1965—A Record Year for SPRAGUE ELECTRIC

Annual Report to Employees
1965—a Record Year for SPRAGUE ELECTRIC

The year 1965 was a record one for Sprague Electric. For the first time sales exceeded $100,000,000 and company-wide employment passed the 10,000 mark.

By comparing the figures for 1960 and 1965, it is readily apparent that there has been a firm growth in the past five years. Company officials are now looking to the next four to five years as a period of substantial growth, both in sales and earnings.

*employment figures represent the yearly average. As of December 31, 1965 employment was over 11,000.
Dear Sprague Employee,

The year just past was a promising and exciting one for Sprague Electric. I'm sure you are all aware of our increased activity in all major segments of our business. Soaring employment totals have strained our facilities in many areas and we are presently in the process of increasing our capabilities.

During 1965 we began construction of a new semiconductor plant in Worcester, Massachusetts. Manufacturing operations are now being conducted on a limited scale in rented quarters, and upon completion of the new building later this year, we expect to expand our production to a considerable degree. A strong market demand for aluminum electrolytic capacitors has necessitated an expansion of our Lansing, North Carolina plant, and a boom in solid tantalum sales prompted our acquisition of a new plant in Sanford, Maine. The demand for our older, established products and increased capabilities in the area of semiconductors are both most encouraging and we look forward to the next few years as a period of substantial growth.

Our manufacturing operations have a very broad base. We participate in all three major markets - consumer, industrial and military. We feel that our total strength is greatly enhanced by this large product line. During 1965 we acquired a controlling interest in Micro Tech Manufacturing, Inc. of Sunnyvale, California, a company which specializes in the design and manufacture of semiconductor and test equipment to customer specifications. Later in the year this firm's operations were moved to Worcester, Massachusetts where its proximity to our semiconductor manufacturing will be of great value.

Personnel changes during 1965 were also noteworthy. At the Annual Meeting of Stockholders on March 26, 1965, Bruce R. Carlson was named Treasurer, replacing me in that area. Dr. John L. Sprague moved to the post of Senior Vice President of Research and Development, replacing Frederick R. Lack who has served as Senior Vice President, Research since 1961. Mr. Lack has retired, but will continue to be available as a Consultant to Sprague Electric and also as a member of the Board of Directors. David B. Peck replaced Dr. Sprague as Vice President, Engineering. In August we welcomed Dr. Augustus B. Kinzel to our Board of Directors. His long experience in industrial research and his extensive experience as a Consultant to the Atomic Energy Commission and in Key Department of Defense advisory posts will prove most helpful.

For the coming year we see a continuation of the trends which have been so clearly manifest in 1965. In production areas we will rely heavily on our long service employees with their experience and know-how to assist the many new people who have joined us and will be joining us during the year. It should prove to be a challenging time for everyone.

Cordially,

[Signature]

Robert Sprague
NEW SEMICONDUCTOR PLANT
IN WORCESTER, MASSACHUSETTS

The construction picture below hardly does justice to the new Worcester plant. The two-story building contains approximately 132,000 square feet of space, and is constructed to allow maximum flexibility in the use of space. Initial construction allows for expansion as the need arises. The present building will house 800-900 employees.

Easily visible are the large prestressed concrete sections being installed across the front of the building. The precast technique allows the complete sections to be delivered to the site, ready for installation.

At the present time the semiconductor market is growing rapidly and Sprague Electric is preparing to take part in this development on a major scale. Some of the most talented semiconductor specialists in the country are employed by us and are concentrating their efforts on the next generation of microelectronic products. At the Worcester plant a large area is being readied for development personnel. There, with the aid of the most modern scientific equipment, the group will further refine new processes and techniques developed by the research people.

One interesting, and important, piece of equipment in the new building will be a large (20 ft. x 6 ft. x 5 ft.) reducing camera used for integrated circuits. The camera takes pictures of large drawings and reduces them to a few thousandths of an inch. The line drawings are completely accurate to .0001 of an inch. In layman's terms, the line reductions are just 1/30th the diameter of a human hair.

The new facility will provide office areas for sales, purchasing, plant and industrial engineering, production control, time study and industrial relations. Like all Sprague divisional headquarters, the Worcester operation will provide complete support departments.

MARKET CONDITIONS ENCOURAGING

During 1965 sales of transistors increased, especially our line of SEPT® Silicon Epitaxial Planar Transistors which was expanded by the addition of a number of new types. Good progress was made, also, on increasing production of planar transistors. Production of Silicon Integrated UNICIRCUITS® for several important military and space programs will be in large-scale production when the new plant is in operation.

Our Silicon Monolithic UNICIRCUIT® line has been expanded to include additional digital circuits in the medium and high speed ranges employing resistor-transistor, diode-transistor and transistor-transistor logic systems of the most advanced design, as well as a
wide variety of both standard and custom Thin-film CERACIRCUITS® for both military and commercial applications. We expect that the market for microelectronic circuits will continue to expand at the rate of approximately 50% per year for at least the next four years, and it is our intention to be a significant factor in the design and manufacture of microelectronic circuits and of components compatible with them.

"THIRD GENERATION" COMPUTERS

The Semiconductor Division expects to become increasingly involved in supplying components for the commercial computer industry. With the introduction of the so-called "third generation" of commercial data-processing systems, which are currently going into volume production, a number of new approaches to computer circuit fabrication have been developed. The quest for higher and higher operating speeds has led to the use of smaller and smaller circuits of either the thin-film or monolithic type, to minimize the length of circuit paths over which information in digital form must travel.

For the "third generation" we are one of the largest suppliers of thin-film precision resistor-capacitor networks, which we call METANETS®. These units make available to the computer manufacturer a series of precision metal-film resistors characterized by very low noise factors, interconnected with close-tolerance capacitors, and packaged in a form factor compatible with solid-state logic modules containing flip-chip transistors and less precise resistors and capacitors.

In computer construction METANET® modules permit substantial savings in assembly cost and packaging densities as high as four to eight times that of individually assembled components. The market for industrial electronic equipment is expected to grow on the order of 13% over the next few years.
IT'S CALLED OVERHEAD

and it's the tools, machinery and equipment needed by our employes to perform their jobs

Soldering operations have been the backbone of Sprague manufacturing for many, many years. The relatively simple resistance soldering shown in the illustration costs between $500 - $600 to install.

Some of the more complicated semiautomatic set-ups have a $5,000 price tag and a vacuum metallizing machine which will apply a thin film of metal to a dielectric material can be installed for $110,000. To expand our business, more and more of the expensive systems will be needed.

What does it cost to create a job? The answer may vary from one type of business to another, but here at Sprague Electric the average cost of putting one person to work is almost five thousand dollars.

As a research based company we have a great deal of money invested in scientific equipment. Without this equipment many manufacturing jobs would never have been created. In addition products

A complicated looking instrument in the Research and Development Center is the electron microprobe. It is used to analyze a very small spot on the surface of a material to determine its composition. In addition it can be used to measure the thickness of a very thin film of material on another.

We assembled and partially built this equipment before it was available commercially. It cost $50,000. To replace it today the price tag would be $80,000.

Another instrument, typical of the great variety available for Research work, is the Spectrophotometer. It determines the elements in organic compounds. In this instrument light is passed through a solution containing the sample and results are recorded on a chart.

The Spectrophotometer was purchased commercially for $15,000. Our extensive facilities for research and development have been a major factor in the growth of Sprague Electric.
Ovens are a familiar sight in many manufacturing areas. Hundreds of them can be found throughout the Company. An oven costs $950 and the controls cost between $350 and $500 depending on its intended use. Many thousands of dollars are invested in this small, but important, part of manufacturing.

Testing devices are employed throughout all product lines. The chamber on the right, for this shock testing operation sells for $4,200. The scope, camera and other equipment on the left costs another $4,500. We have invested $8,700 for just one machine to test the reliability of units.

being manufactured are constantly checked and tested to maintain their high quality - all of this in addition to the regular manufacturing cost.

Pictured on these two pages are a small sampling of the various “tools” found throughout Sprague Electric. The prices noted give an indication of the amount of money needed to keep us on-the-job.

Conveyor systems are an integral part of equipment in many manufacturing areas. The one pictured is more extensive than many, but there are literally thousands of feet of conveyor belts throughout our various operations. A single motor system used to lift the units to a higher level can be installed for about $1,000. A 10-foot length without special equipment costs $130. It is an item we rarely consider, but it is necessary to the smooth operation of many departments.

A highly specialized typewriter is used to type orders. The Flexowriter, with necessary attachments, costs over $4,000. We have 10 of them throughout the Company. More common are the typewriters used by secretaries and clerks. An electric typewriter sports a $490 price tag and there are 450-500 of them in use every working day. In addition we have about 100 manual typewriters at a cost of $150 each. These will be replaced with the more expensive electric models.
On January 1, 1966 Major Medical insurance became available for all qualified Sprague Electric employees. This expanded coverage will do much to ease the burden of payments in the case of prolonged illness. On January 1, 1967 another benefit will be available to hourly employees when the Pension Plan becomes effective.

In the next few months eligible employees will be enrolled for the Plan. The following questions and answers may prove helpful. (North Adams employees are already enrolled in the Pension Plan.)

Q. Who is covered by the Plan?
A. Regular full-time hourly-rated employees.

Q. When may covered employees become members of the plan?
A. On the January 1st of the year in which they will first meet the following requirements:
   (a) Complete 5 years of continuous service; and
   (b) Reach 28 years of age; and
   (c) Have not reached 50 years of age.

Q. Are there any disadvantages in not becoming a member of the Plan on the January 1st when first eligible?
A. Yes.
   (a) Pension Credits for the first year would be lost.
   (b) Failure to become a member of the Plan on the January 1st when first eligible for membership, or on the next following January 1st, will result in permanent loss of membership eligibility.

Q. What must an eligible employee do to become a member of the Plan?
A. Apply for membership and authorize the deduction of contributions from his pay.

Q. When does a member of the Plan retire?
A. Normal Retirement:
   All members of the Plan will be expected to retire at the end of the workweek in which the first day of the month coinciding with or next following his 65th birthday occurs.
   Deferred Retirement:
   Occasionally, if requested by the Company, a member may defer his retirement date and continue working after his normal retirement date.

   Early Retirement:
   A member who has reached age 60 and who has at least 15 years of Pension Credits in the Plan may elect to retire early with the consent of the Company.

   Q. What are the required contributions to the Plan?
   A. From the time he joins the Plan until he reaches his normal retirement date or acquires 30 years of Pension Credits, whichever occurs first, each member contributes $1.00 for each week of active employment.

   The Company contributes an amount which covers the cost of the Plan not satisfied by employee contributions.

Q. What benefits does the Plan provide?
A. A monthly retirement income, beginning on the date of actual retirement and payable for life. The monthly retirement income is equal to the number of years of Pension Credits up to 1 January 1964 times $1.35 plus the number of years of Pension Credits thereafter times $1.50.

Q. What happens to a member’s contribution if he dies?
A. If a member dies either before or after retirement, his beneficiary will be paid all his contributions plus interest of 2% per year as determined by the Plan, minus any benefits paid to the member.

Q. What happens to a member’s contributions upon termination of employment prior to retirement?
A. All his contributions plus interest of 2% per year are returned to him except in the case described below. (Vested Interest)

Q. What is a Vested Interest in the Plan?
A. Any member who acquires at least 20 years of Pension Credits has a vested interest in the Plan. This means that he is entitled to a Pension at age 65, based upon the amount of his Pension Credits, even though he is not then employed by the Company, provided he leaves his contributions in the Plan.

Q. Where may I get further information about the Pension Plan?
A. Contact your Industrial Relations Department. They will be able to answer any questions you may have.
Our total INCOME for 1965 was $108,605,805.00

this is where the money went...

Net Profit $4,886,972* after deducting minority interest in the income of a subsidiary - $48,569
Let's pretend that SPRAGU are a family budget...

Our Imaginary Family has

This is how it is spent:

$45.77
groceries, clothing, etc.

$40.10
mortgage, electricity, telephone, etc.

$ 4.92
real estate taxes
as an Income of $100.00 a week

$ .85
interest on
installment purchases

$3.26
money necessary to
keep property
from deteriorating

$1.75
life insurance, etc.

$2.79
money set aside
to improve home

PROFIT
### Operating Results

**Excluding nonrecurring items**

<table>
<thead>
<tr>
<th>Description</th>
<th>1965 (In thousands of dollars)</th>
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<td><strong>Net Sales</strong></td>
<td>$107,077</td>
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<td>Other Income</td>
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<td><strong>Total Income</strong></td>
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**Costs and Other Charges:**
- Cost of Sales and Expenses: 93,915
- Depreciation and Amortization: 3,537
- Taxes, other than Federal Income Taxes: 3,653
- Interest Expense: 925

**Profit Before Federal Taxes and Minority Interest:** 6,576

**Minority Interest:** (49)

**Federal Income Taxes:** 1,689

**Net Profit:** 4,936

**Net Profit Per Share:**
- On Shares Outstanding at Year End: 3.04
- Adjusted*: 3.04

**Dividends:** 1,901

**Dividends Per Share:** 1.20

**Balance of Income Retained in the Business:** 3,035

*Adjusted cumulatively to reflect 2% stock dividends paid annually 1959-1965.

### Financial Position at Year End

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<th>Description</th>
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<td><strong>Current Assets</strong></td>
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<td><strong>Current Liabilities</strong></td>
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<td><strong>Net Working Capital</strong></td>
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<td><strong>Net Fixed and Other Assets</strong></td>
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<td><strong>Long-Term Debt</strong></td>
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<td><strong>Stockholders' Equity</strong></td>
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<td><strong>Dollars Per Share (Book Value)</strong></td>
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<td><strong>Capital Expenditures</strong></td>
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### General Information

**Number of Shares:**
- Outstanding at Year End: 1,623,387
- Adjusted*: 1,623,387

**Number of Stockholders:** 6,464

*Adjusted cumulatively to reflect 2% stock dividends paid annually 1959-1965.

**Notes:**
- (A) Excludes $400,831 of nonrecurring income from restoration of prior year investment credits, equivalent to $0.25 per share.
- (B) Includes the accounts of European subsidiaries acquired in 1956 and subsequent thereto, not previously consolidated. The years 1956 through 1965 have not been restated to include the accounts of European subsidiaries because the effect would be immaterial.
- (C) Excludes additional Federal income taxes for the years 1941-1946 of $439,090 and interest thereon of $243,400 less Federal tax on the interest of $243,400 and transfer from appropriated retained earnings of $300,000, equivalent to $0.24 per share ($0.23 per share adjusted).
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(D) Adjusted where applicable to reinstate goodwill arising from acquisition of subsidiaries, which previously had been charged off to retained earnings at acquisition date.

(E) Excludes $795,279 of nonrecurring profit from sales of patents, less applicable taxes (including Federal income tax of $291,375), equivalent to $0.55 per share ($0.50 per share adjusted).

(F) Including 800 overseas personnel not included in 1956-64.
For Sprague Electric the consumer market has always been an important one. This is the largest user of aluminum electrolytic capacitors, the largest user of ceramic capacitors and printed circuits, and an important user of synthetic film and paper tubular capacitors.

Manufacturers of TV sets, radios, phonographs and other electronic products for the home are using increasing quantities of electronic components. Strong demand in this market in 1965 was a very important factor in the 7% industry wide gain in total shipments from $4.0 billion in 1964 to $4.3 billion last year.

Total factory sales of home entertainment equipment and other consumer products increased 19% in 1965, to $3.5 billion compared to $3.0 billion in 1964. Demand was exceptionally strong in all types of entertainment products; although surpassed by color TV, home and auto radio and phonographs all registered substantial volume increases.
FACILITIES EXPANDED

Our present capacitor sales reflect, in general, the relative importance of this market and we expect to continue to benefit from its growth. Demand for capacitors and printed circuits for entertainment applications increased steadily during 1965. By early fall, our shipments had reached the limits of available capacity, and it became necessary to accelerate the already planned expansion of a number of our facilities. A major addition to our aluminum electrolytic capacitor plant at Lansing, North Carolina was started in October and should be completed in March 1966. Additional facilities for the production of synthetic film capacitors have already been provided in our plant in Barre, Vermont, and for ceramic capacitors and printed circuits at our Grafton, Wisconsin and Nashua, New Hampshire plants.

INCREASED DEMAND

Several trends in the design of radios and television sets have resulted in substantially increasing the demand for capacitors in these products. A typical black-and-white TV set employing tubes contains 93 capacitors of various types; a typical transistorized set contains approximately 125 capacitors and a color TV set employing tubes contains more than 190. A typical five-tube transistor radio contains 10 capacitors, a portable transistor radio 14, and an AM-FM radio 33. Thus, it is apparent that the expected growth of color TV, the increasing transistorization of monochrome TV sets and the growing proportion of FM radios in the total home and auto radio market are all having a marked effect on the demand for our products.

FOR THE FUTURE

There will, of course, be some shifting in the particular types of capacitors utilized in these various sets. For example, the use of aluminum electrolytics is expected to expand as a result of transistorization of both television and radios, while there may be some reduction in the use of the ceramic types. Our marketing and engineering staffs are keeping in close touch with these and other trends affecting our sales so that we may keep our product line and our facilities in balance with the needs of this important market. For the next few years, at least, it is a market which should be increasing at the rate of approximately 15% per year.
The American Trial Lawyers Association is spearheading a campaign to reduce the slaughter on our highways. They will be successful only if we, the public, become aroused enough to demand corrective action.

SOME FACTS AND FIGURES

Cold statistics are swept under our national rug; the public has become jaded and immune to highway carnage. To the average motorist the prospect of accident, injury or death does not apply to him. It applies to the other fellow. The average motorist is in favor of a crackdown as long as it does not involve him. Each week of the year, on an average, approximately 1,000 persons are killed and an additional 34,000 are injured. Motor vehicle statistics for the year 1964 reveal that there were 47,700 deaths and 1,700,000 disabling injuries; the direct cost of accidents on the highway exceeded 8 billion dollars. In 1964 one driver out of every five was involved in an automobile accident. From 1900 through 1964 motor vehicle deaths in the United States totalled 1,510,000. United States' military battle deaths in wars from 1775 through 1964 totalled 605,000.

The number of injured persons in reported highway accidents in 1964, 1.7 million, is exactly the same as the total number of hospital beds in the United States. The total direct cost of the motor vehicle accidents in 1964, 8.3 billion dollars, is the same as the year's total outlay for highway construction and improvements. The true number of unknown additional unreported accidents and injury victims is enormous.

THE GOVERNMENT ROLE

It is an undeniable fact that the Federal Government has no comprehensive plan in existence or contemplated to cope with this frightful problem which constitutes a major economic threat to our national economy and an ever-present hazard to the life and limb of our people.

The projections for highway deaths 10 years hence indicate 100,000 Americans will die annually on our highways with untold millions being maimed each year. We
are headed for this frightful carnage unless we attack the problem successfully on a broad front.

We are appalled when a group of apathetic citizens stand idly by while a girl is murdered. But our apathy over the daily death and destruction on our highways is more appalling.

THE DRIVER

Over 70% of all accidents occur under conditions of “safe” roads in clear, dry weather, on straight roads, in moderate traffic. The logical inference is that the average “good” driver does not use adequate anticipation or perception and it leads him to make the wrong decision at critical moments.

We cling to the false concept that accidents happen only to a small group of people who are “accident prone”. Most drivers feel that safety campaigns are for the average driver, while they themselves are above average. They resent and are indifferent to the suggestion that they do not drive safely.

Drinking

Drinking is a factor in over 55% of all fatal motor vehicle accidents. During 1962 over 90% of drinking drivers killed in accidents were clearly at fault, whereas only 61% of non-drinking drivers were at fault. Of these 61% a few were found to have been suffering from a rather severe natural disease, and the circumstances of the accident would seem to indicate that the disease was a main factor. Of greater seriousness is the realization that 44% of the innocent, not at fault dead drivers were killed by drinking drivers! This is further proof that the responsibility of the drinking driver is not only to himself but to others as well.

License Revocation

Licensing and license revocation is the most potent weapon we have in the war against death and injury on the highways. Nothing de-tribalizes a man as much as the loss of his driver’s license. Loss of a driver’s license is a serious and effective penalty. It means one cannot drive to work or about one’s pleasures. We note a hodge-podge of procedures and regulations from state to state with no uniformity even attempted. Our public officials are derelict in their duty and softness for failing to provide strict licensing and revocation procedures.

Driver Education

Approximately 8,000 secondary school-age children reach driving age daily – approximately 4,000,000 yearly. Young drivers who have not had driver’s education courses have the worst record of any, yet the drivers-to-be potentially have the capacity to be the best drivers.

We teach our children latin, algebra and history, but we fail to teach our children how to stay alive in the future.

THE AUTOMOBILE

In every serious accident, there are two crashes: first, when the car strikes something and second, when the occupant hits the interior of the car or is thrown out of the car and hits the roadway, another car, or object. We design cars and highways and then advise the driver to adapt himself to these designs. We should first determine the driver’s capabilities and then design the cars and roads to fit them. According to the estimate of the United States Public Health Service, 43% of the persons who die in auto accidents die under survivable conditions, and many of these deaths could be prevented by simple reconstruction of the vehicle.

Tires

The National Safety Council has stated that tire failure accounted for 10% of all highway fatalities in 1964. This rate will undoubtedly rise due to the inadequate tires being placed on new cars. Almost all new cars sold today come equipped with 2-ply tires “with a 4-ply rating”.

It should be unlawful for any car manufacturer to install, as original equipment, a tire which simply is not strong enough to carry the load imposed on it when all seats are occupied by people weighing 170 pounds with 200 pounds of baggage in the trunk. There should be laws established nationally for testing and grading tires, and forbidding sales of unsafe tires.

CONCLUSION

It is a fact of life that all segments of our society are apathetic in dealing with this frightful problem. The average citizen, his local and state governments, are accepting it as a way of life. All of us can and must do more to find solutions.
Now in its fourth year, the Sprague LOG of the Air has become a familiar feature in North Adams over local radio station WMNB. Aired each weekday evening from 5:30 - 5:55 P.M. the program has a large listening audience of both Sprague employees and interested community friends.

Genial Al Nelson, WMNB employee and LOG announcer since the program’s inception, has introduced hundreds of employees and community leaders to the listening audience through the daily interview which is an important part of the program.

Why should Sprague Electric embark on such a venture? As the largest employer in North Adams, practically every family in the area is represented among our employees. Our operations are so extensive and varied that many of our own people are not familiar with the type of products manufactured in the different departments. Through the program we have talked with people in many areas from Research to Shipping. A series of interviews with Group Leaders explained the work done in their particular area. Foremen, Superintendents and Plant Managers have all been interviewed about their areas of responsibility.

Some time ago we produced a series of interviews following an order for dry aluminum electrolytics from its receipt in the Sales Office, through the various manufacturing steps, to ultimate shipment to a manufacturer of TV sets. Manufacturing steps may vary for different products, but our interviews did explain how this one important item is produced.

We are also proud of our many employees who are active in community affairs. They have told about their interests in the City Council, Scouting, Recording for the Blind, Community Fund, Blood Bank, Chamber of Commerce and many others. Another source of interviews has been employees from foreign countries, now employed here in North Adams. Our listening audience has been informed about their homeland, customs, national traditions and about what prompted them to come to this country and Sprague Electric.

Has the program been a success? We feel it has - particularly when someone asks us to repeat a program they particularly enjoyed, or when someone tells us they have learned things about the company they never knew before. Sprague Electric is people - and people on the job make our program.

Al Nelson (left), WMNB employee and announcer for LOG of the Air, interviews Peter V. Mancuso of Quality Assurance and Reliability.
The wealth of a nation like ours is not stored in static reservoirs; it is a fluid value created each day of our lives by the dynamic interplay of our powers as a people.

The wealth of a nation like ours is the constant flow of new ideas from the creative mind of our industrial science—the unrestrained push and probe of the men who work in laboratories—and the always ready response of industrial enterprise of today's reality and tomorrow's promise.

The wealth of a nation like ours lies in its workers and their workmanship; in their earning power, in their yearning power, and in their purchasing power.

The wealth of a nation like ours lies in the freedom of our people to want—and to have, through the free exchange of their individual goods and services.

The wealth of a nation like ours lies in its partnership of people and in the harmony that exists between science and industry, worker and employer, producer and consumer, you and me . . .

— Adapted from Partners.