APPLICATION FOR
THE ICAR CERTIFICATE OF QUALITY

Applying organisation (give name and full address)

Danish Agriculture & Food Council
Knowledge Centre for Agriculture, Cattle (VFL Cattle)
Agro Food Park 15
DK-8200 Aarhus N
DENMARK

Contact name………………………Trine Barrett
Position in organisation…………….Chief Advisor
Contact telephone number..........8740 5253
Contact fax number………………...8740 5010
Contact email address…………...TRB@vfl.dk

State which areas of activity are to be considered for the ICAR Certificate of Quality.
(See Page 11).

1: The identification system of dairy cattle
2: The identification system of beef cattle
6: The recording of production of dairy cattle
7: The recording of production of beef cattle
13: The genetic evaluation of dairy cattle
16: Laboratory analysis for ICAR members
17: Data processing work for ICAR members
State which other certificates of quality or service held, if any, such as ISO 9000, Investors in People, laboratory certifications, etc

State if the organization applied to the ICAR Benchmarking service during the last two years, and add details

RYK participated in Benchmarking with data for the year 2010. Results can be found in Benchmarking Report 2011.

For ICAR Members: the base, non-refundable application fee is €640, or greater where appropriate and agreed with the member, which is non-refundable. Currently the hourly rate is €80.

Cheques are to be made payable to SERVICE- ICAR S.r.l. which supervises this service on behalf of ICAR. Electronic bank transfer details are:

BNL-BNP Paribas
Agenzia Roma Bissolati
Via L. Bissolati, 2
I-00187 Rome (Italia)
IBAN: IT93Z010503200000000004899
BIC: BNLLIITRR

I/We accept the conditions as amended from time to time by the ICAR Board in the granting of the ICAR Certificate of Quality and that the decision of the ICAR Board is final in the granting of the award.

Signed...........................................................................................................

Date..................................................................................................................

This document to be sent to the ICAR Secretary General
ICAR - SERVICE-ICAR Srl.
Via Giuseppe Tomassetti 3-A/1
00161 Rome,
Italy
ICAR CERTIFICATE OF QUALITY

Options for which application may be made

1. The identification system of dairy cattle
2. The identification system of beef cattle
3. The identification system of milking sheep
4. The identification system of milking goats
5. The identification system of buffaloes
6. The recording of production of dairy cattle
7. The recording of production of beef cattle
8. The recording of production of milking sheep
9. The recording of production of meat sheep
10. The recording of production of milking goats
11. The recording of production of meat goats
12. The recording of production of buffaloes
13. The genetic evaluation of dairy cattle
14. The genetic evaluation of beef cattle
15. The genetic evaluation of other species
16. Laboratory analysis for ICAR members
17. Data processing work for ICAR members

The above list is not exhaustive, therefore should the member, or organisation, require consideration for an ICAR Certificate of Quality for an activity which is not listed above, application should be made to the ICAR Secretariat.
Appendix 2

ICAR CERTIFICATE OF QUALITY

Internal Audit Questionnaire
Also to be used as the initial briefing document prior to an auditor’s visit

Relating to…

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7: The recording of production of beef cattle
13: The genetic evaluation of dairy cattle
16: Laboratory analysis for ICAR members
17: Data processing work for ICAR members
Date of audit……………………………………………………………………………………………………

For use of ICAR Secretariat only:

Date received…………………………………………………………………………………………………….

Date passed to auditors…………………………………………………………………………………………

Date returned by auditors………………………………………………………………………………………….

Date passed to ICAR Board members…………………………………………………………………………

Date of ICAR Board decision………………………………………………………………………………….
NOTES FOR THE APPLICATION FOR THE ICAR CERTIFICATE OF QUALITY

ALL DETAILS CONTAINED IN THIS OR ANY REPORT OR DETAILS SENT TO ICAR RELATING TO THE ICAR CERTIFICATE OF QUALITY WILL BE CONFIDENTIAL AND WILL ONLY BE USED FOR PURPOSES RELATING TO THE ICAR CERTIFICATE OF QUALITY

Questions relating to the whole Organisation:

1. Does the organisation itself carryout the work for which certification is requested or is it an “umbrella” or national coordinating organisation?

   VFL CATTLE is a national coordinating organisation responsible for the work. Most of the work regarding animal identification and registration is done by VFL CATTLE and most of the work about milk recording is carried out by the "daughter" company RYK (Livestock Registration and Milk Recording). However there are a couple of very small milk recording societies still active.

2. In the case of an “umbrella” organisation:
   a. Give details of any state involvement

   No state involvement except for animal identification and animal movement registration according to national and EU legislation.

3. Please give details of the organisation, including a description of the governance and management structures. Ideally here include a map showing any business sites such as laboratories, offices, service providers which have a bearing on the services/products provided to farmers.

   The organizational structure chart in #4 is quite useful in explaining the governance and management structures our system. All the services are managed from and placed in Aarhus at the Knowledge Center for Agriculture. RYK has in addition two regional offices handling daily management matters of field service in milk recording. These centres are in western part of Jutland (Holstebro) and on Sjælland (Sorø).
4. Please provide an organisational structure chart

Explanation (because of lack of English version):

Blue ovals are boards. The big blue oval is the board of Danish Agriculture & Food Council, the overall Danish farmers association. This board has representation in the boards of KFC (research centre), RYK (milk recording), and NAV (breeding value estimation).

“Videncentret…” is Knowledge Centre for Agriculture with directors for cattle (kvæg), plant production, farm economics and management, and CEO Jan Mousing.

VFL CATTLE has a board of farmers, a director and three sections, each with a number of sub-sections.

From the left
1. Reproduction and breeding
2. Herd management and production
3. IT solutions
5. What is the core business of the organisation?

Registration, data analyses, estimation of breeding values, collection of knowledge and advising to advisors, providing recording service direct to farmers.

The answers cover activities of VFL CATTLE (previously named Danish Cattle Federation)

6. What other business is the organisation involved with?

Animal identification

7. How is the organisation funded?

It is owned by farmers’ organisations and the services are fully paid for by farmers.

8. Does the organisation provide services in other countries? If so please give details. (Commercial confidentiality will be respected).

No

9. What, if any, other quality assurance schemes, not covered elsewhere, have the organisation in place? Give details.

No schemes

10. What is the number of farms serviced by the organisation? If a national or “umbrella” organisation please give details for each constituent member organisation.

Approx. 18,500 farms. For details see point 12.

11. What recording options are available to these farms? Here and in the following three questions, options mean recording options as defined in the ICAR Guidelines. Should there be other options these should be clearly shown and defined.

The identification system of dairy cattle

The identification system of beef cattle
The recording of production of dairy cattle, methods A4, B4, A8 and B8

The recording of production of beef cattle

The genetic evaluation of dairy cattle

12. How many farms use each option?

3.250 milk recorded farms (90% of all milk producing herds)
   - A4: 330 herds
   - B4: 2,520 herds
   - A8: 50 herds
   - B8: 350 herds

1500 beef herds with intensive breeding registrations.

16700 cattle herds with registration according to EU rules.

The identification system of dairy cattle 3,650
The identification system of beef cattle 14,800

The recording of production of dairy cattle 3,250
The recording of production of beef cattle 1,500

The genetic evaluation of dairy cattle 3,600

13. How many animals are recorded in each option? If less than the whole herd/flock please show.

The recording of production of dairy cattle 530,000

   - A4: 60,000 cows
   - B4: 405,000 cows
   - A8: 9,000 cows
   - B8: 56,000 cows

The recording of production of beef cattle 15,000

14. What is the average herd/flock size in each option?

The recording of production of dairy cattle 160 cows

   - A4: 170 cows
   - B4: 150 cows
   - A8: 220 cows
   - B8: 220 cows
15. Give details of the supervision programmes for technicians and both internal and external staff. Include here the routine number of items such as identity checks and check recordings for dairy production staff. For beef, meat and conformation, the programme of checks and comparisons including national and international comparison training.

Supervision methods are service to the farmers:
Sampling during milking
Cleaning of meters, samplers for AMS and other types of equipment
Connection and/or disconnection of AMs samplers
Instruction in use of equipment

Various statistics, examples:
Frequent check of animal ID
Parlours, scales, entry in the herd, etc
Comparison of figures in recording and dairy factories
Confirmation, follow up on recordings per staff member every 3 month
Benchmark technicians

16. In the case of “umbrella” organisations: (the purpose of this section is to ascertain the inter-relationships in the areas of supervision and commercial activity)

a. What quality standards of performance are expected of the participating constituent-organisations?

For the departments of VFL CATTLE involved in identification, recordings, classifications and breeding value estimation the minimum requirements are to follow ICAR and Interbull guidelines. This is and has always been seen as a prerequisite for providing valid data for farm management and animal breeding systems. The departments are in same house and working closely together, which along with the ICAR Certificate of Quality audits is seen as sufficient quality control.

In the cooperation between different departments possible discrepancies in demands for data and data quality are expected to be identified and solved using the said international guidelines.

The departments are not in competition.

b. What programme of supervision is carried out to ensure such standards?
See point 15

c. What input do the participating constituent-organisations have in the quality control programme of the whole organisation?

d. What direction is given, if any, on individual service and product development in constituent-organisations?

e. Is there active business competition between the constituent-organisations?

Farmers can choose the organisation they find best, although only in limited areas of the country.

f. If there is such competition, what effect does this have on the “umbrella” organisation?

Nothing.

17. What direct and indirect benefit do you believe that organisation will derive from the ICAR Certificate of Quality?

Continue the same rights as approved under the now valid CoQ, and to prove internally and externally that we follow ICAR Guidelines.

Animal Identification

18. Is there a unique national identification scheme for the species for which certification is sought? Give details of format and give examples. Give details of how identifications are allocated.

The identification schemes for cattle sheep and goats are identical and in accordance with National and EU legislation. VFL CATTLE is administering the identification system on behalf of the Danish Veterinary Services.

The identification scheme has holding numbers for each farm, herd numbers for each herd and unique lifetime identities of animals. The animal identification code consists of the six digit holding number of the farm of birth and a five digit sequential number within farm and across species.

For cattle electronic identification is mandatory for all animals born or imported after 30. June 2010.
The below picture shows the layout of ear tags for cattle, one conventional plastic ear tag in the animal’s right ear and one electronic ear tag in the animal’s left ear:

19. Is the above identification used as the sole identifier within your organisation? If not please give details of format and give examples.

The identification system is used as the sole identifier in all systems

20. If there is no single national identifier, what system(s) is/are used?

21. What checks are made by your organisation to ensure correct animal identification and avoidance of duplication? If there is a routine programme of such action give details, including timescales.

Identifiers can be ordered only through the database of VFL CATTLE. The identification numbers are allocated by the database and sent to manufacturers of identifiers who then send the identifiers to farmers. Replacement tags are marked sequentially with roman numerals; so that it is evident it is not the original tag. The database has information about dates of order, dates of production, ID-numbers, and retags numbers.

22. Give details of any links between your organisation and breeding companies and breed societies which takes place on a routine basis.

In Denmark the identification, registration, herdbook keeping and recording of animals is formally done by the ministry, but carried out by VFL CATTLE on a contract. We have no herdbook societies. The AI-company Viking Denmark has seats in the boards of VFL CATTLE, NAV and in RYK and the company contributes with payments for the Danish Cattle Database.
23. What action takes place if errors of identification are found?

In case of error the unidentifiable animal is stripped of its pedigree information. Such animals can be kept only by the owner, where the error was discovered, so the animals can be sold only for slaughter or for rendering.

The marking of replacement tags is helpful in case of duplicate animals with the same identification. In such case the animal with the original tag is accepted to be the correct one.

24. What checks are carried out to ensure correct parentage?

Calculation of parentage

In order to calculate a father, there must at least be an artificial insemination, mating or a part of a mating period during the conception period. If there is no reported information about inseminations, matings or embryo transfers the offspring will be without father or mother. This is not in itself a problem, but it will obviously have an effect on offspring’s breed information, which will include unknown parts. Such an animal and its offspring in a few generations will also not be able to enter the herdbook.

When reporting a calving, the calf’s father is automatically calculated in accordance with the following rules:

Definition of the artificial insemination, embryo transfer or mating during the conception period resulting in gestation (and thereby defining the father) is calculated as:

\[
\text{Conception period} = \text{from (calving date – Max. gestation length) to (calving date – min. gestation length)}
\]

The Minimum and maximum gestation length is defined as the breed's average gestation length +/-21 days.

In case of more inseminations/matings the following rules apply:

In case of inseminations with two different bulls within 8 days the father will be calculated as unknown.

If there is more than 8 days between two inseminations only the last insemination will be taken into consideration.

In case of two mating periods with different bulls in the conception period the father will be calculated as unknown.

Artificial insemination is defined at same level as a mating period with same start and end date. This means that in case of an artificial insemination and a mating period in the conception period the father will be calculated as unknown.
In case the last "insemination" is an embryo transfer the database automatically affixes the biological parents of the ET-calf, if the gestation length is adhered to.

Premature (state code 2)
In case the calf is registered as premature the conception period is considered from 240 days before calving.

Reporting of mating periods
Mating periods must be reported for each female relevant. The report can be carried out as mass treatment (batch service).

The mating bull must be registered on the property throughout the mating period. A mating period can be terminated by the reporting an end date. Logically start of a new mating period, a calving and departure/posting of female or mating bull work the same way as reporting an end date. The logical end of the running period is used in the calculation of the father, but is not updated as end date in the cattle database.
If reported a mating period starts during the last three quarters of a gestation period, the subsequent calving date is used as new start date of mating period in the subsequent lactation.

The Reporting Period
Inseminations must be reported within six weeks after the incident. Natural matings and mating periods can be reported until the calving date. Start of the mating period must be reported within 6 months after the start date.

Reporting of artificial insemination done by AI-organisation is reported to the database by the AI organisation on the same day as the insemination took place.

Reporting of inseminations done by the farmer or his staff, natural matings, and mating periods to the database is done by the farmer/staff. In the year July 2012 – June 2013 we had 19,8 % inseminations done by farmer/staff.

Reporting of embryo transfer is done by the technician/veterinarian implanting the embryo.

Errors, like missing sire, are reported to the farmer as part of information from recording days. Responsibility for correction is fully on the farmer. No one else takes initiatives.

A new survey in connection to the ICAR audit showed that 13,3 % of reports on calvings and movements are reported later than required by law. Here it must be noted that Danish Veterinary Services is responsible for the follow-up on these problems.
14.5% of all calves born in the year 1 July 2012 to 30 June 2013 are recorded without a father. Most of these come from herds with suckler cows not registering mating periods or matings.

25. Give details of any DNA or blood-typing which are carried out. Include the name of the laboratory carrying out such analyses, who receives the results and for what purpose. Indicate if the laboratory is ICAR registered, or takes part in international ring-testing programmes and what other registrations it may have to show technical competence.

DNA typing is used for all bulls for AI and for private use. Without DNA sampling their pedigree information is not accepted in case they father offspring. The DNA typing includes also typing of the bulldam and the father of the bull so that parentage is verified. DNA testing on request of animal keeper is also used in case of problems to decide the parentage or in case of suspicion of mix up of animals.

DNA typing (and previously blood-typing) is made at GenoSkan A/S, Niels Pedersens Allé 2, 8830 Tjele, Denmark (previously known as: Laboratory of DNA-analyses and Parentage Control, P.O. box 50, DK-8830 Tjele, Denmark), which is an ICAR accredited DNA test centre.

The laboratory sends the results to VFL CATTLE who will then take care of possibly needed corrections in the central database.

Attached please find copy of a DNA certificate.

26. Are genetic defects recorded and reported? Please give details.

Systematic registration of hereditary diseases has been instituted in Denmark to prevent the spread of these diseases. Registration is based on reports from breeders, advisers, A.I.-technicians and veterinary officers. The reports are sent to VFL CATTLE for registration and then passed on to the National Veterinary Laboratory for further evaluation.

All cases indicating some hereditary defect are examined and if the result indicates a known hereditary defect, an exact diagnosis is made, often by means of autopsy. For Bovine Brachyspina Syndrome (BY), CVM, and BLAD genetic tests are available at the DNA laboratory. Paternity is confirmed through blood sampling and DNA analysis of both calf and parents.

If a hereditary disease is diagnosed, known carriers are identified in the Central Database using a special note. The record of a female will carry a note if she is a
known or potential carrier. Furthermore, it may be noted if a previously potential carrier has proven to be free from a hereditary disease.

The pedigrees of registered bulls will carry a note similar to the one described for females. The advisers and cattle breeders are thus able to ensure that genes carrying hereditary diseases are not used in the cattle population.

Recording and Sampling Devices

27. Who owns the recording and sampling devices used on farm?

RYK, Nibe and Serridslev, the recording organisations owns the equipment used on farms without fixed installed meters.

All equipment is checked according to manufacturer’s recommendations. TruTest equipment from all 3 associations are checked in the workshop of RYK.

Fixed installed equipment owned by farmers, is serviced and checked by relevant dealer.

DeLaval
Strangko
SAC
BouMatic
Lely
Fullwood
GEA

28. If known, give details of the numbers of each type of recording device.

3,600 TruTest Electronic Milk Meter
150 Lely Shuttle-B
110 DeLaval VMX Autosampler
400 TruTest HI or WB meters
All the above listed equipment is owned by RYK.

2 smaller organisations own respectively 60 TruTest EMM, and 50 TruTest HI meters.

810 robotic farms with automatic milking systems, including milk meters
435 Lely A2, 3 and 4
20 SAC
15 Fullwood
340 DeLaval VMS
300 other farms with fixed installed meters (parlours and rotaries)

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<thead>
<tr>
<th>Milkmeter type</th>
<th>#meters</th>
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<tbody>
<tr>
<td>Afikim</td>
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</tr>
<tr>
<td>Dairy Master Weighall</td>
<td>212</td>
</tr>
<tr>
<td>DeLaval FloMaster/MM25/MM27</td>
<td>4752</td>
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<tr>
<td>Lely MWS/Nedap Levelmeter</td>
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<tr>
<td>SAC Unilac/Memolac/IDC3</td>
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29. What checks are carried out to ensure reliability of results obtained and what record of such checks are kept?

Equipment owned by RYK and the two smaller recording organisations is maintained and calibrated according to manufacturer’s guidelines. The checks are carried out by RYK’s own Service Center, who also keeps the file and history of each unit.

Reports for checking of private meters are either found on the farm or at RYK central office. The private meters are checked as part of normal routine checks of the milking system of the farm.

30. Who is responsible for the maintenance and calibration of the recording and sampling devices?

The owner of the equipment (RYK or the farmer, depending on meters used for official recording)

31. Is such maintenance and calibration carried out in accordance with ICAR Guidelines or another protocol?

Yes.

32. What action takes place if the results obtained from the recording or sampling devices are found to be outside the limits described in the ICAR Guidelines?

Maintenance, adjustment and calibrations according to manufacturers’ advice. Guidance on using the equipment will follow as well.

Meters that cannot be brought to proper function will be discharged.

If nothing of the above will help, the herd will eventually end up with records with the state unofficial.
33. What process, if any, does the organisation take to ensure staff and farmers are aware of ICAR-approved recording or sampling devices?

It is a basic part of our national guidelines that any device or relevant procedure must be in co-ordination with ICAR Guidelines and technical advice.

34. What use is made of any record derived from non-ICAR-approved recording or sampling devices?

Data is accepted in the case the device is under ICAR test. RYK takes part in various development activities with different companies.

Production and conformation recording

35. Give details of how data is recorded on farm and what on-farm check are made to ensure best quality of data.

95% of all recordings are carried out using electronic meters, 5% by manual meters. Discarded milk is weighed and recorded separately. Total amount of milk is calculated and compared to latest available delivery to dairy processor. Reported calvings, movement of cows, reported dry dates and other events influencing the milk production, is evaluated by the technician before leaving the farm. If any questions, they are discussed and settled between the farmer and the technician.

Further information can be found in the document https://www.landbrugsinfo.dk/Kvaeg/Avl/Avlsvaerdital-for-malkekvaeg/Filer/YKTR_Danmark_eng_version.pdf

Link between cow and vial (barcode) is done through barcode readers of various kinds, depending of the milking system. Technical solutions include TruTest EMM, handheld barcode readers, TruTest Eziscanners and mounted readers in Lely Shuttle-B.

A4 and B4 herds have 11 milk recording days per year where A8 and B8 have 6 milk recording days per year.

In order to ensure the accuracy of the milk recording results we have a rule about 11 samples per year for cows milking at all sampling days. For A8 and B8 herds this means they must sample at both evening and morning milking. In addition they must also report dry off dates for at least 90 percent of cows.

In approx. 800 AMS herds we use the installed meters in the AMS systems for milk recording. In case of 11 milk recording days per year we take one sample on the test day. In case of 6 milk recording days per year the systems must set to make at least
two samples per cow and the sampling has to last at least 16 hours, so that the number of samples is expected to be approx. 1.8 sample per cow.

Approx. 300 herds other use own installed meters in milk recording.

The remaining approx. 2,200 use the EMM rented from RYK on recording day. We have a considerable number of herds who have own installed meters, but choose anyway to use RYK’s EMM on recording days.

Milk yields are 24 hour productions calculated from:

Lely Robots: Last 12 milkings
All other AMS systems: 7 day average
All other systems: Milk weights from 1, 2 or 3 daily milkings

Sampling in AMS herds is minimum 1 sample per test day for 11 recording per year and minimum 2 samples per test day for 6 recordings per year. In case of 2 samples per test day fat, protein and somatic cells will be calculated based on a simple average of the samples.

Sampling in non AMS herds using electronic meters and 11 recordings are 1 sample per test day. For 6 recordings it is 2 samples per test day, and the test result is calculated as the weighted average of the two samples. This covers in both examples herds with 2 and 3 daily milkings. Fat and protein will be corrected according to lactations state, breed, season, milk yield and sampling time. Somatic cells will be presented as analysed; if two samples a simple average will be reported.

Please check with the two documents attached: “Regler for ydelseskontrol” (Rules of milk recording) and “Regler for efterkontrol” (Rules for repeated recordings). (I understand that you read Danish).

For beef recording there is the option for farmers to weigh their animals at birth, at 7 months and at 12 months and to report those weightings to the database. However, information on weights of all purebred slaughtered cattle is collected from slaughterhouses and used also in the breeding value estimation.

36. What unit of measurement is used to record yield milk or meat?

Kg milk, % fat, % crude protein, kg fat and kg crude protein.
37. What, if any, checks are made to ensure that the recorded yield is in line with that which may be reasonably expected and what is the process undertaken if they are not?

In any case both amount and content is compared to information received from processors. Data is available for each farm. On farm pre-check is carried out by the technician before leaving the farm. It is by comparing recording and dairy figures available up to 6 month back.

38. In which cases and under what conditions are records deemed to be missing and what procedures are then taken to “bridge the gap”?

Procedures for missing data are all manual and carried out according to the guidelines for technicians, chapter 8. There are no automatic computerized procedures.

39. Are the ranges of yields recorded in conformance with ICAR Guidelines?

Yes. Any routine meet the ICAR Guideline.

40. Where there is meat recording give details of the programme also give details of any international linkage.

Recording of growth and carcass traits on beef cattle are done on farm, in slaughterhouses and on performance test station. All information is stored in a central database. The farmer records birth weight, 200-days weight and 365-days weight. For both ages an interval from 60 days before until 60 days after is accepted and weights are corrected accordingly. Measurements are done by use of scale. Recordings from a proportion of herds are verified by inspectors from VFL CATTLE by randomly chosen weighings 2 – 3 times per year. Net growth and carcass classification (EUROP) are recorded in slaughterhouses.

Further a proportion of the genetically best bull calves chosen within breed on the basis of the total merit index are performance tested at central performance test station. Recordings are weight at 7.5 months, growth from 7.5 to 12 months and area of Longissimus Dorsi. The total merit index is calculated on the basis of a wide variety of traits (birth, growth, fertility, slaughter quality, conformation). Input is primarily field traits registered by farmers. Sub-indices and total merit are calculated in Denmark.

41. Give details of how and what events such as calving/lambing/kidding, inseminations (AI and natural, plus identity of sire) and health events are recorded.

Calving/lambing/kidding is reported to the database by the owner independently from any recording system.
Inseminations, pregnancy checks and related events are reported by either AI technician or the owner of the animals. If the service is carried out by the AI Company, they too do the reporting. Herd and animal ID, type of service, ID of bull, operator, and date of event is mandatory for inseminations or natural services.

Health events are reported either by the veterinarian or by the farmer.

Regardless of the type of registration, there are a number of various validations on data, such as relation herd/animal, valid ID of semen, valid code etc.

Reference to https://www.landbrugsinfo.dk/Kvaeg/RYK/Sider/Registreringsblok_web.pdf

42. Give details of the training programmes of farmers and staff to ensure reliable recording practices.

Farmers are frequently informed of changes in procedures and technical solutions for reporting. This can be directly, in farm magazines or at various meetings depending on the detailed field.

Staff employed by RYK or AI company is subject to systematic update of changes, and are also instructed how to transfer important information to farmers and their staff.

43. Give details of check procedures to ensure maintenance of recorders or recording standards.

Equipment is called for annual check based on information from previous checks. Technicians participate in annual brush up courses, 2-3 day meetings, plus ad hoc instructions on farms in relation to implementation of updated equipment or services.

44. Give details of any conformation recording carried out by the organisation.

Include details of which animals are classified for conformation, such as whole herd, parity groups, only daughters of young sires, any rescoring asked for by farmers or breeding organisation, etc. Clearly show breeds involved and give examples of conformation scoring for each breed.

Specialized classifiers from VFL CATTLE carry out all classifications of dairy cattle. Classifications are done according to standards set up by ICAR. A description of traits classified in Denmark can be found at
45. If no conformation is carried out by the organisation, are such details obtained from a third party? If so give details.

All classifications are done by VFL CATTLE.

Transport

46. How are samples identified for transport to laboratory?

Milk is collected in disposable plastic vials with a unique barcode printed on them. Bar code numbers are within a specified range. When the content of a vial has been analysed the vial is disposed and the bar code is released for reuse. The bar code will not be reused until approx. three months later.

Each vial is identified by a unique barcode. This barcode is linked to data of production information from the individual cow.

Each rack contains 60 vials, and each rack is identified by a label where ID of herd and technician is noted. More racks per herd is identified 1, 2, 3,.....

![Image of 60 vial rack]

60 vial rack seen from above. ID label is in the upper left corner.

Racks are identified with herd #. This to ensure all samples from one herd is analysed in the same sequence, and nothing will be left behind.

47. Are there any temperature constraints or criteria during transportation?

Transport of milk samples from collecting point to laboratory is done in cooled vans at temperature of max 5 degrees Celsius. Recording technicians vans are not cooled.
48. Give details of transport system, collection points and timeframes used for samples from farm to laboratory.

Samples are collected by the lab, as an agreement between RYK and Eurofins. Collections are normally the home of the technician, but can be any point agreed. Samples are collected every evening after 21:00, and will be at the lab the following morning before 8:00.

49. Give details and timeframes used for recorded data to go from farm to data-processing centre.

Recording data are uploaded to the database before 21:00 on the recording date.

50. In the case of an “umbrella” organisation are there fixed requirements for constituent-organisations? If so what are they, such as time from farm to laboratory, sample’ box distribution, etc? (The purpose of this question is to ascertain the role, if any, in the day-to-day issues relating to transportation of samples. It is likely that “umbrella” organisations have no part in this as it may be considered a purely constituent-organisation’ issue).

The contract with the lab includes an optimal delivery of results back to the farmer of 2.5 days. RYK sets the standards, and the other organisations follow. Results will be available next to delivery on the database, because this is what starts the calculation and reporting.

Laboratory

51. Is the laboratory owned by the organisation applying for the ICAR Certificate of Quality?

No.

52. If not so owned by the applicant:

a. Please give details as to ownership and governance

We use the external lab Eurofins.

b. What standards of performance are expected, or contracted, in terms of service provision in areas such as return of results to either the data processing centre or farmer?

Results must be delivered and available on our database not later than 48 hours after recording. We have a Product Manual for the
services provided by the laboratory. This manual states the expectations agreed between Eurofins and RYK. The manual also provides guidelines on how to react in case of errors discovered at the laboratory.

i. Does the applicant have a formal place on its governing body?
   No.

j. Who instigates development of analysis-driven services?
   RYK and Eurofins coordinate according to technologies available and relevant.

k. Does the laboratory carry out analytical work for another organisation which carries out similar work to the applicant?
   Eurofins analyse all milk recording samples in Denmark and in Sweden.

53. Does the laboratory have external certification? Give details such as ISO 17025.
   Milk analysis is carried out in coordination with ISO 17025.

54. Does the laboratory take part in ring-tests? Give details.
   Calibration samples representing the milk tested, are analysed by reference methods (Kjeldahl and Roese Gottlieb) inside the laboratory, and the reference test methods are controlled in ring test. Calibration samples consist of three levels of fat/protein and are tested at least once every day before starting. During the day the equipment is controlled for every 80 samples tested by the use of control samples.

   Standard IDF methods are used. In details adjusted to the individual equipment (Foss and Bentley systems). ISO 17025 is used as reference base.

   Eurofins participates in several international ringtests: CecaLait, Huefner and Kiel. For further details, it will be covered during the inspectors visit to the lab.

55. Give numbers and details of instruments used.
   All samples are tested in a setup where 4 similar robotic systems are used. Each system consists of: One ILAS robot, One MilkoScan FT+ (Foss Instrument) and One Fossomatic 5000 (Foss Instrument).

56. Give details of instrument calibration and checking programmes.
ILAS robot: Temperature of water bath is continuously checked and alarms are given if we exceed limits. Barcodes with check value is used. Each sample is given at very exact and repetitive treatment (time, temperature and shaking).

MilkoScan FT+: Calibration is checked at least every day before upstart with 3 samples (status: SRM) of milk containing 3 levels of fat/protein. Are deviations outside spec an adjustment will be performed and checked. During analysing a control sample (status: SRM) will be analysed approx. every 10 min and if outside spec the instrument stops automatically.

Fossomatic: Measurements is checked at least every day before upstart with 3 samples of milk containing 3 levels of somatic cells. During analysing a control sample will be analysed approx. every 10 min and if outside spec the instrument stops automatically.

57. Give details of staff skills, including routine training and monitoring programmes.

Operators are a mix of educated (chemical technician) and trained people. New people are trained by another skilled person for up to 4 weeks before they analyse on their own.

58. How many samples are tested annually?

5.500.000 recording samples tested for RYK

59. How are samples identified within the laboratory? Give details.

Individual barcodes within specified range of numbers printed on disposable plastic vials.

60. Is there any secondary check to ensure that the sample received is from the specifies animal?

The lab receives a file including herd, cow and barcode for each sample. This file is used for running check in daily production.

61. Give details of the systems and processes used to ensure accurate analyses.

See answers to question 55 and 53

62. Give details of systems and processes which are used where sample results are not that which would be expected.

Results exceeding expected values are verified by a retest and must be typed in manually by a superior.

63. Give details of processes which take place if the samples are missing, or in a condition which would not give reliable results.
If samples are missing it will be reported with information why it is missing or with codes in the result field telling the end user that there has been a problem. If samples are in bad conditions there will be send a special report/mail stating the problem.

64. Are the ranges of constituents reported in conformance with ICAR Guidelines?
   Yes

65. Are there any additional analyses carried out for which there are currently no ICAR Guidelines? Give details.
   Johne’s, Salmonella Dublin, PCR (Finnzymes), Pregnancy (IDEXX), and Ketosis (BHB)

Data Processing

66. Does the organisation applying for the ICAR Certificate of Quality own the data processing centre or facility?
   Yes

67. If not so owned please give details:
   1. Please give details as to ownership and governance
   m. What standards of performance are expected, or contracted, in terms of service provision in areas such as return of results to the farmer, third party or genetic evaluation centre?
   n. Does the applicant have a formal place on its governing body?
   o. Who instigates development of data-based services for farmers and others?
   p. Does the processing centre carry out work for another organisation which carries out similar work to the applicant?

68. Does that data processing centre have external certification and if so give details?
   No

69. How does the data arrive at the centre and by what route?
   All types of data are entered by the body responsible for capturing
Data from farmers and recording organisations are reported through a client-server module. Data from vets, labs and AI companies, are transferred via different relevant data transport systems.

70. At which point are laboratory results incorporated with yield and other data?

In front of the database is a so called waiting area. In this field recording data and lab analysis data are merged, validated and if needed, also corrected.

71. What method of lactation calculation is used?

TIM method as described in ICAR guidelines 2-1.4.1 is used with a supplement for calculation of milk constituents by AM/PM milking. See documentation attached.

72. Does the organisation record health traits, if so which? What use is made by the organisation of this information? Is such information passed to third parties and if so give examples.

VFL CATTLE do not record health traits itself, instead health traits are received from farmers and local veterinarians. Diagnoses are registered for a variety of udder, reproductive, feet&leg and digestive diseases.

VFL CATTLE uses health records for management and breeding purposes. In relation to management different printouts are available for farmers. For breeding purposes EBV’s are calculated for udder health, including mastitis diagnoses in three lactations and other health traits, including reproductive, feet and legs, and digestive diseases in three lactations

73. What are the timeframes from data processing to the farmers receiving reports?

2.5 (+/- 1 for 80 % of the herds) days from milk recording as average of 12 month. 2.5 days are time to reports will available on the web. For those who need a paerversion distributed, and additional 1-1,5 day is added.. Less than one day from data processing to receiving reports.

74. Give details/examples of reports sent to farmers.

Herd reports (one page)
Individual cow reports (1-5 cows per A4 page)
Lists including somatic cell counts
Management lists (breeding, expected calvings, young stock etc.)
Farmers can freely choose reports from a long list, depending on choice, actual need, herd size etc.

75. What process is in place if it is found that a farmer knowingly provides misleading or false information, within the official recording programmes?

   a. Investigation to reveal the source of the error
   b. Information on current routines and regulations
   c. Records will at the end be classified as unofficial

In case of problems seen during observed milkings or repeated controls and not corrected by the farmer unofficial status can be given throughout the year. These are rare occasions.

A systematic review is made each year at the end of October. Here we check that differences between milk recording results and milk sent to dairy are within specified limits on total milk amount and fat content of the milk. We also systematically check that all herds with less than 11 recording days have reported dry off dates for more than 90% of the cows. In case the systematic review finds not allowed discrepancies letters are sent to the farms in question for comments. If there are not valid reasons causing the problem (such as long time disease of recording technician, disease in the herd, reconstruction of the barn etc.) unofficial status is given.

In 2012 the systematic review found 357 herds violating the system parameters. Of those approx. 90 ended up with unofficial records.

76. Do third parties such as nutritionalists and veterinary surgeons receive copies of the farmer’s results? If so what protocols are in place for this service?

   With the farmers signed permission, various advisers and vets can access data via a client-server module.

**Genetic Evaluations**

77. Does the organisation seeking the ICAR Certificate of Quality carryout genetic evaluations itself?

   No, Genetic evaluations are carried out by Nordic Cattle Genetic Evaluations (NAV)

78. If the applicant does not carry out the genetic evaluations itself:

   a. Please give details as to ownership

79. NAV is co owned by VFL CATTLE, Faba co-op (Finland) and Växa Sverige (Sweden).
a. What standards of performance are expected, or contracted, in terms of service provision in areas such as return of results back to the data processing centre, third parties such as breeding organisations or farmers?

NAV is expected to work by ICAR and Interbull guidelines and to deliver breeding value estimations of all cattle in Denmark, as in Sweden, and Finland.

b. Does the applicant have a formal place on its governing body?

VFL CATTLE has two board members in NAV

c. Give details of it governance

The NAV board has a managing director and six board members (two from each country. The board is advised by a technical advisory group. Projects decided by the board are governed by a project manager (it is the managing director) and carried out by three teams: Mastitis, Fertility, and Milk

d. Who instigates development of analysis-driven services?

The NAV Board

e. Does the evaluation centre carry out analytical work for another organisation which carries out similar work to the applicant?

Yes, for Faba (Finland) and for Växa (Sweden)

80. What species/breeds are evaluated? *NB this may include dairy and meat animals*

- Holstein/Red Holstein (HOL)
- Red Dairy Cattle (RDC)
- Jersey (JER)
- Shorthorn
- Simmental
- Original Brown Swiss
- Gelbvieh
- Charolais
- Limousin
- Blonde d’Aquitaine
- Belgian Blue Cattle in Denmark
- Piemontese
- Highland Cattle
- Danish Grauvieh
- Aberdeen Angus
Hereford
Galloway
Dexter
Danish Salers

81. What traits are evaluated in each case?

- Production (Milk, Fat, Protein)
- Conformation (Body, Feet and legs, Udder)
- Health (Udder health, Claw health and Other diseases)
- Longevity
- Calving (Direct and Maternal)
- Fertility
- Workability (Milking speed and Temperament)
- Growth
- Body Condition Score

For documentation please look at:

Also look at: https://www.landbrugsinfo.dk/Kvaeg/Avl/Avlsvaerdital-for-koedkvaeg/Sider/PrinciplesBeef2011.pdf?download=true

82. Give formulae for calculations for species which currently have no ICAR Guidelines for genetic evaluations or where evaluations are for purely internal use and/or what is the model used for evaluation of your production traits?

83. Give correlations where known. For countries using Interbull and Interbeef use the last two successive releases used and date them using nverify or equivalent. In addition give details on the frequency of the Interbull validation tests.
### Correlations between EBV’s, RDC bulls

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### Correlations between EBV’s, Holstein bulls

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Correlations between EBV’s, Jersey bulls

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<td>-19</td>
<td>10</td>
<td>1</td>
<td>8</td>
<td>-6</td>
<td>-3</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Body (9)</td>
<td>-20</td>
<td>7</td>
<td>-3</td>
<td>-3</td>
<td>-26</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Feet &amp; legs (10)</td>
<td>26</td>
<td>-1</td>
<td>1</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Udder (11)</td>
<td>9</td>
<td>14</td>
<td>22</td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Milk speed (12)</td>
<td>-13</td>
<td>-4</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Temperament (13)</td>
<td>10</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Longevity (14)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The Interbull verify program is used to compare and analyse results from subsequent evaluation.

84. Give details if the number of traits to be expanded in the next year and give details.

A breeding value for calf vitality will presumably be published in 2014 using information about calf mortality for heifer and bull calves up to about 6 months of age for bull calves and 15 months for heifer calves.

85. Give details of standards of operation including any peer-review.

Calculations of breeding values, from extraction of data to calculation of published EBV’s, are described in details for all traits. This makes sure that same procedures are followed at each routine run.

Interbull tests have been performed for all traits, making sure that EBV’s holds international standards. Furthermore the Interbull verify program is used to compare and analyse results from subsequent evaluations.

86. Give details of the length of time for which production and pedigree data have been collected

305-days records have been collected since 1982. Test-day records are only available from 1990 and onward.
Pedigree information where animals have unique ID is available from 1982 and onwards.

**NB:** For applicants using ICAR’s Interbull services

- Where appropriate, the ICAR Secretariat will obtain from Interbull Centre, for the auditor, a Report of Conformity relating to the Applicant in relation to genetic evaluations, showing regard to the current ICAR Guidelines and the current Interbull Code of Practice
- Such a report will include:
  - Résumé of information received from the applicant or service provider
  - A copy of the Form GE as per Interbull Code of Practice
  - A short summary of current validation procedures

87. Give details of the length of time which the applicant or service provider has taken part in ICAR’s Interbull and/or Interbeef genetic activities.

*We have taken part in Interbull since 1983. In 2005 Denmark, Sweden and Finland started to deliver data together under the abbreviation DFS*

88. Has the applicant or service provider’s data been rejected for inclusion in the Interbull evaluations for any reasoning the past five years? If yes give details and the steps taken to address the problem(s).

*No*

89. When did the applicant or service provider last take part in an Interbull test-run for production traits? If possible give a summary of that test.

*Nordic Genetic Cattle Evaluation participated in a test run for production in 2012*

90. What is the average correlation between your results and other organisations’ results from the Interbull evaluations?

*Average correlations between DFS and all other countries participating in Interbull evaluation are shown in the table below*

<table>
<thead>
<tr>
<th>Trait</th>
<th>Average correlation (Holstein)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>0.86</td>
</tr>
<tr>
<td>Fertility</td>
<td>0.86 (Trait 5)</td>
</tr>
<tr>
<td>Calving</td>
<td>0.72 (Still birth)</td>
</tr>
<tr>
<td>Udder health</td>
<td>0.91 (SCC)</td>
</tr>
<tr>
<td>Conformation</td>
<td>0.97 (Udder depth)</td>
</tr>
<tr>
<td>Milking speed</td>
<td>0.94</td>
</tr>
<tr>
<td>Temperament</td>
<td>0.85</td>
</tr>
<tr>
<td>Longevity</td>
<td>0.73</td>
</tr>
</tbody>
</table>
All applicants completing this section

91. What use is the organisation making, or intends to make of genomics and the reporting of such information?

Genomic breeding values are calculated. Direct genomic values, DGV, and EBVs, are combined, and published as genomic enhanced breeding values, GEBV.