

**SADIS COST RECOVERY ADMINISTRATIVE GROUP
(SCRAG)**

ELEVENTH MEETING

(Paris, 4 November 2010)

**Agenda Item 2: Consideration of issues relevant to the SCRAG's work addressed by the
SADIS Operations Group (SADISOPSG)**

REPORTS ON CONCLUSIONS OF THE SADISOPSG/15 MEETING

(Presented by the Chairman of the SADIS Operations Group)

1. Introduction

1.1 This paper includes the following Attachments received from the Chairman of the SADISOPSG:

- **Attachment 1:** Executive Summary of the fifteenth meeting of the SADIS Operations Group (SADISOPSG/15, Paris, 26-28 May 2010);
- **Attachment 2:** Annual statement of operational efficacy of SADIS 2009/2010;
- **Attachment 3:** SADIS inventory 2010/2011;
- **Attachment 4:** Follow-up of SADISOPSG/15 Conclusions 15/12 a) and b) and 15/18 b) having an impact on costs of SADIS.

2. Action by the Group

2.1 The Group is invited to review the information presented in this paper.

FIFTEENTH MEETING

**SADIS OPERATIONS GROUP
(Paris, France, 26 to 28 May 2010)**

EXECUTIVE SUMMARY¹

1. INTRODUCTION

1.1 The fifteenth meeting of the SADIS Operations Group (SADISOPSG/15) was held at the European/North Atlantic (EUR/NAT) Regional Office, Paris, 26 to 28 May 2010. The meeting was attended by 17 participants from 8 States (including the representative of the focal point of the EUR OPMET Bulletin Management Group (BMG)) and two international organizations (Agency for Air Navigation Safety in Africa and Madagascar (ASECNA) and the International Air Transport Association (IATA)).

1.2 The Chairman, Dr. Th. L. van Stijn (Netherlands), presided over the meeting throughout its duration.

2. FOLLOW-UP OF SADISOPSG/14 CONCLUSIONS

2.1 With regard to the follow-up of the SADISOPSG/14 conclusions, the group noted that action had been completed on all the issues (Decision 15/1).

3. OPERATION OF THE SADIS

3.1 With regard to the list of SADIS operational focal points, the group concurred that it provided useful contacts for the SADIS Provider State and the ICAO Regional Offices to resolve operational issues, and agreed that ICAO should update the list in time for the dispatch of the SADIS efficacy questionnaire in December 2010 (Conclusion 15/2).

3.2 The group reviewed the operation of SADIS during 2009/2010 based on the annual management report from the SADIS Provider State and on responses from fifty-seven States to the annual questionnaire on the operational efficacy of the SADIS broadcast. Concerning the annual questionnaire, the group was pleased to note the positive developments that had taken place, in particular States' increased capacity of producing compliant SIGWX charts from the BUFR-coded world area forecast system (WAFS) forecasts and the improved availability of operational meteorological (OPMET) messages via the SADIS 2G broadcast. The group agreed that the format of the questionnaire was up-to-date and that no major changes were required (Decision 15/3). The group also agreed that the SADIS broadcast continued to meet the operational requirements during the period under review and that the SADIS Cost Recovery Administrative Group (SCRAG) be informed accordingly (Conclusion 15/4).

3.3 The group reviewed the SADIS inventory for 2010/2011. In order to ensure that SADIS continued to meet the approved operational requirements, amendments to the inventory were made based

¹The full report is available at the following website: www.icao.int/anb/sadisopsg

on proposals by the SADIS Provider State. The updated inventory would be forwarded to the Chairman of SCRAG (Conclusion 15/5).

4. CONTENT OF THE SADIS BROADCAST

4.1 OPMET information

4.1.1 Regarding the recurrent requests for the modifications of TAF requirements from the AOP aerodromes, it was recalled that such requests should be addressed to the ICAO regional office concerned, since the provision of TAF was subject to formal RAN agreement. Meanwhile, the group reviewed and endorsed the proposals made by IATA concerning OPMET information from non-AOP aerodromes and tasked the Secretariat to modify the requirements, subject to States' concurrence (Conclusion 15/6).

4.1.2 In view of fostering the availability of the Nuclear Emergency Message for aviation users, the group agreed that this message should be included in the SADIS broadcast and SADIS FTP Service, in time for the applicability of Amendment 75 to Annex 3 (Conclusion 15/7).

4.2 WAFS forecasts

4.2.1 With regard to Annex 4 to the SADIS User Guide (SUG), listing the WAFS forecasts included in the SADIS broadcast, the group noted that it was up-to-date and that no amendments were required.

5. DEVELOPMENT OF THE SADIS

5.1 Report of the SADISOPSG Gateway Development Team

5.1.1 Based on the results of a 14-day analysis undertaken early 2010, it transpired that the compliance with the SIGMET format had remained insufficient, in particular in India and the NAM Region, to trigger the automatic validation at the SADIS gateway. The group agreed that the States concerned should be reminded of the importance of the correct format of SIGMET (Conclusion 15/8).

5.1.2 The group endorsed the efforts to complete the harmonization of the SADIS and ISCS broadcasts based on Annex 1 to the SUG, as far as the content of OPMET information is concerned (Conclusion 15/9).

5.2 Report of the SADISOPSG Strategic Assessment Team

5.2.1 Based on a report provided by the Rapporteur of the SADISOPSG Strategic Assessment Team, the group reviewed the content of the strategic assessment tables and requested that ICAO forward copies of the tables to the PIRGs concerned so that they may form the basis for the next regional update in respect of future SADIS requirements (Conclusion 15/10). The group also agreed that, for information purposes, the SADIS Strategic Assessment Team should provide estimates of future data volumes related to WAFS forecasts in the GRIB1, GRIB2, PNG and BUFR code forms, as an attachment to the SADIS Strategic Assessment Tables (Conclusion 15/11).

5.3 Report of the SADISOPSG Technical Developments Team

5.3.1 The group noted that the issues dealt with by the SADISOPSG Technical Developments Team were related to:

- a) future utilization of the SADIS satellite bandwidth;
- b) transmission of GRIB2 data on the SADIS 2G; and
- c) SADIS 2G uplink protocols.

5.3.2 With regard to the future utilization of the SADIS satellite bandwidth, the group agreed that the existing SADIS 2G data transfer rate of 64 kbps was sufficient for the foreseen needs of the service, including the introduction of GRIB2 transmissions with an appropriate prioritization, and that therefore, the SADIS Provider State should relinquish the currently retained SADIS 1G Satellite bandwidth to save some £30 000 per annum (Conclusion 15/12).

5.3.3 Concerning the GRIB 2 data transmission on the SADIS 2G, the group agreed that to enable workstation vendors to develop and test their systems, the SADIS Provider State should carry out further test transmissions of GRIB2 WAFS data before the operational implementation of the broadcast. (Conclusion 15/13). It was further agreed that the SADIS Provider State should implement the transmission of GRIB2 WAFS forecasts on 18 November 2010, with the following conditions:

- a) transmission of GRIB2 WAFS forecasts will be 1 hour after the transmission of GRIB1 WAFS forecasts; and
- b) trial forecasts for CB clouds, icing and turbulence in the GRIB 2 code form will not be transmitted until endorsed by the WAFSOPSG (Conclusion 15/14).

5.3.4 Concerning the SADIS 2G uplink protocols, the group concluded that it would be disadvantageous to replace the existing X25 Protocol with the IP between Exeter and Whitehill due to the lack of error correction and increased communication overheads related to the use of IP (Decision 15/15). It was also agreed that, with regard to the transmission rate of the links between Exeter and Whitehill, the needs of the SADIS 2G could be met with the current infrastructure (i.e. 64 kbps transmission rates), and there was no need to increase the transmission rate of the satellite broadcast (Decision 15/16).

5.4 SADIS Internet-based FTP Service

5.4.1 With regard to the term to be used for the secure SADIS Internet-based FTP service, the group agree that, in order to prevent any possible confusion relating to the security features used in the SADIS FTP service, that it should be known as "Secure SADIS FTP" (Decision 15/17). Concerning the implementation of the "Secure SADIS FTP", the group agreed that the SADIS Provider State should use the Digital Signing of files as the methodology for enhancement of security of the data; furthermore, the Chairman of the SADISOPSG would inform the Chairman of the SCRAG of the estimated costs remaining at £67 000 ± £13 000 (Conclusion 15/18).

5.4.2 The group agreed that a registration process be established to ensure that only authorized users were given access to the Secure SADIS FTP service, and that full records be kept by the SADIS Provider State, in order to manage the access to the data delivered by this service (Conclusion 15/19).

6. LONG-TERM PLANNING OF SADIS

6.1.1 The group endorsed the five-year long-term plan for the years 2011 to 2015, based on updates by the SADIS Provider State (Decision 15/20).

6.1.2 With regard to the future of the SADIS 2G satellite broadcast, it was also agreed that SADIS user States and users be consulted on the need for continued satellite distribution of OPMET data beyond 2015 and that the results of the consultation be considered by the SADISOPSG/16 Meeting (Conclusion 15/21). Irrespective of the future of the SADIS 2G, it was concurred that in view of the increasing use of the SADIS FTP, the SADIS Provider State should prepare proposals for contingency arrangements for the Secure SADIS FTP service by the SADISOPSG/16 Meeting. (Conclusion 15/22).

7. THE SADIS USER GUIDE

7.1 The group noted that amendments to the SUG had been made to take into account the introduction of GRIB2 data; the change of issue times of significant weather (SIGWX) medium-level BUFR data and SIGWX PNG charts; and a change to the delivery of these products under back-up. The group endorsed these changes (Decision 15/23).

8. FUTURE WORK PROGRAMME

8.1 The group reviewed and updated the deliverables in its work programme for the years 2010 to 2014 (Decision 15/24).

9. ANY OTHER BUSINESS

9.1 With regard to the implementation of corrective actions to eliminate data losses in the SADIS 2G transmission, the group concurred that the SADIS Provider State should continue to implement the necessary corrective actions to eliminate data losses in the SADIS 2G transmission process and report progress to the Secretariat by 29 July 2010 (Conclusion 15/25).

ATTACHMENT 2

Ref.: SWG 5/1.4.1

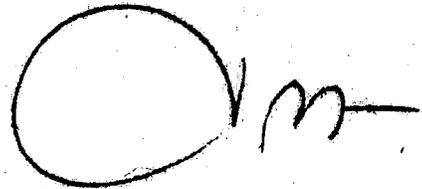
29 June 2010

To: Chairman, SCRAG

From: Chairman, SADISOPSG

Subject: **Annual statement of operational efficacy of SADIS 2009/2010**

I wish to inform you that the SADISOPSG, in Conclusion 15/4, instructed me to advise you that the operational efficacy of the SADIS had continued to be satisfactory, meeting all operational requirements since the SADISOPSG/14 Meeting (15 to 17 July 2009).

A handwritten signature in black ink, consisting of a large, stylized 'O' followed by a cursive 'm' and a horizontal line extending to the right.

Th. L. van Stijn

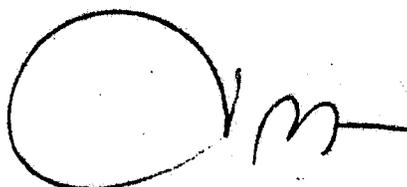
ATTACHMENT 3

Ref.: SWG 5/1.4.1 ✓

29 June 2010

To: Chairman, SCRAG
From: Chairman, SADISOPSG
Subject: **SADIS inventory 2010/2011**

I wish to inform you that the SADISOPSG, in Conclusion 15/5, instructed me to forward to you the attached updated SADIS inventory.

A handwritten signature in black ink, consisting of a large, rounded 'O' followed by a stylized 'v' and 'm'.

Th. L. van Stijn

Enclosure:
Updated SADIS inventory

APPENDIX C
SADIS INVENTORY
(2010)

The inventory items identified below cover the equipment and staffing required to provide, operate and maintain the SADIS. The inventory includes: hub infrastructure (including all additions following the completion of the hub enhancement project) and communications circuits, ISCS data back up system, procured services, and staff. It should be noted that some equipment items are under lease and form part of a wider infrastructure. Costs of individual items cannot be separated from the required infrastructure that includes a significant part of the development of the software and technical configuration. The inventory is in accordance with the SADIS User Guide.

1. EQUIPMENT

A. Key Components of Hub Infrastructure and Communications Circuits

The SADIS 2G hub infrastructure connection to the Met Office message switch (Frost) consists of a number of units developed in conjunction with VADOS Systems and other suppliers. These are installed either at Exeter or at the uplink site at Whitehill, Oxfordshire, UK.

The SADIS FTP hub infrastructure connection to the Met Office message switch (Frost) consists of a number of units installed at Exeter.

i) *Solely procured for SADIS (major components)*

SADIS Gateway function software (developed specifically for the gateway as part of the NATS CoreMet system; see items under “Not procured principally for SADIS”).

Dell Poweredge R900 servers to provide SADIS FTP Service (see section 1C)

ii) *Principally procured for SADIS*

a) At the Met Office

See section 1C for itemised components

b) communications between Met Office Exeter and Whitehill uplink facility

↳ 2 Fibre Optic 64 Kbps circuits in support of SADIS 2G service.

c) the uplink site (Whitehill)

1) units and services leased from Cable and Wireless Communications Ltd. to support SADIS 2G services:

- (a) 1 (70 to 140 MHz) convertor
- (b) use of 1 (140 to C band) convertor
- (c) use of satellite hub (lease represents only a very small part of this large aperture) for SADIS 2G services; and
- 2) units forming part of a totally integrated rack structure to provide SADIS 2G service, with back-up, (see the list under sections 1C)
- d) dual contingent communication links (utilising WMO TCP/IP sockets protocol) between SADIS Gateway and Met Office in support of SADIS 2G service.

iii) Not procured principally for SADIS

- a) Met Office Message switch (FROST): Total investment, £1.2602M¹ of which 1.2271 per cent is attributable to SADIS FTP service usage: switching data to operational FTP service;
- b) 1) Met Office Message switch (FROST): Total investment, £1.2602M¹ of which 0.6386 per cent is attributable to SADIS usage: switching data to operational (2G) broadcast service (excluding GRIB2) and to 2G monitoring system (Corobor Comparator);
- 2) Met Office Message switch (FROST): Total investment, £1.02M¹ of which 1.06 per cent is attributable to SADIS usage: switching data to operational (2G) broadcast service (including GRIB2) and to 2G monitoring system (Corobor Comparator);

Note. - Information regarding the cost with (2) and without (1) the WAFS GRIB2 data are provided since delivery of WAFS GRIB2 data over SADIS 2G has yet to be endorsed by the SADISOPSG, and a date of provision decided.

- c) Allocated bandwidth 4 Mbps bursting to 8 Mbps (as of 31 January 2010) (~~2-Mbps bursting to 4-Mbps~~) between server and Internet Service Provider (ISP) in support of the SADIS FTP service;
- d) NATS Message switch (CoreMet System):

Note. - Some elements of the CoreMet System are exclusively for the support of the SADIS gateway function.

- e) SADIS FTP equipment running costs;

Note. - These costs are applied to all Met Office internet facing services and primarily relate to costs associated with ensuring high levels of IT security.

- f) Met Office Service Desk equipment; and

Note. - Equates to 3.5 per cent of the total share of Met Office IT Operations equipment.

g) Met Office Serial Communications.

Note. - Equates to 20 per cent of total share of Met Office Serial Communications. Includes cost of switching serial data from FROST Message Switch to SADIS 2G, comprising staff and equipment costs of supporting serial WAN, TTL Routers, Serial Modems and TTL matrix switches.

B. SADIS data back-up system

ISCS VSAT receiving system, including TCP/IP receiver and cables, on SADIS Provider (UK Met Office) premises.

Note 1.— This hardware is not currently used in an operational environment;

Note 2.— The SADIS Gateway (UK NATS) ~~has continues to procure~~ a dedicated SADIS data backup arrangement with the ISCS Provider State. The backup infrastructure ~~will includes~~ an ISDN connection between the NWS Telecommunications Gateway and the SADIS Gateway, and an ISDN connection between the SADIS Gateway and Whitehill uplink facility, to provision SADIS data backup. ~~This hardware is currently undergoing final testing of functionality and process before becoming operationally acceptable.~~

C. Hub equipment and services located at Exeter and Whitehill

| <i>Item</i> | <i>Description</i> | <i>Quantity</i> |
|-------------|--|-----------------|
| 1. | Whitehill services (leased from Cable & Wireless) | |
| 1.1 | 70 MHz to 140 MHz converters | 1 |
| 1.2 | 140 MHz to C band converter | 1 |
| 1.3 | Satellite Hub leased bandwidth | 1 slot |
| 2. | ISDN back-up service to Washington (NWSTG) | |
| 2.1 | MegaPAC 2003 router (MP-2003) VadEDGE 4202 | 13* |
| 2.2 | MegaPAC 2003 router plus expansion (MP-2003-3-B) | 1 |
| | ISDN 2e circuit | 1 |
| 2.3 | A/B switch | 1 |
| | Interface cables | 12 |

Hardware listed under Section 2 is located at Whitehill.

| | | |
|-----|---|---|
| 3. | SADIS FTP Service | |
| 3.1 | Dell Poweredge R900 servers with 1 Gb RAM | 2 |
| 3.2 | 26.8 Gb internal disk drives | 2 |
| 3.3 | VMWave Virtual Platform with Red Hat Linux 5.3 OS | 2 |
| 3.4 | Intel Xeon X7350, 2.93 GHz Processors | 2 |
| 3.5 | Licenses, misc. support and maintenance costs | 1 |

Hardware listed under Section 3 is located at Exeter.

| | | |
|------|---|------|
| 4. | SADIS 2G Infrastructure | |
| 4.1 | FROST port | 1 |
| 4.2 | MegaPAC VMegaPAC V-IX Base System Dual PSU including Chassis, 1 CP6000, and 1 switch. | 32* |
| 4.3 | CP6000 for use with MegaPAC V-IX | 1* |
| 4.34 | MegaPAC 2003 (Exeter) VadEDGE 4202 | 3* |
| 4.45 | Uplink modem (Comtech EF Data SDM-300a) | 3* |
| 4.56 | Communications cabinet and lease | 1 |
| 4.67 | MegaWatch including Enterprise Reports, and PC | 1 |
| 4.78 | Comtech SDM300L demodulator (NER5 downlink) | 1 |
| 4.89 | Corobor comparator software and PC | 1 |
| 4.9 | XIO Modules | 12** |
| 4.10 | SIO Modules | 3* |
| 4.11 | 8Mb RAM Modules | 3* |
| 4.12 | 10 Communications rack floor space at Exeter in IT hall 1 and IT hall 2, and at Whitehill | 3 |
| 4.13 | 11 Space in stores at Exeter to locate spare hardware | 1 |
| 4.14 | VadEDGE 4202 1U | 2 |
| 4.15 | 12 WAN module | 2 |
| 4.16 | 13 Comtech EF Data SMS 301 – redundancy switch | 2* |
| 4.17 | 14 BRI Module for VadEdge 4202 | 2 |
| 4.18 | 15 Interface cabling | 158 |

**Includes one unit/module stored as a cold spare.*

***Includes four modules stored as cold spares.*

Note. — Hardware listed under section 4 is located at Exeter and Whitehill.

2. PROCURED SERVICES

- A. Space segment annual lease: 1.5MHz wide frequency band of which 57 per cent is utilised to support SADIS 2G, with 64Kbps data rate (less communications overhead);

Note. - SADIS 1G was terminated on 5 January 2009. The percentage of satellite space segment has, however, remained unchanged because the SADIS 1G satellite bandwidth allocation was maintained in 2009 and 2010, as called for by SADISOPSG Decision 13/26.

B. Annual maintenance of Met Office Exeter and Whitehill uplink site equipment (SADIS 2G and SADIS FTP server); and

C. Gateway function:

- i) communication circuits between Met Office and NATS infrastructure site; and
- ii) System maintenance.

3. ANNUAL STAFF REQUIREMENTS

A. United Kingdom Met Office

i) Service Desk

Note. - The Service Desk acts as a first point of contact for all inquiries, including those concerning the OPMET Gateway function. Complex inquiries will be passed to a relevant expert. Experts are available either on a 24-hour rota basis, or as a daytime support with limited on-call capability.

24-hour Weather Desk support

Skill

- | | |
|--|-----------------------|
| 1. Service Desk (first point of contact) | Scientific supervisor |
| 2. Additional Service Desk operator | Systems analyst |

Note. - Total support for SADIS provided by the Met Office Service Desk team equates to 0.3 per cent of the total Weather Desk budget.

24-hour IT Operations support

Skill

- | | |
|--|----------------------|
| 1. Technical Team Leader (TTL) | Computer engineer |
| 2. Networks and Systems Supervisor (NSS) | Technical supervisor |

Note. - Total support for SADIS provided by the Met Office IT Operations team equates to 3.5 per cent of the total IT Operations budget.

Normal working hours support

Skill

- | | |
|-------------------------------------|-----------------|
| 1. Change and problem manager (CPM) | Systems analyst |
|-------------------------------------|-----------------|

ii) Additional support

| <i>-Day support</i> | <i>Resource</i> |
|---|---|
| 1. Systems integration team <i>(Note 1)</i> | 10 per cent 14 staff-days of network computer engineer and 10 per cent of CIDA |
| 2. Message Switching Manager | 10 per cent 15 staff-days of MSS manager |
| 3. Administrator | 75 per cent 160 staff-days of executive officer |
| 4. International aviation management | 15 per cent 30 staff-days of manager |
| 5. Data traffic | 5 per cent 5 staff-days communications engineer |
| 6. Contract Procurement and Management <i>(Note 2)</i> | 5 per cent 4 staff-days of senior procurement officer |
| 7. UNIX support Message switching Team <i>(Note 3)</i> | 10 per cent 15 staff-days of computer engineer technical officer |
| 8. Web team support Invoice Administration | 10 per cent 20 staff-days of invoicing officer and 15 staff-days of business accountant of web site designer |

Note 1.— Support by the UNIX Team of the SADIS FTP Service will incur some additional costs in excess of simple human resources. These costs are applied to all internet facing services and primarily relate to costs associated with ensuring high levels of IT security.

Note 2.— CIDA is the Co-ordinating Installation Design Authority. The Met Office CIDA Installation Design and Engineering team are technical authorities who work alongside project managers to co-ordinate the efforts of a number of different groups.

Note 1.— Due to re-organisation and rationalisation within the Met Office's IT services division, the CIDA role is now included within the Network Computer Engineer's responsibilities. Effort required also significantly reduced since decommissioning of SADIS IG.

Note 2.— Reduced effort required since cessation of SADIS IG.

Note 3.— Responsibility for support and maintenance to the SADIS FTP service transferred from the Web Team to the Message Switching Team during 2009.

B. NATS infrastructure site – CACC (OPMET Gateway function)

Note 1.— The CACC provides the OPMET Gateway function, which is provided from a single operational site, but with full capability at an alternative site. Staff are available either on a 24-hour basis, or as a daytime support with on-call capability.

Note 2.— The resource demand of 610 days required to provide the SADIS Gateway service comprises 6 watches of 1 ATSA4 and 1 ATSA3 each (Operations), 1 ATCE4 (Engineering Watchkeeping) and 3 ATCE4 (Engineering Day Support).

| <i>24 hour support</i> | <i>Resource</i> |
|------------------------------------|--------------------------|
| 1. Operational staff support | 523 staff-days per annum |
| 2. Engineering staff support | 22 staff-days per annum |
| | |
| <i>Day Support</i> | <i>Resource</i> |
| 3. SADIS administration support | 50 staff-days per annum |
| 4. Engineering (including on-call) | 15 staff-days per annum |

C. Bought-in Services

Additional support and maintenance agreements with third parties are in-place to provide third line support of the SADIS 2G service.

Ref.: SWG 5/1.4.1

29 June 2010

To: Chairman, SCRAG
From: Chairman, SADISOPSG
Subject: **Follow-up of SADISOPSG/15 Conclusions 15/12 a) and b), and 15/18 b)**

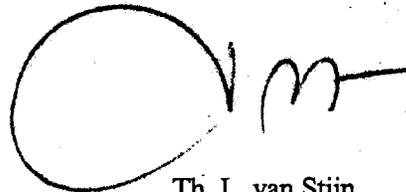
I wish to inform you that the SADISOPSG/15 Meeting instructed me to advise you of the following developments having impact on costs of SADIS:

a) **Conclusion 15/12 a) and b) — SADIS 2G future bandwidth requirements**

The SADIS Provider State relinquishes the currently retained SADIS 1G satellite bandwidth at the end of the current contract (31 December 2010) to save some £30 000 per annum from the SADIS cost base.

b) **Conclusion 15/18 b) — Development of Secure SADIS FTP service ("Phase 2)**

The estimated cost for implementation of Phase 2, implementing Digital Signing, remain at £67 000 ± £13 000.

A handwritten signature in black ink, consisting of a large, stylized 'O' followed by a series of loops and a horizontal line extending to the right.

Th. L. van Stijn