REPORT ON

OIL AND GAS COMMUNICATIONS FACILITIES

AS PRESENTED BY

NATIONAL PETROLEUM COUNCIL'S

COMMITTEE ON OIL AND GAS EMERGENCY DEFENSE ORGANIZATION

AND

ADOPTED BY

NATIONAL PETROLEUM COUNCIL

September 28, 1956

CHAIRMAN OF THE COMMITTEE: Dr. Robert E. Wilson

CHAIRMAN OF THE SUBCOMMITTEE: Mason S. Collett

HEADQUARTERS OFFICE

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As presented to the National Petroleum Council at its meeting in Washington, D. C. on September 28, 1956, jointly by Dr. Robert E. Wilson, Chairman of the Committee on Oil and Gas Emergency Defense Organization and Mason S. Collett, Chairman of the Subcommittee on Oil and Gas Communications Facilities.

September 19, 1956

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TO ALL MEMBERS OF NPC COMMITTEE ON
OIL AND GAS EMERGENCY DEFENSE ORGANIZATION:

Gentlemen:

As you know, the Agenda Committee of the National Petroleum Council, in its report of October 19, 1955, adopted by the Council at its meeting on October 20, 1955 approved a study to be made in response to a request from the Department of Interior with regard to communications facilities of the petroleum and gas industries in connection with wartime mobilization. The study was assigned to the Committee on Oil and Gas Emergency Defense Organization, of which you are a member, by the Chairman of the Council.

On May 29, 1956, I appointed a Subcommittee on Oil and Gas Communications Facilities with Mason S. Collett of the Atlantic Refining Company as chairman. That Subcommittee subsequently met on June 5 and August 2, 1956. Enclosed for your information and review is the final draft of the report of the Subcommittee on Communications Facilities.

I have reviewed the subcommittee's report and feel that it is adequate and satisfactory as written. Inasmuch as this study was accomplished by a subcommittee of experts in the communications field I believe the report will meet with your approval and that a meeting of the committee will not be required prior to its presentation at the meeting of the Council on September 28, 1956. It is presently planned that Mr. Collett will join with me in making the presentation to the Council.

I trust this action will meet with your approval.

Sincerely,

/S/ Robert E. Wilson

Robert E. Wilson, Chairman
Committee on Oil and Gas
Emergency Defense Organization

REPORT OF THE SUBCOMMITTEE

ON

OIL AND GAS COMMUNICATIONS FACILITIES

OF THE

NATIONAL PETROLEUM COUNCIL'S

COMMITTEE ON OIL AND GAS

EMERGENCY DEFENSE ORGANIZATION

CHAIRMAN OF THE SUBCOMMITTEE: M. S. Collett

Joseph E. Keller, Secretary
600 Munsey Building
Washington 4, D. C.

September 15, 1956

THE ATLANTIC REFINING COMPANY
Incorporated - 1870
260 South Broad St.
Philadelphia 1, Pa.

C
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September 14, 1956

Dr. Robert E. Wilson, Chairman
Committee on Oil and Gas
Emergency Defense Organization
National Petroleum Council
Suite 601, 1625 K Street, N. W.
Washington 6, D. C.

Dear Dr. Wilson:

We are happy to submit herewith the Report of the Subcommittee on Oil and Gas Communications Facilities of the National Petroleum Council's Committee on Oil and Gas Emergency Defense Organization pursuant to your letter of May 29, 1956 and the Council's Agenda Committee Report of October 19, 1955.

The Report has the unanimous approval of the full membership of the Subcommittee.

Very truly yours,

/s/ M. S. Collett

M. S. Collett, Chairman
Subcommittee on Oil and Gas
Communications Facilities, of
National Petroleum Council's
Committee on Oil and Gas
Emergency Defense Organization

Enclosure

REPORT OF THE SUBCOMMITTEE ON OIL AND GAS COMMUNICATIONS FACILITIES OF THE NATIONAL PETROLEUM COUNCIL'S COMMITTEE ON OIL AND GAS EMERGENCY DEFENSE ORGANIZATION

Under date of October 18, 1955, Mr. H. A. Stewart, Director, Office of Oil and Gas, Department of the Interior, addressed a letter to Mr. Walter S. Hallanan, Chairman of the National Petroleum Council, requesting that the Council make a study of the communications facilities of the petroleum and gas industries to determine the feasibility and desirability of organizing the existing oil and gas industries' communications facilities into a nationwide wartime communications network for war-time mobilization and operation of the oil and gas industries to handle communications between these industries and the oil and gas war agency and other Government agencies as appropriate.

As provided in the Articles of Organization of the Council this letter was considered at a meeting of the Agenda Committee on October 19, 1955, in Washington, D. C., at which meeting it was unanimously agreed to recommend to the Council the appointment of a committee to make the study as requested by Mr. Stewart in his letter of October 18, 1955, and to report to the Council. The Agenda Committee specifically stated that it is understood that the study and report does not contemplate a detailed inventory of communications facilities of individual companies and that such report should not suggest any plans or programs.

The Council authorized the study and under date of May 26, 1956, Dr. Robert E. Wilson, Chairman of the Committee on Oil and Gas Emergency Defense Organization, appointed a Subcommittee on Oil and Gas Communications Facilities of the National Petroleum Council's Committee on Oil and Gas Emergency Defense Organization. This Subcommittee was selected after consultation with Mr. Collett and correspondence with the members of the main Committee. The members of the Committee and Subcommittee are listed on an attachment to this report.

The first meeting of the Subcommittee was held in Washington, D. C., on June 5, 1956 at which time the general direction of the study was agreed upon. A preliminary draft based on this outline was completed on July 28, 1956, and was presented to the Subcommittee at its second meeting, which was held in Kansas City, Missouri, on August 2, 1956. This completed report has since been unanimously approved by the Subcommittee and is submitted for the consideration of the Committee on Oil and Gas Emergency Defense Organization.

* * * * * * * * *

It is the considered view of your Subcommittee, composed of communications experts trained in providing the essential wire and radio facilities to the petroleum and natural gas industries, that there would be ways and means of utilizing the industries' private communications facilities to fulfill some of the emergency communications requirements of the Department of the Interior as requested.

While your Subcommittee deems such arrangement feasible, and even desirable in some instances in facilitating the common defense

effort, it should be noted that such a program would require much advance planning and could only be done at a considerable expenditure of time and money. Although the basic facilities required for such an adaptation already exist in many parts of the country, much planning and some construction would be necessary in other sections. In general, however, the basic facilities exist in areas where the potential need would be greatest.

The implementation of such a program must be done in such a manner that it would not interfere with the essential day to day operations of these facilities by the petroleum and natural gas industries, since the needs for such communications facilities would increase materially in any national emergency. The proposed plan should also include the leased wire circuits now used by these industries but which are not now included in any effective priority schedule for use under emergency conditions.

It is not feasible, or desirable, at this time to outline a detailed plan of operation. Your Subcommittee does recommend, however, the appointment of a National Petroleum Emergency Communications Director in the new petroleum war agency, if one is created, who will have full responsibility in making certain that there will be no interference to essential petroleum radio or wire facilities, that they are not closed down or taken over by any other government agency and who would also have the responsibility of then integrating

the government's needs in this area with the industry's use of its own private facilities.* There should also be appointed, in whatever regional organizations be created, a similar Regional Petroleum Emergency Communications Director with responsibility for carrying out the same functions at the regional and state levels, since he will be more intimately acquainted with the local needs. The national and regional Directors would then have close liaison with an Emergency Petroleum Communications Committee to be selected from existing groups in the petroleum and natural gas industries such as the Central Committee on Radio Facilities of the American Petroleum Institute, the Communications Committee of the American Gas Association, the National Petroleum Radio Frequency Coordination Association and the Petroleum Industry Electrical Association.

If this phase were put into effect, it would be of maximum usefulness to the Office of Oil and Gas and would minimize possible after effects of attack damage to commercial common carrier communications, since those remaining would be overloaded with high priority messages with the result that many important petroleum and gas messages would be delayed or not sent. Thus, such an emergency communications plan would be desirable to both the government and the industries in coordinating their common efforts in this important area of national defense.

* This step should not be taken until the setting up of a petroleum war agency, which was recommended more than two years ago. This is an additional pressing reason for setting up the proposed petroleum war agency.

The development and activation of any plans for emergency petroleum communications should await the future plans of the National Petroleum Council's Committee on Oil and Gas Emergency Defense Organization. The planning for emergency communications would then be coordinated and integrated with that Committee's overall emergency defense planning. This would assure maximum cooperation and efficiency.

The petroleum and natural gas industries have a critical need for the radio and wire facilities now being used by them. There must be a clear understanding of the essentiality of these facilities and in order to make this clear it would be helpful, at this point, to outline briefly the history of the development of these facilities and the uses being made of them today.

Until radio was made available to these industries in 1949, the bulk of the communications needs were fulfilled almost entirely by wholly-owned or leased wire and carrier facilities. This new dimension in communications has enjoyed a spectacular development, bringing greater efficiency and economy in operations and in very large degree these industry operations have been geared to the existing radio and wire communication pattern so that it would be disastrous to existing operations if these facilities were interfered with in any way.

On July 1, 1949 the Federal Communications Commission released new rules and regulations governing the Industrial Radio Services and established thereunder, as Sub Part "G", the Petroleum Radio Service. Elegibility for licensing in the Petroleum Radio Service is limited to those "engaged in prospecting for, producing, collecting, refining, or

transporting by means of pipe lines, petroleum or petroleum products, including natural gas". Under the new rules and regulations, certain radio frequencies were allocated by the Commission for the exclusive use of licensees in the Petroleum Radio Service and additional frequencies were allocated on a shared basis with other industries.

In addition to the Petroleum Radio Service, the industry is making extensive use of frequencies within the Maritime, Aeronautical, Radiolocation, Special Industrial, Highway, Power Utility, Low Power Industrial, Experimental and Special Emergency Services of the Federal Communications Commission.

From its early usage in geophysical operations, where radio is not only used for voice communication but to transmit and record the shot-instant in seismic prospecting, its use has grown phenomenally until today the latest development in the radio art, microwave, is utilized on long haul pipe lines for remote control of pumps and motors, telemetering of various pressures and other data, teletype operation and the myriad communications functions required in present day pipe line operations. It is significant to note that the petroleum industry is one of the largest, if not the largest, user of microwave facilities today.

Pipe lines also inaugurated radio communication between patrol planes, pump stations and repair crews to expedite the reporting and repair of leaks or other conditions requiring immediate attention.

Radio is employed in production and drilling operations from the time the rig is moved in until final completion of the well and then

becomes a valuable operating tool in the daily activities of a producing field.

Refineries have found the use of radio a great asset in improving the efficiency and safety of their operations, particularly in materials handling and routine maintenance and repair.

In marketing operations, radio is a tremendous benefit and is being used increasingly as conditions warrant. Fuel delivery trucks are dispatched by radio on emergency service calls from a central control station. This results in improved service to the customer with fewer tank-trucks in use by the oil company.

Radio-telephony plays an important role in the movement of petroleum products on the inland waterways and Great Lakes of the United States as well as on ocean-going tankers. In these services, radar serves as a navigational aid which provides a degree of safety heretofore impossible to realize.

Radar is also useful in detecting the presence of a line-squall or hurricane and determining the speed and direction of a storm's movement. Its value to the safety of personnel on isolated drilling platforms in the open sea is readily apparent.

In geophysical prospecting for possible oil bearing structures off shore in the Gulf of Mexico and other waters, the techniques of radiolocation have proved to be invaluable as surveying aids. Radar, Shoran and phase-comparison systems have all given very good results.

The National Petroleum Council's Committee on the Use of Radio and Radar made a comprehensive report under date of May 1, 1953 on the use being made of radio by the petroleum industry. On January 1, 1955, a supplemental report was made to the Council by that Committee.

The petroleum industry is one of the largest users of industrial radio facilities. At the annual meeting of the National Petroleum Radio Frequency Coordination Association, held in Washington, D. C., on June 6, 1956, it was reported that there are in excess of 41,000 transmitters in operation in the Petroleum Radio Service alone. Many hundreds of transmitters are in operation in the other services as previously outlined. Millions of dollars, perhaps in excess of $50,000,000.00 are invested in elaborate microwave private communications systems used by the petroleum and natural gas industries as shown on the attached map. In addition to radio communications facilities, the petroleum industry also utilizes elaborate company owned and leased private communications systems estimated as follows:

Company Owned		Leased
Pole-Line Miles	Circuit Miles	Circuit Miles
30,000	170,000	55,000

(These statistics were compiled in 1954 by a questionnaire sent to all petroleum organizations operating their own communications facilities. The returns were not one hundred percent but the totals were adjusted to include the approximate extent of the systems operated by those not answering and thus should be fairly accurate as of the time of compilation.)

From this brief outline, it is apparent that the petroleum industry's use of wire and radio private communications systems is very great. The petroleum industry, and in turn, the national security and defense would be disastrously affected if the industry's use of wire and radio channels were impaired in any way. The essentiality of the petroleum industry's use of radio was recognized and confirmed by the National Communications Conference held in Washington by the Federal Civil Defense Administration. At that time it was clearly established that present petroleum industry radio communications facilities were not to be disturbed in any way and that they would be permitted to continue to operate under industry control even in a national emergency.

It is timely that this matter is now being studied by the Council, since elaborate plans to control emergency communications are now being formulated by the Federal government, based upon the results of the 1956 Operation Alert exercise, made public on July 26, 1956, at the close of the week's test of the nation's telecommunication's facilities as a part of the broad study in which it was assumed that 76 key target areas had suffered atomic destruction. It was reported that all types of communications were under constant surveillance by a team of industry and government officials gathered at the relocation site of the Office of Defense Mobilization.

Within twenty-four hours after this exercise began, the Defense Mobilizer named a War Communications Administrator and redelegated to him the communications powers of the President under the Communications Act of 1934, as amended. This War Communication's Administrator

then assumed his full responsibilities as Chief War Communications Officer, including the assigning of radio frequencies to government radio stations, directing restoration of wire and radio communications facilities, safeguarding the security of these communications, suspending or amending the rules of the Federal Communications Commission, as necessary, closing or seizing radio or wire communications facilities and authorizing their use or control by any Federal Agency in order to assist the uninterrupted flow of essential communications.

Actually, the Office of Oil and Gas of the Department of the Interior, in asking this special study of the communications facilities of the petroleum and natural gas industries, has anticipated by many months the critical problems created in providing these communications in the event of another emergency.

Your Subcommittee wishes to emphasize that, while it is not making any recommendation for immediate action at this time, this matter is of grave importance and should be given continuing study and review, so that these essential radio and wire communications facilities will be permitted to make their maximum contribution to victory in another war. The measure of performance by the petroleum industry in the next war may well determine the success of our Nation in such a struggle, just as it did in the two great world wars in this century. It should also be pointed out that the degree of performance in petroleum communications may determine in a critical measure, in turn, this industry's contribution to ultimate victory.

This Subcommittee stands ready to be of any assistance to you at any time and we shall be happy to follow out any further directions you may wish to issue to us as your overall emergency defense planning progresses.

Respectfully submitted,

M. S. Collett, Chairman

Pipe Line Microwave Systems

presented by

THE Petroleum Engineer

P. O. Box 1589 Dallas 21, Texas

Published as a supplement to
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Oil & Gas Pipelining Edition

LEGEND

Systems operating in the 960 mc band --------
Systems operating in the 2000 mc band – – – –
Systems operating in the 6000 mc band ————

KEY

1. American Oil Pipe Line Company
2. Atlantic Seaboard Corporation
3. Buffalo Pipe Line Company
4. Colorado Interstate Gas Company
5. El Paso Natural Gas Company
6. Humble Pipe Line Company
7. Industrial Supply Corporation
8. Interstate Petroleum Communications, Inc. (Shell Pipe Line)
9. Keystone Pipe Line Company
10. Michigan Wisconsin Pipe Line Co.
11. Mid-Valley Pipe Line Company
12. Natural Gas Pipe Line Company of America
13. Natural Gas Storage Company of Illinois
14. New York State Natural Gas Corporation
15. Ohio Oil Company
16. Oklahoma Mississippi River Products Pipe Line Corporation
17. Oklahoma Natural Gas Company
18. Panhandle Eastern Pipe Line Co.
19. Plantation Pipe Line Company
20. Platte Pipe Line Company
21. Richfield Oil Company
22. Salt Lake Pipe Line Company
23. Service Pipe Line Company
24. Sinclair-Continental Microwave System
25. Sinclair Pipe Line Company
26. Southern Counties Gas Company
27. Standard Oil Company of Indiana (Products Pipe Line Dept.)
28. Sun Pipe Line Company
29. Tennessee Gas Transmission Co.
30. The Texas Company
31. Texas Eastern Transmission Corporation
32. Texas Gas Transmission Corporation
33. Texas Illinois Natural Gas Pipe Line Company
34. Transcontinental Gas Pipe Line Corporation
35. Trunkline Gas Company
36. United Gas
37. Union Oil Company
38. Wilcox Trend Gathering System, Inc.

3/6/56
9/18/56

NATIONAL PETROLEUM COUNCIL
COMMITTEE ON OIL AND GAS EMERGENCY DEFENSE ORGANIZATION
(1956)

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SUBCOMMITTEE ON OIL AND GAS COMMUNICATIONS
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OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS EMERGENCY DEFENSE ORGANIZATION
1956

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UNITED STATES
DEPARTMENT OF THE INTERIOR
OIL AND GAS DIVISION

Washington 25, D. C.

C
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October 18, 1955

Mr. Walter S. Hallanan
Chairman, National Petroleum Council
1625 K Street, N. W.
Washington, D. C.

Dear Mr. Hallanan:

The National Petroleum Council has made two extensive studies and reports on the use of radio and radar in the oil and gas industries. The first report was under date of May 28, 1953, and the second report was dated January 1, 1955. These reports bring out clearly the great expansion in the use of radio and radar by the oil and gas industries and the importance of these facilities to the industries' daily operations.

The Office of Oil and Gas participated in "Operations Alert 1955," the exercise held last June by the Federal Civil Defense Administration and the Office of Defense Mobilization. These exercises simulated on a limited scale Government operations from relocation centers immediately following an enemy attack.

The exercise proved conclusively that in event of enemy attack communications are vital to effective petroleum and gas mobilization. Because of attack damage to commercial common carrier communications, those remaining would be overloaded with high priority messages, with the result that many important petroleum and gas messages would be delayed or not sent.

Study of the Council's reports raises the question as to the extent that the existing communications facilities of the oil and gas industries could be used as one means of communication in petroleum and gas mobilization. Communication services would be needed between:

(a) The petroleum and gas war agency and the oil and gas industries.

(b) The petroleum and gas war agency's central headquarters and its district and field offices.

(c) The principal offices of the oil and gas companies and the centers of oil and gas operations.

(d) The petroleum and gas war agency and certain other Government agencies.

(e) Those certain Government agencies and the petroleum and gas industries as necessary.

Some advantages to the public, the Government, and to the oil and gas industries would be:

(a) Expediting the flow of petroleum and gas for prompt and effective military retaliatory effort.

(b) Expediting flow of petroleum and gas for survival of citizens in areas damaged by enemy attack.

(c) Assessing damage to petroleum and gas facilities.

(d) Expediting rehabilitation.

(e) Mobilizing the oil and gas industries for an all-out war.

It is therefore requested that the National Petroleum Council make a study of the communications facilities of the petroleum and gas industries to determine the feasibility and desirability of organizing the existing oil and gas industries' communications facilities into a nationwide wartime communications network for wartime mobilization and operation of the oil and gas industries to handle communications between these industries and the oil and gas war agency and other Government agencies as appropriate. The report should include coverage provided by existing facilities. Information on additional equipment needed to complete such a system should also be included in the report if the National Petroleum Council determines that such a communications network would be feasible and desirable. Advice and recommendations with respect to this matter as the Council deems appropriate should be included in the Council's report.

Sincerely yours,

/S/ H. A. Stewart

H. A. Stewart
Director