**DESCRIPTION OF NATIONAL GENETIC EVALUATION SYSTEM**

**June 2012**

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| **Country (or countries)** | France | |
| **Main trait group1** | Calving Ease | |
| **Breed(s)** | Holstein (HOL), Montbéliarde, Normande, Simmental Française (SIM), Brune (BSW), Pie Rouge des Plaines (RED), Abondance, Tarentaise, Vosgienne. Each breed evaluated separately | |
| **Trait definition(s) and unit(s) of measurement2** | 1. Ease of Birth (direct effect)  2. Ease of Calving (maternal effect)  3. Stillbirth (with direct and maternal effect) = dead at birth or within 24 hours |
| **Method of measuring and collecting data** | 1-2 Calving scores, expressed on a scale from 1 to 5: 1=no assistance, 2=easy pulling, 3=difficult calving, 4=caesarean, 5=embryotomy. The last 2 categories are analysed together with code 3.  In Holstein breed:70.7% codes 1, 23.9 % codes 2, 5.4 % codes >=3  3. 0/1 trait  Code 1= dead: 5.2% and 4.7% for Holstein and Montbéliarde |
| **Time period for data inclusion** | Score given by the calf owner, recorded at the same time as the Identification of the calves. |
| **Age groups (e.g. parities) included** | Parities 1-9 |
| **Other criteria (data edits) for inclusion of records** | 1-2 Records since 1990. Twins are excluded.  3. Records since 1999. Herds are not included as long as they don’t have reported at least one death. Region/year combinations with < 3% stillbirth (<2.5% in Montbéliarde) are excluded. Twins are excluded. |
| **Sire categories** | All sires |
| **Environmental effects3, pre-adjustments** | None |
| **Method (model) of genetic evaluation3** | 1-2: Heteroskedastic threshold model  3: Threshold model |
| **Environmental effects3 in the genetic evaluation model** | Sex of calf (2) by parity-age (14) (F); month-year (F); Region (82)-Year (F); HYSeason (R) (Numbers in parentheses = number of levels) |
| **Adjustment for heterogeneous variance in evaluation model** | 1-2: Residual variances:described on a logarithmic scale with the effects of month (12), year of calving (26), sex of calf (2), region (82) and parity-age class (14)**.**  3: No |
| **Use of genetic groups and relationships** | Sire of calf, Sire of Dam (both with relationship matrix).  Genetic groups defined by country of origin, birth year, sex of unknown parent . |
| **Blending of foreign/Interbull information in evaluation** | No |
| **Genetic parameters in the evaluation** | 1-2. On the underlying scale:  Holstein: Direct: h²=5.6%; Maternal: h²=3.2%  Montbéliarde: Direct: h²=7.8%; Maternal: h²=3.7%  Other breeds: Direct: h²=7.4%; Maternal: h²=4.3%  Varg sire = HOL: 1.99 (direct); 1.57 (Maternal); Montbéliarde: 2.12 (direct); 1.31 (Maternal); Normande: 1.99 (direct) 1.57 (Maternal); Other breeds: 1.99 (Direct); 1.57 (Maternal).  3. On the underlying scale:  Holstein:,: Direct: h²=3.0%; Maternal: h²=6.6%  Montbéliarde: Direct: h²=5.9%; Maternal: h²=5.8%  Varg sire = HOL: 0.79 (direct); 1.87 (Maternal); Montbéliarde: 1.53 (direct); 1.73 (Maternal); Normande: 1.05 (Direct); 1.32 (Maternal); Other Breeds: 1.53 (direct); 1.73 (Maternal). |
| **System validation** | Model selection comparing goodness-of-fit criteria of several (40) models (see Ducrocq, 2000). |
| **Expression of genetic evaluations** If standardised (e.g. RBV), give standardisation formula on PART 2 | 1-2. EBV, % of expected easy calvings (codes 1 & 2) from 1st parity dams, assuming a sex ratio of 50%. The expected % of easy calvings are standardized to a 89% mean for the bulls of the male rolling base.  3. EBV, % of expected calves alive from 1st parity dams, assuming a sex ratio of 50%. The expected % of calves alive are standardized to a 92% mean for the bulls of the male rolling base. |
| **Definition of genetic reference base**  **Next base change** | HOL, Montbéliarde and Normande: EBV of AI bulls progeny tested in France, born between years (n-12) and (n-9), with at least 20 offsprings for birth conditions (NAI) and 20 daughters for calving conditions (VEL)  Other breeds: BV of AI bulls born between years (n-14) and (n-9), with at least 20 offsprings for birth conditions (NAI) and 20 daughters for calving conditions (VEL)  No more base change for calving and stillbirth traits |
| **Calculation of reliability** | 1- PEV/g, where PEV is obtained as the diagonal element of the inverse of the coefficient matrix for a simplified threshold model with Sire, MGS, sex\*parity, month\*year, region\*year |
| **Criteria for official publication of evaluations** | Bulls progeny tested in France, with a reliability of at least 50% for HOL, MON and NOR; 35% for the others |
| **Number of evaluations / publications per year** | 3 (April, August, December) |
| **Use in total merit index4** | No |
| **Anticipated changes in the near future** |  |
| **Key reference on methodology applied** | Ducrocq V., 2000: Calving Ease Evaluation of French Dairy Bulls with a heteroskedastic Threshold Model with Direct and Maternal effects. Interbull Bull. 20, pp123-130  *(The stillbirth evaluation follows the calving ease evaluation : same recording time, same software, same model (except for heterogeneous residual model which is not needed for Stillbirth as there are only two categories) )*  Journaux L, Ledos H, Mathevon M, Mattalia S, Leudet O, Organization of recording and control of data used in France to evaluate calving ease and birth weight in dairy and beef cattle. ICAR Meeting 26-31st May 2002, Interlaken (Switzerland). 33rd ICAR Session. |
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1) Either: Production (e.g. milk, fat, protein), Conformation, Health (e.g. mastitis resistance, milk somatic cell, resistance to diseases other than mastitis), Longevity, Calving (e.g. stillbirth, calving ease), Female fertility (e.g. non-return rate, interval between reproductive events, number of AI’s, heat strength), Workability (e.g. milking speed, temperament), Beef production, Efficiency (e.g. body weight, energy balance, body conditioning score), or Other traits.

2) Indicate frequencies per category if the trait is categorical and specify extension or transformation of data if practiced.

3) Use abbreviations for most common effects (see document with list of abbreviations at http://www-interbull.slu.se/service\_documentation/General/framesida-general.htm) and indicate random (R) or fixed (F).

4) Please give economic weights and indicate how they are expressed (preferably in genetic standard deviation units).

**DESCRIPTION OF NATIONAL GENETIC EVALUATION SYSTEM**

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| **Country (or countries)** | France |
| **Main trait group** | Calving Traits (underlying scale) |
| **Breed (repeat as necessary)** | Holstein |

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| Trait | Breed | h2 | Sire genetic  variance | official proof  standardisation formula\* |
| Direct Calving Ease (underlying scale) | HOL | 0.056 | 1.99 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| BSW | 0.074 | 1.99 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| Maternal Calving Ease (underlying scale) | HOL | 0.032 | 1.57 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| BSW | 0.043 | 1.57 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| Direct Stillbirth (underlying scale) | HOL | 0.030 | 0.79 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| BSW | 0.059 | 1.53 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| Maternal Stillbirth (underlying scale) | HOL | 0.066 | 1.87 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |
| BSW | 0.058 | 1.73 | a= 0  b=1 et c= 1 , d= rolling base (computed at each release) |

\* Expressed as follows:  
StandEval=((eval-a)/b)\*c+d where a=mean of the base adjustment, b=standard deviation of the base, c=standard deviation of expression (include sign if scale is reversed), and d=base of expression.