ISB Soot Adjustment and Reference Oil Target Update

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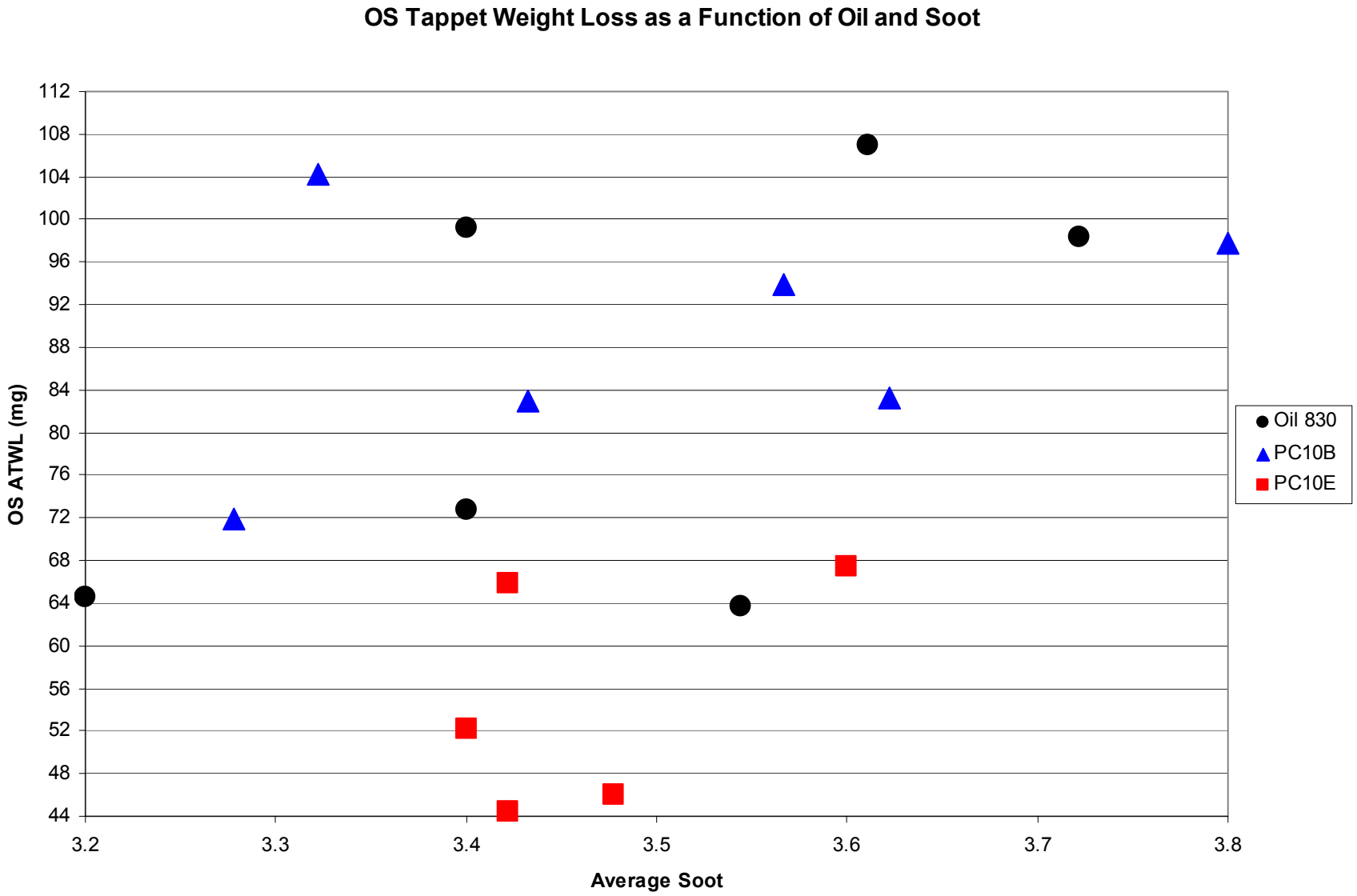
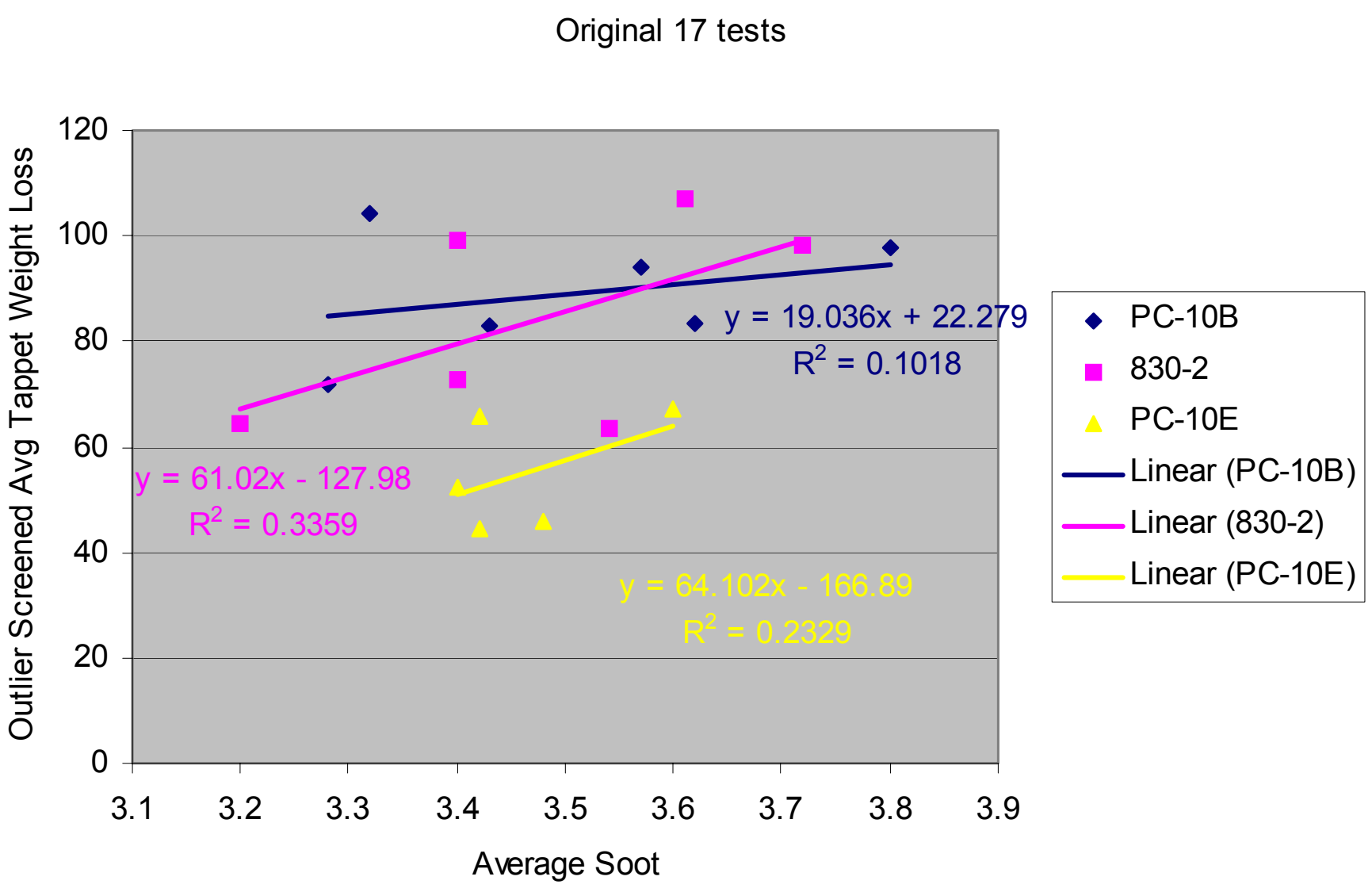
Historical Analysis



Historical with Regression

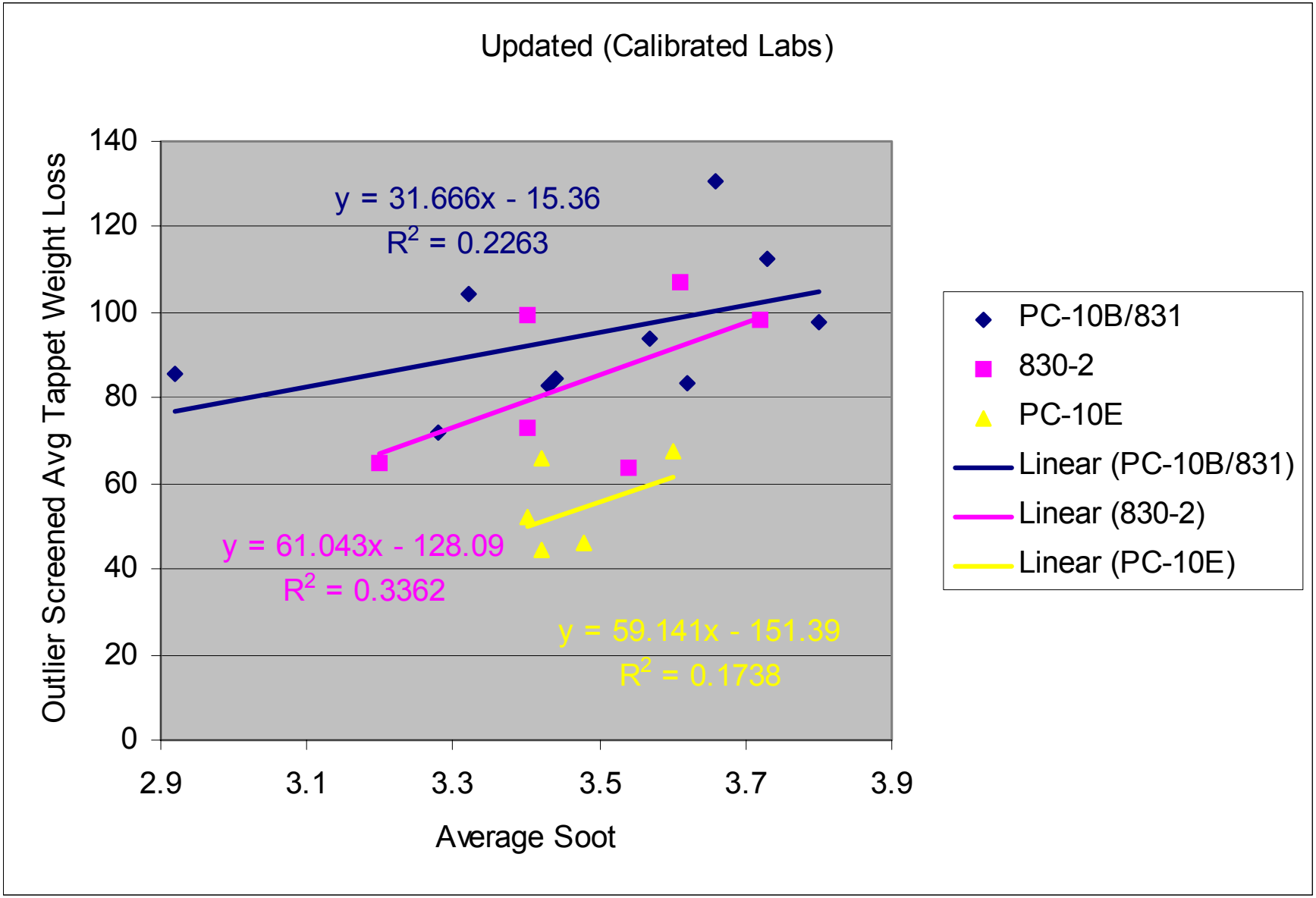


Size of Adjustment

- Range of avg soot for analysis: 3.2 – 3.8
- Coefficient: 76
- Range of adjustment: +/- 22.8 mg @ 0.3%

- Range of avg soot in database: 2.92-4.24
- Range of adjustment: -44.08 – 56.24 mg

Updated Regression

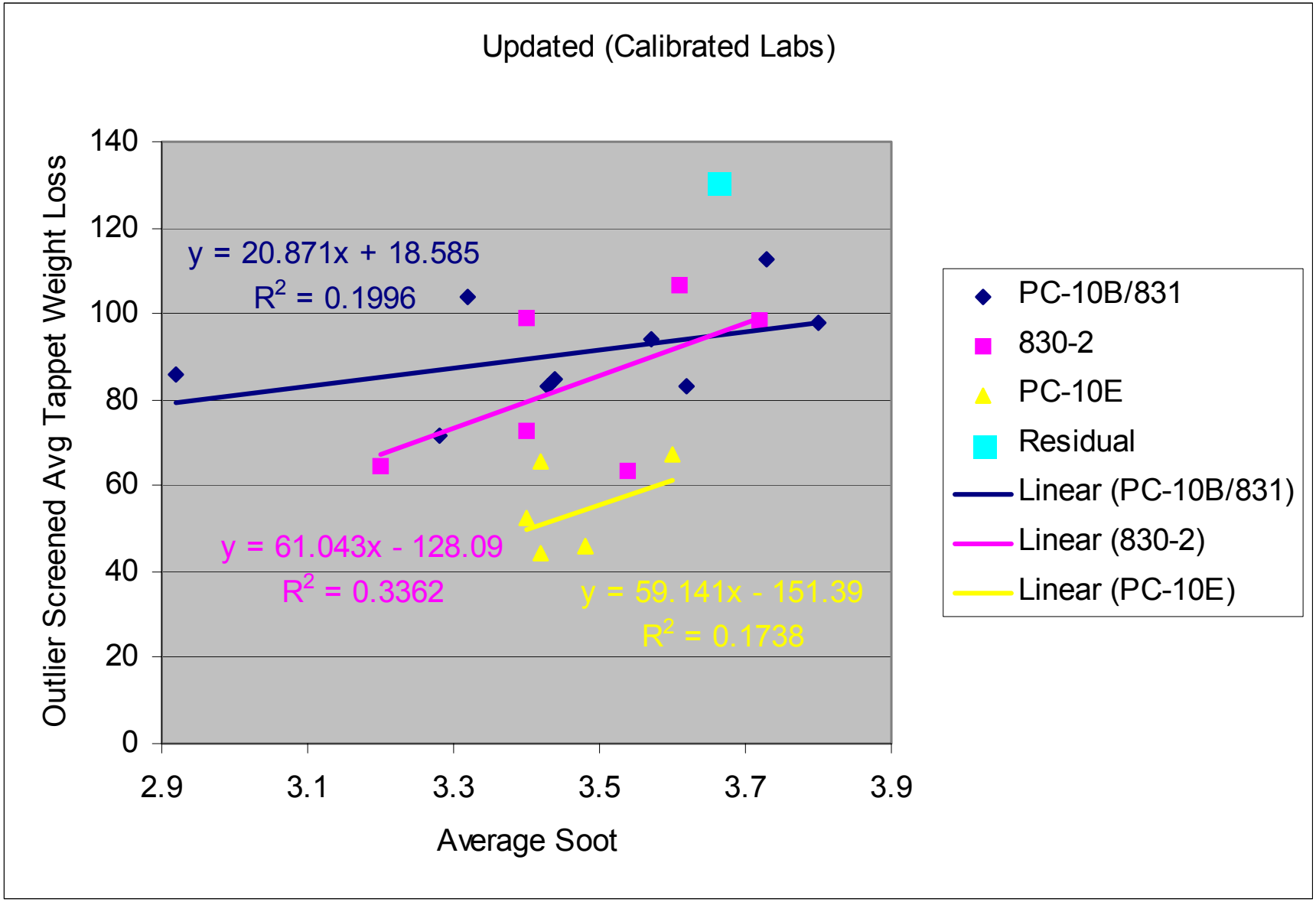


Statistical Analysis
(One test has large standardized residual)

ATWLOS with IND only

	P Value	Adj R sq	Coef
25-350_AVG	**0.03**	60.58	38.7
25-100_AVG	**0.033**	60.2	38.3
100-350_AVG	0.1	55.81	25
150-350_AVG	0.122	54.98	20.9
100-350_DELTA	0.286	51.65	11.6

Regression without Residual Test



Size of Updated Adjustment

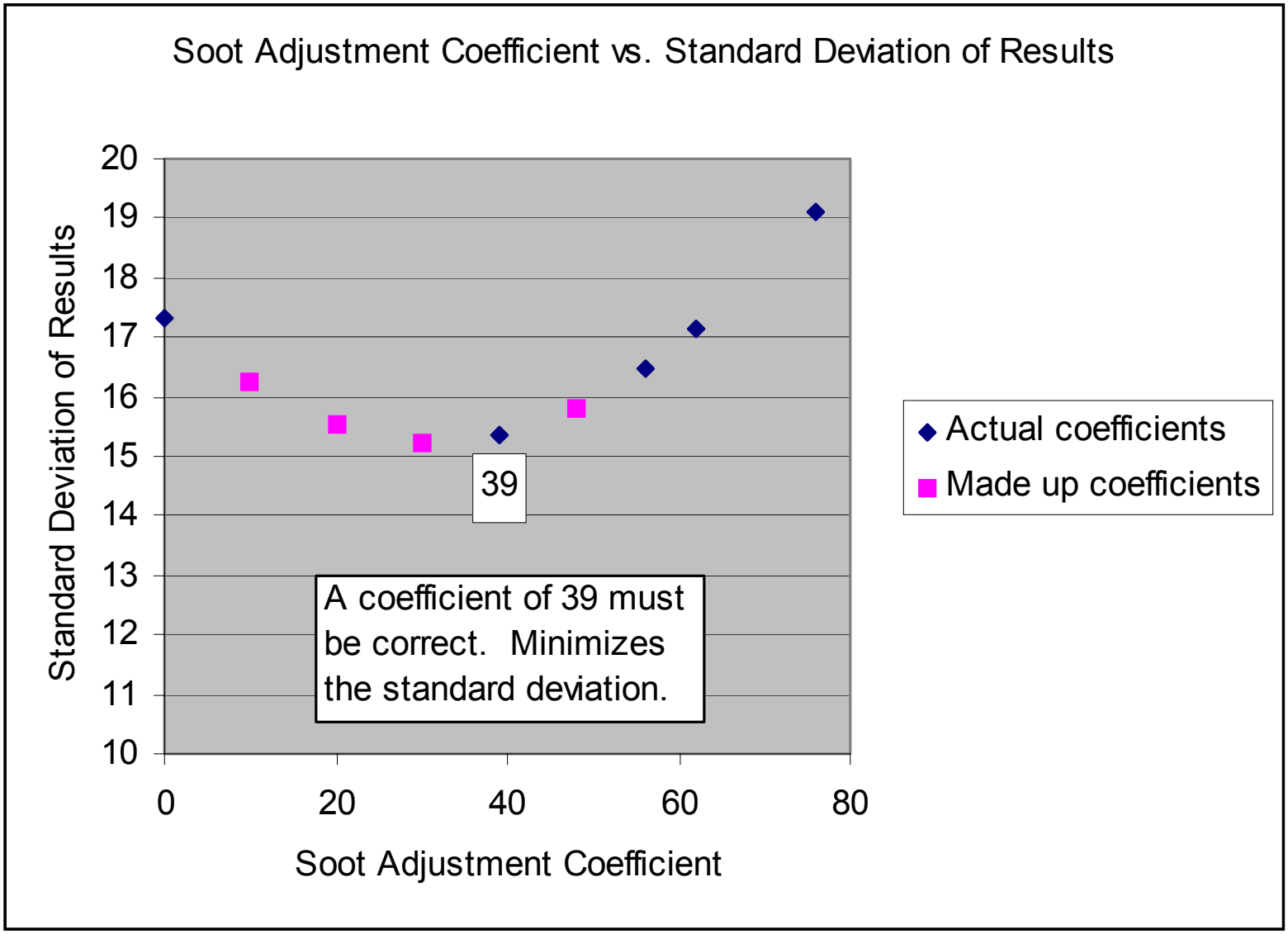
- Range of avg soot for analysis: 2.92 – 3.8
- Average of the Average Soot: 3.48
- Coefficient: 39
- Range of adjustment: -21.84 – 12.48 mg

- Existing Adjustment: +/- 22.8 mg @ 0.3%
- Range of avg soot in database: 2.92-4.24
- Range of Adjustment: -44.08 – 56.24 mg

Reference Oil PC-10B/831 Target Update

	Average Soot	Unadjusted TWL	New Adjusted TWL	New Yi	Old Adjusted TWL	Old Yi
	3.66	130.85	123.83	1.8887	118.70	1.8868
	3.43	82.91	84.86	-0.6519	88.20	-0.0314
	3.62	83.22	77.76	-1.1148	74.10	-0.9182
	3.44	84.52	86.08	-0.5723	89.10	0.0252
	3.32	104.16	110.40	1.0132	117.90	1.8365
	3.57	93.94	90.43	-0.2887	88.60	-0.0063
	3.73	112.43	102.68	0.5099	95.00	0.3962
	3.80	97.71	85.23	-0.6278	74.90	-0.8679
	3.28	71.88	79.68	-0.9896	88.60	-0.0063
	2.92	85.80	107.64	0.8332	129.90	2.5912
Mean:	3.477	94.742	94.859		88.7	
Stdev:	0.260	17.303	15.339		15.9	

Interesting Observation of Standard Deviations with Various Coefficients



Recommendation

- Change coefficient to 39
- Change average of average soot to 3.48
- Limit adjustment to 2.92 to 4.04 avg soot
- Range of Adjustment: +/- 21.84 mg
- Recalculate reference oil test results
- Update targets for PC-10B/831 at 10 tests
- Re-run LTMS, no stands become rejected, one becomes acceptable.