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COMMON TECHNICAL SPECIFICATIONS

FOR THE 2003 CAMPAIGN OF

REMOTE-SENSING CONTROL OF ARABLE AND FORAGE LAND AREA-BASED SUBSIDIES

Pre-amble

This document describes the common technical specifications for the 2003 campaign of the remote sensing control of arable and forage land area-based subsidies (referred to as "remote sensing control" or, simply "control"). The document has been prepared by the European Commission (Joint Research Centre, JRC) in close collaboration with DG AGRI and the awarding Administrations in the participating Member States.

The document aims to describe the tasks that the Administrations of the Member States wish to entrust to contractors. For the sake of completeness, however, the technical context of the work requires some descriptions of the role and responsibilities of both the Administration and the Commission, if only to explain why a certain task is expected from the contractor. Some of the technical details may seem exhaustive, but are primarily included to allow bidders the best possible chance to estimate the expected workloads. Furthermore, as a common document, it has to be inclusive of all the possible choices, options and alternatives that are used in the Member States that use remote sensing controls.

This document is complemented by a separate "National Addendum", which describes the particular choices, options and alternatives applicable in the respective Member State. The information given in this "National Addendum" must be taken into account in the reply to this ITT.

The information in this document is up-to-date with the existing EU regulations that are applicable at the time of writing (November 2002). It is the bidder's responsibility to be aware of other general or specific regulations in the respective Member States that are applicable at the time of control.

The role of the Commission in the procurement procedure to which this document relates is strictly restricted to the technical support required to compile this document and in the coordination of the common publication. The selection, award and follow-up of any contract following from this open procedure is the sole responsibility of the awarding authority in the respective Member States as published in the Official Journal announcement 2002/S 235-186557 of 4 December 2002. While the Commission has attempted to make the information contained in these common technical specifications as accurate as pos-

sible, it does not warrant the accuracy of the information contained or embodied in the document. The Commission does not warrant or make any representations as to the accuracy of the information contained in the National Addenda produced by respective Member States. Contracts awarded are the sole responsibility of the awarding Administrations in the respective Member States.

1. Introduction

1.1 The majority of the European Union Member States, in co-operation with the European Commission, will use Remote Sensing in 2003 to control at least a part of the subsidies for the arable and forage areas funded by the EAGGF. Although the present Technical Specifications have been prepared jointly by the Member States and the Commission, each Member State is responsible for carrying out the work on its territory.

The following Member States participate in this Invitation to Tender: Finland, France, Germany, Greece and Portugal**.** On the other hand, Belgium, Denmark, Ireland, Italy, the Netherlands, Spain, Sweden and the United Kingdom also use remote sensing and will follow these common Technical Specifications, but in a multi-annual programme that is not concerned by the present ITT. Austria and Luxembourg do not participate in the programme this year. The volume of work and requirements specific to each participating Member State are described in Annex 1 and in a "National Addendum" (see § 8.7).

1.2 Remote sensing may be used for the control of the following area-related payments:

- Payments for certain arable crops based on Council Regulation (EC) No 1251/1999 (O.J. L 160, p. 1)[1]. This Regulation sets out the details of the system of area aids as compensatory payments to farmers for the loss of income caused by the reduction of institutional prices. This system was first introduced as part of the reform of the Common Agricultural Policy (CAP) in 1992.

  In principle, the EC still pursues the same approach in the latest CAP-reform-package (Agenda 2000), of which the aforementioned Regulation forms part.

- This regulation provides for area-based subsidies for various kinds of crops falling within the "crop groups"[2] cereals, oilseeds, protein crops, flax and (as of 1 January 2001) hemp grown for fibre. Different factors have to be taken into account for the calculation of the area aid, such as the regional average yield, as set out in regionalisation plans established by the Member States and the national or regional base-area. This is on condition that a minimum percentage of the arable land declared by the farmer is set aside. This percentage is now fixed at a basic rate of 10%. A voluntary set-aside of more than the required area is possible.

- Producers who apply for subsidies for land under cultivation capable of producing not more than 92 tonnes of cereals according to the regional average yield are exempt from this set-aside obligation. Such producers may, however, set-aside land on a voluntary basis nonetheless. A farmer can decide not to request aid for part of his land, or to declare a part of his eligible crops as a forage area, as a way of falling within this group of producers and hence being exempt from the set-aside obligation.

  Further details concerning these measures are to be found in Commission Regulation (EC) No 2316/1999.

- In addition Council Regulation (EC) No 1254/1999 (O.J. L 160, p. 21) provides for various premiums for livestock. These premiums are limited by the application of a stocking density on the holding per hectare and calendar year (calculated as livestock units (LU) compared to forage area).

- Area-related payments for agricultural production methods designed to protect the environment and to maintain the countryside and for certain measures in relation to forestry, based on Council Regulation (EC) No 1257/1999 (O.J. L 160, p. 80). This regulation is the general basis for the rural development policies of the EC.

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[1] All the EC Official Journals, as well as other documents published by the EU, can be obtained in Member States from the National Services responsible for the distribution of the said publications. Electronic versions of Council and Commission regulations can be found at http://europa.eu.int/eur-lex/

[2] Most of the terms between double quotes ("…") in this introduction are defined in the regulations.

- Compensatory payments for rice-producers as provided for in Article 6 of Council Regulation (EC) No 3072/95 (OJ L 329, p. 18) on the common organisation of the market in rice.
- A hectare-based subsidy for certain grain legumes (lentils, chickpeas and vetches) based on Council Regulation (EC) No 1577/96 (O.J. L 206, p. 4).
- A simplified scheme as provided for in Article 2 a of Council Regulation (EC) No 1259/1999 (O.J. L 173, p. 1-4).

1.3 The control rules in respect of the aforementioned area payments are governed by the Integrated Administration and Control System (IACS) as set out in:

- Council Regulation (EEC) No 3508/92 (O.J. L 355, p.1) establishing an Integrated Administration and Control System for certain Community aid schemes and amended by Council Regulation (EEC) No 1593/2000 (O.J. L 182, p. 4, introducing the use of GIS and recommending ortho-imagery);
- Commission Regulation (EEC) No 2419/2001 (O.J. L 327, p.11), laying down detailed rules for applying IACS.

1.4 According to Article 1 § 2 of Regulation No 2316/1999, all these schemes are mutually exclusive. In other words, it is not permitted in most cases to submit more than one request for "area" based aid, for the same parcel and the same year. Also, "second crops" (or "catch crops") are excluded from the scheme, and only the principal crop can be subsidised.

1.5 The "regionalisation" plans are fixed by each Member States and will not be detailed here. As subsidies vary regionally according to the different reference yields, they must be calculated separately if the declared fields or parcels are situated in different yield regions and the set-aside area must be adapted.

1.6 All agricultural parcels should be listed in the applicant's declaration, even though some of them will not be subsidised. For example, the farmer declares the parcel but does not apply for subsidy, in order to be exempted from the set-aside obligation, or if the crop is not eligible (e.g. sugar beet, potatoes etc.). Therefore, the distinction will be made in this document between "declared", "eligible" and "subsidised".

2. Overview

2.1 Farmers are required to submit their annual subsidy applications in prescribed form and by dates set in line with Regulation No 3508/92, in general between the end of March and 15 May depending on Member States. According to Article 8 § 4 of the same regulation, the control of these applications can, as an option, be based on satellite or aerial remote sensing and call in external contractors.

2.2 Remote sensing allows correct applications to be picked out so that inspection on the spot can be directed to the others and to problem parcels and the inspection number and cost are reduced accordingly. The contractor participates only in the stages related to this photo-interpretation, as the previous and final processing of dossiers is reserved for the Administration. Also, this arrangement is assumed to be "invisible" to the farmer, since no third party appears between him and the Administration. The penalty calculations, sanctions or financial consequences for the farmer are not the responsibility of the contractor.

2.3 The Commission's contribution to the programme is, since the 1999 campaign, restricted to furnishing satellite imagery free of charge, the execution of an external quality control procedure (see § 7.4.2) and the technical coordination of methodological choices. This role is observed as a direct support to the Member States' administrations that participate in the programme.

2.4 The area and land use of all the relevant subsidised (see § 1.6) parcels of a sample of the applications lodged by the farmers will be verified. Each crop group will be categorised separately by applying the decision tables and technical tolerances established by the Administrations.

2.5 The photo-interpretation can be carried out on a series of several satellite images (or aerial photographs) distributed in time ("time series"), or on only one aerial photograph. In the latter case at least, the diagnosis cannot be completed by computer-aided photo-interpretation (CAPI) procedures alone. This is why, after having first validated the parcel area declared by analysing the photograph, it is then neces-

sary to organise a series of "rapid field visits" in order to determine or confirm the land use. This implies that such visits are feasible in the local context.

2.6 All crop plans submitted for 2003, which include forage areas, but exclude non-subsidised parcels, shall be controlled using images of that year. In some control areas and using archive images, it will be ascertained that the land fulfils the conditions of eligibility for arable and set-aside subsidies during the course of the reference year(s) ("historical" checks).

2.7 The work procedure is similar in all participating Member States. The tasks will be carried out partially by the National Administration, the contractor and the Commission. The principal stages can be summarised as follows:

Table 1.
Main stages

Responsible	Description	Period
Preliminary work (§ 3, page 4)		
Administration	Choice of control sites, assessment of image requirements	September-November
Administration	Call for tenders, selection of contractors, signature of contracts	December- March
Administration	Selection and administrative processing of applications lodged in chosen sites; transfer to contractors of dossiers and data bases (declarations, and possibly Land Parcel Identification Systems)	April- June
Contractor	Collection of topographical or GIS documents needed and boundary digitisation of parcels declared	March- June
Preparation of data (§ 4, page 6)		
Commission/ Contractor	Acquisition of a set of images (Commission) and/or aerial photographs (contractors), processing, geometrical correction etc.	September - November, March - July (August)
Photo-interpretation of applications (§ 5, page 10)		
Contractor	Photo-interpretation of parcels to be checked on images or photos	May- August
Decision rules and technical tolerances (§ 6, page 14)		
Contractor	Categorisation and return of dossiers and results	June- August
Administrative organisation (§ 7, page 19)		
Administration	Inspection on the spot of problem parcels	July- October
Contractor	Contractor's report to Administration and discussions of results	October- November
Commission	Quality assurance	October - February

3. Preliminary work

The majority of this preliminary work is the **responsibility of the Administration** and is outlined for information only.

3.1 Selection of control sites

3.1.1 The number and location of sites for the remote sensing controls will have been established previously between the Member State and the Commission. The number of sites is dependent on the remote sensing sampling rate decided by each Member State and on the expected number of applications submitted in these sites. The sites will remain confidential and will not be disclosed to the contractor until a contract has been awarded.

3.1.2 The selection criteria for these sites will be entirely at the discretion of the Administration and will not be discussed with the contractor. In general, the sites to be controlled are selected taking account of appropriate risk factors to be determined by the Member States, the parcel measurement tolerances and regional conditions. Although it is not possible to describe these sites in detail, the bidder should use the following information to evaluate the work. The sites to be controlled:

- by satellite will be defined, in general, as a circle with a radius of maximum 25 km and will never cross national boundaries. They will be selected in order to ensure that a minimum number of dossiers are processed, e.g. between 500 and 1,500, or a minimum area is controlled, e. g. 10,000 to 20,000 ha. There could be specific cases in which the size or the shape of the sites differs from the above standard measures;

- by aerial photographs could be distributed inside administrative boundaries, as a function of optimised flight plans and administrative units (e.g. communes) to be checked.

3.1.3 The Administration may decide to withdraw from the sample farms which have a part (percentage to be determined) of their land outside the control site. "Outside the site" refers to any area, which is not covered either by images or photographs, or the maps provided. This will depend on the Member States, according to a precise geographical boundary that will be agreed for each site between the administration and the contractor at the beginning of work (see also the "completeness test" in § 6.4.2).

3.2 Selection of dossiers

3.2.1 The contents of the dossiers, the method used to describe and locate the parcels, as well as the annexes of the application will vary greatly between Member States and from one region to another. It is not possible to describe or even summarise them here. Conversely, the tenderer should demonstrate in his offer that he fully comprehends the national regulations and the type of applications that he will be expected to verify, and the information which they will contain. Relevant information may be included in the "National Addendum".

3.2.2 The "area" based aid applications for the 2003 campaign will be submitted, in principle, before 31 March, but this may be extended in certain Member States to 15 May. Modification to applications may be allowed up to 15 June, depending on the Member State. The definitive situation will not be known until the beginning of 2003.

3.2.3 Member States shall apply the following risk-criteria for the selection of applications to be checked on the spot, in accordance with Article 19 of Commission Regulation (EC) No 2419/2001.

- the amount of aid involved,
- the number of agricultural parcels and the area for which aid is requested,
- changes from the previous year,
- the findings of checks made in past years,
- those farmers who are either just above or below ceilings or limits relevant for the granting of aids
- other factors to be defined by the Member States.

To provide the element of representativity, the Member States shall select randomly between 20 % and 25 % of the minimum number of farmers to be subject to on-the-spot checks.

For remote sensing controls, Article 23 (1b) states that the provisions of Article 19 shall apply only where not all farmers submitting aid applications and falling within the respective control zone are subjected to on-the-spot controls. One of the major advantages of dossier selection for remote sensing control is their geographical proximity, reducing the number of topographic maps and references required, and optimising the acquisition of satellite images and aerial photographs. Furthermore, it will enhance the cross-checking for parcel overlaps and multiple declarations in different applications.

3.3 Administrative checking of the sample

3.3.1 In principle, the Administrations will deliver to the contractor dossiers that have been checked by the Administration, validated and ready to be controlled.

3.3.2 The alphanumeric data of the dossiers to be transmitted to the contractors are in theory available in digital form. These data will be supplied on a date agreed between the Administration and the contractor, and if necessary will be delivered in batches. The cartographic documentation should be supplied, where available, at the same time or separately (see § 4.4).

3.3.3 The format of the database given to the contractor will be described by the Administration, and accompanied, if necessary, by a list of the codes used. For each dossier, the minimum information provided (possibly under an anonymous form) will be:

- an identification number given by the Administration, thus creating a link between the dossiers and the database;
- the commune where the head office of the farm is located;
- agricultural region(s) as defined by the Member State in its "regionalisation" plan;
- the support scheme under which the application is made (see also § 10.7.1);
- for each parcel declared (even if it is not subsidised or situated outside the control site):

- a reference permitting location of the parcel, linked to the other documents supplied (cadastral, cartographic, photographic or equivalent);
- area in hectares to two decimal places;
- code(s) for the (successive) use(s) of the land during the year in question;
- code(s) for the (successive) crop group(s);
- if appropriate, a code indicating if the field is irrigated;

• for each set-aside parcel, according to the case:
- distinction between annual set-aside under Regulation 2316/1999 and possible other types of fallow;
- or list of parcels with "industrial" set-aside and the crop declared.

3.3.4 In some Member States (see the National Addendum, § 8.7), the data base creation may have been carried out only partially by the Administration, so that the administrative preliminary checks would become less comprehensive. The tenderer shall propose a supplementary price for inputting applications, calculated by dossier so the Administration can pass the work to the contractor if it so wishes.

4. Preparation of data

A number of possible alternatives can be considered in order to obtain the necessary image material for photo-interpretation:

- multitemporal satellite images: optical (panchromatic or multispectral) or radar images (to complement or replace missing optical images);
- aerial photos: several options are acceptable: in black-and-white, true colour or colour-infrared (CIR) mode, acquired during the current year or recent archive images (in particular, orthophotos used for the national Land Parcel Identification System (LPIS) can be used), mono- or multi-temporal coverage;
- or a combination of both types.

It is highly recommended that the choice be made according to local conditions, in agreement with the recommendations of DG AGRI on the accuracy of area measurements[3] (i.e. satellite images can only be used without aerial photographs in regions where the objective of a 5% accuracy for at least 50% of the area checked is still met). If the choice is not imposed by the Administration, the tenderer must indicate and justify in detail his choice, with possible different alternatives according to local conditions. Some options, such as mono-temporal controls using satellite images or archive aerial photographs with no year 2003 flight, are not recommended strategies. The tenderer should carefully consider all consequences of his choice, in terms of price, area measurements (pixel size), or land use determination (radiometry and number of images).

4.1 Acquisition of satellite images

4.1.1 For each site to be controlled by satellite images, a series of multi-temporal SPOT XI/XS, LANDSAT ETM+ or IRS-1 LISS-III sensor data will be ordered directly by the Commission, based on requirements drawn up and agreed with the Administration and/or the contractor. If possible, one XI/XS/(ETM/LISS-III autumn and three (or, exceptionally, four) spring/early summer images will be supplied. The Commission will request a SPOT programming service for the established acquisition windows.

4.1.2 The Commission will also supply, at the special request of the administration or contractor, a SPOT or IRS panchromatic image from the 2002 archive, or a programmed image from early 2003. For sites for which aerial photographs are planned to be acquired during the campaign, panchromatic images will, as a rule, not be supplied.

4.1.3 At the time of writing, limited technical evaluation results exists on the quality of the new SPOT 5 “super-resolution” PAN imagery. Extrapolation of quality norms for existing satellite data suggests, however, that these data will, in general, not be sufficient detailed to attain to the area measurement accuracy criteria. Since production of SPOT 5 super-mode data is at approximately twice the cost of a normal image, supply of these data will be restricted to exceptional requests. Supply of normal resolution. .SPOT 5 data (e.g. 5 m PAN, 10 m multi-spectral) will depend on price agreements between the Commission

[3] “Recommendations for on-the-spot measurements of area”, DG-AGRI AI.3 Document Ref. VI/8388/94, Rev. 6 of 17.12.1999. Available at http://mars.jrc.it/control/

and the suppliers of these data. In principle, the Commission will attempt to deliver at least 1 SPOT 5 image per site during the 2003 campaign.

4.1.4 During the 2003 campaign, selected sites, or a sub-selection within a site, may be supplied with very high-resolution (VHR) images acquired during the campaign[4]. As these data are rather costly, priority will be governed by budgetary constraints and arranged in close coordination with the Administration. Contractors are expected to use successfully acquired data as much as possible in an operational mode (rather than experimentally).

4.1.5 The Commission will also supply, if possible, radar images (RADARSAT[5]) to complement or replace optical data, either if a deadline agreed with the contractor has been passed in certain sites without optical acquisitions, or in anticipation (to the judgement of the Commission) in the regions where acquisitions are most difficult. All tenderers using satellite data for sites located above 50 degrees North have to demonstrate their ability to use radar images.

4.1.6 Especially for sites or where optical acquisition is difficult, the contractor may plan to use radar images as the principal source of information. In such a case, the number of optical images to be acquired over the site will be reduced to maximum 2. Such a decision must be made, in agreement with the Commission, at the beginning of the acquisition campaign.

4.1.7 The contractor will be committed to use in the photo-interpretation the complete series of images, delivered according the agreed acquisition schedule. The exclusive use of radar images will not be accepted if good optical images are also available. The use of the radar images provided will be compulsory only if a complete diagnosis cannot be established based on optical images only.

4.1.8 The sensors, the acquisition windows and the optimal number of images for the Member State concerned should be discussed in detail by the tenderer. He will take into account the necessary compromise between the acquisition of late images in 2003 for better discrimination of the spring sown crops, and the need to provide early results, in order to allow the Administration to carry out on-the-spot checks before the harvest. The tenderer may differentiate by region and justify a possible preference for XI/XS, ETM+, LISS-III or RADARSAT data. The Commission will evaluate the justification and try to satisfy this preference, taking into account the acquisitions already made and availability of actual imagery.

4.1.9 The Commission will order the first good image (multispectral and panchromatic if applicable) acquired for each site and each period fixed and have it delivered automatically to the contractor. If cloud-free images are not available, cloud cover evaluations of other images will be forwarded by the Commission to the contractor. Alternatively, the contractor may consult the image supplier's catalogue in order to identify cloudy, but still usable images, and suggest these to the Commission for supply.

4.1.10 The choice of archive images, if required, will be made with the help of the Commission, but under the exclusive responsibility of the contractor, by cross-checking the archives of SPOT, LANDSAT and IRS-1 with the geographic co-ordinates of the defined control sites. The tenderer will indicate if he has the facility to make this search or has access to relevant archive images. If the necessary images are available from the archive of the Joint Research Centre of the Commission in Ispra, they have to be used.

4.1.11 The images will be bought by the Commission and supplied free to the contractor, at the latest 10 working days after the acquisition (SPOT), and after the order (other sensors). These data remain Commission property and will be returned at the end of the work. The images will be supplied preferably on compact disk (CD), if not on magnetic tape (CCT), after agreement between the contractor and the Commission. The images will be delivered to one single address as stated by the contractor, with all costs paid by the Commission, except local taxes. They will be in standard format (level "1A" or "1B" for SPOT, "raw" or "system corrected" for LANDSAT and IRS, "PRI" for "Fine beam path image" for RADARSAT. Data formats for Very High Resolution sensors will be decided on a case by case basis, but are typically for non-ortho-rectified images. The extra cost of all further processing will be at the ex-

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[4] At the time of writing, three VHR space sensors are in orbit: IKONOS, EROS A1 and QuickBird 2. Sustainable, rather than occasional supply of data from any of these sensors is dependent on the existence of supply contracts between the respective image data providers and the Commission..

[5] Since the 2000 campaign, the default SAR products supplied are so-called fine mode RADARSAT time series, which have a resolution of 10 m. Only at special request ERS-2 SAR data (30 m resolution) will be supplied.

pense of the contractor. The rules of copyright both for the Commission and image suppliers will be strictly adhered to.

4.1.12 The contractor will have five days after receipt of the images to make possible comments on the location or the quality of the received images, as compared to the characteristics announced when the order was placed. If required, he may request a longer approbation period. If the contractor does not react within this specified period, the images are considered suitable without restrictions. The price paid for the images that were not rejected and are considered unusable may be charged to the contractor.

4.2 Acquisition of aerial photographs (if relevant to method chosen)

4.2.1 The aerial photograph must, as a general rule, be precision-scanned, thus allowing accurate geometric correction, scaling and overlay, as well as low-cost paper printing. This rule is compulsory when aerial photographs are used for area measurements. It becomes advisory when an aerial photograph is used instead of or in support of rapid field visits in order to check the land use.

4.2.2 If the tenderer has at his disposal or is able to acquire archive photographs and intends to use them, he should state for what purpose, and list precisely in his proposal the technical characteristics, source, and cost of acquisition and processing.

4.2.3 Except if the tenderer can demonstrate in his offer that the National Administration will organise this, he will be responsible for the acquisition of all photographs. He will research all archive photographs if necessary, negotiate all flight plans and authorisations, accept all technical and meteorological risks and organise the film processing.

4.2.4 If the tenderer is planning to acquire aerial photographs in the year 2003, he must indicate in particular:

- how he will obtain flight authorisation and, if relevant, give the name of the subcontractor;
- the aircraft model, the camera, the lens, the photographic film;
- the flight plan, altitude, the proposed date(s), the minimum solar angle, the navigation system, forward and lateral overlap;
- the techniques: film processing, expected ground resolution of the original, scale of printing and enlargements if relevant;
- the detailed price for each stage of the work;
- the proposed timetable, from the flight to the final product;
- justification of the above selections.

4.2.5 The tenderer will always include a buffer zone around each control site (size to be agreed with the Administration), in order to avoid having too many parcels of selected dossiers falling outside the area covered by the photographs.

4.2.6 The tenderer will specify how he will manage the aerial coverage obtained: proportion of photographs actually used, block-triangulation size and limits, mosaicking seams, archiving, disk space, etc.

4.3 Processing of images and photographs

4.3.1 Aerial photographs will be precision-scanned. Scanning equipment and materials (originals, type of precision scanner, scan direction, scanned pixel size, laboratory, technique, and materials) should be detailed in the proposal. For the remainder of this document "image" will refer both to the satellite image and the scanned aerial photograph.

4.3.2 The images will be geometrically corrected using techniques that will ensure a good image-to-map and image-to-image overlay, even with high view angles. The allowed geometric errors in the output images are expressed as a maximum “absolute” Root Mean Square Error (RMSE) tolerance on check points, and are stated below. These values are 1-dimensional RMSE values, and apply independently in the *X*- , and in the *Y*- directions:

- aerial photographs, VHR PAN 1 m satellite imagery: 2.5 m;
- SPOT and IRS panchromatic[6]: 20 m;
- SPOT multispectral[7]: 30 m;
- IRS multispectral and RADARSAT: 40 m;
- LANDSAT ETM+: 50 m;

The above RMSE tolerances[8] put requirements on the input data, on the ground reference data, on the digital terrain model (DTM[9]) (if applicable) and on each step of the geometric correction process. The tenderer shall detail all steps in the production chain. He shall justify the correction method proposed (e.g. ortho-correction or polynomial) and how he expects to obtain the precision, with special reference to differences in altitude in the agricultural areas concerned. He will also indicate how each subsequent image will be corrected in relation to the first.

4.3.3 For the sites where he considers it necessary to ortho-rectify, the tenderer shall indicate if he will correct the images in-house or sub-contract this work. If this is to be produced in-house, the price of the DTM and processing per scene (fixed or variable costs) shall be clearly indicated. If this processing is to be sub-contracted, the tenderer must name the proposed contractor, list all the necessary specifications and include in his financial statement the supplementary cost of this correction.

4.3.4 In case of ortho-rectification, the tenderer shall indicate the technical characteristics of the DTM, either if bought, produced by the tenderer or delivered by a sub-contractor. He will indicate the method used to produce the DTM; from map contours, stereo pairs, or other. He will indicate the map scale, date, and projection system, and relevant contour interval, or grid size (distance between points). He will also give details on the Ground Control Points (GCPs), their source, number and distribution.

4.3.5 The tenderer will indicate his choice of cartographic system (spheroid/datum, projection) for the processed images. He may also choose to obtain the geodetic co-ordinates of the reference points from the competent Administration, or to acquire the co-ordinates of these points using a Global Positioning System (GPS).

4.3.6 The tenderer will indicate and justify all other possible processing techniques envisaged: radiometric correction, contrast stretching, resampling, etc.

4.3.7 The tenderer shall indicate his previous experience, capability and comments with regard to processing radar images. In particular, he will discuss the software to be used and outline how he proposes to carry out geometric correction and to identify the land use using these images. He will propose a timetable for the acquisition of the radar images intended to replace the optical images.

4.4 Acquisition of topographic documents

4.4.1 If the declarations to be controlled contain appropriate cartographic documents allowing the localisation of the parcels on the images (cadastral or topographical map extracts, aerial photographs, sketches, etc.), the Administration will supply them free of charge to the contractor (in the original form if possible).

4.4.2 In other cases, the contractor will approach the competent authorities for all (paper or digital) documents, such as maps or aerial photography, needed to cover the parcels falling within the control sites. If available, databases of alphanumeric official parcel area (such as cadastral areas or LPIS parcels area) should be acquired at the same time. Particular attention should be paid to this type of data, knowing that the declared and measured areas should be cross-checked with the official area. In case of over-claims a "ceiling" on the official area should be undertaken by the contractor (cf. §§ 5.2.3 and 6.2.5),

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6 For SPOT 2 and 4; an RMSE value for SPOT 5 PAN 5 m resolution data has not yet been established, but is expected to be around 10 m;

7 idem; an RMSE value for SPOT 5 multi-spectral 10 m resolution data is expected to be around 15 m;

8 Analysis of geometrical quality control results from recent years shows that RMSE values are generally well below the tabled values, and are typically in the order of 1.5 times the image pixel resolution. The listed values should be considered maximum allowed RMSE.

9 normally, RMSEx = RMSEy and RMSEz = 2 x RMSEx.

unless this remains within the exclusive competence of the Administration. The contractor should detail the list of required documents and data. These materials should be supplied free of charge by the Administration, in principle within 30 days from receipt of the list. They must be returned at the end of the contract.

4.4.3 The contractor shall acquire other map references that he needs (to give an overview of the sites, for fieldwork or documents, geometric correction, etc.).

4.4.4 In certain Member States (Belgium, Denmark, some German Länder, Finland, Ireland, the Netherlands, Portugal and Sweden) the relevant part(s) of the Land Parcel Identification System database may be available in the form of digital vectors (see National Addendum for details).

4.5 Digitisation of the field limits

4.5.1 If the vectors are not already available, the boundaries of all the declared parcels for each dossier making up the sample shall be digitised (or scanned) by the contractor. This will be done from cadastral maps or other documentation available that allows the parcels to be identified. Except if decided otherwise by the Administration, the declared non-subsidised parcels must also be digitised, so allowing e.g. cross checks between declarations, or giving an overall view of the dossier on the field documents. In addition, major landmarks and linear features (roads, canals, railways etc.) will be included in the digitisation. The digitising technique planned will be described: transferring the field limits on topographic documents, screen work on a photograph or scanned map background, etc.

4.5.2 In principle, this work should begin as soon as the applications have become available. However the tenderer may propose alternative methods to accelerate the preparatory work before receiving the applications for 2003, especially if the dossiers are not available by 31 March. For example the contractor could with the permission of the Administration re-use information extracted from the dossiers submitted in previous years in the same site, in order to estimate the position of the parcels of the sample for 2003, or even to begin the dossiers digitisation.

4.5.3 In some cases the contractor may renumber the parcels, using for example an internal number by dossier. However, it is very important to keep the link with the original reference parcel system (i.e. the parcels which form the base of the national LPIS, either cadastral parcels, blocks or ilots), in order to be able to cross-check the parcels controlled by Remote Sensing with the LPIS parcels.

4.5.4 In some cases it is also justified to proceed with preliminary work on parcels for the preparation of photo-interpretation and the area measurement checks. For example, when the declared parcels are based on ilots or blocks composed of cadastral parcels, the contractor should merge the cadastral parcels to form the blocks or ilots to be controlled. In such a case, the contractor should specify how he would proceed to the aggregation or any similar procedure.

4.6 Ground data collection

4.6.1 To prepare for the classification and photo-interpretation, the contractor will carry out during the period most appropriate for the crops of interest (see § 5.3.3), a field survey in each control site selected. The survey will cover at least 750 ha (or 300 parcels) per site, and a good representation of the crops of interest should be ensured. The survey sample size may be reduced or the field survey may be focused on crops of interest or rare crops, if the tenderer is able to demonstrate, to the satisfaction of the Administration, that he is able to build a database of reference fields for the most common crops in another way. Parcels along public ways can be used, especially if the private parcels are inaccessible.

4.6.2 The tenderer will indicate the methodology that he intends to use for this fieldwork (transects, area frame survey, etc.), the origin and the characteristics of the documents drawn up for the investigators, the personnel envisaged and their qualifications, the proposed dates, the planned duration, the area surveyed, the method proposed to ensure a minimum number of parcels per crop of interest on a per-site basis, etc.

5. Photo-interpretation of applications

5.1 Preliminary verification

5.1.1 The contractor will check on arrival all dossiers received. Those still found to be incomplete or obviously incorrect during these preliminary checks will be returned to the Administration, and will only be dealt with if corrected within 30 days.

5.1.2 The contractor will acknowledge the receipt of each batch of dossiers and will also provide summary results of the preliminary checks.

5.2 **Parcel area check** (boundary validation)

5.2.1 The purpose of the remote-sensing control is to check the area and land use of the agricultural parcels in the dossier. To calculate the agricultural parcel areas, the limits of the land parcels will be validated on screen on the basis of digitised parcels, i.e. either the parcels digitised from location document or the blocks or ilots generated during the preparation work, and overlaid on an ortho-image background with the appropriate resolution (in line with the reference in footnote 3 on page 6). This work will be undertaken, if possible, before photo-interpretation, for example as soon as the panchromatic images or the aerial photographs are available. Digitisation (see § 4.5) and validation can be combined provided this does not delay the work. The tenderer will describe the technique used for this validation.

5.2.2 The area of each subsidised agricultural parcel will be verified. Unless requested otherwise by the Administration, the non-subsidised land parcels will not be photo-interpreted, except if the data available reveal incompatibilities with subsidised parcels. During the photo-interpretation on later images, the software should, if necessary, allow further modifications, and save all changes, to the limits already validated on the earlier image. The result of this work will be the photo-interpreted (called "measured") area, to be compared with the declared area for each agricultural parcel. The results will be expressed in hectares with two decimal places, rounded to the nearest unit.

5.2.3 The comparison between declared and measured area will be carried out during the categorisation phase. First of all, a technical tolerance per parcel will be calculated. The retained area should be calculated according to the categorisation rules that are specific for each technical code. Then the retained area should be compared to the official area of the reference parcels (i.e. cadastral areas or LPIS areas), as specified in § 6.2.5.

5.3 Land use checks

This checking will at least be started on screen and will be completed, if necessary, by rapid visits on the spot (as far as local regulations allow the contractor to carry out these inspections). Whatever the procedure selected, the contractor has to organise himself to be able to provide a diagnosis for all the parcels within the sites and the sample.

5.3.1 On the screen:

The land use check with **multi-temporal** images may be made through **automatic classification** and/or **photo-interpretation** on the screen (Computer-Aided Photo-Interpretation, CAPI). The images will be overlaid with the digitised vectors showing the position of the validated parcels. The tenderer will justify and illustrate his choice and the different stages of the checks. He will describe the training techniques and quality control for both methods. If he uses classification, he will give the criteria for assignment of land use and explain how the classification results are used in the parcel categorisation (e.g. as an ancillary image layer or as automatic parcel label).

5.3.2 "Rapid field visits" option

5.3.2.1 The purpose of the "rapid field visits" is to observe the actual land use without contacting the farmer. The area measurements are not covered by the rapid field visits. They can be proposed only if inspections on the spot are permitted. This option is relevant in case of mono-temporal images or when the available images do not permit the right interpretation of land use. They can also be proposed when the strategy of the National Administration is to reduce the number of farm inspections to a minimum.

5.3.2.2 The rapid field visits can be undertaken either by the contractor or by a sub-contractor with good knowledge of crop identification. If relevant, the tenderer should indicate the following:

- whether he proposes a field visit and the procedure envisaged;
- what is the volume of work envisaged and whether the contractor expects to do this himself or how he will sub-contract it;
- the personnel planned for this work and their qualification.

5.3.2.3 The rapid field visits will be carried out on the basis of the first results of categorisation generated by the contractor. Field visit documents (such as maps for the overall location of parcels, detailed location document, e.g. with image background overlaid by the vector boundaries) have to be made available to facilitate the work of the staff in charge of rapid field visits. The results of rapid field visits should indicate the actual land use and any pre-defined anomaly code if appropriate.

5.3.2.4 The contractor should record that the method of land-use identification is by means of a rapid field visit, in order to be able to identify the rate of validation by this method. Then the categorisation should be run again, using the rapid field visit results.

5.3.3 Article 30 of Regulation (EC) 2419/2001 distinguishes crop groups for the purpose of calculation of aid, reductions and exclusions. Areas under cereals, oilseeds, linseed and flax and hemp have still to be distinguished for administrative and on-the-spot check purposes and, moreover, for the purpose of Regulation 2390/1999 and 1251/1999. A key criterion for further distinguishing crop and set-aside groups is the application of different aid rates.

As a minimum, the land use checks will list the "crop groups" below:

- cereals, distinguishing maize, rice and durum wheat if relevant;
- oilseed, except linseed;
- linseed, flax and hemp;
- grain legumes (if applicable);
- protein crops;
- set-aside, differentiated as much as possible from other bare or uncultivated soil;
- pasture and other forage crops as distinguished in Art. 30 (a), (b), (c) and (d) of Regulation 2419/2001;
- other annual crops;
- permanent land use other than grass (orchards, vineyards, woods etc.);
- non-agricultural use (buildings, lakes, etc.).

Other agricultural land use may be distinguished by eligibility, for possible cross checking with other schemes. Irrigated and non-irrigated crops will be distinguished where the Member States use this differentiation. Furthermore, as many sub-groups should be listed as the number of yield regions with different subsidy levels, in which the parcels are situated.

5.3.4 An adapted arrangement will be agreed with the contractor for durum wheat in regions where soft wheat is also grown.

5.3.5 Parcels benefiting from other area subsidy schemes included in the accompanying measures of the Council Regulation (EC) No. 1257/1999 on rural development (see § 1.2), or in national environment protection schemes, and included in the sample, may also be checked during the control, depending on the choice of the Member State. Examples of such schemes are the compensatory allowances paid for less favoured areas (LFA) and for areas with environmental restrictions, and support measures for agri-environment and afforestation measures. In all such cases, the role of the control by remote sensing is generally restricted to the measurement of the parcel area and the identification of the land use.

5.4 Synthesis at the application level

5.4.1 The parcel checks will have the following primary objectives:

- for all parcels declared as "subsidised":
  - to check the net area and land use of each parcel;
  - to eliminate fields with an observed area lower than the prescribed minimum;
  - to detect fields only partly eligible;
  - to check that the parcel is not included in another application.
- for parcels declared as fallow:

- to detect fields cropped or harvested fraudulently;
- to verify all types of fallow, authorised according to the regions;

- for parcels declared as forage:
  - to check that they were in production during the period fixed;
- for parcels not subsidised:
  - to check if necessary that the parcel does not overlap or is not included in subsidised parcels (of other declarations, for example).

5.4.2 Generally, no check will be made by the contractor for the following:

- the parcels not declared;
- the presence of animals;
- the final use of the products, in the case where crops may be used for forage or grain (e.g. oilseed rape or maize), or for industrial set-aside;
- the compliance of the observed percentage set-aside in respect with the farmer's obligations;
- the dividing of areas between farmers having common fields or between associates;
- the varieties of oilseed rape or durum wheat.

However, if required by the National Addendum, the contractor may have to take into account the animal density per hectare for the forage group, using information provided by the Administration from the livestock declarations (to be defined in the National Addendum).

5.4.3 It may also be agreed with the Administration to return in anticipation from the contractor all applications where there is evidence of errors in parcel size or area (e.g. on the panchromatic image), together with field documents for the surveyor that highlight the problem. This helps the Administration to begin on-the-spot checks earlier, without having to wait for land use determination. In this situation it is necessary to decide with the Administration whether or not to continue with the photo-interpretation of these dossiers.

5.5 Two-phase controls

5.5.1 In the Member States or sites where summer crops are important (e.g. maize, sunflower), it may not be feasible to categorise all crops in time to ensure that the winter-sown crops are checked before the harvest. In this case the dossiers may be divided into two or three categories: "winter", "summer" and possibly "mixed", to be defined by the Administration. The dossiers will then be categorised in two phases. Where this methodology is adopted:

- an additional or late image (July or August) will be provided;
- the "winter" and "mixed" dossiers will be checked first for the winter crops and the unclear or rejected dossiers will be pointed out to the Administration;
- the "summer" and possibly "mixed" dossiers will be processed again for the summer crops and a final diagnosis will be provided;
- the results and on-the-spot documents (see § 7.5.1) will be produced successively for each category and will be of the type "alternative b" if they are not grouped by dossier.

5.5.2 This two-phase control can be replaced, for the summer crops, by a partial photo-interpretation followed by a rapid field visit.

5.6 Reference year control

5.6.1 The reference year control period has been defined in the regulations in order to determine that a parcel which was under "permanent" crop (grassland, orchards, wood, etc.) on 31.12.1991 is not eligible (Article 7(1) of Reg. (EC) No 1251/1999).

The set-aside criterion that the parcel was "cultivated for a crop" during the preceding year is no longer applicable (Commission Reg. (EC) No. 556/2001 of 21 March 2001). To check the parcel qualification as a "permanent crop", historic controls are necessary, e.g. to ensure, using archive images, that permanent grassland has not been returned to production and declared as arable. Annex I of Regulation (EC) No 2316/1999, defines the applicability of the term "permanent crop". One of the conditions to qualify as such is that the crop has occupied the land for five years or longer. This makes it necessary to go back to the period 1986-1991 if eligibility on 31.12.1991 is to be examined.

5.6.2 Reference year control by remote sensing shall be carried out on sites selected by the Administrations. These sites will be chosen according to the availability of good quality archive imagery and to technical constraints. The Commission will provide the necessary images. The number of sites and number of applications per site are indicated in Annex 1. For this number of applications, the tender will identify the price supplement for this additional verification.

5.6.3 For the selected sites, the contractor will check, using archive images, if the criteria provided for in the regulations that the Administration requires to be checked are adhered to. The results by parcel and by dossier over the reference period will be presented separately, as well as cumulated with those of the 2003 controls.

6. Decision rules and technical tolerances

6.1 General remarks on decision rules and technical tolerances

6.1.1 "Standard" decision rules, based on current European or national regulations, and applicable to crop groups and applications, have already been set up in previous years in co-operation with the Administrations. These rules are summarised in the present chapter and will be adapted, where necessary, taking into account the particular situation of each Member State in the year 2003.

6.1.2 Since 2001, all Member States apply tolerances at the parcel level, which is consistent and compatible with the Commission's recommendations and state-of-the-art for other types of area control measurements.

6.1.3 The application of technical tolerances at the parcel level clearly separates the two functions provided by the diagnosis rules used in the remote-sensing control: (1) to deal with technical tolerances, and (2) to sort the dossiers (or groups) requiring follow-up action as a result of the remote-sensing control.

- **Technical tolerances** (as mentioned e.g. in Article 22 of Regulation No 2419/2001) are intended to take into consideration the uncertainties specific to any measurement technique. Technical tolerances apply to the result of any area measurement during the control and make it possible to appreciate its reliability. The definition of technical tolerances concerns all "on-the-spot controls", and standards have to be set mainly from technical considerations: the precision of the instruments or of the methods used. The technical tolerance defined at the parcel level will take into account, in the case of controls with remote sensing, the type of maps, the spatial resolution of the images or aerial photographs used, and other factors such as the size and shape of parcels. Note that, as from 2001 onwards, the choice of the appropriate image sensor resolution (satellite or airborne) for use in area measurement in a given site is ultimately determined by the requirement that "the method of measurement must be adapted to the parcel size in the region concerned, so that the objective of a 5% tolerance is met for half the areas checked" (from the reference in footnote 3 on page 6).

- **The sorting of dossiers** for which a follow-up action is necessary, is, on the other hand, a characteristic of remote-sensing controls. One of the basic principles of this sorting is to concentrate field inspections on a reduced number of problematical data. The criteria to be retained therefore depend on organisational or strategic considerations, but also on regulations: One should not envisage to apply sanctions following remote sensing controls only, without any field inspection or possibility of recourse for the applicant. As the regulations accept possible area compensation between parcels of the same group, the rules for the application of sanctions or exclusions are defined at the group level (thresholds of 3%, 2 ha, 20%, as foreseen by Article 32 of Regulation No 2419/2001). As a consequence, the most appropriate method for sorting dossiers is a diagnostic rule at the group level.

6.1.4 **The principle of applying a technical tolerance at the parcel level is the following**: If the difference (positive or negative) between the areas declared and measured at the parcel level is less than the technical tolerance, then the declared area is retained; if this difference is greater than the technical tolerance, the measured area is retained. In practice, the technical tolerance is calculated on the basis of the parcel perimeter (see § 6.2.2).

6.1.5 **The principle of sorting of dossiers at the group level is the following:** The sum of the areas retained for each parcel is made at the group level, where the decision on eligibility is made. For each group, the sum of declared and measured areas will be compared. The sorting is based on the discrepancies between declared and measured areas, taking account of the application of § 6.1.4. The thresholds can be

expressed in absolute (ha) and/or relative (%) values. Therefore, an overall conclusion for the crop groups and the dossiers will always be presented, as well as the justification of the decision at the parcel level for each criterion.

6.1.6 At the parcel level, no photo-interpretation will be carried out for:

- parcels within the sample, but falling outside the site (see § 3.1.3);
- agricultural parcels (as defined in Regulation No 3508/92, see § 1.3) declared as less than 0.3 ha (satellite images) or 0.1 ha (aerial photography). These figures may be adapted by the National Administrations if satellite images and archive aerial photographs are combined, or in the case of rapid field visits.

Special decision rules applied to these cases are explained below (see § 6.4.2 and Table 2) as well as for all the other circumstances where the control with remote sensing is not applicable (technical codes).

6.2 Observations and codification at the parcel level

6.2.1 Schematically, there are four steps in the categorisation at parcel level:

Step 1: For each interpreted agricultural parcel, the technical tolerance is calculated applying a buffer around the perimeter of the observed boundaries (see § 6.2.2.).

Step 2: A code is assigned to the agricultural parcel according to codification rules. The standard rules are set forth in § 6.2.3.

Step 3: According to the technical code, the retained area and the retained land use are assigned to the land parcel (see § 6.2.4)

Step 4: The retained area is compared to the official reference area (as registered in the LPIS) for ceiling (see § 6.2.5).

In certain cases, the first and second steps may be carried out in reverse order.

6.2.2 Calculation of technical tolerances

At the end of the photo-interpretation process, each interpreted parcel should have in the database at least one or more technical codes, a measured area, and an observed land use.

6.2.2.1 The technical tolerance is calculated by multiplying the parcel perimeter with a buffer width to obtain a buffer area. The buffer widths proposed in Table 2 below have been simplified and are listed for image products that are still accepted for parcel measurement.

Table 2.
Buffer widths proposed for calculation of parcel area measurement tolerances[10]

Code	Image product used	Buffer widths
L1	Aerial photography (or 1 m resolution satellite images)	+/- 1.5 metres
L2	Recent archive aerial photo combined with satellite PAN images	+/- 3 metres

6.2.2.2 The buffer areas (derived with one of L1 or L2) are calculated at the digitising stage and validated during the photo-interpretation. The maximum allowed buffer area is 1 hectare, in line with the reference in footnote 3 on page 6. Calculated buffer areas above this threshold should, therefore, be capped to this value. The applicable buffer area thus obtained is added to or subtracted from the area measured. If the area declared is within the margin so calculated, the declared area is retained. If not, the measured area is retained. The over- and under-declarations will be processed in the same way. Compensation between parcels of the same group and outside tolerances is therefore possible.

[10] The use of stand-alone SPOT/IRS PAN satellite images is no longer recommended for parcel measurement.

6.2.2.3 The technical tolerances should be applied only to photo-interpreted agricultural parcels, and not to the internal cadastral parcels. In cases where the agricultural parcel is composed of several cadastral ones, this would lead to the application of an unjustified and excessive technical tolerance. In the same spirit, complementary tests should also be applied in the case of "ilots" or block systems (see also § 6.2.5).

6.2.3 Codification rules

6.2.3.1 A series of "standard" codes have been defined in relation to specific conditions as stated in Table 3 below. If relevant, several codes could be assigned to the same parcel. However, the tests should be undertaken using the same order as in Table 3: The Tx codes have to be considered first, then the codes Ax or Cx. If none of the conditions is fulfilled, the controlled parcel will be coded as "OK", which means that both the declared area and the declared land use are accepted.

6.2.3.2 When several codes are assigned, the retained area and the retained land use should always correspond to the least favourable condition. In any case the rules should always be defined in accordance with the National Administration.

6.2.3.3 When it is justified, additional codes may be defined at the national level. In such cases, the condition of the additional codes should not be the condition of existing codes. For other schemes it may be useful to add specific codes. In such cases it is recommended to use other letters (G, K, L etc.).

6.2.3.4 According to Regulation EEC 2419/2001 Article 23, (2a) the Administration will perform photo-interpretation of satellite images or aerial photographs with a view to recognising the ground cover and measuring the area and, (2b) check on the spot all applications for which photo-interpretation does not make it possible to verify the accuracy of the declaration to the satisfaction of the competent authority. In previous campaigns, the technical codes T1 and T5 were used, for "land use interpretation impossible" and "parcel limit problem not resolved on the image", respectively. These cases fail the condition of Article 23 (2a) and require follow-up action. The cases are regrouped under the code C4 in Table 3. Strictly, also the remaining T-codes disallow interpretation, even before it can be carried out; the C4 category, however, is the result of interpretation and an indication of real discrepancies in declared crop cover or crop area or other systematic errors.

Table 3.

Standard codes related to the condition encountered at the parcel level, and proposed rules for the calculation of retained area and retained land use to be transferred to the group level

Observations at the parcel level	Code	Areas transferred to the group
Outside images or aerial photographs Outside control site (or outside maps available) Covered by clouds Declared as less than 0.3 ha (or 0.1 ha)	**T2** **T3** **T4** **T6**	Use the area declared and land use declared
Declared as more than or equal to 0.3 ha (or 0.1 ha), but found as less	**A1**	Use measured area and the declared land use
Parcel (or part) claimed more than once Parcel or reference not found in the documentation Area ineligible (reference period, 1986-1991)	**A2** **A3** **A4**	Give zero value to the disputed part of the area
Declared in one group, but found in another	**C1**	Give zero value to the eligible area, except for "obvious errors", or when the eligibility is not affected by the found incorrect crop group. If possible, indicate the land use found
Parcel declared in only one group, but found to be in more than one group	**C2**	Divide parcel, then apply previous rules
Land use correct, area outside tolerance (over-declaration)	**C3+**	Use measured area and observed land use
Land use correct, area outside tolerance (under-declaration)	**C3-**	
Land use interpretation impossible or parcel limit problem not resolved on the image	**C4**	Give zero value to the area
Obvious error not covered by another code	**E1**	Use measured area and observed land use
Land use correct, area within tolerance	**OK**	Use declared area and declared land use

6.2.4 Calculation of retained area and retained land use

Table 3 indicates which area should be retained to calculate the retained area at group level (Mg). The 0.3 or 0.1 ha thresholds (T6 and A1) should be fixed according to § 6.1.6. The measured area for each parcel in view of the proposed rules is compared with the declared surface. If the difference (positive or negative) is lower than the tolerance level defined in 6.2.2.2, the declared area is retained; otherwise, it is the measured area. If the observed land use does not correspond to that declared, the area transferred to the group is zero, except if specified otherwise in the decision rules.

6.2.5 Parcel area ceiling based upon the Land Parcel Identification System

6.2.5.1 Complementary tests will be performed to take into account the official information available for the reference parcels: cadastre, specific topographic mapping, block system, “ilots” etc. In this case, the Administration will provide the contractors with digital files containing the official areas of the Land Parcel Identification System (LPIS) utilised.

6.2.5.2 For each agricultural parcel, the retained area (i.e. after application of a technical tolerance) is compared to the gross official area of the corresponding reference LPIS parcel (or the sum of official areas when the land parcel is linked to several reference LPIS parcels). The retained area is kept when this is not greater than that of the LPIS area. Above this threshold, the official LPIS area is adopted.

6.2.5.2 In the case of “ilots” or block reference systems, a supplementary test may be performed: The sum of the retained area for all the agricultural parcels located in the block (i.e. after application of a technical tolerance) is compared to the total reference area of the block (or the total reference areas of the reference parcels composing the ilot). As in the above case, the retained areas are kept when these are not greater than that of the LPIS block area. Above this threshold, reduction of areas should be applied proportionally to all agricultural parcels in order that the official LPIS area is respected. This last test, illustrated in the case of reference block systems, is applicable more generally in cases where several agricultural parcels have been declared in the same cadastral parcel.

6.3 Decision at the crop group level: conformity test

6.3.1 For each group, the total declared area of the parcels belonging to this group has to be compared to the total retained area of the parcels observed in this group. The categorisation tests are applied at the subsidised crop group level, in order to allow, for the conformity test, compensation between positive and negative differences within parcels of the same crop group (if this compensation is allowed or possible in the Member State concerned).

6.3.2 As technical tolerances are applied at the parcel level, the declared area was retained for all the parcels within tolerances, and the measured area where the parcels were outside the tolerances. The following three cases will be encountered at the group level:

- A1: The declared area is equal to the measured area (**Dg - Mg = 0**).
- A2: The declared area is less than the measured area (**Dg - Mg < 0**). In this case, the Administration will accept and pay only what was claimed.
- R: The declared area is greater than the measured area (**Dg - Mg > 0**).

The first two categories can be considered as accepted. **The third category should be considered rejected** and has to be submitted to a "conformity test", in order to sort the groups to determine whether follow-up action should be field inspection or another appropriate administrative action.

6.3.3 Sorting of rejected groups (R1-R3)

One of the tests R1 to R3 below will apply for rejected groups, to categorise the severity of the rejection. Groups failing the test require field inspection (all of RF1, RF2 and RF3). For the rejected groups that pass the test (RP1, RP2, RP3) the Administration has the choice of either carrying out field inspections or directly informing the farmer that his claim will be reduced with the discrepancy found. In this context, the R1-R3 tests serve as an optimisation step in the reporting process to the Administration.

Table 4.
Sorting to be applied at the group level in case of rejection

Test	Range of the test according to the area observed	Sorting criterion (declared – measured)	Codes for the groups	
			Pass	Fail
R1	$0 < Mg \leq S2/P4$	$0 < (Dg - Mg) \leq S2$ (ha)	RP1	RF1
R2	$S2/P4 < Mg \leq S3/P4$	$0 < ((Dg - Mg)/Mg) \leq P4$ (%)	RP2	RF2
R3	$S3/P4 < Mg$	$0 < (Dg - Mg) \leq S3$ (ha)	RP3	RF3

In this table: **Dg** - declared area of the group; **Mg** - total area assigned to the group after the control, calculated following the rules in Table 3.

6.3.3.1 Technical tolerances in percentage (P4) and absolute values in hectares (S2, S3) should be fixed by the National Administrations according to the local conditions. Table 5 below indicates the proposed threshold values.

6.3.3.2 Parameters S2 and P4 have to be optimised in order to avoid organising on-the-spot checks for small differences. Some Member States may decide to apply only one absolute threshold (S3), for instance, based on the calculation of the disputed payment.

Table 5.
Proposed categorisation thresholds for the crop group

Categorisation thresholds for the crop group	Code	Proposed thresholds
relative (%)	**P4**	≤ 2 %
absolute (ha)	**S2**	≤ 0.5 ha
	S3	≤ 2 ha

6.3.3.3 Groups with declared area larger than zero (Dg > 0) but found with zero area (Mg = 0) are rejected.

6.4 Categorisation at the dossier level

There are three steps in the categorisation of the dossiers: A conformity test; a completeness test; and a final diagnostic per dossier that combine the two previous ones.

6.4.1 Conformity test: A dossier is accepted if all groups are accepted.

6.4.2 Completeness test: A dossier will be categorised as "complete" if the total retained area of the T code parcels in the processed groups is lower than two thresholds in percentage:

- P2 (for the total surface area of the dossier);
- **and** P3 (for the set-aside group).

Table 6.
DOSSIER level tests

Input	**Test**	**Dossier conformity test**	Dossier codes	
			Pass	**Fail**
The whole dossier	**D1**	All groups accepted?	**DP1**	**DF1**
Area retained for:		**Dossier completeness test**	Dossier codes	
			Pass (complete)	**Fail** (incomplete)
the whole dossier	**D2**	Σ [dossier retained area T codes] / Σ Mg ≤ P2		**DI2**
		AND		
the set-aside group	**D3**	[set-aside retained area T codes] / Mg set-as. ≤P3	**DC**	**DI3**

6.4.3 Parameters: Maximum values of the two thresholds are indicated in Table 7. However, the minimum value of the two thresholds and, possibly, the list of the groups to be considered important should be determined by the National Administrations.

The P2 threshold concerns the whole dossier, while P3 only concerns the set-aside group. Beyond each of these thresholds the dossier is incomplete (codes DI2 and DI3). In order to be complete, a dossier that includes set-aside must therefore pass the two tests[11].The Administration may add other groups judged important to the set-aside group.

Table 7.
Parameters to be fixed by the Administration

		Proposed maximum	
Code	**Relative tolerances (%)**	Application with set-aside	Application without set-aside
P2	Dossier retained area with T codes	50 %	50 %
P3	Set-aside group retained areas with T codes	50 %	-

6.4.4 Final diagnostic at the dossier level

6.4.4.1 The completeness test implies that the dossiers must be processed differently depending on whether they are complete or incomplete. The final decisions to be taken are proposed in Table 8.

[11] After the introduction of Regulation 1251/1999, the differentiation between “general” and “simplified” schemes is no longer made. The “arable” dossiers can, in some member states, be separated in “large producers” (for whom set-aside is compulsory) and “small producers” (who are under no obligation to set land aside, but who may do so if they wish). See the National Addendum for details.

Table 8.
Final diagnostic at the dossier level

Test	Conformity	Completeness	Code	Conclusion
D5	Pass	Pass (complete)	**DA5**	dossier accepted by remote sensing
D6	Pass	Fail (incomplete)	**DI6**	dossier not controlled with remote sensing; groups which have caused the dossier to be incomplete are verified on the spot
D7	Fail	Pass (complete)	**DR7**	Dossier "rejected"; if the rejected groups are in the RPn categories (cf. Table 4) only, an appropriate administrative procedure may be used to notify the farmer of the correction, otherwise the rejected groups are verified on the spot
D8	Fail	Fail (incomplete)	**DR8**	Dossier "rejected"; the rejected groups are verified on the spot, including those that caused the dossier to be incomplete

6.4.4.2 A dossier categorised as incomplete will be counted and paid to the contractor if it has been processed and photo-interpreted normally. It neither will be counted nor paid if it appeared incomplete before the digitisation and the photo-interpretation.

6.4.4.3 For the dossiers "accepted by remote sensing" and with groups in the category RPn, i.e. for which a field inspection was not decided, the Member State should keep the measured areas in their IACS in order to manage by appropriate administrative procedures the parcels outside tolerances as well as the small positive discrepancies at the group level.

7. Administrative organisation

7.1 **Field inspections** (by the Administration)

7.1.1 The field inspections will be made by the competent authorities of the Member States after photo-interpretation (and possibly after the rapid field visits) and are not the subject of the present Technical Specifications.

7.1.2 The Administration will carry out most of the controls before the harvest. The work schedule will therefore be established taking this into account, and in agreement with the Administration. If needed, the areas where there is an early harvest can be given priority, so that these results are delivered first (see §§ 3.3.2 and 7.5.1). For the same reason, the spring-sown crops may also be separated according to § 5.5. In certain cases, a deadline may be decided when the photo-interpretation will start whatever the number of images received. Also, dossiers where area problems have been found (see § 5.5) or where technical problems that might prevent a correct categorisation have already been identified, may be returned in anticipation to the Administration. The contractor will adapt his work schedule to these conditions and the choices and deadlines of the Administration.

7.2 **Work calendar**

This calendar may differ between and within Member States, from one agricultural region to another. It should be based on the following dates but also adapted to the delivery date for applications as adopted by the Administrations pursuant to Regulation No 3508/92 (see §§ 1.3 and 3.2.2).

Indicative dates of the work calendar are given in Table 9. For the interim report, site data for quality control, the final report and satellite image return (which are all deliverables to JRC) the indicated dates are fixed. In case the contractor is not able to keep one of these dates, a justification, approved by the Administration, explaining the delay and indicating the new delivery date, should reach JRC not later than 10 days before the expiry of the deadline.

Table 9.
Provisional work calendar

15.09.2002 - 15.01.2003	selection of control sites
01.03 - 01.04.2003	signature of contract
01.04 - 15.06.2003	receipt of digitised declarations of sample to control
01.05 - 30.06.2003	ground data collection
15.06.2003	interim report deliverable to Administration and JRC
20.06 - 20.08.2003	delivery of interpretation results and control documents
15.08 - 10.09.2003	(possible) delivery of photo-interpretation results for spring sown crops
01.09 - 01.10.2003	transmission to the contractor of the results of the on-the-spot checks
15.9.2003	Delivery of site data for quality control to the JRC
15.10.2003	final report deliverable to Administration and JRC
Before 01.12.2003	Return of all supplied satellite data to JRC

7.3 Meetings

7.3.1 The contractors must provide for two meetings at their own expenses, to be held with the Commission and the Administration during the contract, either at the JRC, Ispra, or in Brussels.

7.3.2 Regular progress meetings (at intervals to be agreed) will also be organised with the Administration in the concerned Member State, though not necessarily with the participation of the Commission. The contractor will be responsible for his travel costs.

7.4 Quality control

7.4.1 It is important that the contractors implement quality management in their procedures. An **internal** quality assurance is required from the contractor (e.g. resulting in Quality Control Records). In his interim report, the tenderer shall include a description of such internal quality assurance and its outputs, which he expects to put in place at each stage of the work at his premises and also at the sub-contractor's premises (if relevant) (see § 7.8.1).

7.4.2 An **external** quality control relating to the execution and the results of remote sensing will be organised jointly by the Member States and the Commission. This quality control will cover:

- verification of the general organisation of the project (conformity to the Technical Specifications, work flow and project management, adequate technical and human resources, etc.);
- specific verification of the technical stages
- assessment of the work undertaken by the contractor and control of the results of the contractor on the basis of a sample of dossiers.

In 2003, these checks will be carried out on **one** control site per contractor, selected by the Administration. The contractors will be obliged to deliver all necessary elements for the quality control to the JRC by the prescribed date.

7.4.3 The Administration may also require field documents to be produced for a sample of "accepted" dossiers, as a supplementary quality control. Each of these documents which are over 10 % of the controlled dossiers will be paid at the set price proposed in § 10.10.

7.5 Deliverables

The contractor shall deliver the following documents:

7.5.1 To the Administration on dates to be agreed taking into account §§ 5.4.3, 5.5 and 7.1.2:

7.5.1.1 **Alternative "a":** Control results **by dossier**:

- a list of dossiers by geographical unit and by category (accepted or rejected, complete or incomplete), with reason(s) and the level of completeness;
- for each dossier, the results by parcel (category, both declared and found area and land use, technical code given, and possible remarks);
- for the applications with at least one "rejected" group, a folder prepared for the field inspector which will contain:

- a geometrically corrected "imagette", if possible made from the most precise document (aerial photograph, IRS or SPOT Pan) in black and white at a scale and format to be agreed with the Administration (e.g. 1:10,000 scale at DIN A4), with delimitation of the boundaries, indication of the reference of each parcel and those subsidised (or to be verified);
- a large-scale cartographic document, possibly transparent and that can be superimposed on the imagette (to be agreed with the administration), enabling the field worker to locate all the parcels easily when on the spot;
- a table giving comments per parcel.

Whatever the percentage of rejected or incomplete dossiers, the minimum of field documents to be produced in alternative “a” will be 10% of the number photo-interpreted. If necessary, the Administration will select a sample of accepted dossiers, in order to reach this minimum. It will then be the responsibility of the Administration to decide which dossiers it will inspect on the spot, or will not inspect.

OR

7.5.1.2 **Alternative “b”**: Control results **by “geographic unit”** (section of cadastre, of commune, map sheet, block of adjacent parcels, etc.):

- for rejected dossiers, alphanumeric documents containing the parcels within the section as for the first two indents of alternative "a";
- for all sections containing parcels of dossiers judged as rejected, a folder for the field inspector should be included, as alternative "a", but for example in DIN A3 format and covering the whole section. All declared parcels should be included and those subsidised (or to verify) should be flagged;
- a table containing all declared parcels in the section and a comment for all parcels of dossiers judged as rejected.

7.5.1.3 Member States will indicate their choice of alternative "a" or "b". The separate control of spring-sown crops (§ 5.5) necessitates two deliveries of the control documents, preferably type alternative "b". In all cases, the delivery of control documents in batches is recommended, in order to spread out the workload of the inspectors.

7.5.2 To the Administration, no later than the 31.12.2003 (or a date to be agreed):

- return all documentation supplied by the Administration (cadastral maps, original or copies of the declarations, etc.);
- all the documents purchased or produced for the contract and paid for (photos, maps, ortho-images, forms, etc.);
- all data base files developed during the contract, in the format agreed with the Administration;
- all digitised parcel vectors files along with attribute files containing field information and topology (format to be agreed with Administration);
- a copy of the flight plan and the aerial photographs used for the control (raw and/or processed and scanned).

7.5.3 To the JRC for the quality control (no later than 15.09.2003): The data listed in Table 10, for one site selected by the Member State.

Table 10.
Data required for the Quality Control

Type of data	Contents	Format
Alphanumeric	Data resulting from the application input (dossiers, groups and parcels declared) Contractor's results of photo-interpretation and categorisation, per parcel, group and dossier. Ancillary information	ACCESS database (pre-defined and supplied by JRC)
Vector	Vectorial database of the parcels as validated after the photo-interpretation. Original maps used for the location of declared parcels (in vector or raster format). Data from the ground survey (used for land use interpretation training)	SHAPE files or *Export* ARC/INFO or compatible with *Ungenerate* of ARC/INFO
Images	Satellite images and/or scanned aerial photographs (fully processed)	Digital, under the formats ERDAS "IMG", ERDAS "LAN", TIFF or compressed MrSID or ECW formats and related files (e.g. "STA", "TFW", etc.)
Ancillary data	Description of files and formats delivered. Metadata database inherent to each geometrically corrected image. Quality Control Records (QCRs) Nomenclature of the land uses and crop groups declared and observed. Photo-interpretation rules and manual. Categorisation rules and tolerances. Quality Assurance procedures	ACCESS data base (pre-defined and supplied by JRC) Tables and digital files, and/or hard copies

7.5.4 To the Commission, no later than the 01.12.2003:

- the original images (as they were delivered to the contractor);

7.6 Documents to receive

The documents, dossiers and images to be delivered to the contractor have been described above.

After the on-the-spot checks or other follow up action, the Administrations will supply, if necessary in batches, feedback on the findings made by the Administration for all verified dossiers (see § 7.1). These results will be available by the 01.10.2003 and delivered in an agreed format. The contractors shall compare their results with those of the Administrations in the final report. Any conflicting evidence will be discussed.

7.7 Progress reports

The contractor will provide to the Administration, at the end of every month, from the contract notification until the end of September 2003, a short progress report (in the national language). It should show an updated work schedule and a summary of the documents, maps, files, dossiers, images, aerial photographs, etc., received, produced and/or delivered and the volume of data processed.

7.8 Reports

Two reports shall be delivered. They will be subjected to cross-examination before approval. A summary shall be submitted simultaneously, in the national language and either in English or French. If several languages are used, only the versions in the national language will be authoritative. If some part of the work is unfinished or some results are not available at the final report deadline, the report will be delivered at the fixed deadline and an addendum will be provided later.

7.8.1 **Interim report (by 15.06.2003): Printed version:** four (4) copies to the Administration and two (2) to the JRC. **Digital version:** one (1) copy to the Administration, and one (1) to the JRC.

The report shall contain:

- overview of methodology and possible revisions;
- analysis of decision rules, tolerances, techniques and adaptations;
- definitive organisational plan, work schedule, personnel, material, detailed hard-and software description, division of work between partners;
- description of the internal quality assurance set up by the contractor;
- sampling plan and organisation of the ground data collection;
- appraisal of administrative checks of the application sample;
- draft field document for field inspectors;
- present work position and rate of progress;
- revised work schedule indicating actual work progress relative to the planned one.

The Administration may possibly decide, before the beginning of the work, not to require this interim report. In that event, it will deduct its cost from the contract price.

7.8.2 **Final report (by 15.10.2003): Printed version:** four (4) copies of the report and twelve (12) of the summary to the Administration, three (3) copies of the report and the summary to the JRC. **Digital version**: one (1) copy of the report and the summary to the Administration, and one (1) copy of the report and the summary to the JRC.

The report shall contain:

- a synthesis and update of the interim report;
- a critical appraisal of the initial methodology, adaptations (justifying the changes if relevant) and results obtained;
- expected and actual calendars, and discussion of the delays if relevant;
- division of work between partners or sub-contractors;
- detailed analysis of the quality of reference documents: maps, declarations, data bases given to the contractor, etc.;
- detailed analysis of the remote-sensing and field checks results, synthesis, and discussion of the differences;
- examples of field documents;
- analysis of the different types of:
  - farms (size, mean area, number of parcels, etc.);
  - irregularities and their frequency and areas concerned;
- synthesis of the average difference between data declared and measured;
- analysis of the precision of measurements and the tolerances used;
- analysis of the ground data results;
- discussion and interpretation of the regulations;
- proposals for simplifying and improving the methodology;
- analysis of the duration of work and actual costs;
- analysis forms/tables prepared by the JRC and the Administration.

7.8.3 The printed reports addressed to the JRC must be sent by private courier service (e.g. DHL, UPS etc.), and not by public post.

7.9 Archive

7.9.1 The contractor shall keep, at least until 31.12.2003, an archive of the main databases having led to the categorisation delivered to the Administration, for all dossiers processed: alphanumeric and vectorial databases (with attributes), digital maps and processed images. He shall ensure for the same period the capacity to extract the necessary data from the database and to print the documents referred to in the next paragraph, and the protection of the data. This date could be postponed, after agreement with the Administration, for a defined period (e.g. for 6 months) and price.

7.9.2 If needed and for some dossiers still unresolved, the Administration may require the contractor, during the storage period, to print documents analogous to those described under § 7.5.1, containing colour

(except for black-and-white data) imagettes from all images or aerial photographs having been used to categorise these dossiers.

7.9.3 The tender will include, as an option, one or several price proposals:
- possibly, to keep this archive beyond 31.12.2003;
- the price per dossier to print documents as described above.

7.10 Penalties applicable to the contractor

7.10.1 Errors of Interpretation

For all control sites covered by at least three satellite images and for the dossiers for which § 6.1.6 (no photo-interpretation) does not apply, the maximum proportion of land area with "C4" codes, will be 20 % of the total number. Beyond this threshold, the contractor may suffer a penalty of up to 50 % of the variable costs per application (see § 10.5) applied to each dossier over the 20 % threshold. If over 80 % of dossiers are classified as acceptable by the contractor before the field inspections, or those rejected exceed 25 %, the Commission and the Administration may organise a cross check on the spot. An error for a group will only be accepted if it is under 10 % and 2 ha. All errors of less than 2 % will be ignored. The same errors will be accepted for the quality control. Beyond this threshold the report may be rejected. If the errors originate from the applications and are not due to the contractor, or if the state of technology does not permit a correct interpretation, this dossier will not be taken into account when calculating the above penalties.

The same criteria shall be applied to the sites controlled by aerial photographs. If some aerial photographs were not acquired or the rapid field visits have not been carried out, the contractor must demonstrate to the satisfaction of the Administration that every effort was made to fulfil the requirements of the contract.

7.10.2 Lateness

Unless agreed beforehand by the parties involved, there may be a penalty of 0.2 % of the contract value for each working day of delay relative to the date agreed for the delivery, either of the control documents mentioned in § 7.5.1, or the reports mentioned in § 7.8. The delivery dates will be fixed referring to the reception date of the dossiers to process or of the last image used. These penalties are all cumulative. The late delivery of only a part of the work will be penalised *pro rata*. If the delays are not due to the contractor the corresponding dates will be postponed. However, sub-contractors failings may not be invoked.

8. General recommendations

8.1 Groups of contractors are allowed to submit a tender or to negotiate without having to assume a particular legal form. In this case the persons responsible for the main phases of the work should be mentioned, and their qualifications indicated. Any company awards or certificates obtained (e.g. ISO 9000 series) should be mentioned.

8.2 The tenderer is committed by all terms of his tender: price, methodology, personnel, sub-contractors, working places, software, etc. He may not change it substantially after having lodged the tender or during the contract life, except if the procedures applicable to the public contracts are respected and the Administration agrees.

8.3 The successful tenderers will be invited to sign a contract with the Administration concerned, referring to these Technical Specifications. The tenderer will ask for information from the Administration, on the particular conditions applicable to the public works contracts of the type referred to by the present call for tender. The principal contractor shall furnish the Administration with a copy of the agreements with their partners (and/or sub-contractors).

8.4 Due to the sensitive nature of the work and the access to confidential documents, close collaboration between the contractor and the Administration services is absolutely necessary. The contractor must therefore propose staff who speak the national language(s), and are based in the Member State concerned in each offer. The tenderer must keep these authorities up to date on the progress of work, and on the basic techniques being used so that those authorities can, in return, provide the information that the contractor needs and understand why it is needed. In particular it is in the contractor's interest to warn

the authorities of any difficulties that arise, to propose appropriate solutions, and to settle any differences of interpretation as soon as possible.

8.5 The administration of the contract will be coordinated jointly by the Administration and the JRC. More precisely, the main responsibilities will be divided as follows:

- the Administration will sign the contract and receive all results, approve all reports received from the contractor and manage the financial aspects of the contract;
- the contractor will be responsible, to the Administration, for all obligations ensuing from the present Technical Specifications and the resulting contract;
- the JRC will provide the satellite images, participate in the technical evaluation of the work and, as far as necessary and possible, provide a technical support to the Administration and the contractor.

8.6 The Administration and the Commission will each be, insofar they are concerned, the owners of all the results of the work. Any use or publication of the results will be subject to their prior agreement.

8.7 A **compulsory addendum**, containing special requirements or additional national provisions, should be requested from the awarding Administration in each Member State of interest for the tenderer. Furthermore, the information given in Annex 1 may have changed since the publication of the call for tender. Before submitting the tender, the tenderer is invited to verify with the Administration concerned, that his assumptions in terms of alternatives, number of sites and dossiers, historical checks, etc. correspond well with the position of the Administration.

9. Technical offer

9.1 Presentation rules

9.1.1 Various **alternatives** have been suggested (for example §§ 3.3.4, 4.3.2, 5.2.1, 6.1.2, 7.5.1 etc.), for which the tenderer will have to make a choice, in line with the details given in the National Addendum. Additional **options** that are not mentioned in these specifications can also be proposed. In such cases, a comparison with a standard method will always be made. Only options that are directly operational and productive, without risk of compromising parts of the checks and with costs competitive to previously tested solutions, will be considered.

9.1.2 The availability of adapted and powerful software in order to carry out the work is a vital pre-condition for success. As a consequence, this aspect will be one of the essential selection criteria. The proposal shall provide full details on the software used and for what part of the work it is intended, by whom it has been developed, whether it has already been used for similar work and for how long, what is the tenderer's experience, whether previous versions will be adapted, if options are available, etc.

9.1.3 All proposals prepared in reply to this call for tender will be submitted using the standard format given below, in order to ensure easy comprehension and objective comparability. The tenderer is invited to discuss in detail all the elements which will enable him to automate the control process, and which will affect the categorisation quality and unit cost of the dossiers to check.

9.1.4 If the tenderer already has collaborated with the Administration concerned in the framework of the control or has already submitted tenders in previous years, he is advised to facilitate the reading of the tender by highlighting what is new in the proposal for 2003.

9.2 Contents

9.2.1 General information:

- name of the tenderer(s). Contact address and person responsible;
- summary of the tender;
- compliance matrix and indication of where to find the answers to the various prescriptions of the Technical Specifications;
- general analysis of work, demonstrating a knowledge of the European and National regulations, local conditions, national application system under the IACS, contents of the applications which will be checked, and experience of working with the Administration responsible for the IACS.

9.2.2 Detailed description of the methodology:

- discussion and justification of the basic choice: satellite and/or aerial photographs;

- if relevant, complete technical appraisal of the aerial photography;
- analysis of the geometric and radiometric corrections and proposal;
- references and discussion of the use of radar data;
- evaluation of the cadastral topographical maps available (or digital data) and proposed digitisation method (if relevant);
- proposed technique to digitise the parcel limits (if relevant) and to create links between the declared data and the parcels;
- analysis of the working timetable and "bottlenecks";
- means of accelerating the first stages of the work (§ 4.5.2);
- ground data collection;
- validation of the parcel limits and area calculation;
- detailed study of automatic classification and photo-interpretation; description of training (software and personnel), photo-interpretation keys and examples of the proposed method;
- possibly, organisation of the rapid field visits (§ 5.3.2);
- discussion of the summer crops (§ 5.5), i.e. two-phase controls;
- methodology for the reference years checks;
- proposal for documents to be delivered to the Administration (for accepted and rejected dossiers).

9.2.3 Personnel and materials available

- if relevant, precise distribution of work between partners or subcontractors and justification of sub-contracting, share of the work planned for each partner (in per cent of the total price); written agreement between all the partners for the tasks allotted;
- personnel, precise tasks and qualifications;
- number of teams, number of persons per team, number of shifts planned for the various phases of the project. Estimate of the total number of dossiers processed each day/shift with the full team: (1) digitisation of the parcels; (2) photo-interpretation and (3) field document production;
- location(s) where the various phases of work will be carried out. If this will be carried out in several sites simultaneously, means provided to guarantee the homogeneity of the results;
- processing facilities available, specifying: (1) hardware and software proposed for the main tasks; (2) capacity installed; (3) whether it is already available, or to be acquired or developed; (4) level of experience already acquired; (5) precise location (town, country, if several workplaces);
- summary of materials already available: images, aerial photographs, maps, etc.

9.2.4 Project management:

- general organisation, production chain, co-ordination, internal meetings;
- management and training of permanent and temporary staff;
- relations with the Administration.

9.2.5 Timetable (taking into account the fact that the precise location of the sites is not disclosed):

- dates ("acquisition windows") proposed for acquisition of satellite images or photographs;
- dates proposed for archive images (reference years control);
- detailed timetable for the various phases of the work;
- provisional timetable for delivery of the results.

9.2.6 Internal quality assurance:

Description of the internal quality assurance to be put in place at each stage of the work and for each sub-contractor (if relevant).

9.2.7 Confidentiality:

The confidential nature of this work is of paramount importance. Confidentiality must be guaranteed for the farmers' applications, the control sites, the image acquisition dates and the results of checks. A detailed explanation of the tenderers data protection measures must feature in the proposal.

9.2.8 Possible options:

If the tenderer wishes to present additional options, he will:

- describe in detail and justify his proposition;
- analyse the effects as regards results, timetable, simplification of work and costs;
- compare it with a standard method of the specifications.

9.2.9 Agreements

- the tenderer's agreement to carry out the work, duration of validity of the offer;
- accept the possible external quality control and the consequences that may ensue therefrom;
- agree to the confidentiality and measures provided to ensure this;
- status of the person authorised to sign the tender, date and signature of tender.

9.2.10 Companies and personnel:

- description of all the participating companies, references since 1997 relevant to the work;
- number of permanent personnel members at the date of the tender, by principal category, and if relevant, by partner;
- if applicable, ISO certifications or others and date of obtaining;
- curricula vitae of the participants, with the description of their responsibilities.

9.2.11 Summary tables

These tables may be used to evaluate the tenders. The tenderer should check carefully that he has completed the tables, that all figures match and that all information provided in the tables is consistent with that of the full proposal. There are two sets of tables to complete:

- a technical summary of the proposal (see Annex 2);
- a financial summary of the tender. (see Annex 3).

10. Price proposal

10.1 A summary of the tender will be supplied as set out in Annex 2 (technical part) and Annex 3 (financial part).

10.2 Unless otherwise specified by the participating Member States, the "lots" described in Annex 1 cannot be divided by the tenderer. On the contrary, the Administration may divide the work between several contractors according to criteria to its judgement: e.g. balance of volume of work, different techniques, vertical division of the tasks, regional distribution, etc.

10.3 Tenders may be made for several lots, so long as the pricing of each is distinct. The equipment and methodology may differ from one lot to another, but must remain homogenous within a lot. However:

- the proposed satellite or aerial data may differ from one control site to another, but the resulting price difference should clearly be shown;
- where the Member State imposes different techniques according to the sites, each group of sites using the same technique will constitute a separated lot.

10.4 If the tenderer already possesses materials or earlier work and can use them free of charge, this should be mentioned in the tender so as to avoid misinterpretation of the costs put forward. In all cases, the offers will exclude the cost of standard level satellite imagery, which are bought directly by the Commission but will include in detail the cost of processing the images following the different options to be chosen. Conversely, the price of aerial photography and processing will always be included in the proposed price, except if they are free.

10.5 Each stage of the work shall be identified and priced separately. Furthermore, the offer will distinguish between fixed and variable costs with the principal items detailed for both of these groups.

Fixed costs are those that do not vary directly with the control of individual applications. They in turn can be divided into base project costs (management, meetings, equipment, training, salaries, etc.), and fixed costs per site (image processing, ground data collection, etc.). The price of topographic maps will be considered as fixed if their use is general, and variable if they are used for individual dossiers. The tenderer will list what he considers as fixed and variable cost in his tender, respectively.

10.6 The variable prices will be calculated with a series of parameters, either imposed in the National Addendum, or to be proposed in the tender. In both cases, they must be presented in Annex 3. These parameters are explained below.

10.6.1 The control "*method*" to be used in the various sites will be codified in the following way:

M1	control site with satellite images only
M2	site with satellite images and 2003 aerial photographs
M3	site with satellite images and archive aerial photographs
M4	site with aerial photographs only and rapid field visits
M5	site with satellite images and rapid field visits
Mx	site with other method, to be defined

10.6.2 *Historical controls* of the reference periods (if relevant):

H1	control of the 1986-1991 reference period

10.6.3 The following parameters will be defined in the National Addendum or appear in the Annex of this document:

NSM1, NSM2, .., NSMx	number of sites with methods respectively M1, M2, ..., Mx
NSH1	number of sites with controls H1
NDM1, NDM2, .., NDMx	number of dossiers respectively in sites with methods M1, M2, ..., Mx
NDH1	number of dossiers with controls H1
NDD	number of dossiers to be input (if relevant)

All these parameters will be adjusted if necessary at the completion of the contract, in order to obtain the final price.

10.6.4 The following parameters in principle depend upon the lack of optical images:

NSR	number of sites where radar images will be used
NDR	number of dossiers with radar controls

10.7 The tender shall also include the following unit prices, these may not be changed after the tender submission:

FP	**base** fixed costs for the project
FR	**additional** fixed costs for the use of radar images (if relevant)
CSM1, CSM2, ..., CSMx	fixed costs **per site** with methods respectively M1, M2, ..., Mx
CSR	additional fixed costs **per site** where radar images will be used
CSH1	additional fixed costs **per site** with H1 controls
CDM1, CDM2, ..., CDMx	variable costs **per dossier** in sites respectively M1, M2, ..., Mx
CDR	additional variable costs **per dossier** in sites with radar images
CDH1	additional variable costs **per dossier** with controls H1
CDD	additional variable costs **per dossier** to be input

10.7.1 Unless otherwise specified in the National Addendum, the applications can be listed in three categories (or "dossier types"): arable, forage only, or "other" (other subsidy schemes, see § 5.3.5). If necessary, the latter category may be subdivided. Separate unit prices, one for each type, may be proposed. In that event, a weighted average price ("CD") shall be calculated. This is not necessary if a single lump sum is proposed for all types. The assumed distribution between the different types will take into account all available information, notably the possible absence of certain types in the Member State considered.

10.7.2 If the prices per dossier type are differentiated, a rule for adjusting "CD" may be provided for if the final type weight differs with more than 5% from that anticipated. If sensible differences are envisaged between sites in respect of the type weight and if different methods are used, the weighting per site ("CDMx") shall be adapted, taking into account the various methods and dossiers types. In that event, the calculation formulas used shall be provided.

10.7.3 Some of the prices defined above may be zero, if the corresponding task is not performed or is not charged. All non-relevant parameters and prices will be set to zero.

10.8 The contract **base price** will be calculated with the following formula. After the completion of the work, it will possibly be adjusted if some adaptable parameters have been modified.

Base price = FP
+ CSM1*NSM1 + CSM2*NSM2 +... + CSMx*NSMx
+ CDM1*NDM1 + CDM2*NDM2 + ... + CDMx*NDMx
+ price of the aerial photography, if applicable.

10.9 The possible **supplements** will be calculated in the following way:

Supplements = FR
+ CSR*NSR + CDR*NDR
+ CSH1*NSH1 + CDH1*NDH1
+ CDD*NDD + options + alternatives.

10.10 Each price proposal (see annex 3, G.3), will mention at least the *average unit* price for:
- input one dossier (see § 3.3.4);
- digitise field limits for one application (see § 4.5.1);
- one field document to be handed over to the inspector;
- one "rapid field visit" for an individual dossier (if relevant).

10.11 If necessary, the number of dossiers to be processed ("ND") will be modified by the Administration before the signature of the contract. This number however will never be less than 0.50 "ND" or more than 1.50 "ND", unless otherwise specified in the National Addendum. Also the contract may specify that, if the Administration is obliged to alter, or the contractor is unable to process, the expected number of dossiers, a price adjustment will be made based on the actual number processed.

10.12 The Administration may also require in the National Addendum several proposals following various hypotheses: different number of sites or dossiers, alternative techniques, etc. In that event, several columns with different prices should be given in Annex 3 F.

10.13 If options are proposed, the cost of each must be indicated with precision. Especially, if the tenderer wants to submit two offers, using satellite or aerial photography respectively, he will then propose separate prices, i.e. several Annexes 3.

10.14 Independently from the principal one-year tender, the tenderer shall also propose a price for the following two years, thus allowing the Administration to choose between one-year and multi-year contracts.
- These multi-year prices will use a current price indicator (salaries, currencies, inflation, etc.), also giving, where appropriate, a correction factor for the anticipated changes in this indicator;
- the prices will be divided between fixed and variable costs;
- the rate and period of paying-off will be clearly identified.

10.15 The tenderer is expected to have sufficient knowledge of the country for which he presents an offer: structure of control services, availability of topographic or cadastral documents, regionalisation plans adopted, average size of the farms etc. If price reservations are made (e.g. on the number of fields or cadastral maps needed to cover a farm, the complexity of the declaration or the regionalisation plans, etc.), the necessary parameters should be attached, in order to allow the Administration to recalculate the tender price corresponding to the final figures. However, a price in standard conditions must always be given in Annex 3.

10.16 If any part of the offer implies the payment of Value Added Tax (VAT) or other taxes, this shall be specified separately, so that if necessary it can be reimbursed.

10.17 Depending on the National rules, payment shall be made, for example in four instalments, corresponding to the contract signature, on approval of each of the two reports referred to in § 7.8, and after delivery of the documents described under § 7.5.2. The first payment may be subject to a performance guarantee issued by a bank or official institution for the benefit of the Administration. This guarantee will cover the advance payment and should be valid until 31.12.2003. If no interim report is delivered, another milestone may be agreed.

ANNEX 1. Volume of Work and Requirements specific to each Member State

1. **Approximate number of dossiers and sites, with or without reference period control**. Further information will be provided within the "National Addendum".

	Number of year 2003 sites			Number of year 2003 dossiers		
	Reference period			Reference period		
Member State	**with**	**Without**	**TOTAL**	**with**	**without**	**TOTAL**
Finland	**6**	**-**	**6**	**2200**	**-**	**2200**
France		**36**	**36**			
Germany	**-**	**7**	**7**	**-**	**3500**	**3500**
Greece		**4**	**4**			
Portugal *(satellite images)*	**2**	**10**	**12**	**1000**	**7000**	**8000**
Portugal *(aerial photos)*	**-**	**4**	**4**	**-**	**7000**	**7000**

2. **Complementary Information**

Finland
- The Finnish administration may decide to use 2003 aerial ortho-imagery only in 1 or 2 sites, and a combination of archive aerial ortho-imagery and satellite data in 1 or 2 sites. All other sites will use a combination of 2003 aerial ortho-imagery and satellite imagery.

France
- The indicative number of dossiers will be defined in the "National Addendum"

Germany
- The three Länder BADEN-WÜRTTEMBERG, HESSEN and SACHSEN-ANHALT participate in the present ITT and will constitute independent lots.
- The controls will use a methodology combining aerial photography and satellite images.
- Further specifications will be described by the BMVEL in a "National Addendum" ("Nationaler Zusatz").

Greece
- The indicative number of dossiers will be defined in the "National Addendum"

Portugal
- The number of dossiers and site indicated may be re-adjusted depending on the implementation of agri-environmental measures as part of the remote sensing controls. The Portuguese administration reserves the right to modify the work partitioning between remote sensing controls and traditional field controls.
- A "National Addendum" ("Adenda Obrigatória") is available (from INGA) and will stipulate the exact date and place of delivery of the tender proposals.

ANNEX 2: TECHNICAL RÉSUMÉ OF THE PROPOSAL

Member State	
Name of principal tenderer:	Name and function of the person responsible:

Contact Address Phone: Fax: E-mail

Associated Companies	Project Responsibilities	% of price	Person principally responsible

Location of the principal tasks (give details for each partner or sub-contractor)		
Tasks	Location of performance (city, country)	Person principally responsible

A. TECHNICAL PERSONNEL

	Name	Qualifications
Project Manager		
Technical Manager		
Persons responsible from sub-contractors or partners		

N° of employees	Management	Computer	Field Work	Digitisation	Photo-interp	Other
permanent: actual						
to be recruited						
temporary: actual						
to be recruited						

B. METHODOLOGY

Dossiers Analysis	
Basic choice: satellite and/or aerial photos. In the latter case, please give details:	
Documents for parcel boundary location (type, scale):	
Level of pre-processing and geometric correction for satellite images and aerial photographs:	
Maps and DTMs for geometric correction (type/scale, average date):	
Expected precision for geometric corrections (metre):	absolute relative
Methods to accelerate the preparatory work (see § 4.5.2):	
Ground Data Collection Method (§ 4.6.2):	
Proposed method for digitising field limits:	Place (city, country) where the digitisation will be carried out:
Processing (CAPI and/or classification, see § 5.3):	
Description of the rapid field visits, if relevant:	

C. COMPUTER EQUIPMENT

SOFTWARE for the project	Installation place (city, country)	Installed (name & version number)	Years of experience	Proposed (if different)
Operating System(s):				
Database:				
Image Processing:				

Software (contd.)	Installation place	Already installed	Years of experience	Proposed
GIS:				
Management/ Diagnosis:				

				number	
HARDWARE	Type	% for the project	location (city, country)	already installed	to be bought/ leased
Main/Mini Frame:					
Work Stations:					
PCs:					
Tape/ CD-ROM Drives:					
Printers:					

Network details:	

Number of dossiers processed per normal work day (1 shift) and for all the team available			
Dossiers digitised per day:	Dossiers photo-interpreted per day	dossiers per photo-interpreter/hour:	number of shifts per day:

D. MISCELLANEOUS

Summary of possible options and variations with reference to § 10.4:
Other relevant points:

ANNEX 3: FINANCIAL RESUME OF THE PROPOSAL

(A) Currency:	(B) VAT Percentage if applicable: %

(C) Definition of some elements used in the formulas below	
(C.1) Dossiers types	
(C.2) Sites/Methods	
(C.3) Other costs included in the **base** proposal (see E.4 below)	

(D) **Assumptions as per § 10.7.1, and the associated number of dossiers**

	General	Simplified	Forage	Others	...	Total
Number of dossiers of different types						
Unit variable cost per dossier						
Total cost for all dossiers						
Average cost per dossier (=CD)						

(E) **Calculation of base proposal price**

(E.1) Fixed costs for the project, VAT not included (= FP)	

(E.2) Fixed costs per site (base proposal, VAT not included)

Method	M1	M2	M3	M4	M5	...	TOTAL
Fixed costs per site (= CSMx)							
Number of sites (= NSMx)							
Total cost (= CSMx*NSMx)							

(E.3) Variable costs per dossier (base proposal, VAT not included)

Code for the different sites	M1	M2	M3	M4	M5	...	TOTAL
Cost per dossier (CDMx)							
Number of dossiers (NDMx)							
Total cost (= CDMx*NDMx)							

(E.4) Other costs to include in the **base** proposal price (following C.3 above)	

(E.5) **Total cost of base proposal** (= E.1 + E.2 + E.3 + E.4)

	VAT not included	VAT	VAT included
Total price for base proposal			

(F) **Details of base proposal price** excluding VAT

(if necessary for different hypotheses, see §10.12)

	Cost of the hypotheses applicable		
(F.1) **FIXED COSTS** (overall and per site)	hypothesis 1	hypothesis ...	hypothesis ...
Set-up of the project and general management:			
Computer (1) hardware: (2) software (bought or developed):			
Maps and DTM bought:			
Aerial Photographs (if applicable) (1) flight: (2) processing and scanning:			
Geometric and radiometric corrections (1) satellite images: (2) Aerial photography (if applicable):			
Automatic classification:			
Ground Survey:			
Average fixed personnel costs:			
Meetings			
Interim report			
Final report			
Other fixed costs:			
TOTAL FIXED COSTS:			
(F.2) **VARIABLE** COSTS (per dossier)			
Preliminary checks of dossiers on arrival			
Digitisation of parcels or purchase of the vectors:			
Maps bought for the dossiers (field location):			
Boundary validation and Photo-interpret. (CAPI) :			
Production of on-the-spot control documents:			
Rapid field visits (if relevant):			
Categorisation and preparation of results:			
Variable costs for personnel (not included above):			
Other variable costs:			
TOTAL VARIABLE COSTS:			
(F.3) **TOTAL COSTS OF BASE PROPOSAL, excluding VAT**:			
VAT			
(F.3) **TOTAL COSTS OF BASE PROPOSAL, including VAT**:			

(G) **Price proposal for possible supplements**, excluding VAT

(G.1) Radar images	FR	CSR	CDR
Costs excluding VAT			

(G.2) References	CSH1	CDH1
Costs excluding VAT		

(G.3) Costs excluding VAT, **per dossier** (see § 10.10)			
Input of 1 dossier (CDD)	digitisation of the limits of 1 dossier	1 field control document	rapid field visit for 1 dossier

(G.4) Other additional costs	Unit price
to keep the archive beyond 31.12.2003:	
to print **one** complete colour dossier:	

(G.5) Other possible options or alternatives	Unit or total price (specify)

(H) **Multi-year base proposal**, excluding VAT (see § 10.14)

	year 1	year 2	year 3
Base fixed costs			
Fixed costs per site			
Variable costs			
Total without options, constant 2003 prices:			
assumption of annual price change retained (inflation, salaries, etc.), in per cent:		%	%
Total without options, variable prices:			

Date:	
Name and Signature:	

(End of document).