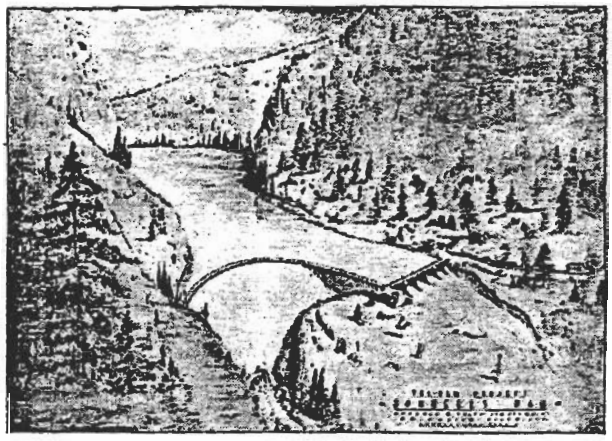
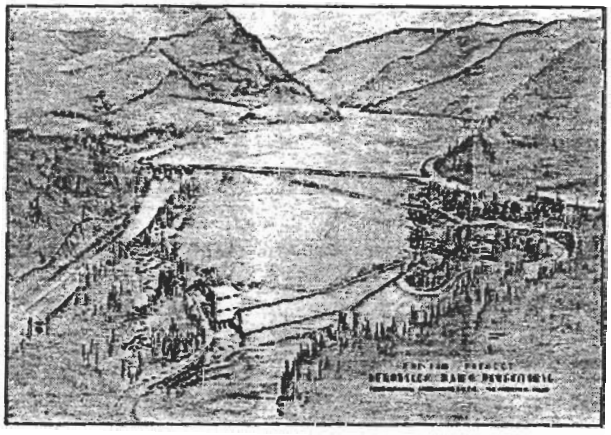
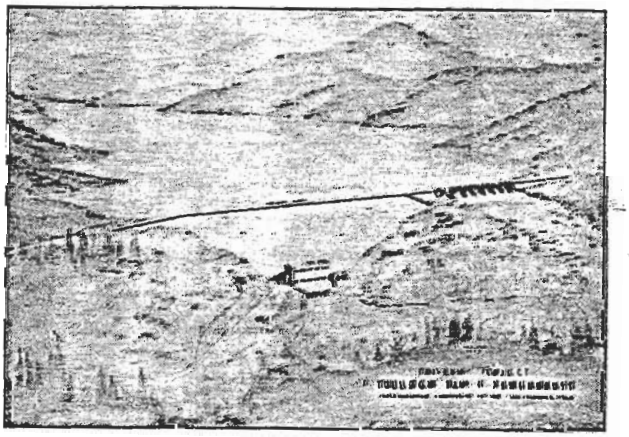
THE TRI-DAM PROJECT
STANISLAUS RIVER
CALIFORNIA



DONNELLS



BEARDSLEY



TULLOCH

OAKDALE IRRIGATION DISTRICT
AND
SO. SAN JOAQUIN IRRIGATION DISTRICT

Souvenir Program

TRI-DAM PROJECT

SATURDAY, JUNE 15, 1957

at

Beardsley Dam and Power House

10:30 o'clock A. M.

PROGRAM

Welcome ..... John E. Vrieling, President
South San Joaquin Irrigation District

Group Singing ..... First Verse of America
Led by Richard D. Stokes

Invocation ..... The Reverend R. Ongna
Pastor, The Calvary Church of Ripon

Introduction of Ralph A. Tudor, Master of Ceremonies
Edwin Koster, President
Oakdale Irrigation District

Remarks ..... Ralph A. Tudor

Remarks ..... N. R. Sutherland
President and General Manager
Pacific Gas and Electric Company

Announcements

Introduction of Boards of Directors, Officials and Guests

Vocal Solo, The Builder ..... Cadman
Richard D. Stokes

Dedication Address ..... Harvey O. Banks, Director
Division of Water Resources
State of California

Vocal Solo, Trees ..... Kilmer
Richard D. Stokes

Benediction ..... The Reverend R. Ongna

THE TRI-DAM PROJECT

This Project is a joint development of the Oakdale rrigation District and the South San Joaquin Irrigation District. The Upper Works of the Project, located on he Middle Fork of the Stanislaus River, consist of

Donnells Dam, Tunnel and
Power Plant
Beardsley Dam, Power Plant
and Afterbay

The Lower Works of the Project, located on the main stream of the Stanislaus River, consist of

Tulloch Dam and Power Plant
Revision of Goodwin Dam to
serve as Tulloch Afterbay

In addition to the units being constructed, the waters will be utilized through the existing Stanislaus and Melones plants of the Pacific Gas and Electric Company. The combined storage of the three reservoirs will be 230,400 acre feet, which, when combined with storage at existing Melones Reservoir, will provide 100% irrigation within the Districts in normal years, and, in addition, provide a substantial hold-over for subnormal or dry years. Melones Dam was constructed by the Districts in 1926 to provide 112,500 acre feet of storage for the Districts.

The Project was financed by the sale of $52,000,000 of revenue bonds payable solely from power revenue derived through a 50 year contract entered into between the Districts and the Pacific Gas and Electric Company. Lands within the Districts will not and cannot be obligated in any way for the payment of any portion of this revenue bond issue. All plants will be owned, maintained, and operated by the Districts and delivery of power will be made into the Company's transmission line system adjacent to each power plant.

Construction was initiated on May 25, 1955, with the sale of $41,500,000 of the Tri-Dam Revenue Bonds to F. S. Smithers & Co., and Salomon Bros. & Hutzler with an interest rate of 3.05% and with an award of a $31,199,850 contract to Tri-Dam Constructors, a joint venture by Morrison-Knudsen Co., Peter Kiewit Son's Co., Macco Corporation, and Stolte., Inc., for construction of Donnells and Beardsley. A second contract in the amount of $8,291,248 was awarded on November 30, 1955, to The Arundel Corporation and L. E. Dixon Company for construction of Tulloch Dam and the revision of Goodwin Dam, following the sale of an additional $10,500,000 of Tri-Dam Revenue Bonds to the same purchasers with the same interest rate.

The Districts' construction schedule calls for the Upper Works of the Project to be fully operable by December 15, 1958. To protect the Districts, the contract calls for liquidated damages in the amount of anticipated revenues should there be construction delays and the Districts have taken out insurance to provide the same revenues should there be a shortage of water. Such net revenues as may be received by completion earlier than December 15, 1958, are passed on to the Contractors as bonuses.

DONNELLS

Donnells, which is the upper dam in this Project, is also the most important insofar as power production is concerned. The dam is a concrete arch dam with a gate-controlled overflow spillway on the left abutment; however, most of the water will enter the power tunnel located just upstream from the dam except for the water which will be released through a low-level outlet pipe to furnish water for fish life in the river or that which will be wasted over the spillway because of an excessive inflow. Water is delivered to the powerhouse through a 7.2 mile tunnel and an 81" diameter penstock 0.5 miles long, and after it is used there it immediately enters Beardsley Reservoir.

STATISTICS

General

Stream — Middle Fork Stanislaus River
Available Water — Average of 300,000 acre feet per year
Drainage Area — 224 square miles

Reservoir

Length — 3 miles
Area Covered — 425 Acres
Maximum Pool Elevation — 4916 ft.
Tunnel Intake Elevation — 4702 ft.
Low Level Outlet Elevation — 4670 ft.
Storage — 64,500 acre feet

Dam

Type — Concrete Arch
Total Length — 960 ft.
Height Above Streambed — 290 ft.
Maximum Height — 477 ft.
Arch Thickness — 10 ft. at crest; 41 ft. at base
Total Concrete in Dam — 175,000 cubic yards

Tunnel

Length — 38,000 ft.
Size — 12½ ft. horseshoe with paved invert

Penstock

Length — 2,600 ft.
Diameter — 81-inch outside
Drop to Powerhouse — 1,200 ft.
Maximum Thickness of Steel — 1-13/16 inches

Powerhouse

Installed Capacity — 1 unit 54,000 KW
Maximum Static Head — 1481 ft.

BEARDSLEY

Beardsley, which lies about 12 miles down river from Donnells Dam, is the largest of the three projects insofar as water storage is concerned. The dam is an earth, sand, gravel, and rock fill with a gate-controlled chute spillway on the right abutment. Most of the water passes through the low level tunnel beneath the spillway and into the 96" diameter penstock, then into the powerhouse which lies just downstream from the dam. Water can be wasted around the penstock as well as over the spillway. A timber-crib and rock afterbay dam is located one mile downstream to regulate the fluctuating discharge from Beardsley. It was necessary to relocate the Pickering logging railroad from its former position through the reservoir to its present crossing over the dam as part of this Project.

STATISTICS

General

Stream — Middle Fork Stanislaus River
Available Water — Average of 400,000 acre feet per year
Drainage Area — 305 square miles

Reservoir

Length — 3 miles
Area Covered — 720 acres
Maximum Pool Elevation — 3397 ft.
Storage — 97,500 acre feet

Dam

Type — Earth Fill
Total Length — 1,000 ft.
Height Above Streambed — 280 ft.
Maximum Height — 320 ft.
Maximum Thickness at Streambed — 1,200 ft.
Total Volume of Fill — 3,000,000 cubic yards

Powerhouse

Installed Capacity — 1 unit 10,000 KW
Maximum Static Head — 264 ft.

Afterbay Dam

Construction — Timber, rock and gravel
Length — 250 ft.
Height Above Streambed — 35 ft.
Storage — 250 acre feet
Outlet — 6-foot diameter gate-controlled pipe

TULLOCH

Tulloch, which lies about 45 miles down river from Beardsley, is the most important to the Districts insofar as storage for irrigation is concerned and provides a stabilization of the river in that it will be used to store any excess water which passes the Upper Works. The dam is a concrete gravity type with a gate-controlled spillway on the left abutment; however, most of the water passes through two 114" diameter penstocks into the powerhouse, or through two 6' diameter steel outlet pipes. Goodwin Dam, which is raised 7 feet as part of this job, forms an afterbay to regulate the discharge down river. This is the Diversion Works for the Districts' irrigation systems. A considerable improvement in the gate structures was also part of the job.

STATISTICS

General

Stream — Stanislaus River
Available Water — Average 1,000,000 acre feet per year
Drainage Areas — 987 square miles

Reservoir

Length — 7 Miles
Area Covered — 1260 acres
Maximum Pool Elevation — 510 ft.
Storage — 68,400 acre feet

Dam

Type — Concrete Gravity
Total Length — 1600 ft.
Height Above Streambed — 165 ft.
Maximum Height — 200 ft.
Maximum Thickness at Base — 165 ft.
Thickness at Crest — 12 ft.
Volume of Concrete — 230,000 cubic yards

Powerhouse

Installed Capacity — 2 units 17,000 KW
Maximum Static Head — 149 ft.

Goodwin Dam

Construction — Concrete Arch (constructed 1916)
Work Involved — Raise 7 ft. Remodel Intakes
Storage — 500 acre feet