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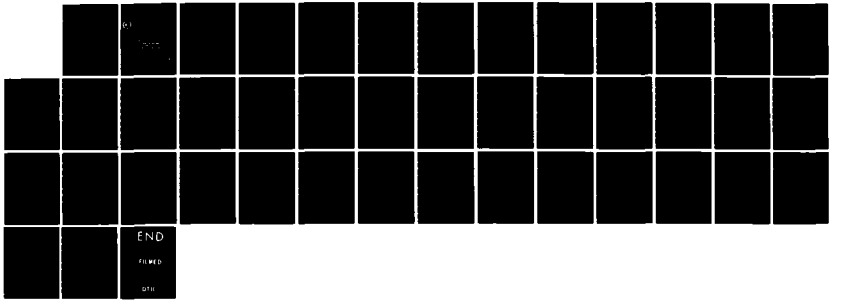

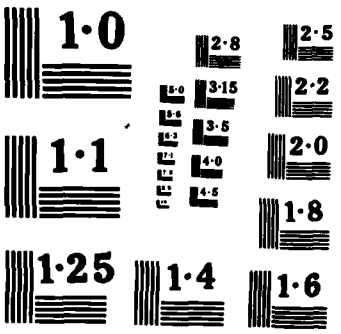
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TECHNICAL REPORT NO. 6-85

TRANSMISSION MONITORING AND CONTROL (TRAMCON) SEGMENTATION PLAN FOR THE DCS DIGITAL TRANSMISSION NETWORK

MARCH 1985

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

The Transmission Monitoring and Control (TRAMCON) application criteria for the (DCS) Digital Transmission Network and the segmentation design for Europe are documented in this report. The Europe network is divided into 31 segments, each segment controlled by a master terminal (TMT) which receives transmission equipment and station data from Intelligent Remote Units (IRUs) located at all nodes of the segment. The considerations influencing the design are described; network geographical-link distribution, Facility Control Office (FCO) locations, backup mastership availability, allowable number of link terminations per segment and the ability to maintain node monitoring and reporting in spite of possible link outages. In many cases, link outages can be circumvented by judicious placement of primary and alternate masters. Since changes are to be expected in FCO designations and in segment configuration, future drawing revisions are likely.

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MARCH 1985

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FOREWORD

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EXECUTIVE SUMMARY

The Transmission Monitoring and Control (TRAMCON) application criteria for the Defense Communications System (DCS) digital transmission networks and the segmentation design for the Digital European Backbone (DEB) are documented in this Technical Report. For monitoring and control purposes the DEB is divided into thirty-one segments, each segment controlled by a primary TRAMCON Master Terminal (TMT) and each limited to a manageable number of sites or nodes. All nodes are equipped with Intelligent Remote Units (IRUs) for monitoring transmission and station equipment, including those designated as primary TMT locations. Additionally, the IRUs perform data processing and thereby are able to send concise information to the TMT when interrogated.

The TMT of each segment is backed up by an alternate counterpart in another segment which can take over the primary duties in whole or in part when the primary cannot function or when a segment link is inoperable. Thus, each TMT has two active data bases and will generally fill both a primary function for its own segment and a backup function for another segment.

The segmentation is designed taking into account the parameters of network geographical distribution, Facility Control Office (FCO) locations, backup mastership availability, allowable number of link terminations per segment and the ability of the design to maintain node monitoring and reporting in spite of possible link outages. Each TMT polls the IRUs in its own segment for information at least every 30 seconds. Polling and the ensuing IRU data response are restricted to the particular segment being monitored. To accomplish this intrasegment operation, software-controlled stopgates are used to disconnect IRU digital bridge ports for preventing link connections to another segment. Whenever it may become necessary to reactivate the link path, the stopgate can be opened by TMT command. Stopgates are also used to open closed link-node loops within segments which otherwise would result in undesired circulating TMT and IRU data signals.

Link outages can be overcome by judicious placement of primary and alternate masters; however, dead-end strings of nodes called "tails" will cause node isolation upon link failure.

The estimated uninstalled equipment cost for the TRAMCON subsystem in Europe is $9.4 million. This cost includes 31 TMTs for the 31 segments, 243 IRUs monitoring 523 link terminations at 223 locations in eight countries, and 63 Remote Display Terminals (RDTs). An RDT at a remote location enables mobile maintenance teams to access information at the TMT on a dial-up basis.

Since the TRAMCON program is world-wide in nature, future revisions of this report will contain TRAMCON application information for the Pacific and Western Hemisphere areas.

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I. INTRODUCTION

The Defense Communications System is continuing to transition from analog transmission and switching to a digital-based technology. The current transitional phase, which is planned to continue through 1992, is making available the operational and economic benefits of digital technology to voice, video and data communications in the DCS as exemplified in the developing Defense Switched Network (DSN), Defense Data Network (DDN) and the DCS digital transmission network.

The same digital processing techniques now being used for transmission can also be applied to monitor the transmission system itself. The first operational system for monitoring DCS digital transmission networks was the interim Enhanced Fault Alarm System (EFAS) installed in Europe at the 13 DEB-1 nodes from Coltano, Italy to Vaihingen, Germany. The EFAS consisted of a computer at a master location which collected data by polling a certain number of nodes within a predetermined sector called a segment. During a tri-service DCA management meeting in July 1981, a decision was made to develop a TRAMCON subsystem modeled after EFAS but with significant operational and logistic advantages including reduced manpower requirements. TRAMCON will employ one or more IRUs at all sites, permitting data processing and control at each of the nodes that was not previously available with the interim EFAS. For TRAMCON purposes, the transmission network will be divided into groups of nodes called segments. Control of all IRUs within a segment will be exercised by a TMT.

The first operational installation of TRAMCON will function with DEB III in the UK, with a scheduled IOC of April 1986. As part of the the overall planning for TRAMCON installation, DCEC Code R210 was tasked (reference [1]) by DCA Code B420 to develop segmentation plans for the DCS digital transmission networks in Europe, the Pacific area, and the Western Hemisphere, both CONUS and OCONUS. The TRAMCON segmentation plan for the Europe DCS digital transmission network is the subject of this Technical Report. Future revisions to the report will contain TRAMCON application information for the Pacific and Western Hemisphere areas.

II. OBJECTIVE

The objective of this Technical Report is to document the TRAMCON Segmentation Plan for Europe, (Figure 1), Drawing No. 201032, Rev. A, 28 February 1985, for use by those involved in any area of the TRAMCON program from its development through operation and maintenance.* The drawing conforms to the EURSEGRD option, as described by reference [2] and as selected in paragraph 2 of reference [3], with a master at Aviano. Note that the drawing is for planning purposes only, and if any conflict is discovered with other documents, DCEC Code R210 and DCA Code B420 should be notified. Since changes are to be expected in FCO designations and in segment configuration, future drawing revisions are likely. Change inputs should be provided, in writing, with marked prints to DCEC Code R210.

The segmentation structure of the enclosed Drawing No. 201032 is intended to develop effective transmission monitoring and control for the DCS digital network in Europe on an interrelated (primary/alternate master) segment basis. Each segment is limited to a manageable number of sites, or link terminations, and is controlled by a TMT generally collocated with a FCO. The rationale supporting the segmentation is described in the following sections. A brief description of TRAMCON operation is first given as an introduction to the rationale.

* *Full E-size prints or 17" x 22" reductions of Drawing No. 201032, Rev. A, are available from DCEC.*

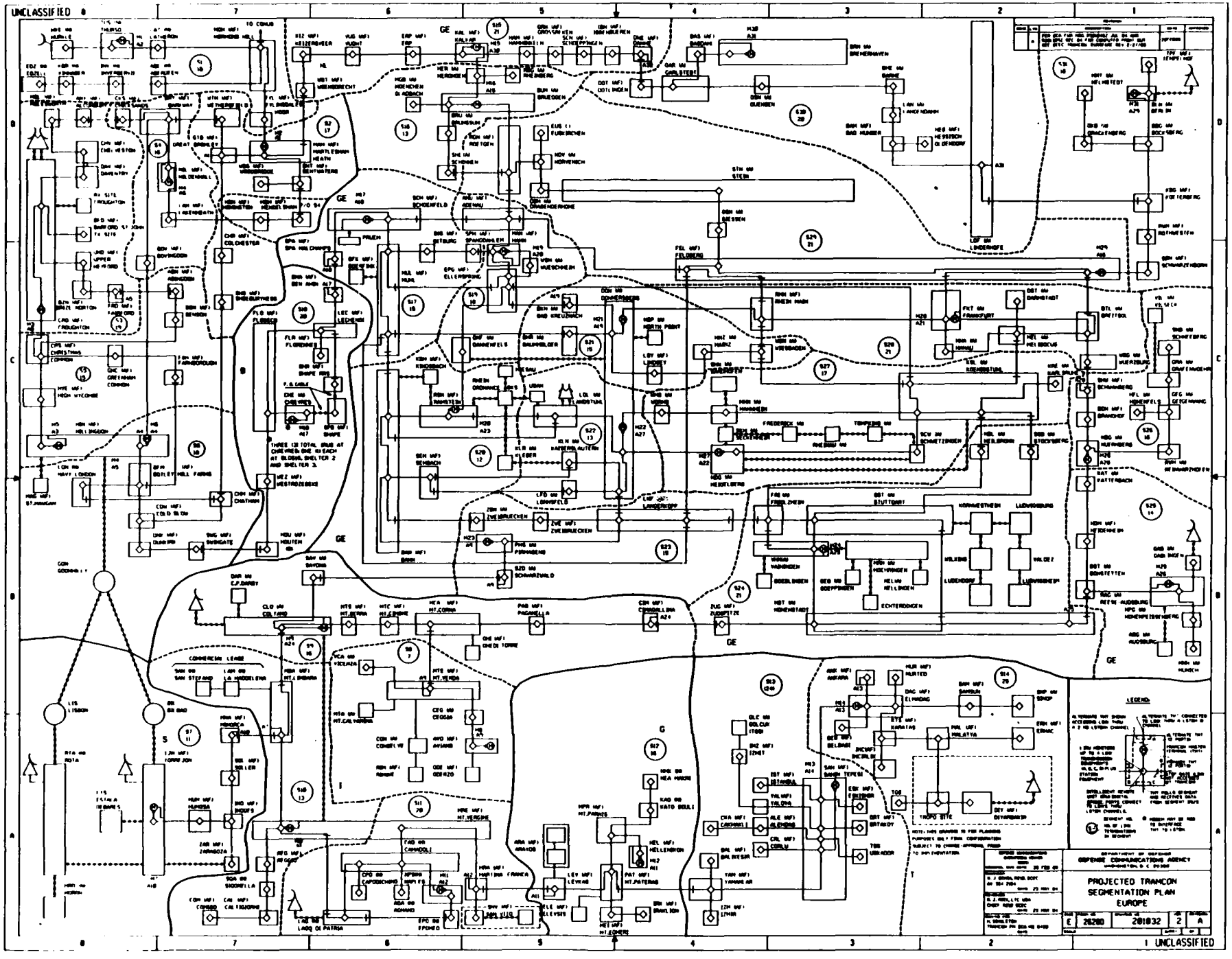

Figure 1. Projected TRAMCON Segmentation Plan, Europe

III. BASIS FOR SEGMENTATION DESIGN

The TRAMCON segmentation drawing for Europe is based primarily on the TRAMCON Operational Concept, [4] and the connectivity drawing, [5]. The relevant features of TRAMCON system operation and of major equipments implementing the operational concept are described in the following paragraphs.

The basic unit of TRAMCON is a segment composed of a master station, generally a FCO, and a number of remote stations in a defined geographical region. The architecture is intended to implement the TRAMCON functions of station polling, alarm scanning, fault isolation, remote control, performance monitoring, information display and distribution, intra and intersegment master communications, and backup mastership for the DCS digital transmission networks. (See section 2 of reference [6] for details of system parameter measurements.) The segment is managed at the master station by a TMT which polls, and receives data from, an IRU. The TMT normally managing the segment is called the primary TMT. A TMT located in another segment shares responsibility for the segment in a backup, alternate role. Thus, each TMT will generally fill both a primary function for its own segment and a backup function for another segment. The TMT, therefore, has two active data bases - one for its primary function and the other for backup use. Two other data bases which are normally inactive are also resident in the TMT as reserves for possible future segment reconfiguration.

IRUs are located at every site including the TMT location. They monitor transmission equipment and site support equipment alarms and status indicators, and measure transmission system performance parameters. (See section 3 of reference [7]). An IRU consists of a Data Acquisition and Control Element (DACE), a Digital Bridge, and depending on the number of man-machine interfaces required at the IRU's site, two, one or no Local Display Terminals (LDTs). Site data processing is performed by the DACE and, upon request by the TMT, data are transferred from the remote IRU DACE through the IRU digital bridge to the 192 kb/s service channel bit stream via a Low Speed Time Division Multiplexer (LSTDM) card, and thence to the master station for display and storage at the TMT. (See Figure 2.) For attended sites, the IRU contains a Local Display Terminal (LDT), used both for local station data display and for operator keyboard entry. The IRU will not initiate information flow - it answers only when polled by the TMT. Each IRU can monitor up to four link terminations plus station equipment.

Under normal operating conditions, the TMT in its primary role will automatically and sequentially interrogate (poll) all IRUs within its segment at least every 30 seconds. This polling interval is determined by the protocols, polling rate, response rate, amount of data transferred, the number of stations, and the total number of link terminations in the segment. The sequence of events will be that the TRAMCON master issues a poll signal to each of its remote IRUs, in turn, and awaits the reply. As the reply is received, the next remote IRU is polled, and it sends a reply. Polling continues in this pattern.

The digital bridge portion of the DACE serves two functions: (1) as an element of the service channel bit stream, it repeats all transmissions received as input into any of its four service channel output ports; (2) as the service channel interface for the IRU, it acts as front end communication processor for the DACE. In this second function, it (1) notifies the DACE central processor of the receipt of any TMT message whose address corresponds to that of the IRU and makes those messages available to the central processor; (2) transmits response messages from the DACE on all output ports not subject to disconnection.

Disconnection of digital bridge output ports is shown in the segmentation drawing by "stopgates," preventing undesired party-line contention which would otherwise be created by TMT polling and DACE response messages circulating in adjoining segments. Another function of stopgates is to prevent the circulation of polling and data signals around link-node loops within a segment The stopgates are activated through software control from the TMT.

The primary TMT interfaces with the collocated IRU digital bridge (Figure 2). The alternate TMT, however, interfaces with the LSTDM input to secure access to an IRU digital bridge in the adjoining segment.

A segment consists of no more than 21 link terminations, whenever possible. This figure is determined largely by the 30 second polling interval requirement, and to a lesser degree by the number of usable display lines on the LDT without scrolling.

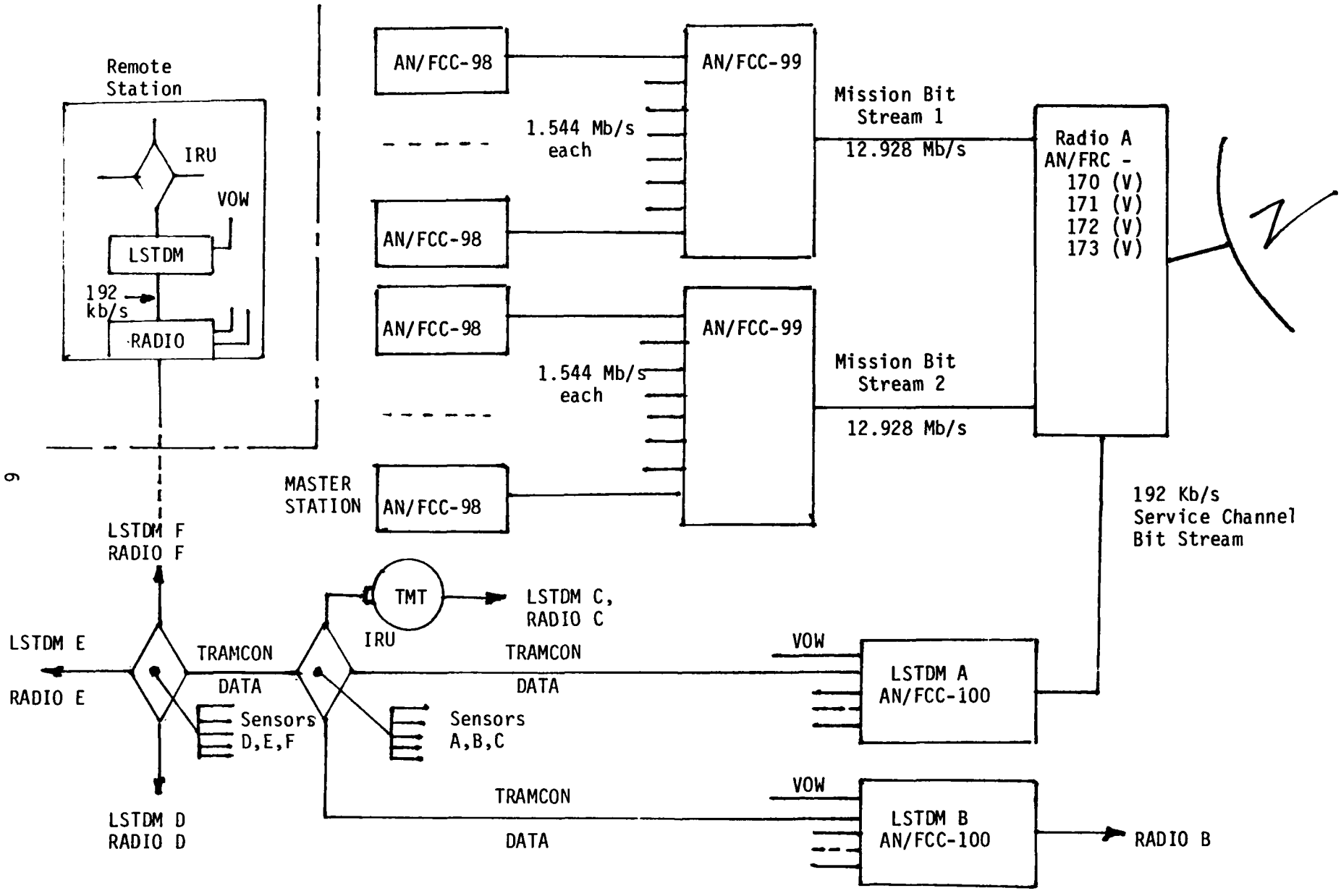

Figure 2. TRAMCON - System Diagram

IV. SEGMENTATION DRAWING SYMBOLOGY

Figure 3 illustrates the symbols used in the segmentation drawing. Each master, e.g., M34, serves as the primary for its own segment (S34) and as the alternate (A34) for an adjoining segment. The interfaces are as described in section III. The DACE digital bridges are represented by diamonds and are shown connected to other digital bridges, to the master and to the link (via an LSTDM). All connections and links represent the TRAMCON service channel bit stream. The basic communication functions (data and voice) of the links are assumed, but not shown for simplicity. The presence of a digital bridge implies the presence of an IRU. Each IRU can monitor up to four link terminations and the station equipment. There are four link terminations for location (1), hence one IRU. For location (2), two IRUs are required. To prevent M34 from polling into segment 33, a stopgate is shown to disconnect the related digital bridge port.

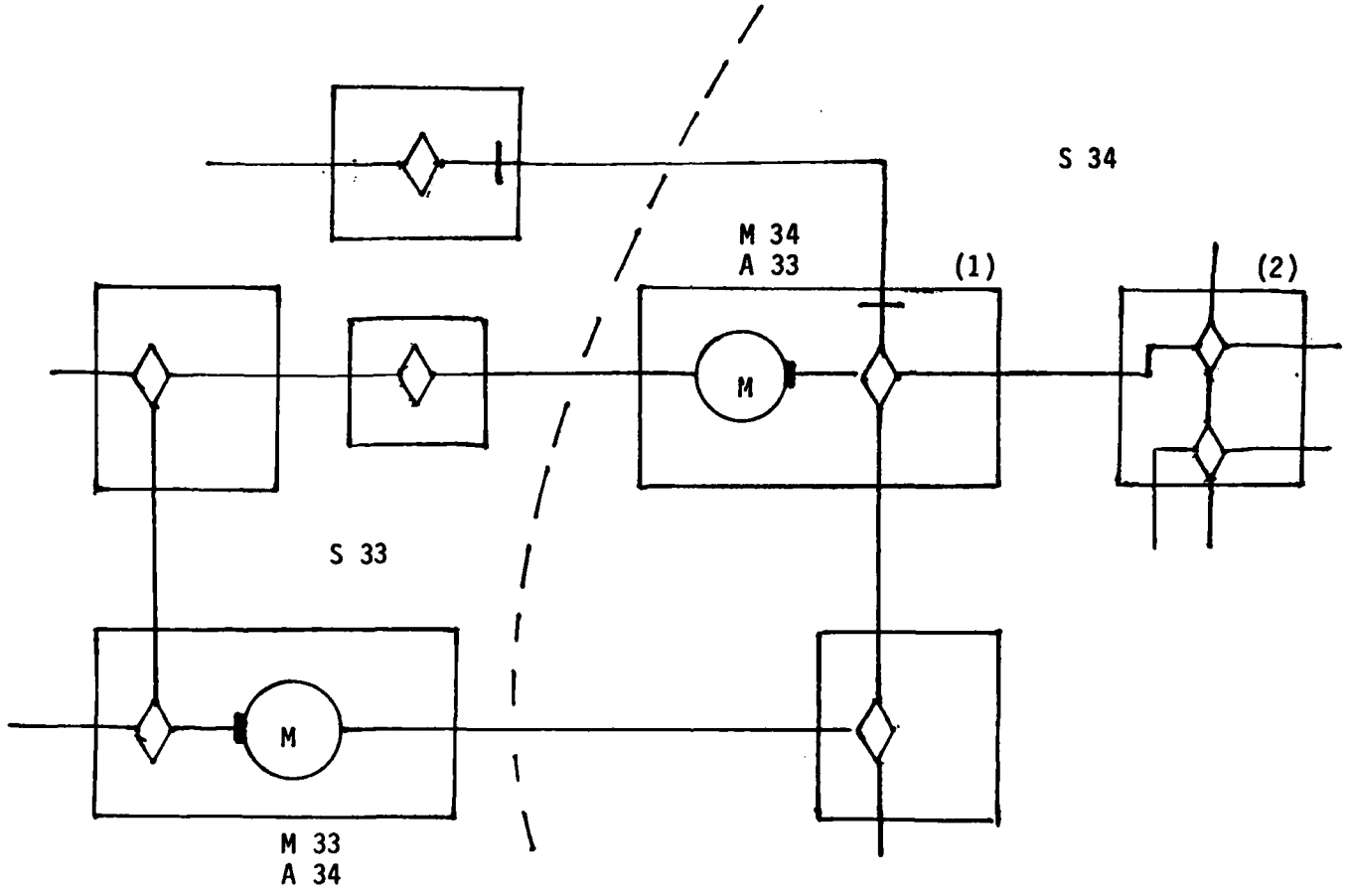

Figure 3. TRAMCON Segmentation

V. SEGMENTATION DESCRIPTION AND RATIONALE

The segmentation design shown in Figure 1 takes account of the network link-geographical distribution, FCO locations, backup mastership availability, the goal of 21 maximum link terminations per segment, and the need to maintain station monitoring and reporting in spite of possible link outages. In the following discussion, salient segmentation features and problems are presented in preference to a segment by segment analysis.

1. SEGMENTATION STRUCTURE

An optimal TRAMCON segmentation structure will compensate for transmission link and TMT/FCO failures to the maximum extent possible. The following examples from Figure 1 illustrate this design aspect:

a. Segments 30 and 31 - M31 at Berlin monitors the eight sites in segment 31. If M31 or the entire site should fail, A29 (alternate side of M29) would provide the backup for M31 through the link to Schwarzenborn. Similarly, M30 at Bremerhaven monitors all ten sites in segment 30. If M30 were disabled, A31, as indicated, would provide the necessary backup through the link to Linderhof to monitor segment 30. Thus, the possibility of primary master failure is provided for by backup mastership. On the other hand, a transmission link failure, e.g., between Bocksberg and Koterberg, would isolate M31 from Koterberg, Rothwesten and Schwarzenborn. However, A29 could take over control of the latter three locations so that the segment, although fragmented, can still be monitored at all locations. This holds for a failure at any link from Berlin to Feldberg. Similarly, if a failure occurred in any link from Basdahl to Linderhofe, all sites in segment 30 could still be monitored by M30 and A31.

b. Segments 29 and 16 - M29 at Feldberg monitors the seven sites in segment 29. A16 (the alternate side of M16) could provide the backup for M29 through the link from Brueggen. Similarly, A15 provides backup for M16 through the link from Kalkar to Herongen. In addition, any failure of one of the six links from Brueggen to Feldberg would not isolate the intervening sites of Roetgen, Norvenich, Drabenderhohe, Stein and Giessen since M29 and A16 together could monitor the fragmented segment. Because of the nature of the connectivity and defined TMT locations, not all sites are accessible to the TMT when link failures occur, e.g., Euskirchen in segment 29; Moenchen Gladbach and Rheinberg in segment 16.

2. SEGMENT TAILS

Extreme examples of potential node isolation are created by "tails," which are dead-end strings of nodes, e.g., Mormond Hill to Edzell in segment 1. If any one of these links fails, one to four nodes are isolated. Murkle is in a similar situation. Consequently, the tails of segment 1 create a tenuous condition. The connectivity results in several other extensive tails: segment 10, Italy; segment 12, Greece; segment 14, Turkey; and segment 26, Germany.

3. SITE SPLITTING.

Three examples of splitting a site into two TRAMCON entities occur: Donnersberg, Hillingdon and Mt. Vergine. The two sectors of Donnersberg and Hillingdon each have a TRAMCON master and are completely independent of each other from a TRAMCON standpoint. The only reason for splitting a site between two segments is to accomplish optimum segmentation.

4. SECOND CHANNELS

The AN/FCC-100 LSTDM contemplated for use on the digital links with the DRAMA radio can accommodate the 192 kb/s service channel bit stream on up to 16 separate duplex channels. One channel carries the 64 kb/s voice orderwire (VOW). The remaining 128 kb/s is reserved for TRAMCON and other uses. IRU digital bridge ports at link terminations and alternate TMT ports interface with LSTDM cards in conducting the TRAMCON component of the 192 kb/s service channel bit stream over the digital radio or fiber optic transceiver. A second LSTDM card is required in some cases for the alternate TRAMCON master to gain access to a remote IRU digital bridge through the service channel bit stream. The design avoids the use of second channels wherever possible to allow a more effective direct connection.

5. CLOSED LOOPS

By virtue of the DCS connectivity, segments 11, 18, 19, 24 and 28 contain closed link-node loops which would result in undesired circulating TMT and IRU data signals if the loops were allowed to remain closed. The closed loop in segment 11 is composed of Naples, Camoldoli, Lago Di Patria and Epomeo. However, stopgates at Lago Di Patria and Epomeo open the loop. As a result, TMT polling is prevented from circulating back on itself, but, instead, the polling from Naples splits through the digital bridge into two paths: Naples to Epomeo; and Naples to Camoldoli (Agnano and Capodichino) to Lago Di Patria. IRU response paths are the same in a reverse direction. If, during normal operation, a link from Naples to Camoldoli or a link from Camoldoli to Lago Di Patria should become inoperative, the TMT would request the stopgates at Epomeo and Lago Di Patria, in turn, to open, thus accessing these nodes from the Naples - Epomeo direction (stopgates are active on the transmit direction of the digital bridge duplex ports). A similar analysis applies to segment 18 and 24 for the Chievres, Flobecq, Lechenoi, SHAPE loop and the Vaihingen, Friolzheim, Stuttgart, Hohenstadt loops, respectively. For segments 19 and 28 the circulatory loop problem is countered by using the second port of the primary TMT. The reason for doing this is that, by this configuration, one less IRU digital bridge is used at the TMT location. For segment 28, the loop nodes are Frankfurt, Breitsol, Melibocus and Hanau. TMT M28 is able to poll the segment loop either into Breitsol or Hanau. The other TMT port is inactive and effectively opens the loop. Again, if any one of the links become disabled, the TMT is able to poll in the direction(s) required to cover all nodes of the loop. The same TMT configuration is used to monitor the Hahn, Wuescheim, Ellerspring loop of segment 19.

6. ALTERNATE TMT ROUTING

An important criterion for proper segmentation design is that the alternate TMT does not traverse a third segment from its own segment location to the segment it is backing up. The reason for this is twofold: (1), alternate traversal of a third segment would create undesirable polling by two masters in one segment; (2), the ability of the alternate to back up a segment would depend on the condition of another segment.

7. ALTERNATE TMT BACKUP

Another criterion for proper segmentation design is that the alternate TMT back up only one segment. This has been accomplished except in one case: Coltano, which now backs up segments 8 and 23. The requirement by reference [8] that Vaihingen alternate for Coltano instead of Aviano because of traffic flow considerations leaves it impossible for Aviano to alternate for any segment without traversing another segment. A preferred overall segmentation design limiting alternate backup to one segment would have Vaihingen as backup for Aviano and Aviano as backup for Coltano.

VI. TRAMCON DATABASE

Information from the Segmentation Drawing No. 201032, Rev. A, is compiled in data base TRAMCON.EURSEGRE, dated 27 Feb 1985. Sorting programs were developed to give segmentation printouts by (1) segment (Table I), (2) country (Table II), and (3) Mildep (Tables III, IV, V). Information included is site name, segment number, primary and backup TMT number, IRU, TMT, RDT, link termination and 2nd channel quantities, MILDEP, FCO and Intermediate Control Office (ICO) identification and summations. A summary of the primary and backup master locations is shown in Table VI.

An "X" in the FCO or ICO column of Table VI indicates that the corresponding primary master location is either a Facility Control Office or an Intermediate Control Office. The FCO and ICO locations are in accordance with the DCA-Europe FCO realignment of reference [9]. Six other primary master locations - Brueggen, Chievres, Hahn, Kalkar, Nuernberg and Thurso - are not covered by reference [9]. The rationale for selecting these six locations for TMT installation is as follows:

(a) Chievres

In reference [10], the 5th Signal Command, Worms, GE recommended the TMT be installed at Chievres TCF for DEB III (and a RDT at SHAPE TCF), cited the adequacy of personnel, space and power, and remarked that since Chievres is manned only by U.S. personnel, DCS links would remain under U.S. control. USACC, USACSA and DCEC concurred with the recommendation. Further, DCEC noted in their evaluation (reference [11]) that the location of a RDT at SHAPE Command Center (SCC) enhances survivability of the total DEB system since access to TRAMCON information is essential in a reconstitution situation.

(b) Thurso

NAVTELCOM recommended in their March 1982 comments on TRAMCON that NAVCOMMSTA Thurso be designated as a TMT location since it has maintenance responsibility for Murkle, Latheron, Edzell, Kinnaber, Inverbervie and Aberdeen.

(c) Kalkar

This site has been recommended for the TMT location by the 5th Signal Command in their evaluation of an early TRAMCON segmentation design. It is to be noted that the Air Force operates and maintains all of tne sites in the Kalkar segment.

(d) Brueggen, Hahn and Nuernberg

Good segmentation design practice required the designation of these three additional sites as master locations. Their selection, coordinated with DCEC and DCA-Europe, gives consistent Mildep responsibility within the segments.

TABLE I.

TRAMCON SEGMENTS IN EUROPE

LATEST REV.: 02/27/85
PRINTED: 03/07/85

DSNAME: R7065.TRAMCON.EURSEGRE

PROJECT ENGINEER: W. J. BONIA CODE: R210 PHONE: AV 364-2164 LOCAL (703) 437-2164
DEFENSE COMMUNICATIONS ENGINEERING CENTER; TRANSMISSION ENGINEERING DIRECTORATE;
TRANSMISSION NETWORK ENGINEERING DIVISION; 1860 WIEHLE AVE.; RESTON, VA. 22090-5500

LEGEND:
- * = STATION HAS MASTER TERM.
- SEG = TRAMCON SEGMENT NOS.
- # IRU = NO. OF INTELLIGENT REMOTE UNITS
- # RDT = NO. OF REMOTE DISPLAY TERM.
- ICO = INTERMEDIATE CONTROL OFFICE
- TERM = NO. OF LINK TERMINATIONS
- R = STATION IS REPEATER SITE
- CODE = 3-LETTER STATION ABBREV.
- # TMT = NO. OF TRAMCON MASTER TERM.
- FCO = FACILITY CONTROL OFFICE
- MMT = MOBILE MAINTENANCE TEAM
- 2NDCH = NO. OF LSTDM CHANNEL CARDS REQUIRED FOR ALTERNATE TMT ACCESS

RMKS: NO. OF LOCATIONS = 223

STATION NAME	MILDEP	SEG	CODE	TMT NUMBER PRIMARY	TMT NUMBER BACK-UP	# IRU	# TMT	# RDT	FCO	ICO	MMT	TERM	2NDCH
001 ABERDEEN UK R	N	1	ABE	M1	A2	1						2	
002 EDZELL UK	N	1	EDZ	M1	A2	1						1	
003 FYLNGDLS UK	AF	1	FYL	M1	A2	1						2	2
004 INVERBRV UK R	N	1	INV	M1	A2	1						2	
005 KINNABER UK R	N	1	KBR	M1	A2	1					1	2	
006 LATHERON UK R	N	1	LAT	M1	A2	1						2	2
007 MRMNDHLL UK	AF	1	MOH	M1	A2	1						4	2
008 MURKLE UK	N	1	MKE	M1	A2	1						1	
009 THURSO UK *	N	1	TUS	M1	A2	1	1	2			1	2	1
*** SEGMENT TOTALS ***						9	1	2	0	0	2	18	7
010 BENTWTRS UK	AF	2	BNT	M2	A1	1						3	
011 COLCHSTR UK	AF	2	CHR	M2	A1	1						2	
012 GTBROMLY UK R	AF	2	GTB	M2	A1	1						3	1
013 MTLSHMHT UK *	AF	2	MAM	M2	A1	1	1	2		1	1	4	2
014 SHBRYNSS UK R	AF	2	SHS	M2	A1	1						2	
015 WOODBRDG UK	AF	2	WBG	M2	A1	1						1	
016 WTHRSFLD UK	AF	2	WTH	M2	A1	1						2	
*** SEGMENT TOTALS ***						7	1	2	0	1	1	17	3
017 ALCONBRY UK	AF	3	ANY	M3	A5	1						2	
018 BFDSTJHN UK	AF	3	BFD	M3	A5	1						1	
019 BRIZNRTN UK	AF	3	BZN	M3	A5	1						2	
020 CHELVSTN UK R	AF	3	CHV	M3	A5	1						2	
021 CROUGHTN UK *	AF	3	CRO	M3	A5	1	1	2		1		4	
022 DAVENTRY UK R	AF	3	DAV	M3	A5	1						2	
023 FAIRFORD UK	AF	3	FRD	M3	A5	1						2	1
024 MOLSWRTH UK	AF	3	MOL	M3	A5	1						2	
025 UPHEYFRD UK	AF	3	UHD	M3	A5	1						2	
*** SEGMENT TOTALS ***						9	1	2	0	1	0	19	1
026 BARKWAY UK	AF	4	BRY	M4	A6	1						4	2
027 BOVINGDN UK R	AF	4	BOV	M4	A6	1						2	2
028 CHCKSNDS UK	AF	4	CKS	M4	A6	1						2	
029 HONINGTN UK	AF	4	HON	M4	A6	1						2	
030 LAKENHTH UK	AF	4	LAH	M4	A6	1						2	
031 MENDLSHM UK R	AF	4	MDH	M4	A6	1						2	

TABLE I. (cont'd)
TRAMCON SEGMENTS IN EUROPE

032 MILDNHLL	UK •	AF	4	MIL	M4	A6	1	1	2		1		2	1
*** SEGMENT TOTALS ***							7	1	2	0	1	0	16	5
033 ABINGDON	UK	AF	5	ABN	M5	A3	1						2	2
034 BENSON	UK	AF	5	BSN	M5	A3	1						2	2
035 CRSMSCMN	UK	AF	5	CRS	M5	A3	1						4	2
036 FARNBRGH	UK	AF	5	FBN	M5	A3	1						2	
037 GRNHMCMN	UK	AF	5	GHC	M5	A3	1						2	
038 HILLNGDN	UK •	AF	5	HIN	M5	A3	1	1	2	1		1	1	1
039 HIWYCOMB	UK	AF	5	HYE	M5	A3	1						2	2
*** SEGMENT TOTALS ***							7	1	2	1	0	1	15	9
040 BOTLYHLL	UK	AF	6	BFM	M6	A4	1						4	
041 CHATHAM	UK	AF	6	CHM	M6	A4	1						3	
042 COLDBLOW	UK	AF	6	CDW	M6	A4	1						3	
043 DUNKIRK	UK	AF	6	DNK	M6	A4	1						2	
044 HILLNGDN	UK •	AF	6	HIN	M6	A4	1	1	2	1		1	2	1
045 LONDON	UK	N	6	LDN	M6	A4	1				1		2	
046 SWINGATE	UK R	AF	6	SWG	M6	A4	1						2	
*** SEGMENT TOTALS ***							7	1	2	1	1	1	18	1
047 HUMOSA	SP	AF	7	HUM	M7	A10	1						2	2
048 INOGES	SP	AF	7	INO	M7	A10	1						3	2
049 MINORCA	SP	AF	7	MNA	M7	A10	1						2	3
050 SOLLER	SP	AF	7	SOL	M7	A10	1						2	2
051 TORREJON	SP •	AF	7	TJN	M7	A10	1	1	2	1			1	1
052 ZARAGOZA	SP R	AF	7	ZAR	M7	A10	1						1	
*** SEGMENT TOTALS ***							6	1	2	1	0	0	11	10
053 AVIANO	IT •	AF	8	AVO	M8	A9	1	1	2	1		1	1	
054 CEGGIA	IT	A	8	CEG	M8	A9	1						2	
055 MT VENDA	IT	AF	8	MTE	M8	A9	1				1		3	1
056 VICENZA	IT	A	8	VCA	M8	A9	1						1	
*** SEGMENT TOTALS ***							4	1	2	1	1	1	7	1
057 CIMAGLIN	IT	AF	9	CIM	M9	A24	1						2	1
058 COLTANO	IT •	A	9	CLO	M9	A24	1	1	2	1			3	2
059 MT CORNA	IT	AF	9	MCA	M9	A24	1				1	1	3	2
060 MT SERRA	IT	AF	9	MTS	M9	A24	1						2	2
061 MTCIMONE	IT	AF	9	MTC	M9	A24	1						2	2
062 PAGANELL	IT	AF	9	PAG	M9	A24	1						2	
063 SAVONA	IT R	A	9	SAV	M9	A24	1						2	2
*** SEGMENT TOTALS ***							7	1	2	1	1	1	16	11
064 CALTAGRN	IT	AF	10	CAL	M10	A7	1						2	
065 COMISO	IT	AF	10	COM	M10	A7	1						1	
066 MTLIMBAR	IT	AF	10	MBA	M10	A7	1				1		3	3
067 MTVERGIN	IT •	AF	10	MRE	M10	A7	1	1	2	1			3	1
068 REGGIO	IT	AF	10	REG	M10	A7	1						2	
069 SIGONELL	IT	N	10	SGA	M10	A7	1						2	
*** SEGMENT TOTALS ***							6	1	2	1	1	0	13	4
070 AGNANO	IT	N	11	AGA	M11	A12	1						1	

TABLE 1. (cont'd)
TRAMCON SEGMENTS IN EUROPE

071	CAMOLDOL	IT		N	11	CAO	M11	A12	2						5	2
072	CAPODCHN	IT		N	11	CPO	M11	A12	1						1	
073	LAGODPTR	IT		N	11	LAG	M11	A12	1						3	
074	MRTNFRNC	IT		AF	11	MRA	M11	A12	1				1		3	3
075	MTEPOMEO	IT		N	11	EPO	M11	A12	1						2	
076	MTVERGIN	IT		AF	11	MRE	M11	A12	1			1			2	2
077	NAPLES	IT	*	N	11	NPS	M11	A12	1	1	2	1			2	1
078	SNVTDNNN	IT		AF	11	SNV	M11	A12	1						1	
	*** SEGMENT TOTALS ***								10	1	2	2	1	0	20	8
079	HELLENKN	GR	*	AF	12	HEL	M12	A11	1	1	2	1		1	1	1
080	IRAKLION	GR		AF	12	IRK	M12	A11	1						1	
081	KATOSOUL	GR		N	12	KAO	M12	A11	1						2	
082	LEVKAS	GR		AF	12	LEV	M12	A11	1						2	3
083	MTEDHERI	GR		AF	12	MEI	M12	A11	1						2	
084	MTPARNIS	GR		AF	12	MPR	M12	A11	1						3	2
085	MTPATERS	GR		AF	12	PAT	M12	A11	1				1		4	2
086	NEAMAKRI	GR		N	12	NMK	M12	A11	1						1	
	*** SEGMENT TOTALS ***								8	1	2	1	1	1	16	8
087	ALEMDAG	TU		AF	13	ALE	M13	A14	1						2	
088	BALIKESR	TU		AF	13	BAL	M13	A14	1						1	
089	CAKMAKLI	TU		AF	13	CKA	M13	A14	1						1	
090	CORLU	TU		AF	13	CRL	M13	A14	1						1	
091	ESKISHIR	TU		AF	13	ESK	M13	A14	1						1	
092	ISTANBUL	TU		AF	13	IST	M13	A14	1						1	
093	IZMIR	TU		AF	13	IZM	M13	A14	1						1	
094	IZMIT	TU		AF	13	IMZ	M13	A14	1						1	
095	ORTAKOY	TU		AF	13	ORT	M13	A14	1						1	
096	SAHINTPS	TU	*	AF	13	SAH	M13	A14	4	1	2		1	1	9	1
097	USKUDAR	TU		AF	13	TGS	M13	A14	1						1	
098	YAMANLAR	TU		AF	13	YAM	M13	A14	1						4	
	*** SEGMENT TOTALS ***								15	1	2	0	1	1	24	1
099	ANKARA	TU		AF	14	ANK	M14	A13	1						1	1
100	BELBASI	TU		AF	14	BEB	M14	A13	1						1	
101	DIYARBKR	TU		AF	14	TGS	M14	A13	1						1	
102	DIYARBKR	TU		AF	14	DIY	M14	A13	2						4	
103	ELMADAG	TU	*	AF	14	DAG	M14	A13	2	1	2	1			6	2
104	ERHAC	TU		AF	14	ERH	M14	A13	1						1	
105	INCIRLIK	TU		AF	14	INC	M14	A13	1						1	
106	KARATAS	TU		AF	14	KTS	M14	A13	1						3	
107	MALATYA	TU		AF	14	MAL	M14	A13	1						3	
108	MURTED	TU		AF	14	MUR	M14	A13	1						1	
109	SAMSUN	TU	R	AF	14	SAM	M14	A13	1						2	
110	SINOP	TU		AF	14	SNP	M14	A13	1						1	
	*** SEGMENT TOTALS ***								14	1	2	1	0	0	25	3
111	DAMME	GE	R	AF	15	DME	M15	A30	1						2	1
112	ERP	NL		AF	15	ERP	M15	A30	1						2	
113	GROSSRKN	GE	R	AF	15	GRN	M15	A30	1						2	
114	HAMMNKLN	GE		AF	15	HAM	M15	A30	1						2	
115	IBBENBRN	GE	R	AF	15	IBN	M15	A30	1						2	
116	KALKAR	GE	*	AF	15	KAL	M15	A30	1	1	2				3	
117	KEIZRSVR	NL		AF	15	KIZ	M15	A30	1						2	
118	SCHOPNGN	GE	R	AF	15	SCN	M15	A30	1						2	

TABLE I. (cont'd)
TRANCON SEGMENTS IN EUROPE

119	VUGHT	NL		AF	15	VUG	M15	A30	1						2	
120	WNSDRCHT	NL		AF	15	WDT	M15	A30	1						2	
	*** SEGMENT TOTALS ***								10	1	2	0	0	0	21	1
121	BRUEGGEN	GE	*	A	16	BUN	M16	A15	1	1	2			1	4	
122	BRUNSSUM	NL		A	16	BRU	M16	A15	1						2	
123	HERONGEN	GE		A	16	HER	M16	A15	1						3	
124	MNCHGDBC	GE		A	16	MGB	M16	A15	1						1	
125	RHEINBRG	GE		A	16	RBG	M16	A15	1						1	
126	SCHINNEN	NL		A	16	SHI	M16	A15	1						2	
	*** SEGMENT TOTALS ***								6	1	2	0	0	1	13	0
127	BITBURG	GE		AF	17	BIG	M17	A18	1						2	
128	MUHL	GE		AF	17	MUL	M17	A18	2					1	6	
129	SCHONFLD	GE	*	AF	17	SCH	M17	A18	1	1	2	1		1	3	1
130	SPMLCMPS	BE	R	AF	17	SPA	M17	A18	1						2	3
131	SPNGDHLM	GE		AF	17	SPM	M17	A18	1						2	
	*** SEGMENT TOTALS ***								6	1	2	1	1	1	15	4
132	BEN AHIN	BE	R	AF	18	BNA	M18	A17	1						2	3
133	CHIEVRES	BE	*	A	18	CHE	M18	A17	3	1	2				2	1
134	FLOBECQ	BE		AF	18	FLO	M18	A17	1					1	3	2
135	FLORENNS	BE		AF	18	FLR	M18	A17	1						1	
136	HOUTEM	BE	R	AF	18	HOU	M18	A17	1						2	
137	LECHENOI	BE		AF	18	LEC	M18	A17	1						4	2
138	SHAPE	BE		AF	18	SPB	M18	A17	1			1			2	
139	SHAPERRS	BE	R	AF	18	SHR	M18	A17	1						2	
140	WESTRZBK	BE	R	AF	18	WEZ	M18	A17	1						2	
	*** SEGMENT TOTALS ***								11	1	3	0	0	1	20	8
141	ADENAU	GE		AF	19	ANU	M19	A20	1						4	
142	DANNNFLS	GE		A	19	DNF	M19	A20	1						2	
143	ELRSPRNG	GE		AF	19	EPG	M19	A20	2						6	2
144	HAHN	GE	*	AF	19	HAN	M19	A20	2	1	2				4	1
145	WUESCHEM	GE		A	19	WSM	M19	A20	1						2	
	*** SEGMENT TOTALS ***								7	1	2	0	0	0	18	3
146	BANN	GE		AF	20	BAN	M20	A23	2						6	
147	RAMSTEIN	GE	*	AF	20	RSN	M20	A23	1	1	2	1			3	
148	SEMBACH	GE		AF	20	SEH	M20	A23	1					1	3	
	*** SEGMENT TOTALS ***								4	1	2	1	1	0	12	0
149	BAUMHLDR	GE		A	21	BHR	M21	A19	1						2	
150	BDKRZNCH	GE		A	21	BKH	M21	A19	1						2	1
151	DNNRSBRG	GE	*	A	21	DON	M21	A19	1	1	2			1	4	
152	LINDSEY	GE		AF	21	LSY	M21	A19	1						2	
153	MAINZ	GE		A	21	MNZ	M21	A19	1						2	
154	WIESBADN	GE		A	21	WBN	M21	A19	1						3	
	*** SEGMENT TOTALS ***								6	1	2	0	1	0	15	1
155	DNNRSBRG	GE	*	A	22	DON	M22	A27	2	1	2			1	6	
156	KSRSLTRN	GE		A	22	KLN	M22	A27	1						2	
157	LANDSTHL	GE		A	22	LDL	M22	A27	1						3	

158	LOHNSFLD	GE	__A___	22	LFD	__M22__	__A27__	__1__	_____	_____	___	___	___	__2__	_____
	*** SEGMENT TOTALS ***							__5__	__1__	__2__	_0_	_1_	_0_	_13_	__0__
159	LANGRKPF	GE	__AF__	23	LKF	__M23__	___A9__	__2__	_____	_____	___	_1_	___	__6__	_____
160	PIRMASNS	GE •	__A___	23	PMS	__M23__	___A9__	__1__	__1__	__2__	_1_	___	___	__3__	_____
161	SCHWRZWD	GE R	__A___	23	SZD	__M23__	___A9__	__1__	_____	_____	___	___	___	__2__	__1__
162	ZWEBRCAF	GE	__AF__	23	ZWE	__M23__	___A9__	__1__	_____	_____	___	___	___	__2__	_____
163	ZWEBRCKN	GE	__A___	23	ZBN	__M23__	___A9__	__1__	_____	_____	___	___	___	__2__	_____
	*** SEGMENT TOTALS ***							__6__	__1__	__2__	_1_	_1_	_0_	_15_	__1__
164	FRIOLZHN	GE	__A___	24	FRI	__M24__	__A25__	__1__	_____	_____	___	___	___	__4__	_____
165	HEILBRNN	GE	__A___	24	HBL	__M24__	__A25__	__1__	_____	_____	___	___	___	__2__	_____
166	HOHNSTDT	GE	__A___	24	HST	__M24__	__A25__	__2__	_____	_____	___	___	___	__4__	__3__
167	STCKSBRG	GE	__A___	24	SSB	__M24__	__A25__	__1__	_____	_____	___	___	___	__2__	_____
168	STUTTGRT	GE	__A___	24	SGT	__M24__	__A25__	__1__	_____	_____	___	___	_1_	__4__	_____
169	VAIHINGN	GE •	__A___	24	VHN	__M24__	__A25__	__1__	__1__	__2__	_1_	___	___	__3__	__1__
170	ZUGSPITZ	GE	__AF__	24	ZUG	__M24__	__A25__	__1__	_____	_____	___	___	___	__2__	__2__
	*** SEGMENT TOTALS ***							__8__	__1__	__2__	_1_	_0_	_1_	_21_	__6__
171	BONSTTTN	GE	__A___	25	BST	__M25__	__A26__	__1__	_____	_____	___	___	___	__3__	__2__
172	GABLINGN	GE	__A___	25	GAB	__M25__	__A26__	__1__	_____	_____	___	___	___	__1__	_____
173	HEIDENHM	GE R	__AF__	25	HDM	__M25__	__A26__	__1__	_____	_____	___	___	___	__2__	_____
174	HNPSNBRG	GE	__A___	25	HPG	__M25__	__A26__	__1__	_____	_____	___	___	___	__2__	_____
175	KATTRBCH	GE	__A___	25	KAT	__M25__	__A26__	__1__	_____	_____	___	___	___	__2__	_____
176	MUNICH	GE	__A___	25	MNH	__M25__	__A26__	__1__	_____	_____	___	___	___	__1__	_____
177	R5AG5BRG	GE •	__A___	25	RAG	__M25__	__A26__	__1__	__1__	__2__	_1_	___	_1_	__3__	__1__
	*** SEGMENT TOTALS ***							__7__	__1__	__2__	_1_	_0_	_1_	_14_	__3__
178	BRANDHOF	GE R	__AF__	26	BDH	__M26__	__A28__	__1__	_____	_____	___	___	___	__2__	_____
179	GEIGNWNG	GE	__A___	26	GEG	__M26__	__A28__	__1__	_____	_____	___	___	___	__3__	_____
180	GRAFNWHR	GE	__A___	26	GRA	__M26__	__A28__	__1__	_____	_____	___	___	___	__2__	_____
181	HOHENFLS	GE	__A___	26	HFL	__M26__	__A28__	__1__	_____	_____	___	___	___	__1__	_____
182	NUERNBRG	GE •	__A___	26	NBG	__M26__	__A28__	__1__	__1__	__2__	___	___	___	__3__	_____
183	RNWRZHFN	GE R	__A___	26	RWH	__M26__	__A28__	__1__	_____	_____	___	___	___	__2__	_____
184	SCHNEBRG	GE	__A___	26	SNB	__M26__	__A28__	__1__	_____	_____	___	___	___	__1__	_____
185	SCHWNBRG	GE R	__AF__	26	SHW	__M26__	__A28__	__1__	_____	_____	___	___	_1_	__2__	__1__
	*** SEGMENT TOTALS ***							__8__	__1__	__2__	_0_	_0_	_1_	_16_	__1__
186	HEIDLBRG	GE •	__A___	27	HDG	__M27__	__A22__	__1__	__1__	__2__	_1_	___	___	__2__	_____
187	KARLSRUH	GE	__A___	27	KRE	__M27__	__A22__	__1__	_____	_____	___	___	___	__1__	_____
188	KONGSTHL	GE	__A___	27	KSL	__M27__	__A22__	__3__	_____	_____	___	___	_1_	__8__	_____
189	MANNHEIM	GE	__A___	27	MHN	__M27__	__A22__	__1__	_____	_____	___	___	___	__2__	_____
190	SCHWTZGN	GE	__A___	27	SCW	__M27__	__A22__	__1__	_____	_____	___	___	___	__2__	_____
191	WORMS	GE	__A___	27	WMS	__M27__	__A22__	__1__	_____	_____	___	___	___	__2__	_____
	*** SEGMENT TOTALS ***							__8__	__1__	__2__	_1_	_0_	_1_	_17_	__0__
192	BREITSOL	GE	__A___	28	BTL	__M28__	__A21__	__1__	_____	_____	___	___	___	__4__	__2__
193	DARMSTDT	GE	__A___	28	DST	__M28__	__A21__	__1__	_____	_____	___	___	___	__1__	_____
194	FRANKFRT	GE •	__A___	28	FKT	__M28__	__A21__	__2__	__1__	__2__	_1_	___	___	__4__	__1__
195	HANAU	GE	__A___	28	HNA	__M28__	__A21__	__1__	_____	_____	___	___	___	__2__	_____
196	MELIBOCS	GE	__A___	28	MEL	__M28__	__A21__	__1__	_____	_____	___	___	___	__4__	_____
197	RHEINMAN	GE	__AF__	28	RMN	__M28__	__A21__	__1__	_____	_____	___	___	___	__4__	_____
198	WURZBURG	GE	__A___	28	WBG	__M28__	__A21__	__1__	_____	_____	___	___	___	__2__	__2__

TABLE I. (cont'd)
TRAMCON SEGMENTS IN EUROPE

*** SEGMENT TOTALS ***								8	1	2	1	0	0	21	5
199	DRBNDRHH	GE	R	A	29	DBH	M29	A16	1						2	
200	EUSKRCHN	GE		A	29	EUS	M29	A16	1						1	
201	FELDBERG	GE	*	AF	29	FEL	M29	A16	3	1	2		1	1	7	
202	GIESSEN	GE		A	29	GSN	M29	A16	1						2	
203	NORVENCH	GE		A	29	NOV	M29	A16	1						3	
204	ROETGEN	GE		AF	29	RGN	M29	A16	1						4	
205	STEIN	GE		A	29	STN	M29	A16	1						2	
*** SEGMENT TOTALS ***									9	1	2	0	1	1	21	0
206	BARME	GE	R	A	30	BME	M30	A31	1						2	
207	BASDAHL	GE		AF	30	BAS	M30	A31	1						2	2
208	BDNUENDR	GE		AF	30	BAM	M30	A31	1						3	
209	BREMRHVN	GE	*	A	30	BRN	M30	A31	1	1	2	1			1	1
210	DOTLINGN	GE	R	AF	30	DOT	M30	A31	1						2	2
211	DUENSEN	GE	R	A	30	DSN	M30	A31	1						2	
212	GARLSTDT	GE		A	30	GAR	M30	A31	1						3	2
213	HSCODNDF	GE		AF	30	HES	M30	A31	1						1	
214	LANGNDMM	GE	R	A	30	LAN	M30	A31	1						2	
215	LINDERHF	GE		A	30	LDF	M30	A31	1						2	1
*** SEGMENT TOTALS ***									10	1	2	1	0	0	20	8
216	BERLIN	BZ	*	A	31	BLN	M31	A29	1	1	2	1			2	1
217	BOCKSBRG	GE		A	31	BBG	M31	A29	1						3	2
218	DRCKNBRG	GE	R	A	31	DKB	M31	A29	1						2	
219	HELMSTDT	GE		A	31	HMT	M31	A29	1						1	
220	KOTERBRG	GE		AF	31	KBG	M31	A29	1						3	2
221	ROTHWSTN	GE	R	AF	31	RWN	M31	A29	1						2	
222	SCWRZNBN	GE	R	AF	31	SBN	M31	A29	1						2	
223	TEMPELHF	BZ		AF	31	TPF	M31	A29	1						1	
*** SEGMENT TOTALS ***									8	1	2	1	0	0	16	5
*** SUM OF SEGMENT TOTALS ***									243	31	63	19	16	17	523	118

TABLE II.

COUNTRY SORT OF TRAMCON SEGMENTS IN EUROPE

LATEST REV.: 02/27/85
PRINTED: 03/07/85

DSNAME: R7065.TRAMCON.EURSEGRE

PROJECT ENGINEER: W. J. BONIA CODE: R210 PHONE: AV 364-2164 LOCAL (703) 437-2164
DEFENSE COMMUNICATIONS ENGINEERING CENTER; TRANSMISSION ENGINEERING DIRECTORATE;
TRANSMISSION NETWORK ENGINEERING DIVISION; 1860 WIEHLE AVE.; RESTON, VA. 22090-5500

LEGEND:
- * = STATION HAS MASTER TERM.
- SEG = TRAMCON SEGMENT NOS.
- # IRU = NO. OF INTELLIGENT REMOTE UNITS
- # RDT = NO. OF REMOTE DISPLAY TERM.
- ICO = INTERMEDIATE CONTROL OFFICE
- TERM = NO. OF LINK TERMINATIONS
- R = STATION IS REPEATER SITE
- CODE = 3-LETTER STATION ABBREV.
- # TMT = NO. OF TRAMCON MASTER TERM.
- FCO = FACILITY CONTROL OFFICE
- MMT = MOBILE MAINTENANCE TEAM
- 2NDCH = NO. OF LSTDM CHANNEL CARDS REQUIRED FOR ALTERNATE TMT ACCESS

RMKS: NO. OF LOCATIONS = 223

					TMT NUMBER								
STATION NAME		MILDEP	SEG	CODE	PRIMARY	BACK-UP	# IRU	# TMT	# RDT	FCO	ICO	MMT	TERM	2NDCH
001 CHIEVRES	BE * R	A	18	CHE	M18	A17	3	1	2				2	1
002 BEN AHIN	BE R	AF	18	BNA	M18	A17	1						2	3
003 FLOBECQ	BE	AF	18	FLO	M18	A17	1					1	3	2
004 FLORENNS	BE	AF	18	FLR	M18	A17	1						1	
005 HOUTEM	BE R	AF	18	HOU	M18	A17	1						2	
006 LECHENOI	BE	AF	18	LEC	M18	A17	1						4	2
007 SHAPE	BE	AF	18	SPB	M18	A17	1		1				2	
008 SHAPERRS	BE R	AF	18	SHR	M18	A17	1						2	
009 SPMLCMPS	BE R	AF	17	SPA	M17	A18	1						2	3
010 WESTRZBK	BE R	AF	18	WEZ	M18	A17	1						2	
*** COUNTRY TOTALS ***							12	1	3	0	0	1	22	11
011 BERLIN	BZ *	A	31	BLN	M31	A29	1	1	2	1			2	1
012 TEMPELHF	BZ	AF	31	TPF	M31	A29	1						1	
*** COUNTRY TOTALS ***							2	1	2	1	0	0	3	1
013 BARME	GE R	A	30	BME	M30	A31	1						2	
014 BAUMHLDR	GE	A	21	BHR	M21	A19	1						2	
015 BDKRZNCH	GE	A	21	BKH	M21	A19	1						2	1
016 BOCKSBRG	GE	A	31	BBG	M31	A29	1						3	2
017 BONSTTTN	GE	A	25	BST	M25	A26	1						3	2
018 BREITSOL	GE	A	28	BTL	M28	A21	1						4	2
019 BREMRHVN	GE *	A	30	BRN	M30	A31	1	1	2	1			1	1
020 BRUEGGEN	GE *	A	16	BUN	M16	A15	1	1	2			1	4	
021 DANNNFLS	GE	A	19	DNF	M19	A20	1						2	
022 DARMSTDT	GE	A	28	DST	M28	A21	1						1	
023 DNNRSBRG	GE *	A	21	DON	M21	A19	1	1	2		1		4	
024 DNNRSBRG	GE *	A	22	DON	M22	A27	2	1	2		1		6	
025 DRBNDRHH	GE R	A	29	DBH	M29	A16	1						2	
026 DRCKNBRG	GE R	A	31	DKB	M31	A29	1						2	
027 DUENSEN	GE R	A	30	DSN	M30	A31	1						2	
028 EUSKRCHN	GE	A	29	EUS	M29	A16	1						1	
029 FRANKFRT	GE *	A	28	FKT	M28	A21	2	1	2	1			4	1
030 FRIOLZHN	GE	A	24	FRI	M24	A25	1						4	
031 GABLINGN	GE	A	25	GAB	M25	A26	1						1	
032 GARLSTDT	GE	A	30	GAR	M30	A31	1						3	2
033 GEIGNWNG	GE	A	26	GEG	M26	A28	1						3	
034 GIESSEN	GE	A	29	GSN	M29	A16	1						2	

TABLE II. (cont'd)
COUNTRY SORT OF TRAMCON SEGMENTS IN EUROPE

035	GRAFNWHR	GE		A	26	GRA	M26	A28	1						2	
036	HANAU	GE		A	28	HNA	M28	A21	1						2	
037	HEIDLBRG	GE	•	A	27	HDG	M27	A22	1	1	2	1			2	
038	HEILBRNN	GE		A	24	HBL	M24	A25	1						2	
039	HELMSTDT	GE		A	31	HMT	M31	A29	1						1	
040	HERONGEN	GE		A	16	HER	M16	A15	1						3	
041	HNPSNBRG	GE		A	25	HPG	M25	A26	1						2	
042	HOHENFLS	GE		A	26	HFL	M26	A28	1						1	
043	HOHNSTDT	GE		A	24	HST	M24	A25	2						4	3
044	KARLSRUH	GE		A	27	KRE	M27	A22	1						1	
045	KATTRBCH	GE		A	25	KAT	M25	A26	1						2	
046	KONGSTHL	GE		A	27	KSL	M27	A22	3					1	8	
047	KSRSLTRN	GE		A	22	KLN	M22	A27	1						2	
048	LANDSTHL	GE		A	22	LDL	M22	A27	1						3	
049	LANGNDMM	GE	R	A	30	LAN	M30	A31	1						2	
050	LINDERHF	GE		A	30	LDF	M30	A31	1						2	1
051	LOHNSFLD	GE		A	22	LFD	M22	A27	1						2	
052	MAINZ	GE		A	21	MNZ	M21	A19	1						2	
053	MANNHEIM	GE		A	27	MHN	M27	A22	1						2	
054	MELIBOCS	GE		A	28	MEL	M28	A21	1						4	
055	MNCHGDBC	GE		A	16	MGB	M16	A15	1						1	
056	MUNICH	GE		A	25	MNH	M25	A26	1						1	
057	NORVENCH	GE		A	29	NOV	M29	A16	1						3	
058	NUERNBRG	GE	•	A	26	NBG	M26	A28	1	1	2				3	
059	PIRMASNS	GE	•	A	23	PMS	M23	A9	1	1	2	1			3	
060	RHEINBRG	GE		A	16	RBG	M16	A15	1						1	
061	RNWRZHFN	GE	R	A	26	RWH	M26	A28	1						2	
062	RSAGSBRG	GE	•	A	25	RAG	M25	A26	1	1	2	1		1	3	1
063	SCHNEBRG	GE		A	26	SNB	M26	A28	1						1	
064	SCHWRZWD	GE	R	A	23	SZD	M23	A9	1						2	1
065	SCHWTZGN	GE		A	27	SCW	M27	A22	1						2	
066	STCKSBRG	GE		A	24	SSB	M24	A25	1						2	
067	STEIN	GE		A	29	STN	M29	A16	1						2	
068	STUTTGRT	GE		A	24	SGT	M24	A25	1					1	4	
069	VAIHINGN	GE	•	A	24	VHN	M24	A25	1	1	2	1			3	1
070	WIESBADN	GE		A	21	WBN	M21	A19	1						3	
071	WORMS	GE		A	27	WMS	M27	A22	1						2	
072	WUESCHEM	GE		A	19	WSM	M19	A20	1						2	
073	WURZBURG	GE		A	28	WBG	M28	A21	1						2	2
074	ZWEBRCKN	GE		A	23	ZBN	M23	A9	1						2	
075	ADENAU	GE		AF	19	ANU	M19	A20	1						4	
076	BANN	GE		AF	20	BAN	M20	A23	2						6	
077	BASDAHL	GE		AF	30	BAS	M30	A31	1						2	2
078	BDMUENDR	GE		AF	30	BAM	M30	A31	1						3	
079	BITBURG	GE		AF	17	BIG	M17	A18	1						2	
080	BRANDHOF	GE	R	AF	26	BDH	M26	A28	1						2	
081	DAMME	GE	R	AF	15	DME	M15	A30	1						2	1
082	DOTLINGN	GE	R	AF	30	DOT	M30	A31	1						2	2
083	ELRSPRNG	GE		AF	19	EPG	M19	A20	2						6	2
084	FELDBERG	GE	•	AF	29	FEL	M29	A16	3	1	2		1	1	7	
085	GROSSRKN	GE	R	AF	15	GRN	M15	A30	1						2	
086	HAHN	GE	•	AF	19	HAN	M19	A20	2	1	2				4	1
087	HAMMNKLN	GE		AF	15	HAM	M15	A30	1						2	
088	HEIDENHM	GE	R	AF	25	HDM	M25	A26	1						2	
089	HSCODNDF	GE		AF	30	HES	M30	A31	1						1	
090	IBBENBRN	GE	R	AF	15	IBN	M15	A30	1						2	
091	KAI KAR	GE	•	AF	15	KAL	M15	A30	1	1	2				3	
092	KOTERBRG	GE		AF	31	KBG	M31	A29	1						3	2
093	LANGRKPF	GE		AF	23	LKF	M23	A9	2				1		6	
094	LINDSEY	GE		AF	21	LSY	M21	A19	1						2	

TABLE II. (cont'd)
COUNTRY SORT OF TRAMCON SEGMENTS IN EUROPE

095	MUHL	GE		AF	17	MUL	M17	A18	2				1		6	
096	RAMSTEIN	GE	•	AF	20	RSN	M20	A23	1	1	2	1			3	
097	RHEINMAN	GE		AF	28	RMN	M28	A21	1						4	
098	ROETGEN	GE		AF	29	RGN	M29	A16	1						4	
099	ROTHWSTN	GE	R	AF	31	RWN	M31	A29	1						2	
100	SCHONFLD	GE	•	AF	17	SCH	M17	A18	1	1	2	1		1	3	1
101	SCHOPNGN	GE	R	AF	15	SCN	M15	A30	1						2	
102	SCHWNBRG	GE	R	AF	26	SHW	M26	A28	1					1	2	1
103	SCWRZNBN	GE	R	AF	31	SBN	M31	A29	1						2	
104	SEMBACH	GE		AF	20	SEH	M20	A23	1				1		3	
105	SPNGDHLM	GE		AF	17	SPM	M17	A18	1						2	
106	ZUGSPITZ	GE		AF	24	ZUG	M24	A25	1						2	2
107	ZWEBRCAF	GE		AF	23	ZWE	M23	A9	1						2	
	••• COUNTRY TOTALS •••								107	15	30	8	6	7	251	34
108	HELLENKN	GR	•	AF	12	HEL	M12	A11	1	1	2	1		1	1	1
109	IRAKLION	GR		AF	12	IRK	M12	A11	1						1	
110	LEVKAS	GR		AF	12	LEV	M12	A11	1						2	3
111	MTEDHERI	GR		AF	12	MEI	M12	A11	1						2	
112	MTPARNIS	GR		AF	12	MPR	M12	A11	1						3	2
113	MTPATERS	GR		AF	12	PAT	M12	A11	1				1		4	2
114	KATOSOUL	GR		N	12	KAO	M12	A11	1						2	
115	NEAMAKRI	GR		N	12	NMK	M12	A11	1						1	
	••• COUNTRY TOTALS •••								8	1	2	1	1	1	16	8
116	CEGGIA	IT		A	8	CEG	M8	A9	1						2	
117	COLTANO	IT	•	A	9	CLO	M9	A24	1	1	2	1			3	2
118	SAVONA	IT	R	A	9	SAV	M9	A24	1						2	2
119	VICENZA	IT		A	8	VCA	M8	A9	1						1	
120	AVIANO	IT	•	AF	8	AVO	M8	A9	1	1	2	1		1	1	
121	CALTAGRN	IT		AF	10	CAL	M10	A7	1						2	
122	CIMAGLIN	IT		AF	9	CIM	M9	A24	1						2	1
123	COMISO	IT		AF	10	COM	M10	A7	1						1	
124	MRTNFRNC	IT		AF	11	MRA	M11	A12	1				1		3	3
125	MT CORNA	IT		AF	9	MCA	M9	A24	1				1	1	3	2
126	MT SERRA	IT		AF	9	MTS	M9	A24	1						2	2
127	MT VENDA	IT		AF	8	MTE	M8	A9	1				1		3	1
128	MTCIMONE	IT		AF	9	MTC	M9	A24	1						2	2
129	MTLIMBAR	IT		AF	10	MBA	M10	A7	1				1		3	3
130	MTVERGIN	IT	•	AF	10	MRE	M10	A7	1	1	2	1			3	1
131	MTVERGIN	IT		AF	11	MRE	M11	A12	1			1			2	2
132	PAGANELL	IT		AF	9	PAG	M9	A24	1						2	
133	REGGIO	IT		AF	10	REG	M10	A7	1						2	
134	SNVTDNMN	IT		AF	11	SNV	M11	A12	1						1	
135	AGNANO	IT		N	11	AGA	M11	A12	1						1	
136	CAMOLDOL	IT		N	11	CAO	M11	A12	2						5	2
137	CAPODCHN	IT		N	11	CPO	M11	A12	1						1	
138	LAGODPTR	IT		N	11	LAG	M11	A12	1						3	
139	MTEPOMEO	IT		N	11	EPO	M11	A12	1						2	
140	NAPLES	IT	•	N	11	NPS	M11	A12	1	1	2	1			2	1
141	SIGONELL	IT		N	10	SGA	M10	A7	1						2	
	••• COUNTRY TOTALS •••								27	4	8	5	4	2	56	24
142	BRUNSSUM	NL		A	16	BRU	M16	A15	1						2	
143	SCHINNEN	NL		A	16	SHI	M16	A15	1						2	
144	ERP	NL		AF	15	ERP	M15	A30	1						2	
145	KEIZRSVR	NL		AF	15	KIZ	M15	A30	1						2	

TABLE II. (cont'd)
COUNTRY SORT OF TRAMCON SEGMENTS IN EUROPE

146	VUGHT	NL		AF	15	VUG	M15	A30	1						2	
147	WNSDRCHT	NL		AF	15	WDT	M15	A30	1						2	
	*** COUNTRY TOTALS ***								6	0	0	0	0	0	12	0
148	HUMOSA	SP		AF	7	HUM	M7	A10	1						2	2
149	INOGES	SP		AF	7	INO	M7	A10	1						3	2
150	MINORCA	SP		AF	7	MNA	M7	A10	1						2	3
151	SOLLER	SP		AF	7	SOL	M7	A10	1						2	2
152	TORREJON	SP	*	AF	7	TJN	M7	A10	1	1	2	1			1	1
153	ZARAGOZA	SP	R	AF	7	ZAR	M7	A10	1						1	
	*** COUNTRY TOTALS ***								6	1	2	1	0	0	11	10
154	ALEMDAG	TU		AF	13	ALE	M13	A14	1						2	
155	ANKARA	TU		AF	14	ANK	M14	A13	1						1	1
156	BALIKESR	TU		AF	13	BAL	M13	A14	1						1	
157	BELBASI	TU		AF	14	BEB	M14	A13	1						1	
158	CAKMAKLI	TU		AF	13	CKA	M13	A14	1						1	
159	CORLU	TU		AF	13	CRL	M13	A14	1						1	
160	DIYARBKR	TU		AF	14	DIY	M14	A13	2						4	
161	DIYARBKR	TU		AF	14	TGS	M14	A13	1						1	
162	ELMADAG	TU	*	AF	14	DAG	M14	A13	2	1	2	1			6	2
163	ERHAC	TU		AF	14	ERH	M14	A13	1						1	
164	ESKISHIR	TU		AF	13	ESK	M13	A14	1						1	
165	INCIRLIK	TU		AF	14	INC	M14	A13	1						1	
166	ISTANBUL	TU		AF	13	IST	M13	A14	1						1	
167	IZMIR	TU		AF	13	IZM	M13	A14	1						1	
168	IZMIT	TU		AF	13	IMZ	M13	A14	1						1	
169	KARATAS	TU		AF	14	KTS	M14	A13	1						3	
170	MALATYA	TU		AF	14	MAL	M14	A13	1						3	
171	MURTED	TU		AF	14	MUR	M14	A13	1						1	
172	ORTAKOY	TU		AF	13	ORT	M13	A14	1						1	
173	SAHINTPS	TU	*	AF	13	SAH	M13	A14	4	1	2		1	1	9	1
174	SAMSUN	TU	R	AF	14	SAM	M14	A13	1						2	
175	SINOP	TU		AF	14	SNP	M14	A13	1						1	
176	USKUDAR	TU		AF	13	TGS	M13	A14	1						1	
177	YAMANLAR	TU		AF	13	YAM	M13	A14	1						4	
	*** COUNTRY TOTALS ***								29	2	4	1	1	1	49	4
178	ABINGDON	UK		AF	5	ABN	M5	A3	1						2	2
179	ALCONBRY	UK		AF	3	ANY	M3	A5	1						2	
180	BARKWAY	UK		AF	4	BRY	M4	A6	1						4	2
181	BENSON	UK		AF	5	BSN	M5	A3	1						2	2
182	BENTWTRS	UK		AF	2	BNT	M2	A1	1						3	
183	BFDSTJHN	UK		AF	3	BFD	M3	A5	1						1	
184	BOTLYHLL	UK		AF	6	BFH	M6	A4	1						4	
185	BOVINGDN	UK	R	AF	4	BOV	M4	A6	1						2	2
186	BRIZNRTN	UK		AF	3	BZN	M3	A5	1						2	
187	CHATHAM	UK		AF	6	CHM	M6	A4	1						3	
188	CHCKSNDS	UK		AF	4	CKS	M4	A6	1						2	
189	CHELVSTN	UK	R	AF	3	CHV	M3	A5	1						2	
190	COLCHSTR	UK		AF	2	CHR	M2	A1	1						2	
191	COLDBLOW	UK		AF	6	CDW	M6	A4	1						3	
192	CROUGHTN	UK	*	AF	3	CRO	M3	A5	1	1	2		1		4	
193	CRSMSCMN	UK		AF	5	CRS	M5	A3	1						4	2
194	DAVENTRY	UK	R	AF	3	DAV	M3	A5	1						2	
195	DUNKIRK	UK		AF	6	DNK	M6	A4	1						2	
196	FAIRFORD	UK		AF	3	FRD	M3	A5	1						2	1

TABLE II. (cont'd)
COUNTRY SORT OF TRAMCON SEGMENTS IN EUROPE

197	FARNBRGH	UK		AF	5	FBN	M5	A3	1						2	
198	FYLNGDLS	UK		AF	1	FYL	M1	A2	1						2	2
199	GRNHMCMN	UK		AF	5	GHC	M5	A3	1						2	
200	GTBROMLY	UK	R	AF	2	GTB	M2	A1	1						3	1
201	HILLNGDN	UK	*	AF	5	HIN	M5	A3	1	1	2	1		1	1	1
202	HILLNGDN	UK	*	AF	6	HIN	M6	A4	1	1	2	1		1	2	1
203	HIWYCOMB	UK		AF	5	HYE	M5	A3	1						2	2
204	HONINGTN	UK		AF	4	HON	M4	A6	1						2	
205	LAKENHTH	UK		AF	4	LAH	M4	A6	1						2	
206	MENDLSHM	UK	R	AF	4	MDM	M4	A6	1						2	
207	MILDNHLL	UK	*	AF	4	MIL	M4	A6	1	1	2		1		2	1
208	MOLSWRTH	UK		AF	3	MOL	M3	A5	1						2	
209	MRMNDHLL	UK		AF	1	MOH	M1	A2	1						4	2
210	MTLSHMHT	UK	*	AF	2	MAM	M2	A1	1	1	2		1	1	4	2
211	SHBRYNSS	UK	R	AF	2	SWS	M2	A1	1						2	
212	SWINGATE	UK	R	AF	6	SWG	M6	A4	1						2	
213	UPHEYFRD	UK		AF	3	UHD	M3	A5	1						2	
214	WOODBRDG	UK		AF	2	WBG	M2	A1	1						1	
215	WTHRSFLD	UK		AF	2	WTH	M2	A1	1						2	
216	ABERDEEN	UK	R	N	1	ABE	M1	A2	1						2	
217	EDZELL	UK		N	1	EDZ	M1	A2	1						1	
218	INVERBRV	UK	R	N	1	INV	M1	A2	1						2	
219	KINNABER	UK	R	N	1	KBR	M1	A2	1					1	2	
220	LATHERON	UK	R	N	1	LAT	M1	A2	1						2	2
221	LONDON	UK		N	6	LDN	M6	A4	1				1		2	
222	MURKLE	UK		N	1	MKE	M1	A2	1						1	
223	THURSO	UK	*	N	1	TUS	M1	A2	1	1	2			1	2	1
*** COUNTRY TOTALS ***									46	6	12	2	4	5	103	26
*** SUM OF COUNTRY TOTALS ***									243	31	63	19	16	17	523	118

TABLE III.

ARMY SORT OF TRAMCON SEGMENTS IN EUROPE

LATEST REV.: 02/27/85
PRINTED: 03/07/85

DSNAME: R7065.TRAMCON.EURSEGRE

PROJECT ENGINEER: W. J. BONIA CODE: R210 PHONE: AV 364-2164 LOCAL (703) 437-2164
DEFENSE COMMUNICATIONS ENGINEERING CENTER; TRANSMISSION ENGINEERING DIRECTORATE;
TRANSMISSION NETWORK ENGINEERING DIVISION; 1860 WIEHLE AVE.; RESTON, VA. 22090-5500

LEGEND:
- * = STATION HAS MASTER TERM.
- SEG = TRAMCON SEGMENT NOS.
- # IRU = NO. OF INTELLIGENT REMOTE UNITS
- # RDT = NO. OF REMOTE DISPLAY TERM.
- ICO = INTERMEDIATE CONTROL OFFICE
- TERM = NO. OF LINK TERMINATIONS
- R = STATION IS REPEATER SITE
- CODE = 3-LETTER STATION ABBREV.
- # TMT = NO. OF TRAMCON MASTER TERM.
- FCO = FACILITY CONTROL OFFICE
- MMT = MOBILE MAINTENANCE TEAM
- 2NDCH = NO. OF LSTDM CHANNEL CARDS REQUIRED FOR ALTERNATE TMT ACCESS

RMKS: NO. OF LOCATIONS = 070

	STATION NAME			MILDEP	SEG	CODE	TMT NUMBER PRIMARY	TMT NUMBER BACK-UP	# IRU	# TMT	# RDT	FCO	ICO	MMT	TERM	2NDCH
001	BARME	GE	R	A	30	BME	M30	A31	1						2	
002	BAUMHLDR	GE		A	21	BHR	M21	A19	1						2	
003	BDKRZNCH	GE		A	21	BKH	M21	A19	1						2	1
004	BERLIN	BZ	*	A	31	BLN	M31	A29	1	1	2	1			2	1
005	BOCKSBRG	GE		A	31	BBG	M31	A29	1						3	2
006	BONSTTTN	GE		A	25	BST	M25	A26	1						3	2
007	BREITSOL	GE		A	28	BTL	M28	A21	1						4	2
008	BREMRHVN	GE	*	A	30	BRN	M30	A31	1	1	2	1			1	1
009	BRUEGGEN	GE	*	A	16	BUN	M16	A15	1	1	2			1	4	
010	BRUNSSUN	NL		A	16	BRU	M16	A15	1						2	
011	CEGGIA	IT		A	8	CEG	M8	A9	1						2	
012	CHIEVRES	BE	*	A	18	CHE	M18	A17	3	1	2				2	1
013	COLTANO	IT	*	A	9	CLO	M9	A24	1	1	2	1			3	2
014	DANNNFLS	GE		A	19	DNF	M19	A20	1						2	
015	DARMSTDT	GE		A	28	DST	M28	A21	1						1	
016	DNNRSBRG	GE	*	A	21	DON	M21	A19	1	1	2		1		4	
017	DNNRSBRG	GE	*	A	22	DON	M22	A27	2	1	2		1		6	
018	DRBNDRHH	GE	R	A	29	DBH	M29	A16	1						2	
019	DRCKNBRG	GE	R	A	31	DKB	M31	A29	1						2	
020	DUENSEN	GE	R	A	30	DSN	M30	A31	1						2	
021	EUSKRCHN	GE		A	29	EUS	M29	A16	1						1	
022	FRANKFRT	GE	*	A	28	FKT	M28	A21	2	1	2	1			4	1
023	FRIOLZHM	GE		A	24	FRI	M24	A25	1						4	
024	GABLINGN	GE		A	25	GAB	M25	A26	1						1	
025	GARLSTDT	GE		A	30	GAR	M30	A31	1						3	2
026	GEIGNWNG	GE		A	26	GEG	M26	A28	1						3	
027	GIESSEN	GE		A	29	GSN	M29	A16	1						2	
028	GRAFNWHR	GE		A	26	GRA	M26	A28	1						2	
029	HANAU	GE		A	28	HNA	M28	A21	1						2	
030	HEIDLBRG	GE	*	A	27	HDG	M27	A22	1	1	2	1			2	
031	HEILBRNN	GE		A	24	HBL	M24	A25	1						2	
032	HELMSTDT	GE		A	31	HMT	M31	A29	1						1	
033	HERONGEN	GE		A	16	HER	M16	A15	1						3	
034	HNPSNBRG	GE		A	25	HPG	M25	A26	1						2	
035	HOHENFLS	GE		A	26	HFL	M26	A28	1						1	
036	HOHNSTDT	GE		A	24	HST	M24	A25	2						4	3
037	KARLSRUH	GE		A	27	KRE	M27	A22	1						1	
038	KATTRBCH	GE		A	25	KAT	M25	A26	1						2	
039	KONGSTHL	GE		A	27	KSL	M27	A22	3					1	8	
040	KSRSLTRN	GE		A	22	KLN	M22	A27	1						2	

TABLE III. (cont'd)
ARMY SORT OF TRAMCON SEGMENTS IN EUROPE

041	LANDSTHL	GE		A	22	LDL	M22	A27	1						3	
042	LANGNDMN	GE	R	A	30	LAN	M30	A31	1						2	
043	LINDERHF	GE		A	30	LDF	M30	A31	1						2	1
044	LOHNSFLD	GE		A	22	LFD	M22	A27	1						2	
045	MAINZ	GE		A	21	MNZ	M21	A19	1						2	
046	MANNHEIN	GE		A	27	MHN	M27	A22	1						2	
047	MELIBOCS	GE		A	28	MEL	M28	A21	1						4	
048	MNCHGDBC	GE		A	16	MGB	M16	A15	1						1	
049	MUNICH	GE		A	25	MNH	M25	A26	1						1	
050	NORVENCH	GE		A	29	NOV	M29	A16	1						3	
051	NUERNBRG	GE	*	A	26	NBG	M26	A28	1	1	2				3	
052	PIRMASNS	GE	*	A	23	PMS	M23	A9	1	1	2	1			3	
053	RHEINBRG	GE		A	16	RBG	M16	A15	1						1	
054	RNWRZHFN	GE	R	A	26	RWH	M26	A28	1						2	
055	RSAGSBRG	GE	*	A	25	RAG	M25	A26	1	1	2	1		1	3	1
056	SAVONA	IT	R	A	9	SAV	M9	A24	1						2	2
057	SCHINNEN	NL		A	16	SHI	M16	A15	1						2	
058	SCHNEBRG	GE		A	26	SNB	M26	A28	1						1	
059	SCHWRZWD	GE	R	A	23	SZD	M23	A9	1						2	1
060	SCHWTZGN	GE		A	27	SCW	M27	A22	1						2	
061	STCKSBRG	GE		A	24	SSB	M24	A25	1						2	
062	STEIN	GE		A	29	STN	M29	A16	1						2	
063	STUTTGRT	GE		A	24	SGT	M24	A25	1					1	4	
064	VAIHINGN	GE	*	A	24	VHN	M24	A25	1	1	2	1			3	1
065	VICENZA	IT		A	8	VCA	M8	A9	1						1	
066	WIESBADN	GE		A	21	WBN	M21	A19	1						3	
067	WORMS	GE		A	27	WMS	M27	A22	1						2	
068	WUESCHEN	GE		A	19	WSN	M19	A20	1						2	
069	WURZBURG	GE		A	28	WBG	M28	A21	1						2	2
070	ZWEBRCKN	GE		A	23	ZBN	M23	A9	1						2	
*** ARMY TOTALS ***									77	13	26	8	2	4	167	26

TABLE IV.

NAVY SORT OF TRAMCON SEGMENTS IN EUROPE

LATEST REV.: 02/27/85
PRINTED: 03/07/85

DSNAME: R7065.TRAMCON.EURSEGRE
PROJECT ENGINEER: W. J. BONIA CODE: R210 PHONE: AV 364-2164 LOCAL (703) 437-2164
DEFENSE COMMUNICATIONS ENGINEERING CENTER; TRANSMISSION ENGINEERING DIRECTORATE;
TRANSMISSION NETWORK ENGINEERING DIVISION; 1860 WIEHLE AVE.; RESTON, VA. 22090-5500

LEGEND:
- * = STATION HAS MASTER TERM.
- SEG = TRAMCON SEGMENT NOS.
- # IRU = NO. OF INTELLIGENT REMOTE UNITS
- # RDT = NO. OF REMOTE DISPLAY TERM.
- ICO = INTERMEDIATE CONTROL OFFICE
- TERM = NO. OF LINK TERMINATIONS
- R = STATION IS REPEATER SITE
- CODE = 3-LETTER STATION ABBREV.
- # TMT = NO. OF TRAMCON MASTER TERM.
- FCO = FACILITY CONTROL OFFICE
- MMT = MOBILE MAINTENANCE TEAM
- 2NDCH = NO. OF LSTDM CHANNEL CARDS REQUIRED FOR ALTERNATE TMT ACCESS

RMKS: NO. OF LOCATIONS = 017

STATION NAME	MILDEP	SEG	CODE	TMT NUMBER PRIMARY	TMT NUMBER BACK-UP	# IRU	# TMT	# RDT	FCO	ICO	MMT	TERM	2NDCH
001 ABERDEEN UK R	N	1	ABE	M1	A2	1						2	
002 AGNANO IT	N	11	AGA	M11	A12	1						1	
003 CAMOLDOL IT	N	11	CAO	M11	A12	2						5	2
004 CAPODCHN IT	N	11	CPO	M11	A12	1						1	
005 EDZELL UK	N	1	EDZ	M1	A2	1						1	
006 INVERBRV UK R	N	1	INV	M1	A2	1						2	
007 KATOSOUL GR	N	12	KAO	M12	A11	1						2	
008 KINNABER UK R	N	1	KBR	M1	A2	1					1	2	
009 LAGODPTR IT	N	11	LAG	M11	A12	1						3	
010 LATHERON UK R	N	1	LAT	M1	A2	1						2	2
011 LONDON UK	N	6	LDN	M6	A4	1				1		2	
012 MTEPOMEO IT	N	11	EPO	M11	A12	1						2	
013 MURKLE UK	N	1	MKE	M1	A2	1						1	
014 NAPLES IT *	N	11	NPS	M11	A12	1	1	2	1			2	1
015 NEAMAKRI GR	N	12	NMK	M12	A11	1						1	
016 SIGONELL IT	N	10	SGA	M10	A7	1						2	
017 THURSO UK *	N	1	TUS	M1	A2	1	1	2			1	2	1
*** NAVY TOTALS ***						18	2	4	1	1	2	33	6

TABLE V.

AF SORT OF TRAMCON SEGMENTS IN EUROPE

LATEST REV.: 02/27/85
PRINTED: 03/07/85

DSNAME: R7065.TRAMCON.EURSEGRE

PROJECT ENGINEER: W. J. BONIA CODE: R210 PHONE: AV 364-2164 LOCAL (703) 437-2164
DEFENSE COMMUNICATIONS ENGINEERING CENTER; TRANSMISSION ENGINEERING DIRECTORATE;
TRANSMISSION NETWORK ENGINEERING DIVISION; 1860 WIEHLE AVE.; RESTON, VA. 22090-5500

LEGEND:
- * = STATION HAS MASTER TERM.
- SEG = TRAMCON SEGMENT NOS.
- # IRU = NO. OF INTELLIGENT REMOTE UNITS
- # RDT = NO. OF REMOTE DISPLAY TERM.
- ICO = INTERMEDIATE CONTROL OFFICE
- TERM = NO. OF LINK TERMINATIONS
- R = STATION IS REPEATER SITE
- CODE = 3-LETTER STATION ABBREV.
- # TMT = NO. OF TRAMCON MASTER TERM.
- FCO = FACILITY CONTROL OFFICE
- MMT = MOBILE MAINTENANCE TEAM
- 2NDCH = NO. OF LSTDM CHANNEL CARDS REQUIRED FOR ALTERNATE TMT ACCESS

RMKS: NO. OF LOCATIONS = 136

STATION NAME		MILDEP	SEG	CODE	TMT NUMBER PRIMARY	TMT NUMBER BACK-UP	# IRU	# TMT	# RDT	FCO	ICO	MMT	TERM	2NDCH
001 ABINGDON UK		AF	5	ABN	M5	A3	1						2	2
002 ADENAU GE		AF	19	ANU	M19	A20	1						4	
003 ALCONBRY UK		AF	3	ANY	M3	A5	1						2	
004 ALEMDAG TU		AF	13	ALE	M13	A14	1						2	
005 ANKARA TU		AF	14	ANK	M14	A13	1						1	1
006 AVIANO IT	*	AF	8	AVO	M8	A9	1	1	2	1		1	1	
007 BALIKESR TU		AF	13	BAL	M13	A14	1						1	
008 BANN GE		AF	20	BAN	M20	A23	2						6	
009 BARKWAY UK		AF	4	BRY	M4	A6	1						4	2
010 BASDAHL GE		AF	30	BAS	M30	A31	1						2	2
011 BDNUENDR GE		AF	30	BAM	M30	A31	1						3	
012 BELBASI TU		AF	14	BEB	M14	A13	1						1	
013 BEN AHIN BE	R	AF	18	BNA	M18	A17	1						2	3
014 BENSON UK		AF	5	BSN	M5	A3	1						2	2
015 BENTWTRS UK		AF	2	BNT	M2	A1	1						3	
016 BFDSTJHN UK		AF	3	BFD	M3	A5	1						1	
017 BITBURG GE		AF	17	BIG	M17	A18	1						2	
018 BOTLYHLL UK		AF	6	BFM	M6	A4	1						4	
019 BOVINGDN UK	R	AF	4	BOV	M4	A6	1						2	2
020 BRANDHOF GE	R	AF	26	BDH	M26	A28	1						2	
021 BRIZNRTN UK		AF	3	BZN	M3	A5	1						2	
022 CAKMAKLI TU		AF	13	CKA	M13	A14	1						1	
023 CALTAGRN IT		AF	10	CAL	M10	A7	1						2	
024 CHATHAM UK		AF	6	CHM	M6	A4	1						3	
025 CHCKSNDS UK		AF	4	CKS	M4	A6	1						2	
026 CHELVSTN UK	R	AF	3	CHV	M3	A5	1						2	
027 CIMAGLIN IT		AF	9	CIM	M9	A24	1						2	1
028 COLCHSTR UK		AF	2	CHR	M2	A1	1						2	
029 COLDBLOW UK		AF	6	CDW	M6	A4	1						3	
030 COMISO IT		AF	10	COM	M10	A7	1						1	
031 CORLU TU		AF	13	CRL	M13	A14	1						1	
032 CROUGHTN UK	*	AF	3	CRO	M3	A5	1	1	2		1		4	
033 CRSMSCHN UK		AF	5	CRS	M5	A3	1						4	2
034 DAMME GE	R	AF	15	DME	M15	A30	1						2	1
035 DAVENTRY UK	R	AF	3	DAV	M3	A5	1						2	
036 DIYARBKR TU		AF	14	DIY	M14	A13	2						4	
037 DIYARBKR TU		AF	14	TGS	M14	A13	1						1	
038 DOTLINGN GE	R	AF	30	DOT	M30	A31	1						2	2
039 DUNKIRK UK		AF	6	DNK	M6	A4	1						2	
040 ELMADAG TU	*	AF	14	DAG	M14	A13	2	1	2	1			6	2

TABLE V. (cont'd)
AF SORT OF TRAMCON SEGMENTS IN EUROPE

041	ELRSPRNG	GE		AF	19	EPG	M19	A20	2						6	2
042	ERHAC	TU		AF	14	ERH	M14	A13	1						1	
043	ERP	NL		AF	15	ERP	M15	A30	1						2	
044	ESKISHIR	TU		AF	13	ESK	M13	A14	1						1	
045	FAIRFORD	UK		AF	3	FRD	M3	A5	1						2	1
046	FARNBRGH	UK		AF	5	FBN	M5	A3	1						2	
047	FELDBERG	GE	•	AF	29	FEL	M29	A16	3	1	2			1	1	7	
048	FLOBECQ	BE		AF	18	FLO	M18	A17	1						1	3	2
049	FLORENNS	BE		AF	18	FLR	M18	A17	1							1	
050	FYLNGDLS	UK		AF	1	FYL	M1	A2	1							2	2
051	GRNHMCMN	UK		AF	5	GHC	M5	A3	1							2	
052	GROSSRKN	GE	R	AF	15	GRN	M15	A30	1							2	
053	GTBRONLY	UK	R	AF	2	GTB	M2	A1	1							3	1
054	HAHN	GE	•	AF	19	HAN	M19	A20	2	1	2					4	1
055	HAMMNKLN	GE		AF	15	HAM	M15	A30	1							2	
056	HEIDENHM	GE	R	AF	25	HDM	M25	A26	1							2	
057	HELLENKN	GR	•	AF	12	HEL	M12	A11	1	1	2	1		1		1	1
058	HILLNGDN	UK	•	AF	5	HIN	M5	A3	1	1	2	1		1		1	1
059	HILLNGDN	UK	•	AF	6	HIN	M6	A4	1	1	2	1		1		2	1
060	HIWYCOMB	UK		AF	5	HYE	M5	A3	1							2	2
061	HONINGTN	UK		AF	4	HON	M4	A6	1							2	
062	HOUTEM	BE	R	AF	18	HOU	M18	A17	1							2	
063	HSCODNDF	GE		AF	30	HES	M30	A31	1							1	
064	HUMOSA	SP		AF	7	HUM	M7	A10	1							2	2
065	IBBENBRN	GE	R	AF	15	IBN	M15	A30	1							2	
066	INCIRLIK	TU		AF	14	INC	M14	A13	1							1	
067	INOGES	SP		AF	7	INO	M7	A10	1							3	2
068	IRAKLION	GR		AF	12	IRK	M12	A11	1							1	
069	ISTANBUL	TU		AF	13	IST	M13	A14	1							1	
070	IZMIR	TU		AF	13	IZM	M13	A14	1							1	
071	IZMIT	TU		AF	13	IMZ	M13	A14	1							1	
072	KALKAR	GE	•	AF	15	KAL	M15	A30	1	1	2					3	
073	KARATAS	TU		AF	14	KTS	M14	A13	1							3	
074	KEIZRSVR	NL		AF	15	KIZ	M15	A30	1							2	
075	KOTERBRG	GE		AF	31	KBG	M31	A29	1							3	2
076	LAKENHTH	UK		AF	4	LAH	M4	A6	1							2	
077	LANGRKPF	GE		AF	23	LKF	M23	A9	2					1		6	
078	LECHENOI	BE		AF	18	LEC	M18	A17	1							4	2
079	LEVKAS	GR		AF	12	LEV	M12	A11	1							2	3
080	LINDSEY	GE		AF	21	LSY	M21	A19	1							2	
081	MALATYA	TU		AF	14	MAL	M14	A13	1							3	
082	MENDLSHM	UK	R	AF	4	MDM	M4	A6	1							2	
083	MILDNHLL	UK	•	AF	4	MIL	M4	A6	1	1	2			1		2	1
084	MINORCA	SP		AF	7	MNA	M7	A10	1							2	3
085	MOLSWRTH	UK		AF	3	MOL	M3	A5	1							2	
086	MRMNDHLL	UK		AF	1	MOH	M1	A2	1							4	2
087	MRTNFRNC	IT		AF	11	MRA	M11	A12	1					1		3	3
088	MT CORNA	IT		AF	9	MCA	M9	A24	1					1	1	3	2
089	MT SERRA	IT		AF	9	MTS	M9	A24	1							2	2
090	MT VENDA	IT		AF	8	MTE	M8	A9	1					1		3	1
091	MTCIMONE	IT		AF	9	MTC	M9	A24	1							2	2
092	MTEDHERI	GR		AF	12	MEI	M12	A11	1							2	
093	MTLIMBAR	IT		AF	10	MBA	M10	A7	1					1		3	3
094	MTLSHMHT	UK	•	AF	2	MAM	M2	A1	1	1	2			1	1	4	2
095	MTPARNIS	GR		AF	12	MPR	M12	A11	1							3	2
096	MTPATERS	GR		AF	12	PAT	M12	A11	1					1		4	2
097	MTVERGIN	IT	•	AF	10	MRE	M10	A7	1	1	2	1				3	1
098	MTVERGIN	IT		AF	11	MRE	M11	A12	1			1				2	2
099	MUHL	GE		AF	17	MUL	M17	A18	2					1		6	
100	MURTED	TU		AF	14	MUR	M14	A13	1							1	

TABLE V. (cont'd)
AF SORT OF TRAMCON SEGMENTS IN EUROPE

101	ORTAKOY	TU		AF	13	ORT	M13	A14	1						1	
102	PAGANELL	IT		AF	9	PAG	M9	A24	1						2	
103	RAMSTEIN	GE	*	AF	20	RSN	M20	A23	1	1	2	1			3	
104	REGGIO	IT		AF	10	REG	M10	A7	1						2	
105	RHEINMAN	GE		AF	28	RMN	M28	A21	1						4	
106	ROETGEN	GE		AF	29	RGN	M29	A16	1						4	
107	ROTHWSTN	GE	R	AF	31	RWN	M31	A29	1						2	
108	SAHINTPS	TU	*	AF	13	SAH	M13	A14	4	1	2		1	1	9	1
109	SAMSUN	TU	R	AF	14	SAM	M14	A13	1						2	
110	SCHONFLD	GE	*	AF	17	SCH	M17	A18	1	1	2	1		1	3	1
111	SCHOPNGN	GE	R	AF	15	SCN	M15	A30	1						2	
112	SCHWNBRG	GE	R	AF	26	SHW	M26	A28	1					1	2	1
113	SCWRZNBN	GE	R	AF	31	SBN	M31	A29	1						2	
114	SEMBACH	GE		AF	20	SEH	M20	A23	1				1		3	
115	SHAPE	BE		AF	18	SPB	M18	A17	1		1				2	
116	SHAPERRS	BE	R	AF	18	SHR	M18	A17	1						2	
117	SHBRYNSS	UK	R	AF	2	SHS	M2	A1	1						2	
118	SINOP	TU		AF	14	SNP	M14	A13	1						1	
119	SNVTDNNN	IT		AF	11	SNV	M11	A12	1						1	
120	SOLLER	SP		AF	7	SOL	M7	A10	1						2	2
121	SPMLCMPS	BE	R	AF	17	SPA	M17	A18	1						2	3
122	SPNGDHLM	GE		AF	17	SPM	M17	A18	1						2	
123	SWINGATE	UK	R	AF	6	SWG	M6	A4	1						2	
124	TEMPELHF	BZ		AF	31	TPF	M31	A29	1						1	
125	TORREJON	SP	*	AF	7	TJN	M7	A10	1	1	2	1			1	1
126	UPHEYFRD	UK		AF	3	UHD	M3	A5	1						2	
127	USKUDAR	TU		AF	13	TGS	M13	A14	1						1	
128	VUGHT	NL		AF	15	VUG	M15	A30	1						2	
129	WESTRZBK	BE	R	AF	18	WEZ	M18	A17	1						2	
130	WNSDRCHT	NL		AF	15	WDT	M15	A30	1						2	
131	WOODBRDG	UK		AF	2	WBG	M2	A1	1						1	
132	WTHRSFLD	UK		AF	2	WTH	M2	A1	1						2	
133	YAMANLAR	TU		AF	13	YAM	M13	A14	1						4	
134	ZARAGOZA	SP	R	AF	7	ZAR	M7	A10	1						1	
135	ZUGSPITZ	GE		AF	24	ZUG	M24	A25	1						2	2
136	ZWEBRCAF	GE		AF	23	ZWE	M23	A9	1						2	
*** AF TOTALS ***									148	16	33	10	13	11	323	86

TABLE VI. TRAMCON PRIMARY AND BACKUP TMT LOCATIONS

Segment No.	Master Location Primary	Backup	FCO	ICO*	Remarks
1	Thurso	Martlesham Heath			
2	Martlesham Heath	Thurso		x	
3	Croughton	Hillingdon		x	2 TMTs at Hillingdon
4	Mildenhall	Hillingdon		x	
5	Hillingdon	Croughton	x		
6	Hillingdon	Mildenhall	x		
7	Torrejon	Mt. Vergine	x		
8	Aviano	Coltano	x		
9	Coltano	Vaihingen	x		
10	Mt. Vergine	Torrejon	x		
11	Naples	Hellenikon	x		
12	Hellenikon	Naples	x		
13	Sahin Tepesi	Elmadag		x	
14	Elmadag	Sahin Tepesi	x		
15	Kalkar	Bremerhaven			
16	Brueggen	Kalkar			
17	Schoenfeld	Chievres	x		
18	Chievres	Schoenfeld			
19	Hahn	Ramstein			
20	Ramstein	Pirmasens	x		
21	Donnersberg	Hahn		x	2 TMTs at Donnersberg
22	Donnersberg	Heidelberg		x	
23	Pirmasens	Coltano	x		
24	Vaihingen	Reese Augsberg	x		
25	Reese Augsberg	Nuerenberg	x		
26	Nuernberg	Frankfurt			
27	Heidelberg	Donnersberg	x		
28	Frankfurt	Donnersberg	x		
29	Feldberg	Brueggen		x	
30	Bremerhaven	Berlin	x		
31	Berlin	Feldberg	x		

* Other ICOs are: London
Mt. Venda
Mt. Corna
Mt. Limbara
Martina Franca
Langerkopf
Mt. Pateras
Muhl

VII. UNINSTALLED EQUIPMENT COST ($K)

The uninstalled equipment costs for the major TRAMCON items are based on the following per unit planning costs. These are subject to change, especially for the IRU which is scheduled for contract award in March 1985.

Unit	Cost
TMT	$105.0
IRU	22.0
RDT	11.0
LSTDM 2nd Channel	0.5

TABLE VII. UNINSTALLED EQUIPMENT COST ($K) - 31 SEGMENTS

Unit	Quantity	Total
TMT	31	$3255
IRU	243	5346
RDT	63	693
LSTDM 2nd Channel	118	59
Total		$9353

TABLE VIII. UNINSTALLED EQUIPMENT COST ($K) - MILDEPs

Unit	Army		Navy		Air Force		Totals
	Qty	Cost	Qty	Cost	Qty	Cost	
TMT	13	$1365	2	$210	16	$1680	$3255
IRU	77	1694	18	396	148	3256	5346
RDT	26	286	4	44	33	363	693
LSTDM 2nd Ch	26	13	6	3	86	43	59
Total		$3358		$653		$5342	$9353

TABLE IX. UNINSTALLED EQUIPMENT COST BY COUNTRY ($K)

	BELGIUM		GERMANY		GREECE		ITALY		NL		SPAIN		TURKEY		UK		
Unit	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Total
TMT	1	$105	16	$1680	1	$105	4	$ 420	0	0	1	$105	2	$210	6	$ 630	$3255
IRU	12	264	109	2398	8	176	27	594	6	132	6	132	29	638	46	1012	5346
RDT	3	33	32	352	2	22	8	88	0	0	2	22	4	44	12	132	693
2nd Ch	11	5.5	35	17.5	8	4	24	12	0	0	10	5	4	2	26	13	59
TOTAL		$407.5		$4447.5		$307		$1114		$132		$264		$894		$1787	$9353

REFERENCES

1. DCA Ltr, B101, Develop a DCS Transmission Monitor and Control (TRAMCON) Segmentation Plan, 19 Sep 83.

2. DCEC Msg, R210, 291605Z Nov 84.

3. DCA-Europe Msg, E510, 281309Z Dec 84.

4. Concept of Operations for Transmission Monitoring and Control (TRAMCON) Annex 2, Aug 1984.

5. DCA Drawing 201026, Existing and Planned Digital Connectivity for DCS Europe.

6. TRAMCON System Specification, 24 Sep 1984.

7. Prime Item Development Specification for the Intelligent Remote Unit (IRU) of the Transmission Monitoring and Control (TRAMCON) System of the Defense Communications System (DCS).

8. DCA-Europe Msg, E510, 301045Z Jul 84.

9. DCA-Europe Msg, E100/E610/E618, 141414Z Mar 84.

10. 5th SigCmd Msg, CCE-OP-RT, 191205Z Sep 83.

11. DCEC DF, R230, DEB III TRAMCON Equipment, 14 Oct 1983.

LIST OF ACRONYMS

DACE	Data Acquisition and Control Element
DCS	Defense Communications System
DEB	Digital European Backbone
DRAMA	Digital Radio and Multiplex Acquisition
EFAS	Enhanced Fault Alarm System
EURSEGRD	Europe Segmentation Data Base, Revision D
EURSEGRE	Europe Segmentation Data Base, Revision E
FCO	Facility Control Office
ICO	Intermediate Control Office
IRU	Intelligent Remote Unit
LDT	Local Display Terminal
LSTDM	Low Speed Time Division Multiplexer
RDT	Remote Display Terminal
SCC	Shape Command Center
TCF	Technical Control Facility
TMT	TRAMCON Master Terminal
TRAMCON	Transmission Monitoring and Control

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