### Interpreting Performance Information of IBEP Bulls

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<table>
<thead>
<tr>
<th>Index</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total *'s</td>
<td>54</td>
</tr>
<tr>
<td>Perf. Index</td>
<td>104.9</td>
</tr>
</tbody>
</table>

**Birth Weight** is the actual birth weight. **Birth CE** is calving ease: UN = unassisted; EP = Easy Pull; HP = Hard Pull; AB = Malpresentation. In the ID section, after the birth date is the (Birth Code): S = Single; TW = Twin; TR = Triplet; ET = Embryo Transfer.

**Dam Age** is the dam’s age at calving.

**205-Day:** **Adj. Wt.** is the 205-day weight adjusted for the age of the dam. **PCT** is the weight expressed as a ratio (percent of the average); this was determined within herd and not within breed at the Test Station. **NO** is the number of bulls of similar age (contemporaries) that were weighed at weaning.

**On Test Wt.** and **End Test Wt.** are the actual weights at the start of the test period (November 18, 2014) and at the end of the performance test (March 23, 2015).

**365-day Wt.** is the end test weight adjusted to 365 days of age and adjusted for age of dam. It is calculated as \{[(End Test Wt - On Test Wt)/(Days On Test)] x 160\} + 205-day Adj. Weaning Wt.

**ADG** is the Average Daily Gain of the bull during the 125-day test. In parentheses is the ADG expressed as a ratio, which compares the ADG to the breed average. A ratio of 106 indicates the bull gained 6% faster than the average of his breed in this test. If there are fewer than 6 bulls of one breed, the ratio is based on the average ADG of all bulls on test.

**WPDA** is the Weight Per Day of Age on March 23. In parentheses is the WPDA expressed as a ratio, which compares the WPDA to the breed average. A ratio of 103 indicates the bull was 3% heavier than the average of his breed on test. If there are fewer than 6 bulls of one breed, the ratio is based on the average WPDA of all bulls on test.

**Perf. Index** is the IBEP Performance Index = .60(ADG Ratio)+.40(WPDA Ratio). In this example, the index is .60(106)+.40(103) = 104.9, indicating that his combined performance was 4.9% above the breed average. Bulls with higher indexes should add more growth potential to calves than bulls of the same breed with lower indexes. Calves with more genetic potential for growth should be heavier at weaning, gain faster in the feedlot, reach an acceptable harvest weight at a younger age, and be more profitable.

**Frame Score:** Hip height was measured on March 23, and was used along with the age of the bull on March 23 to calculate the Frame Score (BIF Guidelines, 2002).
Adj. 365-day SC is the scrotal circumference at the end of the test, in cm., adjusted to 365 days of age.

Adj. REA and Adj. Rib Fat are the Rib Eye Area and Rib Fat measured by ultrasound at the 12th rib, adjusted to 365 days of age. Breed-specific adjustments are used. ^ Denotes that the breed association does not adjust this ultrasound information to 365 days of age, so this is the actual record (unless otherwise specified). Adj. REA/cwt is the adjusted Rib Eye Area expressed per hundred pounds of live weight. The 365-day weight is used as the live weight measurement; if REA is not adjusted to 365 days, the weight at scanning is used.

Adj. % IM Fat is the % intramuscular (IM) fat measured by ultrasound, adjusted to 365 days of age. ^ Denotes that the breed association does not adjust % IM fat to 365 days of age, so this is the actual record (unless otherwise specified). In parentheses is the % IM fat expressed as a ratio, which compares the % IM fat to the breed average. A ratio of 111 indicates the bull had 11% more % IM fat than the average of his breed in this test. If there are fewer than 6 bulls of one breed, the ratio is based on the average % IM fat of all bulls on test. The % IM fat is a measure of marbling, which is one of the major factors influencing carcass Quality Grade. Comparing within a breed, bulls with higher % IM fat should sire calves with a greater ability to have a higher carcass Quality Grade than calves sired by bulls with lower % IM fat.

% Retail Product is estimated as 65.59 - 9.931*(Rib Fat) + 1.2259*(Rib Eye Area) - 0.013166*(Carcass Weight) - 1.29*(KPH). Rib Fat and Rib Eye Area are adjusted to 365 days of age. Carcass Weight was estimated as .60*(365-day Weight); if the breed association does not adjust ultrasound information to 365 days of age, the weight at scanning is used instead of 365-day weight. A KPH (kidney, pelvic and heart fat) value of 2.0% was used for all bulls. In parentheses is the % retail product expressed as a ratio, which compares the % retail product to the breed average. A ratio of 102 indicates the bull is estimated to have 2% more % retail product than the average for his breed in this test. If there are fewer than 6 bulls of one breed, the ratio is based on the average % retail product of all bulls on test. The % retail product is heavily influenced by rib fat thickness and rib eye area, and highly related to carcass Yield Grade. Lower rib fat thickness and larger rib eye area result in greater % retail product. Comparing within a breed, bulls with higher % retail product values should sire calves with carcasses having more desirable Yield Grades than bulls with lower % retail product values.

Carcass Merit is calculated as (% Retail Product Ratio + % Intramuscular Fat Ratio)/2. In this example, the carcass merit is (111+102)/2 = 106.3, indicating that his carcass merit is 6.3% above the breed average. Carcass merit is an attempt to provide an indicator of both carcass Quality Grade and carcass Yield Grade. Ideally, we would prefer bulls that were above average in both % retail product and in % IM fat. However, this is not always possible. Producers whose calves tend to have less than desirable Quality Grades need to place greater emphasis on % IM fat, while those with calves that tend to have poor Yield Grade (i.e., few Yield Grade 1 and 2 with some Yield Grade 4) need to place greater emphasis on % retail product.

EPDs: EPDs and (Accuracies) are given for several traits: Birth Weight, Weaning Weight, Yearling Weight, Maternal Milk, Direct Calving Ease, Maternal Calving Ease, Docility, Carcass Weight, Marbling, Rib Eye Area, Fat Thickness, Yield Grade, and Days to Finish. Exact traits will be different for each breed. “Genomic EPDs” means that the bull himself had a genomic test done, and this was incorporated into his EPDs. See the article EPDs and S Indexes for more information. The numbers in asterisks indicate the percentile group ranking of the bull in the breed, in 10% groups: *10* is in the top 1-10%, *9* is 11-20%, and so on; *2* is 81-90%; and *1* is 91-100% (the bottom 10%). Bulls are compared to non-parent EPDs from their respective breed associations; it is a ranking within the entire breed, not just the bulls in this test. It is only valid to compare EPDs of bulls within the same breed. Do not compare EPDs of bulls in different breeds.
**Indexes:** These are multi-trait selection indexes calculated by some breed associations. These combine EPDs for several traits into a single economic value, which can be used to make selection decisions. The index values are interpreted like EPDs; the difference in index value between two bulls is the expected difference in average dollar value per head of their progeny, when the bulls are bred to similar cows. Typical beef production and economic values are used in calculating the indexes. Indexes are expressed in dollars per head, and higher indexes mean a higher dollar value per head. An index value only has meaning when it is compared to the index value of another animal of the same breed. Currently, indexes are calculated for Angus, Gelbvieh, Gelbvieh Balancer, Hereford, Limousin, Red Angus, Simmental, and SimAngus bulls. **Angus** indexes are Weaned Calf Value ($W), Feedlot Value ($F), Grid Value ($G), Quality Grade ($QG), Yield Grade ($YG), and Beef Value ($B). **Gelbvieh** indexes are Carcass Value (CV) and Feedlot Merit (FM). **Hereford** indexes are Baldy Maternal Index (BMIS), Calving Ease Index (CEZ$), Brahman Influence Index (BIIS), and Certified Hereford Beef Index (CHB$). **Limousin** index is Mainstream Terminal Index ($MTI). **Red Angus** indexes are HerdBuilder Index (HB) and GridMaster Index (GM). **Simmental** and **SimAngus** indexes are All-Purpose Index (API) and Terminal Index (TI). See the article **EPDs and $ Indexes** for more information. The numbers in asterisks indicate the percentile group ranking of the bull in the breed, in 10% groups: *10* is in the top 1-10%, *9* is 11-20%, and so on; *2* is 81-90%; and *1* is 91-100% (the bottom 10%). Bulls are compared to non-parent indexes from their respective breed associations; it is a ranking within the entire breed, not just the bulls in this test.

### HOW SALE ORDER IS DETERMINED

Each bull is given a within-breed percentile group ranking (in *’s) for many traits, including performance during the test, EPD’s, and $ Indexes. These are in 10% groups, so a bull can get 1-10 *’s for each trait. **Total *’s** is the sum of the number of *’s for the bull for **seven** of these traits: ADG Ratio, WPDA Ratio, % Retail Product, % IM Fat, Direct Calving Ease EPD, Weaning Weight EPD, and Maternal Milk EPD (Birth Weight EPD will be used if the bull does not have an EPD for Direct Calving Ease). The maximum number of *’s for a bull is 70. **Sale Order** is determined by Total *’s - the sum of the number of *’s for the seven traits listed above. A bull with 70 *’s would sell first. If two bulls have the same Total *’s, sale order for these bulls will be based on Performance Index.