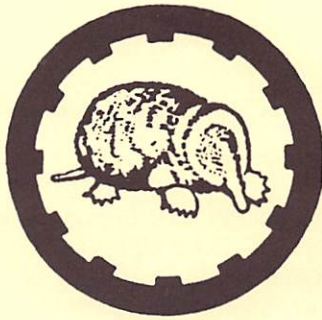


NEWS BULLETIN

AN ASSOCIATION OF INDIVIDUALS



OF THE MOLES

ENGAGED IN HEAVY CONSTRUCTION

HOLING

THROUGH

JULY, 2002

JOE MC NABB, 1978 AWARD RECIPIENT AND BUILDER OF MANGLA DAM, DIES AT AGE 88

Many of our newer and younger members likely will not recognize the name, Joe Mc Nabb, nor Mangla Dam. In fact, there just may not be many Moles' members familiar with the man or the project.

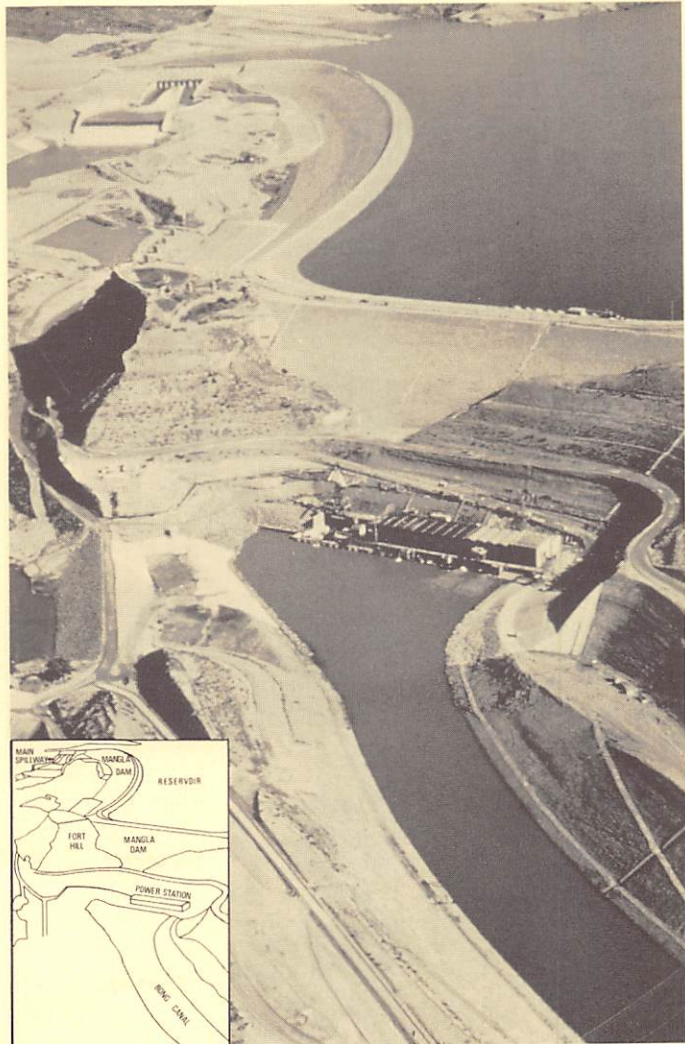
Before moving on to describe the Mangla dam project, lets look at the life of Joe McNabb, who died in Montana on May 31, 2002, at the age of 88. Joe Mc Nabb spent most of his career with the Guy F. Atkinson Company, one of the foremost dam and powerhouse builders in the world.

Joe came from a humble background, having been born in Arkansas in 1913. He always wanted to be a civil engineer and was able to find a way to attend Southwestern College in Winfield, Kansas for two years. Then he ran out of money and decided to join the Navy, where he served from 1934 to 1938. After discharge he worked at various engineering jobs (including with the Corps of Engineers) and without further formal education, was successful in securing a Professional Engineers License in 1941.

In 1943 he went to work in Alaska for Guy F. Atkinson Company constructing military facilities. He remained with Atkinson until his retirement as CEO in 1983.

MANGLA DAM

We hear a great deal today about Pakistan but some may not realize that it is a relatively young country. Pakistan was formed in 1947 when the northeastern and northwestern states of India were given autonomy at the end of British rule. Part of Bengal in the east, and part of Punjab in the west were partitioned off from India,



MANGLA DAM, PAKISTAN

PRESIDENT APPOINTS COMMITTEE MEMBERS

The following Committee assignments have been made for the current year.

AWARD COMMITTEE: Chairman, Thomas J. O'Neill, Vice Chairman Richard S. Weeks, Robert J. Jenny and Salvatore Mancini, Members at Large

MEMBERSHIP COMMITTEE: John A. Rupich, Chairman, Arthur B. Corwin, Vice Chairman, Martin T. Corcoran, Louis S. D'Amico, Thomas A. Gelormino, Michael R. Huie, Lawrence H. Lehman, Paul S. Pedini, Vincent Tirolo, Jr.

PROGRAM COMMITTEE: Joseph M. McCann, Chairman, William V. McGuinness, III, Vice Chairman, John Bidosky III, Gerard P. Brady, John Civetta, Jr., Edward P. Forte, Robert J. Hill, John J. O'Sullivan, Richard J. Redmond, Jr., James P. Strobel, Gary W. Winsper.

FINANCE COMMITTEE: Joseph D. Guertin, Chairman, Everett G. Cruz, Ronald J. Gottlieb, James E. Kelley, Jr., Richard Raab, George G. Searle

EDUCATION COMMITTEE: Gary A. Almeraris, Chairman, Joseph F. Malandro, Vice Chairman, Arthur J. Blattner, Daniel M. Hahn, Michael M. McHugh, Thomas E. Peyton, Edward S. Plotkin, Arturo Ressi de Cervia, John R. Roma

PUBLICITY COMMITTEE: Dominick M. Servedio, Chairman, Joel Moskowitz, Vice Chairman, Robert E. Alger, James J. Brady, David M. Cacoilo, Anthony G. Cracchiolo, Thomas J. King, Val S. McWhorter

A MOMENT OF SILENCE

Thanks to a recent note from Jack Downen, we learned of the death of WILLIAM A. ABRAHAMSON in August 2001. Bill had spent his career with Morrison-Knudsen and C. H. Leavall & Company. He had been residing in Dallas and was approaching his 83rd birthday at the time of death.

LOUIS G. HECHT died on January 31, 2002 at the age of 84. Lou was a graduate of Manhattan College and spent the early part of his career with Johnson, Drake & Piper, Inc. (JDP). Among the projects he worked on was the construction of Naval Airstrip at Guantanamo Bay, Cuba. He was transferred to Buffalo, New York by JDP and went on to build parts of the NYS Thruway and other major roads in that area. In 1965, Lou and another JDP employee, Harold Bixby, organized their own company, Tri Delta Construction Company, which continued to be active in the Buffalo area constructing highways and bridges.

ELI LEMCOE died on June 7, 2002 at the age of 76. Eli was a Civil Engineering graduate of Washington University in St. Louis. He spent most of his career with Sverdrup & Parcel, where he was a partner and managed their New York office. In that capacity he became involved in many tunnel and heavy construction projects, including work on the Washington, D.C. Metro.

ROBERT C. WEST, a graduate of Georgia Tech, died on June 1, 2002 at the age of 81. Bob was with Sverdrup & Parcel from 1953 until his retirement in the late 1980's and served from 1975 till his retirement as President and CEO. During his stewardship with Sverdrup, the company was involved in the design of major heavy construction projects both in this country and abroad.

THE MOLES

Holing Through is published by The Moles three times a year: April, July and November. The Moles is an organization of people engaged in Heavy Construction. Its purpose is to promote better acquaintance among individuals engaged in heavy construction to the end:

- That past and future friendships and a spirit of fraternization among the members be fostered.
- That meetings and other gatherings be held to exchange construction information and promote good fellowship among the members.
- That advancement of the Construction art be achieved, and outstanding performance be recognized through awards and otherwise.
- That the youth of our country be encouraged to participate in heavy construction by a multi purpose program of education in cooperation with engineering colleges and other associations.
- That, in the public interest, standards of construction shall be raised both as to engineering and business ethics.

The Moles' office is located at 577 Chestnut Ridge Road, Woodcliff Lake, New Jersey 07677. Telephone: 201-930-1923 Fax: 201-930-8501 Executive Director: Gerard J. Carty, P.E.

NEWS OF MEMBERS

On April 27, 2002, Bucknell University dedicated its Structural Testing Laboratory to ROBERT J. BRUNGRABER. Bob was a professor at Bucknell from 1968 to 1995. The testing laboratory, completed in 1975, was the result of Bob's vision, resourcefulness and hard work.

After learning that Swathmore College was disposing of its 500 ton large member testing machine, Bob proceeded to acquire the testing machine and he and his students went to work to design and construct the building using all donated materials and labor. The building and its equipment has served the students in the Civil Engineering department well over the past 27 years.

EDWARD W. MC LAUGHLIN has been awarded the prestigious Outstanding Engineering Alumnus Award from Penn State University. Ed spent the first half of his life in the Navy Civil Engineer Corps where he attained the rank of captain. Following his retirement from the Navy, he joined the marine division of Tidewater Construction Corporation where he currently serves as President (under the company's new name, Tidewater Skanska, Inc.).



ROBERT J. BRUNGRABER

GEORGE J. TAMARO, Past President of the Moles, was honored with the Homer Balcom 2002 Award of the Metropolitan Section of ASCE for his lifetime achievements in the structural engineering of buildings and special structures. George also delivered a special address to the Ninth International Conference of the Deep Foundation Institute in Nice, France on the recovery effort at the World Trade Center. Other Moles' members attending this June 2002 meeting were Joel Moskowitz, Arturo Ressi and Peter Nicholson.

BEST WISHES FOR A SPEEDY RECOVERY

A message from Jo Bhoré:

I regret that I will miss this year's May Members meeting. I am in the cardio vascular intensive care unit of St. Paul's Hospital in Dallas. I am listed on their priority list for an immediate heart transplant. I have lived with a heart condition for the past 28 years. With the help of a devoted family and great friends and my unshakable belief in God, I have been blessed to be alive and active for these years.

With the same support, I am fighting this new battle. I am at peace with myself and the world and will accept God's will without regret. There are

two events I would like to attend before I say goodbye - my 17 year old son's high school graduation next summer and to receive my 25 year member certificate from The Moles next May. God bless you all.

Jo: All of us in The Moles wish you a sound recovery. God be with you.

Our best wishes also go to Moles President PETE SCHNEIDKRAUT who is recovering from very major back surgery. Pete was operated on in late June in the Hospital for Special Surgery in New York City and is now home and he reports he is doing good.

CLAMBAKE

**TUESDAY
AUGUST 6, 2002**

**TRAVERS ISLAND
PELHAM, NY**

**REGISTRATION
11:30A.M. TO 5:30 P.M.**

**LUNCH
11:30A.M. TO 2:00 PM.**

**OUTDOOR GAMES
2 P.M. to 5 P.M.**

**TENNIS
TOURNAMENT**

SOFTBALL GAME

**TUG BOAT RIDES
Noon to 5 P.M.**

**SWIMMING and
TENNIS
ALL DAY**

FREE BEER ALL DAY

**SURF & TURF DINNER
SERVED AT 6 P.M.**

**GOLF AT LEEWOOD
GOLF CLUB IN A.M.**

**ACCOMMODATIONS
AVAILABLE AT
RENAISSANCE
WESTCHESTER
HOTEL**

NEW MEMBERS



**Left to Right: Front Row - Leo B. Iking, Jack R. Roadhouse, Janice L. Tuchman, Michael F. Donnino, Mamoud Hosseini
Back Row - Richard D. McDonald, Joseph Ramaglia, Gaby M. Antoun, Terrence M. Flynn, John Civetta, Peter W. Deming**

GABY ANTOUN earned both a Civil Engineering Degree and a Masters Degree in Civil Engineering from California State Polytechnic University. He is a licensed engineer in several states and has been employed by Perini Corporation since 1994 and is currently serving as Project Manager on the Triborough Bridge Rehabilitation Project.

VINCENT F. BARLETTA is a graduate of Northeastern University. As a fourth generation member of the Barletta family, he assumed the Presidency of the family owned company, located in Massachusetts, upon the death of his father, in 1997.

KENNETH R. CHADWICK received a Bachelors Degree in Engineering from Stevens Institute of Technology. After working for Kerr Construction Company on foundation work in the New York City area, he joined Haywood Baker and is currently overseeing their work in the Metropolitan New York area.

FRANK S. CHUANG received his

Bachelors Degree in Civil Engineering from National Taiwan University and Master and Doctoral Degrees from the University of Massachusetts. He is President of L.C. Associates Engineering & Construction Services located in Rocky Hill, Connecticut, a firm active in the design and construction oversight of road and bridge projects in New York State and New England.

JOHN CIVETTA, JR. earned a Degree in Building Construction from Bradley University and along with his brother Teddy (a Moles member) heads up John Civetta & Sons, a construction firm noted for the many foundations constructed in the New York City and adjacent areas.

After graduating from the University of Texas with both Bachelor and Masters Degrees in Civil Engineering, PETER W. DEMING went to work for Mueser Rutledge Consulting Engineers where he now serves as a Partner overseeing their work on the many challenging foundation and underground projects

performed in this country and abroad.

MICHAEL F. DONNINO went to work for Granite Construction Company in 1977 after earning a Bachelors Degree in Civil Engineering from the University of Minnesota. After working on several heavy construction projects in the Central States, he was assigned to a project in Texas in 1985 and has remained in that state ever since. He is currently Regional Manager of Texas operations for Granite.

JOSEPH L. EHASZ received both Bachelor and Masters Degrees in Civil Engineering from Rutgers University. He has spent a long career with Raytheon Engineers & Constructors, and their predecessor firm, EBASCO, on the design and construction of major hydroelectric projects in this country and abroad.

TERRENCE M. FLYNN, Manager of Structural Steel Construction for the Perini Corporation, received a Civil Engineering Degree from the University of Illinois in 1978. After a ten year career with American Bridge Company, he joined Nab Construction Company in 1989 where he remained until he joined Perini in 1998.

MARGARITA D. GAGLIARDI holds Bachelor and Masters Degrees from the University of Illinois, the latter being in Transportation Engineering. After spending her earlier career with UMTA and the FTA she went on to hold senior level positions with NJ Transit and Metro North Railroad. She is now a Vice President with STV Group and is Project Executive for New York City's Cross Harbor Freight Tunnel.

MAMOUD HOSSEINI holds Bachelors, Masters and Doctoral Degrees from George Washington University, all in Civil or Structural

Engineering. After an initial career with Alpha Corporation, he has been with The Clark Construction Group since 1989 and is a Vice President in charge of all of the company's foundation work.

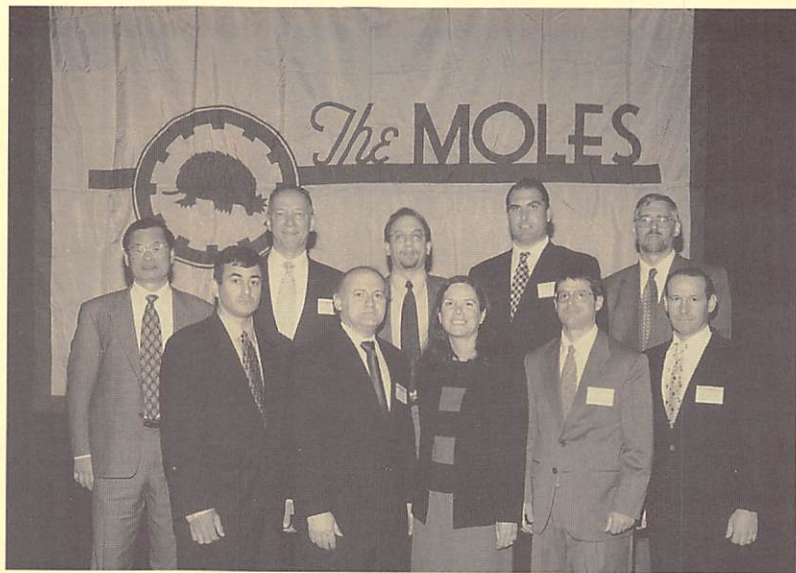
JAMES H. HUGHES III graduated with a Civil Engineering Degree from Brooklyn Polytechnic Institute in 1970 and went to work for Conesco Industries where he has risen from Northeast Sales Manager, to National Sales Manager, Vice President and now Executive Vice President. Conesco, located in Little Ferry, New Jersey, specializes in concrete form work and shoring equipment.

Before joining Weeks Marine, where he now serves as Chief Estimator, LEO B. IKING worked for S. J. Groves & Company and J. A. Jones. He graduated with a Masters Degree in Civil Engineering from the University of Delt, The Netherlands. His position as Chief Estimator has him involved in bidding the major bridge projects in the country.

LEON J. JACOBS earned a Bachelors Degree in Civil Engineering and a Masters in Management, both from Polytechnic University. He has been employed in the underground construction industry in New York City by MacLean Grove & Company and Perini Corporation and is now working for Frontier Kemper Constructors as a project manager on tunnel projects.

ANTHONY R. LANCELLOTTI earned both Bachelor and Masters Degrees in Civil Engineering from Columbia University. He is a Senior Vice President of Parsons Brinckerhoff and has been serving as Deputy Project Manager and as Design Manager for the Boston Central Artery project.

Prior to joining Weeks Marine, where he is Vice President of Operations, RICHARD D. MAC DONALD worked for Morrison Knudsen on the Hampton Roads Tunnel and Boston Harbor



**Left to Right: Front Row: Leon J. Jacobs, Anthony R. Lancellotti, Margarita D. Gagliardi, Paul C. Schmall, Michael V. Mergentime
Back Row: Frank S. Chuang, James M. Hughes III, David M. Plotkin, Vincent F. Barletta, Kenneth Chadwick**

Immersed Tube Tunnel. He holds a Bachelor's Degree in Civil Engineering from Oregon State University and an advanced Degree from Harvard University.

MICHAEL V. MERGENTIME is Vice President and Project Manager for MERCO, Inc., part of the Mergentime Corporation. After earning a Bachelor of Science in Management Degree from Purdue University, he joined the Marine Corps and rose to the rank of Captain. He joined MERCO at its inception in 1991 and has been involved in their various heavy construction projects.

DAVID M. PLOTKIN received a Bachelor of Engineering Degree from Cooper Union. After working for both tunnel contractors and consulting engineers, he joined Parsons Brinckerhoff where is a Supervising Engineer specializing in tunnel ventilation.

JOSEPH RAMAGLIA is Director of Construction for the New York City Department of Environmental Protection. Among the projects for which he is responsible is the \$3

Billion Newtown Creek Water Pollution Control Project. He is a Civil Engineering graduate of the City College of New York.

After an initial career with the Navy Civil Engineer Corps, JACK R. ROADHOUSE went on to a 30 year career at Parsons Transportation Group where he is Senior Vice President and Manager of International Operations. He earned a Civil Engineering Degree from Montana State University.

PAUL C. SCHMALL has been with the Moretrench Corporation since his graduation from Bucknell University where he earned his Civil Engineering Degree. He serves as Chief Engineer and has been involved in the dewatering aspects of many major heavy construction projects.

JANICE L. TUCHMAN is Editor-In-Chief of Engineering News Record. She earned Bachelor and Masters Degrees in Journalism from the University of Colorado and was hired as a reporter at ENR over 25 years ago by then Editor, Art Fox.

MC NABB AND MANGLA DAM (continued)

creating the new divided nation (separated by almost 1,000 miles with India between them) of East Pakistan and West Pakistan. Going as far back as 1965, disputes with India over Kashmir erupted into war.

In 1971, East Pakistan demanded its independence and a civil war followed. In 1972, East Pakistan became independent and became Bangladesh. West Pakistan took the name Pakistan.

THE PROJECT

The idea of creating a dam on the Jhelum river at Mangla was initiated in 1951 as part of the Indus Basin Project. The Pakistan government set up the West Pakistan Water and Power Development Authority (WAPDA) in 1960 which engaged Binnie and Partners, London, England, as project consultants and engaged Harza Engineering Company as general consultants to review the work of Binnie.

The site of the proposed dam was located in northern Pakistan, not far from the border with India and the current capital of Pakistan, Islamabad

BIDDING OF PROJECT

Tender documents were prepared and issued to prospective bidders on June 1, 1961 with bids due on November 15th.. It was to be a unit price contract and there were a total of 1253 bid items in the bid schedule.

Guy F. Atkinson Company put together a joint venture (called Mangla Dam Constructors) consisting of the following companies:

Guy F. Atkinson Company
Chicago Bridge & Iron Company
S.J. Groves and Sons Company
Charles T. Harney
C.J. Langenfelder & Son, Inc.
Ostrander Construction Company
R.A. Tripper, Inc.
Walsh Construction Company

There were a total of four bids received for the project.

Mangla Constructors	\$354,000,000.00
M-K Consortium	\$374,500,000.00
Utah Consortium	\$380,600,000.00
J.A. Jones Consortium	\$461,200,000.00

amounts determined at a conversion factor of \$2.80. Mangla Dam, at the time, was the largest competitively bid job in the world.

A letter of intent was issued to the low bidder on December 15, 1961 and official award on January 20, 1962.

Completion was to be accomplished in 7 years. In bidding the job, Mangla Dam Constructors contemplated completing the job in 6 years.

SCOPE OF WORK

Diversion Tunnels: Five tunnels, 36 ft. in diameter - two were to be steel lined for subsequent use as penstocks and the other three concrete lined. the approach channel and intake to the five diversion tunnels required 6.5 million cubic yards of excavation.

Dams: There were three dams to be constructed to create the reservoir: the main dam at Mangla, Jari Dam (about 12 miles away) and Sukian Dam. (close by the main dam) A total of 143 million cubic yards. of fill material required: 76 million at main dam, 34 million at Jari and 13 million at Sukian.

Tailrace: The tailrace canal (Bong Canal) required 11 million cubic yards of excavation.

Spillways: The main spillway required 27 million cubic yards of excavation and the emergency spillway another 16.5 million cubic yards. The main spillway encompassed an area of 55 acres and required 1.2 million cubic yards of concrete with the emergency spillway requiring another 200,000 cubic yards of concrete.

Powerhouse: The powerhouse was designed for a total of four generating units to generate 1250 MW of power at its peak. Three units were to be installed under the contract but the fourth unit was subsequently added.

EXECUTION OF WORK

Joe Mc Nabb was appointed Construction Manager by George Atkinson immediately after the successful bid was submitted.

All construction equipment and permanent materials and equipment had to be imported to Pakistan through the port city of Karachi and then via rail on a one track rail line 800 miles to the project site. Support offices were set up in both Karachi and Lahore.

Bids were received in British pounds with the above Equipment - a decision was made early on to go with all

(Continued on following page)

MC NABB AND MANGLA DAM (continued)

Caterpillar track equipment and motor graders; with Euclid scrapers, end dumps and bottom dumps; Bucyrus_Erie shovels; P & H motor cranes; American hoist revolver cranes. The major equipment used on the project was as follows:

- 21 Shovels and draglines (3/4 to 8 c.y.)
- 4 Whirley Cranes
- 12 truck Cranes (25 to 90 ton)
- 12 Hydraulic Cranes
- Dozers: 73 D 9's; 40 D 8's; 38 D 7's
- 4 Front End Loaders
- 85 Scrapers (28 and 40 cubic Yard)
- 60 Bottom Dump Wagons (45 cubic yards)
- 25 Side Dumps (50 Ton)
- 32 End Dumps (10 and 30 ton)
- 30 Motor Graders
- 33 Rock Drills
- 74 Compressors
- 29 Concrete Trucks
- 165 Land rovers
- 173 pickups
- 150 Miscellaneous Trucks
- 1 Mole Tunneling Machine

Personnel - The Joint venture recognized the importance of having a competent and experienced supervisory staff at the site if the job was to be a success. Almost all of the key supervisory people came from the Guy F. Atkinson (GFACO) organization. A wise decision was made initially to build a town (called the Baral Colony) on a 230 acre site that could accommodate the 500 person expatriate staff and their families and keep them happy. As a result the following was constructed:

- 58 One bedroom houses
- 64 One bedroom duplex units
- 32 One bedroom apartment units
- 78 two bedroom houses
- 38 Two bedroom apartment units
- 133 three bedroom houses
- 24 four bedroom houses
- 32 one apartment units
- 5 21 man bachelor units
- 1 80 Bed hospital
- 2 Churches
- 1 Theater
- 1 Bowling alley

Although, not initially planned, a golf course was subsequently added.

During his six years in Pakistan, Joe McNabb returned to the United States only once.

Local labor - A camp was constructed to house 6,000 men. It was later expanded to provide housing for the peak labor force of 14,000 men. Although not initially contemplated, the contractor decided to provide food to all locals employed at the site.

Of course, all local labor had to be trained in the operation of the construction equipment and in the skills of all the various trades required on a project of this type and scope.

OUTCOME OF THE PROJECT

The project was successfully completed within the 6 year schedule contemplated by the contractor and \$10 million was earned. The project still ranks as the 14 th largest earth fill dam in the world.

INTERESTING NOTES

With the passing of Joe Mc Nabb, there are not very many people with us who participated in the construction of Mangla Dam. However, there are two who readily come to mind: DONALD K. STAGER who served as excavation superintendent and went on to be CEO of the Dillingham Corporation and RICHARD J. ROBBINS who designed the Mole (TBM) for the excavation of the diversion tunnels.

In 1992, the Editor and writer of this article, had the opportunity to travel to Pakistan in the company of Dick Byers, a long time Atkinson employee and executive who served as Chief Engineer for the Joint Venture on the construction of Mangla Dam. We visited with the officials of the Pakistan Water and Power Authority in Islamabad, some of whom in their earlier careers had worked at Mangla. We were very well received and they were outspoken about their satisfaction with Mangla Dam and its contribution to the welfare of Pakistan in the generation of power and providing important irrigation.

During that trip, the writer had an opportunity to visit Tarbela Dam, designed by TAMS and built by a European Joint Venture. Retired Tams partners, WILSON BINGER and JOHN LOWE III were in Pakistan often overseeing the design and construction of that project.

ACKNOWLEDGMENTS

The material for this article came from three sources: Joe McNabb's book, OZARK HILLBILLY - CEO; MANGLA DAM - a 336 page book which was published in 1967 compiling the Paper on the Engineering and Construction of the Mangla Dam put together by the Institution of Civil Engineers, England; and the Encyclopedia of World Geography, a Barnes & Noble book.

The writer invites discussion and comments about this article.

MAY 1, 2002 BUSINESS MEETING AND DINNER

40 YEAR MEMBERS

Four 40 year members received their certificates at the May Dinner from President George Tamaro. Lets all hope we look as good as these fellows, if and when our turn arrives.



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GOOD JOB GEORGE WELCOME PETER



Outgoing President George Tamaro presents gavel to incoming President Peter Schneidkraut



Henry Jacoby draws the name of a McAlinden scholarship winner . Education Committee Chairman, Gary Almeraris, looks on. Five \$1,000.00 scholarships were awarded.

DAN MEYER AND BOB RUBIN TALK ON DISPUTE REVIEW BOARDS

Dan Meyer and Bob Rubin shared the podium and presented a very informative session on the current activities of Dispute Review Boards. The success of DRBs continues.

Bob Rubin also discussed the adjudication process recently adopted (in effect since May 1998) in the United Kingdom. Under this process, an adjudicator is appointed; hears the issues; renders a decision within 28 days, which is binding and enforceable until reversed by arbitration or litigation. Adjudicator's decisions have been challenged less than 1 percent of the time. Quite interesting !