

EA02-025

**TEXAS INSTRUMENTS,
INC.'S 9/10/03
ATTACHMENT**

REQUEST NO. 7

BOX 8

PART A-U

PART O

LOG NO. 10762
TEST NO. 151700TEST NO. 151700

TECHNICAL SERVICE LABS

ITEM NO.	<u>107</u>
RECEIVER CONT. CHARTER	<u>357</u>
PRODUCT CODE	
RECIPIENT	<u>SEAN MULLIN</u>
MAIL STATION	<u>12-29</u>
EXTENSION	<u>2535</u>
MAIL ID	<u>SEAM</u>
DATE SUBMITTED	<u>3/17/79</u>
DATE REQUIRED	
NO. OF SAMPLES	<u>1</u>
COMPOSITION	

STATE YOUR PROBLEM
SAMPLE DESCRIPTION
77PSL2-1
5% Salt water burn
Identification of
Corrosion matl.

INFORMATION DESIRED:

REPORT OF RESULTS:

Acetone Soaked, Q-Tip + wood stick Rubbed,
Acetone Flushed, Air Dried

DATE RECEIVED _____

DATE OUT _____

TESTIMENT			
HOURS WORKED			
PROCEDURE USED			

*PCC I.D.

MC-325	TM-431	CLKE-122	FACIL-514
PC-127	WIRE-432	CAN-634	FACIL-621
VERB-168	SPD-621	AD DEV-288	FACIL-631
AFDC-463	PGP-622	EMCD-677	STAFF-686
IMD-430	CSD-636		

TO: SEAN MULLIGAN
RUSS BAUMAN

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

SUBJECT: 99-181: TSL # 151700: PRELIMINARY FINDINGS ON LINCOLN
SIMULATION SAMPLES

OBJECTIVE:

Determine if there are similarities between the original sample that Ford had hand-carried in (TSL # 150709) and the simulation samples.

DISCUSSION:

Be advised that these are very, very preliminary findings. We have had a host of equipment problems for the last two weeks and I haven't had the opportunity to do a thorough job.

There are a number of findings that point to a similarity in the failure mode between the hand-carried sample (Memphis) and the simulation sample that had been dosed with sodium-chloride solution through the connector. In particular, both the simulation and the Memphis sample show the following characteristics:

- Corrosion of the brass contact/terminal assemblies.
- Arcing at the broken ends of those assemblies.
- Presence of large amounts of decomposed plastic base material.

There are, however, other findings that indicate that this certainly isn't a precise simulation; especially in regards to the nature of the fluid which caused the corrosion as is shown below:

- The Simulation sample shows a vast amount of sodium and chlorine in the corrosion deposit; the Memphis sample didn't show a significant amount.
- The Memphis sample showed a substantial amount of potassium and sulfur with lesser and variable amounts of phosphorous; the Simulation sample didn't. As I had remarked at the time, potassium is an element that is often associated with detergents used to clean autos. Although this certainly isn't conclusive, it is suggestive.
- The Simulation sample showed very substantial corrosive attack on the top surface of the cup while the Memphis sample showed a much smaller amount.

We have not seen significant similarities between the Memphis sample and the "24 Hour-Used Brake Fluid with 98 Water" sample in regards to the terminal/contact assemblies.

The data was collected under the guidelines of TSL-5-71, Rev A which can be accessed at <http://www-mod.mc.ti.com/tsl/>. SEM-EDAX (Scanning Electron Microscope with Energy Dispersive Analysis of X-rays) analysis was used in the above described analysis. The data will be sent through the internal mail.

AL HOPKINS

MSC ID: AHOP

PHONE: 508/236-3040

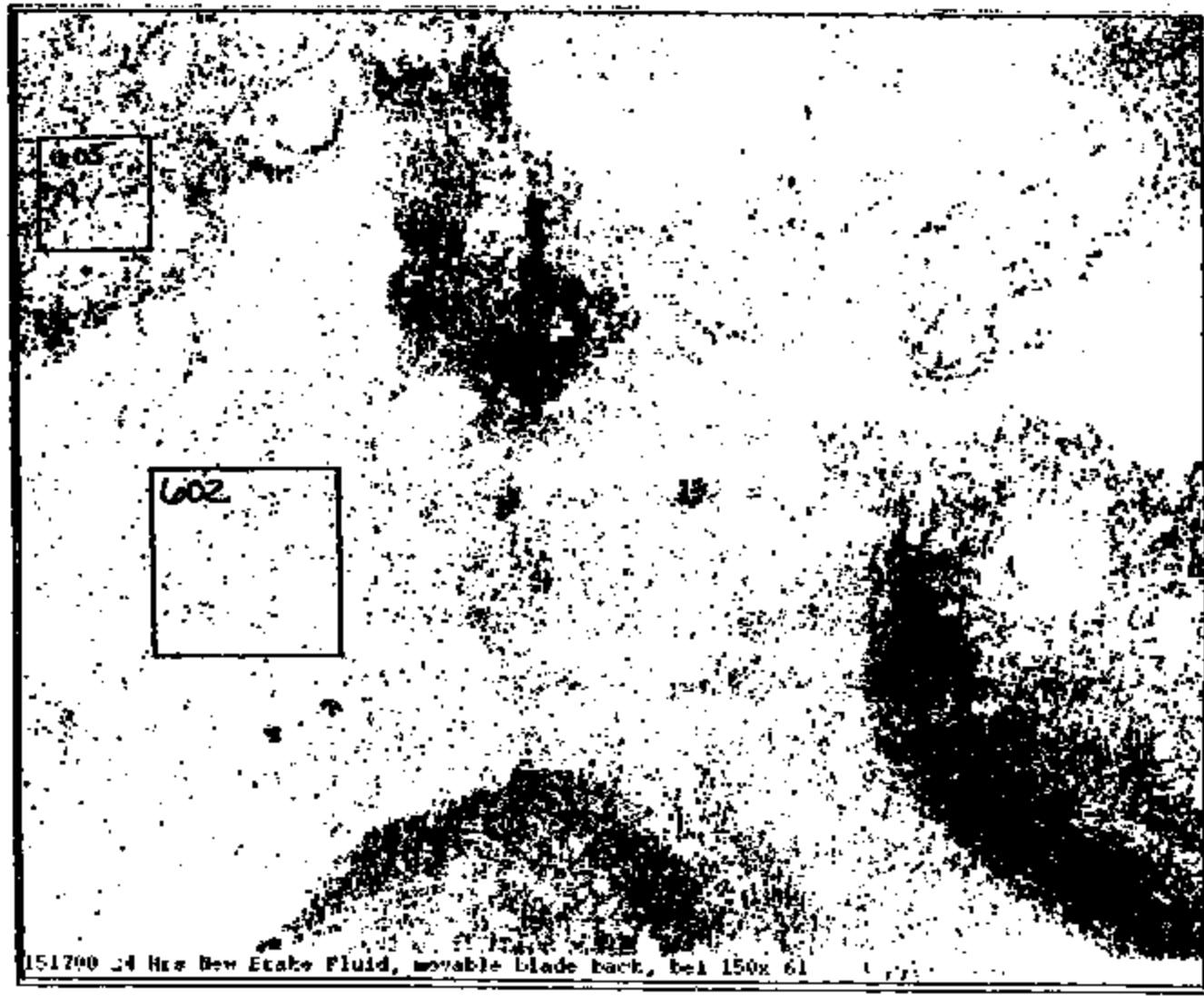
7/7/84

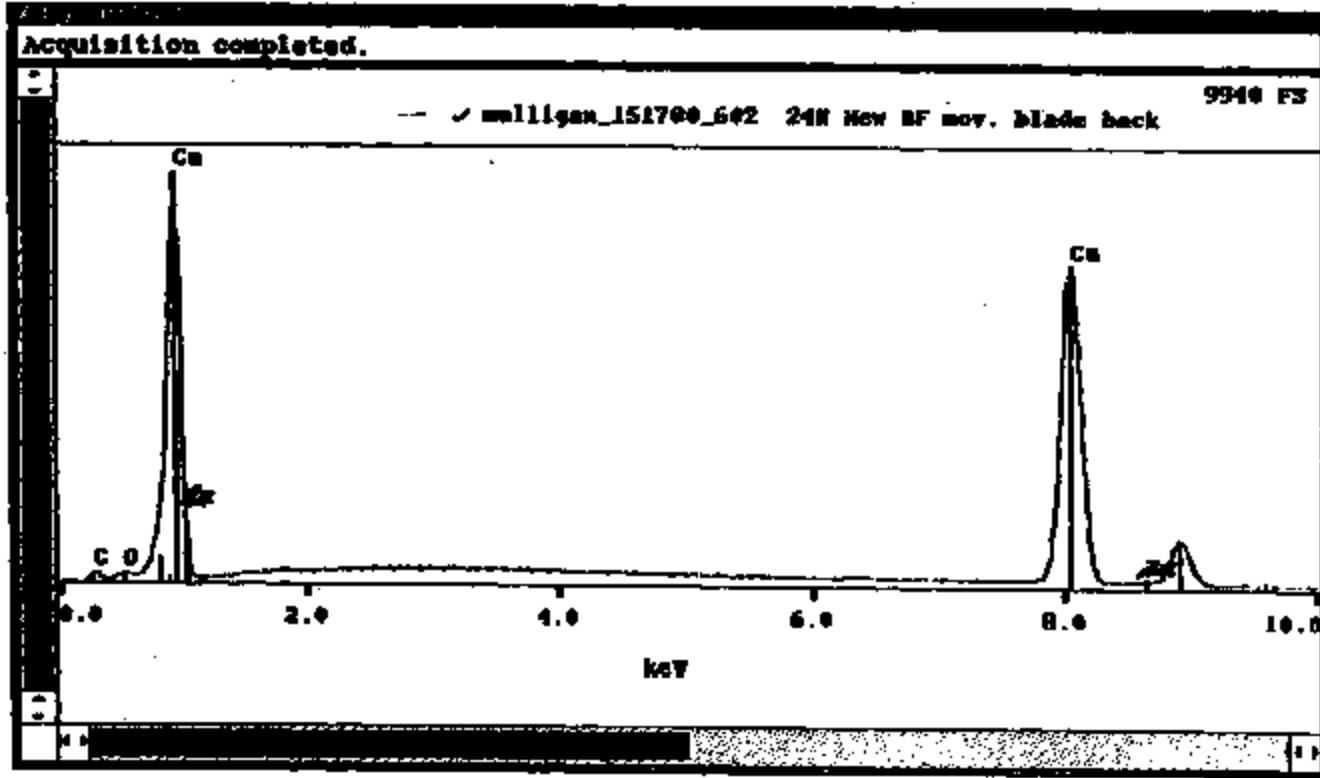
<u>#</u>	<u>Sample</u>	<u>Support, Bushes, Converter & Spacers</u>	<u>Cup, and Fe, Cr, Zn on glass</u>	<u>Terminal, and Cu, Zn, Ag</u>
	5% NaCl in H ₂ O	Red & white corrosion products	Na, Cl, Cu, C, O	
	Table Salt: Methyl Base	Red & white corrosion products	Na, Cl, Cu, C, O	Na, Cl, C, O
10	10 Min Impend Burn	Red & white corrosion products	Na, Cl, Cu, C, O	Na, Cl, C, O
10	200 mamp Current	Red & white corrosion products	Na, Cl, Cu, C, O	Na, Cl, C, O
24	New BF	Blackish Deposits (BF?)	Cu, C, O	
24	New BF: 5% H ₂ O	Blackish Deposits (BF?)	Cu, C, O	
24	Used BF:	Blackish Deposits Brake Fluid	Cu, C, O	
24	Used BF: 5% H ₂ O	Blackish Deposits (BF?)	Cu, C, O	
3	Rain Water	Red & white corrosion products	Cu, C, O	
24	Tap Water	Red & white corrosion products		

Notes:

Ag, Cl and Zn were detected once on the cup of the 5% NaCl sample.
 Si and Ba were detected once on the cup of the Used BF w 5% H₂O sample.

П-4НТ8А 012691



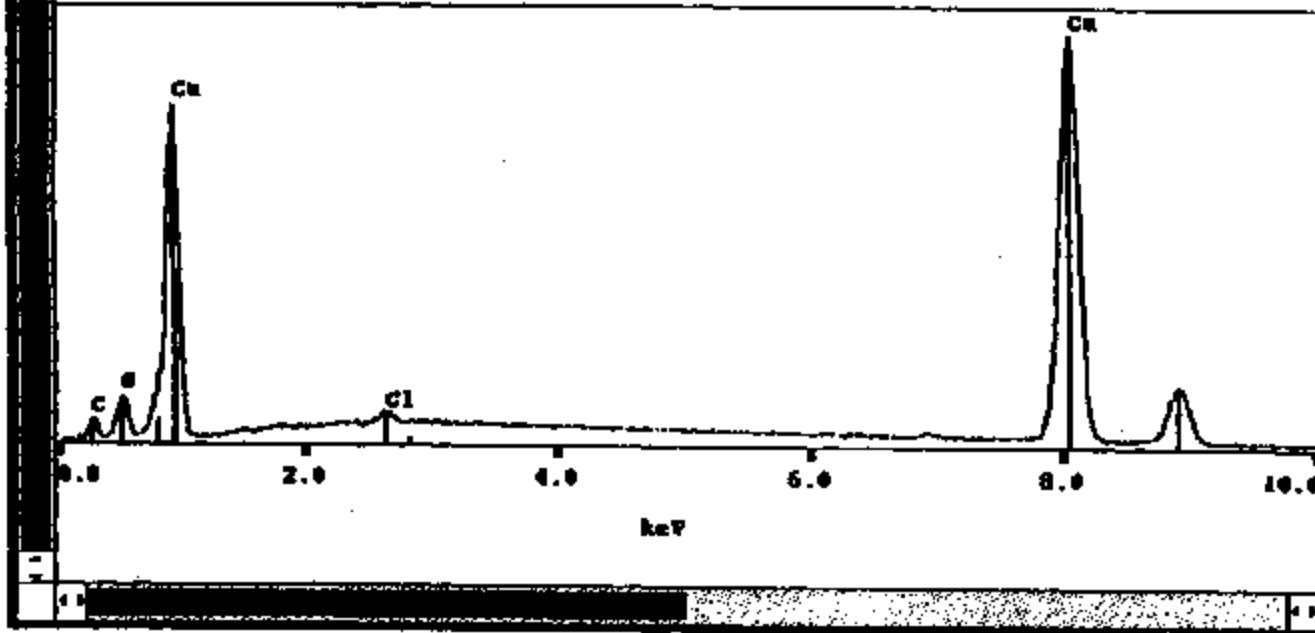


TI-NHTBA 012682

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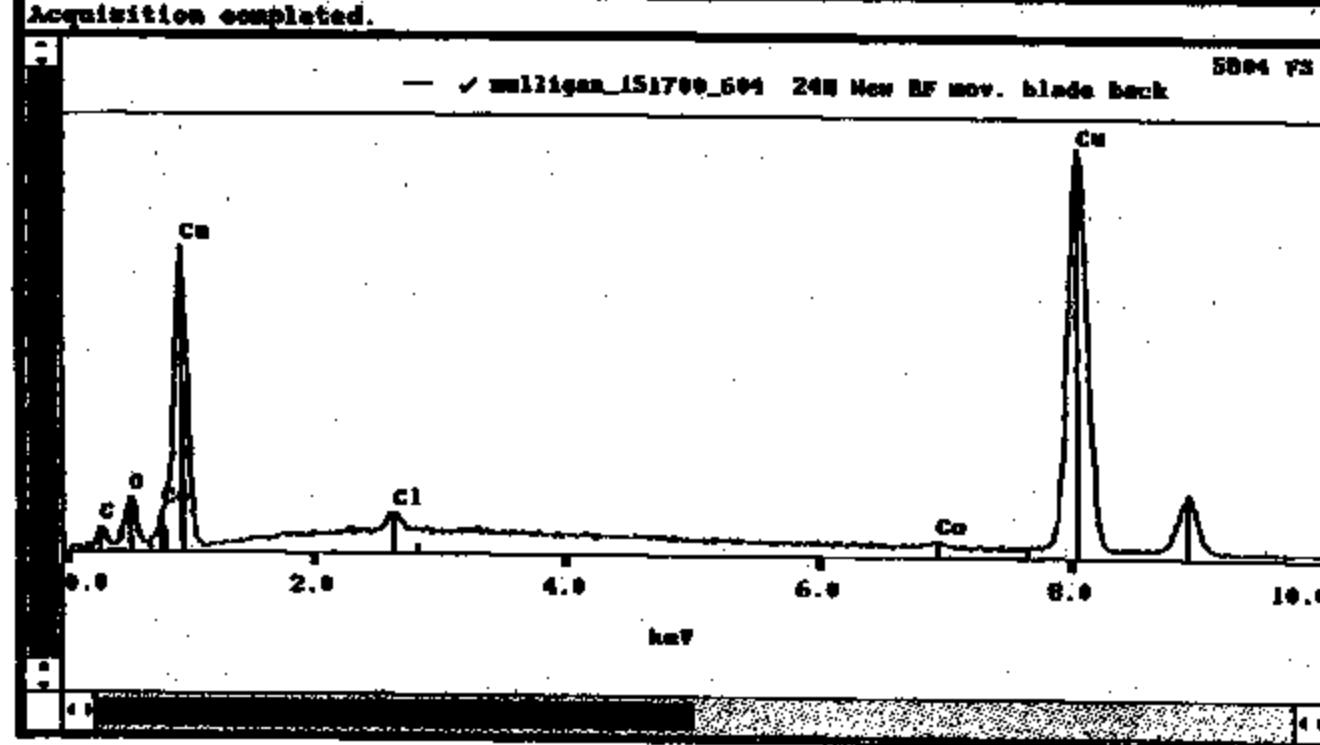
10268 F9

✓ willigan_151748_603 24E New EF nov. blade back

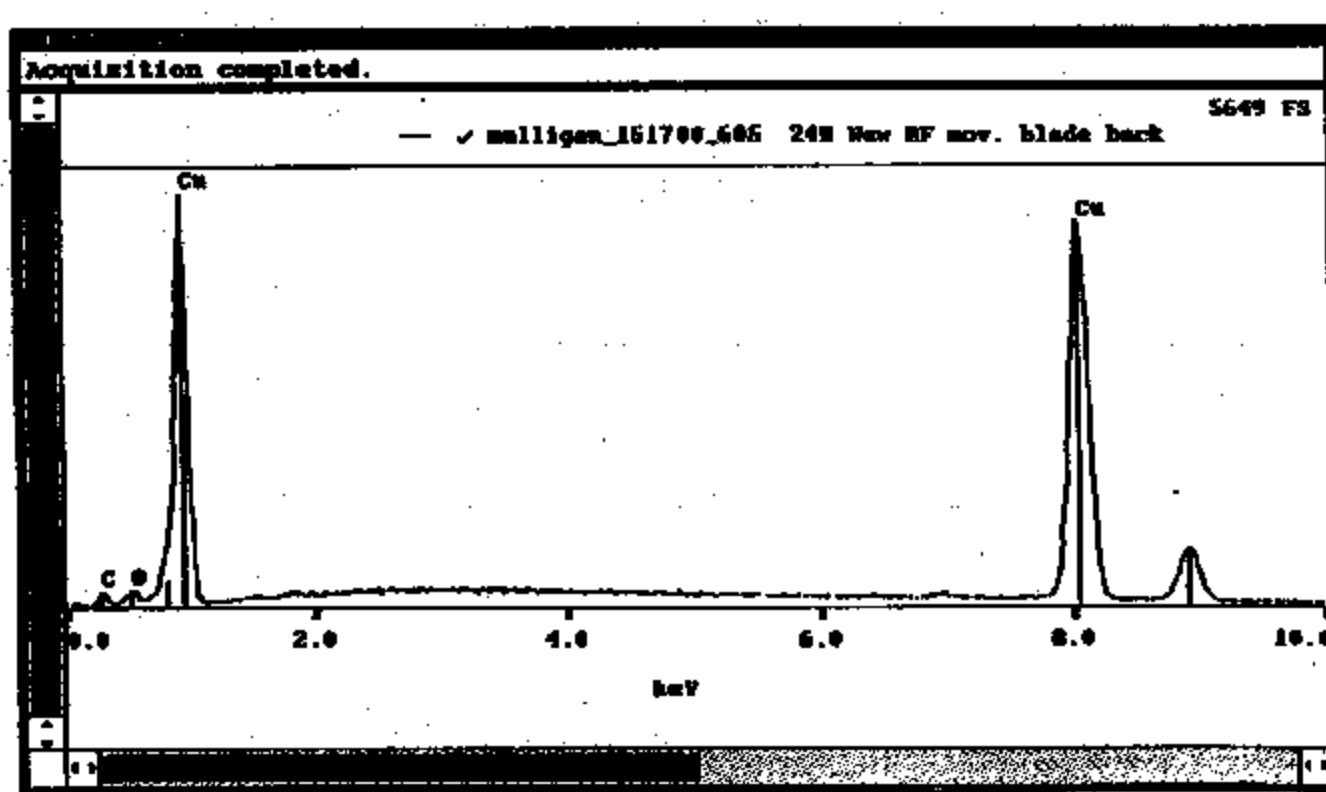


TI-NHTSA 012683

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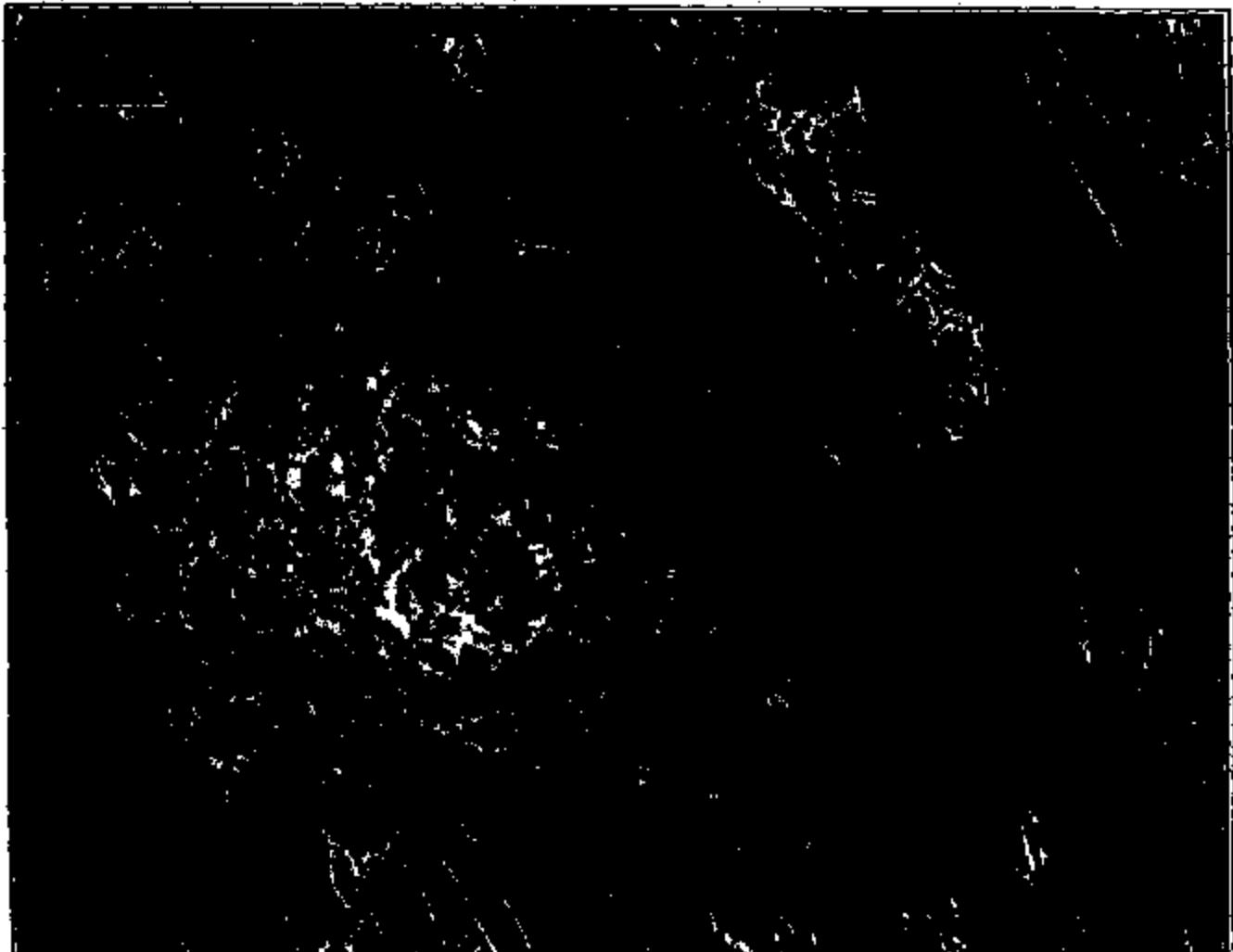


TIAHTSA 012884



ПИ-НПТ8А 012695

TI-NHTSA 012688

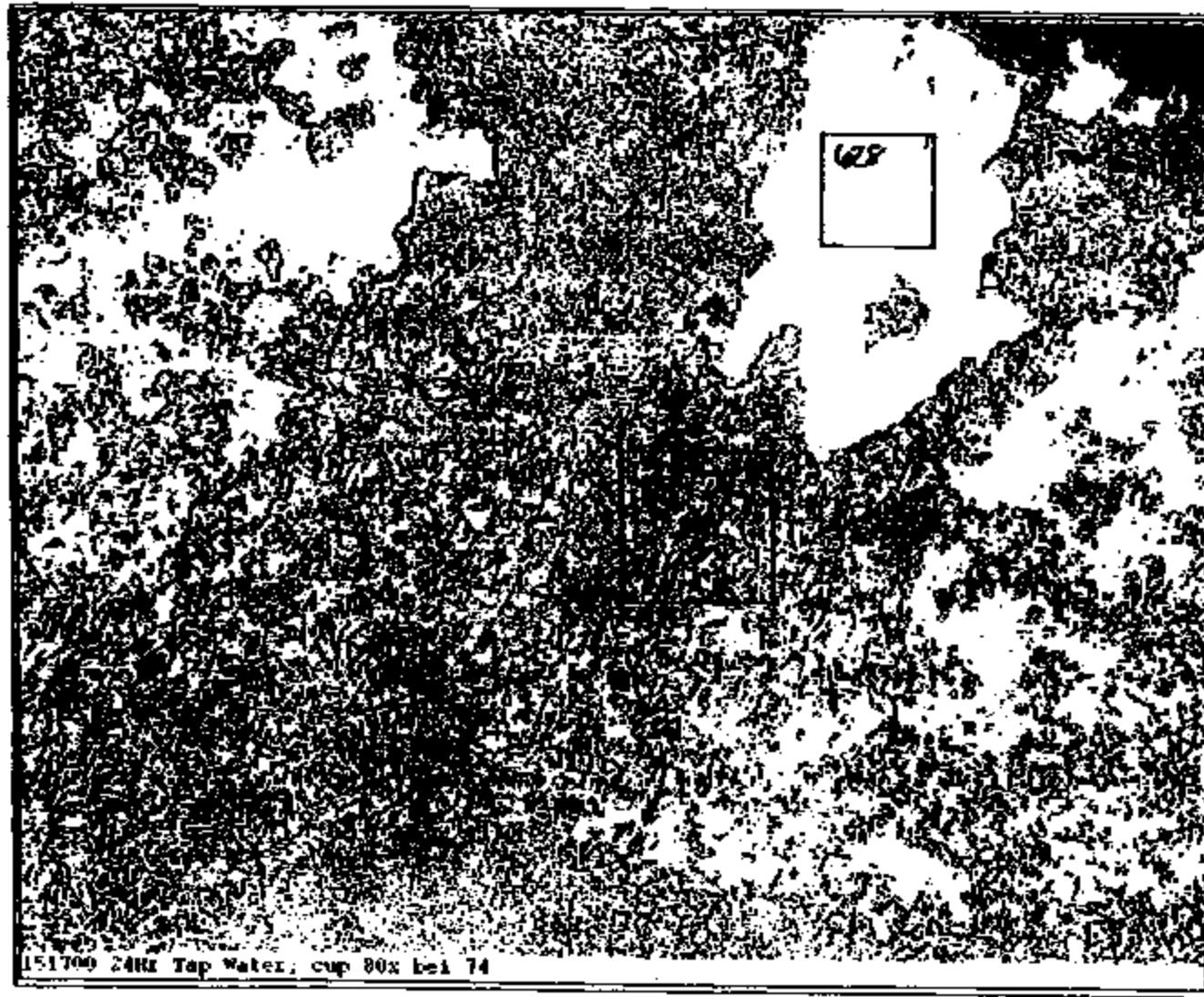


151700 24 fl. oz. Dex Brake Fluid, movable blade back, sei 1000x 66

TI-NHTSA 012887

15176m 24 Hz Hg Brake Fluid, movable blade back, sei 150x 67

T-4HTBA 012608

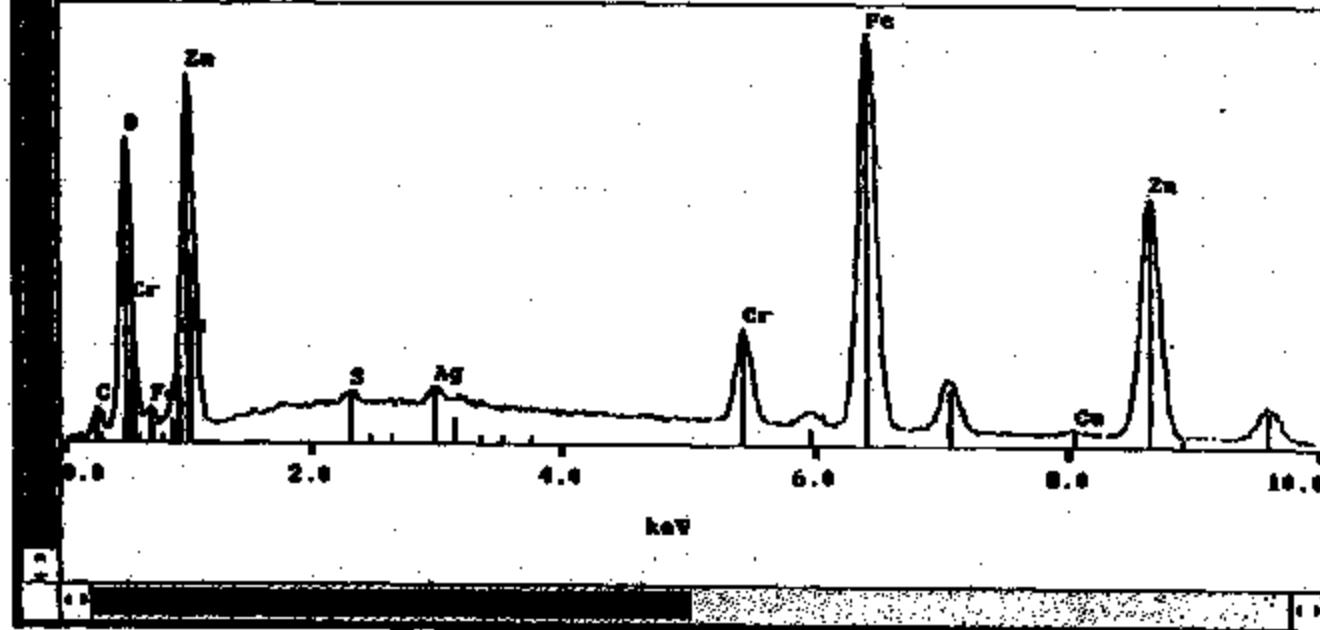


151700 ZRH Tap Water, cup 80x bei 74

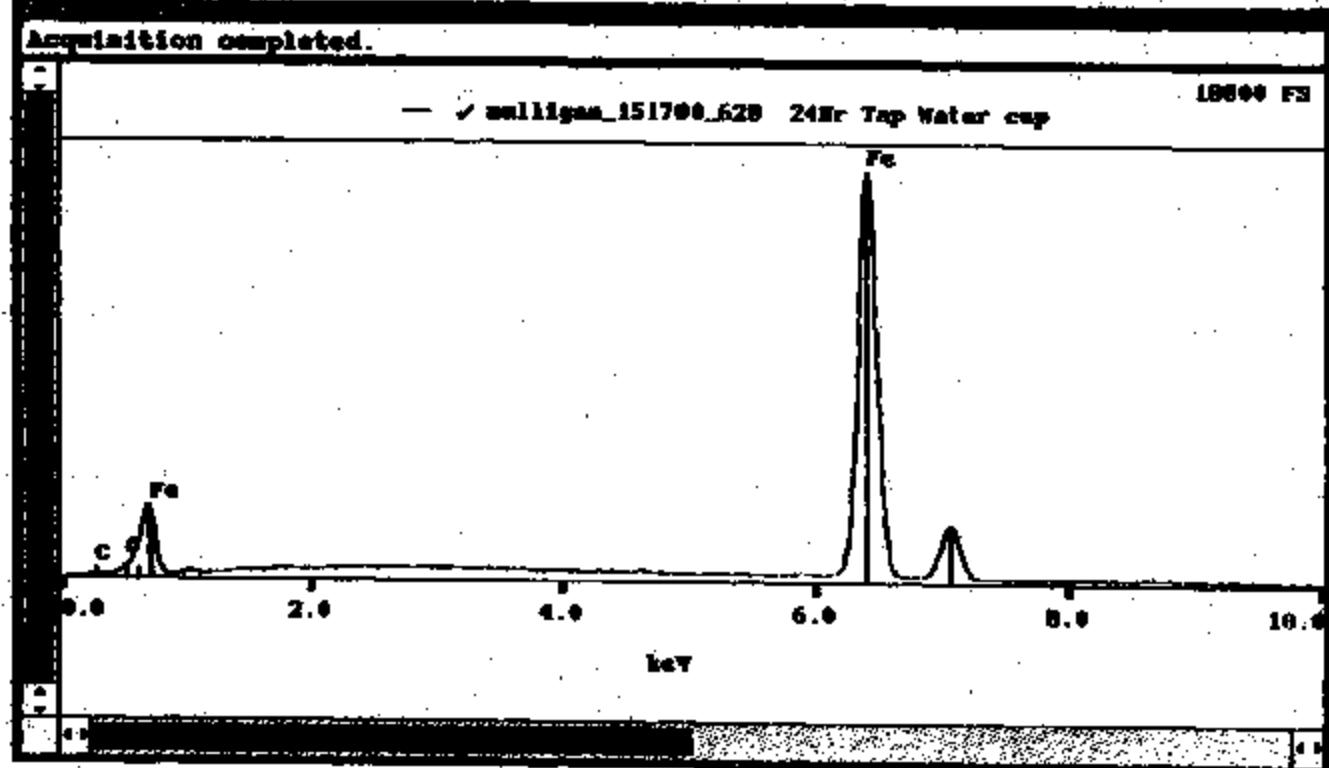
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✓ mulligan_151700_627 24hr Tap Water cmp

7045 FB

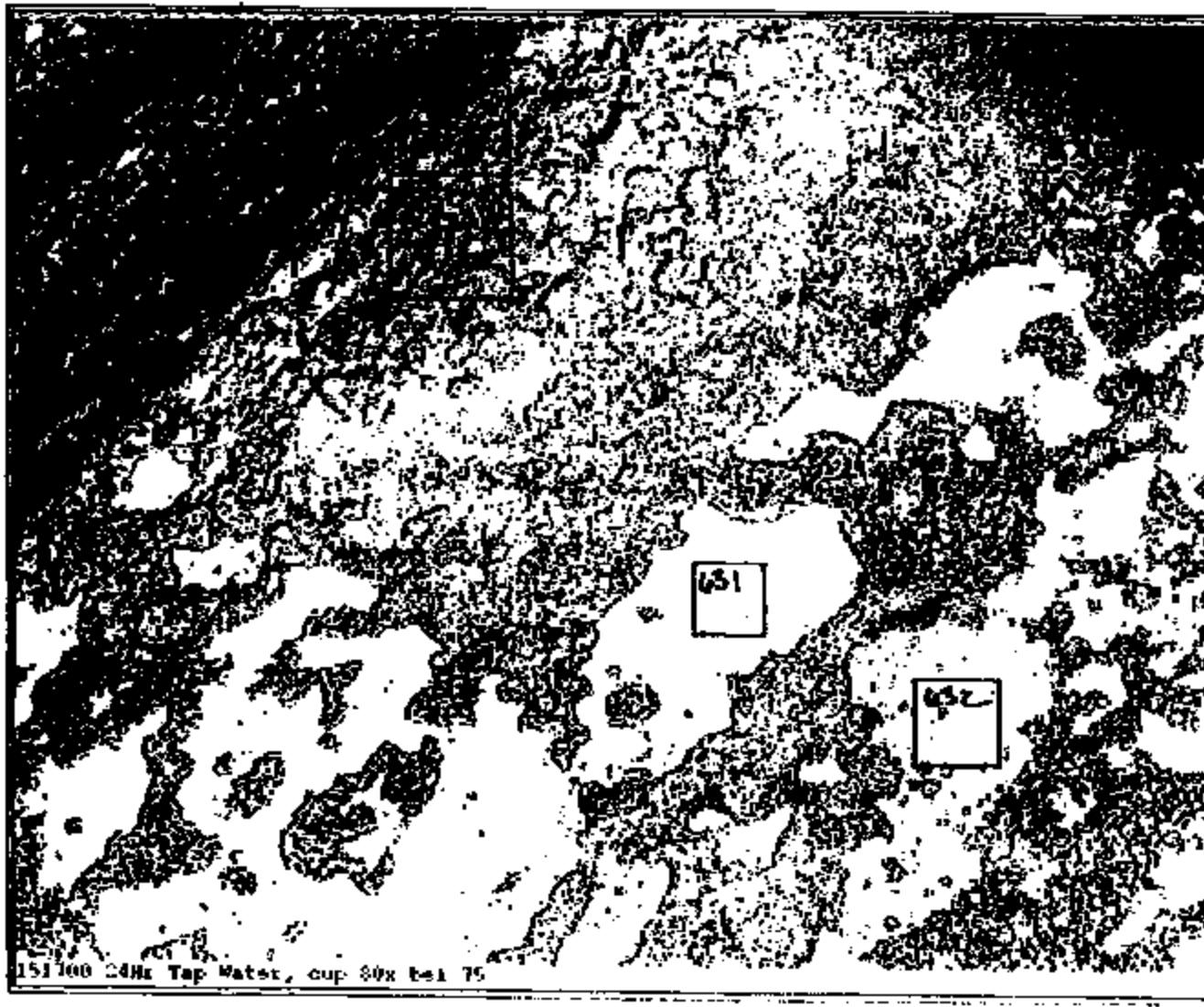


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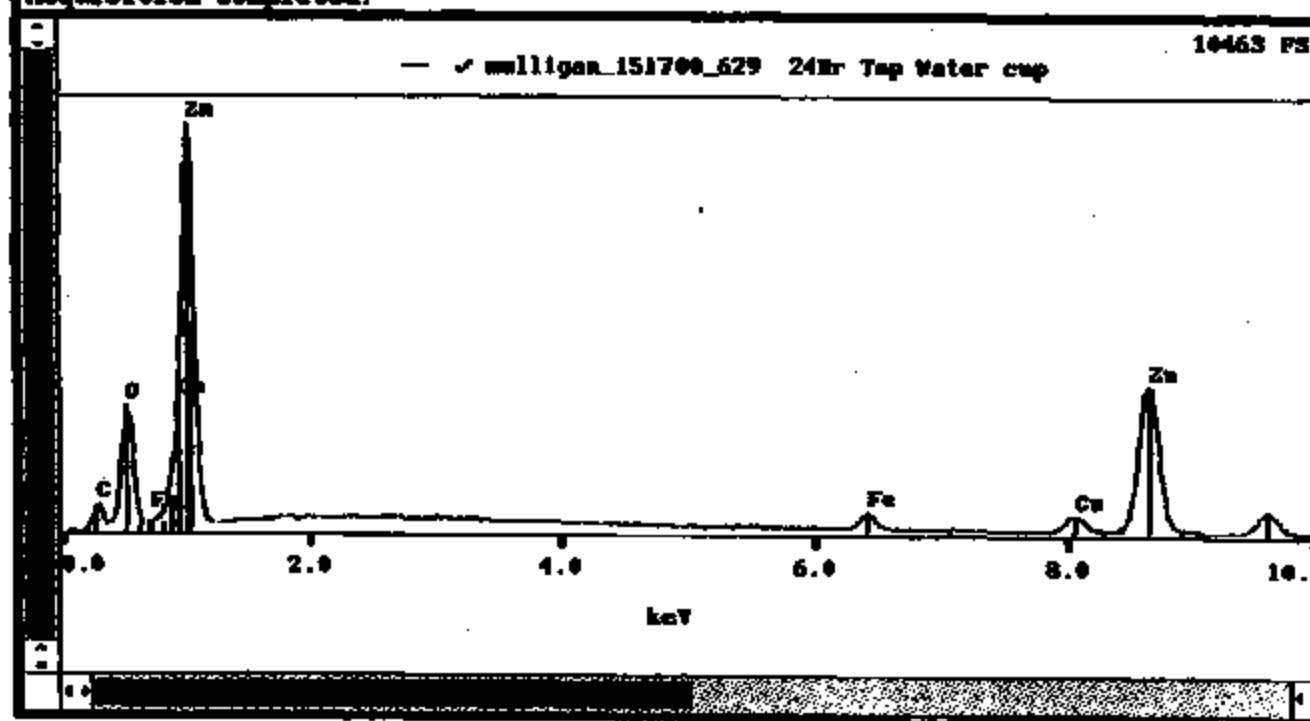


T14N13A 012700

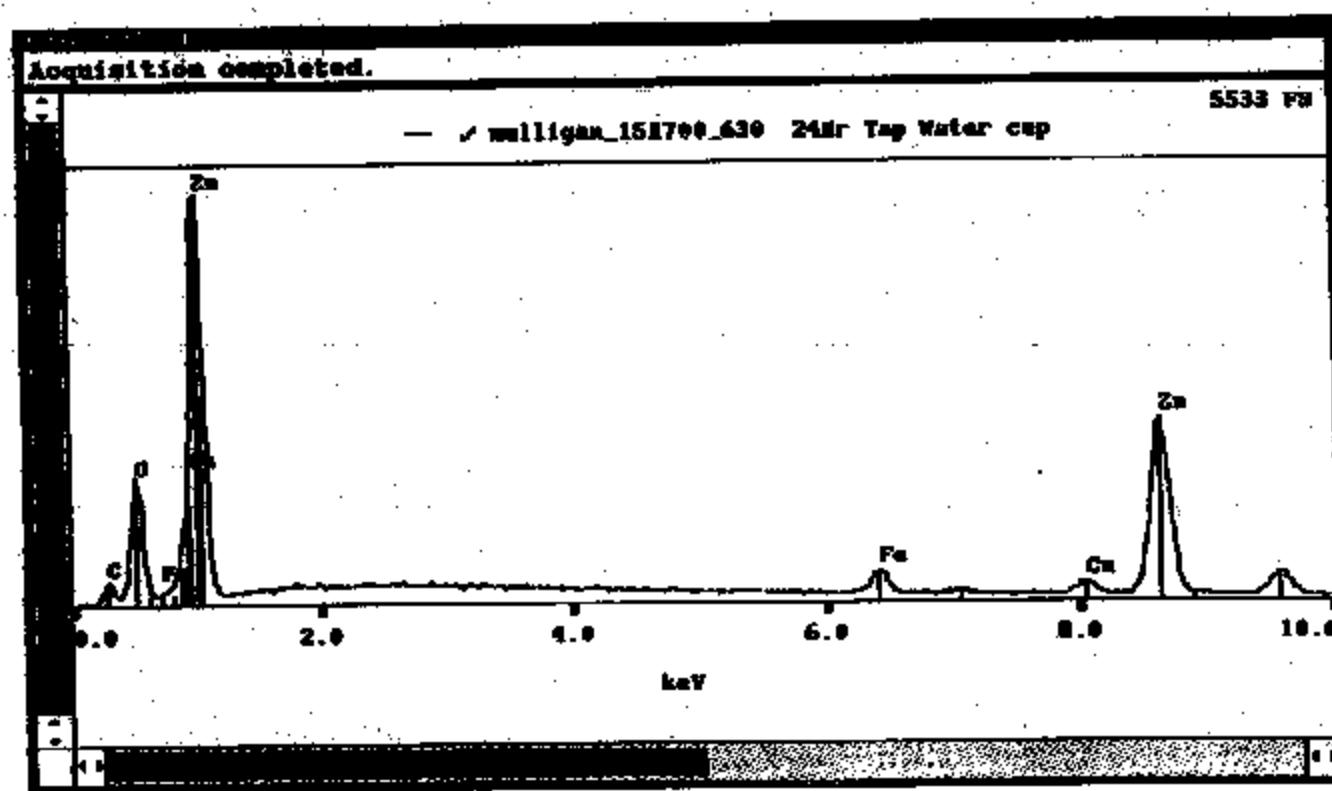
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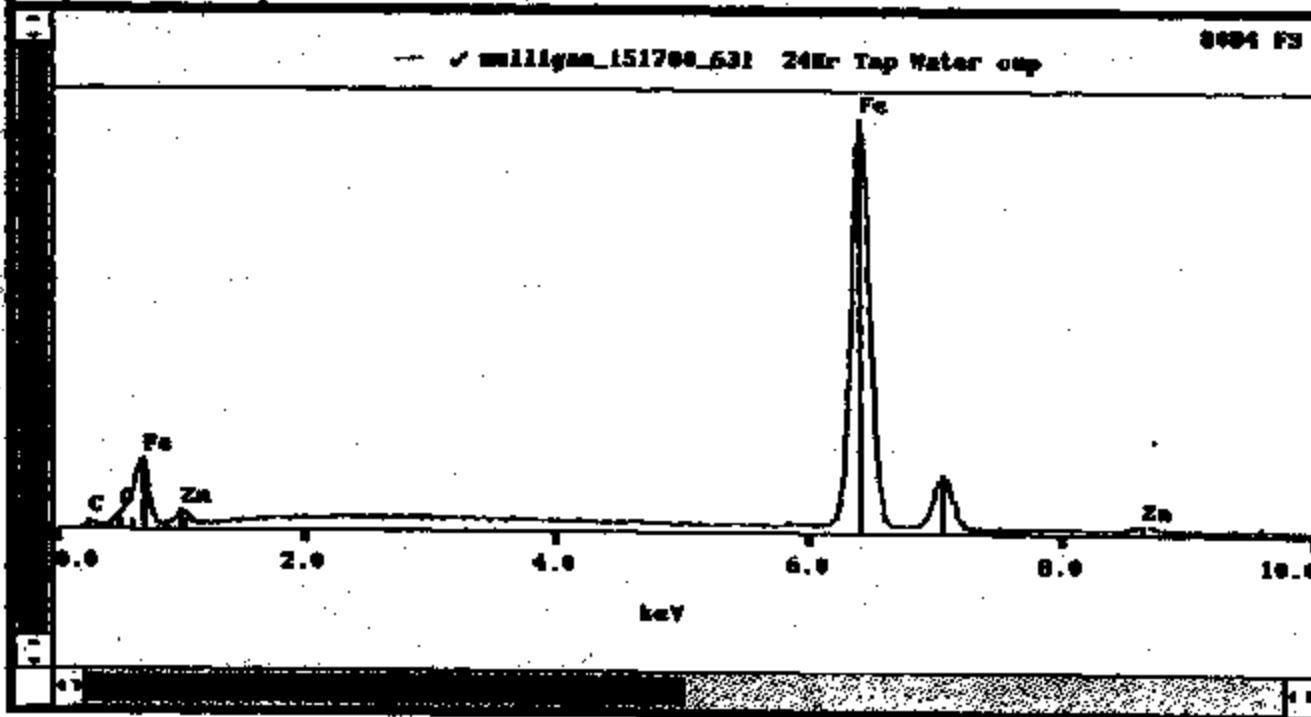


TI-NHTSA 012702



TH-NHTSA 012703

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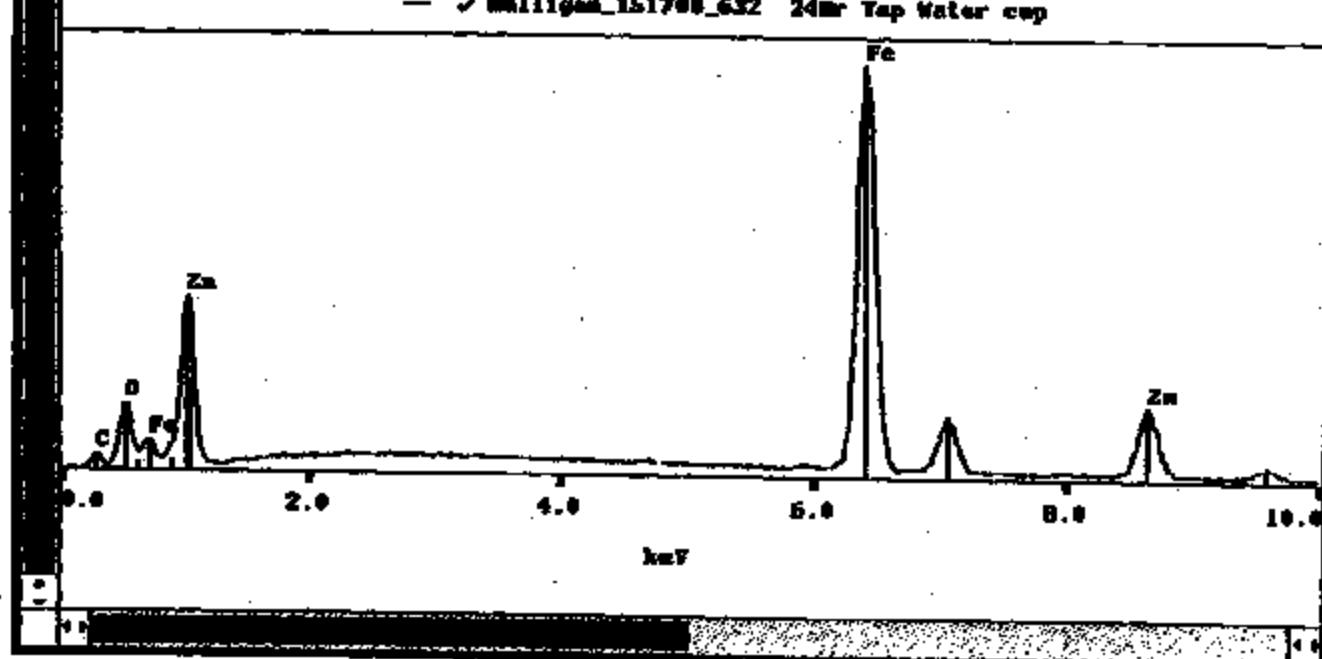


PI-AHNTSA 012764

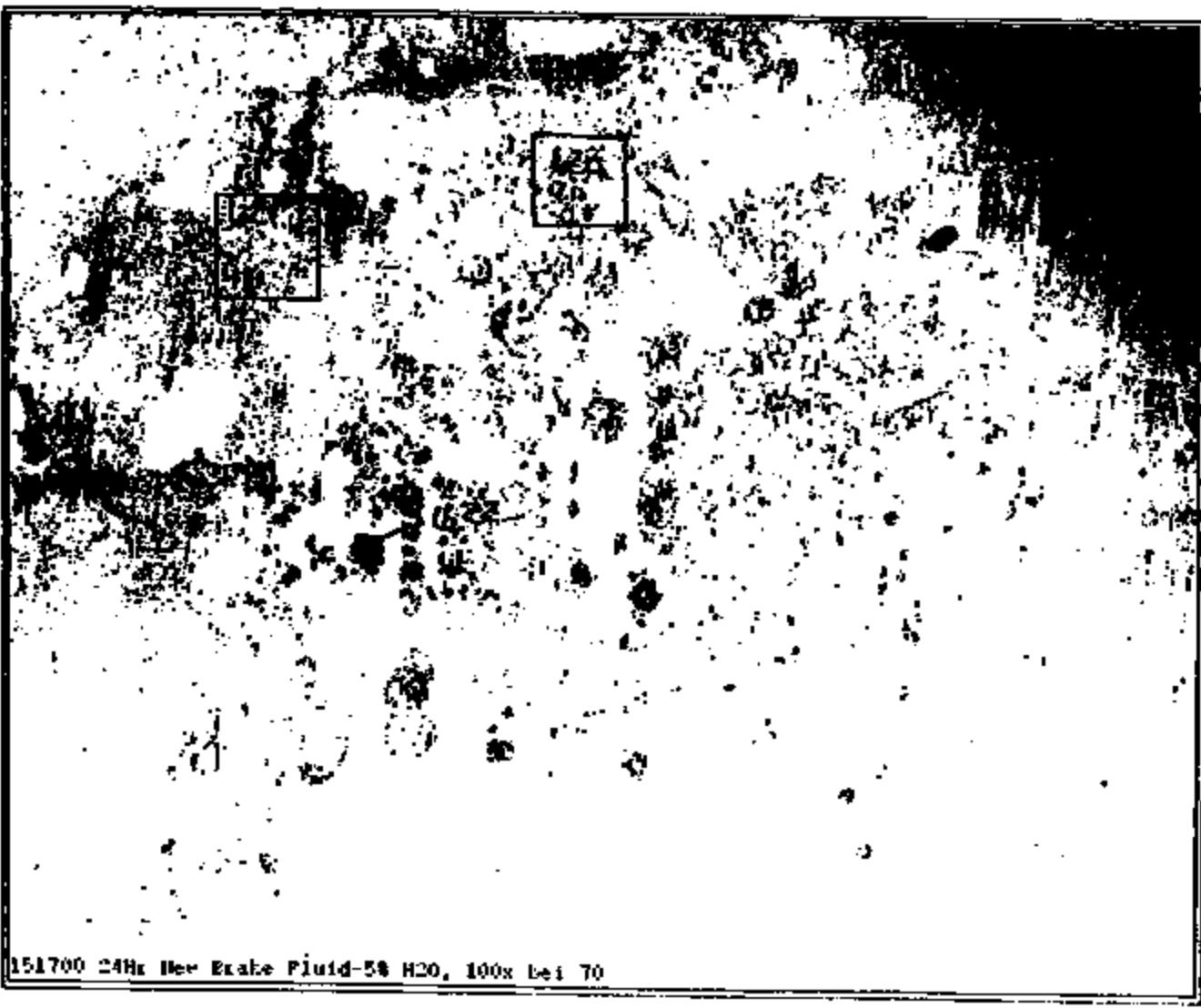
Acquisition completed.

— ✓ mulligan_151768_632 24hr Tap Water cup

9927 F3



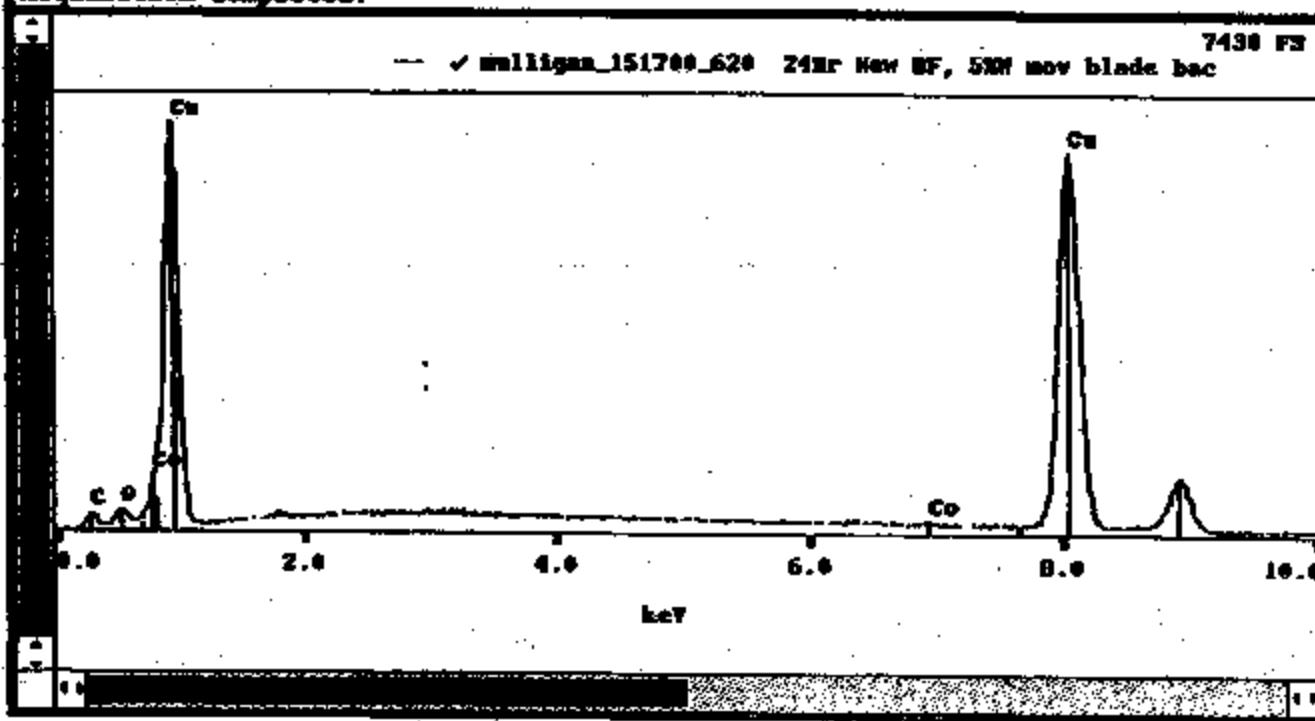
TI-NHTSA 012708



151700 24Hr Bee Brake Fluid-5% H₂O, 100x bei 70

TI-NHTSA 012706

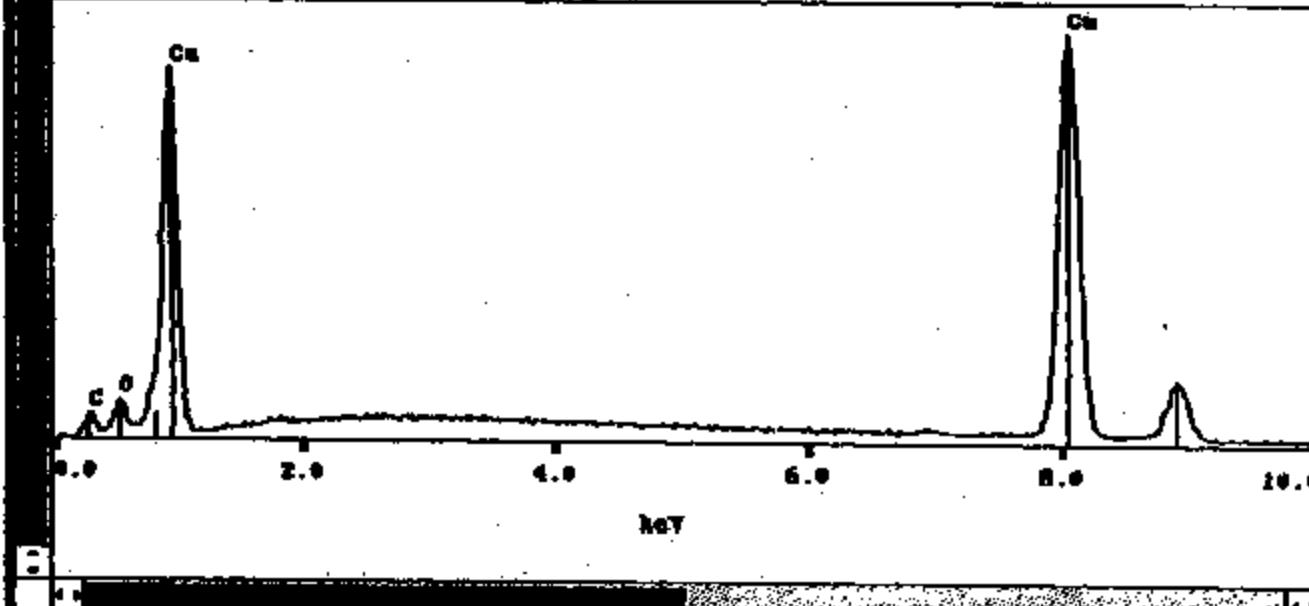
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TI-NHTSA 012707

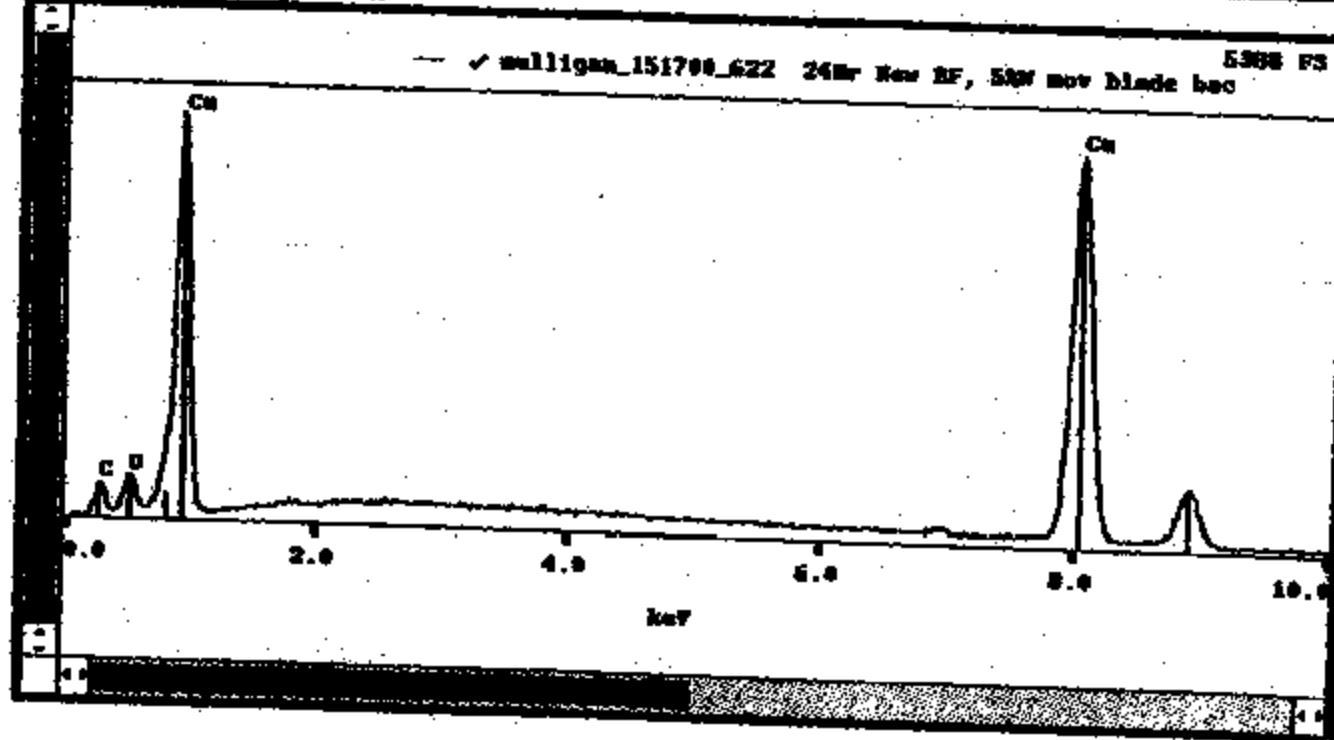
Acquisition completed.

6149 VS
walligan_151704_521 24hr New EF, 50W new blade bac



TI-NHTSA 012708

Acquisition completed.

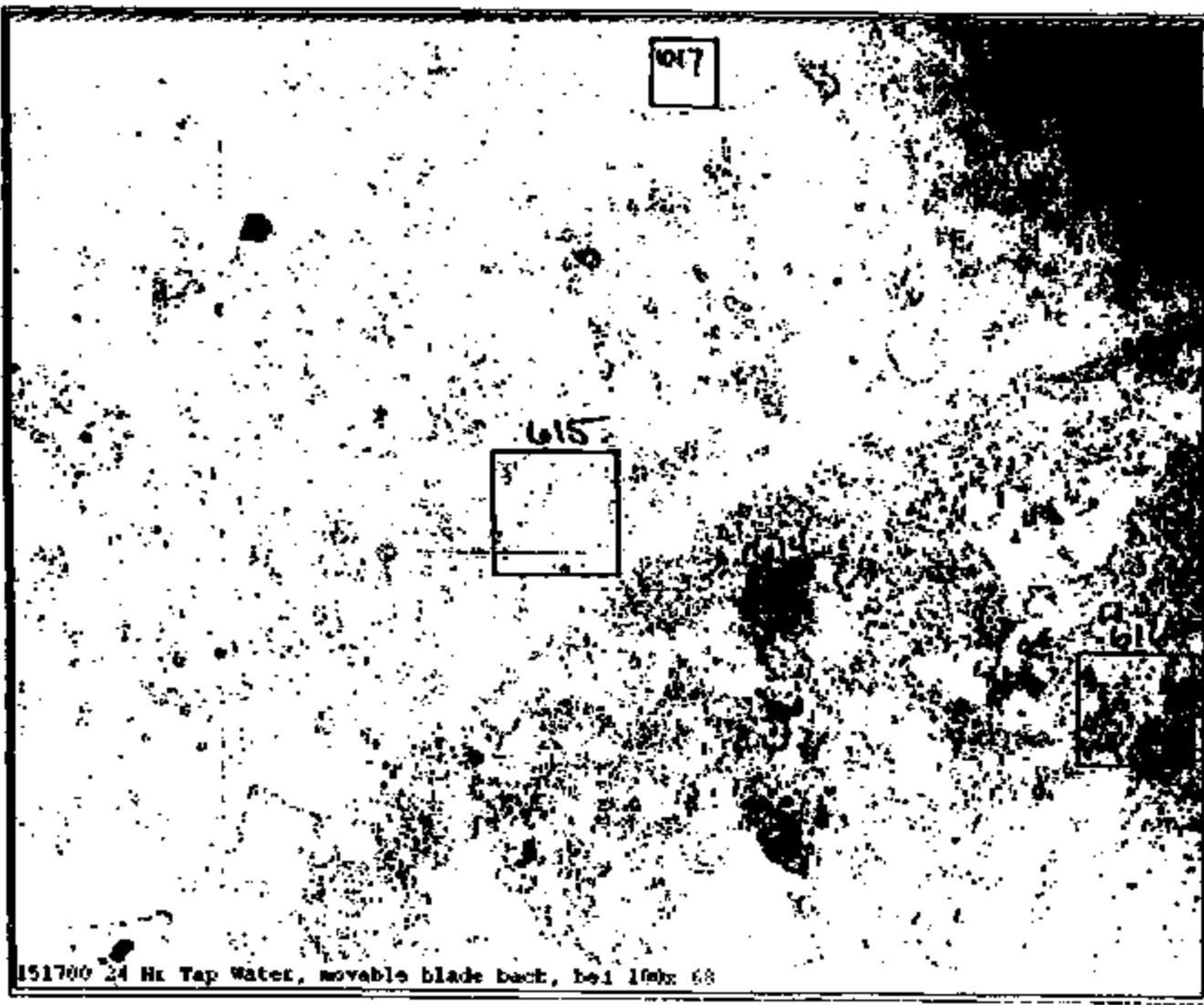


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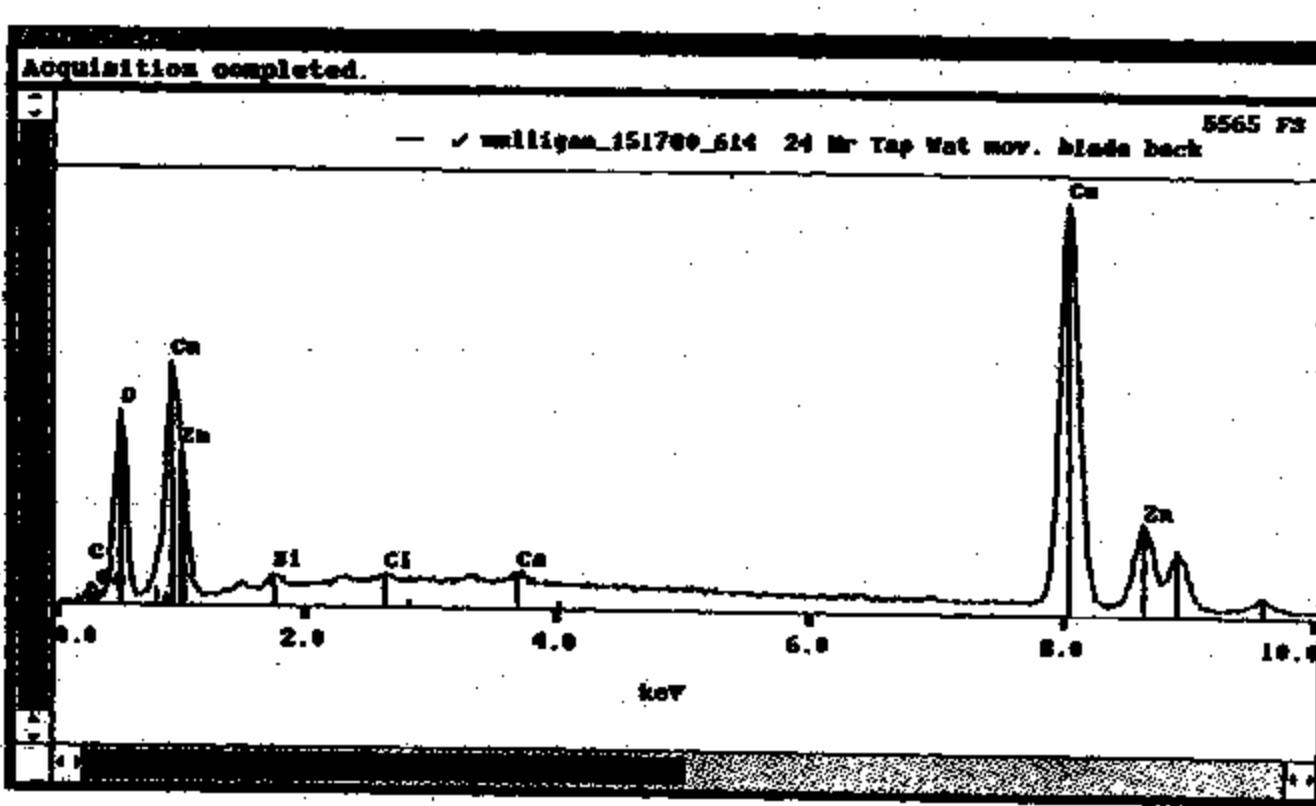




TI-NHTSA 012711



TI-NHTSA 012712

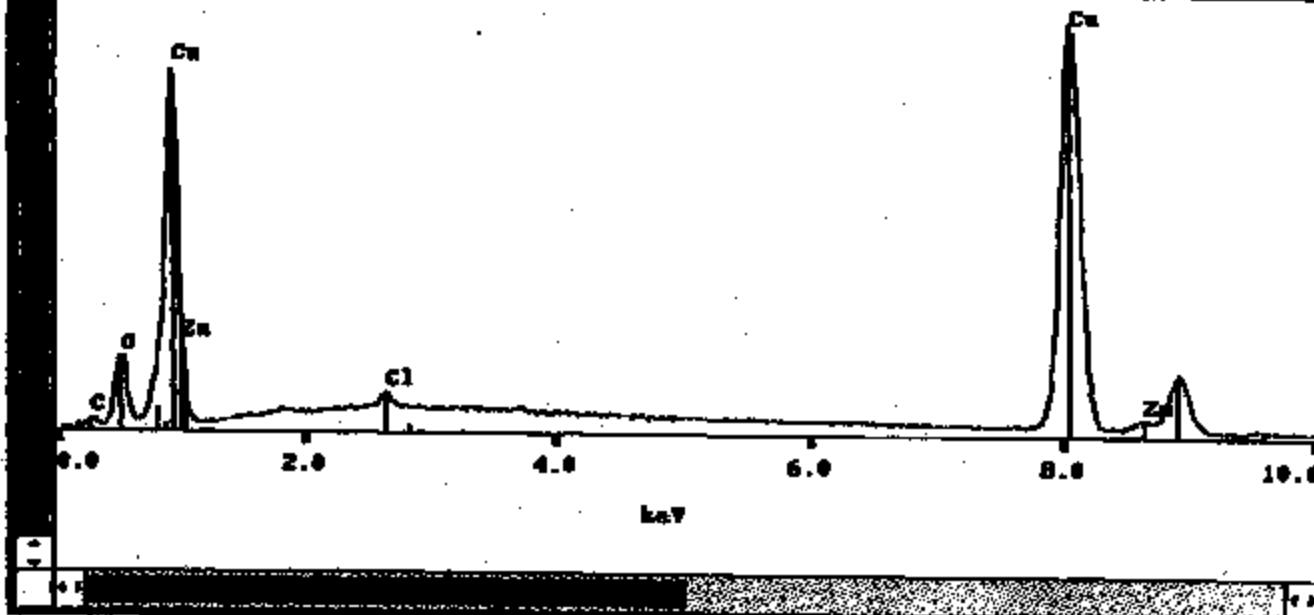


Ti-NHTSA 012713

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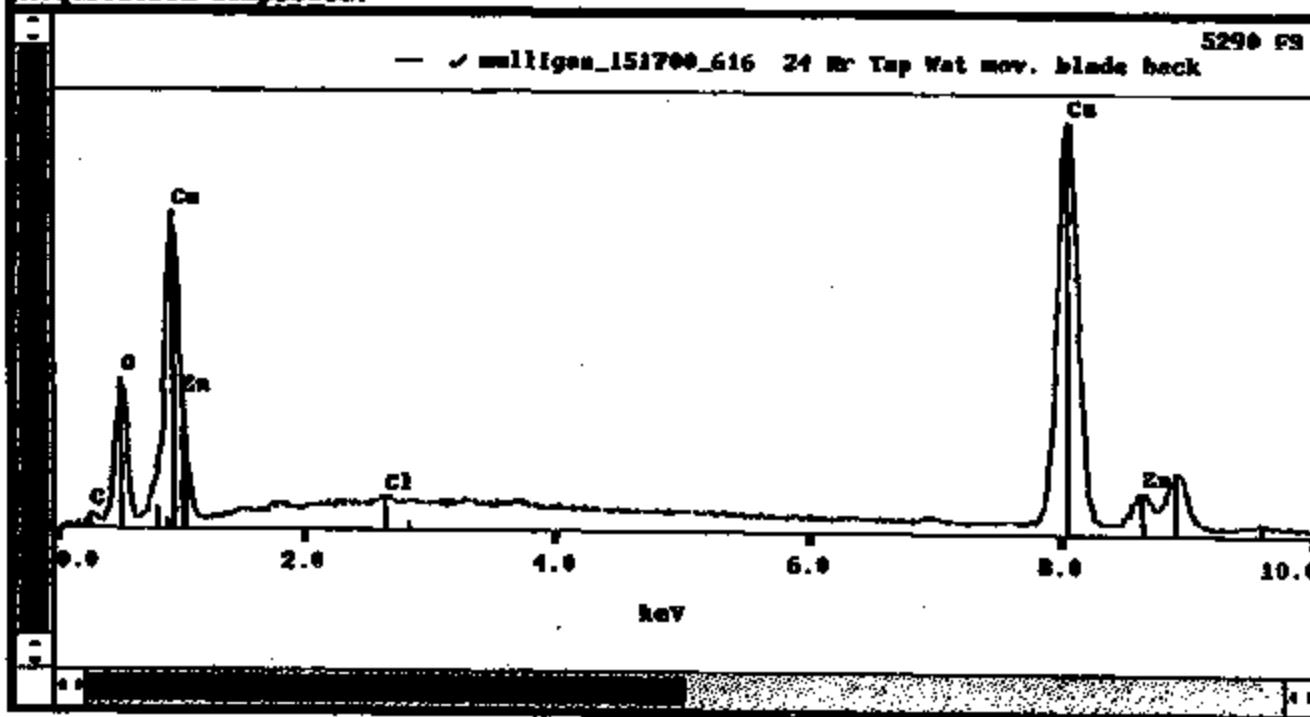
7944 ES

✓ balligan_151700_615 24 Mr Tap Wat mov. blade back



TINHT8A 012714

Acquisition completed.

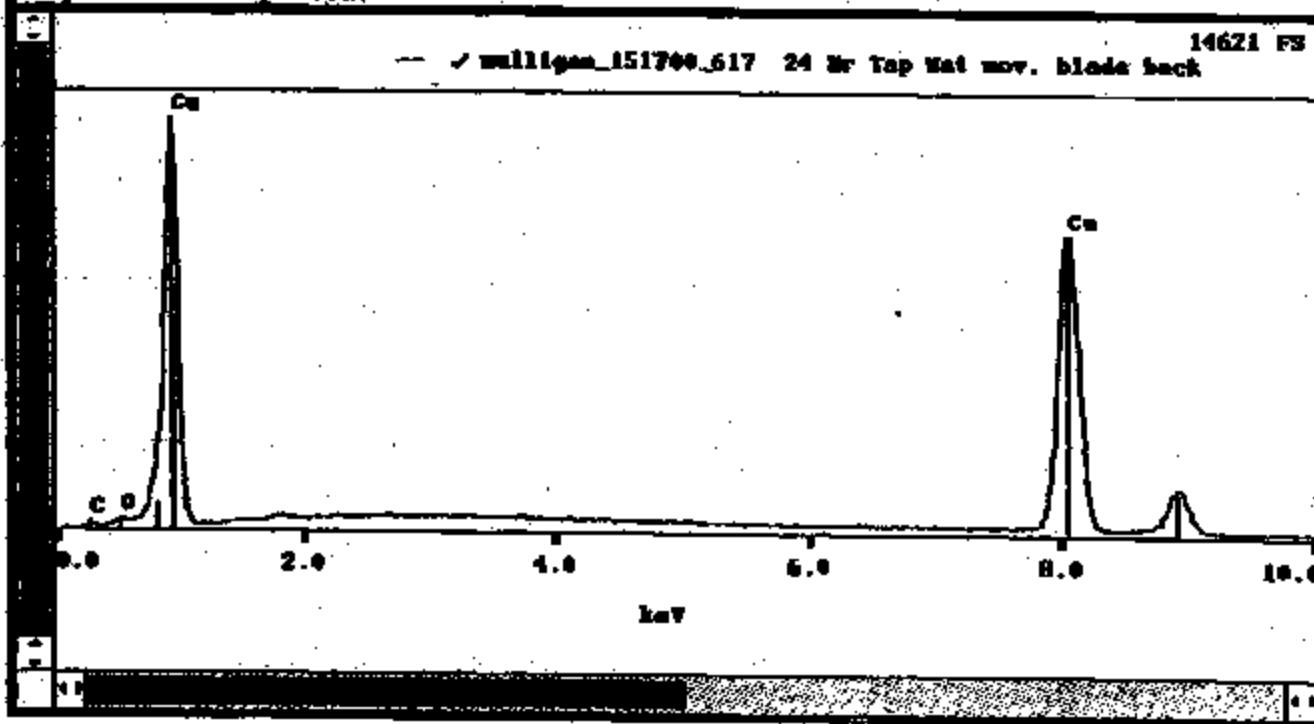


TI-NHTSA 012715

Acquisition completed.

14621 FS

✓ willigen_151744.617 24 Mr Tap Mat mov. blade back



TI-NHNSA 012716

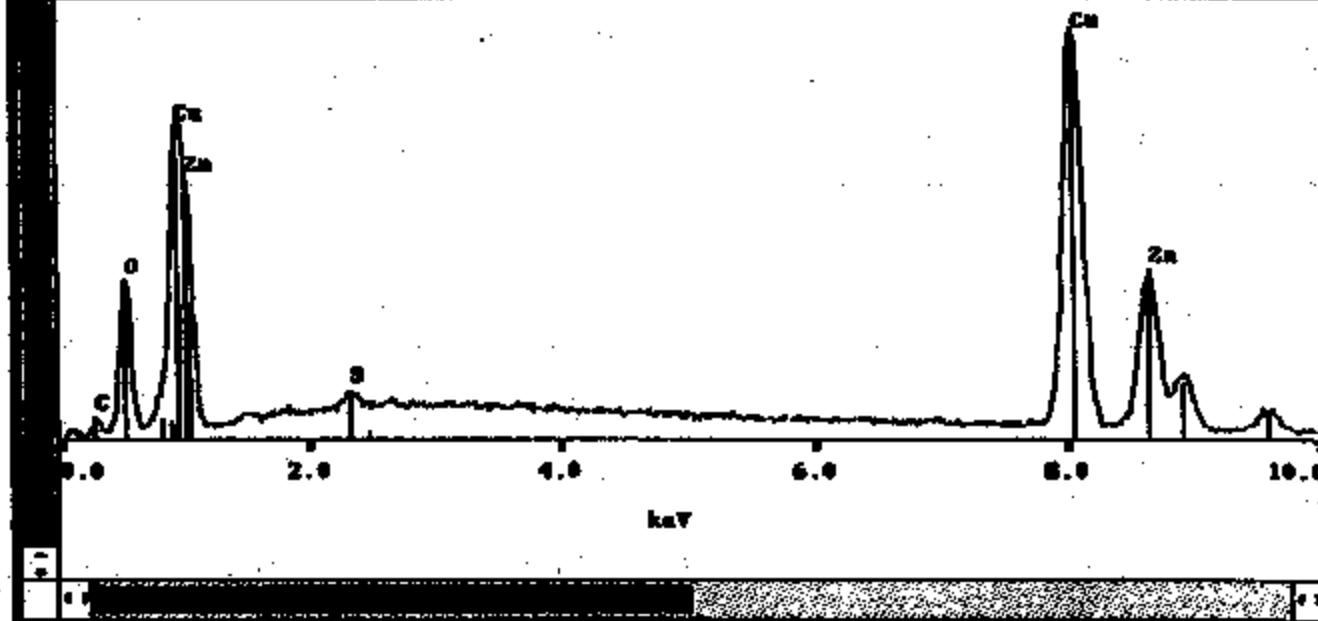


TH-NHTSA 012717

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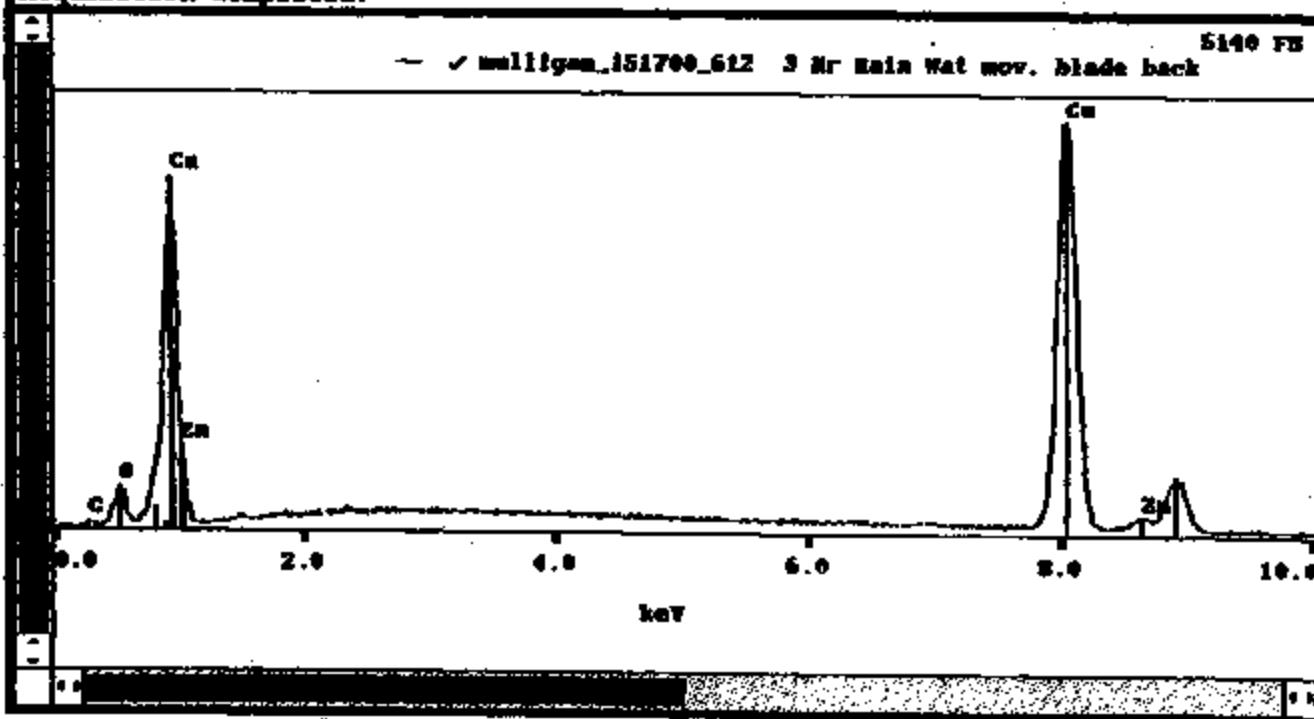
3746 PS

— *swalligan_151700_611 3 Mr Bain Mat nov. blade back*



TI-NHTSA 012716

Acquisition completed.

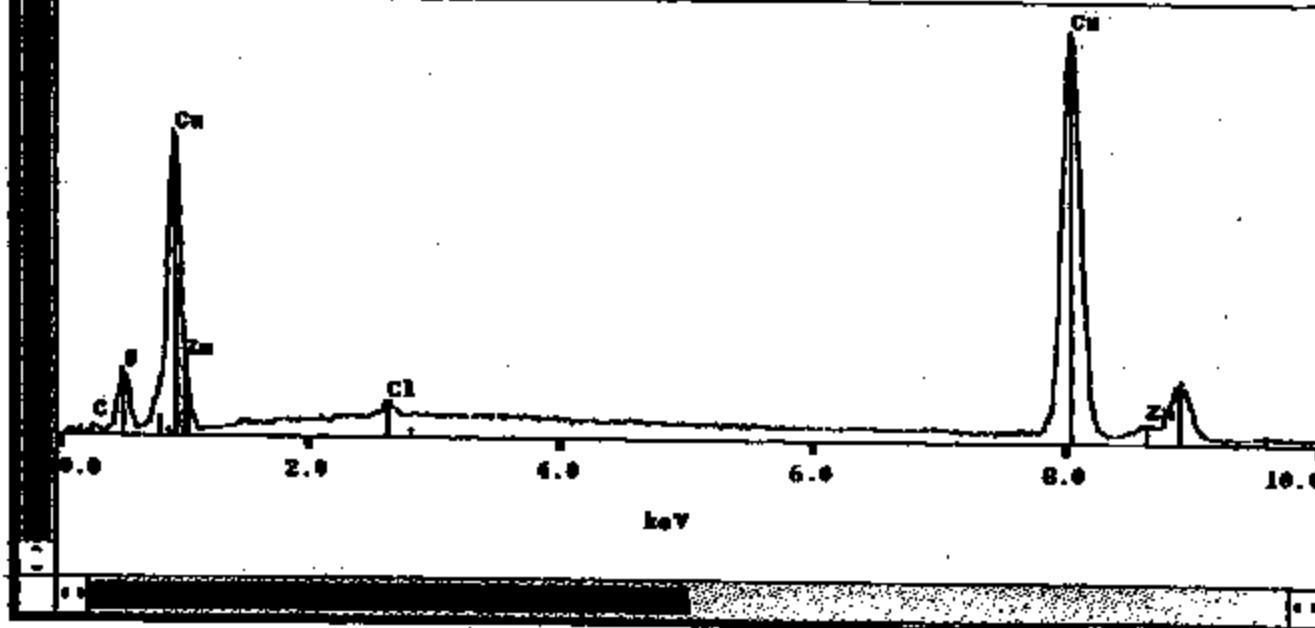


TI-NHTSA 012719

Acquisition completed.

5047 ES

✓ nulligan_1517@_613 3 Mr Rain Wat mov. blade back



24 H TAP WATER - STAT - Cleared in IPA



24 H TAP WATER - STAT - Cleared in IPA

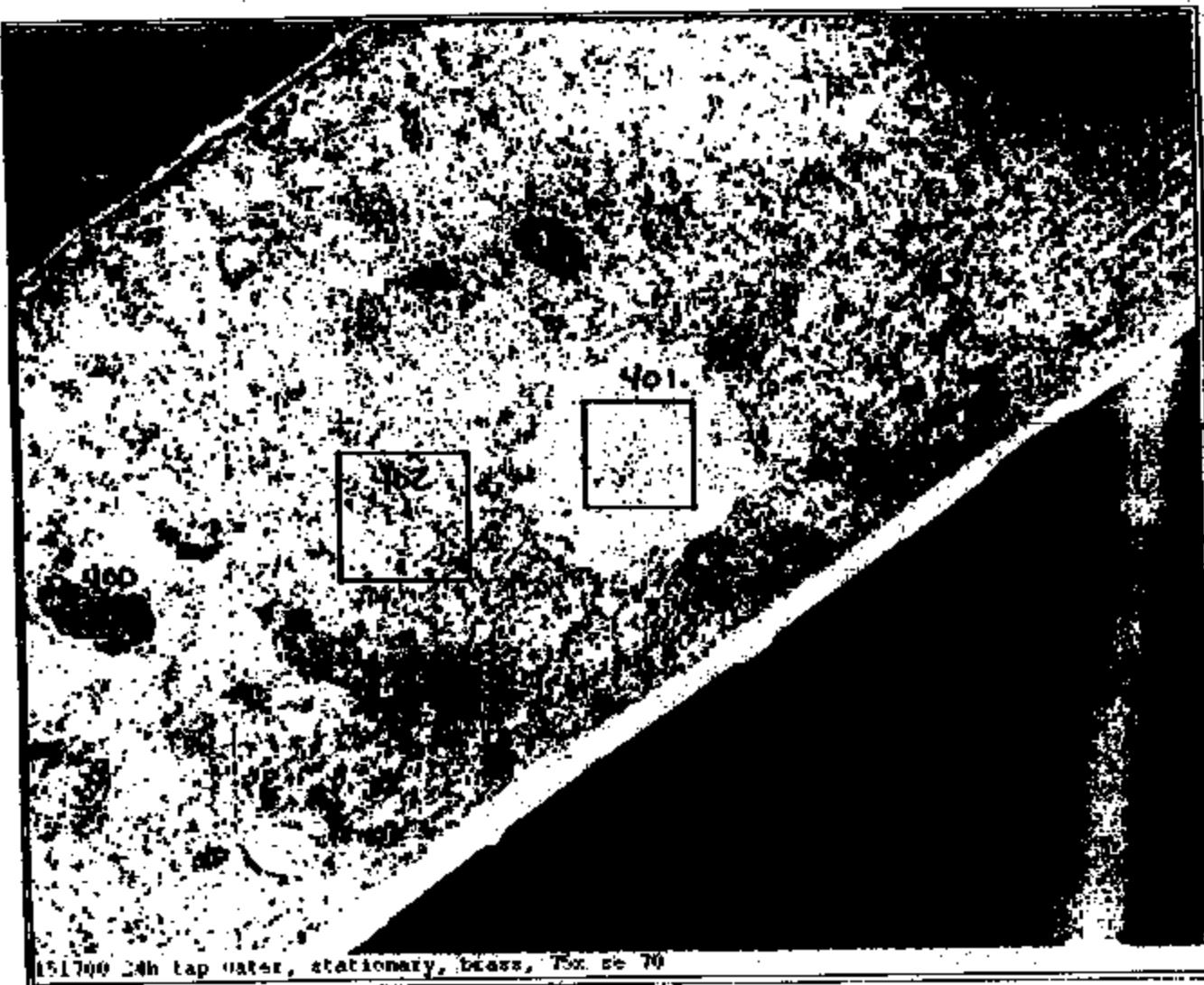


TI-NHTSA 012721

-44 TAPWATER STATE CLEARED IN 3PM



TI-NHT8A 012722



51700 24h tap water, stationary, intact, Test no. 70

TI-NHTSA 012723

TH-NHTSA 012724

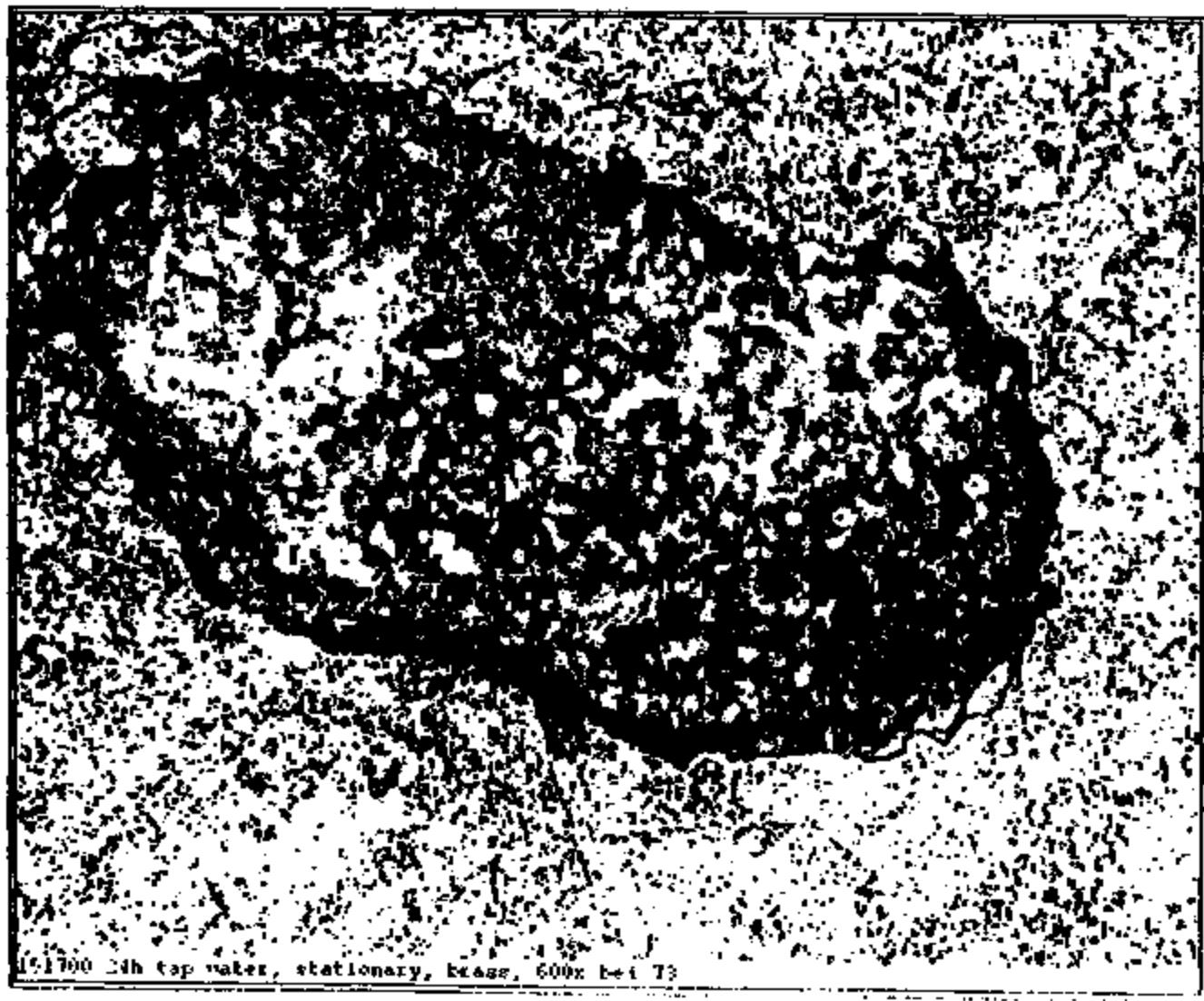


131700 24h tap water, stationary, brass, 400Hz se T1



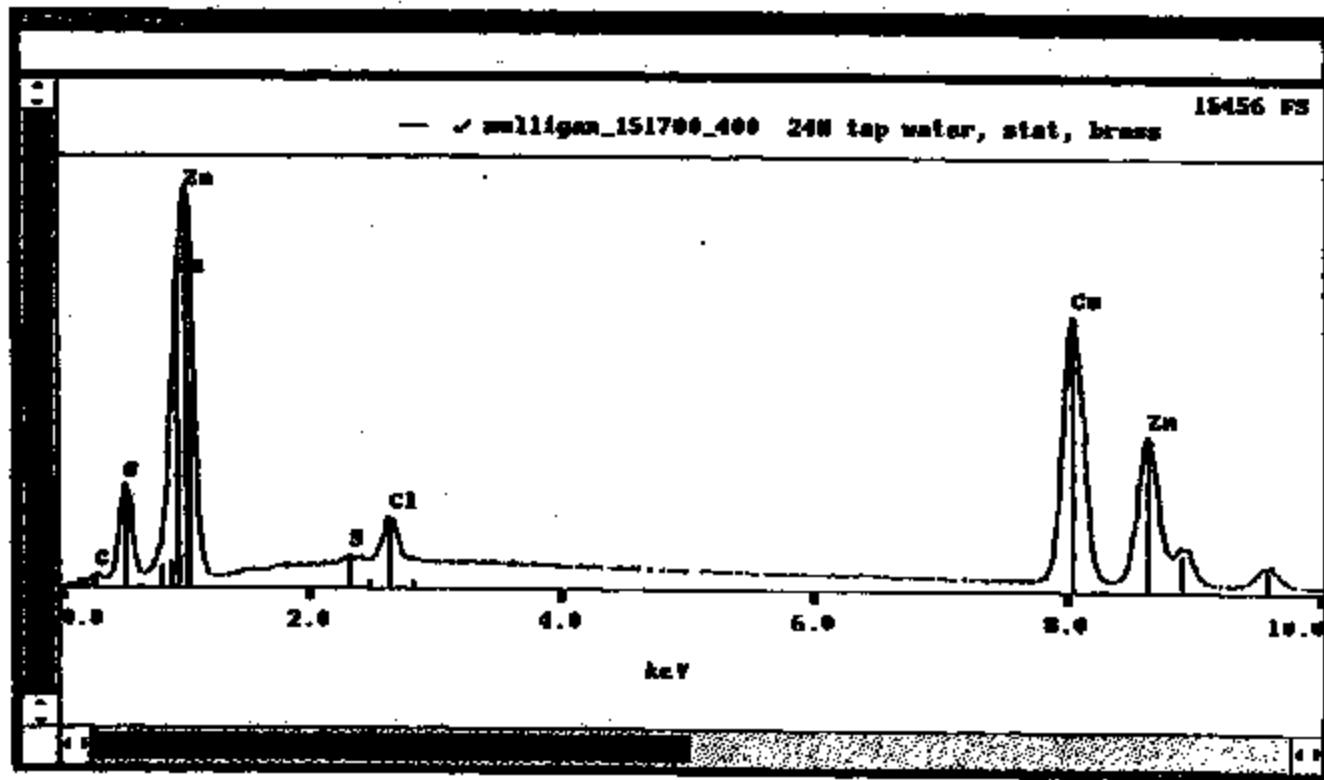
151700 24h tap water, stationary, brass, 75x bei 75

TI-WHTSA 012725



1700 24h top water, stationary, brass, 600x bei T3

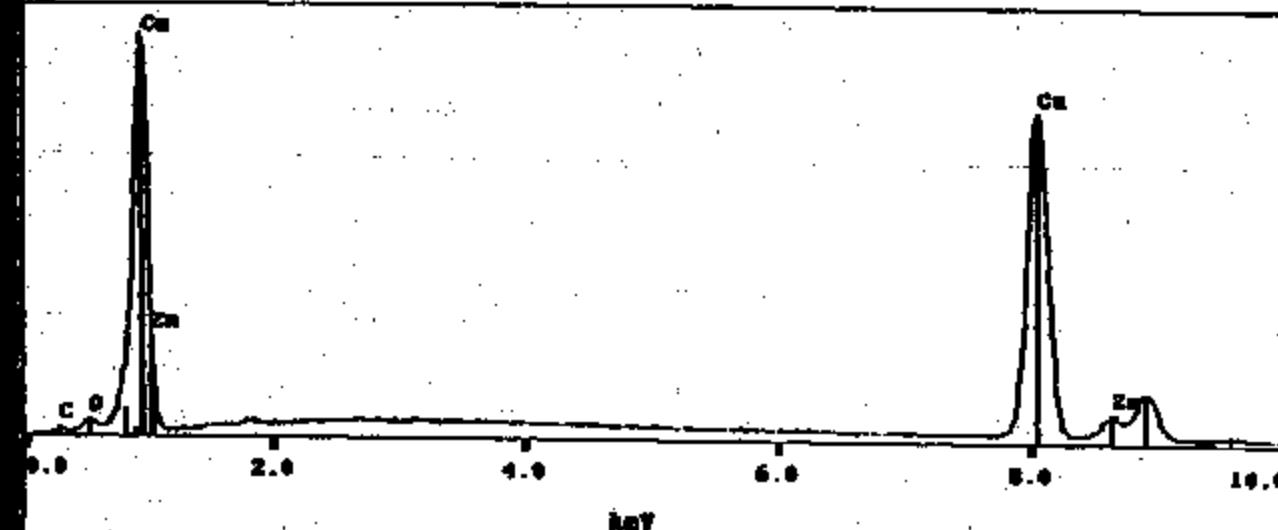
TI-NHTSA 012726



TI-AHTSA 012727

Acquisition completed.

✓ willigan_151700_401 24H tap water, stat, brass 10414 PS

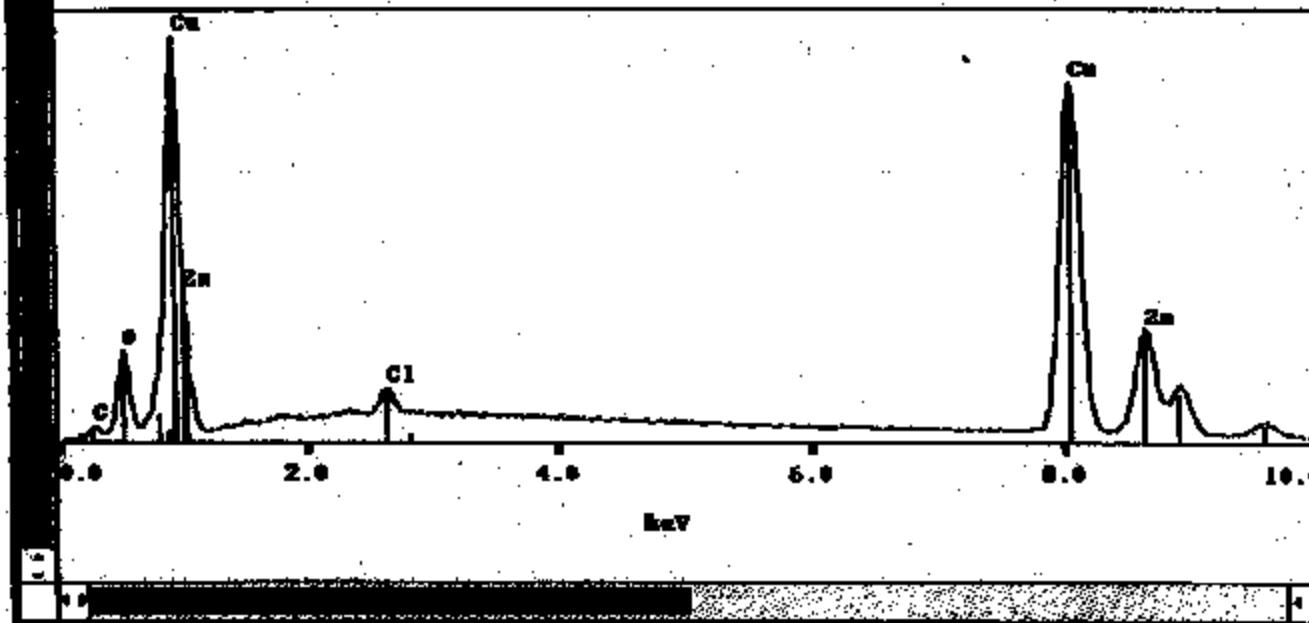


7-NM7SA 012726

Acquisition completed.

✓ mulligan_151700_402 24H tap water, stat, brass

6639 P3

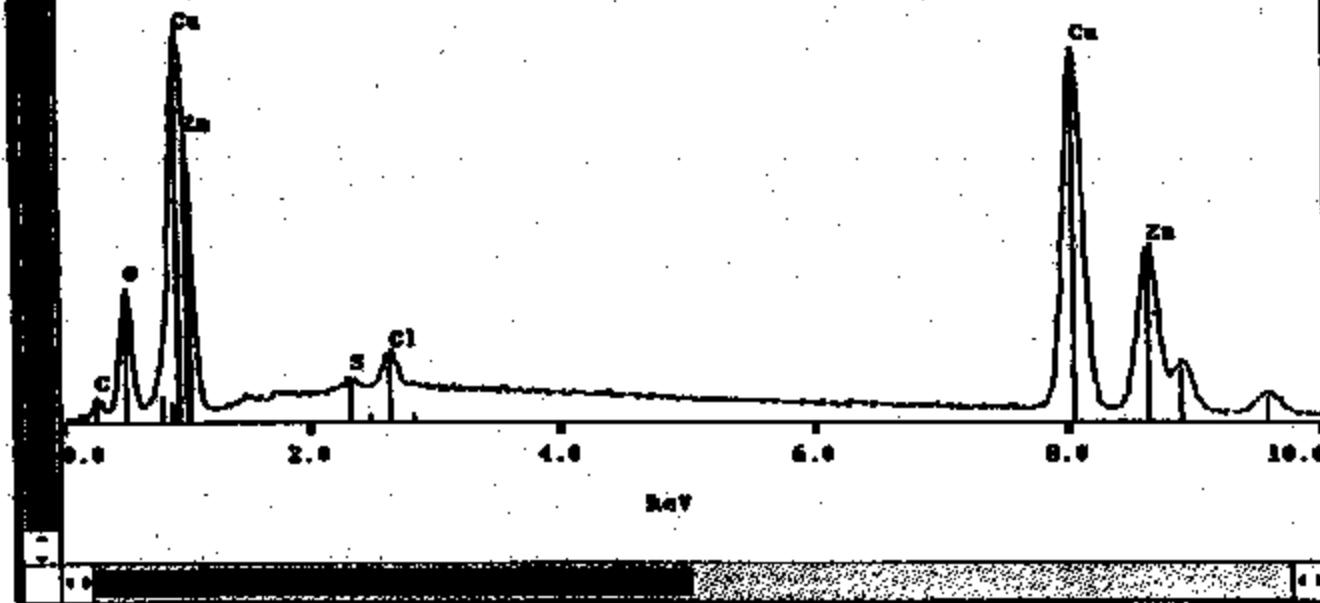


TJ-NHTSA 012729

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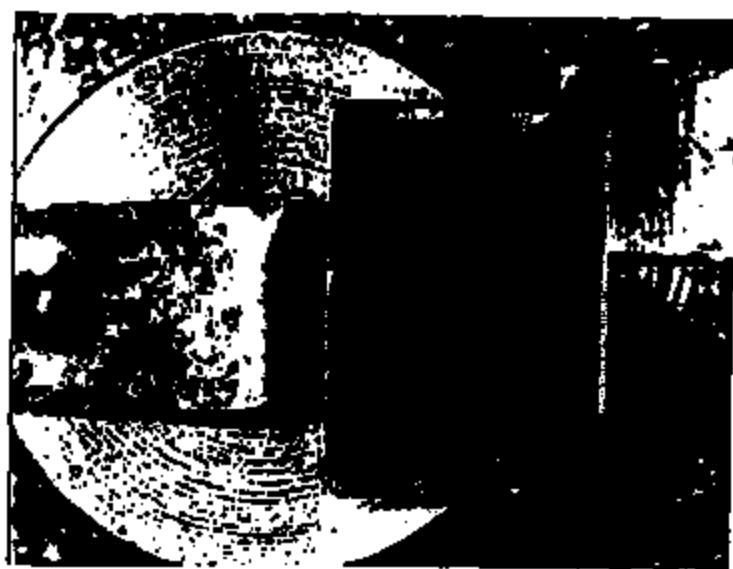
5898 F3

✓ mulligan_151700_403 24H tap water, stat, brass



TI-NHTSA 012730

24 H TAP WATER - NO WASH - CLEANED IN IPA



24 H TAP WATER - NO IPA Cleaned

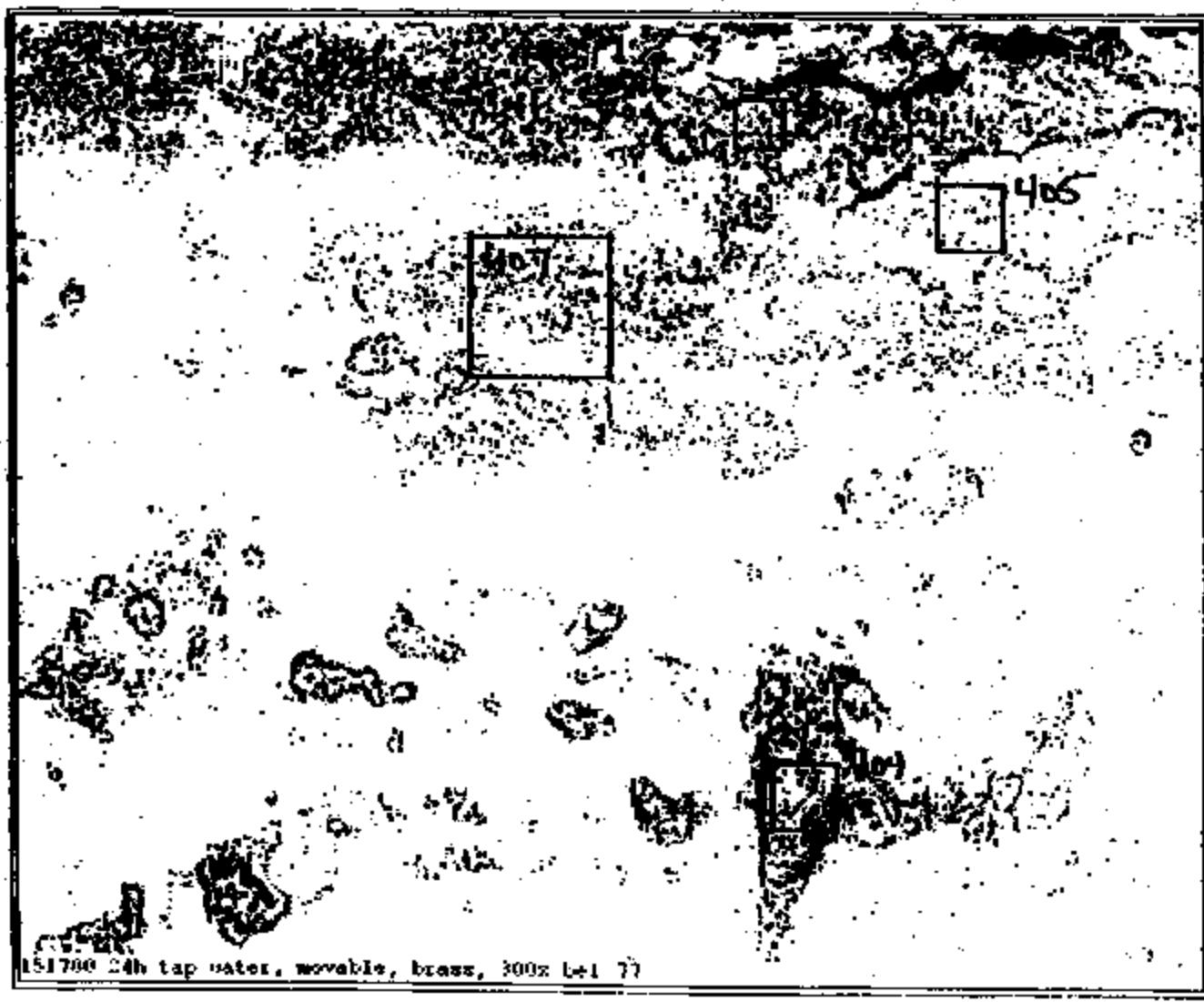


TI-NHTSA 012731

24H TAPWATER MOVALR - Cleaned in IPA



TI-NHTSA 012732

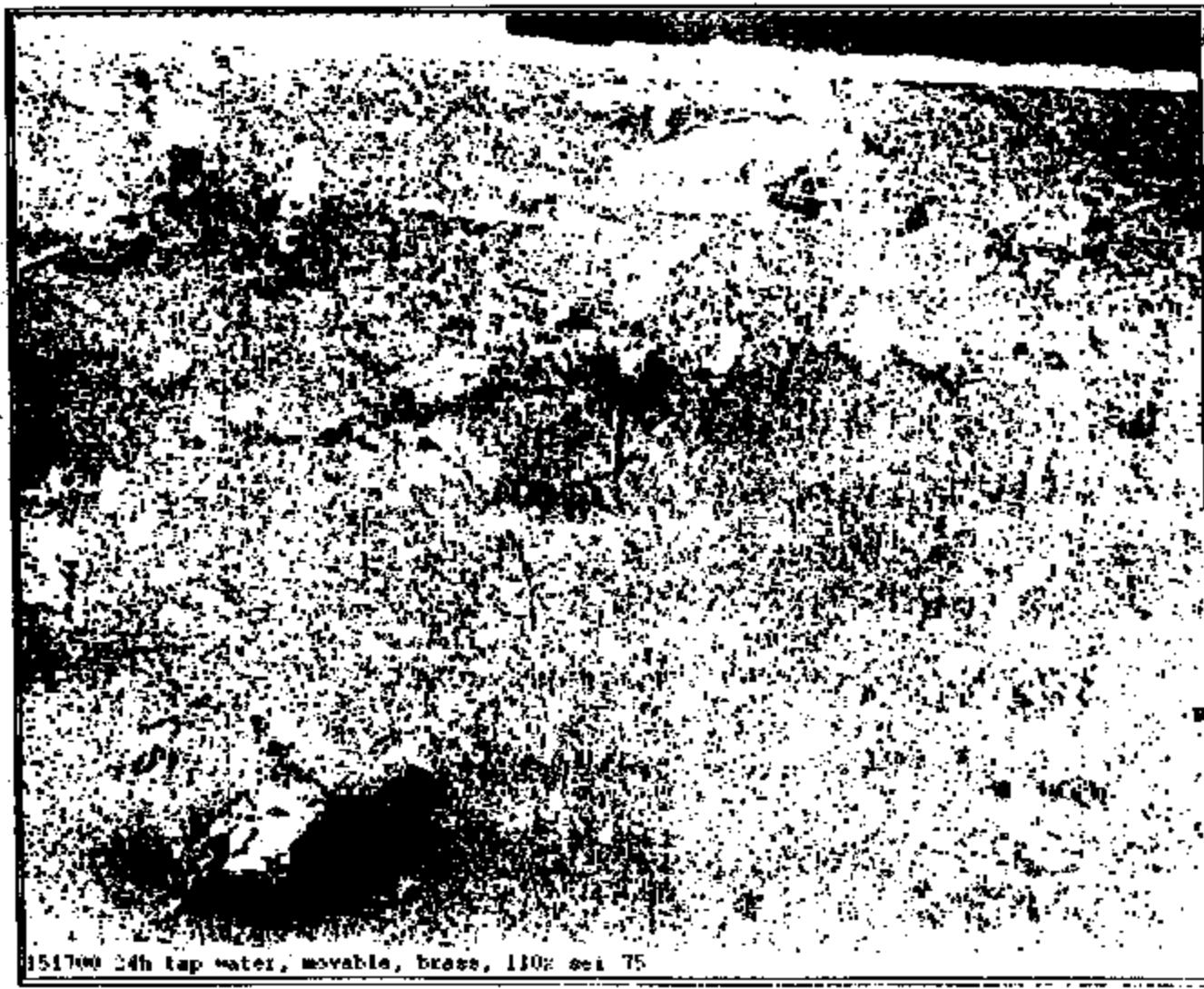


151700 24h tap water, moveable, brass, 300x Lx1 T



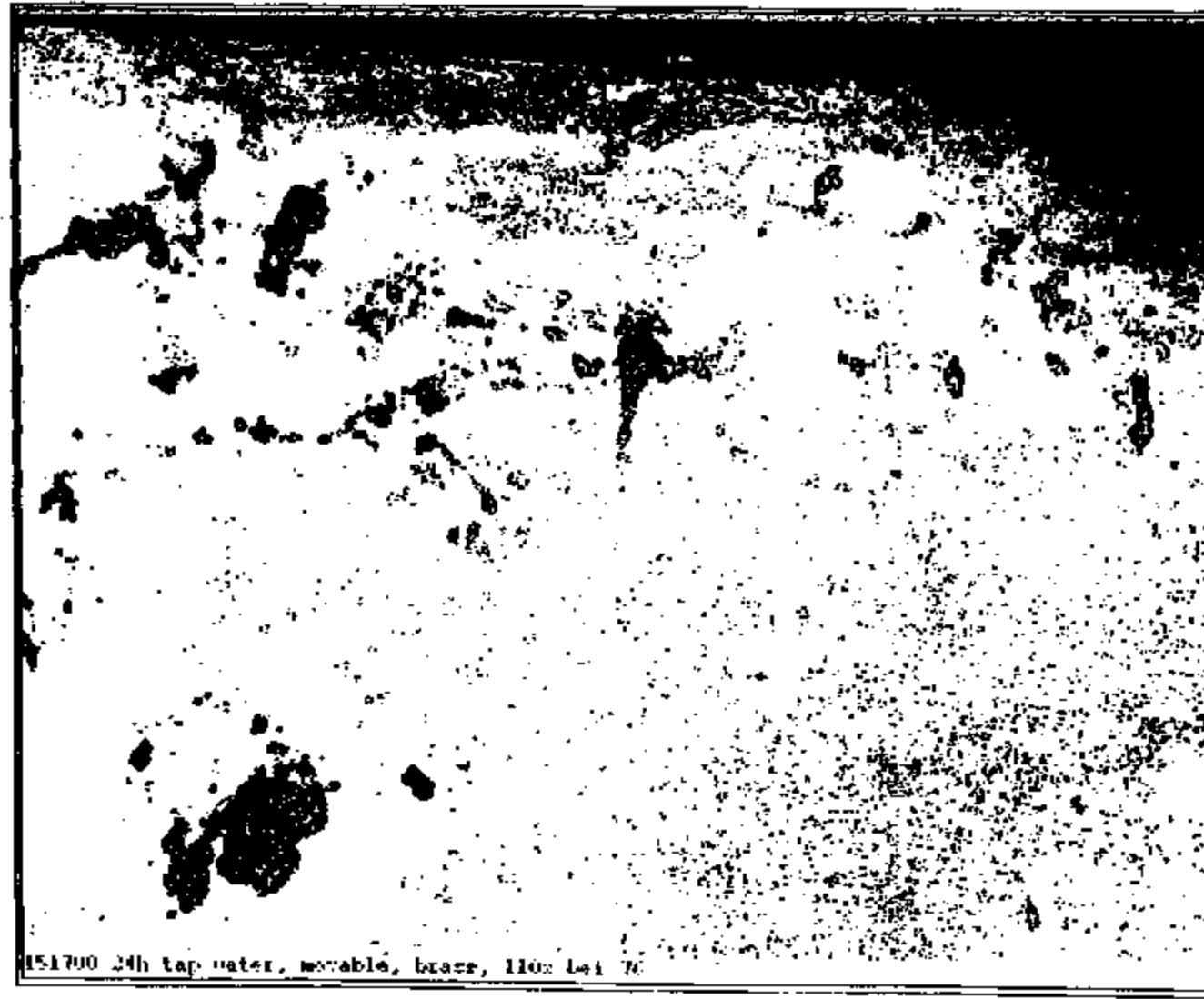
151700 34h tap water, movable, brass, 27x sel 74

TI-NHTSA 012734



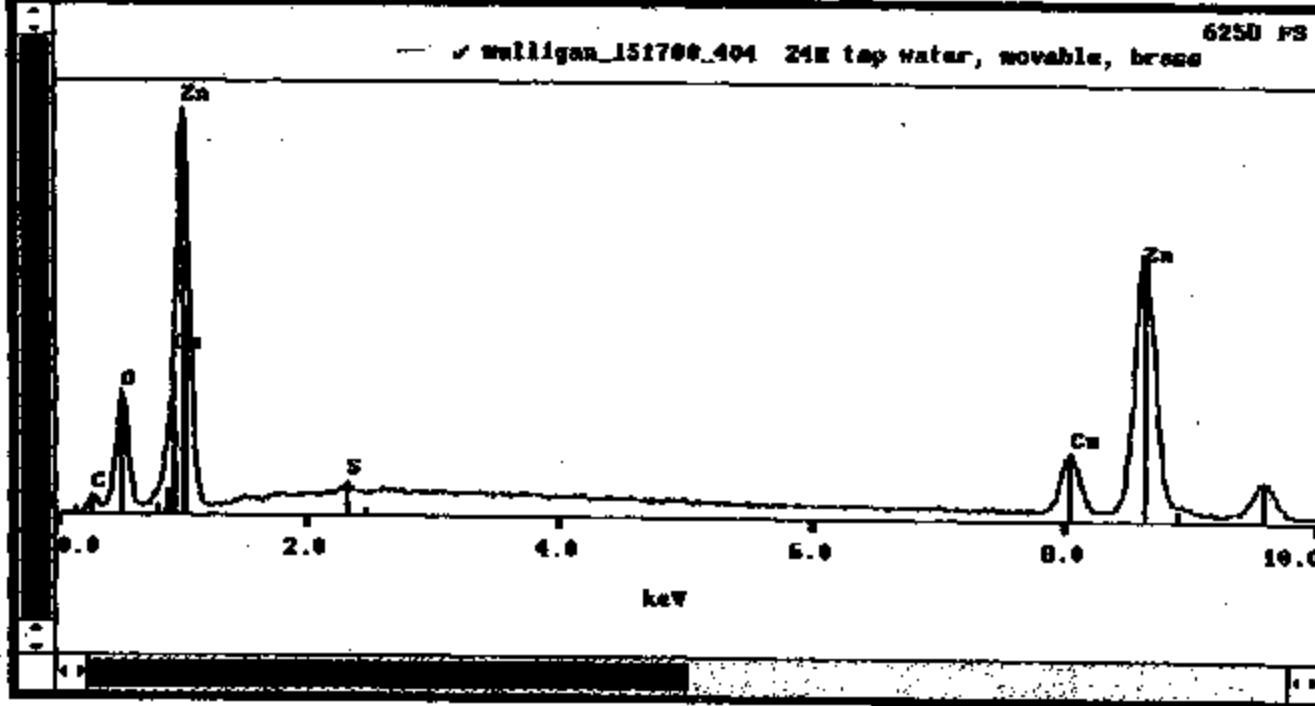
151700 24h tap water, movable, brass, 110g sei 75

TI-NHTSA 012736

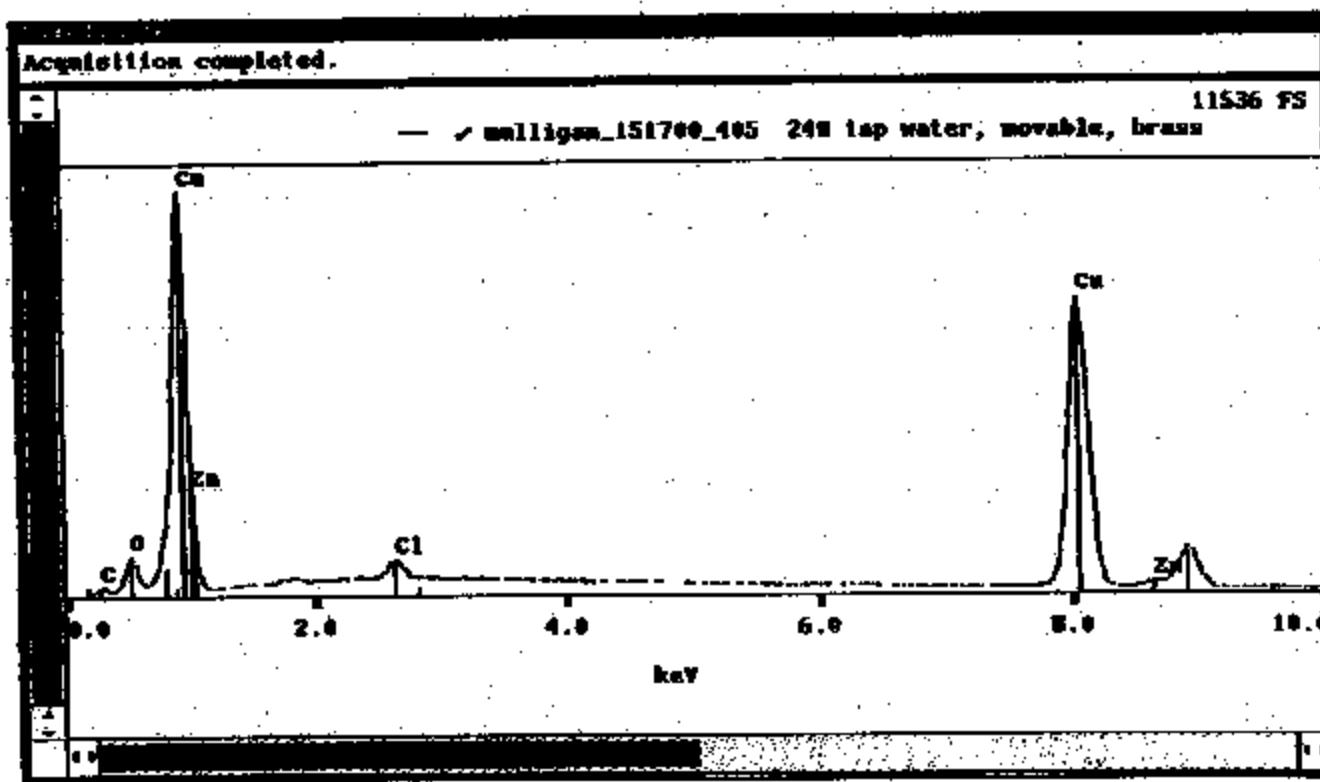


Acquisition completed.

6250 PS
✓ nulligan_151700.404 24E tap water, movable, brass

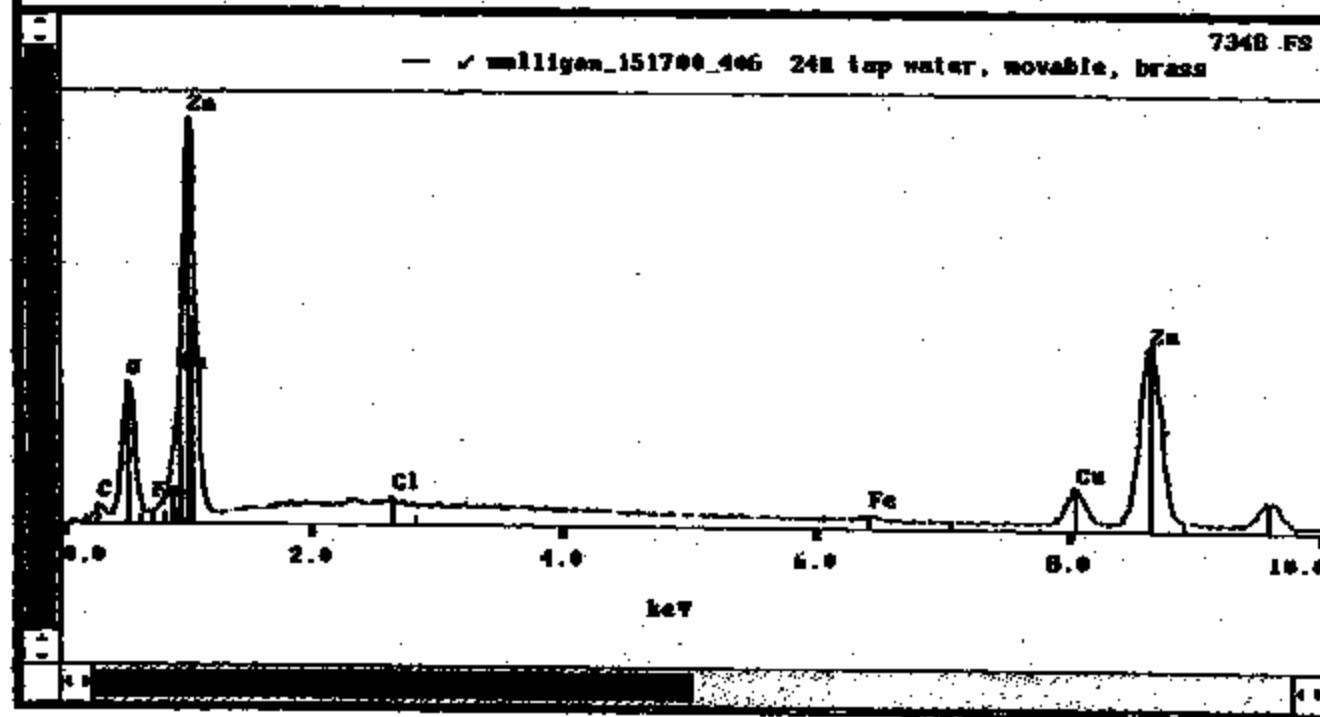


TI-NHTSA 012737

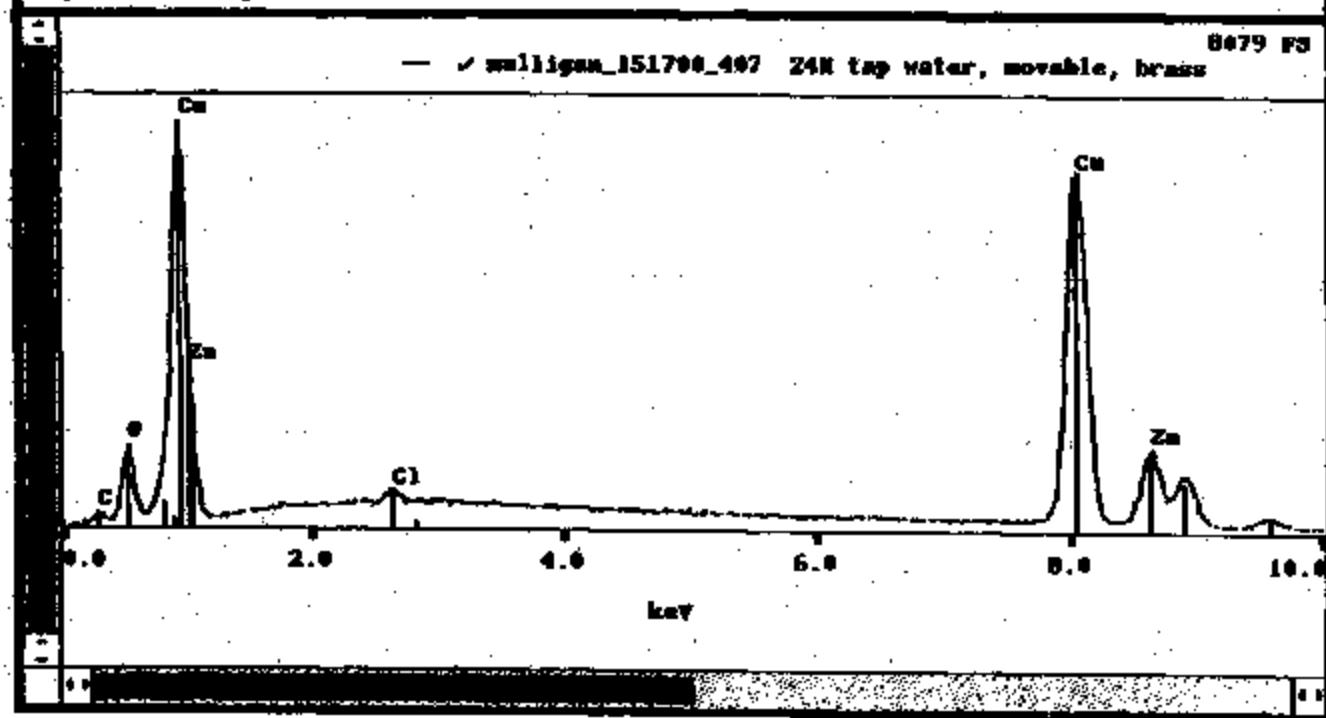


TI-NRHTSA 012738

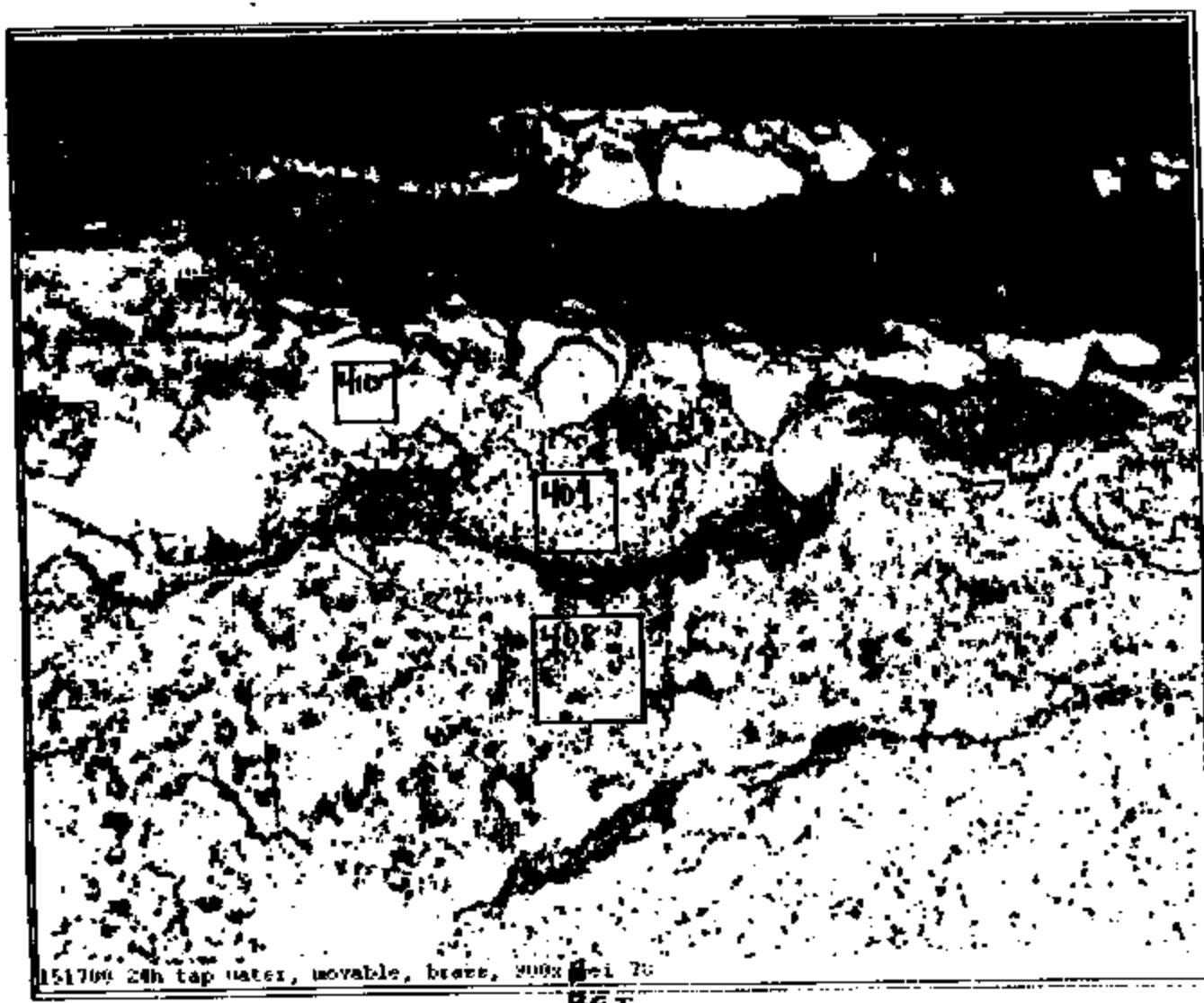
Acquisition completed.



Acquisition completed.



TL-NHTSA 012740



151700 24h tap water, movable, breeze, 2000x bei 70

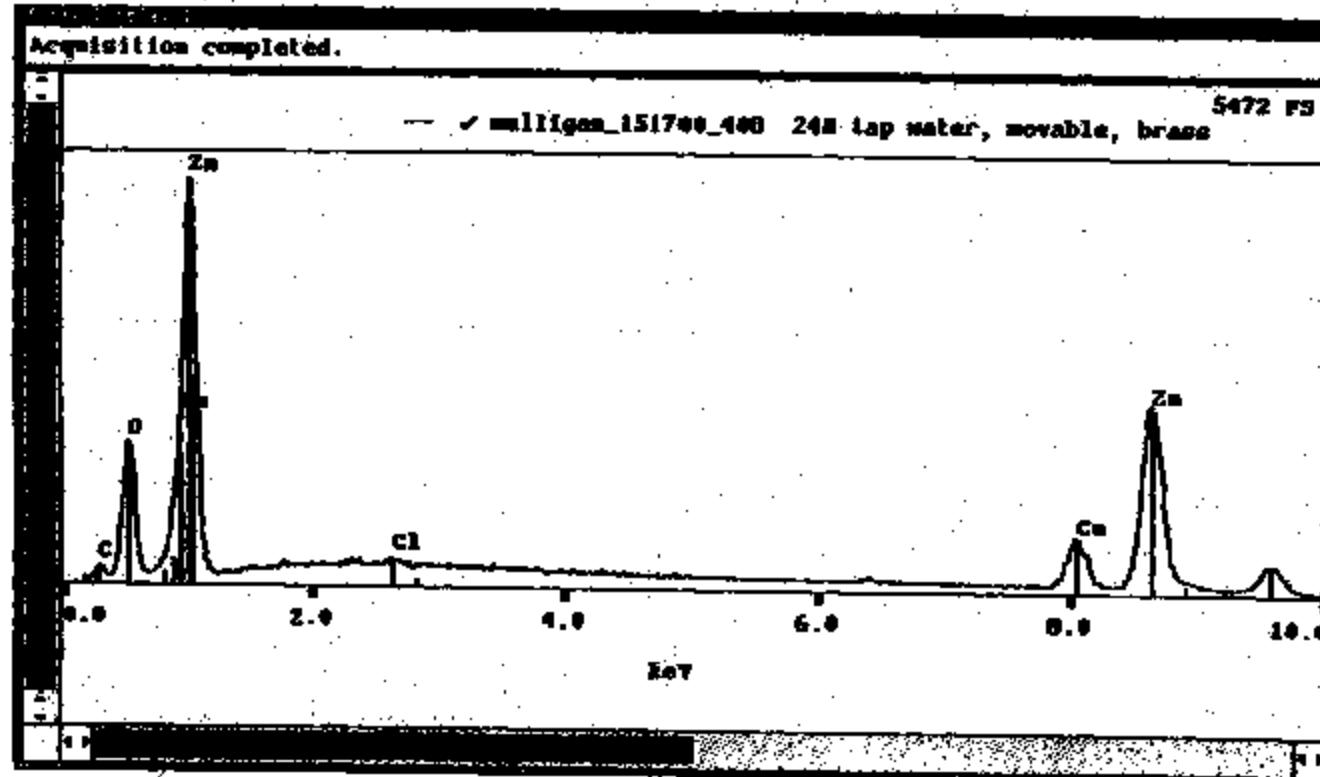
B&W

TI-AHTSA 012741

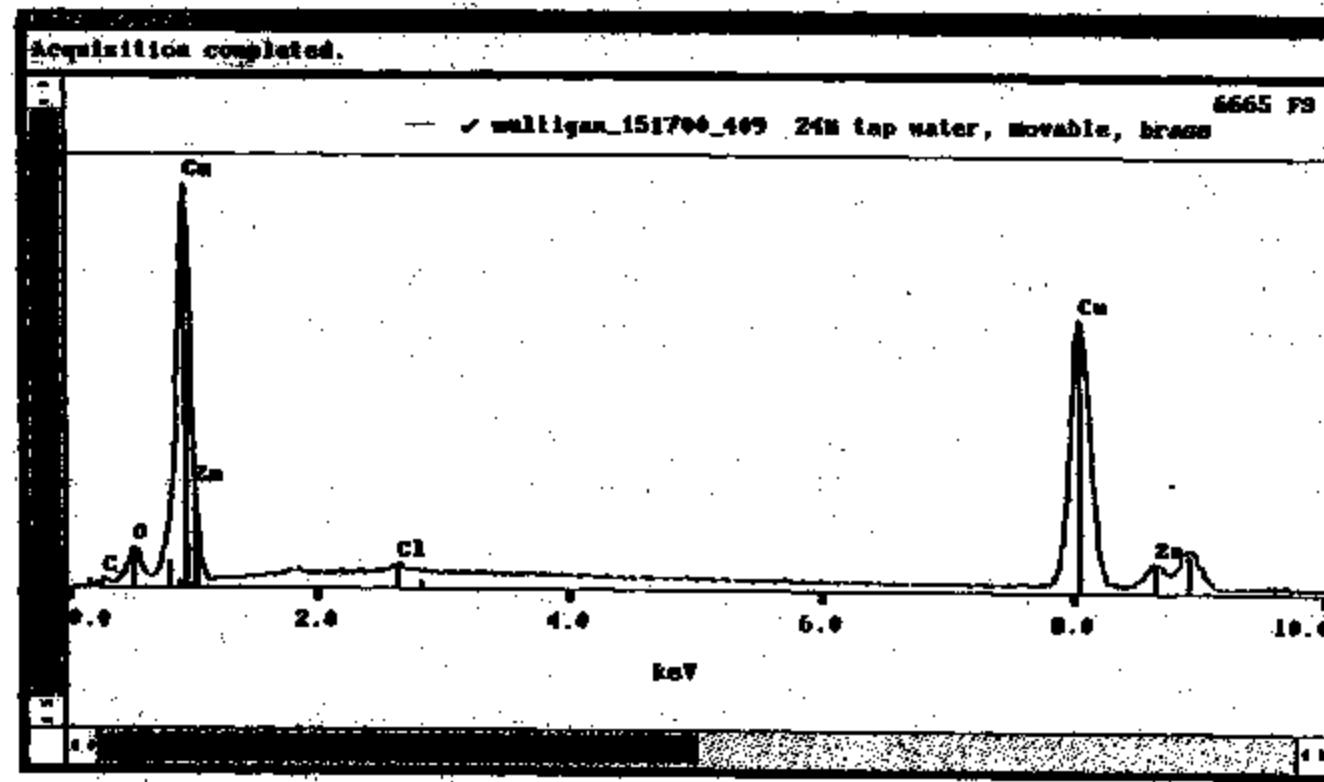


151700 24h tap water, movable, brass, 900x sei 79

TI-NHTSA 012742

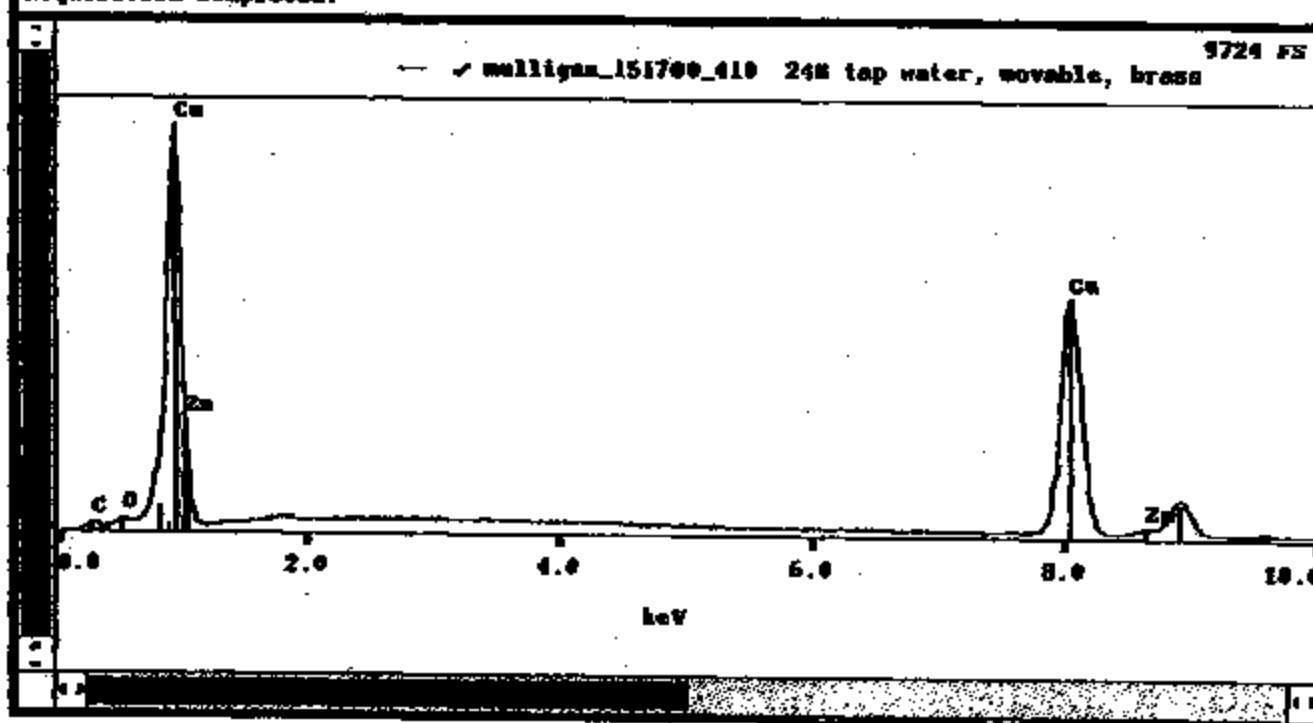


TINHTSA 01743



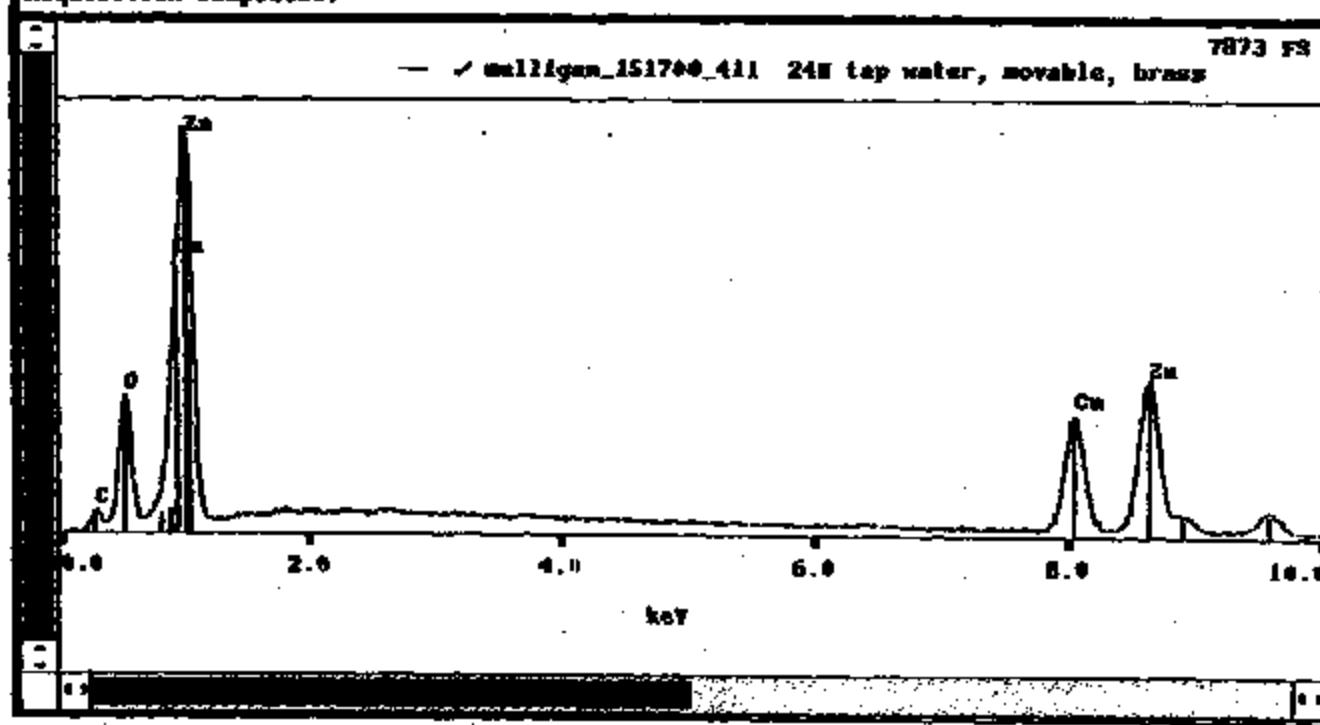
TIAHHTSA 01274

Acquisition completed.



TI-NHTSA 012745

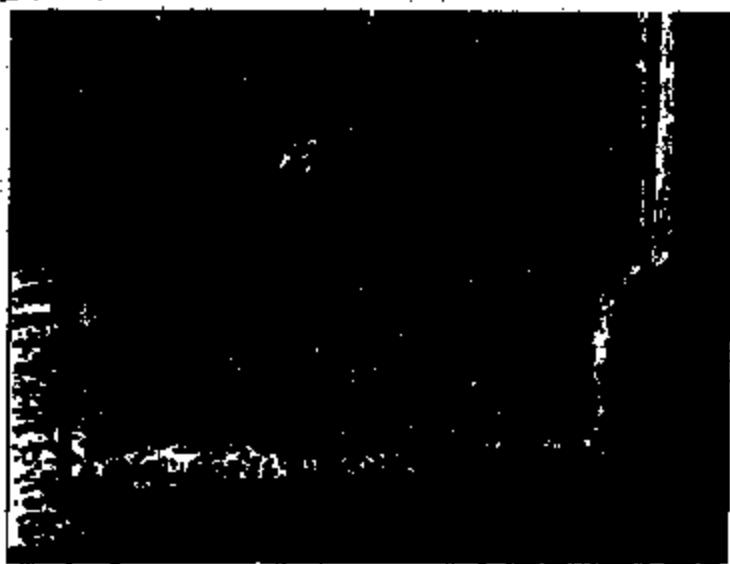
Acquisition completed.



TI-NHTSA 012748

244 NEW A.F. fluid 5% water - cleaned in IPA

New:



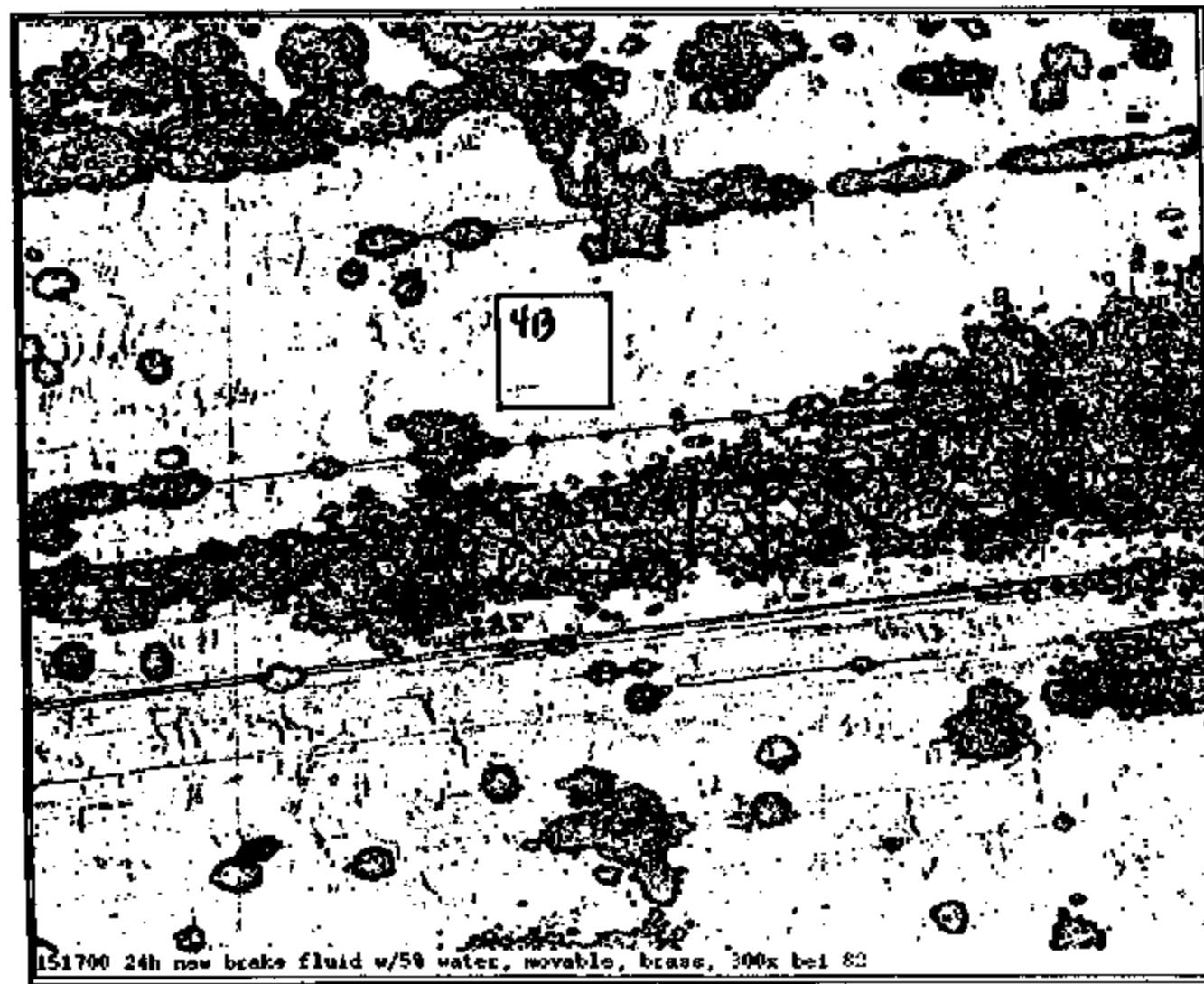
244 NEW BF 5% H₂O - Cleaned in IPA

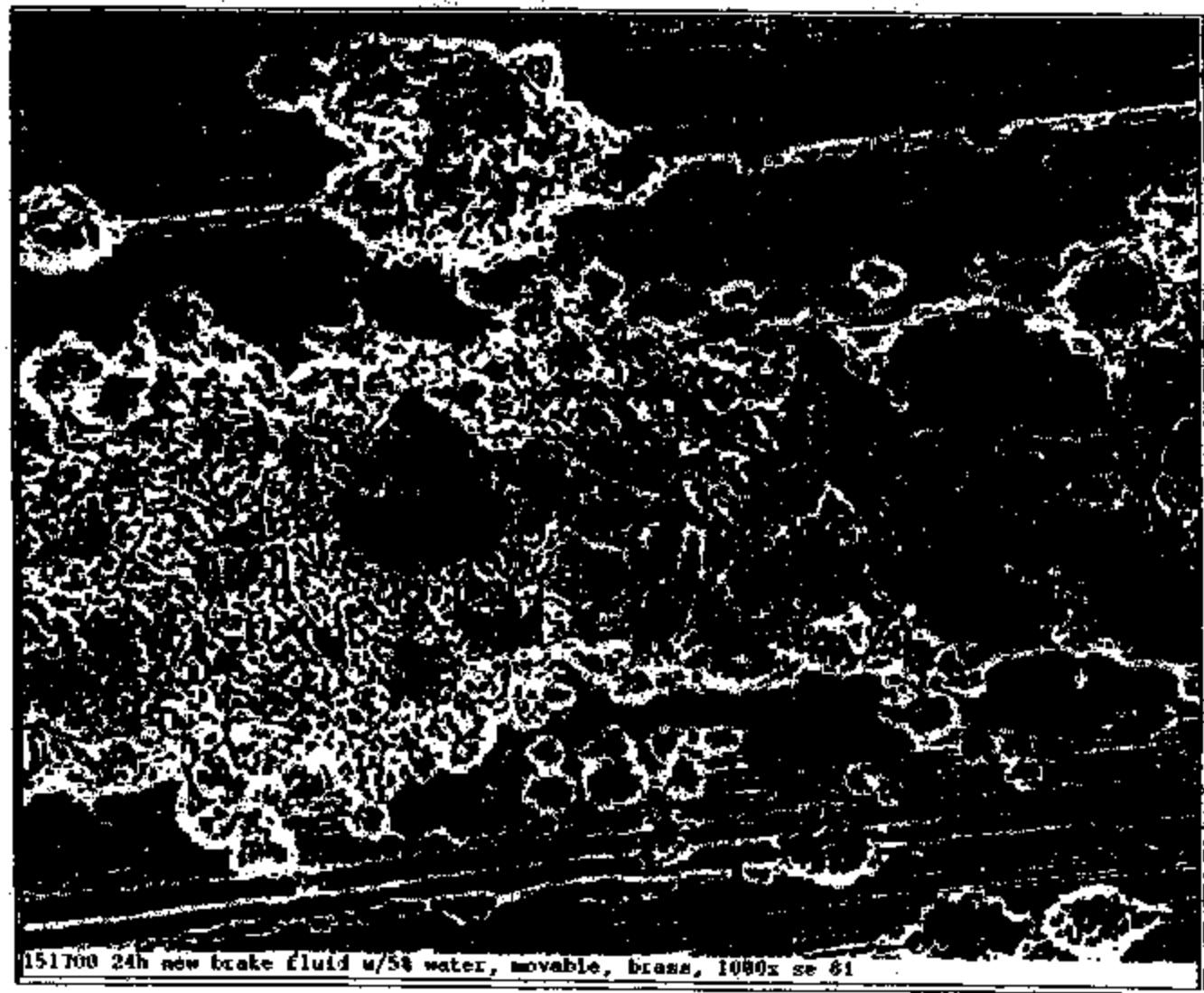
New:



TI-NHT8A 012747

TI-NHTSA 012748





151700 24h new brake fluid w/5% water, movable, brass, 1000x se 61

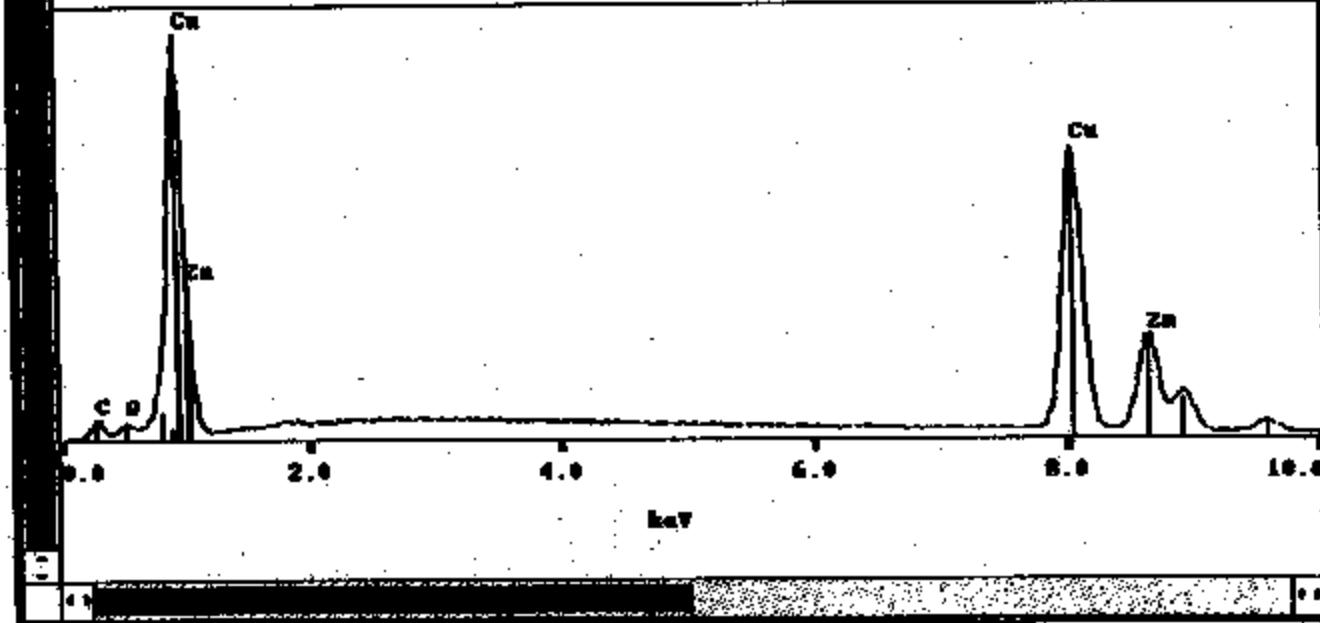
TI-NHTSA 012749

151700 24h new brake fluid w/5% water, movable, brass, 27z sc 80

Acquisition completed.

0122 FS

— / willigan_151700_412 240 nm RF-5302B, nov brass

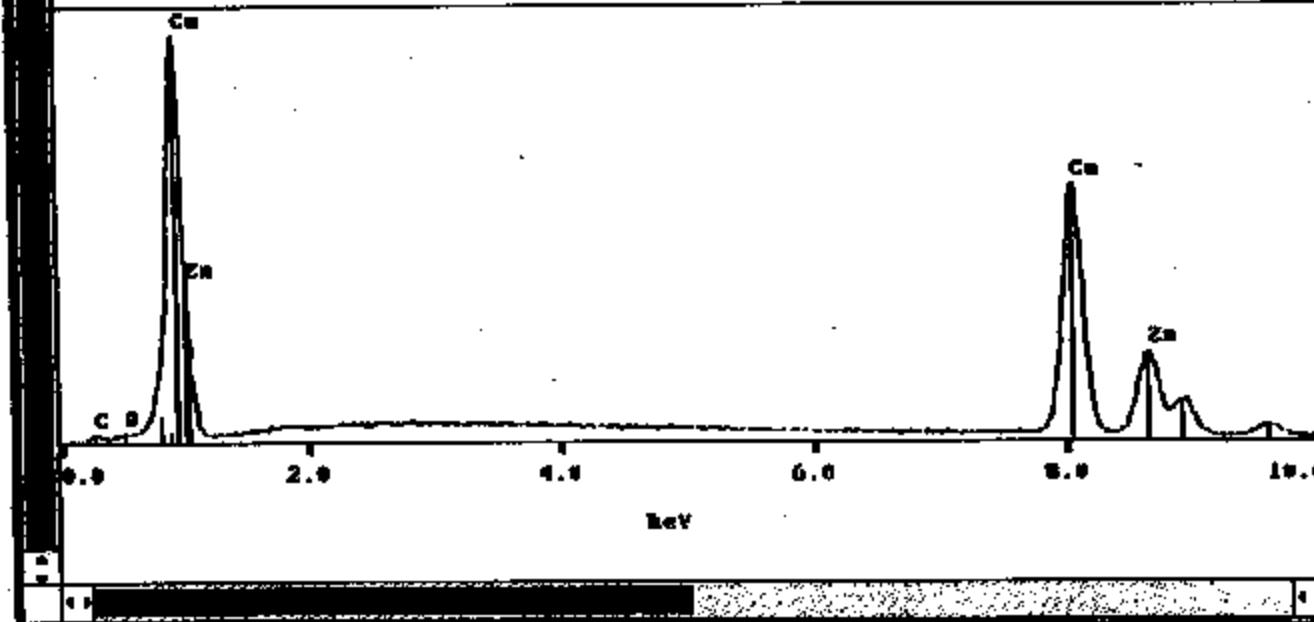


TI-NHTSA 012751

Acquisition completed.

9001 FS

walligan_151749_413 24K new BF-53020, nov brass

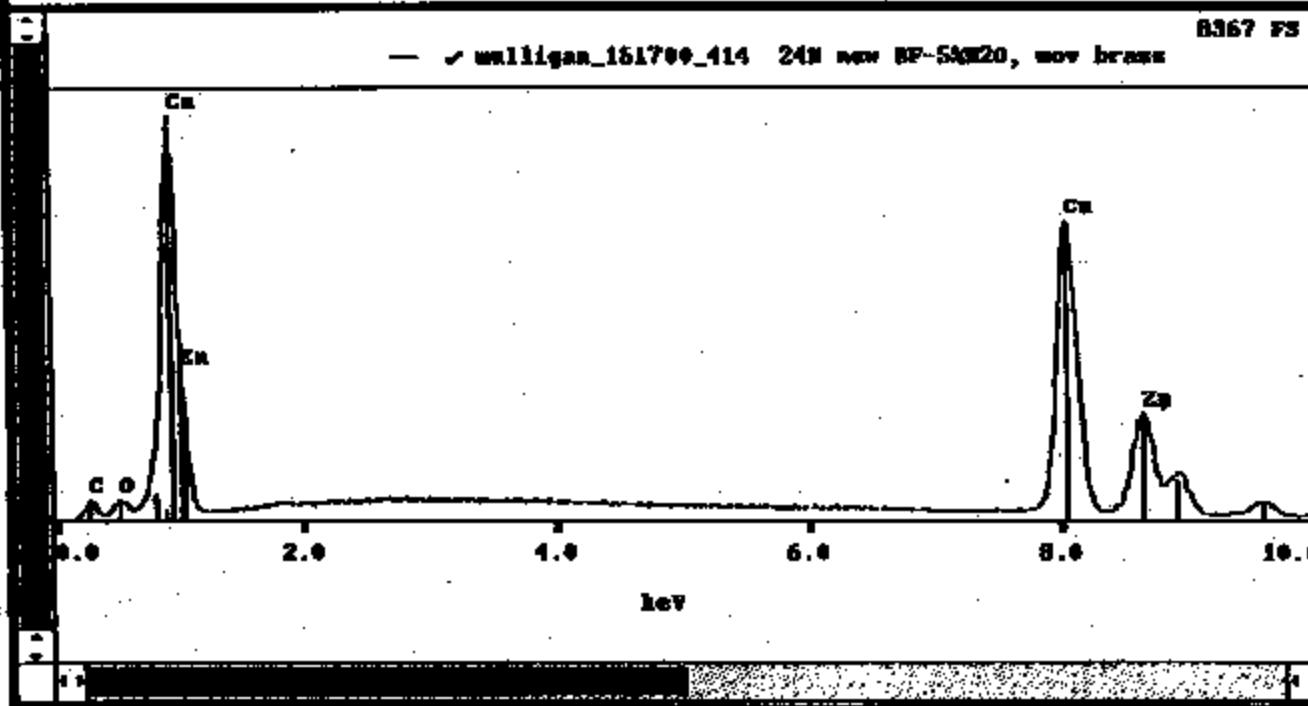


TI-NHTSA 012752

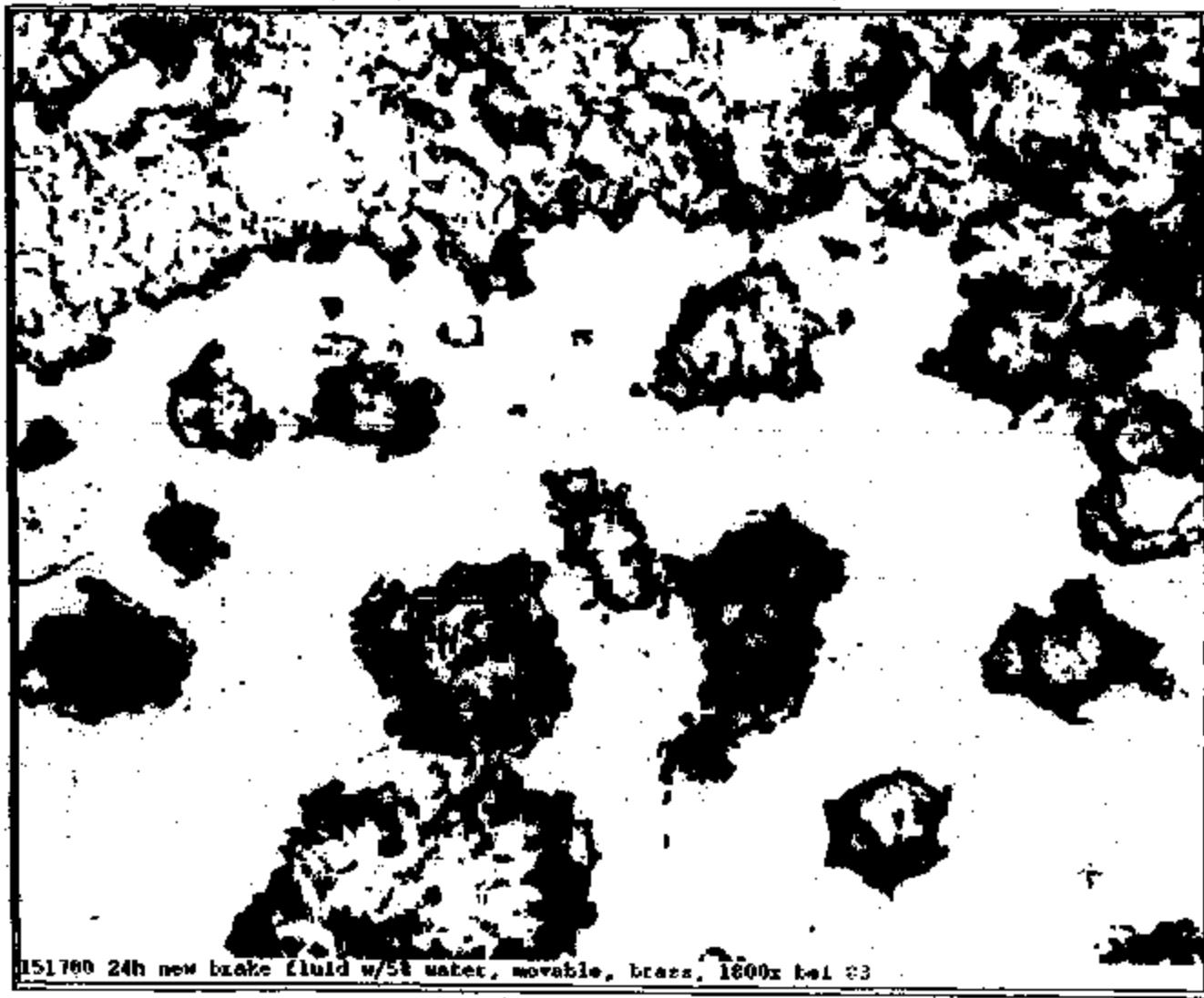
Acquisition completed.

8367 FS

— ✓ willigan_151700_414 24N new BF-S30M20, nov brass



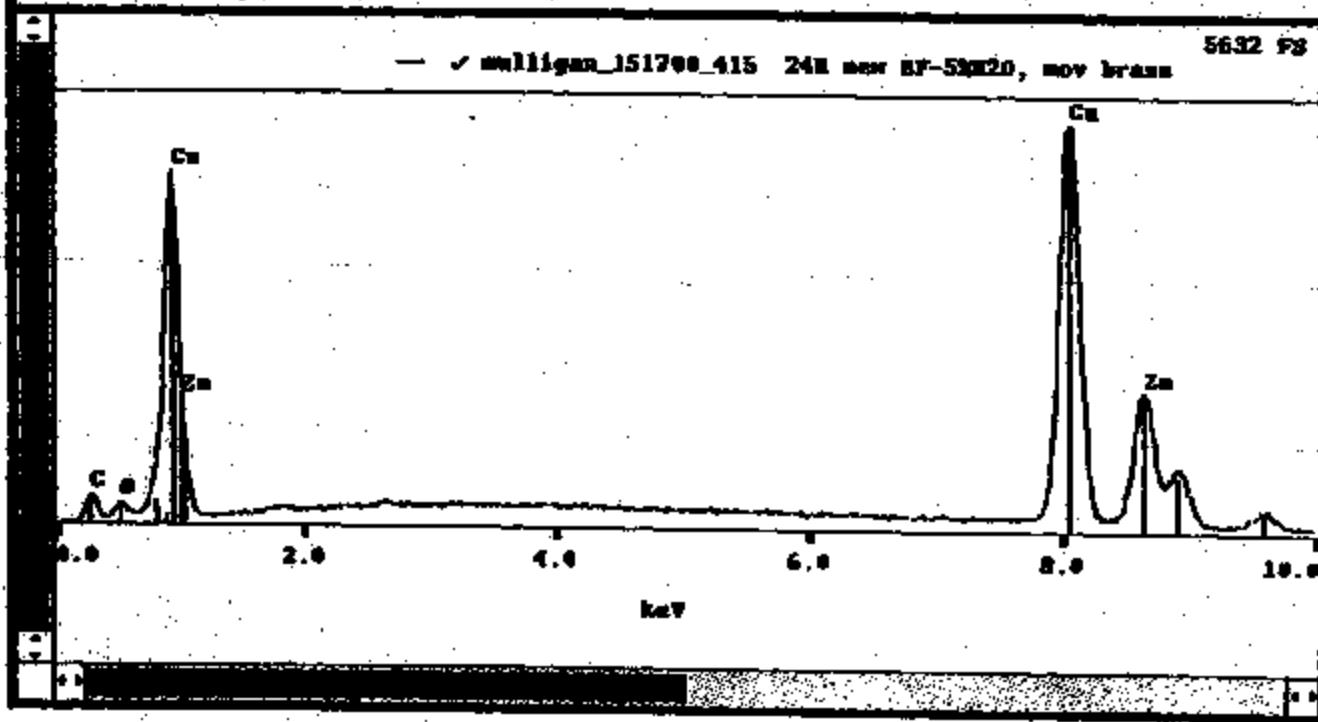
TI-NHTSA 012753



151760 24h new brake fluid w/5% water, movable, brass, 1600x bei 83

TI-NHTSA 012754

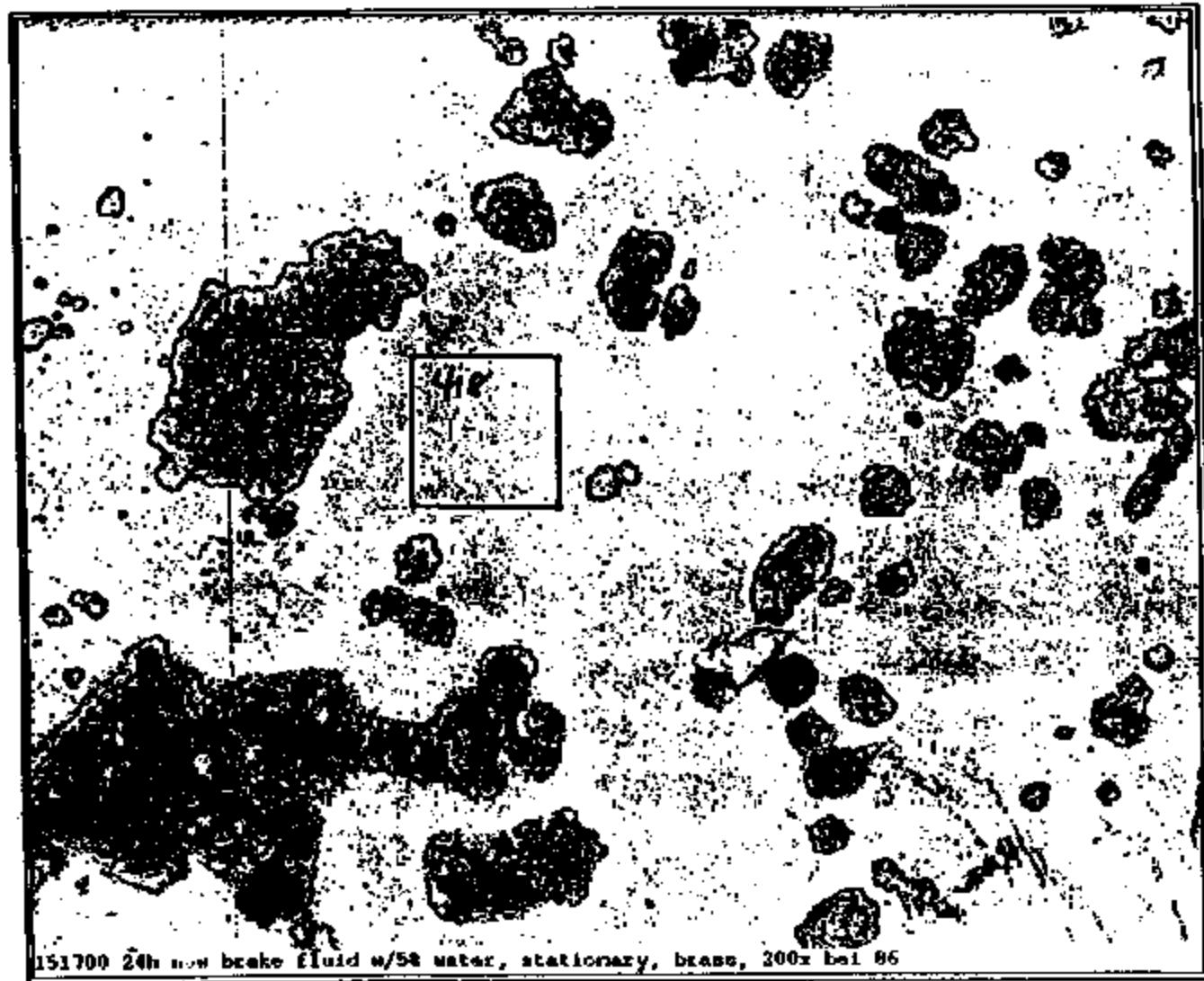
Acquisition completed.



TI-NH78A 012785

FAT- 24H New R.F. 5% 160 - Cleared in MA





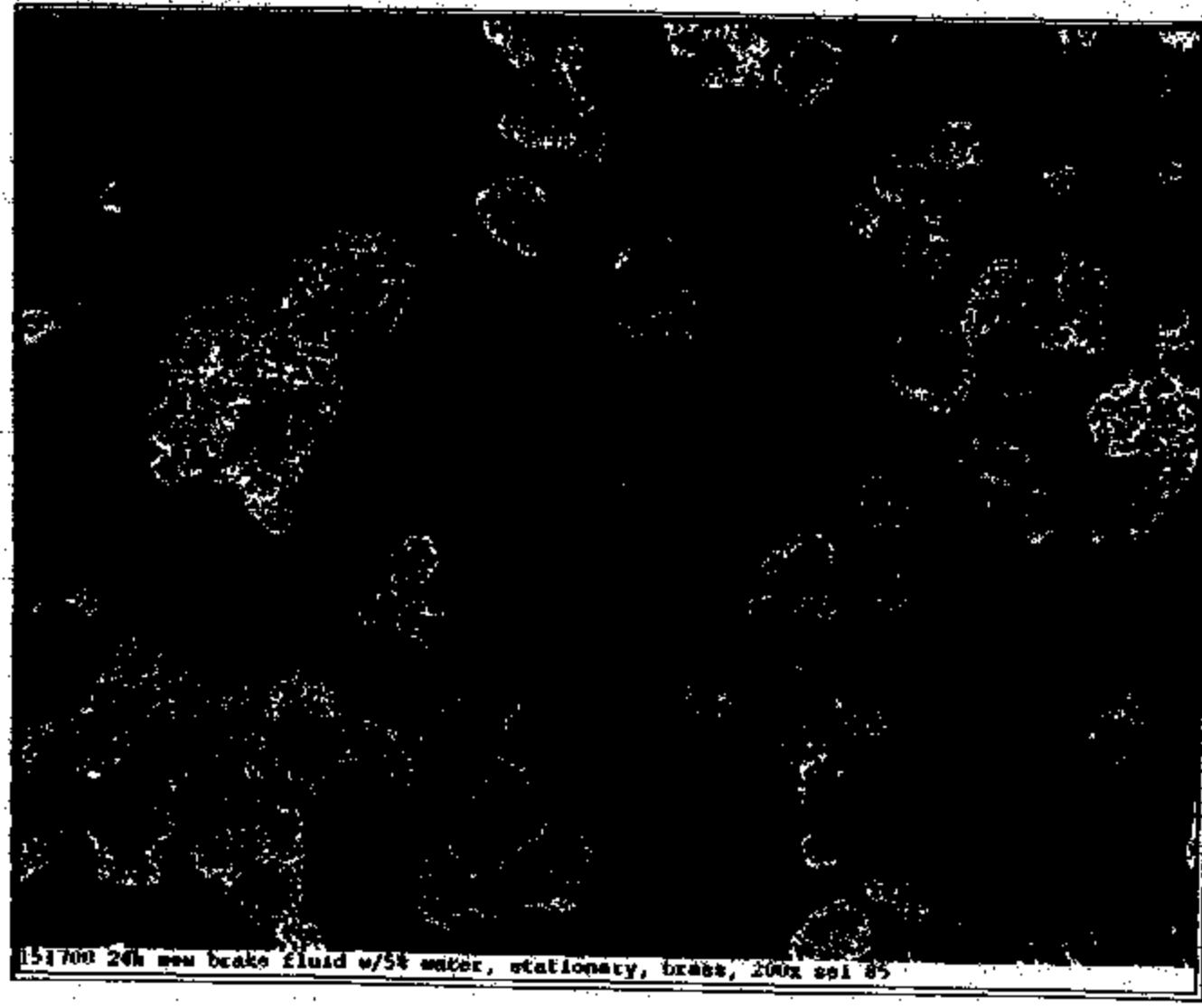
TI-NHTSA 012757



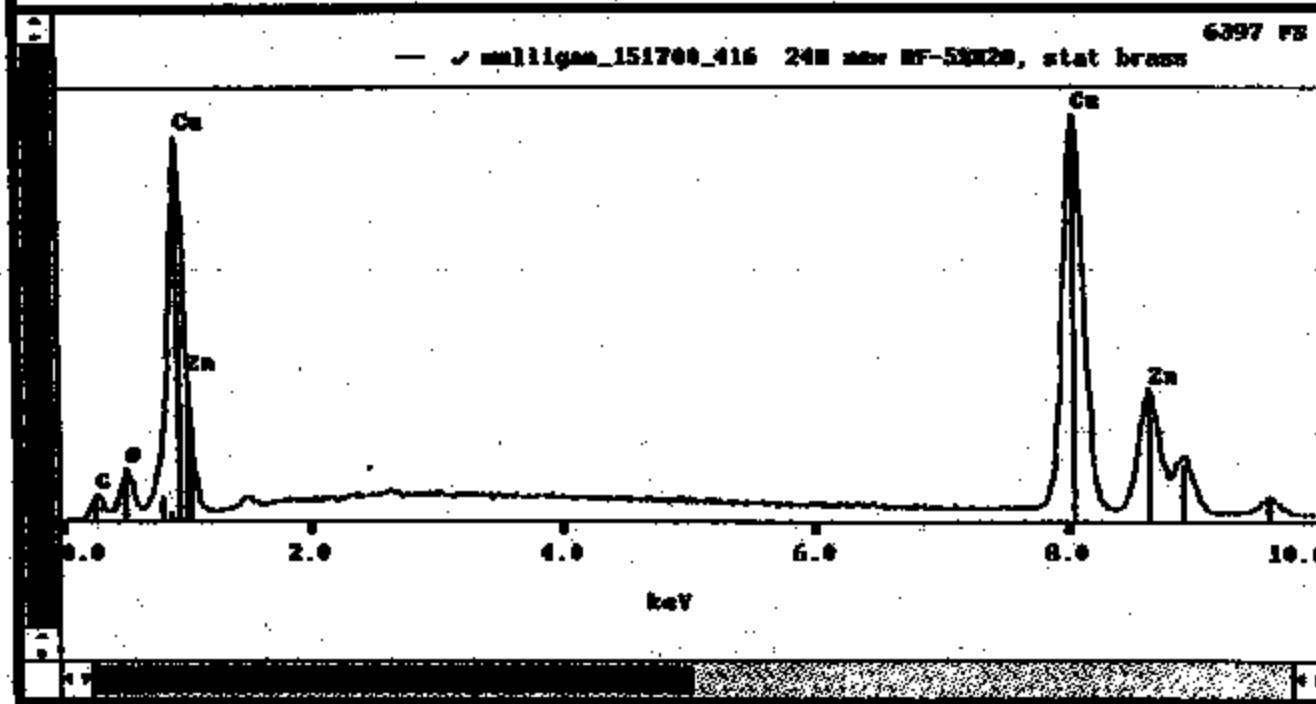
151700 24h new brake fluid w/5% water, stationary, brass, 25x mai 84

TI-NHTSA 012758

TI-NHTSA 012768

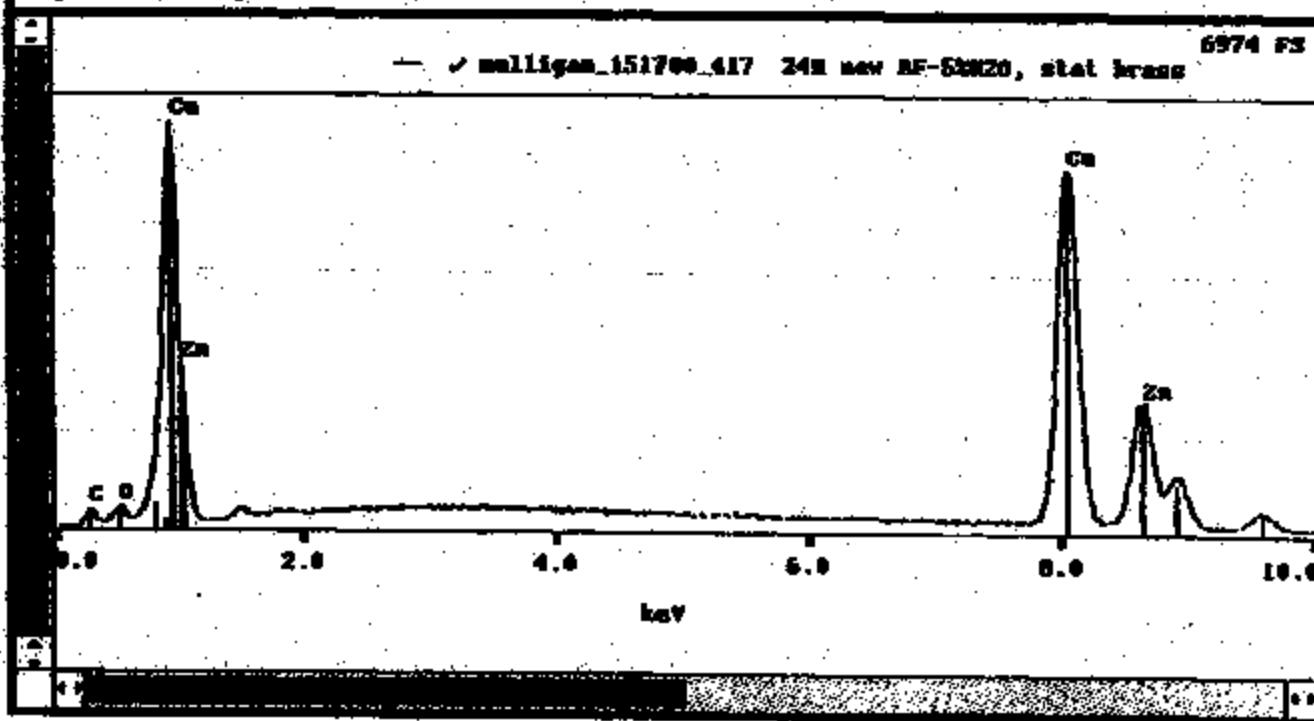


Acquisition completed.



1-AHHTSA 012760

Acquisition completed.

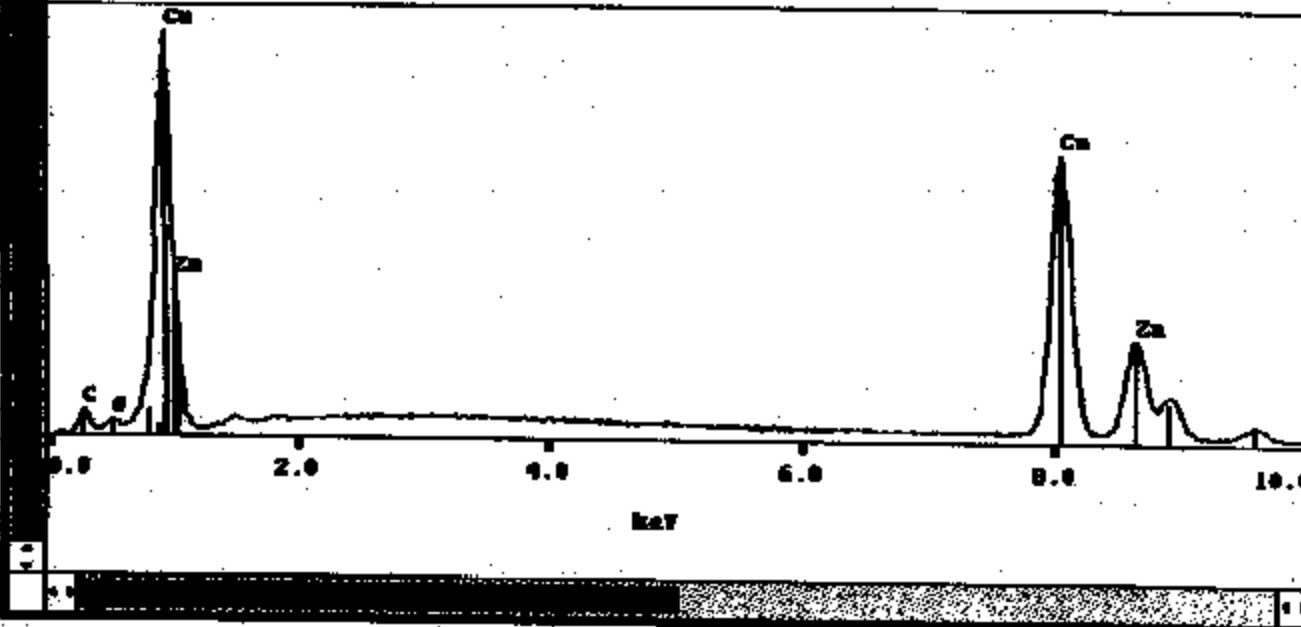


TINHTSA 012761

Acquisition completed.

— ✓ nulligan_151700_415 24K new EF-S30020, stat brass

5142 F3



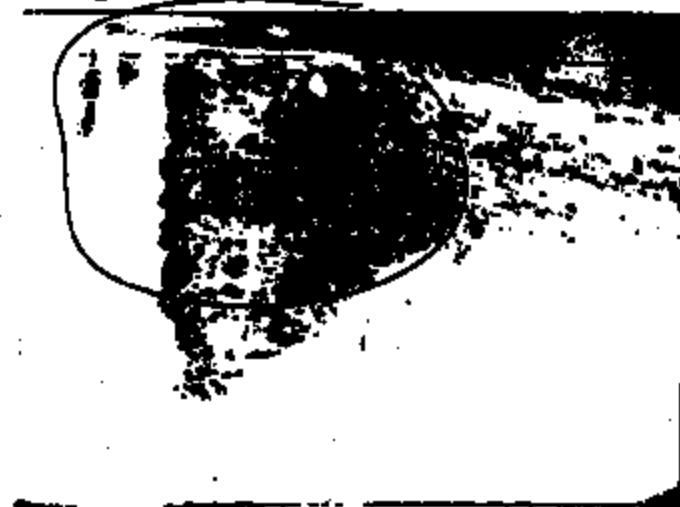
TRANSA 012752



151704 24h new brake fluid w/5% water, stationary, brass, 1000x sci 67

TI-NHTBA 012763

151700
2944 USF/54/160
STAT



TI-NHTSA 012764

TI-NHTSA 012765

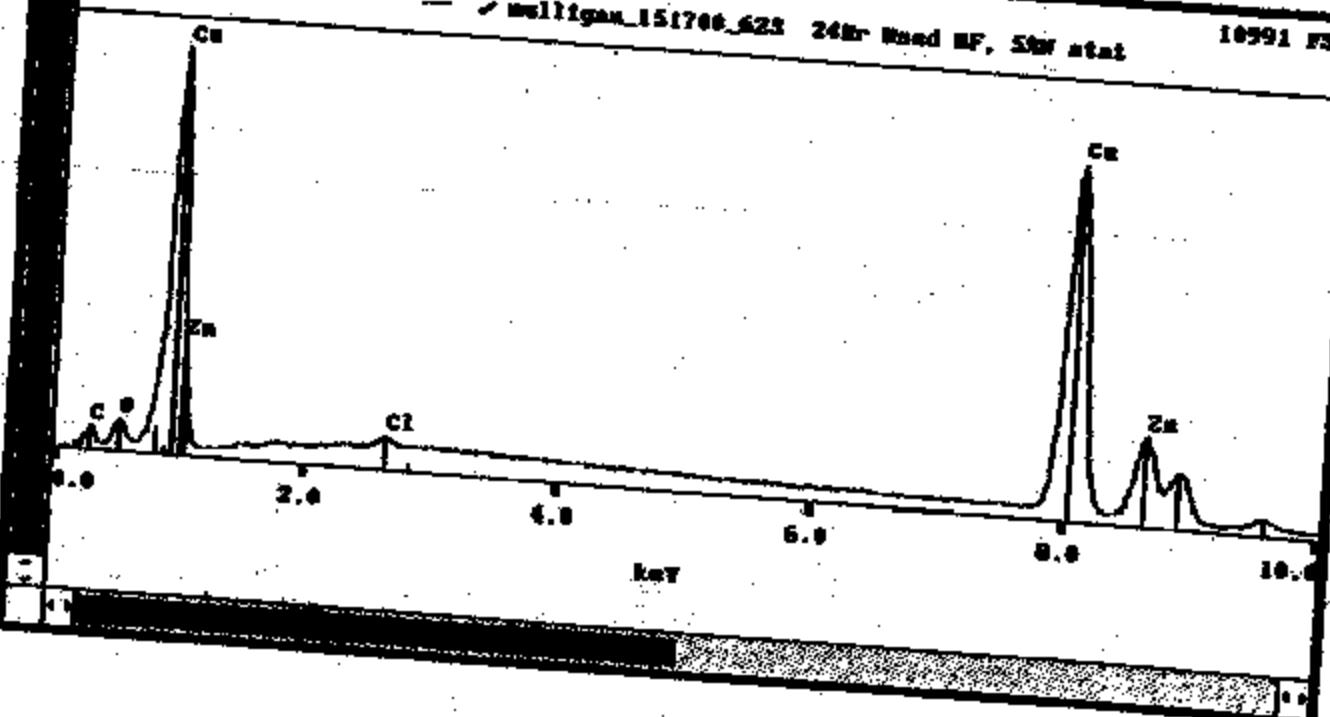


151700 24Hr Used Brake Fluid-Sa HCO, stat 80x bei 73

Acquisition completed.

Welligan_151706_623 24hr Read RF, SWR stat

10991 E3

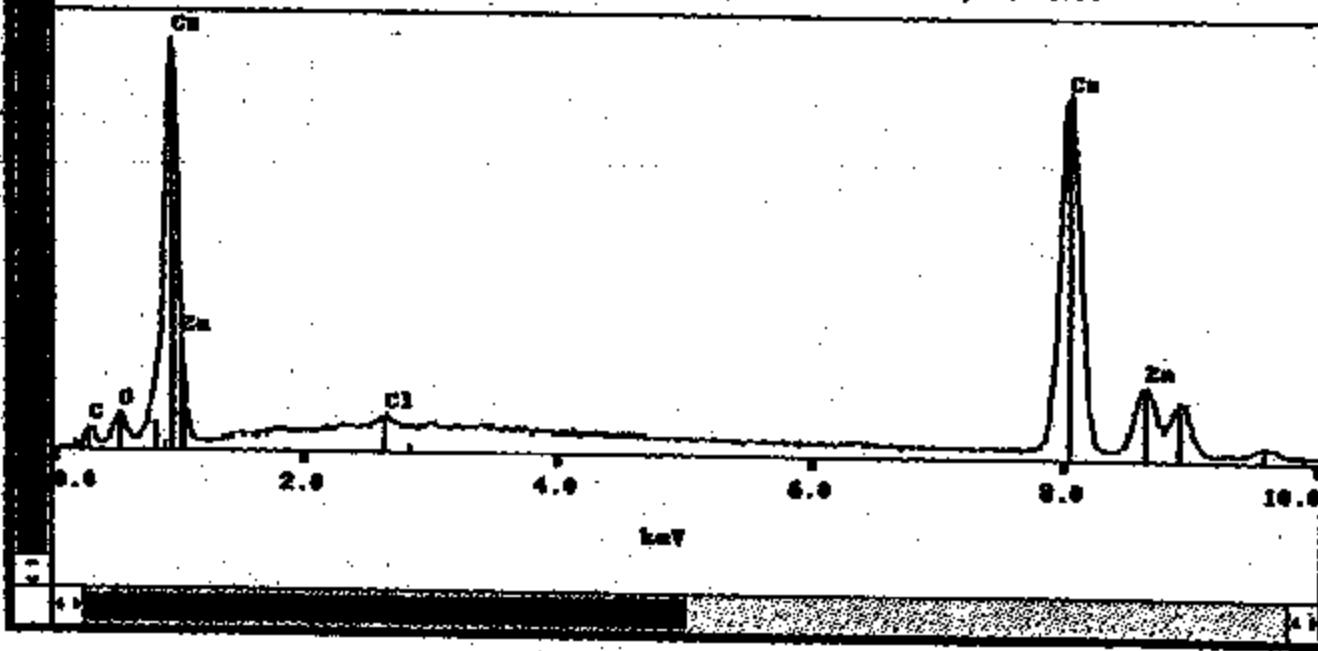


TI-NHTSA 012766

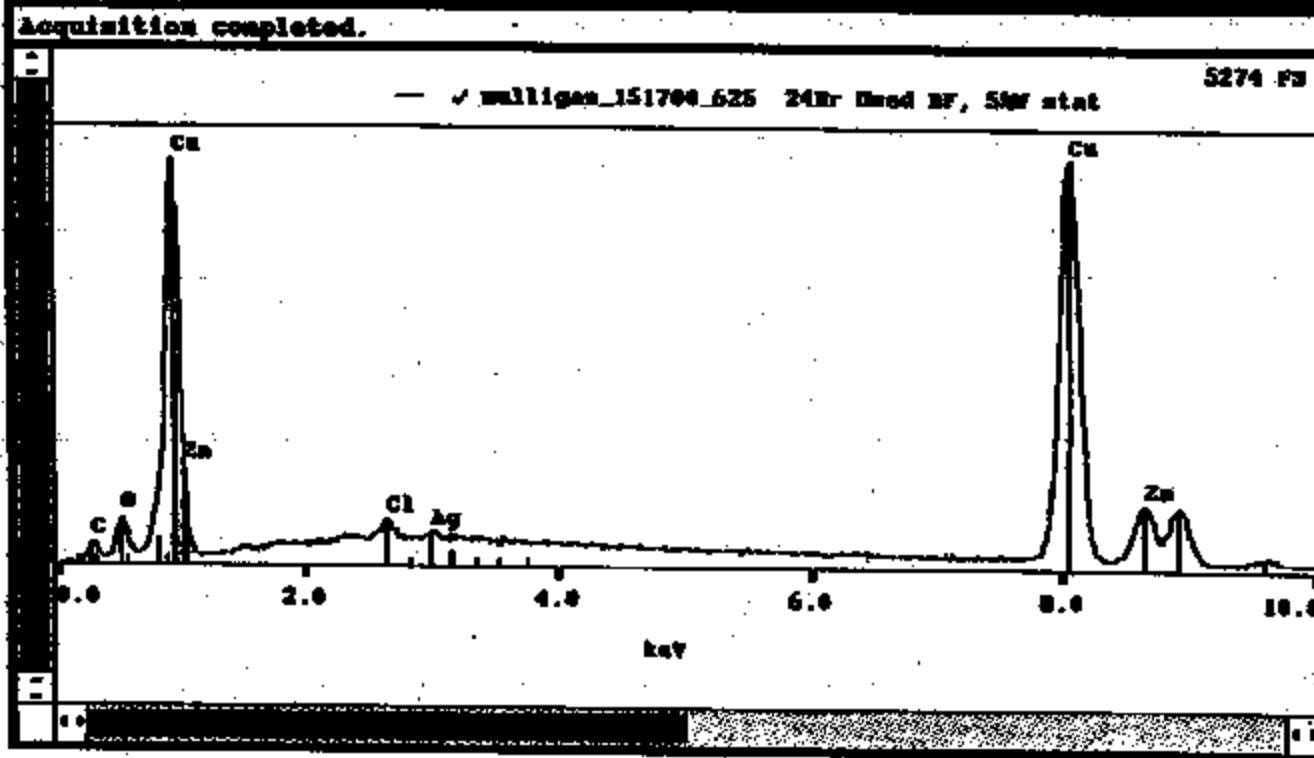
Acquisition completed.

✓ mulligan_151700_624 24hr Read AF, 63W stat

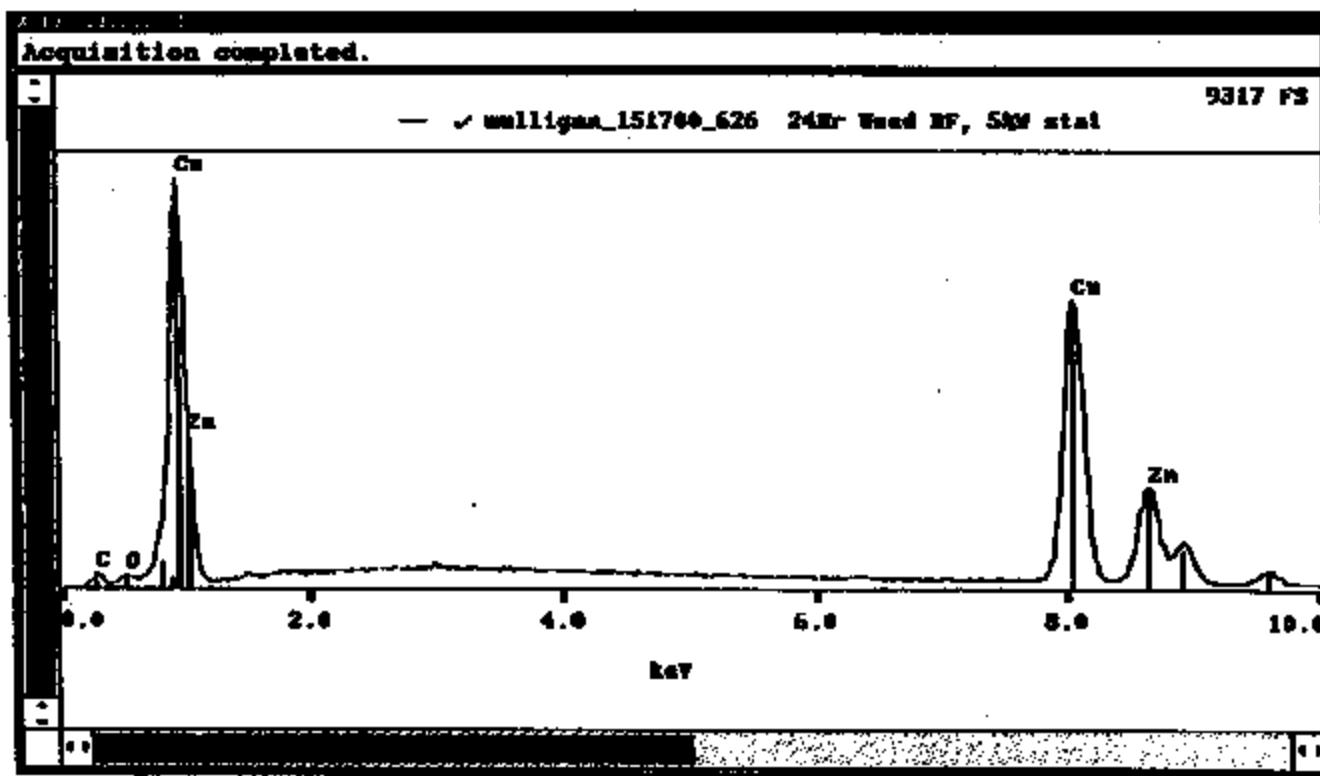
6306 PS



T-NHTSA 01276

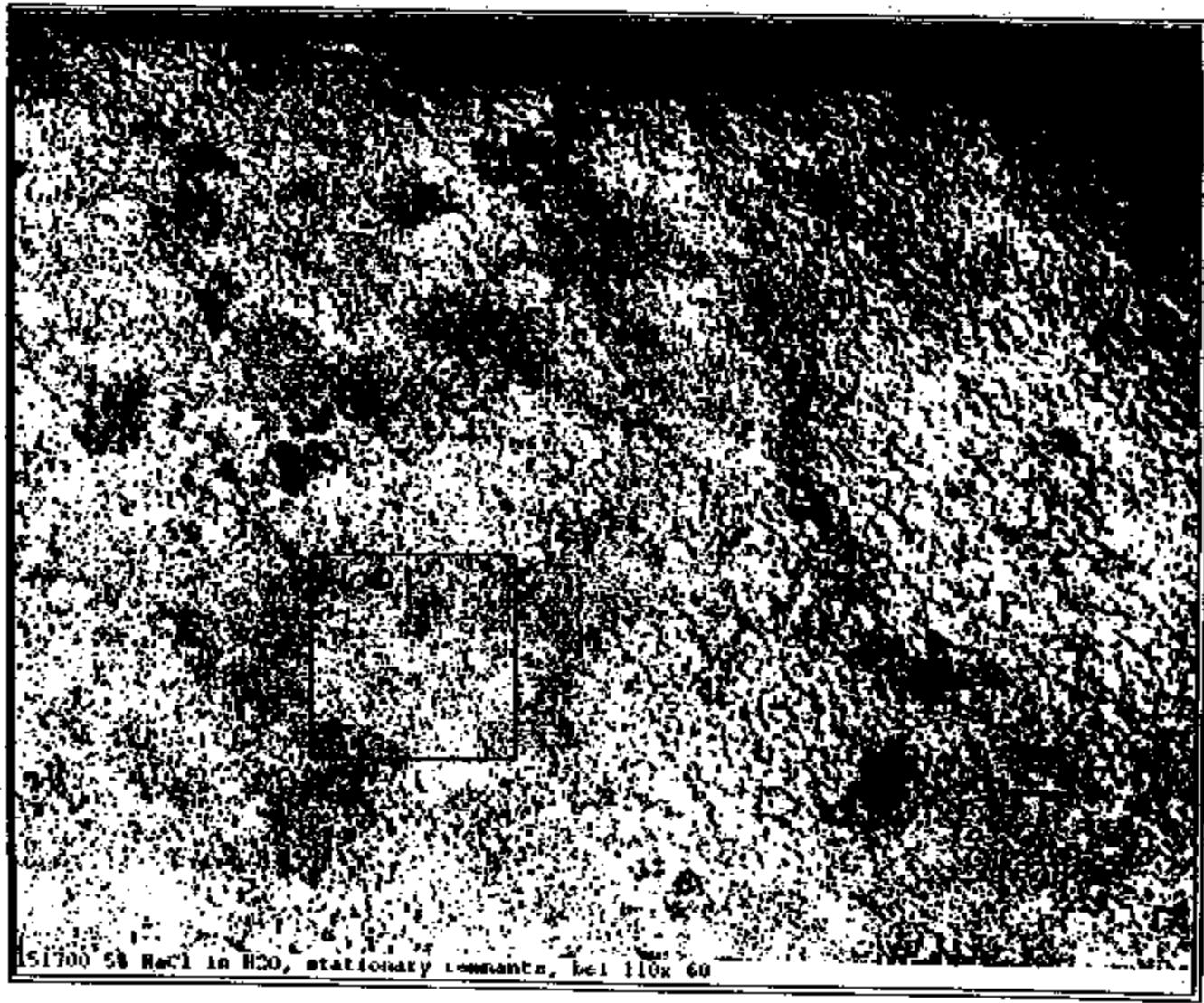


TI-NHTSA 012768

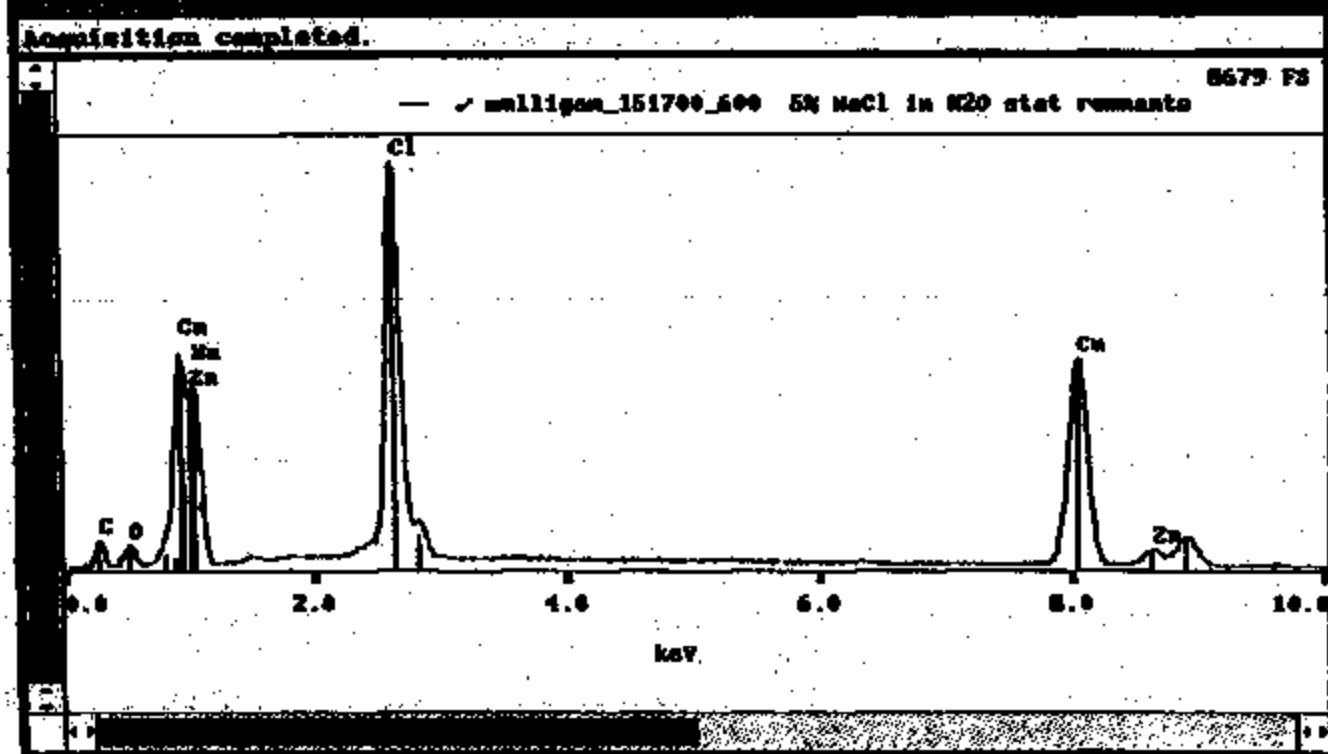


T-NHTSA 012769

TI-NHTSA 012770



151700 5% NaCl in H₂O, stationary remnants, bei 110x 60

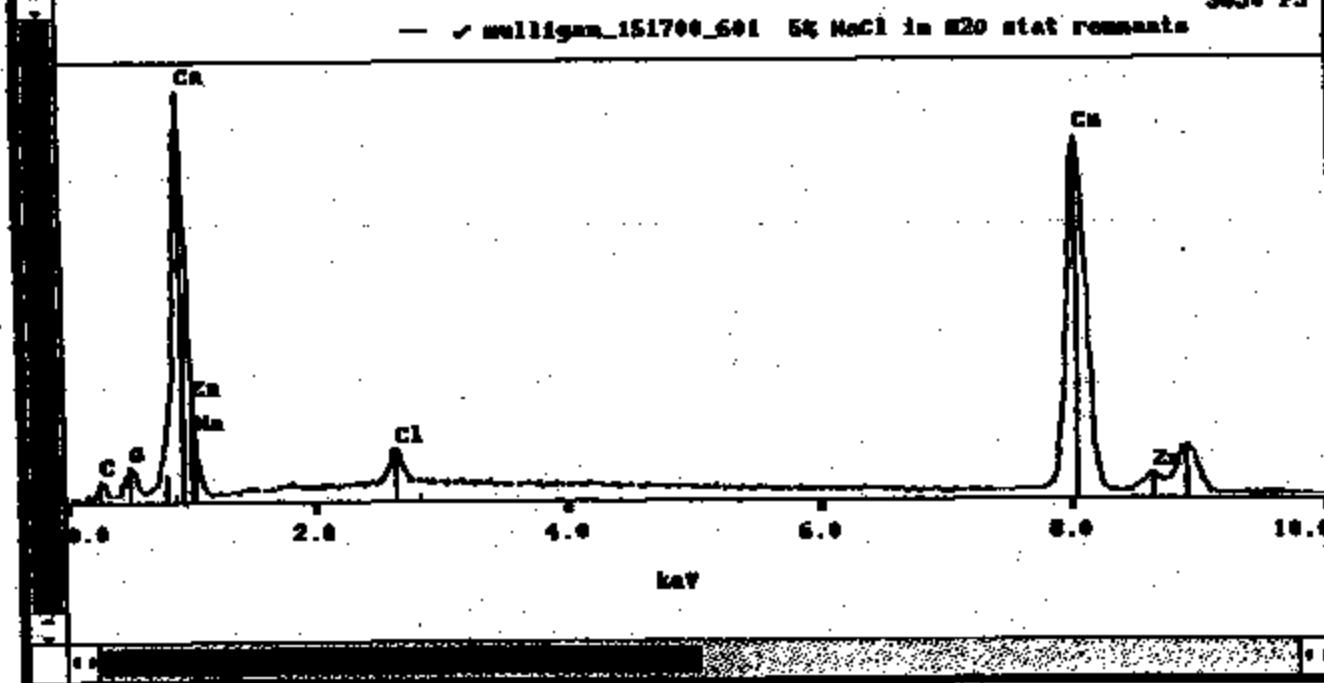


TI-NHMSA 012771

Acquisition completed.

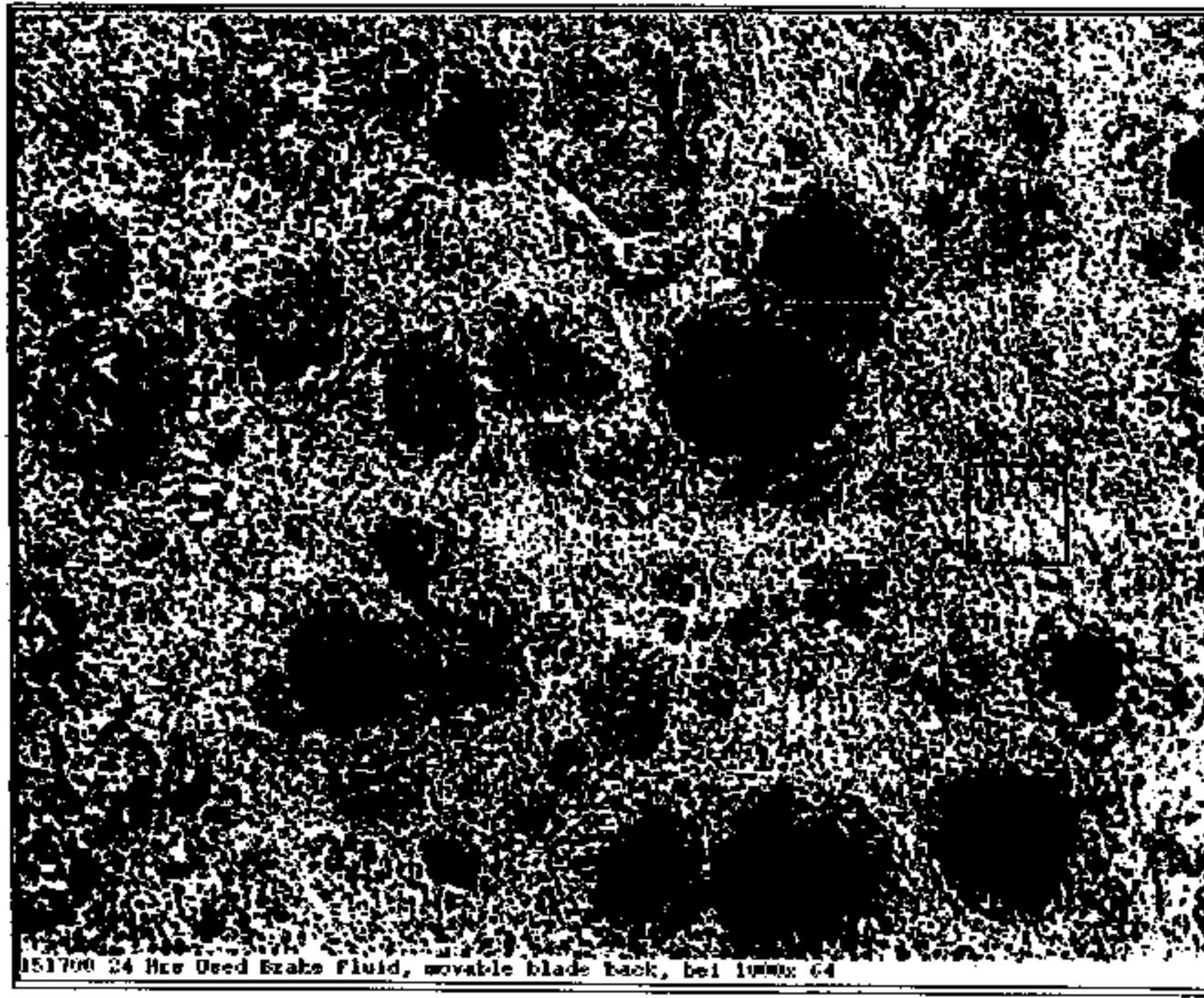
5838 ED

— > welligen_151700_601 5% NaCl in H2O stat remnants



TIKHITSA 012772

TI-NHTBA 012773

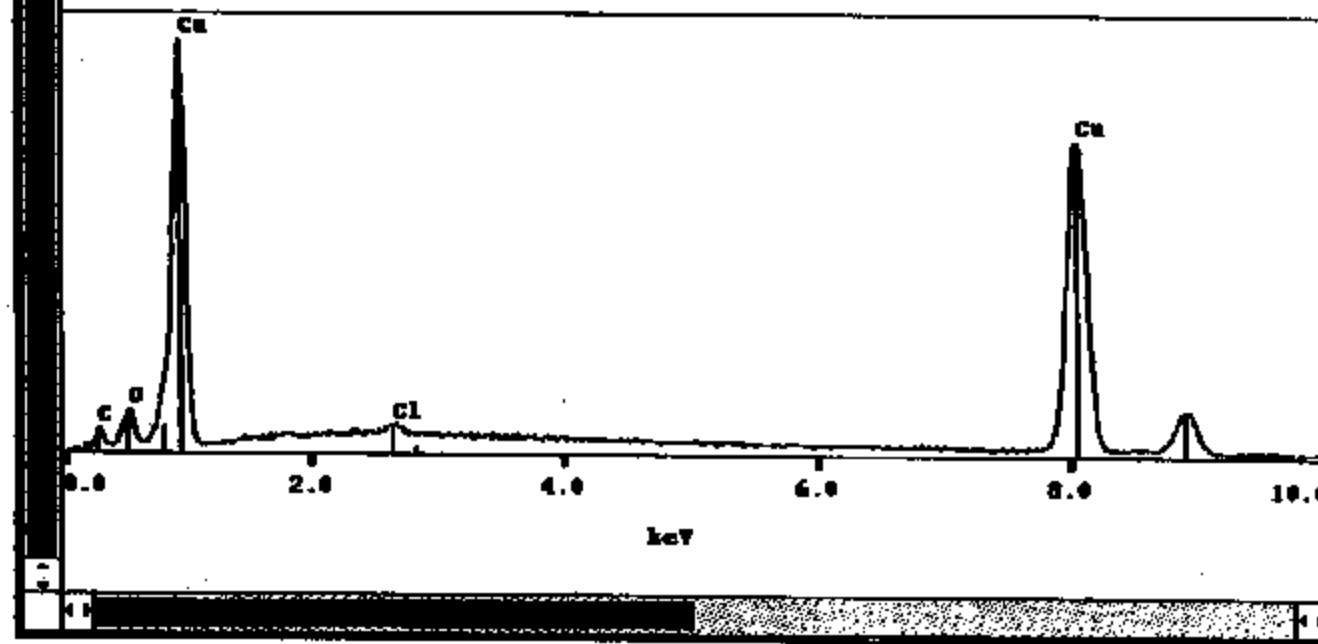


151700 24 Hrs Used Brake Fluid, movable blade back, bei 1988x 64

Acquisition completed.

5119 FS

✓ intelligem_151700_649 24N New EF nov. blade back

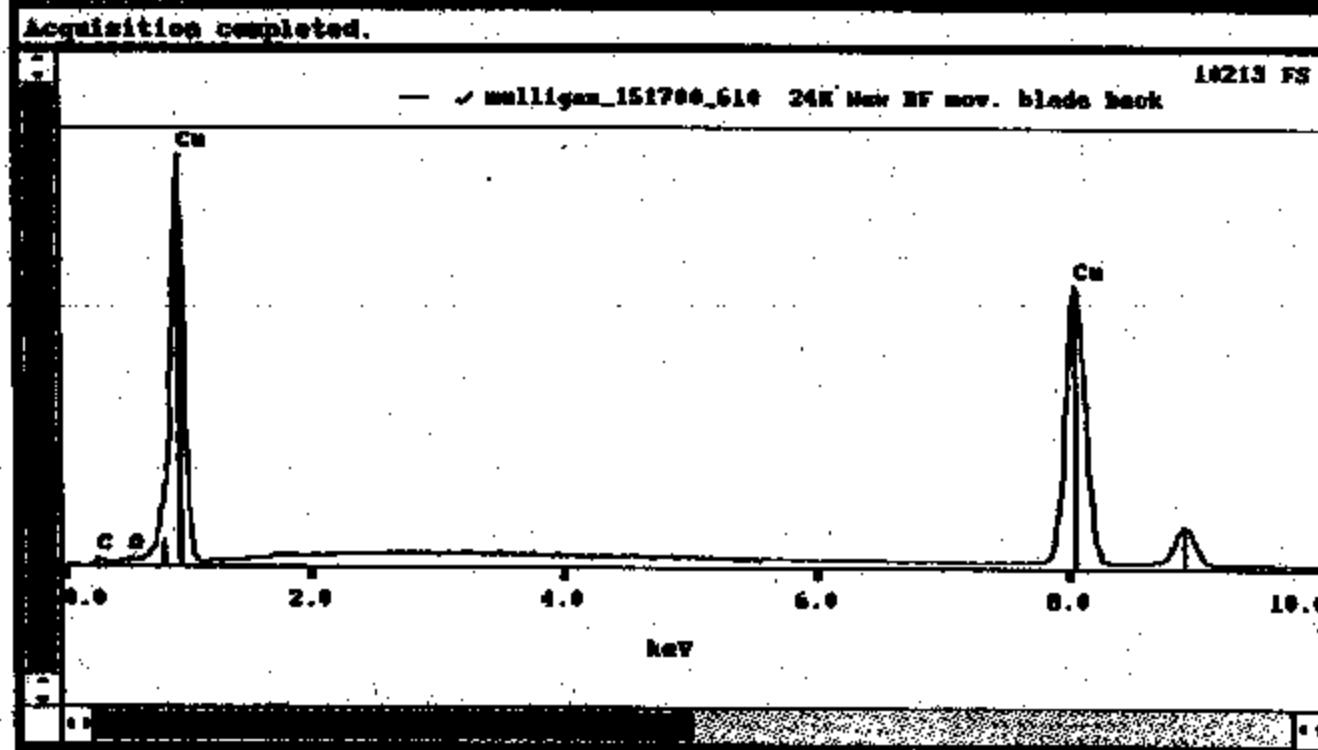


TR-NHTSA 012774

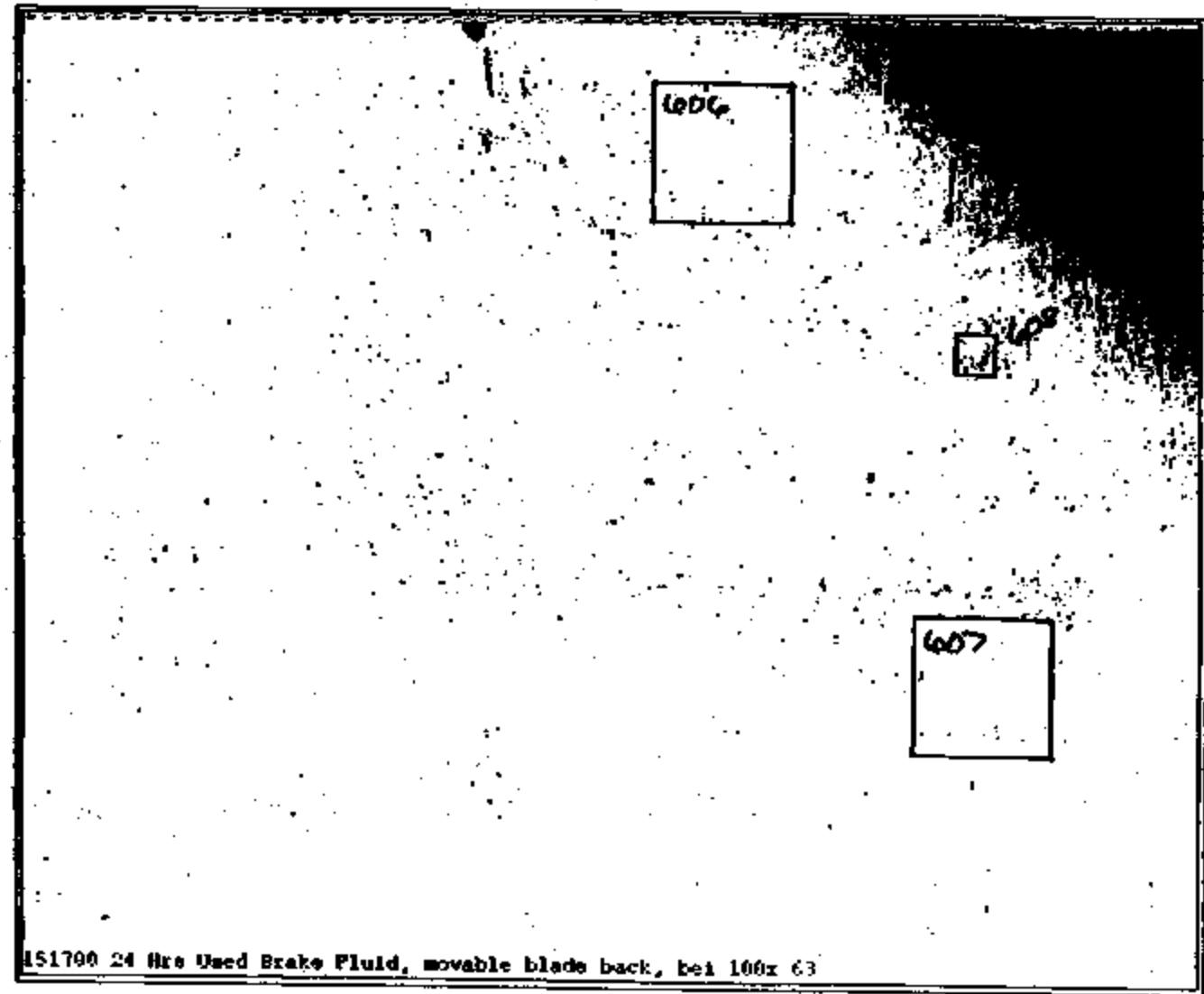
Acquisition completed.

10213 FS

— < nulligan_151700_614 24K New BF mov. blade back



TINHTSA 012775



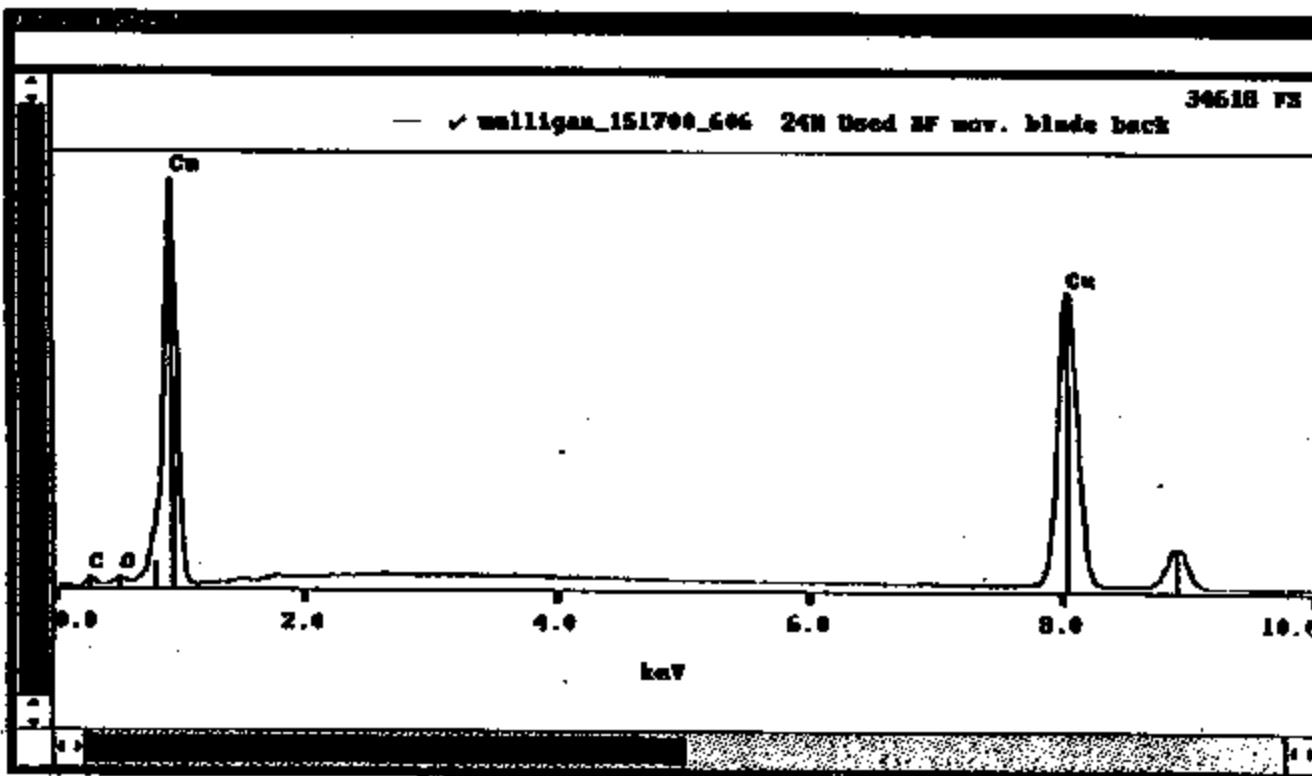
151790 24 Hrs Used Brake Fluid, movable blade back, bei 100x 63

T-4HTSA 012776



151300 24 Hrs Used Brake Fluid, movable blade back, sei 1000x 62

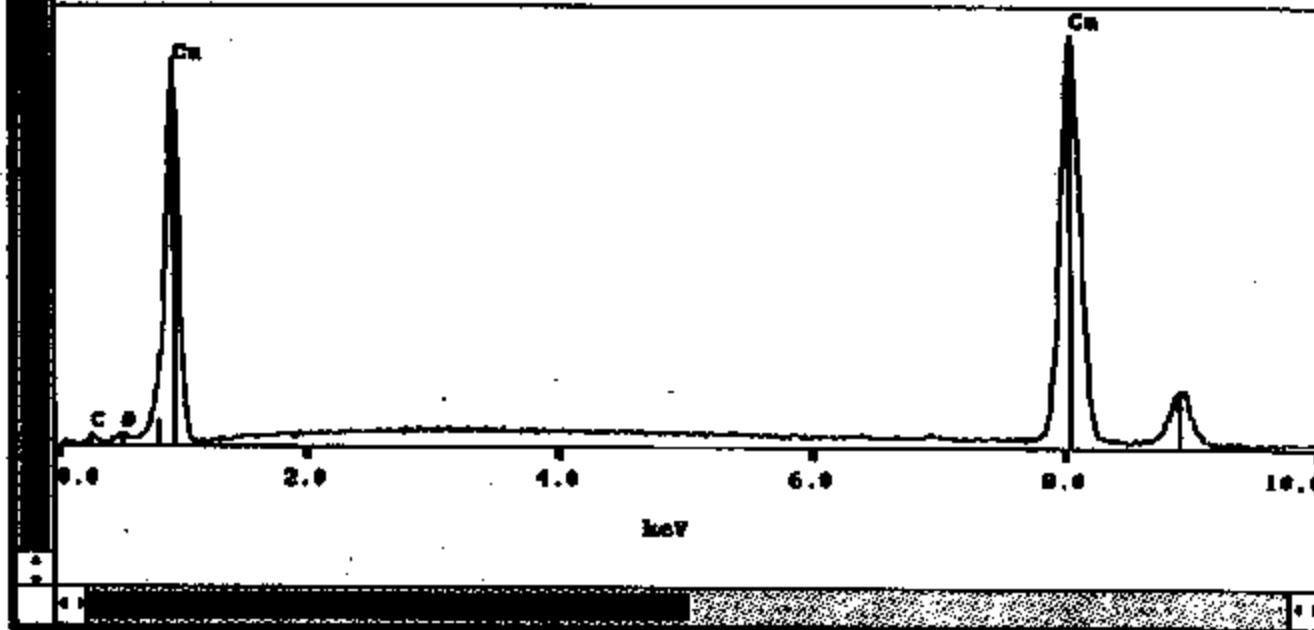
71-NHT&A 01277



TIANHTSA 012776

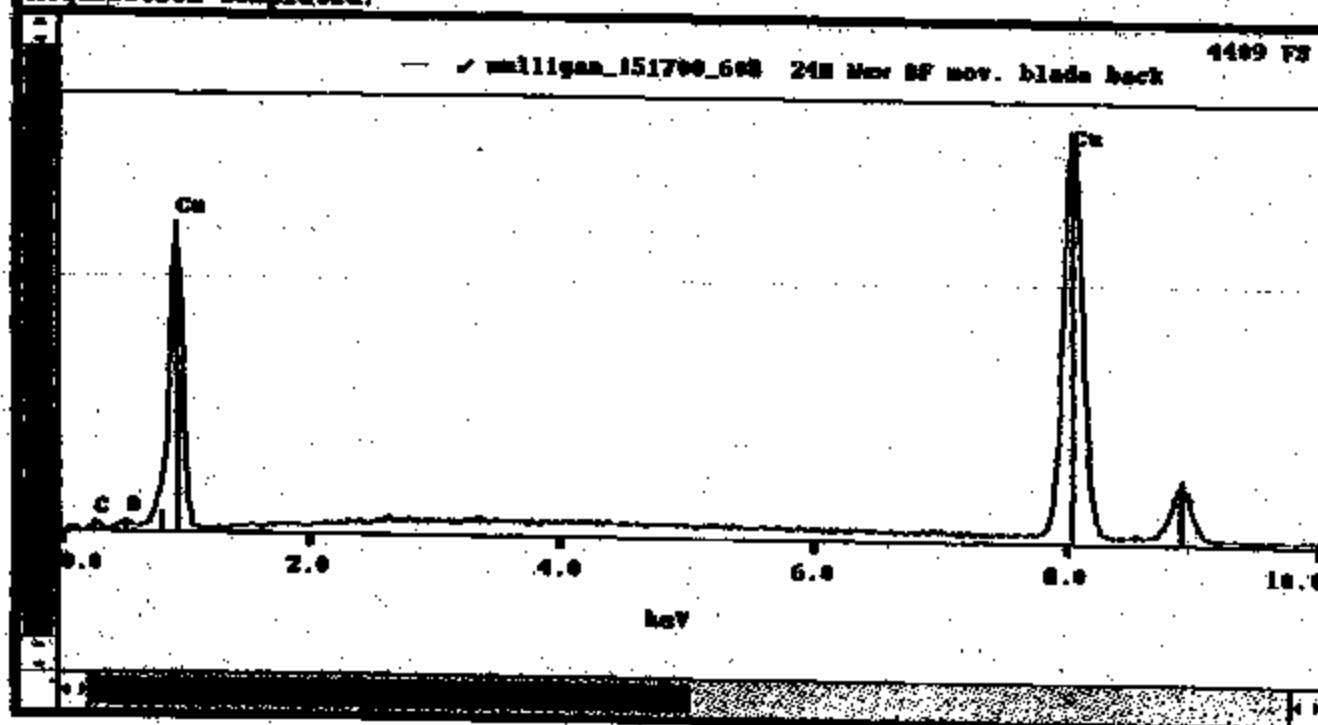
Acquisition completed.

— *walligam_151700_607* 24K Dead RF mov. blade back 5140 FS



TI-NHTSA 012778

Acquisition completed.



TI-NHTSA 012780

TO: SEAN MULLIGAN
RUSS BAUDIN

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

99-243: TEL 8' S 151700 6 142010: ??PS SEMULATION SAMPLES, ROUGH DRAFT
ONLY

OBJECTIVE:

Characterize the samples with regards to contamination, corrosion, and scaling.

SAMPLE EXPOSURE TO USED BRAKE FLUID FOR 24 HOURS:

CUP ANALYSIS: The chromate layer is missing in many areas; generally we find relatively uncorroded zinc metal underneath; these areas appear shiny under optical examination. In areas where the chromate isn't missing, we find that substantial amounts of copper have been deposited on top of the chromate surface. A zone showing both types of these areas is shown at various magnifications in Photos 61-64. Elemental distribution maps are also shown in Photos 60 and 69. They show the nodular nature of this copper deposit. This is also documented in Spectra 500-520.

Both the cup and the switch cavity had large amounts of blackish deposit on them. The deposits on the contact arm are being analyzed in the Chem Lab by FT/IR spectroscopy. The deposits on the cup were mainly removed by gentle washing in isopropyl alcohol. Before and after optical photos were taken to document the effect of cleaning. We can't analyze grossly oily samples in the SEM since that would contaminate the equipment.

The data was collected under the guidelines of TSL-8-71, Rev A which can be accessed at <http://www-pcd.mt.ti.com/tsl/>. SEM-EDAX (Scanning Electron Microscope with Energy Dispersive Analysis of X-rays) analysis was used in the above described analysis. The data will be sent through the internal mail.

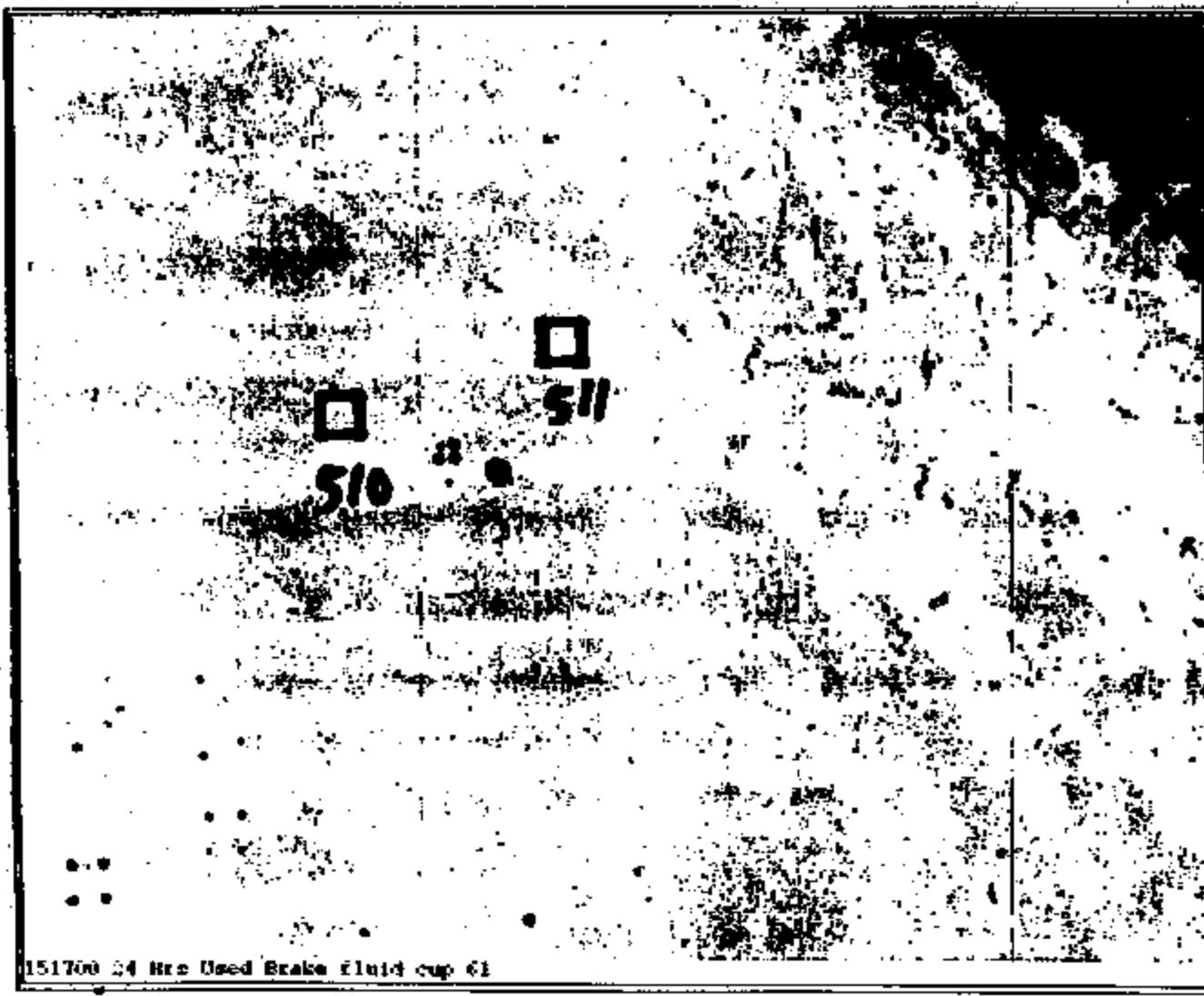
AL HOPKINS

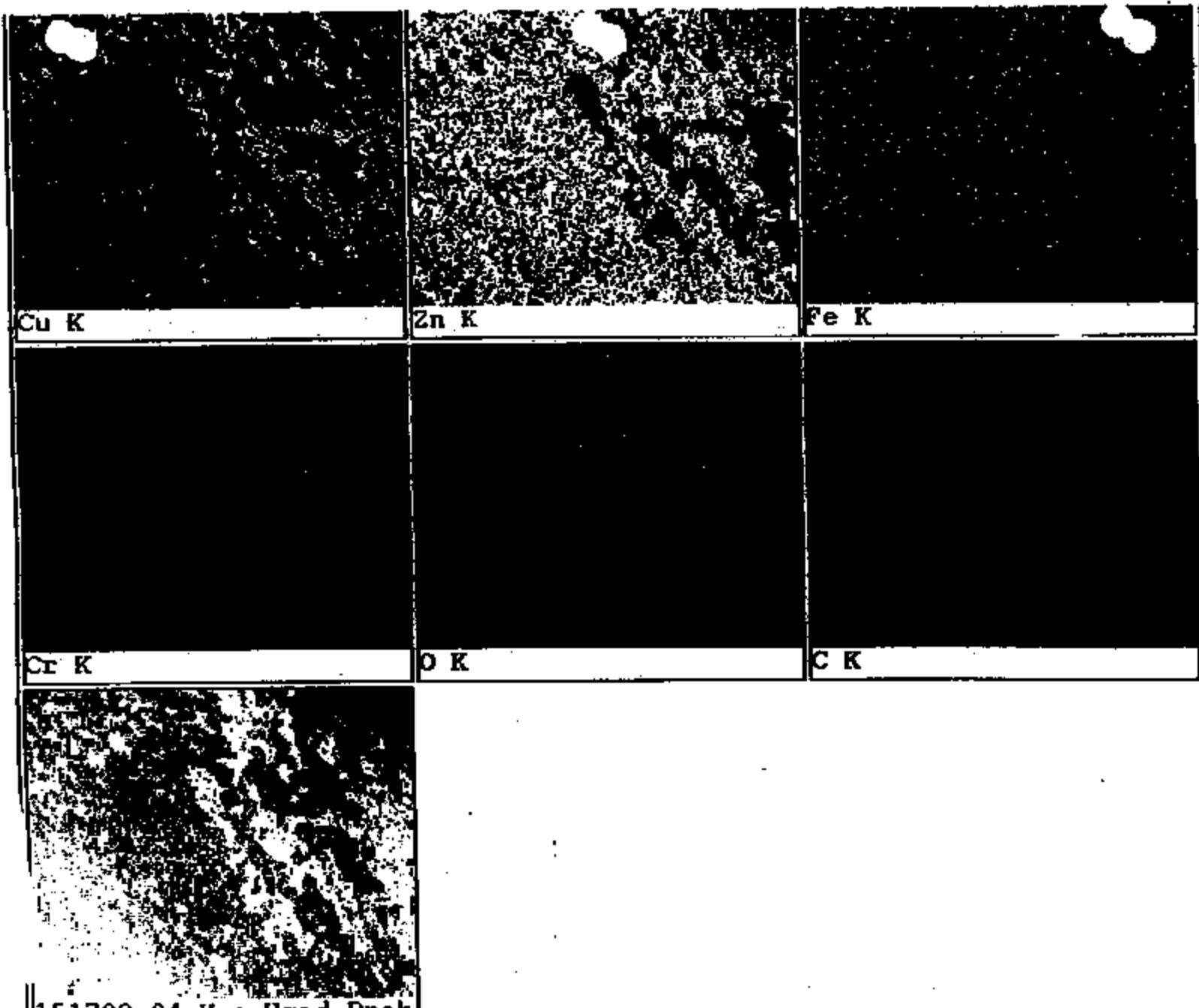
MEG ID: AHOP

PHONE: 508/236-3040

TINHTSA 012781

TI-NHTSA 012782

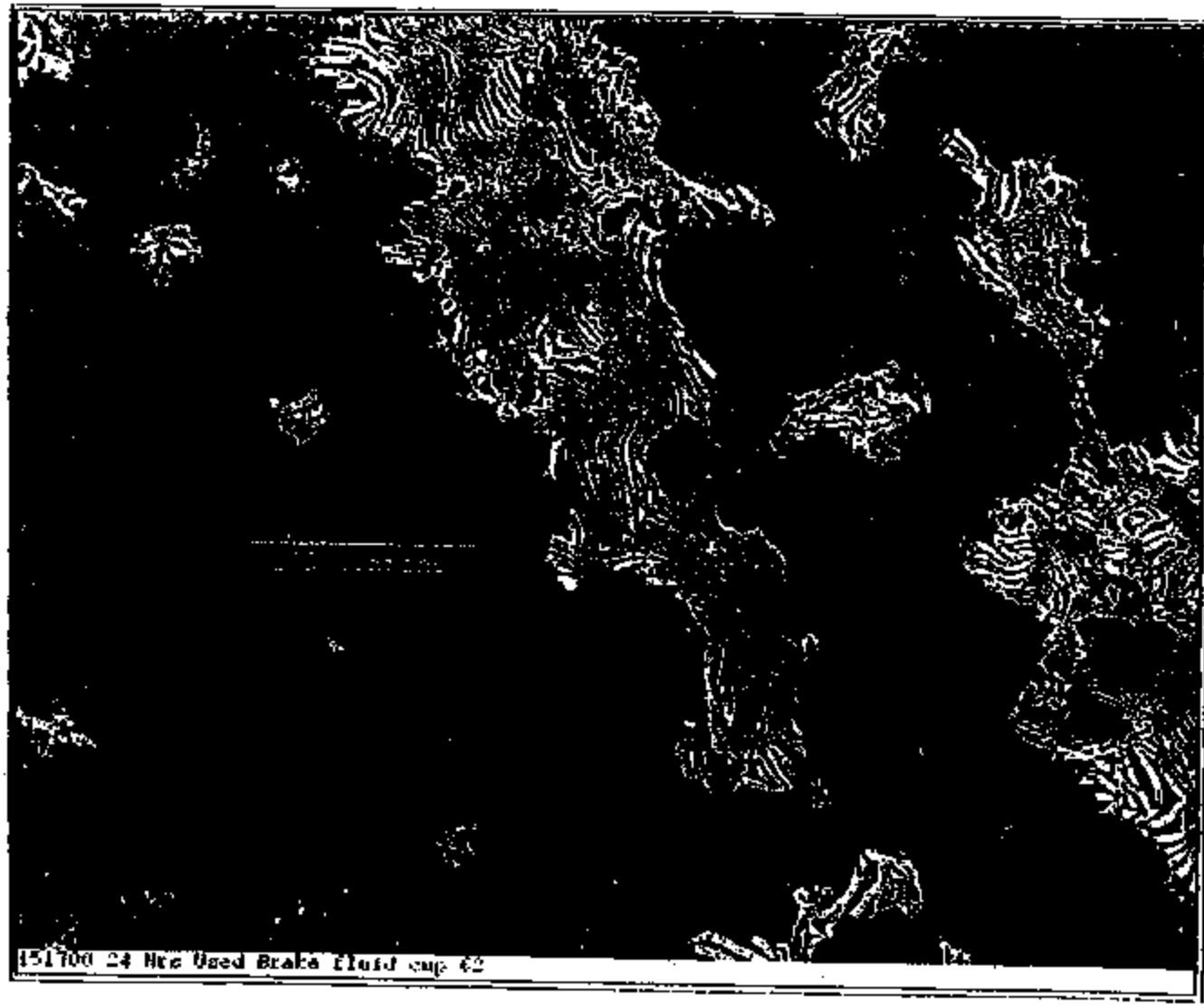




TL-NHTSA 012783

151700 24 Hrs Need Print

NHTSA 012784



II-NHTSA 012785

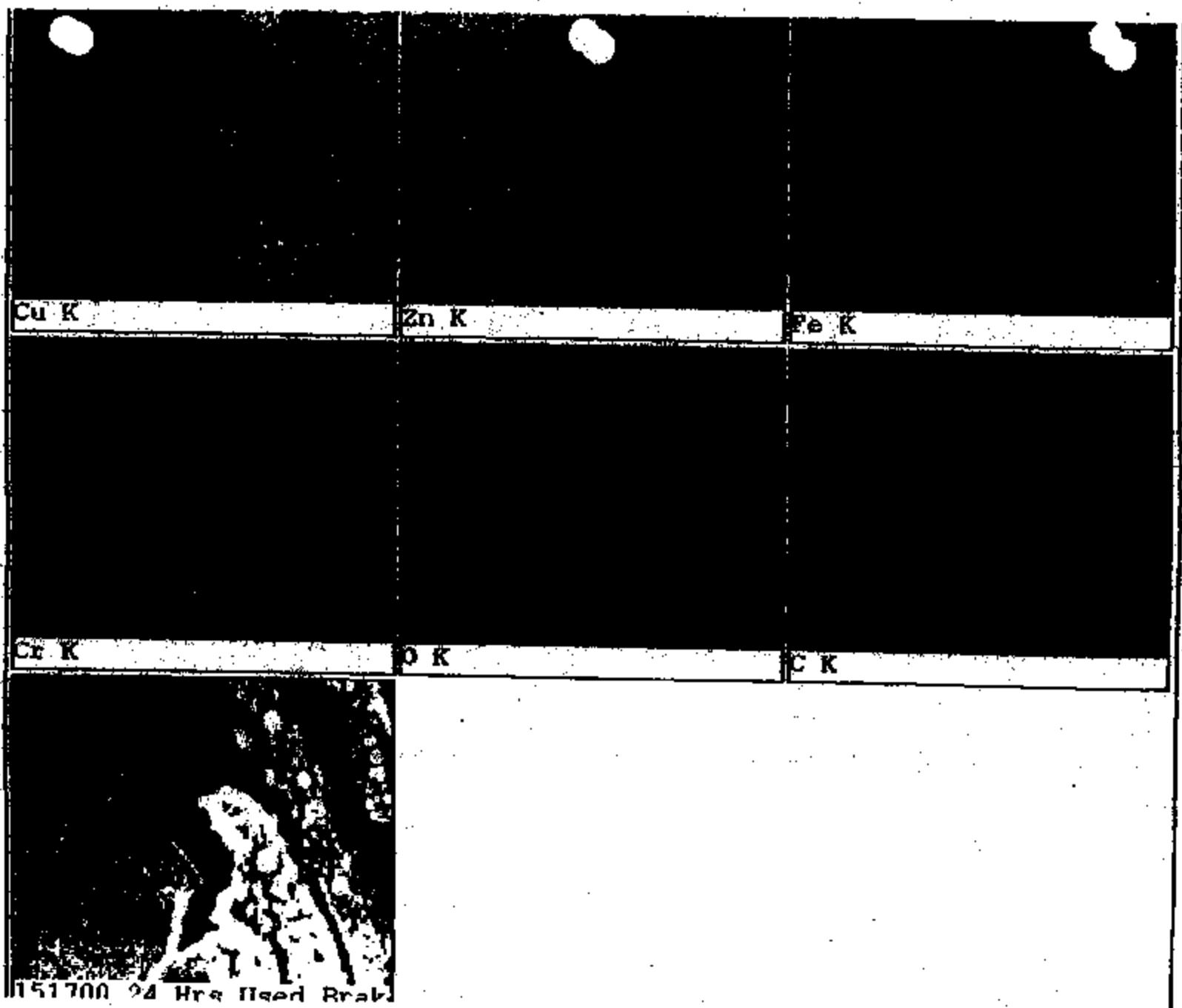


515-517 @ 15 KEV

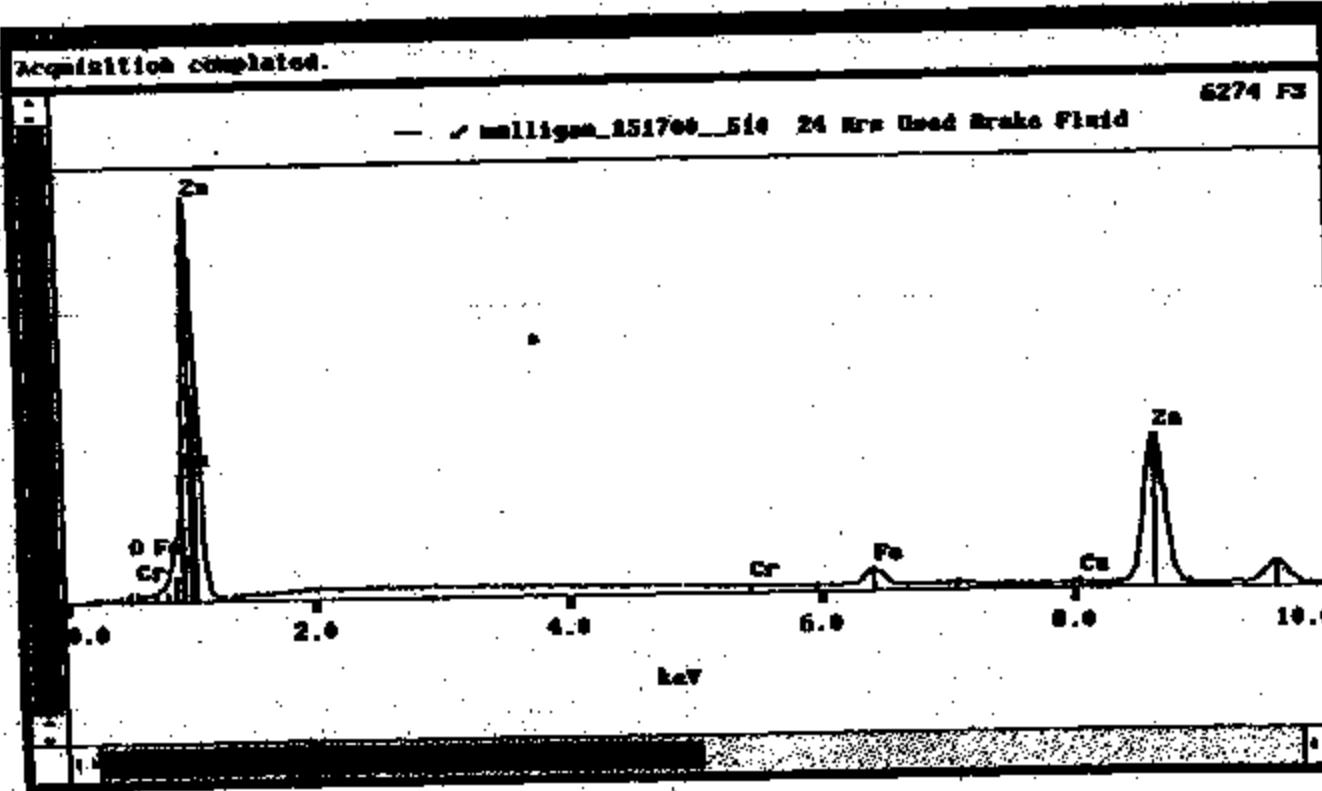
518,
519
520
@
520



15 HEV



TMHTSA 012787

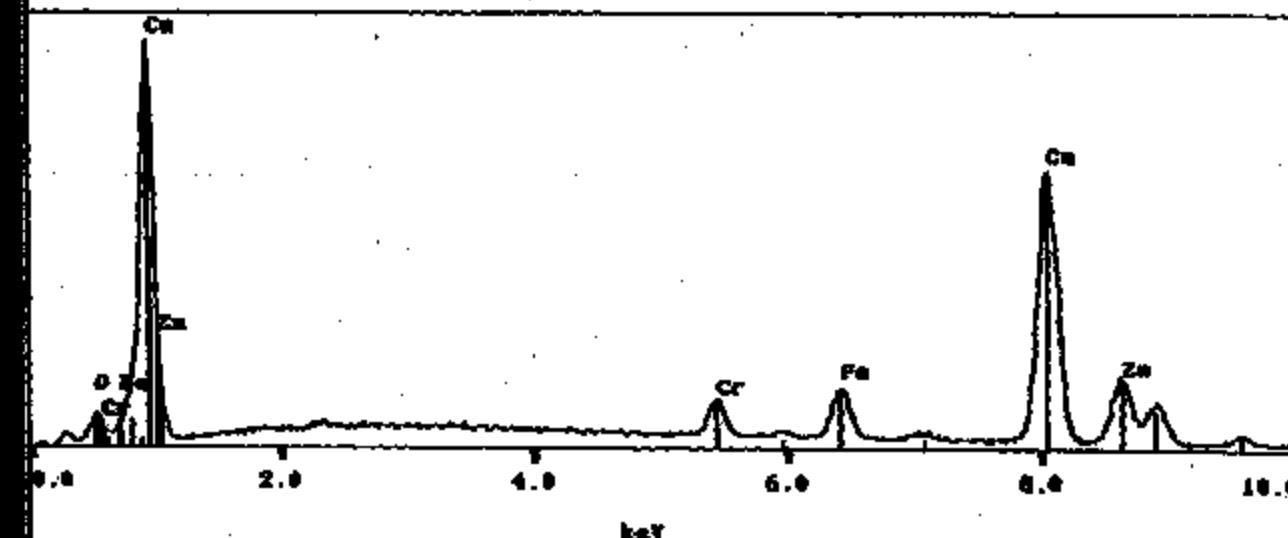


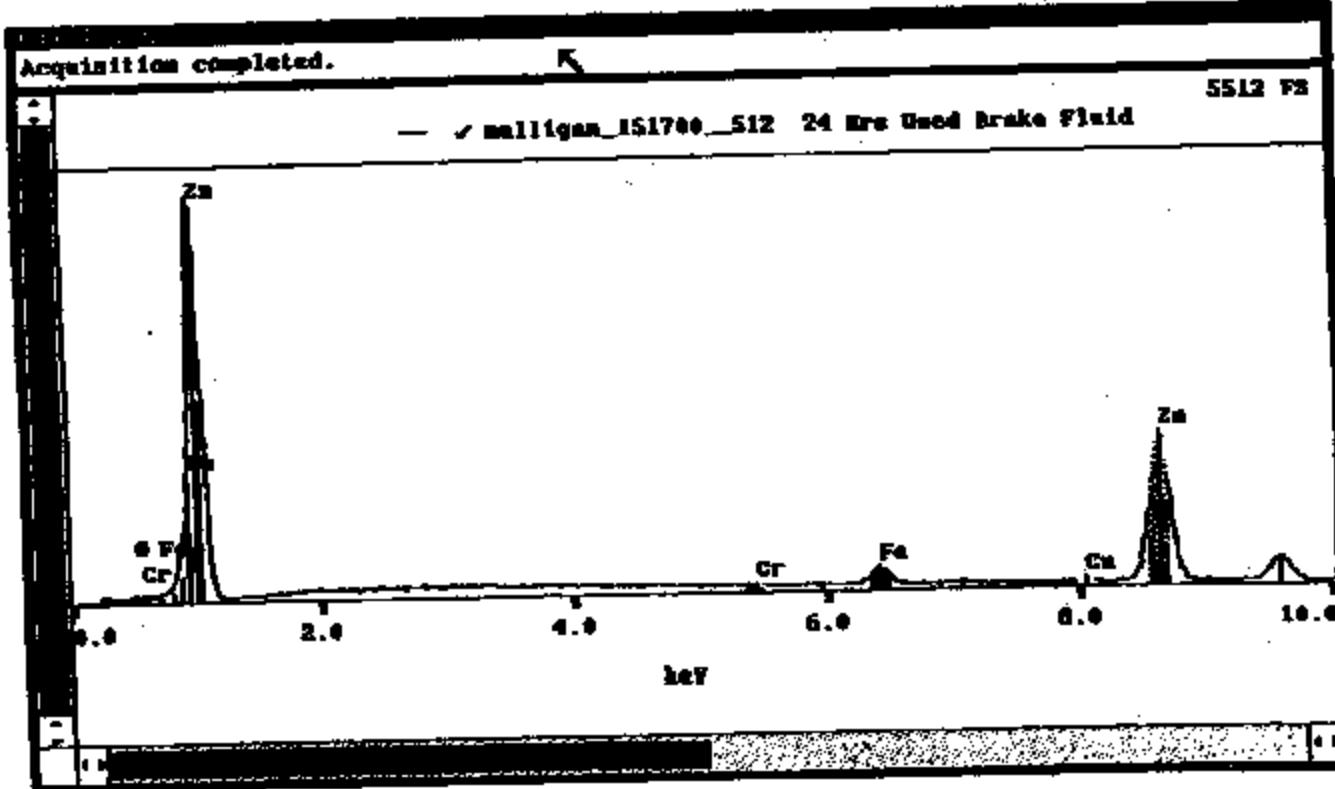
TI-NHTSA.012768

Acquisition completed.

— > mulligan_151700..511 24 hrs Used Brake Fluid

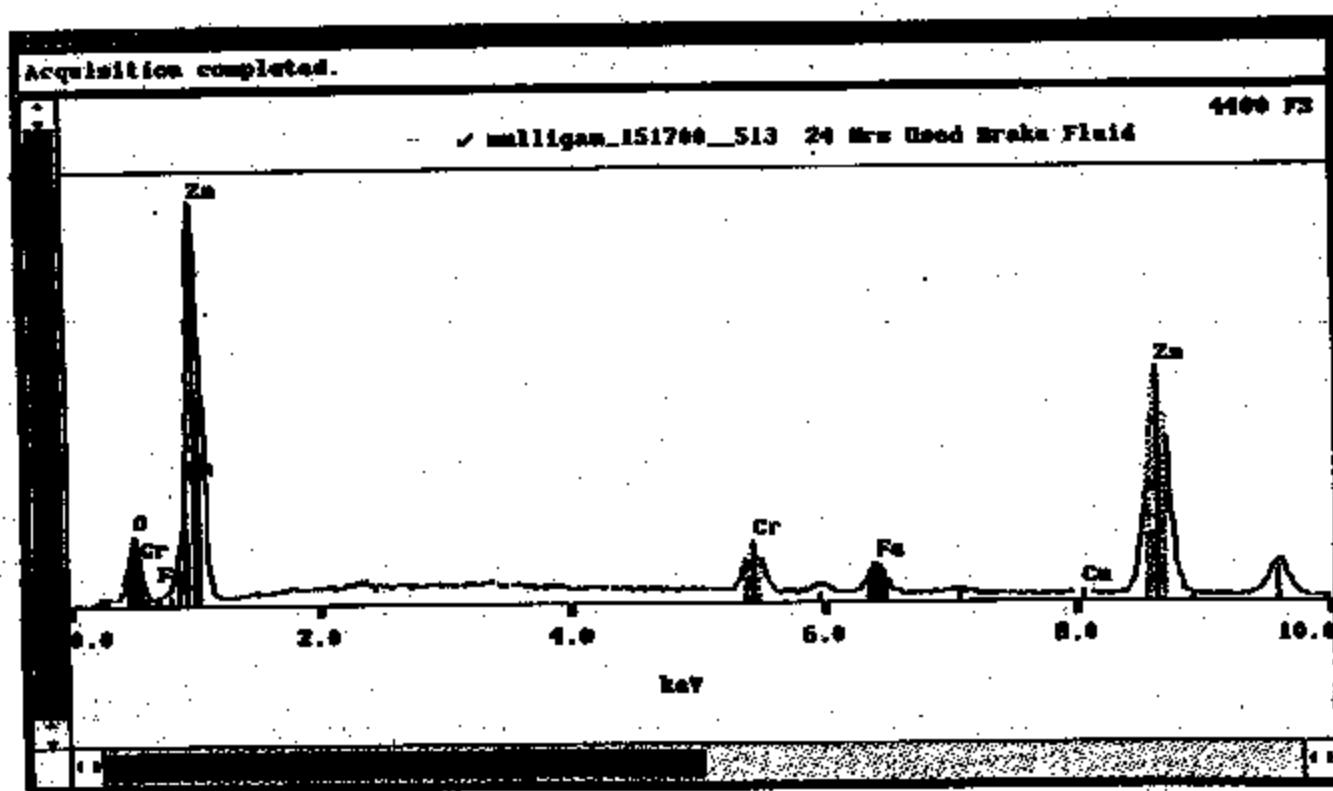
4291 FS





TI-NHTSA 012780

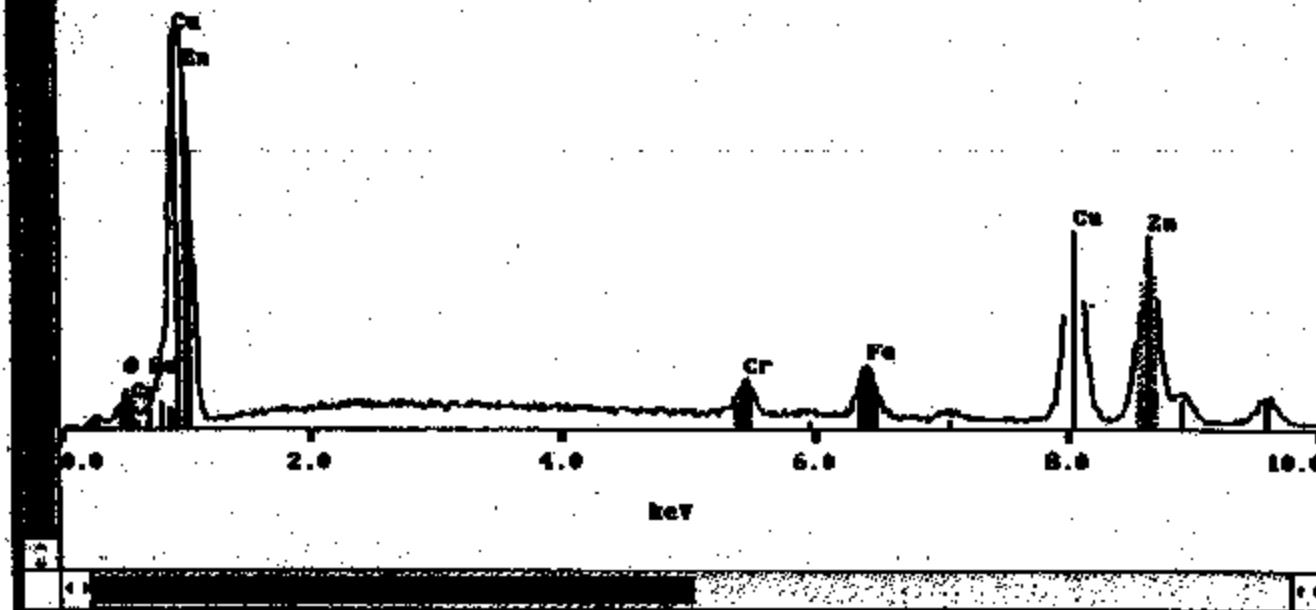
T1-NHTSA 012701



Recognition completed.

✓ welligen_151700_514 24 hrs Used Brake Fluid

2796 F3

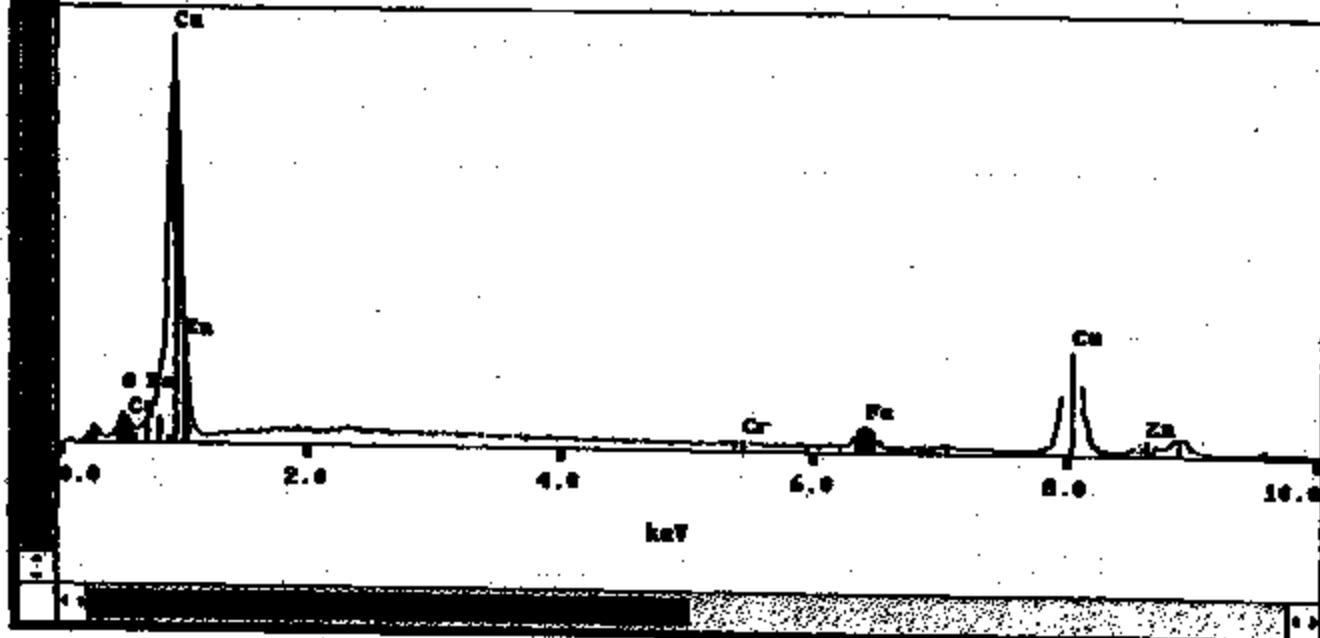


TI-NHTSA 012782

Acquisition completed.

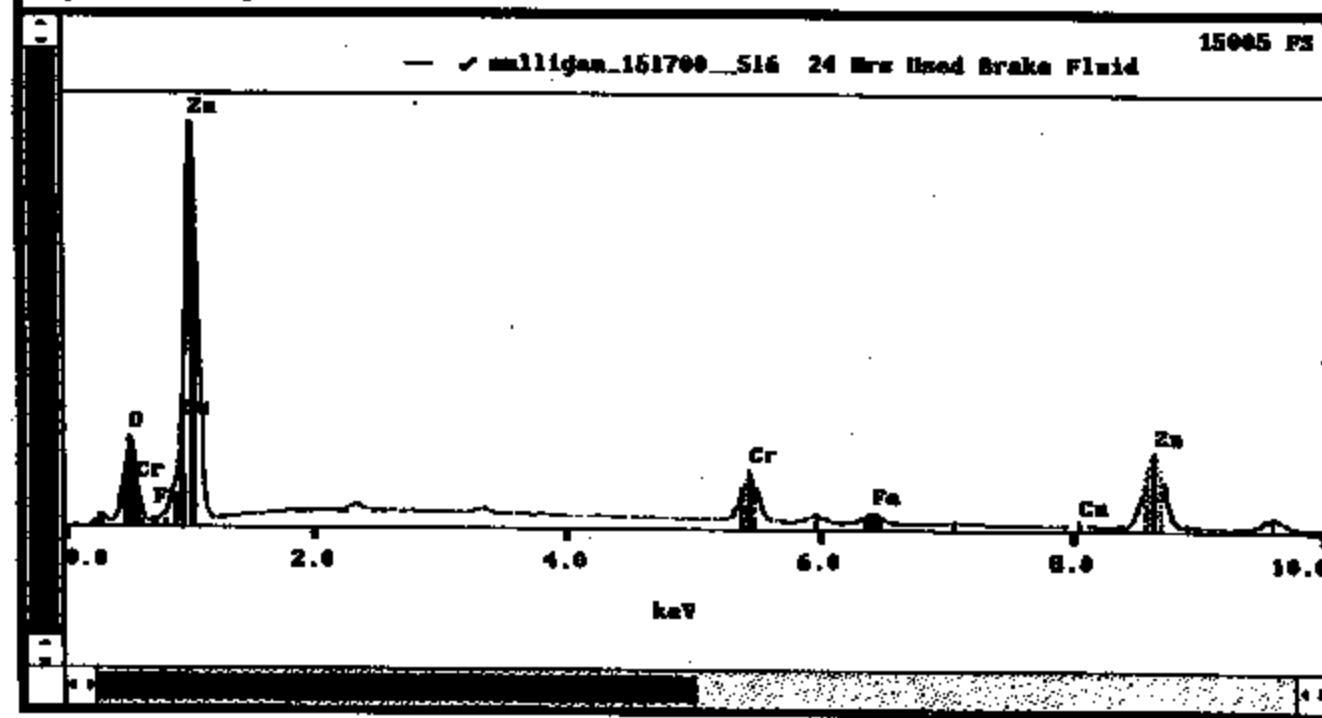
✓ mulligan_151700_515 24 hrs Used Brake Fluid

5620 PS



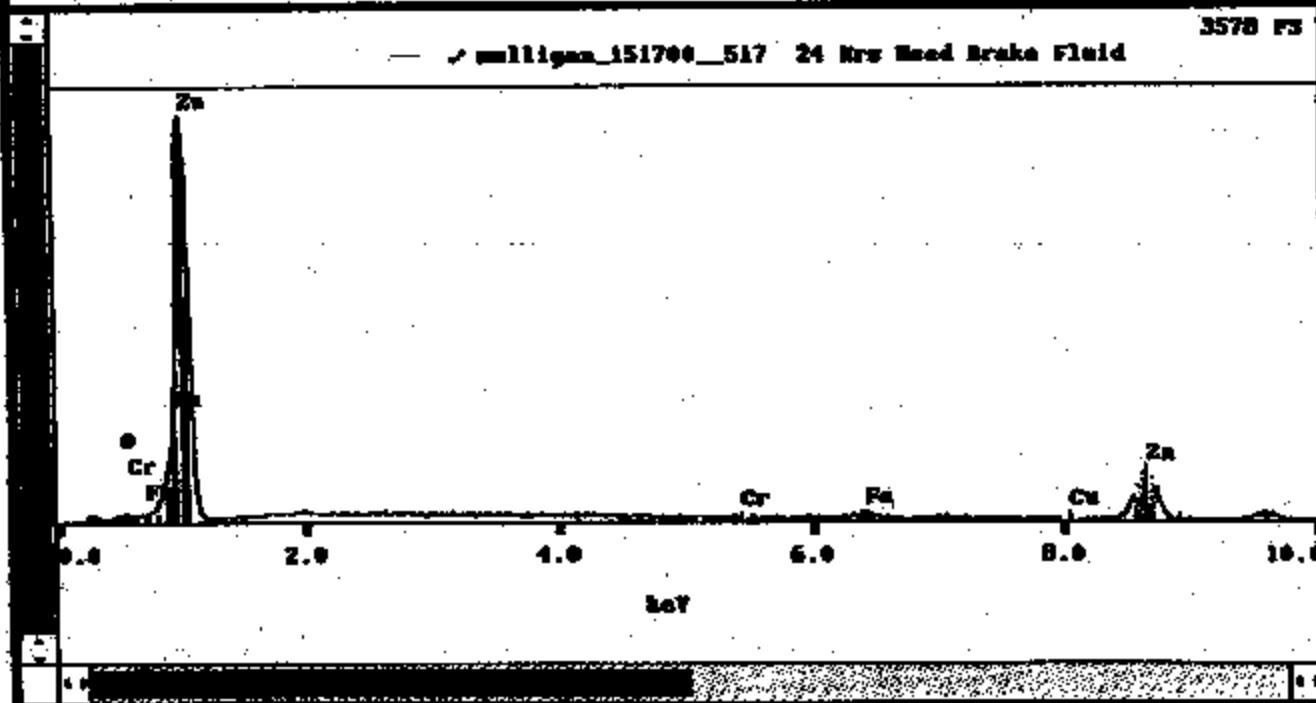
TI-NHTSA 012703

Acquisition completed.



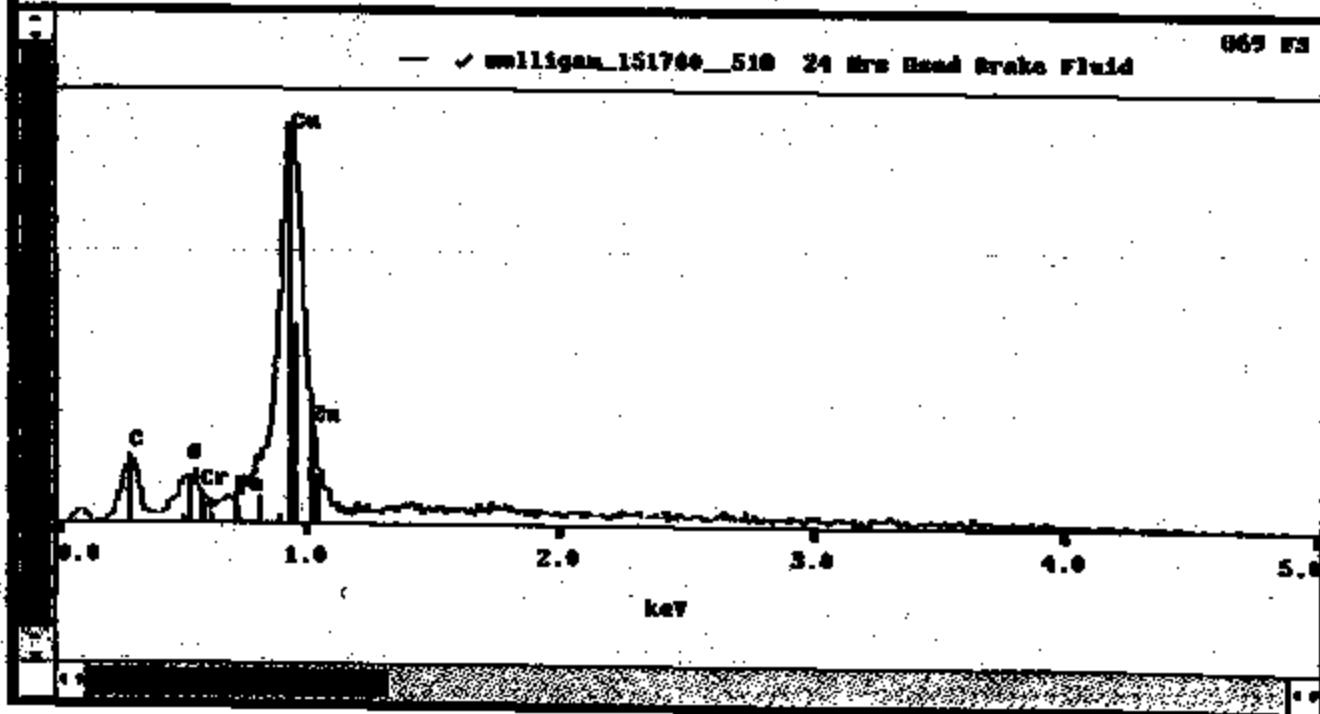
TI-NHTSA 012784

Acquisition completed.

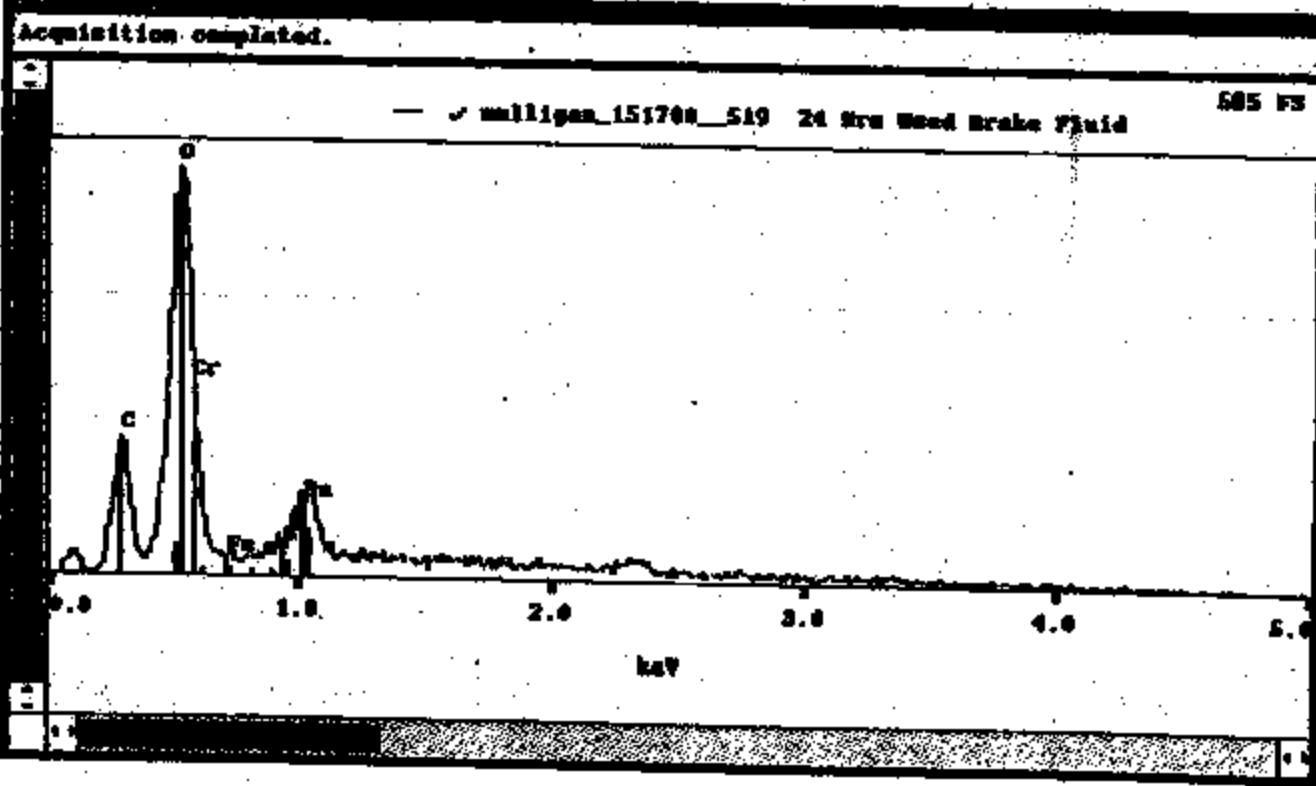


TI-NHTSA 012795

Acquisition completed.



TIAHHTSA 012796

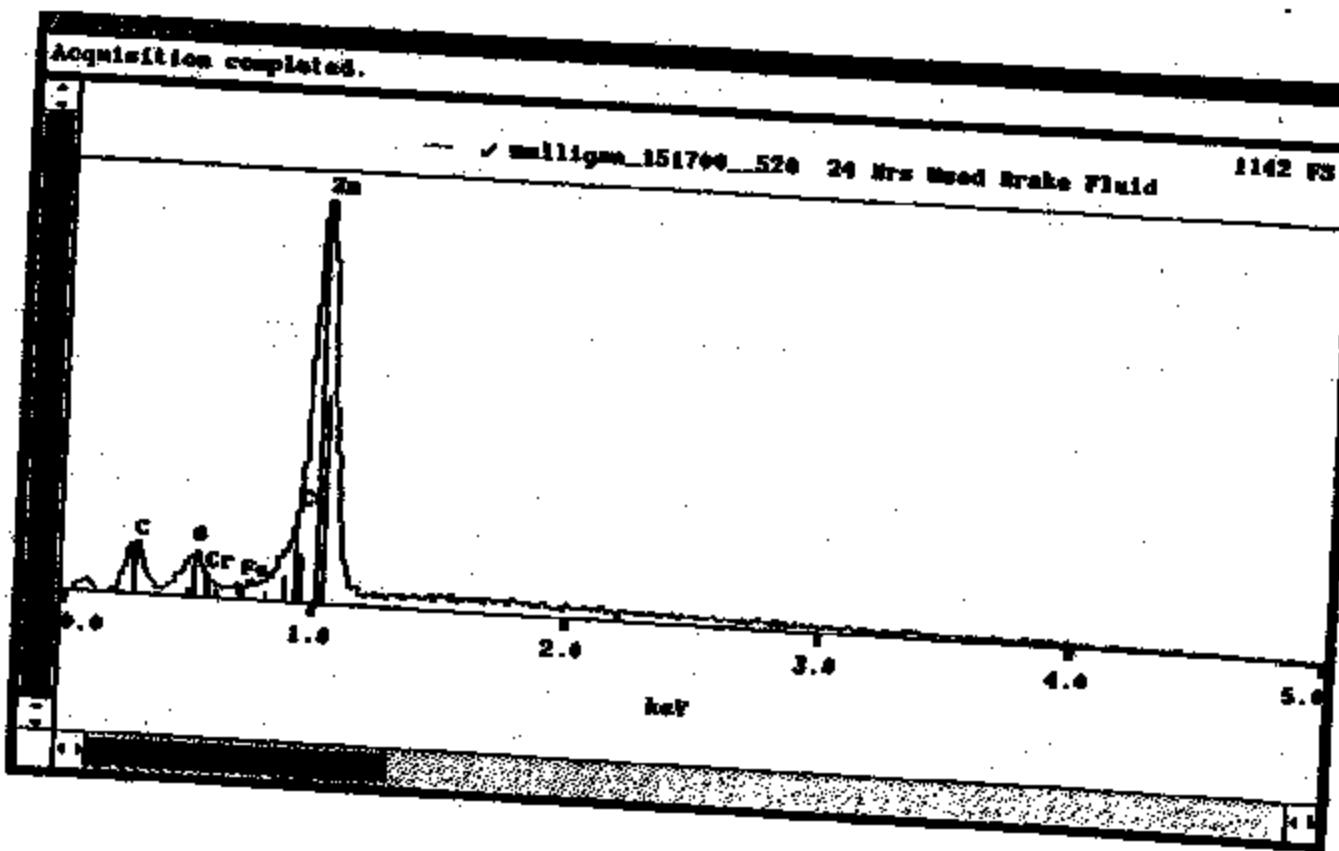


TI-NHTBA 012707

Acquisition completed.

✓ milligan_151740_520 24 hrs Used Brake Fluid

1142 PS





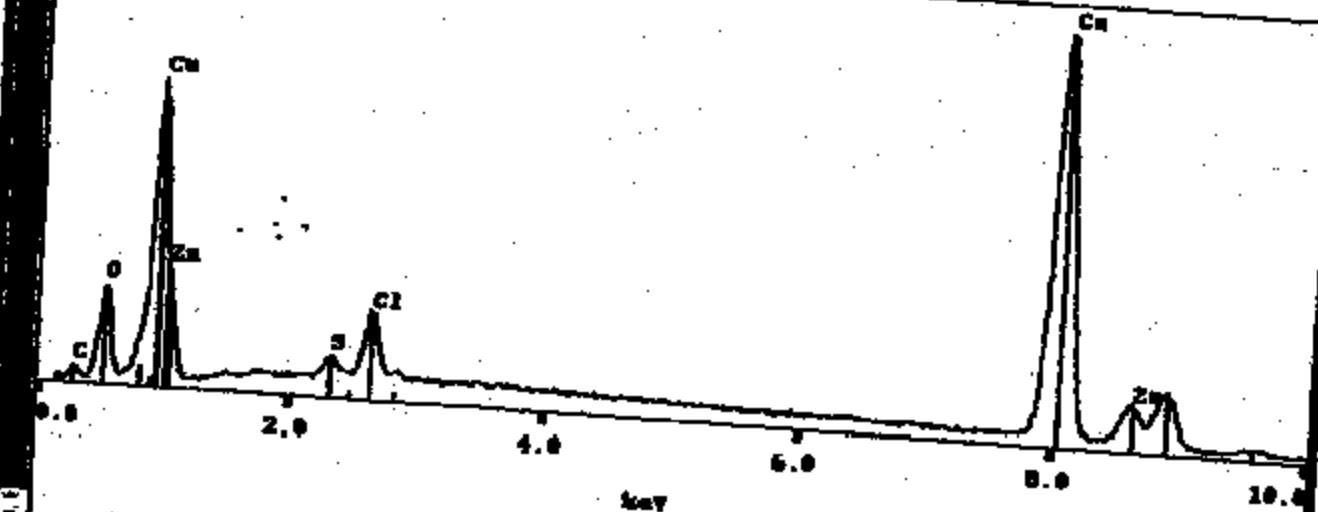
151700 77 SEL2-1, 54 salt water burn, bae 70x 01

TI-NHHTSA 012788

Acquisition completed.

multilite_151700_001 77PSL2-1 corrosion IR

5334 PS

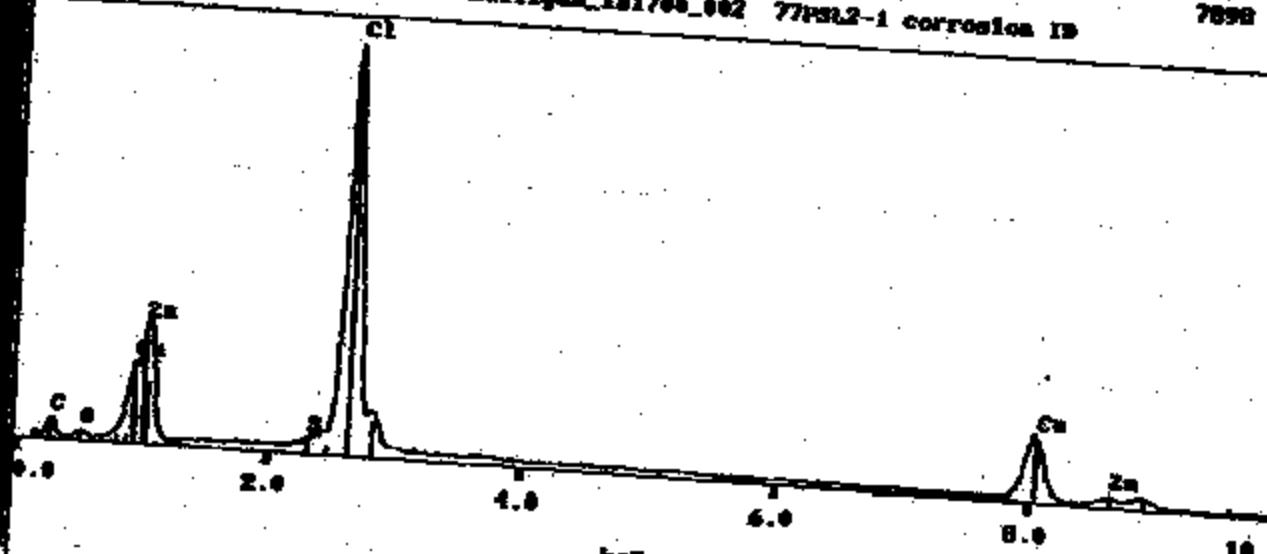


Acquisition completed.

✓ nulligan_151788_002 77PSL2-1 corrosion 1B

7899 PS

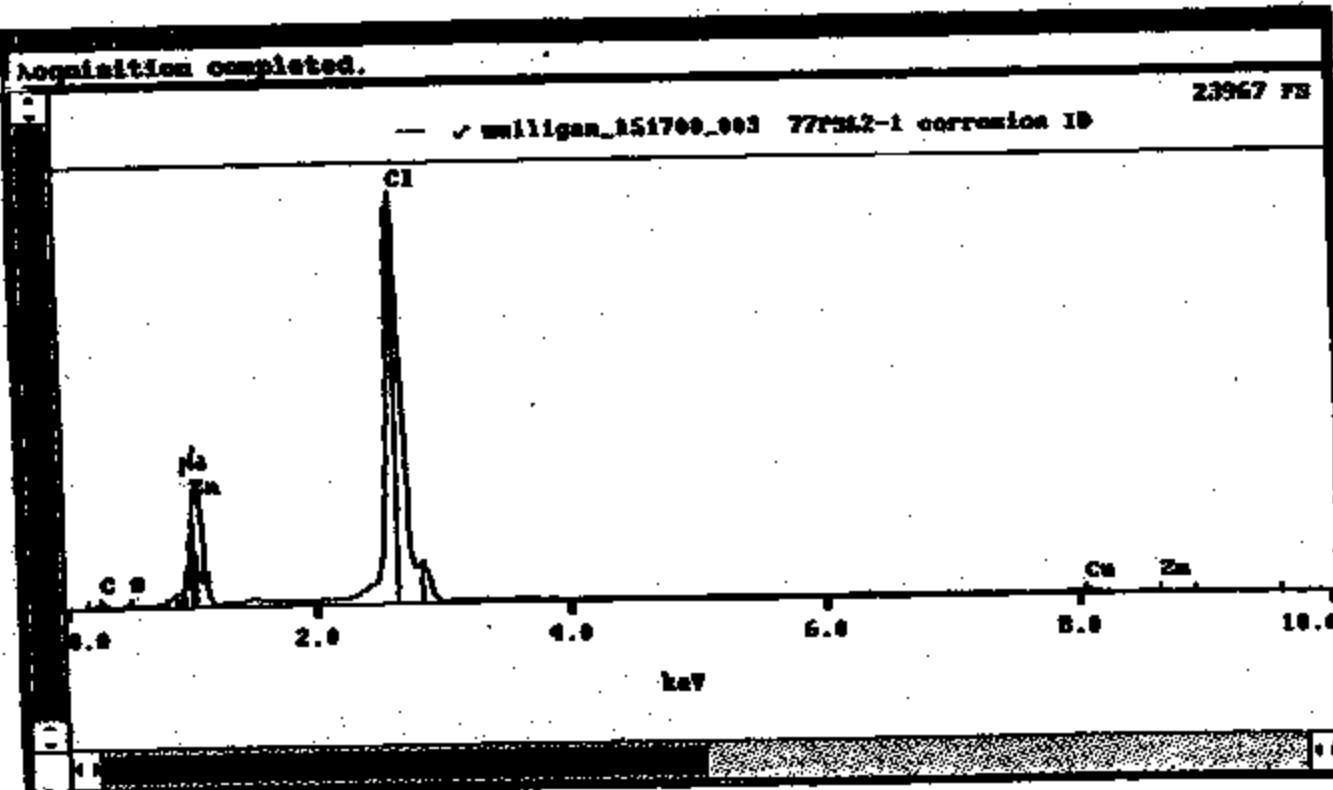
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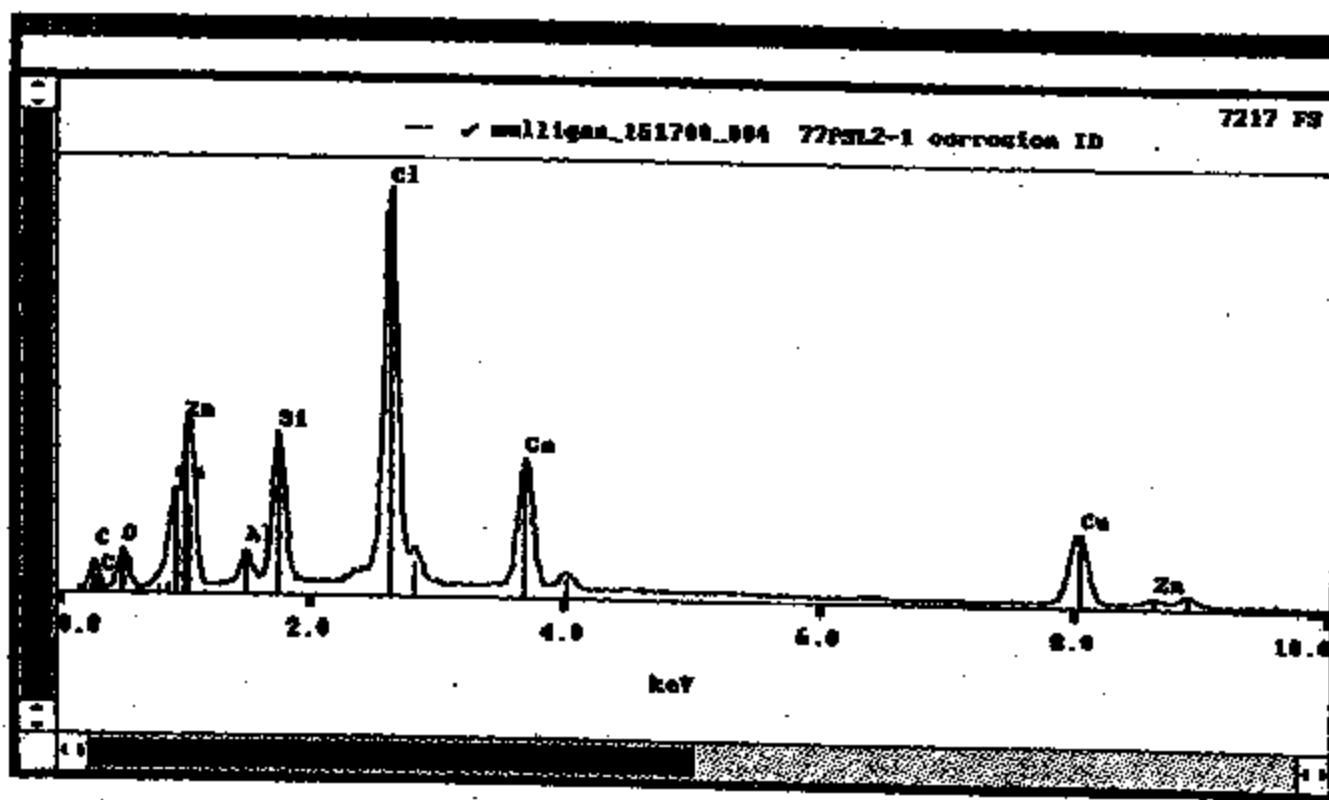
Acquisition completed.

23967 PS

✓ milligan_151700_003 77PM2-1 corrosion ID

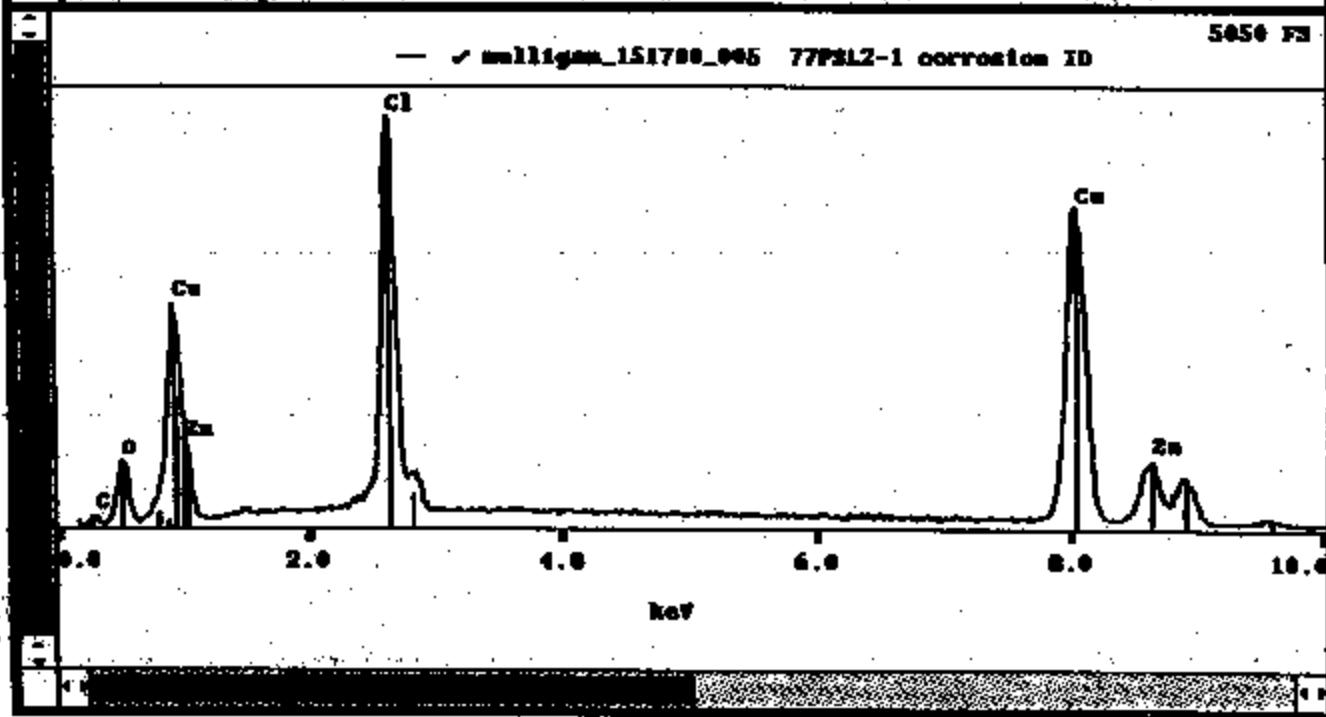


TI-NHTSA 012802

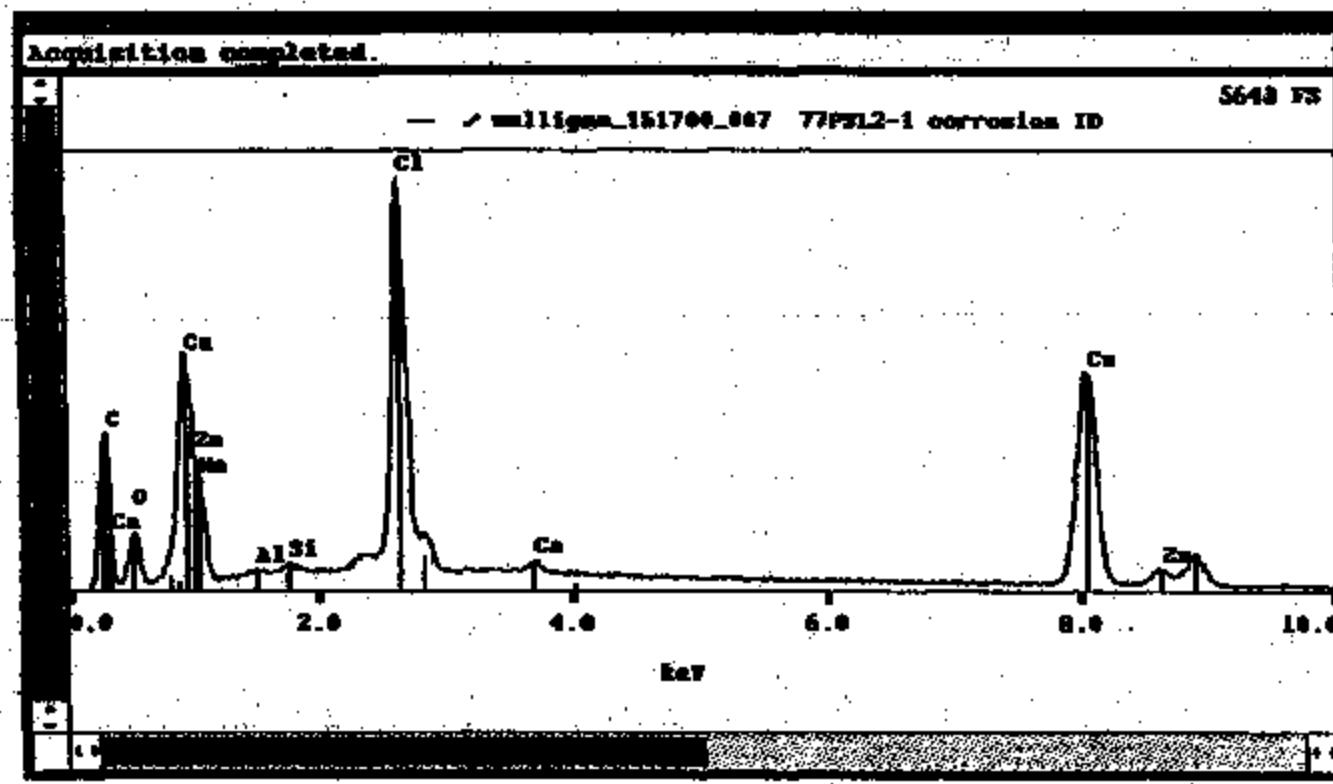


TH-NHTSA 012603

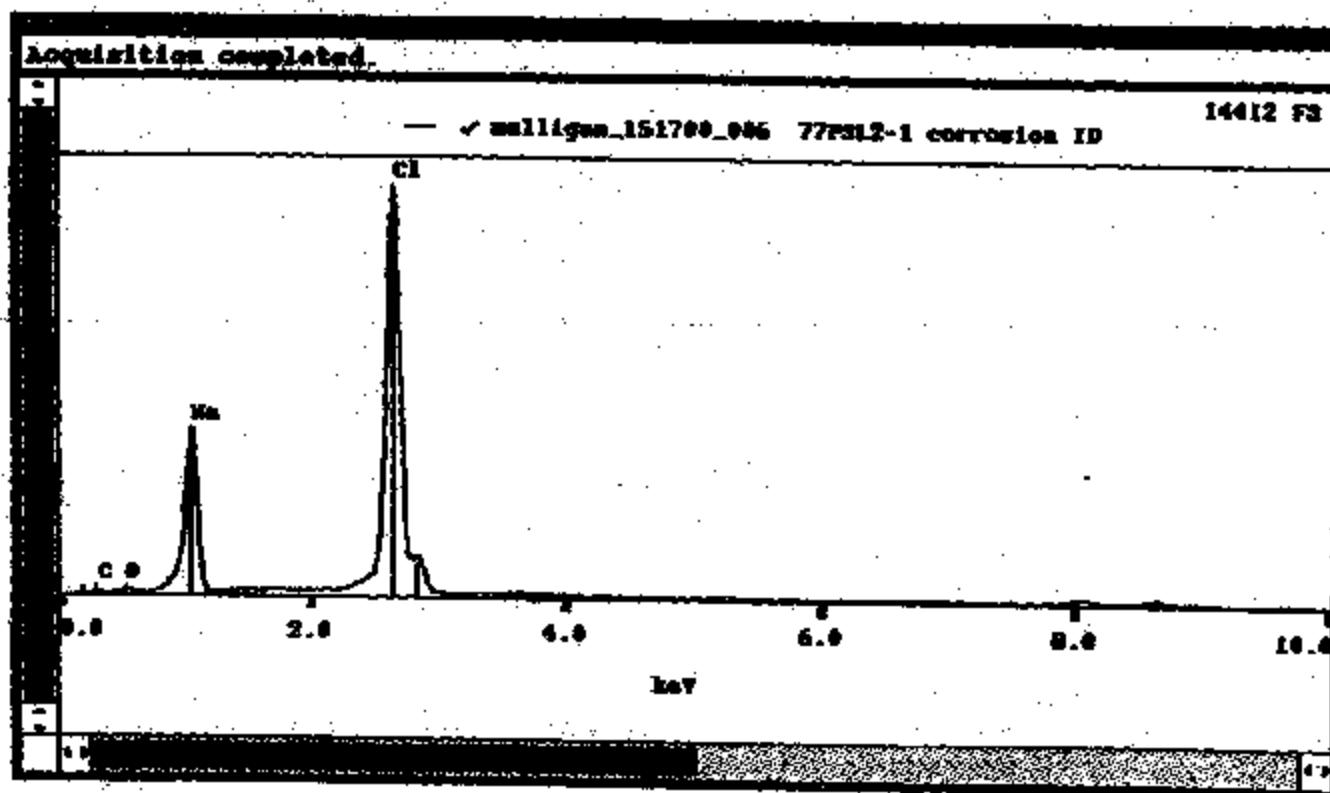
Acquisition completed.



TI-NHTSA 012604



TI-NHTSA 012603



TI-NHTBA 012806

005

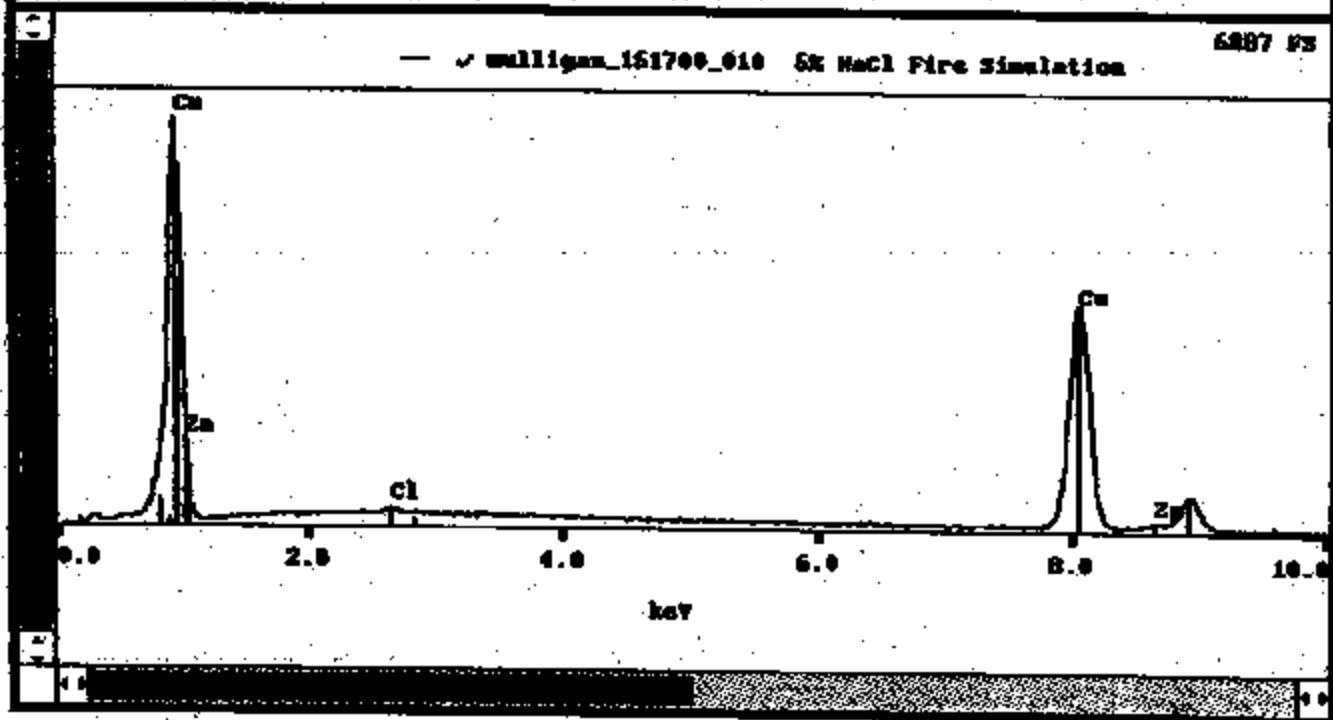
151700 TIPS L2-1, 5% salt water burn, bce 120x 02

TMNTSA 012807

TI-Nspire CX CAS

151700 5t NaCl Fire Simulation

Acquisition completed.



TL-NHTSA 012806

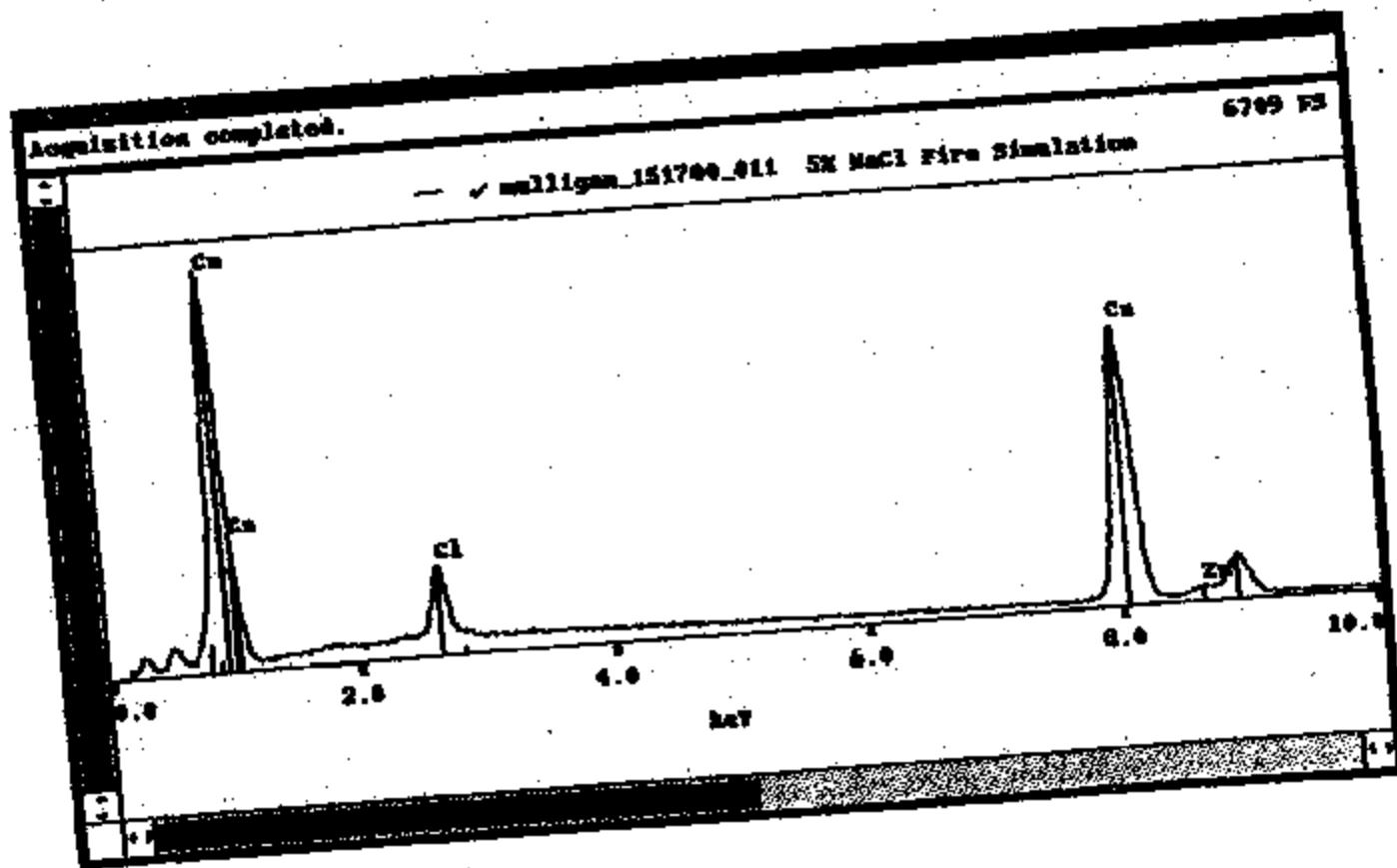
TI-NHTSA 012810



TI-NHTSA 012811



151700 5t NaCl Pipe Simulation: Fractured/Arced Edge 32

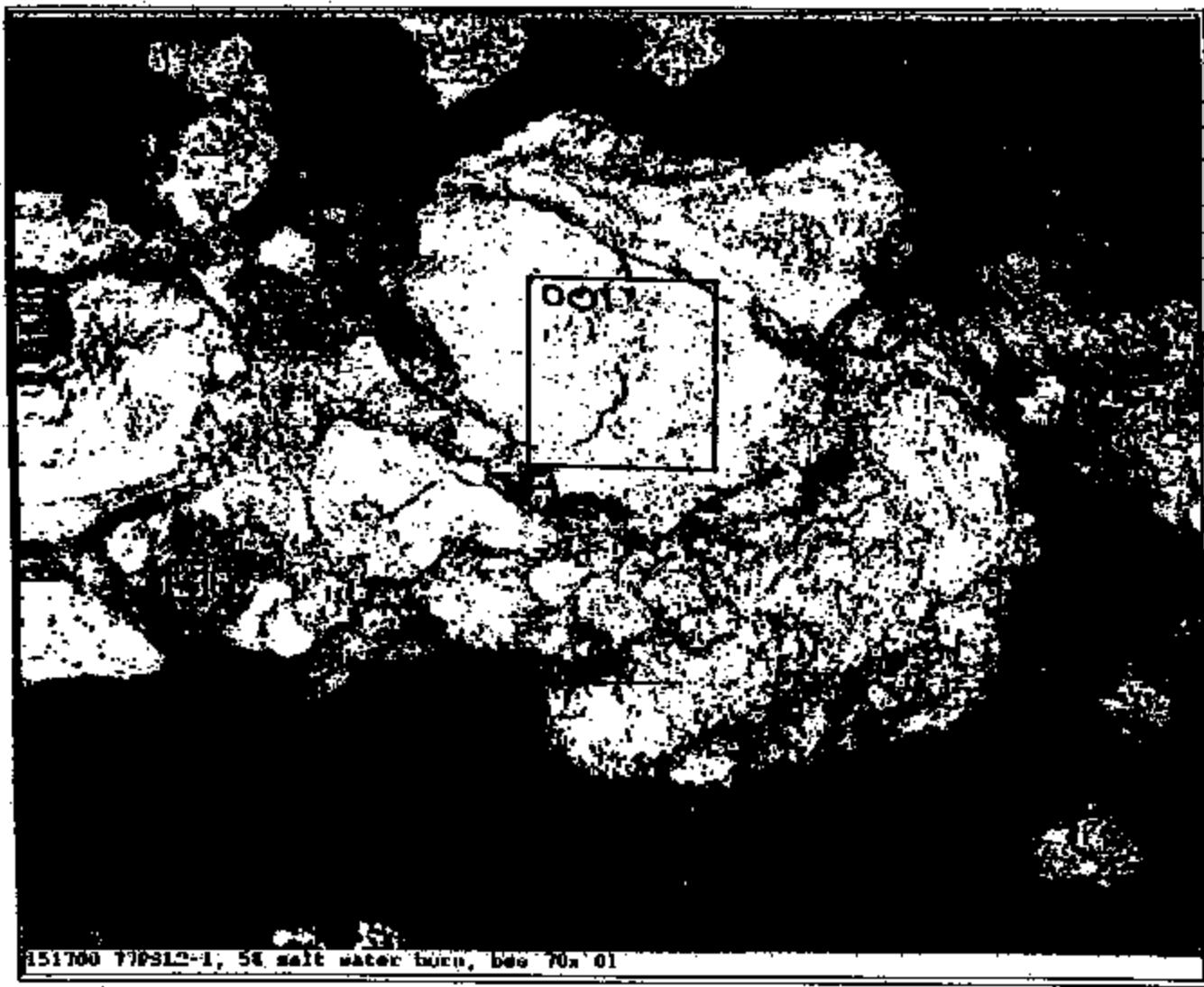


TMHTBA 012



151700 5% NaCl Fire Simulation Fractured/Arched Edge 31

TI-NHTSA 012813



151700 779312-1; 54 salt water truck, b&w 70x 01

TI-NHTSA 012814

Acquisition completed.

✓ nulligan_161700_001 77PSL2-1 corrosion ID

5334 FS

Cu

Cu

Zn

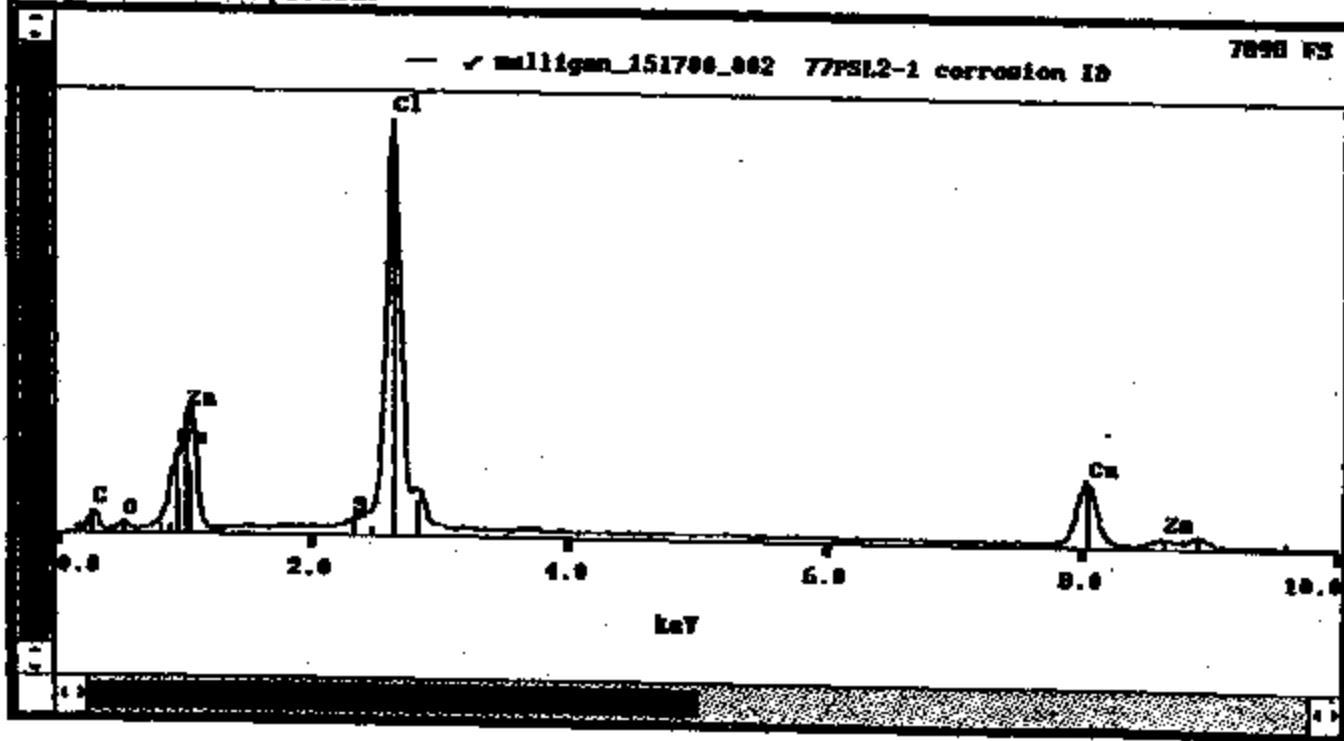
Cl

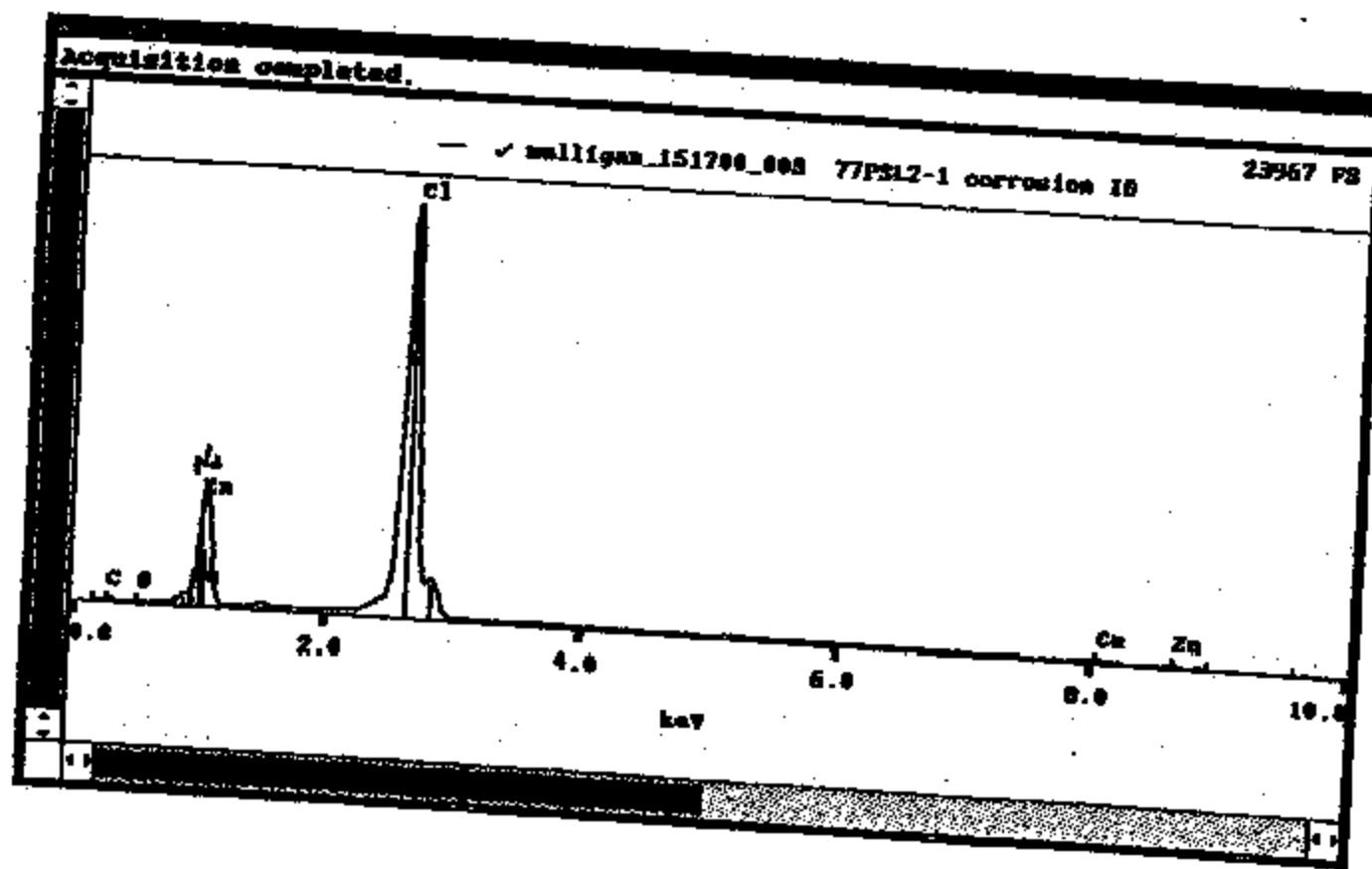
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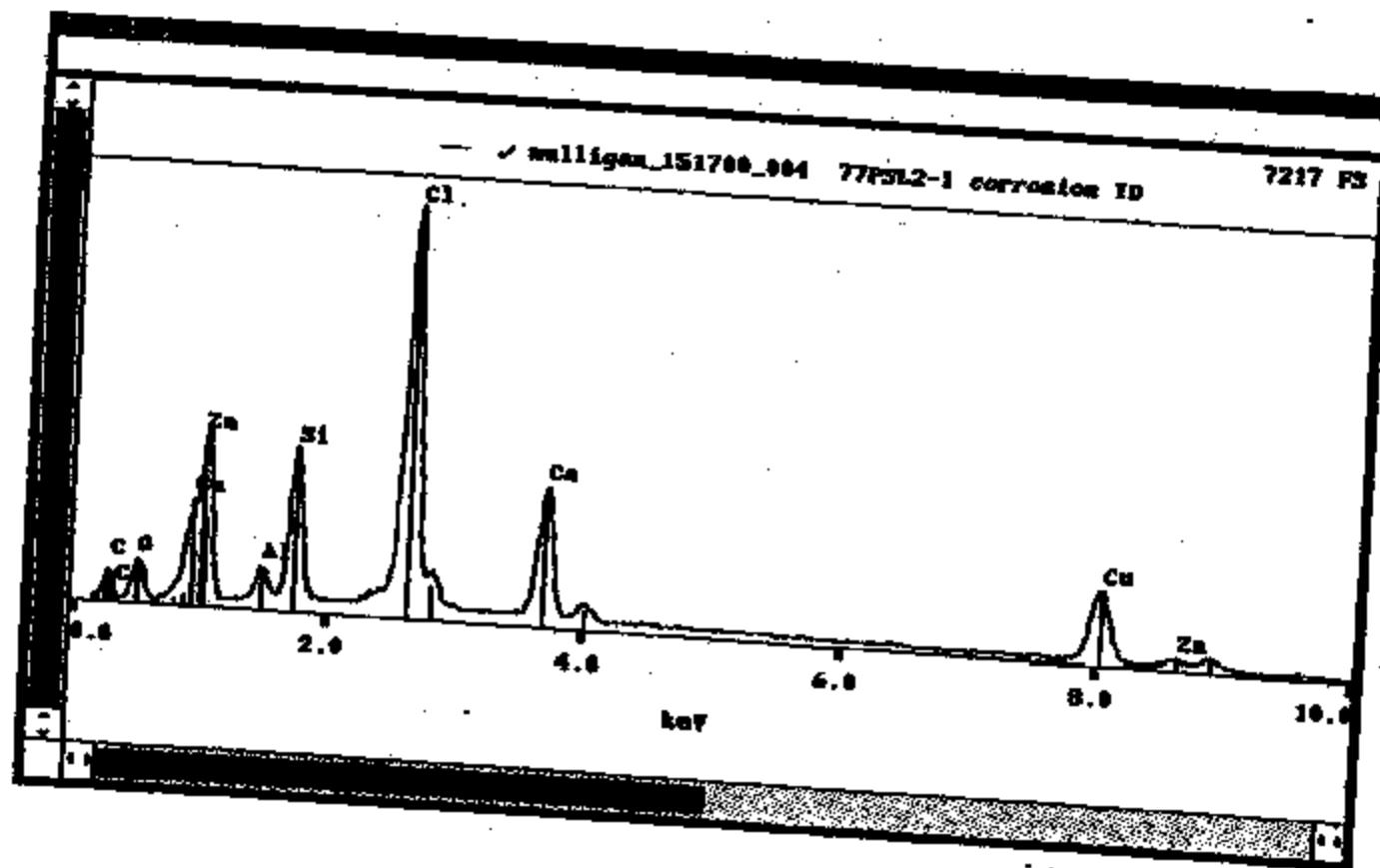
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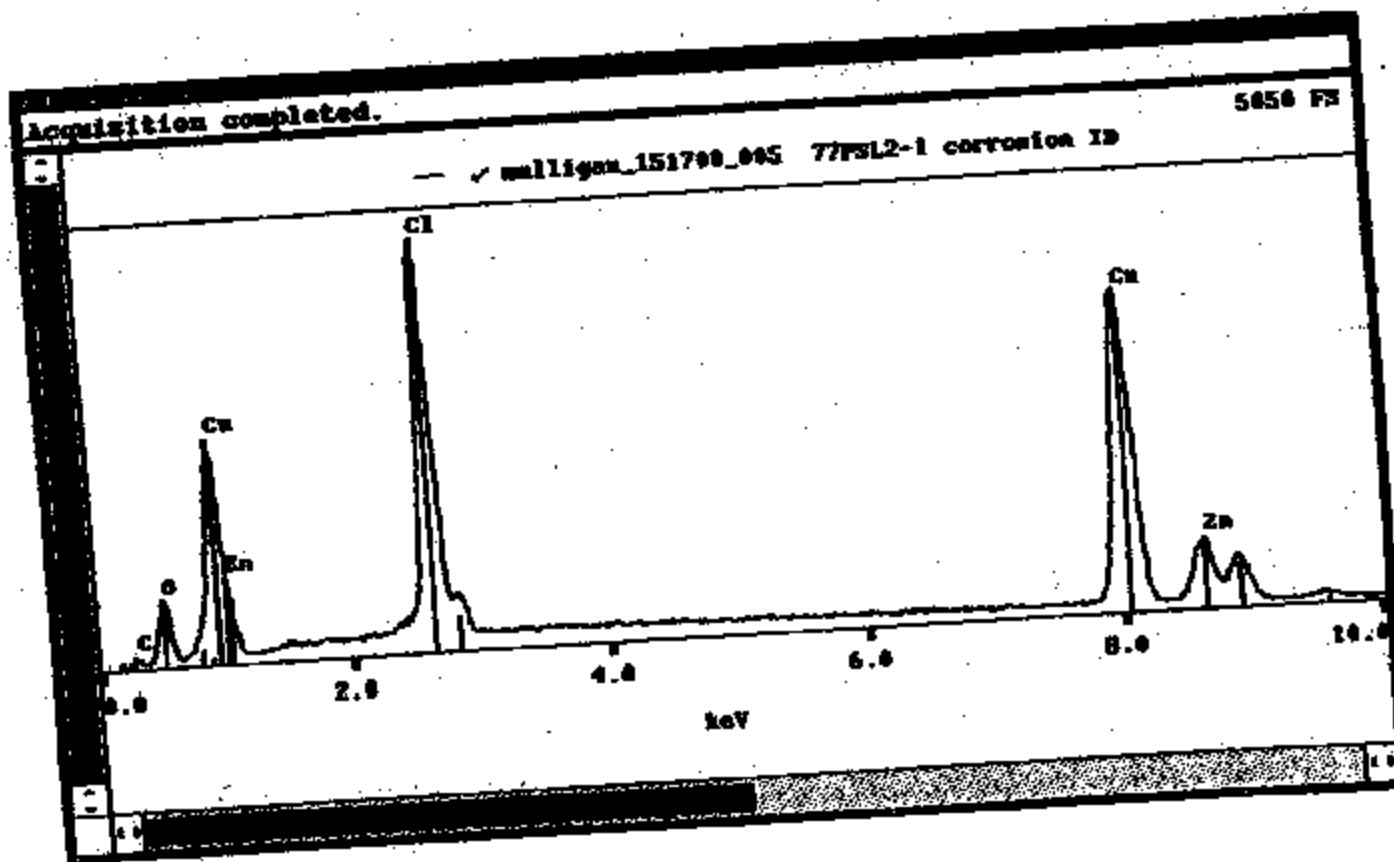
10.0

Acquisition completed.

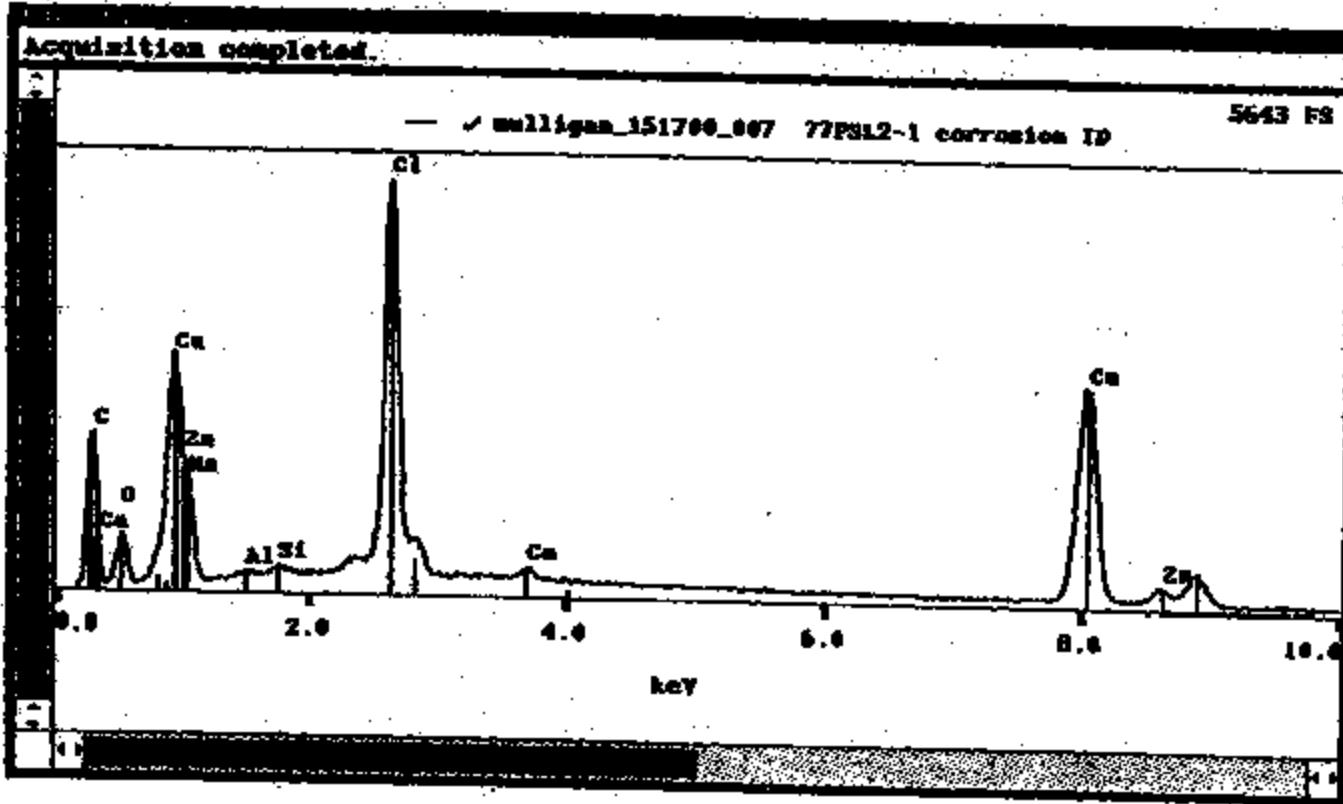


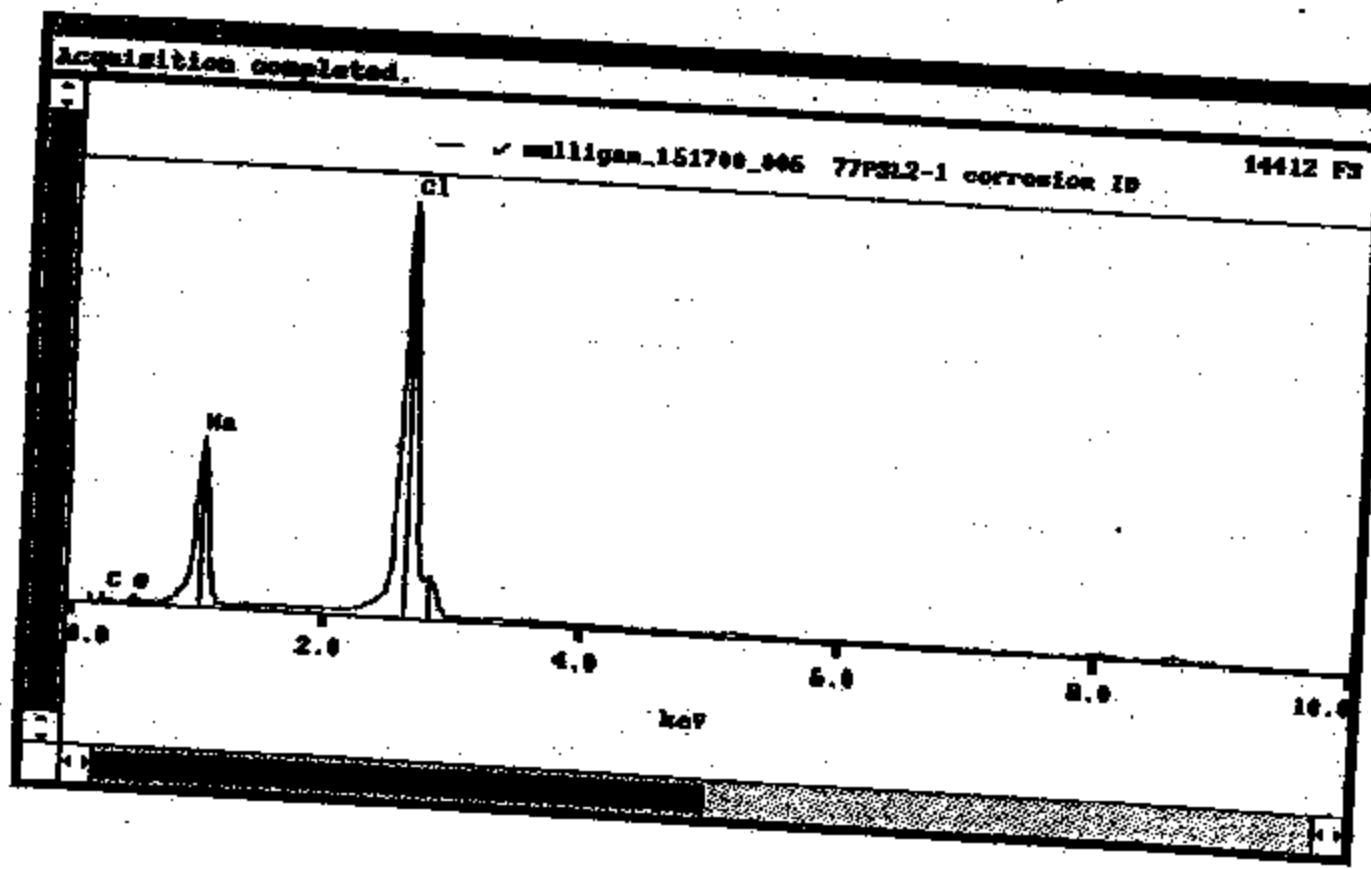


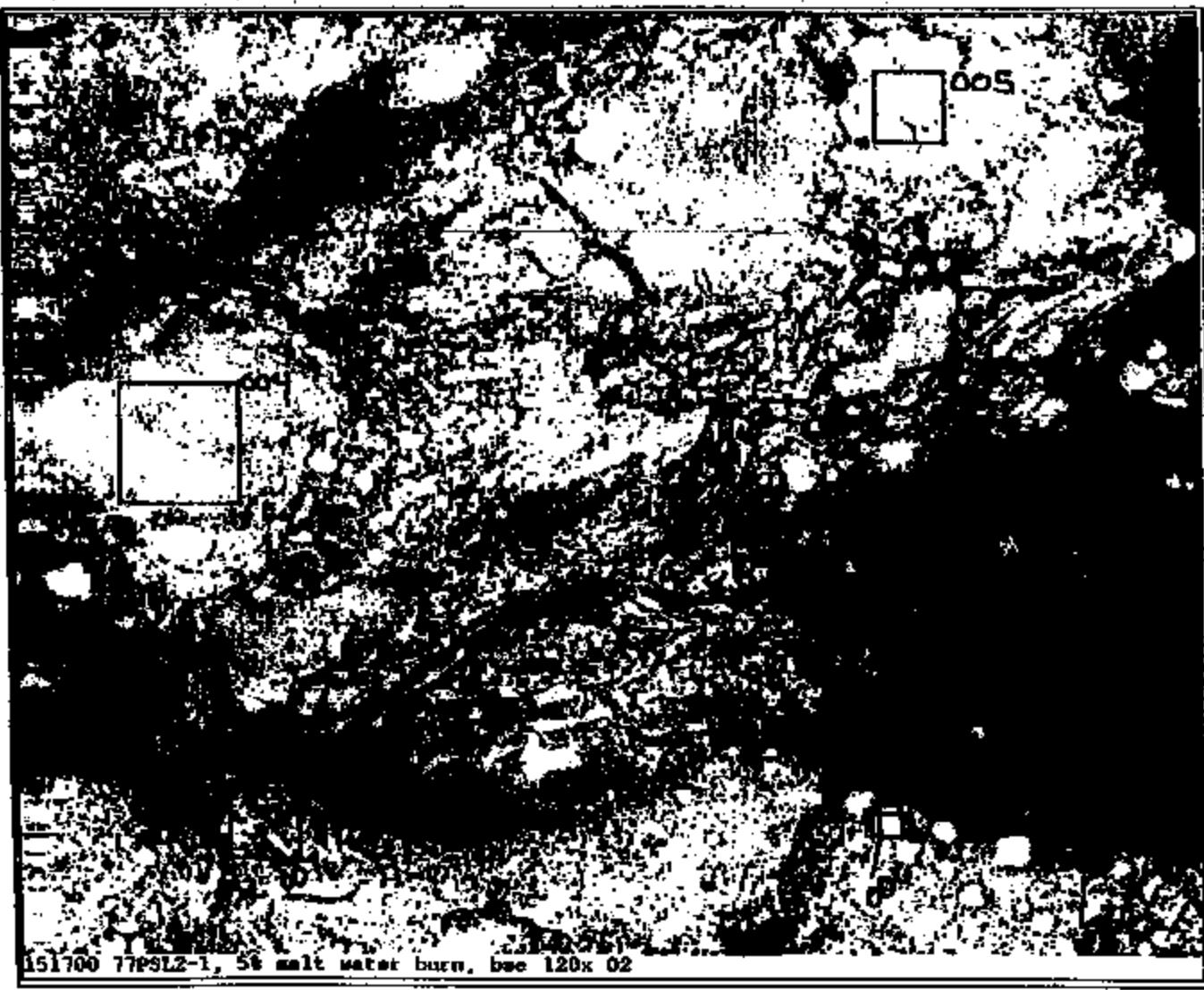




TI-NHT8A 012519



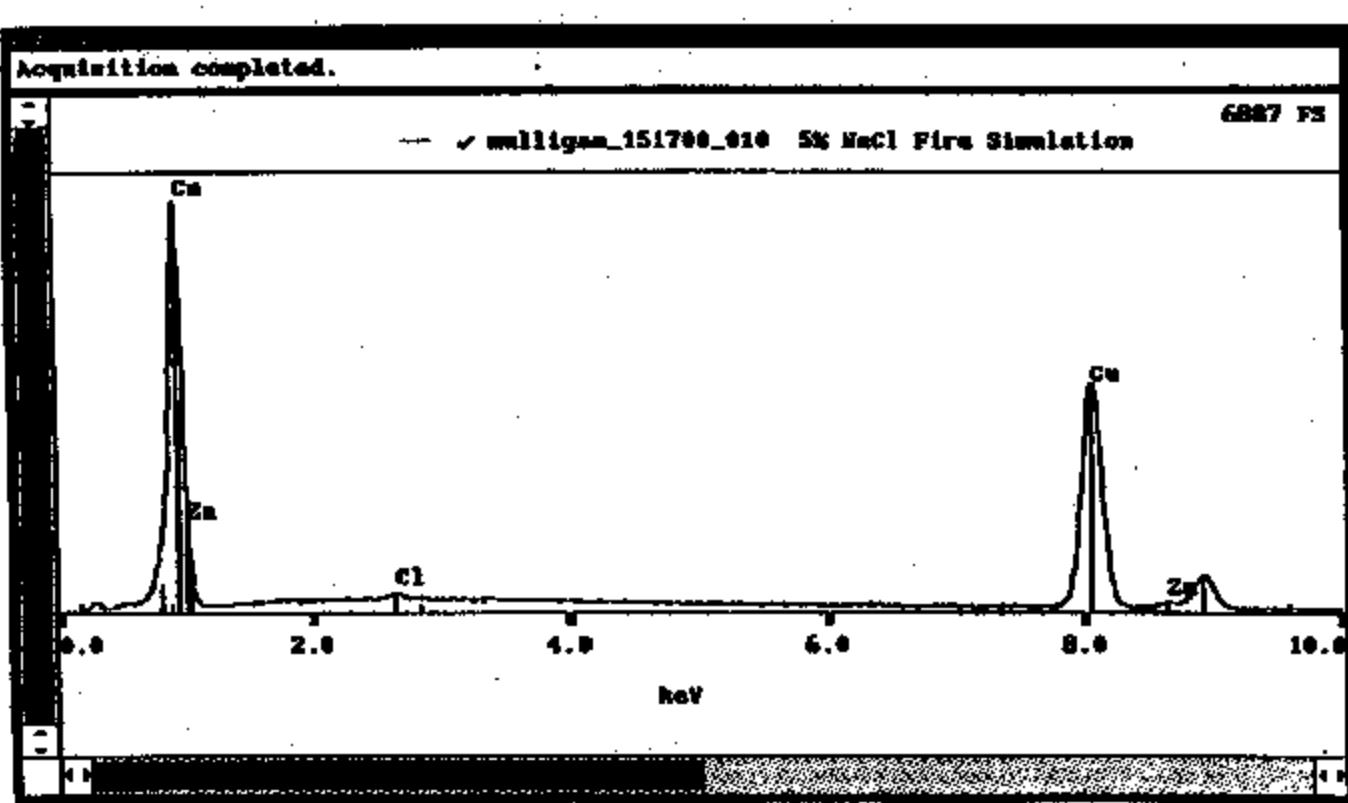




151700 77PSLZ-1, St salt water burn, bue 120x 02

TI-NHTSA 012822

151700 54 NaCl Fire Simulation



TI-NHTSA 012824

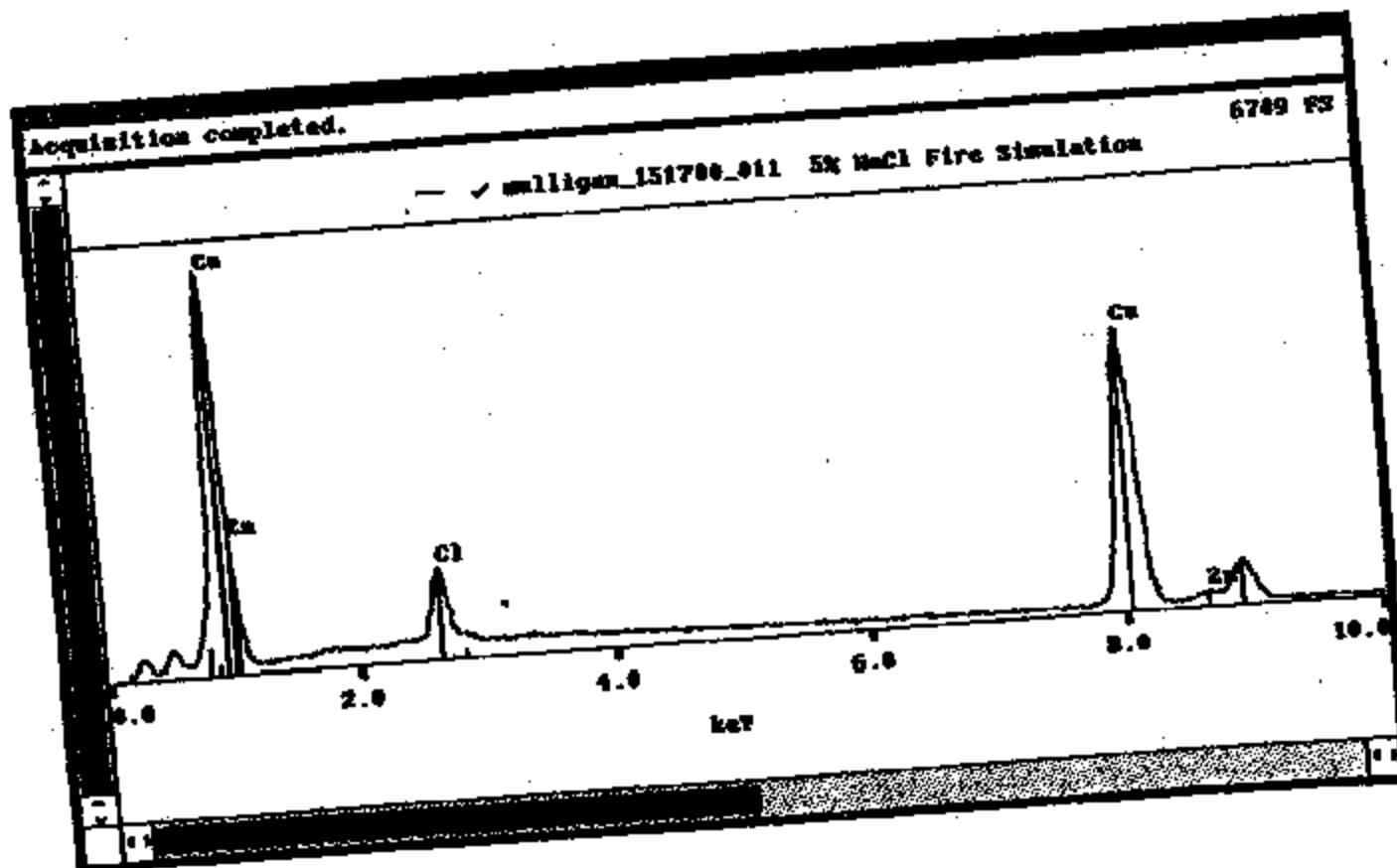


151700 5t NaCl Fire Simulation Fractured/Arced Edge 33

TI-NH13A 01/26/26

TINHRA 012826

151700 ST NaCl Pipe Simulation - Fractured/Arced Edge 32

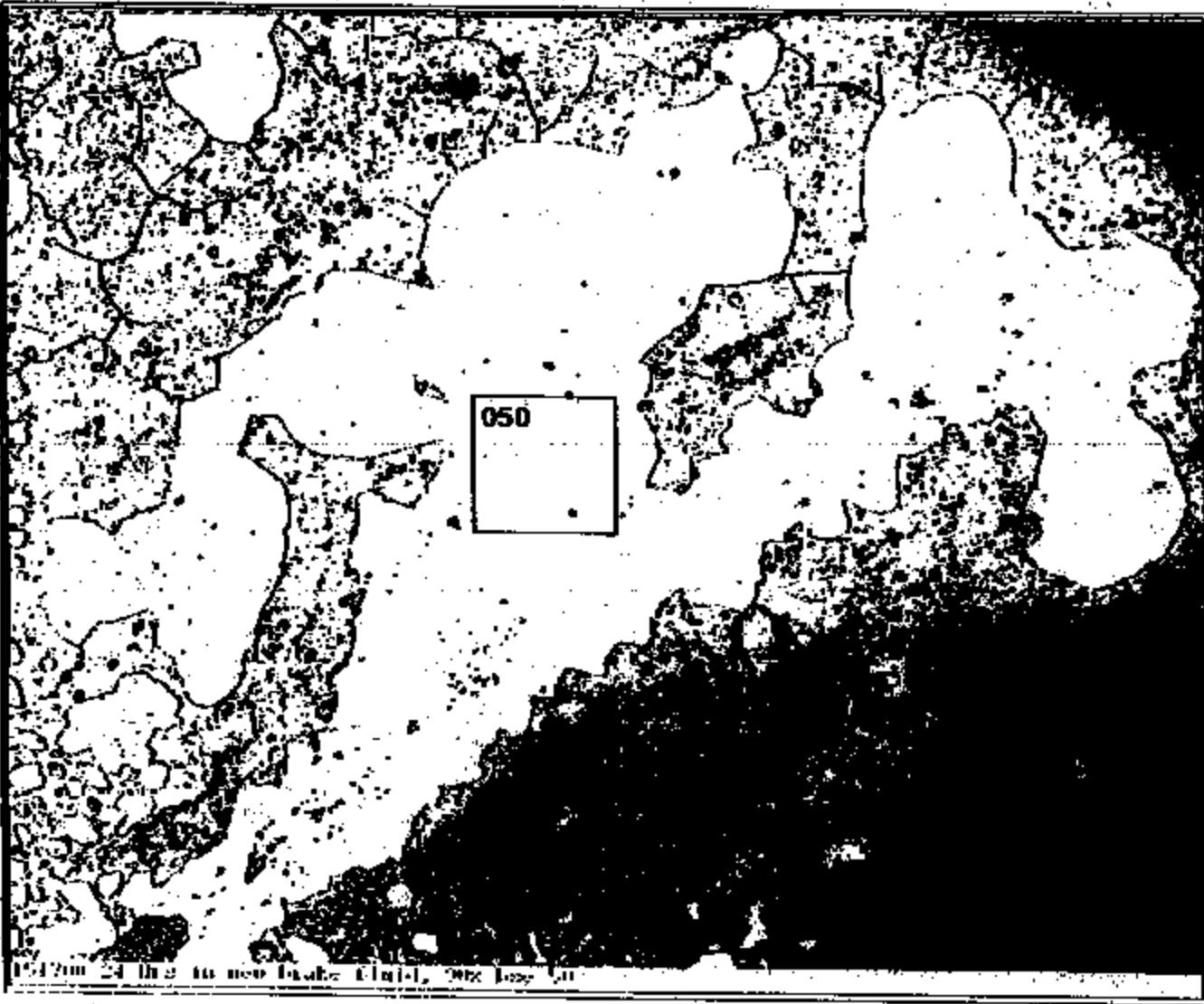


TIAHHTSA 012



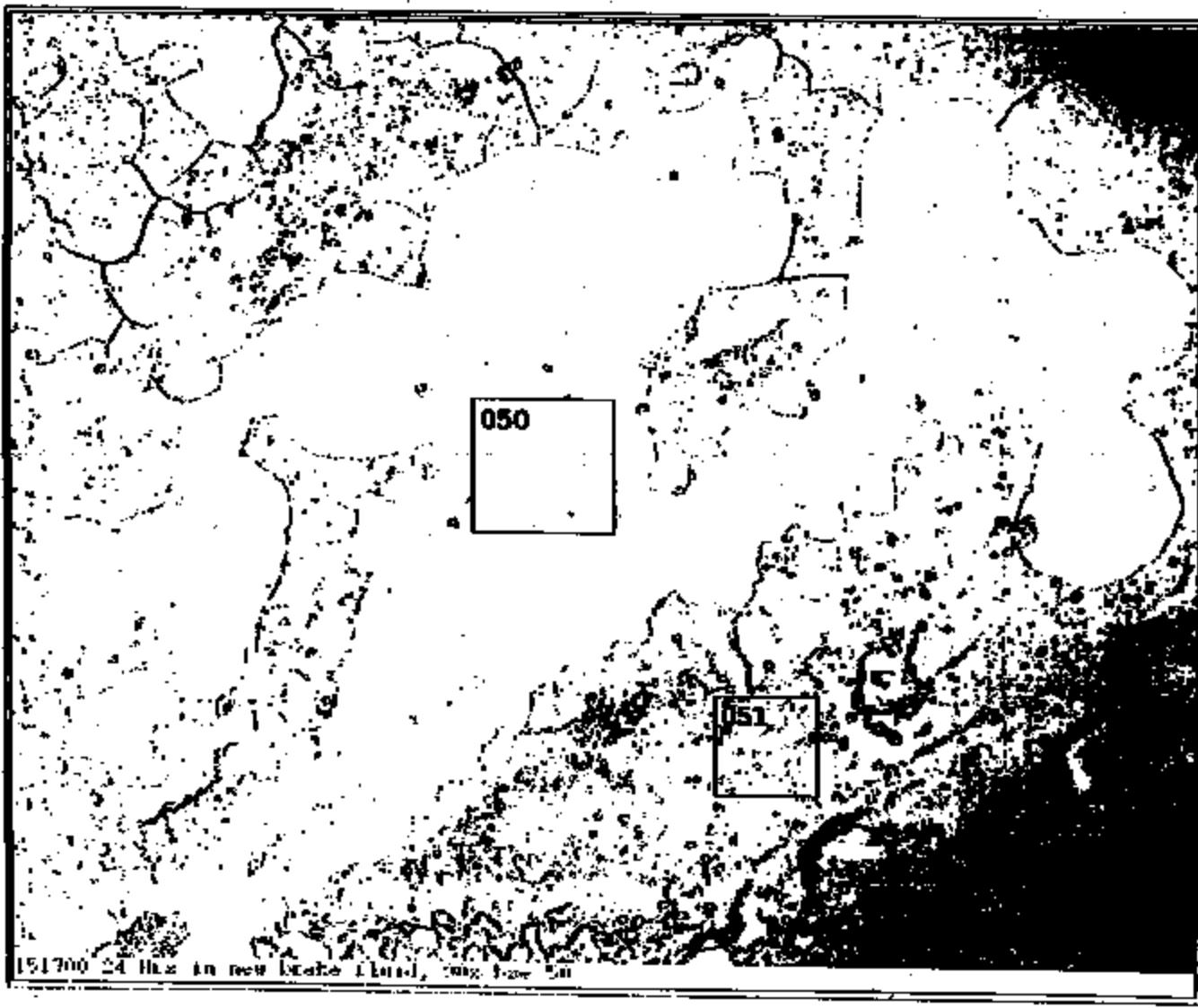
151700 54 NaCl Fire Simulation Fractured/Arced Edge 31

TI-NHTSA 012628



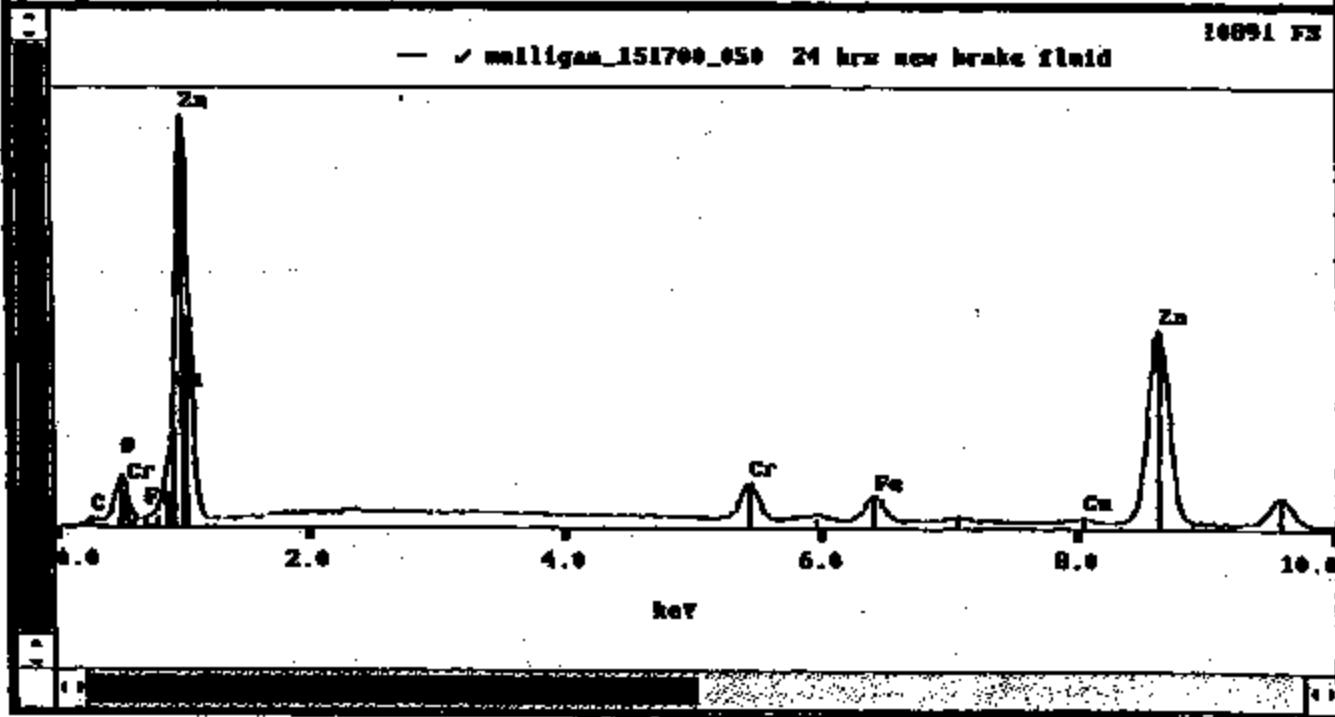
154200Z 24 Dec 1999 DAKOTA CITY, OK 1000' MSL

TI-NHTSA 012828

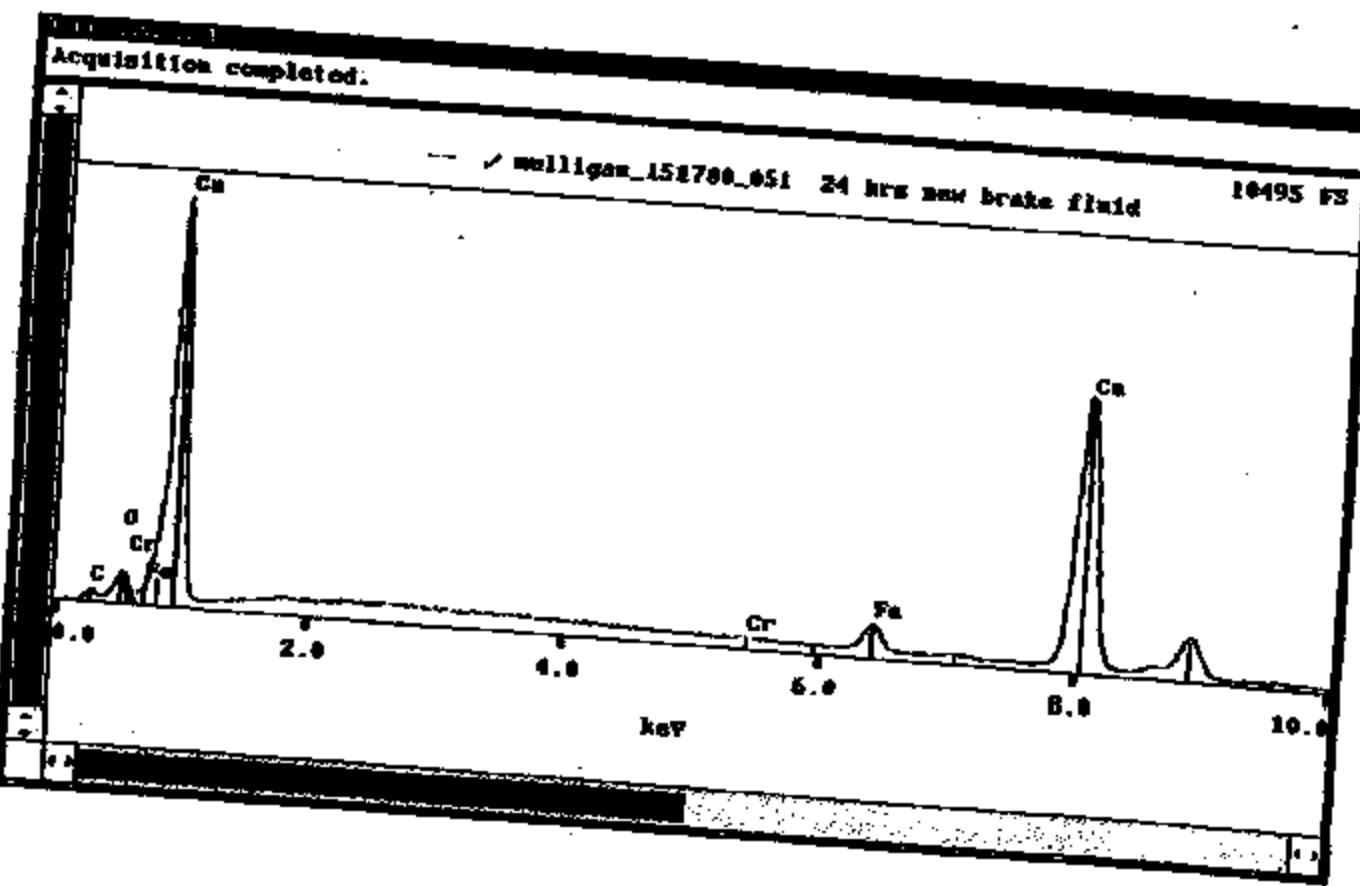


TINHTSA 012830

Acquisition completed.

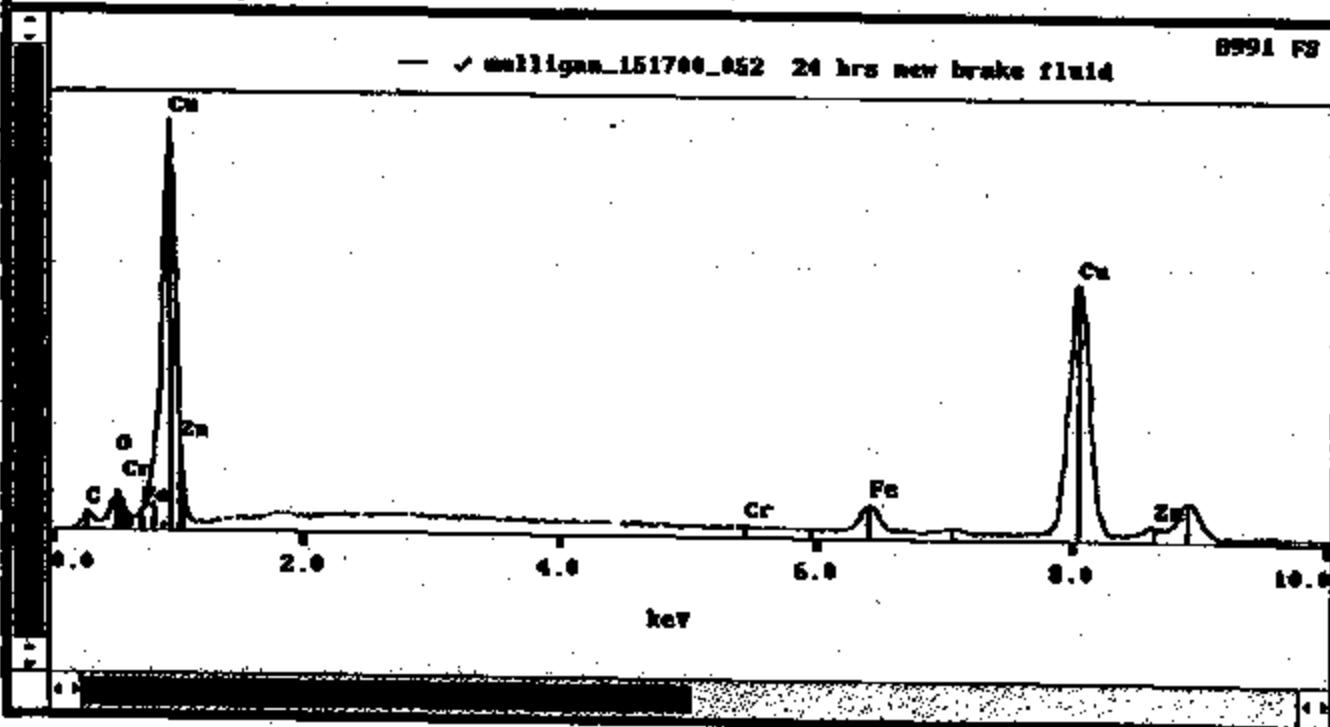


14-NHSA 012631



TI-NHTSA 012632

Acquisition completed.

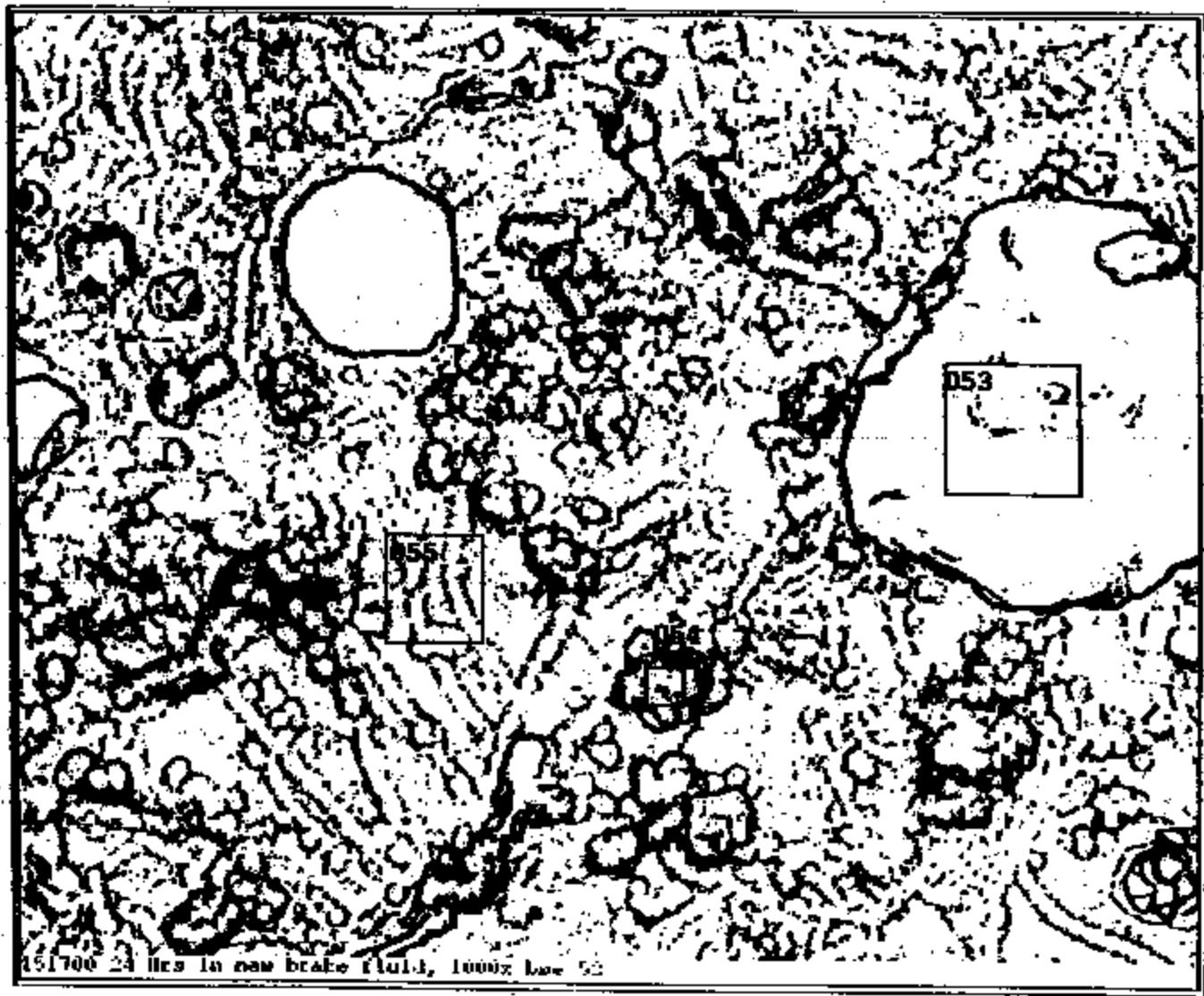


TI-NHTSA 012633

200 microns

101700 24 hrs in new brake fluid, 85° base 51

TI-NHTSA 012834



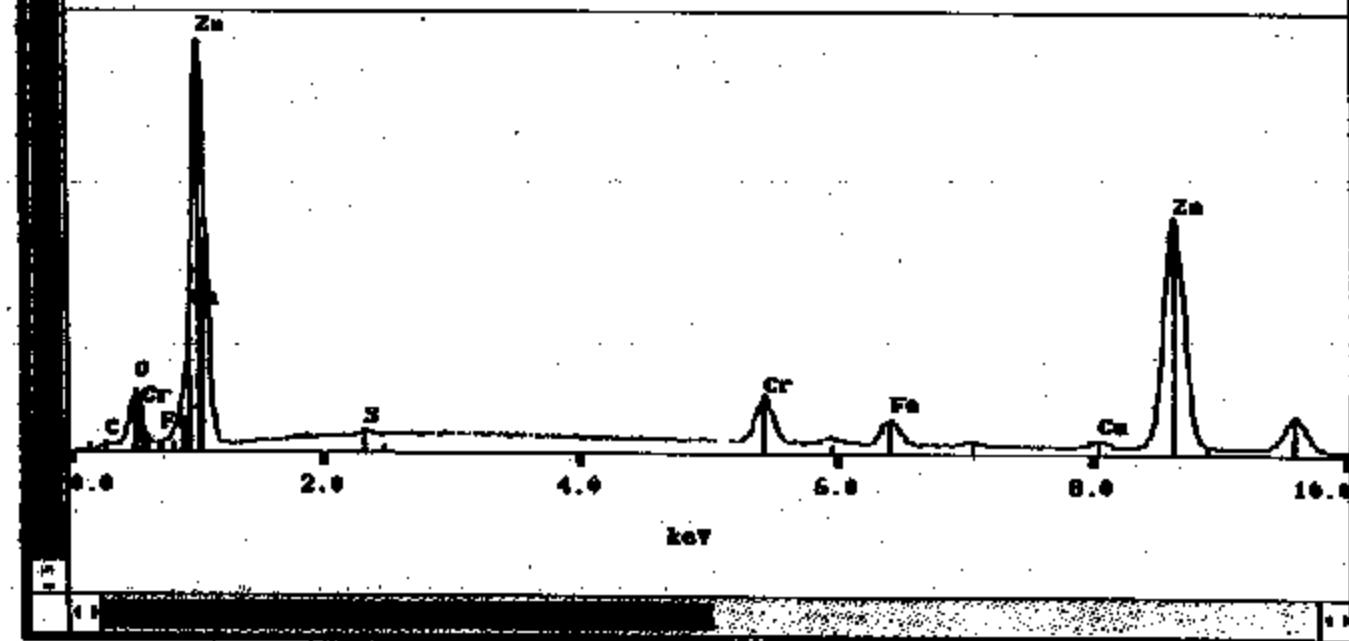
151700 24 hrs in new brake fluid, 1000x low 52

TL-AHHTSA 012235

Acquisition completed.

10142 FS

✓ mulligan_151764_053 24 hrs new brake fluid

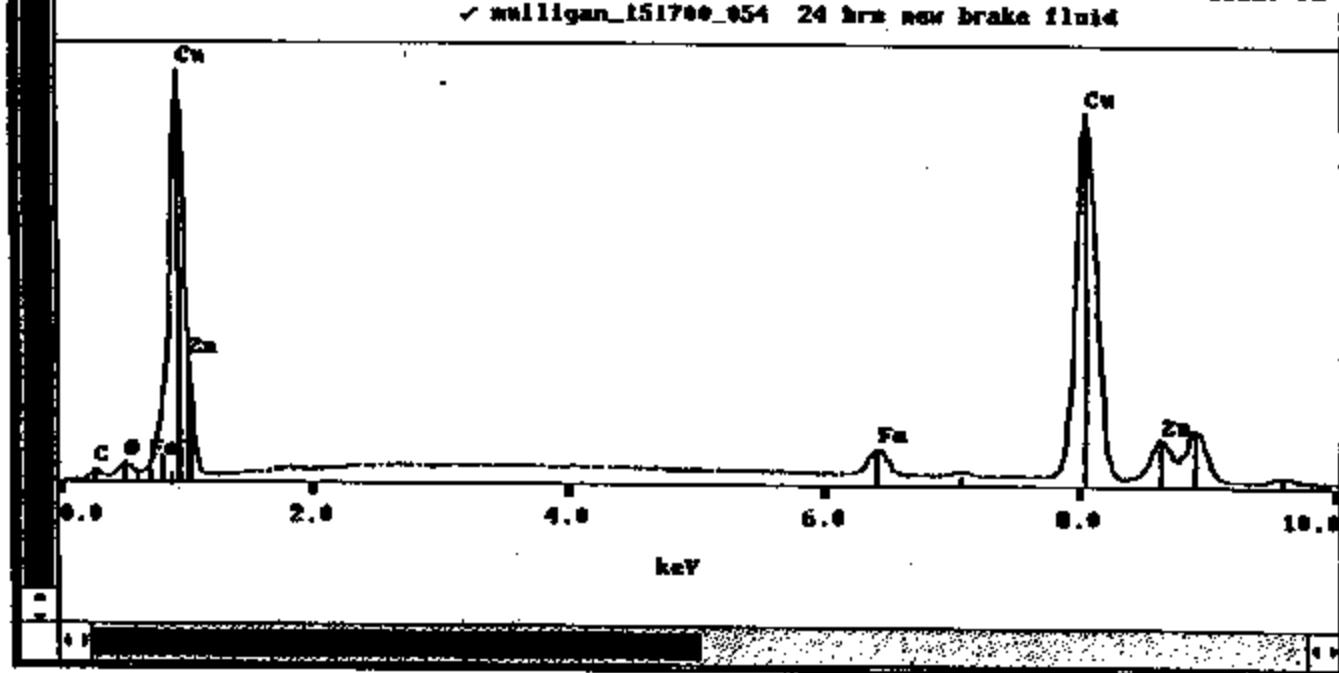


TI-NHTSA 012638

Acquisition completed.

✓ willigan_t51700_054 24 hrz new brake fluid

13327 F9

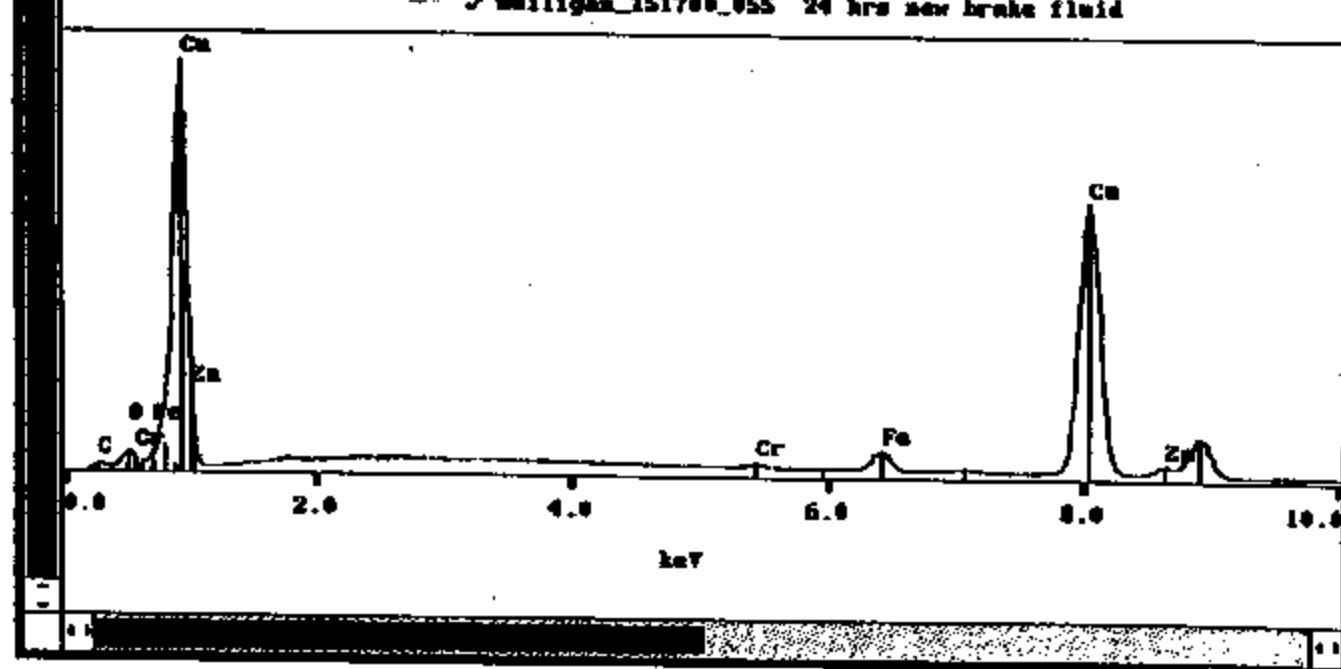


T1-NHT8A 01237

Acquisition completed.

19147 F9

✓ willigan_151760_055 24 hrs new brake fluid

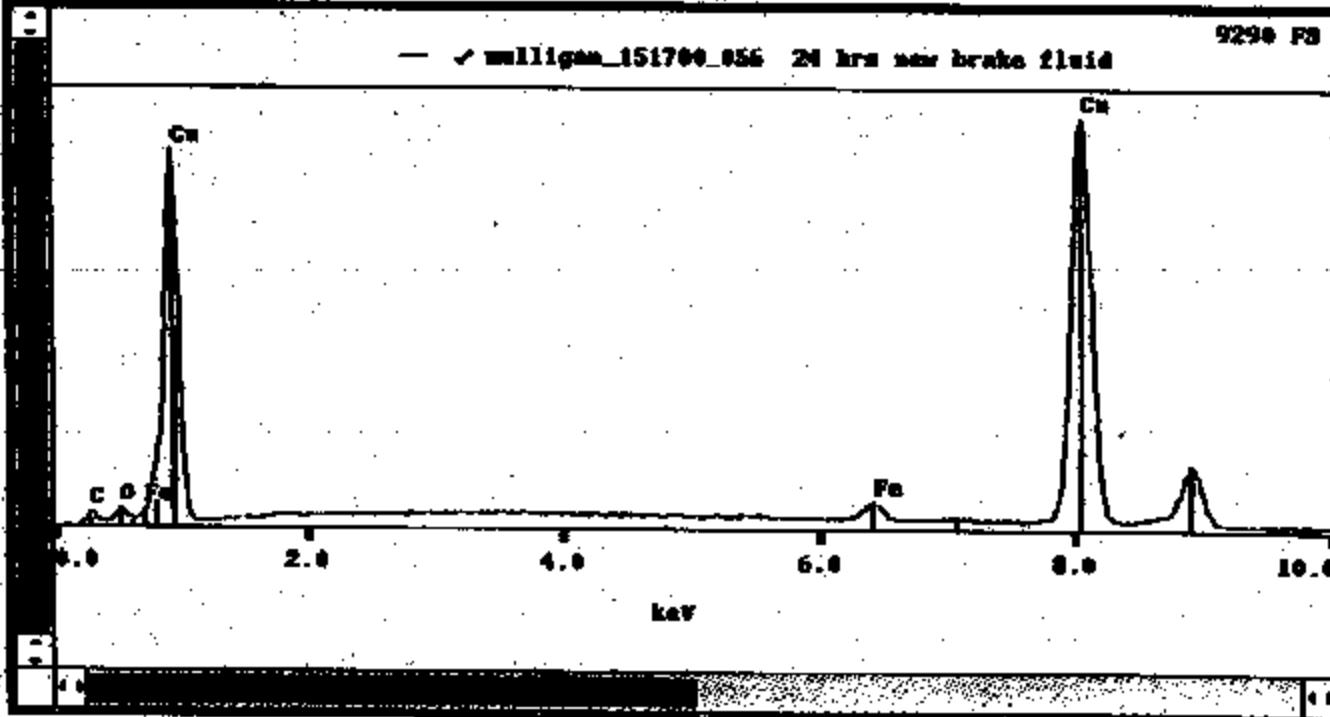


7-NHTSA 012638

TI-NHTSA 012838



Acquisition completed.

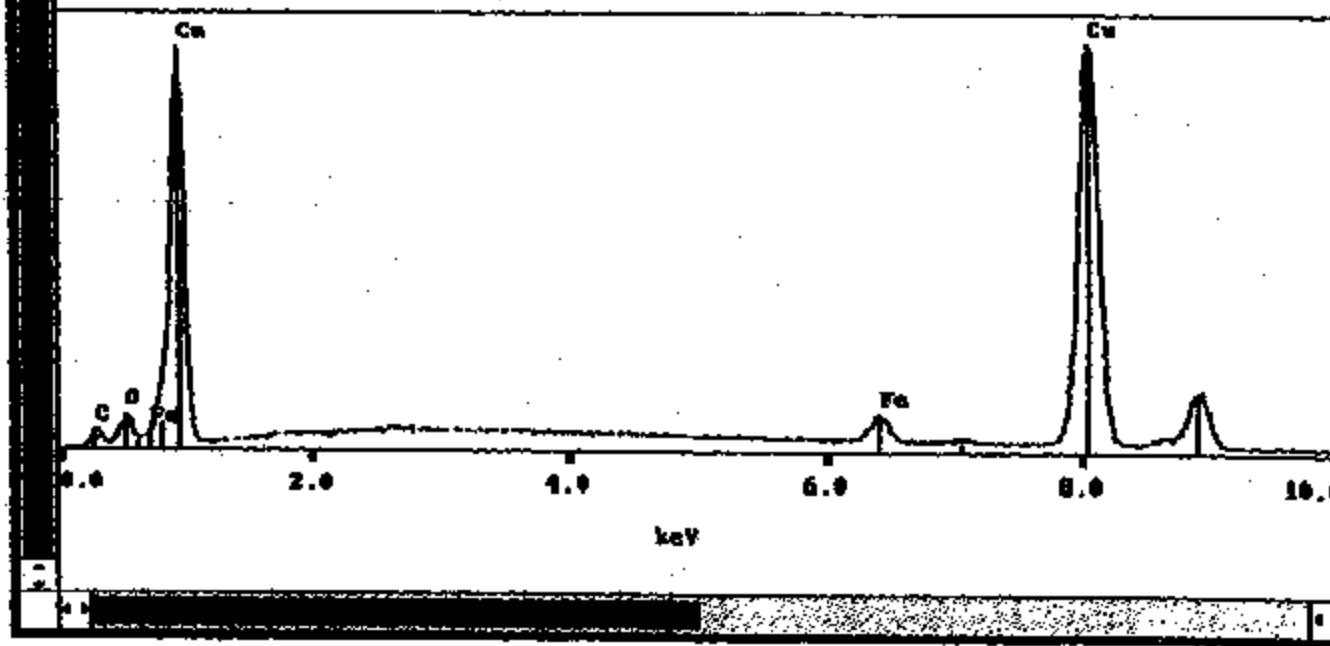


TI-NHTSA 012840

Acquisition completed.

✓ mulligan_161700_057 24 hrs new brake fluid

7434 FZ

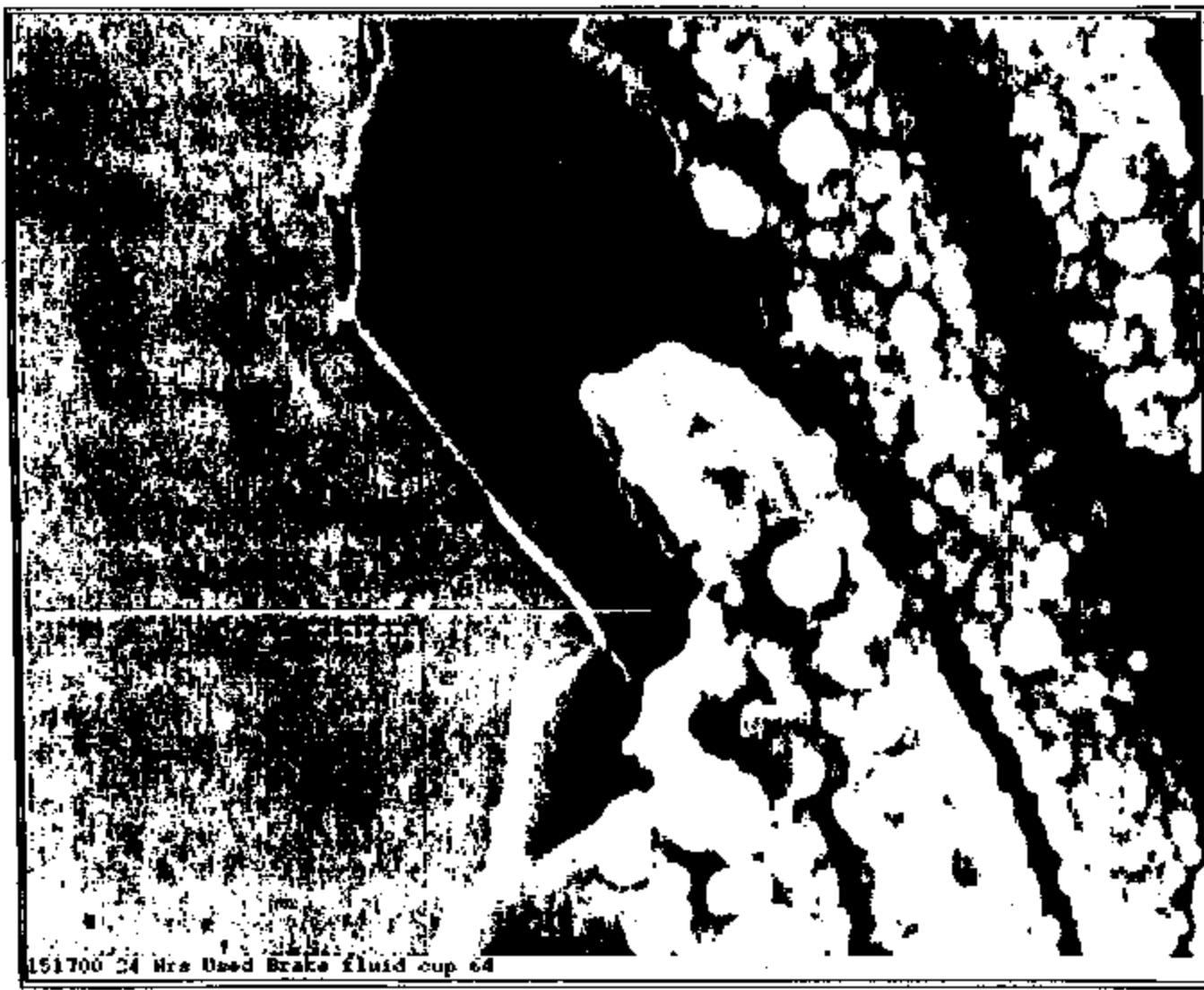


TI-AHHTSA 012241



191700 24 Hrs Used Brake Fluid cup 63

T1-NHTEA 012842

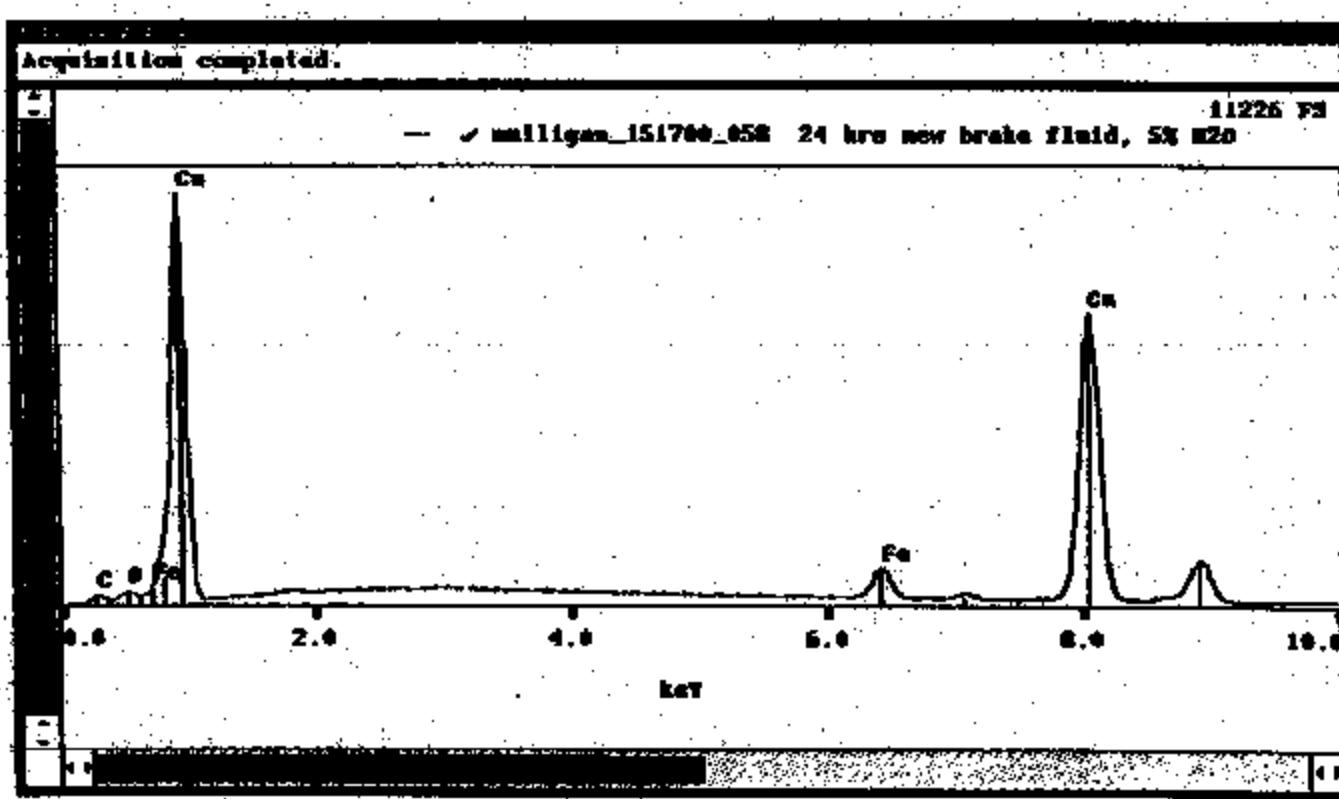


151700 24 Hrs Used Brake fluid cup 64

TI-NHTSA 012843

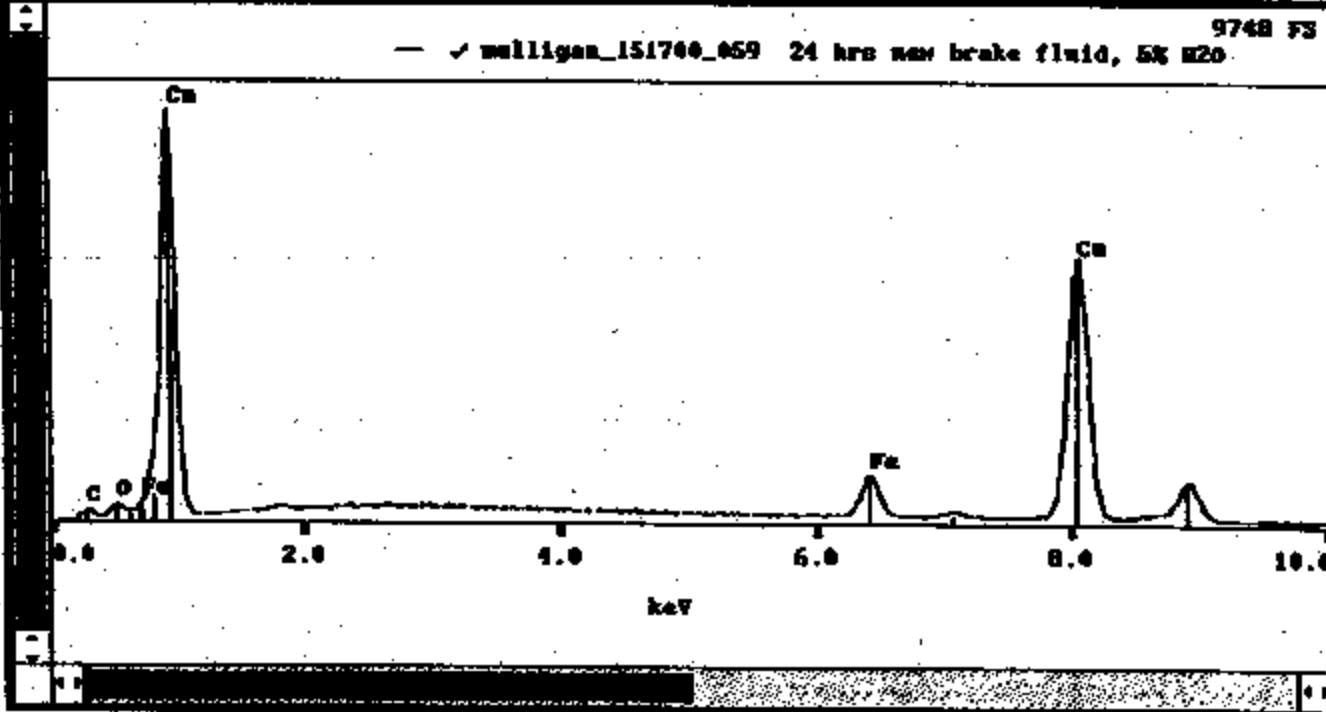


TI-NHTSA 012844



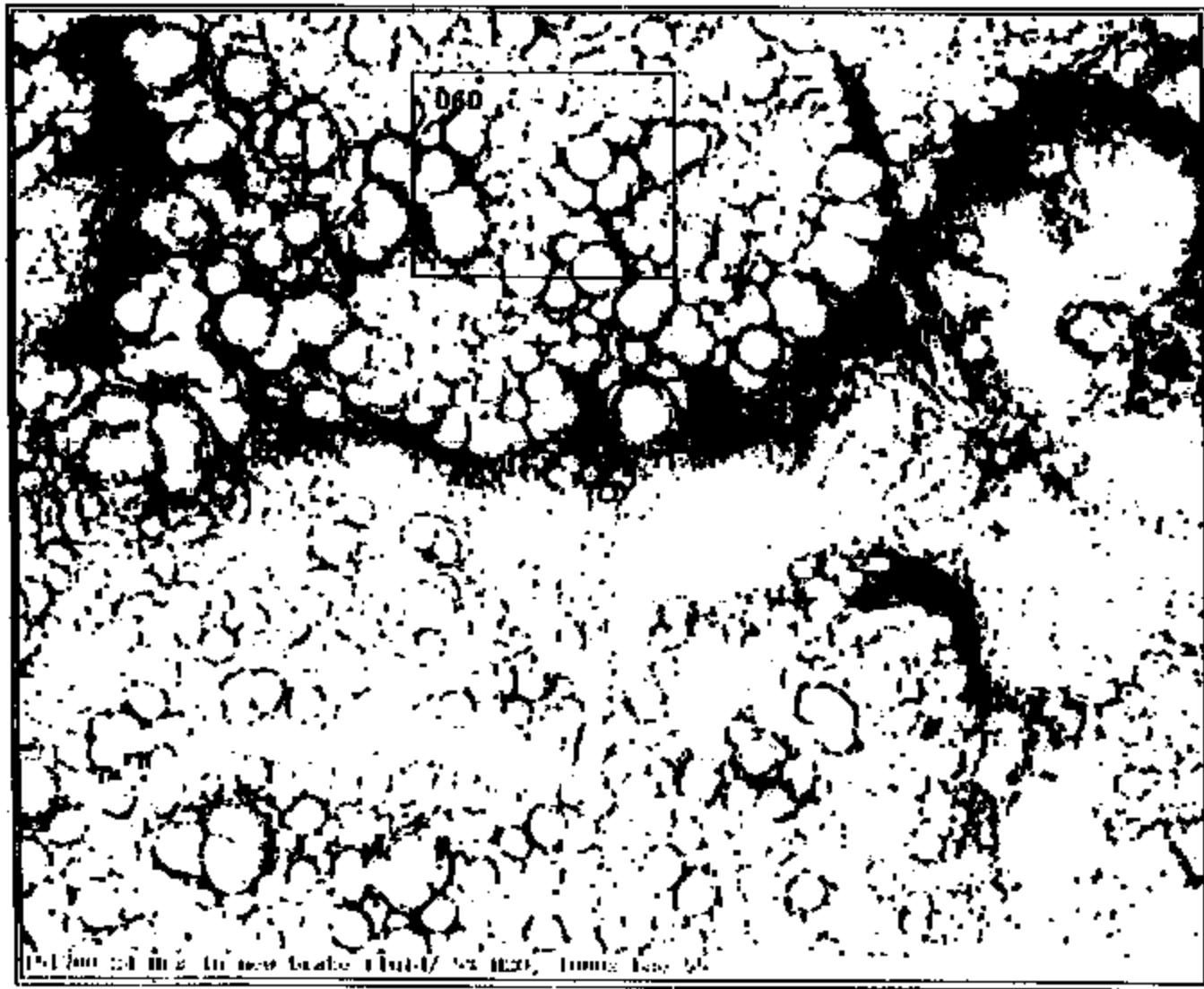
TI-AHHT8A 012845

Acquisition completed.

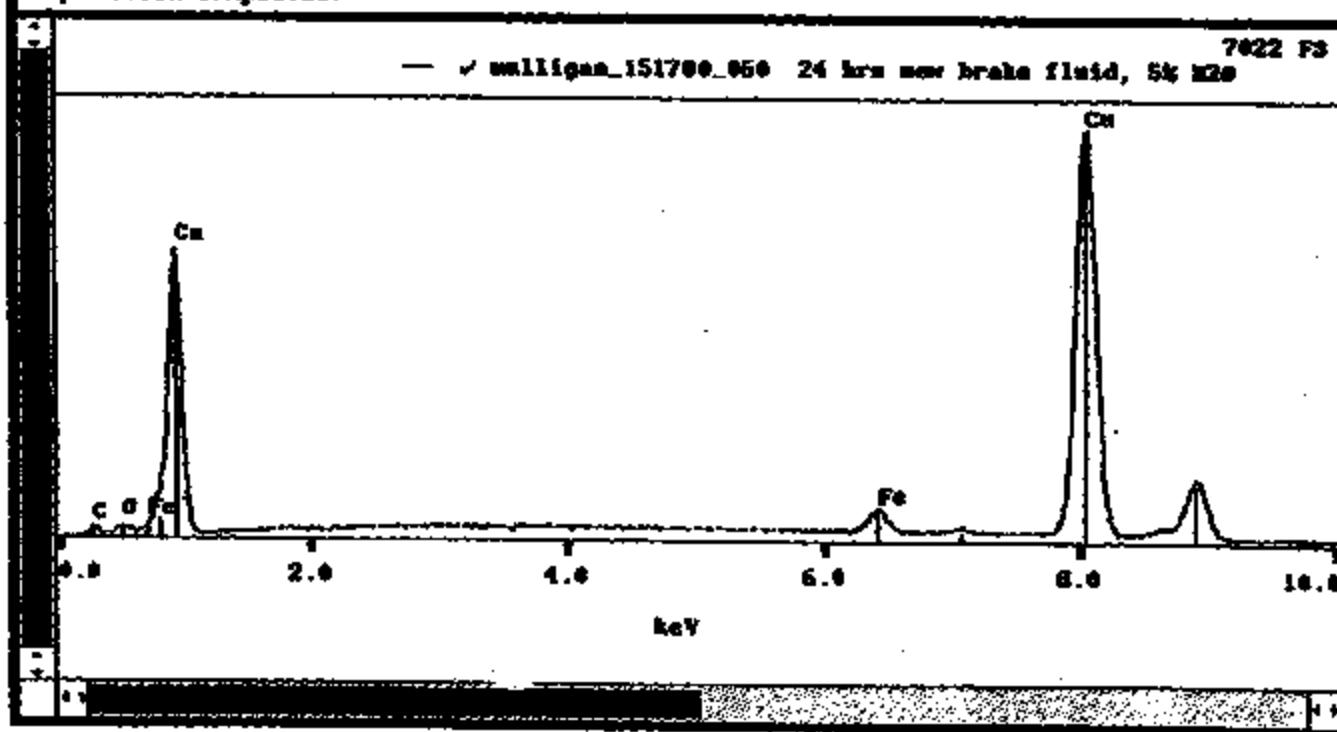


T-NHTSA 012848

TI-NHTSA 012647



Acquisition completed.



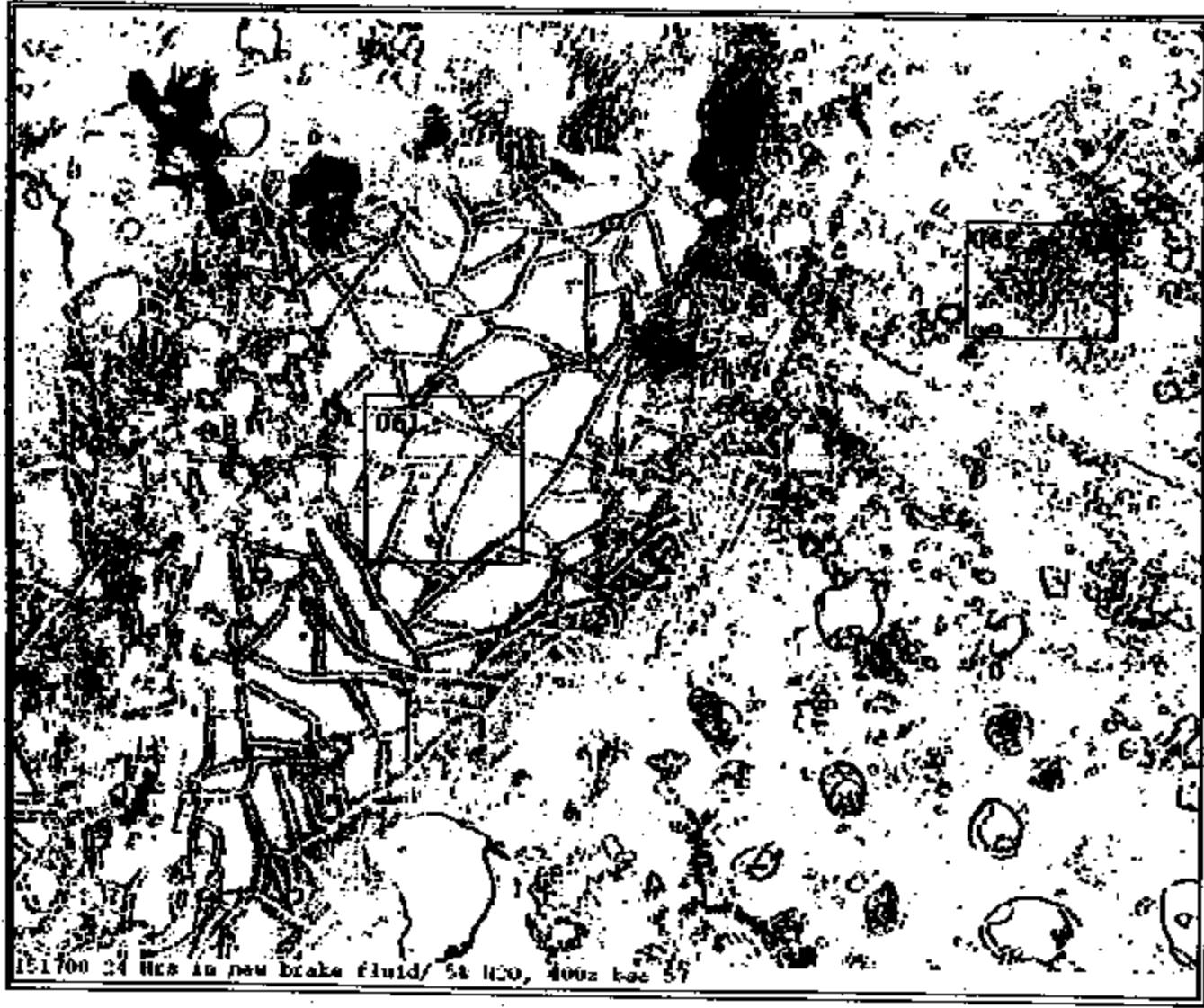
TIAHTSA 012846

PRINTS 01284

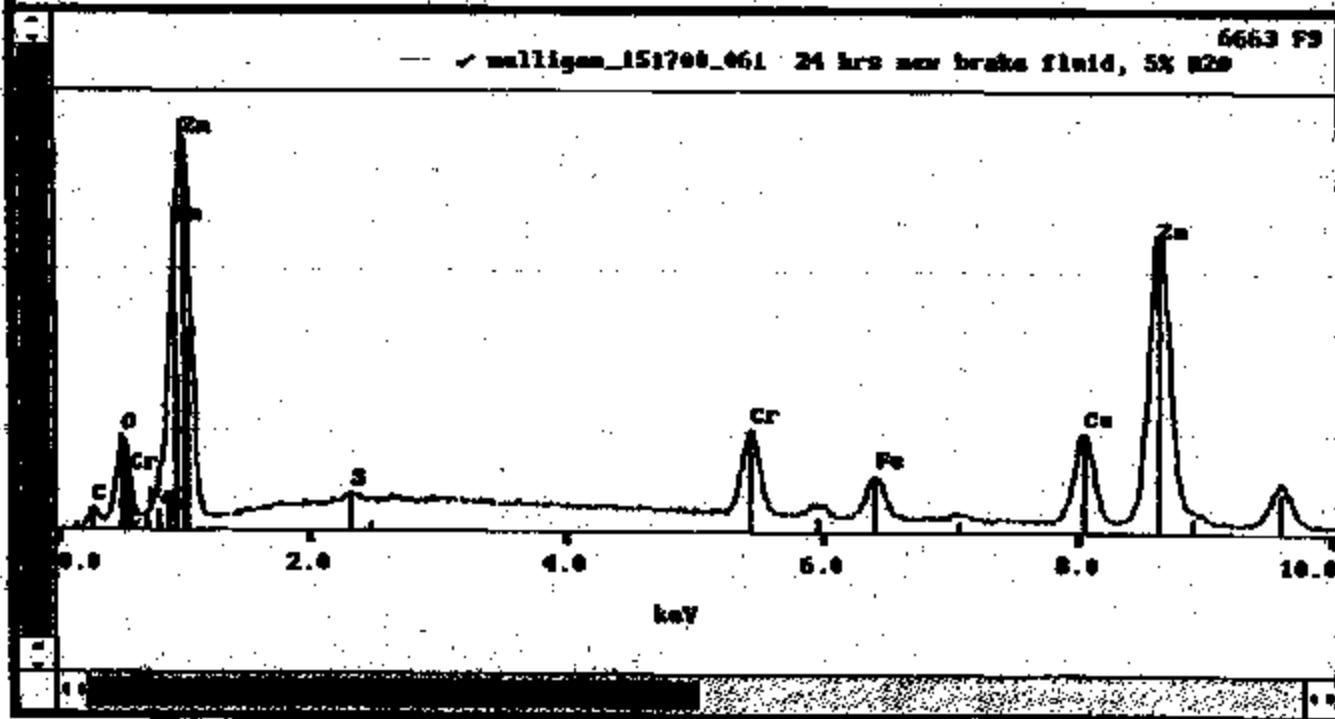


151700 24 hrs in new brake fluid/ 54 mic, 70x hrs 56

TI-NHTSA 012850

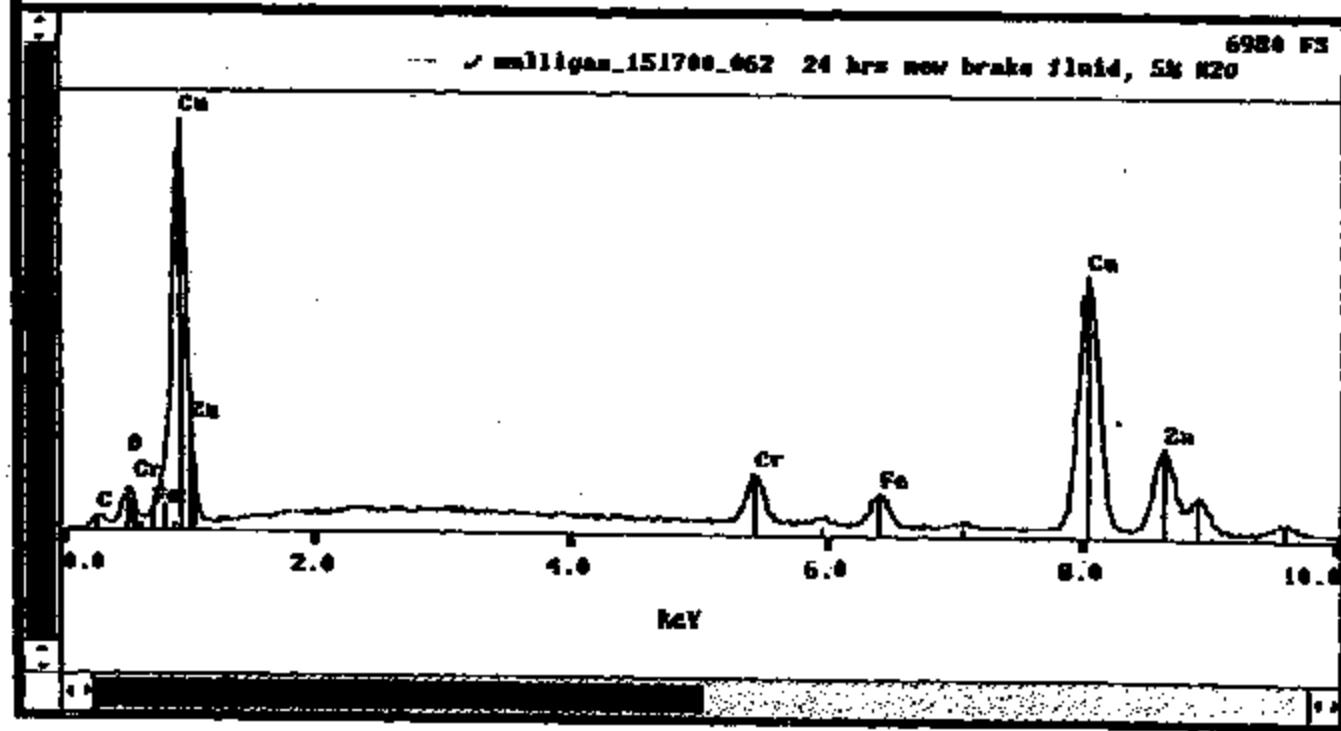


Acquisition completed.



TI-NHTSA 012851

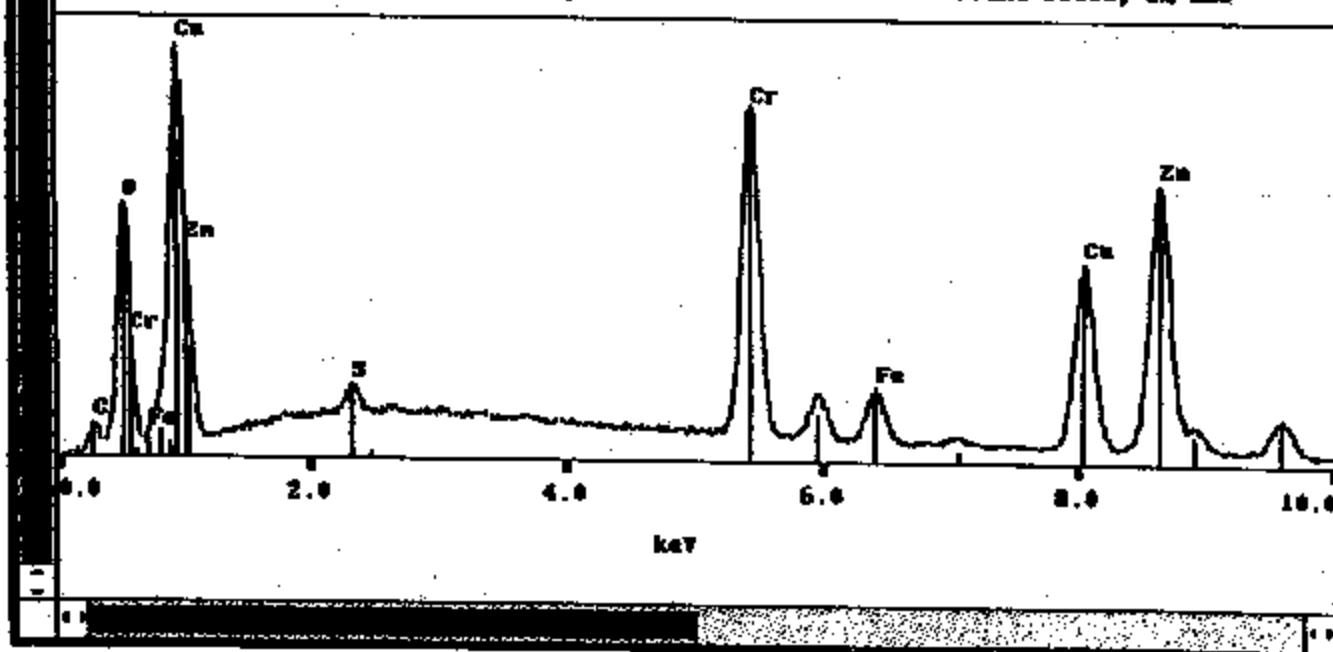
Acquisition completed.



TI-NHT3A 012852

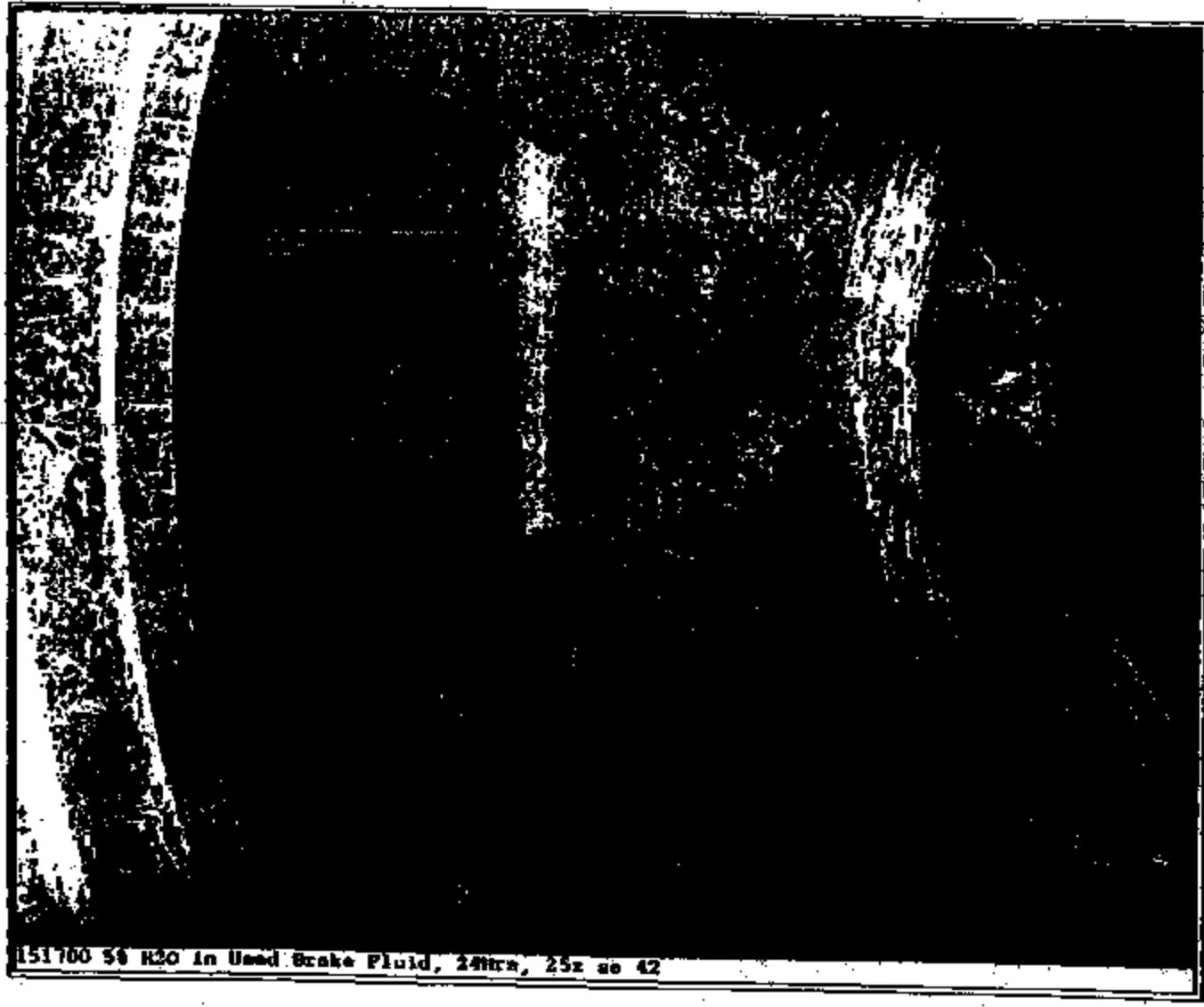
Acquisition completed.

4507 FS
mulligan_151700_063 24 hrs max brake fluid, 5% H2O



TIAHTSA 012853

PI-NHTSA 012854

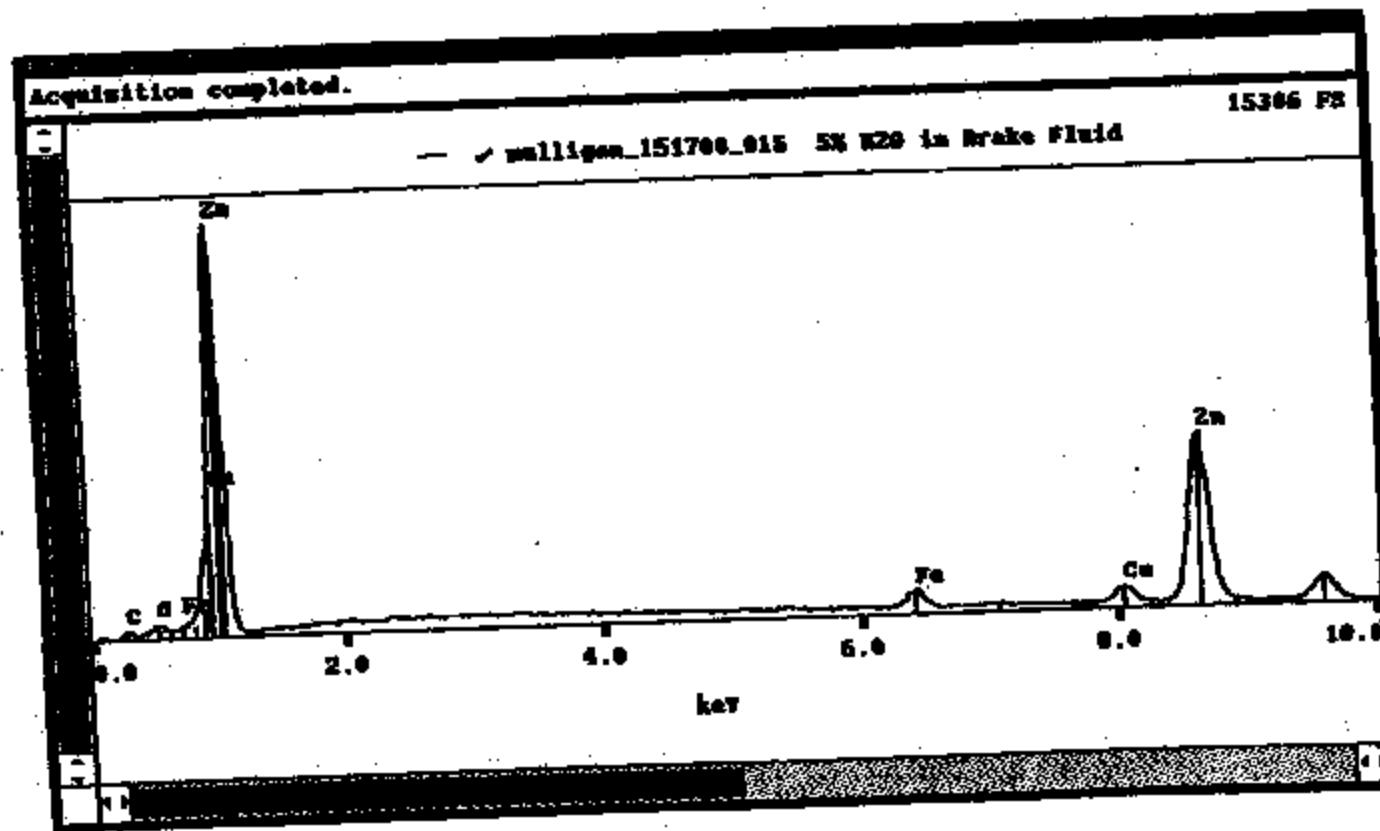


151700 5% H₂O in Used Brake Fluid, 24hr., 25x see 42

TI-NHTSA 012655



131700 56 H2O in Used Brake Fluid, 24Hrs., 25x bin 43

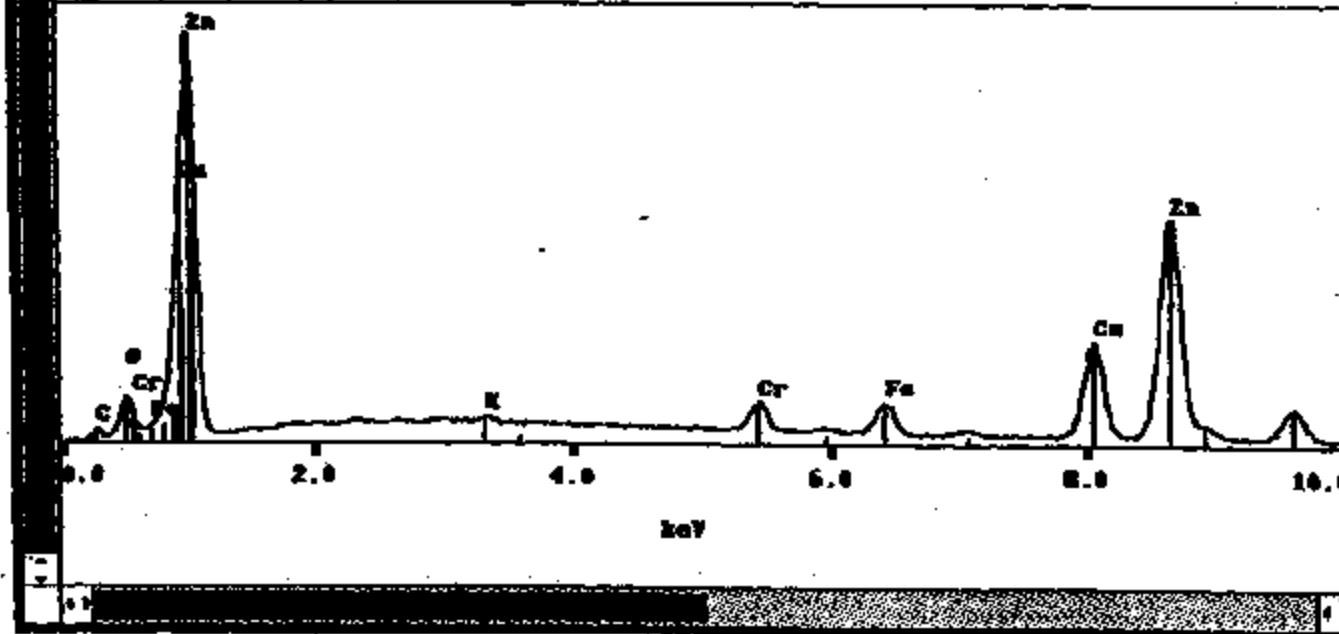


TINHTBA 042856

Acquisition completed.

— nulligan_151786_816 5x n2o in Brake Fluid

12698 FS

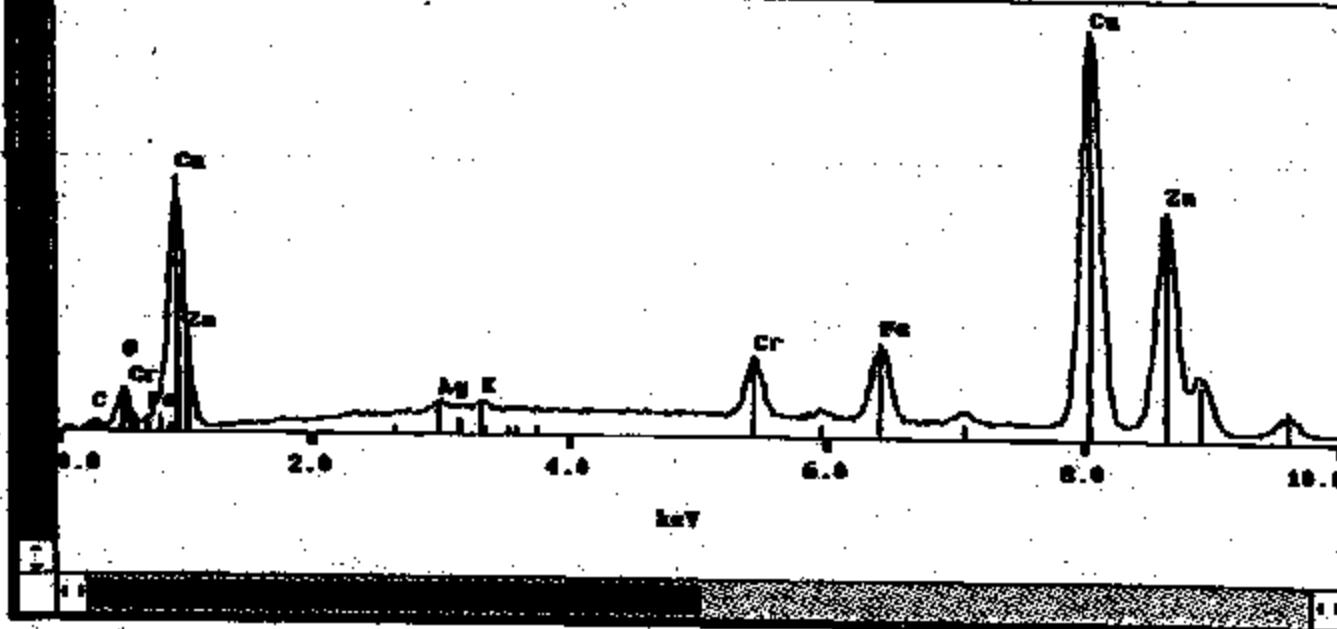


TIA-NHTSA 012857

Acquisition completed.

— v mulligan_151700_017 SK: m26 in Brake Fluid

0110-02

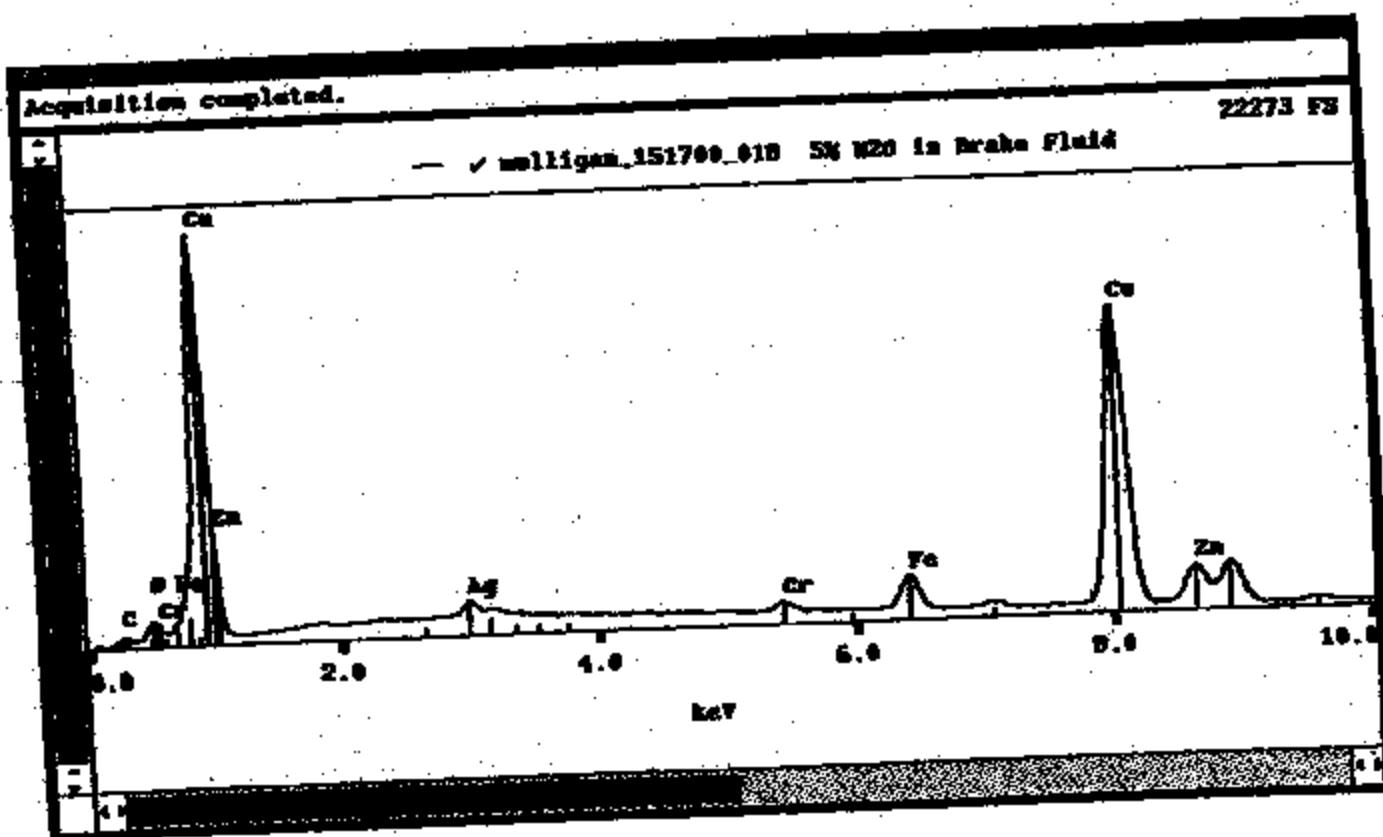


TI-NHT8A 012858

TI-NHTBA 012459



151700 58 M20 in Used Brake Fluid, 24hrs, 750x no 44, area of O17 spectra

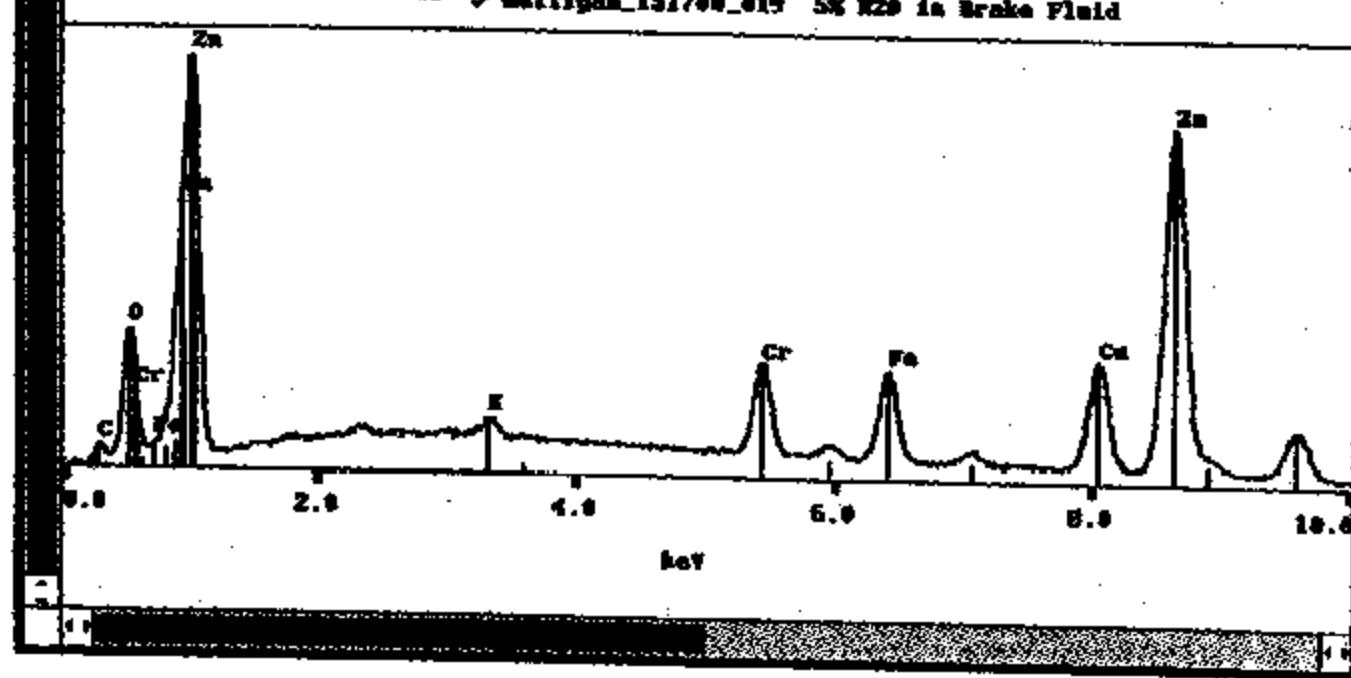


TI-NHTSA 012660

Acquisition completed.

multigan_151700_619 5% E20 in Brake Fluid

7134 PS

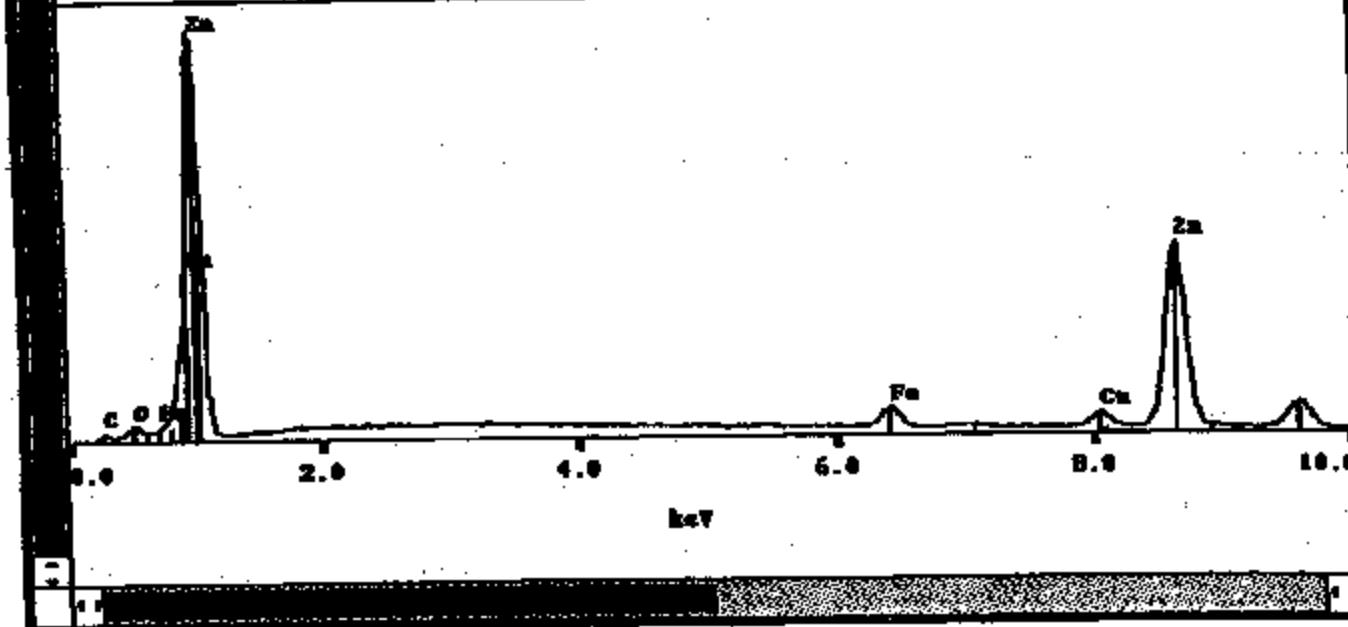


71-NHTSA 012861

Acquisition completed.

13002 F3

— *swalligan_151700_026* 5k E20 in Brack Fluid



T1-NHTSA 012882

TH-NHTAA 012863



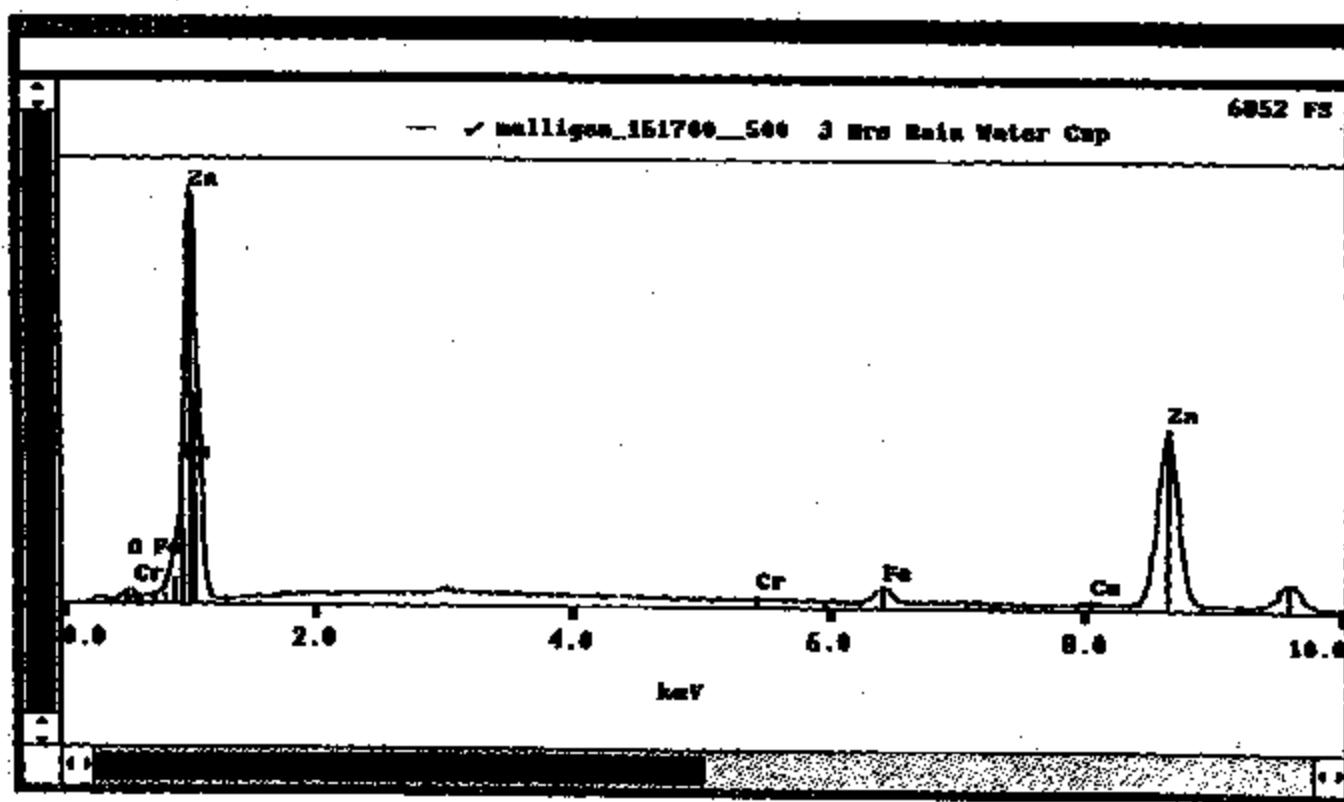
151700 3 hrs Rain Water cup 52

T1-NHTSA 012664

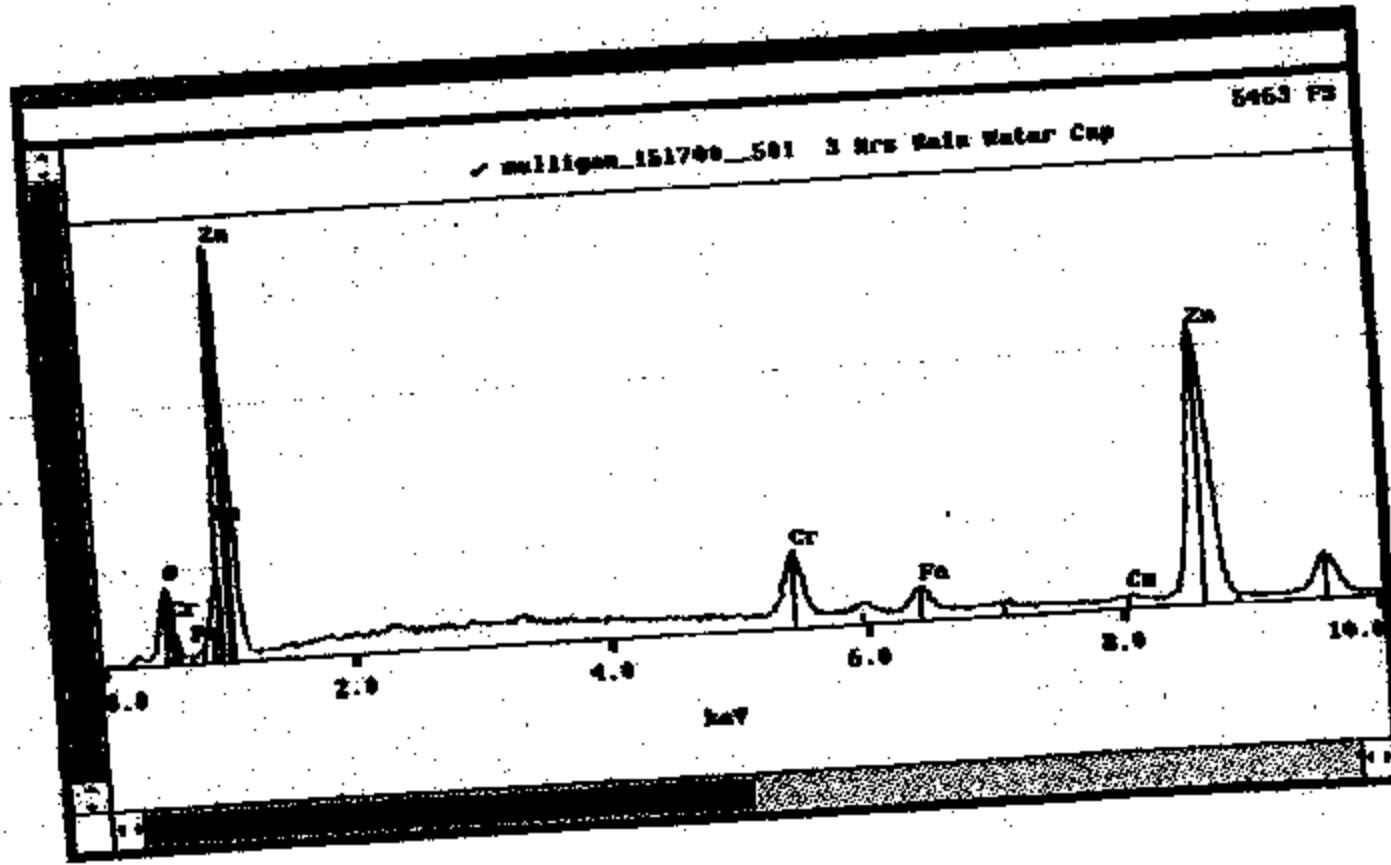


THNHTSA 012865

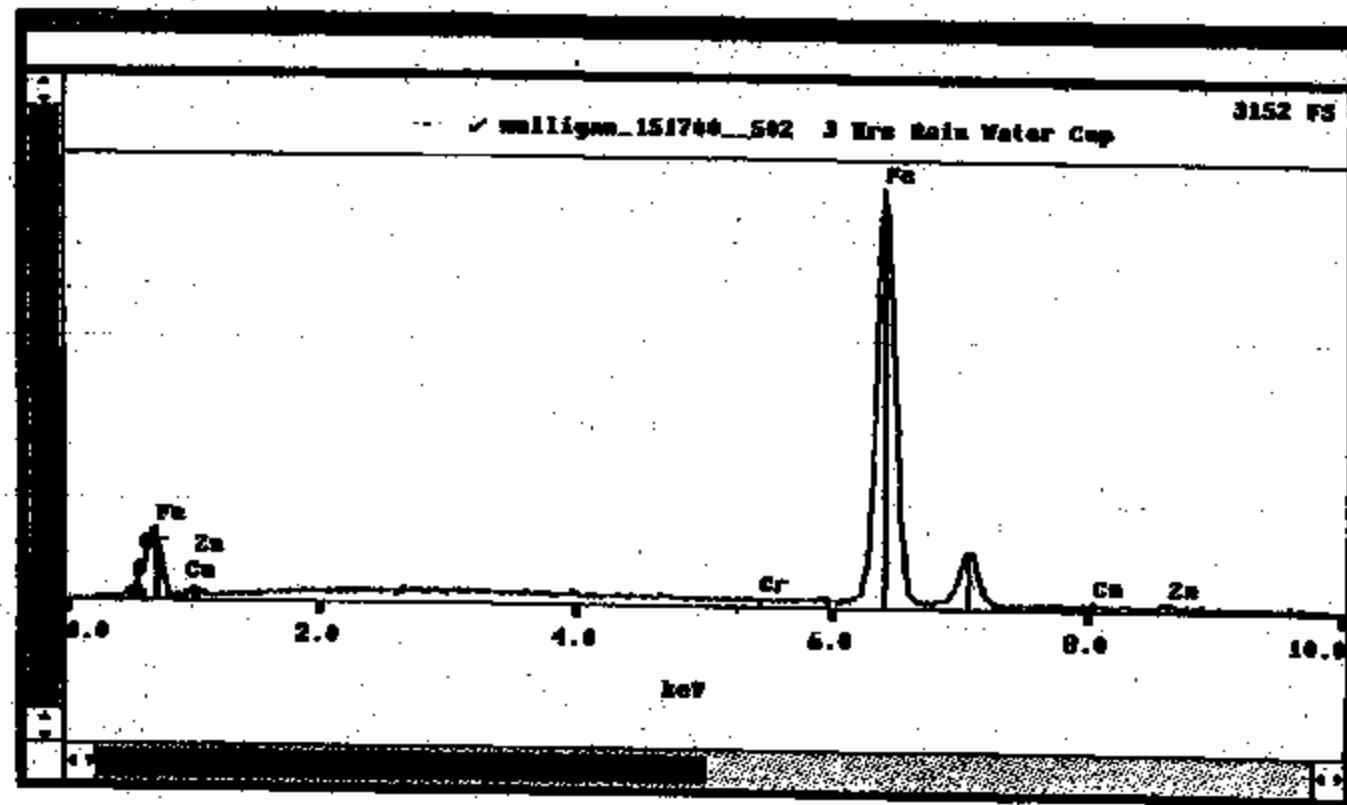


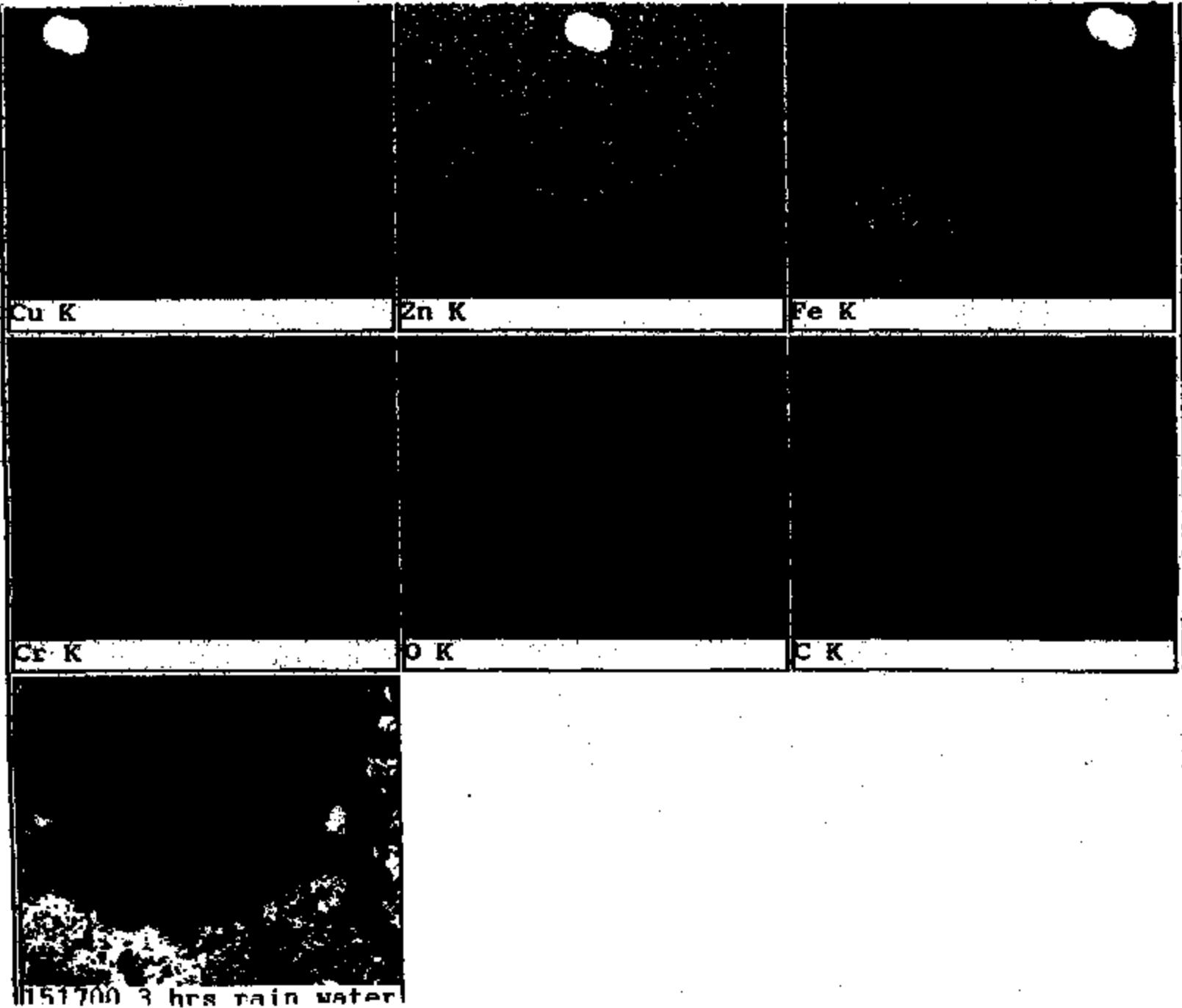


TINHTSA 012663



TI-NH76A 012867



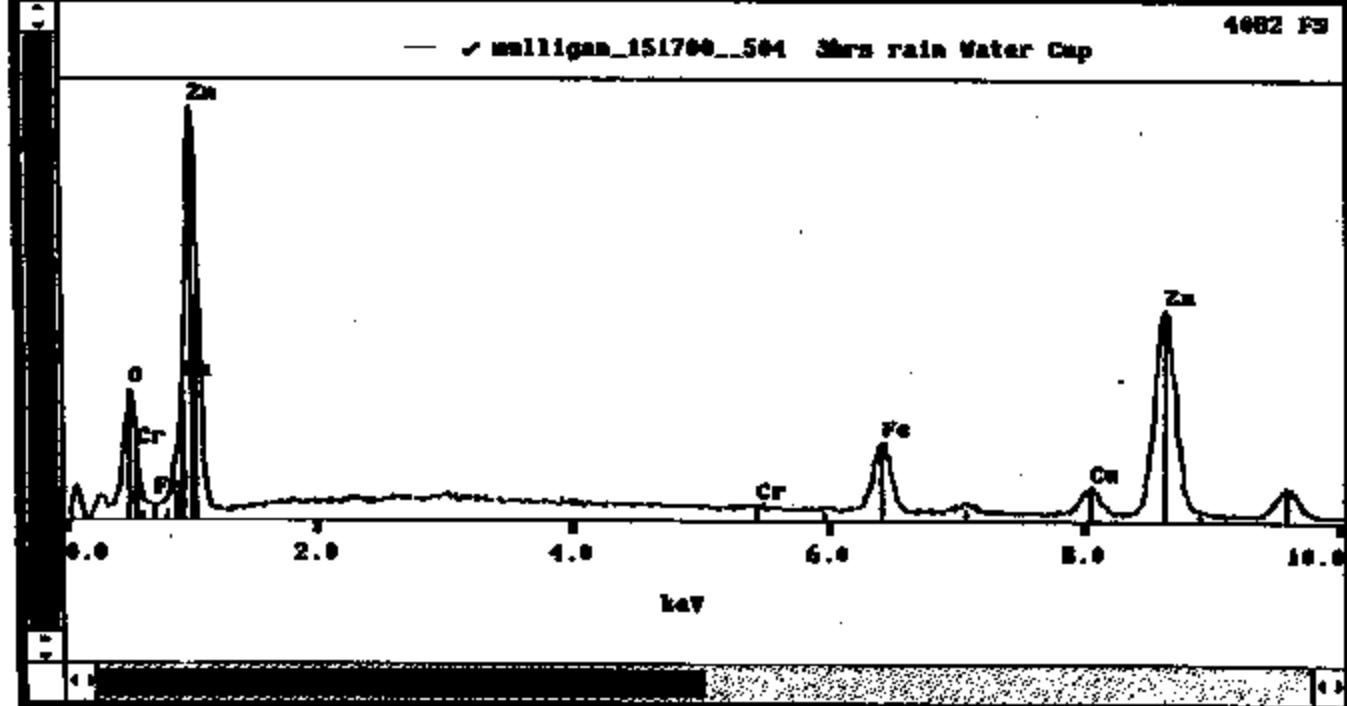


TI-NET8A 012260

Acquisition completed.

✓ mulligan_151780_504 3hrs rain Water Cap

4002 F9



TI-NHTSA 012870

H₃B

151700 Used Oil- 5% Suppo

30/MAR/1999
#3 10117

JEOL



TI-NHTA4 012871

Acquisition completed.

2

✓ mulligan_151700_000 Used Brake Fluid w Water

1892 PS

Cu

Zn

Al

Si

0.0

0.5

1.0

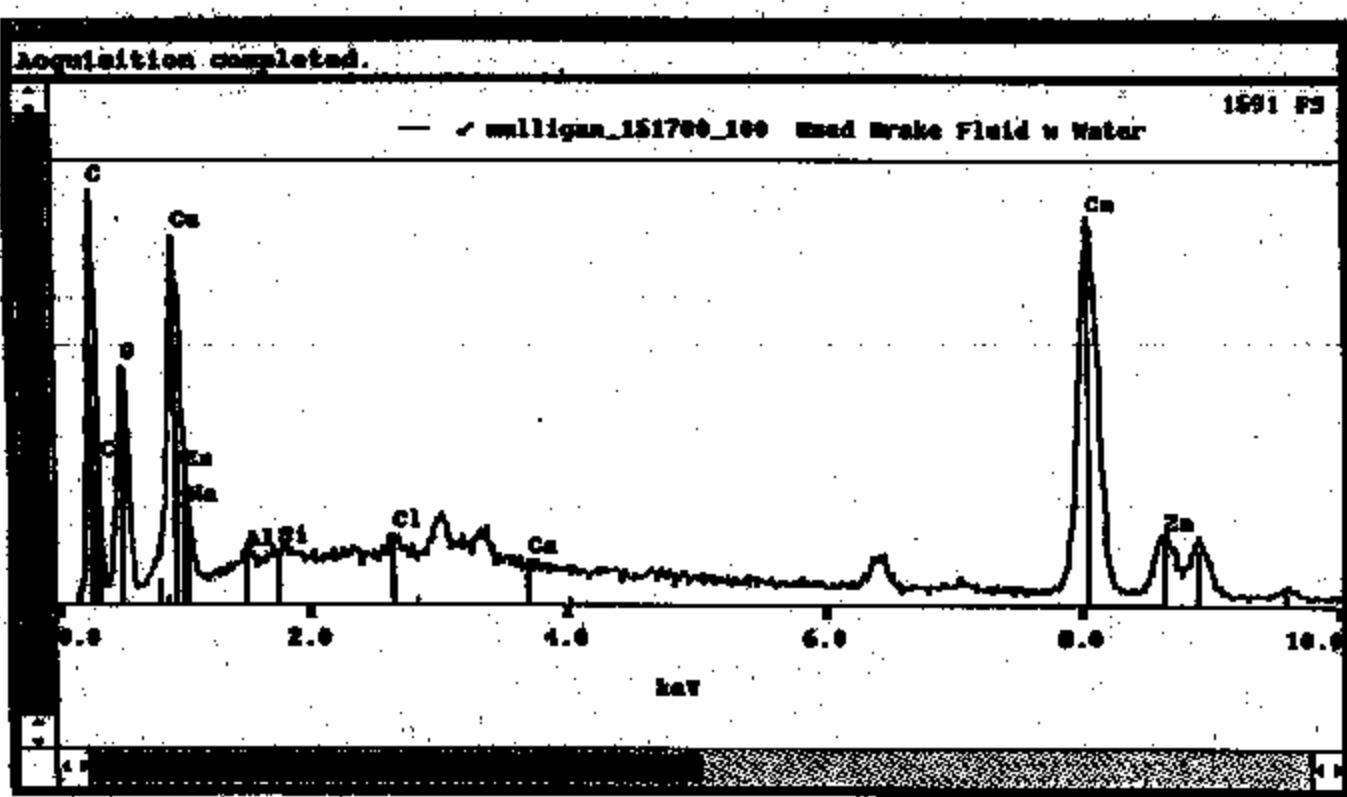
1.5

2.0

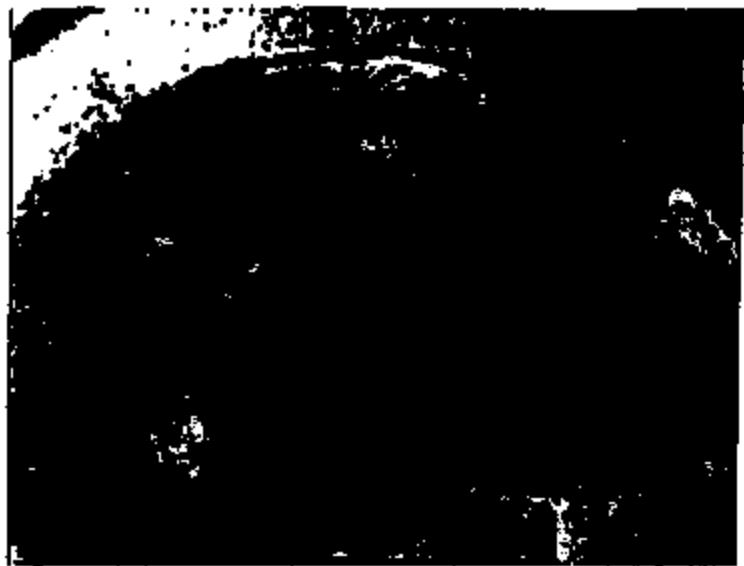
2.5

Key

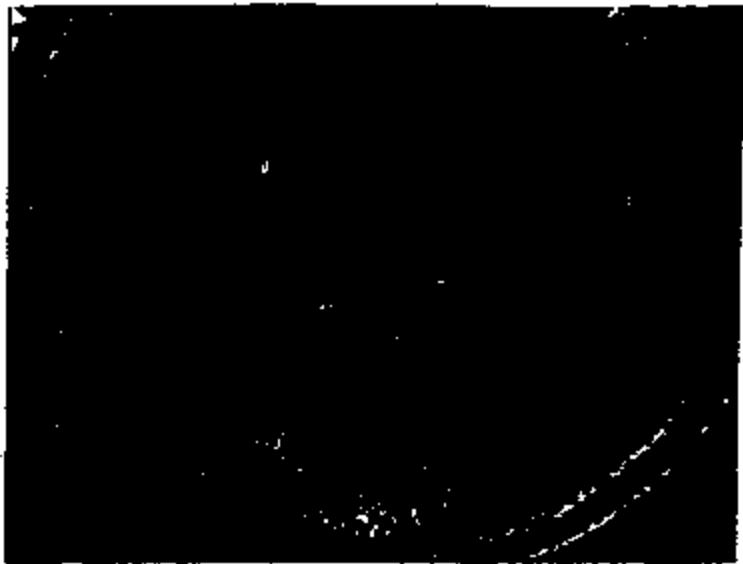
TH-NHTSA 012872



TI-NHTSA 012673



T1-NHTSA 012874



5% NaCl

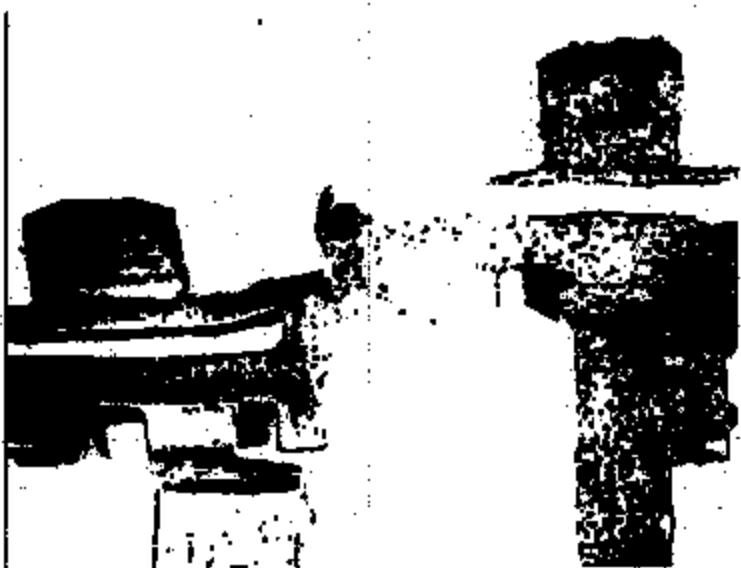
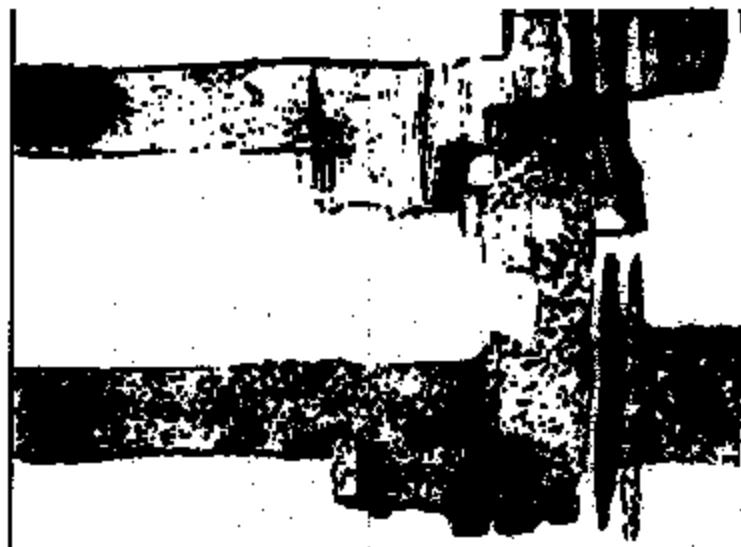


5% NaCl

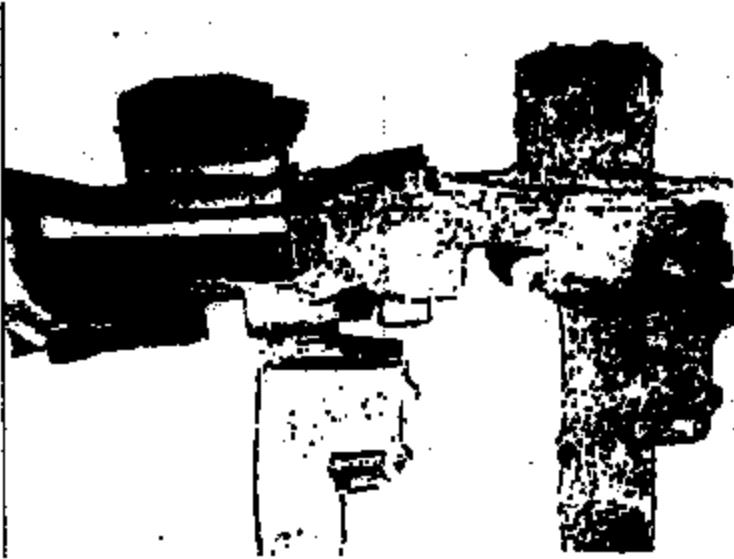
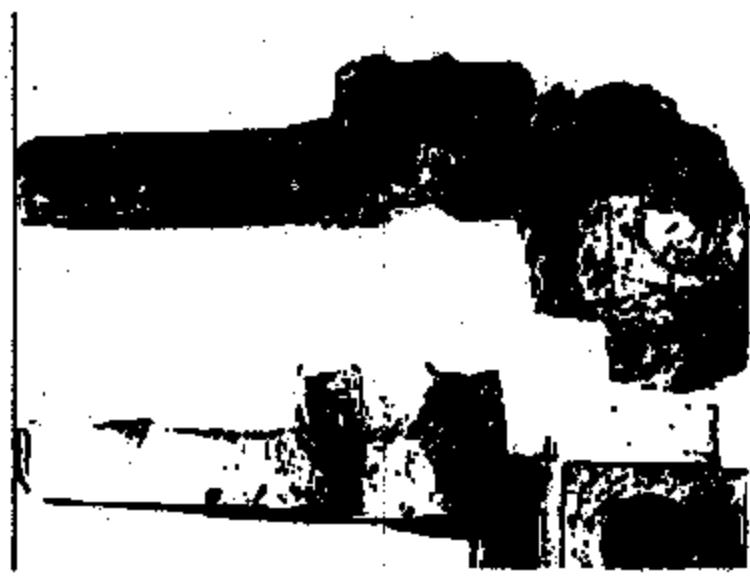
TI-NHTSA 012875



TI-NHTSA 012876



TIA-NHTSA 012877



TI-NHTSA 012878



TI-NHTSA 012879

TECHNICAL SERVICE LABS

LOG NO. 12482
TEST NO. 142010TEST NO. 142010

PCC ID.	(17)	STATE YOUR PROBLEM SAMPLE DESCRIPTION
REQUESTOR CUST. CENTER	357	Trying to compare these samples among themselves and with samples previously tested
PRODUCT CODE	388	
REQUESTOR	S. Michigan	
MAIL STATION	12-29	
EXTENSION	2535	
WIRE ID	SEAM	
DATE SUBMITTED	04/14/69	
DATE REQUIRED		
NO. OF SAMPLES	(3)	
COMPOSITION	<u>NaCl Coatings in severe state</u>	

INFORMATION DESIRED:

Corrosion composition.
Degree of scaling present.
Type of corrosion present
(electrolytic, oxidation etc.)

REPORT OF RESULTS:

DATE RECEIVED _____

DATE OUT _____

TECHNIQUE			
HOURS WORKED			
PROCEDURE USED			

*PCC I.D.

MC-325	TM-431	CLKE-122	FACIL-514
PC-127	WIRE-432	CAN-654	FACIL-521
VERS-168	EPD-621	AD DEV-286	FACIL-531
AFCC-433	PEP-822	EMCD-877	STAFF-855
IMD-430	CSD-635		

TI-NHTSA 012880

OMNIC Search

Spectrum: TSL # 142010, Greenish residue on contact arm

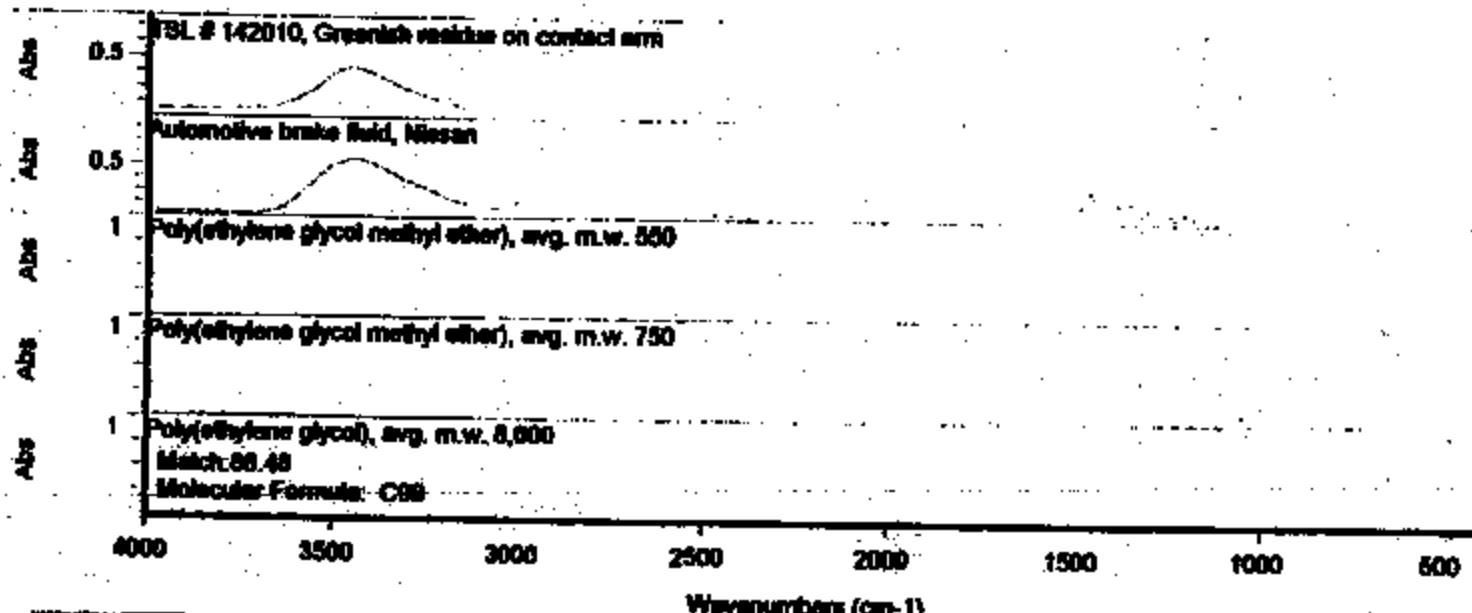
Thu Apr 29 16:39:16 1999

Region: 3995.85 649.98

Search type: Correlation

Comment:

246m 65m 21



Index.	Match	Compound name	Library
98	93.66	Automotive brake fluid, Nissan	TSL
10394	98.12	Poly(ethylene glycol methyl ether), avg.	Aldrich Condensed Phase
10395	87.49	Poly(ethylene glycol methyl ether), avg.	Aldrich Condensed Phase
10392	86.48	Poly(ethylene glycol), avg. m.w. 8,000	Aldrich Condensed Phase
9340	86.40	Brij 95: Polyoxyethylene(37) methyl ether	Aldrich Condensed Phase
9613	86.37	Brij 35: Polyoxyethylene(23) methyl ether	Aldrich Condensed Phase
10398	85.42	Poly(ethylene glycol), avg. m.w. 600	Aldrich Condensed Phase
10393	83.37	Poly(ethylene glycol methyl ether), avg.	Aldrich Condensed Phase
9996	83.36	2-(2-Ethoxyethoxy)ethanol, 99-%	Aldrich Condensed Phase
10396	84.70	Trityl/caproyl isopropenyl ether	Thermal Polymer and Additives

142010 Infestation Burn (18 hr)



48010 Infestation Burn (5 hr)



TI-NHTBA 012682

4 HRS TAPWATER - C.O.P

14241900



Before Cleaning w/ IPA

"4 HRS TAPWATER - C.O.P" Post IPA Cleaning



142010

TI-NHTSA 012883

24 hrs used brake fluid

1/26/97 200

#6



Before cleaning in IPA

24 hrs used brake fluid - dry Post IPA Cleaning



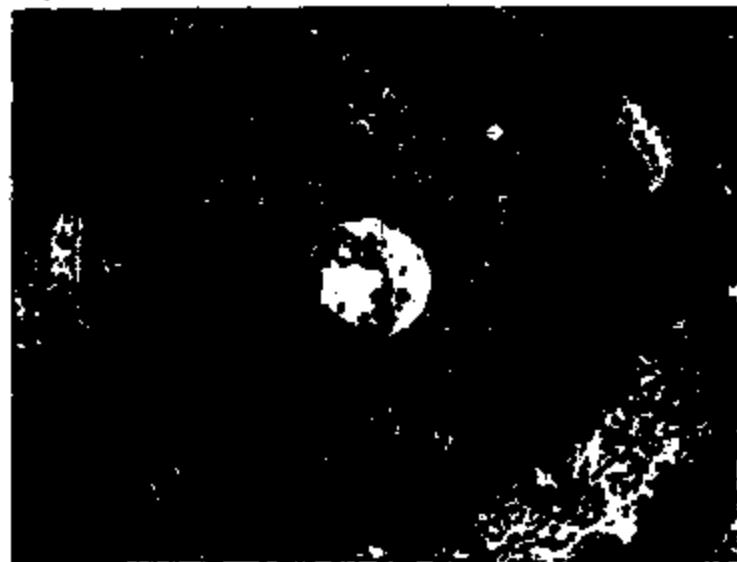
1/26/97

TL-WHTSA 012884

42010 484 13VABLE



42010 484



TI-NHTSA 012865

42010 46 HIS 30P

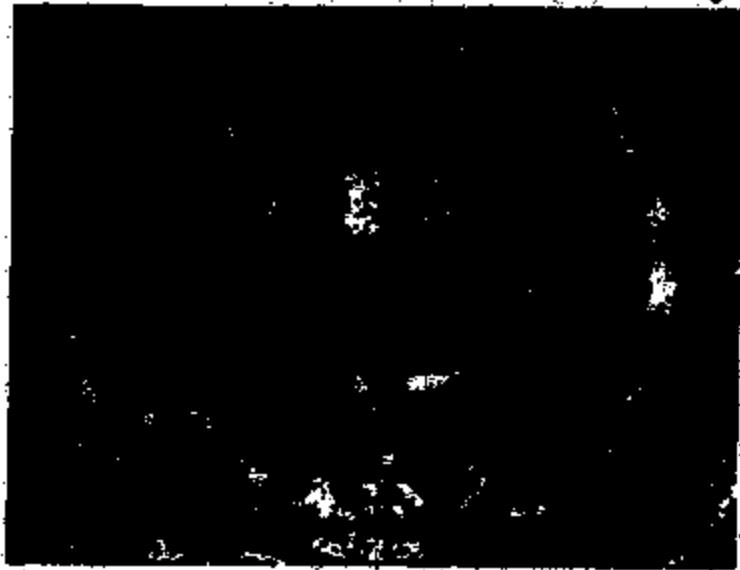


42010 46N 50P summary



TI-NHTSA 012886

3 HCS in rainwater - cup 187-EPA cleanup



142610

3 HCS Rainwater - cup 187-EPA cleanup



droplets cleaning in water

TI-NHTSA 012807



42010 TABLE SALT

TI-NHTSA 012888

1/2010 TABLE SALT CUP



4/2010 TABLE SALT



TH-NHTSA 012669

42010 TABLE SALT STATIONARY

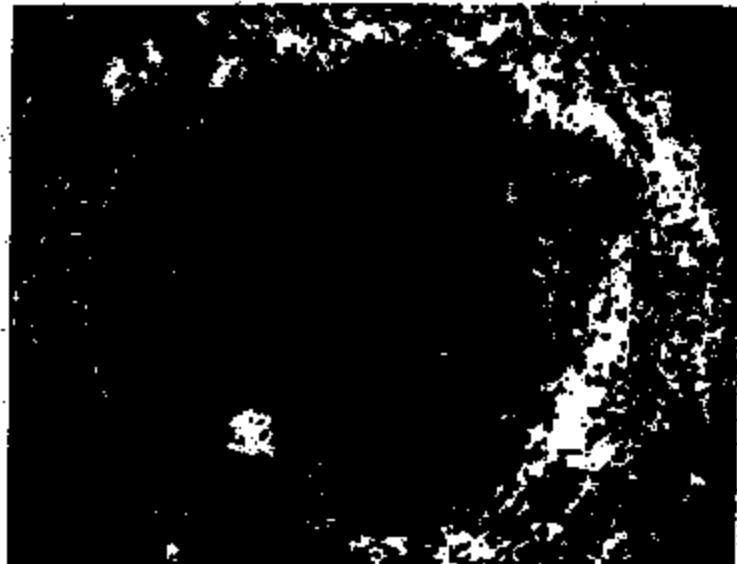


42010 TABLE SALT MONARIE (RIVER AREA)



TI-NHTSA 012890

42040 18HC



TI-NHTSA 012891

42010 18H Inf. Burns - Movable Remants



142010 18H Impenetrable Burn - Cup



TI-NHTSA 012692

142010

18 Hr IMPENDING BURN



12010 18H Ink Burn STATIONARY



TI-NHTSA 012698

TO: SEAN MULLIGAN
NUSS BAUMAN

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

99-243: TSL #'S 151700 & 142010: TTB SIMULATION SAMPLES: ROUGH DRAFT
ONLY

CHARACTERIZE:

Characterize the samples with regards to contamination, corrosion, and arcing.

SAMPLE EXPOSED TO DEMP BRAKE FLUID FOR 24 HOURS:

CUP ANALYSIS: The chromate layer is missing in many areas; generally we find relatively uncorrugated zinc metal underneath; these areas appear shiny under optical examination. In areas where the chromate isn't missing, we find that substantial amounts of copper have been deposited on top of the chromate surface. A zone showing both types of these areas is shown at various magnifications in Photos 61-64. Elemental distribution maps are also shown in Photos 60 and 65. They show the nodular nature of this copper deposit. This is also documented in Spectra 310-320 which were taken at various voltages (20, 15 and 5 KEV to sort out overlapping layers).

Both the cup and the switch cavity had large amounts of blackish deposit on them. The deposits on the contact arm are being analyzed in the Chem Lab by FT/IR spectroscopy. The deposits on the cup were mainly removed by gentle washing in isopropyl alcohol. Before and after optical photos were taken to document the effect of cleaning. We can't analyze grossly oily samples in the SEM since that would contaminate the equipment.

The data was collected under the guidelines of TSL-9-71, Rev A which can be accessed at <http://www-nad.mc.tj.com/tsl/>. SEM-EDAX (Scanning Electron Microscope with Energy Dispersive Analysis of X-rays) analysis was used in the above described analysis. The data will be sent through the internal mail.

AL HOPKINS

MSG ID: ARCP

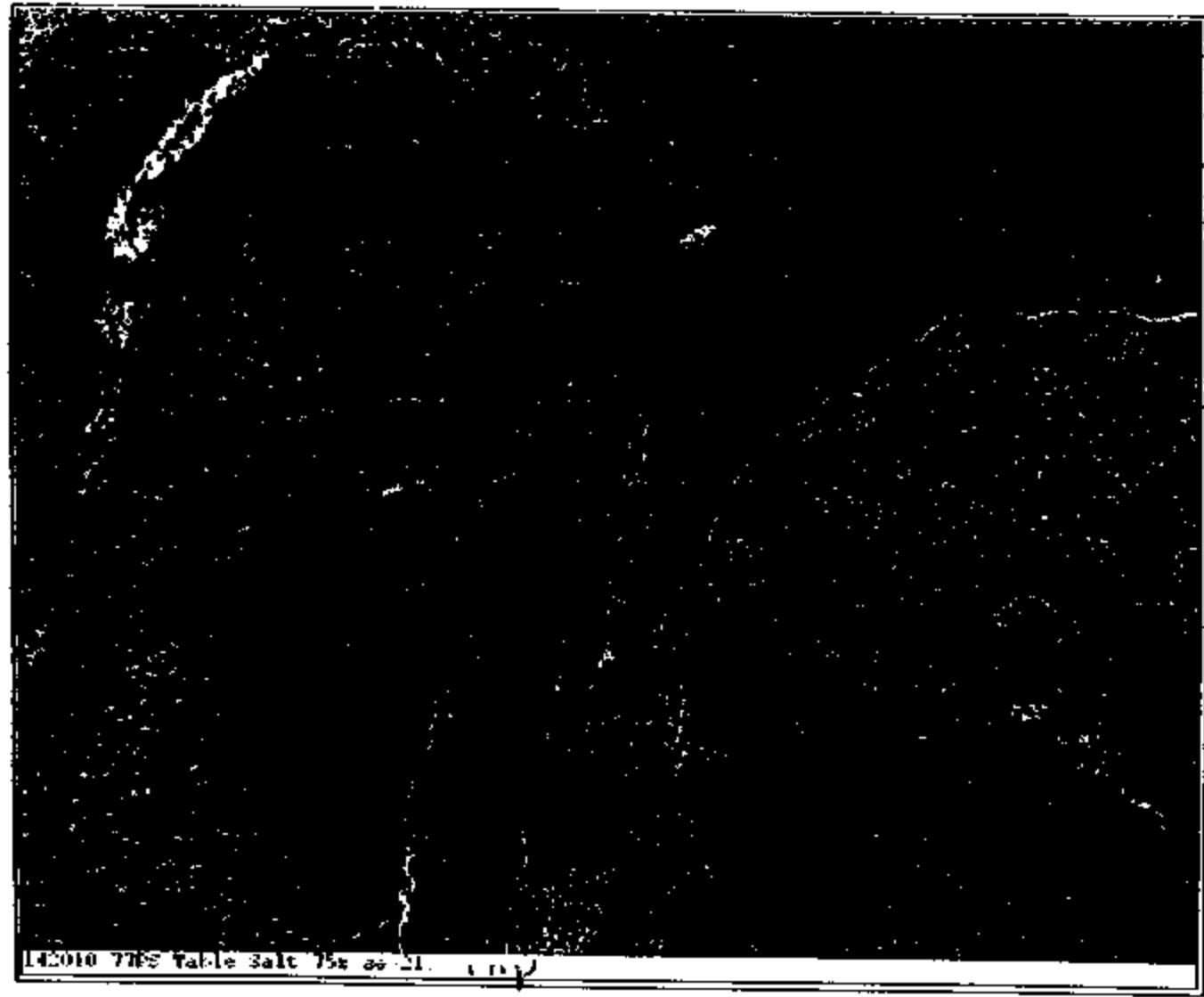
PHONE: 508/236-3040

TI-NHTSA 012685



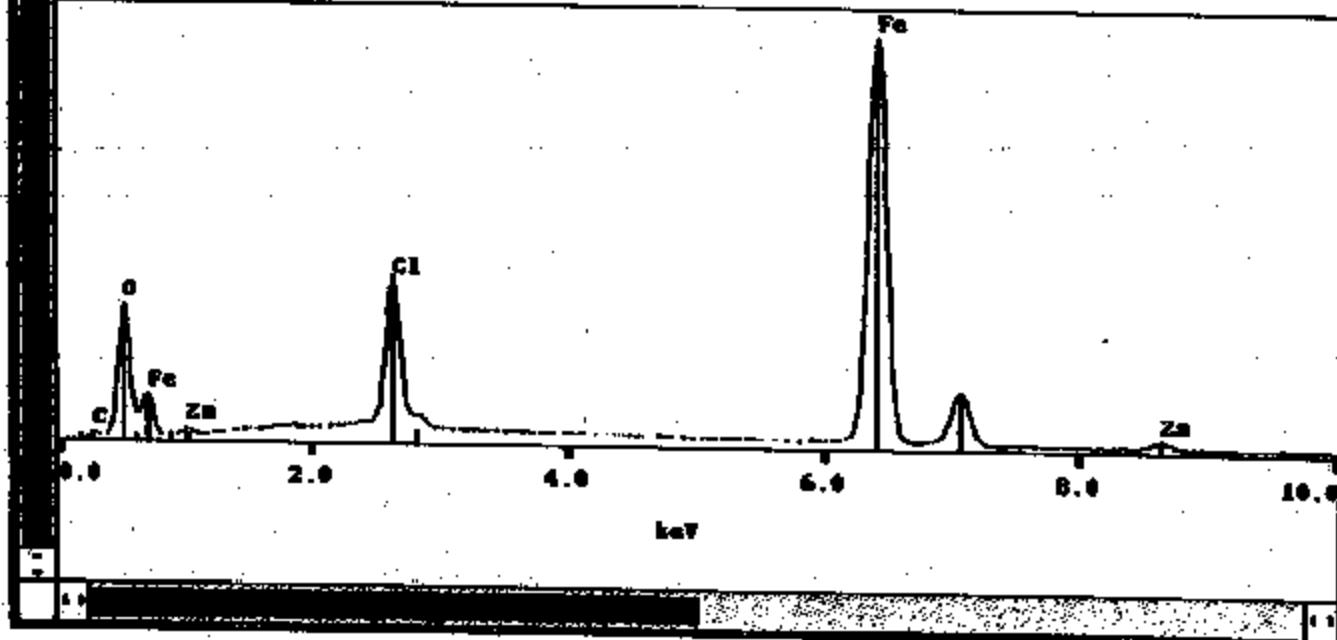
142610 7782 Table Salt 75x less -2

TI-NHTSA 012896

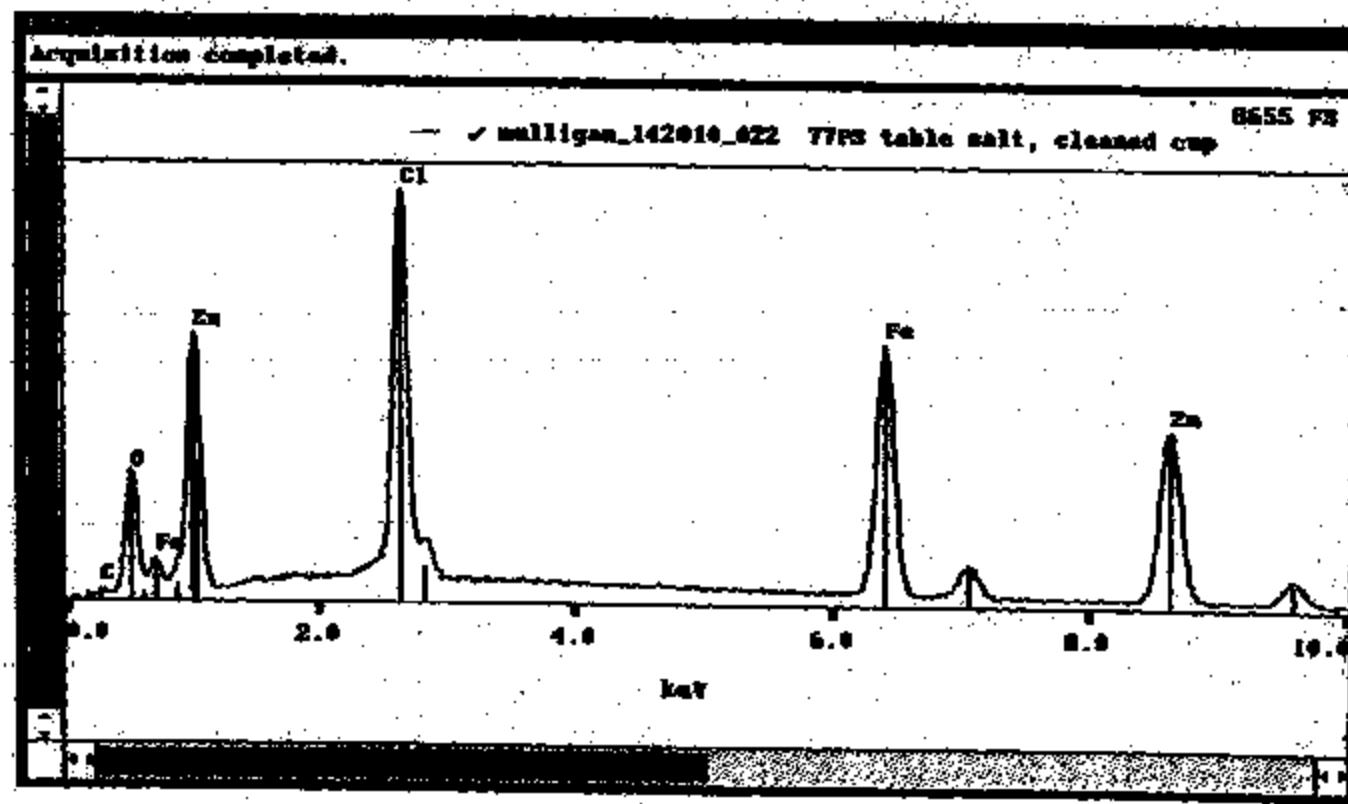


Acquisition completed.

✓ mulligan_142816_021 77% table salt, cleaned cup 12563 PS

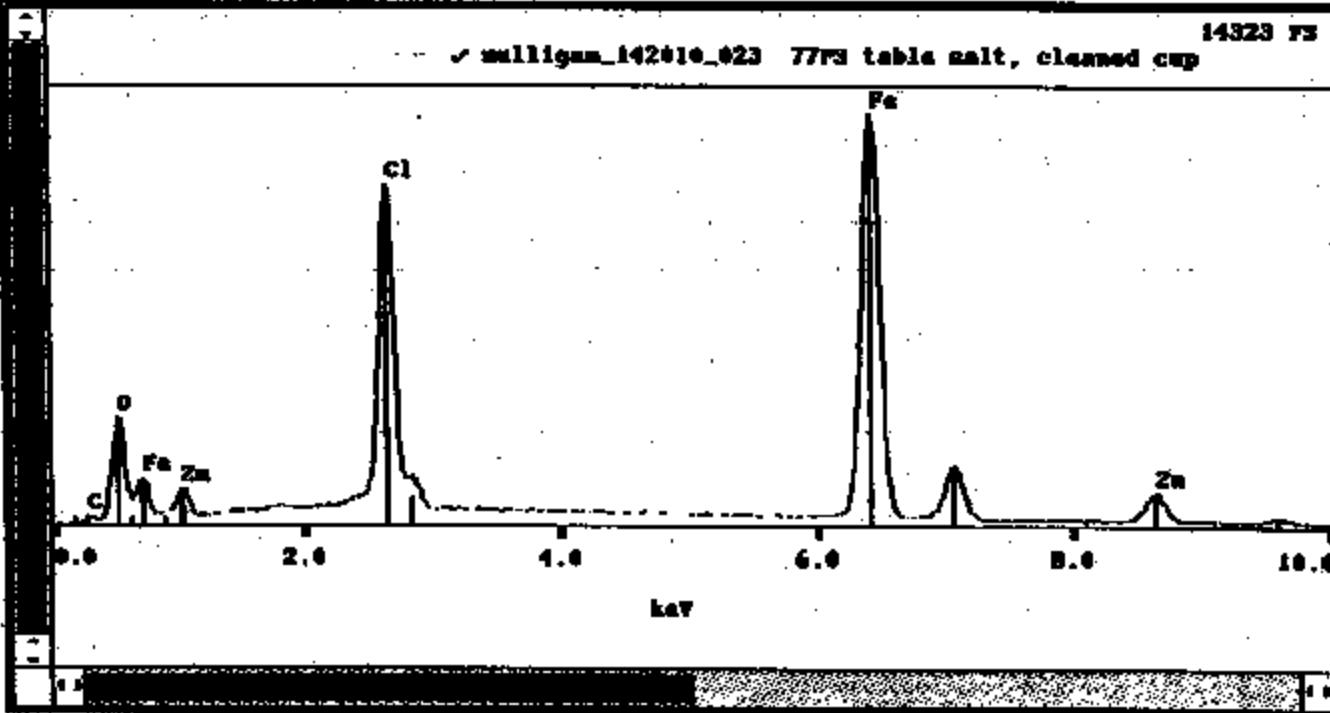


TI-NHTSA 012887



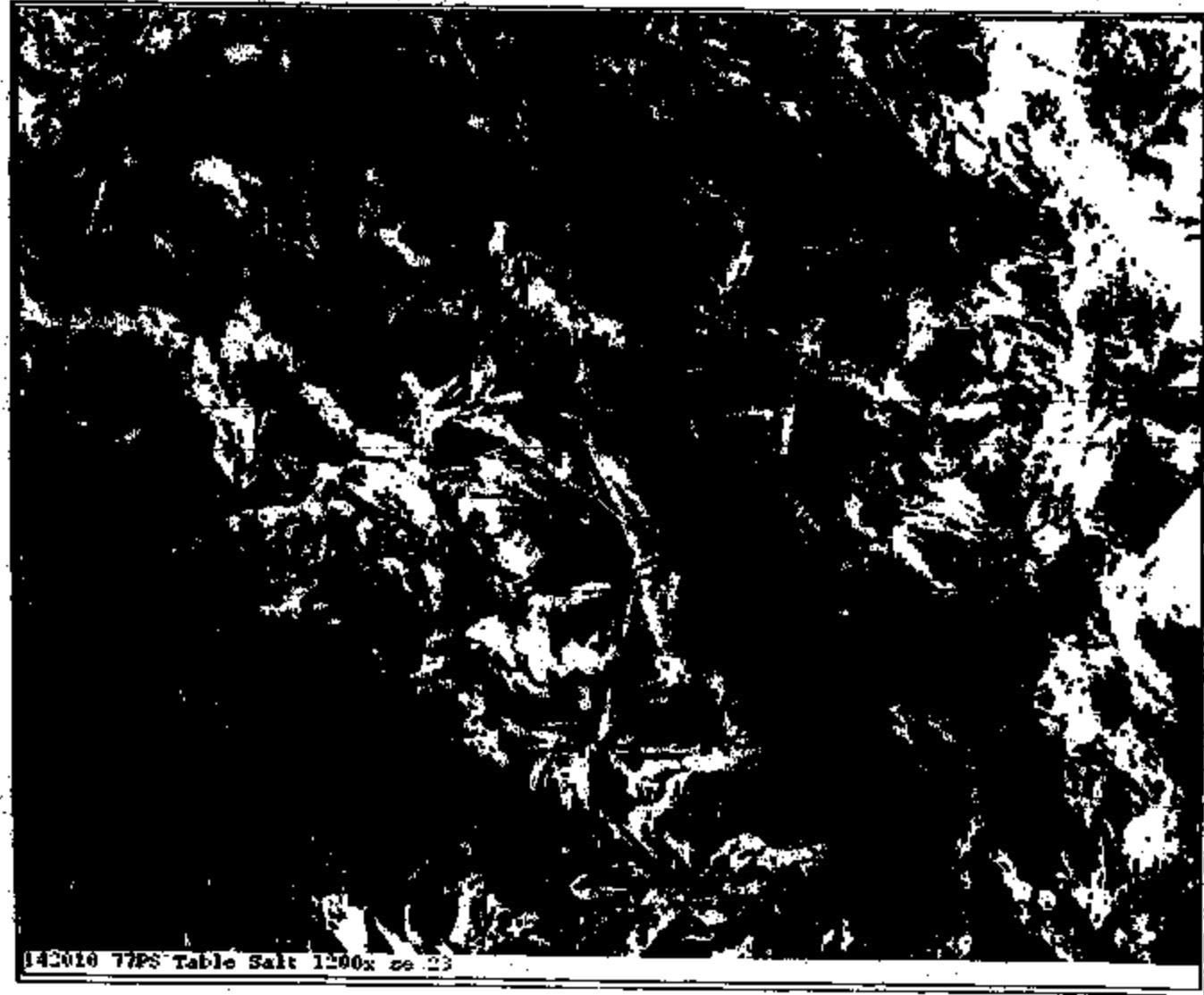
T7EHTBA 012698

Acquisition completed.

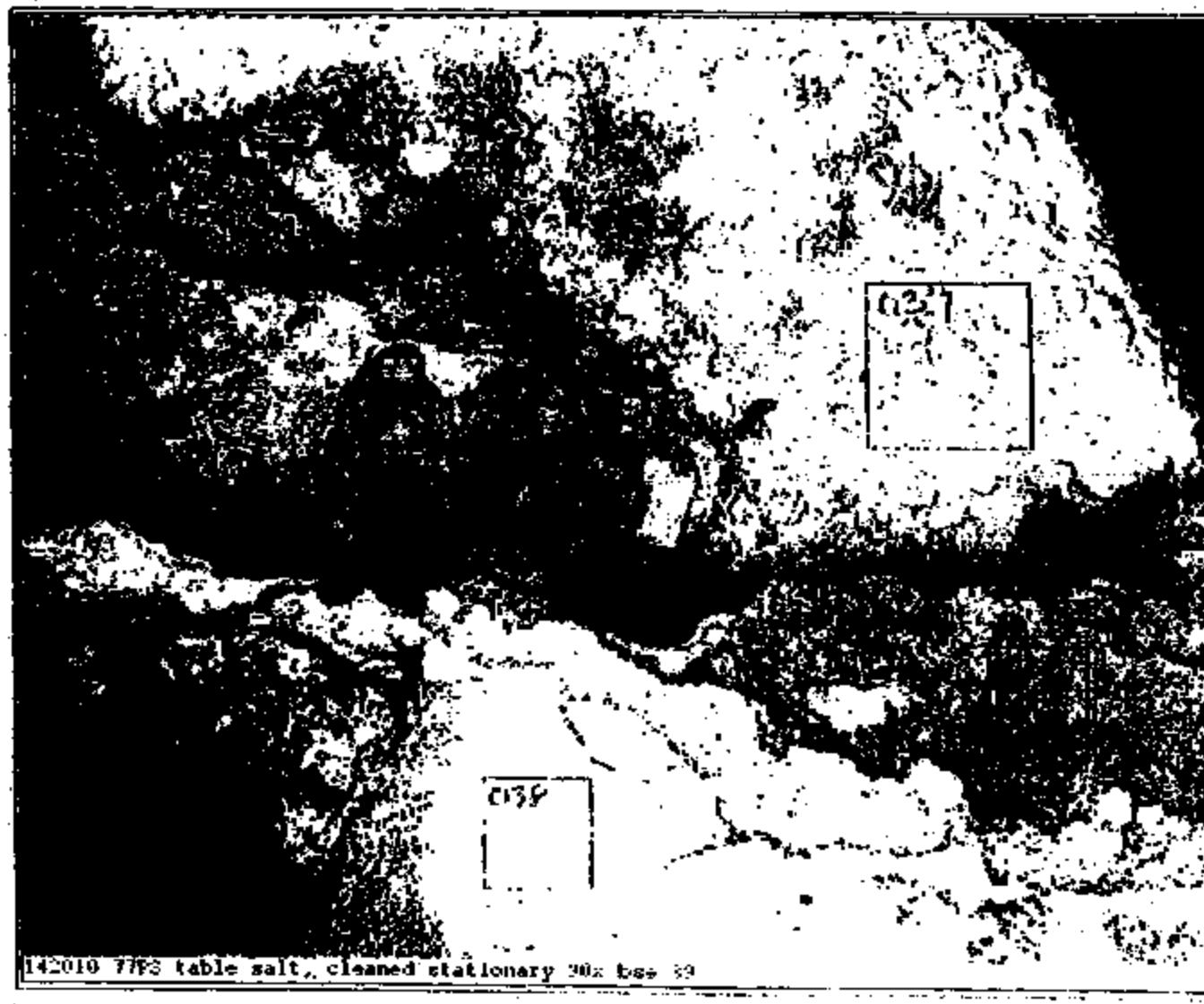


TI-NHT3A 012603

T-NHTSA 012900



142010 77PS Table Salt 1200x ze 23



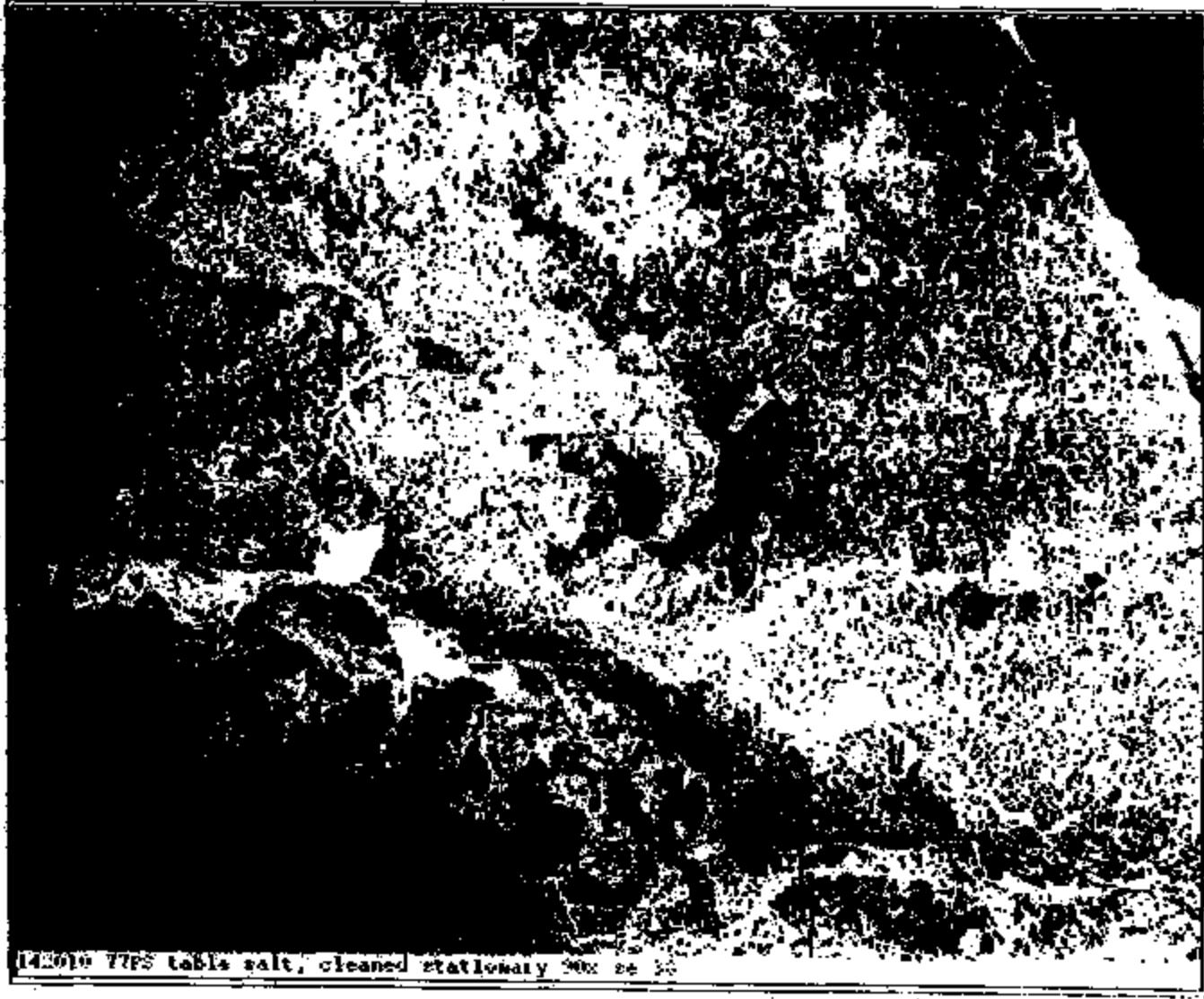
142010 TPS table salt, cleaned stationary 30x bse ss

TL-NHT&A 012801



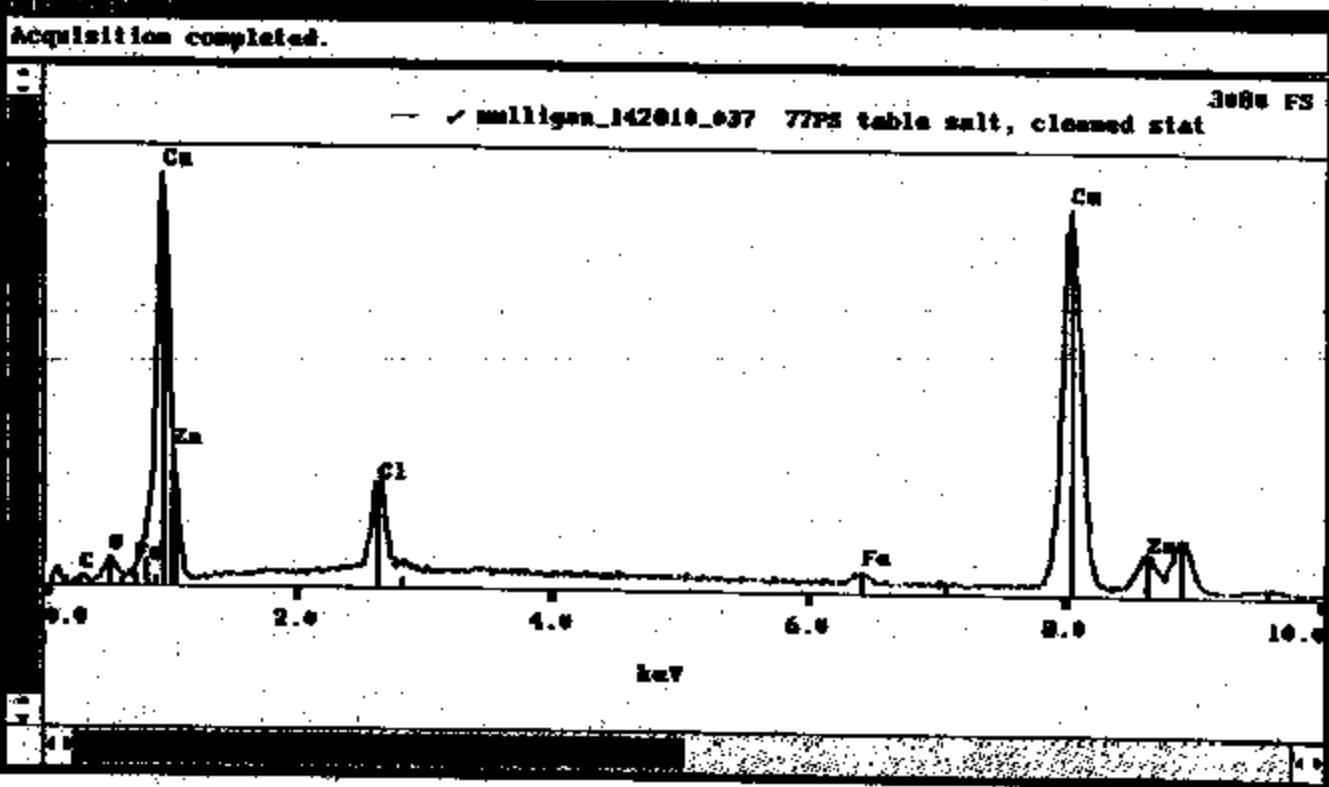
14000x This table salt, cleaned stationary 20x see 57

TI-NHT8A 012802

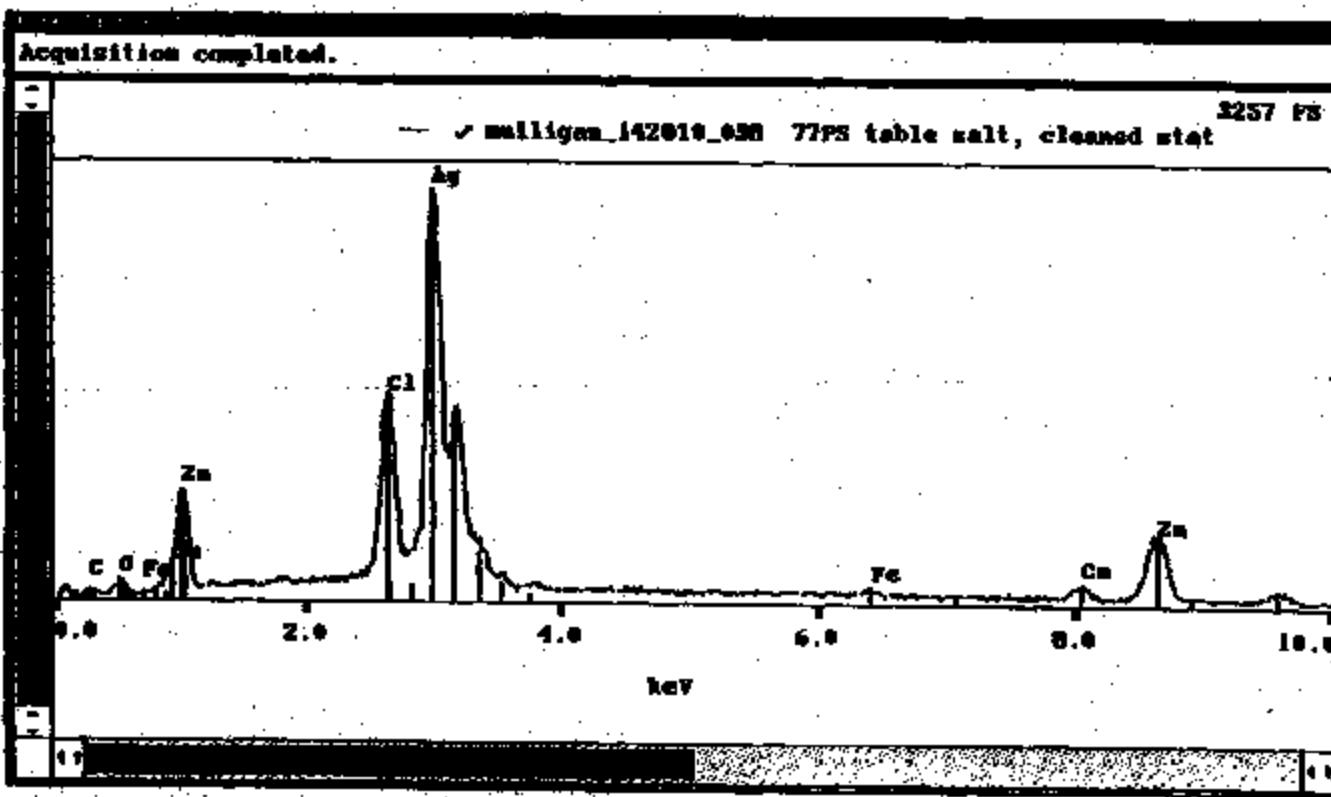


Kroil TPS table salt, cleaned stationary 20x se 30

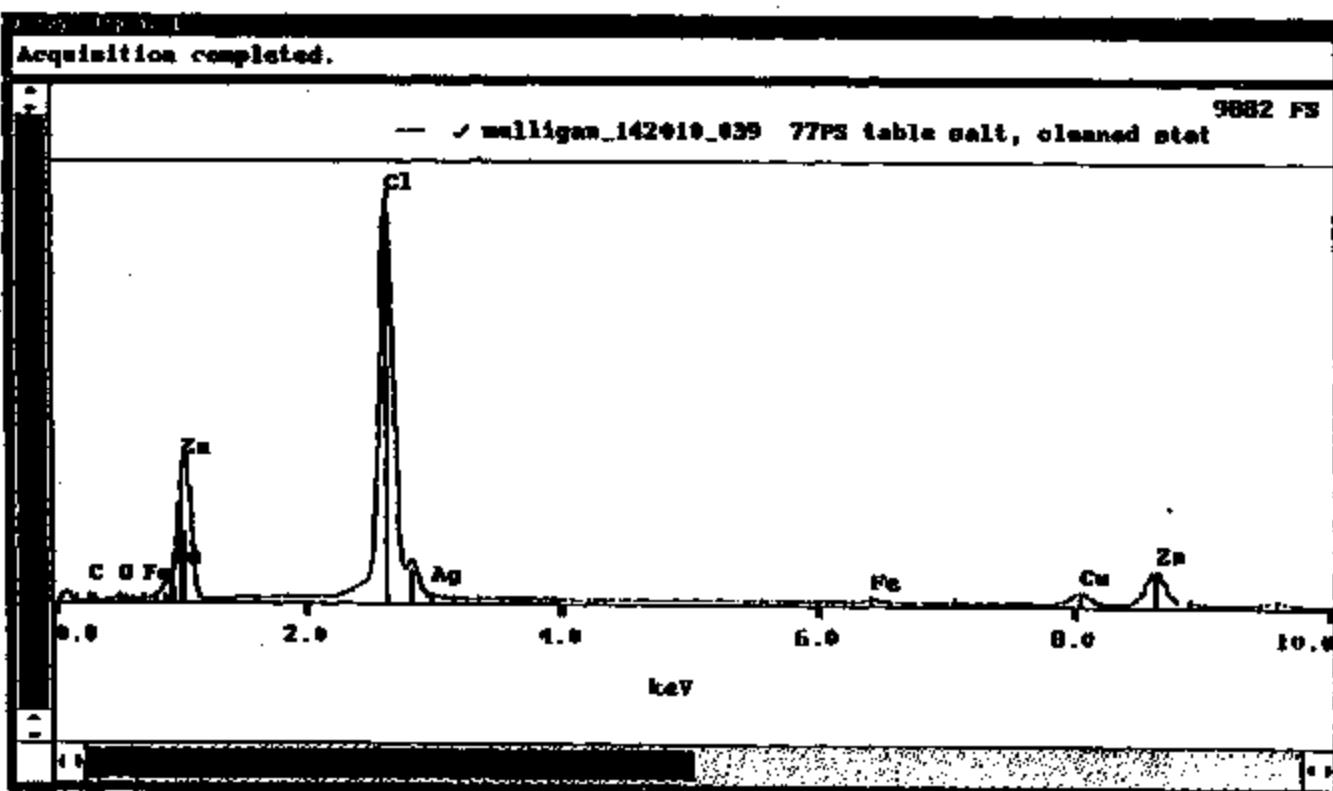
TH-NHTSA 012803



TINHTSA 012804



TI-NHTSA 012005



TIANHTSA 012806



Figure 77c Table salt, cleaned movable remains (x 40)

TI-NHT8A 012007



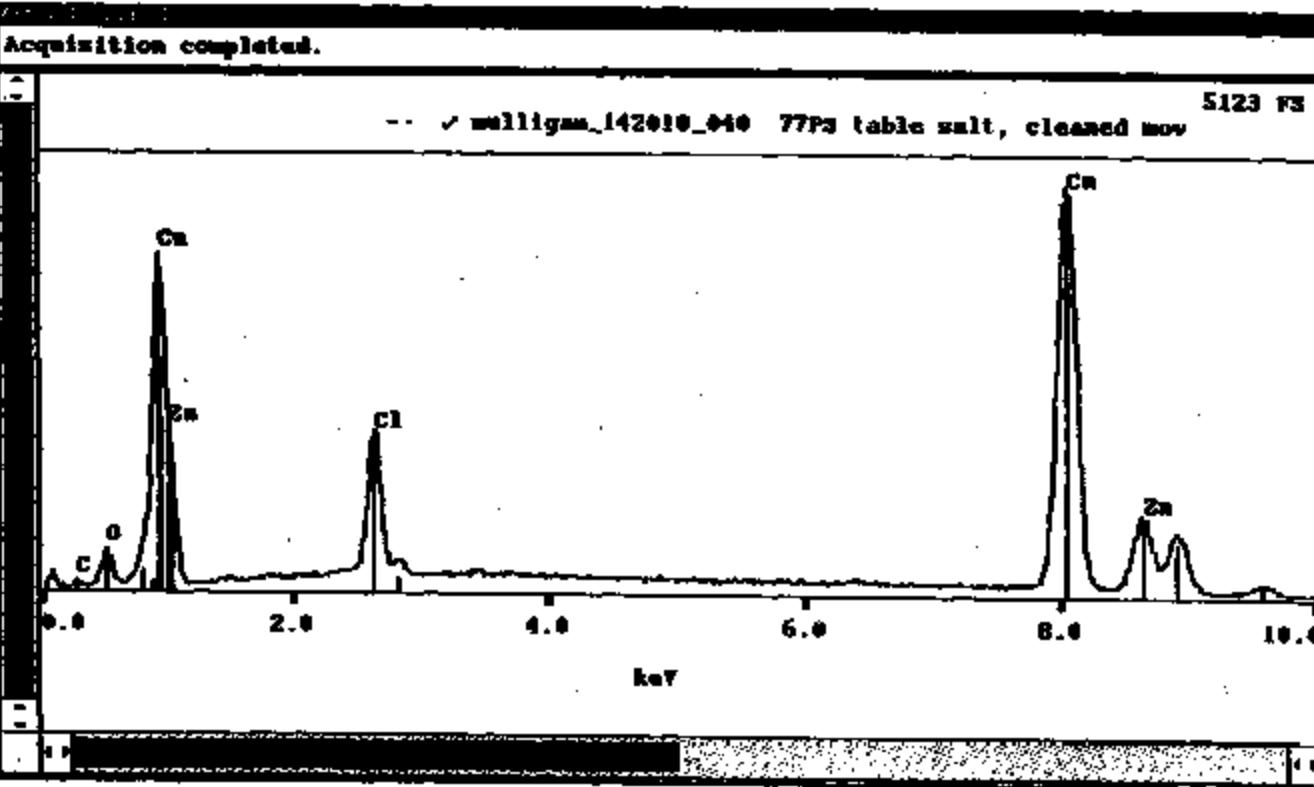
142810 7783 table salt, cleaned movable remnants 75x se 41

TL-AHHTSA 012808

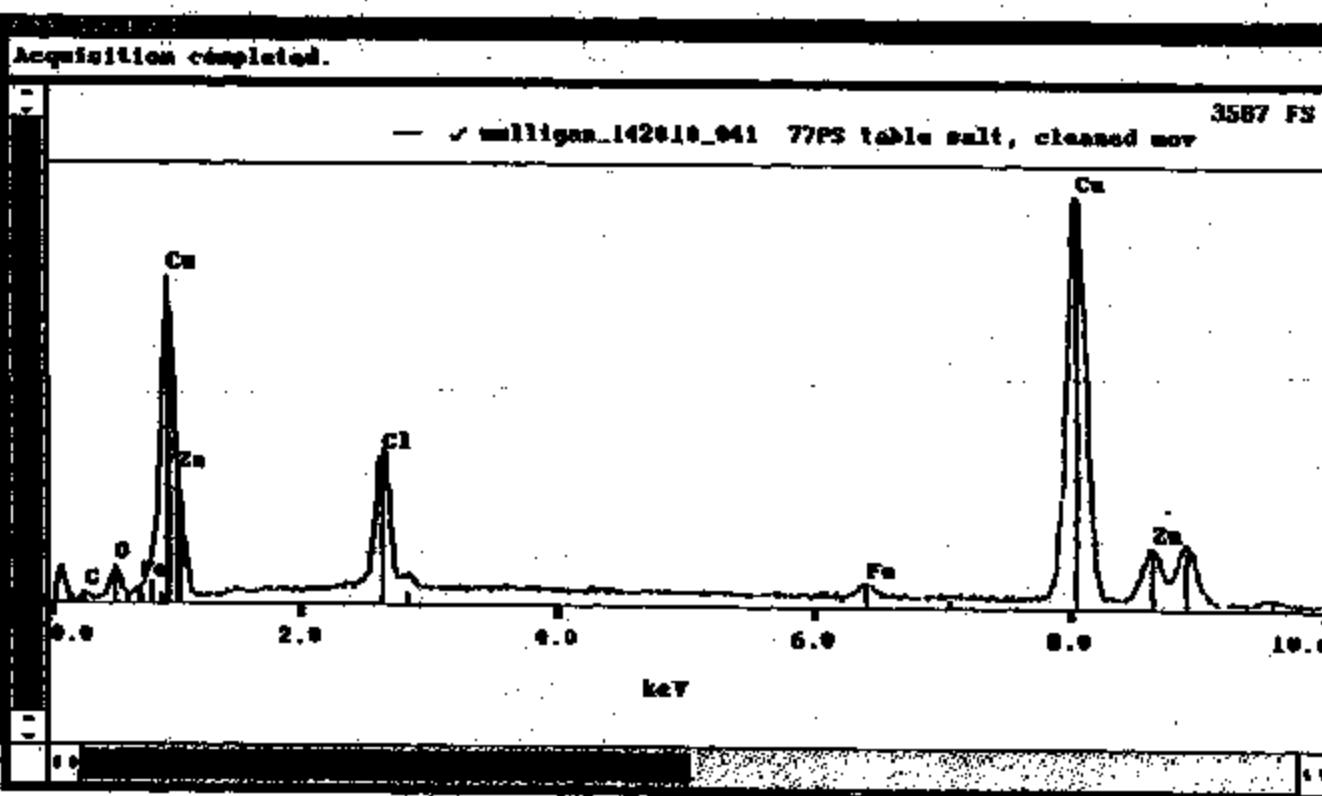


142010 TNS table salt, cleaned movable remains 75x See 42

TMHTSA 012908



TI-NHTSA 012010

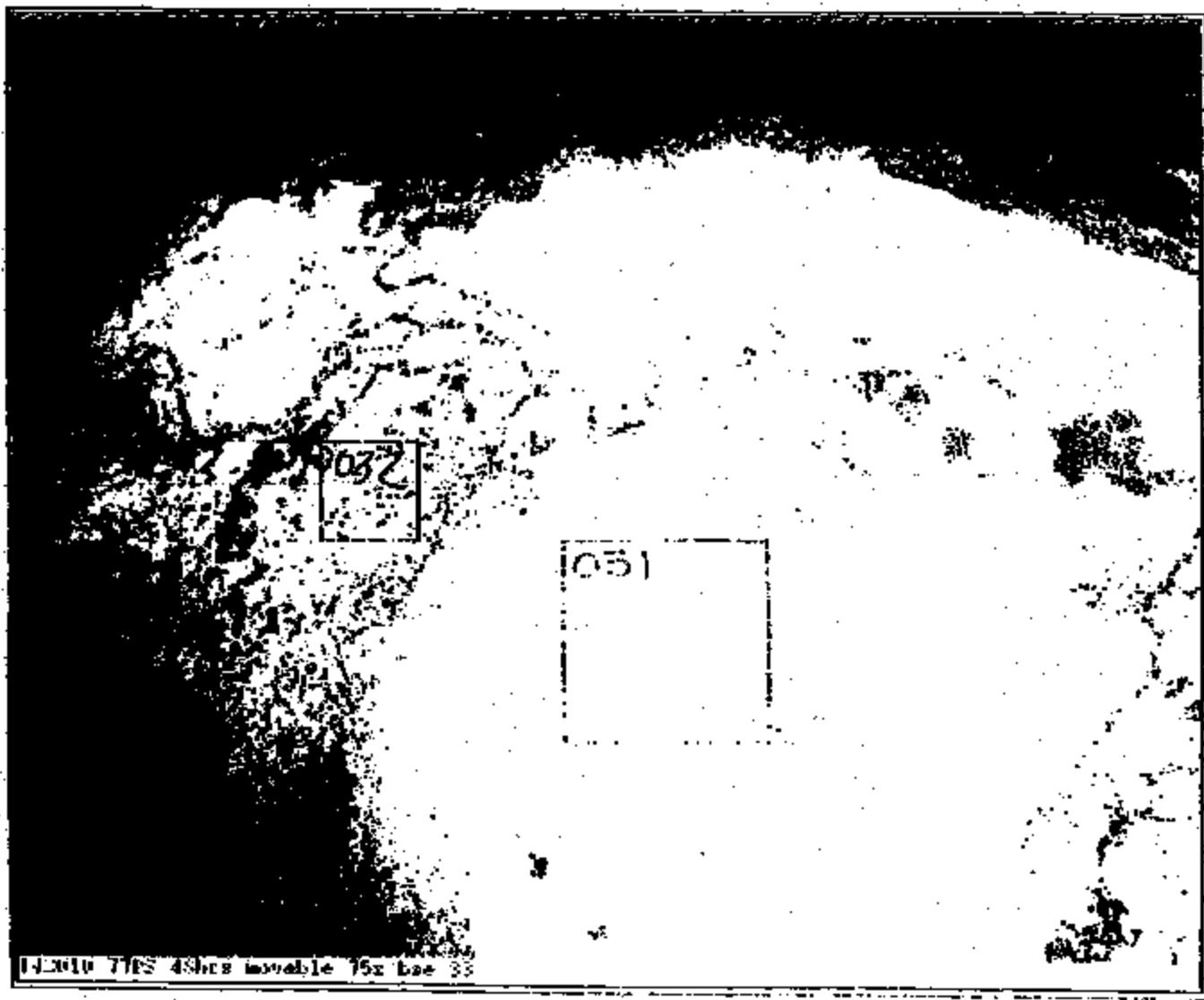


Ti-NHT8A 012911



TH-NHTSA 012012

14.2010 7780 48ms 20x se 31



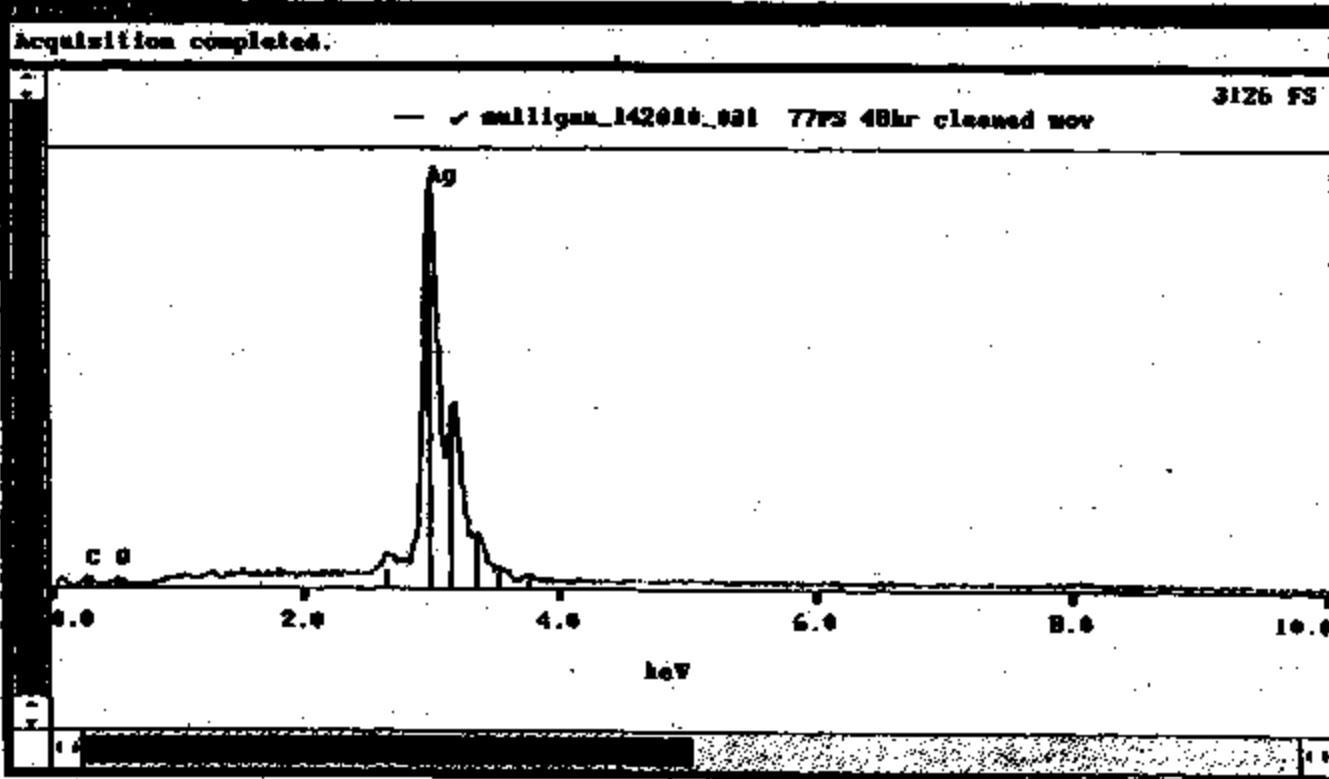
03010 770S 48hrs movable 75x bae 33

TI-NHTSA 012013

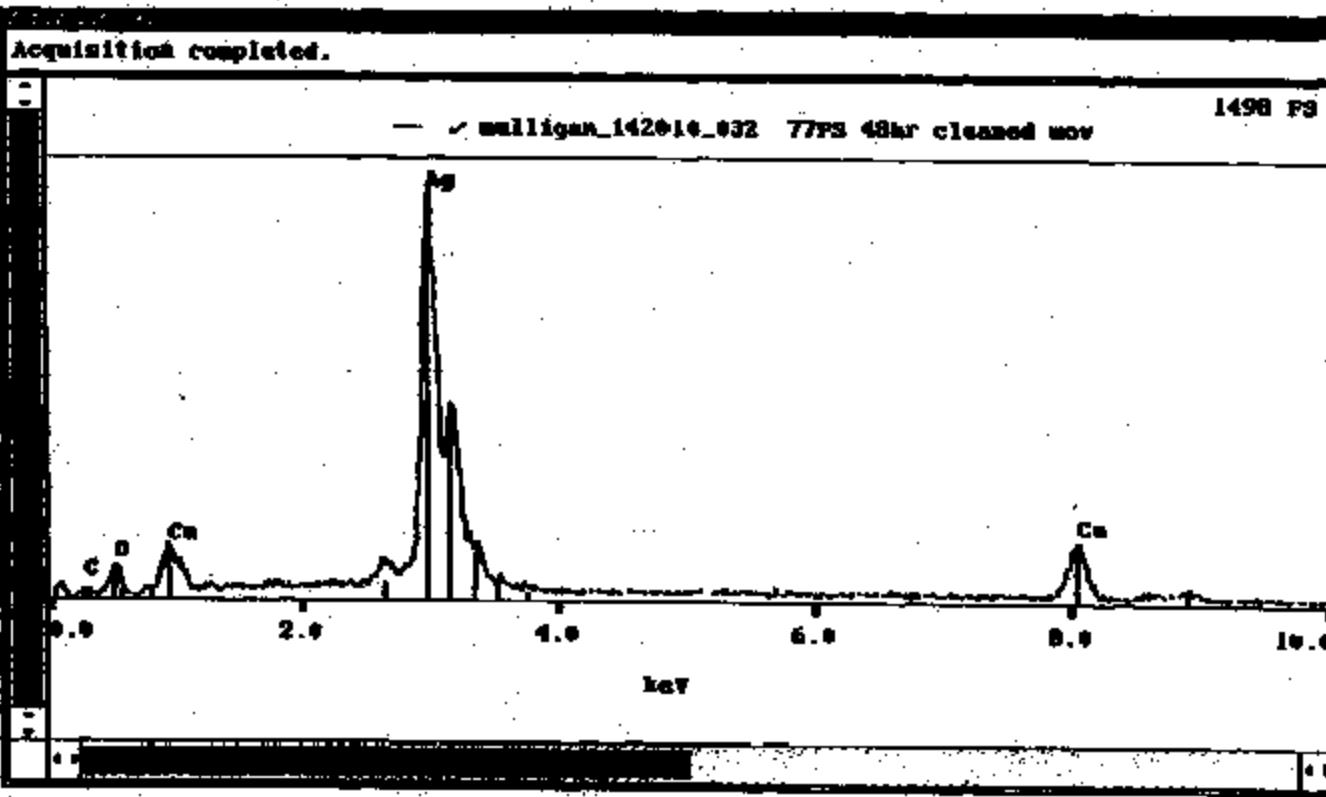


142010 TIPS 48hrs movable 75x se 32

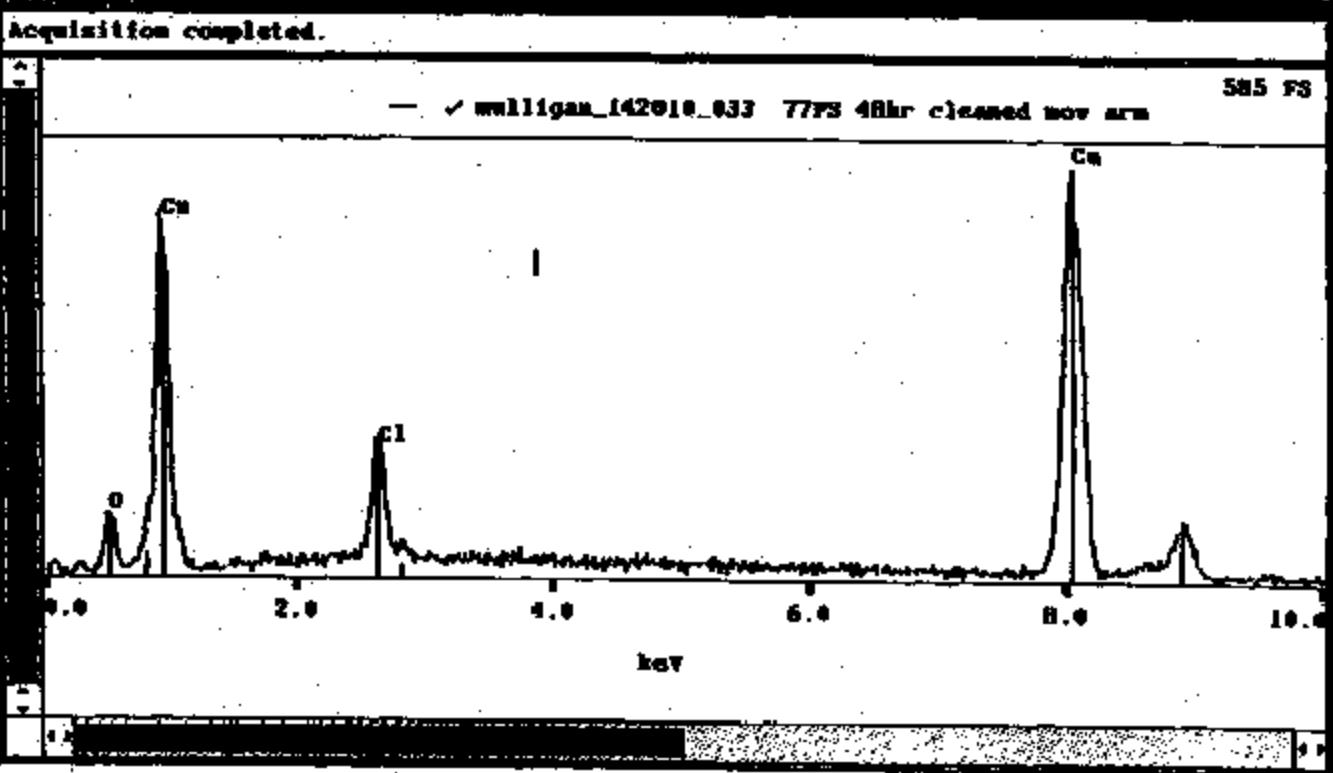
TI-NHTSA 012814



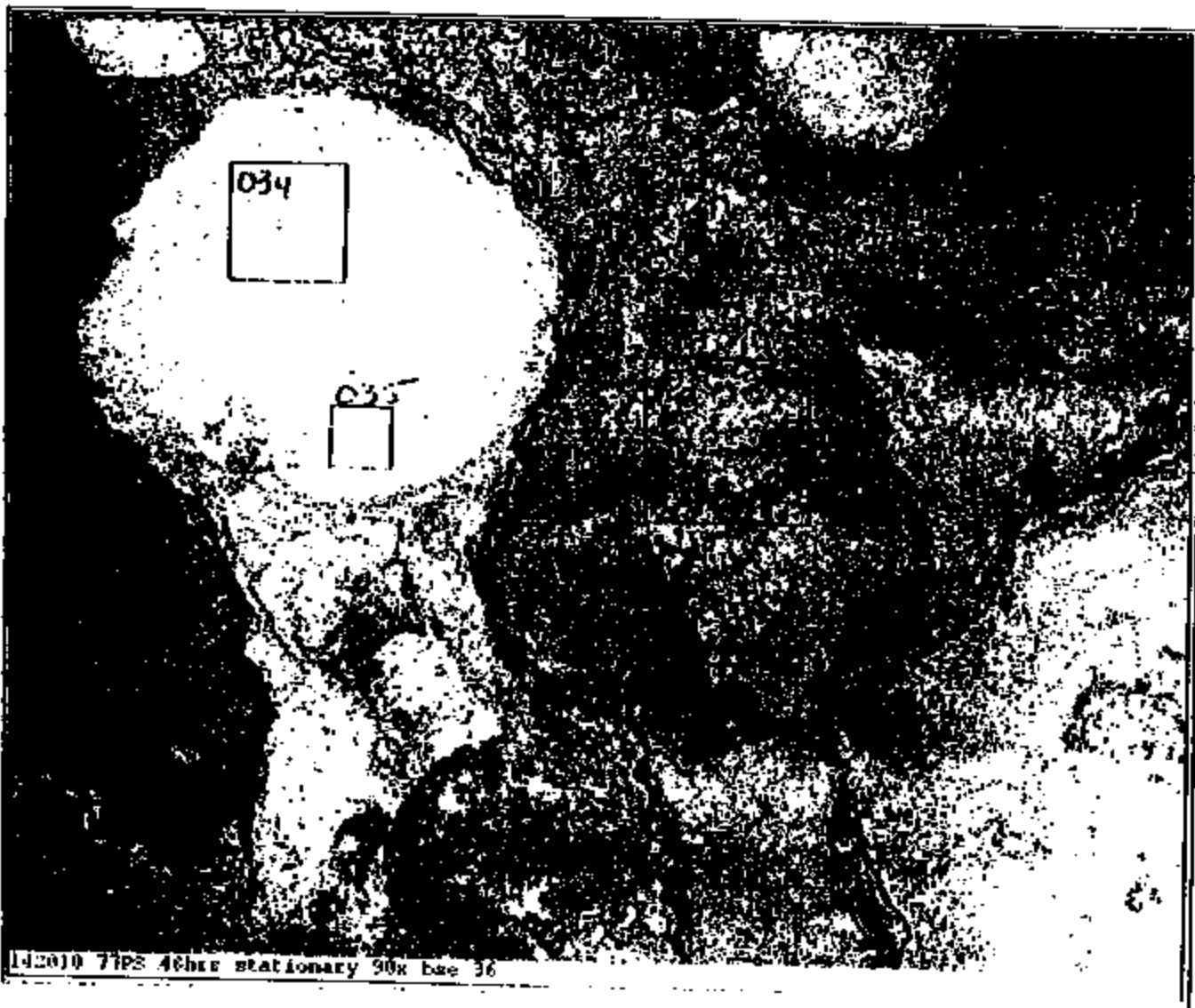
TIAHNTSA 012015



TI-NHTSA 012918



TI-NHTSA 012917



TI-NHTSA 012818

142010 TIPS 4thres stationary 90x bce 36



142010 7162 48hz stationary 22x se 34

TINHTSA 012010

TN-NHT3A 012820



Acquisition completed.

C

milligan_142010_034 77m 40hr cleaned stat

3454 Ps

Ag

O

Cu

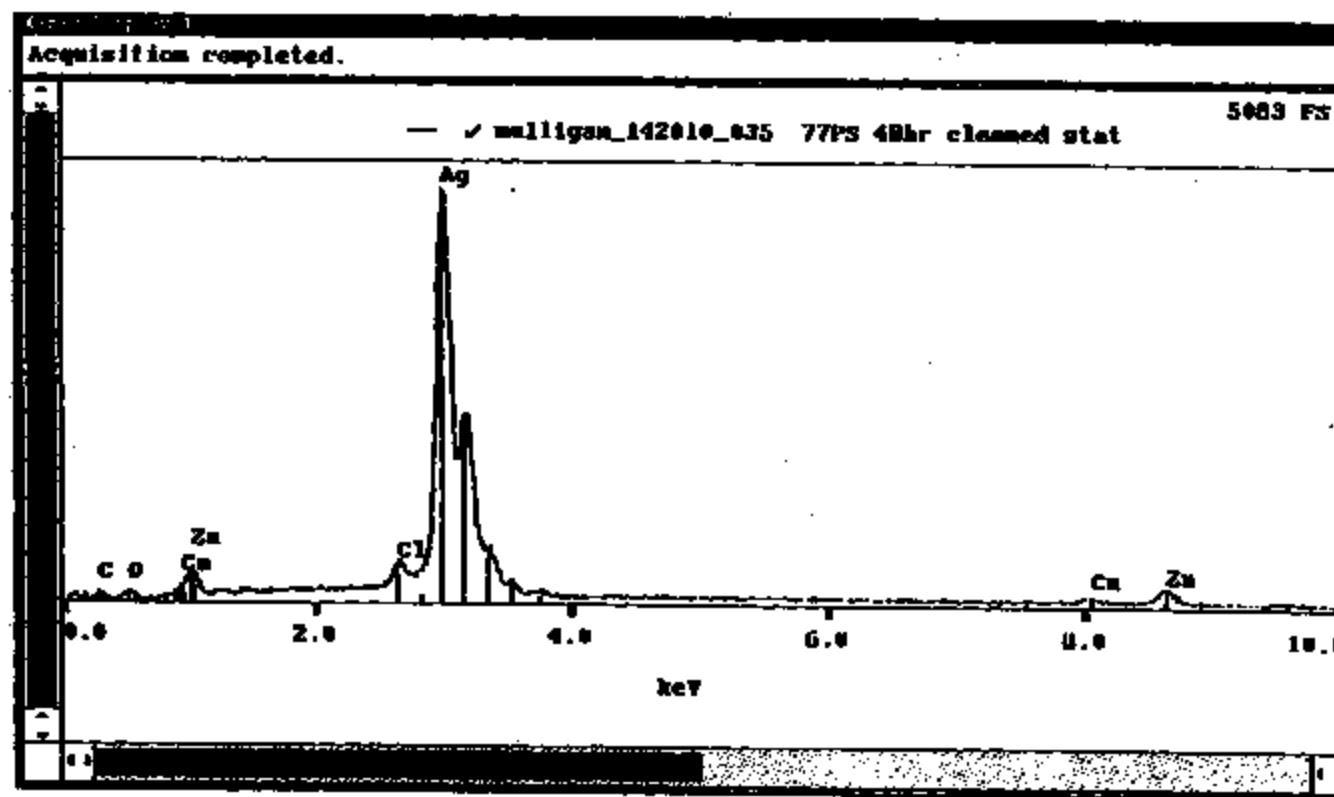
Si

Cu

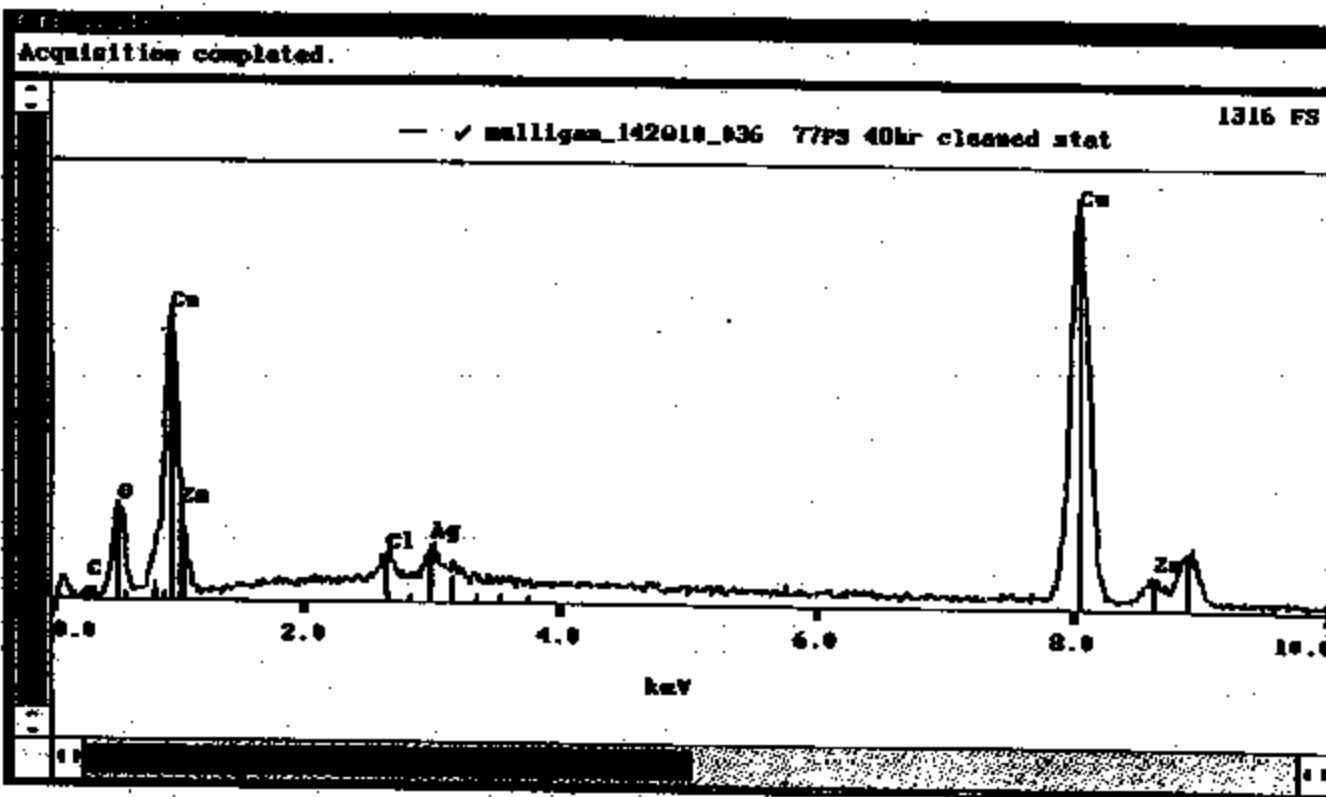
0.0 2.0 4.0 6.0 8.0 10.0

keV

TI-NHTSA 012921



TI-NHTSA 012922



TI-NHT3A 012223