

TEST REPORT ON LOAD CYCLE TEST OF AXIAL TUBE

END CRACKS IN WELDED SLEEVE/TUBE SAMPLES

TR-MCC-185, REV. 00

CE TASK NO. 848841

ABB COMBUSTION ENGINEERING NUCLEAR POWER

MATERIALS TECHNOLOGY

WINDSOR, CONNECTICUT

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The information contained in this document has been reviewed and satisfies the applicable items contained in Checklist No. 4 of QAP 3.6.

Name C. HOEFMANN  
Signature Chris Hoffmann Date 1-3-92

The tests described in this report are accepted as meeting the objectives and instructions described in the referenced test report and test procedures.

Name David Stepnick DAVID STEPnick  
Signature David Stepnick Date 1-8-92

QP001-EPK3

TR-MCC-185, Rev. 00

Rev. 00

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## 1.0 PURPOSE

The purpose of this program was to determine whether or not cracks located in the tube ends of steam generator tubes would propagate into weld joints after sleeves are installed. This determination was made through a test program that involved the cyclic testing of sleeved tube specimens containing tube end cracks.

## 2.0 CONCLUSIONS

On the basis of the tests performed, it is concluded that ABB can successfully weld a sleeve to a tube containing cracked ends. The process of machining away the tube end and welding a sleeve in the fillet weld region assures that the crack is no longer a potential primary to secondary leak path. Cyclic testing of these joints revealed that the crack did not propagate into the weld joint during loading. These test results are applicable to welded tube plug joints.

## 3.0 INTRODUCTION

During recent inspections of the steam generator tubes at the Kewaunee Nuclear Station, longitudinal cracks were found in the ends of some of the tubes. Questions were raised to ABB-CE concerning the potential of these cracks to propagate into weld joints that would be made during steam generator tube sleeving.

A request (Attachment 1) was made to Materials Technology by Steam Generator Services to perform tests to determine the potential for crack propagation. A test program was developed (Reference 6.1) and the tests and examinations performed.

## 4.0 DISCUSSION

### 4.1 Specimen Preparation

Tube specimens were prepared per Figure 1. Tube samples (.875" OD x .050" wall) were rolled into carbon steel blocks, then fillet welded in place. An EDM process was employed to make a notch in the tube to simulate an axial crack. The notch was approximately .0125" wide, 1 3/4" long and 100% throughwall on each sample.

After the tube ends were machined, sleeves were installed and welded in accordance with the Kewaunee site traveller, Reference 6.2. Upon completion of sleeve installation, baseline sleeve eddy current inspection and liquid penetrant examination were performed. Attachment 2 is the complete eddy current inspection report and Attachment 3 consists of all liquid penetrant test results.

Four samples were completed, three for cyclic testing and one for "baseline", to be used for comparison. The three samples for cyclic testing were K-6, K-7 and K-9, while the baseline specimen was K-4.

### 4.2 Cyclic Testing

#### 4.2 Cyclic Testing

Three of the sleeved specimens, K-6, K-7 and K-9, were cyclic tested by Materials technology using a MTS test system. Each specimen was cycled between -200 lbs. and -2550 lbs. for 2000 cycles. The specimens were tested at a frequency of one cycle per second. This test sequence was intended to simulate the loading on the weld joint due to heatup and cooldown cycles, as well as transient conditions. This test sequence duplicates the original tests for the sleeve, as described in the sleeve licensing report, Reference 6.3. Upon completion of the cyclic testing, the samples were liquid penetrant tested.

#### 4.3 Metallographic Examination

The four specimens were examined metallographically in order to determine crack location relative to the weld joint. Each of the specimens was mounted in a fixture and the weld joint was ground down incrementally in the transverse direction until the crack in the tube was visible.

### 5.0 TEST RESULTS

#### 5.1 Eddy Current Tests

The eddy current test results are included as Attachment 2. These tests were performed for information purposes. Eddy current test data for notched samples, as well as data from the Kewaunee steam generators are included.

## 5.2 Liquid Penetrant Tests

The liquid penetrant test results are included as Attachment 3. The specimens passed the tests, both before and after cyclic testing. There were no indications of cracks or voids on the weld joint surfaces.

## 5.3 Cyclic Tests

The specimens did not fail the cyclic tests that were performed. No visible cracks or weld joint failures were visible. Each specimen was tested for the full 2000 cycle requirement.

## 5.4 Metallographic Examination

As described in Section 4.3, the specimens were incrementally ground in the transverse direction until the crack was revealed. Approximately .025" was removed on the first grind, and approximately .005" thereafter. After each grind, the specimen was placed on a polishing wheel in order to more clearly reveal the crack location by removing any "smeared" metal. In all cases, the first measurements were taken from the highest point of the weld bead. The amount of weld metal removed for each specimen is shown in the table below.

<u>Specimen No.</u>	<u>Condition</u>	<u>Amount Weld Metal Removed</u>
K-4	Baseline	.056"
K-6	Cyclic Tested	.044"
K-7	Cyclic Tested	.060"
K-9	Cyclic Tested	.043"

In all cases the crack appeared after the interface between sleeve and tube was revealed. This indicates that the crack was not present in the weld metal, but only in the unwelded tube material. The reason for the slight difference between the amount of metal removed is that there is a minimal variation in weld height around the length of the weld. This variation is due to heat buildup during the weld process.

#### 5.5 Applicability to Plugging

It is the position of ABB that these sleeve tests are applicable to welded tube joints. The joint configuration is similar and the loading conditions are more conservative for the sleeve joint than for the plug joint.

### 6. REFERENCES

- 6.1 00000-MCC-114, Test Program for Weld Integrity Testing of a Steam Generator Sleeve Welded to an Axially Cracked Steam Generator Tube End.
- 6.2 ST No. 848842-001, Rev. 0, Installation of Welded Steam Generator Tube Sleeves Using Peripheral Tooling.
- 6.3 CEN-413-P, Kewaunee Steam Generator Tube Report Using Leak Tight Sleeves.

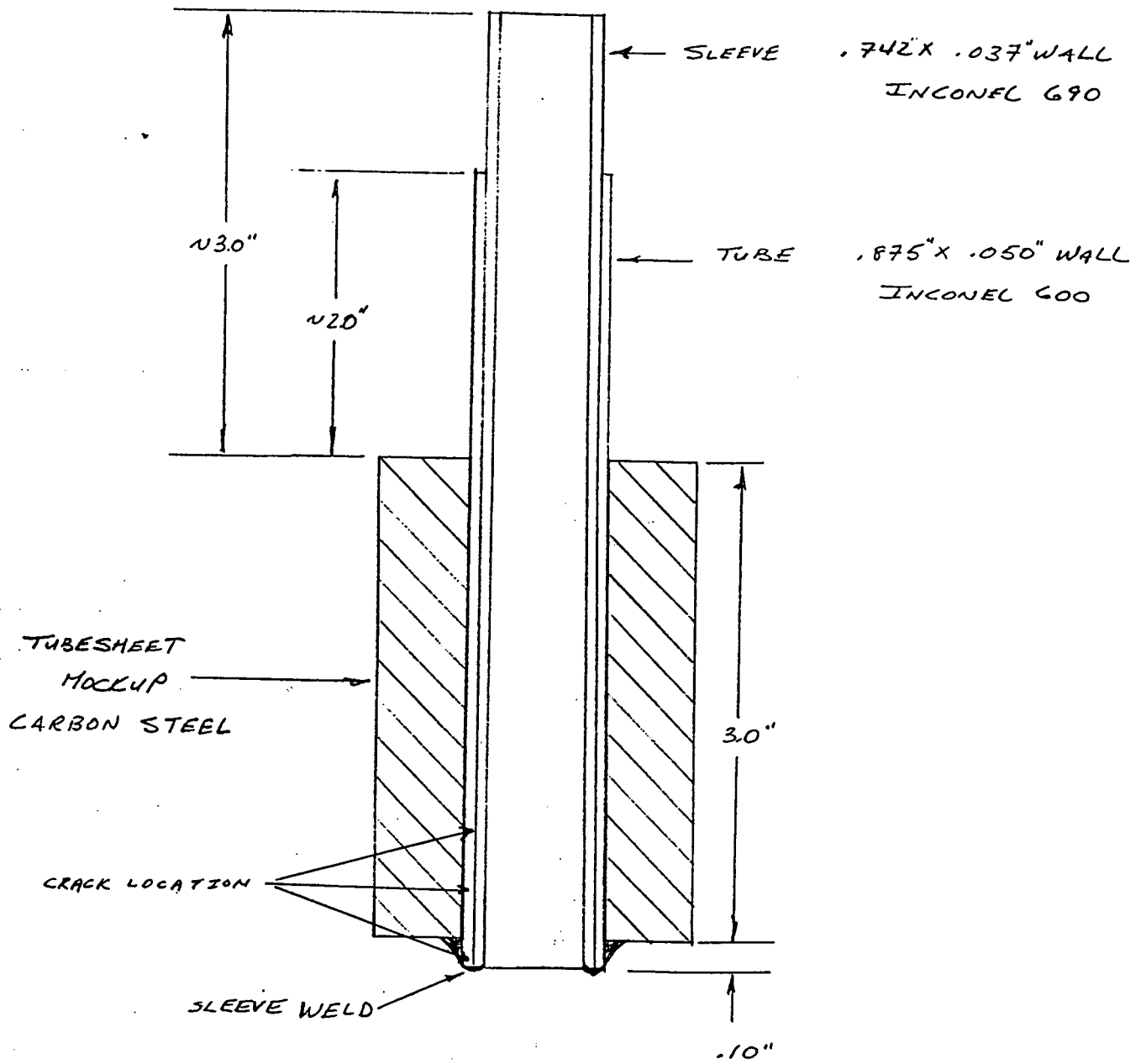


Figure 1. Axial Tube End Crack Sample



ATTACHMENT 1

TEST REQUEST



Inter-Office Correspondence

To: E.P. Kurdziel  
9428-1206

*David Stepnick*  
D. G. Stepnick  
9445-M088

cc: W. R. Gahwiller  
G. H. Stevens

January 2, 1992

Subject: Transmittal of Test Request Involving Welded Sleeve  
Installation In Cracked Tube Ends

Reference: Kewaunee Steam Generator Tube Repair using Leak Tight  
Sleeves, Sleeve Qualification No. CEN-413-P

The purpose of this memo is to transmit the attached Test Request, T.R. NO. T-MCC-185, Supplement Number 00. This test request outlines the preparation and testing of samples which will be used to justify the structural integrity of installed welded tube sheet sleeves in steam generator tubes containing axial cracks near the tube ends.

The significant steps for sample preparation and testing follow:

1. Roll and fillet weld tube samples
2. Perform ECT baseline of tube samples
3. To simulate axial cracks, EDM notch tube samples
4. Repeat ECT program
5. Machine tube ends prior to sleeve installation
6. Install and weld sleeve samples
7. Perform load cycle test on sleeve/tube samples per the requirements of the referenced Sleeve Qualification Report. Load Range: -200 to -2550 pounds  
Cycles: 2000
8. Perform dye penetrant testing and metallographic examination of samples.

SG92000.DS

**ABB-CENP Mat./Chem. Tech. Test - Task Request**

<b>Test - Task Name:</b> Load Cycle Test of Axial Tube End Crack Welded Sleeve / Tube Samples	T. R. No. <u>T-MCC-185</u> Suppl. No. <u>00</u> Account No. <u>848841</u> Time Charge No. <u>848841</u>
--------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------

<b>Requirements:</b>
<ul style="list-style-type: none"> <li>- Prepare test specimens by rolling &amp; welding S/C tubes into blocks. EDM notch that will be through-wall at tube end.</li> <li>- Machine tube ends per Kewanee Traveller, ST No. 848842-001.</li> <li>- Install sleeves per Kewanee Traveller, ST No. 848842-001.</li> <li>- Perform baseline eddy current testing on sample</li> <li>- Perform load cycle testing on samples in accordance with Procedure No. 00000-MSD-072, Rev. 01.             <ul style="list-style-type: none"> <li>- Load Range - 200 to -2550 lbs.</li> <li>- 2000 cycles.</li> </ul> </li> <li>- Perform eddy current testing, dye penetrant testing and metallographic examination</li> </ul>

<b>Quality Assurance:</b>	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Quality Class:	<input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3	
Safety Related:	<input checked="" type="radio"/> Yes <input type="radio"/> No	<b>PURPOSE (Testing - Only One Applies)</b>
QAM 101 - QAP 3.6:	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Quality Plan No.:		Develop Design Input: <input type="radio"/> Yes <input checked="" type="radio"/> No
Other Quality Requirements:		Verify Design: <input checked="" type="radio"/> Yes <input type="radio"/> No

Requested By: <u>D. Proctor</u>	CEP No. <u>9445-M088</u>	Date: <u>12/13/91</u>
Task Approved By:	CEP No.	Date:

For Dept 9428 Use Only		
Estimated By: _____	Date: _____	<b>Estimated 9428 Costs</b> Engineer _____ Hrs Technician _____ Hrs M & S _____ NPS / SDS Estimate No. _____
Engineer Assigned: _____	Date: _____	
Supv / Prod Mgr Assigned: _____	Date: _____	
Work Authorized By: _____	Date: _____	
Targeted Work Completion Date: _____		
Distribution:		
Originals:		
Copy:		
<b>Estimated Total Technology Services Activity Costs</b>		

ATTACHMENT 2

EDDY CURRENT TEST REPORT

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

SUMMARY

Field eddy current data for Kewaunee steam generator tubes was reviewed by ABB Combustion Engineering Outage Services, Windsor, CT. In addition, laboratory eddy current data was taken from expanded, welded and electric discharge machined notched samples. Comparison of the laboratory and field data was performed and is reported in tabular and graphic form. While the signals can be ranked from most flaw-like to least flaw-like, there is no strong evidence that the field eddy current signals are caused by a flaw discontinuity in the SG tube wall. Indications from ID initiated flaws are often similar to indications caused by probe lift off and tube geometry (dings, weld, ovalization). It is recommended that future tests during the refueling outage include the 3 coil MRPC at a slower test speed and that verification of these results be confirmed with visual or penetrant testing.

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

1.0 INTRODUCTION

Eddy Current testing was performed on steam generator (SG) tubes at the Kewaunee Nuclear Plant. This data was forwarded to ABB CE Outage Services for further evaluation.

2.0 SCOPE

Data from 16 SG tubes was provided. In addition, laboratory samples of SG tubes were tested and the data analyzed. The field and laboratory data were compared.

3.0 METHODS

- 3.1 Field Data Analysis. Field eddy current consisted of motorized rotating eddy current (MRPC) data and was analyzed by a certified data analyst using the Eddynet Analysis System. This is the standard, state of the art, eddy current analysis system in general usage for field examinations of nuclear plant eddy current data. High resolution graphic printouts of the field data and tabular summaries are provided as part of this report.
- 3.2 Tube Samples. The tube samples discussed here were described elsewhere in the main body of this report. Since there is a reasonable probability that the signals in the field data are caused by probe wobble or tube geometry irregularities, SG

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

tube samples with and without flaw indications and geometry variations were tested in the laboratory using probe pusher/pullers similar to those used for field examinations. The data was analyzed in the same manner as the field data. High resolution graphic printouts of the field data and tabular summaries are provided as part of this report.

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

4.0 RESULTS AND DISCUSSION

4.1 Field Data Analysis. The results of the field data analysis are tabulated in Table 1. All measurements were taken at 400 kHz; the 100% hole was set at 10 degrees; a three point curve was established with the 100%, 60% and 40% notches; the 60% notch was set at 5.0 volts vert. max.; and 1 inch was assumed between the calibration standard flaws for setting the axial scale of the terrain plots. Table 1 contains a reading for the signal and noise volts in the region of the signal as well as a calculation for the signal to noise ratio (S/N). The S/N ratio is very low for these signals and ranges from 0.04 to 0.3. Values for the estimated length (range of 0.29" to 1.68") of the signal indications as well as the angles (range of 4 to 50 degrees) of the signal indications are provided. For real ID flaws the phase angle is often similar to the phase angle for ID tube noise and probe wobble. In addition, for ID flaws, there is typically very little change in phase angle with depth (poor resolution). A column which estimates the degree to which the signal is flawlike (1 most, 2 more, 3 least or not) is also included in Table 1. Figure 1 shows a category 1 signal where the 400 kHz lissajous is flawlike with supporting evidence from all other frequencies. Figure 2 shows a category 2 signal where the 400 kHz lissajous is flawlike with little supporting evidence from the other



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frequencies. Figure 3 show a 400 kHz signal which is not flawlike. The most flawlike signals have more vertical signal component. Tube R38C61 is the most probable flaw of all the samples due to the location and S/N ratio. The complete graphics will be found in Section 5.0.

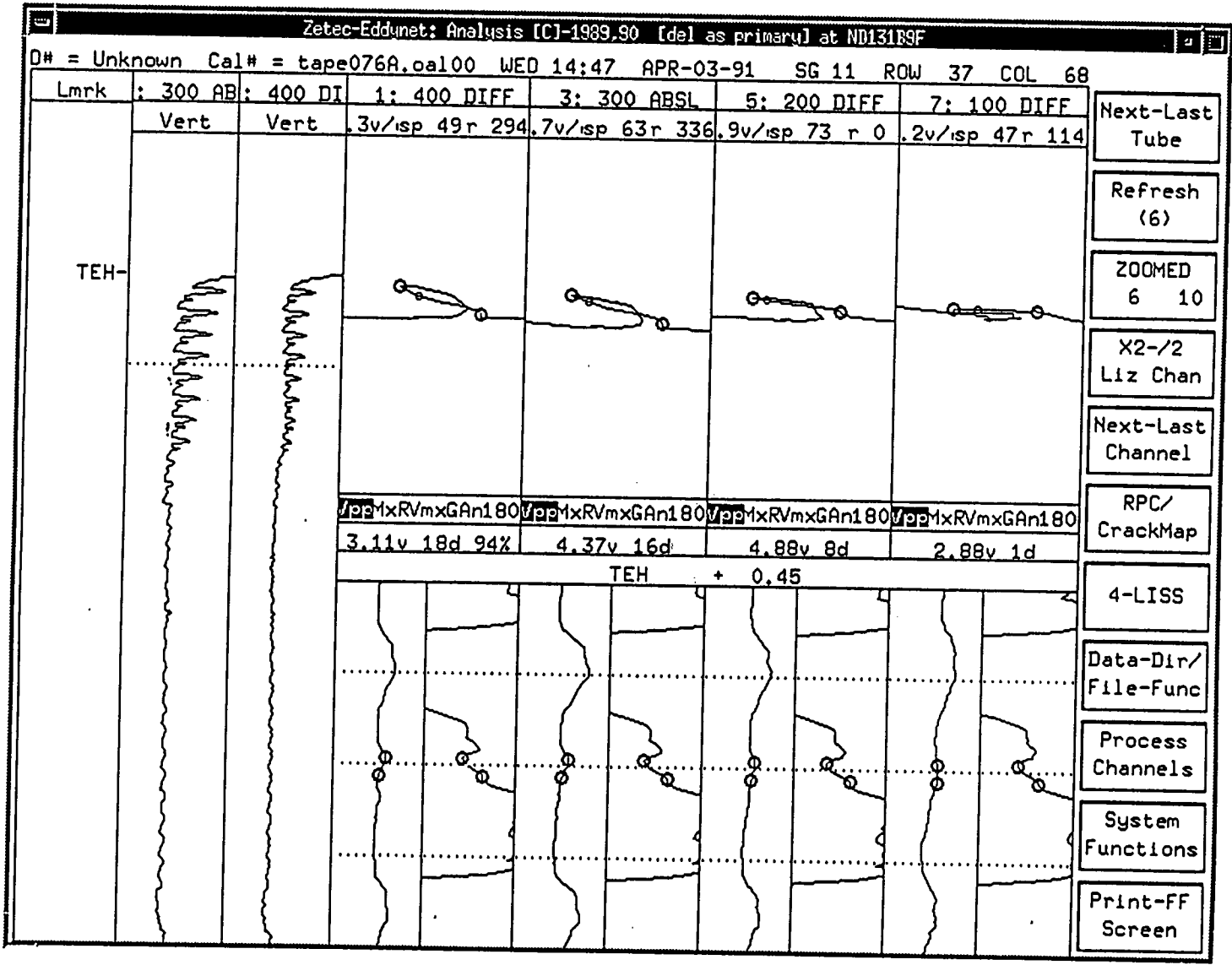
KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

TABLE 1  
KEWAUNEE FIELD EDDY CURRENT DATA ANALYSIS  
(April 1991 Data/December 1991 Analysis)

<u>Row</u>	<u>Col</u>	<u>Signal Volts</u>	<u>Noise Volts</u>	<u>S/N</u>	<u>Length (Inches)</u>	<u>Angle (Degs)</u>	<u>%TW</u>	<u>Est. 1/</u>
18	12	6.3	25.4	0.2	0.6	4	60	2-3
29	13	6.7	35.2	0.2	1.2	13	98	2
30	14	6.7	32.9	0.2	1.68	23	91	1
31	15	4.7	31.7	0.1	1.68	24	90	1
41	42	1.1	30.4	0.04	0.29	359	0	3
45	41	1.1	16.4	0.1	0.43	42	78	1
1	16	8.0	27.7	0.3	0.35	11	99	2
37	45	0	9.9	0	-	-	-	3
38	61 <sup>2/</sup>	4.5	3.3	1.4	0.5	7	70	1
37	68	3.3	42.6	0.1	0.78	18	94	1
4	88	2.6	40.8	0.1	0.60	12	99	2
18	87	3.5	34.4	0.1	0.6	25	89	1
15	91	1.2	32.2	0.04	0.36	50	73	1
10	91	5.9	19.0	0.3	0.35	19	94	1
5	90	1.6	38.9	0.04	0.60	33	84	1
4	89	8.8	37.1	0.2	0.55	21	92	1

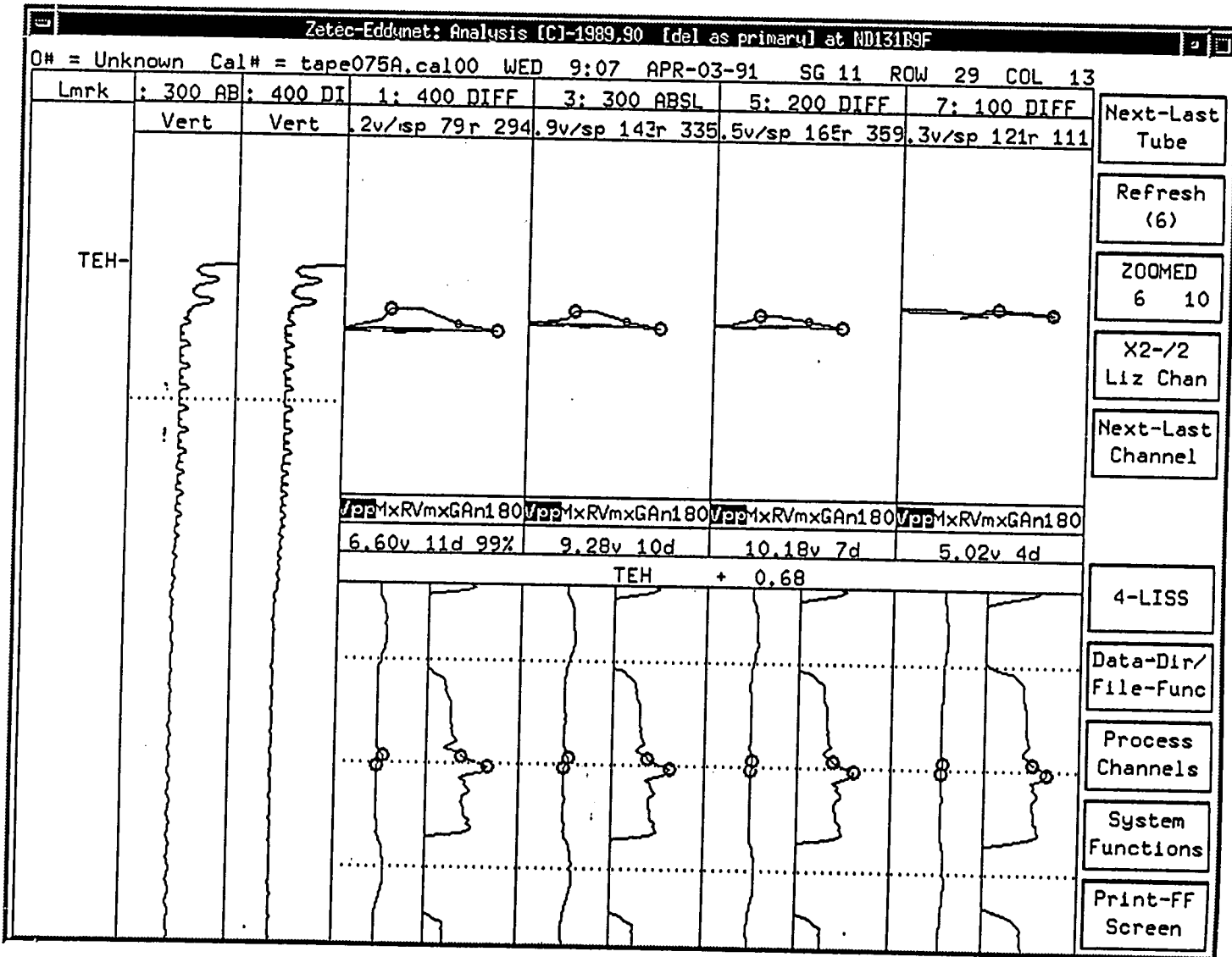
-----  
1/ Key: 1 Most Flawlike  
 2 More Flawlike  
 3 Least or Not Flawlike

2/ For tube R38C61 the signal indication starts at TEH +1.85".



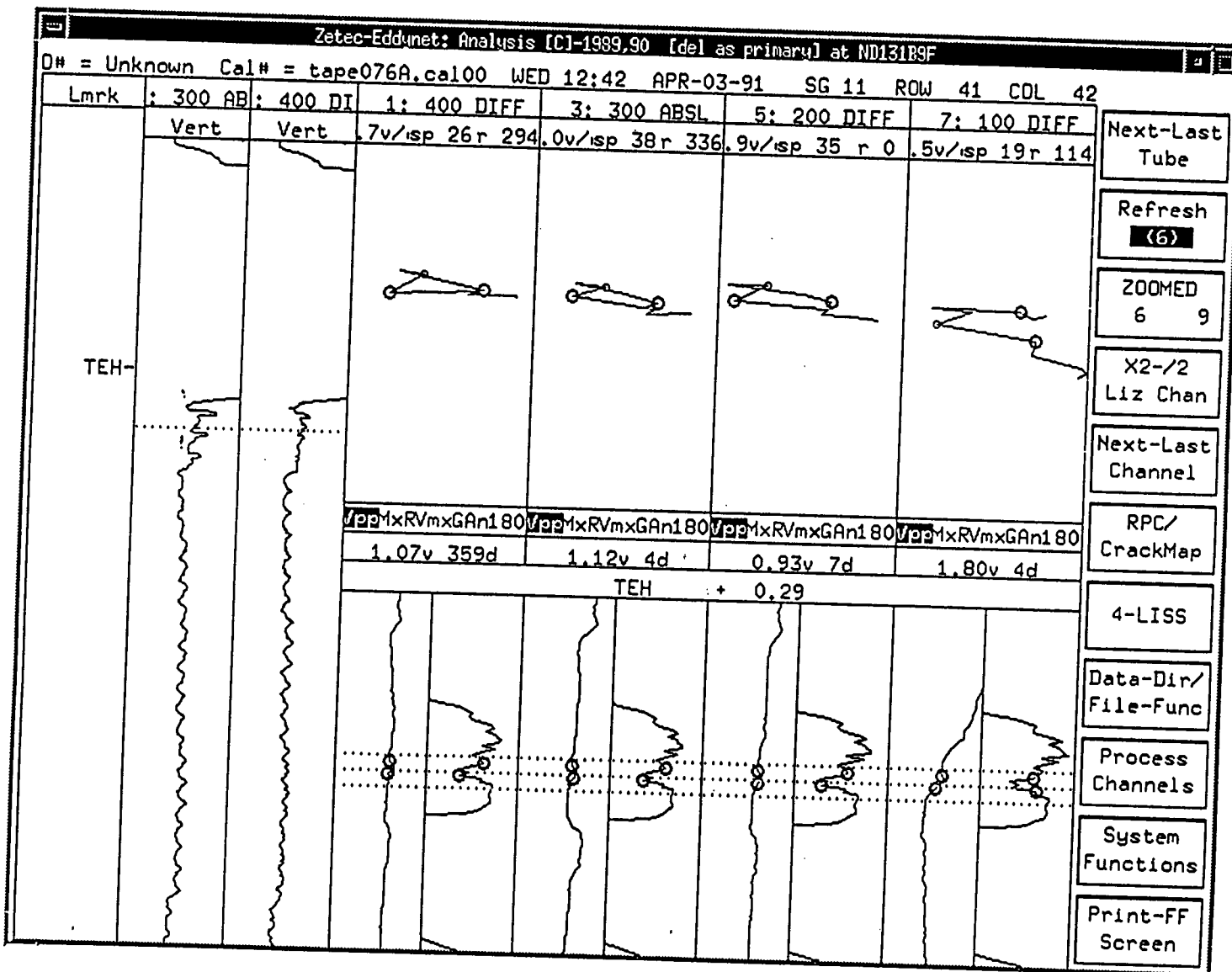
KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

Figure 1--Kewaunee Eddy Current



KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

Figure 2--Kewaunee Eddy Current



KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

Figure 3--Kewaunee Eddy Current

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

4.1 Tube Samples. The results of the analysis of the eddy current data from the tube samples are tabulated in Table 2. The analysis setup was the same as for the field data. Some of the noise volts (range 3.0 to 73.8) are comparable to the volts from the noise in the field data, but the signal to noise ratios are higher ranging from 1.1 to 11.6. The signal voltages are a magnitude larger than those expected in the field due to the size of the EDM notches. Figure 4 shows a typical signal from a tube to tubesheet hand weld. The sample tubes had varying degrees of these indications. Figure 5 show a typical signal from an EDM notch in a tube/tubesheet sample. The notch starts at the tube end and stops at 1.5 inches from the tube end. Figure 6 show a liftoff signal in the tube/tubesheet sample caused by excessive penetration of tubesheet weld. Figure 7 show a liftoff signal caused by a .015" dimple dent in the tube. The complete graphics will be found in Section 6.0.

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

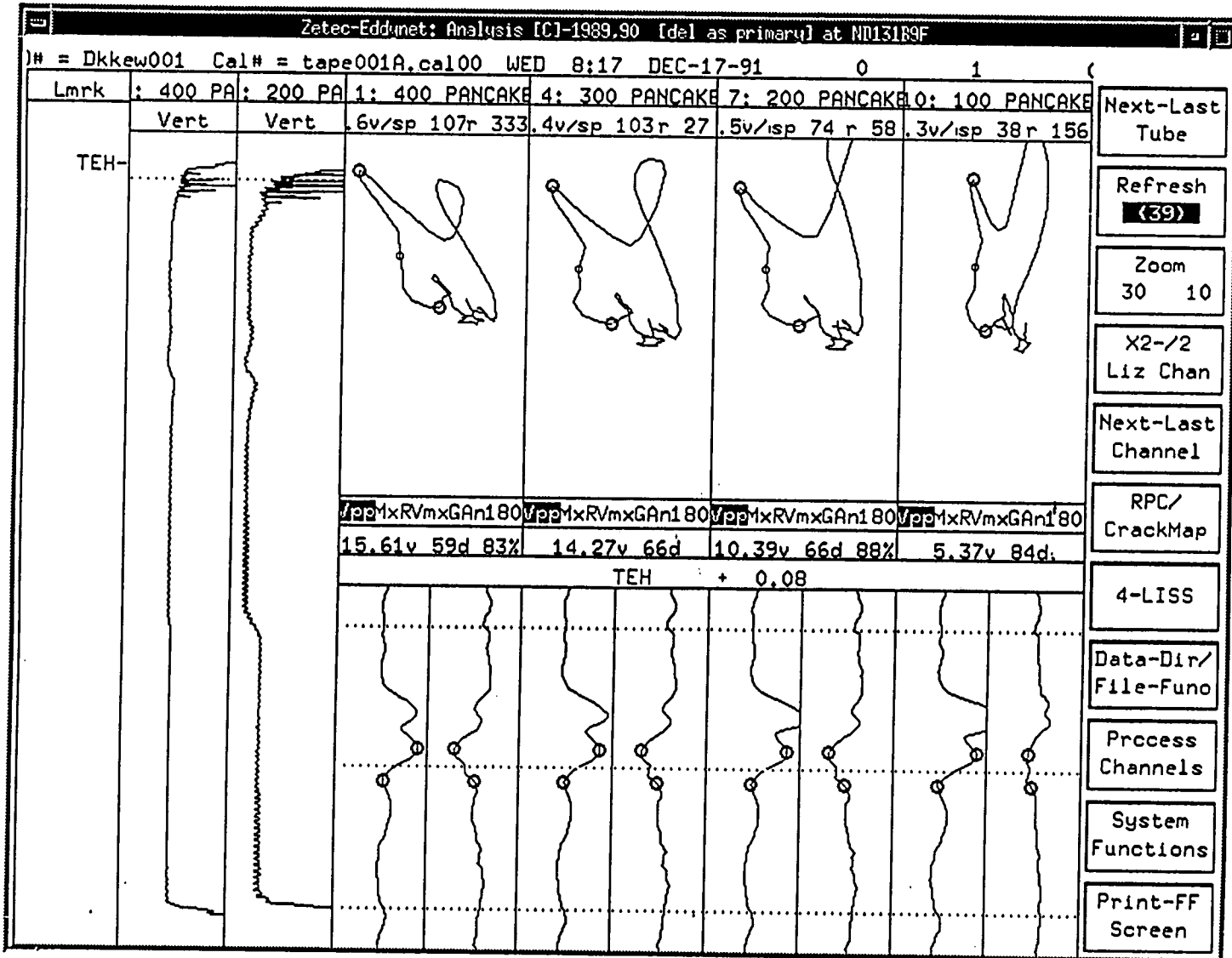
TABLE 2  
KEWAUNEE LAB SAMPLES EDDY CURRENT DATA ANALYSIS  
(December 1991 Data)

Sample Number <sup>1/</sup>	Noise Signals <sup>2/</sup>				EDM Signals <sup>3/</sup>				S/N	
	Volts	Degs	%TW	Loc	Volts	Degs	%TW	Loc		
<u>Samples without notches:</u>										
1	15.6	59	83	.08	n/a					
2	3.0	114	37	.09	n/a					
5	6.3	43	90	.17	n/a					
	3.9	30	94	.10	n/a					
8	73.8	63	81	.21	n/a					
<u>Samples with notches:</u>										
3	12.0	45	89	.14	29.7	14	86	.72	2.5	
4	9.9	40	91	.22	43.3	32	93	.99	4.4	
	3.9	87	66	.20						11.1
6	25.2	35	92	.10	27.0	21	97	.66	1.1	
7	4.4	69	78	.13	51.2	32	93	.79	11.6	
9	7.5	46	88	.19	29.2	24	96	.65	3.9	
10	15.6	80	71	.15	52.5	30	44	.44	3.4	

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1/ Samples described in main report.

2/ Lack of weld, lift off, probe wobble, etc.

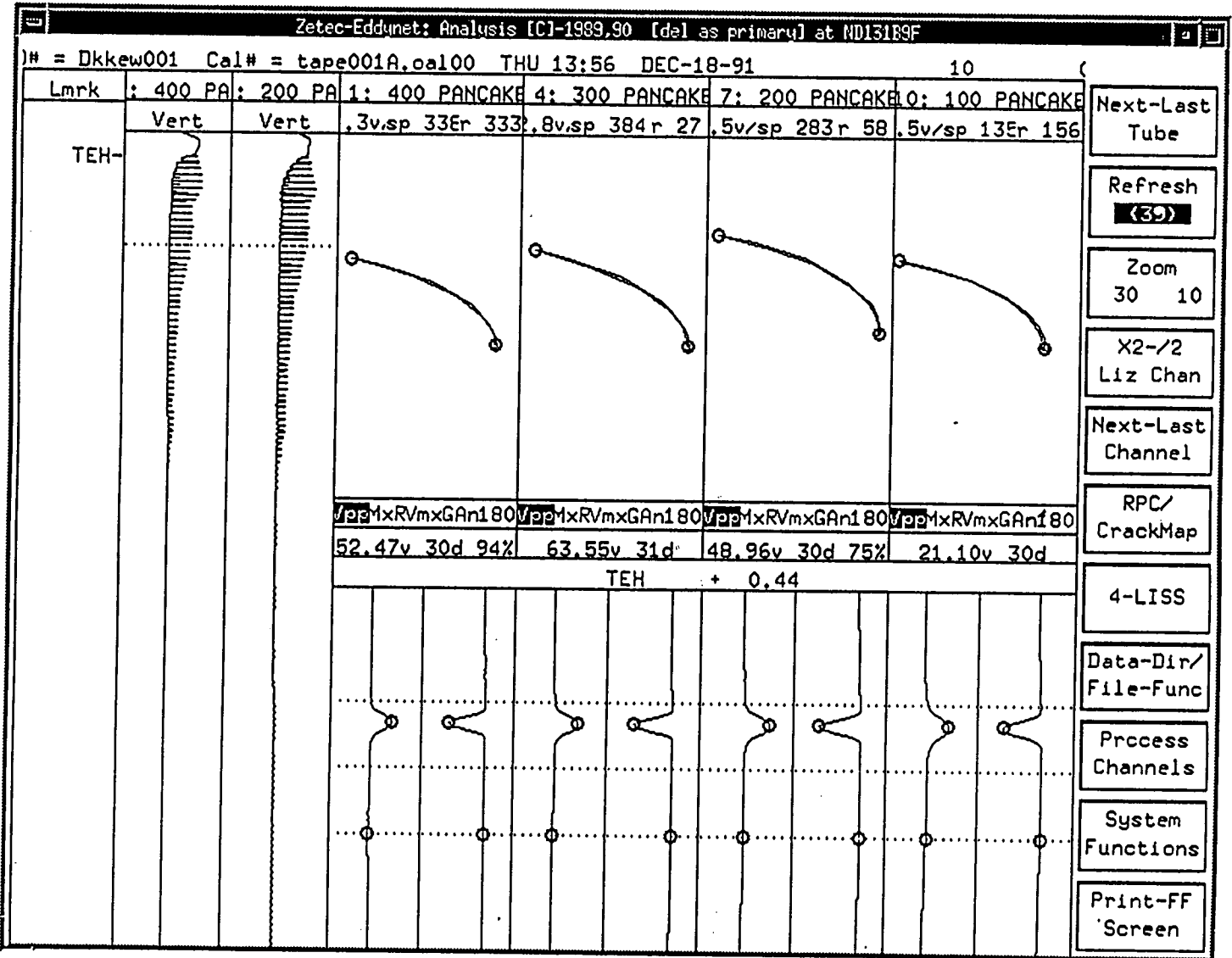
3/ All 1½" long.



KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

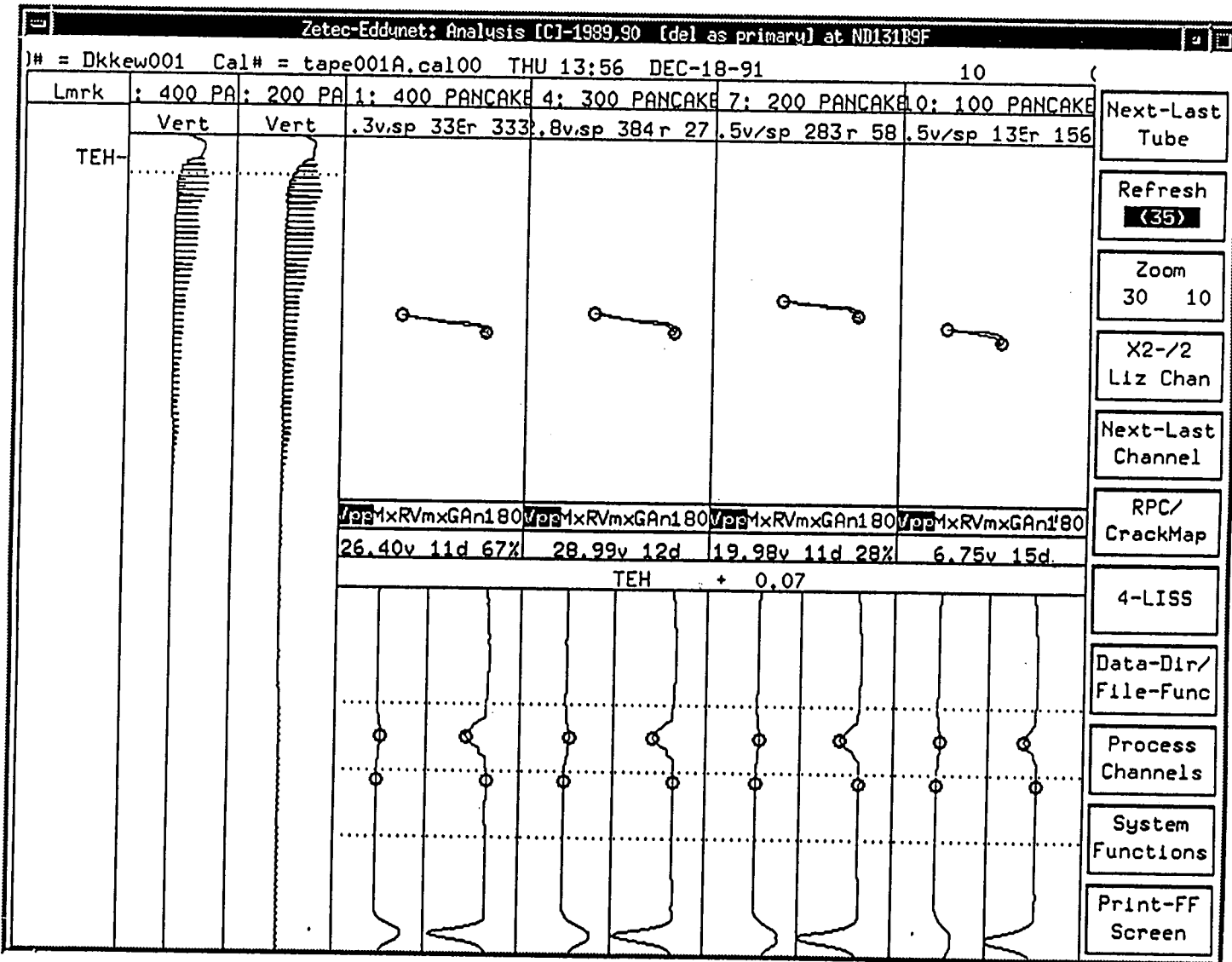
Figure 4--Kewaunee Eddy Current-Weld Signal





KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

Figure 5--Kewaunee Eddy Current-EDM Notch Signal



KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

Figure 6--Kewaunee Eddy Current-Lift-off Signal-Excessive Penetration

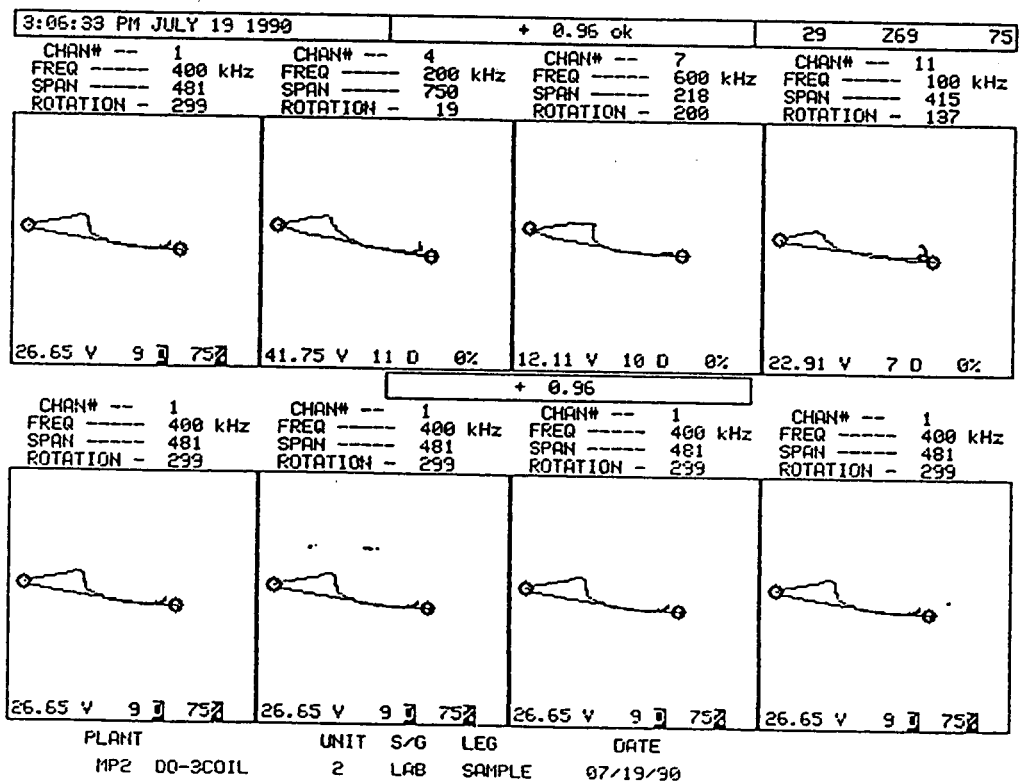
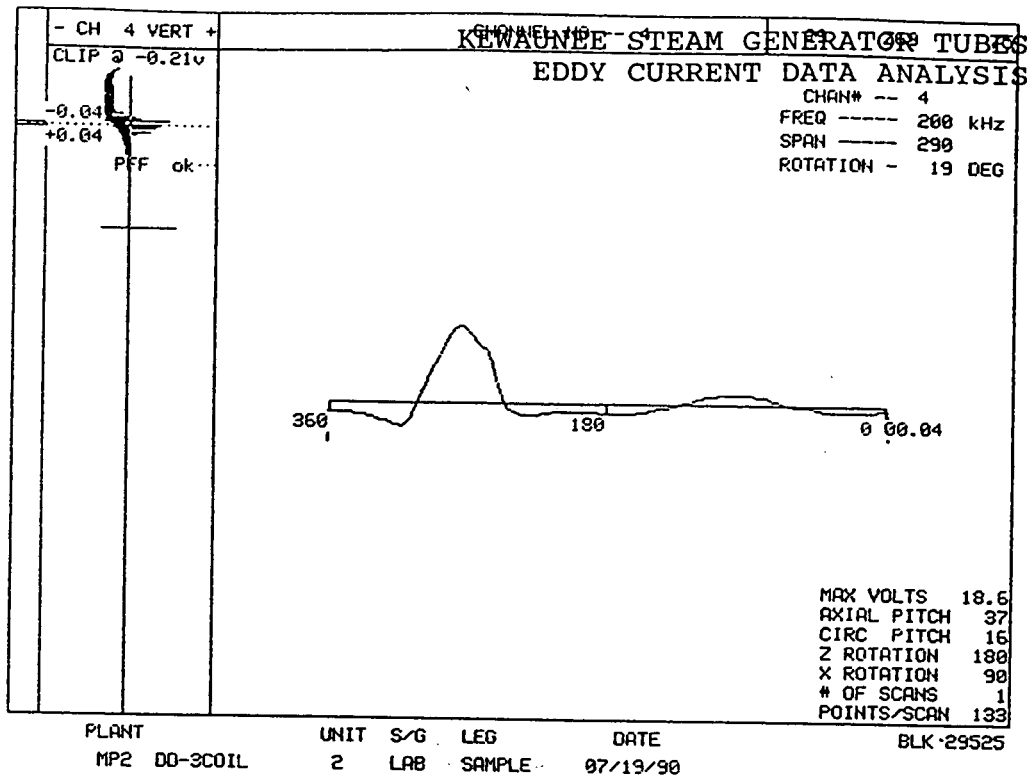


Figure 7A--Kewaunee Eddy Current-Liftoff Signal-Dent

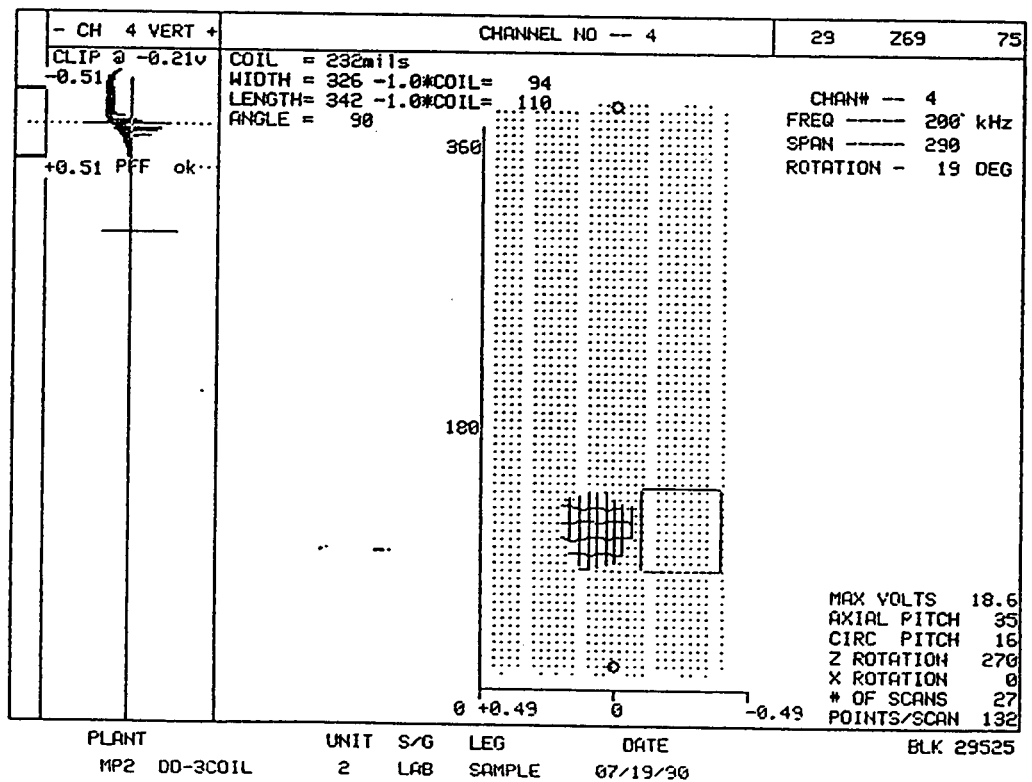
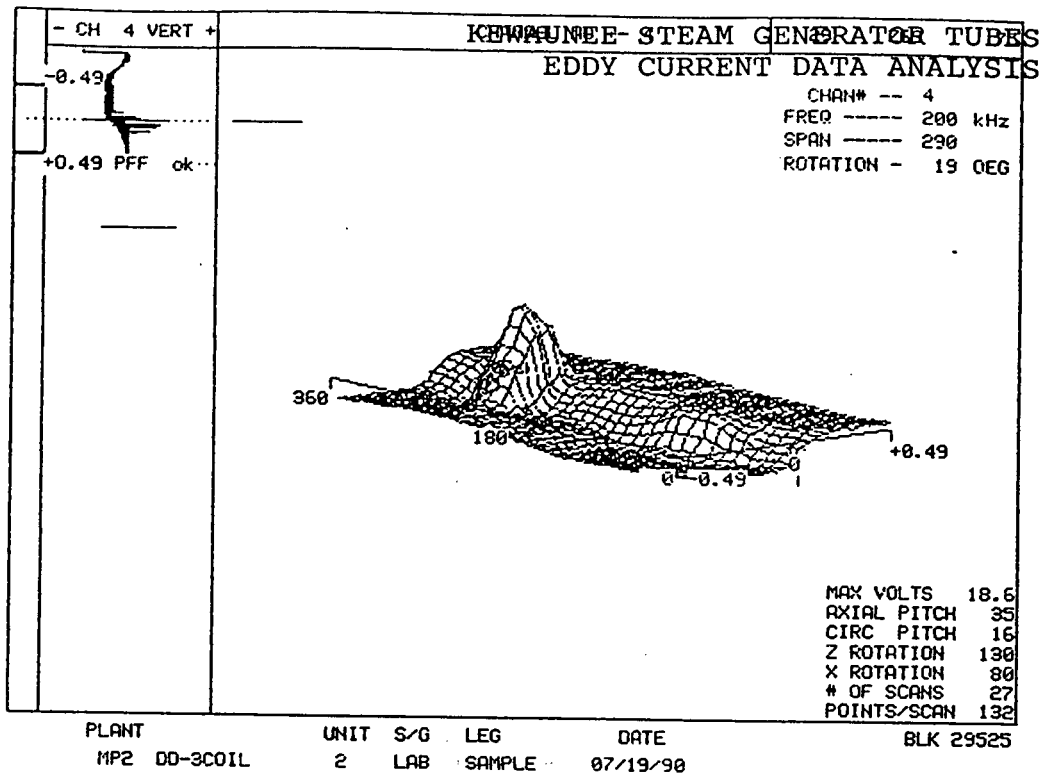
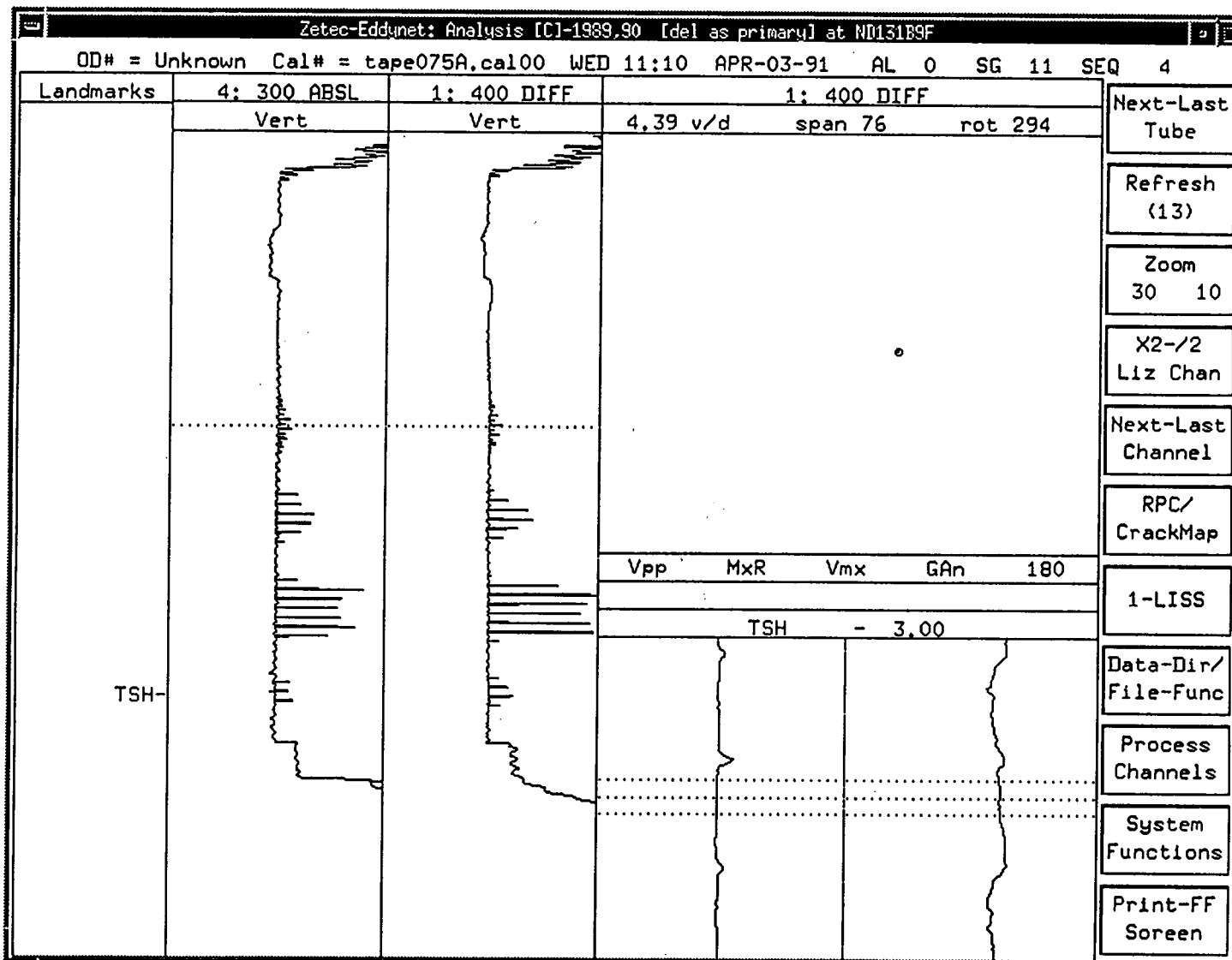


Figure 7B--Kewaunee Eddy Current-Liftoff Signal-Dent

KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

SECTION 5.0 - FIELD EDDY CURRENT GRAPHICS



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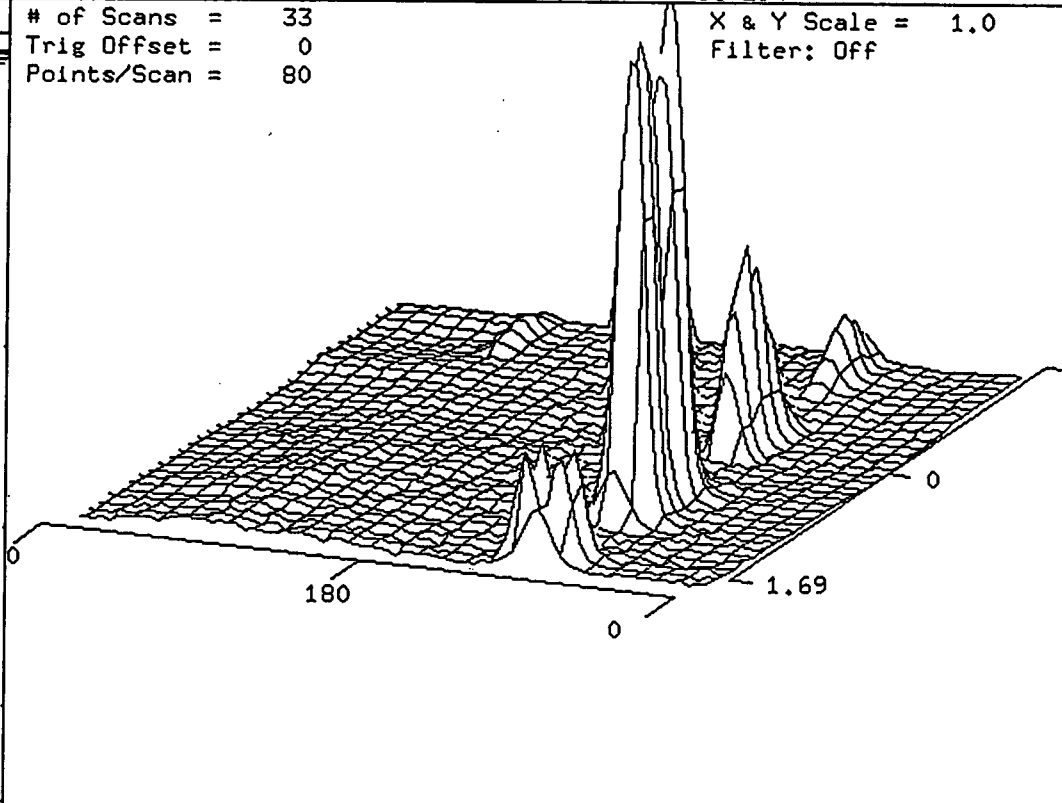
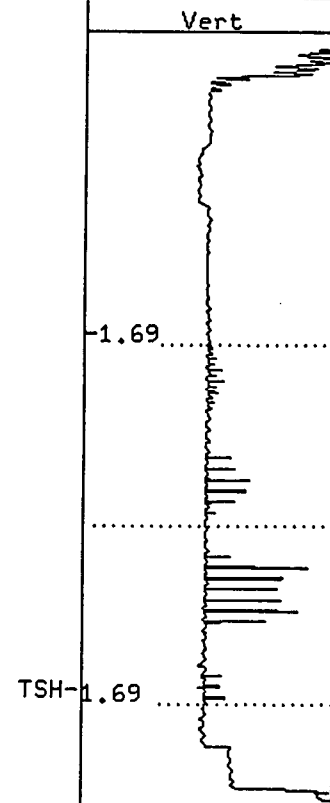
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1: 400 DIFF span 38 rot 294

Vert

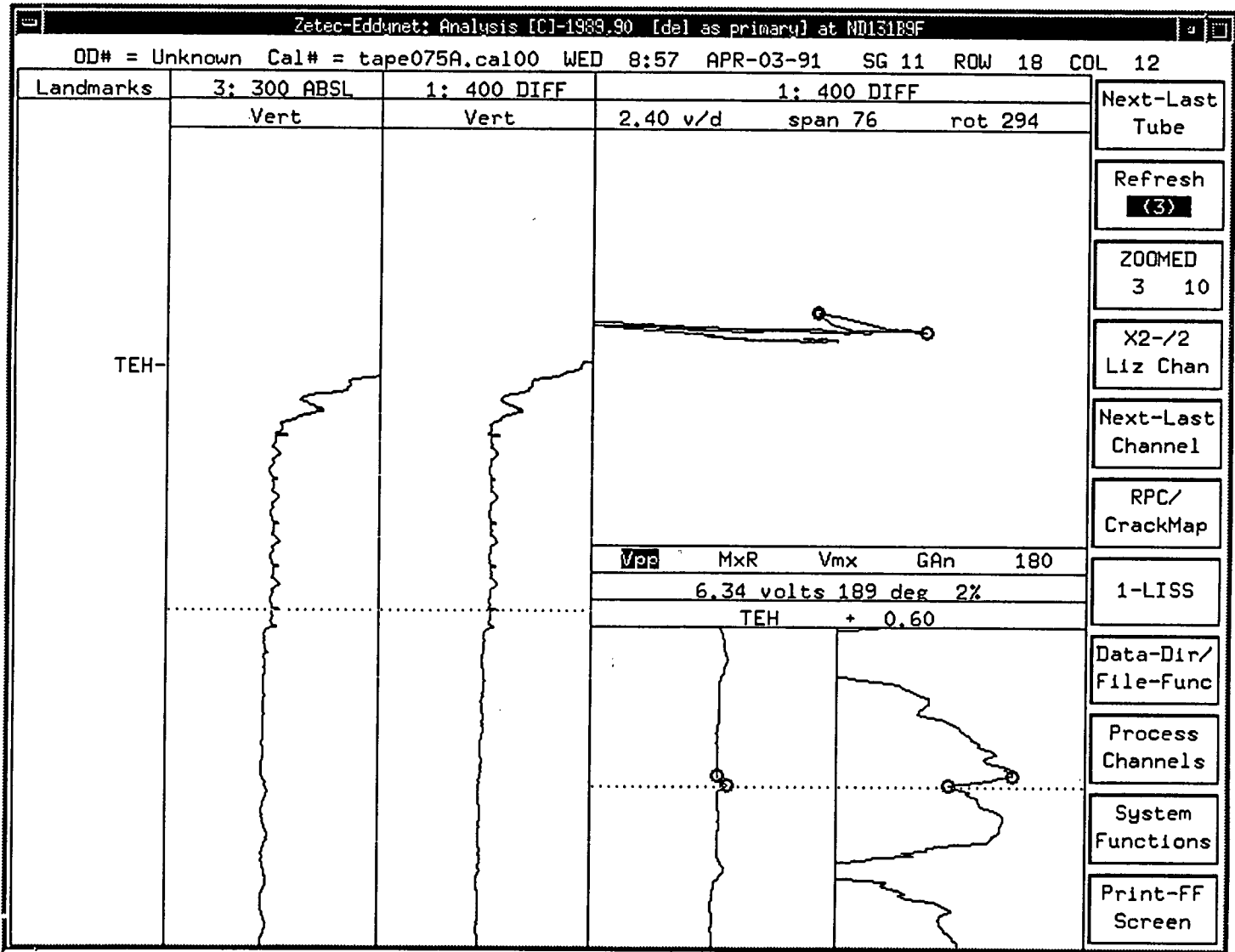
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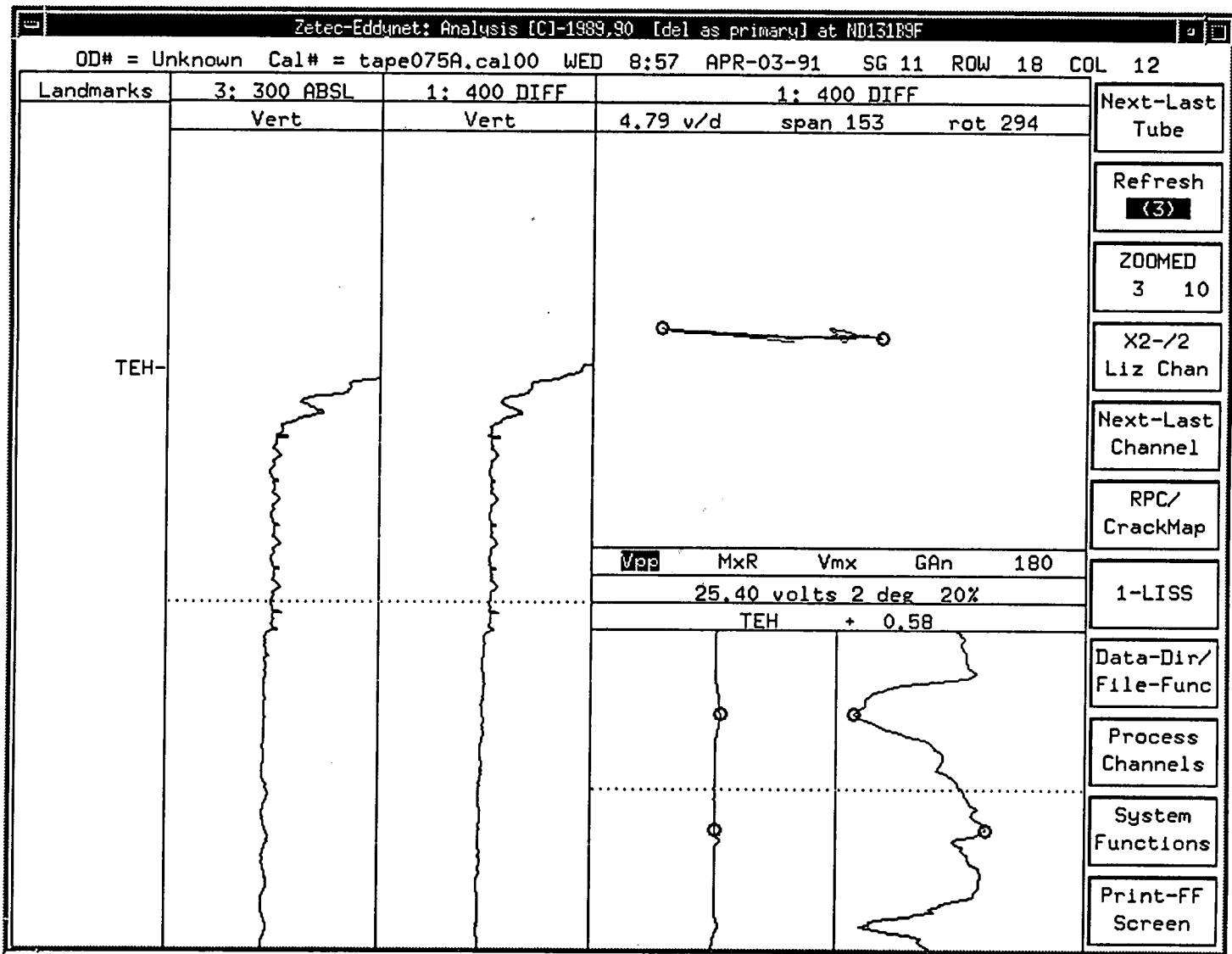


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 Z Rotation = 338.0 Y Translation = 0

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CSCAN	SELECT	FLAW		(13)	30 10	SPAN	SCRN	CRKMP







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Lmrk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
	Vert	Vert	.5v/isp 54r 294	.3v/isp 84r 335	.5v/isp 91r 359	.1v/isp 77r 111

TEH-

1xRVmxGAn180Vpp 1xRVmxGAn180Vpp 1xRVmxGAn180Vpp 1xRVmxGAn180Vpp

4.50v 190d 2% 6.50v 188d 7.42v 185d 3.02v 185d

TEH + 0.41

Next-Last Tube

Refresh (6)

ZOOMED 6 10

X2-/2 Liz Chan

Next-Last Channel

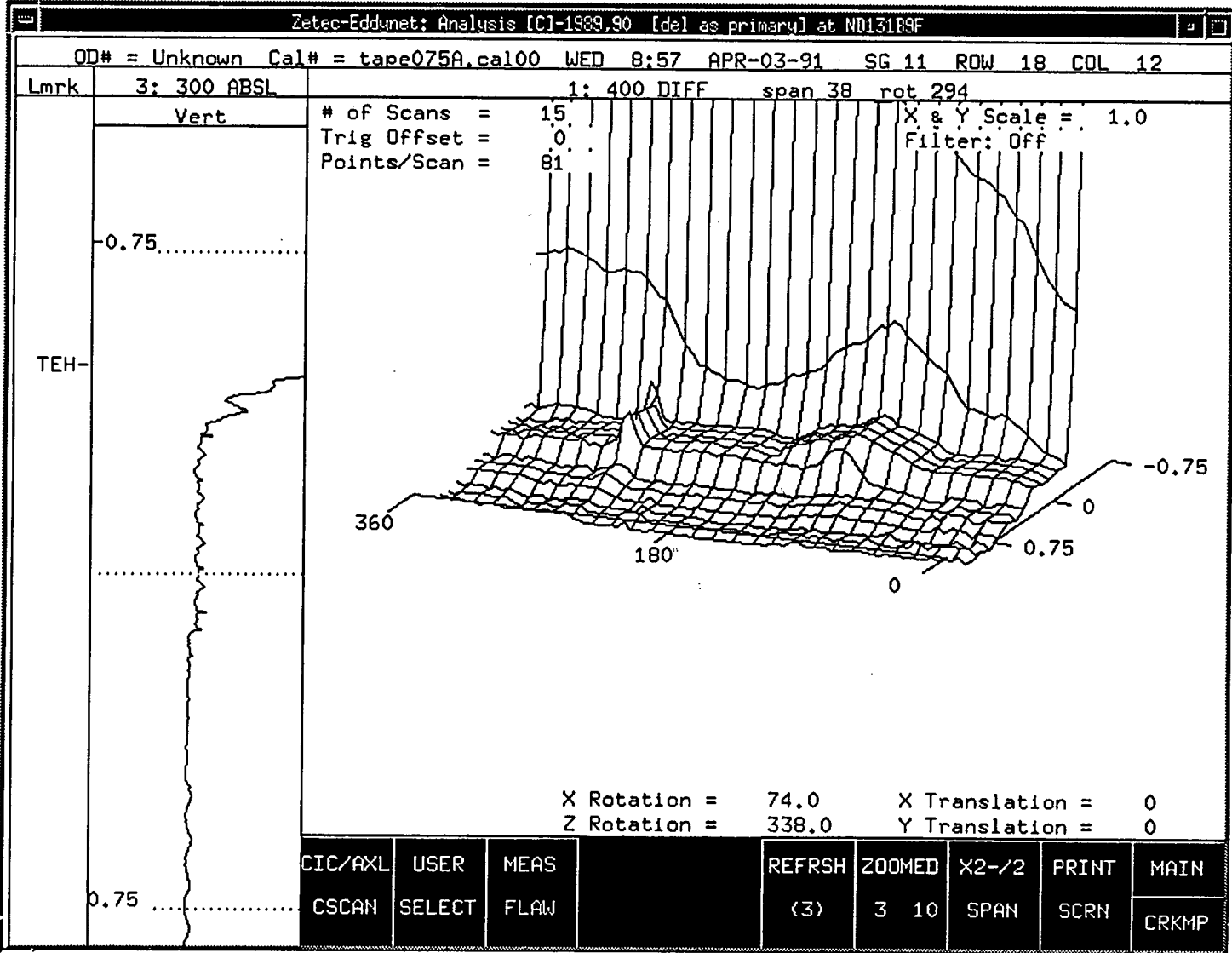
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Data-Dir/ File-Func

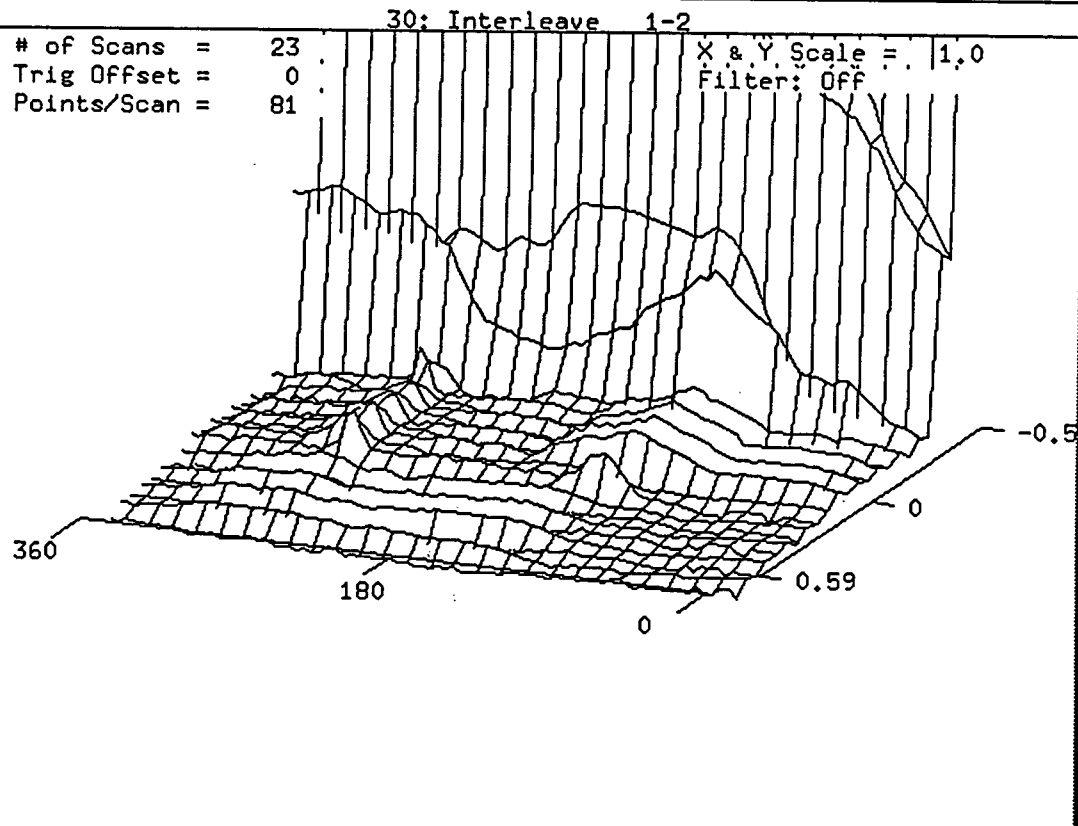
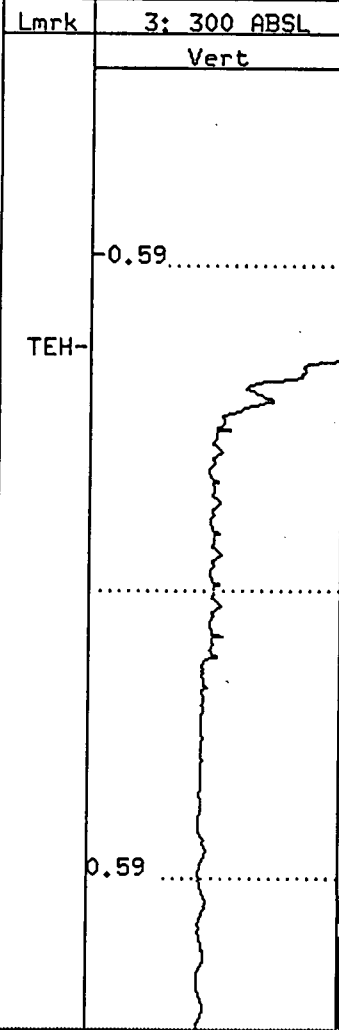
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System Functions

Print-FF Screen

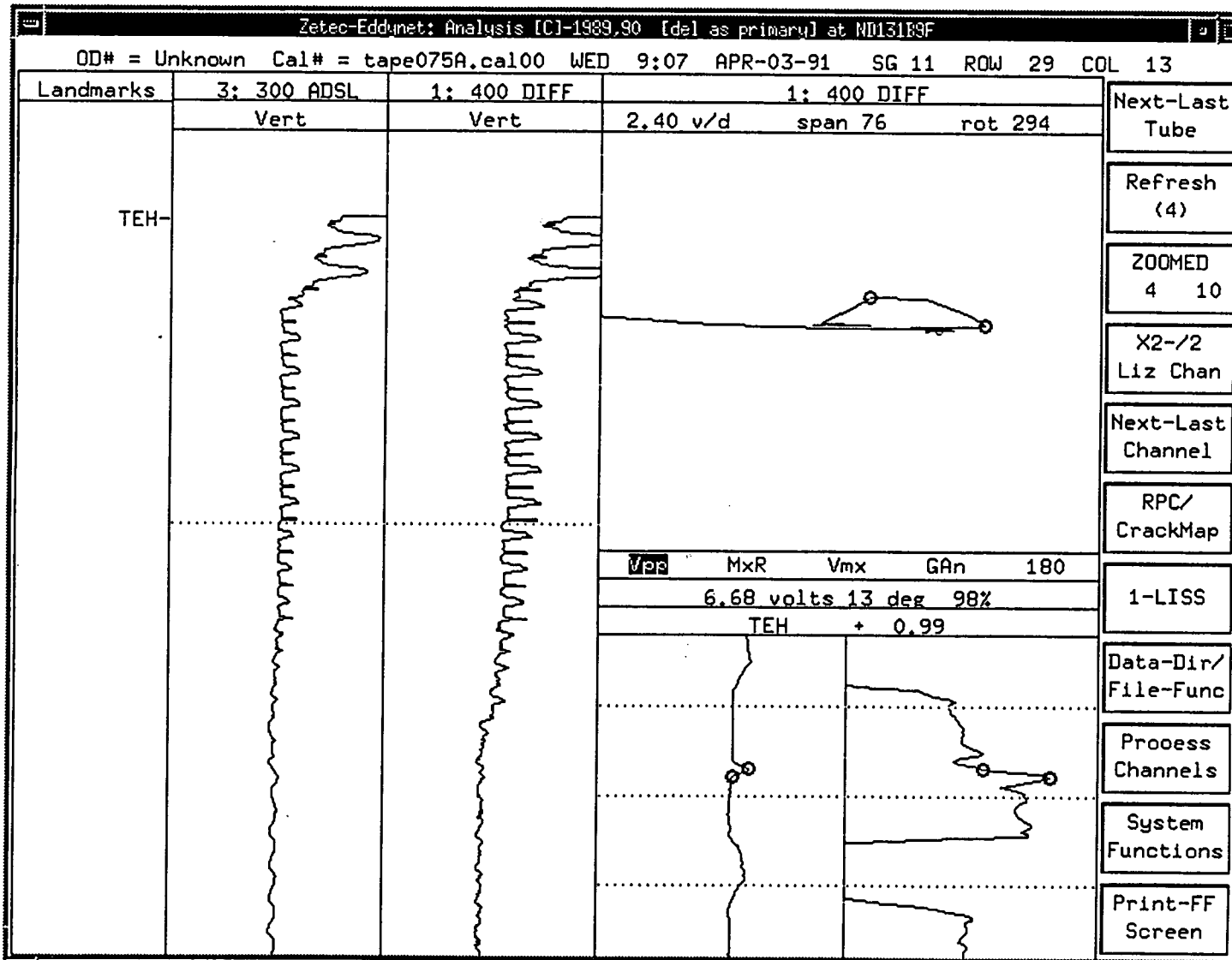


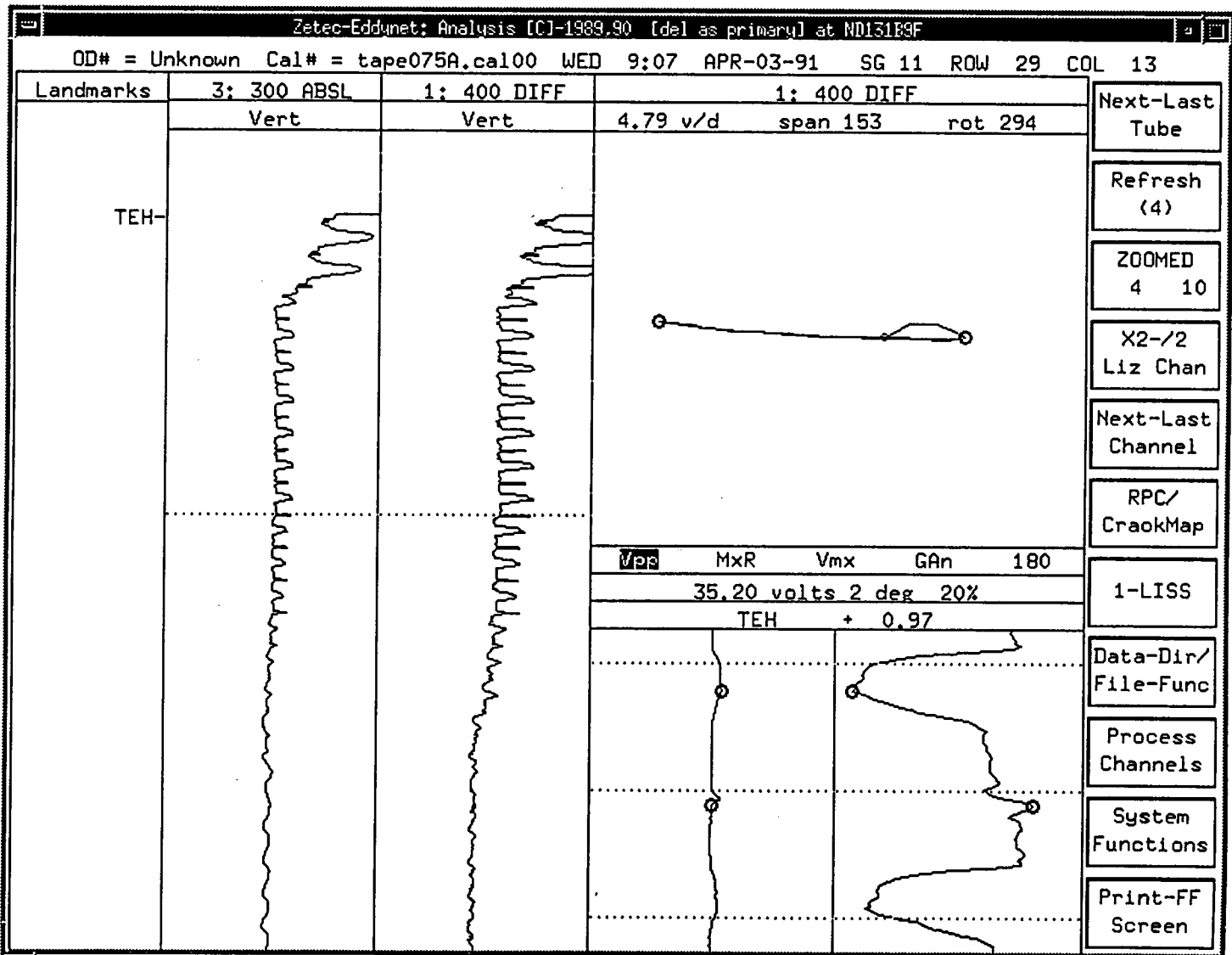
OD# = Unknown Cal# = tape075A.cal00 WED 8:57 APR-03-91 SG 11 ROW 18 COL 12

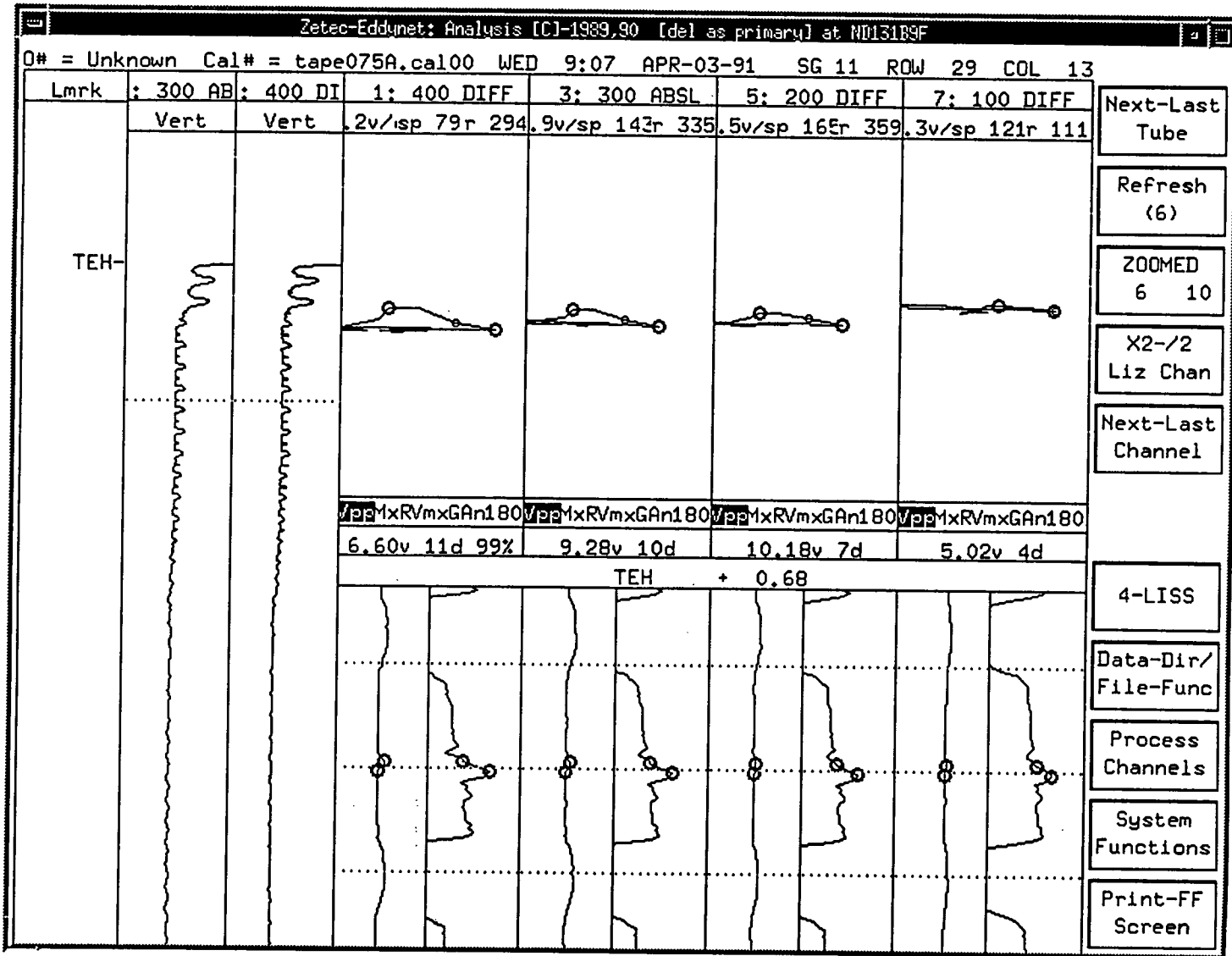


X Rotation = 74.0 X Translation = 0  
Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(3)	3 10	SPAN	SCRN	CRKMP





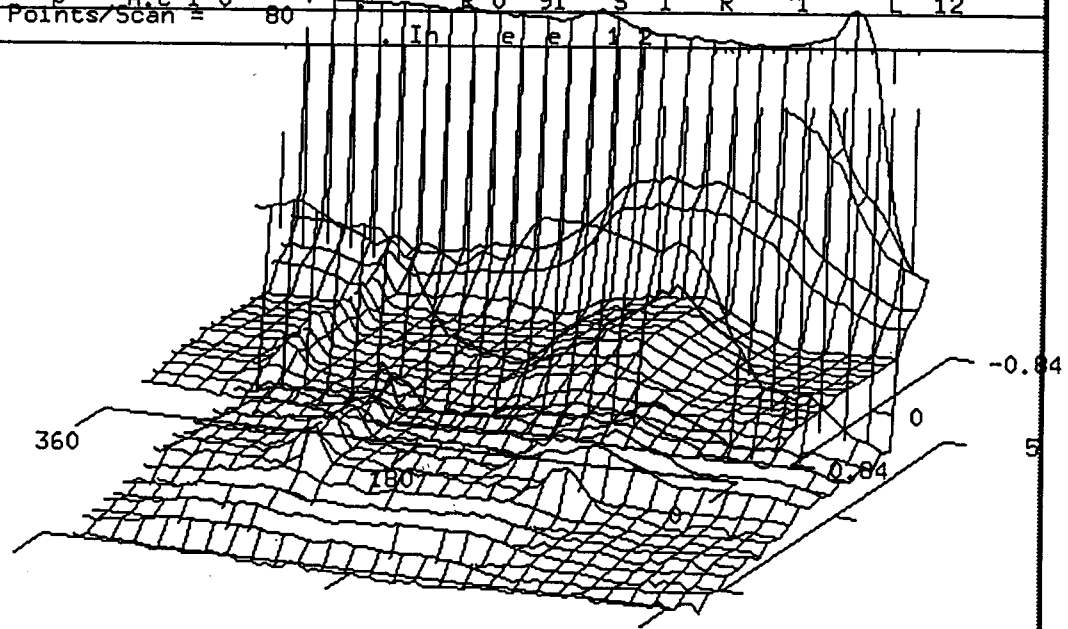
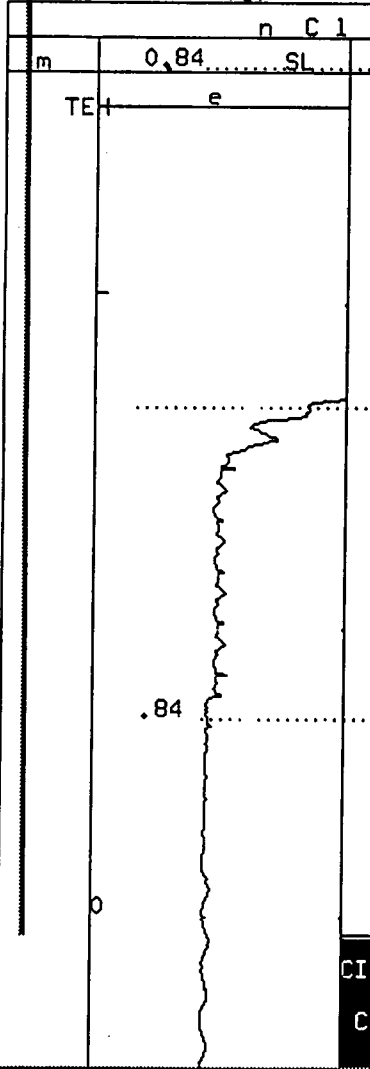


Zetec-EddyNet: Analysis [C]-1983,90 [del as primary] at N013189F

0 # = Unknown Ca # = ta e0 5A ca WE 9.0 P -0 -91 SG OW 2 CO 3

Ver # of Scans = 17 X & Y Scale = 1.0

Trig Offset = 0.9 Filter: OFF  
Points/Scan = 80



X Rotation = 74.0 X Translation = 0  
Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(3)	3 10	SPAN	SCRN	CRKMP



OD# = Unknown Cal# = tape075A.cal00 WED 9:07 APR-03-91 SG 11 ROW 29 COL 13

Lmrk 3: 300 ABSL

30: Interleave 1-2

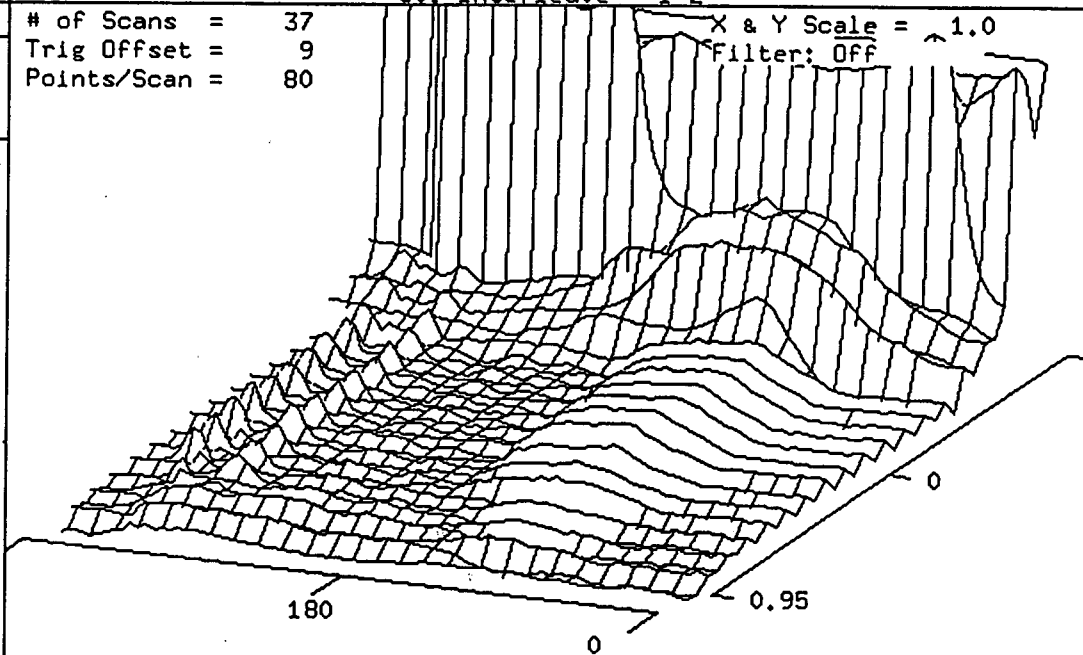
Vert

# of Scans = 37  
 Trig Offset = 9  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off

TEH-

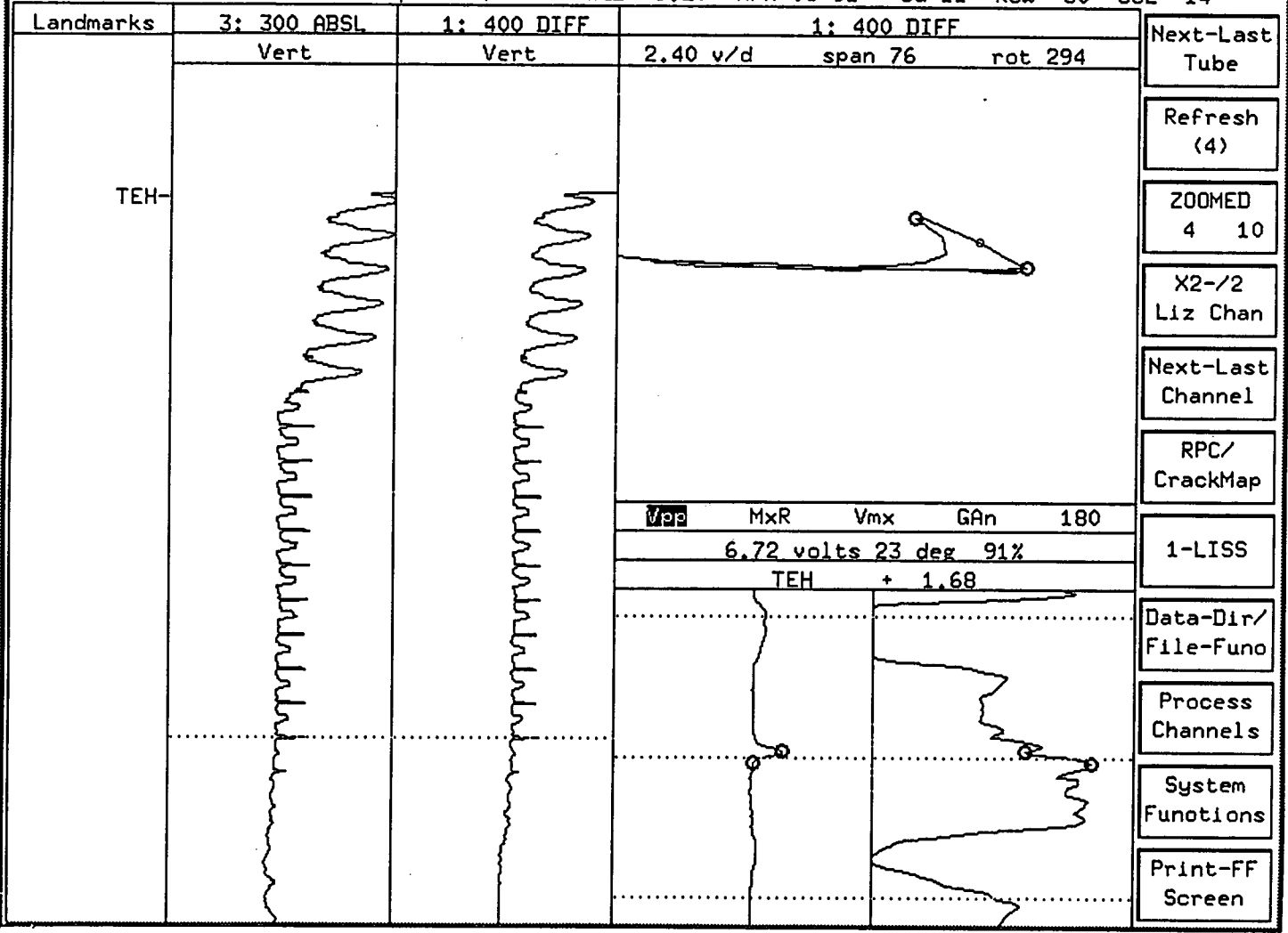
0.95



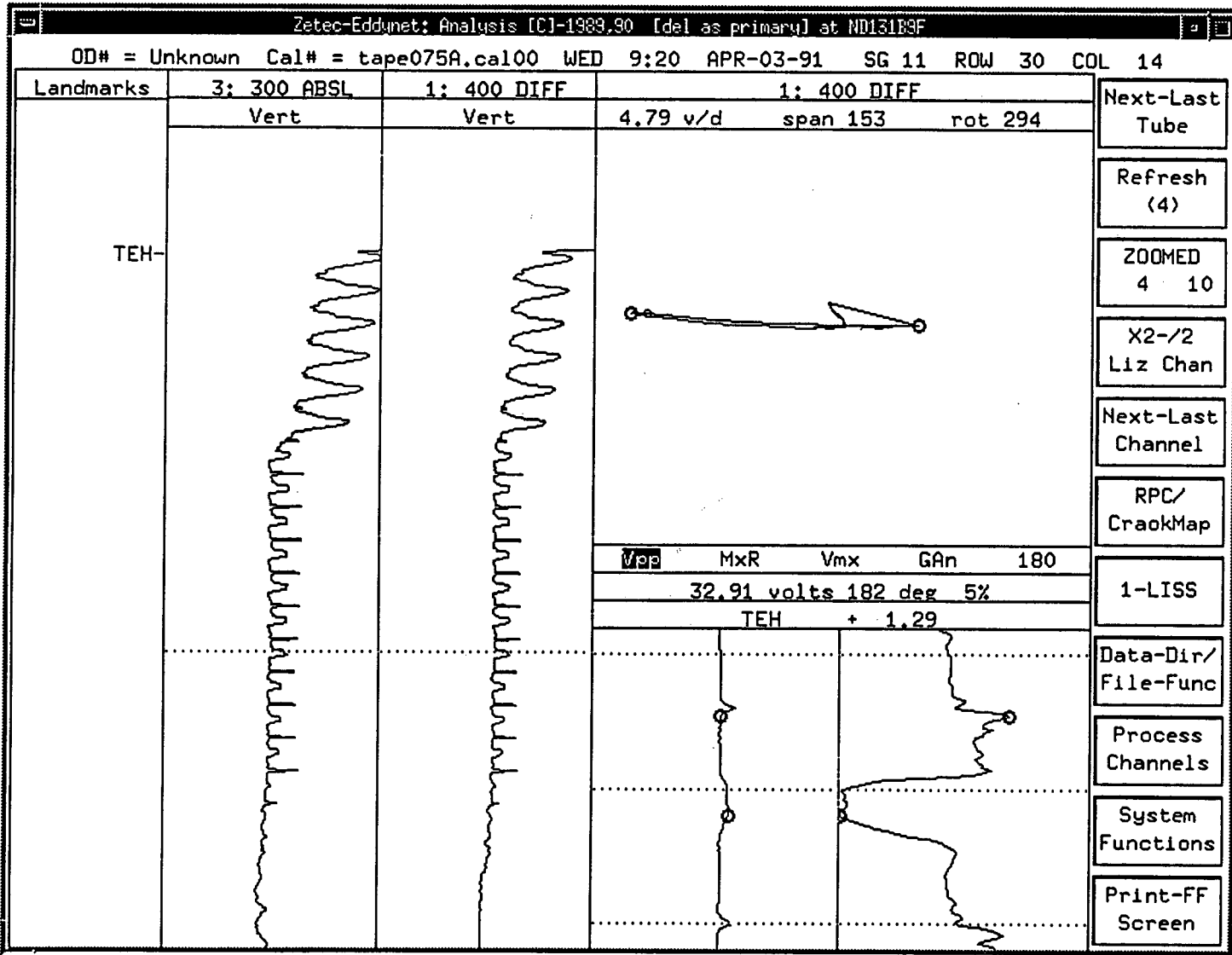
X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(4)	4 10	SPAN	SCRN	CRKMP

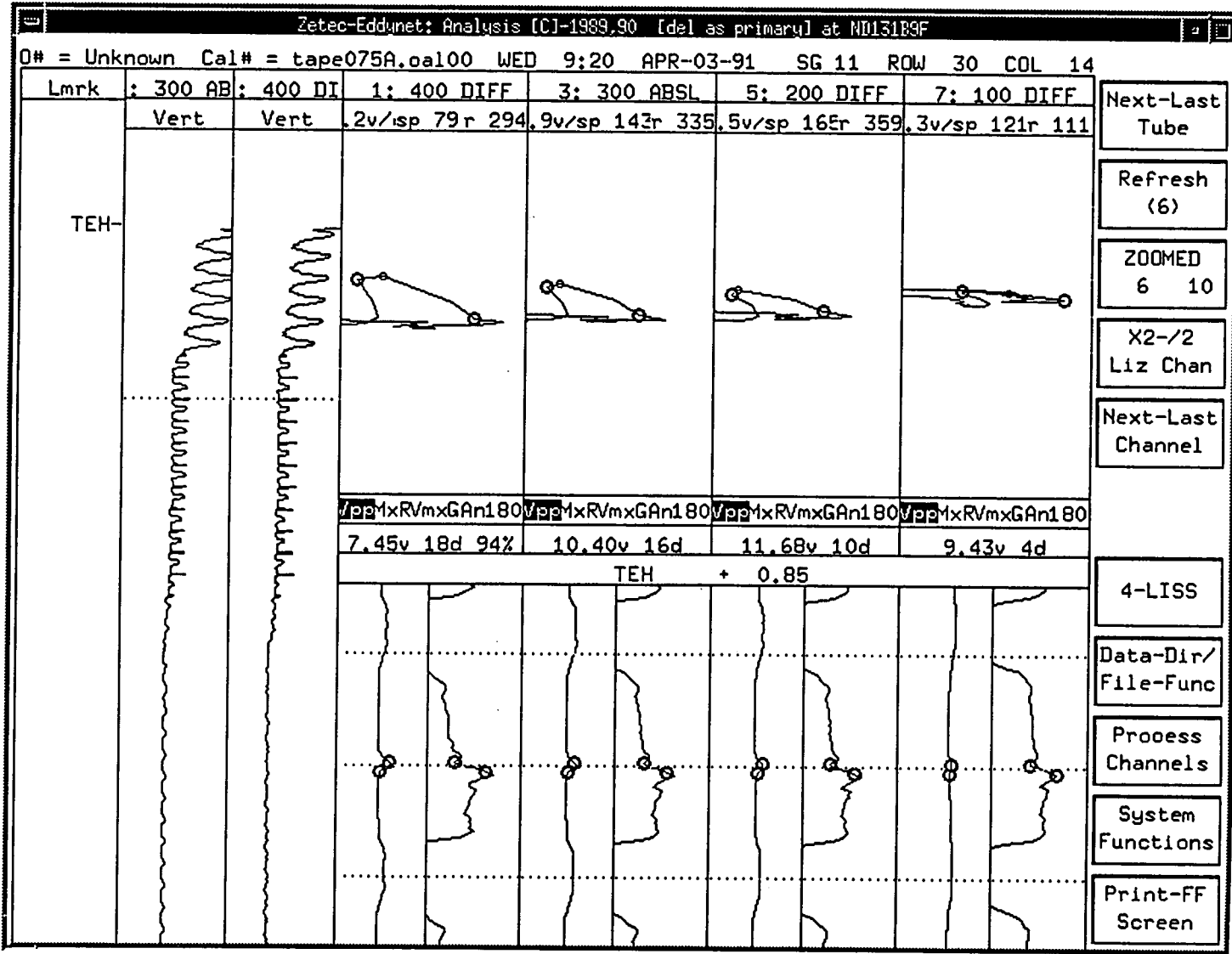
OD# = Unknown Cal# = tape075A.ca100 WED 9:20 APR-03-91 SG 11 ROW 30 COL 14



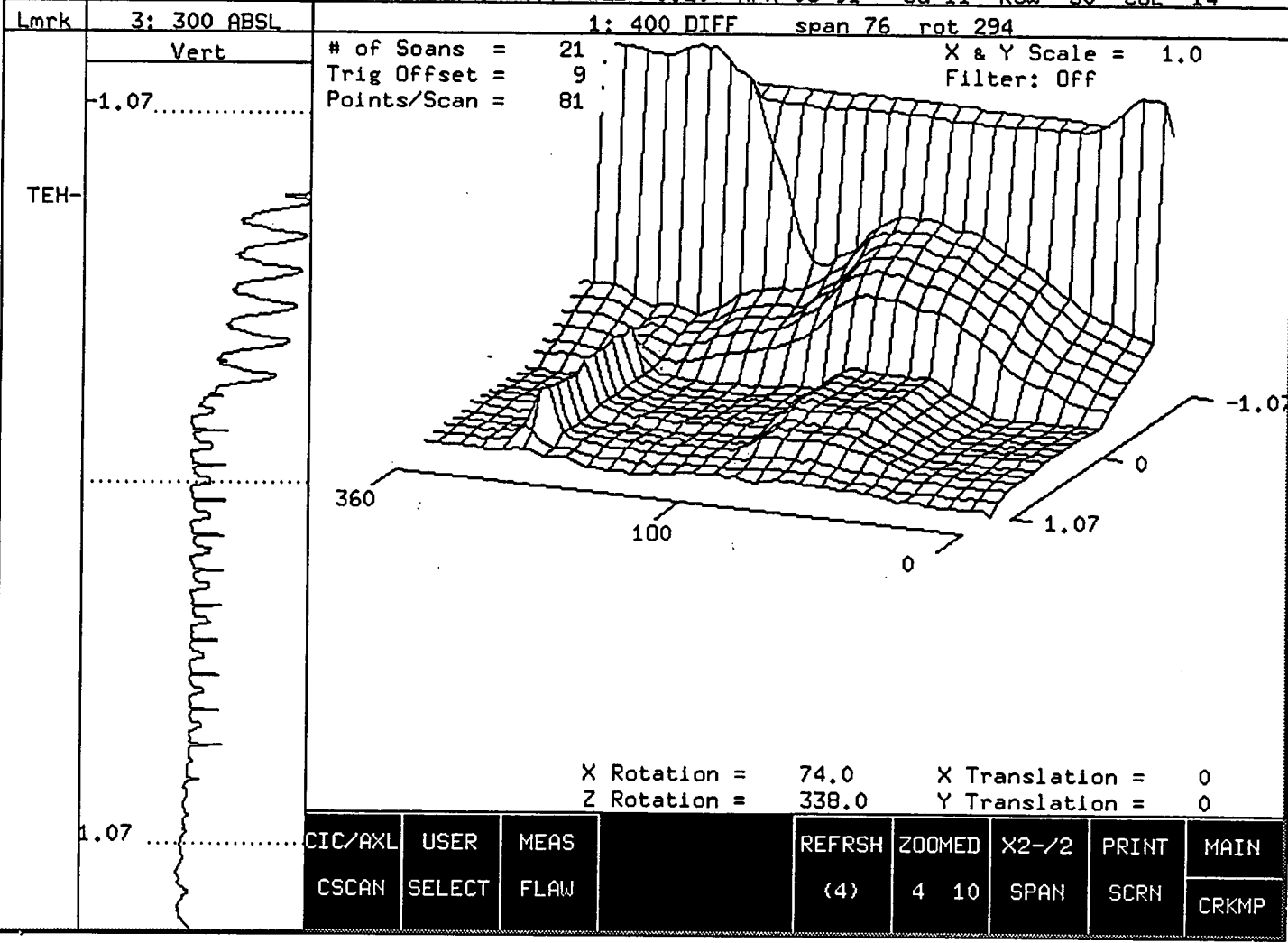
- Next-Last Tube
- Refresh (4)
- ZOOMED 4 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Funo
- Process Channels
- System Funotions
- Print-FF Screen

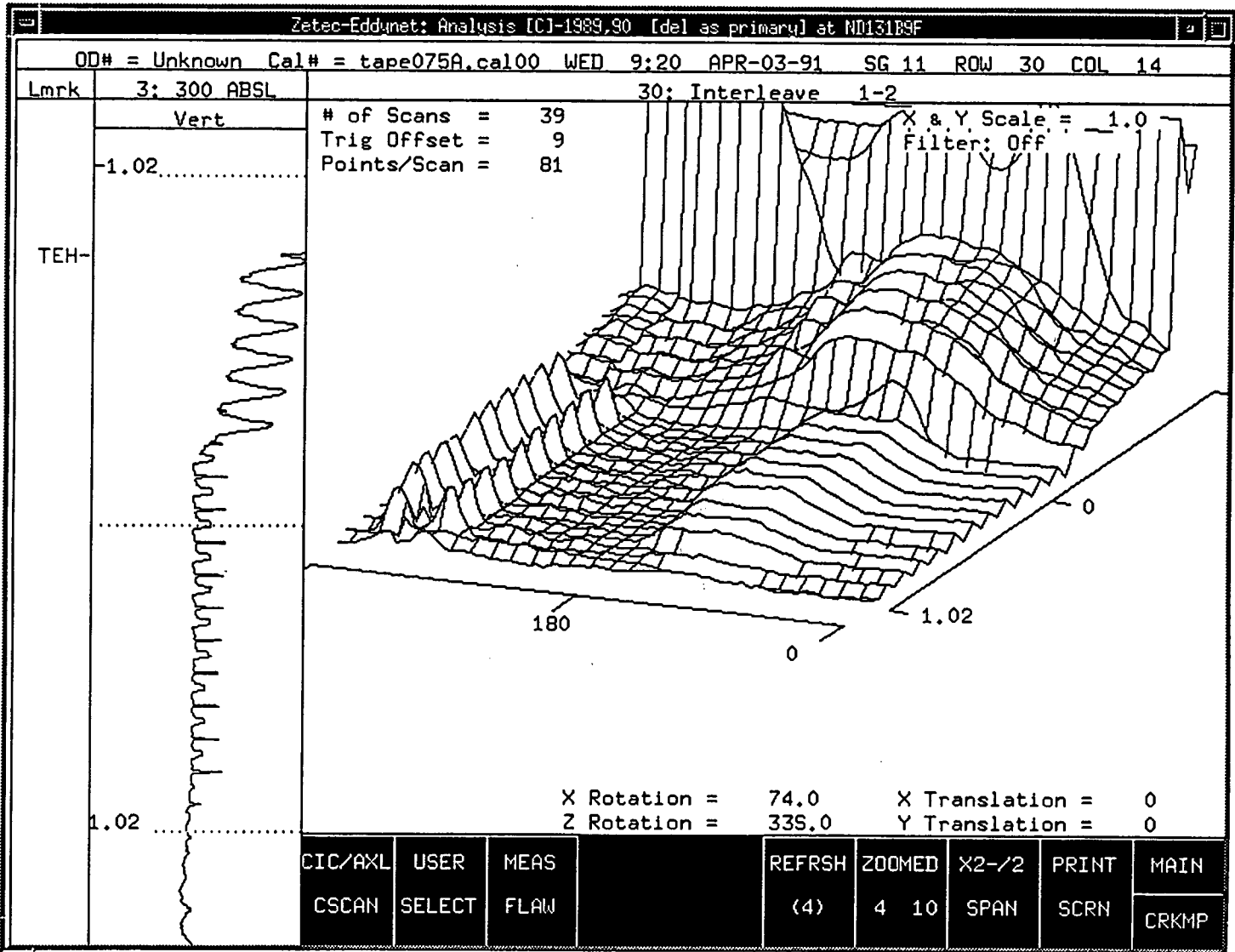


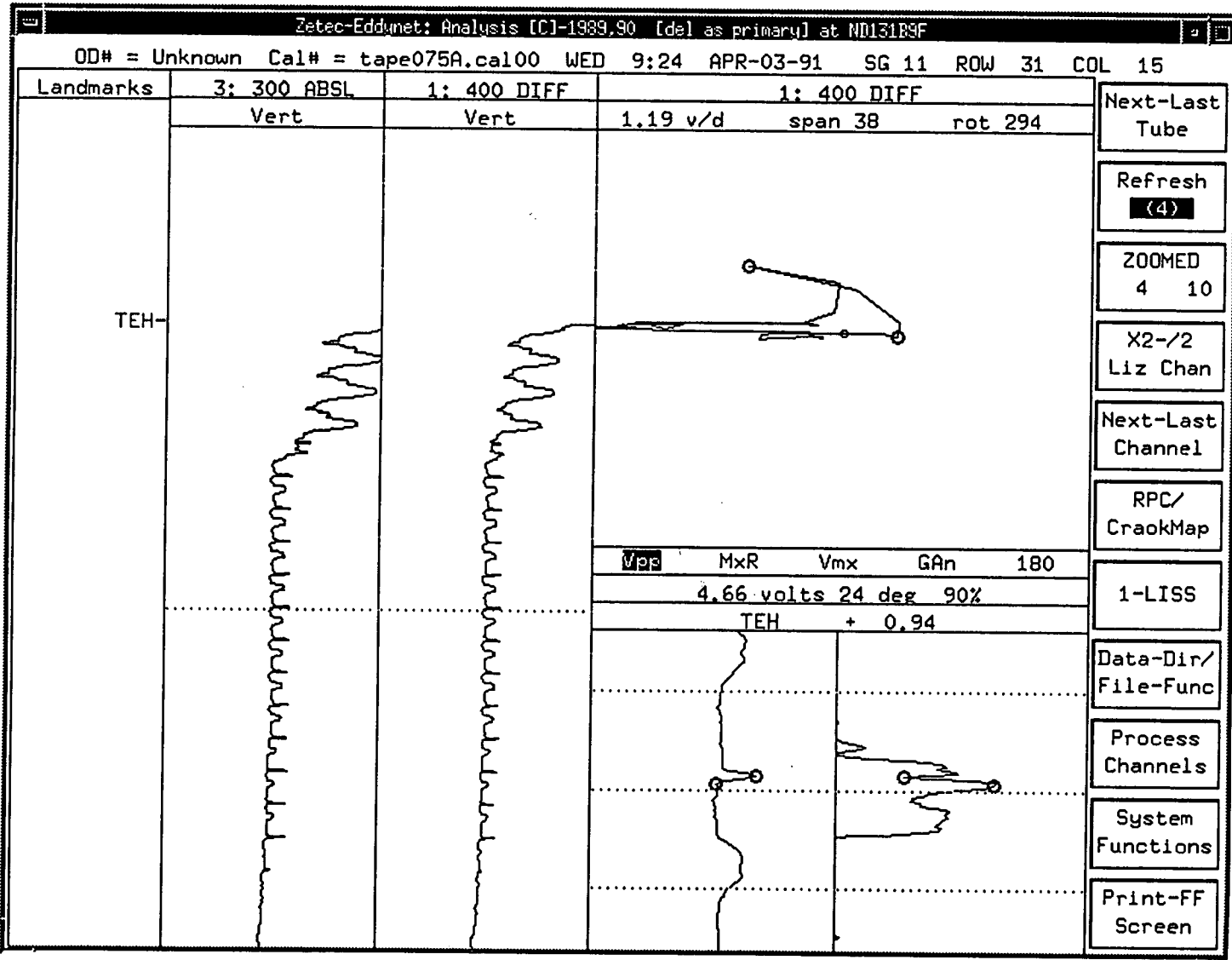
- Next-Last Tube
- Refresh (4)
- ZOOMED 4 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/CraoMap
- 1-LISS
- Data-Dir/File-Func
- Process Channels
- System Functions
- Print-FF Screen



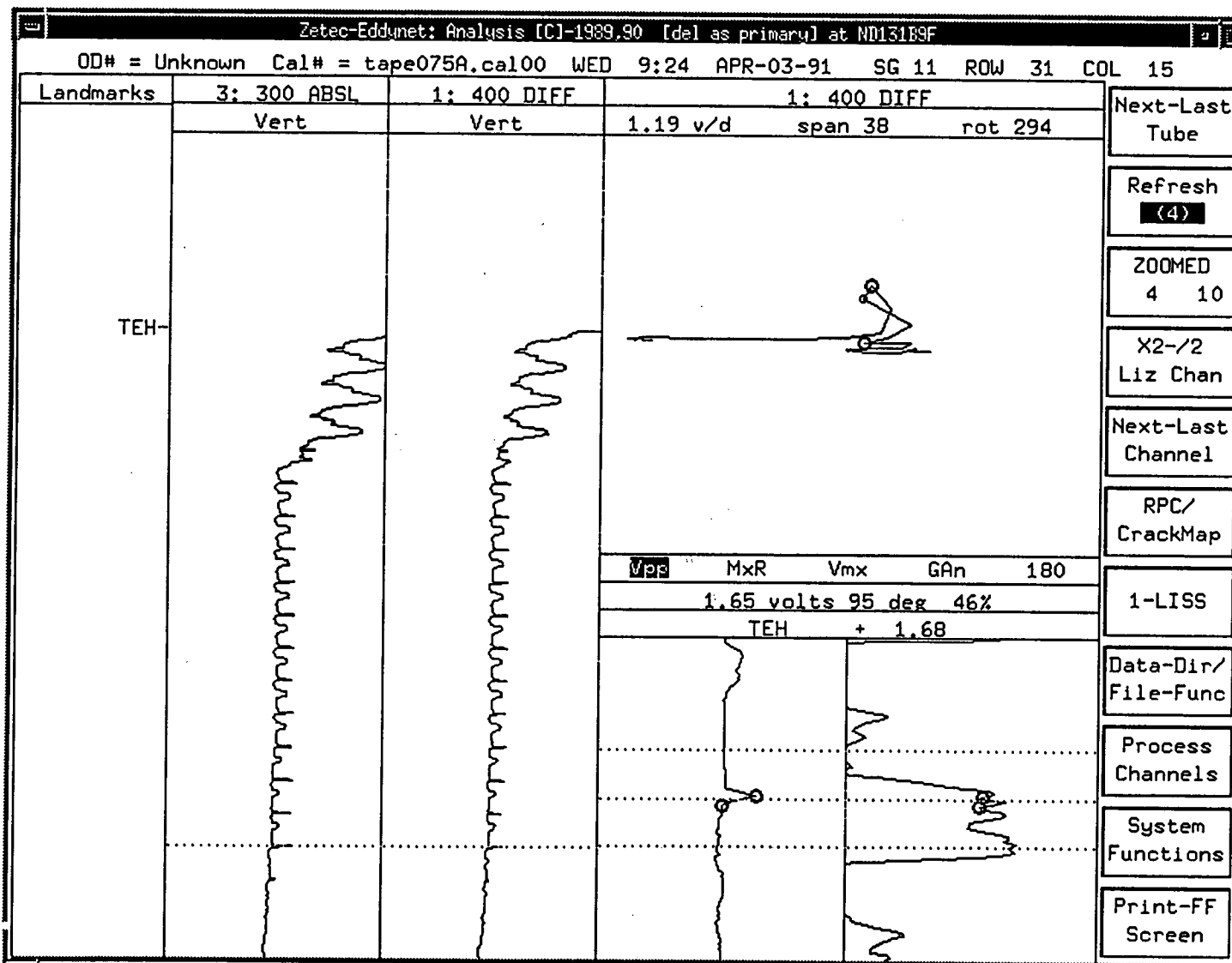
OD# = Unknown Cal# = tape075A.cal00 WED 9:20 APR-03-91 SG 11 ROW 30 COL 14



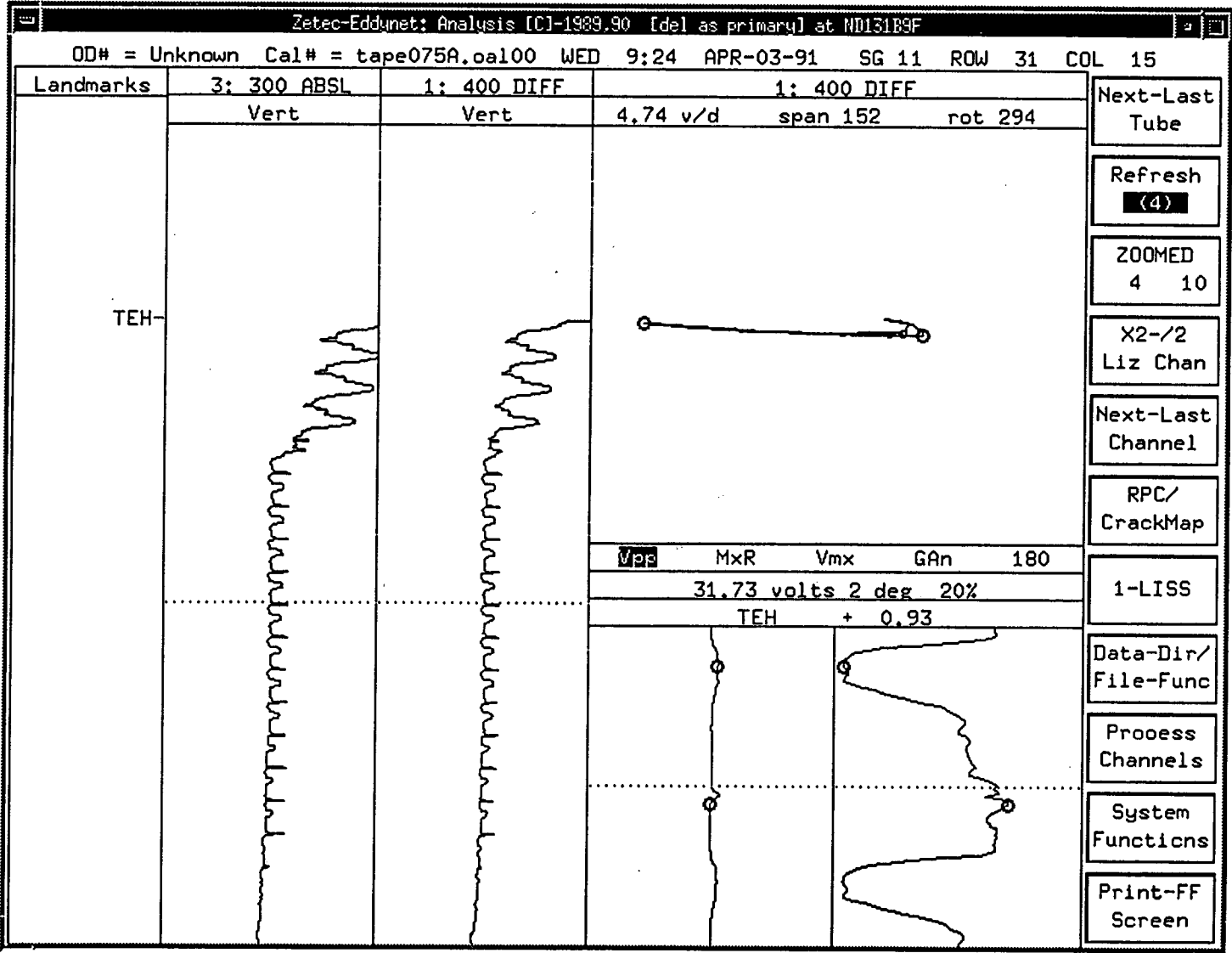




- Next-Last Tube
- Refresh (4)
- ZOOMED 4 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/CraokMap
- 1-LISS
- Data-Dir/File-Func
- Process Channels
- System Functions
- Print-FF Screen



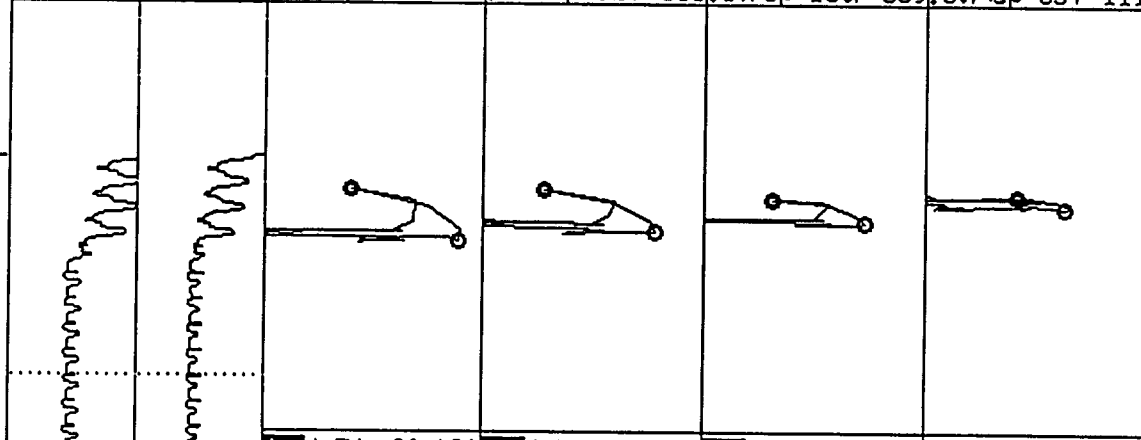




O# = Unknown Cal# = tape075A.cal00 WED 9:24 APR-03-91 SG 11 ROW 31 COL 15

Lnk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
	Vert	Vert	.6v/isp 60r 294	.5v/isp 92r 335	.5v/sp 13Cr 359	.3v/isp 85r 111

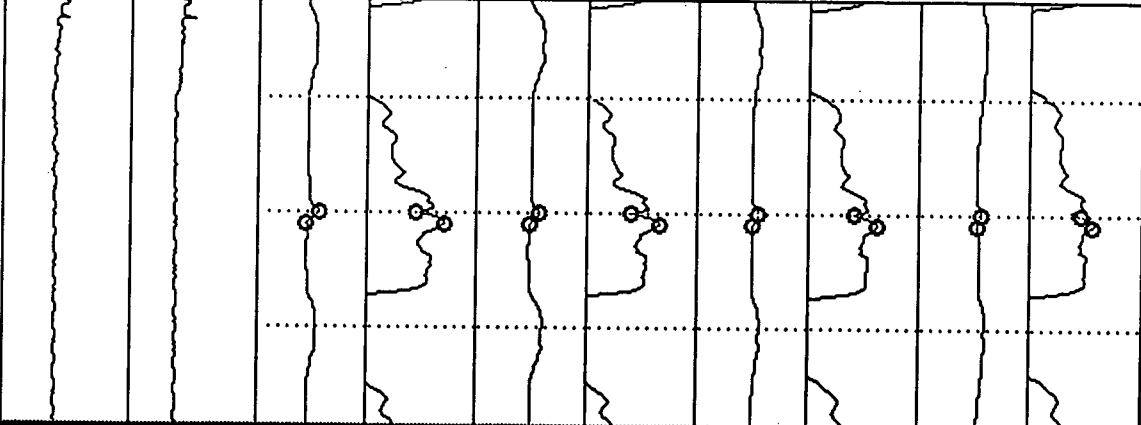
TEH-



pp1xRVmxGAn180 pp1xRVmxGAn180 pp1xRVmxGAn180 pp1xRVmxGAn180

4.65v 24d 90% 6.95v 20d 7.92v 13d 2.68v 13d

TEH + 0.91



Next-Last Tube

Refresh (6)

ZOOMED 6 10

X2-/2 Liz Chan

Next-Last Channel

4-LISS

Data-Dir/ File-Func

Process Channels

System Functions

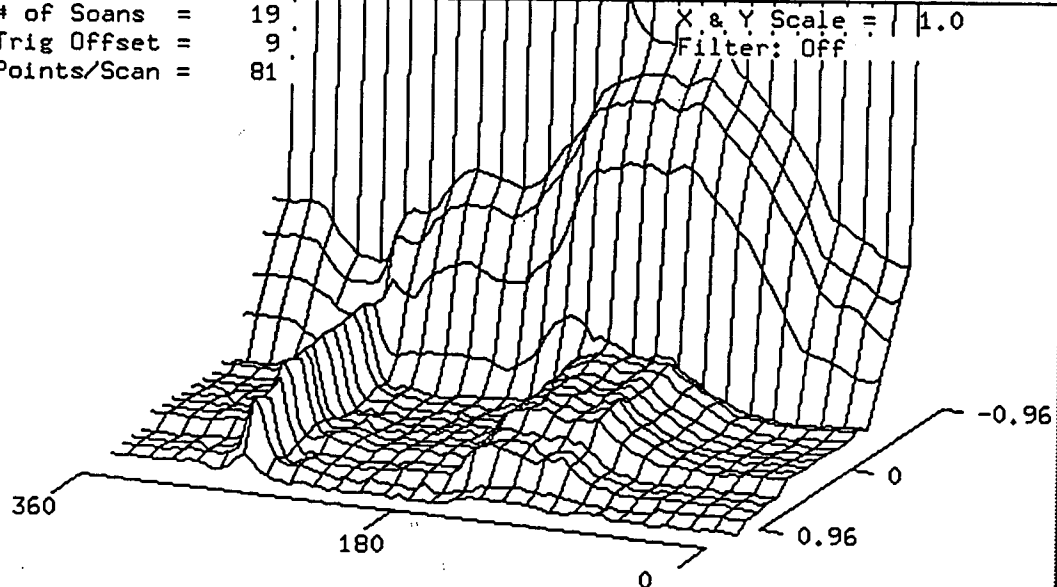
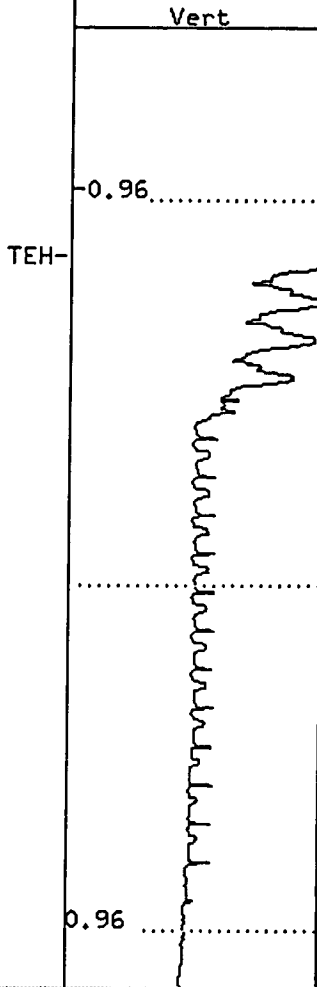
Print-FF Screen

OD# = Unknown Cal# = tape075A.cal00 WED 9:24 APR-03-91 SG 11 ROW 31 COL 15

Lmrk 3: 300 ABSL

1: 400 DIFF span 38 rot 294

# of Soans = 19 X & Y Scale = 1.0  
 Trig Offset = 9 Filter: Off  
 Points/Scan = 81



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(4)	4 10	SPAN	SCRN	CRKMP

OD# = Unknown Cal# = tape075A.cal00 WED 9:24 APR-03-91 SG 11 ROW 31 COL 15

Lmrk 3: 300 ABSL

30: Interleave 1-2

Vert

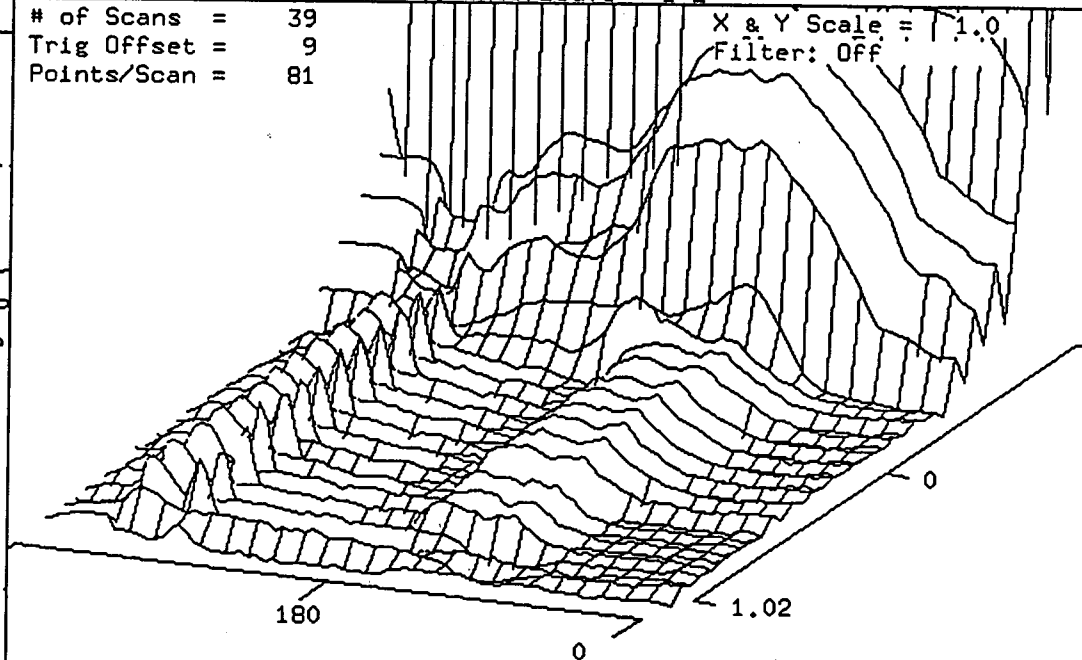
# of Scans = 39  
 Trig Offset = 9  
 Points/Scan = 81

X & Y Scale = 1.0  
 Filter: Off

TEH-

1.02

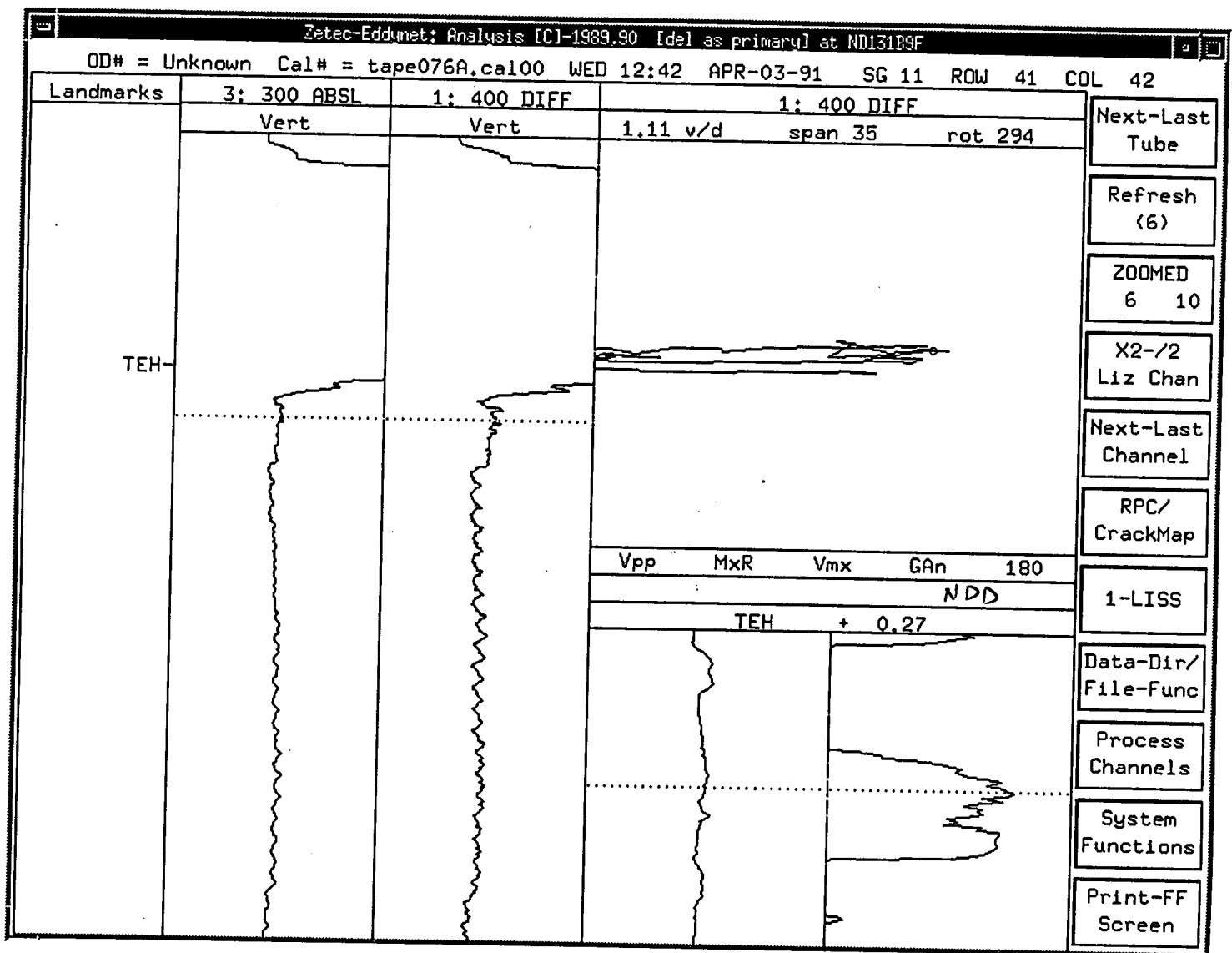
1.02

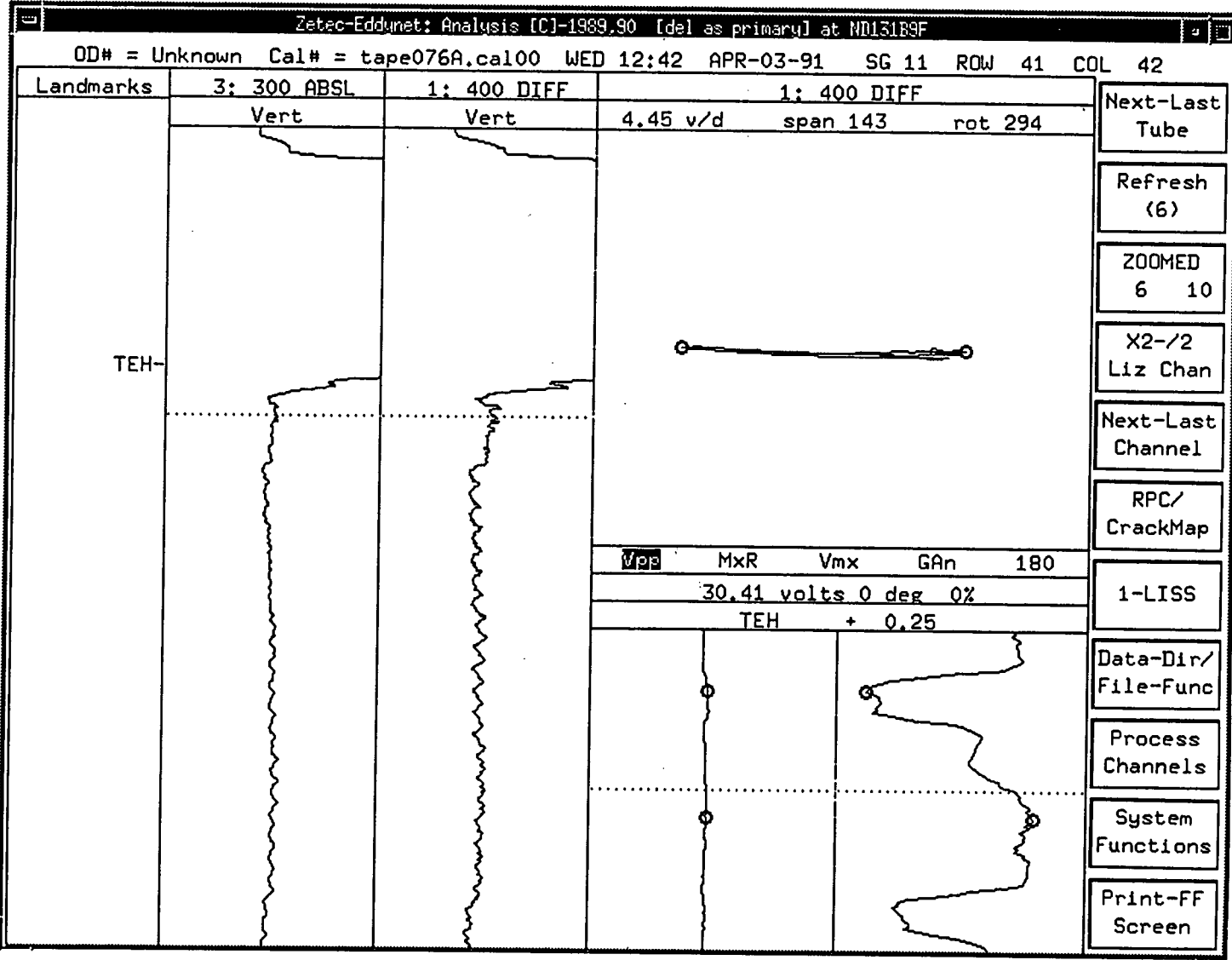


X Rotation = 74.0  
 Z Rotation = 338.0

X Translation = 0  
 Y Translation = 0

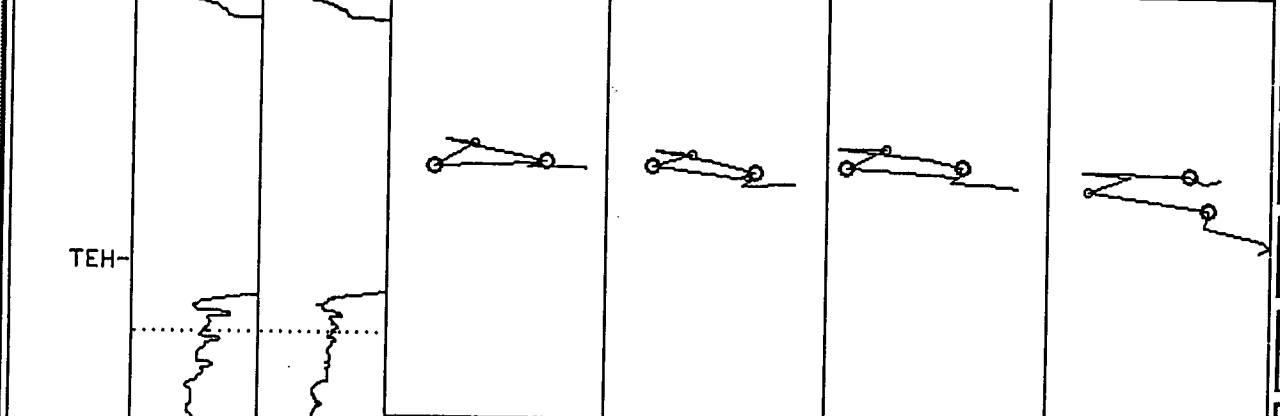
CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(4)	4 10	SPAN	SCRN	CRKMP



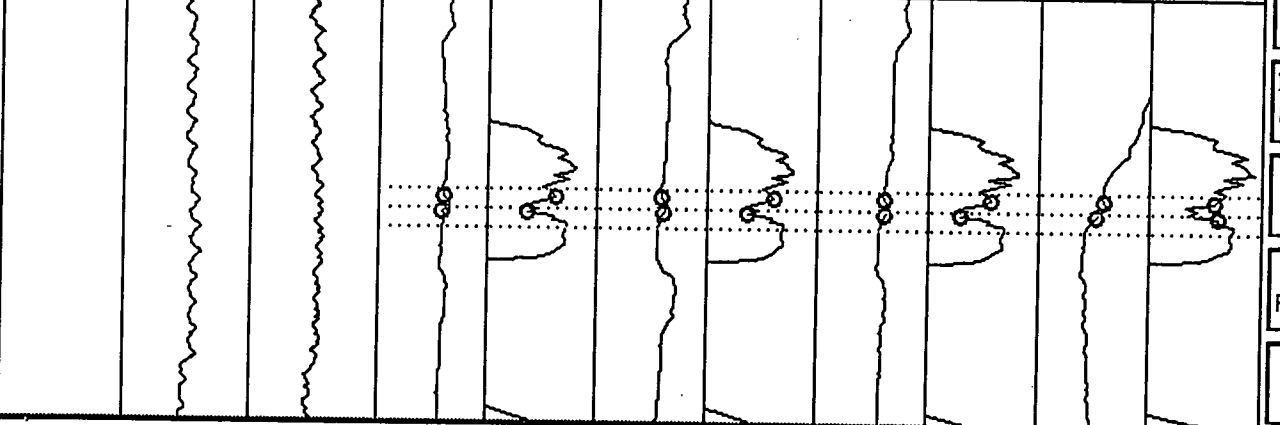


Q# = Unknown Cal# = tape076A.cal00 WED 12:42 APR-03-91 SG 11 ROW 41 COL 42

Lmrk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
	Vert	Vert	.7v/isp 26r 294	.0v/isp 38r 336	.9v/isp 35 r 0	.5v/isp 19r 114



1.07v 359d	1.12v 4d	0.93v 7d	1.80v 4d
TEH + 0.29			



- Next-Last Tube
- Refresh (6)
- ZOOMED 6 9
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

OD# = Unknown Cal# = tape076A.cal00 WED 12:42 APR-03-91 SG 11 ROW 41 COL 42

Lmrk 3: 300 ABSL

1: 400 DIFF span 35 rot 294

Vert

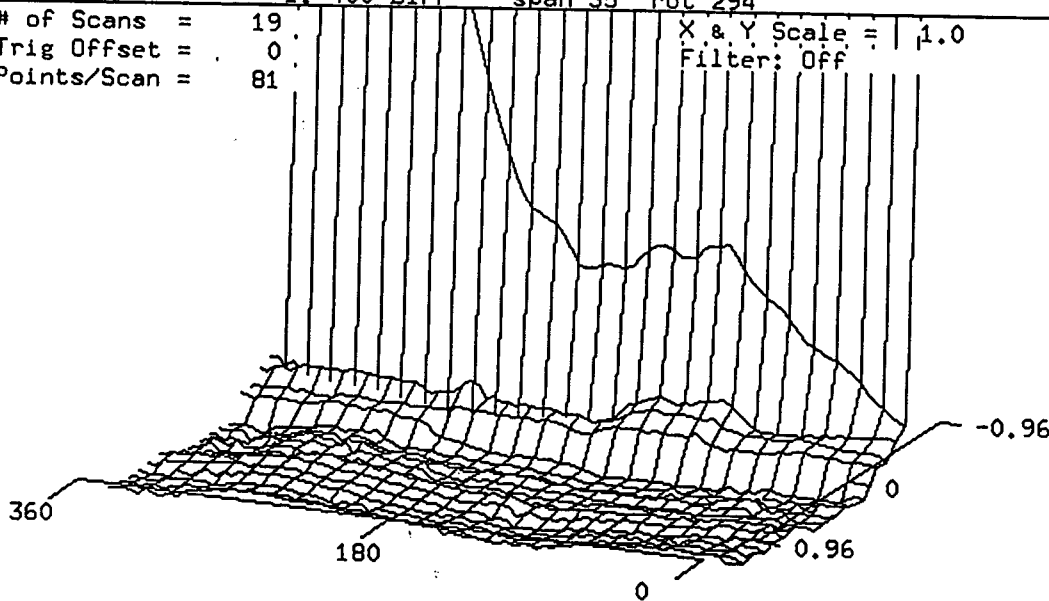
# of Scans = 19  
 Trig Offset = 0  
 Points/Scan = 81

X & Y Scale = 1.0  
 Filter: Off

TEH-

-0.96

0.96

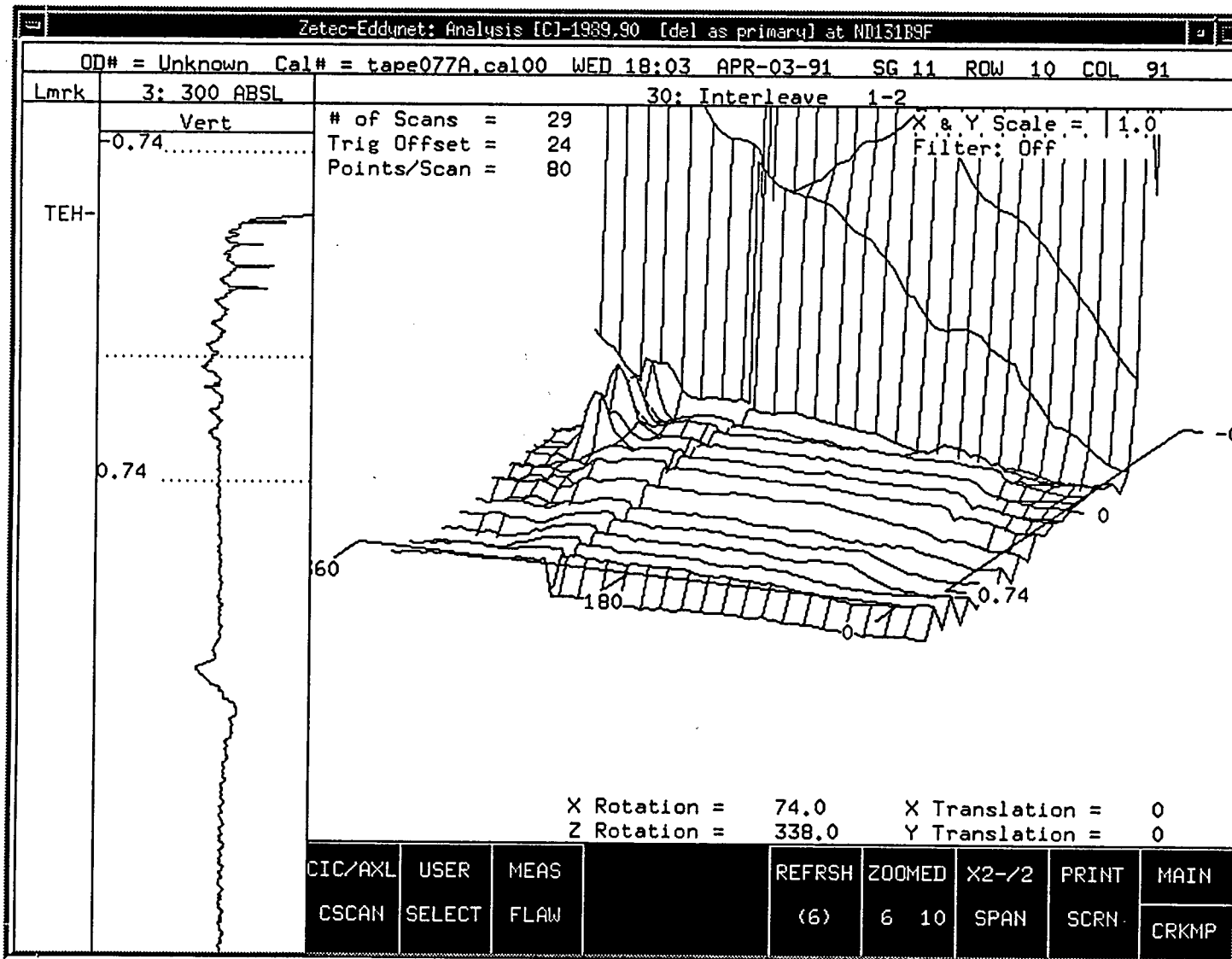


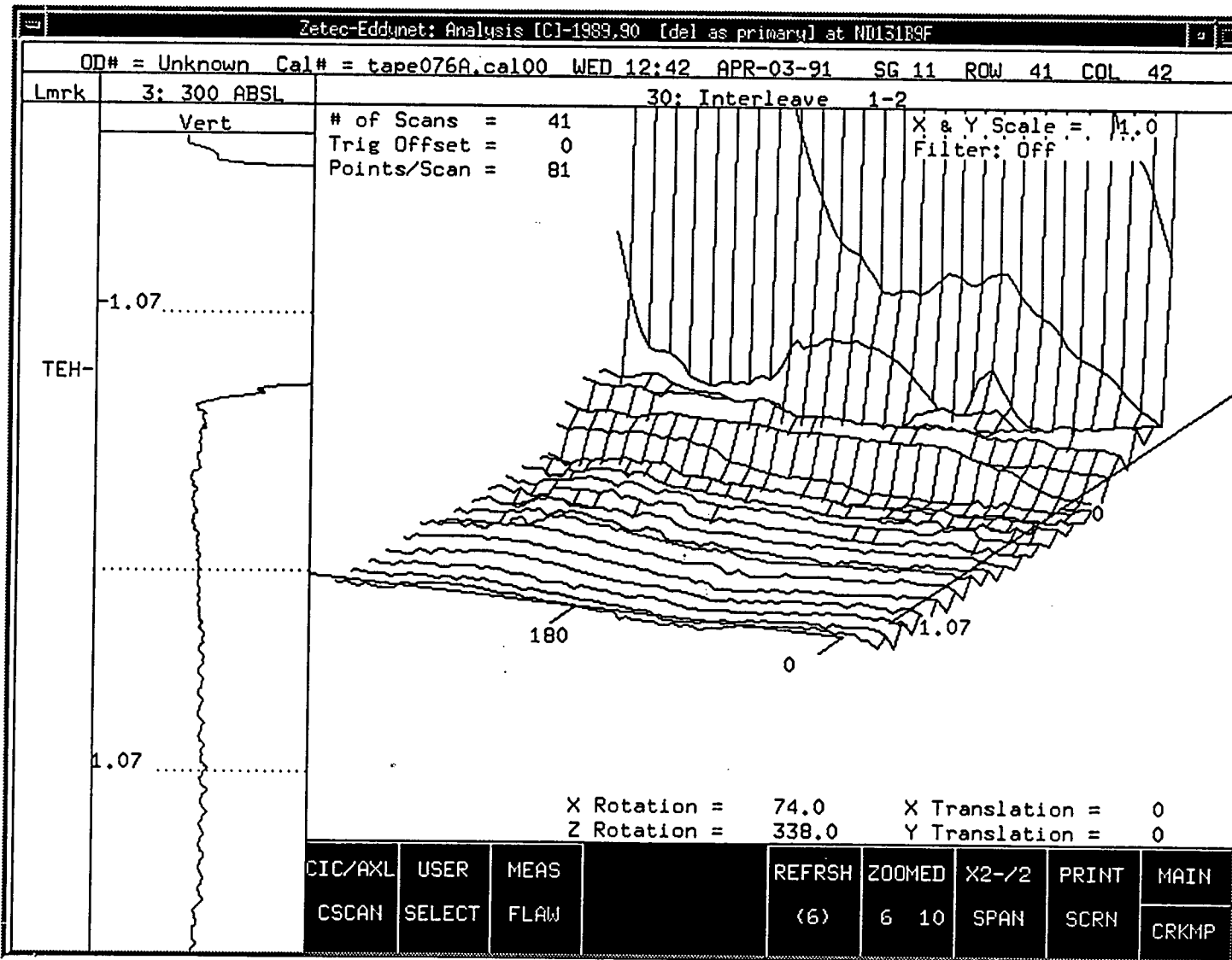
X Rotation = 74.0  
 Z Rotation = 338.0

X Translation = 0  
 Y Translation = 0

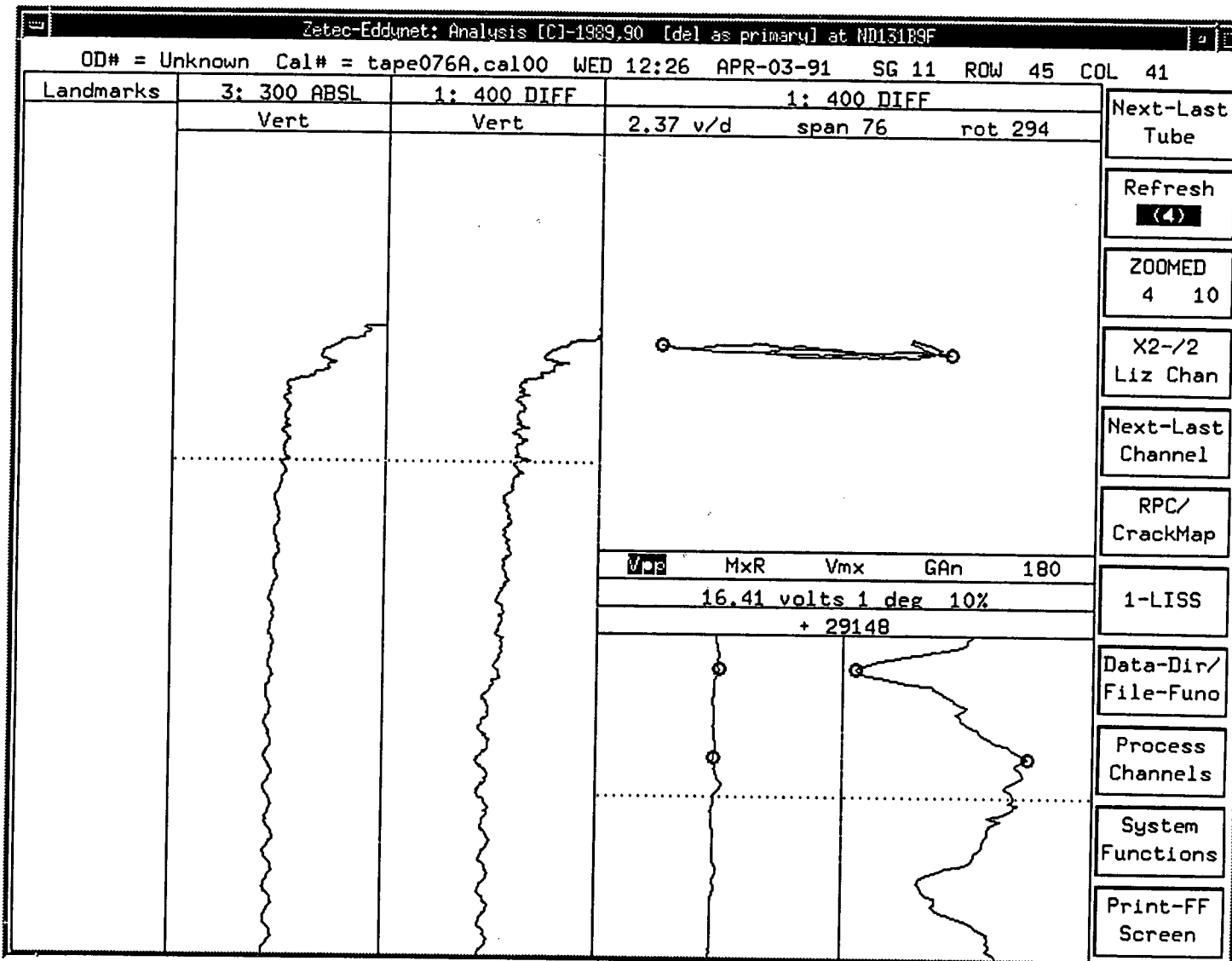
CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

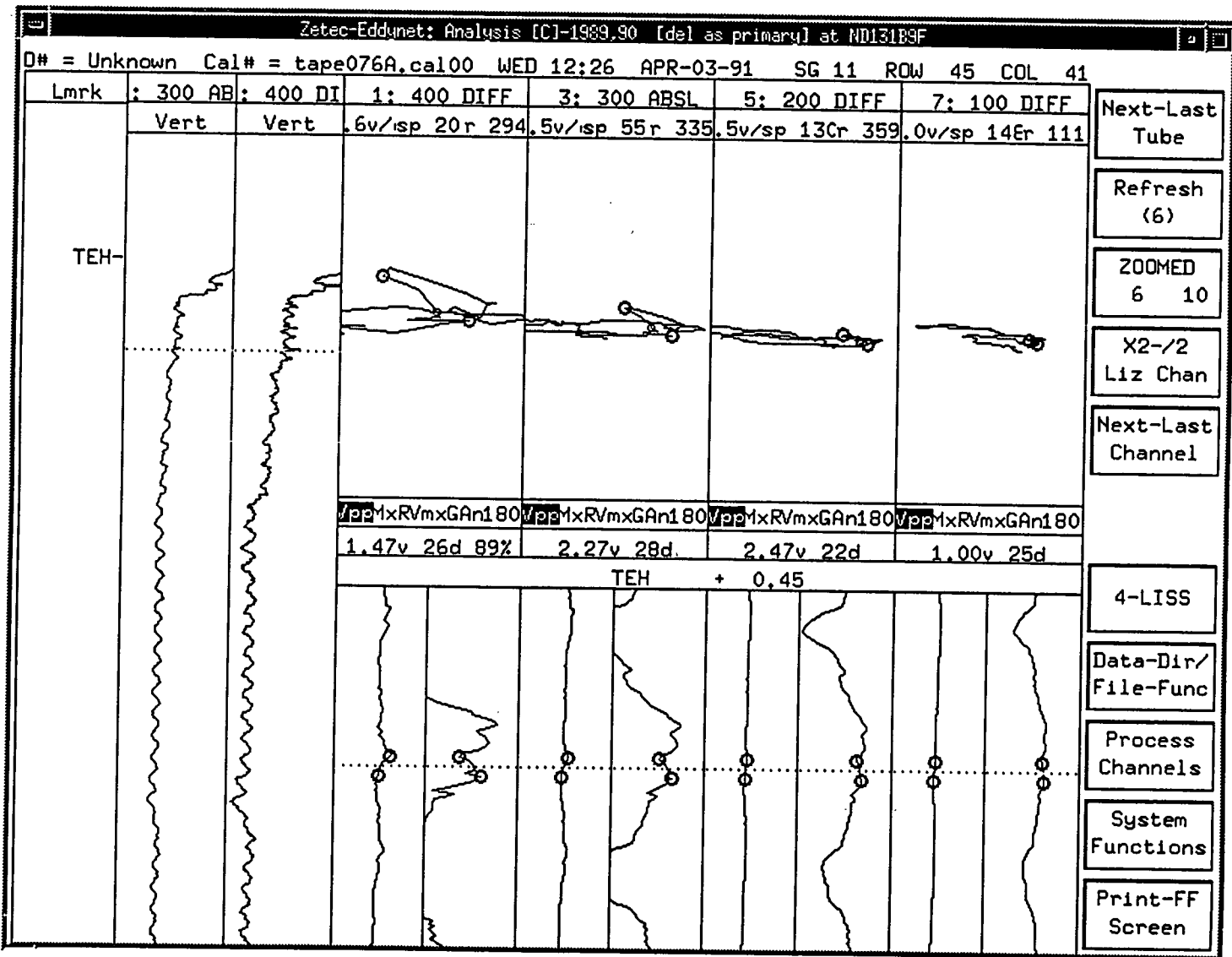














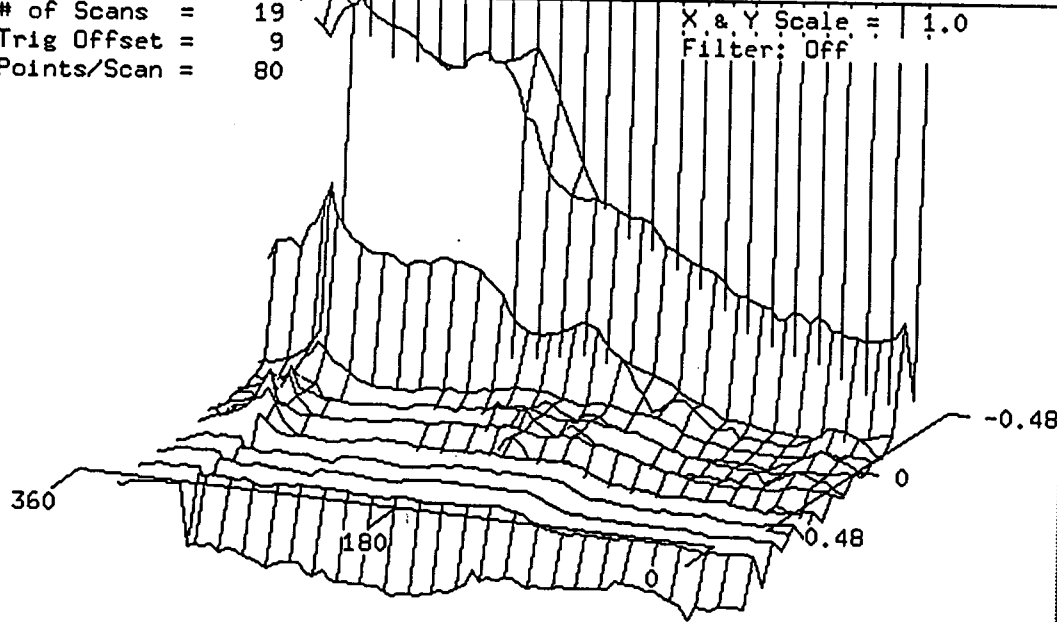
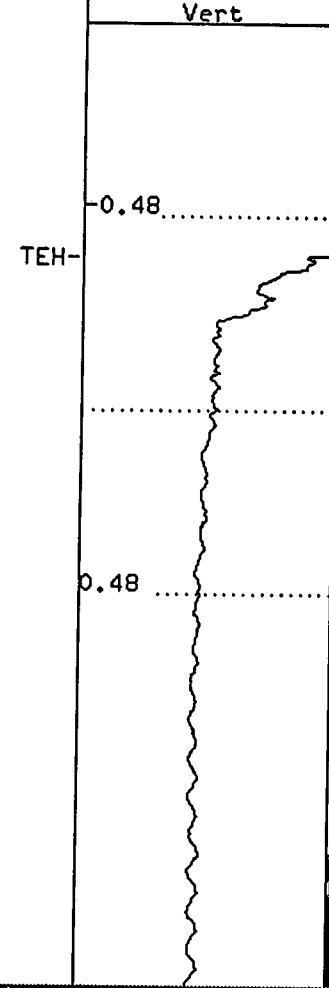
OD# = Unknown Cal# = tape076A.cal00 WED 12:26 APR-03-91 SG 11 ROW 45 COL 41

Lmrk 3: 300 ABSL

30: Interleave 1-2

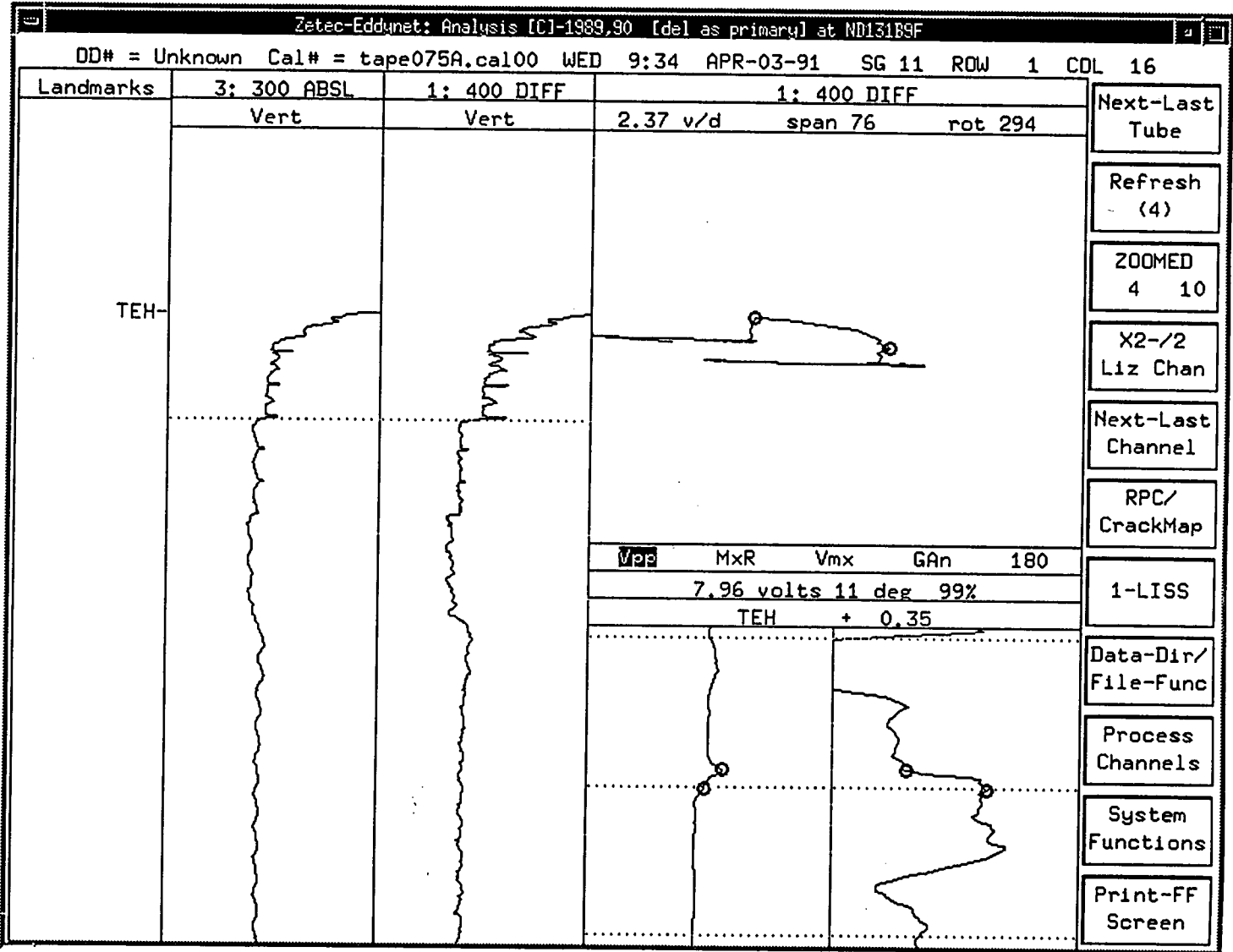
# of Scans = 19  
 Trig Offset = 9  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(4)	4 10	SPAN	SCRN	CRKMP





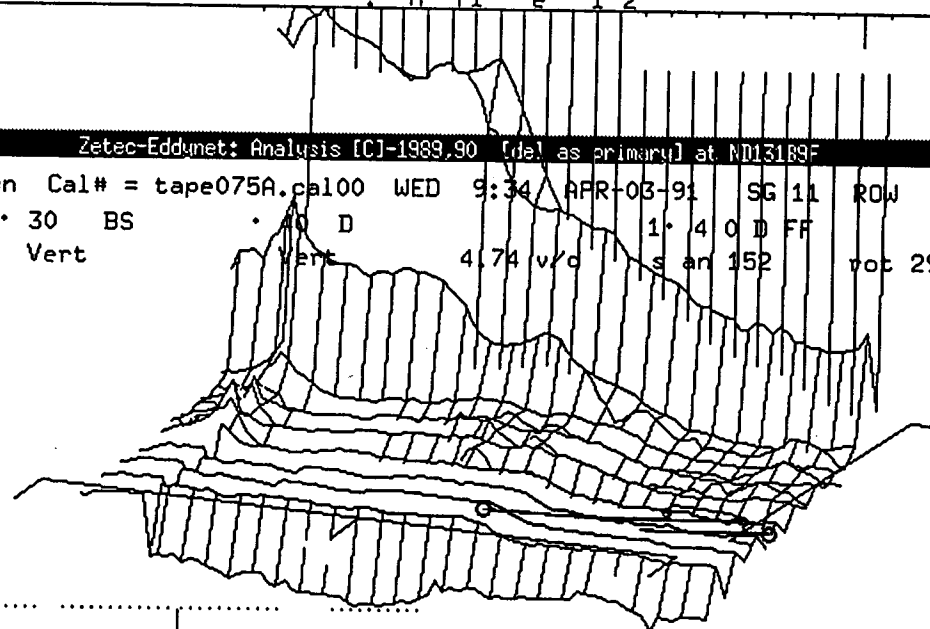
Un n Cl t p A. 1 . A 9 11 R CL 1

A L . n r l e 1 2

Zetec-Eddynet: Analysis [C]-1989.90 [del as primary] at ND13189F

OD# = Unknown Cal# = tape075A.cal100 WED 9:34 APR-03-91 SG 11 ROW 1 COL 16  
Landmarks 3.30 BS . 10 D 1.40 D FF  
Vert 4.74 v/d s an 152 tot 294

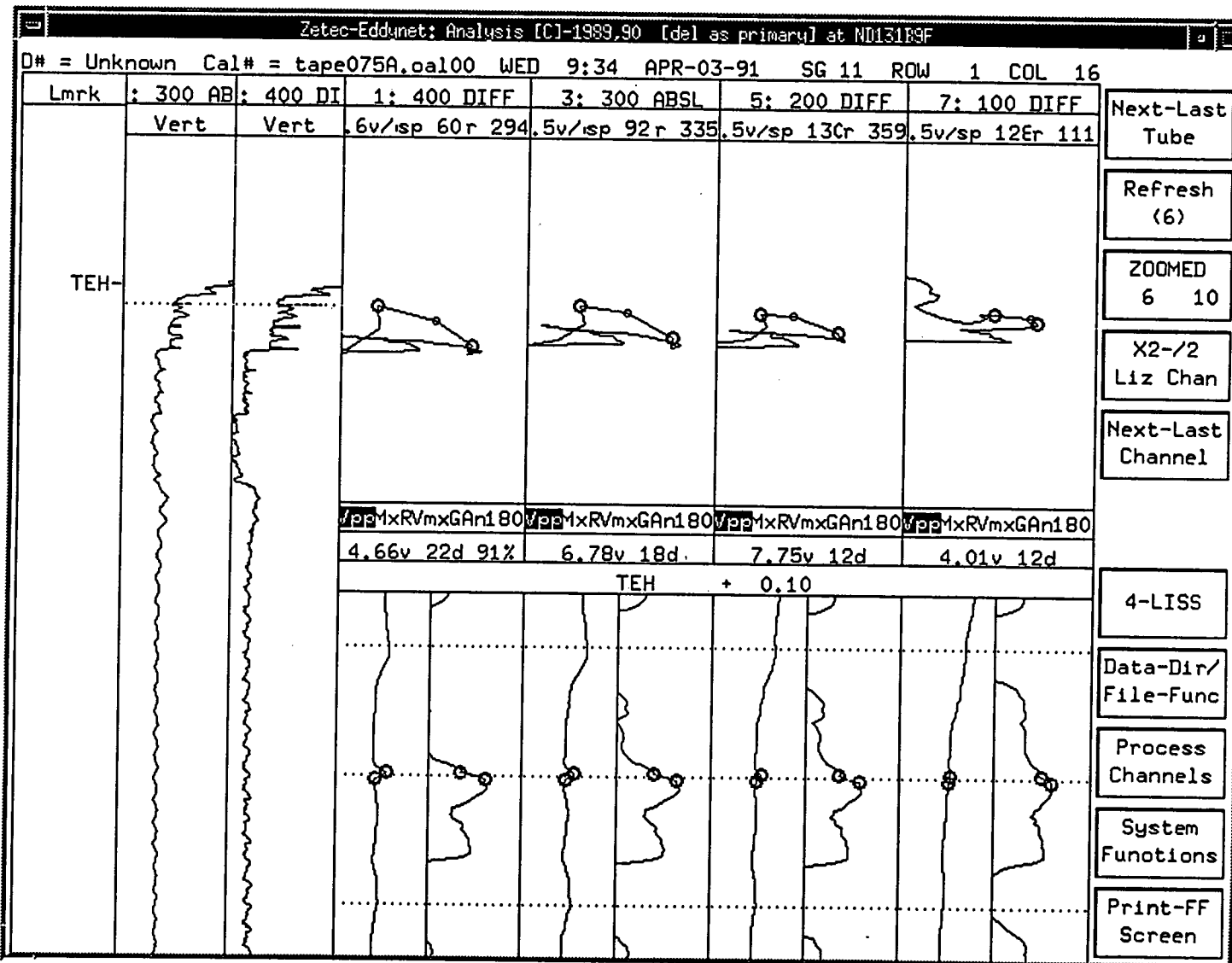
TEH-



Vop MxR Vmx GAn 180  
2 2 vcl s 4 de :  
E +

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(4)	4 10	SPAN	SCRN	CRKMP

- Next-Last Tube
- Refresh (4)
- ZOOMED 4 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen



OD# = Unknown Cal# = tape075A.cal00 WED 9:34 APR-03-91 SG 11 ROW 1 COL 16

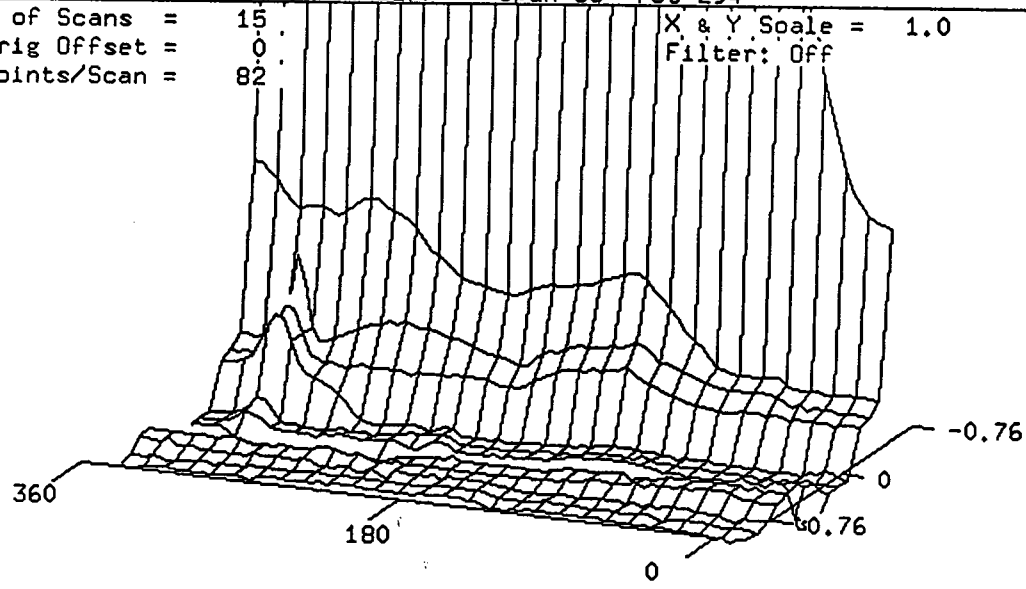
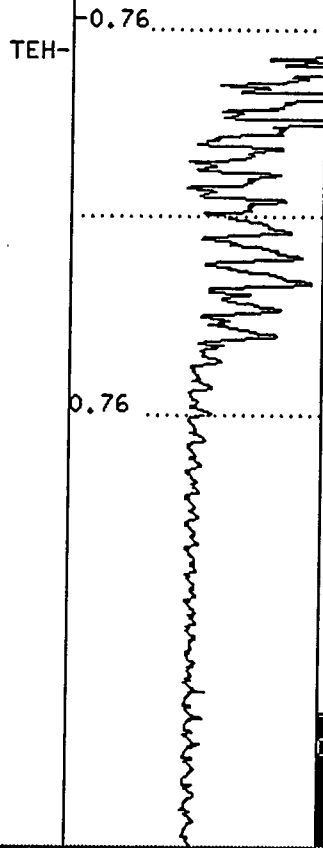
Lmrk 3: 300 ABSL

1: 400 DIFF span 38 rot 294

Vert

# of Scans = 15  
 Trig Offset = 0  
 Points/Scan = 82

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

Zetec-EddyNet: Analysis [C]-1989.90 [del as primary] at ND131B9F

OD# = Unknown Cal# = tape075A.cal00 WED 9:34 APR-03-91 SG 11 ROW 1 COL 16

Lmrk 3: 300 ABSL

30: Interleave 1-2

# of Scans = 31  
Trig Offset = 0  
Points/Scan = 82

X & Y Scale = 1.0  
Filter: Off

TEH-

0.81

0.81

180

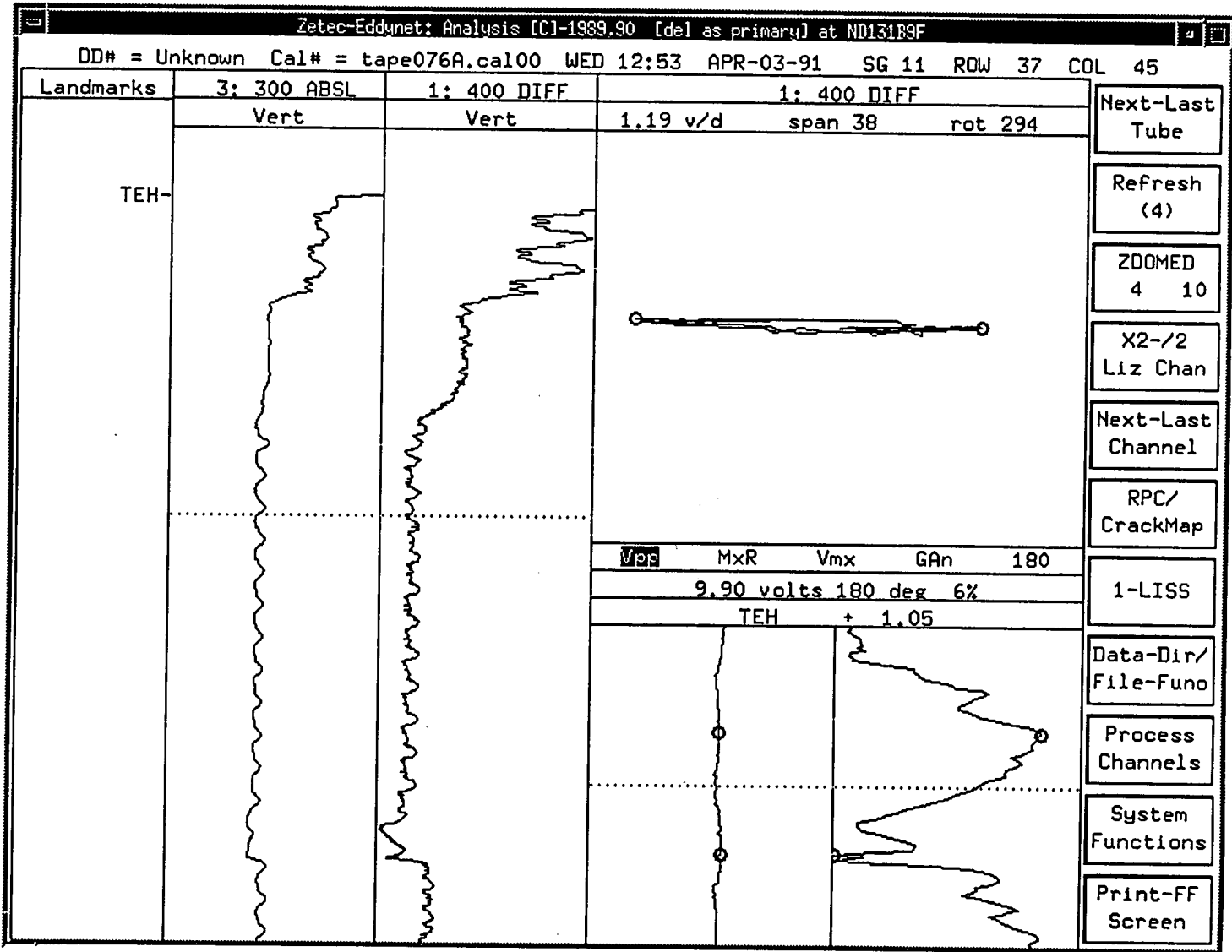
0.81

X Rotation = 74.0  
Z Rotation = 338.0

X Translation = 0  
Y Translation = 0

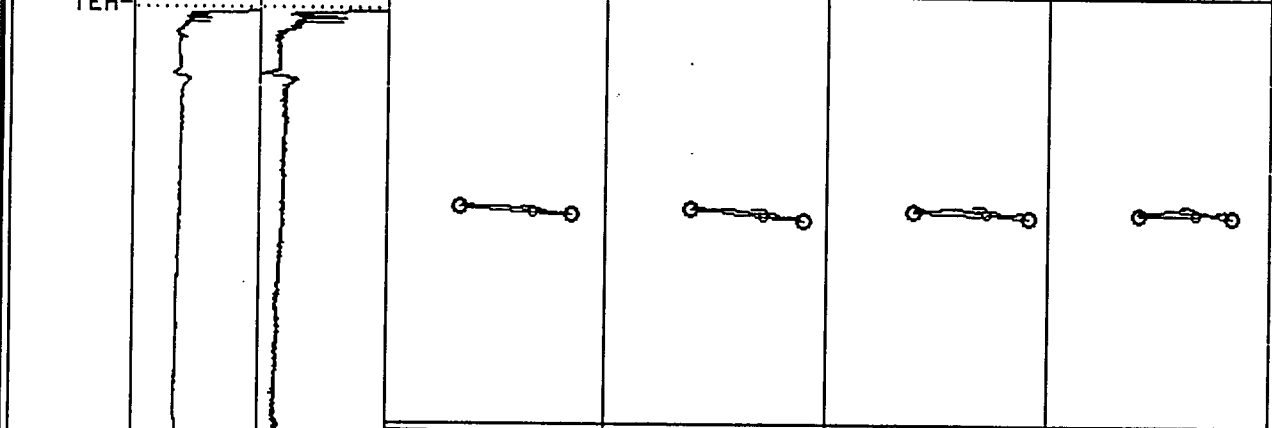
CIC/AXL	USER	MEAS
CSCAN	SELECT	FLAW

REFRSH	ZOOMED	X2-/2	PRINT	MAIN
(6)	6 10	SPAN	SCRN	CRKMP



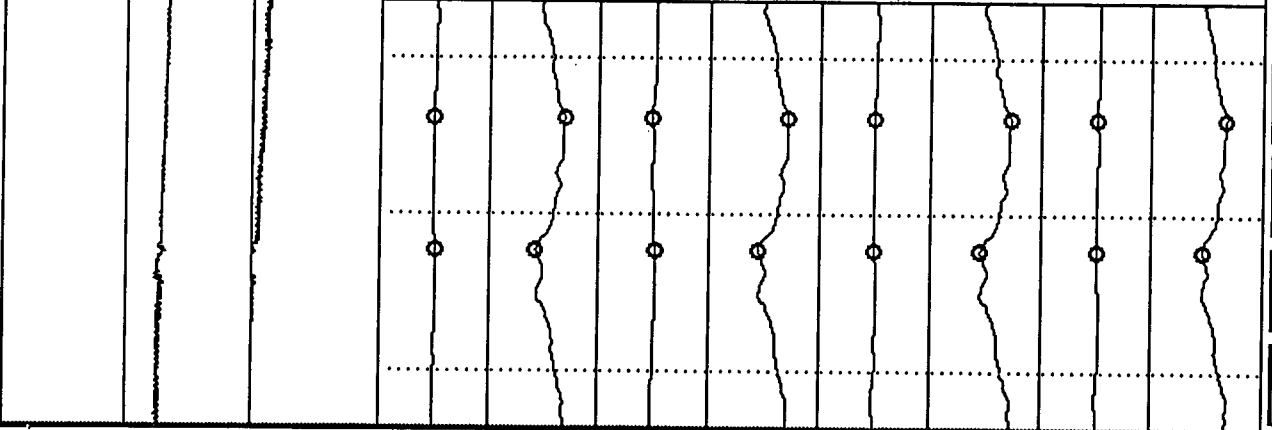
D# = Unknown Cal# = tape076A.cal00 WED 12:53 APR-03-91 SG 11 ROW 37 COL 45

Lmrk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
TEH	Vert	Vert	.2v/sp 276r 294	.0v.sp 382r 336	.9v.sp 417 r 0	.9v/sp 301r 114



18.88v 183d 4%	26.35v 185d	29.24v 183d	17.18v 181d
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TEH + 0.10



Next-Last Tube

Refresh (49)

Zoom 6 10

X2-/2 Liz Chan

Next-Last Channel

RPC/ CrackMap

4-LISS

Data-Dir/ File-Func

Process Channels

System Functions

Print-FF Screen

OD# = Unknown Cal# = tape076A.cal00 WED 12:53 APR-03-91 SG 11 ROW 37 COL 45

Lmrk 3: 300 ABSL

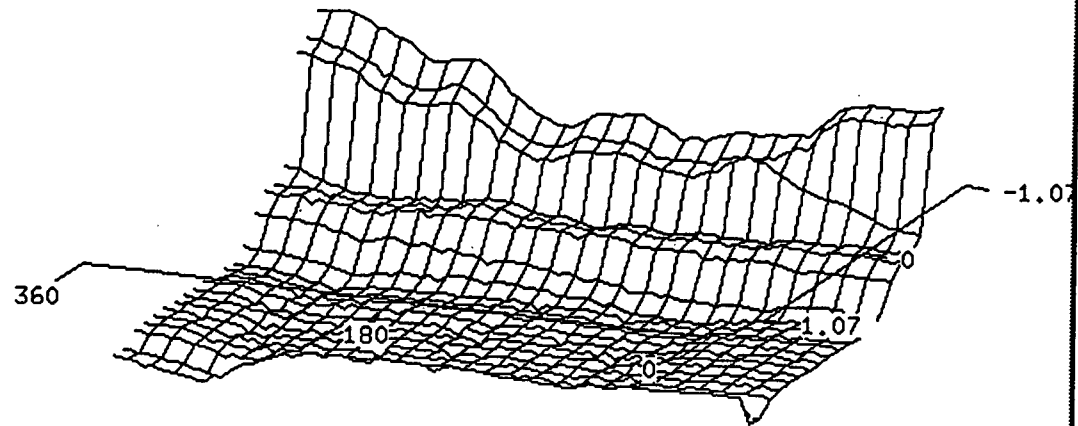
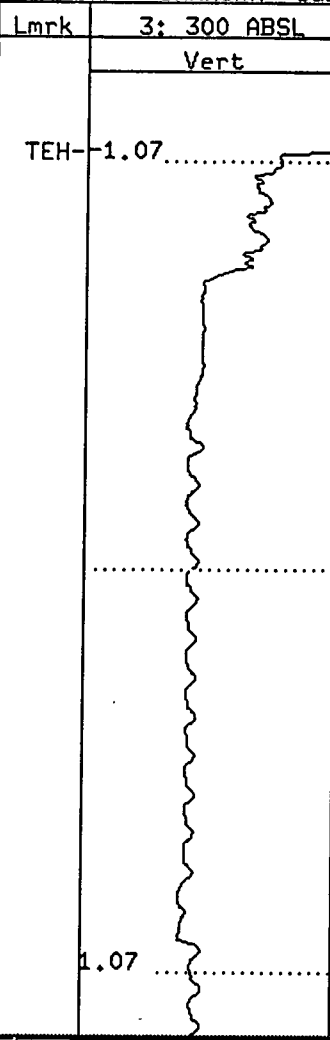
1: 400 DIFF span 38 rot 294

Vert

# of Scans = 21  
 Trig Offset = 9  
 Points/Scan = 81

X & Y Scale = 1.0  
 Filter: Off

TEH-1.07



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(4)	4 10	SPAN	SCRN	CRKMP

OD# = Unknown Cal# = tape076A.cal00 WED 12:53 APR-03-91 SG 11 ROW 37 COL 45

Lmrk 3: 300 ABSL

30: Interleave 1-2

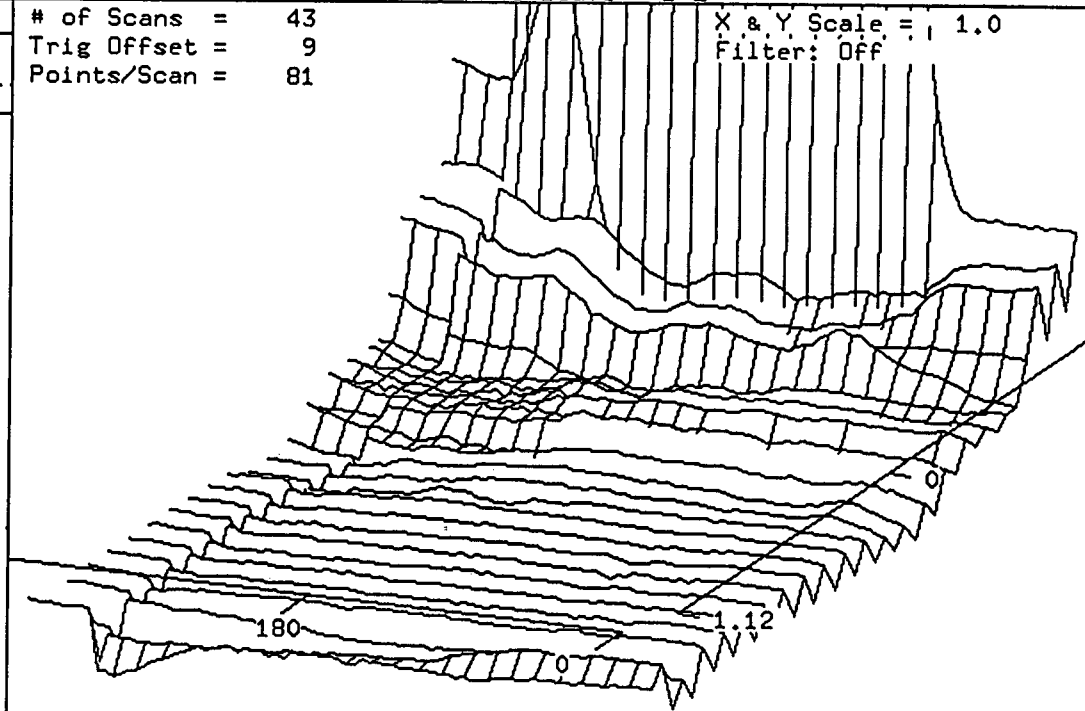
Vert

# of Scans = 43  
 Trig Offset = 9  
 Points/Scan = 81

X & Y Scale = 1.0  
 Filter: Off

-1.12

TEH-

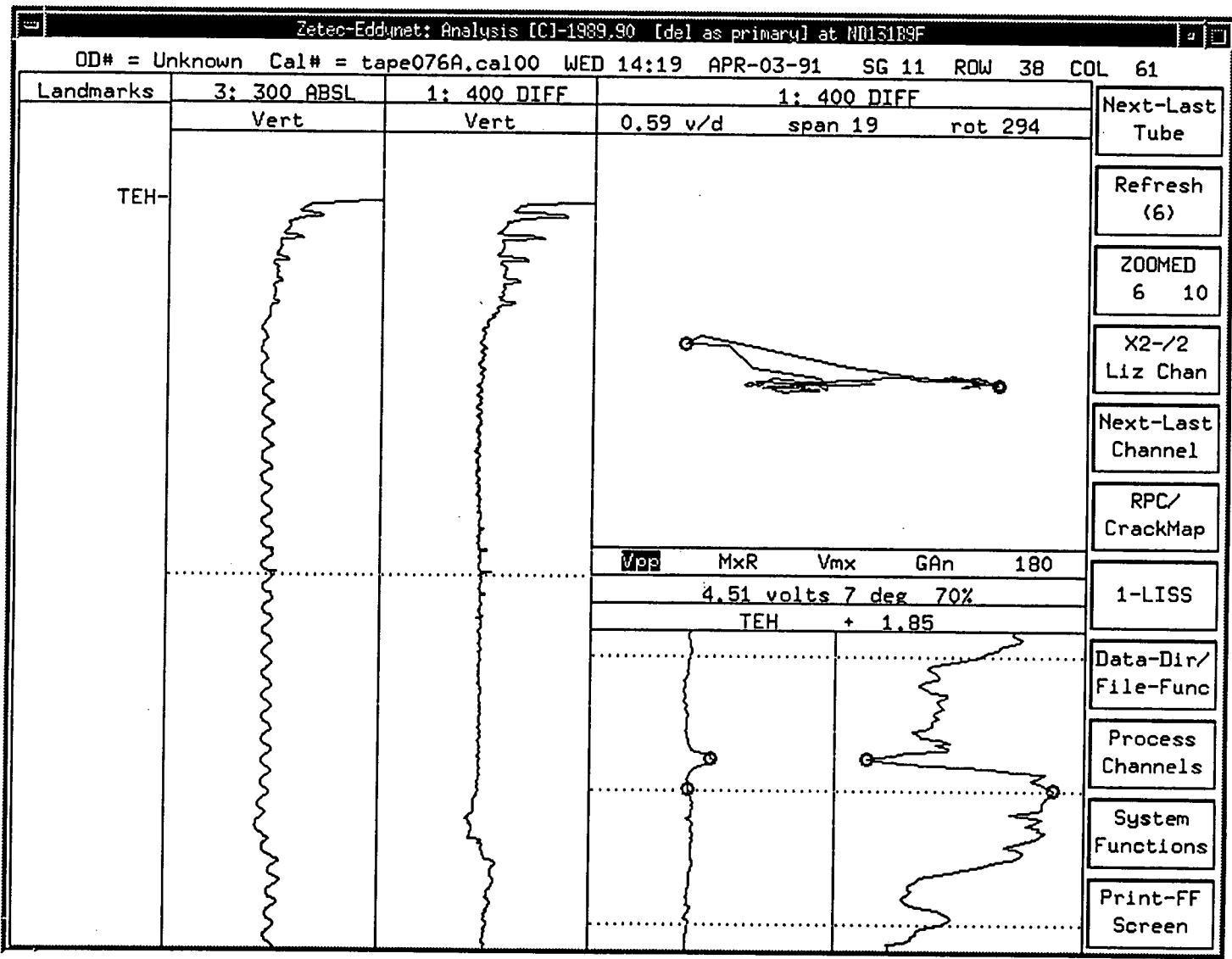


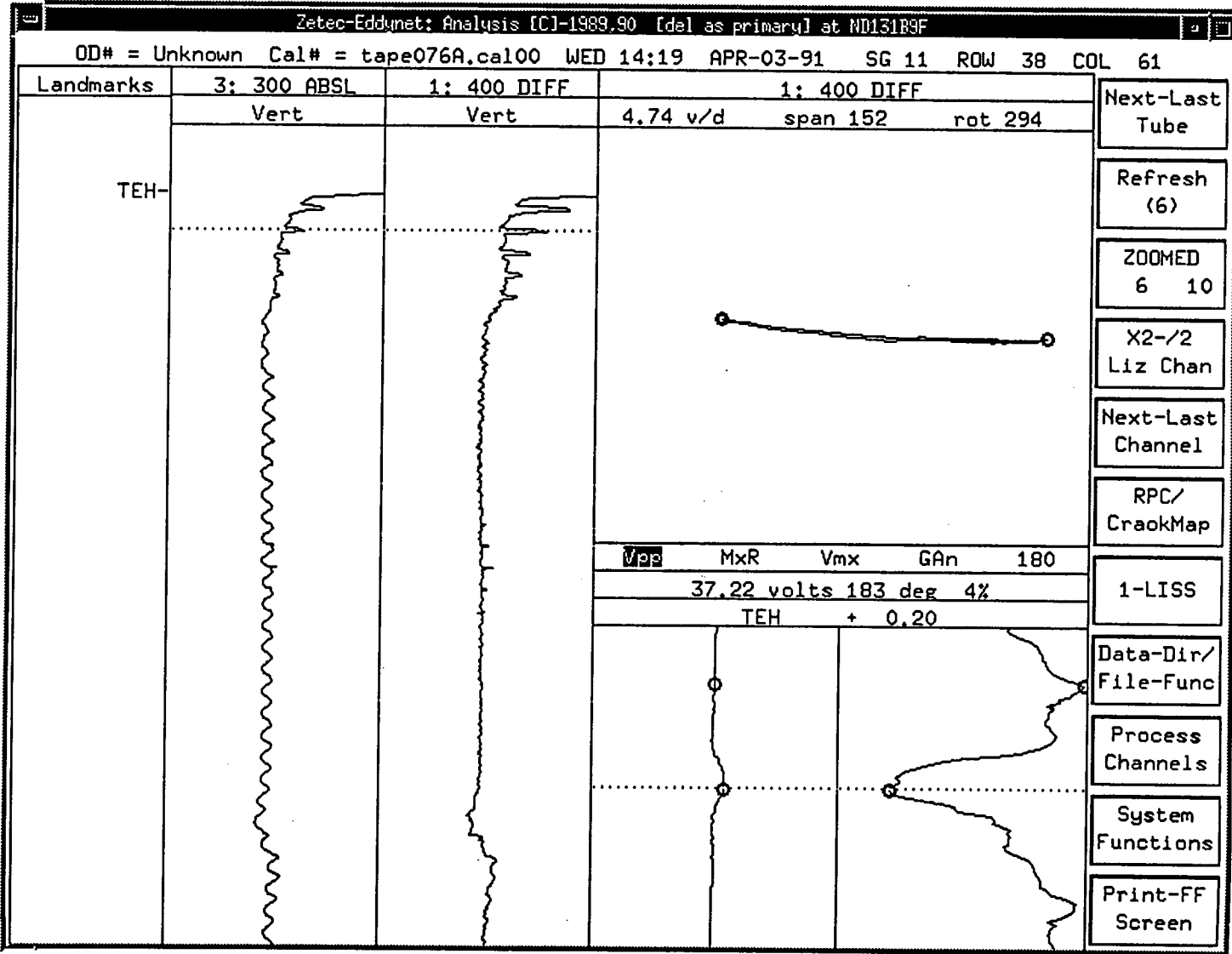
X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

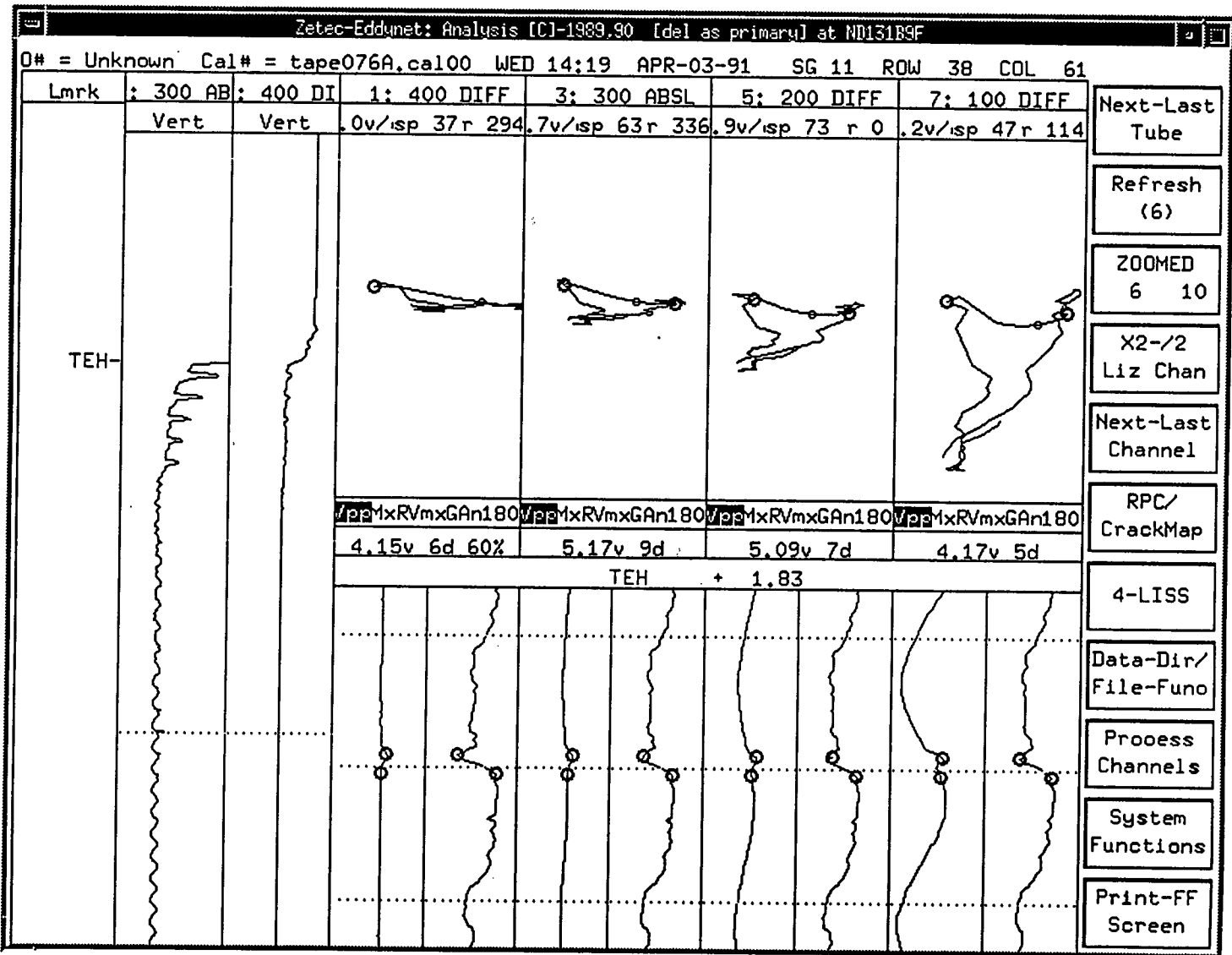
1.12

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(4)	4 10	SPAN	SCRN	CRKMP









OD# = Unknown Cal# = tape076A.cal00 WED 14:19 APR-03-91 SG 11 ROW 38 COL 61

Lmrk 3: 300 ABSL

1: 400 DIFF span 19 rot 294

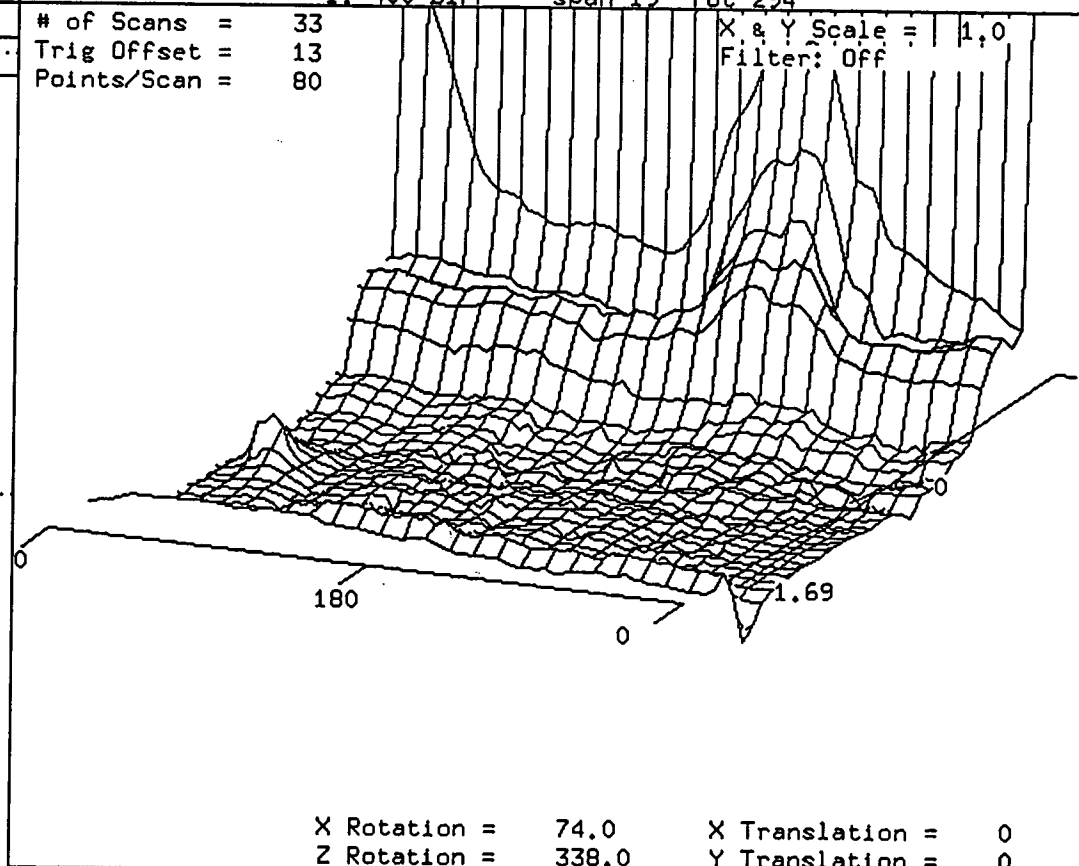
Vert

# of Scans = 33  
 Trig Offset = 13  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off

1.69 .....

1.69 .....



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

OD# = Unknown Cal# = tape076A.cal00 WED 14:19 APR-03-91 SG 11 ROW 38 COL 61

Lmrk 3: 300 ABSL

30: Interleave 1-2

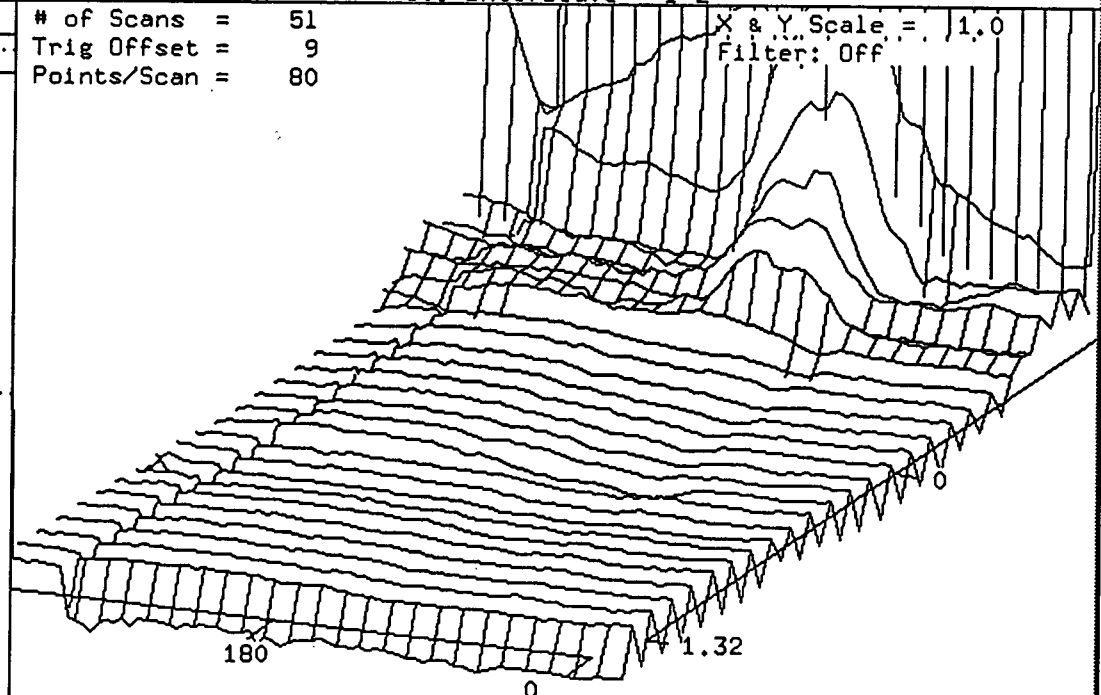
Vert

# of Scans = 51  
 Trig Offset = 9  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off

1.32.....

1.32.....



180

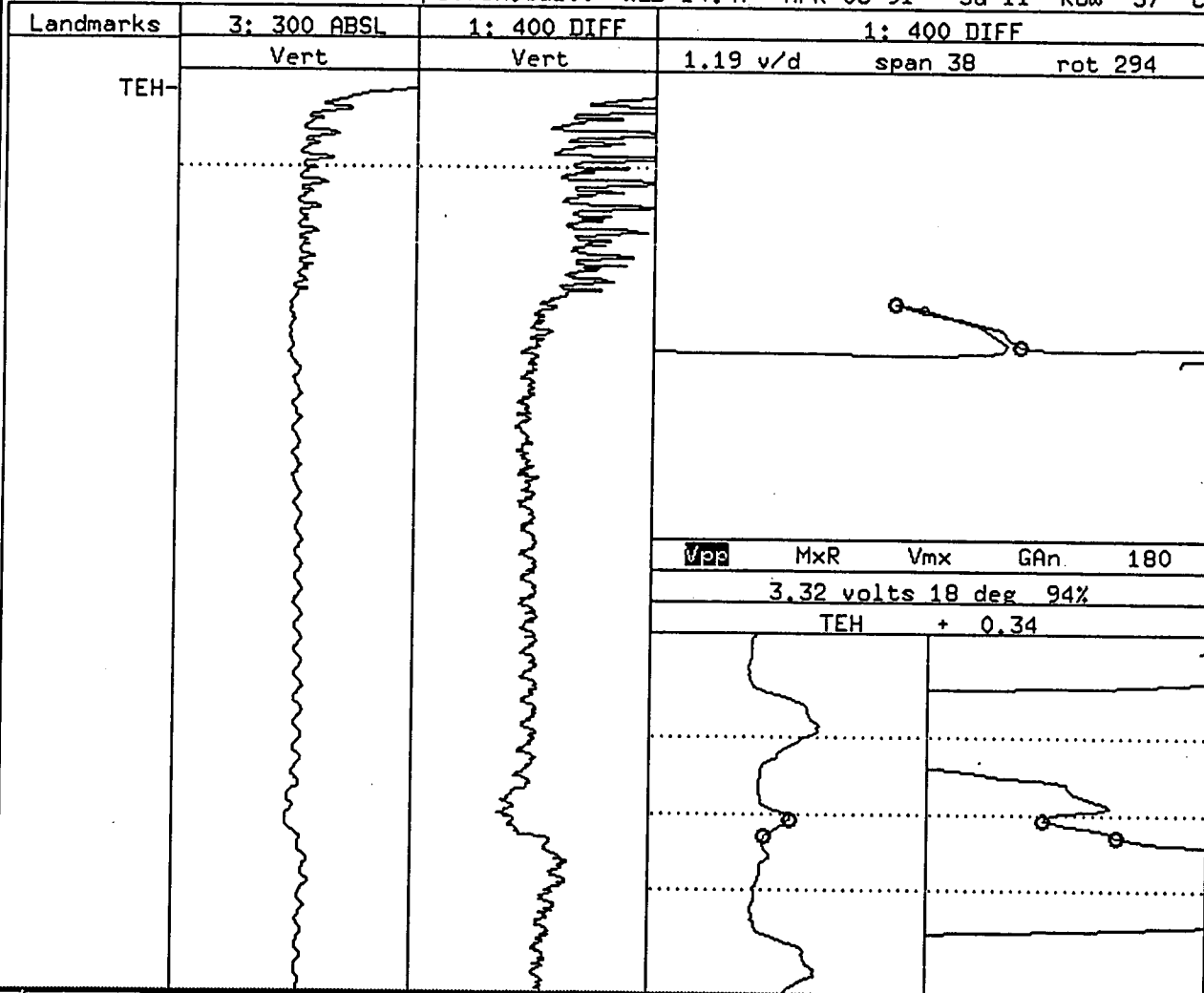
0

1.32

X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

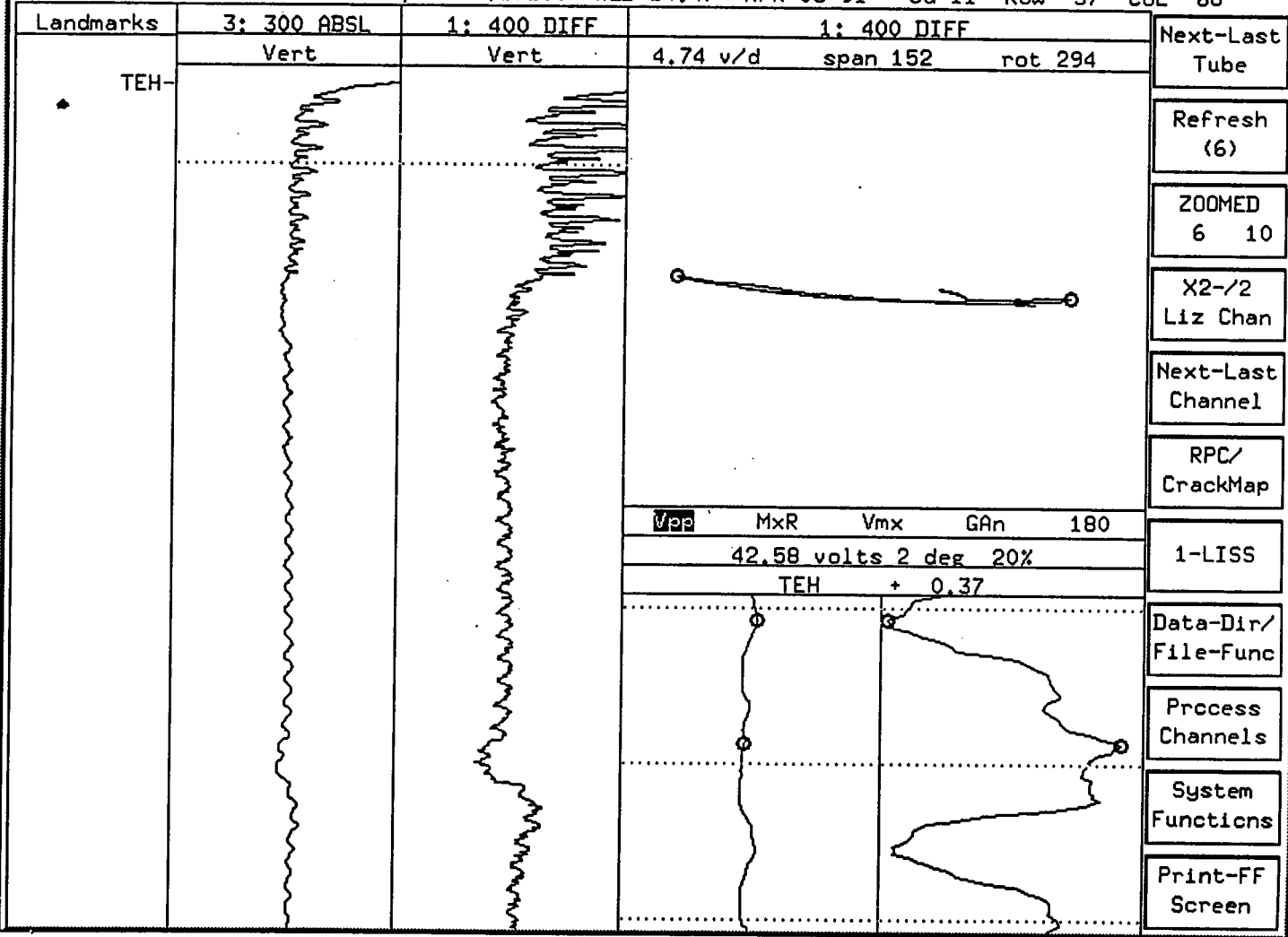
CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

OD# = Unknown Cal# = tape076A.cal00 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68



- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

OD# = Unknown Cal# = tape076A.cal00 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68



Next-Last Tube

Refresh (6)

ZOOMED 6 10

X2-/2 Liz Chan

Next-Last Channel

RPC/ CrackMap

1-LISS

Data-Dir/ File-Func

Process Channels

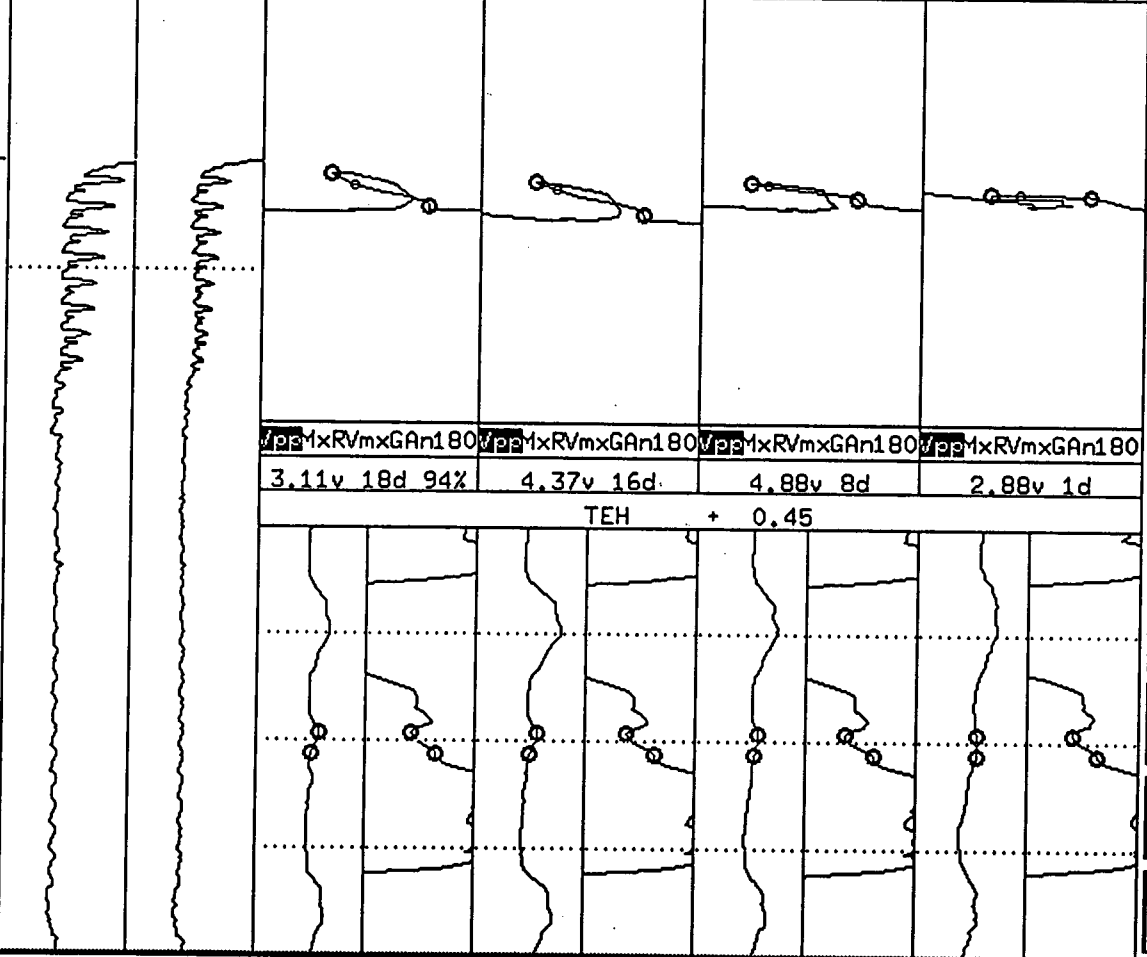
System Functions

Print-FF Screen

Q# = Unknown Cal# = tape076A.cal100 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68

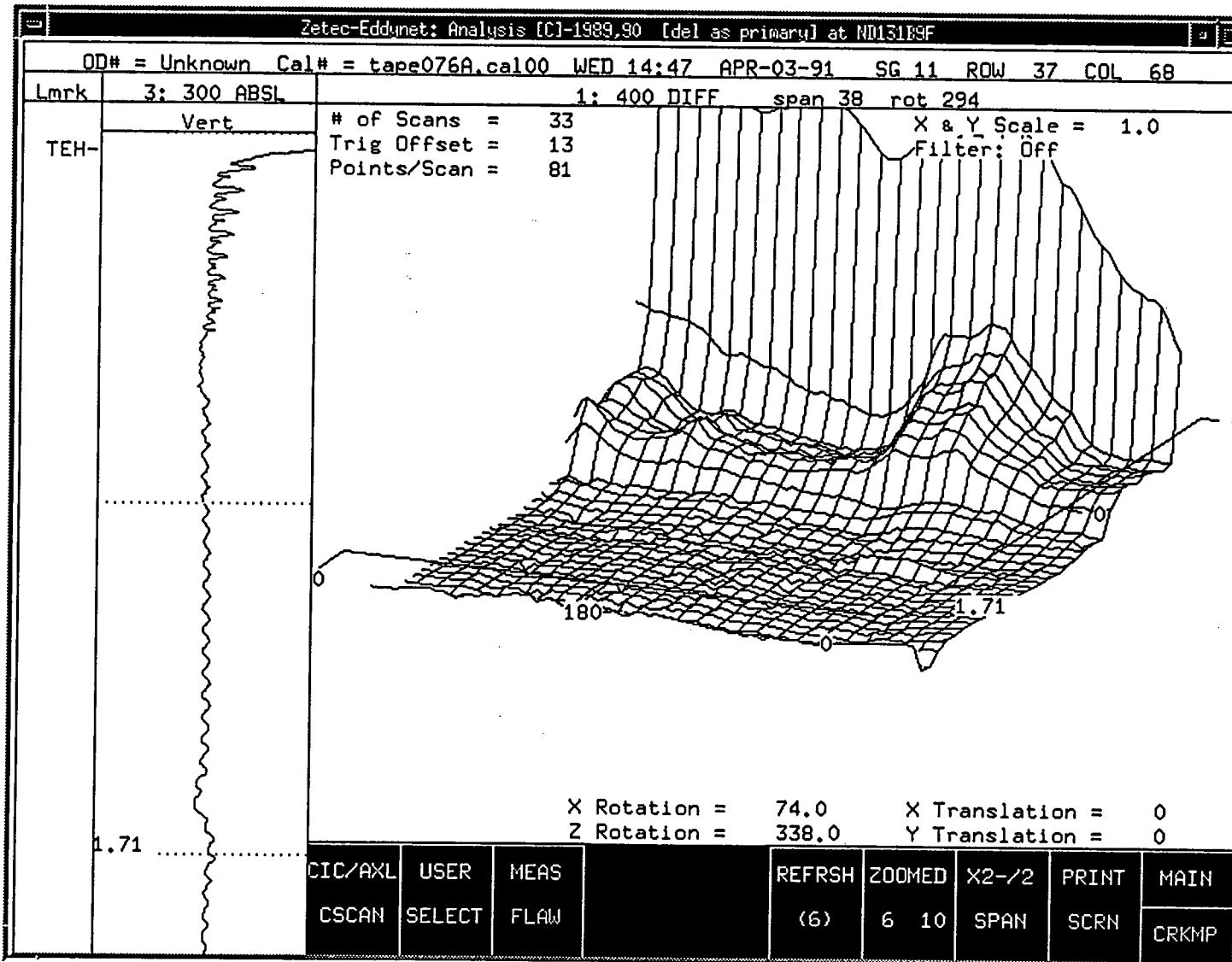
Mrk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
	Vert	Vert	.3v/isp 49r 294	.7v/isp 63r 336	.9v/isp 73 r 0	.2v/isp 47r 114

TEH-



- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen





OD# = Unknown Cal# = tape076A.cal00 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68

Lmrk 3: 300 ABSL

30: Interleave 1-2

TEH-

Vert

# of Scans = 33  
 Trig Offset = 13  
 Points/Scan = 81

X & Y Scale = 1.0  
 Filter: Off

0.86

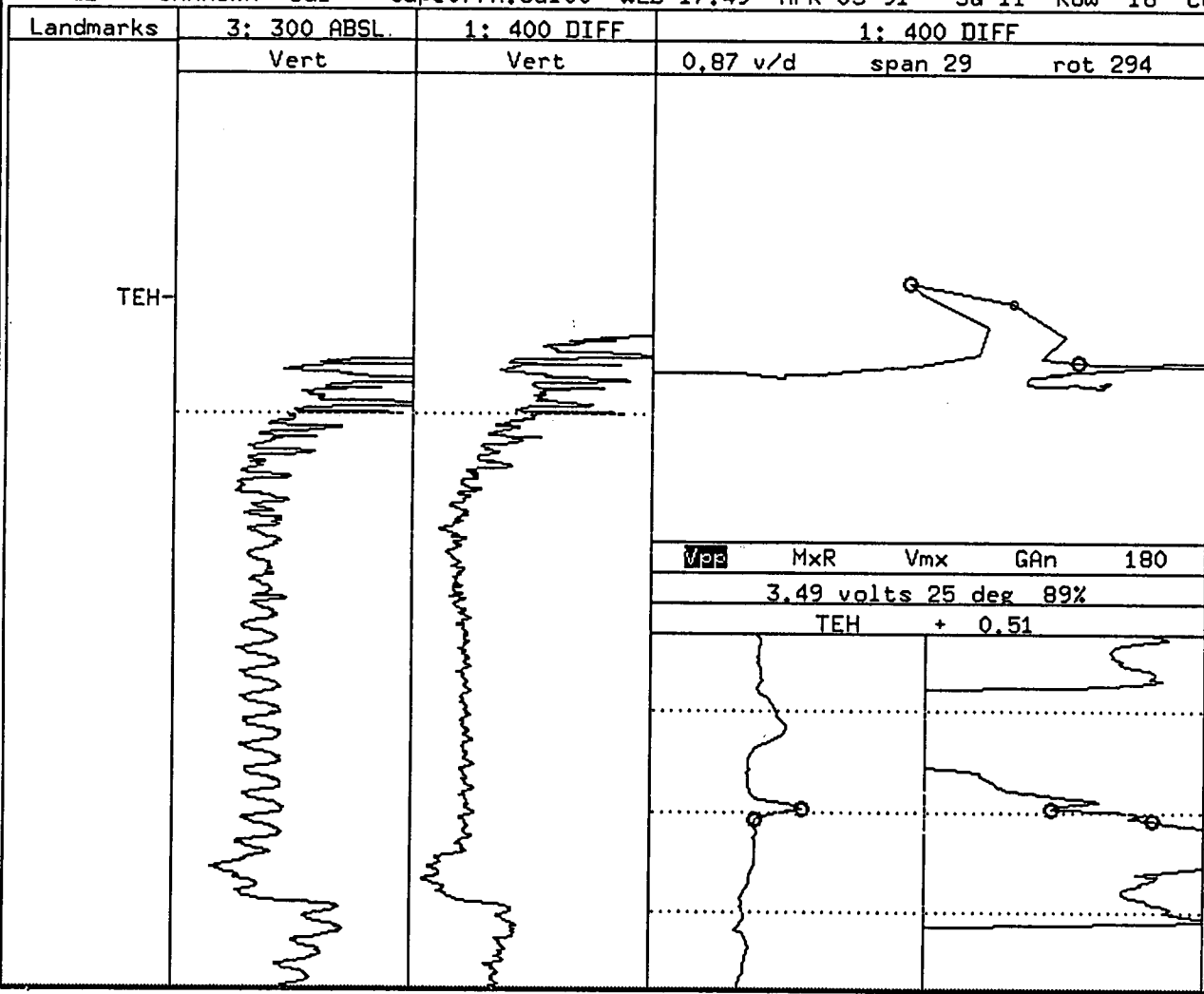
180

0.86

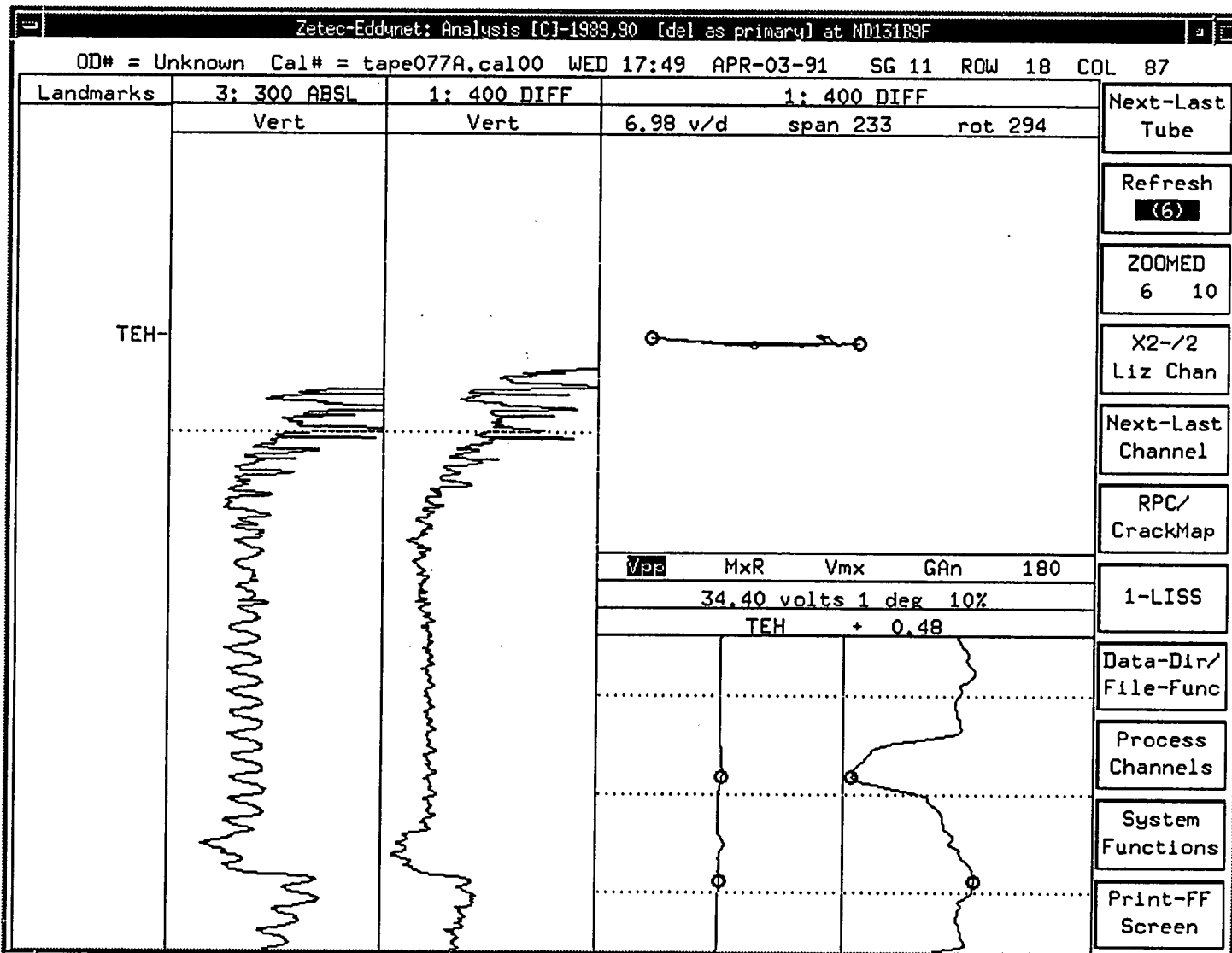
X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

OD# = Unknown Cal# = tape077A.cal00 WED 17:49 APR-03-91 SG 11 ROW 18 COL 87



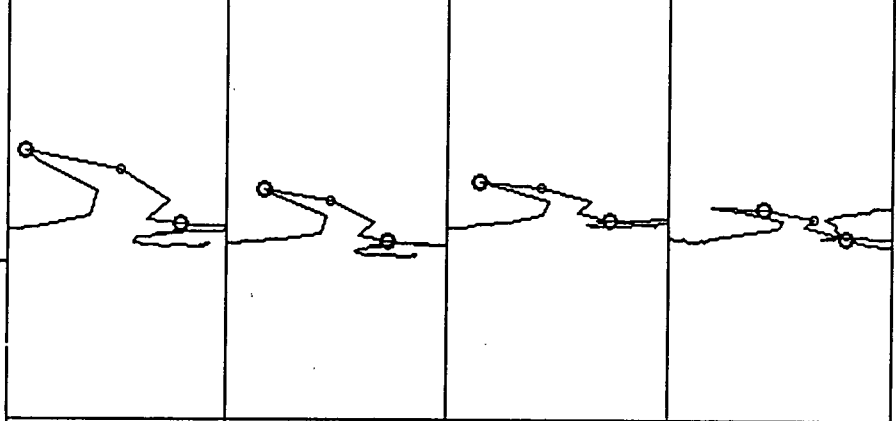
- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen



Q# = Unknown Cal# = tape077A.cal00 WED 17:49 APR-03-91 SG 11 ROW 18 COL 87

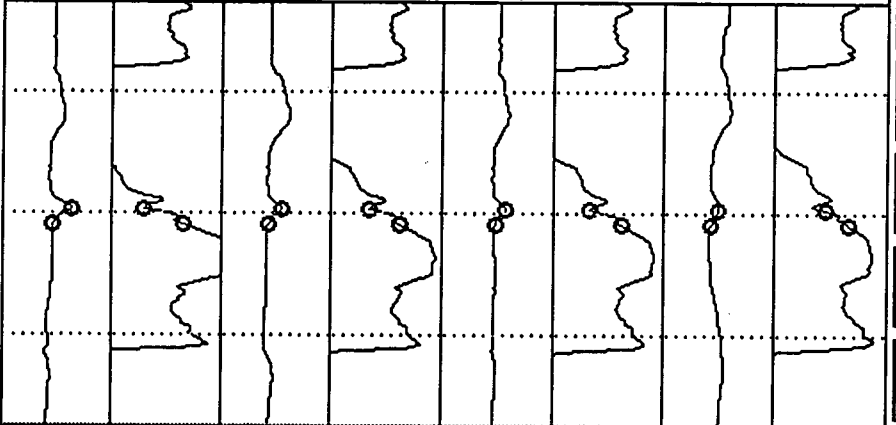
Lmrk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
	Vert	Vert	.9v/isp 33r 294	.7v/isp 63r 336	.9v/isp 73 r 0	.2v/isp 47r 114

TEH-



Vpp1xRVmxGAn180	Vpp1xRVmxGAn180	Vpp1xRVmxGAn180	Vpp1xRVmxGAn180
3.49v 25d 89%	5.23v 22d	6.04v 16d	2.56v 19d

TEH + 0.51



Next-Last Tube

Refresh (6)

ZOOMED 6 10

X2-/2 Liz Chan

Next-Last Channel

RPC/ CrackMap

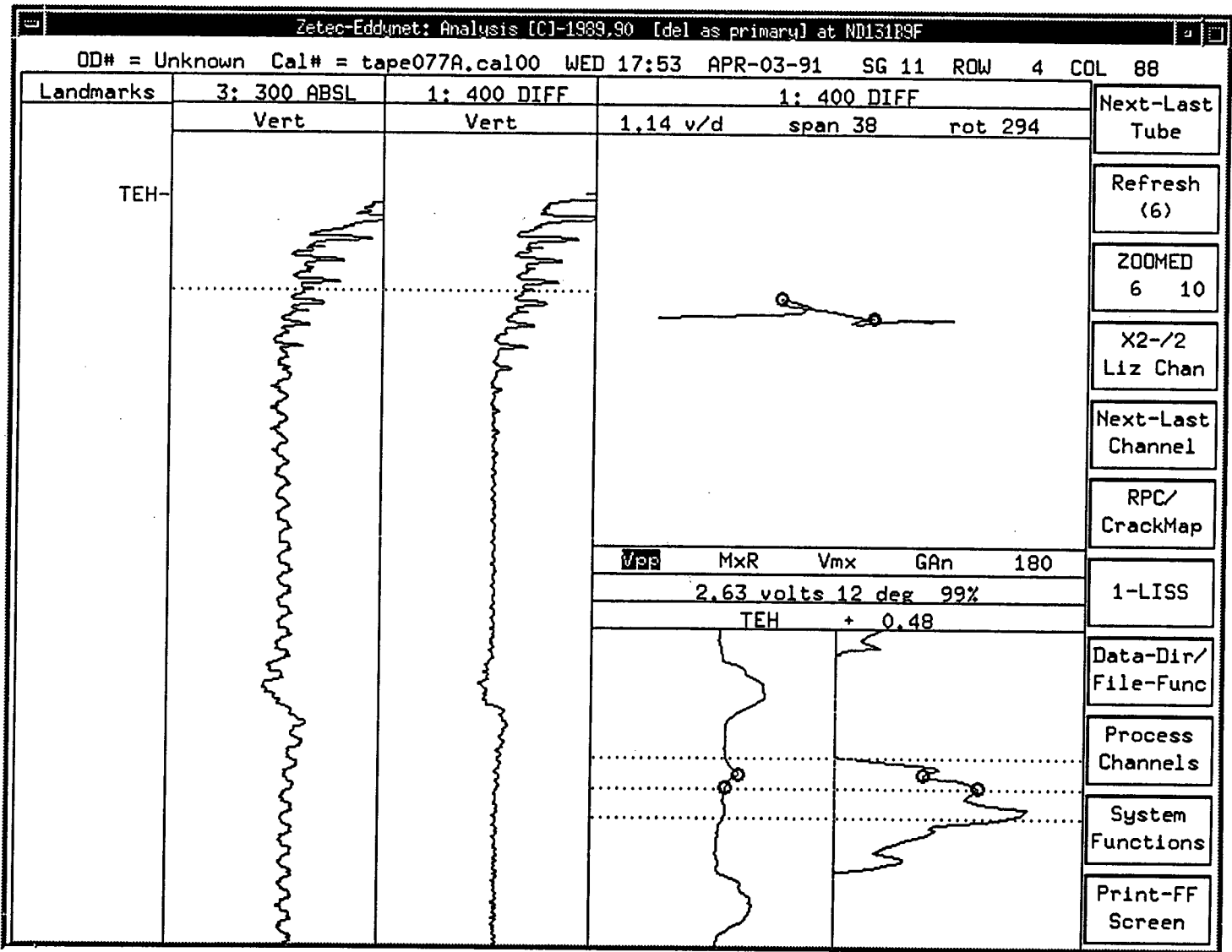
4-LISS

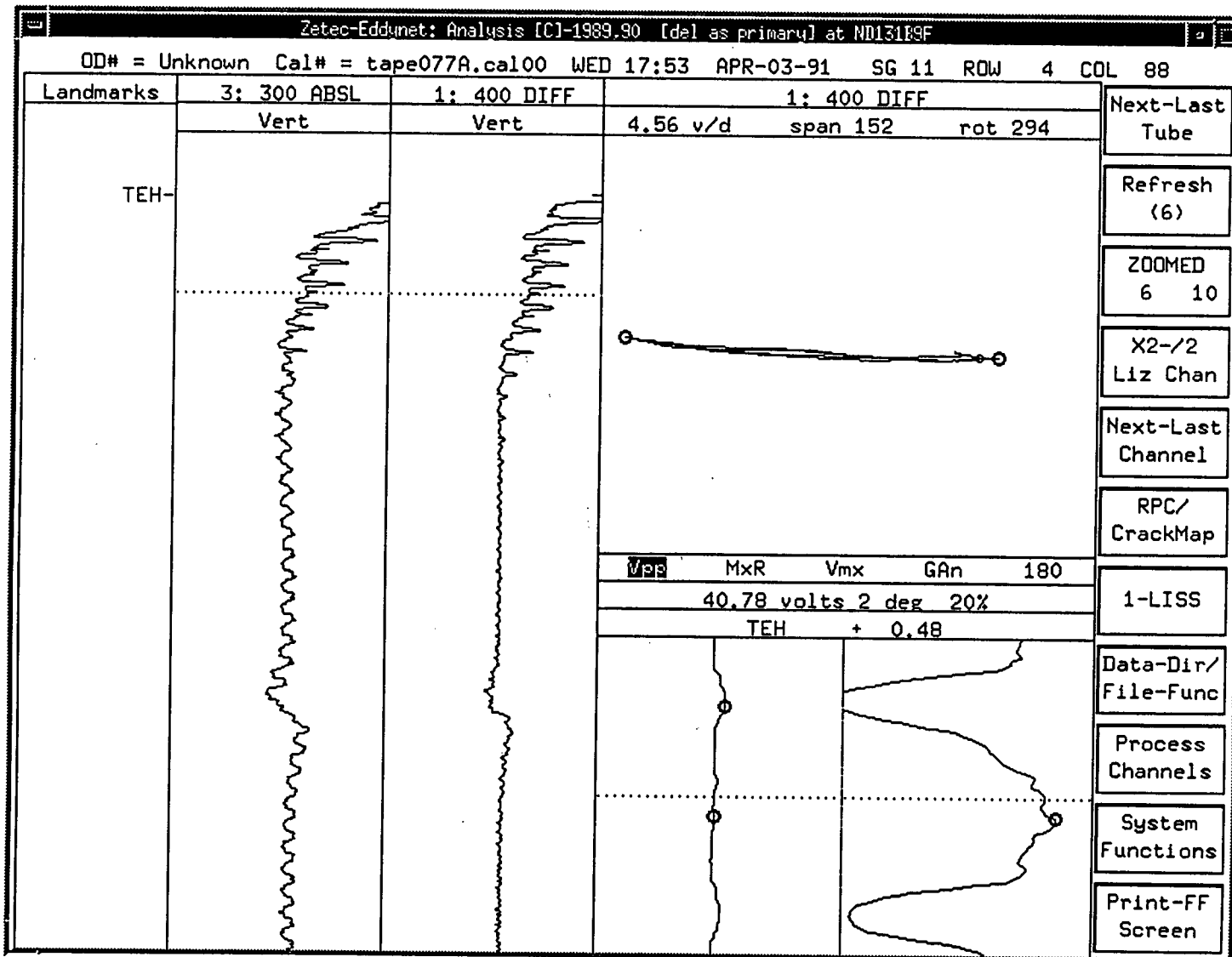
Data-Dir/ File-Func

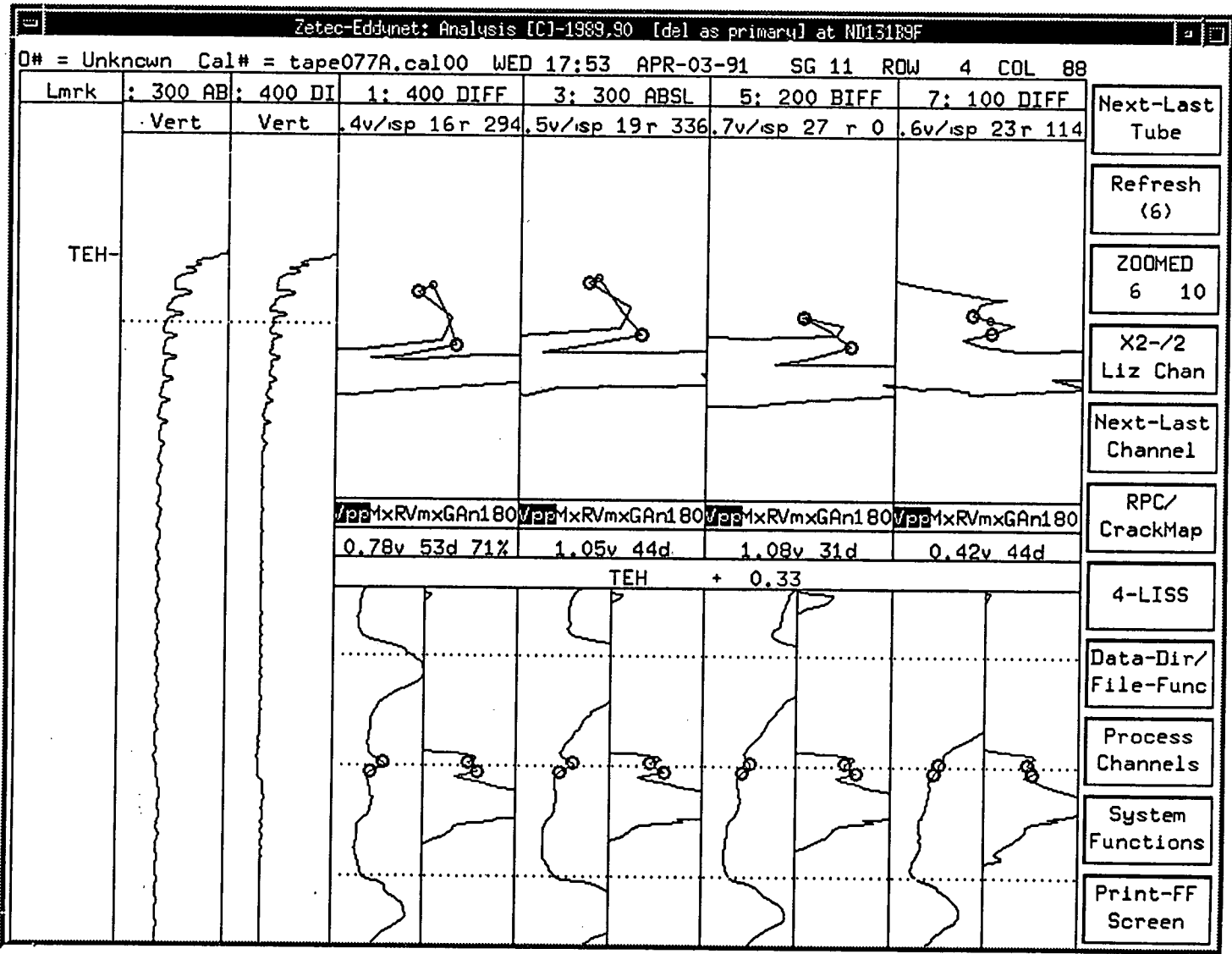
Process Channels

System Functions

Print-FF Screen







- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen



OD# = Unknown Cal# = tape077A.cal00 WED 17:53 APR-03-91 SG 11 ROW 4 COL 88

Lmrk 3: 300 ABSL

1: 400 DIFF span 38 rot 294

Vert

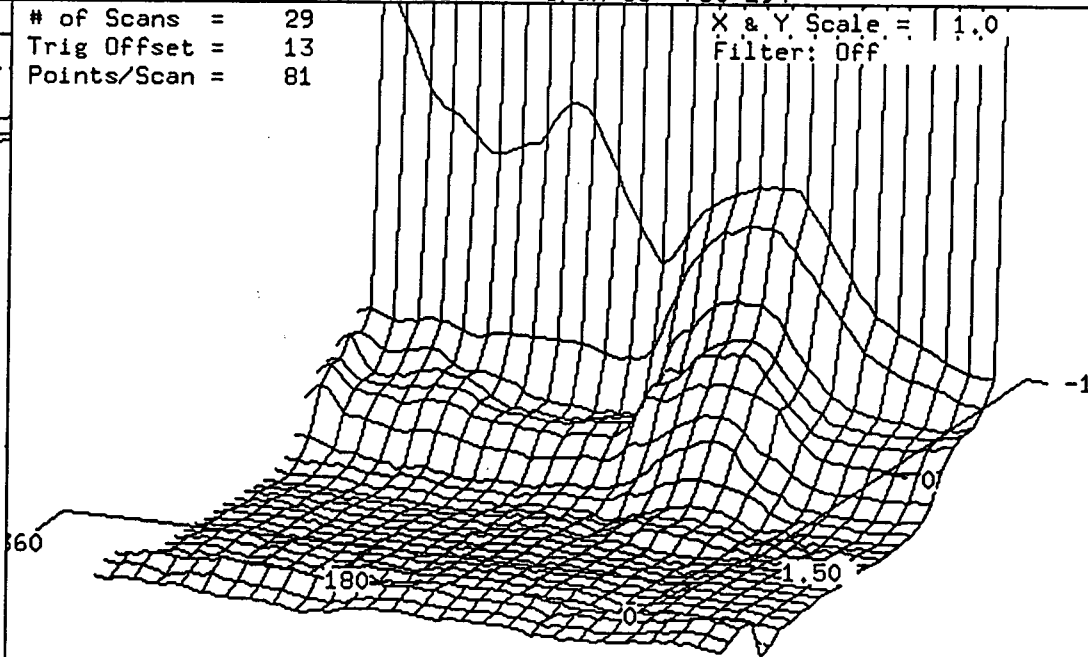
# of Scans = 29  
 Trig Offset = 13  
 Points/Scan = 81

X & Y Scale = 1.0  
 Filter: Off

TEH-

-1.50

1.50



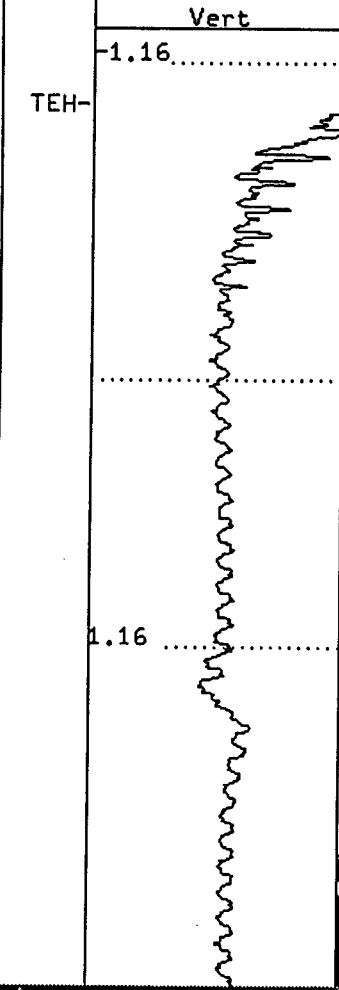
X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

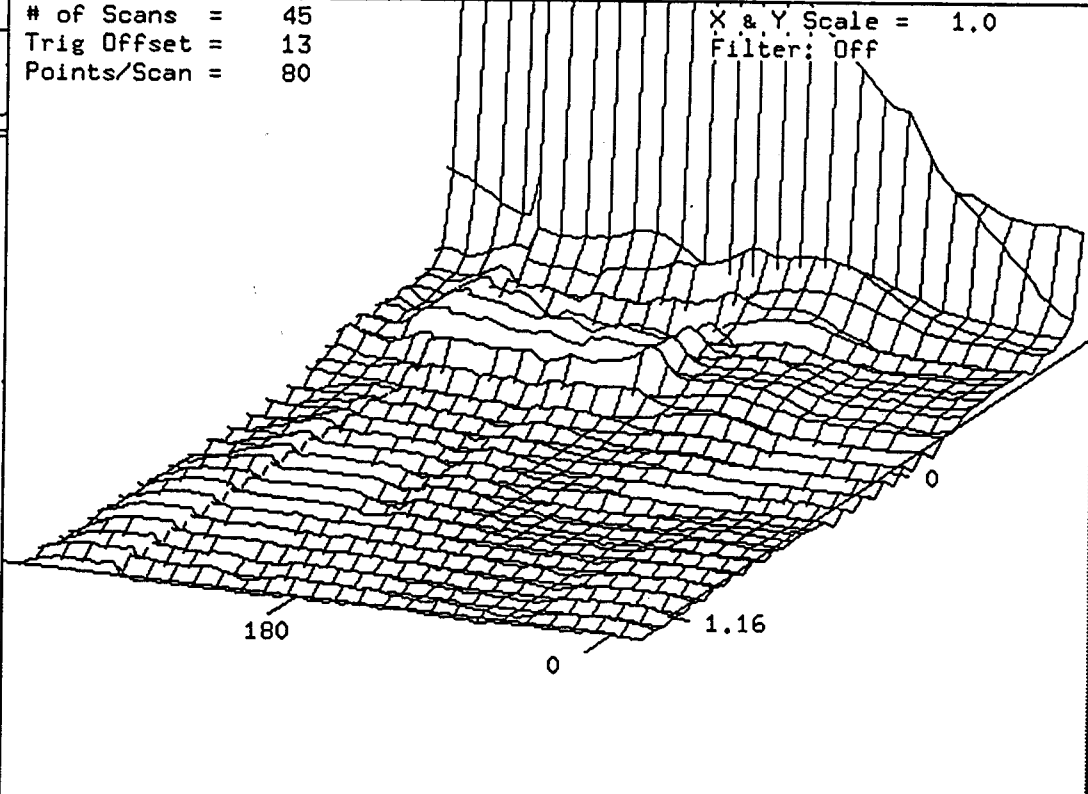
DB# = Unknown Cal# = tape077A.cal00 WED 17:53 APR-03-91 SG 11 ROW 4 COL 88

Lmrk 3: 300 ABSL

30: Interleave 1-2

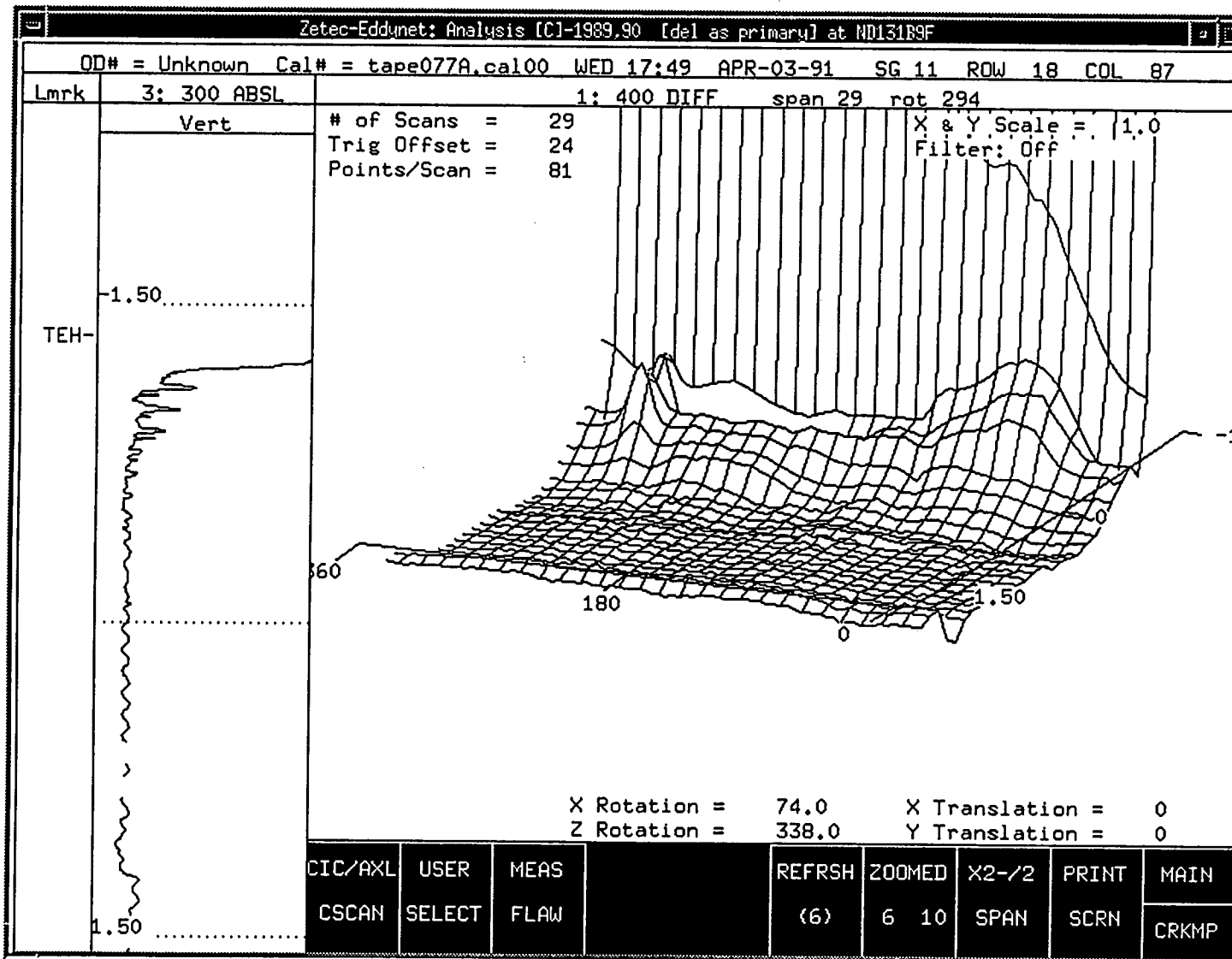


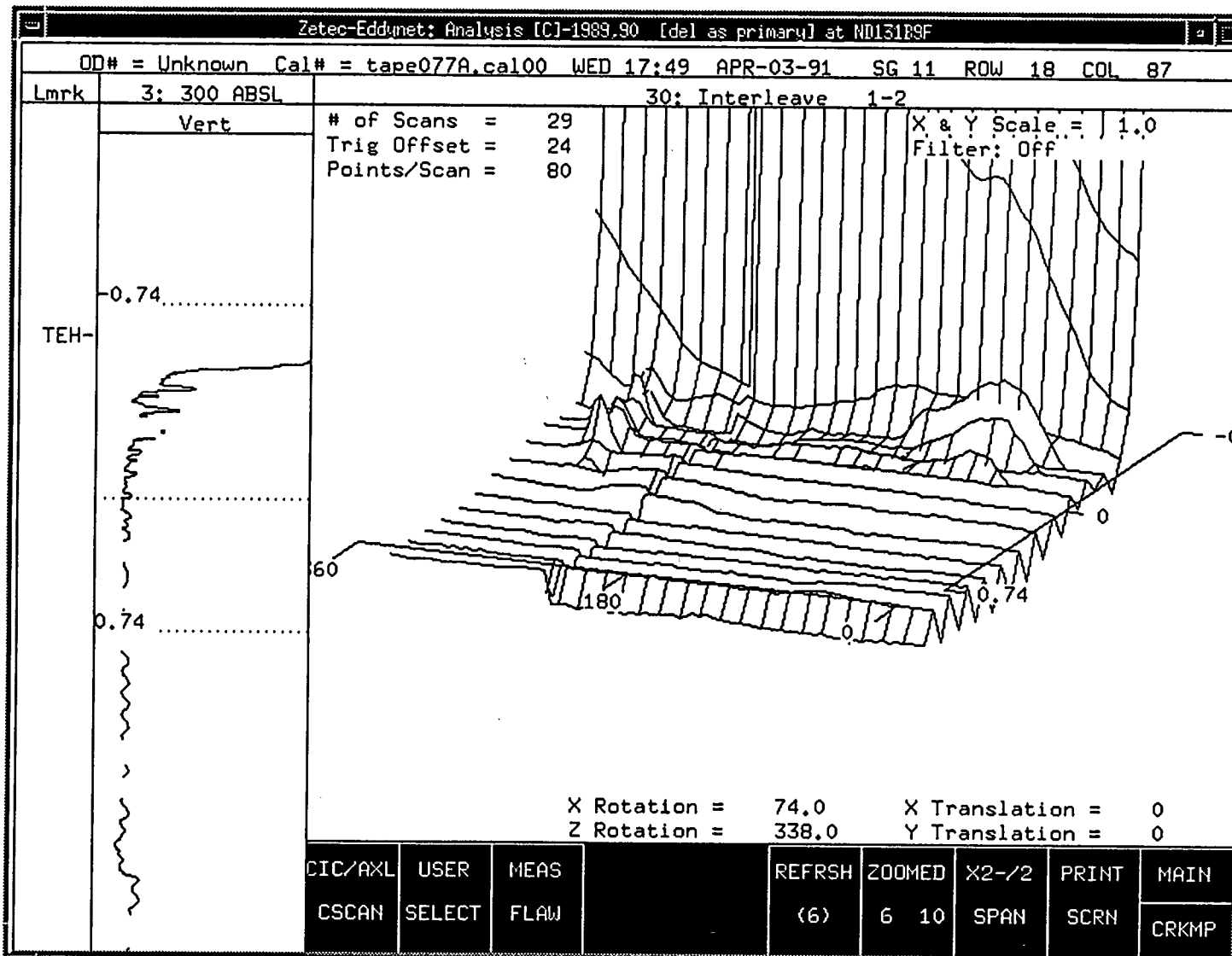
# of Scans = 45  
 Trig Offset = 13  
 Points/Scan = 80  
 X & Y Scale = 1.0  
 Filter: Off

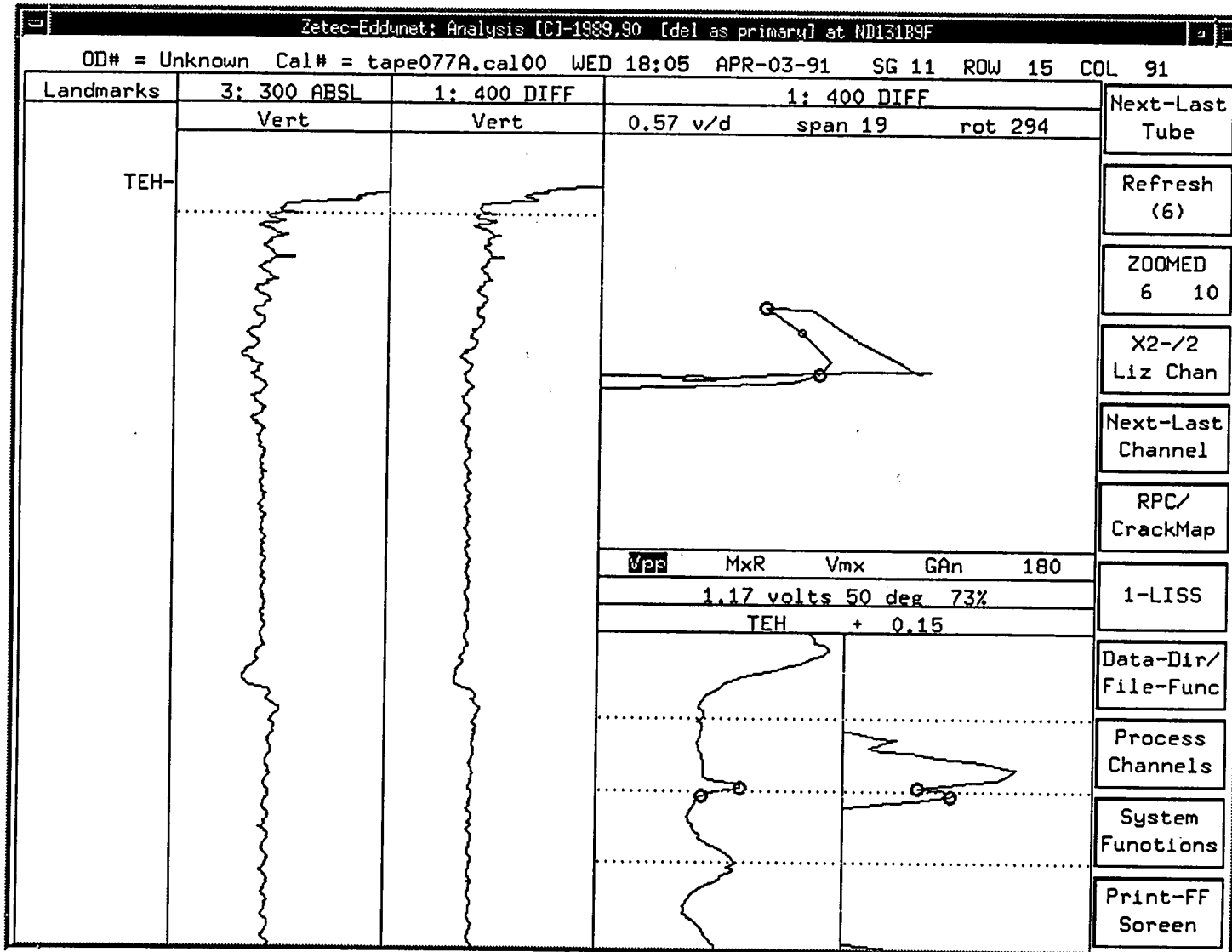


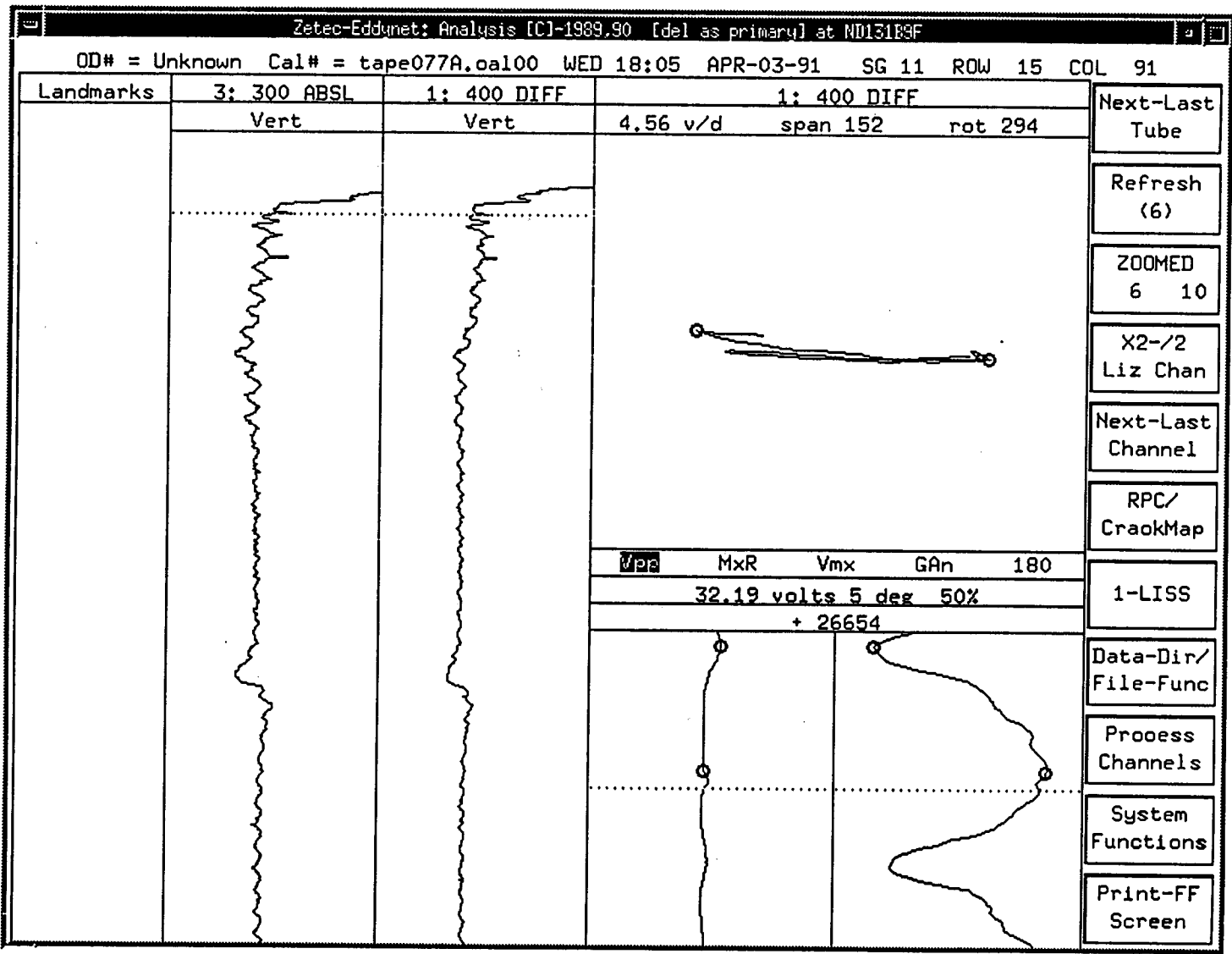
X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(6)	6 10	SPAN	SCRN	CRKMP





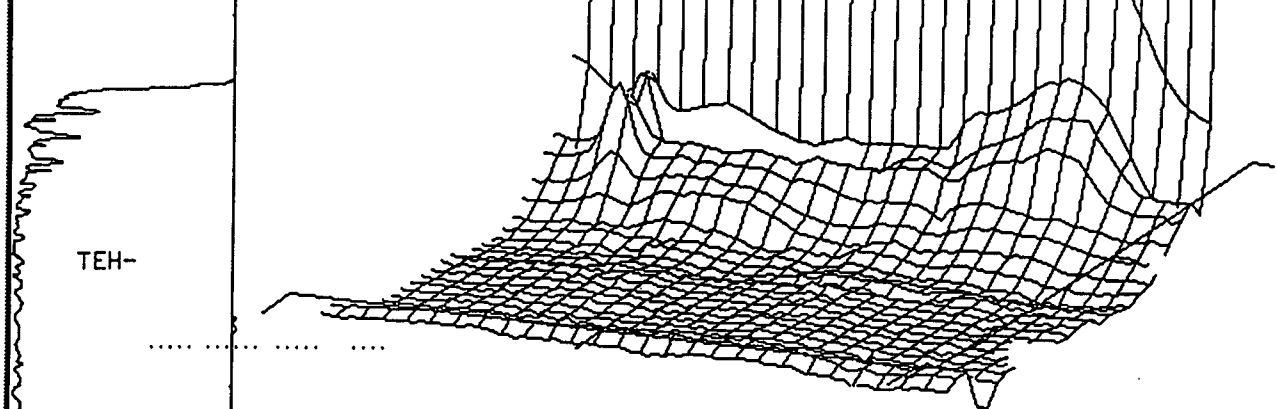




0 U 1 pe0 0 W 17.49 A R 0 1 1 1 8  
 rk . 0 L DF p 4

Zetec-EddyNet: Analysis [CJ-1989.9] [rel as primary] at NDJ318BF

0# = Unknown Cal# = ta e077A.cal00 WED 18:05 APR-08-91 SG 11 ROW 15 CDL 91  
 Lmrk . 300 AB . 4 0 DI 1 . 400 DIFF . 300 A SL 5 . 2 0 DIF . 1 0 DI F  
 Vert Vert 6v/s 21r 294.3v/s 48r 336.6v/s 60 r 0 .3v/s 85r 114



. xRVmxGAn180 xRVmxGAn180 xRVmxGAn180 .. xRVmxGAn180  
 1 04v 34d 8 % v d 6v 26d  
 TEH + 0.36

- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Lz Chan
- Next-Last Channel
- RPC/ CrackMap
- A-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(6)	6 10	SPAN	SCRN	CRKM

OD# = Unknown Cal# = tape077A.cal00 WED 18:05 APR-03-91 SG 11 ROW 15 COL 91

Lmrk 3: 300 ABSL

1: 400 DIFF span 19 rot 294

Vert

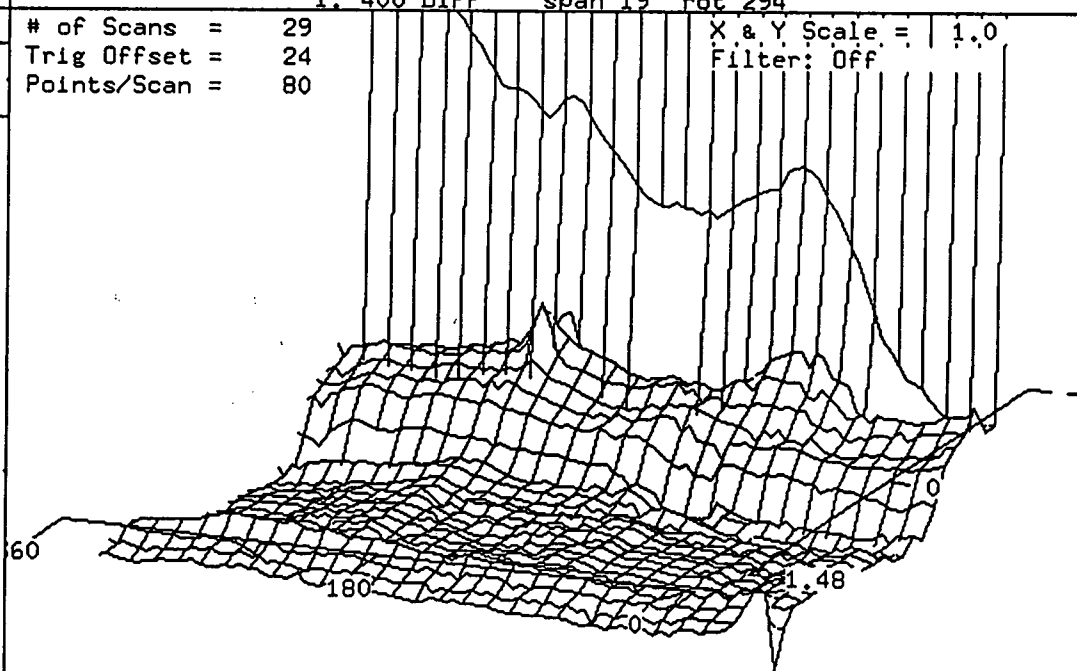
# of Scans = 29  
 Trig Offset = 24  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off

TEH-

-1.48

1.48



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP



OD# = Unknown Cal# = tape077A.cal00 WED 18:05 APR-03-91 SG 11 ROW 15 COL 91

Lmrk 3: 300 ABSL

30: Interleave 1-2

Vert

# of Scans = 29  
 Trig Offset = 24  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off

TEH-

0.74

60

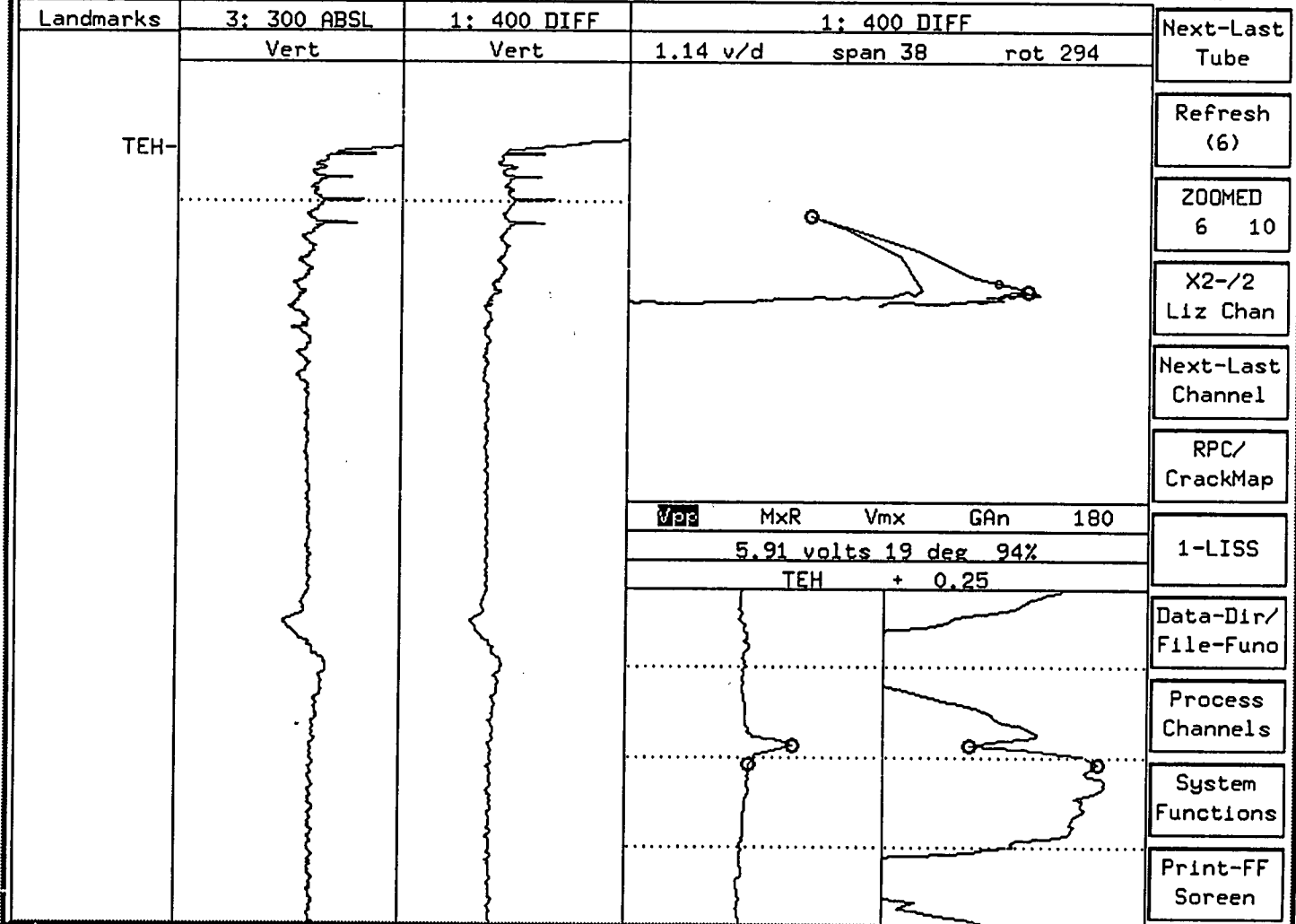
180

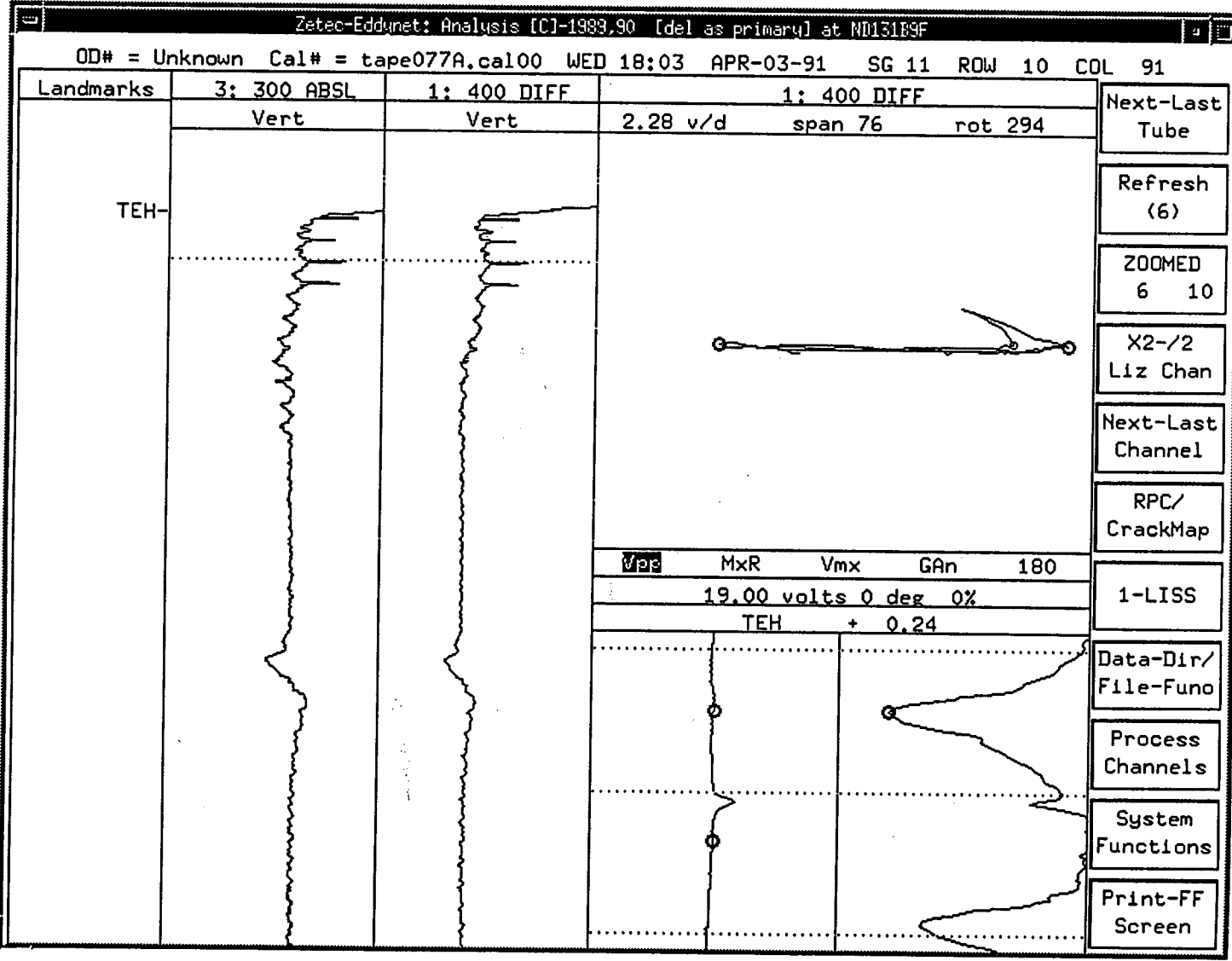
0.74

X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

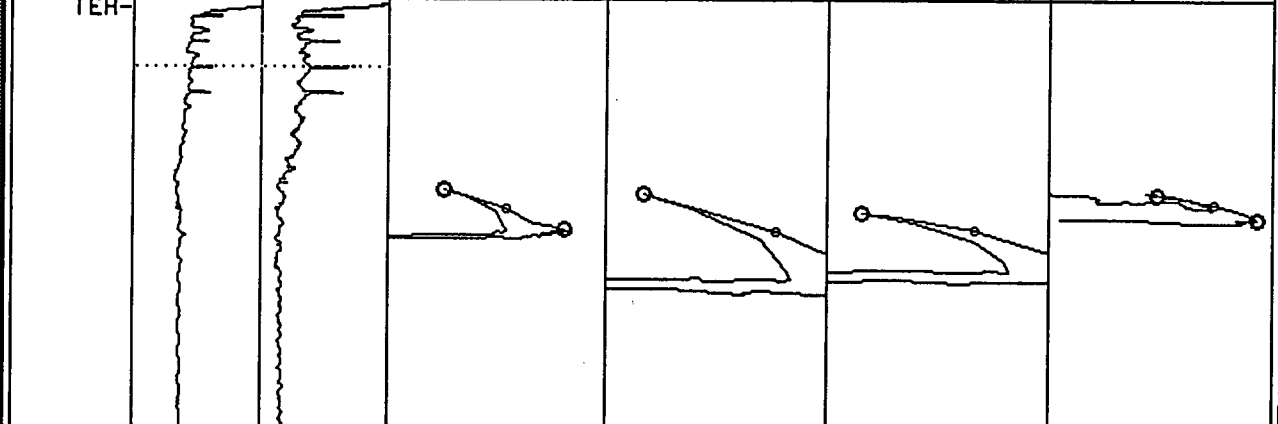
OD# = Unknown Cal# = tape077A.cal00 WED 18:03 APR-03-91 SG 11 ROW 10 COL 91





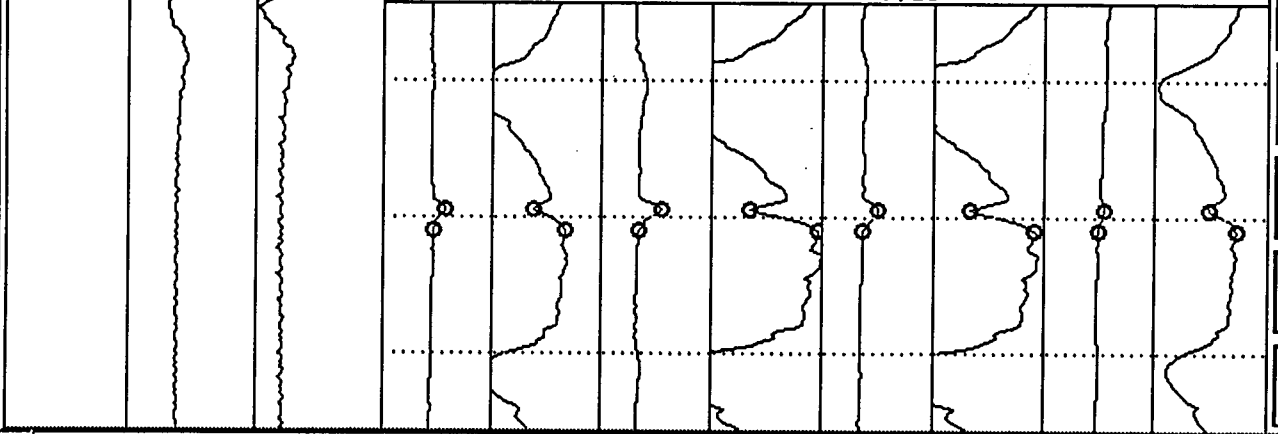
Q# = Unknown Cal# = tape077A.cal00 WED 18:03 APR-03-91 SG 11 ROW 10 COL 91

Lmrk	: 300 AB	: 400 DI	1: 400 DIFF	3: 300 ABSL	5: 200 DIFF	7: 100 DIFF
TEH	Vert	Vert	.0v/isp 74r 294	.3v/isp 48r 336	.6v/isp 60 r 0	.3v/isp 85r 114



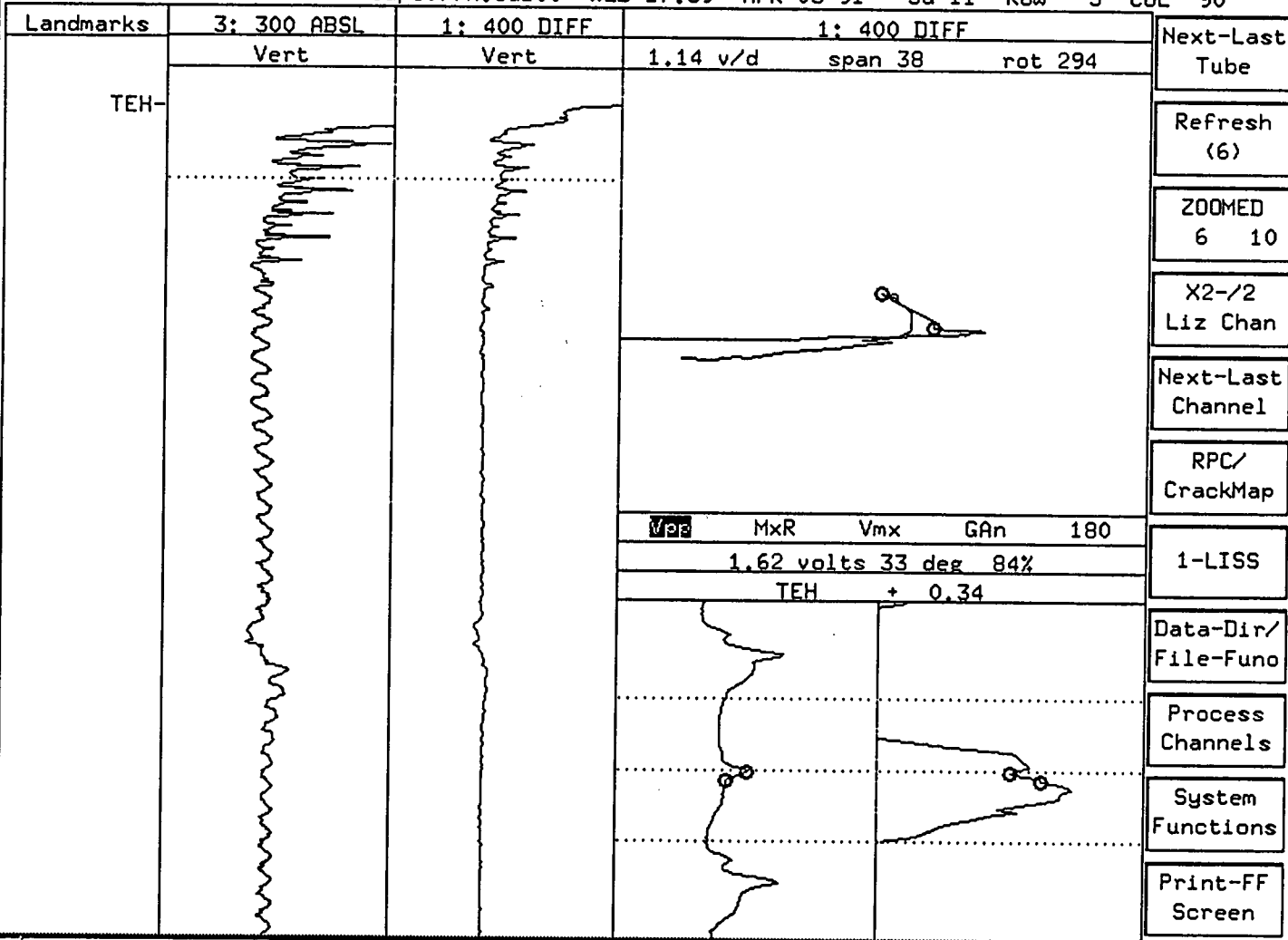
180	180	180	180
5.82v 18d 94%	8.42v 18d	9.50v 13d	5.44v 13d

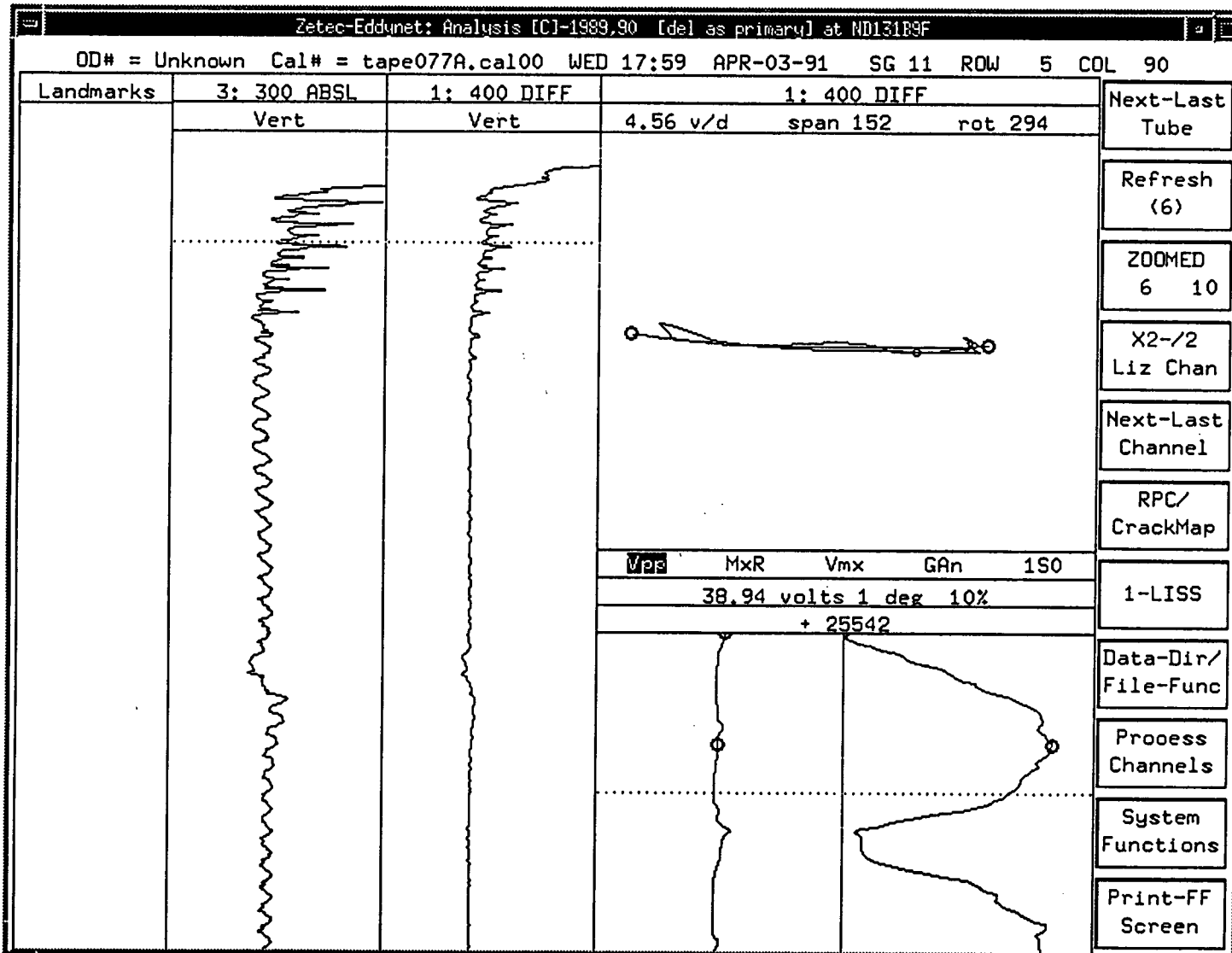
TEH + 0.25

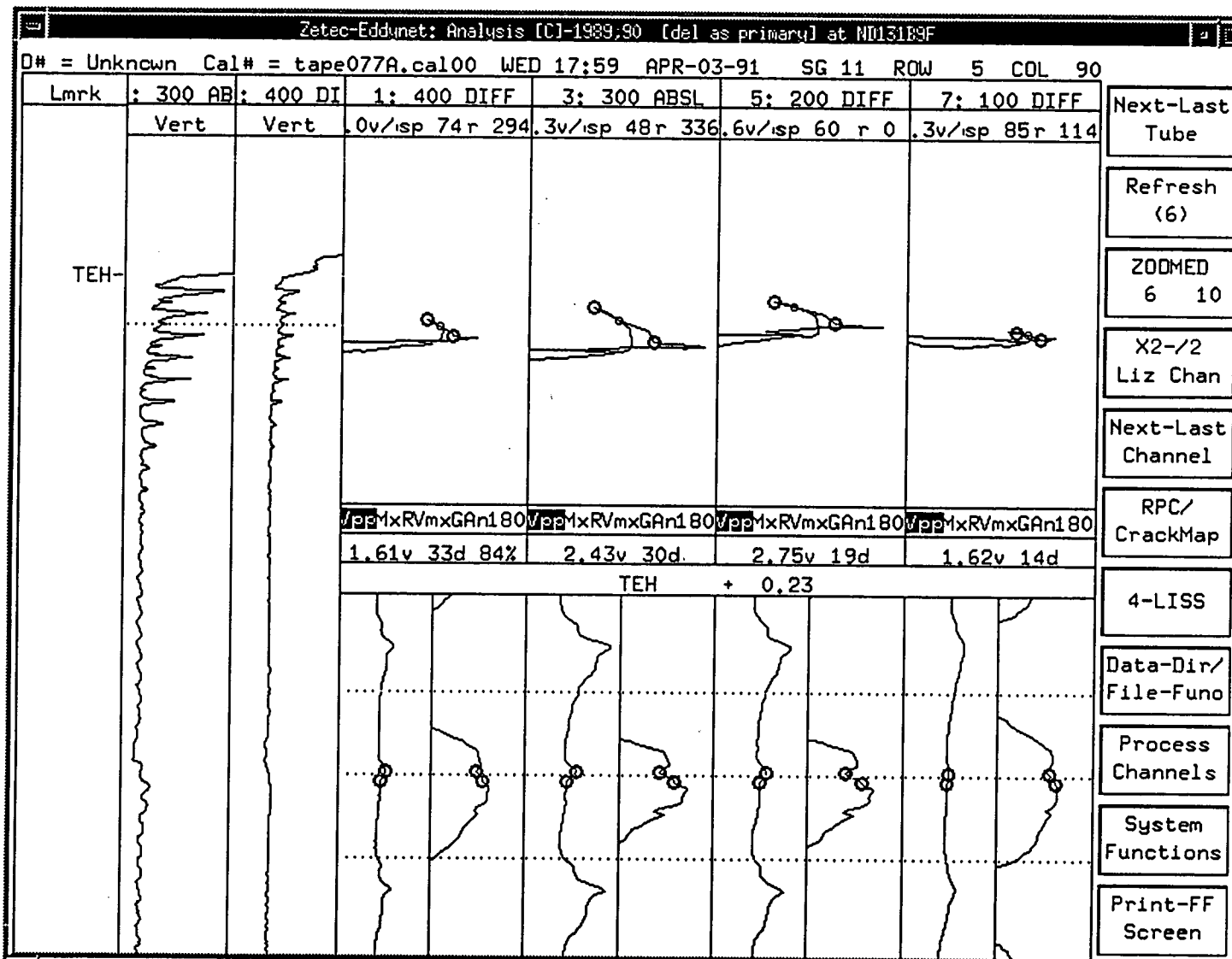


- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Funo
- Process Channels
- System Functions
- Print-FF Screen

OD# = Unknown Cal# = tape077A.cal00 WED 17:59 APR-03-91 SG 11 ROW 5 COL 90







OD# = Unknown Cal# = tape077A.cal00 WED 17:59 APR-03-91 SG 11 ROW 5 COL 90

Lmrk 3: 300 ABSL

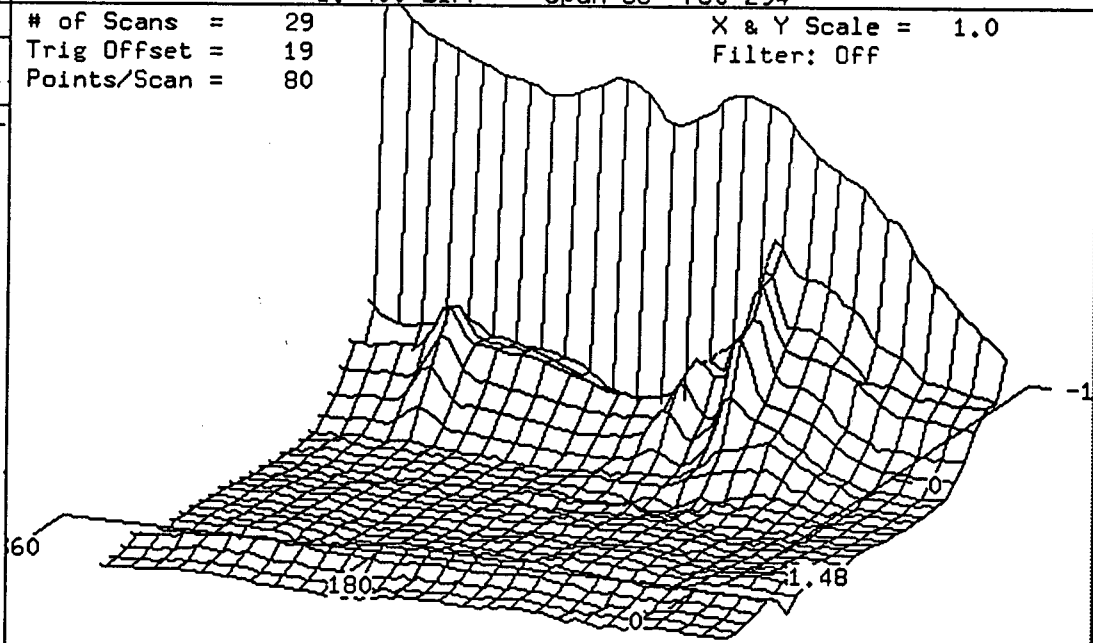
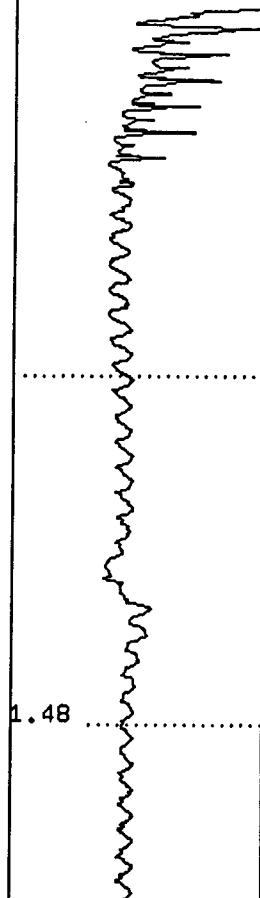
1: 400 DIFF span 38 rot 294

Vert

# of Scans = 29  
 Trig Offset = 19  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off

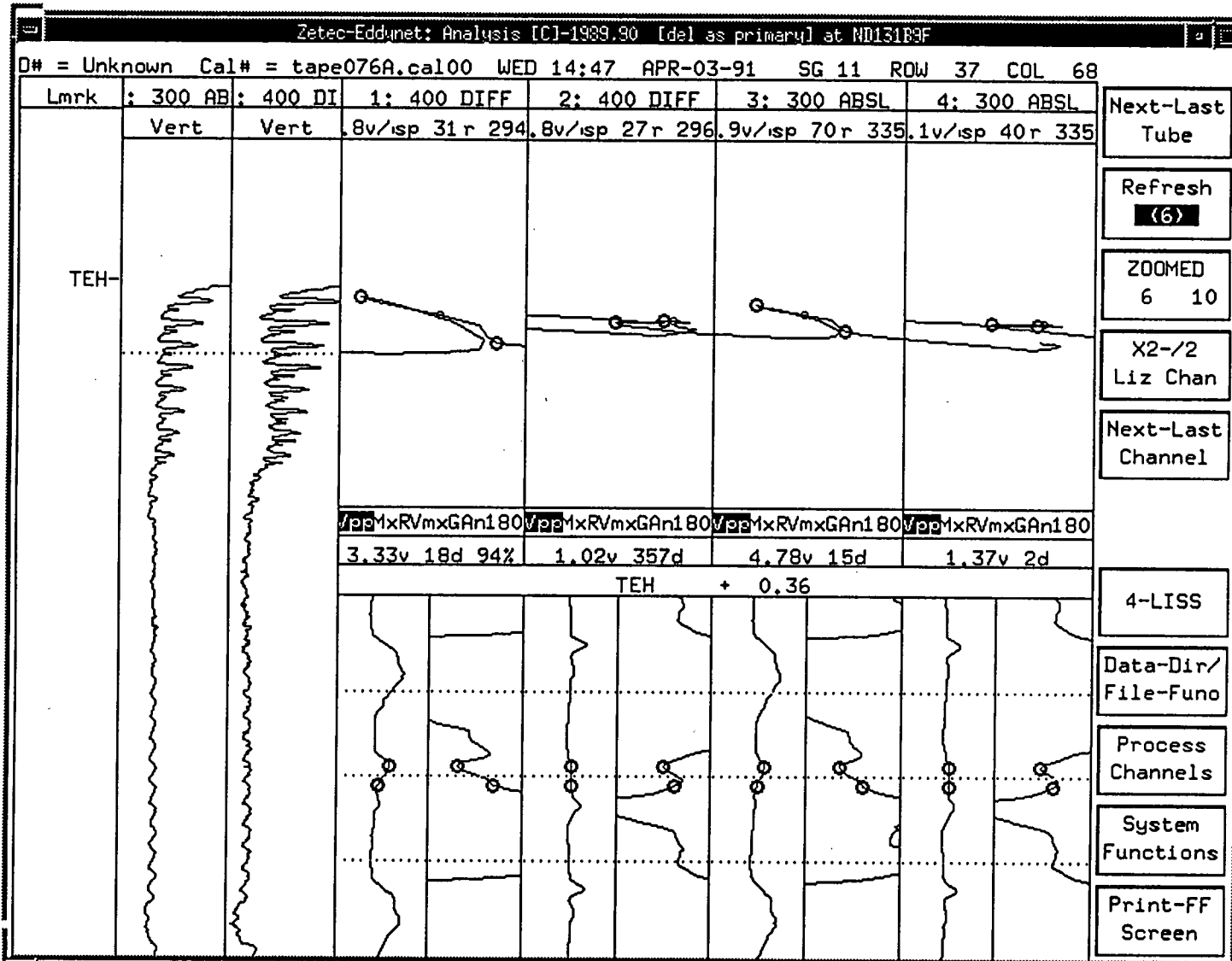
TEH-1.48.....



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(6)	6 10	SPAN	SCRN	CRKMP

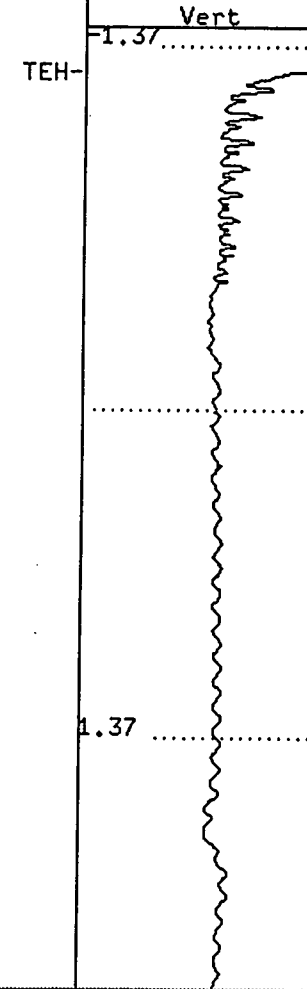




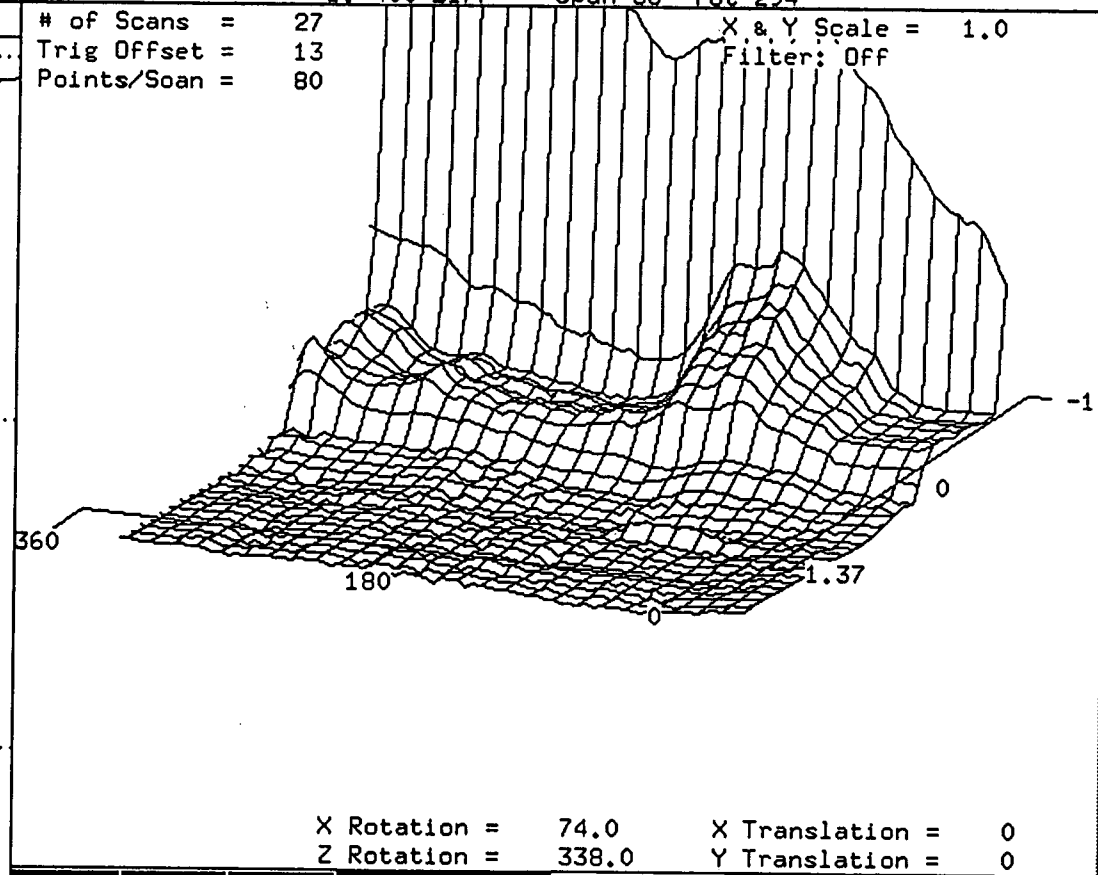
OD# = Unknown Cal# = tape076A.cal00 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68

Lmrk 3: 300 ABSL

1: 400 DIFF span 38 rot 294

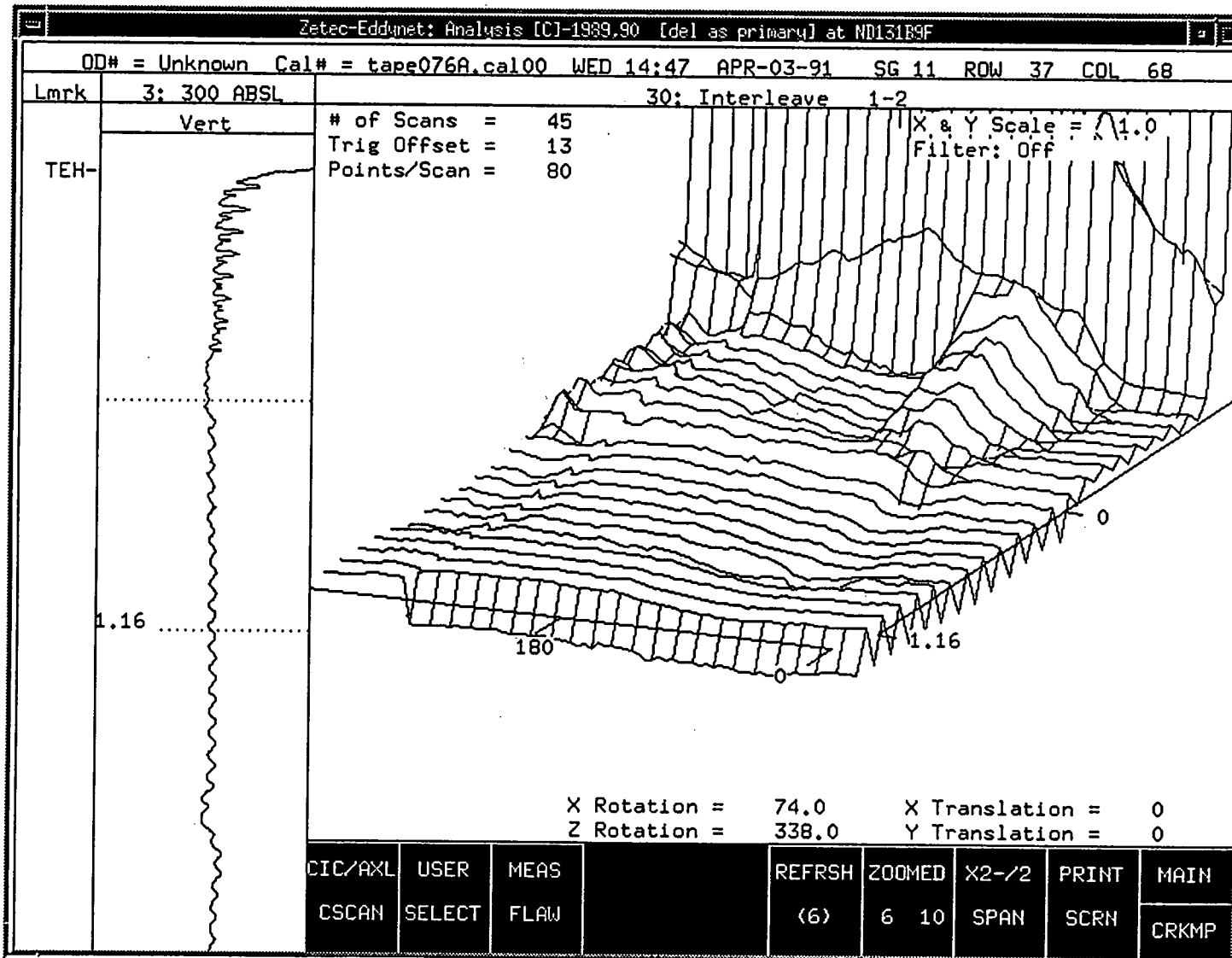


Vert # of Scans = 27 X & Y Scale = 1.0  
 Trig Offset = 13 Filter: OFF  
 Points/Scan = 80

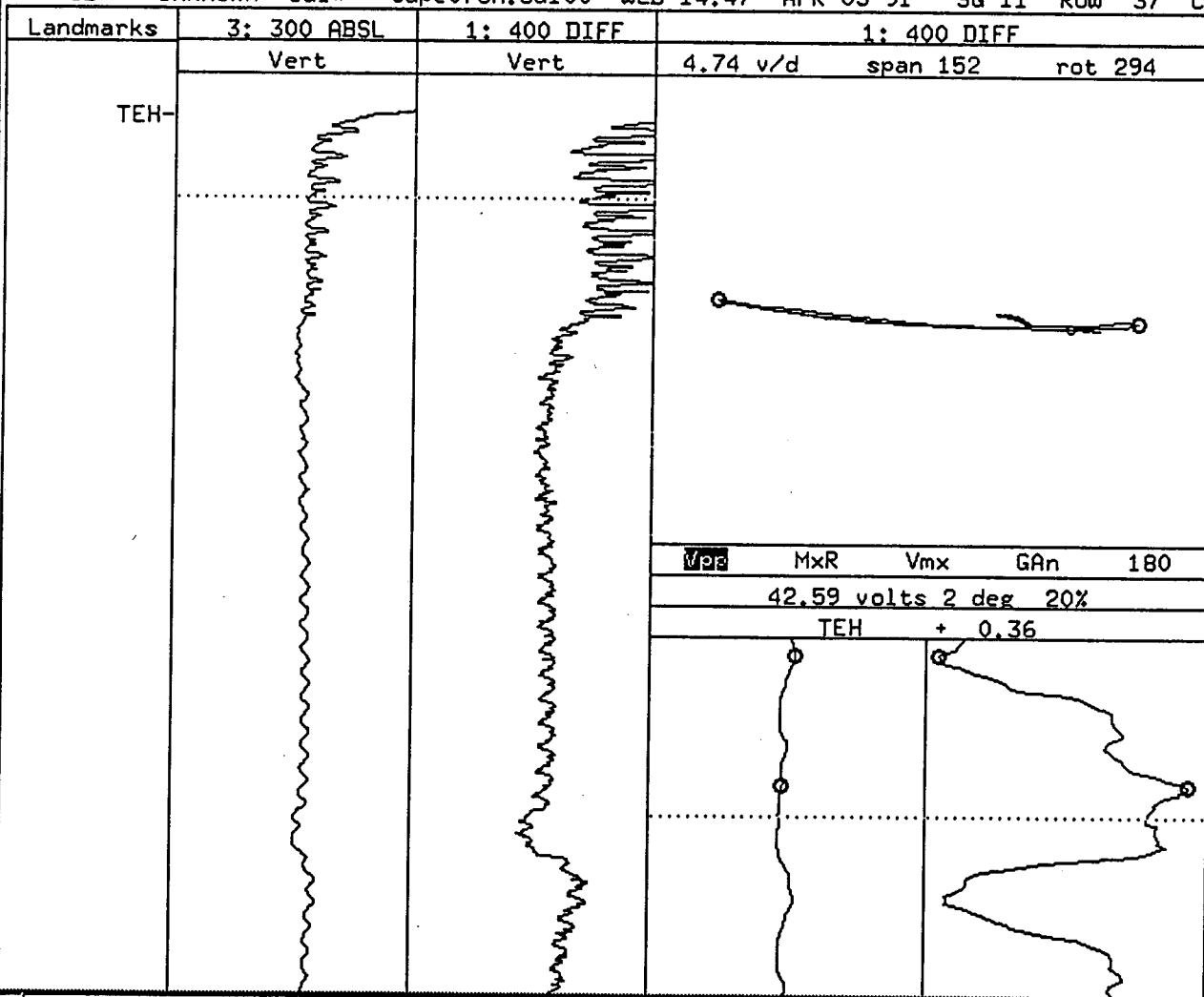


X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(6)	6 10	SPAN	SCRN	CRKMP

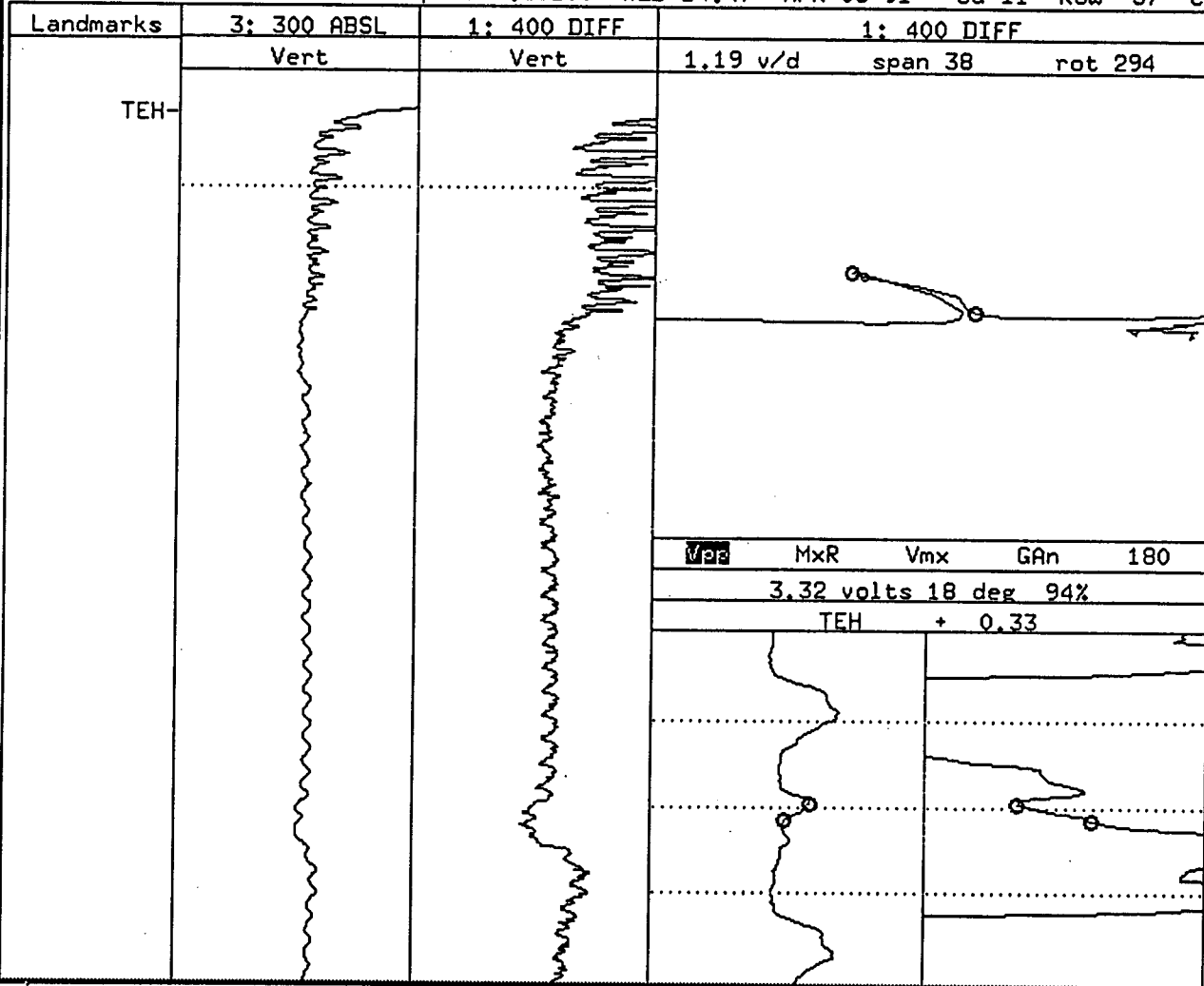


OD# = Unknown Cal# = tape076A.cal00 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68



- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/CraokMap
- 1-LISS
- Data-Dir/File-Func
- Process Channels
- System Functions
- Print-FF Screen

OD# = Unknown Cal# = tape076A.cal00 WED 14:47 APR-03-91 SG 11 ROW 37 COL 68

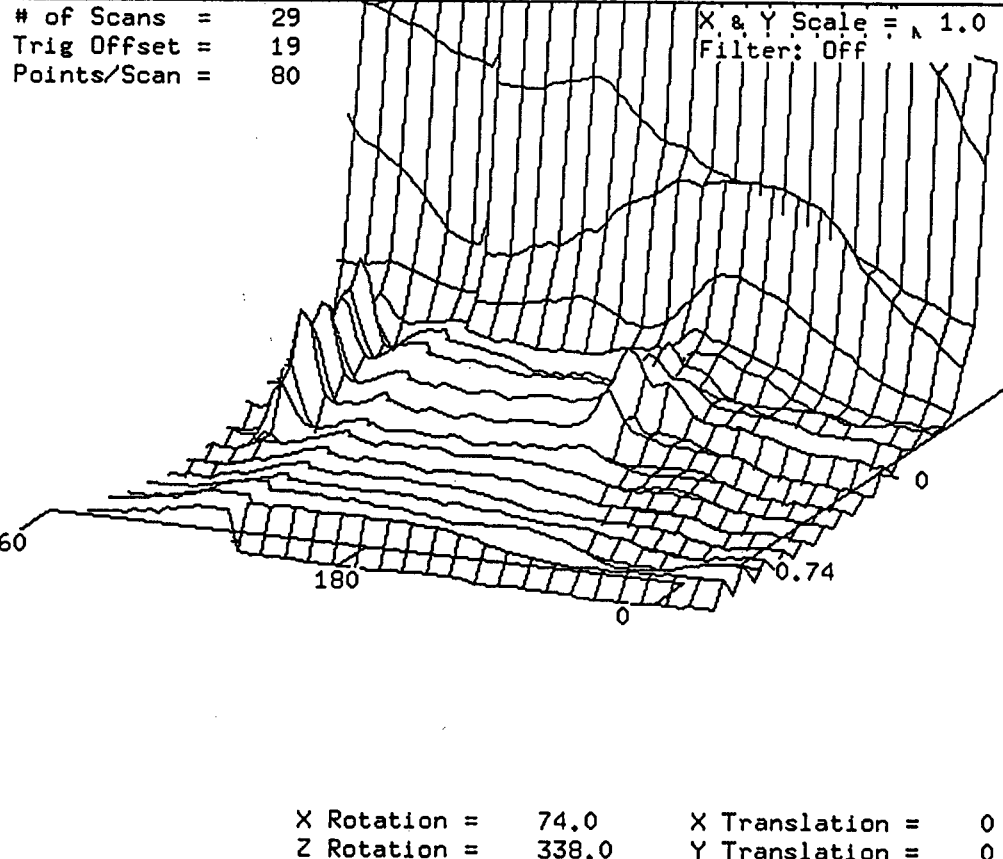
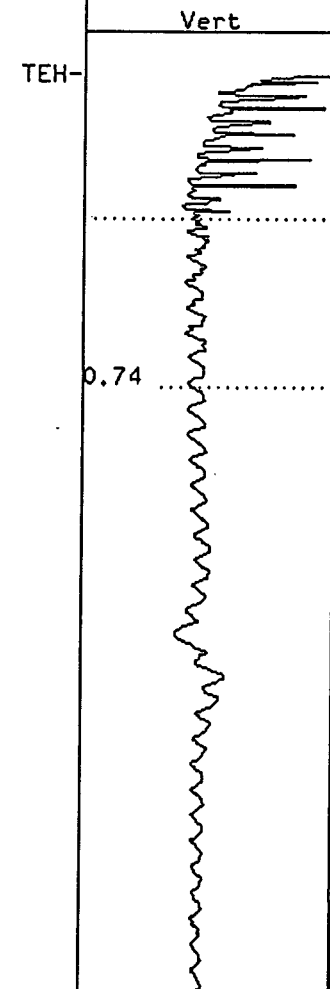


- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

OD# = Unknown Cal# = tape077A.cal00 WED 17:57 APR-03-91 SG 11 ROW 4 COL 89

Lmrk 3: 300 ABSL

30: Interleave 1-2



# of Scans = 29  
 Trig Offset = 19  
 Points/Scan = 80  
 X, Y Scale = 1.0  
 Filter: Off

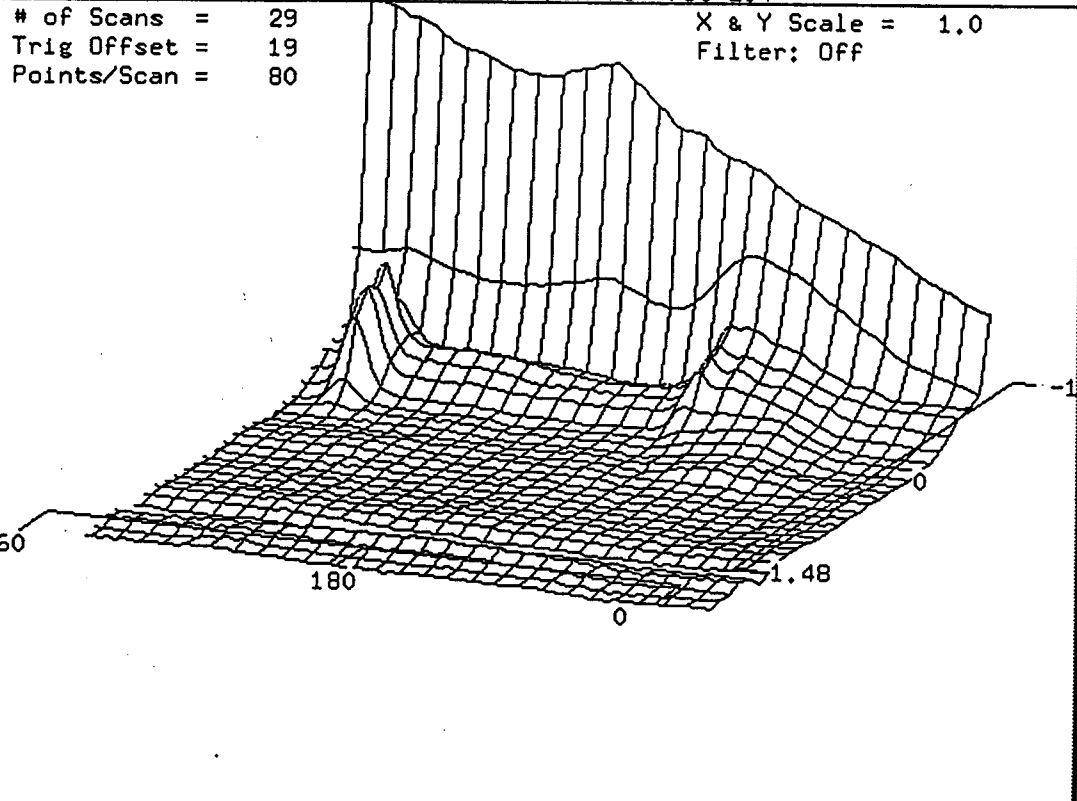
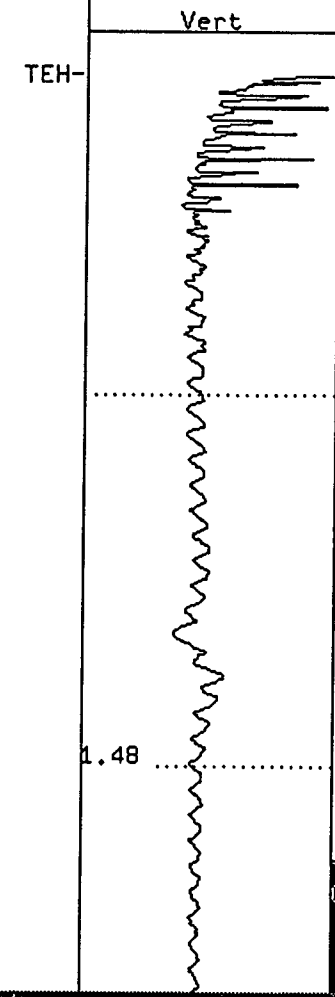
X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(6)	6 10	SPAN	SCRN	CRKMP

OD# = Unknown Cal# = tape077A.cal00 WED 17:57 APR-03-91 SG 11 ROW 4 COL 89

Lmrk 3: 300 ABSL

1: 400 DIFF span 76 rot 294

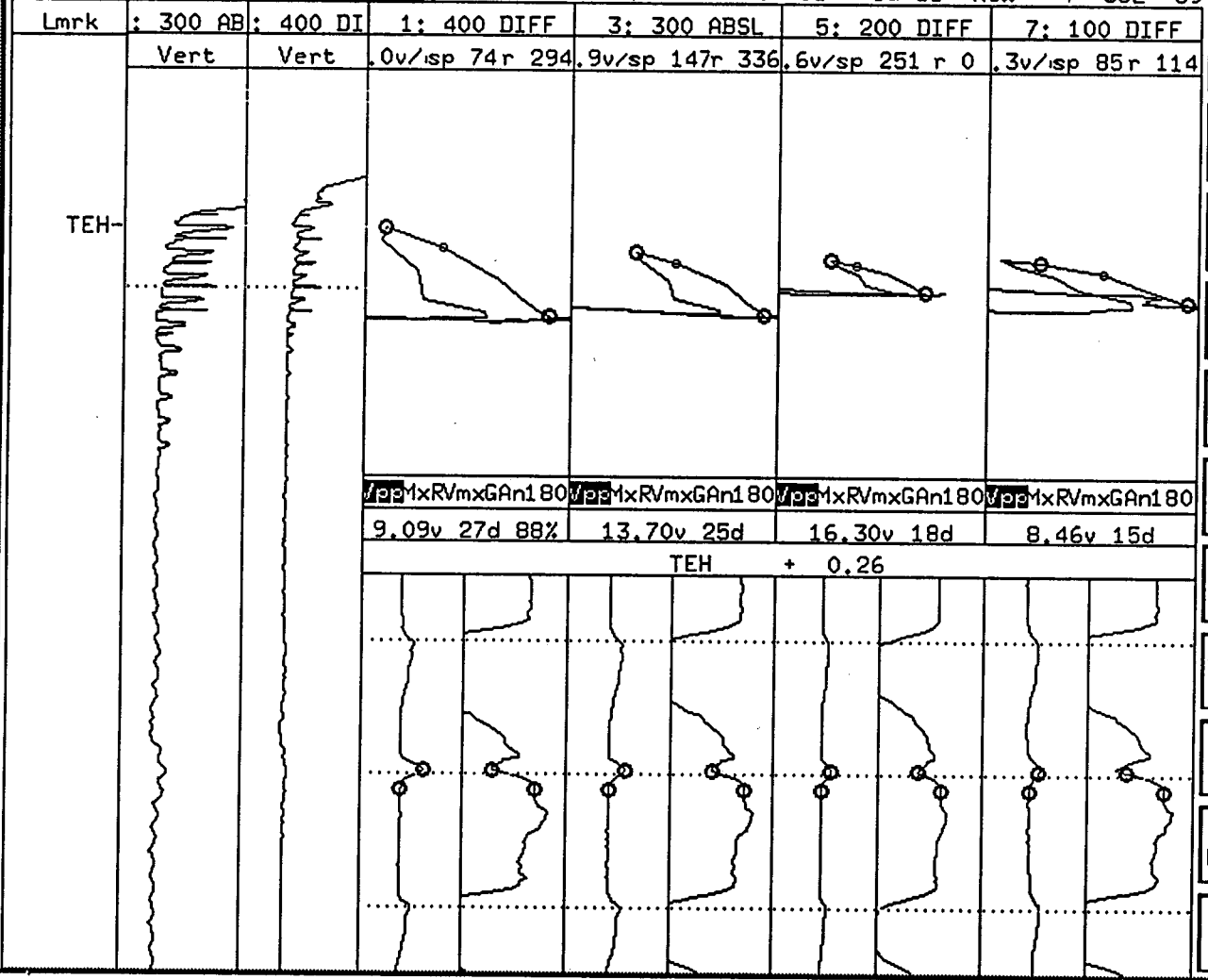


# of Scans = 29  
 Trig Offset = 19  
 Points/Scan = 80  
 X & Y Scale = 1.0  
 Filter: Off

X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

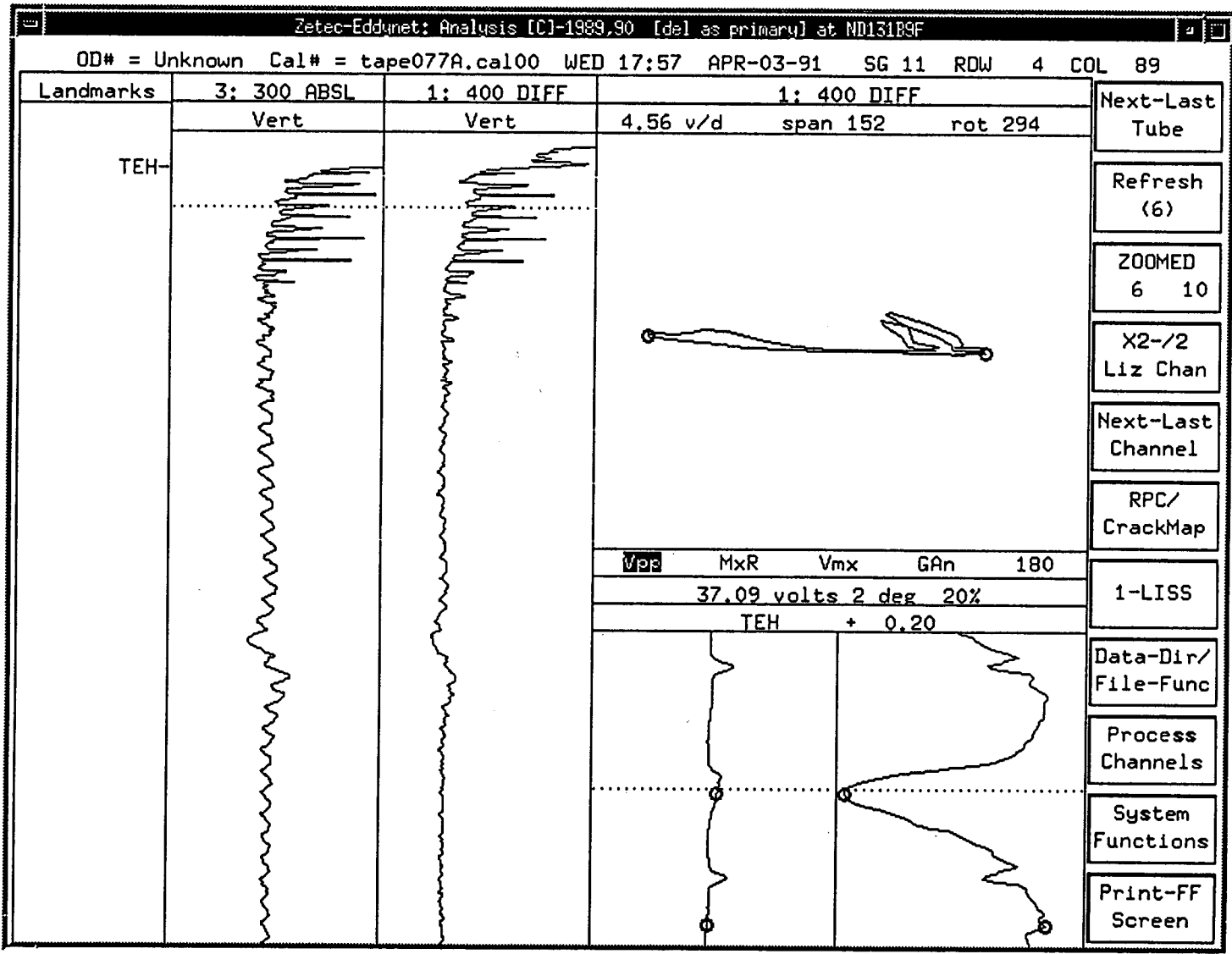
CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(6)	6 10	SPAN	SCRN	CRKMP

D# = Unknown Cal# = tape077A.cal00 WED 17:57 APR-03-91 SG 11 ROW 4 COL 89

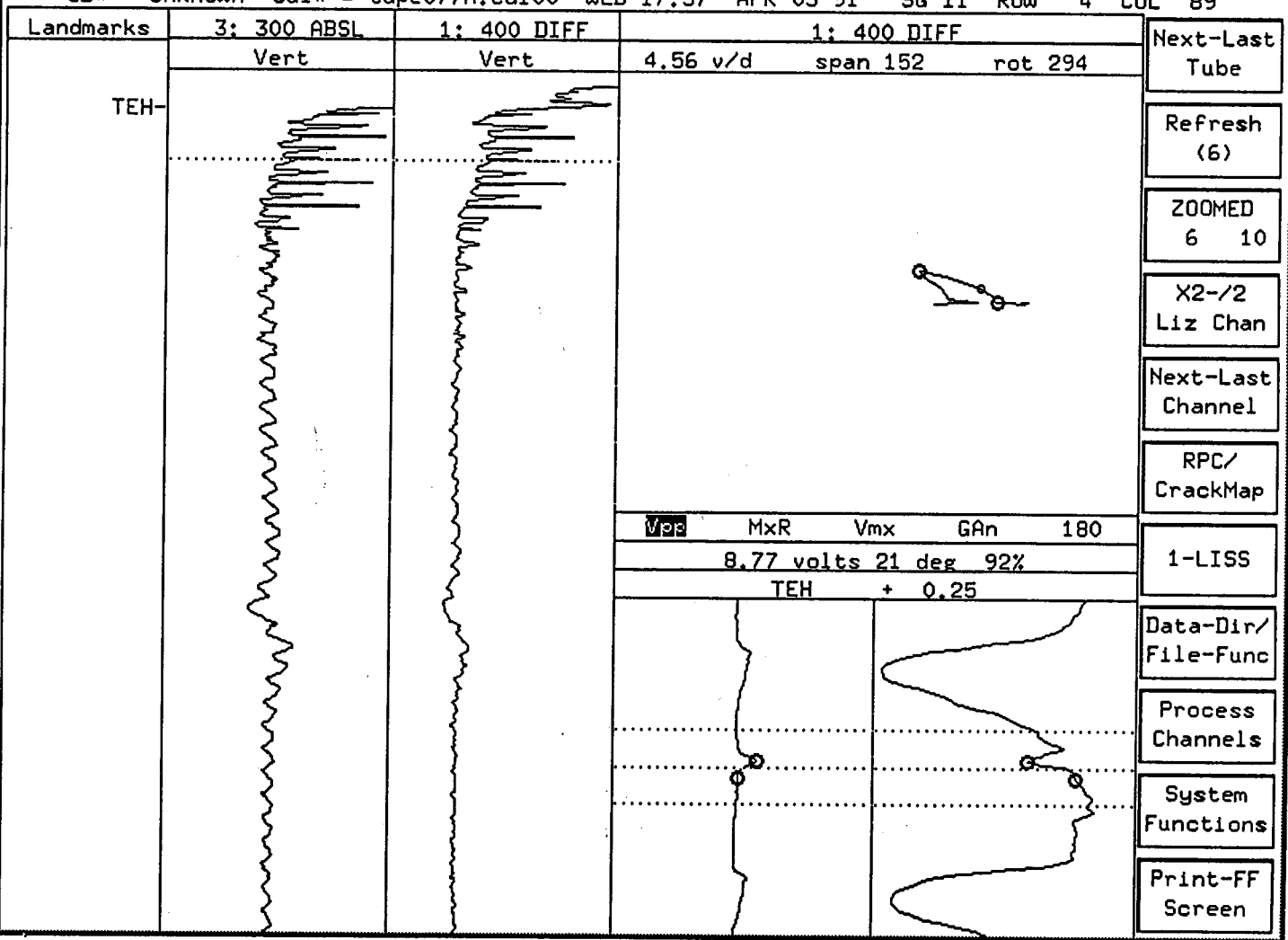


- Next-Last Tube
- Refresh (6)
- ZOOMED 6 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen





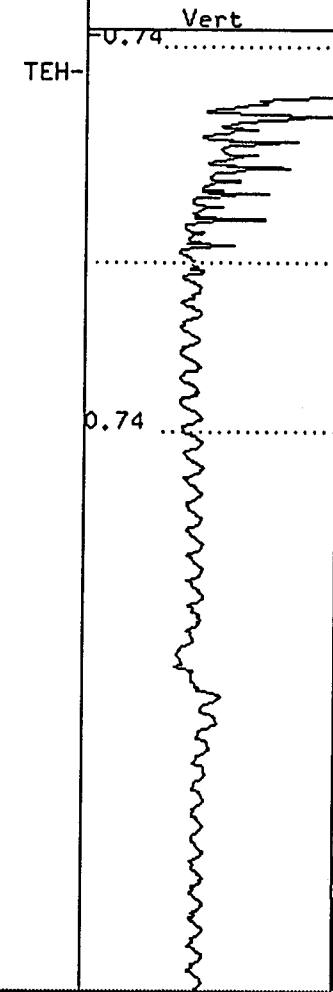
OD# = Unknown Cal# = tape077A.cal00 WED 17:57 APR-03-91 SG 11 ROW 4 COL 89



OD# = Unknown Cal# = tape077A.cal00 WED 17:59 APR-03-91 SG 11 ROW 5 COL 90

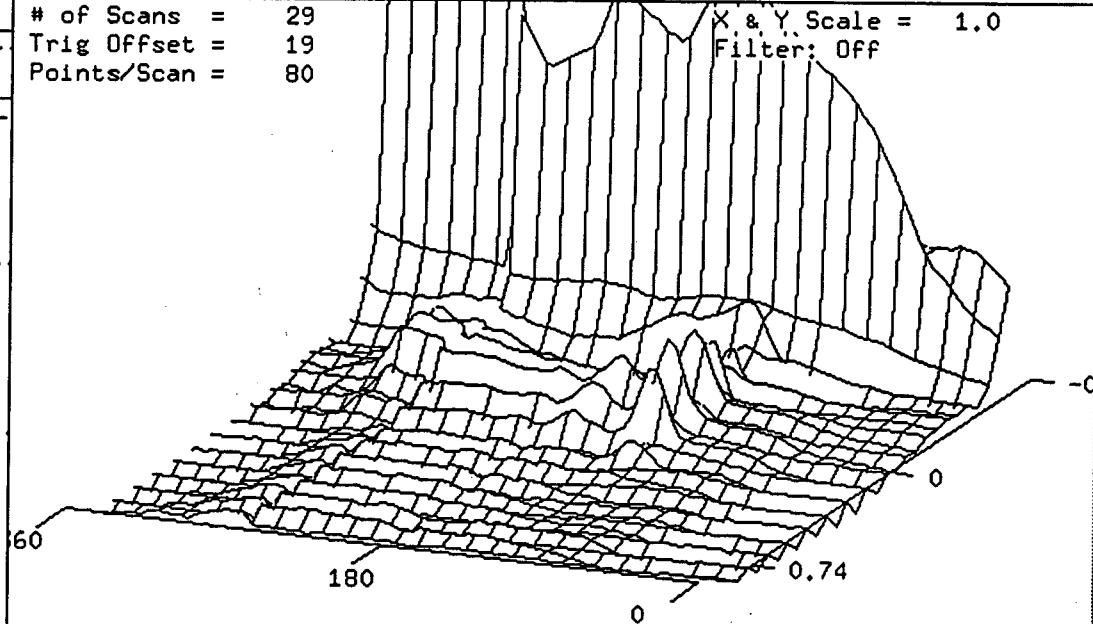
Lmrk 3: 300 ABSL

30: Interleave 1-2



# of Scans = 29  
 Trig Offset = 19  
 Points/Scan = 80

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 74.0 X Translation = 0  
 Z Rotation = 338.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOMED	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(6)	6 10	SPAN	SCRN	CRKMP

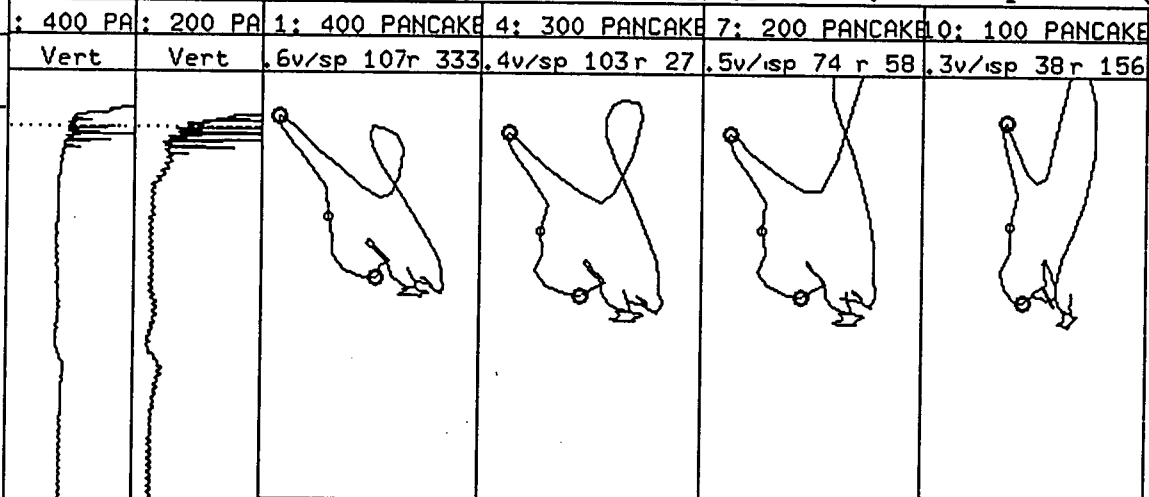
KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

SECTION 6.0A - LAB SAMPLE EDDY CURRENT GRAPHICS  
EXPANDED WELDED SAMPLES

# = Dkkew001 Cal# = tape001A.cal00 WED 8:17 DEC-17-91 0 1

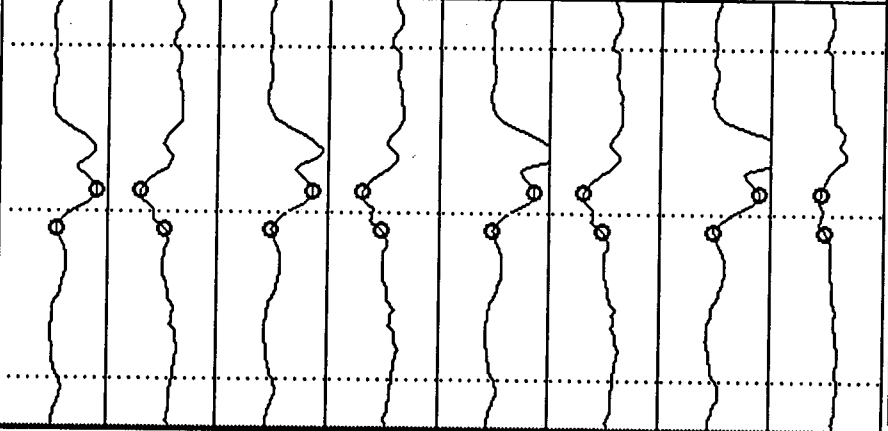
Lmrk	: 400 PA	: 200 PA	1: 400 PANCAKE	4: 300 PANCAKE	7: 200 PANCAKE	10: 100 PANCAKE
	Vert	Vert	.6v/sp 107r 333	.4v/sp 103r 27	.5v/sp 74 r 58	.3v/sp 38 r 156

TEH-

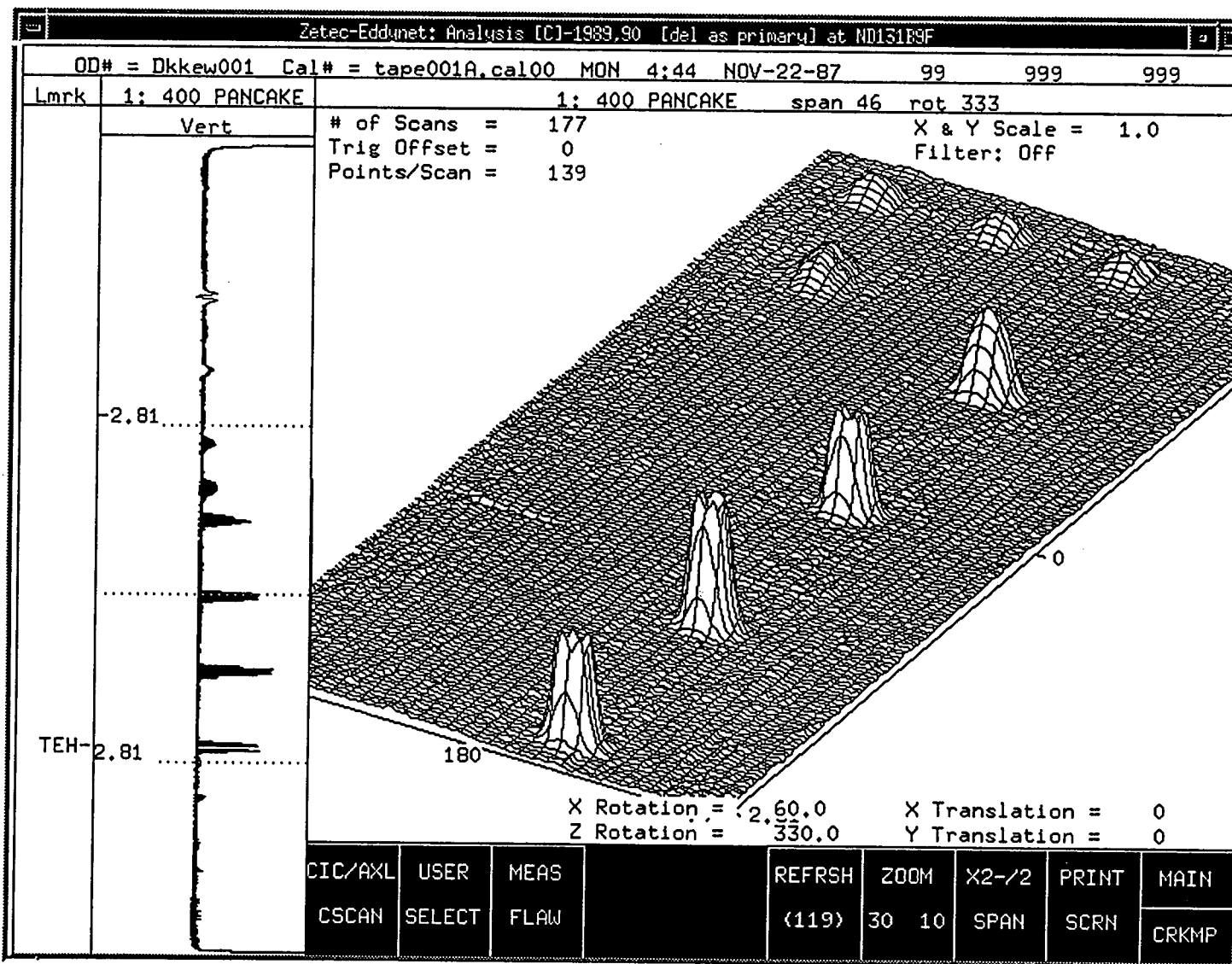


1xRVmxGAn180	1xRVmxGAn180	1xRVmxGAn180	1xRVmxGAn180
15.61v 59d 83%	14.27v 66d	10.39v 66d 88%	5.37v 84d

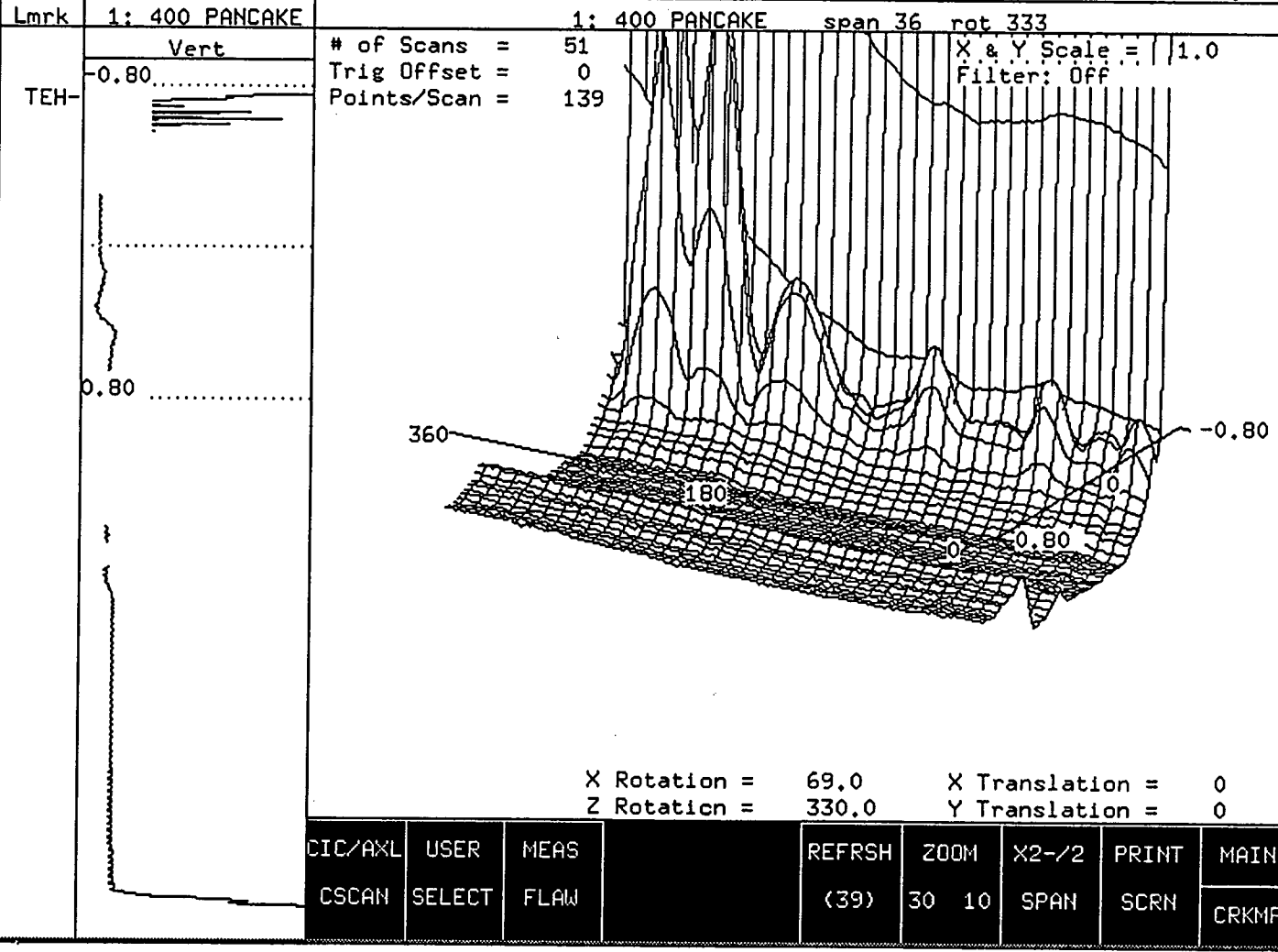
TEH + 0.08



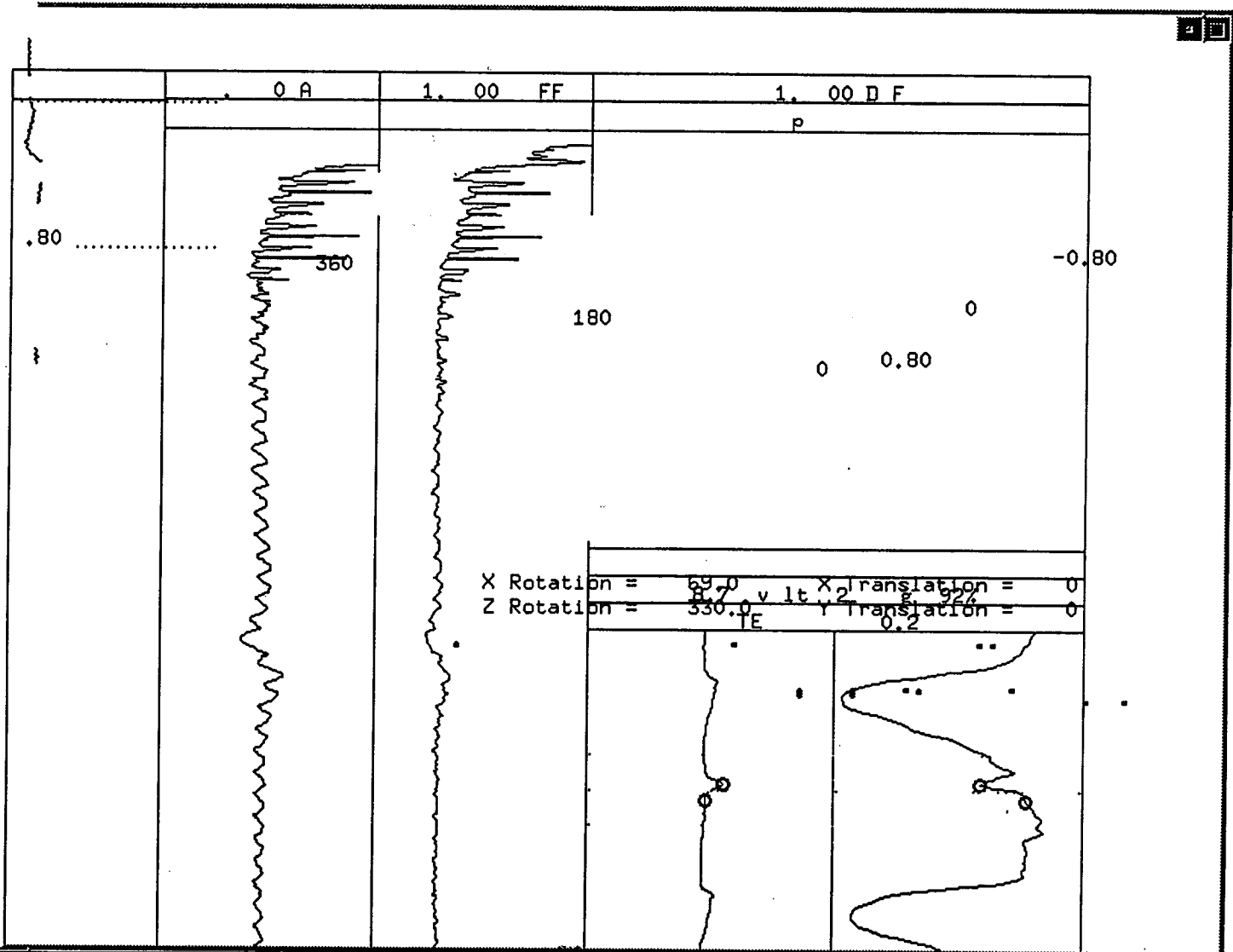
- Next-Last Tube
- Refresh (39)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:17 DEC-17-91 0 1 0



D# = k w 0 1 Cal# = a 1A a100 WED 8.7 DEC-1 - 1 0 1 0  
 mrk . 40 PANCAK . 40 PANCAKE s n 3 r 33  
 Vert # of Scans = 51 X & Y Scale = 1.0  
 Trig Offset = 0 Filter: Off  
 TEH- 0.80 ..... Points/Scan = 139





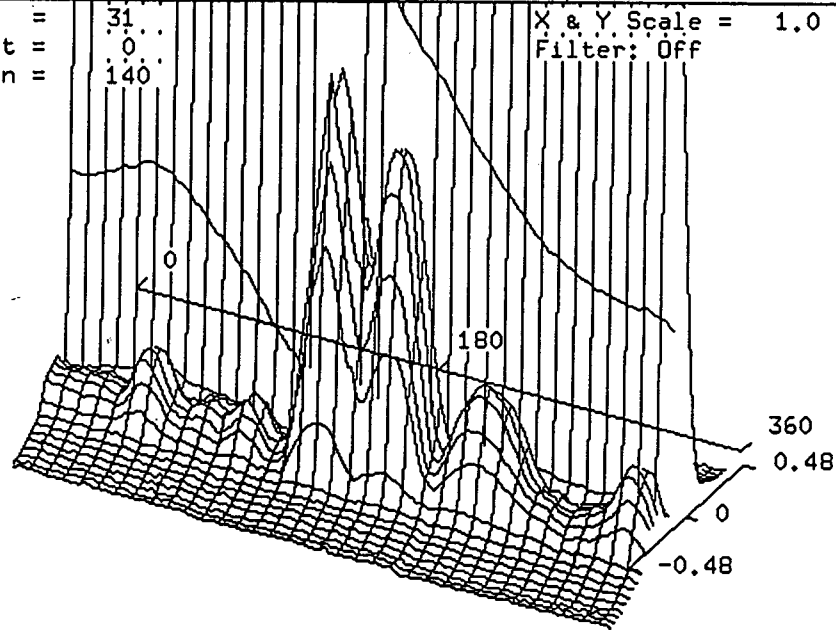
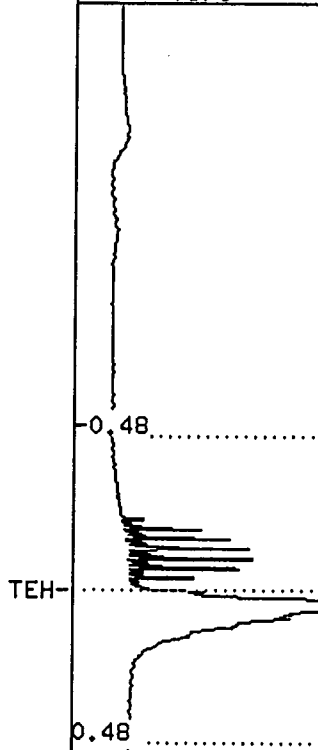
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:22 DEC-17-91 0 *RL* 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333

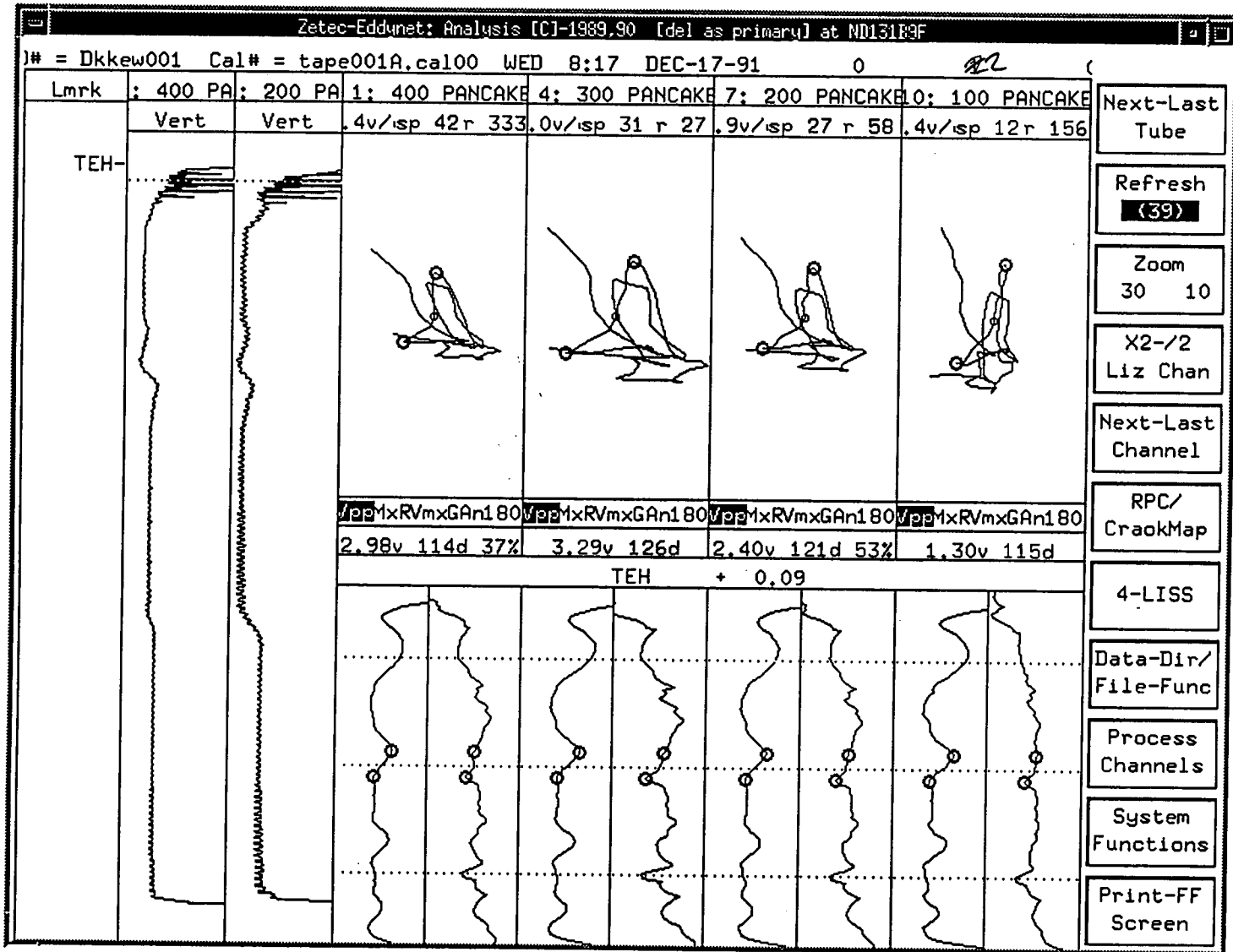
Vert

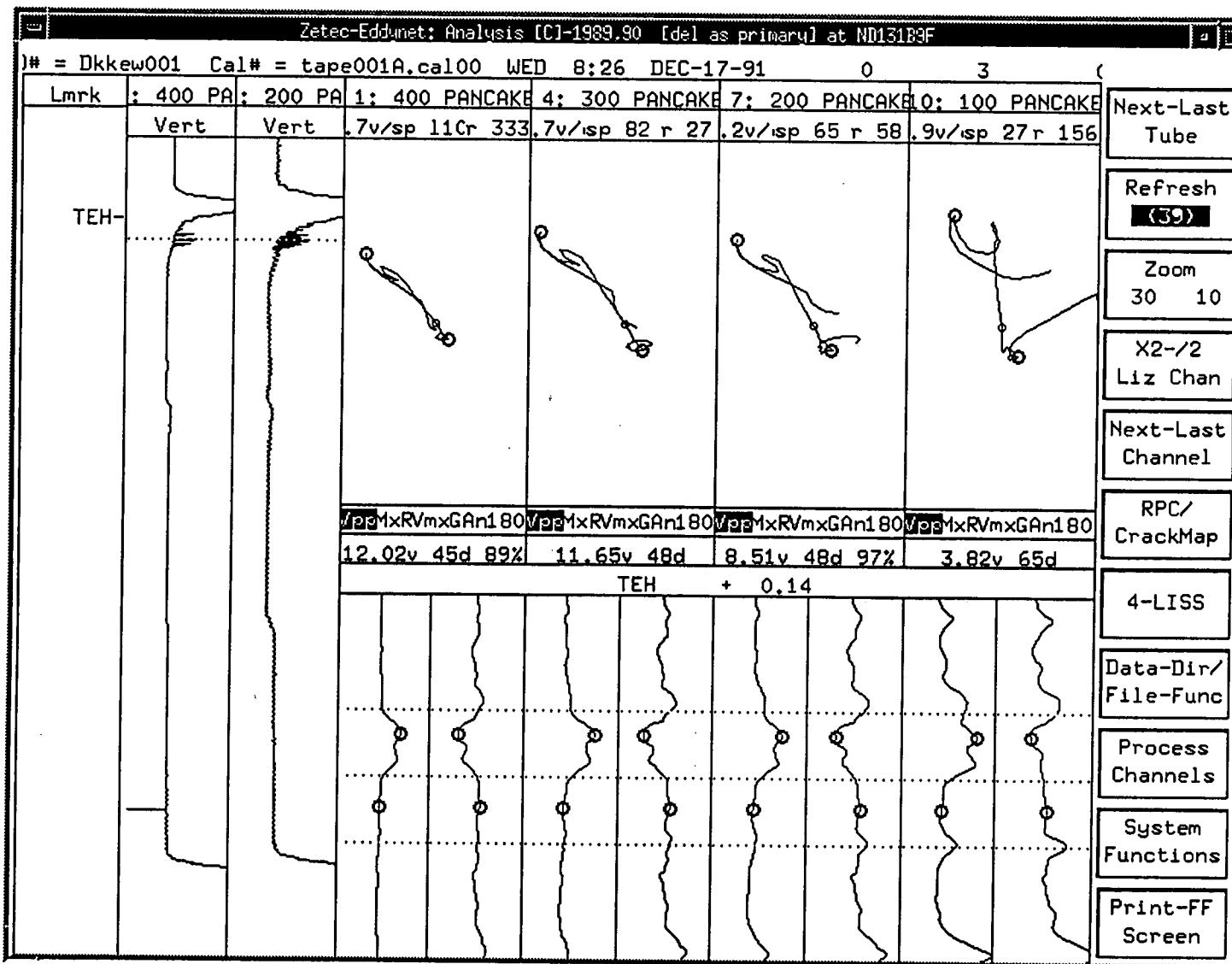
# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 140  
 X & Y Scale = 1.0  
 Filter: Off

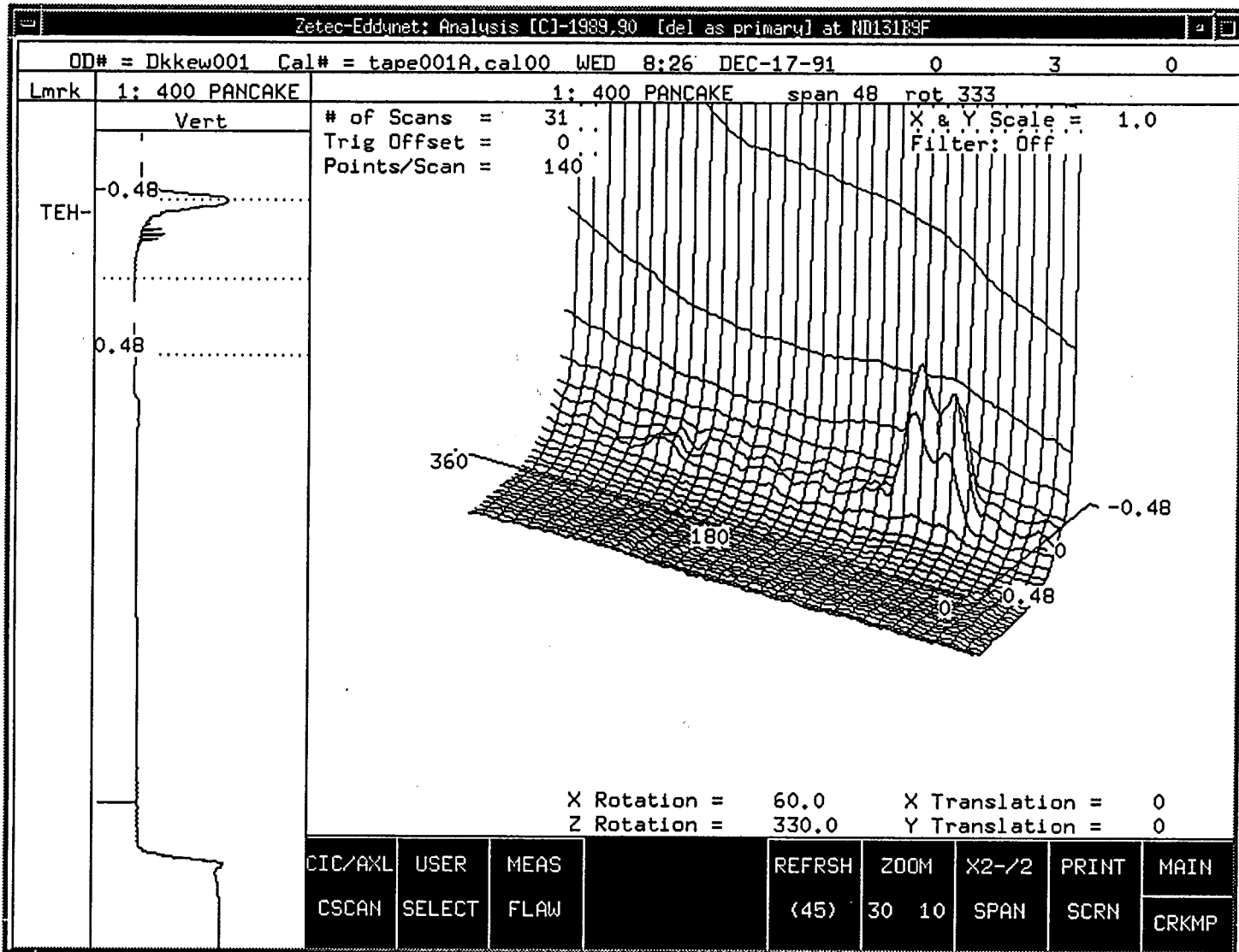


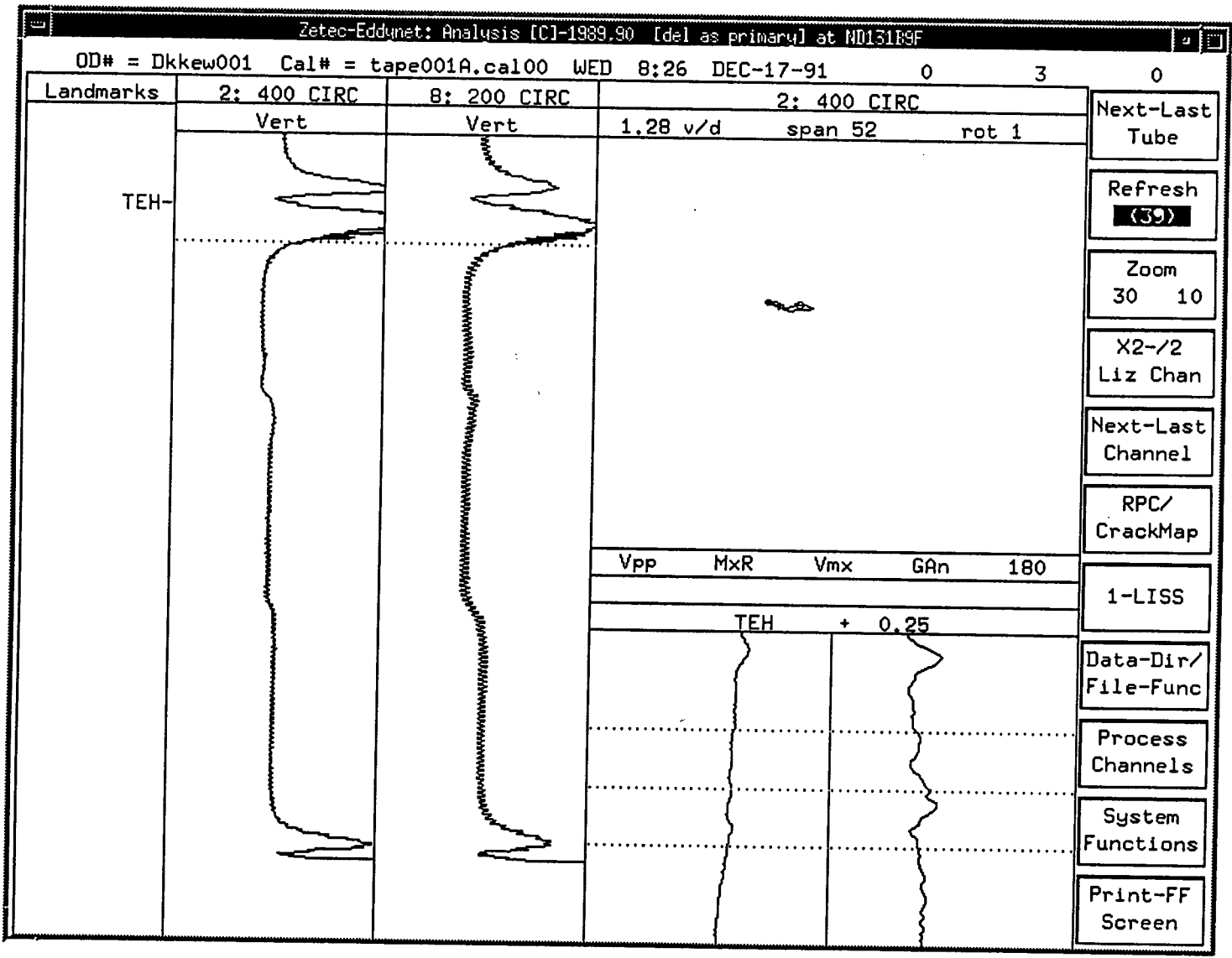
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 152.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(26)	30 10	SPAN	SCRN	CRKMP





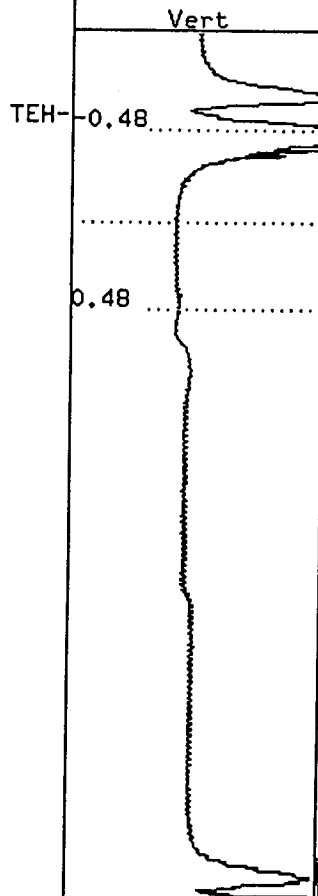




OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:26 DEC-17-91 0 3 0

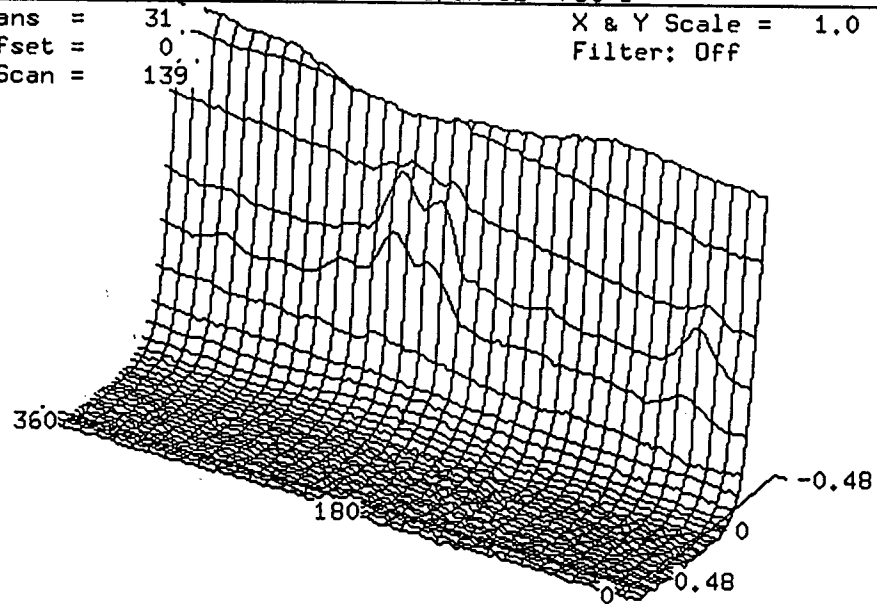
Lmrk 2: 400 CIRC

2: 400 CIRC span 52 rot 1



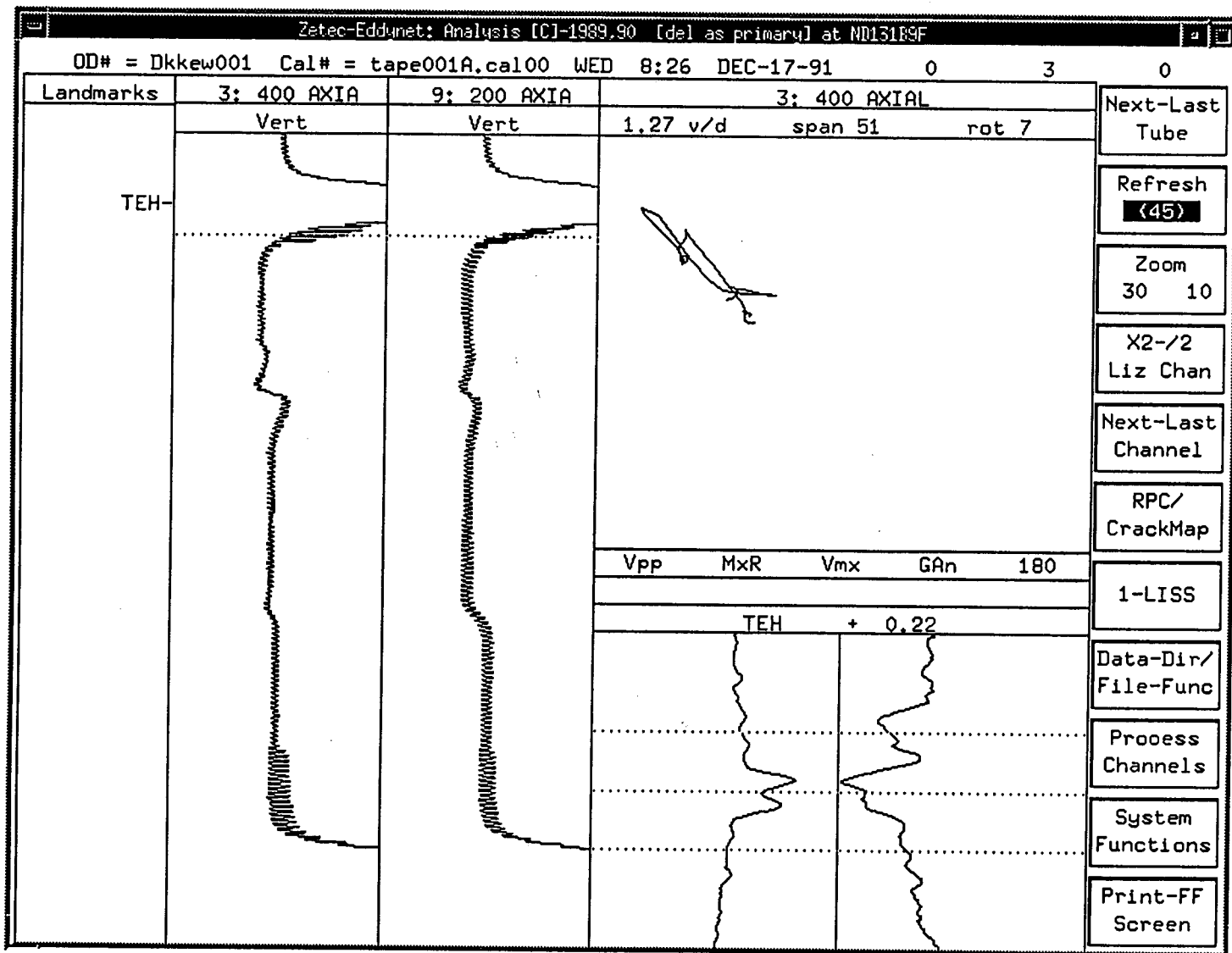
# of Soans = 31  
 Trig Offset = 0  
 Points/Scan = 139

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(45)	30 10	SPAN	SCRN	CRKMP



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:26 DEC-17-91 0 3 0

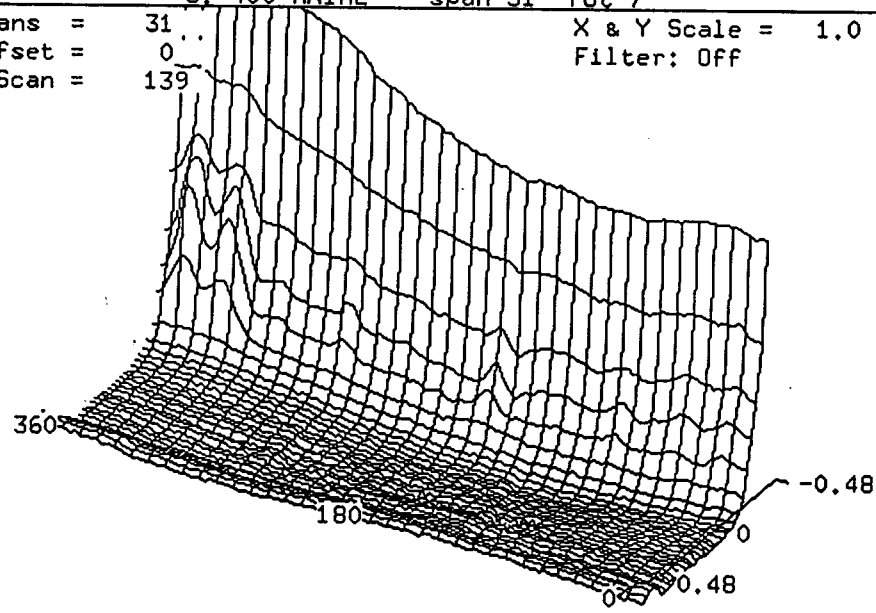
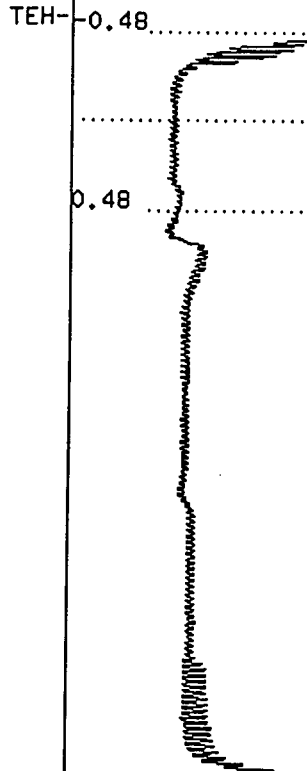
Lmrk 3: 400 AXIAL

3: 400 AXIAL span 51 rot 7

Vert

# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 139

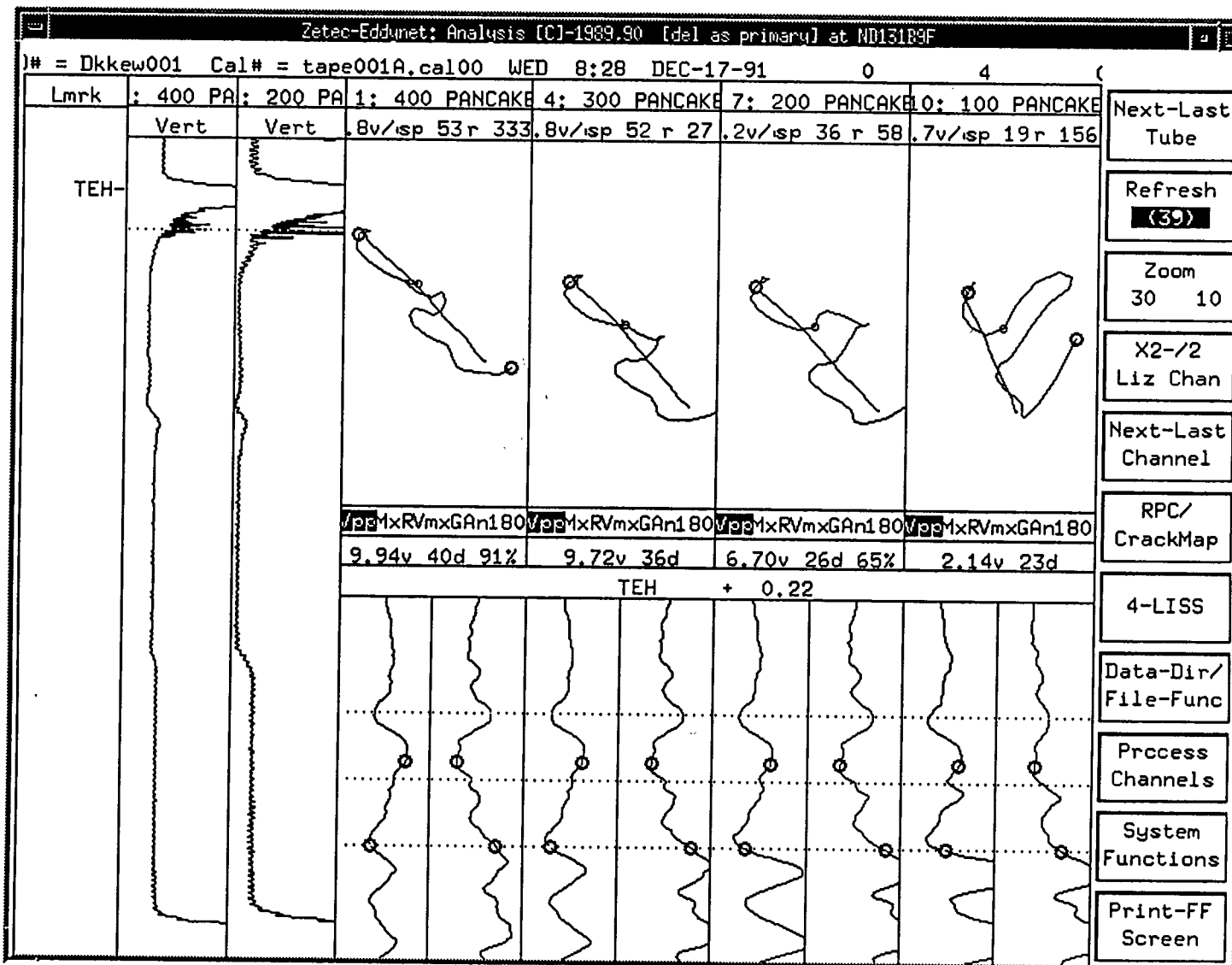
X & Y Scale = 1.0  
 Filter: Off



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

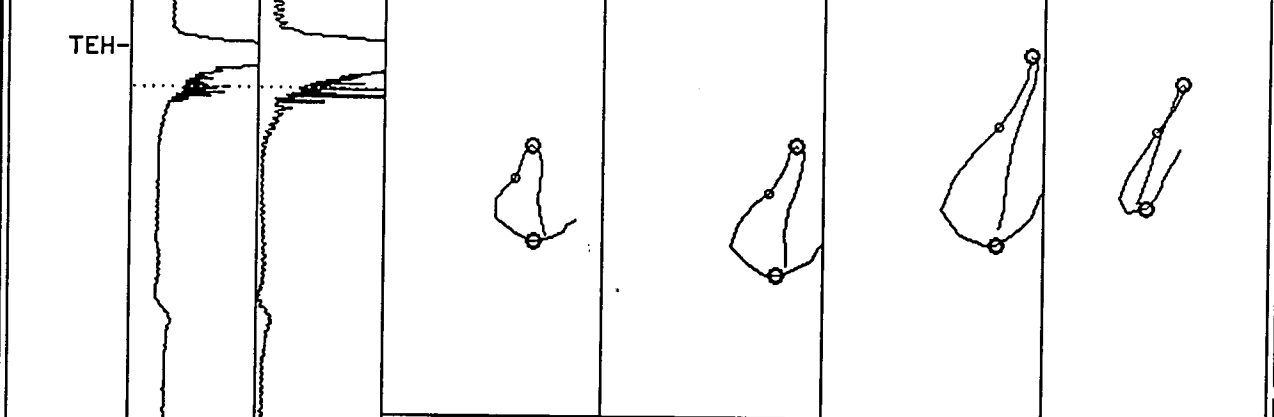
CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(45)	30 10	SPAN	SCRN	CRKMP



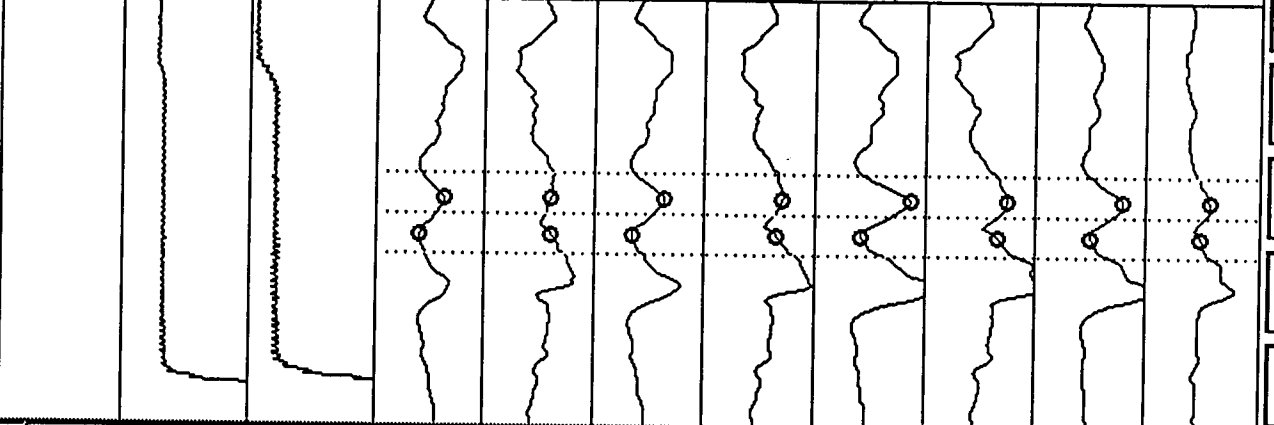


)# = Dkkew001 Cal# = tape001A.cal00 WED 8:28 DEC-17-91 0 4 (

Lmrk	: 400 PA	: 200 PA	1: 400 PANCAKE	4: 300 PANCAKE	7: 200 PANCAKE	10: 100 PANCAKE
	Vert	Vert	.8v/isp 53 r 333	.8v/isp 52 r 27	.2v/isp 36 r 58	.4v/isp 40 r 156



/ppMxRVmxAAn180	/ppMxRVmxAAn180	/ppMxRVmxAAn180	/ppMxRVmxAAn180
3.92v 87d 66%	5.39v 98d	5.44v 100d 68%	4.04v 105d
TEH + 0.20			



Next-Last Tube

Refresh  
(45)

Zoom  
30 10

X2-/2  
Liz Chan

Next-Last Channel

RPC/  
CrackMap

4-LISS

Data-Dir/  
File-Funo

Process Channels

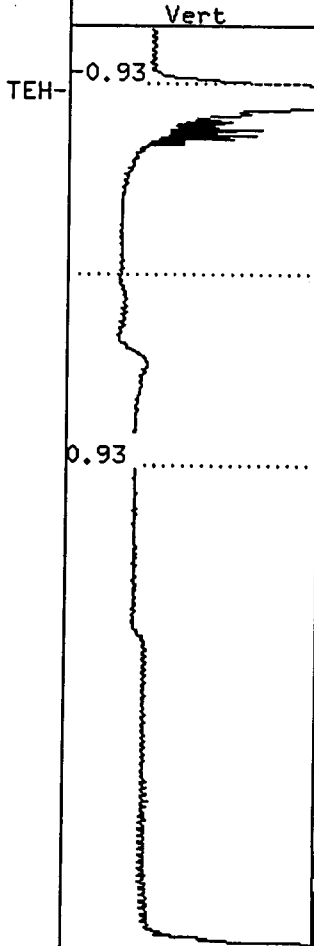
System Functions

Print-FF Screen

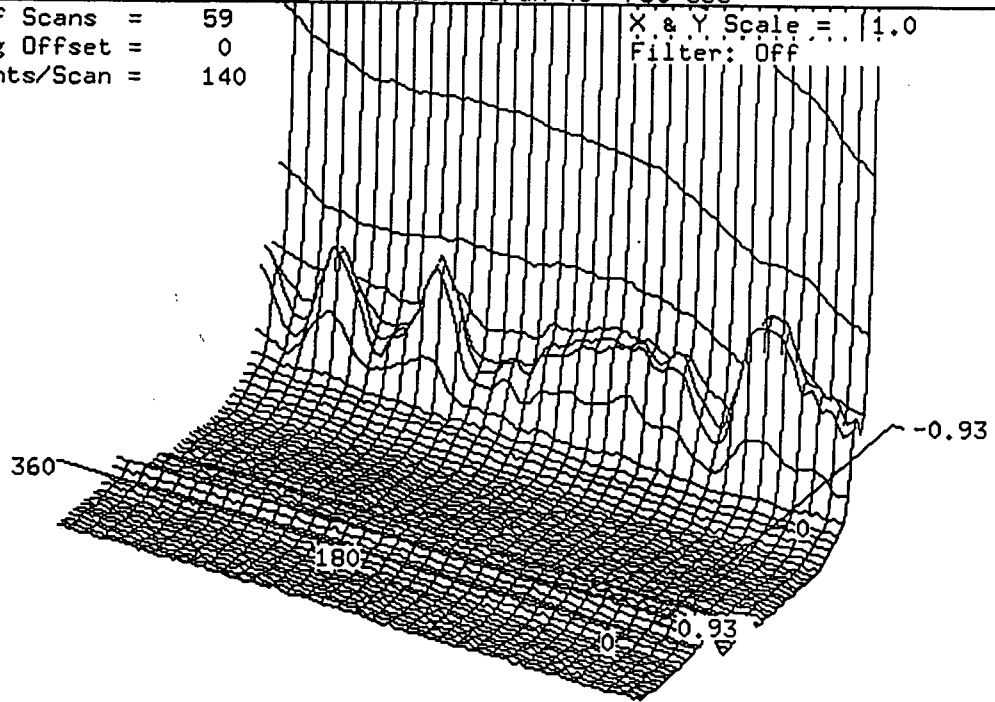
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:28 DEC-17-91 0 4 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333



# of Scans = 59  
 Trig Offset = 0  
 Points/Scan = 140  
 X & Y Scale = 1.0  
 Filter: Off



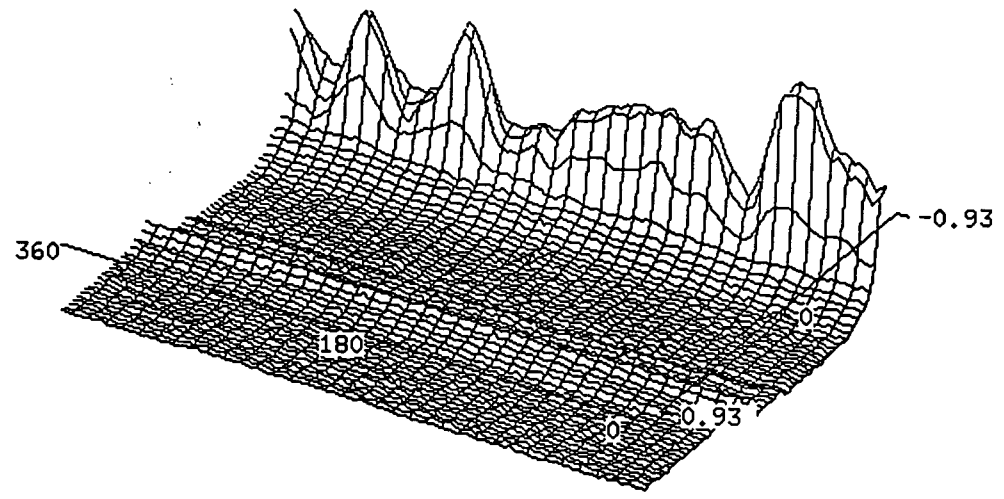
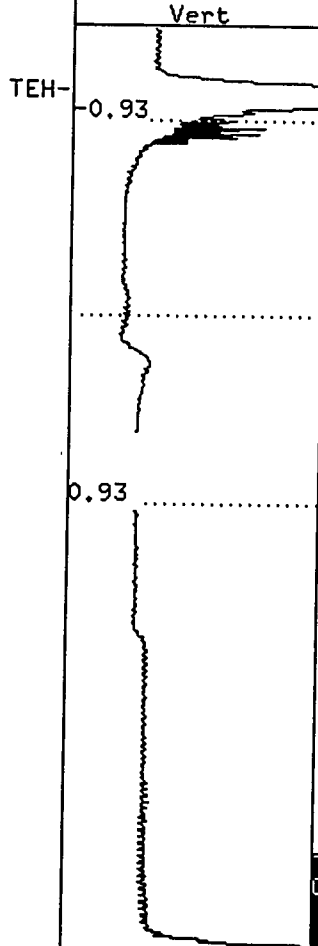
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(41)	30 10	SPAN	SCRN	CRKMP

QD# = Dkkew001 Cal# = tape001A.cal00 WED 8:28 DEC-17-91 0 4 0

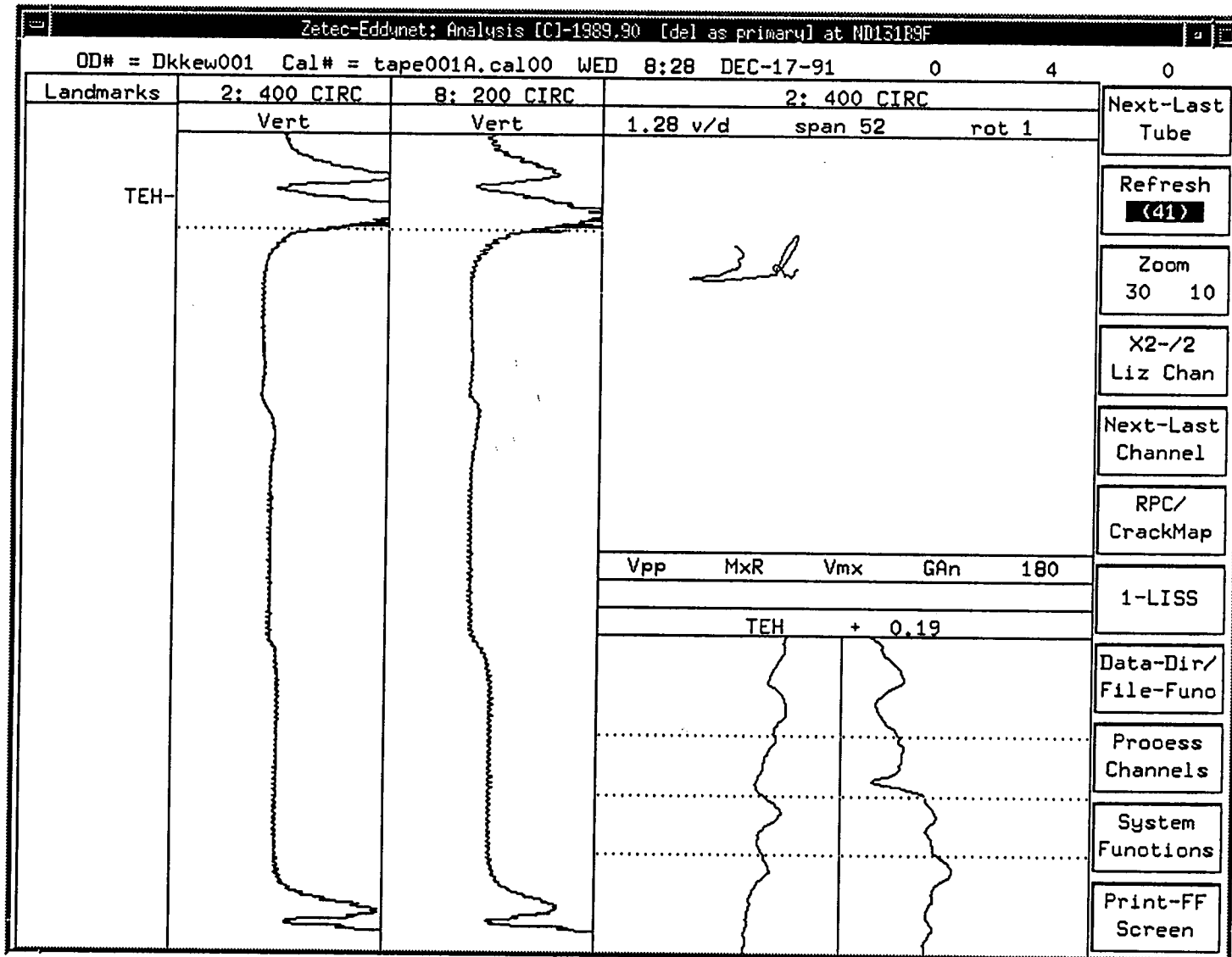
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333  
 # of Scans = 59 X & Y Scale = 1.0  
 Trig Offset = 0 Filter: Off  
 Points/Scan = 140



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(41)	30 10	SPAN	SCRN	CRKMP



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:28 DEC-17-91 0 4 0

Lmrk 2: 400 CIRC

2: 400 CIRC span 52 rot 1

Vert

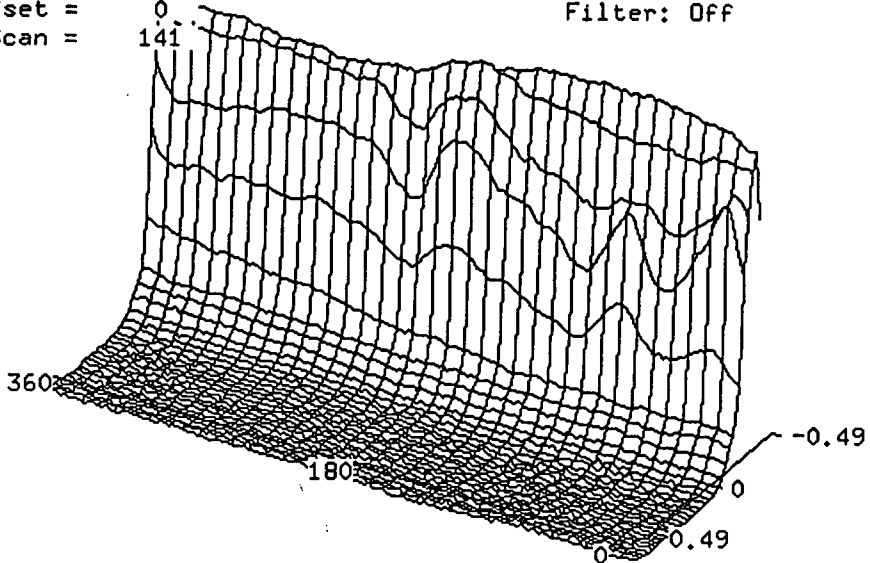
# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 141

X & Y Scale = 1.0  
 Filter: Off

TEH

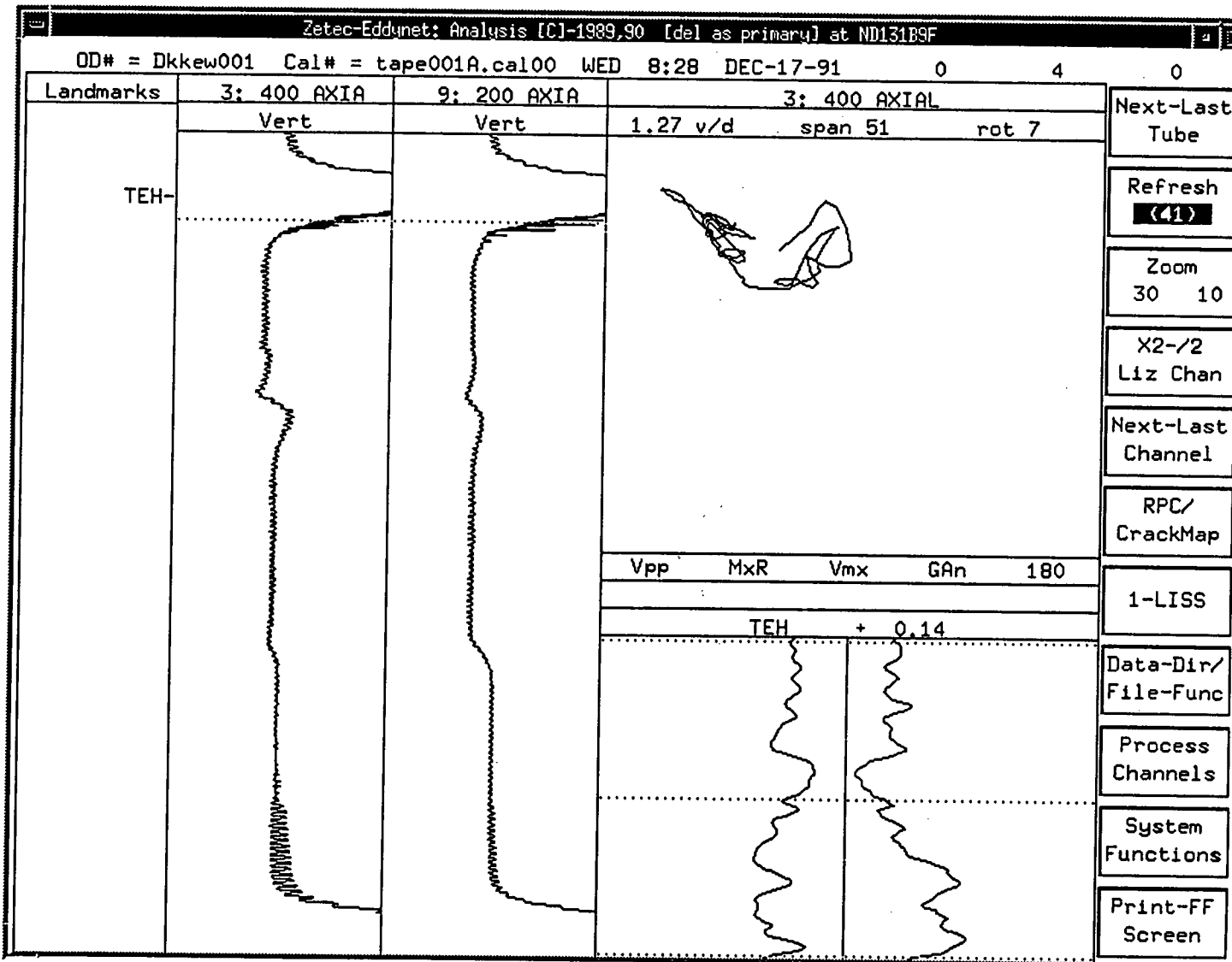
-0.49

0.49



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

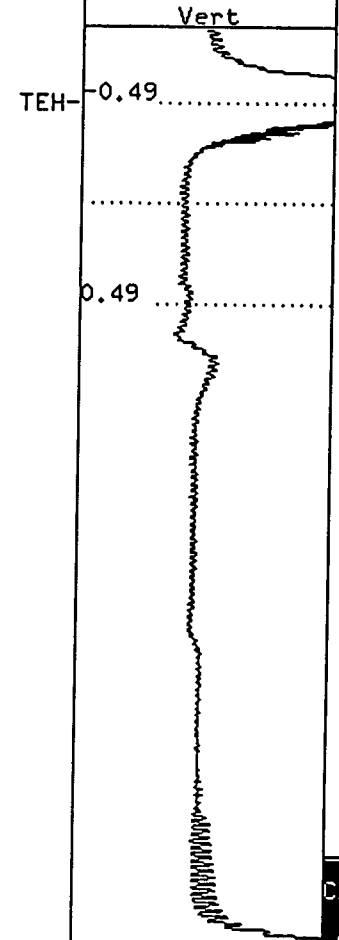
CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(41)	30 10	SPAN	SCRN	CRKMP



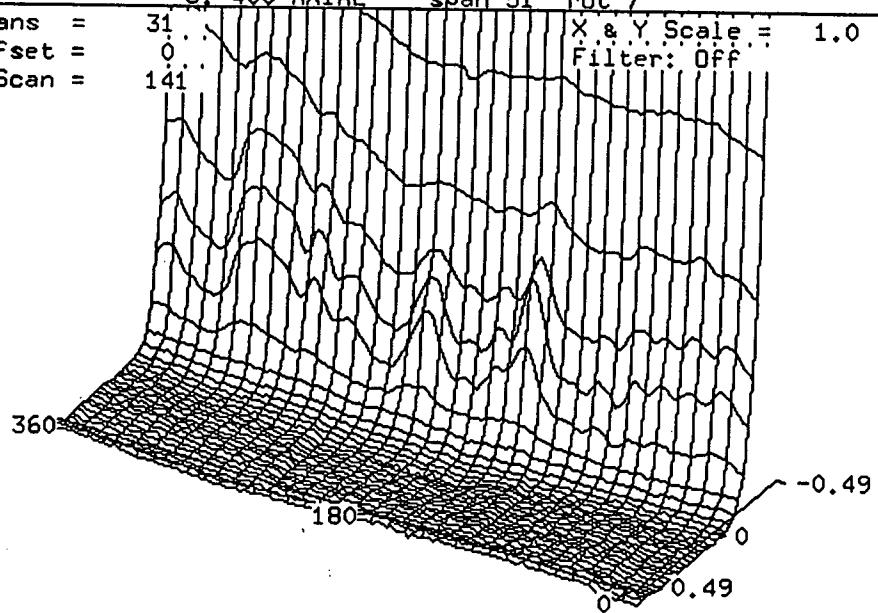
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:28 DEC-17-91 0 4 0

Lmrk 3: 400 AXIAL

3: 400 AXIAL span 51 rot 7



# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 141  
 X & Y Scale = 1.0  
 Filter: Off



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

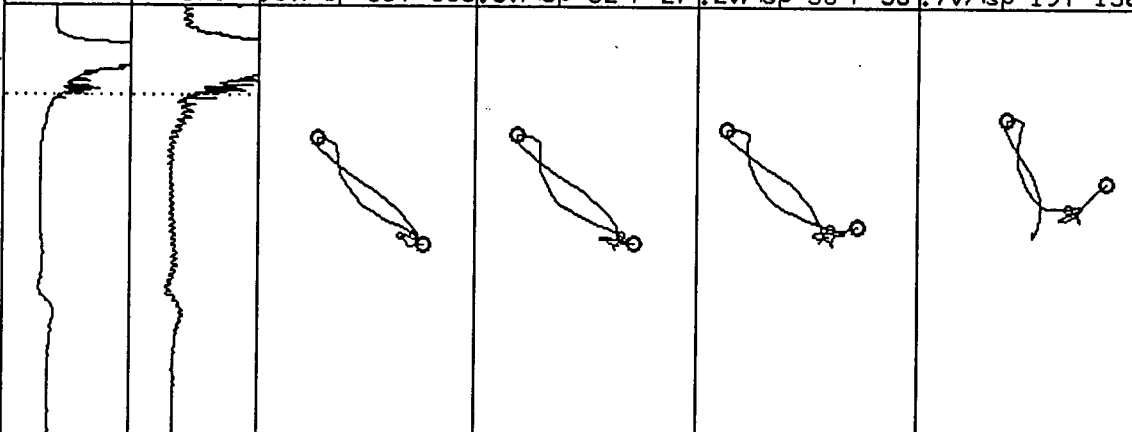
CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(41)	30 10	SPAN	SCRN	CRKMP



)# = Dkkew001 Cal# = tape001A.cal00 WED 8:29 DEC-17-91 0 5 (

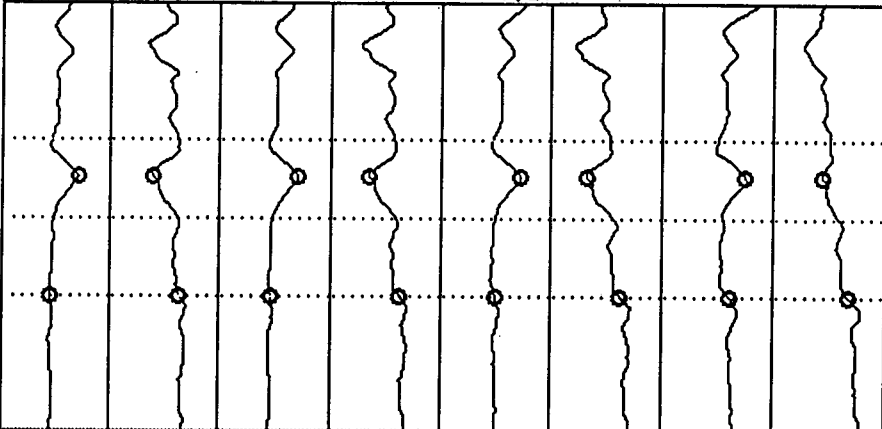
Lmrk : 400 PA: 200 PA 1: 400 PANCAKE 4: 300 PANCAKE 7: 200 PANCAKE 0: 100 PANCAKE  
 Vert Vert .8v/isp 53r 333 .8v/isp 52 r 27 .2v/isp 36 r 58 .7v/isp 19r 156

TEH-



$\frac{V_{pp}}{V_{avg}} \times R_{VmxGAN180}$   $\frac{V_{pp}}{V_{avg}} \times R_{VmxGAN180}$   $\frac{V_{pp}}{V_{avg}} \times R_{VmxGAN180}$   $\frac{V_{pp}}{V_{avg}} \times R_{VmxGAN180}$   
 6.32v 43d 90% 6.41v 42d 4.62v 35d 88% 1.82v 32d

TEH + 0.17



Next-Last Tube

Refresh (41)

Zoom 30 10

X2-/2 Liz Chan

Next-Last Channel

RPC/CraoMap

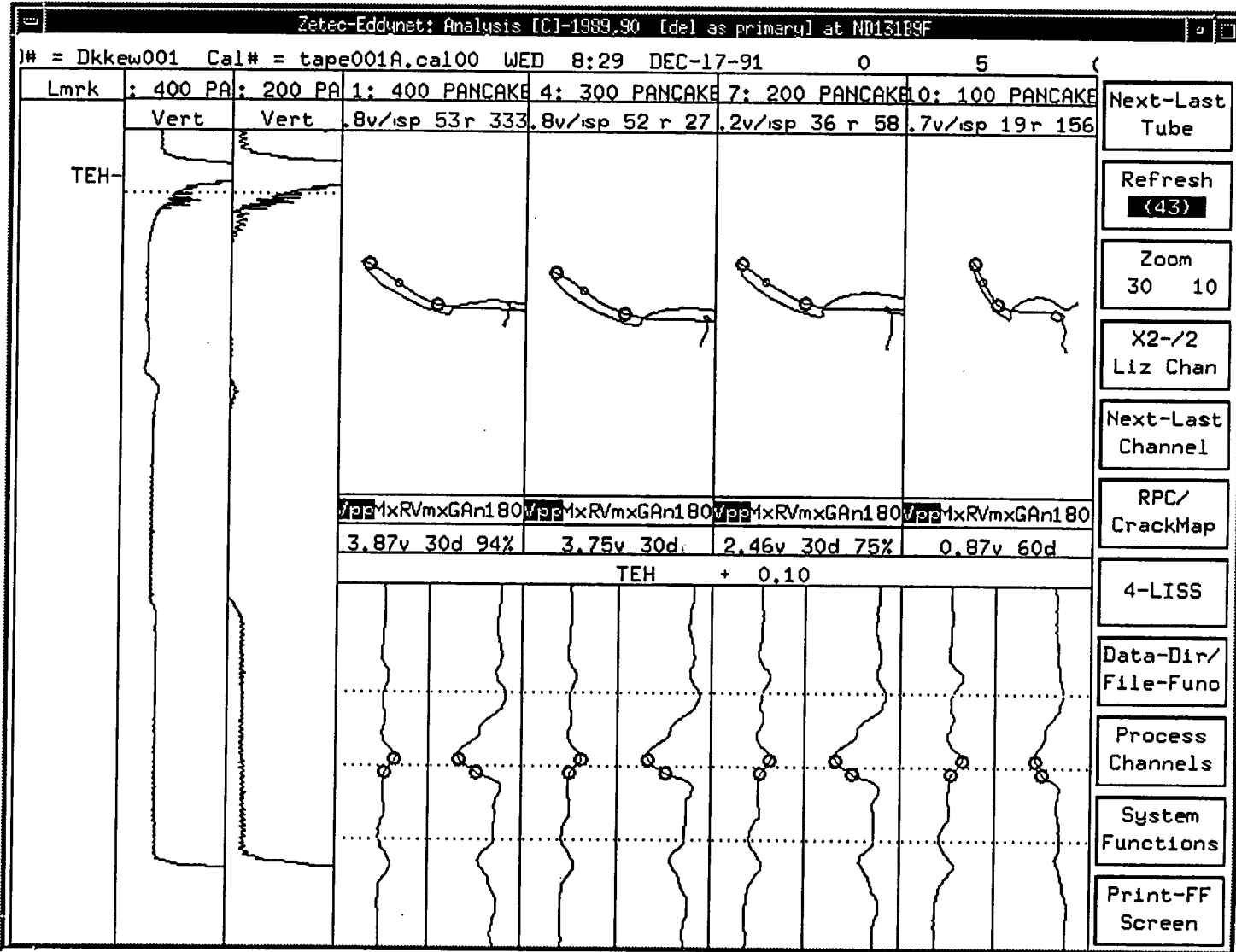
4-LISS

Data-Dir/ File-Func

Process Channels

System Functions

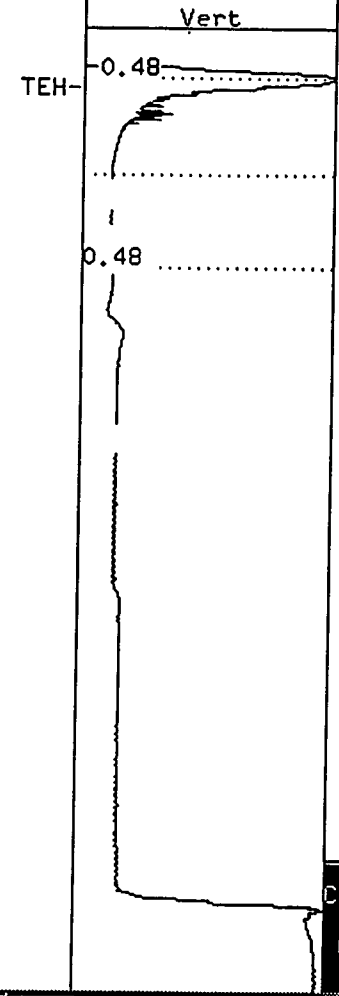
Print-FF Screen



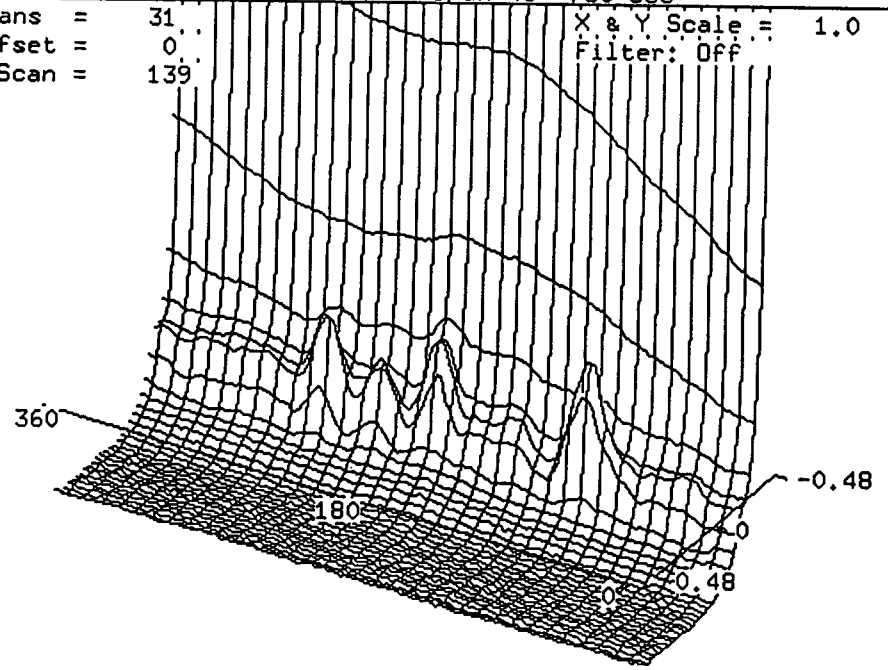
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:29 DEC-17-91 0 5 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333



# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 139  
 X & Y Scale = 1.0  
 Filter: Off

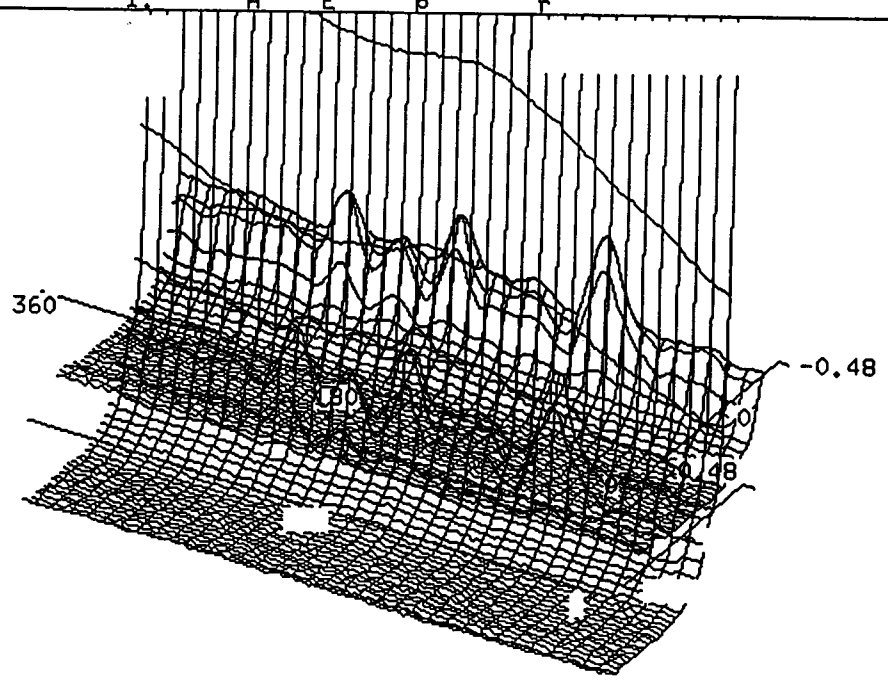
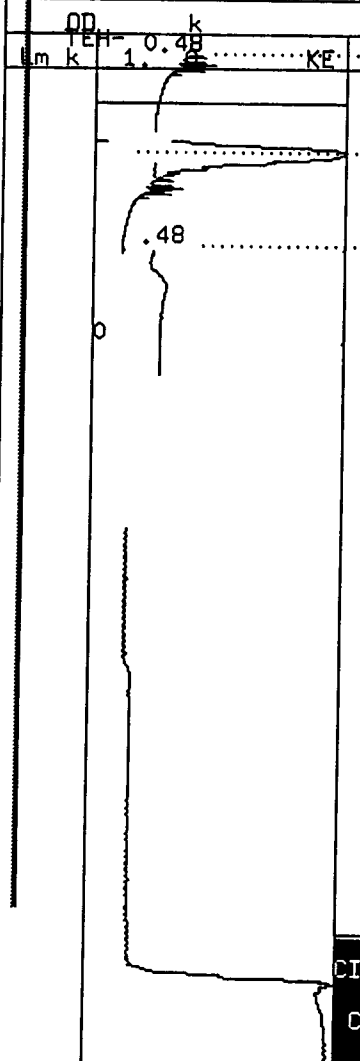


X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(43)	30 10	SPAN	SCRN	CRKMP

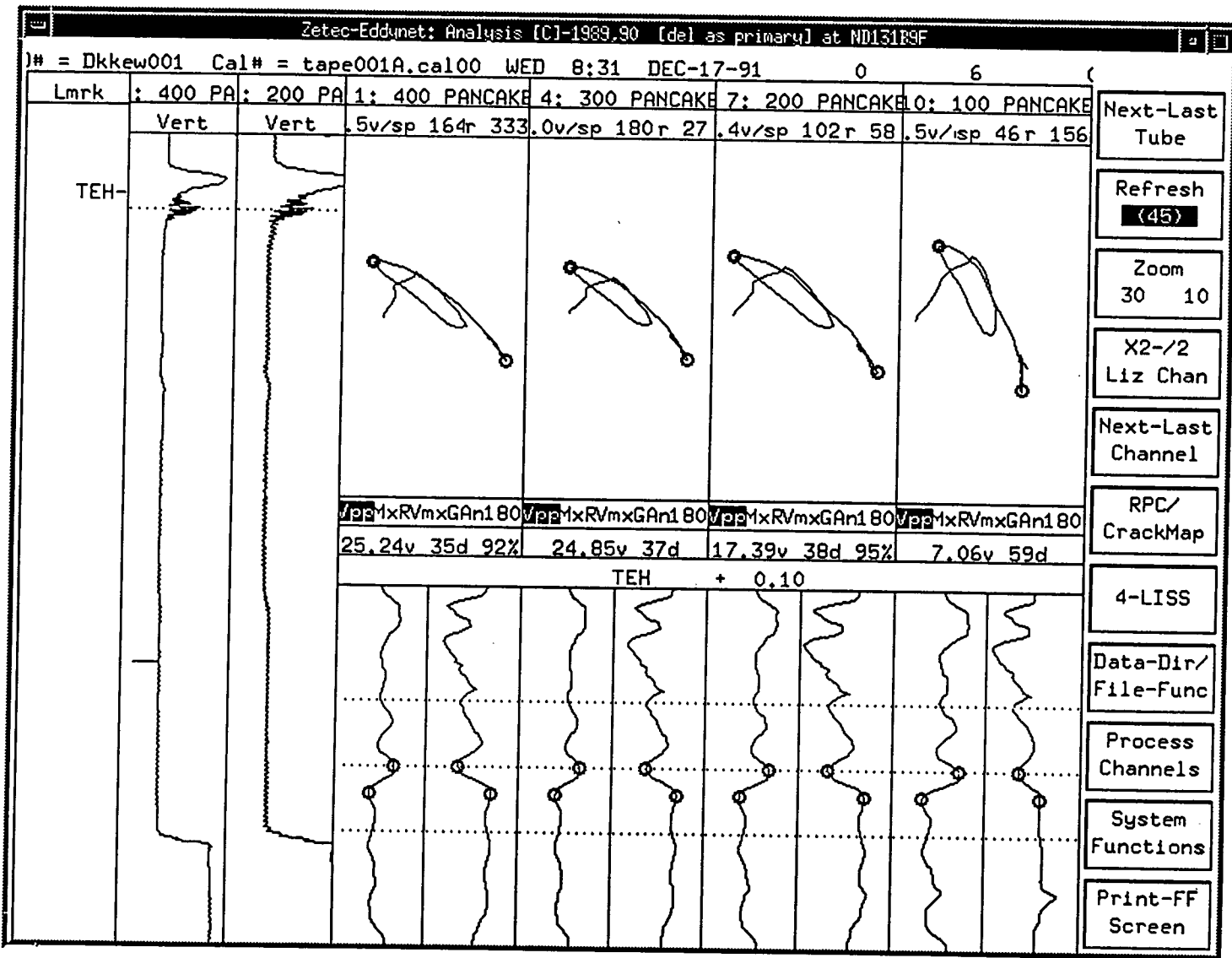
Zetec-Eddynet: Analysis [C]-1989.90 [del as primary] at ND131B9F

OD# = D kew0 al# = ta e ca 00 WED 8. D - - 0  
L r . 4 0 PANCA 1. 4 0 N E s a 46 rot 3  
Vert # of Scans = 31 X & Y Scale = 1.0  
Trig Offset = 0 Filter: Off  
Points/Scan = 0 140 .29 EC 7 9



X Rotation = 60.0 X Translation = 0  
Z Rotation = 330.0 Y Translation = 0

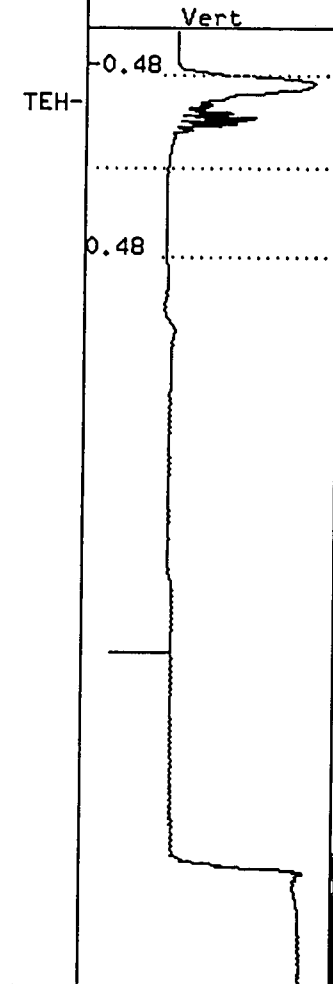
CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(43)	30 10	SPAN	SCRN	CRKMP



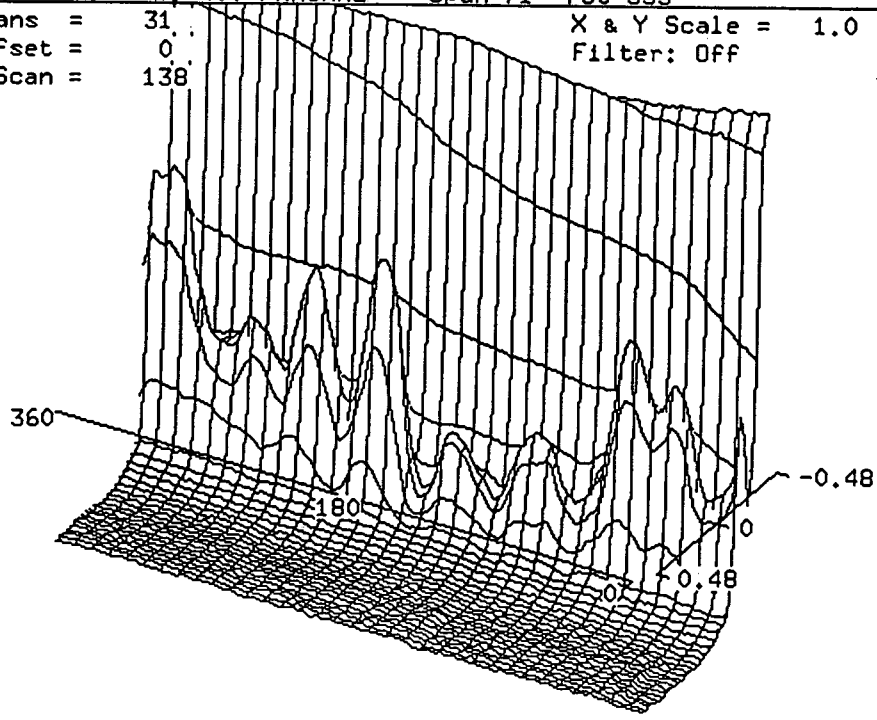
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:31 DEC-17-91 0 6 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 71 rot 333



# of Scans = 31 X & Y Scale = 1.0  
 Trig Offset = 0 Filter: Off  
 Points/Scan = 138



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(44)	30 10	SPAN	SCRN	CRKMP

OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:31 DEC-17-91 0 6 0

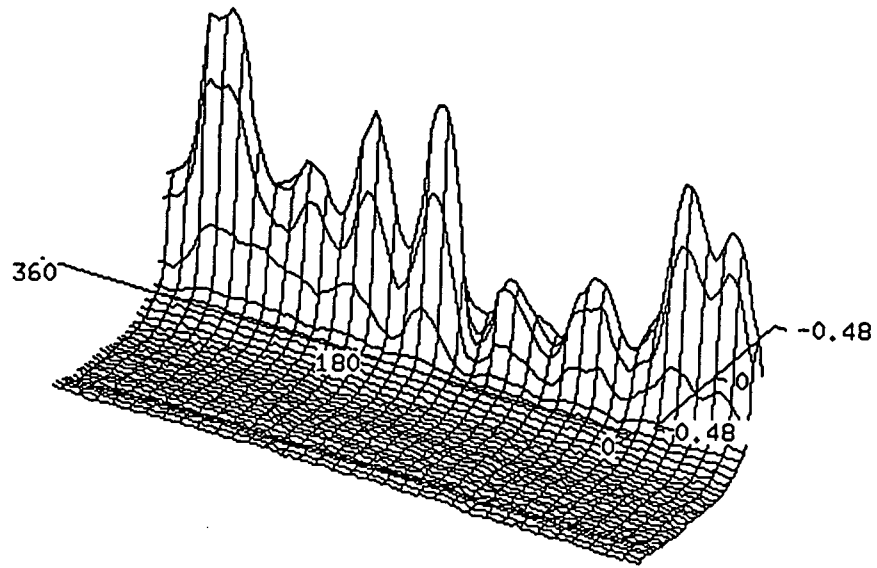
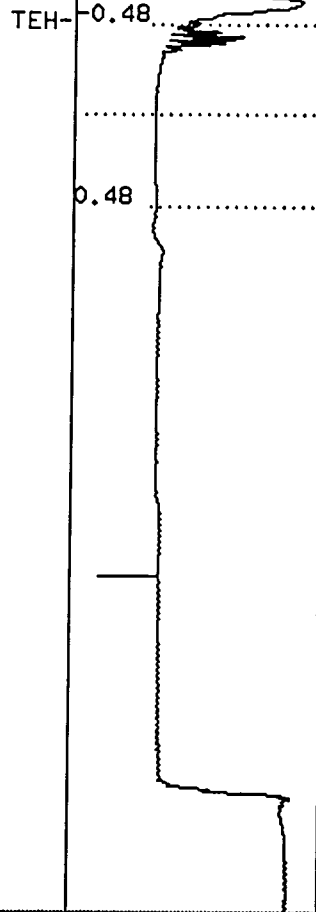
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 71 rot 333

Vert

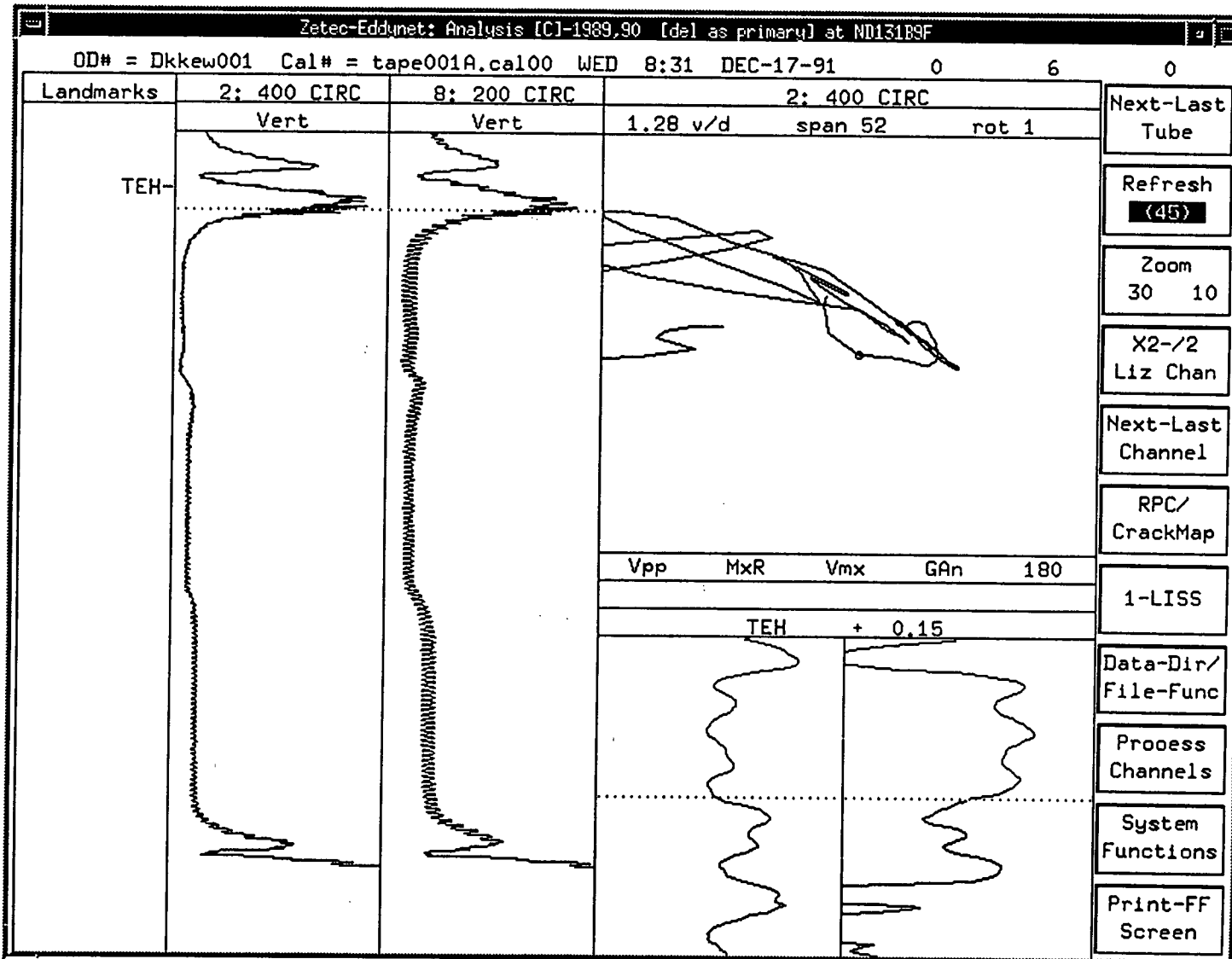
# of Scans = 31  
 Trig Offset = 9  
 Points/Scan = 139

X & Y Soale = 1.0  
 Filter: Off

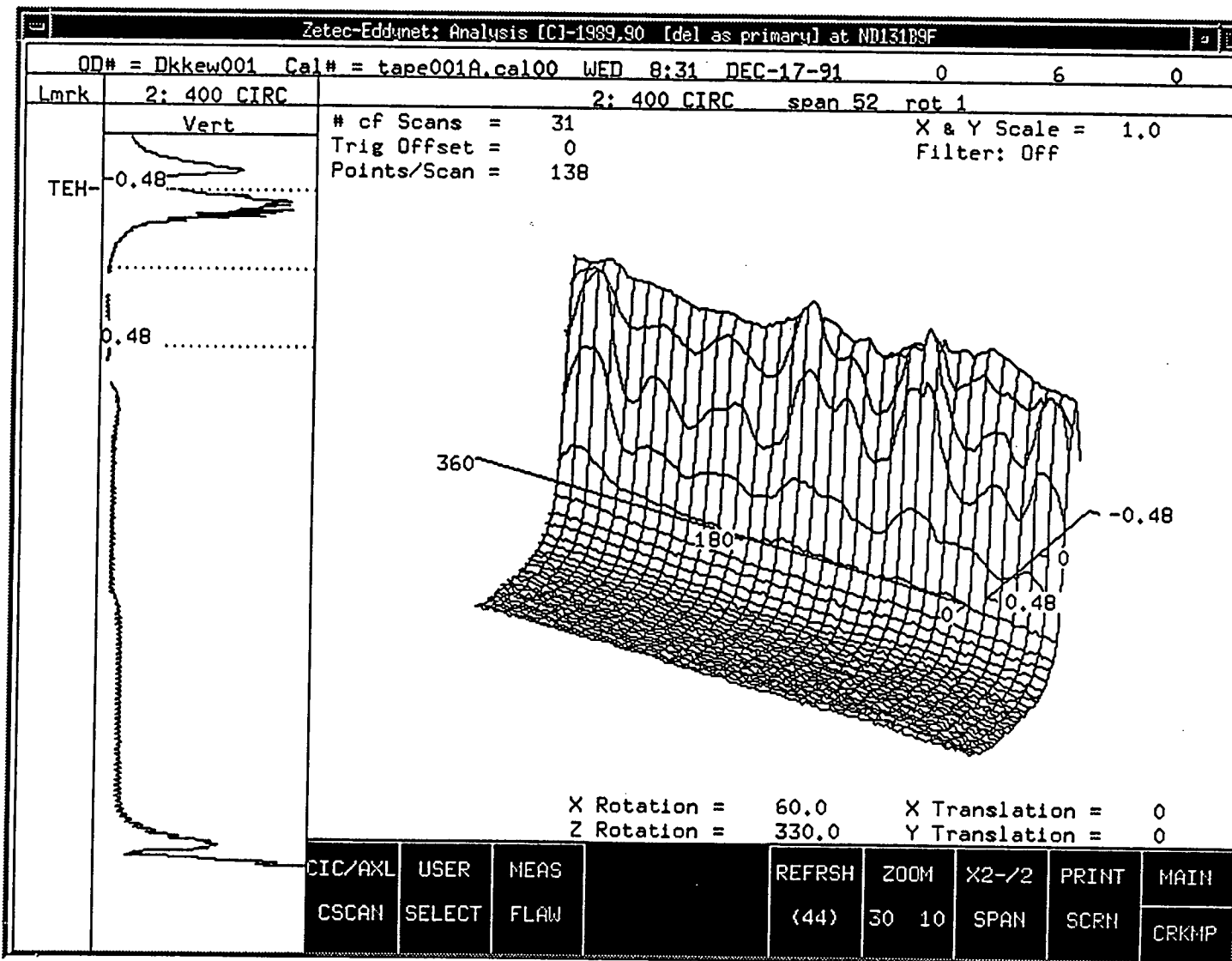


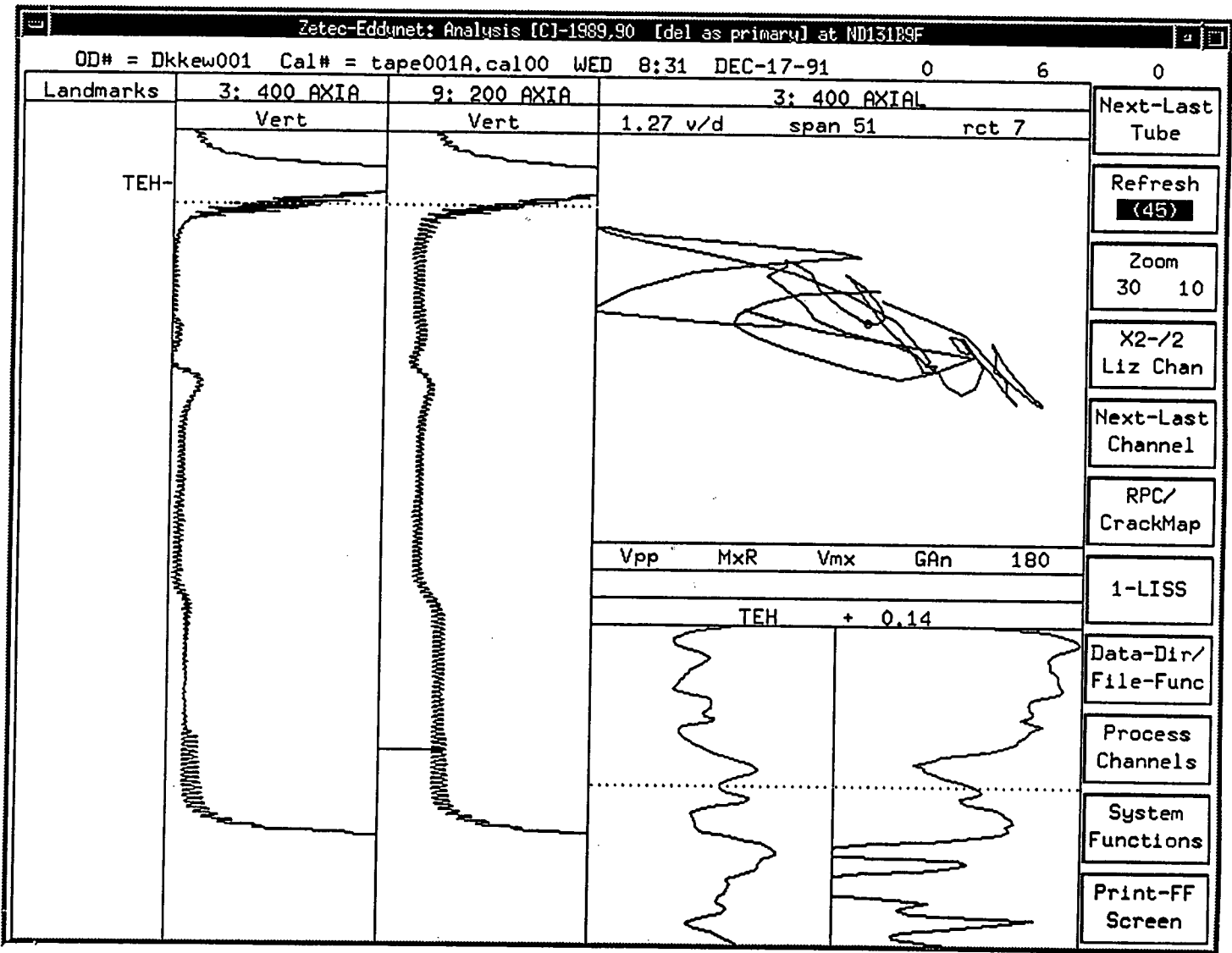
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(44)	30 10	SPAN	SCRN	CRKMP





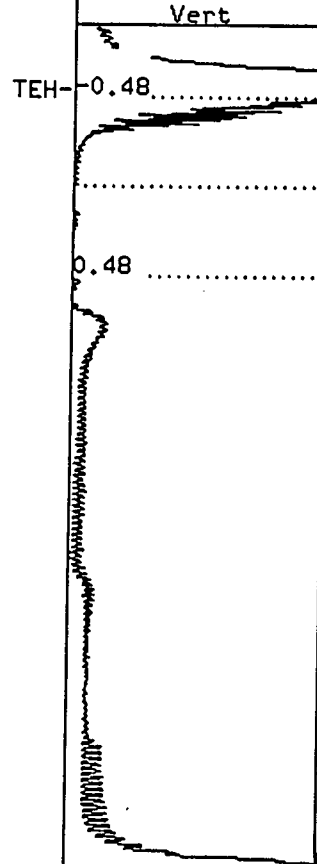




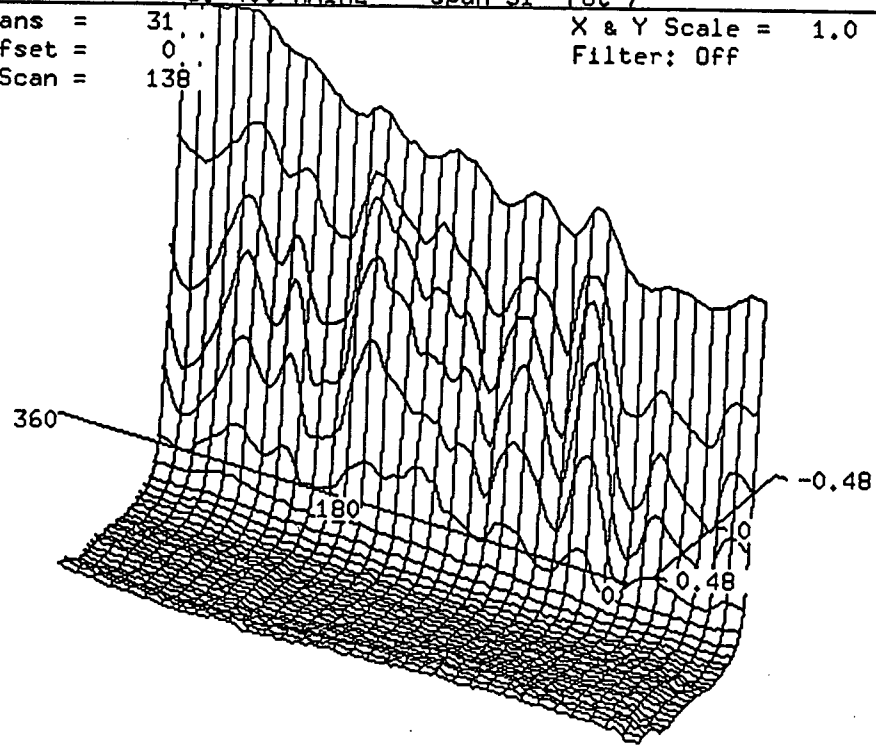
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:31 DEC-17-91 0 6 0

Lmrk 3: 400 AXIAL

3: 400 AXIAL span 51 rot 7

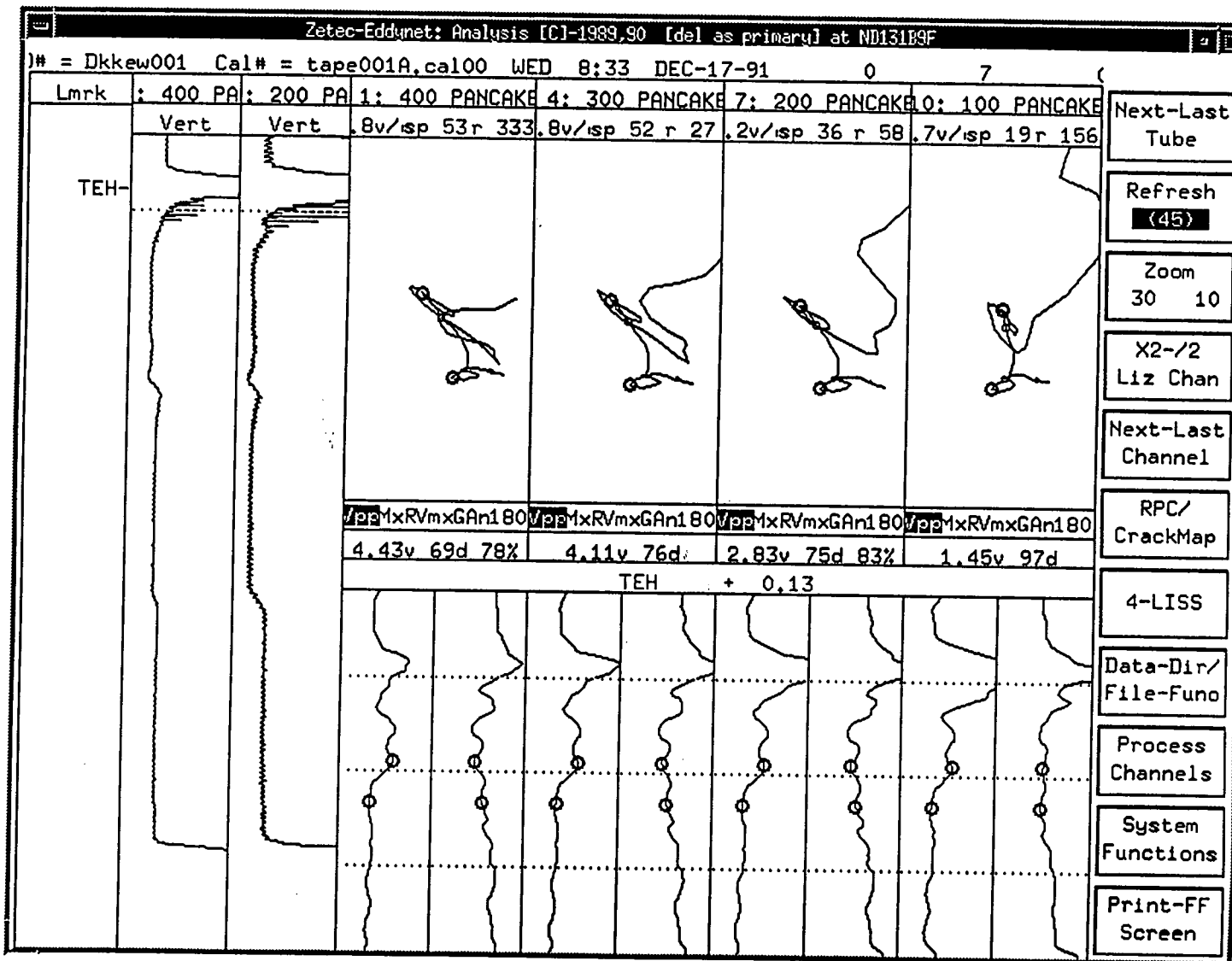


# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 138  
 X & Y Scale = 1.0  
 Filter: Off

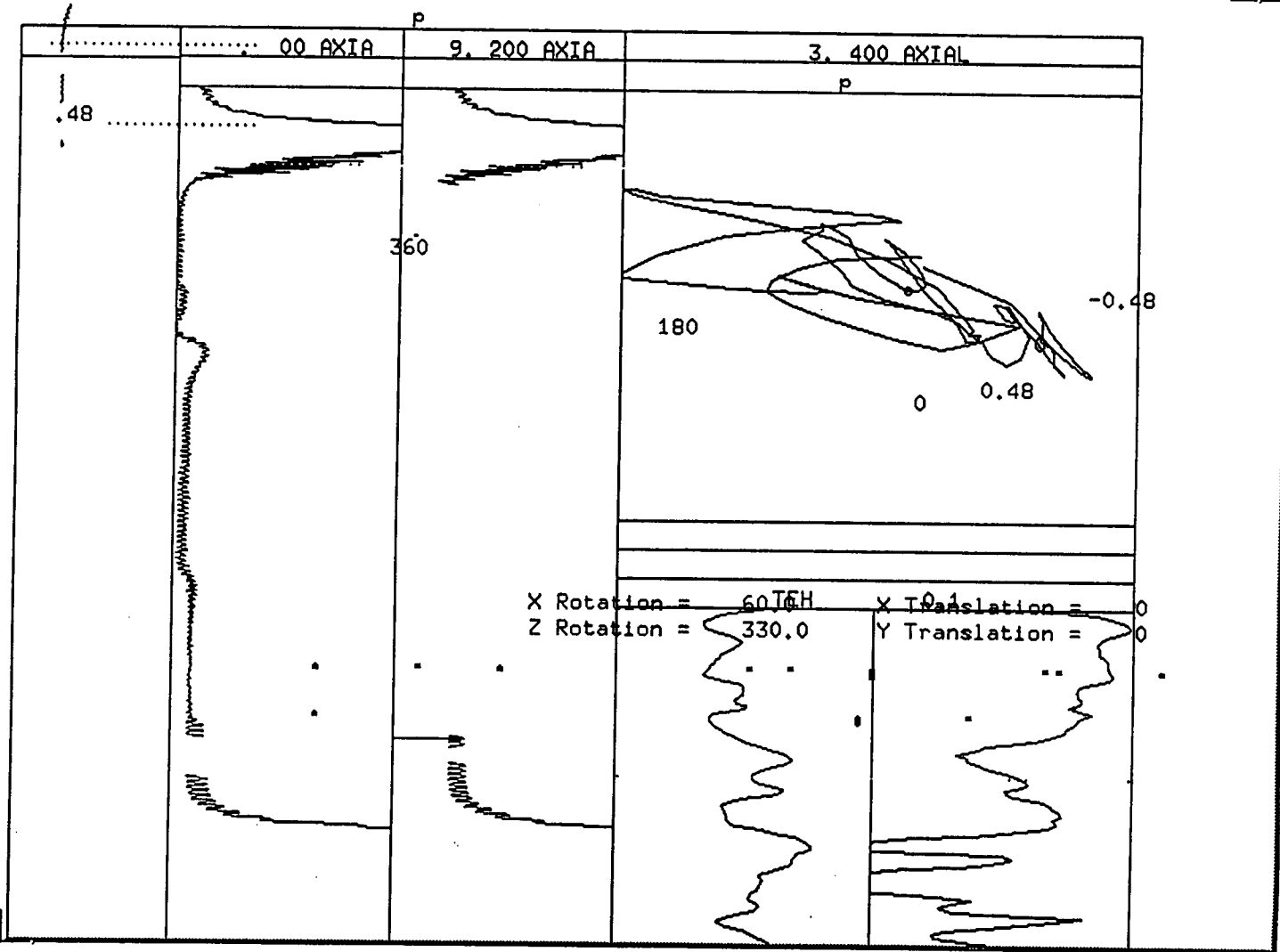


X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(44)	30 10	SPAN	SCRN	CRKMP



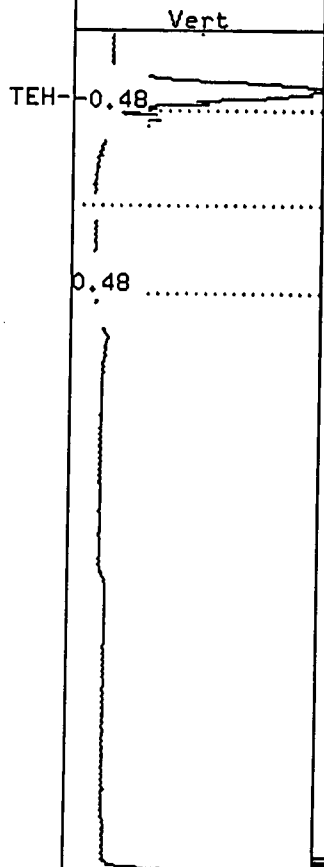
O # = ew      # = a e 0 ca    W D 8\*    - -  
           4                                    40    NCA            4    o  
           e            # of Scans = 31                                    X & Y Scale = 1.0  
                           Trig Offset = 9                                    Filter: OFF  
                           Points/Scan = 140  
 TEH- 0.48



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:33 DEC-17-91 0 7 0

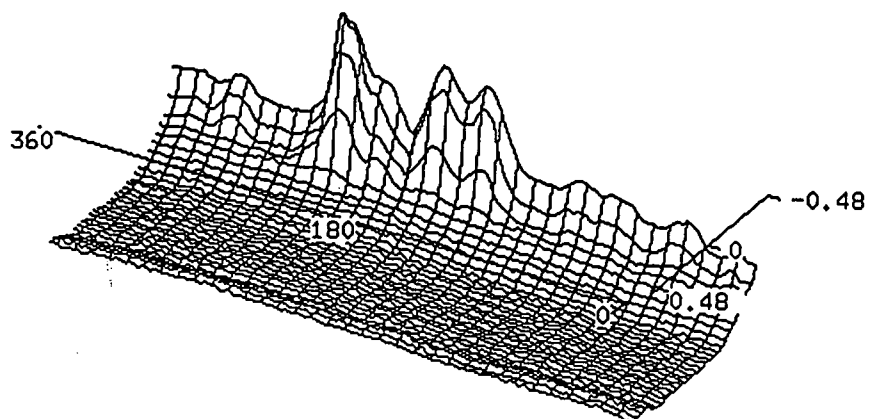
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333



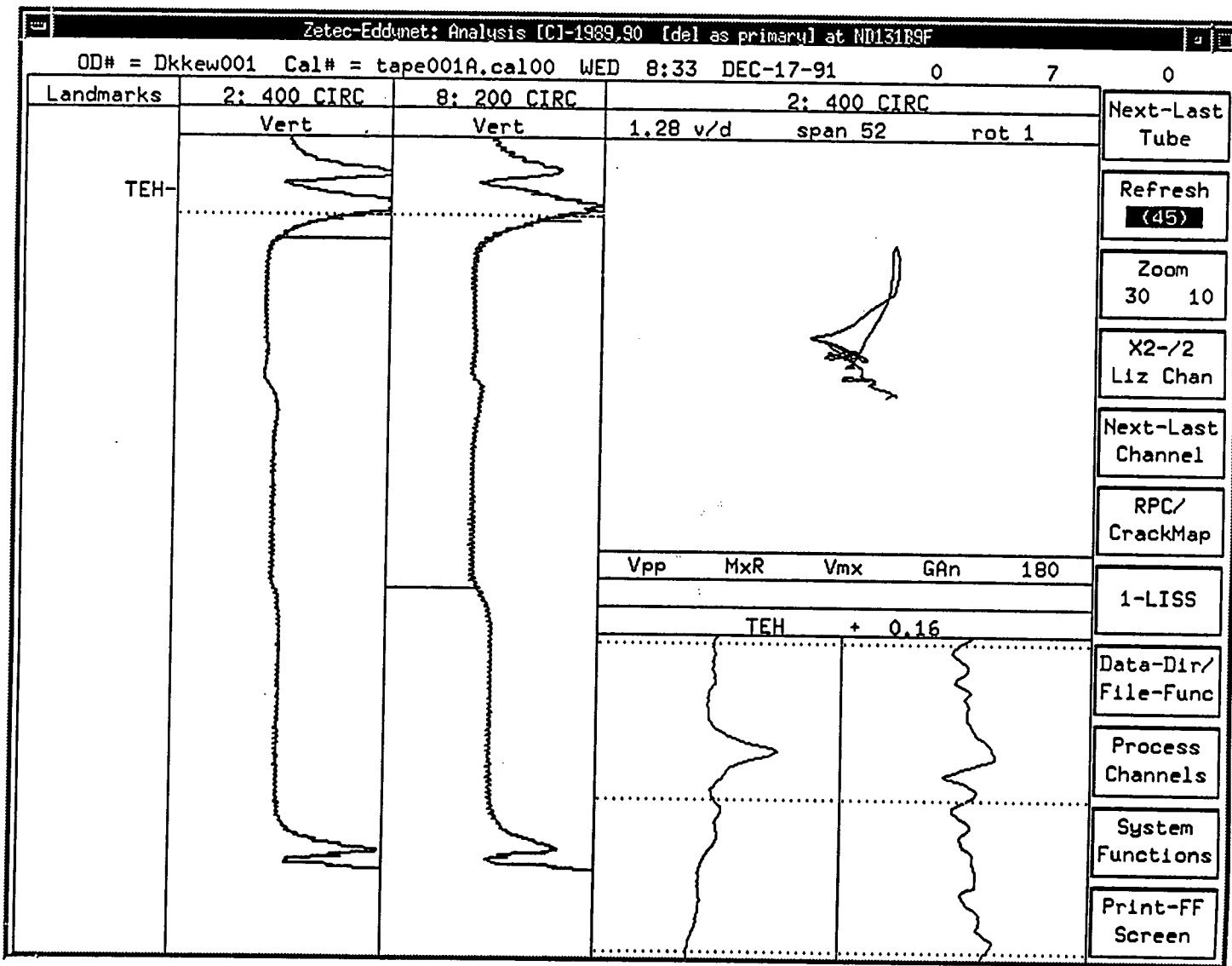
# of Scans = 31  
 Trig Offset = 9  
 Points/Scan = 139

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

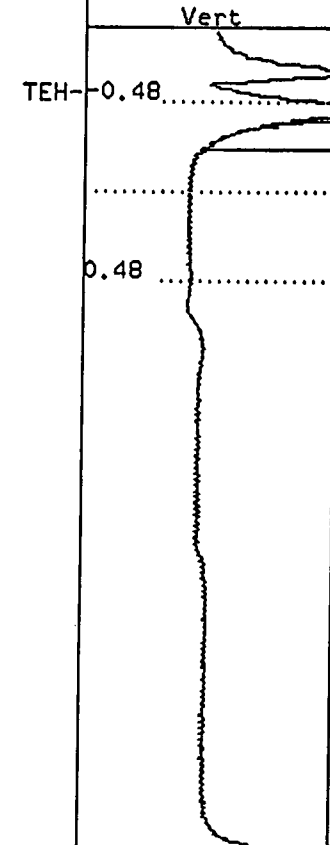
CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(45)	30 10	SPAN	SCRN	CRKMP



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:33 DEC-17-91 0 7 0

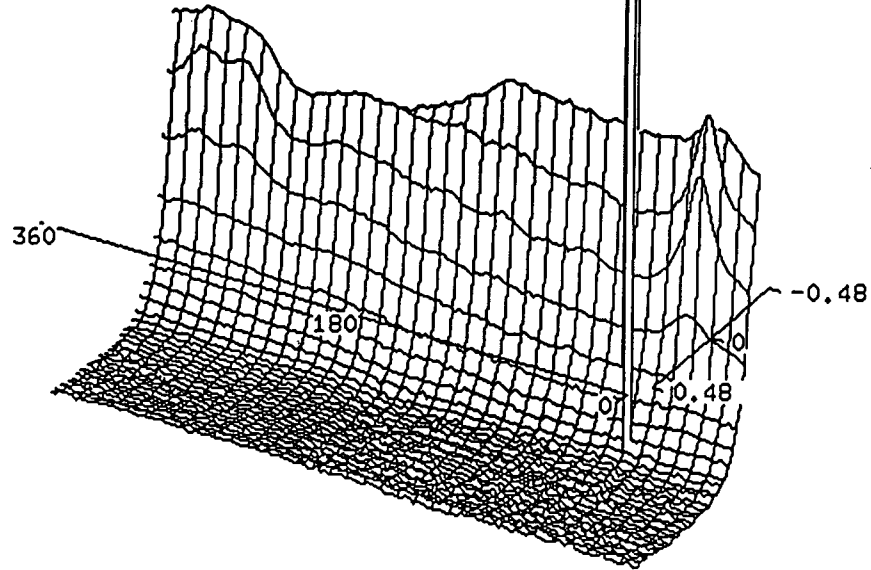
Lmrk 2: 400 CIRC

2: 400 CIRC span 52 rot 1



# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 139

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

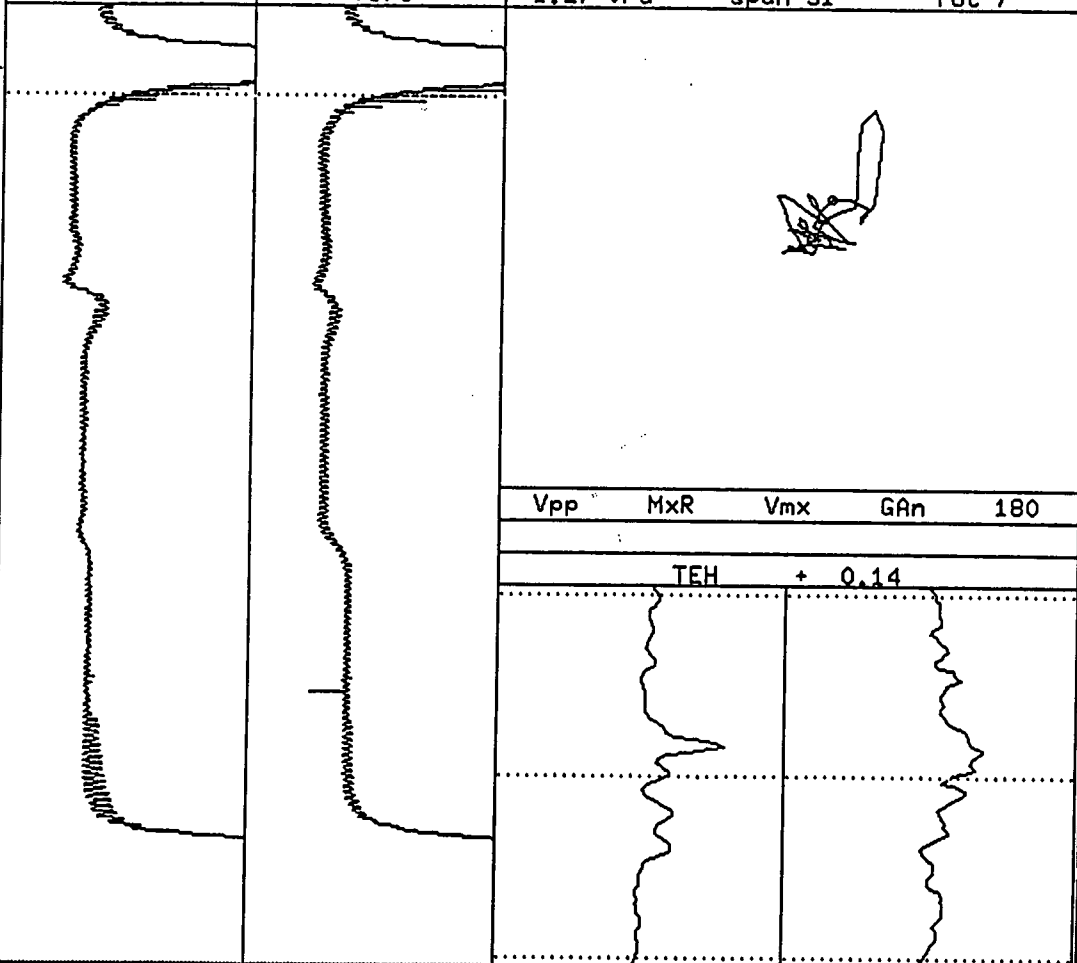
CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(45)	30 10	SPAN	SCRN	CRKMP



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:33 DEC-17-91 0 7 0

Landmarks	3: 400 AXIA	9: 200 AXIA	3: 400 AXIAL		
	Vert	Vert	1.27 v/d	span 51	rot 7

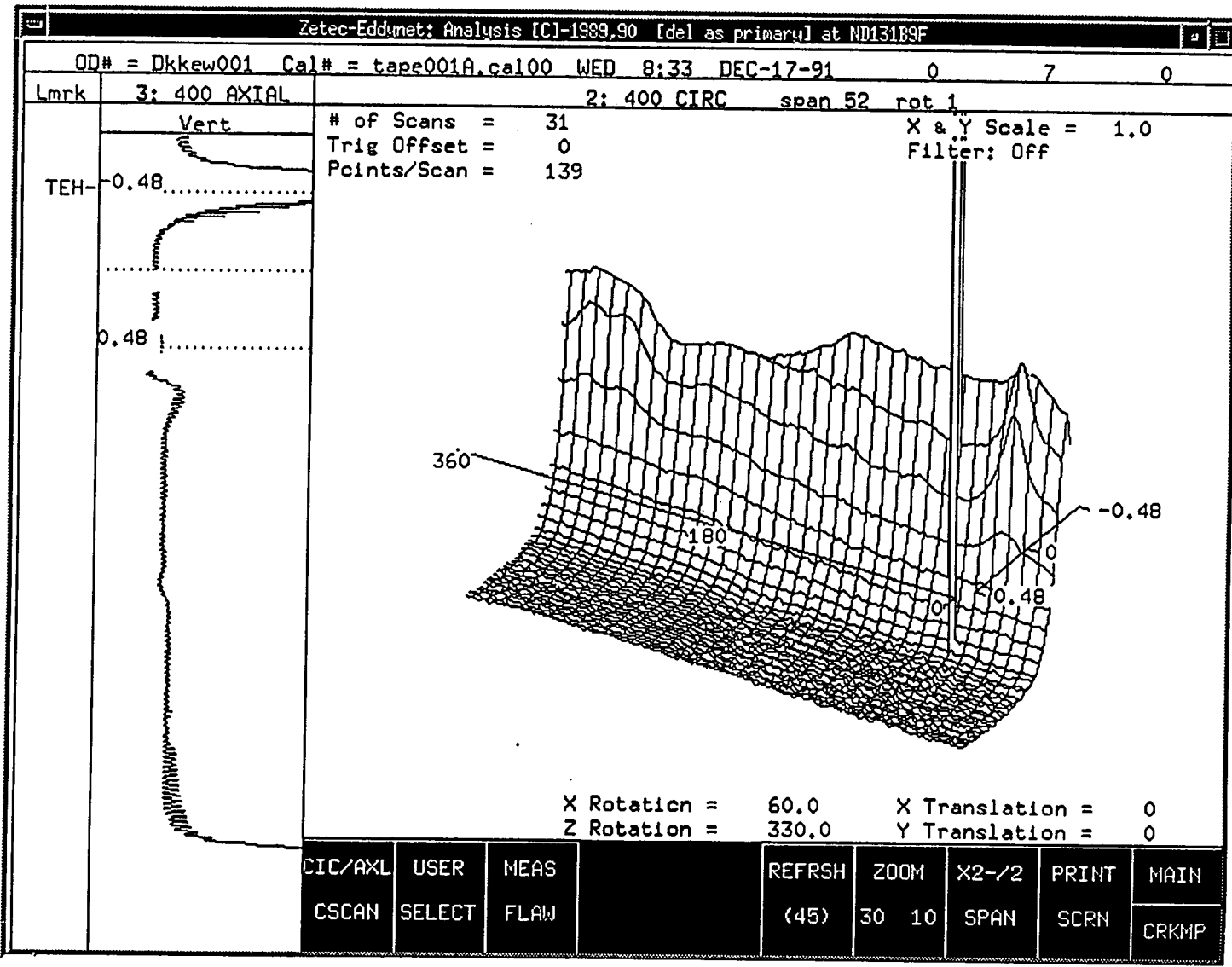
TEH-

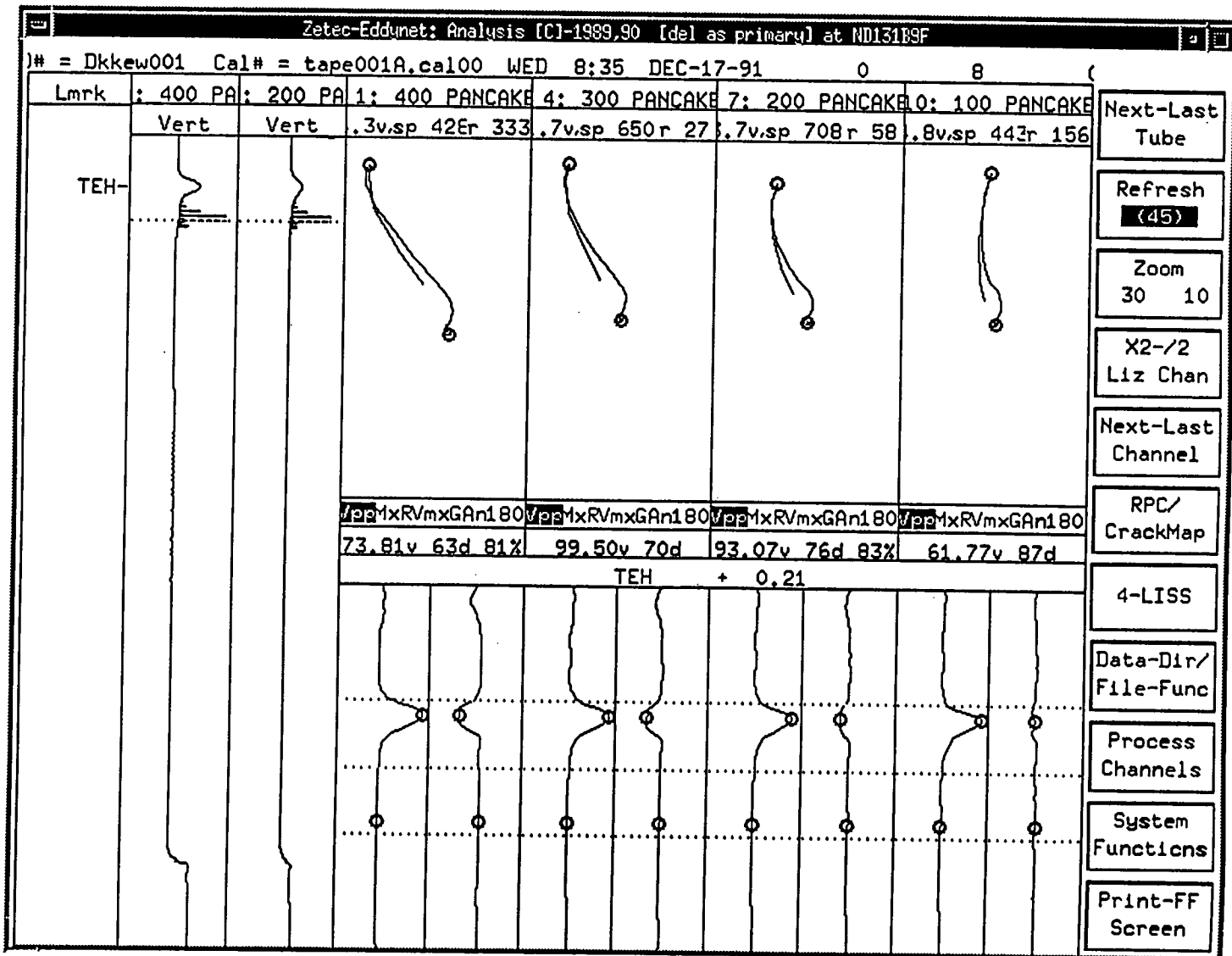


- Next-Last Tube
- Refresh (45)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

Vpp MxR Vmx GAn 180

TEH + 0.14

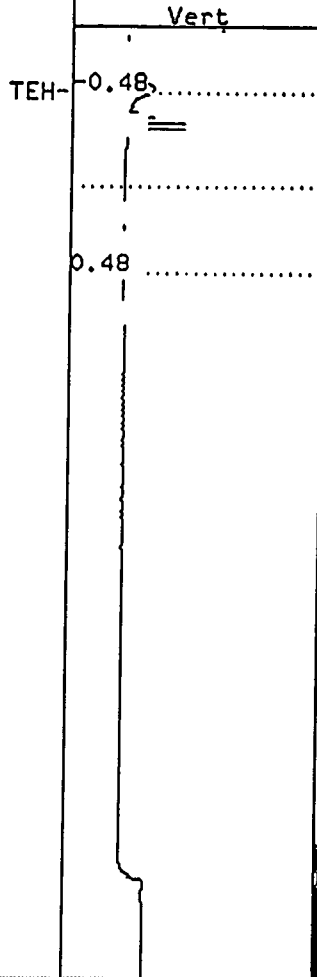




OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:35 DEC-17-91 0 8 0

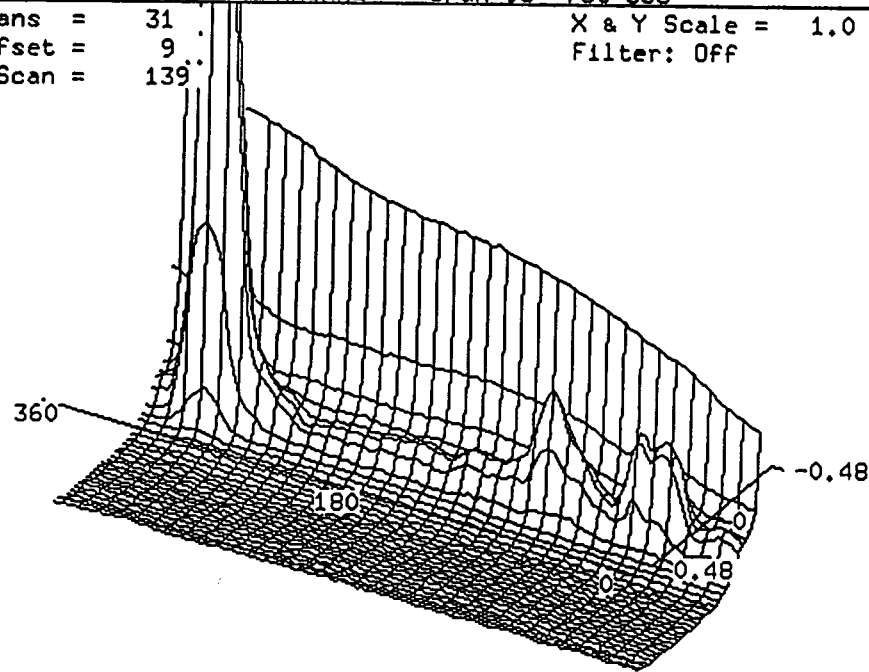
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 93 rot 333



# of Scans = 31  
 Trig Offset = 9  
 Points/Scan = 139

X & Y Scale = 1.0  
 Filter: Off

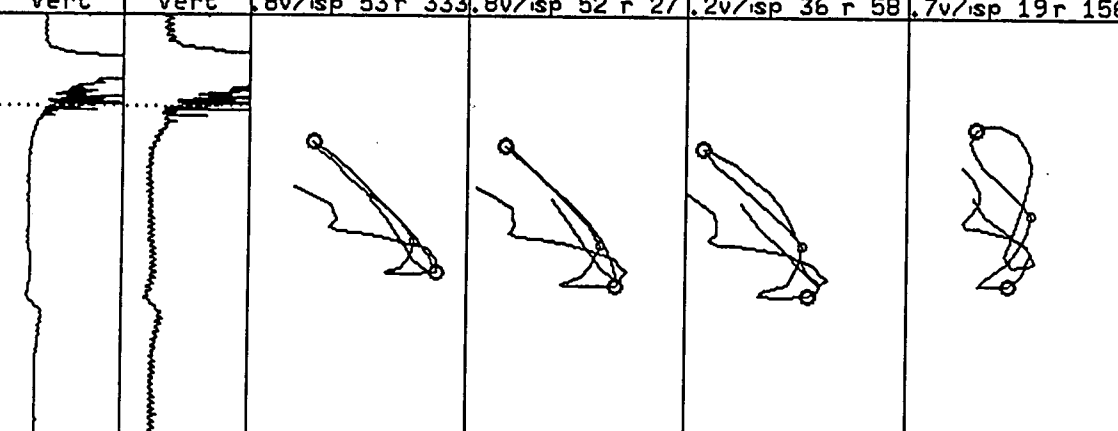


X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(44)	30 10	SPAN	SCRN	CRKMP

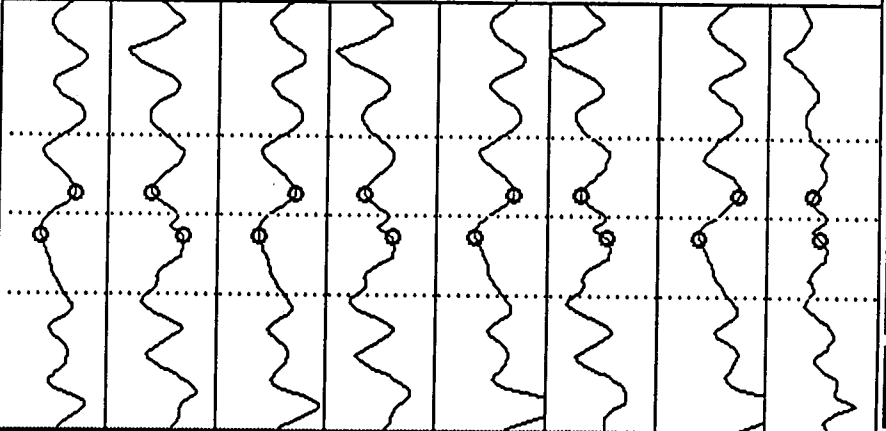
)# = Dkkew001 Cal# = tape001A.cal00 WED 8:36 DEC-17-91 0 9  
 Lmrk : 400 PA: 200 PA: 1: 400 PANCAKE 4: 300 PANCAKE 7: 200 PANCAKE 0: 100 PANCAKE  
 Vert Vert .8v/isp 53r 333.8v/isp 52 r 27 .2v/isp 36 r 58 .7v/isp 19r 156

TEH-



VppMxRVmxGAn180 VppMxRVmxGAn180 VppMxRVmxGAn180 VppMxRVmxGAn180  
 7.51v 46d 88% 7.29v 51d 5.15v 54d 94% 2.47v 78d

TEH + 0.19

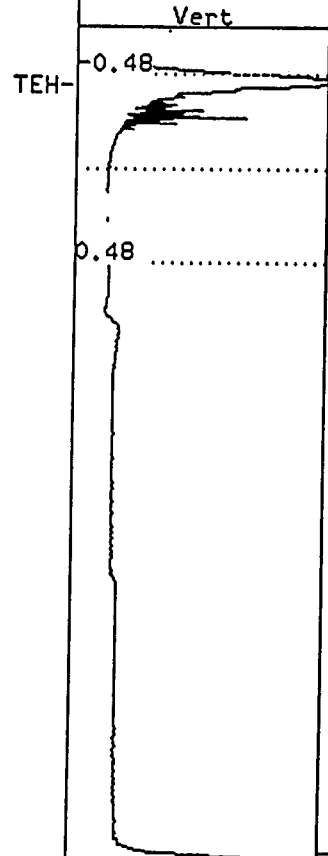


- Next-Last Tube
- Refresh (45)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

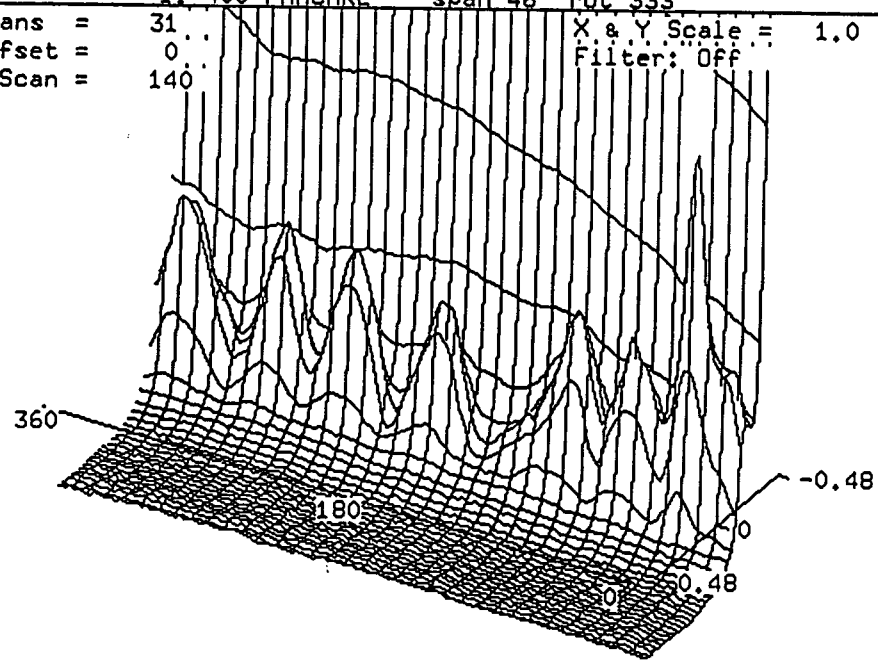
OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:36 DEC-17-91 0 9 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333

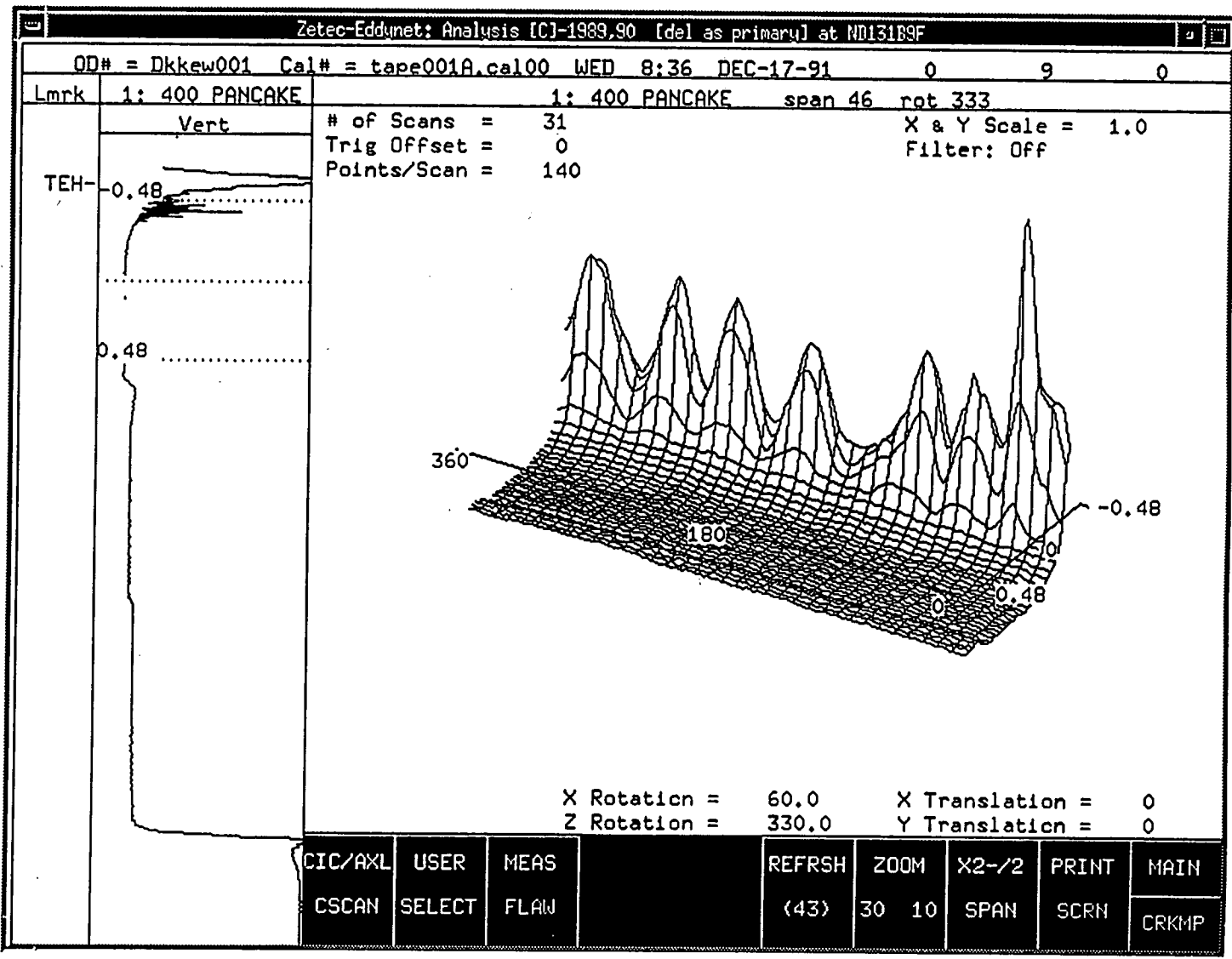


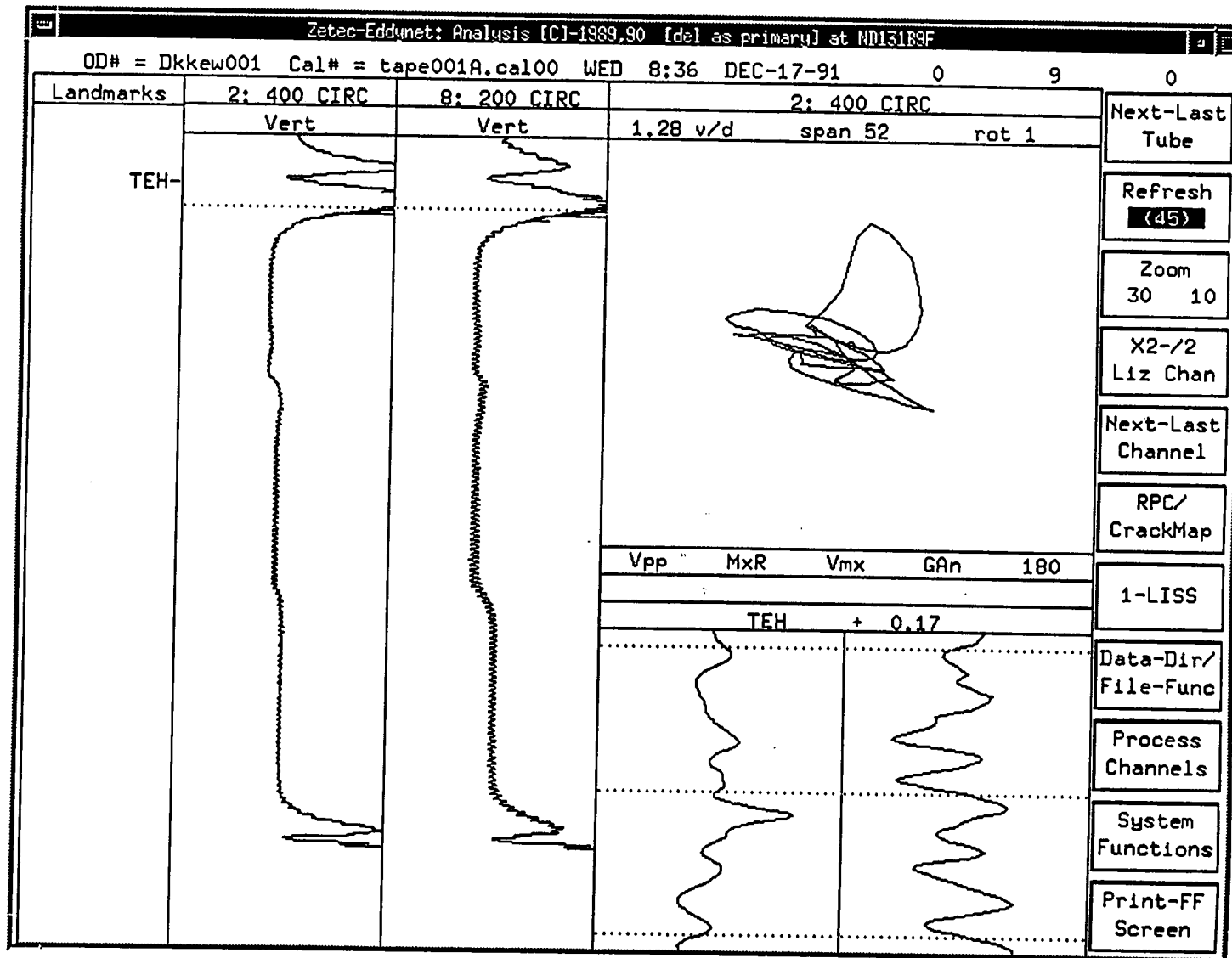
# of Scans = 31  
Trig Offset = 0  
Points/Scan = 140  
X & Y Scale = 1.0  
Filter: Off



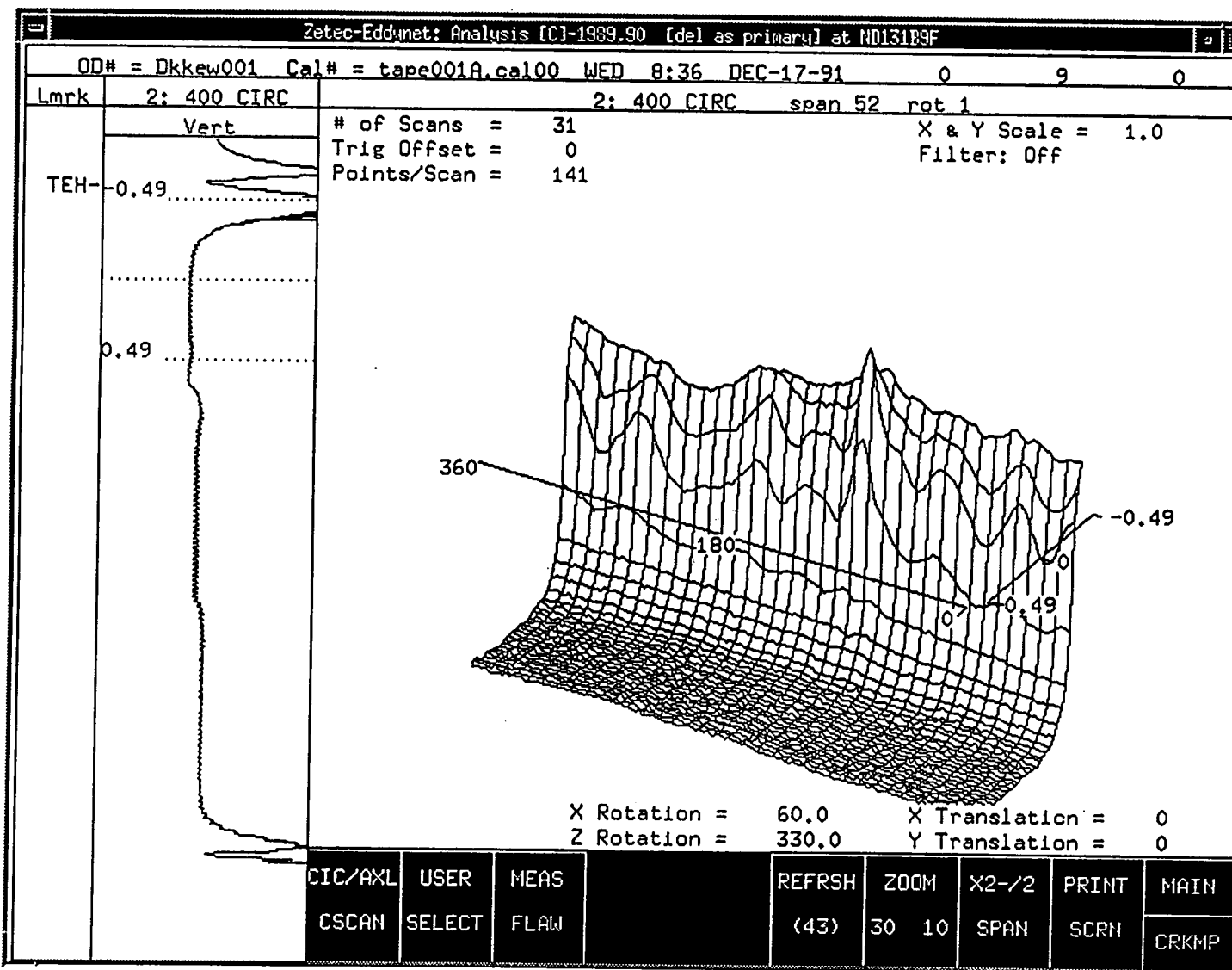
X Rotation = 60.0 X Translation = 0  
Z Rotation = 330.0 Y Translation = 0

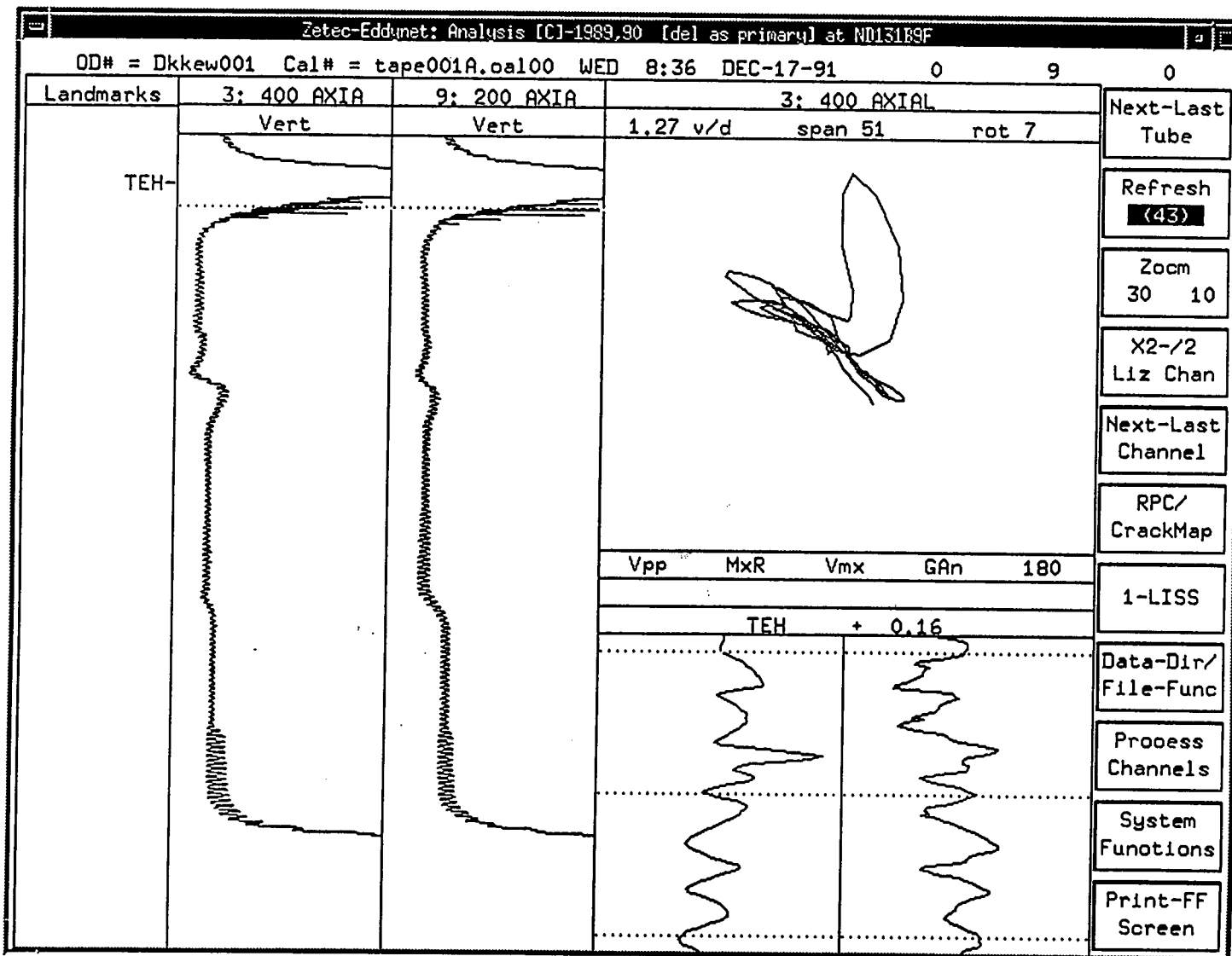
CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(43)	30 10	SPAN	SCRN	DRKMP

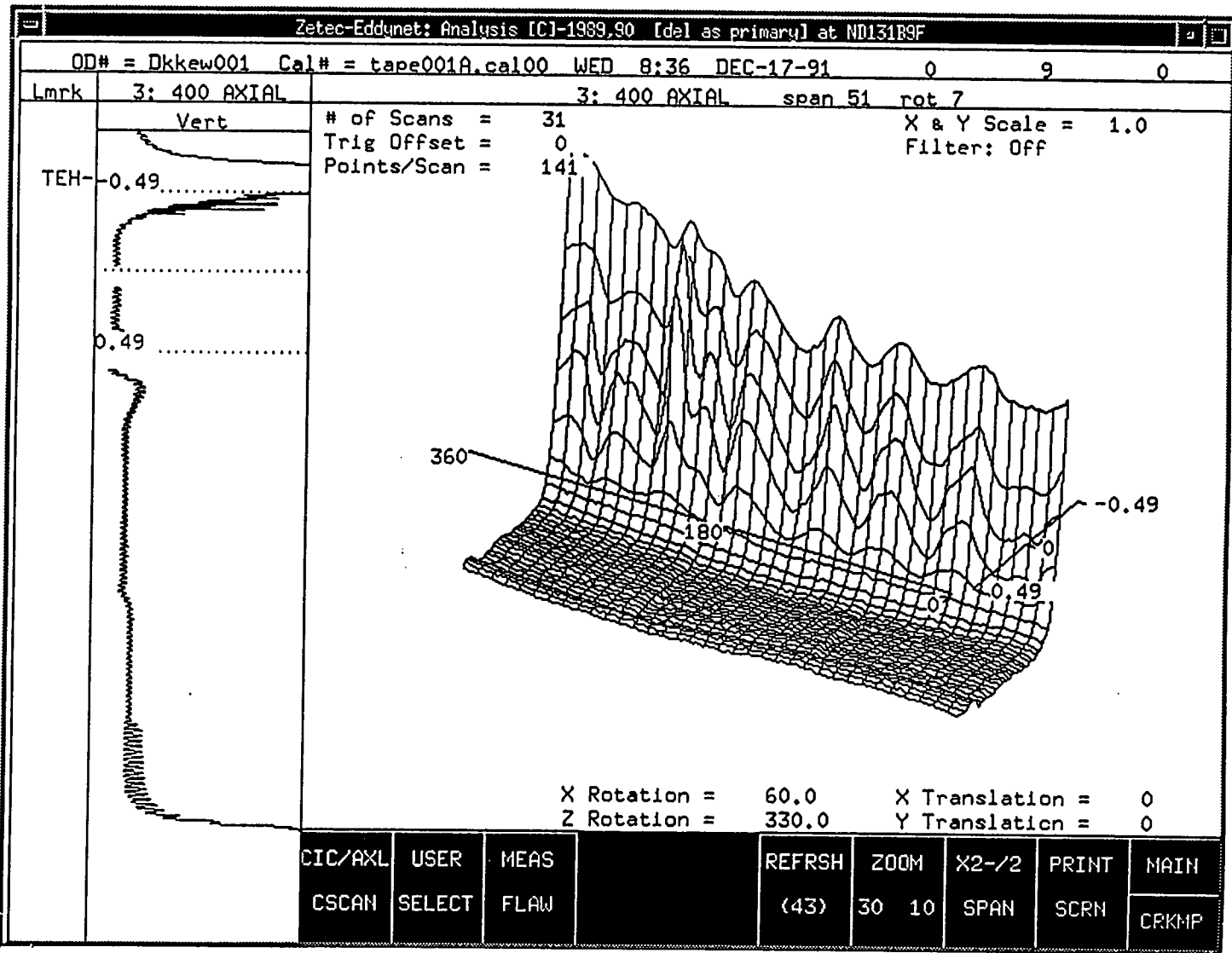


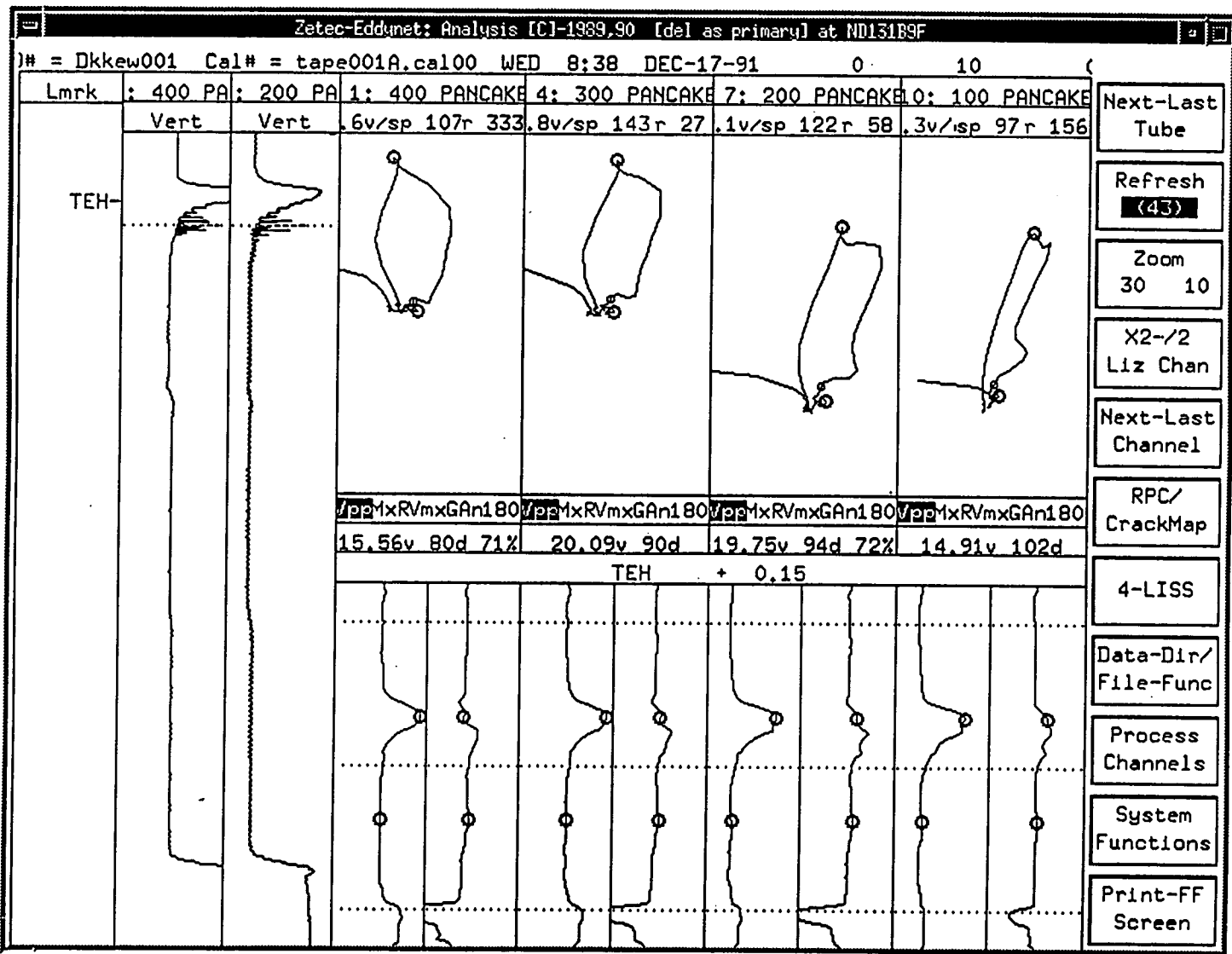




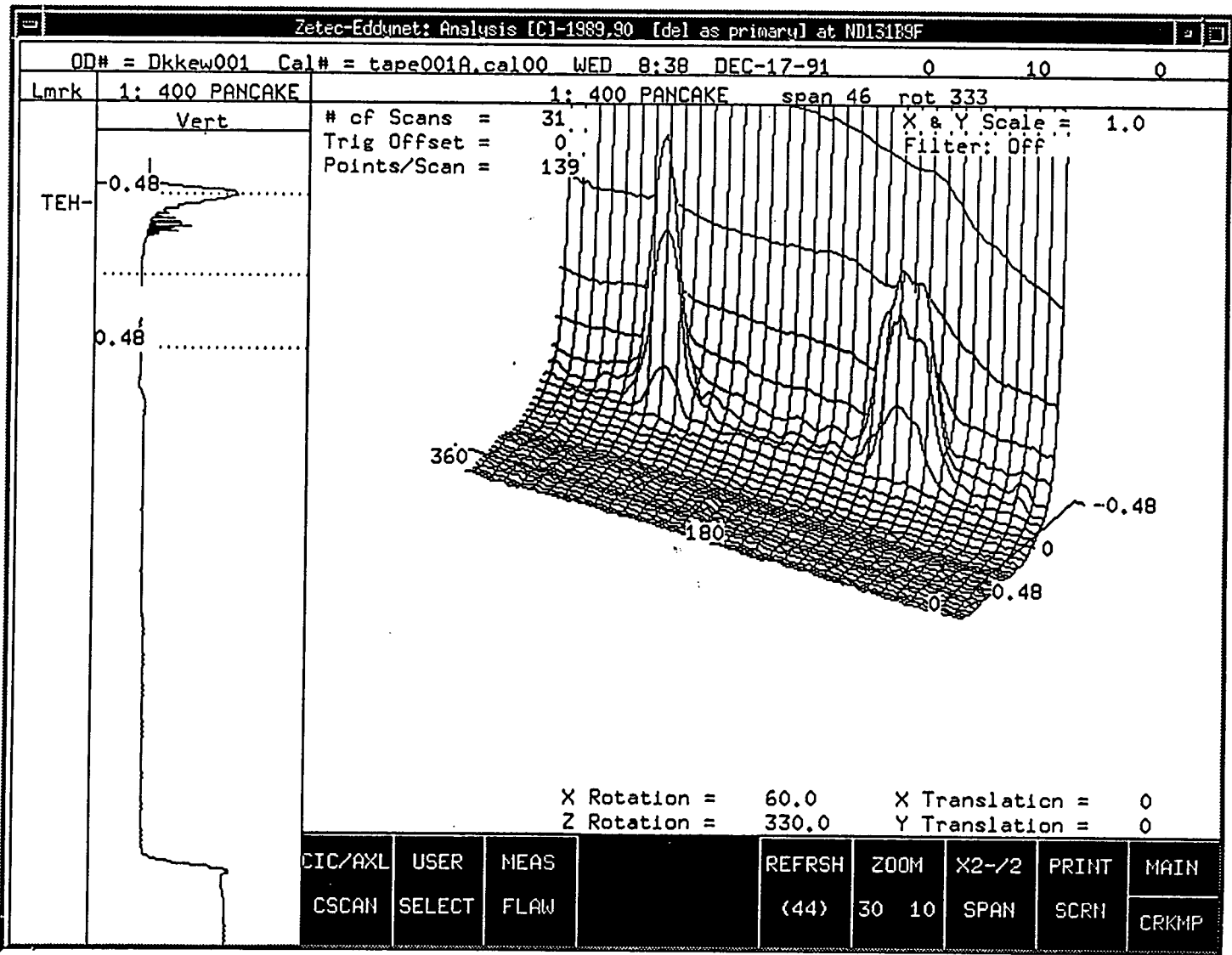








- Next-Last Tube
- Refresh (43)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen



OD# = Dkkew001 Cal# = tape001A.cal00 WED 8:38 DEC-17-91 0 10 0

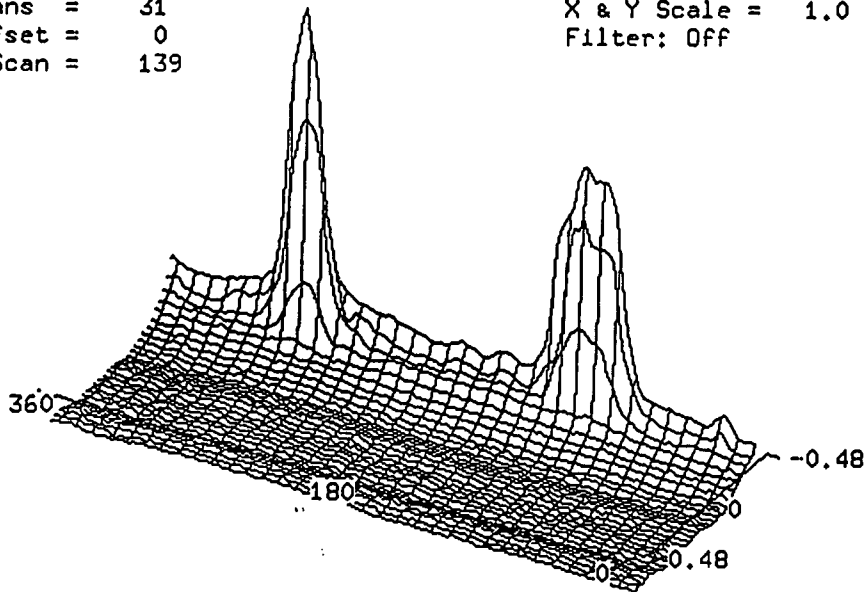
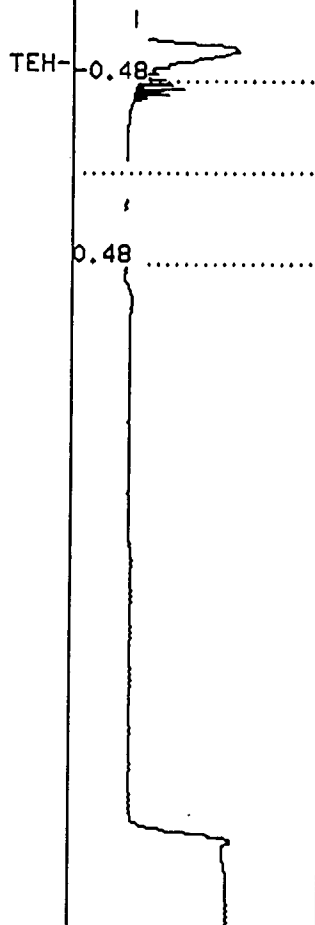
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333

Vert

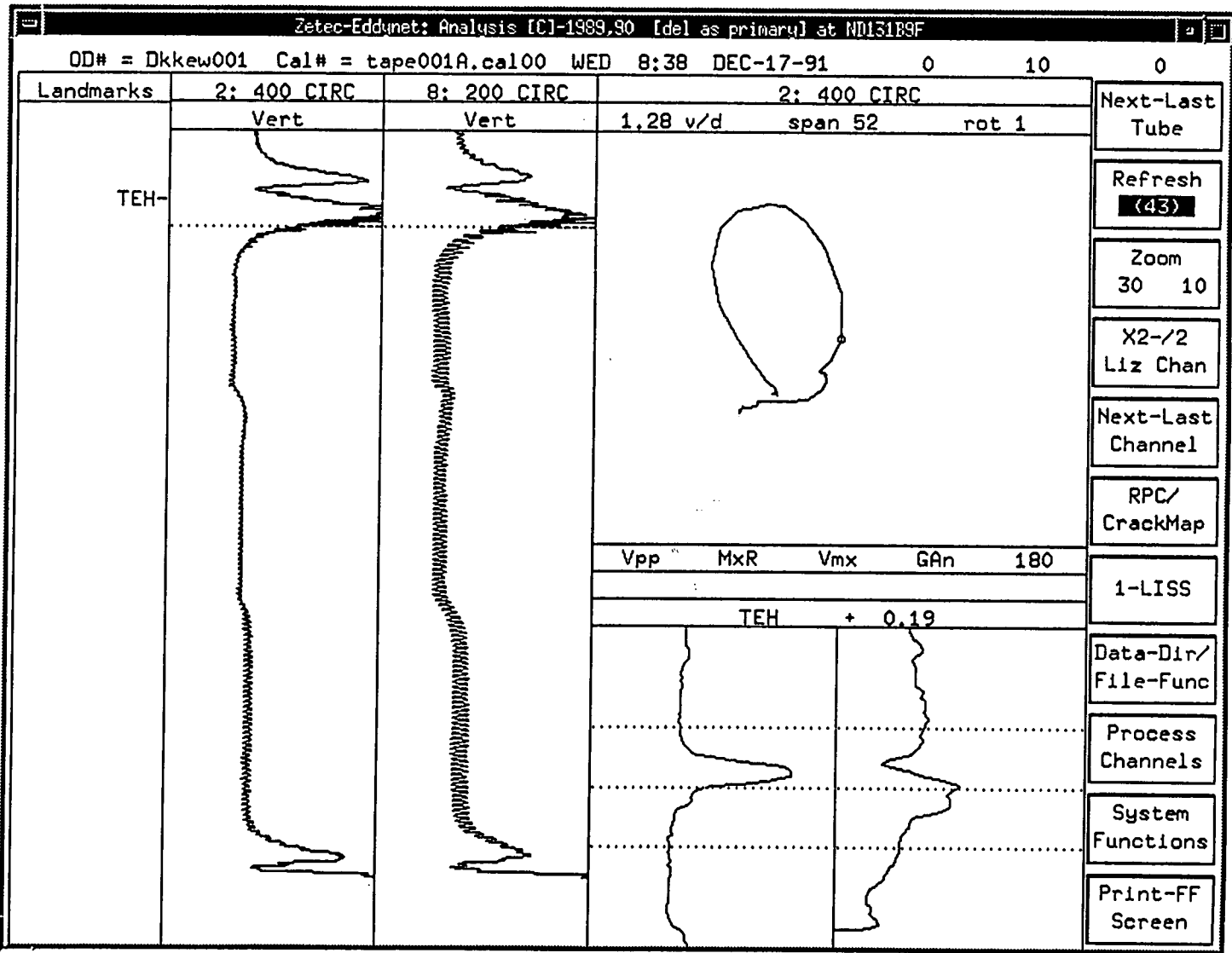
# of Scans = 31  
 Trig Offset = 0  
 Points/Scan = 139

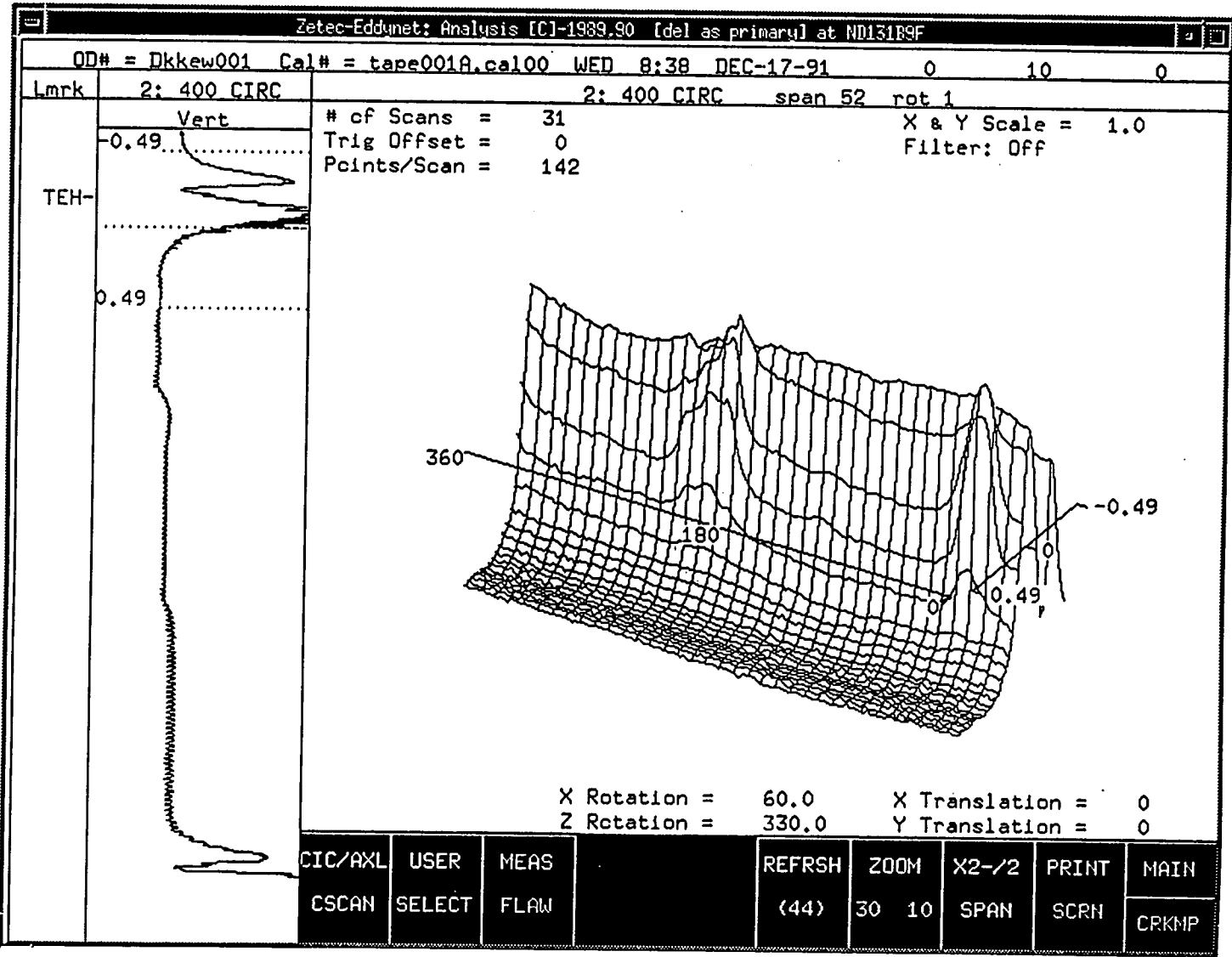
X & Y Scale = 1.0  
 Filter: Off



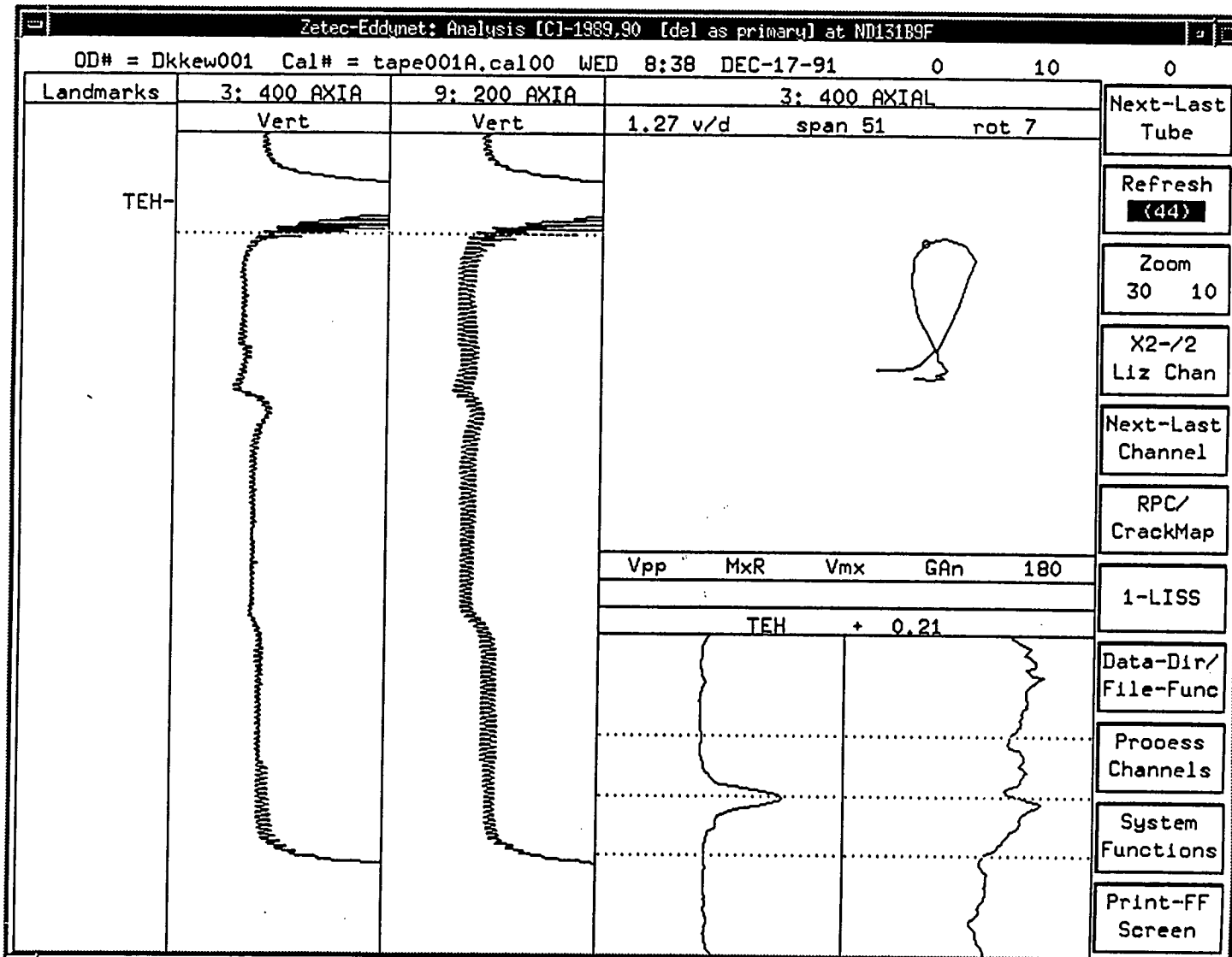
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(44)	30 10	SPAN	SCRN	CRKMP



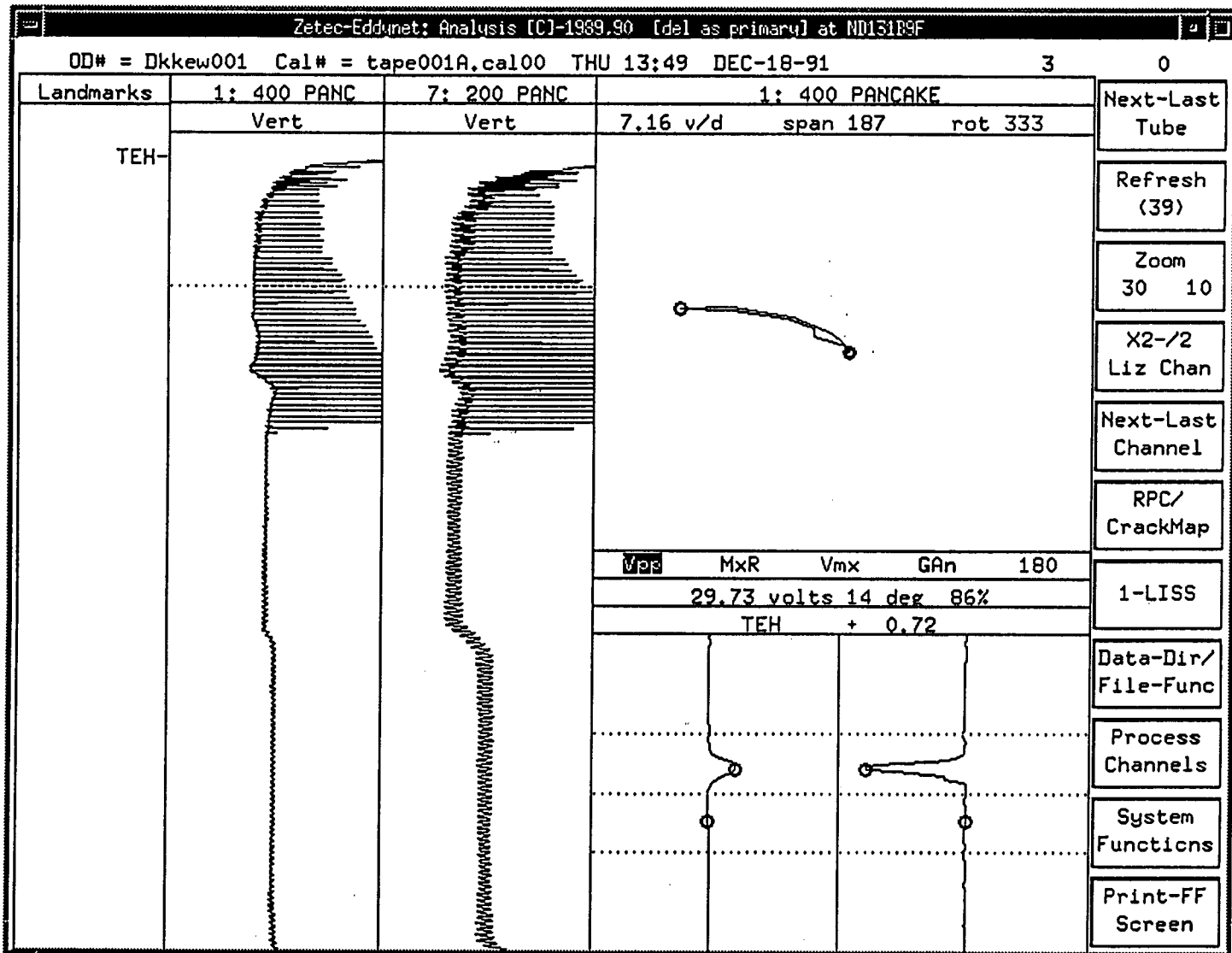


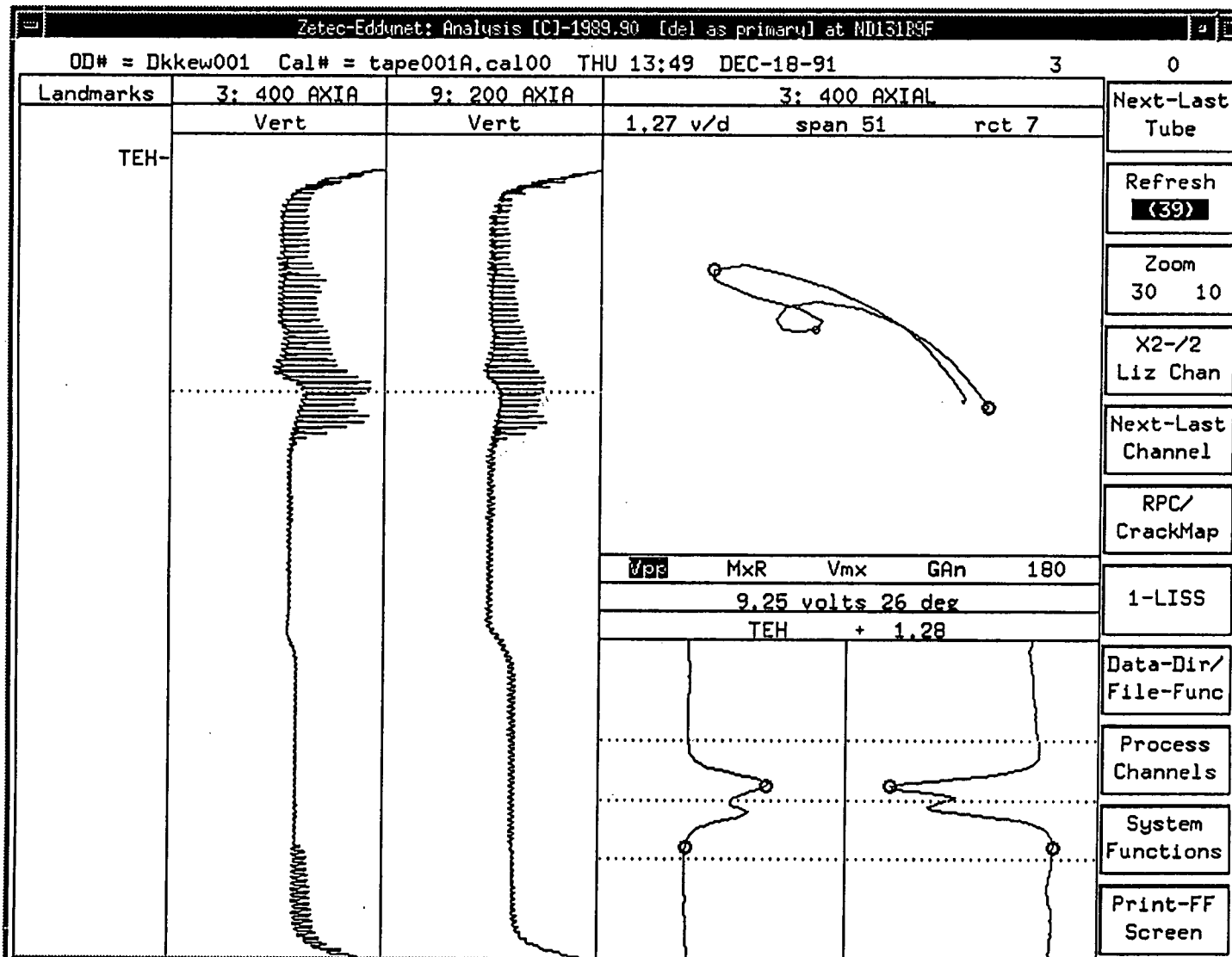




KEWAUNEE STEAM GENERATOR TUBES  
EDDY CURRENT DATA ANALYSIS

SECTION 6.0B - LAB SAMPLE EDDY CURRENT GRAPHICS  
EXPANDED WELDED SAMPLES WITH EDM NOTCHES

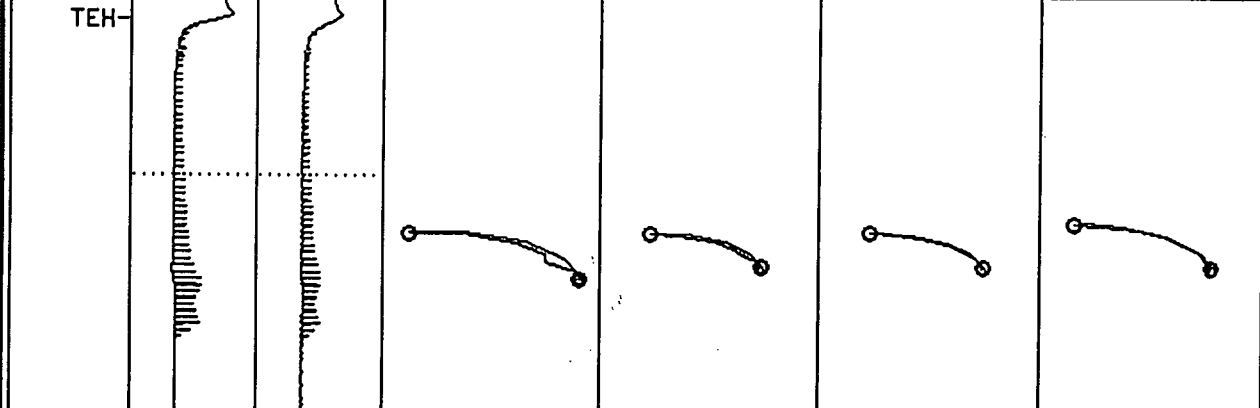




Job# = Dkkew001 Cal# = tape001A.cal00 THU 13:49 DEC-18-91 3

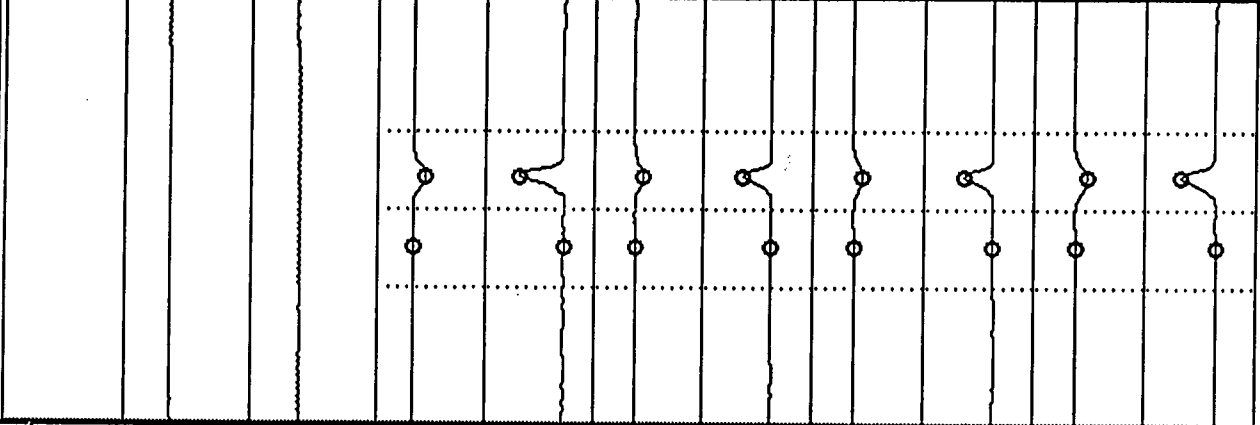
Lmrk : 400 PA: 200 PA 1: 400 PANCAKE 4: 300 PANCAKE 7: 200 PANCAKE 0: 100 PANCAKE

Vert Vert .2v/sp 214r 333.8v.sp 384r 27 .5v/sp 283r 58 .1v/isp 93r 156



1xRVmxGAN180 1xRVmxGAN180 1xRVmxGAN180 1xRVmxGAN180  
 29.74v 14d 86% 34.85v 16d 25.85v 16d 40% 10.55v 17d

TEH + 0.72



Next-Last Tube

Refresh (39)

Zoom 30 10

X2-/2 Liz Chan

Next-Last Channel

RPC/ CrackMap

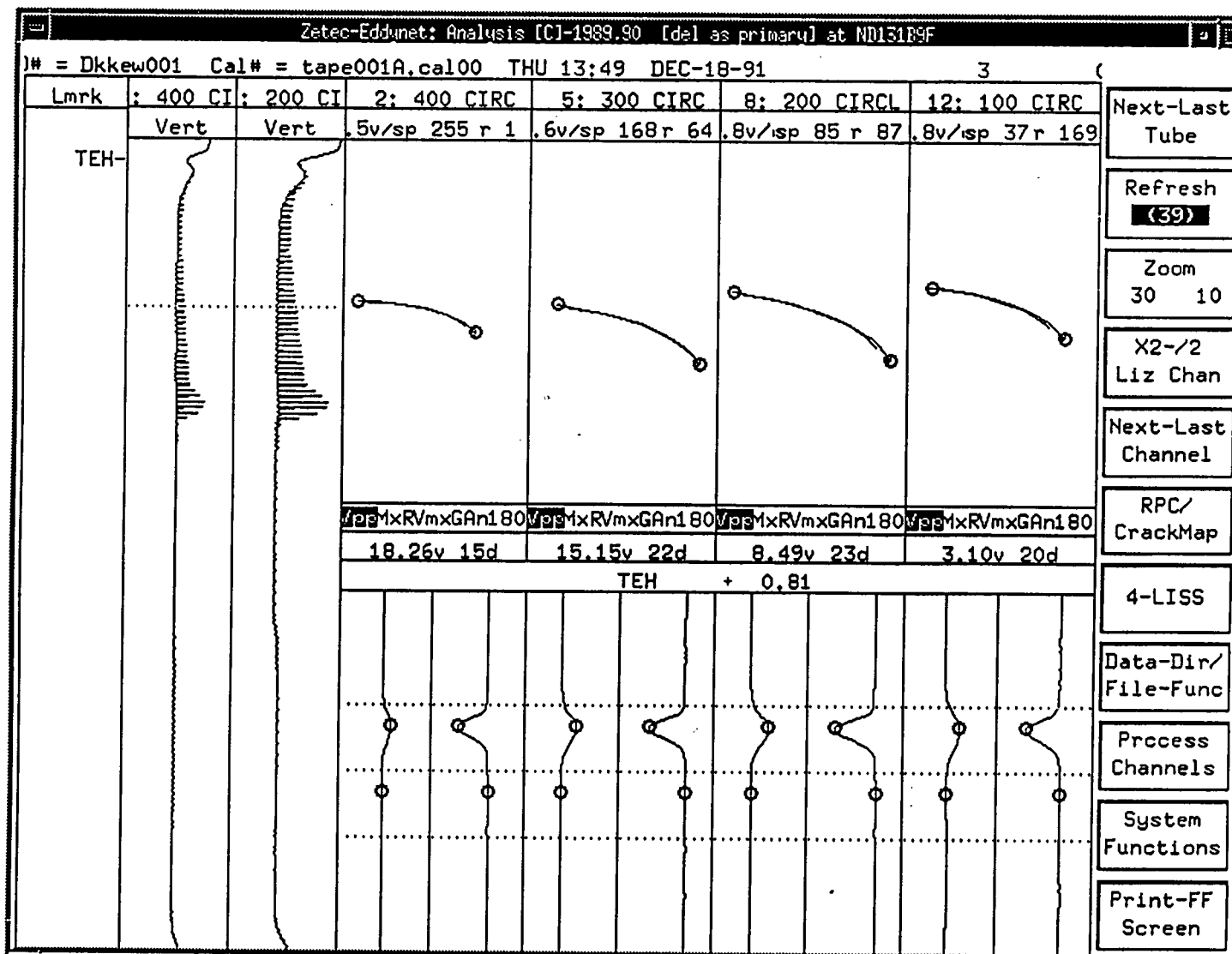
4-LISS

Data-Dir/ File-Func

Process Channels

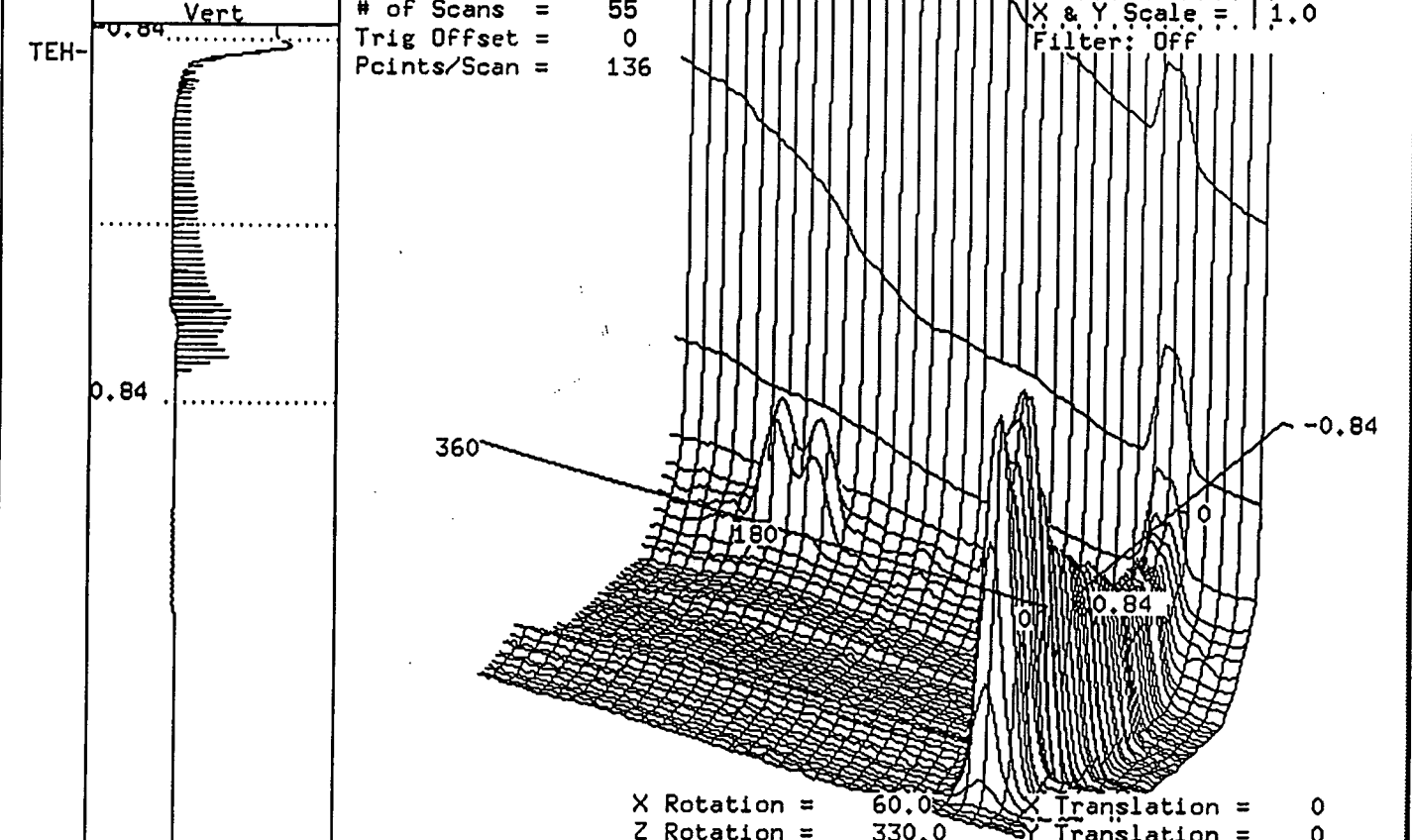
System Functions

Print-FF Screen

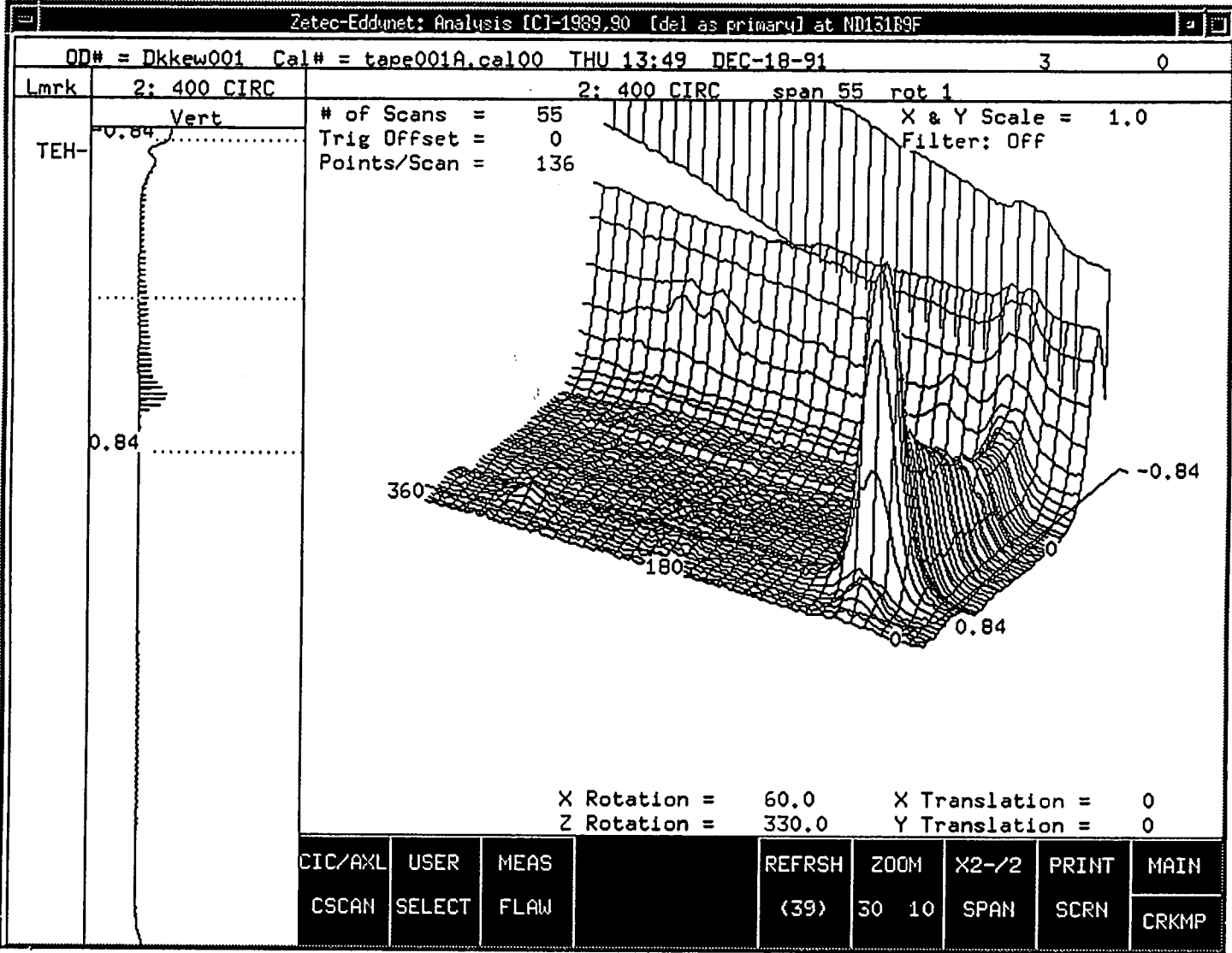


OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:49 DEC-18-91 3 0

Lmrk 1: 400 PANCAKE 1: 400 PANCAKE span 46 rot 333

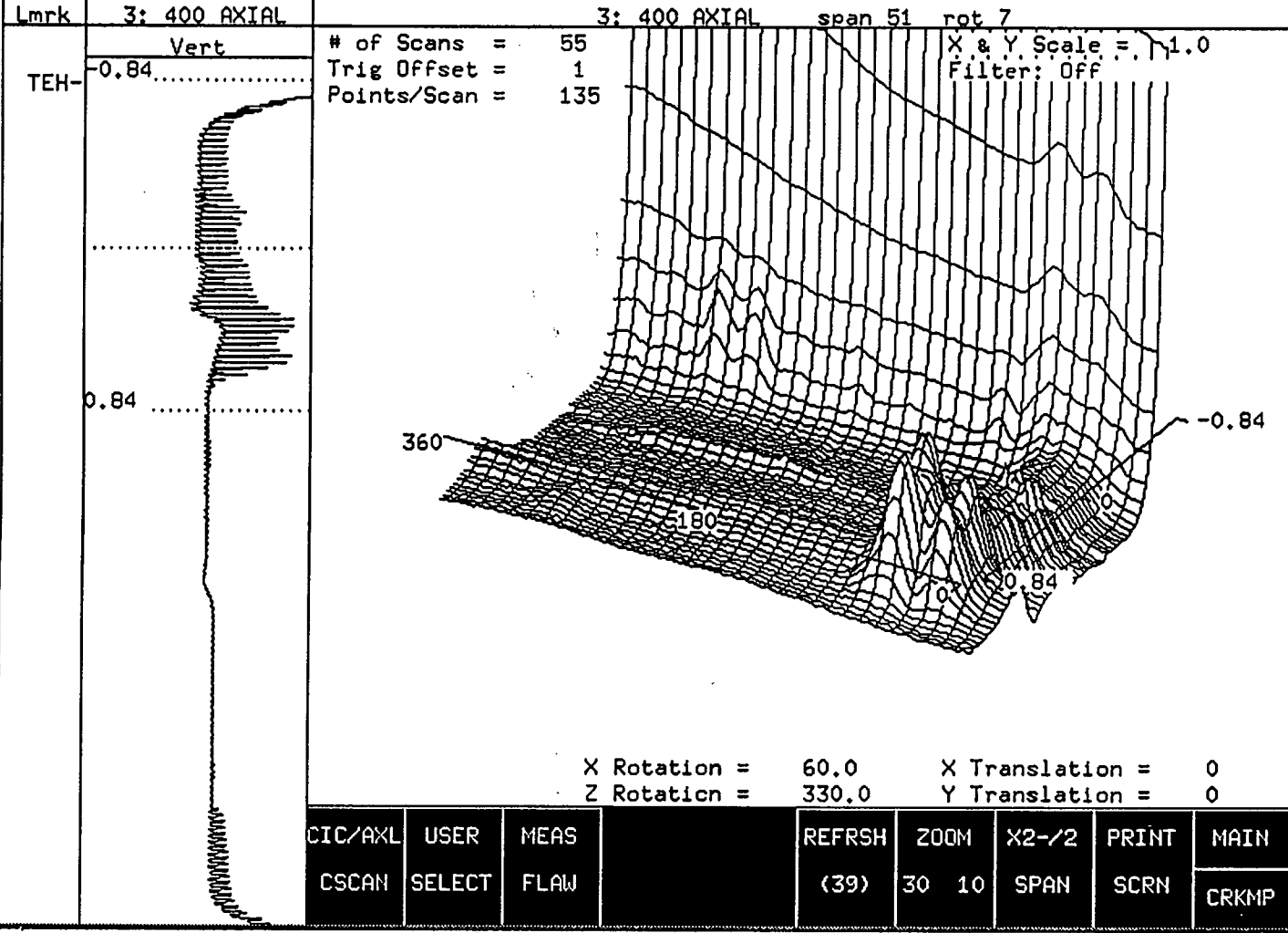


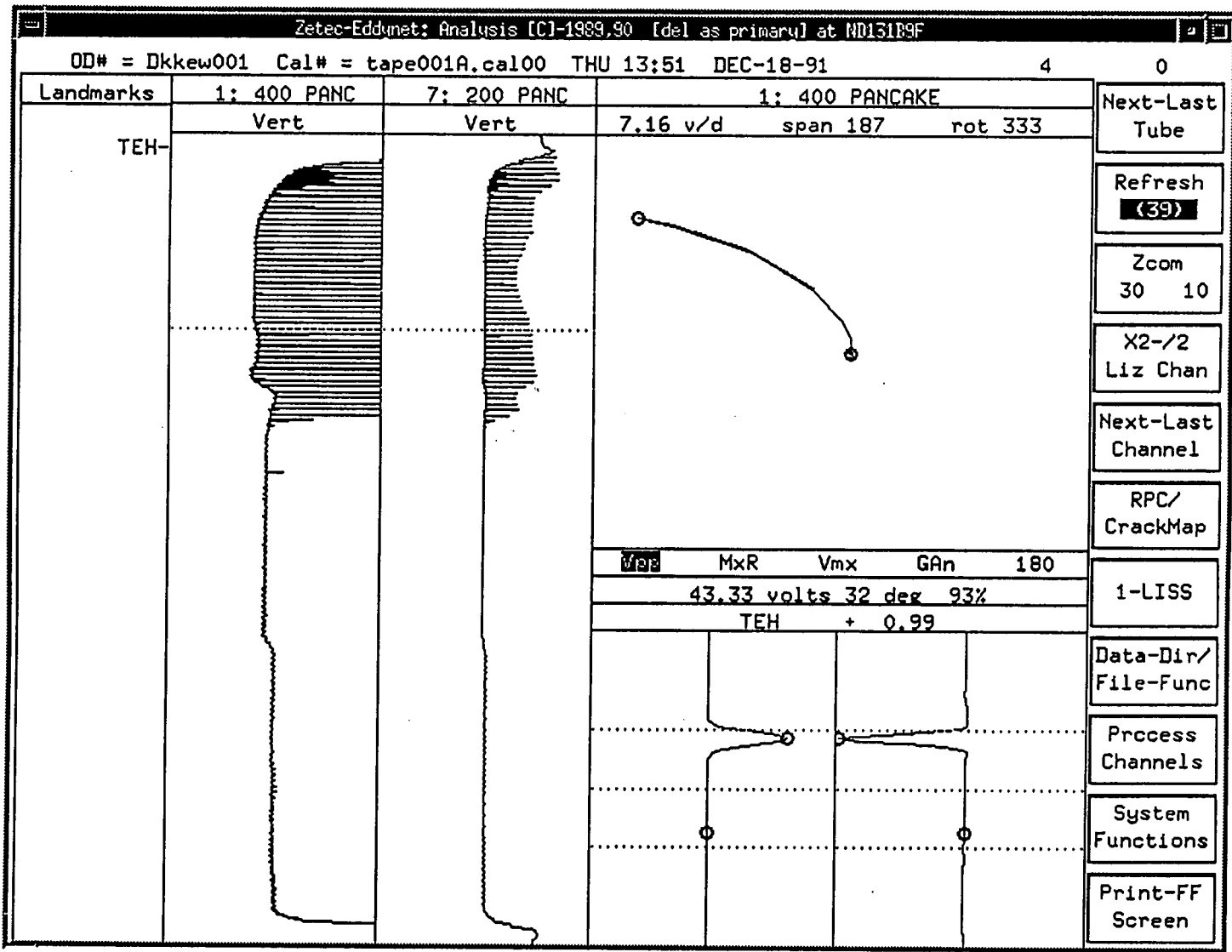
CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(39)	30 10	SPAN	SCRN	CRKMP

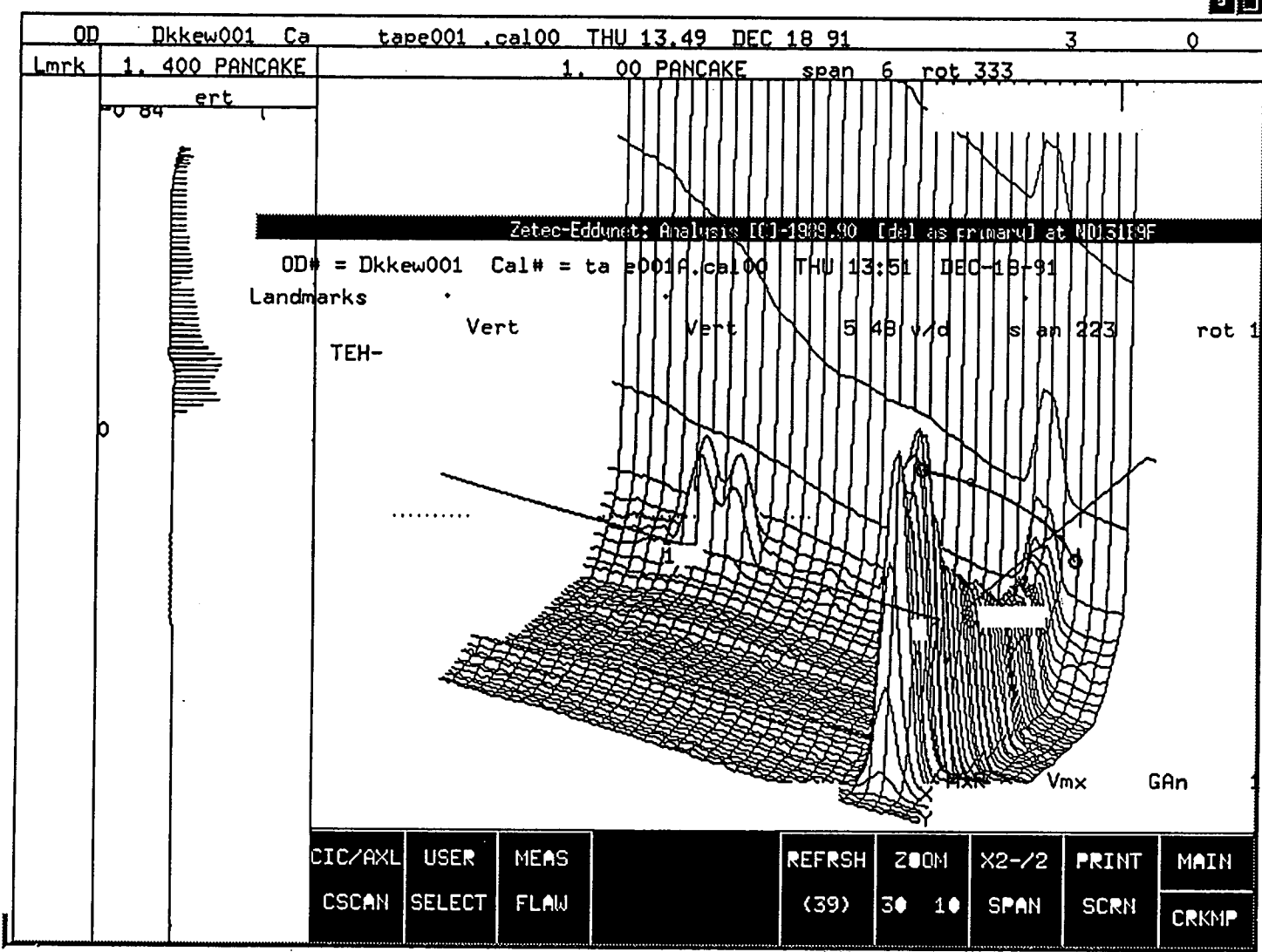




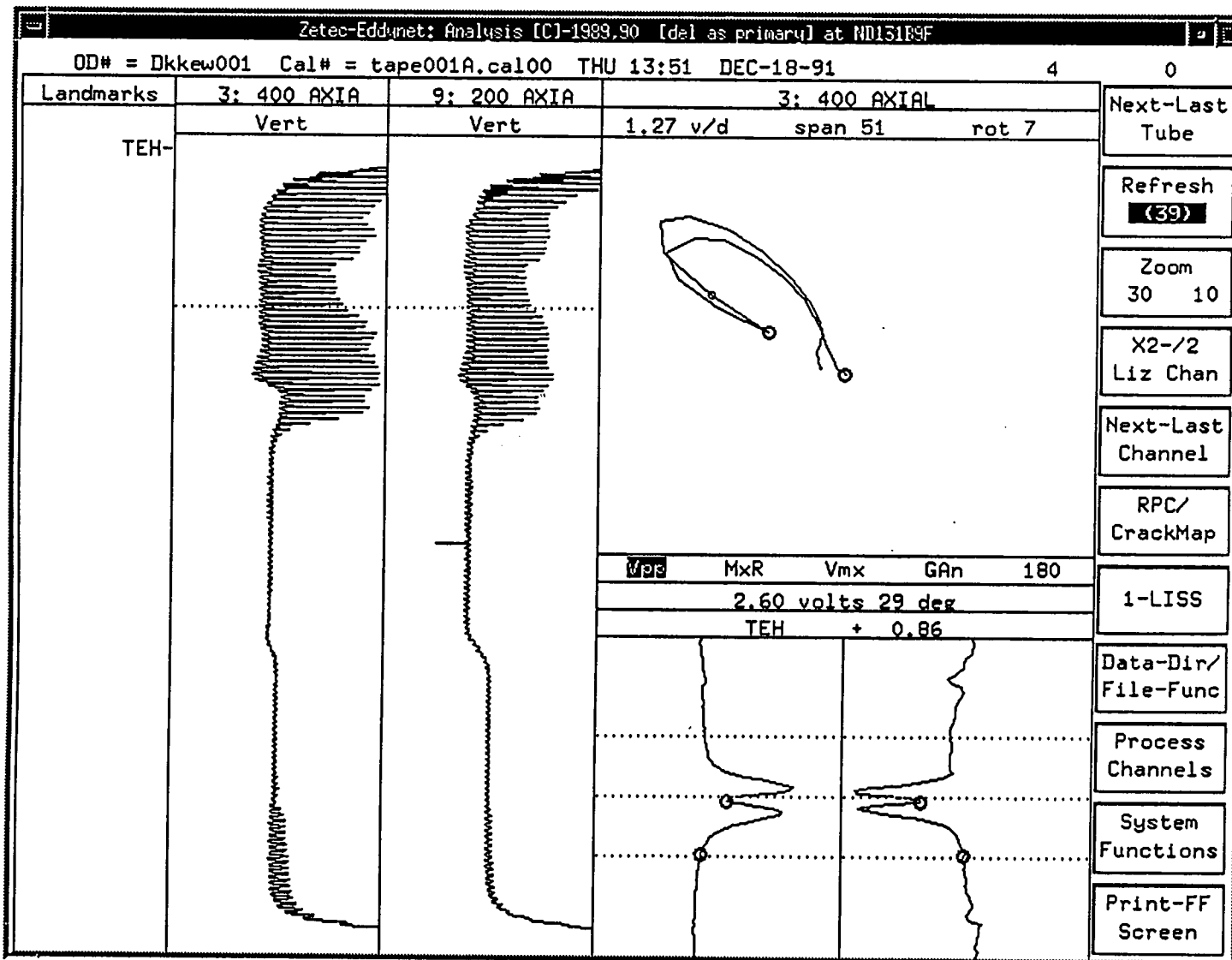
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:49 DEC-18-91 3 0

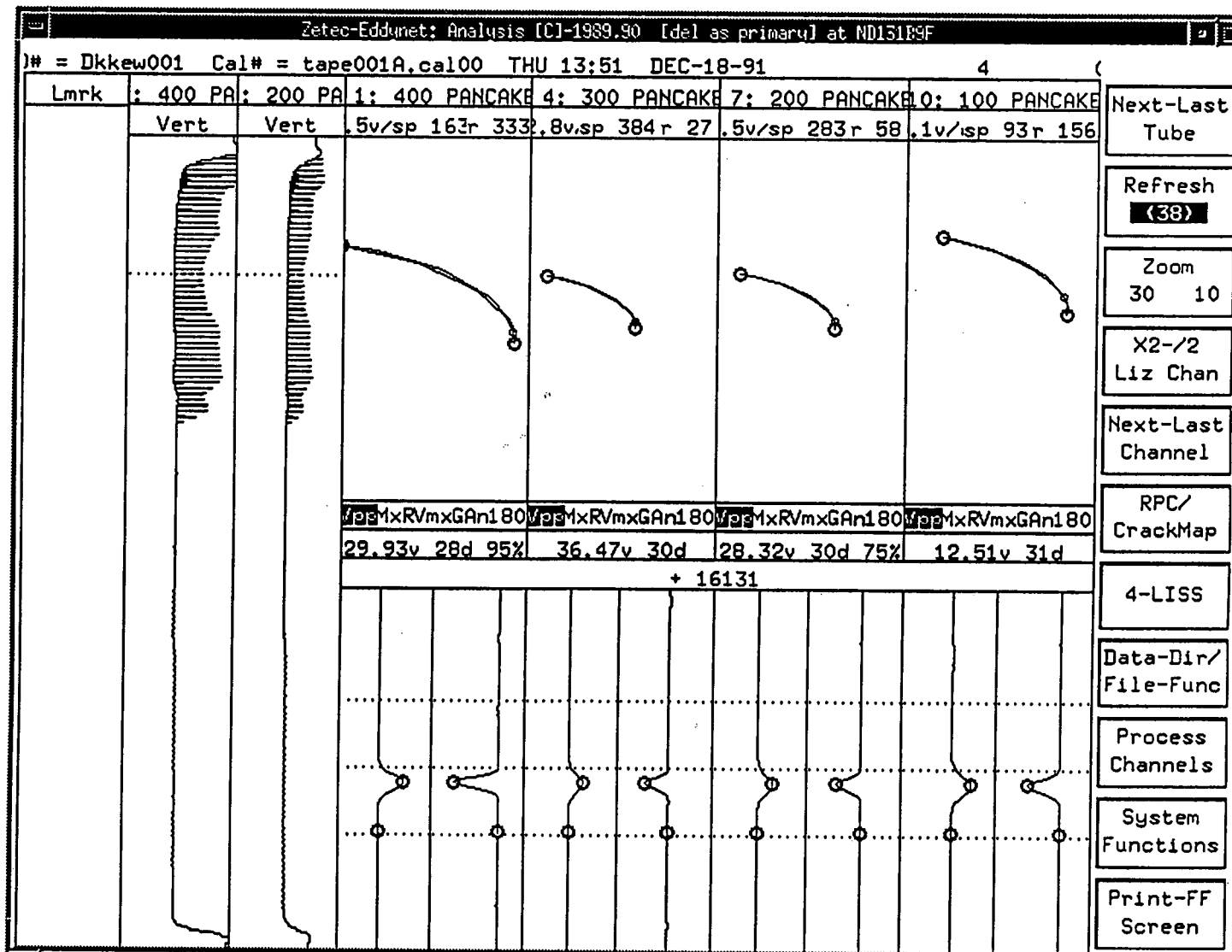






- Next-Last Tube
- Refresh (39)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

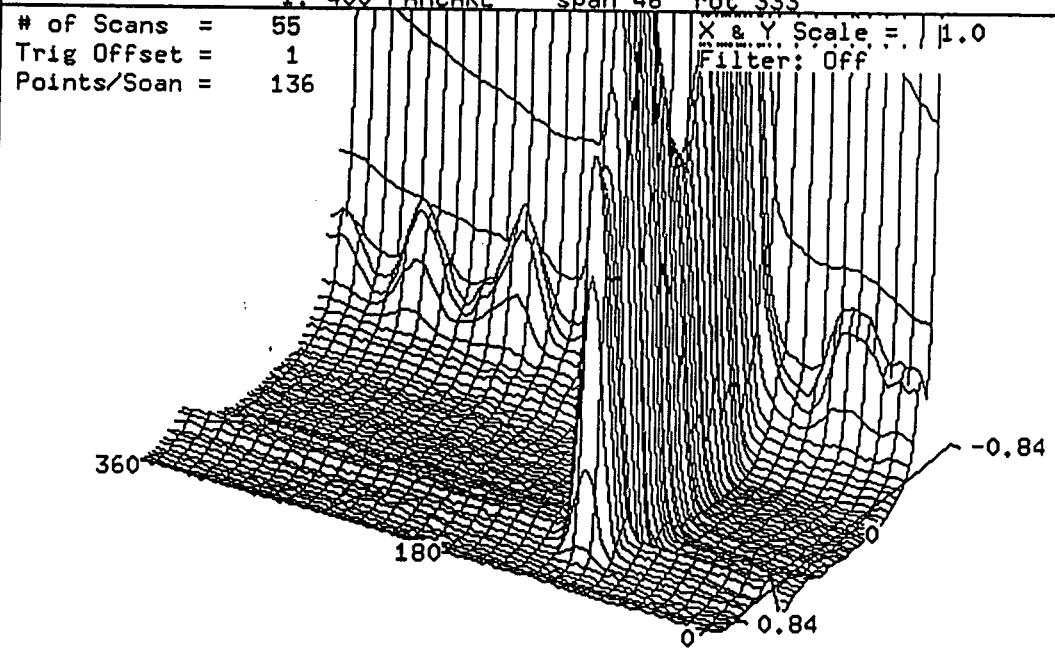
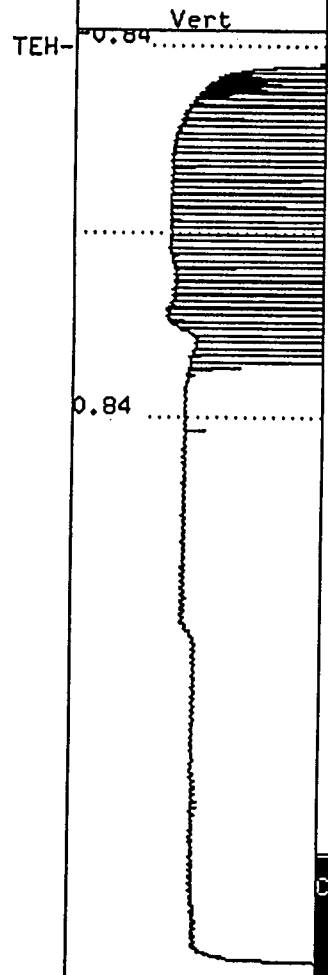




OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:51 DEC-18-91 4 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333



# of Scans = 55  
 Trig Offset = 1  
 Points/Scan = 136  
 X & Y Scale = 1.0  
 Filter: Off

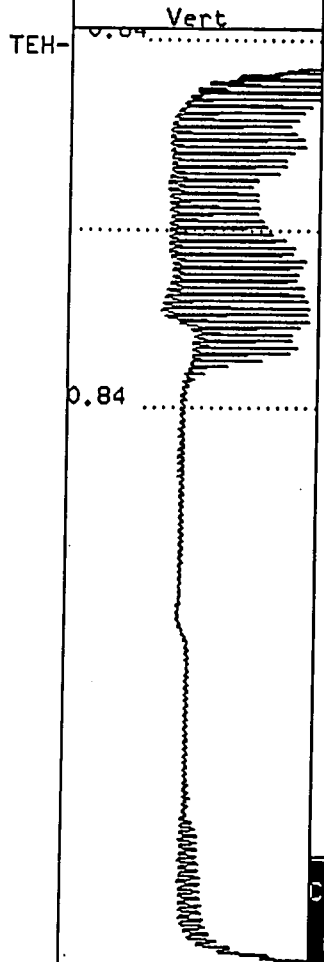
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(38)	30 10	SPAN	SCRN	CRKMP

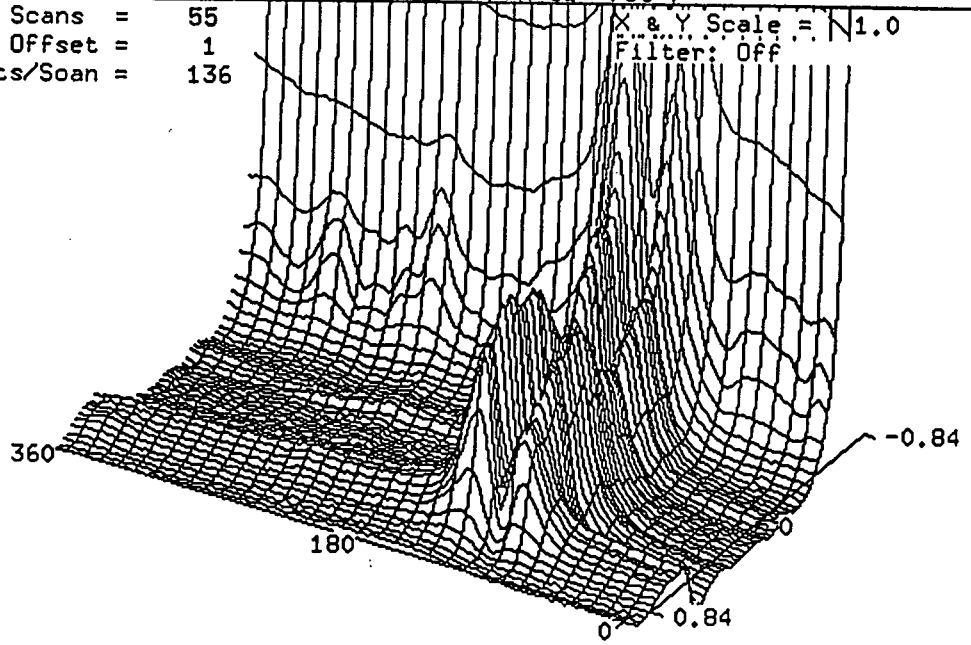
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:51 DEC-18-91 4 0

Lmrk 3: 400 AXIAL

3: 400 AXIAL span 51 rot 7



# of Scans = 55  
 Trig Offset = 1  
 Points/Scan = 136  
 X & Y Scale = 1.0  
 Filter: Off



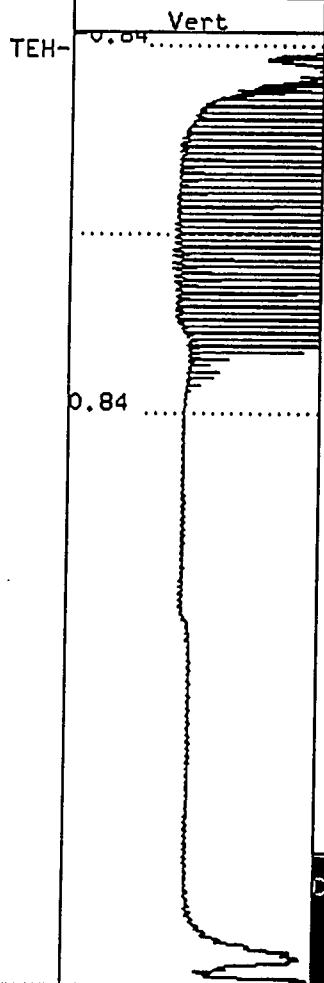
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(38)	30 10	SPAN	SCRN	CRKMP

OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:51 DEC-18-91 4 0

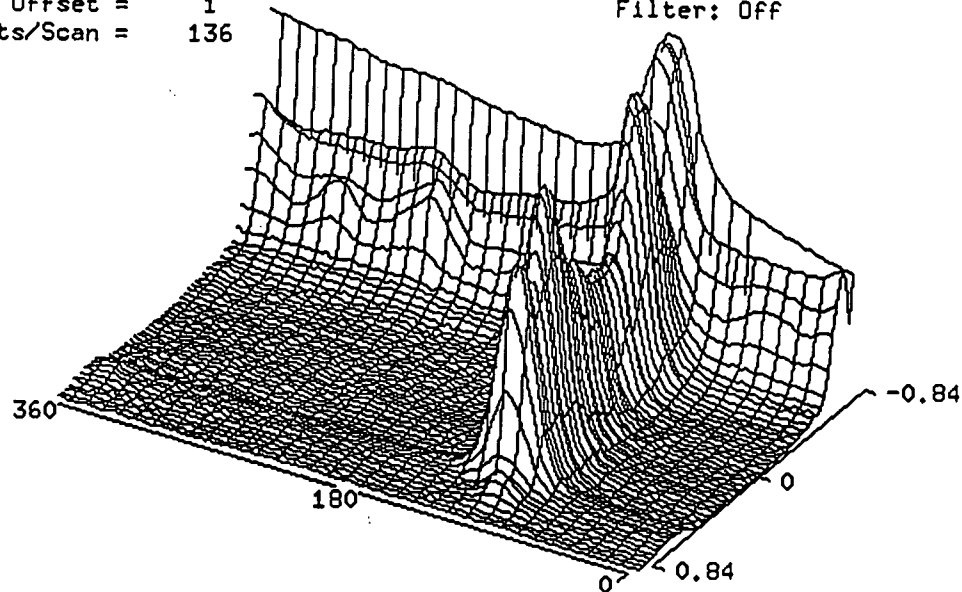
Lmrk 2: 400 CIRC

2: 400 CIRC span 111 rot 1



# of Scans = 55  
 Trig Offset = 1  
 Points/Scan = 136

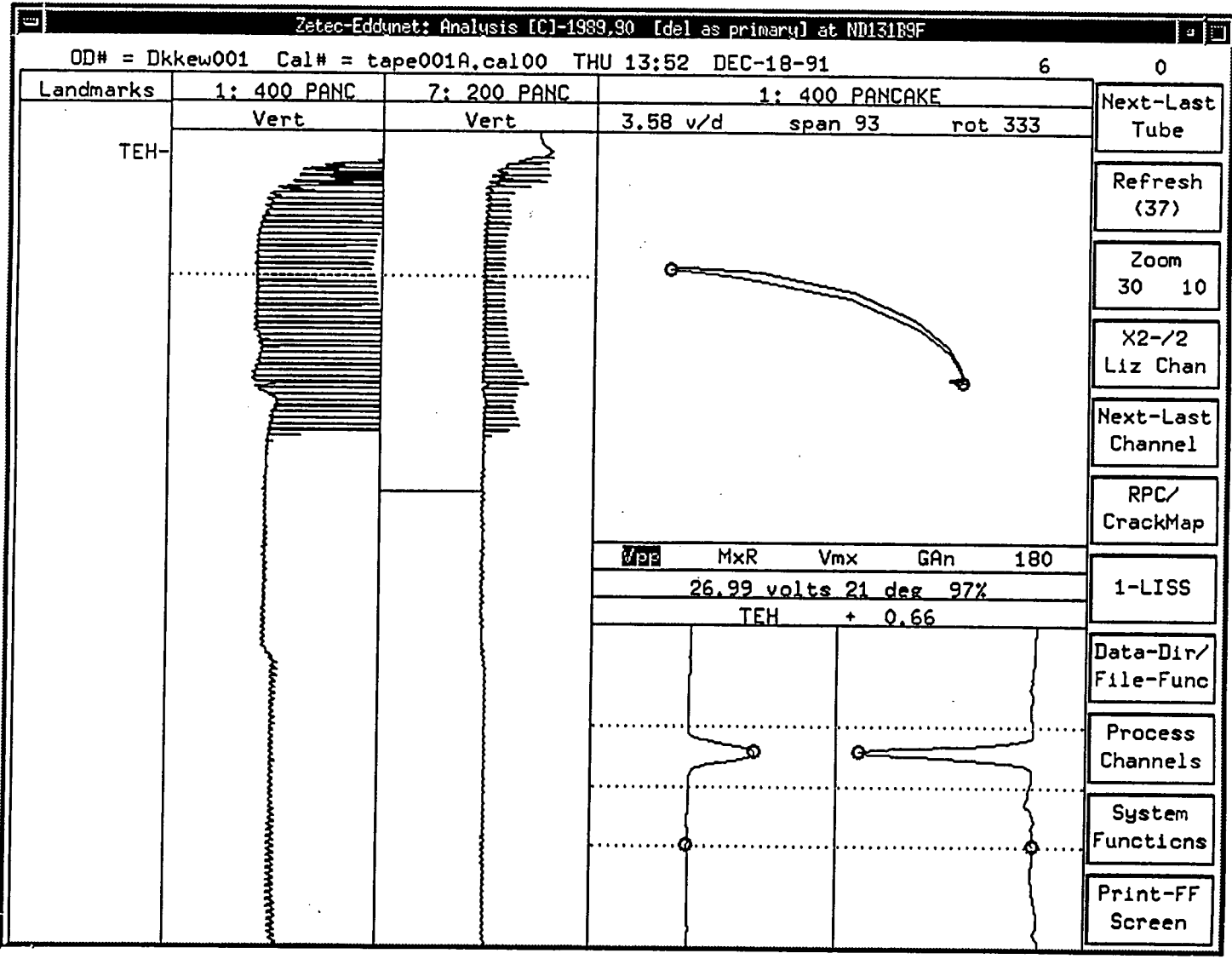
X & Y Scale = 1.0  
 Filter: Off

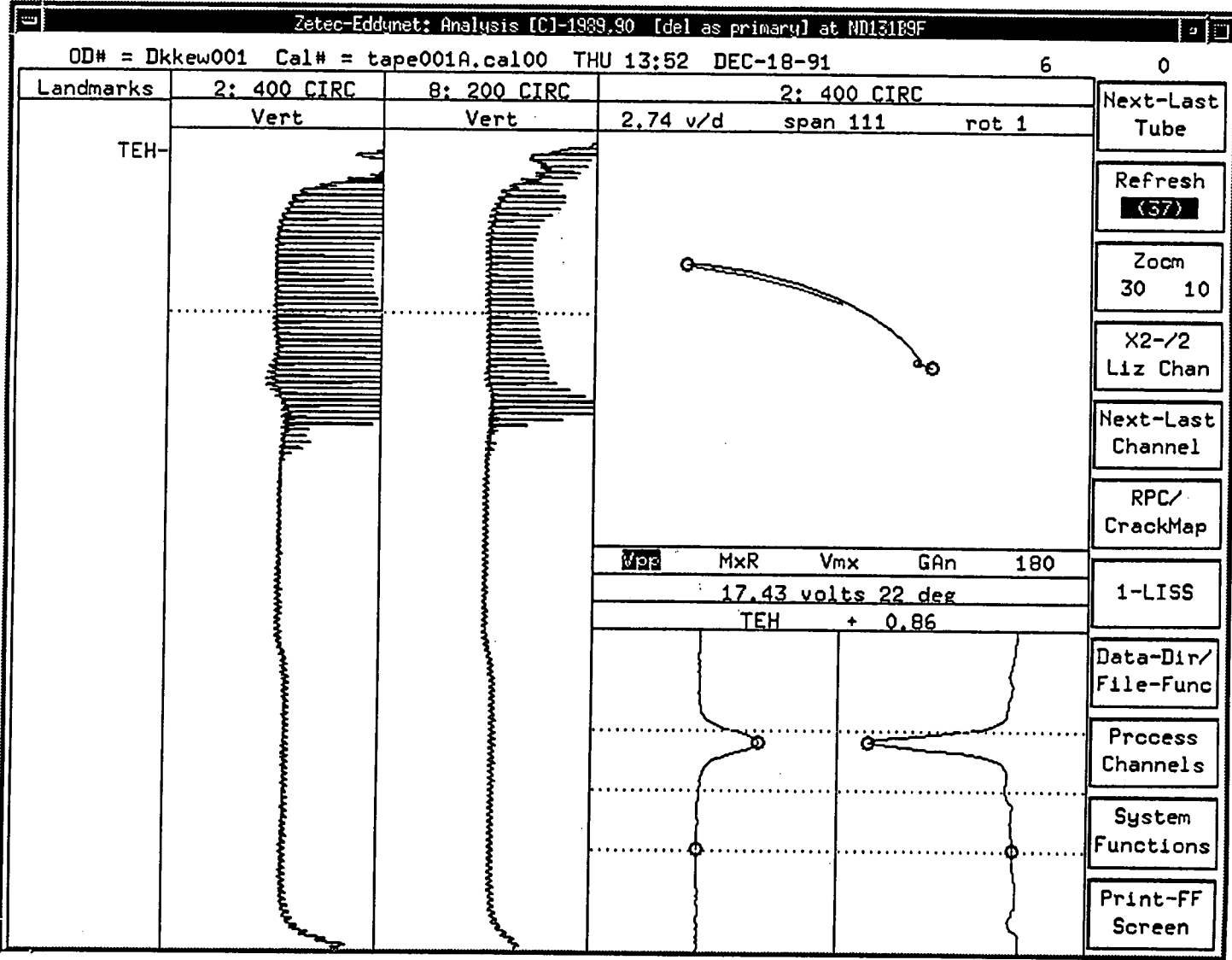


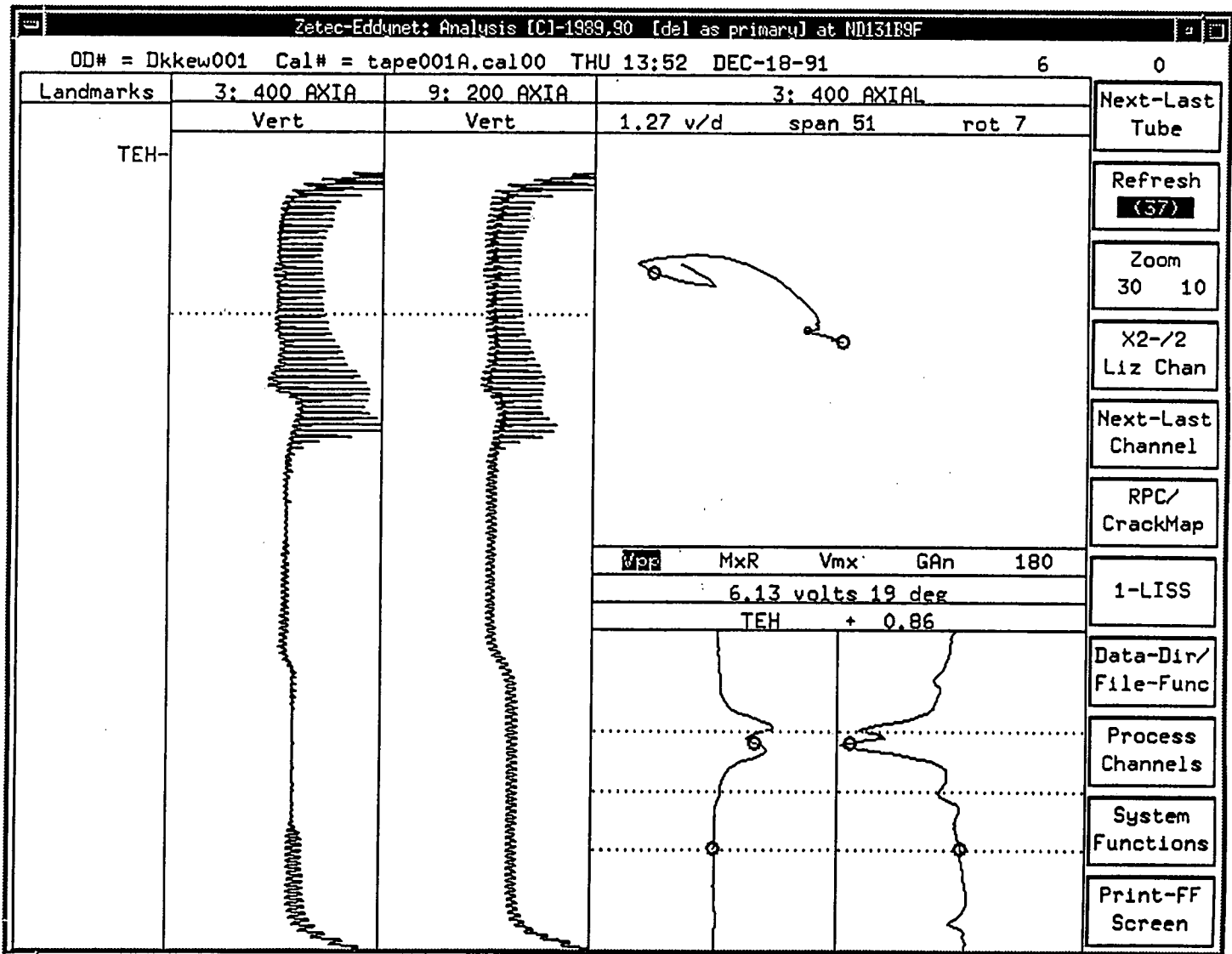
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(38)	30 10	SPAN	SCRN	CRKMP





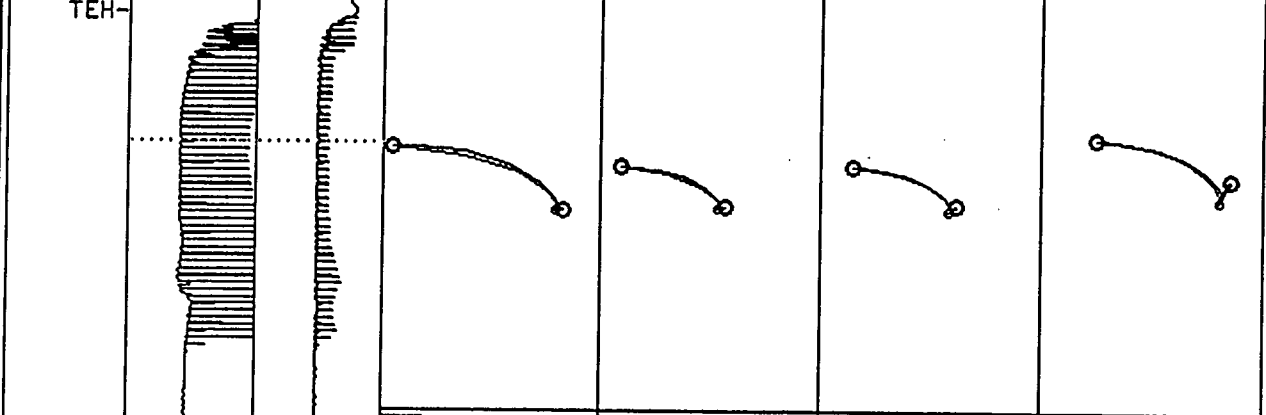




J# = Dkkew001 Cal# = tape001A.cal00 THU 13:52 DEC-18-91 6

Lmrk : 400 PA : 200 PA : 1: 400 PANCAKE 4: 300 PANCAKE 7: 200 PANCAKE 10: 100 PANCAKE

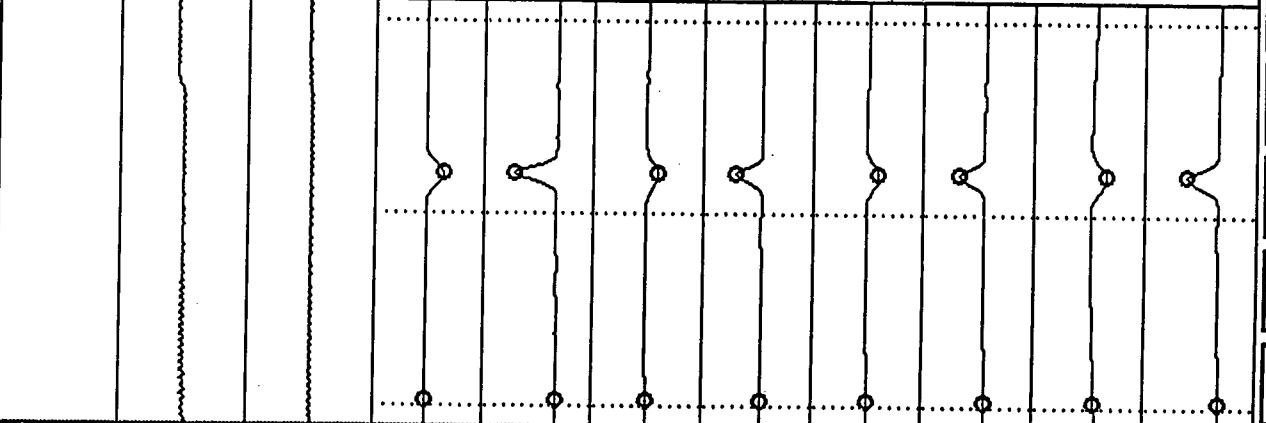
TEH- Vert Vert .5v/sp 196r 333 .8v/sp 384r 27 .5v/sp 283r 58 .1v/sp 93r 156



1xRVmxGAn180 1xRVmxGAn180 1xRVmxGAn180 1xRVmxGAn180

28.05v 20d 97% 33.13v 20d 24.81v 19d 48% 10.31v 16d

TEH + 0.60

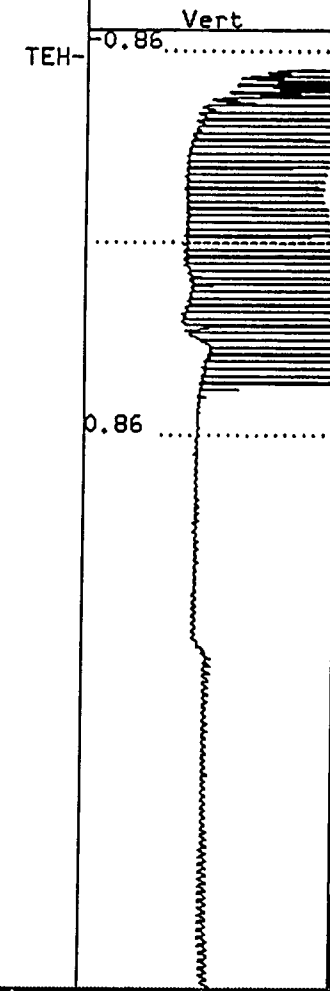


- Next-Last Tube
- Refresh (37)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

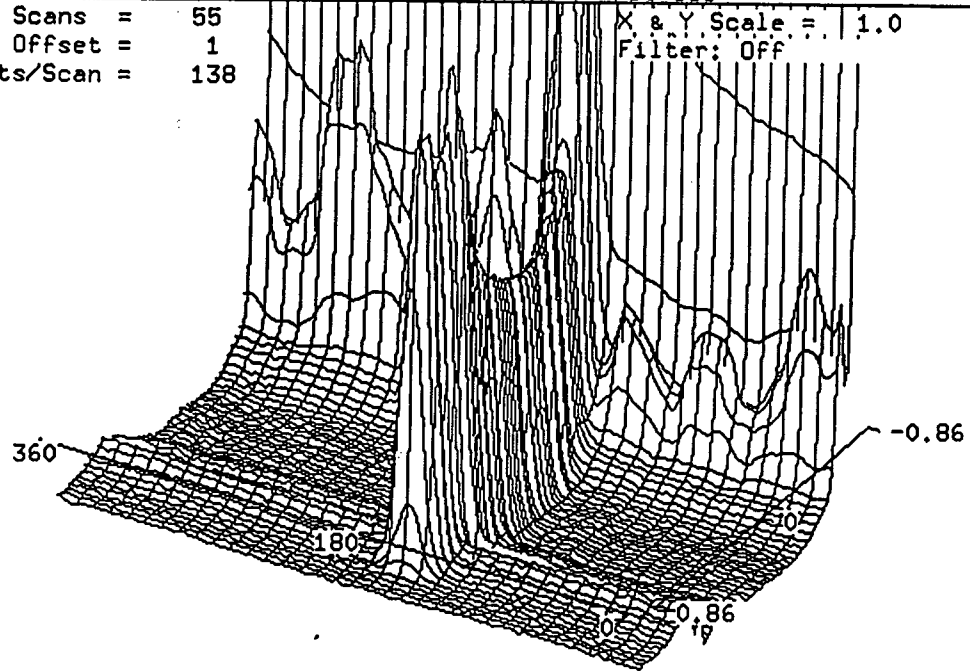
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:52 DEC-18-91 6 0

Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 46 rot 333



# of Scans = 55  
 Trig Offset = 1  
 Points/Scan = 138  
 X & Y Scale = 1.0  
 Filter: Off



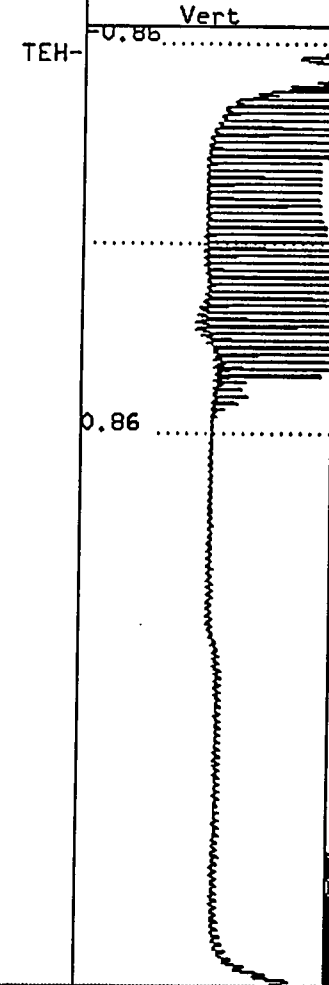
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(37)	30 10	SPAN	SCRN	CRKMP

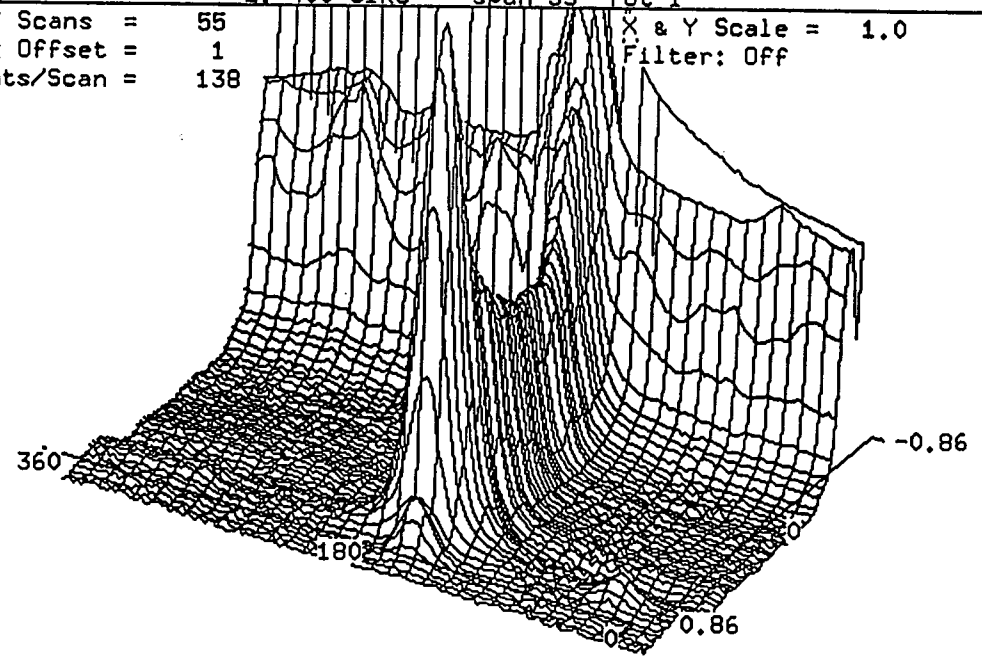
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:52 DEC-18-91 6 0

Lmrk 2: 400 CIRC

2: 400 CIRC span 55 rot 1



# of Scans = 55  
 Trig Offset = 1  
 Points/Scan = 138  
 X & Y Scale = 1.0  
 Filter: Off



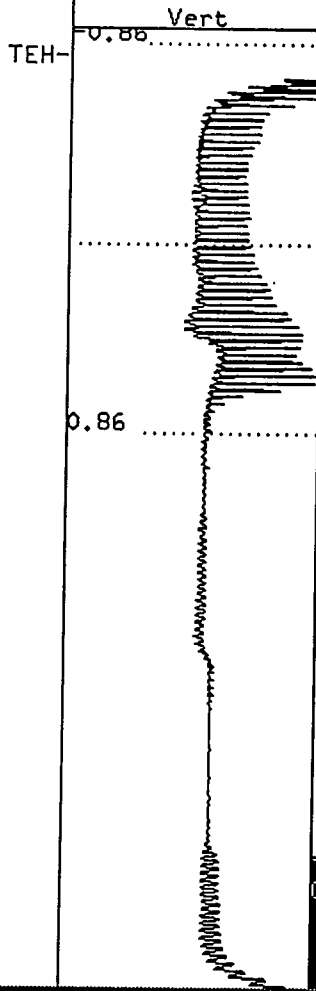
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(37)	30 10	SPAN	SCRH	CRKMP

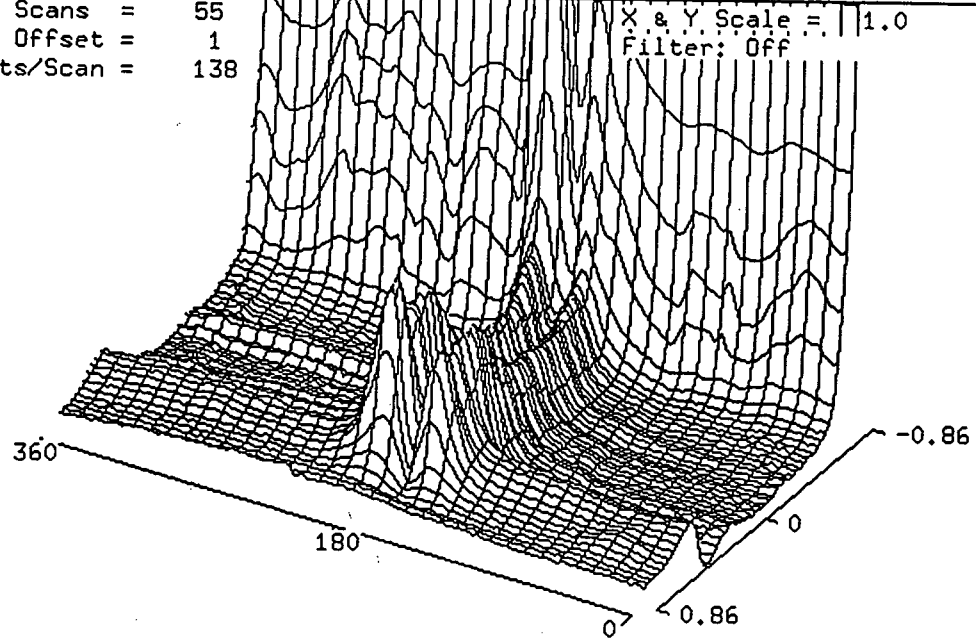
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:52 DEC-18-91 6 0

Lmrk 3: 400 AXIAL

3: 400 AXIAL span 51 rot 7

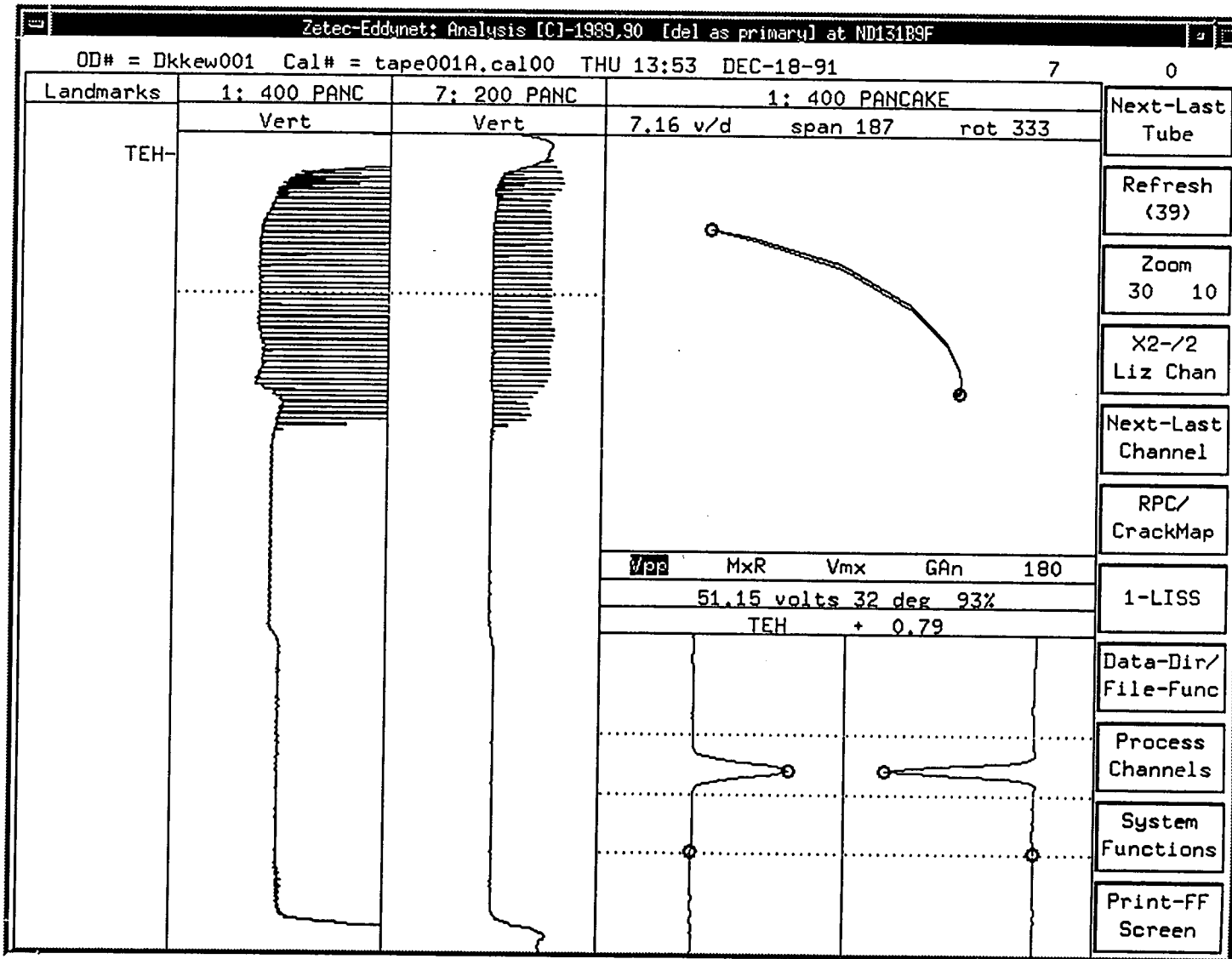


# of Scans = 55  
 Trig Offset = 1  
 Points/Scan = 138  
 X & Y Scale = 1.0  
 Filter: Off

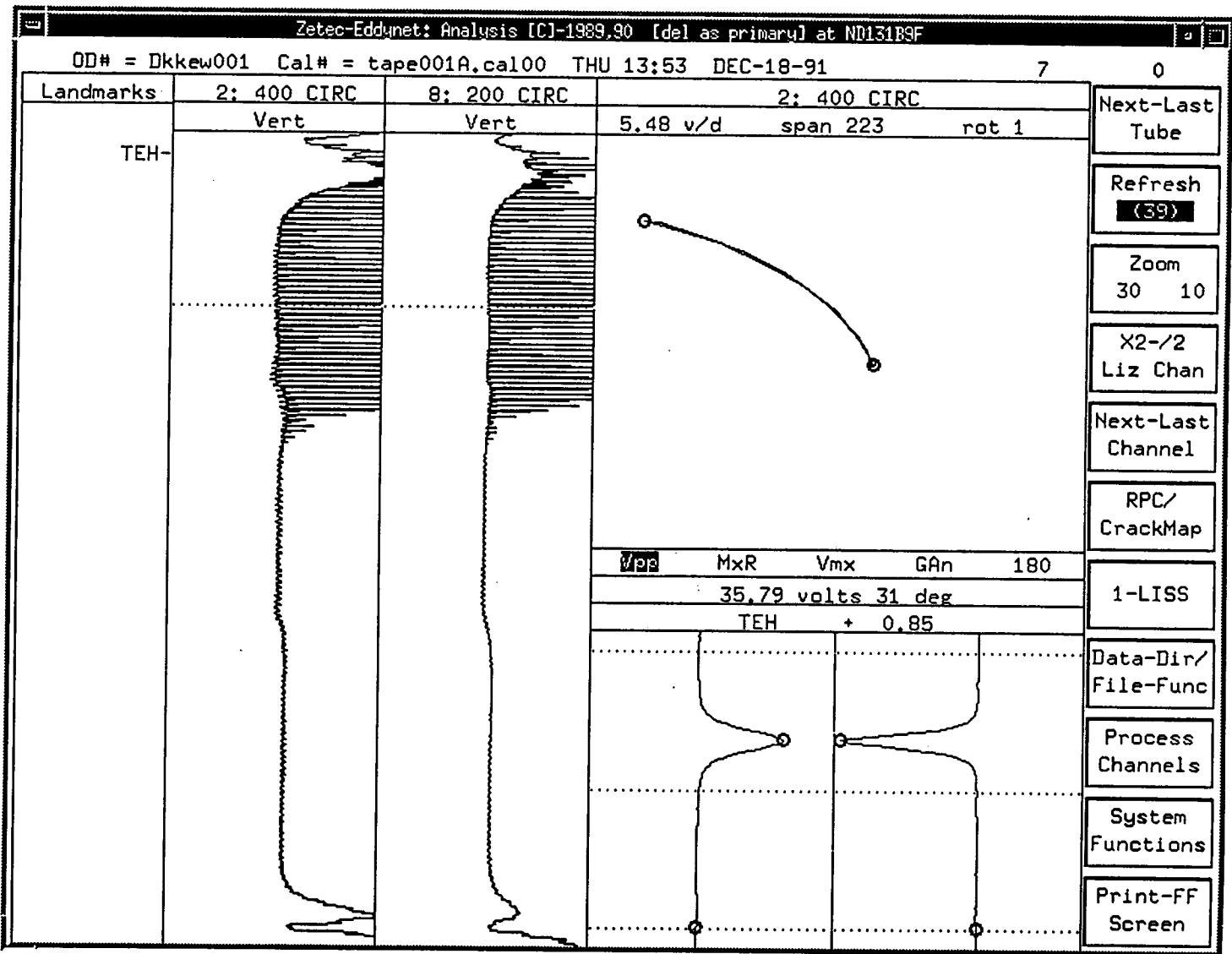


X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(37)	30 10	SPAN	SCRN	CRKMP



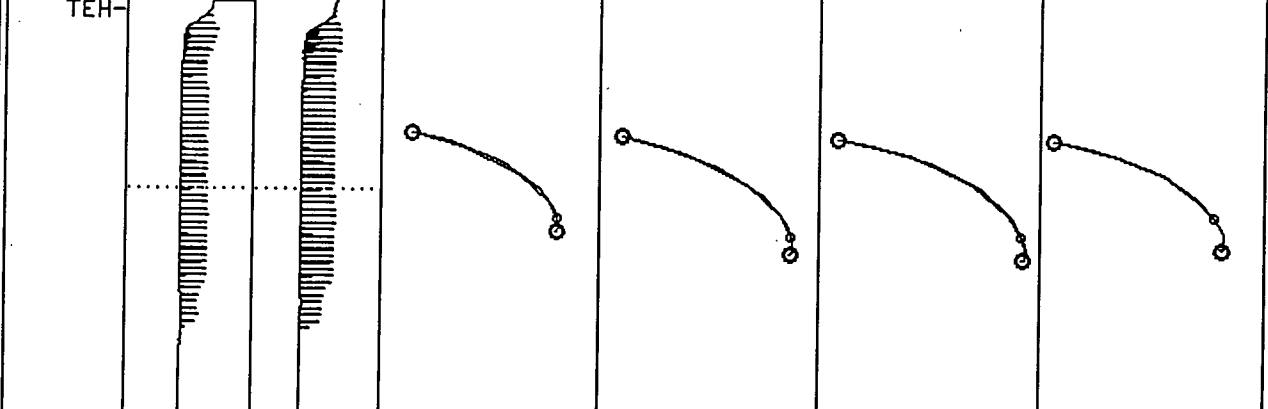






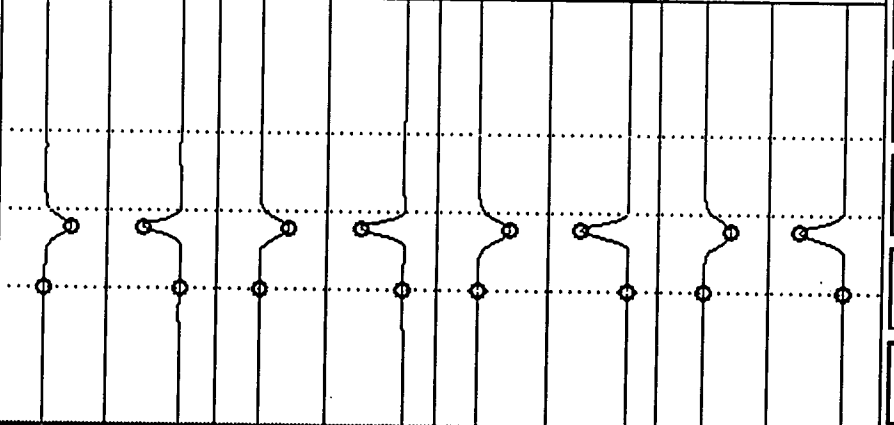
)# = Dkkew001 Cal# = tape001A.cal00 THU 13:53 DEC-18-91 7

Lmrk	: 400 PA	: 200 PA	1: 400 PANCAKE	4: 300 PANCAKE	7: 200 PANCAKE	0: 100 PANCAKE
TEH-	Vert	Vert	.0v/sp 36Cr 333	.8v/sp 384r 27	.5v/sp 283r 58	.7v/sp 135r 156



180VppMxRVmxGAn180	180VppMxRVmxGAn180	180VppMxRVmxGAn180	180VppMxRVmxGAn180
49.35v 33d 93%	61.23v 34d	48.40v 33d 83%	21.47v 32d

TEH + 0.85

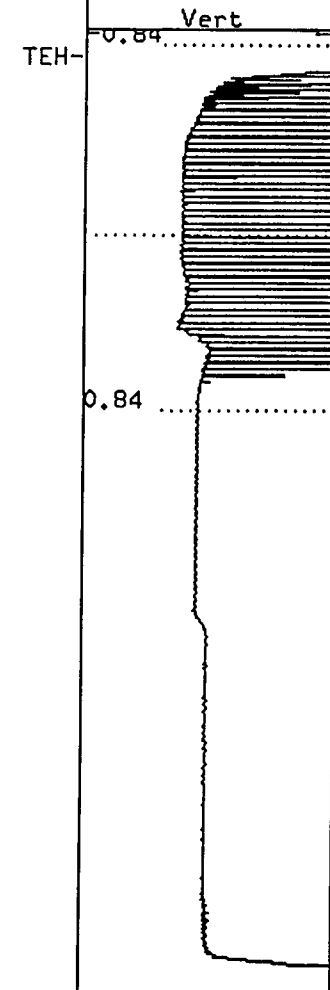


- Next-Last Tube
- Refresh (39)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:53 DEC-18-91 7 0

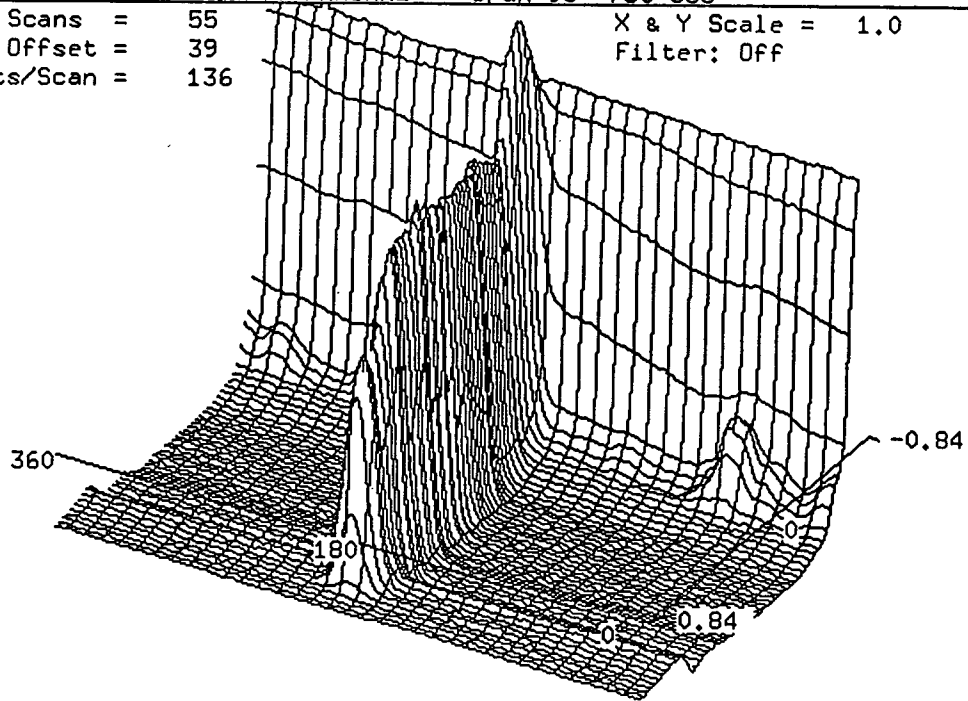
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 93 rot 333



# of Scans = 55  
 Trig Offset = 39  
 Points/Scan = 136

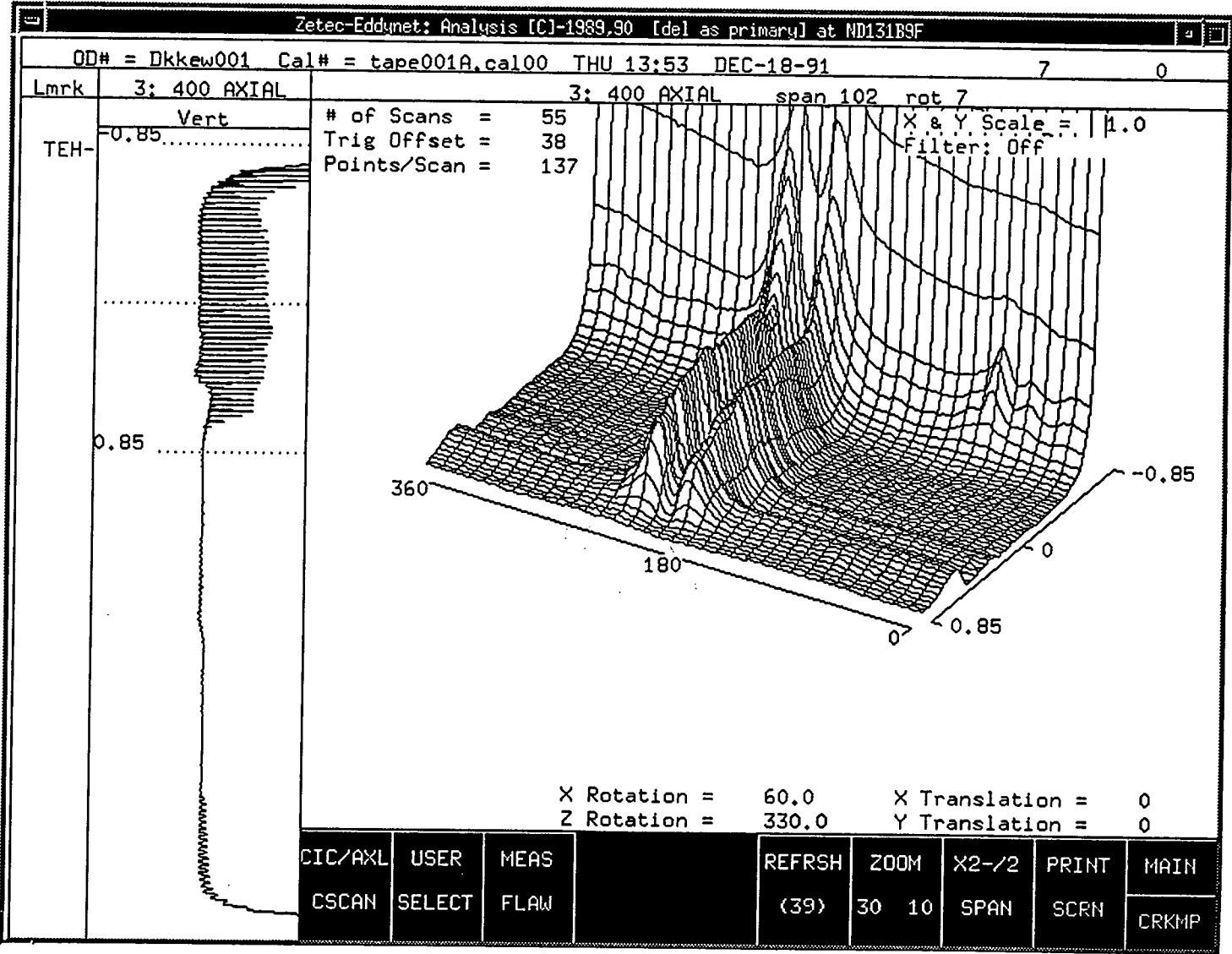
X & Y Scale = 1.0  
 Filter: Off

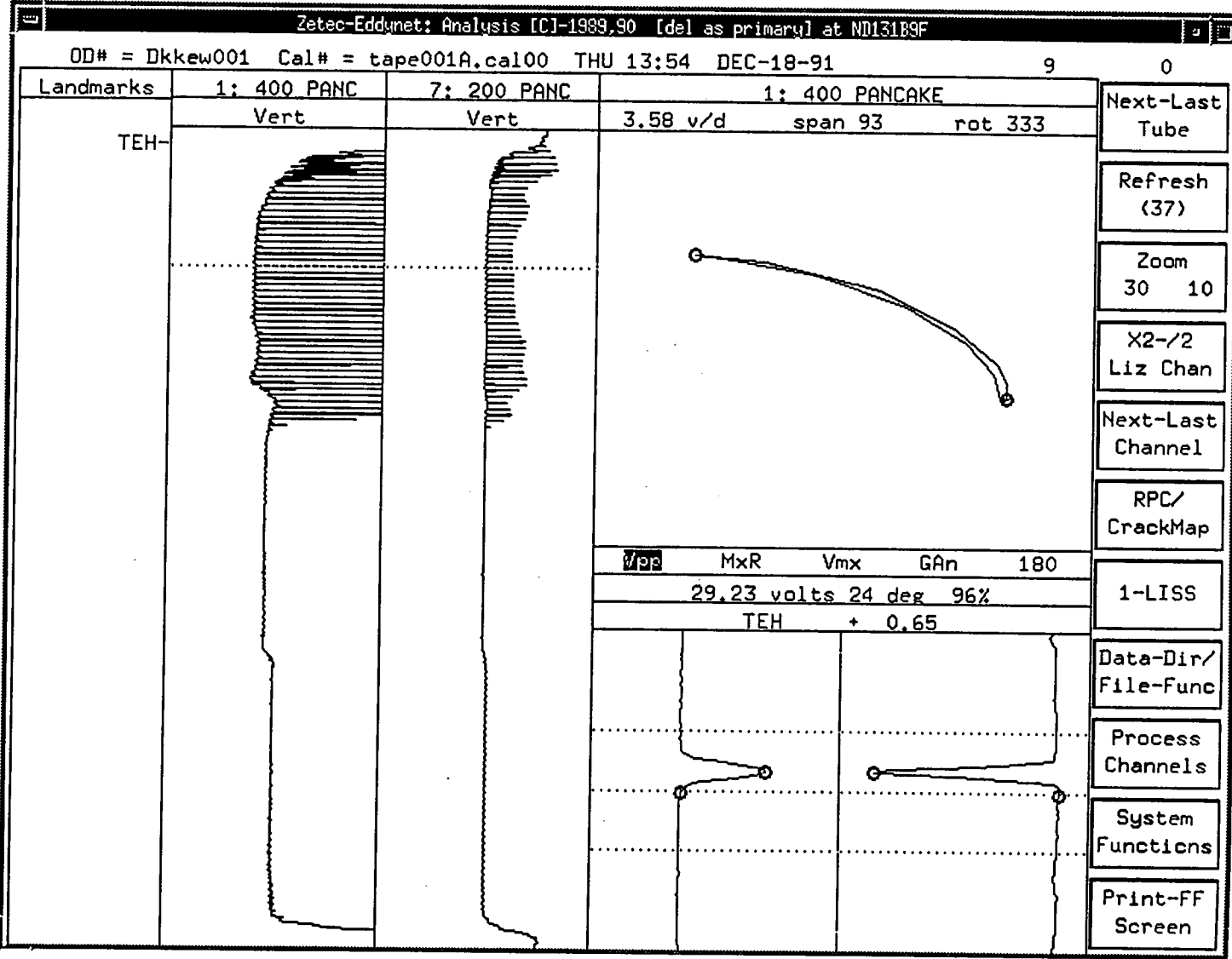


X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(39)	30 10	SPAN	SCRN	CRKMP



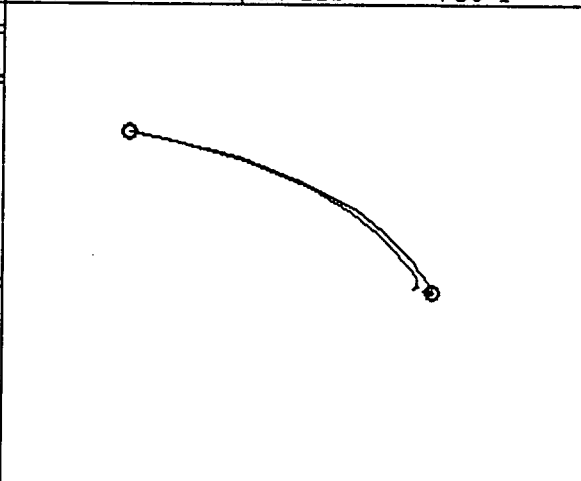
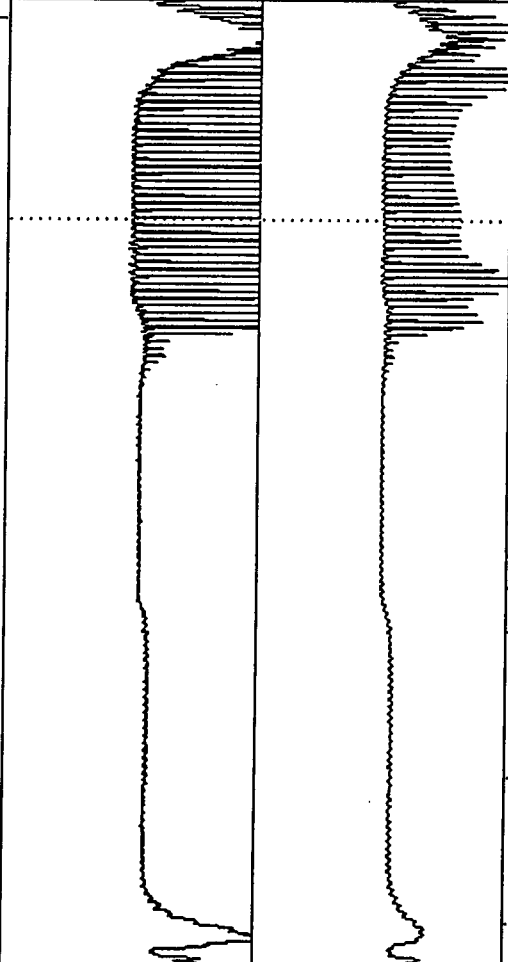




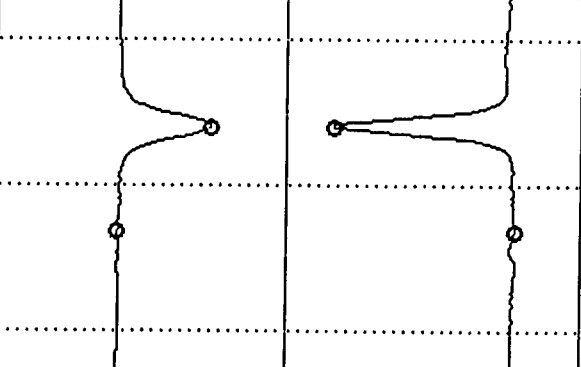
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:54 DEC-18-91 9 0

Landmarks	2: 400 CIRC	8: 200 CIRC	2: 400 CIRC
	Vert	Vert	2.74 v/d span 111 rot 1

TEH

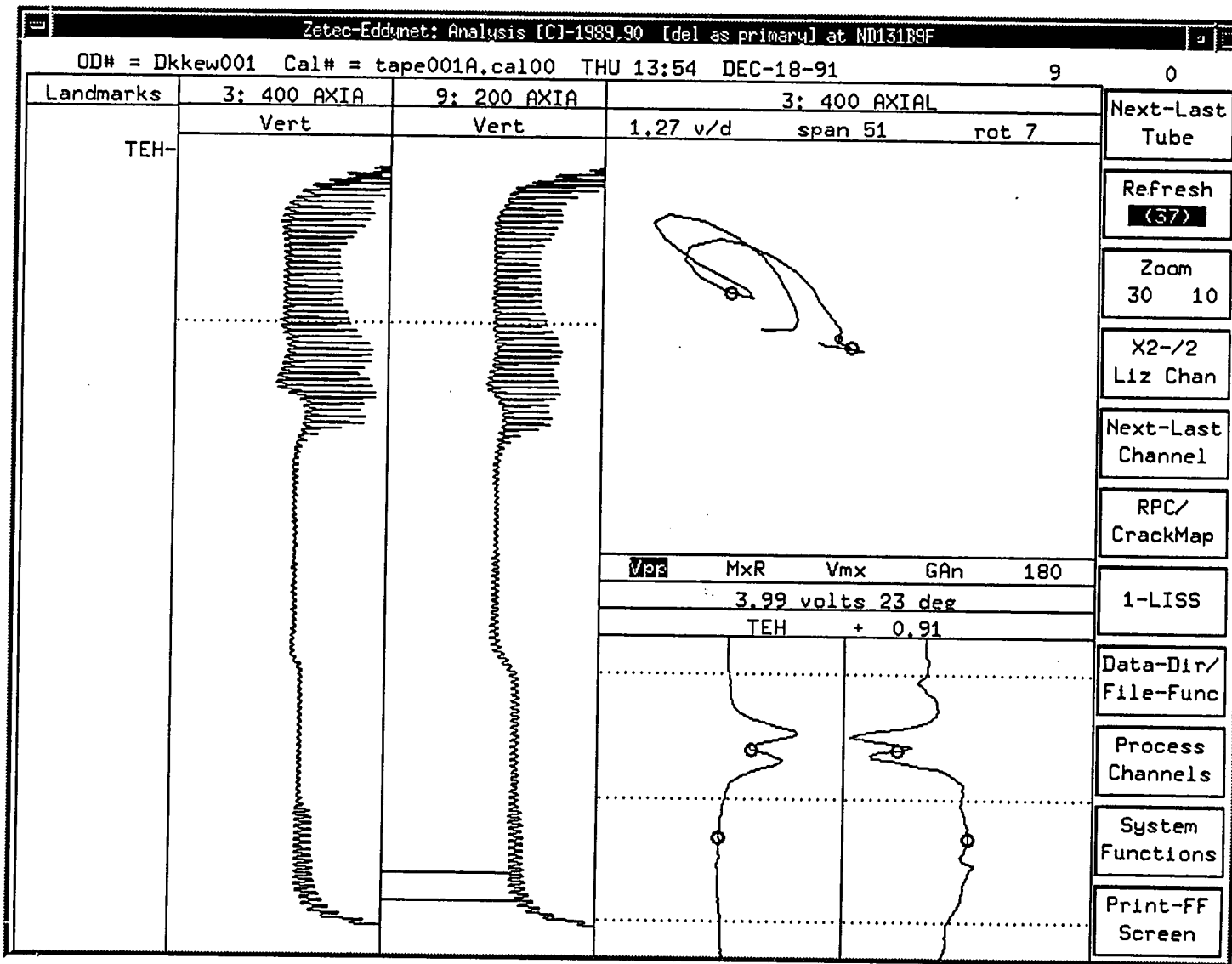


<u>Vpe</u>	MxR	Vmx	GAn	180
	19.11 volts	27 deg		
	TEH	+ 0.91		



- Next-Last Tube
- Refresh (39)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

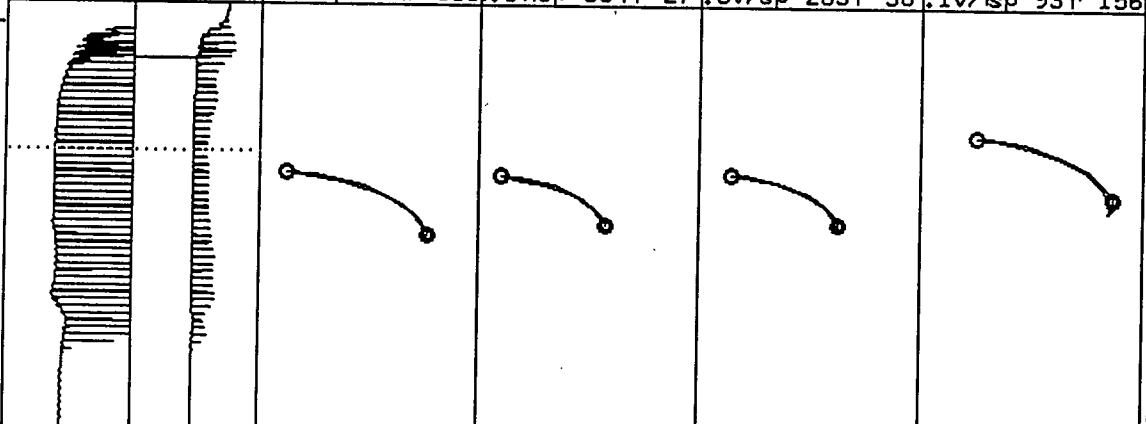




)# = Dkkew001 Cal# = tape001A.cal00 THU 13:54 DEC-18-91 9

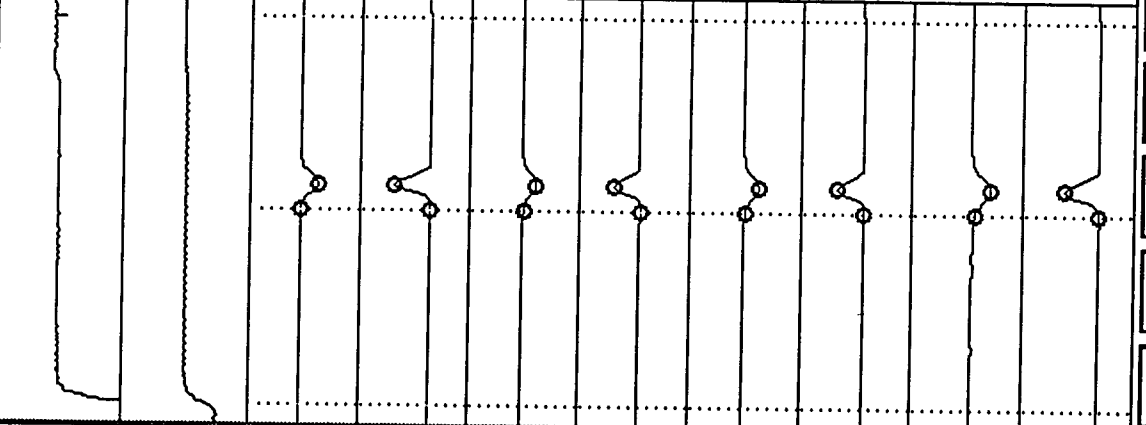
Lmrk : 400 PA: 200 PA 1: 400 PANCAKE 4: 300 PANCAKE 7: 200 PANCAKE 10: 100 PANCAKE  
 Vert Vert .0v/sp 23Er 333r .8v/sp 384r 27 .5v/sp 283r 58 .1v/sp 93r 156

TEH-



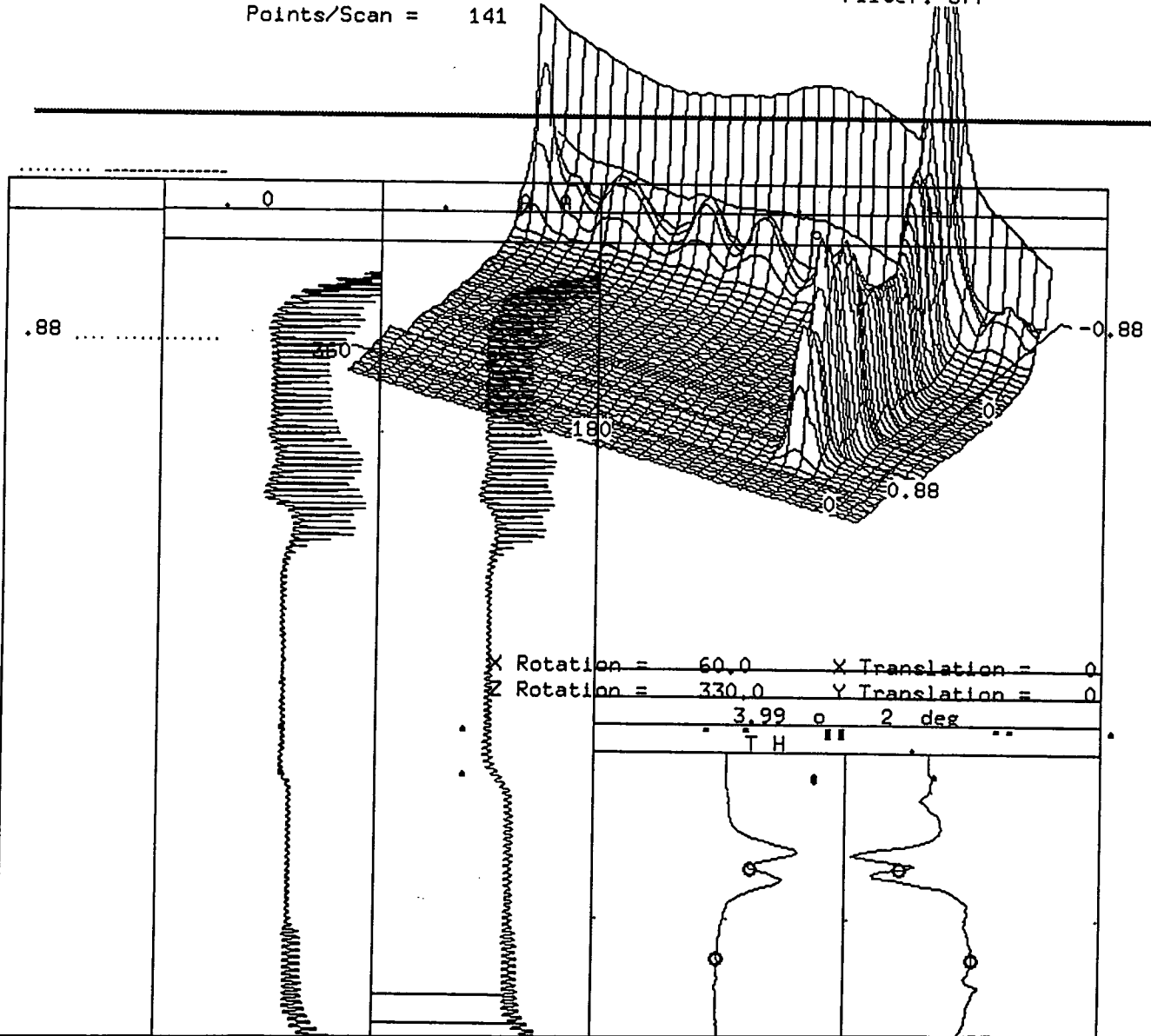
~~1~~ppMxRVmxGAN180 ~~4~~ppMxRVmxGAN180 ~~7~~ppMxRVmxGAN180 ~~10~~ppMxRVmxGAN180  
 28.61v 24d 96% 34.25v 25d 26.06v 24d 60% 10.97v 24d

TEH + 0.57



- Next-Last Tube
- Refresh (37)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/CraokMap
- 4-LISS
- Data-Dir/File-Func
- Process Channels
- System Functions
- Print-FF Screen

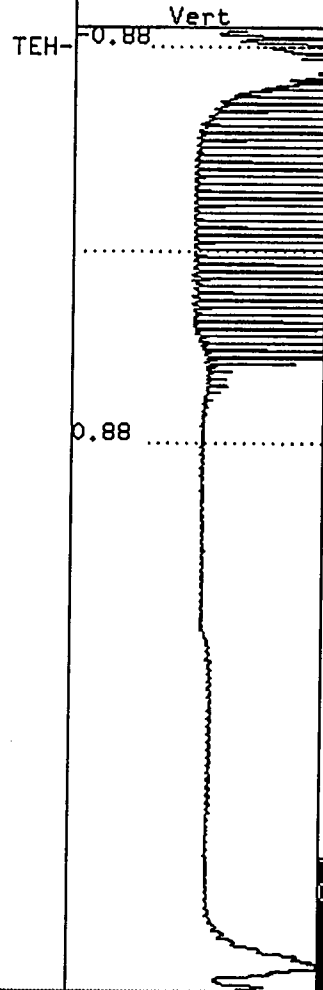
OD# = D kew00    a # = ta    1A a1    THU 13:54 DEC- -    9  
Lmr    1. 400 PANC    . 400    NCAKE    s an 93    rot 333  
          Vert        # of Scans =    55                    X & Y Scale =    1.0  
TEH-    .            Trig Offset =    13                    Filter: Off  
                      Points/Scan =    141



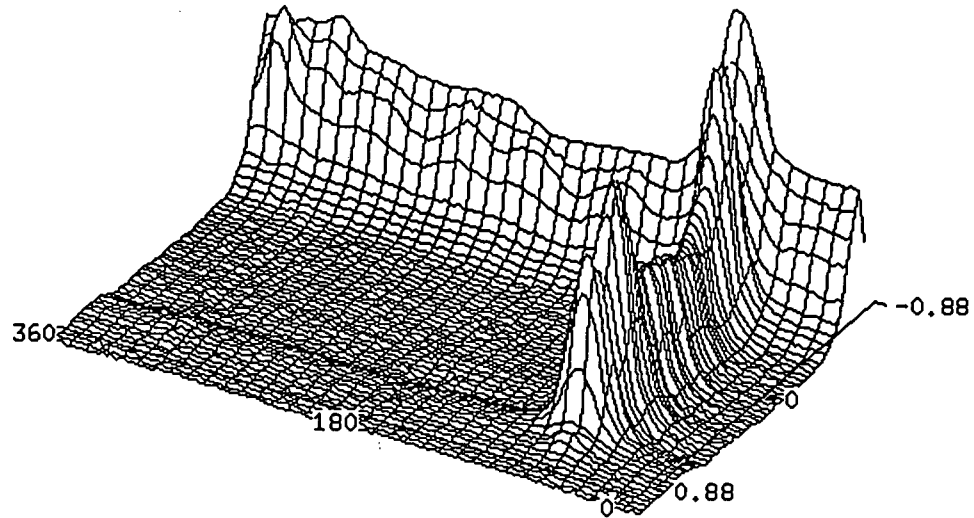
OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:54 DEC-18-91 9 0

Lmrk 2: 400 CIRC

2: 400 CIRC span 111 rot 1



# of Scans = 55 X & Y Scale = 1.0  
 Trig Offset = 13 Filter: Off  
 Points/Scan = 141



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(37)	30 10	SPAN	SCRN	CRKMP

OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:54 DEC-18-91 9 0

Lmrk 3: 400 AXIAL

3: 400 AXIAL span 51 rot 7

TEH-

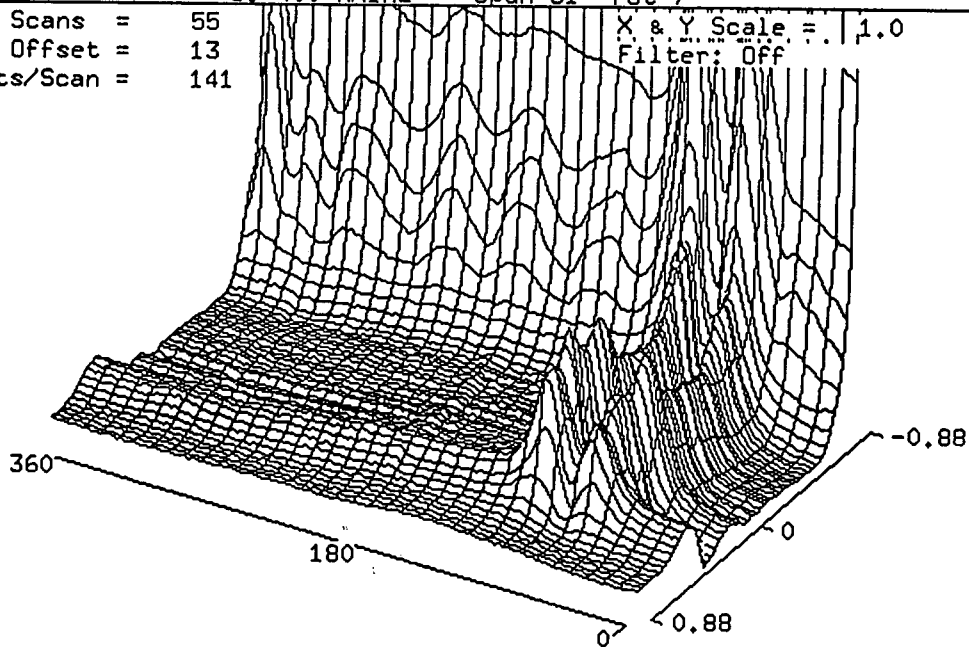
Vert

# of Scans = 55  
 Trig Offset = 13  
 Points/Scan = 141

X & Y Scale = 1.0  
 Filter: Off

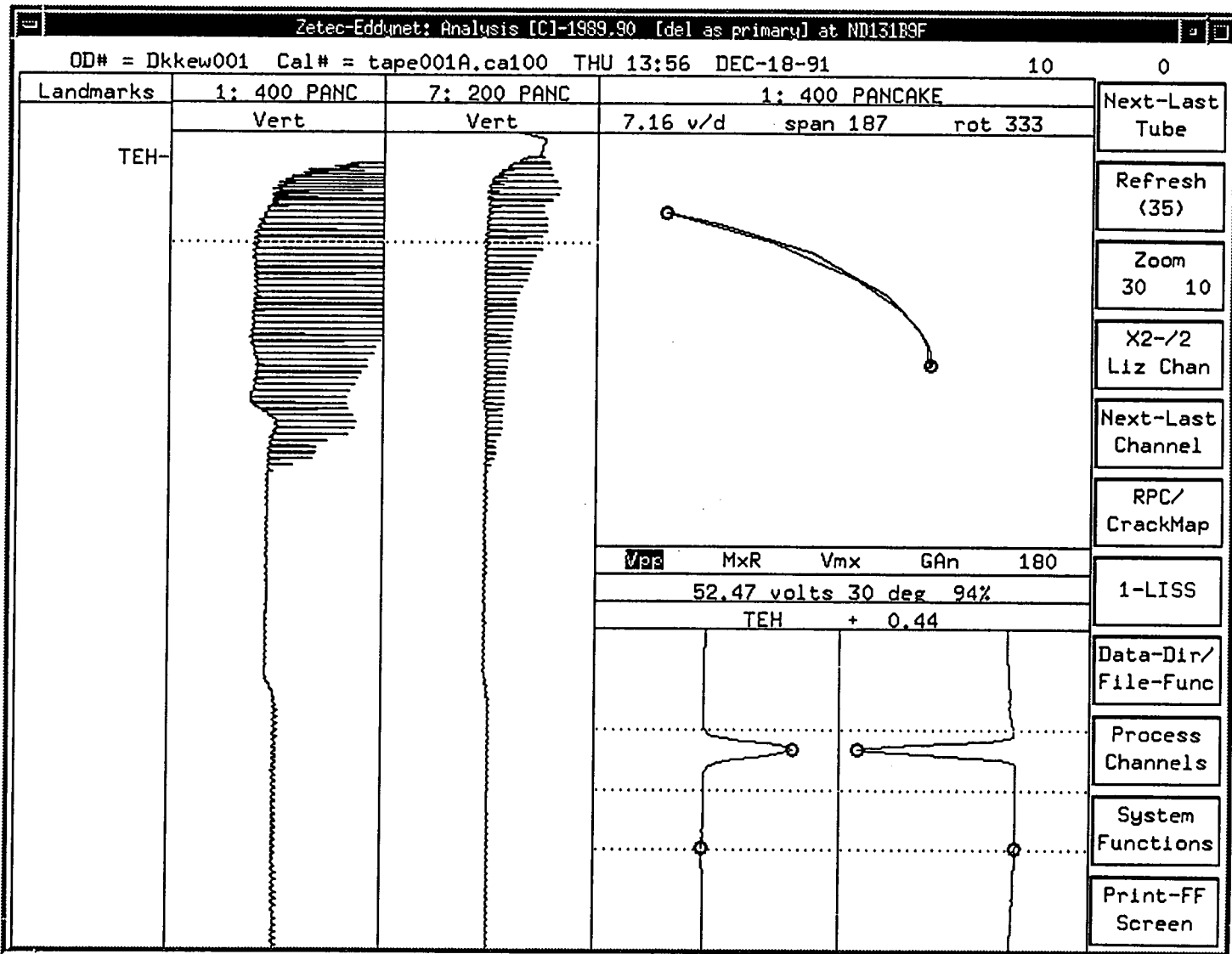
0.88

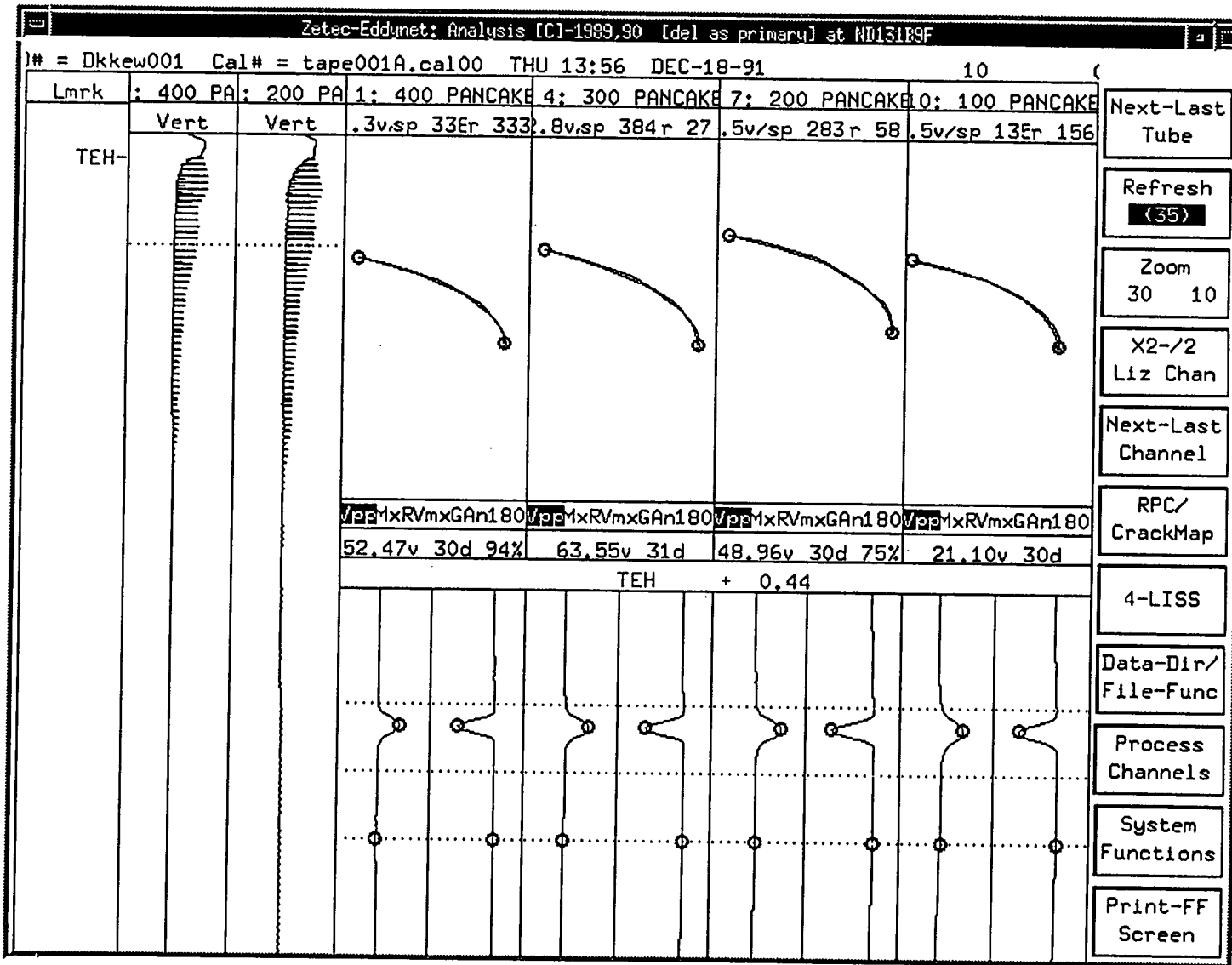
0.88



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

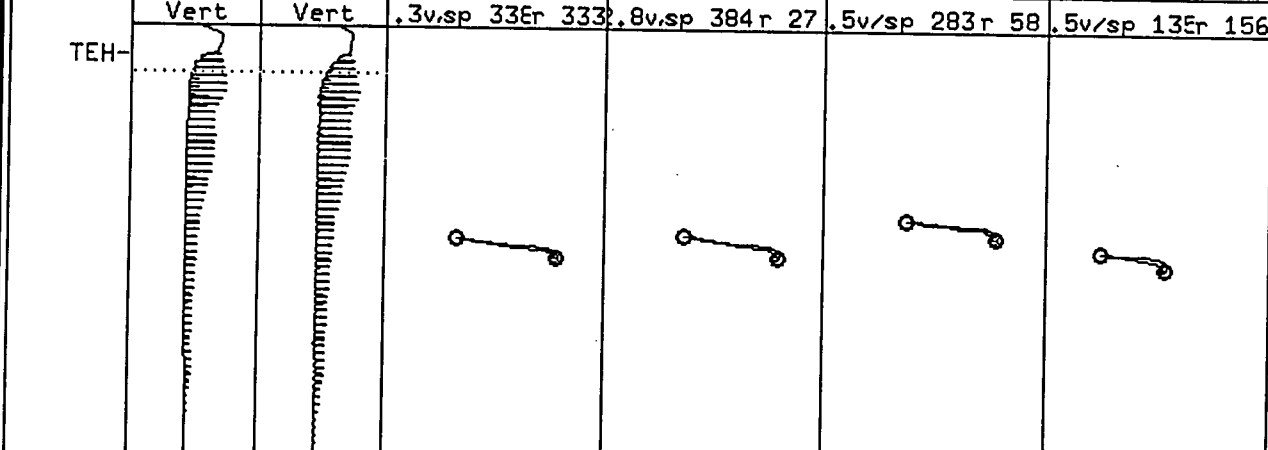
CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(37)	30 10	SPAN	SCRN	CRKMP





)# = Dkkew001 Cal# = tape001A.oal00 THU 13:56 DEC-18-91 10

Lmrk : 400 PA; 200 PA 1; 400 PANCAKE 4; 300 PANCAKE 7; 200 PANCAKE 0; 100 PANCAKE

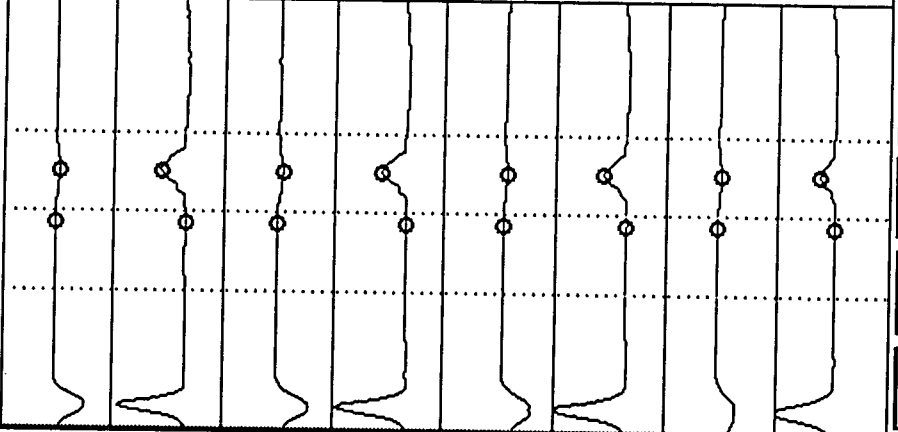


TEH-

180Vpp1xRVmxGAn180Vpp1xRVmxGAn180Vpp1xRVmxGAn180Vpp1xRVmxGAn180

26.40v 11d 67% 28.99v 12d 19.98v 11d 28% 6.75v 15d

TEH + 0.07



- Next-Last Tube
- Refresh (37)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 4-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

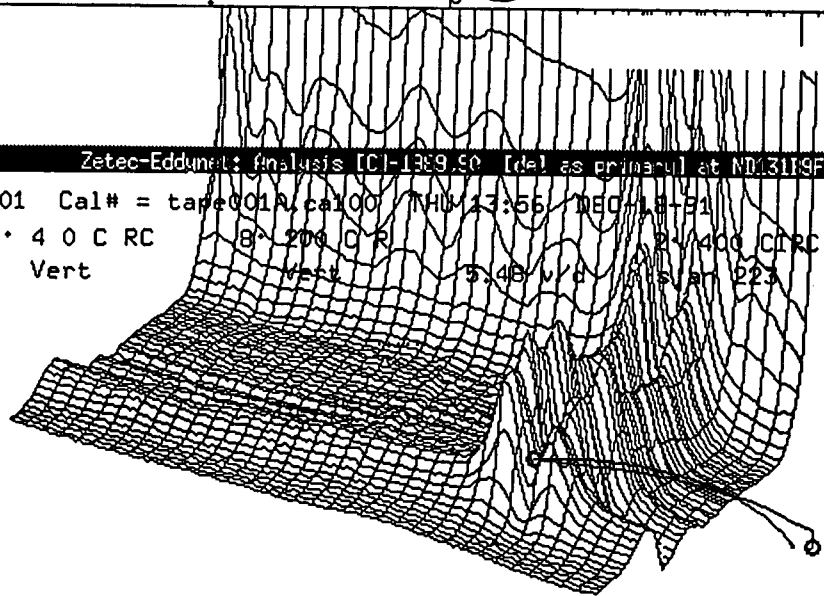


0 88

Zetec-Eddinet: Analysis [CI-1389.90 (dal as primary) at ND13119F

OD# = Dkkew001 Cal# = tape001A.cal100 THW 13:55 DEC 11-81 10 0  
Landmarks · 4 0 C RC 8-200 C R 2-400 CIRC  
Vert 5.48 V 0 223 rot 1

TEH- .....



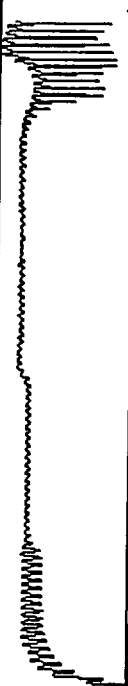
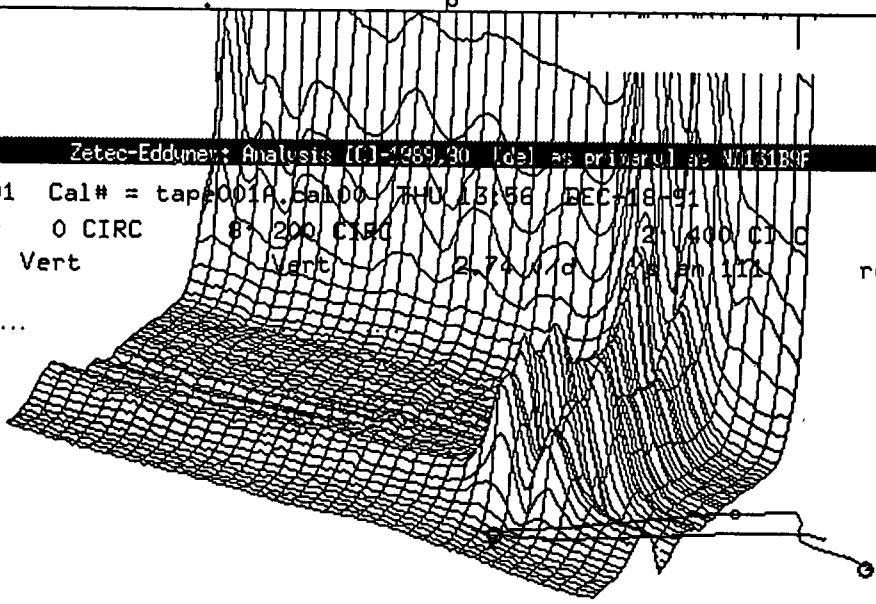
Vpp MxR Vmx GAn 180  
32 41 volts de  
EH + 0 12

CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(37)	30 10	SPAN	SCRN	CRKMP

- Next-Last Tube
- Refresh (67)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

Zetec-Eddiner: Analysis [C]-1989.30 [del] as driver [as] NW131BKF

OD# = Dkkew001 Cal# = tape001A, Cal00 THU 13:58 DEC 18 91 10  
Landmarks 2\* 0 CIRC 8\* 200 CIRC 2\* 400 CIRC  
Vert Vert 2.74 d 18.5m 11% rot 1

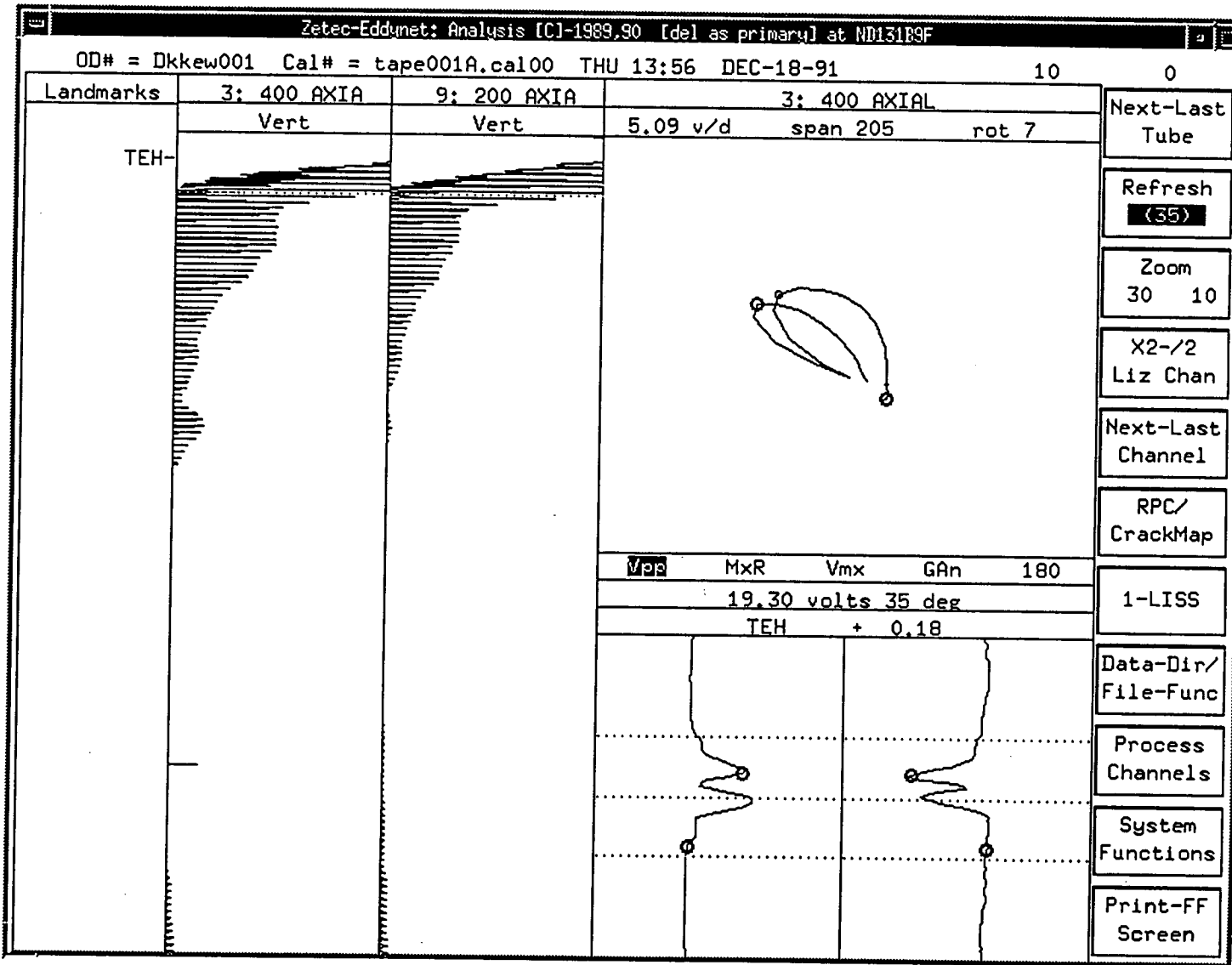


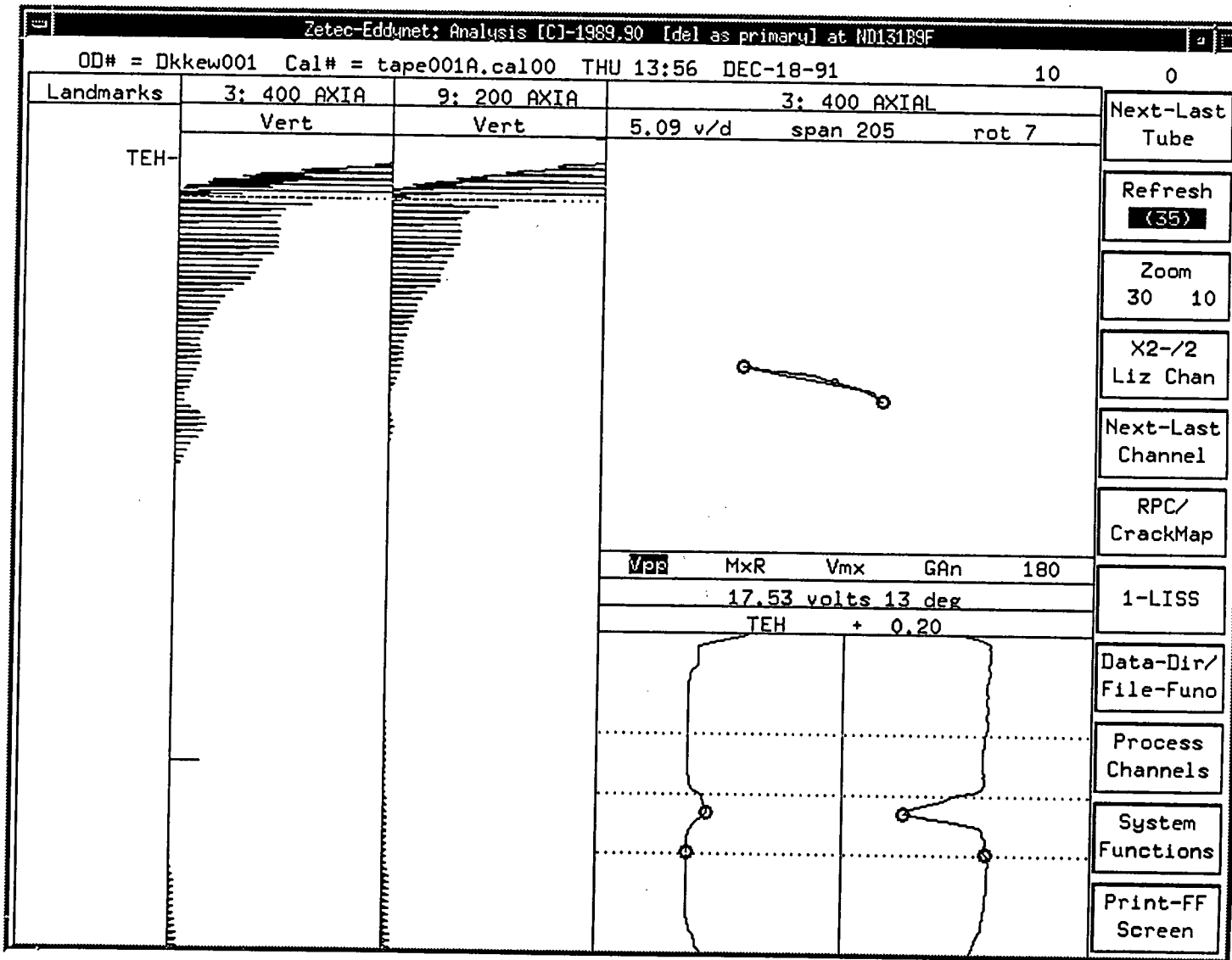
EH-

Vpe MxR Vmx GAn 180  
20 8 vol s e  
EH + 10

CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(37)	30 10	SPAN	SCRN	CRKMP

- Next-Last Tube
- Refresh (35)
- Zoom 30 10
- X2-/2 Liz Chan
- Next-Last Channel
- RPC/ CrackMap
- 1-LISS
- Data-Dir/ File-Func
- Process Channels
- System Functions
- Print-FF Screen

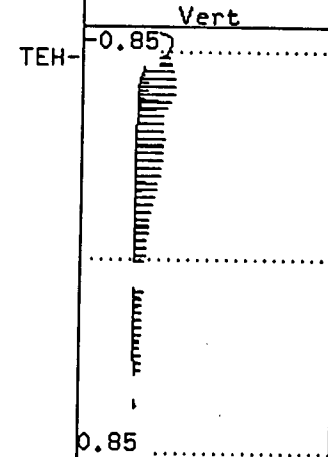




OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:56 DEC-18-91 10 0

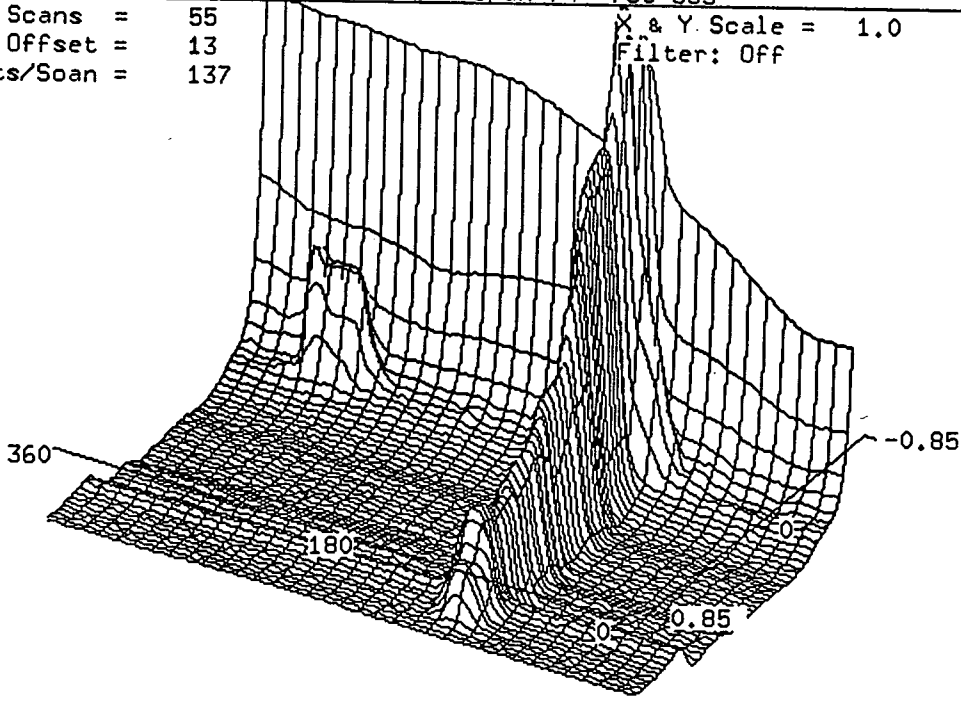
Lmrk 1: 400 PANCAKE

1: 400 PANCAKE span 74 rot 333



# of Scans = 55  
 Trig Offset = 13  
 Points/Scan = 137

X & Y Scale = 1.0  
 Filter: Off



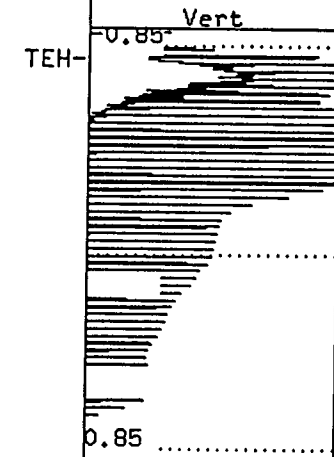
X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS		REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW		(35)	30 10	SPAN	SCRN	CRKMP

OD# = Dkkew001 Cal# = tape001A.cal00 THU 13:56 DEC-18-91 10 0

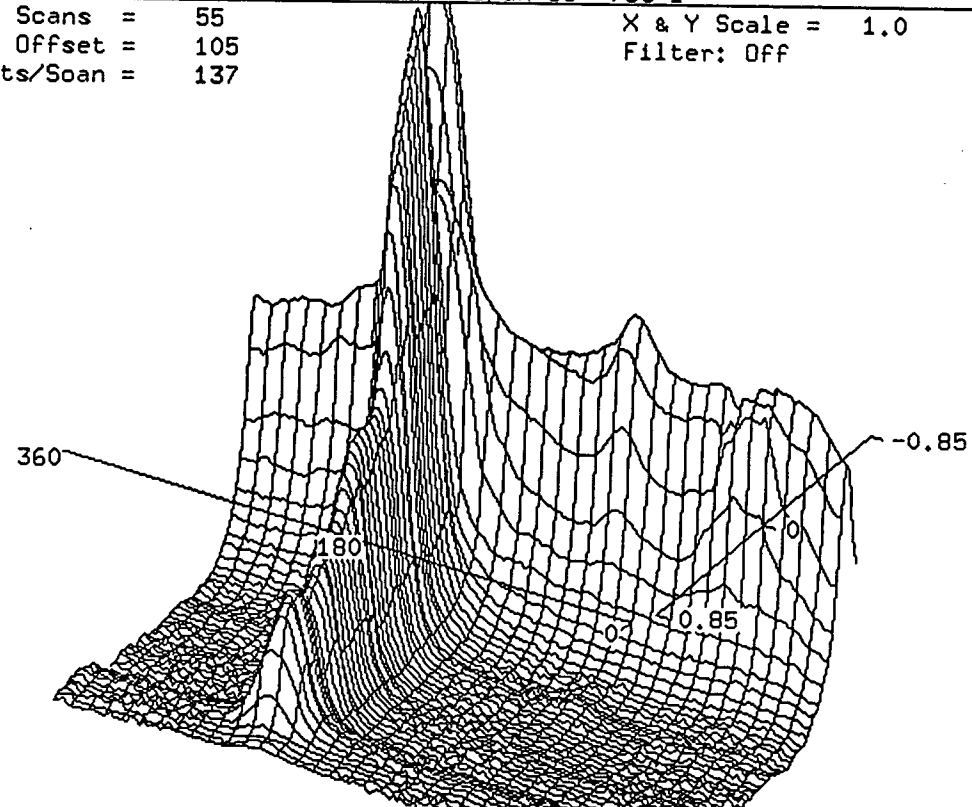
Lmrk 2: 400 CIRC

2: 400 CIRC span 55 rot 1



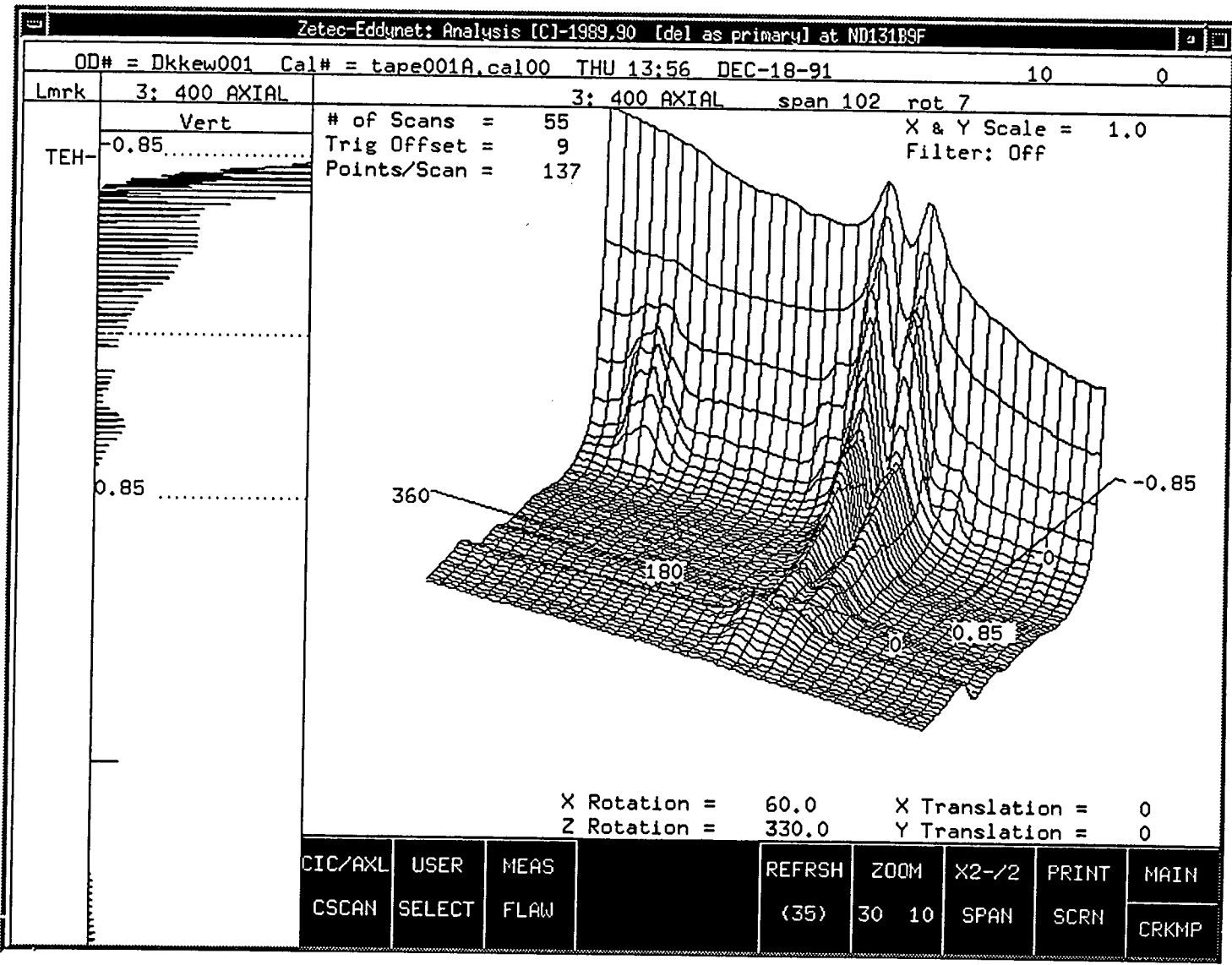
# of Scans = 55  
 Trig Offset = 105  
 Points/Scan = 137

X & Y Scale = 1.0  
 Filter: Off



X Rotation = 60.0 X Translation = 0  
 Z Rotation = 330.0 Y Translation = 0

CIC/AXL	USER	MEAS	REFRSH	ZOOM	X2-/2	PRINT	MAIN
CSCAN	SELECT	FLAW	(35)	30 10	SPAN	SCRN	CRKMP



ATTACHMENT 3

LIQUID PENETRANT TEST REPORTS



Plant/Unit WINDSOR  
 Comp/System Sleeving  
 Zone NA  
 Contract No. NA

PT No. 91-10  
 Procedure No. OP-9.4  
 Rev. No. 11  
 ST. No. NA Rev. NA

**LIQUID PENETRANT EXAMINATION**

	Brand Name	Type	Batch No.	Dwell Time
CLEANER:	<u>Magnaflux</u>	<u>SKC-NF</u>	<u>90FOIK</u>	<u>7 min</u>
PENETRANT:	<u>Magnaflux</u>	<u>SKL-HF/S</u>	<u>87K018</u>	<u>10 min</u>
REMOVER:	<u>Magnaflux</u>	<u>SKC-NF</u>	<u>90FOIK</u>	<u>10 min</u>
DEVELOPER:	<u>Magnaflux</u>	<u>SKD-NF</u>	<u>89C02K</u>	<u>7 min</u>

Instructions: Completely describe ALL Indications.  
 If in the "as-welded" condition - so state.  
 If no indications were found - so state.

EXAMINATION WELD/AREA	DESCRIPTION/REMARKS	ACCEPT	REJECT
<u>K-3</u>	NO INDICATIONS ↓	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>K-4</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>K-9</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>K-6</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>K-7</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Component Temperature 84°F

Photograph: None <input checked="" type="checkbox"/>	Attached <u>NA</u>
Sketch: None <input checked="" type="checkbox"/>	Attached <u>NA</u>

EXAMINER P.K. Long LEVEL III DATE 12-20-91  
 EXAMINER \_\_\_\_\_ LEVEL \_\_\_\_\_ DATE \_\_\_\_\_  
 REVIEWER \_\_\_\_\_ LEVEL \_\_\_\_\_ DATE \_\_\_\_\_  
 Authorized Inspection Agency \_\_\_\_\_ DATE \_\_\_\_\_

