The meeting of the Ad hoc Group of the Office International des Epizooties (OIE) on Non-Tsetse Transmitted Animal Trypanosomoses (NTTAT) was held at the OIE headquarters on 19 May 1999. The Agenda and List of Participants are given in Appendix I and Appendix II, respectively.

The meeting was chaired by Dr W.N. Masiga, Director of OAU/IBAR. The Secretary General of the Group, Dr L. Touratier, was appointed rapporteur. Twenty-seven participants from eleven countries and four intergovernmental organisations were present.

After the Secretary General of the Group had presented the interim report, several presentations were made concerning the various items on the agenda.

1. Interim report of the Secretary General

1.1. Scientific meetings on trypanosomoses

Four scientific meetings concerning trypanosomoses were held in 1998-1999:

- RCPMI/OIE International Symposium on Research and Control of Surra (Trypanosoma evansi) infections

This symposium, jointly organised in Obihiro, Hokkaido, Japan, from 19 to 22 August 1998, by the RCPMI and the OIE, was also sponsored by the Ministry of Education, Science, Sports and Culture of Japan, by the city of Obihiro, by the JICA, and by the following organisations and institutions: CTVM, Edinburgh, Scotland and the British Council, United Kingdom; ILRI, Nairobi, Kenya; IFS, Stockholm, Sweden; and the Ministry of Foreign Affairs, Paris, France.

In addition to the general introductory remarks, the agenda included the following points: epidemiology, diagnosis, molecular biology, culture of trypanosomes, chemotherapy and international collaboration.

Fifty reports and papers were presented on these various points.
Twenty-eight countries were represented by 75 participants and/or rapporteurs: twelve countries from Asia and Oceania (Australia, Bangladesh, Cambodia, the People's Republic of China, Korea, United Arab Emirates, India, Japan, Mongolia, the Philippines, Thailand, Vietnam); nine African countries (Egypt, Kenya, Mali, Mauritania, Senegal, South Africa, Sudan, Swaziland, Uganda); five European countries (Belgium, France, Germany, Sweden, United Kingdom); and two American countries (Canada, United States of America).

Thanks to the generosity of the RCPMI, all of the proceedings of the symposium were published in: *The Japan Journal of Protozoology Research*, 1998, 8 (3 and 4), 88-203 and 204-288, collating the full texts of twenty-nine reports and fifty summaries, together with the recommendations.

These recommendations were to:

- refer to work already carried out by the OIE on this subject in Asia (23rd General Session of the OIE, May 1955), and by the OIE Ad hoc group on NTTAT (Resolutions of the symposium held in Annecy, October 1992), as well as the documents presented and discussed during the symposium;
- emphasise that *T. evansi* infections have a major economic impact in certain Asian, African and American countries, where they affect rice paddy buffaloes, cattle, camels and horses;
- suggesting therefore that:
  - simple diagnostic tests easily carried out in the field (‘penside tests’) such as the CATT7/*T. evansi* for the detection of antibodies and the LAT8 (‘Suratex’) for the detection of antigens, already widely used experimentally by various researchers in Africa and Asia on camels and buffaloes, should be validated on the basis of the principles laid down in chapter I.3. of the OIE *Manual of Standards for Diagnostic Tests and Vaccines*;
  - CTVM, ILRI and CIRDES9 should coordinate their efforts concerning the validation of the above-mentioned tests in specialised laboratories in Asia;
  - the other tests (PCR10, ELISA11) should continue to be studied with a view to adapting them to the same conditions of use in the field;
  - the laboratories in infected countries should be recognised and even designated for validly conducting diagnostic tests for surra;
  - the characteristics of the different strains or isolates of *T. evansi* should be established from the point of view of their pathogenicity and their potential resistance to chemicals;
  - the study of the role of wild animals should continue;
  - the problem of vectors, economic impact and international collaboration should be considered to form an integral part of programmes to combat surra.

9th International Congress on Parasitology (ICOPA IX)

Inaugurated by their Imperial Majesties, this congress brought together around 1,500 participants from 57 countries in Chiba, Tokyo, Japan, from 24 to 28 August 1998. Presentations on trypanosomoses at ICOPA IX were devoted to fundamental research: the study of certain characteristics common to all trypanosomes (analysis of isogenic clones responding to the action of trypanocides, multiple mechanisms for evading immunity, the pathology of African trypanosomes, study of transfection in *T. brucei*); applications of molecular biology and biochemistry (incorporation of fatty acids in *T. brucei*, monitoring the proliferation and differentiation of blood forms of *T. brucei*); immunological aspects (positive role of interleukin 4 [IT4] in parasitaemia in mice infected with *T. brucei gambiense*, the role of T cells in the protection of field mice against trypanosomoses, the use of tubulin for immunisation against trypanosomoses, a retrospective study of the production of nitric oxide during infection with *T. b. rhodesiense* in green monkeys); experimental therapeutic trials on trypanosomosis in mice (*T. brucei*) using verapamil (less favourable effect than diminazene di-aceturate).

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7 Card agglutination trypanosome test  
8 Latex antigen test  
9 International Research Centre for the Development of Animal Husbandry in Humid and Sub-Humid Regions  
10 Polymerase chain reaction  
11 Enzyme-linked immunosorbent assay
Sleeping sickness rediscovered International Symposium

Devoted mainly to sleeping sickness, this symposium, held at the Institute of Tropical Medicine in Antwerp, Belgium, from 14 to 18 December 1998, and attended by more than 180 participants from various tropical countries and countries with tropical disease research facilities, provided a forum for the presentation of many addresses on common aspects of various trypanosomoses. The subjects discussed included:

- promising trypanocides trials (topical application of melarsopol alone or in combination with nifurtimox, nitrofurazone, fexinidazol or megazole; screening new molecules with a trypanocide effect; new diamidine inhibitor of S-adenosylmethionin decarboxylase; combination of diminazene di-aceturate, antipyrine and procaine for the treatment of trypanosomoses and hemoparasitoses; the use of PCR and a DNA probe to verify the effectiveness of a trypanocide treatment in bovines; N-ribohydrolase of T. vivax as a potential target of trypanocides; cloning of a coelomic liquid invertebrate protein toxic for African trypanosomoses);

- a study of immunosuppression caused by trypanosomoses (evaluation of the TSIF; underlying mechanisms of immunosuppression in trypanosomoses);

- the prospect of immunoprophylaxis (immunisation of bovines against cysteines-proteases of T. congolense and T. vivax; ‘candidate vaccine’ against African and American trypanosomoses).

Therapeutic and vaccination targets of parasitology: malaria, leishmaniosis, trypanosomoses, schistosomoses

With 157 participants presenting 38 addresses and 43 posters, this 2nd biannual parasitology meeting, CNRS/DGA/DCSSA/MENESR, held in Montpellier, France, from 9 to 10 February 1999, was largely devoted to fundamental research. On the subject of trypanosomoses, several presentations merit attention: overturning our notions of the evolution of parasitic protozoans; characterisation of specific T. brucei proteins; inhibitors of the enzymes for the metabolism of glucose and oxygen in trypanosomes; transporters of hexose in kinetoplasts; combinatory synthesis and high-speed screening of potential inhibitors of the enzymes of trypanosomes; characterisation of isolates of trypanosomes using polymorphism markers; the use of protozoan parasite proteases as targets for new antiparasitic medicinal products.

1.2. Preparation of an international workshop on T. equiperdum and T. evansi

During the previous meeting of the Ad hoc Group (27 May 1998), a recommendation was made to organise an international workshop to propose a reliable diagnostic method for dourine, given that the results were sometimes inconsistent using the complement fixation test (CF test), and to establish a method for differentiation of the two types: T. equiperdum and T. evansi. Prof. V.T. Zablotskij, an OIE Reference Expert for dourine at the Reference Laboratory in Moscow, Russia, contacted Dr A. Sansyzbaiev, Director General of the Veterinary Research Institute of Kazakhstan in Almaty for this purpose.

This Institute had offered to obtain a sample of a strain of T. evansi isolated in camels (Camelus bactrianus) and a sample of T. equiperdum also isolated in 1995, both strains having been conserved by passages in laboratory animals. Unfortunately, the installations at the Almaty Institute did not allow this limited meeting to take place and it was necessary to seek samples of strains of T. equiperdum recently isolated by certain laboratories with a world-wide reputation for their knowledge of dourine: Berlin (Germany), Onderstepoort (South Africa), Alfort and Bordeaux (France), Antwerp (Belgium), Teramo (Italy), Shanghai (People's Republic of China), Ames (United States of America).

The results of the survey were often disappointing because it was not possible, outside of Kazakhstan, to isolate a strain of T. equiperdum other than the one existing since 1979 in Shanghai (Institute of Veterinary Parasitology). However, the validation of a new diagnostic test for dourine requires an antigen prepared from
a freshly isolated strain in order to avoid any dispute and to make comparisons with the antigen currently used in most countries.

1.3. Possibility of obtaining study grants

Study grants can be allocated for a fairly short time (one to three months) to researchers in developing countries wishing to study in a foreign laboratory. Requests should be sent to the Council for Biotechnology, Fundamental Sciences Division of UNESCO\(^\text{15}\). Paris, France. A Member of the Group had succeeded in joining a molecular biology laboratory in France to study PCR techniques.

1.4. Growing interest in the study of Non-Tsetse Transmitted Animal Trypanosomoses

Three items merit a mention:

− The inclusion of NTTATs on the syllabus at the Pasteur Institute in Paris ‘Ecology of parasitic systems’. Two conferences took place in March 1999, one of them by J. Itard on vectors of NTTATs, and the other by L. Touratier on the epidemiology of NTTATs.

− Creation and development of a network for NTTAT and other haemoparasites in South America. Given the clear interest since the beginning of the decade in South America in such diseases at various meetings and events (Annecy seminar; creation of ‘Trypnews’, a quarterly information bulletin from the IICA\(^\text{16}\)/CIRAD-EMVT\(^\text{17}\); Brazilian studies on \(T. evansi\) and \(T. vivax\); 1st symposium on trypanosomoses and other haemoparasites in the New World in Georgetown, Guyana, November 1996; virtual conferences via the Internet on salivary trypanosomes in December 1996 and in March 1998); it was decided to create a Tryplink-L network on the Internet through collaboration between the Instituto Oswaldo Cruz in Rio de Janeiro (Fio Cruz, Dr A. Davila) and the Romulo Gallegos University of San Juan de los Marros, Venezuela (Labipresan: Dr R. Tamasaukas).

− Creation of a network on mechanically transmitted African trypanosomoses. This network is under development at CIRDES, Bobo Dioulasso, Burkina Faso in liaison with the PAAT\(^\text{18}\) network of the FAO\(^\text{19}\) and the Tryplink-L network.

2. Information supplied to the Office International des Epizooties by Member Countries

Of the documents supplied by Member Countries on their animal health status to the 67th General Session, those from twelve countries provided information concerning dourine and infections of \(T. evansi\).

\textit{Botswana}: dourine (22 cases) in horses and donkeys.
\textit{Brazil} : surra (3 outbreaks, 3 cases, 1 death) in horses.
\textit{Chad} : surra (391 cases) in dromedaries.
\textit{Egypt} : surra (2,701 cases: 55 in bovines, 29 in buffaloes, 2,613 in dromedaries, 4 in horses).
\textit{Namibia} : dourine (11 outbreaks, 33 cases).
\textit{Pakistan} : dourine and surra reported.

\(^{15}\) United Nations Educational, Scientific and Cultural Organization
\(^{16}\) Inter-American Institute for Coopération on Agriculture
\(^{17}\) Centre de Coopération Internationale en Recherche Agronomique pour le Développement, Department of Animal Husbandry and Veterinary Medicine
\(^{18}\) Programme Against African Trypanosomosis
\(^{19}\) Food and Agriculture Organization of the United Nations
Peru: presence of dourine suspected.

Philippines: surra (249 cases, 12 deaths) in horses.

Russia: dourine (106 outbreaks, 2,507 cases, 6 death) in horses.

South Africa: dourine (11 outbreaks, 92 cases).

Tunisia: surra (4 outbreaks, 67 cases) in dromedaries.

Vietnam: surra (presence in bovines and horses).

According to these data for the period under consideration, four countries officially declared cases of dourine, another country suspected cases and one declared cases of both dourine and surra in horses. In addition, infection by *T. evansi* was declared: in three countries (associated with infection of bovines, horses and buffaloes in one country); in horses in only two countries and associated with the infection of bovines in one country.

If these data are compared with the information provided in the reports and papers presented at the RCPMI/OIE symposium in Obihiro in August 1998, it would appear that surra exists in other Asian and African countries such as the United Arab Emirates, Kenya, India, Indonesia, Sudan, Mauritania, Uganda and Thailand, where it has a very significant economic impact. The attention of the Veterinary Services therefore ought to be drawn to this particular point, to confirm the above information and to take the necessary surveillance and control measures.

3. **Diagnosis of dourine and differentiation between *T. equiperdum* and *T. evansi***

**Current diagnostic methods**

Dr J.E. Pearson recalled that the main diagnostic methods that could be used were the complement fixation test (CF test), or (if the suspected sera had anticomplementary effects) the indirect fluorescent antibody test (IFA). Moreover, Prof. C. Staak, Germany, and Dr J. Katz, National Veterinary Services Laboratory, Ames, United States of America, had proposed immuno-enzymatic methods (ELISA) that were sufficiently sensitive and specific.

Dr P. Gadot described the recent situation where analysis of sera from imported racehorses had given reversible results during the complement fixation test, whereby initial analysis resulted in a strong suspicion of infection, followed by a refusal of authorisation to stay despite the return to negative CFT results. Dr S. Zientara confirmed this remark and thought that the IFA would be more reliable for international certification of dourine. A discussion followed involving Prof. R. Hamers, Drs G. Savini, Pearson, Ph. Büscher, Gadot and A. Turnbull, the latter requesting a diagnostic method of choice on behalf of the United Arab Emirates.

**The need for reliable diagnosis of infection by *T. equiperdum***

The Secretary General read out the letter from Prof. Zablotsky to Dr Blancou, dated 11 May 1999 proposing to conduct comparative research between the various antigens of *T. equiperdum* used throughout the world for diagnosing dourine. This proposal was debated and Prof. Hamers, supported by Drs Pearson, D.K. Singh and Büscher, summarised the discussion as follows:

a) In the absence of infection, false-positive reactions can be caused by a cross reaction or by polyclonal activation of the lymphocytes by other infections.

b) The infection can determine a positive serological reaction without clinical signs and even animals considered resistant to infection by trypanosomes react.

The existence of a latent infection can result in the appearance of variable antigen-specific antibodies (VAT) over the course of time. This is a possible method for assessing whether animals are infected. To reproduce this specific case, it is necessary to make a collection of *T. equiperdum* strains and a range of precocious specific VATs. The major difficulty in diagnosing infection by *T. equiperdum* is the problem of a positive serological test not associated with clinical signs and the absence of detectable parasites. The second difficulty is the impossibility of obtaining recent isolates. The third difficulty is the confusion between *T. evansi* and *T. equiperdum* as at least one of the strains labelled *T. equiperdum* seems in reality to be *T. evansi*. 
c) With the necessary moderate investment, it is recommended to proceed in stages:

− to establish a list of existing strains of *T. equiperdum*;
− to establish lists of antibodies in horses giving a positive serological reaction to dourine using, if possible, non-*equiperdum* VATs;
− to isolate strains of recent *T. equiperdum* infections;
− to find establishments where research on horses can be carried out;
− to assess the existing tests for the diagnosis of infection by trypanosomes (CATT, Suratex, Ab and Ag ELISA) on horses clinically diagnosed with dourine and on those free from the disease.

These different stages could be carried out over two years. Once a sufficient number of isolates from horses with clinical signs of dourine had been obtained, a comparison would have to be made between groups of *T. equiperdum* and *T. evansi* at a fundamental level (molecular genetics). This approach is similar to the one normally employed for most bacterial strains, pathogenic or otherwise.

4. Epidemiological surveys on Non-Tsetse Transmitted Animal Trypanosomoses in various countries and Non-Tsetse Transmitted Animal Trypanosomoses in areas with a low population of or free from tsetse flies

Amongst the tools available to researchers, Dr Ph. Truc, whilst pointing out that the reference method still remains parasitological diagnosis, remarked that each serological diagnostic method needs to be validated using strains freshly isolated in the field. In addition to these requirements, it is possible to characterise isolates of *Trypanozoon* spp. using polymorphism markers.

Dr Truc presented the following work:

**BITEAU N., BRINGAUD F., GIBSON W., TRUC PH. & BALTZ T.** – *Characterisation of Trypanozoon isolates using genetic micro- and minisatellite markers.*

Polymorphism markers had been studied from 97 isolates belonging to five species in the group *brucei*: *T. evansi*, *T. equiperdum*, *T. b. brucei*, *T. b. gambiense* and *T. b. rhodesiense*. These markers could be used as a basis for creating a simple, reliable and specific diagnostic method. They could also provide a rapid means of distinguishing between a relapse and reinfection or mixed infections.

Dr L. Logan-Henfrey pointed out the possible spread of *T. vivax* to countries free from the disease as had occurred in the nineteenth century at the time of the contamination of South America from the African continent.

This concern was still valid for *T. evansi*, which had recently spread to Papua New Guinea, coming dangerously close to Australia. For this reason, the Australian quarantine service commissioned studies by the James Cook University, Townsville (Queensland) on the receptiveness of marsupial animals to surra. A report on the preliminary work on this subject had been sent by Dr S. Reid. The Secretary General read it:

**REID S.** – *Experimental infection of agile wallabies (Macropus agilis) and pademelon (Thylagalle stigmatica) with T. evansi.*

These two species of marsupial mammals, very well-known in Australia, were infected with *T. evansi* and they proved to be very susceptible to this trypanosome. Death followed after around 60 days. The consequences of the introduction of this parasite would therefore have a devastating effect on Australian fauna.

Dr Turnbull stated that the Australian quarantine authorities were working to prevent the introduction of *T. evansi* into the country, obliging racehorses from the United Arab Emirates to be accompanied by a certificate stating that they had not been in contact with racing dromedaries and had never stayed in stables occupied by this type of animal.
Dr W.N. Masiga asked Prof. A. Dakkak to present the following paper:

**DAKKAK A., ATARHOUCH T., RAMI M. & HAMERS R. – Trypanosoma strain characterisation in Morocco and assay to reduce prevalence of trypanosomosis.**

A serological survey covering 1,500 dromedaries in the areas surrounding Zagora and Merzouga took place from 1996 to 1998 using CATT and ELISA tests. An average infection rate of 40 to 45% was found. Treatment with ‘Cymelarsan’ brought infection rates down to 9 to 16%, depending on the serological tests employed.

Prof. Hamers believed that CATT/ *T. evansi* was currently the most valid test for diagnosis in the field and for conducting an epidemiological study on surra in camels. It had good specificity but its was less sensitive than the ELISA. It was however adequate for combating the disease in an enzootic zone. In any case, its sensitivity could be considerably increased by using an antibody-enhanced CATT. This variant would be suitable for use on camels. Dr Büscher shared this opinion and Dr E. Magnus would like to see a comparison of CATT and Suratex.

Dr O. Diall then presented his short paper.

**DIALL O. – Evaluation of ‘Suratex’ in the diagnosis of camel trypanosomosis.**

In a comparison of ‘Suratex’ and the CATT during a field trial covering respectively 233 and 64 dromedaries, the CATT appeared to be more sensitive and more specific than ‘Suratex’.

Dr Singh asked Dr Diall if he could provide him with known and analysed sera from animals infected with *T. evansi*. Dr Diall replied in the affirmative.

Dr W.N. Masiga asked Dr D. Cuisance to present the paper he had received on Chad:

**DELFOSSE A., THEBAUD E. & DOUTOUM A.A. – Epidémiologie descriptive de la trypanosomose bovine dans la région du lac Tchad. Présentation de l'étude et résultats préliminaires.**

The purpose of this vast survey involving thousands of bovines was to identify the presence of non-tsetse transmitted *T. vivax*, which confirmed the preliminary results on the north banks of Lake Chad where many herds of cattle live.

Dr Cuisance recalled a similar survey, conducted with D’Amico in 1993/94 in the Central African Republic when many stinging insects other than tsetse flies had been sent for assessment to the late Prof. Travassos Santos Dias at the Centro de Zoologia, Instituto de Investigacao Tropical, Lisbon (Portugal). Before his death, he had identified many species, including five new ones belonging to three genera of the sub-family of *Tabaninae* as mentioned in the recent publication in: Garcia de la Orta, *Ser. Zool. Lisboa*, 1999, 21(1), 67-80.

Dr Masiga handed over to Dr Büscher who presented the following paper:

**LUCKINS A.G., BÜSCHER P., VERLOO D., MAGNUS E., HUSEIN A. & SOLIHAT L. – Evaluation of serological tests for the detection of infection with *T. evansi* in buffalo.**

Two ELISAs and a latex agglutination test (LAT), prepared with variable surface glycoprotein soluble antigens (VSG), were used on sera from 222 Indonesian buffaloes infected with *T. evansi* and on 172 buffaloes free from the disease imported from Australia.

Under these conditions, the two ELISAs had a high level of specificity and sensitivity. The LAT had a higher specificity but lower sensitivity.

This was followed by presentations of three papers sent by Dr R. Tamasaukas, of the Romulo Gallegos University, San Juan de los Morros (Venezuela):

**TAMASAUKAS R., ROA N., RUIZ H., AGUIRRE A., SOLER L., ORDONEZ R., COBO M. & ASO P. – Parasitological analysis in bovine cattle in the eastern part of Guarico State, Venezuela.**
5. Research in progress for combating Non-Tsetse Transmitted Animal Trypanosomoses

At the request of Dr Masiga, the Secretary General briefly presented the following papers:

- **ZHOU JINLIN, SHEN JIE & ZHOU YONGZHI** – Studies on some biological characteristics of some different variable antigenic types (VAT) from a cloned *T. evansi*.

- **BAKALARA N., SANTARELLI X., DAVIS CH. & BALTZ T.** – Purification, cloning and characterisation of a developmentally regulated ectophosphatase from *T. brucei*.

- **PERIE J.** – Activities (in the search for active compounds on *T. brucei* and *T. cruzi*) of the Group ‘Chimie Organique Biologique’, Université Paul Sabatier, Toulouse.

- **DAVIoud-CHARVET E. & SERGHERAERT CH.** – Trypanothione reductase, thioredoxine reductase and glutathione reductase inhibitors as potential trypanocidal and antimalarial drugs.

Several comments were made on the content of these fundamental research efforts, notably by Dr Truc who referred back to the paper from Biteau and others on polymorphism markers. For his part, Dr E. Authie displayed interest in the papers submitted by Bakalara et al., as well those from Davioud-Charvet and his team.

Dr Touratier emphasised the hopes raised by the short paper from Prof. Périé stating that trials would be undertaken on bovines using megazole (imidazole molecule), which seemed to be very active in trypanosomes in the *brucei* group, after having produced tangible results on *T. cruzi*. Moreover, the papers from Davioud-Charvet raised hopes for the synthesis of molecules active against both trypanosomes and other haemoparasites.

Alongside the direct means of combating NTTATs and their vectors, the rapid dissemination of information concerning them also played a very important role, because it responded to one of the objectives of the OIE.

The networks mentioned earlier (see section 1) were the subject of papers presented in succession by Dr S.M. Touré:

- **Network on mechanically transmitted African trypanosomosis** (MTAT) (Organisation described in an introductory letter from Dr M. Desquesnes).

then by Dr Touratier:

- **DAVILA A.R.M.** – Animal trypanosomosis network in South American (ATNSA) on *T. vivax* and *T. evansi*.


6. International meetings concerning Non-Tsetse Transmitted Animal Trypanosomoses planned for the near future

− Médicaments antiparasitaires (Antiparasitic Medicinal Products): joint EU, DG XII\textsuperscript{20}/WHO, TDR\textsuperscript{21}, symposium, Montpellier, France, 24 to 26 May 1999.

− 5th Biennial Conference of the Society for Tropical Veterinary Medicine, Key West, Florida, United States of America, 12 to 16 June 1999.

− 17th Conference of the World Association for the Advancement of Veterinary Parasitology, Copenhagen, Denmark, 15 to 19 August 1999.


− Second Symposium on Trypanosomes and Other Haemoparasites in the New World, Romulo Gallegos University of San Juan de los Marros, Guarico, Venezuela, 13 to 15 October 1999.

− International Workshop on Chamelon, Ouarzazate, Morocco, 24 to 26 October 1999.

Since all of the items on the agenda had been covered, Dr Masiga closed the session at 12:30.
Appendix I

REPORT OF THE MEETING OF THE OIE AD HOC GROUP
ON NON-TSETSE TRANSMITTED ANIMAL TRYPANOSOMOSES

Paris, 19 May 1999

Agenda

1. Interim report of the Secretary General
2. Information supplied to the Office International des Epizooties by Member Countries
3. Diagnosis of dourine and differentiation between *T. equiperdum* and *T. evansi*
4. Epidemiological surveys on Non-Tsetse Transmitted Animal Trypanosomes in various countries and
   Non-Tsetse Transmitted Animal Trypanosomes in areas with a low population of or free from tsetse flies
5. Research in progress for combating Non-Tsetse Transmitted Animal Trypanosomes
6. International meetings concerning Non-Tsetse Transmitted Animal Trypanosomes planned for the near future
Appendix II

REPORT OF THE MEETING OF THE OIE AD HOC GROUP
ON NON-TSETSE TRANSMITTED ANIMAL TRYPANOSOMOSES

Paris, 19 May 1999

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Trypanosomoses/May 1999
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