MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:
another SP

PRE–TEST CONDITIONS: Linksets 1, 3, 4, 5 and 6 are unavailable

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP
SP
SP

SP

Link

Link

Link

Link

4 – 1 :Activate

½
TFPs 4 – 1
(D and E)
½T21

½

∧

TRA 4 – 1

<--------
-------->

<--------
 -------->
4 – 1

4 – 1
½TFP (A)
½
½T21
½
½TRA
^

<--------
2 – X
TFAx
7 – 1
TFAs (A,B) ----->

SPE

2 – 1, 2 ½
        ½
        ½
T21   (for D and C)

        (PCs = C, D and

        E) (Broadcasting

        mode)

8 – 1

TFAs (A,B) ----->

        T21 in D for A

        ½

        ½

SPD

     ½

TRAFFIC

 --------> <--------

4 – 1

2 – 1, 2

<--------

7 – 1

 -------------->

   ½

4 – 1

<--------------

7 –1½

SPE

   ½

SPE

```
2 – 1, 2
TRAFFIC
 -------->
4 – 1
 -------->
8 – 1
 -------------->


SPD




<--------
2 – 1, 2
<--------
4 – 1
<--------------
8 – 1
SPD


:Wait


:Stop traffic
```

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 that traffic to D is restarted after expiration of T21.

3.

Stop traffic and check that there were no lost messages, no duplication and no missequencing.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

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:

TYPE OF TEST:

TYPE OF SP:

MESSAGES SEQUENCE:

SP

SP

SP

SP

Link

Link

Link

Link

:Start traffic

2 – 1
TRAFFIC
 ------------------------------>
7 – 1
 ------------>

SP

(from A)

8 – 1
 ------------>

SP

<------------------------------
2 – 1
<------------
7 – 1
SP

                                        4 – 1
                                    :Activate

<------------
8 – 1
SP

½

½
½
Point restart

½
½ T21 procedure is

½ T21
½
applied in B and C

½
^

<-------
4 – 1
½ TRA

^

4 – 1

TRA

------->

------------------------------>
2 – 1
TFA (PC = B)

2 – 1
TFP (PC = F)
< -------------------------------
4 – 1

(sent to B via C)
<---------------------- ----------------

2 – 1

TRAFFIC

 ------------------------------>

7 – 1

 ------------>

SP

8 – 1

<------------

SP

<------------------------------

2 – 1

<------------

7 – 1

SP

<------------

8 – 1

SP

:Wait

:Stop traffic

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 it was not disturbed.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:
                    SP A unavailable

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

SP

SP

                                        Link

                                        Link

Link

Link

:Activate

X – X
:Activation (first link activated)

½
½
 : T21
½
½
^ <------------

TRA received from B or C

FINAL SITUATION (WHEN ALL LINKS ARE AVAILABLE)

1 – 1, 2
TRAFFIC
 --->

SP

<---
1 – 1, 2
SP

2 – 1, 2
TRAFFIC
------->
5 – 1
 --->

SP

6 – 1
 --->

SP

3 – 1, 2

TRAFFIC
 ------------------------------------>
8 – 1
 ------------>

SP

7 – 1
 ------------>

SP

<------------------------------------
3 – 1, 2
<------------
7 – 1
SP

:Wait

:Stop traffic

TEST DESCRIPTION

1.

Activate SP A.

2.

Check that when the first link is activated, the timer T21 is started.

3.

Check that, on reception of a TRA received from B or C, T21 is stopped.

4.

Check that, when all links are activated, the traffic is carried as described above.

5.

Stop traffic.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

SP

SP

Link

Link

Link

Link

1 – 1
:Activate

1 – 1
                                               ½
                                            TRAFFIC
  --->

SP

                                               ½
  < --
  1 – 1
  SP

                                              1 – 2
                                               ½
                                            Activate

(changeback is performed)

½
   TRAFFIC
-- >

SP

½
< --
1 – 2
SP

½ T21

                                              2 – 1
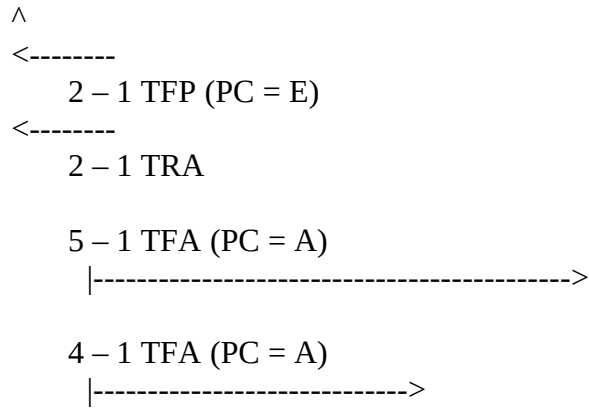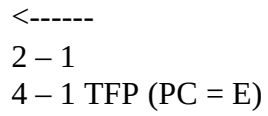   ½
                                            Activate
                        (traffic from/to B is immediately restarted)

```
∧
<--------
    2 – 1 TFP (PC = E)
<--------
    2 – 1 TRA

    5 – 1 TFA (PC = A)
      |------------------------------------------->

    4 – 1 TFA (PC = A)
      |--------------------------->




SP




<------
2 – 1
4 – 1 TFP (PC = E)




2 – 2
:Activate
                            (changeback is performed)




3 – 1, 2
:Activate
                            (changebacks are performed)




1 – 1, 2
TRAFFIC
  ------------------------------------------------------------------------>
```

SP

<---
1 – 1, 2
SP

2 – 1, 2
TRAFFIC
 ------>
5 – 1
 -->

SP

3 – 1, 2
TRAFFIC
 -------------------------------------->
8 – 1
 ------------>

SP
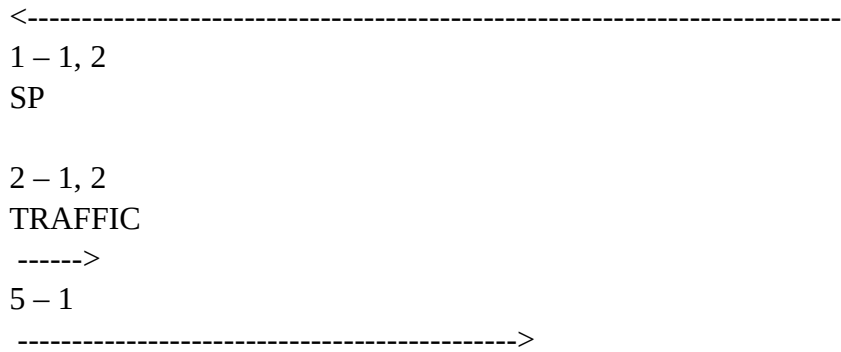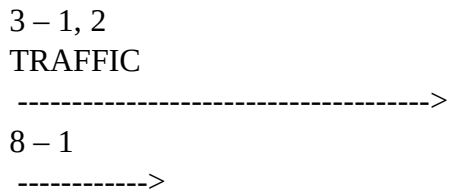
:Wait

:Stop traffic

Note – Changebacks are performed, but they are not described in this point restart test.

TEST DESCRIPTION

1.

Activate the link 1 – 1.

2.

Check that after activation on link 1 – 1, the traffic between A and D is immediately restarted and check that T21 is started in A. Activate 1 – 2.

3.

Activate link 2 – 1 and send a TFP for E from B to A. Check that T21 is stopped on reception of the TRA message.

4.

Check that the traffic is carried as described above, after the restart.

5.

Stop traffic.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:
                    SP A unavailable

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGES SEQUENCE:

SP

SP

SP

SP

Link

Link

Link

Link

:Activate

$$X - X$$
:Activation

½ T18   ½ T21
                                                        ½ T21
½   ½
                                                        ½

                         ½ T21

                         ½

^ all links are aligned   ½
    ½

                         ½

½   ½
                                                        ½   ½

                     ½

½ T19 (see note)   ½   ½

½

1 – 1

½ TFPs (for D and E) -->   ½   ½
                                                        ½

2 – 1
½ TFPs (for D and E) -----------> ½ -------->   ½
                                                                    ½

^ T20   ½
                                    ½   ½

1 – 1
TRA
-------->   ^TFAs (A) are sent   ^TFAs (A) are sent
                              ½

2 – 1
TRA
----------------------------------->

^

3 – 1
TRA
--->

SP F

<div align="center">

1 – 1

TRAFFIC

</div>

```
 ------>
5 – 1
 --------------------------------->
```

SP D

(from A and F)
Via B or C to A and F
```
 ------------> 5 – 1 or 8 – 1
```
SP D


```
6 – 1
 ----------------------------------->
```

SP E

<div align="center">

2 – 1

TRAFFIC

</div>

```
 -------------------------------------->
7 – 1
 ------------>
```

SP E

(from A and F) <-------
Via B or C to A and F
```
 ------------> 6 – 1 or 7 – 1
```
SP E

:Wait

:Stop traffic

Note – If all TRAs are received during T18, T19 is not started.

TEST DESCRIPTION

1.

Activate signalling point A.

2.

Check that the signalling links become available and check that the received TRAs are correctly handled.

3.

Check that when all TRAs are received in A, TRAs are broadcasted from A.

4.

Check that the traffic is restarted correctly, wait and stop traffic.

5.

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 treated normally in A.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS: SP A, linksets 2 and 4 unavailable

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

SP

SP

                                        Link

                                        Link

Link

Link

:Activate

$3-1$
:Activation (traffic from/to F is immediately restarted)

½ T18
½

$1-1$
½ Activation (traffic from/to B is immediately restarted)

½

½   <------
$1-1$
½ TFP (PC = C)

½

½   <------
$1-1$
½TRA

½

^

½

½

^ T19
 ½T21

½ T21

$$3 - 1$$
½ TFP (PC = C)

--->

½SP   F

$$1 - 1$$
½ TFPs

-------->
        ½

½

½ (PC = C, D and E)
½

½

^ T20
½

½

$$1 - 1$$
TRA

-------->
        ^

½

$$3 - 1$$
TRA

```
                  ------------------------------------------------------------------------->
              ^

                                                      1 – 1
                                                     TRAFFIC
        ------>
       5 – 1
        ---------------------------------->

       SP


       (from A and F)

       6 – 1
        ---------------------------------->

       SP


                                                  to A and F

       <-----------------------------------
       5 – 1
       SP



                                                  to A and F

       <-----------------------------------
       6 – 1
       SP


       :Wait



       :Stop traffic
```

TEST DESCRIPTION

1.

Activate signalling point A beginning by the activation of 3 – 1. After activation of 3 – 1, activate link 1 – 1.

2.

Check that T19 is started after expiration of T18. Check that the duration of T18 is inside the specified range.

3.

Check that T20 is started after expiration of T19. Check that the duration of T19 is inside the specified range.

4.

Check that TFPs are sent during T20.

5.

Check that when T20 expires TRAs are broadcasted and that the traffic is correctly restarted, wait and stop traffic.

6.

Repeat the test with activation of 2 – 1 during T19 and check that this event is treated outside the procedure.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:
                        Linkset with one available link

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGES SEQUENCE:

SP

SP

Link

Link

:Start traffic

$1-1$
TRAFFIC

--------------->

<---------------

$1-1$
TRAFFIC

<---------------

$1-1$
TRA

$1-1$
TRAFFIC

--------------->

<-----------------

<div align="center">

1 – 1

TRAFFIC

</div>

:Wait

:Stop traffic

TEST DESCRIPTION

<div align="center">

1.

Start traffic to B and C on link 1 – 1.

2.

Send a TRA from B to A and check that this message is ignored.

</div>

3.

Stop traffic and check that it has not been disturbed.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:

Linksets 1, 4 and 8 unavailable

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

SP

SP

Link

Link

Link

Link

:Start traffic

                                 2 – 1
                              TRAFFIC

------------------------------->
7 – 1
 ------------>

SP

(from A and F)

<-------------------------------
2 – 1
<-----------
7 – 1
SP

<-------------------------------
2 – 1
TRA

                                 2 – 1
                             TFP (PC = B)

------------------------------->

```
                                                    2 – 1
                                             TFP (PC = D)

       ------------------------------->




                                                    2 – 1
                                               TRAFFIC

       ------------------------------->
   7 – 1
     ------------>

   SP


   (from A and F)






   <------------------------------
   2 – 1
   <-----------
   7 – 1
   SP


   :Wait


   :Stop traffic
```

TEST DESCRIPTION

1.

Start traffic to E.

2.

Send a TRA from C to A and check that TFPs concerning B and D are received, then, check that a TRAs received from A.

3.

Stop traffic and check that it was not disturbed.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:
                    All links available

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

SP

Link

Link

Link

:Start traffic

1 – 1
TRAFFIC

------------>
2 – 1
------------>

1 – 2
TRAFFIC

------------>
2 – 1
------------>

<------------

1 – 1

<-----------

2 – 1

TRAFFIC

<-----------

1 – 2

:Wait

:Stop traffic

TEST DESCRIPTION

1.

Start traffic between B and C in both directions via A using the traffic models presented in Recommendation 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:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS: Signalling link 1 – 2 available

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

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.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:
                    Signalling link 1 – 2 available

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

                              Link

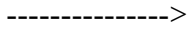   Link

:Start traffic

$1 – 2$
TRAFFIC

\--------------->

<---------------

$1 – 2$
TRAFFIC

$1 – 1$
:Activate

$1 – 1$
SLTM

\--------------->

½
½ T1

½
∧

```
                                              1 – 1
                                              SLTM
---------------->




<---------------
                                              1 – 1
                                              SLTA




<---------------
                                              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 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.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

Link

Link

:Start traffic

                                    1 – 2
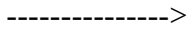   TRAFFIC

 --------------->

<---------------

                                    1 – 2
                                    TRAFFIC

                                    1 – 1
                                    :Activate

                                    1 – 1
                                     SLTM

 --------------->

½
½ T1

½
½
∧

1 – 1
SLTM

--------------->

½
½ T1

½
½
∧

1 – 2
TRAFFIC

--------------->

<---------------

1 – 2

TRAFFIC

:Wait

:Stop traffic

TEST DESCRIPTION

1.

Start traffic to B and C.

2.
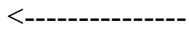
Activate link 1 – 1 and check that two SLTMs are received from A.

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.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:
field

PRE–TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

Link

Link

:Start traffic

        1 – 2
TRAFFIC
 --------------->

<---------------
                                        1 – 2
                                        TRAFFIC

        1 – 1
:Activate

        1 – 1
         ½
SLTM
 --------------->
                                        1 – 1
                                        SLTA (erroneous test

½

<---------------

    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.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

Link

Link

:Start traffic

                                          1 – 2
TRAFFIC

---------------->

<---------------
                                          1 – 2
TRAFFIC

1 – 1
:Activate

1 – 1
SLTM

---------------->

½ T1
<---------------

1 –1
                                          SLTM

                                         1 – 1
                                         ½ SLTA

--------------->

½

                                         1 – 1
                                          SLTM

--------------->
                                         1 – 1
                                         SLTM

½

½ T1
<---------------

                                         1 – 1
                                         ½ SLTA

--------------->

<---------------
                                         1 – 1
                                         STLA

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 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.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE:

SUB TITLE:

PURPOSE:

PRE–TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

Link

Link

:Start traffic

1 – 2
TRAFFIC

--------------->

<--------------

$$1 - 2$$

TRAFFIC

<--------------

$$1 - 2$$

SLTA

<--------------

$$1 - 2$$

SLTM

$$1 - 2$$

SLTA

-------------->

:Wait

:Stop traffic

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.

MTP LEVEL 3

TEST NUMBER:

PAGE:

REFERENCE:

TITLE: Invalid messages

SUB TITLE:

PURPOSE: To check the actions of the system when a signalling network management message is received with a nonexisting H0.H1

PRE–TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

MESSAGE SEQUENCE:

SP

SP

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 nonexisting H0.H1.

3.

Check that this message is discarded without impact on the traffic.

4.

Stop traffic.