Project 0-6607

Alternative OT Data Analysis Methods

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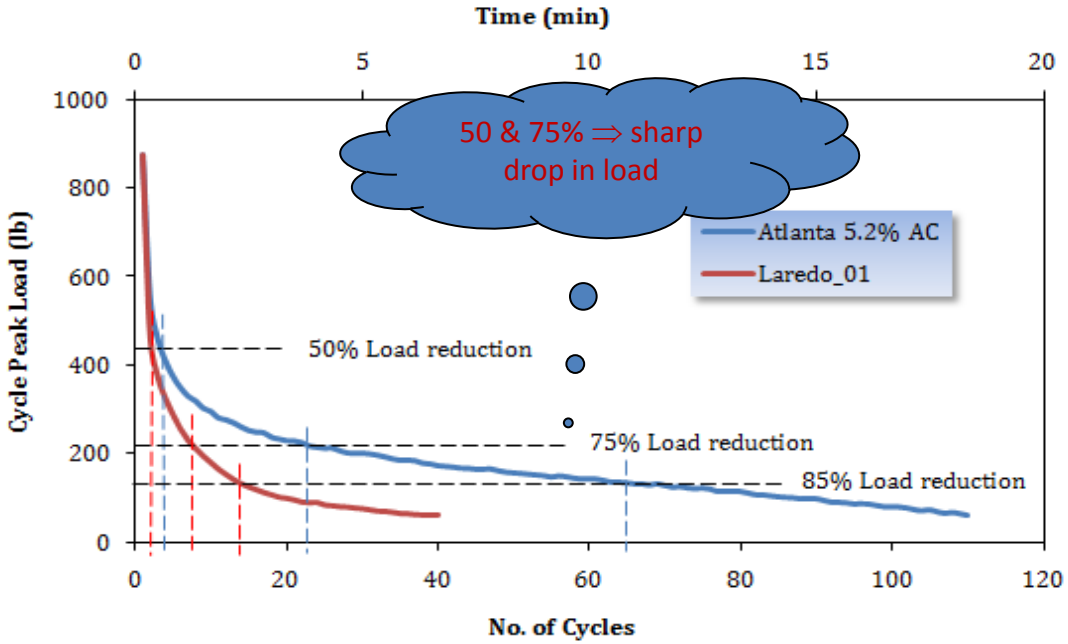
Alternative OT Data Analysis Methods

#	Item	Variable	Key Finding
1	Load reduction criterion	50, 75%, 85%, & 93%	– 50 & 75% → Not viable, sharp drop in load with meaningless & hardly comparable cycles – 85% gives reasonable COV with interpretable OT cycles → Validation
2	Pseudo fracture energy (Pseudo-FE)	Area under load-cycle curve	No improvement in variability with use of Pseudo-FE!!



OT Load Reduction Criterion

Load reduction criteria = 50, 75%, 85%, & 93%

#	District	Mix	Drying method	Average No. of Cycles to Load Reduction of:-							
				50%	COV(%)	75%	COV(%)	85%	COV(%)	93%	COV(%)
1	Atlanta 5.2% AC	Type D	Air	3	0.9	21	8.9	58	10.4	92	8.5
			Oven	3	1.7	22	5.2	70	8.4	118	6.3
2	Atlanta 5.5% AC	Type D	Air	7	4.4	70	10.5	390	1.9	527	26.1
			Oven	4	4.3	40	21.3	185	21.0	520	19.5
3	Childress	Type D	Air	2	6.2	19	17.2	62	14.7	176	31.6
			Oven	3	3.9	22	9.8	106	16.2	560	7.5
4	Laredo	Type C	Air	2	3.1	5	19.8	8	15.5	25	22.3
			Oven	2	5.4	7	9.2	13	12.1	24	15.6

Best 3 out of 5!!

Pseudo Fracture Energy

Pseudo fracture energy ⇒ area under load-cycle curve

Source	Sample No.	No. of Cycles to Failure	COV (%)	Area under Load Vs. Cycle Curve	COV (%)
Atlanta Type D 5.2% AC (plant-mix)	1	224	32.3	28964	33.6
	2	170		24461	
	3	322		45498	
Atlanta Type D 5.5% AC (plant-mix)	1	236	41.9	39554	35.4
	2	402		56515	
	3	575		81189	
Bryan CAM 6.9% PG 76-22 Valero+ Capitol limestone	1	866	4.7	70858	7.5
	2	791		76329	
	3	846		82359	
Bryan CAM 6.9% PG 76-22 Martin+ Capitol limestone	1	236	40.4	26829	43.4
	2	100		10350	
	3	169		24835	
Childress Type D 4.9% AC (plant-mix)	1	534	7.5	33461	11.4
	2	535		35456	
	3	607		41541	
Laredo Type C 5.0% AC (plant-mix)	1	64	44.3	10870	52.5
	2	40		6158	
	3	26		3729	

Three samples tested!

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Analysis & Summary

- 85% gives reasonable COV with interpretable OT cycles
- 50 & 75% → lowest COV, but very small OT cycles to sufficiently differentiate or screen mixes!!
- 50 & 75% → sharp drop in load; thus very small OT cycles
- Proposal → if modification is desired, try 85%, otherwise stay at current 93%
- No improvement in variability with use of pseudo fracture energy!!

Tex-248-F Items 5.7.2 & 6.0

- No change recommended!
- Otherwise, 85% would be the tentative suggestion!!

Challenge would be how to relate to field data