

MX SITING INVESTIGATION  
GEOTECHNICAL EVALUATION

PRELIMINARY GEOTECHNICAL INVESTIGATION  
PROPOSED OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY NEVADA

VOLUME II - GEOTECHNICAL DATA

Prepared for:

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FOREWORD

This volume of geotechnical data was compiled for the Department of the Air Force, Ballistic Missile Office (BMO), in compliance with Contract No. F04704-80-C-0006 CDRL Item 004A2. It contains the field data and laboratory test results from the investigation of Coyote Spring Valley. A synthesis of these data is available in Volume I.

The data in each section of this volume are preceded by an explanation of the format and terms used in the compilation.

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SECTION 1.0  
ACTIVITY LOCATION MAP  
(IN POCKET)

SECTION 2.0

BORING LOGS

## 2.0 EXPLANATIONS OF BORING, TRENCH, AND TEST PIT LOGS

All data from borings, trenches, and test pits are presented on standard Fugro National logs in Sections 2.0, 3.0, and 4.0. Explanations of the column headings on the logs are as follows:

A. Designations - Borings, trenches, and test pits are identified as follows:

CE-B-1

CE - abbreviation for the site (e.g., CE-Coyote Spring Valley)

B - abbreviation for activity (e.g., B-boring, T-trench, P-test pit)

1 - number of activity

B. Sample Type - Different sampling techniques were used and the symbols are explained at the bottom of the boring logs. For details of sampling techniques, see Section A5.0 of Appendix in Volume I. Horizontal lines, to scale, indicate the depth where sampling was attempted.

C. Percent Recovery - The numbers shown represent the ratio (in percent) of the soil sample recovered in the sampler to the full penetration of the sampler.

D. N Value - Corresponds to standard penetration resistance, which is number of blows required to drive a standard split-spoon sampler for the second and third of three 6-inch (15-cm) increments with a 140-pound (63.5-kg) hammer falling 30 inches (76 cm) (ASTM D 1586-67).

E. Depth - Corresponds to depth below ground surface in meters and feet.

- F. Lithology - Graphic representation of the soil and rock types.
- G. USCS - Unified Soil Classification System symbols (see Table II-2-1 for complete details).
- H. Soil Description - Except in cases where samples were classified based on laboratory test data, the descriptions are based on visual classification. The procedures outlined in ASTM D 2487-69, Classification of Soils for Engineering Purposes, and D 2488-69, Description of Soils (Visual-Manual Procedure) were followed. Solid lines across the column indicate known change in strata at the depth shown.

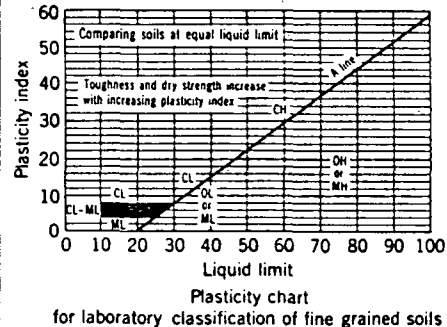
Definitions of some of the terms and criteria to describe soils and conditions encountered during the exploration follow.

Gradation : A coarse-grained soil is well graded if it has a wide range in grain size and substantial amounts of most intermediate particle sizes.

Poorly graded indicates that the soil consists predominantly of one size (uniformly graded) or has a wide range of sizes with some intermediate sizes obviously missing (gap-graded).

Moisture :	Dry	- no feel of moisture
	Slightly Moist	- much less than normal moisture
	Moist	- normal moisture for soil
	Very Moist	- much greater than normal moisture
	Wet	- for soils below the water table

Field Identification Procedures (Excluding particles larger than 3 in. and basing fractions on estimated weights)				Group Symbols <sup>a</sup>	Typical Names	Information Required for Describing Soils	Laboratory Classification Criteria				
Coarse-grained soils More than half material is larger than No. 200 sieve size (For visual classification, the 1/2 in. size may be used as equivalent to the No. 4 sieve size)	Gravels More than half of coarse fraction is larger than No. 4 sieve size	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	GW	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses  For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics  Example: <i>Silty sand, gravelly</i> ; about 20% hard, angular gravel particles 1/2-in. maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (SM)	$C_U = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_0 = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3  Not meeting all gradation requirements for GW  Atterberg limits below "A" line, or PI less than 4 Atterberg limits above "A" line, with PI greater than 7  $C_U = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_0 = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3  Not meeting all gradation requirements for SW  Atterberg limits below "A" line or PI less than 5 Atterberg limits below "A" line with PI greater than 7				
		Gravels with appreciable amount of fines)	Predominantly one size or a range of sizes with some intermediate sizes missing	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines						
	Sands More than half of coarse fraction is smaller than No. 4 sieve size (For visual classification, the 1/2 in. size may be used as equivalent to the No. 4 sieve size)	Clean sands (little or no fines)	Nonplastic fines (for identification procedures see ML below)	GM	Silty gravels, poorly graded gravel-sand-silt mixtures						
			Plastic fines (for identification procedures, see CL below)	GC	Clayey gravels, poorly graded gravel-sand-clay mixtures						
		Sands with appreciable amount of fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes	SW	Well graded sands, gravelly sands, little or no fines						
			Predominantly one size or a range of sizes with some intermediate sizes missing	SP	Poorly graded sands, gravelly sands, little or no fines						
Fine-grained soils More than half material is smaller than No. 200 sieve size (The No. 200 sieve size is about the smallest particle visible to naked eye)	Sils and clays liquid limit less than 50	None to slight	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses  For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions  Example: <i>Clayey silt, brown</i> ; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (ML)	Use grain size curve in identifying the fractions as given under field identification  Determine percentages of gravel and sand from grain size curve Depending on percentage of fines (fraction smaller than No. 200 sieve size) coarse grained soils are classified as follows: Less than 5% GW, GP, SW, SP More than 5% GM, GC, SM, SC Borderline cases requiring use of dual symbols			
					Medium to high	None to very slow			Medium	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
					Slight to medium	Slow			Slight	OL	Organic silts and organic silt-clays of low plasticity
	Sils and clays liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts					
					High to very high	None			High	CH	Inorganic clays of high plasticity, fat clays
					Medium to high	None to very slow			Slight to medium	OH	Organic clays of medium to high plasticity
Highly Organic Soils	Readily identified by colour, odour, spongy feel and frequently by fibrous texture			PI	Peat and other highly organic soils						



From Wagner, 1957.

<sup>a</sup> Boundary classifications. Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, well graded gravel-sand mixture with clay binder.  
<sup>b</sup> All sieve sizes on this chart are U.S. standard.

**Field Identification Procedure for Fine Grained Soils or Fractions**  
 Approximately 3/4 in. For field classification purposes, screening is not intended, simply remove by hand the coarse particles that interfere with the tests.

**Dilatancy (Reaction to shaking):**  
 After removing particles larger than No. 40 sieve size, prepare a pat of moist soil with a volume of about one-half cubic inch. Add enough water if necessary to make the soil soft, but not sticky.  
 Place the pat in the open palm of one hand and shake horizontally, striking vigorously against the other hand several times. A positive reaction consists of the appearance of water on the surface of the pat which changes to a livery consistency and becomes glossy. When the sample is squeezed between the fingers, the water and gloss disappear from the surface, the pat stiffens and finally it cracks or crumbles. The rapidity of appearance of water during shaking and of its disappearance during squeezing assist in identifying the character of the fines in a soil.  
 Very fine clean sands give the quickest and most distinct reaction whereas a plastic clay has no reaction. Inorganic silts, such as a typical rock flour, show a moderately quick reaction.

**Dry Strength (Crushing characteristics):**  
 After removing particles larger than No. 40 sieve size, mould a pat of soil to the consistency of putty, adding water if necessary. Allow the pat to dry completely by oven, sun or air drying, and then test its strength by breaking and crumbling between the fingers. This strength is a measure of the character and quantity of the colloidal fraction contained in the soil. The dry strength increases with increasing plasticity.  
 High dry strength is characteristic for clays of the CH group. A typical inorganic silt possesses only very slight dry strength. Silty fine sands and silts have about the same slight dry strength, but can be distinguished by the feel when powdering the dried specimen. Fine sand feels gritty whereas a typical silt has the smooth feel of flour.

**Toughness (Consistency near plastic limit):**  
 After removing particles larger than the No. 40 sieve size, a specimen of soil about one-half inch cube in size, is moulded to the consistency of putty. If too dry, water must be added and if sticky, the specimen should be spread out in a thin layer and allowed to lose some moisture by evaporation. Then the specimen is rolled out by hand on a smooth surface or between the palms into a thread about one-eighth inch in diameter. The thread is then folded and re-rolled repeatedly. During this manipulation the moisture content is gradually reduced and the specimen stiffens, finally loses its plasticity, and crumbles when the plastic limit is reached.  
 After the thread crumbles, the pieces should be lumped together and a slight kneading action continued until the lump crumbles.  
 The tougher the thread near the plastic limit and the stiffer the lump when it finally crumbles, the more potent is the colloidal clay fraction in the soil. Weakness of the thread at the plastic limit and quick loss of coherence of the lump below the plastic limit indicate either inorganic clay of low plasticity, or materials such as kaolin-type clays and organic clays which occur below the A-line.  
 Highly organic clays have a very weak and spongy feel at the plastic limit.

**UNIFIED SOIL CLASSIFICATION SYSTEM**  
 MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE  
 BMO  
 TABLE II-2-1  
**TUBORO NATIONAL, INC.**



Consistency: Consistency descriptions of coarse-grained soils (GW, GP, GM, GC, SW, SP, SM, SC) are as follows.

<u>Consistency</u>	<u>N Value (ASTM D 1586-67)</u>
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	>50

Consistency descriptions of fine-grained soils (ML, CL, MH, CH,) are as follows:

<u>Consistency</u>	<u>Shear Strength</u>		<u>Field Guide</u>
	<u>(ksf)</u>	<u>(kn/m<sup>2</sup>)</u>	
Very Soft	0.25	12	Sample with height equal to twice the diameter, sags under own weight
Soft	0.25-	12 -	Can be squeezed between thumb and forefinger
	0.50	24	
Firm	0.50-	24-	Can be molded easily with fingers
	1.00	48	
Stiff	1.00-	48-	Can be imprinted with slight pressure from fingers
	2.00	96	
Very Stiff	2.00-	96-	Can be imprinted with considerable pressure from fingers
	4.00	192	
Hard	over 4.00	over 192	Cannot be imprinted by fingers

Grain Shape: Angular - particles have sharp edges and relatively plane sides with unpolished surfaces.

Plasticity : Plasticity index is the range of water content, expressed as a percentage of the weight of the oven-dried soil, through which the soil is plastic. It is defined as the liquid limit minus the plastic limit. Descriptive ranges used on the logs include:

Nonplastic	(PI, 0 - 4)
Slightly Plastic	(PI, 4 - 15)
Medium Plastic	(PI, 15 - 30)
Highly Plastic	(PI, >30)

Cobbles and  
Boulders :

A cobble is a rock fragment, usually rounded by weathering or abrasion, with an average diameter ranging between 3 and 12 inches (8 and 30 cm).

A boulder is a rock fragment, usually rounded by weathering or abrasion, with an average diameter of 12 inches (30 cm) or more.

- I. Remarks - This column was provided on boring and trench logs for comments regarding drilling difficulty, number and size of cobbles or boulders encountered, loss of drilling fluid in the boring, trench wall stability, and other conditions encountered during drilling and excavations.
- J. Dry Density and Moisture Content - The boring logs include a graphical display of laboratory test results for dry density (ASTM D 2937-71) in pounds per cubic foot and kilograms per cubic meter and moisture content (ASTM D 2216-71) in percent from representative samples taken during drilling. The symbols are explained at the bottom of the boring logs.

K. Sieve Analysis - The numbers represent the percentage by dry weight (ASTM D 422-63) of each of the following soil components:

GR - Gravel, rock particles that will pass a 3-inch (76 mm) sieve and are retained on No. 4 (4.75 mm) sieve.

SA - Sand, soil particles passing No. 4 sieve and retained on No. 200 (0.075 mm) sieve.

FI - Fines, silt or clay, soil particles passing No. 200 sieve.

L. Atterberg Limits (LL and PI) -

LL - Liquid Limit, the water content corresponding to the arbitrary limit between the liquid and plastic states of consistency of a soil (ASTM D 423-66).

PL - Plastic Limit, the water content corresponding to an arbitrary limit between the plastic and the semisolid state of consistency of a soil (ASTM D 424-59).

PI - Plasticity Index, numerical difference between the liquid limit (LL) and the plastic limit (PL) indicating the range of moisture content within which a soil-water mixture is plastic.

NP - Nonplastic.

M. Miscellaneous Information -

Elevations - indicated elevations on the logs are estimated from topographic maps of the study area, within an accuracy of half the contour interval.

Surficial Geologic Unit - indicates the surficial geologic unit in which the activity is located.

Date Drilled - indicates the period from beginning to completion of the activity.

Drilling Method - signifies the type of drilling procedure used such as rotary wash.

Hole Diameter - nominal size of boring drilled.

Water Level - indicates depth from ground surface to water table where encountered.

Trench Length - length at ground surface of final trench excavation.

Trench Orientation - bearing of longitudinal trench centerline.































SAMPLE TYPE	% RECOVERY	N VALUE	DEPTH		LITHOLOGY	USCS	SOIL DESCRIPTION	REMARKS	▲(pcf)						SIEVE ANALYSIS								
			METERS	FEET					5	10	15	20	25	30	35	GR	SA	FI	LL	PI			
■	89		0	0		SM	SILTY SAND, light brown, fine to coarse, poorly graded, loose, subangular to subrounded calcareous; some fine to coarse gravel; little nonplastic silt.		●									40	47	13			
■	80					GP-GM				●			▲										
■	100		3	10		SW-SM	interbedded layers of SANDY GRAVEL and GRAVELLY SAND:			●			▲					10	81	9			
■	83					GP-GM	SANDY GRAVEL (GP-GM): brown, fine to coarse, poorly graded, loose to very dense, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt.			●			▲										
■	100		6	20		GP-GM	GRAVELLY SAND (SW-SM, SP-SM): dark brown, fine to coarse, well to poorly graded, dense to very dense, subangular to subrounded, calcareous; trace to some fine to coarse gravel; trace nonplastic silt; silty sand (51.0' - 52.0').			●			▲										
■	100		9	30							●		▲					15	75	10			
■	100					SP-SM		boulder															
■	100		15	50		SM				●			▲										
							TOTAL DEPTH 52.0' (15.8m)																
			18	60																			
			21	70																			
			24	80																			
			27	90																			
			30	100																			
			33	110																			

▲(kg/m<sup>3</sup>)  
1400 1800 2200

**EXPLANATION**

- FUGRO DRIVE SAMPLE
- BULK SAMPLE
- PITCHER TUBE SAMPLE
- STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE

- N - STANDARD PENETRATION RESISTANCE
- ▲ - DRY UNIT WEIGHT (ASTM: D-2937-71)
- - MOISTURE CONTENT (ASTM: D-2216-71)

NR - NO RECOVERY  
\* -- N VALUE > 100

† - TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

**BORING DETAILS**

- ELEVATION : 2870' (875m)
- SURFICIAL GEOLOGIC UNIT : A50
- DATE DRILLED : 29 October 1980
- DRILLING METHOD : Rotary Wash
- HOLE DIAMETER : 4 7/8" (124mm)
- WATER LEVEL : Not Encountered

**FUGRO NATIONAL, INC.**  
DEPARTMENT OF THE AIR FORCE - BMO  
MX SITING INVESTIGATION  
COYOTE SPRING VALLEY, NEVADA  
LOG OF BORING CE-B-16  
OPERATIONAL BASE SITE  
FIGURE II-2-16

SECTION 3.0

TRENCH LOGS

3.0 EXPLANATIONS OF TRENCH LOGS

See Section 2.0, "Boring Logs", for explanations.

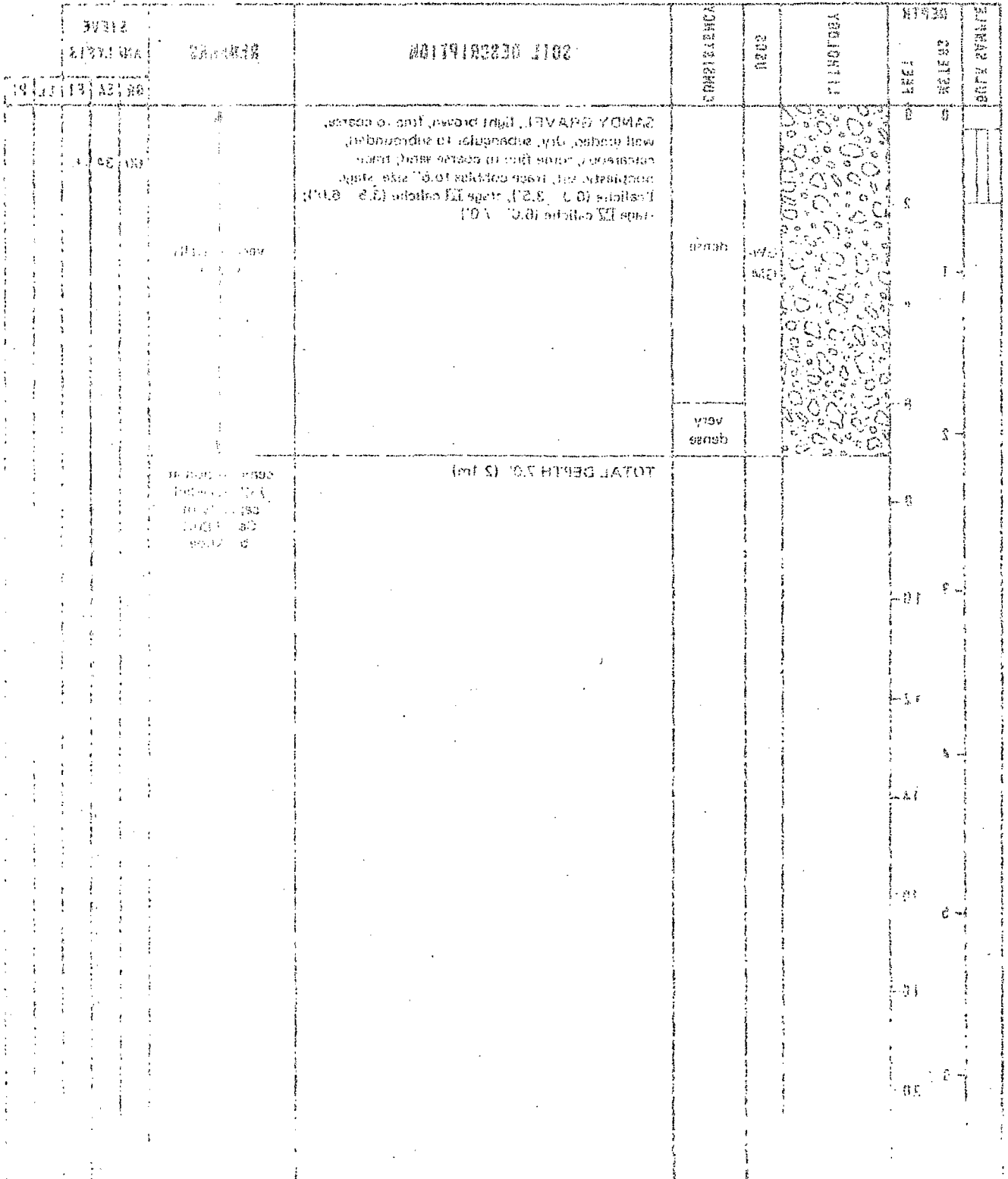
BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0		GW-GM	dense	SANDY GRAVEL, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage I caliche (0.0' - 3.5'); stage III caliche (3.5' - 6.0'); stage IV caliche (6.0' - 7.0').	vertical walls stable	60	34	6		
	2										
	1										
	4										
	6			very dense							
	2				TOTAL DEPTH 7.0' (2.1m)	cementation at 7.0' exceeded capacity of Case 580C backhoe					
	8										
	3										
	10										
	12										
	4										
	14										
	18										
	5										
	18										
	6										
	20										

**TRENCH DETAILS**

SURFACE ELEVATION : 2520' (768m)  
 DATE EXCAVATED : 15 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT: A5i  
 TRENCH LENGTH : 11.0' (3.4m)  
 TRENCH ORIENTATION : N-S

LOG OF TRENCH CE-T-1 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-3-1

**FUGRO NATIONAL, INC.**



DEPARTMENT OF THE ARMY - ARS  
 AM SILENT OPERATION  
 11-3-1  
 LOCATION: ALLEN, MISSOURI  
 OPERATIONAL SITE  
 LOCATION: ALLEN, MISSOURI  
 18 OCTOBER 1980  
 2850 (288m)

18 OCTOBER 1980  
 2850 (288m)  
 110 (134m)  
 110 (134m)

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Dotted pattern]	SM	medium dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt.	↑	0	54	46		NP
	2				medium dense							
	1	4	[Dotted pattern]	SP	medium dense	SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; interbedded cemented lenses of silty clay (CL) and sandy silt (ML) throughout.	vertical walls stable					
	6				dense							
	2	8	[Dotted pattern]	SM	dense	SILTY SAND, light brown, fine to medium, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; stage I caliche.	↓					
	10				dense							
	3	14	[Dotted pattern]	SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little nonplastic silt.		4	83	13		
	4					TOTAL DEPTH 14.0' (4.3m)						
	5	16										
	6	20										

**TRENCH DETAILS**

SURFACE ELEVATION : 2260' (689m)  
 DATE EXCAVATED : 16 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : T<sub>ys</sub>  
 TRENCH LENGTH : 14.0' (4.3m)  
 TRENCH ORIENTATION : N-S

LOG OF TRENCH CE-T-2 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-3-2
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS					
	METERS	FEET						GR	SA	FI	LL	PI	
	0	0		GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little to some fine to coarse sand; little nonplastic silt; trace cobbles to 10" size; stage I caliche (0.5' - 3.0'); stage II caliche (3.0' - 11.0'); stage III caliche (11.0').	vertical walls stable	68	19	13			
	2							47	39	14			
	4												
	6												
	8												
	10												
	12							TOTAL DEPTH 11.0' (3.4m)			cementation at 11.0' exceeded capacity of Case 580C backhoe		
	14												
	16												
	18												
	20												

**TRENCH DETAILS**

SURFACE ELEVATION : 2480' (756m)  
 DATE EXCAVATED : 16 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A5y/A5i  
 TRENCH LENGTH : 13.0' (4.0m)  
 TRENCH ORIENTATION : N-S

LOG OF TRENCH CE-T-3 OPERATIONAL BASE SITE. COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE	BMD
FIGURE II-3-3	

**FUGRO NATIONAL, INC.**



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GM	dense	SILTY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; some fine to coarse sand; stage II caliche.	vertical walls stable	37	31	32		
	2											
	1	4		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage III caliche.						
	8											
	2	8										
	3	10				TOTAL DEPTH 9.0' (2.7m)	cementation at 9.0' exceeded capacity of Case 580C backhoe					
		12										
	4	14										
	5	16										
		18										
	6	20										

**TRENCH DETAILS**

SURFACE ELEVATION : 2320' (707m)  
 DATE EXCAVATED : 16 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : Tys  
 TRENCH LENGTH : 11.0' (3.4m)  
 TRENCH ORIENTATION : N-S

LOG OF TRENCH CE-T-4 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-3-4
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0		GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry; subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; trace cobbles to 6" size.	↑	56	30	14		
	2										
	4										
	6										
	8										
	10										
	12		ML	very stiff	GRAVELLY SILT, light brown, dry, medium plastic, calcareous; some fine gravel; little fine to coarse sand; stage II caliche.	↓	22	19	59		
	14										
	16										
	18										
	20	TOTAL DEPTH 14.0' (4.3m)									

vertical walls stable

**TRENCH DETAILS**

SURFACE ELEVATION : 2300' (701m)  
 DATE EXCAVATED : 17 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A1  
 TRENCH LENGTH : 14.0' (4.3m)  
 TRENCH ORIENTATION : N-S

LOG OF TRENCH CE-T-5 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-3-5

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Dotted pattern]	SP-SM	medium dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine gravel; trace nonplastic silt.	↑	18	70	12		
	2											
	1	4	[Dotted pattern]	SM	dense	SILTY SAND, light brown, fine to medium, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; stage III caliche (4.0' - 9.0'); stage IV caliche (9.0' - 10.0').	vertical walls stable ↓					
	2	8										
	3	10										
					very dense	TOTAL DEPTH 10.0' (3.0m)						
		12										
	4	14										
	5	18										
		18										
	6	20										
							cementation at 10.0' exceeded capacity of Case 580C backhoe					

**TRENCH DETAILS**

SURFACE ELEVATION : 2200' (671m)  
 DATE EXCAVATED : 17 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A1  
 TRENCH LENGTH : 13.0' (4.0m)  
 TRENCH ORIENTATION : N-S

LOG OF TRENCH CE-T-6  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-3-6

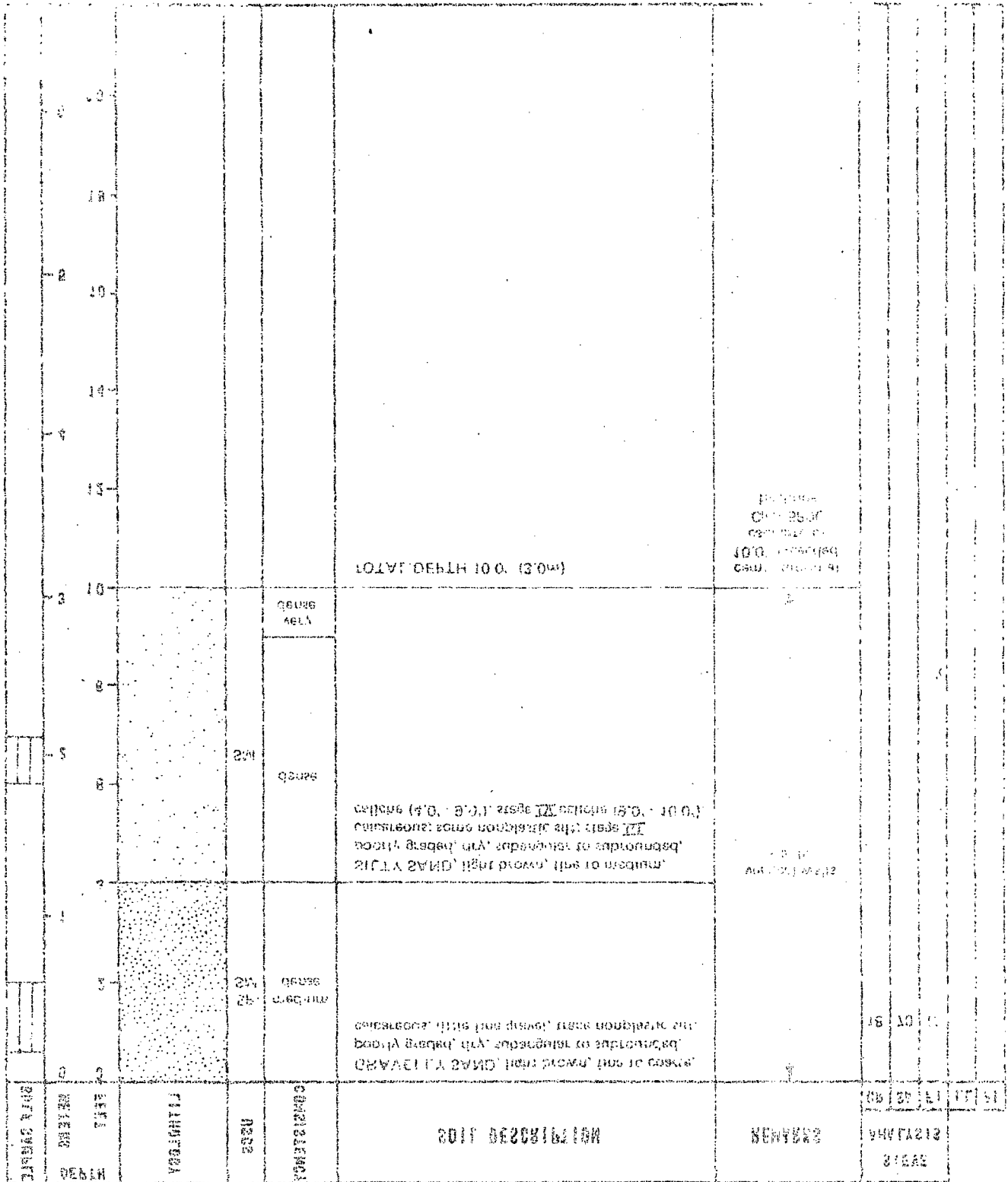
**FUGRO NATIONAL, INC.**

DEPARTMENT OF THE ARMY - ONO  
 AR 21100-10-10-10

II 30  
 115000

DATE OF EXAMINATION : 1980  
 LOCATION : 130. (4000)  
 NAME OF VESSEL : 1011: 11  
 NAME OF COMMANDER : 11 OCTOBER 1980  
 NAME OF SURVEYOR : 115000 (111111)  
 NAME OF CHART : 115000 (111111)

COAST GUARD VESSEL  
 OBSERVATION  
 115000 (111111)



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS											
	METERS	FEET						GR	SA	FI	LL	PI							
	0	0	[Hatched pattern]	ML	firm	SANDY SILT, light brown, dry, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand.	↑ vertical walls stable ↓	1	38	61									
	2																		
	4																		
	6																		
	8																		
	10							[Hatched pattern]	CL	SILTY CLAY, light brown, dry, slightly plastic, calcareous; trace fine subrounded sand.		0	6	94	29	9			
	12																		
	14																		
	16																		
	18																		
	20																		
TOTAL DEPTH 14.0' (4.3m)																			

**TRENCH DETAILS**

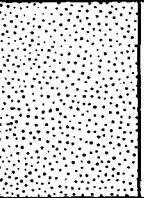
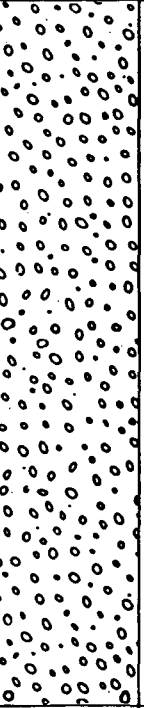
SURFACE ELEVATION : 2225' (678m).  
 DATE EXCAVATED : 17 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : Tys  
 TRENCH LENGTH : 14.0' (4.3m).  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-7  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE BNO

FIGURE  
 II-3-7

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		SP-SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; trace nonplastic silt; stage I caliche.	↑	45	46	9		
	2											
	1	4		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 10" size.	vertical walls stable					
	6											
	8											
	10											
	12											
	14											
						TOTAL DEPTH 14.0' (4.3m)						
	5	18										
	8	20										

**TRENCH DETAILS**

SURFACE ELEVATION : 2800' (701m)  
 DATE EXCAVATED : 18 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A5y  
 TRENCH LENGTH : 14.0' (4.3m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-8 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-3-8
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS											
	METERS	FEET						GR	SA	FI	LL	PI							
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size.	vertical walls stable 	77	16	7									
	2																		
	1																		
	4																		
	6																		
	8																		
	10																		
	3	10							ML	firm	SILT, light brown, nonplastic, dry, calcareous; trace fine sand.		0	11	89		NP		
	12																		
	4																		
	14																		
						TOTAL DEPTH 14.0' (4.3m)													
	5	18																	
	6	20																	

**TRENCH DETAILS**

SURFACE ELEVATION : 2300' (701m)  
 DATE EXCAVATED : 18 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A5y  
 TRENCH LENGTH : 14.0' (4.3m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-9  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMD

FIGURE  
 II-3-9

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Lithology: Sandy Gravel]	GP-GM	dense	SANDY GRAVEL; light brown, fine to coarse, poorly to well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; stage II cementation; occasional cobbles to 8" size (0.0' - 7.0'); trace cobbles and boulders to 10" size (7.0' - 11.0') and to 15" size (11.0').	vertical walls stable	52	37	11		
	2											
	4		[Lithology: Sandy Gravel]	GW-GM	dense			64	29	7		
	8											
	10		TOTAL DEPTH 11.0' (3.4m)			excavation capacity of Case 580C backhoe exceeded at 11.0'						
	12											
	14											
	16											
	18											
	20											

**TRENCH DETAILS**

SURFACE ELEVATION : 2400' (732m)  
 DATE EXCAVATED : 19 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A50  
 TRENCH LENGTH : 14.0' (4.3m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-10  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - 8MO

FIGURE  
 II-3-10

**FUGRO NATIONAL, INC.**



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Pattern]	GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine to coarse sand; little non-plastic silt; stage III caliche (0.0' - 1.5'); stage IV caliche (1.5'); trace cobbles to 6" size.	vertical walls stable ↑ ↓ cementation at 1.5' exceeded capacity of Case 580C backhoe	62	20	18		
					very dense							
	2					TOTAL DEPTH 1.5' (0.5m)						
	1											
	4											
	6											
	2											
	8											
	3	10										
	12											
	4											
	14											
	5	18										
	18											
	6	20										

**TRENCH DETAILS**

SURFACE ELEVATION : 2380' (728m)  
 DATE EXCAVATED : 19 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT: A50  
 TRENCH LENGTH : 8.0' (2.4m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-11 OPERATIONAL BASE SITE COYOTE SPRING VALLEY NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-3-11
TUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0		GP-GM	dense	GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; trace fine to coarse sand; trace nonplastic silt; stage III caliche (0.0' - 3.0'); stage IV caliche (3.0'); occasional cobbles to 6" size.	vertical walls stable	82	11	7		
	2			very dense							
	1				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					
	4										
	6										
	2										
	8										
	10										
	12										
	4										
	14										
	16										
	5										
	18										
	20										

**TRENCH DETAILS**

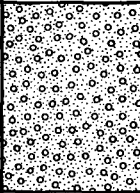
SURFACE ELEVATION : 2460' (750m)  
 DATE EXCAVATED : 20 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A5y/A5i  
 TRENCH LENGTH : 10.0' (3.0m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-12  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE BMD

FIGURE  
 II-3-12

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GM	dense	SILTY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; some fine to coarse sand; stage III caliche (0.0' - 2.5'); stage IV caliche (2.5' - 3.0'); occasional cobbles to 6" size.	vertical walls stable	48	24	28		
	2				very dense							
	1	4				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					
	2	8										
	3	10										
	4	12										
	5	16										
	6	18										
	8	20										

**TRENCH DETAILS**

SURFACE ELEVATION : 2490' (759m)  
 DATE EXCAVATED : 20 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : ASi  
 TRENCH LENGTH : 10.0' (3.0m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-TJ-13 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-3-13
<b>UGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS					
							GR	SA	FI	LL	PI	
	0	GRAVELLY SAND (stippled pattern)	SW-SM	dense	GRAVELLY SAND, light brown, fine to coarse, well to poorly graded, dry, subangular to sub-rounded, calcareous; little fine to coarse gravel; trace nonplastic silt; stage II caliche.	↑	18	71	11			
	2											
	4											
	6											
	8											
	10	GRAVELLY SAND (stippled pattern)	SP	dense	TOTAL DEPTH 12.0' (3.7m)	vertical walls stable						
	12											
	14											
	16											
	18	GRAVELLY SAND (stippled pattern)				↓						
	20											
	22											
	24											
	26											
	28											
	30											
	32											
	34											
	36											
	38											
	40											
	42											
	44											
	46											
	48											
	50											
	52											
	54											
	56											
	58											
	60											
	62											
	64											
	66											
	68											
	70											
	72											
	74											
	76											
	78											
	80											
	82											
	84											
	86											
	88											
	90											
	92											
	94											
	96											
	98											
	100											

**TRENCH DETAILS**

SURFACE ELEVATION : 2760' (841m)  
 DATE EXCAVATED : 21 OCTOBER 1980  
 SURFICIAL GEOLOGIC UNIT : A5y  
 TRENCH LENGTH : 14.0' (4.3m)  
 TRENCH ORIENTATION : E-W

LOG OF TRENCH CE-T-14 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE	BMO
FIGURE II-3-14	

**FUGRO NATIONAL, INC.**

SECTION 4.0  
TEST PIT LOGS

4.0 EXPLANATIONS OF TEST PIT LOGS

See Section 2.0, "Boring Logs", for explanations.



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; occasional cobbles and boulders to 14" size; stage III caliche (0.5' - 5.0'); stage IV caliche (5.0').	vertical walls stable  cementation at 5.0' exceeded capacity of Case 580C backhoe					
	1											
	2											
	3											
	4											
	5		TOTAL DEPTH 5.0' (1.5m)									

SURFACE ELEVATION: 2570' (783m)  
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT CE-P-2

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; trace cobbles to 6" size; stage I caliche (0.5' - 5.0'); stage IV caliche (5.0').	vertical walls stable  cementation at 5.0' exceeded capacity of Case 580C backhoe					
	1											
	2											
	3											
	4											
	5		TOTAL DEPTH 5.0' (1.5m)									

SURFACE ELEVATION: 2500' (762m)  
SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-3

LOGS OF TEST PITS CE-P-2 AND CE-P-3  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
II-4-2

**FUGRO NATIONAL, INC.**



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; trace cobbles to 6" size; stage I caliche (0.5' - 5.0'); stage IV caliche (5.0').	vertical walls stable	51	36	15		
	1											
	2											
	3											
	4											
	5	5				TOTAL DEPTH 5.0' (1.5m)	cementation at 5.0' exceeded capacity of Case 580C backhoe					
	6											
	7											
	8											
	9											
	10	10										

SURFACE ELEVATION: 2500' (762m)  
 SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-4

LOG OF TEST PIT CE-P-4 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-4-3
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS						
	METERS	FEET						GR	SA	FI	LL	PI		
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 10" size; stage I caliche (0.5' - 6.0'); stage IV caliche (6.0').	vertical walls stable	65	27	8				
	1	1												
	2	2												
	3	3												
	4	4												
	5	5												
	6	6												
	7	7												
	8	8												
	9	9												
	10	10												
						TOTAL DEPTH 6.0' (1.8m)	cementation at 6.0' exceeded capacity of Case 580C backhoe							

SURFACE ELEVATION: 2540' (774m)  
 SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-5

LOG OF TEST PIT CE-P-5 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4.4

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GW	dense	SANDY GRAVEL, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace cobbles to 6" size; stage II caliche (0.5' - 5.0'); stage III caliche (5.0' - 7.0').	vertical walls stable	66	30	4		
	1											
	2											
	3											
1	4											
	5											
	6											
	7			GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; stage II caliche (7.0' - 10.0').		54	39	7		
	8											
	9											
	10		TOTAL DEPTH 10.0' (3.0m)									

SURFACE ELEVATION: 2510' (765m)  
 SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-6

LOG OF TEST PIT CE-P-6 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-5
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Stippled pattern representing soil texture]	SM	dense	SILTY SAND, light brown, fine to medium, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; stage II caliche.	↑					
	1							4	56	40		
	2											
	3											
1	4											
	5										vertical walls stable	
	6											
2	7											
	8											
	9											
3	10											
TOTAL DEPTH 10.0 (3.0m)												

SURFACE ELEVATION: 2260' (689m)  
 SURFICIAL GEOLOGIC UNIT: Tys

LOG OF TEST PIT CE-P-7

LOG OF TEST PIT CE-P-7 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-4-6



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS						
	METERS	FEET						GR	SA	FI	LL	PI		
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage II caliche (0.0' - 5.0'); stage III caliche (5.0' - 6.0').	vertical walls stable							
	1													
	2													
	3													
	4													
	5													
	6													
	7													
	8													
	9													
	10													
						TOTAL DEPTH 6.0' (1.8m)								
							cementation at 6.0' exceeded capacity of Case 580C backhoe							

SURFACE ELEVATION: 2400' (732m)  
 SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-8

LOG OF TEST PIT CE-P-8 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-7
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0 0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage I caliche (0.0' - 5.0'); stage III caliche (5.0' - 7.0').	vertical walls stable 					
	1										
	2										
	3										
1	4										
	5										
	6										
	7				TOTAL DEPTH 7.0' (2.1m)	cementation at 7.0' exceeded capacity of Case 580C backhoe 					
	8										
	9										
3	10										

SURFACE ELEVATION: 2400' (732m)  
 SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-9

LOG OF TEST PIT CE-P-9 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-8
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse; poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; occasional cobbles to 6" size;	vertical walls stable					
	1											
	2											
	3											
	4											
	5	5		SM	very dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; trace gravel; stage III caliche.						
	6											
	7											
	8	8	TOTAL DEPTH 8.0' (2.4m)			cementation at 8.0' exceeded capacity of case 580C backhoe						
	9											
	10	10										

SURFACE ELEVATION: 2260' (689m)  
 SURFICIAL GEOLOGIC UNIT: A1

LOG OF TEST PIT CE-P-10

LOG OF TEST PIT CE-P-10 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-9

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS						
	METERS	FEET						GR	SA	FI	LL	PI		
	0	0	GRAVELLY SAND (stippled pattern)			GRAVELLY SAND; light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine gravel; trace nonplastic silt.	↑							
	1	1												
	2	2												
	3	3												
1	4	4												
	5	5												
	6	6												
	7	7	SANDY SILT (diagonal hatched pattern)	ML	firm	SANDY SILT, light brown, dry, nonplastic, calcareous; little fine to medium sand.	↓							
	8	8												
	9	9												
	10	10												
						TOTAL DEPTH 10.0' (3.0m)								

vertical walls stable

SURFACE ELEVATION: 2160' (658m)  
 SURFICIAL GEOLOGIC UNIT: A5y

LOG OF TEST PIT CE-P-11

LOG OF TEST PIT CE-P-11 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE □ 4-10
<b>FUGRO NATIONAL, INC.</b>	



BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Stippled pattern]	SM	medium dense	SILTY SAND, light brown, fine to medium, poorly graded, dry, subangular to subrounded, calcareous; little nonplastic silt; trace fine gravel.	↑					
	1							9	72	19		NP
	2											
	3											
1	4											
	5										vertical walls stable	
	6											
2	7											
	8											
	9											
3	10											
TOTAL DEPTH 10.0' (3.0m)												

SURFACE ELEVATION: 2210' (674m)  
 SURFICIAL GEOLOGIC UNIT: Tys

LOG OF TEST PIT CE-P-12

LOG OF TEST PIT CE-P-12 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-11
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS								
	METERS	FEET						GR	SA	FI	LL	PI				
	0	0	[Stippled pattern representing soil]	SM	medium dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little nonplastic silt; trace gravel; occasional cobbles to 8" size (8.0' - 10.0').	↑          vertical walls stable          ↓									
	1															
	2															
	3															
1	4															
	5															
	6															
2	7															
	8															
	9															
3	10					TOTAL DEPTH 10.0' (3.0m)										

SURFACE ELEVATION: 2215' (675m)  
 SURFICIAL GEOLOGIC UNIT: Tys

LOG OF TEST PIT CE-P-13

LOG OF TEST PIT CE-P-13 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-12
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	GRAVELLY SAND (stippled pattern)	SP-SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine gravel; trace nonplastic silt; occasional cobbles to 6" size; stage II caliche (0.5' - 4.0').	↑					
	1							33	60	7		
	2											
	3											
	4	4	SANDY SILT (diagonal hatched pattern)	ML	very stiff	SANDY SILT, light brown, dry, nonplastic, calcareous; some fine subangular to subrounded sand.	vertical walls stable ↓					
	5											
	6											
	7											
	8											
	9											
	10	10	TOTAL DEPTH 10.0' (3.0m)									

SURFACE ELEVATION: 2230' (680m)  
 SURFICIAL GEOLOGIC UNIT: A5v

LOG OF TEST PIT CE-P-14

LOG OF TEST PIT CE-P-14 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-4-13
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; occasional cobbles to 6" size; stage I caliche.	↑					
	1										
	2										
	3										
	4										
	5		SM	dense	SILTY SAND, light brown, fine, poorly graded, dry, subrounded, calcareous; some nonplastic silt.	vertical walls stable					
	6										
	7										
	8										
	9										
	10										
					TOTAL DEPTH 10.0' (3.0m)	↓					

SURFACE ELEVATION: 2290' (698m)  
 SURFICIAL GEOLOGIC UNIT: A5y

LOG OF TEST PIT CE-P-15

LOG OF TEST PIT CE-P-15  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-4-14

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Stippled pattern]	SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt.	↑					
	1							28	58	14		
	2											
	3	1	[Pattern of small circles]	GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt.	vertical walls stable					
	4											
	5											
	6											
	7											
	8	2	[Diagonal hatching]	ML	firm	SILT, light brown, dry, nonplastic, calcareous; trace fine subrounded sand.	↓					
	9							0	7	93		NP
	10	3										
TOTAL DEPTH 10.0' (3.0m)												

SURFACE ELEVATION: 2290' (698m)  
 SURFICIAL GEOLOGIC UNIT: A5y

LOG OF TEST PIT CE-P-16

LOG OF TEST PIT CE-P-16 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-4 15
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Dotted pattern]	SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine gravel; some nonplastic silt; stage III caliche (0.0' - 8.0').	↑          vertical walls stable					
		1						28	45	27		
		2										
		3	[Diagonal line pattern]	ML	stiff	SANDY SILT, light brown; dry, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand; trace fine gravel.	↓					
	1	4										
		5						5	35	60	34	7
		6										
		7	[Circular pattern]	GW-GM	dense	SANDY GRAVEL, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; stage I caliche (8.0' - 10.0'); occasional cobbles to 6" size.	↓					
		8										
		9						47	43	10		
		10				TOTAL DEPTH 10.0' (3.0m)						

SURFACE ELEVATION: 2290' (698m)  
 SURFICIAL GEOLOGIC UNIT: A5y

LOG OF TEST PIT CE-P-17

LOG OF TEST PIT CE-P-17 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-16
TUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0	[Stippled pattern]	SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel; stage III caliche (2.5' - 6.0').	↑					
	1						6	59	35	NP	
	2										
	3										
	4										
	5										
	6	[Dotted pattern]	SP	medium dense	SAND, gray, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; trace gravel.	↓					
	7										
	8										
	9										
	10				TOTAL DEPTH 10.0' (3.0m)						

SURFACE ELEVATION: 2300' (701m)  
 SURFICIAL GEOLOGIC UNIT: Tys

LOG OF TEST PIT CE-P-18

LOG OF TEST PIT CE-P-18 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE	FIGURE II-4-17
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0	[Stippled pattern]	SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little nonplastic silt; trace gravel; stage III caliche.	↑					
	1										
	2										
	3										
	4										
	5										
	6	[Pattern of circles]	GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; occasional cobbles to 10" size; stage II caliche.	↓					
	7										
	8										
	9										
	10										
					TOTAL DEPTH 10.0' (3.0m)						

vertical walls stable

SURFACE ELEVATION: 2360' (719m)  
 SURFICIAL GEOLOGIC UNIT: Tys

LOG OF TEST PIT CE-P-19

LOG OF TEST PIT CE-P-19 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-18
<b>FUGRO NATIONAL, INC.</b>	



BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0		SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; some fine gravel; stage III caliche (0.5' - 1.5'); stage IV (1.5').	vertical walls stable					
	1			very dense			26	43	31		
	2				TOTAL DEPTH 1.5' (0.5m)	cementation at 1.5' exceeded capacity of Case 580C backhoe					
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

SURFACE ELEVATION: 2560' (780m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-20

LOG OF TEST PIT CE-P-20 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-19
TUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size.	<p style="text-align: center;">↑</p> <p style="text-align: center;">vertical walls stable</p> <p style="text-align: center;">↓</p>					
	1	1						65	25	10		
	2	2										
	3	3										
	4	4										
	5	5										
	6	6										
	7	7				TOTAL DEPTH 7.0' (2.1m)						
	8	8					cementation at 7.0' exceeded capacity of Case 580C backhoe					
	9	9										
	10	10										

SURFACE ELEVATION: 2440' (744m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-21

LOG OF TEST PIT CE-P-21 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-20
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; occasional cobbles to 6" size; stage III caliche (0.0' - 3.0'); stage IV (3.0').	vertical walls stable					
	1											
	2				very dense							
	3	1				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					
	4											
	5											
	6											
	7											
	8											
	9											
	10	3										

SURFACE ELEVATION: 2420' (738m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-22

LOG OF TEST PIT CE-P-22 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-21
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
							GR	SA	FI	LL	PI
	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6.0" size; stage III caliche (0.0' - 1.0'); stage IV caliche (1.0').	vertical walls stable					
	1										
	2				TOTAL DEPTH 1.0' (0.3m)	cementation at 1.0' exceeded capacity of Case 580C backhoe					
	3										
	4										
	5										

SURFACE ELEVATION: 2460' (750m)  
SURFICIAL GEOLOGIC UNIT: A5y/A5i

LOG OF TEST PIT CE-P-23

	0		GP-GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage II caliche (0.0' - 5.0'); stage IV caliche (5.0').	vertical walls stable					
	1										
	2										
	3										
	4										
	5				TOTAL DEPTH 5.0' (1.5m)	cementation at 5.0' exceeded capacity of Case 580C backhoe	68	22	10		

SURFACE ELEVATION: 2460' (750m)  
SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-24

LOGS OF TEST PITS CE-P-23 AND CE-P-24  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE

FIGURE  
II-4-22

**UGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS						
	METERS	FEET						GR	SA	FI	LL	PI		
	0	0		GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; stage III caliche.	vertical walls stable  ↑  ↓							
	1	1												
	2	2												
	3	3		SP-SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded; calcareous; little fine gravel; trace nonplastic silt; stage III caliche; occasional cobbles to 10" size.								
	4	4												
	5	5												
	6	6										13	77	10
	7	7												
	8	8												
	9	9												
	10	10												
TOTAL DEPTH 10.0' (3.0m)														

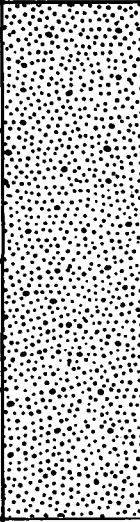


SURFACE ELEVATION: 2530' (771m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-25

LOG OF TEST PIT CE-P-25  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-23
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FUGRO NATIONAL, INC.

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		SW-SM		GRAVELLY SAND, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine gravel; trace nonplastic silt; stage III caliche (0.0' - 4.0'); stage IV caliche (4.0'); occasional cobbles to 6" size.	vertical walls stable  	25	63	12		
	1											
	2											
	3											
	4	4				TOTAL DEPTH 4.0' (1.2m)	cementation at 4.0' exceeded capacity of Case 580C backhoe					
	5											
	6											
	7											
	8											
	9											
	10											

SURFACE ELEVATION: 2580' (786m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-26

LOG OF TEST PIT CE-P-26 OPERATIONAL BASE SITE GOYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-4-24
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; stage III caliche (0.0' - 3.0'); stage II caliche (3.0' - 10.0'); occasional cobbles to 6" size.	vertical walls stable					
	1											
	2											
	3											
1												
	4											
	5											
	6											
	7			SP-SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine gravel; trace nonplastic silt.	14	76	10			
	8											
	9											
	10					TOTAL DEPTH 10.0' (3.0m)						

SURFACE ELEVATION: 2620' (799m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-27

LOG OF TEST PIT CE-P-27 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-25
<b>TUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Stippled Lithology]	SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; stage III caliche.	↑					
	1							41	43	16		
	2											
	3											
	1											
	4											
	5										vertical walls stable	
	6											
	2							SM	dense			
	7											
	8											
	9											
	3	10										
TOTAL DEPTH 10.0' (3.0m)												

SURFACE ELEVATION: 2660' (811m)  
SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-28

LOG OF TEST PIT CE-P-28 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-26
<b>UGRO NATIONAL, INC.</b>	









BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS					
	METERS	FEET						GR	SA	FI	LL	PI	
	0	0	[Stippled pattern]	SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little nonplastic silt; trace gravel; stage III caliche.	↑						
		1											
		2											
	1	3											
		4											
		5	[Dotted pattern]	SW-SM	dense	SAND, light brown, fine to coarse, well graded, dry, subangular to subrounded; calcareous; trace fine gravel; trace nonplastic silt; stage II caliche.	vertical walls stable						
		6											
		7											
	2	8											
		9											
		10											
						TOTAL DEPTH 10.0' (3.0m)							

SURFACE ELEVATION: 2870' (875m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-32

LOG OF TEST PIT CE-P-32 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BND	FIGURE II-4-30

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Stippled pattern]	SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; some nonplastic silt; stage III caliche.	↑ vertical walls stable ↓	24	54	22		
	1	1										
		3	[Circular pattern]	GP	dense	GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; trace fine to coarse sand; stage III caliche; trace cobbles and boulders to 20" size.		86	12	2		
	4	4										
	5	5										
	6	6				TOTAL DEPTH 6.0' (1.8m)	cementation at 6.0' exceeded capacity of Case 580C backhoe					
	2	7										
	3	8										
		10										

SURFACE ELEVATION: 2800' (853m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-33

LOG OF TEST PIT CE-P-33 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-4-31
FUGRO NATIONAL, INC.	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	GRAVELLY SAND, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; stage I caliche (1.5' - 4.0'); stage III caliche (0.5' - 1.5') and (4.0' - 8.0').		dense	GRAVELLY SAND, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; stage I caliche (1.5' - 4.0'); stage III caliche (0.5' - 1.5') and (4.0' - 8.0').	vertical walls stable	48	49	3		
	1											
	2			medium dense	vertical walls sloughing							
	3	1										
	4			SW								
	5											
	6			dense	vertical walls stable							
	7	2										
	8											
	9				TOTAL DEPTH 8.0' (2.4m)	cementation at 8.0' exceeded capacity of Case 580C backhoe						
	10	3										

SURFACE ELEVATION: 2610' (796m)  
 SURFICIAL GEOLOGIC UNIT: Tys

LOG OF TEST PIT CE-P-34

LOG OF TEST PIT CE-P-34 OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-4-32
<b>FUGRO NATIONAL, INC.</b>	

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0	[Stippled pattern]	SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; little fine gravel; stage III caliche; trace cobbles and boulders to 30" size.	↑	19	49	32		
	1											
	3	1	[Gravel pattern]	GW	dense	SANDY GRAVEL, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; stage II caliche.	vertical walls stable	54	44	2		
	4											
	5											
	6											
	7	2										
	8											
	9											
	10	3										
TOTAL DEPTH 10.0' (3.0m)												

SURFACE ELEVATION: 2680' (817m)  
 SURFICIAL GEOLOGIC UNIT: A50

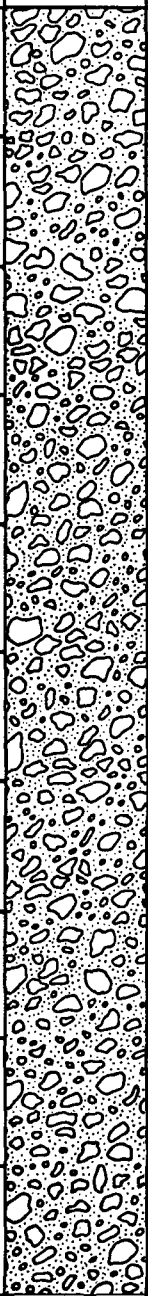
LOG OF TEST PIT CE-P-35

LOG OF TEST PIT CE-P-35  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-4-33

**FUGRO NATIONAL, INC.**

BULK SAMPLE	DEPTH METERS FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS							
							GR	SA	FI	LL	PI			
	0		GW-GM	dense	SANDY GRAVEL, light brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace cobbles to 10" size; stage III caliche (0.0' - 2.0'); stage I caliche (2.0' - 4.0'); stage II caliche (4.0' - 10.0').	vertical walls stable	62	33	5					
	1													
	2					vertical walls sloughing								
	3													
	4					vertical walls stable								
	5													
	6													
	7													
	8													
	9													
	10													
					TOTAL DEPTH 10.0' (3.0m)									

SURFACE ELEVATION: 2680' (817m)  
 SURFICIAL GEOLOGIC UNIT: A50

LOG OF TEST PIT CE-P-36

LOG OF TEST PIT CE-P-36  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

---

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-4-34

**FUGRO NATIONAL, INC.**



SECTION 5.0  
LABORATORY TEST RESULTS

## 5.0 EXPLANATIONS OF LABORATORY TEST RESULTS

Laboratory test results are presented in this section. Table II-5-1 contains a summary of laboratory test results. This table contains results of sieve analysis; plasticity data; in-situ dry unit weight, moisture content, degree of saturation, and void ratio for drive and Pitcher samples; results of compaction tests; and specific gravity of solids. Other tests such as triaxial compression, unconfined compression, direct shear, consolidation, chemical, and California Bearing Ratio (CBR) are indicated on the table. Tables II-5-2 through II-5-4 and Figures II-5-1 through II-5-5 present results of triaxial compression, unconfined compression, direct shear, consolidation, chemical, and CBR tests.

All tests were performed in general accordance with the American Society for Testing and Materials (ASTM) procedures. The following list presents the ASTM designations for the tests performed during the investigation.

<u>Type of Test</u>	<u>ASTM Designations</u>
Particle Size Analysis	D 422-63
Liquid Limit	D 423-66
Plastic Limit	D 424-59
Unit Weight	D 2937-71
Moisture Content	D 2216-71
Compaction	D 1557-70
Specific Gravity of Solids	D 854-58
Triaxial	D 2850-70
Unconfined Compression	D 2166-66
Direct Shear	D 3080-72
Consolidation	D 2435-70
Test for Alkalinity (pH)	D 1067-70
Water Soluble Sodium	D 1428-64
Water Soluble Chloride	D 512-67
Water Soluble Sulphate	D 516-68
Water Soluble Calcium	D 511-72
Calcium Carbonate	D 1126-67
California Bearing Ratio (CBR)	D 1883-73

Explanation for the tables and figures presented in this section are as follows:

- A. Activity Number - Boring or trench sample designation.
- B. Sample Number - Prefix indicates the type of sample; explanation is at the bottom of the table.
- C. Sample Interval - This is the depth range measured from ground surface over which the sample was obtained.
- D. Percent Finer by Weight - Presents the results of laboratory particle-size analysis (ASTM D 422-63) performed on representative soil samples at the depth indicated. The numbers represent the percent (by dry weight) of the total sample weight passing through each sieve size indicated.
- E. Atterberg Limits (ASTM D 423-66 and D 424-59) -

LL - Liquid Limit, the water content (as percent of soil dry weight) corresponding to the arbitrary limit between the liquid and plastic states of consistency of a soil (ASTM D 423-66).

PL - Plastic Limit, the water content corresponding to an arbitrary limit between the plastic and the semisolid state of consistency of a soil (ASTM D 424-59).

PI - Plasticity Index, numerical difference between the liquid limit (LL) and the plastic limit (PL) indicating the range of moisture content within which a soil-water mixture is plastic.

NP - Nonplastic.

- F. USCS - Unified Soil Classification Symbols are given here; see Table II-2-1 in Section 2.0, "Boring Logs", for complete details of USCS system.

- G. In Situ - Presents results of tests on drive and Pitcher samples.

Dry Unit Weight - indicates dry unit weight of soil determined as per ASTM D 2937-71.

- Moisture Content - weight of water reported in percent of dry weight of soil sample (ASTM D 2216-71).
- Saturation - the degree of saturation in a soil sample is defined as the ratio (in percent) of the volume of water to the volume of all voids in the soil.
- Void Ratio - the numerical ratio of the volume of voids to the volume of solids in a soil specimen.
- H. Compacted - Indicates results of laboratory maximum dry density and optimum moisture content test as per ASTM D 1557-70.
- I. Specific Gravity of Solids (ASTM D 854-58) - Indicates the ratio of 1) the weight in air of a given volume of soil solids at a stated temperature, to 2) the weight in air of an equal volume of distilled water at a stated temperature.
- J. Triaxial - The triaxial compression tests were performed in accordance with the procedures of ASTM D 2850-70. The following explanations and definitions apply.

Triaxial Compression Test - a cylindrical specimen of soil is surrounded by a fluid in a pressure chamber and subjected to an isotropic pressure. An additional compressive load is then applied, directed along the axis of the specimen called the axial load.

Consolidated-Drained (CD) Test - a triaxial compression test in which the soil was first consolidated under an all-around confining stress (test chamber pressure) and was then compressed (and hence sheared) by increasing the vertical stress. "Drained" indicates that excess pore water pressure generated by strains are permitted to dissipate by the free movement of pore water during consolidation and compression.

Consolidated-Undrained (CU) Test - a triaxial compression test in which essentially complete consolidation under the confining (chamber) pressure is followed by a shear test at constant water content.

Confining Pressure ( $\sigma_3$ ) - the isotropic chamber pressure applied to the soil specimen during consolidation and compression.

Maximum Deviator Stress ( $\sigma_1 - \sigma_3$ ) - the difference between the major and minor principal stresses in the specimen at failure. The major principal stress on the specimen is equal to the unit axial load plus the chamber pressure and the minor principal stress on the specimen is equal to the chamber pressure.

Strain Rate - axial strain,  $\epsilon$ , at a given stress level is defined as the ratio of the change in length ( $L$ ) of the specimen to the original length of the specimen ( $L_0$ ). The rate of strain was controlled during the test so that this ratio increased at equal increments for each minute of testing.

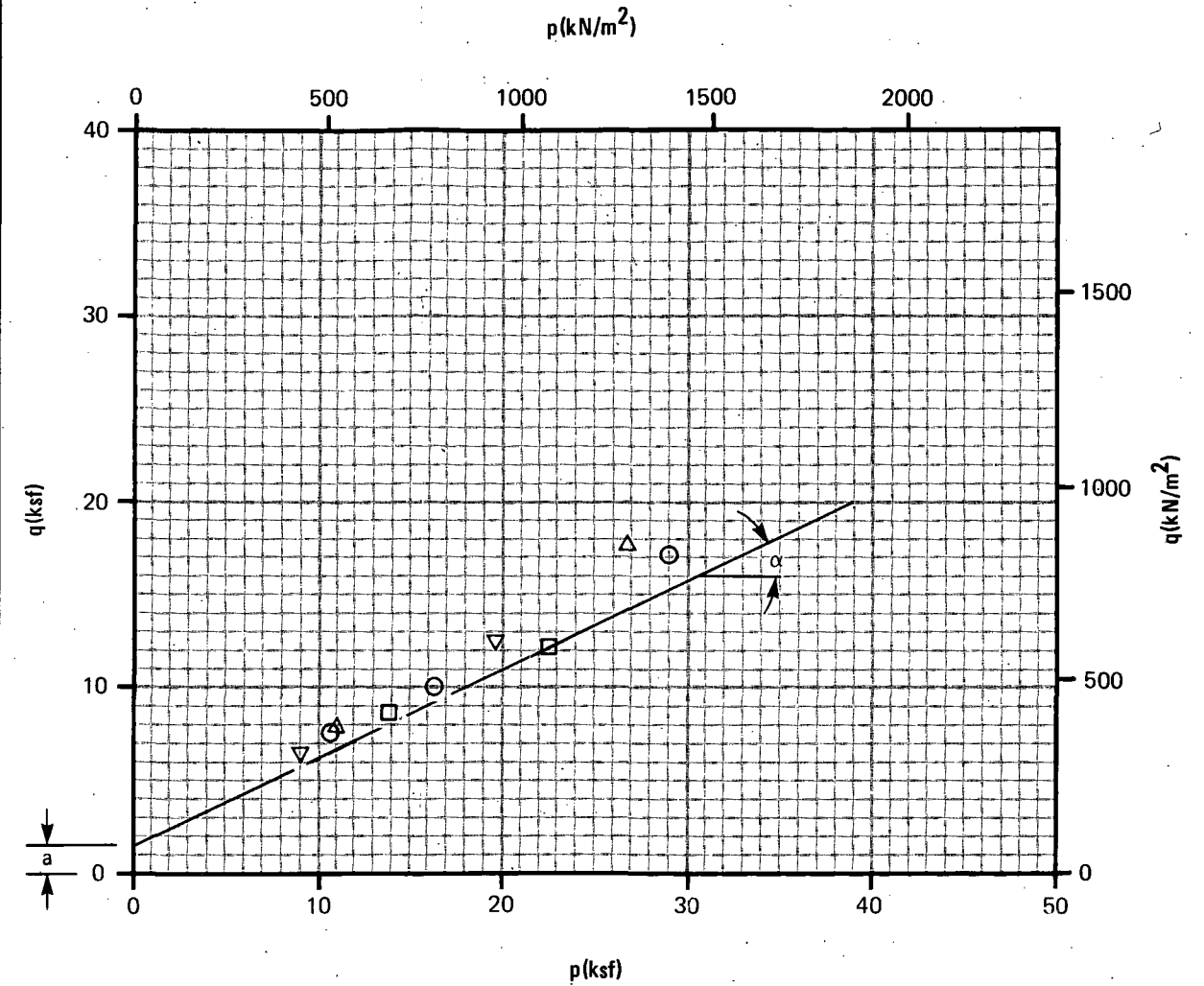
Back Pressure - pressure in excess of atmospheric applied to the pore water of a soil sample. Back pressure is usually applied to 1) increase saturation of the sample, or 2) simulate the actual in-situ pressure regime.

- K. Unconfined Compression - Test procedures were as described in ASTM D 2166-66. Unconfined compressive strength is defined as the load per unit area at which an unconfined prismatic or cylindrical specimen of soil will fail in a simple compression test. In these methods, unconfined compressive strength is taken as the maximum load attained per unit area or the load per unit area at 20 percent axial strain, whichever occurred first during the performance of a test.
- L. Direct Shear - The procedures of ASTM D 3080-72 were followed for direct shear testing. In this test, soil under an applied normal load is stressed to failure by moving one section of the soil container (shear box) relative to the other section. Normal stress is the value of load per unit area acting perpendicular to the plane of shearing. Maximum shear strength is defined as the maximum resistance (ksf) of a soil to shearing (tangential) stresses.

- M. Consolidation (ASTM D 2435-70) - A consolidation test is a test in which a cylindrical soil specimen is laterally confined in a ring and compressed between porous plates. The term "consolidation", as used here, indicates the gradual reduction in volume of the soil mass resulting from an increase in compressive stress (axial load per unit area).
- N. Chemical - The chemical tests performed on soil samples included: pH; water soluble sodium, chloride, sulphate, calcium; and calcium carbonate content. pH is an index of the acidity or alkalinity of a soil in terms of the logarithm of the reciprocal of the hydrogen ion concentration. ASTM test procedure designations for these chemical tests are included in the list on the first page of these Explanations.
- O. CBR - California Bearing Ratio (CBR) is the ratio (in percent) of the resistance to penetration developed by a subgrade soil to that developed by a standard crushed-rock base material. The procedures for conducting a CBR test were as outlined in ASTM D 1883-73. The materials tested for CBR were also analyzed for particle-size distribution (ASTM D 422-63) and compaction characteristics (ASTM D 1557-70). The term "percentage of maximum density" indicates the ratio (as a percentage) of the compacted sample dry unit weight to maximum dry density obtained in the laboratory from ASTM D 1557-70, "Moisture-Density Relations of Soils Using 10-Pound (4.5-kg) Hammer and 18-inch (457-mm) Drop."

SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	TYPE OF TEST	DRY DENSITY		MOISTURE CONTENT (%)	CONFINING PRESSURE ( $\sigma_3$ )		MAXIMUM DEVIATOR STRESS ( $\sigma_1 - \sigma_3$ )		STRAIN RATE (% min.)	COHESION (c)		FRICTION ANGLE ( $\phi$ ) DEGREES
			FEET	METERS			pcf	kg/m <sup>3</sup>		ksf	kN/m <sup>2</sup>	ksf	kN/m <sup>2</sup>		ksf	kN/m <sup>2</sup>	
○	CE-B-1	P-15	59.0 - 59.7	17.98 - 18.20	ML	CD	88.5	1418	10.8	3.0	144	15.4	737	0.07	2.3	110	31°
		P-15	59.7 - 60.4	18.20 - 18.41	ML	CD	78.7	1261	24.5	5.9	282	20.4	977	0.07			
		P-15	60.4 - 61.1	18.41 - 18.62	ML	CD	87.9	1408	13.6	11.8	565	34.5	1652	0.07			
△	CE-B-2	P-18	63.6 - 64.3	19.39 - 19.60	SM	CD	103.4	1656	19.4	3.0	144	15.3	733	0.07	1.4	67	39°
		P-18	62.9 - 63.6	19.17 - 19.39	SM	CD	105.9	1697	21.1	9.1	436	35.5	1700	0.08			
▽	CE-B-12	P-12	35.0 - 35.9	10.67 - 10.94	CL	CD	86.9	1392	20.8	2.4	115	25.2	1207	0.07	1.8	86	34°
		P-12	35.9 - 36.7	10.94 - 11.19	CL	CD	97.0	1554	12.4	7.1	340	13.3	637	0.07			
□	CE-B-14	P-14	69.3 - 70.0	21.12 - 21.34	CL-ML	CD	80.5	1290	14.9	5.0	239	17.6	843	0.08	3.1	148	25°
		P-14	70.0 - 70.7	21.34 - 21.55	CL-ML	CD	77.0	1234	36.9	10.1	484	24.9	1192	0.08			

NOTES:  $p = \frac{\sigma_1 + \sigma_3}{2}$ ,  $q = \frac{\sigma_1 - \sigma_3}{2}$   
 $c = \frac{a}{\cos \phi}$ ,  $\phi = \sin^{-1}(\tan \alpha)$



SUMMARY OF TRIAXIAL COMPRESSION TEST RESULTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-5-1

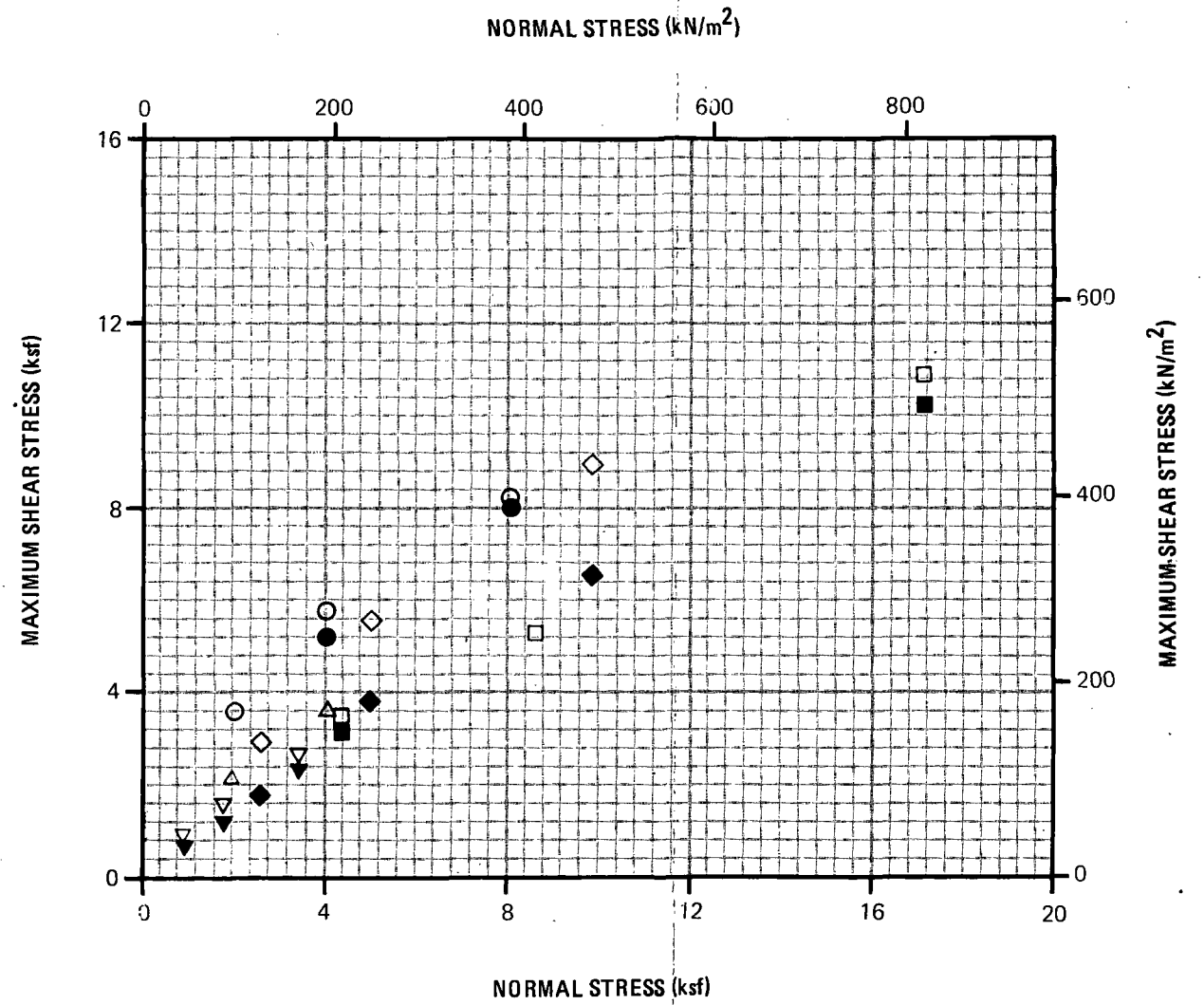
**FUGRO NATIONAL, INC.**





SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	TYPE OF TEST	DRY DENSITY		MOISTURE CONTENT (%)	COHESION (c)		FRICTION ANGLE (φ) DEGREES
			FEET	METERS			pcf	kg/m <sup>3</sup>		ksf	kN/m <sup>2</sup>	
○	CE-B-1	P-13	45.0 - 45.6	13.72 - 13.90	SM	CD	94.6	1515	9.9	2.1	101	39.5°
●									32.1	2.4	115	35°
△	CE-B-6	D-8	19.5 - 20.5	5.94 - 6.25	SM	CD	120.9	1937	1.3	0.5	24	39°
▽	CE-B-7	P-10	17.5 - 18.3	5.33 - 5.58	SM	CD	105.9	1697	11.6	0.3	14	34°
▼									20.8	0.3	14	30°
□	CE-B-8	P-21	86.0 - 86.7	26.21 - 26.43	SM	CD	92.6	1483	24.4	1.2	57	28°
■									21.6	0.5	24	31.5°
◇	CE-B-9	D-16	49.0 - 50.0	14.94 - 15.24	SM	CD	109.4	1753	7.6	1.1	53	39°
◆									21.3	0.2	10	33°
CONTINUED ON NEXT PAGE												

○, △, ▽, □, ◇ — Tested at natural moisture content  
 ●, ▼, ■, ◆ — Tested in soaked condition



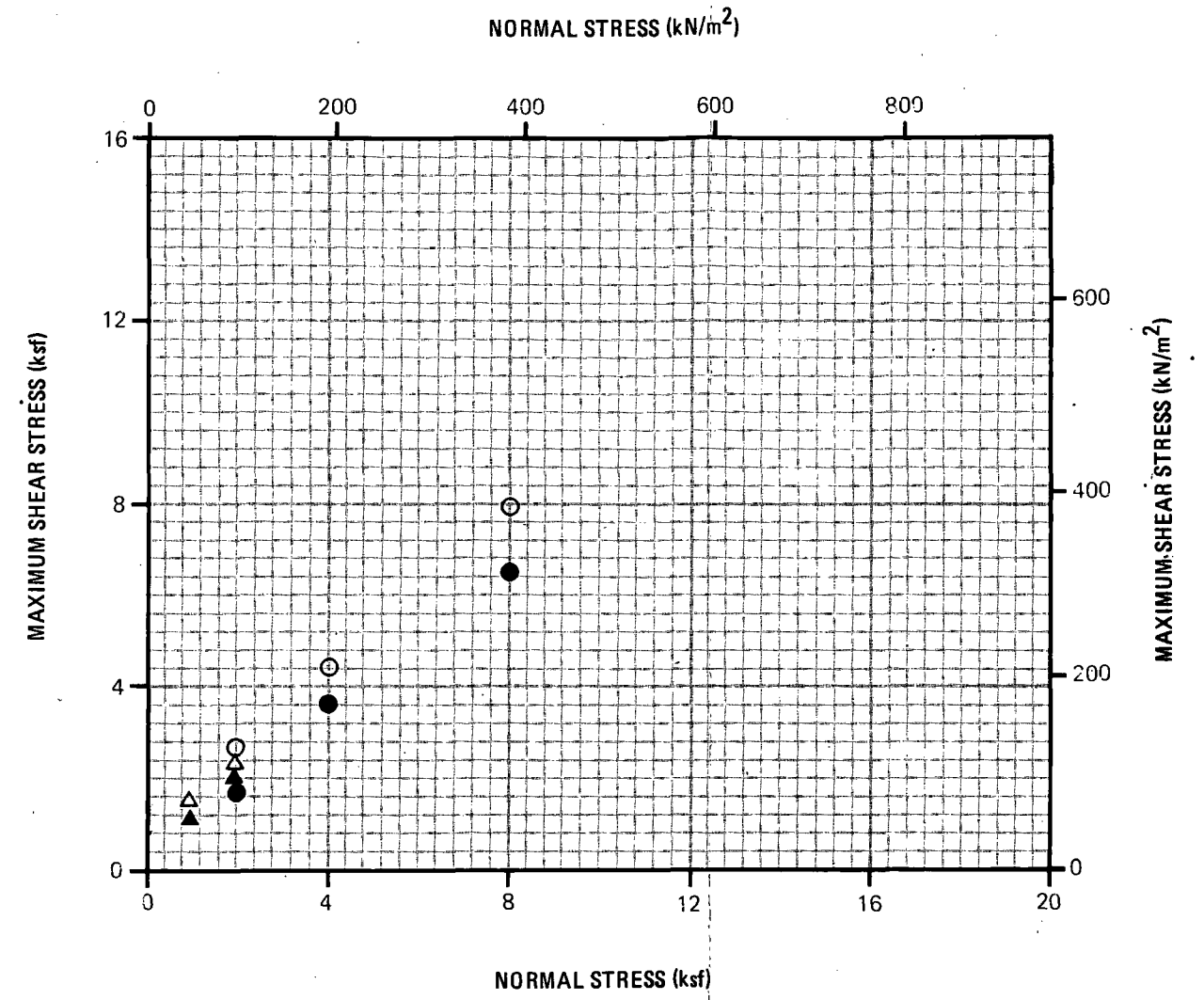
SUMMARY OF DIRECT SHEAR TEST RESULTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE — BMO	FIGURE II-5-2 2 OF 4
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**FUGRO NATIONAL, INC.**

SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	TYPE OF TEST	DRY DENSITY		MOISTURE CONTENT (%)	COHESION (c)		FRICTION ANGLE (φ) DEGREES
			FEET	METERS			pcf	kg/m <sup>3</sup>		ksf	kN/m <sup>2</sup>	
○	CE-B-9	D-14	40.0 - 41.0	12.19 - 12.50	SM	CD	112.1	1796	5.1	0.8	38	42°
●									17.8	0.2	10	38°
△	CE-B-11	D-5	10.5 - 11.5	3.20 - 3.51	SP-SM	CD	110.6	1772	3.7	0.4	19	42.5°
▲									18.8	0.4	19	36.5°
CONTINUED ON NEXT PAGE												

○, △ — Tested at natural moisture content  
 ●, ▲ — Tested in soaked condition



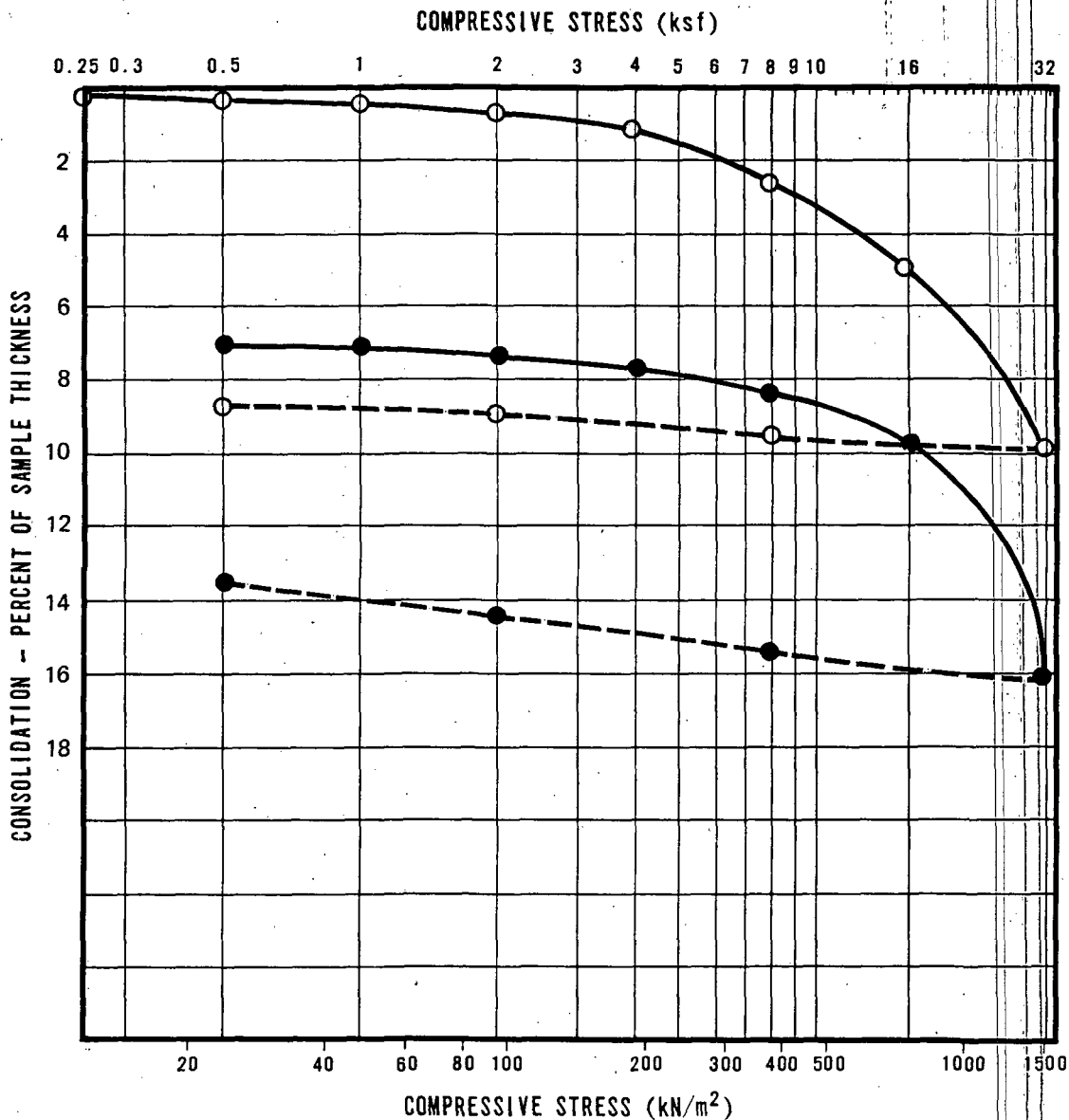
SUMMARY OF DIRECT SHEAR TEST RESULTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE — BMO

FIGURE  
 II-5-2  
 3 OF 4

**FUGRO NATIONAL, INC.**





SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-1	P-16	68.0 - 68.8	20.73 - 20.97	ML	72.2	1157	30.8	1.33	62.5

- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

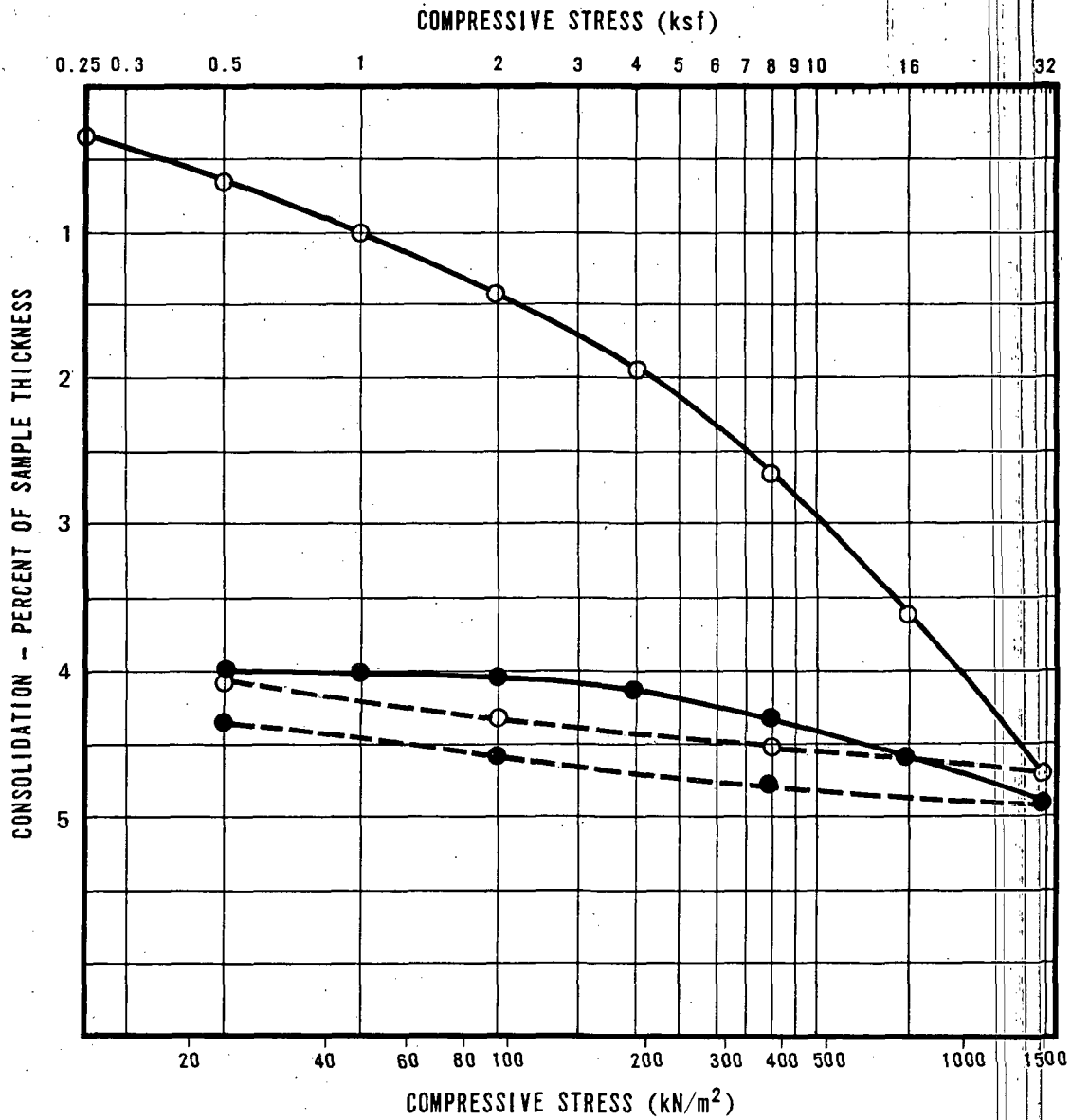
**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

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MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

**FIGURE**  
**II-5-3**  
 1 OF 9

FUGRO NATIONAL, INC.



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-2	P-19	62.5 - 62.9	19.05 - 19.17	SM	97.1	1556	26.0	0.74	94.9

- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

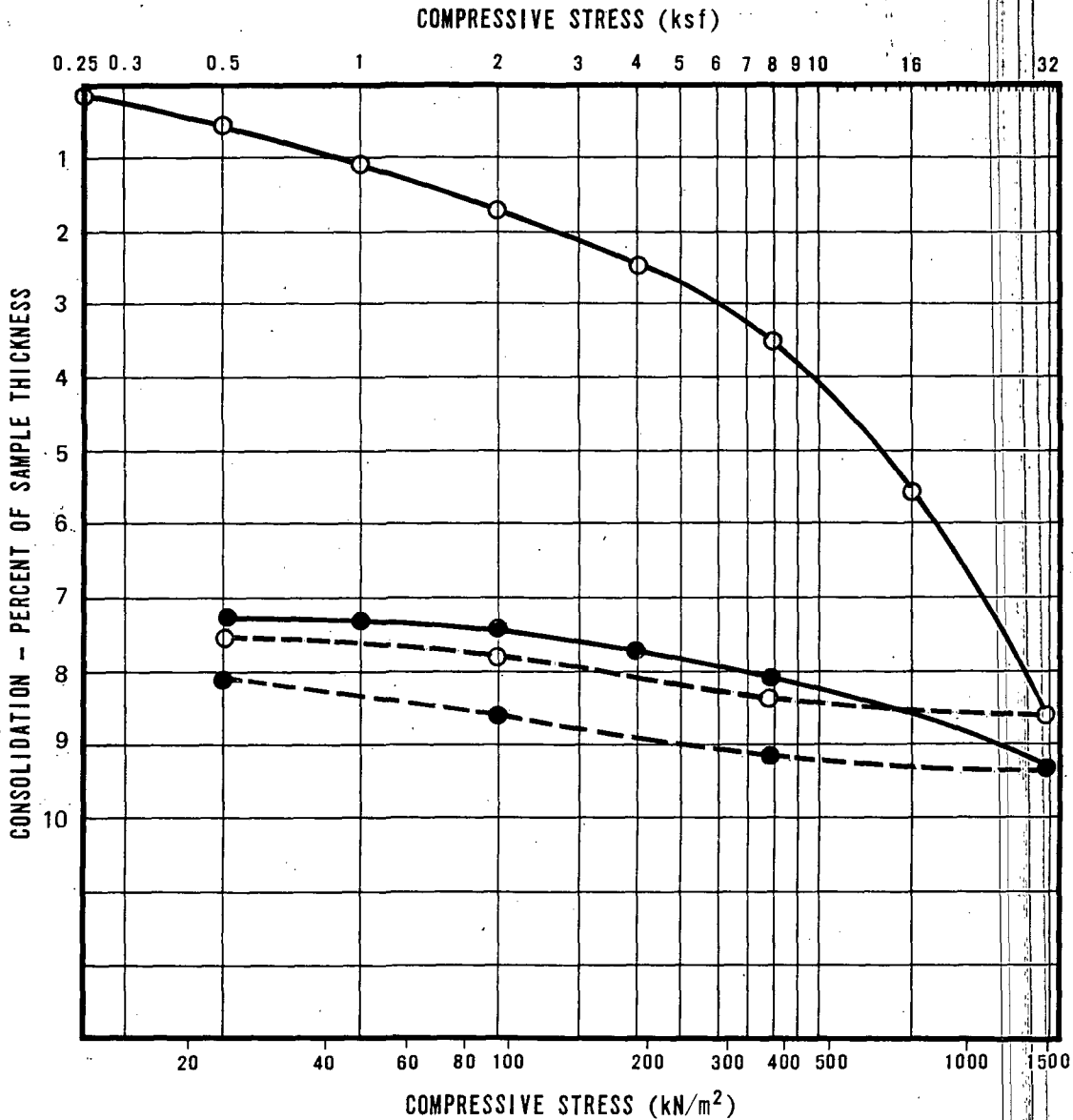
**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

---

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMD

FIGURE  
**II-5-3**  
 2 OF 9

FUGRO NATIONAL, INC.



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m³			
○	CE-B-2	P-20	73.0 - 73.8	22.25 - 22.49	ML	80.0	1281	22.7	1.11	55.2

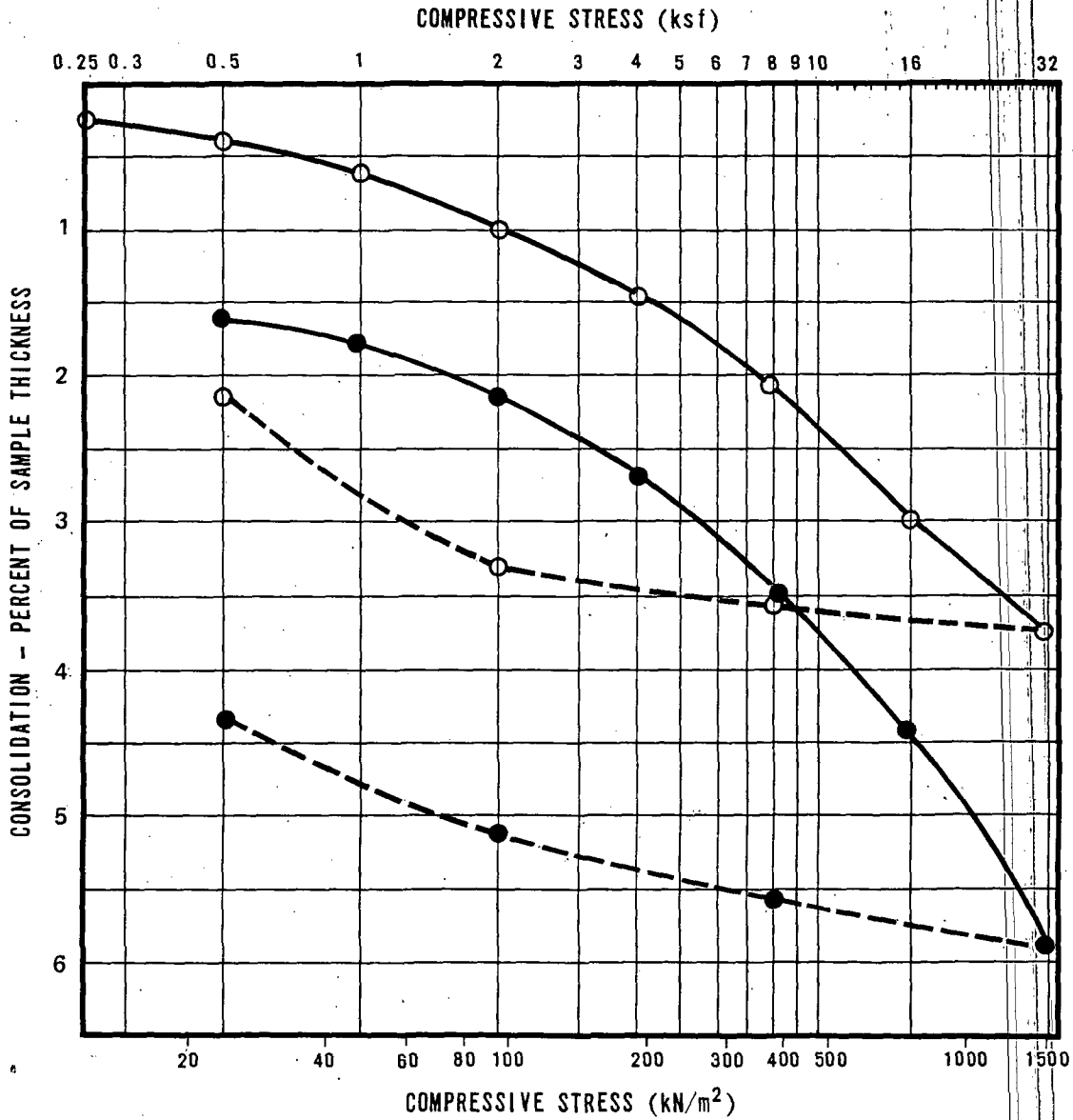
- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 Π-5-3  
 3 OF 9

**FUGRO NATIONAL, INC.**



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-6	D-9	26.0 - 27.0	7.92 - 8.23	SM.	107.4	1721	4.1	0.57	19.4

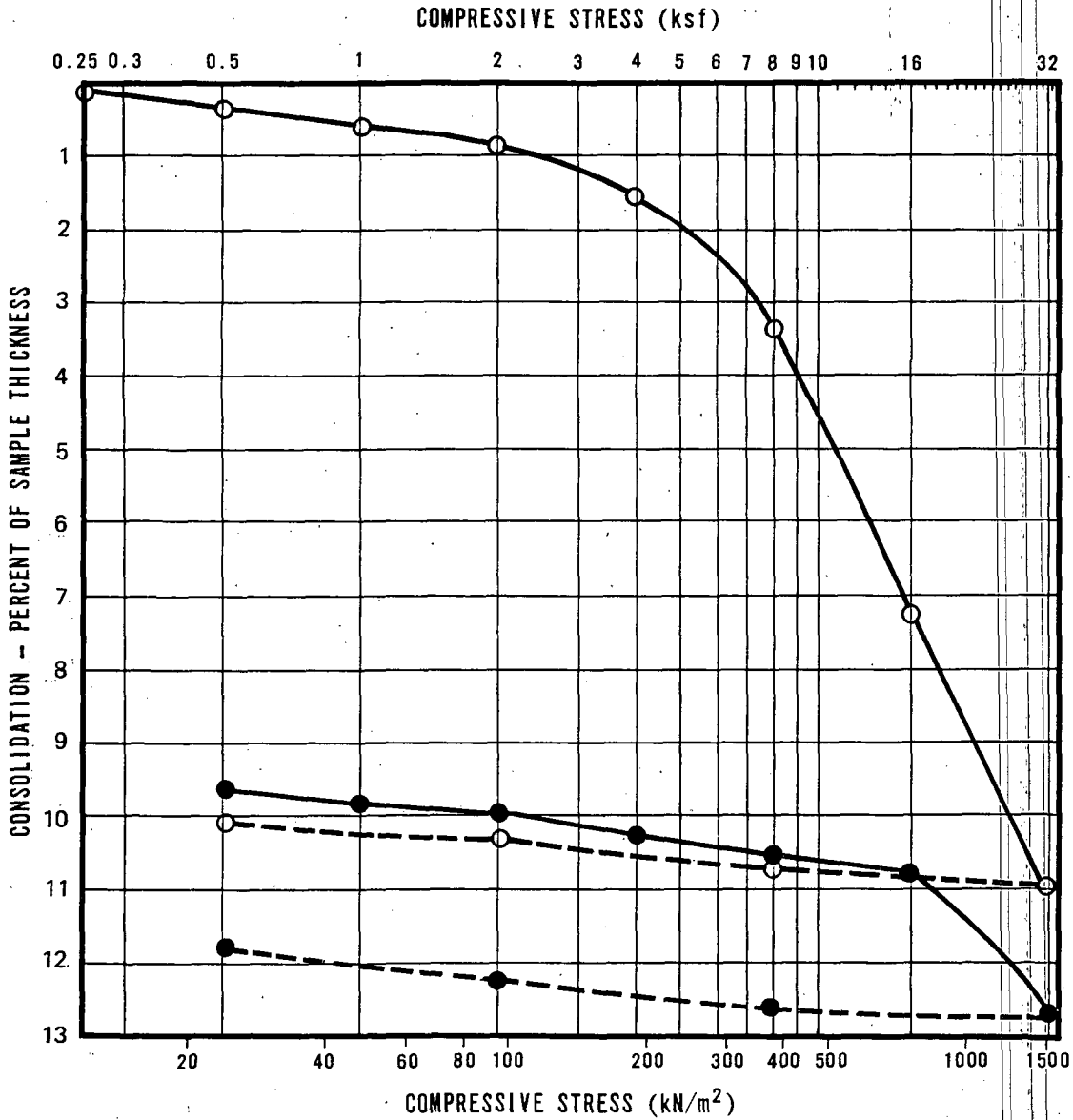
- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMD

FIGURE  
**II-5-3**  
 4 OF 9

**UGRO NATIONAL, INC.**



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-8	P-7	10.2 - 10.6	3.11 - 3.23	ML	85.6	1371	8.7	0.97	24.2

- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

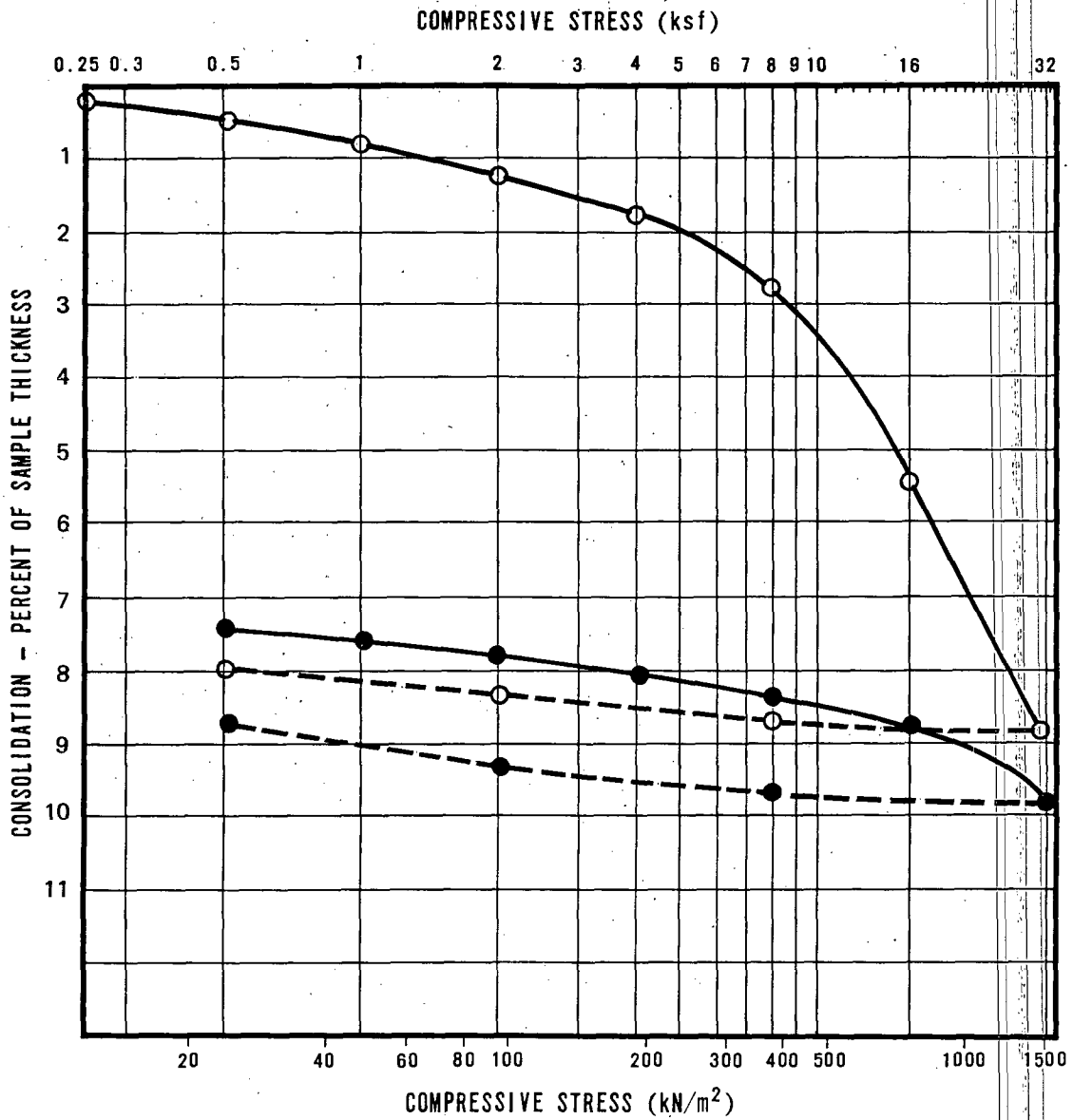
**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
**II-5-3**  
 5 OF 9

**UGRO NATIONAL, INC.**





SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-8	P-11	30.0 - 30.7	9.14 - 9.36	ML	95.5	1530	15.8	0.79	54.8

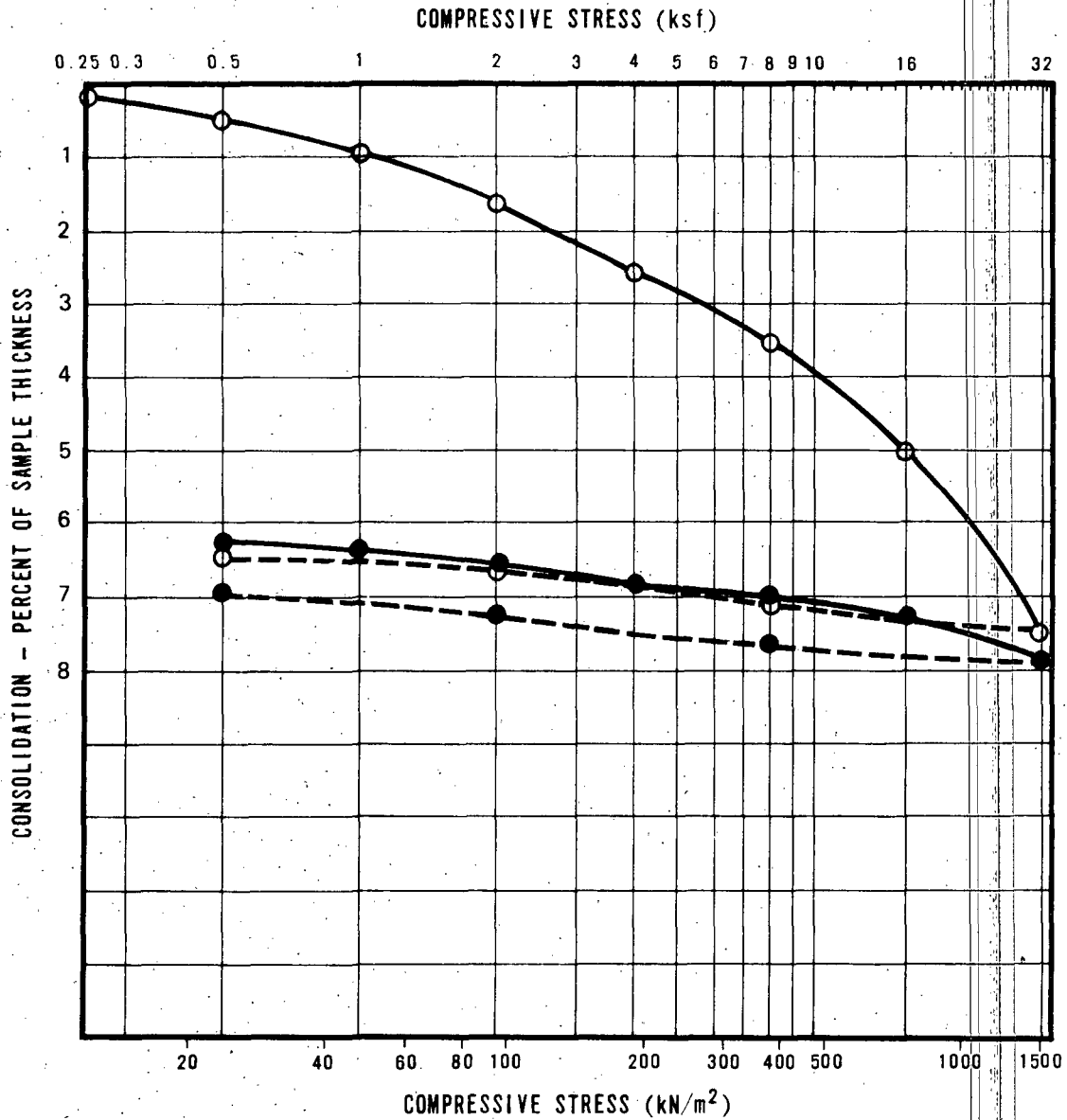
- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

**CONSOLIDATION TEST RESULTS  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA**

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
II-5-3  
6 OF 9

**UGRO NATIONAL, INC.**



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m³			
○	CE-B-11	P-9	30.1 - 30.8	9.17 - 9.39	SP-SM	92.5	1482	10.9	0.82	35.9

- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

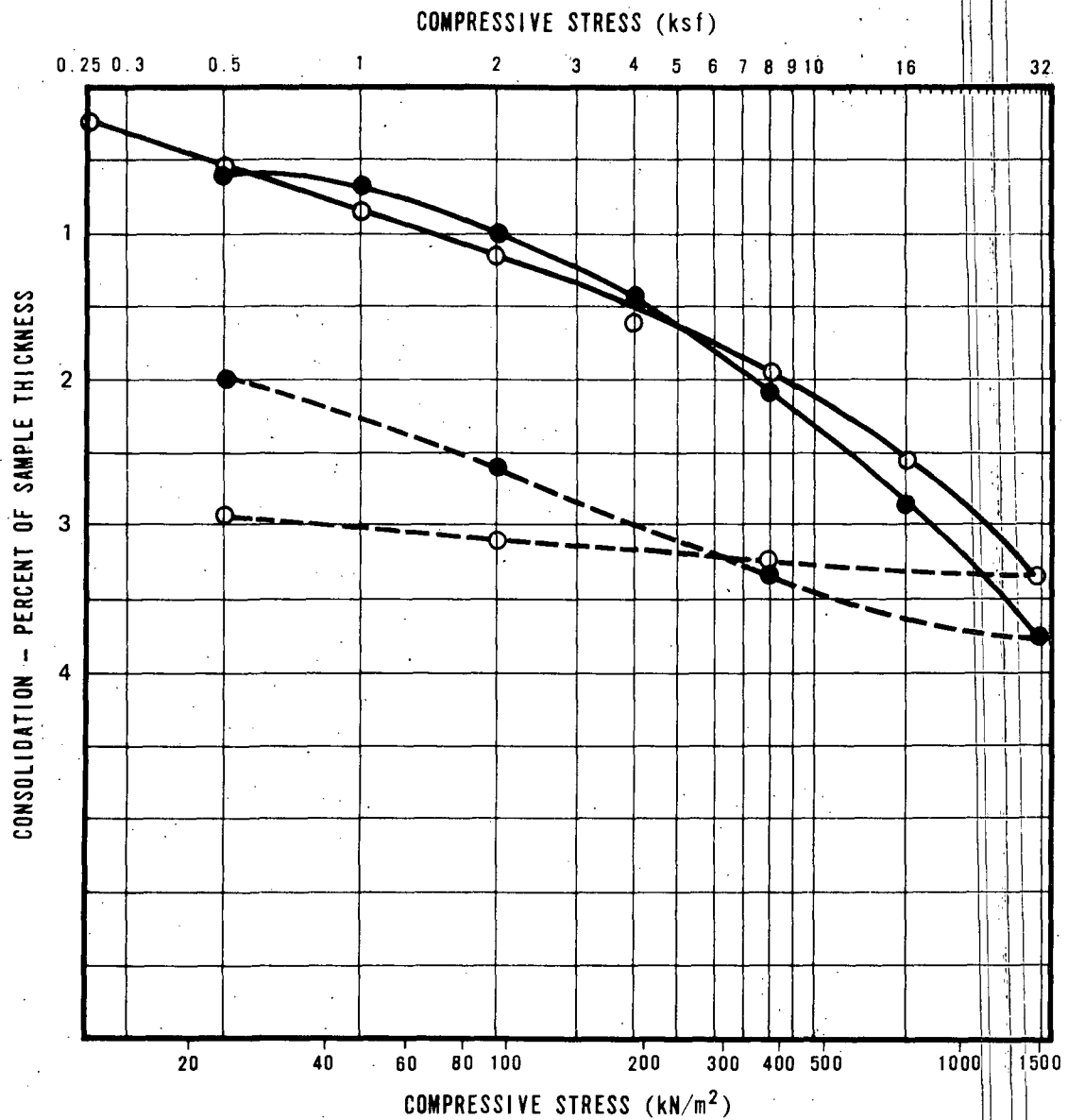
**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

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MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BNO

FIGURE  
**II-5-3**  
 7 OF 9

**UGRO NATIONAL, INC.**



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-12	D-14	45.0 - 46.0	13.72 - 14.02	ML	100.3	1607	10.2	0.68	40.5

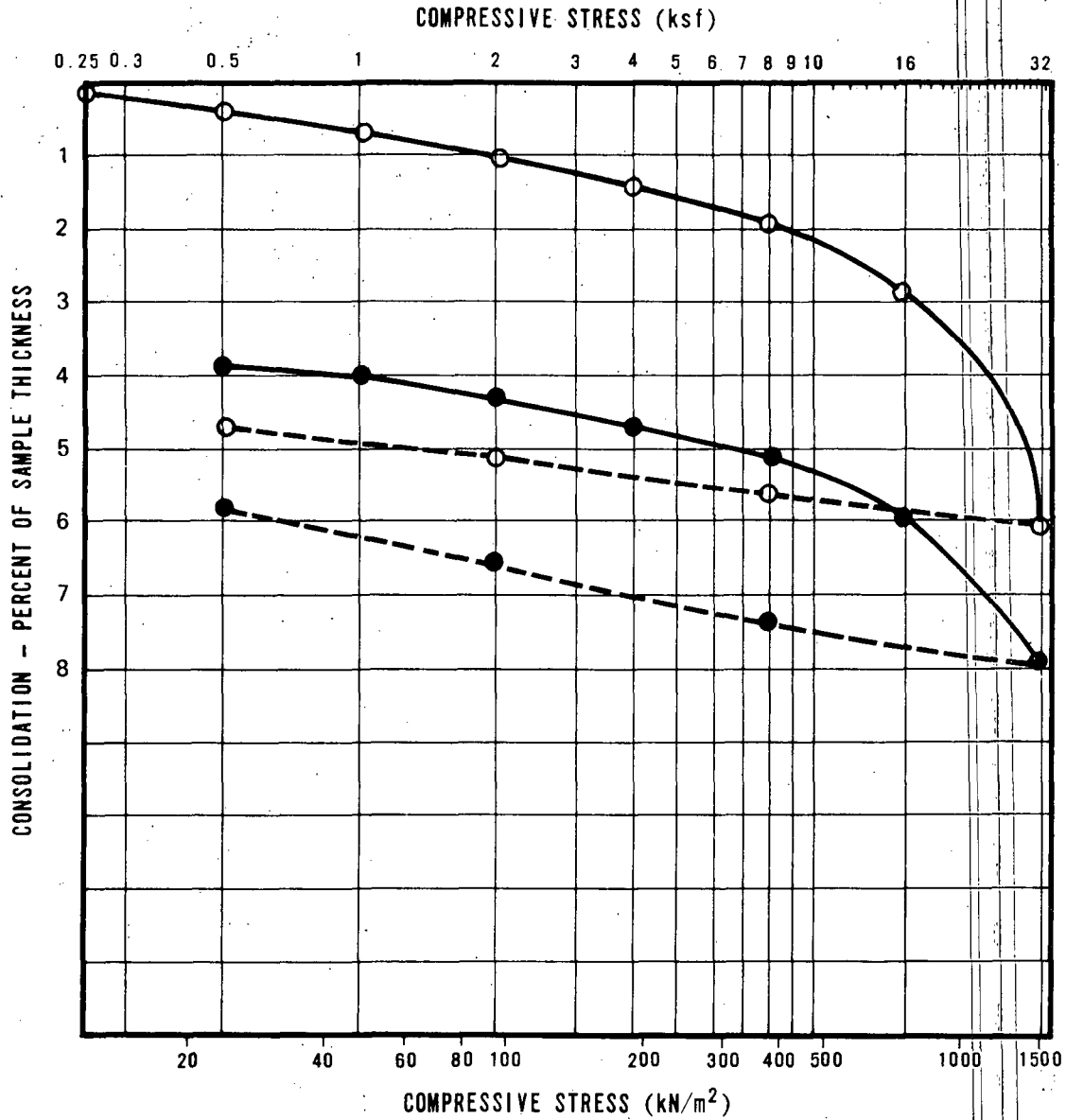
- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

CONSOLIDATION TEST RESULTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE BMD

FIGURE  
 II-5-3  
 8 OF 9

**FUGRO NATIONAL, INC.**



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m <sup>3</sup>			
○	CE-B-14	P-14	69.2 - 69.3	21.09 - 21.12	CL-ML	80.6	1291	22.7	1.09	56.2

- AT FIELD MOISTURE
- AFTER ADDITION OF WATER
- COMPRESSION
- - - REBOUND

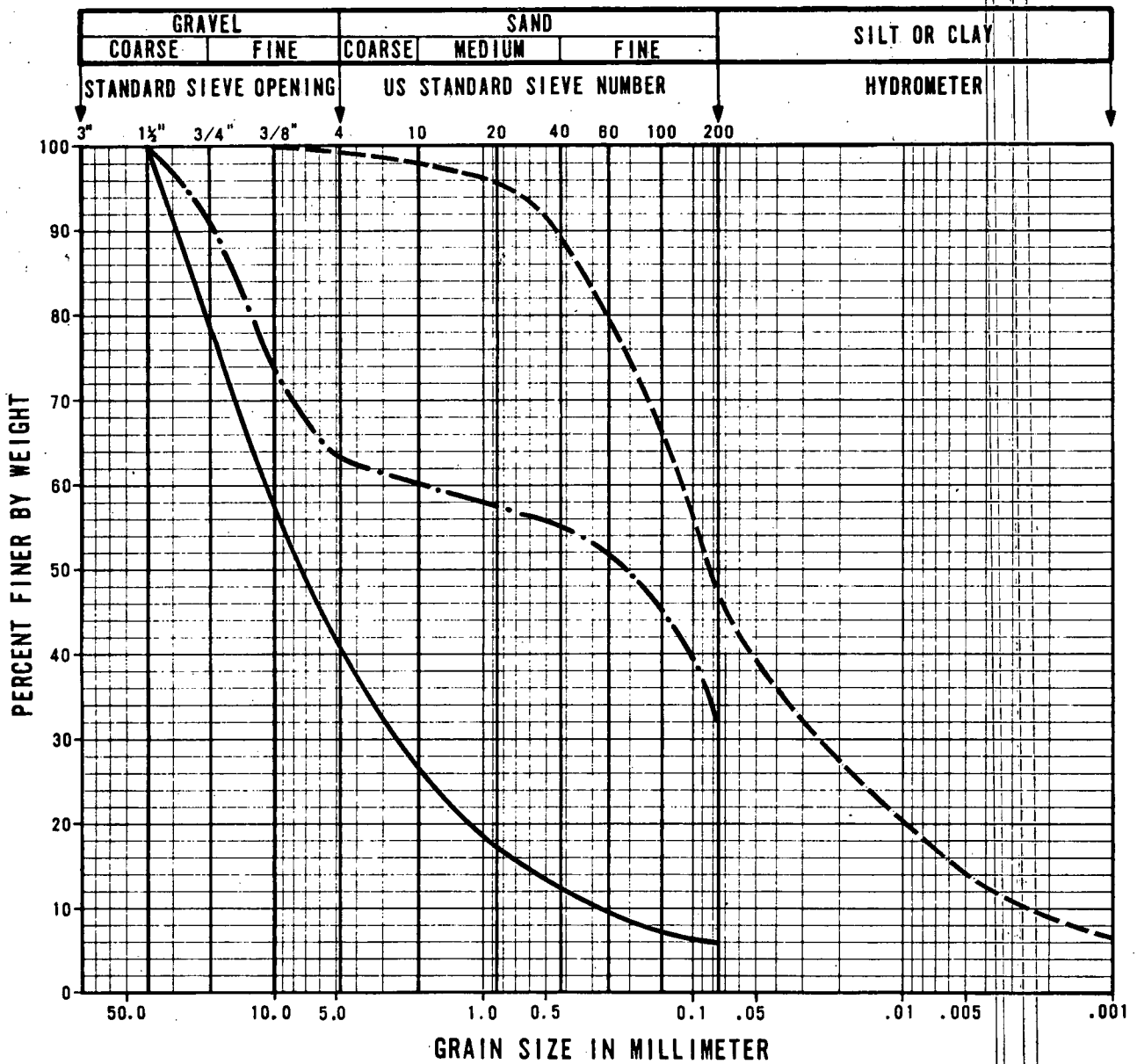
**CONSOLIDATION TEST RESULTS**  
**OPERATIONAL BASE SITE**  
**COYOTE SPRING VALLEY, NEVADA**

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MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE BMO

FIGURE  
**II-5-3**  
 9 OF 9

**UGRO NATIONAL, INC.**



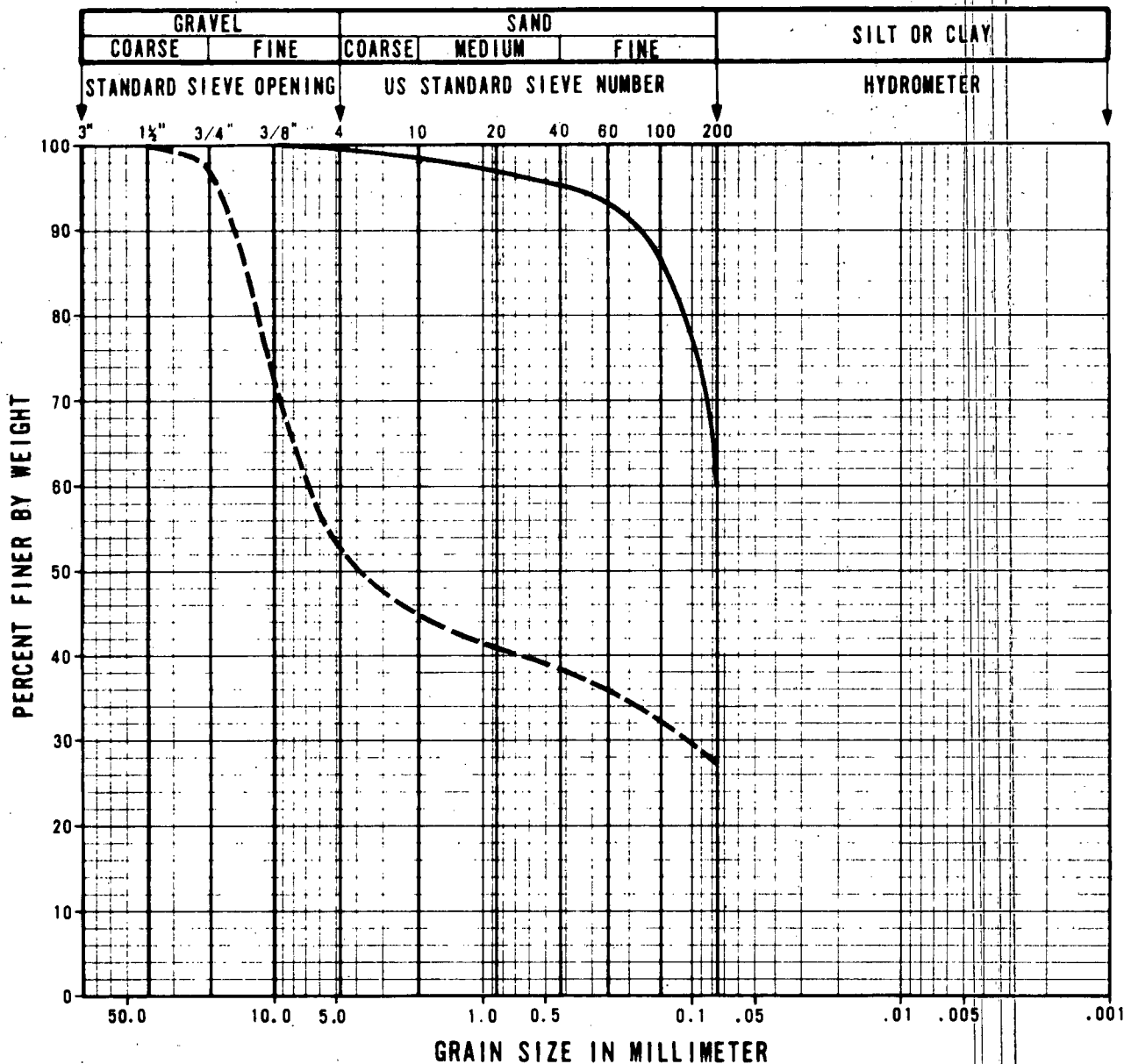
SYMBOL	COMPOSITE SAMPLE NUMBER	ACTIVITY NUMBER	SAMPLE INTERVAL		SOIL TYPE
			FEET	METERS	
—	A	CE-T-1	0.5 - 2.0	0.15 - 0.61	GW-GM
---	B	CE-T-2	0.5 - 2.0	0.15 - 0.61	SM
- · - ·	C	CE-T-4	0.5 - 2.0	0.15 - 0.61	GM

GRAIN SIZE CURVES, CBR TESTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-5-4  
 1 OF 3

**FUGRO NATIONAL, INC.**

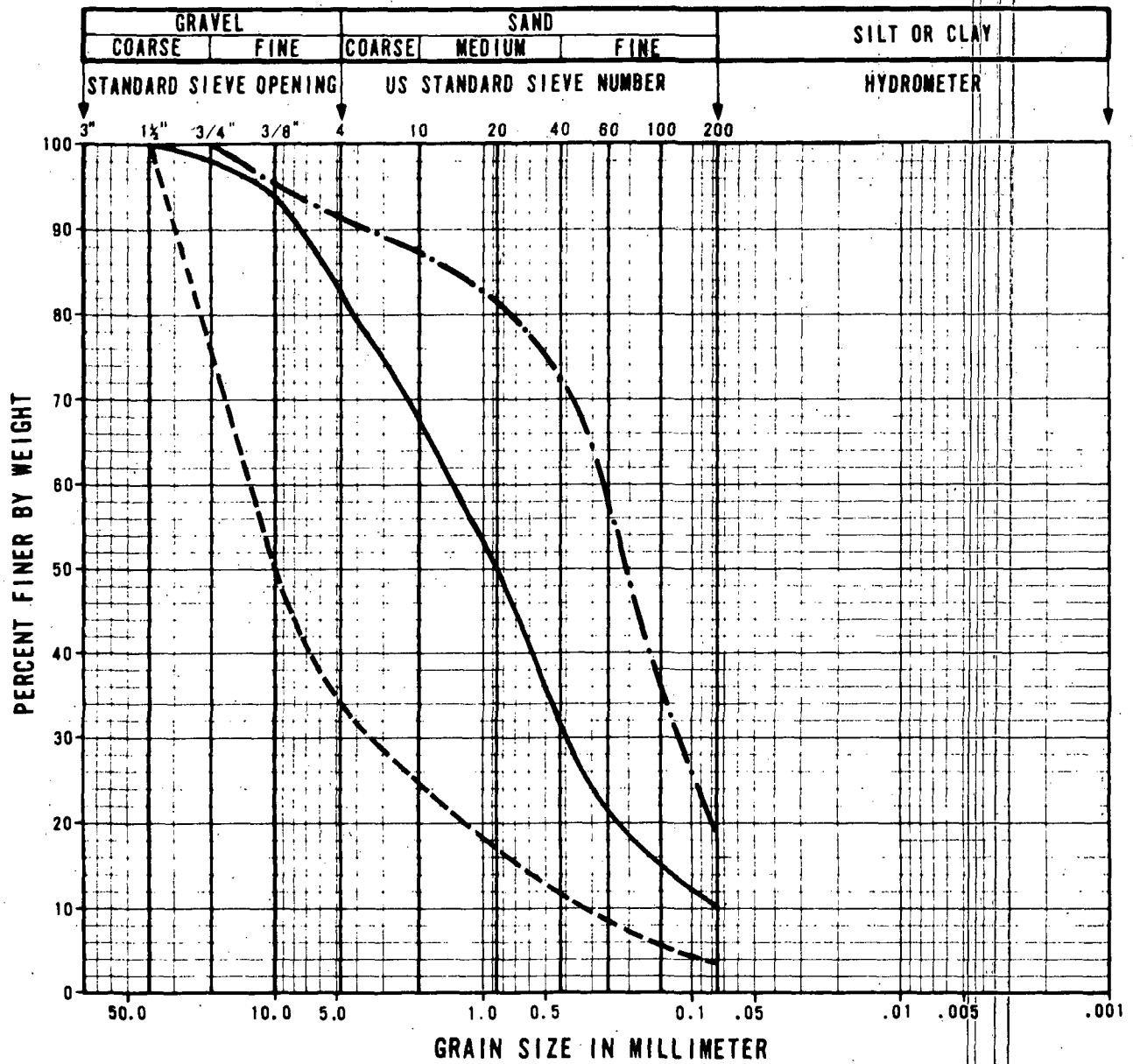


SYMBOL	COMPOSITE SAMPLE NUMBER	ACTIVITY NUMBER	SAMPLE INTERVAL		SOIL TYPE
			FEET	METERS	
—	D	CE-T-7	0.5 - 2.0	0.15 - 0.61	ML
- -	E	CE-T-13	0.5 - 2.0	0.15 - 0.61	GM

GRAIN SIZE CURVES, CBR TESTS  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE	BM0	FIGURE II-54 2 OF 3
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**TUGRO NATIONAL, INC.**



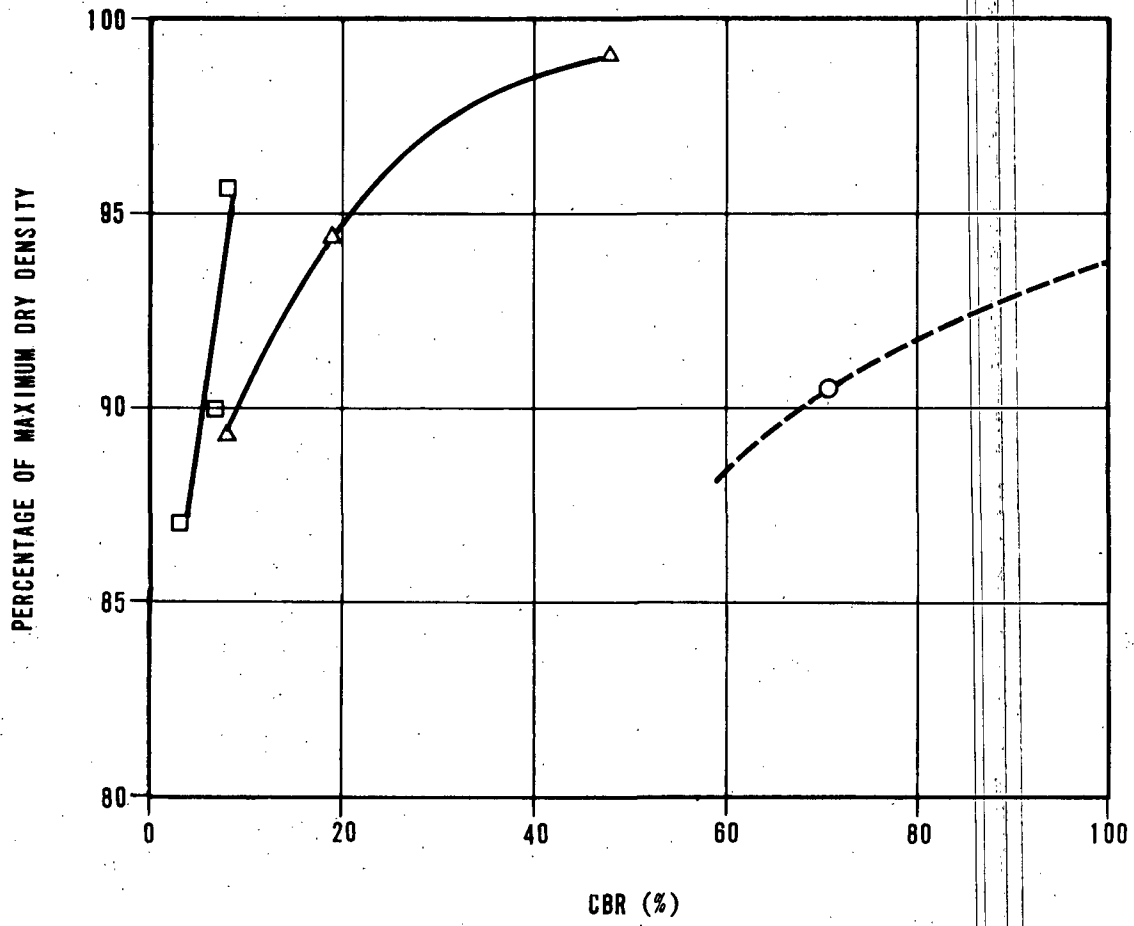
SYMBOL	COMPOSITE SAMPLE NUMBER	ACTIVITY NUMBER	SAMPLE INTERVAL		SOIL TYPE
			FEET	METERS	
—	F	CE-T-14	0.5 - 2.0	0.15 - 0.61	SW-SM
- -	G	CE-P-6	0.5 - 2.0	0.15 - 0.61	GW
- · -	H	CE-P-12	0.5 - 2.0	0.15 - 0.61	SM

GRAIN SIZE CURVES, CBR TESTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION ON  
 DEPARTMENT OF THE AIR FORCE BMO

FIGURE  
 II-5-4  
 3 OF 3

**FUGRO NATIONAL, INC.**



SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	A	GW-GM
□	B	SM
△	C	GM

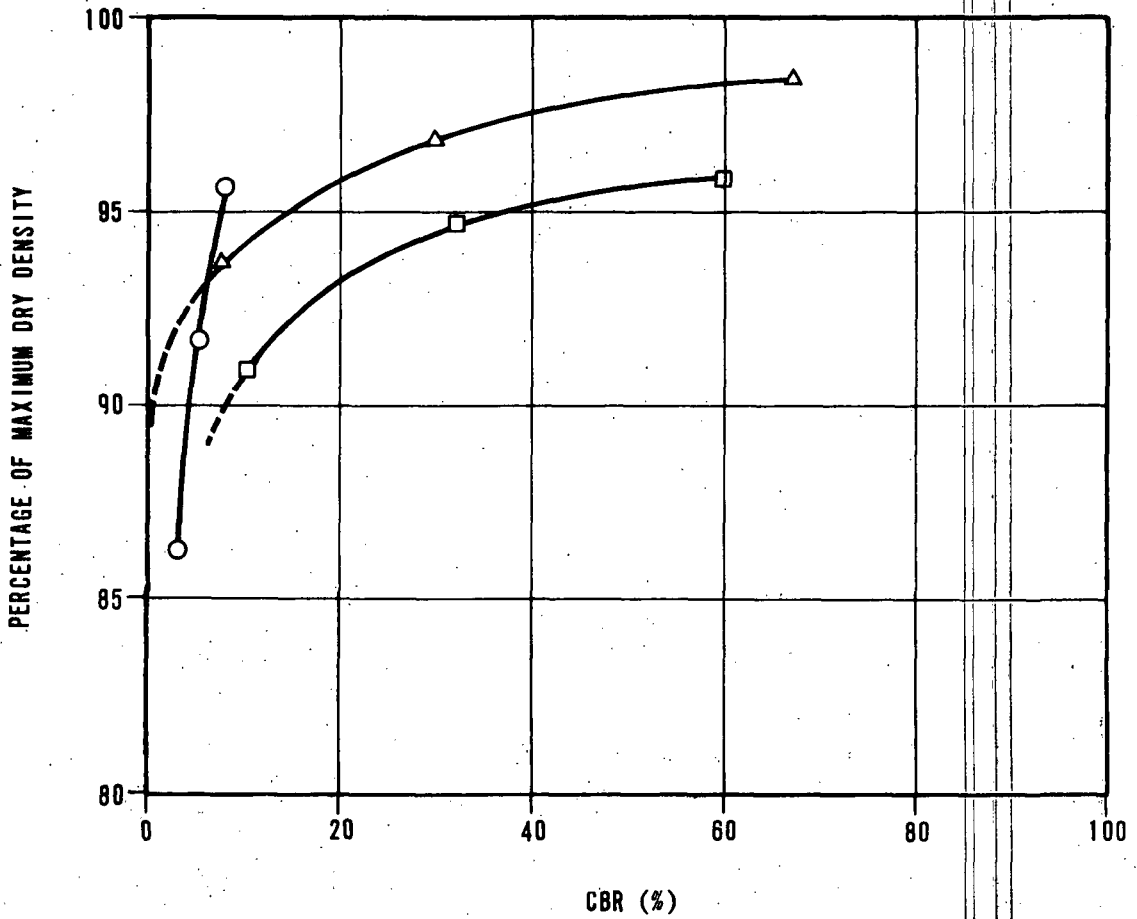
CALIFORNIA BEARING RATIO (CBR) CURVES  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-5-5  
 1 OF 3

**FUGRO NATIONAL, INC.**





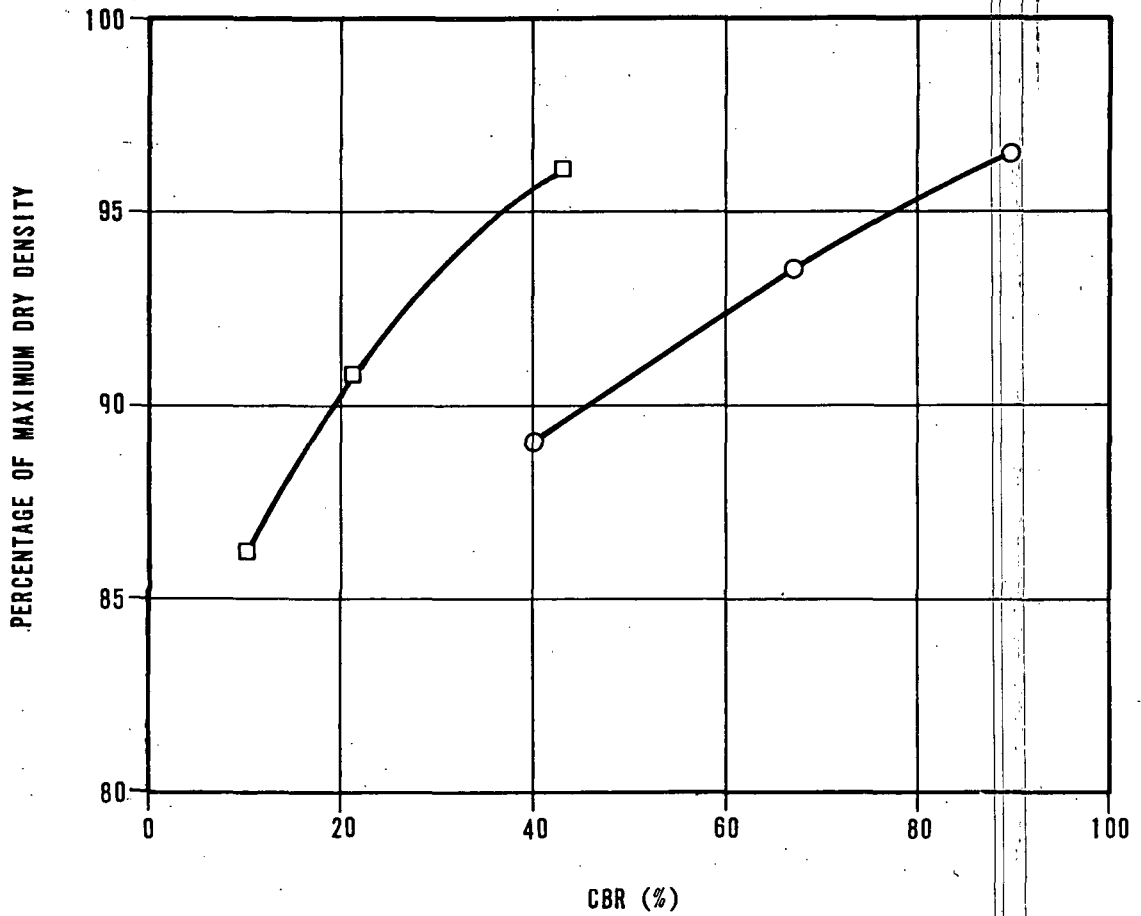
SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	D	ML
□	E	GM
△	F	SW-SM

CALIFORNIA BEARING RATIO (CBR) CURVES  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-5-5  
 2 OF 3

**UGRO NATIONAL, INC.**



SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	G	GW
□	H	SM

CALIFORNIA BEARING RATIO (CBR) CURVES  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMD

FIGURE  
 II-5-5  
 3 OF 3

**FUGRO NATIONAL, INC.**



ACTIVITY NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	pH	WATER SOLUBLE				CALCIUM CARBONATE mg/kg
		FEET	METERS			SODIUM	CHLORIDE	SULPHATE	CALCIUM	
						mg/kg	mg/kg	mg/kg	mg/kg	
CE-B-1	P - 16	68.0 - 68.8	20.73 - 20.97	ML	8.0	388	86	43	205	789
CE-B-2	b - 12	35.0 - 36.0	10.67 - 10.97	GM-GC	8.0	36	73	24	782	1280
	P - 20	73.0 - 73.8	22.25 - 22.49	ML	8.2	35	58	35	180	836
	P - 27	161.4 - 162.0	49.19 - 49.38	ML	8.0	47	97	77	225	964
CE-B-4	b - 9	25.0 - 26.0	7.62 - 7.92	SP-SM	7.9	118	136	39	467	1460
CE-B-5	b - 15	50.0 - 51.0	15.24 - 15.54	GP	8.0	17	64	39	298	1120
CE-B-12	SS - 4	5.0 - 6.0	1.52 - 1.83	SM	8.4	51	58	73	90	562
CE-B-13	D - 3	7.5 - 8.3	2.29 - 2.53	GM	8.0	141	107	121	573	1130
CE-T-11	B - 1	0.5 - 1.5	0.15 - 0.46	GM	7.7	485	770	444	1170	1906
CE-T-12	B - 1	0.5 - 2.0	0.15 - 0.61	GP-GM	8.3	357	65	102	219	1100
CE-P-22	b - 1	0.5 - 2.0	0.15 - 0.61	GP-GM	7.8	97	78	385	492	656
CE-P-24	b - 1	0.5 - 2.0	0.15 - 0.61	GP-GM	8.0	132	121	36	675	1500

SUMMARY OF CHEMICAL TEST RESULTS  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MAX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

**UGRO NATIONAL, INC.**

TABLE  
 II-5-3

COMPOSITE SAMPLE NUMBER	SOIL TYPE	PERCENT PASSING #200	ATTERBERG LIMITS		SPECIFIC GRAVITY	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	COMPACTED DRY DENSITY		COMPACTED MOISTURE (%)	PERCENT OF MAXIMUM DRY DENSITY	CBR (%)
			LL	PI		pcf	kg/m <sup>3</sup>		pcf	kg/m <sup>3</sup>			
A	GW- GM	6				146.0	2339	5.9	140.5	2251	5.3	96.3	150
									138.1	2212	5.3	94.6	113
									132.0	2115	5.2	90.4	71
B	SM	46		NP		117.0	1874	13.5	111.8	1791	14.2	95.6	8
									105.2	1685	14.1	89.9	7
									101.9	1632	14.2	87.1	3
C	GM	32			2.70	127.0	2035	11.0	125.7	2014	10.2	99.0	48
									119.9	1921	10.6	94.4	19
									113.4	1817	11.4	89.3	8
D	ML	61			2.64	123.5	1978	11.5	118.1	1892	12.0	95.6	8
									113.2	1813	11.5	91.7	5
									106.5	1706	11.5	86.2	3

CALIFORNIA BEARING RATIO (CBR)  
TEST RESULTS  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE - BMO

**JUGRO NATIONAL, INC.**

TABLE  
II-5-4  
1 OF 2

COMPOSITE SAMPLE NUMBER	SOIL TYPE	PERCENT PASSING #200	ATTERBERG LIMITS		SPECIFIC GRAVITY	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	COMPACTED DRY DENSITY		COMPACTED MOISTURE (%)	PERCENT OF MAXIMUM DRY DENSITY	CBR (%)
			LL	PI		pcf	kg/m <sup>3</sup>		pcf	kg/m <sup>3</sup>			
E	GM	28			2.67	126.6	2028	10.3	121.3	1943	11.1	95.8	60
									119.9	1921	10.3	94.7	32
									115.1	1844	9.3	90.9	10
F	SW-SM	11				122.0	1954	10.0	120.0	1922	9.6	98.4	67
									118.1	1892	9.8	96.8	30
									114.4	1833	9.8	93.7	7
G	GW	4				148.0	2371	5.2	142.7	2286	5.0	96.5	90
									138.4	2217	5.1	93.5	67
									131.9	2113	5.0	89.1	40
H	SM	19		NP		121.4	1945	10.5	116.7	1870	10.5	96.1	43
									110.2	1765	10.2	90.8	21
									104.7	1677	10.3	86.2	10

CALIFORNIA BEARING RATIO (CBR)  
 TEST RESULTS:  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMD

**JURONATIONAL, INC.**

TABLE II-5-4  
 2 OF 2

SECTION 6.0

CONE PENETROMETER TEST RESULTS

## 6.0 EXPLANATION OF CONE PENETROMETER TEST RESULTS

The results of all cone penetrometer tests are presented in this section. Explanations of the test results are as follows:

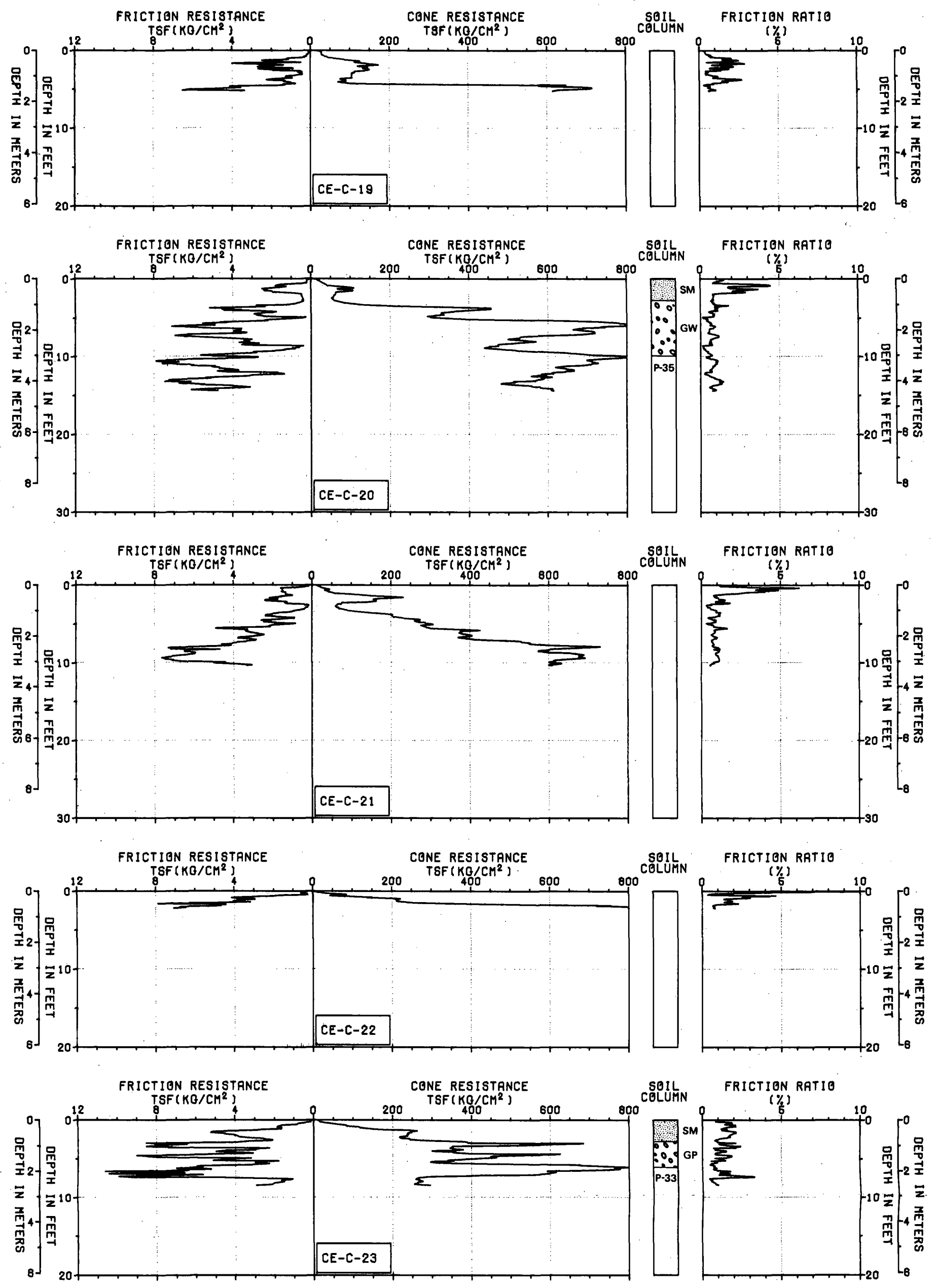
- A. Friction Resistance - The resistance to penetration developed by the friction sleeve, equal to the vertical force applied to the sleeve divided by its surface area. This resistance is the sum of friction and adhesion.
- B. Cone Resistance - The resistance to penetration developed by the cone, equal to the vertical force applied to the cone divided by its horizontally projected area.
- C. Friction Ratio - The ratio of friction resistance to cone resistance.
- D. Designation - Each cone penetrometer test is identified by a number: for example C-1.

C - abbreviation for the CPT  
1 - number of the test

- E. Soil Column - A graphical presentation of the soil type versus depth at each cone penetrometer test location where either a boring, trench or test pit was performed. The Unified Soil Classification Symbol for each different soil type is listed immediately to the right of the soil column.

Immediately below the soil column, the activity number for the corresponding boring, trench, or test pit at each CPT location is given.





CONE PENETROMETER TEST CE-C-19, 20, 21, 22 & 23  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA  
 MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO  
 FIGURE II-6-1  
 4 OF 11

**FUGRO NATIONAL, INC.**

SECTION 7.0  
SEISMIC REFRACTION DATA

## 7.0 EXPLANATIONS OF SEISMIC REFRACTION DATA

Each figure shows seismic wave travel times plotted versus surface distance between the energy source (shot) and the detector (geophone) for a single seismic line. Distances are measured along the line from geophone number 1 which is designated as zero distance. Distances to the right (on the paper) of geophone 1 are positive. The direction arrow gives the approximate direction along the geophone array from geophone 1 to geophone 24.

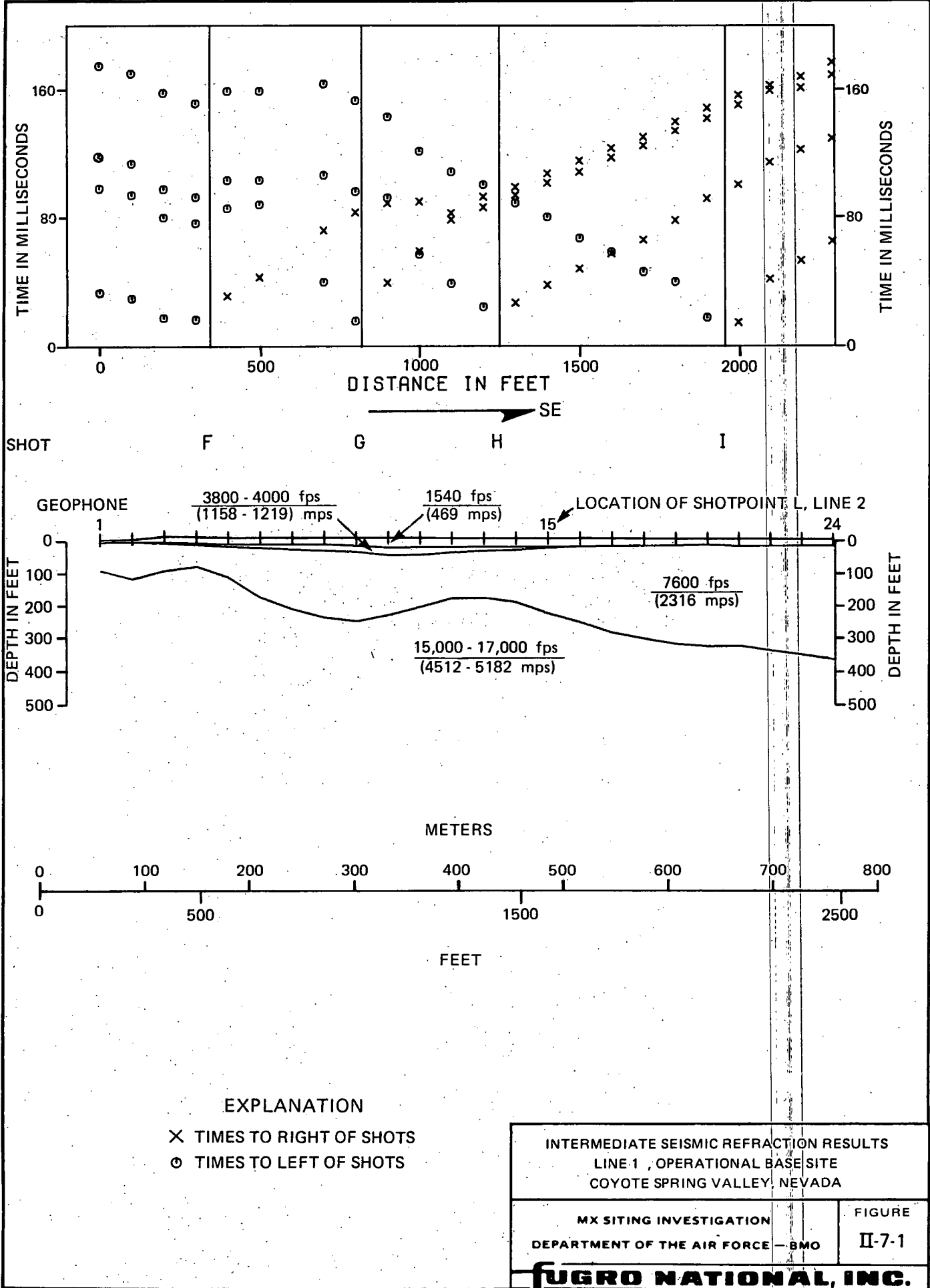
### Travel Time Versus Distance Graph (Upper Half of Figure)

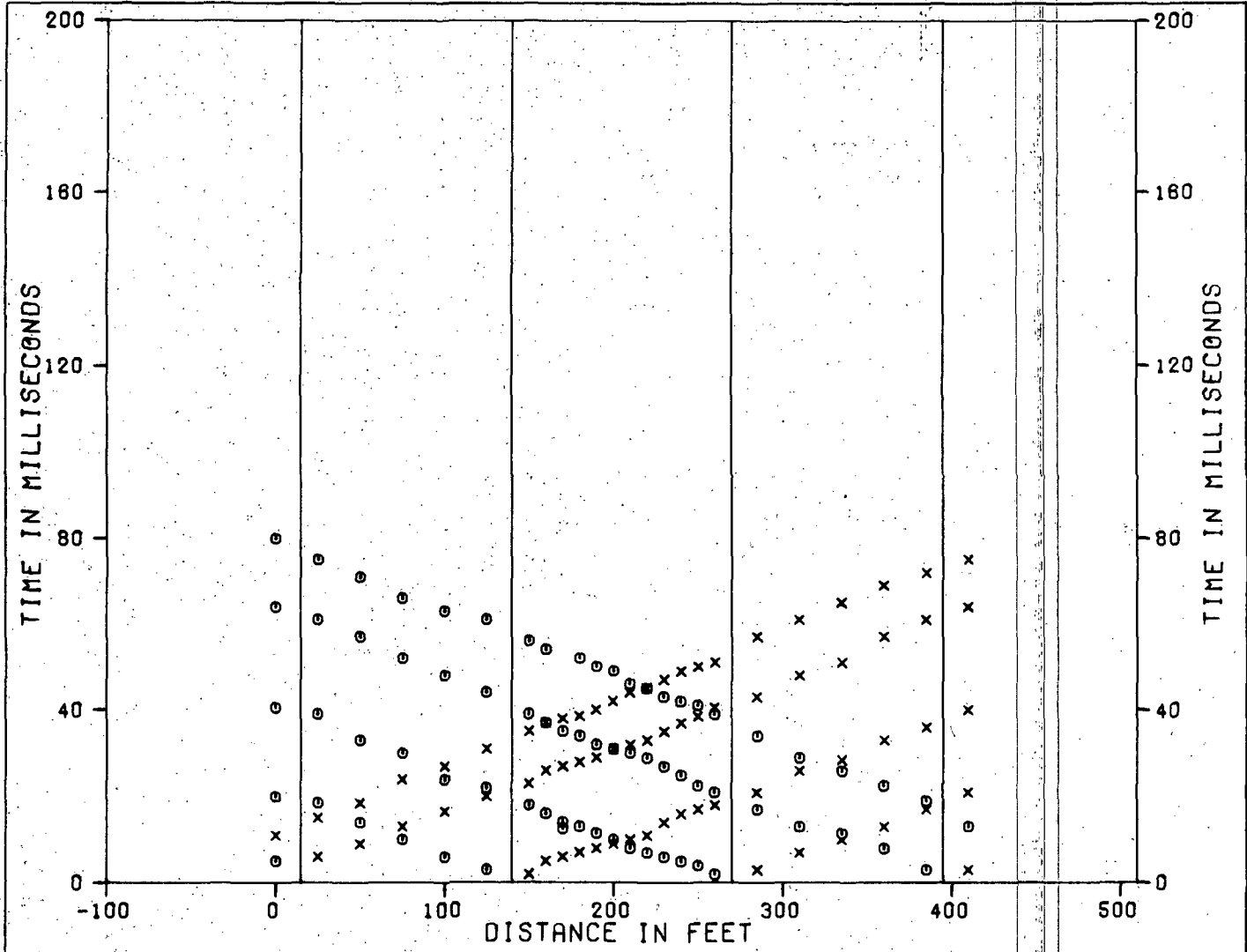
This is a travel time versus distance graph. The abscissa represents distance; the ordinate, time. The six vertical lines represent the locations of shots (designated as F, G, H, I, J, and K). The symbol, X, denotes travel times at geophones that were located to the right of a shot. The symbol,  $\emptyset$ , denotes travel times that were located to the left of shots.

### Velocity Cross Section (Lower Half of Figure)

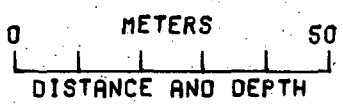
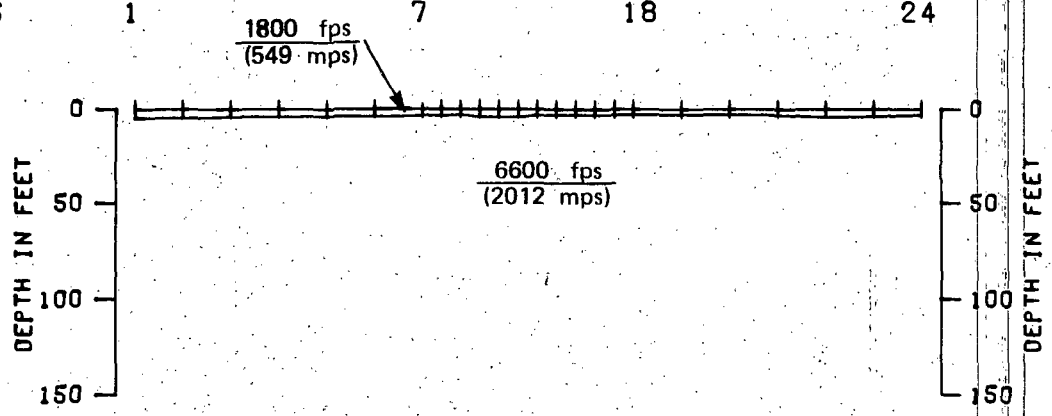
This is an interpreted velocity cross section beneath the seismic line. The top line represents the ground-surface profile. The short vertical lines crossing the top line mark the geophone positions. The depth scale is plotted relative to a point on the line which was arbitrarily chosen as "zero elevation" at the time the line was surveyed. The additional lines across the cross section represent the interpreted boundaries between layers of material with different compressional wave

velocities. These boundaries are commonly called "refractors." The velocity interpreted to be representative of each layer is shown.





SHOT F                      G                      H                      I                      J                      K  
 GEOPHONES              1                      7                      18                      24

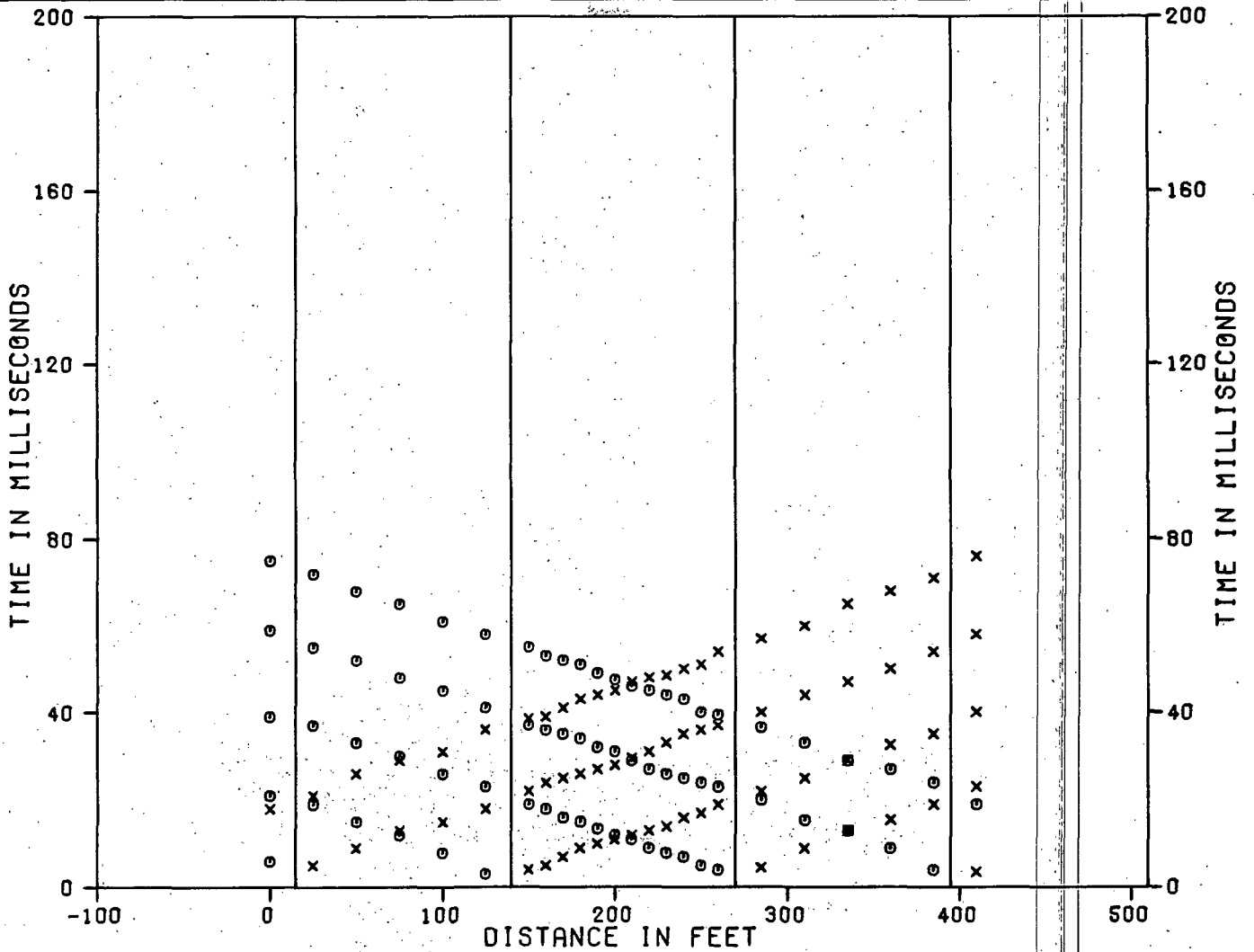


x TIMES TO RIGHT OF SHOTS  
 o TIMES TO LEFT OF SHOTS

SEISMIC REFRACTION LINE CE-S-1  
 TIME DISTANCE DATA AND VELOCITY PROFILE  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

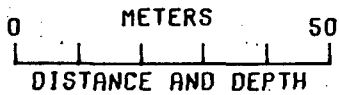
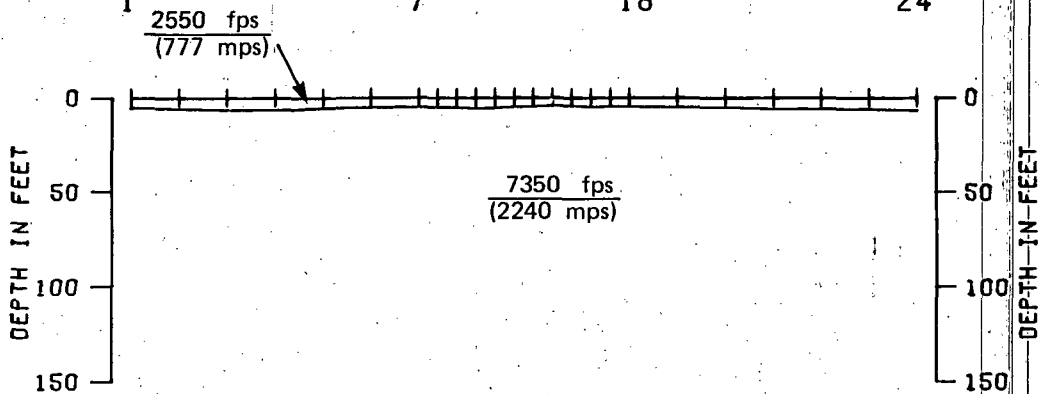
MX SITING INVESTIGATION                      BMO                      FIGURE  
 DEPARTMENT OF THE AIR FORCE                      II-7-3

**FUGRO NATIONAL, INC.**



SHOT F  
GEOPHONES

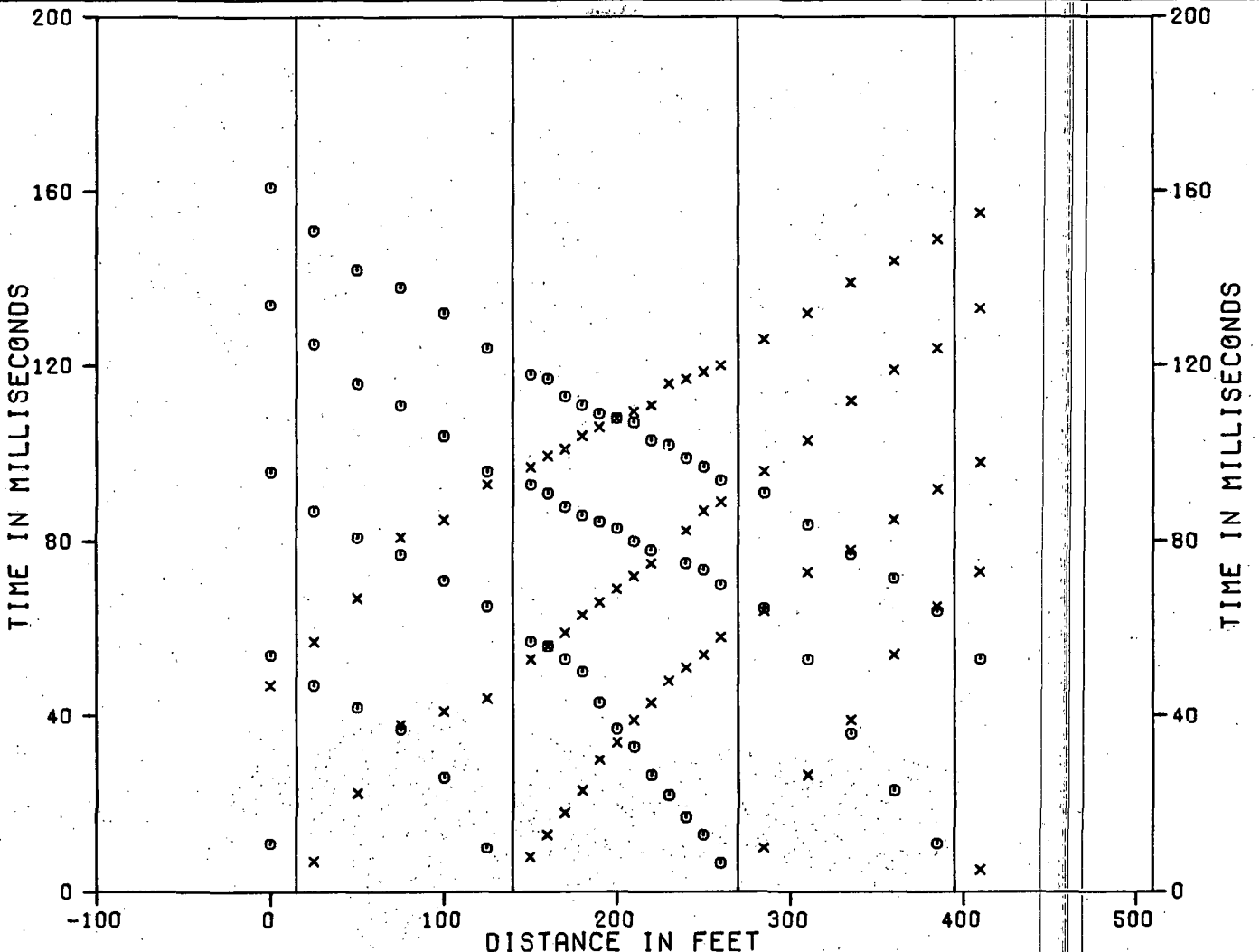
G 1 H 7 I 18 J 24 K



x TIMES TO RIGHT OF SHOTS  
o TIMES TO LEFT OF SHOTS

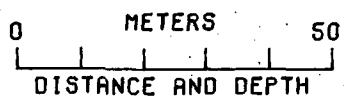
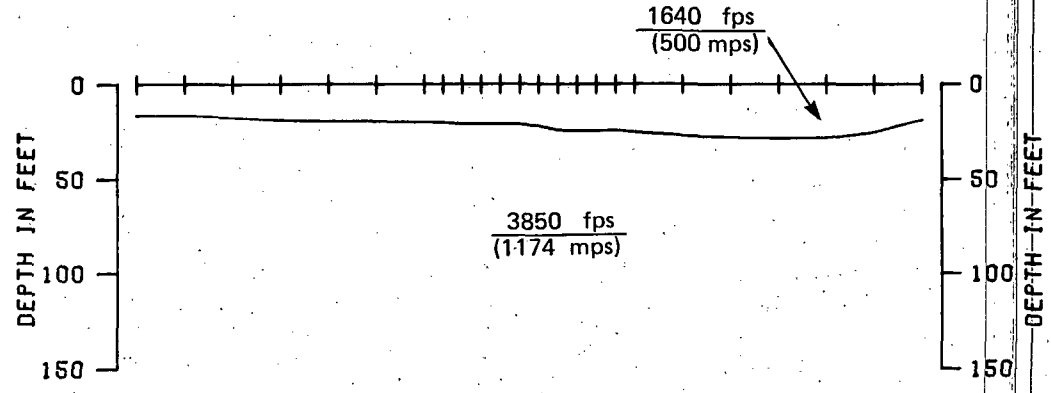
SEISMIC REFRACTION LINE CE-S-2 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-4

**FUGRO NATIONAL, INC.**



SHOT F  
GEOPHONES

G 1 H 7 I 18 J 24 K

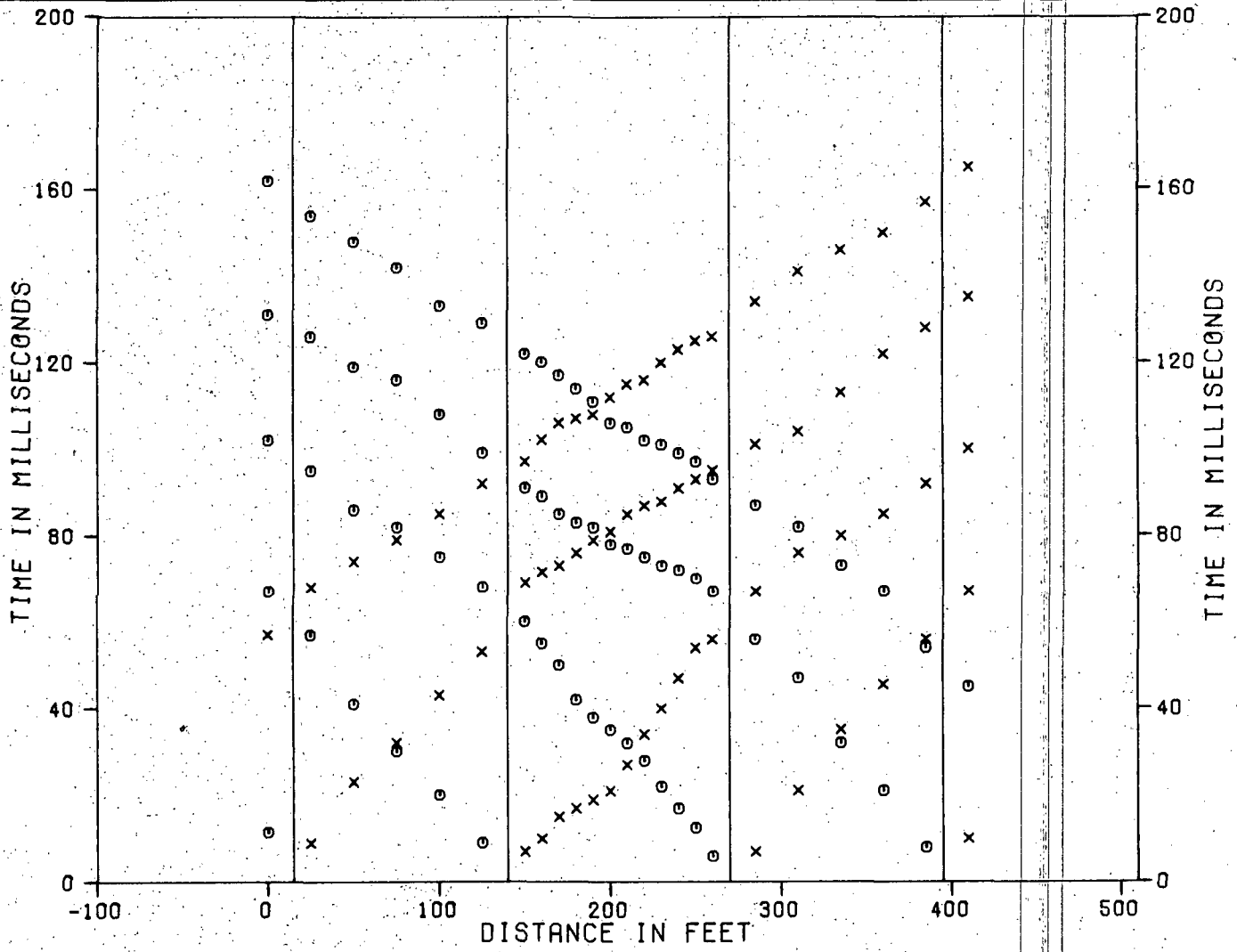


x TIMES TO RIGHT OF SHOTS  
o TIMES TO LEFT OF SHOTS

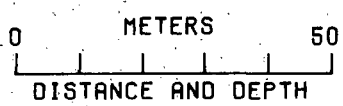
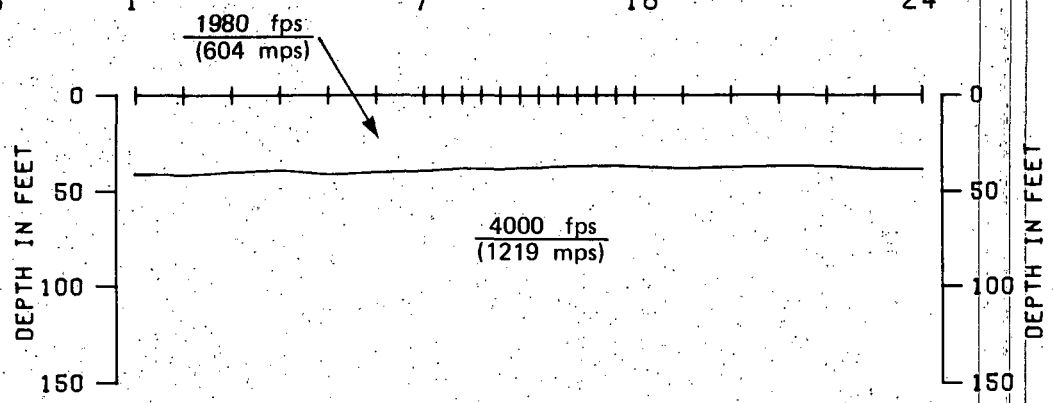
SEISMIC REFRACTION LINE CE-S-3 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-5

**FUGRO NATIONAL, INC.**





SHOT F                      G                      H                      I                      J                      K  
 GEOPHONES            1                      7                      18                      24

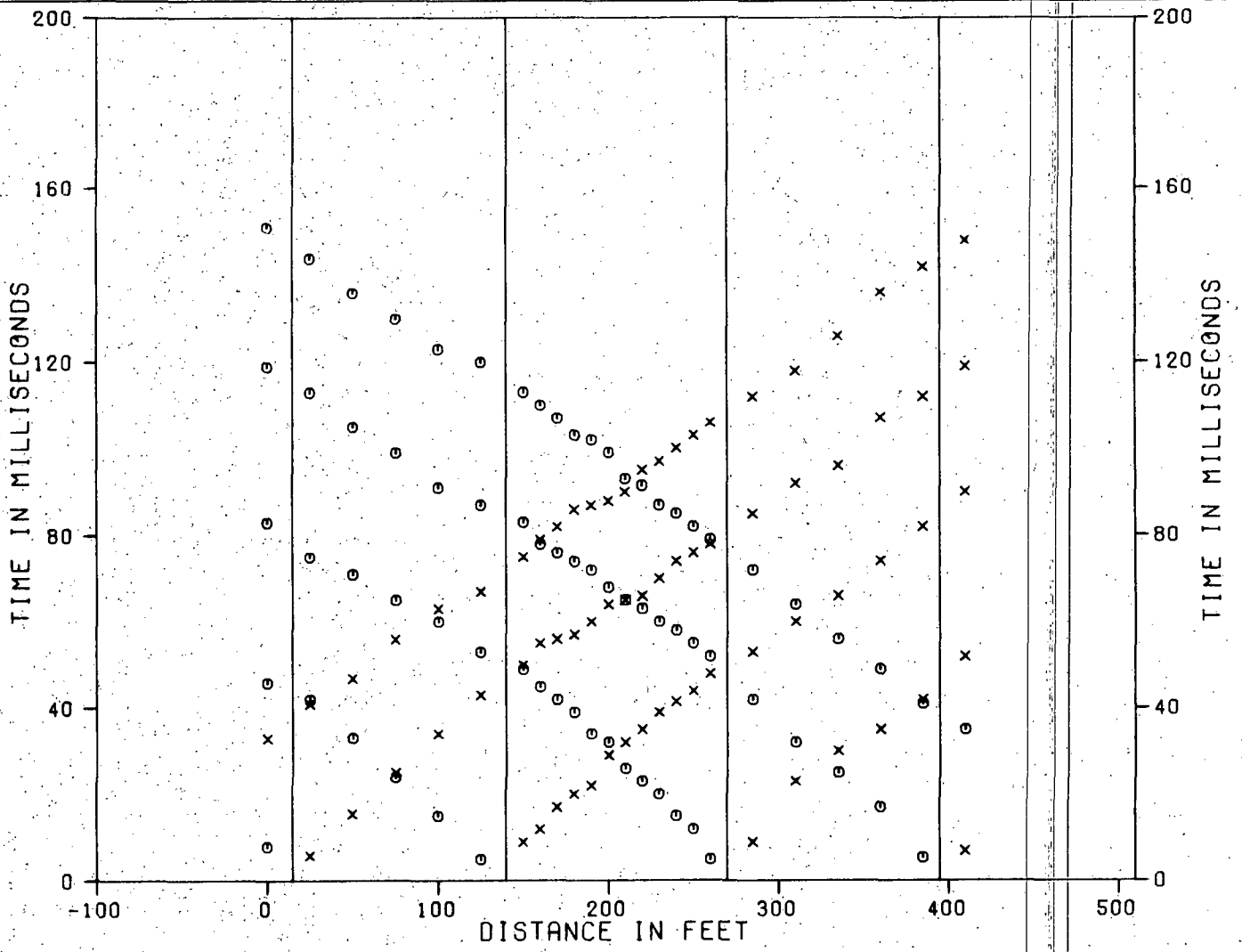


x TIMES TO RIGHT OF SHOTS  
 o TIMES TO LEFT OF SHOTS

SEISMIC REFRACTION LINE CE-S-4  
 TIME DISTANCE DATA AND VELOCITY PROFILE  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

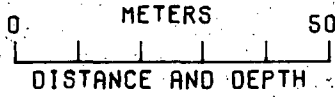
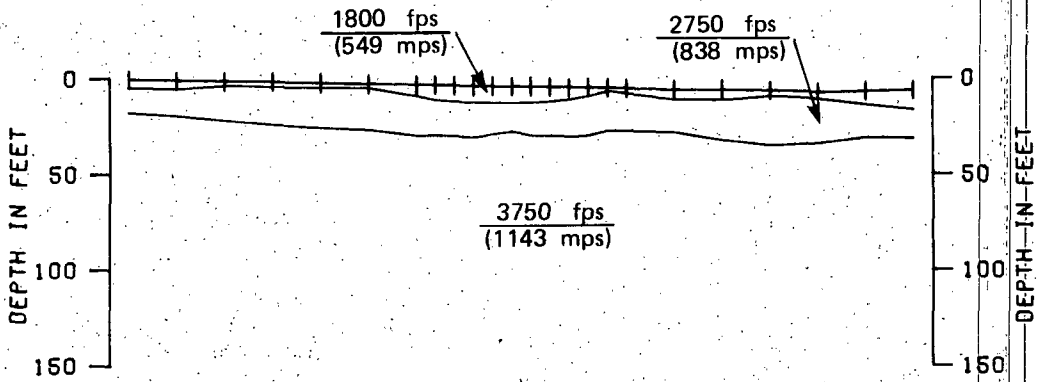
MX SITING INVESTIGATION                      FIGURE  
 DEPARTMENT OF THE AIR FORCE - BMO                      II-7-6

**FUGRO NATIONAL, INC.**



SHOT F  
GEOPHONES

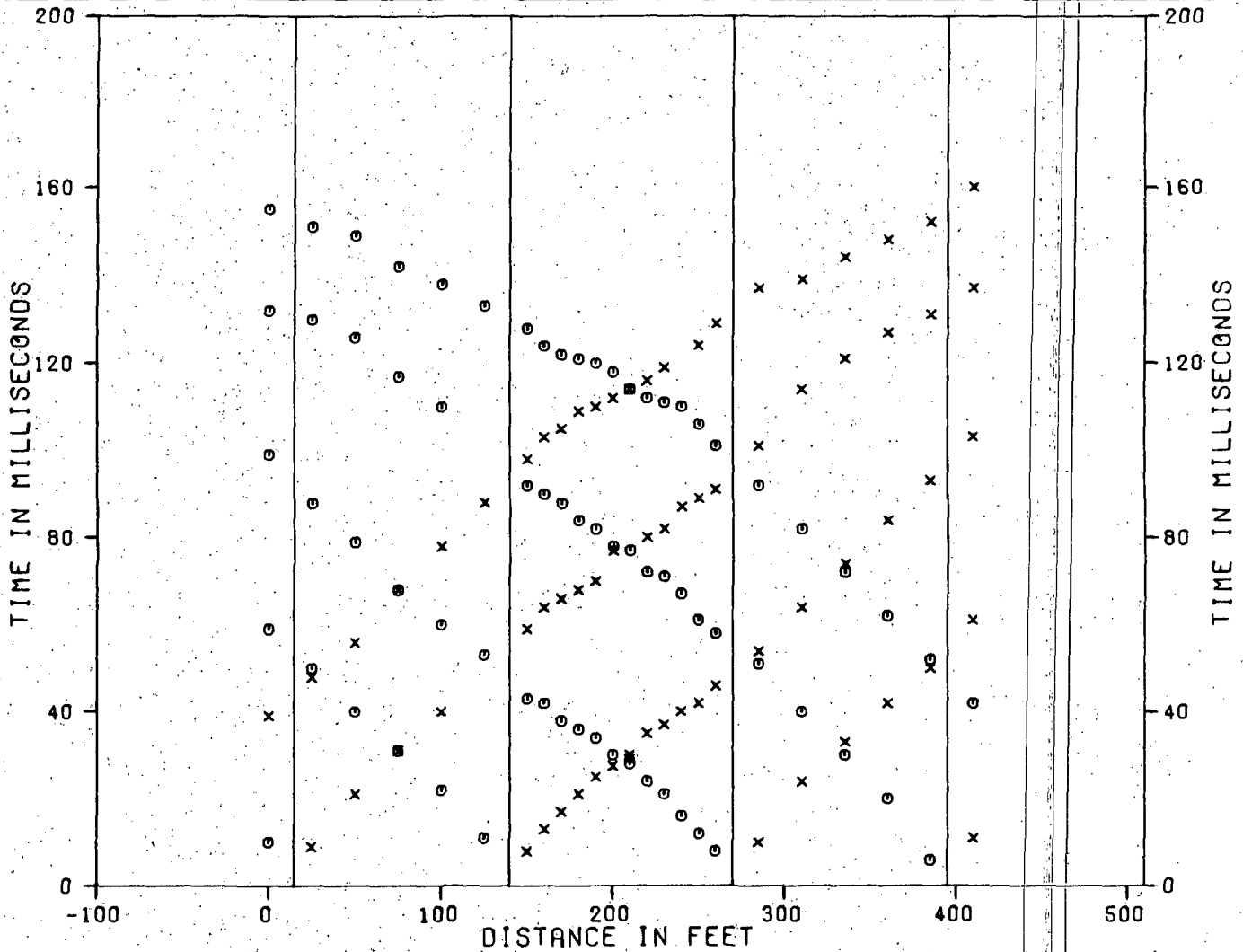
G I  
H 7  
I 18  
J 24  
K



x TIMES TO RIGHT OF SHOTS  
o TIMES TO LEFT OF SHOTS

SEISMIC REFRACTION LINE CE-S-5 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-7

**FUGRO NATIONAL, INC.**



SHOT F  
GEOPHONES

G

H

I

J

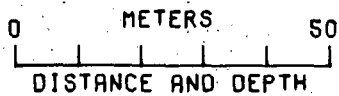
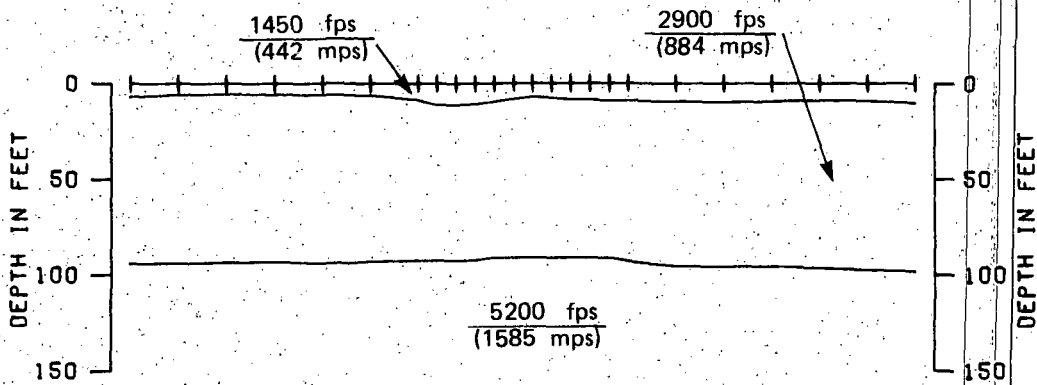
K

1

7

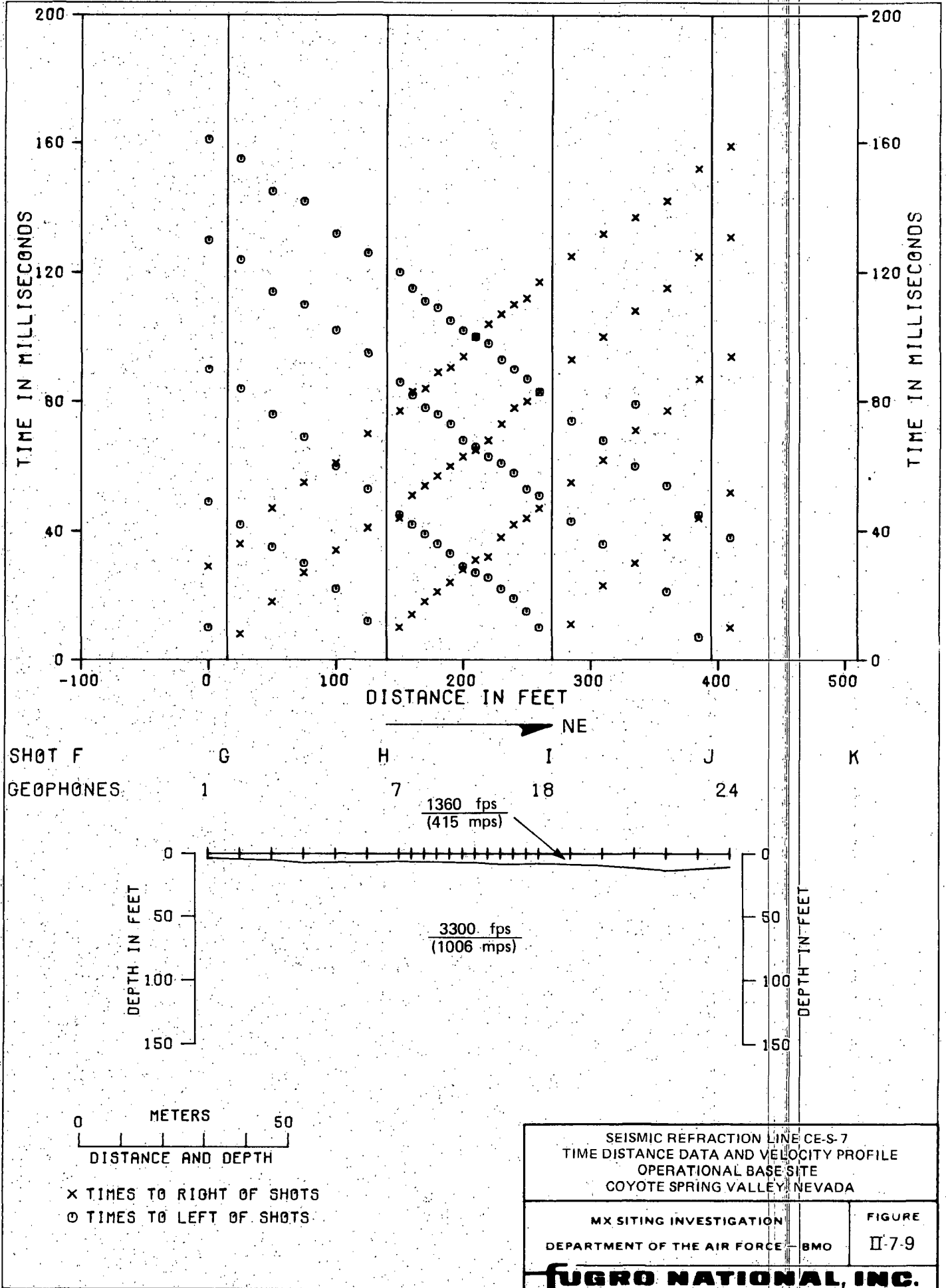
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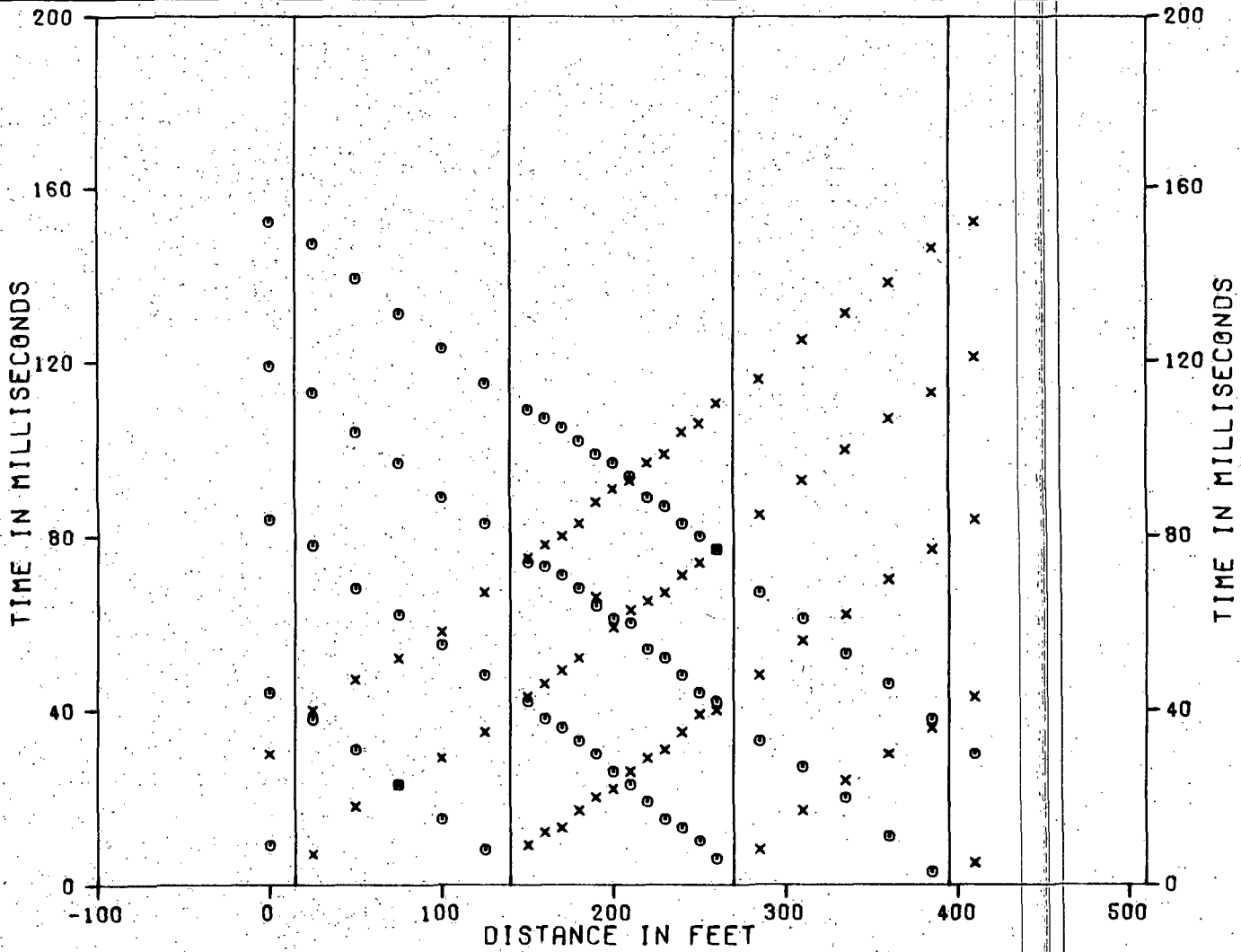
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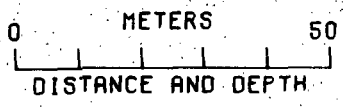
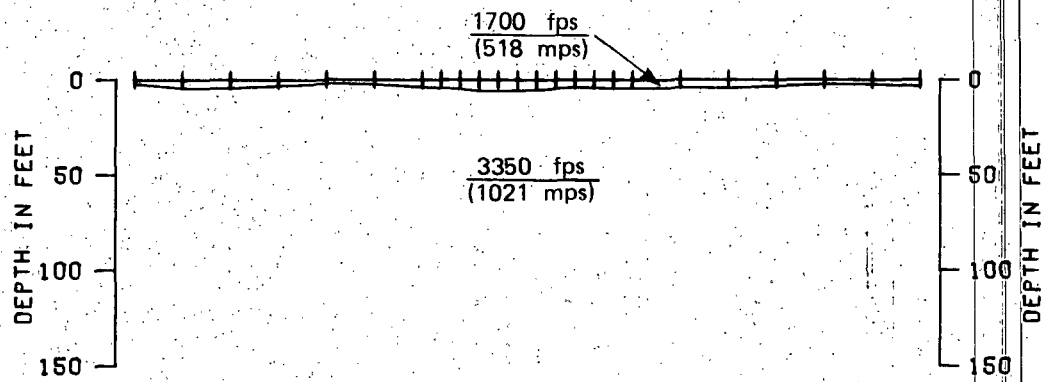
X TIMES TO RIGHT OF SHOTS  
O TIMES TO LEFT OF SHOTS

SEISMIC REFRACTION LINE CE-S-6 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-8
<b>FUGRO NATIONAL, INC.</b>	





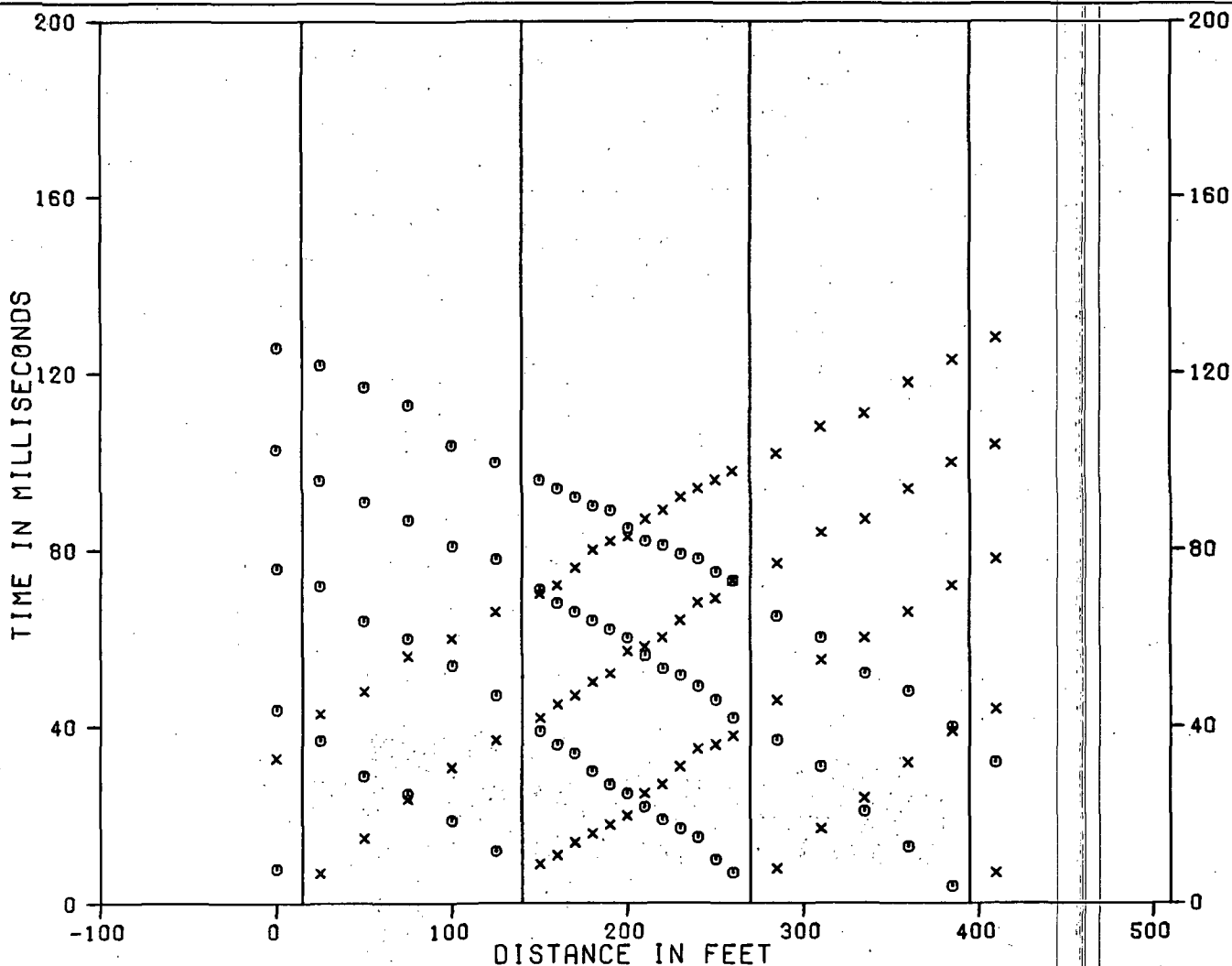
SHOT F                      G                      H                      I                      J                      K  
 GEOPHONES            1                      7                      18                      24



x TIMES TO RIGHT OF SHOTS  
 o TIMES TO LEFT OF SHOTS

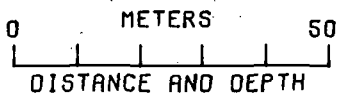
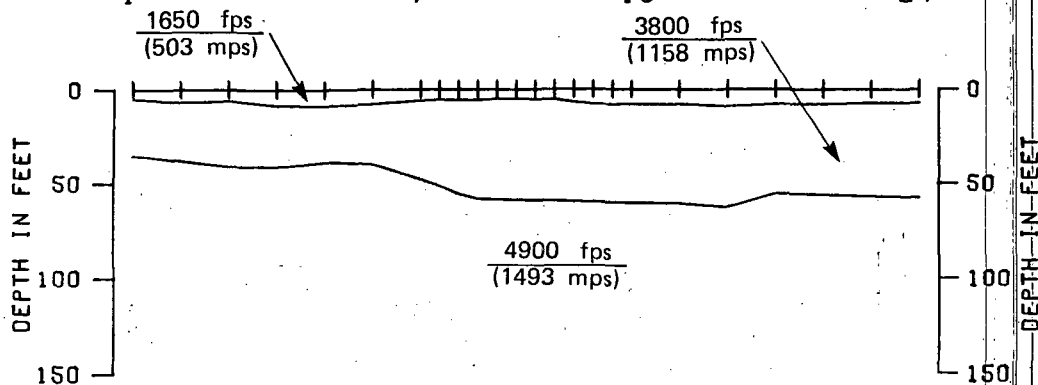
SEISMIC REFRACTION LINE CE-S-8 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-10

**FUGRO NATIONAL, INC.**



SHOT F  
GEOPHONES

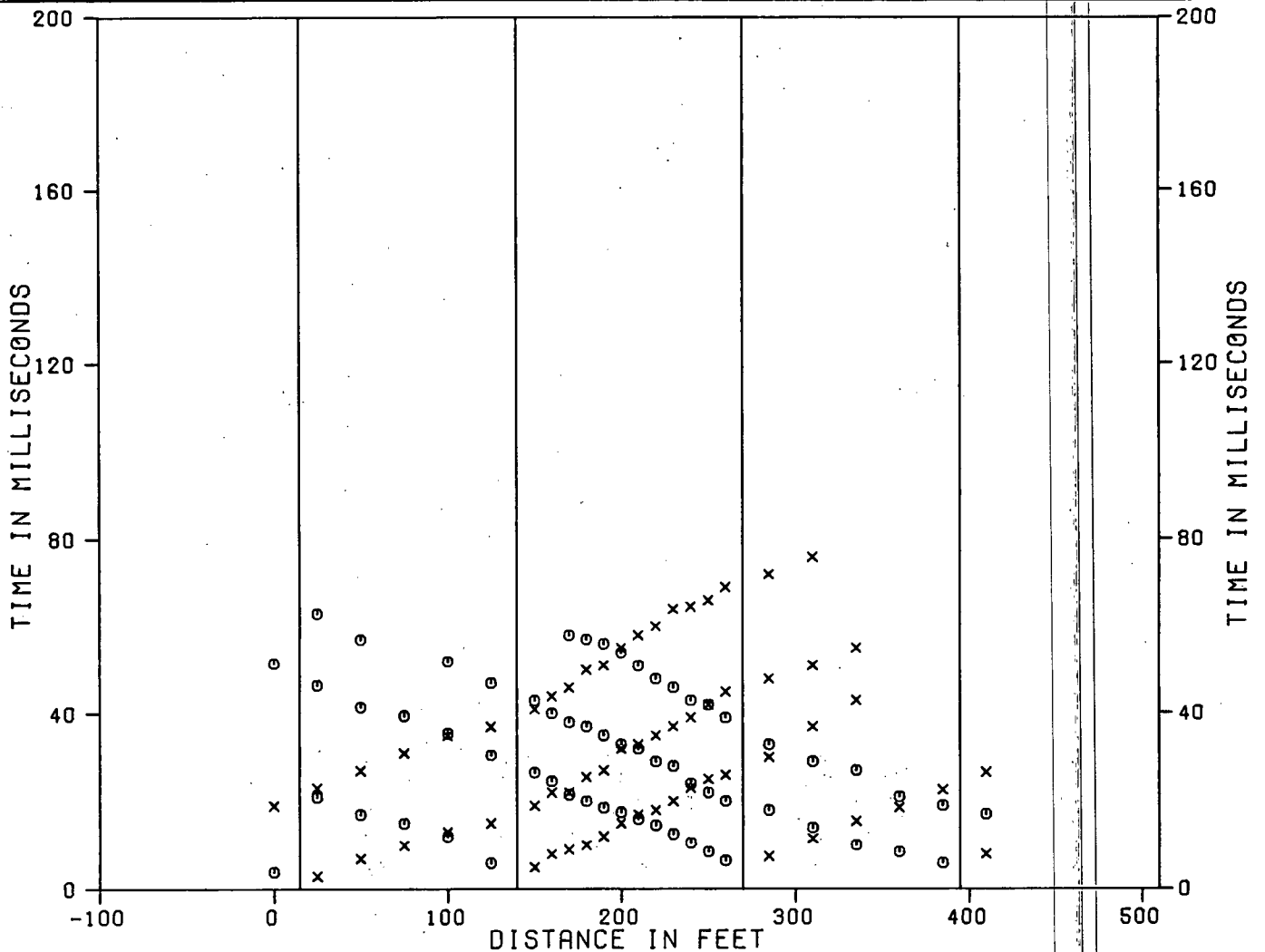
G H I J K  
1 7 18 24



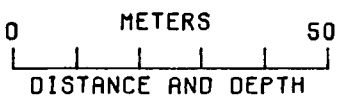
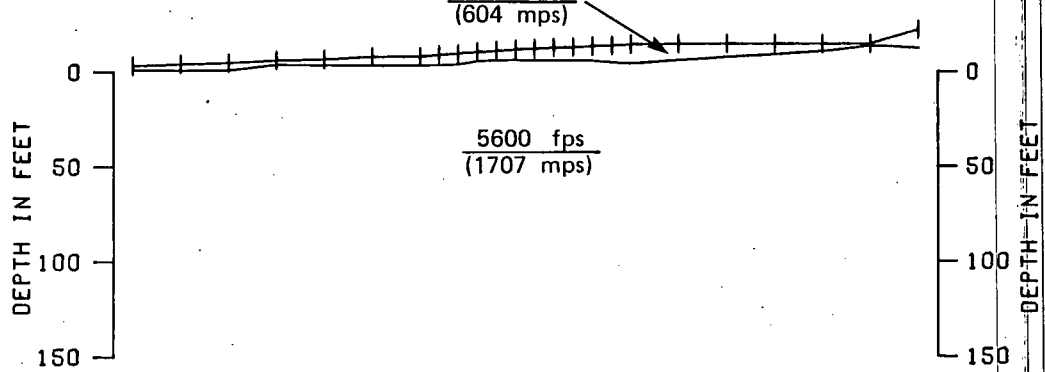
x TIMES TO RIGHT OF SHOTS  
o TIMES TO LEFT OF SHOTS

SEISMIC REFRACTION LINE CE-S-9 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-11

**FUGRO NATIONAL, INC.**



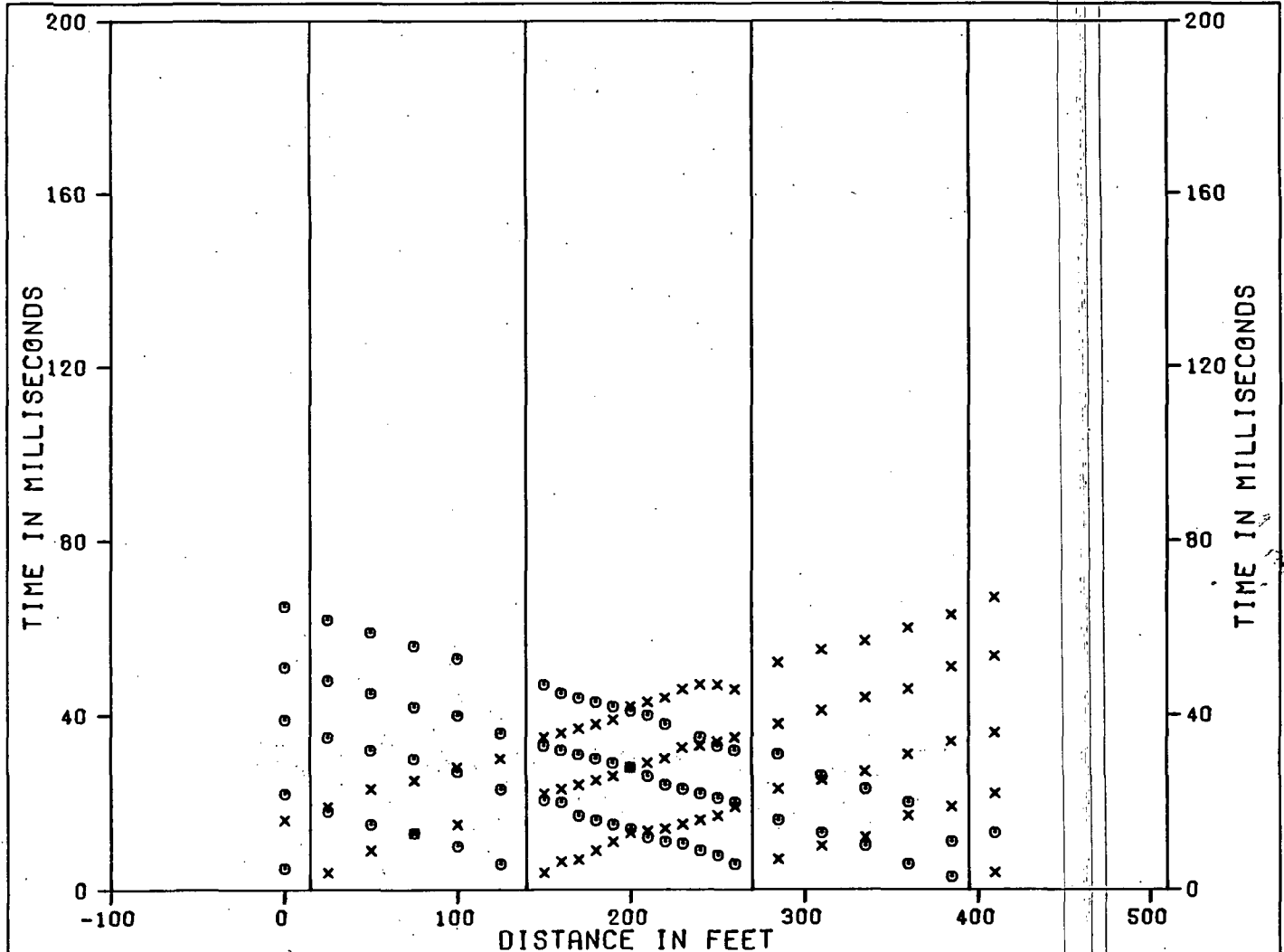
SHOT F                      G                      H                      I                      J                      K  
 GEOPHONES            1                      7                      18                      24



x TIMES TO RIGHT OF SHOTS  
 o TIMES TO LEFT OF SHOTS

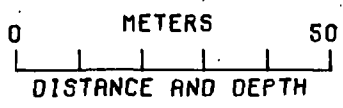
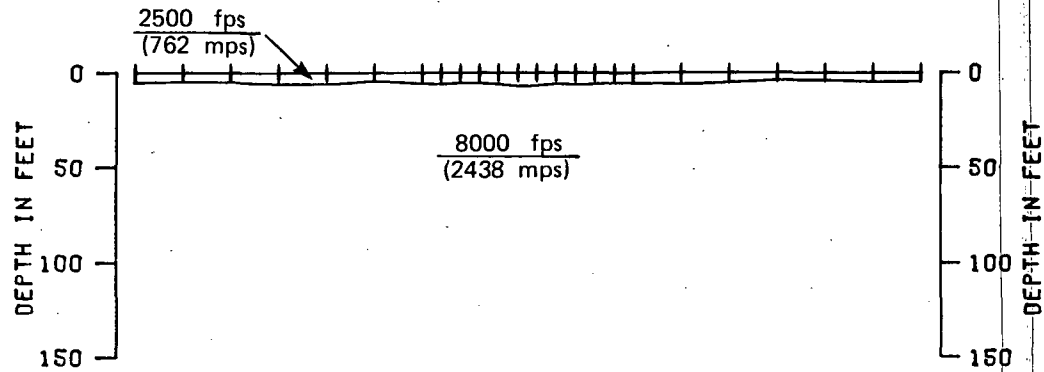
SEISMIC REFRACTION LINE CE-S-10 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-12

**UGRO NATIONAL, INC.**



SHOT F  
GEOPHONES

G H I J K  
1 7 18 24

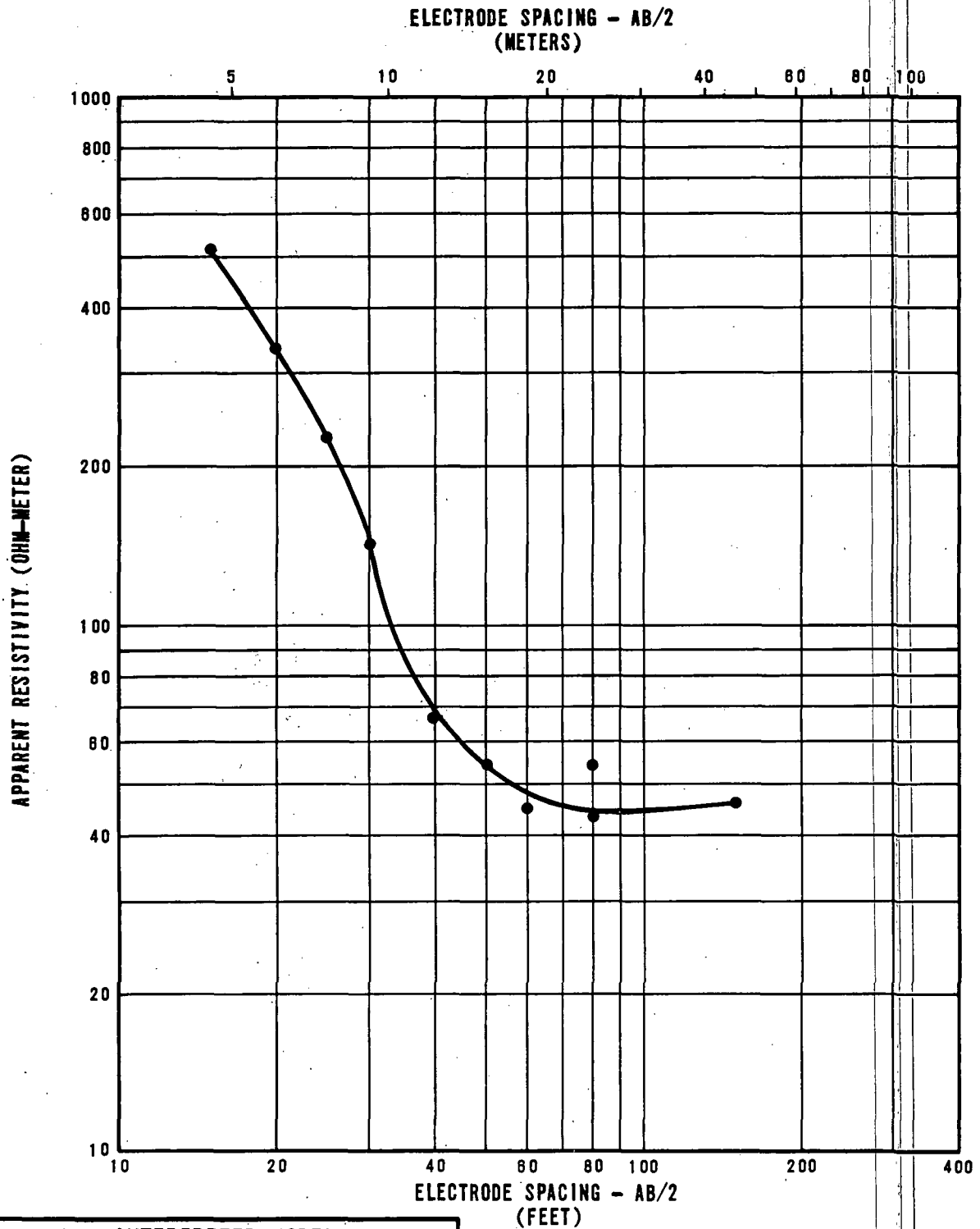


x TIMES TO RIGHT OF SHOTS  
o TIMES TO LEFT OF SHOTS

SEISMIC REFRACTION LINE CE-S-11 TIME DISTANCE DATA AND VELOCITY PROFILE OPERATIONAL BASE SITE COYOTE SPRING VALLEY, NEVADA	
MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-13

**FUGRO NATIONAL, INC.**





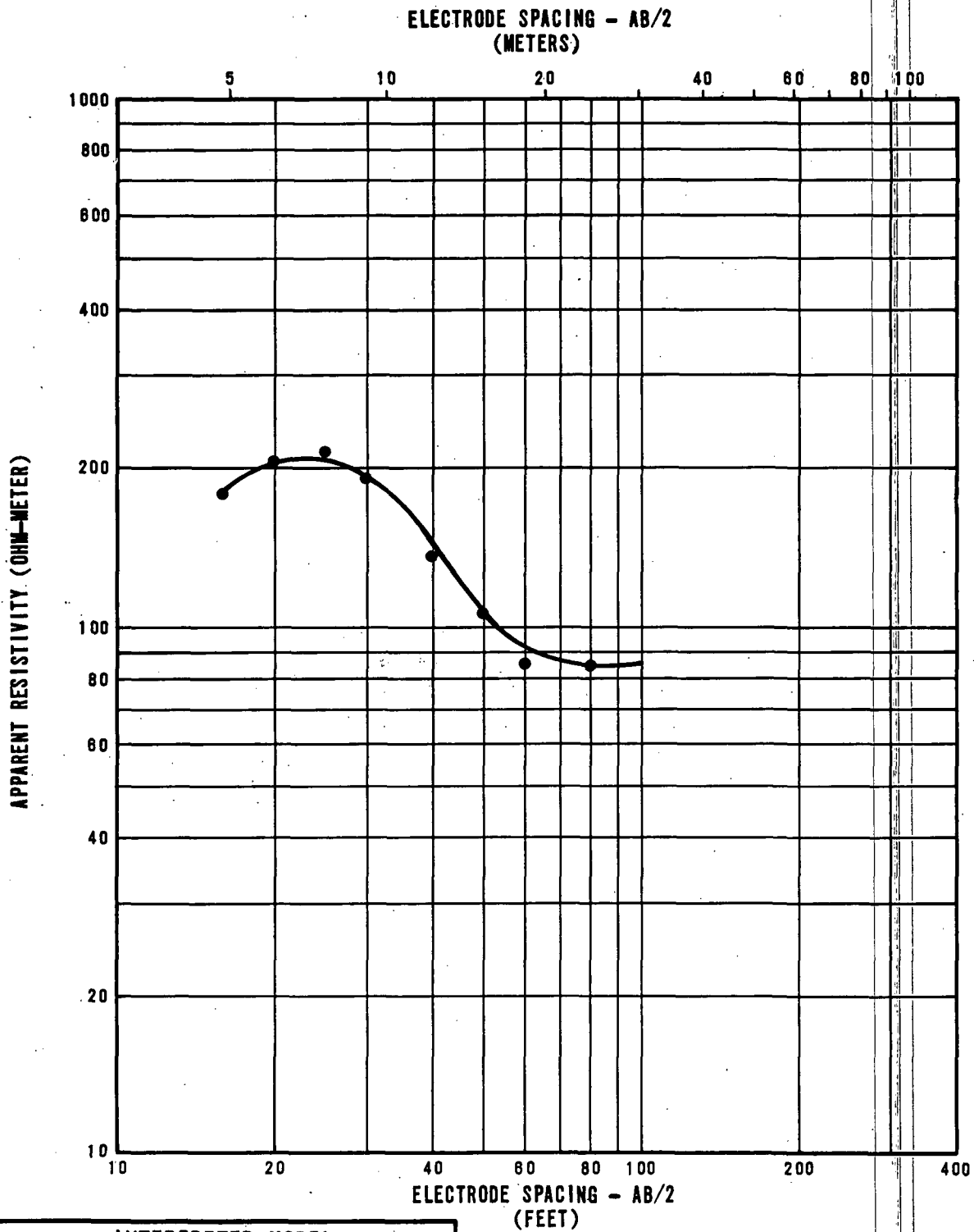
INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	500
11	3	150
18	5	3

RESISTIVITY SOUNDING CER-3  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
II-7-14

**JUGRO NATIONAL, INC.**



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	180
24	7	50
75	23	180

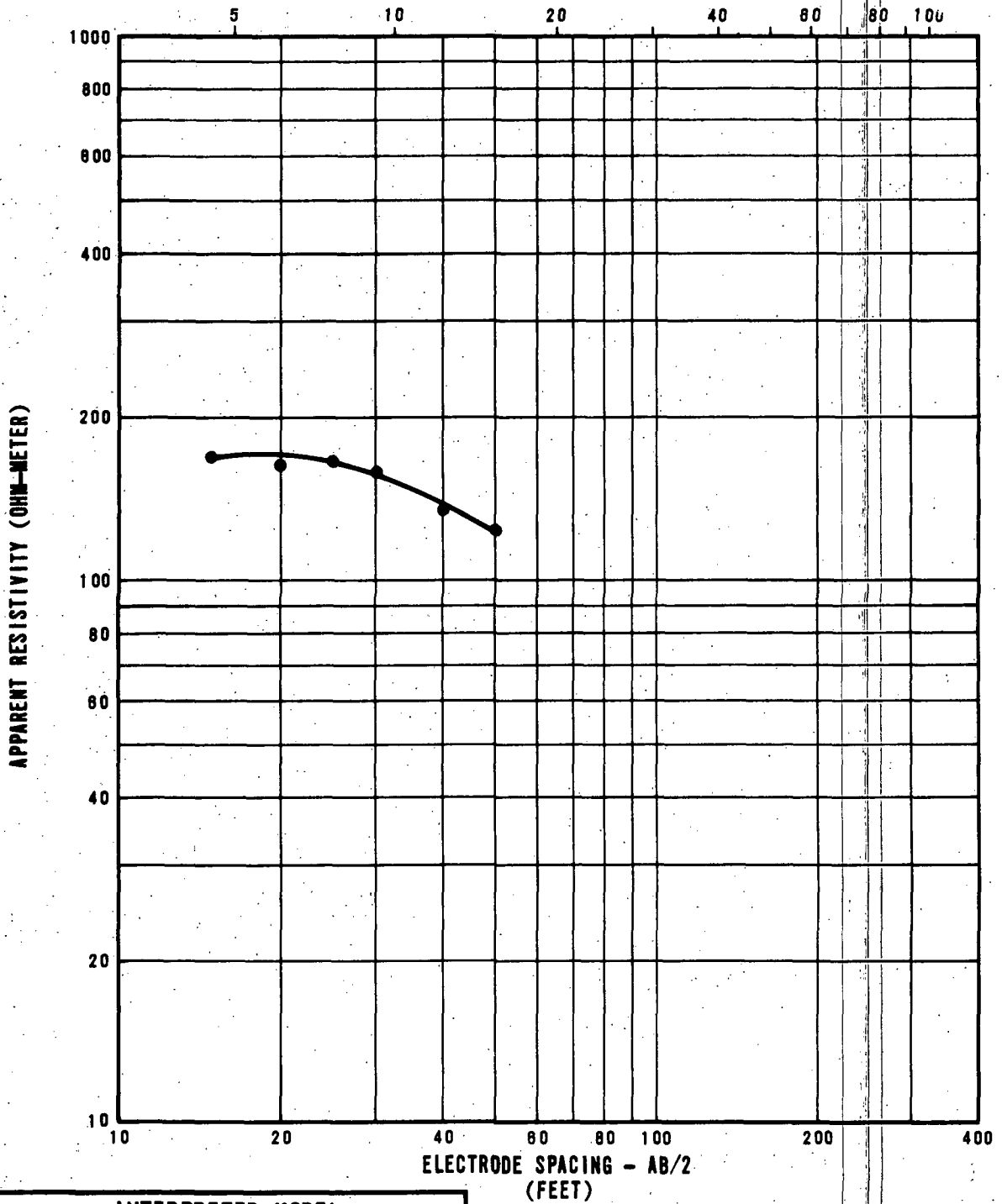
RESISTIVITY SOUNDING CER-4  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE - BMD

FIGURE  
II-7-15

**FUGRO NATIONAL, INC.**

ELECTRODE SPACING - AB/2  
(METERS)



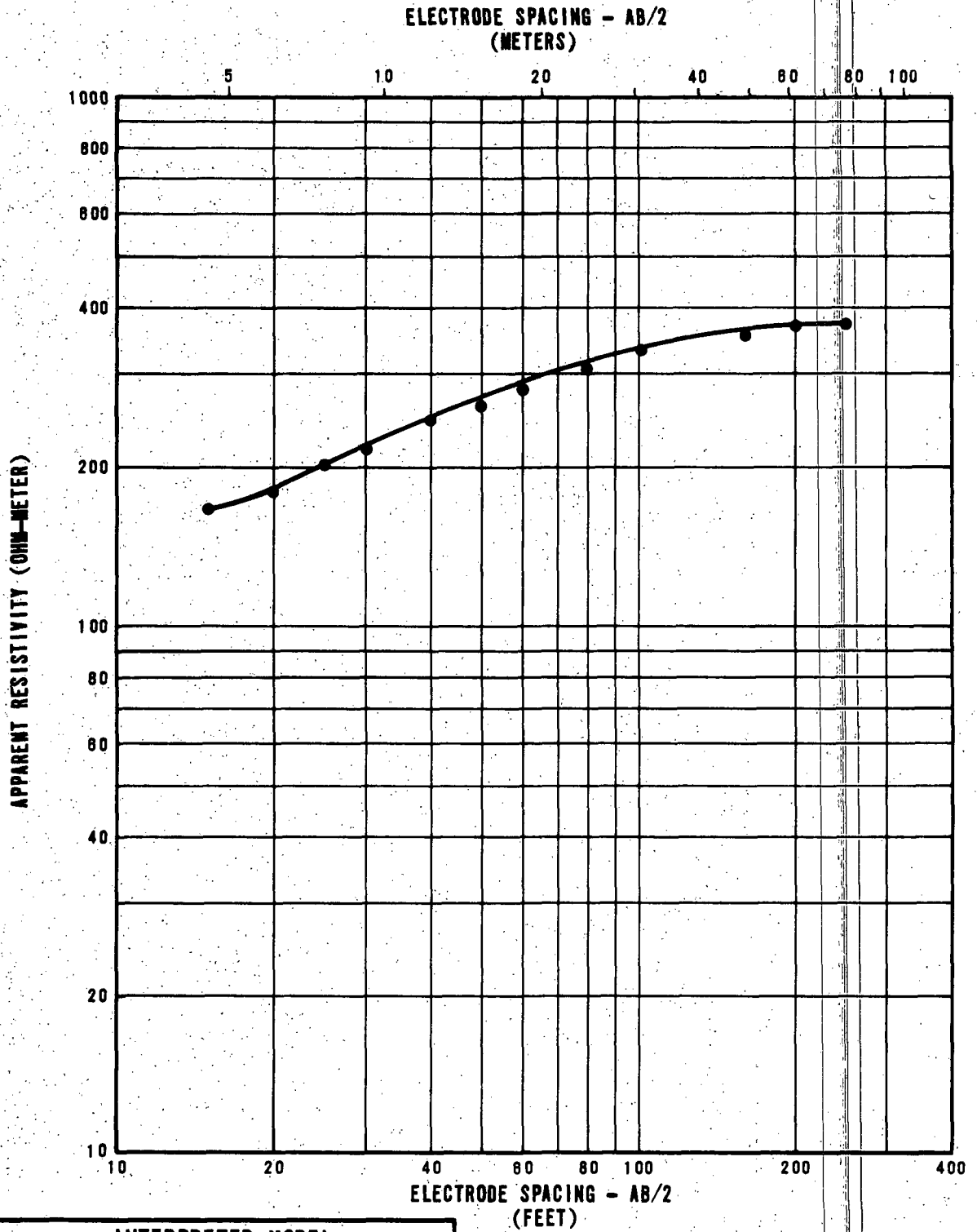
INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	170
29	9	60

RESISTIVITY SOUNDING CE-R-6  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE BMO

FIGURE  
II-7-16

**FUGRO NATIONAL, INC.**



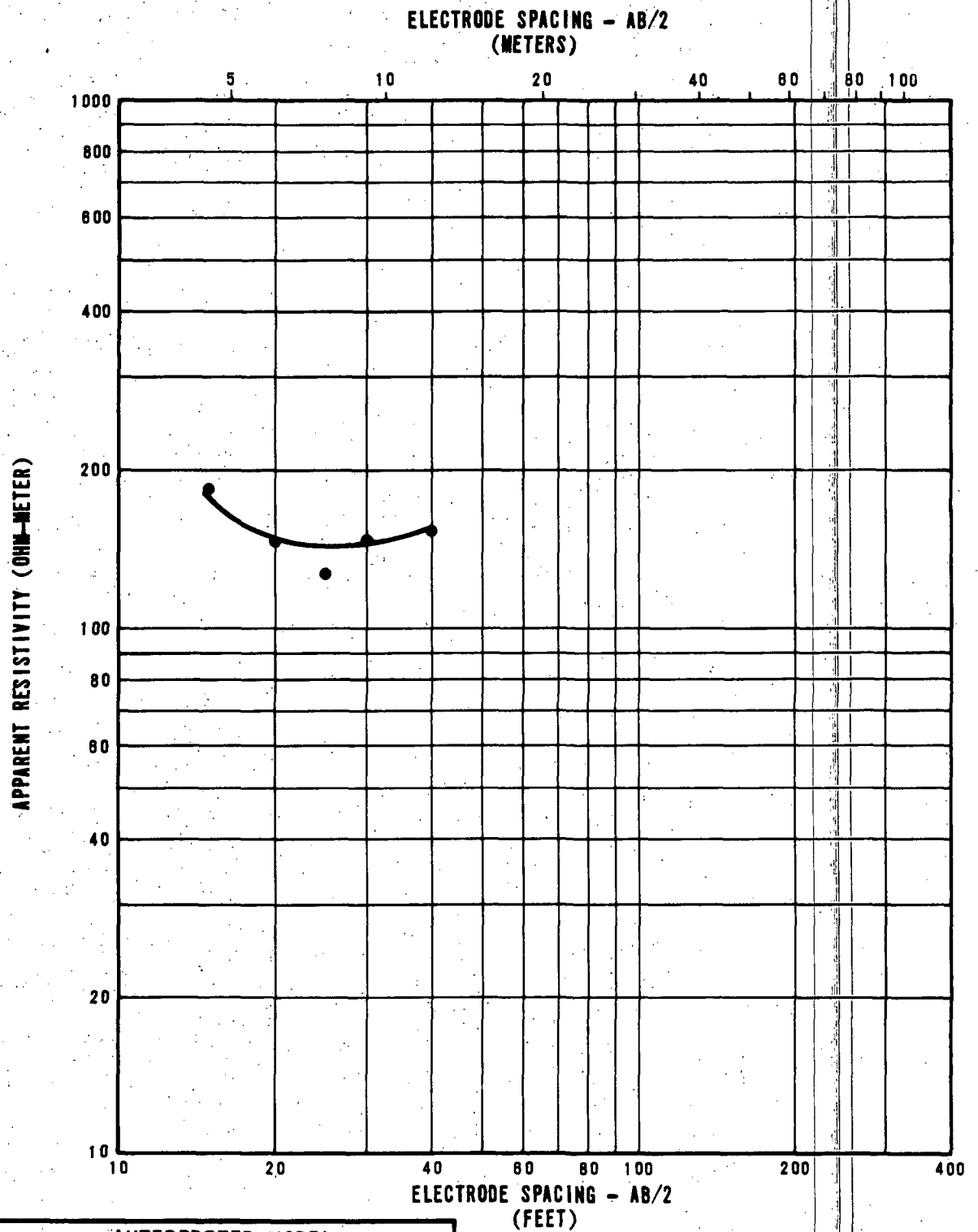
INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	140
11	3	390

RESISTIVITY SOUNDING CE-R-7  
 SOUNDING CURVE AND INTERPRETATION  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMD

FIGURE  
 II-7 17

**FUGRO NATIONAL, INC.**



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	260
6	2	120
26	8	370

RESISTIVITY SOUNDING CE-R-8  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-7-18
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**FUGRO NATIONAL, INC.**



SECTION 8.0

ELECTRICAL RESISTIVITY DATA

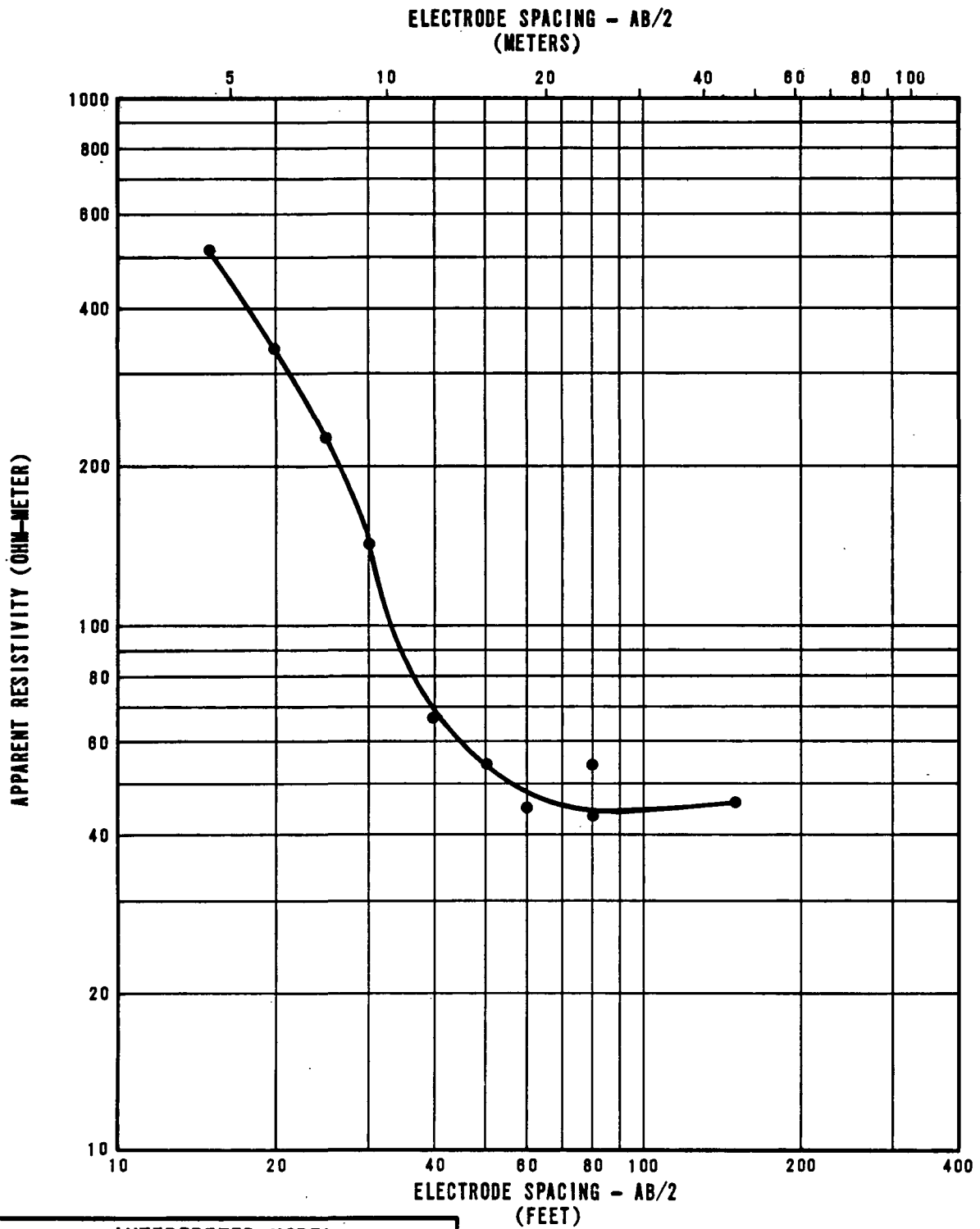
## 8.0 EXPLANATION OF ELECTRICAL RESISTIVITY DATA

Each figure in this section presents the data obtained from a resistivity sounding and a tabulated model of resistivity layers that would produce a curve similar to the observed curve. The upper portion of the figures is a graph in which measured apparent resistivity values in ohm-meters are plotted versus one-half the distance between the current electrodes.

The interpreted model tabulated at the bottom of the figures shows a combination of true resistivity layers and thicknesses obtained by matching theoretical curves to the field curve.

Note: There were no resistivity sounding at locations CE-SR-1, CE-SR-2, CE-SR-5, CE-SR-9, CE-SR-10, and CE-SR-11.





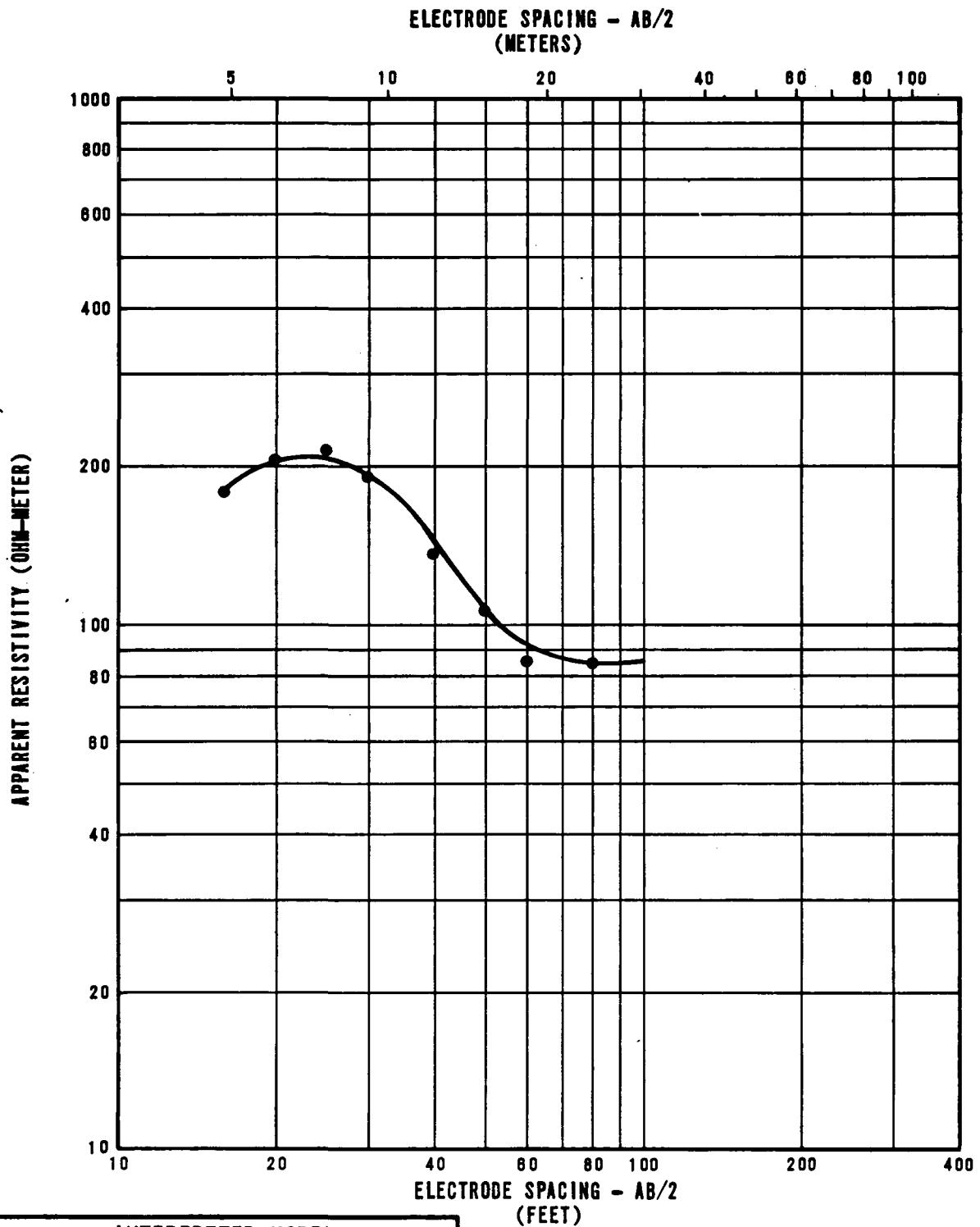
INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	500
11	3	150
18	5	3

RESISTIVITY SOUNDING CE-R-3  
 SOUNDING CURVE AND INTERPRETATION  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-8-1

**FUGRO NATIONAL, INC.**



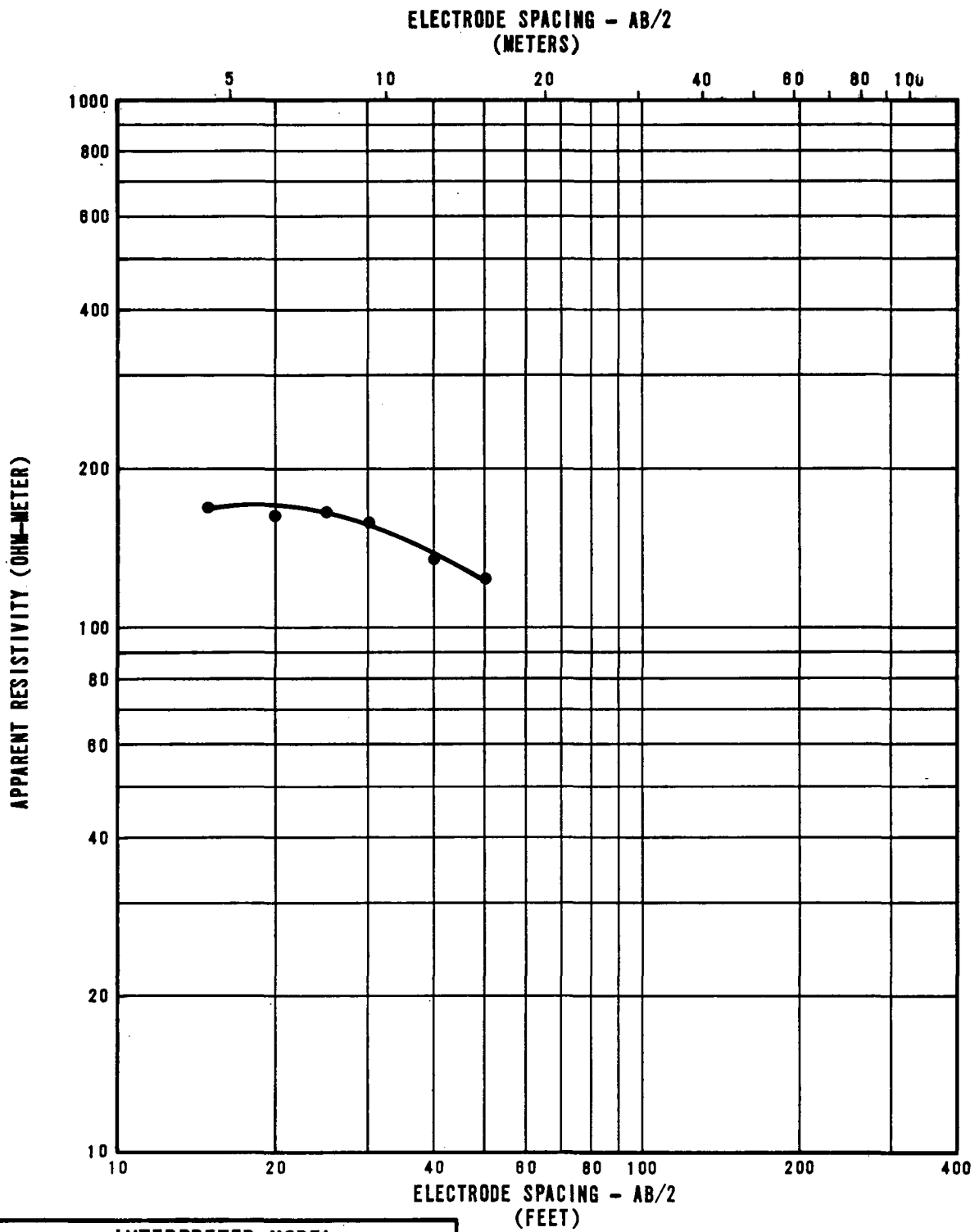
INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	180
24	7	50
75	23	180

RESISTIVITY SOUNDING CE-R-4  
 SOUNDING CURVE AND INTERPRETATION  
 OPERATIONAL BASE SITE  
 COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
 DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
 II-8-2

**FUGRO NATIONAL, INC.**



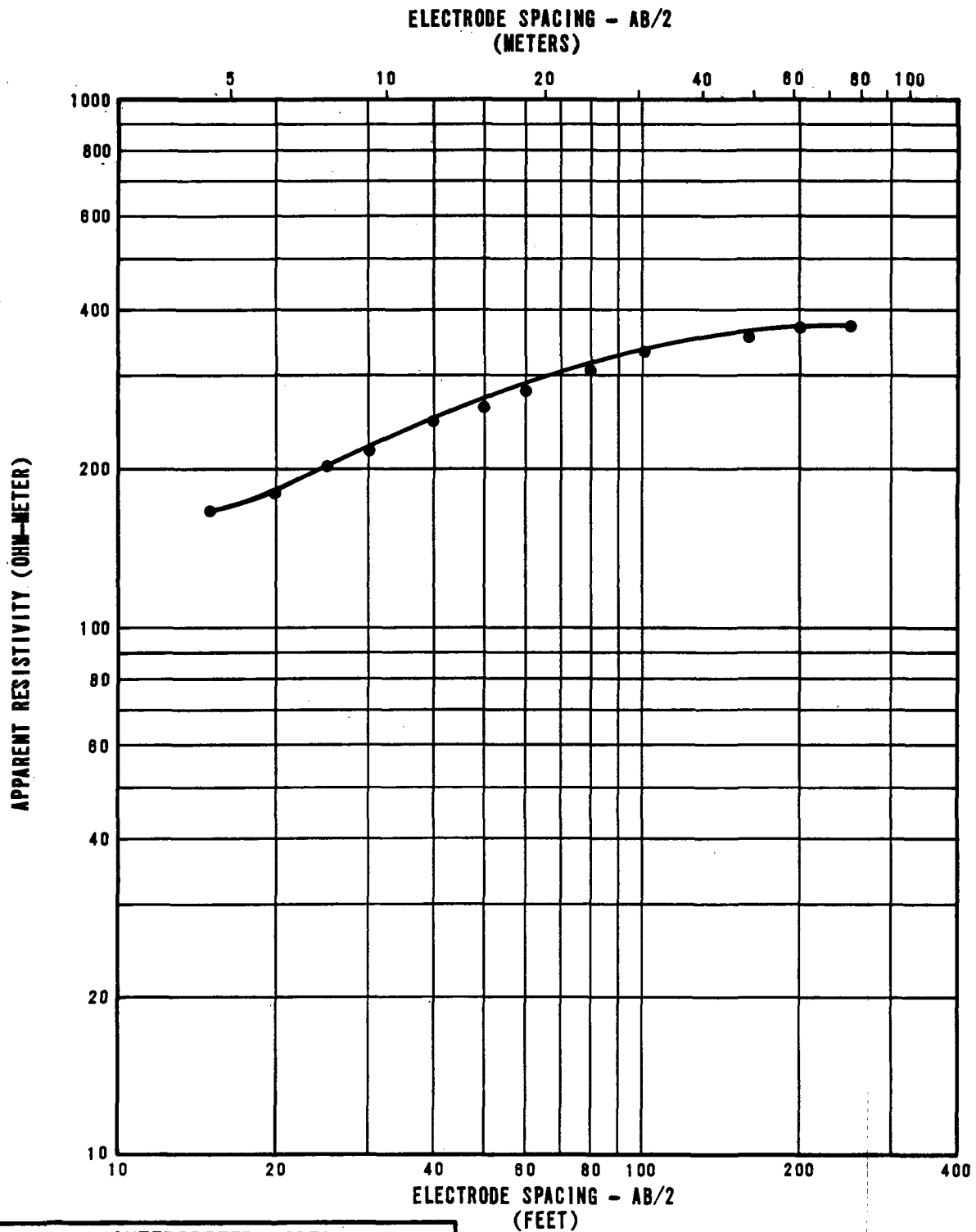
INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	170
29	9	60

RESISTIVITY SOUNDING CE-R-6  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION  
DEPARTMENT OF THE AIR FORCE - BMO

FIGURE  
II-8-3

**FUGRO NATIONAL, INC.**

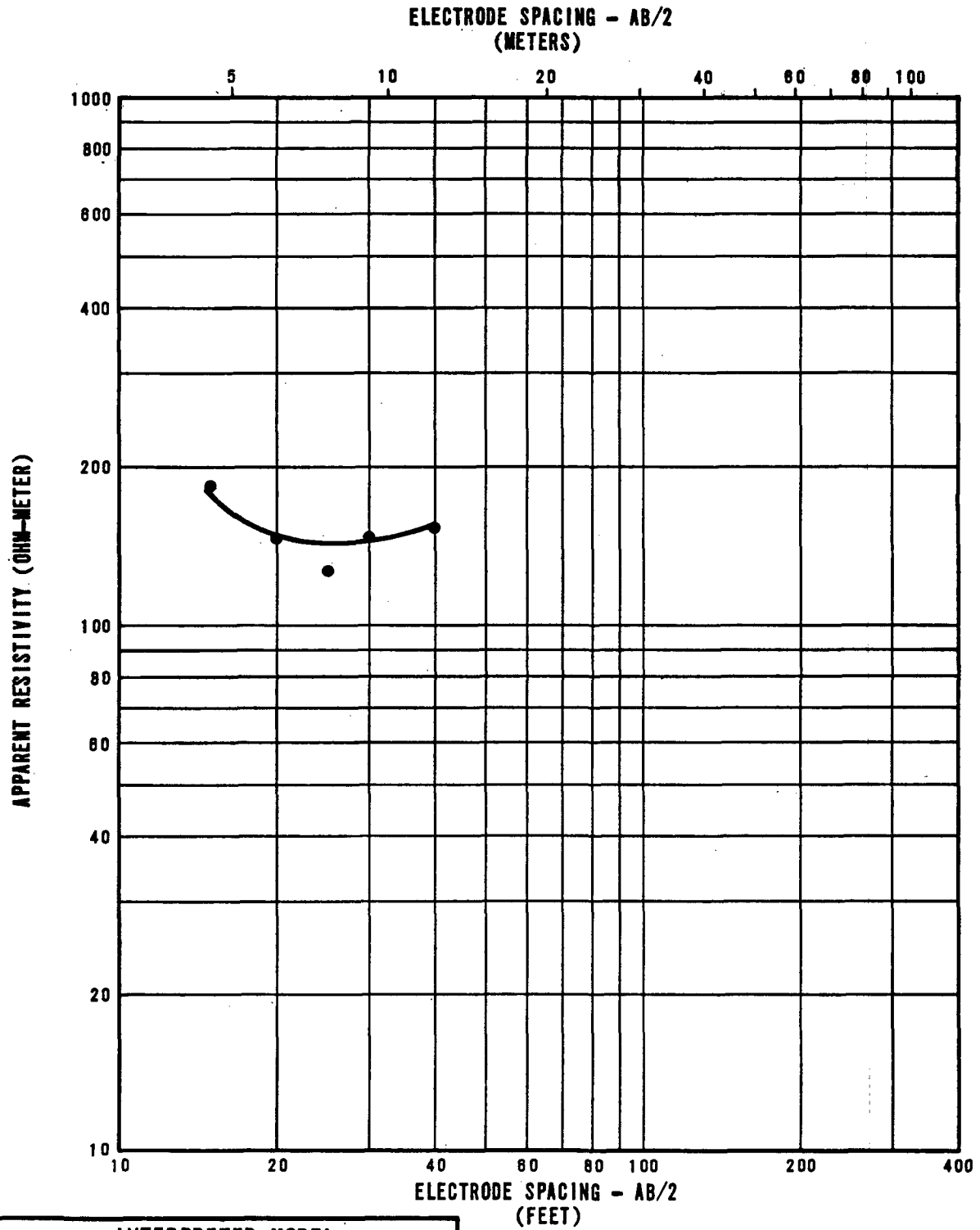


INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	140
11	3	390

RESISTIVITY SOUNDING CE-R-7  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMO	FIGURE II-8-4
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**FUGRO NATIONAL, INC.**



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	260
6	2	120
26	8	370

RESISTIVITY SOUNDING CE-R-8  
SOUNDING CURVE AND INTERPRETATION  
OPERATIONAL BASE SITE  
COYOTE SPRING VALLEY, NEVADA

MX SITING INVESTIGATION DEPARTMENT OF THE AIR FORCE - BMD	FIGURE II-8-5
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**FUGRO NATIONAL, INC.**