

November 20, 2006

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

**Subject: Docket No. 50-362
Additional Information Supporting Third Ten-Year Inservice Inspection
(ISI) Interval Relief Request ISI-3-21 Request for Alternative to ASME
Code Rules for the Embedded Flaw Repair Process for Control
Element Drive Mechanism (CEDM) # 56
San Onofre Nuclear Generating Station Unit 3**

References: See Enclosure 1

Dear Sir or Madam,

Pursuant to 10 CFR 50.55a(a)(3)(i), the Southern California Edison (SCE) Company requested the U. S. Nuclear Regulatory Commission (NRC) approval to allow the continued use of the embedded flaw repair process during Cycle 14 operation as an alternative to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Process for the current configuration of Reactor Vessel Head Penetration (RVHP) CEDM # 56 (Reference 1).

SCE implemented the embedded flaw repair process on CEDM # 56 during the Cycle 13 refueling outage in October 2004, as described in Relief Request ISI-3-13, (Reference 2), which was approved for one cycle of operation.

In a public meeting on March 2, 2006, SCE presented information regarding its conclusion that the indication in CEDM # 56 may not be a flaw indication; and SCE proposed a course of action that would allow SCE to gather further data prior to making additional repairs on CEDM # 56. If the Cycle 14 refueling outage inspection data indicated growth, SCE would immediately perform additional repairs on CEDM # 56 using Relief Request ISI-3-22 (Reference 3). If the Cycle 14 refueling outage inspection data did not indicate growth, SCE proposed to operate one additional cycle while making a final determination of the indication in CEDM # 56. Following return to service from the Cycle 14 refueling outage, if SCE can not conclude that the indication in CEDM # 56 is not a flaw, SCE will perform additional repairs using ISI-3-22 during the Cycle 15

refueling outage. SCE proposed that a measured change from 77.6% through wall to 81.8% through wall be considered growth and a repair be initiated.

On March 22, 2006, SCE and NRC staff conducted a teleconference regarding the information provided during the March 2, public meeting. As a result of the agreement reached between SCE and the NRC staff during that teleconference, SCE submitted ISI-3-21, in which SCE stated that a change in dimension of the indication from 77.6% through wall to 80.7% through wall (change of 0.020 inches) would be considered growth and a repair would be initiated.

SCE has completed the Cycle 14 inspection and, SCE has determined that the indication in CEDM # 56 did not increase more than the 0.020 inches specified in ISI-3-21. The data sheets provided in Enclosure 2 show a decrease in size from 0.513 to 0.464 inches, which equates to a change from 77.6% through wall 70.2% through wall in Cycle 14.

Furthermore, as agreed in a November 14, 2006, teleconference between SCE and NRC staff, SCE has completed the Cycle 14 inspection and is providing a report (Enclosure 3) that provides a comparison of volumetric examinations performed on the SONGS Unit 3 RVHP for CEDM # 56 during the Cycle 12, Cycle 13, and Cycle 14 refueling outages. This comparison was derived from the raw data files recorded during those examinations. Each of these inspections employed the same transducer design that is also equivalent to the design employed during the EPRI demonstration of Westinghouse RVHP inspection technique.

For the purpose of this comparison, the non destructive examination (NDE) data analysis was performed by a single qualified analyst using consistent software for all three data sets. This approach was used to reduce non relevant variables from the comparison. The attachment also includes graphics presenting ultrasonic data at the position of maximum indication depth. The results of this comparison are summarized below:

Indication depth from ID surface (Penetration nominal wall thickness 0.661)

Cycle-12	0.169 inches (74.4%)
Cycle-13	0.170 inches (74.3%)
Cycle-14	0.169 inches (74.4%)

The results from this comparison demonstrate that there has been no discernable change in the indication since first detected during the Cycle 12 refueling outage.

As provided in the attached report, the data analysis performed at the time of the inspections (the inspections of record) has a much wider variation in recorded position. These variations led to a conclusion in the Cycle 13 refueling outage that primary water stress corrosion cracking (PWSCC) may have been present in CEDM # 56 due to apparent growth of the indication relative to the Cycle 12 record.

During the Cycle 14 refueling outage, SCE also deployed an inspection probe that was developed by Westinghouse to more precisely locate the maximum depth of this indication. Analysis of data from that probe is not included in the attached report. However the initial field analysis indicates that the reflector may be positioned slightly over 75% from the OD surface, which exceeds ASME Code limitations for flaw evaluation. For that reason, SCE is not prepared to withdraw Relief Request ISI-3-21 based on the enclosed report (Enclosure 3) which shows a depth of less than 75% in all cases.

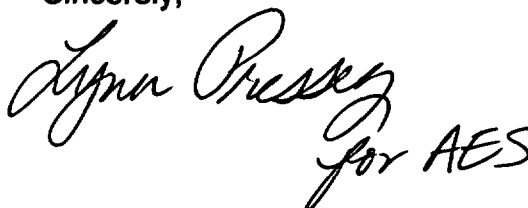
SCE continues to believe that the indication identified in CEDM # 56 is not a flaw. Inspection data collected during the current Cycle 14 refueling outage supports that conclusion. SCE intends to complete a formal evaluation documenting that conclusion and expects to provide a copy of that evaluation to the staff in the spring of 2007.

Upon SCE concluding that the indication in CEDM # 56 is not a flaw, SCE intends to withdraw Relief Requests ISI-3-21 and ISI-3-22. If SCE is unable to conclude the indication is not a flaw, SCE will perform an additional repair on CEDM # 56 during the Cycle 15 refueling outage.

SCE and Westinghouse personnel are available to discuss details of the analysis, present the original inspection reports, and the present the inspection data at your earliest availability.

Should you have any questions or want to set up a meeting to discuss the inspection data, please contact Ms. Lynn Pressey at (949) 368-6351.

Sincerely,

Handwritten signature of Lynn Pressey in cursive, with "for AES" written below it.

Enclosures

cc: B. S. Mallett, Regional Administrator, NRC Region IV
N. Kalyanam, NRC Project Manager, San Onofre Units 2, and 3
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 and 3

ENCLOSURE 1

References

ENCLOSURE 1

References

- References:**
- 1) Letter from A. E. Scherer (SCE) to the U. S. Nuclear Regulatory Commission (Document Control Desk) dated May 11, 2006; Subject: Docket No. 50-362, Third Ten-Year Inservice Inspection (ISI) Interval Relief Request ISI-3-21 Request for Alternative to ASME Code Rules for the Embedded Flaw Repair Process for Control Element Drive Mechanism (CEDM) # 56
San Onofre Nuclear Generating Station Unit 3**
 - 2) Letter from A. E. Scherer (SCE) to the U. S. Nuclear Regulatory Commission (Document Control Desk) dated October 26, 2004; Subject: Docket No. 50-362, Third Ten-Year Inservice Inspection (ISI) Interval Relief Request ISI-3-13 Request for Alternative to ASME Code Rules for the Embedded Flaw Repair Process for Reactor Vessel Head Penetrations 56
San Onofre Nuclear Generating Station Unit 3**
 - 3) Letter from A. E. Scherer (SCE) to the U. S. Nuclear Regulatory Commission (Document Control Desk) dated May 11, 2006; Subject: Docket No. 50-362, Third Ten-Year Inservice Inspection (ISI) Interval Relief Request ISI-3-22 Request for Alternative to ASME Code Rules for the Inside Diameter Structural Weld Overlay Repair Process for Control Element Drive Mechanism (CEDM) # 56
San Onofre Nuclear Generating Station Unit 3**

ENCLOSURE 2

**SAN ONOFRE Unit 3
Control Element Drive Mechanism (CEDM) #56**

Ultrasonic Report Sheet dated 10/8/04

Ultrasonic Report Sheet dated 10/27/06



Westinghouse

ULTRASONIC REPORT SHEET

Plant : San Onofre Unit: 3
 Penetration No: 56
 Probe Type: CEDM OHS

Procedure No: WDI-UT-010 Rev. 13, FCN 1
WDI-UT-013 Rev. 11, FCN 1,2
 File Name: CON03_C14_OH01_056_01 Date: 10/27/06
 Analyst: G. Roper Level: 2
 Signature: 2/1 Walsh for G. Roper

IND #	CH/PR	L @ max	Ø @ max	L 1	L 2	L 3	L 4	Ø 1	Ø 2	d I	d O	IND	RESO	Evaluation Comments
1	1	1.060	350			**	2.46	342	358		0.464"	PTI/ CBH		
	2											***		
	3											NDD		

Comments: ** Lower edge of weld not visible in area of indication. *** CH 2 shows evidence of grain growth in area of indication 1, but no diffraction signals.
WIL OBSERVED 0-360 INTERMITTENTLY

NOMINAL T: 0.661"		LDA (Leak detection assessment) Comments: NDD					LDA IND		LDA RESO	
		NO LEAK PATH OBSERVED					NDD		N/A	
		AS MEASURED LOWER EXAM EXTENT			AS MEASURED UPPER EXAM EXTENT					
		CH1 @ 0°		Lower Exam Extent (Bottom - Start)	CH1 @ 180°		Upper Exam Extent (Stop - Top)			
		Start	Bottom		Top	Stop				
		N/A	N/A	1.160	5.420	9.500	4.080	Scan#	Degrees	
								1	0°-360°	
Reviewer: <u>Randall Weather</u>		Lv: <u>II</u>		Date: <u>10/28/06</u>						
Resolution: <u>Michael Kuntz</u>		Lv: <u>III</u>		Date: <u>10/26/06</u>						
Customer Review: <u>Bonik</u>				Date: <u>28 Oct 06</u>						



Westinghouse

ULTRASONIC REPORT SHEET

Plant : SAN ONOFRE Unit: 3
 Penetration No: 56
 Probe Type: OHS

Procedure No: WDI-UT-129 Rev. 1 FCN# 1, 2
 File Name: CONO_3 OH01_056_01 Date: 10/8/04
 Analyst: Joshua Whiting Level: II
 Signature: [Signature]

IND #	CH/PR	L _{max} @	Ø _{max} @	L 1	L 2	L 3	L 4	Ø 1	Ø 2	d I	d Ø	IND	RESO	Evaluation Comments
1A	1	1.020"	356°	0.300"	1.500"	0.980"	2.700"	356°	356°	N/a	0.513"	-		
1B	1	1.900"	348°	1.500"	2.260"	1.060"	2.700"	348°	356°	N/a	0.313"	-		
1	1	Summary		0.300"	2.260"	-	-	348°	356°	N/a	0.513	PTI**	SE	
1	2	Ch. #2 confirms Ind. 1 seen with Ch.# 1										PTI**	SE	
1	4	-	-	0.500"	0.980"	0.980"	2.700"	356°	358°	N/a	N/a	LOB	SE	
N/A	1											NDD*	NDD	
N/A	2											NDD*	NDD	
N/A	3	N/A												

329° set to 0°

Comments: *Will Observed From 0° to 360° Intermittently

** From the last inspection (Cycle 12) the Ind. # 1 has grown by 0.14" in length and 0.068" in depth. However, the data-quality has improved since last cycle (Cycle 12)

NOMINAL T: 0.661"		LDA (Leak detection assessment) Comments:						LDA IND		LDA RESO	
		No Leak Path Observed						NDD		NDD	
		AS MEASURED LOWER EXAM EXTENT			AS MEASURED UPPER EXAM EXTENT						
		0° X-ducer @ 0°			0° X-ducer @ 180°						
		Lower Exam Extent (Bottom - Start)		Upper Exam Extent (Stop - Top)		Scan#		Degrees			
		Start	Bottom	Top	Stop						
		-0.100	1.060	1.160	5.660	9.060	3.400	1	211-360-217		
Reviewer :	<u>Jorge Benito</u>	Lv:	<u>UT II</u>	Date:	<u>10/9/2004</u>						
Resolution:	<u>Chelle Banda Ref. 10/13/04</u>	Lv:	<u>III</u>	Date:	<u>10/13/04</u>						
Customer Review:											

ENCLOSURE 3

**SAN ONOFRE Unit 3
Control Element Drive Mechanism (CEDM) #56
November 2006 Ultrasonic Exam Re-evaluation**

**SAN ONOFRE Unit 3
Control Element Drive Mechanism (CEDM) #56
November 2006 Ultrasonic Exam Re-evaluation**

Scope:

This report contains the November 2006 reanalysis of Reactor Vessel Head Penetration (RVHP) penetration CEDM #56 Time of Flight Differential (TOFD) ultrasonic data collected for the inspection periods of 2003, 2004 Pre and Post repair, and 2006.

Examination Results:

2003 Inspection (PCS-24)

During the inspection of CEDM #56 a Parent Tube Indication (PTI) was reported at a circumferential location of 356° near the lower extent of the weld. This indication was reported to have a remaining ligament of 0.293" from the inside surface and was dispositioned as grain noise after supplemental eddy current examination confirmed that there was no outside diameter (OD) or inside diameter (ID) surface connection.

Data from the 2003 inspection were re-evaluated in November 2006. Evaluation of the same indication has determined that the indication had a remaining wall of 0.169". This evaluation considered both the B and "B" prime scan (Figures 1A and 1B) for evaluation.

2004 Inspection Results. (PCS-24)

During the inspection of CEDM #56 a PTI was reported. This indication was reported at a circumferential location of 356° near the lower extent of the weld. This indication was reported to have a through wall depth of 0.513" with a remaining ligament of 0.148". The reported growth since the previous inspection led to a weld repair of the penetration.

Sizing results of this indication in November 2006 were similar to the 2004 inspection record. The indication through wall depth was 0.491" with a remaining ligament of 0.170". (See Figures 2A and 2B).

The November 2006 analysis of post repair inspection data found no change from the pre repair inspection data. (See Figure 3)

**SAN ONOFRE Unit 3
Control Element Drive Mechanism (CEDM) #56
November 2006 Ultrasonic Exam Re-evaluation**

2006 Inspection Results. (PCS-24)

During the inspection of CEDM #56 a PTI was reported. This was the same indication reported during the 2003 and 2004 pre and post repair inspections. This indication was reported at a circumferential location of 350° near the lower extent of the weld. This indication was reported to have a through wall depth of 0.464" with a remaining ligament of 0.197". The analyst noted there were no diffraction signals typical of PWSCC observed.

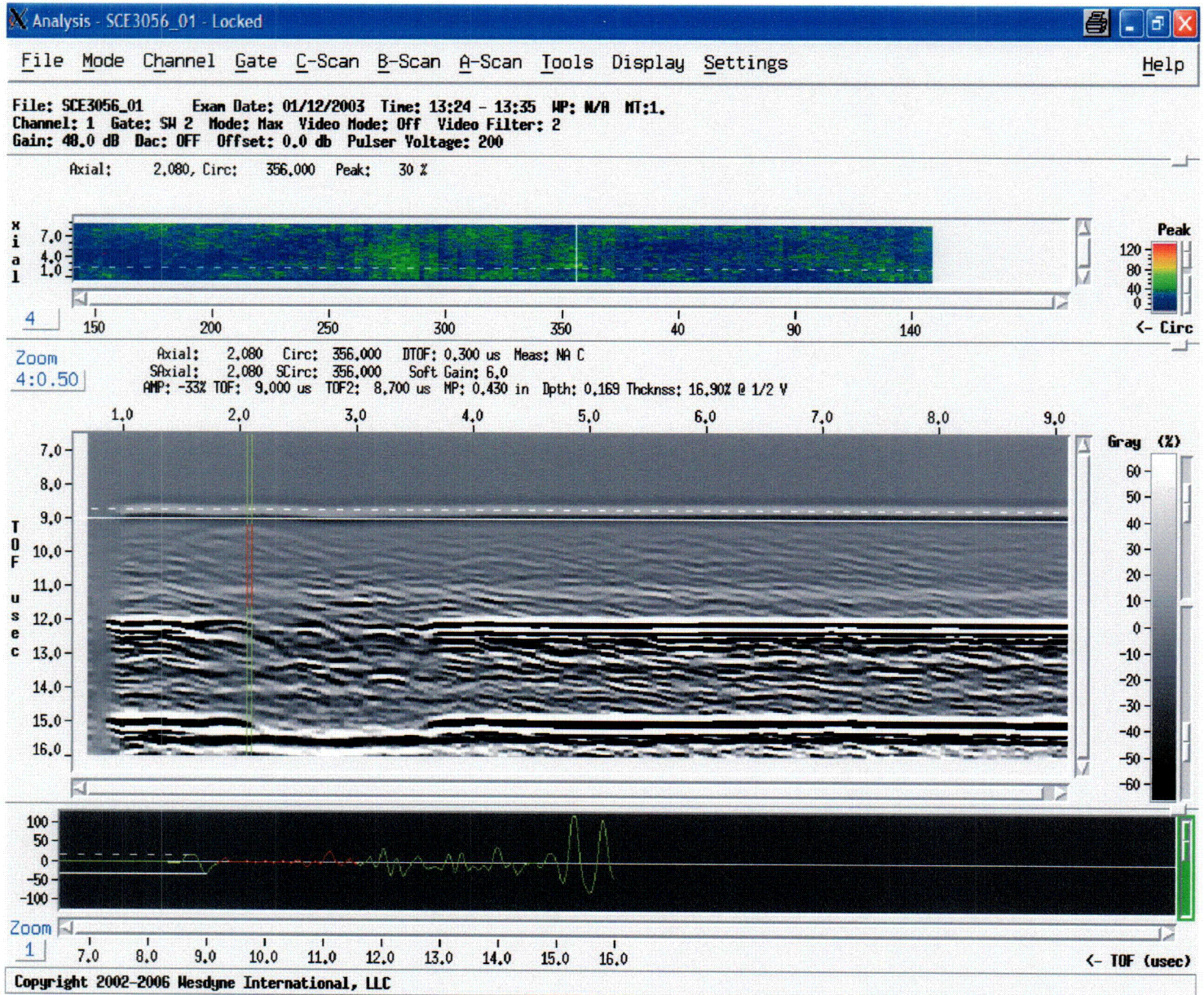
The November 2006 re-evaluation concluded that the Indication has a through wall depth of 0.492" and a remaining ligament of 0.169". (See Figures 4A and 4B).

Summary:

Comparing Figures 1A from the Cycle-12 inspection and Figure 4A from the Cycle-14 inspection shows that the depth of this indication in CEDM 56 has remained essentially the same from 2003 thru 2006. It is SCE's conclusion that this indication shows no growth from discovery in 2003.

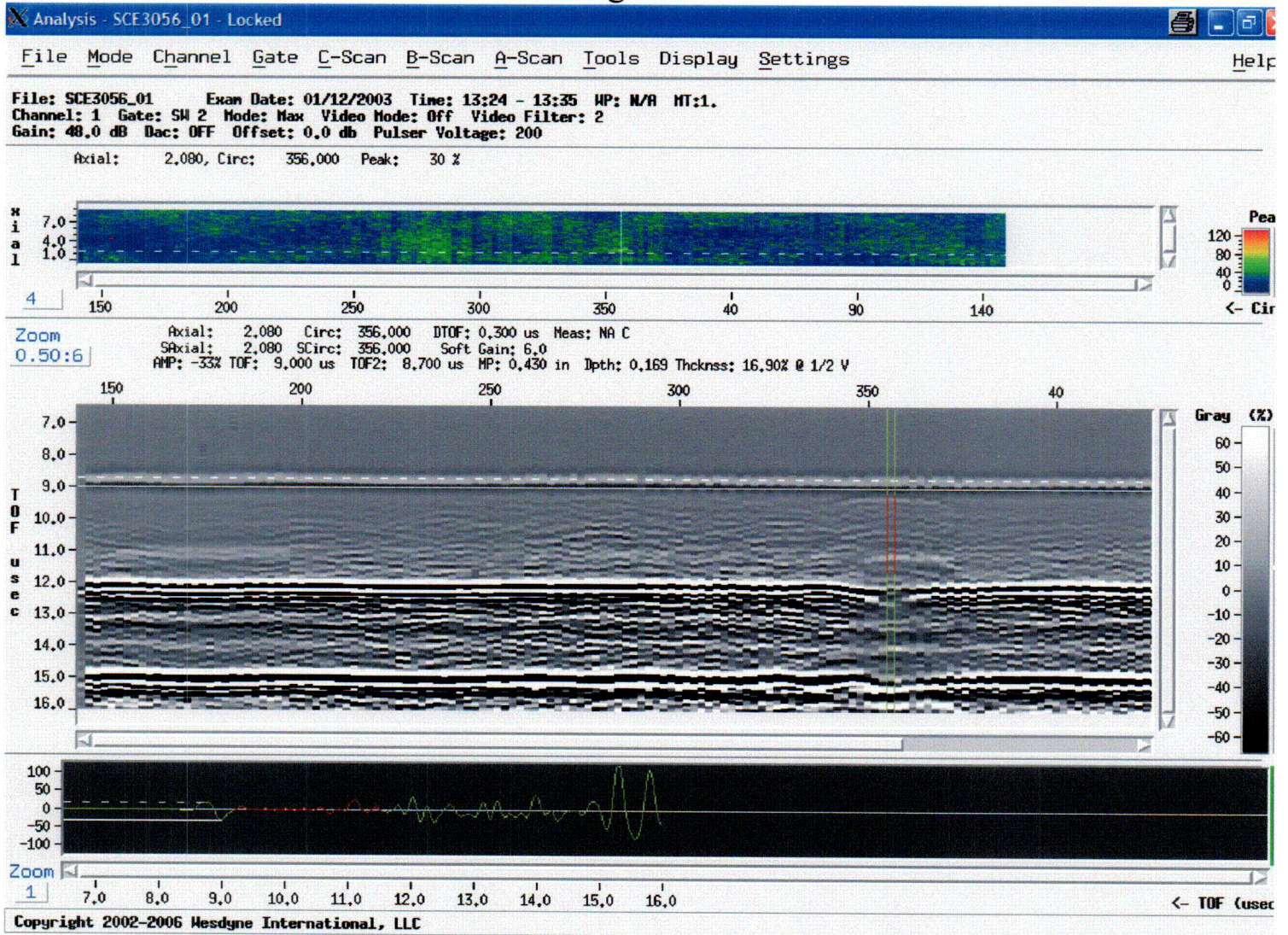
Within this comparison there are slight changes in the grain noise due to refinement in calibration settings, better transducer contact and an increase in pulse voltage. It appears that the original sizing of this indication during the 2003 inspection did not accurately identify the indication's maximum depth. This is in part due to having determined in 2003 that the indication was not a PWSCC flaw. Under sizing of this indication in 2003 led to reported growth and repairs during the 2004 inspection.

Figure 1A



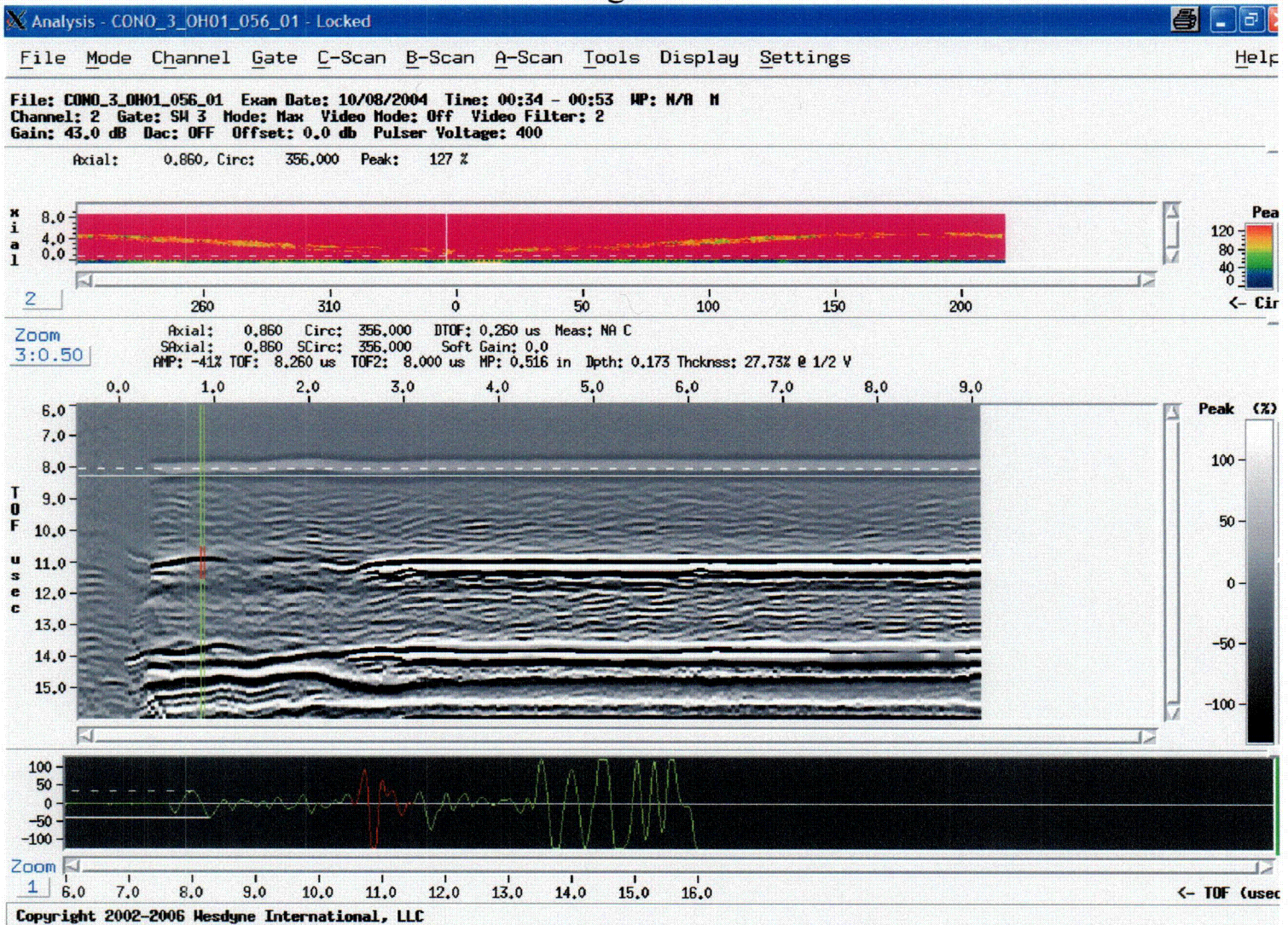
Indication (Anomaly) #1
B Scan Channel 1

Figure 1B



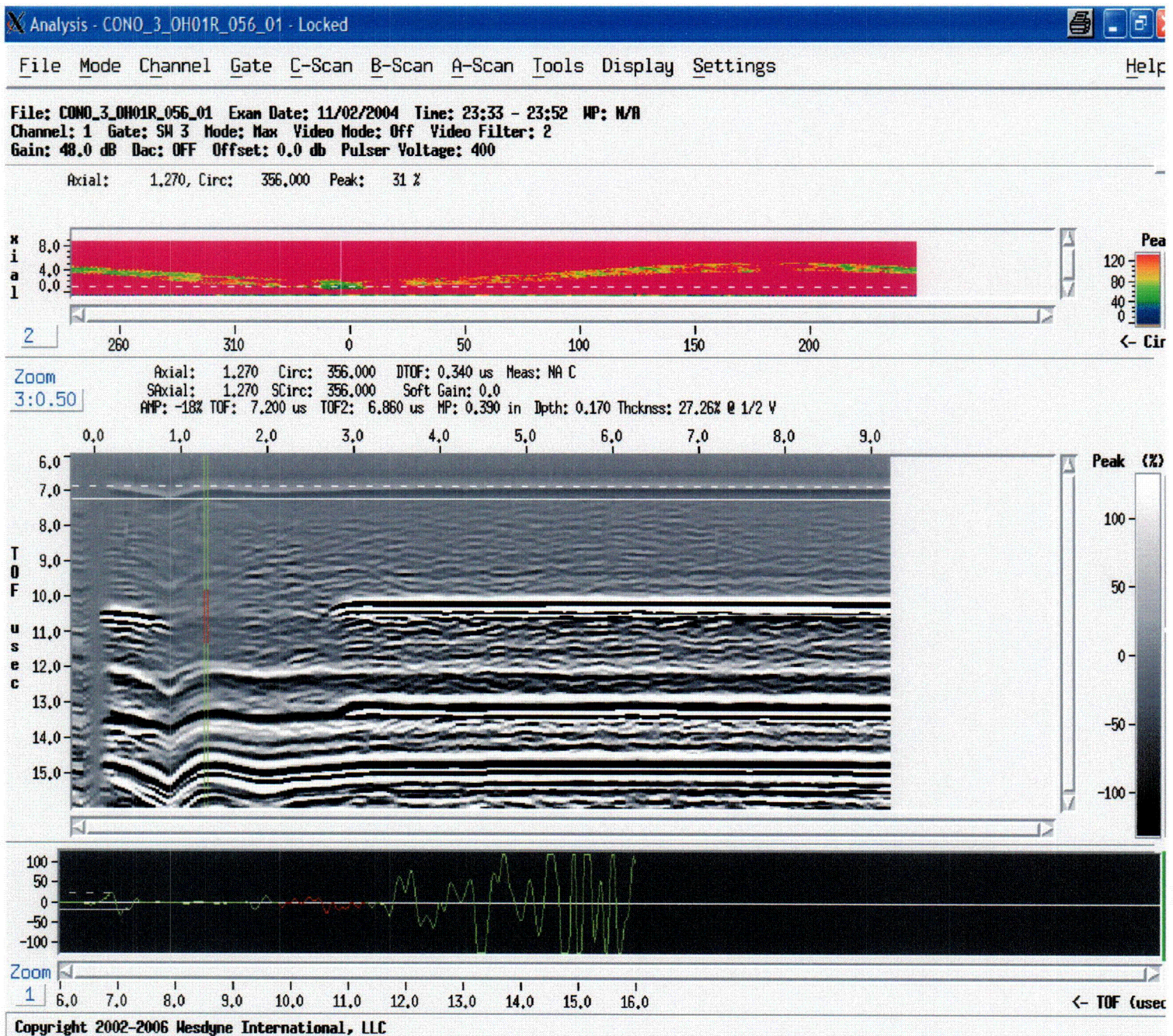
Indication (Anomaly) #1
 "B" Prime Scan Channel 1

Figure 2A



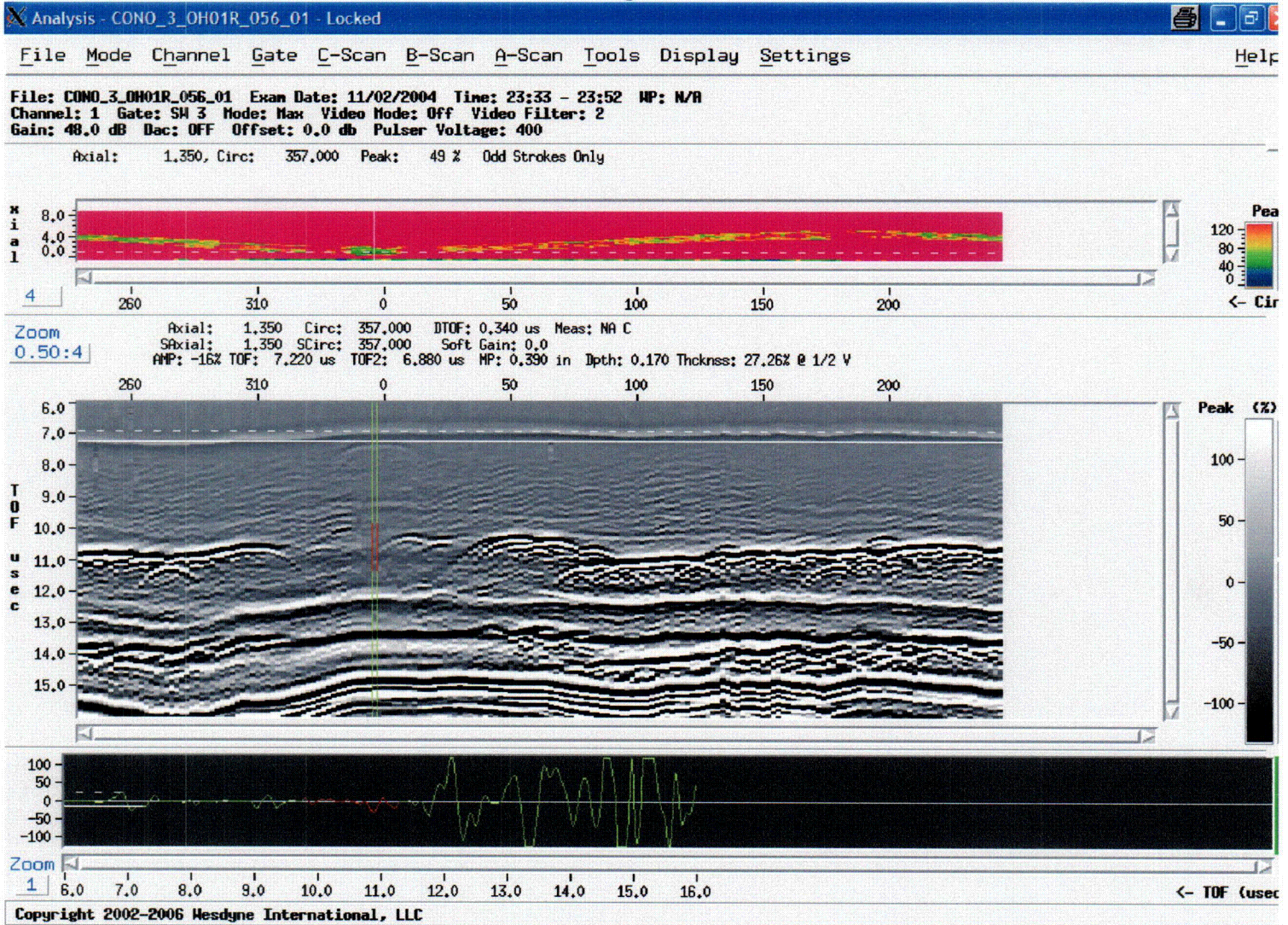
Indication (Anomaly) #1
 B Scan Channel 2

Figure 2B



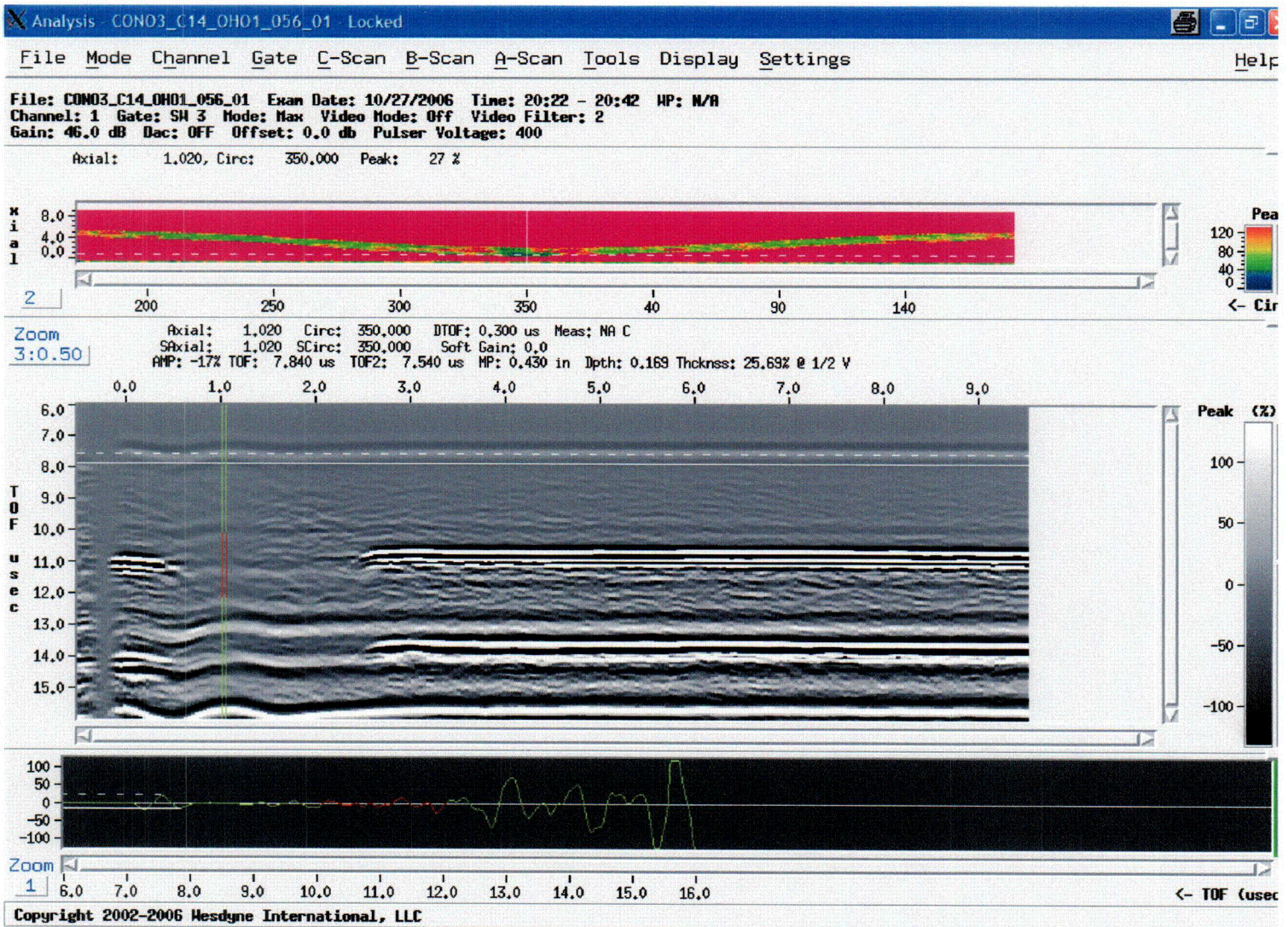
Indication (Anomaly) #1
 B Scan Channel 1

Figure 3



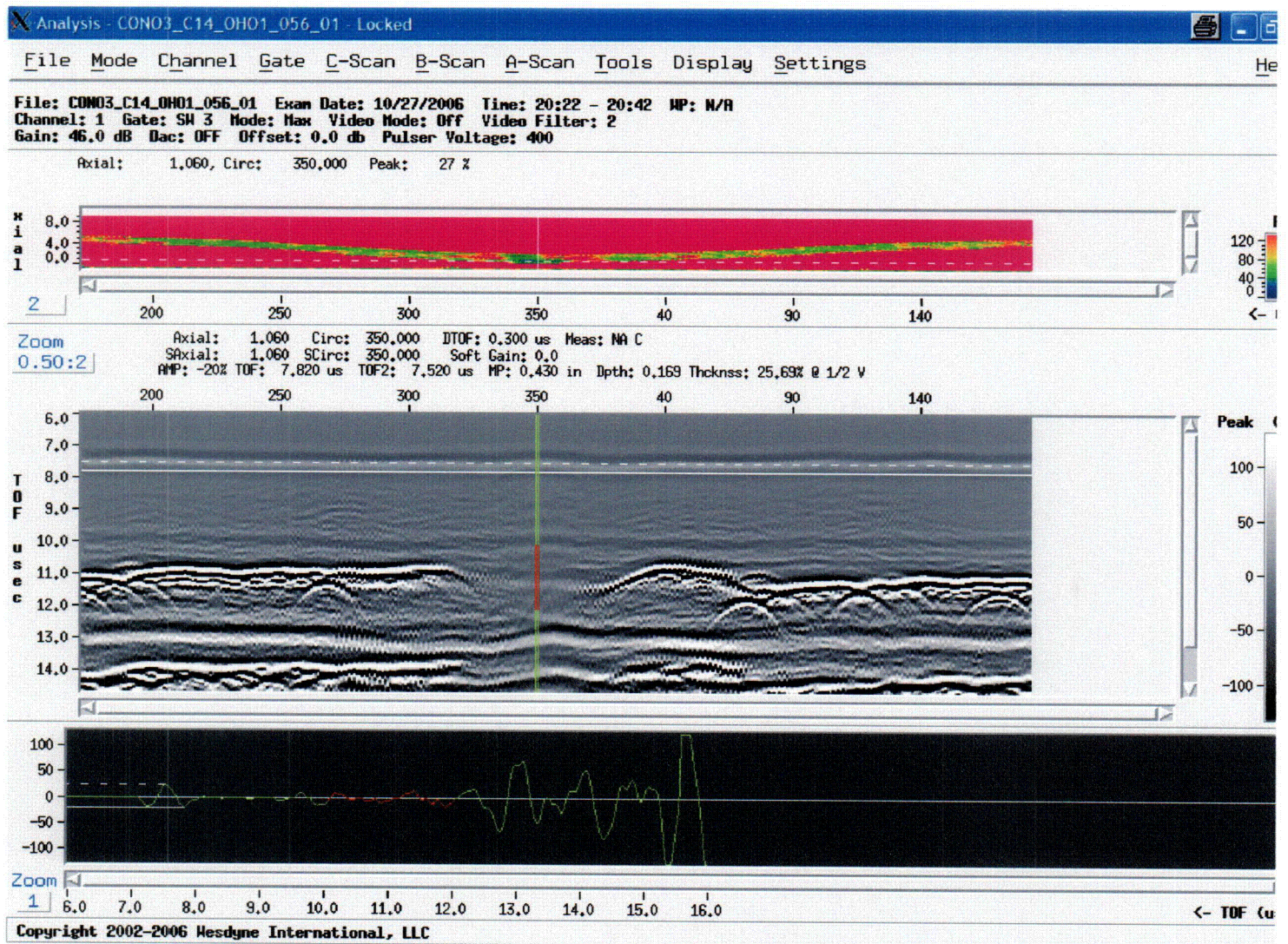
Post Repair Examination
 "B" Prime Channel 1

Figure 4A



Indication (Anomaly) #1
B Scan Channel 1

Figure 4B



Indication (Anomaly) #1
 "B" Prime Scan Channel 1