BASELINE STUDY REPORT
FORMER DELCO CHASSIS FACILITY
ROCHESTER, NEW YORK
VOLUME II

by

Haley & Aldrich of New York
Rochester, New York

for

General Motors Corporation
Detroit, Michigan

File No. 70436-110
August 1996

APPENDIX A
SECTION 1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-1

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2 3/4	1 1/2	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 534.63
DATUM: RCD
START: 18 October 1994
FINISH: 18 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	ND	1 4 7 9	S1 10"/24"	0.0 2.0	1.0	Medium dense brown fine SAND, little silt, trace coarse to medium sand, damp. -FILL-
	60	9 11 9 7	S2 9"/24"	2.0 4.0		Medium dense brown-black mottled SILT, little sand, trace clay, trace cinders. -FILL-
5	200	2 2 3 2	S3 3"/24"	4.0 6.0		Same, except loose. -FILL-
	600	1 1 1 1	S4 16"/24"	6.0 8.0	6.2	Same. Very loose brown fine sandy SILT, trace clay, moist to wet. -FILL-
	1000+	1 1 4 24	S5 15"/24"	8.0 10.0	9.6	Same, except loose, little coarse to fine gravel, trace limestone fragments. Noted petroleum odor. -FILL-
10	NR	8 50/0.3	S6 1/10"	10-10.8		Dense brown-black silty coarse to fine SAND, trace clay, trace fine gravel. -FILL- Same. Auger refusal at 10.8 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 10.8 ft.
15						Notes: 1. Boring was grouted to ground surface upon completion. 2. ND = Not detected; NR = No reading.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 10.8 ft.
ROCK CORED (LIN FT): ----
SAMPLES: 6S

BORING NO. B301-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-2

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2 3/4	1 1/2	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 534.48
DATUM: RCD
START: 18 October 1994
FINISH: 18 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	ND	5 10 12 16	S1 19"/24"	0.0 2.0	0.9	Medium dense silty coarse to fine SAND, trace grass and rootlets, damp. -FILL-
	6.0	10 8 13 11	S2 14"/24"	2.0 4.0		Medium dense brown-black mottled SILT, little sand, trace clay, trace cinders, damp. -FILL-
5	6.0	6 7 8 6	S3 18"/24"	4.0 6.0		Same. -FILL-
	80	8 9 9 14	S4 16"/24"	6.0 8.0	6.6	Same. Medium dense brown fine sandy SILT, trace clay, trace fine gravel, moist. -FILL-
	100	12 13 50/0.6	S5 7"/19"	8.0 9.6	8.8 9.6	Medium dense to dense brown-black coarse to fine SAND, little silt, trace clay, trace fine gravel. -FILL- Auger refusal at 9.6 ft. (Apparent top-of-bedrock).
10						Bottom of Boring at 9.6 ft.
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 9.6 ft.
ROCK CORED (LIN FT): ----
SAMPLES: 5S

BORING NO. B301-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-3

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2 3/4	1 1/2	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.80
DATUM: RCD
START: 18 October 1994
FINISH: 18 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	ASPHALT PAVEMENT
	ND	4 5 5	S1 15"/18"	0.5 2.0		Loose brown-black mottled silty SAND, trace fine gravel, damp. -FILL-
	200	70/0.3	S2 2"/4"	2.0-2.3		Same. Noted petroleum odor. -FILL-
						Advanced augers without sampling from 2.3 to 4.0 ft.
	410	6 16 70/0.3	S3 6"/16"	4.0 5.3	5.8	Same, except medium dense.
	75	70/0.4	S4 3/5	6.0-6.4		Brown fine sandy SILT, trace fine gravel, trace clay, moist. -GLACIAL TILL-
	80	70/0.4	S5 4"/5"	7.0-7.4		Same, except moist to wet.
					7.4	Auger refusal at 7.4 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 7.4 ft.

<u>Notes:</u>
1. Observed split spoon refusal due to obstructions at 2.3, 5.3 and 6.4 ft. At each occurrence the driller advanced augers through the obstruction to the next sampling depth.
2. Boring was grouted to 0.3 ft. from ground surface and patched with asphalt to ground surface upon completion.
3. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 7.4
ROCK CORED (LIN FT): ---
SAMPLES: 5S

BORING NO. B301-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-4

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.63
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT AND CRUSHER RUN STONE-
	100	13 12 12 13	S1 6"/24"	0.5 2.5		Medium dense brown silty fine SAND, trace medium sand, damp. -FILL-
	150	12 13 19 9	S2 9"/24"	2.5 4.5		Same, except dense with trace medium gravel. -FILL-
5	600	5 9 5 11	S3 10"/24"	4.5 6.5	5.5	Medium dense black-brown SILT, little medium to fine sand, trace clay, moist. -FILL-
	600	3 3 7 10	S4 16"/24"	6.5 8.5		Same, except wet.
	400	50/0.3	S5 4"/4"	8.5-8.8	8.5 8.8	Black-brown gravelly SILT, little coarse to fine sand, trace clay. -GLACIAL TILL- Auger refusal at 8.8 ft. (Apparent top-of-bedrock).
10						Bottom of Boring at 8.8 ft.
15						
20						
25						

Note:
1. Boring was grouted to 0.3 ft. from ground surface and patched with asphalt to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 8.8
ROCK CORED (LIN FT): ---
SAMPLES: 5S

BORING NO. B301-4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-5

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.52
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	50	10 11 10 8	S1 6"/24"	0.5 2.5		Medium dense black-brown SILT, little coarse to fine sand, trace fine gravel, trace clay, damp with brick fragments. -FILL-
	160	5 8 11 5	S2 10"/24"	2.5 4.5		Same, except moist. -FILL-
5	625	3 2 3 27	S3 9"/24"	4.5 6.5	5.2	Same, except loose. Loose to very dense black-brown coarse to fine sandy SILT, little fine gravel, trace clay, wet. -FILL-
	NR	51 50/0.2	S4 6"/8"	6.5-7.2	7.2	Auger refusal at 7.2 ft. (apparent top-of-bedrock)
10						Bottom of Boring at 7.2 ft.
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. NR = No reading.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 7.2
ROCK CORED (LIN FT): ---
SAMPLES: 4S

BORING NO. B301-5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-6

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	2 3/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.76
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	900	7 10 9 9	S1 6"/24"	0.5 2.5		Medium dense black-brown mottled silty coarse to fine SAND, trace fine gravel, damp.
	250	10 9 9 8	S2 14"/24"	2.5 4.5	3.7	-FILL- Medium dense black-brown SILT, little medium to fine sand, trace medium to fine gravel, trace clay, damp.
5	1000	5 5 3 4	S3 9"/24"	4.5 6.5	5.7	-FILL- Loose black-brown coarse to fine sandy SILT, trace fine gravel, moist.
	NR	5 21 50/0.3	S4 8"/16"	6.5 7.8	7.3 7.8	Same, except medium dense. -FILL- Fractured rock fragments, wet. -FILL- Auger refusal at 7.3 ft. (apparent top-of-bedrock)
10						Bottom of Boring at 7.3 ft.
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. NR = No reading.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 7.3
ROCK CORED (LIN FT): ---
SAMPLES: 4S

BORING NO. B301-6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-7

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 533.65
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	18 19	S1	0.5		Dense brown gravelly SAND, damp. -FILL-
		19 28	17"/24"	2.5	2.2	Dense tan-brown fine SAND, trace clay, damp.
	ND	31 50/0.4	S2 8/11"	2.5-3.4		Same, except very dense little coarse to medium sand, trace fine gravel. -FILL-
						Advanced augers to 4.0 ft.
	ND	80/0.4	S3 3"/5"	4.0-4.4		-FILL-
5					4.4	Fractured bedrock fragments, moist to wet. Auger refusal at 4.4 ft. (apparent top-of-bedrock).
						Bottom of Boring at 4.4 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from around surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.4
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B301-7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-7

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 533.65
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	18 19	S1	0.5		Dense brown gravelly SAND, damp. -FILL-
		19 28	17"/24"	2.5	2.2	Dense tan-brown fine SAND, trace clay, damp.
	ND	31 50/0.4	S2 8/11"	2.5-3.4		Same, except very dense little coarse to medium sand, trace fine gravel. -FILL- Advanced augers to 4.0 ft.
	ND	80/0.4	S3 3"/5"	4.0-4.4		-FILL-
5					4.4	Fractured bedrock fragments, moist to wet. Auger refusal at 4.4 ft. (apparent top-of-bedrock).
						Bottom of Boring at 4.4 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from around surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.4
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B301-7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-8

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling.

ELEVATION: 533.75
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
						-ASPHALT PAVEMENT AND CRUSHED STONE-
	ND	5 14 8 9	S1 6"/24"	1.0 3.0	1.0	Medium dense brown coarse to fine sandy SILT, little fine gravel, dry to damp.
	10	50/0.1	S2 1"/1"	3.0-3.1		-FILL- Same. Auger refusal at 3.1 ft.
5						Bottom of Boring at 3.1 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from around surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.
3. Boring B301-8A drilled 1.0 ft. south of B301-8. See report.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 3.1
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B301-8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-8A

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 1.0 ft.

ELEVATION: 533.79
DATUM: RCD
START: 19 October 1994
FINISH: 19 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					1.0	-ASPHALT PAVEMENT AND CRUSHED RUNSTONE-
	ND	5 4	S1	1.0		Medium dense brown coarse to fine sandy SILT, little fine gravel, dry to damp. -FILL-
		18 70/0.4	10"/23"	2.9		Same. -FILL-
	10	(NA)	S2 (NA)	2.9-4.0		Auger refusal at 4.0 ft. (apparent top-of-bedrock).
					4.0	Bottom of Boring at 4.0 ft.
5						
10						
15						
20						
25						

Notes:
1. S2 collected from auger flights (not able to collect sample using split spoon). NA = Not applicable.
2. Boring B301-8A located 1.0 ft. S of B301-8.
3. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B301-8A

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-9

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 534.09
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	14 12 5	S1 15"/18"	0.5 2.0	1.0	Medium dense gray silty SAND, some fine gravel, dry. -FILL-
	8.0	8 5 12 24	S2 12"/24"	2.0 4.0		Medium dense tan-brown fine SAND, little silt, little brick fragments, dry. Medium dense dark brown SILT, little fine sand, trace clay, damp.
	NR	27 70/0.3	S3 5/10"	4.0 4.8		-FILL-
5					5.0	Same, except very dense. Auger refusal at 5.0 ft. (apparent top-of-bedrock).
						Bottom of Boring at 5.0 ft.

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected; NR = No reading.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 5.0
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B301-9

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-10

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 534.13
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
						-ASPHALT PAVEMENT-
	ND	15 9 8	S1 12"/18"	0.5 2.0	1.5	Medium dense tan-brown fine SAND, little silt, damp. -FILL-
	8.0	5 7 8 14	S2 16"/24"	2.0 4.0		Same, except with occasional black mottling. -FILL-
5	No Reco-very	24 21 19 16	S3 0"/24"	4.0 6.0	6.0	S3 no recovery, spoon blocked.
	1000	14 7 5 7	S4 14"/24"	6.0 8.0		Medium dense brown-black coarse to fine sand SILT, little fine gravel, moist. -FILL- Same, except wet. -FILL-
	NR	7 50/0.4	S5 8/11"	8.0-8.9	8.9	Auger refusal at 8.9 ft. (apparent top-of-bedrock).
10						Bottom of Boring at 8.9 ft.
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched asphalt to ground surface upon completion.
2. ND = Not detected; NR = No reading.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 8.9
ROCK CORED (LIN FT): ---
SAMPLES: 5S (no recovery for S3)

BORING NO. B301-10

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-11

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.67
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	5 15 13	S1 13"/18"	0.5 2.0		Medium dense gray and tan-brown coarse to fine SAND, little fine gravel, damp. -FILL-
	70	5 9 7 4	S2 15"/24"	2.0 4.0	2.5	Medium dense brown to black silty coarse to fine SAND, little fine gravel. -FILL-
5	1000+	8 12 30 35	S3 16"/24"	4.0 6.0		Same, except dense, black, moist, with rock fragments at 5.5 ft. -FILL-
	1000+	14 15 50/0	S4 7/12"	6.0 7.0	7.0	Rock fragments, wet, with petroleum-product staining. Auger refusal at 7.0 ft. (apparent top-of-bedrock).
						Bottom of Boring at 7.0 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from ground surface and patched asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 7.0 ROCK CORED (LIN FT): --- SAMPLES: 4S BORING NO. B301-11

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-12

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 533.55
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	10 24 32	S1 10"/18"	0.5 2.0		Dense brown SILT, little medium to fine sand, trace clay, damp.
					1.9	-FILL-
		30 32	S2	2.0		Very dense tan-brown gravelly coarse to fine SAND, damp.
	5.0	49 50/0.4	13"/23"	3.9		-FILL-
	NR	50/0.1	S3 0/1"	4.0-4.1	4.1	Auger refusal at 4.1 ft. (apparent top-of-bedrock).
5						Bottom of Boring at 4.1 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected; NR = No reading.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.1
ROCK CORED (LIN FT): ---
SAMPLES: 3S (no recovery for S2)

BORING NO. B301-12

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-13

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 534.04
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	25 50/0.4	S1 10/11	0.5 1.4		Very dense gray and tan-brown coarse to fine SAND, little silt, dry. -FILL-
	No reco-very	50/0.1	S2 0/1"	2.0 2.1		No recovery.
		26	S3	4.0	4.0	
5	10	28 50/0.1	9"/13"	5.1	5.1	Very dense tan-brown coarse to fine SAND, damp. -FILL- Auger refusal at 5.1 ft. (Apparent top-of-berock).
						Bottom of Boring at 5.1 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.1 ROCK CORED (LIN FT): --- SAMPLES: 3S (No recovery for S2)
							BORING NO. B301-13

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-14

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.98
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	84 86 90	S1 16"/18"	0.5 2.0		Very dense gray coarse to fine sand GRAVEL, little silt, trace clay, dry to damp. -FILL-
	2.0	50/0.3	S2 4/4"	2.0-2.3	2.1	Very dense brown SILT, little coarse to fine sand, trace fine gravel, trace clay, damp. -FILL-
						Same.
5	1000+	50/0.2	S3 3/3"	4.0-4.2	4.2	Auger refusal at 4.1 ft. (apparent top-of-bedrock).
						Bottom of Boring at 4.2 ft.
10						
15						
20						
25						

Notes:
1. Observed split spoon refusal due to obstruction at 2.3 ft. The driller advanced augers to the next sampling depth at 4.0 ft.
2. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
3. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 5.0
ROCK CORED (LIN FT): ---
SAMPLES: 3S
BORING NO. B301-14

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-15

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: ---

ELEVATION: 534.05
DATUM: RCD
START: 20 October 1994
FINISH: 20 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	--	50/0.1	S1 0/1"	0.5-0.6	0.5	-ASPHALT PAVEMENT-
	15	50/0.3	S2 4/4"	1.0-1.3	1.0 1.3	No recovery for S1. -FILL- Very dense gray-brown gravelly coarse to fine SAND, little silt, dry. -FILL- Auger refusal at 1.3 ft.
5						Bottom of Boring at 1.3 ft.
10						
15						
20						
25						

Notes:
1. Observed split spoon refusal due to obstructions at 0.6 and 1.3 ft. At 0.6 ft. driller advanced augers to 1.0 ft. and attempted to obtain a split spoon sample from 1.0 to 3.0 ft. Boring was abandoned following split spoon refusal at 1.3 ft. See boring No. B301-15A for additional information.
2. Boring was grouted to 0.3 ft. from ground surface and patched with asphalt to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 1.3
ROCK CORED (LIN FT): ---
SAMPLES: 2S (No recovery for S1)

BORING NO. B301-15

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-15A

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 534.00
DATUM: RCD
START: 24 October 1994
FINISH: 24 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	3	90 100/0.3	S1 10/10	0.5-1.3		Very dense gray-brown gravelly coarse to fine SAND, little silt, dry.
					2.0	Advanced augers from 1.3 to 2.0 ft. without sampling.
	10	10 30 80/0.2	S2 10"/14"	2.0 3.2		-FILL-
					3.2	Very dense brown silty coarse to fine SAND, little clay, little fine gravel, moist. -FILL- Auger refusal at 3.2 ft. (Apparent top-of-rock).
5						Bottom of Boring at 3.2 ft.
10						
15						
20						
25						

Note:
1. Boring was grouted to 0.3 ft. from ground surface and patched asphalt to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

Q Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 3.2
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B301-15A

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-16A

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: ---

ELEVATION: 534.79
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	14 50/0.2	S1	0.5-1.2		Medium dense gray gravelly SAND. Auger refusal at 1.2 ft. Observed concrete fragments in auger cuttings. Boring abandoned at 1.2 ft.
						Bottom of Boring at 1.2 ft.
5						
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched asphalt to ground surface upon completion.
2. Boring B301-16 was drilled (previously) without sampling at location 2 ft. north of B301-16A. B301-16 was abandoned when auger refusal indicated subgrade presence of concrete around former fill lines.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 1.2
ROCK CORED (LIN FT): ---
SAMPLES: 1S

BORING NO. B301-16A

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-17

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top of bedrock.

ELEVATION: 533.65
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	3	12 16 18	S1 6"/18"	0.5 2.0		Dense brown-black mottled SILT, little coarse to fine sand, trace clay, trace medium to fine gravel, damp.
	1	10 13 68	S2 8"/18"	2.0 3.5	2.2	-FILL-
		50/0				Medium to very dense gray silty GRAVEL, trace clay, damp to dry. -FILL-
	14	86	S3 6/7"	4.0-4.6		Advance augers through obstruction from 3.5 to 4.0 ft.
5		100/0.1			4.8	Same, except very dense, dry. -FILL-
						Auger refusal at 4.8 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 4.8 ft.
10						
15						
20						
25						

Note:
1. Boring was grouted to 0.3 ft. from ground surface and patched asphalt to ground surface upon completion.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.8
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B301-17

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-18

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 1.0 ft. to apparent top-of-bedrock.

ELEVATION: 534.78
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
					1.0	ADVANCE AUGERS TO 1.0 FT.
	ND	5 12 12	S1 10"/24"	1.0 3.0		Medium dense brown SILT, little coarse to fine sand, trace clay, damp.
		6 30	S2	3.0		-FILL-
	55	21 100/0.5	9"/18"	4.5	4.5	Same, except very dense with little clay. -FILL- Auger refusal at 4.5 ft. (Apparent top-of-bedrock).
5						Bottom of Boring at 4.5 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.5
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B301-18

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B301-19

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 1
LOCATION: AOR-1

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 533.83
DATUM: RCD
START: 1 December 1994
FINISH: 1 December 1994
DRILLER: D. Miller
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0	ND	5 6 6 5	S1 12"/24"	0.0 2.0		Medium dense brown to black mottled silty fine SAND, some coarse to medium sand, trace fine gravel, trace cinders, damp. -FILL-
	35	11 10 11 10	S2 12"/24"	2.0 4.0		Same, except little coarse to fine gravel, moist. -FILL-
5	23	2 3 50 50/0.4	S3 16"/23"	4.0 5.9	5.9	Very dense severely weathered DOLOMITE. Auger refusal at 5.9 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 5.9 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.9 ROCK CORED (LIN FT): --- SAMPLES: 3S BORING NO. B301-19

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-1	TOP OF CASING ELEVATION: 533.71 FT. TOP OF INNER RISER ELEVATION: 533.44	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/11/93	1300		5.24 ft.	528.20	Bottom depth = 16.74 ft.	JM
12/3/93	1302		3.98 ft.	529.46	Covered by venicle.	RF
2/09/94	1337		---	---		DJ
9/01/94			4.90 ft.	528.54		DMN
2/20/95	1020		4.49 ft.	528.95		DMN/SHP
2/25/95			4.26 ft.	529.18		DMN/SHP
6/27/95			5.31 ft.	528.13		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-201	TOP OF OUTER CASING ELEVATION: 536.91 TOP OF INNER RISER ELEVATION: 536.71	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/7/93	1437	20 hrs.	(7.16*)	529.75	Casing stickup 2.2 ft. * Water level measurement from outer casing.	JGT
11/10/93	0900	4 days	7.40	529.31	Bottom depth = 15.04 ft.	JM
11/17/93	0930	11 days	7.57	529.14	Inner riser stickdown -0.43 ft.	JM
12/3/93	1105	27 days	7.05	529.66		RF
2/08/94	1380		7.56	529.15	0.25 ft.	
9/01/94			7.75	528.96		DMN
2/20/95			6.97	529.74		DMN/SHP
2/24/95	910		6.84	529.87		DMN/SHP
6/27/95			8.22	528.49		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-202	GROUND/TOP OF CASING ELEVATION: 535.88 TOP OF INNER RISER ELEVATION: 533.45	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/6/93	1310	2 days	3.85	529.60		JGT
11/8/93	1443	4 days	4.55	528.90	Inner riser stickdown -0.43 ft.	JGT
11/11/93		7 days	4.66	528.79	Bottom depth = 15.05 ft.	JM
11/17/93	0803	13 days	4.70	528.75		JM
12/3/93	1306	29 days	4.25	529.20	No bolts on cap.	RF
2/09/94	1310		-	-	Venicle parkes over well.	DJ
9/01/94			4.88	528.57		DMN
2/20/95			4.50	528.95		DMN/SHP
2/25/95	850		4.35	529.10		DMN/SHP
6/27/95			5.13	528.32		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-203	GROUND/TOP OF CASING ELEVATION: 532.93 TOP OF INNER RISER ELEVATION: 532.66	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/8/93	1450		4.11	528.55	Inner riser stickdown -0.27 ft.	JGT
11/11/93	1300		5.19	527.47	Bottom depth = 15.06 ft.	SHP
12/3/93	1256		4.89	527.77	Bailer in well.	RF
2/09/94			-	-	Covered by venicle.	DJ
9/01/94			5.61	527.05		DMN
2/20/95			5.23	527.43		DMN/SHP
2/25/95			5.17	527.49		DMN/SHP
6/27/95			5.78	526.88		DMH

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-213	GROUND/TOP OF CASING ELEVATION: 533.76 TOP OF INNER RISER ELEVATION: 533.56	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser		ELEVATION OF WATER	REMARKS	READ BY
11/7/93	1443	2.5 hrs.	4.05		529.51	Inner casing stickdown -0.30 ft.	JGT
11/10/93	1415		4.31		529.25	Depth to bottom = 8.81 ft.	JM
11/11/93	0843		4.36		529.20		SHP
12/3/93	1234		Dry		---	Well dry.	RF
12/9/93	0852		3.90		529.66		RF
2/08/94	1335		4.50		529.06	0.2 ft. difference from top of riser to top of water casing. Also noted stain on ORS probe.	ER
9/01/94			DTP 4.54	DTW 4.74	Oil - 529.02 Water - 528.82		DMN
12/16/94			3.98	4.00	Oil - 529.58 Water - 529.56	Collected +/-1 qt. of product/ water.	DMN
1/15/95	1025		4.50	4.54	Oil - 529.06 Water - 529.02		DMN
2/20/95			4.06	4.10	Oil - 529.50 Water - 529.46	Remeasure difference from top of riser to top of outer casing - 0.2 ft.	DMN/SHP
2/24/95	1100		3.85	3.92	Oil - 529.71 Water - 529.64		DMN/SHP
6/27/95			5.06	5.12	Oil - 528.50 Water - 528.44		DMN

APPENDIX A
SECTION 2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B302-1

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR 2

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 531.23
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
						-CONCRETE PAD-
					2.0	Advanced augers through concrete pad to 2.0 ft.
	100	100/0.5	S1 6/6"	2.0-2.5		Very dense brown-black silty GRAVEL, some coarse to fine sand, wet. -FILL-
					2.7	Auger refusal at 2.7 ft. (Apparent top-of-rock).
5						Bottom of Boring at 2.7 ft.
10						Note: 1. Boring was grouted to ground surface upon completion.
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 2.7
ROCK CORED (LIN FT): ---
SAMPLES: 1S

BORING NO. B302-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B302-2

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR 2

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from ground surface to apparent top-of-bedrock.

ELEVATION: 531.29
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	8	9 22 58	S1 16"/18"	0.5 2.0		Dense to very dense gray-brown silty GRAVEL, same coarse to fine sand, trace wood, dry to damp. -FILL-
	10	80/0.4	S2 5/5"	2.0-2.4	2.8	Same, except dry. Auger refusal at 2.8 ft. (Apparent top-of-rock).
5						Bottom of Boring at 2.8 ft.
10						
15						
20						
25						

Notes:
1. Driller advanced augers from 0.0 to 0.5 ft. without sampling.
2. Boring was grouted to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 2.8
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B302-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B302-3

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR 2

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 531.20
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0	18	47 47 24 50/0.2	S1 12"/21"	0.0 1.7	1.7	Very dense gray-brown to black coarse to fine sandy GRAVEL, little silt, dry to damp. -FILL- Sample black oily, wet at 1.0 ft. Also, wood fragments (apparent railroad tie) from 0.8 to 1.3 ft. Auger refusal at 1.7 ft. (Apparent top-of-rock). Bottom of Boring at 1.7 ft.
5						
10						
15						
20						
25						

Note:
1. Boring was grouted to ground surface upon completion.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 1.7
ROCK CORED (LIN FT): ---
SAMPLES: 1S

BORING NO. B302-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B302-4

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR 2

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: ---

ELEVATION: 535 +/-
DATUM: RCD
START: 23 November 1994
FINISH: 23 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.6	-CONCRETE SLAB-
	18	8 50 50/0.3	S1 19"/16"	0.6 1.9		Very dense coarse to fine SAND, little silt, trace gravel, trace clay. -FILL Advance auger from 1.9 ft. to refusal at 2.4 ft.
						Bottom of Boring at 2.4 ft.

Notes:
1. Boring was grouted to ground surface upon completion.
2. Boring B302-4A drilled southeast of building column U4 (see plan). Concrete foundation or pavement structure encountered beneath concrete floor slab. Thickness of subgrade concrete prevented penetration to underlying soil. Boring abandoned and grouted to ground surface.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 2.4 ROCK CORED (LIN FT): --- SAMPLES: 1S BORING NO. B302-4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B302-4B

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-101
SHEET NO. 1 OF 1
LOCATION: AOR 2

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: ---

ELEVATION: 535 +/-
DATUM: RCD
START: 1 December 1994
FINISH: 1 December 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.8	-CONCRETE SLAB-
	ND	50/0.4	S1 3"/5"	0.8-1.2	1.2	Very dense gray medium to fine GRAVEL, little medium to fine sand, trace silt, damp. -FILL Auger refusal at 1.2 ft. (Apparent top-of-rock).
						Bottom of Boring at 1.2 ft.
5						
10						
15						
20						
25						

Notes:
1. No sample submitted from this boring location.
2. Boring was grouted to ground surface upon completion.
3. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 1.7
ROCK CORED (LIN FT): ---
SAMPLES: 1S

BORING NO. B302-4B

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-2	GROUND/TOP OF CASING ELEVATION: 532.52 TOP OF INNER RISER ELEVATION: 532.06	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/9/93	840		6.20 ft.	525.86		RF
2/09/94			-	-	Covered by Roll-off.	ER
9/01/94			6.31 ft.	525.75		DMN
2/20/05			6.24 ft.	525.82		DMN/SHP
2/24/95	1535		6.20 ft.	525.86		DMN/SHP
6/27/95			6.52 ft.	525.54		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-204	GROUND/TOP OF CASING ELEVATION: 531.78 TOP OF INNER RISER ELEVATION: 531.55	FILE NO. 70436-40 PAGE NO. 1 OF 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser		ELEVATION OF WATER	REMARKS	READ BY
11/10/93	1200	1 day	4.47		527.08	Bailed 10 gallons.	JM
11/10/93	1600	1 day	4.63		526.92	Bailed 4.5 gallons petroleum/oil on bailer.	JM
11/12/93	1845	3 days	Oil - 4.0 ft. Water - 4.49 ft.		527.5 +/-	Bottom depth = 13.95 ft.	JM
12/3/93	1222	23 days	No Reading		---	Approximately 2 ft. of free petroleum product in well.	RF
12/8/93	1000	5 days	Oil - 3.24 ft. Water - 4.51 ft.		527.5 +/-	3.24 ft. to product. Bailer left in well; water and product levels measured may not reflect static levels.	ER
2/08/94	1335		Oil - 4.2 ft. Water - 6.9 ft.		Oil - 527.35 Water - 524.65		ER
9/01/94			DTP 4.13 ft.	DTW 4.27 ft.	Oil - 527.01 Water - 522.42	Water Table elev. adjusted for thickness and density of oil layer = 526.97	DMN
1/09/95	1615		4.57 ft.	9.08 ft.	Oil - 526.98 Water - 522.47	Collected 500 ml. product for specific gravity sample.	DMN
1/10/95	1400		4.62 ft.	8.81 ft.	Oil - 526.93 Water - 522.74	Removed approximately 2.5 gal. of product from well.	DMN
1/10/95	1515		5.46 ft.	5.47 ft.	Oil - 524.09 Water - 524.08	DTP/DTW following removal of product from well.	DMN
1/11/95	0845		4.87 ft.	5.11 ft.	Oil - 526.68 Water - 526.44		DMN
1/11/95	1515		4.81 ft.	5.08 ft.	Oil - 526.74 Water - 526.47	24 hrs. elapsed time from Product Purge.	DMN
1/13/95	1045		4.74 ft.	5.03 ft.	Oil - 526.81 Water - 526.52		DMN
2/20/95	-		4.86 ft.	5.89 ft.	Oil - 526.69 Water - 525.66	Water Table elev. adjusted for density of oil layer = 526.68	DMN
2/24/95	1600		4.97 ft.	6.08 ft.	Oil - 526.58 Water - 525.47		DMN/SHP
6/27/95			4.99 ft.	7.12 ft.	Oil - 526.56 Water - 524.43	Water Table elev. adjusted for thickness and density of oil layer = 526.54	DMN

APPENDIX A
SECTION 3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. MW303-1

PROJECT: Baseline Work Plan Implementation - Former Delco Chassis Facility
CLIENT: General Motors Corporation - Environmental & Energy Staff
CONTRACTOR: Pennsylvania Drilling Company

FILE NO. 70436-103
SHEET NO. 1 OF 1
LOCATION: AOR 3

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	NX
INSIDE DIAMETER (IN)	4 1/4	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers with continuous sampling to top-of-bedrock

ELEVATION: 534.95 ft.
DATUM: RCD
START: 11/28/94
FINISH: 11/30/94
DRILLER: D. Miller
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.8	-CONCRETE SLAB-
	20	6 10 10 12	S1 18"/24"	0.8 2.8		Medium dense light and dark brown mottled SILT, little coarse to fine sand, trace clay with occasional black staining, damp. -FILL-
	20	10 11 30 30	S2 17"/24"	2.8 4.8	3.0	Dense light brown fine SAND, some coarse and medium sand, little coarse to fine gravel, damp. -GLACIAL TILL- Weathered sandstone cobble at 4.4 ft.
5	23	50/0.4	S3	4.8-5.2	5.3	Same. Auger refusal at 5.3 ft.
						See Core Boring Report. Advanced NX core boring to 11.6 ft. Advanced HQ core boring to 12.5 ft.
10						
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 5.3
ROCK CORED (LIN FT): 7.2
SAMPLES: 3S, 5R

BORING NO. MW303-1

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. MW303-1 FILE NO. 70436-103 SHEET NO. 1 OF 1

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5							Begin Coring at 5.3 ft.
	24	R1 5.3-6.5	9/0	60/0	SL		Hard slightly weathered light to medium gray fine grained medium bedded siliceous DOLOMITE with closely spaced argillaceous partings. -LOCKPORT DOLOMITE- Slightly weathered open vertical joint from 7.6 ft. to 8.0 ft. Slightly weathered vertical tight to open joint from 10.8 to 11.0 ft. Numerous pits partially filled with secondary gypsum or quartz from 11.5 to 12.5 ft.
	23	R2 6.5-7.5	6/0	50/0			
	35/30	R3 7.5-8.5	8/0	67/0			
	23/36	R4 8.5-9	3/0	50/0			
	20						
10		9.0					
	22	R5	38	108			
	21	11.9	26*	68*			
	15	11.9-12.5	8/8	100/100			Bottom of Boring at 12.5 ft.
15							
20							
25							
30							
35							

Notes:

1. Observed core barrel blockages from 5.5 to 6.5 ft. and 6.5 to 7.5 ft.
2. Noted loss of drilling water from 9.0 to 12.5 ft. estimated approximately 1000 gallons of water lost during drilling.
3. Observed oily residue at moderately weathered horizontal shaley layers at 12.1 to 12.3 ft.
4. Installed overburden-bedrock interface monitoring well MW303-1 in completed borehole. See Monitoring Well Report.
5. * RQD based on length of core recovered. (RQD = Rock Quality Designation)

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

INTERFACE GROUNDWATER MONITORING WELL REPORT

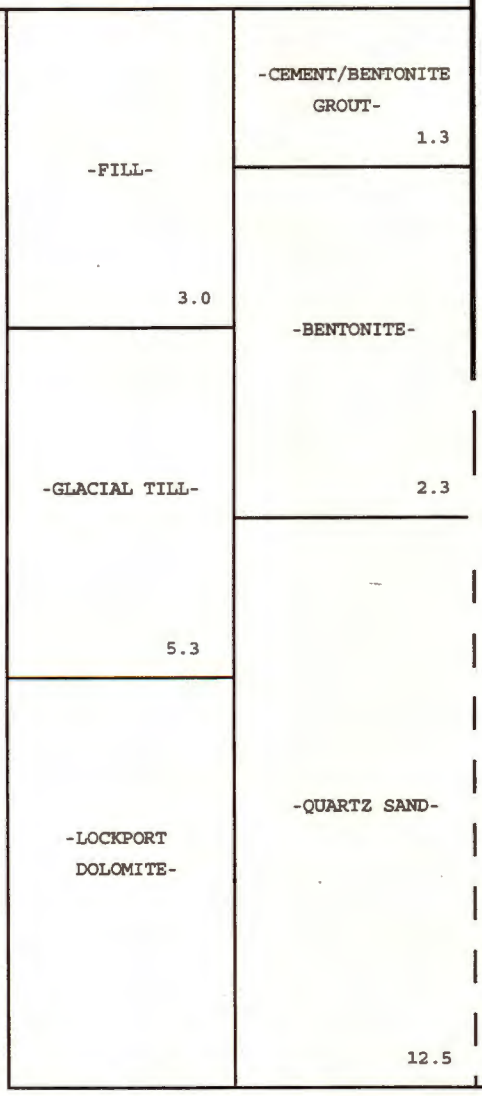
PROJECT: Baseline Work Plan Implementation - Former Delco Chassis Facility
LOCATION: 1555 Lyell Avenue, Rochester, New York
CLIENT: General Motors Corporation -Environmental & Energy Staff
CONTRACTOR: Pennsylvania Drilling Co.
DRILLER: D. Miller RIG TYPE: Diedrich D-26 Skid Mount
INSTALLATION DATE: 6 November 1993

FILE NO.: 70436-103
WELL NO.: MW303-1
LOCATION: AOR 3
SHEET: 1 OF 1
INSPECTOR: D. Nostrant

Survey Datum RCD

Ground Elevation: 534.95 ft.

SUMMARIZED SOIL SCALE CONDITIONS



Stickup below ground surface of protective casing.	0.0 ft.
Stickup below ground surface of riser pipe.	0.26 ft.
Thickness of Surface Seal	1.3 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Cement/Bentonite Grout
Type of Protective Casing	Flushmout
Inside Diameter of Protective Casing	8.0 in.
Depth of Bottom of Protective Casing	1.1 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Cement/Bentonite Grout
Diameter of Borehole	8.0 +/- in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	2.5 ft.
Type of Wellscreen	PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Morie No. 1 Silica Sand
Depth of Bottom of Wellscreen	12.5 ft.
Depth of Bottom of Borehole	12.5 ft.

Remarks:

Well No. MW303-1

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-303-1	GROUND/TOP CASING ELEVATION: 534.95 TOP OF INNER RISER ELEVATION: 534.69	FILE NO. 70436-103 PAGE NO. 1 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser		ELEVATION OF WATER		REMARKS	READ BY
			Oil	Water	Oil	Water		
12/20/94			Not present	7.13	-	527.56	Bottom well - 12.33 ft.	DMN
1/10/95	1620		7.25	7.65	527.44	527.04	Adjusted water elevation = +/- 527.40 ft.	DMN
1/10/95	1645		7.25	7.47			After sampling oil.	DMN
1/11/95	1330		7.20	7.48				DMN
1/13/95	1050		7.24	7.44	527.45	527.25		DMN
2/20/95			7.25	8.10	527.44	526.59	Oil layer = 0.85 ft. Adjusted water elevation = +/- 527.36 ft.	DMN/SHP
2/23/95	1530		7.25	8.10	527.44	526.59	After purging water for 3 days with peristaltic pump (prior to sampling).	DMN/SHP
6/21/95	1000		7.48	9.36	527.21	526.33	Before bailing oil. (Oil layer = 1.88 ft.)	SHP
6/21/95	1040		7.64	7.80			After bailing 0.3 gallons oil. (Oil layer = 0.10 ft.)	SHP
6/23/95	1257	2 days	7.48	9.34	527.21	525.35	Oil layer = 1.86 ft.	DBJ
6/27/95		6 days	7.49	9.29	527.20	525.40	Oil layer = 1.80 ft.	DMN
6/28/95	1120	7 days	7.57	9.25	527.12	525.44	Before bailing oil. (Oil layer = 1.68 ft.)	DMN
6/28/95	1205	---	7.67	8.15			After bailing 1.0 gallons oil. (Oil layer emulsified)	DMN
6/28/95	1620	5 hours	7.54	8.69			Oil layer = 1.15 ft.	DMN
7/10/95	1320	12 days	7.59	9.43	527.10	525.26	Before bailing oil. (Oil layer = 1.84 ft.)	DBJ
7/10/95	1347	---	7.70	8.15			After bailing 0.4 gallons oil. (Oil layer = 0.45 ft.)	DBJ
7/10/95	1535	2 1/4 hours	7.63	9.03			Oil layer = 1.40 ft.	DBJ

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-303-1	GROUND/TOP CASING ELEVATION: 534.95 TOP OF INNER RISER ELEVATION: 534.69	FILE NO. 70436-103 PAGE NO. 2 OF 2

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser		ELEVATION OF WATER		REMARKS	READ BY
			Oil	Water	Oil	Water		
7/18/95	1034	8 days	7.49	9.35	527.20	525.34	Before purging oil. (Oil layer = 1.86 ft.)	DBJ
7/18/95	1131	---	7.71	7.76			After purging 0.7 gallons oil with peristaltic pump. (Oil layer = 0.05 ft.)	DBJ
7/18/95	1607	5.5 hrs.	7.56	8.73			Oil layer = 1.17 ft.	DBJ
8/02/95	0900	15 days	7.66	9.57	527.03	525.12	Before purging oil. (Oil layer = 1.91 ft.)	DBJ
8/02/95	1000		7.90	7.91			Began purging oil with peristaltic pump at 0915, purged 0.5-0.75 gallons oil.	DBJ
8/02/95	1502	5 hours	7.73	8.82			Oil layer = 1.09 ft.	DBJ
8/11/95	1620	9 days	7.63	9.52	527.06	525.17	Before purging oil. (Oil layer = 1.89 ft.)	DBJ
8/11/95	1701		7.88	7.90			Well sampled, then began purging oil with peristaltic pump at 1621, purged 0.5 gallons oil.	DBJ
8/11/95	1717	15 months	7.79	8.14			Oil layer = 0.35 ft.	DBJ
8/18/95	1530	7 days	7.74	9.36	526.95	525.33	Oil layer = 1.62 ft.	DMN
8/18/95	1610		7.91	8.01			After purging 1.5 gallons oil with peristaltic pump.	DMN
9/08/95		21 days	7.88	9.43	526.81	525.26	Before purging oil. (Oil layer = 1.55 ft.)	DMN
9/08/95		---	8.08	8.10			After purge (peristaltic pump).	DMN
10/11/95		33 days	7.55	9.38	527.14	525.31	Before purging oil. (Oil layer = 1.83 ft.)	JM
10/11/95		---	7.92	8.30			Total vol. purged = 1 gal. (peristaltic pump).	JM
10/30/95		19 days	7.45	9.28	527.24	525.41	Before purging oil. (Oil layer = 1.83 ft.)	DMN
10/30/95			7.60	7.64			Total vol. purged = 2 gallons (peristaltic pump).	DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B303-1

PROJECT: Baseline Work Plan Implementation - Former Delco Chassis Facility
CLIENT: General Motors Corporation - Environmental & Energy Staff
CONTRACTOR: Pennsylvania Drilling Company

FILE NO. 70436-215
SHEET NO. 1 OF 1
LOCATION: AOR 3

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advanced augers with continuous split spoon sampling to apparent top of bedrock.

ELEVATION: 534.92 ft.
DATUM: RCD
START: 11/30/94
FINISH: 11/30/94
DRILLER: D. Miller
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.8	-CONCRETE SLAB-
	17	5 15 12 12	S1 19"/24"	0.8 2.8		Medium dense brown silty SAND, little medium to fine gravel, trace clay, damp. -FILL- Same, except moist.
	23	5 10 18 12	S2 17"/24"	2.8 4.8	3.7	Medium dense brown coarse to fine sandy SILT, little medium to fine gravel, trace clay, moist. -GLACIAL TILL-
5	ND	16 50/0.2	S3 6"/9	4.8-5.5	5.5	Auger refusal at 5.5 ft.
						Bottom of Boring at 5.5 ft.
10						
15						
20						
25						

Note:
1. Completed borehole backfilled with cement/bentonite grout to ground surface.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 5.5
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B303-1

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-208	GROUND/TOP OF CASING ELEVATION: 534.98 TOP OF INNER RISER ELEVATION: 534.68	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser		ELEVATION OF WATER	REMARKS	READ BY
11/12/93	---	7 days	8.50		526.18	Bailed 3 gallons, well went dry.	JM
11/12/93	1500		8.15		526.53	Bottom depth = 12.84	JM
11/15/93	1440	10 days	8.19		526.49		JM
12/8/93	0945	24 days	8.24		526.44		ER
2/08/94	1500		Oil - 8.00 Water - 8.21		Oil - 526.68 Water - 526.47	0.35 ft. T.O.R to T.O.C	ER
9/01/94			DTP 7.78	DTW 8.56	Oil - 526.90 Water - 526.12		DMN
12/16/94			8.47	8.55	Oil - 526.21 Water - 526.13	Collected 2 +/- qts. of product/ water	DMN
1/10/95			8.51	8.58	Oil - 526.17 Water - 526.10		DMN
1/13/95			8.50	8.54	Oil - 526.18 Water - 526.14		DMN
2/20/95			8.84	8.99	Oil - 525.84 Water - 525.69		DMN/SHP
2/25/95	1115		8.90	8.95	Oil - 525.78 Water - 525.73		DMN/SHP
6/27/95			8.59	8.74	Oil - 526.09 Water - 524.94		DMN

APPENDIX A
SECTION 4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B304-1

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-104
SHEET NO. 1 OF 1
LOCATION: AOR 4

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 531.01
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	80	15 40 41	S1 15"/18"	0.5 2.0	0.8 1.6 2.0	Dense brown sandy SILT, some wood splinters, damp. -FILL- Very dense gray fine GRAVEL, little silt, wet. -FILL- Very dense, brown fine SAND, little medium to coarse gravel, moist to wet. -FILL- Auger refusal at 2.0 ft. (Apparent top-of-bedrock).
5						
10						
15						
20						
25						

Bottom of Boring at 2.0 ft.

Notes:
1. Sample S1 had a creasote-like odor.
2. Boring was grouted to ground surface upon completion.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 2.0
ROCK CORED (LIN FT): ---
SAMPLES: 1S

BORING NO. B304-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B304-2

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-104
SHEET NO. 1 OF 1
LOCATION: AOR 4

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	--	---
INSIDE DIAMETER (IN)	2 1/4	--	---
HAMMER WEIGHT (LB)	---	--	---
HAMMER FALL (IN)	---	--	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: See Notes

ELEVATION: 531.01
DATUM: RCD
START: 10 November 1994
FINISH: 10 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						
10						
15						
20						
25						

Notes:

1. Advanced augers to approximately 3.0 feet without sampling Drove QED Hydropunch tube to refusal at 5.5 feet to install plastic groundwater sampling screen and riser. Borehole annulus backfilled with auger cuttings to ground surface.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
W Water

SUMMARY

OVERBURDEN (LIN FT): 5.5
ROCK CORED (LIN FT): ---
SAMPLES: 1W

BORING NO. B304-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B304-3

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-104
SHEET NO. 1 OF 1
LOCATION: AOR 4

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 530.54
DATUM: RCD
START: 25 November 1994
FINISH: 25 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0	ND	5 6 7 8	S1 16"/24"	0.0 2.0		Medium dense black-stained GRAVEL, wet, oily. -FILL- Same.
	ND	8 50/0.4	S2 9/11"	2.0-2.9	2.6 3.0	Very dense black-stained silty GRAVEL, little coarse to fine sand, wet, oily. -FILL- Auger refusal at 3.0 ft. (Apparent top-of-bedrock).
5						Bottom of Boring at 3.0 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 3.0
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B304-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B304-4

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-104
SHEET NO. 1 OF 1
LOCATION: AOR 4

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 530.88
DATUM: RCD
START: 25 November 1994
FINISH: 25 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0	ND	25 15 20 17	S1 4"/24"	0.0 2.0		Dense black-stained GRAVEL, wet, oily. -FILL-
						Same.
	ND	17 50/0.4	S2 7/11"	2.0-2.9	2.4 2.9	Very dense black stained silty GRAVEL, little coarse to fine sand, wet, oily. -FILL- Auger refusal at 2.9 ft. (Apparent top-of-bedrock).
5						Bottom of Boring at 2.9 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 2.9
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B304-4

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-3	TOP OF INNER RISER ELEVATION: 531.74*	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/11/93	1000		3.65 ft.	528.24	Bottom depth = 14.14 ft. Top of inner riser = 531.89 ft.	JM
12/3/93	1214		3.29 ft.	528.60		RF
2/09/94	1406		-		Unable to locate.	ER
9/01/94			3.05* ft.	528.69		DMN
2/20/95			4.05* ft.	527.69	Strong odor, sampled well in level C.	SHP/DMN
2/22/95	1330		4.05* ft.	527.69		SHP/DMN
6/27/95			DTM 3.50* ft. DTP 3.47* ft.	Oil 528.27 Water 528.24	* Resurvey top of inner riser - 531.74 ft. Well outer casing damaged. (Original riser elevation was 531.89 ft.).	DMN

APPENDIX A
SECTION 5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-1

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-104
SHEET NO. 1 OF 1
LOCATION: AOR 5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling to apparent top-of-bedrock.

ELEVATION: 533.06
DATUM: RCD
START: 21 October 1994
FINISH: 21 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0	ND	5 16 15	S1 16"/24"	0.0 2.0	0.0 1.0 1.8	Medium dense brown coarse to fine sandy SILT, trace medium gravel damp, with grass and roots. -FILL-
	ND	9 50/0.4	S2 4"/5"	2.0-2.4		Medium dense tan-brown fine SAND, trace medium sand, trace medium gravel, damp. -FILL-
5	1.0	8 45 50/0.2	S3 10"/15"	4.0 5.2	5.2	Very dense tan-brown SILT, little coarse to same medium sand, little clay, trace gravel, damp. -GLACIAL TILL-
						Auger refusal at 5.2 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 5.2 ft.
10						
15						
20						
25						

Notes:
1. Advanced augers without sampling from 2.4 to 4.0 ft.
2. Boring was grouted to ground surface upon completion.
3. ND = Not detected.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 5.2
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B305-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-2

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-104
SHEET NO. 1 OF 1
LOCATION: AOR 5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.0 ft. to apparent top-of-bedrock.

ELEVATION: 532.52
DATUM: RCD
START: 21 October 1994
FINISH: 21 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	ND	5 5 8 11	S1 4"/24"	0.0 2.0		Medium dense tan-brown fine SAND, trace medium sand, trace grass and rootlets, damp. -FILL-
	ND	18 41 48 108	S2 21"/24"	2.0 4.0	3.4	Same, except very dense. Sample wet from 2.4 to 4.0 ft.
5	8.0	28 50/0.3	S3 10/10	4.0-4.8	4.8	Very dense tan-brown silty coarse to fine SAND, little clay, moist to wet. -GLACIAL TILL- Same, except moist. Auger refusal at 4.8 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 4.8 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.8
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B305-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-3

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-105
SHEET NO. 1 OF 1
LOCATION: AOR-5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 531.32
DATUM: RCD
START: 21 October 1994
FINISH: 21 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	3.0	5 14 26	S1 12"/18"	0.5 2.0		Medium dense tan-brown silty fine SAND, little medium to fine gravel, trace asphalt, trace clay, damp. -FILL-
	2.0	15 24 32	S2 14"/24"	2.0 4.0	2.3	Very dense tan-brown to red fine SAND, damp. -FILL-
5	ND	47 50/0.1	S3 1"/1"	4.0-4.1	4.1	Auger refusal at 4.1 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 4.1 ft.

Note:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.1
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B305-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-4

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-105
SHEET NO. 1 OF 1
LOCATION: AOR 5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 532.35
DATUM: RCD
START: 21 October 1994
FINISH: 21 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	15 16 14	S1 16"/24"	0.5 2.0		Dense brown gravelly coarse to fine SAND, little silt, dry. -FILL-
	ND	5 7 8 14	S2 15"/24"	2.0 4.0		Same, except medium dense. -FILL-
5	ND	5 9 50/0.1	S3 5"/17"	4.0 5.4		Same, except wet. Auger refusal at 5.4 ft. (Apparent top-of-bedrock).
					5.4	Bottom of Boring at 5.4 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.4 ROCK CORED (LIN FT): --- SAMPLES: 3S
							BORING NO. B305-4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-5

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-105
SHEET NO. 1 OF 1
LOCATION: AOR-5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.15
DATUM: RCD
START: 24 October 1994
FINISH: 24 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	ND	26 24 12	S1 6"/18"	0.5 2.0		Dense tan-brown fine SAND, trace fine gravel, damp. -FILL-
	ND	4 4 4 4	S2 16"/24"	2.0 4.0		Same, except loose. -FILL-
5	ND	5 6 5 31	S3 14"/24"	4.0 6.0	4.7	Medium dense tan-brown fine SAND, trace clay, trace medium to fine gravel, moist to wet. Same, except very dense. -FILL-
	1.0	28 29 49 76	S4 10"/24"	6.0 8.0	6.3	Very dense brown coarse SAND, some medium to fine gravel, wet. -GLACIAL TILL-
		100/0	S5 0"/0"	8.0 8.0	8.0	Weathered shaley fragments at 7.8 ft. Auger refusal at 8.0 ft. (Apparent top-of-bedrock).
10						Bottom of Boring at 8.0 ft.
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 8.0
ROCK CORED (LIN FT): ---
SAMPLES: 4S

BORING NO. B305-5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-6

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-105
SHEET NO. 1 OF 1
LOCATION: AOR-5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 534.09
DATUM: RCD
START: 24 October 1994
FINISH: 24 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	1	5 11 16	S1 3"/18"	0.5 2.0	1.2	Medium dense gray to brown coarse to fine SAND, little coarse to fine gravel, damp. -FILL-
	1	11 10 10	S2 16"/24"	2.0 4.0	3.5	Medium dense brown and gray mottled sandy SILT, little clay, damp. -FILL-
5	ND	12 10 9 7	S3 17"/24"	4.0 6.0		Medium dense tan-brown fine SAND, little silt, damp. -FILL- Same. -FILL-
	3	11 12 7 17	S4 6"/23"	6.0 7.9	6.5	Medium dense coarse to fine SAND, little silt, trace medium to fine gravel, trace clay, moist to wet. -GLACIAL TILL-
		80/0.4			8.0	Auger refusal at 8.0 ft. (Apparent top-of-bedrock).
10						Bottom of Boring at 8.0 ft.
15						
20						
25						

Note:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 8.0
ROCK CORED (LIN FT): ---
SAMPLES: 4S

BORING NO. B305-6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-7

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-105
SHEET NO. 1 OF 1
LOCATION: AOR 5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 534.73
DATUM: RCD
START: 24 October 1994
FINISH: 24 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	1	17 15 9	S1 8"/18"	0.5 2.0	1.9	Dense brown silty coarse to fine SAND, little medium to fine gravel, damp. -FILL-
	ND	10 9 11 9	S2 20"/24"	2.0 4.0	3.8	Medium dense tan-brown fine SAND, trace silt, trace fine gravel, damp. -FILL-
5	9	21 36 30 39	S3 6"/24"	4.0 6.0		Very dense gravelly coarse to fine SAND, little ash and cinders, damp. -FILL-
	ND	20 10 11 20	S4 10"/24"	6.0 8.0		Same, except medium dense with trace ash and cinders. -FILL-
	ND	10 11 10 9	S5 13"/24"	8.0 10.0	8.8	Same. Medium dense sandy fine GRAVEL, trace silt, trace clay, wet. -GLACIAL TILL-
10	ND	60/0.5	S6 2"/6"	10-10.5		Same. Auger refusal at 10.5 ft. (Apparent top-of-bedrock).
						Bottom of Boring at 10.5 ft.
15						
20						
25						

Notes:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 10.5 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S

BORING NO. B305-7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B305-8

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-105
SHEET NO. 1 OF 1
LOCATION: AOR 5

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.74
DATUM: RCD
START: 24 October 1994
FINISH: 24 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	1	12 25 26	S1 8"/18"	0.5 2.0		Dense gray coarse to fine SAND, little gravel, little silt, dry. -FILL-
	ND	19 21 20 21	S2 20"/24"	2.0 4.0		Dense tan-brown silty fine SAND, trace fine gravel, damp. -FILL-
5	ND	12 11 12 11	S3 18"/24"	4.0 6.0	4.4	Medium dense tan-brown gravelly coarse to fine SAND, moist to wet. -GLACIAL TILL-
	2	30 60 20 30	S4 12"/24"	6.0 8.0	8.0	Same, except very dense, wet. Auger refusal at 8.0 ft. (Apparent top-of-bedrock).
10						
15						
20						
25						

Notes:
1. Boring was grouted to 0.3 ft. from ground surface and patched with asphalt to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 8.0 ft. ROCK CORED (LIN FT): --- SAMPLES: 4S
							BORING NO. B305-8

APPENDIX A
SECTION 6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-1 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR6
ELEVATION: 532.9 ft. RCD
EXPLORATION DATE: 26 Oct. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.3	Brown silty fine SAND and Turf. -TOPSOIL-	
				Brown medium to fine SAND, little gravel and silt, fequent sub-angular cobbles and small boulders of dolomite. -FILL-	PID readings up to 40 ppm (apparently due to mositure) at location of S2.0 ppm elsewhere over spoils and in sidewalls. No visual evidence or odor of contamination.
2			1.3	Black CINDERS, interlayered with brown medium to fine SAND and dark gray ASH, with pockets of oxidized medium to fine SAND and layers of cemented ASH. S1 at STA.21 ft. south 3.2 to 3.4 ft. depth. (sample retained, not analyzed). -FILL-	
3	3.6		2.3	Dark gray-brown and olive-brown silty fine SAND, little gravel, with cemented ash particles and pieces of vitrified slag. Collected S1 at STA.21 ft. South, 3.2-3.4 ft. depth in Ash, S2 at STA.32 ft. South, 3.6-3.8 ft. depth in Fill. Submitted S2 for VOC, SVOC, PCB and RCRA Metals plus Copper analyses. -FILL-	
4	S2		4.0	Dark brown to black silty fine SAND, with frequent rootlets and small organic particles, layer of brown silty SAND from 3.8 to 4.2 ft. -ORGANIC/SWAMP DEPOSIT-	Occasional metallic debris in Fill from 0.8 to 3.2 ft. depth along length of trench; comprised of wire, electric cord, rebar, and metal bar.
5	3.8		4.6		
6			5.5	Gray fine sandy SILT. -ALLUVIUM-	
7				Bottom of Excavation at 5.5 ft.; no refusal.	
8				Note: 1. Excavation backfilled and graded to ground surface.	
9					
10					
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
Not Encountered		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 48 feet WIDTH 3 feet

BOULDERS

8" to 18" DIAMETER: No. 10 = Vol. 8 cu ft

Over 18" DIAMETER: No. = Vol. cu ft

SUMMARY

DEPTH: 5.5
JAR SAMPLES: S1, S2
BAG SAMPLES: ---
WATER LEVEL: NE
TEST PIT NO. TP306-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-3 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR6 ELEVATION: 532.8 ft. RCD EXPLORATION DATE: 27 Oct. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.4	Brown SILT and Turf. -TOPSOIL-	
2				Light brown mottled medium to fine SAND, little gravel, little silt, with frequent pockets of brown and yellow-brown medium to fine SAND. Discontinuous layer of ash from 0.4 to 0.6 ft. depth, layer of ASH at 1.4 ft. depth that varies from 0.2 to 1.0 ft. thick, occasional pieces of brick. -FILL-	0 ppm PID reading over spoils and sidewalls, and no visual evidence or odor of contamination.
3	S1	3.1-3.4	2.8	Dark brown silty fine SAND and rootlets. Collected grab sample S1 at STA.25 ft. south, 3.1-3.4 ft. depth for VOC analysis, collected composite sample S1 from STA.12, 25, 35 ft. south, 3.1-3.4 ft. depth for SVOC analysis. -ORGANIC/SWAMP DEPOSIT-	
4			3.7	Gray fine sandy SILT, with subrounded cobbles near 5.5 ft. depth, grading to light brown mottled silty fine SAND at STA. 34 ft. South. -ALLUVIUM-	
5					
6			5.5	Bottom of Excavation at 5.5 ft. depth, no refusal. Note: 1. Excavation backfilled and graded to ground surface.	Metallic debris in Fill from 2.0 to 3.0 ft. depth near STA.31 ft. South. Comprised of piece of sheet metal, rod, pipe elbow.
7					
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 42 feet WIDTH 3 feet	DEPTH: 5.5
Not Encountered				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 4 = Vol. 3 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-4 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 535.8 ft. RCD EXPLORATION DATE: 28 Oct. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
			0.4	Brown fine sandy SILT and Turf. -TOPSOIL-	
1				Brown gravelly coarse to fine SAND with angular, flat cobbles and small boulders of dolomite. -FILL-	0 ppm PID readings over spoils and sidewalls, and no visual evidence or odor of contamination.
2	S4*	2.0-2.0			
			2.5	Dark brown fine sandy SILT, little gravel, with discontinous layers of black ASH and gray sandy SILT near 2.5 ft., and with occasional to frequent debris. Debris includes 8-ft.-long steel-and-wood composite struts, metal belts and straps, crushed barrels containing ashes and cinders, charred brick and wood, concrete, clay pipe, glass, crushed propane bottles, electrical wiring, rags, and steel pipes with fiberglass coating. Minor occasional white to green crystalline material dispersed in soil matrix and adhering to metallic debris. Fill contains more ash and less metallic debris below 5.0 ft. -FILL-
3					
4					
5	S1*	5.0 6.0			
6	S1-VOC	6.0 6.5	6.0	Gray-brown mottled fine sandy SILT grading to the east to light orange-brown and olive-brown silty fine SAND, trace organics. -ALLUVIUM-	
7	S4-VOC	6.5 6.5	7.0	Bottom of Exploration at 7.0 ft. depth, no refusal.	Depth to alluvium varies from 4.6 to 7.0 ft.
8					
9					
10				Notes: 1. Excavation backfilled and graded to ground surface. 2. S1 grab sample at STA.6 ft. East, 6.0-6.5 ft. depth in Alluvium submitted for VOC analysis, and S1 composite sample (S1-*) from ash debris section near barrel from 5.0-6.0 ft. depth submitted for SVOC, PCB and RCRA Metals plus Copper analyses. 3. S2 and S3 grab samples of white-green crystalline material. (samples retained, not analyzed). S4 grab sample at STA.45 ft. East, 6.5 ft. depth in Alluvium submitted for VOC analysis, and S4 composite sample (S4-*) from Fill beneath 10-inch-thick piece of concrete slab at 2.0 ft. depth submitted for SVOC, PCB, and RCRA Metals plus Copper analyses.	
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 52 feet WIDTH 4.5 feet	DEPTH: 7.0
Not Encountered				JAR SAMPLES: S1-S4
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 18 = Vol. 12 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-5 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 534.6 ft. RCD EXPLORATION DATE: 31 Oct. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.4	Brown silty fine SAND and Turf. -TOPSOIL-	PID readings of 0 ppm from spoils and side-walls, no visual evidence or odor of contamination.
2				Light brown gravelly coarse to fine SAND, trace silt with angular cobbles and boulders of dolomite, occasional steel-and-wood composite struts, pieces of sheet metal, steel cable, rebar, metal straps. -FILL-	
3			2.3	Light brown mottled fine sandy SILT, with layers and pockets of black ASH, occasional boulders, zones with little to trace amount of organics, occasional pieces of cemented slag. Pocket of black SILT and ORGANICS from STA.21-29 ft. East from 2.3-5.5 ft. depth. -FILL-	
4					
5			5.4		
6	S1	5.5-6.0	5.6	Black fine sandy SILT, little amount organics. -ORGANIC/SWAMP DEPOSIT-	
7			6.5	Brown-gray SILT, trace fine sand and clay. Collected S1 grab sample at STA.19 ft. East, 6.0 ft. depth for VOC analysis, S1 composite sample at STA.4 ft., 19 ft., and 45 ft. East from 5.5-6.0 ft. depth for SVOC analysis. -ALLUVIUM-	
8				Bottom of Exploration at 6.5 ft. depth, no refusal.	
9				Note: 1. Excavation backfilled and graded to ground surface.	
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 50 feet WIDTH 3 feet	DEPTH: 6.5
Not Encountered				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 14 = Vol. 10 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-6 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 532.3 ft. RCD EXPLORATION DATE: 7 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Dark brown fine sandy SILT and rootlets. -TOPSOIL-	FID readings of 0 ppm from spoils and sidwalls except where noted for S2 and S3, no visual evidence or odor of contamination.
			1.3	Light brown mottled sandy SILT, trace clay with gray mottling near 2.0 ft., frequent subrounded cobbles beginning at 3.5 ft., occasional piece of metal rod. -FILL-	
2					
3					
			3.5	Interlayered brown and brown-gray silty fine SAND and fine sandy SILT. Lens of gray SAND, little gravel from STA.10-22 ft. East, from 3.0-4.0 ft. depth, with perched water seepage. S1 grab sample at STA.15 ft. East, 5.0-5.5 ft. depth submitted for VOC analysis, S1 composite (S1-*)from STA.4 ft., 15 ft., and 33 ft., East from 4.0-5.5 ft. depth for SVOC analysis. -ALLUVIUM-	
4	S1-*	4.0			
5	S1-VOC	5.0-5.5			
6			6.0	Brown silty coarse to fine SAND, little subrounded gravel, occasional subrounded cobbles and small boulders, soil is moist near 7.0 ft. depth. -GLACIAL TILL-	
7					
8					
9					
			9.5	Bottom of Excavation at 9.5 ft. depth, no refusal. Note: 1. Excavation backfilled and graded to ground surface. 2. S2 and S3 collected at STA. 29 ft. East at 4 ft. and 9.5 ft. respectively. Alluvium and Glacial Till, FID readings of 1-4 ppm, no visual evidence or odor of contamination. Samples retained, not submitted for analysis.	
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 37 feet WIDTH 3 feet	DEPTH: 7.0 ft.
Not Encountered				JAR SAMPLES: S1-S3
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 5 = Vol. 3 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-7 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 535.8 ft. RCD EXPLORATION DATE: 7 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
			0.6	Dark brown SILT and Turf. -TOPSOIL-	
1				Brown silty medium to fine SAND, some gravel, frequent angular cobbles. -FILL-	FID readings of 0 ppm from spoils and side-wall, no visual evidence or odor of contamination.
2			2.3		
3	S1-*	3.0-3.5		Dark brown silty SAND, trace ash and cinders. Debris in fill includes metal straps, wire, crushed barrels, drawers, sheet metal, steel and wood composite strut, concrete, rebar, one rail-road tie. -FILL-	
4					
			4.7		
5				Light brown silty SAND, trace gravel and organics. -FILL-	
6			6.0	Dark brown SILT, little sand and rootlets. -ORGANIC/SWAMP DEPOSIT-	
			6.6		
7	S1-VOC	7.0	7.0	Gray silty SAND, little rounded gravel and occasional cobbles, with pockets of gray-brown SILT and rootlets. -ALLUVIUM-	
				Bottom of Excavation at 7.0 ft., no refusal.	
8				Note: 1. Excavation backfilled and graded to ground surface. 2. S1 grab sample at STA.39 ft. West, 7.0 ft. depth in Alluvium submitted for VOC analysis, S1 composite (S1-*)from STA.4 ft., 21 ft., and 42 ft. West, 3.0-3.5 t. depth in Fill submitted for SVOC, PCB, and RCRA Metals plus Copper analyses.	
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 49 feet WIDTH 3 feet	DEPTH: 7.0
Not Encountered				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-8 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 533.1 ft. RCD EXPLORATION DATE: 8 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.3	Brown SILT and Turf. -TOPSOIL-	FID reading of 500 ppm over silt spoils and in sidewalls at level of swamp deposit, with PID reading (by McLaren Hart personnel) of 0 ppm, indicating probable methane gas reading with FID. FID reading of 7 ppm over seeping water at Fill/Swamp Deposit interface likely related to methane from decomposing lumber in Fill. No visual evidence or odor of contamination. Depth to Alluvium varies from 4.6 to 3.5 ft.
				Light brown mottled fine sandy SILT. -FILL-	
2			1.5	Black oxidized and cemented ASH and CINDERS, occasional pieces of wire, steel cable, metal lids and straps, gears, and charred lumber with nails. Perched water seepage at interface of ash and overlying silt. -FILL-	
3			2.5	S3 at STA.46 ft. East, 2.3 ft. depth from ash material in vicinity of seepage (sample retained, not analyzed).	
	S1	3.2	3.3	Gray fine sandy SILT and ORGANICS, including sticks and roots, intermittent layer of brown mottled sandy SILT, trace gravel from 2.5-3.3 ft. -FILL-	
4		3.8		S1 grab sample at STA.3 ft. East, 3.2 ft. depth in silt Fill submitted for VOC analysis.	
	S2 (S2-VOC)	(5.0) 5.5	4.6	Gray fine sandy SILT and ORGANCIS. -ORGANIC/SWAMP DEPOSIT-	
5					
6			6.0	Gray fine sandy SILT, trace amount organics. S2 grab sample at STA.31 ft. East, 5.0 ft. depth submitted for VOC analysis, S2 composite from STA.12 ft., 31 ft. and 56 ft. East, 3.8-5.5 ft. depth submitted for SVOC analysis. -ALLUVIUM-	
7				Bottom of Excavation at 6.0 ft., no refusal.	
8					
9				Note: 1. Excavation backfilled and graded to ground surface.	
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 65 feet WIDTH 3 feet	DEPTH: 6.0
NOT ENCOUNTERED				JAR SAMPLES: S1-S3
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-9 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 6
ELEVATION: 533.2 ft. RCD*
EXPLORATION DATE: 8 Oct. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.6	Dark brown SILT and TURF -TOPSOIL-	Topsoil and gravel base interface at STA 10.ft. West.
				Crushed stone. -GRAVEL BASE-	
				-1.3-	
2				Dark brown mottled silty SAND, trace gravel and organics, occasional boulders, occasional brick pieces, metal scraps and wire. -FILL-	* - Elevation at east end (east of STA.10W) is +/-2 ft. higher than west of STA.10W. Western end (10W to 61W) is in unpaved parking area, elevation +/-531 ft. RCD. Except as noted for S1 and S2, no visual evidence or odor of contam-ination.
			2.5		
3	S1	3.0		Dark brown silty SAND and black ASH and CINDERS. Group of 2-inch diameter metal pipes buried in Fill from STA. 20-24 ft. West from 1.5-3.0 ft. depth with angular boulders, and cans and bottles. FID reading of 40 ppm and PID reading of up to 90 ppm from open ends of pipes, also naptha odor. FID reading of 0 ppm in ash Fill around pipes. Collected sample S1 at STA. 22 ft. West, 3 ft. depth in ash Fill, submitted for VOC, SVOC, PCB, and RCRA Metals plus Copper analyses. -FILL-	
	S2	3.5			
4			4.0		
			4.5	Boulder and light gray-green sand in pocket from STA.31-34 ft. West, 2.5-4.0 ft. depth, with boards overlying the pocket. FID reading of 40 ppm, also gasoline odor. Collected sample S2 at STA.32 ft. West, 3.5 ft. depth in sand Fill, submitted for VOC, SVOC, PCB, and RCRA Metals plus Copper anlayses.	
5					
6				Light red-brown mottled silty SAND, trace gravel. -GLACIAL TILL-	
7				Bottom of Excavation at 4.5 ft. depth, no refusal.	
8					
9				Note:	
				1. Excavation backfilled and graded to ground surface.	
10					
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTERED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 61 feet WIDTH 3 feet

BOULDERS

8" to 18" DIAMETER: No. 3 = Vol. 2 cu ft

Over 18" DIAMETER: No. 1 = Vol. 8 cu ft

SUMMARY

DEPTH: 4.5
JAR SAMPLES: S1, S2
BAG SAMPLES: ---
WATER LEVEL: NE
TEST PIT NO. TP306-9

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-10 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 532.5 ft. RCD EXPLORATION DATE: 8 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.2	Dark brown SILT and Turf. -TOPSOIL-	FID reading of 0 ppm over spoils and side-walls, no visual evidence or odor of contamination.
			0.7	Light brown silty medium to fine SAND. -FILL-	
2	S1,S2	1.8		Black fine-grained ASH, occasional pieces of porcelain, wood blocks, bricks, bottles, broken glass, scrap metal, and green paint residue. Ash material has blocky texture at STA.26-32 ft. South from 1.7-2.6 depth.	
			2.6	S1 grab sample at STA.6 ft. South, 1.8 ft. depth in Fill submitted for VOC analysis, and S1 composite from STA.6 ft. South and STA.23 ft. South 1.8 ft. depth submitted for SVOC, PCB, and RCRA Metals plus Copper analyses. Soil for S1 taken in vicinity of pieces of paint residue.	
3			3.3	S2 grab sample at STA.23 ft. South, 1.8 ft. depth in Fill submitted for VOC analysis. S2 taken in vicinity of pieces of paint residue.	
4					
5			5.5	Light brown fine sandy SILT, trace organics.	
6				Light red-brown mottled silty fine SAND. -ALLUVIUM-	
7				Bottom of Excavation at 5.5 ft. depth, no refusal.	
8				Note: 1. Excavation backfilled and graded to ground surface.	
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 38 feet WIDTH 3 feet	DEPTH: 5.5
NOT ENCOUNTERED				JAR SAMPLES: S1, S2
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-10

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-11 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 534.0 ft. RCD EXPLORATION DATE: 9 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
			0.4	Brown SILT and Turf. -TOPSOIL-	
1			1.3	Black ASH. -FILL-	FID reading of 0 ppm over spoils and side-walls, no visual evidence or odor of contamination.
2			2.0	Brown mottled silty medium to fine SAND. -FILL-	
3	S1-*	3.0-3.5		Dark brown silty coarse to fine SAND, trace gravel, occasional cobbles, trace cinders, with glass, charred wood, electrical wire, bricks, and metal debris such as crushed, weathered barrels, frames, straps, covers, and steel and wood composite struts. 20-inch-diameter, 5-foot-long tree trunk from STA.17 to 22 ft. West, 3.5 ft. depth. -FILL-	
4					
5			5.0		
	S1-VOC	5.5	5.5	Dark brown silty fine SAND, trace organics, occasional pieces of glass and metal. -FILL-	
6			6.0	Gray-brown silty fine SAND, occasional cobbles. -ALLUVIUM-	
7				Bottom of Excavation at 6.0 ft. depth, No Refusal	
8					
9				Note: 1. Excavation backfilled and graded to ground surface.	
10				2. S1 grab sample at STA.27 ft. West, 5.5 ft. depth submitted for VOC analysis, S1 composite (S1-*) from STA.12 ft., 27 ft., and 46 ft., West from 3.0-3.5 ft. depth in Fill submitted for SVOC, PCB, and RCRA Metals plus Copper analyses. S2, collected at STA.37 ft. West, 2.0 ft. depth in cinders within crushed metal tray (sample retained, not submitted for analysis).	
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 53 feet WIDTH 3 feet	DEPTH: 6.0
NOT ENCOUNTERED				JAR SAMPLES: S1, S2
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-11

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-12 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 532.5 ft. RCD EXPLORATION DATE: 9 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
			0.2	Brown SILT and Turf. -TOPSOIL-	
			0.5	Brown mottled fine sandy SILT. -FILL-	FID reading of 0 ppm over spoils and side-walls, no visual evidence or odor of contamination.
1				Black ASH, with frequent pieces of incinerator slag, occasional white bricks. -FILL-	
2			2.2	Light and dark brown mottled medium to fine sandy SILT, trace clay, trace ash, trace glass, with zones of oxidized ash and cinders. -FILL-	
3					
4			3.7	Light gray-brown silty fine SAND, occasional boulders, overlain by an intermittent 0.2 ft.-thick seam of brown fine sandy SILT. -ALLUVIUM-	
	S1 (S1-VOC)	4.0 (4.5) 5.0		S1 grab sample at STA.26 ft. South, 4.5 ft. depth in Alluvium submitted for VOC analysis, S1 composite from STA.9 ft., 26 ft., and 46 ft. South, 4.0-5.0 ft. depth submitted for SVOC analysis.	
5					
6			6.0	Bottom of Excavation at 6.0 ft. depth, no refusal.	
7				Note: 1. Excavation backfilled and graded to ground surface.	
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 45 feet WIDTH 3 feet	DEPTH: 6.0
NOT ENCOUNTERED				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 4 = Vol. 3 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-12

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-13 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 6
ELEVATION: 533.0 ft. RCD
EXPLORATION DATE: 9 Nov. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
			0.4	Dark brown SILT and Turf. -TOPSOIL-	
			0.8	Brown mottled medium to fine sandy SILT. -FILL	
1				Black ASH. -FILL-	
			1.6	Dark brown silty coarse to fine SAND, with brick, glass bottles, and metallic debris including crushed barrels containing ashes, rebar, pipes, straps, plates, trays, and steel-and-wood composite	Metallic debris extends from 1.0-2.0 depth.
2			2.6-	struts. Occasional traces of unidentified white-green	
	S1-*	2.5	3.5	crystalline particles along excavation at 1.5-3.0 ft. depth.	FID reading of 0 ppm over spoils and sidewalls, no visual evidence or odor of contamination.
3		3.5		-FILL-	
				Red-brown mottled silty medium to fine SAND. -ALLUVIUM-	
4			4.5		Bottom of fill ranges from 2.6 to 3.5 ft.
	S1-VOC	4.5		Dark brown fine sandy SILT, trace organics. -ALLUVIUM-	
5			5.5	Light gray-brown fine sandy SILT. -ALLUVIUM-	
6				Bottom of Excavation at 5.5 ft. depth; no refusal.	
7					
8				Note:	
				1. Excavation backfilled and graded to ground surface.	
9				2. S1 grab sample at STA.26 ft. West, 4.5 ft. depth in Alluvium submitted for VOC analysis, S1 composite sample (S1-*) from STA.5 ft., 31 ft., and 42 ft. West, from 2.5-3.5 ft. depth in Fill submitted for SVOC, PCB, and RCRA Metals plus Copper analyses.	
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 44 feet WIDTH 3 feet	DEPTH: 5.5
NOT ENCOUNTERED				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-13

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-14 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 6 ELEVATION: 532.5 ft. RCD EXPLORATION DATE: 9 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.5	Brown SILT and Turf. -TOPSOIL-	FID readings 0 ppm over spoils and sidewalls, no visual evidence or odor of contamination.
				Dark brown silty coarse to fine SAND and ASH, with frequent pieces of wood, glass, wire, and metallic debris such as steel and wood composite struts, small cart with wheels, 2 ft. x 7 ft. metal plate. Occasional traces of unidentified white-green crystalline particles along length of excavation. 4 ft. x 4 ft. metallic plate at STA.27 ft. East, 1.0 ft. depth with hard, laminated paint-like residue adhering to sides.	
2	S1	1.5-2.0	1.7		
3				Red-brown silty coarse to fine SAND, little gravel, with intermittent mittent black ash layer at 3.0 ft. depth. -FILL-	
			3.3	Dark brown SILT, little fine sand, trace organics. -ALLUVIUM-	
4			4.0		
	S1-VOC	4.5	4.5	Light gray-brown silty fine SAND. -ALLUVIUM-	
5				Bottom of Excavation at 4.5 ft. depth, no refusal	
6				Notes: 1. Excavation backfilled and graded to ground surface. 2. S1 grab sample at STA.19 ft. East, 4.5 ft. depth in Alluvium sub-mitted for VOC analysis, S1 composite from STA.4 ft., 19 ft., and 36 ft. East, 1.5-2.0 ft. depth in Fill submitted for SVOC, PCB, and RCRA Metals plus Copper analyses. S2, grab collected in Fill material in vicinity of 4 ft. x 4 ft. metal plate at STA.27 ft. East (sample retained, not analyzed).	
7					
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 43 feet WIDTH 3 feet	DEPTH: 4.5 ft.
NOT ENCOUNTERED				JAR SAMPLES: S1, S2
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-14

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP306-15 FILE NO. 70436-106

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 6
ELEVATION: 533.2 ft. RCD
EXPLORATION DATE: 10 Nov. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			1.0	Brown SILT and Turf. -TOPSOIL-	FID readings of 0 ppm over spoils and side-walls, no visual evidence or odor of contamination.
2				Light brown mottled silty medium to fine SAND, with frequent cobbles and boulders, occasional bricks and pieces of slag, intermittent layers and pockets of black ASH from 2.5-3.2 ft. depth, occasional metal straps and rebar. -FILL-	
3			3.2	Brown silty fine SAND, trace organics and roots. -ALLUVIUM-	
4	S1	4.0-4.5	4.0	Light gray-brown silty fine SAND. -ALLUVIUM- S1 grab sample at STA.12 ft. North, 4.0 ft. depth in Alluvium submitted for VOC analysis, S1 composite from STA.6 ft., 12 ft., 25 ft. North, 4.0-4.5 ft. depth submitted for SVOC analysis.	
5			5.5	Bottom of Excavation at 5.5 ft. depth, no refusal.	
6				Note: 1. Excavation backfilled and regraded to ground surface.	
7					
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 35 feet WIDTH 3 feet	DEPTH: 5.5
NOT ENCOUNTERED				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP306-15

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. MW306-1

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-106
SHEET NO. 1 OF 3
LOCATION: AOR 6

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	---	NQ
INSIDE DIAMETER (IN)	6 1/4	---	2-3/8
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobil B-80 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers to 12.0 ft. without sampling. Advance HQ core barrel to 19.0 ft. Advance 5-7/8 in. roller bit to 19.0 ft.

ELEVATION: 530.76 ft.
DATUM: RCD
START: 16 January 1995
FINISH: 20 January 1995
DRILLER: D. Miller
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)
5					
10					
15					
20					
25					

VISUAL CLASSIFICATION AND REMARKS

Advance 6-1/4 in. Hollow Stem Augers to 12.0 ft. without sampling.

Apparent top-of-rock at 12.0 ft.
Begin coring at 12.0 ft.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 12.0
ROCK CORED (LIN FT): 7.0
SAMPLES:

BORING NO. MW306-1

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. MW306-1 FILE NO. 70436-103 SHEET NO. 2 OF 3

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. DEPTH(FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
							Begin coring at 12.0 ft.
		12.0			SL		Light gray fine grained, medium to thin bedded siliceous DOLOSTONE, with stylolites and moderately closely to closely spaced argillaceous partings.
		R1	37	100	SL-MOD		-LOCKPORT DOLOMITE (PENFIELD MEMBER)-Slightly weathered horizontal to low angle joints at 12.5, 12.7, 13.0, 13.8, 13.9, 14.1, 14.3, and 14. ft. occasional pits from 12.0 to 15.1 ft. Slightly moderately weathered horizontal to low angle joints at 15.4, 15.7 and 16.2 ft. Slightly weathered high angle joint from 15.7 to 16.7 ft. Occasional pits from 15.1 to 16.9 ft. with moderately weathered horizontal joint at 16.5 ft. and with to low angle joints at 17.1, 18.0, 18.6 and 18.8 ft. Medium angle slightly weathered parting at 18.9 ft.
		15.1	20	54	SL		
		15.1	14	100	SL		
		R2 16.3	0	0			
		16.3	8	100	SL		
		R3 16.9	5	63			
		16.9-19.0	25/15	100/60	SL		Bottom of Exploration at 19.0 ft.

Notes:

1. Approximately 750 gallons of water lost during coring and reaming of borehole. Developed 750 gallons from borehole before installing well screen.
2. Installed interface well in completed borehole. See Well Completion Report.

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

INTERFACE GROUNDWATER MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION -ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: D. MILLER RIG TYPE: MOBIL B-61 TRUCK MOUNT
INSTALLATION DATE: 23 JANUARY 1995

FILE NO.: 70436-109
WELL NO.: MW306-1
LOCATION: See Plan
SHEET: 3 OF 3
INSPECTOR: S. Phillips

Survey Datum RCD

Ground Elevation: 530.96 ft.

SUMMARIZED SOIL CONDITIONS

-OVERBURDEN- 12.2

-CEMENT/BENTONITE GROUT- 6.2

-BENTONITE PELLETS- 8.2

-QUARTZ SAND-

-PENFIELD DOLOSTONE- 19.2

19.2

Stickup above ground surface of protective casing.	2.30 ft.
Stickup above ground surface of riser pipe.	2.04 ft.
Thickness of Surface Seal	8.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Bentonite Pellets Grout
Type of Protective Casing	Steel (Stick-up)
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	2.7 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Sand Bentonite Pellets, Cement-Bentonite Grout
Diameter of Borehole	9.0 +/- in. Overburden 3-5/8 in. Rock
Type of coupling (threaded, welded, etc.)	Threaded PVC
Depth of Bottom of Riser	9.2 ft.
Type of Wellscreen	Slotted PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Morie No. 1
Depth of Bottom of Wellscreen	19.2 ft.
Depth of Bottom of Borehole	19.2 ft.

Remarks:

Well No. MW306-1

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-306-1	TOP OF OUTER CASING ELEVATION: 533.26 TOP OF INNER RISER ELEVATION: 533.00	FILE NO. 70436-106 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
2/20/95			18.23	514.77		DMN/SHP
2/21/95			18.37	514.63		DMN/SHP
6/27/95			17.98	515.02		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-4	TOP OF OUTER CASING ELEVATION: 532.77 TOP OF INNER RISER ELEVATION: 532.65	FILE NO. 70436-40 PAGE NO. 1

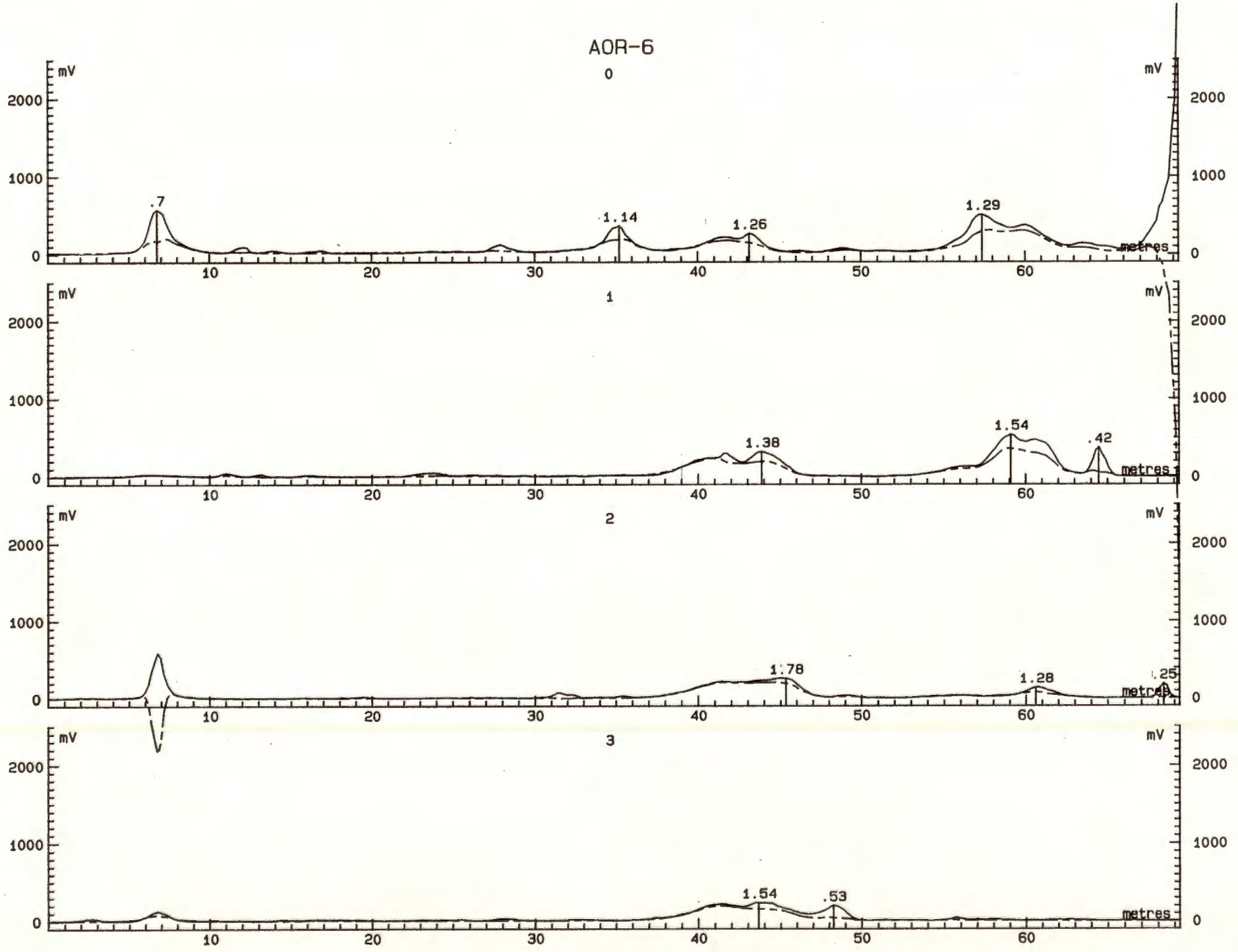
DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/10/93	1300		9.23 ft.	523.42	Depth to bottom = 20.34 ft.	JM
12/3/93	1206		7.68 ft.	524.97		RF
2/09/94	1419		-	-	Unable to locate map inaccurate	DJ
9/01/94			9.45 ft.	523.20		DMN
2/20/95			8.80 ft.	523.85		DMN/SHP
2/23/95	1053		8.53 ft.	524.12		DMN/SHP
6/27/95			10.28 ft.	522.37		DMN

EM-61 Profiles for AOR 6, lines 0 - 131

Several lines are summarized on more than one plot because data collection was discontinuous.

EM-61 Profiles for AOR 6, lines 243 - 383

Lines 243 -383 were run along lines 24 - 38 in the northwesternmost corner of AOR 6, north of the paved parking lot.The zero station for these lines was the northern edge of the parking lot.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3
1.54
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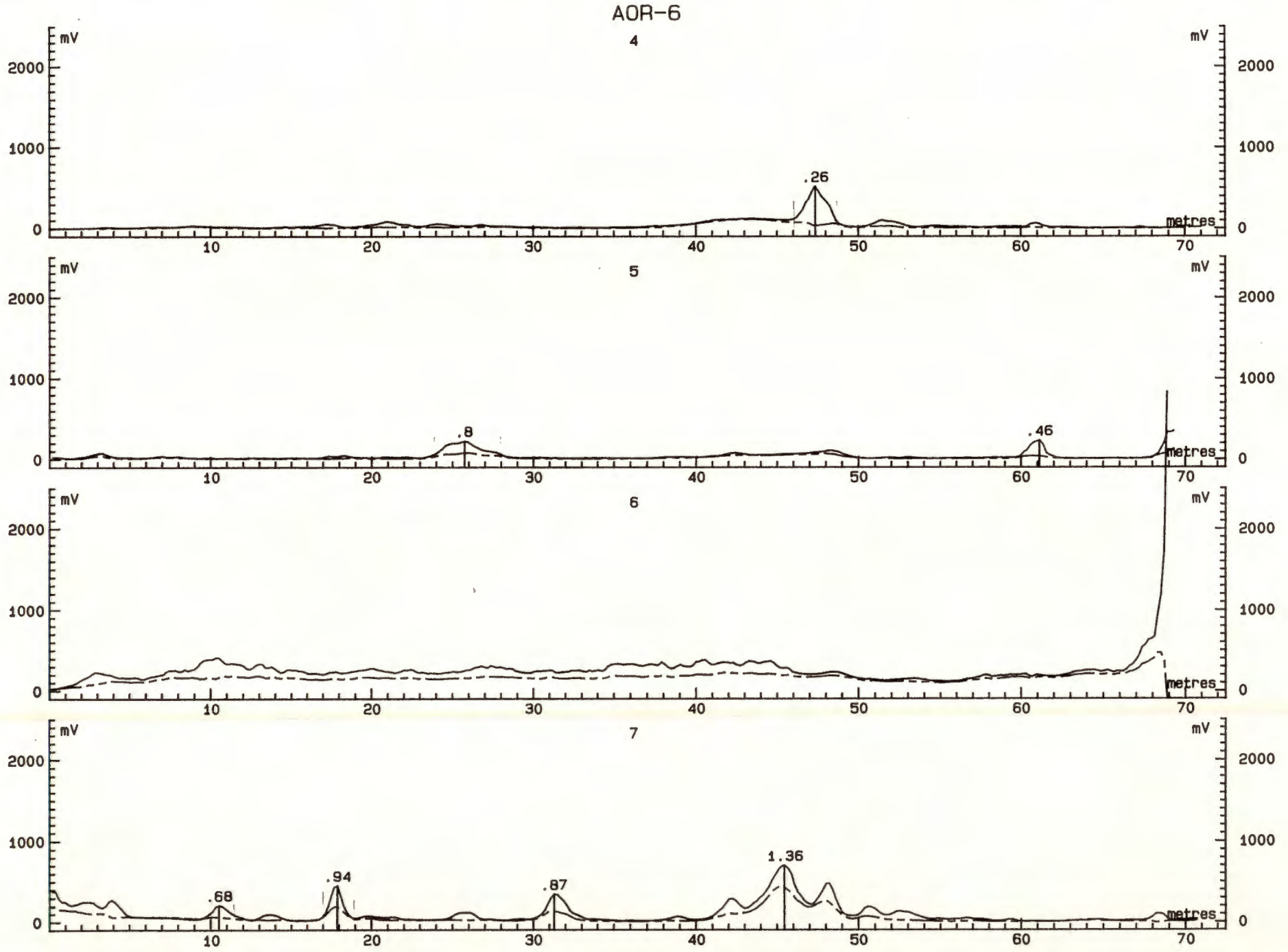
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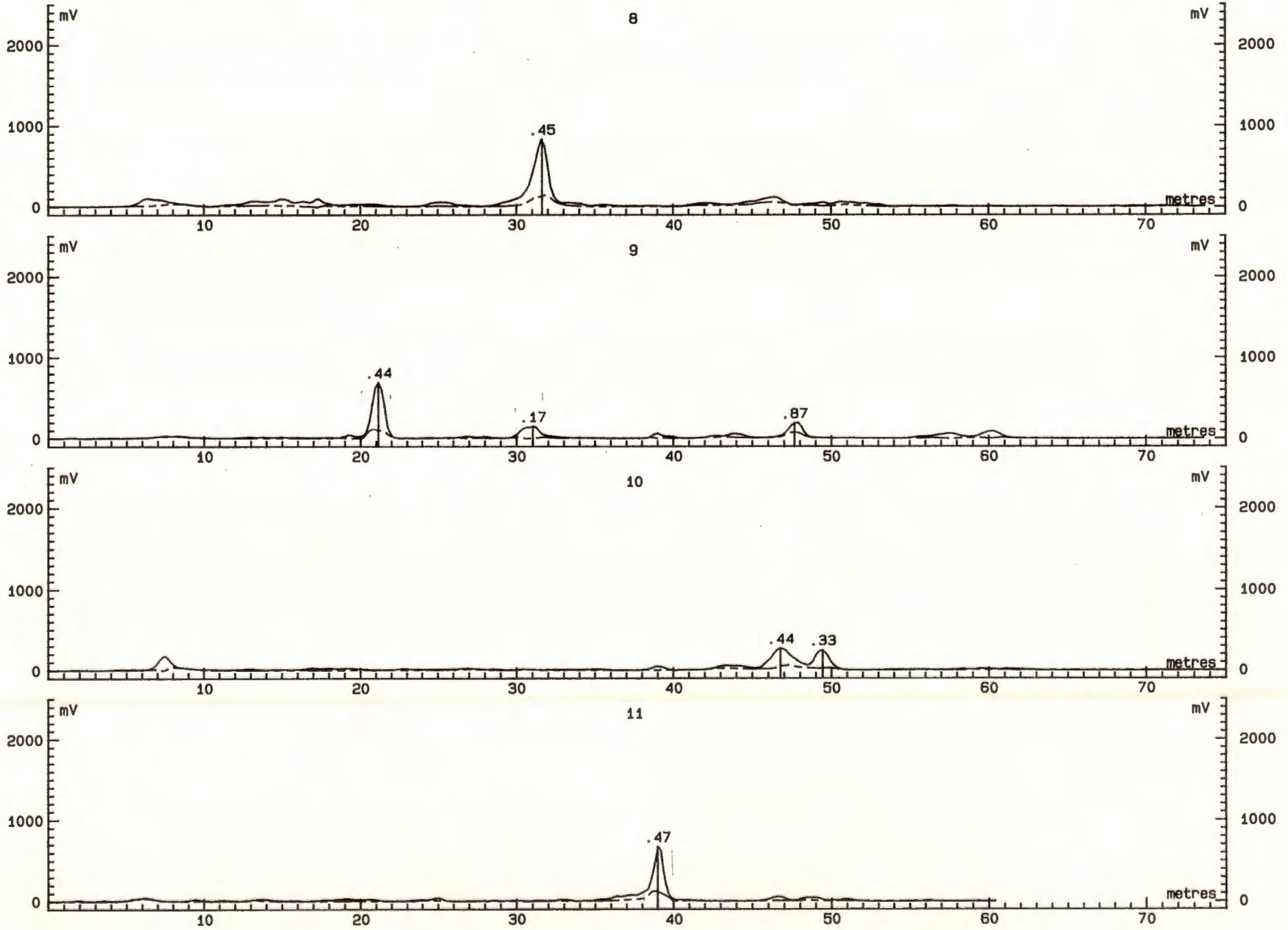
1.36

AOR-6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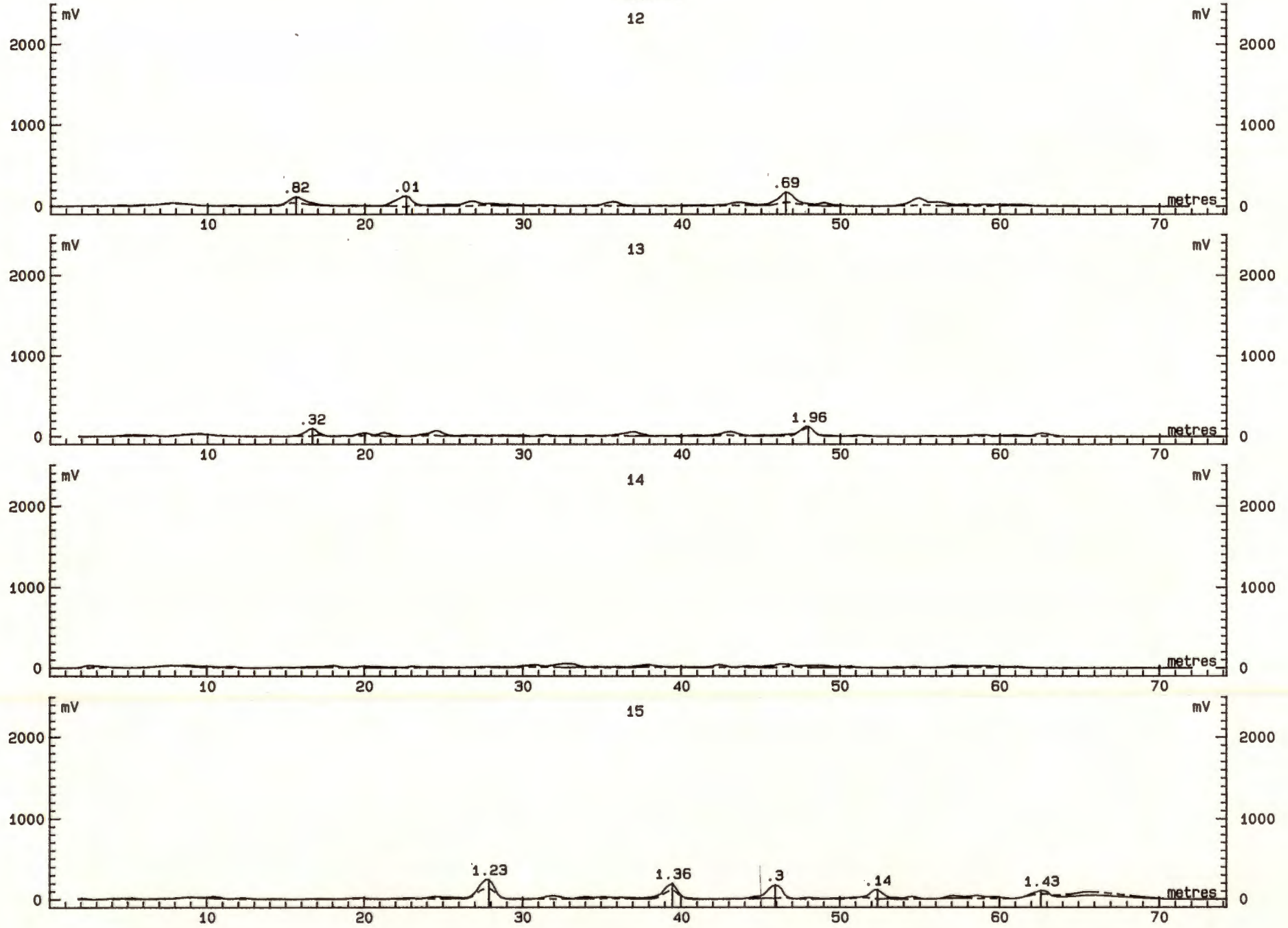
AOR-6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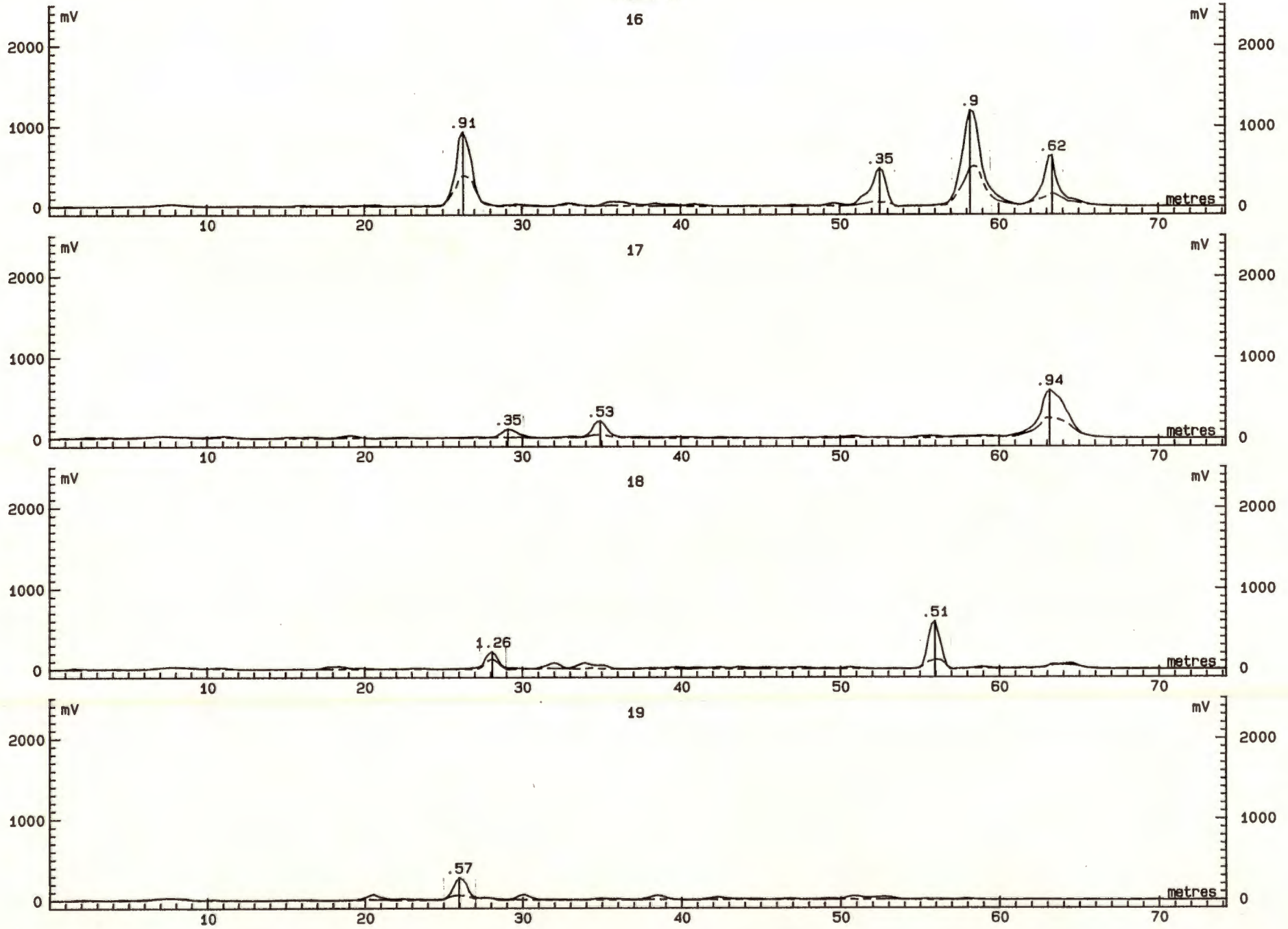
1.43

AOR-6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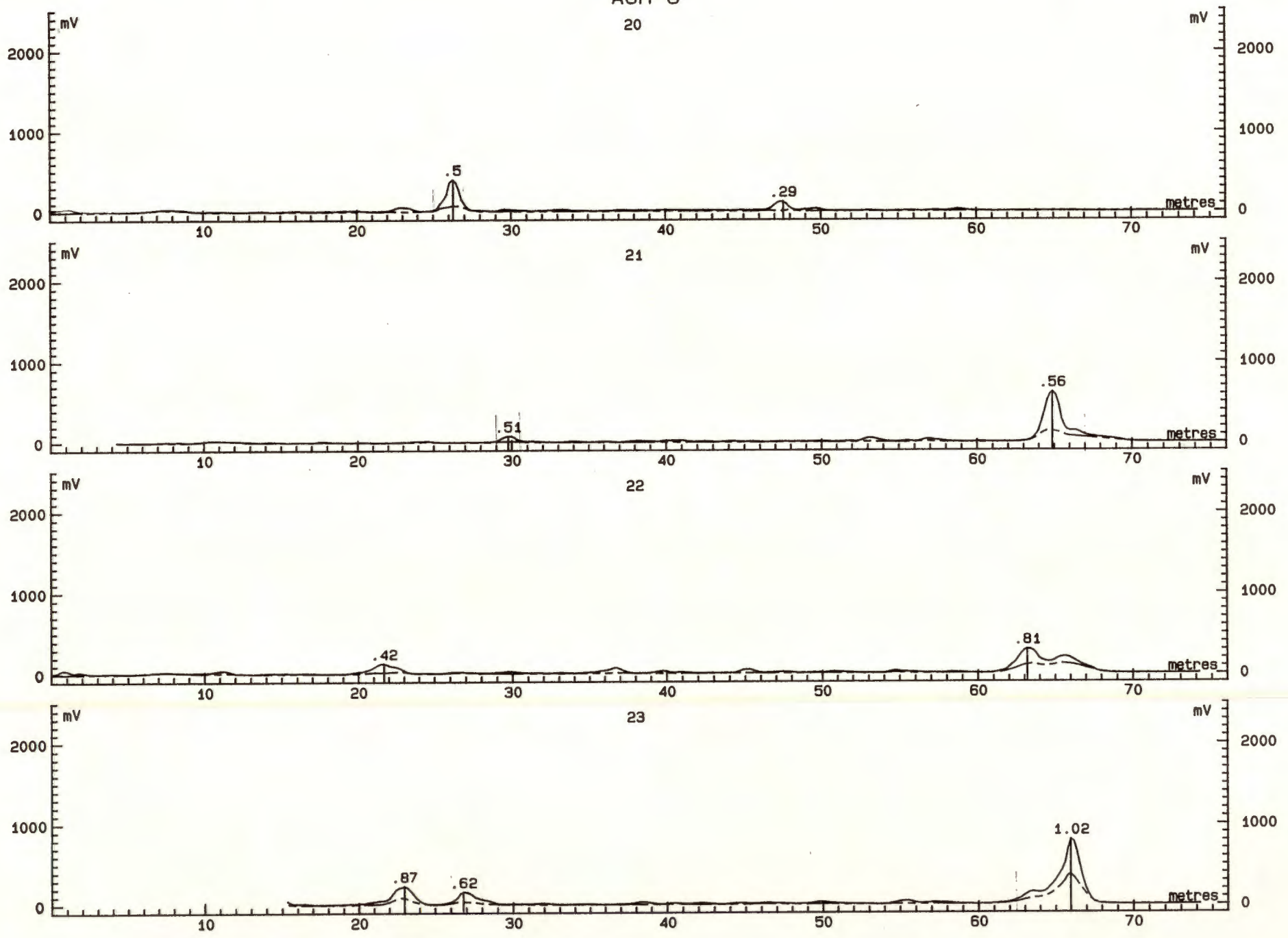
AOR-6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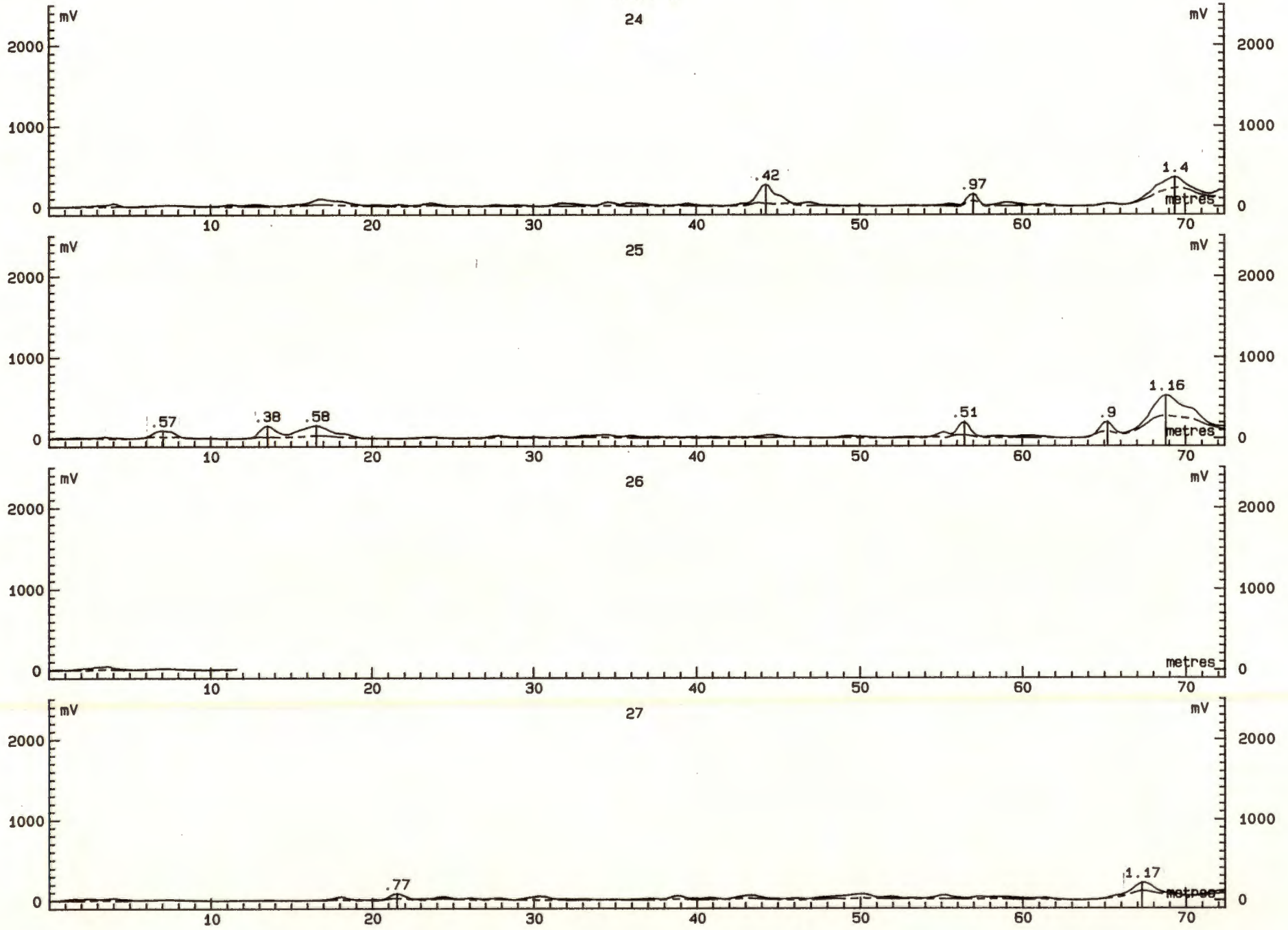
AOR-6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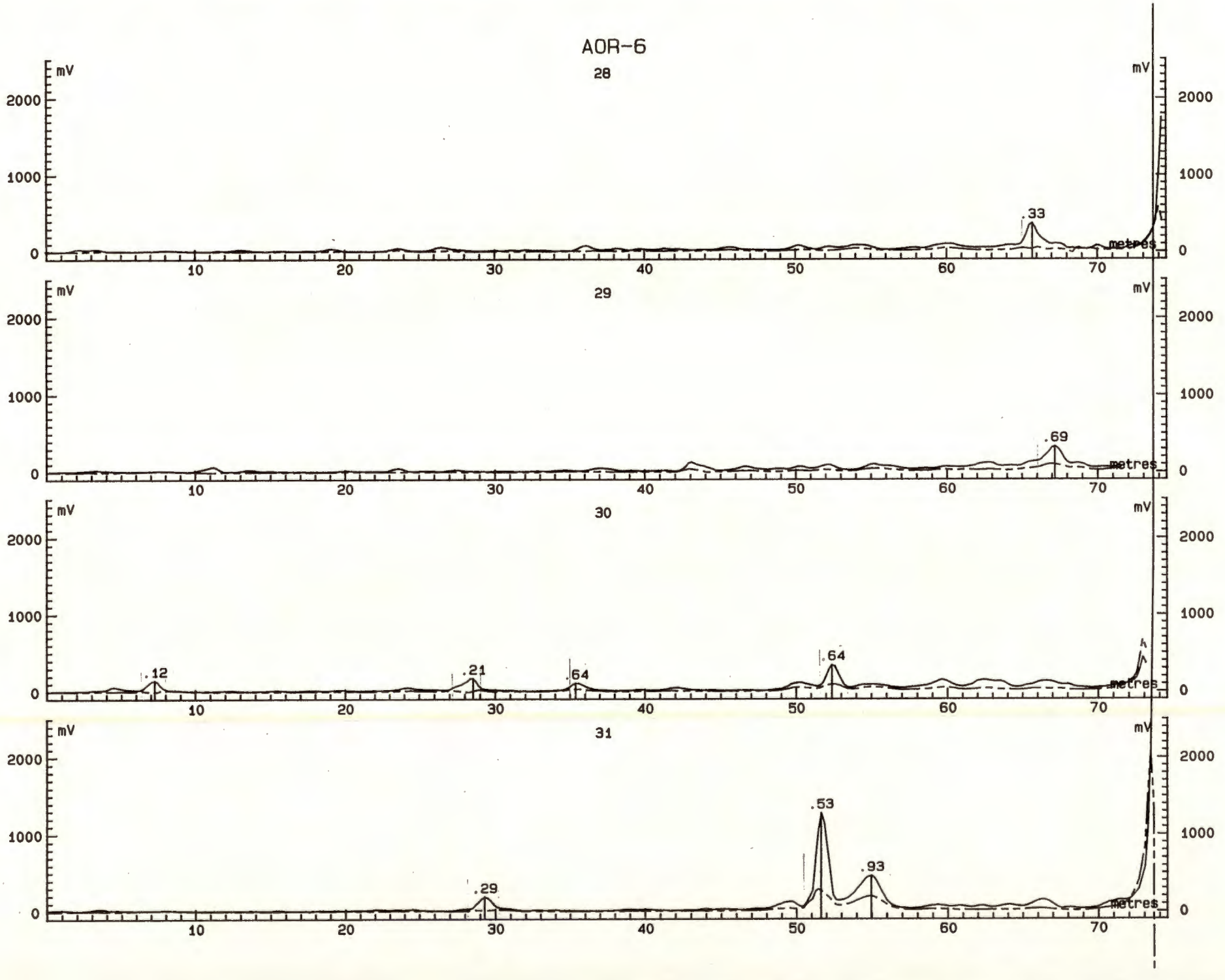
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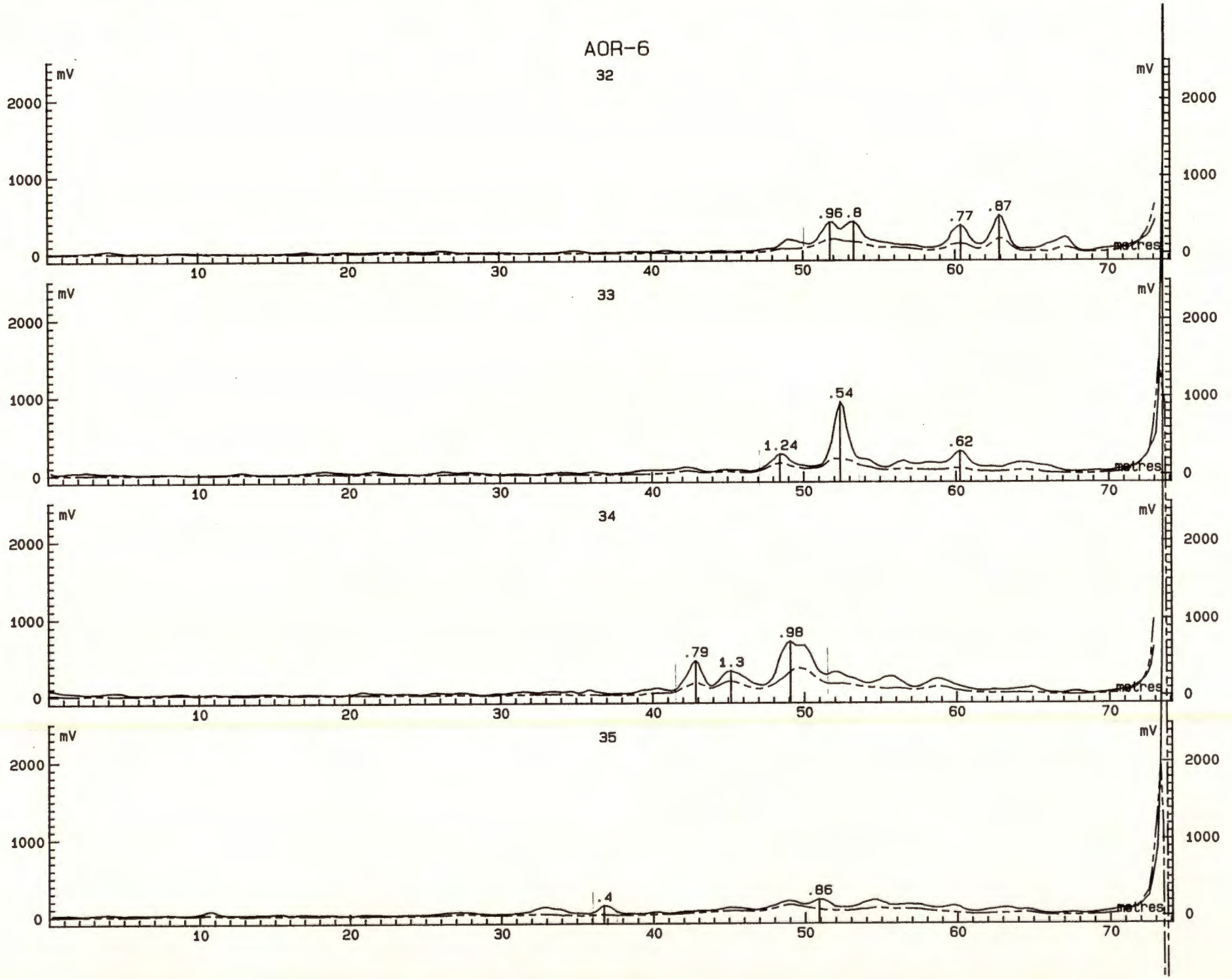
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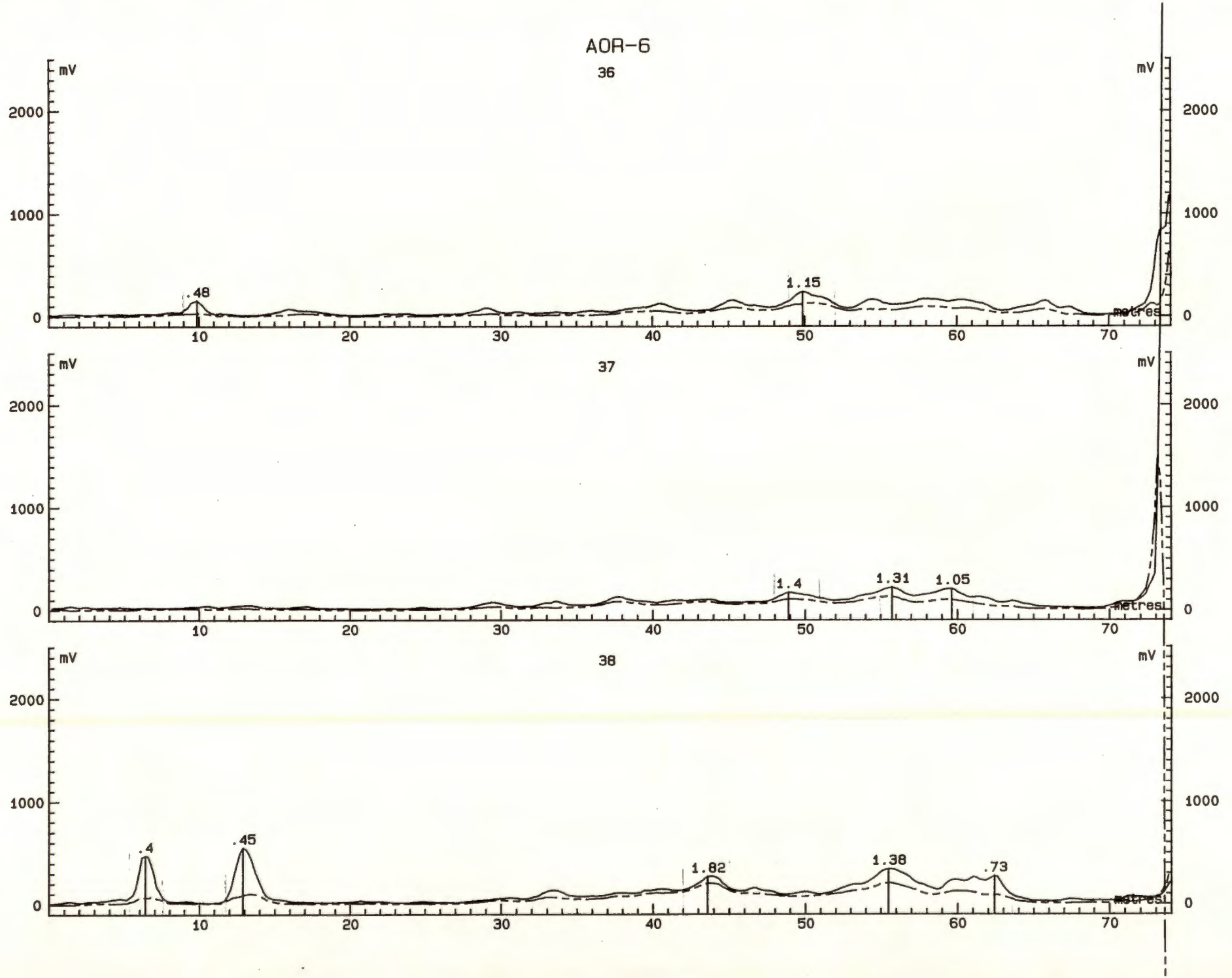
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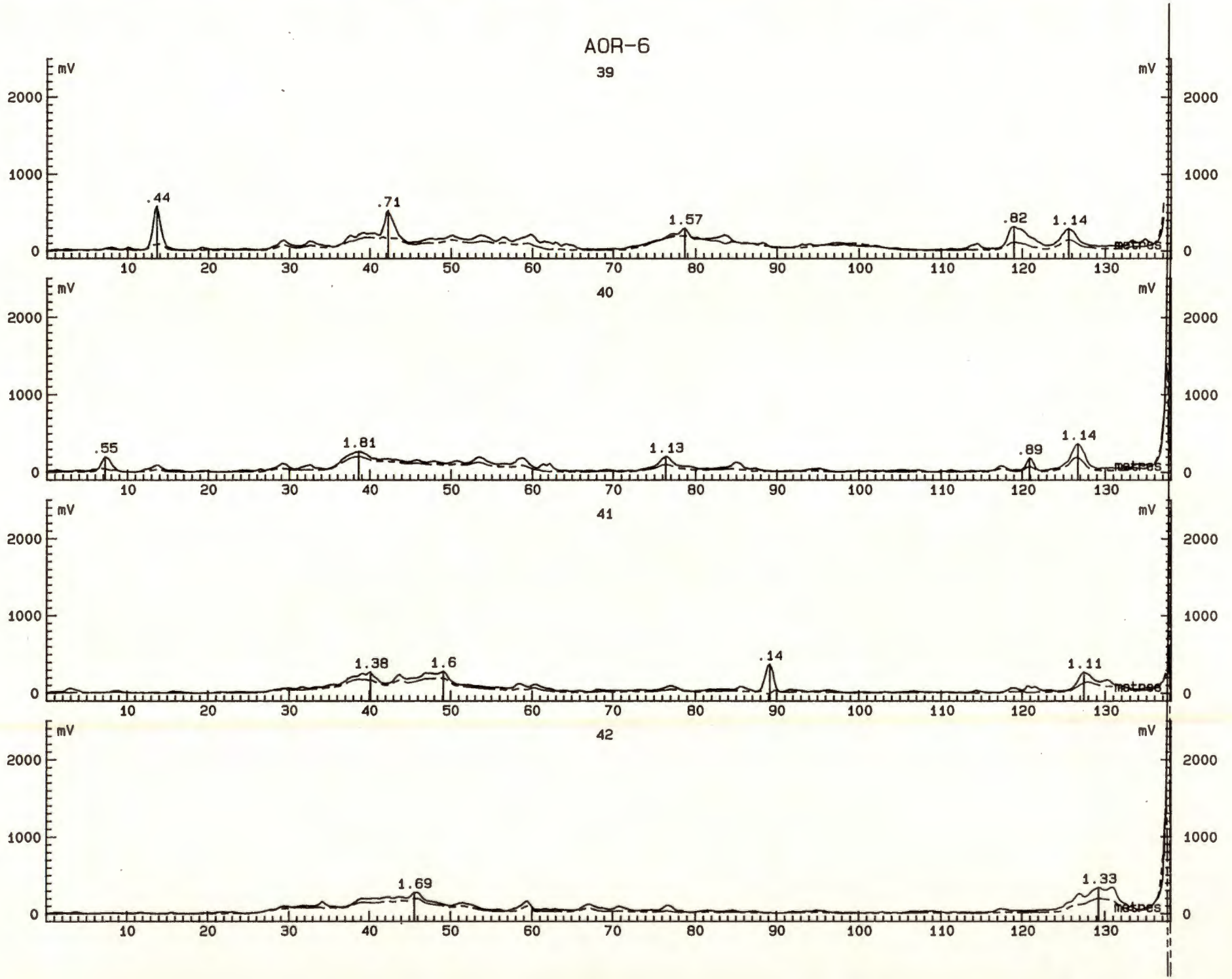
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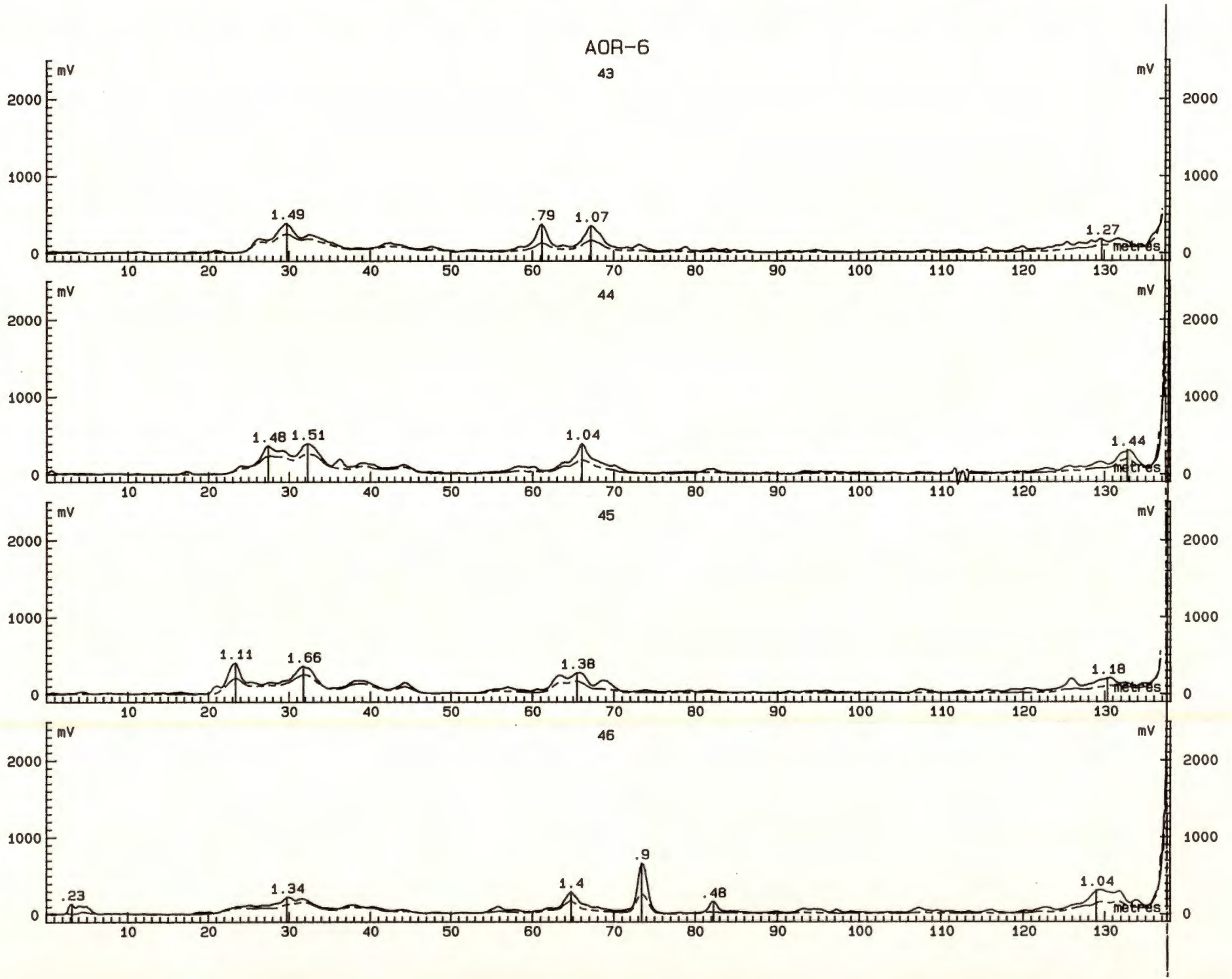
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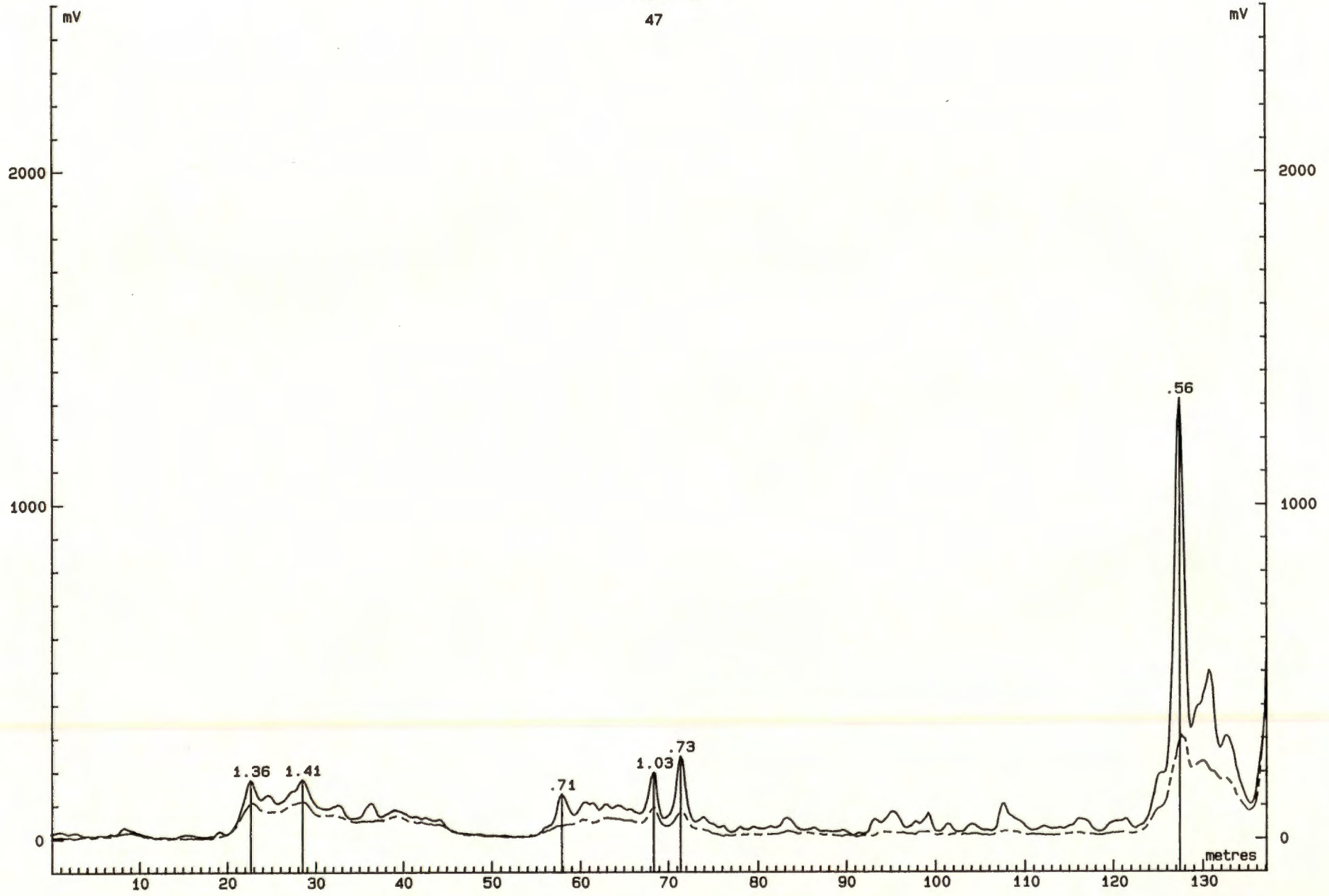
AOR-6

47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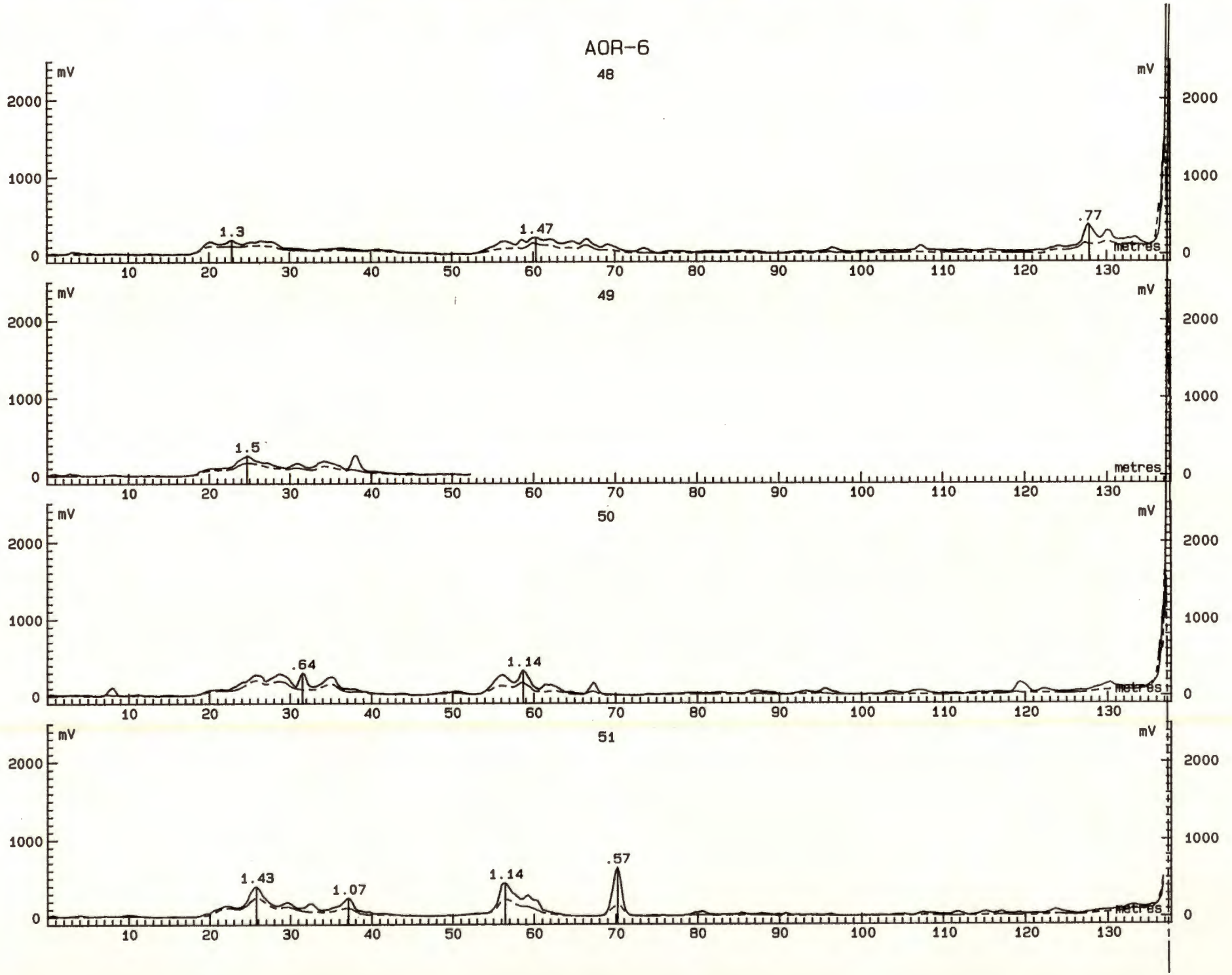
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metres
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100
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120
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50
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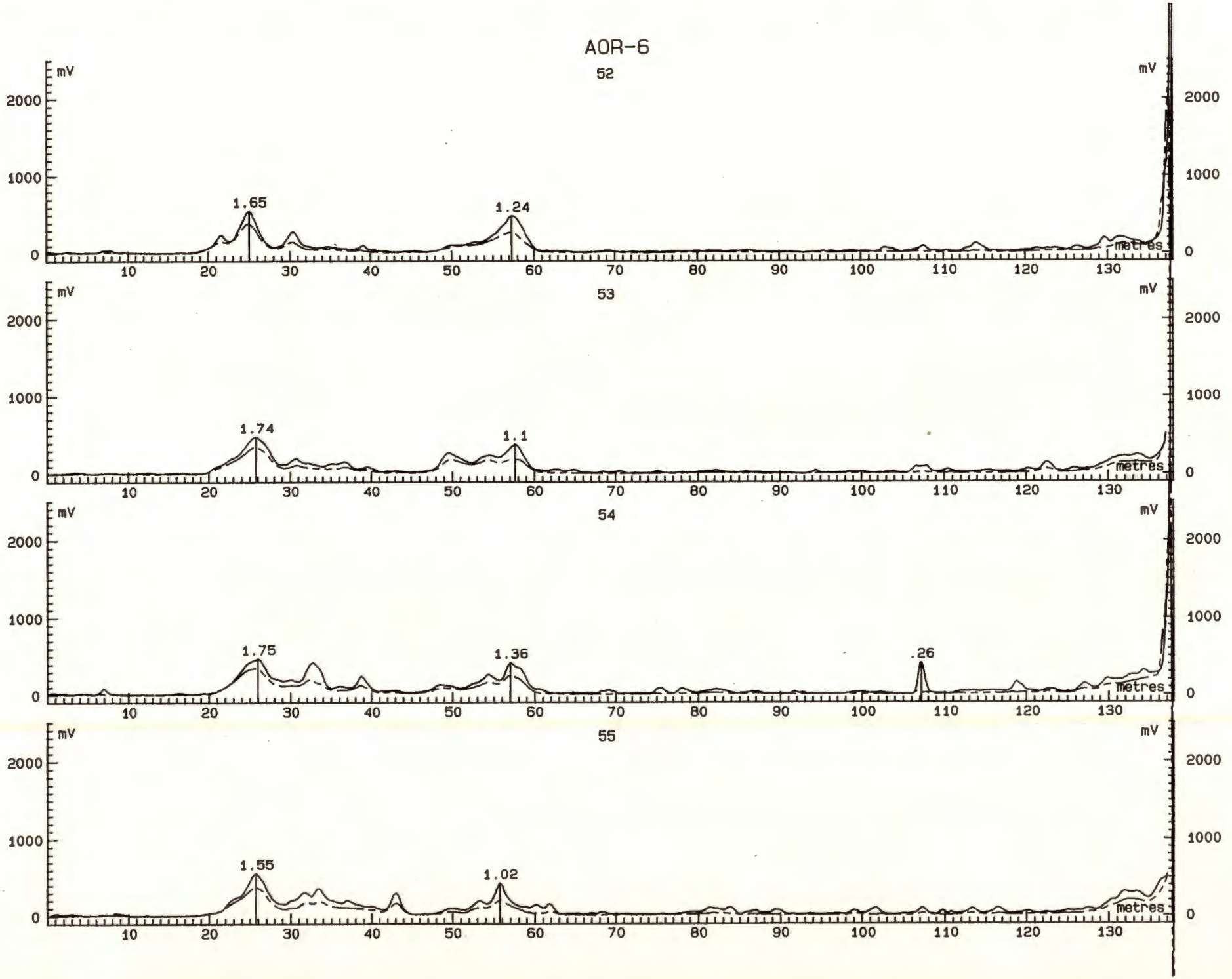
51
1.43
1.07
1.14
.57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mV
2000
1000
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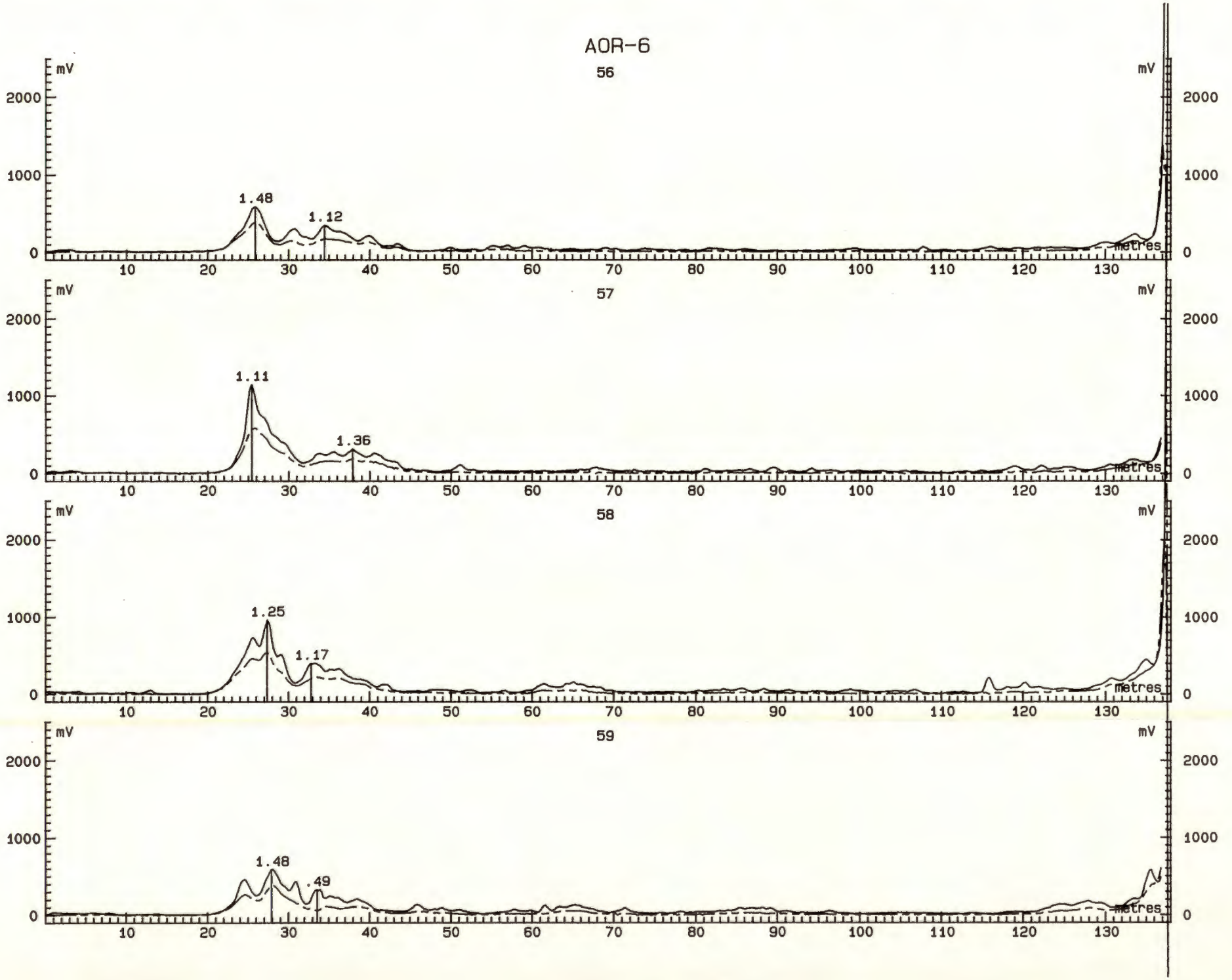
1.65
1.24
metres
10
20
30
40
50
60
70
80
90
100
110
120
130
53
1.74
1.1
54
1.75
1.36
.26
55
1.55
1.02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mV
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1.48
1.12
10
20
30
40
50
60
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120
130
metres
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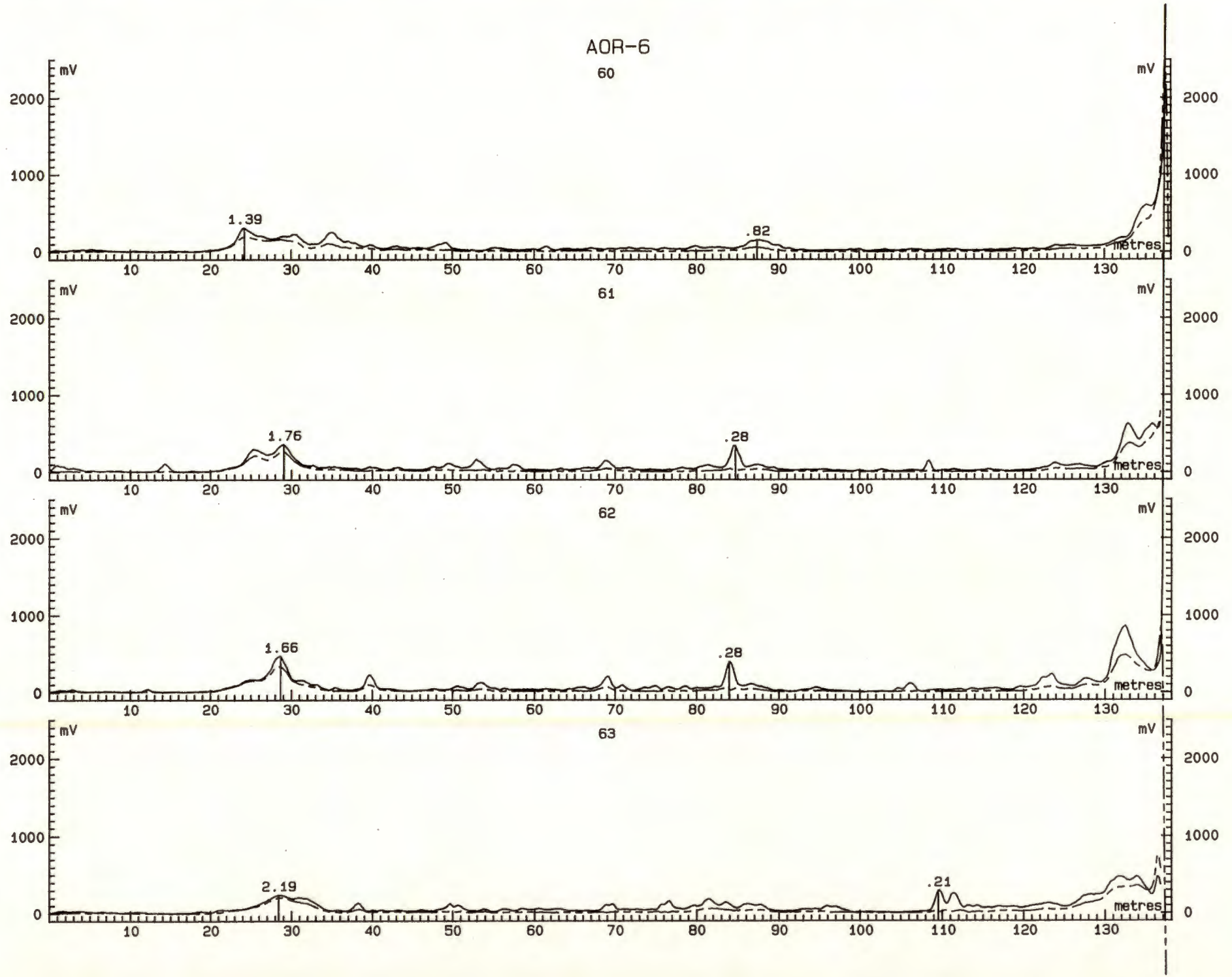
1.11
1.36
58
1.25
1.17
59
1.48
.49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mV
2000
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1.39
.82
metres
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20
30
40
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.28
62
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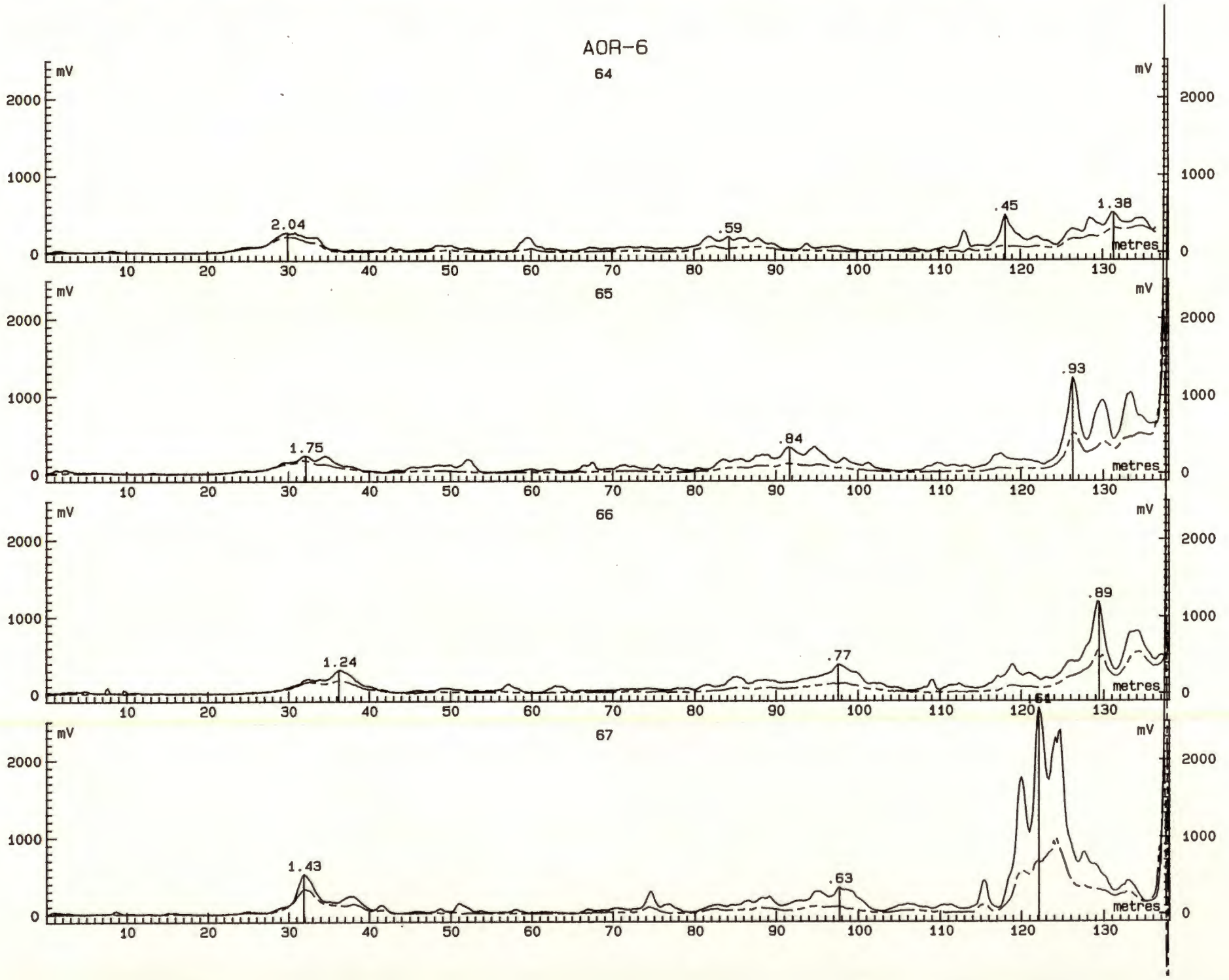
.28
63
2.19
.21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.59
.45
1.38
metres
10
20
30
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50
60
70
80
90
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110
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130
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.84
.93
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1.24
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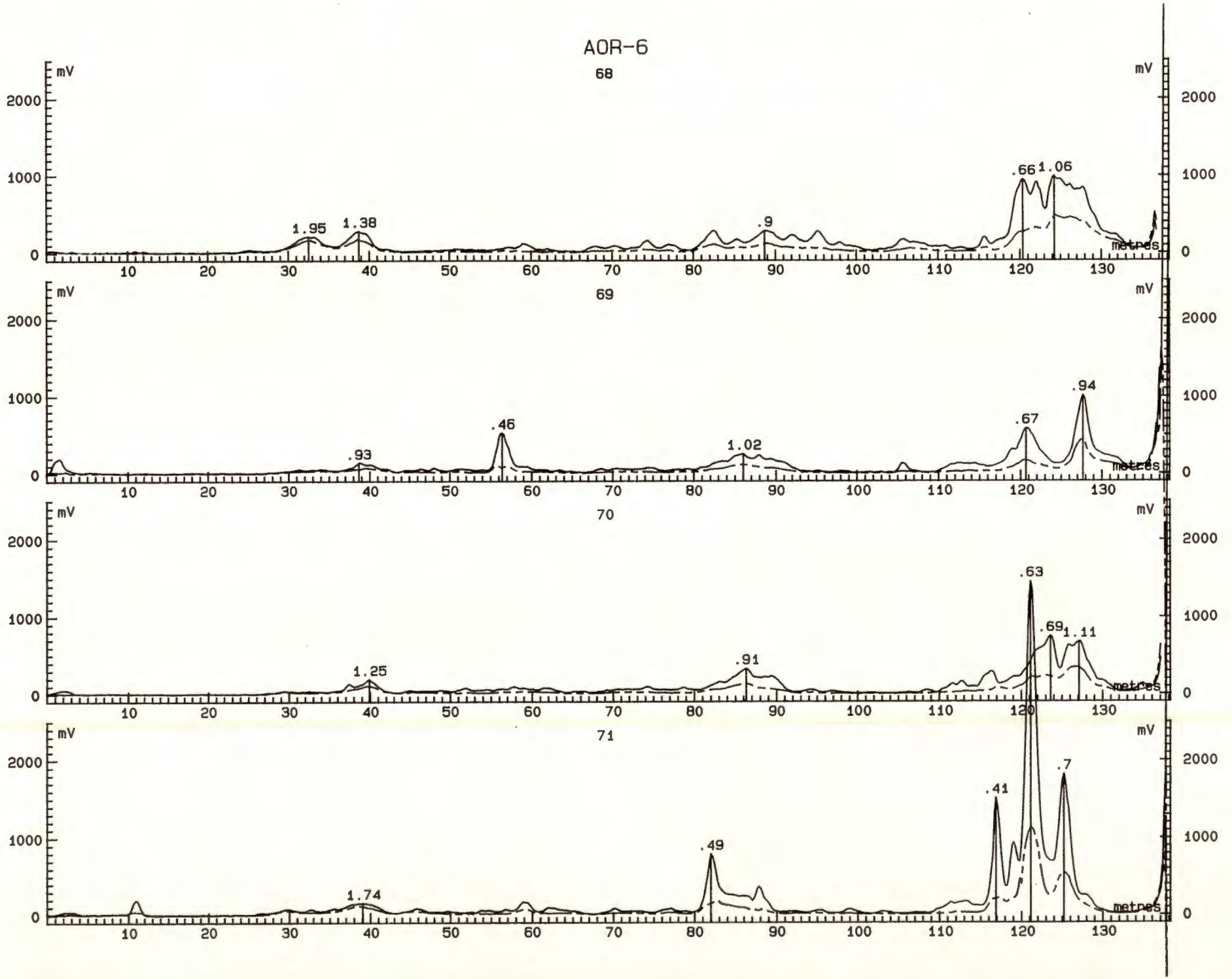
.89
67
1.43
.63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.9
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50
60
70
80
90
100
110
120
130
69
.93
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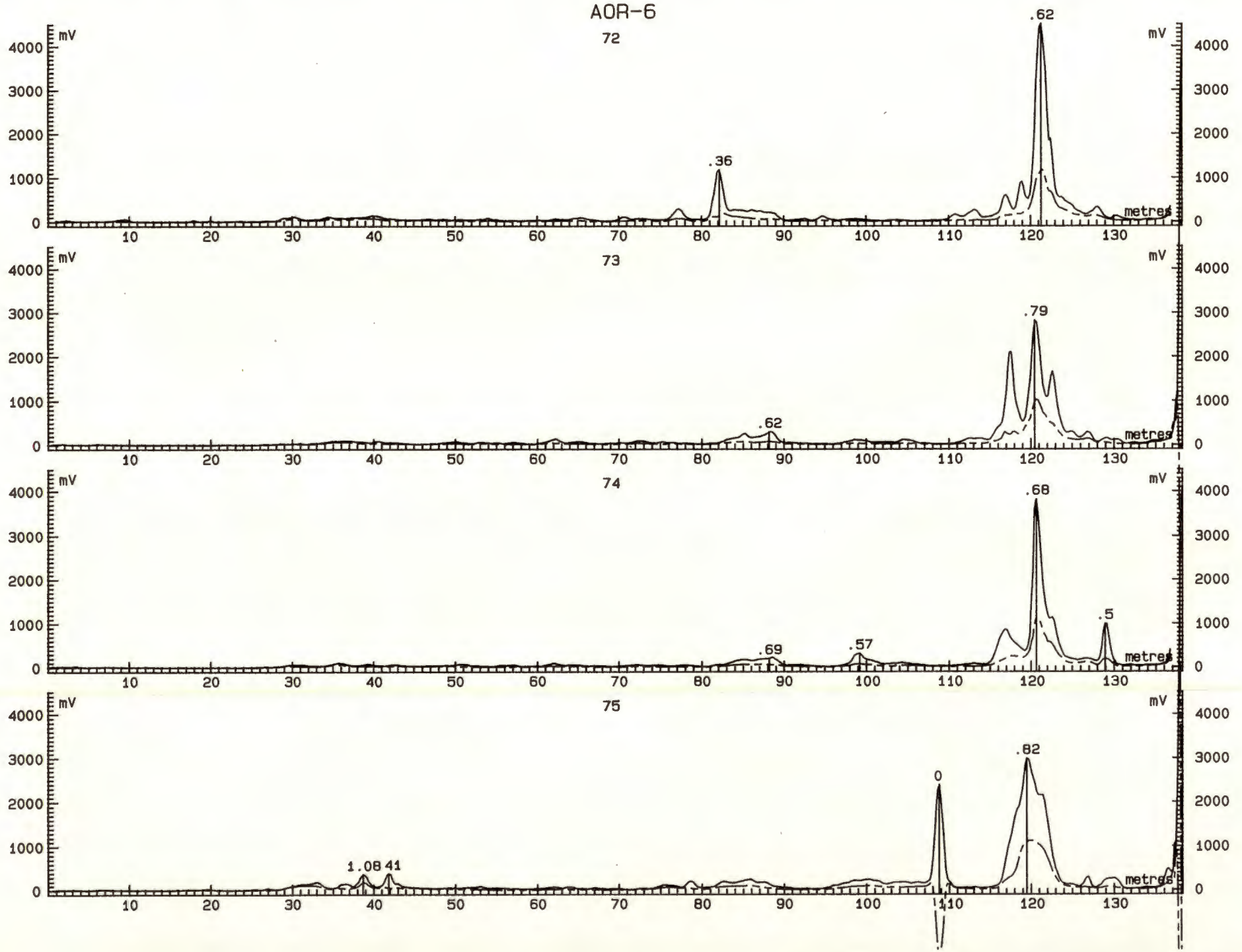
.7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74
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.5
.69
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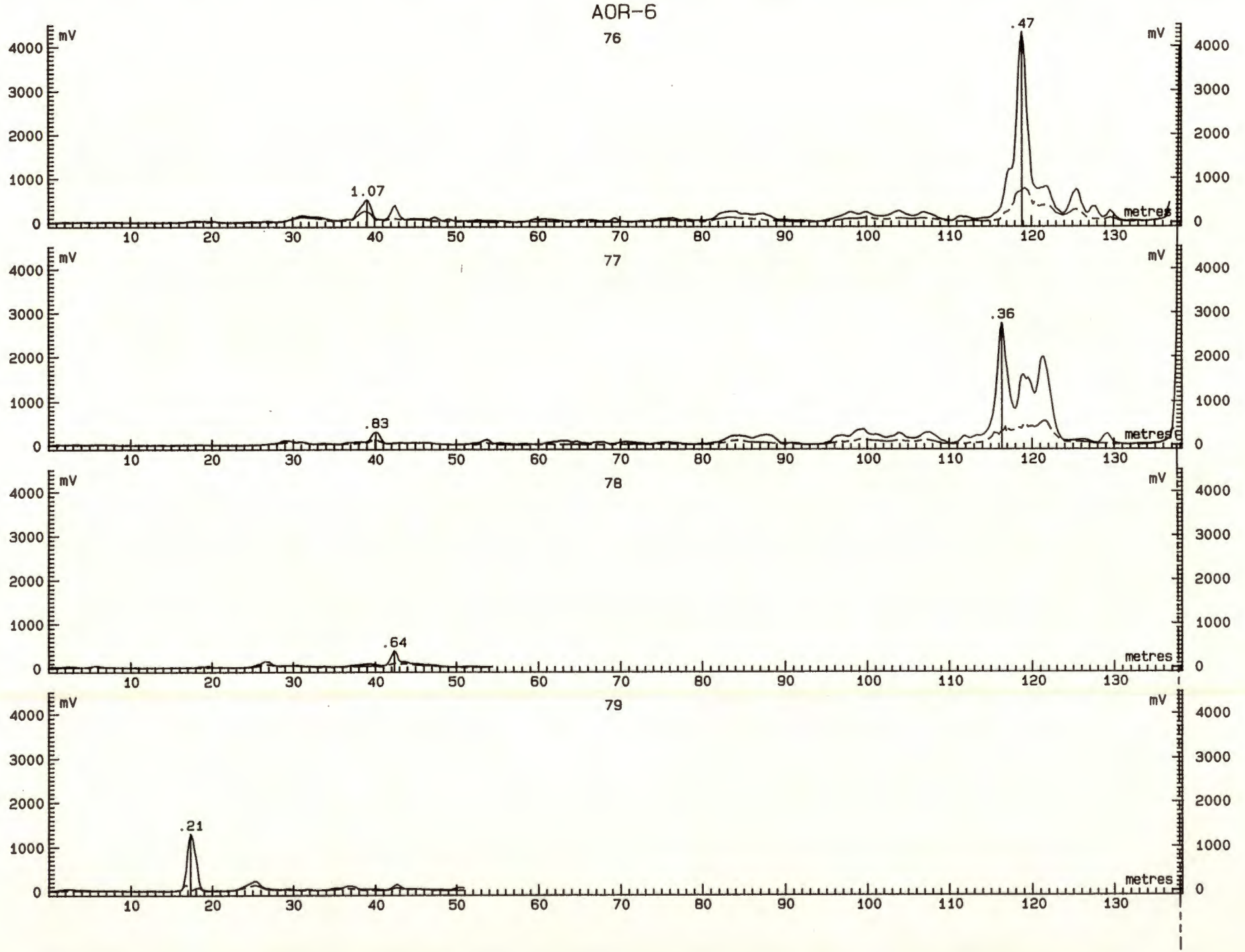
75
.82
0
1.08 41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4000
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.47
metres
10
20
30
40
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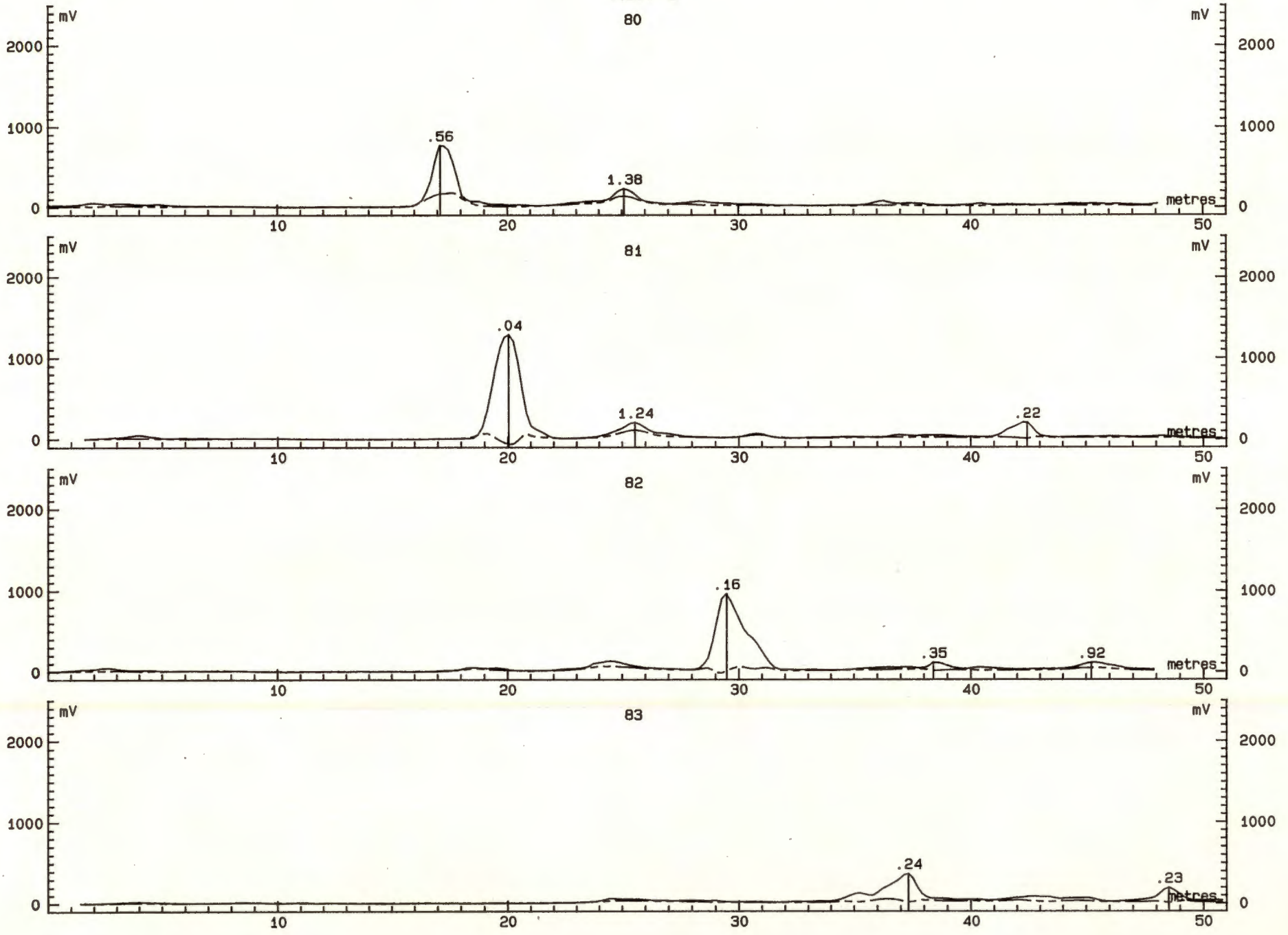
.83
.36
78
.64
79
.21

AOR-6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mV
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1000
0
.56
1.38
metres
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30
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50
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1.24
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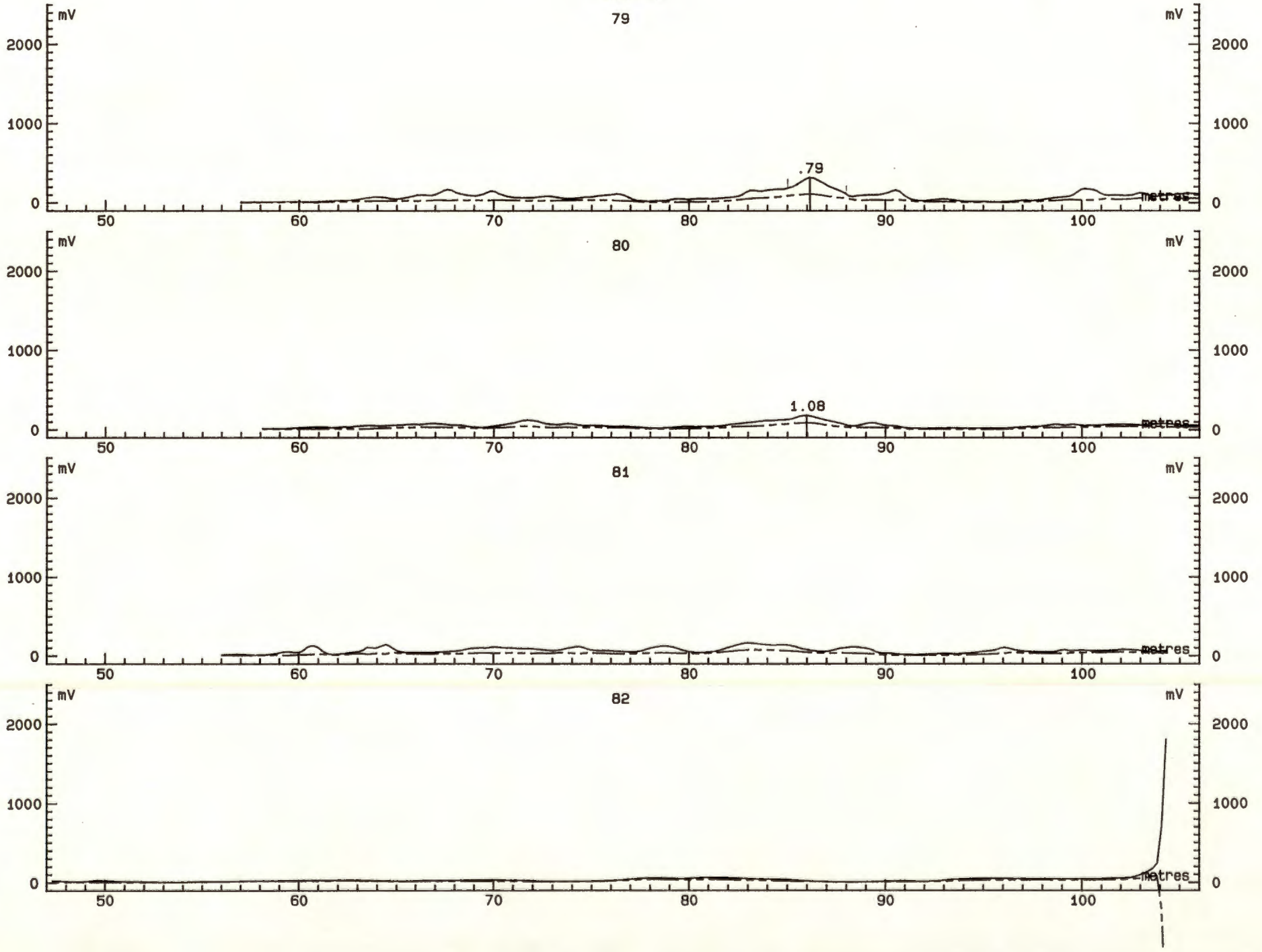
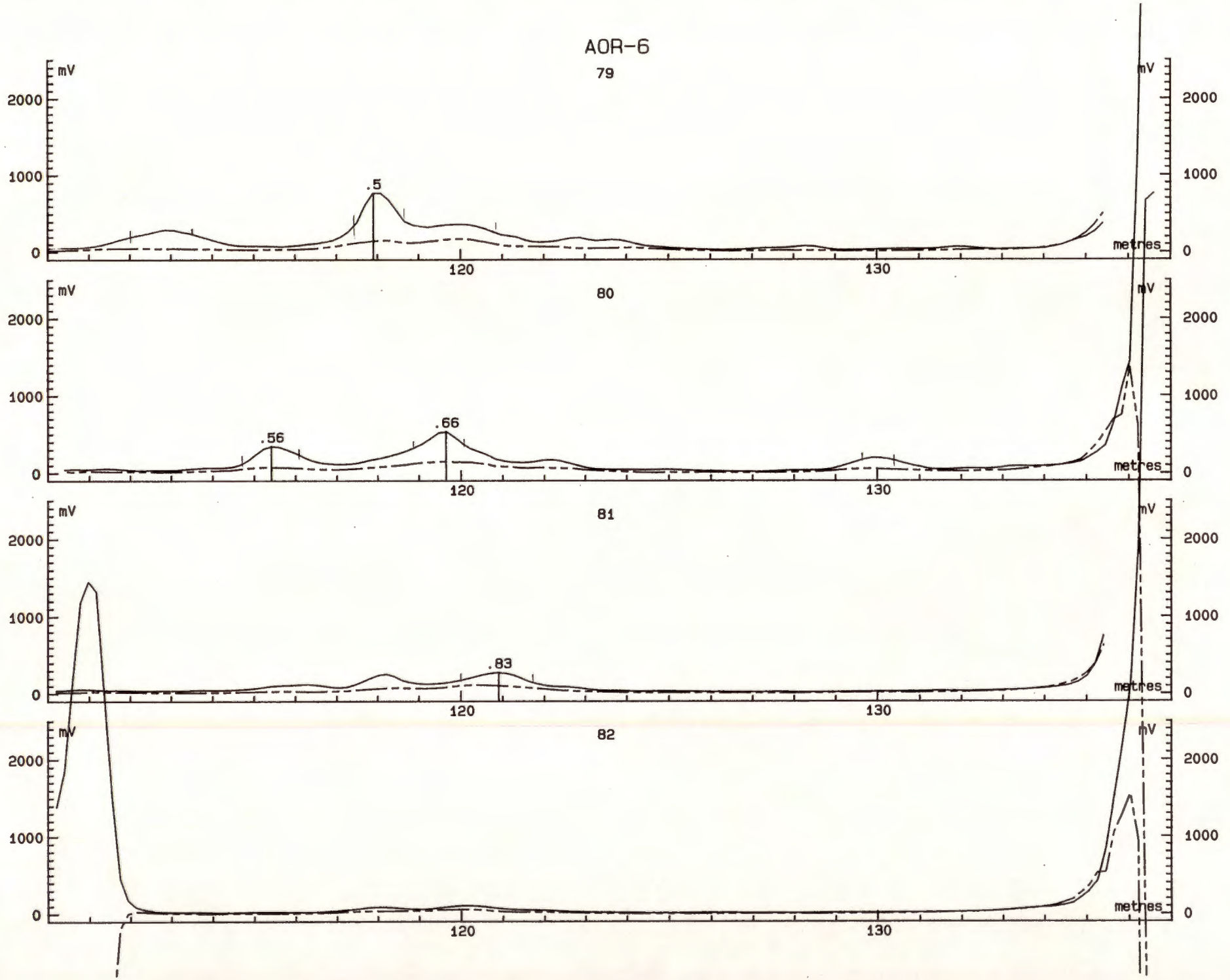
.24
.23

AOR-6

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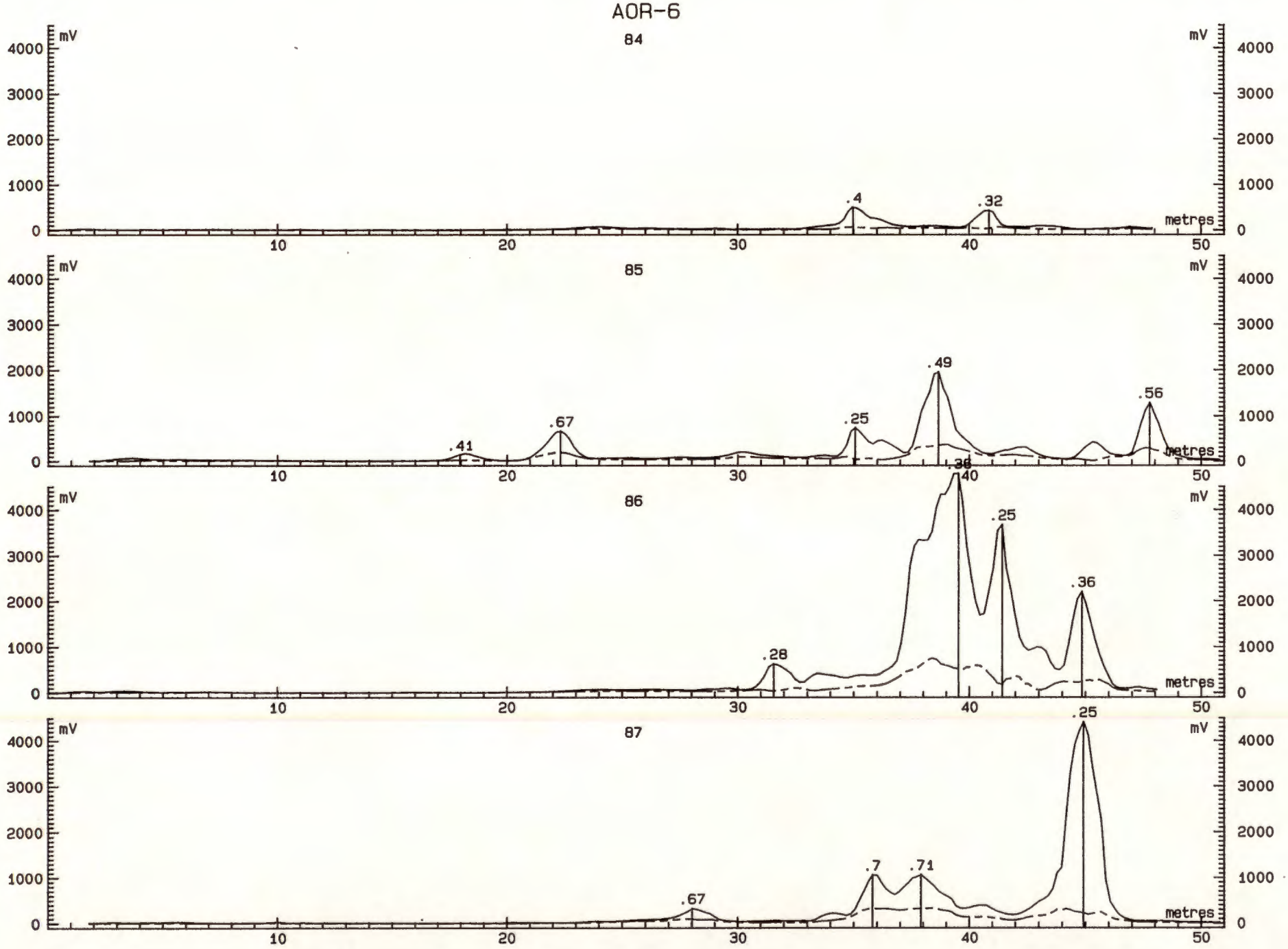
mV
2000
1000
0
.5
120
130
metres
80
.56
.66
81
.83
82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mV
4000
3000
2000
1000
0
.4
.32
metres
10
20
30
40
50
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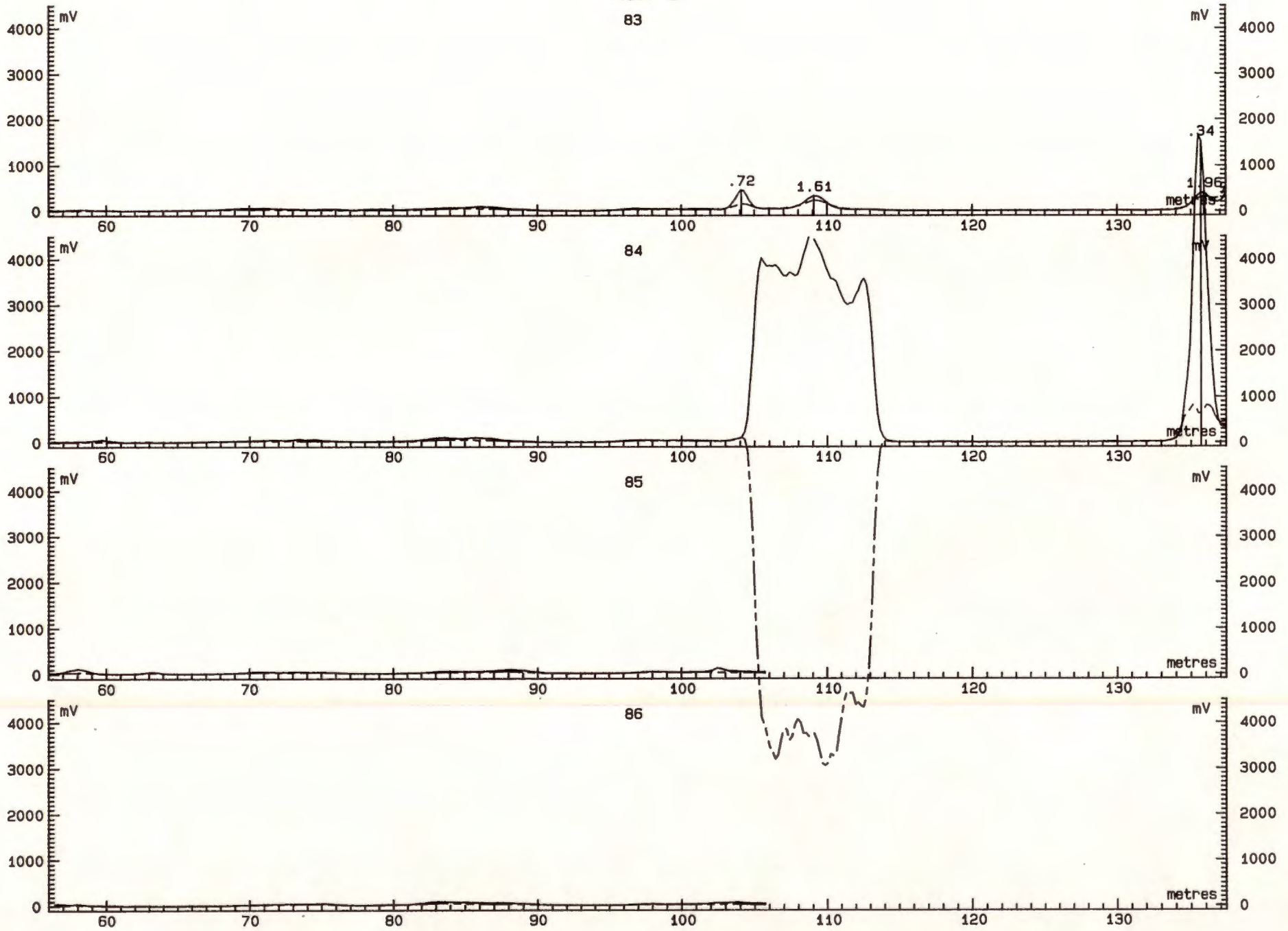
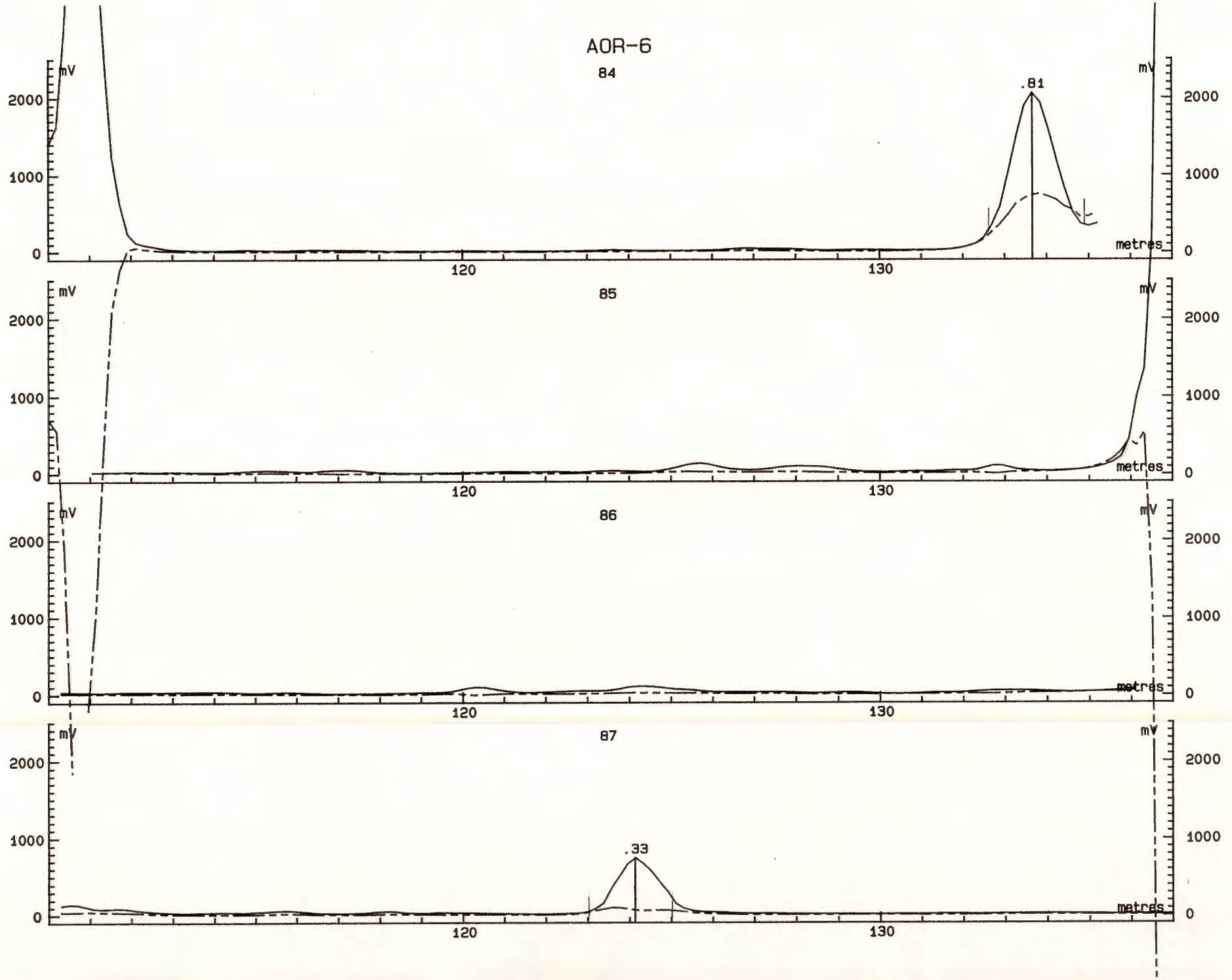
.25
.49
.56
86
.28
.36
.25
87
.67
.7
.71

AOR-6


83
84
85
86
mV
metres
.72
1.61
.34
1.96
0
1000
2000
3000
4000
60
70
80
90
100
110
120
130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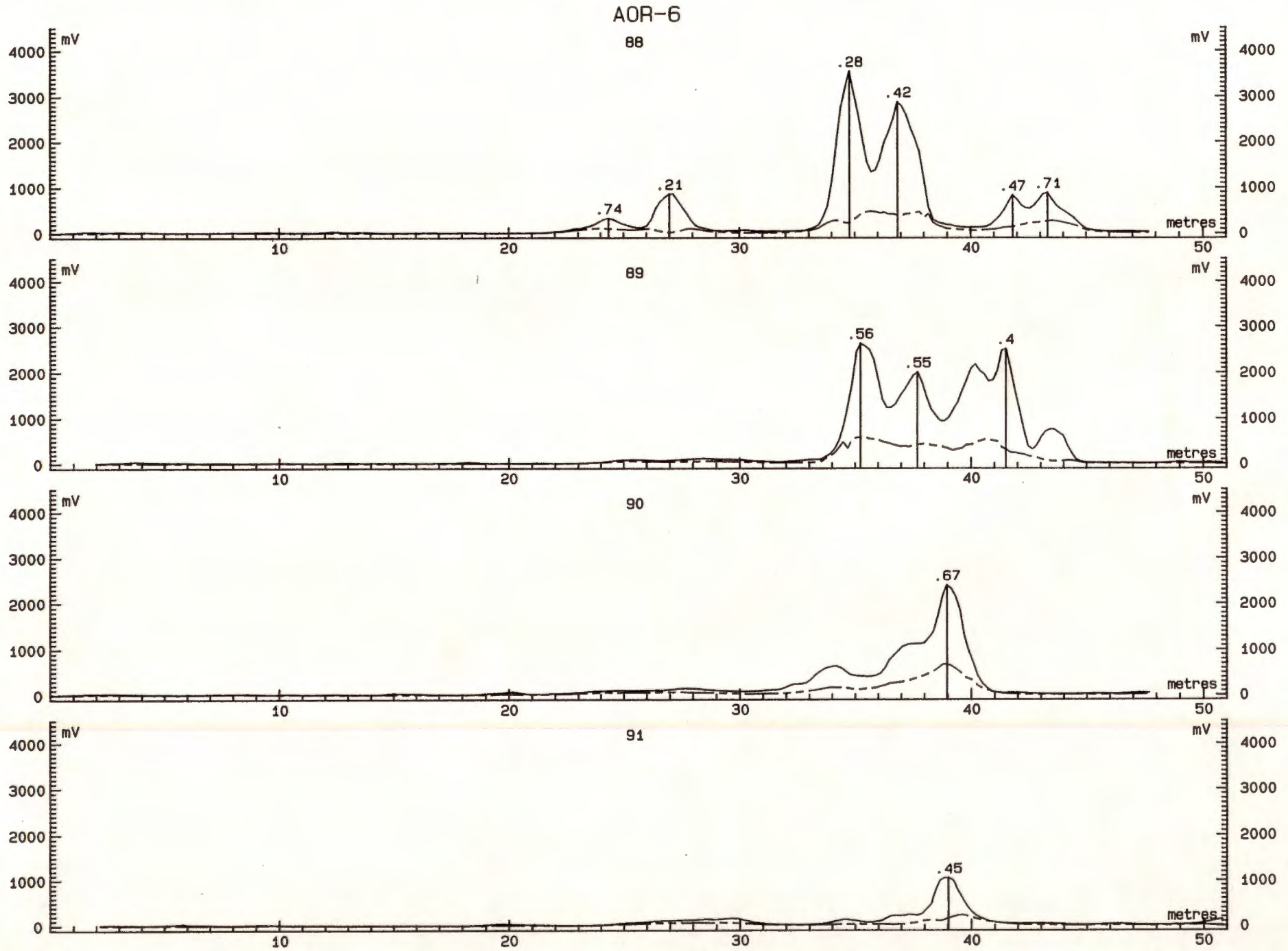
.81
mV
2000
1000
0
120
130
metres
85
86
87
.33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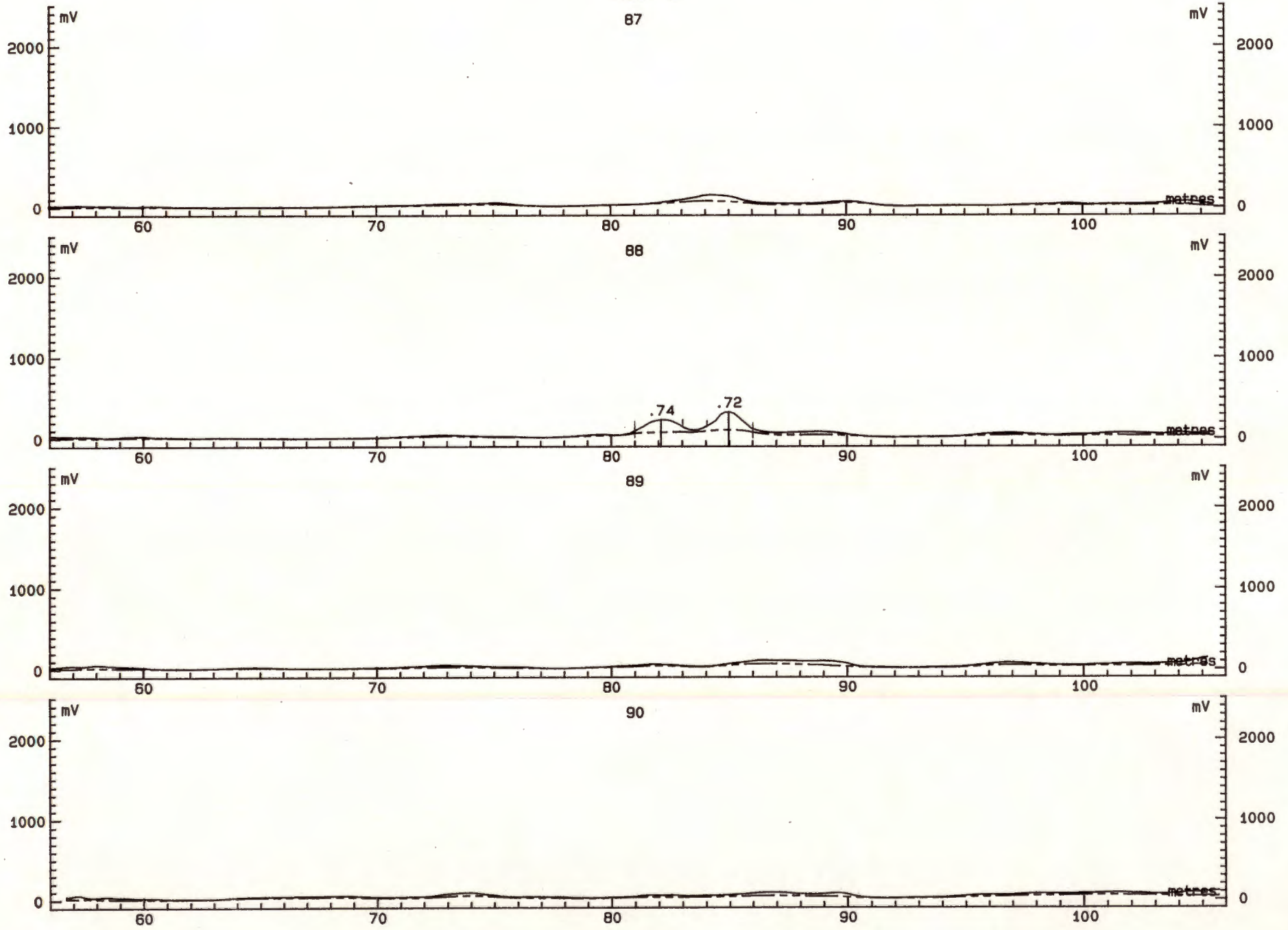
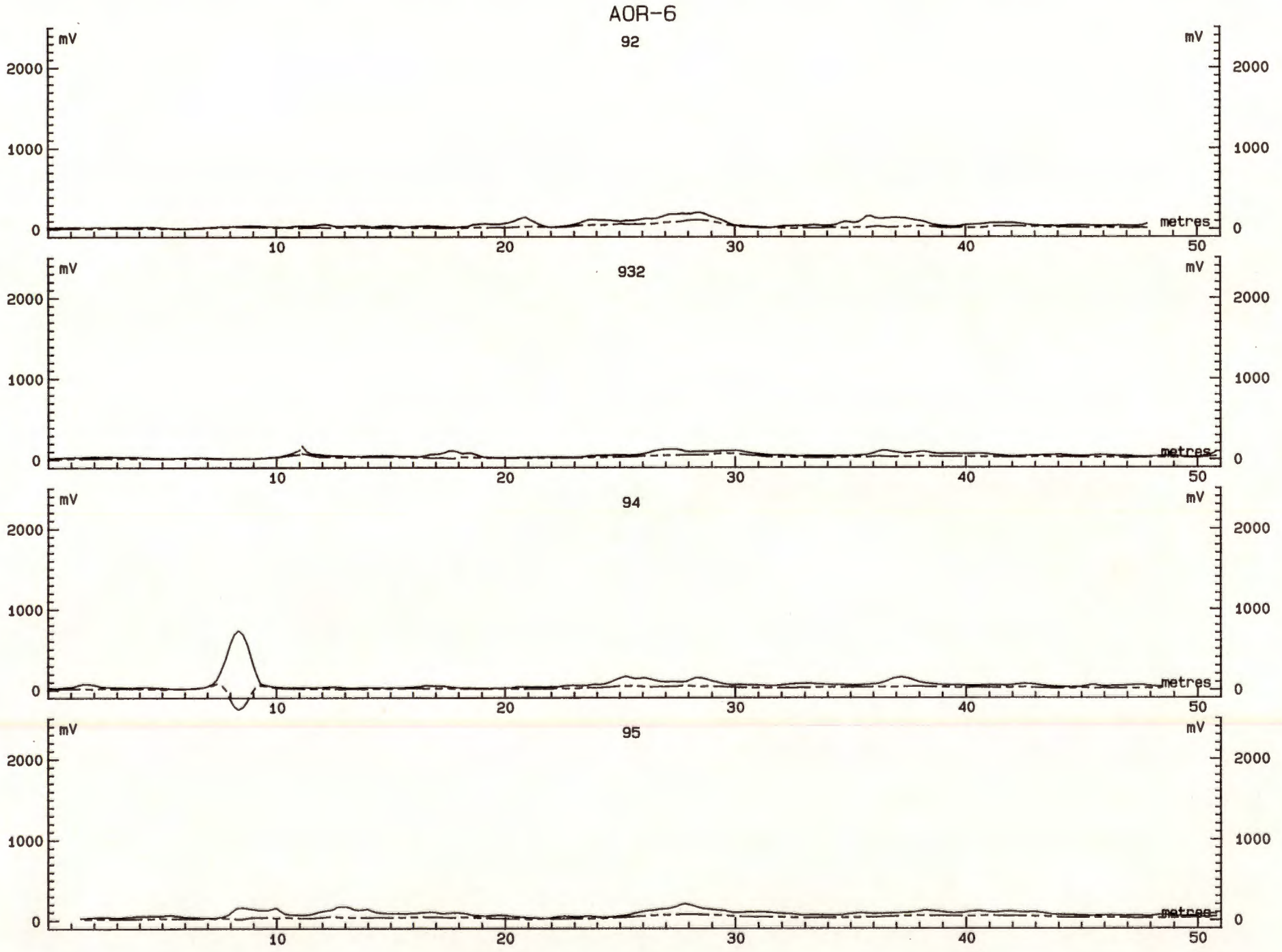
88
mV
4000
3000
2000
1000
0
.74
.21
.28
.42
.47
.71
metres
10
20
30
40
50
89
.56
.55
.4
90
.67
91
.45

AOR-6

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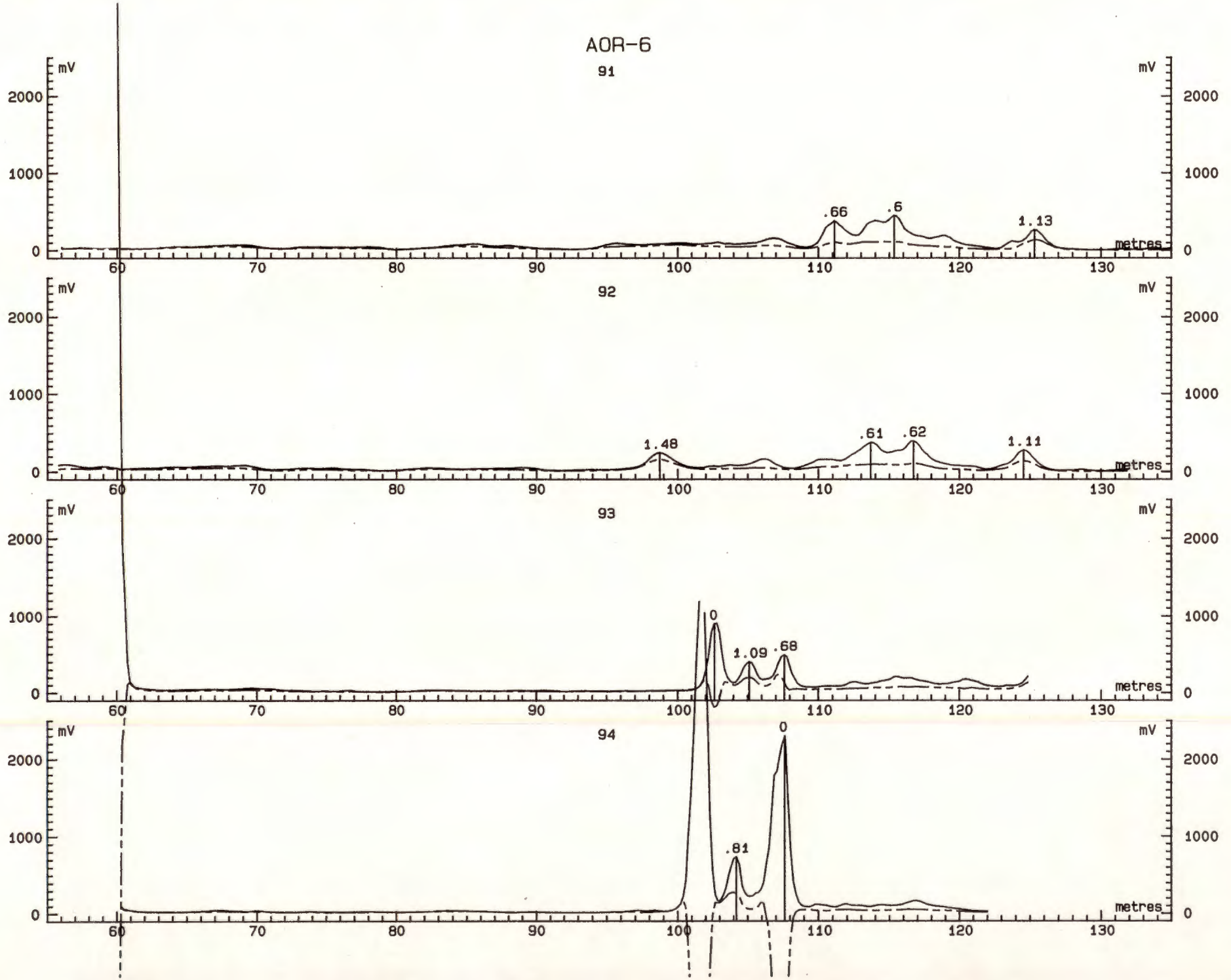
932
94
95
mV
2000
1000
0
10
20
30
40
50
metres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91
mV
2000
1000
0
.66
.6
1.13
metres
60
70
80
90
100
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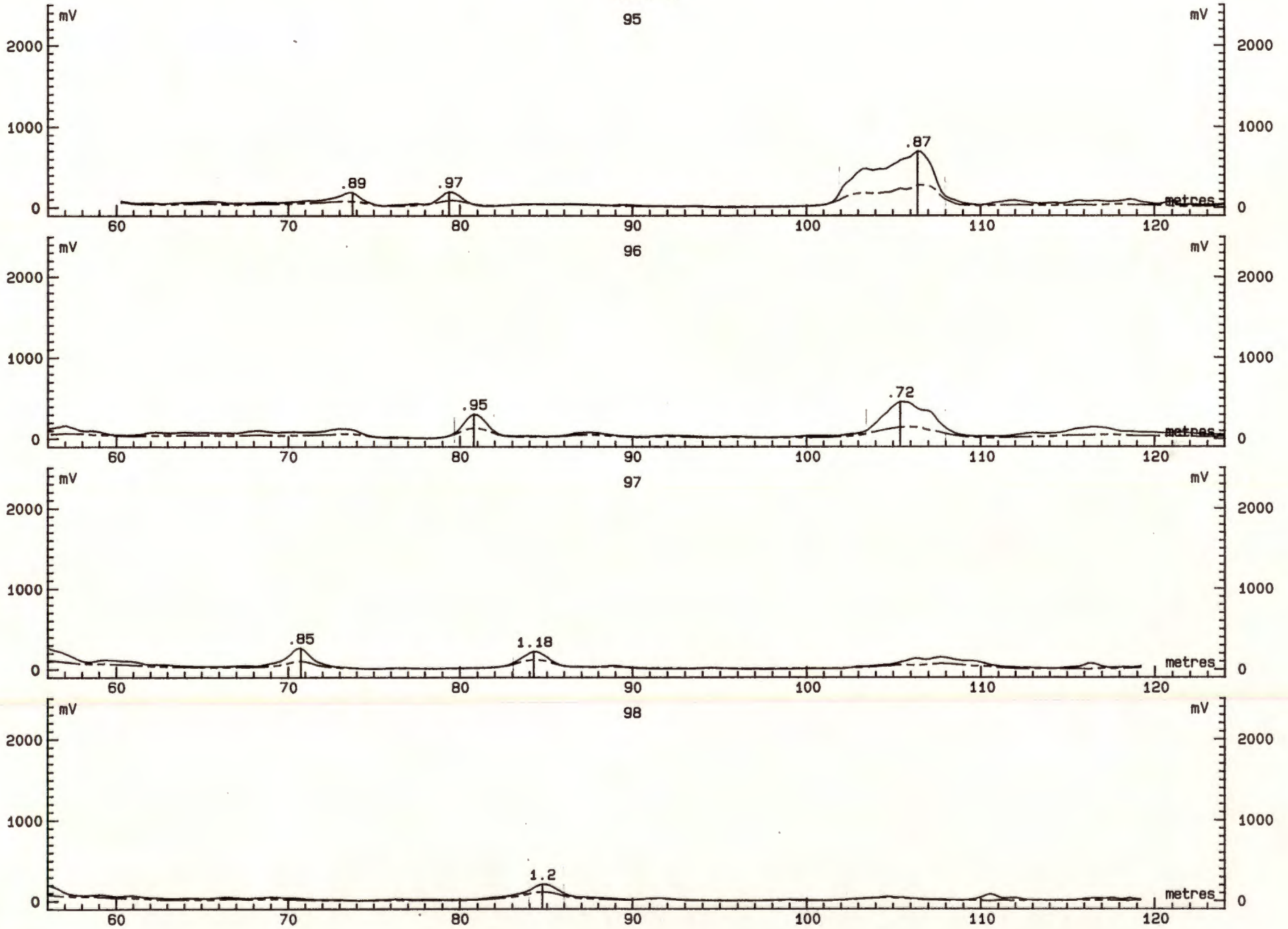
92
1.48
.61
.62
1.11
93
0
1.09
.68
94
.81

AOR-6


95
mV
2000
1000
0
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.97
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metres
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70
80
90
100
110
120
96
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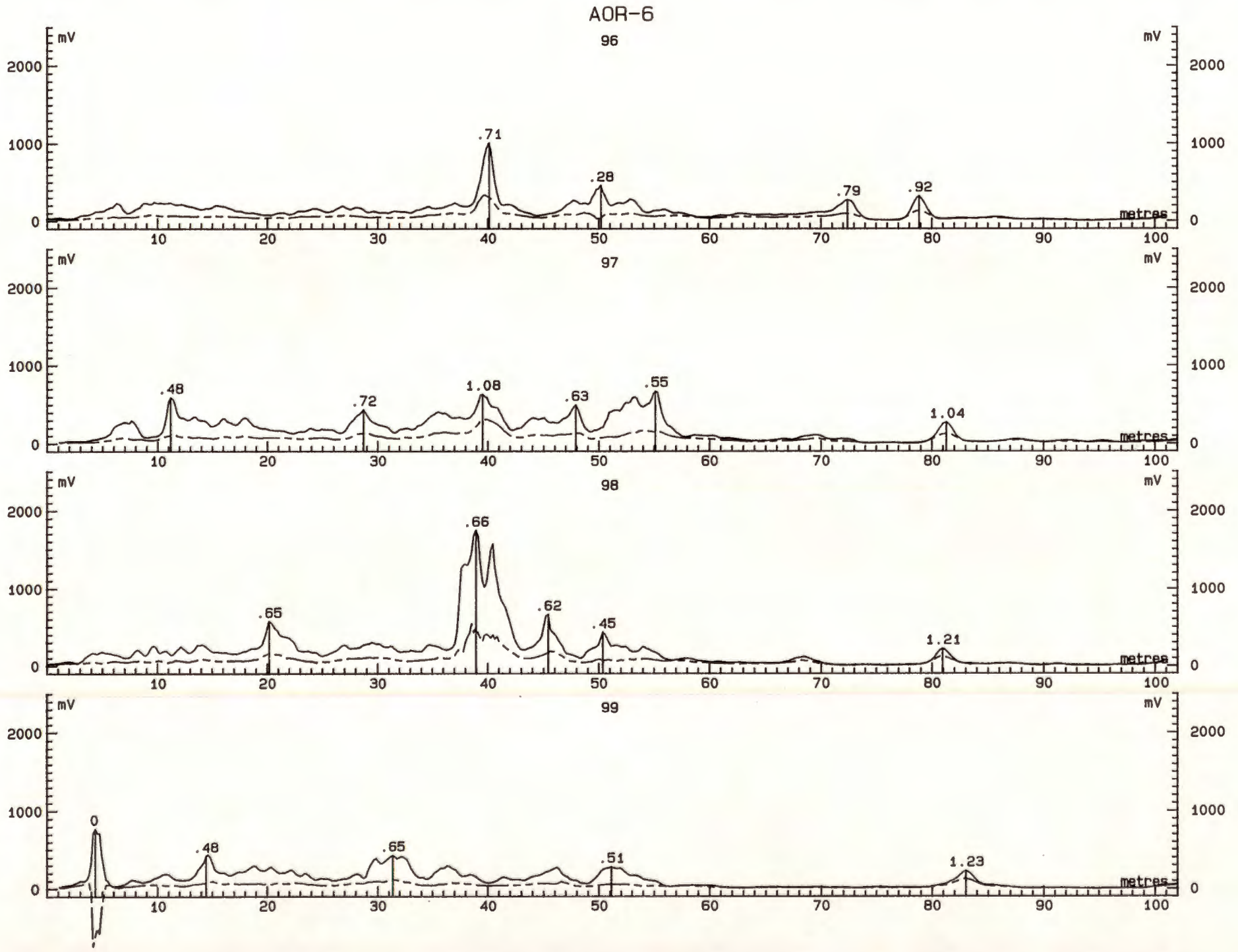
.72
97
.85
1.18
98
1.2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96
mV
2000
1000
0
.71
.28
.79
.92
metres
10
20
30
40
50
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70
80
90
100
97
.48
.72
1.08
.63
.55
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98
.66
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.45
1.21
99
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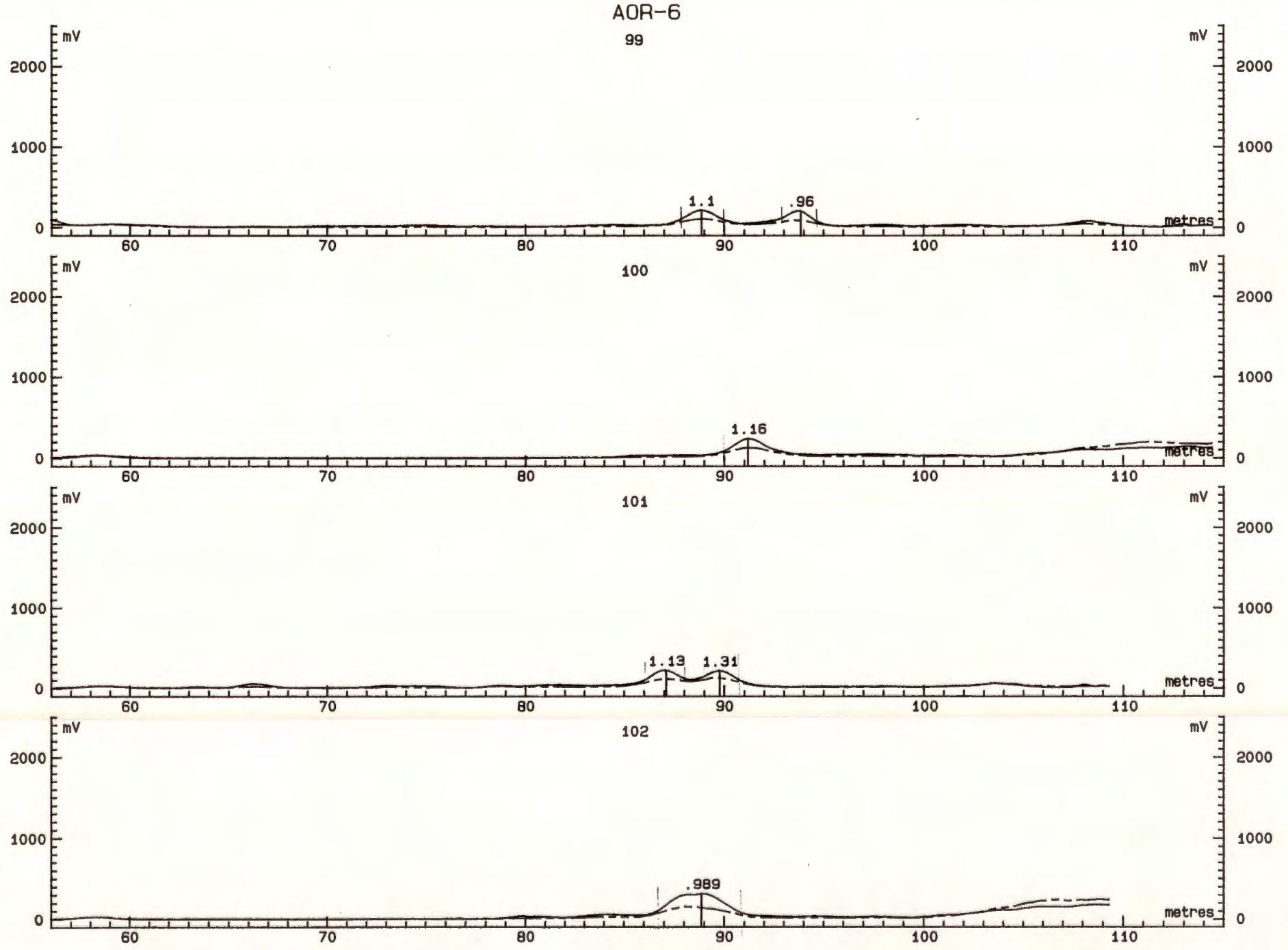
.65
.51
1.23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99
mV
2000
1000
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metres
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70
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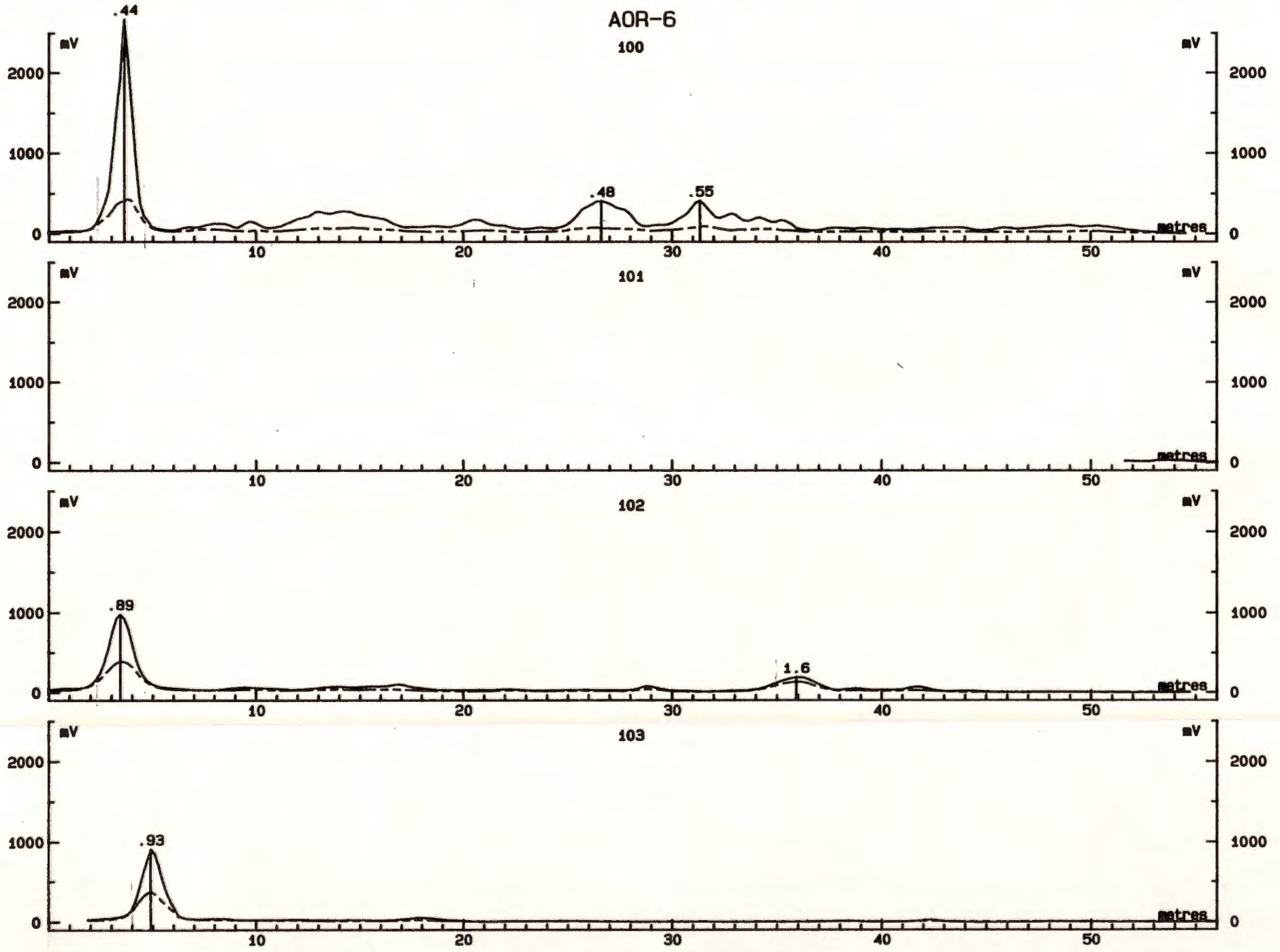
1.16
101
1.13
1.31
102
.989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100
101
102
103
mV
2000
1000
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.55
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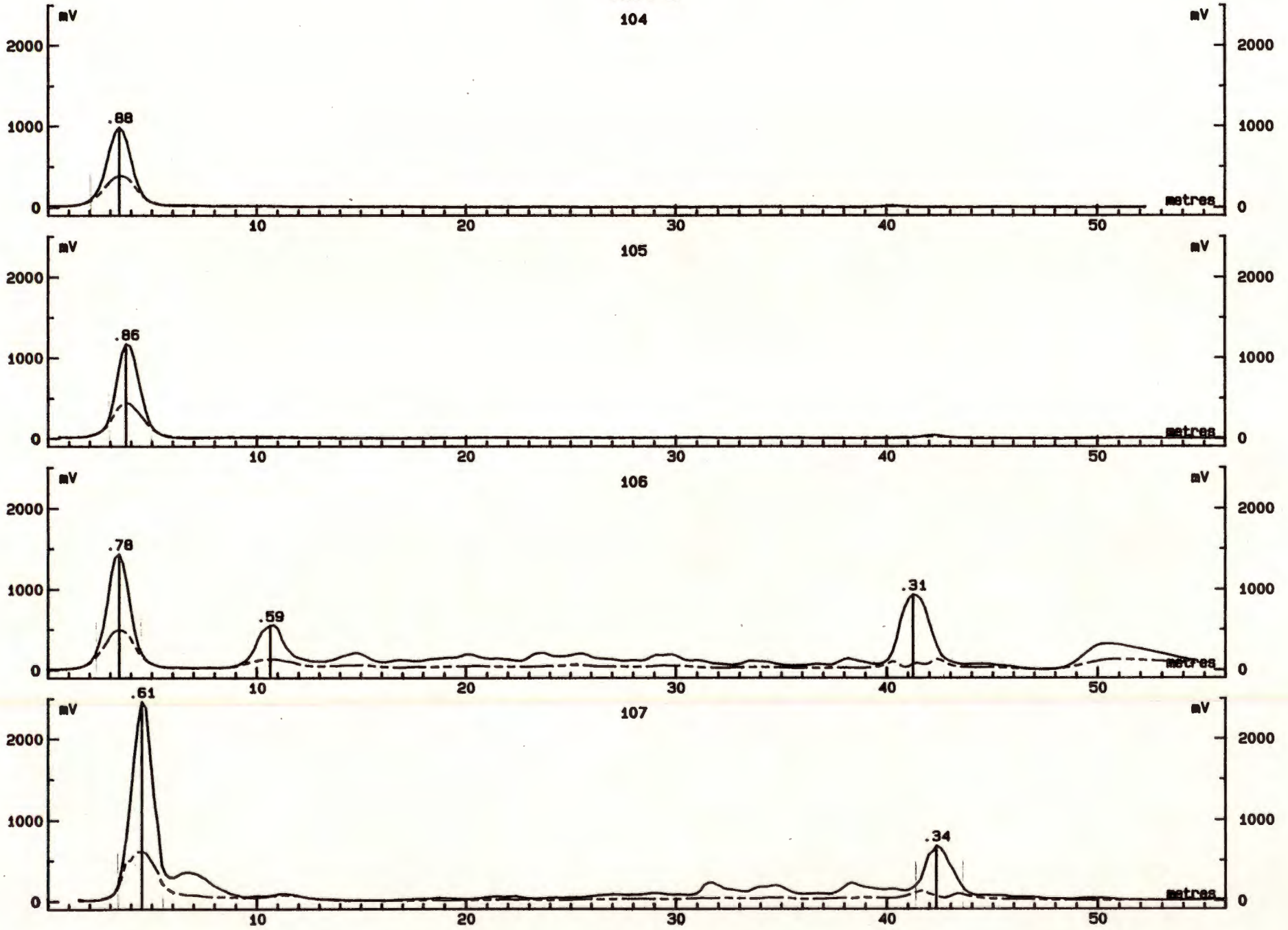
1.6
.93
10
20
30
40
50
metres

AOR-6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0
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metres
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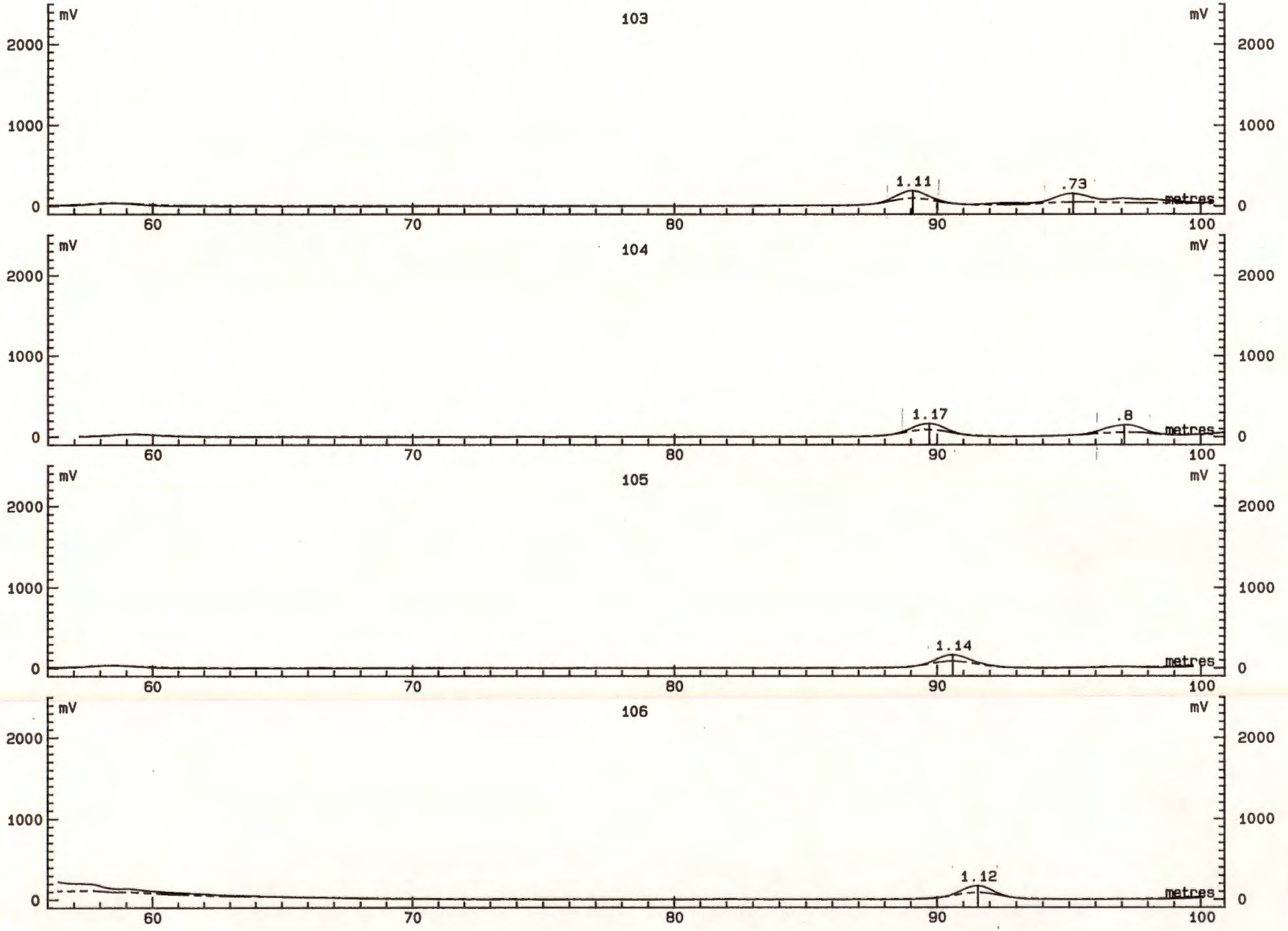
.34

AOR-6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mV
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80
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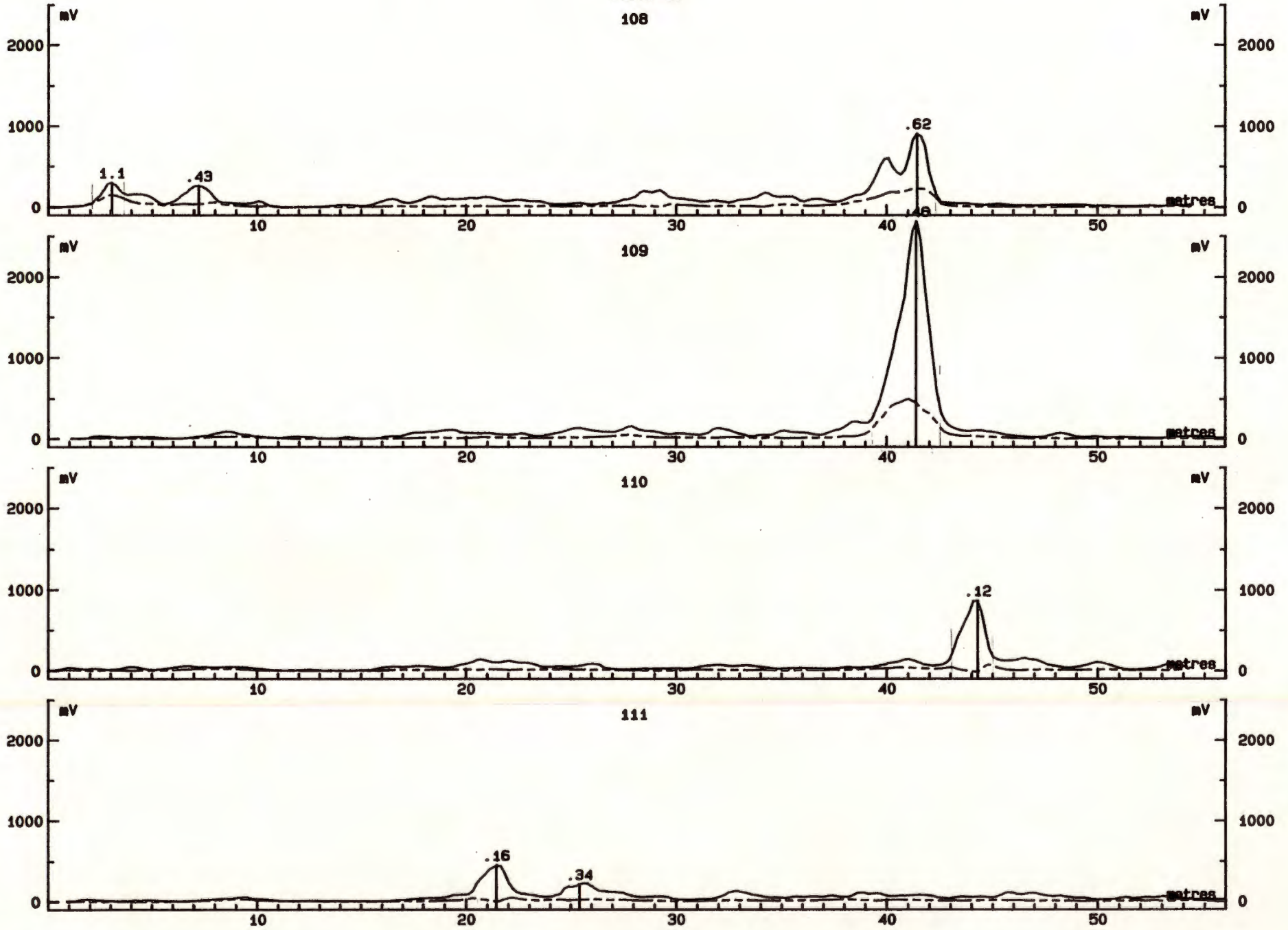
1.11
.73
metres
104
1.17
.8
105
1.14
106
1.12

AOR-6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108
2000
1000
0
1.1
.43
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10
20
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40
50
metres
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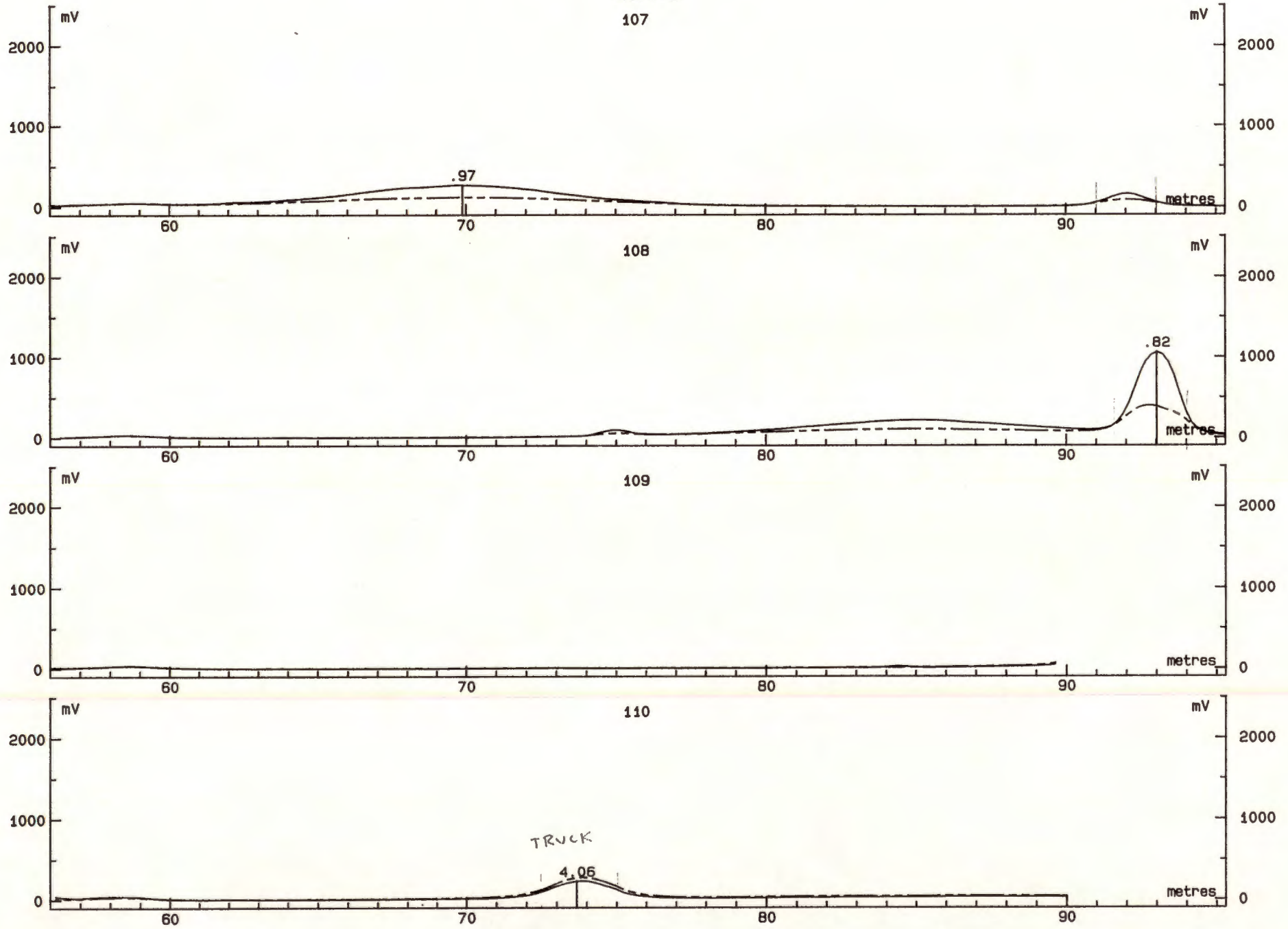
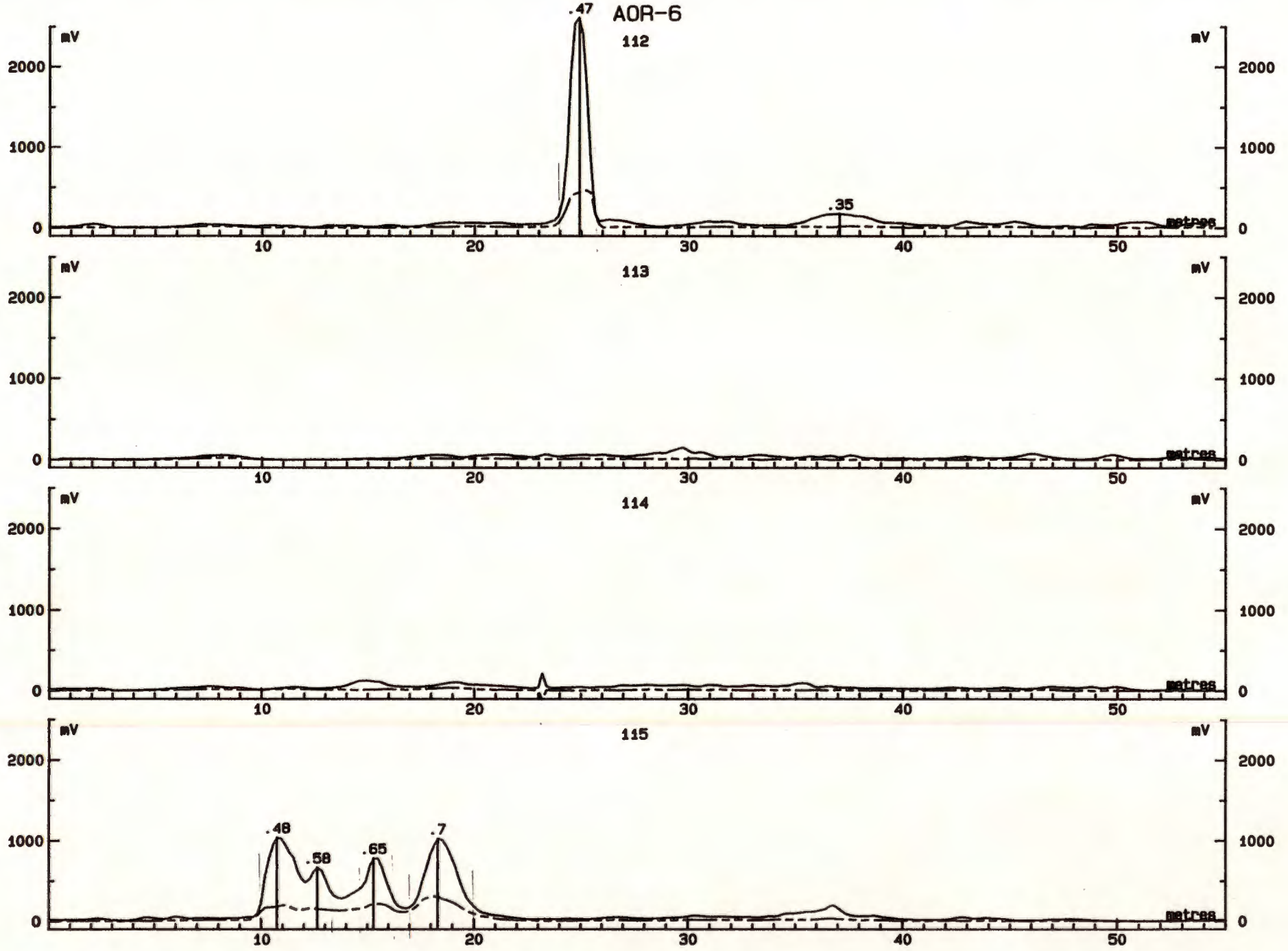
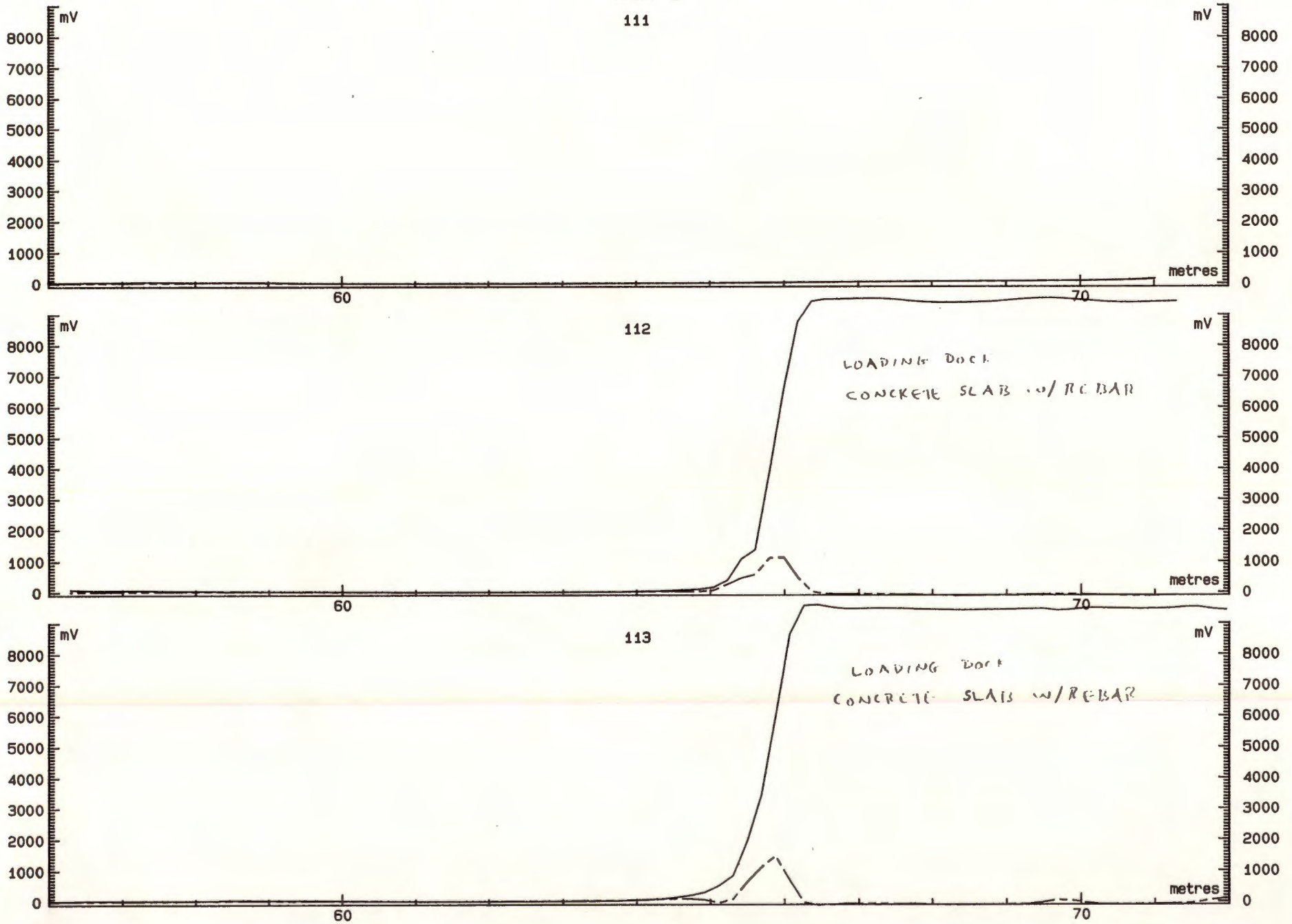
.16
.34

AOR-6

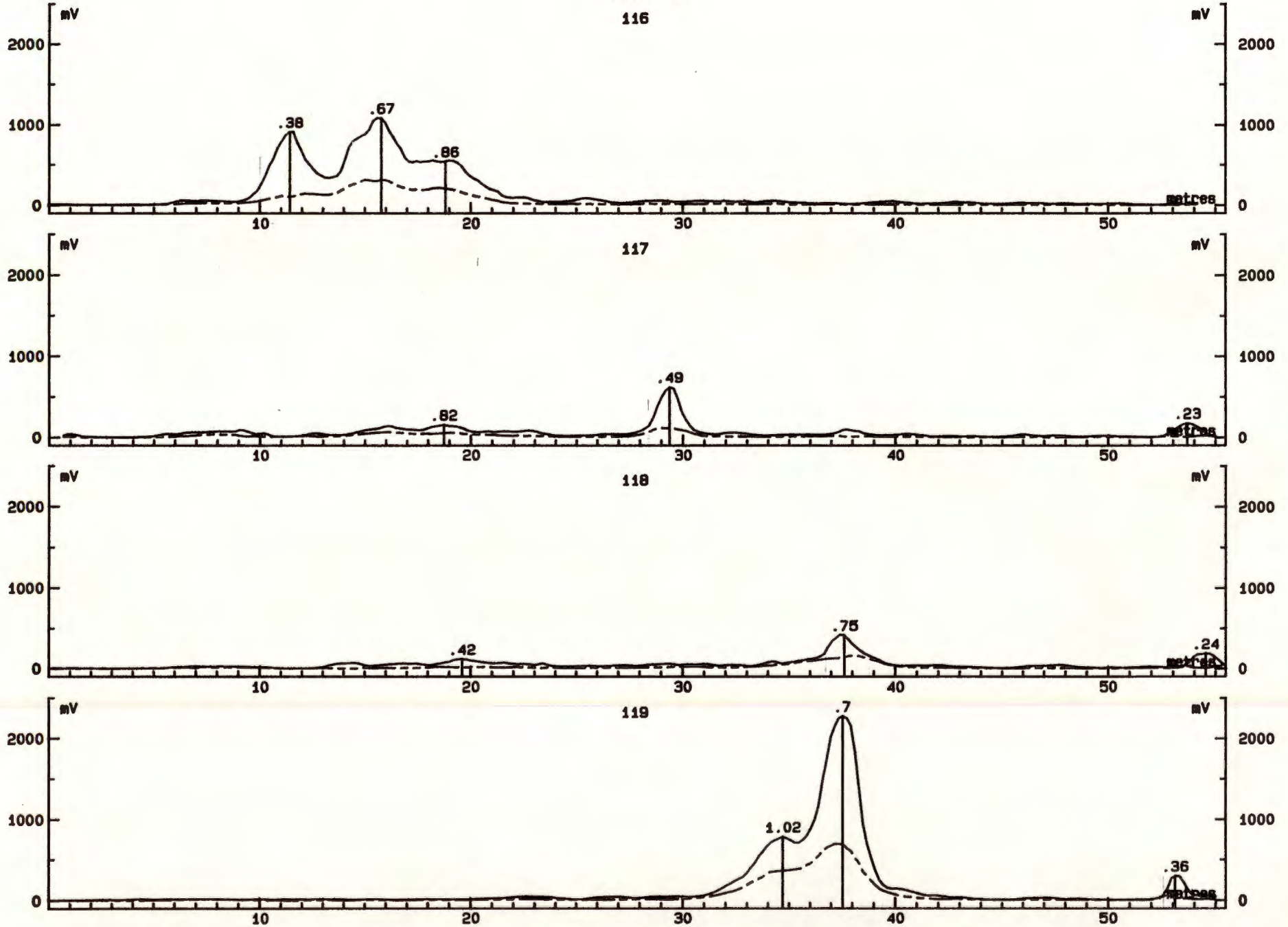



AOR-6
112
113
114
115
mV
2000
1000
0
.47
.35
.48
.58
.65
.7
10
20
30
40
50
metres

AOR-6


111
mV
8000
7000
6000
5000
4000
3000
2000
1000
0
60
70
metres
112
LOADING DOCK
CONCRETE SLAB w/ REBAR
113
LOADING DOCK
CONCRETE SLAB w/REBAR

AOR-6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mV
2000
1000
0
.38
.67
.86
10
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40
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metres
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.49
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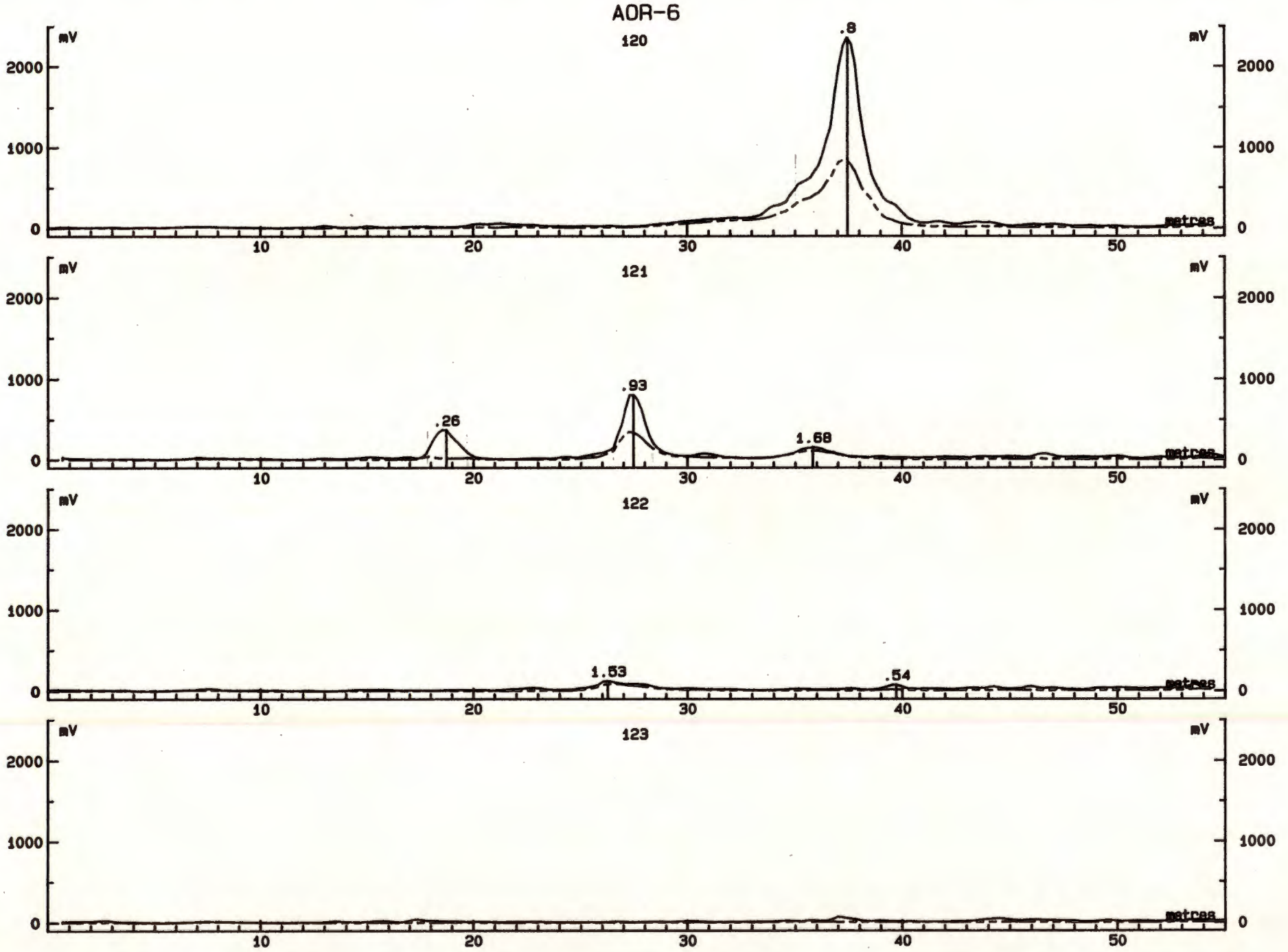
.36


AOR-6
120
.8
121
.26
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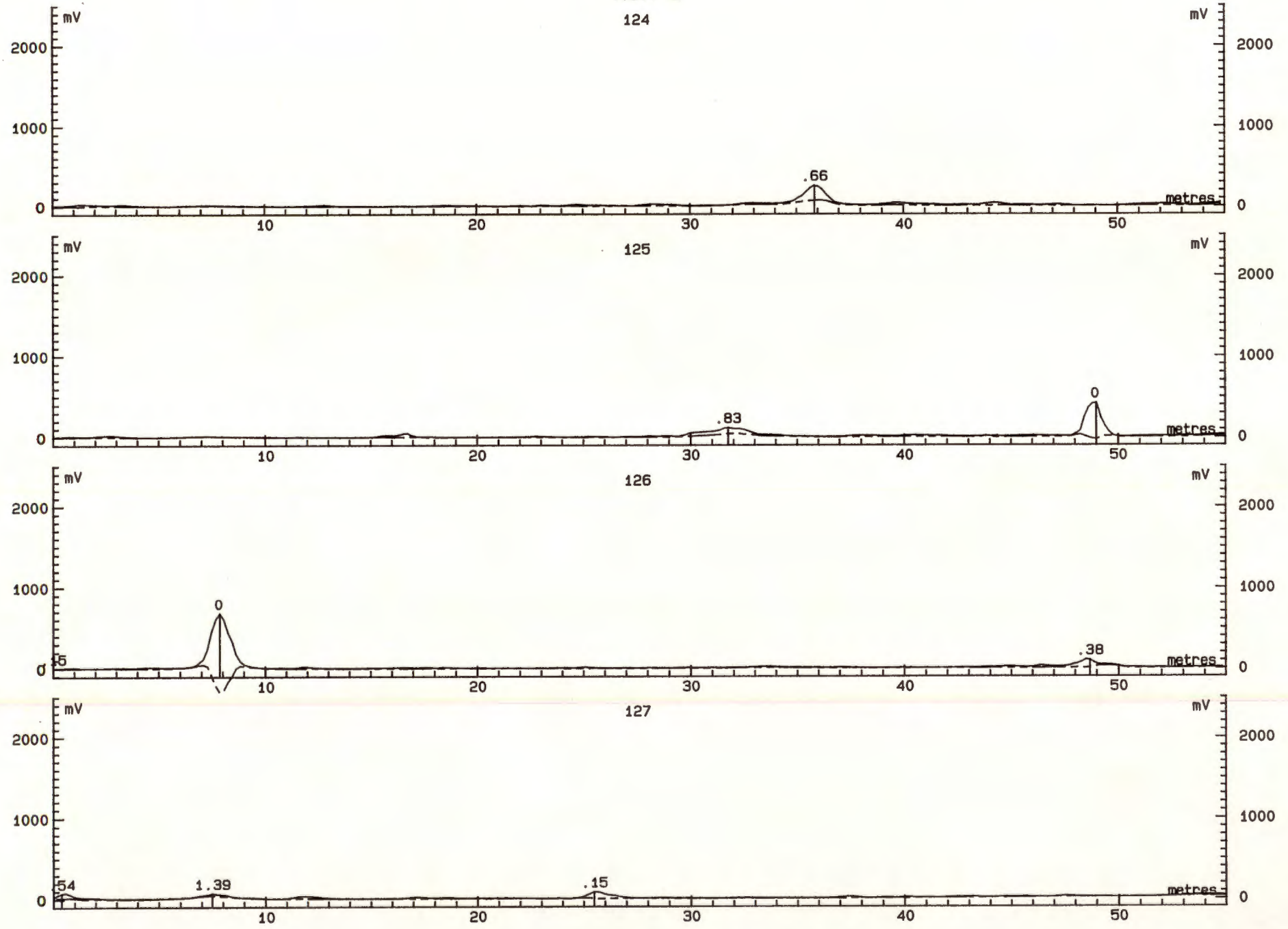
1.68
122
1.53
.54
123
mV
2000
1000
0
10
20
30
40
50
metres

AOR-6


124
mV
2000
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0
.66
metres
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40
50
125
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0
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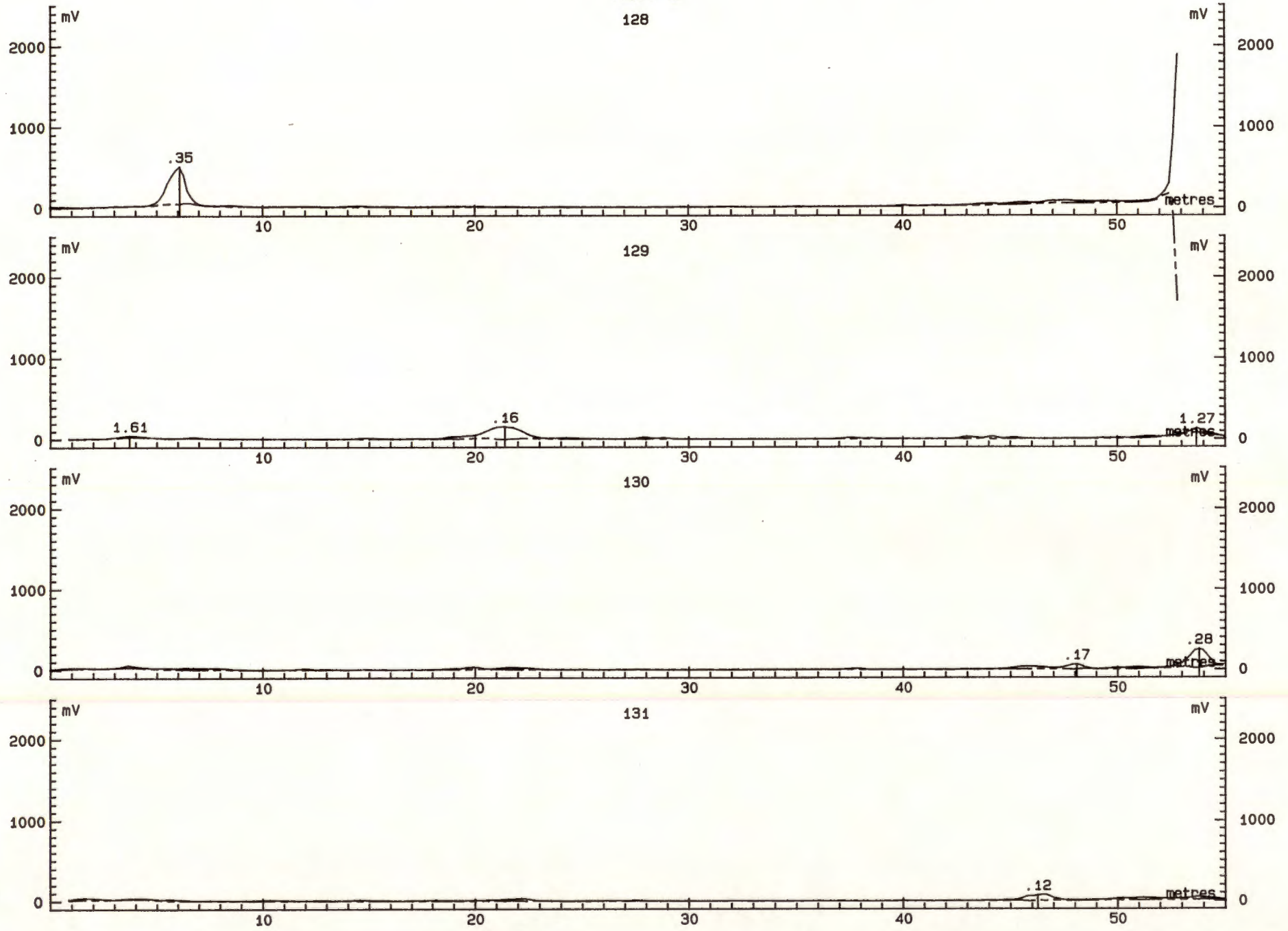
127
.54
1.39
.15

AOR-6


128
mV
2000
1000
0
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10
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30
40
50
metres
129
1.61
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1.27
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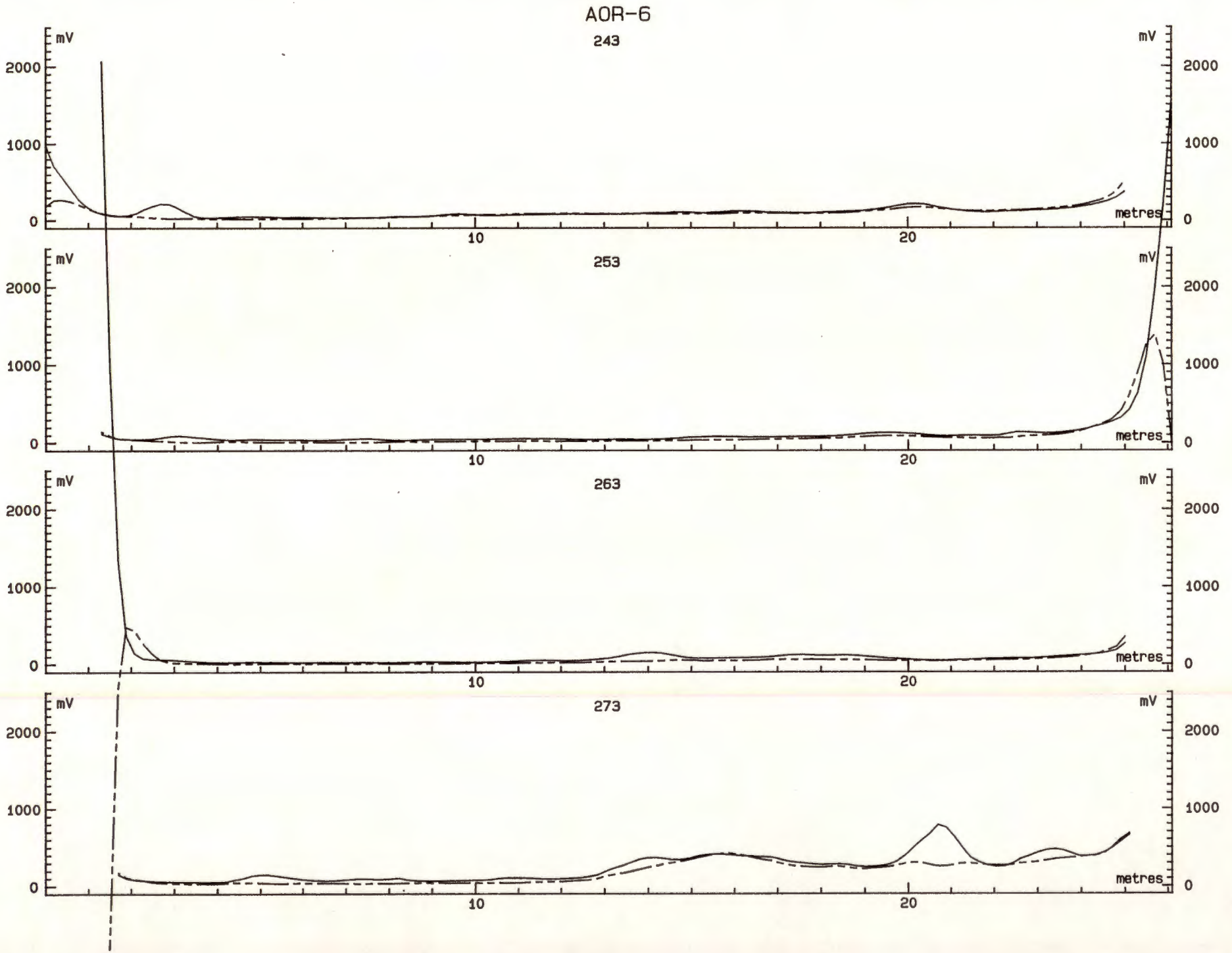
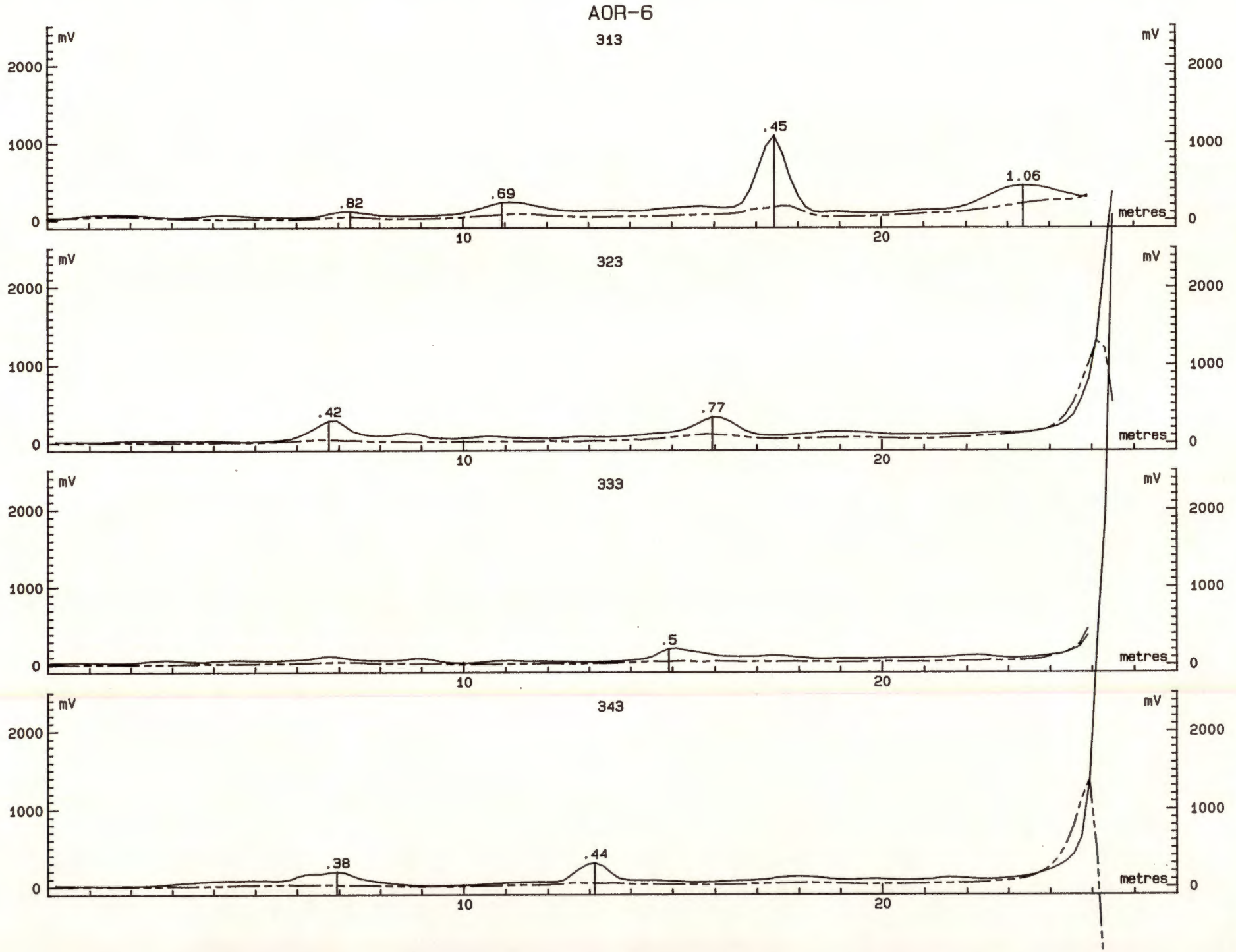
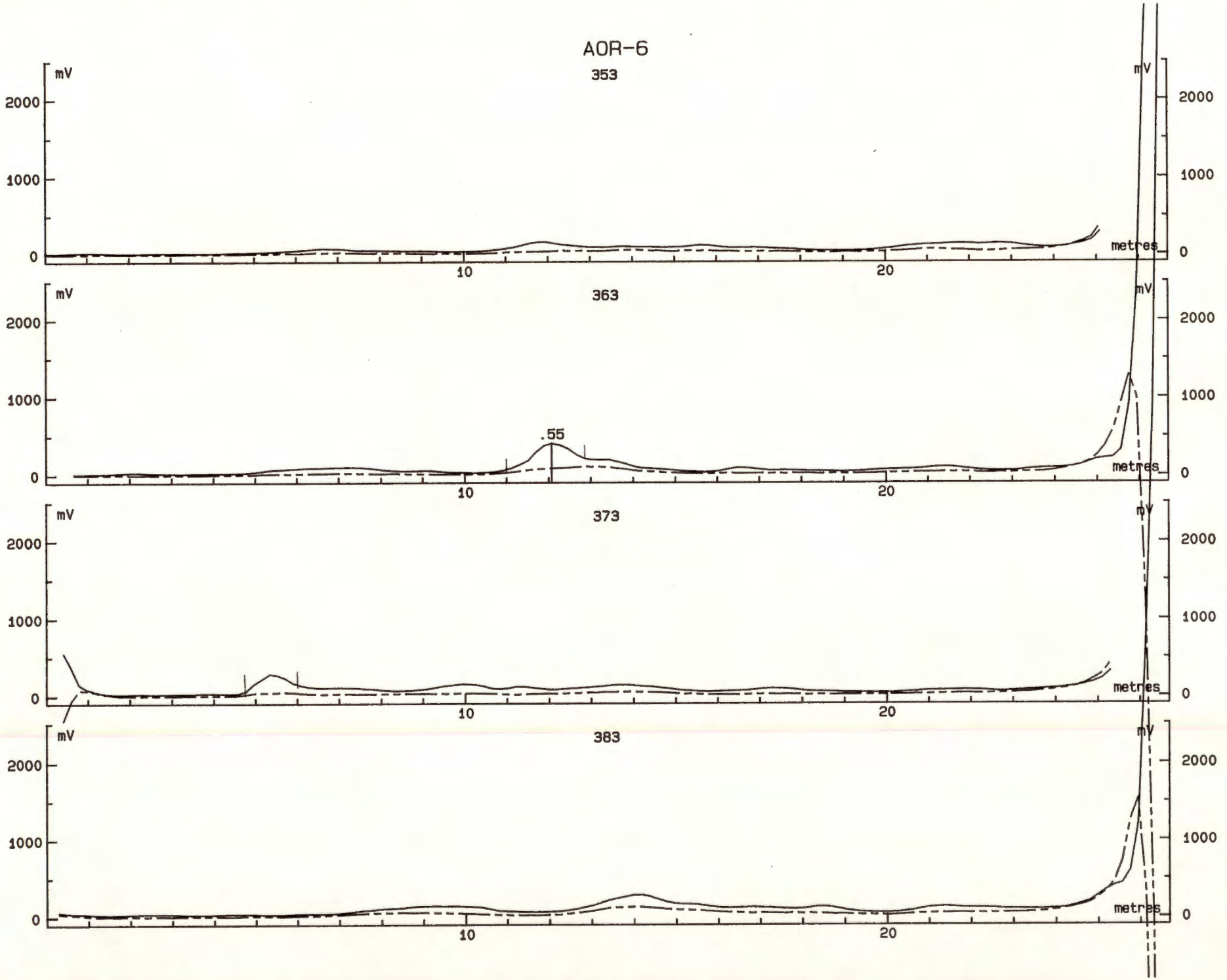
.17
.28
131
.12


AOR-6
243
253
263
273
mV
2000
1000
0
10
20
metres


AOR-6
313
mV
2000
1000
0
.82
.69
.45
1.06
10
20
metres
323
.42
.77
333
.5
343
.38
.44


AOR-6
353
363
373
383
mV
2000
1000
0
10
20
metres
.55

APPENDIX A
SECTION 7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-1 FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 535.0 ft. RCD EXPLORATION DATE: 2 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.5	Brown silty fine SAND and roots. -TOPSOIL-	
2				Brown medium to fine SAND, little silt, with frequent angular cobbles and boulders of dolomite. -FILL-	
3			2.5	Light brown fine SAND, trace medium sand and silt, with debris in Fill from STA.8-25 ft. West, 0.5-4.0 ft. depth, comprised of crumpled barrels, steel pipe, rebar, steel straps, sheet metal. Pieces of asphalt at STA.20 ft. West, 3.0 ft. depth. Layer of wood and roots from 4.0-5.0 ft. depth. Lens at STA.22 ft. West, 3.5 ft. depth and 0.3 ft. thick of dark gray to black silty coarse to fine SAND, PID reading of 15 ppm with fuel-like odor; grab sample S5 in this layer submitted for VOC analysis. (S4 grab sample at STA.16 ft. West, 4 ft. depth beneath sheet metal retained, not analyzed). -FILL-	Trunk of mature tree at STA.5 ft. West is buried in 3 ft. of Fill.
4	S5	3.5			
5			5.0		
6	S3	6.0	6.5	Dark brown fine SAND, little silt and roots, with dark brown SILT and ORGANICS in lens at eastern end of pit from 6.0-6.5 ft. This lens contains occasional pockets of a rubber-like elastic material which has a paint-like odor, PID readings of 40-90 ppm over this material and in the soil immediately surrounding it. S3 grab sample at STA.18-21 ft. West, 6.0 ft. depth in Fill surrounding rubbery material, submitted for VOC, SVOC, and PCB analysis. -DISTURBED ORGANIC/SWAMP DEPOSIT-	PID readings of 0 ppm over spoils and sidewall except where noted in Description of Material.
7					
8				Gray silty fine SAND, with angular cobbles of dolomite near 9.0 ft. depth, sand has cemented zones. S1, S6 composite samples from eastern and western ends of excavation, respectively, in Alluvium (retained, not analyzed).	Collected (and retained) bag sample of rubber-like material.
9			9.0	-DISTURBED ALLUVIUM-	
10				Bottom of Excavation at 9.0 ft., no refusal.	
11				Notes: 1. Excavation backfilled and graded to ground surface. 2. Sample S2 (retained, not analyzed) collected at STA.11 West, 6.0 ft. depth, from Fill.	
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 25 feet WIDTH 4 feet	DEPTH: 9.0
NOT ENCOUNTERED				JAR SAMPLES: S1-S6
			BOULDERS	BAG SAMPLES: B1
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP307-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-2 FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7
ELEVATION: See Remarks
EXPLORATION DATE: 3 Nov. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.8	Dark brown fine sandy SILT. -TOPSOIL-	Elevation (RCD): East end - 534.9 ft. West end - 531.5 ft.
1	S1	1.0-1.5		Light brown silty coarse to fine SAND, with frequent angular cobbles and boulders of dolomite. From STA.0-16 ft. West, trace amounts of porcelain, plastic, asphalt, ashes, carpet and rag fragments, pipes, and tires. From STA.16-37 ft. West, debris present from 0-2 ft. depth is comprised of metal straps, gears, small doors, crumpled drums, electrical wiring, wire screens, brick, glass, aluminum cans, wooden posts, spray paint can, all in dark brown SILT matrix. Crushed barrel at ground surface at STA.16 ft. West, FID reading of 7 ppm from soil beneath drum, slight pesticide-like odor.	
2					
3			3.5	S1 grab sample at STA.16 ft. West, 1.0-1.5 ft. depth in Fill beneath crushed barrel submitted for VOC, SVOC, and PCB analyses. S3 grab sample at STA.23 ft. West, 1.5 ft. in Fill (retained, not analyzed). -FILL-	Except where otherwise noted, FID readings of 0 ppm over spoils and sidewalls, no visual evidence or odor of contamination.
4			4.2	Dark brown SILT with roots. -BURIED TOPSOIL-	
5	S2	5.0		Light brown silty coarse to fine SAND and angular BOULDERS, boulders average 2 ft. x 2 ft. x 1 ft., largest is 3.5 ft. x 5 ft. x 1 ft. -RUBBLE FILL-	Ground surface slopes down aproximately 8 ft. from STA.5-18 ft. West. Buried topsoil layer slopes in similar manner, whereas elevation of top of Alluvium is relatively constant.
6			6.0		
7				Light gray-brown mottled silty fine SAND, trace rootlets in upper 0.6 ft., slightly cemented. S2 grab sample at STA.21 ft. West, 5.0 ft. depth in Alluvium submitted for VOC analysis. -ALLUVIUM-	Depths to strata changes measured at STA.13 ft. West.
8			8.0	Bottom of Excavation at 8.0 ft. depth (deepest), no refusal.	
9				Note: 1. Excavation backfilled and graded to ground surface.	
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 37 feet WIDTH 4 feet	DEPTH: 6.0
NOT ENCOUNTERED				JAR SAMPLES: S1-S3
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 40 = Vol. 50 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. 20 = Vol. 90 cu ft	TEST PIT NO. TP307-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-3 FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7
ELEVATION: 533.7 ft. RCD
EXPLORATION DATE: 3 Nov. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.8	Dark brown fine sandy SILT with roots. -TOPSOIL-	FID readings of 0 ppm over spoils and sidewalls, no visual evidence or odor of contamination.
2	S1-*	1.5		Brown mottled silty medium to fine SAND, trace gravel, trace ash and brick particles, grading to light brown silty coarse to fine SAND. Piece of metal lid at STA.8 ft. West, 0.5 ft. depth. Cement and mortar at STA.10 ft. West, 3 ft. depth. Concrete slab, 7 ft. x 2 ft. x 0.5 ft. at STA.13 ft. West, 1.0 ft. depth. -FILL-	
3			3.2		
			3.3	ROOTS. -BURIED TOPSOIL-	
4				Light brown silty coarse to fine SAND matrix with angular cobbles and boulders of dolomite. -RUBBLE FILL-	
5			5.5	Brown fine sandy SILT and Roots. -BURIED TOPSOIL-	
6	S1-VOC	6.0	6.0	Gray mottled silty fine SAND and fine sandy SILT. -ALLUVIUM-	
7			6.5	Bottom of Excavation at 6.5 t. depth, no refusal.	
8				Notes: 1. Excavation backfilled and graded to ground surface. 2. S1 grab sample at STA.12 ft. West, 6 ft. depth in Alluvium submitted for VOC analysis, S1 composite sample (S1-*) at STA.12 ft. West, 1.5 ft. depth in Fill beneath slab submitted for SVOC and PCB analyses.	
9					
10					
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTERED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 13 feet WIDTH 3 feet

BOULDERS

8" to 18" DIAMETER: No. 12 = Vol. 10 cu ft

Over 18" DIAMETER: No. = Vol. cu ft

SUMMARY

DEPTH: 6.5
JAR SAMPLES: S1
BAG SAMPLES: ---
WATER LEVEL: NE
TEST PIT NO. TP307-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-4 FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 535.5 ft. RCD EXPLORATION DATE: 4 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.5	Dark brown SILT with roots. -TOPSOIL-	
2				Brown mottled silty medium to fine SAND, little organics, with debris comprised of pieces of asphalt (from STA.6-10 ft. East, 0-1.5 ft. depth), crushed metallic basin, scrap metal, rebar, metal strapping, metal foil, steel pipes, spray paint can, and pieces of clay pipe. Crushed drum at surface at STA.32 ft. East, contains cinders and metallic debris. S1 grab sample at STA.4 ft. East, 0.5-1.5 ft. depth in fill beneath metallic basin (retained, not analyzed). -FILL-	Except where otherwise noted, FID readings of 0 ppm over spoils and sidewalls, and no visual evidence or odor of contamination.
3			3.0		
4	S2	3.5	4.2	Dark gray SILT, little medium to fine sand and clay, with crushed stone and frequent angular cobbles and small boulders. FID reading of 0-2 ppm over spoils in this layer. S2 grab sample at STA.5 ft. East, 3.5 ft. depth in Fill submitted for VOC, SVOC, and PCB analyses.	
5	S3	5.0		Brown silty coarse to fine SAND, trace clay, with angular cobbles and small boulders. FID reading of 1-2 ppm over spoils, slight BTEX-like odor. -FILL- S3 grab sample at STA.11 ft. East, 5.0 ft. depth in Fill submitted for VOC, SVOC, and PCB analyses.	Fill is moist from 2.5-3.0 ft. depth.
6			6.3	Dark gray and brown clayey SILT with trace organics, trace to little sand and angular gravel. -FILL-	Layer with crushed stone from 3.0-4.2 ft. depth becomes shallower at STA.30 ft. East, intersects ground surface at STA.36 ft. East.
7					
8			8.3	Gray silty fine SAND. -ALLUVIUM-	
9			9.0	Bottom of Excvation at 9.0 ft., no refusal.	
10				Note: 1. Excavation backfilled and graded to ground surface.	
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 45 feet WIDTH 3 feet	DEPTH: 9.0
NOT ENCOUNTERED				JAR SAMPLES: S1-S3
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 10 = Vol. 8 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP307-4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1N FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 536.3 ft. RCD EXPLORATION DATE: 1 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			1.0	Brown gravelly coarse to fine SAND, with concrete slabs at 0.5 ft. depth in eastern end of pit, and pocket of crushed stone 4 ft. wide from 0-2.0 ft. depth in eastern end of pit with perched water. -FILL-	
2				Light brown silty coarse to fine SAND, with piece of clay pipe at 3.0 ft. -FILL-	
3	S1, S2, S3	NOTED AT RIGHT	3.0	Dark brown SILT, little clay, trace gravel, with pockets of gray SILT, trace ashes. -FILL-	FID reading of 15-20 ppm over sidewall from 3.0-4.0 ft. depth, with sharp BTEX-type odor, and slight sheen from water in contact with spoils.
4			3.8	S1 composite sample from 2.3 ft., 3.0 ft., 3.5 ft., and 4.0 ft. depth submitted for SVOC and PCB analyses. S2 grab sample from 3.0-3.8 ft. in silt Fill submitted for VOC analysis.	
5				Light brown silty coarse to fine SAND with frequent angular dolomite cobbles and boulders. S3, grab sample from 3.8 ft. depth in sand Fill submitted for VOC analysis.	
6					
7					FID reading of 0 ppm over spoils below 7.0 ft. depth, no visual evidence or odor of contamination from spoils at this depth.
8			7.5 8.2	Black ASH and CINDERS. -FILL- S4 grab sample of occasional black, tacky material from 3.8 and 8.0 ft. depth (retained, not analyzed).	
9			8.5	Gray mottled clayey SILT, trace organics. -ALLUVIUM-	
10				Bottom of Excavation at 8.5 ft. depth, no refusal.	
11				Note: 1. Excavation backfilled and graded to ground surface.	
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 16 feet WIDTH 3 feet	DEPTH: 8.5
NOT ENCOUNTERED				JAR SAMPLES: S1-S4
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. 10 = Vol. 7 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP15-1N

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1E FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 535.3 ft. EXPLORATION DATE: 2 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.8	Brown fine sandy SILT and roots. -TOPSOIL-	PID readings 0 ppm over spoils and sidewalls, no visual evidence or odor of contamination.
				Brown fine sandy SILT, trace gravel, concrete slab from 0.8-1.4 ft. depth. -FILL-	
2			2.1		Perched water infiltrated from rain on 1 November 1994.
			2.5	Gray fine GRAVEL; layer dips from east to west in walls of excavation, perched water flows from eastern sidewall. -FILL-	
3				Gray interbedded fine sandy SILT and GRAVEL, with layer of gray fine GRAVEL from 5.2-5.5 ft. steel pole and concrete base at 6.0 ft. -FILL-	
4	S1	3.5		S1 grab sample at 3.5 ft. depth in Fill submitted for VOC, SVOC, and PCB analyses.	
5				S2 grab sample at 6.0 ft. depth, (retained, not submitted for analysis).	
6			6.2		
			6.5	Gray silty fine SAND, with seam of black SILT and Organics from 6.0-6.2 ft. -ALLUVIUM-	
7				Bottom of Excavation at 6.5 ft. depth, no refusal.	
8					
9				Note:	
10				1. Excavation backfilled and graded to ground surface.	
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 12 feet WIDTH 3 feet	DEPTH: 6.5
NOT ENCOUNTERED				JAR SAMPLES: S1, S2
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP15-1E

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1W FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 536.2 ft. RCD EXPLORATION DATE: 1 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Brown silty coarse to fine SAND, little gravel, frequent cobbles. -FILL-	FID reading of 50 ppm over sidewalls at 2.0 ft. depth., sharp BTEX-type odor.
			1.5		
2	S1	2.0		Black to dark gray silty coarse to fine SAND and crushed stone, little organics. S1 grab sample at 2.0 ft. depth submitted for VOC, SVOC, and PCB analyses. -FILL-	FID reading of 4-7 ppm over spoils from 3.0-5.0 ft. depth.
3			3.0		
4				Dark gray and light brown silty fine SAND, little gravel, frequent cobbles and occasional tabular boulders. S2 composite sample from 3.5 ft., 4.5 ft., 5.0 ft., and 6.0 ft. depth. S3 grab at 5.0 ft. in Fill submitted for VOC analysis. S5 grab at 3.5 ft. depth.	
5	S3	5.0		-FILL-	
6					
			6.5		
7				Gray mottled clayey SILT and dark brown SILT, little organics. S6 grab sample at 7.0-8.0 ft. depth. -ORGANIC/SWAMP DEPOSIT-	FID reading of 10 ppm average, possibly from methane, over spoils from 7.0-8.5 ft. depth; no visual evidence or odor of contamination from spoils from 6.5-8.5 ft. depth.
8			8.0		
			8.5	Gray fine sandy SILT. S4 composite sample from 8.0-8.5 ft. depth. -ALLUVIUM-	
9				Bottom of Excavation at 8.5 ft. depth, no refusal.	
10				Note: 1. Excavation backfilled and graded to ground surface.	
11				2. Samples S2, S4, S5, and S6 retained, not analyzed.	
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 13 feet WIDTH 5 feet	DEPTH: 8.5
NOT ENCOUNTERED				JAR SAMPLES: S1-S6
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP15-1W

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1W2 FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 534.9 ft. RCD EXPLORATION DATE: 10 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Dark brown silty medium to fine SAND, trace clay and organics. -FILL-	FID reading of 100 ppm at 2.0 ft. depth, with sharp BTEX-type odor. FID reading of 0 ppm from sidewall beyond STA.15.5 ft. West at 1.5-3.5 ft. depth. No visual evidence or odor of contamination from sidewalls beyond STA.15.5 ft. West.
			1.6		
2	S1	2.0		Dark gray silty coarse to fine SAND, little gravel, with crushed stone layer, layer pinches out at STA.15.5 ft. West, which is 1.0 ft. east of western end of pit. S1 grab sample at STA.3 ft. West, 2.0-2.5 ft. depth, submitted for VOC, SVOC, and PCB analyses.	
	S2	2.0-2.5			
3			3.0	S2, grab sample at STA.18 ft. West, 2.0 ft. depth submitted for VOC analysis.	
4			4.0	Brown silty medium to fine SAND, trace clay. -FILL-	
				Bottom of Excavation at 4.0 ft. depth, no refusal.	
5				Notes: 1. Excavation backfilled and graded to ground surface. 2. Excavation performed to determine lateral extent to west of layer of contaminated soil encountered at depth of 2. 0 feet in Test pit TP15-1W.	
6					
7					
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 20 feet WIDTH 4 feet	DEPTH: 4.0
NOT ENCOUNTERED				JAR SAMPLES: S1, S2
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP15-1W2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1S FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7
ELEVATION: 536.3 ft. RCD
EXPLORATION DATE: 2 Nov. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1			0.8	Dark brown clayey SILT with roots. -TOPSOIL-	Reinforced concrete slabs, 7 inches thick and averaging 3 ft. x 5 ft. at 1.5-2.0 ft. depth occur on north side of TP15-1S.
				Light brown mottled silty coarse to fine SAND, little gravel. -FILL-	
2	S1	2.0 2.6	2.0 2.6	Dark gray SILT and fine gravel-sized crushed stone, perched water at 2.6 ft. depth. -FILL- S1 grab sample from 2.0-2.6 ft. depth in Fill submitted for VOC analysis.	PID reading of 40 ppm maximum over fill in sidewalls from 2.0-2.6 ft. depth, with sharp BTEX-type odor from this horizon.
3	S4	3.0			
4	S4	4.0		Light brown fine sandy SILT, trace gravel, with occasional angular cobbles and boulders. -FILL- S4 composite at 3 ft., 4 ft., 5.5-6.0 ft. depth submitted for SVOC and PCB analyses.	PID reading of 3 ppm maximum over fill spoils from 3.0-5.5 ft. depth.
5					
6	S4	5.5-6.0	5.5	Angular dolomite cobbles and boulders in brown fine sandy SILT matrix. -FILL-	
7					
8			7.5	Dark brown to black silty fine SAND, little organics, trace ash particles.	
9			8.3 8.5	S3 grab sample from 7.5-8.3 ft. depth in Fill (sample retained, not analyzed).	
10				Gray fine sandy SILT. S2 grab sample at 8.5 ft. depth in Alluvium (sample retained, not analyzed). -ALLUVIUM-	
11				Bottom of Excavation at 8.5 ft., no refusal.	
12				Note: 1. Excavation backfilled and graded to ground surface.	
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTERED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 13 feet WIDTH 5 feet

BOULDERS

8" to 18" DIAMETER: No. 10 = Vol. 7 cu ft

Over 18" DIAMETER: No. = Vol. cu ft

SUMMARY

DEPTH: 8.5
JAR SAMPLES: S1-S4
BAG SAMPLES: ---
WATER LEVEL: NE
TEST PIT NO. TP15-1S

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1S2 FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 536.1 ft. RCD EXPLORATION DATE: 10 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Brown silty medium to fine SAND. -FILL-	
2			2.0		
	S1	2.4		Dark gray silty coarse to fine SAND and GRAVEL, with crushed stone. This layer pinches out at STA.7.0 ft. South of TP15-1S. S1 grab sample at STA.8.0 ft. South, 2.4 ft. depth submitted for VOC analysis.	FID reading of 100 ppm from sidewalls from 2.0-3.0 ft. depth, with sharp BTEX-type odor. FID reading of 0 ppm from sidewall beyond STA.7 ft. South at 2.0-3.0 ft. depth.
3			3.0		
			3.5	Brown silty medium to fine SAND.	
4				Bottom of Excavation at 3.5 ft. depth, No Refusal	
5				Notes: 1. Excavation backfilled and graded to ground surface. 2. Excavation performed to determine lateral extent to south of layer of contaminated soil encountered at depth of 2.0-2.6 ft. in Test Pit TP15-1S.	No visual evidence or odor of contamination from side walls beyond STA.7.0 ft. South.
6					
7					
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10 feet WIDTH 3 feet	DEPTH: 3.5
NOT ENCOUNTERED				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP15-1S2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP15-1SW FILE NO. 70436-107

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: PENNSYLVANIA DRILLING EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 ELEVATION: 536.1 ft. RCD EXPLORATION DATE: 10 Nov. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Large concrete slabs and piles of waste concrete from 0.0-1.5 ft. depth. -FILL-	
			1.5		
2				Brown mottled silty coarse to fine SAND. -FILL-	
	S1	2.3	2.5		
3			3.0	Dark gray silty coarse to fine SAND and GRAVEL, with crushed stone. This layer pinches out at STA.20 ft. southwest; it is continuous from TP15-1S, and appears to be absent in the southern sidewall of the excavation. -FILL- S1 grab sample at STA.22 ft. southwest, 2.3 ft. depth, submitted for VOC analysis.	FID reading of 350 ppm from sidewalls from 2.5-3.0 ft. depth, sharp BTEX-type odor. FID readings and odor diminish southwest of STA.20 ft. SW.
4			4.0		
5				Light brown fine sandy SILT. -FILL-	
6				Bottom of Excavation at 4.0 ft. depth, no refusal.	
7				Note: 1. Excavation backfilled and graded to ground surface. 2. Excavation performed to determine lateral extent to southwest of layer of contaminated soil encountered at depths of 2.0 to 2.6 ft. in Test pits TP15-1W and TP15-1S.	
8					
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 24 feet WIDTH 4 feet	DEPTH: 4.0
NOT ENCOUNTERED				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: ---
			8" to 18" DIAMETER: No. = Vol. cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft	TEST PIT NO. TP15-1SW

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. MW307-1

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-103
SHEET NO. 1 OF 3
LOCATION: AOR 7

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	---	NX
INSIDE DIAMETER (IN)	4 1/4	---	3.0
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: 5 7/8 in. tricone
DRILL MUD: ---
OTHER:

ELEVATION: 531.00 ft.
DATUM: RCD
START:
FINISH:
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						Advanced augers through overburden to top of bedrock at 13.5 ft. without sampling. See Core Boring Report.
10						Apparent top-of-rock at 13.5 ft. Begin Coring at 13.5 ft.
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): ---
ROCK CORED (LIN FT): ---
SAMPLES: 0S, 4R

BORING NO. MW307-1

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. MW307-1 FILE NO. 70436-103 SHEET NO. 2 OF 3

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
							Begin Coring at 13.5 ft.
	0.5	13.5				13.5	Slightly weathered light gray fine grained medium to thin-bedded siliceous DOLOSTONE with moderate to very closely spaced argillaceous shale partings. -LOCKPORT DOLOMITE- (PENFIELD DOLOSTONE MEMBER)
15	1	R1	45	94	SL		
	1		33	69			
	1	17.5					
	0.5/0.5	17.5					Medium gray, fine-grained, medium to thin-bedded, siliceous DOLOSTONE, with dark gray to black, moderately closely to closely spaced argillaceous partings. -DECEW DOLOSTONE-
	1						
20	1	R2	83	99	SL		
	1		80	95			
	1						
	1						
	1	24.5					
	0.5/0.5	24.5					
25	1						
	1						
	1						
	1	R3	120	100	SL		
	1		100	92		29.1	Light to dark gray, fine grained thin bedded argillaceous DOLOSTONE, with moderately closely spaced argillaceous partings. -ROCHESTER SHALE- (GATES DOLOSTONE MEMBER)
30	1						
	1						
	1						
	1	34.5					
	0.5/0.5	34.5					
35	1	R4	43	102	SL		Same with secondary gypsum partings at 34.8 and 35.8 ft.
	1		37	88			
	1	38.0					
							Bottom of Boring at 38.0 ft.
40							Notes: 1. After completion of R1 reamed corehole and installed 4-inch-diameter black-iron pipecasing to 17.5 ft. 2. Noted 200 gallons of water lost during drilling. 3. H&A representative monitored the work area for volatiles using a Photovac Microtip PID. All readings were non-detect. 4. See Well Completion Report.
45							

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	BEDROCK MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: P. WADDELL RIG TYPE: MOBILE DRILL B-57 TRUCK MOUNT
INSTALLATION DATE: 10 NOVEMBER 1994

FILE NO.: 70436-107
WELL NO.: MW307-1
LOCATION: AOR-7, See Plan
SHEET: 3 OF 3
INSPECTOR: D. Nostrant

Survey Datum RCD

Ground Elevation: 531.00 ft.

SUMMARIZED SOIL CONDITIONS

- -CEMENT- 2.88
- -OVERBURDEN- 13.5
- -CEMENT BENTONITE GROUT- 17.5
- -PENFIELD DOLOSTONE- 17.5
- -DECEW DOLOSTONE- 29.1
- -ROCHESTER SHALE- (GATES MEMBER) 39.88

Depth/Stickup above ground surface of protective casing.	2.11 ft.
Depth/Stickup above ground surface of well casing.	1.94 ft.
Thickness of Surface Seal	2.88 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	6.0 in.
Depth of Bottom of Protective Casing	2.88 in.
Inside Diameter of Well Casing	4.0 in.
Type of Backfill Around Casing	Cement/Bentonite Grout
Diameter of Borehole	8.0 in.
Depth of Top of Bedrock	13.5 ft.
Elevation/Depth of Bottom of Casing	17.5 ft.
Diameter of Open Rock Hole	3.0 in.
Depth of Bottom of Open Rock Hole	39.88 ft.

Method and Materials used to grout casings: A cement/bentonte grout mix consisting of 1 bag portland cement, 5 lbs. of powdered bentonite mixed with 7.5 gallons of potable water was used to grout the well casing. A packer was inflated 1.0 ft. from the bottom of the well casing and the grout mix was injected through the packer until the mix was observed in the annulus between the borehole and the well casing at ground surface.

Remarks:

Well No. MW307-1

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-307-1	TOP OF OUTER CASING ELEVATION: 533.11 TOP OF INNER RISER ELEVATION: 532.94	FILE NO. 70436-107 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/10/94				515.03	Well installed (developed 11/11/94).	DMN
12/20/94			27.73	505.21	Bottom Depth 39.88 ft.	DMN
1/13/95	1120		27.60	505.34		DMN
2/20/95			24.35	508.59		DMN/SHP
2/23/95	1300		25.44	507.50		DMN/SHP
6/27/95			21.01	511.93		DMN

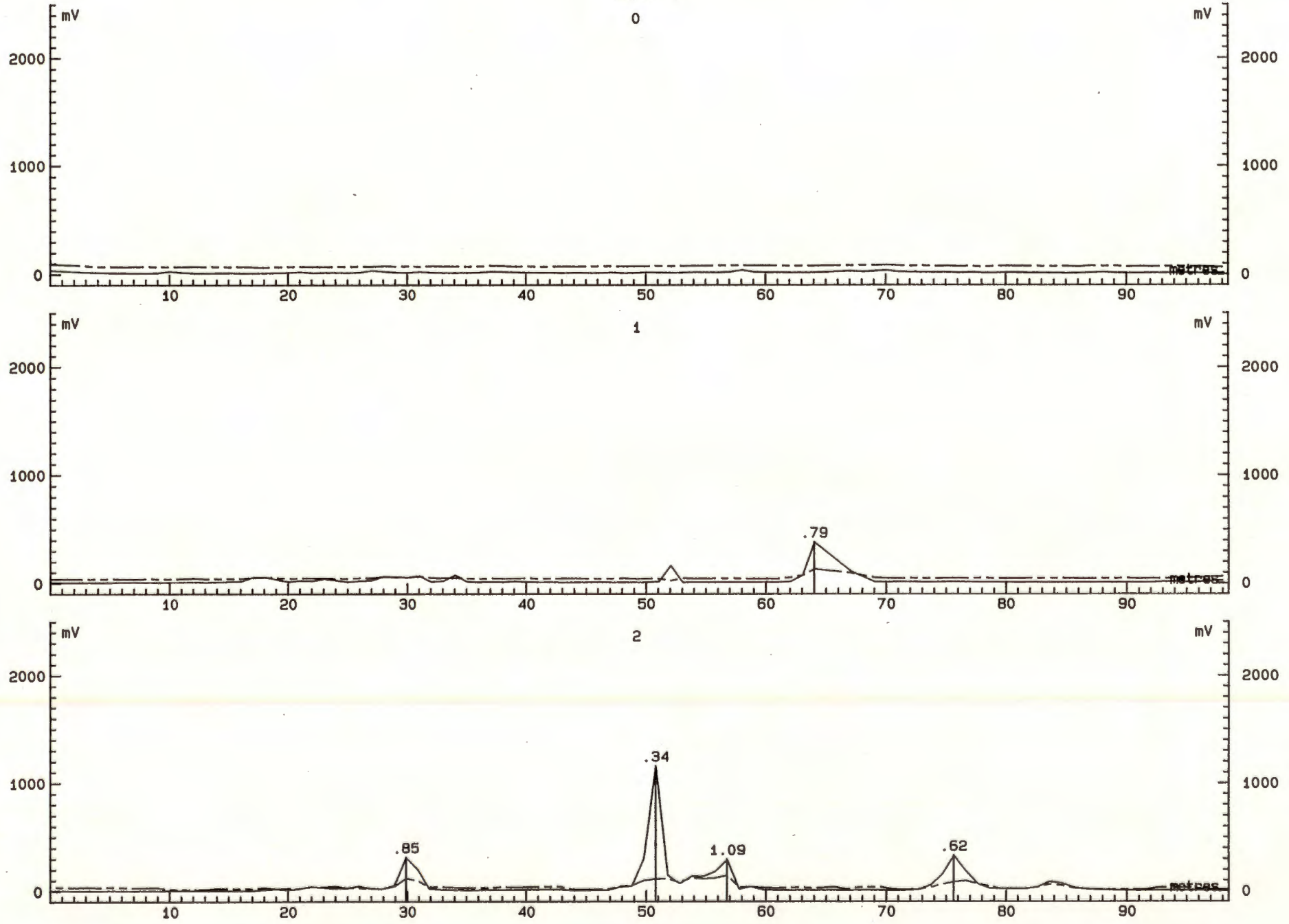
H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-5	GROUND/TOP OF CASING ELEVATION: 530.72 TOP OF INNER RISER ELEVATION: 530.48	FILE NO. 70436-40 PAGE NO. 1

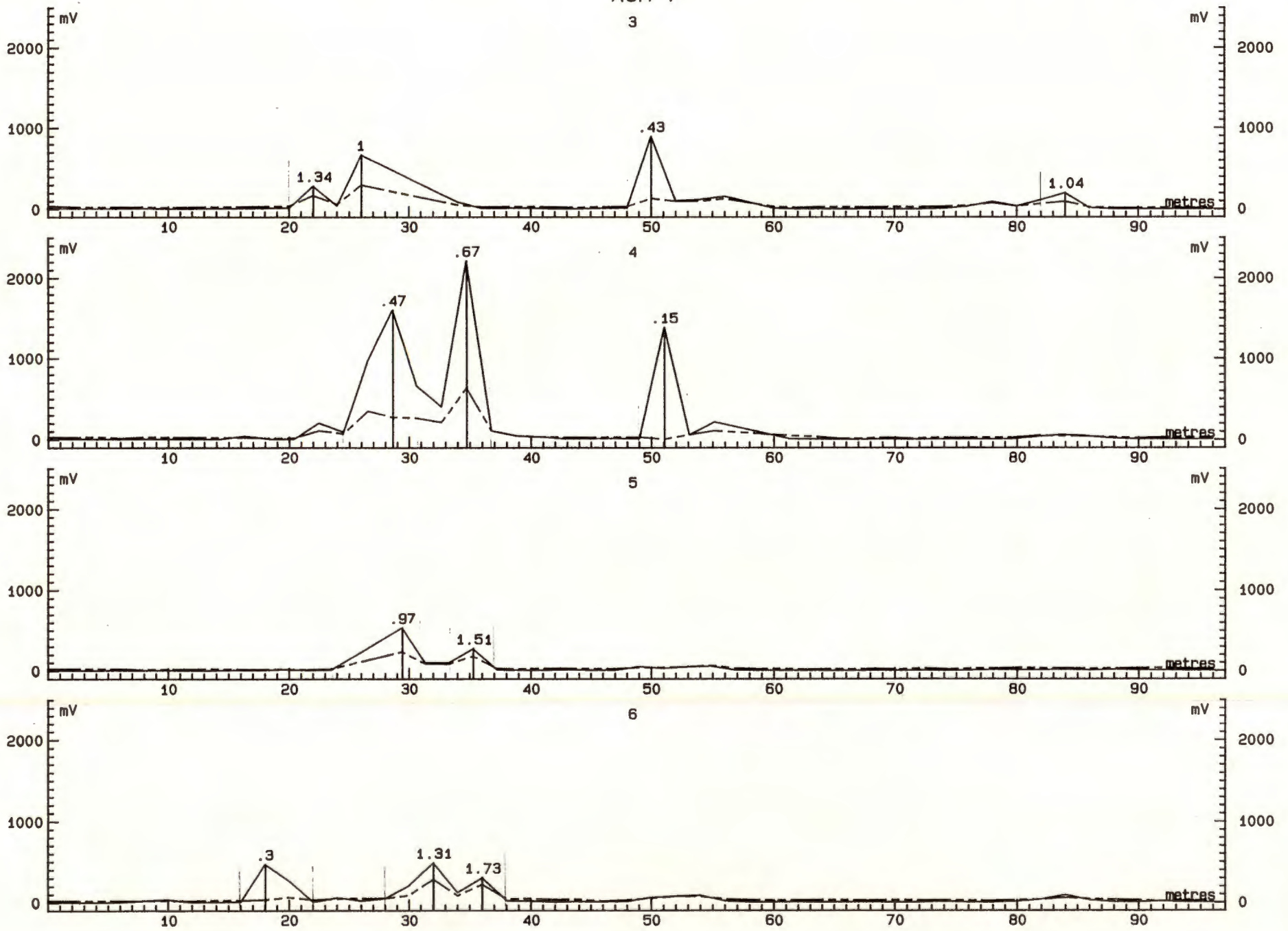
DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/3/93	1705		17.96 ft.	512.52		RF
8/09/94	1100		17.21 ft.	513.27	Purged 8.3 gal. Sampled at 11:00	ER
9/01/94			15.44 ft.	515.04		DMN
2/20/95			16.02 ft.	514.46		DMN/SHP
2/21/95	1500		16.61 ft.	513.87		DMN/SHP
6/27/95			15.87 ft.	514.61		DMN

EM-61 Profiles, AOR #7

AOR-7



AOR-7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6
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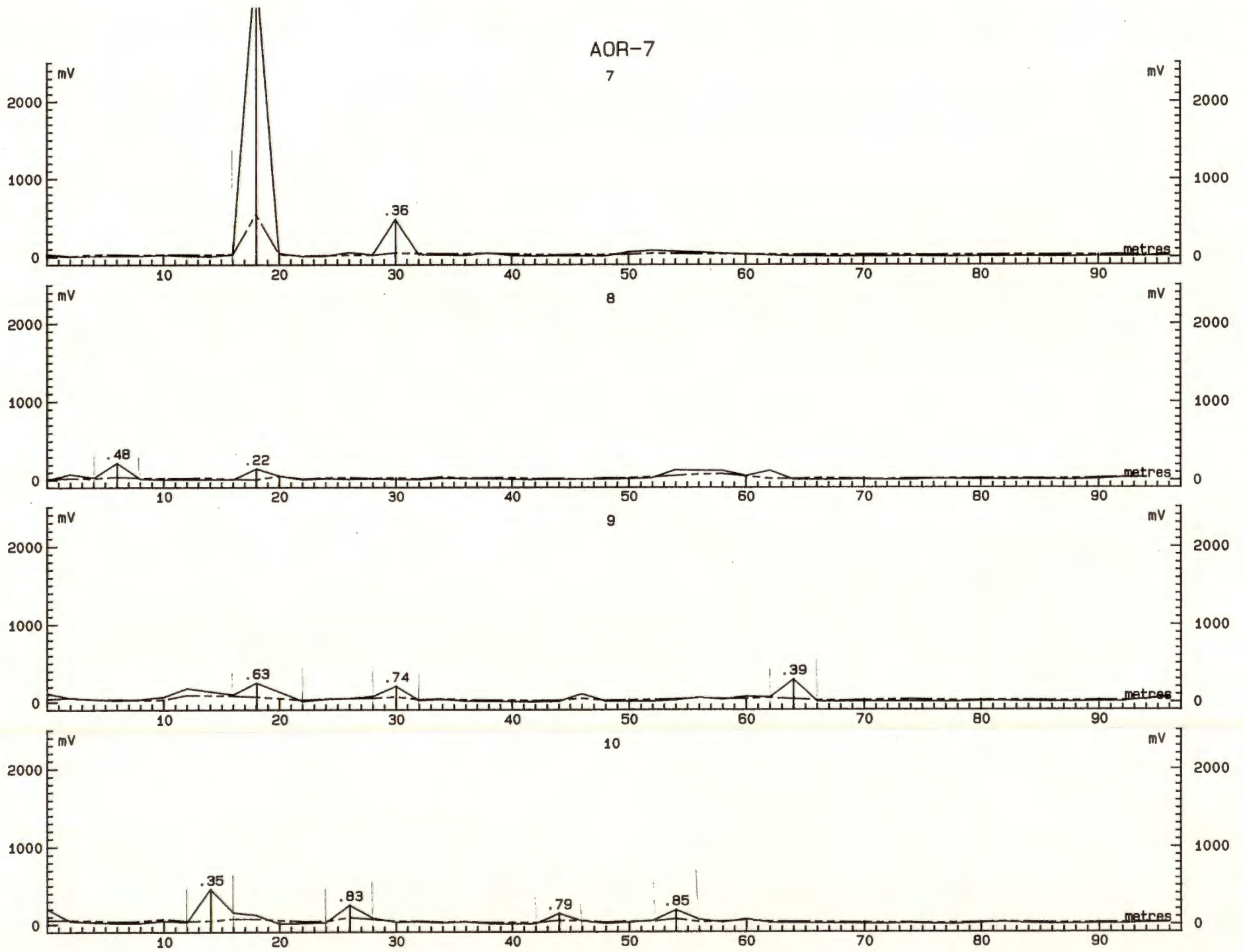
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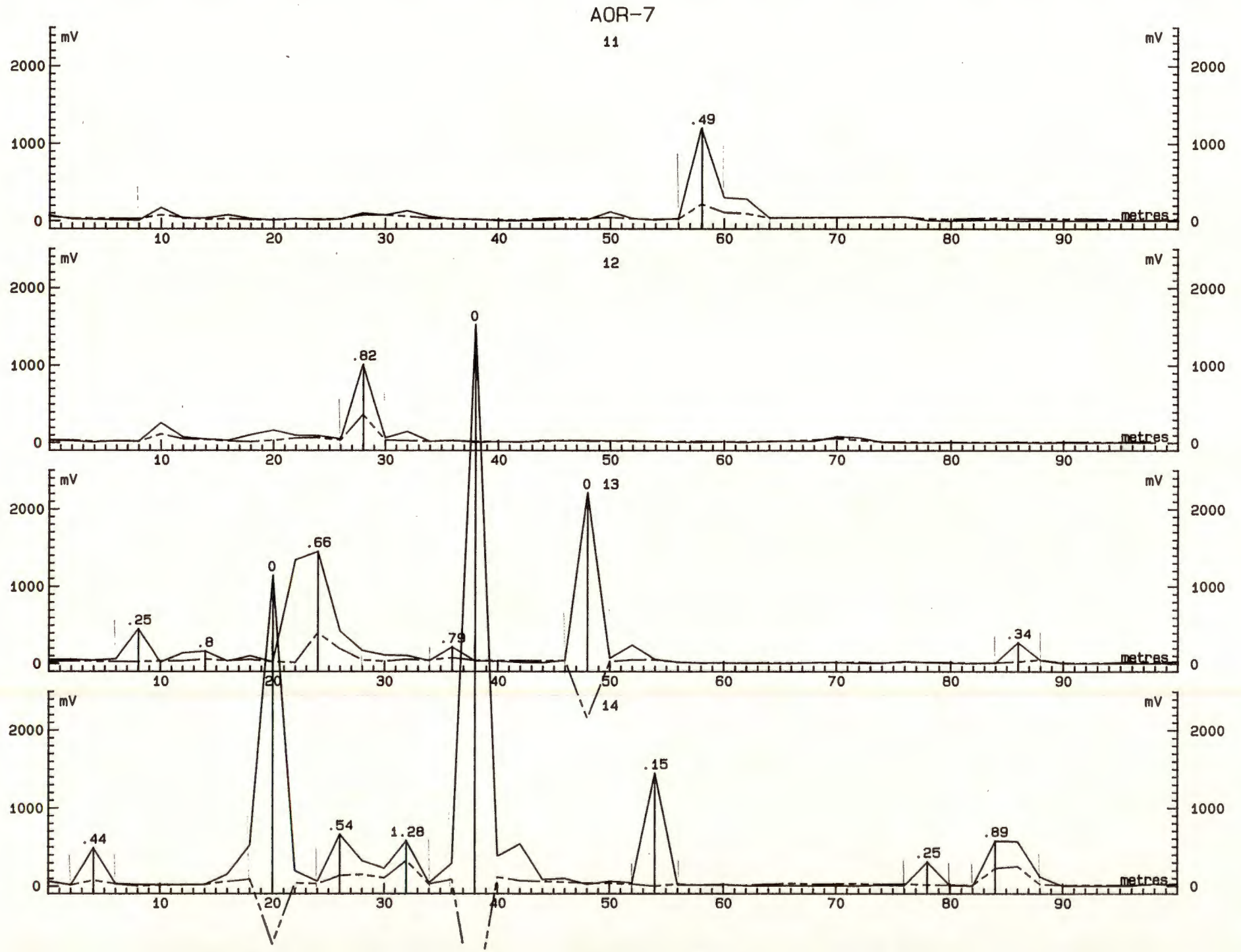
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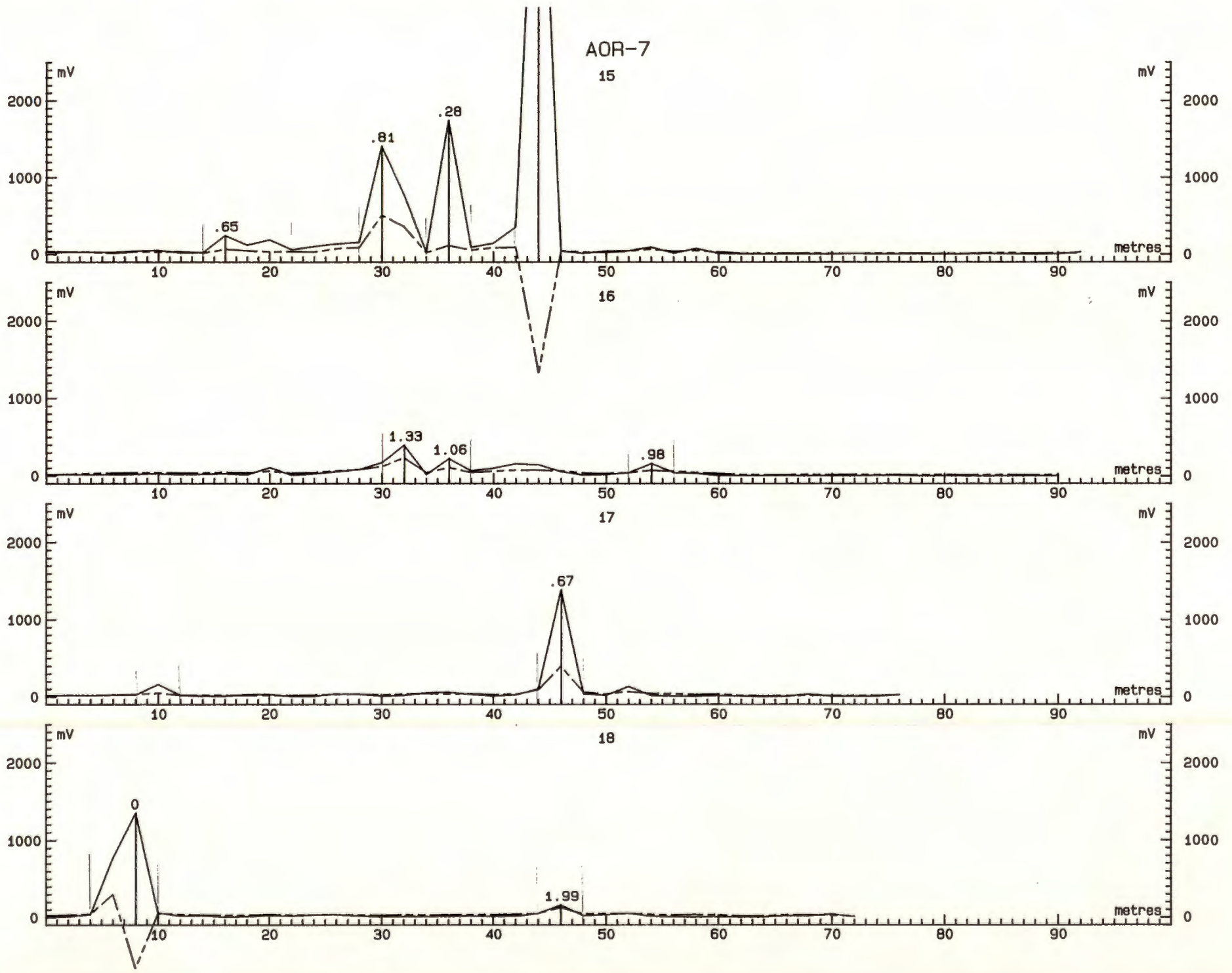
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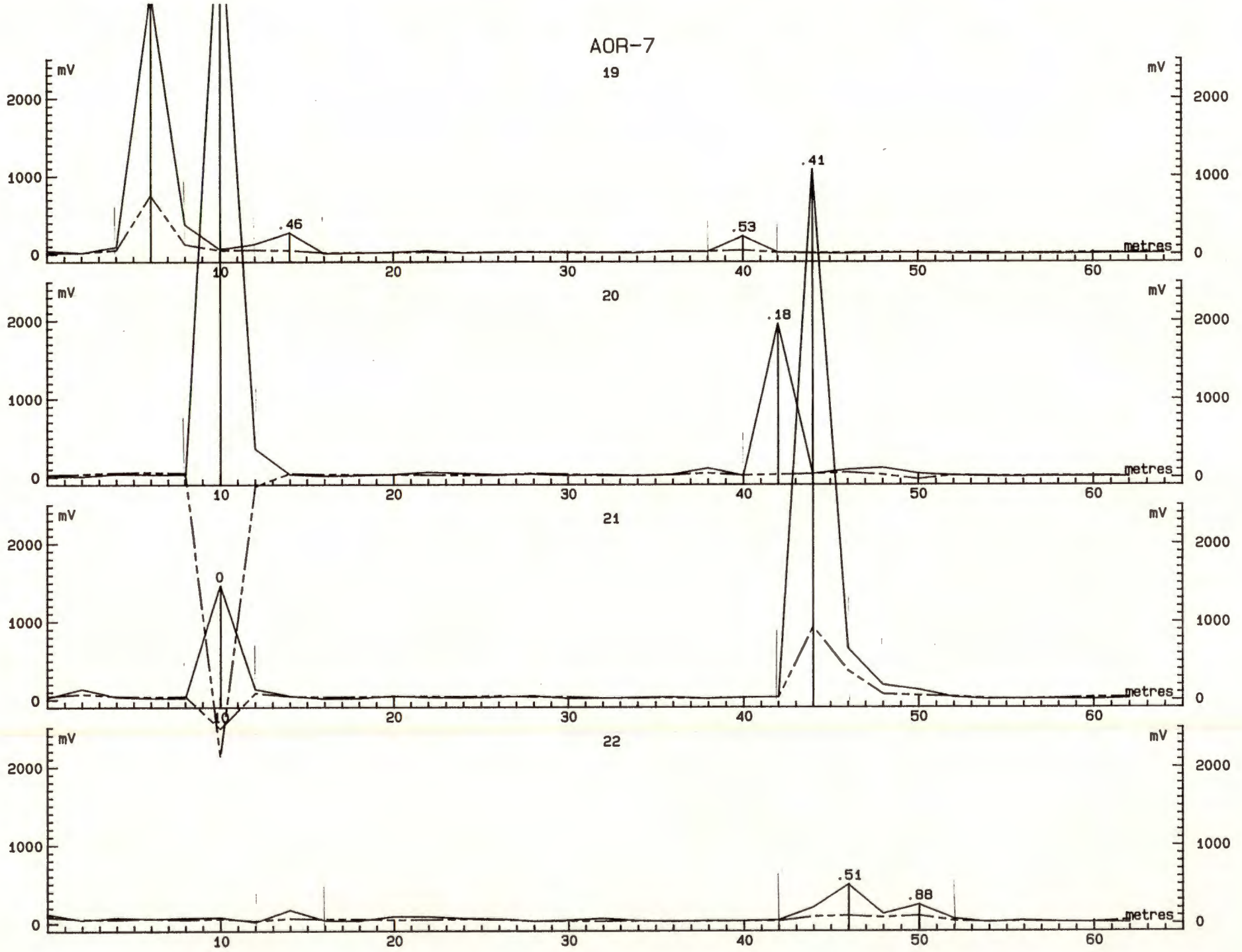
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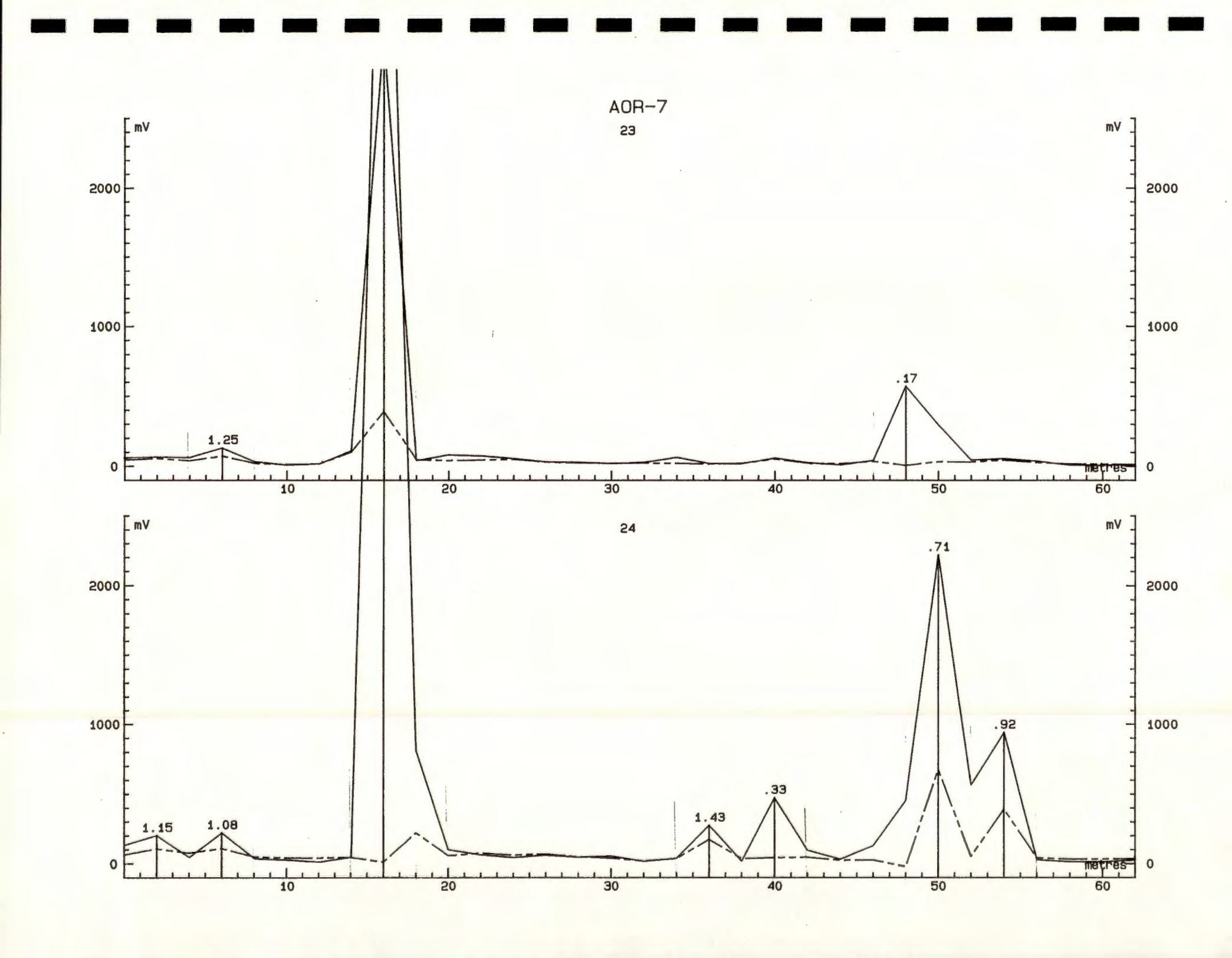
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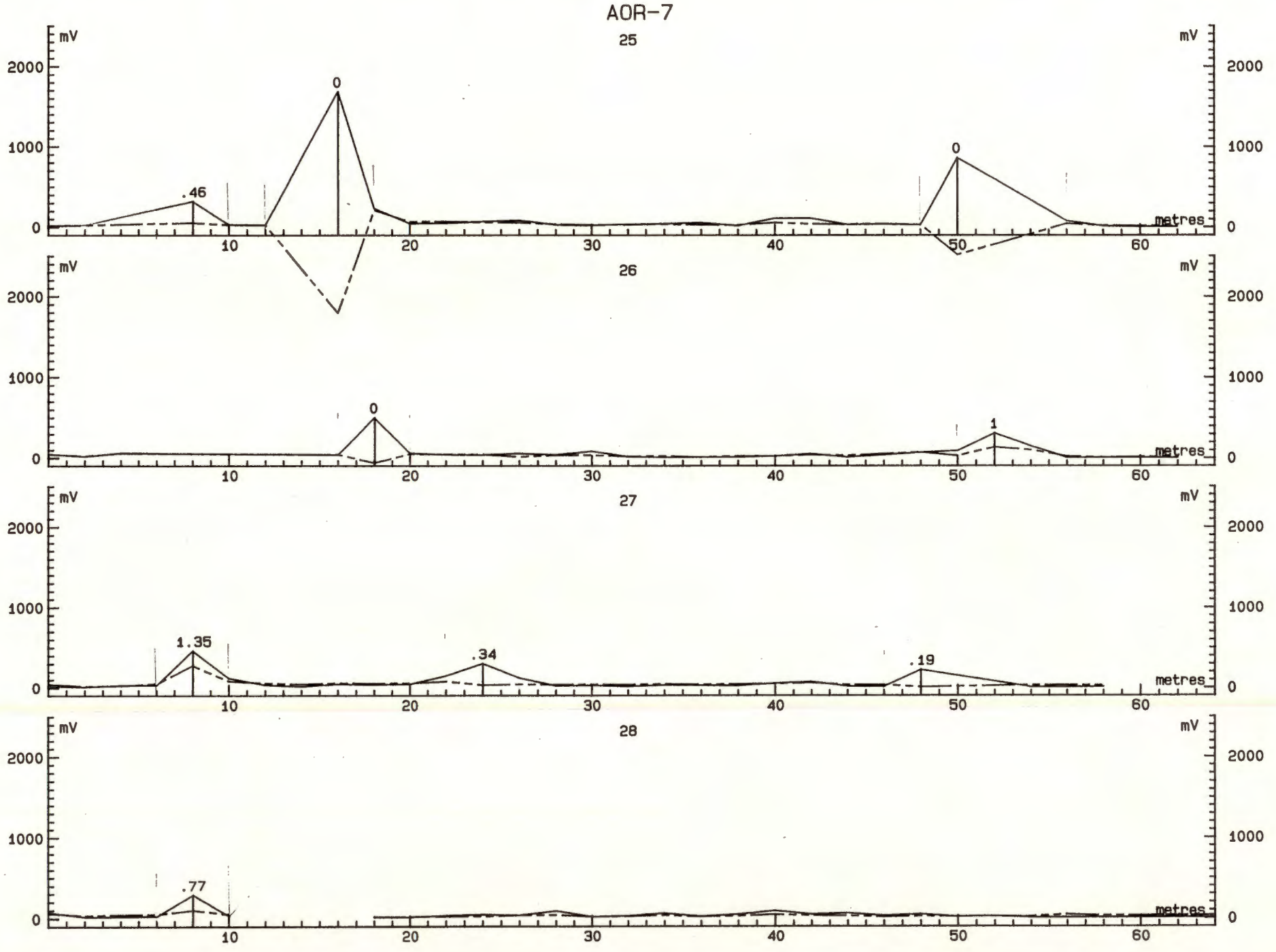
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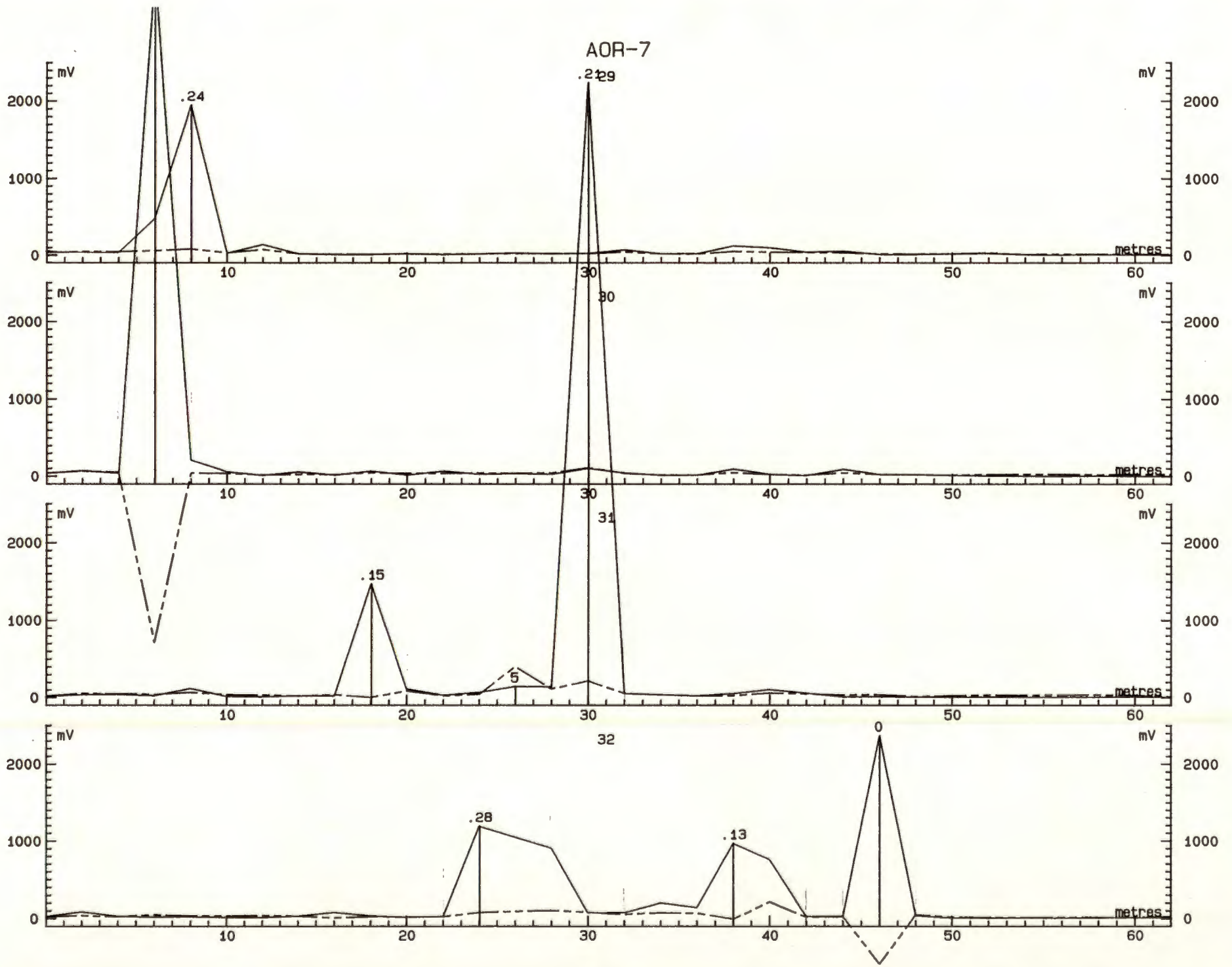
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metres

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-5 FILE NO. 70436-216

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF CONTRACTOR: C.P. WARD INC. EQUIPMENT USED: CASE 580 BACKHOE LOADER	LOCATION: AOR 7 Extension ELEVATION: See Remarks EXPLORATION DATE: 22 Dec. 1994 H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Dark brown silty medium to fine SAND, with turf and rootlets. -FILL-	Bend in pit at STA.4m East.
			1.5		
2				Light brown silty medium to fine SAND, trace clay, trace amounts of debris consisting of wood fragments, porcelain, pieces of weathered, crushed scrap metal, eletrical wiring, small diameter metal rods, metal straps, and vitrified black slag. Frequent tabular boulders near STA.7.5m East, 2.0 ft. depth, and 5 ft. x 4 ft. x 0.8 ft. concrete slab with welded wire fabric at STA.2-3m East. Partially weathered, crushed, empty drum.	FID readings of 0 ppm from spoils and sidewalls, no visual evidence or odor of contamination.
	S1	2.8			
3					
			3.5	S1 at STA. 10m East, 2.8 ft. depth in Fill beneath drum submitted for VOC, SVOC, and RCRA metals plus Copper analyses. -FILL-	
4			4.0		FID readings of 0 ppm through cracks and open bung of drum; 0 ppm reading from Fill surrounding the drum. No visual evidence or odor of contamination.
5				Light gray-brown mottled silty fine SAND, trace rootlets near 3.5 ft., grading to gray-brown fine SAND, trace silt at STA.8m East. -ALLUVIUM-	
6				Bottom of Excavation at 4.0 ft. depth, no refusal.	Depth to top of Alluvium varies from 2.3 ft. to 3.5 ft.
7				Note: 1. Excavation backfilled and graded to ground surface.	
8					Elevation not surveyed; estimated by H&A at 534 ft. RCD
9					
10					
11					
12					
13					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE	SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 32 feet WIDTH 2.5feet	DEPTH: 4.0 ft.
NOT ENCOUNTERED				JAR SAMPLES: S1
			BOULDERS	BAG SAMPLES: __
			8" to 18" DIAMETER: No. 7 = Vol. 6 cu ft	WATER LEVEL: NE
* Hrs after completed			Over 18" DIAMETER: No. 5 = Vol. 10 cu ft	TEST PIT NO. TP307-5

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-6 FILE NO. 70436-216

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: C.P. WARD INC.
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7 Extension
ELEVATION: See Remarks
EXPLORATION DATE: 22 Dec. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Dark brown SILT interlayered with light brown medium to fine SAND, debris in Fill includes pocket from STA.1.5-4.5m East, 0.5-1.5 ft. depth of 1 inch thick sheets of yellow fiberglass backed by charred, fibrous, tar paper-like material, with trace amounts of green wood-like material. Hydrogen sulfide-like odor associated with this debris. Other debris in Fill comprised of piece of corrugated sheet metal at STA.4m East, pocket of metal straps at STA.5.5m East, 0.5 ft. depth, and piece of thin sheet metal from STA.9-10m East, 1.0 ft. depth.	FID readings of 0 ppm from spoils and sidewalls, no visual evidence or odor of contamination.
2			2.0	-FILL-	
	S1	2.5	2.5		
3			3.0	Light rust-brown fine SAND, little silt, trace roots at 2.0 ft. -ALLUVIUM- S1 composite from STA.1.5m, 4.5m, and 9.0m East, 2.5 ft. depth in Alluvium submitted for VOC, SVOC, PCB, and RCRA metals plus Copper analyses.	
4					
5				Gray mottled SILT, little sand and clay, trace gravel. -GLACIAL TILL-	
6				Bottom of Excavation at 3.0 ft. depth, No Refusal. Note: 1. Excavation backfilled and graded to ground surface.	
7					
8					
9					
10					Elevation not surveyed; estimated by H&A at 534 ft. RCD
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 33 feet WIDTH 2.5 feet

BOULDERS

8" to 18" DIAMETER: No. 0 = Vol. cu ft

Over 18" DIAMETER: No. 0 = Vol. cu ft

SUMMARY

DEPTH: 3.0
JAR SAMPLES: S1
BAG SAMPLES: --
WATER LEVEL: NE
TEST PIT NO. TP307-6

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-7 FILE NO. 70436-216

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: C.P. WARD INC.
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7 Extension
ELEVATION: See Remarks
EXPLORATION DATE: 22 Dec. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1				Dark brown silty coarse to fine SAND, little gravel, frequent angular cobbles and small boulders, trace amounts of debris consisting of plastic, pieces of porcelain and brick, occasional pieces of wood and roots at 1-2 ft. depth. Railroad tie, a 2 ft. x 6 ft. x 0.6 ft. concrete slab at STA.8.5m West, 0.5 ft. depth, and a 3 ft. x 4 ft. piece of corrugated sheet metal at STA.5.5m West, 1.5 ft. depth.	Bend in pit at STA.4.5m West.
2					FID readings of 0 ppm from spoils and side-walls, no visual evidence or odor of contamination.
3				-FILL-	
4	S1	Noted at Right	4.0	Light brown silty medium to fine SAND, trace gravel. -ALLUVIUM- S1 composite sample from STA.2m, 4.5m, and 9m East in upper Alluvium submitted for 8260, 8270, and RCRA metals plus Copper analyses.	Ground surface slopes down +/-2.5 ft. to West, Fill thins to West and depth to Alluvium is 1.0 ft. at West end of excavation.
5			5.0		
6			5.5	Brown coarse to fine sandy SILT, little gravel, trace clay. -GLACIAL TILL-	
7				Bottom of Excavation at 5.5 ft. depth, no refusal.	
8					Elevation not surveyed; estimated by H&A at 536 ft. RCD.
9				Note: 1. Excavation backfilled and graded to ground surface.	
10					
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTERED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 32 feet WIDTH 2.5 eet

BOULDERS

8" to 18" DIAMETER: No. 6 = Vol. 4 cu ft

Over 18" DIAMETER: No. 0 = Vol. cu ft

SUMMARY

DEPTH: 5.5 ft.
JAR SAMPLES: S1
BAG SAMPLES: --
WATER LEVEL: NE
TEST PIT NO. TP307-7

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-8 FILE NO. 70436-216

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: C.P. WARD INC.
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7 Extension
ELEVATION: See Remarks
EXPLORATION DATE: 22 Dec. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1	S2	1-1.5		Light brown grading to brown with depth silty medium to fine SAND, little gravel, metal debris in Fill consists of 4 ft. x 0.5 ft. strip of sheet metal at STA.1m East, and a partially weathered, crushed, empty drum at STA.6m East, 0.5 ft. depth. Yellow paint present on top of drum. S2 at 6m East, 1.0-1.5 ft. depth in Fill below drum submitted for VOC, SVOC, and RCRA metals plus Copper analyses. -FILL-	FID readings of 0 ppm from spoils, sidwalls and from inside drum and the surrounding Fill. No visual evidence or odor of contamination.
2					
3					
4			4.0		
			4.5	Dark gray fine SAND, trace silt, little amount of roots. -ORIGINAL TOPSOIL-	
5				Light gray fine SAND, little silt. -ALLUVIUM- S1 composite sample at STA.2m, 4.5m, and 7.5m East, 5.0-5.5 ft. de depth in Alluvium submitted for 8260, 8270, and RCRA metals plus Copper analyses.	
6			6.0		
7				Bottom of Excavation at 6.0 ft. depth, no refusal. Note: 1. Excavation backfilled and graded to ground surface.	Elevation not surveyed; estimated by H&A at 535 ft. RCD
8					
9					
10					
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTERED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 30 feet WIDTH 2.5 feet

BOULDERS

8" to 18" DIAMETER: No. 6 = Vol. 5 cu ft

Over 18" DIAMETER: No. 0 = Vol. 0 cu ft

SUMMARY

DEPTH: 6.0 ft.
JAR SAMPLES: S1, S2
BAG SAMPLES: --
WATER LEVEL: NE
TEST PIT NO. TP307-8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST PIT REPORT	TEST PIT NO. TP307-9 FILE NO. 70436-216

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: C.P. WARD INC.
EQUIPMENT USED: CASE 580 BACKHOE LOADER

LOCATION: AOR 7 Extension
ELEVATION: See Remarks
EXPLORATION DATE: 22 Dec. 1994
H&A REP.: S. Dixon

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
1	S1	1.5	3.5	Dark brown silty medium to fine SAND, little amount of metal debris including straps and cords, trace amounts of procelain, glass, and organics, occasional boulder. 5 ft. x 2 ft. x 0.8 ft. piece of concrete slab at STA.5m South, 1.0 ft. depth. Partially weathered, crushed, empty drum at STA.5.5m South, 0.5-1.5 ft. depth. S1 grab sample at STA.5.5m South, 1.5 ft. depth in Fill beneath drum submitted for VOC, SVOC, and RCRA metals plus Copper analyses. -FILL-	FID readings of 0 ppm from spoils, side-walls, and from inside drum and the surrounding Fill. No visual evidence or odor of contamination.
2			4.0	Light rust-brown medium to fine SAND, trace silt, grading south-ward to light rust-brown mottled silty medium to fine SAND, trace gravel and clay. -ALLUVIUM-	
3					
4					
5					
6					
7					Elevation not surveyed; estimated by H&A at 535 ft. RCD.
8					
9					
10					
11					
12					
13					

WATER LEVEL		
DATE	TIME*	DEPTH FT
NOT ENCOUNTERED		
* Hrs after completed		

APPROXIMATE PIT DIMENSIONS AT SURFACE

LENGTH 21 feet WIDTH 2.5 feet

BOULDERS

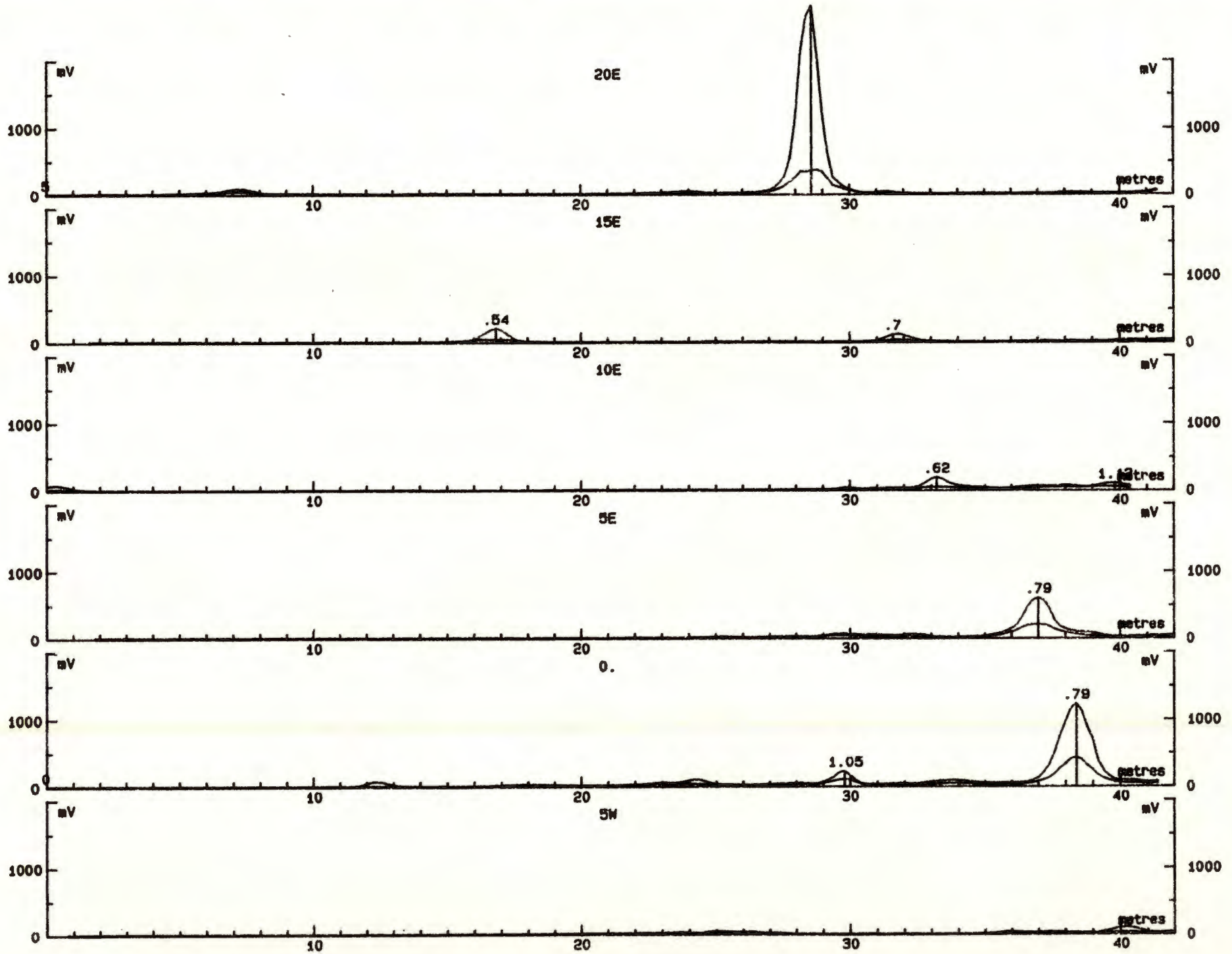
8" to 18" DIAMETER: No. 3 = Vol. 3 cu ft

Over 18" DIAMETER: No. 3 = Vol. 15 cu ft

SUMMARY

DEPTH: 4.0 ft.
JAR SAMPLES: S1
BAG SAMPLES: --
WATER LEVEL: NE
TEST PIT NO. TP307-9

EM-61 Profiles, AOR #7 Extension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metres
15E
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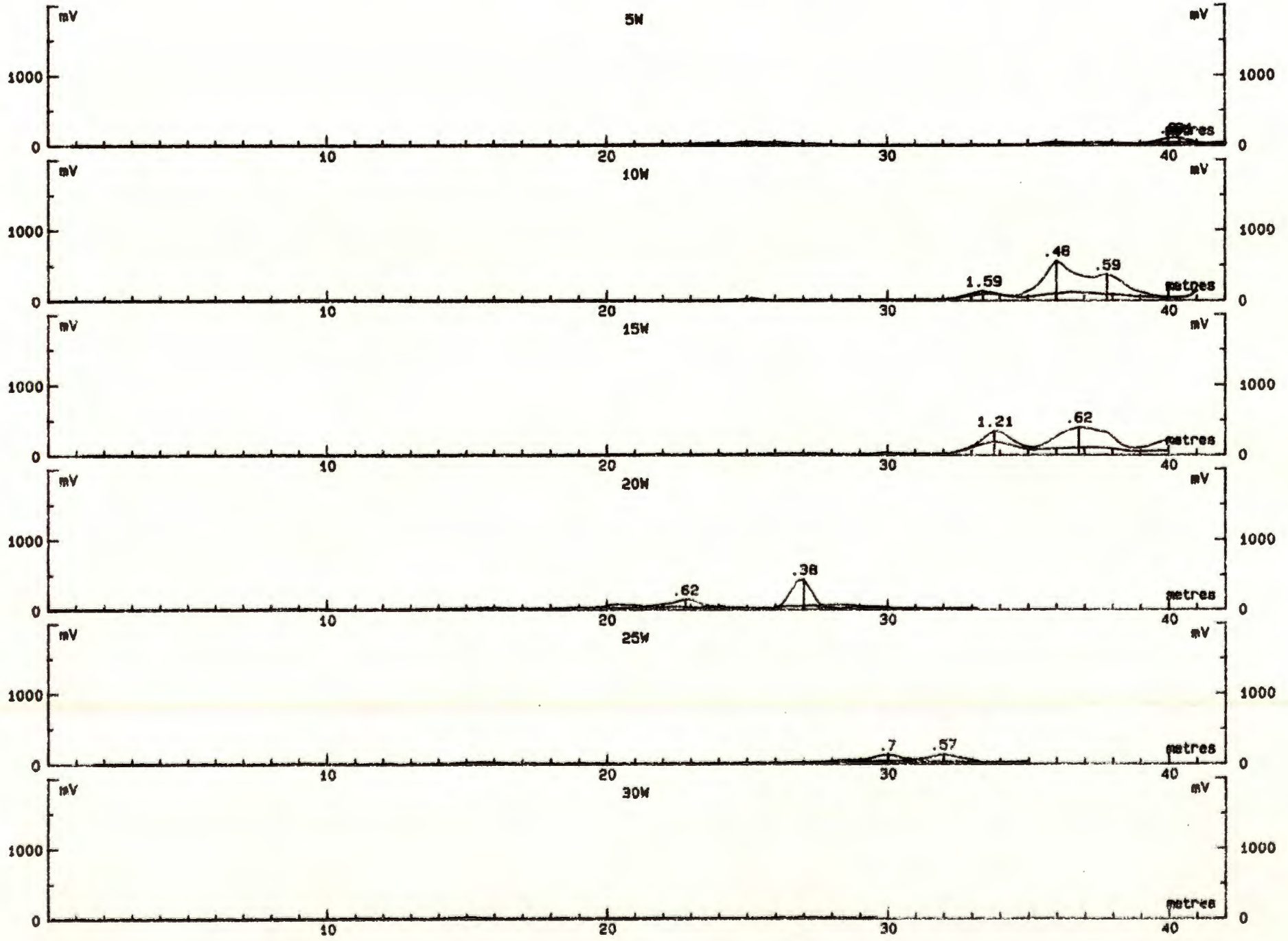
1.05
5W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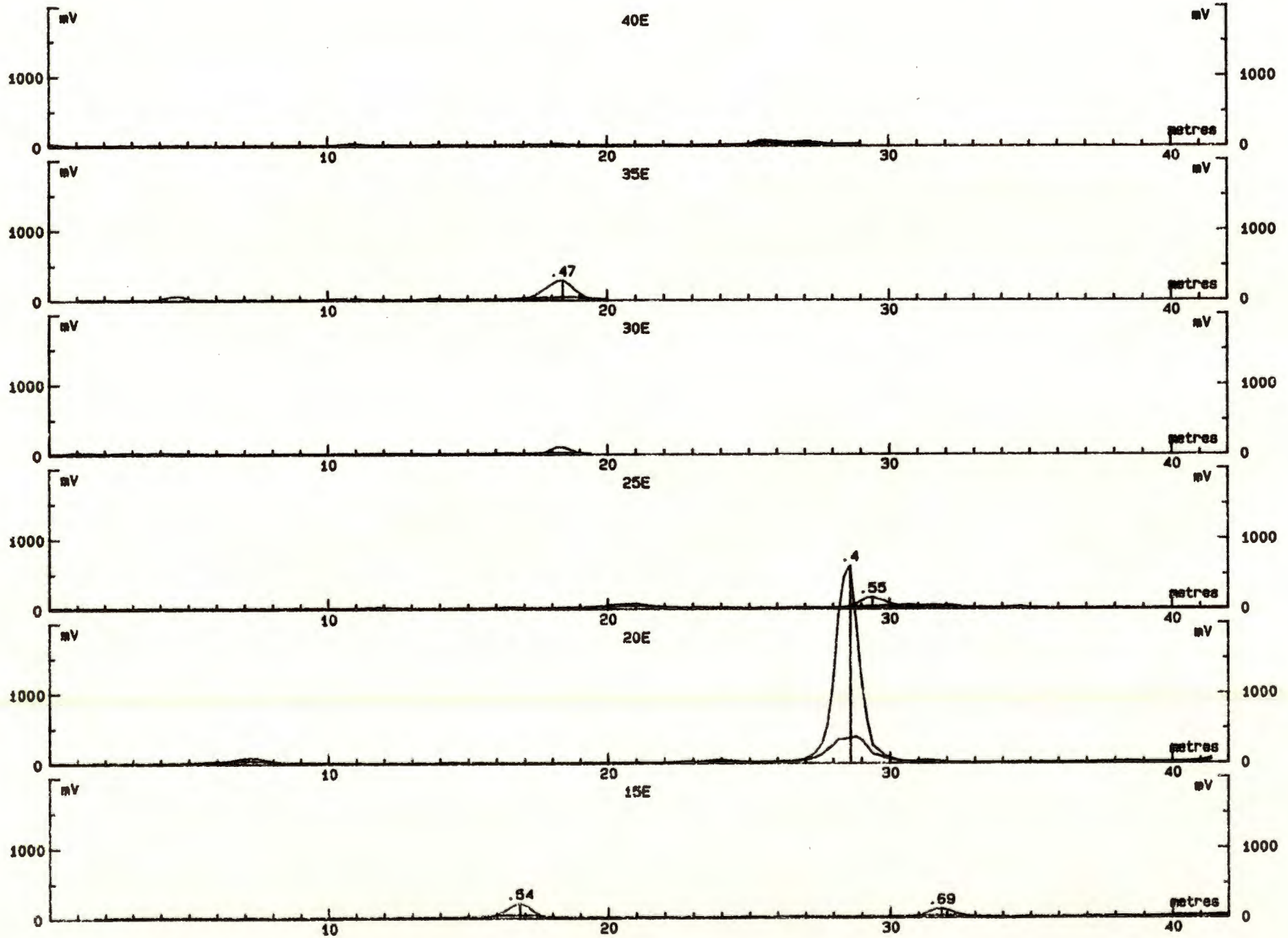
.57
30W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metres
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15E
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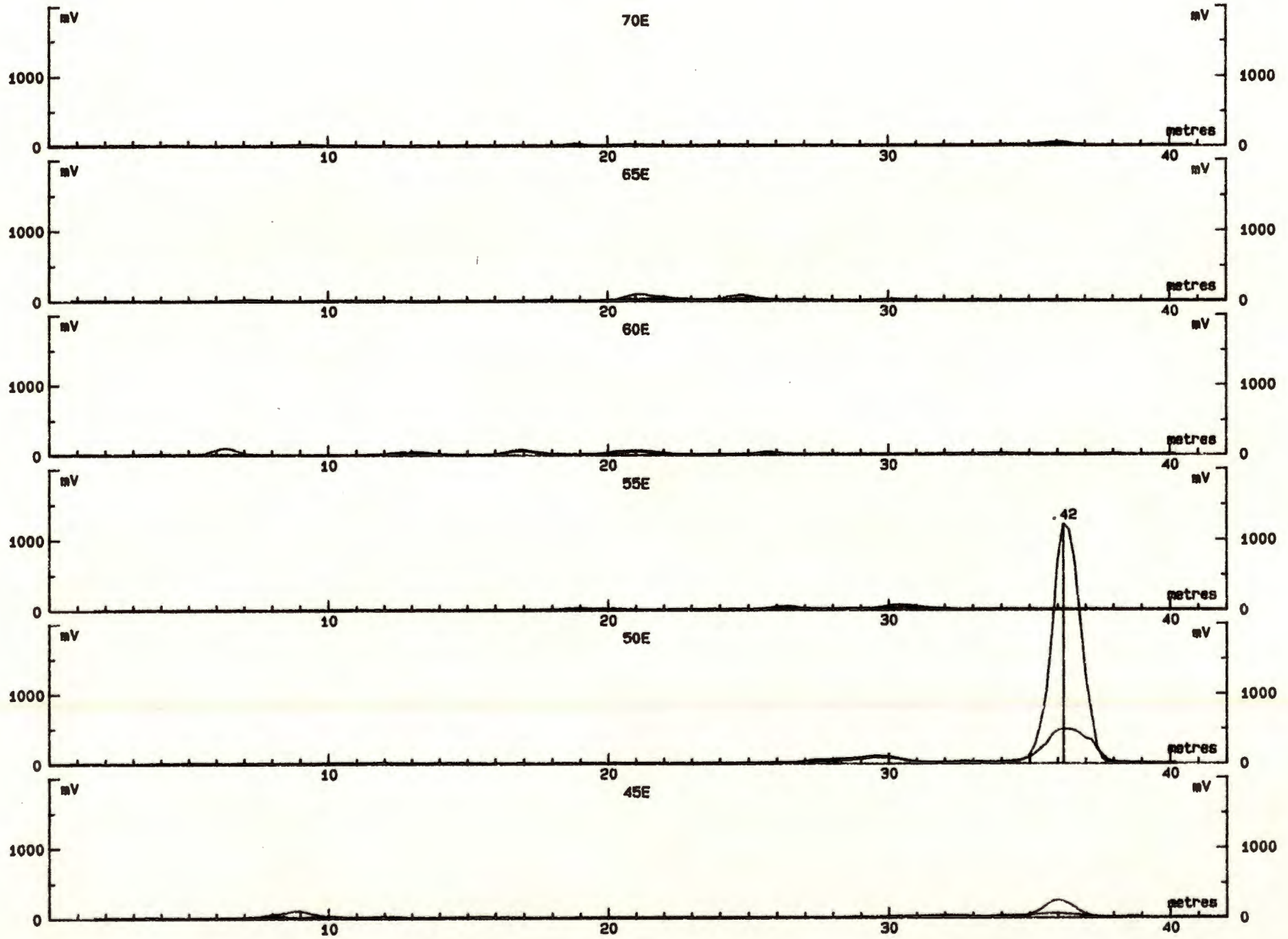
.69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metres
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40
mV
60E
mV
1000
0
metres
10
20
30
40
mV
55E
mV
.42
1000
0
metres
10
20
30
40
mV
50E
mV
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metres
10
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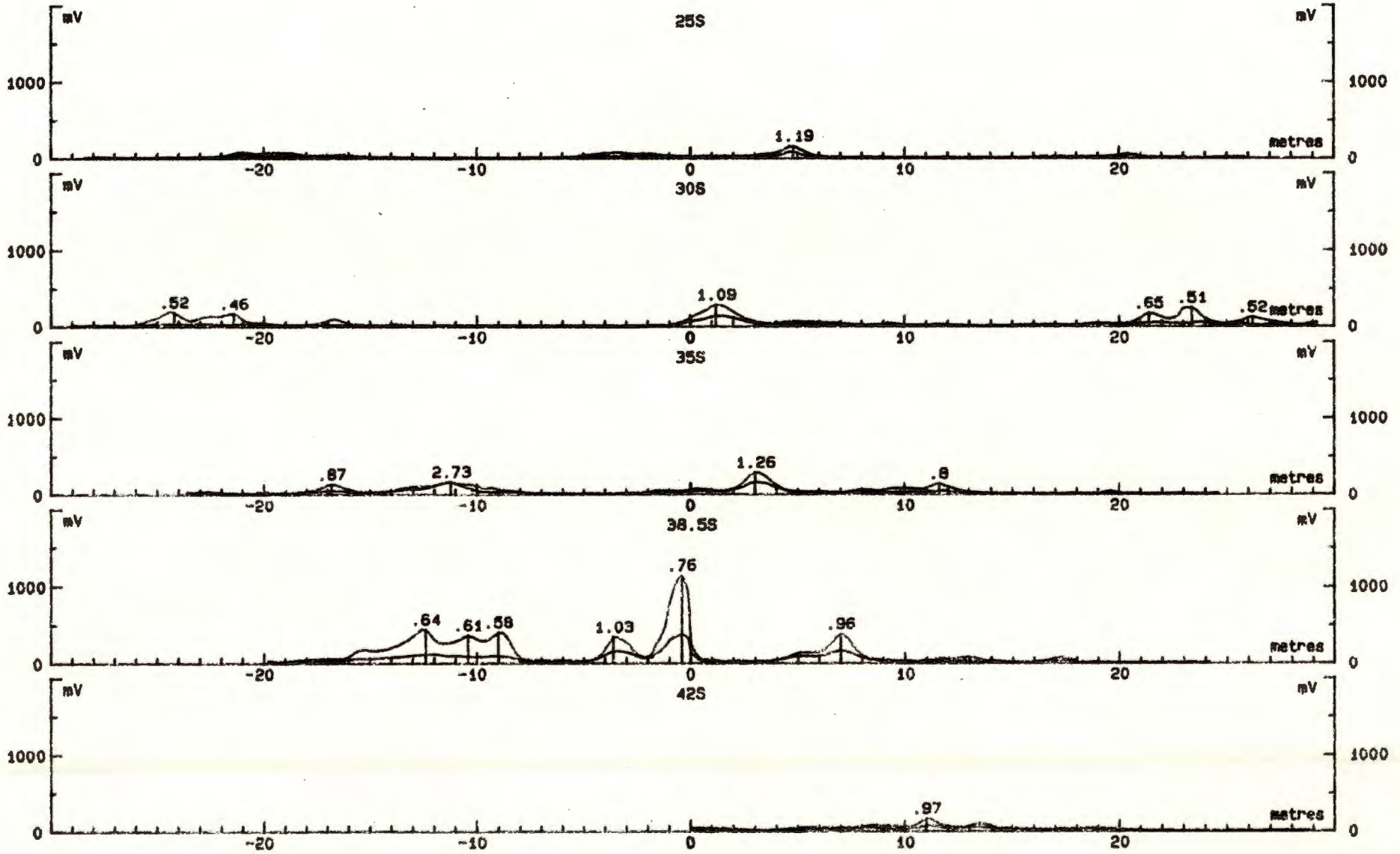
40
mV
45E
mV
1000
0
metres
10
20
30
40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1.19
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-10
0
10
20
metres
30S
.52
.46
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.52
35S
.87
2.73
1.26
.8
38.5S
.76
.64
.61
.58
1.03
.96
42S
.97

APPENDIX A
SECTION 8

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B308-1

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-108
SHEET NO. 1 OF 1
LOCATION: AOR 8

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 534.23
DATUM: RCD
START: 25 October 1994
FINISH: 25 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	5	12 23 13	S1 10"/18"	0.5 2.0	1.7	Dense brown gravelly SILT, some sand, trace clay, damp. -FILL-
	100	30 20 50	S2 22"/24"	2.0 4.0		Very dense brown coarse to fine sandy SILT, little gravel, trace clay, moist. Same. -FILL-
		35				
5	ND	30 40 31	S3 4"/18"	4.0 5.5		Same, except damp. -FILL-
		50/0				Same.
	25	17 24 27	S4 19"/24"	6.0 8.0	6.5	Very dense light gray SILT, trace medium to fine sand, damp. -LACUSTRINE-
		48				Same.
	100	15 15 21	S5 20"/24"	8.0 10.0	8.5	Dense tan-brown mottled coarse to fine sandy SILT, trace fine gravel, trace clay, moist. -GLACIAL TILL-
10		34				
	25	30 28 28	S6 19"/24"	10.0 12.0		Same, except very dense, damp.
		29				
	25	18 16 16	S7 20"/24"	12.0 14.0	12.5	Dense brown fine SAND, little coarse to medium sand, little fine gravel, trace silt, wet. -GLACIAL TILL- Auger refusal at 14.4 ft. (Apparent top-of-bedrock).
		13 50/0.2	S8 0/3"	14-14.4	14.4	
15						Bottom of Boring at 14.4 ft.
20						
25						

Notes:
1. Augers advanced from 5.5-6.0 ft. without sampling due to an obstruction.
2. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.
3. ND = Not detected.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 14.4 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 8S (S8 had no recovery)

BORING NO. B308-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B308-2

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-108
SHEET NO. 1 OF 1
LOCATION: AOR 8

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling from 0.5 ft. to apparent top-of-bedrock.

ELEVATION: 533.93
DATUM: RCD
START: 26 October 1994
FINISH: 26 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					0.5	-ASPHALT PAVEMENT-
	4	10 20 30	S1 10"/18"	0.5 2.0	1.7	Medium dense gray-brown coarse to fine SAND, little gravel, little silt, damp. -FILL-
	28	36 70 100/0.5	S2 12"/18"	2.0 3.5		Very dense brown coarse to fine sandy SILT, little gravel, trace clay, trace metal and brick fragments, damp. Advanced augers through obstruction from 3.5 to 4.0 ft. Same, with trace rootlets. -FILL-
5	450	18 22 35 40	S3 18"/24"	4.0 6.0	5.8	Very dense gray SILT, little fine sand, damp. -LACUSTRINE-
	70	22 40 32 28	S4 16"/24"	6.0 8.0	6.7	Very dense brown-gray mottled coarse to fine sandy SILT, little fine gravel, trace clay. -LACUSTRINE-
	70	14 20 17 22	S5 18"/24"	8.0 10.0	7.9	Dense red-brown SILT, little coarse to fine sand, trace clay, damp. -GLACIAL TILL-
10						Same.
	30	6 6 27 26	S6 22"/24"	10.0 12.0	10.4	Dense red-brown clayey SILT, trace gravel, trace sand, moist, wet at 11.5 ft. Same. -GLACIAL TILL-
	50	20 22 22 22	S7 21"/24"	12.0 14.0	12.1	Dense brown fine SAND, little gravel, little silt, wet. -GLACIAL TILL-
			S8 0/1"	14-14.1	14.2	Auger refusal at 14.2 ft. (Apparent top-of-bedrock).
15						Bottom of Boring at 14.2 ft.
20						
25						

Note:
1. Boring was grouted to 0.2 ft. from ground surface and patched with asphalt to ground surface upon completion.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 14.2 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 8S (S8 had no recovery)

BORING NO. B308-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B308-3

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-108
SHEET NO. 1 OF 1
LOCATION: AOR 8

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling to apparently clean (non-fill) soil.

ELEVATION: 533.38
DATUM: RCD
START: 1 December 1994
FINISH: 1 December 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
					1.0	-CONCRETE SLAB-
	ND	2 3 5	S1 5"/24"	1.0 3.0	2.8	Loose light brown coarse to fine SAND, little silt, damp. -FILL-
		5 2 5	S2 18"/24"	3.0 5.0	3.5	Loose tan-brown fine SAND, trace silt, moist. -FILL-
	ND	3 12				Loose brown SILT, little sand, trace clay, moist. -FILL-
5		2 8	S3 17"/24"	5.0 7.0	6.0	Same.
	17	10 8				Medium dense brown silty coarse to fine SAND, little coarse to fine gravel, damp. Same. -GLACIAL TILL-
		8 8	S4 14"/24"	7.0 9.0	8.0	
	ND	6 7				Medium dense brown coarse to fine sandy SILT, trace clay, damp. -GLACIAL TILL-
10		9 12	S5 16"/24"	9.0 11.0		Same, except moist.
	ND	16 18			11.0	Bottom of Boring at 11.0 ft.
15						
20						
25						

Notes:
1. Headspace results were non-detect for samples S-4 and S-5.
2. Boring was grouted to ground upon completion.
3. ND = Not detected.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 11.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 5S

BORING NO. B308-3

APPENDIX A
SECTION 9

H&A OF NEW YORK, ROCHESTER, NEW YORK
Consulting Geotechnical Engineers,
Geologists and Hydrogeologists

TEST BORING REPORT

BORING NO. MW309-1

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 3
LOCATION: AOR 9

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	---	NX
INSIDE DIAMETER (IN)	4 1/4	---	3.0
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE:Mobile Drill B-57 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance 4 1/4 in. augers to top of rock without sampling NX core to 4.0 ft. below top of rock.

ELEVATION: 532.68 ft.
DATUM: RCD
START: 26 October 1994
FINISH: 28 October 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						Advanced augers through overburden to top of bedrock at 16.0 ft. without sampling. See Core Boring Report.
10						
15						Apparent top-of-rock at 16.0 ft. Begin Coring at 16.0 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 16.0
ROCK CORED (LIN FT): 25.0
SAMPLES: 0S, 4R

BORING NO. MW309-1

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. MW309-1 FILE NO. 70436-103 SHEET NO. 2 OF 3

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
15							Begin Coring at 16.0 ft.
	1	16.0					Hard, slightly weathered medium gray, fine grained medium to thin bedded siliceous DOLOSTONE, with moderately closely to closely spaced secondary gypsum partings and occasional to frequent secondary gypsum pits.
	1	R1	47	98	SL		
	1		46	96			-DECEW DOLOSTONE-
	1	20.0					
20	1	20.0					Same.
	1	R2	48	89	SL		
	1		42	77			
	1	24.5				23.8	
	0.5/0.5	24.5					Light to dark gray, fine grained thin bedded argillaceous DOLOSTONE, with moderately closely spaced argillaceous partings.
25	1						-ROCHESTER FORMATION- (GATES DOLOSTONE MEMBER)
	1						
	1						
	1	R3	112	93	SL		Same.
	1		100	92			
30	1						
	1						
	1						
	1						
	0.5/0.5	34.5					
35	1						
	1						
	1	R4	74	95	SL		Same.
	1		73	94			
	1						
40	1						
	1	41.0					Bottom of Boring at 41.0 ft.
							Notes: 1. Noted 200 gallons of water lost during drilling. 2. H&A representative monitored for volatiles during well installation activities using a Photovac Microtip PID. All readings were non-detect. 3. See Well Completion Report.
45							

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

BEDROCK MONITORING WELL REPORT

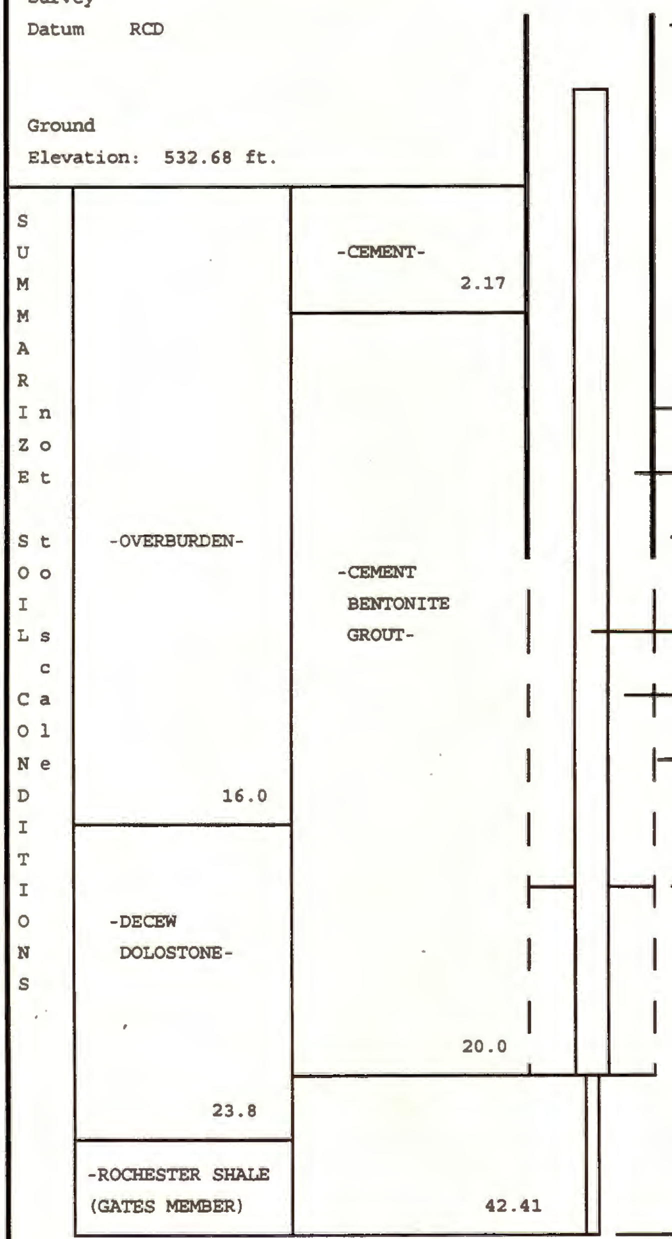
PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: P. WADDELL   RIG TYPE: MOBILE DRILL B-57 TRUCK MOUNT
INSTALLATION DATE: 26-28 OCTOBER 1994

FILE NO.: 70436-107
WELL NO.: MW309-1
LOCATION: AOR-7, See Plan

SHEET: 3 OF 3
INSPECTOR: D. Nostrant

Survey
Datum RCD

Ground
Elevation: 532.68 ft.



Depth/Stickup above ground surface of protective casing.	2.84 ft.
Depth/Stickup above ground surface of well casing.	2.59 ft.
Thickness of Surface Seal	2.17 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	6.0 in.
Depth of Bottom of Protective Casing	2.17 in.
Inside Diameter of Well Casing	4.0 in.
Type of Backfill Around Casing	Cement/Bentonite Grout
Diameter of Borehole	8.0 in.
Depth of Top of Bedrock	16.0 ft.
Elevation/Depth of Bottom of Casing	20.0 ft.
Diameter of Open Rock Hole	3.0 in.
Depth of Bottom of Open Rock Hole	42.41 ft.

Method and Materials used to grout casings: A cement/bentonte grout mix consisting of 1 bag portland cement, 5 lbs. of powdered bentonite mixed with 7.5 gallons of potable water was used to grout the well casing. A packer was inflated 1.0 ft. from the bottom of the well casing and the grout mix was injected through the packer until the mix was observed in the annulus between the borehole and the well casing at ground surface.

Remarks:

Well No. MW309-1

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-309-1	TOP OF OUTER CASING ELEVATION: 535.52 TOP OF INNER RISER ELEVATION: 535.27	FILE NO. 70436-109 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/20/94			23.65	511.62	Bottom Depth 42.41 ft.	DMN
1/13/95	1115		22.95	513.32		DMN
2/20/95			22.91	512.36		DMN/SHP
2/22/95	1315		23.27	512.00		DMN/SHP
6/27/95			20.71	514.56		DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. MW309-2

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 3
LOCATION: AOR-9

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	HS	SS	---
INSIDE DIAMETER (IN)	4 1/4	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Continuous split spoon sampling to top of bedrock, core and to approximately 4.0 ft.

ELEVATION: 531.91 ft.
DATUM: RCD
START: 31 October 1994
FINISH: 2 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		6 12 14 17	S1 18"/24"	0.0 2.0		Medium dense brown SILT, some fine sand, trace grass and rootlets, dry to damp. -FILL-
		12 21 28 100	S2 17"/24"	2.0 4.0	3.0	Dense tan-brown mottled SILT, some coarse to fine sand, trace medium to fine gravel, trace clay, damp. -FILL-
5		17 29 33 41	S3 24"/24"	4.0 6.0	4.6	Very dense tan-brown mottled coarse to fine SAND, little silt, trace medium to fine gravel, moist to wet. -GLACIAL TILL-
		13 29 36 42	S4 22"/24"	6.0 8.0		Same, with trace coarse gravel, wet. -GLACIAL TILL-
		47 100/0.4	S5 16/24	8.0-8.9		Same. -GLACIAL TILL-
10		63 100/0.4	S6 10/11	10-10.9	9.5	Advance augers to 10.0 ft. Medium to slightly weathered gray DOLOMITE, wet. -WEATHERED BEDROCK-
					11.4	Bottom of Boring at 11.4 ft.
15						
20						
25						

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 11.4 ROCK CORED (LIN FT): 28.7 SAMPLES: 6S BORING NO. MW309-2

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. MW309-2 FILE NO. 70436-109 SHEET NO. 2 OF 3

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
							Begin Coring at 16.0 ft.
		11.4					Light to dark gray, fine grained thin bedded argillaceous DOLOSTONE, with moderately closely spaced argillaceous partings.
		R1	36	88	SL		-ROCHESTER SHALE-
			27	66			(GATES DOLOSTONE MEMBER)
		14.8				14.7	Closely spaced high angle to moderately dipping joint sets from 11.7 to 12.2 ft.
15		14.8					Light to dark gray, fine-grained, fossilferous, dolomitic MUDSTONE with interbedded thin dolostone and limestone, and secondary gypsum seams in closely to very closely spaced partings.
	1						-ROCHESTER FORMATION-
	1						
	1						
	1						
20		R2	110	91	SL		Same.
	1		107	88			
	1						
	1						
	1						
	0.5/0.5	24.9					
25		24.9					
	1						
	1						
	1						
	1						
	1	R3	120	100	SL		Same.
30			109	91			
	1						
	1						
	1						
	1						
	0.5/0.5	34.9					
35		34.9					
	1						
	1						
	1		62	100	SL		Same.
	1		50	81			
	1						
	1	40.1					
40							Bottom of Boring at 40.1 ft.
							Notes: 1. Monitoring well MW309-2 installed in completed borehole. See report. 2. Approximately 500 gallons of drilling water lost during installation of MW309-2.
45							

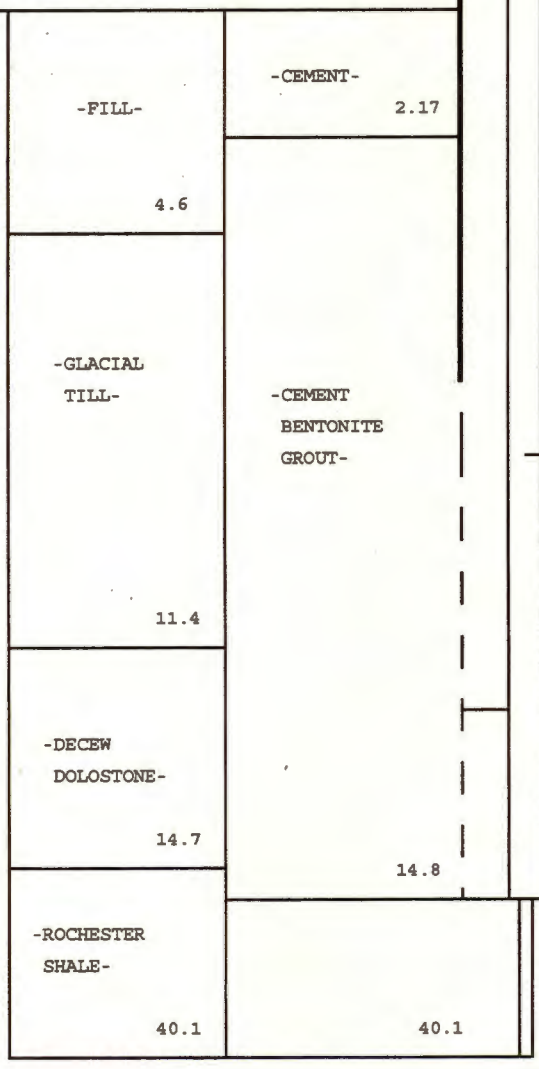
H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	BEDROCK MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY	FILE NO.: 70436-109
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK	WELL NO.: MW309-2
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF	LOCATION: AOR-7, See Plan
CONTRACTOR: PENNSYLVANIA DRILLING CO.	
DRILLER: P. WADDELL RIG TYPE: MOBILE DRILL B-57 TRUCK MOUNT	SHEET: 3 OF 3
INSTALLATION DATE: 2 NOVEMBER 1994	INSPECTOR: D. Nostrant

Survey Datum RCD

Ground Elevation: 531.89 ft.

SUMMARIZED SOIL CONDITIONS



Depth/Stickup above ground surface of protective casing.	2.49 ft.
Depth/Stickup above ground surface of well casing.	2.11 ft.
Thickness of Surface Seal	2.5 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	6.0 in.
Depth of Bottom of Protective Casing	2.52 in.
Inside Diameter of Well Casing	4.0 in.
Type of Backfill Around Casing	Cement/Bentonite Grout
Diameter of Borehole	8.0 in.
Depth of Top of Bedrock	11.4 ft.
Elevation/Depth of Bottom of Casing	14.8 ft.
Diameter of Open Rock Hole	3.0 in.
Depth of Bottom of Open Rock Hole	40.1 ft.

Method and Materials used to grout casings: A cement/bentonte grout mix consisting of 1 bag portland cement, 5 lbs. of powdered bentonite mixed with 7.5 gallons of potable water was used to grout the well casing. A packer was inflated 1.0 ft. from the bottom of the well casing and the grout mix was injected through the packer until the mix was observed in the annulus between the borehole and the well casing at ground surface.

Remarks:

Well No. MW309-2

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-309-2	TOP OF OUTER CASING ELEVATION: 534.38 TOP OF INNER RISER ELEVATION: 534.00	FILE NO. 70436-109 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/20/94			31.02	502.98	Bottom Depth 41.43 ft.	DMN
1/13/95	1135		30.88	503.12		DMN
2/20/95			30.81	503.19		DMN/SHP
2/22/95	1440		30.85	503.15		DMN/SHP
6/27/95			22.12	511.88		DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. MW309-3

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 3
LOCATION: AOR-9

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	HST	SS	---
INSIDE DIAMETER (IN)	4 1/4	3	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: 5 7/8 in. tricone
DRILL MUD: ---
OTHER: Advance augers to top of bedrock without sampling NX core approximately 7.0 ft. corehole to nominal 6.0 in. Install 2 in. PVC wellscreen and riser.

ELEVATION: 530.90 ft.
DATUM: RCD
START: 2 November 1994
FINISH: 2 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						Advanced augers through overburden to top of bedrock at 9.2 ft. See Core Boring Report.
10					9.2	Apparent top-of-rock at 9.2 ft. Begin Coring at 9.2 ft.
15						
20						
25						

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 9.2 ROCK CORED (LIN FT): 7.6 SAMPLES: 0S, 2R BORING NO. MW309-3

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. MW309-3 FILE NO. 70436-109 SHEET NO. 2 OF 3

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5							Begin Coring at 9.2 ft.
10		9.2 R1 13.2	40 28		SL		Light gray, fine-grained, medium to thin-bedded, siliceous DOLOSTONE, with stylolites, moderately closely to closely spaced argillaceous partings. Basal beds especially siliceous and sandy. -PENFIELD DOLOSTONE- Partly open slightly weathered vertical fracture from 12.1 to 13.2 ft., with secondary gypsum from 13.0 to 13.2 ft. Same. Partly open high angle fracture at 14.1 ft. Moderate to severely weathered shaley partings at 15.9 and 16.1 ft.
15		13.2 R2 16.8	41 39		S		
20							Bottom of Exploration at 16.8 ft.
25							Notes: 1. Installed monitoring well MW309-3 in completed borehole. See Monitoring Well Installation Report for details. 2. Approximately 800 gallons of drilling water lost to formation during installation of MW309-3.
30							
35							

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

INTERFACE GROUNDWATER MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION -ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: D. MILLER RIG TYPE: MOBIL B-61 TRUCK MOUNT
INSTALLATION DATE: 2 NOVEMBER 1994

FILE NO.: 70436-109
WELL NO.: MW309-3
LOCATION: AOR-9
SHEET: 3 OF 3
INSPECTOR: D. Nostrant

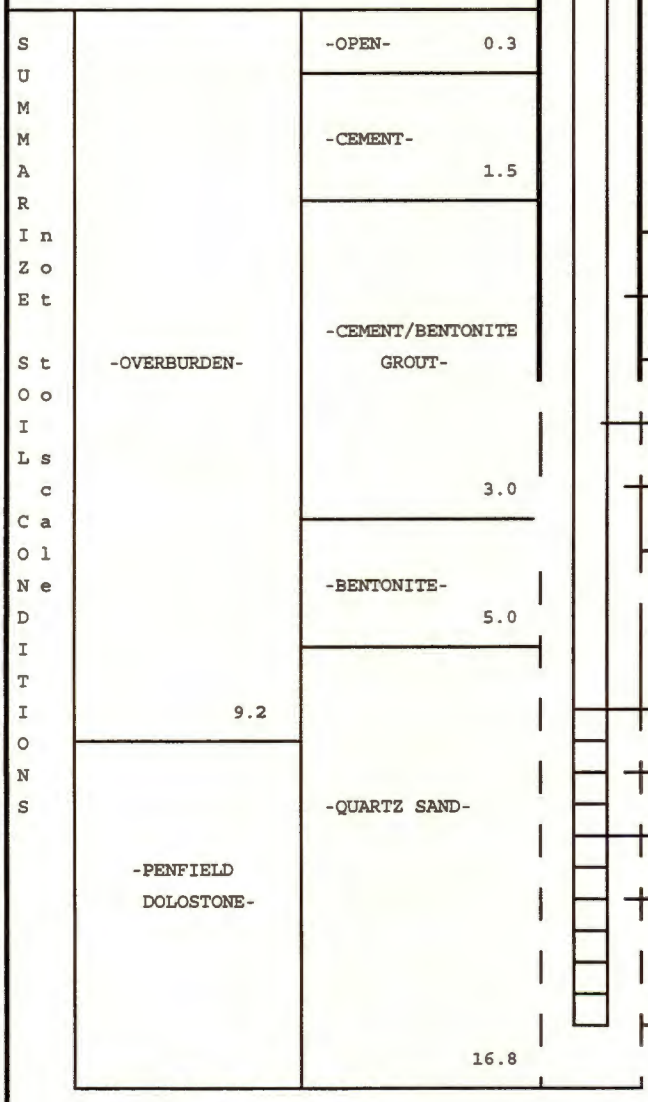
Survey Datum RCD

Ground Elevation: 530.90 ft.

SUMMARIZED SOIL CONDITIONS

-OVERBURDEN- 9.2

-PENFIELD DOLOSTONE- 16.8



Stickup above ground surface of protective casing.	0.0 ft.
Stickup above ground surface of riser pipe.	0.20 ft.
Thickness of Surface Seal	1.3 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete
Type of Protective Casing	Galvanized Steel
Inside Diameter of Protective Casing	8.0 in.
Depth of Bottom of Protective Casing	1.3 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Cement/Bentonite Grout
Diameter of Borehole	8.0 +/- in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	6.8 ft.
Type of Wellscreen	PVC
Screen Slot Size	0.010 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	16.0 ft.
Depth of Bottom of Borehole	16.8 ft.

Remarks:

Well No. MW309-3

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-309-3	TOP OF OUTER CASING ELEVATION: 530.90 TOP OF INNER RISER ELEVATION: 530.70	FILE NO. 70436-109 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/20/94			7.07	523.63	Bottom Depth - 15.63 ft.	DMN
1/13/95	1157		7.57	523.13		DMN
2/20/95			6.46	524.24		DMN/SHP
2/21/95	1630		6.43	524.27		DMN/SHP
6/27/95			7.94	522.76		DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. DB309-1

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 5
LOCATION: AOR 9

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Steel	---	HQ
INSIDE DIAMETER (IN)	12 & 8	---	3.0
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile B-80 Truck Mount
BIT TYPE: HQ Core Barrel
DRILL MUD: ---
OTHER: See remarks section for drilling procedures.

ELEVATION: 534.04 ft.
DATUM: RCD
START: 23 December 1994
FINISH: 16 January 1995
DRILLER: D. Miller
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						Advanced 14-1/4 in. augers to the 15.5 ft. without sampling.
10						
15						Apparent top-of-rock at 15.5 ft.
20						Note: 1. Advanced 15-7/8 in. hammer bit using air rotary to 19.5 ft. Installed permanent 12 in. steel casing to 19.5 ft.
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 15.5
ROCK CORED (LIN FT): 85.3
SAMPLES:

BORING NO. DB309-1

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-1 FILE NO. 70436-109 SHEET NO. 2 OF 5

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
20		19.5 R1 25.8	76 74	100 97	SL	24.9	Hard slightly weathered medium gray fine grained medium bedded siliceous DOLOSTONE with moderate to closely spaced low angle joints. -DECEW DOLOSTONE- Slightly weathered low angle joints at 20.0, 20.3, 21.6, and 23.9 ft.
25		25.8 R2 34.6	105 105	100 100	SL		Light to dark gray, fine grained, thin bedded argillaceous DOLOSTONE, with moderately closely spaced argillaceous partings. Secondary gypsum seams in closely to very closely spaced partings with slightly weathered horizontal joints at 27.4, 29.2, 30.0, 30.8, 31.9, 32.3, 32.7 and 33.5 ft. -ROCHESTER FORMATION- (GATES DOLOSTONE MEMBER)
30							
35		34.8 R3 44.8	122 110	100 90	SL		Slightly weathered smooth to undulating low angle joints at 35.6, 36.1, 36.4, 36.7, 37.1, 37.6, 39.2, 39.3, 40.0, 40.3, 40.8, 41.3, 41.8, 42.4 and 41.7 ft. Driller noted apparent void and loss of drill water circulation at 38.0 ft.
40							
45		44.8 R4 51.3	76 65	97 83	SL		Slightly weathered smooth low angle joints at 44.9, 45.1, 45.3, 45.7, 46.5, 47.5, 47.7, 50.2 and 50.3 ft.
50							

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-1 FILE NO. 70436-109 SHEET NO. 3 OF 5

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		51.3 R5 54.5	38 38	100 100	SL		Slightly weathered smooth low angle joints at 52.1 and 53.6 ft. (gypsum filled at 53.6 ft.)
55		54.5 R6 61.4	82 61	100 74	SL	55.3	Light to dark gray, fine-grained, follilferous, dolomitic MUDSTONE with interbedded thin dolostone and limestone, and secondary gypsum seams in closely to very closely spaced partings. Slightly weathered horizontal below angle smooth joints at 54.6, 54.8, 55.0, 55.1, 55.2, 55.6, 55.7, 56.1, 56.4, 57.0, 57.6, 58.0, 58.8, 59.0, 59.5, 60.6 and 61.3 ft. -ROCHESTER FORMATION-
60		61.4 R7 64.7	40 34	100 80	SL		Joints same as above at 61.9, 62.9, 63.3, 63.7 and 64.4 ft.
65		64.7 R8 71.8	81 67	95 79	SL		Joints same as above, except some gypsum filled at 64.8, 64.9, 65.0, 65.4, 65.8, 66.2, 66.6, 67.2, 67.7, 68.2, 68.5, 68.8, 68.5, 70.7, and 71.2 ft.
70		71.8 R9 75.4	43 43	100 100	SL		Joints same as above at 72.3, 73.6, and 74.8 ft.
75		75.4 R10 81.9	77 72	99 92	SL		Joints as above at 75.4, 76.0, 76.5, 76.9, 77.0, 77.9, 78.5, 79.1, 79.4, 79.8, 80.2, 80.7, and 81.1 ft.
80		81.9 R11 85.0	36 32	97 86	SL		Joints same as above at 82.5, 83.2, 83.7, 84.2, 84.5, 84.8, and 84.9 ft.
85							

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-1 FILE NO. 70436-109 SHEET NO. 4 OF 5

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
90		85.0 R12 92.2	86 75	100 87	SL		
95		92.2 R13 100.8	103 73	100 71	SL		Joints same as above at 92.5, 92.9, 93.0, 93.5, 93.8, 94.3, 94.7, 94.9, 95.4, 95.9, 96.1, 96.6, 96.9, 97.3, 97.4, 98.1, 98.3, 98.7, 99.1, 99.4, 99.7, 100.1, and 100.4 ft. 98.5 ft. - High angle joint.
100							
105							Notes: 1. Performed permeability testing and water sampling for field gas chromatograph and lab screening for discrete 10 ft. intervals. 2. Installed bedrock monitoring well in completed borehole. See Bedrock Monitoring Well Installation Report for details.
110							
115							
120							

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

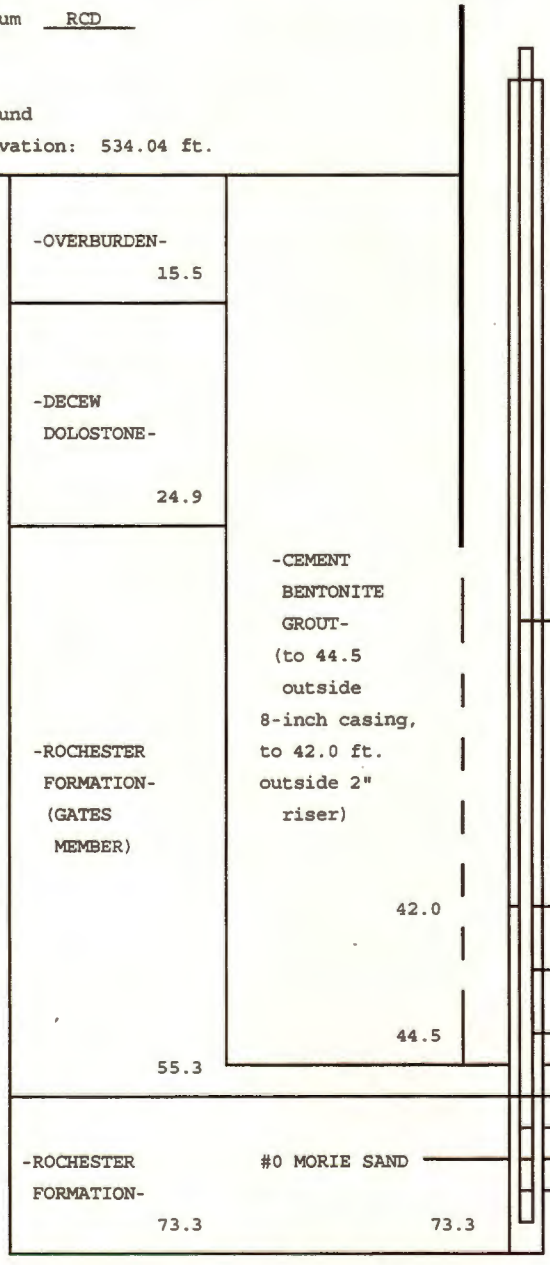
BEDROCK MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: D. MILLER RIG TYPE: MOBILE DRILL B-57 TRUCK MOUNT
INSTALLATION DATE: 16 JANUARY 1995

FILE NO.: 70436-109
WELL NO.: DB309-1
LOCATION: See Plan
SHEET: 5 OF 5
INSPECTOR: S. Phillips

Survey Datum RCD

Ground Elevation: 534.04 ft.



Stickup above ground surface of protective casing	1.4 ft.
Stickup above ground surface of PVC Riser	0.95 ft.
Thickness of Surface Seal	42.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	See Diagram
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	12.0 in.
Depth of Bottom of Protective Casing	19.5 ft.
Inside Diameter of Intermediate Casing	8.0 in.
Type of Backfill Around Casing	Cement/Bentonite Grout
Diameter of Borehole	12.0 in.
Top of Bentonite Seal at 42.0 ft.	
Bentonite Pellets between 2" Riser and 8" Casing	
Top of Sand Pack at 44.0 ft.	
Depth of Bottom of 8" Casing	44.5 ft.
Top of Top of Well Screen at 45.0 ft.	
Diameter of Rock Hole	3-7/8 in.
Type of Screen 0.010 - slotted PVC	
Diameter of Screen 2.0 inches	
Depth of Bottom of Screen	70.0 ft.

Method and Materials used to grout casings: Pressure grout.

Remarks: Completed borehole backfilled by Tremie method with cement bentonite grout from total depth (100.8 feet) to 73.3 feet prior to installation of well screen, riser, sandpack, and seals.

Well No. DB309-1

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: DB-309-1	TOP OF OUTER CASING ELEVATION: 535.44 TOP OF INNER RISER ELEVATION: 534.99	FILE NO. 70436-109 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
2/22/95	1250		27.30	507.69		DMN/SHP
6/27/95			25.68	509.31		DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. DB309-2

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 4
LOCATION: AOR 9

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Steel	---	HQ
INSIDE DIAMETER (IN)	12 & 8	---	3.0
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile B-80 Truck Mount
BIT TYPE: HQ Core Barrel
DRILL MUD: ---
OTHER: See remarks section for drilling procedures.

ELEVATION: 536.56 ft.
DATUM: RCD
START: 28 November 1994
FINISH: 22 December 1994
DRILLER: D. Miller
H&A REP: D. Nostrant

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
						Advanced 14-1/4 in. augers to top-of-rock without sampling.
						Top-of-rock at 4.0 ft.
5						
10						Note: 1. Advanced 15-7/8 in. hammer bit to 8.0 ft. and installed permanent 12 in. I.D. steel casing.
15						
20						
25						

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0
ROCK CORED (LIN FT): 37.0
SAMPLES:

BORING NO. DB309-2

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-2 FILE NO. 70436-103 SHEET NO. 2 OF 4

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. DEPTH(FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
							Begin coring at 8.0 ft.
10		8.0 R1 17.0	105 90	97 83	SL		Light gray, fine graned medium to thin bedded siliceous DOLOSTONE, with stylolites, moderately close to closely spaced argillaceous partings. -PENFIELD DOLOSTONE- Secondary gypsum filled pit at 8.9 ft. Horizontal to low angle to moderately weathered planar to wary joints at 9.2, 9.9, 10.4, 10.7, 10.8, 11.3, 12.0, 12.3, 12.8, 13.5, 13.8, 14.2, 14.7, 15.5, 16.6, and 15.8 ft. High angle slightly weathered smooth joint at 11.0 to 11.4 ft. Vertical moderately weathered joints at 9.6 to 9.8 and 15.3 ft.
15							
20		17.0 R2 24.8	94 65	100 69	SL	17.0	Medium gray fine grained, medium to thin bedded siliceous DOLOSTONE, with dark gray to black, moderately to closely spaced argillaceous partings, closely to very closely spaced horizontal slightly weathered planar joints. -DECEW DOLOSTONE- Frequent pits from 17.0 to 24.8 ft. Low angle slightly weathered smooth joints at 21.3, 23.4, 24.5, and 24.6 ft. Vertical slightly weathered smooth joint from 20.9 to 30.2 ft.
25		24.8 R3 33.7	107 100	100 93	SL		Same, with slightly weathered low angle joints at 25.5, 26.8, 27.4, 27.8, 28.3, 28.4, 29.3, 39.4, 39.6, 30.1, and 32.4 ft. Low angle moderately weathered undulating joints at 30.8 and 31.2 ft.
30							
35		33.7 R4 37.0	41 41	103 100	SL		Same, with low angle slightly to moderately weathered joints at 35.6 and 36.2 ft.
		37.0 R5 38.5	18 8	100 72	SL		Same. Driller noted problem with core bit from 37.0 to 41.0 ft. Low angle slightly weathered joints at 37.4, 37.9, and 38.1 ft.
		R6 39.0	6/4	100/67	SL	39.0	Light to dark gray, fine grained argillaceous DOLOSTONE.
40		R7 40.3	9/6	64/43	SL		

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-2 FILE NO. 70436-103 SHEET NO. 3 OF 4

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. DEPTH(FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATH-ERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		R7 40.3	9/6	64/43	SL		-ROCHESTER FORMATION- (GATES MEMBER) Horizontal slightly weathered joint at 39.6 ft. Advance 3-7/8 in roller bit from 41.0 to 42.5 ft. to complete borehole.
		R8 41.0	9/6	100/67	SL		
							Bottom of Exploration at 42.5 ft.
45							
50							
55							
60							
65							
70							
75							

Note:
1. Noted approximately 30 gallons of water lost from 8.0 to 24.8 ft., 300 gallons of water lost from 24.8 to 37.0 ft., 80 gallows of water lost from 37.0 to 41.0 ft. during drilling.

2. See Well Completion Report.

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

BEDROCK MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: D. MILLER RIG TYPE: MOBILE DRILL B-80 TRUCK MOUNT
INSTALLATION DATE: 28 NOVEMBER - 22 DECEMBER 1994

FILE NO.: 70436-109
WELL NO.: DB309-2
LOCATION: AOR 9
SHEET: 4 OF 4
INSPECTOR: S. Phillips

Survey Datum RCD

Ground Elevation: 536.31 ft.

SUMMARIZED SOIL CONDITIONS

-OVERBURDEN-

4.0

LOCKPORT DOLOMITE (PENFIELD MEMBER)

17.0

-DECEW DOLOMITE-

-CEMENT BENTONITE GROUT-

37.0

39.0

ROCHESTER FORMATION (GATES MEMBER)

Depth/Stickup above ground surface of protective casing.	0.0 ft.
Stickup above ground surface of well casing.	2.0 ft.
Thickness of Surface Seal	8.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Grout
Type of Protective Casing	Steel
Inside Diameter of Protective Casing	12.0 in.
Depth of Bottom of Protective Casing	8.0 ft.
Inside Diameter of Well Casing	8.0 in.
Type of Backfill Around Casing	Grout
Diameter of Borehole	12.0 in.
Depth of Bottom of Casing	37.0 ft.
Diameter of Open Rock Hole	3-7/8 in.
Depth of Bottom of Open Rock Hole	42.5 ft.

Method and Materials used to grout casings: Pressure grout (cement/bentonite).

Remarks:

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: DB-309-2	TOP OF CASING ELEVATION: 538.31	FILE NO. 70436-109 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
2/23/95	1720		20.88	517.43	No inner riser, only 8 in. steel casing.	DMN/SHP
6/27/95			20.93	517.38		DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. DB309-3

PROJECT: BASELINE WORL PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 5
LOCATION: AOR 9

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Steel	---	HQ
INSIDE DIAMETER (IN)	12 & 8	---	2 3/8
HAMMER WEIGHT (LB)	---	---	---
HAMMER FALL (IN)	---	---	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile B-80 Truck Mount
BIT TYPE: HQ Core Barrel
DRILL MUD: ---
OTHER: See remarks section for drilling procedures.

ELEVATION: 535.69 ft.
DATUM: RCD
START: 23 January 1994
FINISH: 20 Febrary 1994
DRILLER: D. Miller
H&A REP: S. Phillips

DEPTH (FT)	FIELD OVA (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
5						Advanced 14-1/4 in. augers to 20.0 ft. without sampling.
10						
15						
20						Top-of-rock at 20.0 ft.
25						

Note:
1. Advanced 15-7/8 in. hammer bit to 28.0 ft. and installed permanent 12 in. I.D. steel casing.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 20.0
ROCK CORED (LIN FT): 80.4
SAMPLES:

BORING NO. DB309-3

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-3 FILE NO. 70436-109 SHEET NO. 2 OF 5

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. / DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
30		28.0 R1 32.3	52 26	100 50			Light to dark gray, fine grained thin bedded argillaceous DOLOSTONE, with moderately closely spaced argillaceous partings. -ROCHESTER FORMATION- (GATES DOLOSTONE MEMBER) Low angle to horizontal slightly weathered joints at 28.1, 28.5, 29.2, 29.4, 29.6, 29.9, 30.0, 30.4, 31.0, 31.4, 31.7, 31.8, and 32.0 ft.
35 40		32.3 R2 42.0	116 91	100 78			Same, with low angle to horizontal slightly weathered joints at 32.9, 33.1, 33.7, 34.4, 35.0, 35.4, 35.9, 36.2, 36.6, 37.0, 37.4, 38.1, 38.7, 39.0, 39.6, 39.8, 40.0, 40.3, 40.5, 40.7, 41.0, 41.4, and 41.6 ft. Occasional secondary gypsum filled vug.
45		42.0 R3 48.3	75 61	100 81			Same, with log angle to horizontal slightly weathered joints at 42.3, 44.1, 44.5, 44.7, 45.2, 45.4, 45.7, 46.3, 47.0, 47.1, 47.3, and 47.5 ft. Low angle slightly weathered joint at 47.1 ft. Occasional secondary gypsum filled vug.
50		48.3 R4 55.0	79 60	99 76		51.3	Same, with low angle to horizontal slightly weathered joints at 48.6, 49.0, 49.1, 49.6, 49.7, 50.3, 50.4, 50.8, and 51.0 ft. Low angle slightly weathered joint at 50.5 ft. Light to dark gray fine grained dolomitic MUDSTONE, interbedded with this dolostone and limestone beds, and secondary gypsum seams in close to very closely spaced partings. -ROCHESTER FORMATION-
55 60		55.0 R5 61.3	76 42	100 55			Low angle to horizontal slightly weathered joints at 51.7, 51.8, 52.2, 52.7, 53.0, 53.3, 53.5, 53.8, 54.3, 54.5, and 54.9 ft. Low angle slightly weathered joint at 51.5 ft. Same, with low angle to horizontal joints at 55.5, 55.8, 56.0, 56.3, 57.0, 57.1, 58.1, 58.2, 58.4, 58.9, 59.1, 59.2, 59.3, 59.6, 59.7, 59.8, 60.2, 60.4, 60.7, and 60.8 ft. Low angle to horizontal moderately weathered joints at 57.4 and 57.6 ft.

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-3 FILE NO. 70436-109 SHEET NO. 3 OF 5

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		61.3					Same, with low angle to horizontal slightly weathered joints at 61.8, 62.7, 63.1, 63.3, 63.6, 68.3, 63.9, 61.7, 65.1, 65.4, 65.5, 65.7, 65.8, 66.4, 66.8, 67.1, 67.4, 67.5, and 67.9 ft.
65		R6	80 52	100 65			
		68.0					
		68.0					Same, with low angle to horizontal slightly weathered joints at 68.1, 68.2, 68.4, 68.9, 69.2, 69.6, 70.2, 70.4, 70.6, 71.1, 71.5, 72.3, 74.5, 74.9, 75.2, 75.4, 75.8, 76.1, 77.1, and 77.8 ft. Low angle slightly weathered joints at 73.3 and 73.4 ft.
70		R7	123 99	102 82	SL		
75							Noted several high angle to vertical breaks in core. Driller noted these breaks to be mechanical (result of drilling).
		78.1					
		78.1					Same, with low angle to horizontal slightly weathered joints at 78.2, 79.4, 80.7, 81.3, 81.5, 82.0, 82.3, 82.8, 83.4, 83.9, 84.5, 85.2, 85.8, 85.9, 86.2, 86.6, 89.9, 87.3, and 87.9 ft.
80							Moderately dipping slightly weathered joint at 80.4 ft.
		R8	122 102	100 84	SL		
85							
		88.3					
		88.3					Same, with low angle to horizontal slightly weathered joints at 88.5, 89.5, 89.6, 90.1, 90.4, and 90.8 ft.
90		R9	38 33	100 87	SL		
		91.5					
		R10 92.8	91/0	88/0	SL		Same, with low angle to horizontal slightly weathered joints at 91.7, 91.9, 92.2, and 94.4 ft.
		92.8					
95							

H & A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	CORE BORING REPORT	BORING NO. DB309-3 FILE NO. 70436-109 SHEET NO. 4 OF 5

DEPTH (FT)	DRILLING RATE (MIN./FT.)	CORE NO. DEPTH (FT)	RECOVERY/RQD IN.	RECOVERY/RQD %	WEATHERING	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
100		R11 100.4	91 75	100 82	SL		Same, with low angle to horizontal slightly weathered joints at 92.9, 93.3, 93.9, 94.4, 94.6, 95.0, 95.5, 96.2, 96.7, 97.1, 97.6, 97.9, 98.4, 99.0, 99.1, 99.5, 100.0, 100.1 and 100.2 ft. Low angle slightly weathered joints at 96.1 ft.
							Bottom of Exploration at 100.4 ft.
105							Notes: 1. Performed permeability testing and water sampling for gas chromatograph and lab screening for discrete 10 ft. intervals. 2. Installed monitoring well in completed borehole. See Bedrock Monitoring Well Installation Report for details.
110							
115							
120							
125							
130							

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

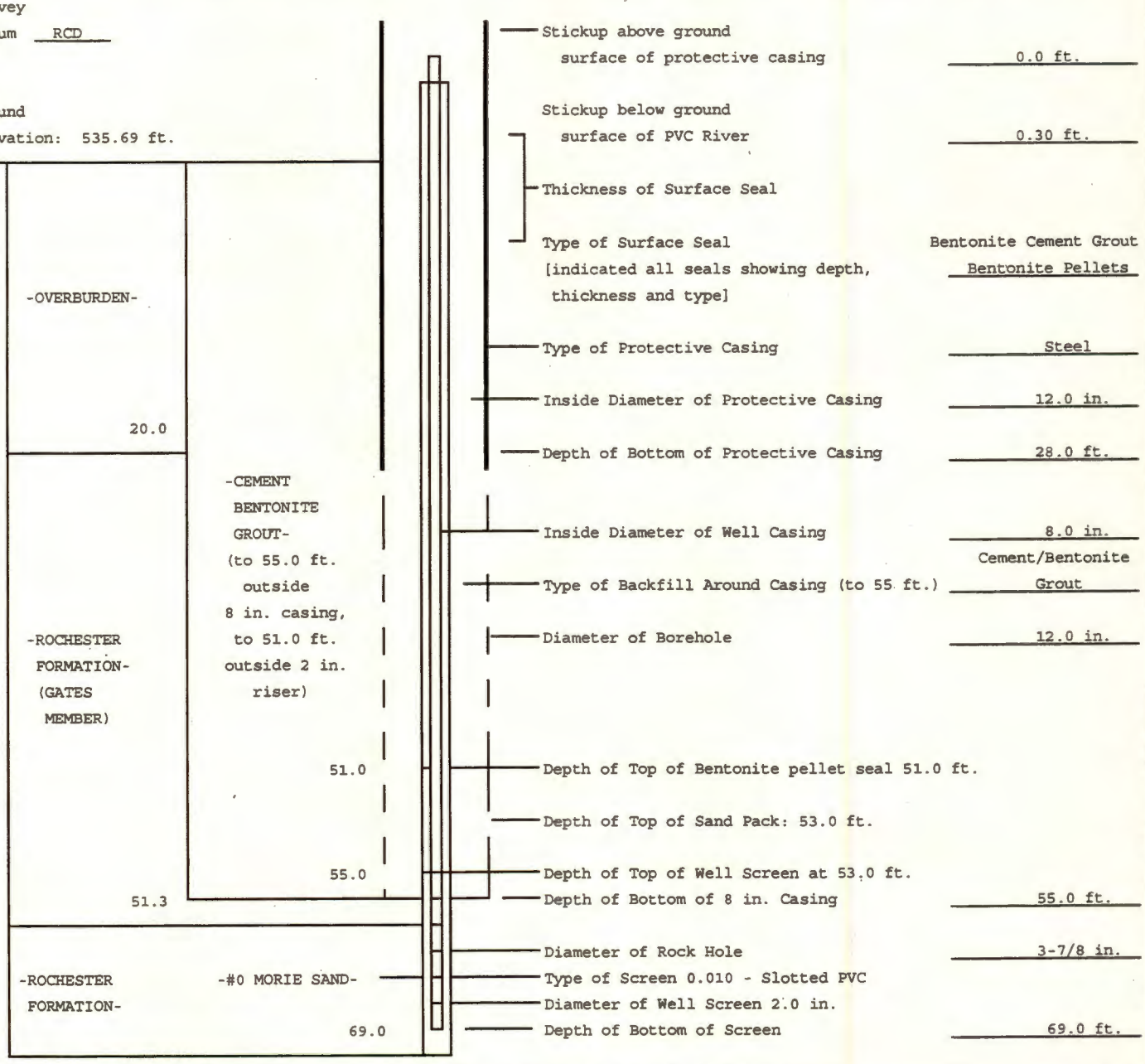
BEDROCK MONITORING WELL REPORT

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
LOCATION: 1555 LYELL AVENUE, ROCHESTER, NEW YORK
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING CO.
DRILLER: P. WADDELL RIG TYPE: MOBILE DRILL B-57 TRUCK MOUNT
INSTALLATION DATE: 26-28 OCTOBER 1994

FILE NO.: 70436-109
WELL NO.: DB309-3
LOCATION: See Plan
SHEET: 5 OF 5
INSPECTOR: S. Phillips

Survey Datum RCD

Ground Elevation: 535.69 ft.



Method and Materials used to grout casings:

Remarks: Completed borehole backfilled by tremie method from total depth (100.4 ft.) to 69.0 ft. with bentonite/cement grout prior to installation of well screen, riser,, sandpack, and seals.

Well No. DB309-3

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: DB-309-3	GROUND/TOP OF OUTER CASING ELEVATION: 535.69 TOP OF INNER RISER ELEVATION: 535.39	FILE NO. 70436-109 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
2/24/95	1715		22.92	512.53		DMN/SHP
6/27/95			23.53	511.86		DMN

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B309-1

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 1
LOCATION: See Plan
(Background location)

ELEVATION: 533.79
DATUM: RCD
START: 3 November 1994
FINISH: 3 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Mobile Drill B-57
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling to natural soil.

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	ND	3 10 19 28	S1 18"/24"	0.0 2.0		Medium dense brown SILT, little coarse to fine sand, trace fine gravel, trace grass, trace slag, damp. -FILL-
	ND	41 45 29 26	S2 15"/24"	2.0 4.0		Very dense tan-brown SILT, trace coarse to fine sand, trace clay, trace medium to fine gravel. -FILL-
5	ND	12 17 11 7	S3 12"/24"	4.0 6.0		Same, except medium dense. -FILL-
	ND	3 7 21 26	S4 16"/24"	6.0 8.0	6.8 7.8 8.0	Medium dense dark brown SILT, little clay, trace coarse to fine sand, trace roots, damp to moist. -LACUSTRINE-
	ND	59 76 43 81	S5 0"/24"	8.0 10.0		Very dense light gray SILT, little clay, trace gravel, trace coarse to fine sand, trace roots, moist to wet. -LACUSTRINE-
10						No recovery. -GLACIAL TILL(?)-
	ND	29 16 12 10	S6 2"/24"	10.0 12.0	11.1 12.0	Medium dense moderately weathered DOLOMITE with residual soil. -WEATHERED BEDROCK-
						Bottom of Boring at 12.0 ft.
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 12.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 6S (S5 had no recovery)
BORING NO. B309-1

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B309-2

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-109
SHEET NO. 1 OF 1
LOCATION: See Plan (Background Location)

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	Auger	SS	---
INSIDE DIAMETER (IN)	4 1/4	3.0	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: Diedrich D-25 Skid Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Advance augers with continuous split spoon sampling to natural soil.

ELEVATION: 532.55
DATUM: RCD
START: 3 November 1994
FINISH: 3 November 1994
DRILLER: P. Waddell
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
	ND	7 25 16 14	S1 12"/24"	0.0 2.0		Dense brown SILT, little coarse to fine sand, trace clay, with rootlets, damp. Cobble at 1.0 ft. -FILL-
	ND	12 16 21 13	S2 16"/24"	2.0 4.0		Dense tan-brown mottled SILT, little coarse to fine sand, trace fine gravel, damp. Same.
5	ND	100/0.4	S3 5/5"	4.0-4.4	4.1	Very dense brown silty coarse to fine SAND, little gravel, moist. -GLACIAL TILL- Advanced augers without sampling from 4.4 to 6.0 ft.
	ND	50/0.0	S4 0/0"	6.0-6.0	6.4	Split spoon refusal at 6.0 ft. Advanced augers without sampling to auger refusal at 6.4 ft.
						Bottom of Boring at 6.4 ft.
10						
15						
20						
25						

Notes:
1. Boring was grouted to ground surface upon completion.
2. ND = Not detected.

WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 6.4 ft. ROCK CORED (LIN FT): --- SAMPLES: 4S (S4 had no recovery) BORING NO. B309-2

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B309-3

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-223
SHEET NO. 1 OF 1
LOCATION: See Notes (Background Location)

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1 3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: CME-75 Truck Mounted
BIT TYPE: ---
DRILL MUD: ---
OTHER: Continuous split spoon sample from 0 to 6.0 ft.

ELEVATION: 533.8 +/-
DATUM: RCD
START: 28 June 1995
FINISH: 28 June 1995
DRILLER: N. Short
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		4 5 11 19	S1 18"/24"	0.0 2.0		Medium dense dark brown silty fine SAND, with organics, dry. -TOPSOIL (FILL)-
		11 14 7 8	S2 18"/24"	2.0 4.0	3.9	Medium dense brown silty fine SAND, little gravel, trace coarse to medium sand, dry. -FILL- Same.
5		4 4 3 4	S3 8"/24"	4.0 6.0	6.0	Loose black to dark brown ASH, dry. Same. -FILL-
						Bottom of Exploration at 6.0 ft.
10						
15						
20						
25						

Notes:
1. Borehole located 2 ft. south of B309-1. Location and elevation not surveyed.
2. Borehole backfilled with excess sample material.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 6.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 3S

BORING NO. B309-3

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B309-4

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-223
SHEET NO. 1 OF 1
LOCATION: See Plan
(Background Location)

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1 3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: ---
BIT TYPE: ---
DRILL MUD: ---
OTHER: Continuous split spoon sample from 0 to

ELEVATION: 533.8 +/-
DATUM: RCD
START: 28 June 1995
FINISH: 28 June 1995
DRILLER: N. Short
H&A REP: D. Nostrant

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
0		2 10 15 10	S1 12"/24"	0.0 2.0	0.5	Dark brown silty fine SAND, trace coarse sand, trace gravel, trace organics, dry. -TOPSOIL (FILL)-
		28 32 16 12	S2 18"/24"	2.0 4.0	3.2	Medium dense silty fine SAND, little coarse to medium sand, little gravel, dry. -FILL- Same, except very dense. Dense to medium dense black mile to medium ASH, dry. -FILL-
5						Bottom of Exploration at 4.0 ft.
10						
15						
20						
25						

Notes:
1. Elevation not surveyed.
   Location determined by tape measure survey performed by H&A of New York.
2. Borehole backfilled with excess sample material.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	DEPTH (FT) TO: BOTTOM OF HOLE	DEPTH (FT) TO: WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B309-4

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists	TEST BORING REPORT	BORING NO. B309-5

PROJECT: BASELINE WORK PLAN IMPLEMENTATION - FORMER DELCO CHASSIS FACILITY
CLIENT: GENERAL MOTORS CORPORATION - ENVIRONMENTAL & ENERGY STAFF
CONTRACTOR: PENNSYLVANIA DRILLING COMPANY

FILE NO. 70436-223
SHEET NO. 1 OF 1
LOCATION: See Plan
(Background Location)

ELEVATION: 533.8 +/-
DATUM: RCD
START: 28 June 1995
FINISH: 28 June 1995
DRILLER: N. Short
H&A REP: D. Nostrant

ITEM	CASING	DRIVE SAMPLER	CORE BARREL
TYPE	---	SS	---
INSIDE DIAMETER (IN)	---	1 3/8	---
HAMMER WEIGHT (LB)	---	140	---
HAMMER FALL (IN)	---	30	---

DRILLING EQUIPMENT & PROCEDURES

RIG TYPE: CME-75 Truck Mount
BIT TYPE: ---
DRILL MUD: ---
OTHER: Continuous split spoon sample from 0 to 4.0 ft.

DEPTH (FT)	OVA READING (PPM)	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS
		1 10 15 19	S1 19"/24"	0.0 2.0	0.5	Very loose dark brown silty fine SAND, trace coarse sand, trace organics, dry. -TOPSOIL (FILL)-
		7 11 10 10	S2 24"/24"	2.0 4.0	2.5 4.0	Medium dense brown silty fine SAND, little gravel, trace coarse to medium sand, dry. -FILL- Medium dense black to red-brown fine to medium ASH, dry. -FILL-
5						Bottom of Exploration at 4.0 ft.
10						
15						
20						
25						

Notes:
1. Elevation not surveyed.
   Location determined by tape measure survey performed by H&A of New York.
2. Borehole backfilled with excess sample material.

WATER LEVEL DATA					
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER

SAMPLE IDENTIFICATION

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon

SUMMARY

OVERBURDEN (LIN FT): 4.0 ft.
ROCK CORED (LIN FT): ---
SAMPLES: 2S

BORING NO. B309-5

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW-104	RISER ELEVATION: 534.80 FLOOR ELEVATION: 535.11	FILE NO. 70042-43/70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/17/91	1300	---	6.50 ft.	528.30		WL
12/17/91	1500	2 hrs.	6.25 ft.	528.55		WL
12/18/91	1040	1 day	6.52 ft.	528.28		WL
12/19/91	0830	1 day	6.63 ft.	528.17	Developed 70 gallons. Water is brown with sulfur odor.	WL
12/20/91	0800	1 day	6.63 ft.	528.17		WL
1/28/92	1414	37 days	6.45 ft.	528.35		WL
10/1/93			6.94 ft.	527.86	Note: Casing and riser elevation surveyed by STV for McLaren/Hart in October 1993.	McL/H
2/09/94	1214		6.71 ft.	528.09	0.3' from top of riser to outer casing.	ER
9/01/94			6.80 ft.	528.00		DMN
2/20/95			6.46 ft.	528.34		SHP/DMN
2/22/95	1635		6.47 ft.	528.33		DMN/JGT
6/27/95			6.78 ft.	528.02		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW-105	RISER ELEVATION: 534.68 FLOOR ELEVATION: 535.03	FILE NO. 70042-43/70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/18/91	1330	---	7.85 ft.	526.83		WL
12/19/91	0900	1 day	8.20 ft.	526.48	Developed 70 gallons.	WL
12/20/91	1340	1 day	8.05 ft.	526.63		WL
1/28/92	1411	37 days	7.99 ft.	526.69		WL
10/1/93			8.06 ft.	526.62	Casing and riser elevations surveyed by STV in October 1993.	McL/H
11/12/93			8.30 ft.	526.38	Depth to bottom = 14.07 ft.	JM
2/09/94	1220		7.79 ft.	526.89	7.0 ft. to T.O.C. 0.37 ft.	ER
9/01/94			7.80 ft.	526.88		DMN
2/20/95			7.72 ft.	526.96		DMN/SHP
2/22/95	1545		7.69 ft.	526.99		DMN/SHP
6/27/95			8.30 ft.	526.38		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: OW-107	RISER ELEVATION: 534.69 FLOOR ELEVATION: 535.01	FILE NO. 70042-43/70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
12/19/91	1600	---	6.30 ft.	528.39		WL
12/20/91	0830	1 day	6.60 ft.	528.09	Developed 70 gallons.	WL
1/28/92	1407	37 days	6.70 ft.	527.95		WL
10/1/93			6.96 ft.	527.73	Casing and riser elevation surveyed by STV in October 1993.	McL/H
2/09/94			---	---	Covered by equipment.	ER
2/20/95			6.59 ft.	528.10		SHP/DMN
2/22/95	1605		6.64 ft.	528.05		SHP/DMN
6/27/95			---	---	Steel electric conduit installed over well cover	DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-6	GROUND/TOP OF CASING ELEVATION: 532.19 TOP OF INNER RISER ELEVATION: 532.00	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/10/93	1200		15.61 ft.	516.39	Depth to bottom = 27.02 ft.	JM
12/3/93	1156		15.30 ft.	516.70		RF
2/08/93			-	-	Could not locate	ER
9/01/94			15.00 ft.	517.00		DMN
2/20/95			13.80 ft.	518.20		DMN/SHP
2/21/95	1710		13.72 ft.	518.28		DMN/SHP
6/27/95			16.24 ft.	515.76		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-7	GROUND/TOP OF CASING ELEVATION: 532.88 TOP OF INNER RISER ELEVATION: 532.66	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/10/93	1515		8.65 ft.	524.01	Depth to bottom = 16.20 ft.	JM
12/3/93	1148		8.39 ft.	524.27		RF
2/01/93			-	-	Could not locate	ER
9/01/95			8.98 ft.	523.68		DMN
2/20/95			8.70 ft.	523.96		DMN/SHP
2/24/95	1800		8.78 ft.	523.88		DMN/SHP
6/27/95			9.39 ft.	523.27		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-205	GROUND/TOP OF CASING ELEVATION: 534.86 TOP OF INNER RISER ELEVATION: 534.59	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/7/93	1446	24 hr.	9.27	525.32	Riser stickdown -0.26 ft.	JGT
11/11/93	AM	5 days	9.02	525.57		
11/11/93	PM	5 days	9.33	525.26	Developed well by bailing 2.0 gallons.	SHP
11/12/93	1315	6 days	9.70	524.89	Bottom depth = 14.46 ft.	JM
11/15/93	0925	9 days	9.02	525.57		JM
12/3/93	1239	27 days	9.02	525.57		RF
2/08/94			-	-	Covered by showbank	ER
9/01/94			9.41	525.18		DMN
2/20/95			6.22	528.37		DMN/SHP
2/23/95	955		6.22	528.37		DMN/SHP
6/27/95			9.79	524.80		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-206	TOP OF OUTER CASING ELEVATION: 536.78 TOP OF INNER RISER ELEVATION: 536.48	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/10/93	1300	2 days	9.32	527.16	Bailed 9 gallons, well went dry.	JM
11/10/93	1330	2 days	9.30	527.18	Bottom depth = 17.96 ft.	JM
11/11/93	---	3 days	9.32	527.16	Inner riser stick down 0.30 ft. below outer casing.	SHP
12/3/93	1210	24 days	8.75	527.73		RF
2/08/94	1340		9.19	527.29		ER
9/01/94			9.65	526.83		DMN
2/20/95			8.82	527.66		DMN/SHP
2/24/95	1755		8.98	527.50		DMN/SHP
6/27/95			10.58	524.90		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-207	GROUND/TOP OF CASING ELEVATION: 535.10 TOP OF INNER RISER ELEVATION: 534.86	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/12/93	---	7 days	10.68	524.18		JM
11/12/93	1515		10.69	524.17	Bottom depth = 13.05 ft.	JM
11/15/93	1350	10 days	10.73	524.13		JM
12/8/93	0930	24 days	10.88	523.98		ER
2/18/94	1459		10.83	524.03	0.25 0.2 to T.O.C.	ER
9/01/94			10.74	524.12		DMN
2/20/95			11.07	523.79		DMN/SHP
2/25/95	1230		11.07	523.79		DMN/SHP
6/27/95			11.28	523.58		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-209	TOP OF OUTER CASING ELEVATION: 538.82 TOP OF INNER RISER ELEVATION: 538.62	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Outer Casing	ELEVATION OF WATER	REMARKS	READ BY
11/7/93	1520	3 hours	22.87	515.95	Casing stickup 2.7 ft.	JGT
11/8/93	1422	1 day	23.10	515.72		JGT
11/12/93	1800	5 days	23.36	515.46		JGT
11/12/93	1900	5 days	23.36	515.46		JM
11/15/93	1230	8 days	23.30	515.52		JM
11/17/93		10 days	23.61	515.21		
12/3/93	1248	26 days	25.25	513.57		RF
2/09/93	0930		22.06	516.76	Measured difference in top of inner & outer casing elev. 0.25 ft.	ER
9/01/94			17.04	521.78	Measured difference in top of inner & outer casing elev. 0.18 ft.	DMN
2/20/95			17.30	521.52	Measured difference in top of inner & outer casing elev. 0.19 ft.	DMN/DMN
2/21/95	1045		16.33	522.49		DMN/SHP
6/27/95			18.29	520.53		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-210	GROUND/TOP OF CASING ELEVATION: 536.06 TOP OF INNER RISER ELEVATION: 535.82	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/11/93	---	2 days	12.56	523.26	Bailed 7.5 gallons, well went dry.	JM
11/12/93	1030	3 days	13.28	522.54	Bottom depth = 25.70 ft.	JM
11/15/93	0903	6 days	14.13	521.69		JM
12/3/93	1312	24 days	14.74	521.08		RF
2/09/94			-	-	Burried under show bank.	ER
9/01/94			15.38	520.44		DMN
2/20/95	1720		12.02	523.80		DMN/SHP
6/27/95			13.18	522.64		DMN

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-211	GROUND/TOP OF CASING ELEVATION: 536.42 TOP OF INNER RISER ELEVATION: 536.15	FILE NO. 70436-40 PAGE NO.

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/6/93	---		3.08	533.07		JGT
11/8/93	0903		3.20	532.95	Inner riser stick down -0.26 ft.	JGT
11/11/93	1312		3.75	532.40	Bailed 3.5 gallons, well went dry.	JM
11/15/93	0829		3.47	532.68		JM
12/3/93	1309		2.15	534.00		RF
2/09/94			5.01	531.14	0.36 ft. T.O.R to T.O.C	ER
9/01/94			4.96	531.19		DMN
2/20/95			4.90	531.25		DMN/SHP
6/27/95			4.46	531.69		DMH

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS GEOLOGISTS AND HYDROGEOLOGISTS	GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: MW-212	TOP OF OUTER CASING ELEVATION: 538.84 TOP OF INNER RISER ELEVATION: 538.73	FILE NO. 70436-40 PAGE NO. 1

DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM Inner Riser	ELEVATION OF WATER	REMARKS	READ BY
11/11/93	---	7 days	11.18	527.55	Inner stick down -0.22 ft.	SHP
12/3/93	1253	28 days	9.04	529.69		RF
2/09/94	1342		10.76	527.97		ER
9/01/94			11.20	527.53		DMN
2/20/95			10.03	528.70		DMN/SHR
2/23/95	1415		9.81	528.92		DMN/SHR
6/27/95			14.16	524.57		DMN

DB-309-1 2/22/95

~~535.44~~
27.30
508.14

30°F Cloudy RCD

DTW (~~outer~~ ~~ranger~~) 27.30 ft 508.14

DTB (~~outer~~ ~~ranger~~) 71.55 ft. 2" PVC set in HQ core hole

DTB (~~outer~~ corner) 70.5 ft

One Well Volume = 7.1 gal

Disp. Bailer Purge + Sample

Purged Volume = 10 (dry) gal

Analysis	Preserv.
VOC 8240	4°C
Semi VOC 8270	4°C
Metals	HNO_3

Noted - High pH and Cond.

Parameters

Vol Purged	pH	T°C	Cond	Turb
2	13.31	7.1	14.02	51
5	13.28	7.2	14.55	>200
Dry at 9 gallons				
9	13.39	7.5	15.07	>200
Dry at 10 gallons				

Sampled @ 2/22/95 12:50

DB-309-2 2/23/95

536.56
20.88
515.68

Rain 30°F

DTW (8.h.) 20.88 ft

DTB (Bailer string) 44.20.66.

One Well Volume = 48 gal

Grundfos Purge

Disp Bailer Sample

Purged Volume = 110 gal dry

Analysis	Preserv.
VOC 8240	4°C
SVOC 8270	4°C
Metals total	HNO_3

Parameters

Vol Purged	pH	T°C	Cond	Turb
34	13.14	11.1	4.29 mS	35
25	>14	11.8	4.26 mS	18
40	~~>14~~ 13.58	11.7	3.97 mS	30
60	8.80	11.7	4.21	12
110	7.47	10.4	4.04	10
Dry @ 110 gal				
Sampled @	2/23/95	17:20		

DB-309-3 2/24/95

535.69
23.19
512.50

Snow - 30°F
DTW (inner) 22.92 ft
DTW (outer) 23.19 ft
DTB (inner) 68.30 ft
One Well Volume = 7.3 gal
Disp. Bailer & Purge + Sample.

2" PVC inside HQ corehole.

Purged Volume = 13.0 gal

Analysis	Preser.
VOC 8240	4°C
SVOC 8270	4°C
Total Metals	HNO_3

Parameters / Vol Purged	pH	T°C	Cond	Turb
5 gal	13.69	10.7	3.96	142
9 gal	>14	10.9	12.39	>200
dry - 10.5 gal	>14	(6.6)	>14	>200
dry - 13.0 gal	>14	8.8	14.04	180

Sampled @ 2/24/95 17:15

MW-303-1 2/23/95

- Developing using Masterflex pump beg. in 2/20/95

DTW (inner) 8.10 ft DTP (inner) 7.25 ft

Vol Purged	pH ~~7.33~~	T(°C)	Cond	Turb
300 gal	~~27~~.33	21.2	2.75 mS	~~2~~10
360 gal	7.01	19.8	2.73 mS	7
440 gal	7.89	19.5	2.77 mS	4

↳ Total Purged Volume

Sample w/ disp bailer. (LNAPL)

Analysis	Preserv.
VOC 8240, SVOC 8270, PCB and Barium	4°C → 1-40ml VOA VIAL

Purge remaining LNAPL from well using masterflex

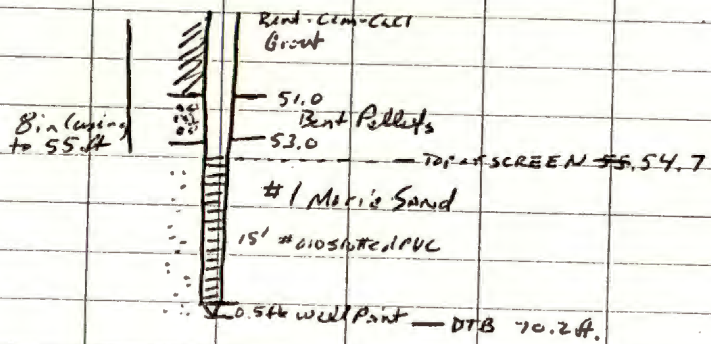
Sample GW w/ disp bailer.

Analysis	Preserv
VOC 8240	4°C
SVOC 8270	4°C
PCB	4°C
Barium	HNO_3
Sulfide	Zn Acetate

Sampled @ 2/23/95 15:30

20 Feb 1995 (continued)

- DB-309-3 Well Construction:



21 Feb 1995

- 8:45 Begin Pumping at MW-303-1.

- Calibrate pH, cond, and turb meter

12.88 mS - cond
7.03 pH 4.00 pH
0.00 NTU - Turb
10.00 NTU - Turb
2000 NTU - Turb

- Total Vol. of H_2O Recovered from MW-303-1
Development to date = 700 gal

~~ROPE~~

2/22 { ~~Decon Pump~~
(~~Q-Tom - Drum mix water ??~~)
- ~~Pick Up Bottles~~ AM

Notes - ~~Label Drums 303 and new MW-5~~
- ~~Decon Pump~~
- ~~Drop Sample AM, pick up Bottles~~
- ~~Tom Q - Can we mix water in Drums?~~
- ~~Need to discard??~~
~~Don't have DUP, MS/MSD + ...~~ MW-10L
~~split at Mand~~

22 Feb 1995

- blown fuse in masterflex pump. Buy fuses.
- Continue developing MW-303-1 total volume purged to date [360] gallons
- Calibrate meters

7.10 pH - 7.0 buffer
4.00 pH - 4.0
Cond.
turb
0 NTU ✓
10.0 NTU couldn't get instrument to respond while trying 10 NTU std.
200. NTU ✓

Notes:

- ~~Still missing extra PCB bottles @ MW-303-1~~ ~~MW-204~~ ~~MW-208~~
- Ice samples
- Trip Blank / store samples

2/23 AM ~~metals total + VOC @ DB-309-1, 2, 3~~

① Q - Tom - mix water in drums?
② GTC drop samples @ GTC
③ Schedule for Thur - Sid's Wells? ~~Hex~~ Cr+6?
④ MW-303-1??

23 February 1995

- Continue Development of MW-303-1.
Total Volume developed = 440 gallons

- Calibrate meters
#1 7.04 pH 4.00 pH #2
12.88 mS Cond

Turb 0 = 0.02 ✓
200 = 199.9 ✓

X - Perform Equip Blank 2/23/95 9:30
~~1 Liter Amber~~
X - Resample ~~OW-104~~ (TPH) 1L Amber
~~OW-105~~ (4 Liters)
~~OW-107~~ 1 L Amber
~~MW-6~~ - repurge 1L Amber
MW-209 - repurge 1L Amber

- PCB dup CQL
X - Get Cr+6 to Lab Tonight
X Filter Metals and Cr+6 from: MW-205 ✓
- MW-4 ✓
- MW-212 ✓
X TB in cooler; Remove ~~PCB dup MW-303-1~~ LNAPL.
(- Need to perm test DB-309-2 !!!
Note to Tom ↑↑↑)

FEBRUARY 1995 SAMPLING EVENT
STANDARD GROUNDWATER ANALYSIS PARAMETERS

	VOC		SVOC	PAH	TPH	PCB	TOTAL METALS					FILTERED METALS			CN-	SULF
	TCL	+MTBE					RCRA	+Cu	+Cr+6	Pb	Ba	RCRA	+Cu	+Cr+6		
OW-104	X				X		X								X	
OW-105	X				X		X								X	
" DUP	X				X		X								X	
" MS/MSD	X				X		X								X	
OW-107	X				X		X								X	
MW-1		X														
MW-2		X														
MW-3	X		X				X		X			X		X		
" DUP	X		X				X		X			X		X		
" MS/MSD	X		X				X		X			X		X		
MW-4	X			X		X	X	X	X			X	X	X		
MW-5	X		X													
MW-6	X				X		X									
MW-7	X				X		X									
MW-201		X		X						X						
MW-202		X		X						X						
" DUP		X		X						X						
" MS/MSD		X		X						X						
MW-203		X														
MW-204	X				X	X	X		X			X		X	X	
" LNAPL	X					X					X					
" LNAPL *						X										
MW-205	X				X		X		X			X		X	X	
MW-206	X				X		X									
MW-207	X				X		X									
MW-208	X		X			X					X					X
" LNAPL	X		X			X					X					
" LNAPL *						X										
MW-209	X				X											
MW-210	X				X											
MW-211	X				X		X									
MW-212	X				X		X		X			X		X		
MW-213		X		X						X						
MW-303-1	X		X			X					X					X
" LNAPL	X		X			X					X					
" LNAPL *						X										
MW-306-1	X			X		X	X	X								
" DUP	X			X		X	X	X								
" MS/MSD	X			X		X	X	X								
MW-307-1	X		X													
MW-309-1	X		X				X									
MW-309-2	X		X				X									
MW-309-3	X		X				X									
" DUP	X		X				X									
DB-309-1	X		X				X									
DB-309-2	X		X				X									
DB-309-3	X		X				X									
TRIP BL.	5X															
EQUIP BL.	X		X		X	X	X	X	X			X	X	X	X	X

ASP GROUNDWATER ANALYSIS PARAMETERS

VOC		SVOC	PAH	PCB	TOTAL METALS				FILT. METALS			CN-
TCL	+MTBE				RCRA	+Cu	+Cr+6	Pb	RCRA	+Cu	+Cr+6	
X					X							X
												X
X		X			X		X		X	X		
X		X			X		X		X	X		
X		X			X		X		X	X		
	X		X					X				
X			X	X	X	X						
				X		X						
				X		X						
X		X			X							
X												

* – SPLIT SAMPLE SUBMITTED TO INDEPENDENT LABORATORY

DELCO/ITT - GROUND WATER SAMPLING

OW104 2/22/95

Indoor well 2" PVC

DTW (inner) 6.47 ft

DTB (inner) 11.91 ft

One Well Volume = 0.8 gal

Disp Bailer Sample + Purge.

Purged Volume = 3.0 gal.

Analysis	Preserv.
VOCs 8240	4°C
TPH 8015	4°C
Metals	HNO_3
Cyanide	NaOH

Parameters

Vol Purged	pH	T°C	Cond	Turb
1	7.56	26.3	967	5
2	7.51	27.0	1024	75
3				

Sampled @ 2/22/95 16:35

Resample TPH - 1L amber 2/23/95

OW105 2/22/95

-Indoor well 2" PVC

DTW (inner) 2.69 ft

DTB (inner) 14.38 ft

One Well Volume = 1.1 gal

Purged Volume = 4.5 gal

Disp Bailer Purge + Sample.

Analysis	Preserv.
VOCs 8240	4°C
TPH 8015	4°C
Metals	HNO_3
~~Total Cyanide~~	NaOH

[+DUP]

[+MS/MSD]

[+ASP for - VOCs 8240]
- Metals
- Cyanide

[+ASP MS/MSD for Cyanide]

PARAMETERS

Vol Purged	pH	Temp (°C)	Cond	Turb
2	7.29	21.2	2.94	17
4	7.62	22.1	1842 uS	-
4.5	7.83	23.0	1743	-

Sampled @ 2/22/95 15:45

*Resample TPH - 1L amber. 2/23/95

OW-10.7 2/22/95

Indoor Well
DTW (inner) 6.64 ft 2" PVC
DTB (inner) ~~18.01~~ 17.71 ft

9.71
6.64
3.07

One Well Volume = 0.5 gal
Disp. Bailer, Purge + Sample
Total Purged Volume = 2.0 gal

Analysis	Preserv.
8240 VOCs	4°C
TPH 8015	4°C
Metals	HNO_3

Parameters

Vol Purged	pH	T°C	Cond	Turb
1.0	7.20	26.3	1437	>200
1.5	7.04	26.6	1384	>200

Sampled @ 2/22/95 16:05
Resample TPH - 1 L AMBER 2/23/95

MW-1 2/25/95

Clear 20°F

DTW (inner) 14.26 ft
DTB (inner) 17.02 ft
One Well Volume = 2.1 gal
Disp bailer purge + Sample
Total Purged Volume = gal

Analysis	Preserv.
VOC 8240 + MTBE	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb
1.5	7.31	9.4	2.35 mS	63
4.5	8.17	8.5	1.99 mS	50
6.5	7.16	8.2	1959 µS	37

Sampled @ 2/25/95 10:20

MW-2

2/24/95

Cloudy Snow 20°F

DTW (inner) 6.20 ft

DTB (inner) 12.65 ft

One Well Volume = 1.8 gal

Disp Bailer Purge & Sample

Purged Volume = 6.0 gal.

Analysis	Preserv
VOCs + MTBE	4°C

Parameters

Vol Purge	pH	T°C	Cond	Turb
1	9.38	6.0	4.24	195
5				

Sampled @ 2/24/95 15:35

MW-3

2/24/95

Cloudy 15°F

DTW (inner) ~~3.69~~ ft 2.62 ft } O2s Probe was reading incorrect
DTP (inner) ~~2.62~~ ft. 2.60 ft } < 0.02 ft of product
DTB (inner) 7.8 ft

One Well Volume = 0.9 gal

Disp Road Box Cover Missing!

UNABLE to UNARL Sample.

~~Disp Bailer = sample UNAPL~~ (SP)

(New) Disp Bailer purge & Sample groundwater

Purged Volume = 3.5 gal

~~Analysis & Parameters~~	Preserv.
VOC 8240	4°C
SVOC 8270	4°C
Metals - total / filtered	HNO_3
Cr^{+6} total / filtered	HNO_3
[+ QVP Entire Set]	4°C
[+ MS/MSD Entire Set]	4°C
[+ ASP]	4°C
[+ ASP QVP and MS/MSD Entire Set]	4°C

Parameters

Purge Vol	pH	T°C	Cond	Turb
1	10.03	5.8	3.52	>200
3.5	10.41	3.6	3.55	>200

Sampled @ 2/24/95 13:30, ASP 13:45

MW-4 2/23/95

cloudy · 30°F 2" PVC

DTW (inner) 8.53 ft

DTB (inner) 29.83 ft

one well Volume = 1.9 gal

Disp Bailer purge + sample

Purged Volume = 6.5 gal

Analysis	Preserv
8240 VOC	4°C
~~8270~~ PAH	4°C
8080 PCB	4°C
Tot. Metals + Cu	HNO_3
Filt. Metals + Cu	HNO_3
Tot. Cr^{+6}	4°C
Filt Cr^{+6}	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb a TU
2 gal	7.38	8.9	2.12	>200
4 gal	7.18	8.2	2.16	>200
6.5 gal	7.68	8.8	2.12	>200

Sampled @ 2/23/95 10:55

MW-5 2/21/95

-Snow 30°F

DTW (inner) 16.61 ft. 2in PVC.

DTB (inner) ~~33.05~~ 34.15 ft.

One well Volume = 2.8 gal

Disp Bailer Purge & Sample

Purged volume = 8.5 gal.

Analysis	Preservative
8240 VOCs	4°C
8270 Semi Vocs	4°C

Parameters

Vol Purged	pH	T(°C)	Cond	Turb
1.0 gal	10.79	9.2	1006 µS	300
4.0 gal	7.85	10.2	3.03 mS	83
6.0 gal	7.54	11.2	3.04	103
8.5 gal	7.94	10.5	2.93	—

Sampled @ 2/21/95 15:00

MW-6 2/21/95

Snow - 30°F

DTW (inner) ~~13.72~~ 22.02 ft
DTB (inner) ~~24.72~~ ft
2" PVC
One Well Volume 2.1 gal
Disp Bailer purge & Sample
Purged Volume 6 gal (dry)

Analysis	Preserv.
VOCs 8240	4°C
TPH 8015	4°C
Metals	HNO_3

Parameters

Vol Purged	pH	T °C	Cond (µs)	Turb (NTU)
1.5 gal	10.68	9.8	1327	130
3 gal	9.06	9.4	3.29	85
4 gal	9.20	8.5	3.23	132
5 gal	9.03	9.7	3.19	130

Dry @ 5 gal
Purged additional 1 gallon.
Dry
Sampled 2/21/95 17:10
Resample TPH - 1 L amber 2/20/95
Repurge 3 volumes and

MW-7 2/24/95

Snow - 15°F
DTW (inner) 8.78 ft 2" PVC
DTB (inner) 16.21 ft
One Well Volume = 1.2 gal
Disp Bailer Purge & Sample
Purged Volume = 3.0 gal

Analysis	Preserv.
VOC 8240	4°C
TPH 8015	4°C
Total Metals	HNO_3

Parameters

Vol (gal)	pH	T °C	Cond	Turb
1	8.12	11.2	4.12	>200
4	7.46	10.3	4.38	>200
5	7.52	9.8	4.30	>200

Sample @ 2/24/95 16:00

MW-20 2/24/95

Snow 20°F

DTW (inner) 6.84 ft 2" PVC

DTB (inner) 14.89 ft

One Well Volume = 1.3 gal

Disp Bailer purge & Sample

Purged Volume = 5.0 gal.

Analysis	Preserv.
VOCs 240 + MTBE	4°C
PAH	4°C
total Pb	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb
2 gal	6.09	7.8	1481 µS	>200
4 gal	7.31	8.3	1267 µS	>200
5 gal	7.55	8.2	1420 µS	>200

Sample @ 2/24/95 9:10

MW-202 2/25/95

Clear 20°F

DTW (inner) 4.35 ft 2" PVC

DTB (inner) 14.60 ft

One Well Volume = 1.7 gal

Disp Bailer purge + Sample

Purged Volume = 5.5 gal

NOTE - WELL ROADBOX COVER MISSING!

Analysis	Preserv.
VOCs 240 + MTBE	4°C
PAH	4°C
Total Pb	HNO_3
[+DUP]	
~~[+ASP]~~ [+MS/MSD]	
[ASP]	

Parameters

Vol Purged	pH	T°C	Cond	Turb
2	5.46	6.0	2.67	>200
4	6.86	6.6	2.79	>200
5.5	6.75	6.3	2.85	>200

Sampled @ 2/25/95 8:50

MW-203 2/25/95

Clear 20°F
DTW (inner) 5.17 ft
DTB (inner) 15.0 ft
One Well Volume = 1.6 gal
Disp Bailer Purge + Sample
Purged Volume = gal.

Analysis	Preserv.
VOC 8240 + MTBE	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb
1	6.94	6.9	1724 µS	>200
3	7.56	7.9	1703 µS	>200
5	7.74	7.2	1800 µS	>200

Sampled @ 2/25/95 945

MW-204 2/24/95

Initial DTW
DTW (inner) 6.08 ft
DTP (inner) 4.97 ft.
DTB (inner) ±10-12 ft.
One Well Volume = 1.0 gal
Disp Bailer + Sample LNAPL
Disp Bailer Purge + Sample GW

Purged Volume = 3.0 gal

Analysis		Preserv.
LNAPL	- VOC, PCB, Ba (GTC)	4°C
	PCB dup (Aquatec)	4°C
GW	- VOC 8240	4°C
	TPH 8015	4°C
	PCB 8080	4°C
	RCRA Metals total/filtered	HNO_3
	Cr+6 total/filtered	4°C
	Cyanide	NaOH

Parameters

Vol Purged	pH	T°C	Cond	Turb
Not Read - Too Oily				

Sample LNAPL 2/24/95 @ 16:10
GW 2/24/95 @ 16:20

MW-205 2/23/95

Clear - 35°F

DTW - 6.22 ft (inner) 2" PVC
DTB (inner) ~~14.79~~ 15.00 ft
One Well Volume = 1.4 gal.
Disp Bailer Purge & Sample
Purged Volume = 5 gal

Analysis	Preserv.
VOC 8240	4°C
TPH 8015	4°C
Metals + Cr^{+6}	HNO_3
Filtered Metals + Cr^{+6}	HNO_3
Cyanide	NaOH

Parameters

Vol Purged	pH	T°C	Cond	Turb
1 gal	6.20	9.1	2.13 mS	>200
2.5 gal	7.01	11.9	1.94 mS	>200
5	7.25	12.2	2.06 mS	>200

Sampled @ 2/23/95 9:55

MW-206 2/24/95

Snow - 15°F

DTW (inner) 5.98 ft 2" PVC
DTB (inner) 18.00 ft
One Well Volume = 1.5 gal.
Disp Bailer Purge & Sample
Purged Volume = 5.0 gal.

Analysis	Preserv.
8240 VOC	4°C
TPH 8015	4°C
Metals total	HNO_3

Parameters

Purged Vol	pH	T°C	Cond	Turb
1.5	10.4	5.5	1712	>200
4.0	8.67	5.9	1716	>200
T.E.	5.87	7.8	1710	>200

Sampled @ 2/24/95 1755

MW-207 2/25/95

Indoor well

DTW (inner) 11.07ft
DTB (inner) 13.25 ft
One Well Volume = 0.4 gal
Disp Bailer purge + Sample
Purged Vol = gal

Analysis	Preserv
TCL 8240	4°C
TPH	4°C
Metals total	HNO_3

4.07
2.78
.56
1.808
2.180
3.488

Parameters

Vol Purged	pH	T°C	Cond	Turb
0.5	6.44	24.4	2.41 mS	35
1.5	6.46	24.2	2.37 mS	150

Sampled @ 2/25/95 @ 12:30

MW-208 2/25/95

Indoor Well
DTP (inner) 8.90 ft (±0.05ft LNAPL in disp bailer.)
DTW (inner) 8.95 ft
DTB (inner) ±13 ft
One Well Volume = 0.7 gal
Disp Bailer Sample LNAPL
ONLY ABLE TO SAMPL
New Disp Bailer Purge + Sample GW
Purged Vol = 2.5 gal

Analysis		Preserv
LNAPL	- VOC, PCB, SVOC, Ba	4°C
	- Dup PCB	4°C
GW	VOC 8240	4°C
	SVOC 8270	4°C
	PCB 8080	4°C
	Ba	4°C
	Sulfides	Zn Acetate

4.1
.16
2.46
4.10
.05

Parameters
Did not measure - too oily.

Sample @ 2/25/95 LNAPL - 11:15
GW - 11:30

MW-209 2/21/95

snow -30°F

DTW (inner) 16.14 ft 4" steel casing & open corehole (2"
DTB (inner) ~~41.85~~ 42.15 ft casing set inside of casing)

One Well Volume 17.1 gal

Grundfos pump - Purge ; Disp Bailer Sample
(± 1 gpm)

Analysis	Presv.
VOCs 8240	4°C
TPH 8015	4°C

Purged Volume - 63 gallons

Parameters

Vol purged	pH	T(C)	Cond	Turb (nTu)
± 2 gal	6.12	9.1	2.24 mS	>1000
± 10 gal	7.08	9.1	2.16	>200 (~~1500~~ 740)
± 15 gal	7.19	10.1	2.02	340
± 30	7.03	10.7	2.10	175
± 50	7.36	11.8	2.09	128
± 55	7.22	11.0	2.02	~~52~~ 50
63	7.36	8.7	2.18	

Sampled @ 2/21/95 10:45

Resample TPH - 1 L amber

MW-210 2/20/95

- clear/sunny 40°F

DTW (inner casing) 12.02 ft 2 in PVC screen + riser
DTB (inner) 26.80 ft.

One Well Volume = 2.4 gal

Disp Bailer purge + sample

Purged Volume = 12.5 gal

Analysis	Presv.
VOC's 8240	4°C
TPH 8015	4°C

Parameter

Vol Purged	pH	T(C)	Cond (uS)	Turb (nTU)
1.5 gal	7.52	10.2	1441	>200 *
3 gal	7.94	9.5	1530	>200
5.5 gal	7.98	9.9	1567	>200
9.5 gal	8.03	9.3	1762	>200
12.5 gal	7.97	10.0	1790	>200

* noted purge water was very silty grey-dark brown. Didn't clear up during purge.

Sampled @ 2/20/95 17:20

MW-211 2/20/95

- Clear & sunny + 45°F.

DTW (inner) 4.10 ft — 2" PVC screen + riser

DTB (inner) 13.80 ft

Disp. bailer purge + sample

1 Well Volume = 1.6 gal.

Purged Volume = 6.5 gal

Analysis		Preserv.
	VOCs - 8240	4°C
	TPH 8015	4°C
	Metals (total)	HNO_3 + 4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb (NTU)
1.5 gal	8.92	11.3	971 µS	1400
3.5 gal	8.03	10.2	925 µS	402
5.0 gal	7.97	9.4	899 µS	78
6 gal	8.71	8.0	882 µS	830
6.5 gal	7.67	8.3	899 µS	410

Sampled @ 2/20/95 15:50

MW-212 2/23/95

Rain - 3.5"

DTW (inner) 9.81 ft — 2" PVC

DTB (inner) ~~15.15~~ 15.75 ft

One Volume = ~~2.40~~ 1.0 gal

Disp. Bailer Purge + Sample

Purged Volume = 3.5 gal.

Analysis	Preserv.
VOC 8240	4°C
TPH 8015	4°C
Total Metals	HNO_3
Cr^{+6} (Total)	~~HNO_3~~ 4°C
Filtered Metals	HNO_3
Filtered Cr^{+6}	& 4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb
1 gal	8.32	8.2	766 µS	>200
3 gal	8.38	8.8	760 µS	>200

Sampled @ 2/23/95 @ 14:15

MW-213 2/24/95

Cloudy/snow - 20°F
DTP (inner) 3.85 ft 2" PVC
DTW (inner) 3.92 ft
DTB (inner) 8.56 ft
One Well Volume = 0.8
Disp bailer purge + sample
Purged Volume = 1.0 gal (dry)

Analytes	Preserv
~~VOCs~~	
PAH	4°C
VOC 8240 MTBE	4°C
Total Pb	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb

dry @ 1.0 gal allow to recover.
needed to return several times to complete sample set & McHart split.
Sampled @ 2/24/95 11:00

~~MW-214~~

MW-306-1 2/21/95

-snow - 30°F
DTW (inner) 18.37 ft 2in PVC.
DTB (inner) 21.25 ft
One Well Volume = 0.5 gal
Disp Bailer Purge + Sample
Purged Volume = 5.0 gal

Analytes	Preserv.
VOCs 8240	4°C
PAH 8270	4°C
Metals RCRA+Copper	HNO_3
PCBs	4°C
[+ DUP SAMPLE]	4°C
[+ MS/MSD]	4°C
+ASP [+ASP DUP for Cu + PCBs only]	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb
<1 gal	7.30	9.4	2.43 mS	>200
3 gal	7.38	9.0	2.67 mS	>200
5 gal	8.03	8.7	2.55 mS	>200
Sampled @ 2/21/95		11:45 - 12:15		

MW-307-1 2/23/95

Cloudy - 30°F
DTW (inner) 25.44 ft
DTB (inner) 40.12 ft
One Well Volume = 9.9 gal
Disp Bailer Sample + Purge
Purged Volume = 7.5 gal (dry)

4" Steel ; Open Borehole

Analysis	Preserv.
VOC 8240	4°C
SVOC 8270	4°C

Parameters

Vol Purged	pH	T°C	Cond	Turb
1	7.16	9.7	3.10 mS	85
5	7.42	9.5	4.28 mS	~~45~~ 95
7.5	7.97	10.3	3.41 mS	13%

Sampled @ 2/23/95 13:00

MW-309-1 2/22/95

Cloudy - 30°F
DTW (inner) 23.27 ft
DTB (inner) 42.45 ft.
One Well Volume = 12.9 gal.
Disp Bailer, Sample
Grundfos - Purge
Purged Volume = 13 gal. (dry)

4" Steel + Open Borehole

*Noted Black Fiberlike substance in ~~Bailer~~ Bailer of H_2O.

Analysis	Preserv.
VOCs 8240	4°C
Semi VOC 8270	4°C
Metals	HNO_3

~~Parameters~~	~~Preserv.~~
~~VOCs 8240~~	~~4°C~~
~~Semi VOCs 8270~~	~~4°C~~
~~Metals~~	~~HNO_3~~

Vol Purged	pH	T°C	Cond	Turb.
4	6.02	5.5	2.57 mS	19.8
(Pump ran dry after 6 gallons)				
10	8.53	6.0	2.91	21.0
Bailed Dry at 13 gallons				
13				

Sampled @ 2/22/95 13:15

MW-309-2 2/22/95

Partly Cloudy - 30°F
DTW (inner) 30.85 ft 4" Steel + Open Borehole
DTB (inner) 41.38 ft
One Well Volume = 7.1 gal
Disp Bailer Purge + Sample
Purged Volume = 22 gal.

PARAMETERS

Vol Purged	pH	Temp (°C)	Cond	Turb
5.0 gal	8.42	8.3	2.12	36
10.0 gal	7.81	9.0	2.08	96
13 gal	7.90	9.1	2.07	52
18 gal	7.99	9.4	2.05	65

Analysis	Preserv.
VOCs 8240	4°C
SemiVOCs 8270	4°C
Metals	HNO_3

Sampled @ 2/22/95 14:42

MW-309-3 2/21/95

Cloudy - 30°F
DTW (inner) 6.43 ft 2" PVC screen
DTB (inner) 15.61 ft
One Well Volume 1.5 gal
Disp Bailer Purge & Sample
Purged Vol = 5.0 gal

Analysis	Preserv.
VOCs 8240	4°C
SemiVOC 8270	4°C
Metals	HNO_3
[+ DUP]	
[+ MSP]	

Parameters

Vol Purged	pH	Temp (°C)	Cond	Turb (NTU)
1 gal	8.27	7.9	1716	>200
3 gal	7.64	7.7	1734	>200
5 gal	8.17	8.5	1752	>800
8.5 gal	8.14	8.5	1747 µS	>200

Sampled @ 2/21/95 16:30

MEMORANDUM

4 November 1994
File No. 70436-109

TO: Jeff Loney

FROM: Bob Mahoney

SUBJECT: Deeper Bedrock Exploratory Borings
ITT/Former Delco Chassis Division Site
Rochester, New York

INTRODUCTION

H&A of New York has performed a review of available information regarding deep bedrock conditions in the vicinity of the above-referenced site. The purpose of the review was to aid in determining locations for deeper bedrock exploratory borings to be installed as part of the Baseline Study currently underway.

Information sources reviewed included the following:

- H&A of New York, 1981, "Report on Geologic Conditions, Combined Sewer Overflow Abatement Program (CSOAP) Phase II, Rochester, New York."
- H&A of New York, 1990, "Regional Geology and Hydrogeology of the Greater Rochester Area."
- H&A of New York, 1990, Photographs of bedrock exposed in the Barge Canal between Route 390 and Chili Avenue.
- H&A of New York, Review of Aerial Photos from 1930 and 1951.
- H&A of New York, 1993, "Former Emerson Street Landfill, Modified Remedial Investigation, Rochester, New York."
- United States Geological Survey, 1926, Rochester Topographic Quadrangle Map, Scale 1:62,500, showing topography surveyed in 1893.
- Calocerinos & Spina Consulting Engineers, 1989, "Report on Observed Geologic Conditions, Saxton-Colvin & Jay-Arnett Tunnels, Rochester, New York."
- Calocerinos and Spina Consulting Engineers, 1982, "Report on Investigation of Natural Gas in Bedrock - Rochester Shale Formation."

STRATIGRAPHY

Bedrock immediately underlying the site is the Lockport Formation, a gray-brown, medium-grained, medium to thick-bedded, stylolitic Dolomite, with carbonaceous partings and vugs . This unit is generally

approximately 180 feet thick in the Rochester Area. Underlying the Lockport is the Rochester Shale, a light to dark-gray, fine-grained, fossiliferous, dolomitic Mudstone with interbeds of Limestone and Dolomite. The contact between the two formations is gradational.

The regional dip of the bedrock units is known to be approximately 50 feet per mile to the SSE (S15°E). The contact between the Rochester and Lockport Formations at the site is anticipated to range between el. 480 ft. in the southeast portion of the site to el. 500 ft. in the northwest. This corresponds to approximate depths of 55 ft. in the southeast to 35 ft. in the northwest.

BEDROCK STRUCTURE

- Bedrock joints mapped in the vicinity of the site generally fall within two predominant sets, oriented at N71°E and N16°W. Subordinate joint sets also exist at N45°E and N45°W. These joints are generally very high angle to vertical. Continuity can vary from a few inches or feet to several tens of feet, as observed in outcrops in the vicinity if the I-490/I-390 interchange just southwest of the site.

- Existing faults have been documented in the vicinity of the site. The nearest is visible in the Barge Canal approximately 300 feet north of Lyell Avenue, or approximately 3000 feet northwest of the center of the site. The structure is a faulted anticlinal flexure, oriented at N70°W, with an associated synclinal warping to the north. The depth to which the feature extends into bedrock is unknown, however CSOAP test borings in the vicinity indicate it extends at least to the Lockport/Rochester contact.

  A small thrust fault was also observed in the Jay-Arnett Tunnel approximately 4500 feet east of the site. The fault was observed to strike approximately NW-SE, with a dip of 12°SW, and a throw of only a few inches. It is not known if this fault is connected or related to the fault observed in the Barge Canal. H&A's 1980 Geologic Report indicated these two features were located in one of four inferred zones of deformation trending roughly NW-SE through the Rochester area. These zones were delineated on the basis of: 1) anomalous bedrock dips noted from correlation of numerous test borings performed as part of the CSOAP project; and 2) the presence of faults observed in outcrop. The ITT site appears to lie along the southern edge of one of these four zones, as defined by the locations of the two faults described above.

  A NW-trending flexure was also noted in shallow rock during construction of the Monroe County Resource Recovery Facility, located approximately 6000 feet northwest of the center of the site.

- A review of available aerial photographs was performed to look for visible evidence of joints or faults at or near the top of rock. The photos were dated from 1930 and 1951. The 1930 photos were taken prior to any development at the site. A very faint lineament appears to cross the approximate center of the site from NW to SE, however it is inconclusive whether the feature is actually a bedrock discontinuity. No significant features were noted in the 1951 photos.

- Topography and drainage patterns shown on topographic maps are often indicative of bedrock structure in areas where overburden is relatively thin. A review of the topographic map developed using topography and drainage surveyed in 1893 did not reveal evidence of joints or faults in the subsurface directly beneath the site. A small unnamed tributary to the Genesee River is shown flowing generally north near the western edge of the site. The upper reach of this tributary, located southwest of the subject site, flows in an orientation approximately N58°E, which is similar to one of the regional joint sets described above. This indicates that this portion of the stream may have been joint controlled. The stream is no longer present due to site development and construction of the canal.

- H&A performed a fracture trace analysis for an investigation of the former Emerson Street Landfill, which is located approximately 5000 north of the center of the subject site. Several linear features interpreted as bedrock joints were noted in aerial photographs of the landfill site. The majority of these features were oriented NW-SE or NE-SW; none were observed to extend southward toward the ITT site.

NATURAL GAS OCCURRENCE

The occurrence of significant quantities of natural gas in the Rochester Shale is well documented in the Rochester area. Numerous CSOAP test borings encountered gas in the Rochester. The pressure and volumes present were often sufficient to force groundwater from the boreholes to heights of 30 ft. or greater above ground surface.

Calocerinos & Spina Consulting Engineers (C&S) performed an evaluation of the presence of Natural Gas in the Rochester Shale. Two test borings were performed in order to determine gas pressure and volume as well as the chemical composition of the gas. Gas pressure values obtained from both direct measurement and estimation methods ranged from 2 to 50 PSI. The average daily volume in one of the test borings was estimated at approximately 10,000 cubic ft.

Laboratory analysis of gas samples indicated the primary constituents to be methane and ethane. Field measurements of hydrogen sulfide (H_2S) exceeded 600 ppm, which is significantly above hazardous levels.

The presence of the natural gas indicates the deeper bedrock probably contains a low frequency of fractures, and the fractures that do exist at that depth are not well connected with the shallower zones of bedrock. Connection with shallower fractures would have allowed previous venting of the gas.

GROUNDWATER

Little information on the deep bedrock groundwater flow characteristics in the vicinity of the site was available. The C&S mapping report for the Jay-Arnett Tunnel, which was constructed primarily in the Rochester Shale, indicated that significant groundwater flow into the tunnel was limited to an 1100-ft. section of the tunnel, located approximately 4500 ft. east of the center of the site. Total flow into the tunnel did not exceed approximately 300 GPM, and the flow decreased with time. Groundwater inflow at the location of the fault (described above) observed in this section of the tunnel was limited to only about 1

GPM. Greater flows of water were encountered in shallow bedrock at shaft locations, presumably due to the greater degree of weathering near the top of rock and the hydraulic connection with the overburden.

PROPOSED WELL LOCATIONS

Based on the information reviewed, the following areas of the site are proposed for installation of deep bedrock exploratory borings (see attached figure):

1) The northeast corner of the site in the immediate vicinity of existing overburden/bedrock interface monitoring well MW-210.

   The northeast portion of the site appears to lie within a potential zone of bedrock deformation trending approximately N65°W to N70°W, as discussed above. In addition, monitoring well MW-210 encountered bedrock at a depth of approximately 21 ft. Top of rock depths across the rest of the site generally range from approximately 4 to 13 ft. The significantly deeper top of rock at MW-210 may be indicative of a structural feature in the bedrock.

2) The southeast corner of the site adjacent to existing interface well MW-212. This will provide data from the apparent upgradient portion of the site.

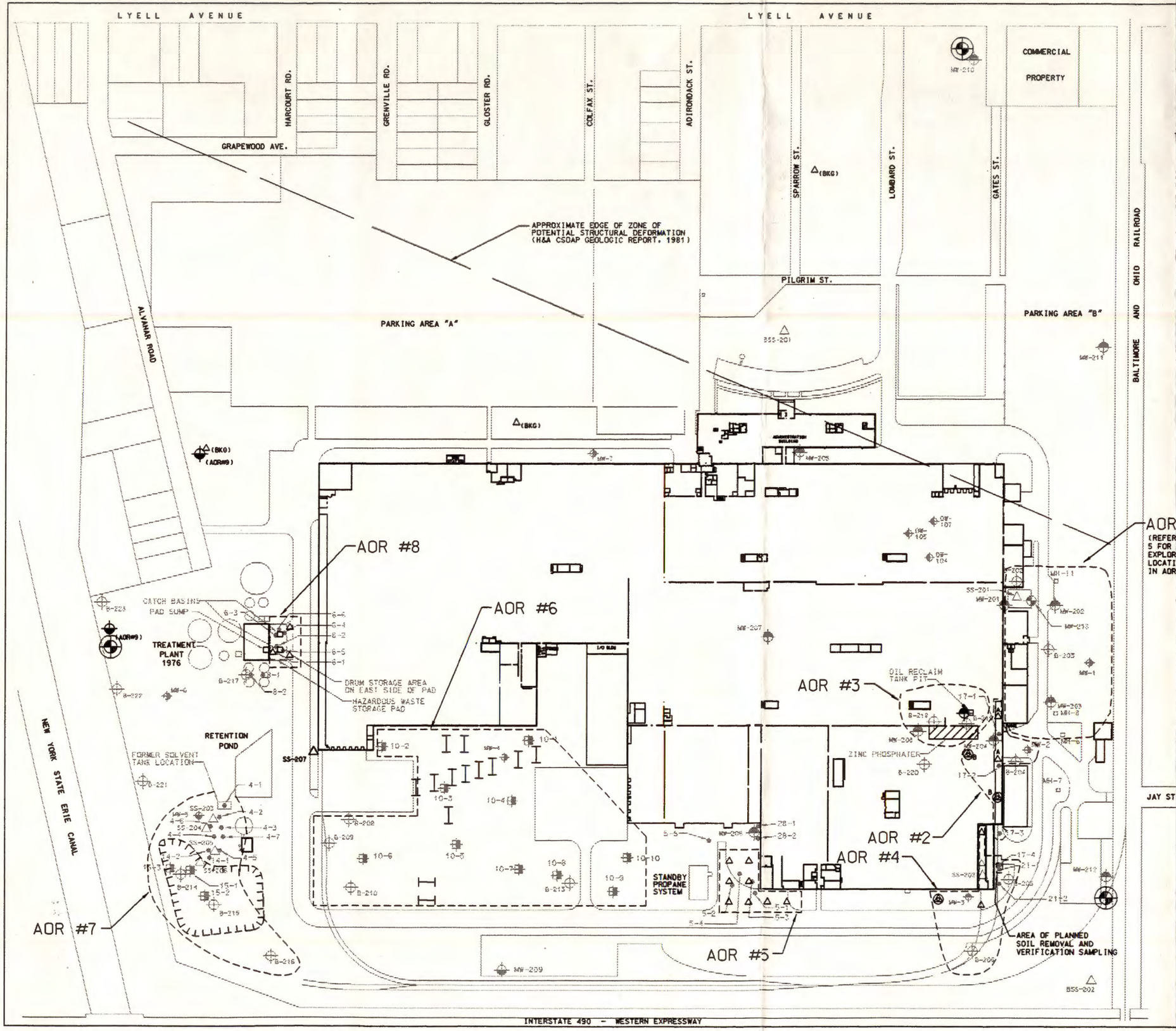
3) The western portion of the site adjacent to monitoring well MW 309-1 (installed on 1 November 1994). This location combined with the other two locations should allow initial assessment of apparent deep groundwater flow directions. This will also provide data in close proximity to the Barge Canal. The seasonal draining and filling of the canal may influence both shallow and deep groundwater flow.

Each of the three deep borings will be installed adjacent to existing wells. This will provide data on vertical gradients in bedrock groundwater.

Drilling methods should be employed that will minimize or eliminate the potential for spreading of contaminants in the bedrock. This could include installing intermediate casings as the borehole is advanced. Intermediate casings will also help to confine natural gas to the borehole, if encountered, and prevent migration of the gas in the weathered top of rock zone. Monitoring of the boreholes for both combustible gas and H_2S should be performed for health and safety reasons.

rjm:wpdoc\ittwells.wp

Attachment



FILE No. 70436-109

LEGEND:

- EXISTING SHALLOW-BEDROCK MONITORING WELL IN FORMER PLATING AREA.
- TEST PIT LOCATION (McLAREN/HART)
- GEOPROBE BORING LOCATION (McLAREN/HART)
- INTERFACE MONITORING WELL LOCATION (McLAREN/HART)
- SHALLOW BEDROCK MONITORING WELL LOCATION (McLAREN/HART)
- BEDROCK MONITORING WELL LOCATION (McLAREN/HART)
- OVERBURDEN MONITORING WELL LOCATION (H&A)
- SURFACE SOIL SAMPLE LOCATION (H&A)
- SOIL TEST BORING LOCATION (H&A)
- INTERFACE MONITORING WELL LOCATION (H&A)
- BEDROCK MONITORING WELL LOCATION (H&A)
- SEWER SYSTEM MANHOLE
- OUTLINE OF AREA OF REVIEW (AOR)

NOTES:

1. BASE PLAN PROVIDED BY DELCO CHASSIS DIVISION.
2. ALL LOCATIONS ARE APPROXIMATE.
3. REFER TO TEXT FOR ADDITIONAL INFORMATION.

LEGEND FOR PROPOSED EXPLORATIONS:

- PROPOSED TEST BORING LOCATION
- PROPOSED TEST BORING LOCATION FOR BACKGROUND METALS, TOC, AND GRAIN SIZE ANALYSIS SAMPLES
- PROPOSED TEST TRENCH LOCATION
- PROPOSED GEOPROBE TEST BORING/ GROUNDWATER SAMPLING LOCATION
- PROPOSED INTERFACE MONITORING WELL LOCATION
- PROPOSED BEDROCK MONITORING WELL LOCATION
- AREA OF PROPOSED MAGNETOMETER/ELECTROMAGNETIC SURVEY
- PROPOSED DEEP BEDROCK EXPLORATORY BORING LOCATION

H & A OF NEW YORK

Geotechnical Engineers & Environmental Consultants

DELCO CHASSIS DIVISION
GENERAL MOTORS CORPORATION
ROCHESTER, NEW YORK

PROPOSED EXPLORATION PLAN REVISED TO SHOW PROPOSED LOCATIONS OF DEEP BEDROCK EXPLORATORY BORINGS

NOVEMBER 1994

FILENAME: 70436-109:RW001D.DGN

HYDRAULIC CONDUCTIVITY TESTING

This section describes the results of hydraulic conductivity tests conducted by H&A during the Baseline Study in deeper bedrock test borings and in new Baseline Study shallow (water table) monitoring wells.

The tests in the deeper bedrock test borings were conducted during the drilling of each boring over successively deeper intervals of rock isolated at the top by a packer assembly. The testing in monitoring wells was conducted either across open-rock sections (in bedrock wells) or across screened intervals (in overburden-bedrock interface wells).

Brief summaries of each test and its results are given below. The summaries include information about the following:

- the physical setup of the test;
- the calculation method(s) employed for estimating hydraulic conductivity; and
- the interpretation of the results.

Graphical representations of the test data are provided along with calculations, interpretations, and results in the pages which follow the attached summaries.

BACKGROUND INFORMATION

Pumping tests were required during the deeper bedrock test boring program at this site, rather than the water injection tests typically used to measure hydraulic conductivity in bedrock coreholes, to minimize the potential for collecting water samples (during subsequent groundwater sampling of each test interval) that contained injected water and were not representative of actual groundwater conditions. Recognizing the limitations of performing and analyzing the results of pumping tests under actual site conditions, H&A also conducted, when possible, standard rising- or falling-head tests on the intervals subjected to pump testing.

For most of the deeper bedrock tests, the packer assembly used consisted of a 2.6-foot-long inflated packer located above a short section of pipe and about 7 feet of screen (10 feet for the first interval tested in MW-309-1). The screen was plumbed to a 1-5/8-inch diameter black pipe that rose to the surface. A bladder pump was used to extract groundwater through the pipe during the pumping tests.

DEEPER BEDROCK TEST BORINGS

DB-309-1, FIRST INTERVAL

A pumping test for the first interval of DB-309-1 tested was conducted on 23 December 1994. This test was performed in an open rock interval 19.5 to 34.6 feet in depth. 12-inch-I.D. casing was set down to a depth of 19.5 feet. The nominal diameter of the open rock borehole below the casing was about 4 inches, having had been drilled by an HQ bit (3-5/8-inch-O.D.). The static water level prior to pumping was above the base of the 12-inch-I.D. casing.

When the drillers attempted to inflate a packer, it blew out. With the deflated packer still in the hole, a pumping test was conducted at an average pumping rate of 0.94 gallons per minute (gpm). Most of the water initially removed during pumping was from casing storage. The water in the 12-inch casing in the

well was pumped out first; then water in the upper portion of the nominal 4-inch-diameter borehole was pumped out to lower level. A plot of drawdown versus the logarithm of time shows 12-inch casing storage effects over the first 2,260 seconds of pumping. The water level shortly thereafter is observed to rapidly decline as the water level dropped below the base of the 12-inch-I.D. casing and as the 4-inch-diameter-borehole-storage water began to be removed. As the effects of borehole storage began to diminish, and as the fraction of water being removed from the geologic media itself thereafter gradually increased, the rate of total water removal began to decline.

The last 500 seconds of data (from about 3,500 to 4,000 seconds) appear to be representative of pumping from the formation. Due to the short span of time available for analysis, an estimate of hydraulic conductivity was made employing the Jacob-Cooper approximation of the Theis equation, using only the last 500 seconds of data, representing a period of time after the effects of casing and wellbore storage had effectively dissipated. During this time interval, most of the water level decline reported was due to water being pulled in from outside the wellbore. Based on the slope of the drawdown data over this period of time, the calculated transmissivity is 3.4×10^{-3} feet^2/minute. Assuming confined conditions over the length of the packed-off interval, an estimate of hydraulic conductivity is 2.5×10^{-4} feet/minute (1×10^{-4} centimeters/second).

A falling head test conducted over this interval provided data that when interpreted using the Bouwer-Rice (1979) method yielded a hydraulic conductivity value of 2×10^{-4} cm/s. This is consistent with the value obtained from the analysis of the pumping test data.

DB-309-1, SECOND INTERVAL

A pumping test for the second tested interval of DB-309-1 was conducted on 28 December 1994. This test was performed in a packed-off open-rock interval from 34.6 to 44.8 feet in depth, having a nominal diameter of about 4 inches.

The drillers inflated a packer to seal the interval. The depth of the static water level for the packed-off interval was 31.13 feet below ground surface prior to pumping. The depth of the static water level above the packed-off interval at this time was 18.26 feet. Pumping commenced at a rate of about 0.8 gpm. No change in static water level in the packed-off interval was observed during pumping. (A water level of 17.7 feet was measured above the packer after 20 minutes of pumping.) Because of observations by the driller of a 0.5-foot gap in the rock and a large loss of circulation water encountered as this gap was drilled past, it is assumed that a large fracture was encountered in this interval that was highly transmissive, such that the limited pumping rate of the bladder pump could not stress the aquifer sufficiently to create a measurable drawdown.

Static water levels above (18.6 ft.) and below the packer (31.3 ft.) were then remeasured and five gallons of water were poured into the 1-5/8-inch-I.D. black pipe in an attempt to conduct a falling head test. The test failed because the interval was too transmissive, and the water could not be poured in fast enough to perform the test reliably. If the water could have been poured in instantly, then the water level in the pipe would in theory have risen by about 46.4 feet. The water level only rose to a maximum value of slightly more than 0.9 feet, due to rapid bleed-off into the formation. These data together likely indicate moderate-to-high hydraulic conductivity, at least for the fracture zone itself, with a value that is probably orders of magnitude greater than the 10^{-6} cm/s criterion for setting a screen over this interval.

DB-309-1, THIRD INTERVAL

A pumping test for the third interval of DB-309-1 tested was conducted on 4 January 1995. This test was

performed in an open rock interval 44.8 to 54.5 feet in depth. Eight-inch-I.D. casing was set down to a depth of 44.8 feet. The large-axis diameter of the upper 6.5 feet of open rock borehole was about 5 to 6 inches, having had been drilled by an HQ bit (3-5/8-inch-O.D.) as two slightly overlapping holes as the result of a driller's error. The static water level prior to pumping was about 43.67 feet, slightly more than a foot above the base of the 8-inch-I.D. casing. The pumping test was performed without a packer seal at the casing seat.

A plot of drawdown versus the logarithm of time shows an initial 1.2-foot drop in water level over 0 to 420 seconds. This represents withdrawal of water from the 8-inch-I.D. casing (i.e., casing storage). After this time, a drop in water level of about 5.3 feet is observed, with no flattening of slope. This represents open-rock-borehole storage with little or no contribution to the removed water from the formation. After the pump was stopped at about 1700 seconds, the water level neither declined nor rose, indicating apparently negligible hydraulic conductivity for this interval (i.e., lower than the 10^{-6} cm/s criterion for setting a screen).

DB-309-1, FOURTH INTERVAL

A pumping test for the fourth interval of DB-309-1 tested was conducted in January 1995. This test was conducted in a packed-off open-rock interval 54.5 to 64.7 feet in depth. The static water level measured below the packer prior to the testing was 30.8 ft. below ground surface. The water levels measured above the packer were constant at 31.1 ft. throughout the pre-test and test periods.

After a packer was inflated, a pumping test with an average flow rate of about 0.5 gpm began. Although a decline in head occurred each time the pump cycled on, there was extremely rapid recovery to approximately the static water level each time that the pump cycled off, such that there was essentially no net change in water level over time. The pumping rate was insufficient to adequately stress the tested interval. This is interpreted as indicating moderate-to-high hydraulic conductivity (i.e., much greater than the 10^{-6} cm/s criterion for setting a screen).

A falling head test was attempted. If the data from the test are plotted with the maximum head occurring at time zero, then they appear to indicate a hydraulic conductivity value of about 5×10^{-3} cm/s, based on the Bouwer-Rice method of analysis. In actuality, the estimated value should be greater. If the 1 gallon of water added to the 1-5/8-in.-I.D. pipe had been instantly added, then the water level would have initially risen to about 9.3 feet. The water level actually rose only to about 1.7 feet after some period of time. This indicates that the interval was too transmissive for a falling head test to be conducted properly with a near-instantaneous addition of water. Rapid bleed-off into the formation prevented the water from initially rising to its much higher theoretical initial level which would have resulted in a greater initial hydraulic gradient and a greater calculated hydraulic conductivity value. An estimated hydraulic conductivity value for the interval is on the order of 10^{-2} to 10^{-1} cm/s.

DB-309-1, FIFTH INTERVAL

A pumping test for the fifth interval ofDB-309-1 tested was conducted 9 January 1995. This test was performed in a packed-off open-rock interval from 64.7 to 75.4 feet in depth. The nominal diameter of the open rock borehole was about 4 inches. Prior to pumping, the static water level in the 1-5/8-in.-I.D. pipe was 5.91 feet below the surface. The static water level after pumping was greater than 67 feet below the surface. At this point, the head was less than the elevation of the base of the packer. The logarithm of the change in head vs. the logarithm of the elapsed time plot shows a slope of approximately unity, indicating that the bulk of the water recovered was casing storage. The water level in the packed-off interval remained below 67 feet for 24 hours. The estimated hydraulic conductivity of this interval is less

than 10^{-6} cm/s.

The water levels measured above the packer were 6.7 feet below grade prior to the testing and 7.85 feet 24 hours after the end of pumping.

DB-309-1, SIXTH INTERVAL

A pumping test for the sixth interval of DB-309-1 tested was conducted 11 January 1995. This test was performed in a packed-off open-rock interval from 75.4 to 85.0 feet in depth. The nominal diameter of the open rock borehole was about 4 inches. Prior to pumping, the static water level in the 1-5/8-in.-I.D. pipe was somewhat greater than 6 feet below the surface. The water levels measured above the packer were 30.2 to 30.4 feet below grade prior to and during the testing. The attached plot of pump test data shows that the level above the packer was constant during the pump test.

The well was pumped at a rate of about 0.33 gpm for 42 minutes. The fall in water levels is indicative of pumping water largely from the casing up to about 1,200 seconds. Between this time and about 2,400 seconds, the data are indicative of pumping water from the tested interval. Since by 1,200 seconds a sufficient amount of time had elapsed such that the effects of casing storage no longer were critical, the Jacob-Cooper approximation to the Theis method for analyzing drawdowns was employed. The calculated hydraulic conductivity value is 3×10^{-5} cm/s. After about 2,400 seconds, no additional water level drop is indicated by the transducer, explained by the field geologist as the result of water levels dropping below the level of the transducer. A falling head test conducted in this same interval yielded an estimated hydraulic conductivity value of 1.5×10^{-5} cm/s, consistent with the results from the pumping test, when the falling head test data were interpreted using the Bouwer-Rice method. However, because the initial head was less than that which would arise if there were no leakage into the formation prior to the start of the test, the actual hydraulic conductivity value should be higher.

DB-309-1, SEVENTH INTERVAL

A pumping test for the seventh interval of DB-309-1 tested was begun on 12 January 1995. This test was performed in a packed-off open-rock interval from 85.0 to 100.8 feet in depth. The nominal diameter of the open rock borehole was about 4 inches. Prior to pumping, the static water level in the 1-5/8-in.-I.D. pipe was 25 feet below ground surface. The water levels measured above the packer were 28.9 to 29.2 feet below grade prior to and during the testing.

Pumping at approximately 0.5 gpm was initiated and the water level below the packer dropped to a level below the packer (greater than 85 feet below grade, the maximum depth measurable) within 18.5 minutes. The interval was pumped dry at the end of the test. No measurable recovery was noted over a period of 18 hours, and the interval pumped dry again after purging of an additional 0.5 gallons. The estimated hydraulic conductivity of this interval is less than 10^{-6} cm/s.

DB-309-2

A single interval of DB-309-2 was tested by pumping at a rate of about 0.66 gpm and measuring the water level response in the well on 5 December 1995. This test was performed in a 3-5/8-inch nominal-diameter unsealed open-rock interval from about 11.7 feet to 24.8 feet in depth. Late-time data from a recovery test were analyzed, and the hydraulic conductivity was estimated as being on the order of 8×10^{-4} cm/s. The linearized Theis Recovery method was employed with only late-time data from the test being used in the analysis due to apparent effects on early-time test data resulting from pumping from a large diameter borehole, partial penetration and unconfined conditions in the fractured rock. Constant storage properties

and minor leakage (or slow drainage from the overburden) toward the end of the test were assumed in the calculations. Employing the alternative assumption of changing storage properties and no leakage (a possible, but less likely interpretation) resulted in only a small calculated change in the hydraulic conductivity value (a 28% decrease).

DB-309-3, FIRST INTERVAL

The first interval of DB-309-1 was tested on 26 January 1995 by a falling head test. This test was performed in a packed-off open-rock interval from 31.1 feet to 41 feet in depth. The nominal diameter of the borehole at this depth was 3 5/8 inches. One gallon of water was added to the well. The Bouwer-Rice calculated hydraulic conductivity, based on an assumption of an instantaneous addition of water, is 4×10^{-3} cm/s. In actuality, the hydraulic conductivity is probably greater. The lower calculated value given above is based on an "initial" differential head of 2 feet, which can be compared with the theoretical rise in water level attributable to the addition of one gallon of water into the 1-5/8-inch pipe of greater than 9 feet. In highly conductive formations, bleedoff during the addition of water to the well in a falling head test results in excessively low "initial" values of hydraulic gradient and calculated values of hydraulic conductivity.

Water levels mesured in the packed-off interval remained constant at approximately 25 feet below grade during subsequent pumping to purge the interval for sampling. Water levels mesured above the packed-off interval remained constant at 22.7 feet below grade prior to and during the testing and purging periods.

DB-309-3, SECOND INTERVAL

The second interval of DB-309-3 was tested on 30 January 1995 by a pumping test and a falling head test. This test was performed in a packed-off open-rock interval from 44.5 feet to 55 feet in depth. The nominal diameter of the borehole at this depth was 3 5/8 inches. During the pumping test, the pumping rate (about 1 gpm) was insufficient to significantly depress the water table for more than a moment per pump cycle due to the high permeability of the interval being tested. In the falling head test, somewhat less than the theoretical head developed upon the rapid addition of an one-gallon slug of water: 5.8 feet versus 9.3 feet. This, too, indicates moderate-to-high permeability. The Bouwer-Rice method (1976) applied to the data recorded after the peak water level occurred yields a value of hydraulic conductivity of 2×10^{-3} cm/s. However, for the reasons previously discussed, the actual value is probably higher.

Water levels mesured in the packed-off interval ranged from 25.9 feet below grade prior to testing and purging 24.6 feet after purging the interval for sampling. Water levels mesured above the packed-off interval ranged from 25 feet below grade prior to testing and purging to 24 feet after purging.

DB-309-3, THIRD INTERVAL

Testing of the third interval of DB-309-3, from 55 to 68 feet in depth, was attempted 3 February 1995 by a pumping test. The pumping test failed due to the malfunctioning of the pressure transducer and the deflation of the packers midway through the test, placing groundwater from the third interval in contact with that from the second interval. However, based on an observed drilling fluid loss of about 750 gallons that occurred during the drilling of the third interval, it is assumed that the third interval has moderate-to-high hydraulic conductivity. Static water levels measured prior to the attempted testing were 25.4 ft. below ground surface for the interval below the packer and 23.1 ft. above the packer.

DB-309-3, FOURTH INTERVAL

Testing of the fourth interval of DB-309-3 was attempted on 8 February 1995 by a pumping test and by a

falling head test. This test was performed in a packed-off open-rock interval from 68.2 to 78.1 feet in depth. The pumping test, as is typical for pumping wells, was affected by casing storage. In addition, however, the water level fell below the level of the transducer shortly after commencing the test, rendering a precise analysis impossible. A falling head test in which the initial water level approximately corresponded with the theoretical level calculated on the basis of 1 gallon of water added yielded a hydraulic conductivity value of 4×10^{-6} cm/s, considered to be fairly accurate. Static water levels measured prior to and during the testing period were 22.3 to 22.9 ft. below ground surface for the interval below the packer and 25.85 ft. above the packer.

DB-309-3, FIFTH INTERVAL

Testing of the fifth interval of DB-309-3 was attempted by a pumping test and a falling head test on 15 February 1995. This testing was performed in a packed-off open-rock interval from 78.4 to 88.3 feet in depth. The attempted pumping test was affected by casing storage, and, again, the water level fell below the level of the transducer shortly after commencing the test, indicating a low hydraulic conductivity for the tested interval, but rendering a precise analysis impossible. The falling head test (in which the initial water level did approximately correspond with the theoretical level) yielded a hydraulic conductivity value of 3×10^{-7} cm/s, considered to be fairly accurate. Static water levels measured were 20.5 ft. below ground surface for the interval below the packer prior to the testing period and 26.3 ft. above the packer prior to and during the testing period.

DB-309-3, SIXTH INTERVAL

Testing of the sixth interval of MW-309-3, from 88.4 to 100.4 feet in depth, was attempted 16 February 1995 by a pumping test and by a falling head test. This testing was performed in a packed-off open-rock interval. During the pumping test, the well was rapidly pumped dry, and the transducer also experienced equipment problems. The data from the falling head test was invalid because it was conducted while the water level in the well had not yet attained static conditions (it apparently was still rising when the test was commenced), such that the water level during the latter part of the test rose instead of falling. Static water levels measured were approximately 20 ft. below ground surface for the interval below the packer prior to pumping and 26.3 ft. above the packer prior to and during the testing period.

MONITORING WELL TESTS

MW-306-1

The lower portion of the screened interval of this well (up to the static water level) was tested 9 February 1995 by a rising head test, and the results were interpreted by the Bouwer-Rice method. Both the initial and the final water levels during the test were within the sandpack interval, so a correction for the value of the effective casing radius was required to account for water flow through the more-permeable sandpack (Bouwer, 1987). An estimated value of 0.35 was assumed for the sandpack porosity. The diameter of the screen was 2.0 inches, and the diameter of the borehole where the water level changes occurred was nominally 3-5/8 inches. As with all rising head tests subsequently reported, water was bailed from wells, and only an approximate volume removed was reported, such that it is not possible to tell if the initial head value as measured in the field was consistent with the theoretical value. Values of differential head were plotted as shown in Appendix XX in absolute terms, such that values of differential head decrease with time. The Bouwer-Rice method yielded an estimated hydraulic conductivity value of 5×10^{-3} cm/s.

MW-307-1

The lower 69% of the open borehole interval of this well (up to the static water level) was tested 9 February 1995 by a rising head test, and the results were interpreted by the Bouwer-Rice method. The nominal diameter of the open borehole was 3 inches. The Bouwer-Rice method yielded an estimated hydraulic conductivity value of 2×10^{-5} cm/s.

MW-309-1

The lower 86% of the open borehole interval of this well (up to the static water level) was tested 9 February 1995 by a rising head test, and the results were interpreted by the Bouwer-Rice method. The nominal diameter of the open borehole was 3 inches. The Bouwer-Rice method yielded an estimated hydraulic conductivity value of 4×10^{-5} cm/s.

MW-309-2

The lower 37% of the open borehole interval of this well (up to the static water level) was tested 9 February 1995 by a rising head test, and the results were interpreted by the Bouwer-Rice method. Neither the initial nor the final water levels during the test were within the screened interval, so a correction for the value of the effective casing radius was not required. The nominal diameter of the open borehole was 3 inches. The Bouwer-Rice method yielded an estimated hydraulic conductivity value of 5×10^{-3} cm/s.

MW-309-3

The screened interval of this well was tested 9 February 1995 by a rising head test, and the results were interpreted by the Bouwer-Rice method. Both the initial and the final water levels during the test were within the sandpack interval, so a correction for the value of the effective casing radius was required to account for water flow through the more-permeable sandpack (Bouwer, 1987). An estimated value of 0.35 was assumed for the sandpack porosity. The Bouwer-Rice method yielded an estimated hydraulic conductivity value of 7×10^{-4} cm/s.

References

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Bouwer, H. and Rice, R.C. (1976) "A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells," *Water Resour. Res.*, 12, 423-428.

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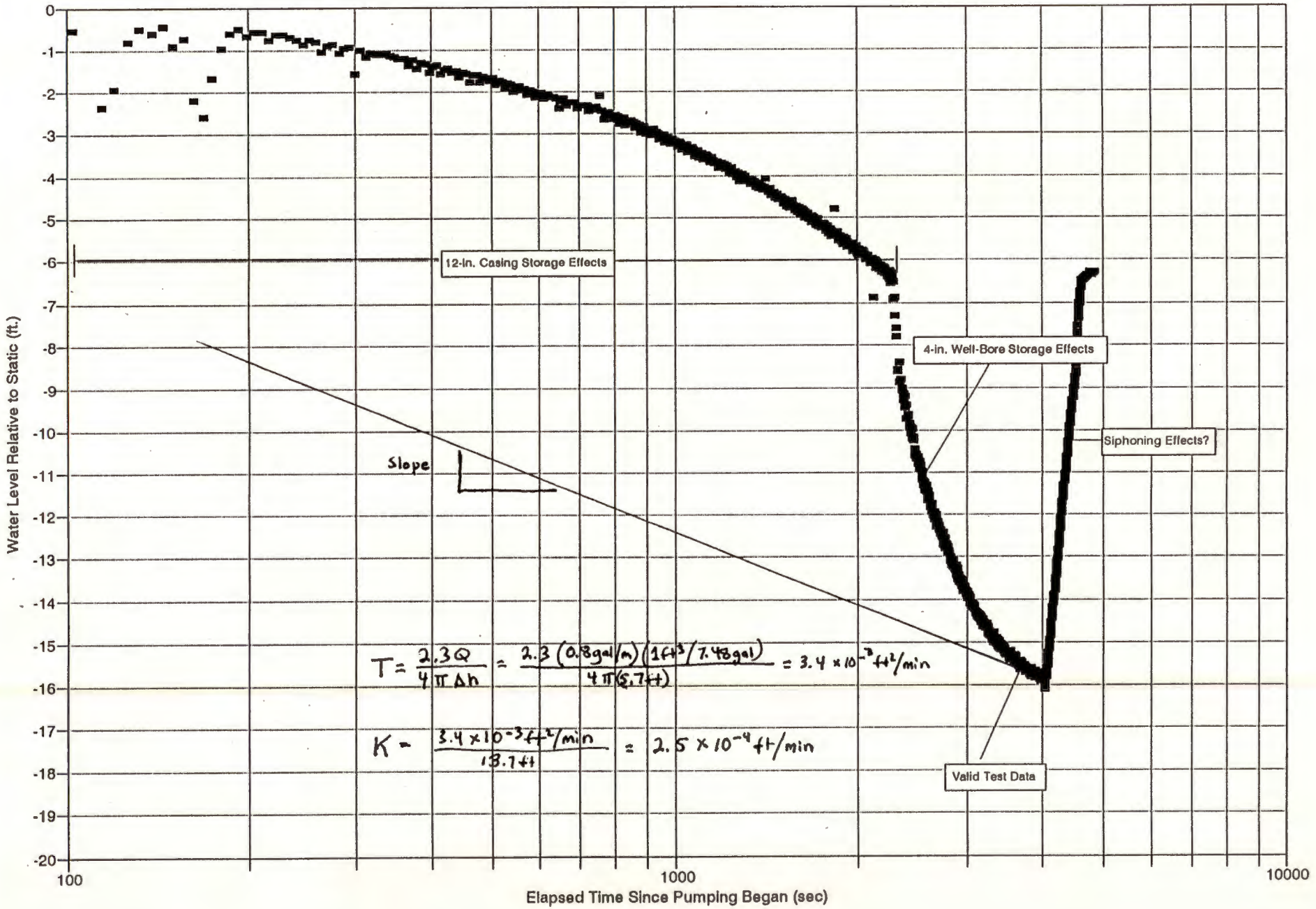
PUMPING TEST HYDROGRAPH FOR DB-309-1
1st INTERVAL: 19.5 ft. - 34.6 ft.



FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-1 INTERVAL #1

DATE OF TEST: 28-DEC-94

Falling Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt)]/2Lt

Test Section Radius (rw), in ft.:	0.17
Casing Radius (rc), in ft.:	0.50
Test Length Section (L),in ft.:	13.7
C:	3.61
L/rw:	80.59
Saturated Thickness (H), in ft.:	13.7
ln (Re/rw):	3.39
Yo, in ft.:	0.73
Yt, in ft.:	0.685
t, in min.:	4.2
Kh (cm/sec) =	2.3E-04
Kh (ft/min) =	4.6E-04
Kh (ft/day) =	6.6E-01

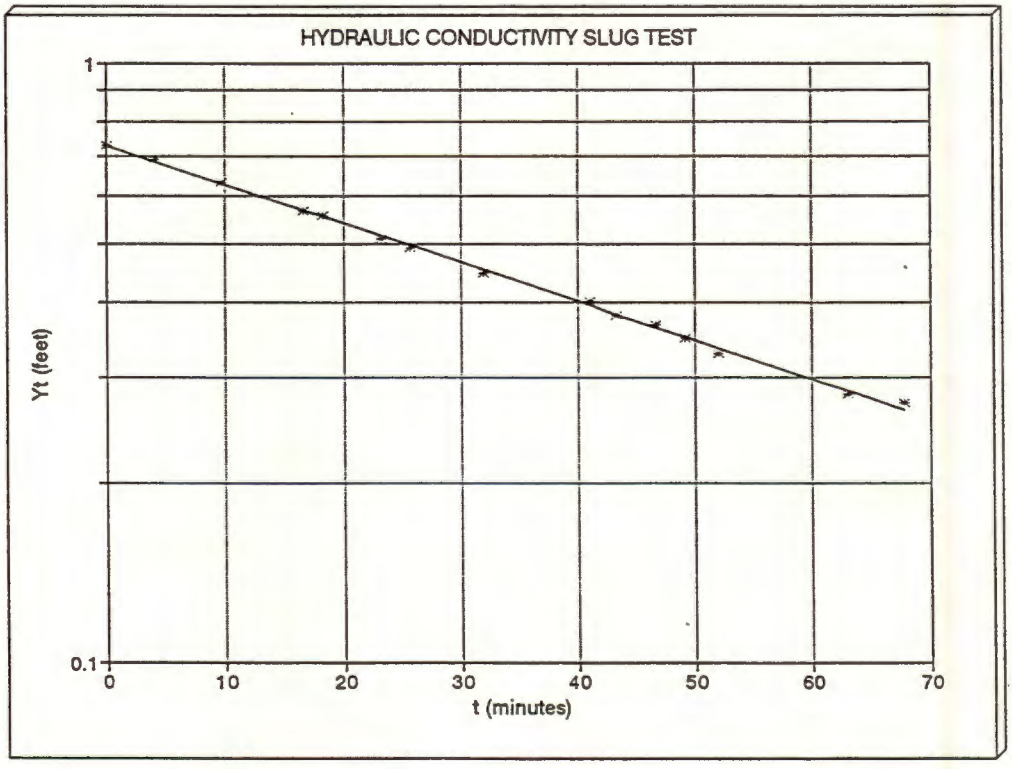
Pre-Test Head
0.00

Falling Head Test Field Data

Residual Head (ft)	Elapsed Time (min)	Residual Head Y (ft)
0.730	0.1	0.73
0.692	4.2	0.69
0.633	9.8	0.63
0.567	16.7	0.57
0.557	18.3	0.56
0.510	23.2	0.51
0.492	25.6	0.49
0.447	31.9	0.45
0.402	41	0.40
0.381	43.3	0.38
0.368	46.6	0.37
0.349	49.1	0.35
0.330	52	0.33
0.281	63	0.28
0.272	67.8	0.27

NOTES

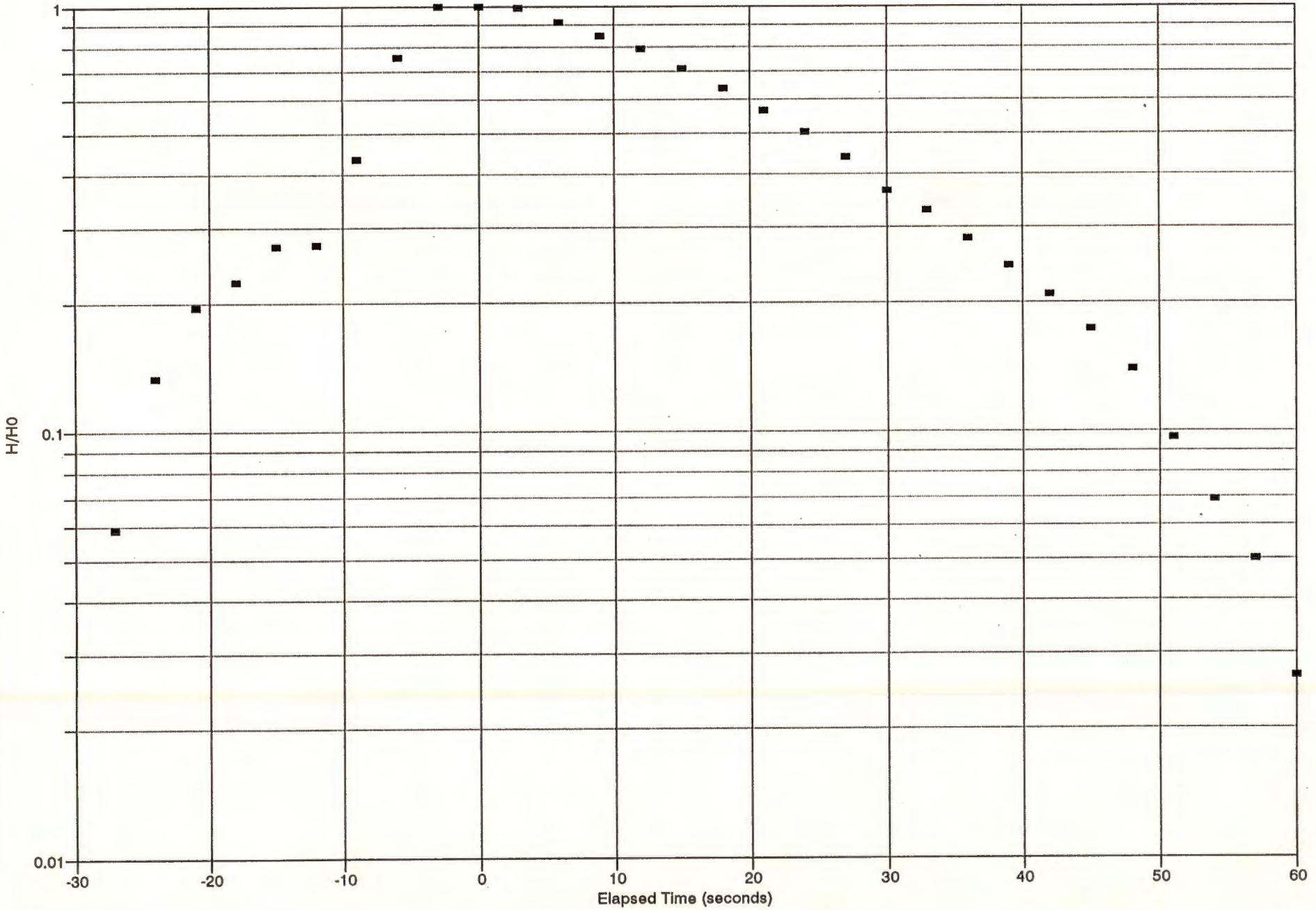
1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



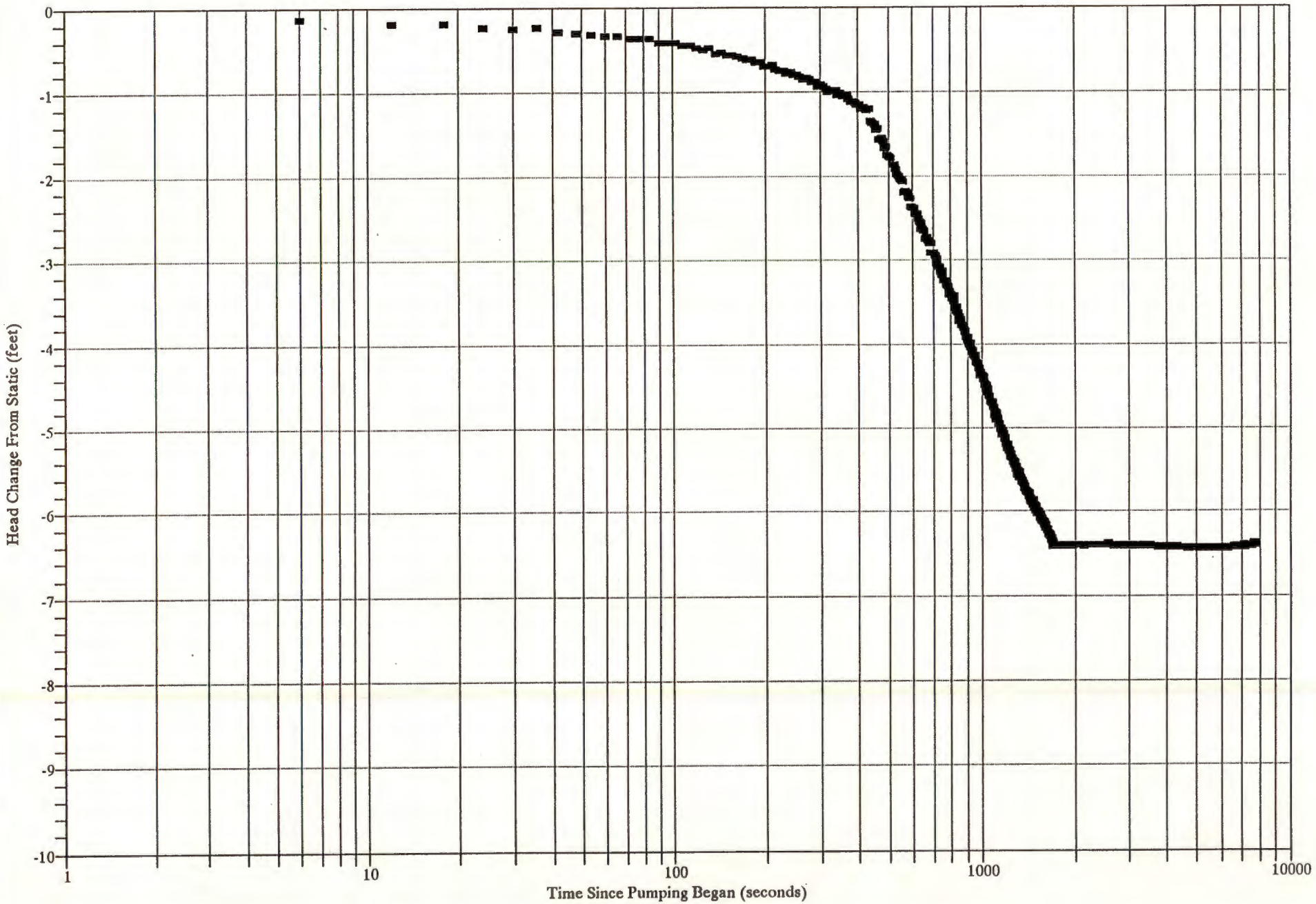
bjd\qpro5\dae\BR30911.wq2
Entered by BJD on 12/28/94

Checked by DAE on 12/29/94

FALLING HEAD DATA FROM DB-309-1
2nd Interval: 34.6 ft.- 44.8 ft.



PUMPING TEST HYDROGRAPH: DB-309-1
3rd Interval: 44.8 ft. - 54.5 ft.



FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-1 INTERVAL #4

DATE OF TEST: 00-JAN-95

Falling Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt)]/2Lt

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.07
Test Length Section (L),in ft.:	9.9
C:	3.18
L/rw:	66.00
Saturated Thickness (H), in ft.:	9.9
ln (Re/rw):	3.22
Yo, in ft.:	3.75
Yt, in ft.:	1.97
t, in min.:	0.05
Kh (cm/sec) =	5.2E-03
Kh (ft/min) =	1.0E-02
Kh (ft/day) =	1.5E+01

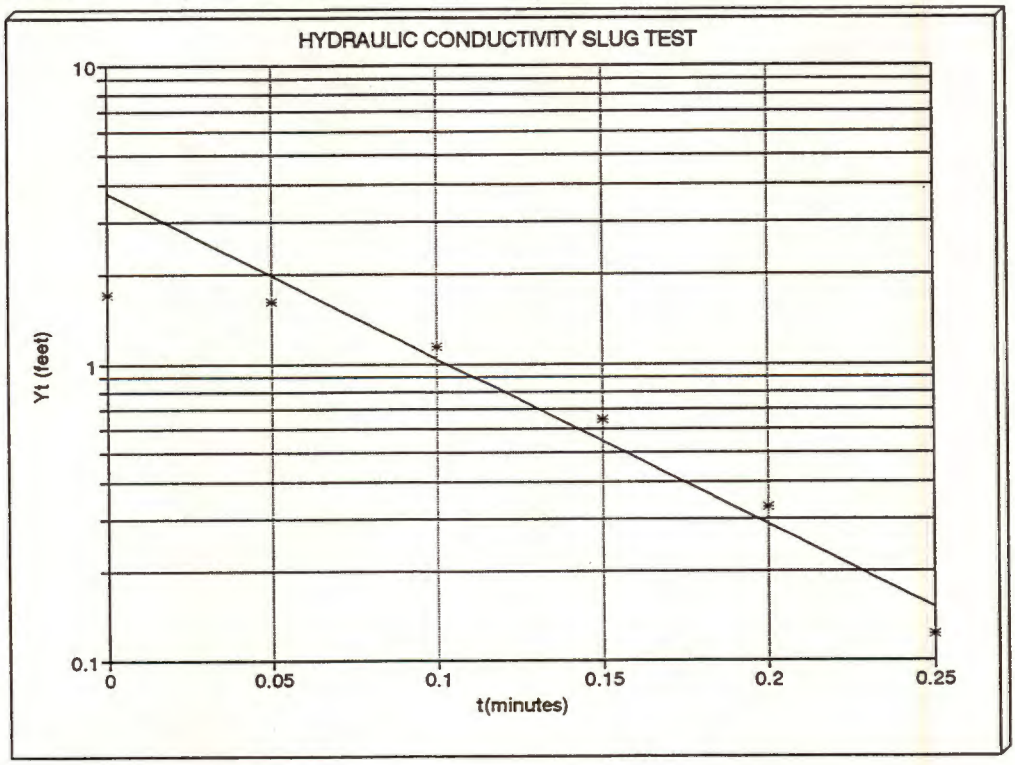
Static Water
0.00

Falling Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
1.70	0	1.70
1.62	0.05	1.62
1.15	0.1	1.15
0.65	0.15	0.65
0.33	0.2	0.33
0.12	0.25	0.12

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.

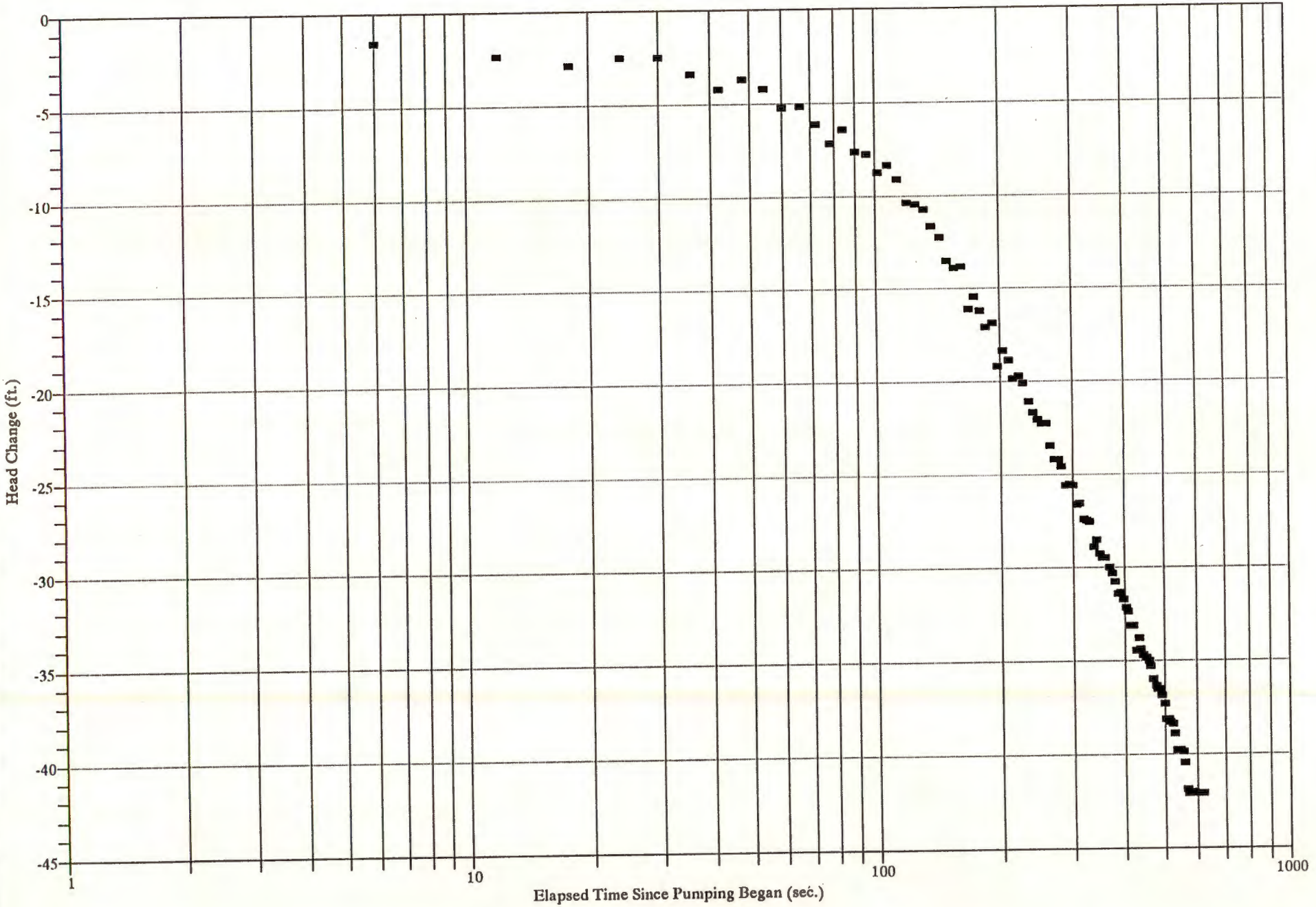


BJD\QPRO3\DAEBBR30914.WQ2

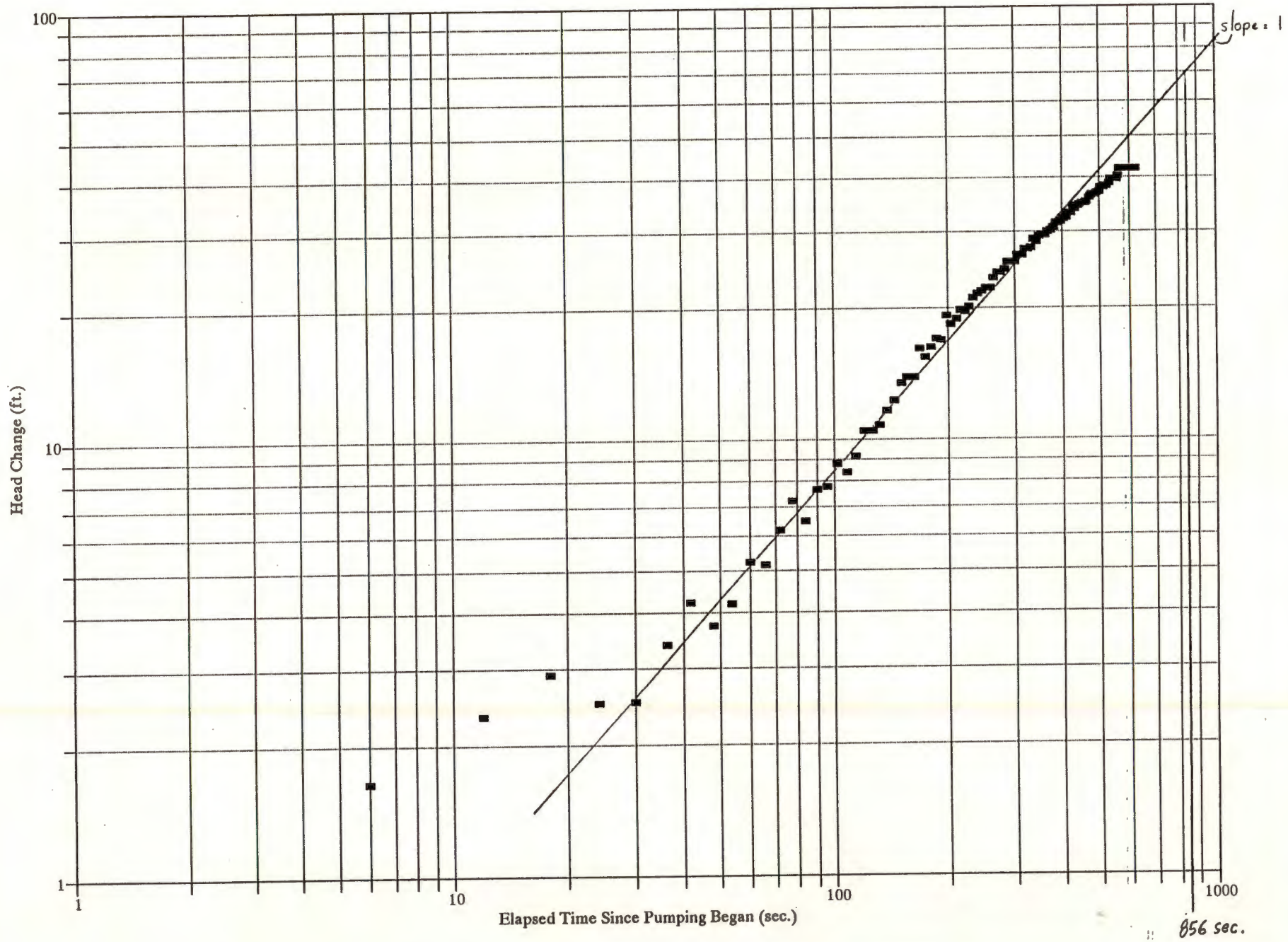
Entered by BJD on 1/9/94

Checked by MGB on 3/10/95

PUMPING TEST HYDROGRAPH: DB-309-1
(5th Interval: 65.5 ft. - 75.4 ft.)



PUMPING TEST HYDROGRAPH: DB-309-1
(5th Interval: 65.5 ft. - 75.4 ft.)



PUMPING TEST HYDROGRAPH: DB-309-1
6th Interval: 75.4 ft. - 85.0 ft.

HALEY & ALDRICH, INC.	CALCULATIONS	File No.
		Sheet 1 of 1
Client		Date 26 Apr 95
Project	GM- ITT Property Transaction Investigation	Computed By DAE
Subject	DB-309-1, 6th Interval, Pumping Test	Checked By BJD

From about 1,200 seconds to about 2,400 seconds,

Δh (per log interval of time) = 15 feet

$$T = \frac{2.3\,Q}{4\pi\,\Delta h} = \frac{2.3\,(7.4\times10^{-4}\,ft^3/s)}{4\pi\,(15ft)} = 9.03\times10^{-6}\,ft^2/s$$

$$K = \frac{T}{b} = \frac{9.03\times10^{-6}\,ft^2/s}{9.9ft} = \boxed{2.8\times10^{-5}\,cm/s}\text{, or } 9.1\times10^{-7}\,ft/s$$

FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-1 INTERVAL #6

DATE OF TEST: 11-JAN-95

Falling Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt)]/2Lt

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.07
Test Length Section (L),in ft.:	9.9
C:	3.18
L/rw:	66.00
Saturated Thickness (H), in ft.:	9.9
ln (Re/rw):	3.22
Yo, in ft.:	2.33
Yt, in ft.:	2.32
t, in min.:	0.10
Kh (cm/sec) =	1.5E-05
Kh (ft/min) =	3.0E-05
Kh (ft/day) =	4.4E-02

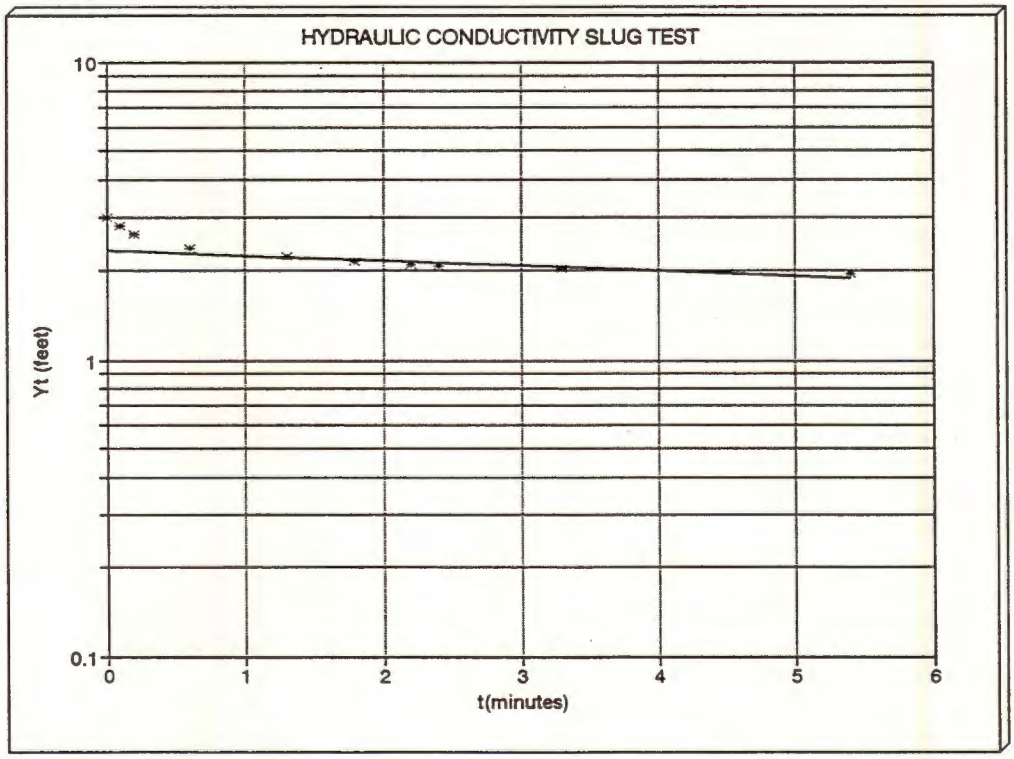
Static Water 0.00

Falling Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
2.99	0	2.99
2.82	0.1	2.82
2.65	0.2	2.65
2.37	0.6	2.37
2.22	1.3	2.22
2.14	1.8	2.14
2.09	2.2	2.09
2.08	2.4	2.08
2.02	3.3	2.02
1.95	5.4	1.95

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.

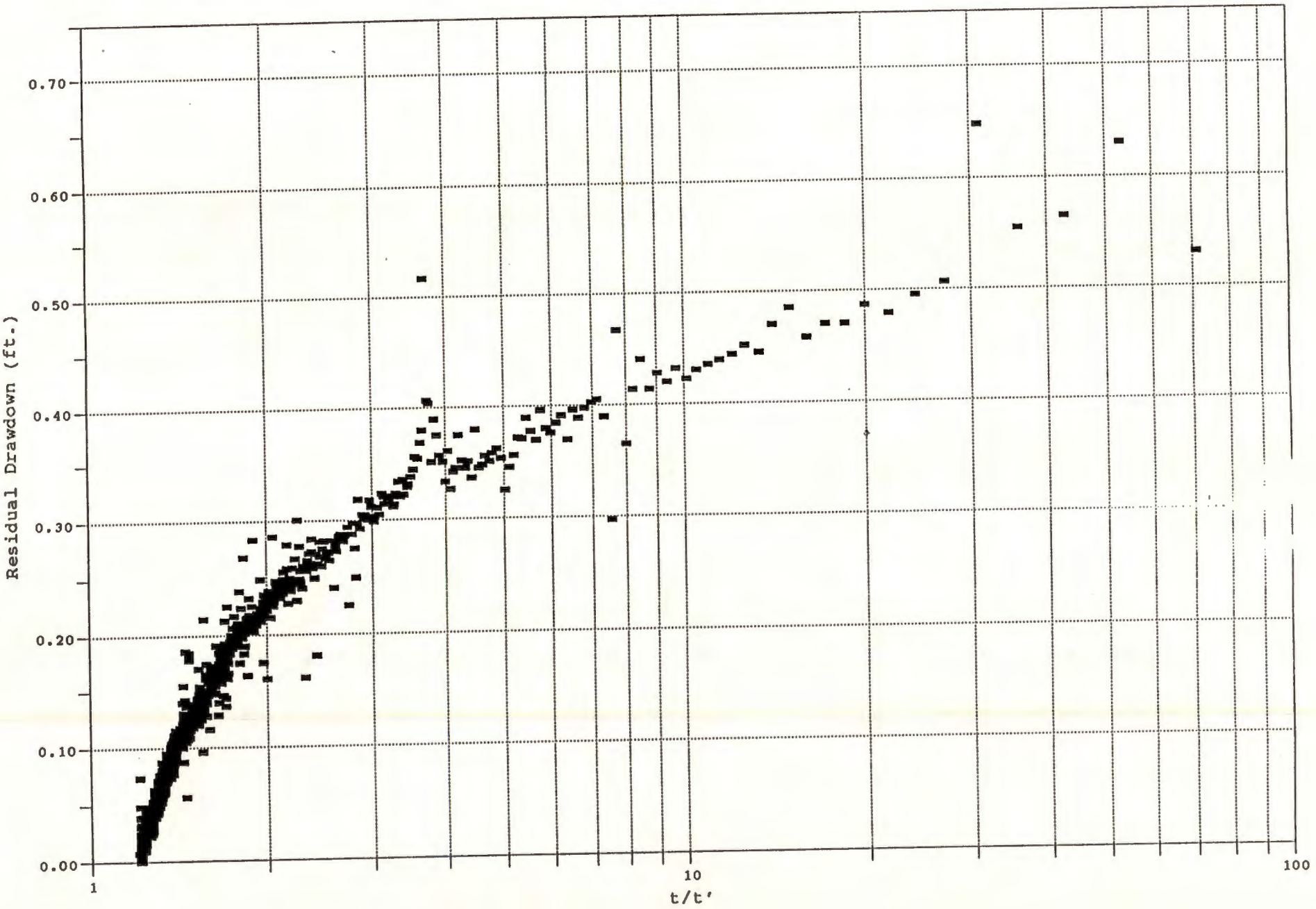


BJD\QPRO3\DATA\BRJ0914.WQ2

Entered by BJD on 1/12/95

Checked by MGB on 3/10/95

THEIS' RECOVERY METHOD
WELL DB309-2A



For partial penetration, use only data for $t' > t'^*$, where

$$t'^* = \frac{D^2 S}{2KD} = 2740 \text{ seconds}$$

Thus

$$\left(\frac{t}{t'}\right)^* = \left(\frac{t_p + t'^*}{t'^*}\right) = \frac{2090 + 2740}{2740} = 1.76$$

$$T = \frac{2.3\,Q}{4\pi \Delta s'} = \frac{2.3\,(0.67 \text{ gal/min})\left(1 \text{ ft}^3/7.48 \text{ gal}\right)}{4\pi\,[0.8 \text{ ft / log unit}(t/t')]} = 2.0 \times 10^{-2} \text{ ft}^2/\text{min}$$

$$K = \frac{2.0 \times 10^{-2} \text{ ft}^2/\text{min}}{13.7 \text{ ft}} = 1.5 \times 10^{-3} \text{ ft/min} = 7.6 \times 10^{-4} \text{ cm/s}$$

Assume some leakage toward the end of the test (as $\frac{t}{t'} \rightarrow 1$) such that the x-intercept < 0.

FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-3 INTERVAL #1 - Test 1

DATE OF TEST: 26-JAN-95

Falling Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt)]/2Lt

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.07
Test Length Section (L),in ft.:	9.9
C:	3.18
L/rw:	66.00
Saturated Thickness (H), in ft.:	9.9
ln (Re/rw):	3.22
Yo, in ft.:	3.60
Yt, in ft.:	0.27
t, in min.:	0.25
Kh (cm/sec) =	4.2E-03
Kh (ft/min) =	8.2E-03
Kh (ft/day) =	1.2E+01

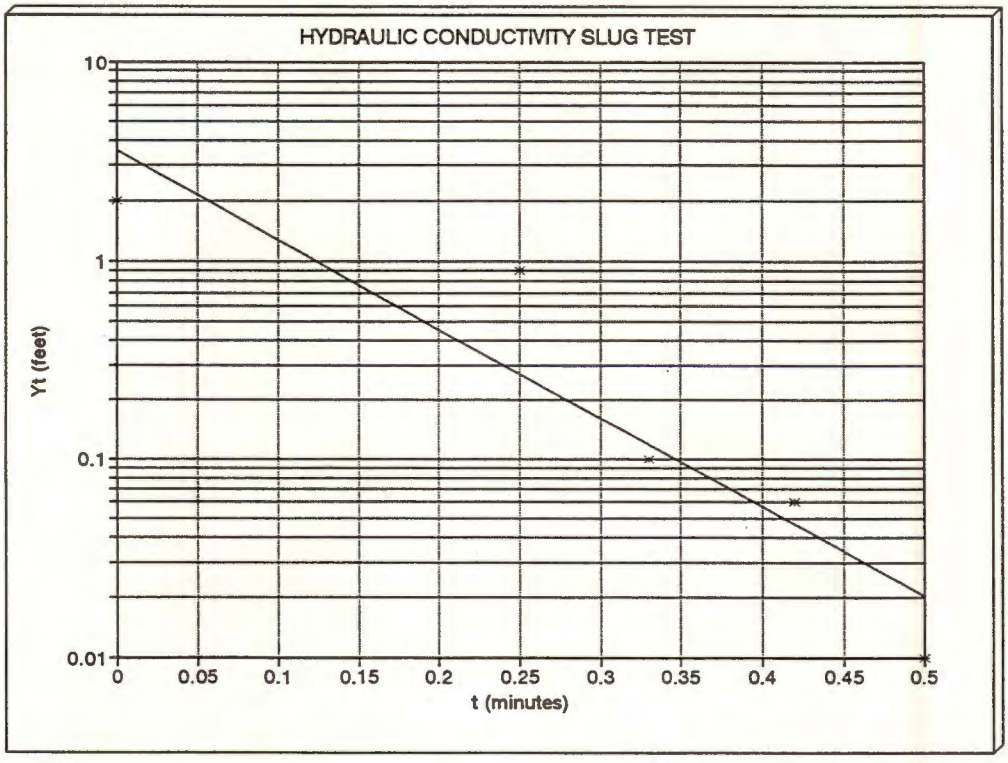
Static Water
0.00

Falling Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
2.00	0	2.00
0.90	0.25	0.90
0.10	0.33	0.10
0.06	0.42	0.06
0.01	0.5	0.01

NOTES

1. C=-2.343E-05(L/rw) ^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



BJD\QPRO5\DAB\BR30931A

CHECKED BY MGB ON 3/10/95

ENTERED BY BJD ON 1/26/95

FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-3 INTERVAL # 2

DATE OF TEST: 30-JAN-95

Falling Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt)]/2Lt

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.07
Test Length Section (L),in ft.:	10.5
C:	3.28
L/rw:	69.52
Saturated Thickness (H), in ft.:	10.5
ln (Re/rw):	3.26
Yo, in ft.:	12.63
Yt, in ft.:	7.598
t, in min.:	0.1
Kh (cm/sec) =	2.0E-03
Kh (ft/min) =	3.9E-03
Kh (ft/day) =	5.6E+00

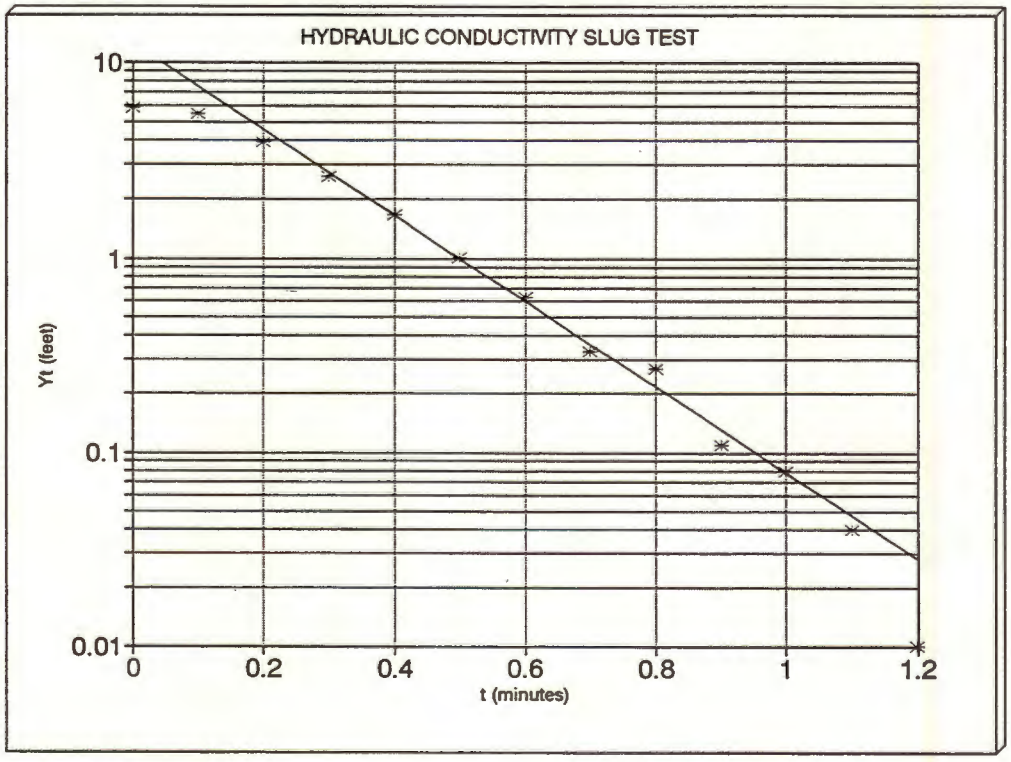
Static Water
25.90

Falling Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
20.05	0	5.85
20.43	0.1	5.47
21.99	0.2	3.91
23.28	0.3	2.62
24.22	0.4	1.68
24.89	0.5	1.01
25.27	0.6	0.63
25.57	0.7	0.33
25.63	0.8	0.27
25.79	0.9	0.11
25.82	1	0.08
25.86	1.1	0.04
25.89	1.2	0.01

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



BJD-QPRO5\M\QPRO5\DATA\BR30932

CHECKED BY MGB ON 3/10/95

ENTERED BY MGB ON 2/06/95

FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-3 INTERVAL # 4

DATE OF TEST: 07-FEB-95

Falling Head Permeability Calculation
Bouwer-Rice Method
$Kh=[(rc*rc*\ln(Re/rw))(\ln(Yo/Yt)]/2Lt$

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.07
Test Length Section (L),in ft.:	9.9
C:	3.17
L/rw:	65.54
Saturated Thickness (H), in ft.:	9.9
ln (Re/rw):	3.21
Yo, in ft.:	9.94
Yt, in ft.:	9.881
t, in min.:	0.50
Kh (cm/sec) =	4.1E-06
Kh (ft/min) =	8.1E-06
Kh (ft/day) =	1.2E-02

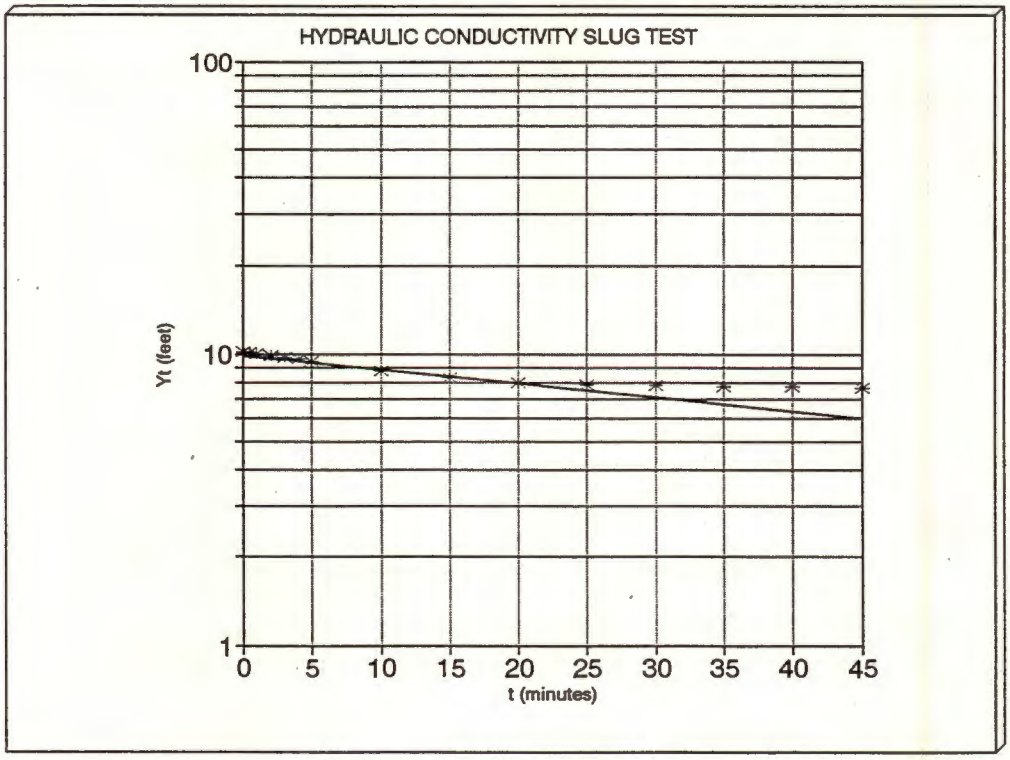
Static Water 22.85

Falling Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
33.11	0	10.26
33.04	0.5	10.19
32.95	1	10.10
32.77	2	9.92
32.61	3	9.76
32.51	4	9.66
32.32	5	9.47
31.69	10	8.84
31.16	15	8.31
30.88	20	8.03
30.72	25	7.87
30.64	30	7.79
30.59	35	7.74
30.58	40	7.73
30.57	45	7.72

NOTES

1. $C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103$
2. $\ln(Re/rw)$ calculated from $1/[\{1.1/\ln(H/rw)\}+\{C/(L/rw)\}]$.
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.

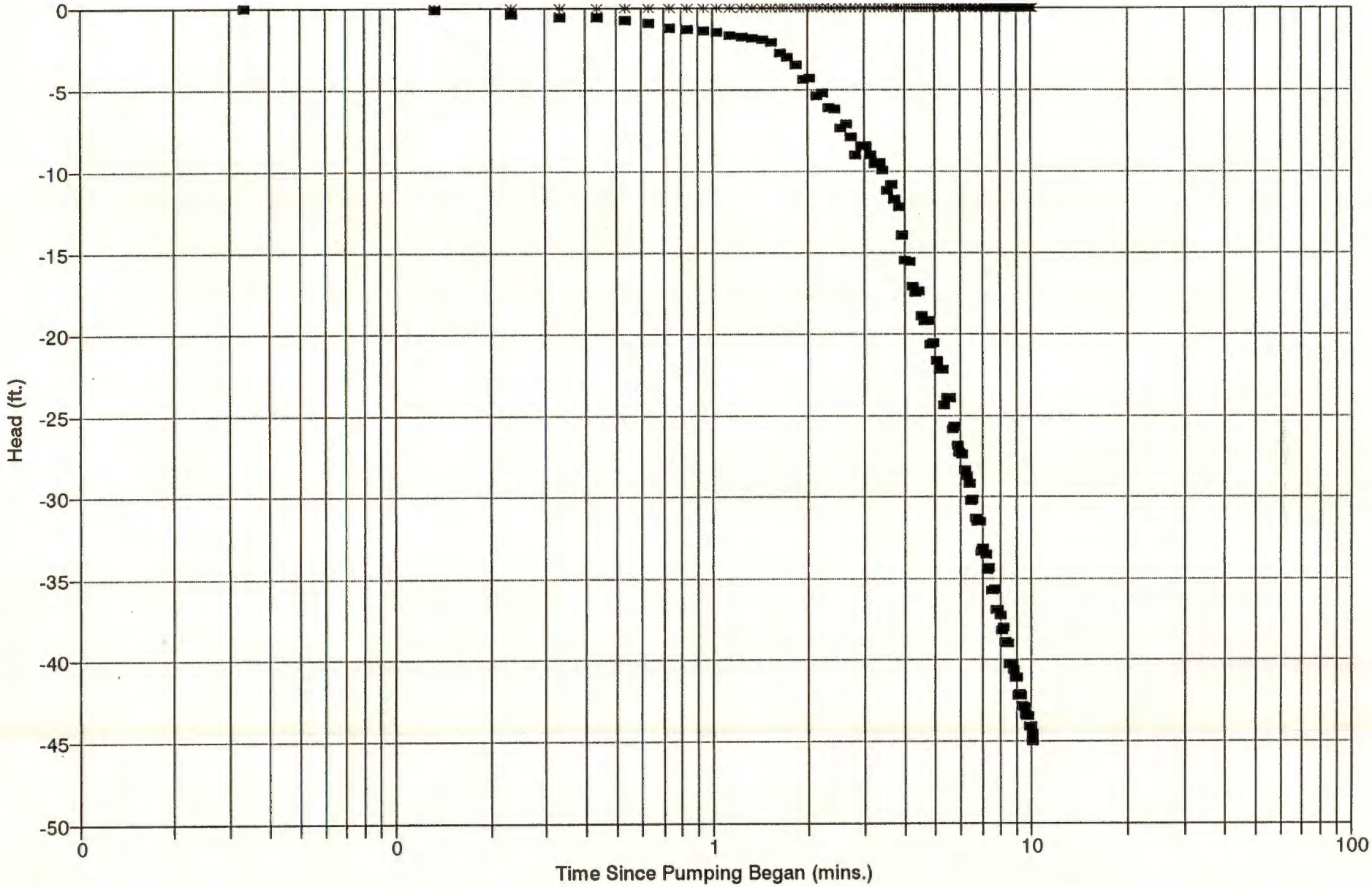


BJD-QPRO5 M:\QPRO\DATA\BR30934

CHECKED BY MGB ON 3/13/95

ENTERED BY MGB ON 2/9/95

PUMPING TEST HYDROGRAPH: DB-309-3
4TH INTERVAL: 68.2 ft. - 78.1 ft.



FALLING HEAD TEST SUMMARY

WELL NAME: DB-309-3 INTERVAL #5

DATE OF TEST: 14-FEB-95

Falling Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt)]/2Lt

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.07
Test Length Section (L),in ft.:	9.9
C:	3.18
L/rw:	66.00
Saturated Thickness (H), in ft.:	9.9
ln (Re/rw):	3.22
Yo, in ft.:	7.28
Yt, in ft.:	7.280
t, in min.:	0.5
Kh (cm/sec) =	2.6E-07
Kh (ft/min) =	5.2E-07
Kh (ft/day) =	7.4E-04

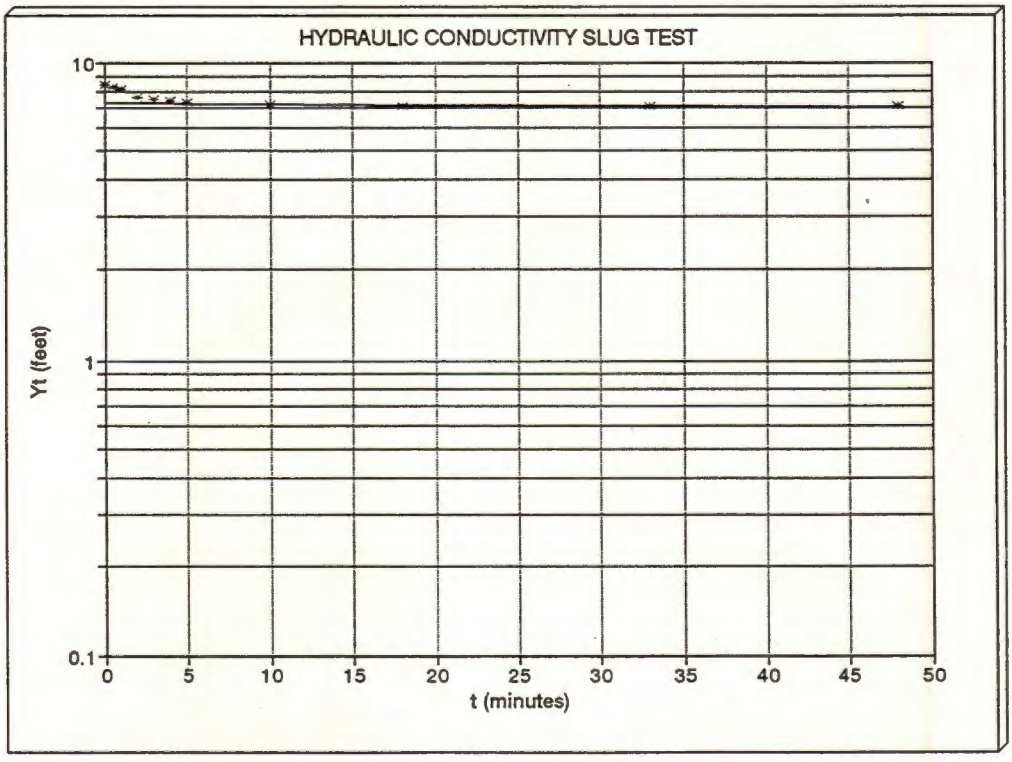
Pre-Test Head
20.54

Falling Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
12.10	0	8.44
12.30	0.5	8.24
12.40	1	8.14
12.90	2	7.64
13.00	3	7.54
13.10	4	7.44
13.22	5	7.32
13.30	10	7.24
13.42	18	7.12
13.44	33	7.10
13.44	48	7.10

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.

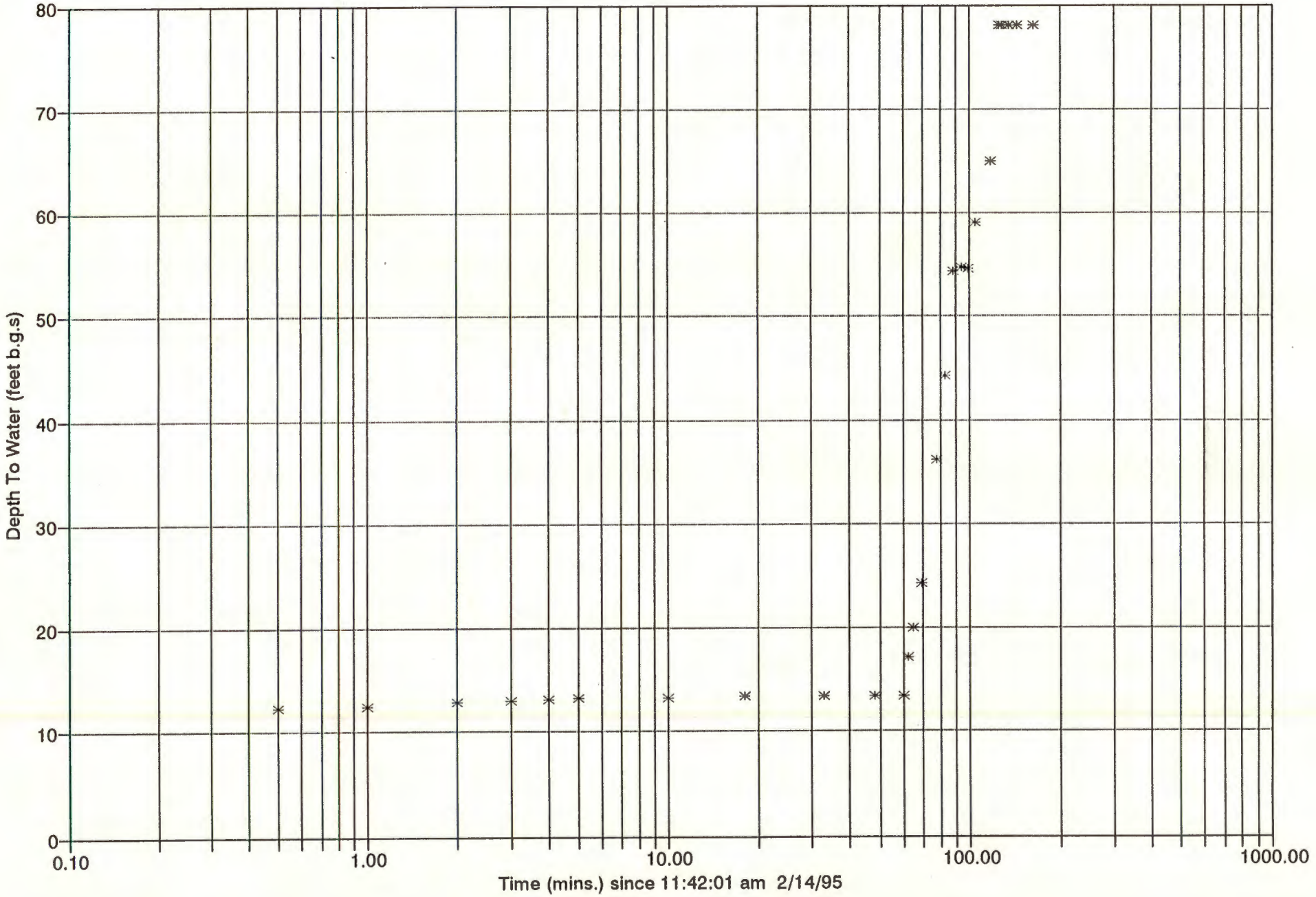


bjd\qpro5\dae\BR30935

Entered by MGB on 3/13/95

Checked by DAE on 3/13/95

HYDROGRAPH: DB-309-3
5TH INTERVAL: 78.4 ft. - 88.3 ft.



RISING HEAD TEST SUMMARY

WELL MW-306-1

DATE OF TEST: 09-FEB-95

Rising Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt))]/2Lt

Test Section Radius (rw), in ft.:	0.15
Casing Radius (rc), in ft.:	0.11
Test Length Section (L),in ft.:	0.8
C:	1.28
L/rw:	5.30
Saturated Thickness (H), in ft.:	0.8
ln (Re/rw):	1.11
Yo, in ft.:	0.15
Yt, in ft.:	0.108
t, in min.:	0.25

Static W.L.
18.20

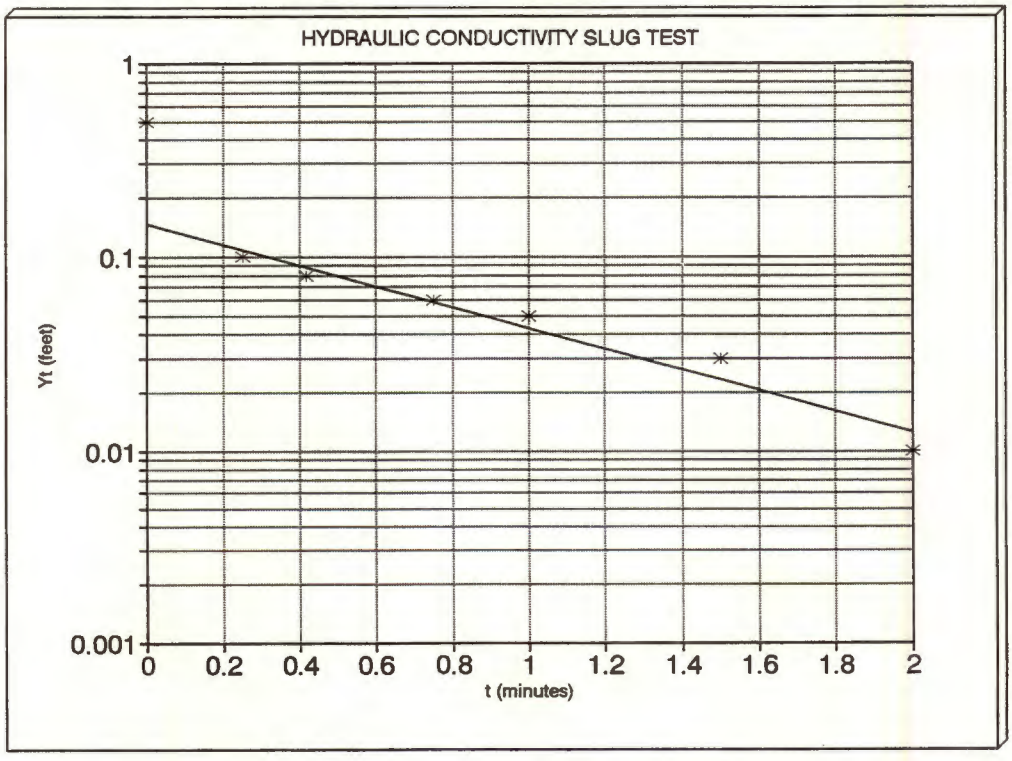
Rising Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
18.70	0	0.50
18.30	0.25	0.10
18.28	0.416	0.08
18.26	0.75	0.06
18.25	1	0.05
18.23	1.5	0.03
18.21	2	0.01
18.20	3	0.00

Kh (cm/sec) = 5.2E-03
Kh (ft/min) = 1.0E-02
Kh (ft/day) = 1.5E+01

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976. Early-time data are indicative of fast drainage through sandpack.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



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ENTERED BY ON / /95, AND CHECKED BY ON / /95

RISING HEAD TEST SUMMARY

MW-307-1

DATE OF TEST: 09-FEB-95

Static W.L.
24.54

Rising Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt))]/2Lt

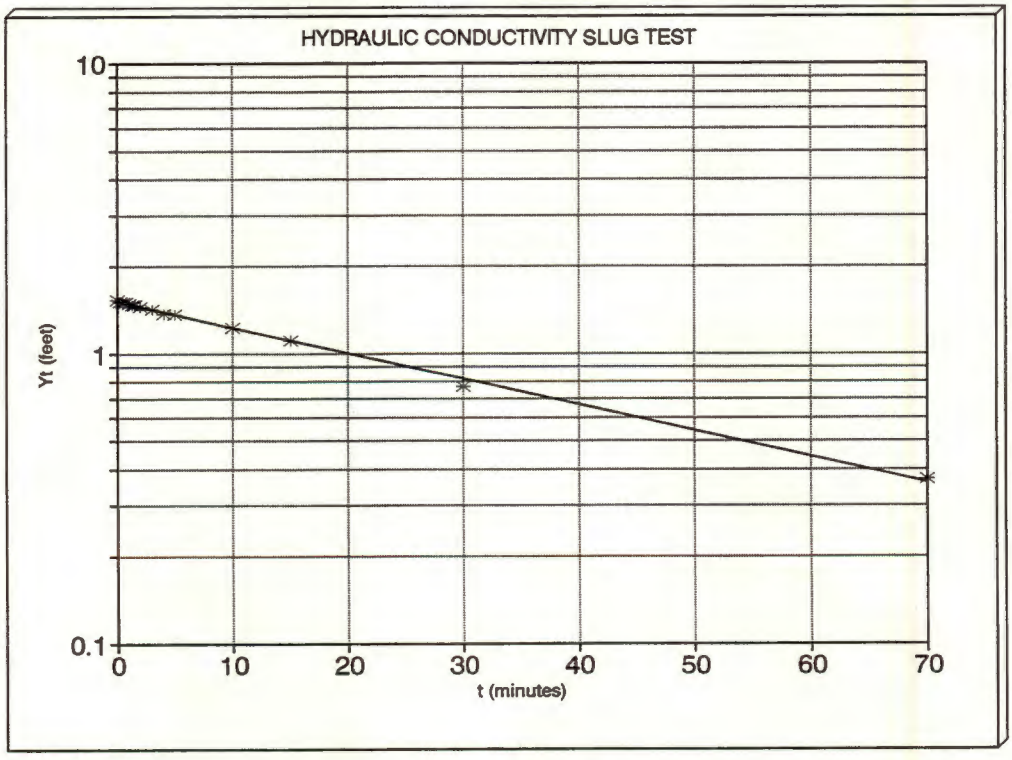
Test Section Radius (rw), in ft.:	0.13
Casing Radius (rc), in ft.:	0.13
Test Length Section (L),in ft.:	15.3
C:	4.80
L/rw:	122.72
Saturated Thickness (H), in ft.:	15.3
ln (Re/rw):	3.73
Yo, in ft.:	1.51
Yt, in ft.:	1.504
t, in min.:	0.25
Kh (cm/sec) =	2.0E-05
Kh (ft/min) =	3.9E-05
Kh (ft/day) =	5.6E-02

Rising Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
26.08	0	1.54
26.05	0.25	1.51
26.04	0.5	1.50
26.04	0.75	1.50
26.03	1	1.49
26.02	1.25	1.48
26.02	1.5	1.48
25.99	2	1.45
25.96	3	1.42
25.92	4	1.38
25.90	5	1.36
25.77	10	1.23
25.65	15	1.11
25.31	30	0.77
24.91	70	0.37

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



DAE-M:\QPRO\CALC*.* ENTERED BY ON / /95, AND CHECKED BY ON / /95.

RISING HEAD TEST SUMMARY

WELL MW-309-1

DATE OF TEST: 09-FEB-95

Rising Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt))]/2Lt

Test Section Radius (rw), in ft.:	0.13
Casing Radius (rc), in ft.:	0.13
Test Length Section (L),in ft.:	19.3
C:	5.64
L/rw:	154.48
Saturated Thickness (H), in ft.:	19.3
ln (Re/rw):	3.92
Yo, in ft.:	1.06
Yt, in ft.:	1.040
t, in min.:	0.50
Kh (cm/sec) =	3.6E-05
Kh (ft/min) =	7.1E-05
Kh (ft/day) =	1.0E-01

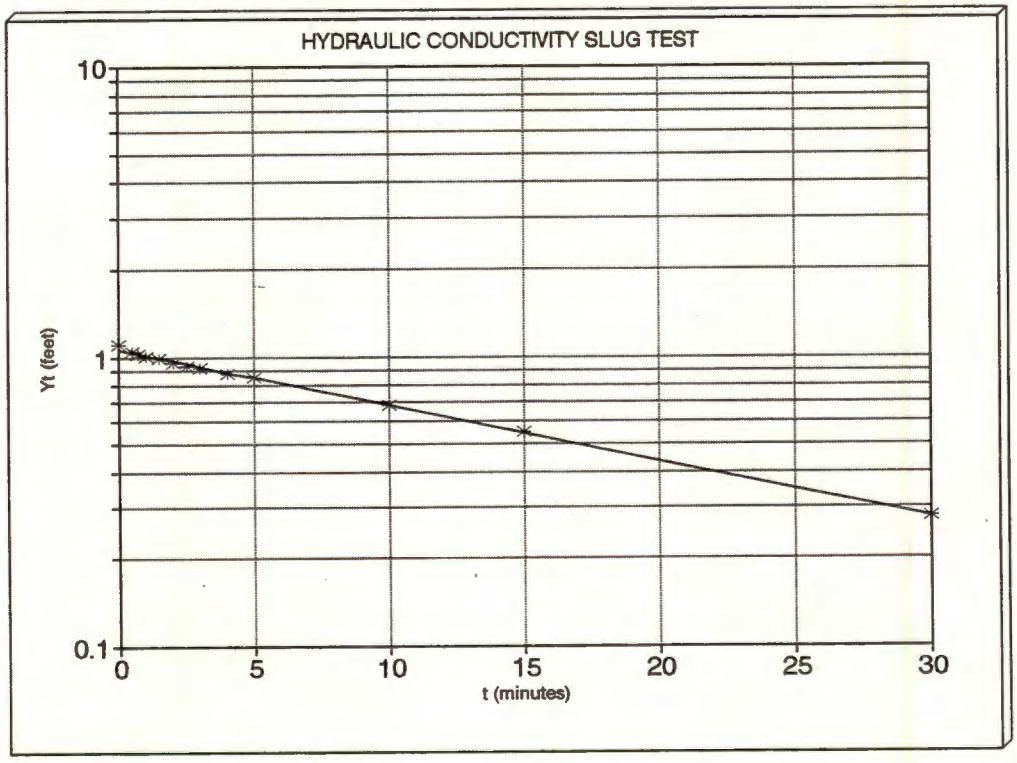
Static W.L.
23.21

Rising Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
24.32	0	1.11
24.26	0.5	1.05
24.24	0.75	1.03
24.22	1	1.01
24.20	1.5	0.99
24.17	2	0.96
24.15	2.5	0.94
24.13	3	0.92
24.09	4	0.88
24.06	5	0.85
23.89	10	0.68
23.76	15	0.55
23.49	30	0.28

NOTES

1. C=-2.343E-05(L/rw) ^ 2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



DAE-MAQPROSCALC*.*

ENTERED BY ON / /95, AND CHECKED BY ON / /95.

RISING HEAD TEST SUMMARY

WELL MW-309-2

DATE OF TEST: 09-FEB-95

Rising Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt))]/2Lt

Test Section Radius (rw), in ft.:	0.13
Casing Radius (rc), in ft.:	0.13
Test Length Section (L),in ft.:	9.3
C:	3.42
L/rw:	74.08
Saturated Thickness (H), in ft.:	9.3
ln (Re/rw):	3.31
Yo, in ft.:	0.05
Yt, in ft.:	0.029
t, in min.:	0.17
Kh (cm/sec) =	4.6E-03
Kh (ft/min) =	9.1E-03
Kh (ft/day) =	1.3E+01

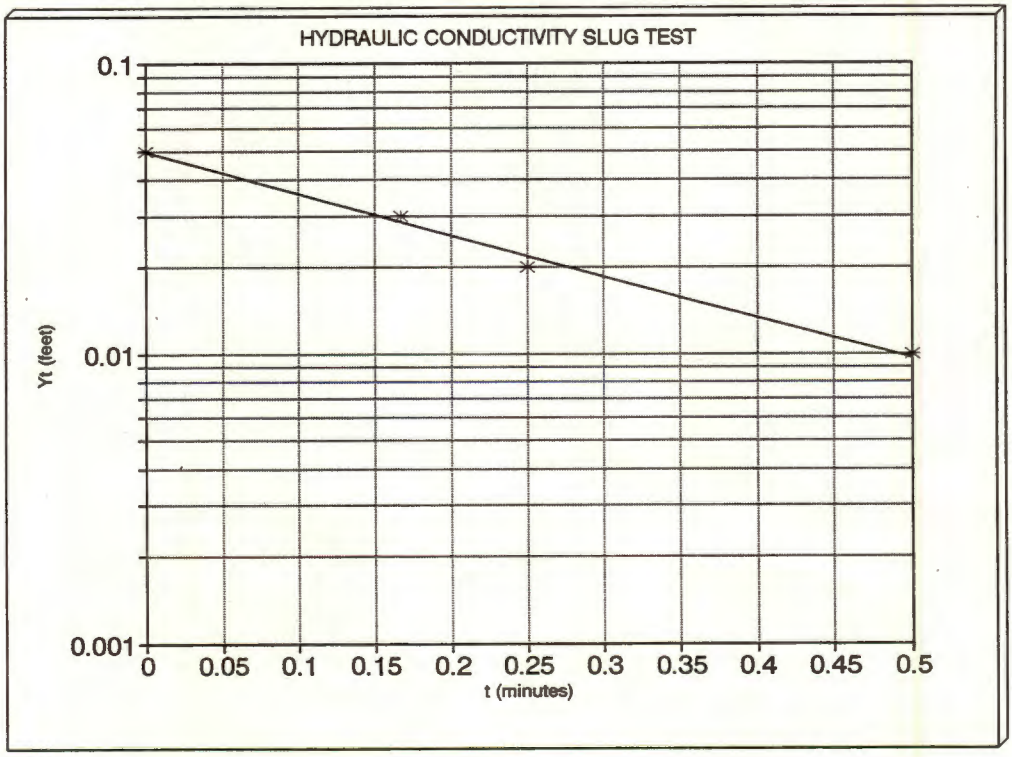
Static W.L.
30.84

Rising Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
30.89	0	0.05
30.87	0.1667	0.03
30.86	0.25	0.02
30.85	0.5	0.01
30.84	0.6667	0.00

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



RISING HEAD TEST SUMMARY

MW-309-3

DATE OF TEST: 09-FEB-95

Rising Head Permeability Calculation
Bouwer-Rice Method
Kh=[(rc*rc*ln(Re/rw))(ln(Yo/Yt))]/2Lt

Test Section Radius (rw), in ft.:	0.25
Casing Radius (rc), in ft.:	0.16
Test Length Section (L),in ft.:	9.2
C:	2.29
L/rw:	36.80
Saturated Thickness (H), in ft.:	9.2
ln (Re/rw):	2.72
Yo, in ft.:	0.13
Yt, in ft.:	0.121
t, in min.:	0.25
Kh (cm/sec) =	7.1E-04
Kh (ft/min) =	1.4E-03
Kh (ft/day) =	2.0E+00

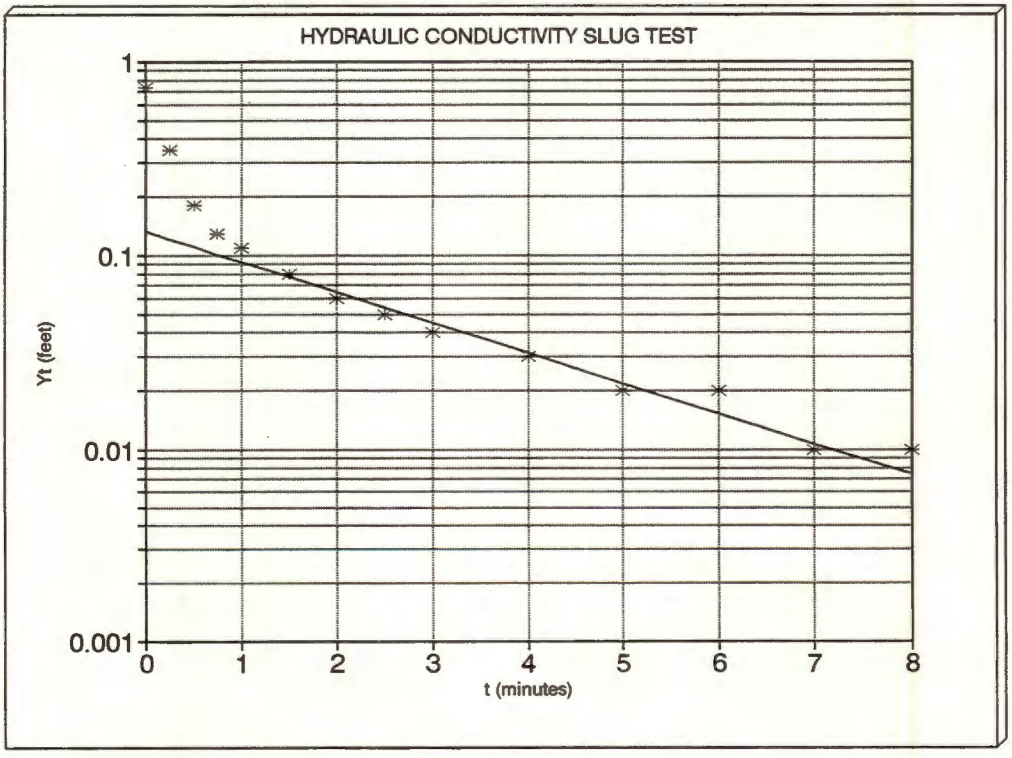
Static W.L.
6.46

Rising Head Test Field Data

Depth Water (ft)	Elapsed Time (min)	Residual Head Y (ft)
7.20	0	0.74
6.81	0.25	0.35
6.64	0.5	0.18
6.59	0.75	0.13
6.57	1	0.11
6.54	1.5	0.08
6.52	2	0.06
6.51	2.5	0.05
6.50	3	0.04
6.49	4	0.03
6.48	5	0.02
6.48	6	0.02
6.47	7	0.01
6.47	8	0.01
6.46	10	0.00

NOTES

1. C=-2.343E-05(L/rw)^2 + .033(L/rw) + 1.103
2. ln(Re/rw) calculated from 1/[{1.1/ln(H/rw)}+{C/(L/rw)}].
3. Test Section radius (rw) is equal to the borehole radius.
4. Method taken from Bouwer and Rice, 1976. Early-time data are indicative of fast drainage through sandpack.
5. Best fit line defined by residual heads at corresponding time values that are shaded.



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ENTERED BY ON / /95, AND CHECKED BY ON / /95.