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SURVEY OF THE
BOLIVIAN NATIONAL POLICE
COMMUNICATIONS SYSTEM

DECONTROLLED JANUARY 24, 1975 AFTER
REVIEW BY ALBERT CARPENTER, PUBLIC
SAFETY COMMUNICATIONS ADVISOR,
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SURVEY

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BOLIVIAN NATIONAL POLICE COMMUNICATIONS SYSTEMS

BY

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OFFICE OF PUBLIC SAFETY

AGENCY FOR INTERNATIONAL DEVELOPMENT

U. S. DEPARTMENT OF STATE

WASHINGTON, D. C.

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I. Introduction:

The U.S. AID Mission in La Paz, Bolivia, requested a U.S. Public Safety Telecom Advisor to survey the present Bolivian Police Telecommunications System to make recommendations concerning equipment and frequency allocations. Mr. Albert W. Carpenter of the Office of Public Safety, Technical Services Division, conducted this survey between May 18 and 22, 1970.

The survey consisted of interviews with the National Police officials, U.S. AID officials, and an inspection of police facilities.

Special thanks are offered to Mr. Louis V. Perez, Deputy Director, USAID/Bolivia, to Lt. Col. DEM Walter Castro Avendano, Director General of the National Police and to Mr. Antonio Bazzoli, Chief of Technical Services for the Ministry of Government, for the generosity of their time and attention which expedited the completion of this survey.

II. Country Background and Assessment:

A. Geographical Assessment:

The Republic of Bolivia is bound on the north and east by the Republic of Brazil, on the southeast by the Republic of Paraguay, on the southwest by the Republic of Chile, on the west by the Republic of Peru and on the south by the Republic of Argentina. The land area, containing 420,000 square miles, is larger than Texas and California combined, and contains considerable mountainous and jungle terrain. Bolivia has an estimated population of approximately four and a half million people.

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There are approximately 1,600 miles of railroad in operation, about 3,000 miles of all weather roads and 9,000 miles of roads which are impassable during the rainy season.

In addition, there are several thousand miles of navigable river waters which furnish the major means of transportation in the forest lowlands of the northern regions.

Air transportation plays an important role in Bolivia. Lloyd Aereo Boliviano (LAB), based in Cochabamba, maintains freight and passenger service within Bolivia, linking all the main cities and towns. LAB also provides service to the Beni regions.

B. Crime Situation:

The National Police have inadequate resources to maintain law and order; as a result, crime rate is increasing. The latest criminal acts occurring in banking and commercial institutions have been planned for political motives which have had the effect of frightening people who handle money in various sectors of commercial and industrial activity. It is reasonable to conclude that this fear has penetrated every department in the country, above all the industrialized zones.

With the increase of delinquency, the emergence of new forms of criminal activity, and the formation of youth groups with various psycho-social tendencies, the National Police urgently require resources which will enable them to confront this set of circumstances which is threatening the society.

C. National Police Assessment:

The National Police is headed by a Director General who is appointed by the president and reports directly to the Minister of Government.

The National Police under the General Directorate is composed of three agencies: the National Directorate of the National Guard, the National Directorate of Traffic, and the National Directorate of Criminal Investigations.

The various aspects of the National Police are as follows:

1. Basic Responsibilities:

- a. Maintenance of public order.
- b. Preservation of personal liberties and rights.
- c. Prevention and investigation of crimes.
- d. Apprehension of offenders.
- e. Administration of trial courts for persons who have committed minor offenses.
- f. Control and regulation of traffic.
- g. Issuance of identification documents.

2. Command:

The present Director General is an active Army Lt. Colonel.

The major duties of the Director General are to administer, coordinate and supervise the three agencies that make up the National Police.

3. Major Subordinate Units:

The Director General and his staff are assigned to the "General Directorate", which is located in the Ministry of Government building.

The heads of the National Guard, Traffic and Criminal Investigations Agencies report directly to the Director General.

The Police Academy operates directly under the General Directorate.

The Director General is directly assisted by:

- a. Command Staff, composed of heads of Personnel Division, Intelligence Division, Planning and Operations Division, Logistics and Disbursement Division.
- b. Administrative Staff, composed of the Director's Adjutant, Public Relations Officer and secretaries.
- c. Superior Disciplinary Tribunal, whose basic responsibilities are to review disciplinary actions taken by Departmental Disciplinary Tribunals.

The National Police have no operational personnel other than those contained in the three agencies previously mentioned who make up this organization.

4. Personnel:

Other than the Director General and a small administrative staff, personnel of the General Directorate Headquarters are drawn from the three police agencies.

a. Actual Strength

National Guard	3,728
Traffic Police	1,025
Criminal Investigation	1,323
Academy (Students & Teachers)	<u>158</u>
Total Personnel of National Police	6,234

5. Agency Description:

a. National Guard

The National Guard is responsible for providing uniform police services throughout the Republic. Their duties consist of the usual law enforcement functions and patrol services in urban and rural areas, control of civil disturbances, demonstrations, border control operations, and service as penal guards. The National Guard has national jurisdiction and authority. The Fire Department is a sub-unit under the National Guard.

b. National Directorate of Criminal Investigations (DNIC)

The National Department of Criminal Investigations is responsible for investigations of major crimes as well as minor offenses that fall under the jurisdiction of the National Police. This organization is also responsible for the investigation of activities of groups or persons which threaten the security of the GOB and/or the internal security of the country. The National Department of Criminal Investigation has national jurisdiction and authority.

c. National Traffic Police

The responsibilities of the Traffic Police are the enforcement of traffic laws, issuance and control of vehicle titles, license plates, examination of drivers, issuance of drivers licenses, registry of vehicles, determination of routes and services of public transportation, intersection control, parking enforcement and vehicle inspection. The entire organization is under the administrative supervision of the National Director of Traffic, with rank of Lieutenant Colonel. He is appointed by the President, upon recommendation of the Minister of Government.

III. Telecommunications Facilities and Systems:A. Nation-Wide System

1. Organization and Staffing: The organization for the nation-wide system is headed by one police officer located at National Police Headquarters. He has overall responsibility for the National Police Communications system. Operator personnel are assigned by their parent organizations to police facilities where radio equipment has been provided. Two to three operators are assigned to each station.
2. General Description of Network & Facilities: A nation-wide radio network consisting of 100 watt Single Side Band radios (R.F. Communications Co. Compact IV Transceiver) provides voice communications from the General Directorate of the National Police at La Paz to the subordinate unit commands. The radio equipment was purchased on PIO/C 5-20168 and 9-30295 and was delivered during October 1963 and April 1964 respectively.

Only 28 of the 40 HF-SSB transceivers purchased for the police nation-wide system can be accounted for within the Police Agencies. The Bolivian Army is reported possessing the balance. Police efforts to regain possession of this equipment has been to no avail.

The telecommunication equipment in the police system is in poor condition and provides only marginal communications. The network consists of 18 stations which the police assert are all in working order. However, an on-the-air check revealed that only four of the 18 stations answered a net roll call. A list of present station locations is provided in Annex #1.

The police have provided a list of additional locations at which they desire future radio installations be made. See Annex 1.

In La Paz, there are three base station installations; the first, which is the net control station, is located at the National Police Headquarters building on the third floor in a small 8 x 8 ft. room next to the repair shop; the second, at the National Guard Headquarters building in a room which will eventually become their operations center; the third, at the National Criminal Investigations Division Headquarters building on the second floor in the same room with the Interpol Communications equipment. The National Police Radio System has no provisions for lateral tie-in with other military/administrative systems.

3. Communications Control Center Operations:

- a. Each of the three installations in La Paz consists of a HF-SSB transceiver, a desk, a chair and a typewriter. Three operators are assigned to operate each station on a 12-hour shift basis.
- b. The station attendants maintain numbered copies of all incoming/outgoing messages on the standard Ministry of Government Radiogram form. The message traffic for each of the La Paz stations during the month of April 1970 is as follows:

National Police Headquarters	<u>600</u>
National Guard Headquarters	<u>1800</u>
Criminal Investigation Hq.	<u>1650</u>

4. Maintenance and Logistic Support:

Repair parts are non-existent for maintaining the equipment. The police have managed to keep the equipment operational only by cannibalizing other units in the repair shop. No parts inventory or stock control record system exist.

The sole repair facility of the Bolivian Police is located on the third floor of the National Police Headquarters and Ministry of Government building. The repair shop is a room 12 x 12 feet and has one cabinet where hand tools, test equipment (VOM and signal generator made in Japan) and a few old used parts are stored. There is a small repair bench and a storage rack for incoming/outgoing equipment (which is full of equipment requiring repair). When telecommunication equipment fails in a station located outside of La Paz, it is the responsibility of that station to provide transportation to and from the repair shop.

No funds have been made available for the local procurement of badly needed repair parts. The chief of the repair section indicated spare parts had been requested on numerous occasions, but had been turned down because of non-availability of funds. Ninety five percent of the present police budget is required to pay salaries alone.

The repair facility has three people assigned to repair all the equipment utilized by the National Police and the Ministry of Government. Two of these people do only administrative work, one being the Chief of Technical Services for the Ministry of Government and the other the National Police Communications Officer. Therefore, there actually is only one technician to maintain all the various equipment for the National Police and Ministry of Government. This technician is familiar with tube type equipment, but does not know how to maintain the OPS/FM-1/5 Series or other types of transistorized equipment.

The monthly salary for the police technicians and operators is as follows:

	<u>Pesos</u>	<u>US \$</u>
Technician	1,500.00	\$125.00
Operator	750.00	62.50

5. Training: There are no training programs in progress and none planned for the future.

6. Observations and Conclusions:

- a. The present repair shop is inadequate due to its small size and unaccessable location on the third floor of the police HQ building.
- b. Sufficient test equipment is not available to provide proper maintenance for equipment presently in country and on order.
- c. Spare parts are not available for repair of radio equipment in country or on order.
- d. Qualified technicians are not available for the repair of transistorized equipment presently on order.
- e. No technicians are being trained to maintain present or incoming equipment.

B. VHF-FM (Low Band) Systems

There exist remnants of two VHF-FM (Low Band) telecommunication systems in the La Paz area which are utilized for Communications between the various police agencies, Ministry of Government and Presidential officials.

These two communication networks are as follows:

- a. National Police Network
- b. Ministry of Government Network

1. General Description of Network and Facilities:

a. The National Police Network

The National Police Network is composed of two types of equipment which is 8 to 12 years old. Most of this equipment is not in operating condition due to the lack of maintenance and spare parts. A list of locations and types of equipment is provided in Annex #4.

b. The Ministry of Government Network

The Ministry of Government Network consists of one base station and nine mobiles. The mobile transceivers in this system are Motorola "Motrac" and are estimated to be about 8 years old. All items are in need of maintenance and spare parts. A list of locations and types of equipment is provided in Annex #5. A photograph of the Ministry of Government Base Station installation also is provided in Annex #5.

2. Communications Control Center Operations:

Inspection of the Control Centers in the National Police and Ministry of Government Networks indicated that these two systems were not in daily operation because of the lack of maintenance and spare parts. The only time the police have tried to operate these two networks was during an emergency situation in La Paz.

3. Maintenance and Logistic Support:

The National Police repair facility is responsible for the maintenance of the National Police and Ministry of Government Networks. No spare parts are in stock for the radio equipment in the above nets. Refer to the comments on the Maintenance and Logistic Support for the nationwide system for additional information on existing conditions. (Page 8)

4. Training:

At present there are no training programs in progress or in planning.

5. Observations and Conclusions:

- a. Spare parts are not available at the Police Repair facility for the radio equipment used in the Police and Ministry of Government Networks.
- b. The radio equipment used in the Police and Ministry of Government Networks is in marginal operating condition or not operating at all.
- c. The present equipment in the Police and Ministry of Government Networks is insufficient in quantity and because of its age unsuitable for the La Paz area.

C. Ministry of Government HF-AM Nation-Wide Communications Network:

The Ministry of Government has a communications network employing HF-AM Base Stations in the La Paz area and 8 provincial capitals. This network is operated by and for the Ministry of Government and in some locations is duplicates to the National Police Nation-Wide Network.

1. General Description of Network and Facilities:

The Base Station installation in La Paz is located in the Ministry of Government building. The outlying stations are located in provincial Government buildings in the provinces Annex 7 contains a photograph of the Base Station installation in La Paz and a list of station locations. Hammarlund, Johnson Viking, Collins and National HF-AM radio equipment is installed at the nine locations in the Ministry network.

2. Communications Control Center Operations:

The operations center in La Paz is manned on a 24 hour basis.

The operator on duty indicated that all stations in the network were operating satisfactorily.

3. Maintenance and Logistic Support:

The National Police repair facility has the added responsibility for the maintenance of the Ministry of Government Communication Network. There are no spare parts available for this network in the National Police Repair Facility. Spare parts are purchased on an emergency basis when the equipment becomes completely non-operative.

4. Training:

No training programs are available for the operators for the Ministry of Government Communications Network.

5. Observations and Conclusions:

Inspection of the one station at the Ministry of Government in La Paz indicated that the system was in operating condition. The operator advised that all nine stations in the network maintained daily contacts on a set schedule.

IV. Progress and Accomplishments of Specific Objectives:

- A. The specific objective of this TDY was to establish the correct frequencies to be used in the procurement of communications equipment (in the Public Safety Program) for the Bolivian National Police.

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In PIO/C 5-00055, 40 FM-1/5 transceivers are ordered for the Bolivian National Police under the FY-1970 ProAg. The FM-1/5 series equipment requires frequencies in the VHF-FM High Band range (148-172 MHz). However, the Bolivian Police supplied Low Band (30-50 MHz) frequencies which could not be used. After attempting to clarify the situation by cable, it was determined that a Public Safety Telecommunications advisor would be required to go to Bolivia to ascertain the problems existing in the utilization of High Band Frequencies.

The U.S.AID Mission Deputy Director was informed of the problems relating to the procurement of Public Safety Communications Equipment for the Bolivian National Police. He suggested a meeting be held with the Director General of the National Police to inform him of the problem areas.

A meeting was arranged and a detailed explanation of frequency requirements of the FM-1/5 transceiver equipment and the cost factors involved (FM-1/5 series versus other commercially available equipment) presented. The Director General indicated the FM-1/5 radios would be completely acceptable for his requirements. At this time, the Director General provided a letter giving the necessary frequencies for the FM-1/5 equipment on order. See Annex #8.

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A complete country-wide frequency plan for all police units was prepared by the writer and submitted to the Director General. These plans were approved by the Director General and his staff. See Annex #9. The communications equipment for the Narcotics unit is being provided by a PIO/C presently being prepared at the Mission.

V. General Overall Observations:

- A. The Bolivian National Police have a distressing situation in that most of the equipment in the Police Communication Networks is obsolete and in need of repair. Due to lack of funds, spare parts are not available for required maintenance. Test equipment and hand tools are almost non-existent. There is only one maintenance technician and he has a limited capability.
- B. The present radio repair facility of the National Police is unsuitable in size and location.
- C. The Bolivian Army, during the 1965 coup d'etat confiscated many items of communications equipment from the National Police and to date these items have not been returned.
- D. No training programs exist to provide much needed training for operators in CW and Voice Operation for the National Police Communication System.
- E. No training programs exist to provide new technicians for the maintenance requirements in the National Police Communication Systems.
- F. No lateral communication channels exist between the Bolivian Armed Forces and the Police.

VI. Recommendations:

To provide adequate communications for the Police and develop the necessary maintenance and repair capability, the following is recommended:

- a. A Public Safety Telecommunications Advisor should be assigned on a full time basis, as soon as possible, to implement a training program, establish a national police repair facility, and to assist in the development of an improved Police Communications System.
- b. Spare parts for the nationwide system should be provided by the USAID. A recommended list of spare parts for the R.F. Communications equipment used in the nationwide system is attached as Annex #2. Estimated cost is \$3,200.
- c. Sufficient test equipment and hand tools should be procured by the USAID to equip a repair shop in La Paz and a telecommunications training facility at the Police Academy. Annex #3 is a list of recommended shop equipment. Estimated cost for shop equipment is \$10,000.
- d. The GOB should provide space suitable for a National Police Repair Center, which would include areas for spare parts storage and equipment maintenance.
- e. The GOB should provide living and classroom space at the Police Academy for ten students attending electronics training.
- f. The GOB should provide qualified local instructors in Electronics for a training program at the Police Academy.

- g. Three technically qualified persons should be selected for U.S. participant training in radio equipment maintenance and repair, as soon as possible. Cost per person is estimated to be \$6,800 plus travel.
- h. A central communications center be established in La Paz which would receive all outgoing and incoming messages for the National Police nationwide network.
- i. A completely new system utilizing OPS/FM-1/5 equipment should be provided for the National Police in the La Paz area as recommended in survey report of December 1967. See Annex 6. Costs for this system are estimated to be \$39,000.
- j. Spare parts should be provided for the Ministry of Government Systems so that necessary repairs can be made as required. Some of the existing radios should be relocated to other vital areas within the Ministry of Government when the OPS/FM-1/5 transceiver equipment is provided for the National Police Network.
- k. The Ministry of Government and the National Police should plan now to eventually combine their communications networks to form a Joint Communications System which will conserve on personnel, equipment and funds. At many locations that have Ministry of Government stations, there is also a police station performing similar functions.

VII. References

Telegrams

1. STATE 041837 (March 21, 1970)
2. LA PAZ 02032 (May 4, 1970)

3. STATE 071103 (May 11, 1970)
4. LA PAZ 02237 (May 13, 1970)

Memorandum

1. Friesz/Engle dated May 6, 1970

ProAg

1. ProAg #00012, Revision #2, dated April 3, 1970

Previous Studies and Reports

1. Survey Report, Moermond/Redlin dated April 1964
2. Survey Report, Willig dated December 1967
3. Survey Report, Katz dated December 1967
4. Report, Powell/Ojeda dated April 1970

PIO/C

PIO/C 5-00055 - 40 FM-1/5 Radios and Accessories

VIII. PRINCIPAL OFFICIALS1. Government of Bolivia Officials

Lt. Col. (Army) Vuan Ayoroa y Ayora
Ministry of Government

Mr. Antonio Bazzoli
Chief of Technical Services
Ministry of Government

Lt. Col. (Army) DEM Walter Castro Avendaño
Director General National Police

Major (Police) Guido Lopez Villegas
Adjutant General National Police

Major Arnaldo Vemio Vaca
Chief Communications Officer
National Police

Luis Valdes P.
Radio Technician
National Police

Captain (Army) Jorge Salazar Crespo
Director General Traffic Division

Col. (Police) Eduardo Canedo Palaez
Director General National Guard

Lt. Col. (Army) Raul Perez Garcia
Director General Criminal Investigation

2. U. S. Officials

Mr. Edward W. Coy
Director/U.S. AID Bolivia

Mr. Louis V. Perez
Deputy Director/US AID Bolivia

Local Hire

Federico A. Murillo Valle
Public Safety Affairs

NATION-WIDE NATIONAL POLICE COMMUNICATIONS SYSTEM

A. STATION LOCATIONS:

LA PAZ

1. National Police Headquarters



2. National Guard Headquarters



3. Criminal Investigation Headquarters



Oruro Province

4. Oruro

Potosi Province

5. Potosi

6. Tupiza

7. Villazon

Chuquisaga Province

8. Sucre

Tarija Province

9. Tarija

10. Bermejo

11. Yacuiba

Santa Cruz Province

12. Santa Cruz

13. Puerto Sarez

14. Puerto Isebel

15. Camiri

Cochabamba Province

16. Cochabamba

El Beni Province

17. Trinidad

Pando Province

18. Cabija

B. ADDITIONAL STATIONS REQUIRED IN NETWORK

1. Copacabana

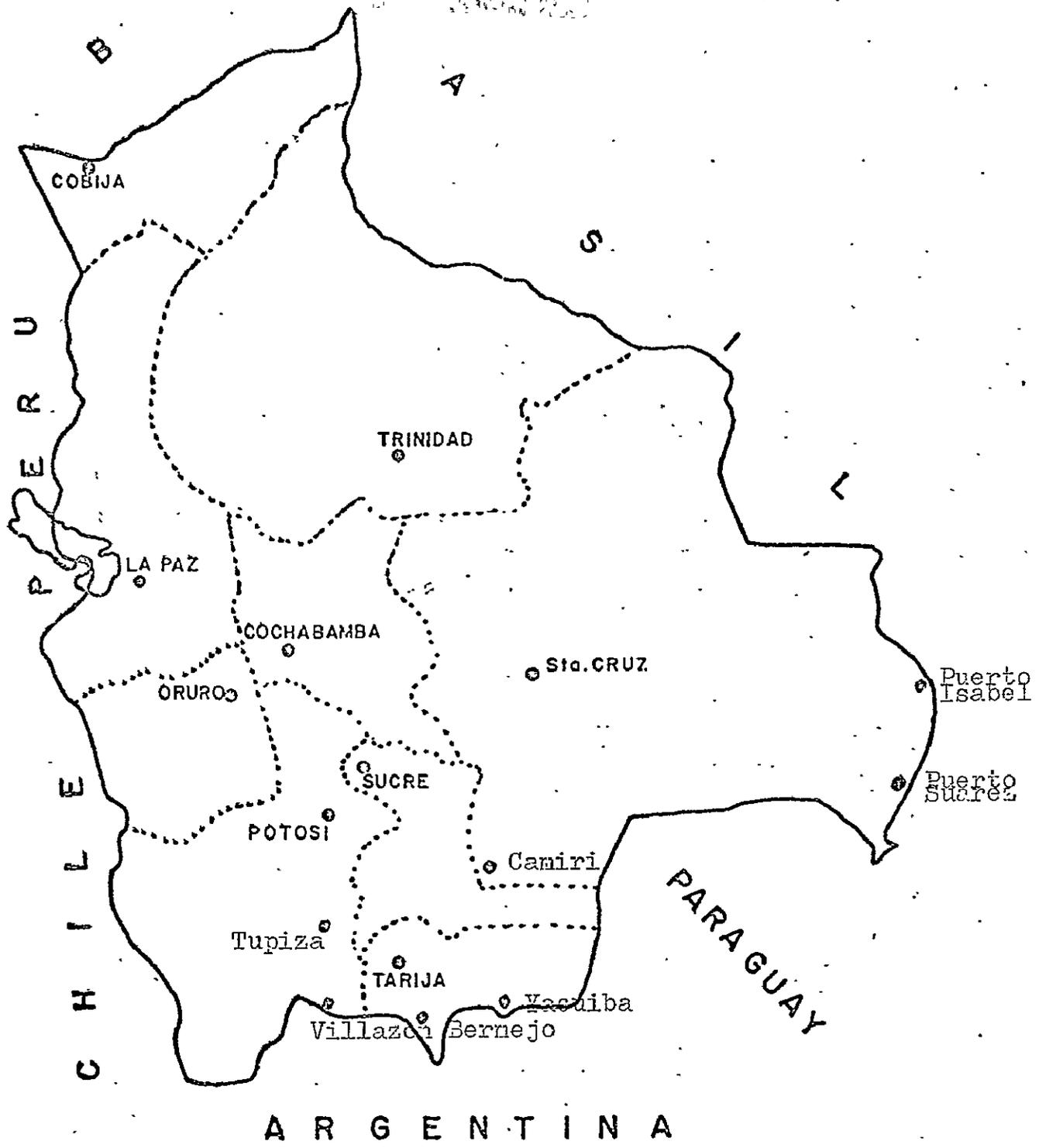
2. Desaguadero
3. San Matias
4. Alto Beni
5. Guayaramerin
6. Valle Grande
7. Caranavi
8. Camargo
9. Uyuni
10. Ollague
11. Robore

C. OPERATING FREQUENCIES

- Channel #1 - 4000 KHz
- Channel #2 - 5000 KHz
- Channel #3 - 8300 KHz
- Channel #4 - 9000 KHz

D. TYPE OF EQUIPMENT

R.F. Communication Compact IV, 100 Watts PEP, HF-SSB,
LSB and USB, Transceiver.



BOLIVIAN POLICE NATION-WIDE COMMUNICATIONS SYSTEM

PRESENT STATION LOCATIONS

ANNEX #2

List of Recommended Spare Parts for R.F. Communications Transceiver equipment. Estimated cost \$3,200.

<u>Compact IV</u>		
<u>Item</u>	<u>Quantity</u>	<u>Description</u>
1.	20	Capacitor, fixed, dry electrolytic, 30 ufd. x 150 vdcw, 30 ufd. x 150 vdcw. R.F. Communications part #C-0325.
2	20	Capacitor, fixed, dry electrolytic, 80 ufd. x 450 vdcw, 100 ufd. x 50 vdcw. R.F. Communications part #C-0304.
3	20	Capacitor, fixed, dry electrolytic, 30 ufd. x 500 vdcw. R.F. Communications part #C-3040.
4	20	Capacitor, fixed, dry electrolytic, 100 ufd. x 50 vdcw, 100 ufd. x 50 vdcw. R.F. Communications part #C-0303.
5	100	Diode, Silicon, IN 2484/F6, 5A6. R.F. Communications part #CR-0001.
6	40	Diode, germanium, IN 198. R.F. Communications part #CR-0101.
7	50	Diode, Silicon, 2F4, 5A4. R.F. Communications part #CR-0000.
8	200	Lamp, indicator, 12V, GE 1815. R.F. Communications part #DS-0001.
9	200	Fuse, 2 amp., Slo blo, MDL2. R.F. Communications part #F-0026.
10	200	Fuse, 1 amp., Slo blo, MDL1. R.F. Communications part #F-0027.
11	5	Filter, Mechanical, 455 KHz. R.F. Communications part #FL-0002.
12	20	Oven, Crystal. R.F. Communications part #HR-0002.
13	15	Relay, 12VDC, 4pdt. R.F. Communications part #K-0001.

ANNEX #2 CONT'D.

<u>Item</u>	<u>Quantity</u>	<u>Description</u>
14	15	Relay, 12VDC, 6pdt. R.F. Communications part #K-0011.
15	10	Loud Speaker. R.F. Communications LS-0000.
16	15	Microphone, Carbon. R.F. Communications part #MK-0002.
17	15	Resistor, Variable, 500K ohm, $\frac{1}{2}$ W, with SPST Switch. R.F. Communications part #R-1111.
18	20	Resistor, Composition, 68 ohm, 1070, 2W. R.F. Communications part #R-0310..
19	20	Resistor, Composition, 7.5 ohm, 10% 1W. R.F. Communications part #R-0417.
20	10	Transformer, 1 F, 455 KHz. R.F. Communications part #T-0003.
21	5	Transformer, output, Audio. R.F. Communications part #T-0100.
22	5	Transformer, power. R.F. Communications part #T-0005.
23	30	Tube, 6U8A.
24	30	Tube, 12BA6.
25	20	Tube, 12AV6.
26	20	Tube, 6AQ5.
27	20	Tube, 12AV6.
28	20	Tube, 12BY7.
29	30	Tube, 6146..
30	5	Crystal, 453.650 KHz. R.F. Communications part #CR-0511.
31	5	Crystal, 456.350 KHz. R.F. Communications part #CR-0512.

ANNEX #2 CONT'D.

<u>Item</u>	<u>Quantity</u>	<u>Description</u>
32	5	Crystal set, channel, 4000 KHz, for R.F. Communications Compact IV.
33	5	Crystal set, Channel, 5000 KHz, for R.F. Communications Compact IV.
34	5	Crystal set, Channel, 8300 KHz, for R.F. Communications Compact IV.
35	5	Crystal set, Channel, 9000 KHz, for R.F. Communications Compact IV.

Items required for R.F. Communications Model RF-101 Linear Power Amplifier and SB-6F Transceivers.

36	10	Tube, 3-400Z.
37	10	Diode, 500 ma., 600 PIV., F6, Silicon. R.F. Communications type CR-0001.
38	5	Diode, 85 PIV., IN 48, Geranium. R.F. Communications type CR-0100.
39	20	Lamp, #1829. R.F. Communications type DS-0000.
40	20	Lamp, #327. R.F. Communications type X-0018.
41	20	Fuse, 20A, type W. R.F. Communications type F-0053.
42	20	Fuse, 10A, type W. R.F. Communications type F-0051.
43	5	Transistor, type 2N388.
44	1	Crystal set, Channel, 5925 KHz for R.F. Communications Model SB-6F Transceiver.
45	1	Crystal set, channel, 7830 KHz for R.F. Communications Model SB-6F Transceiver.
46	1	Crystal set, channel, 15738 KHz for R.F. Communications Model SB-6F.

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ANNEX #3

REPAIR SHOP

SUGGESTED ITEMS - TEST EQUIPMENT - HAND TOOLS - SHOP EQUIPMENT

(Estimated Cost for one repair facility \$10,000.)

A. It is recommended that each individual technician be issued the following hand tools on a permanent basis:

<u>Quantity</u>	<u>Description</u>	<u>OPS Specification</u>
1	Tool kit, Radar and Radio, Mechanics	OPS/IL.2
1	Drill, hand operated	OPS/IL.1
1	Drill bit set of 60, #1 through 60	" "
1	File set, 14 assorted	" "
1	Hack saw, frame, 10" to 12"	" "
1	Hack saw blades, bundle of 10 (30 teeth)	" "
1	Hammer, claw, steel, fiberglass handle	" "
1	Mirror, Inspection, Tilting, 13 $\frac{1}{2}$ " handle	" "
2	Propane refill cylinders, torch	" "
1	Torch kit, w/tips, propane	" "
1	Trouble light, w/guard, 50'	" "

B. In addition to the tools issued the technician, it is suggested that the following tools and shop equipment be provided for the repair facility to be used as required by all technicians on a shared basis:

<u>Quantity</u>	<u>Description</u>	<u>OPS Specification</u>
1	Axe, hand, single edge, 2 $\frac{1}{2}$ lb.	OPS/IL.1
1	Bolt cutter	" "
6	Carrier, storage battery, strap	" "

ANNEX #3 CONT'D.

<u>Quantity</u>	<u>Description</u>	<u>OPS Specifications</u>
2	Chisel, cold, 4" x 1/4"	OPS/L1.1
2	Deburring tool and reamer, 1/8" to 1 1/8"	" "
1	Drill, electric, portable, 1/4"	" "
1	Drill, electric, portable, 1/2"	" "
2	Drill, masonry, hand, star, 1/2" x 12"	" "
1	Drill bit set of 29, 1/16" to 1/2"	" "
1	Drill bit set of 60, #1 through 60	" "
1	File set, 14 piece, assorted	" "
1	File set, 12 piece, assorted, triangular	" "
6	File handles, adjustable	" "
1	Grinder, bench	OPS/L2.1
1	Hammer, sledge, cross peen, 3 lb.	OPS/L1.1
2	Magnifier lamp	OPS/L2.1
2	Punch, chassis, greenlee type, set of 4	OPS/L1.1
2	Safety Belt and strap, Linesman	OPS/L2.1
1	Saw, hand, cross cut, .20"	OPS/L1.1
1	Saw, jig, electric	" "
1	Screw extractor, set	" "
2	Snips, tin, 12 1/2"	" "
1	Square, combination, 12" blade	" "
2	Tape, measuring, 50' with crank	" "
1	Tap and die set	" "
1	Tube caddy	OPS/L2.1
1	Vise, machinist, swivel base, 4"	OPS/L1.1

ANNEX #3 CONT'D.

C. There are certain basic items of test instruments which should be available in every repair shop regardless of the type of equipment it is necessary to repair. The following list indicates these basic instruments.

<u>Quantity</u>	<u>Description and Remarks</u>	<u>OPS Specification</u>
1	Audio generator, 400 and 1,000 Hz., fixed frequency	OPS/T4.3
1	Grid Dip Meter	OPS/T13.1
1	Power supply, D.C.Choice of instrument depends on bench load and allowable ripple content.	OPS/T16.1 & 16.4
1	Signal tracer kit	OPS/T20.1
1	Test Set. NOTE: If T32.1 (Motorola Test Set) is chosen it is suggested that it be ordered with IF alignment generator, RF peaking generator, and deviation meter options, thus possibly eliminating need for separate deviation meter and IF generator.	OPS/T32.1 T32.2 TS20
1	Signal Generator, RF, immediate frequency only.	OPS/T19.7
1	Wattmeter, directional, RF	OPS/T30.1 & T30.5
1	Dummy Load, RF	OPS/T30.3
1	Frequency meter, 100 KHz to 175 MHz .001% accuracy.	OPS/T12.8

ANNEX #3 CONT'D.

<u>Quantity</u>	<u>Description and Remarks</u>	<u>OPS Specification</u>
1	Signal generator, FM, 2 to 400 MHz, calibrated in microvolts	OPS/T19.1
1	Wattmeter, directional, RF	OPS/T30.1 & T30.5
1	Wattmeter/VSWR, direction. This is an inexpensive instrument suitable for low and medium SWR relative measurements.	OPS/T23.1 & T23.2
1	Transistor tester. This is an inexpensive out of circuit tester and may be eliminated if V-O-M is selected with transistor tester accessory.	OPS/T25.1
2	Volt-ohm-milliammeter. It is suggested that consideration be given to ordering one of each as 5 accessory plug-in modules to extend the basic instrument functions are available with OPS/T28.4.	OPS/T28.3 & T28.4
1	The OPS/T29.2 is a VTVM and the OPS/29.7 is a transistorized DC multimeter.	OPS/T29.2 & T29.7
1	Deviation Meter	OPS/T10.3
1	Dummy Load, RF	OPS/T30.3
1	Frequency meter. NOTE: T12.6 is fixed	OPS/T12.6 & T12.8

LIMITED OFFICIAL USE

ANNEX #4

A. National Police Network (VHF-FM Low Band)

Location and Type of equipment

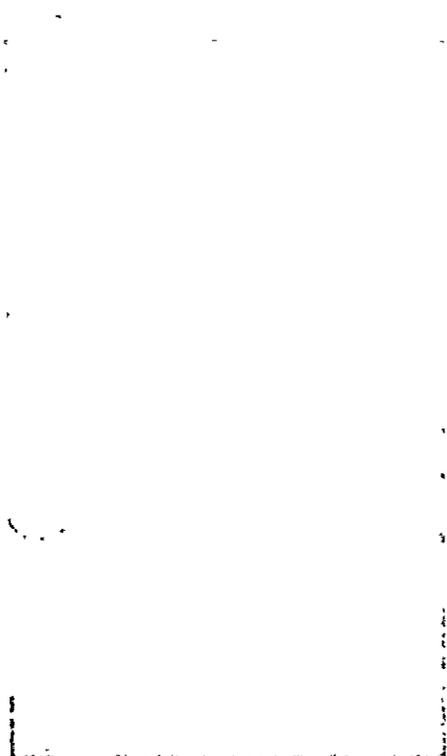
No.	Location	Quantity	Type
1.	Director General National Police	1 Each	Radio Specialty "Packmaster"
2.	Repair Shop National Police	2 Each	Radio Specialty "Packmaster"
3.	Director General National Guard	2 Each	Radio Specialty "Packmaster"
4.	Fire Department National Guard	1 Each	Radio Specialty "Packmaster"
5.	Emergency Center National Guard	2 Each	Radio Specialty "Packmaster"
6.	Director General Criminal Investigation	1 Each	Radio Specialty "Packmaster"
7.	Director General Traffic	1 Each	Motorola Base Station
		1 Each	Motorola Mobile Unit
		3 Each	Motorola Motorcycle Units



Base Station Fire Department

CONFIDENTIAL

ANNEX 4 COMFIC



Base Station Traffic Division

B. Frequency of Operation

47.00 MHz

CONFIDENTIAL

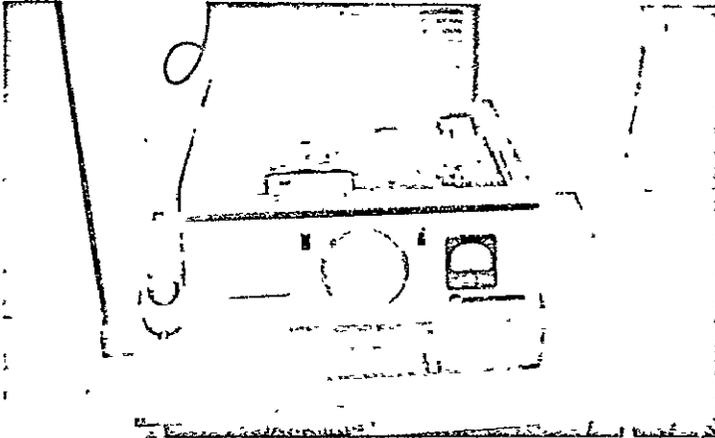
ANNEX #5

Ministry of Government Network

A. Locations and Type of equipment

1. Ministry of Government

Motorola Base Stations



2. President of Bolivia

Automobile

Motorola "Motrac" Transceiver

3. Minister of Government

Automobile

Motorola "Motrac" Transceivers

4. Minister of Finance

Automobile

Motorola "Motrac" Transceiver

5. Fire Department

2-Water Trucks

Motorola "Motrac" Transceivers

6. Police Emergency Center

2-Automobiles

Motorola "Motrac" Transceivers

UNCLASSIFIED

ANNEX #5 CONT'D.

B. Frequency of Operation

43.140 MHz

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Excerpts from the Katz Survey Report dated December 1967 (Updated)

National Police VHF-FM Communication Network.

In La Paz, the following networks should be provided by USAID:

1. High Command Coordination Radio Network.

Establish coordination among the highest ranking government officials. This net (see Charts I and II) includes the following:

- (A) Director General of National Police
- (B) Minister of Government
- (C) Minister of War
- (D) Chief of Army
- (E) Chief of Air Force

2. National Police Administrative and Command Network.

Establishment reliable communications interconnecting the Director General of the National Police with his major division commanders. This net (see Chart I and III) includes the following:

- (A) Director General of National Police
- (B) Director General of National Guard
- (C) Director General Criminal Investigation (DNIC)
- (D) Director General Traffic Police
- (E) Director Police Academy

3. National Police Tactical Communications Network.

Establish reliable communication interconnecting Division Commanders with their operational units. This net should include the following:

- (A) National Guard (see Chart I and IV)
- (B) Criminal Investigation Division (see Chart I and V)
- (C) Traffic Police (see Chart I and VI)
- (D) Police Academy (see Chart I and VII)

4. Commodity Costs

The USAID costs for implementing the above recommendations are estimated at \$39,000 for commodities including shipping and GSA surcharge. (See attached specifications)

Unit Quantity Item

Transito
1 Transceiver

Channel 1 - Transmit/Receive 155.060 MHz.
Channel 2 - Transmit/Receive 155.360 MHz.

Guardia Nacional and Academia
8 Transceivers

Channel 1 - Transmit/Receive 155.060 MHz.
Channel 2 - Transmit/Receive 155.240 MHz.

DNIC
15 Transceivers

Channel 1 - Transmit/Receive 155.060 MHz.
Channel 2 - Transmit/Receive 155.300 MHz.

EA 00053 0003

OPS/AE-1, Flexible whip antenna.

EA 00053 0004

OPS/AE-2, Antenna adapter connector.

EA 00053 0005

OPS/AE-3, 90 degree coaxial connector.

EA 00035 0006

OPS/AE-4, Ground plane antenna.

EA 00051 0007

OPS/AE-8, RG-8U Transmission line.

EA 00020 0008

OPS/AE-9, Coaxial union connector.

EA 00027 0009

OPS/PS/A-16, AC Power Supply without NiCad battery charger section.

EA 00018 0010

OPS/CC-1, Carrying strap for OPS/FM-1B.

EA 00012 0011

OPS/AU/A-1, Mobile mounting bracket for OPS/FM-5B.

EA 00001 0012

OPS/TS-13A, Test stand.

SECRET

SECRET

<u>Unit</u>	<u>Quantity</u>	<u>Item</u>	
EA	00010	0013	OPS/KM-13, Vehicle noise reduction kit.
EA	00005	0014	Instruction Manual for OPS/FM-1B.
EA	00005	0015	Instruction Manual for OPS/FM-5B.
EA	00002	0016	OPS/TS-20, Test set.
KT	00002	0017	Spare parts kit for 10 OPS/FM-1B units.
KT	00004	0018	Spare parts kit for 10 OPS/FM-5B units.
KT	00003	0019	Spare parts kit for 10 OPS/PS/A-16 Power supply units.
EA	00048	0020	Spare crystal for OPS/FM-1B, receiver type, for narrow band modulation. Channel operating frequencies as follows: 3 Crystals - 154.000 MHz. 6 Crystals - 155.360 MHz. 14 Crystals - 155.060 MHz. 2 Crystals - 155.120 MHz. 4 Crystals - 155.180 MHz. 9 Crystals - 155.240 MHz. 10 Crystals - 155.300 MHz. <u>48</u>
EA	00048	0021	Spare crystal for OPS/FM-1B, transmitter type, for narrow band modulation. Channel operating frequencies as follows:

SECRET

SECRET

Unit quantity Item

- 3 Crystals - 154.000 MHz.
 - 6 Crystals - 155.360 MHz.
 - 14 Crystals - 155.060 MHz.
 - 2 Crystals - 155.120 MHz.
 - 4 Crystals - 155.180 MHz.
 - 9 Crystals - 155.240 MHz.
 - 10 Crystals - 155.300 MHz.
- 48

NOTE:

All Items above are to be constructed in accordance with OPS "Standard Specifications for Public Safety Multipurpose VHF-FM Tactical Transceivers OPS/FM-1B and OPS/FM-5B", as amended.

EA 00011 0022

Antenna, VHF, mobile type.

- (a) Polarization: Vertical
- (b) Directional Characteristics:
Omni-directional in azimuth.
Low angle in elevation.
- (c) Frequency Range: 150 to 170 MHz, adjustable
- (d) Gain: 3db minimum
- (e) Mounting: Roof top.
- (f) Power Input: 150 watts maximum.
- (g) VSWR: 1.5 to 1 maximum.
- (h) Impedance: 50 ohms.
- (i) Connector: Solderless connector for
RG-58A/U coaxial cable.
- (j) Cable: 22 feet RG-58A/U cable with
PL-259 connector.
- (k) Hy Gain Model #764, or equal.

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COMMUNICATIONS SECTION
MAY 19 1964

<u>Unit</u>	<u>Quantity</u>	<u>Item</u>
EA	00005	0025

VHF-FM Base Station, constructed in accordance with OPS "Standard Specifications for Radio Equipment" as set forth in Sections 1 and 3.

- (a) Station Control Location: Local
- (b) Frequency Range: 148 to 174 MHz.
- (c) Number of Channels: Two (2).
- (d) Channel Operating Frequencies:

1 Station, HQ Policia Nacional

Channel 1 - Transmit/Receive 155.060 MHz.
 Channel 2 - Transmit/Receive 155.180 MHz.

1 Station, DNIC

Channel 1 - Transmit/Receive 155.060 MHz.
 Channel 2 - Transmit/Receive 155.300 MHz.

2 Stations, Guardia Nacional and Academia

Channel 1 - Transmit/Receive 155.060 MHz.
 Channel 2 - Transmit/Receive 155.240 MHz.

1 Station, Transito

Channel 1 - Transmit/Receive 155.060 MHz.
 Channel 2 - Transmit/Receive 155.360 MHz.

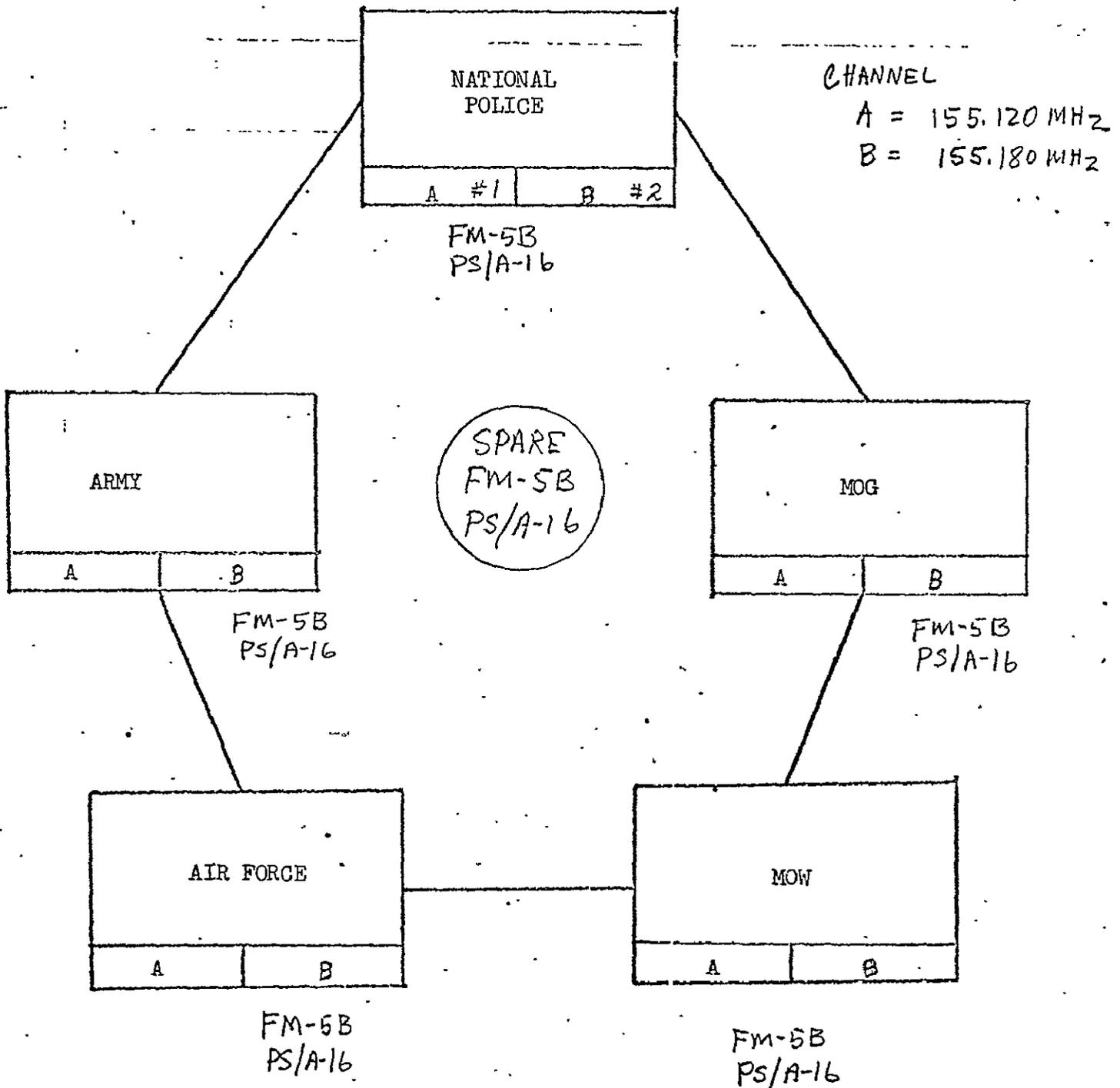
- (e) Power Source Voltage: 115 volts, 50 Hz.
- (f) Enclosure Type: Desk-top or Floor Mount.
- (g) Carrier RF Power Output: 80 watts minimum.
- (h) Accessories: Desk Top Microphone, Operating and Maintenance Manual, and all accessories necessary for operation of the station (except antenna and transmission line) shall be provided.
- (i) Hallicrafters Model CSB-100-2 LA, General Electric Co. Model, Motorola Mode, RCA Model, or equal.

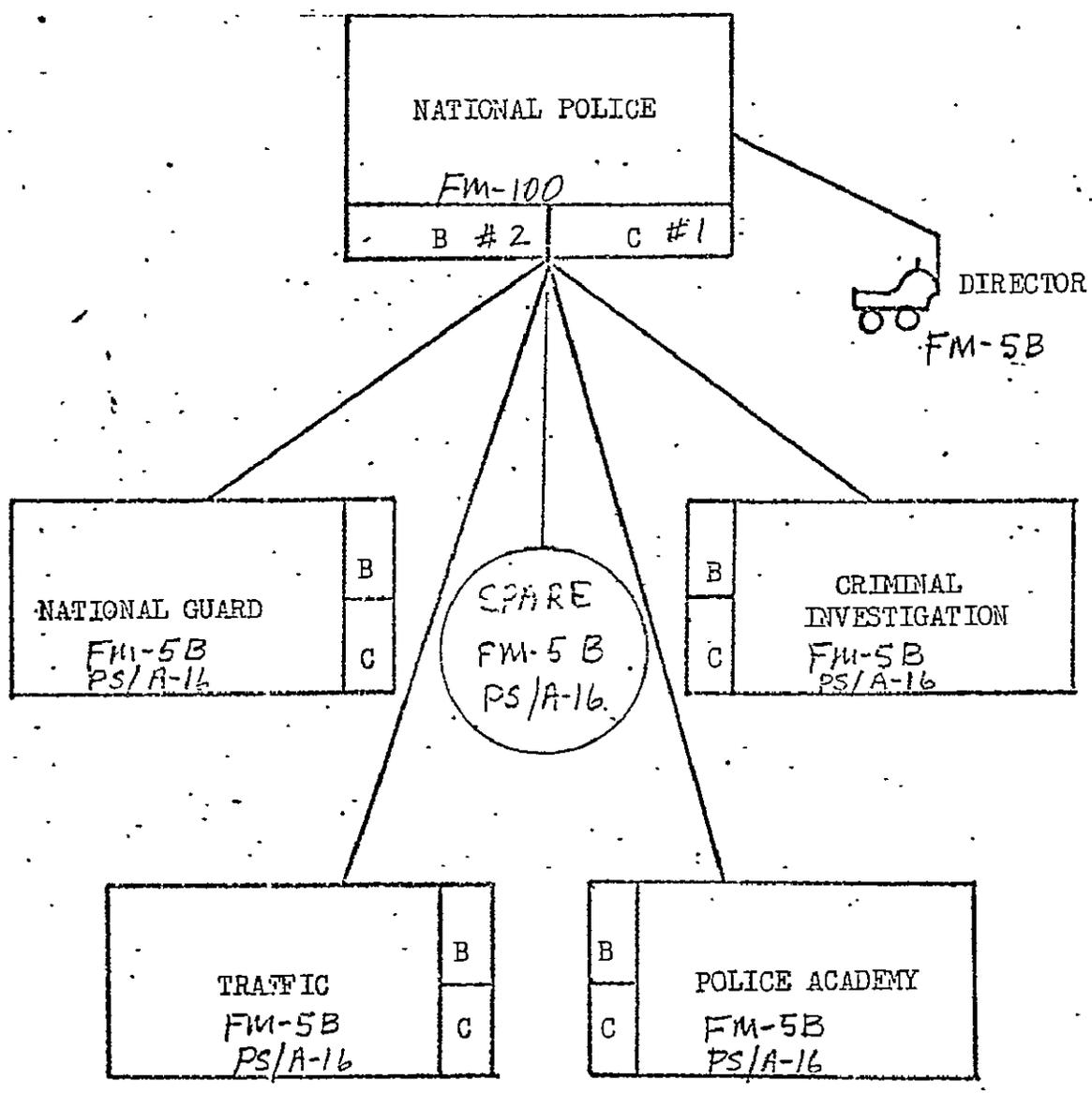
EA	00001	0026
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Spare parts for Item 0024 above, VHF-FM Base Station, as recommended by the manufacturer, but not to exceed 10% of the cost of Item 0024.

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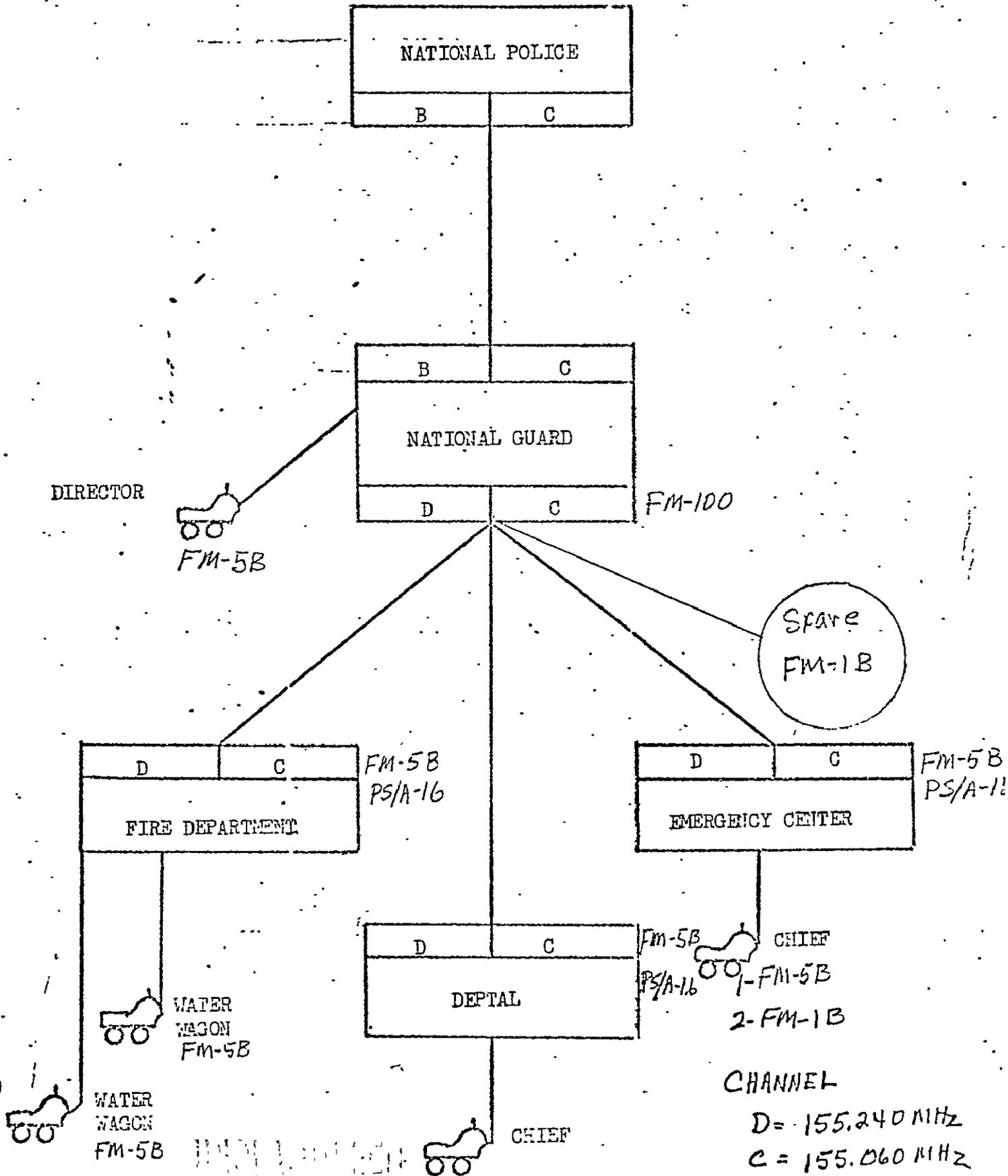
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 OF THE
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CHANNEL

B = 155.180 MHz
C = 155.060 MHz



LIMITED OFFICIAL USE

PUENTE NEGRO
FM-5B PS/A-16

E
C

MUMAY PATA
FM-5B PS/A-16

E
C

CHURUBAMBA
FM-5B PS/A-16

E
C

PARQUE RIOSHINO
FM-5B PS/A-16

E
C

VILLA FATIMA
FM-5B PS/A-16

E
C

VILLA COPACABANA
FM-5B PS/A-16

E
C

SAN PEDRO
FM-5B PS/A-16

E
C

AVO 16 DE JULIO
FM-5B PS/A-16

E
C

ALTO CHIJINI
FM-5B PS/A-16

E
C

CAICONI
FM-5B PS/A-16

E
C

TEMBLADERANI
FM-5B PS/A-16

E
C

VILLA PABON
FM-5B PS/A-16

E
C

NATIONAL POLICE
B C

B C
CRIMINAL INVESTIGATION
DIVISION
E C

FM-100

DIRECTOR DNIK
FM-5B

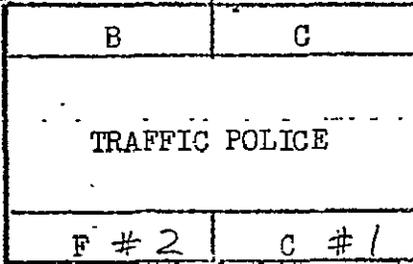
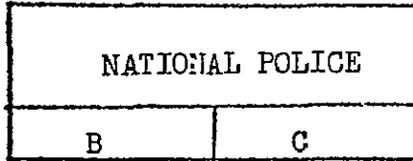
CHIEF DIC
FM-5B

DEPT. SOCIAL ORDER
FM-5B

5-FM-13
(1-SPARE)

CHANNEL

E = 155.300 MHz
C = 155.660 MHz

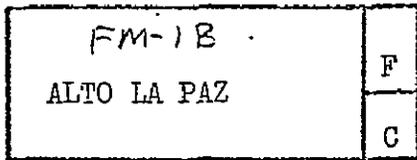


CHANNEL

F = 153.360 MHz

C = 153.060 MHz

FM-100



DIRECTOR

FM-5B

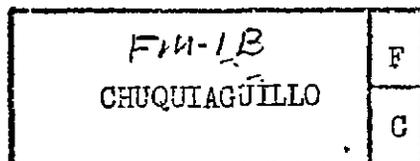
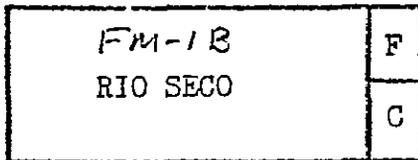
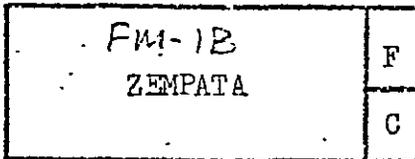
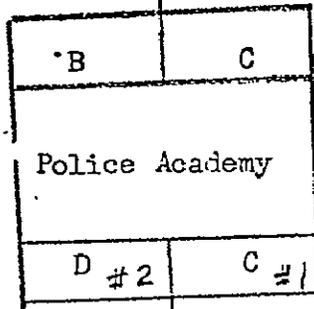
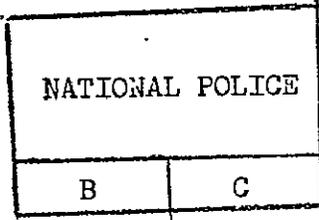


CHART VII



↓
 1- FM-5B (SPARE)
 PS/A-16 (SPARE)
 2- FM-1B

CHANNEL

D = 155.240 MHz
 C = 155.060 MHz

Ministry of Government

Communications System

HF-AM

A. Locations

1. La Paz
2. Oruro
3. Potosi
4. Tarija
5. Sucre
6. Cochabamba
7. Santa Cruz
8. Trinidad
9. Cobija



La Paz Station

SECRET

L. Type of Signal Radio Code:

Handwritten, Common Writing, JMW and National type of Morse
radio equipment.

G. Operating Frequencies:

3900 kHz

5400 kHz

7500 kHz

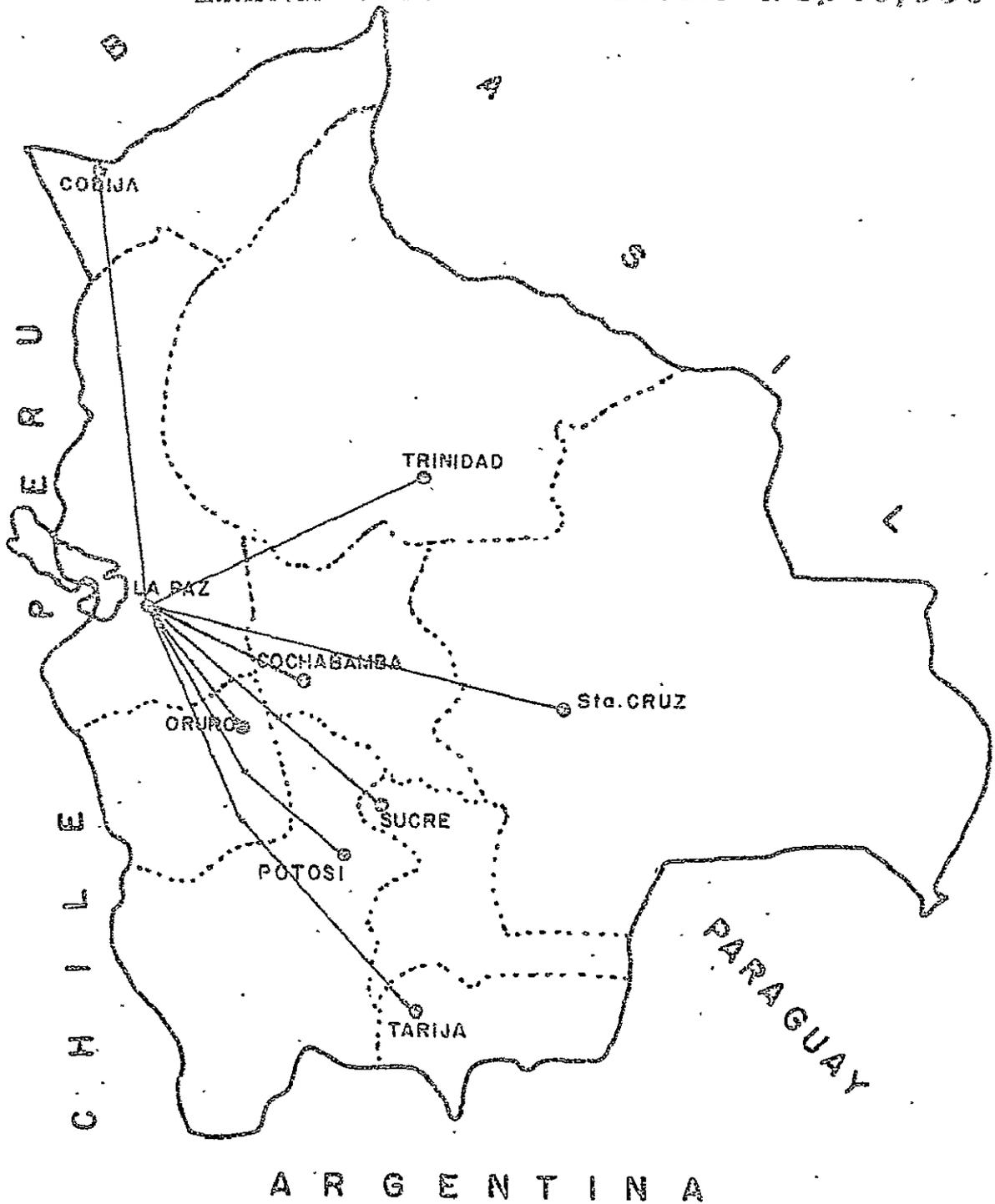
7532 kHz

MAPA DE BOLIVIA

ANEX #7

UNCLASSIFIED
LIMITED OFFICIAL USE

Escala 1:8,740,000



MINISTRY OF GOVERNMENT OF COMMUNICATIONS SYSTEM

UNCLASSIFIED
LIMITED OFFICIAL USE

150/70

Stria. Gral.

Aviso frecuencias.

150/70
REPUBLICA BOLIVIANA
MINISTERIO DE DEFENSA
COMANDO EN JEFE FUERZAS ARMADAS

La Paz, 18 de mayo de 1.970

Al señor

Dn. Edward W. Coy
DIRECTOR DE USAID/BOLIVIA,

Presente.

Señor Director:

Tengo el agrado de dirigirme a su digno despacho, con objeto de comunicarle que, de acuerdo a instrucciones de Mr. Albert Carpenter, personero de la central de ese organismo en los Estados Unidos de Norte América, las frecuencias obtenidas definitivamente para los nuevos equipos de radios que deben ser provistos para atender las necesidades del servicio de la Policía Nacional a mi mando, son las siguientes:

- Frecuencia para canal 1: 155.060 Mc.
- Frecuencia para canal 2: 155.240 Mc.

Además, deberá recomendarse que la central de radio tenga por encima de los 30 watts de potencia en antena.

Aprovecho la oportunidad, para reiterar al señor Director las seguridades de mi consideración más distinguida.



Walter Castro
Teniente. Walter Castro Avendaño
DIRECTOR GENERAL DE LA POLICIA NACIONAL

REPUBLICA BOLIVIANA
MINISTERIO DE DEFENSA
COMANDO EN JEFE FUERZAS ARMADAS

Al Señor Albert Carpenter

ANNEX # 9

Presente.-

LIMITED OFFICIAL USE

Lista de frecuencias para VHF - FM que se deben usar
la siguiente forma:

GUARDIA NACIONAL Y ACADEMIA

Canal N° 1.- 155.060 MHZ

Canal N° 2.- 155.240 MHZ

con estación base.-

TRANSITO

Canal N° 1.- 155.060 MHZ

Canal N° 2.- 155.360 MHZ

con estación base.-

D.N.I.C.

Canal N° 1.- 155.060 MHZ

Canal N° 2.- 155.300 MHZ

con estación base.-

COMANDO UNICO

Canal N° 1.- 155.120 MHZ

Canal N° 2.- 155.180 MHZ

con estación base.-

FUTURA ESTACION REPETIDORA

Canal.- 154.000 MHZ

PARA H.F.- SSB- TRANSCEIVERS RF COMMUNICATION

Para- HF- SSB transceivers .RF

Canal 1.- 4000 KHZ

Canal 2.- 5000 KHZ

Canal 3.- 5925 KHZ

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" 2 "

LIMITED OFFICIAL USE

Canal 4.- 7830 KHZ

Canal 5.- 8300 KHZ

Canal 6.- 9000 KHZ

La Paz, 21 de mayo de 1970

Bazzoli
Antonio Bazzoli
JEFE COMUNICACIONES
MININTERIOR

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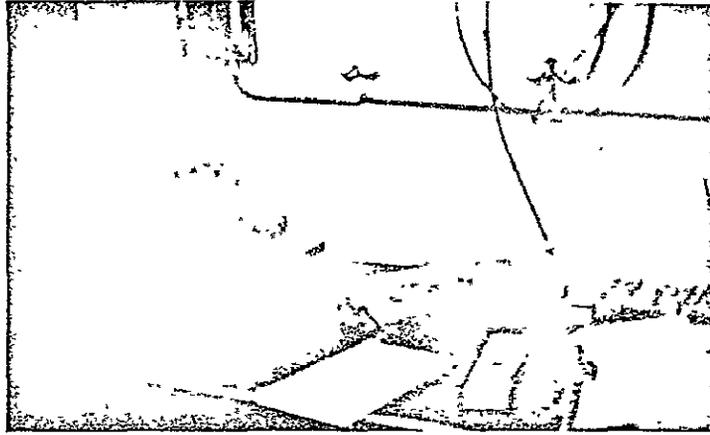
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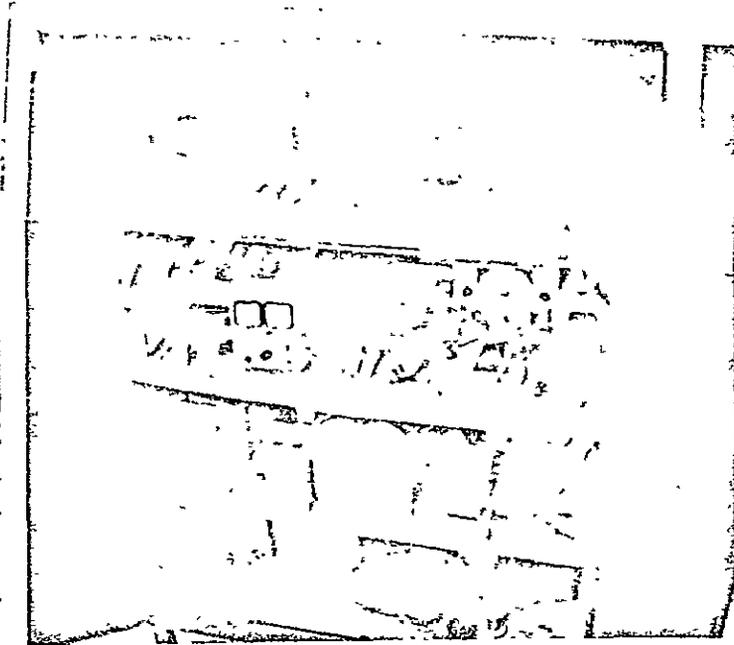
ANNEX #10

National Police Repair Facility

A. Photographs

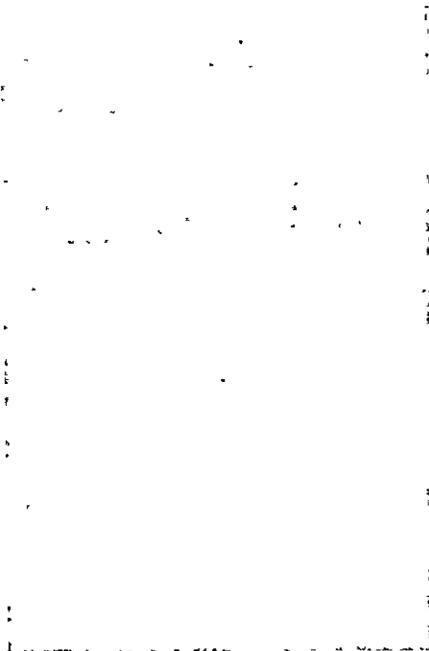


Repair Bench



Storage Cabinet for Hand Tools, Test
Equipment and spare parts.

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Incoming/Outgoing
Storage Area

B. Number of Technicians:

One - Qualified to repair tube type units.

C. Test Equipment and Hand Tools:

Test Equipment

1 - VOM (Made in Japan)

1 - Signal Generator (Made in Japan)

Hand Tools

8 - Screwdrivers, various sizes.

4 - Pliers, various sizes.

1 - Soldering Gun.

1 - Electric Drill with bits.

D. Spare parts for in country radio equipment:

None

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E. Equipment Deadlined for Repairs:

- 2 - R.F. Communications Compact IV Transceiver in cannibalized Condition.
- 7 - R.F. Communications Compact IV Transceiver requiring spare parts.
- 1 - R.F. Communications SB-6F Transceiver requiring spare parts.
- 1 - R.F. Communications SB-6M Transceiver requiring spare parts.
- 1 - R.F. Communications RF-503 Receiver requiring spare parts.
- 2 - Radio Speciality "Packmaster" Transceivers requiring spare parts.
- 1 - Motorola "Motrac" U71HHT-3400B Transceiver requiring spare parts.
- 2 - Hallicrafters SBT-20 Transceivers requiring spare parts.