

# ASSOCIATED POLICE COMMUNICATION OFFICERS

Room 619  
1200 CLARK AVE.



ST. LOUIS, MO.

EVERETT E. H. FISHER, Pres.  
C. J. SCAVARDA, 1st Vice-Pres.  
ROBT. L. BATTS, 2nd Vice-Pres.  
LOUIS R. PADBERG, Sec'y.-Treas.  
H. O. KELLY, Sergeant-At-Arms

## APCO BULLETIN

April, 1935.

Well, gentlemen, this bulletin is being sandwiched in between PLENTY of work, so I'll begin by apologizing for any errors. March 31 ends our fiscal year and between the yearly report and inventory, etc., we burn quite a bit of midnight oil. Busy or not, however, we've been able to accommodate the applications of 18 new members who have been admitted during the past month! And- in regards to new applications, I believe it might be a good idea to enlighten those not familiar with our "modus operandi". When an application is received, it is checked to see that it is properly filled in, and an acknowledgment of receipt is forwarded to the applicant. Seven copies of the application are then made, and five of them are forwarded to the members of the executive committee, two being retained for signatures of Mr. Padberg, our Secretary-treasurer, and my own. If the seven copies are OK'd, they are filed, and the applicant receives his copy of the Constitution, membership card, etc. He is then recognized as a member in good standing until officially accepted at convention. So you men who attend the next convention will do a lot of okaying. In the meantime, please keep up the good work and get those communication men in line.

I have received several favorable comments about the APCO buttons and wall insignia and am taking the proposition up with a local concern, and will advise you later. Most of the answering letters favor a button somewhat similar (in quality) to a class-pin, and about half the size of a penny, and the wall insignia to be about 4x6 inches.

I'm sorry to report that Mr. A.M. Howery of Station WFFO, Knoxville, Tennessee, has inserted an unwarranted attack on the APCO, in the March issue of Communication and Broadcast Engineering. It appears that Mr. Howery has decided to take a one-man stand against us, and he lists a lot of pitfalls to our recommendations regarding intercity communication.

The unfortunate part of it all, however, lies in the fact that Mr. Howery's statements regarding our method of procedure, are utterly devoid of veracity. It is my honest belief that Mr. Howery's statements are based upon mis-information or lack of information, rather than maliciousness and I hope that we might receive his cooperation or at least his approval of our existence in answer to a defensive letter forwarded to him by myself.

I will not take up your time in quoting Mr. Howery in his entire statement, and instead will refer you to the publication. One outstanding paragraph, however, contains the following: "and their recommendations were sent to the Federal Communications Commission and the Association of Chiefs of Police". A statement such as this is ridiculous, as you all know. But what of those communication men who are NOT familiar with our organization?

Another paragraph reads: "Had this group of communication officers taken the problem into consideration and placed their recommendations into the hands of all the stations affected, polled opinion and then made recommendations accordingly, it would have provided the Commission with a report that would be instrumental in their final action." Evidently Mr. Howery failed to receive a copy of the two-hundred reports which were mailed, and for this we are extremely sorry, for the letter which was attached to the two hundred copies explained the action to be taken, and which action was in exact accordance with Mr. Howery's suggestions, except that we "polled opinions" in forwarding the report and we'll "poll opinions" AGAIN, and BEFORE we make recommendations, and that when such recommendations are made they will be made to the International Association of Chiefs of Police, and not to the Federal Communications Commission.

Irreparable damage has been done. Either Mr. Howery failed to get the facts, or failed to use them, and never a word of inquiry on the part of Mr. Howery, or the editor of the periodical. Would it not indicate good sportsmanship, even at this late date, to run a correcting statement, especially if the correction came from Mr. Howery?

Other members of the APCO have written to Mr. M.L. Muhlman, editor of Communication and Broadcast Engineering, and for this cooperation I am grateful.

A mimeographed copy of a change in the system of broadcasts of WMJ, Buffalo, New York, has been received, in which, for the purpose of abbreviating transmissions, simply abbreviations of common sentences are used, For instance:- In transmitting this call "WMJ district one car fifteen Accident at four twenty four South Park" it would, under the new system, be "1st WMJ fifteen ACC four twenty four South Park". Many other abbreviations are listed, and the system should be interesting to some of us who contemplate shortening transmission time. The report is over the signature of James W. Higgins, Commissioner of Police, and I wish to extend our thanks. The final paragraphs are as follows:-

"On January 1, 1934, the present administration took office, and since that time we have reduced our radio transmission 95% without reducing our efficiency.

	Messages	Announcements	Figures and Letters Comprising Messages.
Mar. 10 to 16, 1933.	906	5436	401,212
Mar. 10 to 16, 1935	715	1430	20,560

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A system which has been recently placed in effect here in St. Louis, is, I believe, worthy of attention. Occasionally, regardless of precautions taken, radio stations break down, and there follows, naturally, sudden activity around the radio station, but a "let down" for the men in the cars. Now, without any ulterior motives, we propose to keep the officers on the job, regardless, and here's how:-

Commanding officers in each district have surveyed their various territories and selected strategic points at which the radio patrol cars can locate during breakdown. The points of location are, of course, within the car's regular precinct, and at a telephone station. Each officer doing radio patrol duty is instructed, if he fails to receive radio calls, or time signals regularly to call his district. If the radio station has been removed from service for any reason, the officer is advised, and proceeds to his emergency telephone station, where he cuts off the receiver in the car, stops the engine, and "stands by". The telephone numbers of the various emergency stations are listed with the telephone operators in each district, and duplicate listings are available to the radio dispatcher.

Now, if the radio station suddenly breaks down, and examination shows that it will be off some time, a teletype message advises all districts to "place cars at emergency stations". The various district telephone operators, upon receiving the teletyped message, immediately begin notifying the officers in the cars. When all the cars in each district have reported from these emergency stations, the telephone operators so advise the dispatcher, who records the time each district reports.

Then, if a call is received by the dispatcher which requires police action, the dispatcher calls the district by 'phone and instructs the district operator to "Send car .... to ....." In this manner a minimum amount of time is lost. The car is then out of service until the officers report back at the emergency station.

This system has also been employed when, due to extreme weather conditions, it has been found advisable to keep cars stationary (slippery streets, sleet, etc.) It saves the car battery and wear and tear on equipment, and the officers are immediately available.

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A letter and report from Captain Robert L. Batts, chairman of the Technical Committee and some real information. However, I believe that some of us are "slipping". Among other things, Captain Batts says "This is very meager, indeed, no requests not contributions have been received from any member except your own". Now, fellows, here's opportunity knocking at your door. Surely you have something you would like to have "gone into", or something to offer....I certainly was pleasantly surprised when, upon inquiring in regard suitable car antennae for high frequency work, I received the information PLUS. The report of the Technical Committee follows:-

Section 1. Findings, Recommendations, Offerings:

1. Description of a fully Automatic Gasoline Motor driven 10 K.W. Emergency Power Supply as used by WMDZ, Indianapolis Police Dept., Data and diagrams.

The 10 KW Automatic Emergency Power Supply Unit in use at WMDZ was designed and built for the purpose of supplying power sufficient for the entire station load, particularly to operate transmitters and associated equipment of the station during the time power from the mains of the local power company is, for any reason, interrupted.

The power fails occasionally in most all services in any city, usually due to causes outside the control of the local power company, such as severe electrical storms, etc. WMDZ can cite one case where a squirrel climbed a power pole, got across the transformer and threw a remote circuit breaker. Then a truck may collide with a power line pole and snap the wires. We were told recently about an 80-minute power failure in one of our largest cities over a large area.

Then too, power lines may be out maliciously to put a police radio station out of service temporarily.

The unit is fully automatic as to starting and stopping, change over, from power mains to the alternator, when power fails, and vice versa when power comes back on. The alternator was built special because the service at WMDZ is 220 and 110 V.A. C. 3-phase four wire and the building and equipment are wired accordingly. There is no voltage regulator shown, but when you attend the Indianapolis Convention we will have a thyatron regulator installed, operating on the alternator field or exciter field, giving us 10 KW under "AVC."

For various reasons, mainly cost, it was decided to build it instead of purchasing a manufactured unit. To this end, a gasoline motor and AC generator, made special by Westinghouse, were purchased with the necessary parts to construct the control apparatus and the complete unit was built up and assembled by the radio station personnel.

The unit is installed in a sound-proof room in the basement of the radio station, which is located in a new brick bungalow type building in Willard Park.

Following is an itemized list of parts showing costs of such a unit:

GENERATOR-METERS-RELAYS

1. 1 10 kva 110/220 volt 3 phase 4 wire generator	\$260.00
2. 1 E-83 field exciter	58.50
3. 1 Type AJ flexible coupling	21.00
4. 1 Type DY 60 cycle frequency meter	45.00
5. 1 Type BA voltmeter, 250 volt scale	8.00
6. Relays L-1, L-2, L-3; Struthers-Dunn Midgets	21.60
7. Relay L-4; Type 10-K 12 volt DC Westinghouse	4.50
8. Relay L-5; 75 ampere Type 35-F-5 3 pole special Westinghouse	18.00
9. Relay L-6; 75 ampere Type 35-F-5 3 pole special Westinghouse.	18.00
10. 8 pairs fuse holders, 100 amp. unmounted	9.85
	\$464.45

GENERATORS & RELAYS.....\$464.45

Motor and Accessories

1. 1 Chrysler Industrial Motor, Type PA-511 with governor	\$209.91
2. 1 "Startix" unit for starter	7.50
3. 1 Automatic choke for Motor (Parts)	6.50
4. 1 100 gal. Underground gasoline tank, fittings and pipes	18.00
5. 1 Outdoor muffler for motor and pipe	5.50
6. 1 6 volt storage battery	6.50
7. 1 I-beam mounting frame	30.00
8. 1 Concrete Base (estimate)	5.00
9. 1 set rubber cushions under mounting frame	3.00
	\$292.91

Miscellaneous

1. Sound proof wall and door	27.00
2. 1 main entrance switch - 100 amp.	17.40
3. 1 Control panel and frame (estimate)	10.00
4. Conduit, wire, concrete anchor, etc.	20.00
	\$74.70

GRAND TOTAL: \$831.76

DISCUSSION and DESCRIPTION  
(Method of Operation)

The entire unit, gasoline engine and alternator, are mounted on a 5" I-beam iron frame which is mounted on a concrete slab base. Alongside is the basement control and relay panel. In order to minimize vibration, transmitted to concrete walls and ceilings, slabs of 1 1/4" rubber are placed between the I-beam frame and the concrete slab with rubber cushions around each of the six anchor studs. These studs though cushioned, hold the unit down as well as in place on the 1-foot high concrete slab. The entire unit is enclosed in a sound proof room built in one corner of the radio station basement. The room is 6' by 12', the walls being built of 1 1/2" tongue and groove, lined on the inside with 7/8" Celotex. Operating in this room, the unit creates no noise interference with dispatches handled in transmitter room above.

The gasoline engine is coupled to the Westinghouse 10 KVA 60 cycle AC generator furnishing 3 phase 4 wire at 220 volts and any phase to ground 110 volts. Coupling of the AC generator to the motor is accomplished by means of a Westinghouse Type AJ flexible coupling, which allows free end float of shafts under load, and provides a cushioning action which protects the driving and driven equipment against injury from shock loads or vibration and helps absorb starting or momentary overloads, as well as to insure proper shaft alignment.

The gasoline motor is a Chrysler Industrial 4 cylinder governor controlled gasoline engine, type number PA 511. In order that the motor might operate over long periods of time, if necessary, an auxiliary tank of 120 gallon capacity was buried in the yard of the station. Gasoline from this tank is gravity fed to the motor. The exhaust gases from the motor are piped through the basement wall of the station, where they are passed through a muffler and into the outside air.

Control rheostats R1 and R2 are connected in the fields of the alternator and exciter, respectively.

In order that the radio operator on duty may check operation of this unit in service, a control panel (shown in the upper left of diagram) was installed in the transmitter room. This panel contains rheostat R2, two Western Electric Key switches for manually controlling operation of the unit, an AC voltmeter, a frequency meter and pilot lights indicating operation, whether load is connected to line or generator.

The Western Electric key switches S1, located on panel in power supply room in basement, and S2, located on control panel in transmitter room, are for the purpose of manually starting the motor of the power supply unit for testing purposes.

The Western Electric Key switches S3, on basement panel and S4, on transmitter room control panel, are "throw out switches" always kept in contact position when unit is operating or in standby position.

If trouble develops while the unit is operating or when it is necessary to work on unit to prevent possibility of unit starting without warning these switches are opened thus making the unit inoperative.

WMDZ had to design and build a suitable automatic choke for the carburetor, since no available chokes would function properly under all motor temperatures, very cold to very hot. The choke turned out to be "combination," vacuum-thermal - electrical.

The motor is cooled by the standard water cooling method, except that on this PA-511 which was developed for industrial purposes such as hoists, portable air compressors, cranes, etc., the fan forces the air forward through the radiator. However, a  $\frac{1}{4}$ " stream of cold water was tapped into the lower water intake of the block. This additional cold water is turned on automatically when the unit is in operation by a valve connected to the "Handy, Detroit" governor arm. The excess water passes out through the overflow at the top of the radiator. The cold water does not pass through the motor block until the thermostat opens, but backs up through the radiator and out.

This motor comes complete with 6 volt starting battery, starter, generator, oil gauge, and governor. It somewhat resembles the 1931 Plymouth. It has a 10 gallon reserve tank above the block extending from the radiator back to the rear panel which takes the place of the bulkhead on a car.

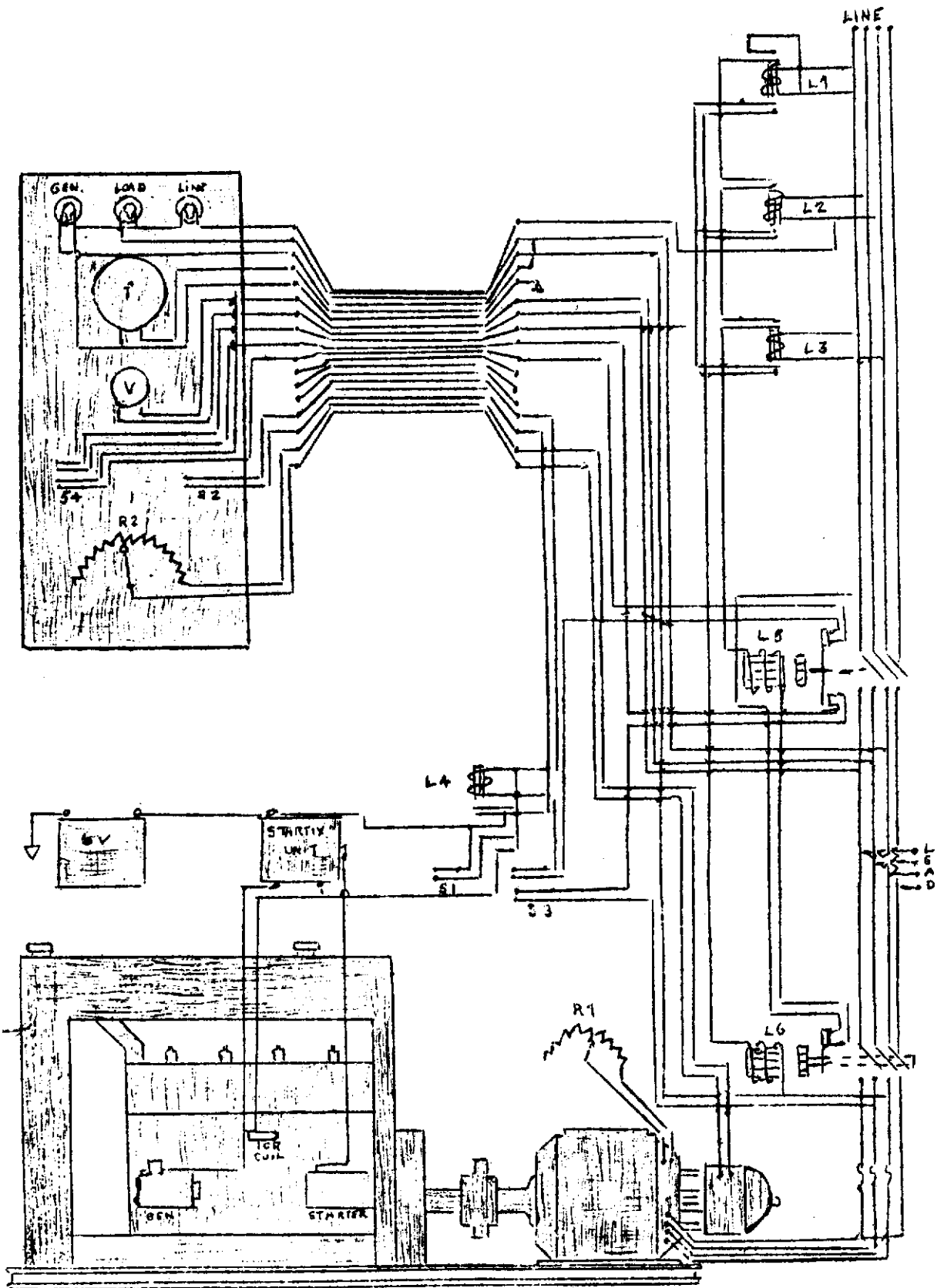
In the attached diagram no attempt was made to draw the unit to scale. The motor on the 1-foot slab, rubber and 5 inch I-beam stands about 5 feet high. The generator with the exciter on the end stands about 35 inches high. The whole unit is  $9\frac{1}{2}$  feet long crank to exciter end.

Referring to the schematic diagram, the unit operates as follows:

Relay solenoids Lk, L2 and L3 are each connected across one phase of the incoming power company mains. As long as voltage is on the mains, the solenoids of these relays are energized. The instant the power fails or single phases, one or more of relays Lk, L2, L3 are de-energized, which in turn de-energizes solenoid of relay L5 through their series contacts disconnecting the radio station load from the power mains. Simultaneously, L4 is energized, which closes contacts energizing the ignition coil and which in turn starts the Chrysler motor. As soon as the alternator voltage is about normal value, relay L6 connects the station load to the output of the generator. It will be noted that the generator and the power mains can not become tied together because of interlock contacts on L5 and L6. It requires about 5 seconds for the machine to be up to full load output. In the reverse change-over it is almost instantaneous.

Maintenance on this unit amounts to practically nothing, a regular inspection and test sufficing.





WMDZ 10 KW AUTOMATIC EMERGENCY POWER SUPPLY UNIT  
 3 PHASE - 4 WIRE  
 220 and 110 volts

2. (a) Suitable material for vertical car antennae in ultra high frequencies can be obtained from the Scovill Mfg. Co., Waterbury, Conn., in the form of tapered tubes, brass, steel or aluminum. The committee is informed that this company manufactures about the only tapered tubing in this country and are equipped to fabricate it.

(b) Vertical Car Antennae VS Horizontal:

In 2 way experimental work at WMDZ early in 1934 vertical 1" thin-walled brass-tubes were used operating as a  $\frac{1}{4}$  wave against ground (car chassis) This was found to be light and strong. They were mounted so as to knock down when they hit garage doors or tree limbs in residential neighborhoods. This was done by hinging the tube at bottom on a crosswise horizontal pin, on which was a spring holding the tube in a V notch. When knocked down the tube climbed out of the notch and fell to the horizontal position. We did no work with horizontal car antennae, because of observations of two conditions. There were:

(1) A horizontal  $\frac{1}{4}$  wave antennae at the base station (W9XS--200 watts output--34,600 Kcs.) mounted rotatable on a  $\frac{1}{2}$ " pin-driven in the top of a 20 foot telephone pole on roof of WMDZ was found to be quite directional. This antenna was then placed vertical on one of the regular towers and fed with a 140 foot transposed 500 ohm line.

(2) When the antennae were knocked down on the two mobile units (W9XO & W9XP, 20 watts output - 34,600 Kcs.) the radiation reduced tremendously, even with readjustment of tuning and coupling. Some of the decrease was undoubtedly due, however, to reduced effective height.

Incidentally, using 6 tube superhets and no headphones, it was possible to work two way a maximum distance car to station of 13 $\frac{1}{2}$  miles air line across town, a maximum distance of 37 $\frac{1}{2}$  miles on W9XS with the downtown area directly in line. A relative field strength survey was made on W9XS (750 readings recorded and plotted) in which "dead spots" were nil, viaducts and over-heads causing no noticeable effect (by ear) as on lower frequencies.

If enough members will send in their results and findings on "Two Way Police Radio" the Committee might assemble and submit an interesting survey on what's going on.

Section II.

Investigations under way as to how to get inquiries and contributions in to the Technical Committee.

Section III. REQUESTS.

The committee has on hand a request for complete information as to the solution to the solo motorcycle storage battery and generator problem when radio is installed. How do batteries hold up on night shifts? The committee will appreciate all information.

Section IV.

Nothing.

Section V. MISCELLANEOUS.

Of interest to many, the Dolco Remy Corp., Anderson, Indiana, has recently developed and placed on the market a special police car six volt generator which is showing up well under tests. This is a voltage regulated generator which also has a current regulator to prevent damage due to heavy overload. This is a special 2-brush shunt wound machine not to be confused with generators used on several General Motors passenger cars. You can obtain full details from Mr. John B. Hiday of that company.

END OF REPORT

That's all we have. It seems very strange that we have received no inquiries nor contributions. I think members should feel anxious to pass things along for the good of the organization. Every one of them could submit something worth while; they could at least start a controversy. We can not send out questionnaires to everyone each month due to the expense involved.

Our set-up is entirely different than that of large companies having elaborate engineering laboratories and facilities and men who do nothing but development work. We have to depend on members for at least inquiries and mostly for contributions. Then, too, most new developments in police radio have been made by police radio men themselves, then brought on the market by commercial companies. When a company wants to prove a piece of police radio equipment they usually put it out in the field for approval and improvement by police radio men.

Very truly yours,  
(SIGNED) ROBERT L. BATTS,  
Supervisor Radio WMDZ,  
Chairman Technical Committee APCO

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APCO members: - Your attention is especially directed to Section 3. Surely you can furnish something along this line. Here's a sensible request for information. Let's cooperate. Ed.  
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Several requests have come in for information regarding activity in behalf of inter-city communication, and the thought is expressed that it will "die" if it is held too long in preparation. I know that Captain Scavarda is doing his best to prepare something out of the hundreds of ideas he has received and judging by the number of communications which have been referred to him by this office alone, he has had plenty to keep himself occupied. You may rest assured, however, that some feasible plan is forthcoming, and very soon...

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Had a visitor in the person of Mr. John D. Southwell, of Beaumont, Texas, and charter APCO member, who dropped in to shake hands and to wish us well. I was glad to see him and sorry he didn't have longer to stay.

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And a letter from Lieut. Roy DeShaffon, Kansas City, Missouri, and he and Mr. Scroggin have been doing a lot of campaigning in our behalf. Joe Thomason of Westinghouse, visited them and they conducted a membership drive and asked for fifteen applications, 2 of which are included in this month's bulletin...

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Digest of proceedings before the Federal Communications Commission held in Washington on the subject of leased private wires.-

On March 26, 1935, a hearing was held before the Federal Communications Commission at Washington, D.C., with reference to private telegraph lines. This hearing was for the purpose of taking testimony for the future consideration of the commission in the regulation of such private lines and the uses to which they might be put. As such regulations might materially affect police teletypewriter systems, and more particularly, the eight-state system now existing in the New England and Middle Atlantic states, the following representatives of these systems appeared before the commission and offered testimony relating to the interstate exchange of police teletypewriter message traffic:

- Lieut. Martin Joyce, Massachusetts State Police
- Commissioner Anthony Suderland, Connecticut State Police
- Lieut. John Murnane, New Jersey State Police
- Lieut. George M. Kinsey, Ohio State Highway Patrol
- Superintendent Gerald Morris, Telegraph Bureau, Police Dept. New York City.
- Captain William F. Allen, Telegraph Bureau, Nassau County, N.Y. Police.
- Captain Albert B. Moore, Inspector, New York State Police.
- Lieut. George M. Searle, Deputy Inspector, New York State Police.

All of the representatives were unanimous in a request that the commission permit the interstate exchange of police teletypewriter messages without promulgating any rules or regulations affecting present practices. It is thought that the commission will act favorably on the request.

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NEW MEMBERS

And now let us welcome these new members to the APCO and next month we will reprint the entire roster, so if we've made any mistakes, please let us know so that we might correct them:-

ACTIVE MEMBERS:

- Gerald Morris, 240 Center Street, New York, City, N.Y., Acting Supt. of Telegraph (by G.M. Searle)
- George P. Allen, 1040 Laura St. Jacksonville, Fla. Chief of Signal Bureau (thru St. Louis)
- Herbert W. Squires, Police Headquarters, Binghamton, NY. Supervisor of all radio equipment, (by G.M. Searle) Chief Radio Operator WJGL.
- Andrew A. Coffin, City Hall, Mobile, Ala. Electrical Engineer (thru St. Louis)
- Robert E. Franklin, Police Bldg. Houston, Tex., Supervisor Police Radio (by Roy DeShaffon)
- Ralph Hoffman, Box 20 Sta. 1, Cincinnati, Ohio, Radiotrician (thru St. Louis)
- E.H. Morgan, 360 W. 2d No. St. Salt Lake City, Utah, Radio Operator, Chief Eng. (St. Louis) thru
- Ray G. Jennings, 2144 So. College, Grand Rapids, Michigan, Patrolman (A.A. Kirchner)
- Robert J. Sellon, 118 Elm St. Grand Rapids, Mich., Radio Operator-Dispatcher (by A.A. Kirchner)

ASSOCIATE MEMBERS:

- J.G. Beard, Chicopee Falls, Mass. Chicopee Falls, Mass. Commercial Engineer (by Jos. J. Thomason)
- B.H. Barker, 185 41st St. Pittsburgh, Penna. V.P. & Sales Mgr. Fed. Lab. Inc. (by G.M. Searle)
- W.J. Purcell, General Elec. Co. Schenectady, NY. Radio Engineer (by G.M. Searle)
- T.W. Schuster, 8719 Lansdowne Av. St. Louis, Mo. Retired Radio Disp. (by E.E.H. Fisher)
- J.H. Lynch, 10 High St. Boston, Mass. Salesman, Westinghouse Elec. & Mfg. Co. (by Jos. J. Thomason)
- Lloyd Curtiss, Millburn, N.J., Eastern Rep. Federal Laboratories (by G.M. Searle)
- William Trudgian, 1052 Gas and Elec. Bldg. Denver, Colo. Mgr. Sales Dept. Westinghouse Elec. & Mfg. Co. (by Jos. J. Thomason)
- William R. David, 873 Dean St. Schenectady, NY. Sales Eng. Gen. Elec. Co. (thru G.M. Searle)
- Oka Veach Swisher, 1706 Wyandotte St. Kansas City, Mo. Distr. Serv. Mgr. RCA Mfg. Co. Inc., (thru Roy DeShaffon)

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Don't forget... The executive committee, the technical committee and the resolutions committee are at your service, We want to cooperate, so drop us a line, and appoint yourself a committee of one and get a member. Next convention will probably be in October and we will announce the exact date next month. Captain Batts reports that the weather is good in October, and I think our trip will be worth while. Chief Morrissey says- "We want them to leave here with something to remember Indianapolis for". Gentlemen, I've known Captain Batts for some time and unless I'm sadly mistaken, a look at the radio "layout" alone would be worth the trip.

Sincerely,  
*Everett E. H. Fisher.*  
EVERETT E.H. FISHER, President,  
Associated Police Communication Officers.