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Sanjeev Motagi					
Approved	Checked	Date	Rev	Reference	
		23-01-2020	Ver1.0		

MOP of GPS Time Sync Ref Alarm for Ericsson Site

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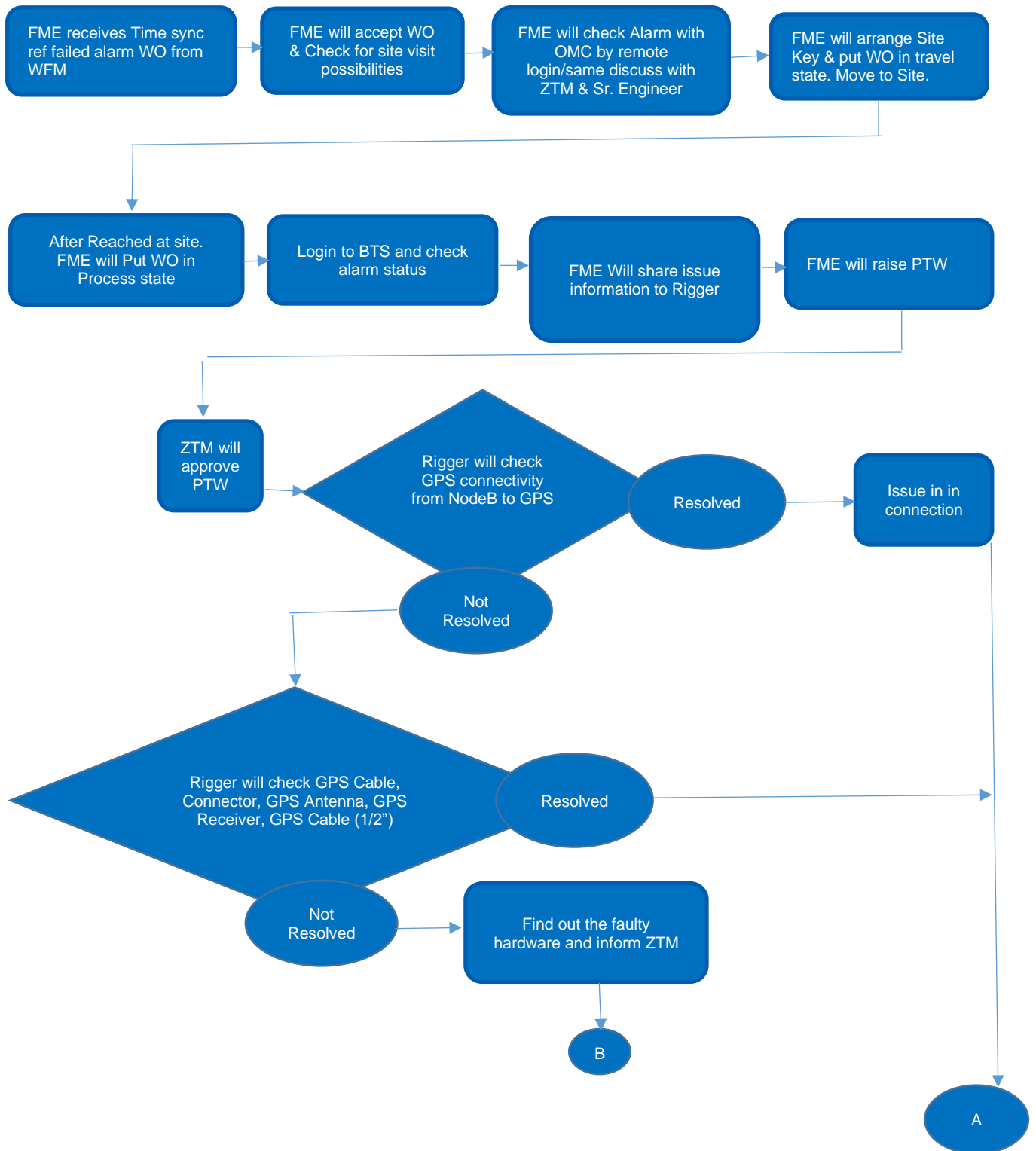| Prepared (also subject responsible if other)		No.			
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Activity Description

This activity is for E2E troubleshooting and Clearance of GPS Time Sync Reference alarms 4G cell/ site.

Attached are the details to be followed by RAN Team. As this need to be followed as guideline.

Alarm Name	TIMESYNC REFERENCE FAILED at ONE FM end
Alarm Description	TIMESYNC REFERENCE FAILED alarm due to GPS connected to Node B
Possible Causes	1. GPS Receiver 2. GPS Connector and ½" Cable damage or bend 3. GPS Antenna Position (Blocking)

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Flow Chart

```
┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│ FME receives    │     │ FME will accept │     │ FME will check  │     │ FME will arrange│
│ Time sync ref   │ ──▶ │ WO & Check for  │ ──▶ │ Alarm with OMC  │ ──▶ │ Site Key & put  │
│ failed alarm WO │     │ site visit      │     │ by remote login/│     │ WO in travel    │
│ from WFM        │     │ possibilities   │     │ same discuss    │     │ state. Move to  │
│                 │     │                 │     │ with ZTM & Sr.  │     │ Site.           │
│                 │     │                 │     │ Engineer        │     │                 │
└─────────────────┘     └─────────────────┘     └─────────────────┘     └─────────────────┘
```

```
┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│ After Reached   │     │ Login to BTS    │     │ FME Will share  │     │ FME will raise  │
│ at site. FME    │ ──▶ │ and check alarm │ ──▶ │ issue           │ ──▶ │ PTW             │
│ will Put WO in  │     │ status          │     │ information to  │     │                 │
│ Process state   │     │                 │     │ Rigger          │     │                 │
└─────────────────┘     └─────────────────┘     └─────────────────┘     └─────────────────┘
```

ZTM will approve PTW

Rigger will check GPS connectivity from NodeB to GPS

Resolved → Issue in in connection

Not Resolved

Rigger will check GPS Cable, Connector, GPS Antenna, GPS Receiver, GPS Cable (1/2")

Resolved

Not Resolved → Find out the faulty hardware and inform ZTM

B

A

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A

FME check the alarm in BTS whether it is clear

→ If alarm cleared then rigger will come down.

→ FME will observe for 20-30 min whether alarm appear again or not.

→ FME inform to ZTM or senior engineer.

FME closes the WO as resolved and update the resolution remarks in WO if any hardware is consumed.

→ FME will do R&R of used Modules in FEAT & same Information will be passed to ZTM for SRN.

→ FME will leave the site.

B

Put WO in waiting internal

→ Raise hardware requirement to BSS team

→ Once material received, put WO in travel mode

→ Reach site and put WO in progress

→ FME will raise PTW

→ ZTM will approve PTW

Rigger will replace the hardware

→ FME check the alarm in BTS whether it is clear

→ FME closes the WO as resolved and update the resolution remarks in WO if any hardware is consumed.

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Activity Summary

1	Corrective WO Time Sync Reference Failed alarm is received on WFM portal
2	FME will Accept the WO
3	Put WO in travel
4	After reaching site - put WO in process
5	Login the BTS & Check alarm status
6	Raise PTW to ZTM
7	PTW Approval done by ZTM
8	Rigger will Check GPS Connectivity from Node B to GPS
9	FME will check in BTS (Alarm cleared or not)
10	If cleared, then Put WO in closed state
11	If not cleared, then check GPS Cable /Connector / GPS Antenna/GPS Receiver /GPS Cable (1/2")
12	Put Work order in Waiting internal if any HW Req at site
13	Raise Req of Hardware to BSS Team
14	Once Material received again put WO in Travel mode
15	After reaching site - put WO in process
16	Raise PTW to ZTM
17	PTW Approval done by ZTM
18	Replace the hardware
19	Check from BTS Login that alarm cleared or not after hardware replaced
20	Once Alarm Cleared
21	FME will close the WO as resolved

Activity Details

Pre requisites:

1) SVD WO for Time Sync Reference Failed alarm.
2) Alarm on OneFM /WFM.

   When Time Sync Reference Failed Alarms reflects, Below the activities need to be done step by step to clear the alarm

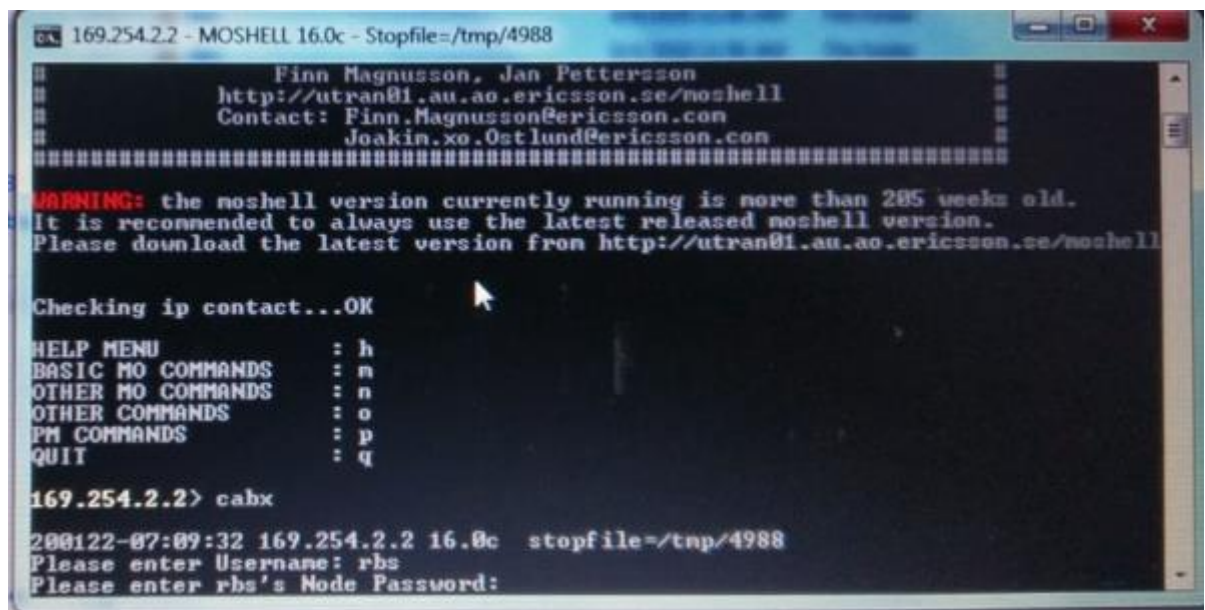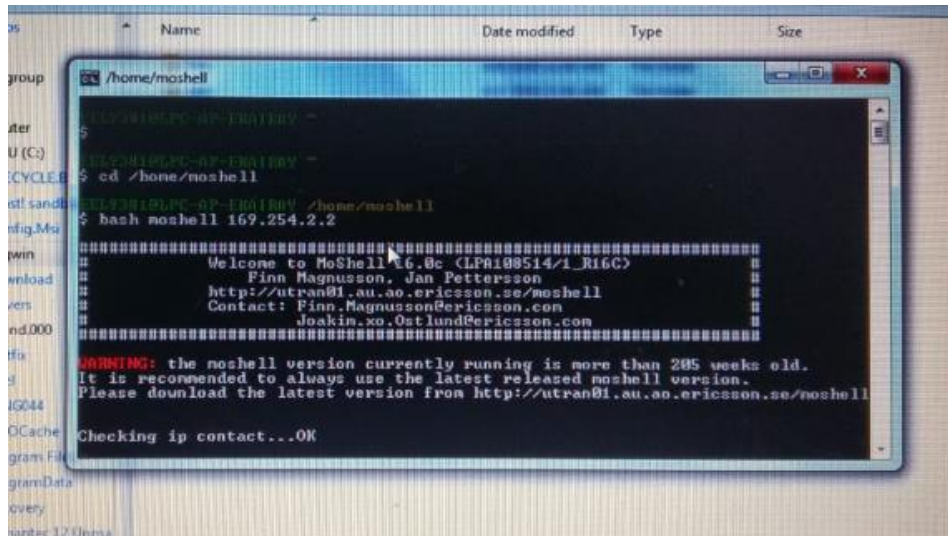   a) Login in 4G BB/ eNodeB as per RAN MOP via LMT OEMS connect using LAN cable
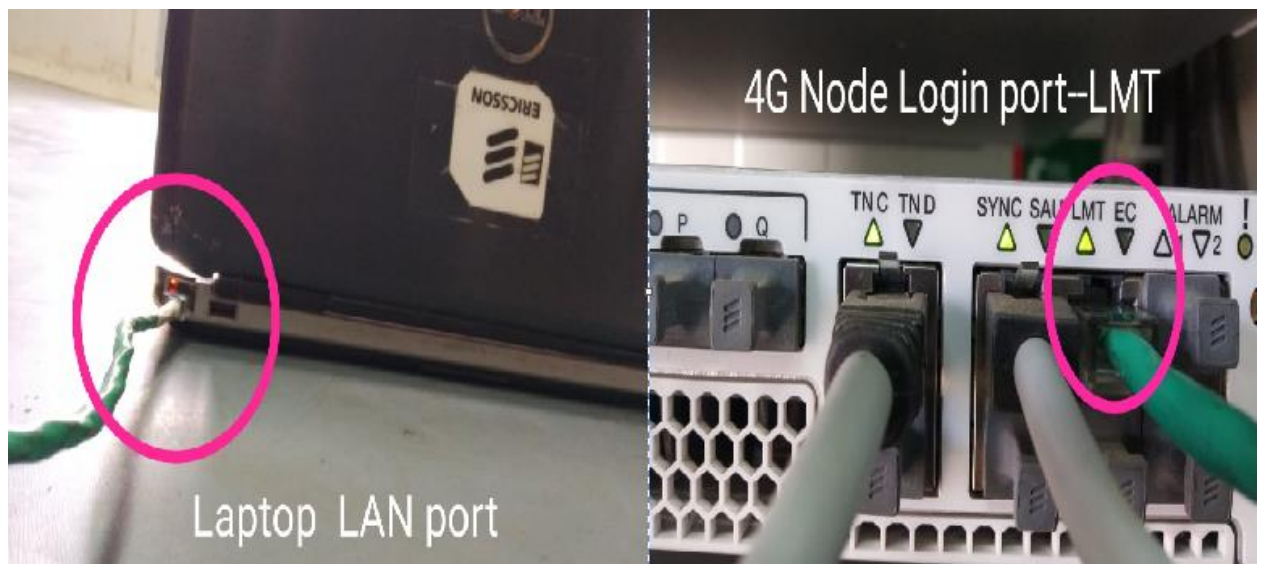
Change the Laptop IP
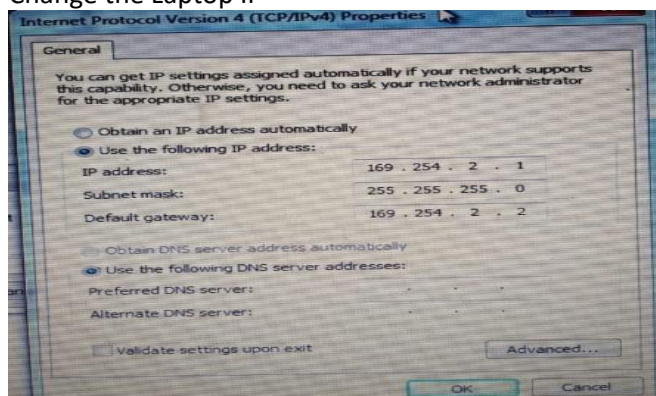
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Login the NodeB

b) Verify the Alarm status :
<mark>Time Sync Reference Failed Alarm in Disabled State</mark>

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c) Check the GPS Connectivity from NodeB to GPS Receiver to GPS Antenna (Connectivity Diagram)
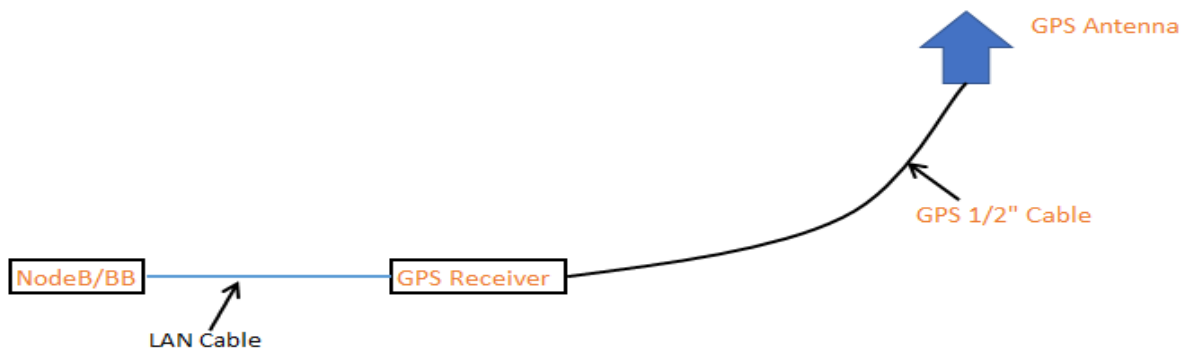
d) Steps how to make GPS Connection
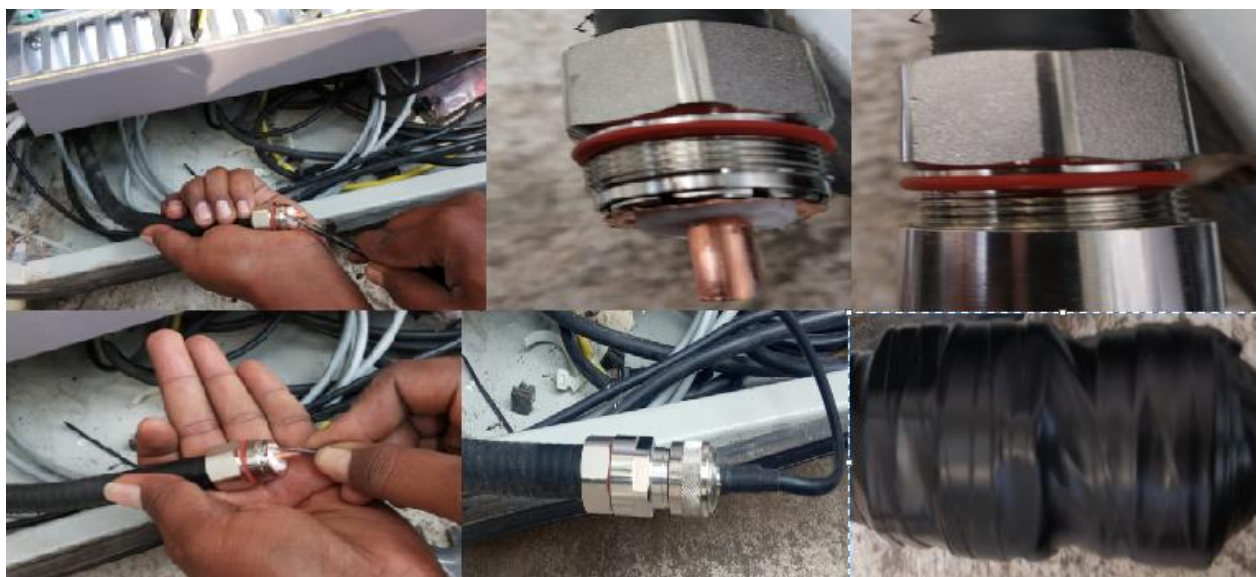
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e) Check the ½" GPS Cable routing/ Sharp bend/Damages till GPS Antenna

f) GPS Antenna Should be installed in such a way it should be **Open to 360 Degree view without any obstruction or blocking**

GPS Installed beside Tower Leg/ Covered by IF or feeder cable, Adjscent building or Trees will lead to Time Sync Ref Failure alarm fluctuations, affects RSSI KPI of surrounding cells

GPS need to be installed at proper height on Tower with clear SKY View 360 Deg without any obstructions from nearby trees, buildings, tower legs etc

g) Check the Time Sync Reference Failed alarm status by login to NodeB
Time Sync Reference Failed Alarm should be in Enabled State

```
LMDKT12> altk

200121-14:38:32 100.69.36.114 19.0h MSRBS_NODE_MODEL_18.Q2_362.27897.47_d5a3 stopfile=/tmp/15597

Collecting Alarms...

===========================================================================================================
Date & Time (UTC)   S Specific Problem          MO (Cause/AdditionalInfo)
===========================================================================================================
2020-01-21 09:00:35 w TimeSyncIO Reference Failed    Synchronization=1,RadioEquipmentClock=1,RadioEquipmentClockReference=1 (Loss of signal)
>>> Total: 1 Alarms (0 Critical, 0 Major)

LMDKT12> st time

200121-14:38:33 100.69.36.114 19.0h MSRBS_NODE_MODEL_18.Q2_362.27897.47_d5a3 stopfile=/tmp/15597

===========================================================================================================
Proxy  Adm State   Op. State   MO
===========================================================================================================
11484               1 (ENABLED)   Transport=1,Synchronization=1,TimeSyncIO=1
===========================================================================================================
Total: 1 MOs
```

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Ericsson Internal

h) If tower work involves, perform PTW

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Post Analysis

Step No.	Step Name/Step Type	Command	Field	Mandatory (Y/N)	Expected Result
1	FME will visit the site after 30 minutes to check	As per MOP and run the alarm check command to confirm its Cleared	RAN	Y	As per MOP
2	BSS Team will check after 24 hrs if alarm has reappeared	As per MOP			

NOTE:

1. Once Time Sync Reference Failed alarm reported, Site will be in hold over mode.

2. If alarm not cleared within 5:30Hrs, Site/ EnodeB will go down.

3. Once Alarm clear, Clock status will revert to LOCK Mode

4. GPS were installed on tower leg corners/feeder cable /lower heights …etc lead to Time Sync Ref Failed alarms affected Site down and Kpi affecting RSSI Value of site and nearby sites also.

5. Further NPI to check KPI