be used directly against the Soviets. Depending upon world political tensions and the U.S. response, the island can provide military facilities for Soviet forces in crisis situations.

On the other hand, these benefits must be weighed against the burden of supporting a large portion of the Cuban economy. Also, Castro's maverick behavior appears uncontrollable and/or defiant at times, leaving the Soviets open to international embarrassment.

To the U.S., the geo-strategic location of this hostile government poses some problems. In a conventional sense, the presence of the professional Cuban military and its limited offensive capabilities requires the U.S. to allocate resources which may be limited or essential elsewhere. These resources may take the form of political influence and economic aid as well as military assets. The greatest fear of the U.S. would be a repeat of the Cuban missile crisis.

With the Soviet development of strategic mobile missile systems such as the SS-20 IRBM and the SS-25 ICBM, detection of any such deployment to Cuba would drastically cut the available response time of the U.S. The possibility of these systems rapidly attaining operational status severely curtails a negotiating period such as was available in 1962. While this scenario may be an unlikely event, the past experience of the 1962 crisis demands acknowledgement of the possibility. On a less cataclysmic note, Cuban successes in the third world can embarrass and diminish the influence of the U.S.

To the third world, the Cuban military and Castro's internationalist foreign policy can provide substantial military aid, as demonstrated in Angola. Cuban aid may be preferable to suspicious third world nationalists, rather than aid from a major power. The Cuban ability to send aid and their willingness to support liberation movements provides the third world with a model which may be emulated. Conversely, the large Cuban military establishment, with its demonstrated offensive capability and the aid given to insurgent organizations, threatens its regional neighbors. Military aid may also turn against a former client should there be a shift in policy, as

occurred in Ethiopia in 1977. The Cubans shifted their support from the separatist movements in Eritrea to the marxist government. Additionally, military alliances with Cuba tend to further alienate the U.S., as has occurred in Nicaragua in recent years. The U.S. government's alarm over the continued Cuban military support to Nicaragua remains an item of contention between the three countries.

The professionalization process of the FAR provides Cuba with young, well-trained officers who maintain the military sector as a secure power base of the Revolution. However, M.L. Vellinga notes that the orientation of the younger professional officers may be a future source of strain with the older guerrillero veterans whom do not have the formal military and political education (Vellinga: 265). However, the Revolution continues to be dominated by the old guerilla guard united by strong loyalties to Fidel and Raúl Castro. Whether turnover of the top leadership will bring about changes in the development and employment of the FAR remains to be seen. For the present, the continued maintenance of a relatively large military and its association with Castro's internationalist foreign policy seems likely.

Appendix:

TABLE A

CUBAN MILITARY RANK STRUCTURE

1959-73	1973-76	1976-present
	Commander-In-Chief Fidel Castro Ruz	
	Army Commander	Army General
	Corps Commander	Army Corps Gen.
	Division Cmdr.	Division Gen.
	Brigade Cmdr.	Brigadier Gen.
	First Commander	Colonel
	Commander	Lt. Colonel
Major	Major	Major
Captain	Captain	Captain
First Lieutenant	First Lt.	First Lt.
Lieutenant	Lieutenant	Lieutenant
	Sub-Lieutenant	Sub-Lieutenant

Sources: Compiled from Domínguez, Jorge I. Cuba: Order and Revolution. Cambridge: Harvard University Press, 1978, p. 369; "Law of Council of Ministers on New System of Rank in Revolutionary Armed Forces," Granma Weekly Review, 16 December 1973, p. 2.; and "Law on the System of Military Rank in the Revolutionary Armed Forces of the Republic of Cuba," Granma Weekly Review, 5 December 1976, p. 12.

TABLE B

CUBAN MILITARY RANK EQUIVALENCY

CUBA	USSR	US
Cmdr-In-Chief	Marshal of the USSR	Gen. of the Army
Army General	Chief Marshal	General
Army Corps Gen.	General Colonel	Lt. General
Division Gen.	General Lt.	Major General
Brigadier Gen.	General Major	Brigadier Gen.
Colonel	Colonel	Colonel
Lt. Colonel	Lt. Colonel	Lt. Colonel
Major	Major	Major
Captain	Captain	Captain
First Lieutenant	Senior Lt.	no equivalent
Lieutenant	Lieutenant	First Lieutenant
Sub-Lieutenant	Junior Lt.	Second Lieutenant

Sources: Compiled from "Law on the System of Military Rank in the Revolutionary Armed Forces of the Republic of Cuba," Granma Weekly Review, 5 December 1976, p. 12; and U.S., Department of the Air Force, Soviet Aerospace Handbook, AF Pamphlet 200-21, May 1978, p. 175.

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