

PATENT PRACTICES OF THE
TENNESSEE VALLEY AUTHORITY

PRELIMINARY REPORT
OF THE
SUBCOMMITTEE ON
PATENTS, TRADEMARKS, AND COPYRIGHTS
OF THE
COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE
EIGHTY-FIFTH CONGRESS, SECOND SESSION

PURSUANT TO

S. Res. 236



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ERRATA

On page v the date "January 2, 1958," should read "January 2, 1959."

On page 4, seven lines from the top, "page 33 of the appendix," should read: "page 23 of the appendix."

On page 5, under subtitle "1. Employees," should read: "No information has been supplied as to any patent owned by an employee."

On page 6, under subtitle "b. Through licensees", paragraph 2 should not be set off by quotation marks.

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FOREWORD

This report was prepared by Herschel Clesner of the subcommittee staff, under the supervision of Robert L. Wright, chief counsel of the Subcommittee on Patents, Trademarks, and Copyrights, as part of the subcommittee's study of the United States patent system, conducted pursuant to Senate Resolution 236 of the 85th Congress, 2d session. It is the first of a series that will describe the current practices of each of the agencies of the Federal Government engaged in activities which may result in the ownership of patents by the Government or patent licenses to the Government from employees, contractors or grantees.

This series of reports is based upon material assembled by the subcommittee in response to inquiries first directed to a number of Government agencies in the summer of 1957. The object of these inquiries was to determine how these agencies were discharging their responsibilities with respect to inventions in which the Government had a substantial financial interest, as the result of its expenditures for scientific research and development. No such inquiry had been made since the investigation which culminated in the Attorney General's report and recommendations with respect to Government patent practices and policies, published in 1947. The subcommittee's inquiries were therefore mainly designed to show the extent to which Government agencies have followed or disregarded the recommendations of that report and the reasons underlying the policies presently followed by these agencies. During the past 10 years there has been a tremendous expansion in Government research and development which has given the problem of what the Government should do with inventions produced by its research even greater importance today than it had in 1947.

The 1947 report was the product of a comprehensive investigation by the Department of Justice, of the practices of government agencies with respect to inventions made by their employees and contractors. The final recommendations of that report as to employee inventions resulted in the issuance in 1950 of Executive Order 10096, which was intended to provide a uniform patent policy for the Government with respect to inventions made by Government employees. The report had recommended the institution of a similar uniform policy with respect to inventions made by Government contractors but this recommendation resulted in no executive or legislative action.

The 1947 report recommended as to research contracts and grants that the Government should take title to all inventions produced in the performance of the contract except in special cases approved by a Government Patents Administrator and the head of the agency involved. In these exceptional instances the Government was to receive an irrevocable, royalty-free, nonexclusive license and if the contractor failed to place the invention in adequate commercial use

within a designated period he was to offer nonexclusive licenses at a reasonable royalty to all applicants. No Government Patents Administrator was created and the Chairman of the Government Patents Board created by the 1950 Executive order was given no power over the disposition of inventions made by contractors or grantees.

This 1950 order was intended to provide a uniform administration of employee inventions by having the Government take title where the invention was made during working hours or with a substantial Government contribution or where it bore a direct relation to or was made in consequence of Government duties. In actual administration the order does not appear to have had that effect.

The 1947 report also recommended that the Government acquire foreign patent rights equivalent to those obtained from the United States, except where the agency head involved and the Government Patents Administrator found it desirable in the public interest to release such rights to the inventing employee or contractor. Executive Order 9865 was issued in 1947 to activate this recommendation, and was modified as to employee inventions by the 1950 order referred to above. In actual administration a policy of inaction with respect to the acquisition of foreign rights appears to be presently in effect, in most government agencies.

The 1947 report further recommended that all Government-owned inventions should be made available to the general public by royalty-free, nonexclusive licensing and that the proposed Government Patents Administrator should report periodically on the extent of use of such inventions. As noted above the proposed Government Patents Administrator was never created and the extent of the use of such inventions is still largely unknown.

As will appear from the reports themselves, the policies followed by a number of agencies having research responsibilities vary widely in important respects and in some cases are diametrically opposed. Since these variations are in part the result of varying statutory responsibilities, the subcommittee staff has first summarized in each preliminary report the statutory provisions which control the patent activities of the agency in question. In each report this summary will be followed by a summary of the agency's own account of the way it is discharging its responsibility as to inventions and a further summary of the agency's own views as to whether its past policy has been successful and what its future policy ought to be.

These preliminary reports are intended to provide only a summary of the facts and opinions provided by the agencies themselves. Whether or not this data is adequate to determine whether a given agency is doing what Congress intended it to do is a matter reserved for future comment. The purpose of these preliminary studies is solely to give the Congress and the public an accurate summary of what the numerous Government agencies with patent responsibilities say they are doing with respect to governmentally financed inventions.

Although the patent operations of the Tennessee Valley Authority are unlike those of many other agencies, the format of this report will be followed in subsequent reports in order that comparisons between the policies of all of the agencies covered may be easily made. The TVA report was prepared for publication first because this agency is

one with long experience in handling inventions and was able to provide more information with respect to the use of the inventions it has financed than most of the agencies involved in the subcommittee's survey.

JOSEPH C. O'MAHONEY,
*Chairman, Subcommittee on Patents, Trademarks and Copy-
rights, Committee on the Judiciary, United States Senate.*

JANUARY 2, 1958.

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PRELIMINARY REPORT AS TO THE PATENT PRACTICES OF THE TENNESSEE VALLEY AUTHORITY

I. LEGAL AUTHORITY AS TO PATENTS

The Tennessee Valley Authority is a public corporation with patent activities authorized and controlled by specific legislative provisions relating to research and development. These provisions are intended to aid the Corporation in carrying out its statutory functions of conserving and developing the resources of the Tennessee Valley region and developing improved fertilizer products and processes. With respect to the fertilizer research and development program, the Corporation—

* * * * *

is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients at Muscle Shoals by the employment of existing facilities, by modernizing existing plants, or by any other process or processes that in its judgment shall appear wise and profitable for the fixation of atmospheric nitrogen or the cheapening of the production of fertilizer (16 U. S. C. 831d (d))—

* * * * *

and is also authorized—

to establish, maintain, and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the Corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency (16 U. S. C. 831d (h)).

The principal patent provisions read as follows:

16 U.S.C. 831 d(i)—To request the assistance and advice of any officer, agent, or employee of any executive department or of any independent office of the United States, to enable the Corporation the better to carry out its powers successfully, and as far as practicable shall utilize the services of such officers, agents, and employees, and the President shall, if in his opinion the public interest, service, or economy so require, direct that such assistance, advice, and service be rendered to the Corporation, and any individual that may be by the President directed to render such assistance, advice, and service shall be thereafter subject to the orders, rules, and regulations of the board: *Provided*, That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee

of the Corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation, which is authorized to grant such licenses thereunder as shall be authorized by the Board: *Provided further*, That the board may pay to such inventor such sum from the income from sale of licenses as it may deem proper.

16 U. S. C. 831r—Patents; access to Patent Office and right to copy patents; compensation to patentees.

The Corporation as an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers shall have access to the Patent Office of the United States for the purpose of studying, ascertaining, and copying all methods, formulae, and scientific information (not including access to pending applications for patents) necessary to enable the Corporation to use and employ the most efficacious and economical process for the production of fixed nitrogen, or any essential ingredient of fertilizer, or any method of improving and cheapening the production of hydroelectric power, and any owner of a patent whose patent rights may have been thus in any way copied, used, infringed, or employed by the exercise of this authority by the Corporation shall have as the exclusive remedy a cause of action against the Corporation to be instituted and prosecuted on the equity side of the appropriate district court of the United States, for the recovery of reasonable compensation for such infringement. The Commissioner of Patents shall furnish to the Corporation, at its request and without payment of fees, copies of documents on file in his office: *Provided*, That the benefits of this section shall not apply to any art, machine, method of manufacture, or composition of matter, discovered or invented by such employee during the time of his employment or service with the Corporation or with the Government of the United States.

II. PRESENT PRACTICE

A. ADMINISTRATION

1. Personnel

The Corporation employs one patent attorney full time who reviews inventions, prepares applications for patents and prosecutes them in the Patent Office. He further utilizes one-third of the time of a clerk-stenographer.

The Corporation maintains a Patent Advisory Committee which is composed of the General Counsel who is Chairman, the Manager of Chemical Engineering, Director of the Division of Agricultural Relations, Director of the Division of Property and Supply, or their designated representatives, and a representative of the Government Relations and Economic staff, Office of General Manager. The purpose of this Patent Advisory Committee is to review the patent policies of TVA and make recommendations.

Patent licenses granted by the TVA are handled by the division where the invention developed as an incident of research and develop-

ment. The licenses are subject to approval by the Board of Directors of TVA as required by statute.

2. Performance statistics

The following is a breakdown by fiscal years of patents applied for, issued to, and owned by TVA:

| Fiscal year | Applica- tions filed | Patents | | | |
|-------------|-------------------------|---------|-----------|---------|----------------------------|
| | | Issued | Purchased | Expired | Number at year's end |
| Prior to— | | | | | |
| 1938..... | | 20 | 3 | 0 | 23 |
| 1938..... | 32 | 14 | 1 | 0 | 38 |
| 1939..... | 25 | 14 | 1 | 0 | 53 |
| 1940..... | 17 | 17 | 0 | 0 | 70 |
| 1941..... | 13 | 13 | 0 | 0 | 83 |
| 1942..... | 20 | 8 | 1 | 0 | 92 |
| 1943..... | 8 | 8 | 0 | 0 | 100 |
| 1944..... | 5 | 6 | 0 | 0 | 106 |
| 1945..... | 7 | 7 | 0 | 0 | 113 |
| 1946..... | 6 | 3 | 0 | 0 | 116 |
| 1947..... | 4 | 1 | 0 | 0 | 117 |
| 1948..... | 7 | 1 | 0 | 1 | 117 |
| 1949..... | 7 | 2 | 0 | 0 | 119 |
| 1950..... | 3 | 6 | 0 | 0 | 125 |
| 1951..... | 9 | 7 | 0 | 2 | 130 |
| 1952..... | 3 | 7 | 0 | 0 | 137 |
| 1953..... | 4 | 8 | 0 | 7 | 138 |
| 1954..... | 2 | 2 | 0 | 12 | 128 |
| 1955..... | 6 | 2 | 0 | 16 | 114 |
| 1956..... | 6 | 7 | 0 | 15 | 106 |
| 1957..... | 3 | 2 | 0 | 18 | 90 |

In view of the large number of TVA patents about to expire as compared to its present rate of filing applications for patents, the TVA's ownership of patents will apparently continue the decline indicated by this table for the years 1953-57. This results from the fact that since 1942, TVA's research and development has been confined essentially to the fertilizer field, with a corresponding decrease in the number of patentable inventions.

B. POLICY AS TO RETENTION OF TITLE

1. By employees

All employees of TVA, as a condition of employment, are required to disclose all inventions, know-how, and technical information created during their employment regardless of the subject matter to which the inventions relate or the circumstances under which each invention is made. TVA then determines whether the inventor or TVA shall have title.

Prior to 1949 the TVA asserted ownership of all inventions made by its employees regardless of whether the invention was made in the course of the inventor's employment. This policy was based on a legal interpretation of the language of title 16, United States Code, section 831d (i). However, provision was made for the granting of exclusive licenses to employee-inventors in those instances where TVA had no program in which it could use the invention.

Following reconsideration of the prior interpretation of title 16, United States Code, section 831d (i), the TVA Division of Law, concluded that TVA is required to assert title only to those inventions

made by TVA employees "by virtue of and incidental to" their services as employees. The TVA accordingly revised its policy and now allows title to inventions made by employees which are not "by virtue of and incidental to" such services to remain in the inventor. Under this revised policy and the one previously in effect, TVA has also granted to five employee-inventors royalty-free, exclusive licenses for the life of the respective patents, listed at page 33 of the appendix.

The revised policy also provides that TVA will permit employees to file their own patent applications concerning inventions made in the course of their employment if TVA's interest is insufficient to justify the expense of prosecuting its own applications or if TVA's contribution to the invention is insufficient equitably to justify retention of complete ownership by TVA. However, in either instance, TVA retains the right of royalty-free use by the Government.

Executive Order 10096 promulgated on January 23, 1950, has had little practical effect on the operation of TVA's employee patent policy. By agreement with the original Chairman of the Government Patents Board, TVA allowed the Chairman to review TVA's determinations as to the ownership of inventions and of its decisions to permit employee-inventors to file for their own patents. However, a later Chairman of the Government Patents Board, upon review of title 16, United States Code, section 831d (i), decided that he had no authority to review TVA's decisions. Therefore, submission of all such decisions for his review has ceased.

As noted above, the TVA has statutory authority to pay to any governmental employee-inventor whose patent has become the property of the TVA, any income from the "sale of licenses." This provision has not been used because TVA licenses its inventions on a royalty-free basis and receives no income from them.

2. *By contractors and grantees*

The TVA has broad and specific powers to make contracts as provided by title 16, United States Code, section 831 c (d) and title 16, United States Code, section 831 d (a)-(i). At present, however, there are no contracts outstanding for research and development work. The TVA also has the right to issue grants to nonprofit organizations. However, no regulations as to the issuance of such grants have yet been promulgated. Therefore, the TVA at present obtains all its patents through inventions created by governmental employees.

C. FOREIGN FILING

1. *Employees' patents*

The TVA makes no attempt to obtain foreign patent rights on its inventions, since these are developed for the conservation and more effective use of the resources of the Tennessee Valley region by the development of better fertilizers and improved methods for the production and use of fertilizers. It has been the TVA's position that no situation has been presented in which its statutory purpose would be materially served by obtaining a foreign patent on a TVA invention.

2. *Contractors' and grantees' patents*

As noted above, there are no contractors or grantees holding title to TVA patents.

D. USE OF PATENTS BY PARTIES RETAINING TITLE

1. *Employees*

No infringement has been supplied as to any patent owned by an employee.

2. *Contractors and grantees*

As noted above, there are no contractors or grantees holding title to patents developed by TVA.

3. *The Government*a. *Directly.*

The TVA puts its patented inventions to use in its own manufacturing operations and in experiments for the purpose of enabling others to produce nitrogen and other fertilizer products. By these patents TVA makes it possible for any National, State, district or county experimental station, farmer, and farm association to use any new form of fertilizer or process to manufacture fertilizers developed by the TVA.

The dissemination of technical information and know-how developed through TVA research and development work is accomplished through publications and by allowing industry representatives and others to visit and observe the TVA work at first hand. The TVA promptly establishes patent ownership of its inventions to avoid claims of invention by others and to preserve for the public the benefits of TVA's research and development work which have been financed by public funds. TVA also states that this step aids in establishing priority in invention in patent interferences and in some instances it is this ownership which enables the TVA to carry out new developments to completion without substantial hindrance as to patent infringement claims.

For example, the TVA did some developmental work and obtained a patent on a rotating electric furnace for the production of phosphorus and a license under this patent was granted to the American Agricultural Chemical Co. Electrochemisk, a Norwegian concern, brought an unsuccessful suit against the American Agricultural Chemical Co. for infringement of Electrochemisk's patent on a rotating electric furnace. The TVA's work in adaptation of the rotating electric furnace to the production of phosphorus and its ownership of a patent thereon contributed substantially to the successful defense by the American Agricultural Chemical Co. The outcome of this suit placed TVA in a strong defensive position regarding its own use of the electric furnace and cleared the way for widespread use by American industry.

Another example of such protection is provided by TVA's patent on a process for reacting ammonia and P_2O_5 to produce a fertilizer material. Monsanto Chemical Co. has made application for a patent on a similar process and TVA's patent is in interference with Monsanto's application. If the TVA establishes priority of the invention in the interference, its patent may protect TVA against suit for infringement in the event the process is carried to large-scale production as well as other possible users of the process.

Although the TVA may use its patents to bring infringement suits against others, it has never done so and at present has never threatened anyone with such action. TVA has never been sued for patent

infringement although claims have been made against it for infringement which have been settled.

Title 16, United States Code, section 831 c (f) and title 16, United States Code, section 831 d (i) give TVA the authority to purchase, sell or license its patents. In its early years the TVA purchased six patents, but has purchased none since 1942. TVA has never sold any patents.

TVA has acquired no patent license from others which requires payment of a continuing royalty. On a few occasions TVA has paid a lump-sum royalty for a paid-up license to use a process or to install and use certain apparatus. The most recent transaction of this nature was the payment in April 1957 of the sum of \$7,500 to Armand Bur of Cleveland, Ohio, in settlement of a claim of infringement under United States Patent No. 2,533,090, covering a car dumper sampling apparatus for coal and for a paid up license to make and use the apparatus in any TVA steam plant.

b. Through licensees

TVA's present policy is to grant nonexclusive, royalty-free licenses upon all of its patents. It has summarized the reason for this policy in the following statement:

Why TVA does not charge a royalty on its fertilizer patents.—

TVA's policy with respect to the licensing of its patents is as follows:

"A license under any application for Letters Patent for an invention or under any patent acquired by TVA may be granted under terms and conditions applicable to each case, which always reserve the right of royalty-free use by and for TVA and the United States Government. An effort is made to secure wide use of TVA inventions. Generally licenses are nonexclusive; however, a license may be exclusive for a limited term and to the extent required to induce proper development of an invention or utilization of the invention in the interests of the TVA program. Licenses with exclusive features are granted on the basis of the relative qualifications of the prospective licensees to complete the development of the invention, to utilize it effectively in the interests of the TVA program, or to secure the widest public use of the invention. When feasible, and when such data seem likely to be of value in developing the resources of the region, a licensee who is granted exclusive rights may be required to supply economic and technical data obtained through the use of the licensed invention. Nonexclusive licenses are granted free of royalty."

The issuance of licenses on patented improvements in fertilizer technology is an important part of TVA's program of improving, increasing, and cheapening the production of fertilizer as provided for in sections 5 and 11 of the TVA Act. TVA strives in this program to develop and to get into use by fertilizer producers, processes and apparatus that will utilize to the fullest extent the raw fertilizer materials in the country and will produce fertilizers of high concentration and utility at an economical price. The ultimate object of the program is to enable the farmers of the country to obtain higher quality fertilizers at cheaper prices

so that the soil resources of the Nation may be preserved and improved.

It seems obvious that any royalty imposed by TVA on licensees under its fertilizer patents would be passed on to the consumers in higher prices. This would tend to nullify the statutory purpose of cheapening the price of fertilizer for the farmers. Charging a royalty would also inevitably tend to limit the number of producers who would accept and utilize the TVA developments.

It is TVA's conclusion that making these licenses available on a nonexclusive, royalty-free basis, just as it makes available other technical information obtained from its research and developmental work, results in the greatest acceptance and use of its developments and thus contributes most to the objectives of the program. The fact that through August 1958 a total of 155 such licenses have been granted for use in 159 plants dispersed throughout the United States seems to justify this conclusion. While these fertilizer producers that have obtained such licenses have undoubtedly received some financial benefit from the use of TVA-developed processes and apparatus, such benefit appears to be largely the result of the expanding use of fertilizers and thus the greater demand for the manufacturers' products, which the TVA program encourages.

Besides decreasing the beneficial effects of the program on the farmers, charging a royalty has certain administrative disadvantages. In the first place, it is extremely difficult to determine a royalty that is fair to all producers. Moreover, charging a royalty would require TVA to police the licensees' operations to see that proper accounting and payment of the royalty is made and to seek out and enjoin any infringement of the patents. It would also probably entail demonstration to a further degree of the commercial feasibility of processes and apparatus and consumer acceptance of the product; the establishment of a promotion or sales organization to get the inventions into use; and involvement of TVA in claims of infringement made by others.

TVA's experience in licensing patents bears out these objections. Several years ago (around 1940) a number of patents relating to food processing were licensed on a royalty basis. TVA found such agreements difficult and costly to administer and largely unproductive. The net result was that an insignificant return from the licenses was realized and, still worse, very little use was made of the inventions. Thus it appeared that the licensing procedures had helped defeat the very purpose for which the research and developmental work behind the inventions had been conducted—namely, better utilization and conservation of our resources.

The only exclusive license, other than the employee-inventor licenses referred to at page 4, was granted as a means of inducing the commercial exploitation of one of TVA's patents. This license, which was exclusive for 5 years, not exclusive thereafter, was granted to the English Mica Co. and covered a patent on wet-ground mica. The purpose of the exclusive provision was to enable the licensee to finance

construction of a plant and complete development work necessary for commercial acceptance of the product. The license further provided that at the end of the 5-year period the company should supply such technical and economic data obtained through the use of the process as might be requested by the TVA and if the company failed to use the process over any period of 12 consecutive months prior to the expiration of the 5-year exclusive term, the TVA had the right to terminate the license.

At the expiration of the exclusive license period to the English Mica Co., another royalty-free license under this patent was granted to the International Minerals & Chemical Corp., of Chicago, Ill., and the English Mica Co. retained only a nonexclusive license.

Prior to 1946 the TVA did not have an established policy as to the terms on which patent licenses would be granted. The number of licenses granted was small and generally they were nonexclusive. They sometimes called for a royalty payment. However, as noted above, the TVA decided that charging a royalty seemed to hinder the acceptance and use of patents that it had developed.

The three nonexclusive royalty bearing licenses referred to above dealt with patented food freezing inventions which were developed through the cooperative research of the TVA and one of the land-grant colleges in the TVA area. Two of the licensees never did carry out operations under the license and all three companies shortly thereafter entered bankruptcy or became insolvent. There was therefore no substantial financial return from these licenses.

All of the remaining patent licenses granted by the TVA, have been on a royalty-free, nonexclusive basis. In all of its licensing arrangements the TVA has retained, for other governmental agencies, as well as itself, the right to manufacture and use.

TVA has succeeded in achieving wide use of its developed fertilizer improvements. It estimates, on the basis of available data, that the processes and methods controlled by TVA patents are used in the production of about two-thirds of the granular fertilizer manufactured annually in the United States.

Under United States patents Nos. 2729554 and 2741545, relating to a continuous process and apparatus for the ammoniation of superphosphate, the TVA, as of October 27, 1958, had issued 77 licenses to corporations, farm cooperatives, societies, small businesses, and others on a nationwide basis. All the major manufacturers and distributors of fertilizer are included in TVA's list of licensees found at appendix, p. 11.

TVA further licensed another 21 corporations, manufacturers and others to manufacture the continuous ammoniator equipment covered by the foregoing United States patent No. 2741545 (appendix p. 13). Another successful process for the use and manufacture of superphosphate by a mixer is licensed by TVA under United States patent No. 2528514 to 35 licensees (appendix p. 15).

There are 12 TVA licensees under patent applications serial Nos. 624177 and 740982 which are directed to a process for the preparation and production of liquid fertilizers (appendix p. 17).

TVA further licenses to numerous corporations, the use of processes and equipment relating to aluminum-silicon alloys, calcium metaphosphate, superphosphoric acid, wet ground mica, phosphorus and phosphoric acid, carbon monoxide catalyst, fused tricalcium phos-

phate, slag expansion, phosphate reducing furnace, and a rotating furnace.

All of these licenses require the licensee to report annually on the number of months the invention was in actual use. By these reports the TVA is kept informed as to the use made of all of its inventions, even when used only by licensees.

III. AGENCY VIEWPOINT

A. JUDGMENT AS TO EFFECTIVENESS OF PRESENT POLICY

The TVA has stated—

the positive usefulness of TVA ownership of patents on inventions developed by it is exemplified by the great number of licenses which have been issued to fertilizer producers and manufacturers of fertilizer products and equipment under the patents described above. Through the nonexclusive, royalty-free licenses TVA grants under such patents, TVA preserves to the public the benefit of its efforts, in accordance with the provisions of the TVA Act, to improve the quality of fertilizers and to improve and cheapen the methods of production. Obviously, a manufacturer of fertilizer or equipment is much more willing to try a new process or piece of apparatus developed by TVA if he has the protection of TVA's patent ownership. TVA's system of licensing has also helped it to keep reasonably accurate data on the extent of use of its developments. It is estimated on the basis of such data that TVA methods are used in the production of about two-thirds of the 3 to 4 million tons of granular fertilizers manufactured annually in the United States (letter of Sept. 23, 1957, from Chairman of the TVA Board, Herbert D. Vogel, to Senator Joseph C. O'Mahoney).

B. RECOMMENDATION AS TO FUTURE POLICY

None were offered.

1942-1943

1. The first step in the process of the development of a new product is the identification of a market need. This is done by conducting market research, which involves gathering information about the target market and its needs. This information is then used to develop a product that meets the needs of the market.

2. Market Research

Market research is the process of gathering information about the target market and its needs. This information is used to develop a product that meets the needs of the market. There are two main types of market research: primary research and secondary research. Primary research is research that is conducted specifically for the purpose of the current project. Secondary research is research that has already been conducted by others. Both types of research are used to gather information about the target market and its needs. Primary research is often conducted through surveys, focus groups, and interviews. Secondary research is often conducted through the use of books, articles, and other published sources. Market research is an essential part of the product development process. It helps to ensure that the product is designed to meet the needs of the target market. Without market research, a product is more likely to fail in the market.

3. Product Development

4. Marketing Strategy

APPENDIX

Licenses by TVA for use of continuous ammoniator (United States patents 2,729,554 and 2,741,545)

[For standard terms of license see the following form]

| Date of License | Company | Address |
|-----------------|--|---|
| Mar. 6, 1958 | AFC, Inc. (Agricultural Fertilizers Chemicals) | Post Office Box 11, Edison, Calif. |
| June 9, 1954 | The American Agricultural Chemical Co. | 100 Church St., New York, N. Y. |
| Apr. 20, 1956 | ArkMo Plant Food Co., Inc. | Walnut Ridge, Ark. |
| Jan. 9, 1958 | Aroostook Federation of Farmers. | Caribou, Maine. |
| Apr. 14, 1954 | Baugh & Sons Co. | 25 South Calvert St., Baltimore, Md. |
| Dec. 21, 1954 | The Buhner Fertilizer Co. (purchased by AACC—American Agricultural Chemical Co.) | Seymour, Ind. |
| Oct. 23, 1957 | Central Chemical Corp. | Hagerstown, Md. |
| Feb. 11, 1954 | Central Texas Fertilizer Co., Inc. | Comanche, Tex. |
| May 12, 1958 | Consumers Cooperative Association | Post Office Box 7305, Kansas City, Mo. |
| Oct. 10, 1956 | Cooperative Plant Foods, Inc. | Schereville, Ind. |
| Dec. 23, 1954 | Cornland Plant Foods | 230 Park St., Grinnell, Iowa. |
| May 24, 1956 | Crest Chemical Co. | Watertown, S. Dak. |
| Mar. 24, 1954 | Darling & Co. | 4201 South Ashland Ave., Chicago, Ill. |
| Mar. 19, 1956 | Dixon Chemical Industries, Inc., I. P. Thomas Division | Cuthbert Rd., Merchantville, N. J. |
| Oct. 4, 1954 | Eastern States Farmers' Exchange, Inc. | West Springfield, Mass. |
| Feb. 3, 1954 | Farm Belt Fertilizer & Chemical Co. | Post Office Box 417, Kansas City, Mo. |
| Apr. 30, 1954 | The Farm Bureau Cooperative Association, Inc. | 245 North High St., Columbus, Ohio. |
| July 2, 1956 | Farm Bureau Service Company of Missouri, Inc. | New Florence, Mo. |
| Oct. 17, 1950 | Farm Bureau Services, Inc. | Kalamazoo, Mich. |
| Mar. 23, 1954 | Farm Fertilizers, Inc. | Post Office Box 351, Omaha, Nebr. |
| Aug. 7, 1956 | The Farmers Fertilizer Co. | Post Office Box 2002, Columbus, Ohio. |
| Feb. 2, 1955 | Federal Chemical Co. | Starks Bldg., Louisville, Ky. |
| Dec. 21, 1954 | Fertilizer Manufacturing Cooperative, Inc. | 1800 South Clinton St., Baltimore, Md. |
| Sept. 23, 1957 | Foremost Fertilizer Co. | Leesburg, Fla. |
| June 14, 1958 | Fort Smith Cotton Oil Co. | Fort Smith, Ark. |
| Oct. 17, 1956 | Gilchrist Plant Food Co. | 525 West Washington St., Morris, Ill. |
| Mar. 15, 1954 | Illinois Farm Supply Co. | 100 East Ohio St., Chicago, Ill. |
| June 9, 1955 | Indiana Farm Bureau Cooperative Association, Inc. | 47 South Pennsylvania St., Indianapolis, Ind. |
| Nov. 29, 1956 | International Minerals & Chemical Corp. | 20 North Wacker Dr., Chicago 6, Ill. |
| July 21, 1955 | Iowa Farm Supply Co. | 1010 High St., Des Moines, Iowa. |
| Dec. 29, 1954 | Jackson Fertilizer Co. | Jackson, Miss. |
| Feb. 22, 1955 | Kelly, Weber & Co., Inc. | Lake Charles, La. |
| Mar. 8, 1958 | Ke-Wash Fertilizer Co. | Keota, Iowa. |
| Aug. 16, 1955 | Kingsbury & Co., Inc. | Post Office Box 7107, Indianapolis, Ind. |
| Dec. 23, 1957 | N. S. Kocs & Son Co. | 4500 13th Ct., Kenosha, Wis. |
| Nov. 22, 1955 | Land O'Lakes Creameries, Inc. | Minneapolis, Minn. |
| July 2, 1957 | Longhorn Construction Co. | Box 338, Sulphur Springs, Tex. |
| Sept. 30, 1957 | Midwestern Farm Fertilizers, Inc. | Post Office Box 282, Stevens Point, Wis. |
| Aug. 5, 1954 | Minnesota Farm Bureau Service Co. | 101 Fairfield Ave. East, St. Paul, Minn. |
| June 24, 1957 | Mississippi Federated Cooperatives | Meridian, Miss. |
| Mar. 8, 1954 | Missouri Farmers Association, Inc. | 301 South 7th St., Columbia, Mo. |
| Mar. 29, 1958 | Missouri Plant Food Co. (affiliate of ArkMo Plant Food Co., Inc.) | Sikeston, Mo. |
| Sept. 11, 1957 | The Mountain Copper Co., Ltd. | 230 California St., San Francisco, Calif. |
| Apr. 30, 1954 | Nichols Seed & Fertilizer Co. (formerly Oklahoma Fertilizer & Chemical Co.) | P. O. Box 1296, Oklahoma City, Okla. |
| Jan. 22, 1954 | The Norris Fertilizer Co. | 25 South Calvert St., Baltimore, Md. |
| Dec. 24, 1957 | Northland Chemical Co., Inc. | East Grand Forks, Minn. |
| Dec. 21, 1954 | Northwest Cooperative Mills, Inc. | 635 North Fairview Ave., St. Paul, Minn. |
| May 24, 1956 | The Ohio Equity Exchange Co. | 704 Cook Tower, Lima, Ohio. |
| July 25, 1955 | Ohio Farmers Grain & Supply Association | Pestoria, Ohio. |
| June 12, 1956 | Olin Mathieson Chemical Corp. | Williamston, N. C. |
| Dec. 9, 1953 | Oregon Washington Fertilizer Co. | Post Office Box 3314, Seattle, Wash. |
| Feb. 10, 1955 | F. H. Peavey & Co. | Minneapolis, Minn. |
| Jan. 7, 1957 | Price Chemical Co. | Miller's Lane, Louisville, Ky. |
| Dec. 5, 1955 | Chas. W. Priddy & Co., Inc. | Post Office Box 900, Norfolk, Va. |
| July 26, 1955 | F. S. Royster Guano Co. | Norfolk, Va. |
| Mar. 7, 1955 | Simonsen Mill-Rendering Plant | Quimby, Iowa. |

12 PATENT PRACTICES OF THE TENNESSEE VALLEY AUTHORITY

Licenses by TVA for use of continuous ammoniator (United States patents 2,729,554 and 2,741,545)—Continued

[For standard terms of license see the following form]

| Date of license | Company | Address |
|-----------------|--|--|
| July 1, 1954 | The Smith Agricultural Chemical Co.----- | Columbus, Ohio. |
| Sept. 18, 1958 | C. O. Smith Guano Co.----- | Moultrie, Ga. |
| Oct. 27, 1953 | The Snyder Chemical Co., Inc.----- | Post Office Box 946, Topeka, Kans. |
| Sept. 22, 1955 | Southern Gotton, Oil division, Wesson Oil & Snowdrift Co., Inc.----- | Post Office Box 30, Little Rock, Ark. |
| Sept. 25, 1956 | Southwestern Agrochemical Corp.----- | Post Office Box 337, Chandler, Ariz. |
| Dec. 5, 1955 | The Summers Fertilizer Co., Inc.----- | Totman Bldg., 210 East Redwood St., Baltimore, Md. |
| Feb. 14, 1957 | Sunland Industries, Inc.----- | Post Office Box 1660, Fresno, Calif. |
| Feb. 4, 1957 | Super-Crop Plant Foods, Inc.----- | Box 324, Ottumwa, Iowa. |
| Feb. 20, 1956 | Texas Farm Products Co.----- | Nacogdoches, Tex. |
| Feb. 11, 1954 | Tyler Fertilizer Co.----- | 420 South Oakland Ave., Tyler, Tex. |
| Mar. 21, 1956 | Tyler Grain & Fertilizer Co.----- | 619 Madison Ave., Wooster, Ohio. |
| Mar. 7, 1955 | Valley Fertilizer Co.----- | Post Office Box 402, Greenville, Miss. |
| Aug. 21, 1956 | Virginia-Carolina Chemical Corp.----- | Richmond, Va. |
| Oct. 23, 1957 | Weaver Fertilizer Co., Inc.----- | National Bank of Commerce Bldg., Norfolk, Va. |
| Aug. 31, 1954 | Wilson & Toomer Fertilizer Co.----- | Post Office Drawer 4459, Jacksonville, Fla. |
| Dec. 5, 1955 | Wisconsin Farmco Service Cooperative----- | 801 West Badger Rd., Madison, Wis. |
| Sept. 9, 1958 | Arcadia Cotton Oil Co.----- | Arcadia, La. |
| Oct. 2, 1958 | Pasco Packing Co.----- | Post Office Box 97, Dade City, Fla. |
| Sept. 15, 1958 | Planters Fertilizer & Phosphate Co.----- | Box 865, Charleston, S. C. |
| Oct. 2, 1958 | Rath Packing Co.----- | Post Office Box 330, Waterloo, Iowa. |
| Sept. 9, 1958 | Ruston Oil Mill & Fertilizer Co.----- | 312 West Louisiana, Ruston, La. |

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____
REGARDING USE OF PROCESS AND APPARATUS FOR AMMONIATION
OF SUPERPHOSPHATE

THIS AGREEMENT, made and entered into this _____ day of _____, 195____, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"; and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, TVA is the owner of U. S. Patents No. 2,729,554 and No. 2,741,545 relating to a process and apparatus for the ammoniation of superphosphate; and

WHEREAS, Licensee desires to use said process and to use, repair, and reconstruct said apparatus for the manufacture of fertilizer; and

WHEREAS, it appears that the use of such process and the use, repair, and reconstruction of such apparatus by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. TVA will furnish to Licensee, without cost to the latter, such description of the process and apparatus described in the preamble and such reports of the experimental use thereof as are now available.

2. TVA makes no warranties or representations with respect to said process and apparatus other than that TVA has legal title to U. S. Patents No. 2,729,554 and No. 2,741,545. TVA assumes no responsibility in connection with the defense or prosecution of rights in the

process and apparatus or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process and apparatus shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve-months' period in which the process and apparatus have been used by it.

4. TVA hereby confers upon Licensee a license to use the said patented process and to use, repair, and reconstruct the said patented apparatus; said license to be nonassignable except to Licensee's successors in business, nonexclusive, royalty-free, and for the full term of each of the said patents.

5. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: _____ By _____
Assistant Secretary *General Manager*

ATTEST: _____ By _____
 _____ (Title) _____ (Title)

Licenses by TVA for the manufacture of continuous ammoniator (United States patent 2,741,545)

[For standard terms of license see the following form]

| Date of license | Company | Address |
|-----------------|--|--|
| Oct. 19, 1954 | Atlanta Utility Works..... | East Point, Ga. |
| Feb. 7, 1956 | Barnard & Leas Manufacturing Co., Inc..... | 1200 34 12th St. SW., Cedar Rapids, Iowa. |
| Mar. 9, 1954 | Blaw-Knox Co..... | Post Office Box 778, Pittsburgh, Pa. |
| Aug. 21, 1956 | Blue Valley Equipment Manufacturing & Engineering Co..... | Post Office Box 73, North Topeka, Kans. |
| June 24, 1957 | Davidson-Kennedy Co..... | Post Office Box 97, Station D, Atlanta, Ga. |
| Mar. 30, 1954 | Divine Engineering, Inc..... | Post Office Box 1670, Cedar Rapids, Iowa. |
| Dec. 2, 1955 | J. H. Ehrsam & Sons Manufacturing Co..... | Enterprise, Kans. |
| May 15, 1954 | Equipment & Engineering Co., Inc..... | Atlanta, Ga. |
| Nov. 7, 1955 | Fertilizer Engineering & Equipment Co., Inc..... | Memorial Dr., Green Bay, Wis. |
| July 9, 1954 | Fertilizer Equipment Sales Corp..... | Post Office Box, 1968, Atlanta, Ga. |
| Dec. 9, 1953 | Link-Belt Co..... | 300 West Pershing Rd., Chicago, Ill. |
| June 24, 1957 | Longhorn Construction Co..... | Box 336, Sulphur Springs, Tex. |
| Oct. 23, 1957 | Manitowoc Shipbuilding, Inc..... | Manitowoc, Wis. |
| Dec. 9, 1953 | Pioneer Manufacturing & Supply Co. (license canceled at request of company)..... | Springfield, Mo. |
| June 30, 1954 | Edw. Renneburg & Sons Co..... | 2639 Boston St., Baltimore, Md. |
| Dec. 9, 1953 | The A. J. Sackett & Sons Co..... | Baltimore, Md. |
| Apr. 23, 1957 | Stedman Foundry & Machine Co., Inc..... | Aurora, Ind. |
| Oct. 23, 1953 | Sturtevant Mill Co..... | Park and Clayton Sts., Dorchester, Boston, Mass. |
| Apr. 30, 1954 | The D. M. Weatherly Co..... | 80 11th St. NE., Atlanta, Ga. |
| Aug. 21, 1956 | White Oil & Equipment Co., Inc..... | Besser City, La. |
| Mar. 8, 1954 | Worthington Corp..... | Plainfield, N.J. |

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____
REGARDING MANUFACTURE AND SALE OF APPARATUS FOR AMMONIA-
TION OF SUPERPHOSPHATE

THIS AGREEMENT, made and entered into this ____ day of _____, 195____, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, TVA is the owner of U. S. Patent No. 2,741,545 relating to apparatus for the ammoniation of superphosphate; and

WHEREAS, Licensee desires to manufacture, sell and/or install said apparatus; and

WHEREAS, it appears that the manufacture, sale and/or installation of such apparatus by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

Now, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. TVA will furnish to Licensee, without cost to the latter, such description of the apparatus described in the preamble and such reports of the experimental use thereof as are now available.

2. TVA makes no warranties or representations with respect to said apparatus other than that TVA has legal title to U. S. Patent No. 2,741,545. TVA assumes no responsibility in connection with the defense or prosecution of rights in the apparatus or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it manufactures, installs, sells, or uses said apparatus shall do so entirely and solely at its own risk.

3. Licensee shall notify purchasers of apparatus covered by this agreement of TVA's ownership of the invention covered by the said patent and that upon request TVA will grant them a license to use such apparatus and the appurtenant process for which TVA holds U. S. Patent No. 2,729,554, such license to be in TVA's standard form and subject to such terms and conditions as its policy with respect to the administration of its inventions may then require. Licensee shall promptly notify TVA in writing of the name and address of each person or firm for whom Licensee furnishes or installs such apparatus.

4. TVA hereby confers upon Licensee a license to manufacture, install, use for demonstration purposes, and sell any and all apparatus covered by the said patent; said license to be nonassignable except to Licensee's successors in business, nonexclusive, royalty-free, and for the full term of the said patent.

5. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: _____ By _____ TENNESSEE VALLEY AUTHORITY
Assistant Secretary *General Manager*
 ATTEST: _____ By _____

 (Title) (Title)

Licenses by TVA for use of superphosphate mixer (United States patent 2,528,514)

[For standard terms of license see the following form]

| Date of license | Company | Address |
|-----------------|---|---|
| May 31, 1957 | The American Agricultural Chemical Co.----- | 100 Church St., New York, N. Y. |
| Mar. 19, 1956 | American Cyanamid Co.----- | 30 Rockefeller Plaza, New York, N. Y. |
| July 23, 1956 | Cartledge Fertilizer Co., division of Wilson & Toomer Fertilizer Co.----- | Post Office Drawer 4459, Jacksonville, Fla. |
| Dec. 21, 1956 | Central Texas Fertilizer Co., Inc.----- | Comanche, Tex. |
| Aug. 26, 1954 | Centrala Farmers Co-op, Inc.----- | Post Office Box 15, Selma, Ala. |
| Nov. 19, 1957 | Chemical Fertilizer Co., Inc.----- | Post Office Box 1443, Modesto, Calif. |
| Aug. 7, 1958 | Coastal Chemical Co.----- | Yazoo City, Miss. |
| Aug. 21, 1958 | Darling & Co.----- | Mississippi Ave., East St. Louis, Mo. |
| Mar. 4, 1953 | Davison Chemical Co., division of W. R. Grace & Co.----- | Baltimore, Md. |
| June 9, 1955 | Etheredge Guano Co., Inc.----- | 753 Reynolds St., Augusta, Ga. |
| Oct. 6, 1953 | Farm Service, Inc.----- | Post Office Box 271, Apalouzas, La. |
| Apr. 29, 1957 | Farmers Fertilizer Co.----- | Post Office Box 944, Texarkana, Tex. |
| Aug. 13, 1951 | Gates Bros., Inc.----- | Wendell, Idaho. |
| Apr. 20, 1956 | Gilchrist Plant Food Co.----- | 525 West Washington St., Morris, Ill. |
| Mar. 19, 1956 | Green & Reedy Fertilizer Plant.----- | Franklinton, La. |
| Jan. 2, 1954 | Guaranty Seed Co., Inc.----- | Bunkie, La. |
| Mar. 7, 1955 | Mississippi Federated Cooperatives.----- | Meridian, Miss. |
| Jan. 19, 1954 | Phillips Petroleum Co.----- | Bartlesville, Okla. |
| Apr. 15, 1955 | Riverside Fertilizer Factory.----- | Marks, Miss. |
| Apr. 30, 1954 | F. S. Royster Guano Co.----- | Norfolk, Va. |
| Sept. 13, 1957 | C. O. Smith Guano Co.----- | Moultrie, Ga. |
| Aug. 29, 1956 | Standard Chemical Co.----- | Troy, Ala. |
| Nov. 7, 1950 | Tennessee Corp.----- | 61 Broadway, New York, N. Y. |
| June 24, 1957 | Tennessee Farmers Cooperative.----- | La Vergne, Tenn. |
| June 9, 1955 | Virginia-Carolina Chemical Corp.----- | Richmond, Va. |

Licenses by TVA for the manufacture of continuous superphosphate mixer (United States patent 2,528,514)

[For standard terms of license see the following form]

| Date of license | Company | Address |
|-----------------|---|--|
| Nov. 25, 1955 | Davidson-Kennedy Co.----- | Post Office Box 97, Station D, Atlanta, Ga. |
| Mar. 13, 1956 | Dorr-Oliver, Inc.----- | Barry Pl., Stamford, Conn. |
| Jan. 5, 1953 | Fertilizer Engineering & Equipment Co., Inc.----- | Memorial Dr., Green Bay, Wis. |
| Sept. 22, 1953 | Fertilizer Equipment Sales Corp.----- | Post Office Box 1968, Atlanta, Ga. |
| Feb. 20, 1956 | The Fluor Corp., Ltd.----- | Post Office Box 7030, East Los Angeles Branch, Los Angeles, Calif. |
| Jan. 19, 1953 | Link-Belt Co.----- | 300 West Pershing Rd., Chicago, Ill. |
| Oct. 23, 1957 | Manitowoc Shipbuilding, Inc.----- | Manitowoc, Wis. |
| Aug. 22, 1958 | W. J. Savage Co.----- | 912 West Clinch St., Knoxville, Tenn. |
| Nov. 7, 1950 | Sturtevant Mill Co.----- | Park and Clayton Sts., Dorchester, Boston, Mass. |
| Apr. 15, 1955 | The D. M. Weatherly Co.----- | 80 11th St. N.E., Atlanta, Ga. |

TENNESSEE VALLEY AUTHORITY LICENSE TO _____
UNDER U. S. PATENT No. 2,528,514

THIS AGREEMENT, made and entered into this ____ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, TVA is the owner of U. S. Patent No. 2,528,514 relating to a process for manufacturing superphosphate; and

WHEREAS, Licensee desires to use the process covered by the foregoing patent in its production of fertilizer materials; and

WHEREAS, TVA is willing to grant Licensee a license to use such process in accordance with the terms and conditions set out below;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by U. S. Patent No. 2,528,514. The license granted hereunder shall endure for the life of said patent.

2. TVA makes no warranties or representations with respect to the process covered by this agreement other than that TVA has legal title to U. S. Patent No. 2,528,514. TVA assumes no responsibility with respect to the defense or prosecution of any rights under said patent or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST:

TENNESSEE VALLEY AUTHORITY

By _____

General Manager

ATTEST:

By _____

(Title)

(Title)

Licenses by TVA for use of liquid fertilizer processes (patent applications Serial No. 624,177¹ and Serial No. 740,982²)

[For standard terms of licenses see the following forms]

| Dates of licenses | | Company | Address |
|------------------------|------------------------|--|---|
| Process 1 ¹ | Process 2 ² | | |
| Sept. 18, 1958 | Sept. 18, 1958 | Agriform of Northern California, Inc. | Post Office Box 6, Woodland, Calif. |
| Aug. 21, 1958 | Aug. 21, 1958 | Aylward Fertilizer Co. | Sullivan, Ill. |
| Oct. 30, 1957 | | J. C. Cardie Corp. | Post Office Box 2851, Denver, Colo. |
| Mar. 27, 1958 | Aug. 21, 1958 | William G. Cox Co. | Route 3, Jacksonville, Ill. |
| Dec. 19, 1957 | | Davidson Chemical Co., division of W. R. Grace & Co. | Baltimore, Md. |
| July 28, 1958 | July 28, 1958 | Delta Liquid Plant Food Co., Inc. | Alexander at North St., Greenville, Miss. |
| Apr. 10, 1958 | | De Soto Chemical & Supply Co., Inc. | Post Office Box 60, Nesbit, Miss. |
| Jan. 9, 1958 | | Farmers Liquid Fertilizer, Inc. | McGow, Ark. |
| Feb. 4, 1958 | | Liquid Fertilizers, Inc. | Greensboro, Ala. |
| Aug. 21, 1958 | Aug. 21, 1958 | Ouachita Fertilizer & Chemical Co. | Post Office Box 454, Monroe, La. |
| Mar. 3, 1958 | Aug. 27, 1958 | Southland Liquid Fertilizer Co. | Post Office Box 607, Boynton Beach, Fla. |
| Nov. 22, 1957 | | West Kentucky Liquid Fertilizer Co., Inc. | Hopkinsville, Ky. |

¹ With super acid.

² With super and wet process acids.

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____ REGARDING USE OF PROCESS FOR PRODUCTION OF LIQUID FERTILIZERS

THIS AGREEMENT, made and entered into this ____ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____ a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, M. M. Steplin, J. M. Stinson, and J. M. Potts, employees of TVA, have invented a process for the production of liquid fertilizers; and

WHEREAS, application for letters patent of the United States, Serial No. 624,177, covering the said invention, was filed by the said employees in the United States Patent Office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS, Licensee desires to use said process; and

WHEREAS, it appears that the use of such process by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuation applications derived

therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: _____ By _____
Assistant Secretary General Manager

ATTEST: _____ By _____
(Title) (Title)

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____
REGARDING USE OF PROCESS FOR PREPARATION OF STABLE LIQUID
FERTILIZERS

THIS AGREEMENT, made and entered into this ____ day of _____, 195__, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:
WHEREAS, M. M. Striplin, J. M. Stinson, and J. A. Wilbanks, employees of TVA, have invented a process for the preparation of stable liquid fertilizers; and
WHEREAS, application for letters patent of the United States, Serial No. 740,982, covering the said invention, was filed by the said employees in the United States Patent Office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS, Licensee desires to use said process; and

WHEREAS, it appears that the use of such process by Licensee under the terms hereinafter stated are consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

Now, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuation applications derived therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST:

TENNESSEE VALLEY AUTHORITY

By

Assistant Secretary

General Manager

ATTEST:

By

(Title)

(Title)

20 PATENT PRACTICES OF THE TENNESSEE VALLEY AUTHORITY

Licenses by TVA for use of other processes or equipment

| Date of License | Company | Address | Patent No. |
|-----------------|---|--------------------------------------|---|
| June 9, 1955 | The American Agricultural Chemical Co. | 100 Church St., New York, N. Y. | United States 2,744,944; rotating furnace. |
| Apr. 15, 1955 | | | United States 2,590,901; slag expansion. |
| Sept. 17, 1952 | Apex Smelting Co. | 2537 West Taylor St., Chicago, Ill. | United States 2,488,568; aluminum-silicon alloys. |
| Dec. 11, 1957 | Central Farmers Fertilizer Co. | 205 West Wacker Dr., Chicago, Ill. | United States 2,589,272; calcium metaphosphate. |
| June 10, 1958 | | | Patent application serial No. 648,445; superphosphoric acid. |
| Apr. 3, 1951 | The English Mica Co. | Sterling Bldg., Stamford, Conn. | United States 2,547,336; wet-ground mica. (5-year exclusive license expired in 1956.) |
| Apr. 2, 1951 | Food Machinery & Chemical Corp. | 161 East 42d St., New York, N. Y. | United States 2,221,770, 2,355,080, 2,509,228, and 2,532,322; phosphorus and phosphoric acid. |
| Sept. 8, 1948 | The Harshaw Chemical Co. | 1945 East 97th St., Cleveland, Ohio. | United States 2,419,255; carbon monoxide catalyst. |
| Dec. 5, 1955 | International Minerals & Chemical Corp. | 20 North Wacker Dr., Chicago, Ill. | United States 2,365,649, 2,474,831, 2,499,385, and 2,770,451; fused tricalcium phosphate. |
| July 23, 1956 | | | United States 2,547,336; wet-ground mica. |
| Jan. 28, 1953 | National Metallurgical Corp. | Springfield, Oreg. | United States 2,488,568; aluminum-silicon alloys. |
| Feb. 12, 1952 | Hooker Chemical Corp., Phosphorus division (formerly Shea Chemical Corp.) | 1940 Ward St., Niagara Falls, N. Y. | United States 2,221,770, 2,355,080, 2,509,228, and 2,532,322; phosphorus and phosphoric acid. |
| Dec. 19, 1952 | | | United States 2,590,901; slag expansion. |
| Aug. 1, 1951 | Virginia-Carolina Chemical Corp. | Richmond, Va. | United States 2,509,228; phosphate reduction furnace. |

NOTE.—Standard terms: These licenses are nonexclusive, nontransferable, royalty-free and require the licensee to report annually on the number of months the invention was in actual use.

TENNESSEE VALLEY AUTHORITY AGREEMENT WITH _____ REGARDING USE OF PROCESS FOR PRODUCTION OF SUPERPHOSPHORIC ACID

THIS AGREEMENT, made and entered into this _____ day of _____, 195____, by and between TENNESSEE VALLEY AUTHORITY, a corporation of the United States, existing under and by virtue of an Act of Congress (hereinafter called "TVA"), and _____, a corporation existing under and by virtue of the laws of the State of _____ and having an office at _____ (hereinafter referred to as "Licensee"),

WITNESSETH:

WHEREAS, M. M. Striplin, D. McKnight, and E. C. Marks, employees of TVA, have invented a process for the production of superphosphoric acid; and

WHEREAS, application for letters patent of the United States, Serial No. 648,445, covering the said invention, was filed by the said employees in the United States Patent Office and their entire interest in said invention and application for letters patent has been assigned to TVA; and

WHEREAS, Licensee desires to use said process; and

WHEREAS, it appears that the use of such process by Licensee under the terms hereinafter stated is consistent with TVA's statutory objectives and its policy regarding the use of inventions owned by it;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements hereinafter set forth, the parties agree as follows:

1. Subject to the terms and conditions hereinafter stated, TVA grants unto Licensee a royalty-free, nonexclusive, nonassignable (except to Licensee's successors in business) license to use the process covered by each and every patent that may issue as a result of said application and any divisional or continuation applications derived therefrom. TVA shall notify Licensee of the issuance of such patent or patents. The license granted hereunder shall endure for the life of such patent or patents.

2. TVA makes no warranties or representations with respect to said process or to any patents which may be issued thereon. TVA makes no commitment as to the prosecution of said application and is free to abandon the same in whole or in part without liability or obligation to Licensee. TVA assumes no responsibility with respect to the defense or prosecution of any rights in the process, or under its application for patent, or in connection with any litigation arising therefrom or relating thereto. Licensee, to the extent that it uses said process, shall do so entirely and solely at its own risk.

3. Licensee shall report to TVA in writing as of each July 1 during the life of this agreement the number of months during the preceding twelve months' period in which the process has been used by it.

4. No member of or delegate to Congress or resident commissioner or any officer or agent of TVA shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement when made by a corporation for its general benefit.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized officers, and their respective corporate seals to be hereunto affixed, as of the day and year first above written.

ATTEST: _____ By _____
Assistant Secretary *General Manager*

ATTEST: _____ By _____
 _____ (Title) _____ (Title)

LICENSES BY TVA FOR USE OF MISCELLANEOUS PATENTS

1. Birmingham Ice & Cold Storage Co., Birmingham, Ala.; license dated February 14, 1941; TV60820 and TV60821:

United States patent 2,164,362; a process for freezing foods.

United States patent 2,172,417; a process for washing food with a refrigerant.

United States patent 2,172,418; a process for separating refrigerant from frozen foods.

Pending patent application serial No. 275,701; a process for purification of refrigerant.

Pending patent application serial No. 288,346; a refrigerant composition.

Pending patent application serial No. 293,598; apparatus for freezing foods.

Comments: This license was never used by the licensee.

2. Chickamauga Producers, Inc., Dayton, Tenn.; license dated May 9, 1941:

United States patent 2,164,362; a process for freezing foods.

United States patent 2,172,417; a process for washing food with a refrigerant.

United States patent 2,172,418; a process for separating refrigerant from frozen foods.

Pending patent application serial No. 275,701; a process for purification of refrigerant.

Pending patent application serial No. 288,346; a refrigerant composition.

Pending patent application serial No. 293,598; apparatus for freezing foods.

Comments: Freezing operations were never carried out under this license. The licensee filed a petition in bankruptcy on July 11, 1947, and discontinued its operations as of that time.

3. Instruments Corp., 4 North Central Avenue, Baltimore, Md.; license dated September 16, 1952:

Patent application serial No. 350,540; now United States patent 2,690,553; telemetric device.

Terms: Implied nonexclusive, royalty free; stated to be for term of pendency of application only—to be replaced by formal license in accordance with TVA policy in effect after issue of patent.

4. Stephenson Brick Co., Inc., Birmingham, Ala.; license dated November 21, 1950; TV46439:

United States patent 2,063,953. Glazed ceramic ware and method of making.

Terms: License is royalty free, nontransferable, limited to Stephenson's Cordova plant only for the term of an investigation period of 3 months; then geographically unrestricted.

5. S. Neil Varnell, Cleveland, Tenn.; license dated March 3, 1939. TV38191; a combination lease of surplus equipment and license under patent applications:

Serial No. 217,971; a process for freezing foods.

Serial No. 219,426; a refrigerant composition.

Serial No. 237,473; apparatus for freezing foods.

Comments: The Varnell enterprise failed in 1941.

6. Dixie Frosted Foods Co., Birmingham, Ala.; license dated January 1, 1943; a combination lease of surplus equipment and license under patents:

United States patent 2,164,362; a process for freezing foods.

United States patent 2,172,417; a process for washing food with a refrigerant.

United States patent 2,172,418; a process for separating refrigerant from frozen foods.

United States patent 2,304,860; apparatus for freezing foods.

Comment: This company was liquidated by foreclosure sale on February 23, 1948.

Exclusive licenses from TVA to TVA employee-inventors

| Date of license | Employee-inventor | Patent No. |
|--------------------|-----------------------|--|
| May 2, 1940..... | Robert A. Noor..... | Patent No. 2,183,465; football charging machine. |
| Nov. 4, 1942..... | Joseph A. Hardin..... | Patent No. 2,286,732; electric furnace. |
| May 31, 1949..... | Norman W. Hatker..... | Patent No. 2,565,769; electric heater. |
| Aug. 5, 1949..... | Jesse Ebersole..... | Application No. 100,277; variable pitch slant mechanism engine. |
| Nov. 14, 1955..... | R. Bruce Shipley..... | Application No. 535,047; testing apparatus for impedance or distance relays. |



STATE OF MISSISSIPPI
 DEPARTMENT OF REVENUE
 TAXPAYER INFORMATION

NAME: JOHN A. JONES JR. ADDRESS: 1234 MAIN ST. JACKSON, MS 39201

| PROPERTY IDENTIFICATION | PROPERTY ADDRESS | PROPERTY VALUE | TAXABLE VALUE | TAX RATE | TAX AMOUNT |
|-------------------------|---------------------------------|----------------|---------------|----------|------------|
| 1 | 1234 MAIN ST. JACKSON, MS 39201 | 150,000 | 140,000 | 0.006 | 840 |
| 2 | 5678 OAK ST. JACKSON, MS 39201 | 200,000 | 190,000 | 0.006 | 1,140 |
| 3 | 9012 PINE ST. JACKSON, MS 39201 | 75,000 | 70,000 | 0.006 | 420 |

TOTAL TAX AMOUNT: \$2,400

DATE: 12/31/2023

PREPARED BY: MISSISSIPPI DEPARTMENT OF REVENUE