Calculation Cover Sheet

Complete only applicable items.

1. QA: L

Page: 1 Of: 9

2. Calculation Title Alternate Acceptance	e of Wulfenst	ein Pit Aggregate		
3. Document Identifier BABEE0000-01717	r (including Rev -0210-00003	rision Number) REV 00		4. Total Pages 9
5. Total Attachments Three		6. Attachment Numbers - Number Attachment I - 9 pages, Attach	of pages in each ment II- 7 pages, Attachment III - 9 p	ages.
		Print Name	Signature	Date
7. Originator		Jerald W. Keifer	Gerald Vlaje	6/24/99
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9. Lead		Jerald W. Keifer	Jeulih. Kip	6/24/89
		Revision I	History	
11 Revision No		12	Description of Revision	
00	Initial Issue			
04P.3.15 /Effective 02/15/00				

1. PURPOSE

The purpose of this calculation is to evaluate Wulfenstein fine aggregate for acceptability under ASTM C 33 standard specification.

2. Method

The method is to apply the criteria in ASTM C 33, which includes conditional allowances and alternative acceptance criteria, to the Wulfenstein aggregate.

3. Assumptions

Not used.

4. Use of Computer Software

Not used.

5. CALCULATION

5.1 Background

Wulfenstein supplies the coarse and fine aggregate for general use in all batch plant operations, which include both shotcrete and concrete. All applicable specification sections, Ref. 7.2 - 7.6, require the aggregate to be procured in accordance with ASTM C 33. (Ref. 7.1) The year-edition specified for ASTM C 33 varies between the different specifications. Impact Reviews were performed, and determined that the latest year-edition, ASTM C 33-97, had no impact on the material specified in the different editions of ASTM C 33. (Ref. 7.7 & 7.8). A deviation to procure all aggregates to ASTM C 33-97 was requested by the constructor and approved by the A/E (Ref. 7.9), which establishes ASTM C 33-97 as the applicable standard. The shotcrete specifications (Ref. 7.2 & 7.3) are Q specifications, which makes all aggregates subject to QA receipt inspection to eliminate separate stockpiles for Q and non-Q aggregates.

Wulfenstein manufactured fine aggregate has been considered to be a non-conforming item to the *Standard Specification for Concrete Aggregates*, *ASTM C 33-97*. Two conditions are documented in Nonconformance Report (NCR) YMSCO-98-0017 (Attachment I) as the causes of the non-conformance. The first condition is the #100 sieve fraction (150- μ m) exceeded the standard gradation limit by 2%. The second condition is the possibility of exceeding the deleterious substance limits for the #200 sieve (minus 75- μ m material) in the fine aggregate.

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5.2 Gradation Issue

ASTM C 33 requires the fine aggregate to be graded within the following limits:

Sieve	Percent Passing
9.5 mm (3/8 – in.)	100
4.75 mm (No. 4)	95 to 100
2.36 mm (No. 8)	80 to 100
1.18 mm (No. 16)	50 to 85
600 μm (No. 30)	25 to 60
300 µm (No. 50)	10 to 30
150 μm (No. 100)	02 to 10

However, as described in section 6.1 of ASTM C 33 (Ref. 7.1) exceptions are allowed when alternative criteria are met in accordance with other sections of the standard. In section 6.3 of ASTM C 33-97 (Ref. 7.1) aggregates are acceptable if :

1) not more than 45 percent passing any sieve and retained on the next consecutive sieve of the above listed sieves sizes and

2) the fineness modulus is between 2.3 and 3.1.

In section 6.4, aggregates are acceptable if the concrete produced from the aggregates have relevant properties at least equal to the those of concrete produced from a reference aggregate.

Sieve analyses of aggregates in accordance with ASTM C136 were taken at receipt inspection of fine aggregate from the Wulfenstein Pits (Attachment II). A review of the analysis results show that the fine aggregate often failed to meet the standard gradations specified on the #100 and #200 sieves. Calculation of the analysis as shown in Figures 1 through 6, was made to determine the size fraction passing any sieve and retained on the next consecutive sieve. Fineness modulus was also calculated. The results demonstrate that the aggregate meets the requirements for retained fraction percentages being less than 45% and the fineness modulus falling between 2.3 and 3.1. Therefore, the fine aggregates meets the requirements of ASTM C 33 –97 under section 6.3.

The fine aggregate identified in the NCR (Attachment I) was a component of the shotcrete that was placed at the ECRB starter tunnel. The shotcrete applied there is representative of that used in the two Field Work Packages and the Job package identified in the NCR. The shotcrete was prepared in accordance with the A/E approved Shotcrete mix design #505 (Ref. 7.11). Shotcrete Mix Design #505 demonstration test panels were made, during the approval process, from a fine aggregate that met the gradation limits of section 6.1 of ASTM C33. These test panels qualify as the reference concrete in accordance with section 6.4 of ASTM C33. The compressive strength results from the production test panels (Attachment III) met the specified strength requirements of the Wet Process Shotcrete specification. (Ref. 7.2) In accordance with section 6.4 of ASTM C 33 the aggregate is acceptable based upon the comparison of compressive strength results with the reference shotcrete cores.

ASTM C136 Sieve Analy	ysis				
	05/19/1998	Cumulative	Retained	Percentage	Cumulative
		Weight	@ Fraction	@ Fraction	Percent
		Retained (g)	Weight (g)	Retained	Retained
9.5 mm (3/8 - in.)		0.0			
			0.0	0.0%	
4.75 mm (No. 4)		0.0			0.0%
			32.2	6.2%	
2.36 mm (No. 8)		32.2			6.2%
			176.7	34.2%	
1.18 mm (No. 16)		208.9			40.5%
			127.5	24.7%	
600 microns (No. 30)		336.4			65.1%
			77.5	15.0%	
300 microns (No. 50)		413.9			80.2%
			50.0	9.7%	
150 microns (No. 100)		463.9			89.8%
Total Dry Weight		516.4			
			Tot	tal % Retained	281.8%
			Fin	eness Modulus	2.82

ASTM C136 Sieve Anal	ysis				
	05/20/1998	Cumulative	Retained	Percentage	Cumulative
		Weight	@ Fraction	@ Fraction	Percent
		Retained (g)	Weight (g)	Retained	Retained
9.5 mm (3/8 – in.)		0.0			
			0.8	0.1%	
4.75 mm (No. 4)		0.8			0.1%
			37.4	7.0%	
2.36 mm (No. 8)		38.2			7.2%
			182.3	34.2%	
1.18 mm (No. 16)		220.5			41.3%
			126.1	23.6%	
600 microns (No. 30)		346.6			65.0%
			76.5	14.3%	
300 microns (No. 50)		423.1			79.3%
			51.9	9.7%	
150 microns (No. 100)		475.0			89.0%
		5 22 (
Total Dry Weight		533.6	10	tal % Retained	201.00/
					281.9%
			Fir	neness Modulus	
					2.82

Figure 2. Calculation of Fineness Modulus and Retained Sieve Fractions.

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ASTM C136 Sieve Analy	/sis				
AS THE CISC Sleve Analy	05/20/1998	Cumulative	Retained	Percentage	Cumulative
	00/20/1990	Weight	@ Fraction	@ Fraction	Percent
		Retained (a)	Weight (g)	Retained	Petained
9.5 mm (3/8 - in)			weight (g)	Retained	1004
9.5 mm (5/8 – m.)		0.0	0.6	0.19/	070
4.75 mm (No. 4)		0.6	0.0	0,170	0.19/
4.75 mm (140. 4)		0.0	20 7	6 70/	0.1%
2.36 mm (No. 8)		28.9	36.2	0.770	6 90/
2.50 mm (140. 8)		20.0	108.4	34 60/	0.070
1.18 mm (No. 16)		227.2	190.4	34.0 /0	41.39/
1.18 mm (140. 10)		231.2	1277	24.00/	41.3%
(00 microne (No. 20)		274.0	137.7	24.0%	(5.20/
000 microns (No. 50)		574.9	82.2	14.00/	65.3%
200 mianana (Nia 50)		459.1	83.2	14.5%	70.00/
500 microns (No. 50)		458.1	55.0	0.404	/9.8%
160 minung (Na. 100)		512.1	55.0	9.0%	00.49/
150 microns (No. 100)		513.1			89.4%
Total Dry Waight		574.2			
Total Dry weight		574.2		-10/ D-+-11	000 70/
			100	al % Retained	282.7%
			Fine	eness Modulus	2.83
	rıg	ure 3. Calculation of Fine	eness Modulus and Retain	ed Sieve Fractions.	
ASTM CI36 Sieve Analy	/\$1\$		Tester: William H.		
	05/21/1998	Cumulative	Retained	Percentage	Cumulative
		Weight	@ Fraction	@ Fraction	Percent
		Retained (g)	Weight (g)	Retained	Retained
9.5 mm (3/8 - in.)		0.0			0%
			0.4	0.1%	
4.75 mm (No. 4)		0.4			0.1%
			40.7	7.5%	
2.36 mm (No. 8)		41.1			7.5%
. ,			193.5	35.5%	
1.18 mm (No. 16)		234.6			43.1%
. ,			130.6	24.0%	
600 microns (No. 30)		365.2		2 / 0	67.0%
			76.2	14.0%	07.070
300 microns (No. 50)		441.4		2	81.0%
()			49.0	9,0%	01.070
150 microns (No. 100)		490.4	.,,,,,	2.070	90.0%

Total Dry Weight 544.9 Total % Retained 288.7%

Fineness Modulus 2.89

Figure 4. Calculation of Fineness Modulus and Retained Sieve Fractions.

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ASTM C136 Sieve Anal	ysis				
	05/22/1998	Cumulative	Retained	Percentage	Cumulative
		Weight	@ Fraction	@ Fraction	Percent
		Retained (g)	Weight (g)	Retained	Retained
9.5 mm (3/8 – in.)		0.0			0%
			0.0	0.0%	
4,75 mm (No. 4)		0.0			0.0%
			41.0	7.5%	
2.36 mm (No. 8)		41.0			7.5%
			187.0	34.1%	
1.18 mm (No. 16)		228.0			41.6%
			131.5	24.0%	
500 microns (No. 30)		359.5			65.5%
			78.5	14.3%	
300 microns (No. 50)		438.0			79.9%
			37.0	6.7%	
150 microns (No. 100)		475.0			86.6%
Fotal Dry Weight		548.5			
			Tot	al % Retained	281.1%

Figure 5. Calculation of Fineness Modulus and Retained Sieve Fractions.

Fineness Modulus

ASTM C136 Sieve Analysis				
06/30/1998	Cumulative	Retained	Percentage	Cumulative
	Weight	@ Fraction	@ Fraction	Percent
	Retained (g)	Weight (g)	Retained	Retained
9.5 mm (3/8 – in.)	0.0			0%
		1.0	0.2%	
4.75 mm (No. 4)	1.0			0.2%
		38.4	7.3%	
2.36 mm (No. 8)	39.4			7.5%
		184.8	35.0%	
1.18 mm (No. 16)	224.2			42.5%
		126.0	23.9%	
600 microns (No. 30)	350.2			66.4%
		74.7	14.2%	
300 microns (No. 50)	424.9			80.5%
		47.9	9.1%	
150 microns (No. 100)	472.8			89.6%
TAD WILL	60.5 (
Total Dry weight	527.6	_		
		Tot	tal % Retained	286.7%
·		Fin	eness Modulus	2.87

Figure 6. Calculation of Fineness Modulus and Retained Sieve Fractions.

2.81

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5.3 Deleterious Substance Limit Issue

The NCR has identified that the fine aggregate exceeds the maximum limit of 5% passing the 75- μ m (No. 200) sieve.

ASTM C 33-97 limits the material finer than $75\mu m$ (No. 200 sieve) to 3.0% for concrete subject to abrasion and 5.0% for all other concrete. A conditional exception increases the limits for manufactured sand to 5 and 7 %, respectively, the condition being that the fines be the dust of fracture and must be essentially free of clay or shale. (Ref. 7.1)

The fine aggregate that is produced by Wulfenstein is prepared by crushing oversize material from the pit screening plant. The minus 200 mesh material meets the definition of "fines are the dust of fracture." The petrographic examination of Wulfenstein pit materials reveals that clays and shale were absent for the list of constituents. (Ref. 7.10). A directive was issued to OQA-QC to test the Wulfenstein fine aggregate to ASTM C 142-90 (Attachment I) to confirm the absence of clay and friable material in the aggregates. The directive contained the following comment:

"Minus No. 200 material for the manufactured sand meets the definition "fines are the dust of fracture" if it is prepared from crushing oversize material off screening plant. Since the different size fractions of the manufactured sand are from the same feed stock, the petrology make up of the coarse fractions will be indicative of the Minus No. 200 material. Since shale is defined as a mixture of clay and silt, the ASTM C 142 Test method for Clay and Friable Material is a suitable method. A result of 0% (<0.5% rounded to nearest percent) clay and friable material is sufficient to indicate that the minus No. 200 material is essentially free of clay or shale."

ASTM C 142 test results show a loss of 0357 percent. (Documentation in Attachment I). This confirms that there is an absence of any significant amount of clay or shale in the minus 200 sieve fraction.

6. RESULTS

The Wulfenstein manufactured fine aggregate satisfactory conforms to the requirements of ASTM C 33 –97 under sections 6.3 and 6.4(Ref. 7.1). The allowable percentage limits for Wulfenstein manufactured fine aggregate for material passing 75 μ m sieve is 7%, except when abrasive resistance is specified the limit is 5%.

The above results conform to the acceptance criteria set forth by ASTM C 33-97, and therefore the use of Wulfenstein fine aggregate is within the bounds of the specifications.

7. References

- 7.1 American Society For Testing Materials 1997. Standard Specification for Concrete Aggregates. ASTM C 33-97. West Conshohocken, PA: ASTM.
- 7.2 CRWMS M&O 1996. Wet Process Shotcrete. BABEE0000-01717-6300-03363 REV 00. Las Vegas, Nevada: CRWMS-M&O. ACC: MOL.19961213.0123
- 7.3 CRWMS M&O 1996. Dry Process Shotcrete. BABEE0000-01717-6300-03362 REV 00 Las Vegas, Nevada: CRWMS-M&O. ACC: MOL.19961213.0122
- 7.4 CRWMS M&O 1994. Precast Concrete. BABFCC000-01717-6300-03480 REV 00 Las Vegas, Nevada: CRWMS-M&O ACC: MOL.19950613.0164
- 7.5 CRWMS M&O 1995. Cast-In-Place Concrete Surface. BAB000000-01717-6300-03300 REV 02 Las Vegas, Nevada: CRWMS-M&O. ACC: MOL.19960514.0331
- 7.6 CRWMS M&O 1994. Cast-In-Place Concrete Subsurface. BAB000000-01717-6300-03301 REV 00 Las Vegas, Nevada: CRWMS-M&O. ACC: MOL.19960425.0374
- 7.7 CRWMS M&O 1998. Impact Review Action Notice for American Society For Testing And Material - Standard Specification For Concrete Aggregates, ASTM C33-93 (C). Las Vegas, Nevada: CRWMS-M&O. ACC: MOL.19980223.0326
- 7.8 CRWMS M&O 1998. Impact Review Action Notice for American Society For Testing And Material - Standard Specification For Concrete Aggregates, ASTM C 33-97 (C). Las Vegas, Nevada: CRWMS-M&O. ACC: MOL.19990311.0456
- 7.9 CRWMS M&O 1998. Transmittal Of Shop Drawings, Equipment Data, Material Samples, Or Manufacturers Certificates Of Compliance (Sdt) For Exploratory Study Facility, Area 25 With Submittal Evaluation Record For Request For Deviation and Impact Review Action Notice With Continuation Page (C). Las Vegas, Nevada: CRWMS-M&O. ACC: DRC.19981007.0021
- 7.10 David B. Vollmer 1997. Petrographic Examination Of Coarse And Fine Aggregate Samples From The Pahrump Pit #1 (Old) And Pahrump Pit #2 (New), Yucca Mountain Project. Skokie, Illinois: Construction Technology Laboratories, Inc. TIC: 240985

<u>Civilian Radioactive Waste Management System</u> Management & Operating Contractor 7.11 Kiewit/PB 1997. Kiewit/PB #505 Shotcrete Mix Design With Sieve Analysis Of Aggregates ASTM C 136, Concrete Batch Plant Mix Adjustment Sheet, Total Moisture Of Aggregates ASTM C 566, Daily Inspection Checklist, Batching & Placement Form, Shotcrete Placement Log, Compression Test Report and A Certificate Of Compliance Dated January 03, 1997, and Letter Dated October 16, 1996 (C). Las Vegas, Nevada: CRWMS-M&O. ACC: DRC.19970407.0019

8. ATTACHMENTS.

- Attachment I.Yucca Mountain Site Characterization Project Nonconformance Report.
NCR No. YMSCO-98-0017. Nine pages
- Attachment II. Yucca Mountain Site Characterization Project Sieve Analyses of Aggregates ASTM C136. Seven pages.
- Attachment III. Selected ECRB And ESF Loop Intersection Shotcrete Placement Logs Correlated, By Test Panel Number, With Compression Test Reports (Cores). Eight pages.

Attachment I

Yucca Mountain Site Characterization Project Nonconformance Report. NCR No. YMSCO-98-0017.

Civilian Radioactive Waste Management System Management & Operating Contractor Alternate Acceptance of Wulfenstein Pit Aggregate BABEE 0000-01717-0210-00003 REV00

Attachment I pI-2 of I-9

YMP-006-R6 YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT 06/02/97 NONCONFORMANCE REPORT NCR. NO. YMSCO-98-0017 NONCONFORMANCE REPORT Page 1 of 2
1. Initiator Name: <u>C. D. Osborne</u> Organization: <u>OQA QC</u> Date: <u>02/26/98</u>
2. Description of Non-Conformance: Work Package <u>1.18</u> Line Item # <u>5</u>
SEE CONTINUATION ON PAGE 2 THIS IS A RED STAMP Job Package/CM/97-01 and 98-01 Job Package/96-02
Hold Tag Applied No. of Hold Tags Applied <u>1</u> Test Planning Package No. <u>N/A</u>
3. OQA: \Box Validation \Box Invalidation \Box Non-Q Name: \Box Date: $2/26/50^{\circ}$
4. Disposition Evaluation
Rework Repair . I Use-As-Is Conditional Release
Reject/Scrap Limited Use Discard Potentially Reportable Yes
- ビ _{No} Justification/Comments:
5. Recommended Disposition by: Name: <u>Rechard A Shares</u> Organization: <u>Subsurface</u> Date: <u>2/4/98</u> Recommended Disposition
Name: <u>Ihada & Gauss</u> Organization: <u>Title III</u> Date: <u>3/4/98</u> Approval of Disposition
6. OQA Concurrence with Disposition: Corrective Action: No Yes No Name: Date: Date:Date: Date: Date:Date: Date: Date:DAte:DAte:DAte:DAte:
7. Completion of Disposition: Hold Tag Removed No. of Hold Tags Removed
Name: Date: Organization: Date:
OQA Concurrence:
Name: Date:
8. OQA Final Review:
Name: Date:
Exhibit YAP-15 10.1

Alternate Acceptance of Wulfenstein Pit Aggregate Attachmenez BABEE0000-01717-0210-00003 REV00 PI-3 of I-9

YMP-006-R6YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT06/02/97NONCONFORMANCE REPORTNCR. No.YMSCO-98-0017 //CONTINUATION PAGEPage

Page _____ of ____

BLOCK 2 CONTINUED FROM PAGE 1:

ORIGINAL THIS IS A RED STAMP

It was discovered during the Cement and Concrete Reference Laboratory inspection of the OQA-QC Test Laboratory, located @ the batch plant, that OQA had not established a time of sieving for their mechanical sieve shakers as required by ASTM C 136 - 96a.

A/E Specification BABEEOOO-01717-6300-03363 R/00 paragraph 2.01C (and 3.12C1 QA Control for testing), BABOOOOOO-01717-6300-03300 R/02 paragraph 2.01B, and BABOOOOOO-01717-6300-03301 R/00 paragraph 2.01A all require aggregate to conform to ASTM C 33.

ASTM C 136 - 96a paragraph 8.4 states: Continue sieving for a sufficient period and in such a manner that, after completion, not more than one mass percent of the residue on any individual sieve will pass that sieve during one minute of continuous hand sieving performed as follows: Hold the individual sieve..... (Item (1) below)

ASTM C 33 - 97 Table 1 states in part: Material finer than the # 200 sieve for concrete not subject to abrasion has a maximum limit of 5 %. Note A goes on to state in part: In the case of ______ manufactured sand, if the material finer than the # 200 sieve consists of the dust of fracture, essentially free of clay or shale, the limit may be increased to 7 % for concrete not subject to abrasion. (Item (2) below)

Upon completion of setting the sieving time for the mechanical shakers it was found that there was a one to two percent difference in material passing an individual sieve when compared to the time that had been being used prior to the shake time established as required by the ASTM C 136 Standard.

An evaluation of previous test results resulted in the following non-conformances: (1) For sand QC had been running for 6 minutes with no wash. QC was unable to get a passing shake time on unwashed sand even when sand was shaken for an hour. QC was able to get acceptable time results on the sand when a Sub-200 wash was performed. QC determined that when washed and the material shaken for 30 minutes on the 8 inch round Gilson shaker the results were in tolerance. When previous methods were compared, the # 100 sieve was out by 2%. This results in the # 100 sieve failing specification requirements. To date this material has not been used to place Specification concrete however several Non-Specification placements have been made.

(2) It was noted that material finer than No. 200 sieve in the sand was 5.4 % when washed and sieved in accordance with the new shake time. It is indeterminate if the 5.0 % limit can be increased to 7 % as QC is unable to determine if the material finer than the # 200 sieve consists of the dust of fracture and is essentially free of clay or shale.

There is no way to compare other material used prior to the present procurement as we do not have any material to test. Therefore it is indeterminate if this would have resulted in material used for specification concrete being out of Specification requirements.

Note: To date all compressive strength tests performed on all mixes exceed the minimum requirements as established by their individual specification sections.

Alternate Acceptance of Wulfenstein Pit Aggregate Attachment I BABEE0000-01717-0210-00003 REV 00 PI-4 of I-9

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3/02/98

NCR YMSCO-98-0016

Conditional Release

Justification:

The present batch of fine aggregate from Wulfenstein has not met the extremely fine end of the sieve analysis requirements of ASTM C 136 paragraph 8.4 and ASTM C 33 Table 1.

As per ASTM C 136 paragraph 8.4, the No. 100 sieve was out of tolerance by 2% resulting in failing the specification requirements.

As per ASTM C 33 Table 1, it was noted that material finer than No. 200 sieve was 5.4% when washed and sieved. It is indeterminate if this material is essentially free of clay or shale in which case the limit of % passing would be 7% and the material would be passing.

cfu³ Until further testing is completed, the fine aggregate may be used for concrete applications but traceability of the location of the concrete is required. The Hold Tag will reflect the condition of this requirement.

The fine aggregate is satisfactory for all shotcrete applications.

E 1/12/98

On going tests will determine the suitability of this material for both concrete and shotcrete. To date all compressive tests performed on all mixes exceed the minimum requirements as stated in the respective specification sections.

Name: Ihal R Gauch Organization: A/ETitle I Date: 3/3/98

OQA Date 3/3/98

NAME: John S. Marton Org.

Alternate Acceptance of Wulfenstein lit Aggregate Attachment I BABEE0000-01717-0210-00003 REV00 pI-5 of I-9

4/09/98

NCR YMSCO-98-0017

Conditional Release

DRIGHT. original Red pa 1:1

Justification:

Continued purchasing of Wulfenstein sand for shotcrete and non-Q concrete may continue under the continuous use purchasing order. Testing and evaluation is ongoing as required in the original Conditional Release dated 3/02/98. Traceability of the location of the batch non-Q concrete shall continue as stated in the original Conditional Release.

Name: Kallala Organization: 505 unface title Date: 4/9/98 Name: Lhale R Gamer Title: Title III Sup Date: 4/9/98 Approval of Disposition

OQA Concurrence with Disposition: Corrective Action: [] No [] Yes No._ [] Reportable [] Nonreportable Organization: OAA Date: 4/ Name:

2) Page 1 of 1 Determination, Decision, or Directive Documentation 2) Tracking Number: 41 AE: Derig 58_01F Januard W, Keifer Dispect Driving Document(s) NCR + YMSCO SH-0017 ASTM C 33 - 97 71 Decision, Determination, or Directive QQA-QC is directed to test the manufactured sand (fine aggregate) from the Wulfenstein Pit to ASTM C 142 - 78 (reapproved 199 Document the results to the nearest percent and attach to the NCR. 1) Criteria or Basis for Decision, Determination, or Directive: he directive is made to determine the "Weight Percentage of Material" limit for material finer than No. 200 sieve from Table 1 of STM C 33 (see NCR). ASTM C CS1 and Simits the material finer than No. 200 sieve from Table 1 of 5 material of the thon No. 200 (75 m) sieve to 3.0% for concrete subject to a bransion uf 5.0% for all other concrete, with an conditional exception which allows the limits to be increase for manufactured sand to 5 am %, respectively. These conditions are; fines be the dust of fracture and material composition be essentially free of clay or shale. Comments: must No. 200 material from manufactured sand meets the definition "fines are the dust of fracture" if it is prepared from crushing errize material for finable material is a suitable method. A result of 0% (< 0.5% rounded to an exception which allows the limits No. 200 material is essentially free of clay or shale. Comments: material is sufficient to indicate that the minus No. 200 material is essentially free of clay o		•		1) QA:	N/A
Determination, Decision, or Directive Documentation a) Tracking Number: 41 A&: 41				2) Pag	gel of 1
1) Tracking Number: 4: AE: Junder Multiple 5: Date: 98-01F Jerald W, Keifer 05/13/98 1) Appropriate Driving Document(s) NCR # YMSCO 98-0017 NSTM C 33 - 97 1) Decision, Determination, or Directive 0QA-QC is directed to test the manufactured sand (fine aggregate) from the Wulfenstein Pit to ASTM C 142 - 78 (reapproved 199 Document the results to the nearest percent and attach to the NCR. Criteria or Basis for Decision, Determination, or Directive: te directive is made to determine the "Weight Percentage of Material" limit for material finer than No: 200 sizes from Table 1 of STM C 33 (see NCR). ASTM C 33 limits the material finer than No. 200 (75 m) size to 3.0% for all other concrete, with an conditional exception which allows the limits to be increase for manufactured sand to 5 an K, respectively. These conditions are; fines be the dust of fracture and material composition be essentially free of clay or shale. Comments: nus No, 200 material from manufactured sand meets the definition "fines are the dust of fracture" if it is prepared from crushing resize material of storesing plant. Since the different size fractions of the manufactured sand res from the suble of clay or shale. Comments: nus No, 200 material from manufactured sand meets the definition "fines are the dust of fracture" if it is prepared from crushing resize material of storesing plant. Since the different size fractions of the manufactured sand res from the suble discle, the of clay or shale is defined as a mixture of clay or shale is the precent	ſ	Determination, Decision, (or Directive Doc	umentation	
B) Tracking Number: 4 AFE: Jundit Mark Mark Mark Mark Mark Mark Mark Mark				······································	
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Alternate Acceptance of Wulfenstein Pit Aggregate Attachments BABEE 0000-01717-0210-00003 REV 00 0I-7 of I-9

Test: Clay Lumps and Friable Particles in Aggregates, (ASTM C-142) $\vec{\neg}$ S Macerial Description: FINE AGERECATE Date Sampled: 06/30/98 Material Sources: WULFENSTEIN DONS TRUCTION Date Tested: 07/01/95 Quantities Represented by Report: 384.2 TONS

Control No.	Sieve Size	Original Sample Z	Before Test	After Test	Loss I Loss I
411297	<i><i>F</i>1<i>L</i>.</i>	100 th	224,2	2:23.4	0.357 0.357
	>				
			NIA WILL O	7/21/98	¯,
		· · · · · · · · · · · · · · · · · · ·	· .		
TOTALS		180%	224.2	223,4	<u>0.357</u>

Tested By: William A. Alina,

Project Specification (Maximum) = 3.0% Results comply/do not comply with project requirements.

Balance No. YICLIG CALDATE: OU/15/94 DUE: 12/15/98

Oven No. 411707 CALDATE: OL/10/95 OUE: 12/10/95 WHY 07/01/95 #16 SIEVE: 411287 CAL OFTE: 12/03/9804E: 12/03/988 WHY 07/01/95 #20 SIEVE : Q-12217 CAL OATE: 06/17/98, DUE: 06/17/99 # 20 SIEVE USED to WASH DECANTED Material from # 16 SIEVE Reviewed By:

REFERENCE: DF: 98-01F NOR: 4m500-98-0017

				CIERIZATION PRO	JECT	
4/7/98		SIEVEAN	ASTM C136 - 96	GREGATES	Page	1 of 1
		COMPLETE C	ONLY APPLICAE	BLE ITEMS		
Material Size:	Fine Accrecate	Sample Location:	Area 25. Stockpile	•		
Sampled By (Signa	ture): William H.	flmson	Printed Name:	William H. Johnson	Date:	06/30/98
US Standard Sieve No.	Cumulative Weight Retained (g)	Total Percent Retained	Percent Passing	Specification Requirement	Pass	Fail
3/8"	0.0	0	100	100	X	
# 4	1.0	0	100	95 100	x	
# 8	39.4	7	93	<u>، 80 م</u>	x	
# 16	224.2	42	58	50 85	x	
# 30	350.2	66	34	25 60	x	
# 50	424.9	81	19	10 30	x .	
# 100	472.8	89.6	10	2 10	x	-
# 200	499.1	94.6	5.4	0 5		-X
Sample Weight	(g): Wet:	540.5 Dry:	527.6	200 Wash Dry: 501.2	FM:	2.87
M&T	E	PTL No.	Calibr	ation Date	Calibratio	on Due
Scale:	Triple Beam	Y10669	06/15/	/97	12/15/98	3
Sieve:	3/8"	Y11282	12/03/	/97	12/03/98	3
Sieve:	#4	Y11283	12/02/	/97	12/02/98	3·
lieve:	# 8	Y11284	12/02/	/97	12/02/98	3
ieve:	# 16	Y11287	12/03/	/97	12/03/98	3
ieve:	# 30	Y11288	12/03/	97	12/03/98	3
ieve:	# 50	Y11289	12/03/	97	12/03/98	3
ieve:	# 100	Y11290	12/03/	97	12/03/98	3
ieve:	# 200	Y11291	12/03/	97	12/03/98	3
hermometer.	Oven	Y11707	06/10/	98	12/10/98	}
omments: C	Fradation for clay lum	ips and mable partic	ales lest			
ested By: (Sign	ature)		Printed Name: V	Villiam H.Johnson	Date: 0	06/30/98

Exhibit YLP-10.3Q-OQA.5

Alternate Acceptance of Wulfenstein Pit Aggregate BABEE0000-01717-0210-00003 REV00 Attachment I p. I-9 of 7-9

8/03/98

NCR YMSCO-98-0017

Disposition: Use-As-Is

Justification:

Sampling and testing was completed per the Conditional Release granted on 4/09/98. Results show .357% (0% rounded) of clay lumps and friable particles. Results of the Seive Analysis of Aggregate Report for #200 US Standard Sieve have 5.4 % passing which is higher than the specification requirement of 5.0%. These two tests included in NCR background information.

ASTM C 33 limits the material finer than #200 sieve to 3.0% for concrete subject to abrasion and 5.0% for other concrete, with a conditional exception which allows the limits to be increase for manufactured sand to 5.0 and 7.0% respectively. Conditions are that the dust of fracture and material composition be essentially free of clay or shale. See Attachment I, Determination, Decision, or Directive Documentation, #DF 98-01F by Jerald W. Keifer.

With the conditions satisfied for dust of fracture and material composition, the appropriate-Specification Series 033XX will be revised for the Wulfenstein Pit #1 and Pit #2 manufactured sand to allow 7% passing #200 sieve.

The NCR will be closed upon revision of the Specification Sections.

Approval of Disposition

Title: A/E + f = TI Date: 8/3/98 A/E = Title TI Date: 8/3/98**Recommended** Disposition Loc Gant Title: A/E TitleIII Name: Lla

Attachment II

Yucca Mountain Site Characterization Project Sieve Analysis of Aggregates ASTM C 136.

Civilian Radioactive Waste Management System Management & Operating Contractor

Alterna BABEEC	te Acc <i>epta.</i> 1000-01717-	nce of u 0210-000	Ulfenstein 03 REV 00	n Pit Aggregate	2	А сси р. II-2			
YMP-291-R1 4/7/98	YU	CCA MOUNTA	IN SITE CHARA IALYSIS OF AG ASTM C136	ACTERIZATION PRO. SGREGATES	IECT Page	1 of 1			
		COMPLETE O	NLY APPLICA	BLE ITEMS					
Material Size:		Sample Location:							
Complet Ry (Sign)	Fine Aggregate	<u> </u>	New Shipment	William H. Johnson	Data	05/10/09			
Sampled by (Signa	William	H-flinson		aaman n. Jonnson	Date: 05/19/98				
US Standard Sieve No.	Cumulative Weight Retained (g)	Total Percent Retained	Percent Passing	Specification Requirement	Pass	Fail			
3/8"	0.0	0	100	100	x	· · · · · · · · · · · ·			
# 4	0.0	0	100	95 100	x				
# 8	32.2	6	94	80 100	x				
# 16	208.9	40	60	50 85	x				
# 30	336.4	65	35	25 60	x				
# 50	413.9	80	20	10 30	x				
# 100	463.9	89.8	10	2 10	x	-			
# 200	491.1	95.1	4.9	05	x				
Sample Weigh M& ⁻	t (g): Wet: TE	555.4 Dry: PTL No.	516.4 Calib	200Wash Dry: 495.3 ration Date	FM: 2 Calibratio	2.82 n Due			
Scale:	Triple Beam	Y10797	12/30)/97	06/30/98				
sieve:	3/8"	Y11282	12/03	3/97	12/03/98				
Sieve:	#4	Y11283	12/02	2/97	12/02/98				
Sieve:	# 8	Y11284	12/02	2/97	12/02/98				
Sieve:	# 16	Y11287	12/03	8/97	12/03/98				
Sieve:	# 30	Y11288	12/03	8/97	12/03/98				
ieve:	# 50	Y11289	12/03	3/97	12/03/98				
ieve:	# 100	Y11290	12/03	9/97	12/03/98				
ieve:	# 200	Y11291	12/03	/97	12/03/98				
hermometer:	Oven	Y11709 Wulfenstein	12/18	/97	06/18/98				
leference:	YLP-10.3Q-0QA-R/1	-ICN/0							
ested By: (Sig William	nature) H-flman		Printed Name:	William H. Johnson	Date: 0	5/19/98			
		<u> </u>		l	Exhibit YLP	-10.3Q-OQA.5			

COMPLETE ONLY APPLICABLE ITEMS Auterial Size: New Shipment New Shipment Date: 05/20/98 Auterial Size: New Shipment Date: 05/20/98 US Cumulative Date: 05/20/98 US Cumulative Total Percent Specification Pass Fa 3/8" 0.0 0 100 X # 4 0.0 100 X # 4 0.0 100 X # 4 0.0 X # 4 0.0 X # 4 0.0 X # 4 0.0 X # 4 Y # 5 S <td <<="" colspan="2" th=""><th>Date: 05/20/98 Pass Fail X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X</th><th>MS Johnson ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10</th><th>Wi</th><th>New Shipment Printed Name: Percent Passing 100 100 93 59 35</th><th>COMPLETE C Sample Location: Dungon Total Percent Retained 0 0 7</th><th>Fine Aggregate ture): Mulliam H. Cumulative Weight Retained (g) 0.0 0.8 38.2</th><th>Aaterial Size: Sampled By (Signa US Standard Sieve No. 3/8" # 4 # 8</th></td>	<th>Date: 05/20/98 Pass Fail X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X</th> <th>MS Johnson ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10</th> <th>Wi</th> <th>New Shipment Printed Name: Percent Passing 100 100 93 59 35</th> <th>COMPLETE C Sample Location: Dungon Total Percent Retained 0 0 7</th> <th>Fine Aggregate ture): Mulliam H. Cumulative Weight Retained (g) 0.0 0.8 38.2</th> <th>Aaterial Size: Sampled By (Signa US Standard Sieve No. 3/8" # 4 # 8</th>		Date: 05/20/98 Pass Fail X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X	MS Johnson ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10	Wi	New Shipment Printed Name: Percent Passing 100 100 93 59 35	COMPLETE C Sample Location: Dungon Total Percent Retained 0 0 7	Fine Aggregate ture): Mulliam H. Cumulative Weight Retained (g) 0.0 0.8 38.2	Aaterial Size: Sampled By (Signa US Standard Sieve No. 3/8" # 4 # 8
Atterial Size: Sample Location: Fine Aggregate New Shipment Sampled By (Signature): Him H US Cumulative Standard Weight Retained (g) Percent 3/8" 0.0 0 100 #4 4 0.8 0.0 0 #4 4 0.8 0.0 100 #4 4 0.8 0.0 100 #4 4 0.8 0.0 100 93 80 #16 220.5 41 59 50 85 # 30 346.6 65 35 # 100 475.0 89.0 11 2 10 X X # 200 504.4 94.5 5.5 0 5 M&TE PTL No. Calibration Date Calibration Date calibration	Date: 05/20/98 Pass Fail X X X X X X X X X X X X X X X X X X X	ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10		New Shipment Printed Name: Percent Passing 100 100 93 59 35	Sample Location: Mugon Total Percent Retained 0 0 7	Fine Aggregate ture): William H. Cumulative Weight Retained (g) 0.0 0.8 38.2	Aaterial Size: Sampled By (Signa US Standard Sieve No. 3/8" # 4 # 8		
Fine Aggregate New Shigment ampled By (Signature): William H. Johnson Date: 05/20/98 US Cumulative Total Percent Specification Pass Fa 3/8" 0.0 0 100 100 X Image: Specification Pass Fa 3/8" 0.0 0 100 100 X Image: Specification Pass Fa 3/8" 0.0 0 100 100 X Image: Specification Pass Fa 3/8" 0.0 0 100 95 100 X Image: Specification Pass Fa 3/8" 0.0 0 100 95 100 X Image: Specification Pass Fa 3/8" 0.0 100 95 100 X Image: Specification X Image: Spec	Date: 05/20/98 Pass Fail X X X X X X X X X X X X X X X X X X X	ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10		New Shipment Printed Name: Percent Passing 100 100 93 59 35	Total Percent Retained 0 7	Fine Aggregate ture): William H. Cumulative Weight Retained (g) 0.0 0.8 38.2	US Standard Sieve No. 3/8" # 4 # 8		
Junch Mutuan International Mathematical Mathmatematical Mathematical Mathmathm	Pass Fail X	ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10		Percent Passing 100 100 93 59 35	Total Percent Retained 0 0	Nullian H Cumulative Weight Retained (g) 0.0 0.8 38.2	US Standard Sieve No. 3/8" # 4 # 8		
US Standard Sieve No. Cumulative Retained (g) Total Percent Retained Percent Passing Specification Requirement Pass Fa 3/8" 0.0 0 100 100 X X #4 0.8 0 100 95 100 X #4 0.8 0 100 95 100 X #4 0.8 0 100 95 100 X #16 220.5 41 59 50 85 X #30 346.6 65 35 25 60 X #100 475.0 89.0 11 2 10 X #200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 wate: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11283 12/02/97 12/03/98 <td>Pass Fail Pass Fail x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x</td> <td>ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10</td> <td></td> <td>Percent Passing 100 100 93 59 35</td> <td>Total Percent Retained 0 0 7</td> <td>Cumulative Weight Retained (g) 0.0 0.8 38.2</td> <td>US Standard Sieve No. 3/8" # 4 # 8</td>	Pass Fail Pass Fail x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x x	ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10		Percent Passing 100 100 93 59 35	Total Percent Retained 0 0 7	Cumulative Weight Retained (g) 0.0 0.8 38.2	US Standard Sieve No. 3/8" # 4 # 8		
Standard Weight Retained (g) Percent Retained Passing Specification Requirement Pass Fa 3/8" 0.0 0 100 100 X X #4 0.8 0 100 95 100 X #16 220.5 41 59 50 85 X #30 346.6 65 35 25 60 X #100 475.0 89.0 11 2 10 X #200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due 06/30/98	Pass Fail X	ecification quirement 100 5 100 0 100 0 85 5 60 0 30 10		Percent Passing 100 100 93 59 35	Percent Retained 0 0	0.0 0.8 38.2	Standard Sieve No. 3/8" # 4 # 8		
3/8" 0.0 0 100 100 X # 4 0.8 0 100 95 100 X # 8 38.2 7 93 80 100 X # 16 220.5 41 59 50 85 X # 30 346.6 65 35 25 60 X # 30 346.6 65 35 25 60 X # 30 346.6 65 35 25 60 X # 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due Calibration Due cale: Triple Beam Y10797 12/03/97 12/03/98 eve: 3/8" Y11283	x x x x x x x x x x x x x x x x	100 5 100 0 100 0 85 5 60 0 30 10		100 100 93 59 35	0 0 7	0.0	3/8" # 4 # 8		
3/8" 0.0 0 100 100 x # 4 0.8 0 100 95 100 x # 8 38.2 7 93 80 100 x # 16 220.5 41 59 50 85 X # 30 346.6 65 35 25 60 X # 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due cale: Triple Beam Y10797 12/03/97 12/03/98 eve: 3/8" Y11283 12/02/97 12/02	x x x x x x x x x x x x x x x x	100 5 100 0 100 0 85 5 60 0 30 10		100 100 93 59 35	0 0 7	0.0	3/8" # 4 # 8		
#4 0.8 0 100 95 100 X #8 38.2 7 93 80 100 X #16 220.5 41 59 50 85 X #30 346.6 65 35 25 60 X #30 346.6 65 35 25 60 X #50 423.1 79 21 10 30 X #100 475.0 89.0 11 2 10 X #200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due cale: Triple Beam Y10797 12/30/97 12/03/98 eve: # 4 Y11283 12/02/97 12/03/98 eve: # 8 Y11284 12/02/97 12/02/98	x x x x x x x x x x x	5 100 0 100 0 85 5 60 0 30 10		100 93 59 35	0	0.8	# 4 # 8		
# 8 38.2 7 93 80 100 X # 16 220.5 41 59 50 85 X # 30 346.6 65 35 25 60 X # 30 346.6 65 35 25 60 X # 50 423.1 79 21 10 30 X # 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due Calibration Due :ale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11284 12/02/97 12/02/98	x x x x x x x x x	0 100 0 85 5 60 0 30 10		93 59 35	7	38.2	# 8		
# 16 220.5 41 59 50 85 X # 30 346.6 65 35 25 60 X # 50 423.1 79 21 10 30 X # 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibraton Date Calibration Due Calibration Due 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98	x x x x x x	0 85 5 60 0 30 10		59 35	38.2 7				
# 30 346.6 65 35 25 60 X # 50 423.1 79 21 10 30 X # 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due cale: Triple Beam Y10797 12/30/97 06/30/98 eve: # 4 Y11282 12/02/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98	x x x x	5 60 0 30 10		35	41	220.5	# 16		
# 50 423.1 79 21 10 30 X # 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibraton Date Calibration Due Calibration Due cale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98	x x	0 <u>30</u> 10	-	1	65	346.6	# 30		
# 100 475.0 89.0 11 2 10 X # 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibration Date Calibration Due Calibration Due cale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98		10		21	79	423.1	# 50		
# 200 504.4 94.5 5.5 0 5 X ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibraton Date Calibration Due cale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98	x		1	11	89.0	475.0	# 100		
ample Weight (g): Wet: 575.1 Dry: 533.6 200WashDry: 507.2 FM: 2.82 M&TE PTL No. Calibraton Date Calibration Due cale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98		5		5.5	94.5	# 200 504.4			
M&TE PTL No. Calibration Date Calibration Due cale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98	FM: 2.82	hDry: 507 2	200	533.6	575.1 Drv:	nple Weight (g): Wet: 575.			
tale: Triple Beam Y10797 12/30/97 06/30/98 eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98	Calibration Due	ite	brate	Calib	PTL No.	M&TE			
eve: 3/8" Y11282 12/03/97 12/03/98 eve: # 4 Y11283 12/02/97 12/02/98 eve: # 8 Y11284 12/02/97 12/02/98	06/30/98		0/97	12/30	Y10797	Triple Beam	ale:		
eve: #4 Y11283 12/02/97 12/02/98 eve: #8 Y11284 12/02/97 12/02/98	12/03/98		3/97	12/03	Y11282	3/8"	eve:		
eve: #8 Y11284 12/02/97 12/02/98	12/02/98		2/97	12/02	Y11283	#4	eve:		
	12/02/98	<u> </u>	2/97	12/02	Y11284	# 8	we:		
eve: #16 Y11287 12/03/98 12/03/98	12/03/98	•	Y.S.	120	Y11287	# 16	eve:		
eve: # 30 Y11288. 12/03/97 12/03/98	12/03/98		<u>3/9</u> 7	12/03	Y11288.	# 30	eve:		
eve: # 50 Y11289 12/03/97 12/03/98	12/03/98		3/97	12/03	Y11289	# 50	eve:		
eve: # 100 Y11290 12/03/97 12/03/98	12/03/98		3/97	12/03	Y11290	# 100	eve:		
eve: # 200 Y11291 12/03/97 12/03/98	12/03/98		<u>3/9</u> 7	12/03	Y11291	# 200	ve:		
ermometer: Oven Y11709 12/18/97 06/18/98	06/18/98		3/97	12/18	Y11709		ermometer:		
YLP-10.3q-OQA-r/1-ICN/0					<u>CN/0</u>	LP-10.3q-0QA-r/1-10	Y		
Sellin H. Johnson Date: 05/20/98	Date: 05/20/98	H. Johnson	Will	Printed Name:	F	ture) K. Almson	ted By: (Signa		

BABEEd	ate Acc 1000-017	eptance 17-0210	-00003 1	enstein Pith REV 00	ggregate	Аса р <i>I</i> – 4			
YMP-291-R1 4/7/98	YU	ICCA MOUNTA SIEVE AI	IN SITE CHARA NALYSIS OF AG ASTM C136	CTERIZATION PRO	OJECT Page	<u>1</u> of <u>1</u>			
		COMPLETE O	ONLY APPLICA	BLE ITEMS					
Material Size:		Sample Location:	New Shipment		·····				
Sampled By (Signa Willia	ature):	eon	Printed Name:	William H. Johnson	Date:	05/20/98			
US Standard Sieve No.	Cumulative Weight Retained (g)	Total Percent Retained	Percent Passing	Specification Requirement	Pass	Pass Fail			
3/8*	0.0	0 .	100	x					
# 4	0.6	0	100	95 100	x				
# 8	38.8	7	93	80 100	x				
# 16	237.2	41	59	50 85	x				
# 30	374.9	65	35	25 60	x				
# 50	458.1	80	20	10 30	x				
# 100	513.1	89.4	11	2 10		x			
# 200	542.8	94.5	5.5	0 5		x			
Sample Weight	(g): Wet:	606.8 Dry:	574.2	200WashDry: 546.4	FM:	2.83			
M&T	E	PTL No.	Calibr	raton Date	Calibratio	on Due			
cale:	Triple Beam	Y10797	12/30	/97	06/30/98	3			
ieve:	3/8"	Y11282	12/03	/97	12/03/98	3			
lieve:	# 4	Y11283	12/02	/97	12/02/98	3			
ieve:	#8	Y11284	12/02	/97	12/02/98	3			
lieve:	# 16	Y11287	12.03	SY `	12/03/98	3			
ieve:	# 30	Y11288	11/2/03/	/97	12/03/98	3			
ieve:	# 50	Y11289	12/03/	/97	12/03/98				
ieve:	ve: # 100 Y11290			/97	12/03/98				
ieve:	# 200	Y11291	12/03/	97	12/03/98				
hermometer.	Oven	Y11709	12/18/	97	06/18/98				
omments: S	LP-10.3Q-OQA-R/1	-iCN/0	ere Slacked						
ested By: (Sign William	H. flinson	_	Printed Name: V	William H. Johnson	Date: (05/20/98			
	/				1				

Exhibit YLP-10.3Q-OQA.5

Z1

Altern	ate Acce	ptance a	of Wulter	nstein Kit DEUM	Agg rega	te Ata
ISA BEE	YU	ICCA MOUNTA	IN SITE CHARA	ACTERIZATION PR	OJECT	P#-3
4/7/98		SIEVE AI	NALYSIS OF AG	GREGATES	Page	<u>1</u> of <u>1</u>
		COMPLETE O	ONLY APPLICA	BLE ITEMS		
Material Size:		Sample Location:				
	Fine Aggregate	1	New Shipment	14 CM		
Sampled By (Sign	ature): William &	+- fluson	Printed Name:	William H. Johnson	Date:	05/21/98
US Standard Sieve No.	Cumulative Weight Retained (g)	Total Percent Retained	Percent Passing	Specification Requirement	Pass	Fail
3/8"	0.0	0	100	100	x	
# 4	0.4	0	100	95 100	x	
#8	41.1	8	92	80 100	x	
# 16	234.6	43	57	50 85	x	
# 30	365.2	67	33	25 60	x	
# 50	441.4	81	19	10 30	x	
# 100	490.4	90.0	10	2 10	x	-
# 200	516.5	94.8	5.2	0 5		x
ample Weigh	t (g): Wet:	581.6 Dry:	544.9	200WashDry: 518.9	FM:	2.89
M&	TÉ	PTL No.	Calib	ration Date	Calibratio	on Due
cale:	Triple Beam	Y10797	12/30	/97	06/30/98	
eve:	3/8*	Y11282	. 12/03	/97	12/03/98	
eve:	#4	Y11283	12/02	/97	12/02/98	
ieve:	# 8	Y11284	12/02	/97	12/02/98	
ieve:	# 16	Y11287	12/03	197 COPY	12/03/98	
ieve:	# 30	Y11288	ORMA 12/03	/97	12/03/98	
eve:	# 50	Y11289	12/03	/97	12/03/98	
eve:	# 100	Y11290	12/03	/97	12/03/98	
eve:	# 200	Y11291	12/03/	/97	12/03/98	
nermometer:	Oven Sampled load # 5 befo	Y11709	12/18/	/97	06/18/98	
eference:	YLP-10.30-00A-R/1	-ICN/0				
ested By: (Sign N'illian	nature) . H filmean		Printed Name: \	William H. Johnson	Date: 0	5/21/98
				·····	Exhibit YI P	-10.30-00A.5

YMP-291-R1	YU	ICCA MOUNTA	IN SITE CHARA	CTERIZAT	ION PROJ	IECT			
/7/98		SIEVE AN	IALYSIS OF AG ASTM C136	GREGATE	S	Page	1 of 1		
······································		COMPLETE C	NLY APPLICA	BLE ITEMS					
Naterial Size:		Sample Location:	New Chiement						
Sampled By (Sign	Pipe Aggregate	1/ ()-	Printed Name:	John K. Dever	3	Date: 05/22/98			
	APUM	R alver	4						
US Standard	Weight	Percent	Percent	Specif	ication	Pass	Fail		
Sieve No.	Retained (g)	Retained	Passing	Requir	ement				
3/8"	0.0	0	100	10	x				
# 4	0.0	0	100	95	x				
#8	41.0	7	93	x					
# 16	228.0	42	58	x					
# 30	359.5	66	34 C DP	1 25	60	x			
# 50	438.0	79 p M	AT1017	10	30	x			
# 100	475.0	LNF0 188.2	12	2	10		 X		
# 200	504.4	93.0	7.0	0	5		×		
ample Weigh	t (g): Wet:	578.0 Dry:	548.5	200Wash C)rv: 530.5	FM: 2	2.81		
M&	TE	PTL NO.	Calib	ration Date		Calibratio	n Due		
cale:	Triple Beam	Y10797	12/30	06/30/98					
eve:	3/8"	Y11282	12/03	12/03/98					
eve:	#4	Y11283	12/02	/97		12/02/98			
eve:	#8	Y11284	12/02	/97		12/02/98			
eve:	# 16	Y11287	12/03	/97		12/03/98			
eve:	# 30	Y11288	12/03	/97		12/03/98			
eve:	# 50	Y11289	12/03	/97		12/03/98			
eve:	# 100	Y11290	12/03	/97		12/03/98			
eve:	# 200	Y11291	12/03/	97		12/03/98			
ermometer:	Oven	Y11709	12/18	/97		06/18/98			
	Sampled Load #6 befo	ore it was stacked	ONE 05/22	198					
mments:	YLP-10.30-00A-R/1-	-ICN/0 7 /							

Alternate Acceptance of Wulfenstein Pit Aggregate Attachment IL BABEE0000-01717-0210-00003 REV 00 pII-7 of I-7

YMP-291-R1	YU	CCA MOUNTA	IN SITE CHARA	CTERIZATION PRO	JECT	
4///98	·	SIEVEAN	ASTM C136 - 96	Sa	Page	_ of <u>1</u>
		COMPLETE C	NLY APPLICAE	BLE ITEMS		
Material Size:	Eine Aggregate	Sample Location:	Area 25 Stocknile			
Sampled By (Signa	iture): William H.	flmson	Printed Name:	William H. Johnson	Date: 0	6/30/98
US Standard	Cumulative Weight	Total Percent	Percent	Specification	Pass	Fail
Sieve No.	Retained (g)	Retained	Passing	Requirement		
3/8"	0.0	0	100	100	X	
# 4	1.0	0	100 '	95 100	x	
# 8	39.4	7	93	80 100	x	
# 16	224.2	42	58	50 85	x	
# 30	350.2	66	34	25 60	x	
# 50	424.9	81	19	10 30	x	
# 100	# 100 472.8		10	2 10	x	
# 200	499.1	94.6	5.4	0 5		X
Sample Weight	t (a). Wet	540.5 Drv:	527 6	200 Wash Day 501 2	EX4: 2	97
M&T		PTL No.	Calib	ration Date	Calibratio	n Due
Scale:	Triple Beam	Y10669	06/15	5/97	12/15/98	
Sieve:	3/8"	Y11282	12/03	/97	12/03/98	
Sieve:	#4	Y11283	12/02	/97	12/02/98	
Sieve:	#8	Y11284	12/02	/97	12/02/98	·····
Sieve:	# 16	Y11287	12/03	/97	12/03/98	
Sieve:	# 30	Y11288	12/03	/97	12/03/98	
Sieve:	# 50	Y11289	12/03	/97	12/03/98	
Sieve:	# 100	Y11290	12/03	/97	12/03/98	
Sieve:	# 200	Y11291	12/03	/97	12/03/98	
hermometer:	Oven	Y11707	06/10	/98	12/10/98	
Comments:	Gradation for clay lun	nps and friable partic	cales test	· · · · · · · · · · · · · · · · · · ·	<u></u>	
ested By: (Sign Nv Illia	mature) M. flin	ton.	Printed Name:	William H.Johnson	Date: 0	6/30/98

Exhibit YLP-10.3Q-OQA.5

Attachment III

Selected ECRB And ESF Loop Intersection Shotcrete Placement Logs Correlated, By Test Panel Number, With Compression Test Reports (Cores). Alternate Acceptance of Wulfenstein Pit Aggregate

Attachment III ATT-2 of III-8

BABEE0000-01717-0210-00003 REV 00

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Ser Ser Street

	KIE YUCCA MOU SHOTCRETE P	WIT/PB NTAIN PROJECT PLACEMENT LOG	Page 1 of Z
Date: 2/18/98 Shift: D	Recorder: C	othia Sundberg	
Certified Nozzie Operat	or. Michael Howkin	45 Test Panel No.: 07	21898-DI
Location: SCPB 0+14	120 to 0+26 ESF 19+80	Rib Ambient Air Temp.: 4	9° Shotcrete Temp.: 50°
Hot/Cold Weather Requ	urements Applicable: [] Yes	No If Yes, Identify Spe	cial Precautions Taken:
			•
		· ·	
A/E Approval:	touch Fil	La Date:	2 18 93
TCO Concurrance.	sentop	Date:	2-18-98
		Dry Mix Predampe	med: [] Yes [] No [X] N/A
Mix No.: 505 A	dmixture Type(s) (if used):	Shotset 250	Admixture Quantity: 40 02
Batch No.	Mix Time	Delivery Time	Discharge Time
0336	0821	0847	0900
337	0923	0943	0955
-0338	1003	1-1021-	<u>(3</u> =/17/94
0339	1051	1126	1/33
0340	1149	1212	1220
0341	1246	1305	1312
Total Quantity Shotcrete	Placed: ZZ CY		
Incomplete Items List:	ALL GROWD Sui	PORT ROCK BOL	TS AND WWF
ARE JUSTA	LED FOR EC	RB STARTER TU	WEL DK TO
BEEN SHOT	CRETE PLACE	EMENT THOMAGE	Wilson Thomas trailed
No Incomplet	le Items.	02/.	1748 & LOWLIT
Note: Batch 0	338 was reject	ed for too high	Slump, Jong
placed.	Approximately 2	Cy of Batch O	341 placed
tist & Katches	placed at/ StarterAl	nix lemp to 520,	Kemainder 60
Shift Engineer	Man XII Mallery	P Cynthia Sund B	<u>erg</u> <u>2/19/98</u> Date
		- AMARKA FIGHT	WITH THE ACTION TO STAN TO LE REV. 0

Alternate RARFERMON-C	Acceptance of 1	Wulfenstein fit A Rev. op	ggregate Attachmenn pⅢ-3 of Ⅱ
BAUCEDUC	KIE YUCCA MOU SHOTCPETTER	WIT/PB NTAIN PROJECT	Page 2 of 2
Date: 2/18/48 Shift: 1	A, Recorder:	inthia Sundberg	
Certified Nozzie Open	nor Michael Haulk	ing Test Panel No .: <	as that I
Location: See R	ige I	Ambient Air Temp.: 5	7° Shotcrete Temp.: Stoff
Hot/Cold Weather Rec	uirements Applicable: [] Yes	[A No If Yes, Identify Spec	al Precautions Taken:
A/E Approval:	See Page 1	Date:	- N/4
TCO Concurrance:	See Dave 1	Date:	NIA
		Dry Mix Predamper	ed: []Yes []No [/]N/A
Mix No.: 505	Admixture Type(s) (if used):	Shotset 250 A	dmixture Quantity: O
Batch No.	Mix Time	Delivery Time	Discharge Time
0342	1326	1350	1400
		-M-	
otal Quantity Shotcrete	Placed: See Hagei		
complete Items List:	N/A		
	1		
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 	AP 1/-		- dialag
ft Engineer.	New Mindula	Lynthia Jund	Berg 419/90

P-286-R(01/97)			YUCCA	MOUNT COMPR	ain si' Iessio	re Ch/ N tes	ARACT T REPO	TERIZAT	ion pro Dres)	JECT		Page Work Pa Traveler QA: Ye	/ of ockage No Line Itam s No	28.1	
s Set No.:	میں <u>منہ محمد</u>	Mate	rial:	بكناين ويوديها بديري					Ť	ime Placed:			Date Cor	ed:		
1711 19	94 D		605	SHOTC	RETE						5			02/20198	, 	
ement No.:			Quantity Re	presented:		Strength	Requirem	ents:	Â	oplicable A/E ABEPOCCC	E Specificat	ion: .747-083	Tested 1	0 AS1M C42-:	94	
	<u>755</u>	<u> </u>	2	1 403		SAG	P5, @ ;	2904		.00/297	7-042:4 84	997-0039	2	0.10		Ì
		Equi	ipment Used	j 					BTE ID No.			Calibration	Date	Candra	uon Due	
-		Cal	LI PER					4119	753			1151	7	<u>E4/1</u>	5198	
		* 100	LNBY					4118	02		03	1061	97	0310	6/98	(2)
		THER	n rownie	TR: A				4117	109		12	1181	97	06/18	198	ľŚ.
	· . L.	The Cas	FT. 22 0	E da de A				4150	60		19	1161	97	03/16	198	
Test	Test	Date	Time	Tested	Moisture Condition	Sampl	e Diamete	er (1m.)			X-Sect	Мак	Type of Fracture	Comp.	Core	
Sample No.	Age	Tested (mmddyy)	(hhmm)	(initiels)	at Time of Testing	1	2	Avg	Uncapped	Capped	(Sq. In.)	Load	(C39. Fig 2)	Fine 30	Index No.	ガ
	3	02/21/29	12:05	TEW	MUISÍ	3,29	3.29	3.290	6.44	6.63	8,50	30000	SHEAR	3528	2	1)2)
2	3	C2/21/98	12:09	TEW	MUIST	3.29	3,29	3.240	4,46	6.60	8,50	355++	SHERK	4156	2	15
3	7	12/25/98	1202	WH3	NEIST	3,29	3.29	3.290	6.44	4.58	8.50	54500	SHA/Cave	4410		
4	7	02/25/98	1205	045	MOIST	3.29	3.29	3.290	6.50	4.63	8.50	56000	COVE	4590		18
6	28	03/18/84	0850	WHJ	MUIST	3,29	3.29	3.29C	6,45	4.58	8.50	30510	CONE	4470		12
6	28	103118198	0855	WHJ	Naisi	3,29	3.29	3.29C	4.45	6.59	8.50	19.500	SHEAR	9350	<u> '</u>	-1 (*
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N/A				 	ļ	-		1							_ <u></u>	- I-
NIA			<u> </u>		<u> </u>	<u> </u>	1	1	1	1	<u> </u>					-
Defects in s Direction of	load with	or caps ye	horizontal p	n Type o	¥ dafect: /V naterial as plac	ed: PAN	PAND	IO ULI	+n	<u></u>			Offigin	AL		
Average Da	y Strengt	h: 33 50	Ps;	Average Da	IT Strength:	1,5 A' P.	5/	Averag	e Day Stren イギレチ	gth: <u>941(</u> Y	p psi	Ave	age Day Sti N/A	rength: _/V/	PSI @ Day	1
	044	PS	W Day		RECALIA	RATED	0310	2/98	Dun:0.	3/102/99	10.000	<u> </u>			, i di e olij	-
REFEREN	U 360 Ve 31 44	p-10,60-00	91. Rão, 6 0	** 1 **	l'iz corpira	7 U7 598-0	157001 DOID CAN	W 3-	4-98;	CAL DATA	e : 01/01	7/98 U	48:07,	107198		
D.26 B	ABE	E0000 -01	717-210	0-4031	1-AAU.OUI	1EAR	4-04	WH 3	3-18-54	RESI	PONSIB	is Pr	STE	PHEN R.	DANA	-
Inspector S	ignature:	"AI	-		Printe	d Name:	. 11	Jak			Dat	e: ~	19 194			
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Alternate Acceptance of Wulfenstein Rit Aggregate Attachment III BABEE0000-01717-0210-00003 REV 00 pIII-5 of III-8

Page I of 2 Clarification: 2 CS 1/30/98 KIEWIT/PB YUCCA MOUNTAIN PROJECT SHOTCRETE PLACEMENT LOG Juntera Date: 244 98 Shift: / Win Recorder. inhia 12, 1298-51 Test Panel No .: Certified Nozzle Operator. M. 1000 1º Shotcrete Temp.: 58° Ambient Air Temp.: Location: ECRB 0+11-0+1420 and ES Hot/Cold Weather Requirements Applicable: [] Yes [] No IF Yes, Identify Special Precautions Taken: CB 2/2/98 clarification. 212 98 Date: A/E Approval: 120/98 Date: TCO Concurrance: Dry Mix Predampened: [] Yes [] No [X] N/A Admixture Quantity: 1078 z Mix No.: 505 Admixture Type(s) (if used): Shotset Discharge Time **Delivery** Time Barch No. Mix Time 10:04 908 292 0806 293 1104 りくへ 1216 1200 32 294 202 295 1228 1258 1245 7.910 312 134 1450 791 408 Total Quantity Shotcrete Placed: 44 - C d Incomplete Items List: N/4 Q.C. APPROVES PLACEMENT SER TAFE JEW. cafer 48 Thomas E. 4 shift Engineer. Printed Name Signat SHOTCRETER ACCMENTLOG FRM TCF-121 REY, D

Alternate Acces	stance of Wulfe	enstein fit Aggregat	te Attachment
SABEE 0000 - 0171	7-0210-00003	REVOD	р III-6 о F III-
	KIE YUCCA MOU SHOTCRETE P	WIT/PB NTAIN PROJECT PLACEMENT LOG	Page Z of Z
ate: 2/2/98 Shift: Da.	Kwing Recorder. Ru	fino Cruz, Cinthia	Sundberg Dave Bus,
Certified Nozzle Operator	Michael Hay	King Test Panel No .: Se.	e Page I
Location: See Page	7	Ambient Air Temp.: [/ Shotcrete Temp.: 580
fot/Cold Weather Requir	ements Applicable: [] Yes	No If Yes, Identify Spec	ial Precautions Taken:
		•	
VE Approval: See	Hage I	Date:	
CO Concurrance: Se	e page I	Date:	
	L *	Dry Mix Predamper	ned: [.] Yes [] No [/] N/A.
fix No.: 505 Adr	nixture Type(s) (if used): \le	hotset 250	dimixture Quantity: Sep Page
Batch No.	Mix Time	Delivery Time	Discharge Time
298		1530	1550
299	1610	1650	1707
300	1726	1750	. 1758
301	1812	1835	1845
302	1856	1942	1953
		<u> </u>	<u>].</u>
Stal Quantity Shotcrete P	laced: Jel Pl	ree L	
complete Items List:	SEE P. lof2		
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At Engineer:(2e tage I	Part and Minute	Date
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ores Set No	.:	Ma	terial:	6 6415					·····	Time Placed:	-7		Date Cor	ed:	98
0202	18D1		Overtity 9	5 SNO/ (IKE/E	Strength	Becutivez			Applicable Al	f IF Specific	tion	Tested T	ASTM C42-	911
75	 3		21	g yp3		50W	PSi Q	28 <i>0•</i> 7	, 6	ABELOCUP	01717-63	02-03363 7-0139	-01	405 (383	-2-98
		Eq	uipment Use	d	······································		[M	STE ID No			Calibration	n Date	Calibrat	ion Due
		<u> </u>	ALIPER					4119	53			10/151	97	04/1	5198
		FC	RNEY					4118	03			13/06/	97	03/0	6198
		THER	nc me Te	R			9	1170	29	1		2/18/	97	06/1	8198
		TEMPERT	ure Re	CORDER			Ý	1500	° <i>C</i>		l	91161	97	63/10	198
Test Sample No.	Test Age	Date Tested (mmddyy)	Time Tested {hhmm)	Tested by: (Initials)	Moisture Condition at Time of Testing	Samp) 1	e Diamete	ar (in.) Avg	Uncapped	Capped	X-Sect Area (Sq. In.)	Məx Load	Type of Fracture (C39. Fig 2)	Comp. Strength (psi)	Core Grading, Index No.
I.	3	02/65/99	1358	WHJ	Moist	3.30	3,30	3.300	6.47	4.40	8.55	37500	CONE	4390	1
2	3	C2/05/99	1401	WHJ	NOIST	3,3C	3.30	3,300	4.45	6.60	8.65	37000	CONE	4330	
3	7	02/09/99	1345	WHJ	Moist	3.28	3.28	3,280	6.46	4.60	8.46	57800	CONE	67.50	
- 4	14	02/09/98	1350	WHJ	MUIST	3,28	3.28	3,280	4.49	4.40	8.75	53000 91500	CHEMANNE	10710	
<u> </u>	18	13/02/98	0855	WNJ	MEIST	3.28	3.28	3.190	6,47	12.59	8,45	89000	CONF	10.530	1
NIA															
NIA														ļ	alla -
NIA	<u> </u>	L	<u> </u>	l	L	I		1			L	1		1	<u> </u>
efects in sp	ecimens	or capsy	es 🕅 no	Туре о	f defect: W/9			·						CRIGINAL red	
irection of i	oad with	respect to the	horizontal p	an of the ma	aterial as place	d: PER	PAND	icula	r						
Average Day	Strength	- <u>4360</u> PS	@ Day	Average Day	Strength: <u>2</u> DAY	430 P	<u>е</u> Дау	Average	Day Stren Stren	gth: <u>1062</u> /	Ø / 5/. PSI @ Di	Aver	age Day Stro N/A	ength: <u>///</u>	9 PSI @ Day
Comments: (REFEREN	1370) 107: 41	N ECRO P-10.6 Q-0	DRIFT QA-REU.	0 - 1 CN - 4	n Dwg.	BABE	E Ø1 10	- 01717	-2 <i>100 -</i> 4	0 WAT 0 311-REV	13/02/98 1. 02/ECI E9	9-0010	CA ERECTION	s a-17-98	
nspector Si Lill	<u>si BLE</u> gnature: Unit	N. Usi	en c	<u>K. PBNA</u>	Printed	Name: LUIT	line 1	H- Jol	hason		Da	te: 03/	102/98		
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'MP-286- 0/01/97	RÛ	 _		YUCC	A MOUNT COMPI	AIN SI RESSIO	TE CH N TES	ARAC	FERIZAT ORT (CC	rion Pro Dres}	OJECT		Page Work Pa Traveler QA: Yes	/_ of ckage No. <u>2</u> Line tom <u>3</u> s No	28.1
ores Set No.		Mat	erial:	n E S An	TARFTE					fime Placed:	01		Date Corr	ed:	3
016 41	• • •		50	3 3 4 6	<u> </u>	Course to	Demoire			/0	λų E Sacailian	Ale	Tested T	A/1////	
acement No	 7 <i>5</i> 3		Quantity F	Apresented:		5000 /	equiren کر ک ^و	1804		ADII & OCOU ADII & OCOU ADII & OCOU	-01117 -63 -01117 -63	1011. 101 - 0 3363 17 - 02 3 9	- TBackQ T		94
		Equ	ipment Use	ad ∙				N	&TE ID No.	· · · · ·		Calibration	Date	Calibrat	tion Due
		CA	LIPER	-				41193	53		10	1151	97	0411	5198
		FOI	RNEY					41180	<i>י</i> 3		0:	3/06/	77	0310	6198
		THERW	a me Ti	¢Л				41170	29	i	12	11819	17	06/19	5/98
	T	NO DEA TIL	THE RE	CORDER	!		ς	1500	0		C	9/16/	77	03/16	198
Test Sample No	Test Age	Date Tested (mmddyy)	Time Tested (hhmm)	Tested by: (initials)	Moisture Condition at Time of	Sampi	e Diamate	or (10.)			X-Sect Area (Sq. in.)	Max Load	Type of Fracture (C39. Fig. 2)	Comp. Strength (psi)	Core Grading Index No.
	- <u>-</u>	00/00/00	1515	1.1.1.2	l esting	7.00	7 16	AV0	Uncappeo		0.50	7050	00.07	7591	
	3	02/05/77	15/5	WHY	Mair	3.29	3.24	7.140	6.47	1 59	9.50	3150	ANKE	38212	<u>├;</u>
<u></u>	7	\$2/09/98	1254	WHY W	MAIST	3.29	3.29	3.290	2.44	6.57	8.50	53.500	STEAR	6330	1-1-
	7	02109199	1357	WHJ5	MBIST	3.29	3.29	3.290	6.45	6.58	8.50	49500	SHRAR	5920	1
5	28	03/02198	0902	NHT	MOIST	3.24	3.29	3.290	4.31	4.49	8.50	7000	CONE	8240	1
4	28	03/02/98	6908	WHJ	Meisi	3,29	3.29	3.190	6.42	4.55	8.50	82000	SHE/Cont	96.50	
NIA				<u></u>			L				ļ				
Nin				·								-			1.10
IN/A	<u> </u>	<u> </u>	L	<u> </u>		<u> </u>	L	1	l	<u> </u>	İ		1		1- <u>N/4</u>
Defects in sp	ecimens (or caps 🔲 ye	s [X] no	а Түре с	of defect: ////	L								CAREERSAL 404	
Direction of	load with	respect to the	horizontal p	lan of the m	aterial as place	d: PER	PAND	ICULA	2.						
Average Da	Strength	3765 PS	/	Average Da	y Strength: 4	275 P.	<u>5,7</u>	Average	Day Stren	gth: <u>8948</u> AV	<u>PS;</u>	Aver	age Day Stre	ngth: <u>N</u>	
Comments:	11570	A KSF	EC RA	ORIFI		F31	W Day				121 6 12	Y			1 STE Day
REFIER	SNCE	YLP-10.6	Q-0QA	-REV.00	-ICN.00	D-666	BABL	E <i>E 00</i> 00	- 61717 -	2100 - 4	0311-	RAU. OC	698.00	-09 NO EFFEC	rive 2-17-9
1 <u>3 # \$? @ A</u> Inspector Si	<u>i S 1340</u> Onaturo:	H. H.	STEP.	YISN' R	Printed	Name: L	illia	p. H.	Jehne	5.81)	Date	n: 193/	112/98		

Sugar Sec. 31

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