Report on Metric Study Tour to Republic of South Africa

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Keeping abreast of world movements relating to the new international language for weights and measures has not been a recent pursuit by me. Since my parents came from Europe, I was introduced to metric units early in life. With a career interest in the physical sciences and technical journalism, I have continued to "pound the drums" for adoption of the metric system. Much has been published about the initial system of 1790 introduced by France and the history of updating and refining the system through several versions, but I will not go into these details. The modernized metric system, known universally as the INTERNATIONAL SYSTEM OF UNITS (abbreviated SI under the French name), was renamed in 1960 by the world body on standards, the General Conference of Weights and Measures. Some 98 percent of the world today uses or is moving towards adoption of SI units. Only the countries of Burma, Liberia, Brunei, and Southern Yemen are nonmetric. (see world map)

AND WHAT ABOUT SOUTH AFRICA? Unknown to many, the Republic of South Africa (SA) (with its territory, South-West Africa) represents an outstanding example of a country that has made unprecedented and enviable progress in moving from the outdated English (Imperial) Units to the International Units. The achievements in this program are even beyond what the original metric countries of Europe have been able to do to date. With the Congressional approval (Public Law 90-168, Metric Conversion Act of 1975) in America about a year ago to begin changeover activities, members of the U. S. Metric Association (USMA) welcomed an invitation from the South African Bureau of Standards (SABS) to examine first-hand the results achieved. The USMA, a nonprofit voluntary organization, has been promoting metric units since 1916, and from World War II to about 1960 was the only group actively stressing action by the nation. Following up on the SABS invitation, USMA Vice President, Andre Nadash, serving as the Tour Director, completed arrangements with H. L. Prekel, the Metrication Department Manager of SABS for a two-week comprehensive

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session (August-September 1976) in Pretoria and Johannesburg. Dr. Prekel served as the Moderator. In addition to the sessions in which leaders from industry, government, education, and the private sectors addressed the group, special tours to plants, industrial works, railways, schools, universities, and various business areas were included. While in Rhodesia to view Victoria Falls and engage in two game drives, a further bonus included a session with the Rhodesian Metrication Officer, K. K. White, of SABS, who joined the group. Rhodesia has adopted the SI units and other countries in Africa working towards this goal include: Kenya, Uganda, Tanzania, and Zambia. The "homelands" of SA as Lesotho, Botswana, and Swaziland have not yet begun the transition. The homelands represent areas in which the native governments have become selfgoverning or are seeking to achieve full independence.

Although my concepts of SA consisted mostly of beehive huts with mud and straw-thatched roofs, wild grasslands, golden desert sands, tribesmen with cattle or sheep, nomads on donkeys or camels, and herds of wild animals grazing in woodlands and on the plains, these became only part of the total scene. In addition the vivid history came to light of the pioneering efforts of early European settlers striving to build a nation, of the fight for independence so similar to that of America, and of the remarkable progress in establishing cities and towns to match those in any country today. In these respects, the story of metrication would not be complete unless one becomes aware of a throbbing modern Republic containing much of the OLD with the NEW.

Thus, this SOUTH AFRICAN METRIC-IN, so dubbed by me, must include more than only a capsule summary. The modus operandi of the SA metric program serves as an excellent example for other countries to follow. Throughout the meetings and tours, the pioneering spirt so characteristic of the SA early pioneers seemed to penetrate and exhume a confidence in today's moderns in their task to overcome the many obstacles inherent in changes from the old to the new. It is no wonder that SA has been able to create a modern industrial and urbanized nation in an area covering only one and a quarter square kilometres (about twice the size of Texas), and has made a home for its diverse and colorful peoples. Of the total population, the white minority is 3,800,000 with some 21,500,000 composed of blacks, browns, coloreds, and Asians. As the fourth largest country, SA today

has become the workshop of the African continent, providing some 40 percent of its entire industrial production. She also leads the world in the production of gold, gem diamonds, and antimony; and consumes more steel and electricity than all of the remaining 47 other African countries. Known as the Union from 1910 through 1961, she assumed the name as the Republic of South Africa after independence from England. As early as 1902, the official languages were adopted as English and Afrikaans, the homeland language. The latter is a combination of the Dutch and German, with some English words. About 50 percent of the people are bilingual and all published materials are printed in both languages (even the restaurant menus). A person born in SA is known as an Afrikaner.

Since a third week was spent by me on an individual basis in other parts of SA, it was possible to engage in a number of exchanges with different people and also to visit harbors, schools, private and public institutions in Cape Town, Paarl, Port Elizabeth, East London, Umtata (driving through the Transkei homeland), and Durban, with the SABS representatives again serving as hosts. On the lighter side, a number of language expressions were collected. The examples have some similarity to the ones developed by the Amish communities in Pennsylvania and popularized in some of the Broadway plays:

Just Now - See you shortly
A Baddie - A no-no
Roundabouts - circles
Brei - a barbecue
Flat Out - Absent today
Chemist - Drug Store
Hecklety Pecklety - quickly
Look nicely - Look closely
Nicely steamed - well done (meat)
Senior Citizens' Home - Home for Gentle Folk
Robot - Traffic light
Bottle Store - Liquor store

The pre-metric history of SA goes back to the 19th Century, and although metric weights and measures were legal from 1922, use had never been enforced. In 1949 along with metrication, the question of decimalization of coins arose. Fortunately the decision on the currency gave the Government an opportunity to assess effects of change on the general public. Noting that no grave upheavals occurred, the action served as a precedent and gave impetus to pursue the question

the question

of metrication. The Minister of Economic Affairs appointed T. H. Louw as Chairman of a study, similar to the U. S. Metric Study, undertaken from 1962 through 1964. The LOUW REPORT polled segments of industry, commerce, and the various publics on the matter. Out of the respondents polled, some 67 percent approved the move, and some 80 percent indicated that no major problems would exist. The announcement by England in 1965 to go metric also helped. Thus in 1966, the Minister of Economic Affairs approved in principle the change from the old system to metric or SI, and both bodies of Parliament approved unanimously. By 1967, a METRICATION ADVISORY BOARD was established to advise the Minister and to begin the program. Later a Metrication Department was set up under the Bureau of Standards since its work and most of its personnel used SI units in many of the areas for science and technology. The SABS stressed that no statutory or new body would be required, but that the staff would be organized to handle the metrication programs. As a quasi-government organization, the SABS was in a unique position to provide the needed leadership. In addition, it had decided to ask retired industrialists, scientists, teachers, etc., to participate in the program. The selection of qualified personnel was important. Secondly, with the support and confidence of the Government and all its departments, action could begin without any complicated legislative procedures. Thus the position of the working groups was strengthened and incentives were provided to encourage all of the nation.

The basic approach was one of consultation by the SABS department with as many segments of society as possible. The final culmination of decisions with all concerned parties, voicing suggestions or changes before final action, proved worthwhile. In the wider context of international development, the same approach could be taken. From the start, it was recognized that changes in all sectors would not come overnight. Efficient coordination and planning with the least inconvenience and disruption were the key elements. Teamwork of all sectors was the important ingredient, and the four cornerstones which marked the progress achieved were: CONSULTATION, COOPERATION, COORDINATION, AND COMMUNICATION. Under guidance of the METRICATION BOARD, the SABS established three divisions: "Metrication in Commerce; Metrication in Industry; and Metrication of Miscellaneous Services." A publicity division was set up to embrace services for all three.

all three.

A significant stress was the realization for all to view the program as a once-only process, and that the changes encompassed benefits of a permanent nature, and included a strongly supported system unequaled by others and one that had worldwide implications for future operations. South Africa has an "open" economy on exports and imports, and international trade amounts to about 20 percent of the gross domestic product, with the major trading partners being the Western nations and Japan.

Specifically, the Government took the position that the program was to be a voluntary one, not compulsory, and that consultation and assistance would be provided at all levels and for all concerns. The first phase was to make an investigation of the problems inherent in such a change; secondly, to establish functional representative committees to deal with the issues; and thirdly, to coordinate between committees and related groups in every way possible. No target dates were established initially, but time tables and schedules could be planned for those that could abide within the structures. In the business world, progress is dependent on and must keep pace with action in other related activities, and this scheme was followed in order to keep the transition orderly. In spite of some suppositions in articles and newspapers that changeover in South Africa was forced, the record shows clearly that the measures taken by the Advisory Board and the Metrication Department with the working committees included involvement by all groups and first considerations were given to the specific problems of operation. For example, as programs were proposed, they were reviewed, discussed, referred back and forth to the relevant parties, and not initiated for final action until solutions or satisfactory arrangements could be approved in advance by those involved. The SABS was the link between the outside world and the operating groups, serving in a sense as the "godfather" to assure confidence, assist, and promote every success possible. During the sessions and tours, many gave unqualified endorsement of the SABS efforts as major contributions to the success of the programs.

In the opening session, the SABS Director General, R. J. Teichmann, and his deputy, C. C. van der Merwe, and the Manager of the Metrication Department, H. L. Prekel, made it clearly evident that the whole program was not clear

sailing. Problems did and will continue to exist, but the impressive willingness and enthusiasm of the varous speakers outlining their efforts to get the job done confirmed my view that the SA effort will be recorded as an outstanding historical achievement. The problems were not hidden, but reported as they existed, and how they were handled. The difficulties were not disguised, and questions were frankly and openly discussed. During the tour sessions, workers and managers could be interviewed, and processes fully described or demonstrated, when necessary. Certainly, the democratic process was at work with exchanges provided for people with people.

Emphasis was also given to the constant liaison and follow-up that must be maintained with the various working committees. Without such action, interest loss, backsliding, unnecessary effort and expense, manhour losses, and false starts could occur. Leadership, support, and interest must be mixed throughout both the lower and higher echelons to maintain progress.

Unlike programs in other countries, SA took an initial step to inform the general public about what was to be undertaken. The communication media of press, radio, television, the advertisers, newspapers, magazines, publishers, all were made aware through meetings, visits, exhibits, jingles on the radio, short movies, posters, etc. When some resistance became evident in the media, the Press Unions played a major role in advancing the cause. The SABS further expanded communication by publishing a monthly newsletter, Metrication News, to report on developments, as well as to advise of international activities. The SABS issued a number of publications for use of industry, commerce, education, etc., and continues to update these as changes occur. Many are available at minimum costs or in some cases on a nonfee basis. The Government departments also publish data through the Government Gazette, similar to the U. S. Federal Register, and data are also excerpted in the SABS news from the Gazette.

The SABS series were coded as MP for the general public; the MPT series for the technical personnel; and the M series contains programs worked out with target dates, units agreed on and tables of explanation.

from the Gazette. . . . tables of explanation.

Although the example by SA in its national program has been outstanding, more recognition and emphasis must be given to the wisdom of the SA Government in working closely through the SABS with the International Organization for Standardization (ISO). The SABS Metrication News publishes data regularly and updates any of its other publications to stress the strict adherence of ISO rules and the advantages of uniformity among nations in using them.

Frankly, this is the BIG PICTURE. Although strongly supporting the national programs, my major thrust relates to following and supporting what the international committees recommend. This does not mean that the national forums must take a second lead in standards. Congressional action in these areas could provide a significant stance for both national and international trade. The United States however has lost ground in playing a major role which could have been captured as far back as 1918. To understand the statement, a bit of history needs review. The ISO, created in 1947, was set up to lay the foundations for international cooperation in standards activities. All countries were invited to join and it has member bodies from some 53 countries, 6 from South America, and 10 or more nonvoting members. The U. S. Government, not a formal member, is represented by the American National Standards Institute (ANSI), founded as early as 1918 by five leading engineering societies to foster uniform standards. With some 150 or more technical committees, ANSI introduces standards for industry, professional and scientific societies, consumers, and even the government groups. The U. S. Government has not supported ANSI financially, preferring to send observer participants from various government agencies. Thus the government-supported groups from other countries have been able to dominate in standards selections, and especially those members of the European Economic Community (EEC) and the European Free Trade Association. The EEC, comprised of the BIG NINE (France, West Germany, Italy, Belgium, the Netherlands, Luxembourg, England, Ireland, and Denmark), could well become the largest trading bloc in the world. In October 1971, the EEC issued a directive that required the adoption of SI by its member countries by 1978.

The U. S. Government as noted in the slide is not represented with the member countries, only ANSI. In 1963, the Department of Commerce set up a panel to study what could be done about the U. S. Government's lethargic approach

to international standards. The result led to the introduction of several bills which have never been passed by Congress, although introduced periodically. In 1972, a bill reached the Senate as S-1798, and in 1973 as H. R. 7506 submitted by the Subcommittee on Commerce and Finance in the 93rd Session, but it never reached the Executive committee. Known as the INTERNATIONAL VOLUNTARY STANDARDS ACT, the bill reads: "An Act to foster fuller U. S. participation in international trade by the promotion and support of representation of U. S. interests in international voluntary standards activities, and for other purposes." The U. S. Metric Association will follow-up to stress action for a new bill as it believes that adherence to ISO and SI rules and recommendations will prevent loss of time and expense in promulgating national preferences that may later have to be changed to meet uniform world uses. More on the international areas will be presented later.

Coming back to South Africa, it should be mentioned that the U. S. group representation included those from the states of California, Colorado, Illinois, Kentucky, Maine, Maryland, Missouri, New Jersey, and Washington, D. C. The trip was a self-financed venture, but open to any individual who wished to participate. A principal advantage in exploring the topic was that a metric environment prevailed throughout the areas visited: the street signs, the traffic and road signs, railroad schedules and distances, fuel oil pumps, pharmacy lists, department store displays, newspaper advertisements, various instruments as used by business or in the home, etc. In a report of this kind, it is not possible to share the extent of the knowledge gleaned from the study, nor to adequately commend the SA groups for the depth of reporting, the value of the tours, the social and recreational reprieves, and the courtesies and hospitality extended throughout the visit. To appreciate the magnitude of the SA METRIC-IN, the following accounts may be of import to various readers.

various readers.

More specific details will be presented of activities in the following areas. Slides will be shown to emphasize some of the programs, and a summary of some pertinent results will be made.

Metrication in Commerce
- Packaging
- Compensation Program for Measuring Instruments
- Home Economics

Metrication in Industry
- Building and Construction
- Engineering

Metrication of Miscellaneous Services
- Education
- Surveying and Mapping
- Agriculture

The Program in Rhodesia

Metrication in the City of Johannesburg

Description of Major Facilities

Summary