Complete Transcript of Business Sessions

THE ASSOCIATED POLICE COMMUNICATION OFFICERS INCORPORATED

1942 APCO Conference

St. Louis, Missouri

ASSOCIATED POLICE COMMUNICATION OFFICERS, INC.

Officers

M. A. Wilt, President, Kansas City, Kan.
R. M. Schuler, 1st Vice-President, Fresno, Calif.
Roy DeShaffon, 2nd Vice-President, Kansas City, Mo.
H. H. Joy, Sergeant-at-Arms, Des Moines, Iowa
J. M. Wherritt, Bulletin Editor, Jefferson City, Mo.

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MONDAY MORNING SESSION

The Ninth Annual Conference of Associated Police Communication Officers, Inc. was declared in session by President M. A. Wilt at 10:00 a.m., on July 27, 1942, at St. Louis, Missouri.

The Star Spangled Banner was sung by the Police Quartette from the St. Louis Police Department.

MR. WILT: We have a gentleman with us that was a regular army chaplain during the other war and he was also Lieut. Teeter's chaplain. We will now have the invocation by Father Thomas Kennedy of the St. Phillip Neri Church.

FATHER KENNEDY: Almighty and eternal God, we stand before Thee this morning and acknowledge Thy supreme dominion over us and over all things. We ask Thee to shower Thy blessings and gifts upon this conference and the assembled members of this conference. Guide them and direct them in their different discussions so that they may do all things for Thy honor and glory, and for the betterment of those they serve. We acknowledge Thy goodness in the past; we ask Thy blessings for the future that everything we do may help one another to know Thee better, serve Thee better, and by this universal service to mankind may things be brought about as Thou dost will. We need Thy guidance; we need it in the work that is before us during this conference. Therefore, we beseech Thee to assist all deliberations and direct them according to Thy word. We ask these blessings in the name of Thy son, Jesus Christ. Amen.

MR. WILT: We are particularly honored this morning by the presence of the Mayor of St. Louis who will give the address of welcome. I take pleasure in introducing to you, the Honorable William D. Becker, Mayor of St. Louis.

MAYOR BECKER: Mr. President, Members of the Associated Police Communication Officers, this is really an honor for me to know that you have picked St. Louis for your annual conference. Your conference, by reason of our being at war, is a very important matter, much more so than usual. Mr. President, there are many reasons for that. I think of the development in the way of communications for police departments, and what I have seen of it in the few years that it has been established, the remarkable good it has done, the almost complete control of gangsterdom and viciousness, to have seen here in our own community and district what it means to have this communication system, the effectiveness of it.

Immediately upon the perpetration of a crime you can spread out the news and let it be known, but it is something beyond that. Every criminal today knows that he can't outsmart the police. In the past the advantage was always with the criminal. He took time and figured out the chances and figured out the whole thing just at the proper time, knew where you were located, he knew your method of work. The crime had been carried out and all the alibis supplied before you really got in a position to get the facts and act upon them. As a matter of fact, there is no such thing as a man outwitting the police in the sense that he can perform a so-called "perfect crime". There are crimes that go undetected and always will be, but the fact remains that the vast majority of crimes are really solved and in the solving there is a solution to the problem that we have to cut down the number of men that come in to willingly violate the law. No man willingly sticks his neck out to be cut off, or put into a noose.

Briefly, I way that your work is just beginning, as I think it is one of the most outstanding advancements of the last years. Let me give another illustration. At the present time, now that we are at war, in the last few weeks in civilian defense in St. Louis and St. Louis County; as you know, St. Louis is in no county. It is a county unto itself. We have 114 counties and the City of St. Louis. The minute you are out of the city limits your police functions and every other function stops. In the county you have a complete setup just as different. We speak of greater St. Louis as St. Louis and the county. When you come into the St. Louis area you include all that part of Illinois, East St. Louis and the tri-cities over there where we have 140,000 to 160,000 of the people living in another state. Now just imagine the benefit there is with your communication system in normal times. When anything happens you can immediately inform all of those cities in and around St. Louis, a complete absolute report of what happened and what should be done. If a man commits a crime here he necessarily wants to get out of the city limits. You know better than I how long it takes to get that information out. I go along here and hear on the radio about some crime that has been committed, I find that somebody has done this, that or the other, and by the time I get home he is caught. We have just now made an arrangement for St. Louis, St. Louis County, the TNT plant in St. Charles County, East St. Louis and the tri-cities, whereby under civilian defense anything needed in the way of help each of us will help the other. St. Louis, in other words, is offering the full cooperation to the smaller communities, because of course the smaller communities might not come in to help us. It is through our communication system that we will be able to handle and be in a position to give quick and immediate relief and aid. We have a control room and when any matter comes up that we have to give immediate notice to all we have to do is get in touch with the control room and immediately the order goes out and everybody knows what he is doing.

We aren't so much concerned about air raids, but we are worried about sabotage. We are the third city in the United States for the manufacturing of material for war. Per capita we stand at the top. Per capita we manufacture more material for war than any city in the United States. There are two thousand four hundred sixty industries alone which are manufacturing materials that aid in the war. We have here the largest TNT plant in the world, as well as the small arms plant that makes nine million cartridges a day. We have the Carter Carburetor Company that makes probably 80 percent of the carburetors for airplanes; Curtiss-Wright that manufactures planes. I think you can see what your communication system means. The possibilities of a system of that sort during war are beyond the average person's understanding. Your citizenry doesn't know about it. We are just finding out what it means in emergency cases that you couldn't possibly handle otherwise. I am sure from your presence here at this time, with an exchange of ideas and with your definite purpose to advance your communication systems, that certainly St. Louis and throughout the country we are going to have some real benefits.

I want to congratulate you. I want to say that the city of St. Louis is proud to have you here. The city is yours. Anything you want you can have. I am awfully glad to have been here with you. I hope you have a fine time, and if you don't it is your own fault, because we want you to have everything you please.

MR. WILT: We now have a man that I want to present, Colonel Edward E. Hoffman, president of the Board of Police Commissioners of the city of St. Louis.

COLONEL HOFFMAN: Gentlemen, the Mayor has welcomed you on behalf of the city of St. Louis and my only function is to extend to you an extra special welcome on behalf of the St. Louis Police Department. We are flattered that you decided to come to St. Louis and especially flattered that you made that decision notwithstanding the hazards of St. Louis July weather. It was pretty good last week, and we hope it will continue. I am quite sure that the members of the St. Louis Police Department will be very glad indeed to do whatever they can for you, provided, of course, it is lawful. The fact that you are here indicates your purpose to keep yourself abreast of developments in your field and to the end that you may serve your communities as well as any other community is served, and I congratulate you on that attitude toward public service. May you have a very pleasant, interesting, and profitable conference.

MR. WILT: I have another gentleman that we are very glad to have with us, and that is Colonel Glassco, Chief of Police of St. Louis.

COLONEL GLASSCO: Mr. President, Associated Police Communication Officers, it gives me great pleasure to have this opportunity to appear before you. I didn't think I was going to have the chance to come down here. You had the mayor on the program and the commissioner, and naturally I thought I would stay away and take a back seat, but it is a pleasure to be here with you and I want you to know that I appreciate your coming to our city. We think we have one of the greatest cities in the United States, as most everyone does of his own city. If you have the opportunity, which I hope you do, I would like for you to pay our department a visit. I would like to have you take a look over what we have to operate with. You may get some idea, and we may get some ideas from your visit. If you have the chance, do come up and we will make every effort we can to see that you have a pleasant visit to our city.

MR. WILT: We are about ready to go into the business of our association and those that have other things to do will be excused at this time.

I have a few communications here that I want to read. I just received this telegram from Dave Veazey. He is now in the army, stationed at Pensacola, Fla.

"WESTERN UNION

PRESIDENT JACK WILT

A MOST IMPORTANT HOME FRONT BATTLE STATION IS IN YOUR HANDS SINCERE WISHES FOR A HIGHLY SUCCESSFUL CONVENTION

LT DAVE VEAZEY"

I have a letter from Mr. J. J. McDonell, Kansas City, Radio Inspector in this district. He was invited to attend this conference and intended to do so but was called to Omaha.

"Dear Mr. Teeter:

I was pleased indeed to get your letter and the copy of the program of the Ninth Annual Conference of the Association. A perusal of its contents indicates that the business of the conference will be in keeping with the

time and present events, and of a highly important nature. I know that consideration will be given to the needs of our war effort and the demands placed upon our Association in the cooperative program that will result. Knowing the organization from the beginning, I am certain that its contribution to the cause will be wholehearted, worthy and outstanding.

I appreciate your kind consideration in placing me on the program and sincerely regret that I have been ordered to attend a conference that is being held by the Command, U. S. Army, Seventh Corps Area, Omaha, Nebraska beginning Monday July 27, 1942.

In my absence I ask that you extend to our many members an expression of my appreciation of their cooperation, my continued interest in the organization and its welfare, and my greetings and well wishes for the occasion.

The Commission's action in arranging to have Mr. G. E. Nielsen, of our Department, attend the conference is both an indication of their interest and faith in our Association, and in the ability of Mr. Nielsen to deliver their very important message to those attending the meeting. I know that the Commission and Mr. Nielsen will appreciate the Association's fullest cooperation.

Respectfully,

William J. McDonell
Inspector in Charge
F.C.C."

Under date of June 19, I received the following letter:

"Dear President Wilt:

It is with regret that I tender my resignation as Sergeant of Arms of the APCO, as I am leaving immediately for the army and you will undoubtedly wish to make a new appointment before the convention.

It has been a pleasure and a privilege to be a member of this organization. Best regards to all.

Yours very truly,

H. H. Joy, Supt.
Radio Communication Division."

In Mr. Joy's place I have appointed Mr. Derby, of Denver, as Sergeant-at-Arms.

Under date of July 8, I received the following:

"Indianapolis, Indiana.
July 8, 1942.

Mr. M. A. Wilt,
President A P C O,
Police Department,
Kansas City, Kansas.

Dear Jack:

It is with deep regret that I find it necessary to hereby tender my resignation as chairman of the Engineering Advisory Committee and also as an active member of the association. I am leaving the police communication field to accept an engineering position with the Farnsworth Television and Radio Corporation.

I have appreciated the opportunity of serving under your leadership and my only regret is that I have not been able to devote more of my time to the work of the organization.

Lieutenant Walter Mentzer has been placed in charge of the Communications and Records Division to be assisted technically by Ray Baumgart, maintenance engineer, and Zellon Audritsh, operations engineer. All three of these men are planning to attend the St. Louis Conference.

Will you please extend to all the gang my regrets for not being able to attend the conference and my best and most sincere wishes for a successful meeting.

Fraternally yours,

Arnet A. Curry"

We all know Arnet and we are going to miss him.

We had invited Don Leonard to be on our program.

"My dear Mr. Tecter:

Upon receipt of your letter of July 17th I talked with Commissioner Olander about having Frank Walker attend the Ninth Annual Conference. Commissioner Olander and Capt. Scavarda have agreed that Walker should attend the meeting so that he will be available to you as a speaker.

I greatly regret that it will not be possible for me to attend the APCO Conference, but present Civilian Defense duties in the State of Michigan require my presence here.

Wishing you a most successful conference, I am

Very sincerely yours,
MICHIGAN COUNCIL OF DEFENSE
Capt. Donald S. Leonard
Director of Civilian Protection and
State Commander, U. S. Citizens
Defense Corps of Michigan"

I have a letter here from Colonel White:

"I don't know what could have given me more pleasure than attending the APCO convention, however, the chances of my being able to get to St. Louis are very, very slim and therefore you should not count on me. I can assure you that if I can manage to hitch-hike a ride to St. Louis anytime during the four days of the conference, with the prospect of spending even an hour or two there, I shall make every effort to drop in and say hello. Best regards."

"Dear Mr. Teeter:

Acknowledging your favor July 10, I appreciate very much your special invitation to attend the Conference in St. Louis. If at all possible, I expect to drop in on at least some portion of the meeting, to meet again my many friends in APCO, and to sit in on some of the important discussions and addresses attendant to this Conference.

However, like everyone else I am up to my ears in work and it is impossible for me to say definitely whether or not I will be able to attend at all.

Again best wishes for a successful Conference and with deepest personal regard, I am

Very truly yours,

Harold Anderson
Chief of Police"

I believe you all know that Harold Anderson is now chief of police. He was the assistant host when we had our conference in Kansas City.

"Dear Sir:

We regret because of existing emergency conditions that it will be impossible for anyone from this Department to attend the 9th Annual Conference being held in St. Louis from July 27 to 30.

With best wishes for a successful conference, I am

Sincerely,

E. Raymond Cato, Chief
California Highway Patrol"

"Dear Mr. Teeter:

At our July meeting the group was canvassed to ascertain if any member intended to attend the annual APCO convention this year.

I regret to inform you that it would be impossible for any member to get leave from his department because of the war condi-

tions on the coast.

Yours very truly,

George K. Burton,
Sec'y-Treas.
NORTHERN CALIF. POLICE COMMUNICATION OFFICERS ASSOCIATION

I have read you these letters from Joy and Arnet Curry, and I also have a letter here from Ted Lowe.

"My dear Jack:

I notice in the May issue of the Bulletin that Commander Fred H. Schnell is still listed in the Frequency Allocations Committee, and that Mr. Joy of Des Moines is listed in that same committee and also the State Systems Standards Committee, and also that Capt. S. J. Renner of Urbana, Ill., is listed in the State Systems Standards Committee.

All of these gentlemen have been called to active duty with either the Army or Navy, and many have been gone for many months.

I was quick to note that my name was removed from several committees practically the day after I was called to active duty. I would like to have an explanation from you as to why these other men who have been called to duty have not also been dropped. It does not seem equally fair and equitable that one would be and one would not be.

I have been advised that members who were called to active duty were being carried on the rolls of A.P.C.O. until such time as they came back from military service. For your information, the International Assoc. of Chiefs of Police are doing likewise. I have my card and receive publications from I.A.C.P. quite regularly. I am, of course, vitally interested in keeping in touch with A.P.C.O. and the communications field, as I plan to return to this activity when this emergency has been concluded.

I should like at this time to ask one or two questions: is a member who is carried on the "honorary or on leave" list entitled to vote? Are they permitted to attend the convention? Upon your answer to these questions depends whether or not I shall avail myself of the opportunity of attending the St.Louis convention this month, and renewing old friendships.

I tried to get in touch with you while in Kansas City a few weeks ago, but it happened you were out of the office. I had a chance to chat with Roy DeShaffon and also with Capt. Wherritt for a few minutes.

It will be appreciated if you let me hear from you at once so that I may make my plans to be in St. Louis, July 27 to July 30.

My very best regards.

Sincerely,

M. B. Lowe
Lt. Commander
Commanding Officer"

Here is something I want to give you to think about, that is, members who for the time being have left the communications field. We have Gene Brown, who was president of the organization. He left the communications field and went with Motorola and now he is with the armed forces. We have Joy, who has gone to the armed forces. Ted Lowe has gone. Arnet Curry has gone into the engineering field. According to the by-laws of our organization, these men have to cease being members of this organization, if they happen to leave the police communications field. I don't think that is right. I think that when a man has belonged to this organization as a communications officer and he should leave the communications field, if he feels that he still wants to be a member of APCO, I think he should be. If he wants to pay his annual dues and continue as a member, I think that is all right. At this conference we should change our by-laws or make a resolution or something to take care of the situation. I wanted to leave that thought with you, and we will bring it up a little later on. Using Arnet Curry for an example, he is still a valuable man to APCO but because he is not working for a police department he can't belong to this organization. Gene Brown is the same way. He is in the Army Signal Corps now. He is still connected with communications, but he can't belong to the association because of our by-laws.

There is another thing, too, that I believe everybody will be in accord with and that is our members that are on military leave should be carried as fully paid up members until such time as they return to their different organizations. Does anybody have any comment on these two things that I have brought up?

MR. KADOW: I believe that a great many things have to be done to our constitution if we want to keep this organization from dwindling down to a very small number. It is my opinion that we must make an arrangement to keep these members that you mention that have been so faithful in the past. Now that they are serving their country in various phases, we have to make it possible for them to remain as members. We can't drop them. There were some ideas that were passed along when the constitution was made up whereby they dropped out when they left the police field. Other departments have sprung up, public utilities; we must make arrangements for them to come in. We must make the membership, that is, active membership, a great deal wider so that we can bring in all our dispatchers, possibly even if they are the third class permit men. They are controlling squad cars and movements of the communications system, and they should be members. Just how far we want to go with that is the things that the group here should decide, but I think it would be the thing to think about it because we must do something to increase this thing so that everyone in the police communications field, we can leave the word "police" out of it, should be able to join this thing.

We have gone along in the Illinois Chapter finding how we could work a little around the constitution. We have 56 active members there, and we have done a lot of work. The boys love to come to the meetings and that is

one point I would like to instill in the minds of the members - to get a chapter going and then for us in the national group to bring in members that you can use. Anybody interested in the meeting will be good to have around.

MR. LATHROP: One thing regarding changes in the constitution, we worked for several months prior to the Orlando meeting of the organization on revising the old constitution. We thought of those conditions and I refer you to Article II on classes of membership. Under Section 2 we have this sentence "Provided, however, that present active members may continue as such until they permit such membership to lapse." In other words, Brown or Curry may continue until they allow their membership to lapse. Now in the case of the members in the armed service, if we at this conference amend the constitution so that they shall have paid up membership for the duration, I see no reason why the thing will not carry through without any change to our membership classification. This matter that Kadow brought up about the membership classification is also taken care of, and I think it is merely a matter of interpretation. The constitution must be somewhat elastic, otherwise it will break. We have tried to incorporate a certain amount of elasticity into this constitution, and we have given the Executive Committee rather broad powers to determine whether any man shall be classed as an active member or an associate member. I noticed in the Bulletin last month that there is still some question about the classification of membership. I would be glad to meet with any group which you will delegate to go over this thing and draw up some resolutions covering the present emergency, carrying on the memberships of members who are in the armed service for the present time.

MR. DESHAFFON: What I would like to ask you on these new men in the station, I have most all new men, and according to the way this reads they are not eligible for active membership. I would like to have that cleared up.

MR. McLAUGHLIN: In the Illinois Chapter we haven't had a meeting in months that we haven't had this same thing come up as to who was eligible for membership in APCO. We have had fellows ask, and we weren't able to take those fellows in as active members of the organization. I think that everyone in the communications field can belong to the organization. I think it is an injustice when a man is called to the armed forces to have to scratch him off the list as an APCO member. We have had this at every meeting, and we have quite an organization in Illinois. We have some very good meetings and at every meeting the same thing comes up.

MR. GENO: This constitution was drawn up after great consideration as to what the membership should consist of and why it should consist of those things. Perhaps during the conference we should enlighten the members on why those qualifications were drawn up. As far as the members in the service are concerned, I believe that everyone is of the opinion that the Executive Committee can handle that. I would like to make the motion that the Executive Committee assume the responsibility relative to the dues being suspended and the members carried on. It is obviously the opinion of the conference that everyone would be willing to extend membership as a paid up member for the time they are in the armed services.

Second to motion by Mr. Fetcher. Motion carried.

MR. LATHROP: That committee was appointed by Mr. Waroing when he

was president, and it was not a regular committee. It was a special committee which he appointed for that purpose, and I happened to be the chairman.

MR. WILT: Are any other members of that committee here?

MR. LATHROP: I don't recall if any of them are here at the present time. If they are I hope they will speak up.

MR. WILT: I believe you could explain to the meeting this morning -- On page 6 under active members it states definitely "The following persons shall be eligible as active members: supervisors and chief operators of police communication systems". It just sets out the two positions there. This wasn't changed at Orlando was it?

MR. LATHROP: Might I suggest something here? You all have had applications for membership in the organization. Anyone fulfilling these qualifications as set out in Article II, page 6, would automatically become an active member, without further comment. But going over to page 9 under Article III, Election of Members, what action is the Executive Committee going to take when they receive from a prospective active member who has a restricted radiotelephone permit and who has an endorsement by a supervising officer who is a recognized active member and this party applies for active membership, especially if he has the qualifications? The Executive Committee is bound to accept him as an active member, but he must be endorsed by his supervising officer for membership. Remember that this endorsement is not exactly necessary for anyone who has the qualifications as set out by our constitution for active membership, but someone who wishes to apply for active membership who hasn't the qualifications must have the endorsement for active membership of his superior officer. I think that takes care of the situation. Of course, we can amend it to absolutely take care of it. I think that anyone applying for active membership in this organization should either have clear cut qualifications or he should have an endorsement which would lead the Executive Committee, who do not know the man intimately, to believe his qualifications are acceptable.

MR. FETCHER: If such has been the policy we haven't known about it. There isn't anything here to indicate that anyone with an endorsement can become an active member. "The following persons shall be eligible as active members: supervisors and chief operators of police communication systems," etc. It doesn't say anything about anyone else.

MR. GENO: I think there is a lot of beating around the bush here. In the discussion on the amendments to the constitution it was the consensus of opinion that the situation was as follows: in quite a few instances it is apparent that if active membership was allowed to include the entire staff of police radio stations, the control of the organization would immediately go to the subordinates. The object of this type of legislation was to defeat that purpose. In other words, under Section 1, Article III, if the supervisor or the commanding officer is of the opinion a man on his staff can become a member, then he does. It would be unlogical to believe that he would endorse enough persons to lose control. Fundamentally, that was the picture. I want to go on record as one favoring having as many in the organization as possible, but still if you have five or six men, and in the case of a radio division a goodly number of them obviously would be made up of membership, a majority of which would be subordinates, and therefore we would lose control of the organization and perhaps the accomplishment would not be as fast or as good as under the present setup. I believe the constitution as it stands answers

all the questions to the best ability of the men and powers that be to accomplish what we wanted to accomplish. If the opinion of the conference would be that they wanted just any communications man to hold active membership, that would be different from the opinion for the past few years.

MR. WILT: As it stands, our organization will probably remain just like it is from the standpoint of active membership.

MR. GENO: I would not say that. There is definitely a loophole for any active members that want to be made by present active members. On page 9, under Article III, Section 1, if I had a member of my organization that wanted to become an active member of APCO it would be necessary for me to endorse and submit the application to the Executive Committee; with my endorsement it absolutely wouldn't be turned down, unless there approached a time when recommendations would exceed the active membership. If you recommended two and everybody else one, then your two would control the vote. I believe that is the purpose that has been tried to be defeated in setting up this constitution. I don't want anybody to get the wrong impression. I am just telling you what the sentiment has been, and I believe most of you know that. It has been discussed at length at every conference this far.

MR. WILT: It is your interpretation that if a supervisor is an active member, his chief operator would be an active member. If he wanted one or two of his dispatchers as active members, he would recommend them for that membership on the application.

MR. GENO: He would endorse an application; it would be decided on by the Executive Committee.

MR. WILT: That leaves it optional with the supervisor as to who he recommends.

MR. LATHROP: That is what we had in mind at Orlando and that is why it was worded in that manner. We have always had two classes of members, and it seemed that either we would all fall in one class or the other. When we started in on the chapter groups we obviously had to take care of the dispatchers and any men interested in communications to bring up the membership. In Wisconsin we have 45 chiefs of police who are members of our organization, and we have had no complaint at all from those men. They are going in as associate members. But it seems that where the pinch comes is in the larger stations where you have seven or eight men who are operators and hold higher class licenses, even who are in reality professional communications men. They are not satisfied to accept an associate membership in the organization. In most cases we figure that the Executive Committee and the endorsement of their superior, who according to our regulations is an active member, shall make them active members.

MR. WILT: I know that has kept a lot of the men from making applications as active members. They read Article II and figured only the chief operator or supervisor could be active members.

MR. LATHROP: The Executive Committee has the power to do quite a bit in this organization, as they should have, and if they can determine upon the qualifications of membership, then that power certainly should be granted to them, and it is. I really feel though that there should be a definite amendment made to the constitution to take care of these men in the armed services at this time, and also the men who have left the communications services and are working for commercial interests. They very definitely can

maintain active membership as long as they do not allow their dues to lapse, because that is very definitely taken care of in the constitution.

MR. WILT: I believe that has skipped the attention of these gentlemen, too. I don't believe they have studied over that enough to get what it means.

MR. KADOW: Where does it say the supervising officer of the department can sign an application and make an active member? It does under associate member but nothing in the other part. You can make an associate member out of a third class permit man. I believe we should put an amendment on it so it is more specific, so it definitely states who shall or shall not be members. I think it can be done and I believe it would be wise possibly to appoint a committee to do this work and let them present something to the body here and vote on it. It has been a problem in our own organization to try to determine who shall be a member, because we didn't know where to classify him. These boys that hold commercial licenses don't want to be associate members, but I do feel that a man who is operating a desk and has cars under his control and would be willing to come to the meetings should be an active member. That is my opinion. If that is what we want we should write it up that way and get rid of this other provision about paid by government agencies. These public utilities are not private organizations. They definitely have a police communications setup.

MR. LATHROP: You are in favor of excluding the clause "whose salaries are paid by the state government or a political subdivision thereof,"?

MR. KADOW: If we are to consider men in the public utilities.

MR. LATHROP: That was very definitely argues in Orlando, and I want to go on record as opposing it. If we are going to take in every type of communications in the country because we are communications officers, sooner or later we are going to have postal telegraph boys running around here. We have had several cases where men who operate broadcast stations as a living maintain police radio stations in our state, and we have found in these particular instances, we have tried to gain some cooperation but we have not been very successful. So in those cases we have urged that sooner or later that department have a man who is on the staff. After all, these other people who are not primarily police officers or definitely connected with police communications, I don't see how we can give them our confidence and place confidence in them. The electric companies are going in with special emergency equipment, so are the oil companies, but where does that enter into police communications? I agree that in an emergency they may be able to help communications, but should we alter our complete organization so as to include all types of communication just because it is emergency service? There isn't such a step between utilities and airlines, etc. After all, ours is a specialized branch of communications which deals with police work, and I am very much in favor of having it remain as police work. I think the way to keep it that way is for them to receive a salary for police work. That would include a broadcast operator who is maintaining a police transmitter, because he is not doing that for glory. Technically, he could come in even under those rules, but that is as far as I think we should relax the rules.

MR. KADOW: What about the Commonwealth Edison Company which

operates a fleet of cars definitely for police work? They don't get paid by a police organization, but they are policemen.

MR. LATHROP: We have the same consideration on some of the large ordnance plants. They are putting in their police communications systems to take care of the guard posts around the plants themselves. They are police, I agree, but I don't believe we should relax our interpretation to the point that we are taking in organizations that are out and out a public utility and have no more connection with police departments than any utility. Some foundry down here has a guard that is a policeman in a certain sense, but he is not a policeman in the sense that we are concerned with. In the particular case you mentioned I don't know the details, so I could not say about that.

MR. KADOW: Normally, they would be guards. We have one of our own men in the organization, one of our state boys.

MR. LATHROP: He has been an active member in the past and he can be an active member until he is 99, if he pays his dues.

MR. WALKER: I have a suggestion to make. We are going through some drastic changes in the police communications field. In Michigan, for example, talking about outside agencies, we are actually training men for the army and putting them in there. We are working two-way communication with various branches of the air corps. They are police communication officers. We are working with them. They are accepting our standard of operation. I think possibly the president should appoint a committee to review the changes in communication since the Orlando convention, bring it up again, and possibly something new will come to light at that time.

MR. WILT: Captain Wherritt have you anything to contribute on this? You have a large group of men under your control.

MR. WHERRITT: Yes, however, I believe most of the men other than chief operators have been accepted as active members. They are on the records as active members. As Mr. Lathrop said a while ago, it was in the power of the Executive Committee and I have men classed as active members who are not chief operators.

MR. WILT: I think it would be good to clarify that.

MR. WHERRITT: The constitution doesn't exclude anybody. It is a question of whether to do away with associate membership. It is a question of putting associate into active and then putting other communication officers as associate members. I think possibly other organizations should not have members that are allowed to vote on police communications matters, however, I do think it would be all right if you had anyone connected with police communications as an active member. Mr. Kadow, you didn't have in mind making Commonwealth Edison employees active members did you?

MR. KADOW: To tell you the truth, we overstepped our bounds a little, and we have them as active members. In other words, it isn't explicit and we have them in there as active members.

MR. WILT: I am going to appoint a committee on this: Mr. Lathrop, Mr. Kadow, Mr. Deshaffon, Mr. Geno, Mr. Vickerson, and Mr. Walker. I

believe you have a general idea now of what we want to clarify this situation. Also this other clause that has been misleading, or they haven't read it, and that is those who have left the police communications field for the commercial field. I think maybe that section could be clarified just a little. Is there any more discussion here for the benefit of this committee? I believe we might get an opinion from the group as to their ideas on these men who have gone into the commercial organizations. Then Mr. Brown went with Motorola what would his status be? My personal opinion would be to keep them.

MR. O'NEIL: It seems to me that is very definitely taken care of in the constitution, that is on Page 6, Article II, Section 2, " Provided, however, that present active members may continue as such until they permit such membership to lapse."

MR. DERBY: As this organization gets along in age it is inevitable that men will drop out and go into the commercial field, and it is possible for the organization to consist principally, especially if it happened to be to the financial interest of the company in question, of ex-police communication officers. I question the wisdom of permitting the men who enter industry to vote. If they are permitted to vote this will soon become a commercial organization. I don't think these men should have a voting membership. With all due respect to those men who have left, I don't think it is wise to permit them to vote in this organization.

MR. GENO: I don't believe in beating around the bush on this thing. We want the organization to stay with the supervisors and with the men in the radio setup. As the gentleman just stated, we can't go into commercial organizations. If you bring in active memberships from other departments, immediately control goes to subordinates. Let's have some ideas. Do you want an organization wide open? Do you want to extend active membership to people in private enterprises who are directly connected with the sale of police equipment? The trend of the organization is definitely in that direction. In the case of Gene Brown, who is a swell fellow and a good engineer, Motorola is connected with the sale of radio equipment. These fellows will be active members, and although they won't necessarily control the house, they will have a good substantial vote in the organization by virtue of the fact they will be financially able to get around to the meetings while, unfortunately, a lot of communications officers will not. What does the conference think? I personally agree with the gentleman over here that the membership should be limited to police communication officers in a supervising capacity.

MR. LATHROP: If a man goes to a commercial enterprise, we have a definite commercial membership for him.

MR. GENO: Which way do we want it? At all these previous conferences it has been the opinion of everybody that was the way we wanted it. Maybe things have changed that drastically. Perhaps some of these things should be clarified a little. I am against the continuation of a voting membership after you enter a private corporation.

MR. DERBY: There seems to be, justifiably, some feeling because a man holds a first class phone license and is limited to an associate membership. If it is the name they object to, we can change that. Just have all members be members and extend voting privileges to certain classes..

MR. LATHROP: In connection with that, the same thing came up

at the time a lot of this work was being done and we felt this way: if we laid out those qualifications for membership in such a way that everybody would be eligible for active membership, sooner or later we would get in trouble. At the same time, we had, as in the case of Milwaukee, a station where seven men held high grade licenses, telegraph first and second; those men would be eligible for active membership, but at the same time we wanted to place the thing so that the supervisor had a little more to say than the men who are working under him. Therefore, we intentionally placed this arrangement so that the supervisor would have to recommend these men and the Executive Committee would have to act on their qualifications. That is the way it has been going through, because I know of every case in Wisconsin where there are two men holding practically the same qualifications at one station and one of them is the supervisor in charge and the other is subordinate to him, in every case they hold active memberships. All of the men on the Milwaukee Police Department staff hold active memberships; that is going through without any question.

You might get a more liberal interpretation by rewording the constitution, but at the same time suppose you get somebody on a staff that you are not particularly anxious to have. He gets a copy of the constitution and he reads it very carefully and he knows the powers under that but still he is checkmated because he hasn't his superior officer's endorsement on there. If we are going to throw it open we should abolish the associate membership entirely. But when we do that, we are more or less defeating our purpose, because a supervisor could be here along with four or five men and if he wants one thing and his men another, then it is going to be the way his men want. Especially would that be true in the state groups; in the national group we don't have that friction because as a general rule only the supervisor gets to attend. In the state groups everybody gets there except maybe one man, and I feel that the chief operator's word should carry more weight than the other members'.

MR. McLAUGHLIN: We have a case in Illinois where one supervisor takes care of four or five towns. Now are any of the radio men in those towns eligible for active membership? Shouldn't somebody in those towns be eligible for active membership? That is where the argument came up in Illinois, and one of them in particular happened to be a sheriff. He had a supervisor over him. Is that sheriff, who carries a radio license, eligible for active membership?

MR. GENO: I would say definitely yes; without the endorsement if he is the top man in that organization. The constitution covers him.

MR. HICKS: Does he have a license or permit?

MR. McLAUGHLIN: You don't have to have a license or permit to belong to this organization.

MR. KADOW: There was a misunderstanding at first; when I received the membership applications he had told me that his radio engineer was the superivising officer. Later on when he found out he couldn't vote, being an associate member, he said he didn' t want to come to the meetings unless he could vote. The associate members want to vote.

MR. LATHROP: Whether there are one or two or seven men in the department they can come in as active members. In Milwaukee there are seven active members and they can all vote, along with the supervising officer. They can vote in the national chapter but not in the Wisconsin

chapter. Milwaukee has one vote, and Waukesha has one vote, etc.

MR. KADOW: This other proposition was straightened out. He said he was the supervising head, therefore, I collected another dollar and raised him to active membership. That is one point, these men that come in as subordinates still want to vote. Maybe this point you brought up of not allowing them to vote in the state is the answer, because the boys that come in all want to vote. We haven't found the state group covers us up in the number of men that come. They could blanket us in votes, but we haven't found that they wanted to do that. They have all been interested, and we have a membership committee that keeps digging. We have a procedure committee that keeps them working, and we found that keeping them all working, they all worked toward one end.

MR. AUDRITSH: I have a question that I would like to ask. This is my first convention. I continually hear about the restricted permits and phone licenses and second phone licenses, etc., and I just wanted to ask the question if somebody can tell me precisely what connection this has with the membership.

MR. WILT: That has no bearing whatever.

MR. JONES: It is my opinion that membership should be limited to supervising communication officers, and by that I mean that one department could possibly have two or three or four active members. I think that should be determined by whether the man actually is a communications officer. Your chief operator or chief technician I think should be allowed to become an active member, but I don't think it would be a good thing to allow all members of the department to become active members. I think it would be well to make some arrangement for the communication officer having control of a communication system that was closely related to police work, for example, some of these public utilities have communication facilities that work very much the same as police departments, and in many instances they are manned by men that have been in the police communication field. I know of several and they are very definitely interested in police work. I know one, for example, where the man that has charge of it is a former member of a police department, and he operates the thing almost the same as a police communications system would operate. One reason I think it would be wise to take those men in is that their problems are very much the same technically. They would be good material technically for publication in the Bulletin. I do think that communication heads such as pipe lines where they have radio stations from one pipe valve to another, I don't think that is related to police communications and I don't think it is operated in such a manner that their interests would be the same as ours. I am also of the opinion that these radio stations that have some public official as their head, I mean by public official, sheriff, or chief, or politician, who to my way of thinking in most instances is not a communications man, I have seen several examples, just to be plain spoken they are figureheads, they have some man under them that takes care of things and he should be the active member. I am opposed to taking in a man as an active member simply because he has under his jurisdiction police stations; unless he is actually the communications officer, I don't think he should be allowed to become an active member. To draw a parallel, the IACP would have a similar problem if it were proposed that the chiefs of police be permitted to bring in captains and sergeants as active members, and I don't think such a thing as that would be permitted in their organization.

MR. WILT: But they do permit it.

MR. JONES: That seems a little unusual to me. I have been in the organization two or three years, and I have very definite ideas as to what the membership should be. My idea of a communications man is one that can operate technically and also handle the administrative end of it. The chief dispatcher, chief operator or chief technician do have a place in the organization. I don't think the thing should be thrown wide open.

MR. BRYANT: Under the constitution no member under the FBI system would be eligible for membership. That is quite a large system and it might be a good thing to remember that when we consider amending the constitution.

MR. DERBY: There is one point: the reason for wanting to include certain types of membership is to build up the size of the organization, make a large organization. A large organization has considerably more potential power than a smaller organization. Suppose we had a backer in our town and he is friendly to our system, I happened to attend an identification bureau convention once and one of the most prominent men there was a druggist. He has done a lot toward furthering that association. We could take in a man without losing control of the organization.

MR. WILT: We don't want to drop the bars down too much. What we do want is to make the constitution so that we can increase our active membership, because we will have more prestige with a larger membership than we have now. We have only a few over 200; with the communications systems over the United States, we should have an active membership of from 500 up.

MR. MYERS: I don't happen to belong to this organization. I came here with the mind of placing my application for active membership. After sitting here for some two hours I don't know whether I should be in this hall. If I could get that straightened out maybe I could save $50 or $75 by going on home. I came up here with the idea in mind that I might be able to submit an application and become an active member, but I just don't know.

MR. O'NEIL: I would like to reply to Mr. Derby's remarks regarding the druggist and his membership in the International Association for Identification. The I.A.I. is interested in all persons who are interested in police science, whether it is chemistry or the study of X-ray, or handwriting identification, identification by means of fingerprints or any other thing, so that makes him eligible. It is police science as applied to identification and all of its branches. That could probably be given thought in this discussion, the science of communication.

MR. JONES: It seems to me the whole question, as the gentleman from Wisconsin put it, if we do those things we propose we are going to change the whole character and type of the organization. The Amateur Radio Relay League is an organization that would be similar to what this would be if we threw it wide open and put everybody interested in police communications. It seems to me that is the question; as to whether the organization remains an association of communication officers or becomes an organization of associated police - what shall we call it. As to the members on leave, I believe those who enter the armed services should be allowed to retain membership; those that go to commercial interests that might have some reason to want to influence the organization, I think they should remain as associate or not be members at all. I mean members om-

ployed by manufacturers of police communications equipment.

MR. SOULE: I believe this whole thing could be solved by the addition of a short phrase in Article II after the words "chief operators" add "and other operators endorsed by their supervisors".

MR. O'NEIL: The federal men are included in our by-laws.

MR. GENO: What is the consensus of opinion on these so-called public utilities? They can absorb a police department in the city so fast it isn't funny. Although under the present emergency we have a definite tie with them, that is as far as it goes. I don't believe they resemble a regular police communications department. There is one instance where a large steel corporation wants a radio system so the police department is putting in a police radio setup in the steel company. This company covers a lot of territory but they still don't do policing from the viewpoint of the police department. Personally, I am of the opinion the constitution should remain as it is. It seems we haven't heard any arguments for any change in the opposite direction. It seems that it would be pretty much along the lines as at present with the exception of putting in subordinates, or clarifying that point. If there is anything in the opposite direction let's hear about it.

MR. O'NEIL: In any case they would have to be recommended.

MR. FETCHER: I believe in large part, concerning the public utilities, that circumstances alter cases, for instance, the Commonwealth Edison Company in Chicago. I am citing a case I know about. They definitely do police work, they have squad cars and are particularly interested in police work. They have a large identification system which is of great service and can be of greater service to the police, and they put it all at the service of the police.

MR. O'NEIL: If they don't have the right of fingerprinting prisoners before turning them over, how would their files assist the police department?

MR. FETCHER: I don't know about fingerprints, but they have files of photographs, automobiles, etc. Now we have the Chicago Surface Lines, and I don't believe they should be a part of this organization, but on the other hand, I believe the other outfit should.

MR. GENO: They are still segregated, because they have to call a policeman if they want to make an arrest. That would be the same as the steel thing up there. If they grab somebody they have to call a police car.

MR. FETCHER: Commonwealth Edison Company's property is all over the city. In the event of an emergency their squad cars would be extremely valuable.

MR. GENO: I just mean these men are not policemen from the standpoint we look at it.

MR. WILT: I still think we should keep in the police communications field.

MR. O'NEIL: I believe when that time comes that the public

utilities and different concerns become so big, they should create their own organizations and that would solve the problem.

MR. FREE: I believe this gentleman is right. If we are going to have a police organization let's have a police organization and not extend it farther than law enforcement organizations.

MR. MILT: That is my idea.

MR. O'NEIL: When there are enough in operation and their interest is as great as the interest that created APCO, then it will be time for the public utilities and others to have their own independent organizations.

MR. MILT: Gentlemen, it is getting about lunch time and I understand the ladies are taken care of, so I would like to read over that list of those appointed on the committee to consider these matters we have discussed: Mr. Lathrop, chairman, Messrs. Kadow, Deshaffon, Geno, Vickeron, and Walker. I believe the committee has an idea what the boys want. I will take another moment of your time to call to your attention another thing that should be considered and that is dues. Now on page 8 it says the national organization has dues coming from the state chapters. I wish Secretary Teeter were here so he could tell you that we cannot function on the income we have. On an active membership we get a dollar and a half and on associate a dollar, but that doesn't give us enough. The point is that in our national organization we need more dues. I believe Mr. Teeter might have something to give us on that.

MR. TEETER: Right at the present time, if we want to continue in the manner we have, which is business-like both financially and from the standpoint of records which I know will be available and which you will appreciate when they are available, it costs money. It costs money to write a letter, and in my report, which will be read here and which is available to the Executive Committee and the officers, I will show that this organization is in better shape than ever before, but we are still running around thirty or thirty-two dollars a month short. That is, we have to take that much out of our treasury. It is wrong to turn it back unless I inform you of that fact. That is the reason I am glad you brought it up, because it is of vital interest to every one that belongs. It is wonderful that we can meet and have a common interest. I find in my correspondence of over a year with various chiefs and individuals that are interested in our organization, they never knew of it before. A lot of chiefs didn't know that members of their department belonged and were elated when they found out that there was an organization that they could write to and get ideas from. If I get a letter from a chief, my chief, whom you met here this morning, answers it because that is the rules in this department. You will find that your chief has received a communication from my chief if he has made an inquiry. I feel that has never been done before, because when I took over the job of secretary-treasurer there were no records. We got a few stamps and in a manner we just discounted the whole setup. We have set up an office, Room 903, and the records which I have prepared are all there and available. It will show you that our organization is certainly not sound financially as far as dues are concerned. There isn't an organization in the whole world that will give you what we give you and charge you the same amount that we are charging you. It is certainly wonderful that you are giving it some thought. I am sorry that in my double capacity of host and secretary I

haven't been able to be in your discussions. I have the answer; it is all in black and white.

Mr. Kadow of Illinois is doing wonderful work over there and I am glad he has an opportunity to voice what he is doing. Illinois has a wonderful chapter, and Wisconsin started them off. I hope some day when we come into a national conference we will have sections blocked off for each state. When I see what we have done in just a little over a year I am quite sure that will come to pass, not by changing our by-laws but using common sense like Gene has exemplified in stating what was in their minds when they revised the constitution and by-laws at Orlando. I have recommended to the people who made inquiries that the supervisor or the man that would be supervisor in his absence were the only ones that would be eligible for active membership. I readily see what was in their minds now was that if anyone had the recommendation of the supervisor or of someone in authority he could be an active member. We receive applications every day, the secretary does, and we vote on the recommendations of those sending the applications. They are then voted into the organization at a conference, or their name is submitted to an executive meeting.

I believe that our organization, judging from others to which I belong, could be made into an organization that would not only be sound financially but could be of a lot more benefit. I have an organization of 33 men and there is only one man in that organization who could rightfully receive anything from the police communication officers and that is my assistant - and that is wrong. I think you will find that is true after you consider it. I believe if we go into this thing in the proper manner we won't be $34 a month short. You can't run a business that way. It isn't sound. We have a wonderful organization. We have membership, and we have good money right in the bank over here. I would like to see the day when we can come in here with the chiefs or business people, regardless of who they are, if they are willing to throw themselves in with us, we should be in a position to accept them.

Announcements.

Adjournment for lunch.

AFTERNOON SESSION - July 27, 1942

MR. WILT: As our program shows, we have an address by Captain Donald S. Leonard, who we know is not able to be here, so Mr. Frank Walker of his department, will say a word or two about Captain Leonard.

MR. WALKER: There was no way possible that I could represent Captain Leonard on this program, or any other program, as far as that is concerned. He has more fluent use of the English language than I have; his contacts and associations go far beyond mine. While I am a radio engineer, he is a lawyer and police officer. He had cherished hopes up to the last moment that he would be able to attend this convention. You possibly know that he has quite a soft spot in his heart for this organization and you fellows, and for police communications in its entirety. He has often spoken to me in more or less an open session that police communications are very vital to the successful apprehension of criminals. He knew nothing technically but he has the administrative ability for police communications. He was a great man to have in our organization, because of his desire to make police radio one of the great pinnacles of any department. He called me day before yesterday and said, "You are going to have

to give my apologies to the boys down there and tell them that my whole heart is with them. Stick to it and bind together as you have never bound together before. Go to greater lengths to make police communications a high point in the nationwide program, which is so vitally needed at this moment." He would be here if he possibly could. His duties are far flung. They reach from California up into Canada, to Mexico and England, and back several times. He is chairman of the civilian defense program in the state of Michigan, as well as operating nationally and internationally in that capacity. So it is quite easy to see that his itinerary is such that occasionally something comes up that he cannot make. However, I wish to assure you, and I know it from the bottom of my heart, that he would be here if it were at all possible. I know different programs on which I have appeared technically and it exhausts me, yet it doesn't him. He can travel nationwide and fly and fly and fly, and still retain the same vigor. This is one meeting that he really wanted to attend. It is with deep regret that he told me he could not be here. He says stick together and make this organization at this time the best that it can be. Thank you.

MR. MILT: Thank you, Mr. Walker. Captain Thorritt just handed me a letter that he received from Herb Wareing. All of us that have belonged to the association for over a year or so know Herb very well. His boy had an accident and is in the hospital. This accident occurred about six weeks ago; he is in the hospital and in a very dangerous condition. Herb sends his regrets that he is unable to be here and sends his best wishes for the success of the conference. He closes the letter with, "best personal regards to all the delegates."

The next thing on the program is a demonstration by the Bell Telephone Company engineers. Mr. O. S. McDaniel of the Bell Telephone Company is with us and will take over at this time.

MR. McDANIEL: First of all, I am not the demonstration so don't make any assumptions in that respect. I discussed a little with Lieut. Teeter the possibility of setting up our emergency radio equipment for demonstration, but there are two reasons we decided against that. One is that it probably wouldn't be anything particularly new to a great many of you to see some radio equipment, and also the equipment is being held in readiness for whatever emergency may come along, so we decided against such a demonstration. We have some other things that we demonstrate to non-technical audiences but I believe you are more interested here in things of a technical nature. I am working quite a bit now on civilian defense and that is the thing that I am most familiar with. I hesitate to say too much about that because in any group of people that you get into you always find quite a few of them that know a great deal about that subject. There has been so much said about it in recent months that it is a little difficult to say something that will be new and interesting to the entire group. Since some of you are from the sea coast and Gulf coast, you probably know more about it than I do, so if any of you feel like "you have heard this one before" and don't care to listen, I won't feel offended if you go down to the tap room or some place and enjoy yourselves.

I might sketch briefly for you the telephone phases of this civilian defense program. I am going to stay out of the radio so I won't get in too much trouble. The thing starts with the observers. They are spotted at about six mile intervals, according to the plan, across the country. At the present time, just the areas along the coast and the gulf coast are activated so that those observers are actually on duty. The

section of the country out through here is not activated. These observers are posted at about six mile intervals on the basis that a plane can usually be seen from about three miles away. Therefore, one observer would still be seeing a plane when the next one got his first glimpse; that would give fairly complete coverage. In this part of the country particularly, it would be a little difficult to get those observers every six miles because there is a lot of territory through here where you couldn't find telephones located just where you want them, so they will have to be shifted a little as time goes on.

In Missouri, the organization for observers is set up and pretty much ready to go. We are ready for whatever training the army decides to give them. Thirty-two thousand of them have been enrolled. That was carried on by the American Legion in Missouri, and they are all set and ready to go in setting up that service. They hope to get started some time soon, because they want something to do. The aircraft warning service is that phase which spots the planes and transmits the information into the army. The air raid warning service takes that information after it has been evaluated by the army and sends it out to the military organization and to the civilian defense organizations. There has been a lot of loose talk about aircraft and air raid warning, and perhaps I can make that one point clear. The aircraft warning service spots the planes and transmits the information into the army. The air raid warning service sends that information out from the army after the army has evaluated it. A great many people confuse those two terms, and even some army officials have been known to do it. There is a further confusing term I might throw in, and that is the air raid warden. He is entirely different, but they often get confused: aircraft warning, air raid warning, and air raid wardens. They are so similar that it is unfortunate they selected those particular names for them.

These spotters, located every six miles, have telephones that are designated for their use. They originate a call by lifting the telephone receiver or ringing, if necessary. When the operator answers they say "Army flash". Those telephones that are designated to originate "army flash" calls have the call placed right straight through to a filter center. The filter center is for the purpose of filtering out extraneous or erroneous information, duplicate reports, and anything of that sort that comes in. They have a large map on which they plot this information. T hose observers have code numbers that identify them with certain points on the map so that the information is plotted there and the good information then is sent on to an information center, where it is again plotted on a map, but there they have only the results of the filtered information that is sent to them, and it is not quite so complicated as it would be if they had every report of every observer that called in. As soon as the information center has the information plotted and has determined that it is not army planes, or not civilian planes, or not navy planes, they decide what the likely objective may be and take action. They have there a representative of the Federal Communications Commission, as you know, and through him the radio stations as required may be silenced. The information may be transmitted then to the Fighter Commands, to the Anti-Aircraft Artillery and whatever military organization is needed. Then it goes out to the civilian defense organizations so that organization can get ready to go.

In sending that information out they hope to be able to send a preliminary warning, in fact two preliminary warnings. One that you are

probably familiar with is the yellow warning. That indicates that an air raid is possible; then there is a blue type of message that indicates that an air raid is probable; then the red indicates that it is liable to break loose most any minute; then after it is all over, the white message. Those colors are merely assigned for convenience in transmitting the messages and for the convenience of the civilian defense organizations in doing certain things and in knowing about how much time they have to do them. The warnings, of course, in yellow and blue are confidential and the army has designated them as confidential. In setting up communication systems for local organizations the attempt is made to keep those lists as small as possible so that they remain confidential. In St. Louis if we passed that out to some 8000 air raid wardens it would hardly be confidential, yet certain of the air raid wardens will need that. I think in police communication activities there will be some need to pass that information around, in such a manner that it will be kept confidential, of course. Probably a lot of people listen in on police radio, I don't know. After these warnings are started out they progress along telephone lines. That is the normal means of getting these warnings out to the divilian defense organizations and in doing that the whole system is laid out so that it takes advantage of the normal flow of messages throughout the telephone system. In the middle west here, we will probably be warned by states and a plan is being worked out now to take care of that warning arrangement.

Then after the warning gets to the states it will be divided up into districts so that the calling is spread out over a number of different points, so that it can be done quickly and so that it won't be too concentrated in any one point and overload the telephone system. After the warnings get started out in this manner, they finally end up at the local centers in the various communities and there it is purely a local function to take whatever action is necessary as a result of these warnings.

I might go back just a moment and mention the transmission of these yellow, blue, and red signals. In some cases the army puts in a telephone in a warning district headquarters which has four lamp signals on the yellow, blue, red, and white, and they have four lines into the nearest telephone office. When this call starts out as "St. Louis yellow", for instance, then when it gets to St. Louis it is put on one of these lines marked yellow in the St. Louis office and then when that call comes in it is answered "St. Louis yellow". If there has been any mistake on it along the line in the transmission of that message it should show up. It is a double check on the accuracy of the message. That won't be used in all cases, but in some cases it will be used. The army turns loose of the message when it gets to the warning district headquarters. In our case, that will be one point in Missouri. The army will send it to us and from there on we will handle it. In some of your states, no doubt, the army, from its information center, will send the messages out to a number of district headquarters within the state. That whole thing is adjusted in scale somewhat to the necessity. On the coast and on the Gulf coast it would be essential that the warnings be sent out faster and perhaps more directly to the army headquarters. Out here we hope we will have more time. We hope that the army will intercept any planes before they get out here, and if they do get through that we will have a considerable amount of time to get ready. So we don't have to go to quite such extensive plans as they would in other areas.

The local defense organization set up a local control center, which is merely a headquarters for the commander of the local civilian defense organization. It provides him with a place he can receive reports of damage in his area and provides him with a means of transmitting such

orders as he may send out to the local civilian defense organizations. It is merely a means of coordination. There is a further need for coordination in civilian defense over and above the coordination we already have between fire and police and other activities in that a bunch of other things have been thrown in here. However, the local control will merely be a coordination and cooperation between the fire and police organizations. In larger centers, I believe the fire and police departments will probably do their own dispatching activities. It seems to us in studying the problem here in St. Louis that the control center is the point where the general supervision can be exercised, but the actual detailed dispatching of which car goes where would still be a thing that would be done in the police department or in the fire department. The utilities enter into that picture and will probably have their own setup for dispatching their own crews, except that they will cooperate with each other better than they have in the past.

Now when something happens, the electric company, telephone, gas, and water companies are all liable to run on out there. Where there are so many things going on that could happen. If we had too many of those go out there they would get in each others way, so they have to look the thing over and decide who is going out to start with. If there is gas escaping, perhaps the gas company should go out and see that the gas is not dangerous, and later on the other crews can go out and take care of their part of the job and not get in the way of the others. It is just a matter of working out the coordination problem in the local area.

In our consideration of these problems we have recommended that the civilian defense organization set up plans for coordination and control and not depend on using the police facilities. There would be a tendency to feel that here is a nice police communication system we might as well use that, but it is going to be busy with its own job at that time. As far as we are concerned around here, we are suggesting that plans be set up so that police communication systems are not called upon any more than absolutely necessary, leaving them free to take care of their business, which will no doubt be above normal at those times. I have here some small diagrams of air defense communications as far as telephone is concerned, a little reminder of how things are set up in general. I have rather hurried through this thing; if there are any questions I would be glad to try to answer them.

QUESTION: How many control centers are there in St. Louis?

MR. McDANIEL: At the present time we have one for the city and the plan is being worked out now, it isn't approved yet, for a number of control centers in the county. If you are not familiar, we have St. Louis city, which is rather compact, something over 6000,000 population, then we have a county surrounding the city with close to eighty municipalities. There are 81 we have listed. The county is set up as a single organization, but there will probably be one district control center for the county with about six group control centers, and in many counties they will set up some form of local control. It is recommended that they confine this local control as much as possible so that they are pretty much independent of outside help. Then if their communication with some master control center is cut off, they can still go ahead and work out their own plans. They are in a better position to handle things quickly than to concentrate it in too large a control center. There has been a sort of mutual assistance pact entered into in the St. Louis metropolitan area.

QUESTION: I have worked in the control center at home and one of our problems is to find an alternate location.

MR. AUDRITSH: How many individual lines are necessary for a control center?

MR. McDANIEL: We are just sort of worrying about that now ourselves. At the present time the St. Louis control center uses the telephone service that is already available in the building. It is the Civil Courts building and there are 25 lines in there, 15 available for incoming and 10 for outgoing calls. In laying out our control center over here we have the thought in mind that we might need anywhere from 25 to 50 lines coming in for damage reports, plus quite a few for outgoing calls; also, we will probably have to connect up the control center with these various other offices, the utilities emergency bureau, and medical bureau, and then the streets and sewers, and other vital service groups.

MR. AUDRITSH: Suppose we have about 8000 workers throughout the city. Do you intend that each warden will call direct to the center?

MR. McDANIEL: That is the plan we are working on. At the present time the plan is for them all to call the control center. St. Louis is divided into twelve police districts and there is a thought that we may have to set up some district control center, perhaps not twelve, but we do think we may have to go to a district plan for a report center so that we don't get all our eggs in one basket.

MR. LATHROP: You say you have at the present time 25 lines which are existing facilities for that building, and you are figuring on 15 for incoming and 10 for outgoing calls. How do you propose to handle those lines?

MR. McDANIEL: That happens to be a private branch exchange system and they dial "Nine" to get an outgoing line.

MR. LATHROP: In normal times all 25 of those lines may be used for the normal operation of the building?

MR. McDANIEL: No, they are used on the basis of outgoing and incoming. They are mounted on a selector basis that dials one number and jumps on down. On the outgoing the ten lines are selected automatically. In the central office the incoming lines are selected and come down only 15.

MR. LATHROP: We have a similar condition, but there is considerable talk that we have to install a number of lines that normally would be dormant. They wanted to work it out some other way, but they couldn't figure it so that somebody couldn't call in on what was an outgoing line. They get around that by putting up a separate group, a private number group. If I know that number I can go in on that outgoing line, but it is an unlisted number and outside of the telephone company which installed it and a very few in the control center that number is absolutely unknown. The public doesn't know that number and those lines will be unused during normal business hours, due to that means of calling. That is the way they approached it. I thought maybe you had some idea that we could go to the telephone company and say we have ten trunks going in, and we would like to convert three to outgoing and still keep the telephone bill the same as it was.

MR. McDANIEL: That is the normal procedure if they terminate on a PBX. A certain group is set up for incoming and a few for outgoing.

MR. LATHROP: In ours we need more for incoming than outgoing and setting up that way wouldn't work out so well. If you have a larger group where you can say 35 or 40 percent are outgoing definitely you can work out something like that, but perhaps 90 percent are incoming, therefore, we need more incoming than outgoing, except in case of an air raid, where you would definitely have to have outgoing facilities which would be equal to incoming.

MR. McDANIEL: I don't think of any way of arranging that if you had 90 percent incoming during the day unless you could use a substantial number of outgoing. They can be divided in any proportion that you would like to have them divided. This arrangement we have is merely a temporary arrangement with the thought that it is there and if we had something unexpected that would be a way of handling it. That is not the final setup at all. It is anticipated that these stations on the switchboard, under emergency conditions, would be quickly diverted to direct central office lines and used only for air raid warden service, and this number the public knows, we would just forget about that as far as the wardens calling in. It is used now to save the expense of putting in a group of trunk lines specifically for warden calls to come in and letting them stand idle day after day. It is just to have something set up. As one of the defense pamphlets states "The poorest system in operation is better than a perfect plan on paper." We mustn't have too much, too good, too late. We are trying to have something set up.

MR. SPOONER: We have one telephone circuit in Oklahoma City. It is only for the purpose of training personnel, so we just have the expense of one telephone.

MR. LATHROP: We set up a skeleton plan of that type and here is what happened. They decided to have a practice trial and it took two hours and a half to report all the incidents, so we decided something had to be done. We couldn't get an accurate idea of the practice trial. They are going to expand it, but the question has been just how to expand it. It is well and good to have 15 telephones going in a place but not setting there idle. I would like to ask something on this line. In conjunction with these telephones that are put in for the general good of the public, are the telephone companies authorized to make any specific reductions or anything of that nature? In other words, you have to hold to what your industrial commission sets the rates for these phones, even though they are put in there for actual emergency use and entail no great expense.

MR. McDANIEL: There is no way the telephone companies can do that.

MR. LATHROP: We didn't figure it exactly free service. Here is the proposition. The telephone company is in business for profit, otherwise they wouldn't be in business. They couldn't operate. But in these particular phones why can't they be put in on a non-profit basis. In most of these towns that have gone ahead, maybe the phones get used once a month, but ordinarily there is no service on them. Where there is installation and all that, the installation has been paid for out of O.C.D. funds. It isn't drawing any current. Of course, it is tying up your facilities, but at the same time in most cases why should it have to

be a revenue producing proposition? If we were to cut off the profit on 15 telephones we might, with the same money, put in 18.

MR. McDANIEL: If you cut off the profit on 15 telephones, you might be able to take the receiver off of another. Profits are at a very close margin. The thing you can do is have the cabling in so that it would just be a matter of a few minutes to bring in telephones and set them down and make the connections in the office. A lot of the paper plans might be set up in advance so that there is no delay in issuing orders and things of that sort, so that can be done on a few hours notice.

MR. LATHROP: I worked in the telephone company for a short time, and I was wondering why it couldn't be set up so that you could pull some heat coils and it would be ready. There would be a service charge on the telephones but no billing for that period of time. That way we could have maybe five extra phones that if we had occasion we could use. We would pay the installation but not a monthly billing on them.

MR. McDANIEL: There is a possibility of applying vacation treatment to those, which amounts to half rate. I don't know whether your particular company has that rate or not. In some cases we have put them in.

MR. LATHROP: I can speak freely to you. If I go to the local company they say "Lathrop is around chiseling again". We pay $65 a month just for clocking service. Every time I talk "telephone" they figure I am trying to get another line or something.

MR. McDANIEL: That vacation plan might be something worth investigating. It permits the telephones to be reconnected on very short notice.

MR. YEAGER: I am located within 180 miles of the east coast defense command and we are tied in directly with the coast. Our control center is set up with ten incoming telephones, one of them is not for anything but a first letter command. The minute a yellow comes through there are ten more outgoing phones set up on another table. The street department, the fire department, the Red Cross and every department has a man go down there and man the telephones out of that particular group. There are 20 telephones there and every four hours there is a test call from the police headquarters to the control center to awaken the operator.

MR. LATHROP: We have essentially the same setup on a smaller scale. We have a telephone incoming only at the control center and that is also multiple to the police station and the PBX is a hand set. I happen to know that number and I can ring it if I want to dial it. The only parties that know that number are at the other end. They will answer the telephone at the police station if there is no one in the control center. We don't keep anyone in the control center unless there is a warning. The problem is this: We have $10,000 set up for civilian defense and you hate to see $3.50 per month going out for each telephone setting idle. It amounts to a terrific expense for a small municipality. I was interested in finding if there was some possible way to cut that expense.

MR. AUDRITSH: In regard to the warning arrangement, what is the plan for getting the information around to turn on the sirens?

MR. McDANIEL: There are two ways of doing that. One, of course, is to call them by telephone and use a chain calling arrangement where

MR. McDANIEL: I just heard this, I am not passing it on as being official or as a solution, but somebody suggested they mount a siren on an airplane and as soon as they got the air raid alarm they turn this airplane loose with the siren.

MR. LATHROP: Regarding your system of this loop where you have maybe ten telephones, how do you handle it where one fellow answers and you give him the information, and then another answers and you have to give it over again. It is all right if you can get them all at once, but you aren't going to get them all there at once. What is the particular advantage?

MR. McDANIEL: The question has been asked about the setting up of a plan to group say ten people on one line so that they would all get their call at the same time. The problem there, as expressed, was whether they would always answer at the same time and how many times you would have to repeat the message. That is something that you would have to find out about as you went along, how quickly they could answer the telephones. They should answer very quickly, and it might be desirable to just have them understand that when they answer this telephone they should wait, and as soon as you are ready just call the roll and give the message once. You would probably want some acknowledgment from each to indicate that he got the message. That would be something to work out locally, whether you would give the message as each one answered or get them all on first and then give the message.

MR. LATHROP: This goes back to ancient history in the telephone game. In conjunction with the boiler room and any siren depending on the attendant to operate it, in the old days didn't they have different frequencies on the ringer so that they could have a tuned frequency. If you had some hundred cycle setups that would ring a large bell so that when that bell went off he would know it was an alarm. An ordinary call wouldn't ring on that frequency. In that way you would get away from somebody answering the telephone who didn't know what it was all about. When that bell went off you would know there was something unusual occurring.

MR. McDANIEL: I don't believe that scheme would work so well. What it would amount to in one way would be a party line setup, with both parties on the same telephone, one bell ringing for one party and one for the others. I think by the time we got those things all done it might pay for the people running the boiler room to put in a telephone and use it for nothing except getting those calls.

MR. LATHROP: We have one that doesn't work out. He answers the one he is used to answering and then he finds out that he should have answered the other. We put one of the large gongs on this telephone and I thought while they are putting in that relay why not put in one of the selective telephone relays and save that expense. Where you have the siren mounted on top of a building you may run a separate control circuit so that you may operate that circuit from your air raid control point or you may depend on a man operating the siren manually. Since it is necessary, why not save expense of the control circuit and the additional expense of ringer and relay would be minor compared with the cost of an additional telephone or something of that nature.

MR. Mc DANIEL: There might be something to that. The way our system is set up I don't believe the additional frequency would fit in be-

cause we don't have the additional frequency available. All of our ringing here is approximately 20 cycles.

MR. LATHROP: We have 133 cycles, 20 cycles and 1000 cycles. It is easy enough to get that ringing current to a point that is necessary. It involves tying up that one pair.

MR. McDANIEL: We do have 133 cycles and 1000 cycles in the toll office.

MR. LATHROP: The relays are negligible in price and are already standard equipment for telephone companies in toll work.

MR. McDANIEL: There might be some possibility of doing that but I think the difficulties we would get into in modifying the equipment would sort of bluff us on doing something of that sort.

MR. LATHROP: In several cases they get a full time talking circuit to a certain point and apply voltage to the line. That is all right until some of the boys at the central office test the voltage, get test voltage and off goes the alarm circuit. With 133 cycles very seldom that alarm would be triggered accidentally. Of course, 1000 cycles is impracticable because that requires a vacuum tube array at the subscriber's end, but the 133 cycle doesn't require that.

MR. JONES: This is a little out of your department, but has the civilian defense program given any thought to the use of radio to supplimont telephone communication where a cable might be blown open or overloaded?

MR. McDANIEL: Their reaction has been very enthusiastic and favorable and anxious to go right away. In our two larger cities, St. Louis and Kansas City, they are going right after that, and the recent release of this War Emergency Radio Service gives them the opportunity to get into that. St. Louis is having a big meeting Thursday night to try to enlist 100 or so amateurs in that program, and Kansas City, I understand, is well along toward getting something actually under way on that.

MR. JONES: How is that to be worked - in connection with the police department, or the civilian defense office, or who will handle it?

MR. McDANIEL: As I understand it, it would be worked entirely by the civilian defense office. In each community there would be a radio aide who would represent the civilian defense office and be responsible for the operation of all the radio sets. You probably know these are small sets, about 25 watt transmitters, and I believe the frequencies start around 112,000 kilocycles.

MR. WUNDERLICH: Where do they get these sets?

MR. McDANIEL: Some of them think they can dig them up out of parts they have around.

MR. WUNDERLICH: Isn't that a rather loose program?

MR. JONES: It is necessary that this auxiliary system be sponsored by some governmental agency?

MR. McDANIEL: As I understood it, it was by the civilian defense organization itself, which is in most cases a governmental organization. It is my understanding that it is a civilian defense organization set up by the city government that would handle the licensing of the apparatus and have full possession of the sets. The mayor is usually the chairman or coordinator, and he has various representatives working on it. As I understand it, they don't have to be under the jurisdiction of the police radio system. I believe the O.C.D. has put out one pamphlet which is more or less an announcement of the service. I believe they are going to prepare a handbook which isn't ready yet. That will probably give a more complete plan covering it.

MR. MAESHNER: Out in the middle west has any thought been given to the fact that when it is actually needed your radio will probably be off the air? Out in the west when there is a "yellow", you go off the air.

MR. LATHROP: Section 15 says that equipment can be used.

MR. MAESHNER: When you get out to the point where the army has control, the army tells the F.C.C. When a "yellow" comes along, in fact we go on very limited operation after the yellow, and generally a radio silencing goes out. We can't put the yellow or blue in plain language. I was talking to the radio inspector the other day, and undoubtedly this same thing will cover the W. E. R. S. If you are going to depend on this, and the army says you aren't going to use it, then you aren't. When you get into a combat area, the F.C .C. takes a back seat and the army tells the F.C.C. what to do.

MR. LATHROP: Do you think the Commission would have gone forward and stated so explicitly if they hadn't had the approval of the army?

MR. MAESHNER: General DeWitt apparently doesn't consult anybody. He has a certain area to protect and he doesn't consult with many people as to how or when. There is a little confusion and divided authority, but I venture to say that if on the west coast he says radio isn't going to be used, you aren't going to use it. It really is serious if you interfere or follow the wrong guidance as to whether you can use your equipment or not, and apparently the army is the one that says where and when.

MR. McDANIEL: That is true. The army is the real authority. The F.C.C. just makes it official. They will countersign it, but the principal authority is the army.

MR. BRYANT: This is one thing we are interested in, what police radio can do during blackouts.

MR. McDANIEL: I believe that it varies in different areas. The point that he has just made is that they feel that if General DeWitt says all radios go off the air, they all go off, including the police, W.E.R.S., everybody.

MR. GENC: That is not true, definitely. Let me qualify that. I was a delegate to this meeting with the Interceptor Command to protest to Restricted Order No. 1. It still applies to all of you fellows in the central west. This was ironed out very definitely for everybody concerned, and we all operate under the same conditions. That is incorporated in Signal Order No. 8-2. The setup is this: I don't want to contradict

California. I believe this will be general when the changes are made. I have some evidence in this room because some of the gentlemen attended the conferences. I thought the APCC missed the boat on that. When I got down to the Interceptor Command I found that the first Interceptor Command didn't know of Restricted Order No. 1 until eight days after we were supposed to have complied. Frank J. Johnson flew a plane to Washington and they received us with open arms. We were delegated with a pretty forceful situation in the state of New York and Pennsylvania and some from Ohio. Here is what happens in this situation. Signal Order No. 8-2 - those things are handed out by the information centers or by the Fighter Commands. Very shortly they will be in Chicago. They are already in Albany and Boston. On all frequencies except those left open in restricted Order No. 1, the following regulations must be complied with. First, this is to maintain operation, no call letters can be given. Second, no information of value to the enemy. Third, no transmission in excess of 30 seconds. Four, frequency of transmission shall not be more frequent than every two minutes. That includes two-way cars, too. Five, anything that has to do with military action must be coded. This is all in paragraph 5a of Order No. 8-2. In places where a pattern of confusion can be set up, where a lot of stations operate on a similar or exact frequency and diversity of power, say 1500 and 250 watt stations, they must all reduce power to 100 watts so that the pattern of confusion is set us whereby field strength is pretty similar. This Order 8-2 is a rather tricky arrangement, along with the sheet from the C.A.R.D. officer, of the Fighter Command. In the order it says if you can comply with 5a you can operate, but you must furnish proof to the Fighter Command that you can operate under those conditions: no suburban towns can be mentioned; you can't give any addresses; you can't name any important streets; you can't give any complaints the nature of which would have to do with enemy action. We have done all of that, formulated a code and taken it to the Fighter Command. Don't confuse that with the aviation group. They are the boss, definitely. When all these things are complied with, the reduction of power and these things I mentioned, you are entitled to operate during an alert. This alert is given by the key broadcast station that operates 24 hours a day, which you have to moniter. You have the exact wording of all their records they play, and when they go off the air you immediately go to alert operations. That may happen an hour or an hour and a half before the yellow. Unless you comply with those regulations, no radio station can operate until the first bomb is dropped in the immediate vicinity of the radio station. After the first incident happens in the service area of the transmitter, then you can start normal operation.

QUESTION: Have you worked out a code system?

MR. GENO: It is a confidential order in our department. I would be glad to explain the principles of it. We just numbered 1921 streets consecutively. We used a code word involving ten digits and five versions of that word; in none of the five do the letters of the word appear consecutively. The streets are handled by numbers, the addresses by numbers, and of course, code words for all defense plants, bridges, and points that might be enemy objectives.

MR. BRYANT: How do you keep the code secret?

MR. GENO: The books are assigned to the captains, and the minute they are assigned they are responsible for them. The order is pretty forceful. The loss of one of those books would be rather serious. They are handled substantially the same as their summons book. They are turned in each night and accounted for by the desk sergeant and returned in the morn-

ing. Each book has a serial number on it.

MR. HICKS: What is this key station?

MR. GENO: The key stations never go off the air and they have an alternate. They have been assigned in all activated areas.

MR. HICKS: I understand that KOSO is designated in Oklahoma.

MR. GENO: Of course, they haven't got out this far yet. All the west coast is activated. Signal Order 8-2 is a modification of Restricted Order No. 1. We spent 4 days with the Interceptor Command in New York City and that was immediately after issuance of Restricted Order No. 1. This code system we have set up was submitted. Of course, the Interceptor Command is the military in its completeness, it is the F.C.C., Coast Guard, Navy, Army, everything you can think of. That is the distribution point. The fellow in the controller's booth represents a four star general. The duty of the F.C.C. is purely to notify key stations of the alert. The actual alert records for these key stations are already made up. Three weeks ago the announcer down in New York put on the actual alert record and they blacked out everything east of Utica.

MR. MAESHNER: How recently was this order issued? I talked to the F.C.C. about a week ago and they had no information on that.

MR. GENO: The only fellow that would know anything about it would be the one at your information center on the West Coast. When they come down to see the officer it is his job to designate key stations, alternate key stations, what they have to do, and what they have to comply with in the different areas. They can make a lot of provises, providing the department cooperates with them. There are certain things that have to do with the technical operation. Some stations that operate with 250 watts have a terrific ground strength. They assure themselves that the field strength pattern will be a pattern of confusion. Some have to go to 50 watts and some to 100 watts, and in no case in excess of 100 watts.

QUESTION: What about state police? If they can create a pattern of confusion are they allowed to operate?

MR. GENO: Unfortunately, we haven't even got one in New York State.

MR. LATHROP: In case you have three stations within fifty miles of each other, one a kilowatt job and the other two 250 watts, would the 250 watts have to go to 100?

MR. GENO: They all have to go to 100. That is, according to the set up in that particular area. If the radio inspector in his survey shows that the one kilowatt station is down in field strength, it might not be necessary. What they want is field strength so that a pattern of confusion is created.

MR. LATHROP: In the case of Milwaukee, if they drop to 100 watts they might as well go off the air.

MR. GENO: No, that isn't right. The minute one signal becomes predominant it is a possibility for homing purposes. They begin to

concentrate on the one that drowns them out, and they might be able to locate it. These gentlemen told us that the navigators on these bombers that would do the first primary raids of a nuisance value would be men that have lived in our cities for at least two years previous to their service with the Japanese, or they would know our localities from a military angle better than we do. Therefore, they allow no streets to be mentioned. "High explosive bomb at a certain place" would be of definite value. Their one object is to eliminate anything of use, that is, anything that would cooperate with the enemy. Order No. 1 was tossed in the ring to be kicked out again. In fact, that happened two days later. Fundamentally, it is not too complicated when they tell you to go off the air with a police radio system.

QUESTION: How does the alert procedure start?

MR. GENO: This information center, by the way, is everything anybody could imagine. They have left nothing undone. You have perhaps seen the movies where they move positions of all these different things on the map. That is exactly what the information system does. In the United States it has been glorified. They are activated 24 hours a day. No civilian airplane leaves the airport until somebody in that office takes it under his wing. Any unit in the sea or in the air, unless it is claimed by the Interceptor Command, will be claimed as hostile. Anything not claimed will be shot down. As I said, it represents the entire military setup of the United States. The command is all centered from that point and all goes out from there. I saw the one at New York City and at Buffalo, and it is really a major project. They are not going to equip the United States over night, but they really do a swell job. I couldn't say too much for all the officers we came in contact with. They received us well, listened to our arguments; fortunately, they are an intelligent bunch of boys.

MR. MALSHNER: I don't understand Signal Order No. 8-2.

MR. GENO: That is issued by the Interceptor Commander as the different areas are activated. I saw the one in Boston before we got ours. I saw the one in New York before Boston got theirs. Ours was activated about five weeks after Boston. That means when the information center actually controls that area.

MR. MALSHNER: We have ten seconds operation every three minutes, but we have no elaborate codes. The only thing we code is yellow and blue messages, because certain key people depend on that. The first order that came out said go off the air. Then there were several modifications since then, but we have very limited operation possible under blackout conditions when the key stations are off.

MR. GENO: We thought we were being real good when we recommended to the first Interceptor office that we do not exceed 8 seconds, but they said 30 seconds, because it takes that long to do anything with a homing signal. They said 30 seconds every two minutes, definitely. Unfortunately, I didn't bring a copy of that order with me. It says "Signal Order No. 8-2, First Fighter Command Information Center, Chicago, Ill." or whatever it may be. They have the power at any time to say whether or not your service might be giving some information.

MR. MALSHNER: Dropping power refers to during an alert?

MR. GENO: That is right. Buffalo is located 500 miles from the coast, so it might be ordered immediately to operate under an alert condition and not ever have an army yellow, so the important time is the time when it is possible for the planes to home or obtain bearings on the station. After the first incident happens we take it for granted that the purpose has been accomplished.

MR. MAESHNER: You can resume normal operation after the first bomb is dropped?

MR. GENO: Yes, that is the way it is. After the first incident happens in the service area.

MR. MAESHNER: That is what we haven't been able to get a ruling on. They must have some ideas of their own. They are probably not more stringent.

MR. GENO: As I understand it, Signal Order 8-2 is for the United States. When you see one of these information centers you can see why it takes a little time.

MR. BRYANT: I would like to ask about the reduction of power to 100 watts.

MR. GENO: That is entirely up to the regional control officers - to create a pattern of confusion. I didn't say definitely what the power would be; 100 watts is the maximum. Niagara has to reduce to 50, in Rochester it is 100, Jamestown 100. That won't include stations on 2422 about 500 miles apart. That would create a pattern, he wouldn't know which one was on the air. We have been through this, and of course the west coast has had a lot more scares than we have. They are quite worried down around Boston, so I believe they have been pretty thorough with this setup. Figure it out. In two minutes you can receive incoming calls in case of an alert where you have to get your police and air raid wardens going, and if they give you 30 seconds on the air and a good dispatcher and good field strength, you could put out about five calls; then by the time you accumulate the next bunch you can go back on the air again. It is much better than not having any radio on the air at all.

MR. YEAGER: You didn't say anything about putting in test calls. I happen to be very well acquainted with the same thing. I am similarly located in Endicott, just below. We are working out of the First Fighter Command. We got a letter and a copy of No. 8-2 and we wrote the inspector and he said we would come from New York. Do you have to monitor the station and send in a card?

MR. GENO: Yes, formerly a telegram. The key station gives the test alert from the Interceptor Command office. I have seen it all happen. The radio inspector who is detailed to the Interceptor Command office grabs a telephone and says "Buffalo test - yellow" and they send out in the Buffalo area immediately an alert. This record is grabbed and put on in the key stations. They tell everybody not to use their telephones and that they are going off the air, "keep tuned to this station for further information." Why take broadcast stations off the air? They say keep tuned to this station. At the snap of a finger the Fighter Command can put them back on the air again. Immediately upon receipt of this, the record is put on, the tone goes on for 30 seconds, and if it is an actual

alert you go to the prescribed procedure, if it is a test you send a telegram collect - or now you fill out a card and send it back. We got seven of them in 24 hours at first, but now there aren't so many. The station is monitored in a continuous 24-hour watch. Our friend from Boston got around the situation by a circuit whereby the 1000-cycle alarm turns the receiver on. That works out very well. This will eventually get to everybody here, so it would be a good idea to keep up on it.

MR. LATHROP: Are there any changes on the restrictions on tower lighting?

MR. GENO: The tower lighting restrictions in 8-2 say that tower lights shall be extinguished during all alert operations, if after the time for the tower lights to be on. If the broadcast station goes off the air and you get the tone, douse the lights.

MR. COOPER: Before the alert it is all right to put the messages in regular form?

MR. GENO: They say in that order, as I quoted, after the first bomb is dropped, yes, but when you talk to the signal officer there is a fellow there in charge --

MR. COOPER: You operate normally except during the alert?

MR. GENO: If you lived up entirely to instructions you can go back to normal operation immediately after the first bomb drops, but not necessarily because there might be other flights on the way in.

MR. McDANIEL: I think that is a very fine explanation.

MR. GENO: In this initial issue of the order a lot of police radio stations are under the impression that they can operate under an alert. It would be a good time to make it plain that according to paragraph 5a, you go off the air until you prove to the Fighter Command that you can eliminate the possibility of the enemy obtaining any information, including a code. A lot of them are under the impression that they can go on the air. If they put out a call with the name of a street, they will get a call from the F.C.C. in the Fighter Command office, and they will go off the air.

MR. MAESHNER: I am interested in the War Emergency Radio Service.

MR. McDANIEL: There are several of us had it dropped in our laps and all we know so far is what we have read in the papers.

MR. GENO: The situation in the W.E.R.S., in the first place, very few can get 15 watts. Who is going to be able to maintain frequency tolerences? You can't buy auxiliary power supplys, and batteries are a major problem. Where are all these things going to come from? I have enough equipment to build 25 watt amateur sets, but I can't hang them on a lamp post some place and plug them into a tree. You build up a set on batteries and all of a sudden the batteries fall out.

MR. McDANIEL: In St. Louis we have probably a couple of thousand Boy Scouts we are going to depend on for carrying messages, and if and when the W.E.R.S. works we will use it and if not we will do the best we can.

As far as I am concerned, I am leaving it up to the radio aides to fight that out.

MR. GENO: Who are the radio aides? Are they communications men or picked from the ranks of amateurs?

MR. McDANIEL: They can be either commercial radio men or amateurs.

MR. BRYANT: They are having a big meeting in Omaha. Is police radio going to be represented there?

MR. McDANIEL: I don't know. The operators of the sets have to have some form of special authorization, as I understand it.

MR. RAUB: My understanding is that he can hold any other than a restricted radiotelephone permit.

MR. McDANIEL: That may be right. If no one has any other questions I will turn the meeting back to the President.

Announcements.

Adjournment.

TUESDAY MORNING - July 28, 1942

The third session of the Ninth Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wilt at 10:25 a.m. on Tuesday.

MR. WILT: Does anybody have anything to bring up before we start the program? If not, we are scheduled for an address by Mr. William J. Davis, Assistant Manager of the A.P..& I.B.

MR. DAVIS: Mr. Chairman, members of APCO, this material that we are to present to you this morning was originally scheduled for presentation by our secretary and manager, Mr. E. L. Rickards. Unfortunately, he couldn't be here because of a previous engagement. Therefore, he sent me down to take up your time. I have a few notes here with reference to the material we would like to call to your attention. My subject, of course, is a proposed plan for coordinating the activities of the APCO in the field of radio tracings of stolen automobiles with the activities of the A.P. & I.B. and its affiliated bureaus.

First of all, I want to emphasize that it is not my purpose to try to tell you gentlemen or police departments how to trace or identify cars. In other words, in any city police department there is a separate theft bureau or separate automobile detail which has had considerable experience, and this detail is in the habit of handling their work in a certain fashion. They pick up an automobile today, for example, concerning which there is some question as to ownership. They may wire our bureau, telephone us, or they may use their regular radio communication system. It is not my purpose to suggest, recommend, or tell your police department what method should be used for tracing that car, but if the radio system is used for tracing the car, then we have certain suggestions which should be considered merely as suggestions and not as any form of

final control or method.

For the benefit of some of you men here who may not know anything about our organization and who may wonder what we do and why we do it, let me explain briefly the functions of the bureau of the A.P.I. Some 26 years ago, a group of insurance companies writing fire insurance on automobiles organized a theft bureau for the purpose of keeping a central record of all cars stolen throughout the country and insured in member companies or reported to us by law enforcement officers. Since that time this bureau has grown until we cover the entire country, Canada, and Mexico. The United States of America is divided into five geographical areas, each area under direct supervision and control of a separate bureau. For example, the eastern area is under the direction and control of an organization known as the Automobile Underwriters Detective Bureau. If I may use the blackboard I will just outline this control system. The eastern bureau, as I say, is the A.U.D.B. The western division is our bureau, the Automobile Protective and Information Bureau. The southern bureau is also known as the A.U.D.B. Dallas, Texas, is under the supervision and control of the National Automobile Theft Bureau, and the western area is also the N.A.T.B. In other words, we have local autonomy, but we have a coordinating bureau having offices in New York known as the National Automobile Theft Bureau, the same name as held by the other two bureaus. The national coordinating bureau in New York is in effect a coordinating bureau and has jurisdiction over matters of national importance, but if a car is picked up in the middle west, in A.P. & I.B. territory, that inquiry is referred to the A.P. & I.B., located in Chicago. That is enough of that particular organization setup. I will tell you a little more about it in a few minutes.

These bureaus act as a central clearing house for theft information on cars stolen anywhere in the country. If a car is stolen in California it is reported to the N.A.T.B. in San Francisco. Immediately the N.A.T.B. there sends out an alarm card or report card to all the other bureaus, so if the car is picked up in Chicago and the police department calls our Chicago office, we have a report of that car, stolen in California, under this territory supervision. With this central reporting system and central records on stolen cars we are in a position to be of material assistance to police departments in the rapid identification of cars brought to their attention.

In addition to these theft activities our bureau also conducts investigations in suspicious automobile fire losses, incendiary fire losses. I might digress for just a minute and say that at the present time we are having a very serious automobile theft and tire theft problem. Our thefts increased in the past three months, our tire losses have just about trebled throughout the country. If that continues, many cars will be put out of business and jacked up because the owners don't have the necessary rubber to operate them. It becomes more important to identify the car and identify the various parts on a car which can be identified, which carry a serial number or identifying component part number.

One of our greatest difficulties with radio tracings, and this isn't to be construed as an criticism, has been the fact that all too often on a radio tracing there has been a tendency at some place along the line to drop it and never completely clear the message. I am not a radio engineer, and I don't know why that happens or how. I might say the same thing happens on wires or telephone messages. In other words, the car is traced to a certain extent and then drops out of sight. We lose track of

the chain of title and have to start over gain. All too often a radio message will be sent from a certain station to another station and the car will be found to be sold to a certain dealership, from there to an owner, and the owner can't be located because he is on vacation or has moved and left no information on a forwarding address, and that particular tracing is never completed. The officer over here in Oak Park, Illinois, who is holding this particular car has a lot of work to do and in the press of business forgets that he has towed that particular automobile to Joe Blow's garage. The car stays there for two or three or four months. Finally, the officer, through a check up, discovers the car, makes further inquiries and finds out it has been stolen, probably two or three days before he picked up the car. Therefore, I solicit your cooperation, that on car tracings not completed within a reasonable time a very definite and active effort be made to clear them in some fashion.

Let me call to your attention a plan of coordination that was adopted by APCO some time ago and as I recall was referred to the I.A.C.P. I am not entirely familiar with what action was taken with this proposed plan, but as I say, I would like to call it to your attention and see what you think about it. This plan is called "A System of Coordinating Automobile Checking Procedures". Wherever police communication men have gathered there has been considered the necessity for providing standard systems and methods of doing business in order that the networks which we operate may lose the stigma of myriad individual organizations and be recognized actually as individual units of a huge national system of emergency communications. In keeping with this thought and to the end that another step might be taken toward the development of such standards of operation, APCO began several months ago and worked out the phases of a problem which has to do with one of the heaviest items of traffic on any of our nets - that of motor vehicle information obtained through national automobile information bureaus.

In collaboration with officials of the A.P. & I.B. at Chicago, and through these officials with executives of all the information organizations at New York, a plan has been devised which it is believed will be both sound and workable, and which will serve to inaugurate the establishment of a definite control in the matter of requesting checks or traces on motor vehicles through the national information centers, namely, these various branch offices. It must be born in mind that the outline and data presented are purely tentative, and I can't emphasize that too much. It should be realized that in the formation of the structure here it was necessary that all factors be considered from the police and communications standpoint, and it has been the consensus that it represents the best possibility for efficiency yet devised in this regard. It is not my purpose to tell you gentlemen, or any police department, how to trace cars. That is not our purpose. It will readily be seen that it is the purpose of this program to accomplish several highly important points, as follows:

(1) Establishing of definite stations of responsibility for the proper orgination of trace cards, for all or any motor vehicle investigations occurring within any state.

(2) Removing the possibility of repetitions of requests for trace of automobile information through such establishment of responsibility.

(3) Providing standard card forms for originating such trace requests, and additional standard card forms for proper cancellation of such requests when data desired has been received.

(4) Rendering more uniform throughout the nation the methods of practice with regard to tracing out the information desired regarding any item of motor vehicle equipment, irrespective of the state in which such equipment may be seized or held.

(5) Providing certain procedures which shall be complied with in all normal cases in which a motor vehicle may come into the hands of the law enforcement officials of any state with respect to holding cars until the proper status of said vehicle shall have been properly established.

(6) Further development of the active participation in the work of locating and establishing the true status of such motor vehicles as may now be at large in the country in the hands of illegal owners or operators.

(7) Thus insuring the utmost in efficiency of all forces concerned in this work which annually involves the theft, recovery, or tracing of automobile property running into untold millions of dollars.

Since the article was written this proposal has been further modified. However, I will bring to your attention the proposal as it was written:

(1) That in every state of the United States, there shall be designated at least one responsible department as the State Control Unit in this plan. There may be, in certain instances, more than one such responsible department, as conditions and circumstances demand. In other words, in State "A" you may designate one particular station as your station of responsibility for originating trace information. If it is considered advisable you may designate other stations of responsibility, giving them jurisdiction over certain territory. That is a matter, as I say, that has to be worked out by individual states.

(2) That each such responsible department shall be supplied with sufficient supplies of both the request for trace and the cancellation of trace standard card forms, which shall be of the postage prepaid type, for use in the work of establishing this service. We don't feel any cost should be born by individual police departments or radio centers, other than the time spent by the radio department.

(3) That the states of the nation shall be divided into five districts, or regions, to correspond with the same number of divisions under the present establishment of the organizations involved, i.e., the National Auto Theft Bureau, the Automobile Protective & Information Bureau, the Automotive Underwriters Detective Bureau. The headquarters of the various divisions are New York, Atlanta, Chicago, Dallas, Texas, and San Francisco. Thus if a car is picked up by the city police of Flint, Michigan, and it is desired that a trace for registration be made through the A.P. & I.B. in Chicago, who has jurisdiction, the Flint department will forward the information that the check is desired to the Michigan State Police at East Lansing, which we will assume has been designated the station of original responsibility, where a proper record of the check shall be made and the request for trace card will be originated. When the request card is received at the Chicago office of the A.P. & I.B., the necessary search will be carried out, and the reply will go to the Flint department direct, with a copy of the information to the East Lansing station to clear their files.

By definitely establishing the Michigan State Police at East Lansing as the point of responsibility in the state of Michigan, we have accomplished the first point of our program. Through the prescribing and furnishing of standard card forms and providing the procedure to be used by all responsible departments, the two next succeeding items of the program will have been completed. Through a thorough understanding upon the part of all police and other law enforcement departments of the reasons for such a plan, and through the enlistment of their active cooperation and participation in the program, we shall have paved the way for a much more efficient handling of the subject of tracing cars and other motor vehicle equipment throughout the nation. All of which tends to bring the point of complete national standardization on these matters to a basis of sound operation for the best interests of all concerned.

That is the program which was originally worked out by a committee of APCO. As you will note in that suggested plan, there was a recommendation that requests for information be forwarded to your bureau, apparently immediately upon receipt of such information from the inquiring police department. There are several objections to an immediate forwarding of such information. In the first place, there are many cars identified, as you gentlemen know, within a very few hours after the car has been picked up, through a regular radio tracing procedure, the procedure you are now using. I feel that it is unnecessary, inefficient, and unwise to refer all of those inquiries to these particular bureaus, because, in the first place, that report of theft may not be in the bureau, and you are already doing a very fine and efficient job in identifying the cars through your present procedure. But suppose you are unable to complete your tracing, through radio, of the car picked up by the Podunk, Illinois, Police Department. Suppose after two or three days you still haven't identified the car, you don't know the individual to whom it belongs. Those are the cases we suggest should be referred to the various branch offices. Why? Because we not not only have a report of theft in our files ready for replying to the individual department, yourself, but we may be able through our various police or secretary of state connections to expedite or hurry along that particular tracing. I would, therefore, propose as a tentative proposition that a certain lapse of time be allowed between the receipt of the original request for radio tracing and a reference of that request to our bureau. Let us say then that we allow 48 or 72 hours between the time you first receive the request for tracing and the time that request is referred to our bureau. In that 48 or 72 hours you will have taken the usual normal steps by radio to complete your tracing. If in that time the car has not been identified, I propose tentatively that such request be referred to these organizations and the tracing be unloaded on to them.

I appreciate also that there are a number of other problems presented by any attempt to set up a national or uniform system of tracing cars. For that reason I suggest, I am a little bit at a loss for words, I don't want you to think I am trying to tell you what to do, I suggest if you consider it advisable you may wish to appoint some committee or group to study the matter and possibly go over some of the things said today and give it further thought, possibly reporting back to the association. There are a number of things that have to be worked out. There are a number of "bugs" in any attempt to set up a national tracing program. You are radio technicians, engineers, you are experts in your field. You forsee problems that we know nothing about. We are automobile theft men; you are communication men. We know how to trace cars by wire, telephone, and the usual communication methods. We know where to go for information on the Chevrolet or Oldsmobile. We maintain a branch office in Detroit that does nothing else but contact motor car manufacturers, and at this particular time

that contact is all the more important because motor car manufacturers are devoting all their time to the war effort, and often it is very difficult to get information unless you know where to go, the particular man, for example, in charge of that department.

With those remarks I have nothing else to bring to your attention. However, I do wish to express my appreciation to the Lieutenant, to the officers, and to you gentlemen for your very kind attention. I also wish to bring to your attention that I am in Room 1203, and in case you are up that way we would be very glad to have you stop in.

MR. MILT: Next on your program is an address by a member of the Federal Bureau of Investigation, St. Louis office, Mr. A. G. Gilliland.

MR. GILLILAND: I suppose to be entirely in the right crowd you might consider the remarks I have to make as a special communication from WFBX, the FBI station in Washington, D. C. As you probably know, those are our call letters. I was glad that Mr. Norris, my boss, was too busy to come over this morning and let me come instead. First of all, you have a swell air-conditioned room, and our office is extremely hot.

In the Federal Bureau of Investigation we have found that communications is often the measure of success in almost any case we might work on, and I am not saying that just because you are communications officers. I am not a radio technician or any type of a communications expert. I have seen it from the practical standpoint, from the way we use it in our 56 field offices in the United States and its territorial possessions.

I recall that it was on September 6, 1939, when the President of the United States issued a directive in which he designated the Federal Bureau of Investigation to be the central agency of the United States for the conducting of investigations relating to espionage, sabotage, and neutrality violations. I recall that on the same date he issued a second directive in which he called upon all police agencies in the United States to assist the FBI in this all important national defense work.

It was on December 4, 1903, in Fremont, Ohio, that a baby boy was born. He was given the name of Kurt Fred Ludwig. In 1909, his parents took him to Germany. He came back to the United States in 1925, but again went to Germany in 1933, and returned the last time to the United States in 1940. Having been born in these United States of America, he had the right to be an American citizen and he was. He posed as a salesman of ornamental electrical goods, but he was in fact a full-time spy for the German government. He busied himself collecting information concerning military camps, airports, etc., in the United States. He established one type of communication with Germany which was known as the "mail drop". He mailed letters to South America, at which place the outside envelope was torn off, and the inside envelope, already addressed, was dropped in the mail again and reached Heinrich Himmler. He soon realized that the British would intercept these letters, so he started carrying with him little white pills and a small bundle of toothpicks. It was easy for him to take one of these small white pills, dissolve it in water, dip a toothpick in it, and on the back of the very innocent letter to relatives in Germany he wrote in secret ink. But he realized the FBI and the British might catch on to that, so he wanted to find some other means of communication. Of course, men and women went back and forth between Europe and the United States by various routes, and they often carried information.

Ludwig was walking down the street in New York City one day with a man by the name of VanderOsten. He was the real head of the spy ring of which Ludwig was a part. One of those New York taxicabs ran into VanderOsten and killed him. Ludwig reached down, grabbed his brief case and disappeared. He didn't know he was being followed. The surveillance didn't need to be such a technical surveillance any more, so it was centered on Ludwig. He had his problems of communication. At the same time, the FBI had their problems, too. Ludwig finally started a trip across the United States. It was about a year ago this time that I recall our radio technician in our local office was reading in the teletype message that came in so suddenly from Washington, that we must get ready to be on the reception committee as Ludwig crossed from Illinois to Missouri. W9AC, a member of our St. Louis office, immediately rigged up a temporary communications system with a transmitter in his car and a small receiver in our office. He took his car and stationed himself at the McArthur bridge. It wasn't long until we heard the words coming over this receiver: "Subject's car is now crossing the Douglas McArthur bridge". We needed to keep in touch with our agents. The first thing we did was grab the telephone, call KGPE, and ask them to have 271, 272, and 273 return to the office at once. These agents came in immediately because they were stationed at the other bridges over which the subject could have entered the state. We immediately dispatched other cars in other directions. With that communications system working we were able to keep in touch with our agents and know where they were at all times. It wasn't long until they were outside the city limits. We found we needed the services of the Missouri Highway Patrol radio system. We called by telephone and gave them the information; it was immediately put on the air. Gentlemen, to us that is real cooperation. It is cooperation that makes our job so much easier.

Ludwig was driving a car that could go 90 or 95 miles an hour, and he did drive that way part of the time. After he left Fort Leonard Wood, where he had gone in to take a few pictures, we lost him temporarily. We didn't dare get close enough to keep him in sight all of the time. After we lost him our men immediately called in and explained the direction of travel. We called Captain Howard, at the Missouri State Highway Patrol station at Kirkwood, and asked for an unusual message to be broadcast to all the Missouri State Highway Patrol cars: to be on the lookout for a car of the following description; do not molest, but report direction of travel and location at the time seen. It wasn't more than thirty minutes until the report came back that the car was parked in a certain block in Lebanon, Missouri. We then radioed our agents, they closed in on the subject and continued from there. He went over into Kansas, where our Kansas City agents took over; into Colorado, and finally, late in August, 1941, our agents closed in on Ludwig near Seattle and placed him under arrest. Why all that surveillance, all that work and trouble? The reason was we have found many of these espionage and sabotage agents are very productive sources of information, once they are placed under surveillance. So the Ludwig case was handled by having adequate facilities available. Perhaps we used some of your facilities. We don't always say "This is an espionage case. Will you put out a call." That isn't necessary. We know you are willing to handle it without a full explanation, and we do appreciate it, because we use it day and night.

There was another spy ring operated in the United States that tried to solve its problems by the installation of a short wave radio station on Long Island. William Siebold, who was handling it for the Gestapo, contacted the Federal Bureau of Investigation. It wasn't long until he contacted AOR, Himmler's station in Germany. During that time we sent some

three hundred messages to Germany and received some two hundred. Many spys in the United States, and 33 in that one ring, brought their messages to Siebold. As you recall, we had a camera and a voice recorder in his office so that each time a spy came in we were able to take his picture. On the wall there was a calendar and on the desk a clock showing the time of day. They were very surprised at the time of the trial to see everything recorded exactly as it happened at the time they visited Siebold. This station was used on behalf of the Gestapo at their request. They gave Siebold $1500 to erect or purchase such a station. We, of course, helped him in doing that and ran the station for him. One of the men now in St. Louis was up there and operated the station for some time. The Gestapo is quite sore at us for leading them astray that way, but I assure you it had to be done.

In the ordinary case of interstate transportation of a stolen automobile, a white slavery case, or something of that sort, in Washington, D. C., Mr. Hoover has a teletype setup by which he can contact all the field offices at the same time. In Washington, D. C., our Washington field office, which handles the work in the District of Columbia, has found considerable use for the radio station located there. WFBX keeps in contact with the agents. Most of the cars are equipped with two-way radio.

We sincerely believe in our communications systems; we trust that we may have the friendly relationship that we have always enjoyed in the past. We hope in some way we can repay you for the great number of favors you have given us. As I said, the Federal Bureau of Investigation is charged with the responsibility of investigating espionage and sabotage cases. As you probably know, the police departments and state highway patrols are assisting in the investigations. We need that help. We need the help of all American citizens. We are still looking for them; we don't think for a moment that all of the spys have been caught, because they haven't. We know that in the past the ones that have been caught and have been sentenced have been placed in that predicament only with the cooperation of the American public and all of the police agencies in the United States, so I know what I am talking about when I say any success we may achieve in this national defense work is not connected with magic or the superhuman, but is the result of the intelligent cooperation of police effort throughout the United States. People bring us complaints that we think there is nothing to, but we can't turn them down. We need your help. It is more important every day that we keep in touch with our agents as they are out in our territory. For that reason, we are probably going to be using your facilities more and more. We appreciate the way you handle our requests. Radio is becoming more and more important to the Federal Bureau of Investigation. The FBI has been employing radio operators for special items of work.

We want you to know you are welcome in our offices. We want you to become better acquainted with us. We want your cooperation the same as we want it of every citizen. It is only with your cooperation, and the cooperation of each citizen, that we can complete this job that the President has assigned to us of making these United States entirely safe for the greatest democracy of the whole world.

(RECESS)

MR. WILT: I was going to have Maurice O'Neil give us a few words, but he is out of the room just now. On the proposition of committees, we don't have a complete committee represented here. I thought we would do this. Several men want to bring up something pertaining to the different committees we have, so I thought I would call up the ones on the committees that are present, and we will have a discussion on them. The first one is the Frequency Allocation Committee. Mr. Walker is the only one here on that committee. Will you come up, please, and take care of any discussion or any problems that any one has under the heading of frequency allocation?

MR. WALKER: I might say that the cause is not defunct. There is a lot of work to be done on this subject. I haven't had the time myself to devote to it. Again Captain Leonard was very active in the field of frequency allocation, and I think everybody will agree that he has probably helped us more than any one individual in obtaining frequencies for police communication.

MR. GRONIER: About a year or so ago I took it upon myself to make a little survey or investigation relative to the intermediate frequencies on which we have to operate. Our problem of interference probably is no worse than it is with most of the others operating in that so-called 2400 Kc band, although we think it is more serious. So after hearing about the complaints for four or five years from all members of my commission, chiefs, and sheriffs, we have a jointly owned and operated system, I took the time and trouble to investigate the occupancy in the intermediate frequency spectrum, feeling that we have reached the saturation point to a certain extent, in that band. It appears as though most all the stations going on the air are going on ultra-high frequencies and I don't blame them. I would, too, but we have a lot of channels there and after spending a day going through the call book I summarized the number of stations that are occupying the bands. Then with an assistant we monitored those various channels over a period of a month's time. At the end of this there were a lot of questions in my mind. Of course, one is why do we have some channels in that spectrum that are listed as government and police, or police and government, the same as all of ours, and are not being occupied? We have other channels that are occupied very, very little. There are others that are completely saturated.

Now I know that in our case our interference problem is so serious that our system is rendered useless in the evening because of interference from Alabama. I intend no reflection on the Alabama boys because we no doubt do the same there, although I have always contended that we should ask the F.C.C., at a later time, for more stringent regulations with reference to radiator systems. But I do feel that some readjustments can be made in this intermediate spectrum that would clear up a lot of our trouble, some of them without a great deal of expense. The big expense in changing frequency is the matter of crystals in cars for receivers. Of course, the main station crystal is an item, but that is only one. I think with some careful consideration and careful thought that the shift can be so small that it will come in the scope of the I.F. stages.

I compiled all this information in a letter to Bob Batts, chairman of the committee. It so happened that I mailed the letter on December 6, and I can see why it wasn't answered right away. I would like to see that followed up by the next frequency allocation committee. I am mindful of the fact that it is our duty to conserve during this period of emergency,

not add any new equipment or make any serious changes that are not necessary. On the other hand, we are charged with the responsibility of operating an emergency communication system that should be more efficient than at any other time in the history of our organization. If we can make some minor changes to better that, which I think can be done, it should be. A lot of us can't junk our intermediate equipment and go to UHF.

MR. WALKER: Do I understand you to mean that you would suggest we merely move the resonant frequency and shift it maybe ten kilocycles or something like that?

MR. GRONIER: This survey revealed that in some bands there were as high as 102 stations operating, and of that 102, some of them are large cities, on the air continuously. On the other hand, certain frequencies had only two stations, small towns, and were hardly being used. I think there are three channels that weren't assigned to any police stations. Two months survey showed that they weren't being occupied at all. In order words, if Wisconsin, for instance, which operates on 2382, and so does Alabama, Texas, Wyoming, and New York, could shift or move down to one of the channels that is occupied a lot less, we wouldn't only help ourselves but we would help the boys in Alabama and New York, and here these other channels are lying idle, as far as I can see. I wish I had that; it was about a 4-page question.

MR. WALKER: You received no answer?

MR. GRONIER: No. I am not criticising Bob, because receiving it on December 8 it could have easily been neglected. I wish something could be done on it. I think there is a possibility of clearing up a bad situation with very little expense. I realize when these were established the ultra-high frequencies weren't developed, and they could see thousands of stations coming on those channels. I think they are going to decrease now. If I were putting in a system today, I wouldn't put in intermediate.

MR. WALKER: I think at the present time, with the marked trend to UHF, that the total abandonment of intermediate channels should be studied by both this organization and the F.C.C., with the one thought in mind of shifting or re-allocating the various municipalities and states to new channels which are not so occupied. However, that raises the question, during the present emergency, of purchasing new crystals. Many of the receivers are crystal-controlled and most of the transmitters are, and with the various new orders out concerning the obtaining of crystals, I question whether we could immediately make the shift. However, that is minor. The major thing is to obtain coverage and communication.

MR. LATHROP: Relative to those frequency allocations, when the Commission originally drew up those allocations they were worried more about adjacent channel interference between stations. For instance, in an area you get a certain frequency regardless of how many are occupying that channel. Therefore, our more populated areas have a lot of stations jammed on those points. With the present development of the art, it is possible to operate stations in adjacent areas on adjacent channels. We now have receivers in cars with crystal oscillators that don't drift all over and they have selectivity of six kilocycles, so we don't have any more of this cross interference between 2450 and 2458 and 2442. Therefore, I think that the Commission really could reconsider, on the basis of the usage, the idea of loading up one channel with 163 stations and having another channel six or

eight kilocycles removed with only three stations occupying it. They should forget this idea of zoning by areas and get a distribution for an equitable number of stations occupying it.

As I remember it, there are six channels that are Canadian shared, subject to the non-interference between Canadian stations. Two of those channels have no Canadian stations occupying them. Tune in and listen on a 24-hour stretch and the only thing you get is a little static. If those channels are available for mutual use, cannot use be made of them in the United States for police stations? It is easily possible to slip over in the next eight kilocycle channel. It would entail in most stations simply buying an additional crystal for the transmitter. In many cases the crystal could be sent back and if the change was to be a higher frequency it could be ground down. Most of us have a spare crystal and the change could be accomplished in that way. I think something should be done along those lines.

I have been to four or five of the meetings and so far the problem has always been from the state police angle. The Frequency Allocations Committee has busied itself mostly with the state police angle and so far they have almost entirely neglected the municipal band. Just before I left, Wareing, of Milwaukee, asked me to make a request that the Frequency Allocations Committee and the body consider the fact that on the Class C group of the ultra-high frequencies there are no provisions of any frequencies on that channel, whereby a large city operating one hundred cars or more and using transmitters with dual crystals can switch from one frequency to another. Ordinarily, if there are 200 kilocycles between one frequency and the next, you may incorporate two crystals in the car and the tank circuits will carry over from one to the other. It happens in the A and B groups you can find groups like that, but in the C Group, the channels are 500 kilocycles or more apart. We need something of that nature to take care of the larger municipalities who are operating 125 cars or more, where a car may be operated by detective squads and patrol squads and the use of two possible calling channels to take care of the information is desired.

I understand the city of Milwaukee is contemplating a hookup that takes in all the suburban area. In other words, there are ten police departments in the Milwaukee area that are taking service from the Milwaukee Police Department. They all propose to put in two-way equipment. In that particular case of those ten suburban departments, it is almost necessary to have two Class C channels to handle their transmissions, in addition to that required by the Milwaukee Police Department proper. Therefore, with the Milwaukee Police Department itself operating over one hundred cars, it is desirable to have two frequencies available so you can take any car and use it on any of the frequencies necessary. In the case of the individual municipality you can give them a separate channel or they can share channels. We need something along those lines.

MR. WALKER: Can we digress just a moment and stick to one or the other? Mr. Gronier brought up the intermediate frequencies, so let's stick to the intermediate channel and go to the ultra-high frequencies possibly later. Mr. Nielsen is here from the F.C.C., and let's get our comments on record. Is there anybody else that has anything on the intermediate channel?

MR. DERBY: We made application to the Commission from Denver for permission to relay within the state of Colorado and it was turned down. T

They said we would have to show that it was impractical to use radiotelegraph. We did send a number of letters out to see what was happening on 2442 from the interference standpoint from Denver or Colorado stations. The only adverse answer we received was from one Texas town to the effect that in their city we didn't bother them, but out in the county we did. They were primarily a municipal station, but gave county service. In towns in Colorado, you take a town of 10,000 people - I don't know what they mean by feasibility of using telegraph. It is not feasible at all from an economic standpoint. They won't hire a telegraph operator. They won't even hire a radio operator. It is not economically feasible. Is that what they mean by feasibility, or do they mean from the technical practicability of the idea? Do they mean you have to use telegraph if it is technically feasible?

MR. NIELSON: I came here primarily to listen, not talk. On that matter of these intermediate frequencies, we are studying that problem at the present time. One of the boys is working on it at the present time, and apparently what this gentleman from Wisconsin said is correct. There is certain congestion on certain frequencies and not so much on others. That has probably come about with the use of ultra-high frequencies. We are studying that problem now and we hope to have the solution in the near future. In the matter of getting frequencies, I don't know what we are going to do on that. We are getting bands continuously for the military, and apparently they have very definite need for all the frequencies they can get. We don't like to make any changes in frequency assignments because of war conditions, but we would like to make plans for some frequency allocation plan after the war. How far we can go before the war is over, I don't know.

On this other gentleman's question on the telephone relay, obviously that is not technically impossible. Usually, because of the very limited number of frequencies, which you can all appreciate, we have kept radiotelephone repeaters off the police frequencies. The Commission usually considers that anything that could be done by wire circuit would preferably be done by wire circuits, rather than add that congestion on the frequencies, and there are altogether too few frequencies now.

MR. WALKER: You mean you would advocate the use of land wire communications?

MR. NIELSON: That is the trend now, to put on wire lines rather than tie up frequencies when we have such a limited number of frequencies.

MR. DERBY: In this particular case, the state of Colorado is 350 to 400 miles long and 350 to 400 miles wide. They have allowed six or seven stations on the air and teletype is not feasible at all because of the extremely high cost; the use of telephone for exchange of information is the way that it has been handled in the past. But if we can make use of radio facilities, if we can communicate by radio with those people, we can handle communications that wouldn't otherwise be handled. If we can't have radio we just simply have no facilities at all. They just can't afford the toll charges. Somebody picks up a boy who is broke and stranded; they are not going to go to the expense to handle it, to make a call on that. We are in a situation where our distances are so great radio is the only economical means of communication. We do communicate quite a good deal direct, because we are under the provisions of reliable service range; we are so far away from the places using our same frequency that very little interference is caused. The closest place is San Angelo, Texas. Relays

necessary would be practically negligible; very rarely we can't handle it direct. The only relay is from Denver to Pueblo to reach LaJunta in the daytime. At night we wouldn't have to do that. It boils down to a choice of radio or nothing.

MR. NIELSON: There is one thing I would like to point out. This is my own opinion, not necessarily the Commission's. The Commission is rather reluctant to grant authority to one state or one municipality that it cannot grant to other municipalities. Probably you could make excellent justification for that type of service, but they are reluctant to establish a precedent and then have it get beyond bounds. There is one thing I would like to correct. I don't think the Commission turned down your request.

MR. DERBY: They said we would have to show specific reason why no other plan was feasible.

MR. NIELSON: I would suggest you write a detailed explanation of it and present it to the Commission. I am sure they will give you due consideration.

MR. DERBY: We felt we had done that in the original application.

MR. NIELSON: I am not familiar with your application.

MR. DERBY: We didn't state it was economically impossible for those people to go to radiotelegraph or wire facilities.

MR. O'NEIL: After listening to Mr. Derby's plans for the necessity of relaying between his station and Pueblo, and he stated that relay would only be necessary during the daytime, that at night it is possible for the Denver station to communicate with other stations within the state direct, it might be a good thought to consider Mr. Derby's request, and others who are in a similar fix for daytime relay, the same as with frequencies that are only allowed to be used from two hours after sunrise until two hours before sunset. In such cases then, they would have only a two-hour period, probably in the afternoon, that they would not be able to communicate with their relay stations and later on they could communicate directly to the station for which the message is destined. If that were permitted, I don't see why there would be any interference by the Denver station or the relay station that is called upon to move that traffic. I don't know whether that has been advocated before, but I think it is worth considering. It would solve their relay problem, since at night they could continue to contact each other direct.

MR. NIELSON: I would like to say that on these tentative amendments which we are making to the rules we discussed this matter of relay circuits for about a day and a half and didn't come to any conclusions. That is one of the unfinished jobs before us.

MR. O'NEIL: I would like to put that in the form of a suggestion as solving the problem for those stations having such difficulties today. A similar condition exists in Louisiana, and I am quite sure it exists in every state in the United States where there are stations 80 or 100 miles apart that can communicate satisfactorily, and that station in turn could move traffic on to the next station or the one of destination. But under the present rules they are not able to operate as a relay station. At night time, of course, it is not necessary to call for a relay. I believe

it would help all the municipalities and the state stations also.

MR. GRONIER: I believe our problem of communicating with a station 80 miles distant is a lot worse at night than in the daytime because of the interference. Oshkosh is about 80 miles from us, so is Elkhorn, and Milwaukee. We don't have any trouble in the daytime, but at night what chance have we got?

MR. GENO: I think this entire discussion gets back to the argument we had originally as to whether we would have radiotelephone or telegraph. Hardships are being worked on departments by virtue of radiotelegraph operating. I am not saying this with any malice. I have been a radiotelegraph operator practically ever since they were. At the same time there is a wrong setup; it is obviously wrong. We talk about this relay business in points like this gentleman's where it is absolutely necessary. Around Washington and Richmond they rip those channels wide open night after night. They want to do some more relaying on the regular channels. This man is asking for relief and somebody else wants to make it tougher for him. Don't you think it is time for this organization to get something done? These telegraph channels will have to change to phone channels so they can be operated. Without fear of contradiction I say I can handle ten times as much traffic by phone as by telegraph. Interference conditions on telegraph are awful. At night you might as well shut down. There is absolute disregard for any channels being busy. They call on any frequency. It is going to be a case of the survival of the fittest, and we can do it faster and much better by phone. A drastic change has to come in the intercity setup. I am like Michigan - if we really want something fast we call by telephone anyhow. Does the Commission object to the possibilities of phone on the channels we already have?

MR. GRONIER: That is the point I wanted to bring out. We have a half dozen channels in the intermediate channel that aren't being used. The Commission is going to take them away. Give us a chance to use the facilities we have.

MR. NIELSON: I agree with you on that. Of course, that is my own opinion. I think the time is ripe for us to get together as you suggested and probably go over this whole allocation plan, working it out from your standpoint and from the standpoint of the Commission.

MR. GRONIER: I know that the F.C.C. has increased their monitoring facilities and also increased their duties, but I happen to be a pretty good friend of the monitoring officer over in Michigan, and they are making surveys for the other services, for instance, ships on the Great Lakes. Could the F.C.C. make a month's occupancy survey of the intermediate frequencies and report to our frequency committee?

MR. NIELSON: If you want me to, I will take that up when we get back to Washington. I agree with you; I think it would be a large scale approach to the whole problem.

MR. WALKER: I have just conferred with Mr. Tooter, and we came to the conclusion that the committee should be re-formed and should study the situation in its entirety. You will have to concede that the picture is new. There is a complete change in police communications. It is agreed that we should re-form a committee at this time and present the new picture, the new problems, to you in the form of an official communication from this organization and your organization work on that. Does that sound acceptable?

MR. NIELSON: I think that is an excellent idea, and I would like to see it carried out. I assure you that the Commission will give anything you suggest due consideration.

MR. JONES: The Commission has an attitude that I have often wondered about in that they won't permit you to use radio facilities, even existing facilities where no interference would be caused, so long as there is available land line or wire. I have often wondered why the Commission had that attitude. It seems to me it reflects on the Commission. It seems they are trying to favor commercial interests. For example, we asked what the attitude of the Commission would be on a relay transmitter operating on 158 megacycles. While it is quite true we could use a land line to bring that in, we preferred to use relay because it was cheaper. On 158 megacycles I don't suppose there is a station in the state, and I don't suppose you could hear anything with special directional antennas anywhere at all. We could use it with no likelihood of interference. The reply from the Commission was that license or construction permit would not be granted if wire facilities existed that we could use. I would like to know the reason for that, and if it is likely that the attitude of the Commission would change.

MR. NIELSON: The reason for that is that it is difficult to predict the growth of the service on any particular frequencies. On February 1 of this year we had occasion to check up on the number of transmitters on the 30 to 40 megacycle band, and we found approximately 12,000 transmitters. We have been getting approximately 20 to 25 applications a day, which involve probably one to five, on an average, new installations, which means about 100 transmitters going on the air every day, new ones. Obviously there is coming a time when the 30 to 40 megacycle band is going to be completely saturated. It might be that we will have to resort to the use of UHF as equipment is developed, and from what we know now, from what they have found out in the last few years, apparently those in the 116 to 156 megacycle band will furnish good service to small municipalities. If we load them down with repeater circuits that could be operated by wire lines, we will have no frequencies available for mobile services when the time comes to use them. They are looking ahead and trying to allocate over a long period of time, rather than the immediate future.

MR. JONES: In part, that answers the question. However, there is no reason why that couldn't be granted to us on the condition it could be withdrawn when it came time to use the wire facilities; we could certainly be made to realize that would be a necessity.

MR. NIELSON: If you did you would probably be the exception.

QUESTION: What do you call the saturation point? For instance, on 39,800 there are thousands and so far as I know there is no interference and not on Group B either. I believe you could have 5000 and they wouldn't interfere with us in Wisconsin.

MR. NIELSON: That is the problem we are trying to work out now, that is, find out how much traffic those frequencies will bear. We haven't had that supported by any technical data and I would hate to commit myself on the number of station that would constitute saturation.

MR. BRYANT: If you are going to discuss UHF, I would like to point out a condition that exists. The Commission in the past, and it is

still the policy to assign those frequencies on the basis that they cause no interference. We have 39,780 and that is subject to serious and disruptive interference from East Coast mobile frequencies on the average of three days a week. We wouldn't get any interference from Illinois, Indiana, or Ohio, but we do get interference from New Jersey.

MR. NIELSON: You don't have any way of shifting your frequency?

MR. BRYANT: By incurring considerable expense we could change, but we were there first.

MR. NIELSON: That is one of the unfortunate conditions that came up because we didn't have enough frequencies. You say you don't have enough money to change, but how about the other people?

MR. BRYANT: I am not criticising. I am saying that the allocation system should be changed.

MR. GENO: That was discussed very definitely in the allocations hearing in Washington. The allocations were made with the primary purpose in mind of eliminating the interference on primary and not skip conditions. We have the same situation and it can be taken care of. It was brought up, talked about, and dropped.

MR. NIELSON: I would suggest that matter also be referred to this committee on allocations and see if they can't figure out a plan that would work.

MR. HICKS: I believe they could divide them up and put the stations farthest east on one and another for the central part of the country and another on the west coast and that would eliminate any interference. It has to be over seven or eight hundred miles before you can hear another car.

MR. NIELSON: That is possible, except I think now would be a rather poor time to make any major shifts in frequency assignment. I understand you are going to have difficulty getting equipment, and certainly crystals is one of the critical materials now for which there is a crying need. If it can go on until the termination of the war, I wouldn't suggest any radical change. If there are some situations that could be cleared up, I think it should be done now.

MR. BRYANT: If we had known that the Commission was going to assign New Jersey and California 39,780 we would have chosen another frequency.

MR. NIELSON: I admit that the present plan is not very effective because of sky wave interference. Now there is something that ties into that and that is the matter of power. We have made some tentative amendments to the rules which I would like to discuss with you tomorrow. It ties in with this skip interference problem. I would like to say that down at the Commission we are striving to reallocate these frequencies and make a more efficient communication system. That is one of the jobs I am here for - to discuss with you people and find out your reaction so that we can make some kind of large scale assignment plan for the future. As I look at it, it will do no good to

make minor changes to correct some faults. We ought to look to the frequency assignment plan and the police services as a matter of twenty years from now rather than tomorrow.

MR. ERICKSON: I have a problem that was taken up in the Illinois chapter about 2040 telegraph. I wrote a lot of letters and after about six weeks I finally got hold of a gentlemen that answered my request by air mail, that is, Mr. O'Neil, who is on the Defense Communications Board, Committee No. 8. I propose that the 2040 be assigned for police use for the duration, on the basis that the existing equipment is all there, we have all the crystals, we have all the coils, and antennas are up at most places. This 2040 went over to the amateurs in 1940. Toalleviate the congestion on 2808 and 5100, we could readily use this frequency. The response in the communication was that it would be taken up officially and the answer would come through official channels. We haven't heard anything else. We are sitting there on the 2800 band, fighting to get our traffic through, license checks, etc., and the only way you get through is by main strength and awkwardness. I am from Chicago where we handle sometimes over 170 telegraph messages a day, and it is very urgent to get in there with a rush piece of information and get rid of it. You can't clear them off; they have just as much right there as you have. By getting permission to use 2040 for the duration would help the situation. We don't want to take it away from the amateurs, but just use it for the duration to get the load off the other frequencies. We already have all the equipment. We have about a bushel basket full of 2040 crystals in the state right now that aren't being used. We don't have to buy them. You can't buy them any place for any money, and get them right away. I would like to find out if there is any information at all on that.

NR. NIELSON: The only thing we could do is take it up with the military. They are using these frequencies now. I don't know what they are using them for. They have been turned over to the military. Before we could make any commitment to you, we would have to check through official sources and find out if they are willing to relinquish those frequencies. We would be glad to do it for you.

MR. WALKER: Are there any more comments on this subject?

MR. JONES: I may be a little out of order, but I would like to call to the attention of the Frequency Allocation Committee, that is, if it is their job, one problem that is coming up. Sometime ago we started construction of a telegraph transmitter. We had the bulk of the material before the emergency came about, and some of it we had to buy after the emergency. We managed to get all the material together without priorities. At the time, we had a full crew of operators to operate C.W. Since the emergency, I understand that out of seven we have only two left who can operate radiotelegraph. As a result, our plans for intercity telegraph are squelched for the time being. I agree with what Gene said about handling some intercity traffic by phone. I have had the thought that the logical arrangement for intercity work would be in states where it could be worked to have one central station or zone station, as we have now, that would handle traffic out-of-state and then there would be some suitable frequency allocated for voice transmissions, so that the smaller departments could communicate with that central station. As I see intercity telegraph at the present time, those states that have it are using it, of course, to its fullest advantage, but intercity communication is not developed to the point where it could have, simply for the reason that it has been restricted

almost entirely to radiotelegraphy. Of course, we have some voice intercity transmissions, but because of interference and the fact the frequencies are such that they can't be reliably used in the daytime in those cities and localities, they have no reliable intercity communication. I think serious thought should be given to the possibilities of using voice for intercity work, that is, what I would call long-haul work, from Birmingham to St. Louis or Chicago. Short distances can be covered by the present intermediate frequencies. I think it deserves a lot of consideration in view of the shortage of operators.

MR. DERBY: I would like to ask if anyone here believes that any interference whatsoever would be caused their department by the use of telephone relays during daylight hours?

MR. GRONIER: In Wisconsin we are probably the most flagrant violators of the telephone relay in the United States. We admit it. We have fought this 337a it was known as at that time. We were sold on the idea of going back to the old system of having unrestricted relays. We have seen the time when you started a phone message out of Madison for Texas to get a check on a black Ford that would come back a green Plymouth and everything like that. We fought it out at Orlando, and at our Executive Committee meeting in Chicago, and we have been through this to get the Commission to relax the rules. The latest publication I have heard about permits one phone relay over established routes. We complied with the Commission's rules. We had a pretty good committee working on that. They put all the stations on the map, with a green line for the route for one station, etc., with instructions on how to operate. We further complied with the Commission's rule in sending that letter and the maps to Colonel White in Washington. According to their rules the Commission was to authorize us to operate accordingly. I think that was sent in December, 1939, and owing to pressing business the Commission hasn't seen fit to answer that correspondence yet. That is all right with Wisconsin. We are still waiting to be cited for violating 337a. I think if Denver or Colorado will do the same you will get along all right.

MR. FETCHER: I don't want to appear to be taking any credit for breaking the rule in Wisconsin, inasmuch as they join with the Chicago area network, but I might point out that there have been something around 10,000 phone relay messages handled in the Chicago area the next year on the Chicago Area Network. Our association down there, which when it was formed Wisconsin was a part, was material in changing the policy of the Commission so that if your department publishes a map of its routes that it uses, as we had and Wisconsin did, they can relay anywhere over that network, in as many as necessary to accomplish the objective. They can relay 15 times if they want to, and you would have no trouble in securing the same thing. That is part of the rules and regulations now. We in the Chicago area depend on phone relay. Of course it is mostly UHF and short hauls, but sometimes there are six or seven relays to a message. We have never had a station cited because we have published maps, and we have kept the Commission up to date. We try to publish at least one map a year and keep up to date on our routings. We just send in a map and say here are the routings in the Chicago area. Please put it on file. We didn't get any answer either, but we didn't get a ticket.

MR. DERBY: It was my impression that phone relays were prohibited except you could make one off the end of a telegraph route. That is the tone of the communication we had from the Commission.

MR. NIELSON: That problem I think we had better look into. I would suggest that be turned over to the allocations committee, and we will work out something.

MR. DERBY: In our particular case, it could be solved very nicely if we were permitted to relay any place any time in the daytime. If we notify Pueblo and say "Will you please tell LaJunta that we are calling them", would that be a relay?

MR. NIELSON: I wouldn't say that was a relay. If there is a need for changes that is something we have to look into.

MR. WALKER: I don't think it is the intent of any person here to violate rules of the F.C.C. knowingly or without special need for same. I think it behooves us to get one line of thought on the whole thing whereby the rules will fit our crying needs. We in Michigan face the same problem. You have heard about the radiotelegraph channels. I might cite several examples where we have rush license checks, maybe, to Missouri or anywhere along the line in the daytime, and we can't raise the station. If it is rush we use the telephone. The department is starting to figure out that the radiotelegraph net is so slow they would rather use a telephone and pay for the call.

MR. NIELSON: I would agree with you one hundred percent on that, because it is to our mutual advantage to work out this problem together. We in the Commission, I am sure, don't want to write up any rules and regulations that will put any obstacle in your operation. If repeater circuits or telephone relays can be used without causing interference and it meets a majority need, I think the Commission would be glad to consider any revisions in its rules.

MR. WALKER: If there are no more questions or comments on this, I will turn the meeting back to the president.

MR. WILT: Thank you, gentlemen. On this Allocations Committee, Mr. Walker will be chairman, Mr. Emmons, Mr. Geno, Mr. Audritsh, Mr. O'Neil, Mr. Vickerson, Mr. Kadow, Mr. Gronier, and Mr. Bryant.

MR. SOULE: I don't propose to tell the chair what to do, but I note those committee men are all from the middlewest or east. I would like to suggest that Mr. Derby be put on there to represent our states which are very large and have a very small population.

MR. WILT: Add Mr. Derby to that committee.

Announcements.

Adjournment.

TUESDAY AFTERNOON SESSION

The fourth session of the Ninth Annual Convention of Associated Police Communication Officers was called to order by the President at 2:00 p.m. on July 28, 1942.

MR. WILT: I am going to make another committee appointment. I am a little early on this, but I wanted to give you time to think it over. Mr. O'Neil will be chairman of the Nominating Committee. On the committee

with him will be Messrs. Kadow, Lathrop, DeShaffon, Vickerson.

MR. WILT: Ladies and gentlemen, I take great pleasure in introducing to you at this time Mr. Frazier Hunt, who will address you.

MR. HUNT: Mr. President, ladies and gentlemen, I think that there are three ladies, so I won't tell those stories. I must start right in about the war, because that is one of the biggest things we have. In fact, it is just plenty big; almost too big. I think that to make a fairly clear analysis of this war we had better divide it into three areas: Russia, the Near East, and the Far East.

I haven't seen a newspaper for the last two hours. I saw an early afternoon paper and things were going with their usual unhappy nature that we are more or less getting accustomed to the last two or three weeks. Personally, I don't look for any great change for the good in the Russian situation for the rest of the summer. Now I think that most of us have been guilty, or the victims rather, of an unfortunate plot that wasn't against us, that plot, which is a rather severe word. The Russian government had the job of keeping its morael high, and in order to do that they had to put out the sort of reports that would keep inflamed the Russian people, because this war is a people's war. In Russia, more than possibly any other place, it is a definite people's war, because the Russian plain folks have had a very great part to do with the fighting. I don't suppose, certainly in modern war, there ever was such an important guerrilla effort as has been made by the Russian plain people. They have killed thousands and tens of thousands of Germans, happily, and they have practiced the "scorched earth" policy. We have read a lot about what happened in British Malaya and the Dutch East Indies, but that was only a faint attempt. The Russians have really destroyed the country before they gave it up. They have destroyed plants, farm houses, live stock, and left the country broken and burned and bare. I don't suppose in all history there has been anything like as great a "scorched earth" policy by a people on defense. Other people have destroyed captured parts of the world, Attila and the Huns, and Genghis Khan and his fellows, but here people have deliberately destroyed their homes, cities, and every inch of land given up. It has been a very brave and telling part of the war.

Now as I say, to keep the morale up the Russian government gave out a great many official communiques that were contrary to the truth. I have had the good fortune to spend a great deal of time around Russia, one way and another. I went in there in 1918; I was in both the northwest and Siberian campaign. I know this Don River country they are fighting over now, and I know Siberia. I know something of the spirit and bravery and hardness of the Russian people. They are very hard to lick, but they needed this propaganda, too; they needed the assurance that the Russian people gave them. Unfortunately, we took it seriously. We took the communiques given for the Russian people to ourselves and believed our own press and radio people, who gave us to understand this past winter and this spring that the Russian armies were invincible, that the Reich armies were much less in power and numbers and strength than ever before, and that the Russians could hold against the Germans. I, unfortunately, didn't have that point of view. Last year when the Russian attack started, I believed that they would hold for a long time. I didn't think they would hold as long as they did. I thought Moscow would fall before winter, but now this fall and all this spring I have been trying to say, as clearly as I could with a considerable amount of censorship, that the Russian invincibility was largely a myth. Unfortunately, this is being proven true. It looks to me, and many of my professional solder friends, that the capture of

Stalingrad on the Volga is only a matter of days. This will give the Nazis all the normal passages to the Caucasus. To get the picture in your minds, the situation about four weeks ago when this great drive started, was that the German line was almost straight down from Moscow to Rostov, a little west of Rostov, about 40 miles. The Germans had held that line all winter. The facts are that the Germans only gave way, this past winter, grounds they didn't care to hold. We read in our papers about the debacle of the German army and how they were rolled back; the whole facts are that the German army held the positions they wanted to hold and gave only the inconsequential ones they didn't want to hold. Just below the city of Orel is a line of hills that the Germans held all winter and all spring and they used that as their springboard; they used that to start a sweeping movement with the base on the lower Don near Rostov and the elbow on the Don with the city of Stalingrad just 40 miles beyond. They have slowly and relentlessly pushed it open, and that is the position now. They haven't actually taken the last corner of the Don bend and they haven't got to the Volga yet, but they will get there. The lower part of the swinging door is a triangle, with the sweep of the door going directly west and Rostove here (illustrating). That is all in German hands and apparently from this early afternoon edition the Germans are now crossing the Don and establishing themselves there.

Marshal Semeon Timoshenko is a very able fellow. He gave ground rather than stand and be trapped and destroyed. The Germans tried their best there in flanking moves, but Timoshenko was too smart. He withdrew and traded space for the chance of getting his armies out. What he has done has been a very victorious retreat. Of course, we are getting rather used to victorious retreats. It would be wonderful to have a victorious offensive. Because of this victorious retreat the Russian armies are largely intact, and they have been able to get the best of their equipment out. They are still fighting armies. Timoshenko finds himself below the Don River with the Germans now driving north to the Caucasus. The first 200 miles are flat land, then you get into the foothills, which are the lower two-thirds of this peninsula, this bridge which separates European Russia from the middle East, which was Mespotamia and Iran and used to be Persia. The oil is in the edges or middle of the Caucasus. There is at least 85 percent of the oil of Russia. The minute that the Germans get to the Volga and cut the great Volga transportation system, it is the greatest river in Europe, one of the greatest in the world and probably the greatest transportation system of any river in the world. It is the main artery of the transportation system of Russia. It is about 200 miles from the mouth. The mouth is at the Caspian sea, and there is the city of Astrakhan. The important thing is the cutting of the Volga. The minute it is cut, all the lines of communication, all of the lines of transportation with the single exception of one little railroad line that is only 100 miles east of the Volga, the southern armies will be cut off from the middle armies; 85 to 90 percent of the Russian oil will be cut off, and our supplies and British supplies will be cut off. That is the tragedy of what is happening today. It is not only that the Germans will gain, eventually, the oil of the Caucasus, if and when they capture the wells, but they have cut the oil from the use of the rest of the Russian armies. Russia has no doubt made provision for this, but it is a great blow. I think you gentlemen would realize what it would mean if you were suddenly told that thirty days from now you would have no more oil for five years. You would have to put away enough oil to run your systems for five years. But even then you couldn't put away enough. Russia hasn't the storage capacity. No doubt she has enough oil to run the rest of the year and maybe to the next year, but it is a tremendous blow to get

85 percent of any of your raw materials cut off, and oil is the most essential in modern war. That is the thing that has happened. If nothing else happens, it means it has been a very successful German campaign.

Two things can happen the rest of the summer. One is that one branch of the German army will move south and try to capture and destroy the oil fields of the Caucasus. Second, there will be a great drive north of Moscow to bypass and eventually make an encircling move and cut off Moscow and that part of Russia. Professional experts on this business say, what has happened to the three million German soldiers? The evidence is that there has been about one million soldiers used there. Where are the other two million? Many people feel that these other two million are in reserve and are being gathered to make a blow in the north, north of Moscow. To make a wedge north of Moscow, and with the wedge that has been driven to the south, they simply have all the country up to the Volga. That would automatically force the Russian armies back beyond the Volga and Ural Mountains, where they can still fight. It still doesn't mean that the Russian armies are going to be out of the picture. They are going to be out of the European picture. They will go back but they will fight on, I am sure of that. There are rumors of some possible peace, but I don't believe that you can kill three million people as there have been three million people killed in Russia, and talk peace. The hate is so bitter I don't believe for a minute that the Russian people have any thought of quitting. They have been trampled on, they have been terrifically beaten, but they are far from whipped.

Now the second phase, the Egyptian business. The thing is almost a stalemate this minute. Rommel, by extraordinarily good luck and by the most daring, foolhardy daring almost, won incredible victories. He knew that he had against him very poor generals. The cold facts are that the British generals against him were not good generals. The British soldier is a fine soldier, the Colonial South Africans are very marvelous boys. There are no finer in any army, but the generals against him were choking themselves with their old school tie. They couldn't shake the Boer war out of their systems. I talked the other day with an old army friend of mine who just came back from Egypt, who lived with the British officers there and knows them very well. What he said was this: Rommel is not a military genius at all. He is a very brave man and a man who takes long risks. He knew he was fighting General Ritchie and that he was a second-rate general, so he took risks he would not have taken against a skillful general. Auchinleck is a first class soldier. This informant of mine said Auchinleck is a first class man, and today he is out on the poopdeck of an American jeep leading his own men in person. He is a field commander himself. Now he has left Cairo and is out with the troops and doing a fine job. In order to build up the broken British army, they pulled people from the middle East, from Palestine, from Syria, and all that part of the country. They pulled them in (off the record, they denuded the British forces in that area) and have built up a very considerably superior force right now and they also, the British, have the superior air force. They have sent planes from all that part of the country, and we have contributed part of our own planes from India. As long as the conditions are as they are today, as long as the Germans receive no reinforcements in air power, troops or tanks, our side will hold all right. It is possible that Auchinleck with the reinforcements can drive through and might force Rommel to roll back. Once they get the outfits rolling in the desert they can keep them rolling. That is what happened to the British. Once they got them rolling they had to roll all the way back. They had to roll back 300 miles to where they had a strip only 30 miles wide between desert marshes and the sea. They made their stand there and stopped Rommel.

If they can get Rommel out in the desert country they can roll him back.

Our side has a better chance in Egypt than Rommel, but if the Germans wash up this campaign in South Russia, if they conclude that with the taking of Stalingrad on the Volga, which is now 100 miles away from where they are on the eastern end, toward the elbow on the eastern end of the Volga, they may say now we can spare men and planes and we will go over and help Rommel. They can fly there almost over night. They can transport in a few days enough fighting planes and air-born troops and glider-born troops to simply turn the odds in favor of Rommel. That is the great danger in Egypt this moment. Today our side has the superiority in men, supplies, and planes. That can be changed and the great danger is that the Germans may say let's change it and do this up. If our side loses Egypt it loses that whole area, the whole Near East and Middle East are lost. All the troops are now in Egypt. All the British and ours are there. They can't give it up. We mustn't give it up. If we do, we lose the oil of the Persian Gulf and that whole part of the world is gone for us. That would be one of the most serious things that could happen. The war ships of the United Nations, troop carriers, our supply ships, would have to take oil out here to come home on. We would have to carry it because already our side has lost all the oil of the Far East. We will lose the oil of Burma and Dutch East Indies, so the situation for the moment, on our side, is a very touchy one, a very difficult one. It would mean if Egypt goes, the road to India would be open and the great arm of Germany may be reaching out to India. Then the great arm of Japan might reach down through Burma.

I am painting the blackest possible picture of this war. All we have to do is read the newspapers most of the time and listen to most of the radio, and we get the wishful thinking side of it. We have all been told bedtime stories about this war quite long enough. It is my feeling that the war is in a very serious moment. We need to grasp the full significance of what may happen and what is happening; find out what has to be done and go do it. I have complete faith in ourselves. I don't believe that there is any need of panic about this thing. I think we just need to know how bad and tough it is and then prepare and go do that; we need to find a way out and then go whip them. I don't have any question about our ability to eventually whip them.

First of all, we have to get awakened to the peril our side is in and know what has to be done and go do it. How can we do it? If I knew exactly how to do it I would be a lot smarter than I am. I can tell you this. I don't believe, and I speak with the knowledge of a good many professional soldiers whom I have talked with, I don't believe to match ground soldier to ground soldier is the answer to the war. We are too far away from the land of Europe. The German army is too big and skilled an army to attempt to fight on its terms. We must make Germany fight us on our terms, and the terms I think we should lay down to Germany are the terms of the air. I think we should turn to the air as the place where American skill and ingenuity emerge, where her great resources, where her inventive and creative ability, where her manufacturing ingenuity can all express themselves. I think we can make more planes, better planes, than all the world put together. I think the American boy can become the greatest flyer in the world, and I think every one in this room and every part of America, every man, women, every professional soldier, sailor and aviator, everybody must think of the war in terms of the air. I believe that victory can only come to us from the air. If we could build an army of ten million men, we haven't the ships to get them there, and where would we fight them after we got them there? If we could build 200,000 planes and send them there and blast the factories, the communications, the centers of industry,

then we could get somewhere. As long as we hold on to Britain and Britain becomes the jumping off place for the armada of the air, we can't chastise Germany.

This can't come from above. The American people must arouse themselves and understand that we take to the air. We will ride the air and we will ride down Hitler and his gangs of thieves and murderers in the air. We can't whip him on the ground, because we can't get to him. We can get through from the free air, and we will. We can control the world from the air, and we can control peace from the air. There is one book that I think every American should make it a duty to read, Seversky's Victory Through Air Power. It is a great book; some of it is a little extravagant, some of it doesn't go far enough, but it tells the story of what we can hope for if we trust the air. There is no use trying to do this job from the sea and from the ground. We will just drag ourselves to our graves if we do. There is a ray of hope if we turn to the air. We were the first people to fly, we were the first people to ever bomb a battleship from the air, we were the first people to drop a soldier from an airship. We have one hundred and one firsts that we have won. The air is ours for the taking. We can build ten ships for every one Germany can build. Once we back everything to do with aviation, make it number one on our list and in our thinking, we can do this job. The government alone can't do it. It must be us. It must be the expression of the American people. We must rise up and say "We claim the air". We will pay for them, We'll build them, and our sons will fly them. Let us get to the air and then we'll whip the scoundrels and get a decent peace and hope.

MR. WILT: I am sure we all enjoyed that talk of Mr. Hunt's. Now we will have an address by Mr. Herb Duval of General Electric.

MR. DUVAL: It is rather difficult to follow Mr. Hunt. He is doing a little "calamity howling", which we probably need. We do get complacent.

Some of the things I wanted to talk about are post-war plans. Right now, from what Mr. Hunt said, you realize that our air power comes first. Radio manufacturers must equip every plane and every tank that we build with from one to half a dozen radio sets. Flying fortresses carry plenty of them. They have to fly thousands of miles, navigate, and get back, and they can't do it without radio. Now in the police radio field, last fall we began to see that it was going to get so tight that we couldn't meet commitments and ship apparatus; for a while we practically withdrew from the field of looking for orders. Right after Pearl Harbor we had a small stock of equipment. I imagine every manufacturer in the business that had any stock at all was immediately wiped out by the armed forces. Some of the police type was used for training; it was not meant for combat duty. Police radio hasn't been built to government specifications. I don't believe any of it will meet the tropic requirments of military radio. In this country, police radio did lend itself to training maneuvers. It was available, could be built quickly, and a lot was bought and put in training, some in planes for the purpose of training troops in maneuvers. Right after our stock of police equipment was wiped out, we saw the need for additional equipment of this type, more or less as a stop gap for our armed forces. We started in Washington trying to get permission to build apparatus that we knew was going to be used.

About that same time, I don't know where the original proposal started, probably in the government requirements section of the WPB, the idea of forming a radio pool whereby defense supplies could give manu-

facturers a priority rating certificate and an order and they would be the order, purchase and resale agent for police radio equipment. During the months of January, February, and March it looked like it was proceeding ahead. It took a lot of meetings to complete. Approval of the Army and Navy Munitions Board had to be obtained. The setup of WPB became expert and found out the requirements for combat and implements of war, each would issue orders stating that his particular material could only be used in implements of war. Some of the restrictions were not too tough. They allowed you to use a certain percentage of stock, you could obtain, for instance, copper. About May 1, this order M-18 hit us. As you know, all quartz comes from Brazil, and of course the quantity of radios for implements of war which was being built meant that the stocks that were available in this country were being rapidly depleted. A poor quality of mother quartz had to be used, which meant you had to have more cutting machinery in order to get out an equal number of crystals. The machine tool industry was tied up and it was very difficult to get diamond saws and multiple gang saws and other apparatus necessary for the cutting of quartz, so the restrictions under M-146 took practically every police radio manufacturer out of business. The penalties are very severe; as much on the purchaser as the manufacturer. Since that order has been out, there has been a lot of pressure brought on WPB. The Chiefs of Police Association has been rather active in trying to help out in the radio industry. Probably most of you men have got inquiries and questionnaires from them, and it appears that there is some relief in the offing. Two weeks ago I would have told you it was hopeless. Last Friday it seemed there may be some relief. I wouldn't say this for the rest of the manufacturers, I have not yet seen a definite plan of action that they intend to use in allocating materials and furnishing equipment to the police radio groups. I have made certain recommendations, based on the few years of experience selling police radio that I have had; I have gathered information from talking to various police radio officials, and the executive secretary and others of the IACP, but there still has not been a definite plan of action as to what they are going to do. There was some statement that the first thing was to equip the coast, that those states and cities on the east and west coast had the most urgent need for radio. Then you see several cities in those areas turned down on priority ratings, cities that have large industrial plants making strategic items. Then you see them go out in the middlewest and grant a high priority. It is difficult to stand on the outside of the WPB and know exactly what is happening. I believe that the radio industry has pulled itself up sufficiently by the boot tops during the past six to seven months that it will not be long before a certain portion of our production can be allocated to the police services.

There are a few here from the public utilities. Unfortunately, I can't say anything about them. I haven't heard anyone make a plea for utility communications. In all probability those organizations would have to gather together such an organization as the police groups and present their case to the WPB to obtain any relief.

The primary purpose of the radio industry, and of my company in particular, is to produce implements of war. We have expanded enormously. We have grabbed up every engineer, every manufacturing space we can get our hands on. We do a lot of sub-contracting to broadcast receiver manufacturers who were out of business when they stopped giving material for the manufacture of broadcast receivers. We have tried to assist them by giving them designs of our military equipment, helping their engineers get their production lines rolling. Several months ago I attended a conference of broadcast engineers in Columbus, Ohio. The theme of their conference was rather

interesting. It was all about no tubes, some only had one spare for their final, and it was how to take stock of all the available parts they can find in their homes, and ashcans, and radio stations, to make a regular inventory of all the various component parts of radio they could find and keep them for maintenance of their equipment as long as they possibly could. One of the first bottlenecks was the hydrogen-cooled free copper, which is very important to the broadcasting industry operating water-cooled vacuum tubes. Some of those broadcast engineers had gone through their transmitter, disconnecting parts, taking out tubes, to see how far they could go and still get a signal on the air. One was the job down at WOR, who has probably the most elaborate maintenance crews in the country. They operated a whole year without a single second off the air. I think that is one of the jobs you gentlemen have to do. Any part that you can possibly save - not to speak of the poor manufacturer who has had every stock of every item depleted from his shelves, and if he had any parts he turned around and built transmitters rather than keep his spare parts. You will probably find a lot of your transmitters will operate on one tube in the final instead of two. I think the gentleman from Buffalo tried dropping his power to 100 watts and couldn't see any difference in communications in his territory.

Now as the production of radio as swung into high gear for our armed forces, a lot of it is strictly confidential and a lot secret, but a lot of wonderful and amazing things have come about. If you ever get a chance, just quit your present job and get a job as operator on one of those pieces of equipment. From the manufacture of that type of apparatus, our engineering departments are learning new fields of endeavor. The communication art is going ahead by leaps and bounds. The avilability of funds, the tremendous number of engineers that have gone to the production of military and marine type of equipment means that what would normally take five or six years, in the ordinary course of events, is done in a period of months. From all that development we are going to have equipment and a lot of new gadgets. I wish we could explain some of them to you, but that would be of more assistance to the enemy than to you gentlemen, because they are not available.

My company feels that electronics is going to play a major part in keeping a depression from occurring after this war. As our engineering is completed on the implements of war, we have tried to think of the applications for those units at the end of the war. We have tried to lay post-war plans, and not let our planning interfere, of course, with our production. There is quite a job in Washington, even in the F.C.C. itself, in the matter of post-war plans, the utilization of the new principles of radio that we are learning in this war. As we go up in frequency, up in power, the exact frequencies and exact powers I am not at liberty to say, we are learning things that are going to improve television, that are going to give us all sorts of new communication arts. We have started on a campaign of publicity, of which Mr. Hunt has a part, in trying to make the general public conscious of the word "electronics" and what it means, because instead of having navigation under present methods, which are helpless under certain weather conditions, navigation by electronics is not hampered by weather. We can sail a ship at full speed through narrow and treacherous waters with perfect ease and reliability by electronics. Airplanes today are grounded when they really have a zero ceiling, but certain applications of the new war type of radio will give complete confidence in the commercial air lines to fly during any and all types of weather conditions. Blind landing equipment will be practically foolproof. It has to be now for some of our bombers to go through the weather conditions they have to in fighting.

Most of you know of electronic welding. It is being used to speed up production of apparatus. Delicate materials heated beyond certain points lose their characteristics, become soft or brittle, but by accurate electronic cycles the weld can be made stronger than the material without damaging the material. Another recent interesting development in the electronic field is in the cutting of lenses for probably, after the war, photographic purposes. Right now it is being used in the production of optical equipment, range finders, periscopes, etc. By electronics we can measure the angles and curves of the lenses with far greater accuracy than by any other method. We hope that will enable the lense manufacturing business in this country to catch up and surpass some of the German industries, who seem to have had quite a monopoly in the field of accurate lense grinding.

We expect in the police radio field to have smaller compact radios, so-called "walkie-talkies" will be obsolete. We will have a new type of "walkie-talkie" that can be carried conveniently. Radio for the smaller communities will be phenomenally small in size, just from some of the things we are now learning. We are learning how to use the combat radio that we are now building in commercial applications. Of course, we were working on things for the improvement of police radio at the time the war happened. Some of them were almost ready for release. One of them was the use of horizontal polarization for police. There has been very little antenna work in the police field. The present coaxial doesn't represent any improvement over the closed "J" type of antenna. It does over the open "J", of course, but quite a lot of work could be done just on antennas for police service. We have developed, and we are just about ready to place on the market, horizontal polarization for mobile and fixed stations, non-directional by the use of concentric rings. You may have seen some releases on some of these antennas. On the mobile unit there would be two rings, one above the other, placed about six inches above the top of the car. It is non-directional, not affected by anything above or below the antenna. If you take this as the lower ring (illustrating), open at that end, this is the upper ring. We feed power into this ring here. It is a half wave around to there. One ring is on top of the other, grounded to a support at this point, and covering the frequency range by means of tunable capacitors. We have a very good non-directional polarized antenna. Some are in actual operation. I don't believe we have more than two or three installations of that type. I believe there are a couple in New York City. These can be stacked as high as your support pole can support them and for eight bay you get practically 8.6 db gain.

We are also doing some work on vibrators. Vibrators for transmitters have never been very satisfactory because it is still difficult to break 25 to 35 amperes of current with a set of contacts and have any contact life and also prevent interference and hash from getting into the various circuits and components. We had under development a vibrator which did not break current. By the use of saturable coreactors we were able to generate a quarter wave which dropped off radically and delayed at zero for some time, but long enough for the contacts of the vibrator to move from one side to the other side. By having circuits electrically and mechanically resonant you could break contacts with only a few mils of current flowing, and actually control circuits of 45 to 50 amperes. The bearing industry in this country was getting to be a bottleneck. The reason you couldn't get dynamotors was because you couldn't get the bearings. We were trying to get a replacement for dynamotors. We hope this new type of resonant inverter will outlast by far any dynamotor built.

Now there is one thing, we are also learning quite a good deal about saving materials in this war. We are finding out how little you can use to build something with. That is why perhaps afterwards our units will be smaller, more compact, and more easily portable. There is one thing the police group can do, probably this Frequency Allocations Committee that you formed here for the purpose of talking to Mr. Nielson, and that is in the planning for the use of the super-high frequencies at the end of the war. We are going to be able to give you practically anything you want, as long as the Commission goes along with you. At the present time I am thinking mainly of the smaller communities where they will necessarily be in the midst of large metropolitan areas like Chicago and the coast districts. By going to the very high frequencies we can offer quite a lot of space and quite a lot of relief from some of your interference problems. If you gentlemen have any questions that you can legitimately ask, I will be glad to try to answer them.

QUESTION: You said the gain on this antenna was over eight db. That is over what type?

MR. DUVAL: That is over the half wave type.

(Recess)

MR. WILT: Gentlemen, the secretary just received a letter this afternoon from Inspector Batts, of Indianapolis: "Enclosed you will find four applications for active membership in the Indiana Chapter of APCO. I am also enclosing a money order for Blair Weicht, G. V. Maynard, Frank Casteel, and Robert C. Mehan. Will you please take care of these membership cards and advise Captain Wherritt to add their names to the mailing list?"

What is your pleasure on these four applications?

Upon motion by Mr. Sowle, second by Mr. Lathrop, these men were accepted as active members.

MR. WILT: Mr. Walker, you are the only one here on the Engineering and Research Committee. I don't know whether or not anybody has anything to bring up.

MR. WALKER: I haven't any information on it. I haven't any of the files on it, so I believe we can pass that over for the time being, and possibly bring it up a little later if anything develops.

MR. WILT: Is there anything on the State Systems Standards Committee? Mr. Gronier is on that committee.

MR. GRONIER: As a member of the committee, I don' t know who could be any dumber on it. The last meeting was in Kirkwood about a year and a half ago. I haven't heard of any meetings since then. The only thing we accomplished of any importance was the establishment of the "10" signals. When I say "10" signals maybe I should confine that to "10-4", which seems to be the one universally used. As you know, the "10" signals were originally started in use by the Illinois State Police and readily adopted by Missouri, and Iowa; Wisconsin being a neighboring state, we adopted them and found the original set inadequate. At the meeting which was called at Kirkwood a year and a half ago we went over them thoroughly, and I would like to say a few words about the "10" signals. The first thing that came up was whether we wanted to continue the use of "10" and that brought about some discussion on whether we should use "Z" or "X" or "Q"

or some other designation. We felt that "Q" would lead to confusion, and of course the "Z" signals are used by the Navy and radiotelegraph and would also lead to confusion. We felt we had to have some prefix in order to accomplish two things: (1) give the transmitter time to go on the air, which a lot of these rapid-fire operators don't do and (2) eliminate confusion with existing local signals. For instance, 24 may mean "A drunk in the alley" in one locality and something else in another. We decided the prefix "10" was as good as any and we set them up in groups, starting in with "10-1", according to importance, and going up to "10-90" which was not of any importance to an operator, only to the technician. I believe the "10" signals are universally used throughout the United States to some extent. We don't use them in Madison as much as we should. I believe that condition exists throughout the country. We haven't had any more meetings since then. I do think there is a considerable amount of work to be done. Since I am on the committee at the present time I would like to have a little discussion on the matter of signals and codes which we now will have to use during the emergency, according to our latest reports from Buffalo on 8-2. Should that be the work of the coming State Systems Standards Committee, and is that something that can be used throughout the country? Can we establish some secret signals and codes? If we are going to do that it will come under the State Systems Standards Committee. How about having Buffalo start out with their signals on streets?

MR. GENO: I saw this official notice that the gentleman from California has in the form of a teletype message. Their interpretation has been the same as a lot of others. Fortunately, or unfortunately, the powers that be haven't made them adhere to it, but it also says that you are not to use the call letters or impart any information that might be of value to the enemy. The Interceptor Command Office says that the location of suburban towns, and actions having to do with warfare are definite information to the enemy and can't be used. Therefore, it leaves only one alternative and that is coding. The first argument is, how good is a secret code in a police department? Naturally they have to be distributed to a large group and the possibility of their getting out is very good. At the same time, no matter how complex you make the cryptograph, if you give someone else the key it doesn't amount to anything. The main idea is to remain on the air, and that keeps us there. I promised several people that I would be glad to draw up this system we use. Everybody is going to run into the same thing whereby all territory that comes under your service will have to have a coordinated code set up. We have a county service and it is necessary, therefore, for us to have the boys pretty well acquainted with the New York State Patrol setup. All these points would be definite locations to the enemy by virtue of the field strength of the transmitter. The county services, the suburban towns and cities and Buffalo proper have to be coordinated to accord amicably. In their towns they can't have street numbers and numbers that are the same as ours. The man who calls our radio station codes them previous to the time they get to the dispatcher. Of course, we have a copy of their setup also. If everybody can see the blackboard I will be glad to write out generally the stages that we have used in our code setup. I don't think they can be standard by virtue of the fact all these information centers insist on certain things having to be. A group from the Air Corps might set up this area and might require certain things. Order No. 8-2 is flexible.

MR. GRONIER: I can only refer to what we did in Wisconsin. Shortly after Pearl Harbor we were mindful of the fact that it would be necessary for us to do something in order to remain on the air. One of the

first things, the chief came back from a meeting he attended and said that radio systems would be taken off the air in case of an emergency. Of course, that set me up in arms and I told him that in my opinion in London it was more the lack of police radio than it was of unoperated radio that did the damage. I have been informed that during the Pearl Harbor attack they remained on the air and did more useful work than they would by going off the air. I don't think they were able to use them for homing their planes. It would be up to us as police engineers to work out a plan and present it to the powers that be, whether it is the army or F.C.C., and convince them we can stay on the air; by using a system of secret codes and signals we can remain on the air and do a lot of good work. We called a meeting in Washington immediately after Pearl Harbor, and we went into a huddle with the result that a committee was appointed, including one member from Illinois State. We did get together on one or two occasions, and we worked out an elaborate system of signals.

There is another use we have of radio and that is in the matter of troop movements, which we were vitally concerned with. We have been having a lot of troop movements through our state and it was necessary to convoy them. In working up these signals we bore that in mind. Just about the time we had them completed and were ready to put them in use, we were told not to mention any troop movements on the air, whether by signal or code. If we hear about a troop movement going through and we want to inform our cars, we ask them to "10-21", call the station. I think this organization is powerful enough to convince the powers that be that we need our radio for that, and that we can operate it with enough intelligence that the enemy won't know what we are talking about. I think that should be the work of the coming State Systems Standards Committee.

MR. DERBY: It strikes me that we can't adopt any nationwide code because the larger the spread that information has the greater liklihood of leakage. Each individual department will have to set up their own. To use idontical codes would be foolish.

MR. GRONIER: I think that is true. If the committee were to analyze it there may be some codes that could be used nationwide by being changed from time to time, and could be used to advantage. Maybe I am entirely wrong.

MR. GEND: Everybody is going to get this and you might as well be prepared and not be caught flat-footed. On the way down to Washington we had to write the minutes of a meeting that hadn't taken place. At the same time, the first question is "Well, all right, what have you got that is better than this?" If you say "Here it is, what can we do about it? This is feasible and will work" they will give you a release to operate under these conditions. Otherwise, you are under this same restriction. The only places that have authority to operate are California, and, of course, Mr. Raub, from Erie, and stations in the East where it has been activated. I think every fellow would be interested in what is satisfactory to them with the least amount of work; in other words, have a working plan to present. I don't think there is any possibility of using a nationwide code, because each one of the Interceptor Command Offices has a different way of thinking.

MR. GRONIER: Maybe the president wants to appoint a new State Systems Standards Committee and have them work out the dope for presentation tomorrow.

MR. VICKERSON: I think it would be very fine if Mr. Geno would just give us a bare outline of the system used in making up the code. He told me about it and it is very good. Most of us aren't very good at making up codes, and I think it might be quite a help.

MR. GRONIER: I think so too. We had "dog", "Mary", and "May" in it and it really sounded to me more like a Boy Scout flag system than it did a real good efficient radio system. I was never satisfied with it because of our ignorance. Would you rather report on that tomorrow, Mr. Geno?

MR. GENO: I can do it right now. I will take each group as we have them arranged in our code book. The book was made up by the department, in the small book that would easily fit your pocketbook. We have a mimeographing outfit like most of the departments do. We have 1681 streets and they are listed in there. No instructions were put in the code book proper so that if one got lost and somebody found it, it would be hard for them to tell just what it was good for. We called in the captains and lieutenants and went over it with them very carefully and issued the books to them. Each one bears an individual serial number in good large letters on the outside, and that is charged to the division by virtue of charging it to that captain. This is our code word, you can use any one having the same number of digits: REGULATION. There are five versions of that, and we will do it consecutively (illustrating).

R E G U L A T I O N
1 2 3 4 5 6 7 8 9 0

To make it simple enough to be intelligible to anyone, we put the word down again each time. There are five versions of this word, each having a different setup of numbers. That makes the rest of the code pretty flexible. A street address "123" would be "REG". We have a signal 25 that we code, which means burglars trying to get in, or burglars in. To overcome that we use the code in that instance. 25 could still be coded by using "EL". The streets are numbered, for instance No. 1 might be Abbot Road. It might be obvious that a street would be number one, so you could code it "R" and the number would be "REG". When you get up to numbers in streets beyond one hundred, you can still pick it out of here. Fundamentally, we intend to use just the numbers as assigned to the streets in the code book.

QUESTION: How would you do that with north and south streets?

MR. GENO: We have streets in Buffalo such as 1819 Twentieth, or Twenty-first. They might be in the code book 1105 or 1100. If they got 804 on the air it would be Fourteenth Street. We thought of taking each group of streets, say all the A's and the B's and assigning letters to them, but that propounded the flexibility. The minute you add another letter to the letters that you are using up here, it is going to add more confusion to those men out in the cars. The numbers are consecutive. We made this as simple as possible and at the same time we said if there are any corrections tell us and we will cooperate. They like it. The next thing was they insisted that in no way we give any information to the enemy, so we had to code all the towns we would have to mention, as well as our important defense points in Buffalo. The Howitt Rubber Co. would have to have a code word, the Ordnance works, the Buffalo Arms, so we tried to associate something with each one of those points so that when it was mentioned it would give the fellow in that area an idea what it was. For example, take the case of the Batavia Barracks. Batavia is famous for one thing and that is the Veterans' hospital. They have a very large medical unit. The code word

for Batavia became "VETERAN". Likewise, Ethol Spring, which is a state constabulary, became "WATER", and so on. For the aircraft plants, the natural thing was to associate them with something that flys, so we coded them as some type of bird. In their own little categories that means a lot. They know what to associate in that area, so they don't have to thumb through the book. You can assign any kind of name or number which you believe would be all right.

The only thing that remains is to code everything that has to do with enemy action. You boil that down and think of the things that could happen in an emergency. We have to try to visualize the seriousness of the situation, and what actually could happen. If you boil it down there aren't too many incidents that you couldn't code in about 15 types of complaints. We boiled them down as best we could and listed them. Sabotage has the top space. You might refer to that as "AB" or any other consecutive letters. That is entirely up to the person. If they like they can use the number series. We give that some specific designation. You can pick out any consecutive letters you want. Go down the line with all the incidents. You have several types of bombs; high explosive bombs, you can take letters out of that or assign a word. Then there are incendiary bombs, demolition, delayed bombs, and, of course, fire from bombs, gas attack, enemy aircraft grounded, friendly aircraft grounded, unknown aircraft grounded, power or telephone lines down, gas line hit, water main hit. That is about the list. Don't lose sight of the fact that their outstanding argument is the fact that the navigators will know more about the section than you will.

MR. JONES: Do the cars code their replies?

MR. GENO: Figure that out. How many times does a car really give any information. You dispatch a car to the scene of an accident, for instance, he doesn't call up and say "Will you send an ambulance to such and such an address", but he says, "This is car 6. We need an ambulance." You look back in the log and see where to send the ambulance. Suppose you dispatch a car to an incident, say a bombing. All of a sudden he needs some help. He is going to come on the air and talk to you in good plain ordinary American. I can just imagine some of our boys when we have to observe this two-minute shutdown. Nevertheless, this accomplished the purpose that we set out to do. In other words, we have a direct release, in writing, from the First Fighter Commander to operate under these conditions, and that is the object we set out to accomplish. Are there any other questions? As I see it, it is going to be mandatory that we adopt something like this in order to stay on the air.

MR. GRONIER: If there is no more discussion on this contemplated work for the State Systems Standards Committee, I have nothing to report. We haven't had any meetings, but it does bring to our mind the future work of this organization, not only on frequency allocations. I think the new State Systems Standards Committee is going to have a job on their hands in keeping us on the air, by educating us to use proper codes and signals. I am going to turn the meeting back to the president.

MR. WILT: Are there any men who haven't registered yet? If there are any present, please register. You can tell the ladies to be in the lobby at 9:30. They are going to give them a trip to the art museum, or if not there, some place else. The exhibitors are still on the third floor, just above us, and they haven't had many customers. They don't have much to sell, but you can see what they have and renew your acquaintances with them.

The next committee is the Development and Activity. Is there anything for that committee?

MR. DESHAFFON: I am on that committee. We didn't have anything with the exception of this proposition on membership and a special committee was appointed on that. If nobody else has anything we will pass that over until this committee reports.

MR. WILT: Is there anything for the Resolutions Committee? There is that matter of drawing up a resolution on the continuance of membership. There was a motion made, but I think it should be made in the form of a resolution. That is, the continuance of membership of those of our members in the armed forces.

Is there anything for the Operating Procedure Committee?

MR. BRYANT: I don't know much about what has been going on. Donstaedt, of Detroit, is chairman of the committee. He and his assistants in the department have worked out a new police communications directory that is being printed now and will be mailed within the next two or three weeks. He has gone to a lot of trouble with it and has gathered considerable material. He sent out a questionnaire to almost every police communications division in the country. I am sure most of you got a copy, and I hope all of you answered it. He has rather complete information if you did, and it should be a complete directory.

There is one thing that I believe was brought up at Orlando about a change in the code word list that we use, the code identification letters like "Adam" for A, etc. There were about six or seven changes in the list. I think mainly it was to eliminate from the list words like "Boston", "Chicago", Denver", that is, place names. They substituted "boy" for B, "Charles" for C, "David" for D. I am sorry I don't have that list here, but you will remember reading about it in the Bulletin. The list never was approved by the conference at Orlando and was to be taken up at this meeting. I can only ask if you are sufficiently acquainted with it to make a decision.

MR. ERICKSON: I think that is a very good move. Ohio doesn't seem to use it very much. They say "C- Chicago" on phone and we don't hear it, but on telegraph they are on our frequency and you get three or four "Chicago's" and you have to lend an ear to listen. If it were "Charles" you would have a little peace of mind, if you were working a circuit. It is confusing in coding intercity messages also to have "D - Denver" , "C - Chicago", etc., because if it has geographical names in it at all, you might have the message misunderstood or misrouted on account of the coding. It lends to confusion. I think the conference should go on record as adopting that system and try to get all the departments to use it.

MR. BRYANT: I don't believe it would be advisable to ask you to approve that without reading the list. I will try to get hold of that before tomorrow or Thursday and bring it up again. It will take only a few minutes. I will read the list and if there is no objection we can take care of it. Would you be willing to change your own code list to agree with that? It isn't very important, but it would be worthless to adopt that list and stay the way we are. We have already written it up, we have the mimeographed sheets ready to send out to all operators and officers in the cars. It would be well if everybody would agree to that proposition. We will read it tomorrow and maybe we can make a decision on it.

Is there any other question on operating procedure? As far as I know there are no complaints on the present radiotelegraph operating procedure. I know there are a lot of complaints on the abuse of the WPPA system. I don't think that properly comes under Procedure Committee work, however.

MR. WILT: Thank you, Sergeant Bryant, for taking that through.

Mr. Geno, chairman of the Intercity Relations Committee, is present.

MR. GENO: I believe I had a misconception of this committee until I got some information around Detroit and Cleveland. I have a couple of axes to grind, but they are pretty much localized and I believe I can grind them with the fellows they are supposed to be ground with.

Intercity Relations, I believe, has a lot to do with the telegraph service. I think a lot of fellows here perhaps hate my fellows at Buffalo because of a lack of cooperation. I don't think it rests exactly in the radio station, in most instances. A message goes out and because of some Identification Bureau or some Auto License Bureau we get held up until the next day, and the thing may be of vital importance. To prove that it can be done, we had a murder take place a week ago, involving a negro who had a record several places. We sent out quite a few individual messages ahead of the WPPA and put a lot of "priority" on them. In some instances when we were sending it to the second and third station, the first station was calling us to give the answer. That proves it can be done, but there is a terrific lack of cooperation either in the stations or back in the police departments. In a lot of instances we use the telephone right at a point where there is a CW station. Columbus, Ohio, apparently because of a message I sent down there, doesn't give us too good service. I am not saying anything, because I listen to the job they have to do. They have the zone frequencies to take care of and, fortunately, we don't. There could be a little better operation. The operators don't make a habit of first taking a listen, after giving you a call of 5195. They say 5140 without ever listening to see if it is busy, and the other guy sits there until the big noise stops. That is not good. Maybe the fellow has been pulling his hair out to raise you, and he dumps you on the frequency because he didn't bother to monitor it.

On the handling of traffic we have a lot of direct refusals. We have a few we never do raise; of course, most of the CW net knows those. I believe a little heat should be put on them by the Operating Procedure Committee. Set up a definite system whereby if you have to use a different "Z" signal, use it. Instead of saying "Go to 40 and if it is busy listen on 35", change the wording or meaning so they will know enough to do it. If you are busy, the tendency is to hold back a lot of traffic. A message was held up ten minutes exactly because the channel he told him to go to was occupied, but the next one was clear.

MR. WILT: Thank you, Mr. Geno.

At the Orlando Conference we gave one of our members a big job that takes a lot of his time. He is still on that job, and that is Mr. O'Neil. Maurice, do you want to say a word to the men?

MR. O'NEIL: Mr. Chairman, fellow members of APCO, I am glad to have this opportunity to let you know that this organization has been represented at each meeting of the Defense Communications Board, now the

Board of War Communications, that Mr. Murnane and Inspector Batts have also attended the meetings. At each meeting, and for each moment that there was a session, this organization was represented. The cooperation I have received from my fellow police officers on Committee VIII has been excellent. There has been no pulling one way or the other. There has been splendid cooperation throughout. I am not permitted to divulge just what takes place in committee meetings, but I can assure you everything possible that could be done for the benefit of the members of this association, and the departments they represent, to operate equipment under the best conditions possible, and all things that could be secured for them, all of their interests have been taken care of in every way possible. I assure you that as the meetings are held from time to time, and as long as the city of New Orleans, the mayor and chief of police there are willing to defray my expenses, this association will be represented by me. When the time comes that the funds are not available, if I am able to carry on my own finances, I will do so. If not, the officers of the association will be notified and I will resign the position that you have given me. But until that time and until Superintendent George Ryer, of the New Orleans Police Department, has told me our funds are too low to pay my expenses, the organization will continue to be represented by me, and I will do the very best I can for all of you at all times.

MR. GRONIER: I would like to make a motion that some of us have discussed, that the secretary be instructed to write a letter to Maurice O'Neil and a copy to his chief and the mayor, thanking them for the expenditures they have made in time and money in giving us the services of Mr. O'Neil for the past two years.

Second to motion by Mr. Deshaffen. Motion carried.

MR. O'NEIL: I want to thank you for that. It is very nice and I know that the mayor and superintendent will appreciate it greatly. They have put out quite a sum of money. In all, I have traveled close to 20,000 miles for this association since that time. They also paid my expenses to the Havana Conference in 1937; in fact, they have done everything possible, and they stand ready and willing to continue to do so, because our interest is their interest. They certainly have been helping me out wonderfully.

MR. WILT: Has anybody anything for the good of the organization that you want to discuss on the floor? If not, the meeting will stand adjourned until tomorrow morning.

WEDNESDAY MORNING - July 29, 1942

MR. WILT: Gentlemen, we will now come to order. The first thing on our program is an informal discussion by Mr. R. M. Ellis of the P. R. Mallory Company. We are all acquainted with Mr. Ellis, and I think he is going to tell us something we want to know.

MR. ELLIS: Mr. Chairman, Members of A.P.C.O and Guests -

We are faced with our most difficult problem since the inception of police radio - the maintenance of police communication equipment at maximum efficiency during the war. The peace time police functions of keeping law and order are now augmented by the vital necessity of protecting war industries and personnel against sabotage. The problem thus becomes important in national defense.

War-time equipment maintenance involves two factors - the obtaining of maximum life and service from existing equipment; and second, the procurement of necessary replacement parts. The second factor arises largely from the War Production Board Order M-9-C, which restricts the availability of copper and brass mill products to orders carrying a priority rating of A-1-K or better. Relief from this restriction through the availability of a higher priority on police equipment is a matter which must be handled by the organizations representing the police departments. There is unfortunately no way that we know of whereby the manufacturer can help the priority situation.

However, perhaps we can give you some hints that will be of value in securing longer life and greater service from one product containing critical materials---vibrators.

When on a standardized life test modern vibrators show a remarkable consistency as to the amount of life they will deliver. This consistency is not always obtained in the field because of the variations in operating conditions.

A vibrator is not a "brute-force" device. Its life is very largely controlled by the operating conditions. If the conditions are favorable long life will be secured - if the operating conditions are bad, vibrator life may be very unsatisfactory. Let us therefore examine the factors which make for long vibrator life.

It is not generally known that temperature has a considerable influence on vibrator life. Within reasonable limits, the cooler a vibrator operates, the longer it will run. It has been determined by thermocouple tests that a vibrator attains its maximum operating temperature after about three hours of continuous operation. If at that time the vibrator is turned off and allowed to cool before being re-operated, a much longer life will be secured than if the vibrator is allowed to operate continuously. This emphasizes the importance of shutting off the car radio when the car is out of service, even for short periods of time.

Consideration of operating temperature should be given when installing a receiver in an automobile. For the sake of both the condensers and the vibrators, always choose the coolest possible location for the set.

Not all automobile receivers have been built with proper ventilation. If your records on any particular model set show consistent short vibrator life, check the ambient temperature. This should not exceed 50 to 60 degrees centigrade for best vibrator life. If the ambient temperature runs higher than this, give careful consideration to the possibility of adding a few ventilating slots in the receiver housing - it may work wonders.

Long vibrator life results from proper circuit constants and from light loading. Let us analyze these factors separately.

The successful functioning of a modern vibrator is due to its use in a tuned circuit so that the voltage and/or current is at or near zero when the contact points make and break. If proper circuit tuning is not achieved the life of a vibrator may be very short indeed.

The circuit tuning is performed by the buffer condenser in combination with the inductance of the transformer winding across which it is

connected. The buffer condenser is usually connected to the high voltage secondary winding for 6. volt equipment because the large number of secondary turns permit the employment of a condenser of small capacity. If economic and space considerations were disregarded the buffer could be connected to the primary, altho a very large capacitor would be required.

From this information it will be seen that proper vibrator life requires the use of a power transformer operating at a reasonable flux density so that core saturation does not occur, plus the correct value of buffer condenser. Since the buffer condenser tunes the circuit, variations in value are permissable only within narrow limits. Incorrect values of buffer capacity may originate from the following causes -

1. Incorrect initial design.

   This is very unlikely in the product of any reputable manufacturer since all major radio manufacturers have their transformer designs approved by their vibrator supplier.

2. Change of transformer design in production. This is just a possibility, but it can happen that a change in the grade of transformer iron will alter the inductance of the transformer so that the previously selected value of buffer capacity will no longer be correct.

3. Carelessness on the part of a serviceman in making a replacement. Here is one factor that will occur with regularity. Because the receiver will operate with the incorrect value of buffer capacitor, the fault will not be recognized until it is discovered by the continuous record of short vibrator life.

4. Change in vibrator frequency.

   If the replacement vibrator has a radically different frequency than the original equipment vibrator, a different value of buffer condenser is required. Happily, most all vibrators now available operate at or near the frequency of 115 cycles, so that trouble from this source is now rare.

The correct value of buffer condenser can easily be determined by connecting an oscilloscope across the primary winding so that the wave form can be observed, and then adjusting the value of the buffer condenser for about 90% closure. If any of the members would care to discuss this with me after the meeting, please come to the Mallory booth.

Vibrator life varies considerably with the primary load current. If the load is light the life will be long. If the load is heavy the life will be shorter. Consequently any change which will reduce the current drain of the receiver will result in greater vibrator economy.

An examination of some receivers show that they are capable of delivering an audio output far in excess of the actual requirements. Like extra horsepower in an automobile, extra audio output is nice to have when you need it. But when replacement vibrators are difficult to secure it is worthy of giving some thought about reducing power output to decrease the burden on the vibrator. The burden can be lightened either by substituting a smaller output tube, or by increasing the value of the cathode bias resistor on the power output stage.

Now let us talk a few minutes about service procedure. It is rather universal practice to make repairs only when the set stops operating, and then to fix only the part that has failed. May we suggest that under existing conditions you give repair procedure more serious consideration.

Now is the time to keep life records on tube and vibrator replacements. Some of you are doing that. Be sure that you keep your records against each individual receiver; and make use of these records. When you find that any one particular receiver requires more vibrator replacements than the average, check into that receiver and find out why it is hard on vibrators. Such conditions **do not** just happen - there is a reason for it.

Mallory Engineers have worked out a new procedure for servicing vibrator operated receivers which takes out guess-work and saves time and effort. We urge that you adopt this procedure, which is described in the 1942 Mallory Vibrator guide, available without charge. We believe that this procedure is worthy of a brief description at this time.

When the set comes in the shop in an inoperative condition and the fuse is blown, proceed as follows:

Connect a 0-20 reading D C ammeter in series with the hot "A" lead to the receiver. Connect a 0-10 voltmeter between the hot "A" lead and the receiver chassis. Be sure the ammeter is poled properly in the circuit. Install a new fuse and vibrator in the receiver and turn on the set. Read the meter.

The service manual of the receiver will give you the rated input current at some fixed potential, usually 6.3 volts. If the measured input current exceeds this rating by more than one ampere after the tubes become heated, <u>there is something wrong with the set.</u>

If the set were allowed to continue operation under excessive input current conditions, the vibrator will gradually reach a temperature which would cause the contact arms to lose their temper. Under these conditions the contact arms will warp and shift to a position where the vibrator contacts will remain permanently closed. This causes a dead short which will blow the fuse.

If the current reading of the ammeter is excessive, turn off the set at once to prevent damage to the vibrator, and check for trouble from one of the following sources.

(a) Replace the rectifer tube with one known to be good to see whether the input current is reduced to normal.

(b) Check the secondary buffer condenser, or condensers for shorts, and replace if necessary with units having the same capacity.

(c) Check by-pass condensers, especially those in screen circuits, for shorts or high leakage.

(d) If hash by-pass condensers are used across the elements of the 0Z4, these should be checked.

(e) If a hash by-pass condenser is used between the "B+" circuit and ground, it should be checked.

(f) Check the filter condensers for short circuits or high leakage.

(g) Check for a short or leakage, the coupling condenser between the grid of the power tube and the plate of the proceeding tube.

(h) Check tubes for shorts. Output tubes especially are likely to develop shorts. Also check the bias voltage of the power tubes. Low bias voltage will cause abnormally high plate current, resulting in a short vibrator life.

When it is certain that the receiver is in proper operating condition, the original vibrator should be reinserted in the set. If the "B" voltage is at least 90% of the B voltage obtained with the new vibrator, and if the old vibrator operates smoothly, it should be left in the set because it is capable of giving more service.

There is one more thought that I wish to leave with you. If, when examining a vibrator mechanism you find the springs have turned blue, the points have a burned look, the rubber sound insulation is charred, and possibly even the solder melted where the lead attachment is made, heavy overloading is indicated. There is no known manufacturing defect which will cause the trouble. The vibrator has been handling so much current that the IR losses have heated it to destruction. In all such cases, there is definitely something wrong with the set.

In closing we would say that our company has had considerable correspondence with various police departments relative to the purchase of vibrator reeds, springs, and contacts, for overhauling vibrators.

The idea behind this of conservation of raw material is indeed commendable. However there are two practical objections to the plan. In the first place, the vibrator springs and contacts require the same priority as complete vibrators. Second, the tools, jigs and special training necessary for the proper adjustment of vibrators is not available to the average service organization.

When the vibrator industry was in its infancy, we sold vibrator repair parts - and gave detailed adjustment information in a manual. However, the general results were so unsatisfactory that we discontinued the practice. We have been compelled to view a vibrator in the same light as a radio tube - a useful device to be used until it is worn out - when replacement should be made.

The logical attack of the vibrator replacement problem is not to turn every police radio repair shop into a vibrator adjustment and repair station. The proper attack, we believe, is that through A.P.C.O., I.A.C.P. or other national organizations, proper representation be made to Washington so that the essential priorities may be secured in order that police work, including police communication, can proceed with peace time efficiency--- and better.

It has been a genuine pleasure to address this meeting. The A.P.C.O. is an organization of which we all can be justly proud.

MR. WILT: We will go into a little business for a half a minute. I have three more applications that I would like to get action on this morning: Walter Mentzer, Indianapolis; Harry C. Myers and Emory Wright, Charles-

ton, W. Va.

On motion by Mr. Gronier, second by Mr. Biorn, active membership was extended to these men.

MR. WILT: We have already heard Captain O. S. McDaniel of the Southwestern Bell Telephone Company, but he was to be with us again this morning. Captain McDaniel has been called out of town, but we have Mr. W. J. VanNice, also of the Southwestern Bell Telephone Company.

MR. VanNICE: It is nice to be here with you. I don't know what Mr. McDaniel had in mind saying to you today. I understand you put him over the ropes and got the information he had when he talked the other day. He was called to Omaha very unexpectedly last night and I had about twenty minutes notice. I got word this morning about 10:00 o'clock that this meeting was being held, and I wanted to come over and see if the pictures went all right and if there was anything he should have done that I could do.

In connection with this picture, it might be interesting to know just a few of the things we are faced with. We are a little selfish in telling this story, because we feel that from here on out certainly we are going to have one hundred percent cooperation from telephone users, or we are all going to be in rather serious trouble. We, of course, are affected by the war just the same as every other industry. You know that copper, rubber, and all the metals have been strictly curtailed, and we have no priorities on them at all. We are in the same boat with the rest of you. One of our principal products, of course, is copper that is used in all the wires; another is aluminum, and our supply of aluminum has been cut off along with everyone elses. Our engineers and scientists are working hard to develope alternate materials. We like to call them alternate and not substitutes; they are doing the job just as well as the material we used previously.

Just to give you an idea of the job we are faced with, in 1941 we connected 1,361,000 telephones in the United States. That is more telephones than were connected in the first twenty-five years of the history of the company, and that was done in one year. At the present time, in the Southwestern Company alone, that is, our company in Missouri, Kansas, Arkansas, and Texas, we are handling about three and a half million calls per day, that is local calls, and about four and a half billion a year. That is a lot of calls. I heard a fellow tell a story the other day that impressed me very much. He said, "Do you know how much a billion is?" Everybody thought they did, but when he told this story I think all of us had a better impression. If you started out spending one thousand dollars a day the day Christ was born, and had continued spending one thousand dollars every day, you wouldn't have spent a billion dollars yet. So I say four and a half billion is a lot of calls to be handled in a year.

You have seen a lot of the work being done by the Bell system in connection with the Army, Navy, Air Corps and Marines, the tremendous demand on Western Electric, which is the supply department of the Bell system, also the drain placed on the local companies. It is a big job; the biggest with which we have ever been faced. So far we have been able to meet it one hundred percent. So far we have been able to care for the needs of local service. There are some places where we can't take telephones at the present time, and we are afraid they are going to increase. There are some places where we are having difficulty handling the calls. When you add to Army business the increase in the personal business calls and from boys in camp and the normal increase in personal usage due to curtailment of auto-

mobiles - instead of driving over to see your son and his family in the machine, you are calling them up in a great number of cases - those increase the number of calls to be handled.

The thing we are asking you to do is this: Help us spread the load and curtail the unnecessary calls. That leads us into the next picture which is entitled "Ready on the Home Front". It was prepared by the Southwestern Bell Telephone Company and the Civilian Defense Committee for the State of Missouri and will show you some of the principal phases of civilian defense and also show you the importance of telephone communication systems in connection with civilian defense. Just to give you some idea of the importance of telephone communications in civilian defense, if a flight of bombers started into St. Louis from, say, Mexico or the Gulf, the first thing that would happen, one of the spotters which are located in about every square mile over the United States would call into what is called a filter center. Then the next spotter would call in. They are all assembled there and they do what the name signifies, they filter out the extraneous information. A very excited farmer called in and reported a flight of four planes. He said they were very high, and he couldn't tell just what size they were. They got no more reports on it so they called back to check on it and a very embarrassed voice said, "I am sorry. I was wrong. It was four ducks." They filter out all information that apparently isn't correct, and then pass on to the information and control center the actual factual information. There it is all compiled on a large map which you will see in the picture. Then the information branches out to the Army. The army commandant in the information and control center will order the anti-aircraft batteries into operation. He will order the pursuit squadrons into the air to intercept the bombers.

Then there is also the civilian defense organization. By use of the telephone they call the information to the various civilian defense groups. It goes first to the district control center, then to the posts, and various civilian defense organizations are placed in operation from the calls which originate in the information center. After the bombs begin to fall, the post wardens call in by telephone and report the damage that has occurred, so many casualties, certain buildings on fire, water mains broken, etc. Then from the control center they again dispatch various crews that must be sent to that location to take care of the damage. I think you can see that there is a tremendous importance placed on the communications system in connection with civilian defense. Again it is very important that during these emergencies the use of the telephone for normal purposes be done away with entirely. This picture will show a lot of these things I have told you about, and I think you will appreciate that when one of these things happens you are going to have to leave the telephone alone.

Two pictures were shown at this time, The Telephone Arsenal and Ready on the Home Front.

MR. WILT: I think we surely owe a vote of thanks to Mr. VanNice for the educational pictures that have been shown. I have learned a lot, and I believe that you have also. From our organization I extend you our thanks, Mr. VanNice.

Mr. Link came to St. Louis last night direct from the WPB in Washington and he brings to this convention something of great importance to our organization. I will now turn the meeting over to Mr. Link.

MR. LINK: Members of APCO, Friends, and Guests, there is a little bit of misnomer in that introduction. I am not an official representative of the War Production Board, but I do come from a special meeting of the WPB with some relatively sad news. I was under the impression when I left Washington that the WPB had an official agent or representative here. Arriving here I find that is not the case, and it is not going to be my job to attempt to indicate what the policies of WPB will be or anything else, because I don't know; I frankly admit that. It certainly would simplify our whole task if we had some representative here from the War Production Board to set the rules right on all the major factors that will pertain in the future to the procurement of radio equipment, both new and maintenance parts. I don't think anybody knows. I talked to Mr. Nielson of the Federal Communications Commission to find out if he had any particular information that could be used, and he is substantially in the same position I am. No one seems to know exactly which way the ax is going to fall.

We do know one thing, however, I have been designated the correlator to advise the WPB as to what will be necessary for the satisfactory operation and continued maintenance of the necessary police radio equipment for the next several years. I have no part in the policy to determine what new equipment will be procured or what new equipment will be permitted to be sold and distributed throughout the country. I only know that it was definitely told to me that if there is any new equipment, and there will be some, it will be very carefully and very judiciously handed out to certain necessary and essential police departments. However, there is another problem that is just as serious and that is why I am here. I have been granted the authority, as the representative of the WPB committee, to contact all manufacturers and suppliers in the country and determine and get certain definite information. I think our present, Mr. Wilt, and other members of the Executivie Committee, will recognize and concede you fellows that I have that authority.

I am going to present the case just as quickly as I can, and it is a serious one. We not only have staring us in the face a curtailment in complete equipment for police radio application, which I think you are all familiar with, we have an even more serious situation that has already come home to a lot of us and to others it is still in the rumor stage - that even those with equipment are going to have a tough time keeping it on the air. There is just as much a shortage in replacement parts and necessary maintenance parts as in the new equipment. The WPB has determined that there will be a definite limiting of replacement parts available to police departments. What does that mean in your particular case? It means that a police department on the West Coast with 150 mobile units in service requires a certain percentage of replacement parts. If my investigation of the field indicates that there aren't going to be enough replacement parts to give every one what they want, the WPB will stipulate what each can have, and those less necessary to the welfare of the country will be deprived of replacement parts, which is the same as putting you off the air.

To eliminate as much as possible any unfair situation developing from this condition, we are going to attempt to set up a rationing pool in advance of the difficulty. It may not be successful. It can only be so if we get one hundred percent cooperation from all police departments. I have requested permission to present this matter to APCO on the assumption, and I believe I am right, although I have been granted other powers to handle it another way, that the way to get this information is to do it only through the people that have to use the equipment. I have talked to Mr. Ellis, of the Mallory company, and he concurred; I have talked to Mr. Becker, of the

Bethel-McCullough company, and he also concurred on the impossibility of going to the manufacturers and asking them to give me information that I can translate into something effective to turn over to the WPB. Let's take the case of Mallory, for example. I go to Mr. Ellis and say "How many vibrators of a certain type can you make available?", and he says, "I don't know. After all, we sell most of our vibrators through jobbers and I don't know whether they go to police radio." There is no way to tell how many vibrators are sold by Mallory for replacement work for police radio. Consequently, I would have a very difficult time determining from him the police radio market, although he probably represents the largest radio manufacturer in that line that police radio has to deal with. If I can't get comprehensive answers from him, it is obvious that I would have difficulty quite similar to that any place I turned in the manufacturing field.

Hence, I believe, and I think I have the cooperation of the older heads in this group, that the way to handle this is to put it entirely in the hands of APCO, as the most representative group in the police communications field in the country today. The big problem is once again going to be the inability to get one hundred percent cooperation from everyone in the field. You people here will recognize the seriousness of the case when you hear the whole story. People not here will be a little lax in their analysis of the problem and there will be a lot of people, not members of APCO, who won't pay any attention to it. I think my recommendation to the WPB would be this: We are going to ask the police departments throughout the country to help us correlate the necessary information to insure the operation of police radio systems for the next several years. I expect, very optimistically, to get about thirty percent returns. I know they will include most of the important police departments. I know there is not a key supervisor of police radio in this country who doesn't recognize the importance of the situation. In smaller departments they may have the necessary material to carry them through and haven't begun to feel the pinch yet. I know you recognize that fact. How are we going to get the little fellows? There will be certain little departments, who, through neglect or indifference or just because we won't have any way to approach them, will not cooperate in this project. The recommendation would be made to the WPB that those who cooperated in obtaining the information would benefit from the pool, if and when set up. This would mean that departments that threw away the request for information wouldn't get any equipment. The jobbers won't have any stocks at all. There will be no way of obtaining parts except through PD applications to the WPB. Suppose Police Department "X" makes application and says they need certain material. The pool that has been set up has no record of any request from that department. They have no choice except to say that no material can be allocated to that service. That way WPB will have control and can cut down on departments they feel unnecessary.

At the present time you all remember that the War Department, Navy, and WPB all feel that police radio is a luxury and not a necessity. It is a fact - I don't know why. They do not consider it as highly essential. The only way we can ever prove the essential need is to get in there and fight and do a lot of it. It happens that certain committees in WPB, including one headed by Mr. McIntosh, know that certain police radio is highly essential, and they are determined to keep it in active service no matter what happens. They know that if there is no maintenance material available in the country their help will be of no avail. Their first move is to budget all the materials available in the country and utilize it effectively where it will do the most good; the second move is to throttle departments that aren't essential by the simple expedient of not being able to make available

certain replacement materials. The manner of control is obvious; whether or not it is a fair means of control I don't know. But it does seem to me that unless the police departments and the officials of the police departments start and cooperate right now we have no right to cry later when a limited amount of materials must be divided among departments who have cooperated.

How do we work? This whole thing was formulated since Monday night. I left the committee meeting Monday afternoon at 5:30. They asked me to come out and try to present the case; in view of the fact that most of you fellows know me they felt I could put it over in your own language and make you understand the seriousness and realize that something has to be done. The answer must be in as of September 2. When you realize that is only five weeks away, you know the committee has very little time.

The opinion was presented at the committee meeting that transmitting tubes used in main station transmitters not only will be very difficult to obtain but may be unobtainable. Consequently, there is a second procedure in the wind, which is certainly not official, but I think I can drop the hint that it would be very wise if all police departments, instead of trying to squeeze the last ounce of power, would reduce the power output to the absolute minimum, if by so doing you could possibly increase the potential operating life of the vacuum tubes and other parts in your sets. There doesn't seem to be any alternative. I know a lot of people that have high power tubes in their main station transmitters; frankly, they are unobtainable on less than an A-a-1, which is untouchable. I think Herb Becker will readily bear me out on that. The life blood of the Eimac group was police radio and amateur radio. They don't want to let that group down, but they can't do anything about it. The move now is for the tube manufacturers to try to show you fellows how to get the most life out of the tubes, and it is up to you to assume that what you have right now will have to last a long time. It happens that in the tube field alone the government must have for essential requirements for combat equipment far in excess of the possibilities of the tube manufacturers for the next two years. There is a potential help in that situation that is being worked on now; the decisions and how it is being worked on I am not at liberty to tell you, and frankly, I don't know. Mechanical and electrical rejects on tubes of certain classifications that do not pass government tests would be made available for essential civilian use. Police radio is considered an essential civilian use. It doesn't come under the classification of essential from the military standpoint, however.

We have tried to check this situation and I will take a typical type, the 6L6. Unless you had local sources of supply, you have probably experienced difficulty several months ago in your efforts to obtain spare replacements. What you have experienced up to now is nothing to what is ahead of you. There aren't any 6L6's! RCA cannot turn out enough for military use alone. They couldn't turn out enough, by roughly fifty percent, for military requirements. When these tubes now available for jobbers' stocks are dissipated, there will be no way to get your equipment on the air.

What is the alternative? The first alternative is to try and find out what can be done about making tubes available; what can be done about redesigning and using other tubes. In lots of equipment that can't be done. My recommendation to the committee will be that if possible we find out what a maximum stock pile of used, defective, mechanical rejects and all other types of 6L6 tubes might possibly be. Let us say that in this stock

pile in the next twelve months there will be something in the nature of 100,000 6L6 tubes available for all types of civilian services. The first thing to give consideration is commercial airplane point-to-point radio, essential broadcast transmissions which must be kept on the air. They must be guaranteed a certain number of tubes. Let us say our survey shows that police departments throughout the United States will require something in the nature of 50,000 6L6 tubes for normal maintenance. After checking over we find there are 30,000 available in the country, and after that, nothing. The next move is for the WPB to start discriminating on its requests in the form of PD applications for 6L6 tubes. Podunk will send in an application for 6L6's, they will determine that it isn't vitally necessary, and they can't justify it. On the other hand, the state of California may request fifty 6L6 tubes and the authority to get those tubes would be granted immediately. With that authority would be, possibly, a notice as to where they could be obtained. It wouldn't be like the priority issued now; you might get priority and couldn't get the equipment now - it must be backed up by "money in the bank". It must be backed up by the tubes. It will probably stipulate that here is a priority that will be good on Hygrade Sylvania, for example, for a certain number of tubes; or here is a priority that will be used against Hytron. They have 87 in stock and here is a priority for 36 tubes, and you can get them from that company.

It is really an extremely serious situation. I have tried to take this tube angle because I think you have all had 6L6 troubles. I know you recognize that while you have had difficulty getting them now, unless something is done to effectively distribute the tubes that will be available, it is possible that the wrong people will get the tubes. If any of you people are from the East and have had to go through this gasoline rationing you know there is nothing worse than a poorly administered rationing setup. It would be an injustice and it would work out that a lot of police departments not essential would get them, and others that are essential couldn't get their hands on them.

The policy as to who will be considered essential is something that is not in my hands. I have an inkling as to how that will be determined and it may be bad news for some of you and good news to others. I believe that the WPB action, backed by the Army and N avy, will be to give first consideration to police departments within one hundred miles of the coast line. Others will be considered on their merits as military establishments. There is a fundamental shortage of materials and nothing can be done about that.

Now let's get on with the situation as to how it can be worked out. I have requested APCO to cooperate in getting this information together so that we would have a fair and impartial study. I asked that because any recommendation that the committee makes to the WPB as to what will be the needed replacement materials for police radio work will probably be the final story. I understand from Mr. Peoples that they will probably take the recommendations complete; if the committee makes a mistake and doesn't protect police departments and their radio systems, there is going to be a tremendous injustice done once again. We feel we can overcome that if we get the APCO to help us get the information together.

Exactly how that should be worked out, I don't think any of us have determined as yet. We talked it over in a general way, hopeful of finding a simple solution for the problem. I think I have a workable method. In presenting it to some of the older fellows in the group last night, I think they agreed it was a sound method of approach. We would request APCO,

through the facilities of the national organization and its national mailing list, to send simplified forms to all police departments and make a sincere effort to see that these forms get in the hands of the radio technician and not in the hands of the mayor or city manager, with the admonition that the filling out of this form is essential for the ultimate operation of police radio systems. If anything could be done to make it mandatory - but I don't know how you could do that. On the other hand, some of the boys feel you can practically make it an order to get the information in. It is not only the fellows that fail to get in the report that will suffer, everybody will.

In order to attempt to circumvent any such difficulty I suggested we get from all the police departments that will report an analysis, for example, Police Department "X" has nine GE transmitters and receivers and a main station unit that they report on, the type number of the equipment, what maintenance difficulties they have had over a certain period of operation, and what materials they feel will be necessary for the continued successful operation of that equipment over a two-year period. You might run into difficulty with a police department that would say, "I might as well ask for three times as much as I need." That condition wouldn't help anybody. It has to be a fair report on the thing, because, frankly, there isn't enough material anyhow. If Police Department "X" asks for 50 extra tubes that doesn't mean they will get them. Here is what is going to happen. Police Departments "X", "Y", and "Z", send in reports, all using GE equipment. They send in a report on the tubes they will need. If "Z" is going to need 15 tubes, "Y" is asking for only 10 tubes, and "X" asks for 50, that shows evidence of poor management and "X" is going to be curtailed. Of course, the fairness of the thing has to be worked out. Maybe Police Department "X" worked on the basis of 24-hour service and "Y" on the basis of 10-hour service.

Let us say we have some fifteen or twenty standard types of equipment with which we are familiar. If we can get a good plan which indicates that over a year's time a Zenith 7IXY transmitter requires one and a half 807s, one-third of a 6L6 and one sixth of a 7C7 - in other words, it will be broken down to a point that will show that a unit of that type will require approximately so much, based on the average of reports I would get in from this particular group. You could go to the F.C.C., which has a pretty active record of the various types of equipment in service, and find that there are 961 XM37Y transmitters in service. Our reports have indicated that this type of transmitter will require one and a third 807's, and we put aside the number of 807's that will be required. Here is where the F.C.C . comes in. They would be requested to determine how many licensed equipments were actively in service, so we don't get an inflated idea of the needs. That the F.C.C. would be willing and capable of doing. They would get that information for us. We would take Zenith, GE, Galvin, our equipment, and all the others, and we immediately set up a plan of what is involved and what the normal maintenance characteristics are of this particular type equipment. Obviously, the equipment that requires the least maintenance would be given the greatest consideration by WPB for any future police radio, so you fellows who send in the reports and turn in excessive requests will not only be hanging yourselves but the manufacturer who supplied your equipment. It will automatically show that maybe the Podunk equipment is of inferior design, they have so many tube failures and so many condenser failures. Maybe it would be a good idea to refuse to allow that company to produce and make any equipment. These things must be taken into consideration. Anything said may be used against you. A fair report is the only way it can be made effective.

It must be effective and it must be truthful. If we get all the commercial types of equipment and catalog them, check the F.C.C. records and show how many definitely are in service, we have a plan of requirements. But, unfortunately, that misses one thing. The F.C.C. has a record of all composite transmitters, but it would be practically impossible for any human being to catalog that information in the next five weeks. We will have to estimate the average maintenance problem for composite equipment and set up a plan accordingly. With the composite and commercial equipment we have the two greatest factors that come into the picture. I am trying to think if there is anything else.

There is one thing that I am going to bring up and I don't know how to handle this one at all. There is no record anywhere of what receivers, how many, and the types of receivers used in police radio services. The F.C.C. has no such record. There is no place you can go and quickly get such information, and the needs of police radio will be just as serious from the receiver standpoint as from the transmitter angle. The only way is to get answers from everybody in the field. I don't know whether there will be any critical shortages on most of the standard receiver type tubes, but there definitely will be shortages on some odd types. If there is a stock pile available they would like to freeze them and hold them for police radio use. We will have to find out what these types are. Maybe we should request the various police departments to indicate the tube types that are difficult to obtain. Of course, we know you have a list of tube types available. I guess it would be too much to expect that the technician in the smaller department would have any knowledge of what these types are. I guess the only way is to try to get it ourselves. Keep in mind that I am dreaming this thing along as I go. I have no particular plan. I am attempting to get a formula that is going to be unquestionably fair to all people. On the transmitters, through the cooperation of APCO we will be able to cover that to a satisfactory degree, and I think also through APCO we will be able to notify all members and all other people just how serious the situation is. Sometime after September we will be able to let you know what you are going to have ahead of you, so if there aren't going to be tubes of certain types available you can take special precautions to insure long tube life.

On the receiver situation I don't know exactly what we can do. It would be almost impossible to print a list of some three hundred types that have been discontinued and have them state if they need any of these types. It would be almost impossible to correlate that information. In any case, I have tried to outline some of the problems ahead. Just how we are going to work this out I don't believe any of us know the exact formula. I believe we have a ninety percent plan worked out. I have asked APCO to cooperate in trying to get the information. What we are trying to do is work out a single sheet form that can be answered yes or no, in the most simple terms, involving main station equipment and mobile equipment, what you feel you are going to need so that the report can be made to the WPB. All we can hope for is one hundred percent cooperation. If we don't get it I know it is going to be a very serious matter in the future.

In view of the fact that my efforts in behalf of this situation are entirely impromptu, I would like to have anybody ask any questions or make any suggestions. I am here to get information and suggestions from everybody if I can.

MR. McDONNELL: I wonder if any one else has been in the situation I am in. We have composite fire department equipment that is just as essential as the police department. Maybe somebody has a water works department.

MR. LINK: In speaking of police departments I was using that as a figure of speech. The fire department would come under the same general classification. That reminds me of a good example of what you shouldn't do. He had sent in a little order to my organization for 50 mobile antennas and wondered why my priority people kept using all kinds of excuses. Frankly, they weren't exactly stalls. I know exactly what it was: just an arbitrary rule that no one can use 50 antennas at one time. I told Mac about it. You are going to have to assume that anybody who attempts to build up a surplus is about six months too late. If you built it up a year ago, that was a swell idea. But as far as setting up a reserve now, you might as well give up the idea because it will be at a tremendous cost to your fellow police officers.

MR. GENO: Who represented the Army at the WPB meeting and thought police radio was not essential?

MR. LINK: If Mr. Nielsen of the F.C.C. is around I am going to let him bear out what I say. I am simply telling you some information out of school. I am not supposed to come here and say they don't like us.

MR. GENO: We know that very definitely, but I believe there are ways of dickering with them. I believe we have very close association with the armed forces, at their own request, and can become a very important part of their setup, so I can't hear them making that statement without asking that you qualify it.

MR. LINK: It is difficult for me to reconcile their attitude with my understanding of the advantages of police radio. In fact, the Army has gone even further. I will give you an example that may or may not be a good one. In the East we have cases where state police radio systems have been operating effectively on a two-way basis. I will name Connecticut, although that isn't the one I refer to, where the state police officials have offered the complete system to the Army to be used as an emergency net and the Army for some reason or other isn't interested. They go ahead and procure equipment, which is the reason the police won't get it. The Army is going to set up substantially the same network.

MR. GENO: Who is the WPB? Just a small faction. Why don't they get in touch with a large organization like APCO? Here are the representatives of the entire United States. This is the organization that should have something to say about it. We have a representative in Washington. I haven't been able to get any information. I walked down to a military office ten days after Restricted Order No. 1 and the man in charge of the office said, "We didn't have a copy of the order until eight days after you were supposed to comply". Something is missing, either representation or something.

MR. LINK: The situation is this, maybe I spoke out of turn at the committee meeting the other day. It was suggested that I know all of you people in the police radio field. I said, "They are having a convention now", and Mr. McIntosh asked me if I would consider coming out here and talking to you. They asked me as a favor to come out here and see if I

could get some cooperation from APCO. I don't know exactly how it can best be handled. I am in a very peculiar position. I am here to try to help a situation as much as I can, and I was hoping that my friend Mr. Nielson of the F.C.C. could be here.

MR. McCONNELL: A certain war plant in our area is wanting to tie into our department for communications. I have a letter from the F.C.C. directed to the head man of this department in which they outline two ways of doing that, and one is under the Commission's ruling that municipal or state police may cooperate with the manufacturers of war materials by extending their facilities to that group. It appears that the smart thing would be to tie in with them.

MR. LINK: There seems to be a lot of mix up in that particular setup. The F.C.C. is highly cooperative with police radio. You should know that. I don't think there is any question of doubt that the F.C.C. is one government agency that has unquestionably backed police radio. That goes all the way down the line. On the situation Captain McConnell brings up about the F.C.C. showing ways and means of cooperating with defense plants, General Summerville, of the Service of Supply, has prohibited them from buying any radio equipment because there is a shortage. One group is of the opinion that there is no equipment available and the Service of Supply has sent out a directive with which I think Mr. Duval is familiar.

MR. DUVAL: I know it was in a telegram on May 18 to the various ordnance plants forbidding them to purchase any more radio equipment, and placing limitations on the quantity for the size area they had to cover. Some of them had 60 or 70 sets; they were equipping all the office boys.

MR. GENO: WPB says an ordnance plant can't have it, so Curtis Aircraft says, "We can have it, can't we?", and they are getting it by the hundreds.

MR. LINK: Why this difference of opinion in these government agencies should exist is something I would never be able to foretell. I could give you some good reasons why it should not exist. This situation at these ordnance plants, as Mr. Duval pointed out, to a great degree these ordnance groups had been securing equipment in sizeable quantities, but that is nothing alongside the needs of police radio. Police radio has been securing them at a greater rate. Along comes the Army and says we are not getting the standard Signal Corps and Navy designs of equipment, and we will have to take commercial police type of equipment temporarily to fill in the gap. The Field Artillery and armored forces and lots of others in the Signal Corps and in the Coast Guard and Marine Corps have secured tremendous quantities of police type equipment. Not because it is ideal, but because it serves their needs until they get the special equipment. What happens is this: The WPB gets a request from, let us say, Illinois for one hundred mobile units. The WPB says, "Why, sure, we would like to see Illinois have it." They OK it. Then they turn it over to the Army-Navy Munitions Board for their OK. They look it over and say that as far as they are concerned it doesn't mean anything to them, but the Navy representative will call up Commander Shaw or Commander Patton and say, "Is there any reason why we shouldn't release some radio equipment to the State of Illinois?" Maybe the Marine Corps says "We are just thinking about buying 400 units". The information goes back to put a stay on it and they do. Then the WPB writes back a letter and says that due to the shortage of material they can't grant the application at this time. Maybe the Marine Corps

won't buy it, but at that moment they thought they needed it. In order to protect the armed forces the policy now is to not make any equipment available except when the Army and Navy backs it up. The WPB will recognize, and so will the F.C.C., any showing on the part of the Army and Navy as to military necessity. They will give that preference in every case.

MR. ELLIS: I was wondering if anything has been done either through the ARRL or through the F.C.C. regarding the tremendous amount of radio parts held by amateurs. There are 50,000 amateurs, and 807's and such parts are very popular. Some sort of a patriotic drive might be initiated. It seems to me that the am ount of radio equipment held by amateurs would be enough to keep police radio equipment going.

MR. LINK: I think you are right. A few amateurs became plutocrats over night by selling alleged transmitters to the military services. I know of a few cases where amateur transmitters in the fruit of decay were turned over at fabulous prices. I think a good many amateurs might be willing to sell at a high market, because they can't operate now anyway. Frankly, I hadn't thought of that. I think it would be a good idea to have the WPB canvass the amateurs. A half used 807 is better than nothing at all.

MR. DUVAL: There are certain sources of listed types of equipment they will take in, HRO receivers, for instance.

MR. LINK: I can understand that on the receivers. They are in need of getting these units right now, and they are like money in the bank. Do you know if anything has been done to try to get in second-hand tubes, condensers, and things like that?

MR. ELLIS: Most of the stuff is composite. There are also a lot of crystals.

MR. JONES: I was talking with an Army civilian employee that I sold a receiver to, and he told me that within a short time the Army will take steps to even buy component parts of receivers. They will send these fellows around to the various cities to buy them up. I think we are a little late on that score. I have another thought about determining the requirements of police departments. This group here possibly represents twenty-five percent of the police stations in the United States. There are many cities that are not represented; for example, in Alabama we have Mobile, Montgomery, Tuscaloosa, and several other towns that are fairly sizeable. I believe that in order for that thing to work and work properly you would have to get a list from the Communications Commission of the various police stations and make it compulsory on the part of the F.C.C. or the WPB that the information be given.

MR. LINK: I think you are entirely right. In fact, we looked at it from that particular angle, and I think we came to that conclusion. Unless it could be made compulsory, and also unless the information got into the hands of every licensee, it would not present a true picture. In a lot of these police departments the mayor happens to be the licensee, or maybe it is a fire commissioner. We will have to work out a method of approach, because unfortunately in a lot of instances the licensee will not answer the questions.

MR. LATHROP: When an inspection report is made out the inspector puts down the name and the license of the one in charge of the maintenance

of the station. Those records should be available.

MR. LINK: Would you assume that the key man should be obtained from each police department?

MR. LATHROP: I think we should if that thing is directed to him or his successor. In a good many cases the man whose name appears on the record is in the armed services or some other job. You can see the necessity of getting it in the hands of an intelligent person familiar with the problem. Incidentally, this is diverging from the situation, but I think APCO could do a good job if they would make a recommendation to the F.C.C. that as a part of every license application, not only would the information on the licensee be made a part, but also the name of the technical person responsible for the correspondence. Most F.C.C. releases don't get to the hands of the key people at the right time. As I say, that is just another thing that came to my mind. The idea that it looks as if we are too late brings home a point that has hit me in the back of the head. If the Army recognizes shortages to the extent that they are going out and salvaging equipment, it looks as if we ought to get busy.

MR. PEEL: Right along that very line - as this is the national organization I don't think I am speaking out of turn because it will soon become public anyhow - but they are getting practically all the available receivers, transmitting tubes, transformers, chokes, filters, the transmitting condensers of the prominent sizes, types, and standard makes, and meters. That comprises the main component parts of anybody's transmitting and receiving setup; I am afraid when they do get through there won't be anything available at any price. They are buying it up on high priority so that the jobbers can order replacements, but I know in my own case, even with those high priorities, when the jobbers send to us it would be six, eight, and even twelve months before we could fill our orders.

MR. LINK: Mr. Peel and the rest of the people can sing their song of the blues, because it is really serious. Possibly all of you know it, but I am just rubbing it in with the hope that anyone who doesn't know it will leave here today with the idea that it is very serious and the future of police radio is at stake.

MR. BRYANT: As you say, we haven't much time. Who is going to prepare the questionnaire? Who is going to print and mail it?

MR. LINK: I have asked APCO, in view of the fact they have never failed to attempt to contribute something to the national effort in behalf of police radio, and with their very lives at stake here would be something that APCO could not only contribute to the overall well-being of police radio but could solve the problem and come out of it a stronger organization. I believe the steering committee concurs with the desirability of doing that. It is going to be a tough task. On the matter of the inquiry or circular, or request for information, I suppose that will be pretty much in my hands to determine what the WPB would like to know. I have asked a lot of questions to try to get some ideas. That plan would be set down, and I would send the form to APCO's authorized representative with the request that it get into the hands of as many people throughout the country as possible, with the understanding that I would attempt to get from the WPB the authority to go with this, so when these forms came into the various offices of the police departments that they would recognize it is a serious business. It is possible that this can be handled through the franking privilege of WPB.

I am not certain about that. You must realize it all happened very quickly, and I am not a duly authorized representative of WPB. However, I think that the details of how it can be handled, once we decide that APCO is going to help, will follow in the normal trend of events.

MR. McLAUGHLIN: Would APCO have to contact all the police departments or just the members of APCO?

MR. LINK: To make such a proposition fair, it would be an attempt to contact all of them.

MR. O'NEIL: It seems to me the logical place to look would be the cooperation between the F.C.C. and the WPB, because they certainly have the facilities both for printing the matter and formulating the questionnaire, and sending it out to all of the licensees in the United States, while if the APCO would handle it there is a chance there would be some hard feelings later due to some people not getting the questionnaire.

MR. LINK: We get back to the spot we started. They can do the job without asking for outside help, but they don't feel they are up to the task. They realize that if they get the information they must have help.

MR. O'NEIL: How about letting APCO formulate a questionnaire that would be suitable to cover as much detail as they request, and help out in that way?

MR. LINK: There is no reason for not doing that. My suggestion was that in trying to get information they try to get all possible the first time. It isn't so much the idea of finding out from each individual group like yourself that has a quantity of equipment of one type, the main thing is to try to cover these boys who have small equipments and composite equipments that won't have any representation otherwise. I know that everybody that has my equipment will be adequately represented. I know how many thousands of units of each type are in service, and once I determine the maintenance problem, which I can do from my own records - anybody who has my type of equipment wouldn't necessarily have to report. Possibly that would be the case with the other manufacturers. I have the authority to approach such manufacturers. I want to make it as all inclusive as I can, and I felt that the way to start was with the police departments and not the manufacturers.

QUESTION: Wouldn't it be the proper thing for this group to formulate the questionnaire by a committee and see that the proper persons in the various departments receive it?

MR. LINK: I would think there is no reason why they shouldn't. What we were going to try to do was set up a rough draft and see what we could do.

MR. WILT: A committee has already been working with Mr. Link:

MR. LINK: I didn't know the status of the committee exactly. I did know that some of the older men in the organization have been in conference with me. Now we are in a spot where we would like to know what we should do about it, and the object of my discussion is simply to try to make the situation clear and then see what we should do. WPB would probably prefer that they handle it through their own channels, but I feel that it should be accomplished by working through APCO. I see that Mr. Nielson has entered

the conference room. I wish you would verify one thing. Am I correct in saying that the official opinion of the Army, Navy and WPB is that police radio is definitely in the non-essential class?

MR. NIELSON: I don't think that is particularly true, as far as I know.

MR. LINK: What I am trying to point out is the fact that we all know that police radio has a very short shift in the Army and Navy. Their attitude has been that the equipment is needed for more essential purposes.

MR. NIELSON: I don't believe I could answer that question, because I haven't heard any official comment from the Army and Navy.

MR. HERRITT: In view of the fact the Executive Committee and a few of the other members met a little unofficially, I believe the president should appoint a so-called "War Committee" to work in conjunction with the secretary-treasurer, and that the secretary-treasurer be instructed to obtain the latest F.C.C. list of licensees, prepare the questionnaire and mail it to each police licensee. Would that take care of the problem?

MR. LINK: Mr. Nielsen, do you see any particular reason why in an effort to get this information on replacement parts requirements that the F.C.C. could not make available to a committee of some type the complete list of licensees?

MR. NIELSON: We have a list prepared. It is not a publication; it is on our official records down there. I am sure there would be no objection to any organization copying the records.

MR. HERRITT: In view of the fact this has to be in by September 2, could the F.C.C. submit a copy of that information as quickly as possible?

MR. NIELSON: We are short-handed and I wouldn't want to commit the Commission on that. I would be glad to look into that and see if we could get a list for you.

MR. LINK: You missed part of the discussion as to finding some way to canvass the police departments in the country today to determine the requirements for maintenance for the next two years, so that WPB will have the necessary information for establishing a stock pile of maintenance parts of certain classifications.

MR. NIELSON: As I understand it all you want is the licensee, the address, the number of stations, frequency, and power.

MR. LINK: With the addition of the type of equipment and number of active units that would apparently be the essential part. In view of the fact this is WPB's baby, maybe the request should come from the WPB to the F.C.C. If necessary the WPB can send people over there to copy it.

MR. NIELSON: We are now in the process of furnishing the WPB with a complete list of municipal and state police stations, possibly for the same reason.

MR. FETCHER: I think it would be more efficient if this organization prepared the questionnaire and the WPB mailed it out. The proposal

so far in sending out this questionnaire has been only for police departments. How are the utilities going to receive the questionnaires? They would be on the same basis.

MR. LINK: I had attempted to over-ride that particular difficulty by assuming that responsibility myself. I would take that through another way. The number of utilities licensed is relatively small in comparison with the police departments. It is very easy to get to the necessary key people. They won't represent more than 30 percent of the police group. After all, it is not the problem of APCO to cover the utilities.

MR. NIELSON: There is one thing. I understand the I.A.C.P. sent out a questionnaire sometime in December, and they got a response of about forty to fifty percent on it. If you do send out a questionnaire I imagine you are not going to get one hundred percent response.

MR. LINK: If they got as much as forty or fifty percent response I am amazed and pleased; I didn't think they would get that much. APCO's unfortunate record has been much worse than that. They got a very poor response.

MR. O'NEIL: In regard to questionnaires, I think that is one thing that is a sore spot in the minds of lots of people in the police field. Sometime ago it seemed to be a practice of universities and educational institutions throughout the United States to forward to police departments questionnaires of such length that it was amazing. I have seen them come in that would take the constant work of several men in the department for at least two days to complete. I think the response from police departments of late has largely been due to the feeling that they have had in the past toward these unnecessary questionnaires. I think they have broken down the spirit of lots of people in answering questionnaires.

MR. LINK: I think we all agree. It was our premise in sending out the questionnaire that anything over one page that required more than yes or no would be worthless. So long as people can count up to one hundred, I think they can answer the questions we are going to ask, if they have the information readily available.

MR. O'NEIL: I didn't mean it would occur in this case. I only meant the attitude of the departments has been such, owing to the unnecessary questionnaires that have been forwarded to them. The ones that are really essential, put out by this association and similar ones, certainly would not go to such length, which I believe was not altogether necessary.

MR. LINK: There is one unfortunate circumstance which must be taken into consideration. The questionnaires themselves will be simple; it still will require a certain amount of study on the part of the key people to insure getting the right answer, because the right answers are going to be essential.

MR. GENO: Don't you think it would be desirable that the association go on record as asking the Commission to put some authority behind this questionnaire? After all, they can give a license or take it away. If the questionnaire is well prepared and sent out under an emergency ruling by the Commission, you have to answer or else. That is the only way that I can figure we will get an answer.

MR. NIELSON: I think that is possible, however, in making your request I would much prefer that you trust it to the Commission to set up the material you want on your questionnaire, if you decide that the Commission is to collect this data for you. I don't know whether the WPB is working on that end or not. I think before you do anything you should check with the WPB and find out if they have released a questionnaire. I think they were contemplating doing something of that sort.

MR. LINK: I don't know if I am an innocent bystander or not. Maybe I am "it". I am on a task committee for radio transmitter replacement parts for the WPB, and I have been sent out to try to get that information.

MR. NIELSON: I think I can promise the license list. As to directing the questionnaire, I would have to take that up with the Commission itself.

MR. LINK: I think we have three or four worrisome things to take up, and these boys from Kansas get awfully hungry. I am going to turn the meeting back to the President.

MR. WILT: It is one o'clock; perhaps we had better adjourn until 2:00 o'clock and then come back and carry on this discussion.

Motion to adjourn by Mr. Maeshner; second by Mr. Fetcher.

WEDNESDAY AFTERNOON - July 29, 1942

The sixth session of the Ninth Annual Conference of Associated Police Communication Officers, Inc., was called to order by the president on Wednesday afternoon, July 29, 1942.

MR. WILT: We were supposed to start at 2:00 o'clock. I don't see Fred Link, so until he comes we will drop off where we were. Mr. Vickerson has something that I believe is going to be very interesting, so I'm going to ask him to take about fifteen or twenty minutes to give us some information about a circuit which he devised and about which he wrote in a recent article in the APCO Bulletin under the heading of "An Air Raid Alarm Device".

MR. VICKERSON: Friends of APCO, first I would like to tell you a little about the Eastern States Police Radio League. When Lieut. Joyce left for Honolulu he turned over to me the job of secretary of the Eastern States Police Radio League. As you know, he was your former president and he is now a Major in the Signal Corps at Fort Chafter, Honolulu. I would like to tell you a little about this League. We have a tentative membership of about 220, 85 of which actually pay the annual dues of one dollar. The league meets once every two months with an average attendance between 35 and 45. The meetings are held in a different city each time. We try not to hold them near the extreme edge of our territory, because we want it to be as handy for as many as possible. The meeting places are also chosen on the basis of what there is of interest in the particular city to the members. For example, the last meeting was held in Providence, Rhode Island, where there is located one of the most elaborate civilian defense radio systems in the country. The entire system runs on batteries, including the main transmitter on the 116 megacycle band.

One of our meetings was held at the headquarters of the Connecticut State Police so that the members could see the new FM system of ten main 250-watt transmitters and 250 two-way cars. Also, we endeavor to get engineers from the leading manufacturers to give us the latest technical information on new developments. In addition, we use films which the telephone company and General Electric Company furnished us without charge on technical radio subjects. During the summer we try to hold one meeting at which the women and children attend, the last being held at Reviere Beach where everyone was permitted to go on any of the mile of amusements without charge. At the conclusion of the business of each meeting, we collect 25¢ from each member present and give him a 75¢ supper, the remainder of the cost of which is taken out of dues collected. In addition to being a social organization and clearing house for technical information, we have approved 114 main station frequencies and 64 car frequencies.

In regard to the frequency allocations, we put on our letters of approval the maximum power which we think the station should have to do the job. We did not do this at first and consequently have a few over-powered jobs. We realize the same as you do that we do not have the authority to regulate the power, but this is how we actually in the last analysis regulate it. If the request is too high in regard to power, we write or telephone, asking that it be reduced to about 20 or 30 watts for municipalities where the maximum distance to be covered from the transmitter is but two or three miles. For larger cities, up to around 100,000 population and where there are large buildings and a distance to be covered of about six to ten miles,

we consider 50 watts sufficient. For the larger cities and states, 250 watts is deemed OK. We prevent the applicant from securing greater power than we feel he should have by wording the approval thus: The Frequency Allocations Committee has approved your request to operate a main station of a certain number of watts on such and such a frequency. We used to say: Limited to such a power, but we were tripped up on it in Washington, and asked to approve the frequency and not refer to the amount of power. However, I spent hours in composing a letter to the FCC on the subject, and Mr. Nielson, whom I did not know at that time, wrote me that we could again suggest the power.

To minimize interference and permit us to re-assign the frequencies at close intervals, we try to get the applicant to use a car frequency for his cars. The reason for this is that a sensitive pick-up receiver which is used for picking up cars has a good ground and antenna system and will pick up main stations 100 miles or more on the ground wave, whereas the normal car is not received in a pick-up receiver more than 15 miles, especially if the squelch is tightened up. Of course, you know we cannot sell everyone the idea of using two frequencies, especially small towns where the funds are limited. One of our best talking points is to explain that with the two-frequency system the headquarters pick-up receiver will be much more quiet and easier to work alongside of than it will be if it is picking up all the main stations within 100 miles or more. In making frequency assignments, we use a committee, some members of which are familiar with the entire area. We use the type of maps which show the outlines of the municipalities rather than those with just dots on them, so we get an idea of the area to be covered. Also, we use colored map pins to make it easy to determine which areas can stand another system on a particular frequency. In cases where the municipality applying for a frequency is located near the border of our territory, we consult with the Metropolitan League which covers parts of New York and New Jersey.

Right now we are moving most all the cities and towns on 35,900 to make room for the new Massachusetts State Police System, which will be similar to that of Connecticut. Agreements have been secured from the municipalities involved, and the state will pay for the labor and material. In this case it is necessary to move nine systems and find other places for them. When working on this project I often hum that old song to myself "Lord Only Knows What Trouble I'm In".

When a Fighter Command office is activated in your district, it will be necessary for you to listen to a broadcast receiver for the thousand cycle tone and standard alert message which follows such tone. After receiving the message you must send a postcard to the Fighter Command, and if you do not do so you will receive a letter from the FCC calling for an explanation why a card was not received by them. In Boston, when we received an alert test we used to put it on the teletype system, which covered thirty cities and towns. In this way there was very little chance of a slip-up resulting from someone not hearing about the test and mailing in the card. However, the FCC asked that we discontinue this practice so as to make each city monitor for themselves. They did, however, request that in the case of a real alarm that we give it as much publicity as possible over the teletype and otherwise. When we first started monitoring we had to listen 24 hours a day to women talking about the best way to do their hair, and other matters relative to how good Lux was for laundering stockings. This

monitoring took up three men's time in order to cover 24 hours of each day, and they were unable to do any other work which required concentration. Therefore, we built this device which we attach to a receiver and which keeps the receiver quiet until the 1000 cycle tone comes on and turns the speaker on. I will describe one system for doing this. There are many other systems, some of which use vacuum tubes, and are rather complicated and the tubes are hard to get, whereas this device can be built almost out of your junk box. First, I will describe the fundamental circuit involved, thus making it possible for you to design your own device according to what parts are available. If you wish to build this device in its more elaborate form, you will find the entire circuit and descriptive matter in a previous issue of the Bulletin.

(At this point Lieut. Vickerson drew the diagram of this device in small sections, making it very easy to understand it. For diagram, see APCO Bulletin for May, 1942.)

MR. WILT: Thank you very kindly, Mr. Vickerson. Now, Mr. Link, if you will come forward you can pick up where you left off before lunch.

MR. LINK: Since morning does anyone have anything to offer? I have exhausted everything I have to offer.

MR. McLAUGHLIN: The only thing I have to offer is on the lines of what I started to say before and Mr. O'Neil carried on. It seems to me if this questionnaire were sent out by APCO to all police departments who are not members of APCO there would be a tendency among a lot of them to throw it in the wastebasket. APCO would indirectly be responsible for them. I believe that if it were sent out by the WPB it would carry more weight.

MR. LINK: I think your point is well taken. If APCO by some stroke of fate or accident should happen to get a favorable response you would come out a stronger organization than you went in. I believe it was the opinion of the special War Committee that here was a chance for APCO to show that it represents a majority of the police departments of the country. Consequently, if APCO takes over or attempts to help out in this situation, they are obviously undertaking a task for which there will be no thanks. But everyone more or less indicated they were ready to get in there and punch. It is a chance to do something!

MR. McLAUGHLIN: I think everybody would be willing to do all they could. We know that everybody favorable to APCO will go along one hundred percent, but I am talking about the other departments around this country that are not a part of APCO and have never been. Will they pay as much attention to a questionnaire sent out through APCO as WPB?

MR. LINK: I think they won't, but if APCO can become a leader at this time it is all the more credit to APCO.

MR. McLAUGHLIN: I was wondering if we should carry the burden.

MR. LINK: I think that can be readily answered. Here are supposed to be the leaders. If you don't undertake the responsibility for carrying through for the laggards, obviously, somebody is going to be left out. It is my opinion that APCO is sort of obligated to try to bring order out of a chaotic condition. I believe the committee, who would be invested with the

responsibility of helping out, recognizes the hazards to APCO in going into it. I am not sure that they recognize the fact there is liable to be calamity at the end. I assure you if somebody doesn't do something that is what will happen.

MR. WALKER: Briefly, what is the questionnaire?

MR. LINK: The questionnaire hasn't been formulated as yet, but the WPB has come to the conclusion that not only is it impossible to continue to allocate new police radio equipment, as and when needed throughout the country, except in special cases they have come to a more serious decision that there is not going to be sufficient maintenance parts to keep existing departments in operation. Consequently, the WPB has established a task committee to determine the amount of replacement parts necessary or adequate for maintaining existing essential equipment. Fortunately, or unfortunately, I have been made the "goat", as far as police radio is concerned, by the government. It is my job to try to get cooperation and as quick answers from as many comprehensive sources as I can. I have been requested on behalf of the WPB committee to present this case.

MR. GRONIER: Who was it sent the other questionnaire wanting to know how many bolts and nuts we were going to use in 1945?

MR. LINK: I don't know, but quite possibly it was the WPB. However, they didn't get the answer, otherwise they wouldn't be so frantically trying to stir it up now. What we are going to try to do, with the help of everybody, is determine a feasible way to work out this problem. That is about the situation as it stands right now.

MR. QUANDT: I am in favor of APCO handling it for this reason. There is nothing to prevent all these police departments from being a member. As I look over your faces I am reminded that police radio has enjoyed many privileges and other departments sit back and enjoy the privileges that these men are getting. If they don't answer the questionnaire they wouldn't be considered and it would mean that much more for the rest.

MR. LINK: There is only one thing, and that is the fact that while that is my opinion it is not the opinion of the WPB. I said that would be my recommendation as a committee member on this particular thing, that if the police departments failed to cooperate they obviously should not be given consideration at a later date. Don't misunderstand the facts. That is just my opinion, but I do think it a fair way to look at it. If this pool of maintenance equipment is set up and parts are rationed, obviously, the department who didn't see fit to help correlate the information should be left out in the cold. The WPB is looking for ways and means of curtailing the useless and indiscriminate use of essential materials. They say there isn't enough material. They have indicated there are not sufficient maintenance parts, whether vibrators, tubes, rectifiers, condensers, motor brushes, antennas, or whatever it is. They say there isn't enough to take care of those in existence today. Obviously, those who have been considered are those essential in the eyes of the WPB. My job is to try and find out what materials are available and what will be needed. I will recommend what the people will tell me will be needed for two years, and WPB will say this much is needed and this much is available. We have less available than needed and consequently it will have to be rationed.

There is one thing that can be done and that is I believe the WPB will authorize whoever sends out the circulars to get the information, whether it is APCO or somebody else, I believe there will be some means of putting an official status to it, perhaps in the form of a directive in a letter that can be made a part of the formal request for information, so that the people will recognize a degree of authority.

MR. DUVAL: I have been wrestling around with some of this WPB, and I have seen a lot of selfish interest exhibited in various parts of it. It wouldn't be my recommendation to this organization that they try to consider it in the manner of selfishness. We are all in this thing. I have friends at Bataan, you have friends in the service. Because some individual police department or other user of radio doesn't happen to answer a questionnaire sent out is no reason that particular department should be penalized. We have utility radio in this country that is as vital in some respects as police radio. They are supplying power to essential war services, to aluminum plants which are very essential to aircraft production. I don't think any record should go out of your organization making a recommendation that anybody who doesn't answer a questionnaire should be penalized; for the future of our country, we can't be selfish. There have been tons of paper mailed out of Washington and other places, gathering data on all sorts of things. Another questionnaire might not be considered so serious because there have been so many of them. The manufacturers have a responsibility in this thing as well as the users of the equipment. Probably your stock pile of parts has been depleted, due to rush orders from the army. We have very few replacement parts, but certainly my company, and surely yours, has a good idea of the replacement parts necessary for their own apparatus in the field. I have talked that thing over with various individuals in Washington as to why the manufacturer himself should not be authorized to have the replacement of stock that he considers essential to maintain systems of all sizes in operation in the country. Let the responsibility be placed on the manufacturer to see that is done. The WPB could count those parts as a portion of a stock pile that cannot be used for the production of new apparatus. I just wanted to throw that in.

MR. LINK: I think we are all in agreement with that. I would like to refer to some previous statements. Perhaps I have missed out on something myself. I believe that three things were discussed after you left the room this morning that cover the whole situation. First of all, we came to the conclusion that the best way to insure adequate protection of these stocks is to utilize the manufacturers who I indicated would have a pretty good idea of the maintenance problems of their own equipment. That will be used as a basis of information, but all I am trying to do is not leave any stone unturned to get a full picture if I can. I am going to get this information if it kills me. If I feel there are three or four sources of getting it, I am going to try all of them. I am asking APCO as a representative group of police departments to see whether they can get some helpful information from the police departments.

MR. DUVAL: I wasn't implying that the services of this organization should not be used at all. I know there is valuable information obtainable there. A number of years ago Lieut. Vickerson gave me some valuable information on their maintenance. They used to keep a very accurate record of the number of service calls they had, the necessary parts, etc. You take a small city using three or four sets and they won't know what they use. They go up and buy what they need at a local store.

MR. LINK: We are going to try to take care of them by the average of this group.

MR. DUVAL: I know on the system Lieut. Vickerson has he probably could give me more information that I could get from our own records.

MR. LINK: The way I look at it, the best way is to take these groups that have a substantial amount of equipment of a given type and use those as a determining factor to estimate the needs.

MR. DUVAL: Why don't you simply take some of the large users throughout the country like the city of Chicago, Boston, the Connecticut state system, go back to your older larger systems, where you could get pretty good records, and use that as a basis or guide.

MR. LINK: That is fair. The only thing is that the individual user of composite equipment should be given some voice. I am trying to take advantage of every little out. Maybe some information won't be extremely valuable, but if we get it, it should be valuable in the future.

MR. DUVAL: You can't get through this war without hurting someone.

MR. LINK: But we don't want to hurt anybody if we can help it.

MR. DUVAL: Then we won't win the war.

MR. LINK: There just isn't going to be enough to go around. Mr. Duval is telling you the same thing I am trying to tell you in another way: There is going to be some degree of rationing.

MR. McCONNELL: I am wondering about our system. It has been in service seven years and every year we have added to it, growing from one unit on. When it came down to it we could probably carry on effectively with a third less than we have. The way I understood it, it was the actual needs necessary to carry on an effective service with the minimum amount of parts. I don't see how the manufacturer could supply that information.

MR. LINK: You hit the nail on the head. The manufacturer knows how many units he has sold. The user knows how many he has bought, and the F.C.C. knows how many are licensed, but only a correlation will tell how many are necessary.

MR. DERBY: I want to make one point. I don't think it is fair to exclude a man because he has composite equipment by taking manufacturers' equipment only. A great many places are using composite equipment.

MR. DUVAL: A city that has made two or three units - that is not a fair place to put in such a pool, but a city that has built 50 or 60 units, they are almost classed as a small manufacturer themselves, and they probably have a pretty good idea of what their requirements will be. But from a small city that has hired one of the local amateurs to build up one or two units, more or less out of the goodness of his heart, you are not going to get any information that will be of any use. He is going to have used two or three parts which no police radio system in the country will have used.

MR. LATHROP: You gentlemen talking about manufacturers' requirements have missed the boat completely. You can go over records on spare

parts and you can be five hundred percent wrong on what parts demands are. If you need a 50,000 ohm resistor you don't order it through the manufacturer; you go to the nearest jobber and pick it up. Therefore, your police radio systems themselves and their records can tell you what parts they have used. Your manufacturers' records are OK for something like a modulation transformer. They are not even accurate on dynamotor armatures. If I have a defective dynamotor I send it back to Pioneer. I I want brushes do I order through Graybar? No, I order direct from Pioneer. That way I get my equipment most rapidly. My own records will tell the number of parts I have used, but no one manufacturer or no five manufacturers of equipment that I am using will have anywhere near the correct idea of what my requirements are.

MR. LINK: I think we can sum that thing up as far as that goes by saying, for example, I would go to Wunderlich and say would you give us a report on what you think the average maintenance would be for one hundred of your standard FM mobile transmitters for a period of a year. Based on what he knows, he would be willing to tell me what, if anything, goes bad, what tube types are critical. I go to GE and ask the same thing. I go to my own group and ask the same thing. Then I go to the others and ask the same question. That should be substantially correct. All I am asking the police departments to do is certify that information. If the police departments come along and an interpolative analysis of their findings comes within 25 percent of the estimates of the manufacturers, we have something to work on. If we find that the police agencies are off five hundred percent, then something must be done. The main object is to try to attack this from two or three different angles; when the WPB is advised of what we think is the true status of affairs, everybody will get a fair chance in the next few years.

MR. DUVAL: I mentioned this morning that services other than police, such as utilities, that is emergency radio, must be taken into consideration, utility companies that have other types such as carrier current.

MR. LINK: That will be taken into consideration but through a different group. They have a very effective setup. Through the Edison Institute a lot of information like that can be obtained, and possibly by direct contact. They are not going to be forgotten. As far as I know there is no particular classification. I might indicate what the WPB feels are critical. In addition to police and fire, you have forestry service, government groups such as the FBI and Secret Service, which are non-combat, broadcast, both amplitude and FM, television broadcast, you have commercial aircraft, which is everything except C.A.A., and at the time of this meeting on Monday morning there was no decision as to whether the C.A.A. would be classed as a combative or civilian equipment; point-to-point radio comes within the scope of this activity; ship-to-shore comes in the scope; there are quite a number of things involved. All types of essential civilian radio comes within this study. If in discussing it here we have stuck to the title of police radio it was because this is fundamentally a police radio convention.

MR. VICKERSON: It seems to boil down to the fact that perhaps we should make up a questionnaire addressed to all police departments. We should put on the tube types, transformers, resistors, and some of those ordinary items they expect to use in a certain period, a couple of years or something like that. Perhaps we could get the F.C.C. to run through a list of envelopes like they use when they send out a release. They evidently have an addressograph and they can run through a whole bunch of envelopes to every licensee in the police field. That would save the addressing of the envelopes and

save the postage. The WPB perhaps could take the information given by us as to what the questionnaire should contain, have it printed and sent out. Then upon the return of the questionnaire there is going to be a job for somebody to go over the list and take out the different tubes, list them, the number in service, the different transformers that are supposed to be used during this two-year period.

MR. LINK: What we should have is a nice IBM machine, but I don't think we could do that. It is really a big job. I frankly don't think that I have the personal time to do it if I didn't have to do anything else. They have asked me to correlate it, and I am going to do the best I can to get a fair analysis of the situation. The reason I feel that APCO can help considerably is because it gives APCO a really serious job to perform, if it wants to take it and perform it. Here is something APCO and get its hands into and say "For the good of police radio in the future we are going to do it." Apparently the steering committee feels it is a desirable task to be performed.

MR. GRONIER: Would you suggest that a committee be appointed to work with you?

MR. LINK: I believe Mr. Wilt has taken that under consideration. He may have already appointed a committee. I wanted to present it to the whole group. If I knew the answer I would try to tell you, I assure you. From my standpoint I am convinced that APCO can do a very important national job by getting into this thing and helping out. Just how effectively, and how much work it will be, I can't tell you. If you agree to do it, whatever the task is, I know you will do it.

Are there any further questions that you can think of?

MR. YEAGER: You spoke a moment ago about using some IBM machines. The factory is right there, we have policed it for them and have good contacts there. Perhaps it could be arranged.

MR. LINK: I agree it would be fine, but I was clowning when I suggested that. If you had a well worked out and trained organization you could utilize something like that. We are not going to have that much information. The main thing is to interpret it effectively. What we want to come out with is this: I will take a type number of my own particular equipment, the FMTR mobile equipment. I want to come out with an answer, for instance, that they will use one-tenth of a 6L6 per year, and two units of 6L7's, etc. We want the same thing on all the other equipments. Then by going to the F.C.C. and checking their records we can find how many are in service; through their field service we can find how many are licensed and not in service, and that way determine what the status is in the field. Before we can determine that one and one-third 807's are necessary for normal maintenance, we have to have enough information so that the average is a fair idea of what the situation is in the field. You have to take it from a lot of different places; you can't take it from equipment that operates only under ideal conditions.

MR. ELLIS: I wanted to emphasize Mr. Lathrop's idea, and although it is probably superfluous, I can't help expressing myself. While on major parts of transmitters the user will go to the manufacturer, on receiver parts, particularly, with the possible exception of an oscillator coil or

something like that, the chances are 100 to 1 that replacements will be made from a jobber. Nobody is going to send in an order to the manufacturer. You probably sell quite a few of the larger tubes, but I'll wager if a 6J6 goes wrong they will get it from the jobber. The manufacturers' information on smaller tubes would be of no value. This involves receivers as much as it does transmitters, and you won't be able to determine a thing from the manufacturers on those, nor can we as parts manufacturers know where they are going for a sale. There seems to be no other place for the information except from the users.

MR. LINK: I think the thing to do is to take the request to the fellow who uses the equipment.

MR. LATHROP: I have another slant that I thought of. This present emergency has been shaping up in the minds of some of us for a little over a year. Some of us got a little scared before the others, and I know of a few cases where there are tubes of certain types to run for four years. I think in shaping any type of questionnaire it would give an unfair picture as to the requirements of police services if I said I need an average of three WE 242C's per year when I have a sufficient supply of those tubes in stock to carry me through for four years; I will not be anticipating any needs of that particular type. Therefore, the figure will be inflated.

MR. LINK: I think you have contributed a real thought. When the questionnaire is formulated there would be a very important spot to show what stocks you have on hand and in that way can be made an intrinsic part, although not available for distribution, it becomes part of the stock pile. I think that is a very important point, and I believe it can be taken care of that way.

MR. WHERRITT: I think possibly we are spending a lot of time on this. I move that the president appoint a committee to study this matter, discuss it with Mr. Link, and consider the mailing of the questionnaire.

Second to motion by Mr. Sowle.

MR. WILT: There is a motion before the conference that the chair appoint a committee which will be known as the "Special War Committee" to take care of this situation.

Motion carried.

MR. WILT: I have two more applications from the Wisconsin Chapter for membership, Mr. F. J. Sarles and Mr. Leslie E. Jenks. What is your pleasure on those two memberships?

MR. KADOW: I move they be accepted.

Second to motion by Mr. Biorn. Motion carried.

MR. WILT: I have an application for a chapter charter from the Indiana-Kentucky group. They enclose a copy of their constitution and by-laws, which will be passed on by the attorneys for APCO. If they meet the requirements of the organization, what is your pleasure?

MR. LATHROP: I move that the application be accepted, contingent upon the constitution meeting the requirements of our organization.

Second to motion by Mr. Fetcher. Motion carried.

MR. WILT: Our program shows we have an address by Professor Noble. He is unable to be here, so Mr. Frank Walker will address us at this time. Tonight we will have an entertainment, starting at 8:00 o'clock, sponsored by the Galvin Manufacturing Corporation, Fred M. Link, P. R. Mallory, General Electric, Eitel-McCullough, Inc., Katrinus, Shure Microphones, and the Peel Sales Engineering Company.

MR. WALKER: We are all greatly aware of the marked and definite evolution of radio communication during the last year and one-half. To police and all forms of emergency communication this evolution is of utmost importance. It is now a matter of record that equipment installed two years ago, even a year to six months ago, and serving the needs of its installers, is now made obsolete. Such a condition is the direct result of the development of ultra-high, frequency modulated radio equipment by our ever alert manufacturers.

You are all no doubt familiar with narrow band frequency modulated radio equipment which is more generally known to engineers as phase modulation. No attempt will be made at this time to elaborate upon this type of radio transmission for a great many papers have been prepared upon the subject and delivered much more comprehensively than could I. However, at the conclusion of this paper I will attempt to answer any and all questions pertaining to this equipment, either technically or administratively. Further, this paper does not constitute any endorsement of any specific type or make of communications equipment. Rather, it is prepared and given solely to possibly assist some other department or service that is contemplating modification of an already existing system or the installation of new equipment. I will attempt to describe how we were able to conduct the all important field survey, determining needed signal strength versus coverage area so that solid day and night, winter and summer communication would result. Again this is a case of supplementing and in the future possibly surplanting an already existing state-wide intermediate to low frequency amplitude system.

All of the credit for this installation goes to the Commissioner of the Michigan State Police, Oscar G. Olander. His complete faith in full scale radio communication for police departments, his recognition of its vital and imperative necessity should gladden the hearts of all of us here. Further, we should be appreciative of and guided by his complete faith in his staff composed of Captain C. J. Scavarda, Communications Officer whom a great many of you know well as pioneering with the APCO, Chief Dispatcher William W. Bouck, so ably carrying out the many far flung administrative duties of the dispatch office and Captain Donald S. Leonard, who needs no further introduction to this body and to the engineering staff, of which I am grateful to be a part.

As previously mentioned, this new system is in addition to an already existing amplitude modulated network. I shall briefly trace its history and composition. In 1929 Michigan installed the first radio station operated by any state police organization. Again it was Oscar G. Olander, our Commissioner, who did the bold pioneering. That first installation had many ramifications. Developments came thick and fast after all the national legislation was completed. The first transmitter was a Deforest, 5 KW using low level modulation. It remains, however, that a recheck of the old and anticuated logs of those days reveals the fact that at no time were

they able to muster anywhere near 5 KW output, but rather in the vicinity of 2 to 2.5 KW. Again the antenna was an old T type suspended between two 150 foot steel towers with a field pattern at which we would now shudder and with a sky wave that would please the newest amateur. With such a transmitter we started broadcasting to mobile and fixed points. It was a common sight in those days to see the troopers stop their model A Fords alongside the road at every broadcast, sit upon the running board with their heads jammed up behind the dashboards receiving or attempting to receive a car dispatch from WRDS, some 40 to 50 miles distant.

In 1936 and 1937 we added a new transmitter at WRDS, East Lansing, a full 5 KW RCA and two other new installations, WRDH, a 5 KW air-cooled RCA at Houghton Lake in the upper part of the lower peninsula, and WRDP, 1 KW in Paw Paw in southwestern Michigan. These three stations operated admirably well and gave us full coverage, provided the elements were favorable. As stated before, the coverage was full but we now see that the communication was but one-third. We maintained a one-way show full of blind broadcasts, blind car dispatches with all communication going out by radio and coming back by public service.

We had no communication or coverage of the upper peninsula of Michigan. This was chiefly due to our hesitancy in making an installation in that area due to the legend of iron ore in the ground which reputedly prevented adequate transmission or reception of signals. We now see how false this legend was.

In 1940 I was given the happy task of investigating the possibilities of two-way communications with our mobile units and point-to-point communication between all 44 of our state police posts in Michigan. More bluntly, I begged for the assignment for I was convinced that such a vast expanse as the State of Michigan, which has everything in the book - young mountains, vast plains, hundreds of miles of land with an extremely high content of iron, copper and other metals,with large cities such as Detroit, Flint and Grand Rapids, could be completely covered with ultra-high frequency communication. I soon abandoned amplitude modulation after conducting tests for some two months. FM installations, I might say installation, for there was only one, was investigated, yet the small coverage, the type and size of country was in no way comparable to our need. Obviously, some other solution had to be found. Some method of utilizing an extremely weak signal would have to be produced if coverage was to be complete and satisfactory during all types of conditions.

Again field tests were conducted and the project all but abandoned for the coverage under slightly adverse conditions just simply did not exist. At this point I knew without a doubt that signals in the region of one-half of one microvolt and even lower would have to be used to completely saturate the limiter in the FM receiver to give complete quieting of the thermal agitation in the receiver, thusly producing intelligibility. All FM equipment now on the market demanded a signal ten to fifteen times stronger to produce this condition. Further tests and data were compiled at our laboratory and the laboratories of the University of Michigan and the Michigan State College. We further found that the squelch would have to operate with definite action with a signal or carrier as infinitesimally small as one-tenth of one microvolt (.1).

Test equipment was again taken out into the field and this time we started getting somewhere. Various makes and types of FM ecuipment were

field-tested under rigid specifications and under the most adverse conditions. The light started to dawn and soon I had at my disposal a receiver designed by Prof. Daniel E. Noble of the Galvin Manufacturing Company, lately with the Connecticut University. This equipment, principally the receiver, came very close to my mental pre-test specifications. Again complete tests were run under the same rigid program. These tests proved that the long sought after coverage was almost a reality and the equipment needed but a few alterations.

I have referred to rigid specifications governing tests. This is what I mean. We all know that two radio engineers can make a piece of radio equipment apparently perform much better than can two non-radio men or police officers. They can seemingly communicate much farther with greater ease. Unfortunately such a police network as I was attempting to design would utilize police officers at both the fixed stations as well as the mobile units. Therefore, they were the men I had to furnish communications to. For the coverage and competitive tests I used a young girl with her only duty to sit at the receiver at the fixed test location and copy random serial numbers created by the officers in the test car. The test car operated in ever widening circles around the fixed point, broadcasting at pre-determined positions. They would log their location and random serial number which they would broadcast and proceed to the next position. It was a simple matter to inspect the girl's received copy, together with the car's log, thusly determining the exact limitations of the coverage, where it was solid, where it was fringy or where there was no communication at all. No other personnel was allowed in the receiving room when the car was on its test run. Engineers from various companies were invited to the scene of the test to correctly tune and adjust their equipment. However, they were prevented from further communication with the receiving room. All types of equipment were tested in like fashion using the same procedure and antenna. They were all tested from the same location as previous tests, with the same girl copying the serial numbers. It is now obvious that we were able to draw an unbiased opinion with the creation of a coverage map, using the serial numbers supplied by the girl's log as maximum communication distances.

Rigid specifications were created and bids followed with Galvin Manufacturing Corporation the vendor.

Now let us refer to this hastily constructed map. This map represents the system in its entirety with the small red square blocks, numbering 15, the 50 watt central station transmitters and the 15 large red strips the 250 watt stations. There is a total of 44 fixed stations throughout the state. The coverage tests dictated the use of the 50 watt stations where you see them located. We have attempted to cover a given area with a minimum amount of power. If all future or present police systems would adhere to that policy the interference problem would be greatly minimized.

The system as you see it is not as yet completely in operation. However, we expect it to be within a month or more. All of the lower portion of the state is in operation with one or two exceptions. It is gratifying to state that all of the stations installed so far have given coverage exactly in accordance with predicted coverage and plans on paper. I might add that they are working and communicating over distances and to points just as our original requirements dictated they should to make the vast system a complete communications network. In other words, we set up the requirements on paper

and then built around it a system of communication composed of equipment which would make such distances possible. It is now a reality.

We have 204 mobile units in operation throughout the state. These are all 50 watt mobile units using a pair of 807 type tubes as the final amplifier. It is now possible to drive anywhere in Michigan's 56,000 square miles and have communication with one of our posts. All mobile units use the 1/4 wave whip antenna mounted on the top of the car. This installation was field tested and proved far superior for our work in that non-directivity of transmissions resulted. We all know the effect of rear mounted antenna with its lowered emission in the rear of the car direction. Our antennas are fed with coaxial transmission lines cut to correct impedance match which is rather critical due to the standing wave ratio of about 5 to 1, which created variation of impedances along its length so that if cut at a length which will not match the base of the whip, creating pure resistance, the transmitter will not load correctly.

To revert back to fixed station equipment and the installations in which we are all interested, I will describe the location survey of this 44 fixed station net. I cannot stress enough the importance of the location of the receiving and transmitting antenna. This spells success or failure in capital letters for any ultra-high frequency system. In a conference yesterday with Mr. Nielson of the F.C.C. Engineering Staff, he stated they are considering, and I earnestly hope they adopt, some method of interpolation upon a prepared chart which will allow them to comprehensively dictate power output individually for both new and already existing services. Such decisions of power output being based upon the ratio between antenna height, antenna location against necessary power and desired coverage. By this method a great deal of sky wave interference could be eliminated. Such elimination will be drastically needed as the ultra-high frequency spectrum is more and more developed and used by the police and emergency communication field. I further hope that they find come method to dictate, possibly after this emergency, the relocation of a transmitting or receiving antenna which will subsequently allow that station to reduce power for the same coverage. This will not only be in the interest of good engineering practice but in many cases will result in increased efficiency of the department involved. I know of several cases where an agency installing two-way radio equipment used some supporting structure such as a stand pipe, high building or other already existing mast or tower to support their transmitting and receiving antenna, regardless of its location. After the installation, they found that both their talk-back and talk-out range was drastically inadequate. To make up for this they increased power of the main transmitter, resulting in interference to other services in areas where they did not interfere before. Naturally, they had to continue with inefficient talk-back range or go to the added expense of installing repeater stations. The money they spent in increasing power of the main station transmitter would have been much more effectively used in surveying a remote location and constructing a new tower which by virtue of its height and location would give them their desired coverage, both talk-out and talk-back, at greatly reduced power and subsequent lessened interference.

As we develop I am certain that the F.C.C. will work hand in hand with us on this important issue before it is too late and both the frequencies and long skip or interfering signals are in such a condition that they will never be straightened out without great cost and sacrifice. All the engineering and development the police and other emergency services are

contributing to the ultra-high frequency spectrum will go for naught if ill-handled and allowed to slip into a chaotic condition.

To get back to our survey, we actually conducted 44 such field tests, each with a mobile unit, signal generator, limiter with saturation meter indicator and equipment for the highly important noise tests. Many apparently fine locations were rejected in favor of others of contrary contour and elevation. This proves conclusively, at least it did for us, that the eye and a map cannot be used alone for correctly determining a really good location for an ultra-high frequency radio station.

Now lets check the result of this painstaking survey. In every district we have complete limiter saturation or noise free reception at the extremities of the patrol areas in the mobile units. Likewise, solid noise free communication from the mobile units back to their headquarters results. Nine locations which had small patrol areas of normal terrain we found by the survey that we could use 125-foot towers and small 50 watt transmitters. Other areas had to have 200-foot towers in order to have coverage with the small 50 watt units. The bigger areas needed 200-foot towers together with 250 watt transmitters. All installations used 7/8-inch coaxial transmission lines. This line size is highly important if complete utilization of weak signals from the cars is to be had. Tests indicated as much as a 15 percent decrease in range with 3/8-inch line.

Our point-to-point communication is again working out directly in accordance with our needs, first outlined on paper, then made possible by the survey or location of the station. For instance, headquarters or dispatch located at East Lansing, now has solid communication with all the district headquarters stations: Detroit, 120 miles; Bay City, 100 miles; Jackson, 40 miles; Paw Paw, 135 miles; Rockford, 75 miles; and Houghton Lake, a distance of some 175 to 185 miles. In addition to this, many of the outlying posts, some as far away as 200 miles, have daily and continuous contact with Lansing.

All of our fixed station transmitters operate on a frequency of 37,500 KC and all mobile units are on 37,380 KC. Two crystals are mounted in the car transmitters so that they may operate on either of the two channels for car-to-car communication. This is accomplished by a push-to-hold switch mounted upon the dash control which operates a relay in the transmitter switching in the car-to-car crystal. Successful car-to-car operation results over a 20-mile range.

The maintenance on a system so vast as this one is quite a problem. There is a surprising dearth of engineers available who understand frequency modulation and whom you can trust in the field with equipment of such drastic design, critical adjustment and operating on such an emergency status. We were fortunate in having among our own personnel good sound technical men, all of them long standing radio amateurs with a very fine technical background. At the outset of the program they were all trained, both in the East Lansing laboratory and in the field, on this type of equipment. We have divided the state into seven engineering districts and assigned each to a district. There he is responsible for all of the radio equipment, both fixed and mobile stations, as well as any 1642 KC. AM transmitters. It is working out admirably well with no out-of-service periods of any equipment lasting over a few hours, regardless of location.

Each engineer is equipped with a complete complement of FM testing instruments, oscillators, microvolters, frequency meters, multivibrators, and the like. The cost of equipping just the district engineers would more than buy a complete FM central station and several mobile units. We are fully minded of the need of completely equipped and competent engineers and we are further aware of the fact that no emergency radio system is any better than the staff who maintain it technically.

With this marked trend of police communication now definitely toward the ultra-high frequency spectrum and the future abandonment of the intermediate frequency channels now in sight with more and more installations of FM, we state police systems are faced with a problem of maintaining our point-to-point communication with other municipal and county radio systems with whom we have developed an efficient and effective medium of handling emergency police traffic. Most of the aforementioned agencies have not had the finances nor the personnel to install and operate radiotelegraph stations. It was therefore simply good sound judgment that we, the state police, maintained our point-to-point with them. Many a crime has been thwarted or a criminal apprehended by that rapid communication.

As the present allocation system is one of local choice with no system, we find that in order to maintain this communication on ultra-high frequency, we shall have to have a bank of receivers rivaling the most complicated monitoring station and what is worse, a maze of antennas and towers. Good engineering practice dictates the operation of only two receivers from one coaxial or other ultra-high antenna. Again a state as large as Michigan would have to have many such elaborate monitoring stations to adequately cover. While those two reasons are highly objectionable, there still exists the fact that the characteristics of FM allow a station with a signal strength of 2-1 over another station to completely obliterate the other at the receiving point. Such a receiving point would be the monitoring point which would be in the center of the area in question. Thusly, if we were receiving a message from Podunk, some 100 miles away, and Hollow City, 30 miles distant, came on the air we would hear Hollow City only, with no trace of Podunk.

In trying to find some solution to this problem so that we could advise various departments in Michigan's police net what procedure to follow in their new or remodeled systems, we have developed the following which I will submit for your consideration and suggestions.

Present existing channels allocated for police use in the ultra-high frequency spectrum can be used as they are with but a slight modification of one or two mobile frequencies which will have to be reallocated for fixed station occupancy. The plan calls for but two receivers at each of the state police monitoring positions, one operating on 33,500 KC and the other on 39,500 KC. If you will examine the allocations chart as printed in Section 10 of the F.C.C. rules and regulations you will see grouped around each of the above frequencies four available channels, only one of which is 400 KC removed from the monitor or center frequency. Thusly:

	(1. 33,100	
	(2. 33,220	
	(	
GROUP A	(33,500	MONITORING CHANNEL
	(	
	(3. 33,780	
	(4. 33,940	

	(1.	39,100	
	(2.	39,380	
	(		
GROUP B	(	39,500	MONITORING CHANNEL
	(		
	(3.	39,780	
	(4.	39,900	

By some prearranged assignment plan within your own state you will allocate any one of the four frequencies in Group A or B to a city or county. The monitoring station will therefore not need to continually listen to the other station's routine traffic. When they have traffic for the state net they will switch in another crystal or another tank circuit or both, thereby changing their frequency to the one upon which you have the monitor frequency receiver. As they will already have a receiver on your frecuency, the contact is established. At the conclusion of the traffic they will again drop back to their normal channel.

This solution to the problem has a great deal of merit, yet there remains a great deal of work and study before it becomes adaptable to every city and state in the country. We in Michigan have foreseen this problem and have already taken steps to put into partial effect when and if needed. You can readily see that the longer we wait, the longer we allow random selection of frequencies, the more difficult the problem of readjustment after we find we are forced to adopt some policy to continue with our police nets after the shift to ultra-high frecuencies is complete. I feel as though there is no better body of men to whom to present this problem than you, the APCO. I further feel confident that the Federal Communications Commission will appreciate this problem and work and cooperate with us to whatever extent necessary in making any changes or modifications in their rules which will allow us to continue with our emergency police communication nets which are so vital to the safety and welfare of our citizens.

I trust that you will give this matter your earnest consideration, and suggestions or other solutions which you may have to this important problem will not be kept to yourself but will be passed along so that we may adopt some policy before the random occupancy creates so saturated condition that a solution no longer exists.

It has been a pleasure to meet here with you again, and I wish to take this opportunity to congratulate you all on behalf of my department for the fine work which you are doing and for the many contributions which you have and will make toward so worthy a cause as police communications. In closing I would personally invite each and every one of you to visit our state and see what we consider the finest police communication system in the world.

MR. JONES: Approximately how much does a system like that cost?

MR. WALKER: Three hundred thousand we have spent and fifty thousand more to go.

MR. WILT: Thank you, Mr. Walker.

I have another application which I am glad to receive, Mr. Harry C. Garba, Supervisor of Radio, Lafayette, Ind., makes application for membership.

What is your pleasure?

On motion by Mr. Fetcher, second by Mr. Biorn, Mr. Garba was received as a member.

MR. WILT: We have next on our program, Mr. Nielson of the Engineering Department of the Federal Communications Commission.

MR. NIELSON: This is the first time I have had the privilege of attending one of your conferences, and I can say truthfully that I have enjoyed it very much. I regret that I haven't prepared any formal address for you this afternoon. I will try to do the best I can. We at the Federal Communications Commission are extremely busy; any duties other than those immediately associated with our work down there must be done at "off" hours, hours after work, and for the past ten days we have been busy making amendments to the rules and regulations governing emergency radio service. I notice quite a few of you winced when I said that. They are not quite as bad as they sound.

I am sure you will understand that while I am attending the conference as a representative of the Commission's Engineering Department, I must ask you to bear in mind that what I say here is my own opinion, and it does not represent the official opinion of the Communications Commission. As you all know, the war has been instrumental in promulgating new rules, orders, amendments to our existing rules and regulations, as well as in all other activities, and I know you will be very much interested in the particular changes in the orders affecting municipal and state police service.

In the interest of meeting a need for rapid emergency radio communications, the Commission, on June 12, promulgated rules and regulations that established a new radio service known as the War Emergency Radio Service. The rules and regulations governing the operation of stations in this service were formulated and drafted by the Federal Communications Commission in coordination and in cooperation with the United States Office of Civilian Defense, the Office of Chief Signal Officer of the Army, and the Training and Supply Division of the State Guard, U. S. Army. The latter was primarily concerned with the operation of the State Guard Stations. The service as such comprises two classes of stations, the civilian defense stations and the State Guard stations. These stations are intended to provide separate and distinct communication facilities for these respective classes of stations. Instructions relative to effective communication systems have been and will be released by the United States Office of Civilian Defense. It is my understanding that they are preparing a manual setting up the procedure and scope of service and other essential information for the civilian defense agencies. In compliance with Order No. 9 of the Board of War Communication, which delegated the complete control of these stations to the Federal Communications Commission, a license authorizing stations in the War Emergency Radio Service will be granted on the express condition that such authority can be cancelled or changed without notice or hearing, if in the discretion of the Commission such action is deemed necessary or desirable.

In drafting those rules and regulations, one of the most important considerations was a matter of security of communications. To accomplish this security, and in so far as possible to preclude the use of these stations for inadvertent transmissions that might be of value to the enemy, it was

necessary to include certain restrictions and limitations on the operation of these stations. Licenses for civilian defense stations will be issued only to instrumentalities of local governments of the municipalities, counties, and cities. The applicants for this class of station are required to submit with the application complete detailed information relative to their proposed method of operation, which includes the scope of service to be rendered, the type of messages to be transmitted, the method to be used in monitoring, supervision and control of the operation of stations which are authorized to the licensee. In making application for civilian defense authorization consideration should be given to the available means for quickly silencing the radio stations in the event such orders are issued by the defense commander. It is my understanding that there are approximately twelve thousand potential applicants for these stations. Obviously, it would be impossible to silence or notify each station individually, and some means must be established to afford a practical and efficient means of transmitting those orders from the defense commander to the station licensee. It has been suggested that probably the most desirable method would be to license the station to the municipality in which the district warning center is located, and the equipment would be assigned then to the other associated municipalities within the area. Irrespective to any procedure established for receiving these orders, the silencing of radio stations upon the receipt of orders from the defense commander is primarily the responsibility of the station licensee, and the station licensee should take such necessary steps to accomplish this purpose.

Civilian defense stations may be used for essential communications relating to civilian defense activity, and only during or immediately following actual air raid, or pending air raid, or other enemy operations or actions of sabotage. The rules governing civilian defense stations depart considerably from the usual procedure of the Commission with respect to the other services. One of these departures is the requirement of an official who is designated as "radio aide". The radio aide, in accordance with rules and regulations, Part 15, must meet certain technical qualifications, among which is the holding of a valid radio operator's license of any class except a radiotelephone restricted operator permit. That includes amateurs, Class 1 and Class 2 operator licensees. The radio aide is charged with the responsibility for the direction and supervision of all the stations in that network. It is his duty to make provisions for adequate monitoring stations and supervise them in such a manner that it will be assured that they will comply with the rules and regulations of the Commission, particularly with respect to monitoring that there shall be no intentional or inadvertent transmissions which might be an aid to the enemy. He is required to inspect the equipment periodically to see that efficient operation is assured and to establish the operating procedure which will be maintained at all times. He is also charged with the duty of certifying the radio aides to be associated with the stations with which he is affiliated.

Now the actual operation of all civilian defense stations, for that matter all stations in the War Emergency Radio Service, must be carried on only by a duly qualified operator holding a War Emergency Radio Service operator's permit. This is valid only for the operation of stations in the War Emergency Radio Service and the stations under the license granted to the municipality with which he is affiliated. As in the case of the station license, the operator's license is also subject to change or cancellation at any time without advance notice or hearing. To obtain authority to operate civilian defense stations it will be necessary for each post operator to file an application for a War Emergency Radio Service operator's permit.

This can be filed on F.C.C. Form 457. As a prerequisite to the granting of the operator's permit, it will be necessary for the applicant to show that he holds an operator's license and that he has complied with the provisions of Order 75, which includes citizenship, fingerprints, photograph, and other essential information. Then too the operator's application must be certified to by the radio aide.

Another departure from the usual procedure in the Commission's rules and regulations is the requirement that all civilian defense stations conduct tests only at specified times. It will be noted in the rules and regulations that these tests are to be conducted at the same instant of time throughout the United States. This was put in the rules and regulations primarily for the purpose of supervising and controlling the stations. I might say that one of the major considerations in the establishment of this service was the matter of security not only from the Commission's standpoint but from the other interested government departments.

The state guard station license, which I don't think you people will be so much interested in, is issued only to the states, and it is available for use by the State Guard, the organization that replaced the old National Guard, which was called into active service.

It will also be noted that Section 15.64 of the War Emergency Radio Service provides that stations in the War Emergency Radio Service may communicate with stations in the emergency radio service, which includes police, forestry, special, and marine, which provides for the coordination of activity. It is anticipated that the civilian defense stations will probably find a need for communicating with state police stations in the event there is any enemy activity whatsoever.

The Commission appreciates the splendid work that is being done by APCO in fostering more efficient police communication systems. While the Commission is charged with the duties of administration of radio service under the Communications Act of 1934 as amended, nevertheless, suggestions and recommendations coming from police organizations such as APCO are extremely helpful in the formulation of policies and promulgation of rules and regulations. The limited personnel on the staff of the Commission precludes a close contact with the everyday operation of police communication systems. This would undoubtedly be extremely helpful from the standpoint of both the police and the F.C.C. if such could be accomplished. Nevertheless, this deficiency can be corrected to a large measure by close cooperation with the police, cooperation such as APCO and the Federal Communications Commission have enjoyed.

With this in mind, we are making available for your information at this time by draft copy certain proposed amendments to the rules and regulations governing the police service. Your suggestions and recommendations on these proposed changes would be certainly welcome. They have been referred to one of your committees.

There is no need for me to tell you of the traffic congestion on the police frequencies or to admonish you concerning the necessity for close cooperation between the licensees of the police stations. We have had an opportunity to check the number of transmitters operating on the frequencies in the 30 to 40 megacycle bands; as of February 1, this year, we found that there were 11,463 transmitters. There are, of course, two

possible solutions. One is to try to get more frequencies, and the second is to make the most advantageous use of the frequencies we have. With the dire need of frequencies by the military, it is extremely doubtful that any additional frequencies can be made available to the police. If anything, it is going to be the other way about. For that reason, we must necessarily look to the second alternative. I would say that if you didn't get anything more out of your trip here than the full significance of what Mr. Walker said in connection with his state police stations, your trip would be very worth while. It is apparent that in general police stations are excessively over powered.

I had these amendments, which I hoped to discuss with you, printed, and they were sent out Friday from the Federal Communications Commission, addressed to the Hotel Lennox. Whether the post office department has gone back to the ox cart to save wear and tear on rubber, I don't know, but they haven't shown up. I hoped to circulate them. I would like to run through, briefly, what we have covered in these proposed amendments.

In Section 10.31 we made no drastic changes. We spelled out the instrument of authority which was to be covered by that blanket application. In other words, we stated specifically an application for construction permit, and an application for modification of license, or license, whichever the case might be.

Section 10.41, which relates to the assignment of the medium frequencies to the state and municipal police stations - the proposed amendment does not change the frequencies available or the method of assignment to state and municipal stations. The proposed section includes limitations on power, which were previously contained in Sections 10.121, 10.122, and 10.151. The proposed amendment eliminates the maximum power restriction of 500 watts for municipal police stations proposing to serve a municipality, the 1000 watts limitation on municipalities proposing to serve one or more counties, and reduces the maximum power authorized for state police from 5000 watts to 500 watts. Under the proposed rules and regulations power authorization requested by applicant must be the minimum power consistent with satisfactory technical operation in relation to the size of the area to be covered and the local conditions which affect radio transmissions and reception in that particular area. Power authorized for municipal police stations normally would be granted on the basis of the showing of need made by the applicant, and such authorization involving power would be granted, subject to the condition that serious interference would not be caused to the service for which the frequencies are allocated, and further subject to any limitations and restrictions which were believed necessary in individual cases. The maximum power of 5000 watts previously authorized to state police stations, as I said, would be reduced to 500 watts. Power in excess of that, as in the case of municipalities, would be granted only on the basis of showing of need by the applicant, and likewise that would be granted subject to causing no serious interference.

The next section we amended was Section 10.42, which relates to the frequencies in the 30 to 40 megacycle band assigned to state and municipal police stations. Here again the proposed amendments do not alter frequency assignment or assignment of frequencies to the various classes of stations. The amendment proposes, however, to establish a maximum power of 250 watts. That is irrespective of amplitude or frequency modulation. Power

in excess of the 250 watts limitation would be granted only on the basis of showing of need and, of course, subject to causing no serious interference. The power of 250 watts is more or less an arbitrary value we selected. So far as we know it represents about the highest power equipment that the manufacturers have in stock. Under the present amendment power in excess of 250 watts would be authorized only on Group A frequencies. The 250 watts limitation on Group B frequencies would remain as it is in the present rules and regulations.

I think perhaps the need for these revisions is quite apparent from what has been said before me and probably said far better than I can say it. But today with the advent of frequency modulation, power in excess of 250 watts does not seem to be required. I will admit in certain municipalities and counties probably there may be some justification for power in excess of that amount. The objection to the use of power in excess of 250 watts is not alone in the interference caused in the immediate vicinity of the station, it is also the interference caused by sky wave and skip distance effects. This interference is more or less directly proportional to the amount of power radiated. There are other considerations that come in, such as the type of antenna, local terrain, and propagation characteristics. I think Mr. Walker stressed a point here as to the desirability of constructing efficient antenna systems, and I think that probably in many cases with an efficient radiator it would not be necessary to go to excessive amounts of power; certainly it would have a tendency to reduce interference from sky wave propagation.

Section 10.123, which relates to cooperative service, has been divided into two subsections, (a) and (b). There is no radical departure in this amendment. It simply spells out the type of agreement that must be submitted to the Commission in connection with the application requesting such authority. Subsection (a) refers to the municipalities that are furnishing land service to adjacent municipalities who have their own portable mobile units licensed separately. Subsection (b) refers to those municipalities which are furnishing service to adjacent municipalities under one instrument of authorization.

Section 10.122 of the present rules has been deleted and in place of this old section we have entered a new section which provides for intercommunication between municipal and state police stations, government stations, and stations in the War Emergency Radio Service, and with other stations which are authorized to communicate with state and municipal police stations.

Another subject I would like to bring out is one that has certainly been discussed here plenty and that is Memorandum Opinion of the Commission of July 7. That relates to this subject of equipment, which appears to be rather controversial. I would like to outline how that came into being. This memorandum opinion was promulgated pursuant to a recommendation from the Defense Communications Board on June 12, which has later been called the Board of War Communications. The Board of War Communications recommended that the War Production Board and the Federal Communications Commission immediately place into effect the following policy: "No future authorization involving the use of any materials shall be issued by the Federal Communications Commission nor shall further materials be allocated by the War Production Board to construct or to change the transmitting facilities of any amateur or Class 3 experimental station. (2) No future authorization

involving the use of any materials shall be issued by the Federal Communications Commission nor shall further materials be allocated by the War Production Board to construct or to change the transmitting facilities of any aeronautical fixed domestic station, itinerant aircraft station, training school station, or stations operating in the emergency and miscellaneous radio services, provided, however, that upon a proper showing that any such station is serving an essential military need or a vital public need which cannot otherwise be met, the Commission and the War Production Board will take action commensurate with the importance of the particular facilities in question." That was read from the release from the Board of War Communications.

The Commission adopted this recommendation and released its Memorandum Opinion on July 7, which incorporated the two recommendations of the Board of War Communications. The broad principals of this policy I think are sufficiently clear as to preclude misinterpretation; however, there is yet to be established policies with respect to certain classes of stations within the services covered by this recommendation. Applicants for all municipal and state police stations will be required to submit a verified statement with the application showing the facts and circumstances which the applicant believes will demonstrate that the facilities to be constructed or changed will serve either an essential military need or, second, a vital public need which cannot otherwise be met. I think that last phrase means to apply to number one as well as to two. In other words, a vital public need which cannot otherwise be met, or an essential military need which cannot otherwise be met. I am sorry that I am not in a position to advise you as to what particular facts constitute an adequate showing. This is a policy which will have to be decided by the Commission itself. I believe, however, the Commission will take into consideration such fundamental factors as the nearest military concentrations, the extent of radio service rendered to the military, the location of the area to be served with respect to its vulnerability to enemy attack, the protection furnished to plants engaged in the production of critical war materials, and probably the population of the area in which the station renders service. In any event, however, it will be necessary to show what existing facilities are available for the type of service proposed to be rendered.

Just before I left for St. Louis I received a call from a member of the War Production Board and he informed methat a pool arrangement had been worked out by the War Production Board. Unfortunately, I didn't have time to get the details of this plan, and I think probably Mr. Link can give you more information on it than I can, but as I understand it the applicants will place their orders with the manufacturers or servicers, and they will forward the request to the War Production Board for consideration.

There is one thing else I would like to take up which seems to have caused considerable confusion and that was this Restricted Order No. 1, released by the Commission. I don't think that any order ever released by the Commission was so badly misinterpreted as Restricted Order No. 1. Let us go back to the history of that. Restricted Order No. 1 was an outgrowth of the committee which was delegated to draft the material contained in Restricted Order No. 1. It was constituted of the U. S. Army, the U. S. Navy, the Civil Aeronautics Authority, the Office of Civilian Defense, and the station licensees of stations affected by Order No. 1. It was not necessarily a

Commission release, and it was approved by the War Department before the Commission released it. Restricted Order No. 1 had absolutely nothing to do with the nature, the scope, the content, or the purpose of orders issued by the defense commander. Neither did it have anything to do with the war time operation of stations in compliance with those particular orders. Its sole purpose was to establish a means or procedure for relaying those orders from the defense commander to the station licensee. We realize that it did not go into very great detail. In fact, we could not get any more detail at the time that was promulgated than was in there. The setup of the defense communications system, the area, etc., was submitted by the U. S. Army to the Federal Communications Commission in that Restricted Order No. 1. We have been working on a revision, it is not in my division, but in one of the divisions of the Commission we are working on a revision of Order No. 188, pertaining to the operation of broadcast stations. The new release will not name those orders originating from the defense commander. That is his job. It is his job to tell which stations to get off the air, how to get off, and what type of communications they can render over those stations under war-time operations. It simply sets up various procedures whereby these orders can be relayed from the defense commander to the station licensees. When that comes out I wish you would bear that in mind.

Then there was another thing that was badly misinterpreted and that was stations operating on frequencies between 4 and 30 megacycles. For some reason or other, two-thirds of the people did not understand that. Some people said we are operating on 38 megacycles, therefore we are not included in that order; if you are operating on a frequency from 4 to 30 megacycles you don't need to pay any attention to it. Any station, irrespective of frequency, power emission, or service, is subject to those orders from the defense commander and it is up to the station licensee to get those stations off the air or to obey the orders of the defense commander when they are issued. That frequency 4 to 30,000 was placed in there at the request of one of the military branches, I don't recall which one it was. It was inserted in there as a matter of information. It did not mean that stations operating in that band would not be controlled by the defense commander, but from information available at the time it appeared that frequencies from 4 to 30,000 were not particularly useful for direction-finding purposes and that was the reason that particular band was spelled out in Restricted Order No. 1.

I believe that is about all I have to say here except that I have certainly appreciated the privilege of coming and speaking before you and being associated with you. I hope that I shall have an opportunity again sometime to do a little better than I have done this time.

There is one thing I would like to say in closing. I will be here this afternoon, tomorrow and probably the next day. If you have any problems on which I can help you out in any way, I would certainly be glad to do it.

MR. WILT: We thank you Mr. Nielson.

MR. WALKER: If a committee reviewed the proposed amendments and went on record as accepting them as dictated by Mr. Nielson, I think there should be a motion by this organization to officially accept them and enter that on the records of the organization.

MR. LATHROP: I have one question with reference to power. What about the case of a large municipality that is at the present time using 1000 watts daytime and 500 watts night? The two I know of went through considerable work compiling field strength data in order to get that increased power. How is this new order going to affect those stations? I refer specifically to Milwaukee. They spent a lot of time and money going around to stations on 2450. They serve Milwaukee and ten suburban towns surrounding Milwaukee. I would hate to have anything come up here and say I was a party to it and not have mentioned that. Wareing has been one of the members of this organization since its inception, and I am sure he would be worried about this unless there was something further stated.

MR. NIELSON: These amendments would not be retroactive.

MR. MAESHNER: That means nothing will be affected until after the war because nothing can be built until then.

MR. WILT: I think we should go on record as certifying this committee's recommendations.

MR. GRONIER: I move the recommendations of the committee be accepted.

Second to motion by Mr. Lathrop.

MR. JONES: I would like to ask, before I vote on such a motion, what the proposals are.

MR. WILT: They are the ones that Mr. Nielson just gave us.

MR. JONES: If I understand it properly the Commission proposes to change certain intermediate frequencies.

MR. O'NEIL: No, just power for future authorizations.

Motion unanimously carried.

MR. WILT: Mr. Herb Becker of the Eitel-McCullough company has a few remarks to make.

MR. BECKER: In conjunction with what Fred Link had to say I just wanted to give you our point of view. In the very beginning Eimac supplied tubes to the amateurs and to the police boys, and we owe a great deal to both groups. Unfortunately, the present state of affairs makes it very difficult and embarrassing to answer a lot of questions from the police. The answer is very short: We have about 99.75 percent of tubes going to the army and navy. Most of the tubes are restricted and secret tubes, so that a very logical question comes to the factory every day. Why can't you supply us with 250's or 100's? We will say our output of tubes will be 5000 a week; I don't know if that is right, but we will assume we can put out 5000 a week. The army and navy want 75000. We can't begin to supply army and navy orders. The question is, what are we going to do about the police? We know what has happened to the "hams". Any station that I would say is down to their last tube with no spare setting on the shelf, we can't guarantee but we think that by going to the WPB, and this is irrespective of the suggestions Fred Link had this morning, by going to the WPB and getting an A-1-a (everything we have is A-1-a or better) you might get some rejects or slightly defective

tubes, as far as army and navy use is concerned. Whether they are that way, or they are called that way, I can't say publicly. If you want to contact me individually --. The tube envelope might be a little dirty or the base a little crooked, but they would serve fine in transmitters. We are going to make every effort to see what can be done. It has been rumored that one or two of the boys are using Eimac tubes in their transmitters, so I thought those two might be interested in that information.

MR. WILT: Captain Wherritt, do you care to make a few remarks? Our Bulletin editor wants to give everyone a little going over that won't send him anything to publish in the Bulletin.

MR. WHERRITT: While I am up here, so I won't take any more time than necessary, I want to hand the Secretary-Treasurer the report of the financial condition of the Bulletin for the record.

Following is the report of the APCO Bulletin Editor as of 12:00 Noon, July 23, 1942:

Balance brought forward 9-2-41	$ 774.96	
Receipts	2,433.93	
Total Receipts and Balance		$3,208.89
Expenses:		
Publication of Bulletin, stamps, cuts, stenographic help, etc.		2,887.59
Balance on hand 7-23-42		$ 321.30
*Accounts Receivable	$ 368.82	
Accounts Payable	--	
		368.82
TOTAL		$ 690.12

(*Advertising in July issue The APCO Bulletin)

MR. WHERRITT: I hadn't intended to talk today, but while I am up here I might as well. I would certainly like to see your next editor given a little better cooperation by the members in submitting material. I come to the conference and I hear various members say "Why don't we have more technical articles in the Bulletin?" I don't know where they think we get them. They come from you men, and we can't have a Bulletin unless you send in the material. I meet another man and he wants another certain type of article that he thinks would be desirable for the Bulletin, but maybe that man has never submitted an article. A lot of them have been written with the request that they supply material for the Bulletin. I realize that you are busy, probably more so now than you have been, but if you do intend to keep a Bulletin we have to give the officers a little more cooperation. Your intentions are of the best; that is not questioned. You put things off, I do the same thing, and think that you will turn in some material next month, but it doesn't get in.

Another thing that I have heard complaints on (I am doing this to clear up some trouble for the next editor), on arriving at the conference

some member will lament the fact, as was brought up at this conference, that certain members had not been dropped from the list of committees. I didn't find out until I arrived at this conference that four of the members are in the military services. I didn't know anything about it. They hadn't turned in a resignation or stated they wished to be dropped from the committees. When you start to criticize those things in the future I wish you would think of the fact that the information might not have been supplied to the officers. That happens in a great many cases.

Another thing we hear quite often is that some member gets up and says "I think we missed the boat" on something during the year. Possibly he knows something that should have been handled by the Executive Committee. Possibly the Executive Committee didn't know anything about it. He doesn't write the committee or Bulletin editor so that the members will be aware of the condition that exists. I am not referring to Geno's remarks particularly, because he submitted an article which we never received, and he has a logical explanation for that, but the remark he made about "missing the boat" is a common one we hear in each conference on things that happened during the year or things that should have been handled by the Executive Committee. In the future when you come to the conference don't say "Why didn't the officers do something about that? Why didn't the association take action?" when you may be the only member that knew anything about it.

I think it is your duty to send in information on which you want action taken. I think that is the only way we will get these things done that the organization should get done. I wanted to get that off my mind in consideration of the new officers; I wanted to help them out a little.

MR. WILT: I believe that anybody that is a member of our organization, that leaves for the armed services, if he would just take a few minutes out and send the Secretary-Treasurer a note telling him he is leaving for the army, navy, marine corps, or whatever, then we will know what happens to some of our members. Otherwise, we don't know. We found out when we came here that there were several in the armed forces that we didn't know about. I think it is a good time to follow up with the Secretary-Treasurer's report and see how we stand.

MR. TEETER: I would like to go a little further with the President and say that anything at any time that you would send to the Secretary-Treasurer he could get to the proper ones, whether it be the officers, the President, committee chairmen, or whoever it is. If it is a matter that should be recorded, then I am sure it would be brought up at the annual meeting. If you will give that a little thought he will greatly appreciate it.

I have prepared a report to be submitted to the officers who act more or less as auditors. I shall read the report.

Cash in bank October 1, 1941 $ 949.80

Expended by check:

Printing	$129.14
Office Supplies	90.72
Stamps and Mailing	48.18
Secretary's expenses	31.30
Telephone & Telegraph	32.48

H. O. Kelly Shipping	$ 8.60
Miscellaneous	6.75
Actual Expenses	$347.17

Received from members 1942 dues	$306.00
	$1255.80

The total of cash in bank plus dues received from members for 1942 dues amounts to $1255.80 which on the face of it would leave the impression th t our organization was in excellent financial condition. However, when it is considered that the above $306.00 received from members as 1942 dues represents an income of $25.00 per month for the twelve month period, while actual expenses of $347.17 for the nine months period represents a $38.57 expenditure each month. The difference clearly shows a monthly operating loss of $13.07.

We have had to expend the following:

Transcript of 1941 Conference	$197.00
Rebate to local chapters	48.00
Bad check	3.00
	$248.00

In addition to the above amount of $248.00, I, as Conference Chairman, have taken the liberty of drawing on the treasury of the Association for the sum of $259.51, expenses incurred by me as Chairman of the 1942 Conference. Same will be returned from proceeds of sale of booths and Conference registration fees when available.

Recapitulation:

Cash on hand October 1, 1941	$949.80
Expended by check	854.68
Balance	$ 95.12
Received as dues	306.00
Cash on hand June 30, 1942	$401.12
Due from 1942 Conference Chairman	259.51
	$660.63

With regard to the transcript I might say that it was examined by your editor, president, and myself, and we didn't consider it worth copying, so we refunded the money that had been turned in for copies. I believe our editor has published most of the important parts of that report in the Bulletin, as space permitted.

The rebates to local chapters I believe you are all concerned in. Something should be done about straightening that out. That is money that is collected from the individual in Illinois, for instance, who hears of us in some manner or someone suggests th t so long as he is in the communication field he should be in APCO, so he sends in a letter with his $2.50. His application is kept on file until it is taken up with the Executive Committee or put to a vote by the organization. Now in the case of Illinois, Kadow reads in the Bulletin that John Smith of Illinois has paid his dues and he writes for his cut, which he is entitled to. It is a long story and I could have written up a lot about it, but I am sure you know about it. We have been getting along dandy, but the future life of this organization depends on the day we can go into a national conference with sections blocked off for Michigan or Missouri or Illinois, and you are going to see that day, because this is an organization that has to go. Our sponsors or godfathers, the IACP,

and their present president, think so much of this organization; you have heard what the F.C.C. thinks of it.

I shall read the rest of my report:

Pursuant to the provisions of the Constitution and By-Laws, Article VI, Section 3, I have examined the books and accounts of the Associated Police Communication Officers, Inc., and as a result thereof have prepared and present herewith the following statement:

The cash in bank, amount $401.12, was verified by direct communication with the Security National Bank Savings and Trust Company, St.Louis, Mo.

Accounts payable and receivable, cancelled checks and details of paid invoices were verified and found to be in agreement with the general account.

The books and records of the general account as kept by Earl Snooks and checked by Paul Barton are neat and were accurately kept and are correct in every detail.

I have prepared and present herewith a tabulation of monthly expenditures from October 1, 1941 to June 30, 1942 which in my opinion clearly reflects the financial condition of your organization.

The net operating deficit of $13.07 per month indicates that membership dues alone are not sufficient to maintain the office of the Secretary-Treasurer on a sound basis.

It is believed that in view of the fact that State or Regional Chapter members, while enjoying all the rights and privileges of ordinary members are not required to pay the full membership fee, the annual membership dues should be increased by an amount sufficient to cancel the deficit.

Our Auditors and Attorneys at Law, the firm of Dubinsky and Duggan of St. Louis, Missouri, have examined this report in its entirety and confirm the findings as to its accuracy.

Respectfully submitted,

James H. Teeter,
Secretary-Treasurer

MR. WILT: If there are no objections, the Secretary's report will be accepted and placed in the record.

MR. KADOW: Due to a misunderstanding I "nicked" him for a dollar here and there. Getting down to another thing, this is just off from the Secretary's report, I have been thinking for a long time how this organization might be stronger. This gets back to some of the things Wherritt spoke of, because I don't believe very many of the gentlemen realize that the Bulletin is the only contact that we have between this conference and the next one. If it wasn't for the good work Wherritt has done we wouldn't know anything about it. We would go home and forget about it and wonder when the next one

was coming off. It has been a pet peeve of mine that national organizations should at some time or other grant charters. I am still going to keep after that thing, so that you fellows will go home and start chapters in your states. That is the only way, in my mind, that you can get contact with the men around you. You have an opportunity once every month or once every two months to get together. We found after we got going that we could get the boys to go and they clamored to come to meetings. We have 56 active members; at our last meeting we had 38 members present. Now that is pretty good, because many of our boys are from away across the state. Even in a state chapter it is a long haul to go up to the Chicago area where a majority of the members are listed. We try to come down state a way. When you consider that we get that many people out, there is something to it. We use a membership committee that goes out and digs these fellows up. All the committees are working. That is what gets them interested. While they weren't doing anything for the first year we had 16 or 17 fellows coming out. We have a little dutch lunch; each one pays his own way. A few groups get together, and they talk over trouble they have, or something they want to talk about; we get a better business meeting going that way and more things done than we could if we had just a dried up meeting once in a while. I would like to see chapters organized in the various states. I know that is one way that this organization could grow, because the secretary could send out invitations to become members and you wouldn't get the returns that you get if you personally contact them.

Coming back to the Bulletin, I shouldn't talk, I guess, I sent in one item that wasn't worth a nickle. If everyone sent in one item in one year's time, it would give quite a bit of material to work on. If you have a publicity agent in your chapter, the boys who don't come will read in the Bulletin what you did and it will encourage them to come to the next meeting. I wish we could do something to get chapters going. I believe it is the only way to strengthen our organization.

MR. GRONIER: I'd like to ask how many chapters are in operation. I will tell you how easy it is. I was in police radio less than a year when I went around and met some of the boys and the idea occurred to somebody that we ought to have an organization. I wrote penny postals to all I heard about and invited them to come to Madison. That is the night we started Chapter Number 1. I was wondering what progress has been made, how many chapters we have and where we should do some work. I want to do something more about these chapters.

MR. TEETER: We have four and we took application for the fifth one this afternoon.

MR. WILT: We have talked about starting a Missouri chapter, and I hope we can get it done this year.

MR. TEETER: There is too much stuff in Missouri now. All of it is centered here in the middle west. We don't want to set any precedents. We could have had a chapter after Wisconsin. I told you about the idea I have for some day coming into conference and having sections blocked off for the various states. They will vote by states and that is the way it should be. This is the ninth annual conference and we have done well. This organization means a lot to some members.

MR. WILT: We have had a by-word in the past, "We want more frequencies!" perhaps we should change it to "We want more chapters!"

Announcements. Adjournment.

THURSDAY MORNING SESSION

The seventh session of the Ninth Annual Conference of Associated Police Communication Officers, Inc., was called to order by the president on Thursday morning, July 30, 1942.

MR. WILT: This is our last day, gentlemen, and since it is 11:00 o'clock I thought we would go right on through with all the business of APCO and stay with it until we finally adjourn for the end of this conference period. Mr. Nielson is still with us and is going to stay throughout the day. If any of us has any problems to take up, Mr. Nielson will be glad to work with us on it. He will be here the rest of today and tomorrow. We have 52 active members registered at this conference, and 26 ladies. That is 50 percent ladies, which is very good. At our next conference, wherever it is, I hope we will have more ladies than one-half. Now we have the reports of some of the committees. I believe the Resolutions Committee is ready.

MR. SOWLE: The report of the Resolutions Committee is in rough draft and doesn't have the usual "Whereas's" and Wherefores" to make it acceptable to attorneys.

Resolution No. 1

Due to the fact that there are various public officials indicated as signatories upon the licenses of police stations and that these officials have in many cases mislaid or failed to recognize the importance of mail received from the F.C.C., mail has not reached the hands of the engineer in charge of said station. Therefore, Be it Resolved, that the APCO assembled in National Conference at St. Louis, Missouri, on this 30th day of July, 1942, petition the F.C.C. that:

(a) The F.C.C. in all future applications for station licenses and renewals of station licenses of the various classes of police service require that the name of the licensed engineer in charge be included in such applications.

(b) The F.C.C. direct all mail pertaining to such stations to the individual so designated.

(c) Upon change of the individual named by the licensee at such stations it become mandatory that the F.C.C. be so notified.

(d) The F.C.C. request all licensees of police radio stations to submit the name of the individual so designated at once so that these names may be attached to the present station files, due to 1944 being our new renewal date.

(e) The secretary be instructed to furnish the F.C.C. with a copy of this resolution.

MR. SOWLE: Are there any comments?

MR. WALKER: Do you mean just the engineer in charge?

MR. SOWLE: Yes.

MR. WALKER: In a state system that is a little vague.

MR. SOWLE: It was brought up here rather rapidly during another discussion that it would be desirable. He doesn't sign anything. It is simply that his name will be included in the application for station license or renewal of station license so that when mail is sent to that particular station he will get it. Sometimes mail is addressed to the station and when it comes in it is sent to the mayor, the commissioner, or the chief of police, and sometimes it gets in the round file in the corner instead of to you. Maybe it is the renewal of your station license. I have had to go under the blotter for the renewal of a station license when it didn't show up.

MR. LATHROP: In the case of a state system there is generally one engineer in charge of all stations, and he would be the logical one in that case.

MR. SOWLE: Yes, I imagine so, because his name would appear in the application for renewal of license. He would be in charge of making that application, therefore, his name would appear in it, and he would be the one to receive that mail.

MR. LATHROP: I have had that happen to me five or six times, and it happened particularly with Restricted Order No. 1. Three or four weeks after it was out I hadn't received a copy. I didn't trace it but wrote for another. A month later the original order happened to come around. The Chairman of the County Board had gotten it.

MR. WALKER: Is there any provision for existing stations?

MR. SOWLE: The provision is in renewals. I don't know just how we could rectify that particular part.

MR. GRONIER: I suggest that it be amended to request the Commission to insert the name of the engineer where they send in their name, and request that it be placed in their files.

MR. SOWLE: You would request the F.C.C. to send out a memorandum to all stations requesting that the engineer file his name and address so that they may attach that to the station license file?

MR. MYERS: If a state has eight or nine stations scattered out over the state and that information is coming to an engineer -- our engineer hasn't been with us for six months - the communications officer takes charge of all paper work in connection with that station. We have information from the F.C.C. going to some of our stations, and it is impossible for headquarters to know what is going on. My contention is that all information from the F.C.C. should come to the communications officer. The communications officer is the uniformed police officer, and he does transact and take care of all business in connection with the radio division of that state. It may apply all right to a city or municipality, providing the engineer doesn't change every few days and mail come to an individual who has been gone for six, eight, or ten months. I don't feel like opening mail addressed to someone else.

MR. SOWLE: In that particular case, it would be necessary for us to make a slight amendment. We could say "the licensed engineer in charge or the chief communications officer". What we are trying to get away from is having the chief of police or police commissioner, or city manager, get the mail. We want to get it to the chief communications officer.

MR. AUDRITSH: I wonder why you should make that "chief engineer". Why don't you make it "the man in charge of communications". Frequently he is the chief engineer and as such it would go to the right party.

MR. WALKER: Why not make it "whoever he shall designate".

MR. DERBY: The only objection is that one time we had a police official who was in charge of the communications system. Mail going to him was no different than for the chief of police. It should be for the action of the man who makes out the applications that the chief has to sign. My chief doesn't know anything about the answers to the questions asked on the application form. I make them out and he signs them. I would like to get those things so that I can take them to his attention.

MR. GRONIER: Why couldn't we say to "an individual designated by the licensee"?

MR. MAESHNER: Would it be possible to address it to the station itself by the call letters?

MR. SOWLE: No, sir, that is the trouble now. Shall we say then, "require the name of the individual designated by the licensee to be included in such application"?

MR. KADOW: There is just one thing about that, if the chief decided he wants to be the fellow that gets the mail, you would have to get around that. We are endeavoring to get it in the hands of the man in charge of the communications system. Just so his interest is in that system and it is taken care of when the mail comes. I don't know just how to word it in such a way that the licensee will be required to furnish the name of that person. He should be the one in charge of the system, whether the technician or just plain supervisor.

MR. SOWLE: I shall now read the resolution as we have amended it:

Resolution No. 1 (as amended)

Due to the fact that there are various public officials indicated as signatories upon the licenses of police stations and that these officials have in many cases mislaid or failed to recognize the importance of mail received from the F.C.C., mail has not reached the hands of the engineer in charge of said station. Therefore, Be it Resolved, that the APCO assembled in National Conference at St. Louis, Missouri, on this 30th day of July, 1942, petition the F.C.C. that:

(a) The F.C.C. in all future applications for station licenses and renewals of station licenses of the various classes of police service require that the name of the individual named by the licensee be included in such applications.

(b) The F.C.C. direct all mail pertaining to such stations to the individual so designated.

(c) Upon change of the individual named by the licensee at such stations it become mandatory that the F.C.C. be so notified.

(d) The F.C.C. request all licensees of police radio stations to submit the name of the individual so designated at once so that these names may be attached to the present station files, due to 1944 being our new renewal date.

(e) The secretary be instructed to furnish the F.C.C. with a copy of this resolution.

MR. WALKER: I move that the resolution as amended be accepted.

Second to motion by Mr. Wherritt. Motion carried.

MR. SOWLE: I shall read the second resolution.

Resolution No. 2

Due to the present war emergency many of our members are now or will be in the Armed Forces of the United States. To keep these members intact and informed of our activities at home, be it Resolved that:

(a) All members of the APCO in good standing who enter the Armed Services of the United States be carried as paid up members in good standing for the duration and including six months thereafter.

(b) Such members be sent regular issues of the Bulletin, when published, Provided that the Editor is notified of the proper mailing address.

(c) The secretary be instructed to see that a copy of this resolution is sent to the Bulletin Editor to be published in the official Bulletin of the APCO.

Upon motion by Mr. Lathrop, second by Mr. Stone, the resolution was adopted as read.

MR. SOWLE: There is one more resolution:

Resolution No. 3

The Resolutions Committee on behalf of the entire assembled delegates and their guests extend thanks and appreciation to our host, Lieut. Teeter, and his committees for the splendid conference, with special commendation for the smooth and punctual manner in which all events, both business and pleasure, have been executed.

(Signed) N. Arthur Sowle, Chairman
J. R. Derby
Rufus M. Jones
Robert E. Lathrop
A. C. Kadow

MR. FETCHER: I move the adoption of the resolution with a rising vote.

Second to motion by Mr. O'Neil. Motion carried.

MR. TEETER: Thank you all. I am sorry that at this time our dear "uncle" or "grand-uncle" was in such a shape that we had to curtail some of the things we wanted to do for you. I wanted to show you the things we promised you in Oakland. Some day, when times are normal, we want you back again. That is what we think of you.

MR. SOWLE: That is all that the Resolutions Committee has to present at this time. The resolutions will be properly typed up and presented to the secretary so he can record them.

MR. WILT: Mr. Walker, will you kindly take over now with your committee report?

MR. WALKER: The report on frequency allocations is more or less in a status quo condition at the present time. There are many dealings with communications, especially frequencies and frequency assignments that we were unable to definitely come to a conclusion on in the brief time in which we had to meet. We met with Mr. Nielson, who gave us some splendid support and some splendid suggestions. Due to conditions at the present time, as you all know, the activities of the Communications Commission have a wide scope; due to the present emergency we feel that it is not the practical nor diplomatic thing to do for this body to put a lot of pressure on frequency changes, or changes in their rules and regulations. It was verbally agreed, however, that we will at a future date between now and possibly the next meeting, again meet with members of the Communications Commission, working out in detail various assignments which they, I am happy to add, so earnestly solicit. We are going to try to meet again in the near future, not at this conference but possibly somewhere else and definitely obtain the reshuffle of some of the frequencies. There will be no new frequencies during this emergency, but a re-allocation of the present ones, which will mutually benefit all of us. However, we do have one report on intermediate frequency changes, which Ray Gronier of Madison, Wisconsin, will read at this time.

MR. GRONIER: I warn you men that this will probably be open for discussion afterwards, but we had several meetings and I think we gave it considerable thought.

"Whereas, we, the police communication officers of these United States, have had an unprecedented burden thrust upon us because of our country's entry into the war, and we find it necessary to do an increased amount of work in the aiding and protection of life and property. This burden is made more difficult because of numerous handicaps such as ever increasing shortage of materials, an increase in the demands for additional channels by other services, including the military forces.

Whereas, we are mindful of the fact that it is our patriotic duty to conserve on everything such as materials and energy as well as the judicial use of frequencies now available to us.

An examination of our various bands shows that a very serious interference problem exists in our intermediate frequency municipal bands. It is

believed that it will not be possible for the stations now operating there to move to the ultra-high frequency bands until after the duration, hence something must be done to alleviate the chaos that now exists. It is further believed that some relief can be obtained by some minor revisions in the frequencies now assigned to us without acquiring any additional equipment. In some cases a station is required to serve a large county and because of interference at night from other stations putting in a stronger sky wave than the signal for the local station, it is not possible to serve their own county.

An investigation has shown that whereas some of the channels in this spectrum are heavily occupied, some others are used very little, and others not at all.

Therefore, we recommend that the F.C.C. grant permission to a licensee to

(1) permit a municipally operated station to change from a crowded channel to one that is less occupied, provided the licensee can show that they are unable to give satisfactory service in the area they are required to serve.

(2) That said licensee has conducted a survey and submits a statement with the request for such change of frequency, stating the reasons why his service will be improved and not cause serious interference to another station.

(3) That the licensee also show that the change can be made without having to acquire additional new equipment.

We further recommend that the F.C.C. consider the possibilities of re-assigning already existing police frequencies to be used for zone radiotelegraph."

That is the result of much discussion with Mr. Nielson. I think the resolution explains it pretty well. What we are trying to do is make the most of the equipment that we have and the frequencies that are now assigned to us. If you start in at the broadcast band and go on down or up in frequency, now that the amateurs are gone, I think you will find the most chaotic condition exists throughout the radio spectrum, first, in the municipally operated intermediate band, and second, in the telegraph band. Of course, as the resolution states, we think some corrections can be made rather easily. That is what it amounts to. Are there any suggestions or corrections?

Upon motion by Mr. Biorn, second by Mr. Wherritt, the resolution was adopted.

MR. WILT: Does everybody have a copy of the attendance? There are plenty of copies here if you want to take some along or mail some out. I think the next thing on the program will be the selection of the convention city for next year. I have numerous letters from cities not represented. Cincinnati and Omaha have extended invitations, but since there is no representative from these cities, I believe we will not consider them at all unless someone moves that we do. Here is an invitation from Buffalo, New York.

(Mr. Wilt read letters from the Mayor, the Commissioner of Police, the Rotary Club, the Kiwanis Club, the Greater Buffalo Advertising Club, the Buffalo Chamber of Commerce Convention and Tourist Bureau.)

MR. WILT: Is there anyone in the room that wants to bid for the convention next year?

MR. GRONIER: Wisconsin was all set to invite you this year to Milwaukee, but at this time, in behalf of the Wisconsin delegation, I want to yield to Buffalo and hope they will yield to us some day.

MR. GENO: I am not a super-salesman; I think most of the boys know I am about the lousiest salesman in the world. After I really got going in this convention, I really went. In Buffalo we have a pretty energetic Chamber of Commerce and Tourist Bureau, and it isn't a bad place. We had the IACP convention there last August, and it seemed the hardest thing in the world to keep them together. They drove 90 miles to go skating in August. We have wonderful ale over there in Canada. Somebody is going some place all the time, so they don't stick to the convention all the time. Nevertheless, I have a lot of - I can't call it "love" for APCO - I have a lot of respect for the boys and I like to get out with them and associate with them. I think the organization is a swell outfit. I missed by one vote last year. Come on up to Buffalo and let us do what we can. I had to make some awful rash promises around here. Come on up and let us see what we can do.

MR. WILT: Thank you, Mr. Geno. Is there anyone else who wants to bid for the convention next year? Everybody in favor of holding our 1943 Conference in the city of Buffalo, signal by raising of the hands. The motion is unanimously carried.

MR. SOWLE: Mr. President, I would like to place a motion before the assembly in reference to Omaha. I recall that there is a Seventh Corps Area army meeting up there which is very important. That is the reason they have no representative here to back up their letter. I would like to make a motion that this organization thank them for the offer and instruct the secretary to write them a letter to that effect.

Second to motion by Mr. McLaughlin. Motion carried.

The drawing for the attendance prize was held at this session. The small portable radio was awarded to Mr. Ray Hoffman, Ft. Atkinson, Wisconsin.

MR. WILT: Are there any other committees to report beside the Nominating Committee?

MR. LATHROP: Gentlemen, all of you have a copy of the constitution. We have amended Section 2 of Article II to read as follows:

> Section 2. Active Members. The following persons shall be eligible as active members: supervisors and chief operators of police communication systems, or fixed stations thereof, and other operators who must be recommended by their supervising communication officer, and regularly engaged in police communication services, whose salaries are paid by the federal or state government, or a political subdivision thereof, who may be accepted for membership in accordance with Article III, Section 1, of this constitution. Provided, however, that present active members may continue as such until they permit such membership to lapse.

Article VII - Dues

Section 1. National Chapter Dues. Each member shall pay to the Secretary-Treasurer of this association the following dues, for the period of each calendar year, according to his membership classification: Active membership, $3.00; Associate membership, $2.00; Cooperative membership, $3.00; Commercial membership, $3.00.

Under Section 2 of Article VII, Charter Chapter Dues, for Active membership, $2.00, Associate membership, $1.50.

You recall at our last convention the dues for the commercial membership were changed to read "Commercial member". What is your pleasure regarding this?

MR. BRYANT: I would like to point out that you have there "or other operators" in the system. I think you should make that "members of the system" and not specifically say operators. It might be dispatchers.

MR. LATHROP: Is that favorable to everybody? Substitute the word "members" for "operators". That is a good point.

MR. GRONIER: I will voice my objection to having commercial members. I don't see why we have to ask any company to join. I don't think the radio manufacturers should belong to this organization. I am wrong, but I just want to voice my objection.

MR. LATHROP: I shall read Section 2 of Article II as it has been changed to read:

Section 2. Active Members. The following persons shall be eligible as active members: supervisors and chief operators of police communication systems, or fixed stations thereof, and other members of the system who must be recommended by their supervising communication officer, and regularly engaged in police communication services, whose salaries are paid by the federal or state government, or a political subdivision thereof, who may be accepted for membership in accordance with Article III, Section 1, of this constitution. Provided, however, that present active members may continue as such until they permit such membership to lapse.

Does that meet the approval of the association?

MR. WILT: May we have a motion for acceptance of these revisions as stated?

Upon motion by Mr. Fetcher, second by Mr. Biorn, the revisions as stated were accepted.

MR. DERBY: I would like to call attention to this sheet that Mr. Teeter has asked be sent around.

MR. TEETER: We started this last year at Oakland and it would do anybody good to see the nice letters that we have got back, and I know they appreciate receiving them. A letter is sent from the association thanking them for sending you, and it is a pretty good way to get back next year. It

lets them know what we are doing. In some instances there will be some one other than the chief of police that sponsored your coming here. You might have an alderman or somebody else. If it isn't a chief of police, please state, so we can have that correct in our files.

MR. WILT: We will have the report from the Nominating Committee at this time.

MR. O'NEIL: Mr. Chairman, members, in the selection of nominees for officers for the coming year your Nominating Committee gave special consideration to members we hope will be available during the year and in attendance at our next conference. Of course, you are all familiar with the many changes that were made necessary during the past year, and as far as possible each one on the committee tried to think of men and submit their names for your consideration that we hoped would be with us during the year, and of course at our next conference and not have all the trouble we have had through the past year. Some things have transpired since our last conference; we could not even have a slight idea of what we would run into during the past year, but every effort has been made in consideration of these names to avoid that in the coming year. Your Nominating Committee submits the following for consideration of the members of this association.

President: Jack Wilt, Kansas City, Kansas

1st Vice-President: Frank Walker, East Lansing, Mich.; Ralph Hicks, Tulsa, Okla.; Harry L. Ware, Decatur, Ill.; L. D. Geno, Buffalo, N.Y.

2nd Vice-President: J. R. Derby, Denver, Colo.; J. W. Bryant, Jefferson City, Mo.; Ray Gronier, Madison, Wisconsin

Secretary-Treasurer: James H. Teeter, St. Louis, Mo.

Sergeant-at-Arms: E. F. Henning, Little Rock, Ark.; N. A. Sowle, Reno, Nev.; Roy E. McConnell, Evansville, Ind.

Bulletin Editor: J. M. Wherritt, Jefferson City, Mo.

This report is signed by the committee, Roy DeShaffon, A. C. Kadow, R. E. Lathrop, Arthur H. Vickerson, and myself, as chairman.

MR. WHERRITT: Mr. President, I will have to ask the association to withdraw my name as Bulletin editor, not that I don't appreciate the honor, but I think our superintendent would rather that I would not take it. I don't see any possible way that I can.

MR. TEETER: What if I would do the same thing, what if the whole outfit did?

MR. WHERRITT: Of course, we are all working for our chiefs, and I am not sure that I would be permitted to do it. Indirectly the superintendent has indicated that I should not take it; that I should get rid of it because of exceptionally heavy work in our department at this time.

MR. TEETER: Mr. President and fellow members, I believe I understand what Captain Wherritt is trying to tell, and I can understand him a little better than some of you. I have this to say, and I believe it is the proper time. I don't think anyone in the organization, while our Nominating Committee tries to do a good job that you all approve of, I don't think it is fair the way we have done the past two or three years, assembling here and electing officers that know beforehand that they can't serve you. I believe that is what Captain Wherritt has in mind, and I certainly feel that anyone that would allow their name to be used and possibly elected - as I say in the last two or three years it worked a terrible hardship on the officers or whoever has to administer it by continually changing officers. That is one reason that stationery is so high, because of the fact that during my term of office I have had to change stationery three times. That means using stationery for scratch paper that cost about a cent and a half a piece. You can't order 25 or 30 or 100, you have to order 500 or a thousand to get any sort of a price. If we could order 5000 we would get a lot better price, too. I believe that is what the Captain has in mind. While my chief doesn't desire me giving the amount of time I do to the job, he isn't going to kick about it. He knows his own condition a lot better than we do and probably has some idea of his own about it. Changing officers makes it an expensive proposition, too.

MR. WILT: We have all had a lot of work thrown on us since December Seventh. I know we have in my department, and I know that all the rest here have a lot more work, but the men that do the work are the men that have too much work to do. They are the men that really do produce. I know it is a hard job on this Bulletin; I know that the Bulletin editor does not get the cooperation from the membership that he should, and that makes the job harder than it really should be. We know it is a hard job and no one wants it. Captain Wherritt wanted to give it up at Oakland last year, but we prevailed upon him to keep it for another year, and I would like to prevail upon him this time for another year or to carry us through the duration of the war.

MR. WHERRITT: I don't see how it can be done under the circumstances. I feel that some other member probably has better facilities for taking care of it. I don't know whether you are aware of the fact we don't even have the Bulletin set up in Jefferson City. The copy comes to St. Louis and the type shipped back by express and the cuts and photographs have to be mailed to another town. About all that is done in Jefferson City is that Sergeant Bryant and Miss Tunnell do most of the editing, writing, and in fact lay it on the printer's rolls to press. The facilities are terrible for anyone to try to handle the publication of the Bulletin. We are working under too much of a handicap. It makes the job twice as hard as it would be for somebody who had the proper facilities. I have heard two or three members suggested here, and I would like for my name to be withdrawn.

MR. GRONIER: Do you think we could leave the selection of the editor to the new Executive Committee?

MR. WHERRITT: I don't want the association to feel that I am shirking my responsibilities. There are certain circumstances that make it necessary.

MR. VICKERSON: Mr. President and members of the organization, I know from experience and being the secretary of the Eastern States association, getting out notices and taking care of the correspondence, and when we

have a meeting somebody suggests that we write a letter; all those little things pile up and a person can be involved in an awful lot of work. Some of us have the facilities and some haven't. Some of us have the time and some of us are over-burdened with mental worries with the radio system itself. Therefore, I think that the individual man here knows himself whether he is able to handle the matter. I would like to suggest that those who feel that they could handle it, have the facilities, might be called upon to submit their names for election.

MR. WILT: I think it is useless. Do we have anybody in the organization that will volunteer to take this job? We want to keep a Bulletin regardless of anything else. We still want a Bulletin; we have to have it. It is the means of letting everyone know what is going on.

MR. GENO: I move, if it is absolutely fitting, that Mr. Vickerson would be a swell guy for the job.

MR. VICKERSON: No, I am awfully sorry, but I am handling all I can just now.

MR. WILT: We will go on with the election of officers and when we come down to the office of Bulletin Editor, why maybe there will be some nominations from the floor.

As you know from the report of the Nominating Committee, nominations for any of the offices can be made from the floor.

(There were no additional nominations for president, and upon motion by Mr. Walker, second by Mr. Gronier, the secretary was instructed to cast a ballot for the entire association.)

(There were no additional nominations for 1st Vice-President. The members voted by ballot for Messrs. Frank Walker, Ralph Hicks, Harry L. Ware, L. D. Geno.)

MR. WILT: By your ballot you have elected Mr. Walker as 1st Vice-President.

Are there any additional nominations for the office of 2nd Vice-President?

MR. VICKERSON: I would like to place the name of Larry Geno on that list.

MR. WILT: If there are no other nominations, I will declare the nominations closed.

(Ballots were cast for Messrs. J. R. Derby, J. W. Bryant, Ray Gronier, L. D. Geno.)

MR. WILT: By your ballot you have elected Mr. Geno as 2nd Vice-President of APCO.

MR. WILT: Are there any nominations from the floor for secretary?

(Upon motion by Mr. Fetcher, second by Mr. McLaughlin, Mr. Teeter was unanimously elected secretary-treasurer.)

MR. WILT: Are there any nominations from the floor for Sergeant-at-Arms?

MR. McLAUGHLIN: I nominate Mr. Derby.

MR. FETCHER: I nominate Mr. Quandt.

MR. GENO: I nominate Mr. Cooper.

Upon motion by Mr. Gronier, second by Mr. Lathrop, the nominations ceased.

(The members voted by ballot for Messrs. E. F. Henning, N. A. Sowle, Roy E. McConnell, J. R. Derby, H. F. Quandt, J. D. Cooper.)

MR. WILT: By your ballot you have elected Mr. Derby for Sergeant-at-Arms.

Are there any nominations from the floor for Bulletin editor?

MR. GRONIER: Mr. Chairman, we all know and greatly appreciate the work Captain Wherritt has done on the Bulletin; he has done a magnificent job. We know how hard he has worked. He gets up and says he is unable to carry on with the thing. I think we ought to appoint a committee to discuss this thing further. The man selected must have the facilities, he has to know the organization, and he has to have the time to put into it. I suggest you appoint a committee for further discussion of that.

MR. GENO: I understand that Nicholson from Illinois has the setup and could do the job. They are a pretty well organized group.

MR. NICHOLSON: It would be absolutely impossible.

MR. GENO: With all due respect to the Captain, I think if we can convince Nicholson that in cooperation and in conjunction with the Captain, he could take over and do a swell job. I nominate Mr. Nicholson.

MR. NICHOLSON: It is impossible for me to take it.

MR. GRONIER: I think it is too serious a matter to pass over here, and I know if I were to vote now I couldn't cast an intelligent vote. I think we should put it in the form of a motion that the Executive Committee appoint the Bulletin editor.

Second to motion by Mr. Erickson. Motion carried.

MR. VICKERSON: If they should fail to do this, the Executive Committee shall act as a joint body and edit it themselves.

MR. WILT: Now is the time, I believe, for Mr. Wherritt to come up and give us a word about the transcript of the minutes of this meeting. This transcript will be larger than any we have ever had at any of our conventions, and I think not only the ones present would like a copy of the transcript, but quite a few of the members that were not able to be here would like to obtain a copy of it. I will let Wherritt talk to you about obtaining a copy of it.

MR. WHERRITT: From the discussion that has taken place from the floor, it seems to me there will be considerable more in the minutes than in the past. It has been the custom to charge a dollar a copy. With the help of advertising that we sold we could take care of the additional expense. Actually, the cost will run more than that. I think $1.25 a copy would adequately take care of it. I shouldn't think anyone would object to that price. Heretofore at conventions we have asked the members that did want a copy to pay for it at that time, the reason being that after they left the convention a good many of them forgot or didn't care for copies and we would have a good many printed and not be able to sell them. I believe if we can sell 40 or 50 copies here on the conference floor at $1.25, then by possibly sending mimeographed circulars to the members not in attendance we can sell a sufficient number to make it pay for the printing. Last year, even if we had had a decent transcript, there were only 21 copies paid for at the conference, which wouldn't pay for the printing. I would like to hear some comments from the floor as to whether you think $1.25 would be objectionable and also whether or not you want to have the members here pay for them at this time. It is usually the safest thing to do to get enough money to start on while you are at the convention.

MR. VICKERSON: I would like to ask a question. The actual typing out of these minutes, of course, will involve a lot of labor by this young lady. I don't know whether the money that would be taken in would be enough to pay her for her time and trouble. She is probably very busy on some items and would like a little rest and a vacation. I don't know but what perhaps if they were kept in their present form for reference, in case anything comes up, the members might like that she have a little rest. However, if there is enough money taken in to make it pay, and if the young lady would like the job, of course, it would be all right to go ahead.

MR. WHERRITT: I think we should publish it regardless of whether or not we get enough money to pay for it. You can't tell until it is written up just how long it will be.

MR. GRONIER: Let's get the money now - $1.50 a copy.

MR. WHERRITT: How many would want copies, as Ray suggested, at $1.50 a copy? We can get the money out of the treasury, but as far as possible we want to make it self-supporting. Somebody suggested we circularize the absent members. Year before last we ran three articles in the Bulletin about the minutes being available for anybody that wanted them, and I think two people wrote in for copies.

MR. LATHROP: I know quite a few members who could not be here that were interested enough to send telegrams or letters of regret. Those particular parties who sent through those telegrams would be interested in a transcript. I don't recall how many were received, but would that have any bearing on the possible number?

MR. WHERRITT: Here is something that would help out a lot; when you have your next chapter meeting in Illinois, or Wisconsin, you could discuss the proposition with the operators who are not in attendance and possibly get rid of a few copies there. If we can get an idea of how many are wanted - we would like to print a hundred and get rid of a hundred.

MR. LATHROP: I think there would be less loss if you make arrangements for fifty and then if the organization had to subsidize it, it wouldn't run so much.

MR. WHERRITT: The actual printing isn't much; the cost is in the purchase of stencils. After the stencils are cut, the cost is minor.

MR. VICKERSON: Would it be any better to charge a dollar and see if everybody would take one at a dollar?

MR. WHERRITT: I doubt if it would make much difference. I think the incoming Executive Committee should state how many copies will be printed so when the bill is turned in it will be OK. Why not let them advise as to how many copies to have printed? Those who raised their hands, indicating they wanted copies, can pay for them here before they leave. Is $1.50 satisfactory? That seems to be the consensus. I can't tell you how long it will be, because there is quite a great deal of work entailed in getting them out.

As you recall, we announced an award of ten dollars would be given for the best article appearing in the March, April and May issues of the Bulletin on "How APCO Can Best Serve in the National War Effort". The only article submitted, which fell in that classification, was the one in the May issue, by Wilbert T. Peterson, Illinois State Police, Chicago. Since he is not in attendance, I will give the check for ten dollars to Mr. Nicholson, who will see that he gets it.

The best technical article appeared in the same issue. There was some discussion on some of the articles, one submitted by Floyd Hatfield, of Seattle, Washington, on his composite FM transmitter, brought considerable comment. However, it was the opinion of the editorial staff that the article submitted on the air raid alarm device, by Lieut. Vickerson, was the most timely and did cause considerable comment. So we will tender a check for ten dollars to Mr. Vickerson for the best technical article in the Bulletin contest.

MR. VICKERSON: I would like to give half the prize to the other gentleman, Mr. Hatfield.

MR. WILT: There is a committee appointment that I haven't made so far and that is this Special War Committee. It was my idea that the Executive Committee would serve on that committee and also Messrs. Lee Fetcher, Roy DeShaffon, and J. W. Bryant. On the Executive Committee, I am now the chairman, Messrs. Teeter, Kadow, Batts, Walker, Morris, Wherritt, Schuler, Wareing. The War Committee will be composed of these men I have just named and the other three, Mr. Fetcher, Mr. DeShaffon, and Mr. Bryant. Does anybody else have a suggestion for someone to include? I will be glad to receive suggestions. As soon as this meeting is adjourned I wish the War Committee would remain in this room and get the questionnaire started.

I believe the next thing is the installation of officers. I think I have done enough talking at this convention. It looks as if you are going to have to listen to me next year if I am still here, and I hope to be. You are all acquainted with the officers you have elected, but I would like to have them come forward at this time so you can see them.

MR. WILT: Has anybody anything for the good of the organization before we officially close the convention?

MR. SOWLE: Some of the members mentioned this to me, and I believe it should be in the form of a motion, that the secretary thank the distributors and manufacturers for their participation and cooperation in the conference.

Second to motion by Mr. O'Neil. Motion carried.

MR. WILT: I see a large representation of the distributors just walking in. I want to take this opportunity to thank them for coming forward under conditions as they are today. They knew they didn't have anything to sell us, yet they came forward like they have in the past. On behalf of the organization I wish to sincerely thank them.

Announcements.

MR. WILT: If that is all, gentlemen, I will declare the Ninth Annual Conference of Associated Police Communication Officers adjourned until Buffalo, in 1943.

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