INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.782

(04/2002)

SERIES Q: SWITCHING AND SIGNALLING

Specifications of Signalling System No. 7 – Test specification

MTP level 3 test specification

ITU-T Recommendation Q.782

ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEM No. 4	Q.120–Q.139
SPECIFICATIONS OF SIGNALLING SYSTEM No. 5	Q.140–Q.199
SPECIFICATIONS OF SIGNALLING SYSTEM No. 6	Q.250–Q.309
SPECIFICATIONS OF SIGNALLING SYSTEM R1	Q.310–Q.399
SPECIFICATIONS OF SIGNALLING SYSTEM R2	Q.400–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.799
General	Q.700
Message transfer part (MTP)	Q.701–Q.709
Signalling connection control part (SCCP)	Q.711–Q.719
Telephone user part (TUP)	Q.720–Q.729
ISDN supplementary services	Q.730–Q.739
Data user part	Q.740–Q.749
Signalling System No. 7 management	Q.750–Q.759
ISDN user part	Q.760–Q.769
Transaction capabilities application part	Q.770–Q.779
Test specification	**Q.780–Q.799**
Q3 INTERFACE	Q.800–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1699
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2000	Q.1700–Q.1799
SPECIFICATIONS OF SIGNALLING RELATED TO BEARER INDEPENDENT CALL CONTROL (BICC)	Q.1900–Q.1999
BROADBAND ISDN	Q.2000–Q.2999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation Q.782

MTP level 3 test specification

Summary

This Recommendation contains a set of detailed tests of Signalling System No. 7, MTP level 3 protocol. These tests intend to validate the protocol specified in ITU-T Recs. Q.704 and Q.707. The level 3 performance aspects specified in ITU-T Rec. Q.706 are also partly checked whenever possible. This Recommendation conforms to ITU-T Rec. Q.780. However, in addition to the objectives and guidelines of the latter Recommendation, other general principles specific to level 3 tests are presented.

Source

ITU-T Recommendation Q.782 was prepared by ITU-T Study Group 11 (2001-2004) and approved under the WTSA Resolution 1 procedure on 13 April 2002.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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CONTENTS

		Page
1	Introduction	1
2	General principles of level 3 tests	1
2.1	Presentation of test descriptions	1
2.2	Presentation of the test list	1
2.3	Test traffic	2
3	Test configurations	3
3.1	Definition	3
3.2	Presentation of test configurations	3
3.2.1	General	3
3.2.2	Configuration A	4
3.2.3	Configuration B	4
3.2.4	Configuration C	5
3.2.5	Configuration D	6
4	Test list	8
5	Test descriptions	13

ITU-T Recommendation Q.782

MTP level 3 test specification

1 Introduction

This Recommendation contains a set of detailed tests of Signalling System No. 7 MTP level 3 protocol. These tests intend to validate the protocol specified in ITU-T Recs. Q.704 and Q.707. The level 3 performance aspects specified in ITU-T Rec. Q.706 are also partly checked whenever possible. This Recommendation conforms to ITU-T Rec. Q.780. However, in addition to the objectives and guidelines of the latter Recommendation, other general principles specific to level 3 tests are presented below.

2 General principles of level 3 tests

2.1 Presentation of test descriptions

Each test description mentions the type of SP involved in the test. Three cases are possible:

– test applicable to an SP having no STP function: SP

– test applicable to an SP having STP function: STP

– test applicable to all types of SPs: ALL

Each test description includes the environment in which the point under test must be inserted in order to pass the test. Four test configurations are necessary (named A, B, C and D); they are presented in clause 3.

Each test is precisely described. Nevertheless, some events not directly concerning the point under test, or without direct link with the test nature, are not explicitly described. This is, for example, the case of TFPs propagation when a point becomes isolated, or of the changeover procedure in a test concerning transfer allowed procedure.

In order to preserve the test description implementation independence, a certain flexibility has been left in the test descriptions. This is particularly the case when it is necessary to deactivate a link (where it is only mentioned "Deactivate" with no more precision). The operator will choose, if possible, according to the implementation particularities and the events expected in the test description, the appropriate deactivation means (MML, provoked failure, etc.).

In the test descriptions, the signalling links are identified as follows: "number of linkset"–"number of link in the linkset" (e.g. 1–1 means link 1 of the linkset 1). This identification is independent of SLC attributed to these links. When the number of the link is X, that means that the concerned message can use any link of the linkset. When the field "number of link in the linkset" is, for example, "1, 2, . . .", that means that the traffic uses all indicated links. Finally, when the links are identified by the mention ALL, that means that the traffic will use all available links of the point.

The orders "Start traffic", "Wait" and "Stop traffic" apply to the test configuration. They are placed at the beginning of the line.

2.2 Presentation of the test list

These tests, as a whole, aim at a complete validation of the level 3 protocol without redundancies.

The test list is presented in clause 4. The national options and the various signalling link management "policies" are not included in this Recommendation.

The first set of tests in the list checks that, before some more precise tests, the point under test can perform the basic functions, i.e. can connect itself to the external environment and exchange signalling messages.

The second set basically validates the signalling message handling function of the point under test. A main point of this part concerns the validation of load sharing procedures. If an implementation does not use the load sharing between linksets, some tests would not be applicable, and others should be adapted.

The third and fourth sets check changeover and changeback procedures. They include tests like changeover and changeback to/from two linksets which will be performed only if the point under tests allows this possibility.

Rerouting procedures are checked using the tests in sets 5 and 6.

Set 7 concerns tests to check inhibition and uninhibition procedures. To limit the test numbers, it was not considered that the messages used in these procedures can be transferred via STPs.

Set 8 concerns tests to check transfer controlled procedure and MTP user flow control for the international signalling network.

Set 9 concerns tests to check signalling route management functions in a point having an STP function. To limit the test numbers and to avoid complicating the test configuration, it was not considered that TFPs and TFAs can be transferred via STPs.

Set 10 concerns tests for the point restart procedure.

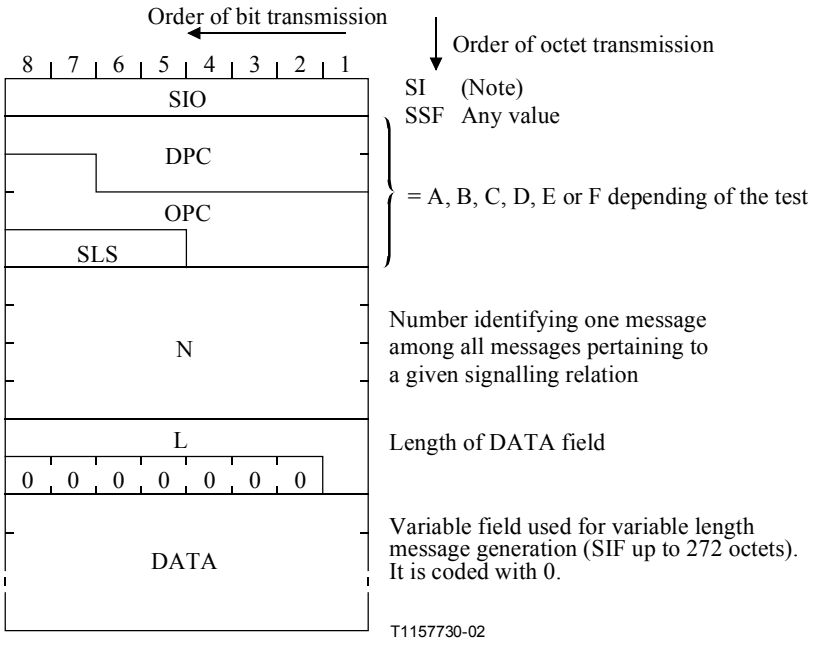
Set 11 deals with STP traffic test.

Set 12 checks the signalling link test procedure.

Finally, set 13 contains solely validation tests and aims at checking the actions of the tested system on reception of invalid level 3 messages.

2.3 Test traffic

Running the tests described in this Recommendation requires the exchange of traffic between the point under test and its environment. The traffic used is a test traffic especially generated for the test of the system. It uses variable length messages, structured as described below:



NOTE – For compatibility testing (CPT), use SI value for MTP testing user part, for validation testing (VAT) value is to be chosen as required.

The mechanisms of generation and reception of this test traffic may be internal to the point under test or external (using a simulator for example). The tests presented here do not impose the choice of one of these mechanisms except for the tests of the STP function itself (tests 2.7, 8.2, 10 and 11) where the test traffic is necessarily generated outside the STP. The test traffic should be recorded and analysed subsequently for each described test.

3 Test configurations

3.1 Definition

The set of tests described in this Recommendation assumes that the point under test is inserted in a test environment called "test configuration". A **test configuration** is defined as being:

a) the set of points, real or simulated, linked between them by signalling linksets, real or simulated, and of which some are connected to the point under test by one or several signalling linksets;

b) the set of routing rules applied in different points and also in point under test;

c) the flows of test traffic generated and received by

d) a set of generation and reception means (see 2.3);

e) the means (program, operator interface, etc.) to run the described tests; notably the possibilities of storage and analysis of test traffic and level 3 messages and, in the case of validation tests, the possibility to send at any stage of a test, any messages (level 3 or test) valid or not.

3.2 Presentation of test configurations

3.2.1 General

The set of tests described in this Recommendation requires 4 different configurations named A, B, C and D. For each test, only the three first aspects of the above definition are precisely defined (set of points, set of routing rules and test traffic flows, see 3.1).

3.2.2 Configuration A

This simple configuration is adapted to the validation of all procedures concerning only one or more signalling links belonging to one linkset. It is used for the tests:

– of activation and deactivation of links;

– of changeover and changeback procedures;

– of inhibition and uninhibition of links;

– invalid messages.

Configuration A is shown in Figure 1.

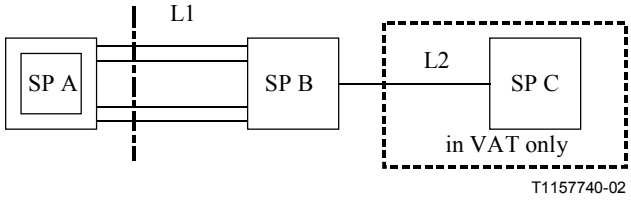


Figure 1/Q.782 – Configuration A

Configuration A, Table 1, makes use of a point C in all validation tests in order to check the impact of the procedures on various traffic flows. Point C is not used in configuration A in the case of compatibility tests.

Linkset 1 has four signalling links in order to check, for example, changeover procedure to several links within a linkset (test 3.15).

In real networks, the procedures checked with this configuration act on the traffic carried in both directions of a link. Consequently, the flows of test traffic used are, regarding the routing label of messages:

– OPC = A, DPC = B and OPC = B, DPC = A

– OPC = A, DPC = C and OPC = C, DPC = A (in validation test only).

Table 1/Q.782 – Routing rules in configuration A

→	**A**	**B**	**C**
A	–	L1	L1
B	L1	–	L2
C	L2	L2	–

3.2.3 Configuration B

Configuration B is adapted to the validation of all procedures concerning several signalling linksets. It is used for the tests:

– of signalling message handling;

– of changeover and changeback;

– of forced and controlled rerouting.

Configuration B is shown in Figure 2.

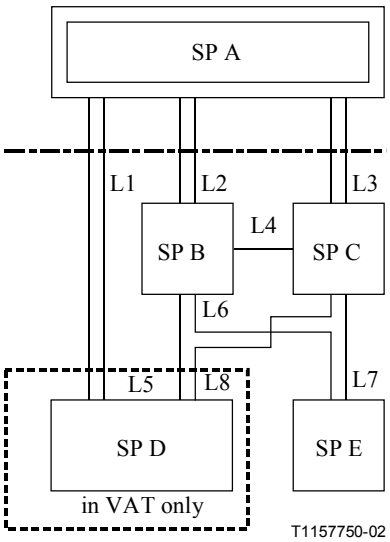


Figure 2/Q.782 – Configuration B

In configuration B, Table 2, the point under test A is linked to the external world with 3 signalling linksets. This is the minimum required number of linksets in order to check:

– load sharing between three linksets;

– changeover and changeback from/to two linksets (see 5.3.1/Q.704).

Table 2/Q.782 – Routing rules in configuration B

→	**A**	**B**	**C**	**D**	**E**
A	–	L2, L3	L3, L2	L1-L2-L3	L2-L3
B	L2, L4	–	L4	L5, L4	L6, L4
C	L3, L4	L4	–	L8, L4	L7, L4
D	L1, L5, L8	L5, L8	L8, L5	–	Any
E	L7, L6	L6, L7	L7, L6	Any	–
Li, Lj Li normal linkset and Lj alternative linkset Li-Lj Load sharing between Li and Lj					

When the SP A is an SP having no STP function, this configuration is also the minimum to run the tests in a network situation where associated mode and quasi-associated mode are used (see 3.1.2/Q.701).

This configuration comprises point D in all validation tests in order to check the impact of the procedures on various traffic flows (relations A-D and A-E). The point D is not used in configuration B in case of compatibility tests.

In a real network, some procedures (changeover, changeback) checked with this configuration act on the traffic in both directions on the concerned linksets. Consequently, the test traffic flows used are, regarding the routing label of messages:

– OPC = A, DPC = E and OPC = E, DPC = A

– OPC = A, DPC = D and OPC = D, DPC = A (in validation test only).

3.2.4 Configuration C

This configuration is adapted to the validation of some functions specific to an STP like:

– message transfer function;
– sending of TFC;
– traffic test.

Configuration C is shown in Figure 3.

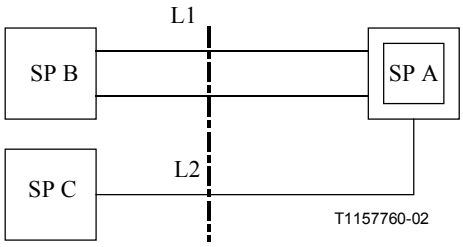


Figure 3/Q.782 – Configuration C

In configuration C, Table 3, the point under test A carries the test traffic from B to C and from C to B. The linkset 1 has two links, this a minimum to create an overload situation to trigger the sending of TFC independently of the implementation of the flow control procedure.

Table 3/Q.782 – Routing rules in configuration C

→	**A**	**B**	**C**
A	–	L1	L2
B	L1	–	L1
C	L2	L2	–

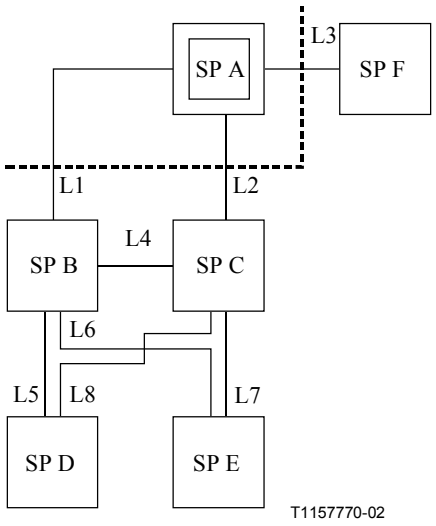
The tests performed with this configuration require that the traffic crosses the STP under test in both directions. Consequently the test traffic flows are, regarding the routing label of messages:

– OPC = B, DPC = C and OPC = C, DPC = B.

3.2.5 Configuration D

This configuration is adapted to the validation of all procedures concerning exclusively the points having an STP function. It is used to check the signalling route management procedures.

Configuration D is shown in Figure 4.



NOTE – The SPs E, D and F do not have an STP function.

Figure 4/Q.782 – Configuration D

Configuration D, Table 4, is used only to check the signalling route management: transfer prohibited and transfer allowed procedures. Consequently, all linksets of this configuration have only one signalling link.

Table 4/Q.782 – Routing rules in configuration D

→	**A**	**B**	**C**	**D**	**E**	**F**
A	–	L1, L2	L2, L1	L1, L2	L1, L2	L3
B	L1, L4	–	L4	L5, L4	L6, L4	L1
C	L2, L4	L4	–	L8, L4	L7, L4	L2
D	Any			–	Any	
E	Any				–	Any
F	L3	L3	L3	L3	L3	–

The STP under test is linked to the external world with three linksets: one terminal linkset (to an SP without STP function) and two inter STP linksets. This structure is minimal to check the various aspects of the broadcasting of TFPs and TFAs:

– TFPs or TFAs concerning several destinations;

– TFPs or TFAs to several destinations.

This configuration includes points D and E. This is necessary in order to check the sending of TFP on an alternative linkset: in A, the routing rules are such that the linksets 1 and 2 are used to reach D using normal/alternative routing and to reach E using load sharing routing (sending of TFP in the first case and not in the second).

The tests performed with this configuration, which check the signalling route procedures, require that the test traffic uses the concerned signalling routes. The test traffic flows used in this Recommendation are, regarding the routing label messages:

– OPC = F, DPC = D OPC = D, DPC = F

– OPC = F, DPC = E OPC = E, DPC = F

– OPC = A, DPC = D OPC = A, DPC = E OPC = A, DPC = F

4 Test list

All tests with the indication "*" are validation and compatibility tests. The tests without asterisk are validation tests only.

1 *Signalling link management*

* 1.1 First signalling link activation

* 1.2 Signalling linkset deactivation

* 1.3 Signalling linkset activation

2 *Signalling message handling*

2.1 Message received with an invalid SSF (discrimination function)

2.2 Message received with an invalid DPC (discrimination function)

2.3 Message received with an invalid SI (distribution function)

2.4 Load sharing within a linkset

* 2.4.1 All links available

2.4.2 With one link unavailable

2.5 Load sharing between linksets

* 2.5.1 Between two linksets

2.5.2 Between three linksets

2.5.3 Between three linksets and one route unavailable

2.5.4 Between three linksets and one linkset unavailable

2.6 Inaccessible destination

2.6.1 Due to a linkset failure

2.6.2 Due to a route failure

2.6.3 Due to a linkset and a route failure

* 2.7 Message transfer function

3 *Changeover*

3.1 Changeover initiated at one side of a linkset (COO ↔ COA)

3.2 Changeover initiated at the both ends at the same time (COO ↔ COO)

3.3 Changeover on expiration of timer T2 (COO or ECO → –)

3.4 Unreasonable FSN in COO/COA

3.5 Reception of a changeover acknowledgement without sending a changeover order (– ← COA or ECA)

3.6 Reception of an additional changeover order (– ← COO or ECO)

3.7 Emergency changeover at one side of a linkset (COO ↔ ECA)

3.8 Emergency changeover at one side of a linkset (COO ↔ ECO)

3.9 Emergency changeover at one side of a linkset (ECO ↔ COA)

3.10 Emergency changeover at both sides of a linkset (ECO ↔ ECA)

3.11 Emergency changeover at one side of a linkset (ECO ↔ COO)

3.12 Emergency changeover initiated at the both ends at the same time (ECO ↔ ECO)

3.13 Reactivation of a link during a changeover procedure

3.14 Simultaneous changeover

3.15 Changeover to several alternative links within a linkset

* 3.16 Changeover to another linkset with the adjacent SP accessible

* 3.17 Changeover to another linkset with the adjacent SP inaccessible

3.18 Changeover to two linksets

3.19 Changeover due to various reasons

3.20 Changeover as compatibility test

3.21 Reception of a changeover order on an available link

4 *Changeback*

* 4.1 Changeback within a linkset

4.2 Additional CBA

4.3 Additional CBD

4.4 No acknowledgement to first CBD

4.5 No acknowledgement of repeat changeback declaration

4.6 Simultaneous changeback

4.7 Changeback from several alternative links within a linkset

* 4.8 Changeback from another linkset

4.9 Changeback from two linksets

4.10 Changeback due to various reasons

* 4.11 Time controlled diversion procedure

* 5 *Forced rerouting*

* 6 *Controlled rerouting*

7 *Management inhibiting*

7.1 Inhibition of a link

* 7.1.1 Available link

* 7.1.2 Unavailable link

7.2 Inhibition not permitted

* 7.2.1 Local reject on an available link

* 7.2.2 Local reject on an unavailable link

7.2.3 Sending of LID

7.2.4 Reception of LID

7.3 Expiration of T14

7.3.1 On an available link

7.3.2 On an unavailable link

7.4 Additional inhibition messages (LIA, LID, LIN)

7.5 Inhibition asked by the both ends of a link

7.6 Manual uninhibition of a link

* 7.6.1 With changeback

* 7.6.2 Without changeback

7.7 Expiration of T12

* 7.8 Not possible uninhibition

7.9 Automatic uninhibition of a link

7.10 Forced uninhibition of a link

7.10.1 Sending of LFU

7.10.2 Reception of LFU

7.11 Expiration of T13

7.12 Additional uninhibition messages (LUA, LUN, LFU)

7.13 Uninhibition at one side after test 7.5

7.14 Automatic uninhibition after test 7.5

7.15 Automatic uninhibition with two links inhibited

7.16 Reception of traffic on an inhibited link

7.17 Management inhibiting test

* 7.17.1 Normal procedure

7.17.2 Reception of an LLT or LRT on an uninhibited link

7.17.3 Reception of an LLT on a link locally inhibited

7.17.4 Reception of an LRT on a link remotely inhibited

8 *Signalling traffic flow control*

8.1 Reception of a TFC

8.2 Sending of TFCs

8.3 Reception of an UPU

8.4 Sending of an UPU

9 *Signalling route management*

9.1 Sending of a TFP on an alternative route

* 9.1.1 Failure of normal linkset

* 9.1.2 On reception of a TFP

9.2 Broadcast of TFPs

* 9.2.1 On one linkset failure

* 9.2.2 On multiple failures

9.3 Reception of a message for an inaccessible destination

9.4 Sending of a TFA on an alternative route

* 9.4.1 Recovery of normal linkset

* 9.4.2 On reception of a TFA

9.5 Broadcast of TFAs

* 9.5.1 On one linkset recovery

* 9.5.2 Various reasons

9.6 Periodic sending of Signalling-Route-Set-Test (SRST) messages

9.7 Reception of a signalling-route-set-test message

10 *Signalling point restart*

10.1 Recovery of a linkset (SP A does not have the STP function)

* 10.1.1 With use of point restart procedure

10.1.2 Not resulting in the signalling point restart procedure

10.2 Recovery of a linkset (SP A has the STP function)

* 10.2.1 Not resulting in the signalling point restart procedure

10.2.2 Not resulting in the signalling point restart procedure

10.3 An adjacent signalling point becomes accessible via another signalling point (SP A does not have an STP function)

10.4 An adjacent signalling point becomes accessible via another signalling point (SP A has STP function)

* 10.5 Restart of an SP having no STP function

* 10.6 Restart of an SP having STP function

10.7 Reception of an unexpected TRA

10.7.1 In an SP having no STP function

10.7.2 In an SP having the STP function

11 *Traffic test*

12 *Signalling link test*

* 12.1 After activation of a link

12.2 No acknowledgement to first SLTM

12.3 No acknowledgement to second SLTM

12.4 Unreasonable field in an SLTA

12.5 Reception of an SLTM in an attempt state

* 12.6 Additional SLTA, SLTM

13 *Invalid messages*

13.1 Invalid H0-H1 in a signalling network management message

13.2 Invalid changeover messages

13.3 Invalid changeback messages

13.4 Invalid changeback code

13.5 Invalid inhibition messages

13.6 Invalid transfer control messages

13.7 Invalid signalling route management messages

13.8 Invalid signalling-route-set-test messages

13.9 Invalid traffic restart allowed message

13.10 Invalid H0-H1 in a signalling network testing and maintenance message

13.11 Invalid signalling link test messages

13.12 Invalid user part unavailable messages

5 Test descriptions

MTP Level 3

TEST NUMBER: 1.1		PAGE: 1 of 1
REFERENCE: clause 3/Q.704 Fig. 7, Fig. 36, Fig. 37, Fig. 38		
TITLE: Signalling link management		
SUBTITLE: First signalling link activation		
PURPOSE: To put into service a signalling linkset with 1 signalling link		
PRE-TEST CONDITIONS: Signalling links deactivated		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
			1–1	:Activate
1–1	:Activate			
		←	1–1	SLTM
1–1	SLTA	→		
1–1	SLTM	→		
		←	1–1	SLTA
:Start traffic				
1–1	TRAFFIC	→		
		←	1–1	TRAFFIC
:Wait				
:Stop traffic				

NOTE – The MTP restart procedure is not described in this test and is checked in others tests.

TEST DESCRIPTION

1.	Check that the signalling link becomes available.
2.	Check the reception and sending of variable length messages on the activated linkset from/to the SP at the other end of this linkset (and, in case of VAT, from/to other SP crossing the SP at the other end of this linkset).
3.	Check that, after the alignment, the level 2 does not send any message received before or during the deactivation.
4.	Check that all messages are correctly received (no loss of messages, no duplication and no missequencing).
5.	Stop traffic.
6.	Repeat the test with different SLC values.

MTP Level 3

TEST NUMBER: 1.2		PAGE: 1 of 1
REFERENCE: clause 3/Q.704 Fig. 7, Fig. 36, Fig. 37, Fig. 38		
TITLE: Signalling link management		
SUBTITLE: Signalling linkset deactivation		
PURPOSE: To remove from service a signalling linkset with 1 signalling link		
PRE-TEST CONDITIONS: One signalling link (1–1) activated		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

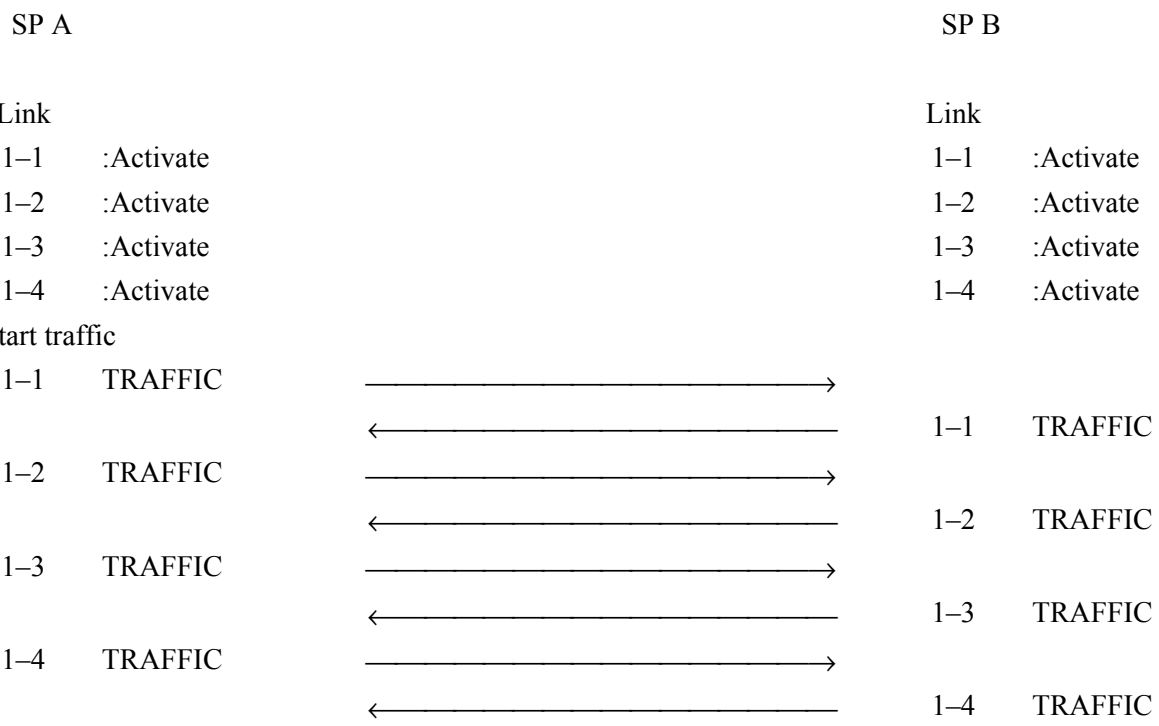
SP A		SP B
Link 1–1	:Deactivate	Link

TEST DESCRIPTION	
1.	Check that the signalling linkset becomes unavailable.

MTP Level 3

TEST NUMBER: 1.3		PAGE: 1 of 1
REFERENCE: clause 3 and 12.2.4.1/Q.704 Fig. 7, Fig. 36, Fig. 37, Fig. 38		
TITLE: Signalling link management		
SUBTITLE: Signalling linkset activation		
PURPOSE: To put into service a signalling linkset with 4 signalling links		
PRE-TEST CONDITIONS: Signalling links deactivated		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – This test describes the activation of a linkset. The signalling link activation order is given simultaneously to all signalling links of the signalling linkset (see 12.2.4.1/Q.704). However, depending on which order the links are aligned, changeback procedures will be performed. This test does not describe the transitory states (signalling link test, changeback and restart procedures are checked in other tests).

TEST DESCRIPTION

1.	Check that the signalling links become available and start traffic between A and B (and A and C in VAT).
2.	Check the reception and sending of variable length messages on the activated linkset from/to the SP at the other end of this linkset (and, in case of VAT, from/to other SP crossing the SP at the other end of this linkset).
3.	Check that, after the alignment, the level 2 does not send any message received before or during the deactivation.
4.	Check that all messages are correctly received (no loss of messages, no duplication and no missequencing).
5.	Stop traffic.

MTP Level 3

TEST NUMBER: 2.1		PAGE: 1 of 1
REFERENCE: clause 3 and 2.4/Q.704 Fig. 24		
TITLE: Signalling message handling		
SUBTITLE: Message received with an invalid SSF (discrimination function)		
PURPOSE: To check the response to a message with an invalid SSF		
PRE-TEST CONDITIONS: Signalling linkset activated		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

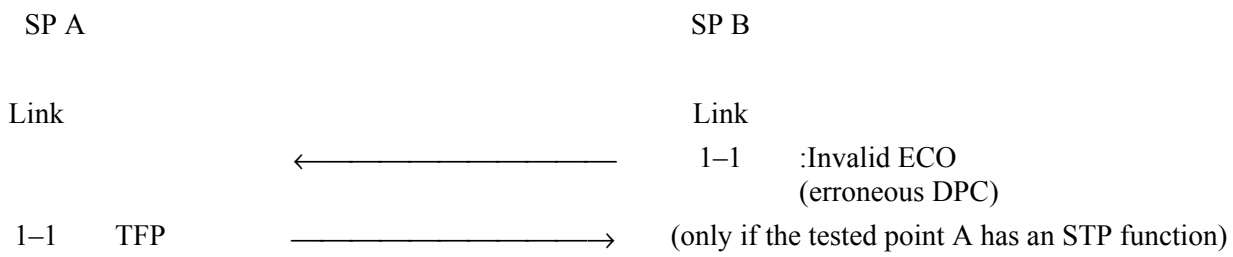
MESSAGE SEQUENCE:

TEST DESCRIPTION	
1.	Send an SLTM with an erroneous SSF.
2.	Check that no response is received.

MTP Level 3

TEST NUMBER: 2.2		PAGE: 1 of 1
REFERENCE: clause 2/Q.704 Fig. 24, Fig. 26		
TITLE: Signalling message handling		
SUBTITLE: Message received with an invalid DPC		
PURPOSE: To check the response to a message with an invalid DPC		
PRE-TEST CONDITIONS: Signalling linkset activated		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Send a ECO message with an erroneous DPC.
2.	Check that no response is received if the tested point does not have an STP function. If the tested point has the STP function, check that a TFP is received.

MTP Level 3

TEST NUMBER: 2.3		PAGE: 1 of 1
REFERENCE: 2.4/Q.704 Fig. 24, Fig. 25		
TITLE: Signalling message handling		
SUBTITLE: Message received with an invalid SI (distribution function)		
PURPOSE: To check the response to a message received with an invalid SI		
PRE-TEST CONDITIONS: Signalling linkset activated		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

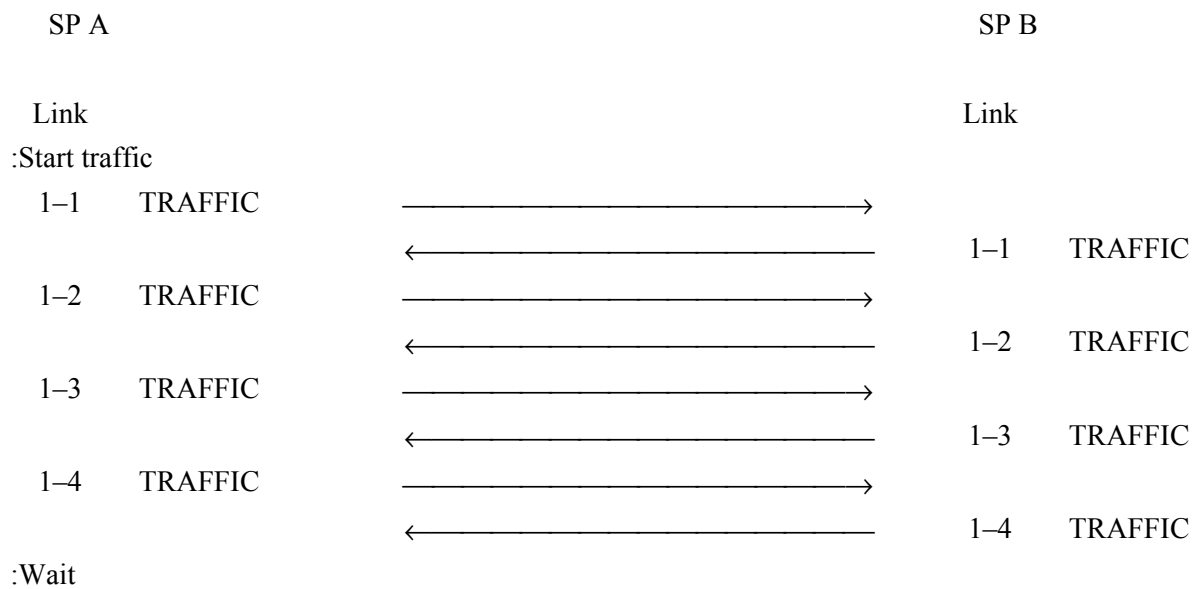
MESSAGE SEQUENCE:

TEST DESCRIPTION

1.	Send an SLTM message with an invalid SI.
2.	Check that no response is received except perhaps a UPU (cause unequipped) when the SI used does not exist.

TEST NUMBER: 2.4.1		PAGE: 1 of 1
REFERENCE: 2.3/Q.704 Fig. 26 4.4/Q.705		
TITLE: Signalling message handling		
SUBTITLE: Load sharing within a linkset – All links available		
PURPOSE: To check the load sharing within a linkset with all the links available		
PRE-TEST CONDITIONS: Signalling linkset activated		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

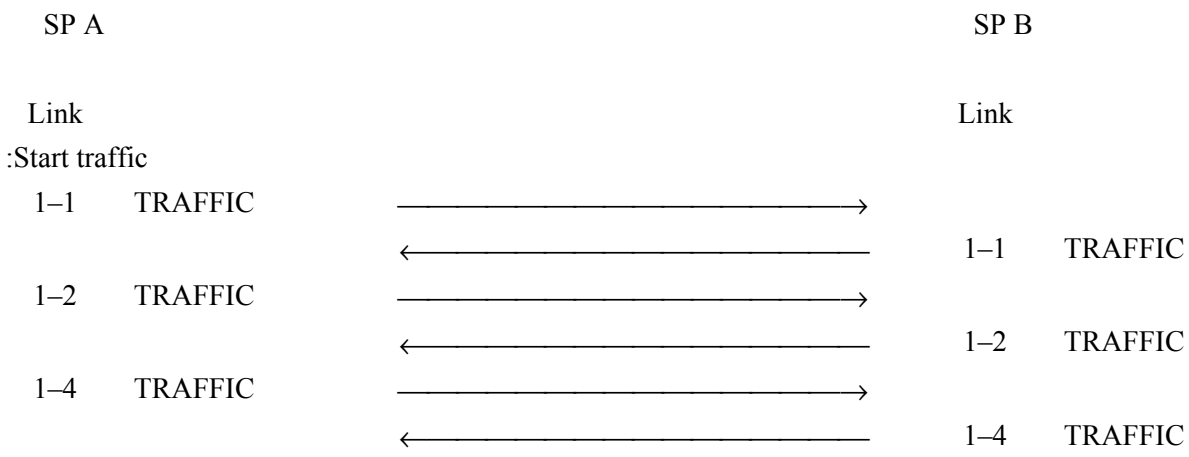


TEST DESCRIPTION

1.	Start traffic to B (and C in VAT) for all SLS.
2.	Stop traffic, check that the messages have been transmitted on the correct link in accordance with the SLS field.
3.	Check that there was no loss of messages, no duplication and no missequencing.

TEST NUMBER: 2.4.2		PAGE: 1 of 1
REFERENCE: 2.3/Q.704 Fig. 26 4.4/Q.705		
TITLE: Signalling message handling		
SUBTITLE: Load sharing within a linkset – With one link unavailable		
PURPOSE: To check the load sharing within a linkset when one link is unavailable		
PRE-TEST CONDITIONS: Signalling link 1–3 deactivated		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

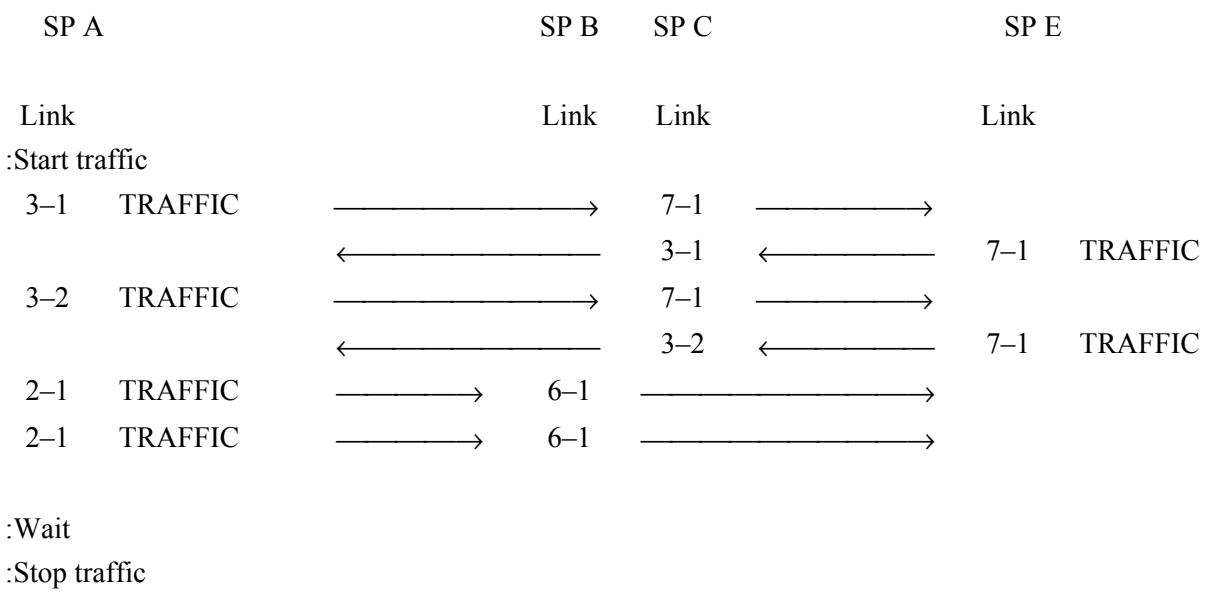


TEST DESCRIPTION

1.	Start the traffic to B and C for all SLS, wait and stop.
2.	Check that the messages have been transmitted on the correct link in accordance with the SLS field on the remaining links.

TEST NUMBER: 2.5.1		PAGE: 1 of 1
REFERENCE: 2.3/Q.704 Fig. 26 4.4/Q.705		
TITLE: Signalling message handling		
SUBTITLE: Load sharing between linksets – Between two linksets		
PURPOSE: To check the load sharing between two linksets under normal conditions		
PRE-TEST CONDITIONS: All linksets and routes available		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

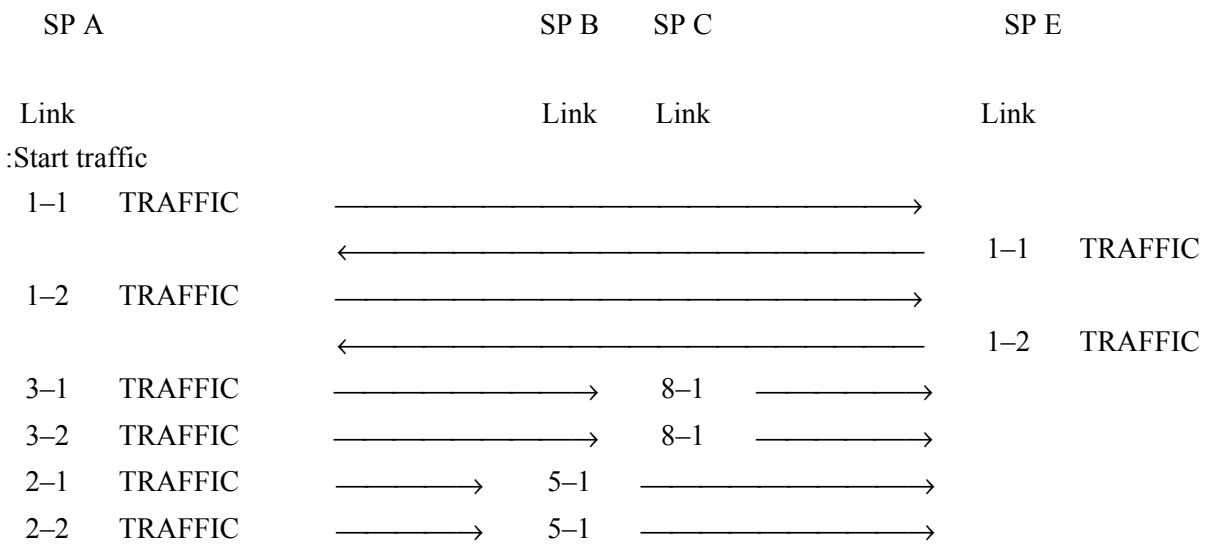


TEST DESCRIPTION

1.	Start the traffic to E for all SLS.
2.	Stop the traffic and check that the messages have been transmitted on the correct linkset in accordance with the SLS and DPC.
3.	Check that there was no loss of messages, no duplication and no missequencing.

TEST NUMBER: 2.5.2		PAGE: 1 of 1
REFERENCE: 2.3/Q.704 Fig. 26 4.4/Q.705		
TITLE: Signalling message handling		
SUBTITLE: Load sharing between linksets – Between three linksets		
PURPOSE: To check the load sharing between three linksets under normal conditions		
PRE-TEST CONDITIONS: All linksets and routes available		
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

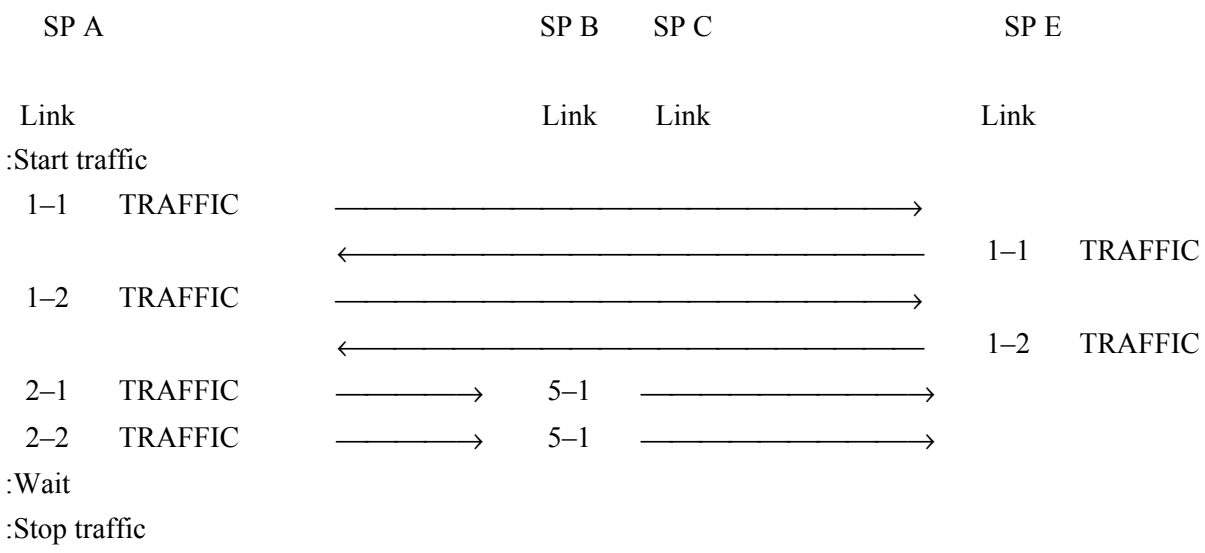


TEST DESCRIPTION

1.	Start the traffic to D for all SLS.
2.	Stop the traffic and check that the messages have been transmitted on the correct linkset and on the correct link in accordance with the SLS.
3.	Check that there was no loss of messages, no duplication and no missequencing.

TEST NUMBER: 2.5.3		PAGE: 1 of 1
REFERENCE: 2.3/Q.704 Fig. 26 4.4/Q.705		
TITLE: Signalling message handling		
SUBTITLE: Load sharing between linksets – Between three linksets and one route unavailable		
PURPOSE: To check the load sharing between three linksets when one route is unavailable		
PRE-TEST CONDITIONS: Linksets 4 and 8 unavailable (TFP, PC = D from C to A)		
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

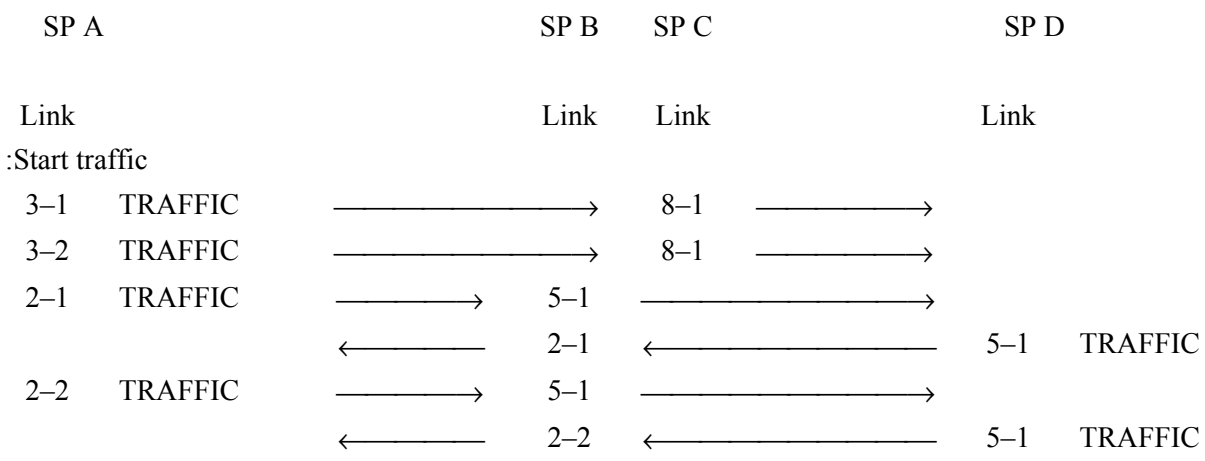


TEST DESCRIPTION

1.	Start the traffic for all SLS, wait and stop.
2.	Check that the traffic to D via C has been shared on the remaining linksets.

TEST NUMBER: 2.5.4			PAGE: 1 of 1
REFERENCE: 2.3/Q.704 Fig. 26 4.4/Q.705			
TITLE: Signalling message handling			
SUBTITLE: Load sharing between linksets – Between three linksets and one linkset unavailable			
PURPOSE: To check the load sharing between two linksets after the unavailability of the third linkset			
PRE-TEST CONDITIONS: Linkset 1 deactivated			
CONFIGURATION: B	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

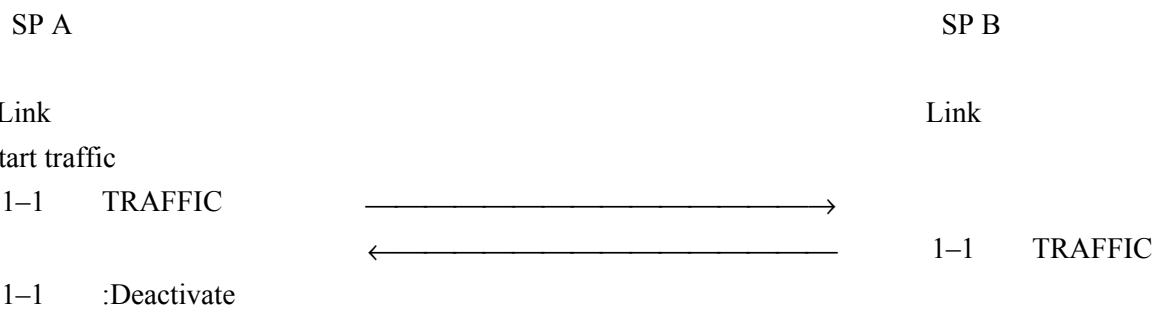


TEST DESCRIPTION	
1.	Start the traffic for all SLS to D, wait and stop.
2.	Check that the traffic has been shared on the remaining linksets.

MTP Level 3

TEST NUMBER: 2.6.1		PAGE: 1 of 1
REFERENCE: Q.704 Fig. 26		
TITLE: Signalling message handling		
SUBTITLE: Inaccessible destination – Due to a linkset failure		
PURPOSE: To check the signalling message handling when a destination becomes inaccessible due to a linkset failure		
PRE-TEST CONDITIONS: Signalling linkset with one link available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

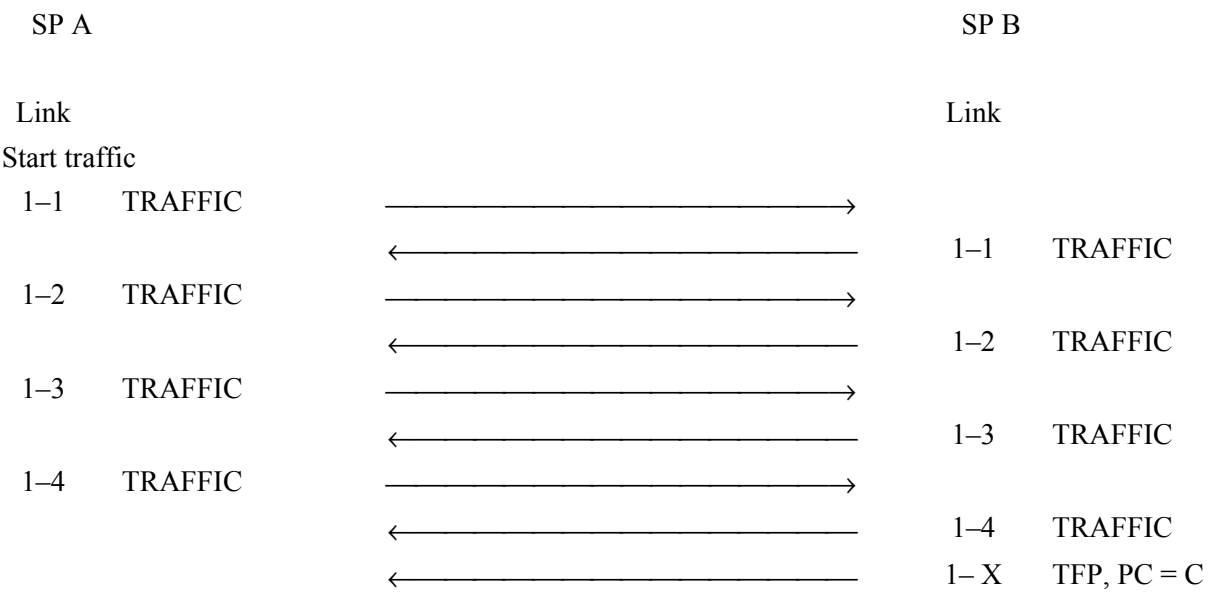


TEST DESCRIPTION

1.	Start the traffic for all SLS to B and C.
2.	Deactivate the last link 1–1 and check that the linkset becomes unavailable.
3.	Check that the SPs B and C become inaccessible.
4.	Check that all messages stored or received after the unavailability of the linkset are discarded.

TEST NUMBER: 2.6.2		PAGE: 1 of 1
REFERENCE: Q.704 Fig. 26		
TITLE: Signalling message handling		
SUBTITLE: Inaccessible destination – Due to a route failure		
PURPOSE: To check the signalling message handling when a destination becomes inaccessible on reception of a TFP		
PRE-TEST CONDITIONS: All links and routes available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

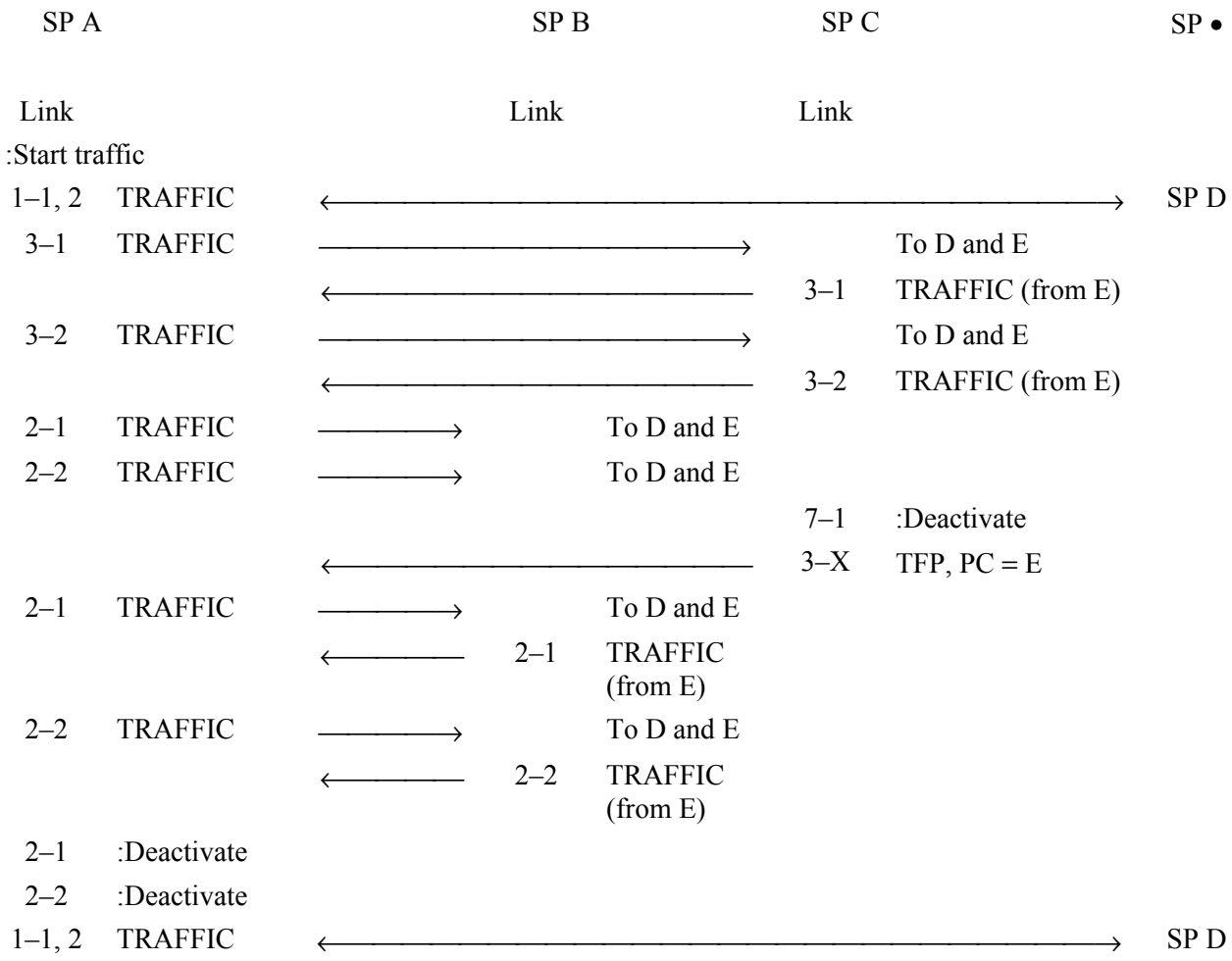


TEST DESCRIPTION

1. Start the traffic to B and C for all SLS.
2. Provoke the sending of a TFP (PC = C) from SP B to SP A.
3. Check that the SP C becomes inaccessible.
4. Stop traffic.
5. Check that all messages stored or received after the inaccessibility have been discarded.
6. Check that traffic to B has not been disturbed.

TEST NUMBER: 2.6.3			PAGE: 1 of 1
REFERENCE: Q.704 Fig. 26			
TITLE: Signalling message handling			
SUBTITLE: Inaccessible destination – Due to a linkset and a route failure			
PURPOSE: To check the signalling message handling when a destination becomes inaccessible due to a linsket and a route failure			
PRE-TEST CONDITIONS: Linkset 4 unavailable			
CONFIGURATION: B	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – The transitory states (signalling network management procedures) are not described in this test, which checks only the signalling message handling.

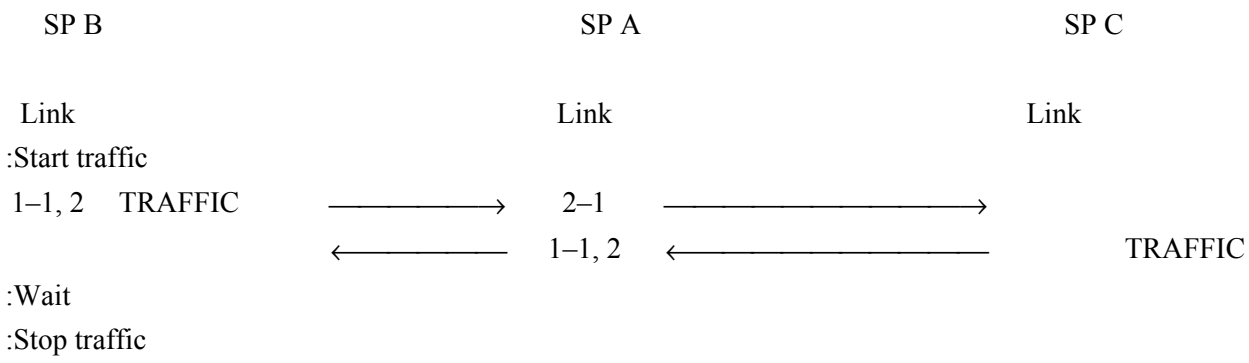
TEST DESCRIPTION

1.	Start the traffic to the SPs D and E for all SLS.
2.	Initiate the sending of a TFP (DPC = E) from SP C to SP A, check that the traffic to E is routed via B and check that the traffic to D is not disturbed.
3.	Deactivate the linkset 2 and check that the destination E becomes inaccessible. Stop traffic.
4.	Check that all messages stored or received during the inaccessibility have been discarded.

MTP Level 3

TEST NUMBER: 2.7		PAGE: 1 of 1
REFERENCE: clause 2/Q.704 Fig. 26		
TITLE: Signalling message handling		
SUBTITLE: Message transfer function		
PURPOSE: To test the transfer function in an STP		
PRE-TEST CONDITIONS: All links available		
CONFIGURATION: C	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



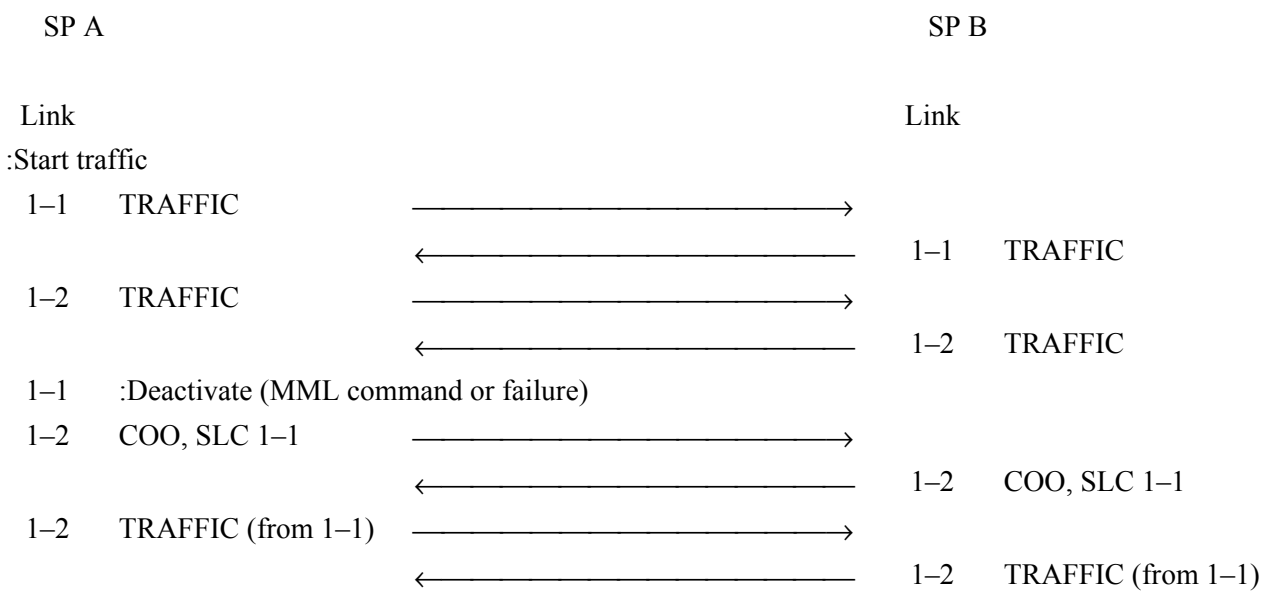
NOTE – The traffic used in this test is in conformance with the traffic model presented in ITU-T Rec. Q.706.

TEST DESCRIPTION	
1.	Start traffic between B and C in both directions via A.
2.	Check that transfer function is correctly performed.
3.	Stop traffic and check that there was no loss of messages, no duplication and no missequencing. Check that the information field of these messages has not been corrupted.

MTP Level 3

TEST NUMBER: 3.1		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Changeover initiated at one side of a linkset (COO ↔ COA)		
PURPOSE: To check the normal changeover procedure		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1.	Start traffic to B and C on all the links.
2.	Deactivate link 1–1, check that a COO is sent (from A) for 1–1 on 1–2 and respond with a COA within T2.
3.	Check that the time between the deactivation and the sending of the COO is inside the specified value (see ITU-T Rec. Q.706).
4.	Check that the traffic from link 1–1 is changed over to 1–2 and check that the traffic normally carried by 1–2 is passed over to 1–2.
5.	Stop traffic and check it has been received correctly (no lost messages, no duplication and no missequencing).
6.	Repeat the test by sending the COO from B (instead of A). In addition, check that the time between the reception of the COO and the sending of the COA is inside the specified value (see ITU-T Rec. Q.706). NOTE – In this case, A might also send a COO/ECO to B as well as the COA. As a consequence, B would then return a COA/ECA to A.

MTP Level 3

TEST NUMBER: 3.2		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Changeover initiated at both ends at the same time (COO ↔ COO)		
PURPOSE: To check the changeover procedure when the changeover is initiated at the both ends simultaneously		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

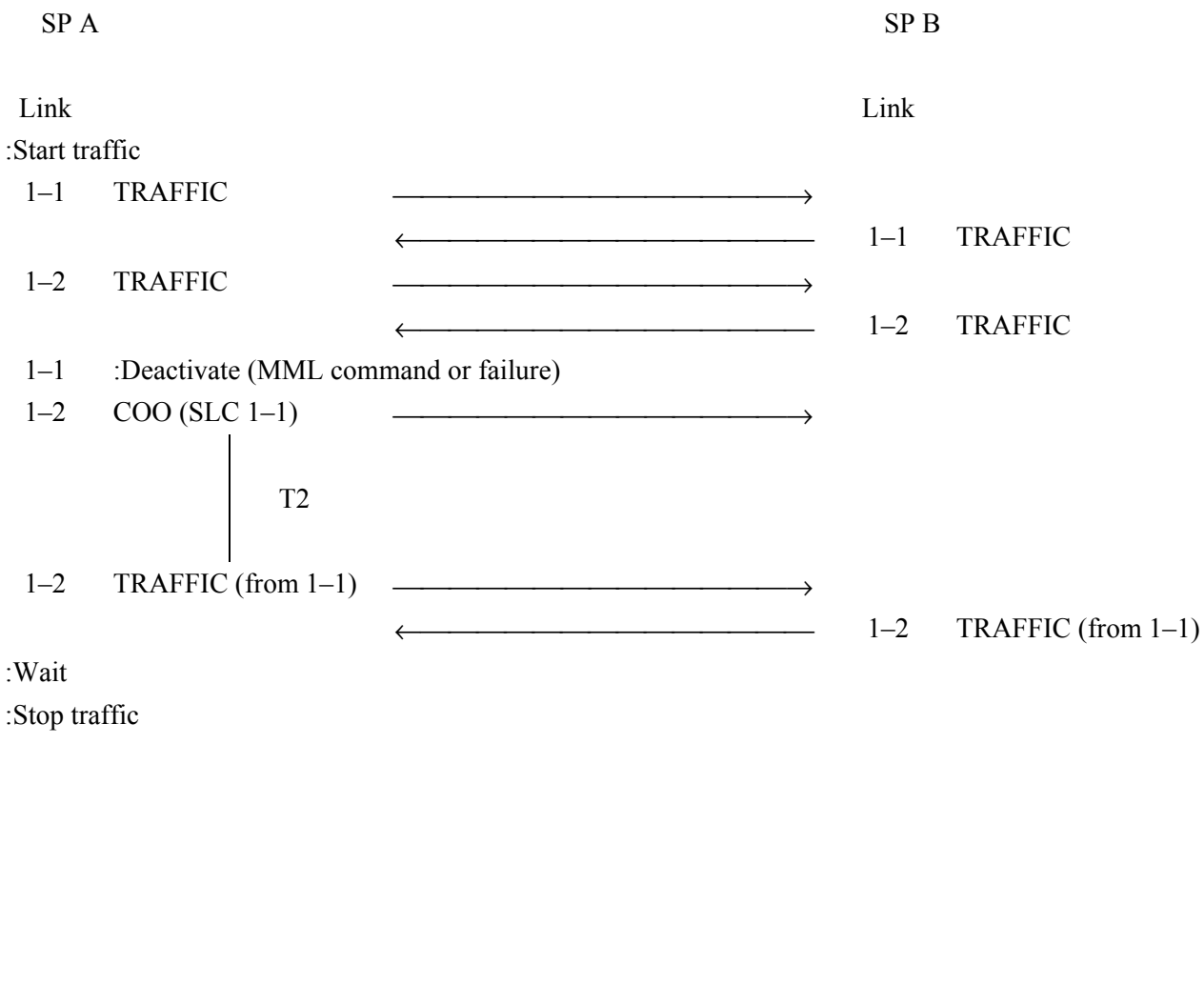
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Deactivate (MML command or failure)			
1–2	COO (SLC 1–1)	⟶		
		⟵	1–2	COO (SLC 1–1)
1–2	COA (SLC 1–1)	⟶		
		⟵	1–2	COA (SLC 1–1)
1–2	TRAFFIC (from 1–1)	⟶		
		⟵	1–2	TRAFFIC (from 1–1)
:Wait				
:Stop traffic				

TEST DESCRIPTION

1. Start the traffic to B and C on all the links.
2. Deactivate the link 1–1, check that the COOs and COAs for 1–1 are received on link 1–2.
3. Check that the traffic from link 1–1 changed over to 1–2 and stop traffic.
4. Repeat the test without sending of COA from SP B to SP A.

TEST NUMBER: 3.3		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Changeover on expiration of timer T2 (COO or ECO → –)		
PURPOSE: To check the changeover procedure when no COA is received in response of a COO previously sent		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

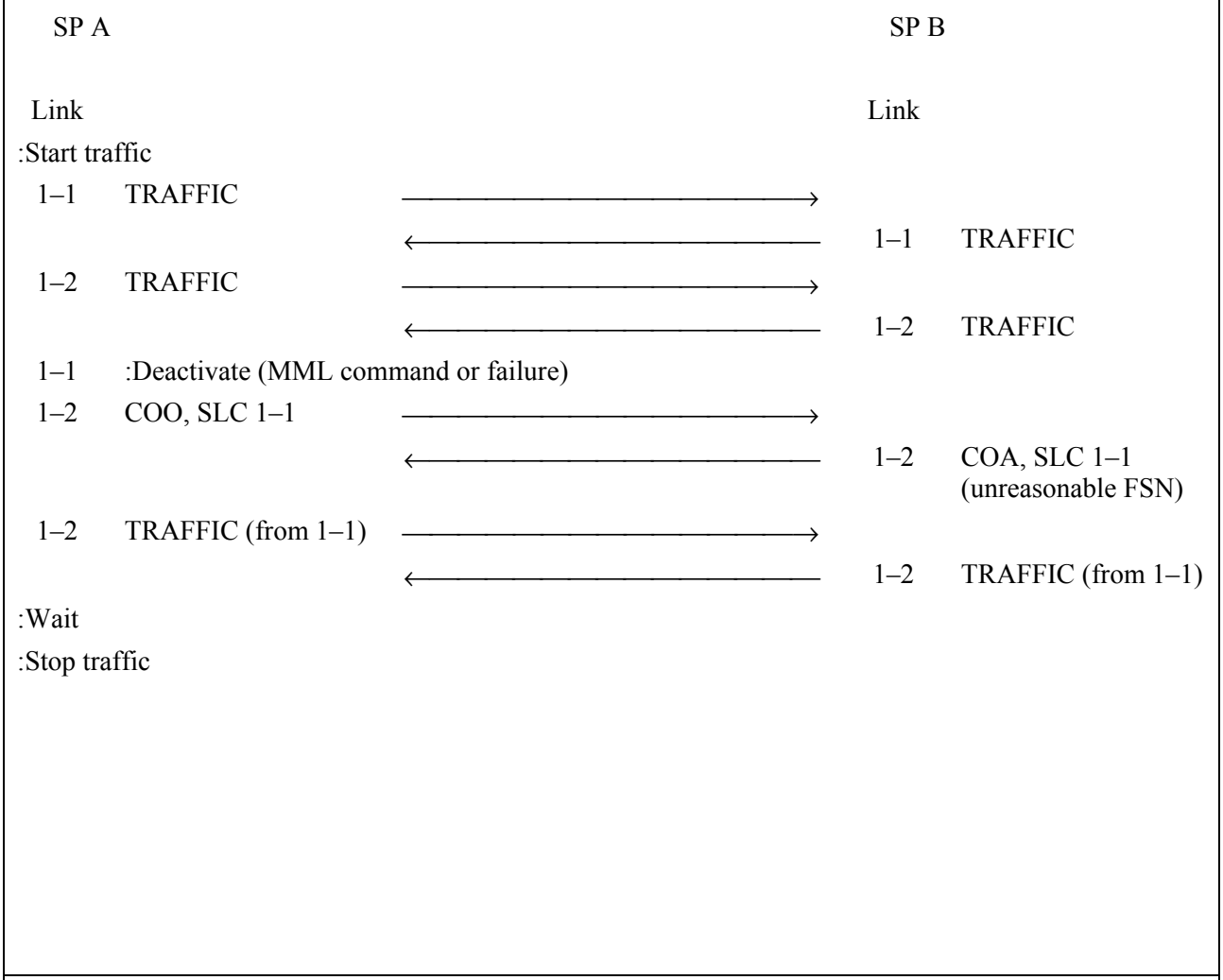
MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to B and C on all the links.
2.	Deactivate link 1–1, check that a COO is received for 1–1 on link 1–2.
3.	After the expiration of T2, check that the changeover procedure is performed.
4.	Check that the duration of T2 is inside the specified range.
5.	Stop traffic and check that there was no duplication and no missequencing, some messages may be lost as the system should not perform retrieval.
6.	Repeat the test but replacing COO by ECO.

TEST NUMBER: 3.4		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Unreasonable FSN in COO/COA		
PURPOSE: To check the changeover procedure on reception of a COO/COA containing an unreasonable FSN		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1.	Start traffic to B and C on all the links.
2.	Deactivate link 1–1, check that a COO is received for 1–1 on link 1–2 and respond within T2 with a COA containing an unreasonable FSN.
3.	Stop traffic, check that the changeover procedure has been performed.
4.	Check that there was no duplication and no missequencing. Some messages may be lost as the system should not perform retrieval.
5.	Check that an indication is given by the system.
6.	Repeat the test with a COO sent from B (instead COA) containing an unreasonable FSN.

MTP Level 3

TEST NUMBER: 3.5		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Reception of a changeover acknowledgement without sending a changeover order (– ← COA or ECA)		
PURPOSE: To check the changeover procedure on reception of an unexpected changeover acknowledgement		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	COA, SLC 1–1
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1. Start traffic to B and C on all the links.
2. Send a COA for 1–1 on link 1–2, check that this message is ignored.
3. Stop traffic and check that it has been received correctly.
4. Repeat the test with an ECA instead of a COA.

MTP Level 3

TEST NUMBER: 3.6		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Reception of an additional changeover order (– ← COO or ECO)		
PURPOSE: To check the action of the system when a changeover order relating to a particular link is received after completion of changeover		
PRE-TEST CONDITIONS: Linkset with only the link 1–2 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

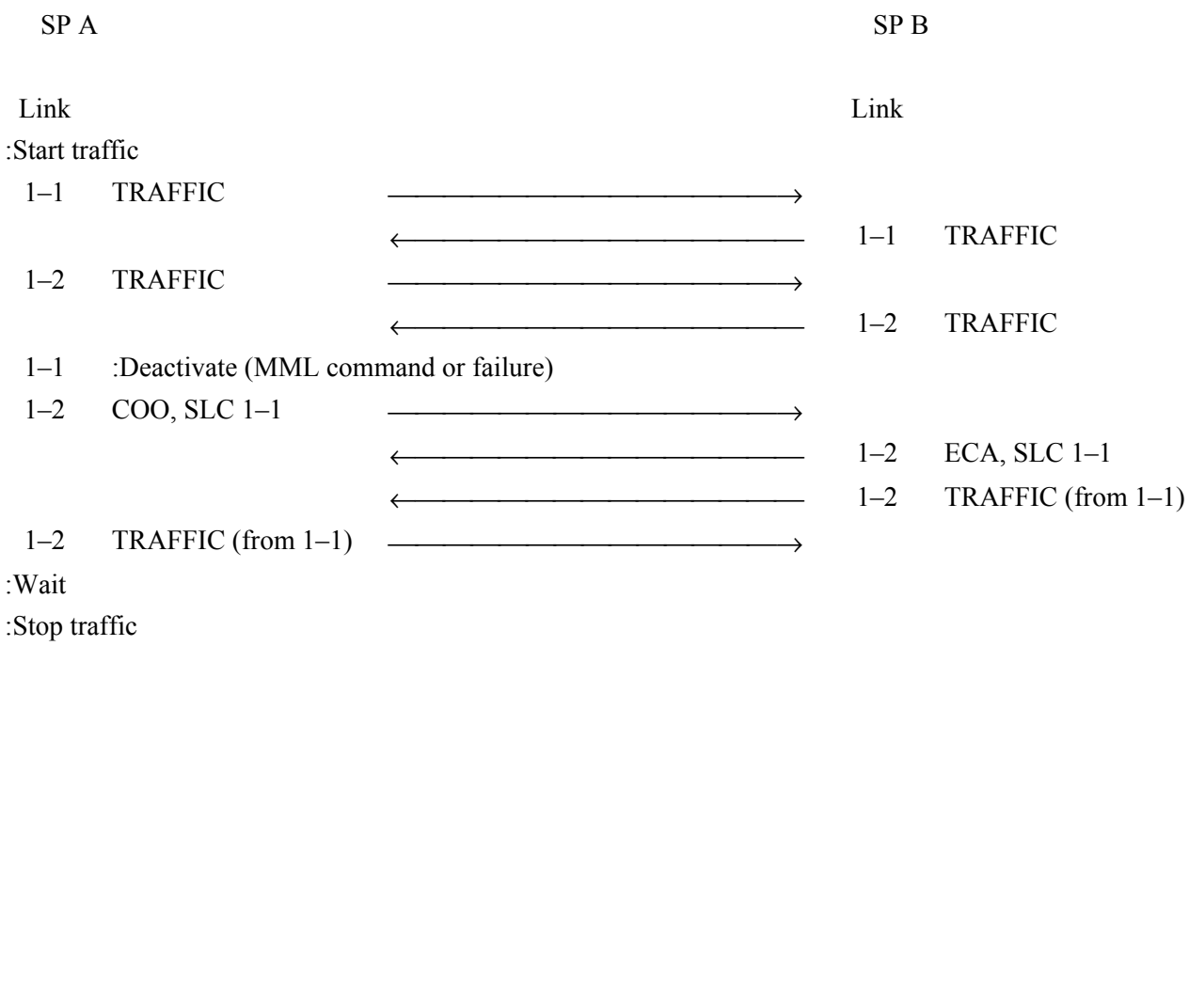
SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	COO, SLC 1–1
1–2	ECA, SLC 1–1	⟶		
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Send a COO for 1–1 on link 1–2 and check that an ECA is received in T2.
3.	Stop traffic and check that it has been received correctly.
4.	Repeat the test with an ECO instead of a COO.

TEST NUMBER: 3.7		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Emergency changeover at one side of a linkset (COO ↔ ECA)		
PURPOSE: To check the emergency changeover procedure when a COO is acknowledged by an ECA		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

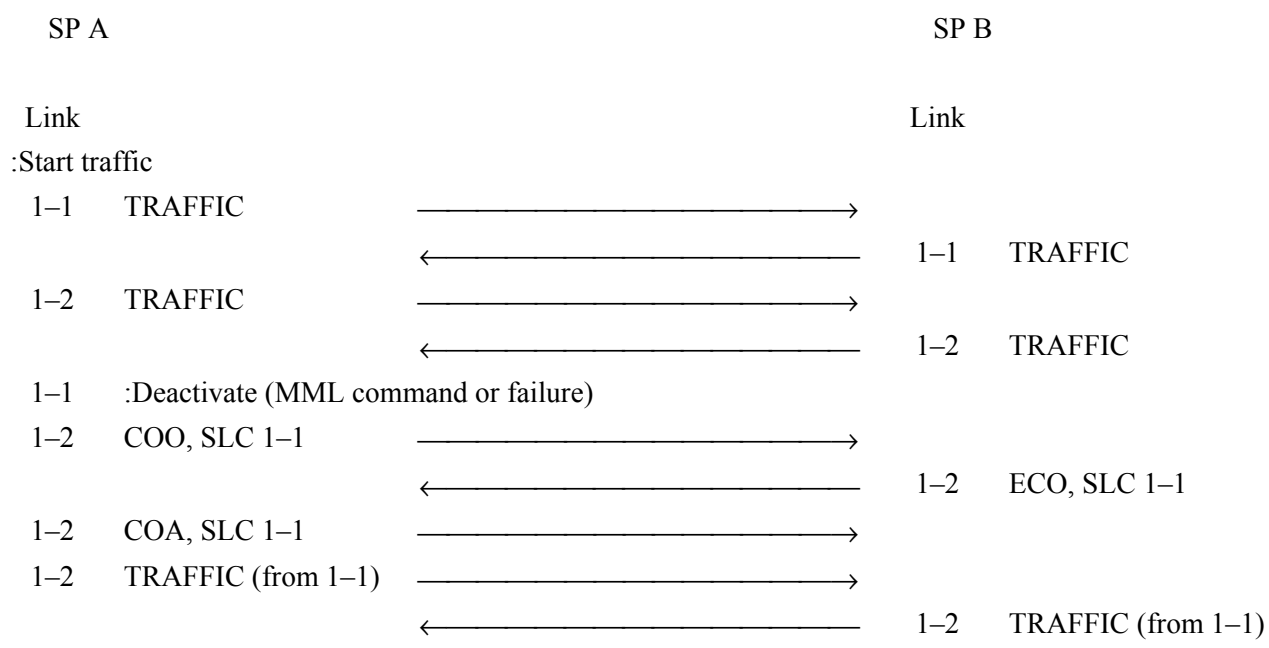


TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Check the sending of a COO (from A) for 1–1 on 1–2 and check that an ECA is sent inside T2.
3.	Check that the traffic is changed over from 1–1 to 1–2.
4.	Stop traffic and check that it has been received correctly; no duplication and no missequencing. Some messages may be lost as the system should not perform retrieval.
5.	Repeat the test by sending COO from B (instead of A).
	NOTE – In this case, A might also send a COO/ECO to B as well as the COA. As a consequence, B would then return a COA/ECA to A.

TEST NUMBER: 3.8		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Emergency changeover at one side of a linkset (COO ↔ ECO)		
PURPOSE: To check the emergency changeover procedure when a COO is acknowledged by an ECO		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

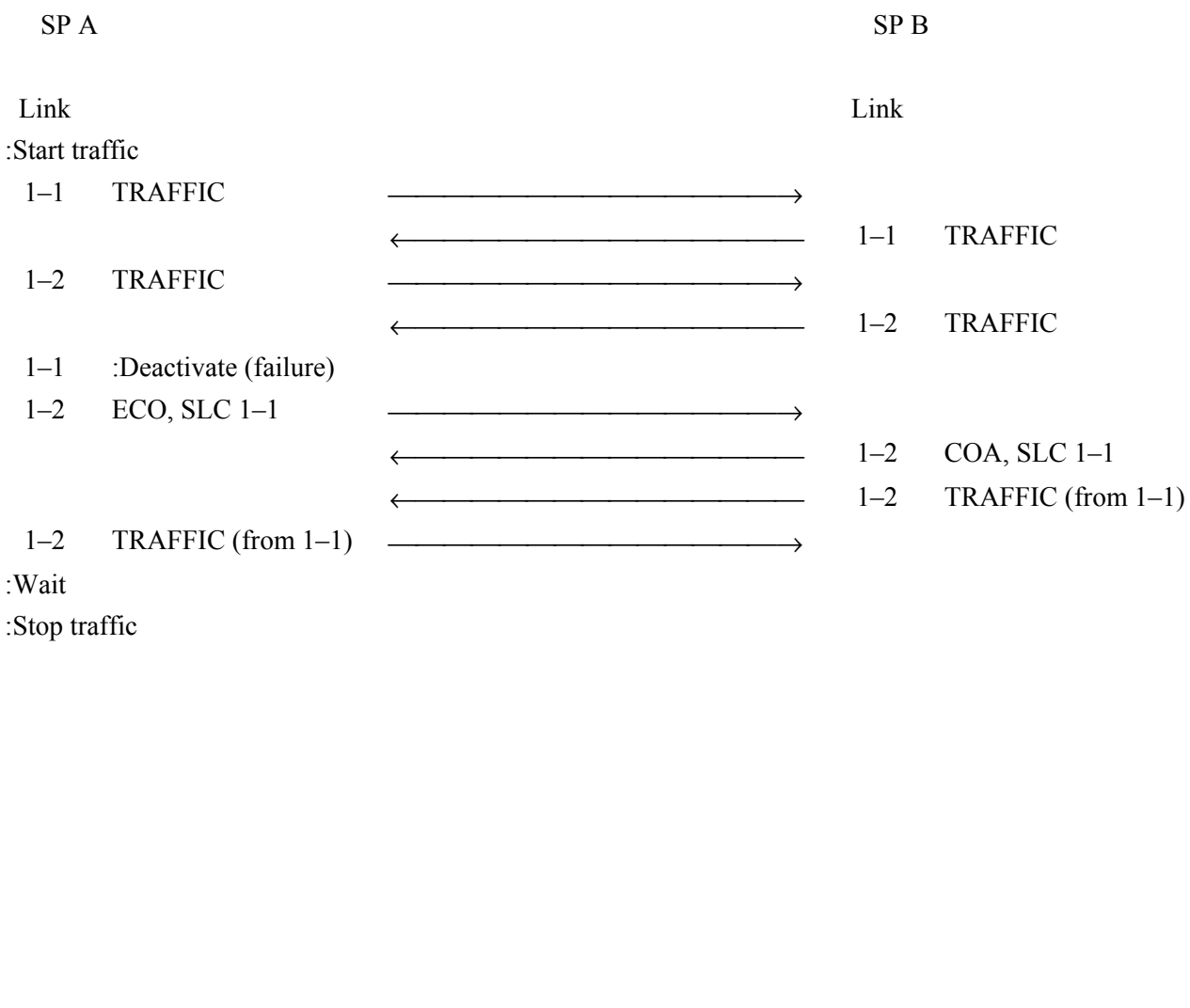
1. Start traffic to B and C on all links.
2. Check the sending of a COO (from A) for 1–1 on 1–2 and check that an ECO is sent (before T2 expires) and a COA is received.
3. Check that the traffic is changed over from 1–1 to 1–2.
4. Stop traffic and check that it has been received correctly; no duplication and no missequencing. Some messages may be lost as the system should not perform retrieval.
5. Repeat the test but send COO from B (instead of A).

   NOTE – In this case, A might also send a COO/ECO to B as well as the COA. As a consequence, B would then return a COA/ECA to A.

MTP Level 3

TEST NUMBER: 3.9		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Emergency changeover at one side of a linkset (ECO ↔ COA)		
PURPOSE: To check the emergency changeover procedure when an ECO is acknowledged by a COA		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1. Start traffic to B and C on all links.
2. Check that an ECO is received for 1–1 on 1–2 and that a COA is sent before T2 expires.
3. Check that traffic is changed over from 1–1 to 1–2.
4. Stop traffic and check that it has been received correctly; no duplication and no missequencing, some messages may be lost as the system should not perform retrieval.
5. Repeat the test but send ECO from B (instead of A).

   NOTE – In this case, A might also send a COO/ECO to B as well as the COA. As a consequence, B would then return a COA/ECA to A.

MTP Level 3

TEST NUMBER: 3.10		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Emergency changeover at both sides of a linkset (ECO ↔ ECA)		
PURPOSE: To check the emergency changeover procedure when an ECO is acknowledged by an ECA		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

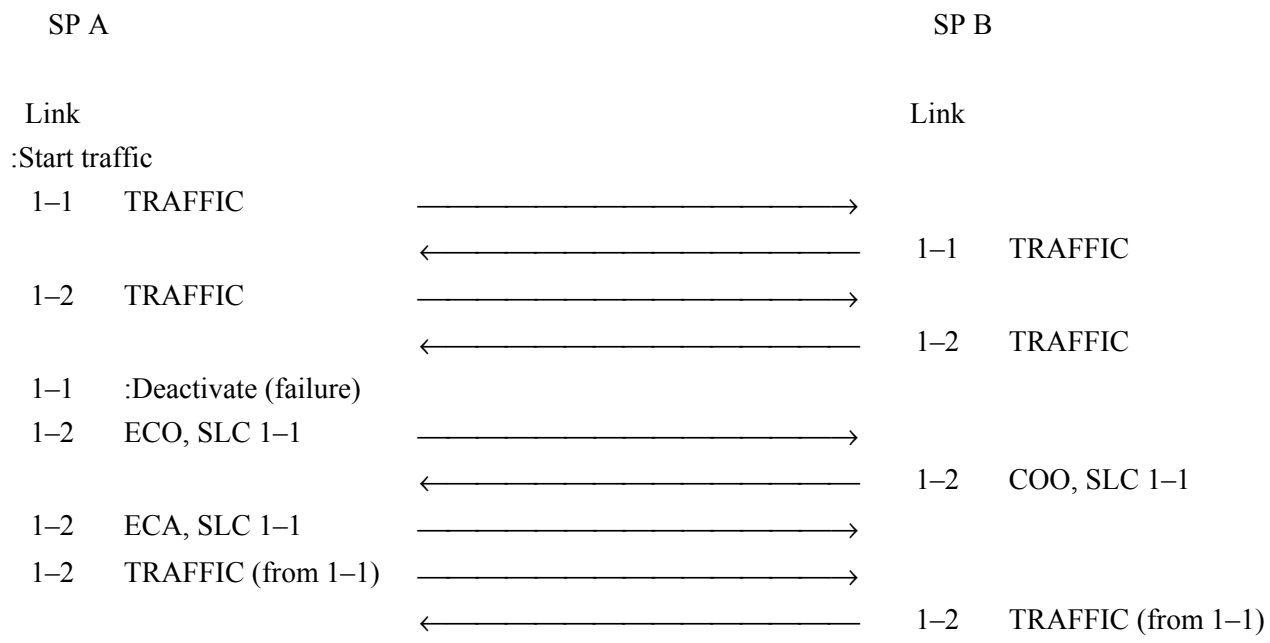
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Deactivate (failure)			
1–2	ECO, SLC 1–1	⟶		
		⟵	1–2	ECA, SLC 1–1
		⟵	1–2	TRAFFIC (from 1–1)
1–2	TRAFFIC (from 1–1)	⟶		
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Check that an ECO is received for 1–1 on 1–2 and that an ECA is sent before T2 expires.
3.	Check that traffic is changed over from 1–1 to 1–2.
4.	Stop traffic and check that it has been received correctly; no duplication and no missequencing. Some messages may be lost as the system should not perform retrieval.
5.	Repeat the test but send ECO from B (instead of A).

TEST NUMBER: 3.11		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Emergency changeover at one side of a linkset (ECO ↔ COO)		
PURPOSE: To check the emergency changeover procedure when an COO is received in response to an ECO		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

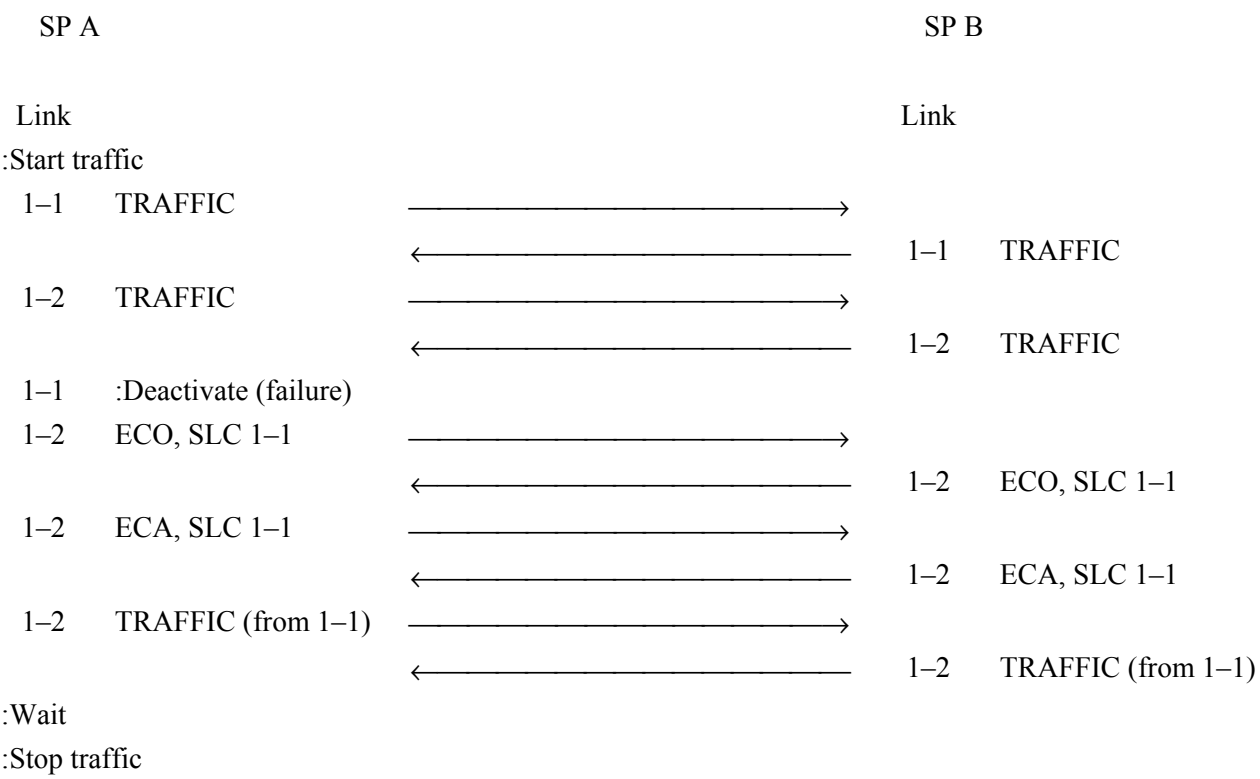


TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Check that an ECO is received for 1–1 on 1–2 and that a COO is sent before T2 expires and acknowledged with an ECA.
3.	Check that traffic is changed over from 1–1 to 1–2.
4.	Stop traffic and check that it has been received correctly; no duplication and no missequencing. Some messages may be lost as the system should not perform retrieval.
5.	Repeat the test but sent ECO from B (instead of A).

TEST NUMBER: 3.12		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Emergency changeover initiated at both ends at the same time (ECO ↔ ECO)		
PURPOSE: To check the emergency changeover procedure when it is initiated at the both ends simultaneously		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Check that an ECO is received for 1–1 on 1– 2 and that an ECO is sent before T2 expires and acknowledged with ECA.
3.	Check that traffic is changed over from 1–1 to 1–2.
4.	Stop traffic and check that it has been received correctly; no duplication and no missequencing. Some messages may be lost as the system should not perform retrieval.
5.	Repeat the test without sending ECA from SP B to SP A.

TEST NUMBER: 3.13		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Reactivation of a link during a changeover procedure		
PURPOSE: To check the changeover procedure when the link failure causing the changeover is removed during the procedure		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A		SP B
Link		Link
:Start traffic		
1–1 TRAFFIC	⟶	
	⟵	1–1 TRAFFIC
1–2 TRAFFIC	⟶	
	⟵	1–2 TRAFFIC
1–1 :Deactivate (failure)		
1–1 : Activate (end of failure)		
:Wait		
:Stop traffic		

NOTE – This test will be performed if applicable (some systems may terminate the changeover procedure, then perform the changeback).

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Deactivate the link 1–1 and reactivate this link immediately.
3.	Stop traffic and check that the changeover procedure has not been performed. Depending on the time between the deactivation and the reactivation, a COO may be sent or not.
4.	Check that the traffic used the links 1–1 and 1–2 normally.

TEST NUMBER: 3.14		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Simultaneous changeover		
PURPOSE: To check that the system can correctly handle simultaneous failures of several links		
PRE-TEST CONDITIONS: Linkset with three available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–3	TRAFFIC	⟶		
		⟵	1–3	TRAFFIC
1–1, 1–2	:Deactivate (MML command or failure)			
1–3	COO, SLC 1–1	⟶		
1–3	COO, SLC 1–1	⟶		
		⟵	1–3	COA, SLC 1–1
		⟵	1–3	COA, SLC 1–2
1–3	TRAFFIC (from 1–1 and 1–2)	⟶		
		⟵	1–3	TRAFFIC (from 1–1 and 1–2)
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Deactivate the links 1–1 and 1–2 simultaneously.
3.	Check that COOs are received on 1–3 for 1–1 and 1–2, and respond with COAs inside T2. Check that traffic is changed over from 1–1 and 1–2 to 1–3.
4.	Stop traffic and check that it has been received correctly (no lost messages, no duplication and no missequencing).

MTP Level 3

TEST NUMBER: 3.15		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Changeover to several alternative links within a linkset		
PURPOSE: To check the changeover procedure when there are several alternative links		
PRE-TEST CONDITIONS: Linkset with all links available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

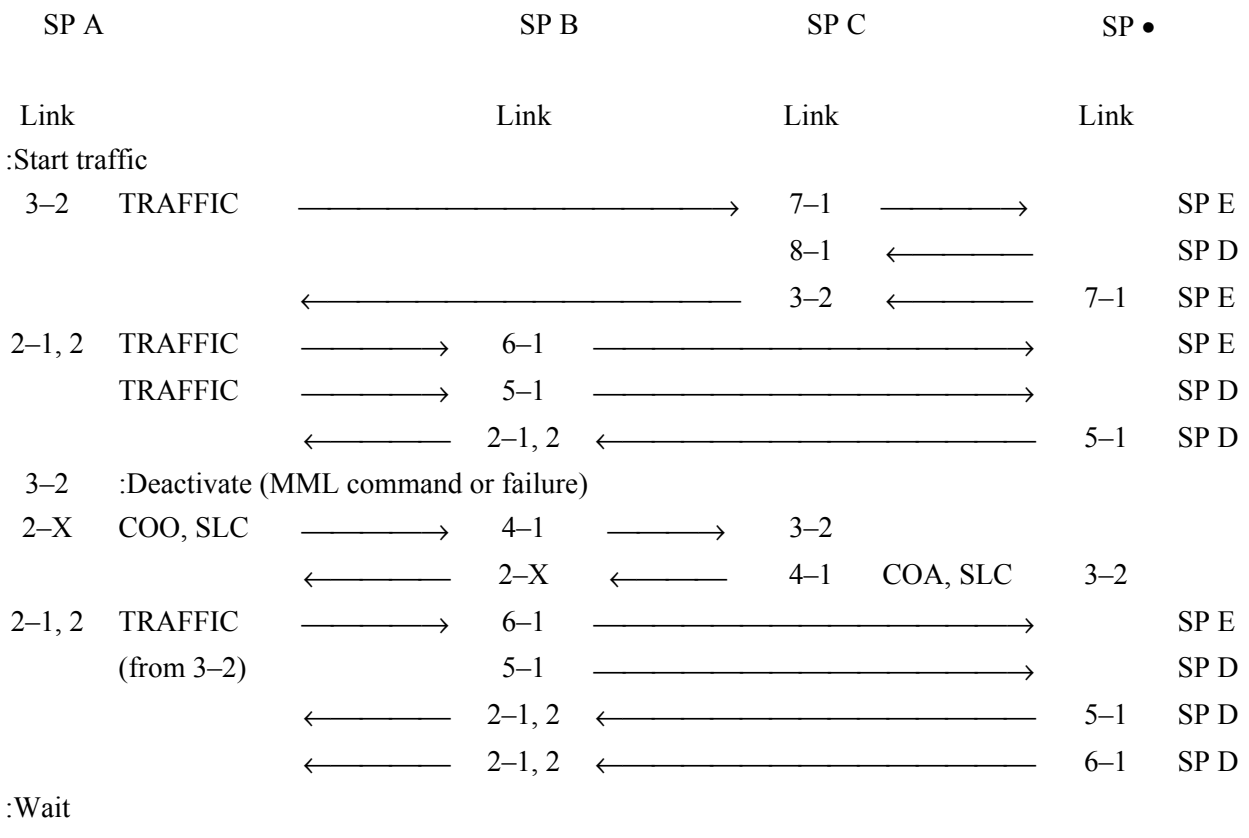
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–3	TRAFFIC	⟶		
		⟵	1–3	TRAFFIC
1–4	TRAFFIC	⟶		
		⟵	1–4	TRAFFIC
1–1	:Deactivate (MML command or failure)			
1–2, 3 or 4	COO, SLC 1–1	⟶		
		⟵	1–2, 3 or 4	COA, SLC 1–1
1–2	TRAFFIC (from 1–1)	⟶		
		⟵	1–2	TRAFFIC (from 1–1)
1–3	TRAFFIC (from 1–1)	⟶		
		⟵	1–3	TRAFFIC (from 1–1)
1–4	TRAFFIC (from 1–1)	⟶		
		⟵	1–4	TRAFFIC (from 1–1)
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Deactivate the link 1–1 and check that the changeover is performed to links 1–2, 1–3 and 1–4.
3.	Stop traffic and check that it has been shared on the alternative links according to the load sharing policy of this linkset.
4.	Check that, for each destination and for each SLS, there were no lost messages, no duplication and no missequencing.

TEST NUMBER: 3.16			PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30			
TITLE: Changeover			
SUBTITLE: Changeover to another linkset with the adjacent SP accessible			
PURPOSE: To check that the system performs changeover to an alternative route when the last link of a linkset becomes unavailable			
PRE-TEST CONDITIONS: Linkset 1 and link 3–1 unavailable			
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: ALL	

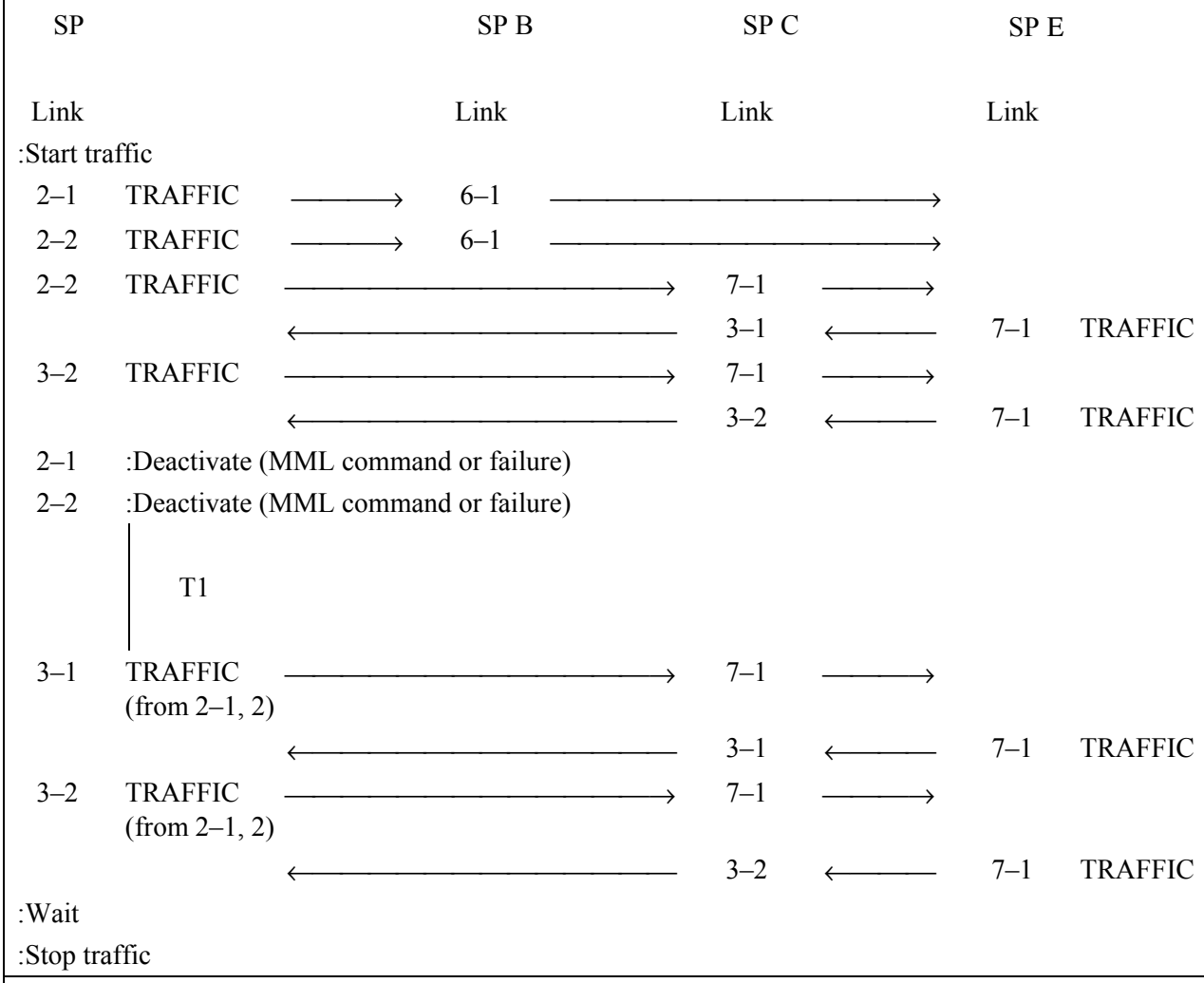
MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to E (and D in VAT).
2.	Deactivate link 3–2 and check that a COO (for 3–2) is sent from A to C via B and that a COA (from 3–2) is sent from C to A via B within T2.
	NOTE – C might also send a COO/ECO to A as well as the COA. As a consequence, A would then return a COA/ECA to C.
3.	Stop traffic and check that it has been shared on the alternative links 2–1 and 2–2 according to the load sharing rules of linkset 2.
4.	Check that, for each SLS, there were no lost messages, no duplication and no missequencing.
5.	Repeat the test but replace COO with ECO (some messages may have been lost).

TEST NUMBER: 3.17		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Changeover to another linkset with the adjacent SP inaccessible		
PURPOSE: To check that the system responds correctly when there is no path between the ends of an unavailable link.		
PRE-TEST CONDITIONS: Linkset 4 unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

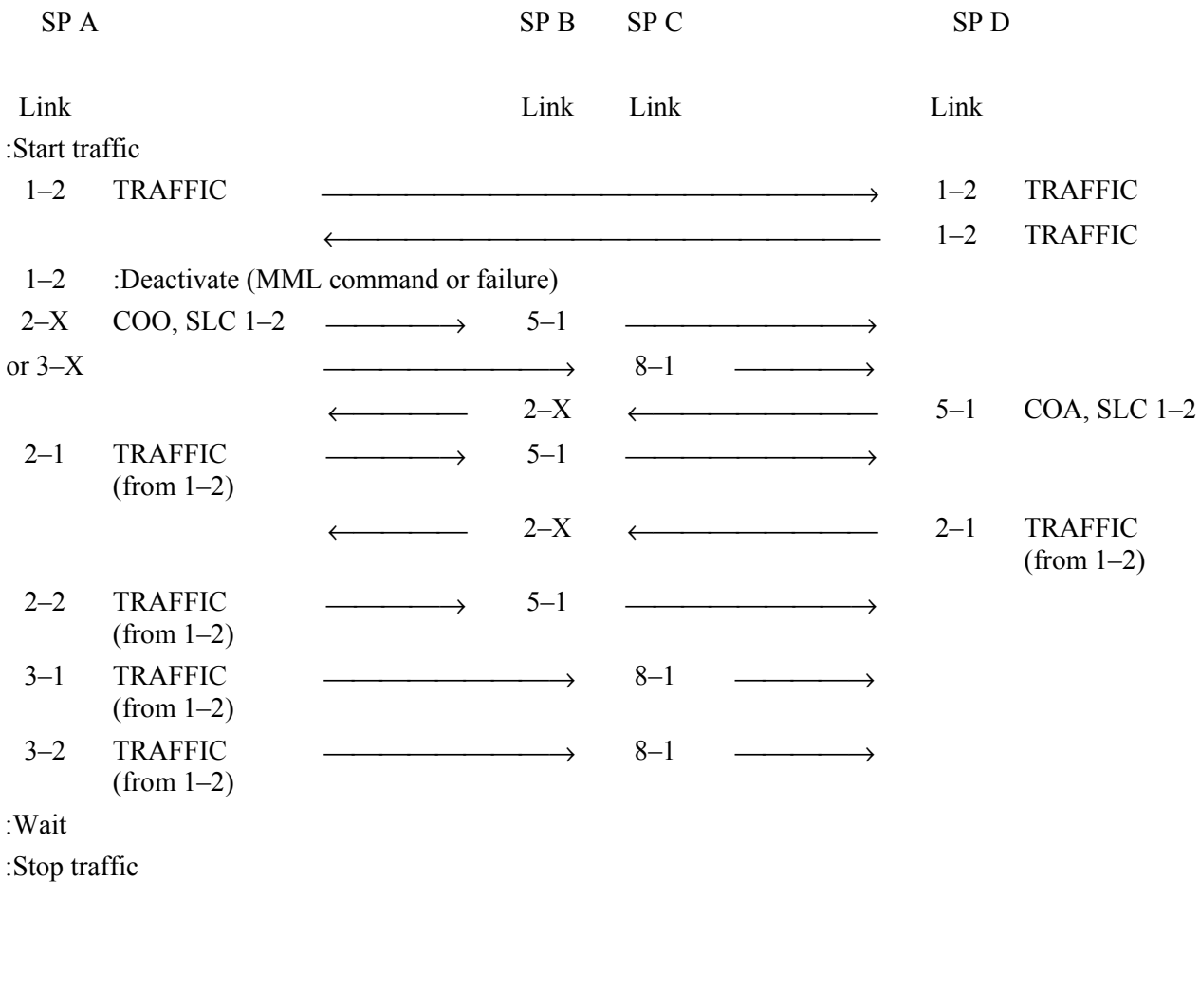


TEST DESCRIPTION

1.	Start traffic to E on linkset 2 and 3.
2.	Deactivate the linkset 2.
3.	Check that traffic continues on linkset 3 at the expiration of T1.
4.	Stop traffic and check that it has been shared on links 3–1 and 3–2 according to the load sharing rules of the linkset 3.
5.	Check that the traffic has been received correctly. Some messages may have been lost but none should be missequenced or duplicated.
6.	Check that the duration of T1 is inside the specified range.

TEST NUMBER: 3.18			PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30			
TITLE: Changeover			
SUBTITLE: Changeover to two linksets			
PURPOSE: To check the changeover procedure when it is performed to several links pertaining to two linksets			
PRE-TEST CONDITIONS: Link 1–1 unavailable, all other available			
CONFIGURATION: B	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1.	Start traffic to D.
2.	Deactivate the link 1–2 and check that a COO for 1–2 is sent to D via B or C and that a COA is sent from D to A via B or C inside T2.
3.	Stop traffic and check that it has been shared on the alternative links 2–1, 2–2, 3–1 and 3–2 according to the load sharing rules in A.
4.	Check that, for each SLS, there were no lost messages, no duplication and no missequencing.
5.	Repeat the test but replace COO with ECO (some messages may have been lost).

MTP Level 3

TEST NUMBER: 3.19		PAGE: 1 of 1
REFERENCE: clause 5 and 3.2.2/Q.704		
TITLE: Changeover		
SUBTITLE: Changeover due to various reasons		
PURPOSE: To check the interface L2-L3		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Deactivation due to various reasons (Note) CHANGEOVER			
1–2	TRAFFIC (from 1–1)	⟶		
		⟵	1–2	TRAFFIC (from 1–1)
:Wait				
:Stop traffic				

NOTE – The object of this test is to check the interface L2-L3 by invoking a changeover by the different means listed in 3.2.2/Q.704. These reasons are: high error rate, expiration of timer T1, T2, T6 and T7 of L2, equipment failure, erroneous BSN or FIB, reception of SIOS, SIN, SIE and SIO of L2, and management request. The goal of this test is not to check the changeover procedure itself, but only that the COO is generated for each of these reasons.

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Invoke the deactivation of the link 1–1 (see Note above).
3.	Check that traffic is changed over from 1–1 to 1–2.
4.	Stop traffic and check that it has been received correctly.
5.	Repeat the test for each reason.

MTP Level 3

TEST NUMBER: 3.20		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Changeover as compatibility test		
PURPOSE: To check the changeover procedure as compatibility test		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Deactivate (MML command or failure) CHANGEOVER			
1–2	TRAFFIC (from 1–1)	⟶		
		⟵	1–2	TRAFFIC (from 1–1)
:Wait				
:Stop traffic				

NOTE – In a compatibility test it is impossible to describe precisely the exchanges of changeover messages because the description depends on the type of deactivation of the link and of the time necessary to detect the deactivation.

TEST DESCRIPTION

1.	Start traffic to B on links 1–1 and 1–2.
2.	Deactivate link 1–1 and check that the changeover is performed.
3.	Check that the sequence of changeover messages conforms to one of the descriptions 3.1 to 3.12. Stop traffic.
4.	Repeat the test by invoking the different reasons listed in the Note in test 3.19.

MTP Level 3

TEST NUMBER: 3.21		PAGE: 1 of 1
REFERENCE: clause 5/Q.704 Fig. 28, Fig. 29, Fig. 30		
TITLE: Changeover		
SUBTITLE: Reception of a changeover order on an available link		
PURPOSE: To check the changeover procedure on reception of a COO or ECO for a link in service		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	COO, SLC 1–1 (FSN corresponding to the last received message)
1–2	COA, SLC 1–1	⟶		
1–2	TRAFFIC (from 1–1)	⟶		
		⟵	1–2	TRAFFIC (from 1–1)
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all the links.
2.	Send a COO from B to A for 1–1 on link 1–2 and check that the COA is received.
3.	Check that the link 1–1 becomes unavailable.
4.	Stop traffic and check that the changeover procedure has been performed.
5.	Check that there was no loss of messages, no duplication and no missequencing.
6.	Repeat the test but send an ECO (instead of a COO) and check that a COA is received. Some messages may be lost.

TEST NUMBER: 4.1			PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31			
TITLE: Changeback			
SUBTITLE: Changeback within a linkset			
PURPOSE: To check that the changeback procedure is correctly performed on restoration of a link in a linkset			
PRE-TEST CONDITIONS: Linkset with one available link (end of test 3.1)			
CONFIGURATION: A	TYPE OF TEST: VAT, CPT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Activate (depending on the deactivation mean previously used)			
1–2	CBD, SLC 1–1	⟶		
		⟵	1–X	CBA, SLC 1–1
1–1	TRAFFIC (from 1–2)	⟶		
		⟵	1–2	CBD, SLC 1–1
1–X	CBD, SLC 1–1	⟶		
		⟵	1–1	TRAFFIC (from 1–2)
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B (and C in VAT) on link 1–2.
2.	Activate the link 1–1 and check that it enters the correct in service state.
3.	Check that a CBD for SLC 1–1 is received and that traffic for link 1–1 is switched back after a CBA is sent.
4.	Stop traffic and check that it has been received correctly; no lost messages, no duplication and no missequencing.
5.	Continue the test by activating the link 1–3, then 1–4.
6.	As a compatibility test, repeat the test for several reasons chosen among those listed in test 4.10.

MTP Level 3

TEST NUMBER: 4.2		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: Additional CBA		
PURPOSE: To check the actions of the system on reception of an additional CBA		
PRE-TEST CONDITIONS: Linkset with all links available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
ALL	TRAFFIC	⟶		
		⟵	ALL	TRAFFIC
		⟵	1–X	CBA, SLC 1–1
ALL	TRAFFIC	⟶		
		⟵	ALL	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Send an unexpected CBA to A and check that this message is discarded without action on the traffic.
3.	Stop traffic.

MTP Level 3

TEST NUMBER: 4.3		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: Additional CBD		
PURPOSE: To check the action of the system on reception of an additional CBD		
PRE-TEST CONDITIONS: Linkset with all links available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
ALL	TRAFFIC	⟶		
		⟵	ALL	TRAFFIC
		⟵	1–X	CBD, SLC 1–1
1–X	CBA, SLC 1–X	⟶		
ALL	TRAFFIC	⟶		
		⟵	ALL	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Send an unexpected CBD to A and check that a CBA is send back in response without impact on the traffic.
3.	Stop traffic and check that it has been received correctly.

MTP Level 3

TEST NUMBER: 4.4		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: No acknowledgement to first CBD		
PURPOSE: To check that a second CBD is sent if the first is not acknowledged		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Activate			
1–2	CBD, SLC 1–1	⟶		
	T4			
1–2	CBD, SLC 1–1	⟶		
		⟵	1–X	CBA, SLC 1–1
1–1	TRAFFIC (from 1–2)	⟶		
		⟵	1–1	TRAFFIC (from 1–2, Note)
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

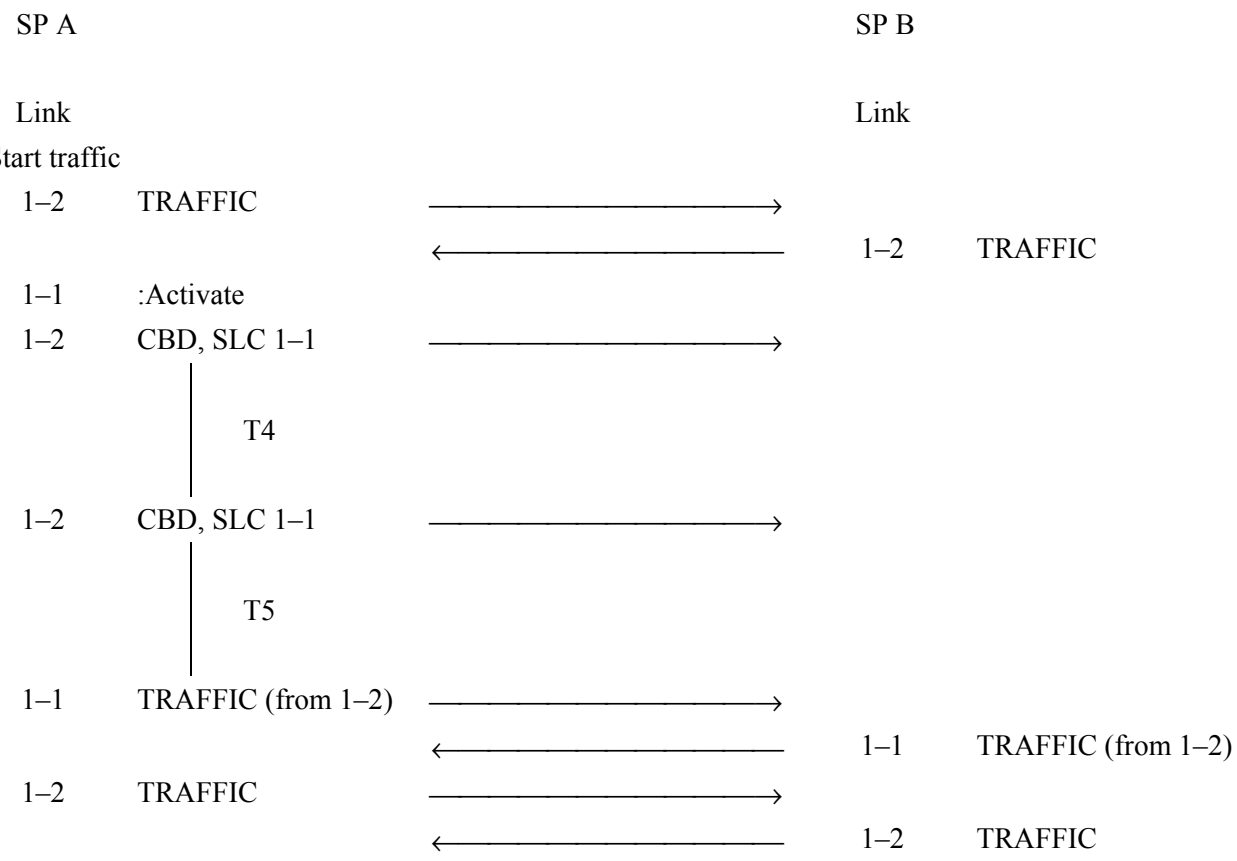
NOTE – B may perform a changeback or not.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Activate link 1–1 and check that a CBD is received (no CBA in response).
3.	Check that after T4 a second CBD is received and CBA is sent in response before T5 expires.
4.	Check that the traffic is changed back on link 1–1.
5.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.
6.	Check that the duration of T4 is inside the specified range.

TEST NUMBER: 4.5		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: No acknowledgement of repeat changeback declaration		
PURPOSE: To check that traffic is changed back after a repeat changeback declaration is not acknowledged		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – B may perform a changeback or not.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Check that a CBD is received and not acknowledged.
3.	Check that after T4, a CBD is repeated and not acknowledged by a CBA.
4.	Check that after T5, the traffic is changed back on link 1–1.
5.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.
6.	Check that the duration of T5 is inside the specified range.

MTP Level 3

TEST NUMBER: 4.6			PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31			
TITLE: Changeback			
SUBTITLE: Simultaneous changeback			
PURPOSE: To check simultaneous changebacks of traffic onto two links			
PRE-TEST CONDITIONS: Linkset with one available link (end of test 3.14)			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–3	TRAFFIC	⟶		
		⟵	1–3	TRAFFIC
1–1	:Activate (depending on the deactivation mean previously used)			
1–2	:Activate			
1–3	CBD, SLC 1–1	⟶		
1–3	CBD, SLC 1–2	⟶		
		⟵	1–X	CBA, SLC 1–1
		⟵	1–X	CBA, SLC 1–2
1–1	TRAFFIC (from 1–3)	⟶		
		⟵	1–1	TRAFFIC (from 1–3, Notes 1 and 2)
1–2	TRAFFIC (from 1–3)	⟶		
		⟵	1–2	TRAFFIC (from 1–3, Notes 1 and 2)
1–3	TRAFFIC	⟶		
		⟵	1–3	TRAFFIC
:Wait				
:Stop traffic				

NOTE 1 – B may perform changebacks or not.

NOTE 2 – Changeback procedures may be performed in sequence. The traffic sequence presented here, after the changebacks, is the final situation.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–3.
2.	Simultaneously activate links 1–1 and 1–2.
3.	Check that CBDs are received and CBAs are sent (within T4) for 1–1 and 1–2 and that the traffic is changed back on links 1–1 and 1–2.
4.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.

TEST NUMBER: 4.7			PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31			
TITLE: Changeback			
SUBTITLE: Changeback from several alternative links within a linkset			
PURPOSE: To check the changeback procedure when it is performed to several links in a same linkset			
PRE-TEST CONDITIONS: Linkset with one unavailable link (end of test 3.15)			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2, 3, 4	TRAFFIC	⟶		
		⟵	1–2, 3, 4	TRAFFIC
1–1	:Activate (depending on the deactivation mean previously used)			
1–2	CBD, SLC 1–1	⟶		
1–3	CBD, SLC 1–1	⟶		
1–4	CBD, SLC 1–1	⟶		
		⟵	1–X	CBA, SLC 1–1
		⟵	1–X	CBA, SLC 1–1
		⟵	1–X	CBA, SLC 1–1
1–1	TRAFFIC (from 1–2, 3, 4)	⟶		
		⟵	1–1	TRAFFIC (from 1–2, 3, 4, Note)
1–2, 3, 4	TRAFFIC	⟶		
		⟵	1–2, 3, 4	TRAFFIC
:Wait				
:Stop traffic				

NOTE – B may perform changebacks or not.

TEST DESCRIPTION

1.	Start traffic to B and C on links 1–2, 1–3 and 1–4.
2.	Activate link 1–1 and check that a CBD is sent on links 1–2, 1–3 and 1–4. Check that each CBD contains a different changeback code.
3.	Check that the traffic is changed back on link 1–1.
4.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.

TEST NUMBER: 4.8			PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31			
TITLE: Changeback			
SUBTITLE: Changeback from another linkset			
PURPOSE: To check the changeback procedure when it is performed from another linkset			
PRE-TEST CONDITIONS: Linksets 1 and 3 unavailable (end of test 3.16)			
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL	

MESSAGE SEQUENCE:

SP A		SP B	SP C	SP •	
Link		Link	Link	Link	
:Start traffic					
2–1, 2	TRAFFIC ⟶	5–1	⟶		SP D
		6–1	⟶		SP E
	⟵	2–1, 2	⟵	5–1	SP D
	⟵	2–1, 2	⟵	6–1	SP E
3–2	:Activate (depending on the deactivation mean previously used)				
2–1	CBD, SLC 3–2 ⟶	4–1	⟶		
2–1	CBD, SLC 3–2 ⟶	4–1	⟶		
	⟵		3–2	CBA, SLC 3–2	
	⟵		3–2	CBA, SLC 3–2	
				CHANGEBACK	
2–1, 2	TRAFFIC ⟶	5–1	⟶		SP D
		6–1	⟶		SP E
	⟵	2–1, 2	⟵	5–1	SP D
3–2	TRAFFIC ⟶		8–1	⟶	SP D
	(from 2–X)		7–1	⟶	SP E
:Wait					
:Stop traffic					

NOTE 1 – It is possible that A and/or B prefers to perform a time controlled diversion procedure.

NOTE 2 – After activation of link 3–2, CBDs are sent from C to A via B and acknowledged by A. These messages are not presented to simplify the test description.

TEST DESCRIPTION

1.	Start traffic to E (and D in VAT).
2.	Activate link 3–2 and check that CBDs are received and that CBAs are sent before T4 expires in A.
3.	Check that the traffic is changed back on linkset 3 in accordance with the load sharing rules in A.
4.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.

TEST NUMBER: 4.9		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: Changeback from two linksets		
PURPOSE: To check the changeback procedure when it is performed from two linksets		
PRE-TEST CONDITIONS: Linkset 1 unavailable (end of test 3.18)		
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A		SP B	SP C	SP D	
Link		Link	Link	Link	
:Start traffic					
2–1	TRAFFIC	⟶ 5–1	⟶		
		⟵ 2–1	⟵	5–1	TRAFFIC
2–2	TRAFFIC	⟶ 5–1	⟶		
		⟵ 2–2	⟵	5–1	TRAFFIC
3–1	TRAFFIC	⟶	8–1 ⟶		
3–2	TRAFFIC	⟶	8–1 ⟶		
1–2	:Activate (depending on the deactivation mean previously used)				
2–1	CBD, SLC 1–2	⟶ 5–1	⟶		
2–2	CBD, SLC 1–2	⟶ 5–1	⟶		
3–1	CBD, SLC 1–2	⟶	8–1 ⟶		
3–2	CBD, SLC 1–2	⟶	8–1 ⟶		CBAs
		⟵ 2–X	⟵	5–1	SLC 1–2
		⟵ 2–X	⟵	5–1	SLC 1–2
		⟵ 2–X	⟵	5–1	SLC 1–2
		⟵ 2–X	⟵	5–1	SLC 1–2
1–2	TRAFFIC (from linksets 2 and 3)	⟶			
		⟵		1–2	TRAFFIC (from linksets 5, Notes 1 and 2)
2–1, 2	TRAFFIC	⟶ 5–1	⟶		
3–1, 2	TRAFFIC	⟶	8–1 ⟶		
:Wait					
:Stop traffic					

NOTE 1 – D may perform changebacks or not.
NOTE 2 – It is possible that A and/or B prefers to perform a time controlled diversion procedure.

TEST DESCRIPTION

1.	Start traffic on linksets 2 and 3 to D.
2.	Activate the link 1–2 and check that CBDs are received and that CBAs are sent before T4 expires in A. Check that each CBD has a different changeback code.
3.	Check that the traffic is changed back to link 1–2 in accordance with the load sharing rules in A.
4.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.

TEST NUMBER: 4.10		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: Changeback due to various reasons		
PURPOSE: To check the interface L2-L3		
PRE-TEST CONDITIONS: Linkset with one available link (end of 3.19)		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Activation due to various reasons (Note)			
1–2	CBD, SLC 1–1	⟶		
		⟵	1–2	CBA, SLC 1–1
1–1	TRAFFIC (from 1–2)	⟶		
		⟵	1–2	CBA, SLC 1–1
1–X	CBA, SLC 1–1	⟶		
		⟵	1–1	TRAFFIC (from 1–2)
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

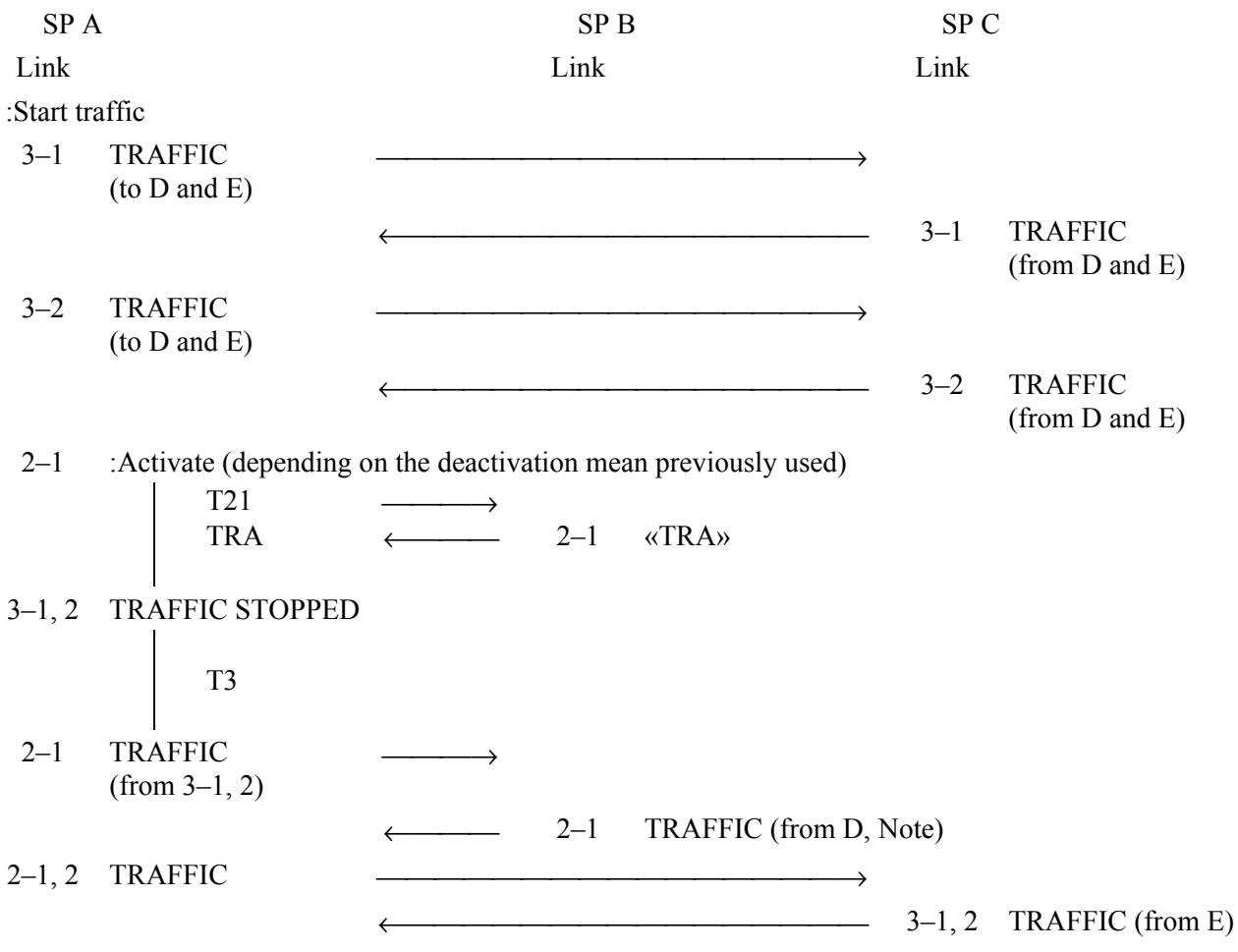
NOTE – The object of this test is to check the interface L2-L3 by provoking a changeback by different means listed in clause 3/Q.704. These reasons are: initial alignment procedure completed with success, processor outage condition has ceased at the remote signalling terminal and management request.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Provoke the activation of the link 1–1 (see Note above).
3.	Check that the traffic is changed back to 1–1.
4.	Stop traffic and check that it has been received correctly.
5.	Repeat the test for each reason.

TEST NUMBER: 4.11		PAGE: 1 of 1
REFERENCE: clause 6/Q.704 Fig. 28, Fig. 29, Fig. 31		
TITLE: Changeback		
SUBTITLE: Time controlled diversion procedure		
PURPOSE: To check the correct operation of the time controlled diversion procedure		
PRE-TEST CONDITIONS: Linksets 1, 2 and 4 unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – B performs the point restart procedure and D, on reception of a TFA for A, reroutes its traffic to A. These procedures are not presented to simplify the test description.

TEST DESCRIPTION

1.	Start traffic to E (and D in VAT) on linkset 3.
2.	Activate link 2–1.
3.	Check that T21 is started in A, and is stopped on reception of TRA from SP B (see Note).
4.	Check that traffic on linkset 3 ceased in A and that after expiration T3 traffic diverts to link 2–1 in accordance with the load sharing rules in A.
5.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.
6.	Check that the duration of T3 is inside the specified range.
7.	Repeat the test (in VAT) without sending TRA from B to A and check that the time controlled diversion is performed when T21 expires.

MTP Level 3

TEST NUMBER: 5		PAGE: 1 of 1
REFERENCE: clause 7/Q.704 Fig. 29, Fig. 32		
TITLE: Forced rerouting		
SUBTITLE:		
PURPOSE: To check that the system can perform forced rerouting		
PRE-TEST CONDITIONS: Linksets 1 and 4 unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A		SP B		SP C
Link		Link		Link
:Start traffic				
2–1, 2 TRAFFIC	⟶	to D and E		
	⟵	2–1, 2 TRAFFIC (from D)		
3–1, 2 TRAFFIC	⟶		⟶	to D and E
	⟵		⟵	3–1, 2 TRAFFIC (from E)
		6–1 :Deactivate		
	⟵	2–X TFP, PC = E		
3–1, 2 TRAFFIC	⟶		⟶	
(to D and from 2–1, 2 to E)				
	⟵		⟵	3–1, 2 TRAFFIC (from E)
2–1, 2 TRAFFIC	⟶	to D		
	⟵	2–1, 2 TRAFFIC (from D)		
:Wait				
:Stop traffic				

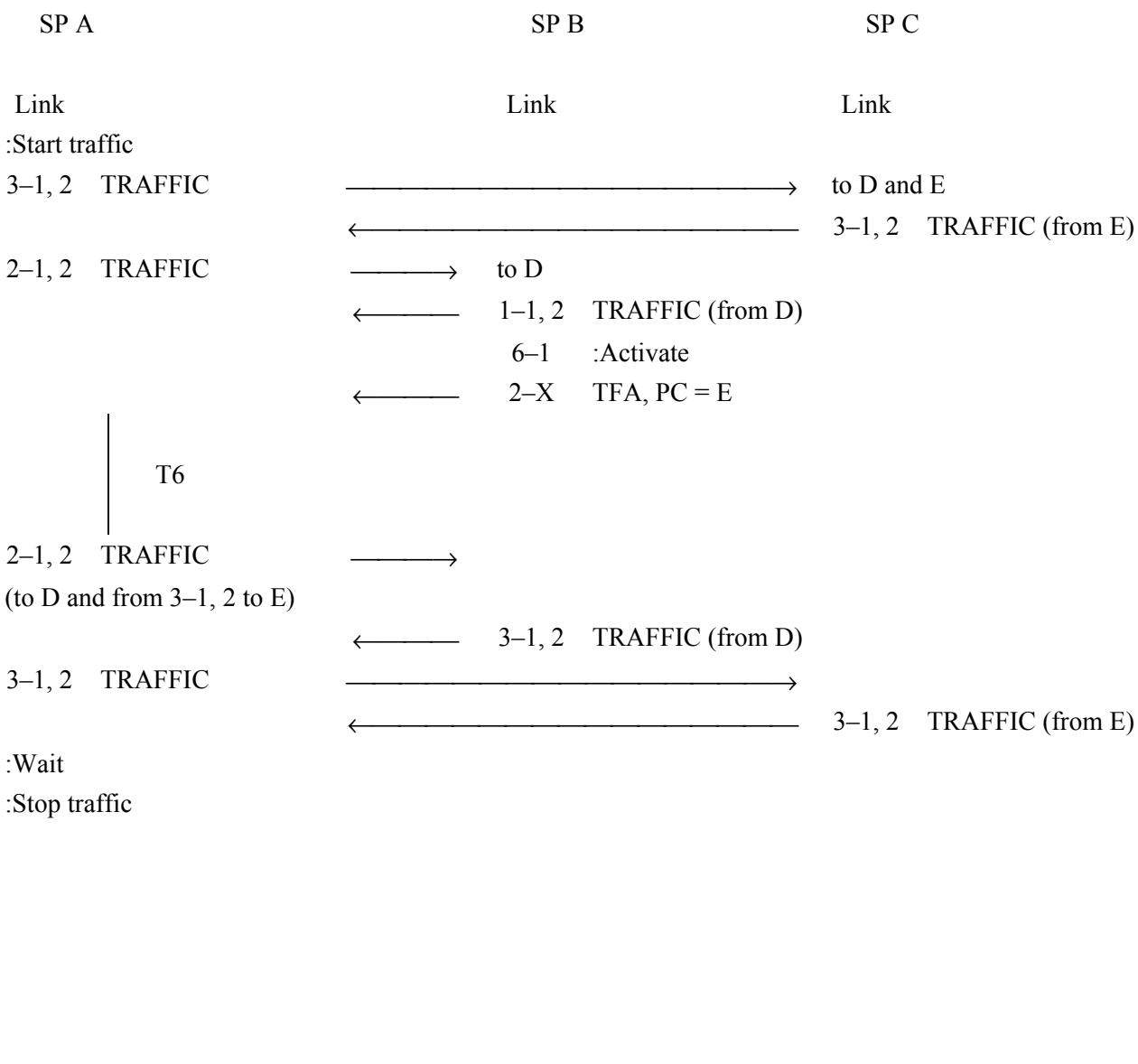
TEST DESCRIPTION

1.	Start traffic on linksets 2 and 3 to E (and D in VAT).
2.	Deactivate the linkset 6 and check the sending of a TFP concerning E from B to A.
3.	Stop traffic and check that the forced rerouting has been performed correctly, messages may have been lost but not missequenced or duplicated.
4.	Check that the traffic to D carried by the linksets 2 and 3 has not been disturbed (no lost messages, no duplication and no missequencing).
5.	Check that an indication was given by the system.

MTP Level 3

TEST NUMBER: 6		PAGE: 1 of 1
REFERENCE: clause 8/Q.704 Fig. 29, Fig. 33		
TITLE: Controlled rerouting		
SUBTITLE:		
PURPOSE: To check that the system can perform controlled rerouting		
PRE-TEST CONDITIONS: Linksets 1, 4 and 6 unavailable (end of test 5)		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to E (and D in VAT).
2.	Activate the linkset 6 and check the sending of a TFA concerning E from B to A.
3.	Stop traffic and check that the controlled rerouting has been performed correctly (for all traffic flows, no lost messages, no duplication and no missequencing).
4.	Check that the duration of T6 is inside the specified range.

TEST NUMBER: 7.1.1		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition of a link–Available link		
PURPOSE: To check for the correct response when link inhibition is requested for an available link		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Request inhibition			
1–X	LIN, SLC 1–1	⟶		
		⟵	1–X	LIA, SLC 1–1
	TIME – CONTROLLED CHANGEOVER (Note)			
1–2	TRAFFIC (from 1–1)	⟶		
		⟵	1–2	TRAFFIC (from 1–1)
:Wait				
:Stop traffic				

NOTE – A changeover is performed after the inhibition of link 1–1 but it is not described in this test which checks only the inhibition procedure.

TEST DESCRIPTION

1.	Start traffic to B (and C in VAT) on links 1–1 and 1–2.
2.	Initiate inhibition of link 1–1 and check that LIN is received and an LIA is received in A within T14.
3.	Check that the traffic normally carried by link 1–1 is transferred to link 1–2.
4.	Check that the link 1–1 enters in the "Local inhibiting" state.
5.	Repeat test in the reverse direction.

TEST NUMBER: 7.1.2		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition of a link – Unavailable link		
PURPOSE: To check for the correct response when link inhibition is requested for an unavailable link		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–1	:Request inhibition			
1–1	LIN, SLC 1–2	⟶		
		⟵	1–1	LIA, SLC 1–2
1–2	:Activate (depending on the deactivation mean previously used)			
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B (and C in VAT) on link 1–1.
2.	Request inhibition of link 1–2, check the reception of LIN at B and send LIA in response within T14.
3.	Check that the inhibition was performed.
4.	Activate link 1–2 and check that it stays in inhibited state.
5.	Stop traffic and check that it was not disturbed.
6.	Repeat test in reverse direction.

TEST NUMBER: 7.2.1		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition not permitted – Local reject on available link		
PURPOSE: To check the inhibition procedure in case of local reject on an available link		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

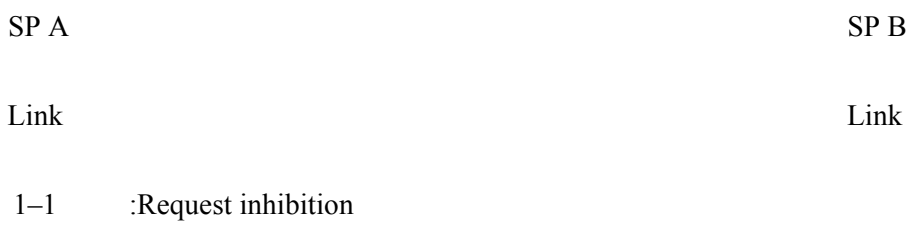
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–1	:Request inhibition			
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B (and C in VAT) on link 1–1.
2.	Request inhibition of link 1–1 and check that this request is not permitted.
3.	Stop traffic and check that it has not been disturbed.
4.	Repeat the test but modify pre-test conditions as follows: link 1–1 available and link 1–2 inhibited by B.

TEST NUMBER: 7.2.2		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition not permitted – Local reject on an unavailable link		
PURPOSE: To check the inhibition procedure in case of local reject on an unavailable link		
PRE-TEST CONDITIONS: All links unavailable		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Request inhibition of link 1–1 and check that it is rejected.

TEST NUMBER: 7.2.3		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition not permitted – Sending of LID		
PURPOSE: To check the reject of an inhibition asked on reception of an LIN		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
		⟵	1–1	LIN, SLC 1–1
1–1	LIN, SLC 1–1	⟶		
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–1.
2.	Send an LIN, SLC 1–1 from B to A and check the reception of an LID.
3.	Check that the inhibition is not performed.
4.	Stop traffic and check that it has not been disturbed.

TEST NUMBER: 7.2.4		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition not permitted – Reception of LID		
PURPOSE: To check the reject of an inhibition asked on sending of an LIN		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

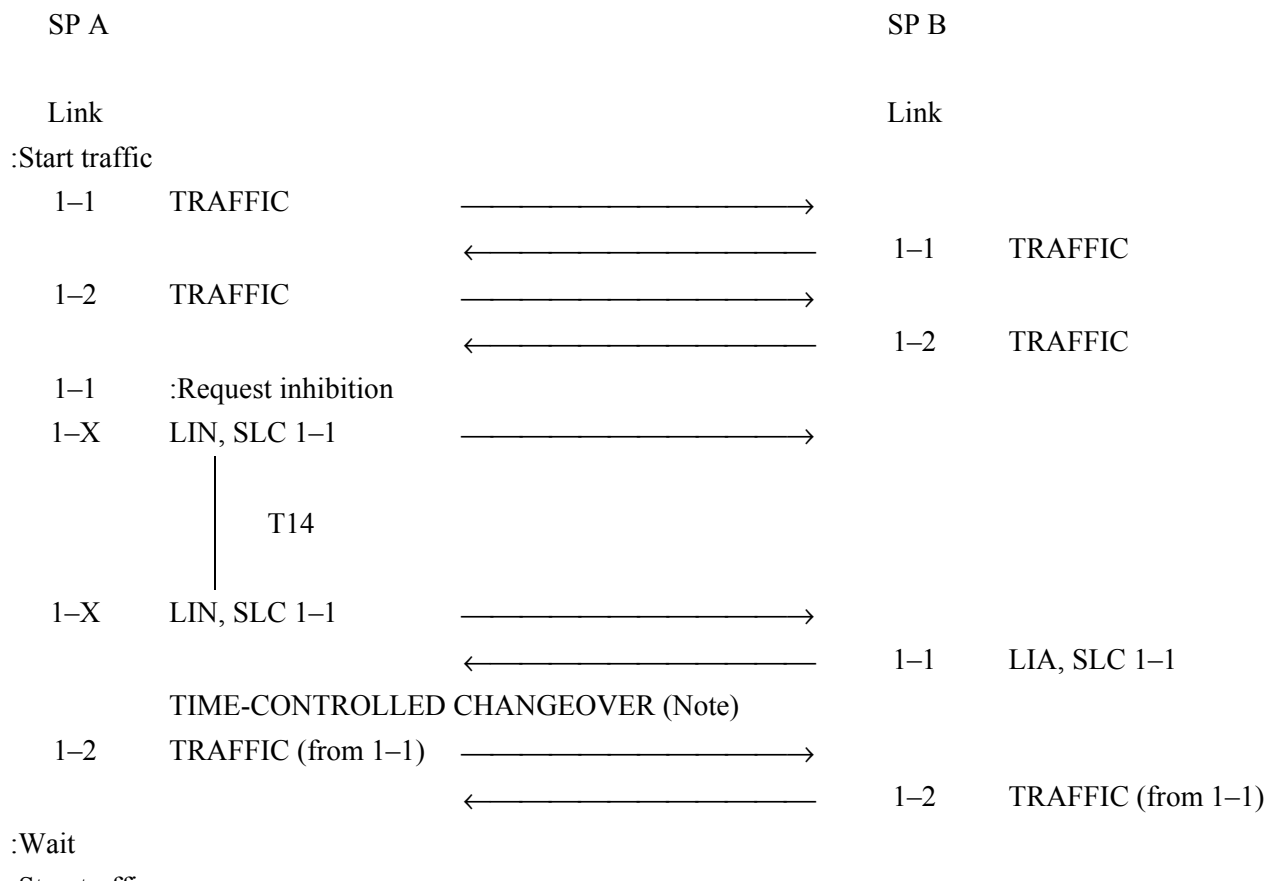
SP A			SP B	
Link			Link	
:Start traffic				
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
1–1	:Request inhibition			
1–X	LIN, SLC 1–1	⟶		
		⟵	1–X	LID, SLC 1–1
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on links 1–1 and 1–2.
2.	Request the inhibition of link 1–1 and check the reception of LIN and response with an LID before T14 expires in A.
3.	Check that the inhibition is not performed.
4.	Stop traffic and check that it was not disturbed.

TEST NUMBER: 7.3.1		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Expiration of T14 – On an available link		
PURPOSE: To check that the inhibition procedure asked for an available link is restarted when T14 expires		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



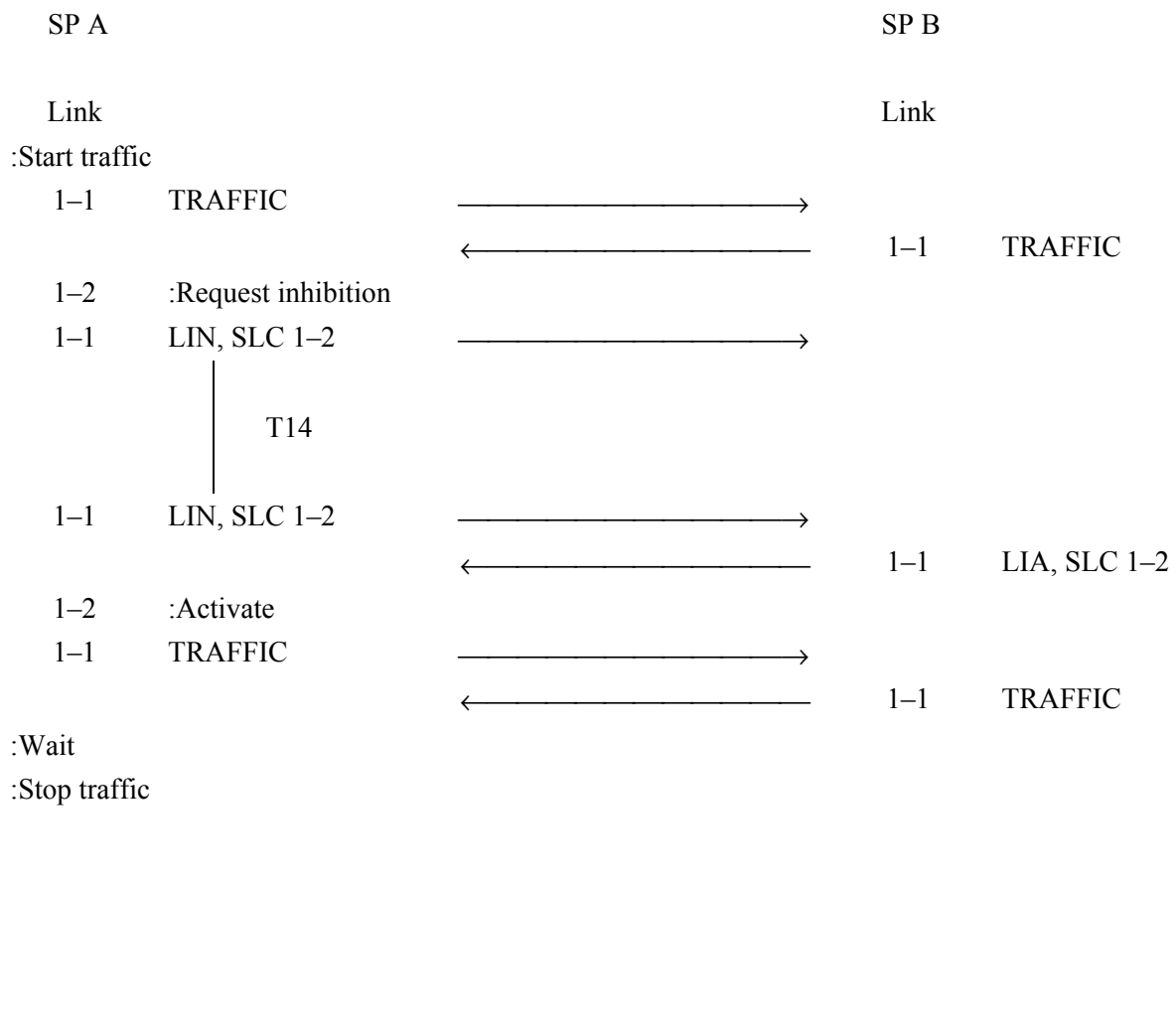
NOTE – A changeover is performed after the inhibition of link 1–1 but it is not described in this inhibition test.

TEST DESCRIPTION

1.	Start traffic to B and C on links 1–1 and 1–2.
2.	Request the inhibition of link 1–1, check that an LIN is received without response. Check that a new LIN is received after T14 expires and that an LIA is sent in response.
3.	Check that the inhibition is performed. Stop traffic and check that it was not disturbed.
4.	Repeat the test but without sending of an LIA. Check that after the second expiration of T14 the procedure is stopped.
5.	Check that the duration of T14 is inside the specified range.

TEST NUMBER: 7.3.2		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Expiration of T14 – On an unavailable link		
PURPOSE: To check that the inhibition procedure asked for an unavailable link is restarted when T14 expires.		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to B and C on link 1–1.
2.	Request inhibition of link 1–2, check that an LIN is received without response. Check that a new LIN is received after T14 expires and that an LIA is sent in response.
3.	Check that the inhibition is performed.
4.	Activate link 1–2 and check that it stays unavailable.
5.	Stop traffic and check that it was not disturbed.
6.	Repeat the test but without sending of an LIA. Check that after the second expiration of T14, the procedure is stopped.

TEST NUMBER: 7.4			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Additional inhibition messages (LIA, LID, LIN)			
PURPOSE: To check the action of the system on reception of an additional LIA, LID or LIN			
PRE-TEST CONDITIONS: End of test 7.1.1			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

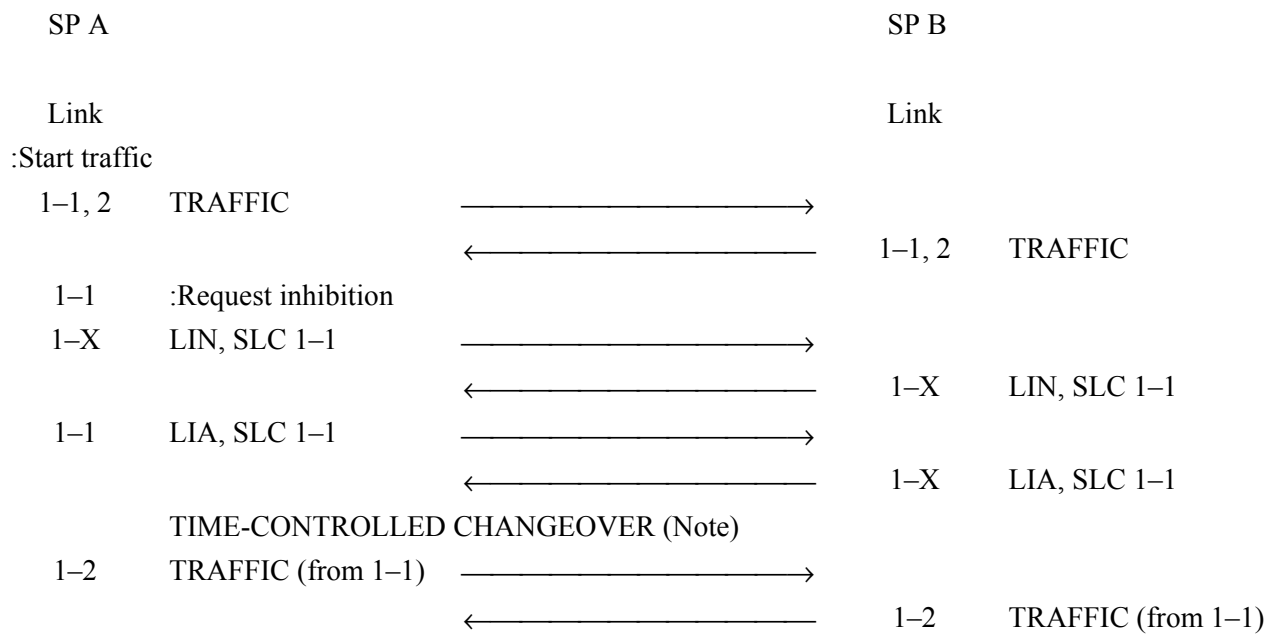
SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	LIA, SLC 1–1
		⟵	1–2	LID, SLC 1–1
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	LIN, SLC 1–1
1–1	LIA, SLC 1–1	⟶		
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Send an additional LIA and LID on link 1–2.
3.	Check that these messages are ignored without impact on the traffic.
4.	Send an additional LIN on link 1–2.
5.	Check that an LIA is received in response without impact on the traffic and that the link 1–1 enters in the "Local and remote inhibiting" state.
6.	Stop traffic.

TEST NUMBER: 7.5		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibition asked by the both ends of a link		
PURPOSE: To check the action of the system on reception of an LIN after sending of an LIN		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – A changeover procedure is performed but not described in this inhibition test.

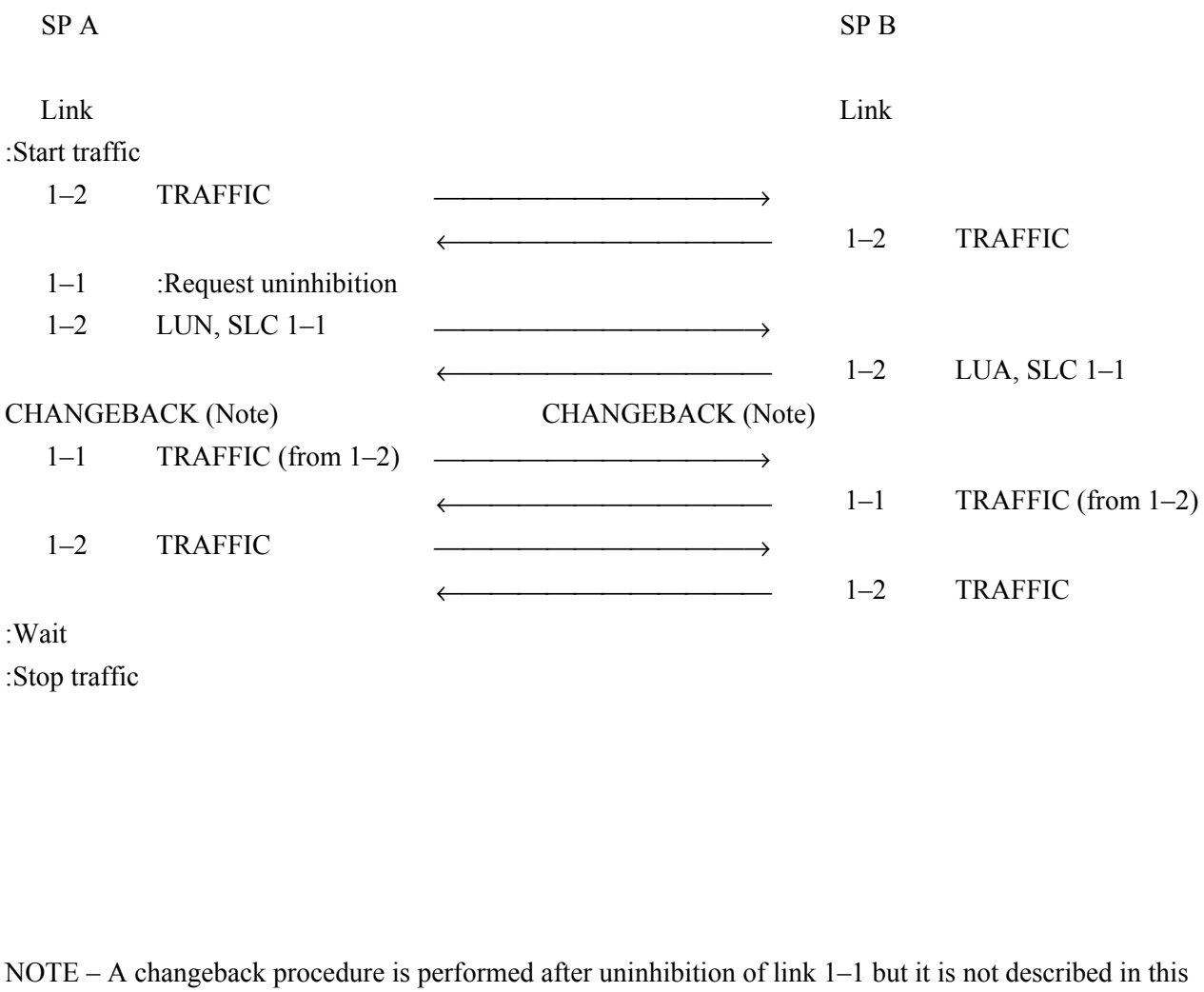
TEST DESCRIPTION

1.	Start traffic to B and C on link 1–1 and 1–2.
2.	Request inhibition of link 1–1. Check the reception of LIN and response with an LIN.
3.	Check the reception of an LIA and send an LIA.
4.	Check that the inhibition is correctly performed and that the link enters in the "Local and remote inhibiting" state.
5.	Stop traffic and check that it was not disturbed.

MTP Level 3

TEST NUMBER: 7.6.1		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Manual uninhibition of a link – With changeback		
PURPOSE: To check for correct restoration when link uninhibition is requested by an operator		
PRE-TEST CONDITIONS: End of test 7.1.1		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – A changeback procedure is performed after uninhibition of link 1–1 but it is not described in this test which checks only uninhibition procedure.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Request uninhibition of link 1–1, check the reception of an LUN and response with an LUA inside T12.
3.	Check that the uninhibition is performed and stop traffic.
4.	Check that the traffic was shared on links 1–1 and 1–2 according to the load sharing rules.
5.	Check that an uninhibition indication was given by the system.
6.	When B has initiated inhibition (point 5, test 7.1.1), repeat test in reverse direction. Check that uninhibition is not possible when it is requested by an operation in A.

TEST NUMBER: 7.6.2		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Manual uninhibition of a link – Without changeback		
PURPOSE: To check manual uninhibition procedure when the uninhibited link stays unavailable		
PRE-TEST CONDITIONS: End of test 7.1.2 without activation of link 1–2 (link 1–2 deactivated and inhibited)		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

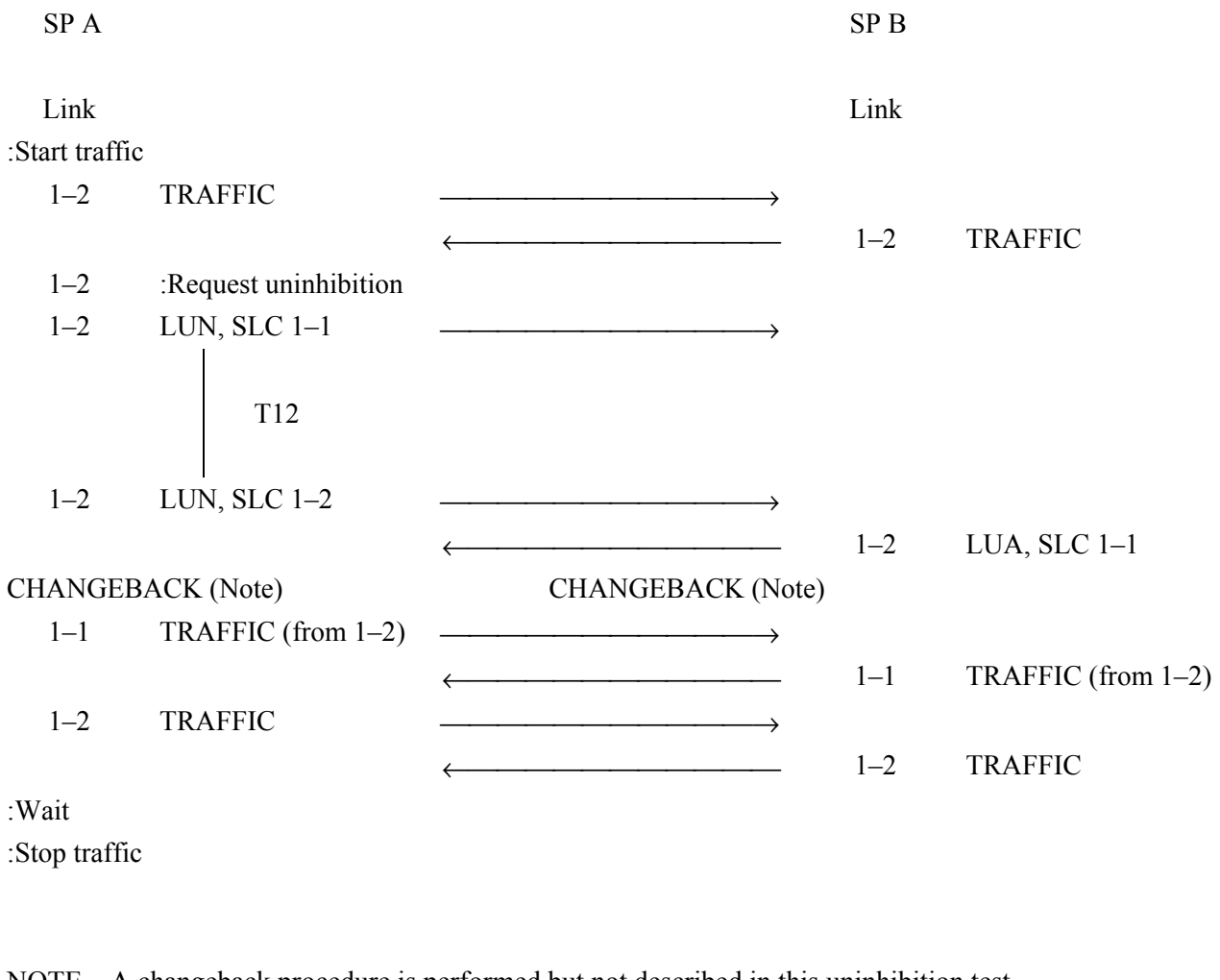
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	:Request uninhibition			
1–1	LUN, SLC 1–2	⟶		
		⟵	1–1	LUA, SLC 1–2
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic B (and C in VAT) on link 1–1.
2.	Request uninhibition of link 1–2 and check that an LUN is received and that an LUA is sent in response inside T12.
3.	Check that uninhibition is performed correctly and that link 1–2 stays unavailable.
4.	Stop traffic and check that it was not disturbed.
5.	When B has initiated inhibition (point 6, test 7.1.2), repeat test in reverse direction. Check that uninhibition is not possible when it is requested by an operator in A.

TEST NUMBER: 7.7		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Expiration of T12		
PURPOSE: To check uninhibition procedure on expiration of time T12		
PRE-TEST CONDITIONS: End of test 7.1.1 (1–1 inhibited by A)		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



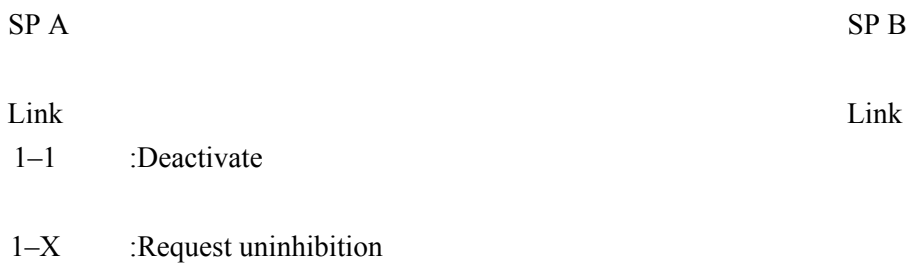
NOTE – A changeback procedure is performed but not described in this uninhibition test.

TEST DESCRIPTION

1.	Start traffic B and C on link 1–2.
2.	Request uninhibition of link 1–1 and check that an LUN is received.
3.	Check that after expiration of T12, a new LUN is received and acknowledged by an LUA.
4.	Check that uninhibition is performed correctly.
5.	Stop traffic and check it was shared on links 1–1 and 1–2 according with the load sharing rules and that it was not disturbed.
6.	Repeat the test but without sending of an LUA. Check that after the second expiration of T12, the procedure is stopped and an indication is given to the management.
7.	Check that the duration of T12 is inside the specified range.

TEST NUMBER: 7.8		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Not possible uninhibition		
PURPOSE: To check the actions of the system when the uninhibition is not possible		
PRE-TEST CONDITIONS: Link 1–2 unavailable and inhibited and link 1–1 available		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Deactivate link 1–1.
2.	Check that uninhibition is not performed.

TEST NUMBER: 7.9			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Automatic uninhibition of a link			
PURPOSE: To check that the system performs uninhibition procedure when a point becomes inaccessible			
PRE-TEST CONDITIONS: End of test 7.1.1			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–2	:Deactivate (failure)			
1–1	LUN, SLC 1–1	⟶		
		⟵	1–1	LUA, SLC 1–1
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

NOTE – When link 1–1 becomes available, point restart procedure is applied in A and B but it is not described in this inhibition test to simplify the test description.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Deactivate link 1–2 and check that an LUN is received on link 1–1 and response with an LUA within T12.
3.	Check that uninhibition is performed and that the traffic is restarted on link 1–1 (see Note).
4.	Stop traffic, some messages have been lost.
5.	Repeat the test but without sending of an LUA. Check that after the second expiration of T12 the procedure is stopped, an indication is given to the OMAP and the link 1–1 does not carry traffic.

TEST NUMBER: 7.10.1		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Forced uninhibition of a link – Sending of an LFU		
PURPOSE: To check forced uninhibition procedure when a point becomes inaccessible		
PRE-TEST CONDITIONS: Link 1–1 available, link 1–2 inhibited by B		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–1	:Deactivate (failure)			
1–2	LFU, SLC 1–2	⟶		
		⟵	1–2	LUN, SLC 1–2
1–2	LUA, SLC 1–2	⟶		
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

NOTE – When link 1–2 becomes available, point restart procedure is applied in A and B but it is not described in this inhibition test to simplify the test description.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–1.
2.	Deactivate link 1–1 and check the reception of an LFU on link 1–2. Response by an LUN. Check that T13 is stopped and that an LUA is received.
3.	Check that uninhibition is performed and that the traffic is restarted on link 1–2 (see Note).
4.	Stop traffic, some messages have been lost.

TEST NUMBER: 7.10.2		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Forced uninhibition of a link – Reception of an LFU		
PURPOSE: To check uninhibition procedure on reception of an LFU		
PRE-TEST CONDITIONS: Link 1–1 available, link 1–2 inhibited by A		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
		⟵	1–2	LFU, SLC 1–2
1–1	LUN, SLC 1–2	⟶		
		⟵	1–1	LUA, SLC 1–2
	CHANGEBACK (Note)			
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–1	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

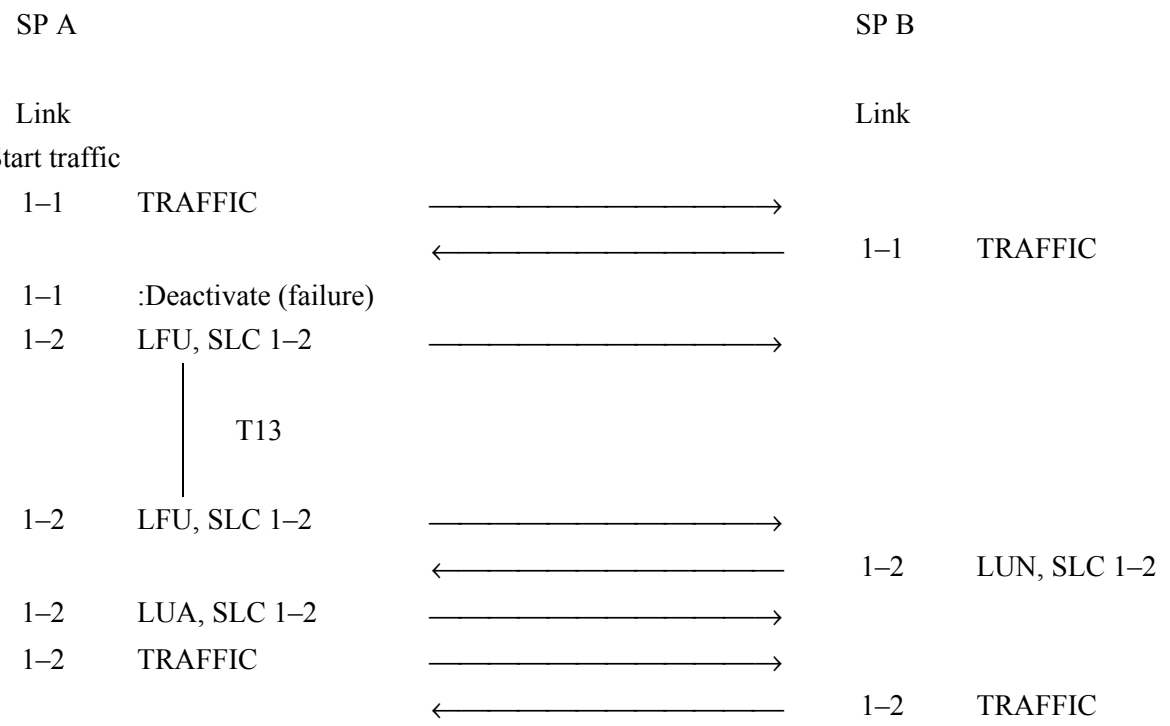
NOTE – A changeback is performed but not described in this uninhibition test.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–1.
2.	Send an LFU to A on link 1–2 and check that an LUN is received within T13 and acknowledged by an LUA inside T12.
3.	Check that the uninhibition is performed.
4.	Stop traffic and check that it was carried on 1–1 and 1–2.

TEST NUMBER: 7.11		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Expiration of T13		
PURPOSE: To check uninhibition procedure when T13 expires		
PRE-TEST CONDITIONS: Link 1–1 available and link 1–2 inhibited by B		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to B and C on link 1–1.
2.	Deactivate link 1–1 and check the reception of an LFU. After T13 expires, check the reception of a second LFU and send an LUN. Check the reception of an LUA.
3.	Check that uninhibition is performed correctly.
4.	Stop traffic and check that it has been restarted on link 1–2. Some messages have been lost.
5.	Repeat the test but without sending an LUN. Check that after the second expiration of T13 the procedure is stopped, that an indication is given to the OMAP and that the link 1–2 does not carry traffic.
6.	Check that the duration of T13 is inside the specified range.

TEST NUMBER: 7.12			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Additional uninhibition messages (LUA, LUN, LFU)			
PURPOSE: To check the actions of the system on reception of an additional LUA, LUN or LFU			
PRE-TEST CONDITIONS: Linkset with two available links			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
		⟵	1–2	LUA, SLC 1–1
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
		⟵	1–2	LUN, SLC 1–1
1–X	LUA, SLC 1–1	⟶		
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
		⟵	1–2	LFU, SLC 1–1
1–X	LUN, SLC 1–1	⟶		
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–1 and 1–2.
2.	Send an LUA (SLC 1–1) on link 1–2.
3.	Check that this message has been ignored without impact on the traffic.
4.	Send an LUN (SLC 1–1) on link 1–2.
5.	Check that an LUA is received in response without impact on the traffic.
6.	Send an LFU (SLC 1–1) on link 1–2.
7.	Check that an LUN is received in response without impact on the traffic.
8.	Stop traffic.

TEST NUMBER: 7.13			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Uninhibition at one side after test 7.5			
PURPOSE: To check uninhibition procedure when the inhibition has been asked by the two ends of a link			
PRE-TEST CONDITIONS: End of test 7.5			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Request uninhibition			
1–2	LUN, SLC 1–1	⟶		
		⟵	1–2	LUA, SLC 1–1
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Request uninhibition of link 1–1. Check that an LUN is received and response with an LUA within T12.
3.	Check that the link stays inhibited (by B).
4.	Stop traffic and check that it was not disturbed.
5.	Repeat test in reverse direction.

TEST NUMBER: 7.14				PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28				
TITLE: Management inhibiting				
SUBTITLE: Automatic uninhibition after test 7.5				
PURPOSE: To check automatic uninhibition of a link when the inhibition has been initiated by the both ends				
PRE-TEST CONDITIONS: End of test 7.5				
CONFIGURATION: A	TYPE OF TEST: VAT			TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–2	:Deactivate (failure)			
1–1	LUN, SLC 1–1	⟶		
1–1	LFU, SLC 1–1	⟶		
		⟵	1–1	LUN, SLC 1–1
		⟵	1–1	LFU, SLC 1–1
		⟵	1–1	LUA, SLC 1–1
		⟵	1–1	LUN, SLC 1–1
1–1	LUA, SLC 1–1	⟶		
1–1	LUN, SLC 1–1	⟶		
1–1	LUA, SLC 1–1	⟶		
		⟵	1–1	LUA, SLC 1–1
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Deactivate link 1–2 and check that uninhibition and forced uninhibition are requested by the both ends which send LFU.
3.	Check that one LUN is sent. Each LUA from B is acknowledgement by an LUA from A .
4.	Check that the traffic is restarted on link 1–1 and stop traffic.

TEST NUMBER: 7.15			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Automatic uninhibition with two links inhibited			
PURPOSE: To check the actions of the system when two links are inhibited and when the third (and last) link is deactivated			
PRE-TEST CONDITIONS: Links 1–1 and 1–2 inhibited (by A) and link 1–3 available			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–3	TRAFFIC	⟶		
		⟵	1–3	TRAFFIC
1–3	:Deactivate (failure)			
1–X	LUN, SLC 1–1	⟶		
and/or	LUN, SLC 1–2	⟶		
	(implementation dependent: at least one link must be uninhibited)			
		⟵	1–X	LUA, SLC 1–1, and/or
		⟵	1–X	LUA, SLC 1–2
1–1	TRAFFIC	⟶		
and/or		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶	and/or	
		⟵	1–2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Deactivate link 1–3.
2.	Check that at least one LUN is received and acknowledged with an LUA.
3.	Check that the traffic is restarted on linkset 1. Some messages have been lost.
4.	Stop traffic.

TEST NUMBER: 7.16		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Reception of traffic on an inhibited link		
PURPOSE: To check the actions of the system on reception of traffic on an inhibited link		
PRE-TEST CONDITIONS: Link 1–1 inhibited by A, link 1–2 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

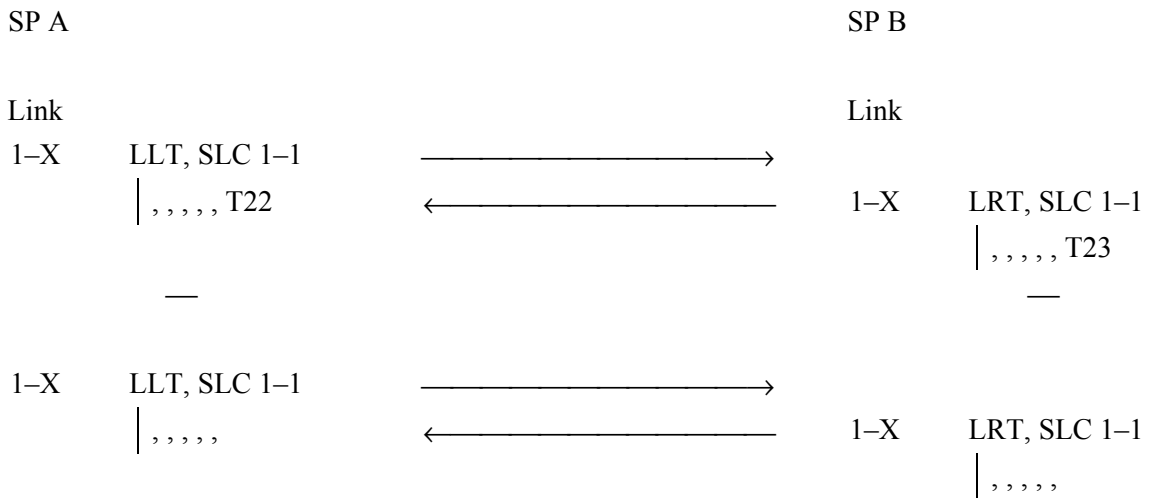
SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic on link 1–1.
2.	Send traffic from B to A on the inhibited link 1–2. Check that the messages received in A are normally treated.
3.	Stop traffic.

TEST NUMBER: 7.17.1		PAGE: 1 of 3
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Management inhibiting test – Normal procedure		
PURPOSE: To check that the system performs correctly the management inhibiting test		
PRE-TEST CONDITIONS: Link 1–1 inhibited by A, other links are available		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

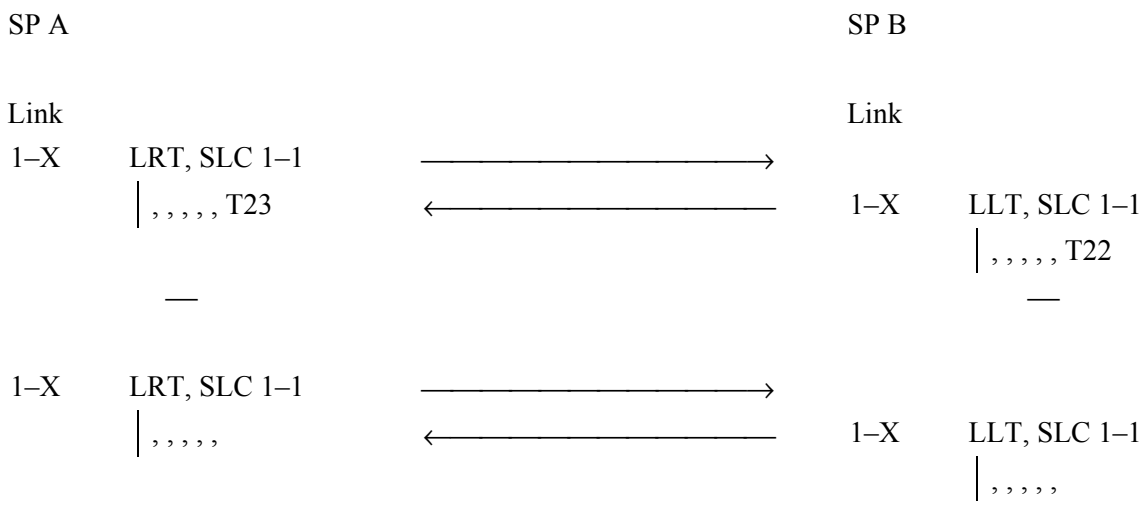


TEST DESCRIPTION

1.	Check that an LLT is periodically sent by A and check (in VAT) that the duration of timer T22 is inside the specified range.
2.	Check that on the reception of an LRT, no action is taken in A.
3.	As compatibility test, check that an LRT is periodically sent from B to A.

TEST NUMBER: 7.17.1 *(continued)*		PAGE: 2 of 3
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibiting test procedure – Normal procedure		
PURPOSE: See page 1		
PRE-TEST CONDITIONS: Link 1–1 inhibited by B, other links are available		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

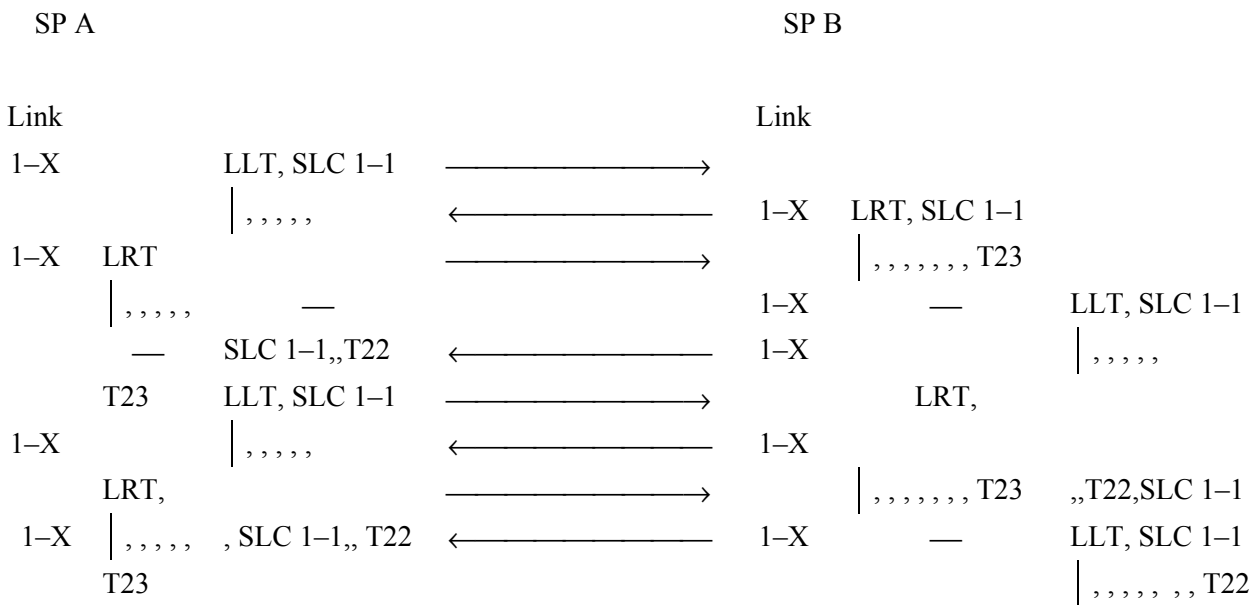


TEST DESCRIPTION

1.	Check that an LRT is periodically sent by A and, in VAT, check that the duration of the timer T23 is inside the specified range.
2.	Check that, on the reception of an LLT, no action is taken in A.
3.	As compatibility test, check that an LLT is periodically sent from B to A.

TEST NUMBER: 7.17.1 *(concluded)*			PAGE: 3 of 3
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Inhibit test procedure – Normal procedure			
PURPOSE: See page 1			
PRE-TEST CONDITIONS: Link 1–1 inhibited by A and B. The other links are available			
CONFIGURATION: A	TYPE OF TEST: VAT, CPT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

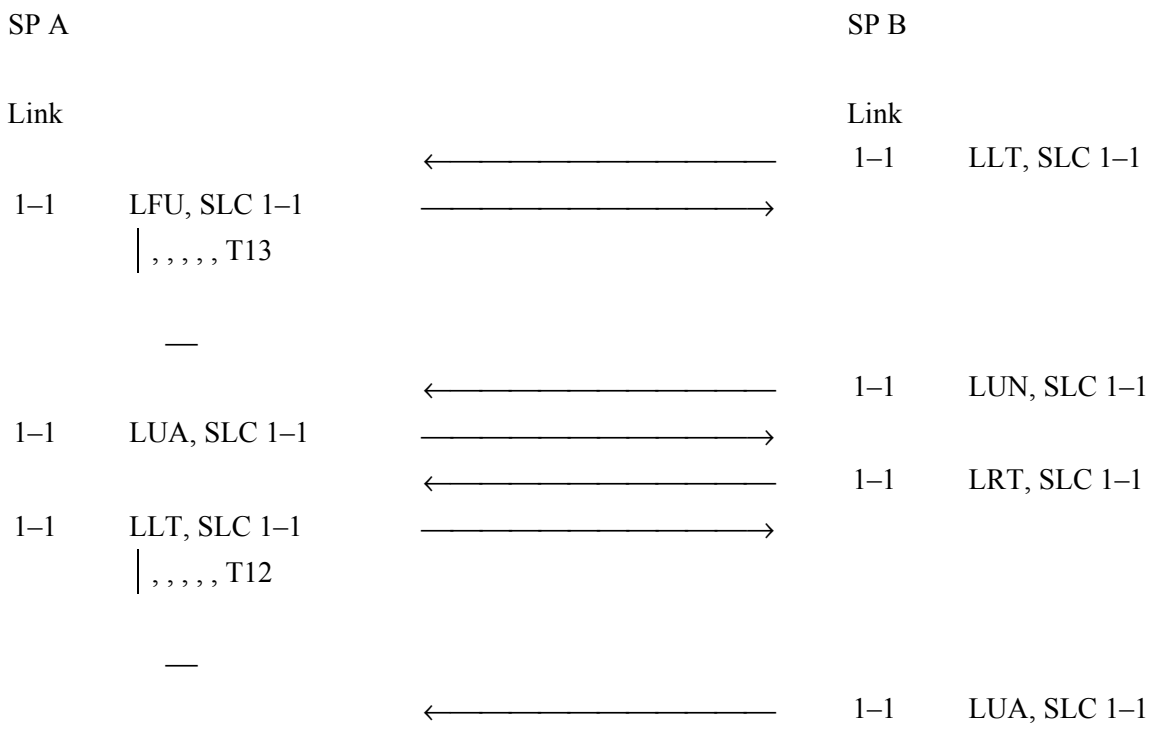


TEST DESCRIPTION

1.	Check that the LLT and LRT messages are periodically sent from A to B and from B to A.

TEST NUMBER: 7.17.2			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Inhibit test procedure – Reception of an LLT or LRT on an uninhibited link			
PURPOSE: To check the actions of the system on reception of an LLT or LRT on an uninhibited link			
PRE-TEST CONDITIONS: Link 1–1 available			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

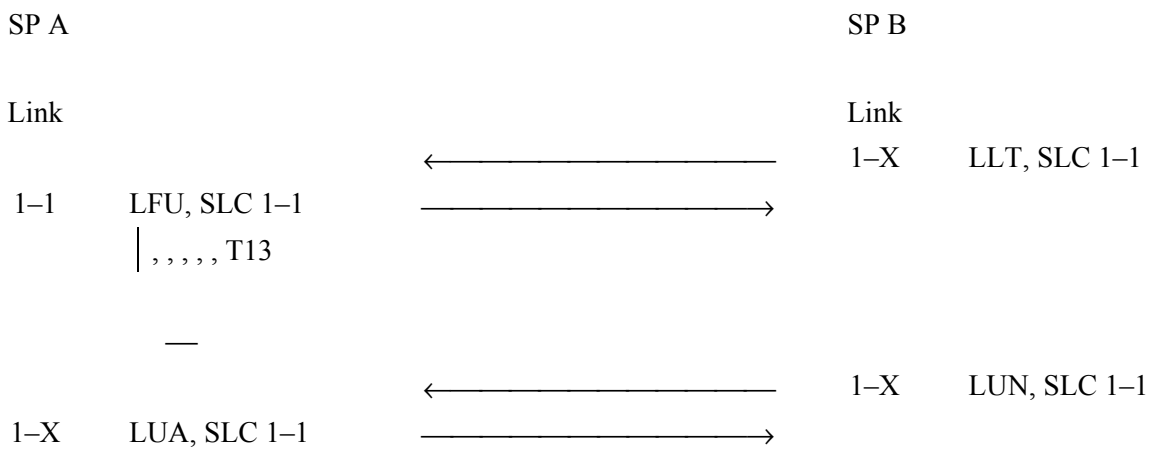
MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Send an LLT from B to A and check that an LFU is received. Then, send an LUN and check that an LUA is received.
2.	Send an LRT from B to A and check that an LUN is received. Answer with an LUA.

TEST NUMBER: 7.17.3			PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28			
TITLE: Management inhibiting			
SUBTITLE: Inhibit test procedure – Reception of an LLT on a link locally inhibited			
PURPOSE: To check the actions of the system on reception of an LLT on a link locally (not remotely) inhibited			
PRE-TEST CONDITIONS: Link 1–1 inhibited in A, other links are available			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

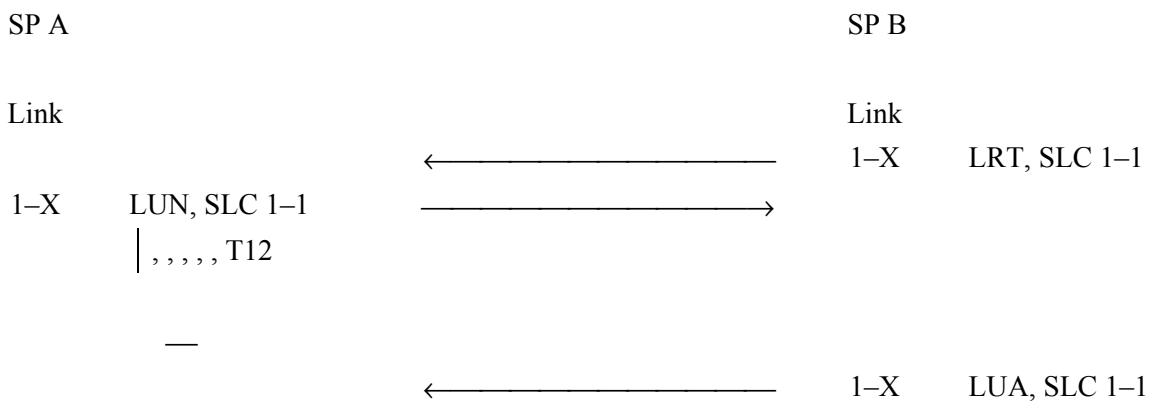


TEST DESCRIPTION

1.	Send an LLT from B to A and check that an LFU is received as described above.

TEST NUMBER: 7.17.4		PAGE: 1 of 1
REFERENCE: clause 10/Q.704 Fig. 28		
TITLE: Management inhibiting		
SUBTITLE: Inhibit test procedure – Reception of an LRT on a link remotely inhibited		
PURPOSE: To check the actions of the system on reception of an LRT on a link remotely inhibited		
PRE-TEST CONDITIONS: Link 1–1 inhibited by B, other links are available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

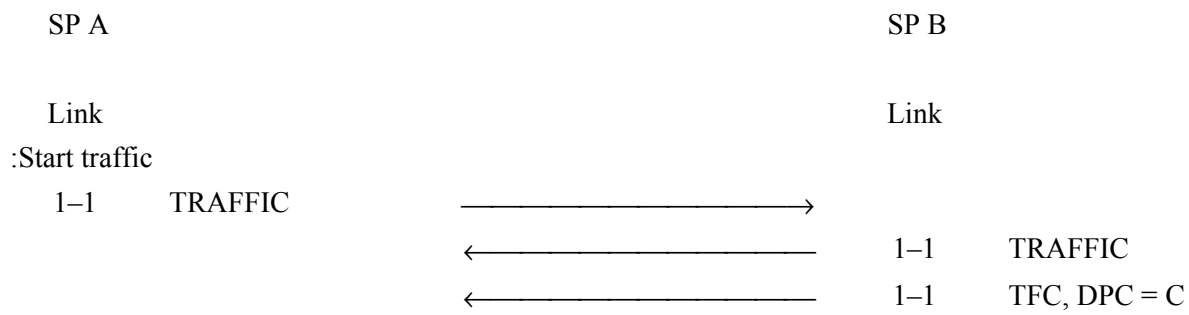
MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Send an LRT from B to A and check that an LUN is received as described above.

TEST NUMBER: 8.1		PAGE: 1 of 1
REFERENCE: clause 11 and 12.6/Q.704 Fig. 46A		
TITLE: Signalling traffic flow control		
SUBTITLE: Reception of a TFC		
PURPOSE: To check the actions of the system on reception of a TFC		
PRE-TEST CONDITIONS: One or more link available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – This test requires further study.

TEST DESCRIPTION

1. Start traffic to B and C.
2. Send a TFC concerning C and check that this message is received correctly.

MTP Level 3

TEST NUMBER: 8.2			PAGE: 1 of 1
REFERENCE: clause 11 and 12.6/Q.704 Fig. 46A			
TITLE: Signalling traffic flow control			
SUBTITLE: Sending of TFCs			
PURPOSE: To check the detection of a level 3 congestion			
PRE-TEST CONDITIONS: All links available			
CONFIGURATION: C	TYPE OF TEST: VAT	TYPE OF SP: STP	

MESSAGE SEQUENCE:

SP A		SP B			SP C	
Link		Link			Link	
:Start traffic						
1–1	TRAFFIC	(>n/2 E) ⟶	2–1	— (n E) ⟶		
		⟵	1–1	⟵	2–1	TRAFFIC (<n E)
1–2	TRAFFIC	(>n/2 E) ⟶	2–1	— (n E) ⟶		
		⟵	1–2	⟵	2–1	TRAFFIC (<n E)
:Wait						
		⟵	1–X	TFC, DPC = C		
			.			
			.			
			. One TFC each 8 messages sent to C			
			. or one TFC each 256 octets sent to C			
		⟵	1–X	TFC, DPC = C		
			.			
			.			
1–1	TRAFFIC	(>n/2 E) ⟶	2–1	⟶		
		⟵	1–1	⟵	2–1	TRAFFIC
1–2	TRAFFIC	(>n/2 E) ⟶	2–1	⟶		
		⟵	1–2	⟵	2–1	TRAFFIC (<n E)
:Wait						
:Stop traffic						

NOTE – n is the maximum load capacity of linkset 2. The traffic model used in this test is described in Table 2/Q.706.

TEST DESCRIPTION

1.	Start traffic to C with a load exceeding n/2 erlang on links 1–1 and 1–2 (n is the maximum load that the link 2 may carry without congestion).
2.	Check that the signalling traffic flow control procedure is started in A. Check that a TFC message concerning C is received for each 8 messages or each 256 octets received in B during the congestion.
3.	Reduce the load below n/2 erlang on links 1–1 and 1–2.
4.	Check that the congestion disappears and that no TFC is received.
5.	Stop traffic.
6.	Check that the traffic from C to B has not been disturbed.

MTP Level 3

TEST NUMBER: 8.3		PAGE: 1 of 1
REFERENCE: 11.2.7/Q.704		
TITLE: Signalling traffic flow control		
SUBTITLE: Reception of a UPU		
PURPOSE: To check the actions of the system on reception of a UPU		
PRE-TEST CONDITIONS: One link available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: see Note

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC (DPC = B, SI = X)	⟶		
1–1	TRAFFIC (DPC = C, SI = X)	⟶		
		⟵	1–1	TRAFFIC (OPC = C, SI = X)
		⟵	1–1	UPU (OPC = B, SI = X)
1–1	TRAFFIC (DPC = C, SI = X)	⟶		
		⟵	1–1	TRAFFIC (OPC = C, SI = X)
:Wait				
:Stop traffic				

NOTE – The impact of the reception of a UPU on the traffic from A to B requires further study. The SPs having user part(s) are concerned.

TEST DESCRIPTION

1.	Start traffic to B and C with SI = X.
2.	Send a UPU from B to C with SI = X with the cause "unknown".
3.	Check that the UPU message is received correctly without impact on the traffic from A to C.
4.	Wait and stop traffic.
5.	Repeat the test with a UPU with the cause "unequipped", and with the cause "unavailable".

TEST NUMBER: 8.4		PAGE: 1 of 1
REFERENCE: 11.2.7/Q.704		
TITLE: Signalling traffic flow control		
SUBTITLE: Sending of a UPU		
PURPOSE: To check the detection of an unavailability of a user part		
PRE-TEST CONDITIONS: One link available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: See Note

MESSAGE SEQUENCE:

SP A Link			SP B Link
:Start traffic			
1–1 TRAFFIC (to B and C, SI = X)	⟶		
	⟵	1–1	TRAFFIC (from B and C, SI = X)
:Deactivate user part X (Note)			
	⟵	1–1	MESSAGE (from B to A, SI = X)
1–1 UPU (DPC = B, SI = X)	⟶		
	⟵	1–1	MESSAGE (from C to A, SI = X)
1–1 UPU (DPC = C, SI = X)	⟶		
	⟵	1–1	MESSAGE (from B to A, SI = X)
1–1 UPU (DPC = B, SI = X)	⟶		
:Reactivate user part X			
	⟵	1–1	TRAFFIC (from B and C to A, SI = X)
1–1 TRAFFIC (to B and C, SI = X)	⟶		
:Wait			
:Stop traffic			

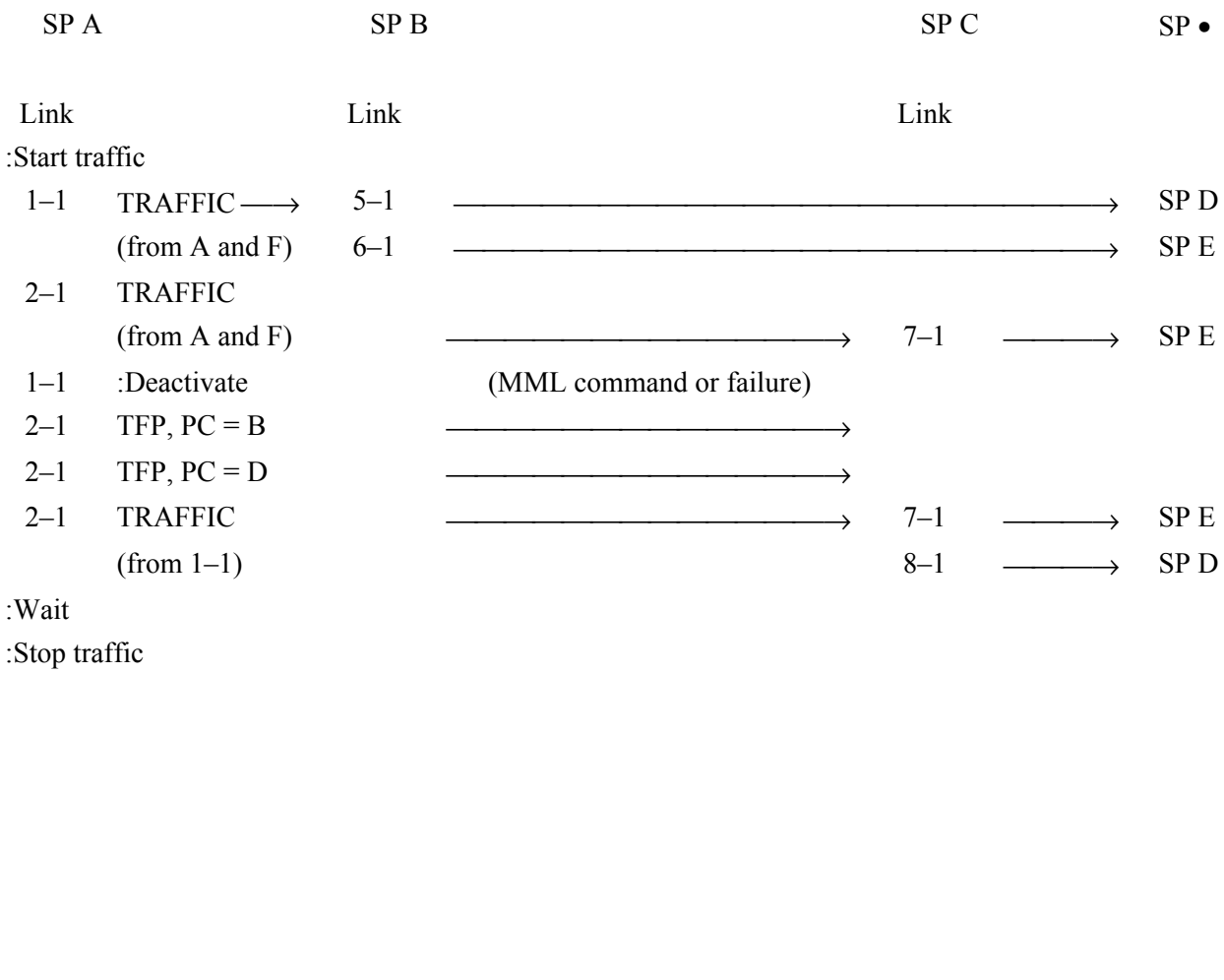
NOTE – The notion of unavailability of a user part is specific to the implementation; consequently, the ability to deactivate a user part is implementation dependent. The SPs having user part(s) are concerned.

TEST DESCRIPTION

1.	Start traffic to B and C with SI = X.
2.	Deactivate the user part X.
3.	Send a message from B to the user part X in A and check that this message is discarded and that a UPU is sent back with the cause "unavailable".
4.	Send a message from C to the user part X in A and check that this message is discarded and that a UPU is sent back with the cause "unavailable".
5.	Repeat point 3 and reactivate the user part.
6.	Check that the messages sent from B and C are received correctly and that no UPU is sent back. Wait and stop traffic.
7.	Repeat the test for an unequipped user part, and verify that a UPU is sent back with the cause "unequipped".

TEST NUMBER: 9.1.1		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Sending of a TFP on an alternative route – Failure of normal linkset		
PURPOSE: To check the sending of a TFP on the alternative route when the normal linkset becomes unavailable		
PRE-TEST CONDITIONS: All linksets available		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



NOTE – A changeover procedure is performed after deactivation of link 1–1 but it is not described in this transfer prohibited test.

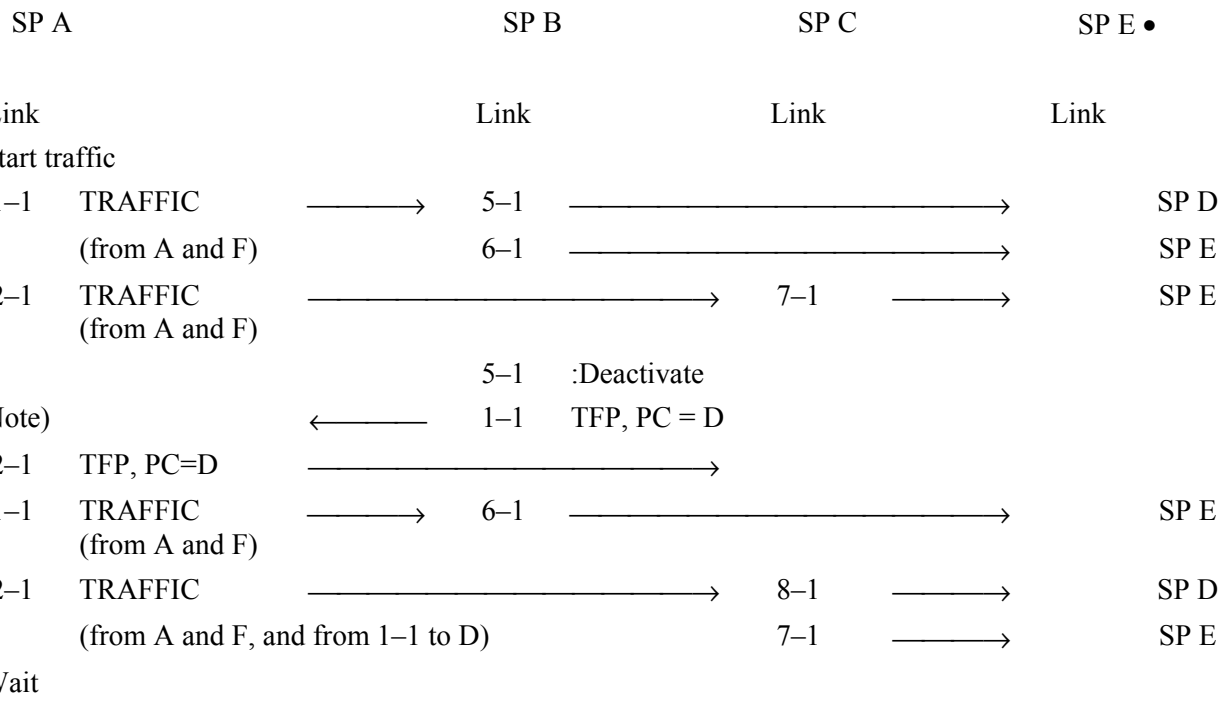
TEST DESCRIPTION

1.	Start traffic to D and E on linkset 1 and 2.
2.	Deactivate link 1–1 and check that TFPs concerning B and D are sent from A to C (alternative route to reach B and D). Check that no TFP concerning E is sent from A to C (load sharing between linksets 1 and 2 in A to reach E).
3.	Check that time out T8 is started for each TFP sent.
4.	Check that the traffic to D and E is diverted to C.
5.	Stop traffic and check that it was not disturbed.

MTP Level 3

TEST NUMBER: 9.1.2		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Sending of a TFP on an alternative route – On reception of a TFP		
PURPOSE: To check the sending of a TFP on the alternative route when the normal route becomes unavailable on reception of a TFP		
PRE-TEST CONDITIONS: Linkset 4 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



NOTE – A forced rerouting is performed after the reception of TFP for D in A but it is not described in this transfer prohibited test.

TEST DESCRIPTION

1.	Start traffic to D and E.
2.	Deactivate link 5–1 and check that a TFP concerning D is sent to A.
3.	Check that a TFP concerning D is received from A and that traffic to D is diverted via C.
4.	Check that a time out T8 is started.
5.	Stop traffic and check that traffic to E has not been disturbed. Some messages to D may have been lost.

MTP Level 3

TEST NUMBER: 9.2.1		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Broadcast of TFPs – On one linkset failure		
PURPOSE: To check the broadcast of TFPs when one point is inaccessible		
PRE-TEST CONDITIONS: All linksets available		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:

SP A		SP B	SP C	SP F
Link		Link	Link	Link
:Start traffic				
3–1	TRAFFIC (from A, D and E)	⟶		
3–1	:Deactivate	(MML command or failure)		
1–1	TFP, PC = F	⟶		
2–1	TFP, PC = F	⟶		
:Wait				
:Stop traffic				

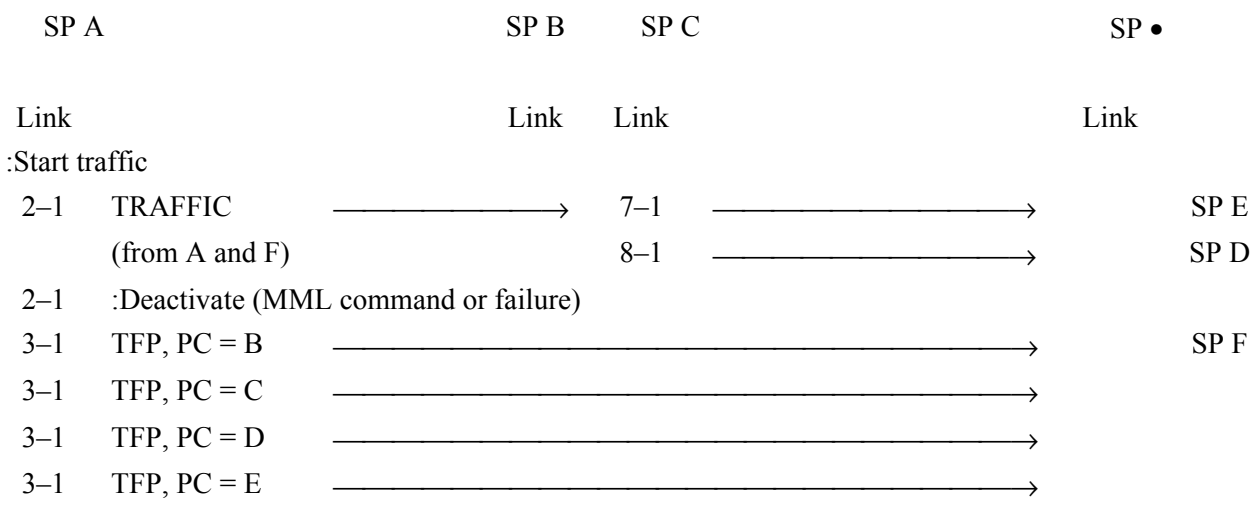
NOTE – The propagation of TFPs is not presented to simplify the test description.

TEST DESCRIPTION

1.	Start traffic to F.
2.	Deactivate link 1–1 and check that TFPs concerning F are broadcasted.
3.	Check that a timer T8 is started.
4.	Stop traffic.

TEST NUMBER: 9.2.2		PAGE: 1 of 2
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Broadcast of TFPs – On multiple failures		
PURPOSE: To check the broadcast of TFPs when several points are inaccessible (various reasons)		
PRE-TEST CONDITIONS: Linkset 1 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:

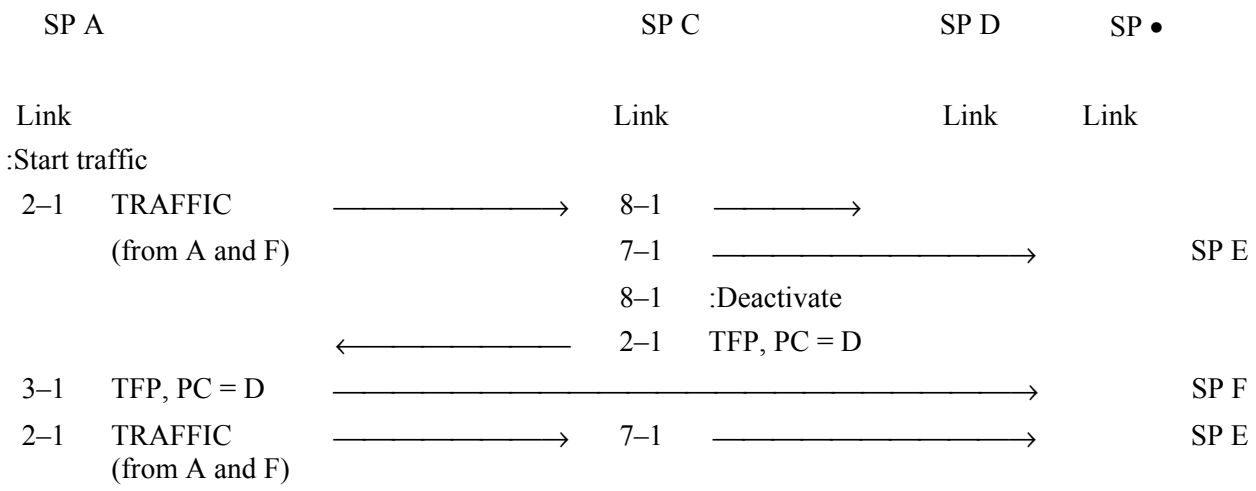


TEST DESCRIPTION

1.	Start traffic to D and E.
2.	Deactivate linkset 2 and check that TFPs concerning B, C, D and E are broadcasted (to F).
3.	Check that for each TFP sent a timer T8 is started.
4.	Repeat test but with linkset 2 unavailable as pre-test condition and then deactivate linkset 1.

TEST NUMBER: 9.2.2 *(concluded)*		PAGE: 2 of 2
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Broadcast of TFPs – On multiple failures		
PURPOSE: See page 1		
PRE-TEST CONDITIONS: Linksets 1 and 4 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:

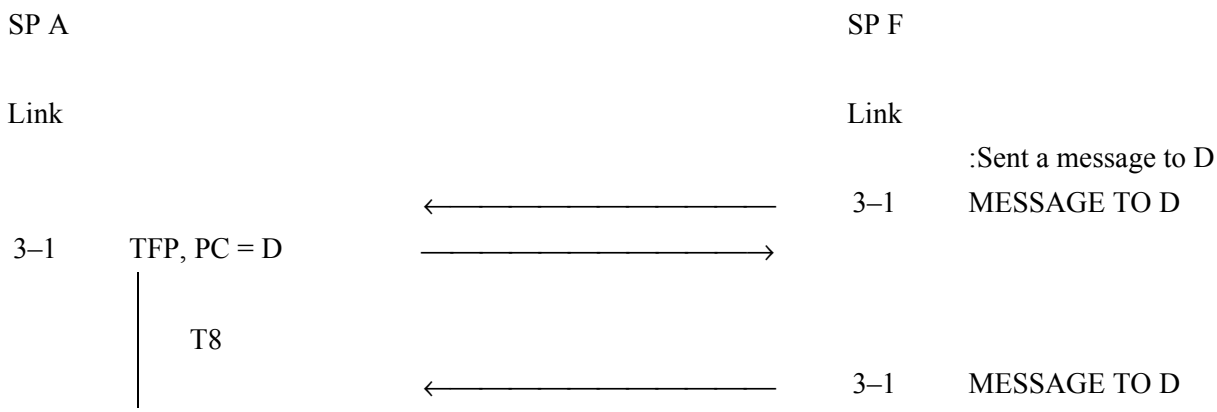


TEST DESCRIPTION

1.	Start traffic to D and E.
2.	Deactivate linkset 8 and check that a TFP (PC = D) is sent. Check that TFPs are broadcasted (here to F).
3.	Check that a time out T8 started.
4.	Stop traffic and check that traffic to E has not been disturbed.
5.	Repeat the test with linksets 2 and 4 unavailable as pre-test conditions and then deactivate linkset 5. Repeat the test with linksets 4 and 8 unavailable as pre-test conditions and then deactivate linkset 1.
6.	Repeat the test with linksets 4 and 5 unavailable as pre-test conditions and then deactivate linkset 2.

TEST NUMBER: 9.3		PAGE: 1 of 2
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Reception of a message for an inaccessible destination		
PURPOSE: To check that a TFP is sent in response to a message received for an inaccessible destination		
PRE-TEST CONDITIONS: Linksets 1, 4 and 8 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGE SEQUENCE:

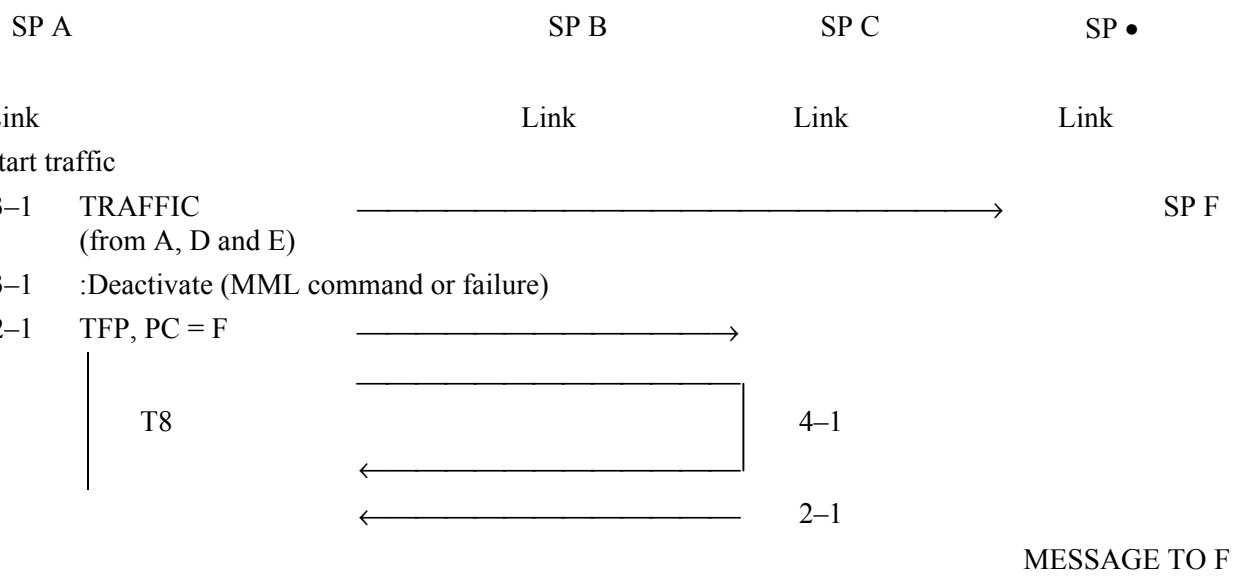


TEST DESCRIPTION

1.	Send from F a message with DPC = D to A.
2.	Check that a TFP PC = D is sent in response. Check that a time out T8 is started.
3.	During T8, send a new message with DPC = D to A and check that no TFP is sent.

TEST NUMBER: 9.3 *(concluded)*		PAGE: 2 of 2
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 44		
TITLE: Signalling route management		
SUBTITLE: Reception of a message for an inaccessible destination		
PURPOSE: See page 1		
PRE-TEST CONDITIONS: Linksets 1 and 8 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGE SEQUENCE:

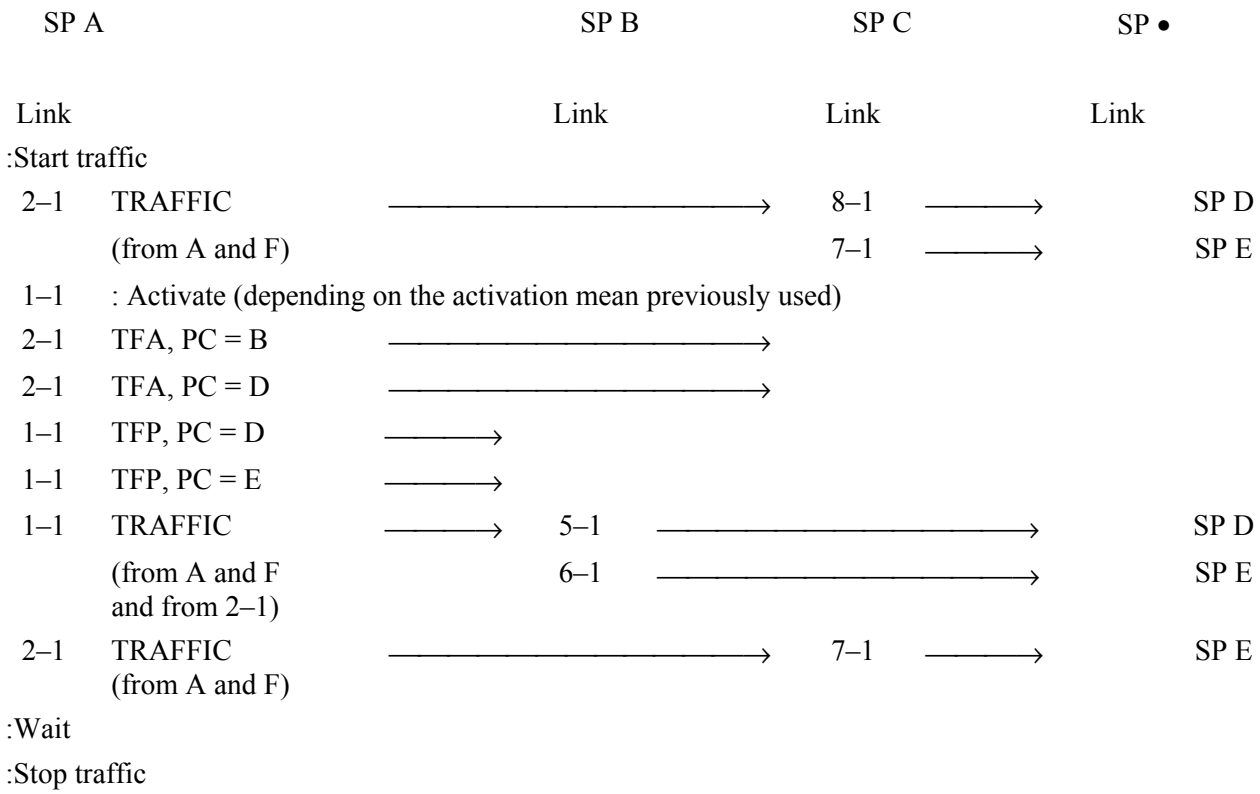


TEST DESCRIPTION

1. Start traffic to F.
2. Deactivate linkset 3 and check that TFPs are broadcasted.
3. Within T8, send one message with DPC = F from C to A and check that no TFP is sent in response.

TEST NUMBER: 9.4.1		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 45		
TITLE: Signalling route management		
SUBTITLE: Sending of a TFA on an alternative route – Recovery of normal linkset		
PURPOSE: To check the sending of a TFA on an alternative route when the normal linkset becomes available		
PRE-TEST CONDITIONS: Linkset 1 unavailable (end of test 9.1.1)		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



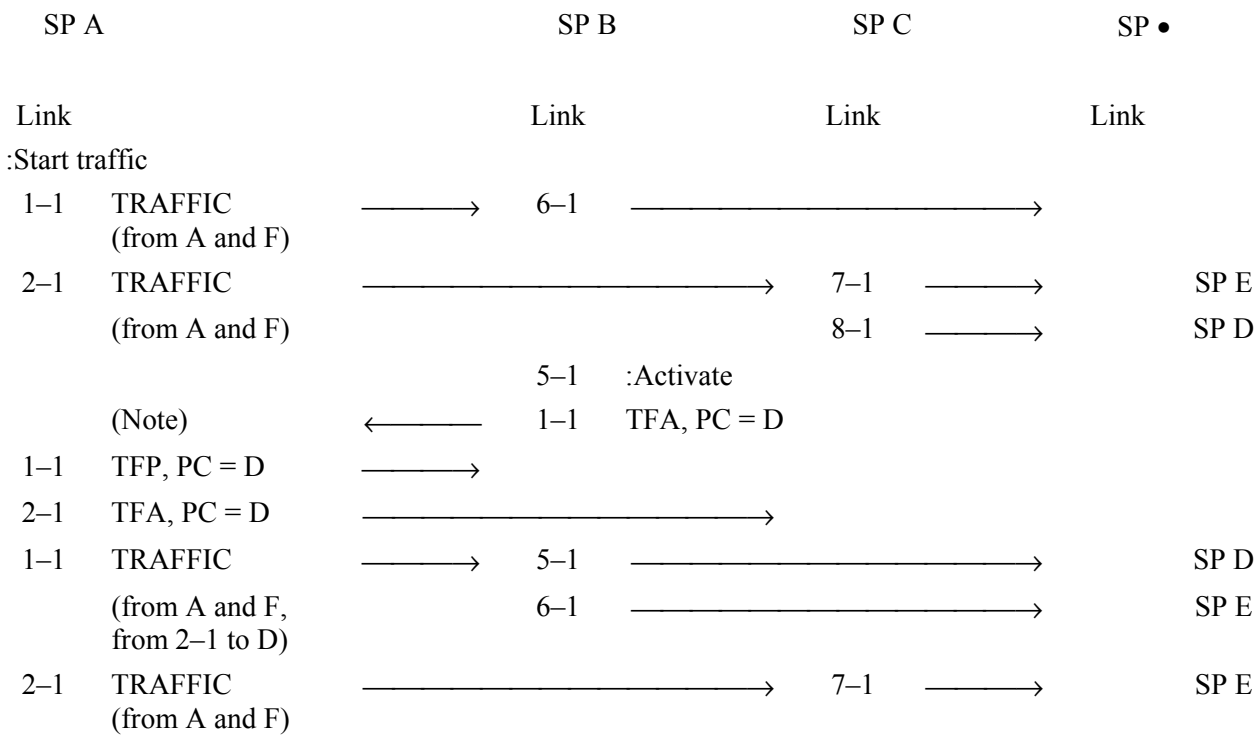
NOTE – A changeback procedure is performed after activation of link 1–1 but it is not described in this transfer allowed test.

TEST DESCRIPTION

1.	Start traffic to D and E.
2.	Activate linkset 1 and check that traffic to D and E is diverted on linkset 1 and that a TFA concerning D is sent from A to C. Check that no TFA is sent concerning E (load sharing in A between linksets 1 and 2).
3.	Stop traffic and check that it was rerouted correctly without loss of messages, duplication and missequencing.

TEST NUMBER: 9.4.2		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 45		
TITLE: Signalling route management		
SUBTITLE: Sending of a TFA on an alternative route – On reception of a TFA		
PURPOSE: To check that a TFA is sent on the alternative route when the normal route becomes available on reception of a TFA		
PRE-TEST CONDITIONS: Linksets 4 and 5 unavailable (end of test 9.1.2)		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



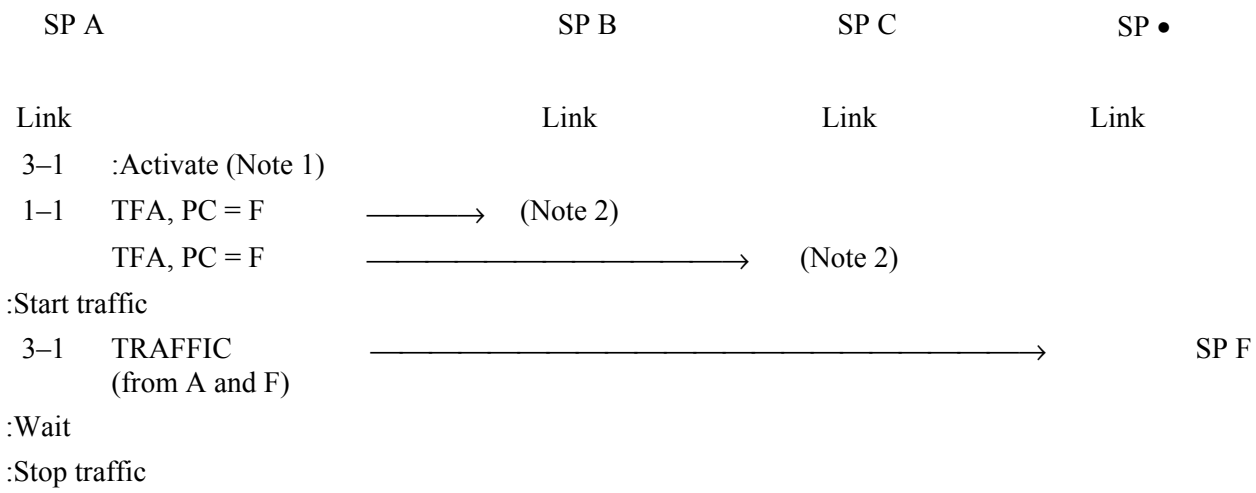
NOTE – A controlled rerouting is performed after the activation of linkset 5 and it is not described in this transfer allowed test.

TEST DESCRIPTION

1.	Start traffic to D and E.
2.	Activate link 5–1 and check that a TFA concerning D is sent to A.
3.	Check that the traffic to D via B and check that a TFA concerning D is sent from A to C.
4.	Stop traffic and check that traffic was not disturbed.

TEST NUMBER: 9.5.1		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 45		
TITLE: Signalling route management		
SUBTITLE: Broadcast of TFAs – On one linkset recovery		
PURPOSE: To check the broadcast of TFA when a destination becomes accessible		
PRE-TEST CONDITIONS: Linksets 3 unavailable (end of test 9.2.1)		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



NOTE 1 – After activation of the linkset 3, SPs A and F perform a point restart procedure which is not explicitly described in this test.

NOTE 2 – The propagation of TFAs is not presented to simplify the test description.

TEST DESCRIPTION

1.	Activate linkset 3.
2.	Check that TFAs concerning F are broadcasted.
3.	Start traffic to F and check that it is routed correctly; stop traffic.

TEST NUMBER: 9.5.2			PAGE: 1 of 2
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 45			
TITLE: Signalling route management			
SUBTITLE: Broadcast of TFAs – Various reasons			
PURPOSE: To check the broadcast of TFA when several destinations become accessible in various network situations			
PRE-TEST CONDITIONS: Linksets 1 and 2 unavailable (end of test 9.2.2 page 1 of 2)			
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP	

MESSAGE SEQUENCE:

SP A		SP B	SP C	SP •
Link		Link	Link	Link
2–1	:Activate			
2–1	TFA, PC = B	⟶		SP F
3–1	TFA, PC = C	⟶		SP F
3–1	TFA, PC = D	⟶		SP F
3–1	TFA, PC = E	⟶		SP F
2–1	TFP, PC = B	⟶		
2–1	TFP, PC = D	⟶		
2–1	TFP, PC = E	⟶		
:Start traffic				
2–1	TRAFFIC	⟶	7–1 ⟶	SP E
	(from A, and F)		8–1 ⟶	SP D
:Wait				
:Stop traffic				

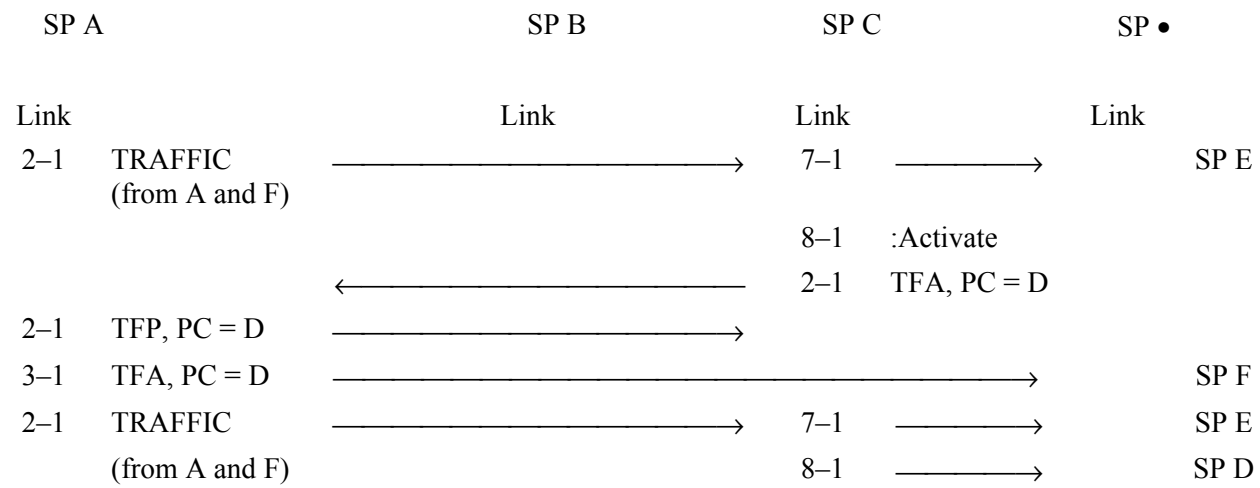
NOTE – After activation of the linkset 2, SPs A and C perform the point restart procedure which is not described in this test.

TEST DESCRIPTION

1.	Activate linkset 2.
2.	Check that TFAs concerning B, C, D and E are broadcasted.
3.	Start traffic and check that it is routed correctly; stop traffic.
4.	Repeat test but activate linkset 1 instead of linkset 2.

TEST NUMBER: 9.5.2 *(concluded)*		PAGE: 2 of 2
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 45		
TITLE: Signalling route management		
SUBTITLE: Broadcast of TFAs – Various reasons		
PURPOSE: See page 1 of 2		
PRE-TEST CONDITIONS: Linksets 1, 4 and 8 unavailable (end of test 9.2.2 page 2 of 2)		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



:Wait

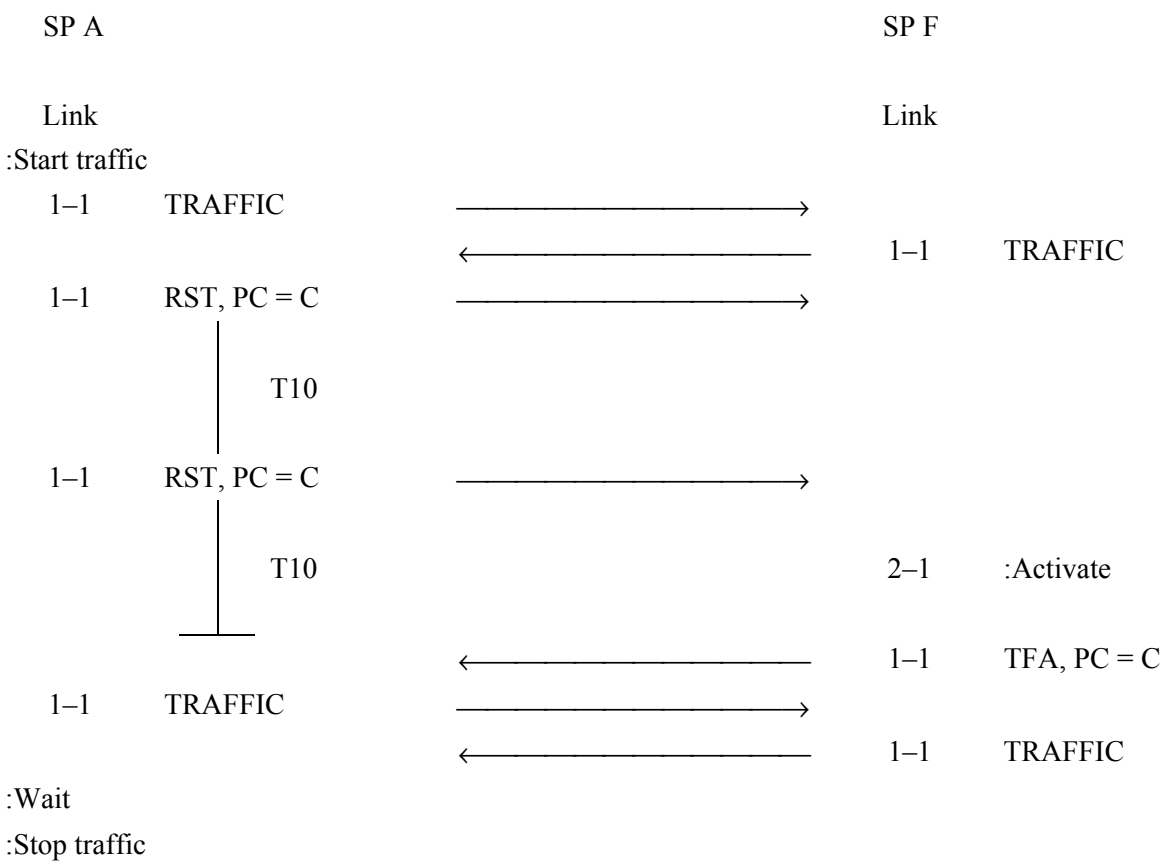
:Stop traffic

TEST DESCRIPTION

1.	Start traffic to E.
2.	Activate linkset 8 and check that a TFA concerning D is sent from C to A. Check that A broadcasts TFAs concerning D.
3.	Check that the traffic to D is restarted.
4.	Repeat test with linksets 2, 4 and 5 unavailable as pre-test conditions and activate linkset 5. Repeat test with linksets 1, 4 and 8 unavailable as pre-test conditions and activate linkset 1. Repeat test with linksets 2, 4 and 5 as pre-test conditions and activate linkset 2.

TEST NUMBER: 9.6		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 46		
TITLE: Signalling route management		
SUBTITLE: Periodic sending of Signalling-Route-Set-Test (SRST) messages		
PURPOSE: To check the periodic test of an unavailable signalling route is performed correctly		
PRE-TEST CONDITIONS: Linkset 2 unavailable		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

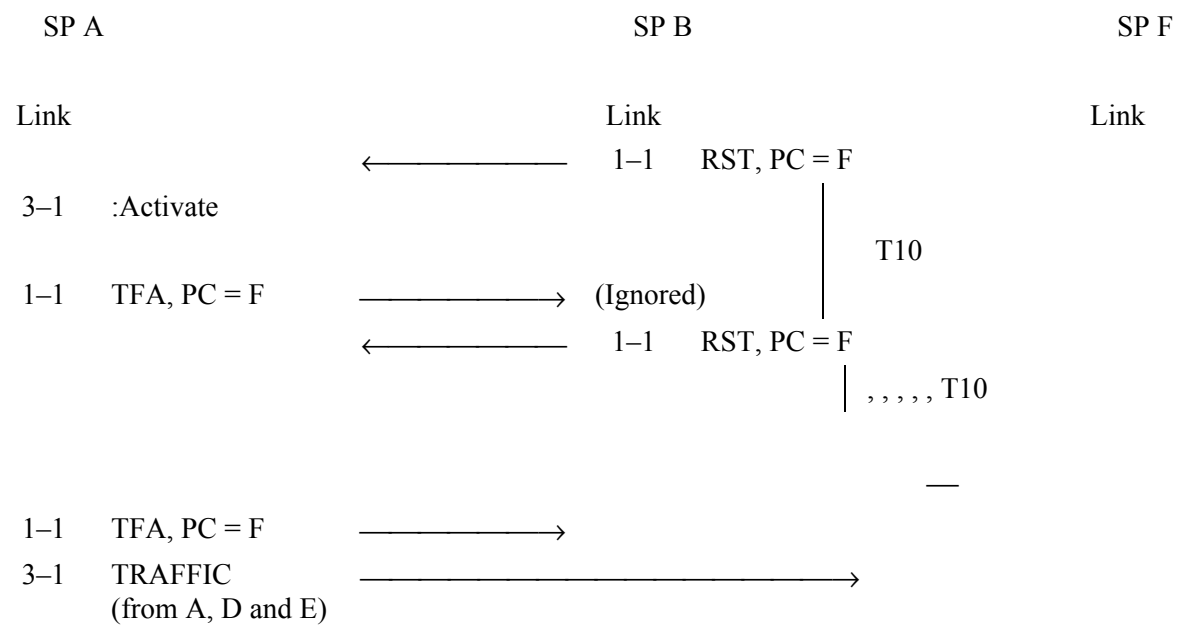


TEST DESCRIPTION

1. Start traffic to B.
2. Check that at each expiration of T10, a signalling-Route-Set-Test message concerning C is received from A without response.
3. Activate linkset 2 and check that a TFA is received and that T10 is stopped.
4. Check that traffic to C is restarted and stop traffic.
5. Repeat the test but without sending of TFA after activation of linkset 2 and check that when a RST is received a TFA is sent in response. Check that T10 and signalling-route-set-test procedure are stopped.
6. Check that the duration of T10 is inside the specified range.

TEST NUMBER: 9.7		PAGE: 1 of 1
REFERENCE: clause 13/Q.704 Fig. 29, Fig. 46		
TITLE: Signalling route management		
SUBTITLE: Reception of a signalling-route-set-test-message		
PURPOSE: To check the actions of the system on reception of an SRST		
PRE-TEST CONDITIONS: Linksets 2 and 3 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGE SEQUENCE:



:Wait

:Stop traffic

TEST DESCRIPTION

1.	Send to A RST message concerning F and check that no response is received.
2.	Activate linkset 3 and check that a TFA is received but ignored in B.
3.	Send a RST message concerning F after activation of linkset 3 and check that a TFA is received in response.
4.	Repeat the test but with linksets 1 and 3 unavailable as pre-test conditions and RST message sent from C.

TEST NUMBER: 10.1.1		PAGE: 1 of 1
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Recovery of a linkset (SP A does not have an STP function) – With use of point restart procedure		
PURPOSE: To check that point restart procedure is performed correctly when the recovery of a linkset restores connexity between two adjacent SPs		
PRE-TEST CONDITIONS: Linksets 1, 2, 4 and 6 unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: SP

MESSAGE SEQUENCE:

SP A Link		SP B Link		SP C Link		SP ? Link	
3–1, 2	TRAFFIC	⟶		7–1	⟶		SP E
				8–1	⟶		SP D
		⟵		3–1, 2	⟵	7–1	SP E
					⟵	8–1	SP D
2–1	:Activate						
2–1	Activation (link in service at level 2)						
	T21		T21				
2–1	TRA	⟶					
		⟵	2–1	TFP (PC = C)			
		⟵	2–1	TFP (PC = E)			
		⟵	2–1	TRA			
			5–1	TFA (PC = A)	⟶		SP D
	TIME CONTROLLED DIVERSION IS APPLIED						
2–1	TRAFFIC (from 3–1, 2)	⟶	5–1	⟶			SP D
		⟶	2–1	⟶		5–1	SP D
3–1, 2	TRAFFIC	⟶		7–1	⟶		SP E
				8–1	⟶		SP D
		⟵		3–1, 2	⟵	7–1	SP E
:Wait							
:Stop traffic							

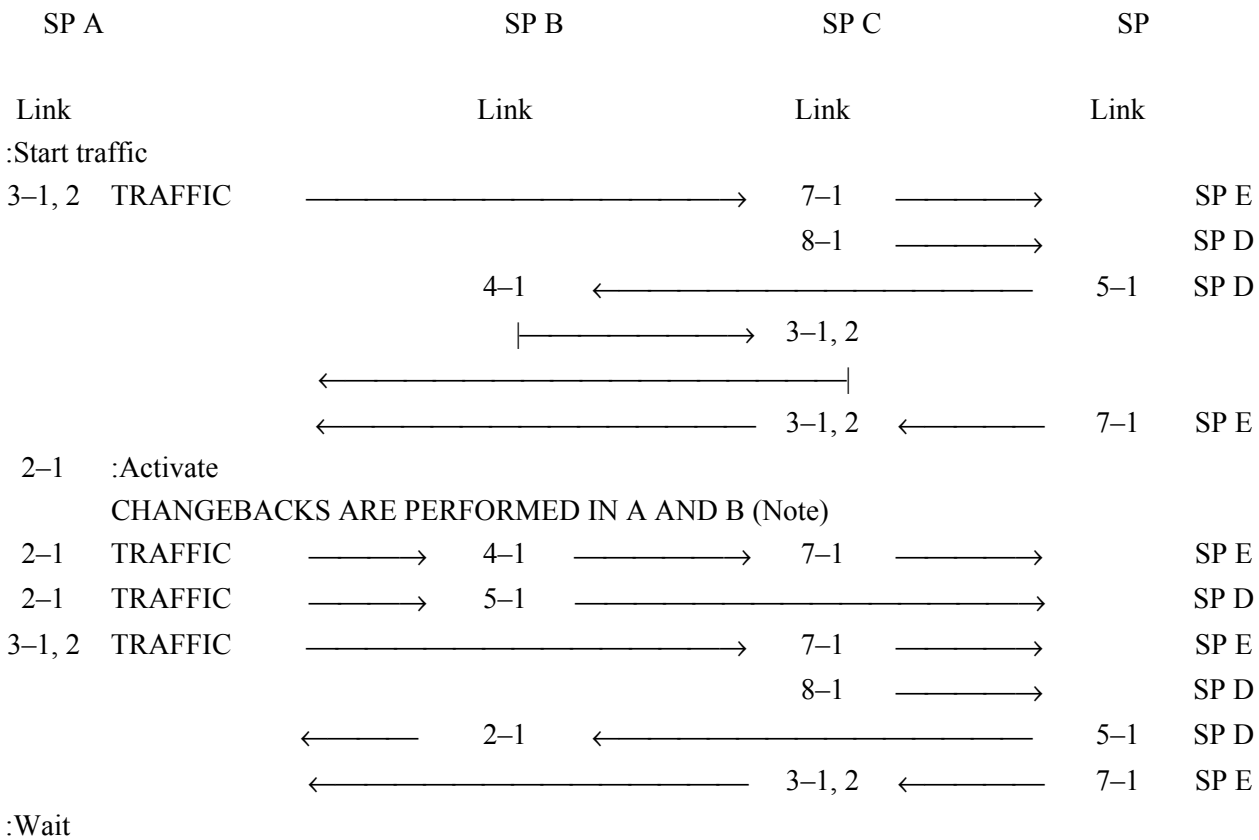
NOTE – The time controlled diversion procedure is applied in A and a controlled rerouting is performed in D. These procedures are not described in this point restart test.

TEST DESCRIPTION

1.	Start traffic to E (and D in VAT).
2.	Activate link 2-1.
3.	Check that the time controlled diversion procedure is performed after reception of the TRA. Check that the traffic to D is diverted to the link 2–1 in accordance with the load sharing rules in A. Check that the traffic to E is not diverted.
4.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.
5.	Repeat the test (in VAT) without sending of TRA and check that the duration of timer T21 is inside the specified range.

TEST NUMBER: 10.1.2		PAGE: 1 of 1
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Recovery of a linkset (SP A does not have an STP function) – Not resulting in the signalling point restart procedure		
PURPOSE: To check the actions of the system in case of restart of a linkset		
PRE-TEST CONDITIONS: Linksets 1, 2 and 6 are unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: SP

MESSAGE SEQUENCE:



NOTE – After activation of link 2–1, changebacks are performed in A and B but they are not explicitly described in this point restart test.

TEST DESCRIPTION

1.	Start traffic to E and D.
2.	Activate link 2–1. Check that the point restart procedure is not applied and that changebacks are performed.
3.	Check that the traffic from A is diverted to the link 2–1 in accordance with the load sharing rules in A.
4.	Check that the signalling route set test procedure is not applied after the activation of the link 2–1.
5.	Stop traffic and check that were no lost messages, no duplication and no missequencing.

TEST NUMBER: 10.2.1			PAGE: 1 of 2
REFERENCE: clause 9/Q.704			
TITLE: Signalling point restart			
SUBTITLE: Recovery of a linkset (SP A has STP function) – With use of point restart procedure			
PURPOSE: To check that restart procedure is performed correctly when the recovery of a linkset restores connectivity between two adjacent SPs			
PRE-TEST CONDITIONS: Linksets 1, 3, 4 and 6 are unavailable			
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP	

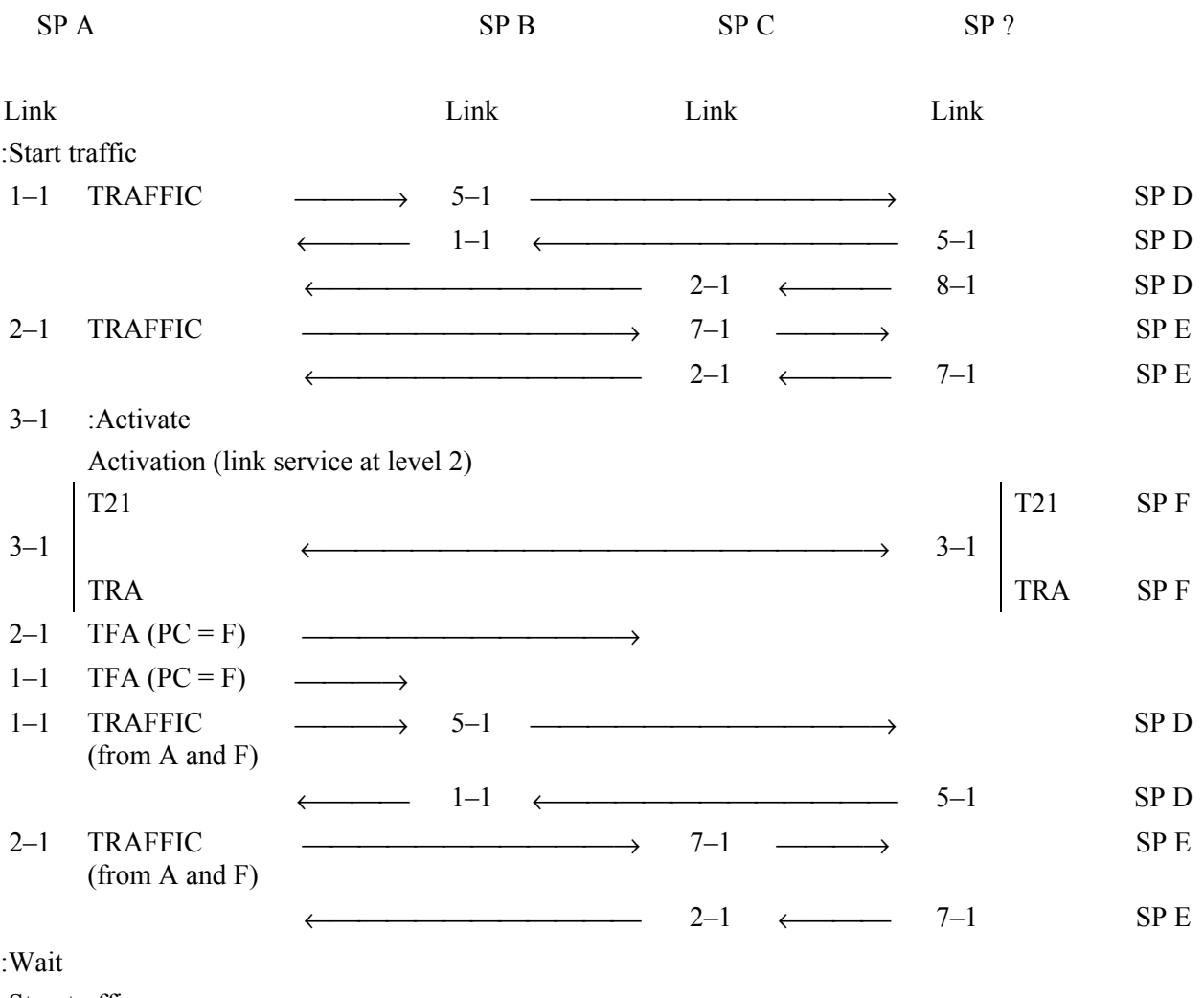
MESSAGE SEQUENCE:

SP A Link		SP B Link		SP C Link		SP ? Link	
:Start traffic							
2–1	TRAFFIC →			7–1	→		SP E
				8–1	→		SP D
	←			2–1	←	7–1	SP E
					←	8–1	SP D
1–1	:Activate						
1–1	Activation (link in service at level 2)						
	T21	T21					
1–1	TFP (PC = F) →						
1–1	TRA →						
	←	1–1	TFP (PC = C)				
	←	1–1	TFP (PC = E)				SP D
	←	1–1	TRA				
		5–1	TFA (PC = A) →				
2–1	TFA (PC = B) →						
2–1	TFA (PC = D) →						
1–1	TFP (PC = D) →						
	TIME CONTROLLED DIVERSION IS APPLIED						
1–1	TRAFFIC →	5–1	→				SP D
	←	1–1	←			5–1	SP D
	←			2–1	←	8–1	SP D
2–1	TRAFFIC →			7–1	→		SP E
	←			2–1	←	7–1	SP E
:Wait							
:Stop traffic							

TEST DESCRIPTION	
1.	Start traffic to D and E.
2.	Activate link 1–1. Check that TFPs are sent from B to A for E and C, and that a TFP is sent from A to B for F.
3.	Check that timer T21 in SP A and timer T21 in SP B stop at about the same time. Check that a TFA is sent from A to C for B.
4.	Check that the controlled time diversion is applied in A. Check that the traffic to D is diverted on link 1–1.
5.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.
6.	Repeat the test (in VAT) without sending TRA from B to A and check that the duration of timer T21 is inside the specified range.

TEST NUMBER: 10.2.1 *(concluded)*		PAGE: 2 of 2
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Recovery of a linkset (SP A has STP function) – With use of point restart procedure		
PURPOSE: See page 1 of 2		
PRE-TEST CONDITIONS: Linksets 3, 4 and 6 are unavailable (end of page 1)		
CONFIGURATION: D	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGE SEQUENCE:

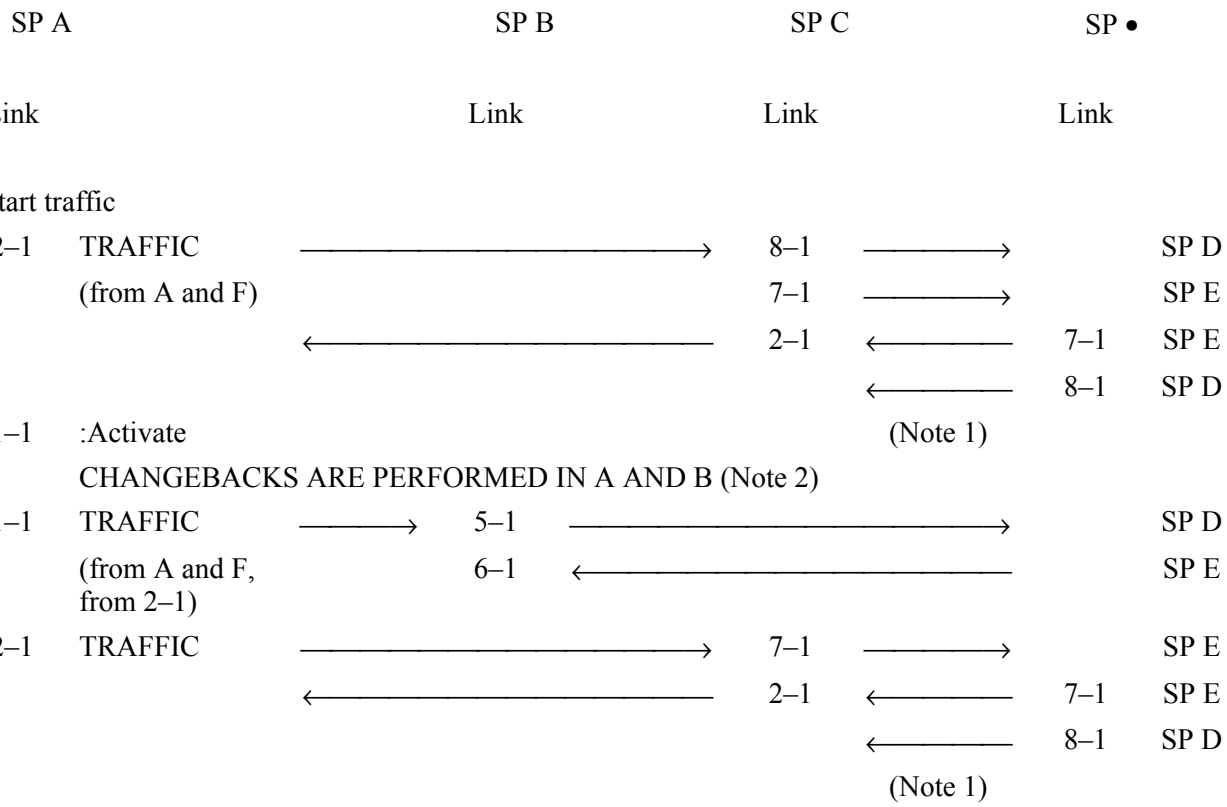


TEST DESCRIPTION

1. Start traffic.
2. Activate link 3–1.
3. Check that timer T21 in SP A and timer T21 in SP F stop at about the same time. Check that a TFA is sent from A to C for F and from A to B for F.
4. Stop traffic and check that there were no lost messages, duplication and no missequencing.

TEST NUMBER: 10.2.2		PAGE: 1 of 1
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Recovery of a linkset (SP A has STP function) – Not resulting in the signalling point restart procedure		
PURPOSE: To check the actions of the system in case of restart of a linkset		
PRE-TEST CONDITIONS: Linkset 1 unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGE SEQUENCE:



NOTE 1 – Depending on the routing rules in D and E, the traffic to A and F may be carried either on linksets 5 or 8, or on linksets 6 or 7.

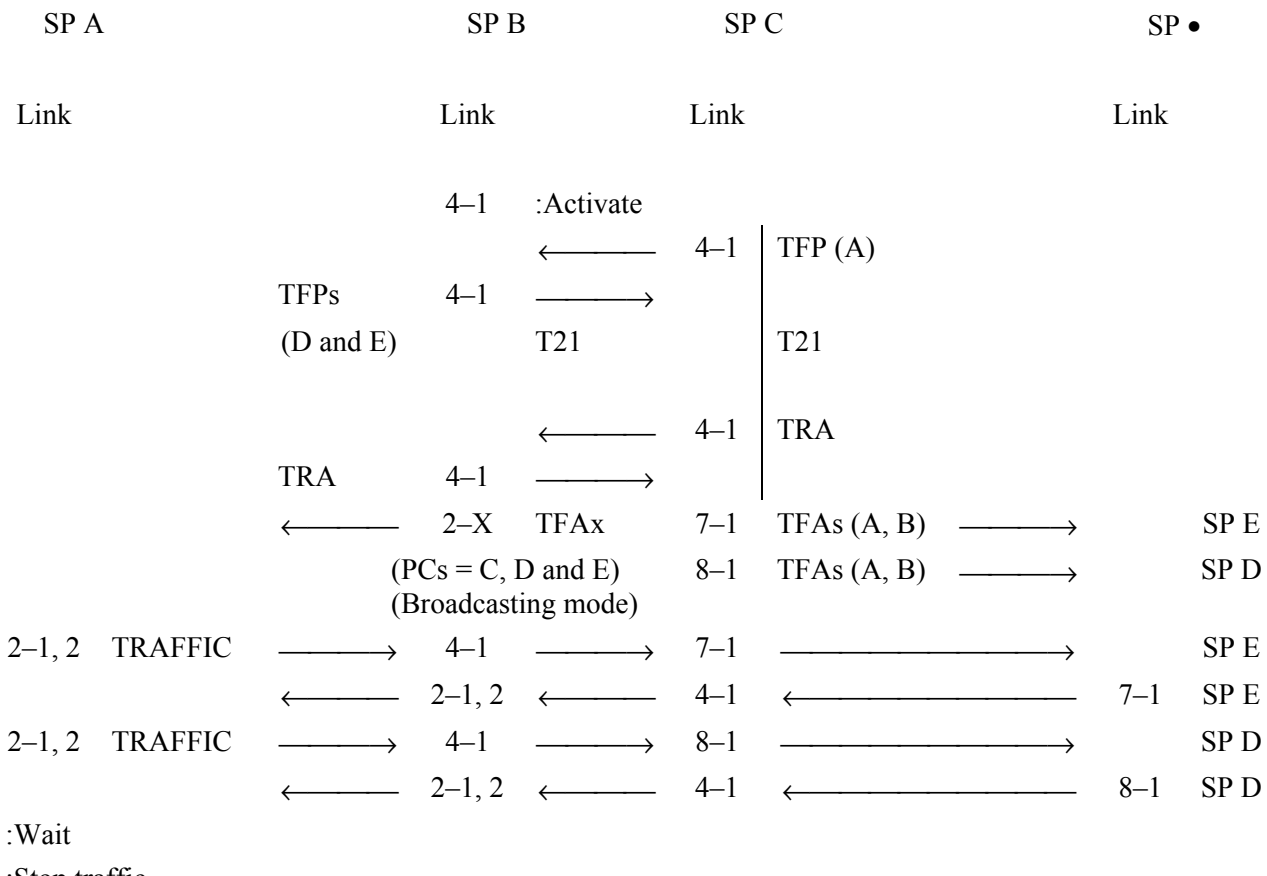
NOTE 2 – Changebacks are performed but they are not explicitly described in this point restart test.

TEST DESCRIPTION

1.	Start traffic to D and E.
2.	Activate link 1–1. Check that point restart procedure is not applied in this case and that changebacks are performed.
3.	Check that the traffic to D and E is diverted on link 1–1 in accordance with the load sharing rules in A.
4.	Check that the signalling route set test procedure is not used.
5.	Stop traffic and check there were no lost messages, no duplication and no missequencing.

TEST NUMBER: 10.3			PAGE: 1 of 1
REFERENCE: clause 9/Q.704			
TITLE: Signalling point restart			
SUBTITLE: An adjacent SP becomes accessible via another SP (SP A does not have an STP function)			
PURPOSE: To check the actions of the system when an adjacent SP becomes accessible via another SP			
PRE-TEST CONDITIONS: Linksets 1, 3, 4, 5 and 6 are unavailable			
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: SP	

MESSAGE SEQUENCE:



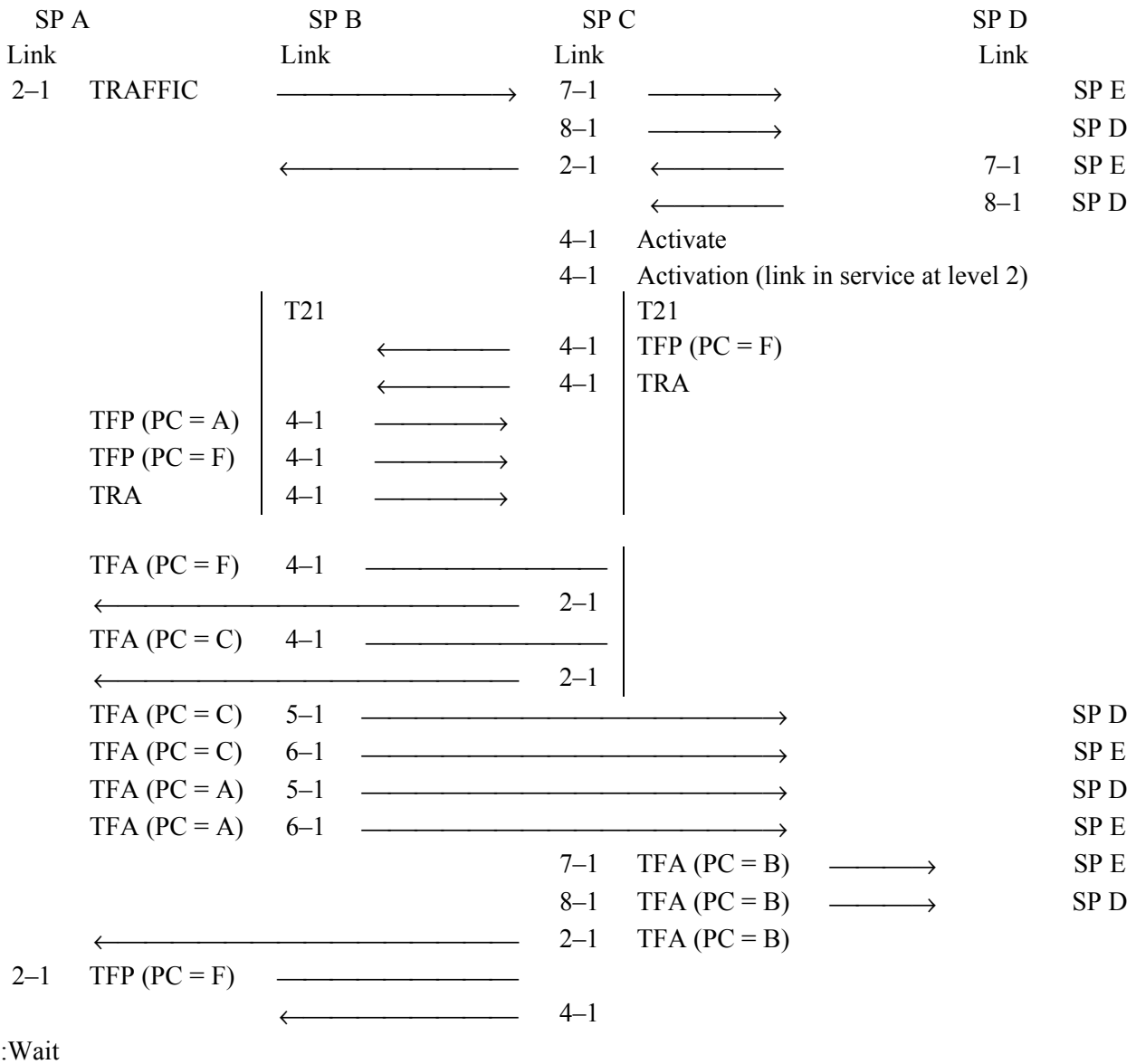
TEST DESCRIPTION

1. Activate link 4–1.
2. Check that on the reception of TFAs the traffic is immediately restarted in A to E and to D.
3. Stop traffic and check that there were no lost messages, no duplication and no missequencing.

MTP Level 3

TEST NUMBER: 10.4			PAGE: 1 of 1
REFERENCE: clause 9/Q.704			
TITLE: Signalling point restart			
SUBTITLE: An adjacent SP becomes accessible via another SP (SP A has STP function)			
PURPOSE: To check the actions of the system when an adjacent SP becomes accessible via another SP on reception of a TFA			
PRE-TEST CONDITIONS: Linksets 1, 3 and 4 are unavailable			
CONFIGURATION: D	TYPE OF TEST: VAT	TYPE OF SP: STP	

MESSAGE SEQUENCE:



:Wait

:Stop traffic

NOTE – Messages between B and C are only present for understanding the global sequence of message. Only messages received and sent by/from A are subject to this test

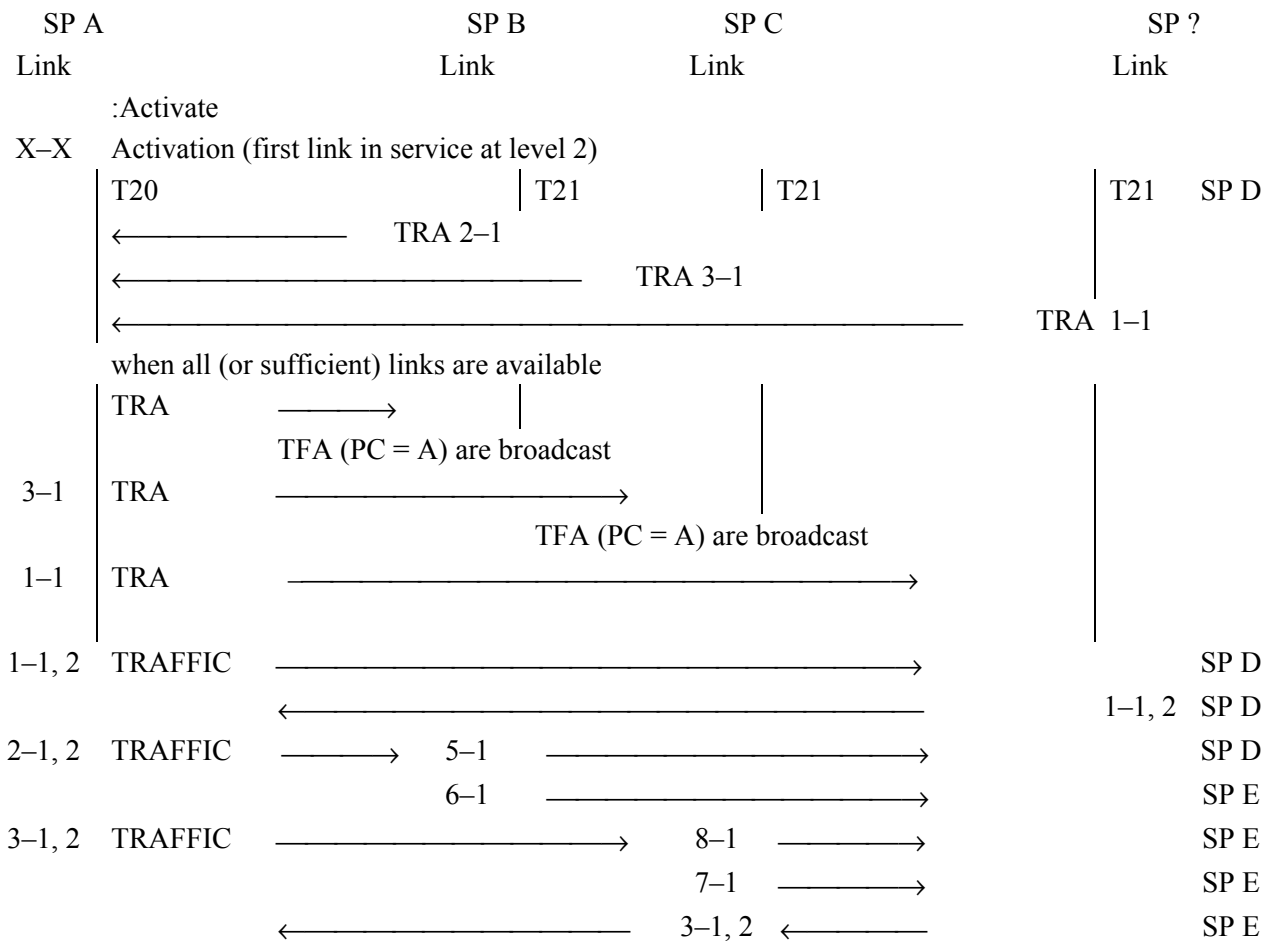
TEST DESCRIPTION

1.	Start traffic.
2.	Activate link 4–1.
3.	Check that, when the TFA is received for B, SP A is aware of that B is an adjacent point which restarts, and consequently, A sends a TFP concerning F on link 2–1 to B.
4.	Stop traffic and check that there were no lost messages, no duplication and no missequencing.

MTP Level 3

TEST NUMBER: 10.5		PAGE: 1 of 2
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Restart of an SP having no STP function		
PURPOSE: To check the restart procedure in an SP having no STP function		
PRE-TEST CONDITIONS: SP A unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT, CPT	TYPE OF SP: SP

MESSAGE SEQUENCE:

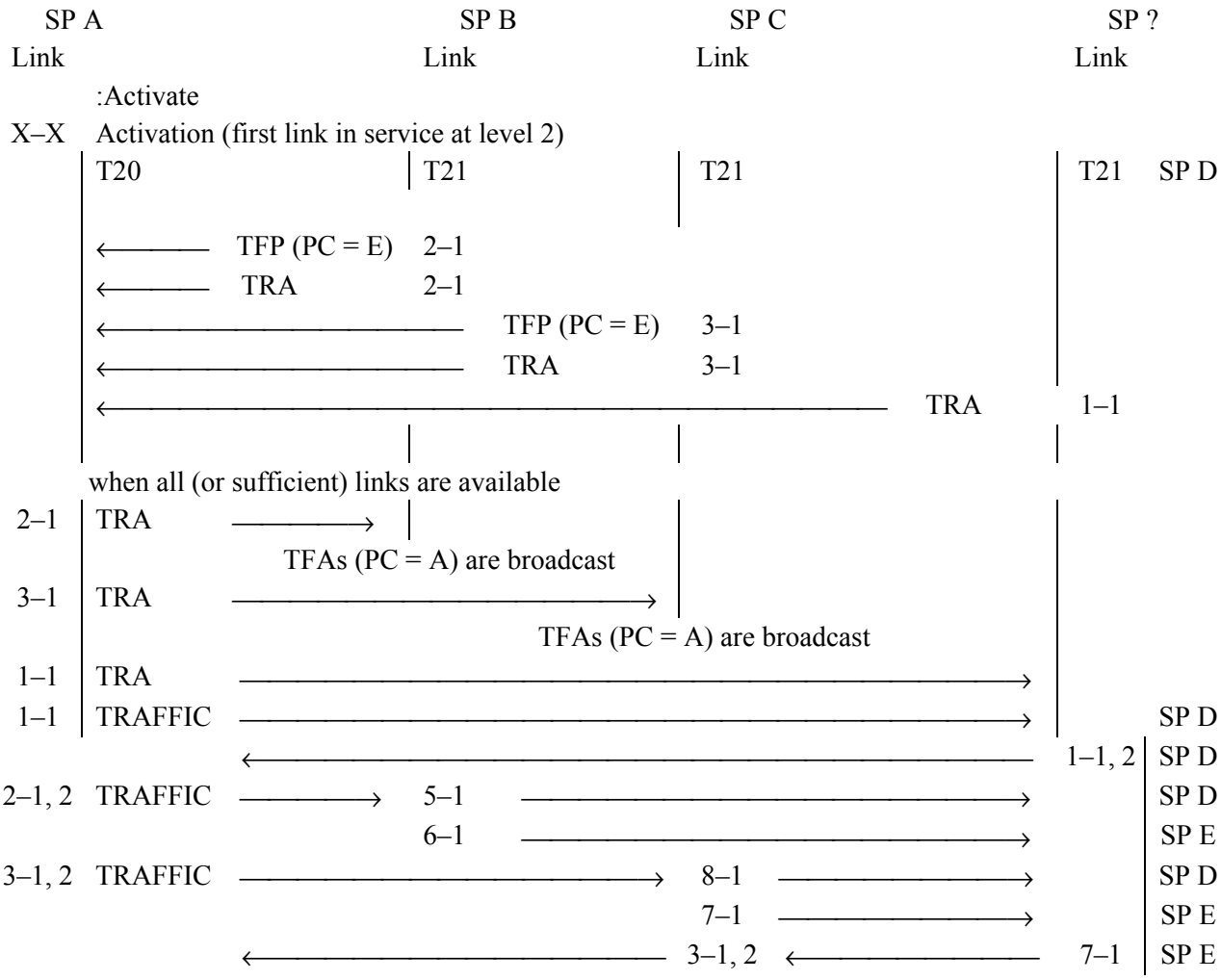


TEST DESCRIPTION

1.	Activate SP A
2.	Check that when the first link is in service at level 2, the timer T20 is started.
3.	Check that when all (or sufficient) links are activated, and all TRAs are received from B, C and D timer T20 is stopped.
4.	Check that SP A broadcasts TRAs to B, C and D.
5.	Check that the traffic is carried as described above.
6.	Stop traffic.
7.	In VAT, repeat the test without sending TRA from B to A, and check that the duration of T20 is inside the specified range.
8.	In VAT, repeat the test without activating the link 1–1, and check that the duration of T20 is inside the specified range.

TEST NUMBER: 10.5 *(concluded)*		PAGE: 2 of 2
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Restart of an SP having no STP function		
PURPOSE: To check the restart procedure in an SP having no STP function		
PRE-TEST CONDITIONS: SP A, linksets 6 and 7 unavailable		
CONFIGURATION: B	TYPE OF TEST: VAT	TYPE OF SP: SP

MESSAGE SEQUENCE:

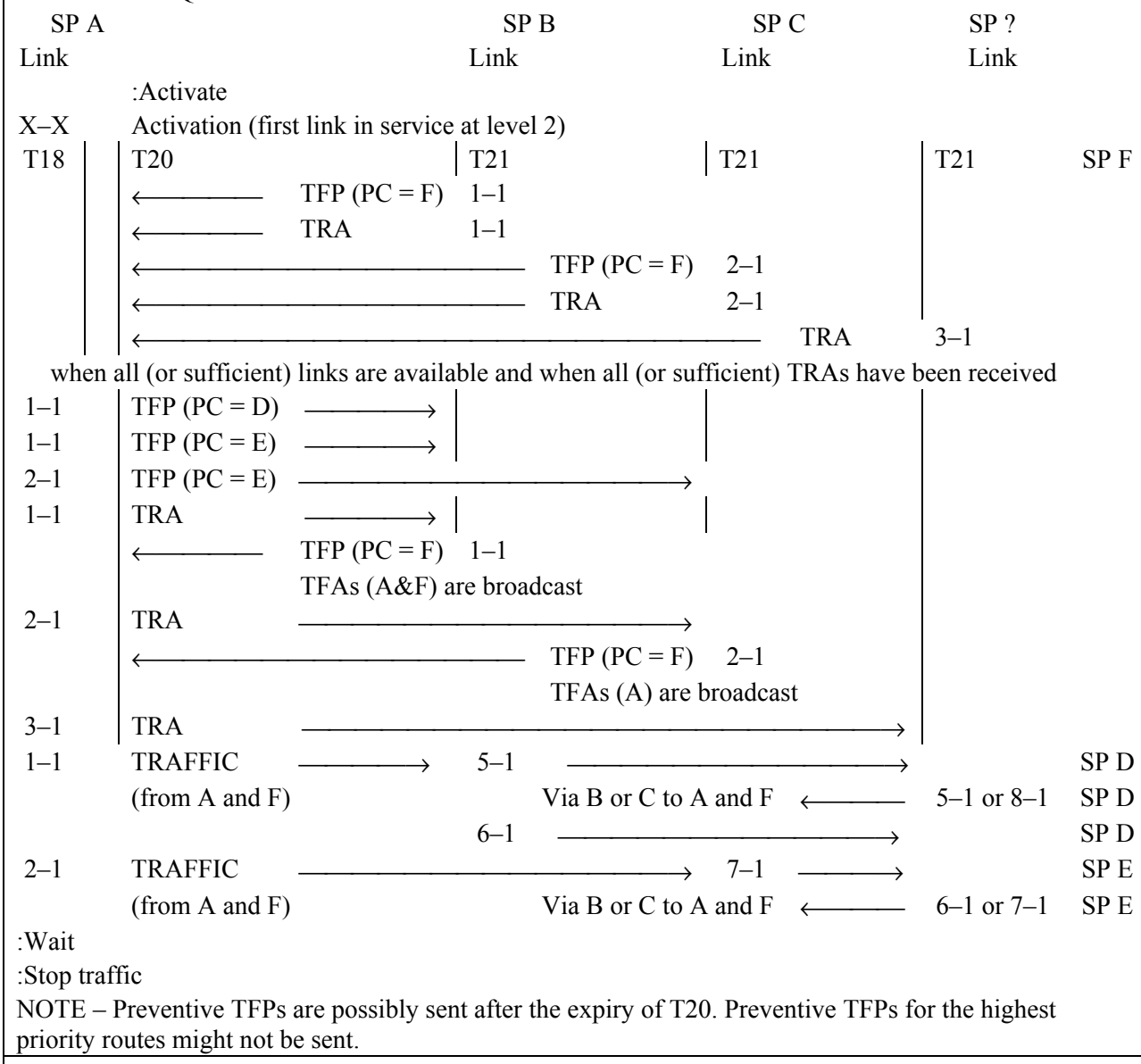


TEST DESCRIPTION

1.	Activate SP A.
2.	Check that when the first link is in service at level 2, the timer T20 is started.
3.	Check that when all (or sufficient) links are activated, and all TRAs are received from B, C and D timer T20 is stopped.
4.	Check that SP A broadcasts TRAs to B, C and D.
5.	Check that the traffic is carried as described above.
6.	Stop traffic.
7.	Repeat the test without sending TRA from B to A, and check that the duration of T20 is inside the specified range.
8.	Repeat the test without activating the link 1–1, and check that the duration of T20 is inside the specified range.

TEST NUMBER: 10.6		PAGE: 1 of 2
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Restart of an SP having the STP function		
PURPOSE: To check the restart procedure in an SP having STP function		
PRE-TEST CONDITIONS: SP A unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



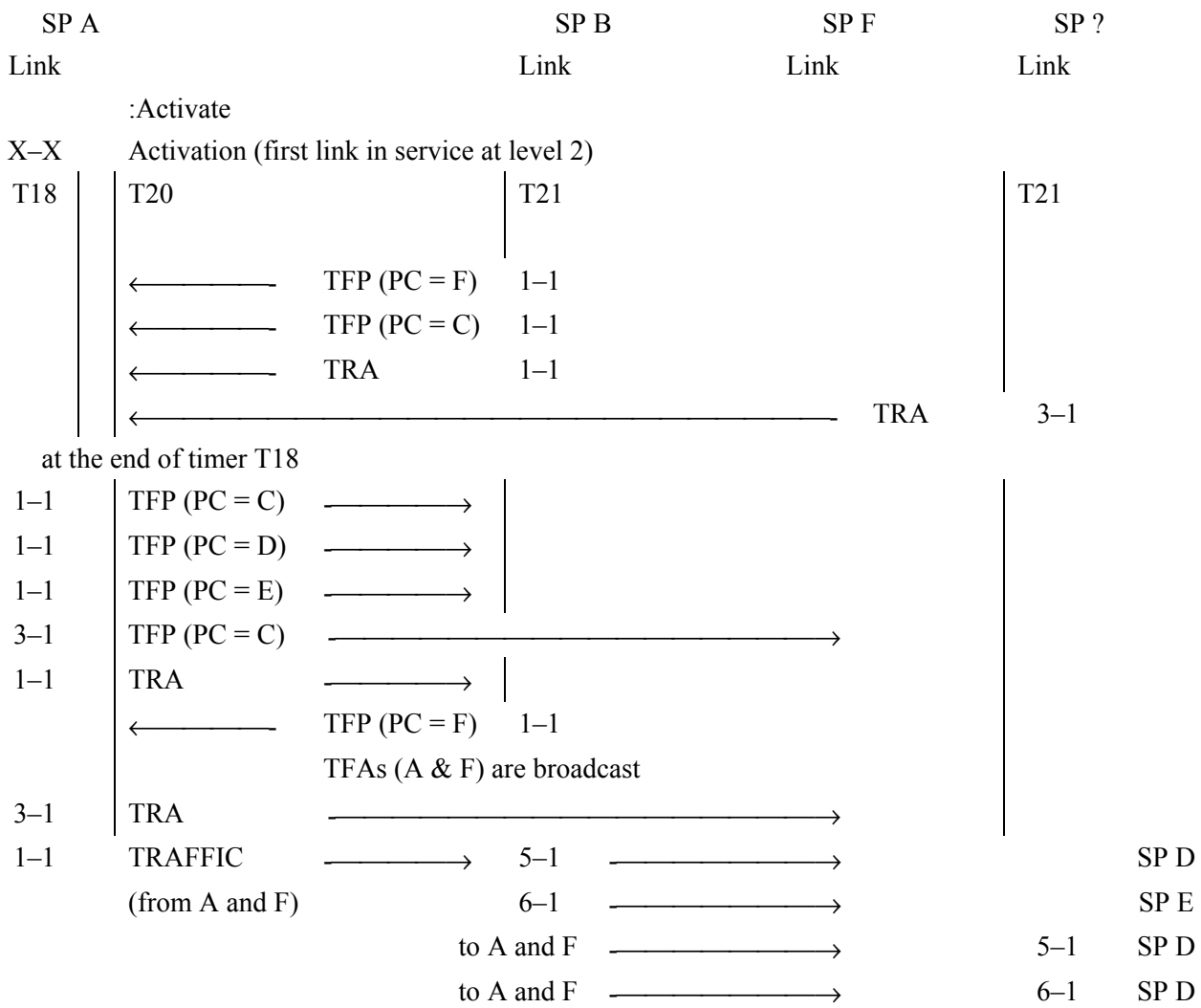
NOTE – Preventive TFPs are possibly sent after the expiry of T20. Preventive TFPs for the highest priority routes might not be sent.

TEST DESCRIPTION

1.	Activate SP A.
2.	Check that when the first link is in service at level 2, the timer T20 is started.
3.	Check that when all (or sufficient) links are activated, and all TRAs are received from B, C and D timer T18 is stopped.
4.	Check that SP A broadcasts TRAs to B, C and F.
5.	Check that the traffic is carried as described above.
6.	Stop traffic.
7.	Repeat the test (in VAT) but send the traffic from F to D and E via A immediately after alignment of link 3–1 and check that this traffic is discarded until the end of T20.

TEST NUMBER: 10.6 *(concluded)*		PAGE: 2 of 2
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Restart of an SP having the STP function		
PURPOSE: To check the restart procedure in an SP having STP function		
PRE-TEST CONDITIONS: SP A unavailable and linkset 2 and 4 definitively unavailable		
CONFIGURATION: D	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:



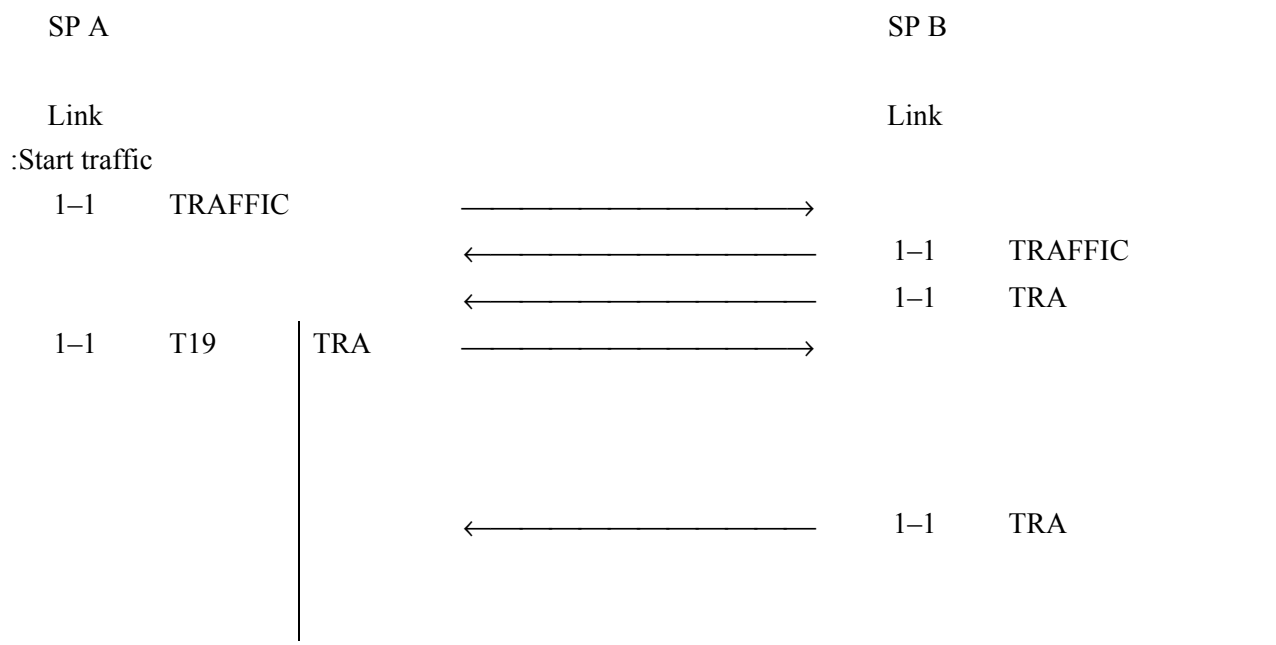
NOTE – Preventive TFPs may be sent after the expiry of T20. Preventive TFPs for the highest priority routes might not be sent.

TEST DESCRIPTION

1.	Activate SP A beginning by the activation of 3–1, activate link 1–1.
2.	Stop traffic.

TEST NUMBER: 10.7.1		PAGE: 1 of 1
REFERENCE: clause 9/Q.704		
TITLE: Signalling point restart		
SUBTITLE: Reception of an unexpected TRA – In an SP having no STP function		
PURPOSE: To check the system in case of reception of an unexpected TRA		
PRE-TEST CONDITIONS: Linkset with one available link		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: SP

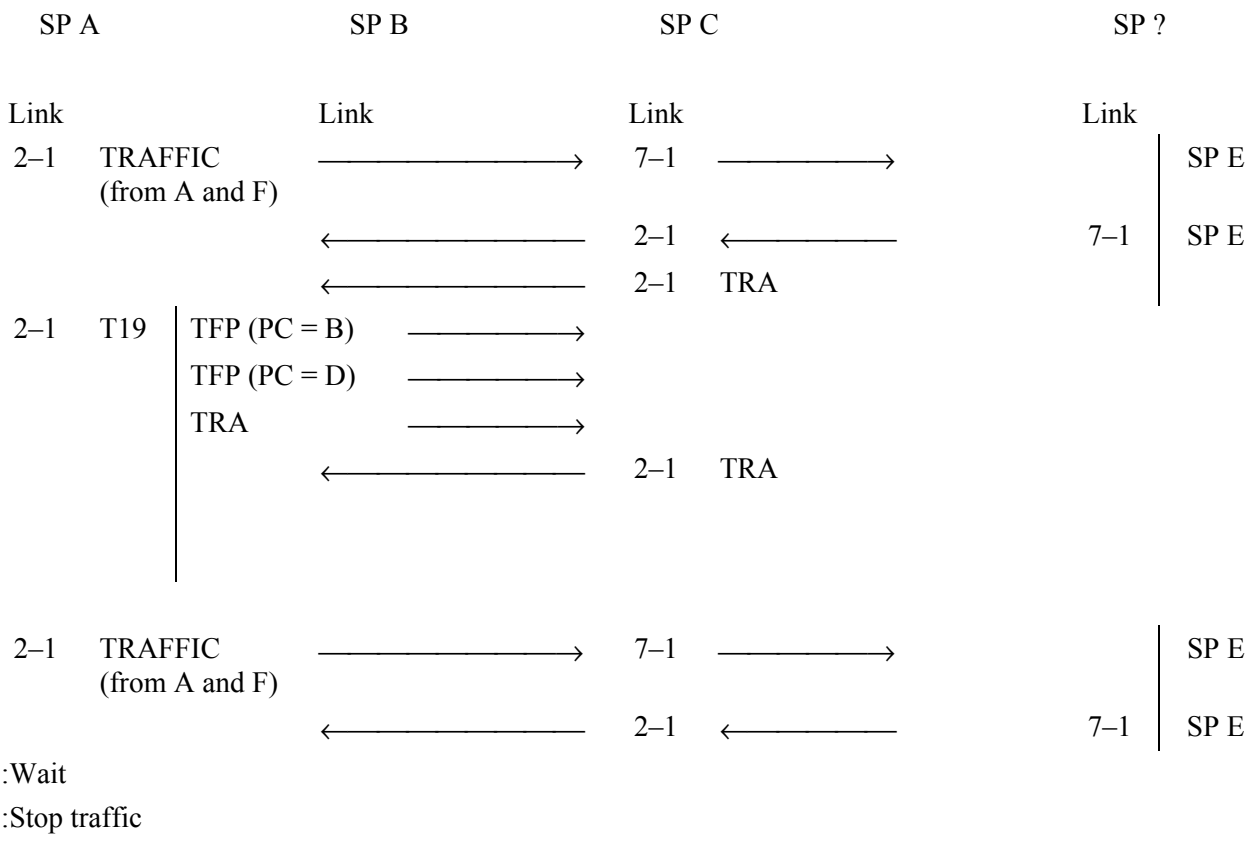
MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to B and C on link 1–1.
2.	Send a TRA from B to A and check that the timer T19 is started.
3.	During T19 send a TRA from B to A and check that this message is ignored.
4.	Stop traffic and check that it has not been disturbed.

TEST NUMBER: 10.7.2			PAGE: 1 of 1
REFERENCE: clause 9/Q.704			
TITLE: Signalling point restart			
SUBTITLE: Reception of an unexpected TRA – In an SP having the STP function			
PURPOSE: See test 10.7.1			
PRE-TEST CONDITIONS: Linksets 1, 4 and 8 are unavailable			
CONFIGURATION: D	TYPE OF TEST: VAT		TYPE OF SP: STP

MESSAGE SEQUENCE:



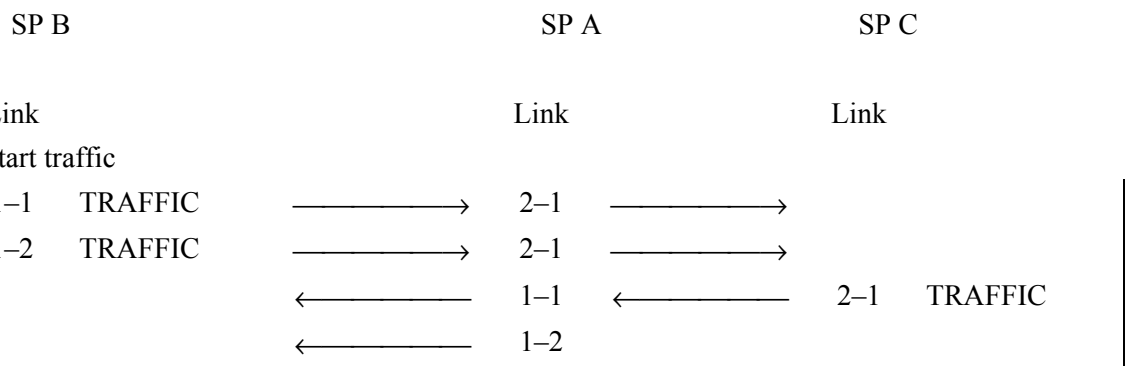
TEST DESCRIPTION

1.	Start traffic to E.
2.	Send a TRA from C to A and check that the timer T19 is started, and that TFPs concerning B and D are received, then, check that a TRA is received from A.
3.	During T19 send a TRA from C to A and check that this message is ignored.
4.	Stop traffic and check that it has not been disturbed.

MTP Level 3

TEST NUMBER: 11		PAGE: 1 of 1
REFERENCE: Q.706		
TITLE: Traffic test		
SUBTITLE:		
PURPOSE: To check the behaviour of an STP in various traffic situations		
PRE-TEST CONDITIONS: All links available		
CONFIGURATION: C	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic between B and C in both directions via A using the traffic models presented in ITU-T Rec. Q.706.
2.	Check that the time to cross the STP is better than 20 milliseconds.
3.	Stop traffic and check that it was not disturbed.
4.	Repeat test but with a traffic model including 5% of messages with an SIF = 272 octets.

MTP Level 3

TEST NUMBER: 12.1		PAGE: 1 of 1
REFERENCE: Q.707		
TITLE: Signalling link test		
SUBTITLE: After activation of a link		
PURPOSE: To check the signalling link test procedure after activation of a signalling link		
PRE-TEST CONDITIONS: Signalling link 1–2 available		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: STP

MESSAGE SEQUENCE:

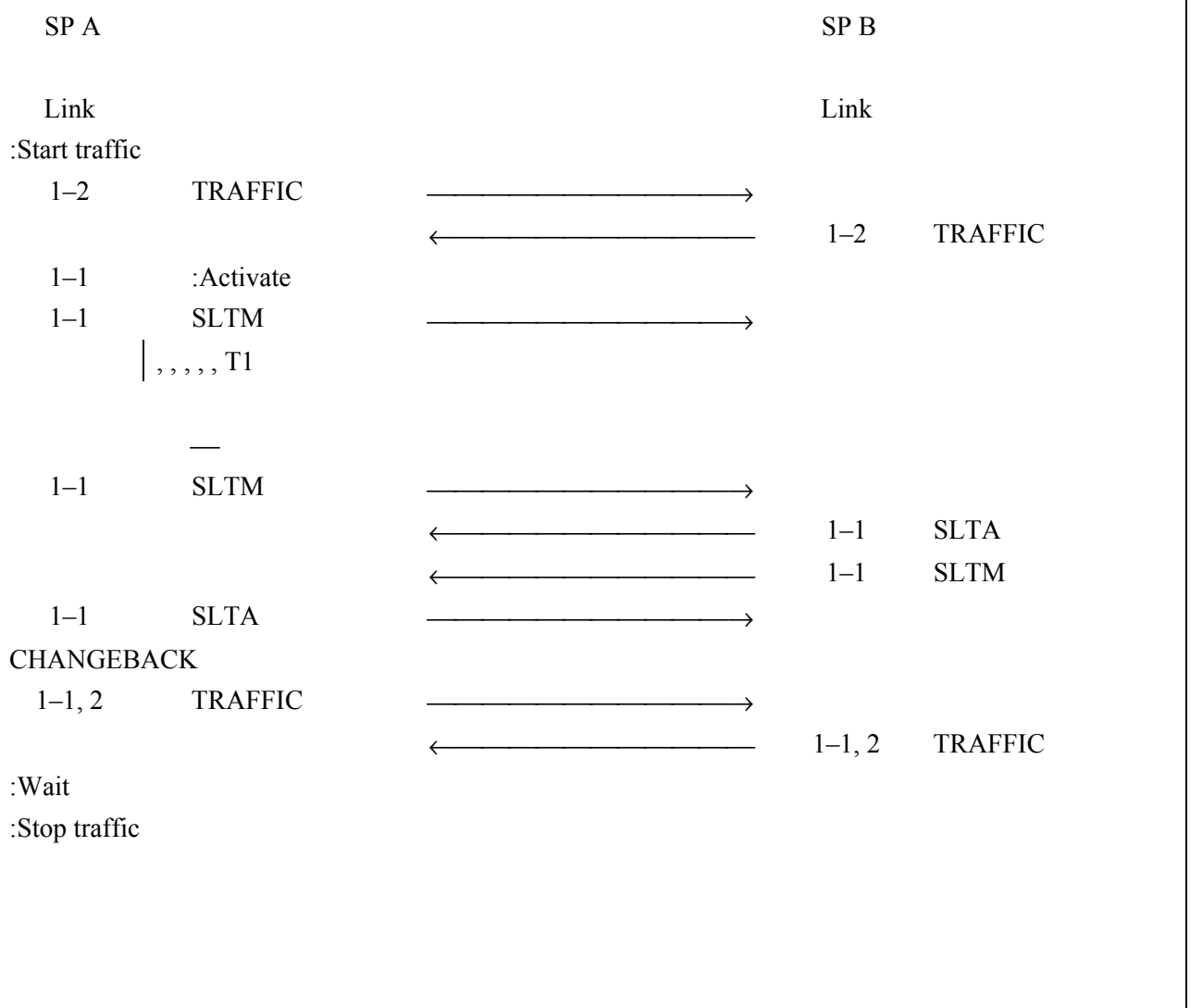
SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Activate			
1–1	SLTM	⟶		
		⟵	1–1	SLTA
		⟵	1–1	SLTm
1–1	SLTA	⟶		
CHANGEBACK				
1–1, 2	TRAFFIC	⟶		
	TRAFFIC	⟵	1–1, 2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B (and C in VAT).
2.	Activate link 1–1 and check that an SLTM is received from A.
3.	Send an SLTM to A and check that an SLTA is received.
4.	Check that the link 1–1 becomes available and that changeback is performed correctly.
5.	Stop traffic.
6.	In VAT, repeat the test with link 1–1 unavailable and inhibited (in this case changeback is not performed). Check that the link 1–1 becomes available and stays inhibited.

TEST NUMBER: 12.2		PAGE: 1 of 1
REFERENCE: Q.707		
TITLE: Signalling link test		
SUBTITLE: No acknowledgement to first SLTM		
PURPOSE: To check that a second SLTM is sent if the first is not acknowledged		
PRE-TEST CONDITIONS: Signalling link 1–2 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

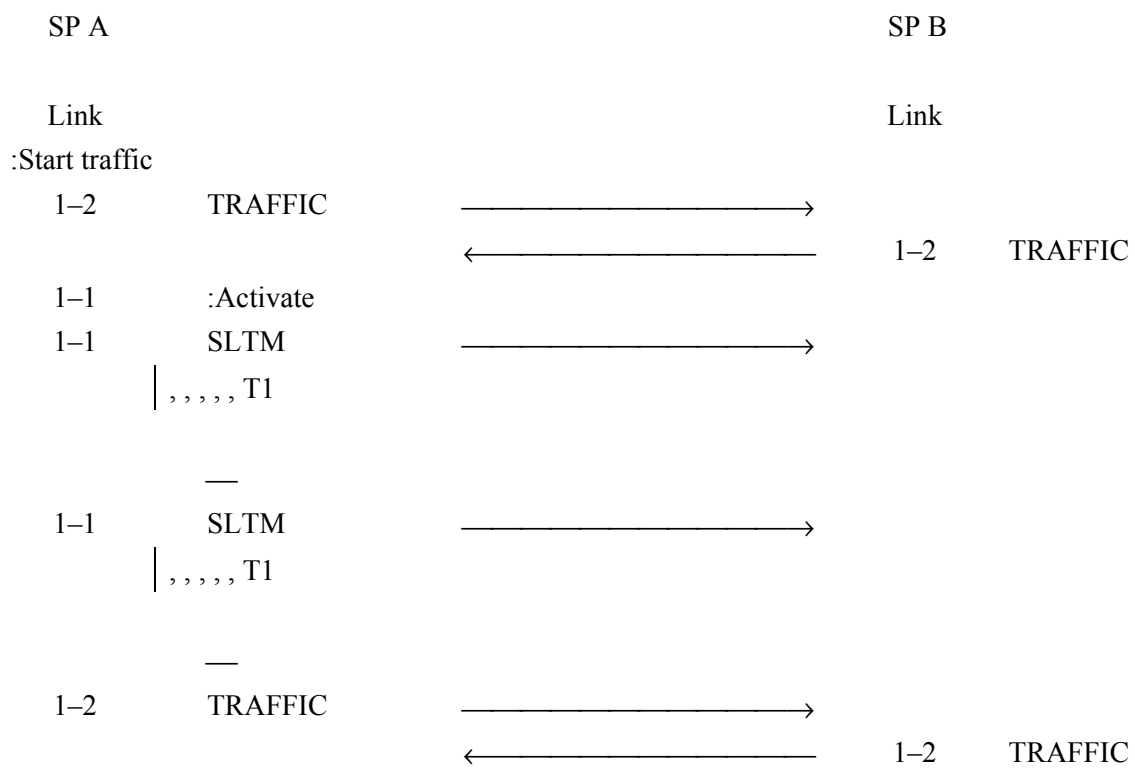


TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Activate link 1–1 and check that an SLTM is received and not acknowledged.
3.	Check that when the time T1 expires a new SLTM is sent. Check that the duration of this time is inside of the specified range.
4.	Check that the link 1–1 becomes available and that the changeback is performed correctly.
5.	Stop traffic.
6.	Repeat the test with link 1–1 unavailable and inhibited (in this case changeback is not performed). Check that the link becomes available and stays inhibited.

TEST NUMBER: 12.3		PAGE: 1 of 1
REFERENCE: Q.707		
TITLE: Signalling link test		
SUBTITLE: No acknowledgement to second SLTM		
PURPOSE: To check that the link stays unavailable when the second SLTM is not acknowledged		
PRE-TEST CONDITIONS: Signalling link 1–2 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Activate link 1–1 and check that two SLTMs are received from A.
3.	Check that after the second expiration of T1, link 1–1 stays unavailable and that the management system is informed.
4.	Repeat the test with link 1–1 unavailable and inhibited.

TEST NUMBER: 12.4			PAGE: 1 of 1
REFERENCE: Q.707			
TITLE: Signalling link test			
SUBTITLE: Unreasonable field in an SLTA			
PURPOSE: To check the actions of the system on reception of an SLTA with an unreasonable field			
PRE-TEST CONDITIONS: Signalling link 1–2 available			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

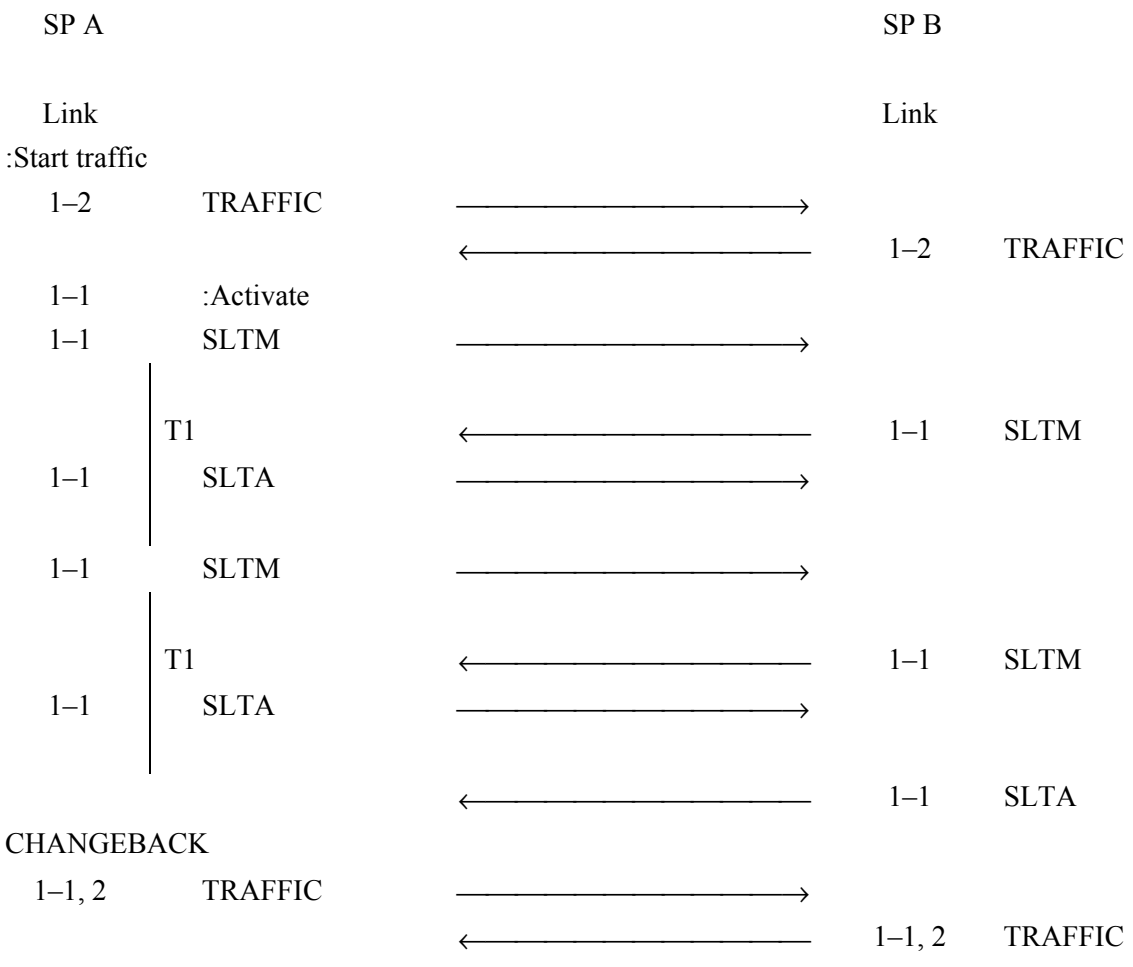
SP A			SP B	
Link			Link	
:Start traffic				
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
1–1	:Activate			
1–1	SLTM	⟶		
		⟵	1–1	SLTA (erroneous test pattern)
1–1	SLTM	⟶		
		⟵	1–1	SLTA
CHANGEBACK				
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Activate link 1–1 and check that an SLTM is received and acknowledged with an SLTA containing an erroneous test pattern.
3.	Check that a second SLTM is sent from A and correctly acknowledged.
4.	Check that link 1–1 becomes available and that changeback is performed correctly.
5.	Wait and stop traffic.
6.	Repeat the test with a first SLTA containing an erroneous SLC then OPC.
7.	Repeat the test with the first and second erroneous SLTA and check that link 1–1 stays unavailable and that management system is informed.

TEST NUMBER: 12.5			PAGE: 1 of 1
REFERENCE: Q.707			
TITLE: Signalling link test			
SUBTITLE: Reception of an SLTM in an attempt state			
PURPOSE: To check the actions of the system when an SLTM is received in an attempt state			
PRE-TEST CONDITIONS: Signalling link 1–2 available			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

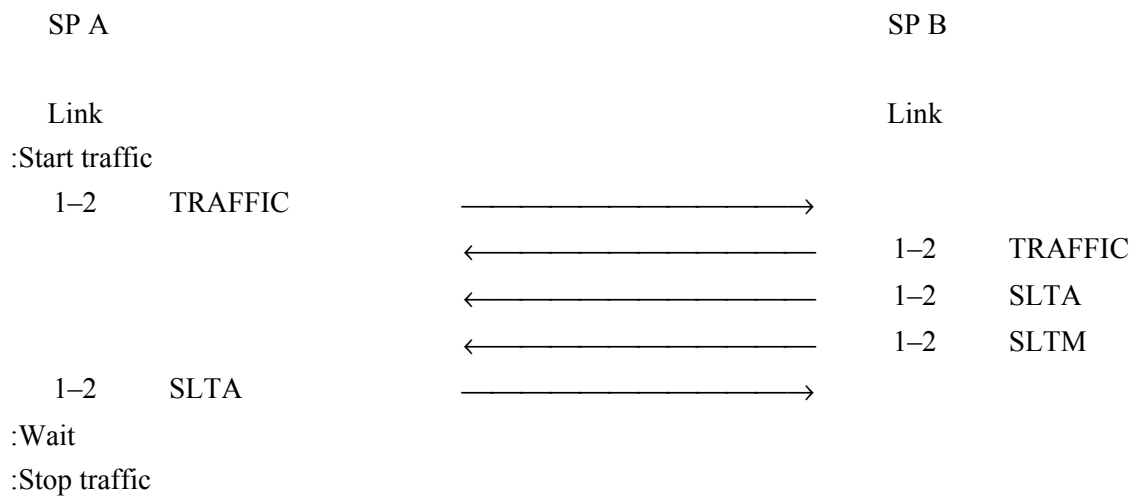
MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to B and C.
2.	Activate link 1–1 and check that SLTM is received. Send an SLTM and check that an SLTA is received.
3.	On reception of the second SLTM, send an SLTM and check that an SLTA is received. Send an SLTA to A.
4.	Check that changeback is performed correctly, and stop traffic.

TEST NUMBER: 12.6		PAGE: 1 of 1
REFERENCE: Q.707		
TITLE: Signalling link test		
SUBTITLE: Additional SLTA and SLTM		
PURPOSE: To check the actions of the system on reception of additional SLTA and SLTM		
PRE-TEST CONDITIONS: Signalling link 1–2 available		
CONFIGURATION: A	TYPE OF TEST: VAT, CPT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1. Start traffic to B (and C in VAT).
2. Check that the reception of an SLTA is ignored.
3. Send an SLTM to A and check that an SLTA is received.
4. Stop traffic and check that it was not disturbed.

TEST NUMBER: 13.1		PAGE: 1 of 1
REFERENCE: Table 1/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid H0-H1 in a signalling network management message		
PURPOSE: To check the actions of the system when a signalling network management message is received with a non-existing H0-H1		
PRE-TEST CONDITIONS: All links available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
ALL	TRAFFIC	⟶		
		⟵	ALL	TRAFFIC
		⟵	1–X	SIGNALLING NETWORK MANAGEMENT MESSAGE (Invalid H0-H1)
ALL	TRAFFIC	⟶		
		⟵	ALL	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1. Start traffic to B and C on all links.
2. Send a signalling network management message with a non-existing H0-H1.
3. Check that this message is discarded without impact on the traffic.
4. Stop traffic.

TEST NUMBER: 13.2			PAGE: 1 of 1
REFERENCE: clause 15/Q.704			
TITLE: Invalid messages			
SUBTITLE: Invalid changeover messages			
PURPOSE: To check the actions of the system on reception of changeover messages with an invalid SLC or OPC			
PRE-TEST CONDITIONS: Linkset with two available links			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	COO, SLC 1–X (non-existing SLC)
		⟵	1–2	COO, SLC 1–1 (non-existing OPC)
		⟵	1–2	ECO, SLC 1–X (non-existing SLC)
		⟵	1–2	ECO, SLC 1–1 (non-existing OPC)
		⟵	1–2	COA, SLC 1–X (non-existing SLC)
		⟵	1–2	COA, SLC 1–1 (non-existing OPC)
		⟵	1–2	ECA, SLC 1–X (non-existing SLC)
		⟵	1–2	ECA, SLC 1–1 (non-existing OPC)
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Send the invalid messages as described above and check that they are ignored.
3.	Stop traffic and check that it was not disturbed.

TEST NUMBER: 13.3			PAGE: 1 of 1
REFERENCE: clause 15/Q.704			
TITLE: Invalid messages			
SUBTITLE: Invalid changeback messages			
PURPOSE: To check the actions of the system on reception of changeback messages with an invalid SLC or OPC			
PRE-TEST CONDITIONS: Linkset with two available links			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

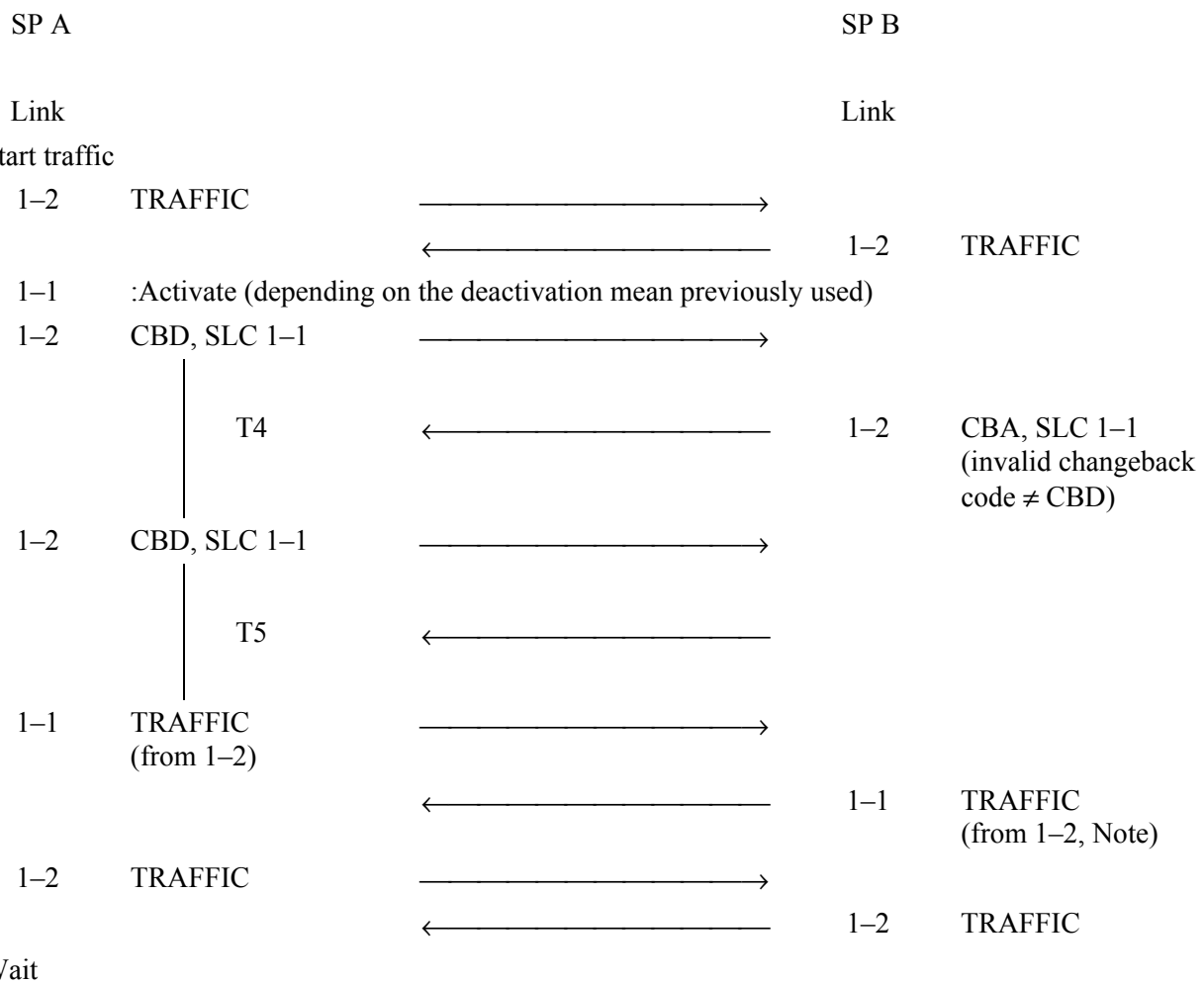
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	CBD, SLC 1–X (non-existing SLC)
		⟵	1–2	CBD, SLC 1–1 (non-existing OPC)
		⟵	1–2	CBA, SLC 1–X (non-existing SLC)
		⟵	1–2	CBA, SLC 1–1 (non-existing OPC)
1–1, 2	TRAFFIC	⟶		
		⟵	1–1, 2	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C on all links.
2.	Send the invalid messages described above and check that they are ignored.
3.	Stop traffic and check that it was not disturbed.

TEST NUMBER: 13.4		PAGE: 1 of 1
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid changeback code		
PURPOSE: To check the actions of the system on reception of an invalid changeback code in a changeback message		
PRE-TEST CONDITIONS: Linkset with one link available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



NOTE – B may perform a changeback or not.

TEST DESCRIPTION

1.	Start traffic to B and C on link 1–2.
2.	Activate link 1–1, check that a CBD is received and acknowledged by a CBA with an invalid changeback code.
3.	Check that a new CBD is received after T4 expires and acknowledged by a correct CBA. Check that changeback is performed.
4.	Stop traffic and check that the invalid message has been discarded without impact on the traffic.

TEST NUMBER: 13.5		PAGE: 1 of 3
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid inhibition messages		
PURPOSE: To check the actions of the system on reception of an invalid inhibition message		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
1–2	TRAFFIC	⟶		
		⟵	1–2	TRAFFIC
		⟵	1–2	LIN, SLC 1–X (non-existing SLC)
		⟵	1–2	LIN, SLC 1–2 (non-existing OPC)
		⟵	1–2	LIA, SLC 1–X (non-existing SLC)
		⟵	1–2	LIA, SLC 1–1 (non-existing OPC)
		⟵	1–2	LID, SLC 1–X (non-existing SLC)
		⟵	1–2	LID, SLC 1–1 (non-existing OPC)

TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Send the invalid messages described above and check that these are ignored.
3.	Stop traffic and check that it was not disturbed.

TEST NUMBER: 13.5 *(continued)*		PAGE: 2 of 3
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid inhibition messages		
PURPOSE: As page 1		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A		SP B	
Link		Link	
	←———	1–2	LUN, SLC 1–X (non-existing SLC)
	←———	1–2	LUN, SLC 1–1 (non-existing OPC)
	←———	1–2	LUA, SLC 1–X (non-existing SLC)
	←———	1–2	LUA, SLC 1–1 (non-existing OPC)
	←———	1–2	LFU, SLC 1–X (non-existing SLC)
	←———	1–2	LFU, SLC 1–1 (non-existing OPC)

TEST DESCRIPTION

1.	See page 1.

TEST NUMBER: 13.5 *(concluded)*		PAGE: 3 of 3
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid inhibition messages		
PURPOSE: As page 1		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
		←———	1–2	LLT, SLC 1–X (non-existing SLC)
		←———	1–2	LLT, SLC 1–1 (non-existing OPC)
		←———	1–2	LRT, SLC 1–X (non-existing SLC)
		←———	1–2	LRT, SLC 1–1 (non-existing OPC)
ALL	TRAFFIC	———→		
		←———	ALL	TRAFFIC

:Wait

:Stop traffic

TEST DESCRIPTION	
1.	See page 1.

TEST NUMBER: 13.6			PAGE: 1 of 1
REFERENCE: clause 15/Q.704			
TITLE: Invalid messages			
SUBTITLE: Invalid transfer control messages			
PURPOSE: To check that there is no problem on reception of a TFC with spare field or SLC not coded 00			
PRE-TEST CONDITIONS: Link 1–1 available			
CONFIGURATION: A	TYPE OF TEST: VAT		TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
		⟵	1–1	TFC, PC = C (spare field ≠ 0)
		⟵	1–1	TFC, PC = C (SLC ≠ 0000)
		⟵	1–1	TFC, PC = X (non-existing PC)
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Send a TFC with invalid spare field to A, then a TFC with an invalid SLC then a TFC with a non-existing PC.
3.	Check that these messages are correctly received without disturbances due to these incorrect values.
4.	Stop traffic.

TEST NUMBER: 13.7		PAGE: 1 of 1
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid signalling route management messages		
PURPOSE: To check the actions of the system on reception of invalid TFA or TFP		
PRE-TEST CONDITIONS: Links 1–1 and 2–1 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGES SEQUENCE:

SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
		⟵	1–1	TFP, PC = X (non-existing PC)
		⟵	1–1	TFA, PC = X (non-existing PC)
		⟵	1–1	TFP, PC = C (non-existing OPC)
		⟵	1–1	TFP, PC = C (spare bits # 00)
			2–1	:Deactivate
		⟵	1–1	TFP, PC = C
		⟵	1–1	TFA, PC = C (non-existing OPC)
		⟵	1–1	TFA, PC = C (spare bits # 00)
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION	
1.	Start traffic to B and C.
2.	Send TFPs and TFAs with invalid values to A (as described above). Check that these messages are discarded without impact on the traffic, (except for spare bit # 0).
3.	Deactivate linkset 2 and check that C becomes inaccessible.
4.	Send TFAs concerning C with invalid values to A (as described above) and check that these messages are discarded without impact on the traffic.
5.	Check the indications are given by the system (except for spare bits # 0).
6.	Stop traffic.

MTP Level 3

TEST NUMBER: 13.8		PAGE: 1 of 1
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid signalling-route-set-test messages		
PURPOSE: To check the actions of the system on reception of invalid RST messages		
PRE-TEST CONDITIONS: Link 1–1 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: STP

MESSAGES SEQUENCE:

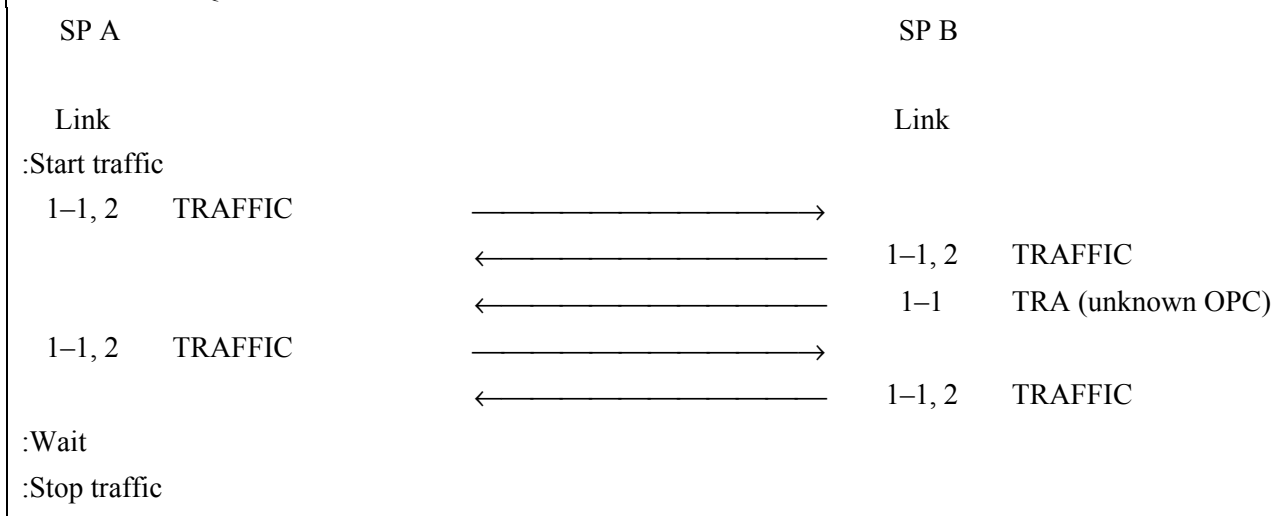
SP A			SP B	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
		⟵	1–1	RST, PC = X (non-existing PC)
		⟵	1–1	RST, PC = C (non-existing OPC)
		⟵	1–1	RST, PC = C (spare bits # 00)
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Send to A the invalid messages described above and check that these messages are discarded without impact on the traffic, (except for spare bits # 0).
3.	Stop traffic.

TEST NUMBER: 13.9		PAGE: 1 of 1
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid traffic restart allowed message		
PURPOSE: To check the actions of the system on reception of an invalid traffic restart allowed message		
PRE-TEST CONDITIONS: Linkset with two available links		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Send the invalid message described above and check that this message is ignored.
3.	Stop traffic and check that it was not disturbed.

TEST NUMBER: 13.10		PAGE: 1 of 1
REFERENCE: Q.707		
TITLE: Invalid messages		
SUBTITLE: Invalid H0-H1 in a signalling network testing and maintenance message		
PURPOSE: To check the actions of the system on reception of this invalid message		
PRE-TEST CONDITIONS: Link 1–1 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

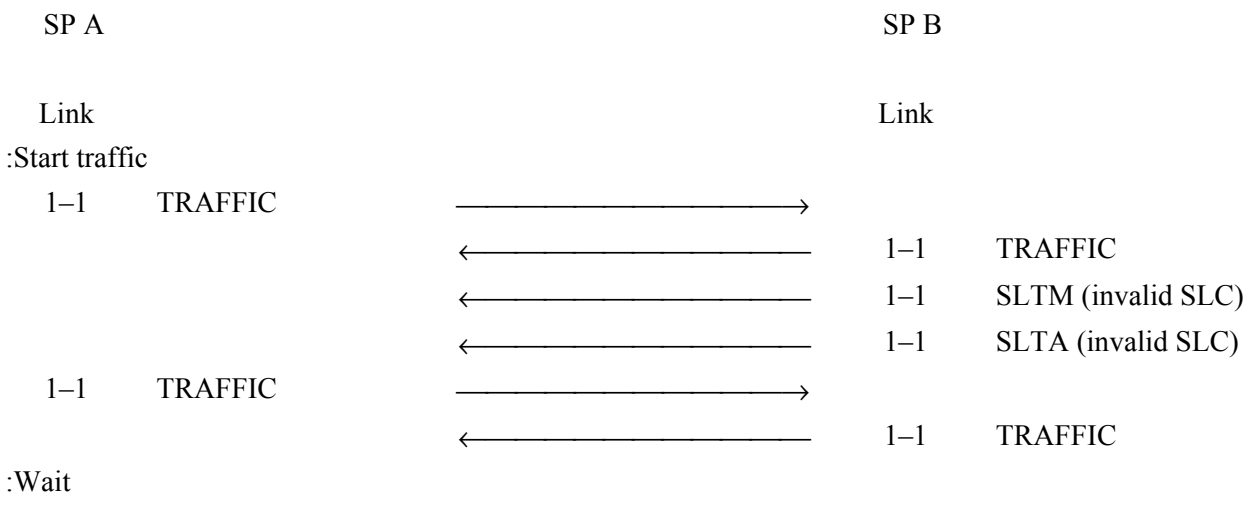
SP A			SP A	
Link			Link	
:Start traffic				
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
		⟵	1–1	SIGNALLING NETWORK TESTING AND MAINTENANCE MESSAGE (Invalid H0-H1)
1–1	TRAFFIC	⟶		
		⟵	1–1	TRAFFIC
:Wait				
:Stop traffic				

TEST DESCRIPTION

1.	Start traffic to B and C.
2.	Send a signalling network testing and maintenance message with a non-existing H0-H1.
3.	Check that this message is discarded without impact on the traffic.
4.	Stop traffic.

TEST NUMBER: 13.11		PAGE: 1 of 1
REFERENCE: Q.707		
TITLE: Invalid messages		
SUBTITLE: Invalid signalling link test messages		
PURPOSE: To check the actions of the system on reception of an invalid signalling link test message		
PRE-TEST CONDITIONS: Link 1–1 available		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:



TEST DESCRIPTION	
1.	Start traffic to B and C.
2.	Send the invalid SLTM and SLTA described above and check that they are discarded without impact on the traffic.
3.	Stop traffic.

MTP Level 3

TEST NUMBER: 13.12		PAGE: 1 of 1
REFERENCE: clause 15/Q.704		
TITLE: Invalid messages		
SUBTITLE: Invalid user part unavailable messages		
PURPOSE: To check the actions of the system on reception of an invalid user part unavailable message		
PRE-TEST CONDITIONS: Link 1–1 available?		
CONFIGURATION: A	TYPE OF TEST: VAT	TYPE OF SP: ALL

MESSAGE SEQUENCE:

SP A		SP B
Link		Link
:Start traffic		
1–1 TRAFFIC	⟶	
	⟵	1–1 TRAFFIC
	⟵	1–1 UPU (non-existing OPC)
	⟵	1–1 UPU (non-existing SI)
1–1 TRAFFIC	⟶	
	⟵	1–1 TRAFFIC
:Wait		
:Stop traffic		

TEST DESCRIPTION

1. Start traffic to B and C.
2. Send the invalid UPUs described above and check that these messages are ignored.
3. Stop traffic and check that it was not disturbed.

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Geneva, 2002