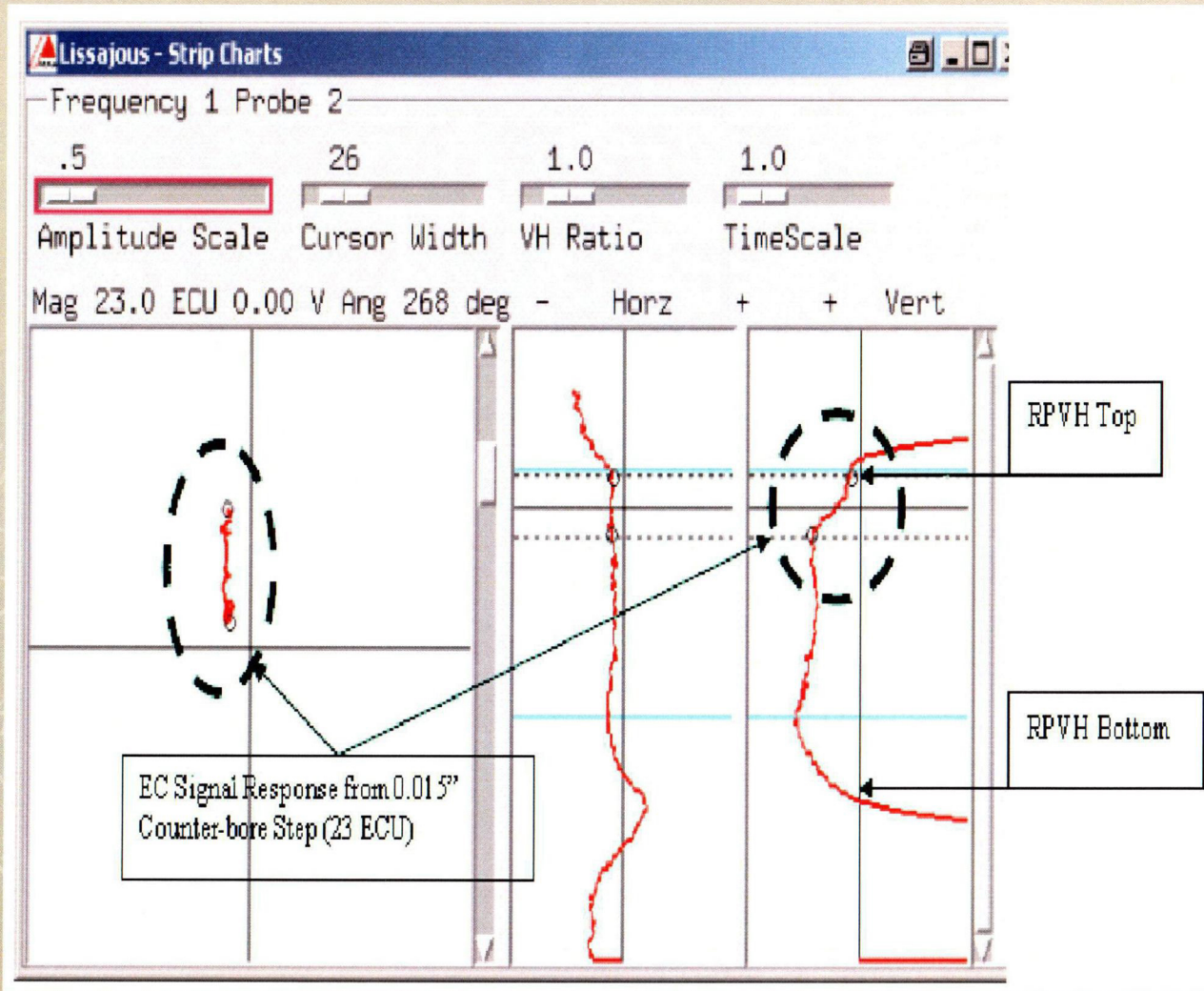
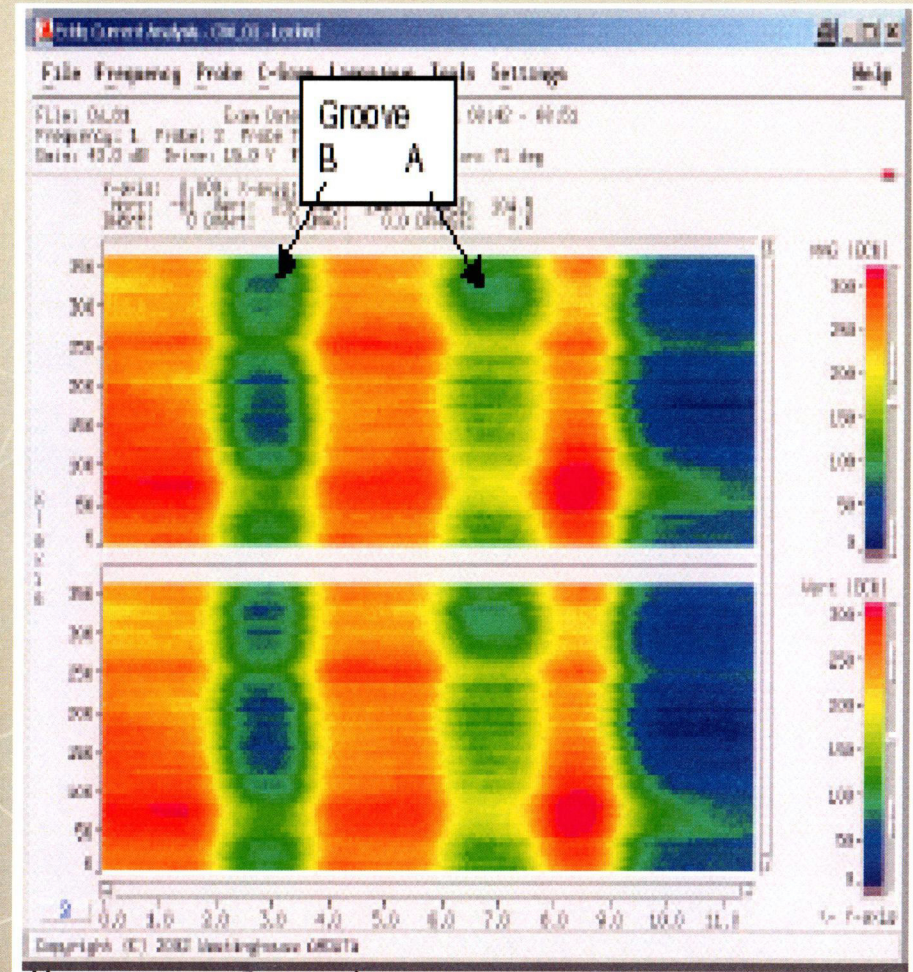


# Development of Low Frequency ECT Vessel Leakage/Integrity Inspection



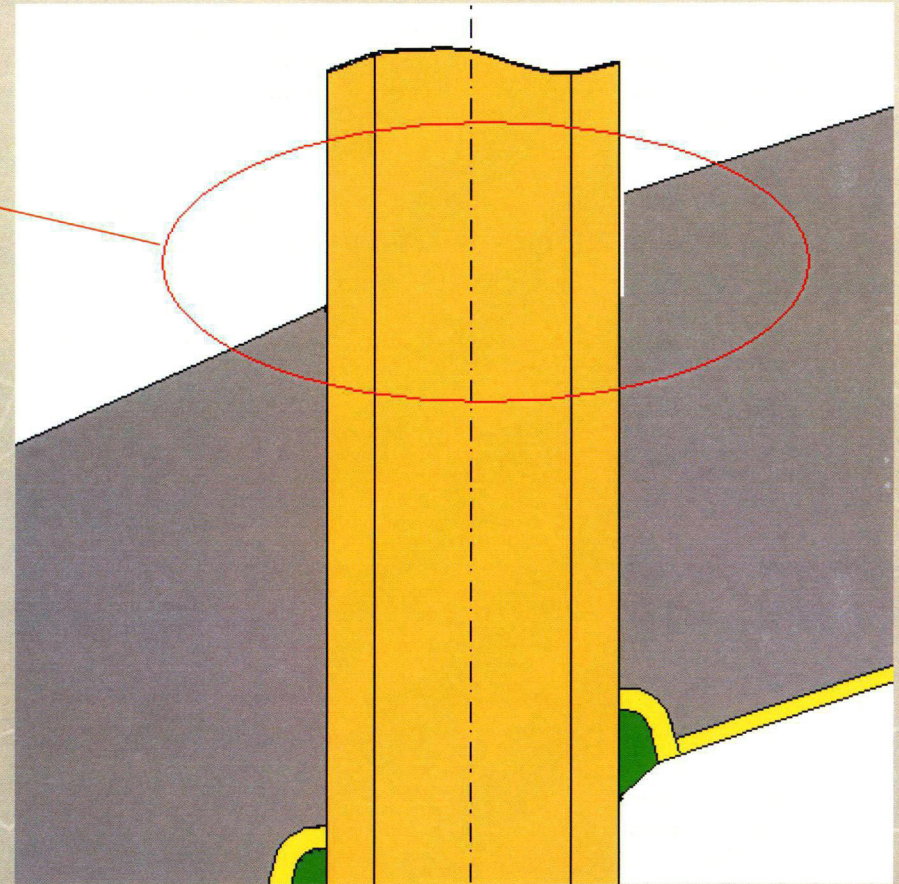
# Development of Low Frequency Vessel Leakage/Integrity Inspection

- ▶ Picture shows machined grooves of 0.250" depth (A) and 0.500" depth (B).
- ▶ Both grooves are 2" in axial length and 360 degrees around the sample.



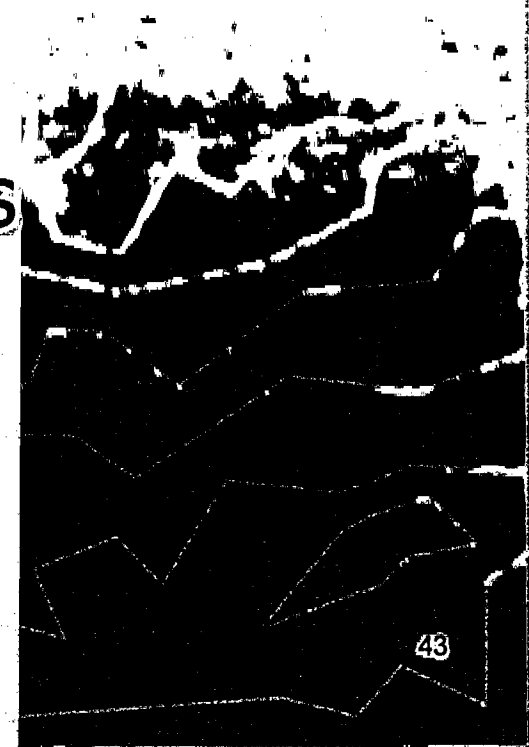
# Low Frequency Vessel Inspection

- ▶ OD of Vessel and counter bore inspection area
- ▶ Measures degradation
- ▶ Diverse and complementary to UT (triple point and riverbed)
- ▶ Assures integrity of OD of Vessel



# ICI BMV

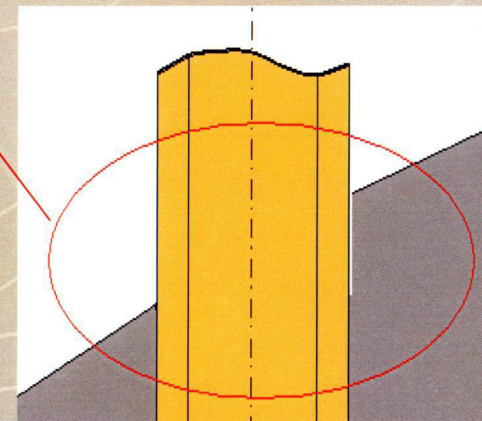
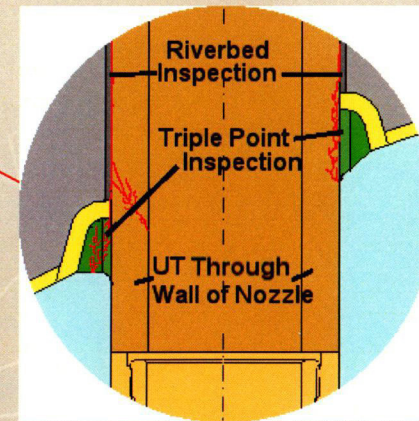
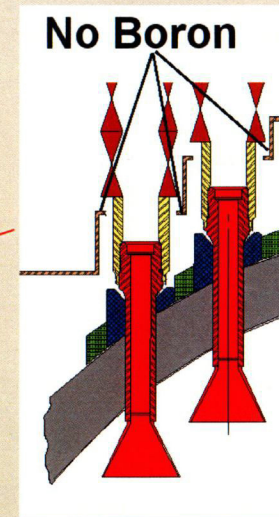
- ▶ Open Cooling Shroud Doors
- ▶ Remove Insulation Collars
- ▶ Perform BMV around ICI Annulus



# Conclusion

- ▶ Combination of Supplementary and BMV inspection
- ▶ Volumetric Insp. of nozzle/J-weld
  - UT through wall of nozzle
  - Weld fusion line and Triple Point
  - Riverbed
- ▶ CEDM/Vent Low Freq ECT Vessel Inspection
  - Leakage/degradation assessment on vessel OD and annulus region

Diverse & Complementary inspections that ensure quality and safety



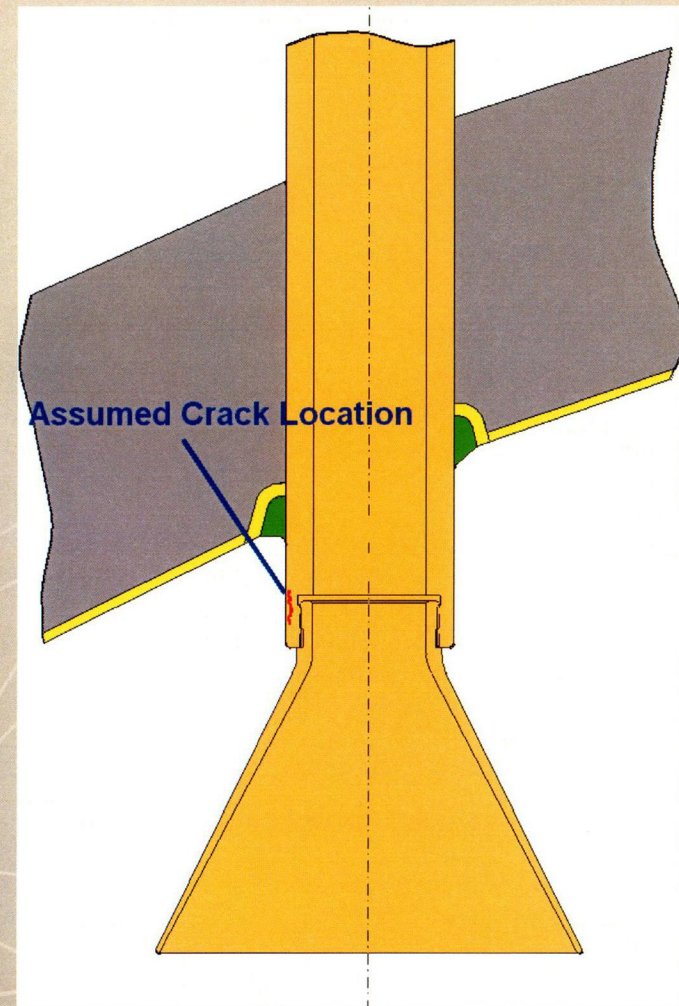
# Other Relaxation Requests

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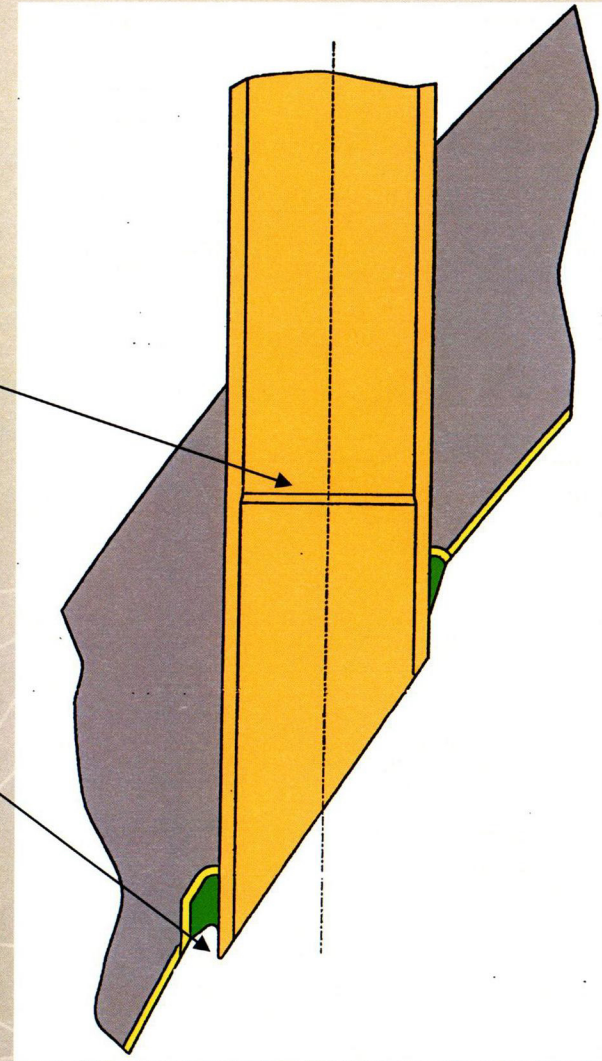
# ORDER Relaxation - Inspection of Threaded Nozzle Cone Area

- ▶ Threaded length 1.34" not inspected
- ▶ Dead Zone ~0.2 inches
- ▶ Crack Growth Analysis from dead zone area to J-weld interface
  - Finite element analysis for residual operating and weld stresses
  - Elastic/plastic fracture mechanics analysis
- ▶ All nozzles acceptable for greater than one cycle



# ORDER Relaxation - Inspection of ICI Nozzle Ends

- ▶ Counter Bore affects the 2" criteria above the weld
- ▶ Cannot see to the tip of nozzle





# Order / Alternative

<b>2R16 Inspections Complying with Order</b>			
	<b>CEDM (81)</b>	<b>ICI (8)</b>	<b>Vent (1)</b>
BMV	See alternative	BMV around penetrations	See alternative
UT or Wetted Surface	UT/Riverbed	UT/Riverbed	Wetted Surface (eddy current)
<b>Complementary Alternative</b>			
	<b>CEDM (81)</b>	<b>ICI (8)</b>	<b>Vent (1)</b>
BMV	<ul style="list-style-type: none"> <li>• Triple Point</li> <li>• Low Frequency Eddy Current Vessel Exam</li> <li>• Supplemental Visual</li> </ul>	N/A	<ul style="list-style-type: none"> <li>• Low Frequency Eddy Current Vessel Exam</li> <li>• Supplemental Visual</li> </ul>

# Closing Remarks

6/17/2003