767

GEOPHYSICAL REPORT

on

REFRACTION SURVEY

on

BEAR, BEAVER & MOOSE CLAIMS

4 MILES N.N.E. OF MILE 548, ALASKA HIGHWAY

59° 127° ~~N.W.~~ N.E. QUADRANT

by

H. C. BICKEL, B. Sc., P. Eng.

for

MAGNET COVE BARIUM CORPORATION LTD.

July 15th, 1965, thru August 3rd, 1965

TABLE OF CONTENTS

Where ?

(These are not filmable and are available for viewing at Min. Res. Branch, Victoria)

REFRACTION SURVEY

INTRODUCTION

During the second half of July and early August 1965, a refraction survey was conducted in and around various claims owned by Magcobar Ltd. in north-eastern British Columbia, and generally referred to as the Bear Claims. Some of the work was done on the adjoining Beaver and Moose Claims as indicated on the attached map.

OBJECTS

It was desired to evaluate the effectiveness of the refraction seismic method in outlining the extent of certain ore bodies. In addition, it was desired to find the thickness of unconsolidated overburden at various places on the claims. By so doing, core hole sites could be selected to minimize the expense of drilling and casing off the unconsolidated materials.

METHODS AND PROCEDURES

Instrumentation consisted of a Model ER-75-12 Recording Interval Timer, manufactured by Electro-Technical Labs Division of Mandrel Industries Inc.. This equipment is designed for use with electric blasting caps plus whatever explosives might be required to get the necessary seismic energy into the ground. No explosives were actually used in the field work and a sledge hammer hit sharply upon a metal plate was used as an energy source.

Twelve EVS-8 miniature seismic detectors by the same manufacturer were employed to pick up the seismic energy from the ground and convert it to electrical energy for transmission to the recorder. This "pick-up" has a natural frequency of 4.5 cycles per second and arrangements were made to have bottom spikes available in different lengths up to 12 inches.

A 13 pair cable, 650 feet long, was utilized to transmit the energy to the recorder. This was shortened to 250 feet when it became apparent this was the maximum distance we could expect energy from a hammer blow to penetrate the formation.

The electrical energy arriving at the recorder was used to activate individual galvanometers for each geophone. A light source reflecting from a mirror on each galvanometer provided a visual trace of light whose motion corresponded with the ground motion at each geophone position. All twelve light traces were interrupted each .01 second by a vibrating reed to provide means for timing

METHODS AND PROCEDURES (Cont'd.)

the arrival of the various energy events. The entire sequence was photographed by a Polaroid camera to provide a permanent record.

The writer acted as recorder operator and had the assistance of a student summer employee to wield the sledge hammer and assist with moving and hooking up the equipment.

Thirty-nine records, 16 graphs, and a field book diary are included.

RESULTS

Observed results can be tabulated as follows:

LOCATION	OVERBURDEN THICKNESS
1	Nil
2	14.8 feet
3	12.5 "
4	11.2 "
5	24.5 "
6	15.0 "
7	8.5 "
8	3.5 "
9	2.8 "
10	4.0 "
11	4.7 "
12	8.2 "
13	Indeterminate
14	6.3 feet
15	5.1 "

DISCUSSION OF RESULTS

A highly weathered and aerated layer was observed at most locations with velocities less than 2000 feet per second. At only one location (#5) were 3 distinct layers observed. Elsewhere, penetration of energy was not sufficient to bring in more than one velocity below the weathered layer. This higher velocity second layer varied widely with location, and at location #6 became preposterously high at 23,600 *feet per second*.

Where these rocks were at the surface, the velocity of Argillite was well established at 10,500 to 12,500 feet per second and the velocity of Barite was well established at about 5,300 feet per second. Most of the secondary velocities fell within these two limits, leading to the belief energy penetration was insufficient to bring in true country rock velocities as a third velocity at most locations.

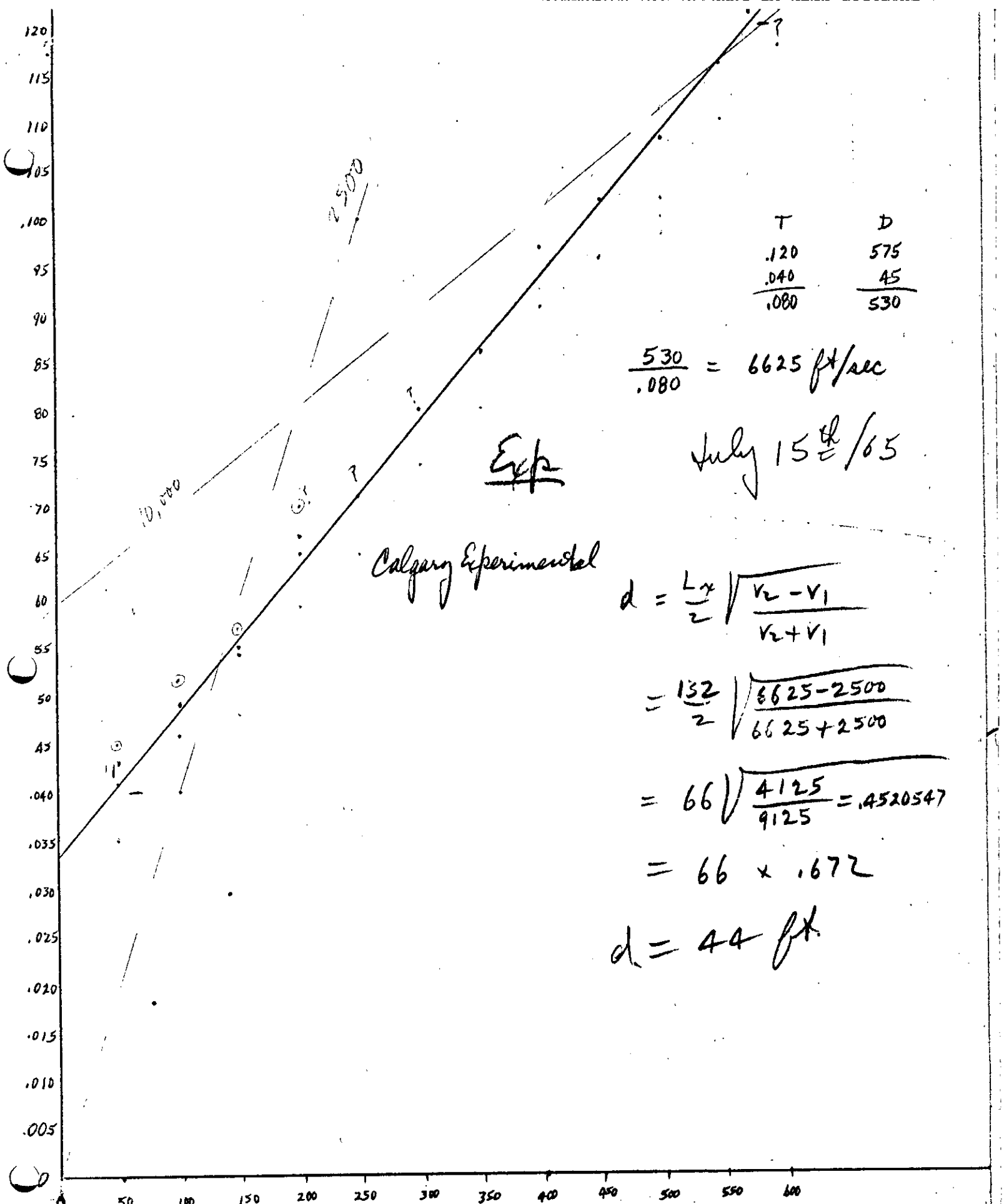
The line of shooting along the creek draining Bear Lake was particularly unsatisfactory and is believed to be largely unreliable. The Muskeg mat limited ability to get energy into the ground and the presence of some near surface permafrost is suspected. This can effectively mask (increase) the velocities immediately below the weather layer.

CONCLUSIONS

It is believed that the objectives of the survey were not met very satisfactorily. The poor seismic energy transmission characteristics of the surface muskeg inhibited the collection of reliable data at distances great enough to pin down some of the answers desired. There is little expectation that greater penetration of seismic energy can be expected from the use of a sledge hammer as a source. The next step would, of necessity, involve the use of explosives as a source.

Depths to bed rock from known drill logs should now be compared with those recorded here to confirm or deny the lack of agreement anticipated.

H C Bickel



T	D
.120	575
.040	45
.080	530

$\frac{530}{.080} = 6625$ ft/sec

Exp

July 15th/65

Calgary Experimental

$$d = \frac{L}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}}$$

$$= \frac{132}{2}\sqrt{\frac{6625-2500}{6625+2500}}$$

$$= 66\sqrt{\frac{4125}{9125}} = .4520547$$

$$= 66 \times .672$$

$$d = 44 \text{ ft.}$$

#1 28/7/65

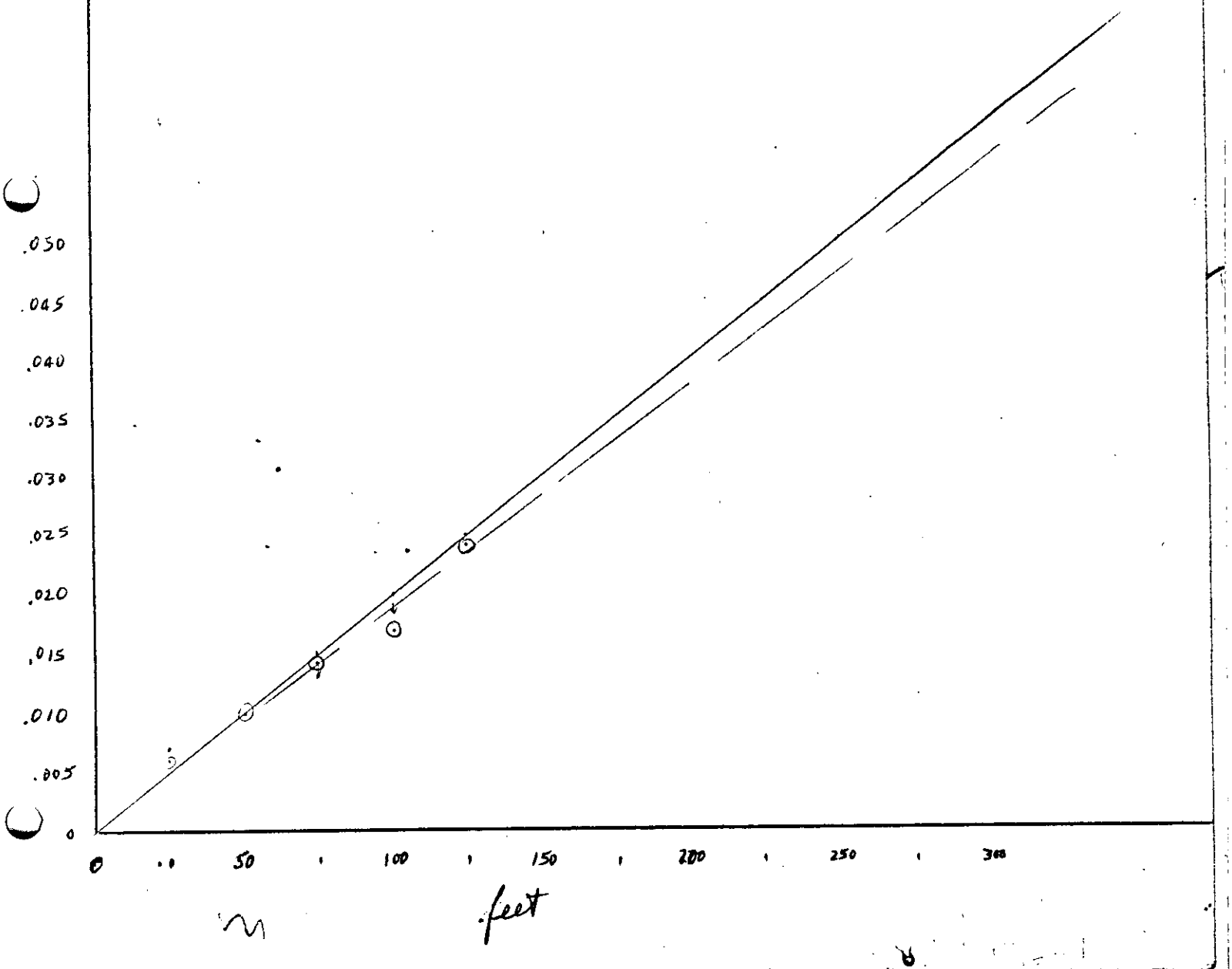
$\frac{250'}{.050\,s.} \times 20 = \boxed{5000\ 1/s}$ Gr. Sta A-1 Spread NE on Base Line

(1)

Barite at Surface

#2 $\frac{100'}{.019\,s} = \boxed{5270'/s}$ $\frac{50'}{9} = 5555'/s$

amazingly low Velocity.



July 29, 1965

Drill Hole 65-1 Slots 2 & 3 (#1 no TB)

Spread East. (2)

$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}}$$

$$= \frac{26}{2}\sqrt{\frac{5263 - 2222}{5263 + 2222}} = 13\sqrt{\frac{3041}{7485}}$$

$$= 13\sqrt{.406279} = 13 \times .637$$

$$= 8.3'$$

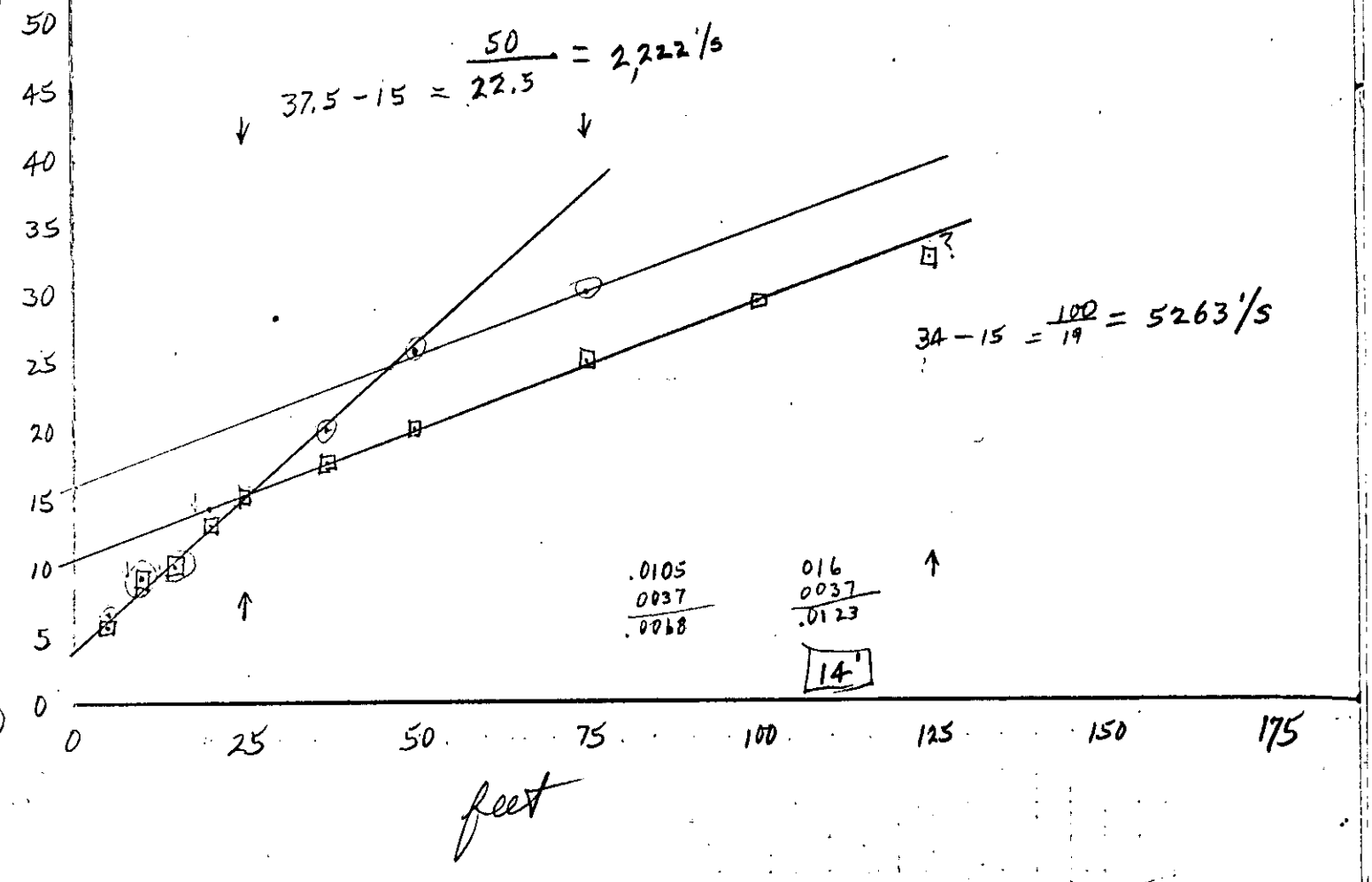
#1 slot no TB

⊙ #2 slot.

⊡ #3 slot.

$\frac{46.5}{2} = 23.25 = 14.8'$

ms.



July 29/65

H M Sta Q-10-5

(3)

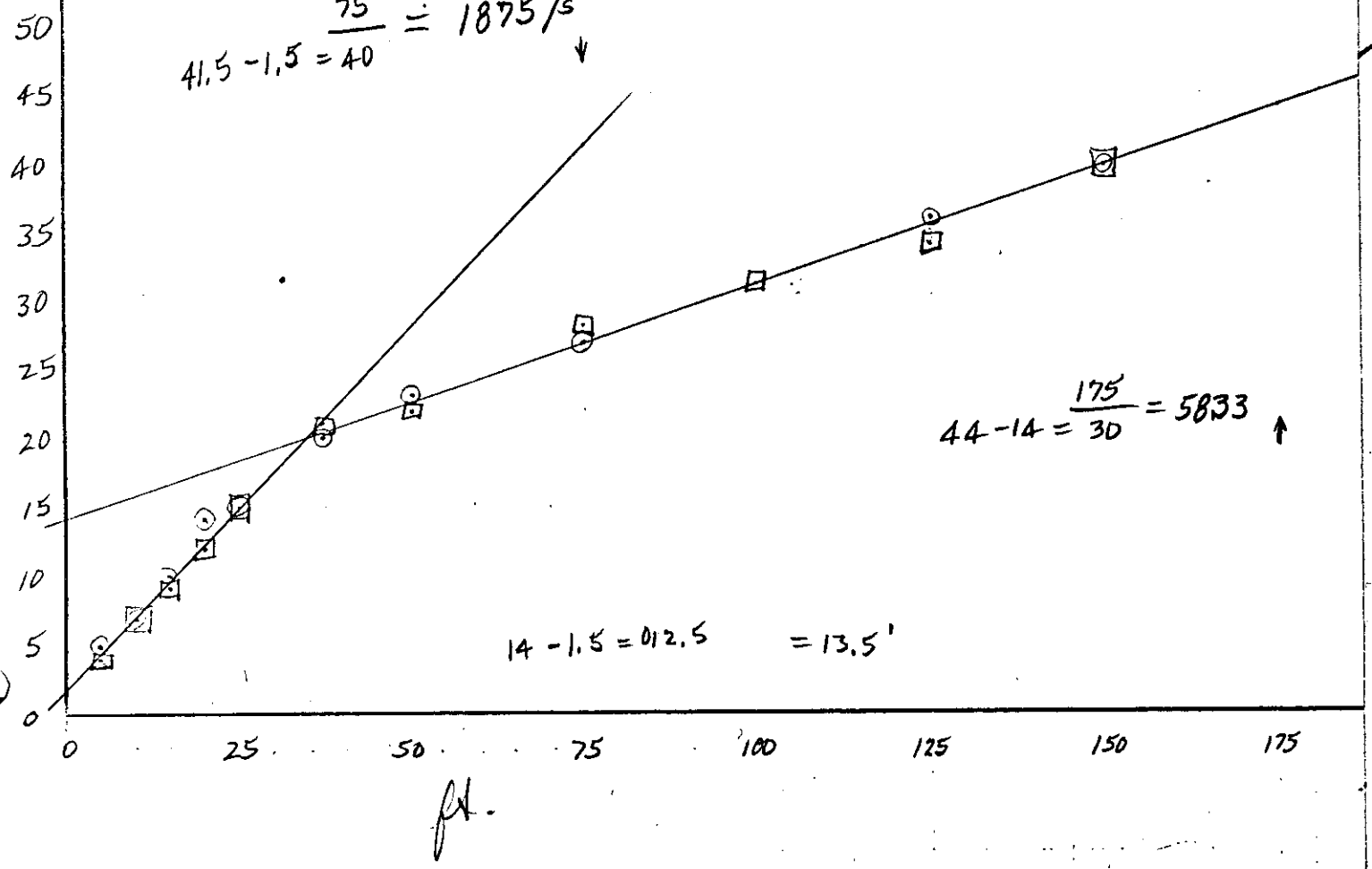
$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}}$$

$$= \frac{35}{2}\sqrt{\frac{5833 - 1875}{5833 + 1875}} = 17.5\sqrt{\frac{3958}{7708}}$$

$$= 17.5\sqrt{.513492} = 17.5 \times .716$$

$$= 12.5 \text{ ft.}$$

⊙ #4 Shot.
⊡ #5 Shot



July 29th 1965

GM Sta. Q-0

Test Hole AH-13 (4)

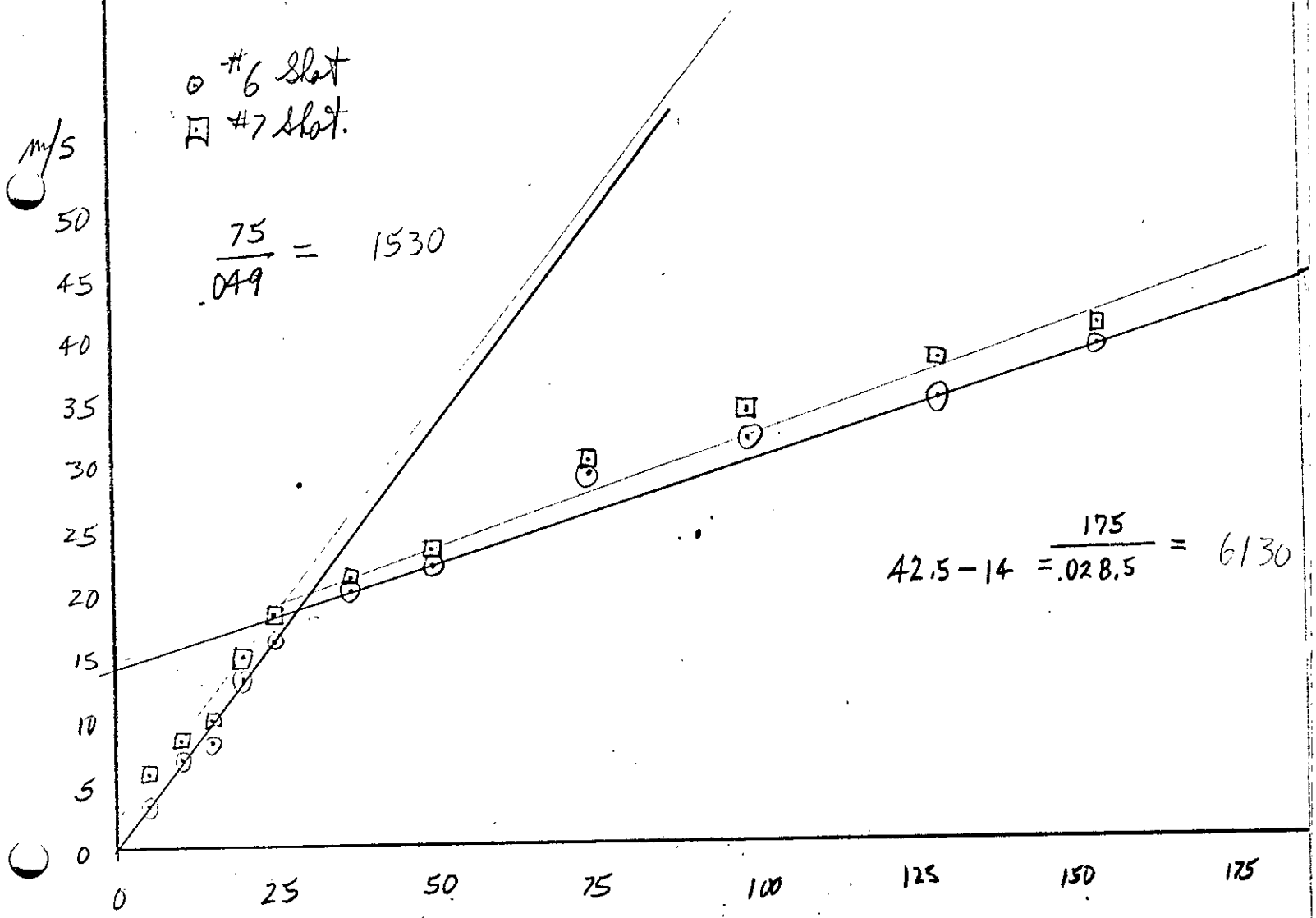
Shot at Q 15

#12 @ Q 2 N

$$d = \frac{L_x}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{29}{2}\sqrt{\frac{6130-1530}{6130+1530}}$$

$$= 14.5\sqrt{\frac{4600}{7660}} = 14.5\sqrt{.60}$$

$$= 14.5 \times 775 = 11.2 \text{ ft.}$$



July 29 1965

Shot { 315' W of Q10N
180' S of Beaver #1 Final claim stake
Spread 5

(5)

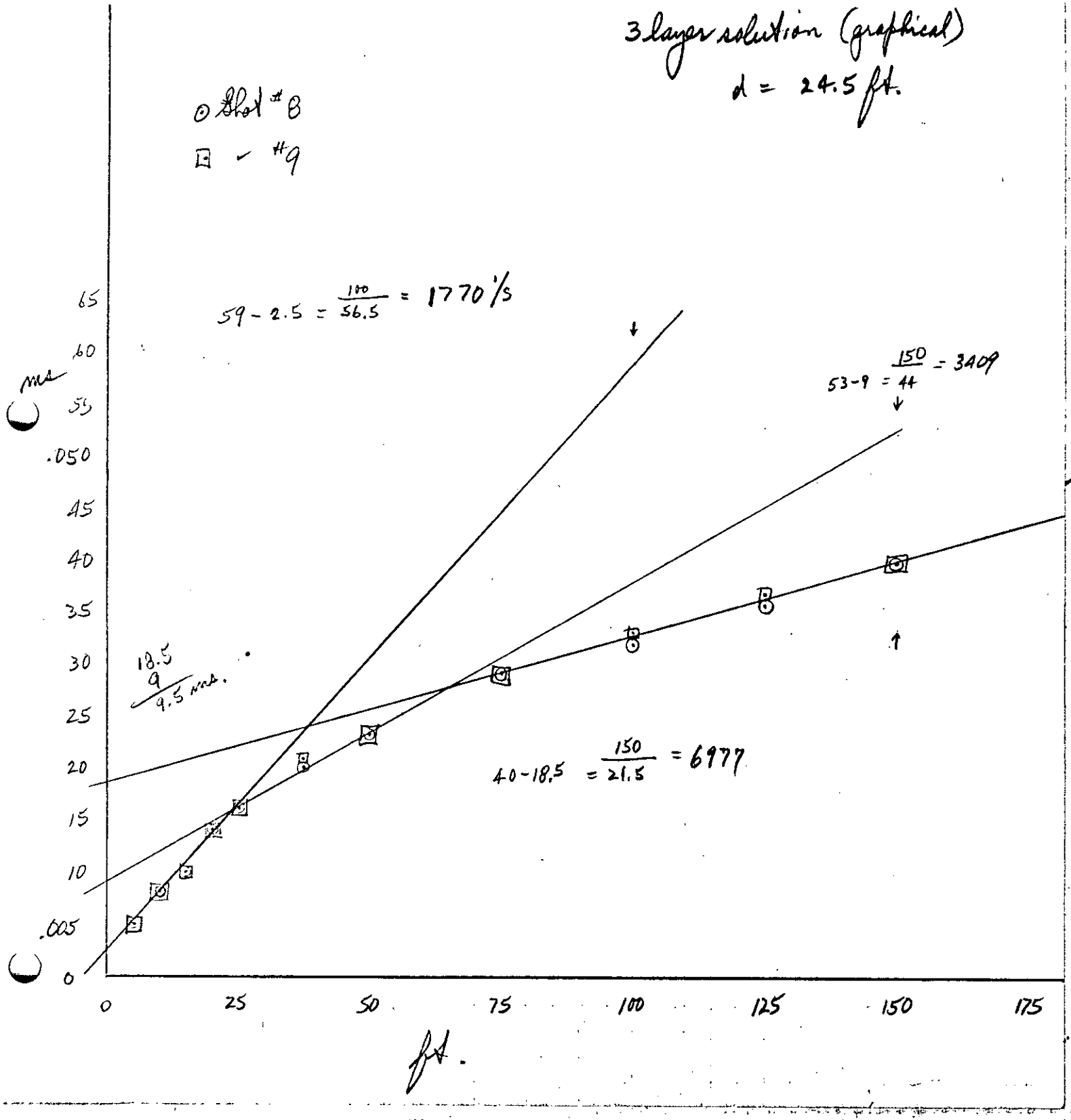
$$d = \frac{L_x}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{38}{2}\sqrt{\frac{6977 - 1770}{6977 + 1770}}$$

$$= 19\sqrt{\frac{5207}{8747}} = 19\sqrt{.595290}$$

$$= 19 \times .77 = 14.6$$

3 layer solution (graphical)

$d = 24.5$ ft.



July 30/65
Drill Hole 65-2 Spread SW

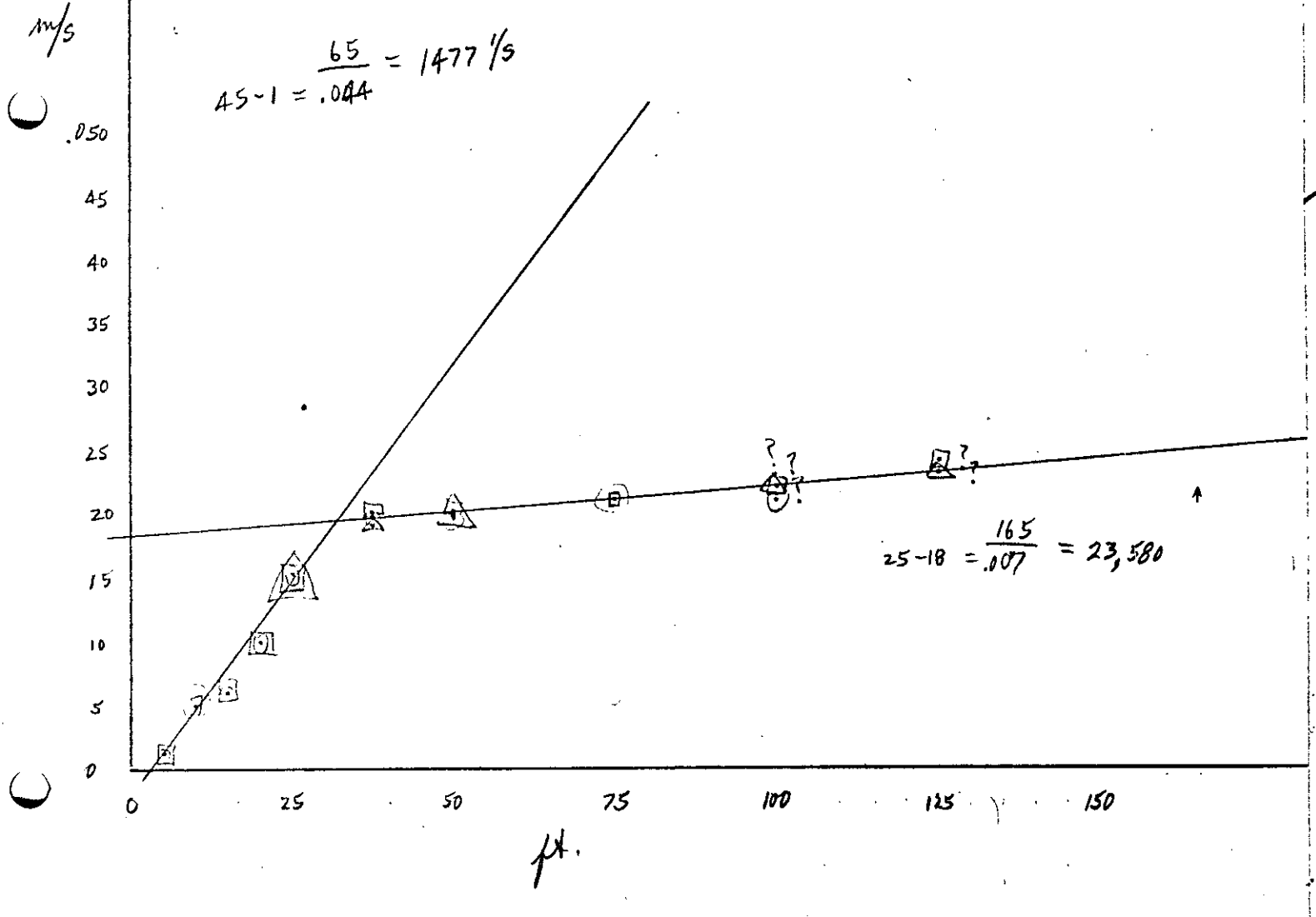
(6)

$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{32}{2}\sqrt{\frac{23{,}580 - 1{,}477}{23580 + 1{,}477}}$$

$$= 16\sqrt{\frac{22{,}103}{25{,}057}} = 16\sqrt{.881}$$

$$= 16 \times .939 = 15 \text{ ft.}$$

● Shot #1
□ ✓ #2
△ ✓ #3



July 30, 1965

D-5N Spread SW

(7)

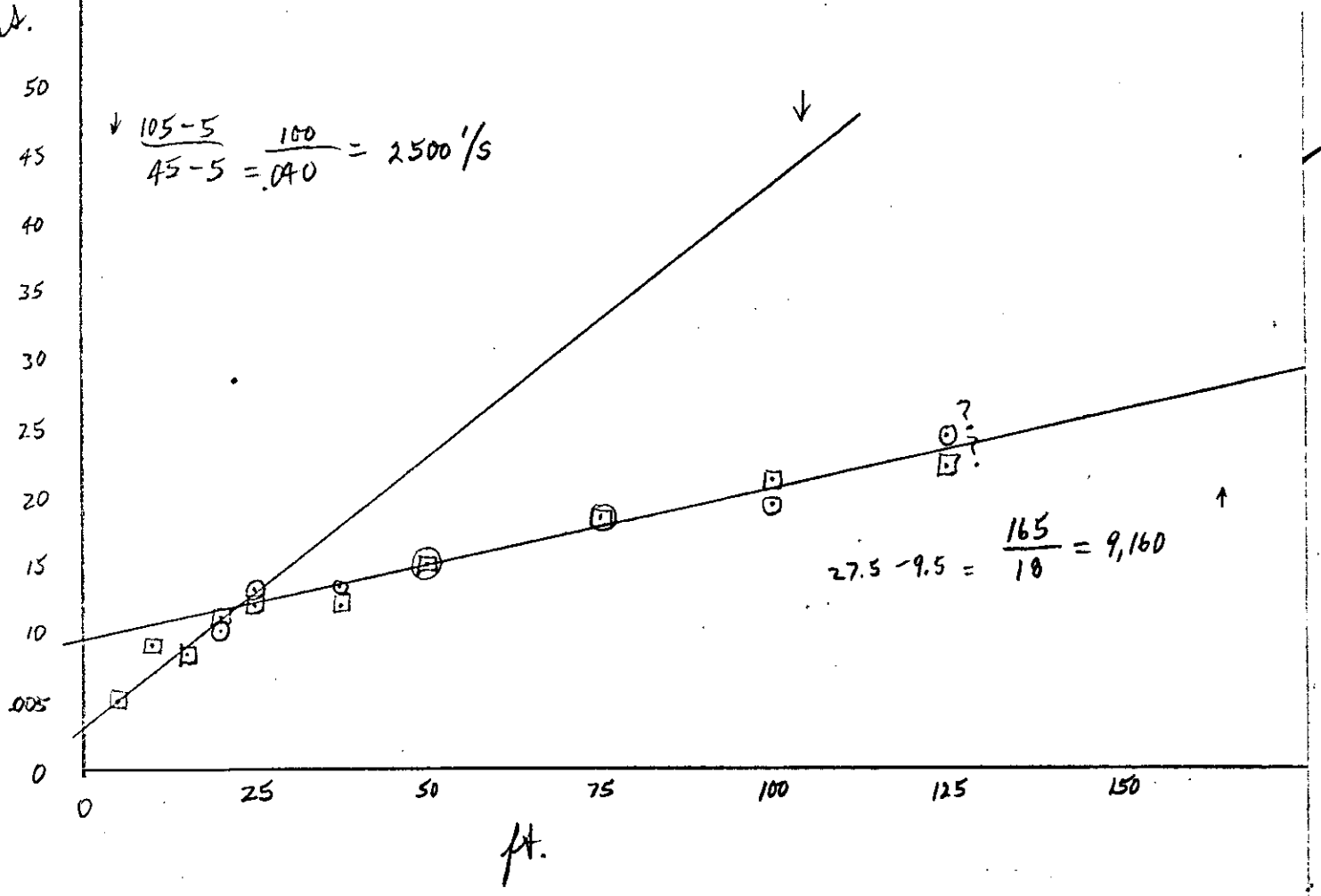
$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{22.5}{2}\sqrt{\frac{6660}{11,660}}$$

$$= 11.25\sqrt{.571} = 11.25 \times .756$$

$$= 8.5 \text{ ft.}$$

Slot # 4 ⊙

" # 5 ⊡



July 30, 1965

150' SW of D-S-N Spread SW

(8)

⊙ Record #6

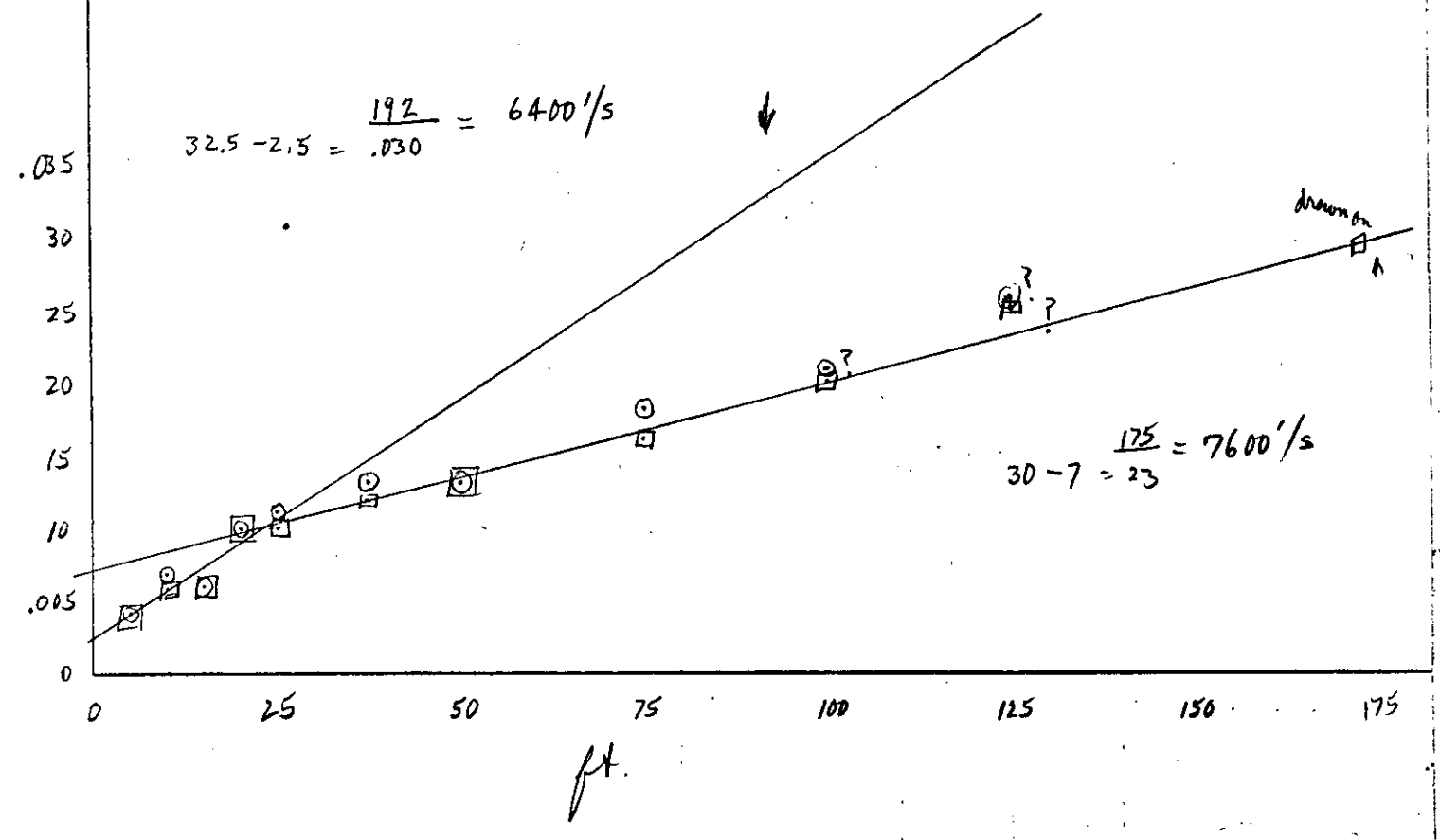
⊡ ✓ #7.

$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{24}{2}\sqrt{\frac{7600 - 6400}{7600 + 6400}}$$

$$= 12\sqrt{\frac{1200}{14000}} = 12 \times \sqrt{.0857142B}$$

$$= 12 \times .292 = 3.5 \text{ ft.}$$

ms.



July 30, 1965

Midway between lines E & F spread SW

(9)

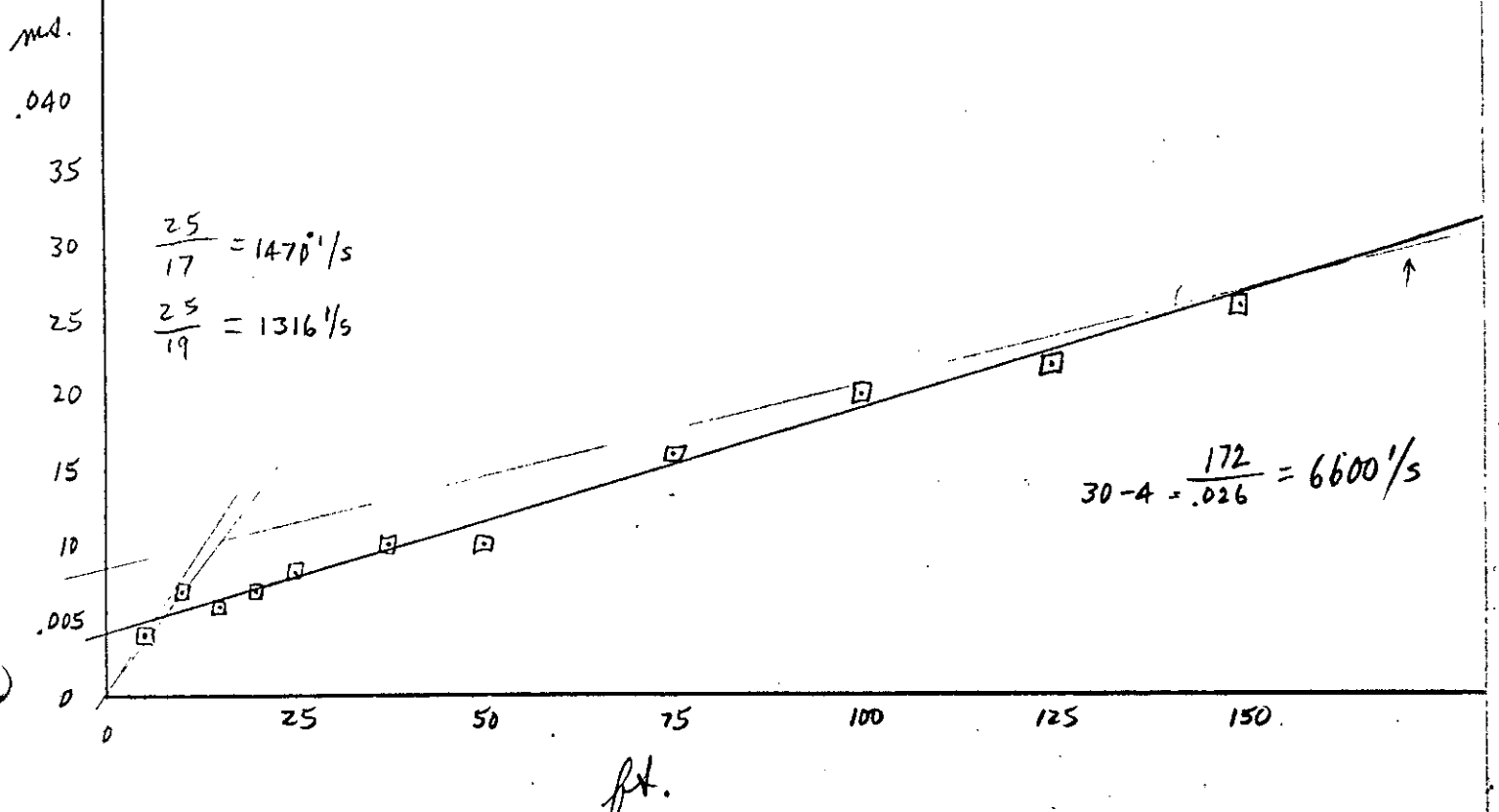
Shot # 9 ⊡

✓ # 8 no TB

$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{7}{2}\sqrt{\frac{6600 - 1400}{6600 + 1400}}$$

$$d = 3.5\sqrt{\frac{5200}{8000}} = 3.5\sqrt{.65}$$

$$d = 3.5 \times .805 = 2.8 \text{ ft.}$$



July 30, 1965

Line G (at Sta 4)

Spread SW

(10)

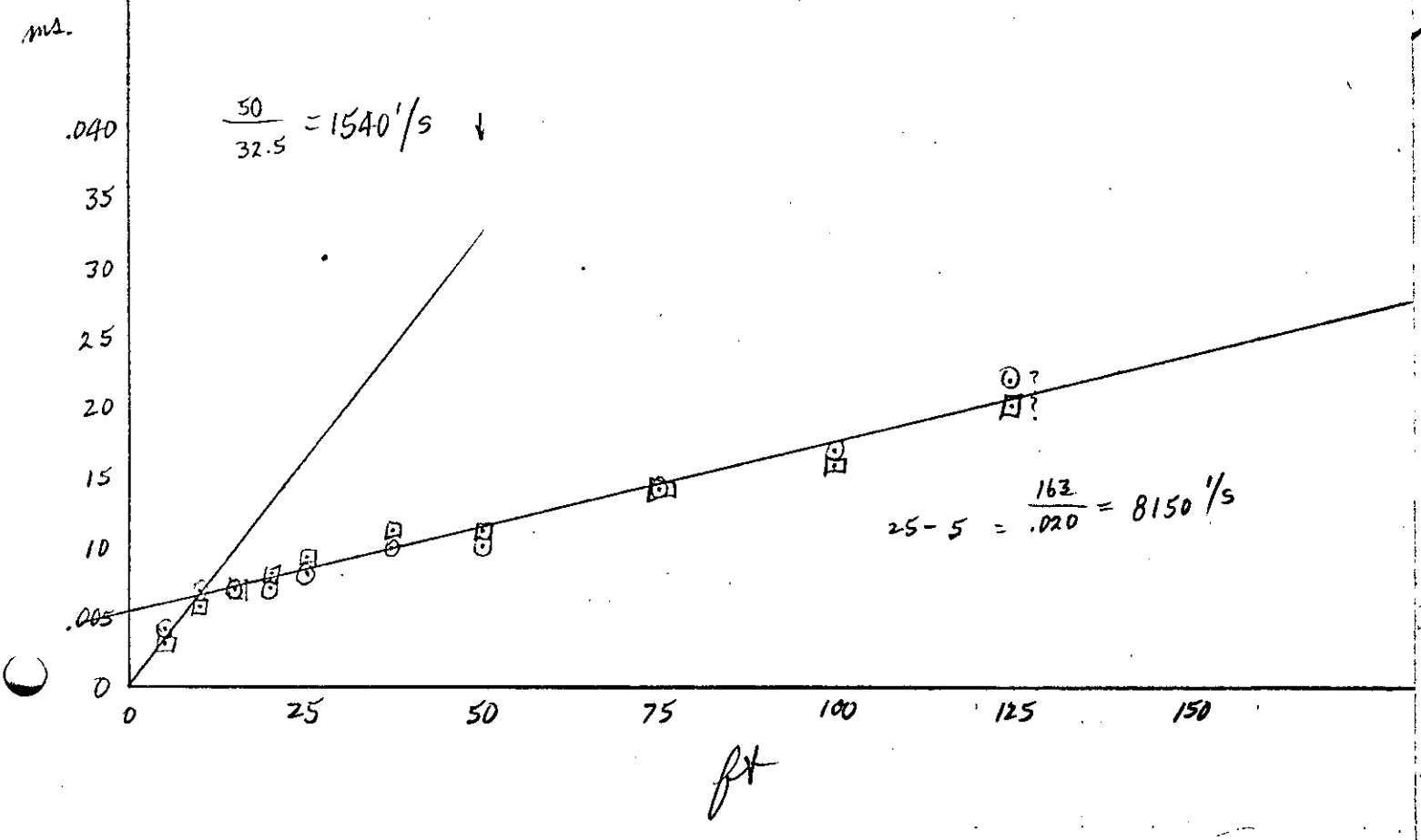
$$d = \frac{L_x}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{10}{2}\sqrt{\frac{8150-1540}{8150+1540}}$$

$$= 5\sqrt{\frac{6610}{9690}} = 5\sqrt{.684}$$

$$= 5 \times .825 = 4 \text{ ft.}$$

⊙ Shot #10

⊡ Shot #11



July 30, 1965

Midway between Lines H & I

Spread SW (11)

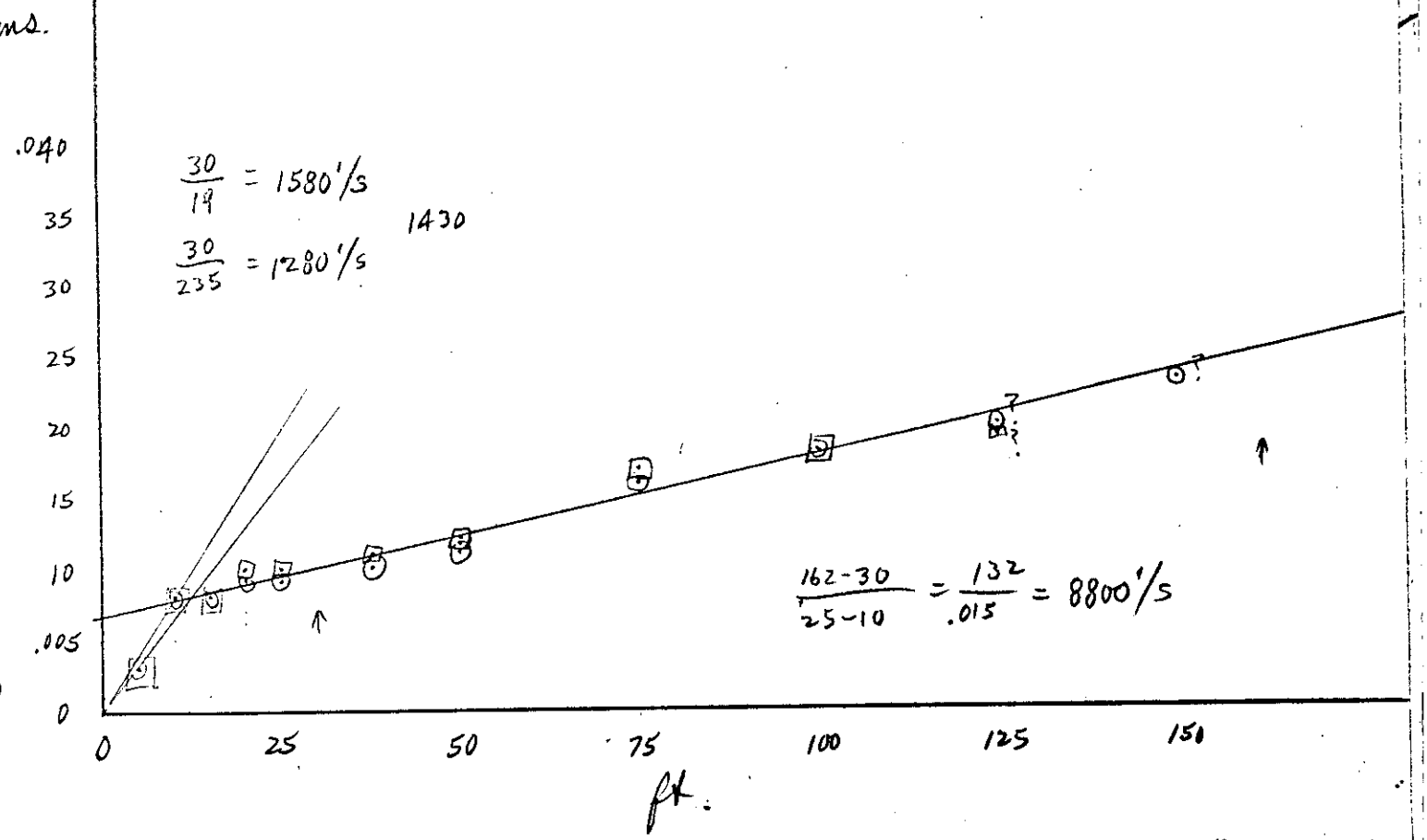
⊙ Shot # 12

⊡ " 13

$$d = \frac{L_N}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{11}{2}\sqrt{\frac{8800 - 1430}{8800 + 1430}}$$

$$= 5.5\sqrt{\frac{7370}{10,230}} = 5.5\sqrt{.72}$$

$$= 5.5 \times .85 = 4.7 \text{ ft.}$$



July 30/65 argillite NE of Comp. 37ft SW of Drill Hole (AH 11?)
Spread NE

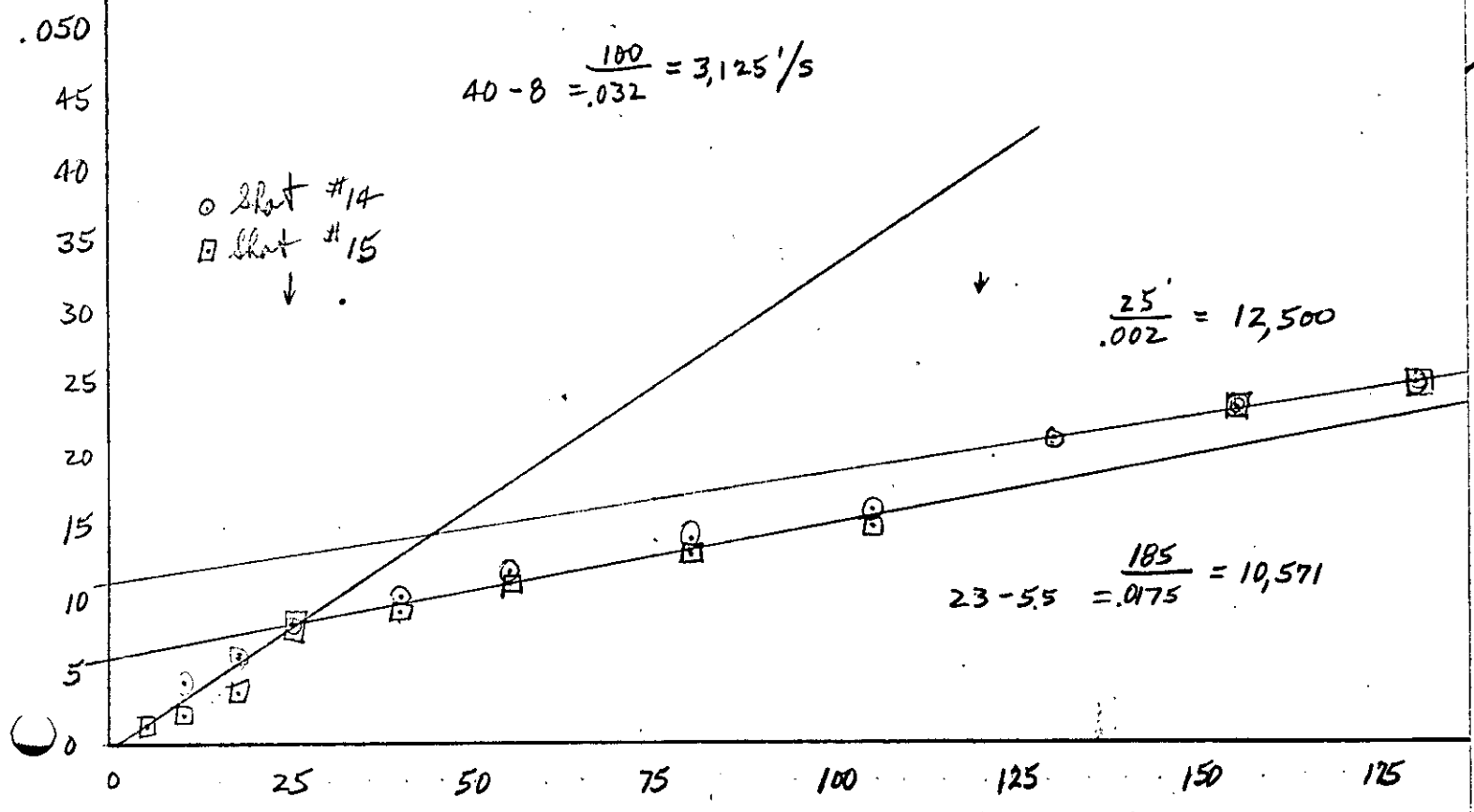
(12)

⊙ Shot #14
⊡ ✓ #15

$$d = \frac{Lx}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{25}{2}\sqrt{\frac{10571 - 3125}{10571 + 3125}}$$

$$= 12.5\sqrt{\frac{7446}{13696}} = 12.5\sqrt{.4352}$$

$$= 12.5 \times .66 = 8.25 \text{ ft.}$$



July 31, 1965

(13)

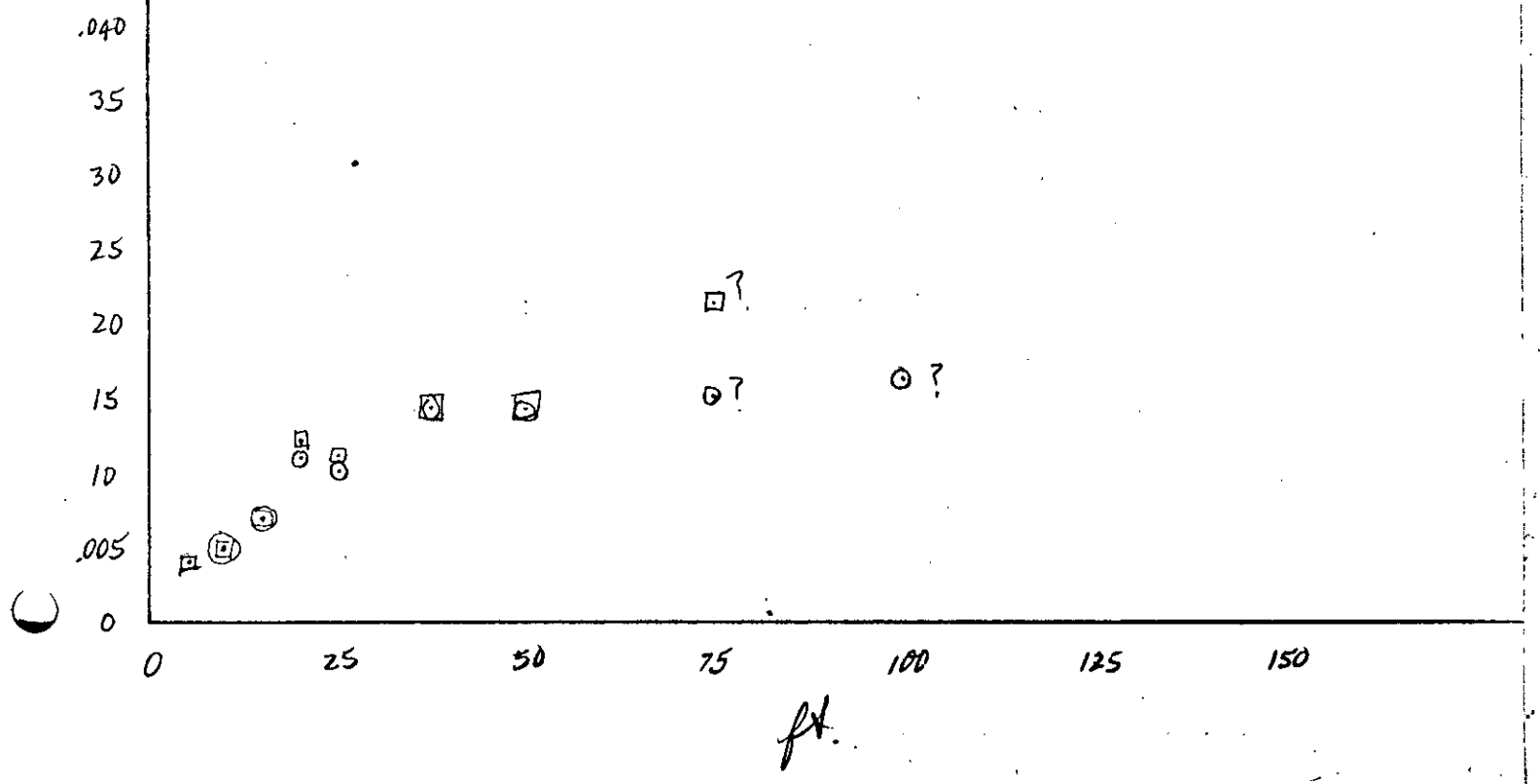
150ft N of EBBM

Spread South

12" spikes

Shot #1 ⊙ poor energy

✓ #2 ⊡



July 31 1965

EB BM spreads (14)

12" spikes

⊙ Slot #1 3

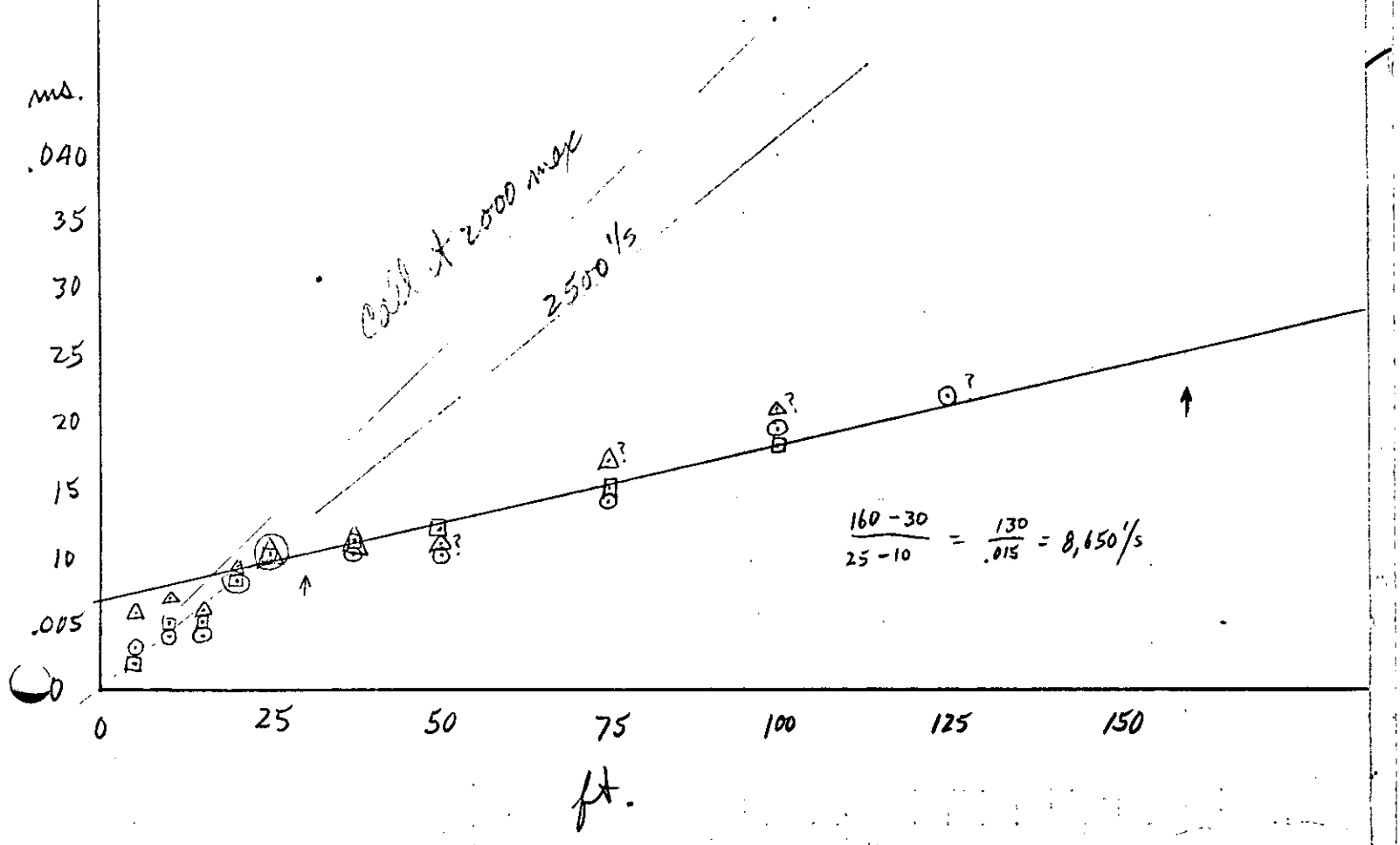
⊡ ✓ 4

△ ✓ 5

$$d = \frac{L_f}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{16}{2}\sqrt{\frac{6650 - 2000}{8650 + 2000}}$$

$$= 8\sqrt{\frac{6,650}{10,650}} = 8\sqrt{.625}$$

$$= 8 \times .79 = 6.3 \text{ ft.}$$



July 31st 1965

120 ft S of EBBM Spread S

12" Spikes

(15)

Misfire #6 Dave missed the plate

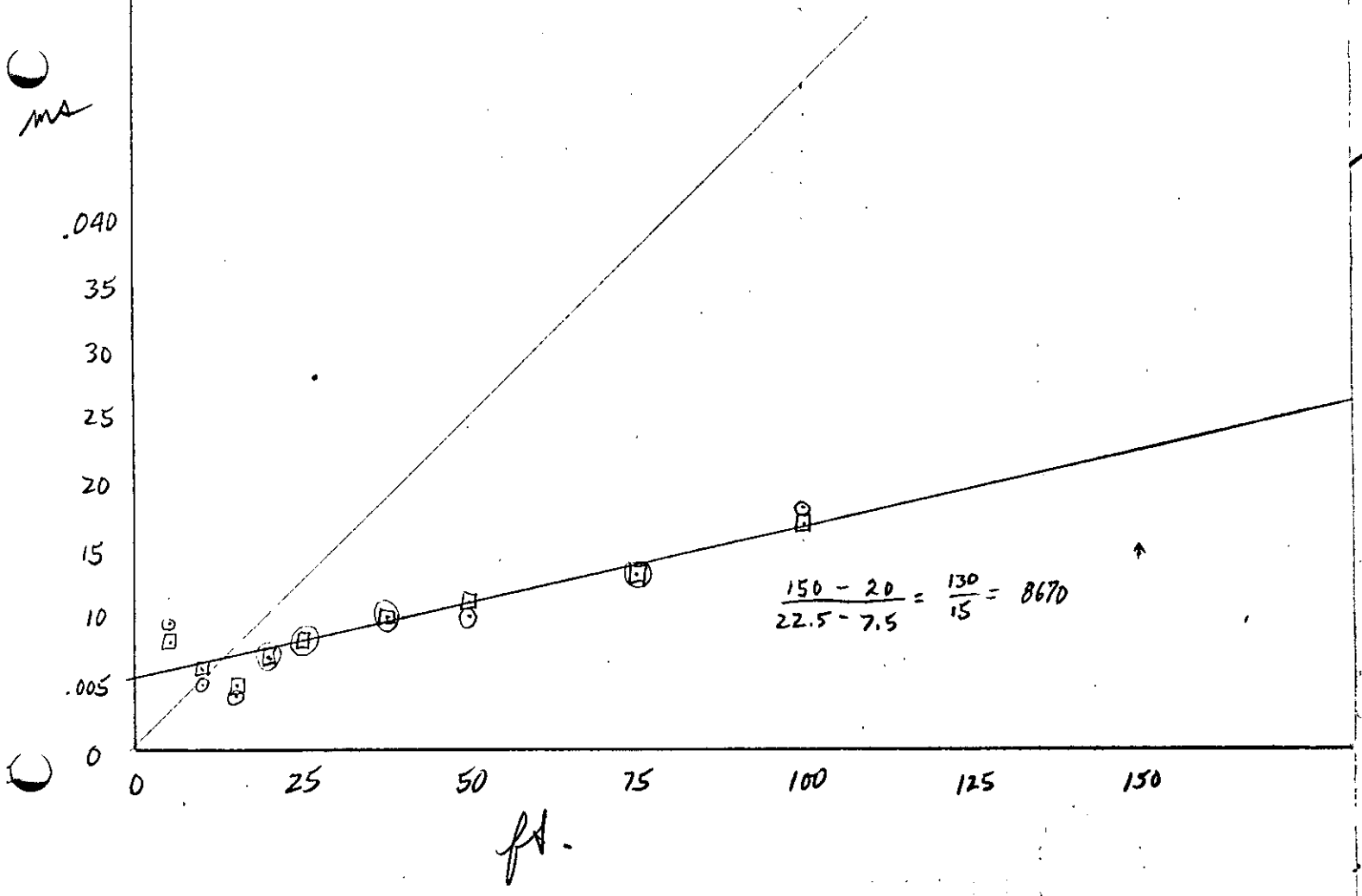
⊙ Shot #7

⊡ ✓ 8

$$d = \frac{L}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}} = \frac{13}{2}\sqrt{\frac{8670 - 2000}{8670 + 2000}}$$

$$= 6.5\sqrt{\frac{6670}{10670}} = 6.5\sqrt{.625}$$

$$= 6.5 \times .79 = 5.1 \text{ ft.}$$



Thursday July 29th 1965

Shot DH-65-1 to the SW (2)

Weathered Vel 2222 f/s To 14.8 ft. (or 8.3')

Very slow 5263 f/s under that

Transmission 100 ft 125 ft?

Shot Sta Q-10-S (now R-10-S) (3)

Weathered velocity 1075 f/s To 12.5 ft.

Slow 5833 f/s under that

Transmission 150 ft. Good

Thursday July 29th 1965 (cont.) (4)

Shot GM Sta. Q1S to the N (#12@ Q2N)
Test Hole AH-13
Weathered velocity 1530 f/s to 11.2 ft.
6130 f/s under that
Transmission to 150 ft. OK

(5)

Shot 315 ft No of Q10 N & 100'S of Final claim stake Beaver #1 Spread South
Weathered velocity 1770 f/s to 14.6 ft.
6977 under that
Transmission good to 150'
Possible solution
Intermediate layer at 3409 f/s provides alternate
8 ft of weathered
16.5 ft of weathered rock
Thereafter rock at 7000 (argillaceous?)

Friday July 30th 1965 (6)

Shot Drill Hole 65-2 Spread SW

Weathered velocity 1477 To 15 ft.

Unreasonably high velocity of 23,580 thereafter
Transmission good - only 75 ft.
makes no sense

Shot on D5N (on road) Spread SW (7)

Weathered Velocity 2500 f/s To 8.5 ft.

Thereafter 9160 f/s
Transmission To only 100 ft
Is this permafrost?

Friday July 30th 1965 (cont.) (8)

Shot on road midway between projections of lines C & B (just at the end of the previous 150 ft spread. New spread SW Too and 65 ft short of stat point used for 65-1

weathered (?) velocity 6400 f/s for 3.5 ft. good
poor transmission to 75 feet eq.
Thereafter 7600 f/s little difference

Shot on road between E4N & F4N (9)
Spread SW
Weather velocity of 1400 ft/sec for 2.8 feet
NG
Thereafter 6600 f/s
Transmission good To 150 ft.

believe a 7800 f/s velocity can be inferred at considerable depth

Friday July 30th 1965 (cont.)

(10)

Shot along same road at intersection with line G-I spread S-W

Weathered velocity 1540'/s for 4 feet

Thereafter 8150 ft/sec

Transmission to 10'; 125'?

(11)

Shot along same road at a point about midway between line H and a projection of line I spread S

Weathered velocity about 1430'/s for 4.7 ft.

thereafter 8800 '/s

Transmission good to 100' thereafter ?

Friday July 30th 1965 (12)

After supper shot on argillite on the surface just outside comp.
Spread NE.
Shot was 37 ft SW of some drill hole
Was it AH 11?

Weathered layer velocity @ 3,125'/sec
for 8½ feet

Thereafter argillite in place velocity of 10,500 to 12,500 ft/sec.

Transmission real good all the way to 180 ft.

This makes sense.

Put out phones with
12" long steel spikes today

Saturday July 31st 1965 (13)

Set up and shot 150 ft No. of EBBM in the Marsh on unscraped mudflat to the spread to the south.

Energy extremely erratic and Transmitted only 50 feet.

No useful results

(14)

Shot at East Bear Bench Park EBBM spread South.

Weathered velocity indeterminate call it a maximum of 2000 f/s and an estimated depth of 8.7 ft emerges.

Thereafter a husky 8,650 f/s obtains.

Transmission reasonable to 100 ft.

Saturday July 31st/65 (cont.) (15)

Shot 120 ft S of EBBM spread 5

Again energy out to only 100 ft and early time very erratic so that a weathered velocity was indeterminate. Lets assume a max of 2000 f/s

Then the weathered (unshot) depth is 5.1 ft

Thereafter velocity is 8670 f/s

Sunday August 1st 1965

Office calculations all day

Forestfire threat in evening caused entire camp to be evacuated

Spent night at Fireside (from 1 A.M) charged to Magcobar.

film

CHESTNUT 3-0170

H. C. BICKEL LTD.
3406 NINTH STREET S.W.
CALGARY, ALBERTA, CANADA

Magnet Cove Barium Corporation Ltd.
510 5th Street West
Calgary, Alberta

Statement — August 31, 1965

TO:

Geophysical Services

10 days at $ 125.00		$ 1,250.00
Expenses:		
Rentals & Supplies	$ 544.45	
Transportation	204.26	
Miscellaneous	33.45	782.16
		$ 2,032.16

RENTALS & SUPPLIES:

# 5829	Mandrel Industries Ltd.	$ 573.50	
# 563	" " "	(75.60)	
# 5828	" " "	58.92	
# 559	" " "	(57.92)	
# 5891	" " "	21.00	
# 560	" " "	(21.00)	
# 5892	" " "	447.50	
# 561	" " "	(447.50)	
# 5954	" " "	n/c	
# 5953	" " "	n/c	
# 5952	" " "	15.30	
# 562	" " "	n/c	
# 59406	Seismic Service Supply	19.66	
# 59928	" " "	(19.66)	
# 53600	Explosives Limited	10.25	
			$ 544.45

TRANSPORTATION:

Airbus	Calgary-Edmonton	$ 12.00	
C.P.A.	Roundtrip Edmonton-Watson Lake	130.00	
C.P.A.	Excess baggage " " "	5.25	
Air Canada	Edmonton-Calgary	13.00	
Air Canada	Air Freight charges	44.01	
			$ 204.26

MISCELLANEOUS CASH EXPENSES - UNSUPPORTED

Inter Airport Taxi - Edmonton	$ 7.00	
Car Expense in Calgary - 100 miles at 10¢ per mile	10.00	
Telephone	12.70	
Food	3.75	
		$ 33.45

Magcobar

MAGNET COVE BARIUM CORPORATION LTD. CALGARY, ALBERTA

Complete Drilling Mud Service CANADA

"ONE OF THE DRESSER INDUSTRIES"

44619

PAY $ 002032 DOLLARS AND 16 CENTS

Pay to the Order of

H C BICKEL LTD
3406 9TH ST S W
CALGARY ALBERTA

AMOUNT 2032.16

DATE NOV 18-65

TO: THE ROYAL BANK OF CANADA
MAIN BRANCH, CALGARY, ALBERTA

NEGOTIABLE WITHOUT CHARGE AT ANY BRANCH OF THE ROYAL BANK OF CANADA IN CANADA. (FAR NORTHERN BRANCHES EXCEPTED)

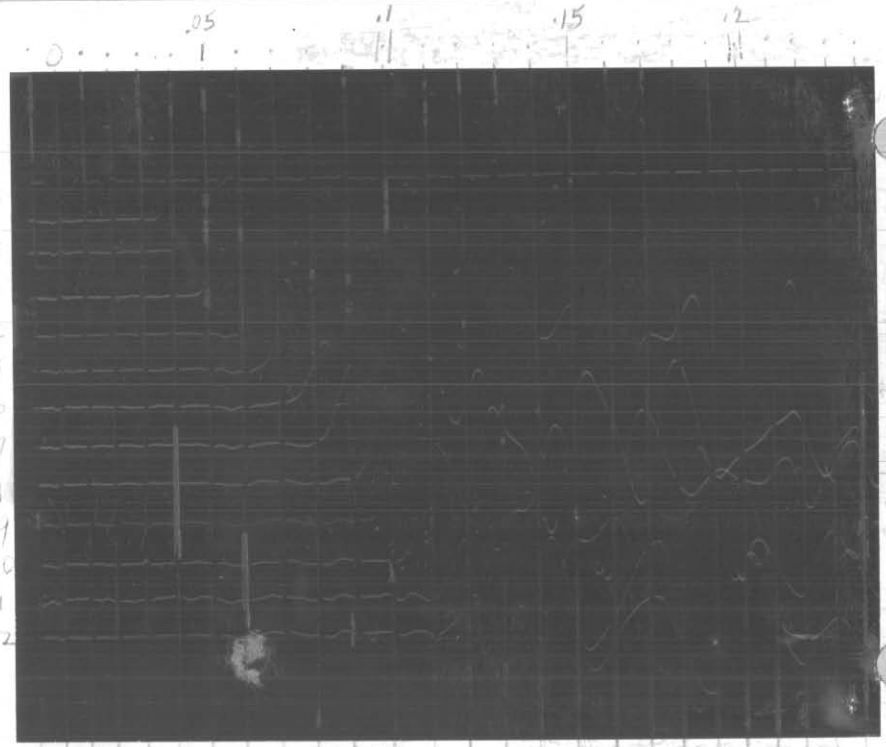
VOID - NOT NEGOTIABLE

	DATE	REFERENCE	AMOUNT	DEDUCTIONS	BALANCE
	11 18 65		2032.16		2032.16
					2032.16

REMITTANCE ADVICE PLEASE DETACH BEFORE PRESENTING
MAGNET COVE BARIUM CORPORATION LTD.

44619

(5) 15-7-6.5



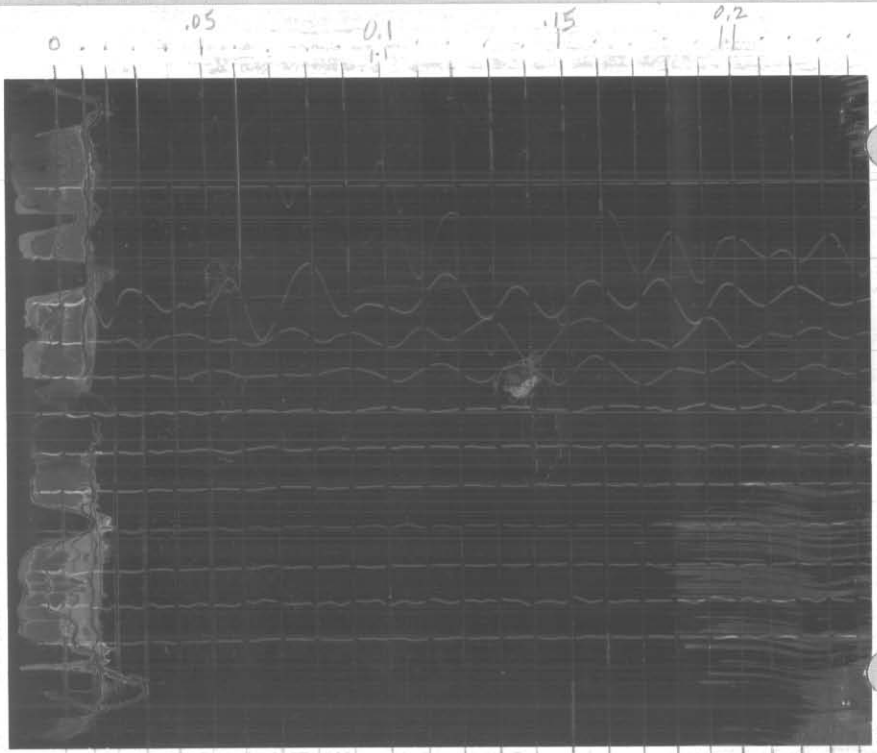
RP7-767

Experimental Location
8 mi W of Calgary

(2) 13-7-65

Hammer W/O T.B.

20 W/O Tri.



L92

Epermental Location
8 mi W of Calgary

#1 29/7

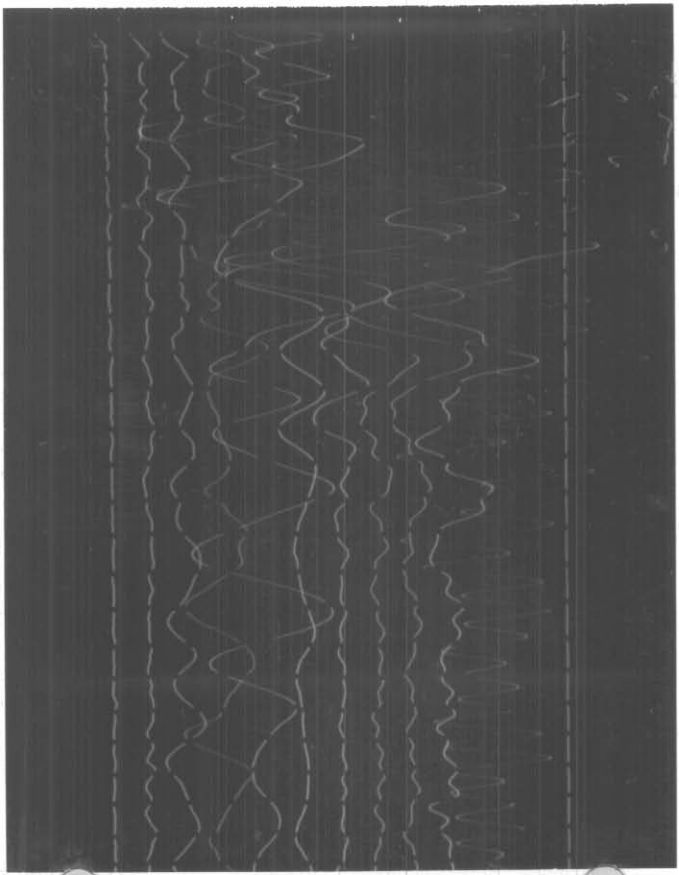
120ft NE

65 - 1 drill Hole

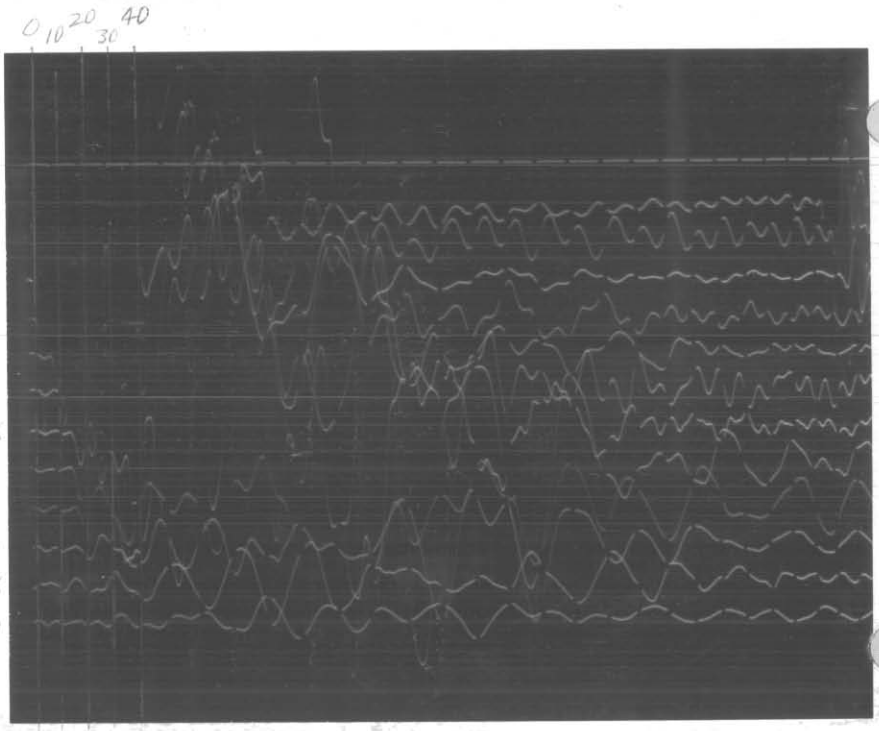
Spread 5 W

#6@25

#1 7@50



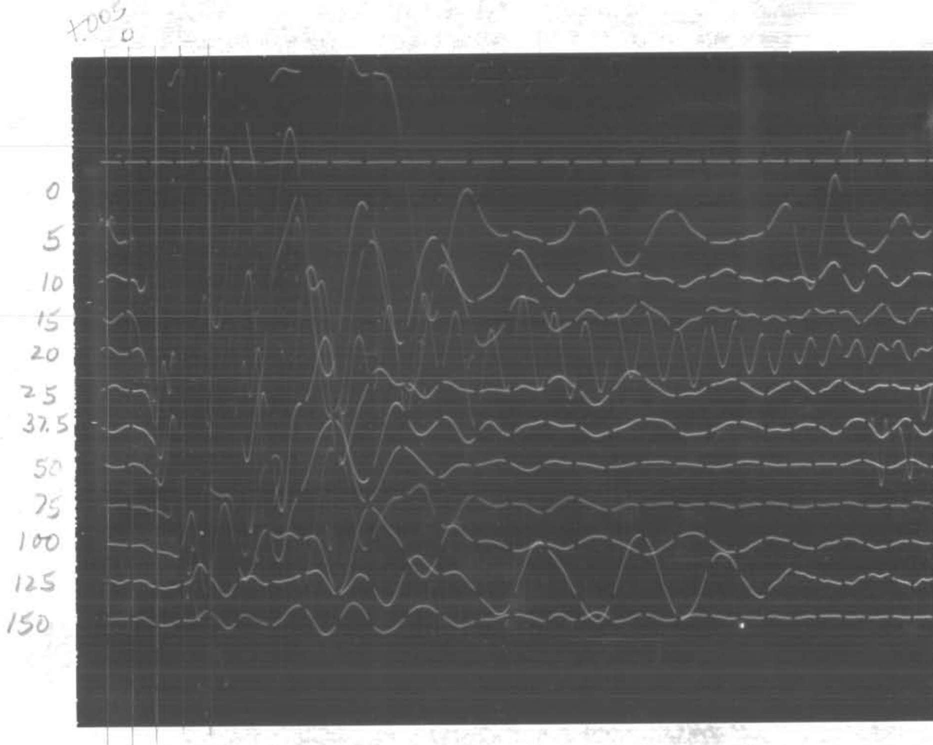
Location (2)


±.005
0
10
20
30
40
10
15
20
25
37.5
50
75
100
125
150

POLAROID E510L2B

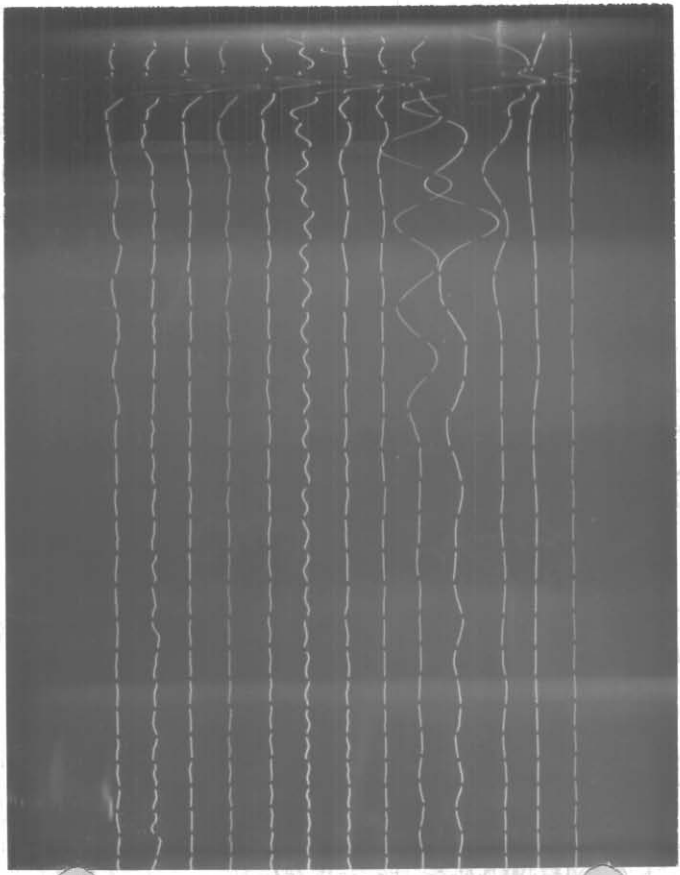
Location (6)

#517 EBBM Spread South
12' Spikes



Location (14)

#6
31/7 Misfire 120's of EB BM Spread



Dept. of Music

Location (15)