

The Light company

Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

June 20, 1994
ST-HL-AE-4817
File No.: G09.18
C13.05
10CFR50

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Main Cooling Reservoir

Reference: Correspondence from S. L. Rosen (HL&P) to NRC Document Control Desk, dated February 22, 1993 (ST-HL-AE-4317)

Houston Lighting & Power Company (HL&P) submitted the referenced letter to describe the performance of the South Texas Project Main Cooling Reservoir and Essential Cooling Pond during and after filling. In a conference call between HL&P (W. Harrison/K. Cope/D. Bize) and NRC (L. Kokajako/R. Pichumani) on June 13, 1994, HL&P determined that corrections/clarifications to page 12 of the referenced letter were necessary. A new page 12 is attached with the changed portions marked by a vertical line in the margin.

In addition, the minimum factor of safety for piping around the Main Cooling Reservoir was discussed during the conference call. ASCE Standard N-725, "Guideline for Design and Analysis of Nuclear Safety Related Earth Structures", in Section 4.4.6, recommends a minimum factor of safety of 1.2 for dynamic loading (e.g., piping) for ultimate heat sink earth structures. Although the Main Cooling Reservoir is not an ultimate heat sink, a preliminary calculation of piping factors of safety at worst case locations yielded a minimum factor of safety of 10.0.

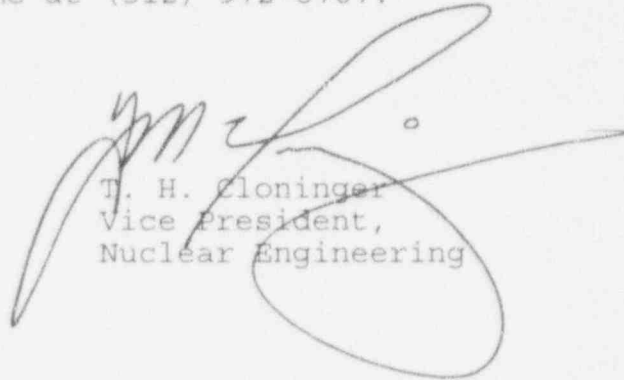
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If there are any questions, please contact either Mr. A. W. Harrison at (512) 972-7298 or me at (512) 972-8787.



T. H. Cloninger
Vice President,
Nuclear Engineering

DNB/esh

Attachment: Corrected page 12 from ST-HL-AE-4317

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C:

L. J. Allan
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8084

Lawrence E. Kokajko
Project Manager
U. S. Nuclear Regulatory Commission
Washington, DC 20555 13H15

David P. Loveless
Sr. Resident Inspector
c/o U.S. Nuclear Regulatory Comm.
P. O. Box 910
Bay City, TX 77404-910

J. R. Newman, Esquire
Newman, Bouknight & Edgar, P.C.,
STE 1000, 1615 L Street, N.W.
1615 L Street, N.W.
Washington, DC 20036

K. J. Fiedler/M. T. Hardt
City Public Service
P. O. Box 1771
San Antonio, TX 78296

J. C. Lanier/M. B. Lee
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

Rufus S. Scott
Associate General Counsel
Houston Lighting & Power Company
P. O. Box 61867
Houston, TX 77208

Institute of Nuclear Power
Operations - Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Dr. Joseph M. Hendrie
50 Bellport Lane
Bellport, NY 11713

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

Joseph R. Egan, Esq.
Egan & Associates, P.C.
2300 N Street, NW
Washington, DC 20037

G. E. Vaughn/C. A. Johnson
Central Power and Light Company
P. O. Box 2121
Corpus Christi, TX 78403

The spillway stilling basin is designed to dissipate the kinetic energy of water flowing down the spillway chute. The stilling basin is lined with a graded granular filter and rip-rap to protect the filter material from erosion. Since the water in the stilling basin was 14 feet deep, the effectiveness of the liner material could not be verified by inspection. Filling the stilling basin with sand increases the flow path from the reservoir to the exit point and allows access to the area by the reservoir inspector. Seepage of 75 gpm was recorded before filling the stilling basin with sand. Seepage of only a few gpm continues on both sides of the stilling basin.

The stilling basin still functions as an energy dissipator. During operation of the emergency spillway the sand filling the basin will be eroded down to the original rip-rap basin lining. Use of the spillway is not anticipated under the present reservoir operating plan.

Seepage Gradient: The seepage gradient was measured at 34 locations around the reservoir where there are three to four piezometers in a line normal to the embankment axis. The seepage gradient around the reservoir is generally between 1% to 2.5%. There are three locations with elevated seepage gradients of 4%, 5% and 8%. Sand and clay borrow pits within the confines of the embankment were not permitted within 800 feet of the embankment centerline. This restriction was to preserve the natural surface clay lining to the extent that lateral head loss from an exposed sand layer in the barrow area would equal the vertical head loss through the surface clay at the inside embankment toe. A permeable layer is probably exposed near the embankment at the three locations with high seepage gradients. The seepage exits at all three areas are monitored closely.

Uplift Pressures: Factors of safety against uplift pressures remain at or above 1.5 at a reservoir pool elevation of +45 feet MSL. In addition to the safety factor, the ditches where the safety factors are the lowest are provided with filters and sand drains.

Circulating Water Intake Structure: Settlement measurements on the intake structure began in 1977. To date, the structure has settled about 0.4 feet on the north side closest to the embankment and about 0.3 feet on the south side.

5.2 Essential Cooling Pond

Embankment and Training Dike: ECP settlement data was first collected in 1979. The survey monuments are located on the inside berm. Measurements to-date indicate a range from