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STRUCTURES AND MATERIALS RESEARCH
Department of Civil Engineering

STUDIES OF CONCRETE FOR WOLF CREEK KANSAS GAS AND ELECTRIC COMPANY POST TENSIONED REACTOR BUILDING

Final Report

by

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Report to

Bechtel Power Corporation
Gaithersburg, Maryland

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STRUCTURAL ENGINEERING LABORATORY
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BERKELEY, CALIFORNIA

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Final Report - Option 1

STUDIES OF CONCRETE FOR WOLF CREEK, KANSAS GAS AND ELECTRIC COMPANY, POST TENSIONED REACTOR BUILDING

1.0 SCOPE

The purpose of this test program was to establish the uniaxial creep and other mechanical and thermal properties of the proposed concrete mix design for the Wolf Creek, Kansas Gas and Electric Company, Reactor Building. The work consisted of furnishing all supervision, labor, materials, and equipment, and performance of all operation and incidentals necessary for the concrete material properties test, except as noted in Section 2.7.

The test program consisted of two options: Option I, the final test program; and, Option II, a preliminary test program, which was not performed for this reactor building.

The Option I test program required the testing of three concrete mixes.

1.1 Mix No. E-2

1.1.1 A mix with 1-1/2 in. maximum size aggregate.

1.1.2 Compressive strength of 6000 psi at 90 days.

1.1.3 Mix design supplied by Owner.

1.2 Mix No. E-1

1.2.1 A mix with 3/4-in. maximum size aggregate.

1.2.2 Compressive strength of 6000 psi at 90 days.

1.2.3 Mix design supplied by Owner.

1.3 Mix No. E-2-S (Special)

1.3.1 A mix with 1-1/2 in. maximum size aggregate.

1.3.2 Compressive strength less than that of the E-2 mix.

1.3.3 Mix design supplied by U.C.

1.3.4 This mix was required because the compressive strength for the 28-day E-2 mix was considerably higher than the 6000 psi compressive strength specified.

2.0 TEST PROGRAM

The Option I test program comprised the evaluation of the following properties of the concrete.

2.1 Compressive Strength determined on sealed concrete specimens, stored at 73°F, at ages of 7, 28, 90, 180, and 365 days for Class E-2 and E-2-S concrete and at ages of 28, 90, and 180 days for Class E-1 concrete.

2.2 Modulus of Elasticity and Poisson's Ratio determined on 6 by 12-in. sealed concrete specimens, stored at 73°F, at ages of 7, 28, 90, 180, and 365 days for Class E-2 and E-2-S concrete and at the age of 180 days only for Class E-1 concrete.

2.3 Coefficient of Thermal Expansion determined on two 6 by 16-in. sealed concrete specimens, stored at 73°F, at ages of 28, 180, and 365 days for Class E-2 concrete.

2.4 Specific Heat determined on two 8 by 16-in. sealed concrete specimens, stored at 73°F, at ages of 28 and 365 days for Class E-2 concrete.

2.5 Diffusivity determined on two 8-1/2 by 17-in. sealed concrete specimens, stored at 73°F, at ages of 28 and 365 days for Class E-2 concrete.

2.6 Creep Characteristics of sealed concrete specimens were determined at a sustained stress of 2100 psi, initially applied at ages of 28, 180, and 365 days for Class E-2 concrete, at age 28 days for Class E-2-S concrete, and at age 180 days for Class E-1 concrete. The autogenous strain change for the Class E-2 concrete was determined for a period of one year on sealed creep specimens that were loaded at age one year. No autogenous strain change was determined for the Class E-1 or Class E-2-S concretes. The creep tests were carried out at 73°F and 110°F for the Class E-2 concrete and at 73°F only for the Class E-1 and E-2-S concretes. Each creep test was conducted on a set of two 6 by 16-in. sealed concrete specimens.

2.7 The following related work was not included.

2.7.1 Design of concrete mixes, except for Mix E-2-S.

2.7.2 Supply of portland cement, admixtures, and aggregate used for the test program.

2.7.3 Performance of acceptance or user tests for concrete materials.

3.0 ABBREVIATIONS

ACI	-	American Concrete Institute
ASTM	-	American Society for Testing and Materials
AISI	-	American Iron Steel Institute

4.0 CODES AND STANDARDS

Codes and standards referenced herein are listed below, together with their common abbreviations and year of adoption, as used in this Specification. Standards or codes, including the year of adoption or revision, appearing in referenced documents other than those describing test procedures or methods of sampling shall not be considered as part of this Specification unless specifically referenced below.

ASTM C 33-74	Standard Specification for Concrete Aggregates
ASTM C 39-72	Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 125-74	Standard Definitions of Terms Relating to Concrete and Concrete Aggregates
ASTM C 127-73	Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate
ASTM C 128-73	Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate
ASTM C 138-75	Standard Method of Test for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete
ASTM C 143-74	Standard Method of Test for Slump of Portland Cement Concrete
ASTM C 150-74	Standard Specification for Portland Cement
ASTM C 192-69	Standard Method of Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231-75	Standard Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method

ASTM C 469-65	Standard Method of Test for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
ASTM C 566-67	Standard Method of Test for Total Moisture Content of Aggregate by Drying
ASTM C 617-73	Standard Method of Capping Cylindrical Concrete Specimens
ASTM E 4-72	Standard Method of Capping Cylindrical Concrete Specimens
ASTM E 6-73	Standard Definitions of Terms Relating to Methods of Mechanical Testing
ASTM E 12-70	Standard Definitions of Terms Relating to Density and Specific Gravity of Solids, Liquids and Gases
ASTM E 83-67	Standard Method of Verification and Classification of Extensometers

5.0 MANUFACTURE OF CONCRETE SPECIMENS

5.1 Mixing and Placing

Concrete was proportioned in accordance with the mix design and materials supplied by the Owner. The mix designs are shown in Table A.

Aggregates were prepared in accordance with ASTM C 192, Section 4.3. Bulk specific gravity and absorption were determined for the aggregates in accordance with ASTM C 127 and C 128, and are reported in Table B. Cement was stored in a steel moisture-proof container.

Mixing of concrete was in accordance with ASTM C 192, Section 5.1.2. Cement and aggregates were stored at 73°±3°F for at least two days before mixing to assure a uniform temperature of these materials. Slump was measured in accordance with ASTM Method C 143. Entrained air content was measured in accordance with ASTM Method C 231. Unit weight and yield were determined in accordance with ASTM C 138. Specimens were made and consolidated in accordance with ASTM C 192, Sections 5.3 and 5.4.3, respectively. Accurate records of the mix proportions, moisture content of aggregate, air content, unit weight, and yield were retained.

The specimens for the creep and thermal coefficient of expansion were cast in 6.000 inches (within a tolerance of -.002 inches) by 18 inches machined split cast iron molds. Prior to casting, one Carlson 8-inch strain gage, properly calibrated, was centered on the axis of the cast iron mold. The lead wire from the strain gage was brought out through a hole drilled in the center of a 2-inch thick plate placed at the bottom of the mold and sealed by means of an "O" ring. The final specimen length was 16 inches.

A 1/8-in. by 8-in. metal rod was placed diametrically across the top of this mold to serve as a support for a wire which held the meter in an axial position during casting. After casting, the wire was cut-off, the rod removed, and the top of the cast iron mold sealed with Saran wrap.

The creep and thermal expansion specimens were allowed to set for five hours after casting to allow bleeding water to be reabsorbed prior to capping. Then, a conical-shaped layer of mortar made from the original mix was formed on the top of each cylinder. The 1-1/2 in. thick steel top-plates were then worked back and forth into position until the mortar appeared to be spread uniformly between the plate and the specimen. A leveling plate was used to assure that each top-plate was normal to the axis of the specimen. The creep and thermal expansion specimens were than moved to the 73°F, 50 percent relative humidity room.

The split cast iron molds were stripped from the creep and thermal expansion specimens at the age of one day. Within three minutes after removal of the cast iron mold, a 1/16-in. thick butyl rubber sheet was wrapped and bonded to the top and bottom steel plates with rubber cement. A 3-in. wide lap splice was used to join the butyl rubber sheet. Large hose clamps were placed over the butyl rubber and the end steel plates to assure that the specimens would be internally sealed. The specimens tested at 73°F remained in the 73°F, 50 percent relative humidity room. The specimens tested at 110°F were moved to a 90°F room at the age of eight days. At the age of 16 days, they were moved to the 110°F room where they remained until the end of the test.

Compressive strength specimens were cast in 6 by 12-in. sheet-metal cans. The lid and all joints were sealed with silicon rubber to internally seal the specimens. All sealed compressive strength specimens remained in the 100 percent relative humidity room until just prior to testing, at which time they were stripped, capped, and covered with Saran wrap to ensure water retention throughout the test period.

Modulus of elasticity and Poisson's ratio were determined on the compressive strength cylinders.

Specimens for thermal diffusivity tests were cast in 8-1/2 by 17 by 0.020-in. thick steel cans. They were cast solid, except for a 3/8-in. diameter by 8-1/2 in. deep thermometer well centered on the axis of the specimen. After casting, lids were placed on the specimens and the cans were sealed with silicon rubber prior to being moved to the 73°F, 100 percent relative humidity room. The external metal container was left on the cylinders throughout the duration of the test.

Specimens for the specific heat tests were cast in 8 by 16 by 0.020-in. thick copper cans. They were cast solid, except for a 1-5/8 in. O.D. by 1-1/2 in. I.D. brass tube centered on the axis for the full length of the specimen. After casting, lids were placed on the specimens and the cans were sealed with silicon rubber prior to being moved to the 73°F, 100 percent relative humidity room. The external metal container remained on the cylinders throughout the duration of the test.

5.2 Curing Procedure

After each specimen was consolidated and finishing of the top surface was completed, it was placed in a room under the environmental conditions specified herein for the required test.

6.0 TEST RESULTS

6.1 Mix Design Data

The mix design and data for the concrete mixes used in casting the specimens are shown in Tables C to H. In Tables C to F, the mix designs were computed using absorptions of the aggregate supplied by the Owner. In Tables F to H, the mix designs were computed using absorption of the aggregate determined at Berkeley. In Tables C to H, the weight of cement, water, sand, 3/4-in. and 1-1/2-in. aggregates per cubic yard of concrete were computed using the measured unit weight of the concrete and the batch weights of each material. [Weight of each material, pcy = (Batch weight of each material, lbs.) x (Unit weight of concrete, pcy) ÷ (Total batch weight, lbs.)]

6.2 Compressive Strength and Elastic Properties

Compressive strengths were determined at the ages of 7, 28, 90, 180, and 365 days for Class E-2 and Class E-2-S concretes, and at ages 7, 28, 90, and 180 days for Class E-1 concrete. The average diameter of each specimen was between 5.96 in. and 5.98 in. The ends of the cylinders, to which loads were applied, were plane square end surfaces at right angles to the axis of the specimen and met the planeness requirements of Section 1.2 of ASTM Method C 617. Each specimen was checked for planeness. Testing procedures were in accordance with ASTM C 469, Sections 4.3 through 4.7, inclusive. The testing machine and compressometer used comply with ASTM C 469, Section 2. Each strength determination represents the average obtained from three 6 by 12-in. cylinders. The same three 6 by 12-in. concrete cylinders were used in the determination of compressive strength, modulus of elasticity (E), and Poisson's ratio (μ). The modulus of elasticity and Poisson's ratio were determined by use of an XYY recorder employing differential transformers. This arrangement produces a continuous plot of stress versus longitudinal strain and lateral strain versus longitudinal strain from which both the modulus of elasticity (E) and Poisson's ratio (μ) were computed. The loading rate used was 60,000 lbs. per minute, which is equivalent to 35 psi per second for a 6-in. diameter specimen. Compressive strength, modulus of elasticity, and Poisson's ratio for sealed concrete specimens stored at 73°F and 100 percent relative humidity are shown in Table I.

6.3 Thermal Diffusivity

The average 28 and 365-day thermal diffusivities for Class E-2 concrete, as determined on two 8-1/2 in. diameter by 17-in. long concrete cylinders, were 0.031 and 0.032 ft^2/hr, respectively, and are shown in Table I. The hot water bath and cold water bath were approximately 120°F and 40°F, respectively, for the thermal diffusivity tests.

Thermal diffusivity was determined by the cooling test described in "Thermal Properties of Concrete," Bulletin 1, United States Bureau of Reclamation, Boulder Canyon Project, Final Reports, 1940, pp. 66-86 and pp. 133-143.

6.4 Specific Heat

The average 28 and 365-day specific heat for Class E-2 concrete, as determined on two 8-in. diameter by 16-in. long concrete cylinders, were 0.262 and 0.252 Btu/lb. x °F, respectively, and are shown in Table I.

Specific heat was determined with an adiabatic calorimeter designed to measure the amount of heat required to raise the temperature of a cylindrical test specimen. The calorimeter consisted essentially of two double-walled containers, one within the other, with provision for the measurement of heat input and temperature rise. The equipment and method used were essentially the same as described in "Thermal Properties of Concrete," Bulletin 1, U.S. Bureau of Reclamation, Boulder Canyon Project, Final Report, 1946, pp. 26 and 27 and pp. 112 to 117.

6.5 Thermal Coefficient of Expansion

The two sealed 6-in. by 16-in. thermal coefficient of expansion specimens containing Class E-2 concrete were measured for length changes by means of a Carlson strain meter at successive temperatures of 73°F, 40°F, 100°F, 73°F, 100°F, and 73°F. Specimens were left for at least 24 hours at each temperature before strain readings were taken. At the end of the cycling period, the specimens were stored at 73°F. The average linear thermal expansion for the two specimens at ages of 28, 180, and 365 days were 3.3, 3.4, and 3.5 micro-strain per 1°F temperature change, respectively.

6.6 Sustained Modulus of Elastic, Creep, and Autogenous Strains

Creep characteristics for the concrete were determined on sealed 6-in. by 16-in. cylinders with centrally embedded Carlson strain meters. Sixteen specimens were initially loaded at different ages and temperatures as shown in the table below.

Class of Concrete	Temp. of Specimen	Number of Specimens at Each Loading Age, days		
		28	180	365
E-2	73°F	2	2	2
E-2	110°F	2	2	2
E-1	73°F	-	2	-
E-2-S	73°F	2	-	-

The autogenous strains for the 28 and 180-day loaded creep specimens with Class E-2 concrete were determined from strain data before loading on the specimens with Class E-2 concrete, which were loaded at 365 days. No specimens were cast to determine autogenous strains for the Class E-1 concrete so the strains were assumed to be zero. The autogenous strains for the 28-day loaded creep specimens with Class E-2-S concrete were determined from data before loading on the specimens with Class E-2 concrete, which were loaded at 365 days.

The loading frames used are capable of applying and maintaining a stress level of 2100 psi to all loaded creep specimens despite any change in the dimension of the specimen. Each frame is capable of accepting two specimens in tandem (lengthwise) for simultaneous loading. The frame consists of two header plates (thickness of 1 inch) connected by three 1-1/2 in. (AISI C 1215) steel rods. Care was taken to prevent eccentric loading on all specimens. The hydraulic load-maintaining element consisted of accumulators, regulators, indicator gages, and a high pressure pump which is used to maintain the load on each frame. Pressure gages provide a means for measuring the load to the nearest 2 percent of the total applied stress.

For applying the initial stress of 2100 psi, a manual hand pump was used to apply the stress at a uniform rate of 35±5 psi per second. At this rate the total stress was applied in 60 seconds. Each loaded creep specimen's strain gage was read at: -60 seconds (no load applied); zero time (full load applied); one minute; 10 minutes; two hours; eight hours; 24 hours; daily for one week; weekly for one month; and, twice monthly thereafter.

Sustained modulus of elasticity, creep characteristics, and autogenous strains for sealed concrete specimens are shown in Tables J to Q.

Table J - Class E-2 concrete stored at 73°F and stressed for 339 days starting at age 28 days.

Table K - Class E-2 concrete stored at 110°F and stressed for 339 days starting at age 28 days.

Table L - Class E-2 concrete stored at 73°F and stressed for 217 days starting at age 180 days.

Table M - Class E-2 concrete stored at 110°F and stressed for 217 days starting at age 180 days.

Table N - Class E-2 concrete stored at 73°F and stressed for 60 days starting at age 365 days.

Table O - Class E-2 concrete stored at 110°F and stressed for 60 days starting at age 365 days.

Table P - Class E-1 concrete stored at 73°F and stressed for 166 days starting at age 180 days.

Table Q - Class E-2-S concrete stored at 73°F and stressed for 318 days starting at age 28 days.

In the above tables, a minus time under stress indicates a time prior to full load and zero time under stress indicates the time when full load was reached. The sustained modulus of elasticity was computed by dividing the applied stress of 2100 psi by the sum of elastic, creep, and autogenous strains. The autogenous strain values shown are based on a zero value at time of full load.

Elastic plus creep plus autogenous strains, creep plus autogenous strains, and creep strains are all shown plotted versus log of time plus one day for the average of two unsealed concrete specimens in Figures 1 to 8.

Figure 1 - Class E-2 concrete stressed at age 28 days and stored at 73°F.

Figure 2 - Class E-2 concrete stressed at age 28 days and stored at 110°F.

Figure 3 - Class E-2 concrete stressed at age 180 days and stored at 73°F.

Figure 4 - Class E-2 concrete stressed at age 180 days and stored at 110°F.

Figure 5 - Class E-2 concrete stressed at age 365 days and stored at 73°F.

Figure 6 - Class E-2 concrete stressed at age 365 days and stored at 110°F.

Figure 7 - Class E-1 concrete stressed at age 180 days and stored at 73°F.

Figure 8 - Class E-2-S concrete stressed at age 28 days and stored at 73°F.

Elastic plus creep plus autogenous strains are plotted versus time for the average of two sealed concrete specimens in Figures 9 and 10.

Figure 9 - Class E-2 concrete stressed at ages of 28, 180, and 365 days and stored at 73°F.

Figure 10 - Class E-2 concrete stressed at ages of 28, 180, and 365 days and stored at 110°F.

The complete computer calculations for determining the strains due to loading the sealed concrete specimens are shown in Tables 1A/1B to 8A/8B.

Tables 1A & 1B - Class E-2 concrete stressed at age 28 days and stored at 73°F.

Tables 2A & 2B - Class E-2 concrete stressed at age 28 days and stored at 110°F.

Tables 3A & 3B - Class E-2 concrete stressed at age 180 days and stored at 73°F.

Tables 4A & 4B - Class E-2 concrete stressed at age 180 days and stored at 110°F.

Tables 5A & 5B - Class E-2 concrete stressed at age 365 days and stored at 73°F.

Tables 6A & 6B - Class E-2 concrete stressed at age 365 days and stored at 110°F.

Tables 7A & 7B - Class E-1 concrete stressed at age 180 days and stored at 73°F.

Tables 8A & 8B - Class E-2-S concrete stressed at age 28 days and stored at 73°F.

The complete computer calculations for determining the autogenous strains are shown in Tables 9A/9B and 10A/10B.

Tables 9A & 9B - Class E-2 concrete stored at 73°F.

Tables 10A & 10B - Class E-2 concrete stored at 110°

7.0 COMMENTS

7.1 For the first mix, Class E-2 concrete, using the mix design supplied by Kansas Gas and Electric Company, aggregate absorptions obtained at Berkeley, a pan-type mixer slump of 5-1/2 in., and an air content of 14 percent were measured. Because the slump and air content were greater than specified, Mr. Daye of the Bechtel Corporation was contacted by phone on February 4, 1976, prior to casting any specimens. A decision was then made to use the aggregate absorptions as given by Mr. Daye for all further mixes since this reduced the calculated free water and, therefore, the slump.

7.2 A Lancaster counter current batch pan mixer, Type 30 DH, was used for all of the mixes. Use of this mixer may have accounted for the decrease in air-entraining agent used to obtain the required 3 to 6 percent air. Also, due to better mixing, this pan mixer may have accounted for some of the increase in compressive strength for mixes made at Berkeley.

7.3 Bechtel specifications for slump are given for field conditions measured at point and time of placement. Clarification was needed as to what procedure to follow in the laboratory to measure the desired slump. For the mixes made at Berkeley, slump was measured three minutes and eight minutes after end of mixing.

7.4 All work was performed in accordance with the "Quality Assurance Program" submitted prior to the start of testing.

TABLE A

WOLF CREEK POST TENSIONED REACTOR BUILDING

Material	Source
Cement:	Ashgrove Type II
Sand:	Christie Quarry, Lomont, Kansas
3/4 in. Aggregate:	Christie Quarry, Lomont, Kansas
1-1/2 in. Aggregate:	Christie Quarry, Lomont, Kansas
WRA Admixture:	Master Builders, Pozzolith 300N
AEA Admixture:	Master Builders, MV-BR

Specifications

Compressive Strength:	6,000 psi at 90 days
Slump: Working limit at point of placement -	3 inches - Mix E-1 2-1/2 inches - Mix E-2
Inadvertency Margin -	2 inches - Mix E-1 and Mix E-2
Rejection Limit -	5 inches - Mix E-1 4-1/2 inches - Mix E-2
Air:	3 to 6 percent
Temperature:	73°F ± 3°F

Weights (S.S.D.) for One Cubic Yard of Concrete
(as per letter from Mr. Thomas F. Regan, Kansas Gas & Electric Company, dated September 24, 1975)

Mix No.	E-1	E-2
Maximum Size Aggregate:	3/4 in.	1-1/2 in.
Cement, lbs.	750	740
Water, lbs.	307	290
Sand, lbs.	1400	1271
3/4 in. Aggregate, lbs.	1480	820
1-1/2 in. Aggregate, lbs.	--	820
WRA, fl. oz.	37.5	37.0
AEA, fl. oz.	6.6	6.9

TABLE B

WOLF CREEK POST TENSIONED REACTOR BUILDING

Bulk Specific Gravity and Absorption Capacity

Aggregate	Bulk Specific Gravity (Saturated Surface Dry)	Absorption Capacity, percent	
		Berkeley	Owner
Sand	2.62	2.6	1.9
3/4 in. Aggregate	2.62	2.2	1.8
1-1/2 in. Aggregate	2.61	1.9	1.4

Note: Aggregates not initially oven dried in the determination of these values.

TABLE C

CASTING DATA FOR MIX E-2

Mix designs are computed using absorption of aggregates supplied by Owner.

Date	February 4, 1976				March 26, 1976		
Specimens Cast	12 - 6x16-in. creep specimens 2 - 6x16-in. thermal expansion cylinders 14 - 6x12-in. cylinders 1 - 8-1/2x17 in. diffusivity cylinder 1 - 8x16-in. specific heat cylinder				9 - 6x12-in. cylinders 1 - 8-1/2x17-in. diffusivity cylinder 1 - 8x16-in. specific heat cylinder		
Batch No.	3	4	5	6	11	12	Avg.
Batch Size, cu. ft.							
Cement, pcy	737	742	738	741	737	743	740
Water, pcy	289	291	289	290	289	291	290
Sand, pcy S.S.D.	1266	1274	1267	1272	1266	1276	1271
3/4 in. Aggregate, pcy S.S.D	817	822	817	821	817	823	819
1-1/2 in. Aggregate, pcy S.S.D.	817	822	817	821	817	823	819
AEA, oz./cu. yd.	6.9	6.9	6.9	6.9	6.9	7.0	6.9
WRA, oz./cu. yd.	37.0	37.0	37.0	37.0	37.0	37.1	37.0
Unit Wt., pcf	145.4	146.4	145.5	146.1	145.4	146.5	145.9
1st Slump, in.	3-1/2	3-1/4	3-3/4	4	4-3/4	3	3-3/4
2nd Slump, in.	2-1/2	2	2-1/2	2-3/4	3-1/4	2-1/4	2-1/2
Air, % by volume	4.2	4.2	4.7	4.7	4.8	3.7	4.4
Temp., °F(b)	68	68	68	69	72	72	69
W/C Ratio by wt.	0.392	0.392	0.392	0.391	0.392	0.392	0.392

(1) First slump was taken three minutes after the end of mixing.
(2) Second slump was taken eight minutes after the end of mixing.

TABLE D

CASTING DATA FOR MIX E-2-S

Mix designs are computed using absorption of aggregates supplied by Owner.

Date	March 26, 1976		
Specimens Cast	2 - 6x16-in. creep specimens 15 - 6x12-in. cylinders		
Batch No.	13	14	Avg.
Batch Size, cu. ft.	1.8	1.8	
Cement, pcy	591	593	592
Water, pcy	270	270	270
Sand, pcy S.S.D.	1387	1391	1389
3/4 in. Aggregate, pcy S.S.D.	832	834	833
1-1/2 in. Aggregate, pcy S.S.D.	832	834	833
AEA, oz./cu. yd.	1.9	1.9	1.9
WRA, oz./cu. yd.	30.2	30.2	30.2
Unit Wt., pcf	144.9	145.3	145.1
1st Slump, in.	3-3/4	4	3-3/4
2nd Slump, in.	2-3/4	2-1/2	2-5/8
Air, % by volume	4.3	4.4	4.4
Temp., °F(b)	71	72	72
W/C Ratio by wt.	0.457	0.455	0.456

(1) First slump was taken three minutes after the end of mixing.
(2) Second slump was taken eight minutes after the end of mixing.

TABLE E

CASTING DATA FOR MIX E-1

Mix designs are computed using absorption of aggregates supplied by Owner.

Date	March 17, 1976	March 26, 1976		
Specimens Cast	9 - 6x12-in. cylinders	2 - 6x16-in. creep specimens 9 - 6x12-in. cylinders		
Batch No.	8	9	10	Avg.
Batch Size, cu. ft.	1.8	1.8	1.8	
Cement, pcy	747	746	742	745
Water, pcy	305	305	304	305
Sand, pcy S.S.D.	1393	1392	1385	1390
3/4-in. Aggregate, pcy S.S.D.	1473	1472	1464	1470
1-1/2 in. Aggregate, pcy S.S.D.	---	---	---	---
AEA, oz./cu. yd.	2.2	2.2	2.2	2.2
WRA, oz/cu. yd.	37.5	37.5	37.5	37.5
Unit Wt., pcf	145.3	145.0	144.2	144.8
1st Slump, in.	2-3/4	3-1/4	3-1/2	3-1/8
2nd Slump, in.	2	2-1/2	2-1/2	2-1/3
Air, % by volume	4.6	4.9	4.9	4.8
Temp., $^oF^{(b)}$	73	71	72	72
W/C Ratio by wt.	0.408	0.409	0.410	0.409

(1) First slump was taken three minutes after the end of mixing.
(2) Second slump was taken eight minutes after the end of mixing.

TABLE F

CASTING DATA FOR MIX E-2

Mix designs are computed using absorption of aggregates determined at Berkeley.

Date	February 4, 1976				March 26, 1976		
Specimens Cast	12 - 6x16-in. creep specimens 2 - 6x16-in. thermal expansion cylinders 14 - 6x12-in. cylinders 1 - 8-1/2x17-in. diffusivity cylinder 1 - 8x16-in. specific heat cylinder				9 - 6x12-in. cylinders 1 - 8-1/2x17-in. diffusivity cylinder 1 - 8x16-in. specific heat cylinder		
Batch No.	3	4	5	6	11	12	Avg.
Batch Size, cu. ft.							
Cement, pcy	737	742	738	741	737	743	740
Water, pcy	272	274	273	274	272	274	273
Sand, pcy S.S.D.	1275	1284	1276	1282	1275	1285	1279
3/4-in. Aggregate, pcy S.S.D.	820	826	821	824	820	826	823
1-1/2-in. Aggregate, pcy S.S.D.	820	826	821	825	820	826	823
AEA, oz./cu. yd.	6.9	6.9	6.9	6.9	6.9	7.0	6.9
WRA, oz./cu. yd.	37.0	37.0	37.0	37.0	37.0	37.1	37.0
Unit Wt., pcf	145.4	146.4	145.5	146.1	145.4	146.5	145.9
1st Slump, in.	3-1/2	3-1/4	3-3/4	4	4-3/4	3	3-3/4
2nd Slump, in.	2-1/2	2	2-1/2	2-3/4	3-1/4	2-1/4	2-1/2
Air, % by volume	4.2	4.2	4.7	4.7	4.8	3.7	4.4
Temp., °F(b)	68	68	68	69	72	72	69
W/C Ratio by wt.	0.369	0.369	0.370	0.370	0.369	0.369	0.369

(1) First slump was taken three minutes after the end of mixing.
(2) Second slump was taken eight minutes after the end of mixing.

TABLE G

CASTING DATA FOR MIX E-2-S

Mix designs are computed using absorption of aggregates determined at Berkeley.

Date	March 26, 1976		
Specimens Cast	2 - 6x16-in. creep specimens 15 - 6x12-in. cylinders		
Batch No.	13	14	Avg.
Batch Size, cu. ft.	1.8	1.8	
Cement, pcy	591	593	592
Water, pcy	254	254	254
Sand, pcy S.S.D.	1397	1401	1399
3/4-in. Aggregate, pcy S.S.D.	835	837	836
1-1/2-in. Aggregate, pcy S.S.D.	835	837	836
AEA, oz./cu. yd.	1.9	1.9	1.9
WRA, oz./cu. yd.	30.2	30.2	30.2
Unit Wt., pcf	144.9	145.3	145.1
1st Slump, in.	3-3/4	4	3-7/8
2nd Slump, in.	2-3/4	2-1/2	2-3/8
Air, % by volume	4.3	4.4	4.4
Temp., °F(b)	71	72	72
W/C Ratio by wt.	0.430	0.428	0.429

(1) First slump was taken three minutes after the end of mixing.
(2) Second slump was taken eight minutes after the end of mixing.

TABLE H

CASTING DATA FOR MIX E-1

Mix designs are computed using absorption of aggregates determined at Berkeley.

Date	March 17, 1976	March 26, 1976		
Specimens Cast	9 - 6x12-in. cylinders	2 - 6x16-in. creep specimens 9 - 6x12-in. cylinders		
Batch	8	9	10	Avg.
Batch Size, cu. ft.				
Cement, pcy	747	746	742	745
Water, pcy	287	287	286	287
Sand, pcy S.S.D.	1403	1402	1395	1400
3/4-in. Aggregate, pcy. S.S.D.	1478	1477	1469	1475
1-1/2-in. Aggregate, pcy S.S.D.	---	---	---	---
AEA, oz./cu. yd.	2.2	2.2	2.2	2.2
WRA, oz./cu. yd.	37.5	37.5	37.5	37.5
Unit Wt., pcf	145.3	145.0	144.2	144.8
1st Slump, in.	2-3/4	3-1/4	3-1/2	3-1/8
2nd Slump, in.	2	2-1/2	2-1/2	2-1/3
Air, % by volume	4.6	4.9	4.9	4.8
Temp., $^{o}F^{(b)}$	73	71	72	72
W/C Ratio by wt.	0.384	0.385	0.385	0.385

(1) First slump was taken three minutes after the end of mixing.
(2) Second slump was taken eight minutes after the end of mixing.

TABLE I

MECHANICAL AND THERMAL PROPERTIES

Property	Age, days	Concrete, class		
		E-1 3/4"	E-2 1-1/2"	E-2-S 1-1/2"
Compressive Strength, psi (a)	7	6820	6625	5540
	28	8050	8200	6770
	90	9110(c)	9030(e)	7580
		8900(d)	8740(f)	xxxx
	180	9210	9340	7750
	365	xxxx	9990	7940
Poisson's Ratio (a)	7	xxxx	0.23	xxxx
	28	xxxx	0.23	0.23
	90	xxxx	0.24	xxxx
	180	0.23	0.24	xxxx
	365	xxxx	0.25	xxxx
Modulus of Elasticity, psi (psi x 10^6) (a)	7	xxxx	4.5	xxxx
	28	xxxx	4.7	4.6
	90	xxxx	4.8	xxxx
	180	4.7	5.1	xxxx
	365	xxxx	5.1	xxxx
Linear Thermal Expansion, micro-strain/°F (b)	28	xxxx	3.3	xxxx
	180	xxxx	3.4	xxxx
	365	xxxx	3.5	xxxx
Diffusivity, ft^2/hr	28	xxxx	0.031	xxxx
	365	xxxx	0.032	xxxx
Specific Heat, Btu/lb. °F	28	xxxx	0.262	xxxx
	365	xxxx	0.242	xxxx

Notes: All tests done on sealed specimens.

xxxx - specimens not tested at these ages

(a) Average of three specimens.

(b) Average of two specimens.

(c) Specimens from Mix No. 8 cast on 3/17/76.

(d) Specimens from Mix No. 9 and Mix No. 10 cast on 3/26/76.

(e) Specimens from Mix Nos. 3, 4, & 5 cast on 2/4/76.

(f) Specimens from Mix No. 11 and 12 cast on 3/26/76.

TABLE J

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION I CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING	:	28 DAYS
TEST TEMPERATURE	:	73 DEG. F.
ULT. STR.	:	8200. PSI
APPLIED TEST STRESS	:	2100. PSI
PER. ULT. STR. APPLIED	:	25.6 PERCENT
METER NUMBERS		
AUTOGENOUS	:	73 12 AND 73 13
CREEP	:	73 00 AND 73 01

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY MPSI (A)	ELASTIC, CREEP PLUS AUTOGENOUS (MICROSTRAIN)	CREEP PLUS AUTOGENOUS (MICROSTRAIN)	AUTOGENOUS (MICROSTRAIN)	CREEP (MICROSTRAIN)	SPECIFIC CREEP (B)
-.0007		0				
.0000	4.57	-450	0	0	0	0.
.0063	4.42	-475	-25	0	-25	-.0119
.2014	4.08	-515	-65	0	-65	-.0310
.4771	3.93	-534	-83	0	-83	-.0395
1.1785	3.78	-555	-104	-1	-103	-.0490
2.3	3.62	-580	-130	-2	-128	-.0610
3.2	3.55	-591	-141	-1	-140	-.0667
4.2	3.46	-607	-157	-1	-156	-.0743
5.3	3.39	-619	-169	-1	-168	-.0800
6.3	3.35	-627	-176	-1	-175	-.0833
7.3	3.31	-635	-184	-2	-182	-.0867
8.3	3.27	-643	-192	-2	-190	-.0905
9.0	3.24	-648	-198	-2	-196	-.0933
14.3	3.08	-681	-231	-3	-228	-.1086
20.3	2.97	-705	-255	-3	-252	-.1200
27.9	2.88	-730	-280	-2	-278	-.1324
37.0	2.79	-753	-302	-3	-299	-.1424
44.3	2.74	-767	-316	-2	-314	-.1495
52.1	2.69	-780	-329	0	-329	-.1567
58.1	2.67	-787	-336	-1	-335	-.1595
70.2	2.62	-801	-351	0	-351	-.1671
78.2	2.59	-811	-360	1	-361	-.1719
83.2	2.57	-816	-366	2	-368	-.1752
99.1	2.52	-832	-381	2	-383	-.1824
107.2	2.49	-842	-391	3	-394	-.1876
118.2	2.46	-853	-403	6	-409	-.1948
133.0	2.43	-863	-413	6	-419	-.1995
148.3	2.40	-875	-425	8	-433	-.2062
152.1	2.39	-881	-431	9	-440	-.2095
155.1	2.39	-884	-433	8	-441	-.2100
166.2	2.36	-891	-441	8	-449	-.2138
173.3	2.34	-896	-446	9	-455	-.2167
186.9	2.33	-903	-453	9	-462	-.2200
197.2	2.32	-907	-457	9	-466	-.2219
202.2	2.31	-909	-458	10	-468	-.2229
212.0	2.31	-910	-459	14	-473	-.2252
231.2	2.29	-918	-468	16	-484	-.2305
246.1	2.28	-921	-471	15	-486	-.2314
261.2	2.27	-927	-476	16	-492	-.2343
292.2	2.25	-934	-484	20	-504	-.2400
317.1	2.23	-940	-490	20	-510	-.2429
322.0	2.23	-941	-491	21	-512	-.2438
337.0	2.22	-945	-495	22	-517	-.2462
339.9	2.22	-946	-496	21	-517	-.2462
33[illegible].0	2.22	-946	-495	21	-516	-.2457

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

TABLE K

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING	:	28 DAYS
TEST TEMPERTURE	:	110 DEG. F.
ULT. STR.	:	8500. PSI
APPLIED TEST STRESS	:	2100. PSI
PER. ULT. STR. APPLIED	:	24.7 PERCENT
METER NUMBERS		
AUTOGENOUS	:	11 04 AND 11 05
CREEP	:	11 00 AND 11 01

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY MPSI (A)	ELASTIC, CREEP PLUS AUTOG-ENOUS (MICROSTRAIN)	CREEP PLUS AUTOG-ENOUS (MICROSTRAIN)	AUTOG-ENOUS (MICROSTRAIN)	CREEP (MICROSTRAIN)	SPECIFIC CREEP (B)
-.0007		0				
.0000	4.50	-467	0	0	0	0.
.1028	4.00	-525	-57	0	-57	-.0271
.3795	3.77	-557	-90	0	-90	-.0429
1.0799	3.56	-590	-122	0	-122	-.0581
2.2	3.40	-617	-150	0	-150	-.0714
3.1	3.32	-632	-165	2	-167	-.0795
4.1	3.21	-655	-188	4	-192	-.0914
5.2	3.13	-670	-203	6	-209	-.0995
6.2	3.08	-681	-213	7	-220	-.1048
7.2	3.01	-697	-229	8	-237	-.1129
8.2	2.99	-703	-236	9	-245	-.1167
8.9	2.97	-708	-241	9	-250	-.1190
14.2	2.83	-738	-271	8	-279	-.1329
20.2	2.75	-765	-297	5	-302	-.1438
27.8	2.67	-787	-319	6	-325	-.1548
36.9	2.59	-811	-343	7	-350	-.1667
44.2	2.55	-823	-356	6	-362	-.1724
58.0	2.49	-845	-377	5	-382	-.1819
70.1	2.46	-854	-387	5	-392	-.1867
78.1	2.42	-867	-400	4	-404	-.1924
83.1	2.40	-874	-406	2	-408	-.1943
99.0	2.35	-893	-425	2	-427	-.2033
107.1	2.33	-903	-436	0	-436	-.2076
117.1	2.31	-911	-444	0	-444	-.2114
132.9	2.28	-922	-455	-2	-453	-.2157
155.0	2.24	-937	-470	-6	-464	-.2210
155.1	2.21	-950	-483	-5	-478	-.2276
173.2	2.19	-957	-489	-8	-481	-.2290
186.8	2.18	-964	-496	-5	-491	-.2338
197.1	2.16	-971	-504	-9	-495	-.2357
202.1	2.15	-975	-507	-10	-497	-.2367
211.9	2.14	-980	-513	-13	-500	-.2381
246.0	2.11	-996	-528	-18	-510	-.2429
261.1	2.11	-997	-529	-21	-508	-.2419
292.1	2.06	-1020	-552	-27	-525	-.2500
317.1	2.03	-1037	-569	-35	-534	-.2543
323.0	2.02	-1040	-572	-36	-536	-.2552
336.9	2.01	-1046	-579	-39	-540	-.2571
338.6	2.01	-1047	-579	-39	-540	-.2571

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

TABLE L

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING : 180 DAYS
TEST TEMPERTURE : 73 DEG. F.
ULT. STR. : 9340. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.5 PERCENT
METER NUMBERS
AUTOGENOUS : 73 12 AND 73 13
CREEP : 73 04 AND 73 05

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY MPSI (A)	ELASTIC, CREEP PLUS AUTOG-ENOUS (MICROSTRAIN)	CREEP PLUS AUTOG-ENOUS (MICROSTRAIN)	AUTOG-ENOUS (MICROSTRAIN)	CREEP (MICROSTRAIN)	SPECIFIC CREEP (B)
-.0007		0				
.0000	4.96	-423	0	0	0	0.
.0028	4.78	-439	-16	0	-16	-.0076
.0053	4.74	-443	-20	0	-20	-.0095
.0201	4.66	-451	-28	0	-28	-.0133
.1833	4.44	-473	-50	0	-50	-.0238
.2250	4.43	-474	-51	0	-51	-.0243
.3639	4.38	-480	-57	0	-57	-.0271
1.0757	4.24	-495	-72	1	-73	-.0348
2.1	4.16	-505	-82	0	-82	-.0390
3.1	4.06	-517	-94	0	-94	-.0448
4.1	4.03	-521	-98	-1	-97	-.0462
7.0	3.95	-532	-109	0	-109	-.0519
9.2	3.88	-541	-118	0	-118	-.0562
14.1	3.76	-558	-135	-1	-134	-.0638
21.2	3.65	-576	-153	0	-153	-.0729
34.9	3.50	-600	-177	0	-177	-.0843
45.1	3.44	-611	-188	0	-188	-.0895
50.1	3.41	-615	-192	1	-193	-.0919
59.9	3.38	-622	-199	5	-204	-.0971
79.1	3.28	-641	-218	7	-225	-.1071
94.0	3.23	-650	-227	6	-233	-.1110
109.1	3.18	-660	-237	7	-244	-.1162
140.1	3.12	-674	-251	11	-262	-.1248
165.0	3.07	-685	-262	11	-273	-.1300
170.0	3.06	-687	-264	12	-276	-.1314
184.9	3.03	-693	-270	13	-283	-.1348
196.9	3.03	-694	-271	12	-283	-.1348
203.9	3.00	-699	-276	14	-290	-.1381
214.8	2.99	-703	-280	15	-295	-.1405
216.9	2.99	-703	-280	15	-295	-.1405

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION 1 CLASS E-2 ES738B
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 110 DEG. F.
ULT. STR. : 9340. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.5 PERCENT
METER NUMBERS
AUTOGENOUS : 11 04 AND 11 05
CREEP : 11 02 AND 11 03

TABLE M

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY, MPSI (A)	ELASTIC, CREEP PLUS AUTOGENOUS (MICROSTRAIN)	CREEP PLUS AUTOGENOUS (MICROSTRAIN)	AUTOGENOUS (MICROSTRAIN)	CREEP (MICROSTRAIN)	SPECIFIC CREEP (B)
-.0007		0				
.0000	5.06	-415	0	0	0	0.
.0026	4.86	-432	-17	0	-17	-.0081
.0063	4.83	-435	-20	0	-20	-.0095
.0201	4.76	-441	-26	0	-26	-.0124
.0444	4.69	-448	-33	0	-33	-.0157
.0961	4.63	-454	-39	0	-39	-.0186
.1278	4.59	-458	-43	0	-43	-.0205
.2667	4.51	-466	-51	0	-51	-.0243
.9785	4.34	-484	-69	-1	-68	-.0324
2.0	4.20	-500	-85	-2	-83	-.0395
3.0	4.11	-511	-96	-4	-92	-.0438
4.0	4.04	-520	-105	-7	-98	-.0467
5.9	3.98	-528	-113	-6	-107	-.0510
9.1	3.87	-542	-127	-5	-122	-.0581
14.0	3.68	-570	-155	-6	-149	-.0710
21.1	3.57	-588	-173	-9	-164	-.0781
34.8	3.42	-614	-199	-6	-193	-.0919
45.0	3.34	-628	-213	-10	-203	-.0967
50.0	3.31	-635	-220	-11	-209	-.0995
59.8	3.25	-647	-232	-14	-218	-.1038
75.0	3.18	-661	-246	-16	-230	-.1095
93.9	3.07	-683	-268	-19	-249	-.1186
109.1	3.03	-693	-278	-22	-256	-.1219
140.0	2.88	-730	-315	-28	-287	-.1367
165.0	2.78	-755	-340	-36	-304	-.1448
170.9	2.76	-760	-345	-37	-308	-.1467
184.8	2.73	-769	-354	-40	-314	-.1495
186.8	2.73	-770	-355	-40	-315	-.1500
203.8	2.66	-789	-374	-40	-334	-.1590
214.8	2.63	-800	-385	-41	-344	-.1638
216.9	2.62	-801	-386	-41	-345	-.1643

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING : 365 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 8200. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 25.6 PERCENT
METER NUMBERS
AUTOGENOUS : 73 12 AND 73 13
CREEP : 73 12 AND 73 13

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY MPSI (A)	ELASTIC, CREEP PLUS AUTOG-ENOUS (MICROSTRAIN)	CREEP PLUS AUTOG-ENOUS (MICROSTRAIN)	AUTOG-ENOUS (MICROSTRAIN)	CREEP (MICROSTRAIN)	SPECIFIC CREEP (B)
-.0007		0				
.0000	5.34	-393	0	0	0	0.
.0028	5.30	-396	-2	0	-2	-.0010
.0063	5.29	-398	-4	0	-4	-.0019
.0375	5.17	-406	-12	0	-12	-.0057
.0861	5.12	-410	-17	0	-17	-.0081
.1813	5.06	-415	-21	0	-21	-.0100
1.1875	4.88	-430	-35	2	-38	-.0181
2.0	4.77	-440	-46	2	-48	-.0229
3.0	4.71	-446	-52	2	-54	-.0257
4.3	4.69	-448	-55	2	-57	-.0271
5.0	4.64	-453	-59	2	-61	-.0290
7.2	4.58	-459	-66	2	-68	-.0324
14.3	4.44	-473	-79	2	-81	-.0365
17.0	4.39	-478	-84	2	-86	-.0410
23.0	4.34	-484	-91	3	-94	-.0448
27.9	4.25	-493	-100	3	-103	-.0490
39.3	4.19	-501	-107	3	-110	-.0524
47.1	4.13	-508	-115	3	-118	-.0562
60.2	3.98	-527	-134	3	-137	-.0652

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

TABLE N

TABLE O

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION 1 CLASS E-2 FS7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING	: 365 DAYS
TEST TEMPERATURE	: 110 DEG. F.
ULT. STR.	: 9990. PSI
APPLIED TEST STRESS	: 2100. PSI
PER. ULT. STR. APPLIED	: 21.0 PERCENT
METER NUMBERS	
AUTOGENOUS	: 11 04 AND 11 05
CREEP	: 11 04 AND 11 05

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY, MPSI (A)	ELASTIC, CREEP PLUS AUTOGENOUS (MICROSTRAIN)	CREEP PLUS AUTOGENOUS (MICROSTRAIN)	AUTOGENOUS (MICROSTRAIN)	CREEP (MICROSTRAIN)	SPECIFIC CREEP (B)
-.0007		0				
.0000	5.40	-389	0	0	0	0.
.0028	5.34	-393	-4	0	-4	-.0019
.0063	5.30	-396	-7	0	-7	-.0033
.0424	5.15	-408	-18	0	-18	-.0086
.0958	5.07	-414	-24	0	-24	-.0114
.1535	5.04	-417	-28	0	-28	-.0133
1.1674	4.76	-441	-51	1	-52	-.0248
2.0	4.65	-452	-62	1	-63	-.0300
4.3	4.52	-465	-76	1	-77	-.0367
5.0	4.47	-470	-80	1	-81	-.0386
7.2	4.38	-479	-90	1	-91	-.0433
14.3	4.18	-502	-112	0	-112	-.0533
16.9	4.13	-509	-119	0	-119	-.0567
22.9	4.02	-523	-134	0	-134	-.0638
27.9	3.95	-531	-142	-1	-141	-.0671
39.3	3.81	-551	-162	-1	-161	-.0767
47.1	3.73	-563	-173	-2	-171	-.0814
60.2	3.72	-565	-176	-2	-174	-.0829

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

TABLE P

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION I CLASS E-I ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 9210. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.8 PERCENT
METER NUMBERS
AUTOGENOUS : AND
CREEP : 20 41 AND 20 42

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY MPSI (A)	ELASTIC, CREEP PLUS AUTOG-ENOUS	CREEP PLUS AUTOG-ENOUS	AUTOG-ENOUS	CREEP	SPECIFIC CREEP (B)
		MICROSTRAIN				
-.0007		0				
.0000	5.10	-412	0	0	0	0.
.0028	4.92	-427	-15	0	-15	-.0071
.0097	4.85	-432	-20	0	-20	-.0095
.0201	4.81	-437	-25	0	-25	-.0119
.0826	4.69	-448	-36	0	-36	-.0171
.3326	4.54	-463	-51	0	-51	-.0243
.9993	4.38	-479	-67	0	-67	-.0319
2.0	4.29	-490	-78	0	-78	-.0371
3.1	4.22	-493	-86	0	-86	-.0410
4.1	4.17	-504	-92	0	-92	-.0438
5.0	4.13	-509	-97	0	-97	-.0462
6.0	4.09	-514	-102	0	-102	-.0486
7.0	4.05	-518	-106	0	-106	-.0505
9.0	4.00	-525	-113	0	-113	-.0538
15.3	3.84	-547	-135	0	-135	-.0643
21.0	3.76	-559	-147	0	-147	-.0700
28.2	3.69	-569	-157	0	-157	-.0748
43.1	3.57	-589	-177	0	-177	-.0843
58.2	3.45	-607	-195	0	-195	-.0929
89.3	3.33	-630	-218	0	-218	-.1038
114.1	3.25	-646	-234	0	-234	-.1114
119.1	3.24	-649	-237	0	-237	-.1129
134.1	3.20	-656	-244	0	-244	-.1162
136.0	3.20	-657	-245	0	-245	-.1167
153.0	3.16	-664	-252	0	-252	-.1200
164.0	3.14	-668	-256	0	-256	-.1219
166.0	3.14	-668	-256	0	-256	-.1219

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

TABLE Q

AVERAGE ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK OPTION 1 CLASS E-2-S FS7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

AGE OF LOADING : 28 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 6770. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 31.0 PERCENT
METER NUMBERS
AUTOGENOUS : 73 12 AND 73 13
CREEP : 73 02 AND 73 03

TIME UNDER STRESS, DAYS	SUSTAINED MODULUS OF ELASTICITY, MPSI (A)	ELASTIC, CREEP PLUS AUTOGENOUS	CREEP PLUS AUTOGENOUS	AUTOGENOUS	CREEP	SPECIFIC CREEP (B)
		MICROSTRAIN				
-.0007		0				
.0000	4.32	-486	0	0	0	0.
.0028	4.15	-505	-20	0	-20	-.0095
.0063	4.06	-517	-31	0	-31	-.0148
.0590	3.87	-542	-56	0	-56	-.0267
.1458	3.78	-556	-70	0	-70	-.0333
.9861	3.50	-600	-114	-1	-113	-.0538
2.0	3.38	-621	-135	0	-135	-.0643
3.1	3.28	-641	-155	0	-155	-.0738
4.1	3.21	-655	-169	0	-169	-.0805
5.1	3.15	-667	-181	0	-181	-.0862
6.9	3.07	-685	-199	-1	-198	-.0943
11.1	2.94	-714	-228	-1	-227	-.1081
19.0	2.81	-748	-262	-2	-260	-.1238
27.0	2.72	-773	-287	-1	-286	-.1362
32.0	2.68	-785	-299	-1	-298	-.1419
47.9	2.57	-816	-330	0	-330	-.1571
67.0	2.52	-833	-347	2	-349	-.1662
81.8	2.48	-846	-360	3	-363	-.1729
97.1	2.44	-859	-373	4	-377	-.1795
100.9	2.43	-863	-377	4	-381	-.1814
105.0	2.43	-865	-379	5	-384	-.1829
115.0	2.40	-874	-388	7	-395	-.1881
122.1	2.39	-879	-393	8	-401	-.1910
135.8	2.37	-887	-401	7	-408	-.1943
146.0	2.36	-891	-405	10	-415	-.1976
151.0	2.35	-892	-406	10	-416	-.1981
160.8	2.35	-895	-409	10	-419	-.1995
181.0	2.34	-897	-411	11	-422	-.2010
194.9	2.36	-890	-404	11	-415	-.1976
210.0	2.34	-897	-411	16	-427	-.2033
241.1	2.32	-905	-419	17	-436	-.2076
265.5	2.30	-912	-426	19	-445	-.2119
270.9	2.30	-914	-428	19	-447	-.2129
285.9	2.29	-917	-431	21	-452	-.2152
287.8	2.29	-917	-431	22	-453	-.2157
304.8	2.28	-921	-435	22	-457	-.2176
315.8	2.28	-923	-437	21	-458	-.2181
317.8	2.27	-924	-438	22	-460	-.2190

(A) SUSTAINED MODULUS OF ELASTIC = 2100. PSI DIVIDED BY SUM OF ELASTIC, CREEP, AND AUTOGENOUS STRAINS.
(B) SPECIFIC CREEP = CREEP STRAIN DIVIDED BY 2100. PSI

TABLE 1A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS F-2 ES7788
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.40 OHMS
TEMP. CALIBRATION CONSTANT = 10.79 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.26 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 3.4 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 927 73.00
AGE OF LOADING : 28 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 8200. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 25.6 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN (TEMPERATURE CORRECTED) FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2-4-76	1400	0	SPECIMEN CAST									
2-6-76	1100	1.9		-.36611	55.74	75.2	9408	0	0			
2-12-76	1000	7.8		-.37261	54.91	70.2	9280	-128	-34			
2-20-76	1300	16.0		-.37221	54.95	70.6	9070	-338	-44			
3-2-76	1600	25.1		-.37155	55.05	71.7	8921	-487	-49			
3-3-76	830	26.8		-.37176	55.02	71.4	8967	-441	-47			
* 3-3-76	942	26.8	LOADING BEGINS									
3-3-76	942	26.8	-.0007	-.37169	55.03	71.5	8930	-478	-49	0		
* 3-3-76	943	26.8	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
3-3-76	943	26.8	.0000	-.37169	55.03	71.5	637	-8771	-497	-448	0	0.
3-3-76	952	26.8	.0063	-.37170	55.03	71.5	157	-9251	-522	-473	-25	-.01190
3-3-76	1433	27.0	.2014	-.37155	55.05	71.7	-586	-9994	-562	-513	-65	-.03095
3-3-76	2110	27.3	.4771	-.37162	55.04	71.6	-911	-10319	-580	-531	-83	-.03952
3-4-76	1400	28.0	1.1785	-.37171	55.02	71.5	-1281	-10689	-600	-551	-103	-.04905
3-5-76	1600	29.1	2.3	-.37138	55.07	71.9	-1764	-11172	-625	-576	-128	-.06095
3-6-76	1410	30.0	3.2	-.37161	55.04	71.6	-1931	-11339	-635	-586	-138	-.06571
3-7-76	1530	31.1	4.2	-.37147	55.05	71.8	-2257	-11665	-652	-603	-155	-.07381
3-8-76	1500	32.1	5.3	-.37147	55.05	71.8	-2466	-11874	-663	-614	-166	-.07905
3-9-76	1545	33.1	6.3	-.37140	55.06	71.9	-2599	-12007	-670	-621	-173	-.08238
3-10-76	1545	34.1	7.3	-.37116	55.09	72.2	-2739	-12147	-677	-628	-180	-.08571
3-11-76	1615	35.1	8.3	-.37121	55.09	72.2	-2896	-12304	-685	-636	-188	-.08952
3-12-76	930	35.9	9.0	-.37111	55.10	72.3	-2995	-12403	-690	-641	-193	-.09190
3-17-76	1745	41.2	14.4	-.37067	55.16	72.9	-3616	-13024	-722	-673	-225	-.10714
3-23-76	1615	47.1	20.3	-.37083	55.14	72.7	-4009	-13417	-745	-696	-248	-.11810
3-31-76	910	54.8	27.9	-.37127	55.08	72.1	-4421	-13829	-768	-719	-271	-.12905
4-9-76	1050	63.9	37.0	-.37129	55.08	72.1	-4929	-14337	-790	-741	-293	-.13952
4-16-76	1500	71.1	44.3	-.37051	55.18	73.0	-5105	-14513	-803	-754	-306	-.14571
4-24-76	1300	79.0	52.1	-.37086	55.13	72.6	-5340	-14748	-816	-767	-319	-.15190
4-30-76	1100	84.9	58.1	-.37106	55.11	72.4	-5460	-14868	-823	-774	-326	-.15524
5-12-76	1340	97.0	70.2	-.37034	55.20	73.4	-5779	-15187	-837	-788	-340	-.16190
5-20-76	1415	105.0	78.2	-.37051	55.18	73.1	-5953	-15361	-847	-798	-350	-.16667
5-25-76	1320	110.0	83.2	-.37073	55.15	72.8	-6038	-15446	-853	-804	-356	-.16952
6-10-76	1150	125.9	99.1	-.37079	55.14	72.7	-6327	-15735	-869	-820	-372	-.17714
6-18-76	1330	134.0	107.2	-.37029	55.21	73.4	-6551	-15959	-879	-830	-382	-.18190
6-29-76	1430	145.0	118.2	-.36982	55.29	73.8	-6834	-16242	-891	-842	-394	-.18762
7-14-76	915	159.8	133.0	-.37021	55.22	73.5	-7020	-16428	-904	-855	-407	-.19381
7-29-76	1500	175.1	148.3	-.37012	55.23	73.7	-7316	-16724	-919	-870	-422	-.20095
8-2-76	1155	178.9	152.1	-.37022	55.21	73.5	-7428	-16836	-926	-877	-429	-.20429
8-6-76	1100	183.0	156.1	-.37008	55.23	73.7	-7494	-16902	-929	-880	-432	-.20571
8-16-76	1410	193.0	166.2	-.37012	55.23	73.7	-7645	-17053	-937	-888	-440	-.20952
8-23-76	1530	200.1	173.3	-.36956	55.26	74.0	-7764	-17172	-942	-893	-445	-.21190
9-6-76	815	213.8	186.9	-.37027	55.21	73.5	-7876	-17284	-950	-901	-453	-.21571
9-16-76	1430	224.0	197.2	-.37022	55.21	73.5	-7951	-17359	-954	-905	-457	-.21762
9-21-76	1330	229.0	202.2	-.37011	55.23	73.7	-7990	-17398	-956	-907	-459	-.21857
10-1-76	905	238.8	212.0	-.36996	55.25	73.9	-8017	-17425	-956	-907	-459	-.21857
10-20-76	1400	258.0	231.2	-.37026	55.21	73.5	-8154	-17562	-965	-916	-468	-.22286
11-4-76	1100	272.9	246.1	-.37037	55.20	73.3	-8211	-17619	-969	-920	-472	-.22476
11-19-76	1430	288.0	261.2	-.37047	55.18	73.2	-8321	-17729	-975	-926	-478	-.22762
12-20-76	1445	319.0	292.2	-.37084	55.14	72.7	-8450	-17858	-984	-935	-487	-.23190
1-14-77	1200	343.9	317.1	-.37109	55.10	72.3	-8546	-17954	-990	-941	-493	-.23476
1-19-77	1050	348.9	322.0	-.37103	55.11	72.4	-8579	-17987	-991	-942	-494	-.23524
2-3-77	945	363.8	337.0	-.37087	55.13	72.6	-8666	-18074	-995	-946	-498	-.23714
2-5-77	825	365.8	338.9	-.37103	55.11	72.4	-8670	-18078	-996	-947	-499	-.23762
2-5-77	837	365.8	339.0	-.37103	55.11	72.4	-8655	-18063	-995	-946	-498	-.23714
* 2-5-77	838	365.8	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
2-5-77	838	365.8		-.37121	55.09	72.2	-1441	-10669	-608	-559	-111	
2-5-77	842	365.8		-.37118	55.09	72.2	-1361	-10789	-602	-553	-105	
2-5-77	847	365.8		-.37114	55.10	72.2	-1274	-10702	-598	-549	-101	
2-5-77	914	365.9		-.37112	55.10	72.3	-1134	-10562	-591	-542	-94	
2-5-77	1015	365.8		-.37110	55.10	72.3	-1094	-10502	-587	-538	-90	
2-5-77	1125	365.9		-.37103	55.11	72.4	-1026	-10434	-583	-534	-86	
2-5-77	1342	366.0		-.37093	55.12	72.4	-964	-10372	-580	-531	-83	
2-6-77	1351	367.0		-.37129	55.08	72.1	-641	-10049	-566	-517	-69	
2-7-77	931	367.9		-.37118	55.09	72.2	-601	-10009	-561	-512	-64	
2-8-77	927	368.9		-.37110	55.10	72.3	-541	-9949	-558	-509	-61	
2-9-77	1550	370.1		-.37091	55.13	72.6	-349	-9757	-552	-503	-55	
2-10-77	952	370.9		-.37107	55.11	72.4	-401	-9809	-550	-501	-53	
2-12-77	1331	373.0		-.37103	55.11	72.4	-291	-9699	-544	-495	-47	
2-19-77	1732	380.1		-.37046	55.18	72.2	-119	-9527	-532	-483	-35	
2-22-77	905	382.8		-.37118	55.09	72.2	-6	-9414	-529	-480	-32	
2-28-77	909	388.8		-.37090	55.14	72.7	152	-9256	-519	-470	-22	
3-5-77	747	393.7		-.37068	55.17	72.9	200	-9208	-516	-467	-19	
3-16-77	1547	405.1		-.37139	55.06	71.9	390	-9018	-509	-460	-12	
3-24-77	1130	412.9		-.37108	55.10	72.2	432	-8976	-505	-456	-8	
3-30-77	912	418.8		-.37124	55.08	72.1	475	-8933	-503	-454	-6	
4-6-77	1446	425.0		-.37079	55.14	72.7	485	-8923	-501	-452	-4	

MODULUS: LOADING E= 4.7 AT AGE 27 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 1B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION I CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:			
METER RESISTANCE AT 0.0 DEGREES F.	= 48.29 OHMS	STRAIN METER NO. :	528 73.01
TEMP. CALIBRATION CONSTANT	= 10.82 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	28 DAYS
STRAIN CALIBRATION CONSTANT	= 9.16 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	73 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT		
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR.	: 8200. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS	: 2100. PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:	25.6 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN, TEMPERATURE CORRECTED: FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2-4-76	1400	0	SPECIMEN CAST									
2-6-76	1100	1.9		-.36701	55.73	72.4	11641	0	0			
2-12-76	1000	7.9		-.37391	54.74	69.8	11581	-60	-12			
2-20-76	1300	15.9		-.37386	54.75	69.9	11361	-280	-44			
3-2-76	1600	25.1		-.37205	54.58	72.4	11071	-570	-62			
3-3-76	930	26.8		-.37226	54.95	72.1	11081	-560	-52			
* 3-3-76	942	26.8	LOADING BEGINS									
3-3-76	942	26.8	-.0007	-.37219	54.96	72.2	11046	-595	-54	0		
* 3-3-76	943	26.9	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
3-3-76	943	26.8	.0000	-.37219	54.96	72.2	2735	-8906	-507	-453	0	0.
3-3-76	952	26.9	.0063	-.37219	54.96	72.2	2290	-9351	-532	-478	-25	-.01150
3-3-76	1433	27.0	.2014	-.37212	54.97	72.3	1545	-10096	-572	-518	-65	-.03095
3-3-76	2110	27.3	.4771	-.37215	54.97	72.3	1205	-10436	-591	-537	-84	-.04000
3-4-76	1400	28.0	1.1705	-.37231	54.95	72.0	815	-10826	-613	-559	-106	-.05048
3-5-76	1600	29.1	2.3	-.37196	54.99	72.5	302	-11339	-639	-585	-132	-.06286
3-6-76	1410	30.0	3.2	-.37236	54.94	72.0	115	-11526	-651	-597	-144	-.06857
3-7-76	1530	31.1	4.2	-.37212	54.97	72.3	-171	-11812	-666	-612	-159	-.07571
3-8-76	1530	32.1	5.3	-.37212	54.97	72.3	-413	-12054	-679	-625	-172	-.08190
3-9-76	1545	33.1	6.3	-.37205	54.98	72.4	-565	-12206	-687	-633	-180	-.08571
3-10-76	1543	34.1	7.3	-.37193	55.00	72.6	-749	-12390	-696	-642	-189	-.09000
3-11-76	1615	35.1	8.3	-.37179	55.01	72.8	-899	-12540	-704	-650	-197	-.09381
3-12-76	930	35.8	9.0	-.37171	55.02	72.9	-1006	-12647	-710	-656	-203	-.09667
3-17-76	1745	41.2	14.3	-.37132	55.07	73.4	-1670	-13311	-744	-690	-237	-.11286
3-23-76	1415	47.1	20.3	-.37143	55.06	73.2	-2133	-13774	-770	-716	-263	-.12524
3-31-76	810	54.8	27.9	-.37197	54.99	72.5	-2571	-14212	-796	-742	-289	-.13762
4-9-76	1050	63.9	37.0	-.37194	54.99	72.5	-2968	-14609	-819	-765	-312	-.14857
4-16-76	1600	71.1	44.3	-.37146	55.06	73.2	-3303	-14944	-834	-780	-327	-.15571
4-24-76	1300	79.0	52.1	-.37161	55.04	73.0	-3532	-15173	-847	-793	-340	-.16190
4-30-76	1100	84.9	58.1	-.37183	55.01	72.7	-3645	-15286	-854	-800	-347	-.16524
5-12-76	1340	97.0	70.2	-.37107	55.11	73.7	-3973	-15614	-869	-815	-362	-.17238
5-20-76	1415	105.0	78.2	-.37123	55.08	73.5	-4134	-15775	-878	-824	-371	-.17667
5-25-76	1320	110.0	83.2	-.37148	55.05	73.2	-4209	-15850	-883	-829	-376	-.17905
6-10-76	1150	125.9	99.1	-.37152	55.05	73.1	-4482	-16123	-898	-844	-391	-.18619
6-18-76	1330	134.0	107.2	-.37111	55.10	73.7	-4689	-16330	-908	-854	-401	-.19095
6-29-76	1430	145.0	118.2	-.37044	55.18	74.6	-4989	-16630	-919	-865	-412	-.19619
7-14-76	915	159.8	133.0	-.37109	55.10	73.7	-5018	-16659	-926	-872	-419	-.19952
7-29-76	1400	175.1	148.3	-.37094	55.12	73.9	-5199	-16840	-935	-881	-428	-.20381
8-2-76	1155	178.9	152.1	-.37104	55.11	73.8	-5274	-16915	-940	-886	-433	-.20619
8-6-76	1300	183.0	156.1	-.37076	55.15	74.1	-5318	-16959	-942	-888	-435	-.20714
8-16-76	1410	193.0	166.2	-.37097	55.12	73.9	-5457	-17098	-949	-895	-442	-.21048
8-23-76	1530	200.1	173.3	-.37073	55.15	74.2	-5563	-17204	-954	-900	-447	-.21286
9-6-76	815	213.8	185.9	-.37117	55.09	73.6	-5639	-17280	-960	-906	-453	-.21571
9-16-76	1430	224.0	197.2	-.37112	55.10	73.7	-5714	-17355	-964	-910	-457	-.21762
9-21-76	1330	229.0	202.2	-.37101	55.11	73.8	-5743	-17384	-965	-911	-458	-.21810
10-1-76	905	238.8	212.0	-.37081	55.14	74.1	-5790	-17431	-967	-913	-460	-.21905
10-20-76	1400	258.0	231.2	-.37108	55.10	73.7	-5920	-17561	-975	-921	-468	-.22286
11-4-76	1100	272.9	246.1	-.37112	55.10	73.7	-5951	-17592	-977	-923	-470	-.22381
11-19-76	1430	288.0	261.2	-.37130	55.08	73.4	-6037	-17678	-982	-928	-475	-.22619
12-20-76	1445	319.0	292.2	-.37154	55.05	73.1	-6126	-17767	-988	-934	-481	-.22905
1-14-77	1200	343.9	317.1	-.37172	55.02	72.8	-6217	-17858	-994	-940	-487	-.23190
1-19-77	1050	348.9	322.0	-.37156	55.04	73.1	-6252	-17893	-995	-941	-488	-.23238
2-3-77	945	363.8	337.0	-.37159	55.04	73.0	-6321	-17962	-999	-945	-492	-.23429
2-5-77	926	365.8	338.9	-.37171	55.02	72.9	-6325	-17966	-1000	-946	-493	-.23476
2-5-77	837	365.9	339.0	-.37173	55.02	72.8	-6328	-17969	-1000	-946	-493	-.23476
* 2-5-77	838	365.8	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
2-5-77	838	365.8		-.37178	55.01	72.8	834	-10807	-609	-555	-102	
2-5-77	842	365.9		-.37176	55.02	72.8	926	-10715	-604	-550	-97	
2-5-77	847	365.9		-.37176	55.02	72.8	1002	-10639	-600	-546	-93	
2-5-77	914	365.8		-.37170	55.03	72.9	1125	-10516	-593	-539	-86	
2-5-77	1015	365.8		-.37172	55.02	72.8	1202	-10439	-589	-535	-82	
2-5-77	1125	365.9		-.37178	55.02	72.8	1282	-10359	-585	-531	-78	
2-5-77	1342	366.0		-.37186	55.01	72.7	1345	-10296	-582	-528	-75	
2-6-77	1351	367.0		-.37223	54.96	72.2	1625	-10016	-568	-514	-61	
2-7-77	931	367.8		-.37216	54.97	72.2	1730	-9911	-562	-508	-55	
2-8-77	927	368.8		-.37210	54.97	72.3	1792	-9849	-558	-504	-51	
2-9-77	1558	370.1		-.37189	55.00	72.6	1887	-9754	-552	-498	-45	
2-10-77	952	370.8		-.37209	54.98	72.3	1936	-9705	-551	-497	-44	
2-12-77	1331	373.0		-.37201	54.99	72.5	2029	-9612	-545	-491	-38	
2-19-77	1732	380.1		-.37143	55.06	73.2	2202	-9439	-533	-479	-26	
2-22-77	905	382.8		-.37196	54.99	72.5	2299	-9342	-530	-476	-23	
2-28-77	900	388.8		-.37157	55.04	73.1	2452	-9189	-520	-466	-13	
3-5-77	747	393.7		-.37181	55.05	73.1	2504	-9137	-517	-463	-10	
3-16-77	1547	405.1		-.37204	54.96	72.4	2696	-8945	-509	-455	-2	
3-24-77	1128	412.9		-.37178	55.01	72.8	2750	-8891	-505	-451	2	
3-30-77	912	418.8		-.37196	54.99	72.5	2801	-8840	-503	-449	4	
4-6-77	1446	426.0		-.37159	55.04	73.0	2828	-8813	-500	-446	7	

MODULUS: LOADING E= 4.6 AT AGE 27 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES73AA
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.72 OHMS	STRAIN METER NO. :	934 11 00
TEMP. CALIBRATION CONSTANT	= 10.75 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	28 DAYS
STRAIN CALIBRATION CONSTANT	= 9.16 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	110 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT		
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR.	: 8500. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS	: 2100. PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:	24.7 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN, TEMPERATURE CORRECTED: FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36456	55.94	77.6	7725	0	0			
2-12-76	1000	7.9		-.37126	55.08	68.4	7593	-132	-35			
2-20-76	1300	16.0		-.35632	57.01	89.1	6137	-1588	-50			
* 3 -3-76	1204	26.9	LOADING BEGINS									
3 -3-76	1204	26.9	-.0007	-.34193	58.91	109.5	5275	-2450	-34	0		
* 3 -3-76	1205	26.9	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
3 -3-76	1205	26.9	.0000	-.34193	58.91	109.5	-3351	-11076	-505	-471	0	0.
3 -3-76	1433	27.0	.1028	-.34116	59.01	110.6	-4489	-12214	-563	-529	-58	-.02762
3 -3-76	2110	27.3	.3785	-.34055	59.09	111.5	-5146	-12871	-597	-563	-92	-.04381
3 -4-76	1400	28.0	1.0759	-.34105	59.02	110.8	-5722	-13447	-630	-596	-125	-.05952
3 -5-76	1600	29.1	2.2	-.34164	58.95	109.9	-6179	-13904	-658	-624	-153	-.07286
3 -6-76	1410	30.0	3.1	-.34167	58.94	109.9	-6462	-14187	-673	-639	-168	-.08000
3 -7-76	1530	31.1	4.1	-.34165	58.94	109.9	-6882	-14607	-696	-662	-191	-.09095
3 -8-76	1500	32.1	5.2	-.34165	58.94	109.9	-7175	-14900	-712	-678	-207	-.09857
3 -9-76	1545	33.1	6.2	-.34156	58.95	110.0	-7395	-15120	-724	-690	-219	-.10429
3-10-76	1545	34.1	7.2	-.34764	58.15	101.4	-7223	-14948	-741	-707	-236	-.11238
3-11-76	1515	35.1	8.2	-.34257	58.82	108.6	-7738	-15463	-747	-713	-242	-.11524
3-12-76	930	35.8	8.9	-.34169	58.94	109.9	-7901	-15626	-752	-718	-247	-.11762
3-17-76	1745	41.2	14.2	-.34105	59.02	110.8	-8521	-16246	-783	-749	-278	-.13238
3-23-76	1615	47.1	20.2	-.34130	58.99	110.4	-8971	-16696	-809	-775	-304	-.14476
3-31-76	810	54.8	27.8	-.34112	59.01	110.7	-9393	-17108	-830	-796	-325	-.15476
4 -9-76	1050	63.9	36.9	-.34085	59.05	111.1	-9863	-17588	-855	-821	-350	-.16667
4-16-76	1600	71.1	44.2	-.34263	58.81	108.5	-9837	-17562	-867	-833	-362	-.17238
4-30-76	1100	84.9	58.0	-.34182	58.92	109.7	-10385	-18110	-888	-854	-383	-.18238
5-12-76	1340	97.0	70.1	-.34043	59.11	111.7	-10680	-18405	-899	-864	-393	-.18714
5-20-76	1415	105.0	78.1	-.34023	59.13	111.9	-10924	-18649	-911	-877	-406	-.19333
5-25-76	1320	110.0	83.1	-.34018	59.14	112.0	-11063	-18788	-918	-884	-413	-.19667
6-10-76	1150	125.9	99.0	-.33990	59.18	112.4	-11412	-19137	-936	-902	-431	-.20524
6-18-76	1330	134.0	107.1	-.34175	58.93	109.8	-11470	-19195	-947	-913	-442	-.21048
6-28-76	1435	144.0	117.1	-.34230	58.86	109.0	-11574	-19299	-955	-921	-450	-.21429
7-14-76	915	159.8	132.9	-.34247	58.83	108.7	-11765	-19494	-967	-933	-462	-.22000
8 -6-76	1300	183.0	156.0	-.34421	58.60	106.2	-11908	-19633	-982	-948	-477	-.22714
8-16-76	1410	193.0	166.1	-.33996	59.17	112.3	-12500	-20225	-995	-961	-490	-.23333
8-23-76	1630	200.1	173.2	-.34193	58.91	109.5	-12466	-20191	-1002	-968	-497	-.23667
9 -6-76	815	213.8	186.8	-.34078	59.06	111.2	-12690	-20415	-1009	-975	-504	-.24000
9-16-76	1430	224.0	197.1	-.34132	58.99	110.4	-12771	-20496	-1016	-982	-511	-.24333
9-21-76	1330	229.0	202.1	-.34209	58.89	109.3	-12788	-20513	-1021	-987	-516	-.24571
10 -1-76	905	238.8	211.9	-.34198	58.90	109.4	-12891	-20616	-1026	-992	-521	-.24810
11 -4-76	1120	272.9	246.0	-.34178	58.93	109.7	-13213	-20938	-1042	-1008	-537	-.25571
11-19-76	1500	288.0	261.1	-.34109	59.02	110.7	-13301	-21026	-1044	-1010	-535	-.25667
12-20-76	1445	319.0	292.1	-.34147	58.97	110.2	-13664	-21389	-1066	-1032	-561	-.26714
1-14-77	1330	344.0	317.1	-.34177	58.93	109.7	-13955	-21680	-1083	-1049	-578	-.27524
1-20-77	1155	349.9	323.0	-.34172	58.94	109.8	-14011	-21736	-1086	-1052	-581	-.27667
2 -3-77	1000	363.8	336.9	-.34140	58.98	110.3	-14154	-21879	-1092	-1058	-587	-.27952
2 -5-77	805	365.8	338.8	-.34148	58.97	110.2	-14159	-21884	-1093	-1059	-588	-.28000
* 2 -5-77	808	365.8	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
2 -5-77	808	365.8		-.34160	58.95	110.0	-6911	-14636	-658	-664	-193	
2 -5-77	810	365.8		-.34165	58.94	109.9	-6783	-14508	-691	-657	-186	
2 -5-77	815	365.8		-.34163	58.95	109.9	-6743	-14468	-689	-655	-184	
2 -5-77	1005	365.8		-.34172	58.94	109.8	-6500	-14225	-676	-642	-171	
2 -5-77	1057	365.9		-.34175	58.93	109.8	-6443	-14168	-673	-639	-168	
2 -5-77	1214	365.9		-.34181	58.92	109.7	-6357	-14122	-670	-636	-165	
2 -5-77	1337	365.0		-.34177	58.93	109.7	-6353	-14078	-668	-634	-163	
2 -6-77	1357	367.0		-.34175	58.93	109.8	-6064	-13789	-652	-618	-147	
2 -7-77	937	367.8		-.34187	58.91	109.6	-5954	-13679	-647	-613	-142	
2 -8-77	939	368.8		-.34184	58.92	109.6	-5830	-13555	-640	-606	-135	
2 -9-77	1504	370.1		-.34190	58.91	109.6	-5764	-13489	-636	-602	-131	
2-10-77	939	370.8		-.34182	58.92	109.7	-5729	-13454	-634	-600	-129	
2-12-77	1335	373.0		-.34173	58.93	109.8	-5634	-13359	-628	-594	-123	
2-19-77	1738	380.2		-.34142	58.97	110.2	-5444	-13169	-617	-583	-112	
2-22-77	836	382.8		-.34175	58.93	109.8	-5377	-13102	-615	-581	-110	
2-28-77	817	388.8		-.34167	58.94	109.9	-5286	-13011	-609	-575	-104	
3 -5-77	800	393.7		-.34170	58.94	109.9	-5224	-12949	-606	-572	-101	
3-16-77	1605	405.1		-.34170	58.94	109.8	-5117	-12842	-600	-566	-95	
3-24-77	1131	412.9		-.34166	58.94	109.9	-5075	-12800	-598	-564	-93	
3-30-77	926	418.8		-.34205	58.89	109.3	-4985	-12710	-594	-560	-89	
4 -6-77	1500	426.0		-.34160	58.95	110.0	-4749	-12474	-580	-546	-75	

MODULUS: LOADING E= 4.5 AT AGE 27 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS F-2 ES73AA
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.52 OHMS	STRAIN METER NO. :	936 11 C1
TEMP. CALIBRATION CONSTANT	= 10.79 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	28 DAYS
STRAIN CALIBRATION CONSTANT	= 9.09 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	110 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT		
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR.	: 8500. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS	: 2100. PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:	24.7 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED: FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36606	55.75	78.0	10736	0	0			
2-12-76	1000	7.8		-.37218	54.06	69.5	10530	-206	-37			
2-20-76	1300	16.0		-.35757	56.81	89.4	9983	-1753	-50			
* 3 -3-76	1204	26.9	LOADING BEGINS									
3 -3-76	1204	26.9	-.0007	-.34364	58.68	109.6	7822	-2914	-61	0		
* 3 -3-76	1205	26.9	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
3 -3-76	1205	26.9	.0000	-.34364	58.68	109.6	-601	-11337	-525	-464	C	C.
3 -3-76	1433	27.0	.1028	-.34315	58.74	110.3	-1679	-12415	-582	-521	-57	-.02714
3 -3-76	2110	27.3	.3785	-.34252	58.83	111.2	-2304	-13040	-613	-552	-88	-.04190
3 -4-76	1400	28.0	1.0799	-.34301	58.76	110.5	-2850	-13586	-645	-584	-120	-.05714
3 -5-76	1600	29.1	2.2	-.34358	58.69	109.7	-3288	-14024	-672	-611	-147	-.07000
3 -6-76	1410	30.0	3.1	-.34361	58.68	109.7	-3550	-14286	-687	-626	-162	-.07714
3 -7-76	1530	31.1	4.1	-.34364	58.68	109.6	-3967	-14703	-710	-649	-185	-.08810
3 -8-76	1500	32.1	5.2	-.34364	58.68	109.6	-4222	-14958	-724	-663	-199	-.09476
3 -9-76	1545	33.1	6.2	-.34357	58.69	109.7	-4403	-15139	-733	-672	-208	-.09905
3-10-76	1545	34.1	7.2	-.34948	57.91	101.3	-4196	-14932	-748	-687	-223	-.10619
3-11-76	1615	35.1	8.2	-.34459	58.55	108.3	-4714	-15450	-755	-694	-230	-.10952
3-12-76	930	35.8	8.9	-.34351	58.68	109.7	-4885	-15621	-760	-699	-235	-.11190
3-17-76	1745	41.2	14.2	-.34298	58.77	110.6	-5469	-16205	-789	-728	-264	-.12571
3-23-76	1615	47.1	20.2	-.34320	58.74	110.3	-5933	-16669	-816	-755	-291	-.13857
3-31-76	810	54.8	27.9	-.34302	58.76	110.5	-6366	-17102	-839	-778	-314	-.14952
4 -9-76	1050	63.9	36.9	-.34278	58.79	110.9	-6808	-17544	-862	-801	-337	-.16048
4-16-76	1500	71.1	44.2	-.34456	58.56	108.3	-6890	-17626	-875	-814	-350	-.16667
4-30-76	1100	84.9	58.0	-.34370	58.67	109.5	-7368	-18104	-897	-836	-372	-.17714
5-12-76	1340	97.0	70.1	-.34235	58.85	111.5	-7646	-18382	-906	-845	-381	-.18143
5-20-76	1415	105.0	78.1	-.34213	58.88	111.8	-7887	-18623	-919	-858	-394	-.18762
5-25-76	1320	110.0	83.1	-.34205	58.89	111.9	-8017	-18753	-925	-864	-400	-.19048
6-10-76	1150	125.9	99.0	-.34210	58.88	111.8	-8363	-19099	-945	-884	-420	-.20000
6-18-76	1330	134.0	107.1	-.34353	58.69	109.8	-8430	-19166	-955	-894	-430	-.20476
6-28-76	1435	144.0	117.1	-.34410	58.62	109.0	-8526	-19262	-963	-902	-438	-.20857
7-14-76	915	159.8	132.9	-.34432	58.59	108.6	-8705	-19441	-973	-912	-448	-.21333
8 -6-76	1300	183.0	156.0	-.34593	58.37	106.3	-8847	-19583	-988	-927	-463	-.22048
8-16-76	1410	193.0	166.1	-.34169	58.94	112.4	-9414	-20150	-1001	-940	-476	-.22667
8-23-76	1630	200.1	173.2	-.34388	58.65	109.3	-9357	-20093	-1007	-946	-482	-.22952
9 -6-76	915	213.8	186.8	-.34275	58.80	110.9	-9571	-20307	-1014	-953	-489	-.23286
9-16-76	1430	224.0	197.1	-.34347	58.70	109.9	-9651	-20387	-1022	-961	-497	-.23667
9-21-76	1330	229.0	202.1	-.34409	58.62	109.0	-9550	-20286	-1024	-963	-499	-.23762
10 -1-76	905	238.8	211.9	-.34396	58.64	109.2	-9757	-20493	-1030	-969	-505	-.24048
11 -4-76	1120	272.9	246.0	-.34343	58.71	109.9	-10088	-20824	-1045	-984	-520	-.24762
11-19-76	1500	288.0	261.1	-.34241	58.84	111.4	-10165	-20901	-1045	-984	-520	-.24762
12-20-76	1445	319.0	292.1	-.34307	58.75	110.4	-10538	-21274	-1069	-1008	-544	-.25905
1-14-77	1330	344.0	317.1	-.34337	58.72	110.0	-10830	-21566	-1086	-1025	-561	-.26714
1-20-77	1155	349.9	323.0	-.34331	58.72	110.1	-10889	-21625	-1089	-1028	-564	-.26857
2 -3-77	1000	363.8	336.9	-.34303	58.76	110.5	-11045	-21781	-1096	-1035	-571	-.27190
2 -5-77	805	365.8	338.8	-.34308	58.75	110.4	-11040	-21776	-1096	-1035	-571	-.27190
* 2 -5-77	806	365.8	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
2 -5-77	806	365.8		-.34325	58.73	110.2	-3668	-14604	-703	-642	-178	
2 -5-77	810	365.8		-.34325	58.73	110.2	-3758	-14494	-696	-635	-171	
2 -5-77	915	365.8		-.34325	58.73	110.2	-3723	-14459	-695	-634	-170	
2 -5-77	1005	365.9		-.34337	58.72	110.0	-3494	-14230	-682	-621	-157	
2 -5-77	1057	365.9		-.34343	58.71	109.9	-3443	-14179	-680	-619	-155	
2 -5-77	1214	365.9		-.34345	58.70	109.9	-3395	-14131	-677	-616	-152	
2 -5-77	1337	366.0		-.34344	58.71	109.9	-3354	-14090	-675	-614	-150	
2 -6-77	1357	367.0		-.34342	58.71	109.9	-3081	-13817	-660	-599	-135	
2 -7-77	937	367.8		-.34355	58.69	109.7	-2979	-13715	-655	-594	-130	
2 -8-77	939	368.8		-.34354	58.69	109.8	-2866	-13602	-649	-588	-124	
2 -9-77	1504	370.1		-.34358	58.69	109.7	-2805	-13541	-646	-585	-121	
2-10-77	939	370.8		-.34352	58.70	109.8	-2769	-13505	-643	-582	-118	
2-12-77	1336	373.0		-.34340	58.71	110.0	-2680	-13416	-638	-577	-113	
2-19-77	1738	380.2		-.34312	58.75	110.4	-2506	-13242	-627	-566	-102	
2-22-77	836	382.8		-.34343	58.71	109.9	-2445	-13181	-625	-564	-100	
2-28-77	917	388.8		-.34337	58.72	110.0	-2359	-13095	-620	-559	-95	
3 -5-77	900	393.7		-.34340	58.71	110.0	-2304	-13040	-617	-556	-92	
3-16-77	1505	405.1		-.34344	58.71	109.9	-2202	-12938	-612	-551	-87	
3-24-77	1131	412.9		-.34339	58.71	110.0	-2160	-12896	-609	-548	-84	
3-30-77	926	418.8		-.34375	58.66	109.5	-2074	-12810	-606	-545	-81	
4 -6-77	1500	426.0		-.34332	58.72	110.1	-1849	-12585	-592	-531	-67	

MODULUS: LOADING E= 4.5 AT AGE 27 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 2B

TABLE 3A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION I CLASS E-2 ES77RR
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.05 OHMS
TEMP. CALIBRATION CONSTANT = 10.67 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 10.41 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION= 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 929 73 04
AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 9340. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.5 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY ONE	ELASTIC +CREEP	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.37909	54.05	65.6	7344	0	0			
2-12-76	1000	7.8		-.37489	54.62	71.4	7233	-111	13			
2-20-76	1300	16.0		-.37484	54.63	71.5	7016	-328	2			
3 -5-76	1500	29.1		-.37461	54.65	71.8	6830	-514	-5			
3-10-76	1600	34.1		-.37453	54.67	71.9	6777	-567	-7			
3-11-76	1615	35.1		-.37426	54.70	72.3	6750	-594	-7			
3-12-76	930	35.8		-.37425	54.70	72.3	6720	-624	-8			
3-17-76	1745	41.2		-.37345	54.80	73.4	6735	-609	-4			
3-23-76	1515	47.1		-.37374	54.77	73.0	6740	-604	-5			
3-31-76	810	54.8		-.37410	54.72	72.5	6743	-601	-7			
4 -9-76	1050	63.9		-.37484	54.63	71.5	6855	-489	-4			
4-30-76	1100	84.9		-.37603	54.48	69.8	6743	-601	-15			
5-20-76	1415	105.0		-.37558	54.53	70.5	6662	-682	-17			
6-10-76	1150	125.9		-.37410	54.72	72.5	6630	-714	-12			
6-18-76	1330	134.0		-.37345	54.80	73.4	6600	-744	-11			
6-29-76	1430	145.0		-.37281	54.88	74.3	6555	-789	-10			
7-14-76	915	159.9		-.37383	54.75	72.9	6649	-695	-10			
7-20-76	1500	166.0		-.37374	54.76	73.0	6611	-733	-11			
7-29-76	1600	175.1		-.37344	54.80	73.4	6690	-654	-6			
* 8 -2-76	1125	179.9	LOADING BEGINS									
8 -2-76	1125	179.9	-.0007	-.37244	54.80	73.4	6717	-627	-5	0		
* 8 -2-76	1126	179.9	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
8 -2-76	1126	179.9	.0000	-.37344	54.80	73.4	-2071	-9415	-427	-422	0	0.
8 -2-76	1130	179.9	.0028	-.37344	54.80	73.4	-2449	-9793	-445	-440	-18	-.00857
8 -2-76	1135	179.9	.0063	-.37344	54.80	73.4	-2551	-9895	-450	-445	-23	-.01095
8 -2-76	1155	179.9	.0201	-.37344	54.80	73.4	-2708	-10052	-458	-453	-31	-.01476
8 -2-76	1550	179.1	.1833	-.37331	54.82	73.6	-3206	-10550	-481	-476	-54	-.02571
8 -2-76	1650	179.1	.2250	-.37332	54.82	73.6	-3241	-10585	-483	-478	-56	-.02667
8 -2-76	2010	179.3	.3639	-.37335	54.82	73.5	-3359	-10703	-489	-484	-62	-.02952
8 -3-76	1315	180.0	1.0757	-.37343	54.81	73.4	-3699	-11043	-505	-500	-78	-.03714
8 -4-76	1320	181.0	2.1	-.37331	54.82	73.6	-3924	-11268	-516	-511	-89	-.04238
8 -5-76	1430	182.0	3.1	-.37345	54.80	73.4	-4178	-11522	-528	-523	-101	-.04810
8 -6-76	1300	183.0	4.1	-.37338	54.81	73.5	-4269	-11613	-532	-527	-105	-.05000
8 -9-76	1230	185.9	7.0	-.37349	54.80	73.3	-4519	-11863	-545	-540	-118	-.05619
8-11-76	1610	188.1	9.2	-.37328	54.82	73.6	-4718	-12062	-554	-549	-127	-.06048
8-16-76	1410	193.0	14.1	-.37339	54.81	73.5	-5096	-12440	-572	-567	-145	-.06905
8-23-76	1630	200.1	21.2	-.37318	54.84	73.8	-5489	-12833	-590	-585	-163	-.07762
9 -6-76	815	213.8	34.9	-.37354	54.79	73.3	-5985	-13329	-616	-611	-189	-.09000
9-16-76	1430	224.0	45.1	-.37345	54.80	73.4	-6227	-13571	-627	-622	-200	-.09524
9-21-76	1330	229.0	50.1	-.37331	54.82	73.6	-6326	-13670	-631	-626	-204	-.09714
10 -1-76	905	238.8	59.9	-.37321	54.83	73.7	-6495	-13839	-639	-634	-212	-.10095
10-20-76	1400	258.0	79.1	-.37348	54.80	73.4	-6880	-14224	-658	-653	-231	-.11000
11 -4-76	1100	272.9	94.0	-.37362	54.78	73.2	-7050	-14394	-667	-662	-240	-.11429
11-19-76	1430	288.0	109.1	-.37371	54.77	73.0	-7278	-14622	-678	-673	-251	-.11952
12-20-76	1445	319.0	140.1	-.37398	54.74	72.7	-7586	-14930	-694	-689	-267	-.12714
1-14-77	1200	343.9	165.0	-.37422	54.70	72.3	-7802	-15146	-706	-701	-279	-.13286
1-19-77	1050	348.9	170.0	-.37418	54.71	72.4	-7863	-15207	-708	-703	-281	-.13381
2 -3-77	945	363.8	184.9	-.37402	54.73	72.6	-7997	-15341	-714	-709	-287	-.13667
2 -5-77	826	365.8	186.9	-.37419	54.71	72.4	-8004	-15348	-715	-710	-288	-.13714
2-22-77	905	382.8	203.9	-.37393	54.74	72.7	-8135	-15479	-720	-715	-293	-.13952
3 -5-77	747	393.7	214.8	-.37363	54.78	73.2	-8238	-15582	-724	-719	-297	-.14143
3 -7-77	931	395.8	216.9	-.37363	54.78	73.1	-8234	-15578	-724	-719	-297	-.14143
3 -7-77	937	395.8	216.9	-.37366	54.78	73.1	-8236	-15580	-724	-719	-297	-.14143
* 3 -7-77	938	395.8	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3 -7-77	938	395.8		-.37356	54.78	73.1	-86	-7430	-333	-328	94	
3 -7-77	942	395.8		-.37366	54.78	73.1	33	-7311	-327	-322	100	
3 -7-77	947	395.9		-.37363	54.78	73.1	80	-7264	-325	-320	102	
3 -7-77	1045	395.9		-.37368	54.77	73.1	278	-7066	-315	-310	112	
3 -7-77	1635	396.1		-.37362	54.78	73.2	492	-6852	-305	-300	122	
3 -8-77	1307	397.0		-.37351	54.79	73.3	724	-6620	-293	-288	134	
3 -9-77	1555	398.1		-.37355	54.79	73.3	882	-6462	-286	-281	141	
3-10-77	1617	399.1		-.37364	54.78	73.1	964	-6380	-282	-277	145	
3-11-77	1546	400.1		-.37361	54.78	73.2	1038	-6306	-278	-273	149	
3-12-77	1202	400.9		-.37388	54.75	72.8	1103	-6241	-277	-272	150	
3-13-77	1326	402.0		-.37382	54.76	72.9	1160	-6184	-274	-269	153	
3-15-77	1230	403.9		-.37393	54.74	72.7	1253	-6091	-270	-265	157	
3-16-77	1547	405.1		-.37394	54.74	72.7	1298	-6046	-267	-262	160	
3-24-77	1138	412.9		-.37383	54.75	72.9	1503	-5841	-257	-252	170	
3-30-77	912	418.8		-.37414	54.71	72.4	1618	-5726	-253	-248	174	
4 -6-77	1446	425.0		-.37381	54.76	72.9	1703	-5641	-247	-242	180	

MODULUS: LOADING E= 5.0 AT AGE 179 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 3B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.67 OHMS
TEMP. CALIBRATION CONSTANT = 10.73 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.12 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 930 73 05
AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 9340. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.5 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2-4-76	1400	0	SPECIMEN CAST									
2-6-76	1100	1.9		-.36368	58.05	79.2	6409	0	0			
2-12-76	1000	7.8		-.36993	55.25	70.6	6297	-112	-12			
2-20-76	1300	16.0		-.37012	55.23	70.4	6082	-327	-44			
3-5-76	1500	29.1		-.36581	55.27	70.8	5894	-515	-53			
3-10-76	1545	34.1		-.36571	55.28	70.9	5841	-568	-56			
3-11-76	1615	35.1		-.36546	55.31	71.3	5809	-600	-57			
3-12-76	930	35.8		-.36944	55.31	71.3	5808	-601	-57			
3-17-76	1745	41.2		-.36659	55.42	72.5	5743	-666	-57			
3-23-76	1615	47.1		-.36901	55.37	71.9	5764	-645	-57			
3-31-76	810	54.8		-.36945	55.31	71.3	5807	-602	-57			
4-9-76	1050	63.9		-.36582	55.27	70.8	5868	-541	-55			
4-16-76	1600	71.1		-.36549	55.31	71.2	5866	-543	-54			
4-30-76	1100	84.9		-.36575	55.27	70.9	5913	-495	-52			
5-12-76	1340	97.0		-.36904	55.37	71.8	5883	-526	-51			
5-20-76	1415	105.0		-.36922	55.34	71.6	5912	-497	-50			
5-25-76	1320	110.0		-.36942	55.32	71.3	5919	-490	-50			
6-10-76	1150	125.9		-.36944	55.31	71.3	5950	-459	-49			
6-18-76	1330	134.0		-.36667	55.41	72.4	5899	-510	-48			
6-29-76	1430	145.0		-.36727	55.59	74.3	5863	-546	-44			
7-14-76	915	159.8		-.36314	55.48	73.1	5913	-496	-45			
7-20-76	1500	165.0		-.36795	55.50	73.3	5884	-525	-46			
7-29-76	1500	175.1		-.36757	55.55	73.9	5930	-479	-42			
* 8-2-76	1125	178.9	LOADING BEGINS									
8-2-76	1125	178.9	-.0007	-.36727	55.59	74.3	5947	-462	-40	0		
* 8-2-76	1126	179.9	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
8-2-76	1126	178.9	.0000	-.36727	55.55	74.3	-1801	-8210	-424	-424	0	0.
8-2-76	1130	178.9	.0028	-.36727	55.59	74.3	-2046	-8455	-478	-438	-14	-.00667
8-2-76	1135	178.9	.0063	-.36727	55.59	74.3	-2124	-8533	-482	-442	-18	-.00857
8-2-76	1155	178.9	.0201	-.36764	55.54	73.8	-2230	-8639	-490	-450	-26	-.01238
8-2-76	1350	179.1	.1833	-.36748	55.56	74.0	-2614	-9023	-510	-470	-46	-.02190
8-2-76	1650	179.1	.2250	-.36745	55.57	74.0	-2636	-9045	-511	-471	-47	-.02238
8-2-76	2010	179.3	.3639	-.36750	55.56	74.0	-2721	-9130	-516	-476	-52	-.02476
8-3-76	1315	180.0	1.0757	-.36758	55.55	73.9	-2982	-9391	-531	-491	-67	-.03190
8-4-76	1320	181.0	2.1	-.36747	55.57	74.0	-3159	-9568	-540	-500	-76	-.03619
8-5-76	1430	182.0	3.1	-.36763	55.55	73.8	-3354	-9763	-551	-511	-87	-.04143
8-6-76	1300	183.0	4.1	-.36756	55.56	73.9	-3425	-9834	-555	-515	-91	-.04333
8-9-76	1230	185.9	7.0	-.36764	55.54	73.8	-3613	-10022	-565	-525	-101	-.04810
8-11-76	1610	188.1	9.2	-.36744	55.57	74.0	-3767	-10176	-573	-533	-109	-.05190
8-16-76	1410	193.0	14.1	-.36752	55.56	73.9	-4078	-10487	-590	-550	-126	-.06000
8-23-76	1630	200.1	21.2	-.36733	55.58	74.2	-4400	-10809	-607	-567	-143	-.06810
9-6-76	815	213.8	34.9	-.36774	55.53	73.6	-4792	-11201	-630	-590	-166	-.07905
9-16-76	1330	224.0	45.1	-.36767	55.54	73.7	-4981	-11390	-641	-601	-177	-.08429
9-21-76	1330	229.0	50.1	-.36748	55.56	74.0	-5071	-11480	-645	-605	-181	-.08619
10-1-76	905	238.8	59.9	-.36738	55.58	74.1	-5195	-11604	-651	-611	-187	-.08905
10-20-76	1400	258.0	79.1	-.36766	55.54	73.7	-5508	-11917	-669	-629	-205	-.09762
11-4-76	1100	272.9	94.0	-.36772	55.53	73.7	-5659	-12068	-678	-638	-214	-.10190
11-19-76	1430	288.0	109.1	-.36783	55.52	73.5	-5828	-12237	-688	-648	-224	-.10667
12-20-76	1445	319.0	140.1	-.36801	55.50	73.3	-6023	-12432	-699	-659	-235	-.11190
1-14-77	1200	343.9	165.0	-.36822	55.47	73.0	-6199	-12608	-710	-670	-246	-.11714
1-19-77	1050	348.9	170.0	-.36814	55.48	73.1	-6253	-12662	-712	-672	-248	-.11810
2-3-77	945	363.9	184.9	-.36807	55.49	73.2	-6357	-12766	-718	-678	-254	-.12095
2-5-77	926	365.8	186.9	-.36818	55.48	73.0	-6363	-12772	-718	-678	-254	-.12095
2-22-77	905	382.8	203.9	-.36798	55.50	73.3	-6472	-12881	-724	-684	-260	-.12381
3-5-77	747	393.7	214.8	-.36753	55.56	73.9	-6574	-12983	-727	-687	-263	-.12524
3-7-77	937	395.8	216.9	-.36761	55.55	73.8	-6558	-12967	-727	-687	-263	-.12524
* 3-7-77	938	395.8	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3-7-77	938	395.8		-.36761	55.55	73.8	733	-5675	-327	-287	137	
3-7-77	942	395.8		-.36761	55.55	73.8	826	-5583	-322	-282	142	
3-7-77	1045	395.9		-.36756	55.56	73.9	1021	-5388	-311	-271	153	
3-7-77	1635	396.1		-.36752	55.56	73.9	1198	-5211	-301	-261	163	
3-8-77	1307	397.0		-.36739	55.58	74.1	1393	-5016	-290	-250	174	
3-9-77	1555	398.1		-.36746	55.57	74.0	1525	-4884	-283	-243	181	
3-10-77	1617	399.1		-.36759	55.55	73.8	1590	-4819	-280	-240	184	
3-11-77	1546	400.1		-.36754	55.56	73.9	1651	-4758	-276	-236	188	
3-12-77	1202	400.9		-.36783	55.52	73.5	1709	-4700	-274	-234	190	
3-13-77	1326	402.0		-.36775	55.53	73.6	1761	-4648	-271	-231	193	
3-15-77	1230	403.9		-.36786	55.52	73.5	1834	-4575	-268	-228	196	
3-16-77	1547	405.1		-.36784	55.52	73.5	1867	-4542	-266	-226	198	
3-24-77	1138	412.9		-.36773	55.53	73.6	2034	-4375	-256	-216	208	
3-30-77	912	418.3		-.36804	55.49	73.2	2135	-4274	-252	-212	212	
4-6-77	1446	426.0		-.36779	55.53	73.6	2195	-4214	-248	-208	216	

MODULUS: LOADING E= 5.0 AT AGE 179 DAYS (STRESS LEVEL 0 TO 2100 PSI)

TABLE 4A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES77RA
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.62 OHMS
TEMP. CALIBRATION CONSTANT = 10.75 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.26 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION= 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 535 11 02
AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 110 DEG. F.
ULT. STR. : 9340. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.5 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN, TEMPERATURE CORRECTED: FROM DAY ONE	ELASTIC	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36619	55.73	76.7	11919	0	0			
2-12-76	1000	7.8		-.36659	55.42	73.4	11826	-93	-14			
2-20-76	1300	15.0		-.35812	56.77	88.0	10370	-1549	-48			
3 -5-76	1600	29.1		-.34411	58.62	107.9	9495	-2424	-33			
3-10-76	1545	34.1		-.34571	57.58	95.9	10081	-1838	-27			
3-11-76	1615	35.1		-.34526	58.46	106.2	9741	-2178	-25			
3-12-76	930	35.8		-.34429	58.59	107.6	9647	-2272	-26			
3-17-76	1745	41.2		-.34355	58.69	108.7	9562	-2357	-27			
3-23-76	1615	47.1		-.34383	58.65	108.3	9552	-2367	-29			
3-31-76	810	54.8		-.34360	58.68	108.6	9525	-2394	-30			
4 -9-76	1050	63.9		-.34343	58.71	108.8	9494	-2425	-30			
4-15-76	1600	71.1		-.34516	58.48	106.4	9643	-2276	-30			
4-30-76	1100	84.9		-.34425	58.60	107.7	9566	-2353	-30			
5-12-76	1240	97.0		-.34283	58.78	109.7	9457	-2462	-30			
5-20-76	1415	105.0		-.34233	58.85	110.4	9405	-2514	-30			
5-28-76	1320	113.0		-.34225	58.86	110.5	9382	-2537	-31			
6-10-76	1150	125.9		-.34208	58.89	110.8	9382	-2537	-30			
6-18-76	1330	134.0		-.34378	58.66	108.3	9490	-2429	-32			
7-29-76	1600	175.1		-.34395	58.65	108.2	9537	-2382	-30			
6-28-76	1435	144.0		-.34432	58.59	107.6	9528	-2391	-33			
6-29-76	1430	145.0		-.34390	58.64	108.2	9511	-2408	-32			
7-14-76	915	159.8		-.34454	58.56	107.3	9523	-2396	-34			
7-20-76	1500	165.0		-.34428	58.59	107.6	9522	-2397	-33			
* 8 -2-76	1345	179.0	LOADING BEGINS									
8 -2-76	1345	179.0	-.0007	-.34322	58.74	109.1	9498	-2421	-29	0		
* 8 -2-76	1346	179.0	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
8 -2-76	1346	179.0	.0000	-.34322	58.74	109.1	1509	-10110	-444	-415	0	0.
8 -2-76	1350	179.0	.0028	-.34322	58.74	109.1	1489	-10430	-462	-433	-16	-.00857
8 -2-76	1355	179.0	.0063	-.34322	58.74	109.1	1431	-10488	-465	-436	-21	-.01000
8 -2-76	1415	179.0	.0201	-.34318	58.74	109.2	1316	-10603	-471	-442	-27	-.01286
8 -2-76	1450	179.0	.0444	-.34305	58.76	109.4	1190	-10729	-477	-448	-33	-.01571
8 -2-76	1550	179.1	.0861	-.34304	58.76	109.4	1057	-10862	-484	-455	-40	-.01905
8 -2-76	1550	179.1	.1278	-.34310	58.75	109.3	995	-10924	-488	-459	-44	-.02095
8 -2-76	2010	179.3	.2667	-.34330	58.72	109.0	875	-11044	-495	-466	-51	-.02429
8 -3-76	1315	180.0	.9785	-.34355	58.69	108.6	577	-11342	-513	-484	-69	-.03286
8 -4-76	1320	181.0	1.9819	-.34358	58.68	108.6	285	-11634	-528	-499	-84	-.04000
8 -5-76	1430	182.0	3.0	-.34381	58.66	108.3	95	-11824	-540	-511	-96	-.04571
8 -6-76	1300	183.0	4.0	-.34516	58.48	104.9	130	-11789	-548	-519	-104	-.04952
8 -9-76	1230	185.9	6.9	-.34318	58.74	109.2	-254	-12173	-556	-527	-112	-.05333
8-11-76	1510	188.1	9.1	-.34193	58.92	111.1	-608	-12527	-569	-540	-125	-.05952
8-16-76	1410	193.0	14.0	-.34199	58.90	110.9	-1097	-13016	-596	-567	-152	-.07238
8-23-76	1630	200.1	21.1	-.34391	58.64	108.1	-1253	-13172	-613	-584	-169	-.08048
9 -6-76	815	213.8	34.8	-.34298	58.77	109.5	-1824	-13743	-640	-611	-196	-.09333
9-16-76	1430	224.0	45.0	-.34350	58.70	108.7	-2038	-13957	-653	-624	-209	-.09952
9-21-76	1330	229.0	50.0	-.34419	58.61	107.8	-2100	-14019	-650	-621	-216	-.10286
10 -1-76	905	238.8	59.8	-.34403	58.63	108.0	-2322	-14241	-671	-642	-227	-.10810
10-20-76	1410	259.0	79.0	-.34488	58.51	106.8	-2549	-14468	-687	-658	-243	-.11571
11 -4-76	1120	272.9	93.9	-.34378	58.66	108.3	-3012	-14931	-707	-678	-262	-.12524
11-19-76	1500	288.0	109.1	-.34177	58.93	111.2	-3416	-15335	-720	-691	-276	-.13143
12-20-76	1445	319.0	140.0	-.34209	58.89	110.8	-4143	-16062	-761	-732	-317	-.15095
1-14-77	1330	344.0	165.0	-.34237	58.85	110.4	-4628	-16547	-788	-759	-344	-.16381
1-20-77	1155	349.9	170.9	-.34231	58.86	110.4	-4722	-16641	-793	-764	-349	-.16619
2 -3-77	1000	363.8	184.8	-.34205	58.89	110.8	-4936	-16855	-803	-774	-359	-.17095
2 -5-77	754	365.7	186.8	-.34220	58.87	110.6	-4933	-16852	-804	-775	-360	-.17143
2 -7-77	937	367.8	188.8	-.34207	58.89	110.8	-5090	-17009	-812	-783	-368	-.17524
2-22-77	836	382.8	203.8	-.34203	58.89	110.9	-5323	-17242	-824	-795	-380	-.18095
3 -5-77	800	393.7	214.8	-.34197	58.90	110.9	-5518	-17437	-835	-806	-391	-.18619
3 -7-77	1117	395.9	216.9	-.34175	58.93	111.3	-5555	-17474	-836	-807	-392	-.18667
* 3 -7-77	1118	395.9	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3 -7-77	1118	395.9		-.34175	58.93	111.3	1949	-9970	-430	-401	14	
3 -7-77	1122	395.9		-.34175	58.93	111.3	2081	-9838	-423	-394	21	
3 -7-77	1127	395.9		-.34175	58.93	111.3	2141	-9778	-420	-391	24	
3 -7-77	1530	396.1		-.34208	58.89	110.8	2551	-9368	-399	-370	45	
3 -8-77	1447	397.0		-.34218	58.87	110.6	2838	-9081	-384	-355	60	
3 -9-77	1506	398.1		-.34226	58.86	110.5	2954	-8965	-378	-349	66	
3-10-77	1526	399.1		-.34240	58.84	110.3	3023	-8896	-375	-346	69	
3-11-77	1554	400.1		-.34241	58.84	110.3	3076	-8843	-372	-343	72	
3-12-77	1150	400.9		-.34235	58.85	110.4	3118	-8801	-370	-341	74	
3-13-77	1332	402.0		-.34227	58.86	110.5	3157	-8762	-367	-338	77	
3-15-77	1152	403.9		-.34256	58.82	110.1	3234	-8685	-365	-336	79	
3-16-77	1605	405.1		-.34239	58.85	110.3	3266	-8653	-362	-333	82	
3-24-77	1131	412.9		-.34233	58.85	110.4	3399	-8520	-355	-326	89	
3-30-77	925	418.8		-.34272	58.80	109.9	3518	-8401	-350	-321	94	
4 -6-77	1500	426.0		-.34227	58.86	110.5	3825	-8094	-331	-302	113	

MODULUS: LOADING E= 5.1 AT AGE 179 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 4B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS F-2 ES73BA
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.56 OHMS
TEMP. CALIBRATION CONSTANT = 10.76 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.16 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 7.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 938 11 03
AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 110 DEG. F.
ULT. STR. : 9340. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.5 PERCENT

NOTE: FOR MODE 4 OF 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OF 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN — TEMPERATURE CORRECTED — FROM DAY ONE	ELASTIC	CREEP	SPECIFIC CREEP
* 2-4-76	1400	0	SPECIMEN CAST									
2-5-76	1100	1.9		-.36486	58.90	79.0	12014	0	0			
2-12-76	1000	7.8		-.37088	55.13	70.7	11884	-130	-32			
2-20-76	1330	16.0		-.35684	56.96	90.2	10395	-1619	-53			
3-5-76	1600	29.1		-.34249	58.83	110.5	9408	-2606	-43			
3-10-76	1545	34.1		-.34819	58.06	102.4	10051	-1963	-34			
3-11-76	1415	35.1		-.34362	58.46	104.9	9714	-2300	-32			
3-12-76	930	35.8		-.34259	58.82	110.4	9632	-2382	-32			
3-17-76	1745	41.2		-.34188	58.91	111.4	9604	-2410	-30			
3-23-76	1415	47.1		-.34219	58.87	111.0	9672	-2342	-28			
3-31-76	910	54.8		-.34195	58.90	111.7	9705	-2309	-25			
4-9-76	1050	63.9		-.34178	58.93	111.5	9734	-2280	-23			
4-16-76	1600	71.1		-.34341	58.62	108.9	9855	-2159	-24			
4-30-76	1100	84.9		-.34270	58.80	110.2	9763	-2251	-25			
5-12-76	1340	97.0		-.34158	58.95	111.8	9624	-2390	-28			
5-20-76	1415	105.0		-.34160	58.92	111.5	9617	-2397	-29			
6-10-76	1150	125.9		-.34170	58.94	111.7	9484	-2530	-36			
6-18-76	1330	134.0		-.34250	58.79	109.9	9535	-2479	-38			
6-28-76	1435	144.0		-.34347	58.70	109.1	9565	-2449	-35			
6-29-76	1430	145.0		-.34315	58.74	109.6	9546	-2468	-39			
7-14-76	915	159.8		-.34384	58.65	108.6	9540	-2474	-42			
7-20-76	1500	165.0		-.34356	58.69	109.0	9552	-2462	-40			
7-29-76	1600	175.1		-.34263	58.79	110.6	9507	-2507	-40			
* 8-2-76	1345	179.0	LOADING BEGINS									
8-2-76	1345	179.0	-.0007	-.34223	58.97	110.9	9458	-2556	-40	0		
* 8-2-76	1346	179.0	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
8-2-76	1346	179.0	.0000	-.34195	58.90	111.3	1331	-10183	-455	-415	0	0.
8-2-76	1350	179.0	.0028	-.34202	58.89	111.2	1539	-10475	-471	-431	-16	-.00762
8-2-76	1355	179.0	.0063	-.34196	58.90	111.3	1459	-10555	-475	-435	-20	-.00952
8-2-76	1415	179.0	.0201	-.34213	58.88	111.0	1361	-10653	-481	-441	-26	-.01238
8-2-76	1450	179.0	.0444	-.34205	58.89	111.2	1270	-10744	-488	-448	-33	-.01571
8-2-76	1550	179.1	.0861	-.34199	58.90	111.3	1120	-10894	-494	-454	-39	-.01857
8-2-76	1650	179.1	.1278	-.34202	58.89	111.2	1042	-10972	-498	-458	-43	-.02048
8-2-76	2010	179.1	.2567	-.34217	58.87	111.0	895	-11119	-507	-467	-52	-.02476
8-3-76	1315	180.0	.9785	-.34249	58.83	110.5	582	-11432	-525	-485	-70	-.03333
8-4-76	1320	181.0	1.9819	-.34238	58.85	110.7	287	-11727	-541	-501	-86	-.04095
8-5-76	1430	182.0	3.0	-.34274	58.80	110.2	105	-11909	-552	-512	-97	-.04619
8-6-76	1300	183.0	4.0	-.34496	58.50	107.0	113	-11901	-562	-522	-107	-.05095
8-9-76	1230	185.9	6.9	-.34210	58.88	111.1	-260	-12274	-570	-530	-115	-.05476
8-11-76	1610	188.1	9.1	-.34068	59.07	113.1	-640	-12654	-584	-544	-129	-.06143
8-16-76	1410	193.0	14.0	-.34101	59.03	112.6	-1144	-13158	-613	-573	-158	-.07524
8-23-76	1530	200.1	21.1	-.34251	58.78	109.9	-1337	-13351	-632	-592	-177	-.08429
9-6-76	815	213.8	34.8	-.34193	58.91	111.3	-1896	-13910	-658	-618	-203	-.09667
9-16-76	1430	224.0	45.0	-.34245	58.84	110.6	-2135	-14149	-673	-633	-218	-.10381
9-21-76	1330	229.0	50.0	-.34307	58.76	109.7	-2195	-14209	-679	-639	-224	-.10667
10-1-76	905	238.9	59.8	-.34303	58.76	109.8	-2434	-14448	-692	-652	-237	-.11286
10-20-76	1410	258.0	79.0	-.34307	58.76	109.7	-2639	-14653	-704	-664	-249	-.11857
11-4-76	1120	272.9	93.9	-.34243	58.83	110.5	-3151	-15165	-729	-689	-274	-.13048
11-19-76	1500	288.0	109.1	-.34306	58.76	109.7	-3240	-15254	-736	-696	-281	-.13381
12-20-76	1445	319.0	140.0	-.34342	58.71	109.2	-3791	-15805	-768	-728	-313	-.14905
1-14-77	1330	344.0	165.0	-.34374	58.67	108.7	-4205	-16219	-792	-752	-337	-.16048
1-20-77	1155	349.9	170.9	-.34369	58.67	108.8	-4283	-16297	-796	-756	-341	-.16238
2-3-77	1000	363.8	184.8	-.34338	58.71	109.3	-4476	-16490	-805	-765	-350	-.16667
2-5-77	758	365.7	186.8	-.34353	58.69	109.0	-4474	-16488	-806	-766	-351	-.16714
2-9-77	1604	370.1	191.1	-.34345	58.70	109.2	-4603	-16617	-813	-773	-358	-.17048
2-22-77	836	382.8	203.8	-.34335	58.72	109.3	-4825	-16839	-824	-784	-369	-.17571
3-5-77	800	393.7	214.8	-.34330	58.72	109.4	-5027	-17041	-835	-795	-380	-.18095
3-7-77	1117	395.9	216.9	-.34308	58.75	109.7	-5063	-17077	-836	-796	-381	-.18143
* 3-7-77	1118	395.9	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3-7-77	1118	395.9		-.34308	58.75	109.7	2459	-9555	-425	-385	30	
3-7-77	1122	395.9		-.34308	58.75	109.7	2592	-9422	-419	-378	37	
3-7-77	1127	395.9		-.34308	58.75	109.7	2652	-9362	-415	-375	40	
3-7-77	1630	396.1		-.34328	58.73	109.4	3022	-8992	-396	-356	[illegible]	
3-8-77	1447	397.0		-.34348	58.70	109.1	3326	-8688	-380	-340	75	
3-9-77	1606	398.1		-.34343	58.71	109.2	3467	-8547	-372	-332	83	
3-10-77	1626	399.1		-.34360	58.68	108.9	3556	-8458	-368	-328	87	
3-11-77	1554	400.1		-.34360	58.68	108.9	3614	-8400	-365	-325	90	
3-12-77	1150	400.9		-.34355	58.69	109.0	3661	-8353	-362	-322	93	
3-13-77	1332	402.0		-.34347	58.70	109.1	3708	-8306	-359	-319	96	
3-15-77	1156	403.9		-.34376	58.66	108.7	3794	-8220	-356	-316	99	
3-16-77	1605	405.1		-.34356	58.69	109.0	3826	-8188	-353	-313	102	
3-24-77	1131	412.9		-.34351	58.70	109.1	3987	-8027	-344	-304	111	
3-30-77	926	418.8		-.34390	58.64	108.5	4129	-7885	-338	-298	117	
4-6-77	1500	426.0		-.34347	58.70	109.1	4385	-7629	-322	-282	133	

MODULUS: LOADING E= 5.1 AT AGE 179 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

5A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.32 OHMS			
TEMP. CALIBRATION CONSTANT	= 10.81 F/OHM CHANGE IN RESIST.	STRAIN METER NO. :	931	73 12
STRAIN CALIBRATION CONSTANT	= 9.29 MICROVOLTS/VOLT/MICROSTRAIN	AGE OF LOADING :	365	DAYS
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT	TEST TEMPERATURE :	73	DEG. F.
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.			
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.5 MICROSTRAIN/DEGREE F.	ULT. STR. :	8200.	PSI
STRAIN INCREMENT FACTOR	= 6 PERCENT	APPLIED TEST STRESS :	2100.	PSI
		PER. ULT. STR. APPLIED:	25.6	PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM 0 DAY ONE	ELASTIC	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -5-76	1100	1.9		-.36696	55.63	75.0	9709	0	0			
2-12-76	1000	7.8		-.36894	55.38	75.3	9587	-122	-14			
2-20-76	1300	16.0		-.37273	54.89	71.1	9445	-264	-39			
3 -5-76	1600	29.1		-.37351	54.80	70.0	9478	-231	-39			
3-10-76	1545	34.1		-.37336	54.81	70.2	9461	-248	-40			
3-11-76	1615	35.1		-.37331	54.82	70.3	9454	-255	-40			
3-12-76	930	35.8		-.37324	54.83	70.4	9447	-262	-40			
3-17-76	1745	41.2		-.37232	54.95	71.6	9379	-330	-40			
3-23-76	1615	47.1		-.37286	54.88	70.9	9420	-289	-40			
3-31-76	810	54.8		-.37322	54.83	70.4	9495	-214	-37			
4 -9-76	1050	63.9		-.37309	54.85	70.6	9504	-205	-36			
4-16-76	1600	71.1		-.37271	54.90	71.1	9510	-199	-34			
4-30-76	1100	84.9		-.37313	54.84	70.5	9576	-133	-33			
5-12-76	1340	97.0		-.37232	54.95	71.6	9557	-152	-30			
5-20-76	1415	105.0		-.37256	54.92	71.3	9595	-114	-29			
6-10-76	1150	125.9		-.37279	54.89	71.0	9657	-52	-27			
6-18-76	1320	134.0		-.37205	54.98	72.0	9610	-99	-26			
6-29-76	1430	145.0		-.37064	55.16	73.9	9548	-161	-23			
6-30-76	1715	145.0		-.37242	54.93	71.5	9599	-110	-28			
7-14-76	915	159.8		-.37186	55.01	72.3	9660	-49	-23			
7-20-76	1500	165.0		-.37177	55.02	72.4	9624	-85	-23			
7-29-76	1500	175.1		-.37177	55.02	72.4	9692	-17	-24			
8 -2-76	1155	179.9		-.37154	55.05	72.7	9699	-10	-21			
8 -6-76	1300	183.0		-.37128	55.08	73.1	9660	-49	-19			
8-16-76	1410	193.0		-.37139	55.06	72.9	9668	-41	-20			
8-23-76	1530	200.1		-.37101	55.11	73.4	9648	-61	-20			
9 -6-76	815	213.8		-.37152	55.05	72.7	9699	-10	-20			
9-16-76	1430	224.0		-.37145	55.06	72.8	9695	-14	-19			
9-21-76	1330	229.0		-.37138	55.07	72.9	9711	2	-19			
10 -1-76	905	238.8		-.37128	55.08	73.1	9840	131	-18			
11 -4-76	1100	272.9		-.37180	55.01	72.3	9907	198	-10			
11-19-76	1430	288.0		-.37196	54.99	72.1	9928	219	-9			
12-20-76	1445	319.0		-.37240	54.94	71.5	10017	308	-9			
1-14-77	1200	343.9		-.37282	54.86	70.9	10038	329	-6			
1-19-77	1050	348.9		-.37278	54.86	71.0	10067	358	-6			
2 -3-77	945	363.8		-.37249	54.92	71.4	10063	354	-5			
2 -5-77	825	365.8		-.37263	54.91	71.2	10074	355	-4			
* 2 -5-77	920	365.8	LOADING BEGINS						-4			
2 -5-77	920	365.8	-.0007	-.37250	54.92	71.4	10092	383	-3	0		
* 2 -5-77	921	365.8	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
2 -5-77	921	365.8	.0000	-.37247	54.93	71.4	2615	-7094	-383	-380	C	C.
2 -5-77	925	365.8	.0029	-.37245	54.93	71.5	2575	-7134	-385	-382	-2	-.00095
2 -5-77	930	365.8	.0063	-.37245	54.93	71.5	2535	-7174	-387	-384	-4	-.00190
2 -5-77	1015	365.8	.0375	-.37230	54.95	71.7	2375	-7334	-394	-391	-11	-.00524
2 -5-77	1125	365.9	.0861	-.37206	54.98	72.0	2261	-7448	-399	-396	-16	-.00762
2 -5-77	1342	366.0	.1813	-.37173	55.02	72.4	2160	-7549	-403	-400	-20	-.00952
2 -6-77	1351	367.0	1.1875	-.37171	55.02	72.5	1872	-7837	-417	-414	-34	-.01619
2 -7-77	931	367.8	2.0	-.37163	55.03	72.6	1672	-8037	-427	-424	-44	-.02095
2 -8-77	927	368.8	3.0	-.37160	55.04	72.6	1582	-8127	-432	-429	-49	-.02333
2 -9-77	1558	370.1	4.3	-.37141	55.06	72.9	1512	-8197	-434	-431	-51	-.02429
2-10-77	952	370.8	5.0	-.37162	55.04	72.6	1466	-8243	-438	-435	-55	-.02619
2-12-77	1331	373.0	7.2	-.37156	55.04	72.7	1332	-8377	-444	-441	-61	-.02905
2-19-77	1732	380.1	14.3	-.37111	55.10	73.3	1037	-8672	-457	-454	-74	-.03524
2-22-77	905	382.8	17.0	-.37165	55.03	72.5	996	-8713	-462	-459	-79	-.03762
2-28-77	809	388.8	23.0	-.37115	55.10	73.2	817	-8892	-468	-465	-85	-.04048
3 -5-77	747	393.7	27.9	-.37106	55.11	73.4	625	-9084	-478	-475	-95	-.04524
3-15-77	1547	405.1	39.3	-.37144	55.06	72.8	537	-9172	-484	-481	-101	-.04810
3-24-77	1138	412.9	47.1	-.37131	55.07	73.0	392	-9317	-491	-488	-108	-.05143
4 -6-77	1446	425.0	60.2	-.37124	55.08	73.1	27	-9682	-509	-506	-126	-.06000

MODULUS: LOADING E= 5.5 AT AGE 366 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

54

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS F-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.11 OHMS
TEMP. CALIBRATION CONSTANT = 10.84 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.16 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 533 73 13
AGE OF LOADING : 365 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 8200. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 25.6 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36803	55.50	80.1	12378	0	0			
2-12-76	1000	7.8		-.37468	54.65	70.9	12229	-149	-36			
2-20-76	1300	16.0		-.37476	54.66	70.7	11981	-397	-50			
3 -5-76	1500	29.1		-.37451	54.67	71.1	11794	-584	-59			
3-10-76	1545	34.1		-.37431	54.69	71.4	11751	-627	-60			
3-11-76	1615	35.1		-.37428	54.70	71.4	11744	-634	-60			
3-12-76	930	35.8		-.37424	54.70	71.5	11740	-638	-60			
3-17-76	1745	41.2		-.37337	54.81	72.7	11663	-715	-61			
3-23-76	1615	47.1		-.37381	54.76	72.0	11674	-704	-62			
3-31-76	810	54.8		-.37417	54.71	71.6	11700	-678	-62			
4 -9-76	1050	63.9		-.37469	54.64	70.8	11713	-665	-64			
4-16-76	1600	71.1		-.37436	54.69	71.3	11692	-686	-64			
4-30-76	1100	84.9		-.37461	54.66	71.0	11687	-691	-65			
5-12-76	1340	97.0		-.37382	54.76	72.0	11641	-737	-64			
5-20-76	1415	105.0		-.37408	54.72	71.7	11654	-724	-64			
6-10-76	1150	125.9		-.37429	54.70	71.4	11671	-707	-64			
6-18-76	1330	134.0		-.37338	54.81	72.6	11634	-744	-63			
6-29-76	1430	145.0		-.37179	55.01	74.8	11570	-809	-59			
7-14-76	915	159.8		-.37273	54.89	73.5	11627	-751	-60			
7-20-76	1500	166.0		-.37255	54.92	73.8	11606	-772	-61			
7-29-76	1600	175.1		-.37262	54.91	73.7	11661	-717	-58			
8 -2-76	1155	179.9		-.37239	54.94	74.0	11651	-727	-57			
8 -6-76	1300	183.0		-.37223	54.96	74.2	11624	-754	-58			
8-16-76	1410	193.0		-.37237	54.94	74.0	11633	-745	-58			
8-23-76	1630	200.1		-.37191	55.00	74.7	11604	-774	-58			
9 -6-76	815	213.8		-.37254	54.92	73.8	11658	-720	-58			
9-16-76	1430	224.0		-.37240	54.94	74.0	11657	-721	-57			
9-21-76	1330	229.0		-.37228	54.95	74.2	11646	-732	-57			
10 -1-76	905	238.8		-.37211	54.97	74.4	11649	-729	-56			
10-21-76	1210	258.9		-.37263	54.91	73.7	11744	-634	-53			
11 -4-76	1100	272.9		-.37250	54.92	73.9	11702	-676	-55			
11-19-76	1430	288.0		-.37252	54.91	73.7	11747	-631	-53			
12-20-76	1445	319.0		-.37303	54.86	73.1	11880	-498	-48			
1-14-77	1200	343.9		-.37334	54.82	72.7	11916	-462	-47			
1-19-77	1050	348.9		-.37336	54.81	72.7	11924	-454	-47			
2 -3-77	945	363.8		-.37309	54.85	73.0	11908	-470	-46			
2 -5-77	826	365.8		-.37326	54.83	72.8	11919	-459	-47			
* 2 -5-77	920	365.8	LOADING BEGINS									
2 -5-77	920	365.8	-.0007	-.37310	54.85	73.0	11905	-473	-47	C		
* 2 -5-77	921	365.8	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
2 -5-77	921	365.8	.0000	-.37317	54.84	72.9	4445	-7933	-454	-407	C	C.
2 -5-77	925	365.8	.0028	-.37317	54.84	72.9	4395	-7983	-457	-410	-3	-.00143
2 -5-77	930	365.8	.0063	-.37317	54.84	72.9	4357	-8021	-459	-412	-5	-.00238
2 -5-77	1015	365.8	.0375	-.37320	54.83	72.9	4200	-8178	-468	-421	-14	-.00667
2 -5-77	1125	365.9	.0861	-.37313	54.84	73.0	4121	-8257	-472	-425	-18	-.00857
2 -5-77	1742	366.0	.1813	-.37303	54.85	73.1	4016	-8362	-477	-430	-23	-.01095
2 -6-77	1351	367.0	1.1875	-.37313	54.84	73.0	3721	-8657	-493	-446	-39	-.01857
2 -7-77	931	367.8	2.0	-.37306	54.85	73.1	3532	-8846	-503	-456	-49	-.02333
2 -8-77	927	368.8	3.0	-.37302	54.86	73.1	3407	-8971	-510	-463	-56	-.02667
2 -9-77	1558	370.1	4.3	-.37286	54.88	73.4	3334	-9044	-513	-466	-59	-.02810
2-10-77	952	370.8	5.0	-.37304	54.85	73.1	3271	-9107	-518	-471	-64	-.03048
2-12-77	1331	373.0	7.2	-.37293	54.87	73.3	3134	-9244	-525	-478	-71	-.03381
2-19-77	1732	380.1	14.3	-.37251	54.92	73.8	2830	-9548	-539	-492	-85	-.04048
2-22-77	905	382.8	17.0	-.37301	54.86	73.2	2779	-9599	-544	-497	-90	-.04286
2-28-77	809	388.8	23.0	-.37267	54.90	73.6	2622	-9756	-551	-504	-97	-.04619
3 -5-77	747	393.7	27.9	-.37266	54.90	73.6	2476	-9902	-559	-512	-105	-.05000
3-17-77	1200	405.9	40.1	-.37191	55.00	74.7	11549	-829	-61	-14	393	.18714
3-16-77	1547	405.1	39.3	-.37294	54.87	73.2	2333	-10045	-568	-521	-114	-.05429
3-24-77	1138	412.9	47.1	-.37278	54.89	73.5	2175	-10203	-576	-529	-122	-.05810
4 -6-77	1445	425.0	60.2	-.37274	54.89	73.5	1820	-10558	-596	-549	-142	-.06762

MODULUS: LOADING E= 5.2 AT AGE 366 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

6A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES73HH
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.50 OHMS	STRAIN METER NO. :	935 11 04
TEMP. CALIBRATION CONSTANT	= 10.79 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	365 DAYS
STRAIN CALIBRATION CONSTANT	= 9.09 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	110 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT		
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR. :	9990. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS :	2100. PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:	21.0 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY CAST	ELASTIC +CREEP	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36591	55.77	78.4	5790	0	0			
2-12-76	1000	7.9		-.36807	55.49	75.4	5662	-128	-15			
2-20-76	1300	16.0		-.35784	56.81	89.7	4240	-1550	-49			
3 -5-76	1600	29.1		-.34376	58.66	109.7	3251	-2539	-42			
3-10-76	1545	34.1		-.34937	57.92	101.7	3812	-1978	-36			
3-11-76	1615	35.1		-.34492	58.51	108.0	3475	-2315	-35			
3-12-76	930	35.8		-.34384	58.65	109.6	3383	-2407	-35			
3-17-76	1745	41.2		-.34313	58.75	110.6	3271	-2519	-38			
3-23-76	1615	47.1		-.34343	58.71	110.1	3178	-2612	-44			
3-31-76	810	54.8		-.34317	58.74	110.5	3140	-2650	-45			
4 -9-76	1050	63.9		-.34293	58.77	110.9	3129	-2661	-45			
4-16-76	1600	71.1		-.34478	58.53	108.2	3271	-2519	-45			
4-30-76	1100	84.9		-.34390	58.64	109.5	3175	-2615	-47			
5-12-76	1340	97.0		-.34265	58.84	111.5	3046	-2744	-47			
5-20-76	1415	105.0		-.34233	58.85	111.7	3015	-2775	-48			
5-25-76	1320	110.0		-.34225	58.86	111.8	2986	-2804	-50			
6-10-76	1150	125.9		-.34208	58.89	112.1	2969	-2821	-50			
6-18-76	1330	134.0		-.34363	58.68	109.9	3065	-2725	-51			
6-28-76	1435	144.0		-.34412	58.62	109.1	3110	-2680	-51			
6-29-76	1430	145.0		-.34373	58.67	109.7	3082	-2708	-51			
7-14-76	915	159.8		-.34442	58.58	108.7	3101	-2689	-53			
7-20-76	1500	166.0		-.34406	58.62	109.2	3098	-2692	-52			
7-29-76	1600	175.1		-.34333	58.72	110.3	3076	-2714	-49			
8 -2-76	1415	179.0		-.34271	58.80	111.2	3032	-2758	-49			
8 -6-76	1700	183.0		-.34648	58.30	105.8	3194	-2596	-57			
8-16-76	1410	193.0		-.34191	58.91	112.3	2850	-2940	-56			
8-23-76	1630	200.1		-.34408	58.62	109.2	2959	-2831	-59			
9 -6-76	915	213.8		-.34303	58.76	110.7	2929	-2861	-56			
9-16-76	1430	224.0		-.34370	58.67	109.7	2917	-2873	-60			
9-21-76	1330	229.0		-.34417	58.61	109.1	2912	-2878	-62			
10 -1-76	905	238.8		-.34406	58.62	109.2	2856	-2934	-65			
10-20-76	1410	258.0		-.34468	58.54	108.3	3051	-2739	-57			
11 -4-76	1120	272.9		-.34356	58.69	109.9	2826	-2964	-64			
11-19-76	1500	288.0		-.34291	58.78	110.9	2803	-2987	-67			
12-20-76	1445	319.0		-.34344	58.71	110.1	2554	-3236	-79			
1-14-77	1330	344.0		-.34379	58.66	109.6	2417	-3373	-88			
1-20-77	1155	349.9		-.34374	58.67	109.7	2384	-3405	-89			
2 -3-77	1000	363.3		-.34343	58.71	110.1	2311	-3479	-92			
2 -5-77	951	365.8		-.34347	58.70	110.1	2322	-3468	-92			
2 -5-77	754	365.7		-.34363	58.68	109.8	2329	-3461	-92			
* 2 -5-77	955	365.8	LOADING BEGINS									
2 -5-77	955	365.8	-.0007	-.34347	58.70	110.1	2322	-3468	-92	0		
* 2 -5-77	956	365.8	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
2 -5-77	956	365.8	.0000	-.34347	58.70	110.1	-4871	-10661	-487	-395	0	0.
2 -5-77	1000	365.8	.0028	-.34347	58.70	110.1	-4931	-10721	-491	-399	-4	-.00190
2 -5-77	1005	365.8	.0063	-.34347	58.70	110.1	-4989	-10779	-494	-402	-7	-.00333
2 -5-77	1057	365.9	.0424	-.34335	58.72	110.3	-5217	-11007	-506	-414	-19	-.00905
2 -5-77	1214	365.9	.0958	-.34333	58.72	110.3	-5328	-11118	-512	-420	-25	-.01190
2 -5-77	1337	366.0	.1535	-.34322	58.74	110.4	-5400	-11190	-515	-423	-28	-.01333
2 -6-77	1357	367.0	1.1674	-.34312	58.75	110.6	-5826	-11616	-538	-446	-51	-.02429
2 -7-77	937	367.8	1.9868	-.34320	58.74	110.5	-6011	-11801	-549	-457	-62	-.02952
2 -9-77	1604	370.1	4.3	-.34328	58.73	110.4	-6251	-12041	-562	-470	-75	-.03571
2-10-77	939	370.8	5.0	-.34325	58.73	110.4	-6331	-12121	-567	-475	-80	-.03810
2-12-77	1336	373.0	7.2	-.34310	58.75	110.6	-6518	-12308	-576	-484	-89	-.04238
2-19-77	1738	380.2	14.3	-.34285	58.78	111.0	-6946	-12736	-599	-507	-112	-.05333
2-22-77	936	382.8	15.9	-.34318	58.74	110.5	-7046	-12836	-606	-514	-119	-.05667
2-28-77	817	388.8	22.9	-.34312	58.75	110.6	-7306	-13096	-620	-528	-133	-.06333
3 -5-77	800	393.7	27.9	-.34315	58.74	110.5	-7459	-13249	-628	-536	-141	-.06714
3-16-77	1605	405.1	39.3	-.34326	58.73	110.4	-7742	-13532	-644	-552	-157	-.07476
3-24-77	1131	412.9	47.1	-.34321	58.74	110.4	-7949	-13739	-655	-563	-168	-.08000
4 -6-77	1500	425.0	60.2	-.34310	58.75	110.6	-7994	-13784	-657	-565	-170	-.08095

MODULUS: LOADING E= 5.3 AT AGE 366 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 6B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 49.91 OHMS
TEMP. CALIBRATION CONSTANT = 10.70 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.19 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 937 11 05
AGE OF LOADING : 365 DAYS
TEST TEMPERATURE : 110 DEG. F.
ULT. STR. : 9990. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 21.0 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN, TEMPERATURE CORRECTED: FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36266	56.19	77.9	11892	0	0			
2-12-76	1000	7.8		-.36839	55.45	70.0	11671	-221	-35			
2-20-76	1300	16.0		-.35454	57.24	89.1	10255	-1637	-53			
3 -5-76	1600	29.1		-.34056	59.09	108.9	9245	-2647	-47			
3-10-76	1545	34.1		-.34609	58.35	101.1	9871	-2021	-37			
3-11-76	1615	35.1		-.34182	58.92	107.1	9561	-2331	-35			
3-12-76	930	35.8		-.34079	59.06	108.6	9477	-2415	-35			
3-17-76	1745	41.2		-.34003	59.16	109.7	9439	-2453	-34			
3-23-76	1615	47.1		-.34030	59.12	109.3	9462	-2430	-34			
3-31-76	810	54.8		-.34002	59.16	109.7	9475	-2417	-32			
4 -9-76	1050	63.9		-.33983	59.19	110.0	9492	-2400	-30			
4-16-76	1600	71.1		-.34187	58.92	107.1	9643	-2249	-31			
4-30-76	1100	84.9		-.34070	59.07	108.7	9543	-2349	-31			
5-12-76	1340	97.0		-.33943	59.24	110.5	9422	-2470	-32			
5-20-76	1415	105.0		-.33933	59.25	110.7	9395	-2497	-33			
5-25-76	1320	110.0		-.33928	59.26	110.8	9360	-2532	-35			
6-10-76	1150	125.9		-.33918	59.27	110.9	9344	-2548	-35			
6-18-76	1330	134.0		-.34050	59.10	109.0	9420	-2472	-37			
6-28-76	1435	144.0		-.34102	59.03	108.3	9448	-2444	-38			
6-29-76	1430	145.0		-.34076	59.06	108.6	9436	-2456	-37			
7-14-76	915	159.8		-.34164	58.97	107.7	9445	-2447	-40			
7-20-76	1500	166.0		-.34109	59.02	108.2	9452	-2440	-38			
7-29-76	1600	175.1		-.34036	59.11	109.2	9412	-2480	-37			
8 -2-76	1415	179.0		-.34003	59.16	109.7	9372	-2520	-37			
8 -6-76	1300	183.0		-.34348	58.70	104.8	9533	-2359	-44			
8-16-76	1410	193.0		-.33902	59.30	111.1	9213	-2679	-42			
8-23-76	1530	200.1		-.34122	59.00	109.0	9330	-2562	-45			
9 -6-76	815	213.8		-.34043	59.11	109.1	9309	-2583	-43			
9-16-76	1430	224.0		-.34062	59.08	108.8	9265	-2627	-46			
9-21-76	1330	229.0		-.34107	59.02	108.2	9276	-2616	-47			
10 -1-76	905	238.8		-.34047	59.10	109.1	9178	-2714	-50			
10-20-76	1410	258.0		-.34125	59.00	107.9	9390	-2502	-42			
11 -4-76	1120	272.9		-.34009	59.15	109.6	9170	-2722	-49			
11-19-76	1500	288.0		-.33947	59.24	110.5	9134	-2758	-48			
12-20-76	1445	319.0		-.34014	59.15	109.5	8916	-2976	-53			
1-14-77	1330	344.0		-.34052	59.10	109.0	8804	-3088	-71			
1-20-77	1155	349.9		-.34050	59.10	109.0	8771	-3121	-72			
2 -3-77	1000	363.8		-.34020	59.14	109.4	8707	-3185	-74			
2 -5-77	754	365.7		-.34038	59.11	109.2	8726	-3166	-74			
2 -5-77	951	365.8		-.34014	59.15	109.5	8699	-3193	-75			
* 2 -5-77	955	365.8	LOADING BEGINS									
2 -5-77	955	365.8	-.0007	-.34014	59.15	109.5	8696	-3196	-75	0		
* 2 -5-77	956	365.8	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
2 -5-77	956	365.8	.0000	-.34014	59.15	109.5	1640	-10252	-459	-384	0	0.
2 -5-77	1000	365.8	.0028	-.34014	59.15	109.5	1567	-10325	-463	-388	-4	-.00190
2 -5-77	1005	365.8	.0063	-.34014	59.15	109.5	1505	-10387	-466	-391	-7	-.00333
2 -5-77	1057	365.9	.0424	-.34008	59.15	109.6	1292	-10600	-477	-402	-18	-.00857
2 -5-77	1214	365.9	.0958	-.34005	59.16	109.6	1185	-10707	-483	-408	-24	-.01143
2 -5-77	1337	366.0	.1535	-.33994	59.17	109.8	1097	-10795	-487	-412	-28	-.01333
2 -6-77	1357	367.0	1.1674	-.33975	59.20	110.1	642	-11250	-511	-436	-52	-.02476
2 -7-77	937	367.8	1.9858	-.33982	59.19	110.0	445	-11447	-522	-447	-63	-.03000
2 -9-77	1504	370.1	4.3	-.33993	59.17	109.8	195	-11697	-536	-461	-77	-.03667
2-10-77	939	370.8	5.0	-.33985	59.18	109.9	115	-11777	-540	-465	-81	-.03857
2-12-77	1336	373.0	7.2	-.33973	59.20	110.1	-71	-11963	-550	-475	-91	-.04333
2-19-77	1738	380.2	14.3	-.33945	59.24	110.5	-506	-12398	-572	-497	-113	-.05381
2-22-77	836	382.8	16.9	-.33980	59.19	110.0	-609	-12501	-579	-504	-120	-.05714
2-28-77	817	388.8	22.9	-.33975	59.20	110.1	-876	-12768	-594	-519	-135	-.06429
3 -5-77	800	393.7	27.9	-.33977	59.20	110.1	-1031	-12923	-602	-527	-143	-.06810
3-16-77	1605	405.1	39.3	-.33984	59.19	110.0	-1454	-13346	-626	-551	-167	-.07952
3-24-77	1131	412.9	47.1	-.33978	59.19	110.0	-1684	-13576	-638	-563	-179	-.08524
4 -5-77	1500	425.0	60.2	-.33970	59.20	110.2	-1754	-13646	-641	-566	-182	-.08667

MODULUS: LOADING E= 5.5 AT AGE 366 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

7A

TABLE 7A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION I CLASS F-1 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.40 OHMS	STRAIN METER NO. :	941 2C 41
TEMP. CALIBRATION CONSTANT	= 10.79 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	180 DAYS
STRAIN CALIBRATION CONSTANT	= 9.19 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	73 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT		
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR.	: 9210. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS	: 2100. PSI
STRAIN INCREMENT FACTOR	= 6 PERCENT	PER. ULT. STR. APPLIED:	22.8 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY ONE	ELASTIC	CREEP	SPECIFIC CREEP
* 3-26-76	900	0	SPECIMEN CAST									
3-30-76	840	4.0		-.37086	55.13	72.7	11323	0	0			
4 -9-76	1050	14.1		-.37357	54.79	68.9	11131	-192	-21			
4-30-76	1100	35.1		-.37323	54.83	69.4	10874	-449	-34			
5-20-76	1415	55.2		-.37273	54.89	70.1	10860	-463	-32			
6-29-76	1430	95.2		-.36964	55.26	74.0	10741	-582	-26			
7-14-76	915	110.0		-.37165	55.03	71.5	10893	-430	-26			
7-20-76	1500	116.2		-.37140	55.06	71.9	10852	-471	-27			
7-29-76	1800	125.3		-.37204	54.98	71.0	10961	-362	-24			
8 -2-76	1135	129.1		-.37167	55.03	71.5	10983	-340	-21			
8 -6-76	1300	133.2		-.37148	55.05	71.8	10962	-361	-21			
8-16-76	1410	143.2		-.37184	55.01	71.3	11019	-304	-20			
8-23-76	1630	150.3		-.37106	55.11	72.4	10969	-354	-19			
9 -6-76	815	154.0		-.37184	55.01	71.3	11041	-282	-19			
9-16-76	1430	174.2		-.37162	55.04	71.5	11032	-291	-18			
9-21-76	1330	179.2		-.37168	55.03	71.5	11054	-269	-17			
* 9-22-76	830	180.0	LOADING BEGINS									
9-22-76	830	180.0	-.0007	-.37038	55.19	73.3	10934	-389	-17	0		
* 9-22-76	831	180.0	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
9-22-76	831	180.0	.0000	-.37038	55.19	73.3	2794	-8529	-475	-418	0	0.
9-22-76	835	180.0	.0028	-.37038	55.19	73.3	2426	-8897	-454	-437	-19	-.00905
9-22-76	845	180.0	.0097	-.37045	55.16	73.2	2350	-8973	-458	-441	-23	-.01095
9-22-76	900	180.0	.0201	-.37036	55.20	73.3	2221	-9102	-464	-447	-29	-.01381
9-22-76	1030	180.1	.0826	-.37033	55.20	73.4	2009	-9314	-475	-458	-40	-.01905
9-22-76	1630	180.3	.3326	-.37026	55.21	73.5	1690	-9633	-491	-474	-56	-.02667
9-23-76	830	181.0	.9993	-.37051	55.18	73.1	1382	-9941	-508	-491	-73	-.03476
9-24-76	830	182.0	1.9993	-.37048	55.18	73.2	1147	-10176	-520	-503	-85	-.04048
9-25-76	1005	183.0	3.1	-.37053	55.17	73.1	990	-10333	-528	-511	-93	-.04429
9-26-76	1100	184.1	4.1	-.37061	55.16	73.0	882	-10441	-534	-517	-99	-.04714
9-27-76	800	185.0	5.0	-.37071	55.15	72.8	785	-10538	-539	-522	-104	-.04952
9-28-76	900	186.0	6.0	-.37031	55.20	73.4	652	-10671	-544	-527	-109	-.05190
9-29-76	800	187.0	7.0	-.37028	55.21	73.4	580	-10743	-548	-531	-113	-.05381
10 -1-76	905	189.0	9.0	-.37018	55.22	73.6	437	-10886	-555	-538	-120	-.05714
10 -7-76	1615	195.3	15.3	-.37008	55.23	73.7	-24	-11347	-578	-561	-143	-.06810
10-13-76	815	201.0	21.0	-.37043	55.19	73.2	-215	-11538	-589	-572	-154	-.07333
10-20-76	1400	208.2	28.2	-.37043	55.19	73.2	-439	-11762	-601	-584	-166	-.07905
11 -4-76	1100	223.1	43.1	-.37052	55.18	73.1	-816	-12139	-621	-604	-186	-.08857
11-19-76	1430	238.2	58.2	-.37070	55.15	72.9	-1176	-12499	-640	-623	-205	-.09762
12-20-76	1443	269.2	89.3	-.37075	55.15	72.8	-1539	-12862	-664	-647	-229	-.10905
1-14-77	1200	294.1	114.1	-.37094	55.12	72.5	-1943	-13266	-680	-663	-245	-.11667
1-19-77	1050	299.1	119.1	-.37088	55.13	72.6	-2003	-13326	-683	-666	-248	-.11810
2 -3-77	945	314.0	134.1	-.37082	55.14	72.7	-2163	-13486	-691	-674	-256	-.12190
2 -5-77	826	316.0	136.0	-.37089	55.13	72.6	-2176	-13499	-692	-675	-257	-.12238
2-22-77	905	333.0	153.0	-.37076	55.15	72.8	-2318	-13641	-699	-682	-264	-.12571
3 -5-77	747	343.9	164.0	-.37031	55.20	73.4	-2438	-13761	-703	-686	-268	-.12762
3 -7-77	937	346.0	166.0	-.37033	55.20	73.4	-2436	-13759	-703	-686	-268	-.12762
* 3 -7-77	938	346.0	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3 -7-77	938	346.0		-.37033	55.20	73.4	5629	-5694	-289	-272	146	
3 -7-77	942	346.0		-.37033	55.20	73.4	5749	-5574	-283	-266	152	
3 -7-77	1045	346.1		-.37038	55.19	73.3	5976	-5347	-271	-254	164	
3 -7-77	1635	346.3		-.37057	55.17	73.0	6205	-5118	-260	-243	175	
3 -8-77	1307	347.2		-.37064	55.16	73.0	6446	-4877	-248	-231	187	
3 -9-77	1555	348.3		-.37062	55.16	73.0	6594	-4729	-241	-224	194	
3-10-77	1617	349.3		-.37073	55.15	72.8	6668	-4655	-237	-220	198	
3-11-77	1546	350.3		-.37065	55.16	72.9	6736	-4587	-234	-217	201	
3-12-77	1202	351.1		-.37096	55.12	72.5	6813	-4510	-231	-214	204	
3-13-77	1325	352.2		-.37097	55.12	72.5	6875	-4448	-228	-211	207	
3-15-77	1230	354.1		-.37103	55.11	72.4	6956	-4367	-224	-207	211	
3-16-77	1347	355.3		-.37101	55.11	72.4	6993	-4330	-222	-205	213	
3-24-77	1138	363.1		-.37088	55.13	72.6	7194	-4129	-211	-194	224	
3-30-77	912	369.0		-.37114	55.10	72.3	7313	-4010	-206	-189	229	
4 -6-77	1446	376.2		-.37076	55.14	72.8	7378	-3945	-201	-184	234	

MODULUS: LOADING E= 5.0 AT AGE 180 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

7B

TABLE 7B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION I CLASS F-1 ES73A8
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.41 OHMS
TEMP. CALIBRATION CONSTANT = 10.79 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.02 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 6 PERCENT

STRAIN METER NO. : 942 20 42
AGE OF LOADING : 180 DAYS
TEST TEMPERATURE : 73 DEG. F.

ULT. STR. : 9210. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 22.8 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 3-26-76	900	0	SPECIMEN CAST									
3-30-76	840	4.0		-.37104	55.11	72.3	11828	0	0			
4-9-76	1050	14.1		-.37254	54.92	70.2	11603	-225	-18			
4-30-76	1100	35.1		-.37256	54.92	70.2	11419	-409	-28			
5-20-76	1415	55.2		-.37201	54.99	70.9	11386	-442	-28			
6-29-75	1430	95.2		-.37004	55.24	73.7	11423	-405	-17			
7-14-76	915	110.0		-.37173	55.02	71.1	11593	-235	-15			
7-20-76	1500	116.2		-.37155	55.04	71.6	11516	-312	-18			
7-29-76	1600	125.3		-.37189	55.00	71.1	11666	-162	-12			
8-2-76	1155	129.1		-.37157	55.04	71.6	11678	-150	-10			
8-6-76	1300	133.2		-.37138	55.07	71.8	11659	-169	-10			
8-16-75	1410	143.2		-.37172	55.02	71.4	11708	-120	-9			
8-23-75	1630	150.3		-.37103	55.11	72.3	11577	-151	-7			
9-6-76	815	164.0		-.37177	55.02	71.3	11746	-82	-7			
9-16-76	1430	174.2		-.37160	55.04	71.5	11742	-85	-6			
9-21-76	1330	179.2		-.37153	55.03	71.5	11759	-69	-5			
* 9-22-76	830	180.0	LOADING BEGINS									
9-22-76	830	180.0	-.0007	-.37066	55.16	72.8	11672	-156	-6	0		
* 9-22-76	831	180.0	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
9-22-76	831	180.0	.0000	-.37066	55.16	72.8	3896	-7932	-412	-406	0	0.
9-22-76	835	180.0	.0028	-.37038	55.19	73.2	3639	-8189	-424	-418	-12	-.00571
9-22-76	845	180.0	.0097	-.37075	55.15	72.7	3577	-8251	-429	-423	-17	-.00810
9-22-76	900	180.0	.0201	-.37066	55.16	72.8	3481	-8347	-434	-428	-22	-.01048
9-22-76	1030	180.1	.0826	-.37066	55.16	72.8	3296	-8532	-444	-438	-32	-.01524
9-22-76	1530	180.3	.3326	-.37061	55.16	72.9	3022	-8806	-458	-452	-46	-.02190
9-23-76	830	181.0	.9993	-.37081	55.14	72.6	2730	-9098	-474	-468	-62	-.02952
9-24-76	830	182.0	1.9993	-.37078	55.14	72.7	2529	-9299	-484	-478	-72	-.03429
9-25-76	1005	183.0	3.1	-.37086	55.13	72.5	2390	-9438	-492	-486	-80	-.03810
9-26-76	1100	184.1	4.1	-.37091	55.13	72.5	2276	-9552	-498	-492	-86	-.04095
9-27-76	800	185.0	5.0	-.37108	55.10	72.2	2205	-9623	-502	-496	-90	-.04286
9-28-76	900	186.0	6.0	-.37068	55.16	72.8	2085	-9743	-507	-501	-95	-.04524
9-29-76	800	187.0	7.0	-.37063	55.16	72.8	2010	-9818	-511	-505	-99	-.04714
10-1-76	905	189.0	9.0	-.37053	55.18	73.0	1870	-9958	-518	-512	-106	-.05048
10-7-76	1515	195.3	15.3	-.37053	55.17	73.0	1452	-10376	-539	-533	-127	-.06048
10-13-76	815	201.0	21.0	-.37083	55.14	72.6	1220	-10608	-553	-547	-141	-.06714
10-20-76	1400	208.2	28.2	-.37083	55.14	72.6	1057	-10771	-561	-555	-149	-.07095
11-4-76	1100	223.1	43.1	-.37097	55.12	72.4	717	-11111	-580	-574	-168	-.08000
11-19-76	1430	238.2	58.2	-.37112	55.10	72.2	405	-11423	-597	-591	-185	-.08810
12-20-76	1445	269.2	89.3	-.37131	55.08	71.9	-25	-11853	-620	-614	-208	-.09905
1-14-77	1200	294.1	114.1	-.37149	55.05	71.7	-301	-12129	-635	-629	-223	-.10619
1-19-77	1050	299.1	119.1	-.37148	55.05	71.7	-356	-12184	-638	-632	-226	-.10762
2-3-77	945	314.0	134.1	-.37134	55.07	71.9	-496	-12324	-645	-639	-233	-.11095
2-5-77	926	316.0	136.0	-.37143	55.05	71.7	-509	-12337	-646	-640	-234	-.11143
2-22-77	905	333.0	153.0	-.37123	55.09	72.0	-663	-12491	-653	-647	-241	-.11476
3-5-77	747	343.9	164.0	-.37101	55.11	72.3	-765	-12593	-657	-651	-245	-.11667
3-7-77	937	346.0	166.0	-.37096	55.12	72.4	-770	-12598	-657	-651	-245	-.11667
* 3-7-77	938	346.0	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3-7-77	938	346.0		-.37096	55.12	72.4	6901	-4927	-256	-250	156	
3-7-77	942	346.0		-.37096	55.12	72.4	7009	-4819	-251	-245	161	
3-7-77	1045	346.1		-.37086	55.13	72.5	7213	-4615	-240	-234	172	
3-7-77	1535	346.3		-.37069	55.15	72.8	7387	-4441	-230	-224	182	
3-8-77	1307	347.2		-.37067	55.16	72.8	7591	-4237	-219	-213	193	
3-9-77	1553	348.3		-.37070	55.15	72.8	7723	-4105	-212	-206	200	
3-10-77	1617	349.3		-.37081	55.14	72.6	7795	-4033	-209	-203	203	
3-11-77	1346	350.3		-.37075	55.15	72.7	7860	-3968	-205	-199	207	
3-12-77	1202	351.1		-.37106	55.11	72.3	7920	-3908	-203	-197	209	
3-13-77	1326	352.2		-.37107	55.11	72.2	7972	-3856	-201	-195	211	
3-15-77	1230	354.1		-.37113	55.10	72.2	8049	-3779	-197	-191	215	
3-16-77	1547	355.3		-.37109	55.10	72.2	8089	-3739	-195	-189	217	
3-24-77	1138	363.1		-.37093	55.12	72.4	8264	-3564	-185	-179	227	
3-30-77	912	369.0		-.37126	55.08	72.0	8377	-3451	-180	-174	232	
4-5-77	1446	375.2		-.37089	55.13	72.5	8444	-3384	-175	-169	237	

MODULUS: LOADING E= 5.2 AT AGE 180 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

8A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS F-2-5 ES738F
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F. = 61.58 OHMS		STRAIN METER NO. :	545 73 02
TEMP. CALIBRATION CONSTANT = 8.26 F/OHM CHANGE IN RESIST.		AGE OF LOADING :	28 DAYS
STRAIN CALIBRATION CONSTANT = 9.17 MICROVOLTS/VOLT/MICROSTRAIN		TEST TEMPERATURE :	73 DEG. F.
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT			
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.		ULT. STR. :	6770. PSI
CONCRETE COEFF. OF THERMAL EXPANSION = 3.6 MICROSTRAIN/DEGREE F.		APPLIED TEST STRESS :	2100. PSI
STRAIN INCREMENT FACTOR = 0 PERCENT		PER. ULT. STR. APPLIED:	31.0 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN FROM DAY ONE	TEMPERATURE CORRECTED ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 3-26-76	1200	0	SPECIMEN CAST									
3-30-76	840	3.9		-.26115	70.36	72.5	13741	0	0			
4-9-76	1050	14.0		-.26351	70.01	69.6	13680	-61	-11			
* 4-23-76	1319	28.1	LOADING BEGINS									
4-23-76	1319	28.1	-.0007	-.26115	70.36	72.5	13092	-649	-34	0		
* 4-23-76	1320	28.1	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
4-23-76	1320	28.1	.0000	-.26115	70.36	72.5	3343	-9608	-534	-500	0	0.
4-23-76	1324	28.1	.0028	-.26115	70.36	72.5	3523	-10218	-556	-522	-22	-.01048
4-23-76	1329	28.1	.0063	-.26115	70.36	72.5	3322	-10419	-567	-533	-33	-.01571
4-23-76	1345	28.1	[illegible]	-.26109	70.37	72.6	2850	-10891	-593	-559	-59	-.02810
4-23-76	1650	28.2	.1458	-.26102	70.36	72.7	2562	-11179	-608	-574	-74	-.03524
4-24-76	1300	29.0	.9861	-.26144	70.32	72.2	1730	-12011	-655	-621	-121	-.05762
4-25-76	1315	30.1	1.9965	-.26212	70.22	71.3	1317	-12424	-680	-646	-146	-.06952
4-26-76	1600	31.2	3.1	-.26134	70.33	72.3	906	-12835	-700	-666	-166	-.07905
4-27-76	1445	32.1	4.1	-.26139	70.33	72.2	635	-13106	-715	-681	-181	-.08619
4-28-76	1630	33.2	5.1	-.26132	70.34	72.3	385	-13356	-728	-694	-194	-.09238
4-30-76	1100	35.0	6.9	-.26164	70.29	71.9	47	-13694	-748	-714	-214	-.10190
5-4-76	1600	39.2	11.1	-.26134	70.33	72.3	-619	-14360	-783	-749	-249	-.11857
5-12-76	1340	47.1	19.0	-.26086	70.41	72.9	-1430	-15171	-825	-791	-291	-.13857
5-20-76	1415	55.1	27.0	-.26104	70.38	72.7	-1960	-15701	-855	-821	-321	-.15286
5-25-76	1320	60.1	32.0	-.26127	70.34	72.4	-2215	-15956	-869	-835	-335	-.15952
6-10-76	1150	75.0	47.9	-.26128	70.34	72.4	-2883	-16624	-906	-872	-372	-.17714
6-29-76	1430	95.1	67.0	-.26028	70.49	73.6	-2743	-16484	-894	-860	-360	-.17143
7-14-76	915	109.9	81.8	-.26079	70.42	73.0	-2989	-16730	-910	-876	-376	-.17905
7-29-76	1500	125.2	97.1	-.26071	70.43	73.1	-3314	-17055	-927	-893	-393	-.18714
8-2-76	1155	129.0	100.9	-.26078	70.42	73.0	-3393	-17134	-932	-898	-398	-.18952
8-6-76	1300	133.0	105.0	-.26069	70.43	73.1	-3436	-17177	-934	-900	-400	-.19048
8-16-76	1410	143.1	115.0	-.26072	70.43	73.1	-3630	-17371	-945	-911	-411	-.19571
8-23-76	1630	150.2	122.1	-.26048	70.46	73.4	-3781	-17522	-952	-918	-418	-.19905
9-6-76	815	163.8	135.8	-.26088	70.40	72.9	-3918	-17659	-961	-927	-427	-.20333
9-16-76	1430	174.1	146.0	-.26080	70.42	73.0	-4017	-17758	-966	-932	-432	-.20571
9-21-76	1330	179.1	151.0	-.26067	70.43	73.1	-4059	-17800	-968	-934	-434	-.20667
10-1-76	905	188.9	160.8	-.26059	70.45	73.2	-4128	-17869	-971	-937	-437	-.20810
10-21-76	1210	209.0	181.0	-.26108	70.37	72.6	-4181	-17922	-976	-942	-442	-.21048
11-4-76	1100	223.0	194.9	-.26095	70.39	72.8	-4064	-17805	-969	-935	-435	-.20714
11-19-76	1430	238.1	210.0	-.26108	70.37	72.6	-4181	-17922	-976	-942	-442	-.21048
12-20-76	1445	269.1	241.1	-.26140	70.32	72.2	-4356	-18097	-987	-953	-453	-.21571
1-14-77	1200	294.0	265.9	-.26165	70.29	71.9	-4471	-18212	-994	-960	-460	-.21905
1-19-77	1050	299.0	270.9	-.26162	70.29	72.0	-4522	-18263	-997	-963	-463	-.22048
2-3-77	945	313.9	285.9	-.26148	70.31	72.1	-4598	-18339	-1000	-966	-466	-.22190
2-5-77	826	315.9	287.8	-.26162	70.29	72.0	-4587	-18328	-1000	-966	-466	-.22190
2-22-77	905	332.9	304.8	-.26139	70.33	72.3	-4686	-18427	-1005	-971	-471	-.22429
3-5-77	747	343.8	315.8	-.26093	70.39	72.8	-4788	-18529	-1008	-974	-474	-.22571
3-7-77	942	345.9	317.8	-.26109	70.37	72.5	-4782	-18523	-1009	-975	-475	-.22619
* 3-7-77	943	345.9	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3-7-77	943	345.9		-.26109	70.37	72.6	3096	-10645	-579	-545	-45	
3-7-77	947	345.9		-.26109	70.37	72.6	3206	-10535	-573	-539	-39	
3-7-77	1045	345.9		-.26113	70.36	72.6	3435	-10306	-561	-527	-27	
3-7-77	1635	346.2		-.26103	70.38	72.7	3660	-10081	-548	-514	-14	
3-8-77	1307	347.0		-.26097	70.39	72.8	3904	-9837	-535	-501	-1	
3-9-77	1555	348.2		-.26087	70.39	72.8	4031	-9710	-527	-493	7	
3-10-77	1617	349.2		-.26104	70.38	72.7	4118	-9623	-523	-489	11	
3-11-77	1546	350.2		-.26093	70.39	72.8	4189	-9552	-519	-485	15	
3-12-77	1202	351.0		-.26131	70.34	72.4	4247	-9494	-517	-483	17	
3-13-77	1326	352.1		-.26127	70.34	72.4	4321	-9420	-513	-479	21	
3-15-77	1230	354.0		-.26137	70.33	72.3	4418	-9323	-508	-474	26	
3-16-77	1547	355.2		-.26139	70.33	72.3	4464	-9277	-506	-472	28	
3-24-77	1139	363.0		-.26127	70.34	72.4	4657	-9084	-495	-461	39	
3-30-77	912	368.9		-.26156	70.30	72.0	4787	-8954	-489	-455	45	
4-6-77	1446	376.1		-.26121	70.35	72.5	4872	-8869	-483	-449	51	

MODULUS: LOADING E= 4.2 AT AGE 28 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 8B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2-S ES738A
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 61.23 OHMS
TEMP. CALIBRATION CONSTANT = 8.23 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.18 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION = 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 0 PERCENT

STRAIN METER NO. : 946 73 03
AGE OF LOADING : 28 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 6770. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 31.0 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM 1 DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
* 3-26-76	1200	0	SPECIMEN CAST									
3-30-76	840	3.9		-.26373	69.97	72.0	9834	0	0			
4-9-76	1050	14.0		-.26571	69.68	69.5	9742	-92	-12			
* 4-23-76	1319	28.1	LOADING BEGINS									
4-23-76	1319	28.1	-.0007	-.26350	70.01	72.3	9323	-511	-26	0		
* 4-23-76	1320	28.1	SPECIMEN FULLY LOADED, APPLIED TEST STRESS 2100 PSI									
4-23-76	1320	28.1	.0000	-.26350	70.01	72.3	660	-9174	-498	-472	0	0.
4-23-76	1324	28.1	.0028	-.26350	70.01	72.3	300	-9534	-517	-491	-19	-.00905
4-23-76	1329	28.1	.0063	-.26350	70.01	72.3	132	-9702	-527	-501	-29	-.01381
4-23-76	1445	28.1	.0590	-.26364	69.99	72.1	-301	-10135	-551	-525	-53	-.02524
4-23-76	1650	28.2	.1458	-.26352	70.01	72.2	-551	-10385	-564	-538	-66	-.03143
4-24-76	1300	29.0	.9361	-.26399	69.94	71.6	-1284	-11118	-606	-580	-108	-.05143
4-25-76	1315	30.1	1.9965	-.26350	70.01	72.3	-1632	-11466	-623	-597	-125	-.05952
4-26-76	1600	31.2	3.1	-.26391	69.95	71.7	-1981	-11815	-643	-617	-145	-.06905
4-27-76	1445	32.1	4.1	-.26386	69.94	71.7	-2206	-12040	-656	-630	-158	-.07524
4-28-76	1630	33.2	5.1	-.26387	69.95	71.8	-2414	-12248	-667	-641	-169	-.08048
4-30-76	1100	35.0	6.9	-.26421	69.50	71.4	-2669	-12503	-682	-656	-184	-.08762
5-4-76	1600	39.2	11.1	-.26391	69.95	71.7	-3107	-12941	-705	-679	-207	-.09857
5-12-76	1340	47.1	19.0	-.26343	70.02	72.3	-3523	-13357	-731	-705	-233	-.11095
5-20-76	1415	55.1	27.0	-.26362	69.99	72.1	-3987	-13821	-751	-725	-253	-.12048
5-25-76	1320	60.1	32.0	-.26384	69.96	71.8	-4167	-14001	-762	-736	-264	-.12571
6-10-76	1150	76.0	47.9	-.26386	69.95	71.8	-4617	-14451	-787	-761	-289	-.13762
6-29-76	1430	95.1	67.0	-.26288	70.10	73.0	-5544	-15378	-833	-807	-335	-.15952
7-14-76	915	109.9	81.8	-.26344	70.02	72.3	-5675	-15509	-843	-817	-345	-.16429
7-29-76	1600	125.2	97.1	-.26331	70.04	72.5	-5850	-15684	-852	-826	-354	-.16857
8-2-76	1155	129.0	100.9	-.26338	70.03	72.4	-5892	-15726	-854	-828	-356	-.16952
8-5-76	1300	133.0	105.0	-.26333	70.03	72.5	-5946	-15780	-857	-831	-359	-.17095
8-16-76	1410	143.1	115.0	-.26330	70.04	72.5	-6055	-15889	-863	-837	-365	-.17381
8-23-76	1630	150.2	122.1	-.26310	70.07	72.7	-6143	-15977	-867	-841	-369	-.17571
9-6-76	815	163.8	135.8	-.26356	70.00	72.2	-6225	-16059	-873	-847	-375	-.17857
9-16-76	1430	174.1	146.0	-.26347	70.01	72.3	-6294	-16128	-876	-850	-378	-.18000
9-21-76	1330	179.1	151.0	-.26327	70.04	72.5	-6313	-16147	-877	-851	-379	-.18048
10-1-76	905	188.9	160.9	-.26320	70.05	72.6	-6357	-16191	-879	-853	-381	-.18143
10-21-76	1210	209.0	181.0	-.26363	69.99	72.1	-6308	-16142	-878	-852	-380	-.18095
11-4-76	1100	223.0	194.9	-.26350	70.01	72.2	-6219	-16053	-872	-846	-374	-.17810
11-19-76	1430	239.1	210.0	-.26363	69.99	72.1	-6308	-16142	-878	-852	-380	-.18095
12-20-76	1445	269.1	241.1	-.26390	69.95	71.8	-6409	-16243	-884	-858	-386	-.18381
1-14-77	1200	294.0	265.9	-.26408	69.92	71.5	-6500	-16334	-890	-864	-392	-.18667
1-19-77	1050	299.0	270.9	-.26399	69.94	71.6	-6521	-16355	-891	-865	-393	-.18714
2-3-77	945	313.9	285.9	-.26398	69.94	71.7	-6592	-16426	-895	-869	-397	-.18905
2-5-77	826	315.9	287.8	-.26407	69.92	71.5	-6578	-16412	-894	-868	-396	-.18857
2-22-77	905	332.9	304.8	-.26388	69.95	71.8	-6642	-16476	-897	-871	-399	-.19000
3-5-77	747	343.8	315.8	-.26328	70.04	72.5	-6725	-16559	-899	-873	-401	-.19095
3-7-77	942	345.9	317.8	-.26352	70.00	72.2	-6716	-16550	-900	-874	-402	-.19143
* 3-7-77	943	345.9	SPECIMEN(S) FULLY UNLOADED, ZERO APPLIED TEST STRESS									
3-7-77	943	345.9		-.26352	70.00	72.2	-357	-10191	-553	-527	-55	
3-7-77	947	345.9		-.26352	70.00	72.2	-266	-10100	-548	-522	-50	
3-7-77	1045	345.9		-.26345	70.02	72.3	-81	-9915	-538	-512	-40	
3-7-77	1635	346.2		-.26343	70.02	72.3	113	-9721	-527	-501	-29	
3-8-77	1307	347.0		-.26324	70.05	72.6	305	-9529	-516	-490	-18	
3-9-77	1555	348.2		-.26338	70.03	72.4	447	-9387	-509	-483	-11	
3-10-77	1617	349.2		-.26348	70.01	72.3	511	-9323	-506	-480	-8	
3-11-77	1546	350.2		-.26339	70.03	72.4	576	-9258	-502	-476	-4	
3-12-77	1202	351.0		-.26375	69.97	71.9	640	-9194	-500	-474	-2	
3-13-77	1326	352.1		-.26372	69.98	72.0	691	-9143	-497	-471	1	
3-15-77	1230	354.0		-.26379	69.96	71.9	766	-9068	-493	-467	5	
3-16-77	1547	355.2		-.26379	69.97	71.9	801	-9033	-491	-465	7	
3-24-77	1138	363.0		-.26357	69.98	72.0	981	-8853	-481	-455	17	
3-30-77	912	368.9		-.26359	69.94	71.6	1106	-8728	-475	-449	23	
4-6-77	1446	376.1		-.26364	69.99	72.1	1178	-8656	-470	-444	28	

MODULUS: LOADING E= 4.4 AT AGE 28 DAYS (STRESS LEVEL 0 TO 2100 PSI)

NOTE: MINUS DAYS UNDER LOAD INDICATES SPECIMEN LOADING TIME PRIOR TO FULL LOAD

TABLE 9A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES738A
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:
METER RESISTANCE AT 0.0 DEGREES F. = 48.32 OHMS
TEMP. CALIBRATION CONSTANT = 10.81 F/OHM CHANGE IN RESIST.
STRAIN CALIBRATION CONSTANT = 9.29 MICROVOLTS/VOLT/MICROSTRAIN
CALIBRATED RANGE = 11100 TO -10100 MICROVOLTS/VOLT
METER COEFF. OF THERMAL EXPANSION = 6.7 MICROSTRAIN/DEGREE F.
CONCRETE COEFF. OF THERMAL EXPANSION= 3.6 MICROSTRAIN/DEGREE F.
STRAIN INCREMENT FACTOR = 6 PERCENT

STRAIN METER NO. : 931 73 12
AGE OF LOADING : 365 DAYS
TEST TEMPERATURE : 73 DEG. F.
ULT. STR. : 8200. PSI
APPLIED TEST STRESS : 2100. PSI
PER. ULT. STR. APPLIED: 25.6 PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN TEMPERATURE CORRECTED FROM DAY ONE	ELASTIC +CREEP	CREEP	SPECIFIC CREEP
2 -4-76	1400	0	SPECIMEN CAST									
2 -6-76	1100	1.9		-.36696	55.63	79.0	9709	0	0			
2-12-76	1000	7.8		-.36894	55.38	76.3	9587	-122	-14			
2-20-76	1300	16.0		-.37273	54.89	71.1	9445	-264	-37			
3 -5-76	1600	29.1		-.37351	54.80	70.0	9478	-231	-39			
3-10-76	1545	34.1		-.37336	54.81	70.2	9461	-248	-39			
3-11-76	1515	35.1		-.37331	54.82	70.3	9454	-255	-39			
3-12-76	930	35.8		-.37324	54.83	70.4	9447	-262	-39			
3-17-76	1745	41.2		-.37232	54.95	71.6	9379	-330	-39			
3-23-76	1615	47.1		-.37286	54.88	70.9	9420	-289	-39			
3-31-76	810	54.8		-.37322	54.83	70.4	9495	-214	-37			
4 -9-76	1050	63.9		-.37309	54.85	70.6	9504	-205	-36			
4-16-76	1600	71.1		-.37271	54.90	71.1	9510	-199	-34			
4-30-76	1100	84.9		-.37313	54.84	70.5	9576	-133	-32			
5-12-76	1340	97.0		-.37232	54.95	71.6	9557	-152	-30			
5-20-76	1415	105.0		-.37256	54.92	71.3	9595	-114	-29			
6-10-76	1150	125.9		-.37279	54.89	71.0	9657	-52	-27			
6-18-76	1330	134.0		-.37206	54.98	72.0	9610	-99	-26			
6-29-76	1430	145.0		-.37064	55.16	73.9	9548	-161	-23			
6-30-76	1315	146.0		-.37242	54.93	71.5	9599	-110	-28			
7-14-76	915	159.8		-.37186	55.01	72.3	9660	-49	-22			
7-20-76	1500	166.0		-.37177	55.02	72.4	9624	-85	-24			
7-29-76	1600	175.1		-.37177	55.02	72.4	9692	-17	-21			
8 -2-76	1155	178.9		-.37154	55.05	72.7	9699	-10	-19			
8 -6-76	1300	183.0		-.37128	55.08	73.1	9660	-49	-20			
8-16-76	1410	193.0		-.37139	55.06	72.9	9668	-41	-20			
8-23-76	1630	200.1		-.37101	55.11	73.4	9648	-61	-19			
9 -6-76	815	213.8		-.37152	55.05	72.7	9699	-10	-19			
9-16-76	1430	224.0		-.37145	55.06	72.8	9695	-14	-19			
9-21-76	1330	229.0		-.37138	55.07	72.9	9711	2	-18			
10 -1-76	905	238.8		-.37128	55.08	73.1	9840	131	-11			
11 -4-76	1100	272.9		-.37180	55.01	72.3	9907	198	-10			
11-19-76	1430	288.0		-.37196	54.99	72.1	9928	219	-9			
12-20-76	1445	319.0		-.37240	54.94	71.5	10017	308	-7			
1-14-77	1200	343.9		-.37282	54.88	70.9	10038	329	-7			
1-19-77	1050	348.9		-.37278	54.89	71.0	10067	358	-6			
2 -3-77	945	363.8		-.37249	54.92	71.4	10063	354	-5			
2 -5-77	826	365.8		-.37253	54.91	71.2	10074	365	-5			
2 -5-77	920	365.8		-.37250	54.92	71.4	10092	383	-3			

TABLE 9B

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.21 OHMS	STRAIN METER NO. :	933	77 13
TEMP. CALIBRATION CONSTANT	= 10.84 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	365	DAYS
STRAIN CALIBRATION CONSTANT	= 9.16 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	73	DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT			
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR. :	8200.	PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS :	0.	PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:	0.	PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN — TEMPERATURE CORRECTED — FROM DAY ONE	ELASTIC	CREEP	SPECIFIC CREEP
2 -4-75	1400	0	SPECIMEN CAST									
2 -6-75	1100	1.9		-.36803	55.50	79.0	12378	0	0			
2-12-76	1000	7.8		-.37458	54.65	69.8	12229	-149	-36			
2-20-75	1300	15.0		-.37476	54.64	69.7	11981	-397	-50			
3 -5-76	1600	29.1		-.37451	54.67	70.0	11794	-584	-59			
3-10-76	1545	34.1		-.37431	54.69	70.3	11751	-627	-60			
3-11-76	1615	35.1		-.37428	54.70	70.3	11744	-634	-60			
3-12-76	930	35.8		-.37424	54.70	70.4	11740	-638	-60			
3-17-76	1745	41.2		-.37337	54.81	71.6	11663	-715	-61			
3-23-76	1615	47.1		-.37381	54.76	71.0	11674	-704	-62			
3-31-76	910	54.8		-.37417	54.71	70.5	11700	-678	-62			
4 -9-76	1050	63.9		-.37469	54.64	69.8	11713	-665	-64			
4-16-76	1600	71.1		-.37436	54.69	70.2	11692	-686	-64			
4-30-76	1100	84.9		-.37461	54.66	69.9	11687	-691	-65			
5-12-76	1340	97.0		-.37382	54.76	71.0	11641	-737	-64			
5-20-76	1415	105.0		-.37408	54.72	70.6	11654	-724	-64			
6-10-76	1150	125.9		-.37429	54.70	70.3	11671	-707	-64			
6-18-76	1330	134.0		-.37338	54.81	71.6	11634	-744	-63			
6-29-76	1430	145.0		-.37179	55.01	73.8	11570	-808	-59			
7-14-76	915	159.8		-.37273	54.89	72.5	11627	-751	-60			
7-20-76	1500	165.0		-.37255	54.92	72.7	11606	-772	-61			
7-29-76	1600	175.1		-.37262	54.91	72.6	11661	-717	-58			
8 -2-76	1155	178.9		-.37239	54.94	72.9	11651	-727	-57			
8 -6-76	1300	183.0		-.37223	54.96	73.2	11624	-754	-58			
8-16-76	1410	193.0		-.37237	54.94	73.0	11633	-745	-58			
8-23-75	1530	200.1		-.37191	55.00	73.6	11604	-774	-58			
9 -6-76	815	213.8		-.37254	54.92	72.7	11658	-720	-58			
9-16-76	1430	224.0		-.37240	54.94	72.9	11657	-721	-57			
9-21-76	1330	229.0		-.37228	54.95	73.1	11646	-732	-57			
10 -1-76	905	238.8		-.37211	54.97	73.3	11649	-729	-56			
10-21-76	1210	259.9		-.37263	54.91	72.6	11744	-634	-53			
11 -4-76	1100	272.9		-.37250	54.92	72.8	11702	-676	-55			
11-19-76	1430	288.0		-.37262	54.91	72.6	11747	-631	-53			
12-20-76	1445	319.0		-.37303	54.86	72.0	11880	-498	-48			
1-14-77	1200	343.9		-.37334	54.82	71.6	11916	-462	-47			
1-19-77	1050	348.9		-.37336	54.81	71.6	11924	-454	-47			
2 -3-77	945	363.8		-.37309	54.85	72.0	11908	-470	-46			
2 -5-77	826	365.5		-.37326	54.83	71.7	11919	-459	-47			
2 -5-77	920	365.8		-.37310	54.85	71.9	11905	-473	-47			

TABLE 10A

ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES739A
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.50 OHMS		STRAIN METER NO. :	935 11 04
TEMP. CALIBRATION CONSTANT	= 10.79 F/OHM CHANGE IN RESIST.		AGE OF LOADING :	363 DAYS
STRAIN CALIBRATION CONSTANT	= 5.09 MICROVOLTS/VOLT/MICROSTRAIN		TEST TEMPERATURE :	110 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT			
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR.	:	0. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS	:	2100. PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:		F PERCENT

NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN -- TEMPERATURE CORRECTED -- FROM DAY ONE	ELASTIC + CREEP	SPECIFIC CREEP
* 2 -4-76	1400	0	SPECIMEN CAST								
2 -6-76	1100	1.9		-.36591	55.77	78.4	5790	0	0		
2-12-76	1000	7.8		-.36807	55.49	75.4	5662	-128	-15		
2-20-76	1300	15.0		-.35784	56.81	89.7	4240	-1550	-49		
3 -5-76	1600	29.1		-.34376	58.66	109.7	3251	-2539	-42		
3-10-76	1545	34.1		-.34937	57.92	101.7	3812	-1978	-36		
3-11-76	1615	35.1		-.34492	58.51	108.0	3475	-2315	-35		
3-12-76	930	35.8		-.34384	58.65	109.6	3383	-2407	-35		
3-17-76	1745	41.2		-.34313	58.75	110.6	3271	-2519	-38		
3-23-76	1515	47.1		-.34343	58.71	110.1	3178	-2612	-44		
3-31-76	810	54.8		-.34317	58.74	110.5	3140	-2650	-45		
4 -9-76	1050	63.9		-.34293	58.77	110.9	3129	-2661	-45		
4-16-76	1600	71.1		-.34478	58.53	108.2	3271	-2519	-45		
4-30-76	1100	84.9		-.34390	58.64	109.5	3175	-2615	-47		
5-12-76	1340	97.0		-.34245	58.84	111.5	3046	-2744	-47		
5-20-76	1415	105.0		-.34233	58.85	111.7	3015	-2775	-48		
5-25-76	1320	110.0		-.34225	58.86	111.8	2986	-2804	-50		
6-10-76	1150	125.9		-.34208	58.89	112.1	2969	-2821	-50		
6-18-76	1330	134.0		-.34363	58.68	109.9	3065	-2725	-51		
6-28-76	1435	144.0		-.34412	58.62	109.1	3110	-2680	-51		
6-29-76	1430	145.0		-.34373	58.67	109.7	3082	-2708	-51		
7-14-76	915	159.8		-.34442	58.58	108.7	3101	-2689	-53		
7-20-76	1500	166.0		-.34406	58.62	109.2	3098	-2692	-52		
7-29-76	1600	175.1		-.34333	58.72	110.3	3076	-2714	-49		
8 -2-76	1415	179.0		-.34271	58.80	111.2	3032	-2758	-49		
8 -6-76	1300	183.0		-.34648	58.30	105.8	3194	-2596	-57		
8-16-76	1410	193.0		-.34191	58.91	112.3	2850	-2940	-56		
8-23-76	1630	200.1		-.34408	58.62	109.2	2959	-2831	-59		
9 -6-76	815	213.8		-.34303	58.76	110.7	2929	-2861	-56		
9-16-76	1430	224.0		-.34370	58.67	109.7	2917	-2873	-50		
9-21-76	1330	229.0		-.34417	58.61	109.1	2912	-2878	-62		
10 -1-76	905	238.8		-.34406	58.62	109.2	2856	-2934	-65		
12-20-76	1445	319.0		-.34344	58.71	110.1	2554	-3236	-79		
1-14-77	1330	344.0		-.34379	58.66	109.6	2417	-3373	-88		
1-20-77	1155	349.9		-.34374	58.67	105.7	2384	-3406	-85		
2 -3-77	1000	363.8		-.34343	58.71	110.1	2311	-3479	-92		
2 -5-77	951	365.8		-.34347	58.70	110.1	2322	-3468	-92		
2 -5-77	754	365.7		-.34363	58.68	109.8	2329	-3461	-92		
2 -5-77	955	365.8		-.34347	58.70	110.1	2322	-3468	-92		

10B

TABLE 10B

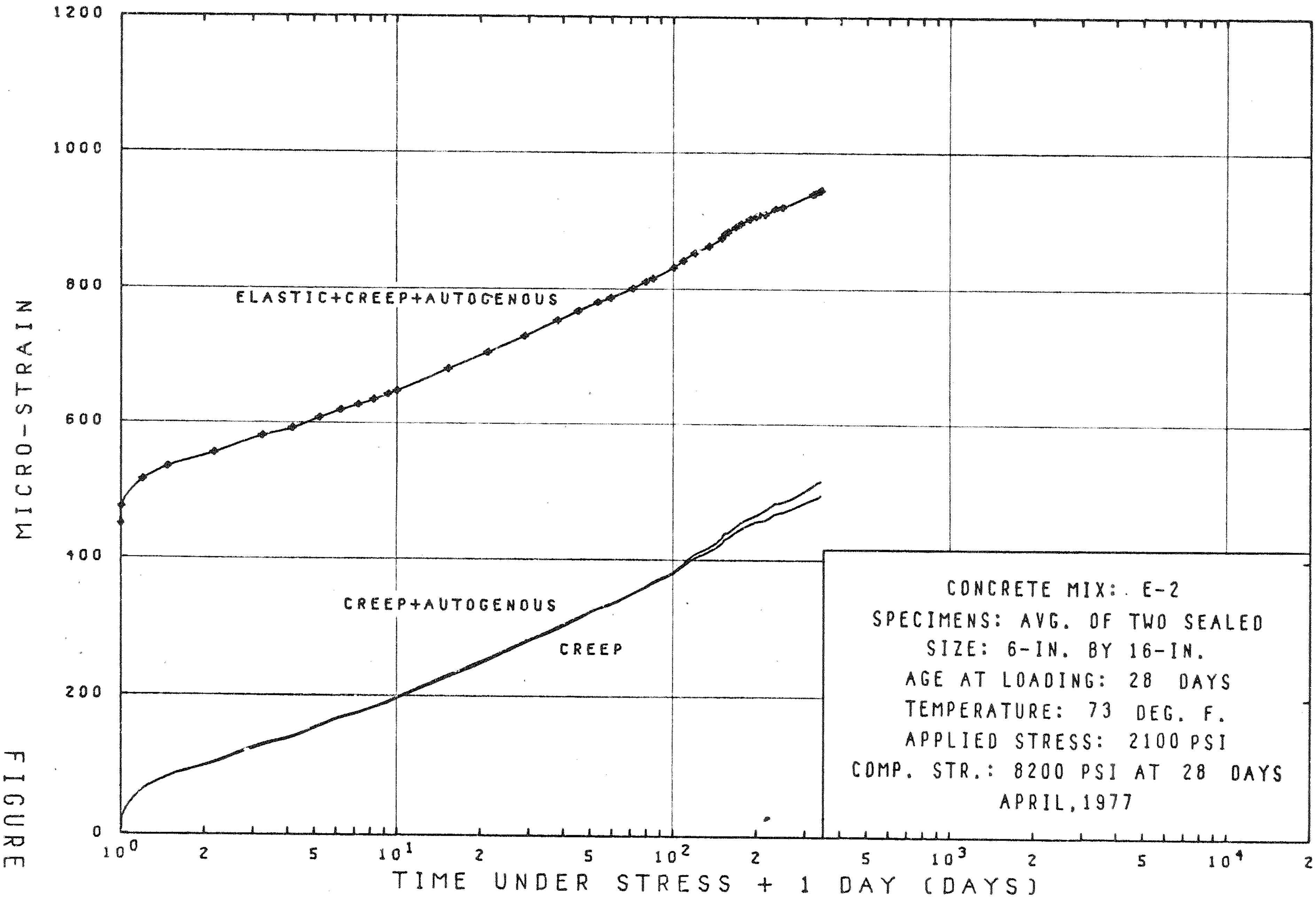
ELASTIC AND CREEP STRAINS (NOT CORRECTED FOR AUTOGENOUS STRAINS)
WOLF CREEK OPTION 1 CLASS E-2 ES7388
(SPECIMEN: SEALED 6 BY 16 IN. CONCRETE CYL.)

CALIBRATION CONSTANTS:

METER RESISTANCE AT 0.0 DEGREES F.	= 48.51 OHMS	STRAIN METER NO. :	537 11.05
TEMP. CALIBRATION CONSTANT	= 10.70 F/OHM CHANGE IN RESIST.	AGE OF LOADING :	365 DAYS
STRAIN CALIBRATION CONSTANT	= 9.19 MICROVOLTS/VOLT/MICROSTRAIN	TEST TEMPERATURE :	110 DEG. F.
CALIBRATED RANGE	= 11100 TO -10100 MICROVOLTS/VOLT		
METER COEFF. OF THERMAL EXPANSION	= 6.7 MICROSTRAIN/DEGREE F.	ULT. STR. :	0. PSI
CONCRETE COEFF. OF THERMAL EXPANSION	= 3.6 MICROSTRAIN/DEGREE F.	APPLIED TEST STRESS :	2100. PSI
STRAIN INCREMENT FACTOR	= 0 PERCENT	PER. ULT. STR. APPLIED:	0 PERCENT

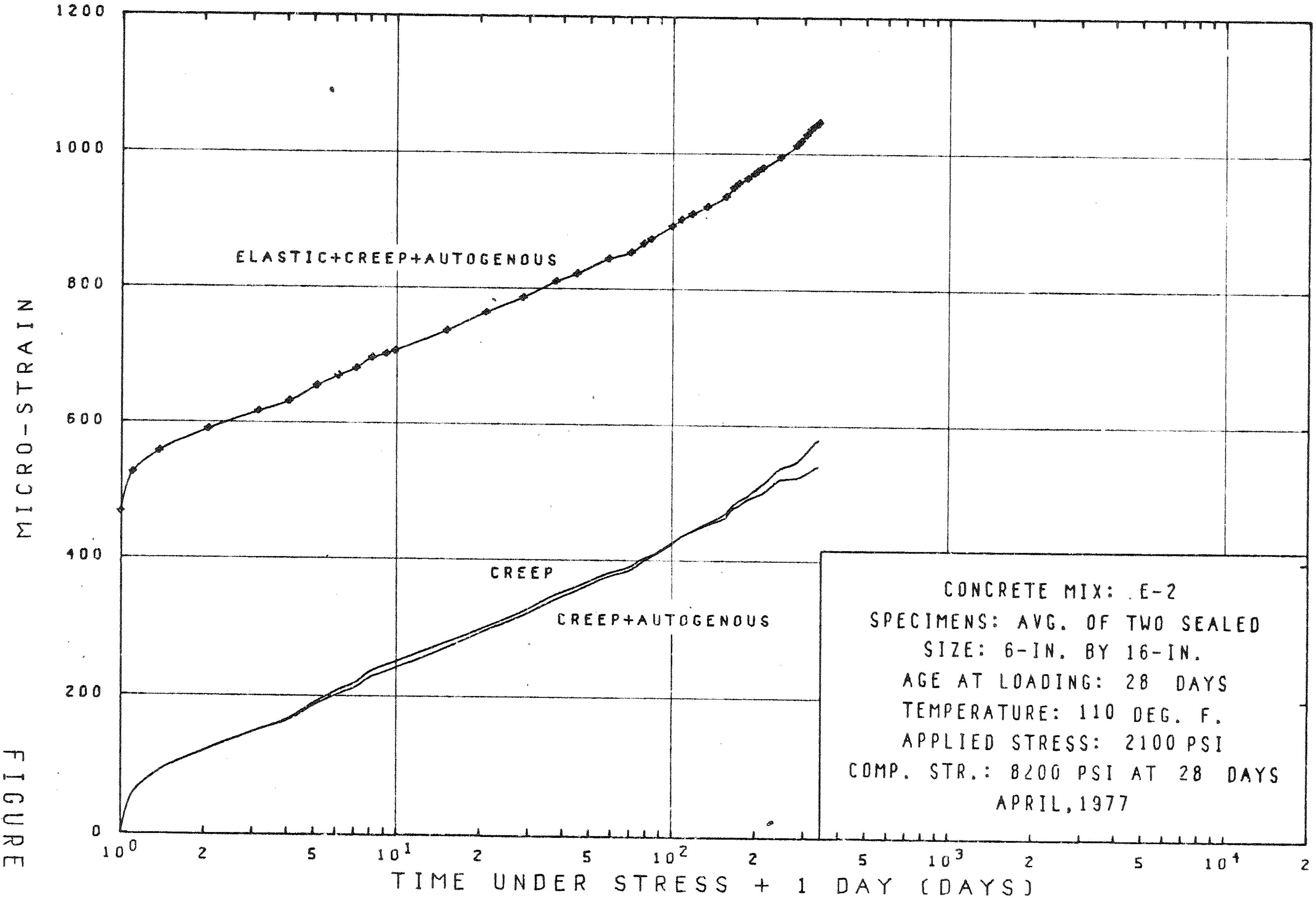
NOTE: FOR MODE 4 OR 5 VOLTS, AND MODE 3 MICROVOLTS -- THE BRIDGE VOLTAGE WAS 2.00000 VOLTS.

DATE	TIME	AGE, DAYS	DAYS UNDER LOAD	MODE 4 OR 5 VOLTS	RESIST. OHMS	TEMP. DEGREE F.	MODE 3 MICRO-VOLTS	CHANGE MICRO-VOLTS	MICROSTRAIN, TEMPERATURE CORRECTED: FROM DAY ONE	ELASTIC + CREEP	CREEP	SPECIFIC CREEP
2-4-76	1400	0	SPECIMEN CAST									
2-6-76	1100	1.9		-.36266	56.19	77.9	11892	0	0			
2-12-76	1000	7.8		-.36839	55.45	70.0	11671	-221	-35			
2-20-76	1300	15.0		-.35454	57.24	89.1	10255	-1637	-53			
3-5-76	1600	29.1		-.34056	59.09	108.9	9245	-2647	-47			
3-10-76	1545	34.1		-.34609	58.35	101.1	9871	-2021	-37			
3-11-76	1615	35.1		-.34182	58.92	107.1	9561	-2331	-35			
3-12-76	930	35.8		-.34079	59.06	108.6	9477	-2415	-35			
3-17-76	1745	41.2		-.34003	59.16	109.7	9439	-2453	-34			
3-23-76	1515	47.1		-.34030	59.12	109.3	9462	-2430	-34			
3-31-76	810	54.8		-.34002	59.16	109.7	9475	-2417	-32			
4-9-76	1050	63.9		-.33983	59.19	110.0	9492	-2400	-30			
4-16-76	1600	71.1		-.34167	58.92	107.1	9643	-2249	-31			
4-30-76	1100	84.9		-.34070	59.07	108.7	9643	-2249	-31			
5-12-76	1340	97.0		-.33943	59.24	110.5	9422	-2470	-32			
5-20-76	1415	105.0		-.33933	59.25	110.7	9395	-2497	-33			
5-25-76	1320	110.0		-.33928	59.26	110.8	9360	-2532	-35			
6-10-76	1130	125.9		-.33918	59.27	110.9	9344	-2543	-35			
6-19-76	1330	134.0		-.34050	59.10	109.0	9420	-2472	-37			
6-28-76	1435	144.0		-.34102	59.03	108.3	9448	-2444	-38			
6-29-76	1430	145.0		-.34076	59.06	108.6	9436	-2456	-37			
7-14-76	915	159.8		-.34144	58.97	107.7	9445	-2447	-40			
7-20-76	1500	166.0		-.34109	59.02	108.2	9452	-2440	-38			
7-29-76	1600	175.1		-.34038	59.11	109.2	9412	-2480	-37			
8-2-76	1415	179.0		-.34003	59.16	109.7	9372	-2520	-37			
8-6-76	1300	183.0		-.34348	58.70	104.8	9533	-2359	-44			
8-16-76	1410	193.0		-.33902	59.30	111.1	9213	-2679	-42			
8-23-76	1530	200.1		-.34122	59.00	108.0	9330	-2562	-45			
9-6-76	915	213.8		-.34043	59.11	109.1	9309	-2583	-43			
9-16-76	1430	224.0		-.34062	59.08	108.8	9265	-2627	-46			
9-21-76	1330	229.0		-.34107	59.02	108.2	9276	-2616	-47			
10-1-76	905	238.8		-.34047	59.10	109.1	9178	-2714	-50			
12-20-76	1445	319.0		-.34014	59.15	109.5	8916	-2976	-63			
1-14-77	1330	344.0		-.34052	59.10	109.0	8804	-3088	-71			
1-20-77	1155	349.9		-.34050	59.10	109.0	8771	-3121	-72			
2-3-77	1000	353.8		-.34020	59.14	109.4	8707	-3185	-74			
2-5-77	754	365.7		-.34038	59.11	109.2	8726	-3166	-74			
2-5-77	951	365.8		-.34014	59.15	109.5	8699	-3193	-75			
2-5-77	955	365.8		-.34014	59.15	109.5	8696	-3195	-75			



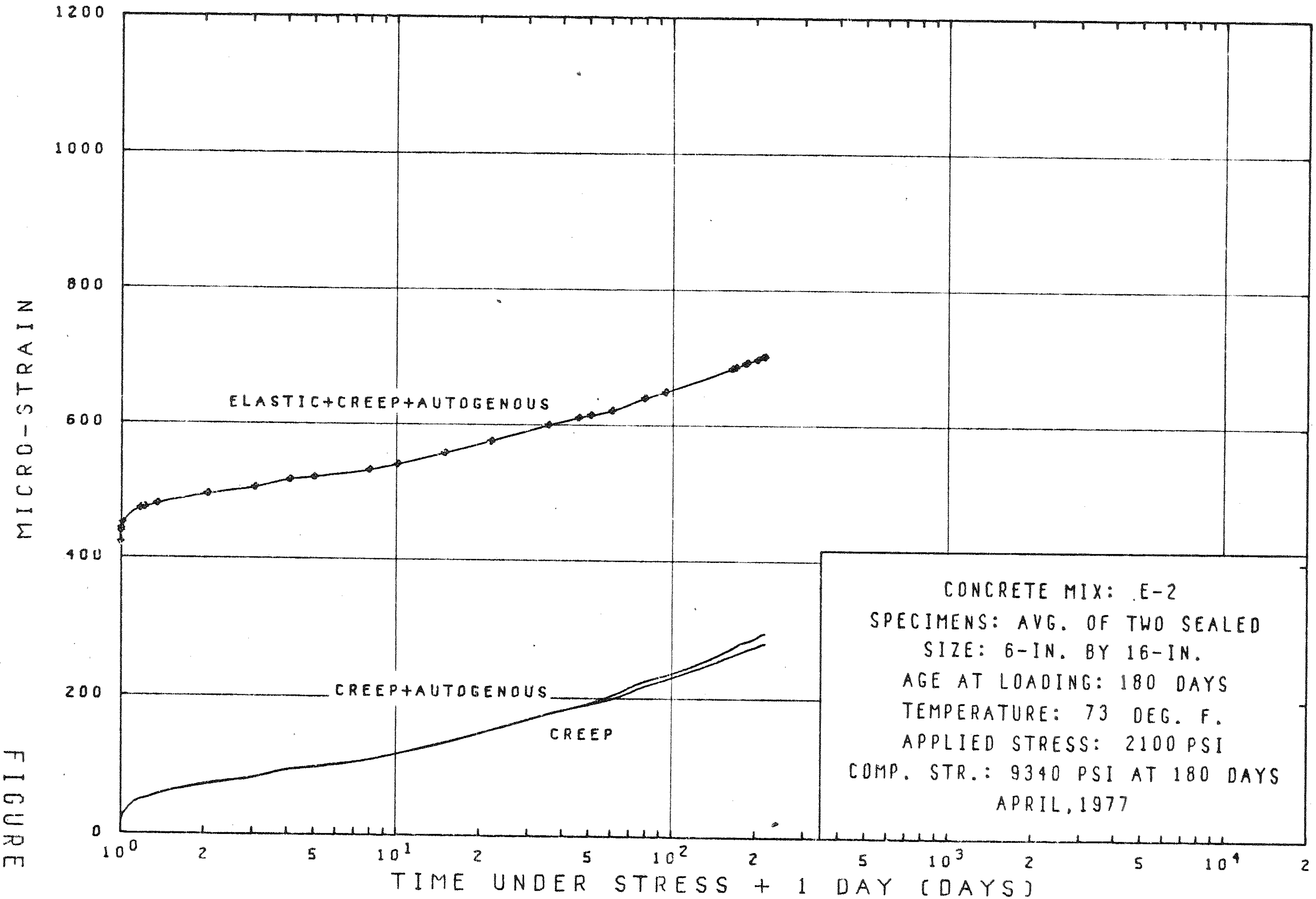
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 1



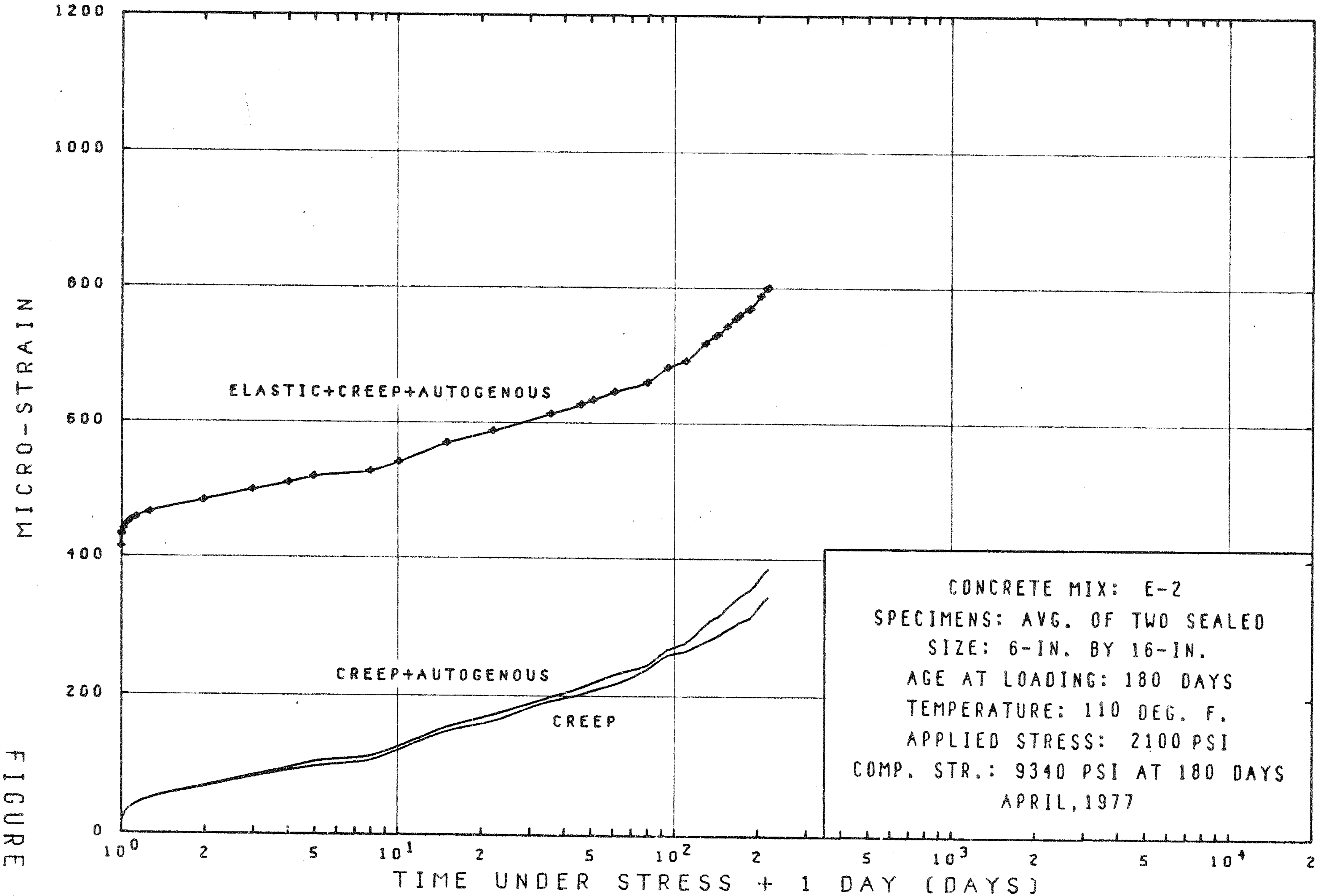
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 2



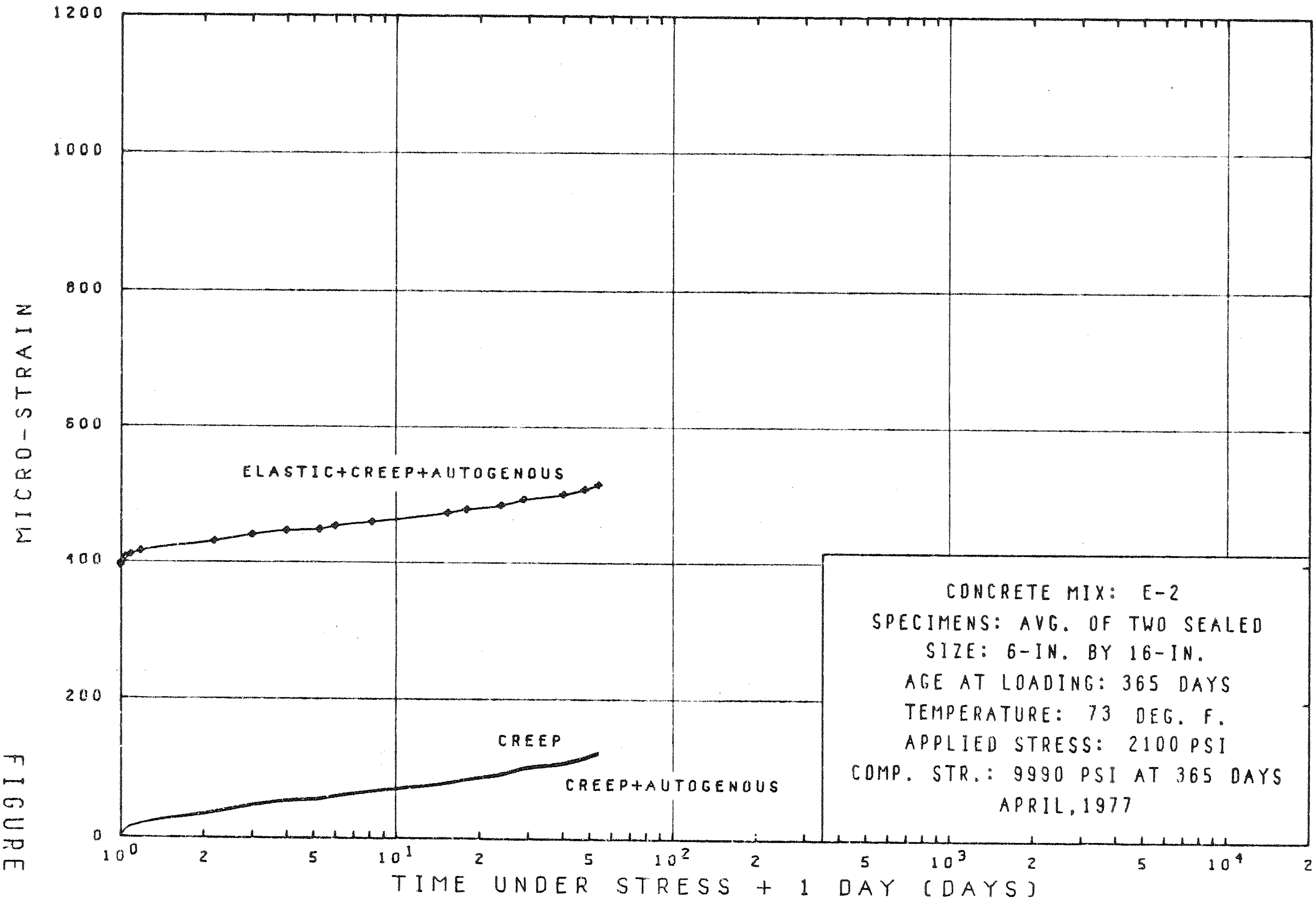
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 3



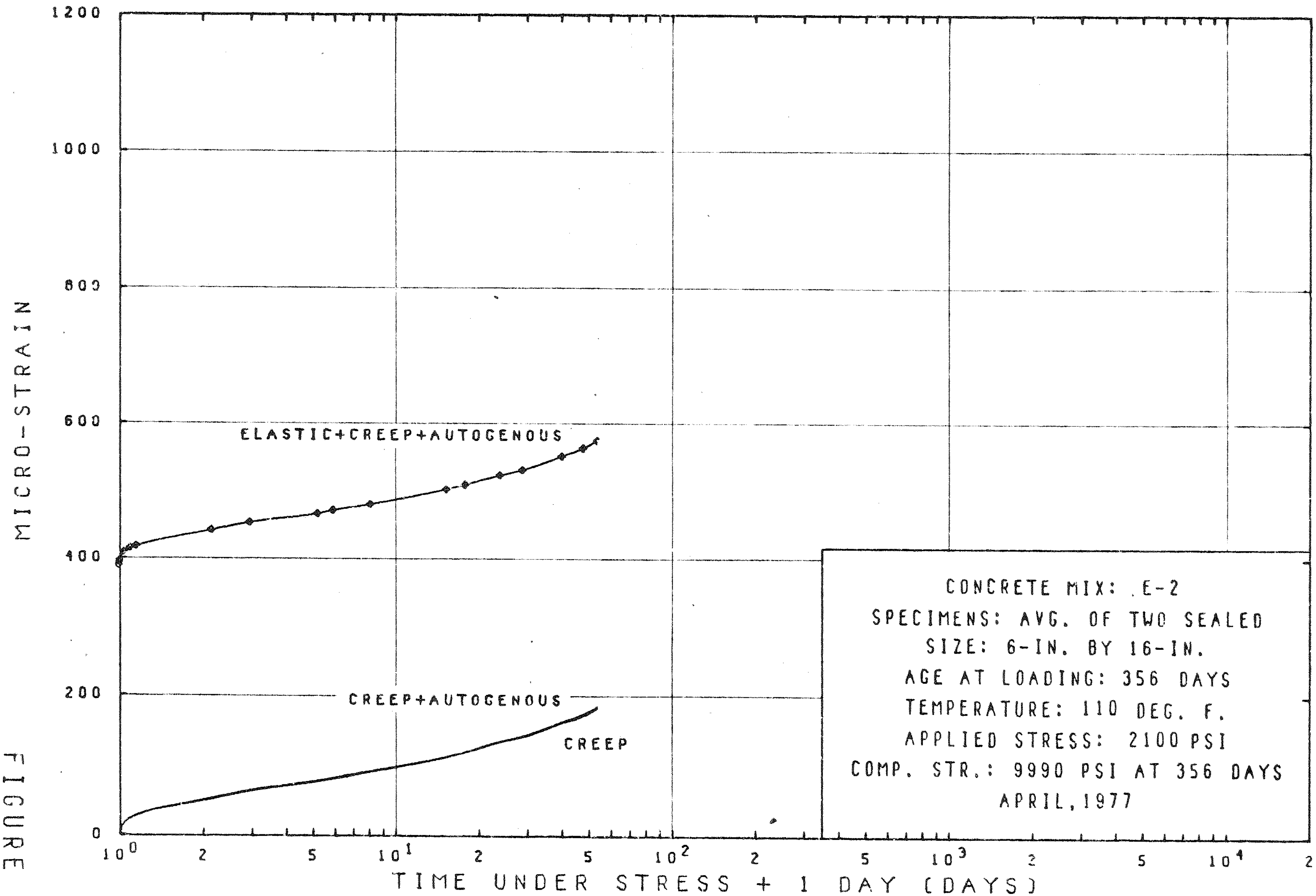
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 4



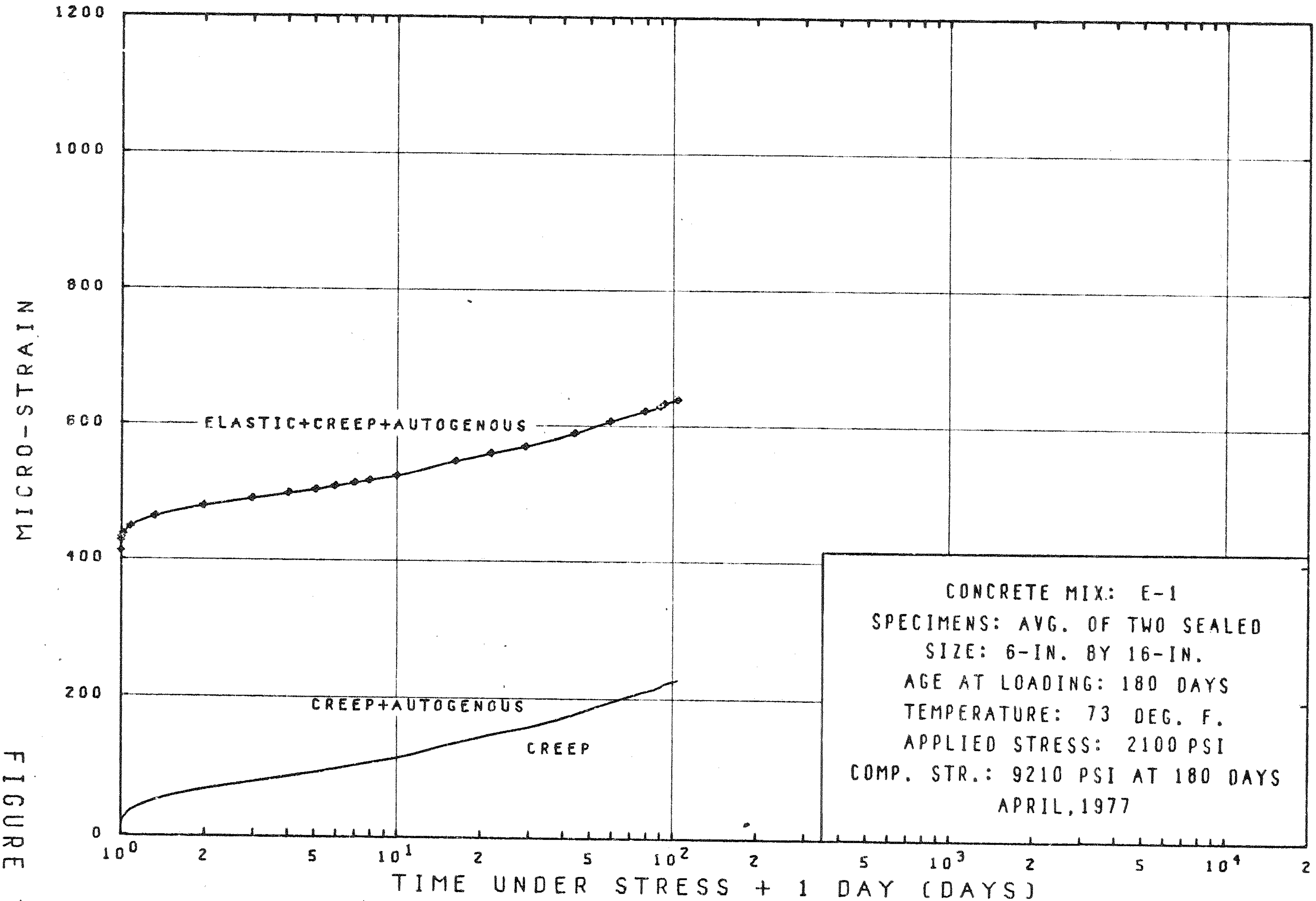
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 5



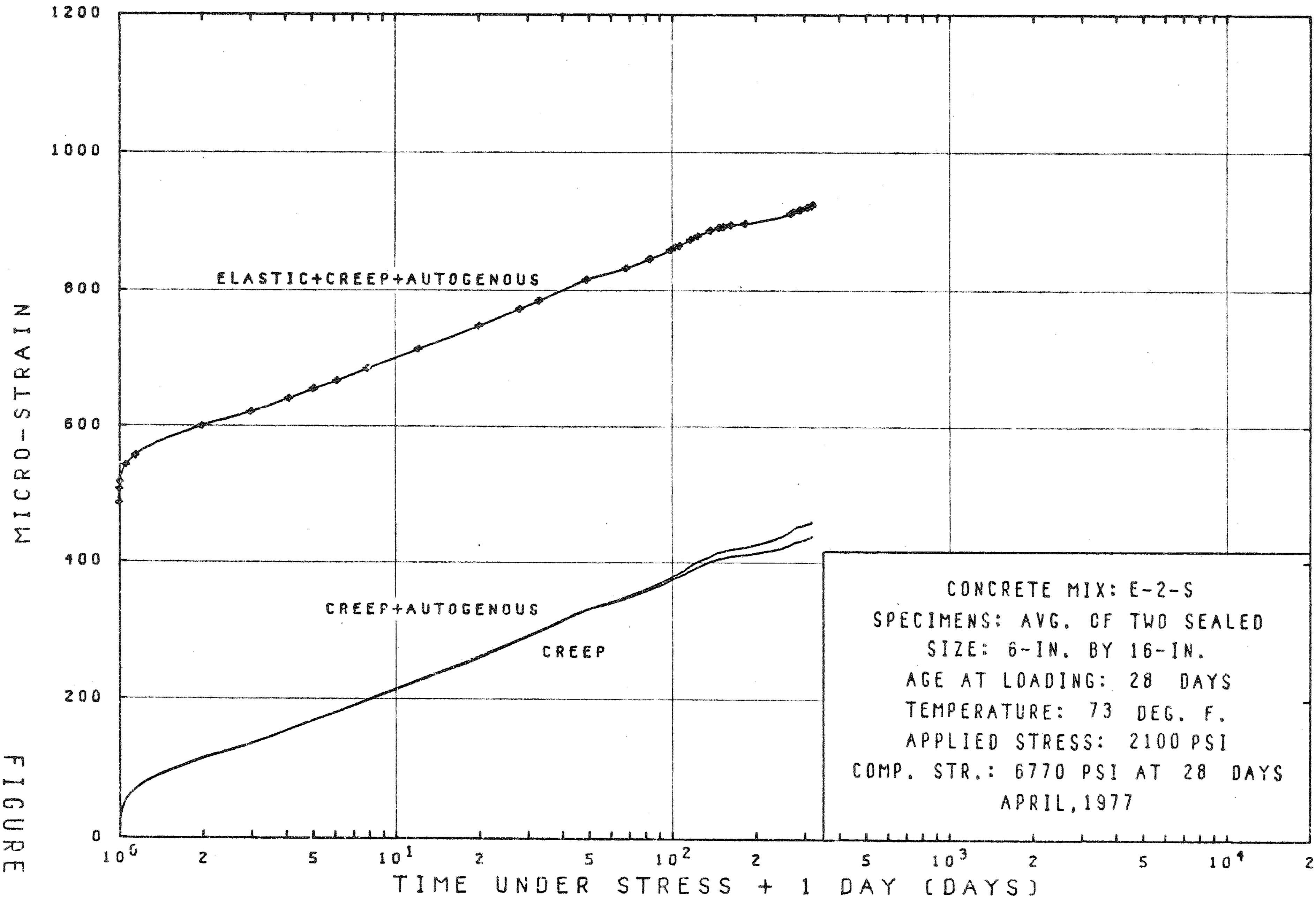
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 6



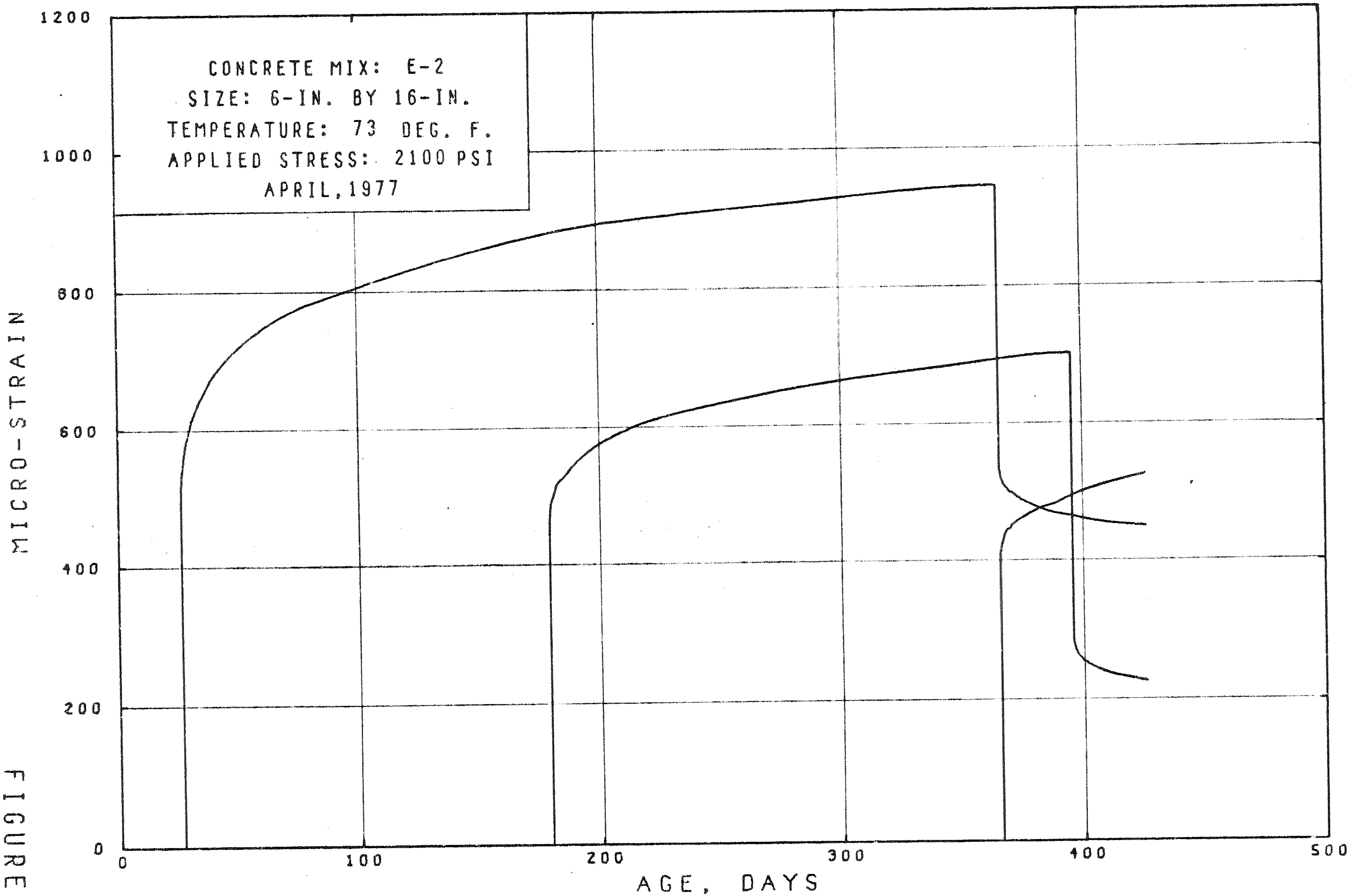
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 7



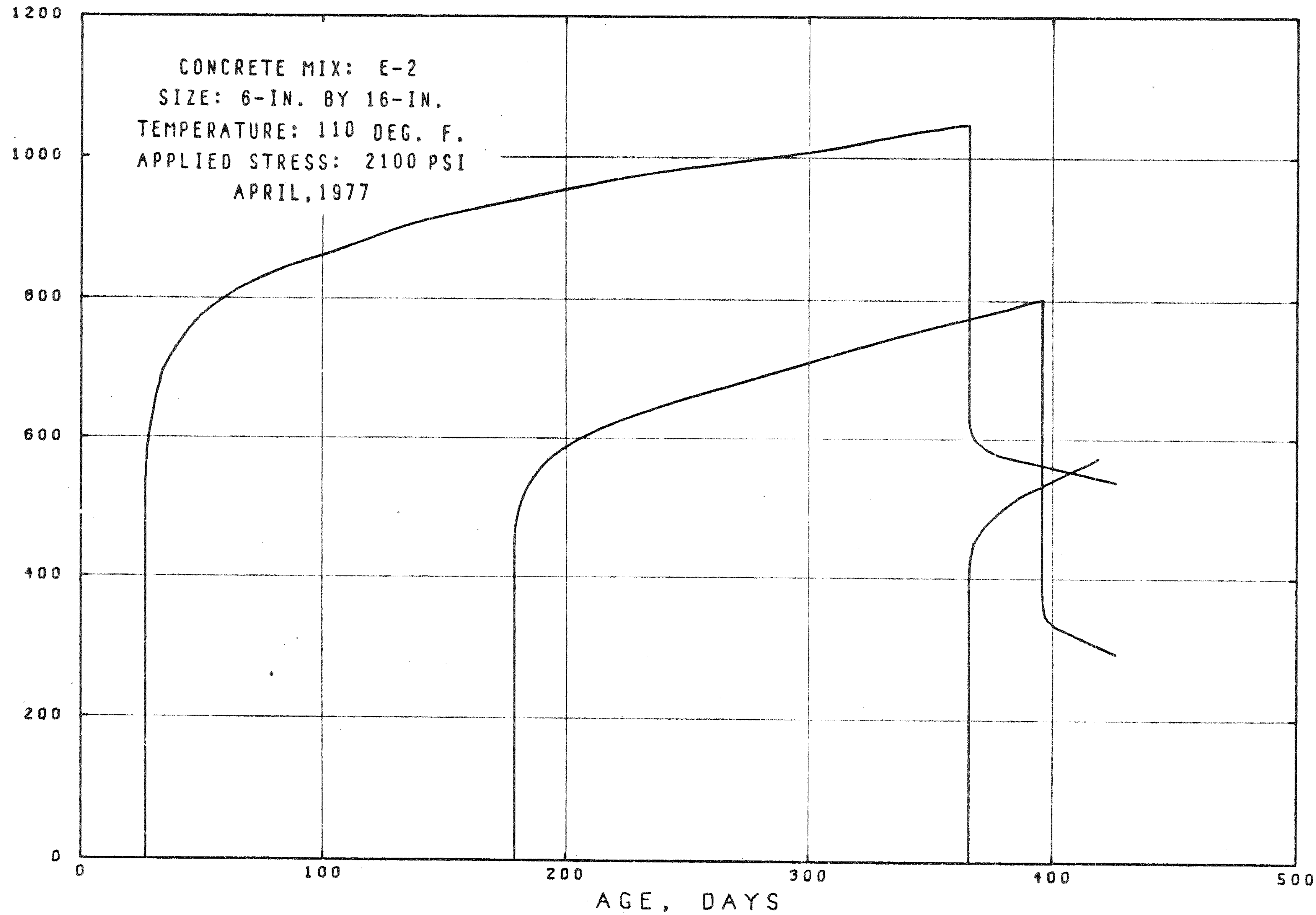
ELASTIC, CREEP AND AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 8



ELASTIC PLUS CREEP PLUS AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 9



ELASTIC PLUS CREEP PLUS AUTOGENOUS STRAINS
WOLF CREEK POST TENSIONED REACTOR BUILDING

FIGURE 10