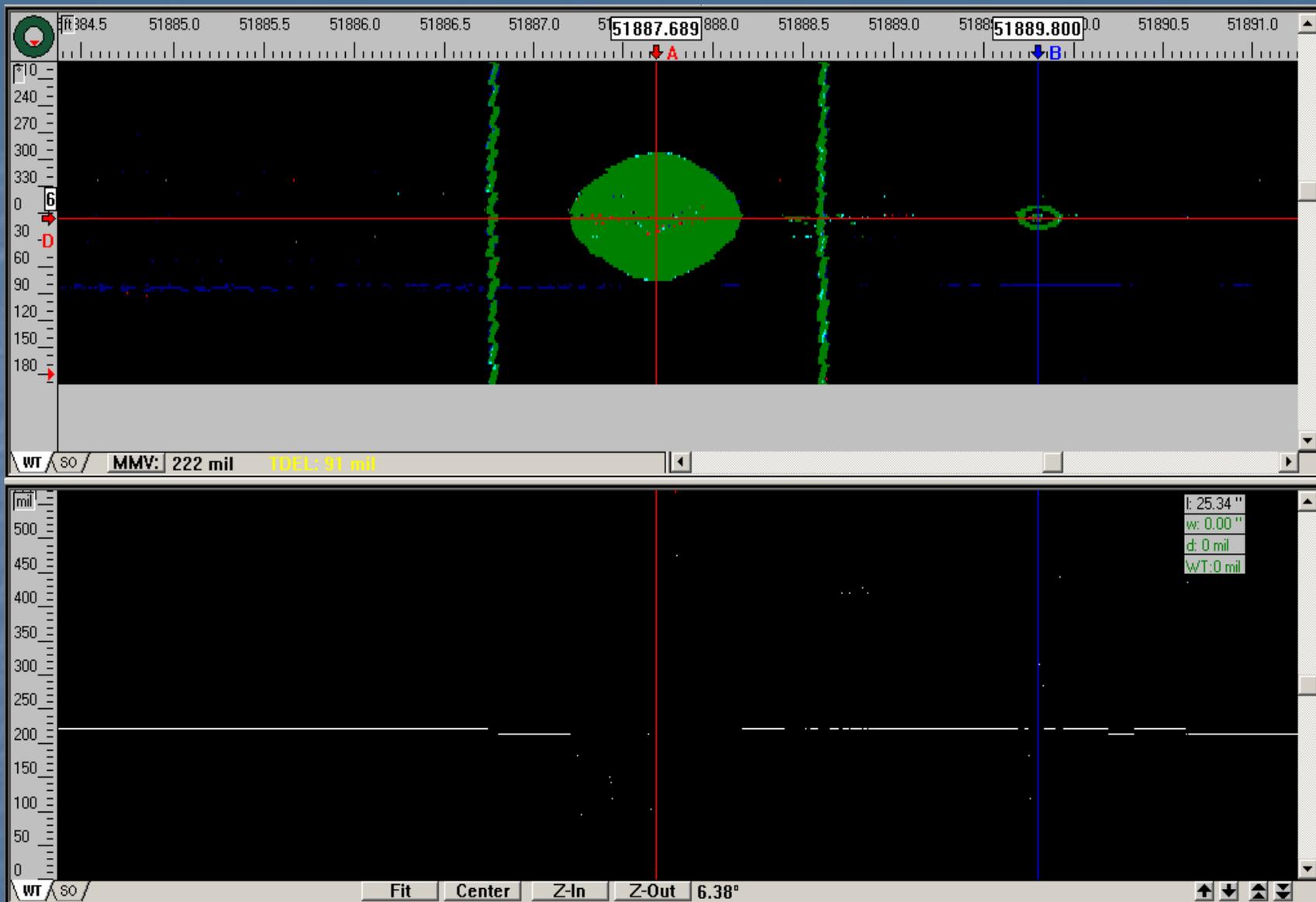


Inline Inspection Public Meeting

11 August 2005

Some Inline Inspection Lessons Learned



Source: Pipeline Operator



Figure 2. Corrosion Around the Leak Location.

FIELD EXAMINATION

Max. Depth: 95%

Orientation: 10:00

Location: 24.1' from weld

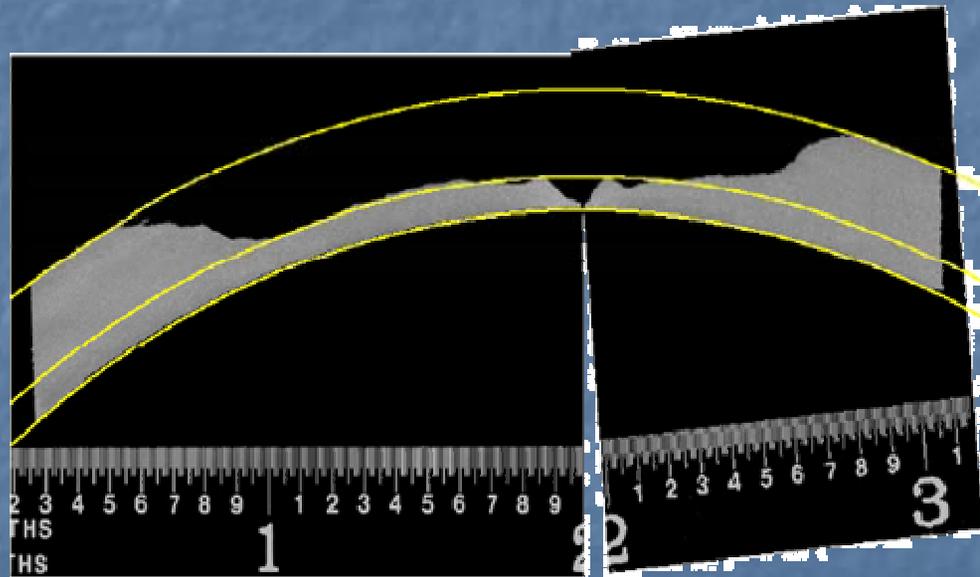
Other: In seam

ILI CALL-OUT

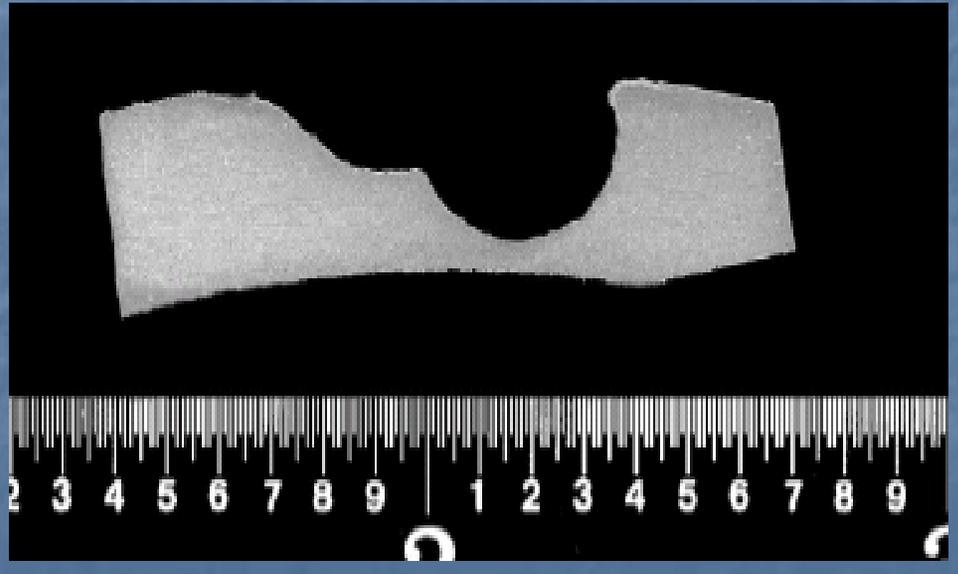
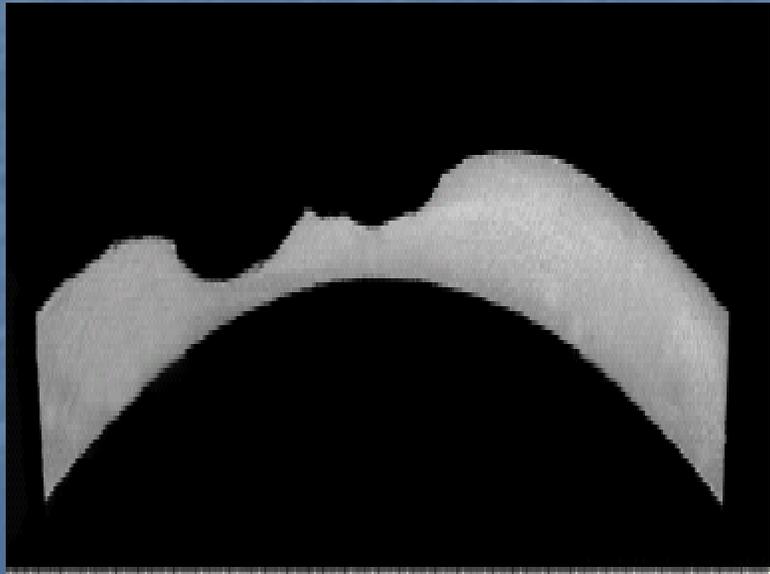
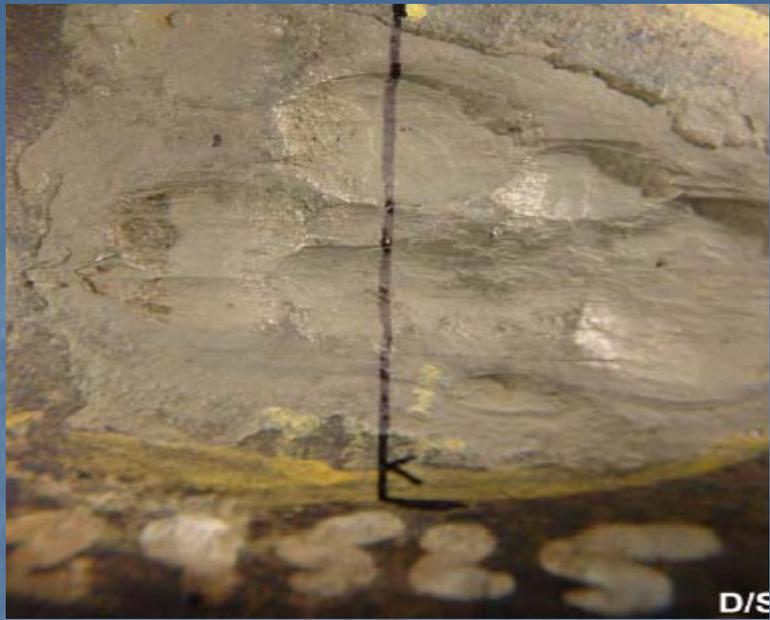
Max. Depth: 49%

Orientation: 7:50

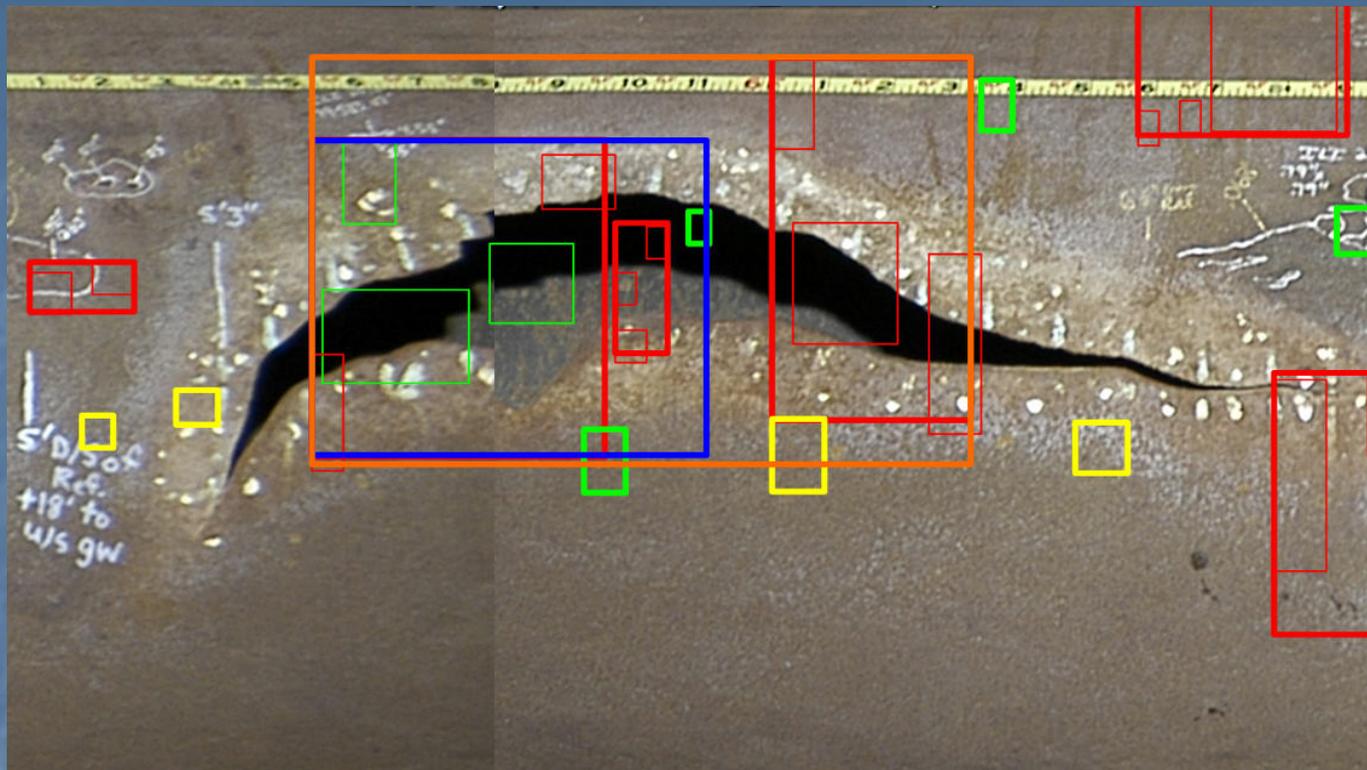
Location: 23.7' from weld



Source: Metallurgical Laboratory



Source: Metallurgical Laboratory



Source:
Metallurgical
Laboratory &
ILI Analyst

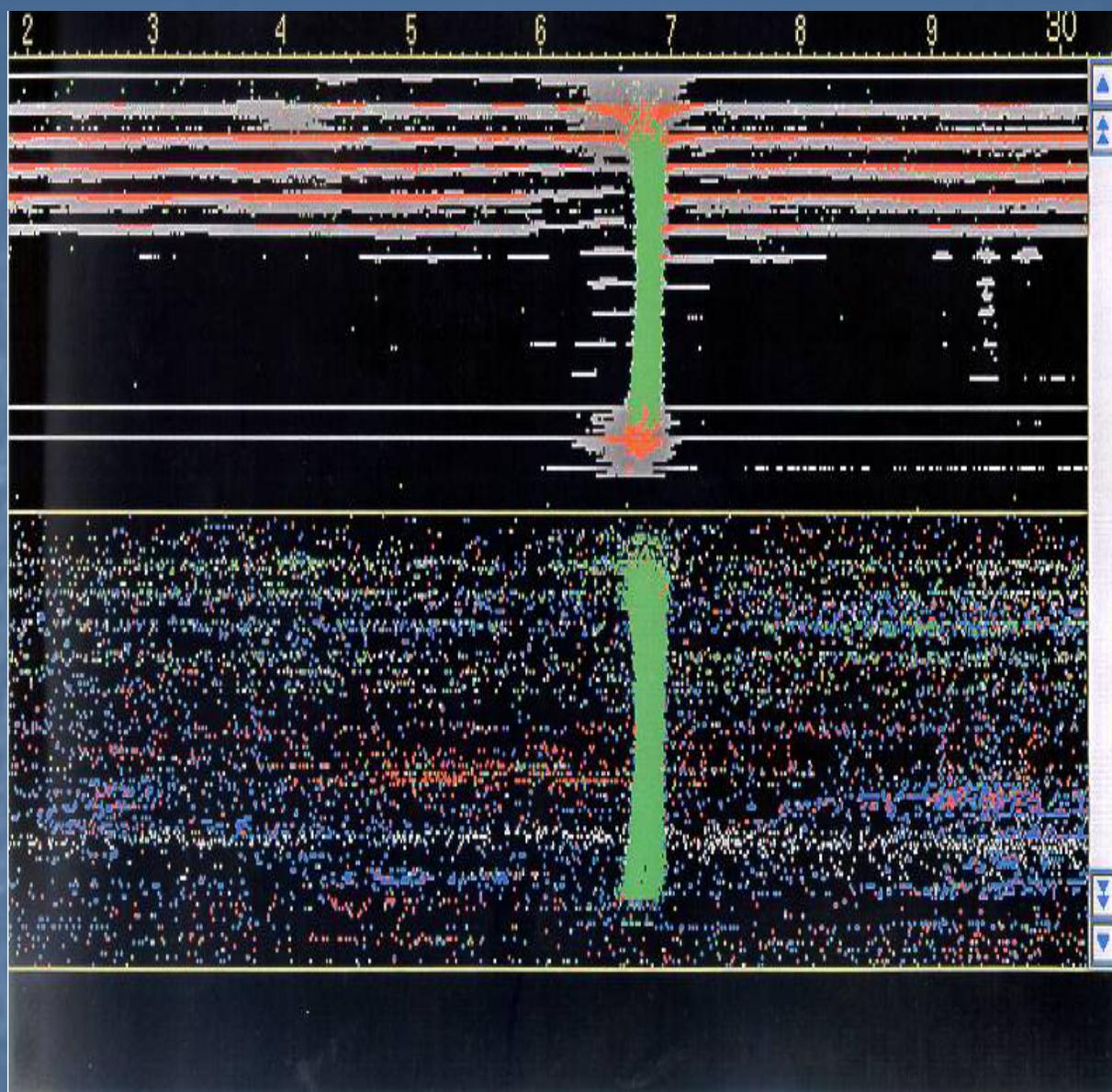
Relative Distance Method

Fixed-distance Method w/1" Criteria

3t Criteria

LOCATION	DIFFERENCE		
	Weld-to-Feature	Orientation	Maximum Depth
	(inch)	(degrees)	(%)
1	3.6	0	70%
2	2.4	40	6%
3	2.4	-45	55%
4	2.4	7.5	30%
5	2.4	-7.5	36%
6	-1.2	42	-1%
7	1.2	-29	27%
8	-2.4	60	40%
9	-2.4	-14	57%
10	2.4	67.5	16%
11	2.4	60	59%
12	4.8	63	46%
13	3.6	27.5	47%
14	4.8	46	13%
15	3.6	-27	7%
16	-2.4	-46	19%

Dig #	WITHIN TOLERANCE			
	Depth	Length	Width	Orientation
1	No Data	Yes	No Data	No
2	No	Yes	Yes	No
3	Yes	No	Yes	No Data
4	Yes	No	No	No Data
5	No	Yes	Yes	Yes
6	No	Yes	Yes	Yes
7	Yes	No	No	No
8	Yes	No	No	No
9	No	Yes	Yes	Yes
Within Tolerance	50%	56%	63%	29%
Out of Tolerance	50%	44%	38%	71%



Source: Pipeline Operator

Information for Good Decisions

■ From Pipeline Operator

- Asset susceptibilities
- Threats
- Operational bounds and history, including failure history
- Appurtenances, fixtures, connectors
- Objectives of inline inspection

Information for Good Decisions

- **Expectations of ILI Vendor**
 - Select appropriate ILI tool for threats
 - Establish performance specification and confirm spec. was met
 - Segregate “whoa!” signatures
 - Develop dig list to verify initial call-outs. How big a sample?
 - Are call-out specs met?
 - Refine analysis and develop prioritized dig list

Information for Good Decisions

- **Communications for Data Integration:
Pipeline operator and ILI Vendor**
 - Alignment sheets, CP records, CIS, other ILI tools, environmental data

What we have Learned ...

- ILI can find corrosion, cracks, and geometric deformations only after they occur.
- ILI can not assess corrosion growth rate or potential for corrosion without successive surveys.
- MFL tool sees sleeves; UT tool does not always detect sleeves.
- Neither sees re-coats or clock springs.
- UT pigs cannot identify or evaluate features such as cracks or metal loss in areas of significant or abrupt deformation.

What we have Learned ...

- If an anomaly isn't found during on-site discovery, ask why.
- If the image of an anomaly appears strange, inquire as to its disposition.
- Were any sensors rendered inoperative? If so, you need more rigorous confirmation.
- Data integration must be done in a disciplined manner.
- Interpretation of patterns of echo loss, while not totally definitive, can sometimes be useful integrity management tools.
- Over-reliance on odometer readings can pose problems.