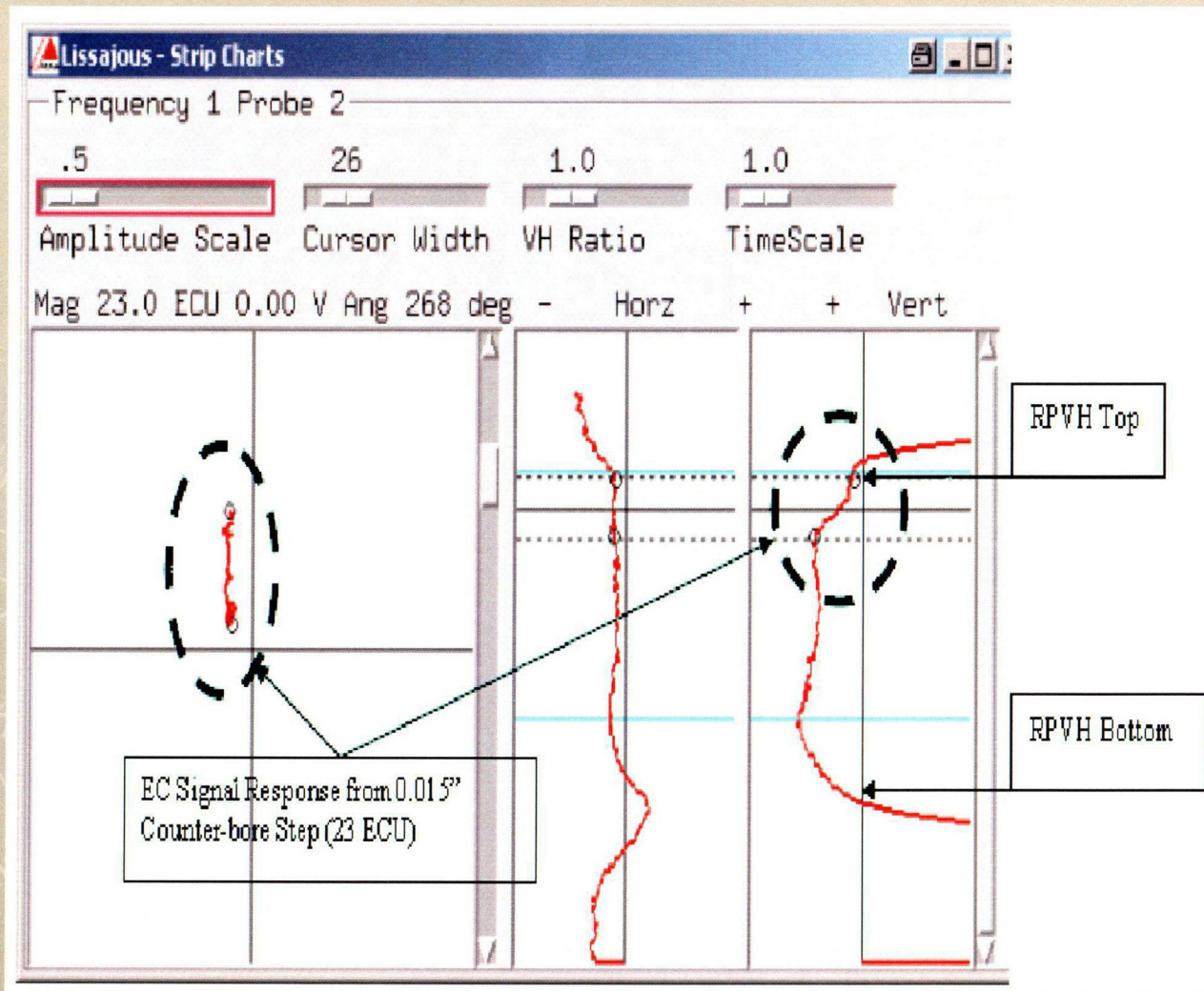


Development of Low Frequency ECT Vessel Leakage/Integrity Inspection



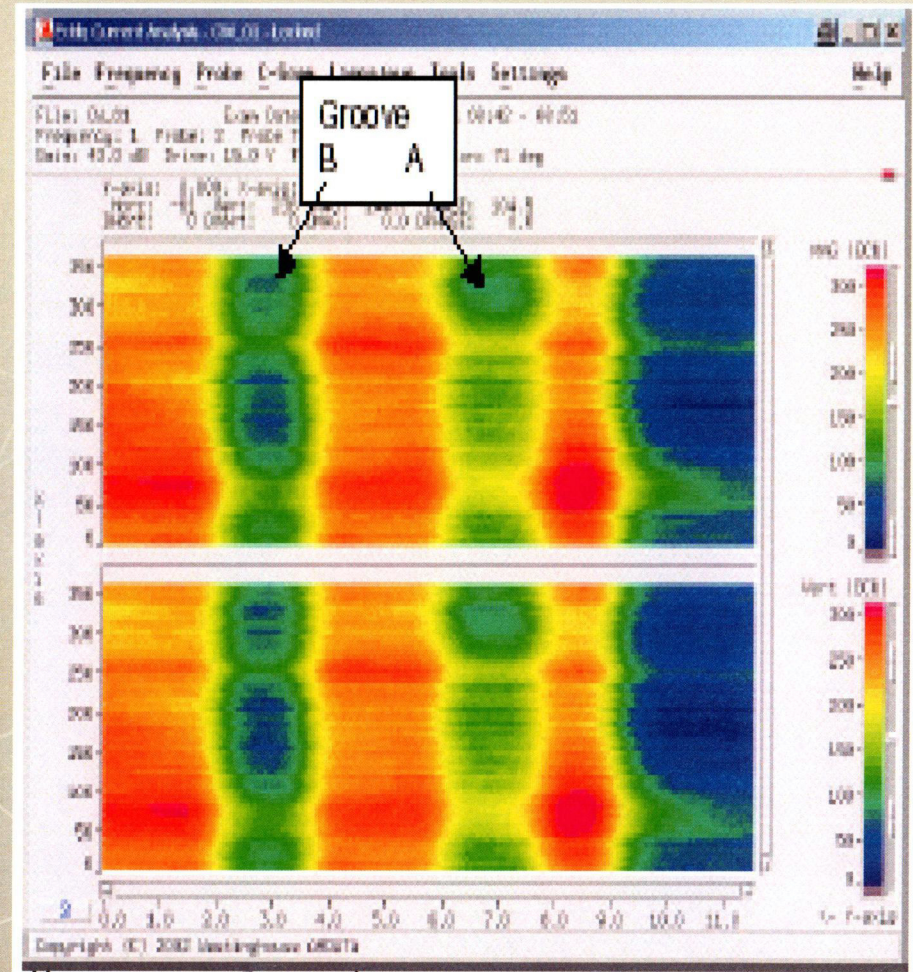
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CZ1

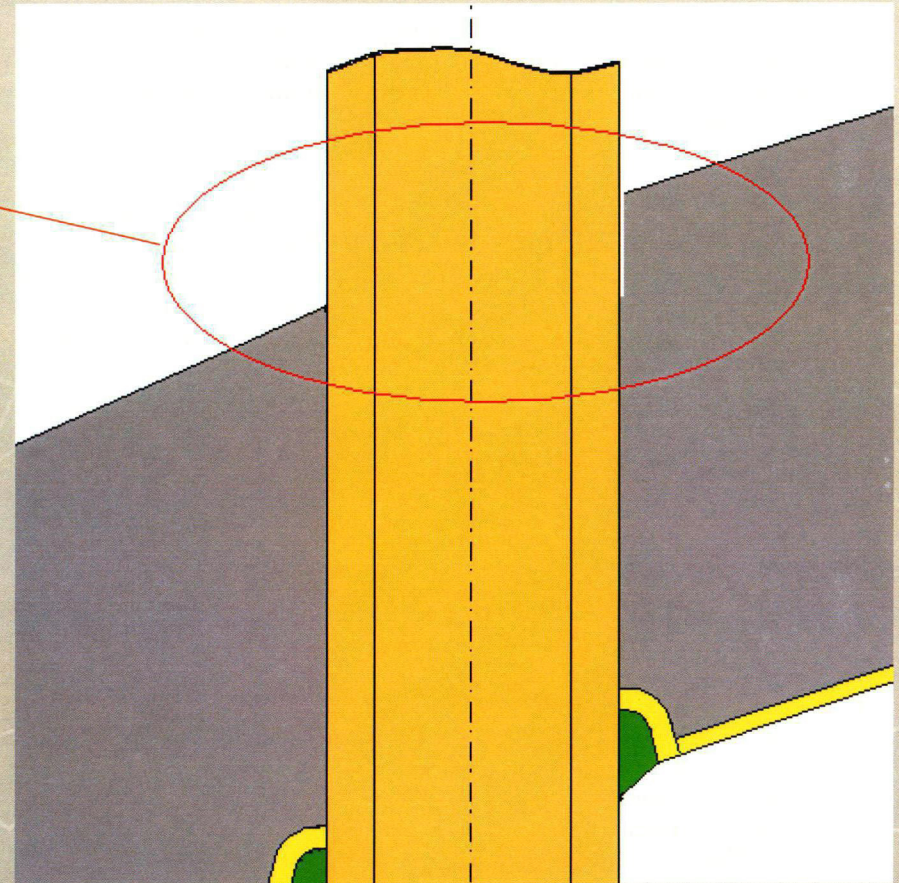
Development of Low Frequency Vessel Leakage/Integrity Inspection

- ▶ 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

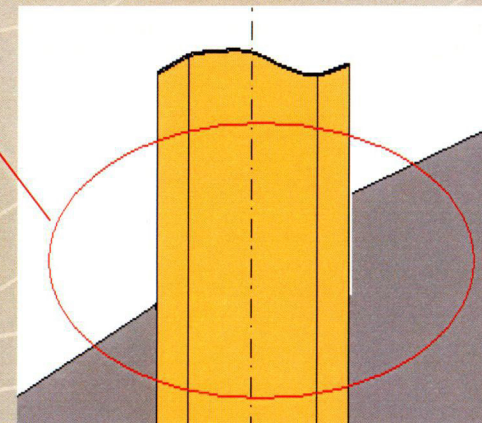
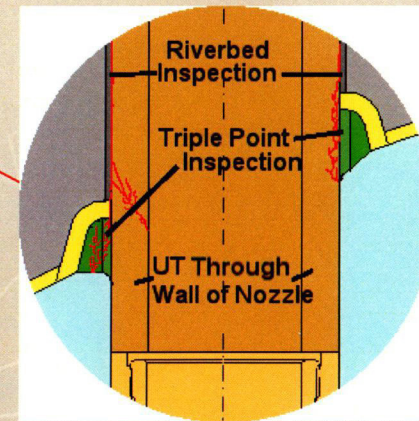
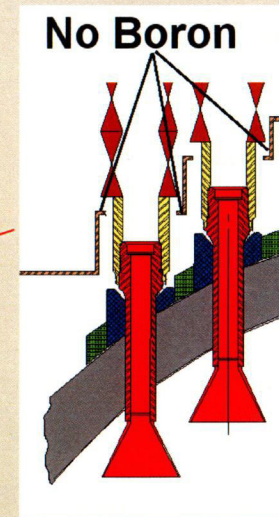
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Conclusion

- ▶ 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



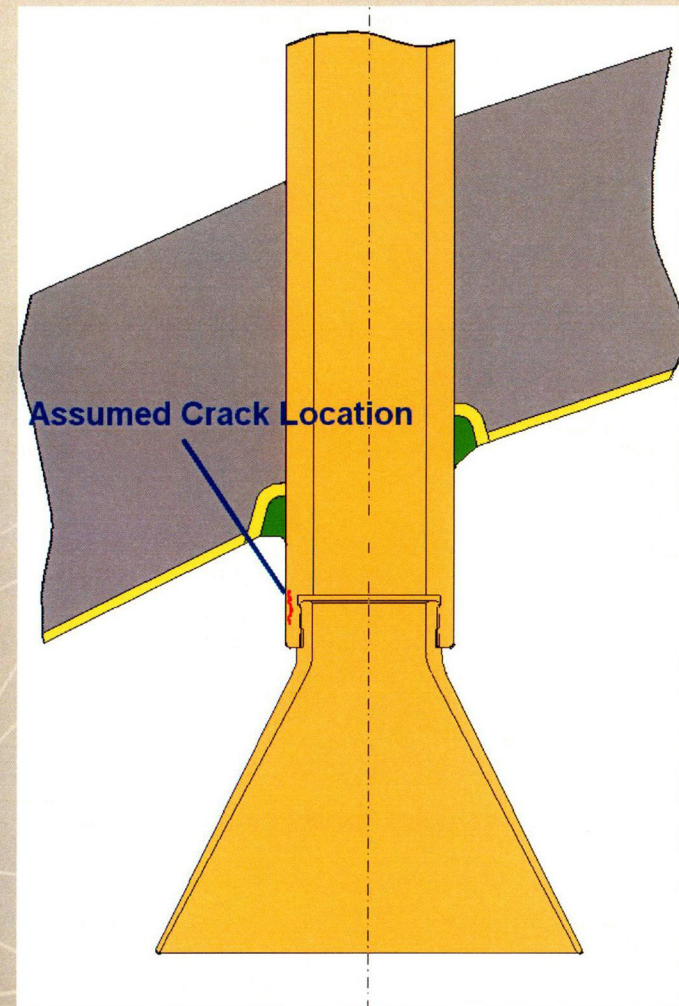
Other Relaxation Requests

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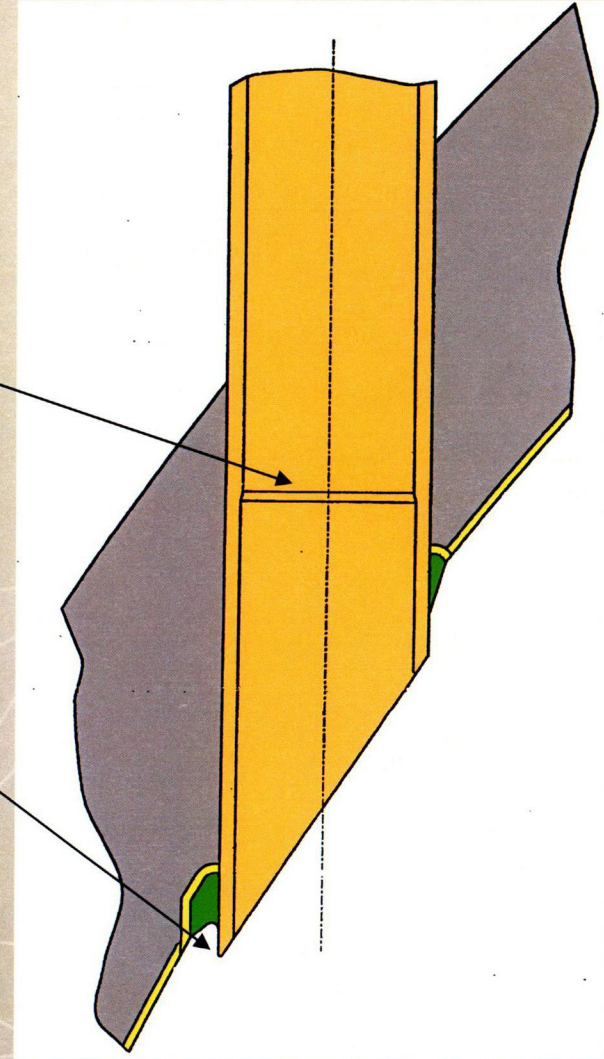
ORDER Relaxation - Inspection of Threaded Nozzle Cone Area

- ▶ 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

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

Closing Remarks

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