CFM56 TRF Eddy Current

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A STAR ALLIANCE MEMBER

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Overview

UA operates over 750 engines affected by AD's 2009-03-09 and/or 2010-01-05. Worldwide, the CFM56-7 engine fleet is nearly 8,400.

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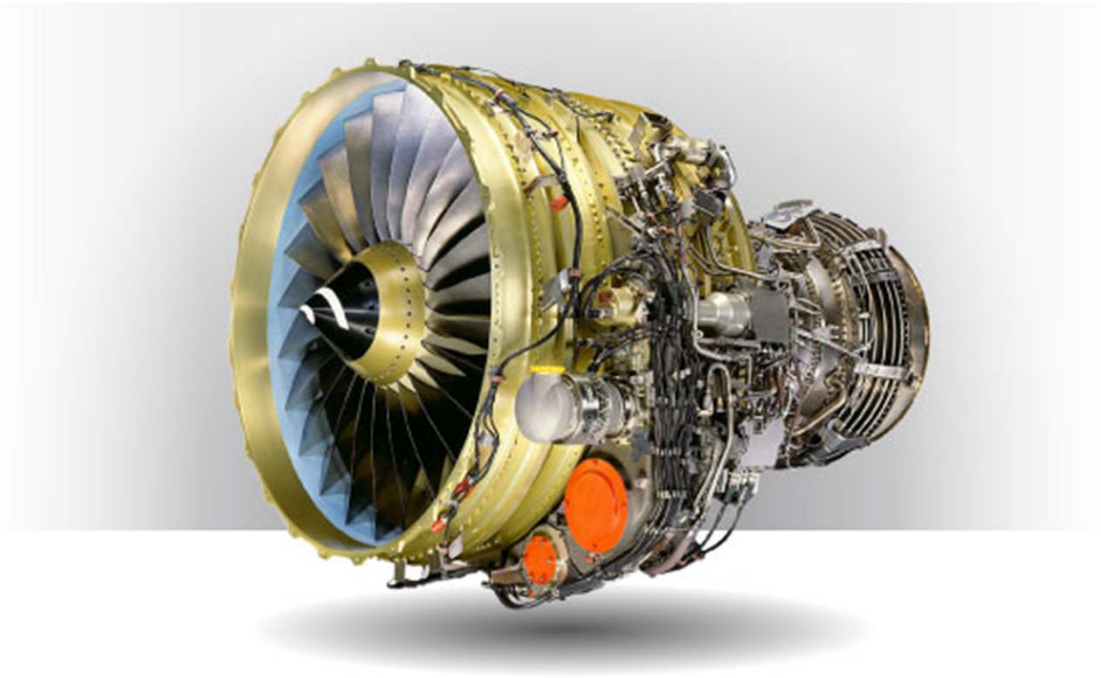
Compliance Requirements



CFM SB's 72-0568 and 72-0579 provide the inspection details for the repetitive on-wing eddy current inspections. SB effectivity is dependent upon TRF part number. AD is applicable only to part numbers in SB 72-0579 .

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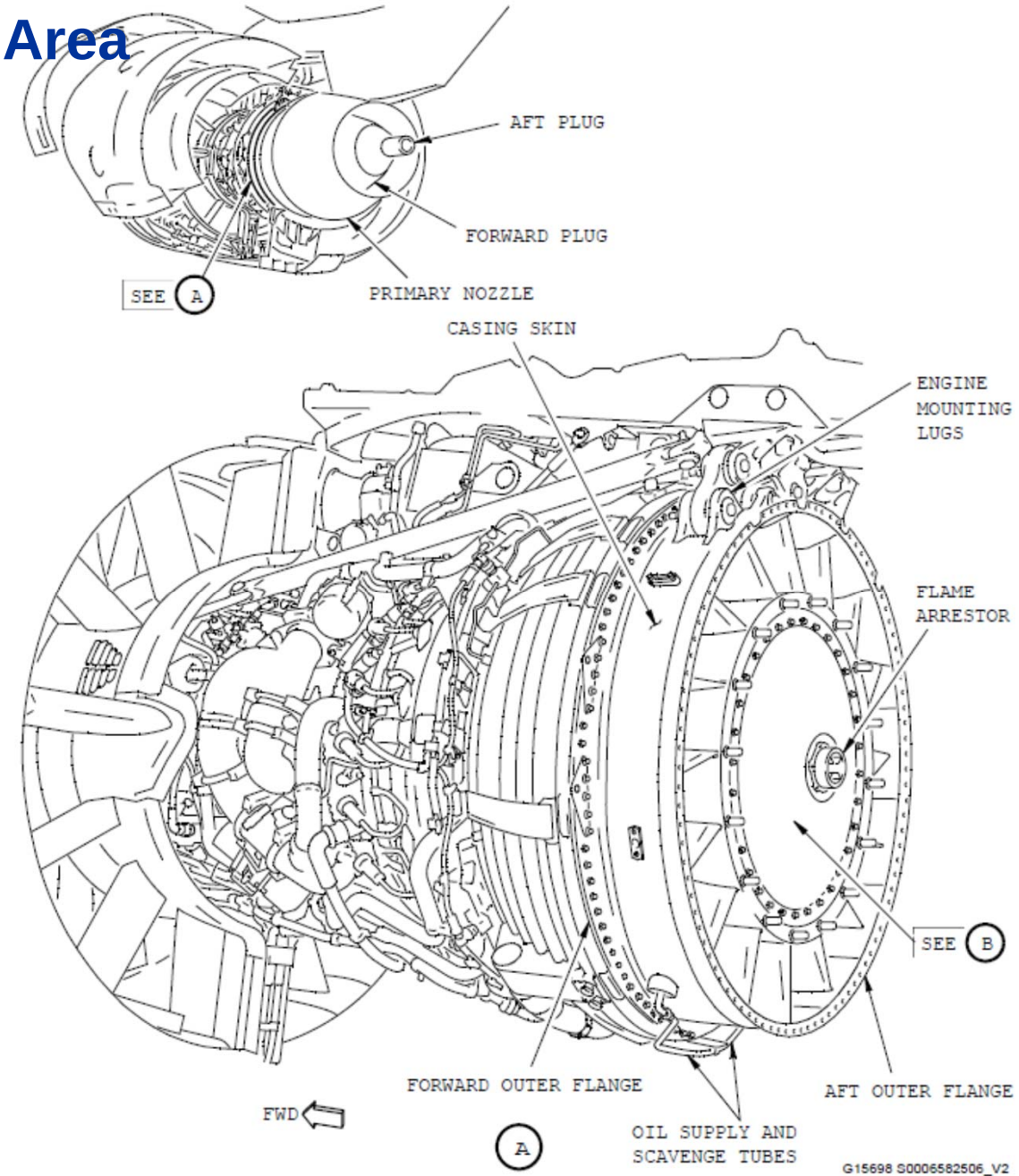
Inspection Area



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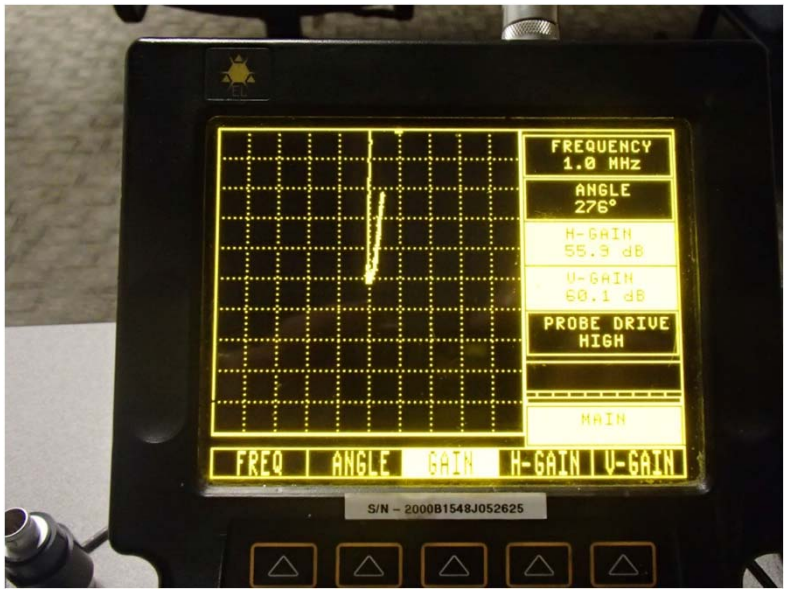
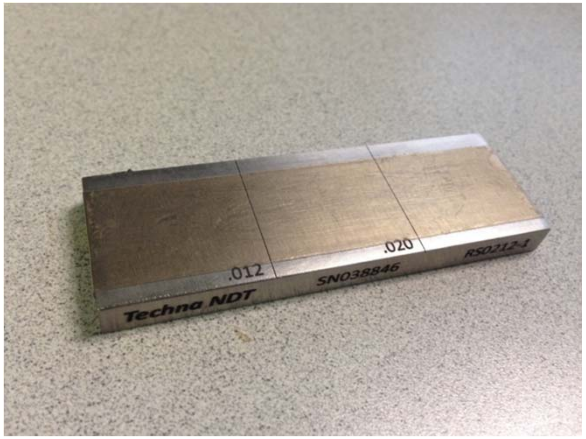
The procedure as written:

Choose the probe for the area
Set up on the reference standard





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Identify the inspection areas

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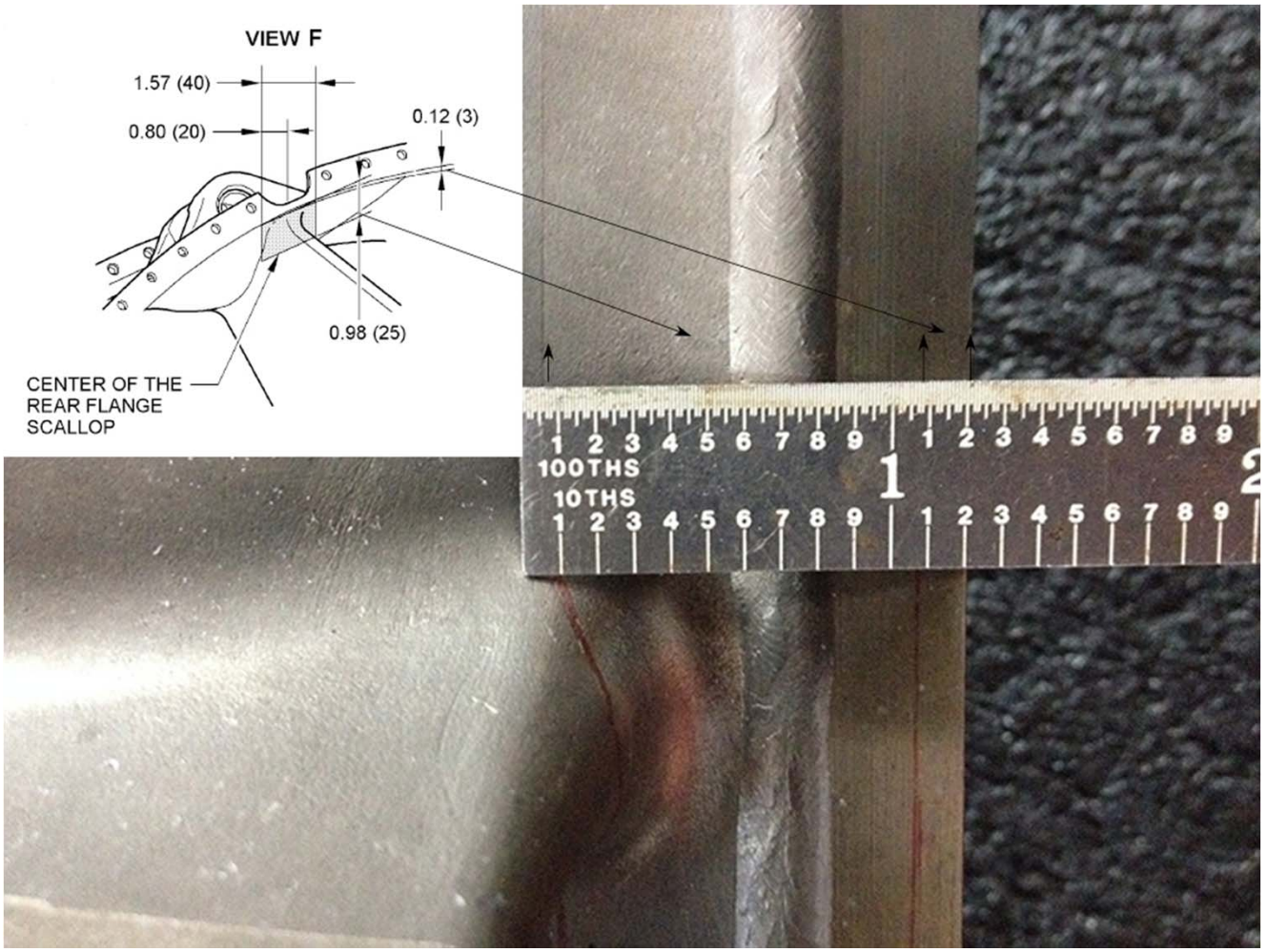
Identify the inspection areas- area C1



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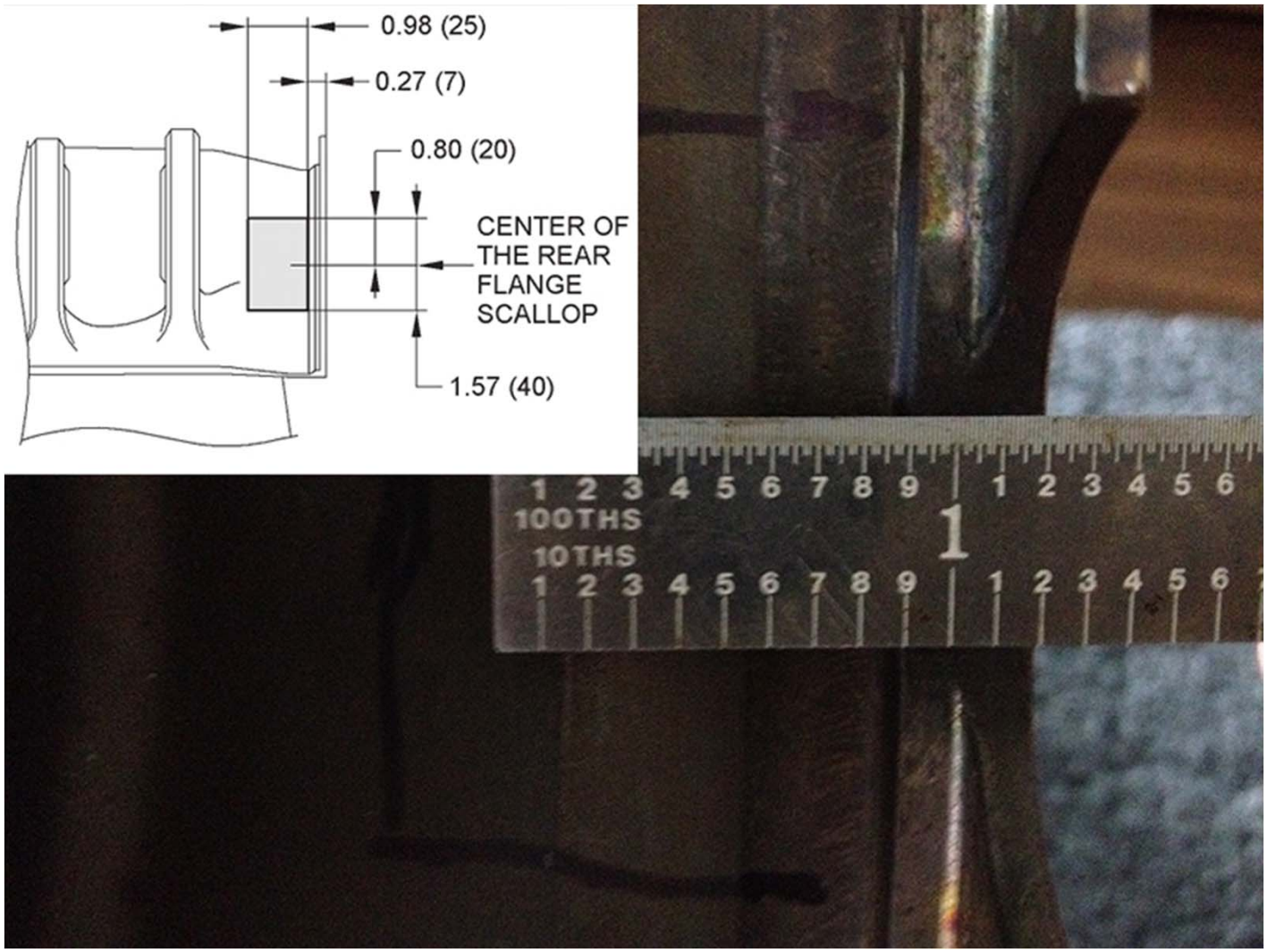
Identify the inspection areas- area C2



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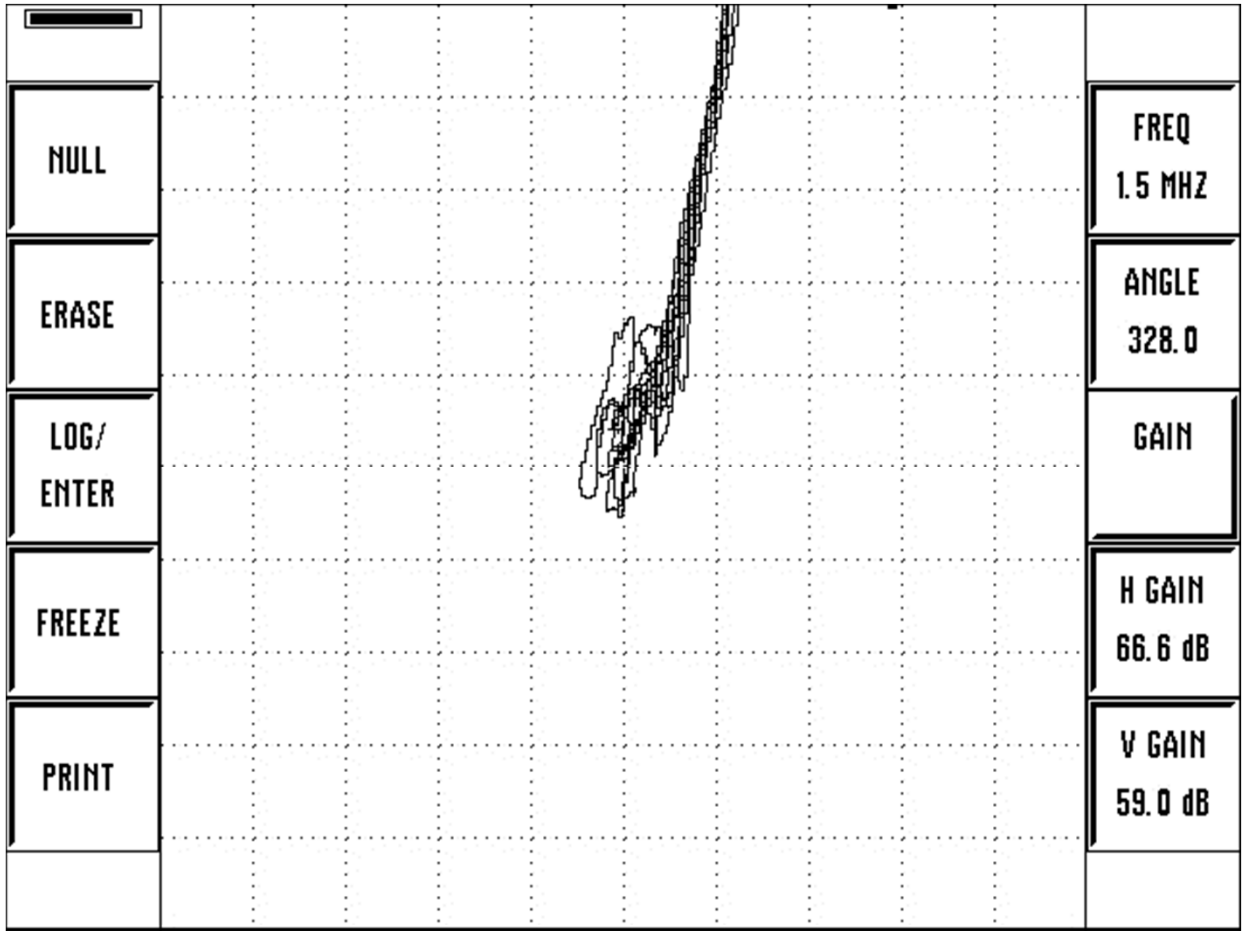
What does it look like when we scan across the weld?



Rejectable signal = 1.5 divisions. Houston, we have a problem!

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The next step

Contact Safran via GE rep asking for help

Initial response, use FPI;
this was later rescinded, with the
following email…
"November 05, 2014

Dear Customer,

CFM has no objection that UA develops a specific probe
for ECI inspection of weld beads…"

Stephane Furic, CFM PSE

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Developing a probe

We had a good idea that the answer was most likely a dual coil probe for inspecting the weld. This still left a problem:

How do we try out what is available without spending a lot of money on R&D?

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November 2014- SB 72-0568 due- we have an inspection to prototype on live aircraft and no solution yet…

- Contacted GE and Olympus- both were willing to help
- Borrowed “Weldscan” probe to attempt a solution

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The Southwest Factor

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One more thing to try…

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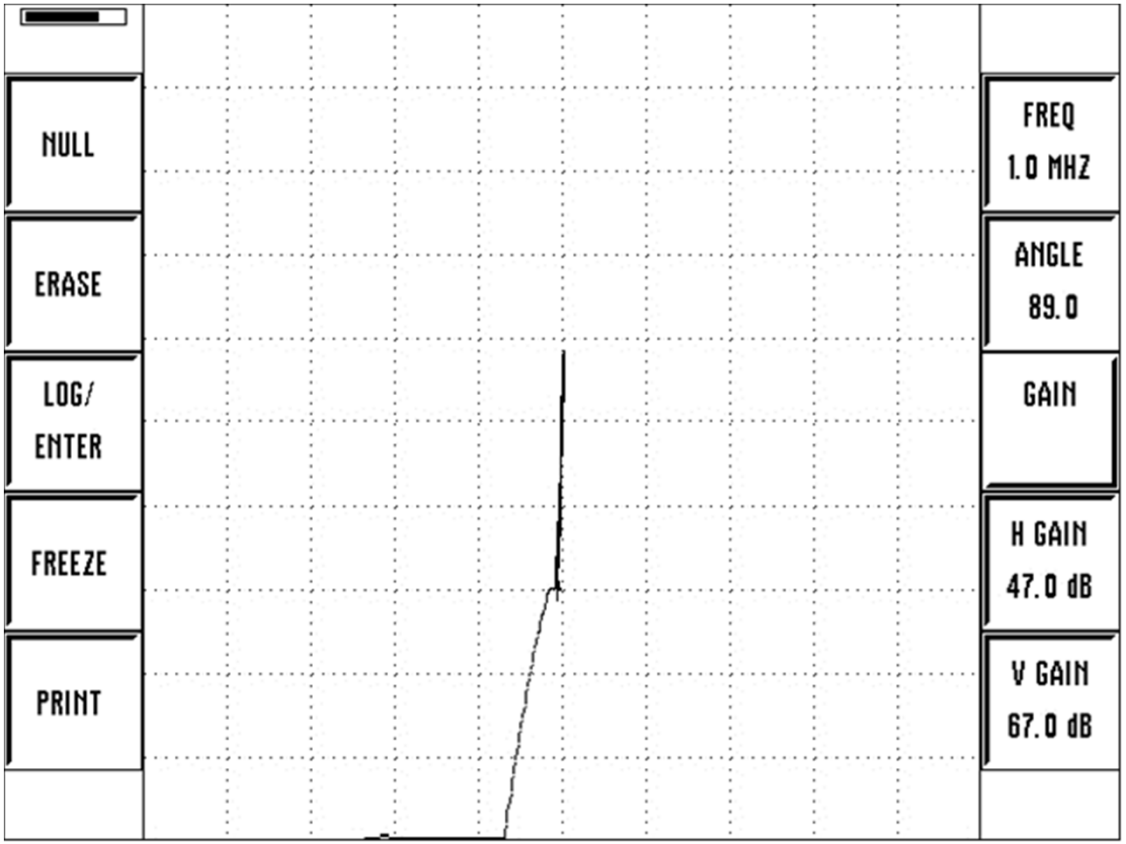
The Eureka! Moment…

- Neither of the borrowed weld probes we tried would set up on the ref standard…
- The Uniwest US-1839 gave a nice signal on the reference standard. Instead of 10 degrees of separation, we had 180!



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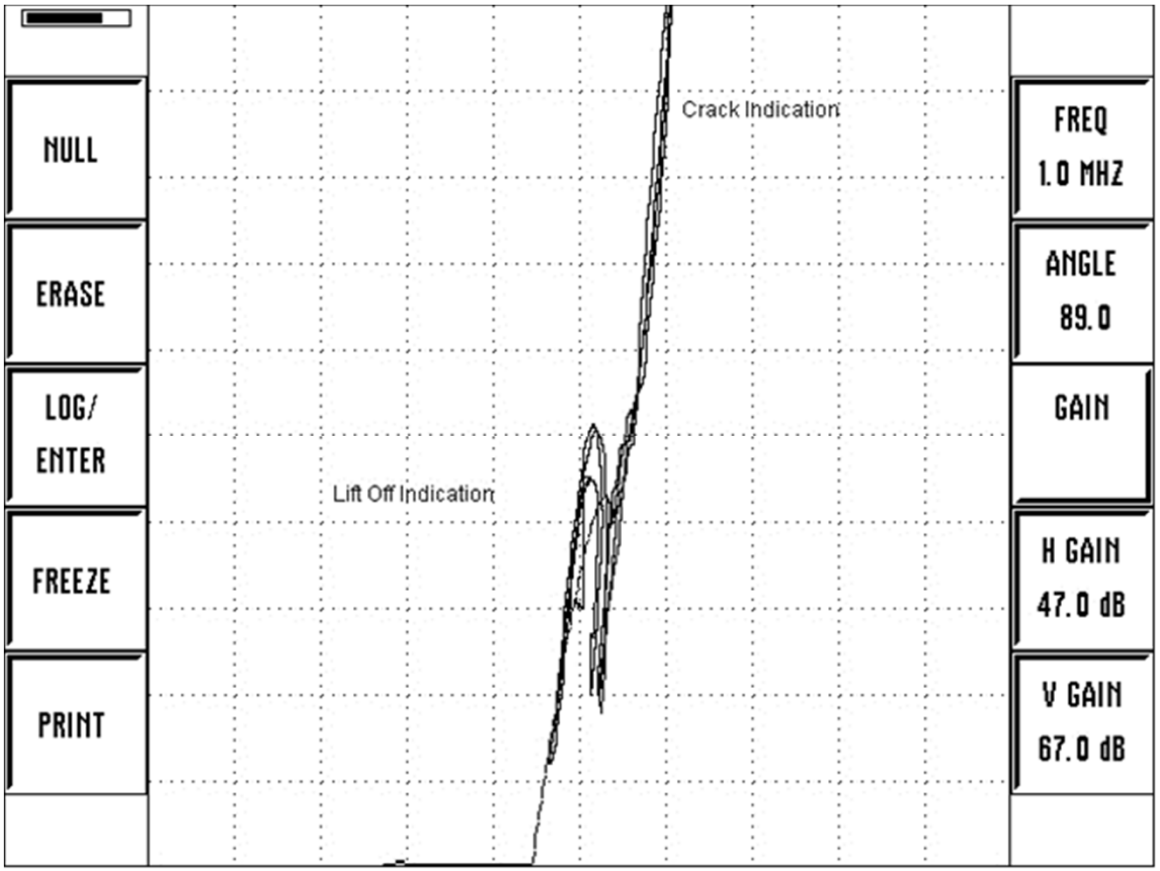
Will the US-1839 work on the scrap frame?

YES!

But what is this???



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The scrap frame section is cracked in area C1!

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Refining the solution- can we get a modified US-1839?

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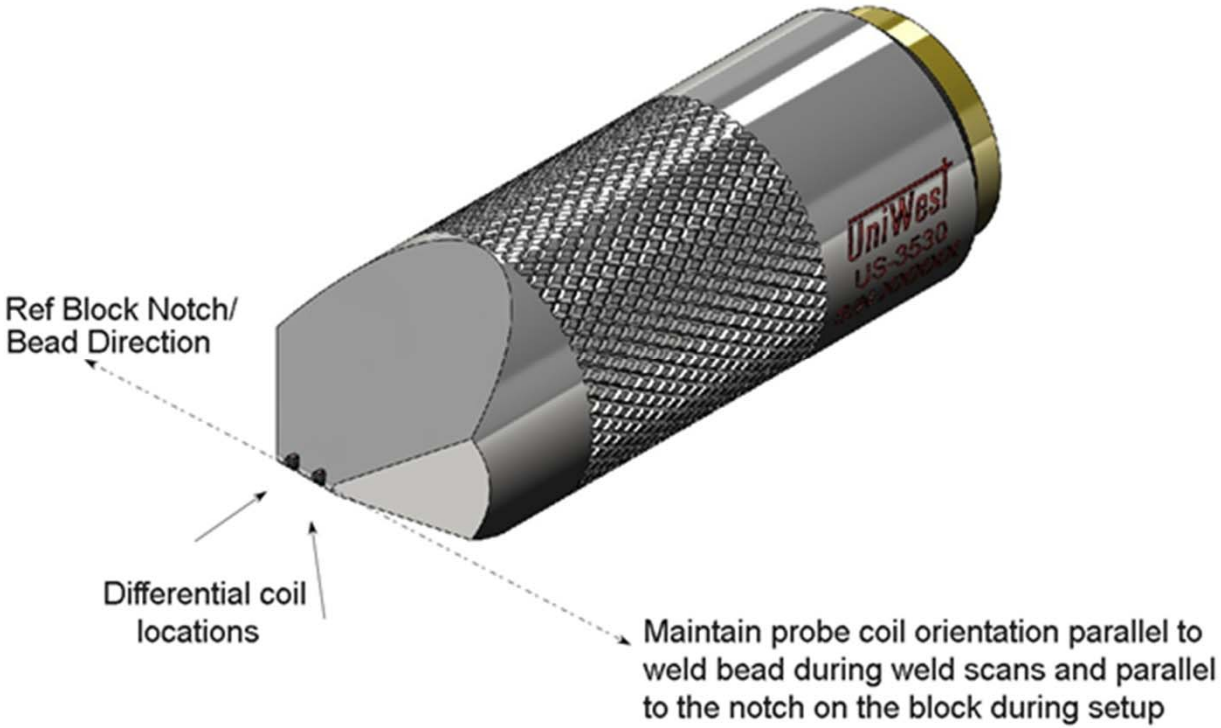
We need a shorter version- Uniwest comes through with US-3530



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Next stop- Paris

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All done but….

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Conclusion

- Once approved, this solution will save millions in engine changes while enhancing POD
- Safran has projected approval for 4Q 2015
- SB revision will hopefully provide global AMOC
- Collaboration made it happen- thanks to all!

Dorsey Perkins, Southwest Airlines
Nellie Mauzey, GE Strother
Bryan Leach, Uniwest
Jason Meade, United Airlines
Cyril Collot, Safran

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Questions?

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