EVALUATION OF ADVANTICA STUDY RESULTS

A Review Of Methods for Assessing the Remaining Strength of Corroded Pipelines

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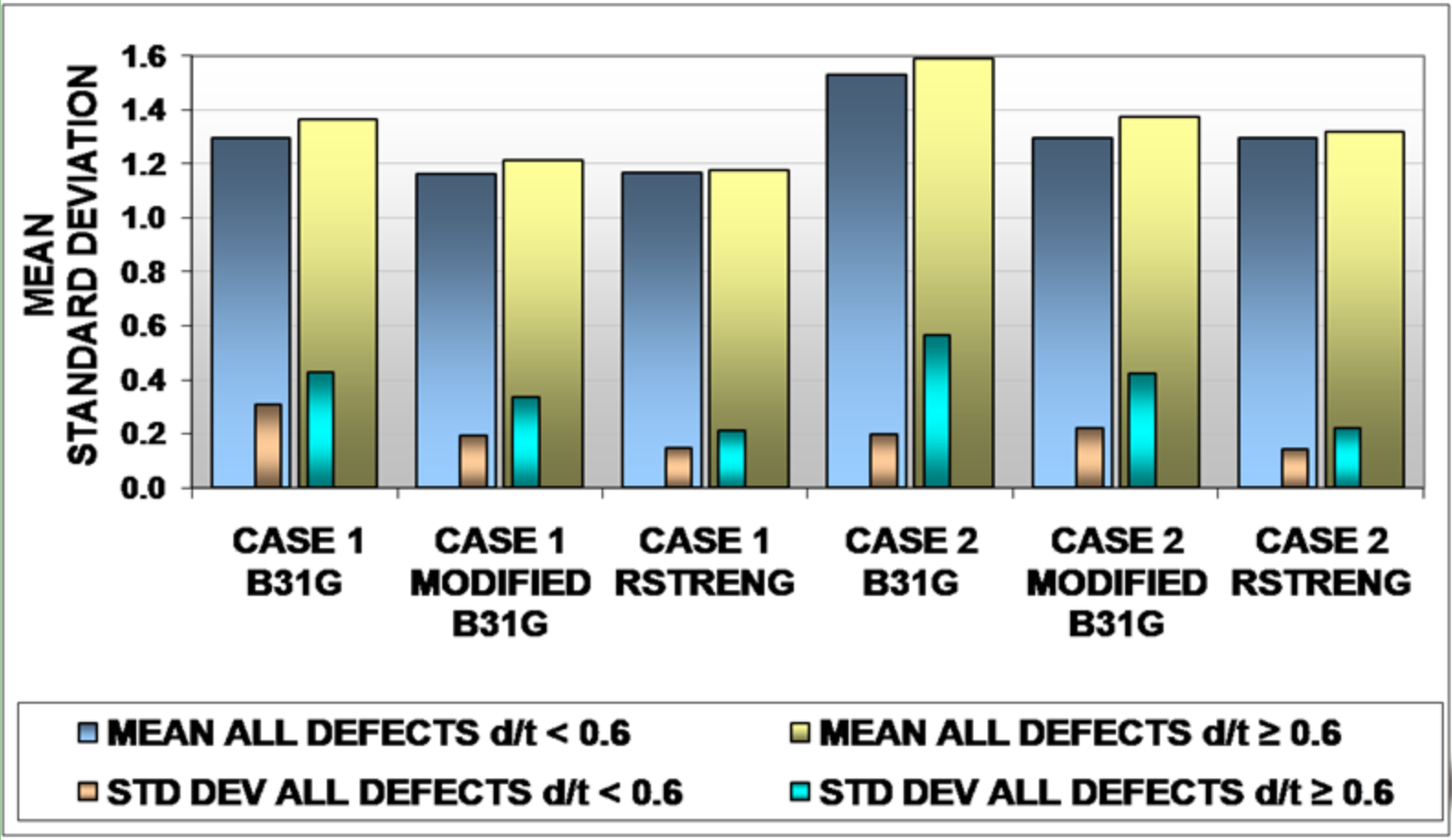
PHMSA EVALUATION
PURPOSE

- Evaluate ASME B31G, Mod B31G, and RSTRENG results reported by Advantica
- Evaluate expected reliability of B31G, Mod B31G, and RSTRENG
- Determine conditions more likely to produce non-conservative Pf
- Compare Case 1 vs. Case 2 Results

PHMSA EVALUATION
TARGET RELIABILITY

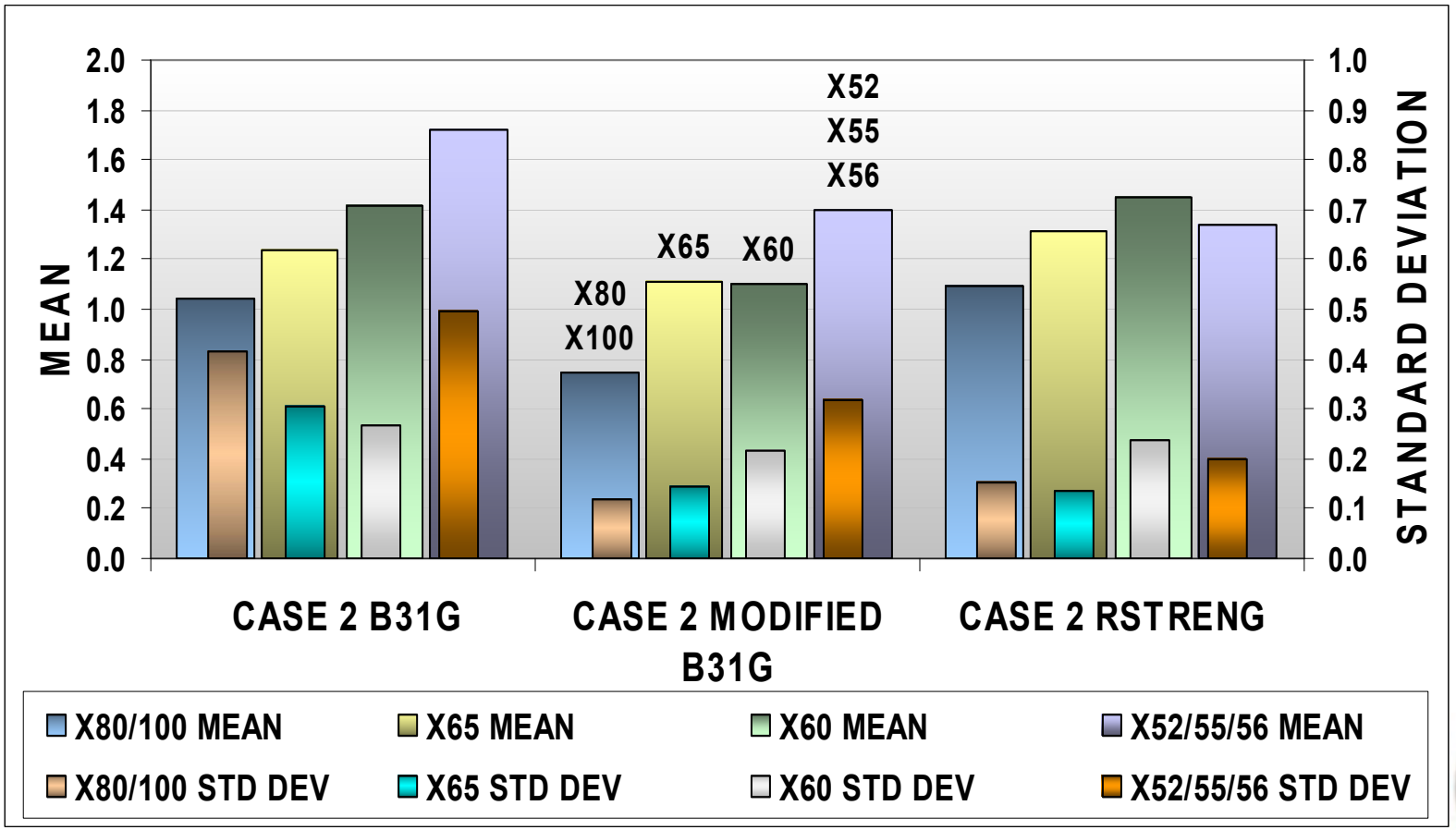
- Target for reliable prediction of conservative Pf
- Confidence level of 95%

MEAN OF Pa/Pf WITH STANDARD DEVIATION

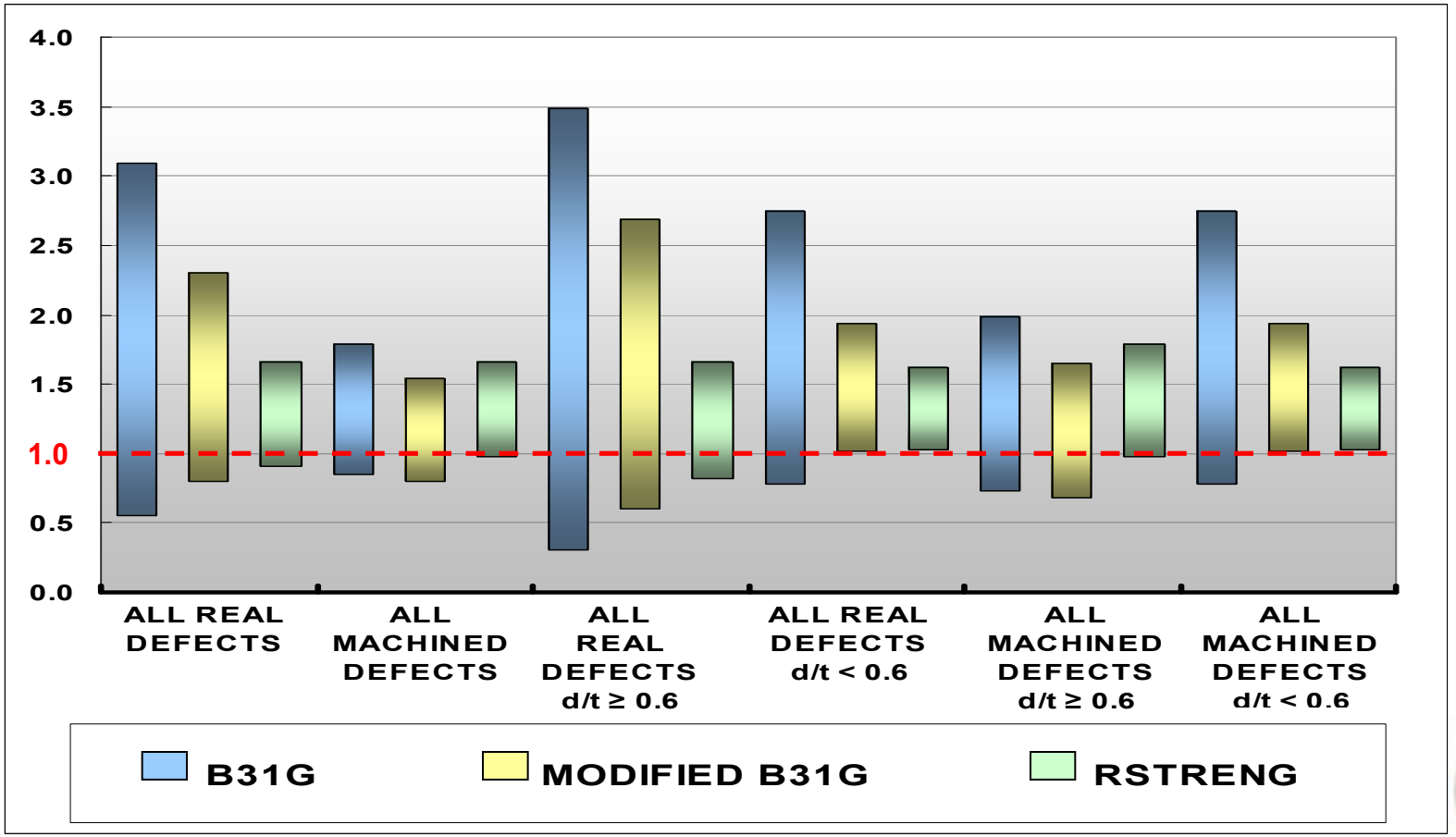


SAMPLE MEAN OF Pa/Pf WITH STANDARD DEVIATION

d/t ≥ 0.6 by Pipe Grade

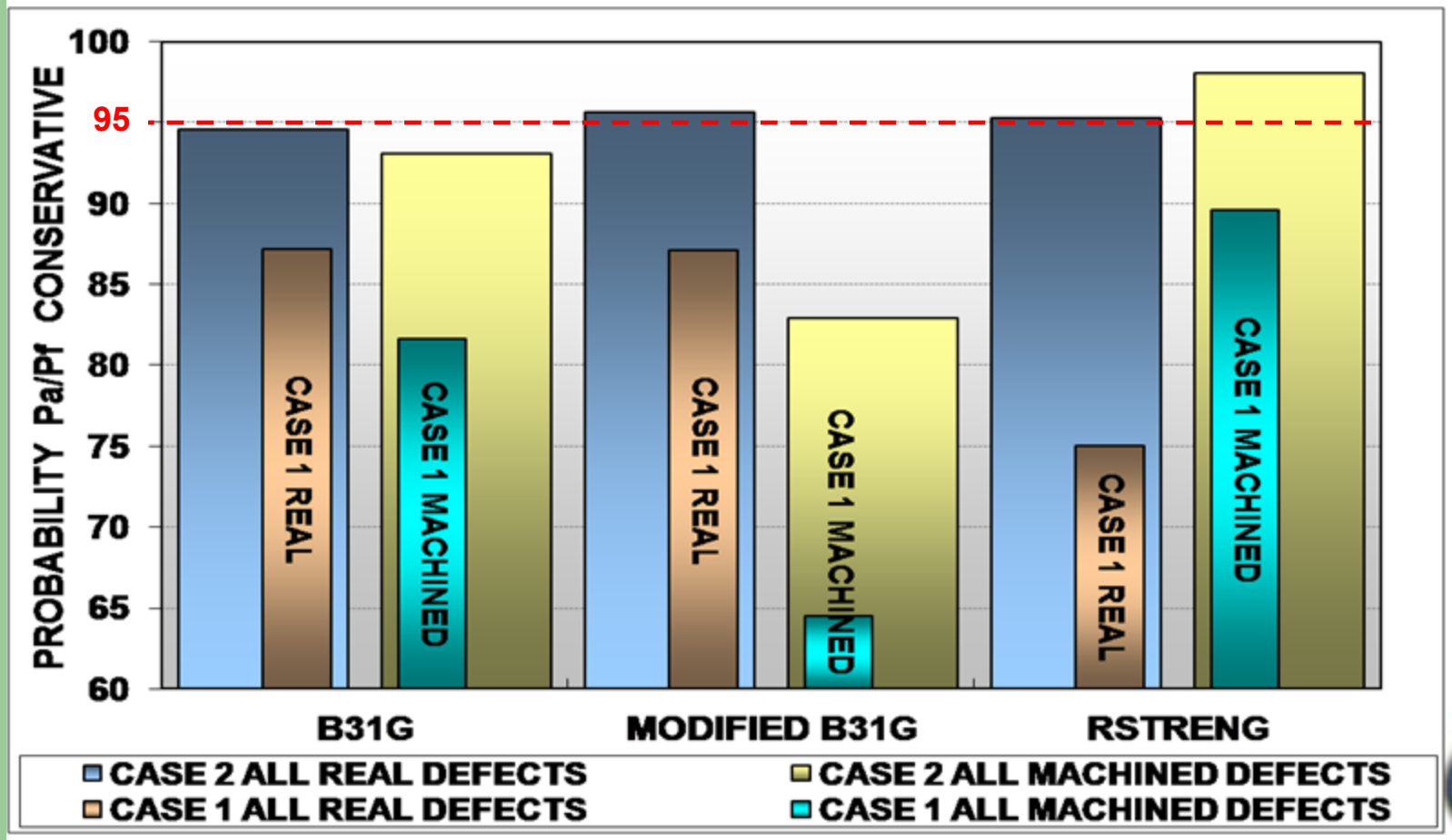


CASE 2
RANGE OF Pa/Pf WITHIN TWO STANDARD DEVIATIONS OF THE MEAN
~ 95 % OF SAMPLE DATA POINTS



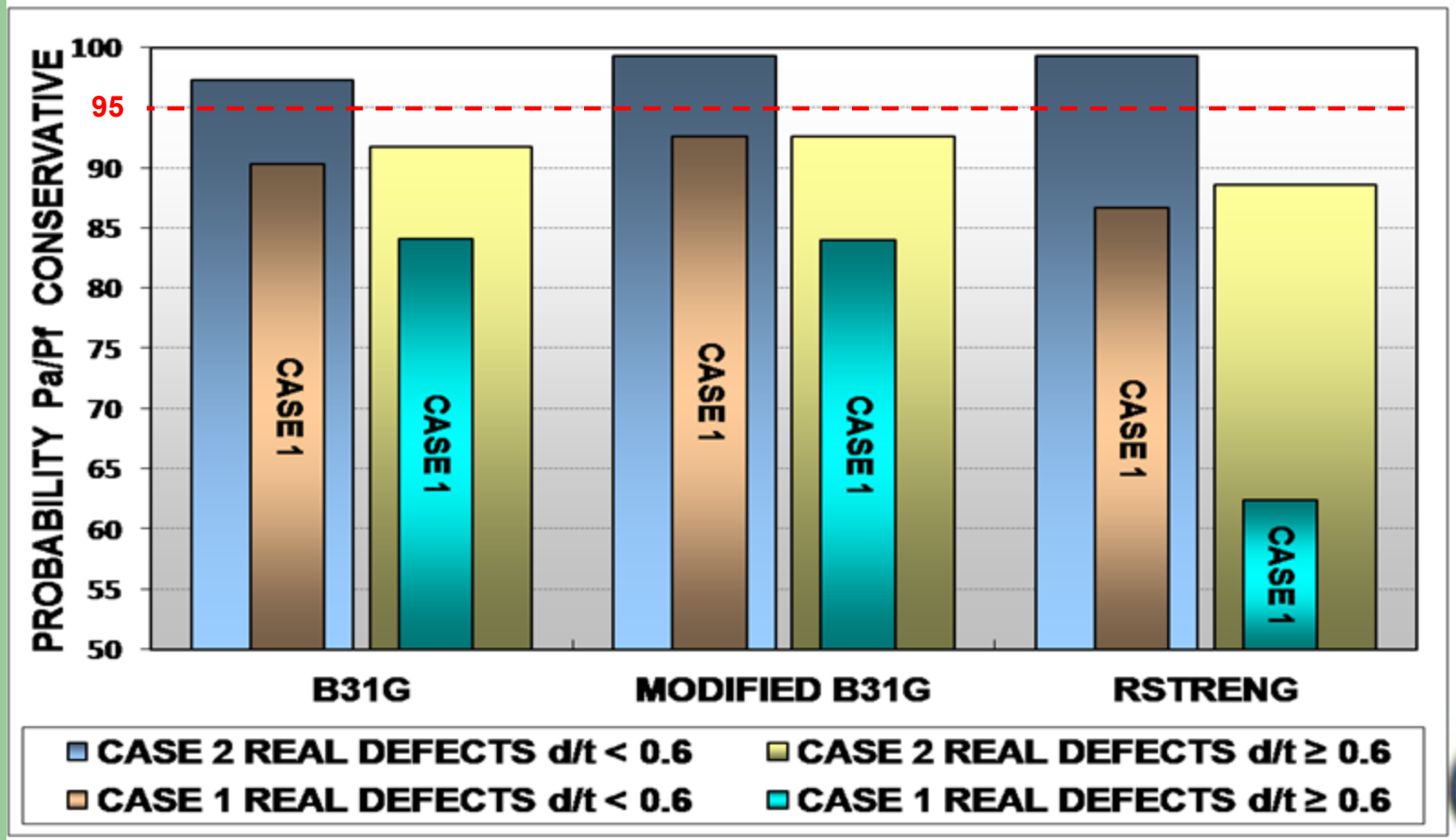
PROBABILITY THAT Pa/Pf IS CONSERVATIVE

REAL vs. MACHINED



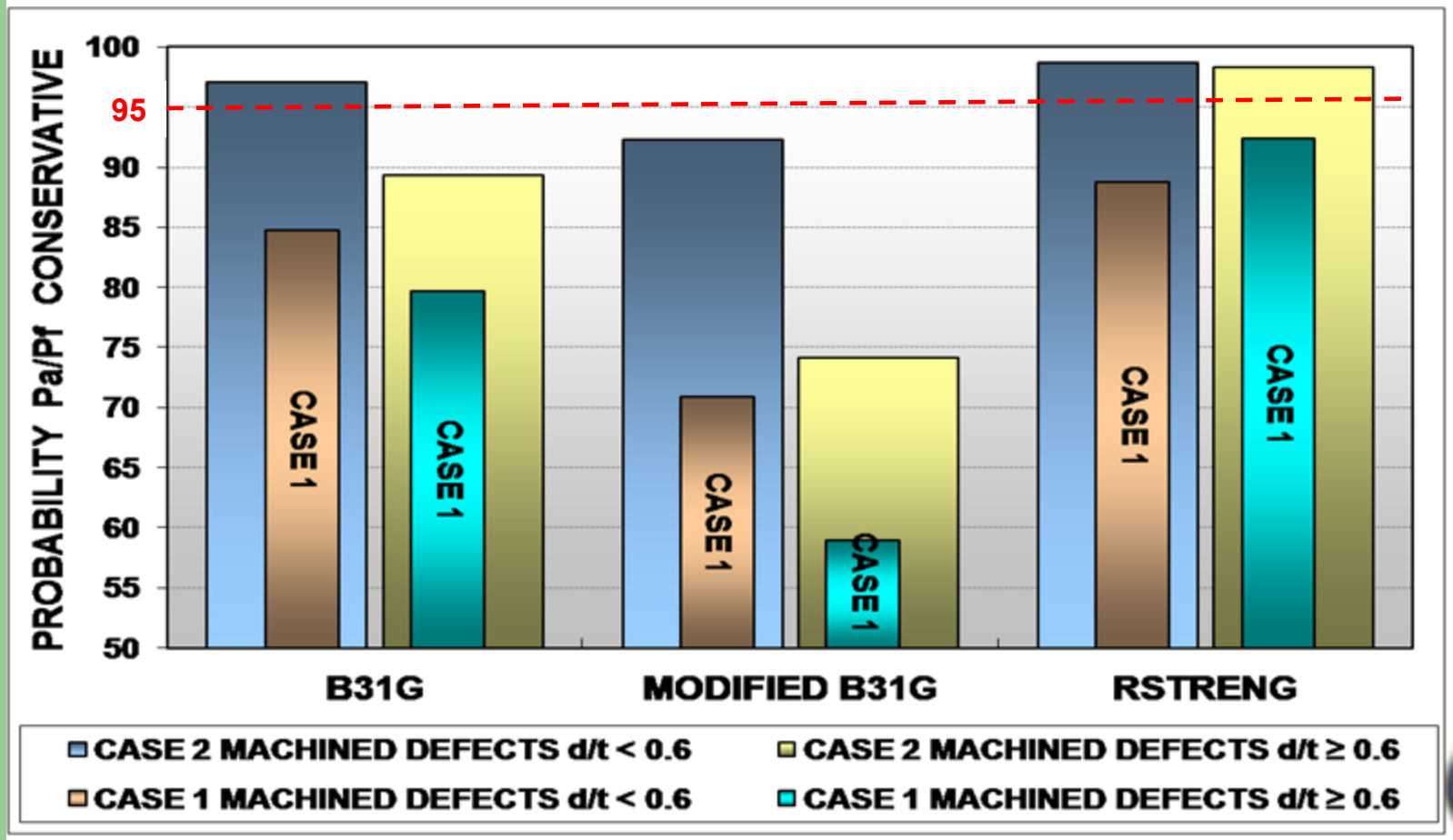
PROBABILITY THAT Pa/Pf IS CONSERVATIVE

REAL DEFECTS BY d/t



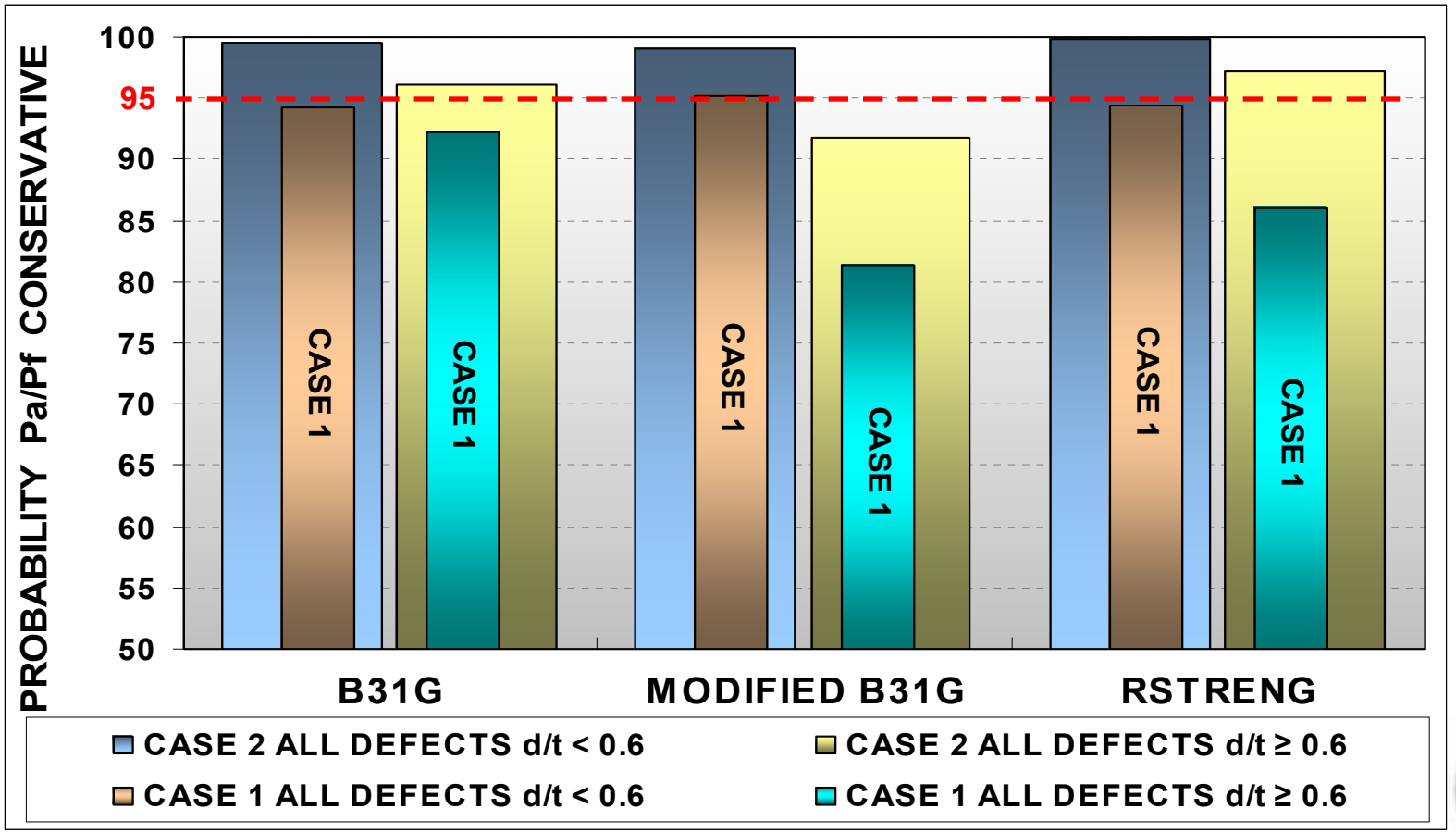
PROBABILITY THAT Pa/Pf IS CONSERVATIVE

MACHINED DEFECTS BY d/t



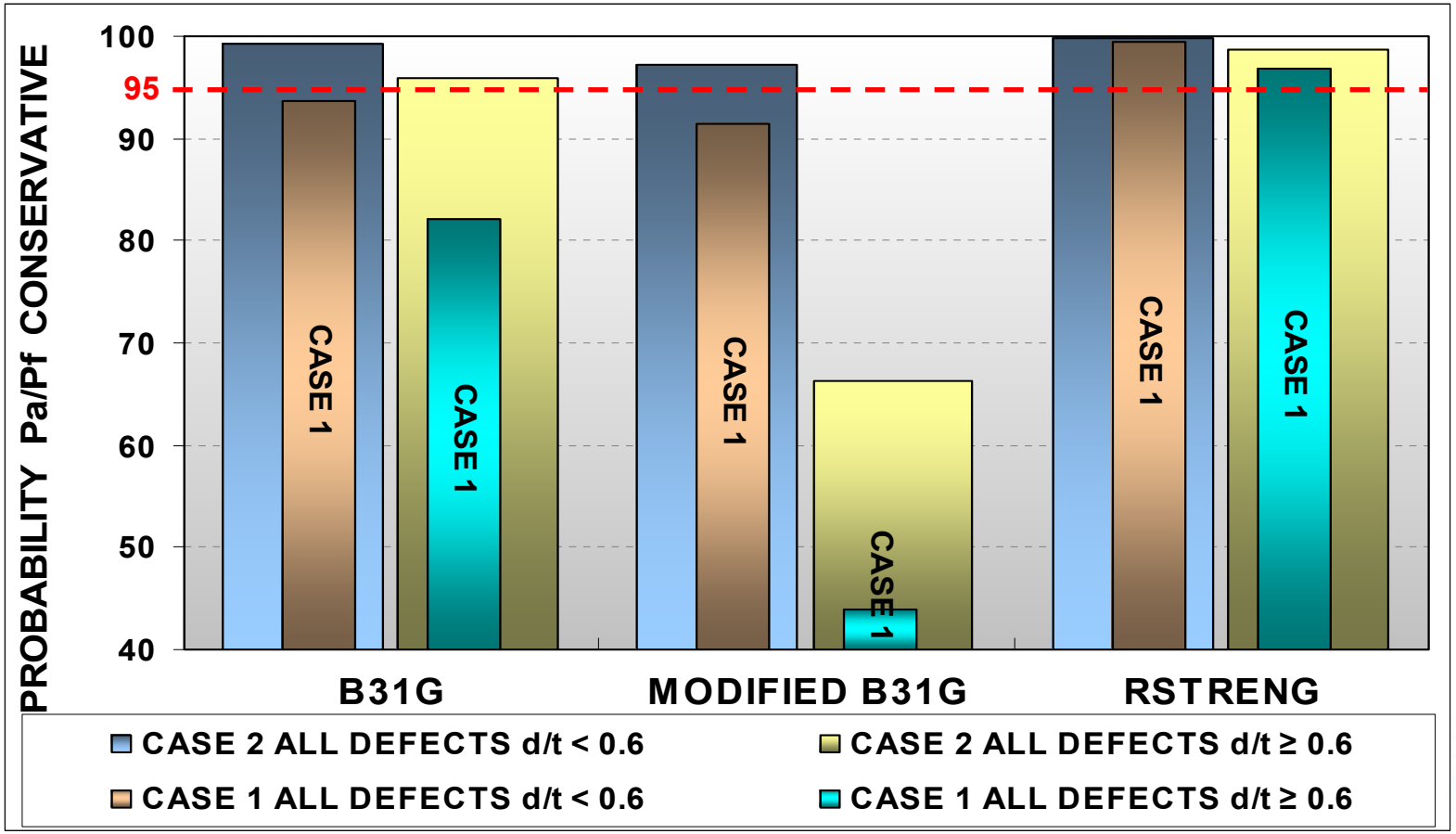
PROBABILITY THAT Pa/Pf IS CONSERVATIVE

PIPEGRADES X52, X55, X56 BY DEFECT DEPTH



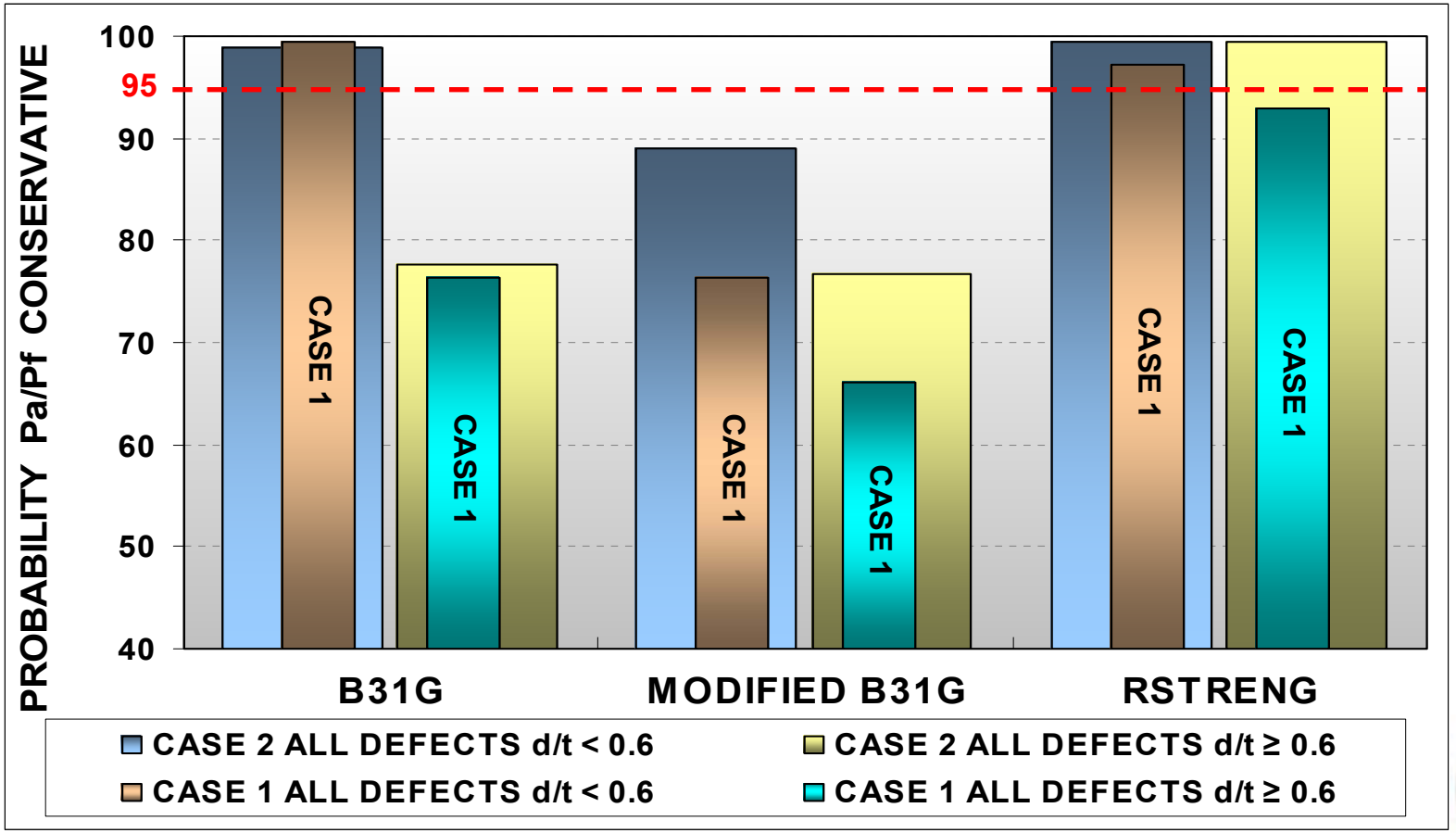
PROBABILITY THAT Pa/Pf IS CONSERVATIVE

PIPEGRADE X60 BY DEFECT DEPTH



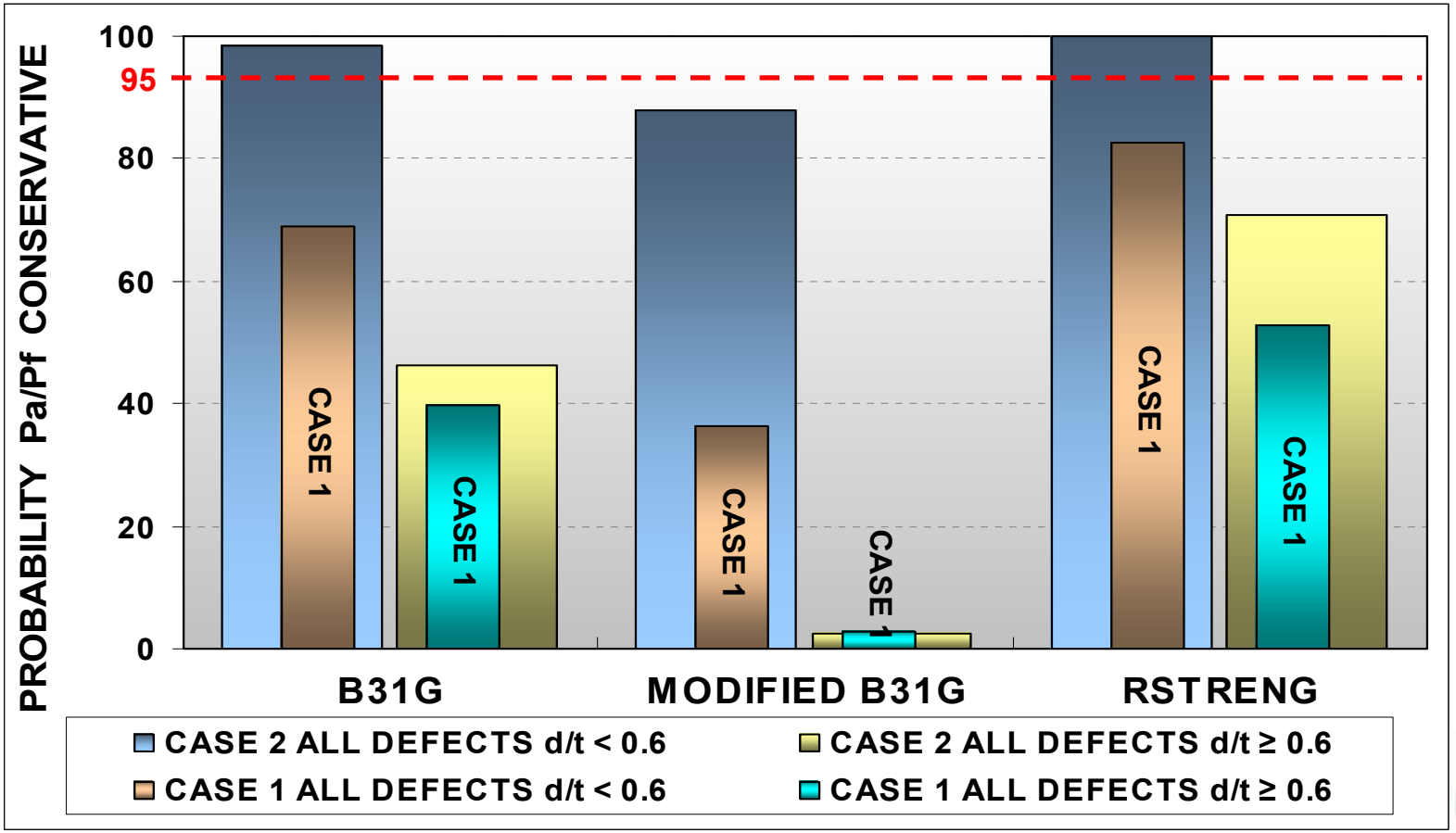
PROBABILITY THAT Pa/Pf IS CONSERVATIVE

PIPEGRADE X65 BY DEFECT DEPTH



PROBABILITY THAT Pa/Pf IS CONSERVATIVE

PIPEGRADES X80, X100 BY DEFECT DEPTH



MACHINED DEFECTS ONLY (NO DATA FOR REAL DEFECTS). ONLY 3 DATA PTS d/t ≥ 0.6

PHMSA EVALUATION
RESULTS

B31G, Modified B31G, and RSTRENG tend to give more frequent non-conservative results when

- Pipe Grade ≥ X60
- d/t ≥ 0.6

PHMSA EVALUATION

RESULTS

METHODS TO CALCULATE CONSERVATIVE Pf WITH CONFIDENCE LEVEL ~ 95%

	X52/X55/X56	X60	X65	X80/X100
d/t < 0.6	B31G^ MOD B31G^ RSTRENG^	B31G* MOD B31G* RSTRENG^	B31G* RSTRENG*	B31G* RSTRENG*
d/t ≥ 0.6	B31G* MOD B31G^ RSTRENG*	B31G* RSTRENG^	RSTRENG^	Incon- clusive

^Based on Both Case 1 and 2 Results *Based on Case 2 Results Only