TUDOR QUARTERLY

SPRING 1983

SEATTLE METRO STUDY

For many years, the METRO system in Seattle has concentrated on being a first-rate bus system. Recently, a serious study of alternatives to bus transportation was begun.

In late April 1983, Tudor Engineering Company, as the principal subconsultant to Raymond Kaiser Engineers (RKE) of Oakland, was selected and given notice to proceed on the Seattle METRO Alternatives Analysis. The basic mission of the 15-week effort is to investigate nine separate combinations of two primary alignments and three technologies. Geographically the project extends from Union Station, adjacent to the Kingdome, to Alderwood Mall, which is just beyond the north King County line. The technologies involved are:

- Guided Busways – This would be a new system of buses entering a controlled busway with the vehicles guided by a steel beam. A driver would control only the speed while the bus was in the busway. The buses would be articulated and powered by both electrical motors and diesel engines.

- Conventional Light Rail Transit – Part of this system would share the right-of-way with other vehicles and electrical power would come from a pantograph connection to overhead wires. In many respects it would be similar to San Francisco's MUNI METRO.

- Fully Automated Light Rail – This is the highest-capacity system being considered. The steel-wheeled or rubber-tired system would always be in exclusive right-of-way and could therefore be powered by a third rail as is the BART system. The trains would be fully automated and could be operated with or without drivers.

The Tudor staff involved include Bela Vadasz as Project Manager for Tudor and Deputy Project Manager for the entire team under the RKE Project Manager, John Bergerson. Dick Rudolph and Jim Schroeder are evaluating two major existing structures; Einer Handeland and Darryl Chambers are responsible for the traffic and transportation engineering; and Dewitt Jensen and Rosemary George are responsible for project coordination and for graphics, respectively. San Francisco office staff are also involved. Don Rose, with assistance from Don Scapuzzi, Jon Kaneshiro and others, is responsible for the tunnel segments of the project.

STOCKHOLDERS MEETING

The annual stockholders meeting of Tudor Engineering Company was held on Saturday, May 7, 1983, at the Claremont Hotel in Oakland, California. Twenty-seven people attended the meeting. As part of the agenda, reports were presented on the Company's financial status, the Employees' Retirement Plan and the new Employees' Stock Plan. In official actions of the stockholders, the current Board of Directors was reelected, consisting of Louis W. Riggs, Robert N. Janopaul, Paul E. Potter, Keith D. Bull and Douglas J. Mansfield. The meeting concluded with presentations on the Company's current operations and an outlook to the future. The stockholders learned that, in spite of the general economy in 1982, Tudor had a good year and that the outlook for 1983 is very promising.

MONTICELLO DEDICATED

Morris Dally and Vic Fazio unveil dedication plaque.

Solano Irrigation District's 11.5 MW Monticello Power Plant at Lake Berryessa was dedicated on June 18, 1983, 21 months after revenue bonds were sold and construction begun. Over 130 Federal, State and local officials and other persons influential in the implementation of this $17 million hydroelectric project heard Congressman Vic Fazio summarize the historical development of the project and its value to the area, and District Secretary/Manager Brice Bledsoe explain the legislative effort underway to resolve the lengthy controversy over the Federal charge for the use of Monticello Dam. Board President Morris Dally and Congressman Fazio unveiled the impressive bronze dedication plaque. The startup of the hydroelectric units provided a fitting conclusion to the dedication ceremony.

The three horizontal Francis units have successfully completed their performance tests and are producing energy at an average annual rate of 52 million kilowatt hours; the Full Operation Date has been declared by PG and E, the power purchaser.

Tudor's field staff consisted of Resident Engineer Oral Conyers, and Assistant Resident Engineer Brian McDermott. Startup and other mechanical and electrical engineering assistance was given by Don Guild, Gary Durham, Bill Untiedt and Cesar Formoso. Walt Anton was the Project Manager during the construction phase and Dave Willer was the Principal-in-Charge.

CARACAS METRO OPENS

Formal dedication ceremonies were held by C.A. Metro de Caracas with invited guests from around the world. The occasion was the opening to revenue service of the second section of the Metro from La Hoyada to Chacaito on March 27th. The first section, from Propatria to La Hoyada, was opened without international fanfare on January 2, 1983. These two sections are the first elements of the Propatria-Petare Line that were designed by PBTB.

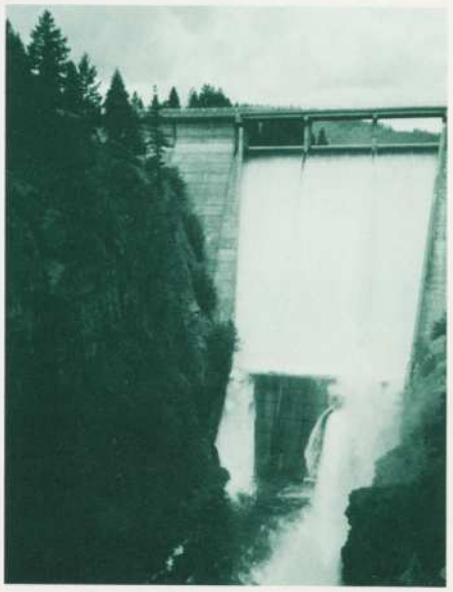
Representing PBTB were several members of Parsons Brinckerhoff, including the original Board of Control member, Walter Douglas. Louis Riggs was there for Tudor, having also worked on the project in the capacity of Board member since 1967.

The President of Metro de Caracas, Jose Gonzalez Lander, welcomed old friends from Parsons Brinckerhoff and Tudor and conducted a private tour for the group on the preceding day. The President of Venezuela addressed the assembled throng at Chacaito Station and presented awards to both engineers and construction personnel involved with the project.

Propatria Yard – Metro de Caracas,

Jose Gonzalez Lander and Louis Riggs in Metro car.

LAKE SISKIYOU POWER PROJECT



Box Canyon Dam

Siskiyou County Flood Control and Water Conservation District recently signed a contract with Tudor covering design and engineering services for a 5 MW hydroelectric project at Box Canyon Dam near Mt. Shasta in northern California.

Design work started in Spring of 1983. The procurement and construction bids will be awarded in August and October 1983, respectively. Construction work at the site is expected to begin in December and to be completed in the Fall of 1985.

Two interesting aspects of this project are the powerhouse, which is to be constructed beneath the existing spillway flip bucket, and the multiport intake structure which is designed to withdraw water from the reservoir at different levels.

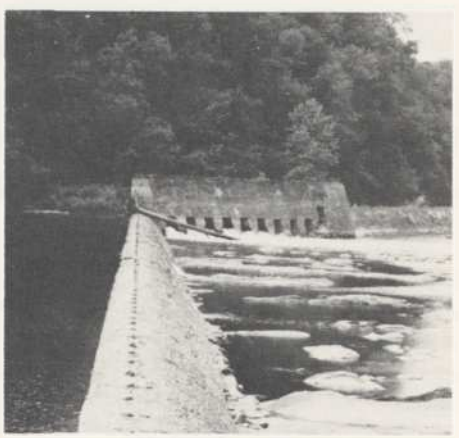
The narrow canyon in which the powerhouse will be constructed dictated a layout in which the spillway bucket area was virtually the only space available. Enormous forces generated by the water flowing over the spillway and passing over the powerhouse roof require the roof to be extremely strong and rigid.

Tudor has been retained by the District to provide engineering services since early 1977. Prior to the final design work, Tudor completed for the District the FERC license application, Department of Energy feasibility report, power purchase negotiations, and California Environmental Quality Act initial study documents.

CAPITOLA PROJECT BIDS

On April 15, bids were opened for the construction of the Capitola Hydroelectric Project. This project, with an installed capacity of 3 MW and a rated head of less than 15 feet, will be built on the French Broad River in Marshall, North Carolina. The owner is the French Broad Electric Membership Corporation, which operates under the general guidance of the Rural Electrification Administration. Tudor has provided final design services for this project and will continue to provide engineering services during construction. All documents were prepared according to REA guidelines and bidding was conducted in accordance with REA specified procedures. Accordingly, the bid opening was a private affair. There was a total of 21 bids received, an extraordinarily high number. The low bid was submitted by Crowder Construction Company of Charlotte, North Carolina. Although no bid amounts can be revealed, it can be said that everyone was extremely pleased with the results of the bidding. The contract was awarded to Crowder on April 25 and construction operations were begun in the field during the second week of May.

A good deal of the credit for the success of this bid must go to Andy Yeung and the hydroelectric design staff in San Francisco and Tom O'Neill in Atlanta. Through their efforts, the numerous questions raised by the large number of bidders were addressed promptly and all addenda and clarifying documents were distributed expeditiously and accurately.



Capitola Dam (foreground) and Canal Headworks

THE APRIL 1983 THISTLE LANDSLIDE

In mid-April 1983 a gigantic ancient landslide slowly moved again, creating, in about two weeks, a 180′ high dam in the Spanish Fork Canyon in the Wasatch Mountains south of Provo, Utah. Two small streams were dammed, and spring snowmelt runoff and unusually high rainfall created a new reservoir behind the dam, completely drowning the town of Thistle. For a time the landslide grew in height faster than the new reservoir waters rose, but by early May, Weather Bureau predictions indicated that the dam could be overtopped by mid-May, which could release some 50,000 acre-feet of water to inundate the town of Spanish Fork at Utah Lake, 25 miles downstream.

The landslide is more than a mile long and contains 25,000,000 cubic yards of clayey debris derived from the North Horn Formation red shales. It has moved several times since the late Pleistocene age. The slippery red clay is dense enough to support bulldozers and scrapers without difficulty, but moisture from even a two-minute-duration light drizzle makes the clay so slippery that heavy equipment slides downgrade. The landslide has moved, and is moving, on wet slippery planes at depth, and snowmelt from the mountains at the head of the landslide continues to lubricate the mass. Surveyed movements of 3′′ per hour (6′ per day) were still taking place on the dam in early May, and large tension cracks up to a foot wide, a few tens of feet deep, and several tens of feet long were visible on all flanks of the slide.

The slide closed off traffic south on U.S. 89 and east on U.S. 6; reports in the literature (1962) indicate that decades ago Highway 89 was moved to the east side of the canyon, to try to escape earlier creep movements on this ancient slide. The Denver and Rio Grande Western Railroad was cut, forcing a 1100-mile detour to haul coal from Utah's Carbon and Emery Counties to Salt Lake City, thence overseas to Taiwan/Korea/Japan. Loss of revenue to the railroad is enormous — estimates range from $200,000 to $1,000,000 per day. Early reports indicate the slide first slowly uplifted the railroad tracks, in spite of maintenance crew efforts to keep the track level. A higher level railroad tunnel, 18′ wide by 28′ high by 2400′ long was started in early May by Morrison-Knudson to enable the track to be raised above the new reservoir and renew rail traffic as soon as possible.

The State of Utah directed Morrison-Knudsen to drive an emergency spillway tunnel. This 300′ long, 8′ by 10′ high shotcreted tunnel was holed through in early May, at elevation 5180, i.e., about 43′ above the reservoir level on 6 May. However, the reservoir rose so fast it began to spill reservoir water through the tunnel on 18 May. The State has also directed Elbert Lowdermilk Inc. to place a compacted buttress with a wide gravel drain on the downstream side of the dam to stabilize it. The U.S. Corps of Engineers awarded a contract to Weyher Construction to pump water over the top of the dam through flexible pipe from barge-mounted pumps; at mid-May about 200 cfs was being pumped over the dam . The emergency spillway tunnel can pass several hundred additional cfs safely around the dam. However, Weather Bureau predictions indicate inflows may be greater than this outflow.

The State engaged Woodward Clyde Consultants to design a low-level tunnel to tap the reservoir waters. In mid-May, Morrison Knudson began to drive this low-level tunnel, although the final design details were still under study. The Federal Emergency Management Agency (FEMA) has engaged Tudor Engineering Company (with Dewberry & Davis) as consultants for on-call use as needed in any federal emergency; at this site Don Rose is providing FEMA's Miles McCormack and his staff with technical assistance.

Spanish Fork Canyon, before slide

Spanish Fork Canyon, after slide

JONES FORK HYDROELECTRIC PROJECT

Jones Fork Power Plant, concrete top out

Despite adverse winter weather, construction at SMUD's 10 MW Jones Fork Hydroelectric Project has progressed on schedule, and is now 33 percent complete.

The first stage concrete work on the powerhouse is nearly completed. About 2000 cubic yards of concrete was poured. The lower draft tube liner was placed in early July, and then work on the powerhouse will be minimal until the valves, turbine and generator arrive next winter.

About 1700 feet of the 1800-foot-long tunnel have been excavated. The 100-foot-long plug will be excavated next fall after the reservoir level drops. A major portion of the tunnel has been concrete-lined, and a 400-foot section of the tunnel will have steel tunnel liner installed later this summer.

Additional summer operations will include penstock erection, gate shaft completion, and erection (by SMUD) of the 3½-mile long 69 kV transmission line to Union Valley Reservoir.

Next Fall, tunnel gates will be seated, Ice House Reservoir drawn down, the tunnel holed through, and the tunnel intake constructed. Turbine, generator and valve installation will be started.

SMUD has been able to assist CALTRANS in expediting reopening of slide-blocked Highway 50 by making fill material available from tunnel and powerhouse excavations.

Fred Estep is Tudor Project Manager/Resident Engineer, assisted onsite by John Wurschmidt, Bob Beal (formerly of Tudor's Lewiston office), Sue Sanders, and George Schneider.

LAKE MENDOCINO POWER PROJECT

Lake Mendocino Dam

Final contract documents for construction of the Lake Mendocino Power Project were completed and the project advertised in June. The power plant will be located downstream of Coyote Dam, which forms Lake Mendocino and will utilize two horizontal Francis turbines to generate 3.5 MW of electrical power.

The City of Ukiah has awarded contracts to the Axel Johnson Engineering Corporation for turbines, generators and valves, and to Marubeni Corporation for a 108-inch bypass valve. Bids will be received in August for the project construction, which includes providing a temporary bypass pumping system; installation of a steel liner in the existing Coyote Dam outlet conduit; a post tensioned, reinforced concrete plenum structure with a Tainter valve; powerhouse; and a liquid oxygen storage and distribution system to maintain oxygen content in the water releases for fish and aquatic life in the East Fork of the Russian River.

The City of Ukiah and Tudor began work to develop the Coyote Dam site for power production in 1978 with applications for water rights and a Department of Energy loan for the feasibility study. In April 1981, the FERC license application and Environmental Initial Study were prepared. Since the FERC license was granted in April 1982, Tudor has completed the design of the project, including the Construction Documents, under the direction of Project Manager Gordon Marsh, Project Coordinator Sally Simone, and Project Engineer Kurt Scholz.

Gordon Marsh and Sally Simone have directed key design staff members in the layout and design and construction and sequencing studies for the project. A model study was performed to validate the complex hydraulic conditions for the project and a special oxygenation study was completed for the project. Construction is expected to begin in January 1984, and to continue approximately 15 months.

News in Brief

DENVER

The Denver office is promoting small hydro development in a new geographic area – the State of Arizona. There are a number of water users associated with the Bureau of Reclamation Central Arizona Project who are planning and designing their interconnections to receive water from the Granite Reef Aqueduct of the CAP in 1985. Tudor, cooperating with a local Tempe firm, Franzoy, Corey and Associates, has determined the potential for small hydro generation at several turnouts from the aqueduct. To date, a preliminary study has been performed for a 2.5 MW power plant for the Harquahala Valley Power District.

The Milk River Irrigation Districts were awarded a FERC preliminary permit for Fresno Dam on the Milk River in Montana. It is anticipated that Tudor will proceed with the license application in the near future. Tudor recently completed a license application for Tiber Dam on the Marias River in Montana for the same client. Another repeat client is the Incorporated County of Los Alamos, New Mexico. Tudor is completing a FERC license application for El Vado Dam on the Rio Chama for the County and recently received a go-ahead for preparation of a preliminary permit application for Abiquiu Dam, also on the Rio Chama.

The Denver-designed labyrinth (or folded) weir for the Garland Canal Power Project began successful operation early this spring as water was turned into the canal for the start of the irrigation season. The weir was constructed to divert water from the Ralston Chute to a 2.5 MW power plant due for completion later this summer. In the meantime, the intake structure for the penstock has been stoplogged, and water is passing over the weir and down the chute.

The weir looks like three large V's placed side by side when viewed from overhead. This results in a crest length over four times longer than a weir built straight across the canal. A semicircular crest section further improves the weir's hydraulic performance.

The design method was thoroughly researched and tests were run on a model for a similar labyrinth weir installation at the Bureau of Reclamation's Hydraulics Laboratory. To everyone's satisfaction, the weir was tested throughout the entire range of irrigation flows and performed better than the theoretical rating curve.

NEW ATLANTA OFFICE

On June 1 Tudor Engineering Company took occupancy of new office space in Atlanta, Georgia. The office is located at 148 International Boulevard, in Atlanta's central business district. Tudor's operations in the Southeast, separate from MARTA, began in November 1982 when Tom O'Neill relocated to Atlanta from San Francisco. Since that time, Tudor's operations have been located in the Marietta, Georgia, office of Law Engineering Testing Company and, later, Law/Geoconsult International. Tudor has enjoyed the hospitality of these fine firms and looks forward to ongoing and future associations with them. Ulrich Lemcke and his wife, Elise, left San Francisco for relocation in Atlanta on June 3. There he will assist in Tudor's southeastern hydro projects.

63RD ANNUAL S.A.M.E. MEETING

The 63rd Annual Meeting of the Society of American Military Engineers was held this year in St. Louis on April 26 through the 29th. Louis and Pat Riggs attended the meeting and were actively involved in events. Louis, who is the immediate Past President of the Society and continues to serve on its Board of Directors, presented the prestigious Tudor Medal at the Awards Banquet to Russell E. Milnes who works for the Portland District, U.S. Army Corps of Engineers. The Tudor Medal is awarded each year to the outstanding engineer in the nation who is 36 years old or younger. Jack and Edna Biederman also represented Tudor at the meeting this year. Jack is very active in S.A.M.E. on the local level and serves as the firm's alternate Sustaining Member in San Francisco.

MOUNTAIN HOME PROJECT

Tudor is finalizing the design on the domestic well and transmission line for the City's water system. Additional work may involve renovation of a two million gallon reservoir. Tudor, San Francisco, did a structural damage type report on the same reservoir in 1971. The City wants to repaint the reservoir, but some remedial work needs to be performed first. Tudor will also provide onsite inspection during construction.

Ted Purcell is providing the structural expertise for the reservoir while Tim Burgess and Bob Mayers are working on the well and transmission line design.

DUCK VALLEY AGRICULTURAL DEVELOPMENT PROJECT

The Shoshone-Paiute Tribes, of the Duck Valley Indian Reservation, have retained Tudor to administer and manage the construction of Phase 2 of the Duck Valley Agricultural Project.

The Reservation straddles the Idaho-Nevada border on the high desert. This phase brings the master-planned project to 50 percent complete by adding two center pivot irrigators, two vertical turbine pumps and a mile-and-one-half of transmission piping. The project will ultimately irrigate more than 1500 acres with 12 center pivot irrigators.

The project is funded by EDA. Tudor's construction management team includes Stan McHutchison as Project Manager, Bob Mayers as Technical Advisor, and Neal Eagar as Resident Inspector.

Laying pipeline at Duck Valley

CITY OF McCALL WATER SYSTEM IMPROVEMENTS

Recently the City of McCall, a recreational resort community situated on Big Payette Lake in Idaho's central mountains, retained Tudor to assist in planning, design and construction of extensive improvements to the municipal water system. McCall, with a permanent population of 700 to 800 persons, experiences intense strain on municipal services caused by seasonal recreational influxes which can double the effective service population. Nearby Brundage Mountain ski resort provides excellent skiing during winter months. Other times of the year, vacationers, fishermen, boaters, skiers, and those with summer homes in the area, make extensive use of local recreational opportunities.

Big Payette Lake is a natural cold water lake and serves as the City's water supply source. Water withdrawn from lake depths of 20 to 30 feet has a constant year round temperature of 37°F, and is so pure and clear that only chlorination is required to comply with state water quality standards. Tudor is providing engineering services for design and construction of a new intake and pumping facility located on the lake near its natural discharge to the Payette River. Both chlorination and fluoridation will be provided at the pumping facility. Other contemplated improvements include approximately 16,000 feet of ductile iron water distribution lines and a future water tower.

The Economic Development Administration is providing funding for the $725,000 project, accompanied by local matching funds.

Work is already progressing under a series of initial work orders to construct a new 30,000 gallon concrete chlorine contact chamber and to set the groundwork for future project activities. Full scale design is scheduled to begin in late spring or early summer, 1983. Bids will be received and construction begun in the fall. Construction should be completed by mid-summer, 1984.

The Project Manager is Ted Purcell, assisted by other engineers, including Bob Mayers, Paul Kunz and Tim Burgess.

KUNA SEWER PROJECT

Construction management and onsite inspection services continue on the City's $3.5 million sewage collection, treatment and disposal project.

Above normal precipitation in March and April has slowed construction progress on the Treatment and Disposal Contract. Over 850,000 square feet of 20-mil PVC liner needs to be placed for the four lagoon system along with 15,600 cubic yards of earthen cover material and over 10,000 yards of riprap. The Contractor will have to move about 200 acre-feet or 66 million gallons of water to test the lagoons for leakage. He has revised his schedule a couple of times and is now anticipating completion by late summer.

Sabin Landaluce is providing the inspection with support from Tim Burgess and Paul Kunz.

NAPA VALLEY BIKE TRIP

On May 21st, the second annual San Francisco Tudor bike ride was held. This year organizers opted for a route through the Napa Valley wine producing region.

Participants managed to rouse themselves early enough to arrive at the starting point by 9:30 Saturday morning. The earliest enthusiasts could see hot air balloons in the northern part of the valley.

You could tell who the serious bikers in the group were. They were the two, trying to get the rest of us away from the open air cafe, where we had lunch.

One of the members set (we think) some sort of record. On a vehicle with two wheels, Roslyn managed to have three flat tires; but overall the trip was pleasant.

Now that the ride is over, it can be revealed that the round trip was actually 35 miles. Congratulations!

Checking the maps for coordinates are Tony Lea, Candy King, Joy Church, Joe Lawrence, Terry Herman, Katrina Oliphant and Edward Sykes.

UP CLOSE AND PERSONAL

Jim Albert

James "Jaimeto" Albert, the financial wizard of Tudor's San Francisco office, could add, subtract and multiply before he could walk. As a child he especially enjoyed playing with red crayons. He balanced stacks of comic books and empty milk cartons high above his little head. Having survived this arduous past in the streets of San Francisco, Jaimeto graduated from U.C. Berkeley with a B.S. in Civil Engineering. His red crayons have given way to red Bic pens.

After working summer vacations with Tudor from 1955 through 1957, Jim joined Tudor on a full time basis in June of 1958, embarking upon a career full of experience, diversity and travel.

James married Jeannette of Washington, D.C. in 1962, while on a Tudor assignment there. They now live in Tiburon with two Venezuelan "gatos" (cats), Metro and Nina.

In 1966, armed with a smattering of Spanish and a new pair of field boots, Jim landed in Guayaquil, Ecuador, to work on a Tudor feasibility report for a land reclamation project, and later, a highway reconnaissance study in the Andes. Jim and Jeannette became semi-natives, traveling to Lima, Peru, in 1967, where Jim did a port and harbor feasibility study at Chimbote.

Having reluctantly returned to the U.S. in July 1967, their dream to revisit South America was granted in 1977, when Jim was sent to Caracas, Venezuela, to serve as coordinator of design and construction services for the Caracas Metro System. This stint lasted two years, and Jim emerged looking, acting and speaking like a native. He still has not lost his accent.

Jim's involvement in other special projects include: Onsite field subsurface exploration work on the New Exchequer Dam on the Merced River, California; first powerline inspection for the Palm Springs Aerial Tramway, which (powerline) was constructed totally by helicopter (there's a story behind this one!); preparation of numerous environmental impact reports for such projects as a bulk mail center (Richmond, CA) and proposed water supply and wastewater projects in California.

James is currently involved in project control for the Jones Fork Hydro and Stanford Linear Collider Projects. When things get out of control, he simply cracks a joke, gets another cup of coffee, or goes out for a "bite."

Jim's special interests include both traditional and latin jazz, and, when time and the spirit move him, he follows the sun. Jaimeto's ambition is to return one day to the white sandy beaches of Barbados and to its special golden elixir of life, so he can balance his wife's checkbook.

John Williams

John Williams has been manager of the Denver office since the office was established in the fall of 1979. At that time John returned to Tudor after working for another firm in Iran for three and a half years. His first employment with Tudor began in September 1972 as a project manager in Tudor's San Diego office. John's hometown is Winterset, Iowa — the same as John Wayne's — but after growing up on the farm and attending college, he left for California and other distant places.

During John's engineering career, he has travelled and lived abroad in the Middle East, Subcontinent, Southeast Asia and several European countries. He feels that India is the most interesting country that he has visited, and in his opinion, it may be the most civilized when one considers the poverty and population problems. He suggests that if the same conditions existed in this country the situation might be uncontrollable. For culinary pleasures though, he claims that "any old restaurant" in France will do, and, in most instances, it will be superior to the best restaurants in most cities in the United States.

While in Iran, John was the project manager for the first phase of the Karkheh River Project. Initially, he and his wife, Janet, lived in Kermanshah near the border of Iran and Iraq; later they lived in Tehran. At one stage he managed a staff of about thirty engineers and technicians along with ten cars. John supervised the feasibility studies for three large dams and several groundwater irrigation projects, and directed the preparation of a master plan report for the development of the land and water resources for the entire Karkheh Basin. With all of these activities, John found it much easier, after a couple of years, to converse in the Iranian language (Farsi), than English. John's and Janet's stay in Iran was cut short by the revolution. They were evacuated in the Spring of 1979 by the Australian Air Force. John says this is one of the benefits of having an Australian wife.

John's education includes Iowa State University, Stanford University and Western State University College of Law, where he obtained his BSCE, MSCE and legalese, respectively. John is a member of the ASCE, SAME, ICOLD and ACEC; Janet is currently the President of the Colorado Section of the ASCE Auxiliary, and a member of the steering committee planning the National ASCE Convention to be held in Denver in May 1985.

John is an avid tennis player and enjoys thoroughbred horse racing. In fact, he is a charter member of the Tehran Racing Club. He also enjoys reading good books, one of his favorite pastimes while flying in airplanes and staying in strange hotel rooms. His favorite authors, among others, are Thomas Hardy, Anthony Powell, John LeCarre and Dick Francis.

UP CLOSE AND PERSONAL

Rosemary George

Rosemary George, a Tudor employee for five years, is a senior designer in the Seattle office. She grew up in Pullman, home of WSU, so becoming a cougar was a natural progression. She graduated from WSU in February 1968, receiving a BA in General Studies (major study area in architecture, minor in math). She then worked for Sverdrup & Parcel in Bellevue for 10 years before coming to Tudor in June of 1978.

Rosemary's official title is senior designer but her favorite title is one she cajoled from Keith Bull. Keith said if she created an office organization chart, she could include herself with the title of Graphic Arts Chief Designer. "I always loved that title and I'm probably one of the few people who really appreciated that org chart." She also loves the special atmosphere in the Seattle office and appreciates the orientation toward tasks, not rules, the general cameraderie and esprit de corps.

After work, Rosemary routinely chauffeurs her 15½ year old daughter and best buddy, September, to dancing and track. Rosemary is looking forward to when September can drive herself around — but now that she has a learner's permit, September has chickened out and decided to perfect her back seat driving first.

Rosemary and September enjoy snow skiing, musicals, theater, movies, and travel. "I never take quiet, relaxing vacations. My everyday life seems so humdrum that on vacation I try to cram as much sightseeing, activities and excitement into one week as possible. We're pretty flexible. One spring, we decided on a Thursday that we would leave on Friday for a mule ride down the Grand Canyon. It was a great trip and not too expensive — we saw every McDonald's and Motel 6 between Washington and Arizona. Last year, we traveled to the east coast: Washington, D.C., Colonial Williamsburg, Atlantic City, Philadelphia, New York and Boston. One of the reasons we went was to prove to September that New York wasn't the big, bad awful place she thought it was. I'm not sure she was convinced." This spring they went to Florida for EPCOT, the space shuttle launch, and an Everglades airboat ride.

Rosemary enjoys her role as a homeowner and mother, although she flatly states she's not too domestic. She claims a Joan Rivers attitude toward housework — "Why dust the furniture, mop the floors and scrub the bathroom, when six months later you have to start all over again? I don't cook, I microwave," she says. Actually, she's a great food sculptor. Her office birthday specialties include chocolate cabbage and "R" rated bikini cakes. "I lost track of how much liqueur I put into the last cake I brought to the office, but the guys drank it anyway." Rosemary enjoys having the office over for pool parties — especially when everyone else, Jim Schroeder for instance, barbeques a mean teriyaki salmon and Darrel Chambers does something to a Texas taco.

Sabin Landaluce

Of Basque heritage, Sabin was born in Munguia, Spain, 34 years ago. He moved to Boise, Idaho, at the age of 8, where he attended local elementary and high schools. He spent 3 years at Boise State studying civil engineering. Sabin married Noni in May of 1971, and they are the parents of three boys aged 5, 7, and 10.

Sabin began working on the City of Boise survey crew part time (if you can call 33 hours a week part time) in 1970, while he attended school full time. He was transferred into drafting two years later, followed by design and inspection work. Tudor discovered Sabin in August of 1976 and put him to work in design and inspection on the West Boise Sewer projects. Since then he has worked on subdivision inspections, the Castleford Water System, and currently on the Kuna Treatment and Disposal System.

When he is not playing softball or coaching YBA basketball, Inspector Landaluce is often backpacking in the mountains, where he has been known to chase fish, elk, deer and porcupines. The spines of the latter are especially delicious when cooked over an open fire.

Sabin's travels have taken him as far as Spain last summer, and to Cordova, Alaska, in April to familiarize himself with a family-interest fish business. Anyone for fresh shrimp or lobster?

THE PING PONG CHAMPIONSHIPS

On April 11, 1983, the San Francisco office again had the pleasure of hosting the fourth annual Round Robin Ping Pong Championships. Mark Nothaft coordinated this year's tournament, which was divided into two groups. After the first games, winners advance into the championship rounds while the losers pair off to compete in consolation games. Thirty-eight signed up to play in the noon and evening tournament events which were scheduled over a six week period. Office morale was given a boost through the duration of the games as players exchanged stories recounting the dramatic moments that culminated in their victories and defeats. Mark Nothaft was crowned "Numero Uno" when his victory was declared in an upset finals match against Wu-Chieh Chen.

The Championship final was played on the evening of May 20, 1983. Mark Nothaft, after four years of grueling practice and three unsuccessful bids for the top seed, faced fearless two-time champion Wu-Chieh Chen. Wu, his nerves unsteadied by the sleepless nights which confirmed his initiation into the fraternity of new fathers at Tudor, was not at the peak of his performance. He did, however, challenge Mark through 45 minutes of rigorous competition. The final score: three games to one.

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continued from previous page

Major upsets occurred throughout the tournament. Number one seeded Joe Lawrence was toppled in a quarter finals match against Tony Rodrigues. Rainer Rungaldier, who was defeated last year by second seeded Paul Potter, acquired his long awaited revenge when the two met once more in this year's tournament.

Other players who showed signs of great potential were Eva Spatenka and Karen Chew. Eva, more known for her game of tennis, beat Dave Willer in two straight games and was later defeated by Paul Potter. After losing her first game to Ocie Williams, Karen made a spectacular comback in the consolation rounds, where she chalked up victories against Terry Herman and Jay Hsiao. The wreath of victory, however, ultimately proved beyond her reach when Karen was beaten in a highly competitive match against David Silveira. Karen accepted her defeat with grace and dignity, though some say she was heard mumbling, "I could have been a contender."

The Consolation finals match was between Steve Van Til and David Silveira, two of the most improved players over the last year. Playing a game of consistency and patience, Steve beat David two games to one. The results are very good, considering Steve had not played in two years and David just started to play this past winter.

The tournament victory celebration consisted of a pizza party held at "Uno" on Lombard street, where the contest moved from sports to food and drink.

Our 1983 "Numero Uno," Mark Nothaft.

Wu-Chieh Chen, 1st runner-up to Champion, is toasted by Don Rose.

SEATTLE STAFF IN SAN FRANCISCO

Harry Jasper, Ron Wright, and Dick Rudolph, members of the Seattle Office, have been working on various projects in the San Francisco Office during the last six months.

Dick has had key roles in the design of the Navy Corrosion Control Hangar, the Santa Cruz Bus Depot, and the plenum structure for the Mendocino Project.

Harry, in addition to working on the Stanford Linear Accelerator Project, has found time to ski at Tahoe, run in the Bay to Breakers race, and play on the Tudor softball team.

Ron has been working exclusively on the Middle Bar/Railroad Flat Projects for East Bay Municipal Utility District. He greatly appreciates San Francisco's efforts to make him feel at home with all the extra rainfall so far this year.

NEW FACES...

Tudor welcomes new employees:

...for san francisco

Karen Burns
Marketing Assistant

Terry Herman
Civil Engineer

Jay Hsiao
Civil Engineer

Louis Krug
Civil Engineer

Sue Sanders
Secretary

Janine Stevens
Word Processing

Welser Taleno
Drafter

...for seattle

Wilson Binger
Civil Engineer

CONGRATULATIONS...

Bob Toothman and Brooke Kirkham were married April 7, 1983, in San Francisco, California.

Candence and Gordon Little of San Francisco on the birth of a daughter, Jesse Kurtin Little, April 6, 1983.

Sandra and Tom O'Neill of Atlanta, proud parents of a baby girl, Ames Rayburn O'Neill, April 26, 1983.

Marilyn and Wu-Chieh Chen of San Francisco on the arrival of their son, Jerome Chen, May 3, 1983.

Candace and Jay Hsiao of San Francisco on the birth of daughter Tami, on May 5, 1983.

Yoshimi and Greg Reichert of San Francisco, proud parents of baby boy Kota Blaise, May 17, 1983.

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THE TUDOR QUARTERLY is published by Tudor Engineering Company for the information and enjoyment of its employees, their families, and friends.

CONTRIBUTING AUTHORS: Roslyn Ball, Jack Biederman, Dick Everett, Gerry Gibney, Joe Lawrence, Mark Nothaft, Tom O'Neill, John Richardson, Don Rose, Rainer Rungaldier, S.T. Su.

EDITING AND PRODUCTION STAFF: Barbara Cooper, Frank Chiappella, Paula Dierkop, Jim Flannery, Alfred Korbmacher, Grant Larsen, and Greg Reichert.

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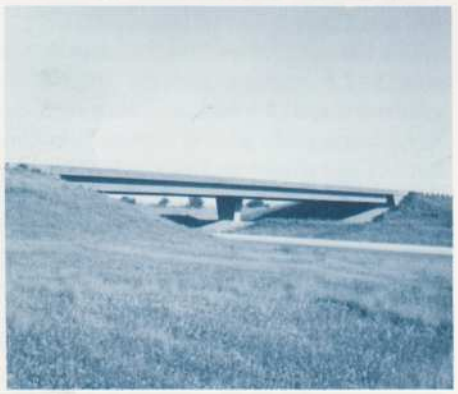
TUDOR QUARTERLY

SUMMER 1983

WANETA WINS PCA AWARD



Waneta Undercrossing

The Portland Cement Association, Rocky Mountain-Northwest Region, has given Tudor Engineering Company its "Award of Excellence" for the Waneta Undercrossing on I-82 in Eastern Washington. This structure is a two-span, cast-in-place, reinforced concrete box girder, 233 feet long and 55 feet wide. The perched abutments and rectangular tapered center pier rest on spread footings. The wingwalls and outside face of the parapet employ an exposed aggregate finish. This crossing, completed in October 1982 at a cost of $467,500, was one of eight structures Tudor designed for a 6.8 mile segment of freeway.

In their evaluation the judges commented that the crossing achieved a very pleasing effect while remaining economical. They were impressed by the use of a single material, the overall proportions, and especially, the design of the center pier. PCA presented the award at the Northwest Bridge Engineers Conference held in Olympia, October 5.

Don Hoel was project manager for the design of I-82 and Harry Jasper was Project Engineer designing the Waneta Undercrossing.

LOS ANGELES—SCRTD

Tudor/Pereira (T/P), a Joint Venture of Tudor Engineering Company and William L. Pereira Associates (a renowned architectural firm headquartered in Los Angeles), was selected in August by the Southern California Rapid Transit District (SCRTD) to design approximately 3 miles of twin bore tunnels, the Wilshire/Western Station and the Wilshire/Normandie Station. Two minority engineering firms, Benito Sinclair and Associates (Civil-Structural Engineers) and Pacific International Engineers (Mechanical-Electrical Engineers) will assist T/P during the design process.

Notice to Proceed with the project was received from the Metro Rail Transit Consultants (MRTC) who will monitor the T/P contract. Based on the NTP, Tudor/Pereira established office space on the 2nd floor of the Pereira Building on Wilshire Boulevard near Beverly Hills.

The Joint Venture management organization consists of Louis W. Riggs and William L. Pereira as the Board of Consultants, with Paul Potter as the alternate to Louis. Keith Bull is the designated Project Manager in Los Angeles; assisting Keith will be Neil Birnbrauer (Sr. Vice President, Pereira) as Deputy Project Manager, responsible for Architectural Design; and Bob Ganse, Deputy Project Manager for all Engineering. Bob will remain in the San Francisco office but will travel often to Los Angeles. Wil Pacheco will assist Keith and the Joint Venture with interface coordination of all systemwide and subsystem design elements on a part-time basis. Jim Schroeder recently transferred from the Seattle Office to the T/P office to assist Keith in Administrative and Project Control activities. Melodie Gillette, a new Tudor employee, is assigned to the T/P office.

Currently the SCRTD system will be designed for approximately 18 miles of subway line and 17 stations. The system will begin at the existing Union Station in downtown Los Angeles and terminate in North Hollywood.

I-90 MERCER ISLAND SEGMENT

The Washington State Department of Transportation has selected Tudor Engineering Company to conduct a value engineering analysis and to prepare the final design for the Central Business District segment of I-90 on Mercer Island, east of Seattle. The value engineering study will be prepared as a coordinated effort involving Tudor and firms responsible for other segments of the highway. The final design covers a complex interchange which is a quarter mile long and 300 feet wide. Principal features included: Three access ramps in subway tunnels; a depressed roadway eight lanes wide; extensive retaining walls up to 30 feet high; two undercrossings, 150 feet wide, one of which rests on a subway tunnel; and aerial ramps and surface roadways.

In order to match the State's construction sequence for the entire I-90 project, final design for this segment must be completed in November of 1984. This is a very tight schedule, but Tudor was able to demonstrate its capability to meet this requirement. Subject to the value engineering study, construction cost is estimated to be approximately $25 million.

Don Hoel will be the Project Manager and Bob Janopaul will be Principal-in-Charge. Tudor's primary consultants for this project include INCA Engineers, Inc. for structural and civil engineering; CTS Consulting Engineers for operational systems (metering); and Converse Consultants for soils engineering.

BOWMAN PROJECT

Final design is underway for the Nevada Irrigation District's Bowman Project, a 3 megawatt plant to be constructed at the dam and outlet tunnel at Bowman Lake. The plant will operate under a maximum head of about 160 feet with about 300 cubic feet per second maximum flow. Tudor has provided the planning services and will provide the design and construction services.

Bowman Lake is located in the Sierra about 50 miles northeast of Auburn, California, at about El. 6000, a site snowbound through the winter. The existing rockfill dam and outlet tunnel were built in 1928 and are an integral part of the District's Yuba-Bear Project, a joint development with PGandE, which brings water from the Middle Fork of the Yuba River to a series of power plants on the South Fork Yuba and Bear Rivers.

The project includes a new lining for the tunnel and modifications to the control works for the downstream pond, which will become the power plant's afterbay. This summer a survey and inspection of the tunnel interior and the intake gate were performed with a full lake since the heavy snowpack last winter required the District to maintain a full reservoir most of the summer.

Bowman power plant is scheduled for operation at the end of 1985. Bids for procurement of the turbine, generator, and associated equipment were received on October 12, 1983. A low bid of about $800,000 was submitted by Axel Johnson for the power plant equipment. The estimated total construction cost is $3.5 million. Paul Kneitz is Project Engineer for the work and Bob Ganse is Project Manager.

Bob Ganse, Hugh Brown and Paul Kneitz — Tudor's underwater inspection team at Bowman.

PERFORMING ARTS GARAGE

The long-delayed $4.5 million Performing Arts Garage for the City of San Francisco Parking Authority was dedicated on April 15 and opened for service on August 1, in time for the 1983 Opera and Symphony seasons. Tudor started work on the Garage in 1975 and was first delayed by a site move, followed by various civic groups protesting its construction. A final design delay resulted from investigation of the feasibility of including housing on top of the garage. Finally, a contract for the garage (without housing), was awarded in 1981 with more delays caused by bad weather and a slow contractor. The initial contractor was terminated by the Parking Authority in July and the final cleanup work was performed by others. Major work on the project was performed by Jim Meyer, Don Croft, Grant Larsen and Charlie Tsang.

TALLASSEE HYDRO

The Oglethorpe Power Corporation of Atlanta, Georgia, has authorized Tudor to proceed with definitive project feasibility studies for their proposed 2 MW Tallassee Hydroelectric Project on the Oconee River near Athens, Georgia. Reconstruction or replacement of the existing breached low dam will be one of the challenging aspects of this project. If the updated feasibility studies continue to support project implementation, Tudor will be authorized to proceed with final design and to assist Oglethorpe's field staff during construction.

The schedule calls for design work to be completed by summer 1984, and the power plant to be operational by early 1986. Total Project Cost has been estimated at approximately $6.2 million with Tudor's engineering services targeted at about $700,000. The Project Manager is Hugh Brown and the Project Engineers are Andy Yeung and Hans Albring. Management support is being provided by Oral Conyers, Manager of Field Engineering Services, and Walt Anton, Principal in Charge.

SLAC DESIGN AND BIDS

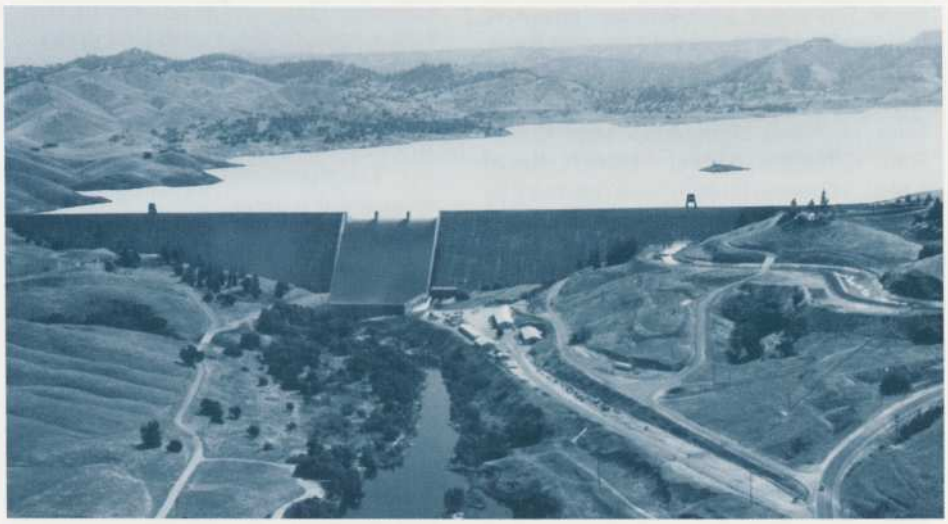
For the past two years, Tudor's San Francisco office has provided design services to the Stanford Linear Accelerator Center (SLAC) for facilities to house high-energy nuclear physics experiments. The project includes two 4,500 foot long tunnels with appurtenant chambers, adits and shafts, a cut-and-cover box, and a junction between existing facilities and new tunnels.

The bid opening was held on September 15, 1983, at Stanford. About 80 people attended, including 16 bidders and Tudor representatives, Mike Harrington, Heinz Mueller, and Don Rose. The low bidder was Gates & Fox of Loomis, California, with a bid of $7.95 million. The average bid was $12.8 million and the engineer's estimate was $13.4 million. Fierce competition among underground construction contractors was shown by Gates & Fox, Granite Construction, Obayashi/Olsen (joint venture), Cementation, Healy/Superior Gunite (joint venture), Morrison-Knudsen, and Kiewit Construction, all bidding below the engineer's estimate. The contract was awarded to Gates & Fox on October 3, 1983, and on October 10, a notice to proceed was given to the Contractor. Tudor is providing engineering construction services for the Linear Collider Project under the direction of Clyde Earnest, Resident Engineer.

Key personnel involved in the design and specifications included Jon Kaneshiro, Joe Lawrence, Tom Scotese, Alfred Korbmacher, Don Moore, and Grant Larsen, under the direction of Heinz Mueller and Don Rose. An outstanding effort by these individuals was required to meet tight project deadlines for the tunnel. A design staff is currently working on the Experimental Hall, which will be the actual site of the positron-electron collisions.

Stanford Linear Accelerator Center

FRIANT BIDS, BONDS, AND CONSTRUCTION



Friant Dam

The general construction bids for the Friant Power Project were opened August 30 in Tudor's San Francisco office. This marked the end of a 3½ month delay in receiving bids due to the lack of a power purchaser. The low bid of $10,890,000 was received from R.G. Fisher Constructors of Fresno, California.

The Friant Power Project will be built for the Friant Power Authority on the U.S. Bureau of Reclamation's Friant Dam in Madera and Fresno Counties, California. The Friant Dam, the Friant-Kern Canal and the Madera Canal were built by the U.S. Bureau of Reclamation in the 1940s as part of the Central Valley Project to supply irrigation water for agricultural use in the San Joaquin Valley. Three separate powerhouses make up the total 25 MW capacity of the project. The largest, Friant-Kern No. 1, at the canal outlet, will house a 15,000 kW horizontal Kaplan turbine and synchronous generator. The switchyard for all three powerhouses, as well as the maintenance building, will also be located at the Friant-Kern No. 1 site. Madera Canal powerhouse will include an 8,000 kW horizontal Kaplan turbine and synchronous generator while the smallest, River Outlet powerhouse, will have a 2,000 kW horizontal Francis turbine with an induction generator. The turbine and generator equipment for all three power plants are being manufactured by Hitachi America, Ltd., under a separate contract.

The Friant Power Authority negotiated the sale of construction revenue bonds on October 17, 1982 and construction started immediately thereafter. The River Outlet power plant is expected to go online in January 1985, with the Friant-Kern No. 1 and Madera power plants to follow in July 1985.

Much credit for the successful implementation of the project is due the Hydro Design Group, and in particular, Kurt Scholz, Project Engineer, who developed for the two larger power plants an original design layout called "sidewinder." Others who contributed include Don Guild, Gary Durham, Geoff McCavitt, Bill Untiedt, Greg Reichert, Birgit Chase and Paula Dierkop. The prime mover of the Friant Power Project from the initial inception and design through the power purchase contract and successful bond sale has been Tudor's Principal in Charge, Dave Willer.

KAHLOTUS, WASHINGTON

The Boise office has completed design, and construction is approximately 60 percent complete on water system improvements in Kahlotus, Washington. Kahlotus is a community of some 360 people located on the Snake River about 35 miles north of its confluence with the Columbia River. The project consists of a 75,000 gallon reservoir, a new well, a pumphouse and miscellaneous appurtenances.

Construction inspection has provided Tudor's resident inspector, Jim Spofford, with a pleasant respite from the daily routine of office life.

SPIRIT LAKE

Spirit Lake is a community of approximately 840 residents, tucked into the wooded mountains of northern Idaho, along the shores of Spirit Lake. (A legend has it that two Indian lovers, she from a different tribe than he, were not allowed to marry by elders of the two tribes. Rather than remain forever apart, they took their lives by plunging together into the lake from a precipice high above. Their spirits have inhabited the waters ever since and thus, became the ethereal namesakes for the lake.)

In order to protect the lake's pristine waters from continuing discharges of raw sewage, the City undertook a project in 1977 to upgrade the City sewer and construct a sewage treatment and effluent disposal plant. The project was abandoned in 1978 after all the funds were expended without completing the construction.

Tudor was retained in 1980 to perform a Plan of Study, a Facility Plan, prepare design plans and specifications and provide services for construction management, plant startup and operator training. Construction was begun in September 1982; winter shutdown spanned from November 1982 through May 1983. Construction of the plant was completed in August 1983.

The plant consists of an aerated/facultative lagoon system, influent flow monitoring, effluent pumping and flow monitoring, chlorination and center pivot effluent land application. The lagoons are sealed with an aplastic membrane liner system consisting of covered PVC (polyvinyl chloride) and exposed reinforced CPE (chlorinated polyethylene) liners for the lagoon bottoms and interior sideslopes, respectively. All systems were deemed operational in August and startup and operator training was subsequently completed.

LAKE MENDOCINO POWER

On August 2, 1983, the construction bids for the Lake Mendocino Power Project were received and opened. The Lake Mendocino Project consists of constructing a 3.5 MW hydroelectric power plant with associated structures at the existing Corps of Engineers Coyote Dam in Northern California. Thirteen bids were received, ranging from a low of $7,334,327 to a high of $10,828,000. Eight bids were within 5 percent of the Engineer's Estimate of $9,000,000.

News in Brief

DENVER

Tudor has received the go-ahead for the second FERC license application for the Incorporated County of Los Alamos, New Mexico — the Abiquiu Dam Power Project. The County is pushing hard for a fast track schedule for Abiquiu to get the project online in 1987, at about the same time as the El Vado Dam Power Project. Members of the County Utility Department, County Utility Board and County Council were guests of Tudor recently on a tour of several Tudor projects in California. Accompanied by Nelson Jacobs and Jack Biederman, the group was given a tour of the Jones Fork Project construction site by Fred Estep, the Rollins Project by Dave Willer, and the Monticello Project by Brian McDermott. The highlight of the tour was a barbeque by Fred and Janie Estep at their home near Auburn. The group thoroughly enjoyed the tour and were appreciative of the opportunity to see hydro projects under construction and in operation.

The Denver office has been awarded a contract by the Western Area Power Administration of Golden, Colorado, for production of an informational booklet — Small-Scale Hydroelectric Power, A Brief Assessment. The job includes a brief inventory and screening of identified potential small-scale hydroelectric sites in the 15-state western area of operations.

Farther east, Tudor's efforts on two hydropower projects on the Mississippi River and three hydropower projects on the Illinois Waterway have resulted in FERC license applications which were submitted in late summer.

An open-ended contract with the Louisville Corps of Engineers continues to generate work for the Denver office. Three reconnaissance level feasibility studies have been completed at major existing reservoirs in Kentucky and Ohio. Three additional reconnaissance studies are currently being performed at lock and dam facilities on the Ohio and Kentucky Rivers in Kentucky.

Tudor's Denver office is also studying a new 50 megawatt hydroelectric project in North Carolina for the French Broad Electric Membership Cooperative. The Spring Creek Project will involve six miles of tunnels and a 150-foot high dam. Law Engineering is studying the geotechnical aspects of the project while J.E. Sirrine Co. is conducting an environmental fatal flaw analysis.

WATER POWER '83

Tudor was well represented at Water Power '83 Conference in Knoxville, Tennessee in September. John Williams presented two papers, "Hydroelectric Resource Potential at New Damsites in 17 Western States", and "Low-head Turbine Studies for Lock and Dam 14 Power Plant—Mississippi River." Tom O'Neill's paper, "French Broad E.M.C.'s Capitola Project," was presented by Hugh Brown. The titles of the papers presented by Gordon Little were, "Mini-Hydro at Isolated Sites in Alaska and Developing Countries," and "Regional Assessment of Small Scale Hydropower—A Methodology for Developing Countries." Other co-authors of papers included Don Guild, John Richardson, and Dave Willer. Three of Tudor's hydro projects were discussed by others: Jim Conwell of the Mid-Pacific Division USBR provided a paper on the "Development of Friant Project"; Charles Sullivan of EPRI talked about the revised edition of the small hydro manual; and Dr. Alexander Rudovsky of Hydro Research Science presented a paper on the energy dissipator at Lake Mendocino Power Plant.

Tudor's travelling display on hydropower was located in a prominent place in the lobby of the hotel and periodically manned. Over 250 hydroelectric brochures were provided to participants at their request. From a new business viewpoint alone, Water Power '83 surpassed previous successful conferences.

LAHONTAN PROJECT

Tudor has been selected by the Truckee Carson Irrigation District to provide engineering services for a power project at Lahontan Dam and Reservoir, located at Fallon, Nevada, about 60 miles east of Reno. The project consists of the addition of a 3.0 MW turbine generator to the existing outlet works of the dam.

Lahontan Dam is located on the Carson River and also stores water diverted from the Truckee River. Completed in 1915, the dam is one of the earliest projects undertaken by the USBR. An existing 2.0 MW powerhouse at the site has been producing power continually since 1911. This is even earlier than the dam completion since the power plant uses the Truckee River diversion flows and that portion of the project was completed before the dam. As a point of some interest, the records indicate that Darby Dam, the diversion structure on the Truckee River, was the first construction specification ever issued by the USBR.

Tudor's initial activity consists of the preparation of a FERC license application, a definitive project report to optimize project features, and the initial power sales activities. Some of the later work will be performed in association with Western State Construction Company which is currently working on spillway rehabilitation at the site. Part of the design work will begin early to enable Western to replace the existing outlet works which will be used for power production.

SPACE AGE SURVEYING

A new method of surveying was employed for the basic control network and photogrammetric control for the Upper Mokelumne River Hydroelectric Project. Utilizing signals from five orbiting satellites, mobile antennae were placed over the control points and the signals were recorded. The data was compared to signals recorded at the same time by an antenna placed over a point of known position, and the difference in location was determined. The horizontal accuracy of this work is better than one part in 50,000 for observances of about two hours in length, and better than one part in 10,000 for observances of about half an hour in length. Vertical accuracy is better than one part in 5,000 for all points. One drawback to the increased use of this method is the bulk of the recording equipment. For this reason at the present time all points must be located within 100 feet of vehicular access.

Gordon Marsh is Project Manager and Don Scapuzzi coordinated the surveying work. The use of the satellite system resulted in an approximate 25 percent savings in the surveying budget.

Tripod mounted antenna.

Detail view of the antenna.

TUDOR SUMMER PICNICS

DENVER, STERNE PARK

The Denver office summer picnic was held at Sterne Park in Littleton on August 7th. The group enjoyed a beautiful Colorado Sunday afternoon just relaxing. John Williams was the chef in charge of burning hamburgers and hotdogs and everyone joined in the fun and games.

The Denver staff in deep discussion.

Janet Williams enjoyed the meal.

Frank Techar and Pam Stimpson — the mixed doubles champs.

Lucy Stevens is glad to have Jeff back from his San Francisco assignment.

Pam Stimpson, "No diet Pepsi for me."

Ed Barbour and John Williams, get out the liniment.

Lucy Stevens and Janet Williams, just relaxing.

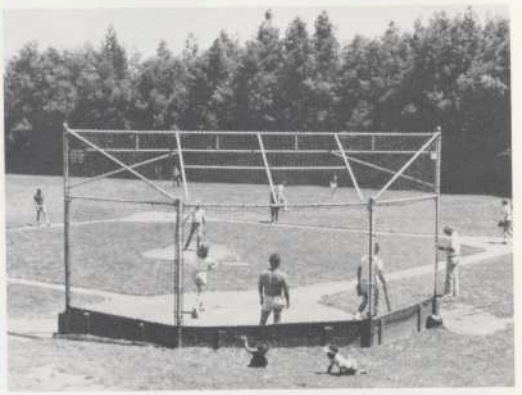
Ed Barbour is looking for challengers.

The buffet is readied as Bob Ganse, John Wurschmidt, Bob Beal and Fred and Janie Estep indulge in a good field story.

Don Scapuzzi, Beth Janopaul, Dave Church and Patricia Scapuzzi caught by the roving camera.

The view from the stands shows the mini series in progress, managed by Don Scapuzzi.

Gary Durham enjoys a beer, as Oral and Linda Conyers greet Brian and Debbie McDermott.



After lunch, conversation takes a much slower pace.

Christopher Sykes in the first-aid station being attended by Patricia Scapuzzi.

David Silveira jumps to connect with volleyball as others anticipate their moves.

In the terraced grass stands, fans watch the baseball game in progress.

SAN FRANCISCO, ROBERTS PARK

"Great American Picnic" was the theme for the Tudor San Francisco office summer event. Helium-filled colored balloons attached to small baskets of flowers denoted the area in the grove of redwood trees in Roberts Park high in the Oakland Hills.

The menu for the picnic was a variety of home-made salads from American potato and Middle Eastern tabouli to Japanese seaweed-and-cucumber to complement marinated barbecued beef ribs, corn on the cob and bean casserole. After lunch the desserts became the center of interest, with a carrot cake decorated in the theme of the picnic.

Special guests were Harriette and Stan Froid and Agnes and Les Helgesson, retired members of the Tudor staff.

Some of the sports planned for the afternoon were baseball and volleyball, and for the spectators in the grass terrace area, water-filled balloon fights.

The day's events were planned and executed by Bambi and Mehrdad Goosheh, Sabine Jentzsch, David Silveira, and Steve Van Til.

TUDOR SUMMER PICNICS

BOISE, LUCKY PEAK

Tudor Boise office picnic at Lucky Peak Reservoir (Spring Shores) was attended by almost everyone. Boating and water skiing were of major importance with eating steaks and home-made goodies running a close second. A good time was had by all.

SEATTLE, FLAMING GEYSER PARK

Geyser flames!! Skies drizzle!! When reservations were made back in March, Flaming Geyser State Park seemed an ideal location for a July picnic. In addition to covered tables and a volleyball court, it offered leisurely floating on inner tubes down the Green River. A perfect way to cool off! Unfortunately, the macrosphere did the cooling off, and July 14th (the middle of the wettest July on record) was chilly and overcast in contrast to the balmy March day when the site was selected.

Nonetheless, Tudor spirit, fortified by various potions, triumphed over all obstacles. The usual spirited volleyball game warmed bodies and whetted appetites and from time to time enough sun appeared to cast a shadow. The picnic menu, featuring seven prime roasts, was a worthy successor to earlier repasts. Although the river was too cold and swollen to permit lazy drifting, Jack Bjork and companions put on a thrilling display of rubber rafting techniques.

Enjoying the protection of the kiosk from wet skies are Seattle staff.

Waiting for the volleyball setup are David Alden, DeWitt Jensen, Gerry Gibney and Carol Jensen.

Terese Chambers, Carol Jensen deciding which dessert has the least calories as Wilson Binger digs in.

Jane Curtis and Jack Bjork rubber rafting on the Green River.

Ted Purcell demonstrates double on the lake.

Jim Spofford and Mike Moore waiting for their turn on the skis.

Paul Kunz hoping for a ringer.

Vern and Mildred Richards look after the younger set.

SF SOFTBALL: ALWAYS A BRIDESMAID. . .

For 1983, Tudor's softball team scored 12 victories against only 2 defeats in the regular season and finished in second place in their league. This year's team was enhanced by the super performance of three "rookies" brought up to the big club: Cliff Bjorgum, Fernando Iniguez and Harry Jasper, who collectively hit over half of our home runs and improved the team batting average 30 points while playing only a little over half the season.

Steve Gold and Harry Jasper: "Let's see now, how does it go — Who's on first, I Don't Know's on second . . . "

Fernando Iniguez: "I thought they'd have me doing exciting stuff this summer like hydraulics and. . . "

NEW FACES . . .

Tudor welcomes new employees:

. . . for san francisco

Al Beane
Chief Accountant

Francesca Liecty
Receptionist

Jim Gormly
Mechanical Engineer

Peter McCoun
Word Processing

Linda Rivera
Accounting

Tom Scotese
Geotechnical Engineer

TENNIS TOURNAMENT

On the 28th of August, Tudor held its first annual tennis tournament in conjuction with the Holiday Inn Corporate Invitational.

Holiday Inn is the official sponsor and the Cystic Fibrosis Foundation is the official charity of the Holiday Inn corporate tennis tournament to benefit the foundation's outstanding programs of research, education and community service. One half of each corporation's entry fee will go to the Cystic Fibrosis San Francisco chapter.

The tournament, held at the Lafayette Tennis Club, drew 14 of the top-notch players presently competing at Tudor, with Lou Krug and Mark Nothaft ending as the top doubles team to represent the company at the official tournament to be held in December at the S.F. Tennis Club.

Walt Anton and Lou Krug held the prime game of the day to the delight of the crowd and showed great diversity of strokes in their games from the baseline and from the net.

Jon Kaneshiro, a quiet person by nature, showed another personality with one of the most aggressive games.

Cliff Bjorgum, who claims he only played tennis once before, is one of the most improved players and shows potential as a future player.

Andy Yeung and Fernando Iniguez, the expected winners, met some rough water. Andy claims the heat got to him, and Fernando was most concerned trying to impress Lelia with his 90 mph serves.

Special thanks to Eva Spatenka for her membership sponsoring the use of the courts, and for the excellent hors d'oeuvres after the game. Cheese and crackers and good wine was surely the way to cap the day.

CONGRATULATIONS

Lisa Harris and Paul Sullivan were married at Valley Christian Center on September 10,1983; reception at the Pleasanton Hotel and honeymoon in Hawai.

James Spofford of the Boise office married Cindi Rainey on August 9.

Jon Kaneshiro, Ulrich Lemcke, Brian McDermott, Dorene Thornton, Bob Toothman and Steve Van Til received their Civil Engineering registration from the State of California.

Dale Bowers is taking her mountain climbing seriously as she recently completed her first 14'er, climbing 14,036-foot Mt. Sherman.

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THE TUDOR QUARTERLY is published by Tudor Engineering Company for the information and enjoyment of its employees, their families, and friends.

CONTRIBUTING AUTHORS: Walter Anton, Gerry Gibney, Barbara Iverson, Nelson Jacobs, Candy King, Grant Larsen, Gordon Little, Wil Pacheco, Mark Nothaft, Ed Peters, Ted Purcell, Don Scapuzzi, George Schneider, Tom Scotese, Sally Simone, Dave Willer.

EDITING AND PRODUCTION STAFF: Barbara Cooper, Frank Chiappella, Paula Dierkop, Jim Flannery, Alfred Korbmacher, Grant Larsen, Greg Reichert and Charlotte Wheeler.

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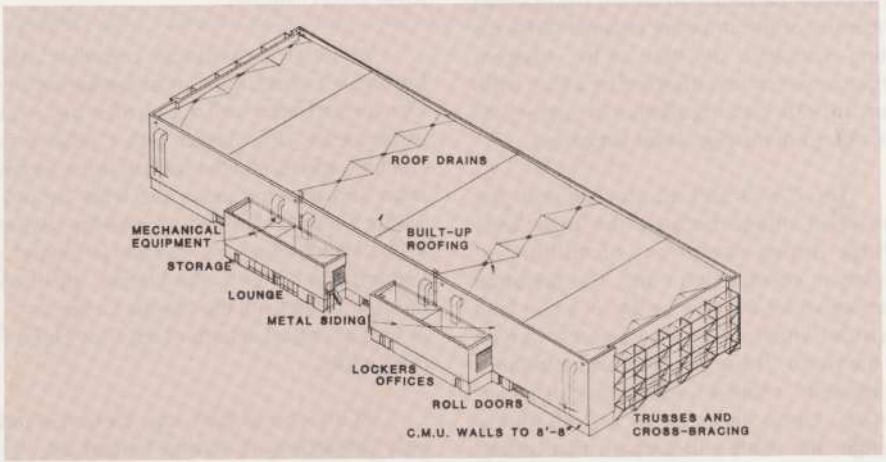
TUDOR QUARTERLY

FALL 1983

NAVY HANGAR FOR ALAMEDA



Corrosion Control Hangar

The Corrosion Control Facility at the Naval Air Rework Facility, Alameda Naval Air Station has been under design since June 1982. The primary structure is a 55,000 square foot steel framed hangar with two bays for aircraft stripping, one bay for bead blasting, and facilities for personnel and administration. This facility has various detached support structures including pollution control buildings for reducing emissions from the stripping bays; filter houses to remove emissions from the blasting bay; a firepump house for internal fire protection system; a gas-fired steam boiler plant for heating air and water and for carbon bed regeneration; an electrical substation; and an industrial waste treatment plant to treat liquid waste effluent. Because of the facility's somewhat remote location, extension of utility services are required and both sanitary sewer and industrial wastelines have pump stations.

An interesting feature of the project is the system designed to control air flow through the bays to enhance the working environment and to improve process efficiencies from present conditions at existing station facilities. Twenty air changes per hour for all bays will force warmed clean air from registers at the roof and walls and will exhaust polluted air through trenches and ducts beneath the concrete slab. These underground ducts will convey the polluted air to the pollution control facilities. Another element of the work will be the use of two mobile aerial work platforms per bay for blasting and stripping the upper portions of aircraft.

The project schedule has consisted of a 35% design submittal in December 1982, followed by a 35 percent redesign, submitted in June 1983, due to a government-mandated decrease to $16,675,000 in available construction funds. The 100 percent design plans, specifications, and estimates were submitted in December 1983 and the final submittal is scheduled for January 1984. Tudor Engineering is the prime consultant responsible for project management and civil and structural design. Keller & Gannon is the architectural, mechanical and electrical subconsultant. Harding Lawson Associates provided the geotechnical studies, and Construction Planning Services the cost estimating. The Principal-In-Charge is Mike Harrington with Lou Salaber acting as Project Manager. Structural design was carried out by Heinz Mueller, Dick Rudolph, Don Croft, Mike Goldberg, Steve Gold, Walter Zien, Harry Jasper, and Charlie Tsang; civil engineering by Mark Nothaft. Jim Richardson and Darryl Tyson have provided drafting services.

WEST SEATTLE BRIDGE OPENS

On November 10, 1983, the City of Seattle held an official ceremony to celebrate the opening of the new, high-level West Seattle Freeway Bridge. A few days later two eastbound lanes began carrying general traffic. Full service, featuring six traffic lanes and several interchanges, will begin late in 1984. The project is on schedule, tens of millions of dollars under budget, and has received widespread acclaim. This is another milestone in Tudor Engineering Company's ongoing contribution to improving one of Seattle's most congested corridors.

Tudor and three joint-venture partners (Andersen, Bjornstad, Kane & Jacobs; Kramer, Chin & Mayo; Parsons Brinckerhoff) began conceptual planning for this project in 1978 and completed the final design early in 1981. Tudor was the lead civil firm and had specific responsibility for designing 30 traffic signal installations, all surface roadways, the 1,600 foot long Harbor Island structure, and all detours, including the connections that permitted the opening.

Participating in the ribbon-cutting ceremony (Left to Right) are civic leaders, Seattle councilwoman, Jeanette Williams; Seattle mayor, Charles Royer; former congressman and senator, Warren G. Magnuson; and King County councilman, Robert Grieve.

GEORGIA TRIDENT

Tudor, as a subcontractor to Dewberry & Davis of Fairfax, Virginia, has been selected to do structural design of numerous Strategic Weapons High Explosive Magazines for the Trident Missile Base in Kings Bay, Georgia. The project will be incrementally funded over the next five years and ultimately will entail the design of approximately 75 missile motor magazines and several small ordnance magazines. Total construction cost is over $40,000,000. A notice to proceed with the first increment of design was received in late November and consists of 15 missile motor magazines and 5 small ordnance magazines.

The overall Trident program is developing and deploying a greatly improved missile-carrying submarine with new long-range missiles. This program will replace the existing Polaris and Poseidon fleet. There are two bases being constructed to support this new fleet, one on the east coast and one on the west coast. The initial base is on the west coast at Bangor, Washington, and is complete and in operation. Construction is in the early stages at the Kings Bay site, representing a $1.4 billion Military Construction program over a 9-year period and is the Navy's largest peacetime construction effort.

The magazines to be designed by Tudor are earth-covered, reinforced concrete storage buildings of various shapes which must be capable of protecting contents from detonation should an adjacent magazine explode.

Team Participants are Dewberry & Davis, civil, archectural, mechanical and electrical; Tudor, structural; Keller & Gannon, mechanical and electrical; Law Engineering Testing Company, soils; Boyle Engineering, surveys; and D.A.M.S. Inc., cost estimating.

ASCE CONVENTION

Janet and John Williams attended the ASCE National Convention in Houston, Texas, on October 17-19, 1983. Janet is on the steering committee for the National Convention to be held in Denver in the Spring of 1985, as Chairperson of the spouse program. Therefore, she was interested in how the spouse program was conducted in Houston. Janet is currently in her second term as President of the Colorado Section—ASCE Auxiliary. John attended the Engineering Management Divisions' programs in which the featured topic was "Improving Productivity".

WSB-2 MOVES INTO TS&L

The City of Seattle has given notice to proceed with type, size and location studies to the West Seattle Bridge-2 Design Team a Tudor joint venture with Andersen, Bjornstad, Kane & Jacobs and Parsons Brinckerhoff. Early in 1982, the City selected the Design Team to conduct a feasibility study for a low-level, movable bridge connecting the Harbor Island industrial district with West Seattle. This bridge will replace the existing two lane bascule bridge which has insufficient clearance to permit the planned widening of the shipping channel. (The existing bascule is the twin of the adjacent structure which was disabled by a ship collision in 1978, creating additional urgency for the design of the high-level structure.)

The City is able to proceed with the low-level bridge because the high level bridge design saved tens of millions of dollars in construction costs. The preferred alternative for the new bridge is a two lane bascule, which will be the longest of its type in the world. The project will also evaluate a "high tech" cable stayed swing bridge alternative. Upon approval of a preliminary design, the team will prepare final plans, specifications and estimates. Mike Harrington is Principal-in-Charge; Bela Vadasz is Tudor's Project Manager and is directing the location and alignment studies. Einer Handeland is Project Civil Engineer and Darrel Chambers is conducting traffic and related studies.

DUCK VALLEY FISH REARING PONDS

Mountain View and Sheep Creek Reservoirs, both on the Duck Valley Indian Reservation in Idaho, have been hot fishing spots for many years. The Shoshone-Paiute Tribes have decided to improve this attraction to fishermen by raising trout fingerlings in separate ponds for eventual release to the reservoirs.

Small ponds at the inlet section of each reservoir will be modified for rearing the young fish. Modifications will include dike rehabilitation and construction of combination screen, release, and overflow structures. Special screens will retain fish but allow water passage. The Tribes plan to rear and release two fish crops to each reservoir a year.

The Tribes have hired Tudor to perform design work and construction management for this project.

DENVER STAFF IN SAN FRANCISCO

Last summer, the Denver office provided much needed manpower support to the San Francisco office during a busy two or three months. John Williams, Denver Office Manager, dispatched Sal Todaro, Joe Bergquist, Cliff Bjorgum and Jeff Stevens to the San Francisco office to work on two projects with critical time schedules. Sal and Jeff worked on the final design for the Lake Siskiyou Power Project, while Joe and Cliff were assigned to the EBMUD Mokelumne River Project studies.

Although it was a tough commute, (Sal, Joe and Jeff came home most weekends) the Denver staff fared well during their Bay Area assignments. Cliff stayed with a relative in Danville and joined the softball team, tennis team and partying team, the latter by providing a place to hold the end-of-the-season softball celebration. Sal, Joe and Jeff found a comfortable motel in the Marina and soon became veterans of the Marina Green track, as well as critical experts of the Cow Hollow restaurants.

At the end of their stay, there was not only satisfaction in having helped the San Francisco staff bring projects to successful completion, but also a greater satisfaction arriving at Stapleton Airport and spending the rest of the summer at home.

TECHNICAL SUPPORT OF FEMA

The Federal Emergency Management Agency (FEMA) has extended the contract with the Dewberry & Davis/Tudor Joint Venture to provide technical support during emergencies. The Spring 1983 issue of Tudor Quarterly discussed one assignment to advise FEMA regarding various aspects of the Thistle Landslide in Utah. This work is continuing as are several other interesting assignments. These include evaluation of the need for emergency pumping to empty Tulare Lake, California; appraisal of the collapse of a major storm sewer in Salt Lake City, Utah; evaluation of various repairs made to landslides in Santa Cruz County, California; inspection of a 210 foot span bridge in Clifton, Arizona; definition of damage to a sewage treatment plant in Florence, Arizona; and evaluation of structures damaged by the earthquake in Coalinga, California. Tudor personnel involved have been Dave Church, Rick Orton, Jack Biederman, Don Rose, Ted Purcell, and Don Croft. This contract has offered a variety of challenges and interesting work.

MIAMI DPM UPDATE

Early in 1981 we reported on Tudor's selection to be a member of the design team for the Miami Downtown People Mover project. The design team is led by the architectural firm of Spillis, Candela and Partners, who are the designers of the ten stations of the system; the 4-mile-long guideway structures design is the responsibility of "PB/T-Miami," a joint venture between Tudor and Parsons Brinckerhoff; another branch of PB/T-Miami is designing the systemwide facilities such as power supply and communications. The overall project contractor is Westinghouse Electric Corporation.

Currently the design work is near completion and many elements are under construction. A contract for construction of the guideway — Tudor's primary concern — was awarded in June 1983. Work is progressing with excavations, utility relocations and pile installation.

Last-minute changes called for by the client, requests from the contractor and shop drawing checking will keep the Tudor design group under Mike Goldberg's leadership busy for several months. Primarily involved in this work are Wu-Chieh Chen, Karen Chew, Eva Spatenka and Don Yamagishi. Rainer Rungaldier is Project Manager and Paul Potter is Principal-in-Charge.

News in Brief

DENVER

Tudor joined with Espey, Huston and Associates of Austin, Texas, in proposing to provide engineering services to the Sabine River Authority of Texas. The proposals were for a Master Plan Update and a Low-Head Hydropower Study of the entire Sabine River basin in Texas. The Tudor Denver office was notified about November first that the combined firms were selected for both studies. Work is expected to start on both contracts soon after the first of the year. Espey, Huston will have the major role in the Master Plan Update, while Tudor will have the major role in the Low-Head Hydropower Study. In addition, Tudor is involved with Espey, Huston in negotiating a contract for final design of a small hydro plant for the Trinity River Authority of Texas. The plant, about 300 kW capacity, will be located at the outfall from the Central Regional Wastewater Treatment Plant between Dallas and Fort Worth. Tudor will begin the first phase of the work, a feasibility evaluation, about the first of the year. Nelson Jacobs will be the Project Manager for these activities in Texas.

On October 27, 1983 the Tudor Denver Office was notified by Hellsgate Associates that Tudor was selected for the feasibility level design of a dam and power project on the Colorado River near Glenwood Springs, Colorado. The project, to be known as the Hellsgate Hydroelectric Project, will consist of a low dam, some 15 to 20 feet high, and a power plant with a capacity of about 5 MW. Enartech, Inc. of Glenwood Springs will manage the project for Hellsgate Associates and will be responsible for the non-engineering aspects of the project. Project Manager, Nelson Jacobs, along with Sal Todaro, Jeff Stevens and Dave Church made an initial trip to the site just before Thanksgiving Day. Dave, from the San Francisco office, will assist the Denver office in the hydrologic analyses.

INTERURBAN AVENUE BRIDGE

The King County, Washington, Design Commission has selected Tudor Engineering Company to design a replacement for the Interurban Avenue Bridge across the Duwamish River, south of Seattle. The existing bridge is a 290 foot long steel through truss, which is too narrow (two 11 foot lanes) and has become a maintenance burden. The new bridge will be 58 feet wide and will follow the existing alignment. Tudor will conduct a type, size and location study to determine the most appropriate design. In addition to structural design the project presents some interesting issues for detour sequencing and for relocating an existing intersection. Robert Janopaul will be Principal-in-Charge, Donald Hoel will be Project Manager, Harry Jasper will be Project Structural Engineer and Einer Handeland will be Project Civil Engineer.

ACWA CONFERENCE

The Fall Conference of the Association of California Water Agencies was held at the Disneyland Hotel in Anaheim, California. Tudor was represented by Beth and Robert Janopaul and Irene and David Willer. The highlights of the meeting included addresses by the new Director of Water Resources, David Kennedy, and the new Regional Director for the U.S. Bureau of Reclamation, David Houston. Both speakers expressed the need for new water storage projects in California and the desire to change from a "do nothing" to a "can do" administration. On the first evening a bond closing party was hosted by Frank J. Soriano of Blyth Eastman Paine Webber for the Directors of the Friant Power Authority, and other key participants in the Friant Project including Tudor Engineering Company.

SOUTH FORK MERCED

On October 21, 1983, Dave Willer and Dick Everett from Tudor and Dick Parker, Joe Plagenza and Tim McCullough from the Merced Irrigation District flew by helicopter to visit the proposed South Fork Merced River damsite, tunnel and powerhouse. The project would consist of a large roller compacted concrete dam storing about 25,000 acre-feet of water; a four mile tunnel; a 1500-foot head, 80 MW power plant; and an afterbay dam to re-regulate the flows from the power plant. The rough terrain and the steep riverbed restrict movement in the damsite area. Large outcrops of rock are visible in the streambed and on the left abutment, and some vegetation and exposed weathered rock on the right abutment. The original location of the powerhouse appeared to be suitable; however, a half mile downstream a small canyon appeared more suitable since it would not only afford protection for the powerhouse but also provide room for the switchyard and construction operations. The project is anticipated to cost about $140 million (1983) and provide a possible $4 million in annual net benefits to the District from the sale of power. Additional feasibility work by Tudor is anticipated in the spring of 1984.

Inspecting the damsite are Dave Willer, Dick Parker, Tim McCullough and Dick Everett.

Miguel Cornejo

Miguel Cornejo, Peruvian construction and design engineer, envoy and advisor, began with Tudor in 1972 in the Lima office as part of the design team for the Fishing Port of Oquendo just north of Lima. Tudor had been awarded the contract on a joint venture with other firms, but in early 1973 the client decided to end the project. While waiting for the Oquendo project Miguel was engaged in the design of the final stages of four other fishing ports and the feasiblity study of Sullana-La Tina Highway on the Peru-Ecuador border. Tudor closed the Lima office in 1973 and Miguel transferred to San Francisco. In early 1974 he was transferred to the Republic of Panama for Technical Assistance to the Ministerio de Obras Publicas (Ministry of Public Works) during the design of the Panama-Colon Freeway. While there, he served as Resident Production Coordinator and Advisor to the client, a twenty-month assignment.

When Miguel returned to San Francisco in 1976 he was offered a transfer to Caracas, Venezuela. Visa approvals held up the move until June, and then only on a temporary assignment to the joint venture PBTB's Caracas Metro office. After PBTB signed the contract with the Authority (C.A. Metro de Caracas), the assignment lasted nearly 5 years. Miguel worked in design services during construction, and later as Area Interface Manager for the Propatria Yard.

Miguel and his family returned to the U.S. in August 1981 and were transferred to Atlanta, Georgia, to the joint venture offices of PB/T. He has been working as Resident Engineer on one of the Facility Contracts of the South Line of the Metropolitan Atlanta Rapid Transit Authority (MARTA).

Born and raised in Lima, Peru, Miguel obtained a B.S.C.E. and a degree in Civil Engineering from the Universidad Nacional de Ingenieria of Lima in 1963. Immediately after college, Miguel spent 2 years in England with a scholarship granted by the Confederation of British Industries in Design and Maintenance of Ports and Harbours, and also was involved in field inspection of the new line of the London Rapid Transit "Underground." Back in Peru, he worked several years in construction and design of ports and one year with Parsons Brinckerhoff in the construction of the ore handling pier for the Port of Callao.

Miguel married Lia in 1967 and they have three children: Maria Lia, Maria Pia and Miguel Estuardo. Everyone in the family enjoys tennis, swimming and scouting, and Miguel excels at tennis and soccer. His wife Lia has resumed her oil painting after a 14-year intermission. Miguel, Lia and children are settled and happy in Atlanta, though part of their hearts will always remain in San Francisco, Panama and Caracas.

Jack Bjork

Jack's formative years were spent in Boring, Oregon, at Route 1, Box 1 (for town profile, see Wall Street Journal, September 23, 1981). He attended Oregon State University receiving B.S. degrees in Geology and General Science. While working for the USGS in Portland, he became interested in water resources engineering. He obtained an M.S. from U.C. Berkeley in Civil Engineering. While working in Portland, he conducted stream pollution investigations and river and ocean flood studies.

Jack has worked for Tudor for nearly six years, always officially for the Seattle office but a considerable part of his time has been spent in San Francisco, Denver, Alaska and Malaysia.

Jack's emphasis at Tudor has been primarily flood studies and hydro. "My most interesting assignment was conducting field reconnaissance for four months on the Malaysian Hydro Project," he reflects. "Selecting dam sites and penstock alignments was physically demanding. I spent about six hours each day soaked in sweat, returning each night exhausted. I've worked and traveled in remote areas in Oregon and Washington but I was surprised at how hostile the jungle was — even the plants! Damn thorns, vines and brush! My least favorite creatures were not the leeches, bugs or nasty bees but the poisonous snakes. They were virtually impossible to see since they looked like vines. Fortunately, I never met any cobras or tigers. The best times were swimming in remote streams and riding an elephant. My worst experience was spent on the floor of a Malay house with some sort of fever, certain that I had contracted malaria or worse. I stumbled to the village 'clinic,' where the 16 year-old attendee prescribed one of his four types of pills. I recovered on my own."

While in Asia, Jack traveled to Hong Kong, China, Thailand and Indonesia, including Bali. He found China fascinating and Bali like Eden, especially away from the topless beaches. Previous adventures include lengthy trips in Europe in 1974 and 1978. His next hoped for destination is South America.

Jack's Seattle sporting activities include soccer, aerobics, softball, backpacking, camping, rafting and skiing. His more serious pastimes are reading and remodeling his house between the Olsen's and Eriksen's in Ballard (the Scandinavian section of Seattle).

UP CLOSE AND PERSONAL

Paul Kunz

Paul Kunz, a steadfast member of the Boise office for over twelve years, was born and raised in San Francisco. Paul grew up within walking distance of the notorious Haight-Ashbury area of San Francisco and graduated from a local high school. He graduated "Cum Laude" from Santa Clara University with a B.S. in Civil Engineering in 1971. During his college years he was often found beachcombing in Santa Cruz or roaming the U.C. Berkeley campus, no doubt in search of some wild game. His interest in engineering faltered a bit in his junior year while he contemplated changing majors to Philosophy. . . those were the days!

In 1971 a call from Boise gave Paul the opportunity to leave "big city" life behind. His first experience with Tudor, working on a survey crew on the edge of the Idaho Primitive Area at Big Creek, certainly gave Paul a chance to "get away from it all". Later, he worked in the "back room nerve center" of the Boise office, first with a small desk top calculator and later with the H-P computers.

Paul began work on flood insurance study contracts in 1976. During a short stay in Seattle, he gained experience in hydraulic computer modeling and later worked briefly in San Francisco assisting Tudor's first flood study for FEMA. Currently Paul is completing a study that led him into the Salmon River area of Idaho.

In 1976 Paul married Rhonda and adopted Troy and Heidi, now 15 and 10. Rhonda's parent's cabin in the Grandjean area of central Idaho is a welcome retreat in the fall hunting season. This year Paul bagged a five-point buck.

Paul has been resident engineer on various projects in Idaho including the Melba and Castleford water systems, and sewage systems in Bruneau and Kuna. His construction-related duties have included work on the West Boise Sewer District, and often he has a phone stuck in his ear, debating with contractors the benefits of good construction management. Paul's current position is manager of the water resources and construction management departments in Boise. He also has a key responsibility in the quality control program checking plans and specifications. With his work on local storm drainage and flood mitigation projects, his fellow workers hear him complain about Boise's meager twelve-inch annual precipitation.

Some of Paul's favorite pastimes are baking sourdough french bread and harvesting his own grapes for home made wine. His interest in computers got the best of him last year when he bought an Apple, but his teenage son has moved in and claimed squatter's rights on the keyboard!

Roberto Iniguez

Roberto Estuardo Iniguez, our international traveler, was born in the city of Cuenca, Ecuador, at approximately 9,000 feet in elevation in the Andes. He lived in Cuenca for 18 years until he began engineering studies at the University of Santa Clara. He received his B.S. degree in Civil Engineering in 1955.

After graduation Roberto returned to Ecuador where he started his career as a construction engineer on the 2500 kW Saymirin hydroelectric power plant at about 12,000 feet in elevation near Cuenca. Later he moved to Quito, Ecuador, where he joined a U.S. firm contracted by the Government of Ecuador to build the Quito International Airport.

During his periodic trips from Quito to Cuenca to visit relatives and friends, Roberto proposed to Josefina; his wife points out that on that 4th of July Roberto lost his independence. Roberto and Josefina were married in Cuenca in 1957 and are the proud parents of Norma, Stewart and Fernando, one working and two in college.

In 1958 Roberto received a job offer from the State of California, Department of Water Resources. Important water resources experience was acquired during this five-year employment.

In 1963 Roberto joined a group of 12 other U.S. engineers on a two year contract as Supervising Engineer in charge of the design of dams and waterways for the Calima II hydroelectric project under contract with the Corporacion Autonoma Regional del Valle del Cauca in Cali, Colombia. While in Colombia, Roberto met and worked with other current Tudor engineers — Hugh Brown, Richard Everett and Hans Albring.

At the completion of his Colombia assignment, Roberto returned to the United States and was hired by Tudor; two days later he was on his way back to Ecuador. This was the first of a series of assignments with Tudor which have taken Roberto to almost every country in Latin America, parts of Europe, and six countries of Southeast Asia.

During his 18 years with Tudor, Roberto has been involved in overseas and domestic projects in the fields of water resources, highways, structures and rapid transit systems. In addition to Project Management responsibilities in the San Francisco office, he has served as Manager of International Operations for Tudor since 1973.

Roberto loves soccer, a sport he has played since he was eight years old. While at the University of Santa Clara he played on the varsity team all four years (he was coach and player for two years) and made the All-Star team every year. During the last 10 years he has played regularly in Marin County every Sunday morning. In addition to soccer Roberto enjoys bicycling, traveling, eating and dancing. . . not necessarily in that order.

NEW FACES . . .

Tudor welcomes new employees:

. . . for san francisco

Daniel Boyle
Mechanical Engineer

Gene Buffum
Electrical Engineer

Mary Jo Campbell
Secretary

Delia Cavizo
Accounting

Clyde Earnest
Civil Engineer

Royce Edwards
Field Inspector

Bill Grey
Civil Engineer

Josephine Lee
Drafter

Synthia Lee
Accounting

Kenneth Mathis
Civil Engineer

Bertie Peters
Secretary

Craig Vernon
Civil Engineer

TJO FROM ATLANTA TO SEATTLE

The substantially increased workload at the Seattle office, coupled with the suspension of Tudor's work on the Houston Rapid Transit System and the downturn in the hydro work in the Southeast has resulted in the closure of Tudor's Atlanta office and the relocation of Tom O'Neill from Atlanta to Seattle. Tom, Sandra and their six month old daughter, Ames, moved from the Southeast to the Northwest in late October of 1983.

When Tom and Sandra purchased their home in Redmond, a three foot diameter, 100-foot tall cedar tree stood adjacent to their rear deck. On Thanksgiving morning, a severe wind storm claimed that cedar tree as one of its many victims. The tree crashed down, narrowly missing their house, just as the O'Neills were preparing to leave for a Thanksgiving holiday with Dave and Jeri Alden at their vacation home near Bellingham. Damage to the house was minor. On the positive side, the O'Neills met all of their new neighbors on Friday while clearing their yard. Tom's and Sandra's first Thanksgiving in Seattle was indeed memorable, thanks to the Aldens' hospitality and an "act of God," as the insurance company termed it.

THE TUDOR TREK

A weekend in late summer found nine Tudorites hiking and camping amid the splendors of the Desolation Wilderness Area in California's Sierra Nevada Mountains. Choosing a trip that would fit the wide range of hiking abilities and experience was the first challenge; by the end, all participants had experienced varying degrees of exultation . . . and suffering. The trip began at Wrights Lake, and led the hikers over Rockbound Pass and down into the lake-studded lands above Rockbound Valley. The group included three first-time packers who deserve special recognition: Roslyn "New Boots" Ball, Gate "Goat" Gelana and Sabine "Now I Have Something to Tell My Grandchildren" Jentzsch. The true miracle of the 3-day trip was the hikers' continuous high spirits despite the almost constant non-cooperation of the weather. Steve Van Til and Karen Ganse expressed the most faith that the sun would come out by appearing each frigid morning dressed in shorts. All members of the party ate well, even though Kevin Young and Co. forgot their pancake spatula (!?). Fortunately, Karen remembered the Grand Marnier, which made a tremendously popular drink when mixed with hot chocolate. On Saturday, Dave "Mark Trail" Church and George "Ridge Runner" Schneider climbed high into the fog and hail, never quite reaching the summit of Mt. Price, while others spent the day fishing, hiking and sleeping. Tony "Be Prepared" Lea impressed everyone that night by building a roaring campfire, around which good cheer emanated far into the night, accompanied by the sounds of distant thunder, crashing icefalls, and the exotic melodies of the thumb piano.

Trekkers bristling with energy at the beginning of the trip.

CONGRATULATIONS

Aurora and Campton Mock of San Francisco on the birth of a daughter, Ashley Kanoelani, October 28, 1983.

Tim and Anita Burgess of Boise on the arrival of their daughter, Amanda, November 9, 1983.

Bob and Brooke Toothman of San Francisco, proud parents of baby boy Davis John, December 1, 1983.

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TUDOR QUARTERLY

WINTER 1983

TUDOR WINS TWO ACEC CONTESTS

Tudor Engineering Company won two awards from state member organizations of the American Consulting Engineering Council this month, one in California and the other in Georgia.

Tudor won the California award for its pioneering work in small hydroelectric power development. It has planned or designed more than 200 small hydro projects, probably more than any other private engineering organization. The award also recognized Tudor's national studies on this subject for the Federal Bureau of Reclamation and the Electric Power Research Institute. The company last year completed inventorying 2,628 potential sites in the 17 western states in which hydropower plants might be constructed.

Tudor won in Georgia as part of a three-company team which conducted a study of alternative energy storage concepts for a proposed large power plant in north Georgia. The team analyzed conventional pumped-storage hydroelectric power, underground pumped-storage hydropower, and compressed-air energy storage. In the latter concept, air is compressed by large compressors and stored in an airtight underground cavern for use as needed. Instead of powering a hydroelectric generator, as is the case of pumped storage, the compessed air is mixed with fuel to power a combustion air turbine generator.

California Entry

NEXT STOP — HOUSTON!

On Friday, February 18 1983, Paul Potter received word that Tudor had been selected for not one, but *two* significant and prestigious projects on the Houston Transit system. As a result, we are pleased to add Houston to our list of cities — San Francisco, Caracas, Atlanta, and Miami — where Tudor has had a major role in rail transit design.

Tudor will be the prime consultant for the final design of the Standard Aerial Structure system for the entire project. Rainer Rungaldier, Mike Goldberg and the rest of the aerial structures design crew are anxious to carry on the work they started on the conceptual analysis for the project. They will be assisted by Walter P. Moore and Associates, Georgia A. Wilson and Associates, and Charles D. Gooden Consulting Engineers, all of Houston.

The other, and larger, project is the design of three individual subway stations and connecting tunnels. The construction cost of this segment is estimated at approximately $300 million. The Parsons Brinckerhoff/Tudor joint venture proposed for this work will move a portion of the required staff to reside in Houston and will support the work from Atlanta and from the home offices of Parsons Brinckerhoff and Tudor San Francisco. Doug Mansfield will be the Project Principal in addition to his continuing position as Manager of Engineering for PB/T Atlanta. Houston firms acting as consultants to the joint venture include Morris•Aubrey Architects; Lockwood, Andrews & Newnam; Georgia A. Wilson and Associates; John S. Chase, F.A.I.A., Architect; CBM Engineering; and Fernandez Engineering Services.

STOCK BONUS PLAN

The Administrative Committee for the Tudor Engineering Company Employee Stock Bonus Plan has been hard at work these last few months filing the necessary forms to have our Plan authorized by the federal government and ERISA. Assisted by Keith Betzina, the Company's counsel in Stock Bonus Plan matters, the Committee filed a Letter of Determination with the Internal Revenue Service on February 28, 1983. This is an important final step in obtaining government approval for the Plan. All other paperwork has been processed with appropriate agencies, and the Stock Bonus Plan is officially in effect with a starting date for eligibility of January 1, 1982.

By mid-year each participant will receive a certificate reflecting his status in the Stock Bonus Plan and a separate certificate pertaining to his Retirement Plan status as of December 31, 1982. The Administrative Committee remains the same for the Stock Bonus Plan as for the Retirement Plan, with Rainer Rungaldier, Chairman; Barbara Cooper, Plan Administrator; and Robert Myrdal.

The final Plan Document and Trust Agreement will be made available to each office in the first week of April. Office Managers will keep a copy of these documents on file, and every employee is invited to peruse this material. If after reading through the documents you have further questions, please feel free to direct them to one of the Trustees, who are Paul Potter, Gerry Gibney, and Mike Harrington.

TUDOR WRAPS UP THE HOLIDAYS

The cocktail hour in the Back Parlor.

Enjoying dinner (and each other) are Pat Chambers, Ross Jackson, Laurie Gantt and Darrel Chambers.

Jack Bjork and Jane Tanner demonstrate the Chair Dervish Dance Jack learned in Malaysia.

Gary Andresen on the harp.

A view from the minstrel gallery of the Great Hall.

Keith Bull receives his Tudor 20 year Service Award from Louis Riggs.

The Great Hall sets the scene for dinner.

Guests from San Francisco, Louis and Pat Riggs, seated with Einer and Marilyn Handeland.

SEATTLE CHRISTMAS PARTY

The Seattle Office 1982 Christmas party was held at the Petrie Mansion, "Tudor" Style residence on the shores of Puget Sound in Normandy Park. After a pleasant cocktail hour in the Back Parlor, the party moved into the Great Hall for a traditional "Tudor" dinner of Beef Wellington, Yorkshire Pudding and, as a concession to the Northwest, Baked Alaska. Gary Andresen played "Greensleeves" and other appropriate tunes on his harp overhead in the minstrels' gallery. After dinner Louis Riggs narrated a slide history of TEC. Louis also presented Keith Bull with his 20 year Service Award. Then Gary Andresen descended to join the less musically accomplished and played the traditional Victorian 88 string horizontal harp.

RIVERTON CHRISTMAS PARTY

The Riverton Christmas party this year was held at Togowtee Mountain Lodge 100 miles west of Riverton near Jackson Hole. Tudor employees, wives, children and pets attended the weekend event. Many activities were planned for the daytime such as snowmobiling, cross country skiing, and cutting personal Christmas trees. Saturday night the Christmas Party was held in the Red Fox Saloon and lodge Dining Room.

Susan Hagan playing Christmas carols with little helper Theresa Weast.

Togowtee Lodge.

Jam session featuring Buzz Nuse on guitar and Kevin Brown on case.

Tudor employees take over the Red Fox Saloon.

On a clear day you can see the Grand Tetons from Togowtee Lodge.

Matt Armstrong wants to ride with Shirley Walton as his mother, Linda Armstrong, has second thoughts.

Enjoying cross country skiing are Daisy and Buzz Nuse.

A quiet moment for Bill and Joan Williams while baby Erin sleeps.

Buzz Nuse slows down the snowmobile to enjoy the view.

SAN FRANCISCO CHRISTMAS PARTY

The annual San Francisco Office Christmas Party and dinner-dance was held at the Engineers Club on December 4th. Bob Ganse was the Master of Ceremonies for the evening. After dinner, Bob presented slides showing some early photos of Tudor people and projects, and, thanks to clandestine conspiracy with wives, husbands, and relatives, Bob was able to get baby pictures of some of the employees which were worked into the presentation of "Tudor Beginnings."

A high point in the evening was Louis Riggs' announcement of the Board of Directors' action whereby Louis became Chairman of the Board and Robert Janopaul was appointed President, effective January 1st.

Louis also had the pleasure of presenting several memorable Tudor Service Awards. Paul Potter became the third person to receive a 30-year Service Award. Robert Janopaul received his 25-year Service Award and Keith Bull, his 20-year Service Award. Louis also commemorated Wil Pacheco's retirement from Tudor and recognized Wil's 18 years of dedicated service with the presentation of a Certificate of Merit.

All smile before dinner and wonder who will get the centerpiece — Hugh Brown, Greg Reichert, Elise Lemcke, Yoshimi Reichert and Ulrich Lemcke.

Paul Kneitz and Chris Baez discussing future wedding plans with Kurt and Rosemary Scholz.

Wil and Marge Pacheco receive from Louis Riggs, on behalf of Tudor Engineering Company, a Certificate of Merit upon Wil's retirement.

Bob Janopaul receives congratulation for his 25th anniversary with Tudor from Louis Riggs as Beth Janopaul admires the Service Award.

Waiting for "Tudor Beginnings" to begin — a relaxed group after a great dinner.

San Francisco Master of Ceremonies for 1982, Robert W. Ganse.

Louis Riggs honored Paul Potter with Tudor 30 year Service Award.

Dancing to music of Rich Scudder are Geoff McCavitt and wife Janet Gilmore, and guests from Atlanta, Tom and Sandy O'Neill.

Paula Dierkop and Juanita Rungaldier visit as Steve Alters and Rainer Rungaldier greet each other for the holidays.

BOISE CHRISTMAS PARTY

The annual Boise Christmas Party again was held at the Crystal Ballroom in the Hoff Building. One hundred percent attendance of Tudor employees was enhanced by guests Bob and Beth Janopaul from San Francisco, Dave and Loreen Toothman and Charlie and Adele Malone from Boise, and Bob Beal and Bob Moorhead from Lewiston. That everyone had a good time can be seen from the photos.

Receiving his Tudor 10 year Service Award from Bob Janopaul is Randy Witt.

Bob Janopaul presents Don Payne his Tudor 15 year Service Award.

A lighthearted group — Gary and Diane Ames, Cindi Raney and Jim Spofford.

The out-of-towners — Beth and Bob Janopaul.

Pat and Ted Purcell said they could have danced all night.

Special guests for the evening are Dave and Loreen Toothman.

MOUNTAIN HOME PROJECT

Tudor has been selected by the City of Mountain Home to perform engineering and surveying in connection with a new domestic water well. Although the well will be an addition to the City's existing seven wells in the area, it currently is a 585-foot-deep well being used for irrigation. The City hopes to gain about 2,000 gallons per minute, which is the approximate current usage. Tudor's efforts include hiring a contractor to pump test and TV-inspect the well; designing and preparing contract documents for construction of a well building with chlorine and fluoride equipment and a new well pump and a half-mile transmission pipeline to an existing two million gallon reservoir; and surveying for property descriptions and easements. Depending on the well investigation, additional work may be required on the well, or the addition of above-ground improvements to deal with a reported sand production problem. Project Manager is Paul Kunz with Bob Mayers as Project Engineer and Sabin Landaluce as inspector.

FLOOD INSURANCE STUDIES

Tudor has made two requests to Federal Emergency Management Agency for additional work in connection with the ongoing flood studies. Surveying is needed in the City of Kamiah to update the original surveys by the Corps of Engineers. Also, new techniques are now available to study ice jam problems which are applicable to the study for the City of Salmon. Ice jam problems were witnessed by Paul Kunz and Jim Spofford in February 1982, when ice thicknesses were in excess of eight feet in some areas. The extra ice jam analysis, when approved by FEMA, should prove to be a challenging addition to the study.

TUDOR WRAPS UP THE HOLIDAYS

DENVER CHRISTMAS PARTY

The Denver office held its annual Christmas party on December 11th in the Luau Room at Trader Vic's in the Denver Hilton. More than 20 employees and guests enjoyed the good food and crazy antics of host Santa Claus, Ed Barbour. Dave and Irene Willer were special guests from San Francisco and Dave presented John Williams a special award for "hanging in there" — a picture of a lion hanging from a tree branch.

Denver's special hydraulic consultant and John Williams' tennis doubles partner, Al Stevens and his wife, Susan, also enjoyed the festivities.

Tudor No. 1 traveler for 1982, Dave Willer, a guest at the party.

Ed Barbour takes delight in bestowing upon Cliff Bjorgum a power plant sizing chart.

John Williams and tennis partner, Al Stevens, receive antique tennis rackets, as Frank Techar enjoys the festivities.

A dramatic looking couple on the dance floor — Jessica Ryan and Tom Rawlings.

John Williams roars as he receives a picture of a hanging lion.

Denver's one-and-only Santa Barbour.

Enjoying a quiet moment at Trader Vic's are Frank Techar, Dale Bowers and friend, Steve Snyder.

One of the crew in the Denver office — Pam Stimpson.

KITANO HYDROELECTRIC PROJECT

Tudor Engineering Company is providing civil engineering services for this project in west central Kauai, Hawaii. The client is Kekaha Sugar Company, Limited, a division of AMFAC, Inc. The project utilizes a drop in elevation of approximately 800 feet in a section of the existing Kokee Irrigation Ditch to generate clean, safe, renewable hydroelectric energy.

The Kitano Hydroelectric Project is an example of unique cooperation between owner, equipment supplier, and engineer. In the spring of 1981 the team of Axel Johnson, Tudor, and Kennedy/Jenks was selected to conduct a feasibility study, and if feasible, to acquire environmental permits, design the project, and supply equipment for a proposed high head hydroelectric installation. Tudor took the lead in conducting the feasibility study. A turbine-generator installation with a rated output of 1.4 MW with a Pelton type turbine was selected. The Honolulu office of Kennedy/Jenks conducted the environmental review, and the project has been approved by the various state authorities for construction. Tudor has since provided general civil design for the intake structure, penstock and powerhouse. Axel Johnson has provided a mechanical-electrical design based on equipment it is manufacturing or purchasing from other firms.

In the design of the project Tudor has incorporated the talents and resources of the client which has operated and maintained two other hydroelectric installations for the last 70 years. The 9,100-foot-long penstock has been designed to utilize a combination of steel and ductile iron pipe which the client has readily available. In addition, the civil works construction has been laid out for possible construction by the client. Kekaha Sugar Company plans to construct portions of the project and to negotiate the remaining portions depending on its own manpower and equipment availability. Construction on this $2,500,000 project is scheduled to begin in March 1983, and the scheduled startup date is December 31 1983. Most of the work has been performed in San Francisco, although Greg Reichert, Hugh Brown, Don Guild and Don Scapuzzi have visited the site. Others working on this interesting job include Paul Kneitz, Eldon Floodeen, Tony Lea, Amelio Bulseco, Dave Silveira and Andy Nguyen. Robert Janopaul is the Principal-in-Charge.

FRIANT POWER PROJECT

The final design of the Friant Power Project is nearing completion. The turbine/generator bids were received on February 15 1983 with the general construction bid documents scheduled for advertisement in March. Six bids were received for the River Outlet plant equipment and three bids for the horizontal Kaplan units for the Friant-Kern and Madera plants. The low bidder for a combination of all three plants was Hitachi at about $5.5 million. The project is to be under construction by mid-July 1983. Tudor has complete responsibility for the design which has taken a little over a year with a major emphasis during the last five months. Tudor also performed the project feasibility study and license application work beginning in 1978.

The Friant Power Project will be located at the U.S. Bureau of Reclamation Friant Dam and reservoir near Fresno, California. Friant Dam is a vital element of the California Central Valley irrigation program. The Friant Power Authority, Tudor's client, consists of eight irrigation/water Districts that formed together to develop this hydroelectric project to help offset their growing energy needs. The power project consists of four power plants with a total capacity of 40 megawatts. Three power plants (total 25 megawatts) are under design now with a fourth plant as Phase Two. The 15 megawatt Friant-Kern Power Plant No. 1 is located at the Friant-Kern Canal inlet. Because of the complicated modification required to properly merge the power plant and the irrigation canal, a model study was required. The model study has aided in the design.

The eight megawatt Madera Power Plant is also located on the inlet to an irrigation canal. The third plant in the initial phase is the two megawatt River Outlet Plant located at the outlet to the San Joaquin River. When completed, estimated to be in 1985, these three power plants will furnish an average of 83 million kW hours of energy annually to the PG&E system.

Since October, Kurt Scholz, Project Engineer, and Greg Reichert, Assistant Project Engineer, have directed key design staff members in the layout work, structural analysis, construction sequencing and surge studies. Gary Durham, Don Guild and others in the mechanical engineering section have proposed a horizontal Kaplan turbine which we believe will help reduce project cost. Bill Untiedt and the electrical staff have worked closely with PG&E and the USBR to develop the supervising control system required. Paula Dierkop and Grant Larsen have provided the leadership in preparing the bid documents. John Richardson, Project Manager, has assisted the client in the power purchase agreement negotiation and extensive coordination activities with the U.S. Bureau of Reclamation. Tudor's Principal-in-Charge for the project is Dave Willer with key quality assurance review and input from Walt Anton and Hugh Brown.

DENVER SMALL HYDRO

The Denver staff recently completed a FERC license application for the Tiber Dam Power Project, a potential 12 MW hydroelectric development at the existing Tiber Dam on the Marias River, Montana. The client is a combination of eight irrigation districts along the Milk River. A preliminary FERC permit application was recently filed for the same client at Fresno Dam on the Milk River, Montana.

Also submitted to FERC, was the license application for the Vallecito Dam Power Project in Colorado. The client is Ptarmigan Resources and Energy, Inc., of Durango, Colorado.

Work is progressing in the Denver office on several more FERC license applications including, El Vado Dam Power Project in New Mexico; Starved Rock Lock and Dam Power Project in Illinois; Dresden Island Lock and Dam Power Project in Illinois; Branden Road Lock and Dam Power Project in Illinois; and Locks and Dams No. 11 and No. 14 on the Mississippi River.

The Denver staff is assisting the Atlanta office in the study of hydroelectric potential at the Buckhorn Lake Power Project in Kentucky. Power studies and reconnaissance level designs and cost estimates are being done in the Denver office.

Construction is progressing satisfactorily on the Garland Canal Power Project in Wyoming. Work is on schedule for the construction of the intake, penstock, stream crossing, and the powerhouse. Sal Todaro has been making periodic site inspections as construction progresses.

SOUTH SUPERIOR WATER SYSTEM

In July 1981, the Town of South Superior, WY, learned that its drinking water contained as much as 30 times the maximum allowable radioactivity. Tudor personnel, led by Bob Stannard, helped develop an emergency operations plan and prepared a plan of action to correct the situation. In response to the severity of the problem, Wyoming Governor Herschler formed a task force to evaluate the Tudor report and to recommend a solution. After five months of review by the Task Force, Tudor's report was formally accepted and presented to the legislature for funding. After considering the full range of possible options from new wells, reverse osmosis treatment, selective radiological ion removal, to pipelines stretching 50 miles, the solution will include 11 miles of pipe, a new, conventional surface water treatment plant, and corrections to the distribution system. Bob Stannard has assisted the Town during the legislative hearings which may ultimately make $3 million available for the project.

BLACKS FORK BRIDGE, WY

As early as 1978, Tudor personnel led by Ted Purcell inspected the single lane bridge in Granger that spans the Blacks Fork River. The 150 foot steel pratt truss with a timber deck has a load rating of 8 tons which is inadequate for the oil field equipment which must cross the bridge. Granger has continued to expand on both sides of the river, and the single lane structure causes both traffic and safety problems. Mayor Lindsley and Don Armstrong conceived a plan to finance a new, two lane structure and succeeded in obtaining the $660,000 necessary to complete the project. Design of the project began in October 1982 when Keith Bull, Ted Purcell and Don Armstrong met with the Town Council Board to discuss the proposed structures and potential problems. Seattle personnel are designing the bridge; Boise personnel are designing the ancillary streets; and Wyoming personnel are coordinating the regulatory review, client coordination, and project administration. Construction is expected to start in June.

DISASTER RECOVERY WORK

Last fall, Tudor formed a joint venture with Dewberry and Davis, of Fairfax, VA, to offer "Standby Technical Services" to the Federal Emergency Management Agency (FEMA) in the event of a federal disaster.

The combination of storms and high tides throughout southern California during the period January 21 through February 8 1983 caused extensive damages and resulted in the official declaration of a federal disaster covering eligible damages sustained during that period.

Throughout Orange County and San Diego County, five teams, each led by a Tudor engineer as the federal inspector, investigated damages, estimated costs of repairs, suggested future mitigation measures, and evaluated eligibility for federal funding. The work consisted primarily of waterfront damage such as erosion of sand, damages to seawalls, parking lots, roads, and utilities. Tudor was also responsible for similar work on evaluating structural damages to piers over the length of the California coast.

Based on the results of these investigations and the Disaster Survey Reports prepared, FEMA will be able to make decisions on the allocation of disaster relief funds.

Tudor engineers were brought in from San Francisco, Seattle, Boise, and Denver to ensure that trained personnel would be available for future FEMA disaster requirements in any of these areas.

IN MEMORY OF BERT...

H.H. (Bert) LaVigne, one of the first employees of Tudor Engineering Company when it was formed in 1950, will be missed by many Tudor employees, both past and present. Retiring in 1979 after 29 years of service with Tudor, Bert served in many capacities ranging from project engineer to Vice President (1971) on a variety of municipal and regional transportation projects in California, Washington, Oregon and Hawaii. Bert was also actively engaged in marketing for the company, and was the manager of Tudor's San Diego office during the mid 1970s. During his professional career, Bert served as President of the San Francisco Section of ASCE (1970–71) and President of the Northern California Chapter of APWA (1968–69). His other professional affiliations included SAME, ITE, AIP, and the Metropolitan Association of Urban Designers and Environmental Planners.

For all of us, Bert's sudden and unexpected passing in early January was shocking. Bert's casual decorum, sense of humor, and zeal for life have left a void in all of us who had the opportunity of knowing and sharing his life's experiences.

H.H. (Bert) LaVigne

NEW FACES...

Tudor welcomes new employees:

...for san francisco

Barbara Michaelis
Clerical Assistant

Carl Smith
Environmental Specialist

Caroline Taylor
Executive Secretary

CONGRATULATIONS

Polly and Brian Rae on the birth of a daughter, Emily Rae, December 20 1982.

Chris Baez and Paul Kneitz were married at St. Peter's Church, San Francisco, on February 12 1983; reception at the Clipper Club, Watergate complex and honeymoon in Hawaii.

Mary Bickerdike and Ron Lee were married at First Lutheran Church, Bothell, Washington, February 12 1983; reception at Lake City Elks Club and honeymoon in Hawaii.

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THE TUDOR QUARTERLY is published by Tudor Engineering Company for the information and enjoyment of its employees, their families, and friends.

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