Performance Testing of the Proposed 0.52 COR/275 PQI Ball

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There has been a lot of "hype" about the so-called NEW (0.52 COR/275 PQI) ball, so we decided to conduct a controlled indoor Batted-Ball Speed (BBS) test using this NEW ball. We measured BBS using a calibrated Stalker SportTM radar gun accurately to within +/- 1mph and a target acquisition time of 0.046 Sec. We used 4 bats for test: a wooden bat, a single-walled metal bat, a multi-walled metal bat and a composite-fiber bat. The temperature of the controlled indoor facility was 65 degrees Fahrenheit and the test balls were allowed to acclimate to this temperature prior to testing. We used 3-dozen each of leather (L) and synthetic (S) covered 0.52 COR/275 PQI balls.

The logic behind the use of a high-COR/Low-PQI ball is quite simple. By lowering the PQI and increasing the COR, the result should be to reduce the affect the bat has on performance. It should be noted that the concept of a high COR/low compression ball is not new. It was done in the 1980's prior to the use of 100% polyurethane balls and is in fact, a variation on an old theme.

Three claims are made about this ball:
1. Any bat type results in about the same performance.
2. The ball performs about the same as the current 0.44/375 pqi ball.
3. The ball is safer, lower severity index and peak G's.

This indoor test investigated Claim 1. Claim 2 will be investigated in a future study. Claim 3 can only be verified by using a Gadd Severity Index measuring device such as a crash test dummy. We do not have direct access to such a device and will not be investigating this claim.

Method:
For this controlled indoor field test, we used two consistent (Class B Level) batters. All test bats were hit for three separate rounds (8 total hits each round) by each batter. Each round consisted of a batter hitting 4 leather covered and 4 synthetic covered balls. In order to represent optimal performance, the top 25% of the results were used as a comparison between cover types and bat types.

Ball Cover Comparison:
We tested both the synthetic cover and leather cover and saw no significant difference between them. Table 1 summarizes the top 25% of the BBS results for each batter-bat-cover type. The average of the differences (Deltas of Table 1) between the synthetic cover and the leather cover was -0.09 mph. A difference this small is not statistically significant. Hence we found no difference in batted-ball speed (BBS) performance due to cover type.

Table 1. Ball Cover Comparison, Average Initial BBS (mph)				
	Bat Type	**Leather**	**Synthetic**	**Delta (L-S)**
Batter 1	Wood	86.9	86.2	0.7
	Single-walled Metal	91.2	91.2	.0.
	Multi-walled Metal	91.5	91.0	0.5
	Composite-fiber	97.3	98.7	-1.4
Batter 2	Wood	84.8	85.2	-0.4
	Single-walled Metal	89.2	90.9	-1.7
	Multi-walled Metal	92.2	92.6	-0.4
	Composite-fiber	98.9	96.9	2.0
AVERAGE DELTA				-0.09

Bat Type Comparison:
Table 2 lists the bat properties for the test bats used for this study.

Table 2. Bat Properties			
Bat Type	**Weight (oz.)**	**Balance Point (in.)**	**SwingWeight**
Wood	29.6	22.3	7.6
Single-walled Metal	30.1	20.2	4.3
Multi-walled Metal	28.7	21.9	6.0
Composite-fiber	30.6	20.3	5.0

The top 25% of the measured batted-ball speeds for each batter-bat type were used to quantify the performance of the 0.52 COR/275 PQI ball. The results for both batters combined are summarized in Table 3. These results show that there is a significant difference in performance due to bat type. The BBS for the single-walled metal bat was higher than the wooden bat by 4.7-5.1 mph and the BBS for the multi-walled metal bat was higher than the wooden bat by 5.0-7.1 mph. However, the most significant difference in BBS was obtained with the composite-fiber bat. For the multi-walled composite bat, the BBS was higher than the wood bat by 11.9-13.1 mph. And it is important to note that the composite-fiber bat out performed the multi-walled metal bat by 6.0-6.9 mph.

These results clearly show that the bat type has a significant effect on the performance of the 0.52 COR/275 PQI ball and this data refutes the first claim that: “Any bat type results in about the same performance.”

Table 3. Bat Type Comparison, Average Initial BBS (mph)		
Bat Type	**Batter 1**	**Batter 2**
Wood	86.5	85.3
Single-walled Metal	91.2	90.4
Multi-walled Metal	91.5	92.4
Composite-fiber	98.4	98.4

Conclusions:
At this point, we reserve final judgment on this ball until we investigate Claim 2 and combine the results of Claim 1 and 2. However, it is clear that bat type has a significant effect on the performance of this ball. In addition, it appears that the ball cover type does not significantly affect its performance.

Future Testing:
We plan to conduct another controlled indoor test using the 0.52 COR/275 PQI ball against a standard 0.44 COR/375 PQI ball in the near future. More specifically, we plan to test 98-mph composites-fiber bats verses 1.20-BPF composite-fiber bats using both balls. Stay tuned for this study!!!
