Centralized Technical Agency

I am very happy to have this opportunity to visit Brazil and I have enjoyed meeting many of you. I am here for the annual review of work being done by the Bureau of Reclamation team of technicians stationed in your country.

We have 10 men stationed in Rio and 2 in Recife. The 10 men in Rio are working with the Sao Francisco Valley Commission, SUDENE, and the electrical company CHESF. This group of Brazilians and North Americans is making a study of the water resources of the Sao Francisco Valley. The 2 men at Recife are furnishing technical assistance in operation and maintenance of irrigation projects constructed by DNOCS.

Currently, this team is the third largest of the six teams we have stationed in various countries throughout the world. By use of teams such as these, the United States is extending technical assistance and aid in developing patterns of resource use which have been most successful in our own country.

The Bureau of Reclamation was established by our Congress in 1902 to develop land and water resources in the arid and semiarid Western half of the United States. The objective was to facilitate settlement of the West and to expand the economic base not only of the West, but also for the benefit of the entire Nation. Throughout the years, as our water needs increased and changed in nature, the role of the Bureau has evolved and expanded to meet them.

The Bureau's original single function of developing water for irrigation of land soon expanded to include hydroelectric power generation, and municipal
and industrial water supplies. Later, flood control, enhancement of fish and wildlife habitat, outdoor recreation, and water quality improvement were added. Today, every project plan is investigated and formulated under the multiple-function concept.

The first hydroelectric power was generated on Bureau of Reclamation projects in 1909 and was substantially increased in 1936 when power production began at Hoover Dam. This was the first of many great multipurpose dams the Bureau of Reclamation has built in the last three decades.

Delivery of water to cities and towns in the vicinity of irrigation projects was authorized in 1906 and, with the growth of Western cities in recent years, this has become one of the most vital considerations in water resource planning. The rapid urban growth has also increased the demand for permanent clean water pools to be maintained for outdoor recreation and fish and wildlife pursuits.

The net result of these activities is that water is being made to serve all possible functions that can be included and coordinated in a project plan. Originally, project planning was done for specific projects or in smaller areas. The original project plan basis which served one individual area has long since given way to a planning on a river basin basis, and this concept, in turn, has been expanded to embrace interregional areas. The Bureau's planning program has been and will remain flexible to the challenge of meeting the water requirements necessary for Western growth.

During the past 64 years, the Bureau of Reclamation has constructed irrigation facilities to serve 3.9 million hectares, or about 9.5 million acres of land, which produced a gross crop value of $1.6 million in 1965. Installed hydroelectric power generating capacity now amounts to 6,474 megawatts, which
grossed more than one hundred million dollars in revenue last year. Bureau facilities currently furnish municipal water to about 11 million people, aid navigation, afford sediment retention, and provide partial to complete flood protection to vast areas. The reservoirs created for these purposes number over 200 and, in addition to the purposes discussed, they provide excellent fishing and recreation sites. About 90 percent of all of the investment in Federal Reclamation facilities is being repaid by the water and power users who benefit therefrom.

The experience gained during the past 64 years has enabled the development of an organizational structure which is considered to be the best possible for efficiently managing and controlling a diverse program of water resource development projects. I have been asked to tell you about this organizational structure. As professional men, you may wish to consider its adaptation for use in your country as water resource development expands.

The Bureau of Reclamation is organized on basically two levels: a policy-administration level, and a technical level. The policy-administration level centers in the Office of the Commissioner in Washington, D.C., and where the Congress and the President are located. It is supported by seven Regional Directors whose offices are located at strategic points throughout the Reclamation West. The technical level is centered in the Office of Chief Engineer in Denver, Colorado.

As with your own agencies, SUDENE AND DNOCS, the Bureau of Reclamation has a geographical limitation on its area of responsibility. In general, we operate only in the 17 Western States and Alaska, but the research into atmospheric water resource development, and also in other fields, is
related to water problems facing the entire Nation. Work outside the United States, such as by the team here in Brazil, is done at the request of other U. S. Government agencies, principally the Department of State, international organizations such as the World Bank, or at the direct request of other governments.

The Commissioner's Office, through the Department of the Interior, works directly with the Bureau of the Budget which represents the President and with the committees of the Congress to obtain authorization and funding for water resource development projects. In this activity, the Commissioner is administratively supported by the appropriate regional offices and technically supported by the Chief Engineer.

The geographic area of responsibility of each of the seven regions generally encompasses a major river basin. Where river basin areas are especially large and unwieldy, such as the Missouri and Colorado River Basins, practical limits on size have had to be imposed to establish coherent areas that can be effectively and efficiently administered from one central office. Within each region, area, project, or field offices are normally established to facilitate planning, construction, or operation of specific projects.

Each Regional Director is administratively responsible for construction and operation and maintenance activities and for project plan formulation within his region. Although primary responsibility for major construction activities is carried by the Chief Engineer, he may delegate responsibility for lesser programs to the Regional Director.

Each Regional Director is responsible for water resources development and operation in the watersheds encompassed by his region. He is responsible for
evaluating needs for water development projects and for initiating and completing the work of formulating project plans to fulfill these needs. In this process he is accountable for accomplishing engineering surveys, cropping studies and land classification; evaluating the surface and groundwater supply for meeting irrigation and municipal and industrial water supply requirements; for flood studies, water pollution and quality determination; evaluating hydroelectric power potential, navigation, fisheries, and recreation needs; and for economic studies considering all of these purposes.

In conjunction with the Bureau's primary responsibilities in this field, and because water needs overlap virtually all natural resource programs, other Federal, State, and private organizations are invited to contribute data, constructive suggestions, and recommendations pertaining to their interests in the overall Reclamation program. An important function of a Regional Director is to obtain the participation and coordination of local, State, and other Federal interests in the Reclamation program to the greatest extent possible.

Technical guidance of the Reclamation program flows from the Office of the Chief Engineer. The work of the technical men in the field offices is reviewed by the regional technical staff, who in turn receive their technical guidance from the Office of Chief Engineer. Periodically, as the field investigations and planning proceeds, various specialists from the Chief Engineer's office are invited by regional office counterparts to review the work and make recommendations concerning the planning studies. In this way, the field information, when submitted to the Chief's office, is
complete and in conformance with the Bureau's high standards. The Chief
Engineer's office prepares designs and estimates for all major Reclamation
works and proposals.

After a project has been authorized by Congress and necessary funds provided,
the responsibility for final designs, construction specifications, and
ultimate construction rests with the Chief Engineer. The final design
activities frequently involve extensive technical and laboratory studies
of available construction materials, foundation conditions, hydraulic
characteristics of proposed designs, suitability of new materials and
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specification writers and laboratory and research specialists are available
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In addition to being the centralized design headquarters, the Chief Engineer's
office includes large, well-equipped materials testing and hydraulic laboratories
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Then too, there are many men in design specialities for which one small group
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require a great number of people. The seven regions together have enough work to maintain staffs in these specialities whereas each region by itself does not.

The Chief Engineer also conducts schools to train technical personnel from the regions. This procedure enables the Chief Engineer's office to insure uniformity of design procedures and construction and inspection. He is in a position to insure uniformity in contracts with construction and consulting firms. Contractors bidding on Reclamation work have learned exactly what is expected of them in working for the Bureau. This uniformity in contract administration has resulted in lower bids, high quality work, and has produced savings in construction costs.

After the construction is completed and operational patterns established, it is the Bureau's policy to transfer responsibility for operation and maintenance of many project facilities to local water users' organizations. Under this policy the Bureau usually transfers single-purpose irrigation works, but not powerplants, transmission lines, or multiple-purpose storage facilities. The water users' organization must have/legitimate status, and must retain a staff competent to assure successful project operation. Both the Chief Engineer and Regional Directors carry out regularly scheduled programs of inspection of constructed facilities to assure proper operation and maintenance procedures and protection of Federal investments.

I understand that Brazil already has several agencies working on water resources development in regional geographic areas. To this extent you have an organization somewhat paralleling our regional system. I can
highly recommend that you go the next step and establish a central technical office similar to that of our Chief Engineer equipped and staffed to furnish those types of specialized services I have already described. It has proved to be an efficient organizational structure which makes effective utilization of scarce technical skills, and assures uniformly high standards of design and construction.

The water resource development opportunities of Brazil are tremendous. Your nation is even more fortunate in this respect than ours. I am aware that you have made very good progress in initiating water development for hydroelectric power production. In the future, I'm sure you will find it most beneficial, as we have, to include the many multiple purposes of water resources development. As opportunity offers, I shall watch your progress with great interest. We in Reclamation deem it a pleasure to work with you in getting a program underway.
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great interest. We in Reclamation deem it a pleasure to work with you in getting a program underway.

In closing may I remind you that the ultimate purpose in water resource development—whether it is to benefit your people. Dams and power plants are wonderful engineering works—they will control floods, generate electricity, supply water for irrigation and industry, but remember that the physical works are not the end in themselves but are merely the means to the end. The final end objective is to provide a better life for the people. Brazil and in that a broader sense, the people of the world.

We consider it a privilege to work with you.