

CRIMINALISTICS CAPABILITIES
AND U.S. TECHNICAL ASSISTANCE IN
NICARAGUA
June 1970

A BRIEF STUDY OF THE CRIMINALISTICS
CAPABILITIES IN NICARAGUA AND THE
U.S., TECHNICAL ASSISTANCE PROGRAM
IN PROGRESS

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Mr. Arlen W. Jee

Regional Advisor
In Criminalistics

AID/OPS/LA
U.S. Department of State
Washington, D.C.

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A BRIEF STUDY OF THE CRIMINALISTICS CAPABILITIES IN NICARAGUA AND THE
U.S. TECHNICAL ASSISTANCE PROGRAM IN PROGRESS

I.- INTRODUCTION

The purpose of this study is to evaluate the criminalistics situation in Nicaragua and to examine past, present and future paths used to develop these forensic science capabilities.

Information herein was obtained principally from Major Paul Lyon, MFC, U.S. Army, technical advisor with the U.S. Military Assistance Program in Nicaragua. Major Lyon had initiated the on-going criminalistics project over a year ago.

II.- SUMMARY

Civil police responsibilities in this Latin American country are handled by the National Guard and have been delegated to 17 of their companies, each located in a State and in Managua. (For more detail, see the AID/Office of Public Safety Survey Report, June 1970).

Within the National Guard and, in general, within Nicaragua there is no facility to conduct criminalistics examinations and related scientific functions. Any required laboratory expertise in the past had been handled by private or public medical facilities or by the police laboratories in neighboring countries.

U.S. technical assistance in criminalistics has been provided by the U.S. Military Group with limited training support by AID/OPS.

A.- Laboratory Operations. The project in progress calls for the development of a criminalistics laboratory to be responsible directly to the Chief of the Managua Police (The National Guard's 4th Company).

The director of the laboratory is expected to be a National Guard lieutenant (Lt. Noel Vanegas) who is now undertaking a course in questioned document examinations and will probably receive further general criminalistics study under MIIGP auspices at the El Salvador National Police Laboratory.

In addition to the director, the technical staff will include 7 other specialists and will be expanded by the end of FY-71 to a total of 10-12 examiners.

The laboratory will consist of five sections - chemical analyses,

fingerprints, questioned documents, firearms and photography. Two of these warrant further comments. For lack of proper management, the fingerprint files employing the Henry system were disbanded about two years ago. It is expected that one officer (Lt. Adolfo Cuadra) will be given the responsibility of reinstating and implementing the Henry fingerprint files.

In the field of chemical analyses 7 types of examinations have been identified by the U.S. MILGP as being particularly important in Nicaragua: drug identifications (of principally marihuana, some barbiturates and amphetamines); chemical tests for intoxication; trace evidence analyses, including those on glass, paints, hairs, fibers; restorations of obliterated serial numbers; tool mark identifications; blood/seminal stain examinations; counterfeit paper detection; and casting of shoe/tire impressions.

The laboratory will be housed in a government-owned building that is now being used as a detention compound. Its 12 amply sized rooms will be appropriately modified to handle the criminalistics personnel and activities.

Personnel stability of the laboratory is hopefully to be assured by the immunity of the assigned individuals from routine transfers (As per promise of President Somoza), through special compensation as

specialists and, hence, by their indefinite lengths of service with the laboratory (Estimated at 10 years of service).

B.- Laboratory Training. Training of the technicians is now in progress. Two officers are taking a 22-week course in photography at the New York Institute of Photography and are expected to complete their studies in July 1970. Two more officers are studying in El Salvador at the National Police Laboratory in questioned document examinations; the 17-week course ends in July 1970. Another pair of National Guard officers are taking courses in fingerprinting and the Henry system of classification; both will be back in Nicaragua by the end of October 1970. The seventh officer is now at Ft. Gordon, Georgia, undertaking a one-year course in firearms identification and will terminate his studies in June 1971.

Difficulties are encountered in finding a qualified candidate to be trained in forensic chemical analyses. As of this date, no one is capable in this field. Alternatives which have been suggested to resolve this dilemma are to contract a medical doctor or University graduate and provide him with the necessary training or to send qualified National Guard officers who don't have English language capabilities to the El Salvador facility for training. The National Guard rejected the first alternative, leaving the last.

C.- Laboratory Commodities. Approximately \$27,000 worth of commodities are scheduled for the laboratory. Already 50% of the items are in the country and the remainder expected to arrive no later than the end of FY-71. (See Annex I, for U.S. MILGP list of requested equipment).

The course of action to be taken in implementing the project will be to turn over all the equipment to the laboratory, when all the technicians have completed their training and a U.S. military technical assistance team is in country to help set up the laboratory and to put it into operation. This is anticipated to occur in July 1971.

D.- Crime Scene Investigations. The processing of crime scenes is not conducted by specially trained technicians but is handled solely by the detectives. At least twenty of the detectives have received criminal investigation training by the U.S. MILGP. The same investigators may soon be given an advanced, more technical course in criminal investigations and thereafter will be the key individuals who will be responsible for crime scene investigations in the future.

III.- CONCLUSIONS

Nicaragua has no criminalistics capability. Present efforts to develop a police laboratory should be pursued. The planned objectives

and courses of action of the U.S. MILGP are sound.

At the same time, however, certain aspects of this program should be considered again to facilitate the accomplishment of the intended goals.

A.- Modern Crime Investigations. Along with the establishment of a crime laboratory must be the emphasis on the development of modern investigative capabilities, as well as the realization on the part of police and judicial authorities that physical evidence must be properly collected and preserved, before the laboratory can perform its expertises.

Due to their lack of experience with physical evidence, police and judicial authorities now have little capability in carrying out their functions and have little idea as to the true value of a crime laboratory.

B.- Chemical Analyses. The specializations within this very broad field of chemical analyses, as specified by the MILGP, should be reconsidered, reassigned and hence the training of these technicians reevaluated. To avoid the dilemma of finding a qualified candidate to handle this highly complex field of criminalistics, it is suggested that one technician can more easily be trained exclusively in three specific expertises: (1) blood/seminal stain examinations, (2) iden-

tification of selected drugs, and (3) analyses of selected trace evidence.

At the same time, other specified specialties of the so-called chemical analysis section should be reassigned to other laboratory units. The tool mark examinations, restorations of obliterated serial numbers and shoe/tire impression identifications are more normally the responsibilities of the firearm examiners. The detection of counterfeit paper is the function of the questioned document examiners. Making Plaster of Paris and other types of casts is the function of all laboratory technicians.

C.- Project against Intoxication. Special consideration must be given to chemical testing for intoxication and to field examinations related to drunk driving. This extremely involved project includes political, legal, social and technical problems of a special nature. The GON and police ought to realize that the stopping of high public officials and influential citizens will arise and will be required. Whether he is guilty or not, the person will feel indignant and inconvenienced by the questioning and testing. The situation becomes a very sensitive matter and political repercussions in these cases must be a considered consequence.

A law must then be put into effect, forbidding the driving while

under the influence of alcohol. It should also specify a prima facie level of blood alcohol content, over which it is legally presumed the driver is "under the influence" (The most common level specified is 0.15%). If a law of this type already exists in Nicaragua, it should be reexamined and, if necessary, appropriately amended.

Drunk driving is essentially a social problem and in Nicaragua would present a paradoxical situation. On the one hand, such a campaign must be fully accepted, actively supported and strictly enforced by the populace. Yet, the Nicaraguans who would be most effective in carrying out the campaign would be the same ones who can afford both the liquor and a motor vehicle. It would be in drunk driving, more than in any other offense, that this group - the affluent and middle class - would be involved in.

Technically speaking, all police officers involved with traffic problems must be specially trained to recognize drunk driving situations and to perform the necessary field examinations. Moreover, at least one laboratory technician would have to receive intensive and thorough training in the chemical and instrumental testing techniques, as well as the physiological and psychological effects of alcohol.

It must also be considered that the use of drugs aggravates the situation and compounds the problem's complexity. For instance, the

consumption of a small amount of alcohol along with a barbiturate pill would result in a multiplied effect on the human body, yet the alcohol content would be below the prima facie level.

D.- Laboratory Commodities. While the available list of laboratory equipment was not sufficiently detailed to evaluate, it indicated that no chemicals nor miscellaneous laboratory supplies were included.

E.- Laboratory Administration. The persons to be selected as the laboratory director and his deputy will have no experience as administrators in this type of operation. A short period of training in laboratory management should be provided.

F.- Technical Assistance. Other than the short term assistance to be provided to set up the laboratory, no other form of assistance in criminalistics is being programmed. Periodic attention must be given to assist in the development of the technicians.

G.- Project Implementation. The implementation of this project depends heavily on the simultaneous arrival of all commodities, the completion of all training and the presence of a technical assistance team. Since the first trainees will return in July 1970 and the last in October 1970, and since the target date for implementation is the end of FY-71, equipment and technical assistance should be provided the specialists as soon as possible in order that they may begin opera-

tions. Modifications to the building should begin and should employ the assistance of the returned specialists.

Extended inactive periods run the risk of the officers being transferred (even temporarily) and losing valuable time collecting practical experience in their respective fields.

IV.- RECOMMENDATIONS

In consideration of the objectives and courses of action in the U.S. MILGP program for the National Guard laboratory's development and the situations encountered with the same, it is recommended:

A.- That at least two mobile units of crime scene/evidence technicians be established to provide technical assistance to the regular police and judicial investigators; that each of the teams be equipped with the necessary vehicles and kits to carry out their functions (See Annex II, "Equipping a Mobile Crime Scene Investigation Vehicle").

B.- That these mobile teams be employed in the more technical, complicated and/or publicized cases, while the regular investigators be trained to handle the minor incidents; that during the time they are not in the field, the evidence technicians be used

as assistants to the different laboratory sections.

C.- That the programmed staff be retained at 8 technicians and that it not be increased, this being based on the present lack of National Guard investigative capabilities and on the lack of a realistic need for such a large operation in light of the crime situation, present and anticipated.

D.- That greater, accelerated emphasis and effort be given as soon as possible toward increasing general police investigative capabilities and, for all National Guard police elements in general, toward establishing a greater awareness of the values and limitations of criminalistics.

E.- That one or two officers be trained exclusively in three of the criminalistics specialties: blood/seminal stain analyses; identification of marihuana, barbiturates and amphetamines; the examination of trace materials frequently encountered in breaking and entering into dwellings (That is, glass fragments, paint residues, building construction materials). That this training be for no less than three months at one appropriate facility, the choice being of course dependent on the candidates' professional experiences and their English capabilities.

F.- That, if a drunk driving campaign is considered feasible in Nicaragua and is to be initiated, at least one more technician be trained only in chemical and instrumental determination of blood alcohol content.

G.- That additional commodities be purchased for the laboratory and that they include the missing chemicals, glassware, porcelain and metal accessories (See Annex III, for suggested types of chemicals and materials).

H.- That the nominated laboratory director and his deputy be provided with a 4-week observation/study tour of appropriate U.S. police laboratories to examine the facilities' administration, organization and operations.

I.- That short-term criminalistics assistance be provided periodically by the USG to advise, supervise and evaluate laboratory operations and staff performance; that the same assistance be to program and supervise the implementation of and training required for the mobile crime scene/evidence units.

ANNEX I: U.S. MILGP List of Requested Equipment

(Extracted from DA Form 2064 - Document
Register for Supply Actions; US MILGP/
Nicaragua)

U.S. MILGP LIST OF REQUESTED EQUIPMENT

<u>Cost</u>	<u>U.S. Military Code</u>	<u>Item</u>	<u>Qty</u>
\$345	65307029240	Cabinet	1
217	65307027000	Cabinet	6
145	65205327500	Furnace	1
329	65205339750	Grinding Mach.	1
39	65252097216	TLuminator	5
512	65307128500	UV Light	1
152	65305970494	Sterilizers	1
123	65163819100	Telescope	1
29	52102504761	Calipers	1
45	52102932913	Calipers	1
55	51302042718	Drill Elec 1/4	1
20	51202454224	Vise 3 1/2	1
96	51305424544	Drill Elec 3/4	1
25	51332930983	Drill Set	1
27	51302042718	Drill Elec 1/2	1
68	66704018400	Balance	1
18	66704017195	Balance	1
10	66404106000	Burner Lab.	1
34	66751743237	Lettering Set	1
2	66404107000	Burner Gas	1
1	66404114000	Burner	1
85	66402999835	Centri Fuge	1
279	66404404882	Distilling Apr	1
127	66504287050	Light Micro	1
58	66407562595	Washer	1
604	66304314750	Meter Hydro	1
388	66504316000	Microscope	2
69	66502999681	Microscope	1
51	66509736945	Microscope	3
707	66404336000	Miscroscope	1
605	66404357120	Lab Oven	1
69	66404389600	Shaking Mach.	1
422	66504398350	Spectrophotometer	1
42	66704018800	Washer Set	1
52	66955378948	Light Assy.	2
33	66456637941	Timer int.	3
389	36106796498	Photo Copy	1
25	66354393500	Sieve Lab	1
136	66955374470	Lamp Merc.	2
140	62303785449	Light Assy.	2
24	66457197940	Wrist Watch	2
113	66704013000	Balance	1
123	67402929637	Drier Photo	1
487	67402553223	Drier Photo	1
173	67602235107	Light Set	2

<u>Cost</u>	<u>U.S. Military Code</u>	<u>Item</u>	<u>Qty</u>
\$173	67602220525	Light Set	2
146	67605975347	Lens Camera	1
167	66702858546	Lens Camera	1
144	67402439395	Dry Mtg. Press	1
1022	67403923734	Print Contact	1
426	67402004351	Printer	1
9	67402407494	Hanger Photo	4
295	67405975348	Straightner	1
50	67402432857	Tank Procc.	2
130	67402249563	Tank Procc.	1
7	67402432943	Tray Procc.	12
13	67405434050	Tray Procc.	4
73	67605210657	Tripod	3
7	67402249568	Tank	3
287	67203014685	Camera	2
123	67205590435	Camera	
7	67402471730	Lamp	4
20	67608108385	Meter Photo	2
31	67305774813	Screen	1
3	67404085787	Tongs	4
3	67402432941	Tray	3
143	67305988534	Projector	1
620	67402429175	Washer Print	2
143	67305988534	Projector	1
620	67402429175	Washer Print	2
29	51204498028	Tester	1
30	52102504761	Caliper	1
42	52102932913	Caliper	1
55	51302042718	Drill Elec.	1
33	51202454224	Vise 3 $\frac{1}{2}$	1
96	51305424544	Drill Elec. 3/4	1
31	51308898994	Drill Elec. $\frac{1}{4}$	1
30	65205339750	Machine Polish.	1

ANNEX II: Equipping a Mobile Crime Scene Investigation
Vehicle

EQUIPPING A MOBILE CRIME SCENE INVESTIGATION VEHICLE

Arlen W. Jee
Criminalistics Advisor
USAID/Venezuela

V e h i c l e

- A. - General Specifications: The vehicle is to be the panel type station wagon or pick-up which will permit easy access into its interior. Examples are the Jeep Wagoneer and the Chevrolet Step-Van. It should also include the following:
1. - Four-wheel drive transmission.
 2. - Double doors at the rear.
 3. - Heavy-duty options: Suspension, handling, brakes, tires, clutch, generator, battery.
 4. - Police equipment: Radio(s) for police communications, spotlight with clear lens, preferably without emergency red lights and siren.
- B. - Cabinets, General: The cabinets described herein are designed for a vehicle like the Chevrolet Step-Van, whose body measures approximately 139 in. long x 76 in. wide x 68 in. high. These dimensions can be correspondingly changed to accommodate other sizes of vehicles.
1. - Two cabinets are to be built, one for each side of the body's interior. They are to be bolted onto the body.
 2. - The over-all dimensions are approximately 4 ft. high x 18 in. deep x 6 ft. 6 in. long, per cabinet.

The length will depend on the space needed in front by the radio on one side and easy access to the passenger seat on the other. The space allowed in the rear will depend on the size of the spare tire and the gas generator (or electrical converter).
 3. - The over-all design of the cabinets will also have to be dependent on the size and location of the tire wells. However, the depth of the cabinet should not be over 18 inches.

C. - Cabinets, Specific: They are to be made of wood, such as ply, but of a thickness which is durable and yet not excessively heavy. A thickness for the cabinet's frame and door might be 3/8 in. - 1/2 in. The drawers can be made with thinner wood, but for particularly the bottom ones should be adequate to hold heavy items, such as, cans of plaster, hammers, crow bars and other similar tools.

1. - Each cabinet is to have a pair of sliding doors with the necessary locks.

2. - The lower two rows of drawers should be approximately 18" wide and 9" deep. The remaining upper drawers can be 6" deep, but still 18" wide. (Dividers for each of the drawers can be made to suit the needs).

D. - Weight Distribution: Primary consideration must be given to the distribution of weight of the cabinets and supplies, so that the vehicle is not top- or rear-heavy and does not ride lop-sided.

1. - Locate the heavier items near to or on the floor.

2. - As much as possible, divide the weights evenly between the two sides of the vehicle.

3. - The bulk of the weight is to be on top of or in front of the rear axles, as close to the center of the wheelbase as possible.

E. - Miscellaneous: With the distribution of weight in mind, the following installations are also made.

1. - On top of one cabinet are to be attached a pair of belt-like straps to secure the tripod.

2. - On the sliding doors of the cabinets are to be attached a pair of similar straps to secure the various portable kits on the floor and to the cabinet. The size and location of these straps will be dependent on the size of the kits.

3. - Two combinations of straps and floor brackets are to be constructed. One is to be located next to the spare tire to secure a 5-gal. Jeep can of water. The other is to be located on the opposite side between the cabinet and rear door to secure the power generator (or converter).

With reference to the gas power generator, it should be secured in such a manner as to permit its removal and use in a more remote area away from the vehicle.

S u p p l i e s

A. - General Considerations: Portable kits for each phase of the crime scene investigation should be made up. The cabinets serve as storage bins of extra supplies.

B. - Collection and Preservation of Evidence

Boxes (Assorted sizes, pill containers)
Bags (Assorted sizes, paper and polyethylene)
Envelopes (Assorted sizes, paper)
Bottles (Assorted sizes, glass, stoppered)
Test tubes (Assorted sizes, glass, stoppered)
Tags (with tie-string)
Tape (Masking and Transparent)
Labels (Adhesive)
Stapler and staples
String and cord
Glass and metal marker
Ink pen (Felt-point)
Distilled water (in plastic bottle)
Normal saline solution (in plastic bottle)
Micro-pipettes, Pasteur-type, with rubber bulb
Filter paper
Absorbent cotton or soft tissue paper

Dissecting set, with tweezers, scissors, scalpel, Cenco N° 53008,
\$4.25 ea.

Binocular Eye Loop Magnifier, Geo. Cake N° A-919, \$12.50 ea.

C. - Casting Impressions (Foot, Tire, Tool)

Gasoline can (5-gal. size, "Jeep cans")
Spatula, small, metal
Glass slides (2" x 3")
Plasticine

"Preciso" Law Enforcement Casting Kit, Geo. Cake N° A-1147,
\$10.95 ea.

L.D. Caulk "Jelcone" Silicone Rubber Casting Kit, \$10 ea.

D. - Processing Latent Fingerprints

Flashlight (2-cell size)

Search All-Purpose Fingerprint Kit, Geo. Cake N° S-116,
\$49.25 ea.

Binocular Eye Loop Magnifier, Geo. Cake N° A-919, \$12.50 ea.

E. - Casting Paraffin Gloves

- Metal containers (N° 10 cans)
- Electric hotplate
- Spatula (Large, metal)
- Knife (Carving-type)
- Scissors (Household)
- Paraffin blocks
- Cotton gauze
- Envelopes (Large, Manila)

F. - Crime Scene Photography and Sketch

Appropriate films, lamps, flashbulbs
Clipboard
Ruler (30 cm)
Drafting compass
Tape measure (30 meters)
Graph paper
Magnetic compass
Carpenter's level (Small)

Photographic equipment, compatible with available supplies in the country. The following is a suggestion: (Total Cost = \$338)

Century Graphic 23, w/ 101mm Graflar f/4.5 lens in Prontor shutter, Graphic N° CY-5530

Kalart Rangefinder, Graphic N° 3101

Graflite Jr. Flash, w/ mounting clamps, Graphic N° 2852

Graflite Mounting Plate, Graphic N° 2754

Cable Release Kit, Graphic N° 9458

20-inch Synchronized Shutter Cord, Graphic N° 2721

RH-10 Rapid Vance Film Holder, Graphic N° 1253

Carrying Case for above, Graphic N° 4212

Exposure Meter

Tripod, Graflex Speed-Pro Model, Geo. Cake N° C-113

Two (2) Reflectors, photographic, w/ gen. purpose clamps, Geo. Cake N° C-325

Two (2) Single Stand Lamp, Geo. Cake N° C-327

G. - Miscellaneous Items

Rope (Safety colored barrier type)(2, 100 ft.), Ref: McMaster-Carr Supply Co. N° 60Z68, \$0.09 per ft.

Posts with stands, barrier type, portable

Electrical extension cords, (2, 50 ft.)

Magnet (At least 100-lb pull)

Ladder, Scaling, Telescoping, Geo. Cake N° A-5404, \$78.95 ea.

Independent power supply: Generator (Gas-operated) or power inverter (12VDC), to provide 115VAC, 60 cycles, at least 500 watts, approx. \$200

Tool kit to include:

Sets of chisels, screwdrivers, wrenches, drill bits

Hammer

Prybar

Pliers

Glass cutter

Wire cutter

Saw, wood

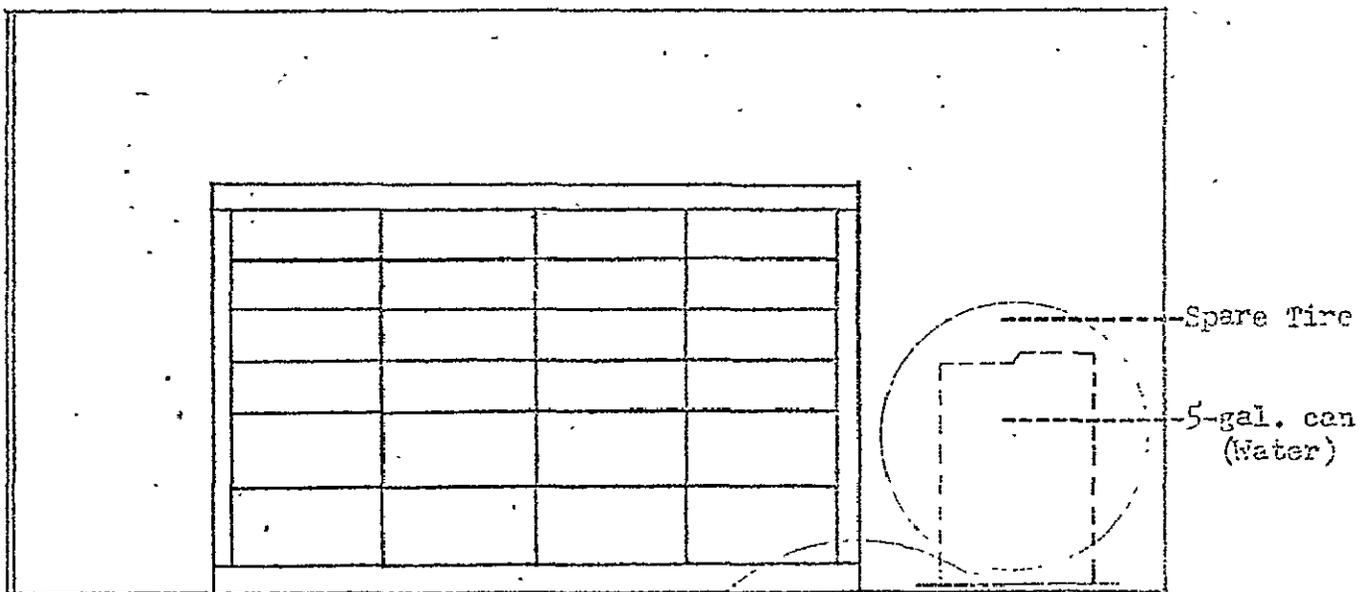
Tin snip

Hand drill

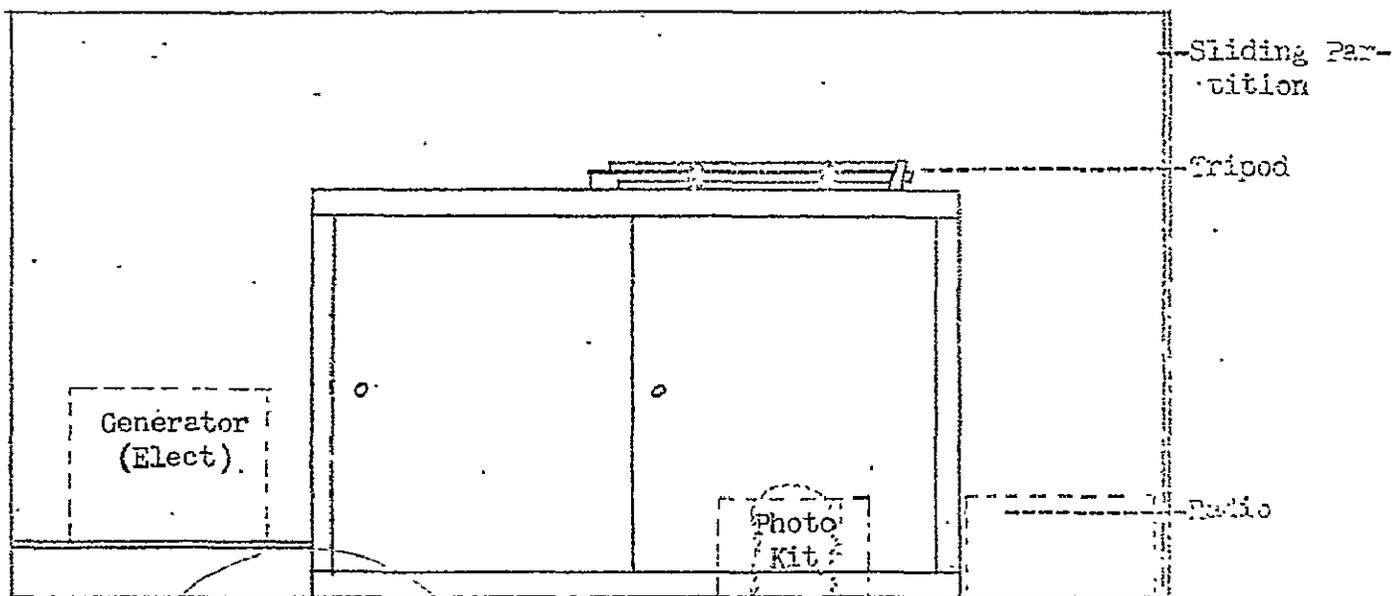
(May 1967)

RIGHT SIDE OF MOBILE UNIT (With Sliding Doors Not In Place)

-14f-



LEFT SIDE OF MOBILE UNIT (With Sliding Doors Closed and Locked)



ANNEX III: Suggested Chemicals and Laboratory
Supplies

	<u>Total Cost</u>
List No. 1: Chemicals and Reagents	\$ 641
List No. 2: Blood Testing Sera	83
List No. 3: Special Test Kits	<u>48</u>
Grand Total ..	\$ 772

MISCELLANEOUS APPARATUSES

Vacuum-Air Pump	Ultra-Sonic Cleaner
Waterbath	Magnet, Min. 80-lb Pull
Vibra-Tool	Refrigerator
Bullet Puller	Fuming Chamber
Hot Plate	Spraying Chamber

LABORATORY SUPPLIES

G l a s s

Test Tubes
Centrifuge Tubes
Beakers, Griffin
Flasks, Erlenmeyer
Microscope Slides
Microscope Cover Slips
Agglutination Plates
Pipets, micro
Pipets, graduated
Reagent Bottles
Screwcap Bottles
Cylinders, graduated
Petri Dishes, w/ cover
Atomizers
Funnels
Melting Point Tubing

M e t a l

Stands
Clamps
Rings
Burners, gas and alcohol
Wire Gauze, asbestos shield
Test Tube Holders
Beaker Holders
Flask Holders
Forceps, dissecting
Needles, dissecting
Scissors, dissecting
Test Tube Racks
Spatulas
Forceps, micro-dissecting
Watch Glasses

P o r c e l a i n

Mortar and Pestle
Spot Plates

M i s c e l l a n e o u s

Tubing, plastic
Stoppers, cork and rubber
Filter Papers

LIST NO. 1: CHEMICALS AND REAGENTS

<u>ITEM</u>	<u>QTY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
ACETIC ACID, Glacial, BAR, 31006C4, 1-pt	4	\$3.50	\$14.00
ACETONE, BAR, 31025, 1-pt	4	0.99	3.96
8-AMINO-1-NAPHTHOL-3,6-DISULFONIC ACID MONO-SODIUM SALT, Tech, T-380, 250-gm	4	2.45	9.80
AMMONIUM HYDROXIDE, BAR, 32210, 1-pt	4	1.66	6.64
AMMONIUM MOLYBDATE, BAR, 32260, 1-lb	1	4.94	4.94
AMMONIUM THIOCYANATE, BAR, 32440, 1-lb	1	3.99	3.99
AMMONIUM m-VANADATE, BAR, 32450, 1/2-lb	1	1.84	1.84
BARIUM HYDROXIDE, BAR, 32765, 1-lb	1	3.31	3.31
BENZENE, BAR, 32865, 1-pt	4	1.01	4.04
BENZIDINE BASE, 32874, 10-gm	8	1.85	14.80
BISMUTH NITRATE, BAR, 32955, 1/4-lb	1	3.25	3.25
BROMINE WATER, 33094, 4-oz	4	0.70	2.80
BROMOBENZENE, BAR, 33094E, 1-pt	4	6.16	24.64
BROMOFORM, Purif, 33095, 1/2-pt	4	6.24	24.96
CADMIUM IODIDE, BAR, 33175, 1/2-lb	2	4.92	9.84
CALCIUM CHLORIDE, Purif, Anhydr, 33306, 1-lb	10	1.24	12.40
CANADA BALSAM, 33560, 1-oz	4	1.30	5.20
CARBON TETRACHLORIDE, BAR, 33595, 1-pt	4	1.55	6.20
CHLOROBENZENE, CX-855, 1-kg	1	2.00	2.00
CHLOROFORM, BAR, 33710, 1-pt	4	2.24	8.96
CHROMIUM CHLORIDE, BAR, 33765, 1-lb	1	3.87	3.87
CHROMIUM SULFATE, BAR, 33830, 1/4-lb	1	1.91	1.91
CHROMIUM TRIOXIDE, BAR, 33842, 1/2-lb	1	1.98	1.98
COBALT ACETATE, BAR, 33900, 1/2-lb	2	3.23	6.46
CUPRIC CHLORIDE, BAR, 34200, 1/2-lb	2	2.08	4.16
CUPRIC SULFATE, BAR, 34285, 1/4-lb	2	1.31	2.62

(Continued on next page)

NOTE: Codes and Prices: As per W. H. Curtin Catalog Nr. RC-63

Weights & Volumes: Recommended unit-size of item

Chemical Grades: BAR = Baker Analyzed Reagent Grade
 Tech = Technical Grade
 Pract = Practical Grade
 Purif = Purified Grade

<u>ITEM</u>	<u>QTY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
DEXTROSE, BAR, 34405, 1-lb	1	1.33	1.33
p-DIMETHYLAMINOBENZALDEHYDE, 34429Q, 25-gm	2	2.20	4.40
DIPHENYLAMINE, BAR, 34460, $\frac{1}{4}$ -lb	4	2.52	10.08
ETHYL ACETATE, BAR, 34515, 1-pt	1	1.88	1.88
ETHYL ALCOHOL, Absolute, 34523D, 1-gal	1	2.27	2.27
ETHYLENEDIAMINE, 34538M, 500-gm	2	3.90	7.80
FORMALDEHYDE, BAR, 34850, 1-pt	4	1.30	5.20
GLYCERINE, BAR, 34910, 1-pt	2	2.88	5.76
GOLD CHLORIDE, BAR, 34921, 15-gr	4	2.77	11.08
HYDROBROMIC ACID, BAR, 34977, 1-lb	1	3.47	3.47
HYDROCHLORIC ACID, Reagent, 34978, 1-pt	4	1.80	7.20
HYDROGEN PEROXIDE, 3%, BAR, 34985, 1-pt	6	1.07	6.42
IODIC ACID, BAR, 35024, 1-lb	1	26.43	26.43
IODINE, BAR, 35025, 1-oz	12	1.30	15.60
ISO-PROPYLAMINE, 875, 500-gm	5	2.55	12.75
LEAD ACETATE, BAR, 35170, $\frac{1}{4}$ -lb	2	0.97	1.94
MAGNESIUM, Ribbon, Purif, 35505, 1-oz	6	2.07	12.42
MERCURIC CHLORIDE, BAR, 35870, 1-oz	2	1.65	3.30
METHANOL, BAR, 36033, 1-pt	4	0.97	3.88
METHYL RED, BAR, 36050, 1-oz	1	2.24	2.24
METHYLENE BLUE SOL'N, SAT'D Alc, 36063, 1-oz	4	0.75	3.00
METHYLENE IODIDE, DX-1485, 100-gm	1	4.10	4.10
NAPHTHOL YELLOW "S", 36119C, 25-gm	2	2.30	4.60
a-NAPHTHYLAMINE, 172, 100-gm	2	3.75	7.50
NICKELOUS ACETATE, BAR, 36170; 1-lb	1	6.91	6.91
NITRIC ACID, 90%, BAR, 36317C, 1-lb	2	6.62	13.24
PALLADIUM CHLORIDE, 36362K, 1-gm	2	2.35	4.70
PARALDEHYDE, USP, 36370, 1-pt	4	2.19	8.76
PHENOLPHTHALEIN SOL'N, Reduced, 36410D, 4-oz	4	1.00	4.00
PHOSPHOMOLYBDIC ACID, BAR, 36432, $\frac{1}{4}$ -lb	1	7.22	7.22
PHOSPHORIC ACID, 85%, BAR, 36433A, 2-lb	1	3.38	3.38
PHOSPHOTUNGSTIC ACID, BAR, 36471, $\frac{1}{4}$ -lb	1	8.63	8.63
PICRIC ACID, BAR, 36473, 1-oz	4	1.33	5.32

(Continued on next page)

<u>ITEM</u>	<u>QTY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
PLATINUM CHLORIDE, BAR, 36480, 1-gm	4	\$9.20	\$36.80
POTASSIUM ACETATE, BAR, 36500, 1-lb	1	1.96	1.96
POTASSIUM BROMIDE, BAR, 36655, 1-lb	2	1.84	3.68
POTASSIUM CHLORIDE, BAR, 36705, 1-lb	2	1.61	3.22
POTASSIUM CHROMATE, BAR, 36730, $\frac{1}{4}$ -lb	2	1.32	2.64
POTASSIUM DICHROMATE, BAR, 36770, $\frac{1}{4}$ -lb	3	1.20	3.60
POTASSIUM FERROCYANIDE, BAR, 36795, $\frac{1}{4}$ -lb	2	1.38	2.76
POTASSIUM FERRICYANIDE, BAR, 36780, $\frac{1}{4}$ -lb	2	2.06	4.12
POTASSIUM HYDROXIDE, BAR, 36832, 1-lb	2	1.91	3.82
POTASSIUM IODIDE, BAR, 36871, 1-lb	2	5.91	11.82
PYRIDINE, BAR, 37135, 1-pt	2	4.53	9.06
SILVER NITRATE, BAR, 37280, 1-oz	8	2.04	16.32
SODIUM ACETATE, BAR, 37325, 1-lb	2	2.55	5.10
SODIUM BENZOATE, USP, 37385, 1-lb	1	1.53	1.53
SODIUM BORATE, BAR, 37505, 1-lb	1	1.88	1.88
SODIUM CARBONATE, BAR, 37590, 1-lb	1	1.28	1.28
SODIUM CHLORIDE, BAR, 37625, 1-lb	2	1.33	2.66
SODIUM CHLORIDE SOL'N, 0.85% Norm Saline, 37646, 1-oz	72	0.60	43.20
SODIUM HYDROXIDE, BAR, 37763, 1-lb	2	1.73	3.46
SODIUM NITROPRUSSIDE, Pract, P-2394, 100-gm	2	3.25	6.50
SODIUM TUNGSTATE, BAR, 38245, 1-oz	2	1.65	3.30
STANIOUS CHLORIDE, BAR, 38305, $\frac{1}{4}$ -lb	1	2.04	2.04
SUCROSE, BAR, 38485, $\frac{1}{4}$ -lb	2	0.95	1.90
SULFANILIC ACID, (Chlorine-Free), 238, 250-gm	1	5.10	5.10
SULFURIC ACID, Fuming, BAR, 3852361, 1-lb	4	3.20	12.80
TITANIUM DIOXIDE, BAR, 38635, 1-lb	1	2.44	2.44
TRIETHANOLAMINE, NF, 38657D, 1-pt	1	2.32	2.32
1,2,3-TRIKETOHYDRINENE (Ninhydrin), 2495, 5-gm	6	2.60	15.60
XYLOL, Tech, 38798, 1-gal	1	2.81	2.81
ZINC, 40 Mesh, BAR, 38825, 1-lb	3	3.11	9.33
ZINC CHLORIDE, Reagent, 38945, $\frac{1}{4}$ -lb	2	1.14	2.28

LIST NO. 2: BLOOD TESTING SERA

<u>ITEM</u>	<u>QTY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
<u>For Precipitin Test</u>			
ANTI-HUMAN SERUM, 1-ml	4	\$6.00	\$24.00
NORMAL RABBIT SERUM, 1-ml	2	3.00	6.00
ANTI-SERA, from Assorted Animals, 1-ml (For example, dog, cat, horse, bovine)	4	6.00	24.00

For Blood Typing

ANTI-A and ANTI-B SERA, Set, 2-ml	3	3.00	9.00
ANTI-A,B SERUM, 2-ml	3	1.50	4.50
BLOOD TEST CELLS, Types A and B, Set, 5-ml	2	7.50	15.00

NOTE: The above sera are highly perishable and must be refrigerated. Whenever possible, they should be obtained on the local market and not imported. Anti-sera should be purchased in the dessicated form, if available.

LIST NO. 3: SPECIAL TEST KITS

<u>ITEM</u>	<u>QTY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
PHOSPHATABS ACID, Kit, for 100 Detns	2	\$24.00	\$48.00