

ERL MAINTENANCE SUPPORT SDN BHD

(Company No. 498574-T)



**Maintenance Department**



**SAP Plant Maintenance Process Guide**

G00.OMN.M11070.CZ.1001.A

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 2 of 43	SAP Plant Maintenance Process Guide

**TABLE OF CONTENTS**

1	PURPOSE	3
2	SAP PM	3
	2.1 Application of Notification Types	3
	2.2 Definition of terms used with Notification/Work Order	4
	2.3 Application of Work Order Types	4
	2.4 Maintenance Services	7
	2.5 Work Types	8
	2.6 Breakdown / Downtime	10
	2.7 Work Order Technical and Business Completion	11
3	MAIN MENU	12
4	CREATING NOTIFICATION	13
5	CHANGING NOTIFICATION	16
6	DISPLAY NOTIFICATION	18
7	RELEASING WORK ORDER FROM NOTIFICATION	20
8	CREATING WORK ORDER	24
9	RELEASING WORK ORDER FROM SCHEDULED MAINTENANCE (IP10)	26
10	WORK ORDER CONFIRMATION: CLOSING WORK ORDER	31
11	CHECKLIST TO ENSURE ACCURACY OF NOTIFICATIONS AND WORK ORDERS	34
12	CHANGING DATA IN THE SERVICE DISRUPTION REPORT	35

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 3 of 43	SAP Plant Maintenance Process Guide

**1 PURPOSE**

This document describes the terms, methods and process guides for use of SAP PM for E-MAS.

**2 SAP PM**

**2.1 Application of Notification Types**

A fault notification shall be reported by Operation Control Centre (OCC) or MTN via SAP to notify a failure of a component or equipment. Each failure independent from how it was discovered (e.g. during scheduled maintenance, inspections, etc) has to be notified and if similar failures are discovered in a different locations and components, each failure has to be reported separately.

A failure notification can only be completed after the failure has been rectified.

The followings are the types of notifications used for mode of failures.

<b>Notification Type <sup>1</sup></b>	<b>Description</b>	<b>Action Dept</b>
<b>OP</b>	To notify and record incidents, security, safety and general operational related activities.	<b>OCC</b>
<b>SF</b>	To notify failure report notification in SAP, when a malfunction is reported by the train drivers/station staff or detected via TMS/Scada. It should cover all failures discovered when the particular technical object is in operation. This includes platform screen doors (PSD) & Depot Workshop Equipment (DWE), if reported by end-user.	<b>OCC RST ELT SIG INF</b>
<b>MR</b>	To notify failures detected during scheduled maintenance, standby or additional inspection activities. <i>(When ZUMO is created with reference to MR, all originating work orders such as ZSMO, ZAIP, ZSTO, etc shall be referred to ZUMO by the work order relationship function).</i>	<b>RST, ELT, SIG, INF</b>
<b>RM</b>	To notify Track & Civil Work activities under YTL's scope of work.	<b>SIG (TRW)</b>

Note<sup>1</sup>: Service Failure (SF), Maintenance Request (MR), Operation Procedures (OPE), Degraded Report (DR), Emergency Report (ER), Request for Maintenance (RM)

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 4 of 43	SAP Plant Maintenance Process Guide

**2.2 Definition of terms used with Notification/Work Order**

<b>Terminology</b>	<b>Description</b>
<b>Assembly</b>	A subdivision of a technical object for the separation into more clearly defined units. It is essentially used for maintenance bill of material and maintenance task list.
<b>Breakdown</b>	Defined as when the condition of a functional location does not allow its operation or is out of service.
<b>Bill of Material</b>	A structured list of parts or components of an equipment or assembly.
<b>Cause Code</b>	The reason for the occurrence of the failure to be defined after investigation and there are corresponding codes for each failure.
<b>Downtime</b>	Defines the time or interval during which a functional unit is down. The downtime starts when a functional location breaks down and lasts until it is able to function again.
<b>Equipment</b>	An individual, physical object that is maintained independently and installed in functional locations or other equipment.
<b>Failure Code</b>	Describes the actual defect of a technical object after the object has been repaired. Codes are the means with which this data is managed in the system and there are corresponding codes for each failure.
<b>Function Location</b>	A place or physical location at which a maintenance task is performed and history data is collected.
<b>Incident Code</b>	The visible effect of a malfunction.
<b>Malfunction start time</b>	Point of time when a system/system component stops to fulfill its required function.
<b>Malfunction end time</b>	Point of time when a system/system component is back to its normal operational conditions.
<b>Operation no.</b>	Numbers that identifies an activity.
<b>Operation</b>	Description of work/activity to be performed.
<b>PM activity type</b>	Describes the type of maintenance service carried out. E.g. regular maintenance, warranty, scheduled maintenance, etc.
<b>Service Failure</b>	Failures or malfunction caused by any part of the E&M System in service where a particular item is not able to fulfill its required function.
<b>Staff no.</b>	Identification (I.D) of the person who performs and confirms the task in SAP.
<b>Work end date</b>	Date on which the work/operation(s) completed.
<b>Work start date</b>	Date on which the work/operation(s) started.
<b>Work centre</b>	An organizational unit that defines where and when an operation should be carried-out. Activities carried out here are valued by charge rates, which are determined by cost center and activity types.
<b>Planner Group</b>	A group of employee or people responsible for planning and execution of maintenance activities.

**2.3 Application of Work Order Types**

A work order is a document used by the maintenance department to manage and document maintenance tasks. It may include such information as a description of the work required, the

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 5 of 43	SAP Plant Maintenance Process Guide

task priority, the job procedure to be followed, the parts, materials, tools and equipment required to complete the job, the labour hours, costs and materials consumed in completing the task, as well as key information on failure causes, what work was performed etc.

Types of order and work order definitions are as follows:

SAP Order Type	Description	Notification		W/O Category
		Required	Type	
ZUMO	<b>Unscheduled maintenance</b> - Maintenance activity to restore a defective/malfunction structure, system or component to perform its designed functionality by repair, parts replacement, overhaul, etc.	Yes	SF/ MR	Unscheduled
ZRPO	<b>Repair Order</b> - To be used for repair of exchanged parts or component off vehicle/site in workshop or send for external repair.	No	-	Unscheduled
ZCAN	<b>Cannibalization Order</b> - The removal/installation of parts or components from a piece of equipment in one function location to another function location temporarily until spare parts is available and replaced.	No	-	Unscheduled
ZSMO	<b>Scheduled maintenance</b> - is a predefined cycle of maintenance e.g., servicing, cleaning, lubrication, inspection or component change based on time, distance or other measurable parameters.	No	-	Scheduled
ZSTO	<b>Standing Order</b> - A work order created for collecting labour hours, costs and/or history for tasks for which it maybe decided that individual work orders should not be necessary.	No	-	Scheduled
ZSTC	<b>Scheduled Calibration</b> - A planned calibration performed according to calibration interval assigned to an item of equipment, tools and measuring device.	No	-	Scheduled
ZMOD	<b>Modification</b> - Activities such as correct, upgrade, improve etc carried out on a structure, system or component to increase the capability of that system/sub-system to perform the required functions.	No	-	Scheduled
ZSIP	<b>Scheduled Inspection</b> - is a planned inspection carried out according to inspection interval as specified by manufactures/suppliers manual.	No	-	Scheduled
ZTRN	<b>Training Order</b> - To record technical training and general training activities within the department, inter-department or externally conducted training.	No	-	Scheduled

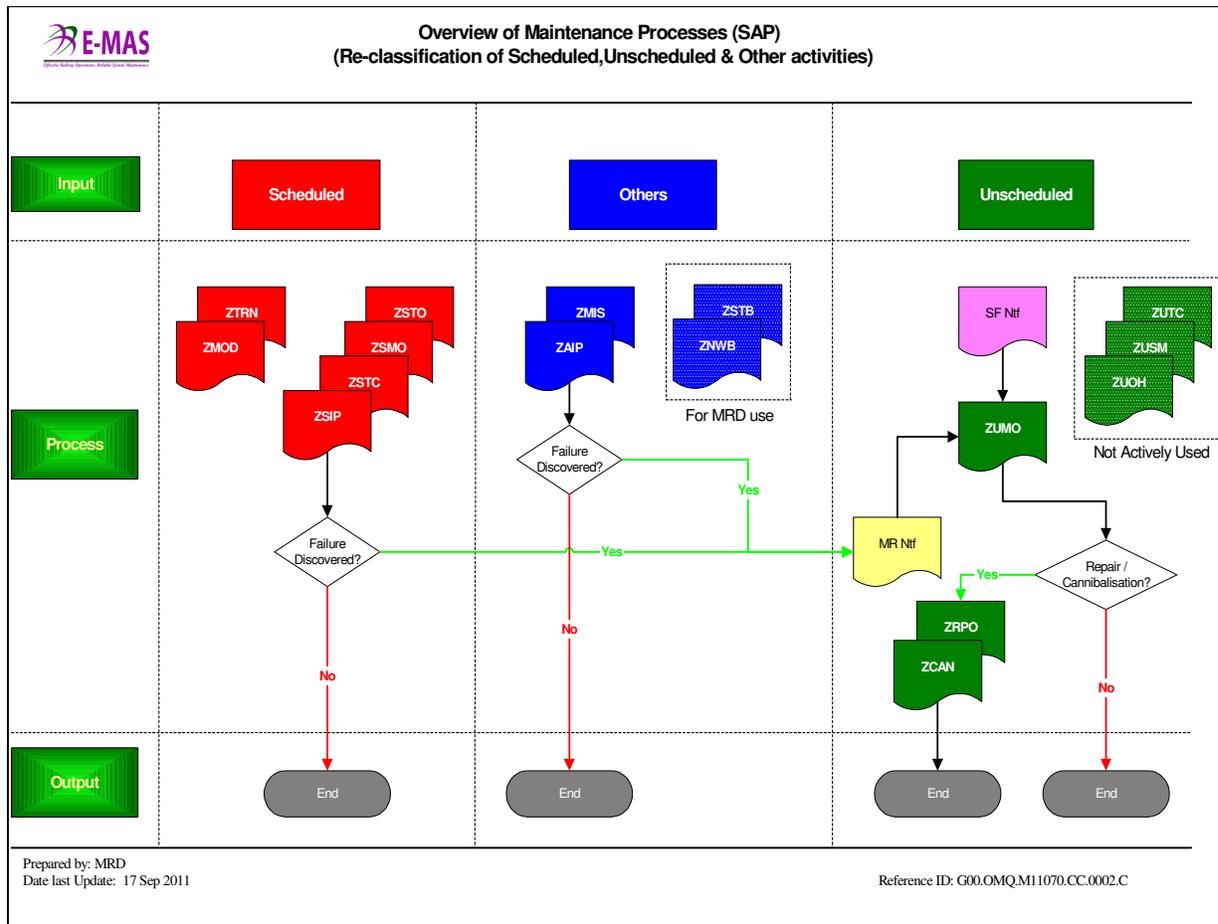
<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 6 of 43	SAP Plant Maintenance Process Guide

ZAIP	<b>Additional Inspection</b> - To record any additional inspection activities on the basis of as and when required during maintenance work or standby time.	No	-	Others
ZMIS	<b>Miscellaneous Order</b> - To record support activities not described in the normal unscheduled or scheduled order types e.g. monitoring, checking of spare parts condition & special projects.	No	-	Others
ZNWO	<b>Activities without work order</b> - To record activities via timesheet for events such as meeting, documentation work, briefing, visits, planning, etc.	No	-	Others
ZSTB	<b>Standby Order</b> - To record standby activity time via timesheet.	No	-	Others

**NOTES:**

- Malfunctions detected during scheduled maintenance work will require maintenance department to create ZUMO with reference to MR notification while fault found during unscheduled maintenance shall use SF, if it is service/operations critical.
- ZSMO is generated automatically by SAP according to the maintenance plan whereas ZUMO is created manually with reference to notification reported either by OCC or maintenance staff.
- ZSTO Standing order is a work order that is left open for a pre-determined period of time for the purpose of collecting labour hours, costs and/or history for tasks for which it has been decided that individual work orders should not be raised. This order is used for routine work e.g. inspection, checking, cleaning, housekeeping, etc, which are carried out on a daily basis within the respective maintenance department. Performed work is confirmed daily or weekly as a partially confirmed work and technically closed after reached a pre-determined period in the SAP system.

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 7 of 43	SAP Plant Maintenance Process Guide



## 2.4 Maintenance Services

Maintenance department has to identify latent defect work, additional services, above scheduled maintenance and regular maintenance in order to separate the individual work order and charge the maintenance cost according to its activity type. All defect liability work performed on behalf of the suppliers are charged to the supplier and tasks requested by Express Rail Link Sdn. Bhd. (ERLSB), which are not covered by the latest Operations & Maintenance latest O&M contract are classified as additional services.

Definitions for the maintenance activity type are as follows:

- **Regular Maintenance** is the normal maintenance work covered by the latest O&M contract.
- **Additional Services** are additional work, which are performed by E-MAS at the request of ERLSB. (E.g. additional train rides, special modifications on the train, sub systems, refurbishment or improvement work, etc). This includes any external support to 3<sup>rd</sup> parties, such as ERLSB, Syarikat Pembinaan Yeoh Tiong Lay Sdn. Bhd. (YTL), contractors, etc for work outside latest O&M contract.

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 8 of 43	SAP Plant Maintenance Process Guide

- **Above Scheduled Maintenance** is the scheduled maintenance work performed, more than required by the maintenance manual of the supplier/manufacturer. This can be required for e.g. serial failures.

Activity Type	Description	Work Order Type
001	Regular Maintenance	ZUMO, ZSMO, ZSTO, ZRPO, ZCAN, ZAIP, ZMIS, ZSIP, ZSTC, ZNWO
002	Additional Services	ZUMO, ZSMO, ZSTO, ZRPO, ZMOD, ZCAN, ZAIP, ZMIS, ZSIP, ZSTC
099	Above Scheduled Maintenance	ZUMO & ZMOD
004	Training	ZTRN only
008	Standby	ZSTB

**2.5 Work Types**

Defines the type of work performed on the maintenance task. All performed repair work is recorded in the work order on completion of the task to indicate the type of action taken to ensure the functionality of the system/sub-system. This information is then used as a maintenance history for future planning/evaluation purposes.

No.	Work Type	Description	Used with Order Type
1	<b>Fault Finding / Troubleshooting</b>	Troubleshooting and any functional test carried out to identify a defect in a component or system that has failed.	ZUMO ZAIP ZSIP
2	<b>Repair</b>	All repair work which returns the functionality of a component/system that has failed either permanently or temporarily.	ZUMO ZRPO
3	<b>Calibrate</b>	Calibration/validation work e.g. measurement, adjustment, tuning, etc carried out on equipment, tools and measuring devices.	ZUMO ZSTC ZSMO
4	<b>Clean / Servicing</b>	All cleaning work including that are associated with servicing – e.g. oil change, consumable item change (belts, filter, etc) and tightening of belts, wiring and filling up diesel tanks.	ZUMO ZSMO ZSTO ZRPO
5	<b>Inspect</b>	Any inspection task done visually or by hand checking to determine the condition of the structure, system or	ZUMO ZSMO ZAIP

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 9 of 43	SAP Plant Maintenance Process Guide

		component during unscheduled and scheduled maintenance.	ZRPO
6	<b>Component Change</b>	Component change work including scheduled changes after it has been diagnostic as faulty e.g., fuse, belts, lights, etc.	ZUMO ZSMO ZCAN
7	<b>Support</b>	Any activities that are associated with cross-departmental assistance to perform certain task e.g. SAP work or order processing, documentation, operation, safety/security etc.	All types of work order
8	<b>Training</b>	Record trainer and trainee's man-hours of an individual department or inter department for all technical training and general training.	ZTRN
9	<b>Testing / Commissioning</b>	All testing work including functional check, interface check or verification of a system/component availability on completion of corrective or preventive activities.	All type of work order except ZTRN
10	<b>Modification</b>	Any modification work carried out by specific instructions either from client or system suppliers in order to correct, improve or upgrade a particular subsystem/system.	ZMOD
11	<b>Traveling</b>	Traveling time includes the preparation, waiting time, material withdrawal/return, material management and journey to and from the destination.	All types of work order
12	<b>Standby</b>	Standby at stations / workshop.	ZSTB
13	<b>3<sup>RD</sup> party Repair /PICOP</b>	Activities that include assistance, monitoring, supervising, checking, verification, etc for the 3 <sup>rd</sup> party work (ERLSB, outsourced contractors, etc).	ZUMO ZSMO ZMIS
14	<b>Safety/Quality /Auditing</b>	Any activities associated with safety functions, internal auditing or providing assistance in auditing within the department or across the company.	ZUMO ZMIS
15	<b>Data Readout</b>	All activities associated with data reading/analysis e.g. reading out log files, interpretation of data, etc for trend analysis or ad hoc checking.	ZUMO ZSTC ZMIS

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 10 of 43	SAP Plant Maintenance Process Guide

16	<b>Monitoring</b>	Activities carried out to observe and evaluate the performance of a sub system/ system to detect any variation in its behavior or circumstances and respond immediately if failure was to occur.	All type of work order except ZTRN
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**NOTE:**

**Application of work type to work order described above is a general GUIDE ONLY, you may use any appropriate type where it is best applicable**

**2.6 Breakdown / Downtime**

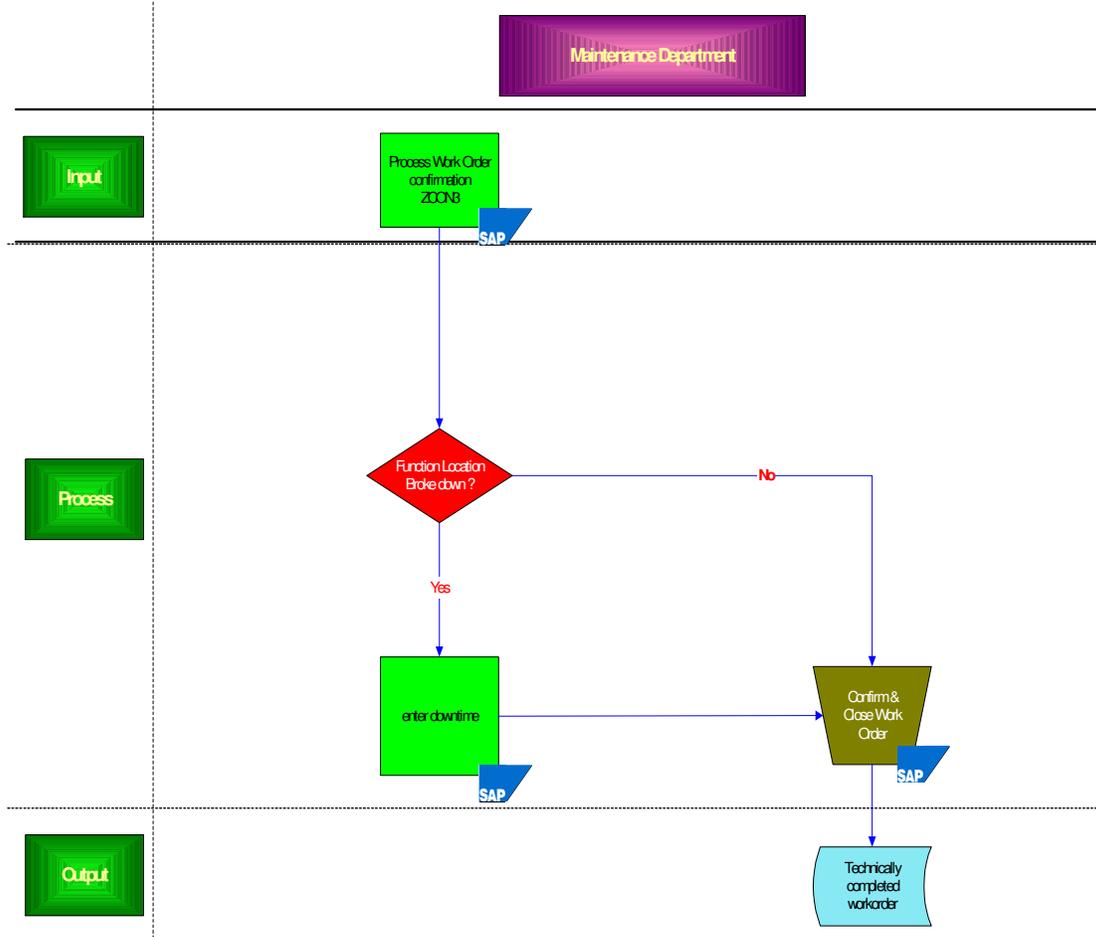
The purpose of specifying a breakdown or downtime in the failure notification is a necessity to provide accurate reliability and availability statistics / report for the ERL System. Breakdown of a particular system or component has to be identified correctly and its actual downtime recorded when a work order is closed.

- **Breakdown** can be defined as a failure when the condition of a functional location when it does not allow operation or is out of service.
- The **Downtime** - It defines the time/interval during which a functional unit is down. The downtime starts when a functional location breaks down and lasts until it is able to function again. However, ZCON3 (SAP confirmation transaction, page 31) is structured in such a manner that work end is always equals to malfunction end time. Therefore in notification the malfunction end time has to be calculated from the start of malfunction until end of breakdown.

Downtime must be specified only if the selected functional location has a breakdown and to be used for SF and MR type notifications only. The actual downtime of a functional location's breakdown must be entered in minutes to standardize report requirements, refer figure 1.

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 11 of 43	SAP Plant Maintenance Process Guide

**Figure 1**



**2.7 Work Order Technical and Business Completion**

Maintenance completes a work order processing by setting TECO, which means the technical part of the work is finished, but it is still possible to book labour and material costs to this order until the order is financially closed. In a normal case a work order is technically completed by two weeks after released for unscheduled maintenance, 4 weeks for scheduled maintenance orders and within a pre-defined period for standing work orders.

PCNF is a status assigned to a work order when further works are still pending or carried forward to the next month. A work order is partially closed to gather maintenance info for generation of respective month reports. Work order with PCNF shall be closed with TECO once all the works are completed and captured.

Whereas business completion means the order is commercially closed after cost settlement by FIN and after this no work and material transactions can be recorded to this work order any more. FIN performs business completion for TECO work orders after 90 days to enable maintenance to settle any open work orders pending spare part, resources etc.

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 12 of 43	SAP Plant Maintenance Process Guide

**3 MAIN MENU**

The screenshot shows the SAP User menu interface. A red box highlights the 'Menu' button and the input field. A callout box '2. Click enter' points to the input field. Another callout box '1. Enter Transaction Code: /niw21, /niw29, etc. See #3.' points to the input field. A third callout box '3. Transaction Code can be obtained this way' points to the 'IW22 - Change Notification' item in the menu tree.

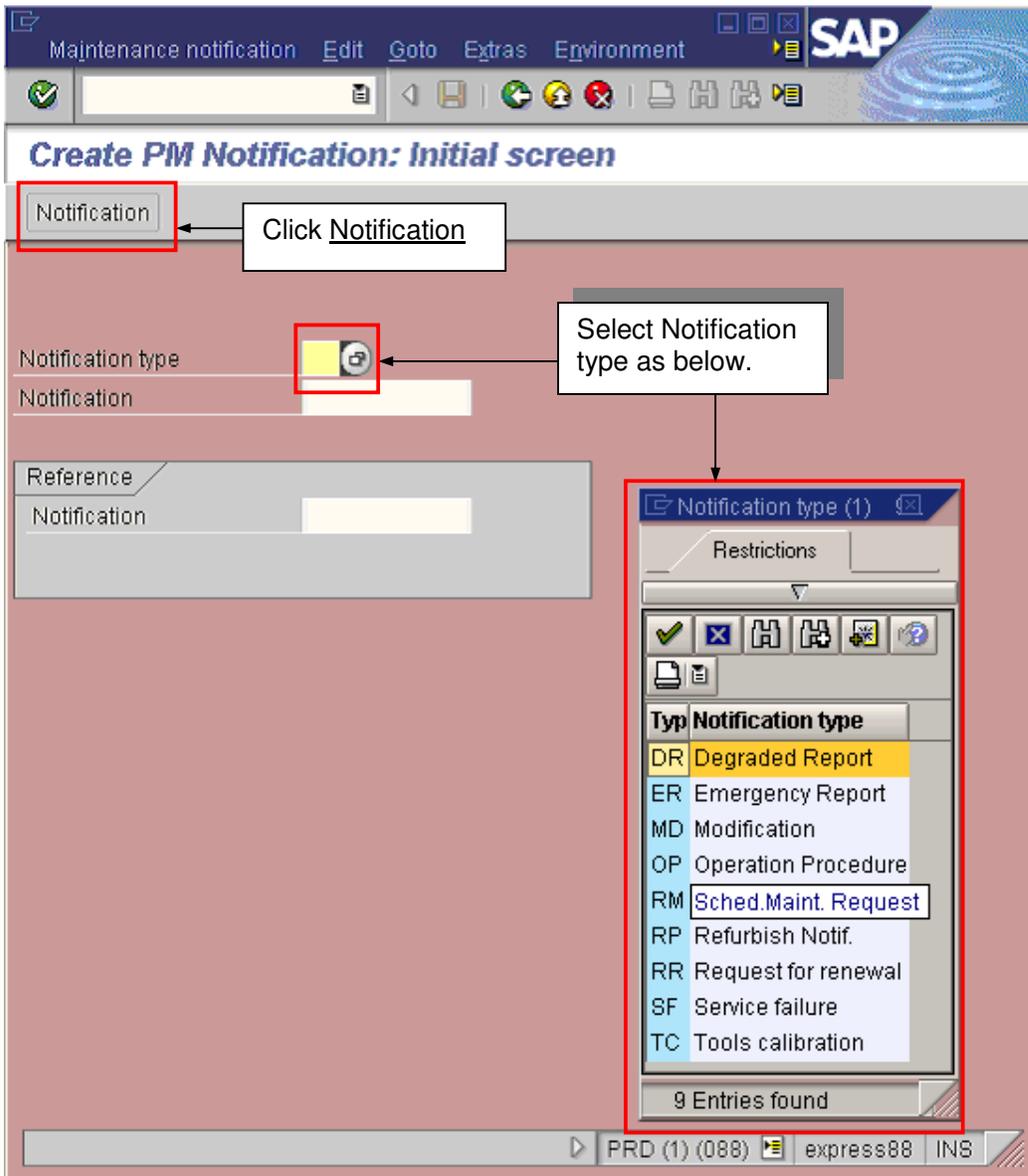
Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 13 of 43	SAP Plant Maintenance Process Guide

**4 CREATING NOTIFICATION**

In SAP Easy Access window:

User Menu → Plant Maintenance → Notification → Create → IW21-General

- a. Type in /niw21 in Transaction Code Box and click Enter
- b. Create Notification page



Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 14 of 43	SAP Plant Maintenance Process Guide

**c. Create Notification Page: Overview Page**

The screenshot shows the SAP 'Create PM Notification: Service failure' interface. The window title is 'Maintenance notification Edit Goto Extras Environment System Help'. The main title is 'Create PM Notification: Service failure'. The interface includes a menu bar, a toolbar, and several data entry sections. Ten numbered callouts provide instructions for each step:

- 1. Type short description for incident**: Points to the 'Short description' field at the top.
- 2. Change status to "ZASS"**: Points to the 'Status' dropdown menu.
- 3. Type in system code**: Points to the 'System code' field.
- 4. Select detailed Functional Location from structure list**: Points to the 'Functional location' selection icon.
- 5. Enter malfunction date and time**: Points to the 'Malfunction start' date and time fields.
- 6. Insert if available**: Points to the 'Trip No.', 'Speed of train', and 'Weather code' fields.
- 7. Select always**: Points to the 'Safety Status' dropdown menu.
- 8. Select incident**: Points to the 'Incident' dropdown menu.
- 9. Select physical location**: Points to the 'Location' dropdown menu.
- 10. Go to "Details"**: Points to the 'Detail' tab in the navigation bar.

The interface sections include: Reference object (FuncLoc, Equipment, Assembly), Malfunction data (Malfunction start/end, Breakdown), Basic dates (Req.start, Required end), User data (Trip No., Failure 1-4, Speed of train, Weather code, Trip Direction, Safety Status, Down Time), and Item (Incident, Location, Text, Cause code, Cause text).

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 15 of 43	SAP Plant Maintenance Process Guide

d. Create Notification Page: Detail Page

**11. Fill in additional information**

**12. Make appropriate selection**

**13. Select the person who reported**

**14. Select date and time when the person reported**

**15. Release**

**16. Save**

Notification: \*000000000001 SF | Status: ZSRT

Subject: Description

Effect on the system: Effect

System availability: Avail.bef.malfunctn, Cond.bef.malfunctn, Avail.aft.malfunctn, Cond.aft.malfunctn, Avail.after task, Cond.after task

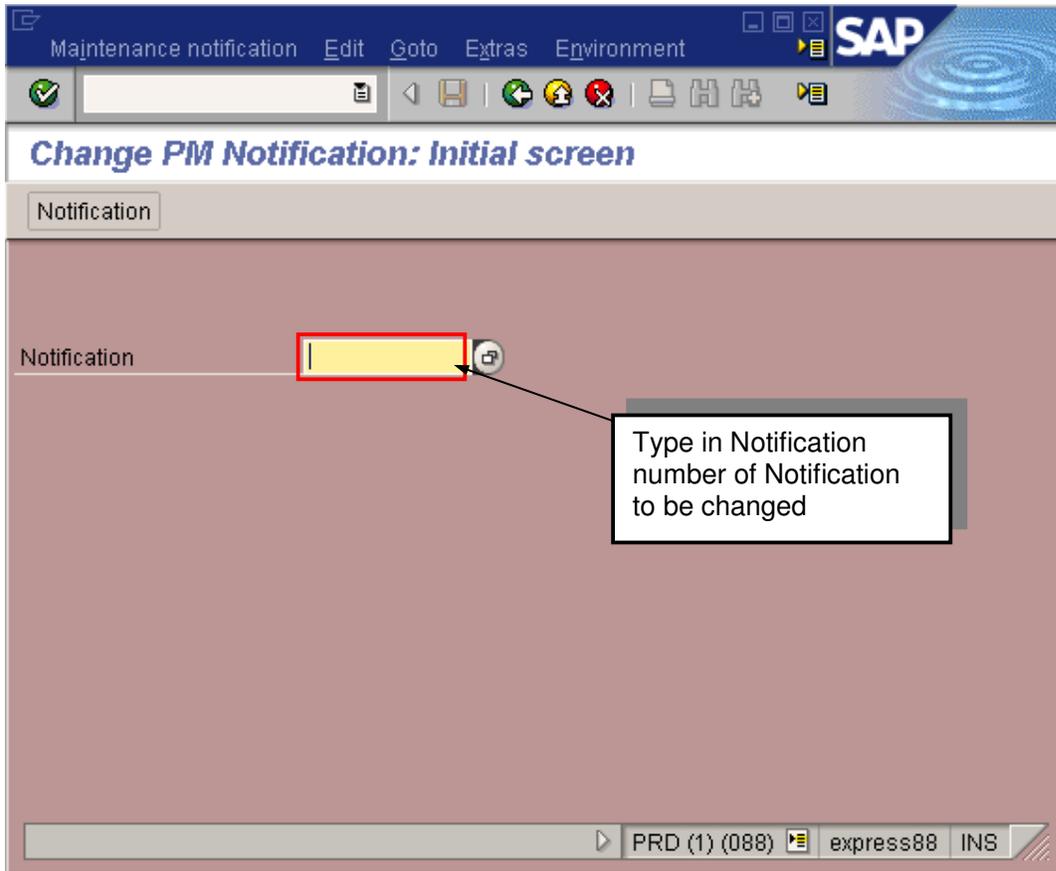
Responsibilities: Reported by

Notif.date: 18.06.2003 15:09

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 16 of 43	SAP Plant Maintenance Process Guide

**5 CHANGING NOTIFICATION**

- a. Type in /niw22 in Transaction Box and click Enter
- b. Change Notification Page



Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 17 of 43	SAP Plant Maintenance Process Guide

c. Change Notification Page: Overview and Detail Page

The screenshot displays the SAP SAP Plant Maintenance interface for a notification titled "Change PM Notification: Service failure". The notification ID is 10013382, and the description is "Roof leakages BTS". The status is OSNO, and the assigned user is ZASS. The interface is divided into several sections:

- Reference object:** Includes fields for "FunctLocation" (24000-STA-BTS-AF ...) and "Platform1-2".
- Malfunction data:** Includes "Malfuncnt. start" (17.06.2003 14:50) and "Malfuncnt. end" (00:00). There are checkboxes for "Breakdown" and "Breakdown dur." (0.00 H).
- Basic dates:** Includes "Req.start" (17.06.2003 14:50:42) and "Required end" (00:00:00). There is a "Priority" dropdown and a "Breakdown" checkbox.
- User data:** Includes "Trip No.", "Failure 1" (00000003, 0024, General Codes - Leaking), and "Failure 2" through "Failure 4".
- Speed of train:** A field for "Speed of train" in km/h.
- Trip Direction:** A field for "Trip Direction".

Two callout boxes provide instructions:

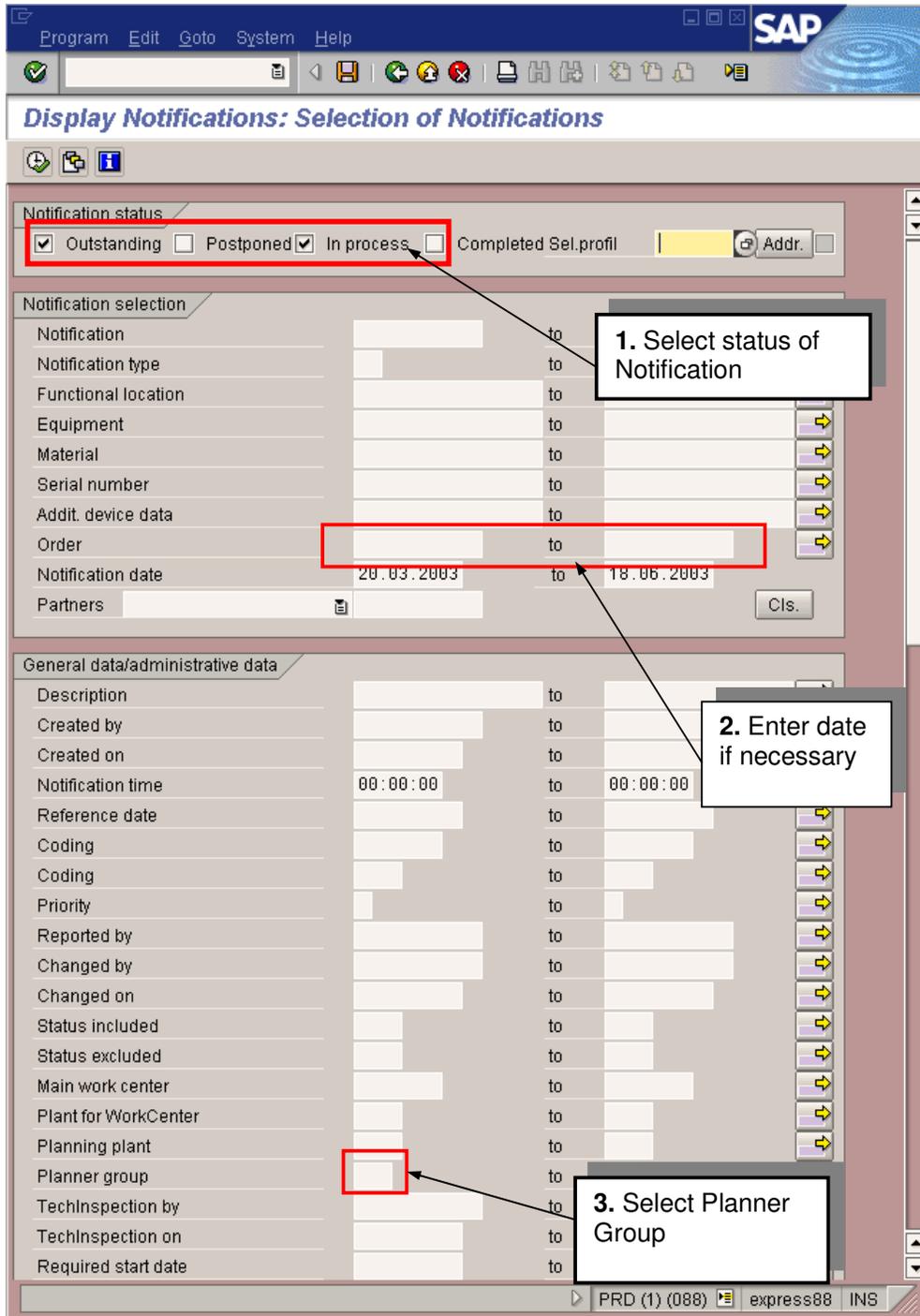
- Box 1: "1. Make all necessary changes in proper field as in section 2.3 & 2.4" (pointing to the malfunction data and basic dates sections).
- Box 2: "2. Save" (pointing to the Save icon in the toolbar).

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 18 of 43	SAP Plant Maintenance Process Guide

**6 DISPLAY NOTIFICATION**

User Menu → Plant Maintenance → Notification → List Editing → IW29 –Display

- a. Type in /niw29 in the Transaction Box and click Enter
- b. Selection of Notification page



<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 19 of 43	SAP Plant Maintenance Process Guide

c. Listing of Notification Page

The screenshot shows the SAP 'Change Notifications: List of Notifications' window. The interface includes a menu bar (List, Edit, Goto, Notification, Environment, Settings, System), a toolbar with various icons, and a data table. Three callout boxes provide instructions:

- 1. Click here to toggle Work Order button:** Points to the 'Work Order' icon in the toolbar.
- 2. Right click mouse to select copy, hide, show, sort, set filter:** Points to the right-click context menu options for a selected row.
- 3. Click to select notification:** Points to the selection icon in the left margin of the table.

Notification	Notif.type	SysStatus	Effect	Order	FunctLocation	FunctLocDescrip.
10011451	SF	NOPR ORAS	2	4012130	44000-4430...	Aux - Battery Charg...
10010495	SF	NOPR ORAS	2	4012630	24000-DEP-...	1 Flr (!) OCC
10010496	SF	NOPR ORAS	2	4010891	T102B1-910...	Automatic Train Pr...
10010497	SF	NOPR ORAS	2	4010891	65000-DEP-...	DEP/ADM - Supervi...
10010498	SF	NOPR ORAS	2	4010820	T104	Transit T104
10010498	SF	NOPR ORAS	2	4010894	53000-DEP-...	DEP/ADM - TMS Se...
10010499	SF	NOPR			55000-STS-...	STS/CON - PIDS C...
10010500	SF	NOPR				PCS/CON - PIDS C...
10011449	SF	NOPR ORAS	2	4010894		Aux - Battery Charg...
10010539	SF	OSNO				
10010726	SF	NOPR ORAS	2	4011125	X106B1-910...	Automatic Train Pr...
10010746	SF	NOPR ORAS	2	4011125	X106B1-910...	Brake & Pneumatic...
10011163	SF	NOPR ORAS	2	4011163	X106B2-910...	Train Interior
10011644	SF	NOPR ORAS	2	4011644	53000-DEP-...	DEP/ADM - TMS Se...
10011237	SF	NOPR ORAS	2	4011237	71000-ACS-...	1 Flr Arr East Area (...)
10011645	SF	NOPR ORAS	2	4011645	52000-KLA-...	KLIA - ATP Cabinet ...
10011301	SF	NOPR ORAS	2	4011301	65000-KLA-...	KLA/PF4 - Cameras
10011270	SF	NOPR ORAS	2	4011270	T104B1-910...	Train Head Structur...
10011555	SF	NOPR ORAS	2	4011555	21000-XCR-...	Earthworks KM 15 t...
10010945	SF	OSNO	2		21000-XCR-...	Earthworks KM 15 t...
10011647	SF	NOPR ORAS		4011647	X104B1-910...	Automatic Train Pr...
10011649	SF	NOPR ORAS	2	4011649	53000-DEP-...	DEP/ADM - OCC W...
10011891	SF	NOPR ORAS	2	4011891	52000-DEP-...	DEPOT - Outdoor
10011414	SF	NOPR ORAS	2	4011414	82000-8210...	Control System
10011465	SF	NOPR ORAS	2	4011465	X105 -92010	Pantograph
10011577	SF	NOPR ORAS	2	4011577	72000-FAS-...	Control Panel
10011657	SF	NOPR ORAS	2	4011657	T103B1-910...	Automatic Train Pr...
10011893	SF	NOPR ORAS	2	4011893	T103A1-910...	Automatic Train Pr...
10011770	SF	NOPR ORAS	2	4011770	X103A1-910...	Driver's Cab
10011777	SF	NOPR ORAS	2	4011777	T101 -91120	Bogies & Suspensi...
10011881	SF	NOPR ORAS	2	4011881	84000-8410...	Road / Rail Shuntin...

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 20 of 43	SAP Plant Maintenance Process Guide

**7 RELEASING WORK ORDER FROM NOTIFICATION**

a. Initial Screen Page

The screenshot shows the SAP 'Create Notification Order: Initial Screen' interface. A red box highlights the 'Order type (1) 31 Entries found' dropdown menu. Three callout boxes provide instructions:

- 1. Select Order Type as below**: Points to the dropdown menu.
- 2. Select Priority**: Points to the 'Priority' field.
- 3. Select Planning Plant as ERL**: Points to the 'Planning plant' field.

The dropdown menu lists the following entries:

Type	Name
PM01	Maintenance order
PM02	Maintenance order
PM03	Maintenance order/-message
PM04	Refurbishment order
PM05	Calibration order
PM06	Capital investment order
SM01	Service order
SM02	Service order (with revenues)
SM03	Repair service
ZCAN	Cannibalization
ZCSO	Consumables (oil, grease)
ZMIS	Miscellaneous
ZMOD	Modification
ZOSO	Operation Service Order
ZOTO	Operation Train Order
ZRNW	Renewal work order
ZRPO	Repair work order
ZSHM	Scheduled Heavy Maintenance
ZSIP	Scheduled Inspection
ZSMO	Scheduled maintenance
ZSOH	Scheduled overhaul
ZSTC	Scheduled Tools Calibration
ZSTO	Standing work order
ZTBO	Troubleshooting
ZTRN	Training
ZUHM	Unscheduled Heavy Maintenance
ZUIP	Unscheduled inspection
ZUMO	Unscheduled maintenance
ZUOH	Unscheduled Overhaul
ZUSM	Unscheduled maint. during scheduled main
ZUTC	Unscheduled Tools Calibration

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 21 of 43	SAP Plant Maintenance Process Guide

b. Header Data Page

**2. Go to Operations**

**1. Select PM Activity Type as shown below**

M...	MAT Description
001	Regular maintenance
002	Additional service
003	Defects Liability (Warranty)
004	Training
005	Claimed and pending response
006	Claimed and accepted
007	Claimed and rejected
009	Above schedule maintenance

8 Entries found

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 22 of 43	SAP Plant Maintenance Process Guide

c. Operation page

**8. To print work order, click order → print → order**

**7. Release Work Order**

**3. For single task enter same number**

**4. For single task enter consecutive number**

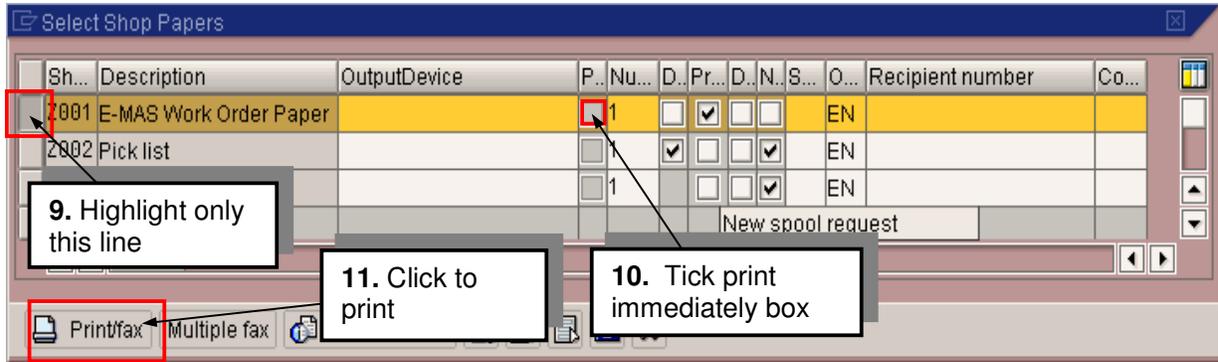
**5. For single task enter PM99**

**6. For data accuracy enter step-by-step maintenance operation**

Op...	Sop	Work ctr	Plant	Co...	StTextK	S.. Short text	LT	W
0010		BDG	EMAS	PM01		Step 1: .....		
0010	0010	BDG	EMAS	PM99		Step 2: .....		
0010	0020	BDG	EMAS	PM99		Step 3: .....		
0020		BDG	EMAS	PM01				
0030		BDG	EMAS	PM01				
0040		BDG	EMAS	PM01				
0090		BDG	EMAS	PM01				
0100		BDG	EMAS	PM01				
0110		BDG	EMAS	PM01				
0120		BDG	EMAS	PM01				
0130		BDG	EMAS	PM01				
0140		BDG	EMAS	PM01				

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 23 of 43	SAP Plant Maintenance Process Guide

d. Print Page



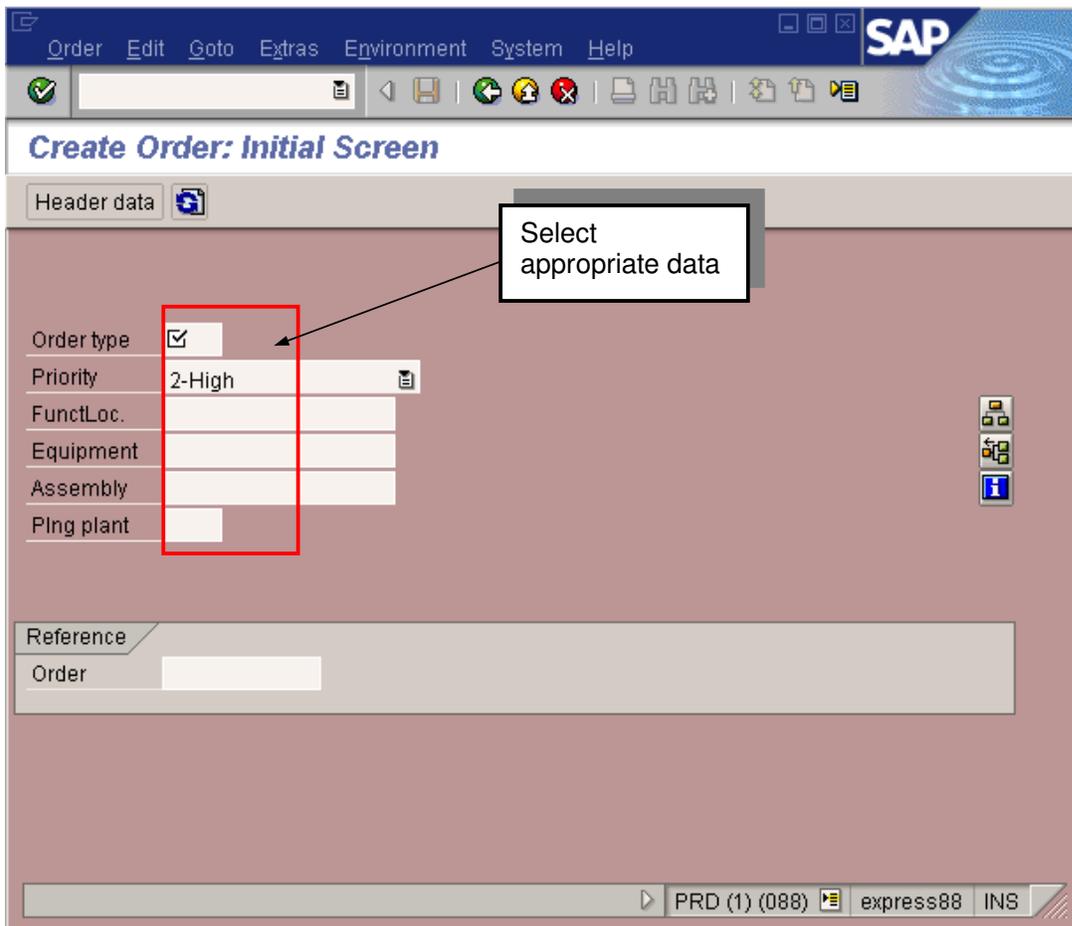
Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 24 of 43	SAP Plant Maintenance Process Guide

**8 CREATING WORK ORDER**

In SAP Easy Access window:

User Menu → Plant Maintenance → Notification → Create → IW31 → Create (General)

- a. Type in **/niw31** in the Transaction Box and click **Enter**.
- b. Create Work Order Initial Screen.



Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 25 of 43	SAP Plant Maintenance Process Guide

### c. Create Work Order: Header Page

The screenshot shows the SAP 'Create Work Order: Header Page' interface. The following callouts provide instructions:

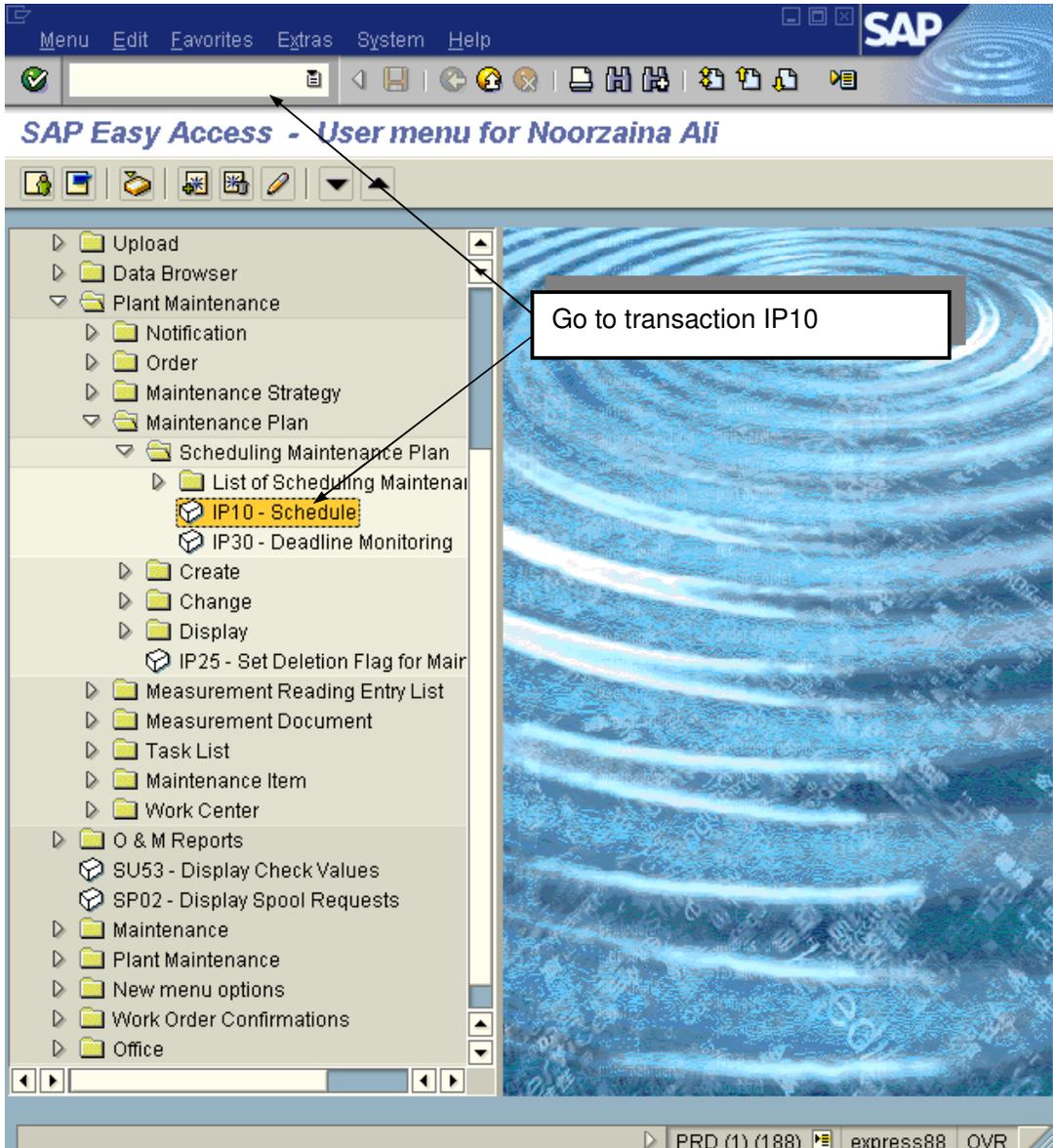
- 1. Enter appropriate data:** Points to the 'PMActType' field, which contains the value '002'.
- 2. Release Work Order:** Points to the 'Operations' button in the top navigation bar.
- 3. Save:** Points to the 'Save' icon in the top toolbar.
- 4. To print work order, click order → print → order:** Points to the 'Order' menu item in the top menu bar.

Key data visible in the screenshot includes:

- Order: ZMOD %000000000001
- System Status: CRTD MANC NTUP
- Planner Group: INF / ERL Infrastructure
- Maintenance Center: E&M / EMAS Electrical & Mechanical
- Bas. start: 19.06.2003 10:07
- Basic fin.: 23.06.2003 10:07
- Reference object: Air Handling Unit(1 Flr North End Admin) / Chilled Water AHU, 40RW028
- Operation: WkCtr/PInt E&M / EMAS, Ctrl key PM01, Acty type, Work durtn H, Oprtn dur. H

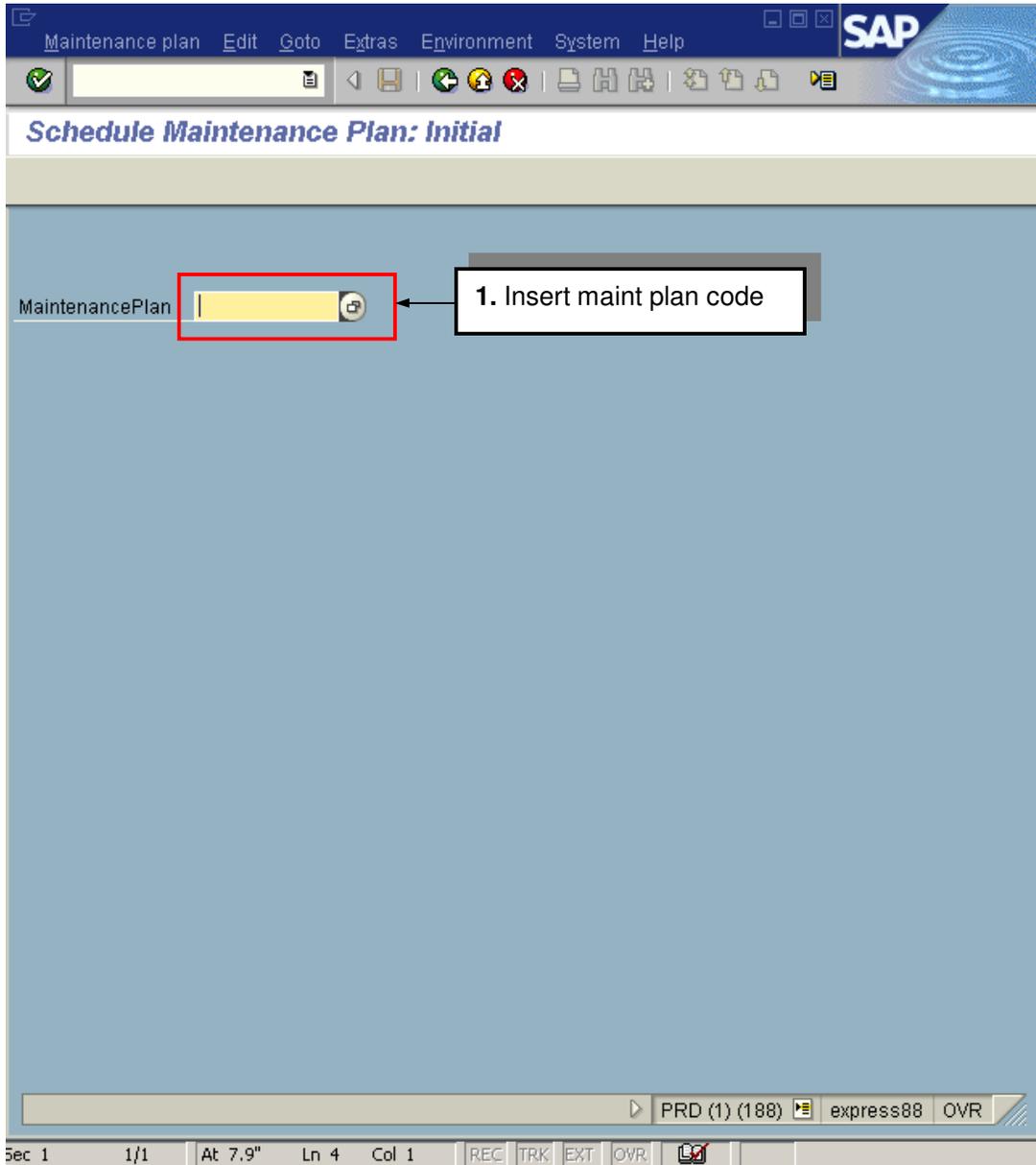
Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 26 of 43	SAP Plant Maintenance Process Guide

**9 RELEASING WORK ORDER FROM SCHEDULED MAINTENANCE (IP10)**



Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 27 of 43	SAP Plant Maintenance Process Guide

a. Initial Screen Page



<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 28 of 43	SAP Plant Maintenance Process Guide

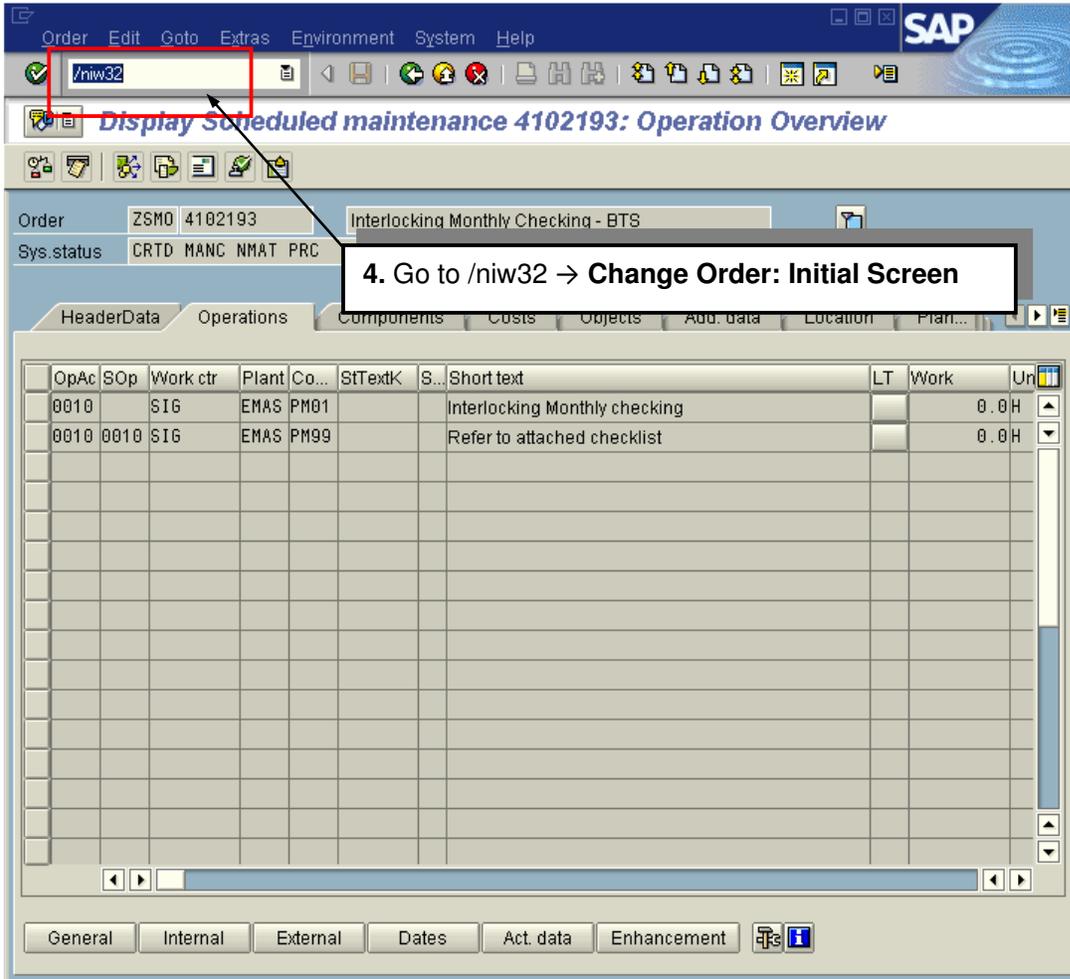
b. Schedule Maintenance Plan

The screenshot shows the SAP 'Schedule Maintenance Plan' interface for 'Strategy plan 00000000002'. The main window displays a table of scheduled calls. Call 85 is highlighted in yellow. A call object icon (a square with a circular arrow) is highlighted in the toolbar at the bottom, with a callout box pointing to it. The callout box contains the text: '3. Click [icon] (display call object)'. Another callout box points to the highlighted row in the table, containing the text: '2. Highlight scheduled maint'. The toolbar at the bottom also includes a 'Display call object' button.

C...	PlanDate	Call date	CompConf...	Due packag...	Date Type/Status	Act. v...	Unit
83	18.05.2009		13.07.2009	1M	Scheduled Complete	56	Da
84	17.06.2009			1M	Scheduled Called		
85	17.07.2009			1M	Scheduled Called		
86	16.08.2009			1M	Scheduled Called		
87	15.09.2009			1M	Scheduled Save to call		

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 29 of 43	SAP Plant Maintenance Process Guide

c. Display Scheduled Maintenance Work Order: Operation Page



Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 30 of 43	SAP Plant Maintenance Process Guide

d. Change Scheduled Maintenance Work Order: Operation page

6. Release work order  
→ save → print

5. Make all necessary changes in proper field

OpAc	SOp	Work ctr	Plant	Co...	StTextK	S...	Short text
0010		SIG	EMAS	PM01			Interlocking Monthly checking
0010	0010	SIG	EMAS	PM99			Refer to attached checklist
0020		SIG	EMAS	PM01			
0030		SIG	EMAS	PM01			
0040		SIG	EMAS	PM01			
0050		SIG	EMAS	PM01			
0060		SIG	EMAS	PM01			
0070		SIG	EMAS	PM01			
0080		SIG	EMAS	PM01			
0090		SIG	EMAS	PM01			
0100		SIG	EMAS	PM01			
0110		SIG	EMAS	PM01			
0120		SIG	EMAS	PM01			
0130		SIG	EMAS	PM01			
0140		SIG	EMAS	PM01			
0150		SIG	EMAS	PM01			

e. Print Page

7. Highlight only this line

8. Change printer name

9. Tick Print immediately box

10. Click to print

Sh...	Description	OutputDevice	P...Nu...	D..	P..D..	N..S...	O...	Recipient number
Z001	E-MAS Work Order Paper	EMSOPS	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EN	
Z002	Pick list	LOCL	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	EN	

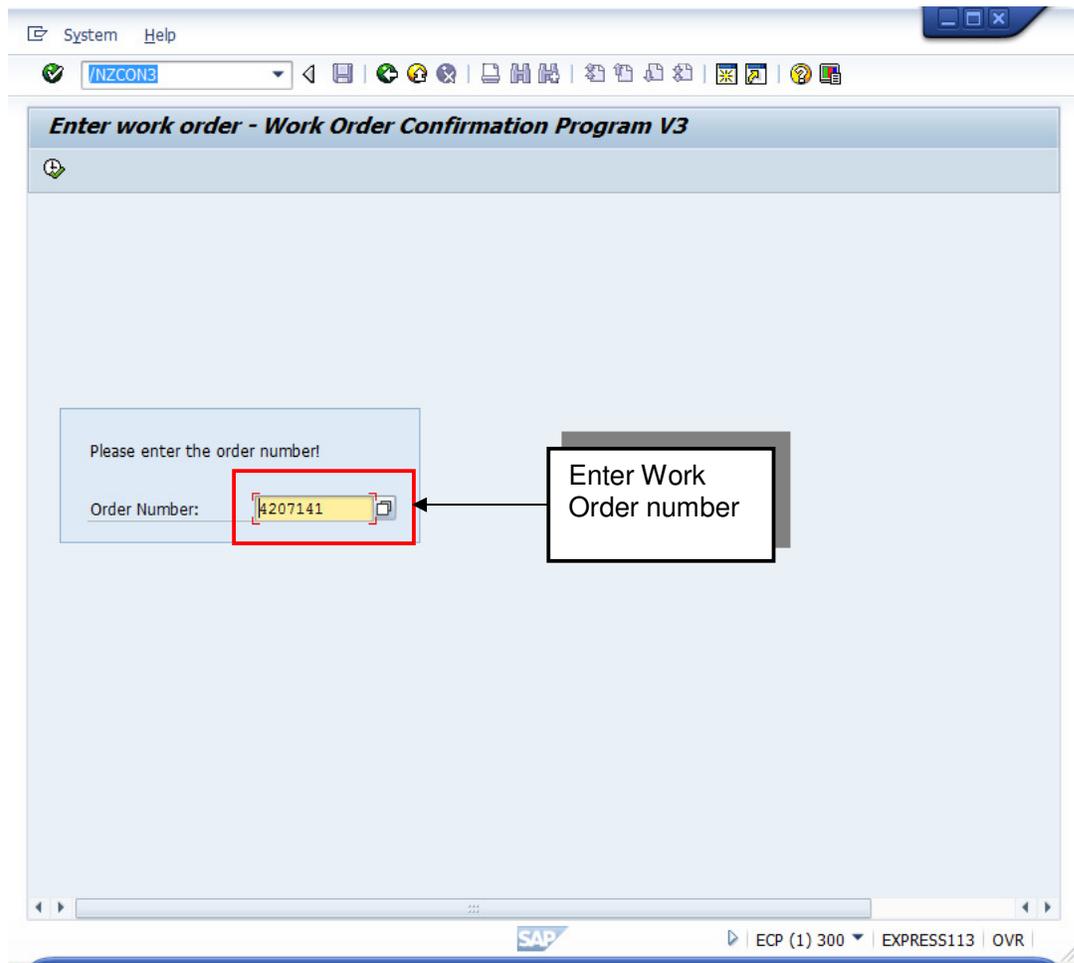
<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 31 of 43	SAP Plant Maintenance Process Guide

## 10 WORK ORDER CONFIRMATION: CLOSING WORK ORDER

In SAP Easy Access window:

**User Menu → W/O Confirmation V3 → ZCON3**

- a. Type in **/nzcon3** in the Transaction Box and click **ENTER**
- b. Work Order Confirmation Page



<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 32 of 43	SAP Plant Maintenance Process Guide

**c. Details of Work Order Confirmation ZCON3**

The screenshot shows the SAP ZCON3 'Work Order Confirmations' screen. The interface includes a table for 'Work Order Confirmations' and several data entry fields. Ten numbered callouts provide instructions for each step:

- 1. Enter details of operations**: Points to the 'Work ...' column in the table.
- 2. To add row**: Points to the 'Add Row' icon in the table toolbar.
- 3. Check Function Location, change if necessary**: Points to the 'Functional loc.' field.
- 4. Enter Failure Code after repair**: Points to the 'Group/Code' field in the 'Failure:' section.
- 5. Enter actual Cause Code after repair**: Points to the 'Cause:' field.
- 6. Enter Maintenance Activity Type**: Points to the 'MaintActivType' field.
- 7. Enter Down Time of breakdown**: Points to the 'Down Time' field.
- 8. Enter malfunction date/time**: Points to the 'End of malfunction' field.
- 9. Brief remark of completed task**: Points to the large text area for remarks.
- 10. Click here if W/O is fully completed**: Points to the 'Save Confirmations with TECO' button.
- 10. Click here if W/O is partially completed**: Points to the 'Save Confirmations without TECO' button.

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 33 of 43	SAP Plant Maintenance Process Guide

The screenshot shows the SAP Plant Maintenance 'Enter Confirmation' screen. The interface includes a menu bar with 'Confirmation' and 'Work Order' options. A table titled 'Work Order Confirmations' contains one entry with the following data:

Operation	Staff No.	Employee Grade	Work	Start Date	Time	End Date	Time	Completion	Work Type
0010			BHS	20.08.2018	09:20:27	20.08.2018	09:20:27		

Below the table, the 'Objetc data' section shows 'Functional loc.' set to '77000' (Baggage Handling System KLS). The 'MaintActivType' is set to '001'. At the bottom, there are two buttons for saving confirmations: 'Save Confirmations with Technical Completion of the order' and 'Save Confirmations without Technical Completion of the order'. The interface also features a toolbar with various icons and a status bar at the bottom showing 'ECP (1) 300 | EXPRESS113 | OVR'.

2. To add row

1. Enter details of operations

3. Check Function Location, change if necessary

4. Enter Maintenance Activity Type

5. Brief remark of completed task

6. Click here if W/O is fully completed

6. Click here if W/O is partially completed

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 34 of 43	SAP Plant Maintenance Process Guide

**11 CHECKLIST TO ENSURE ACCURACY OF NOTIFICATIONS AND WORK ORDERS**

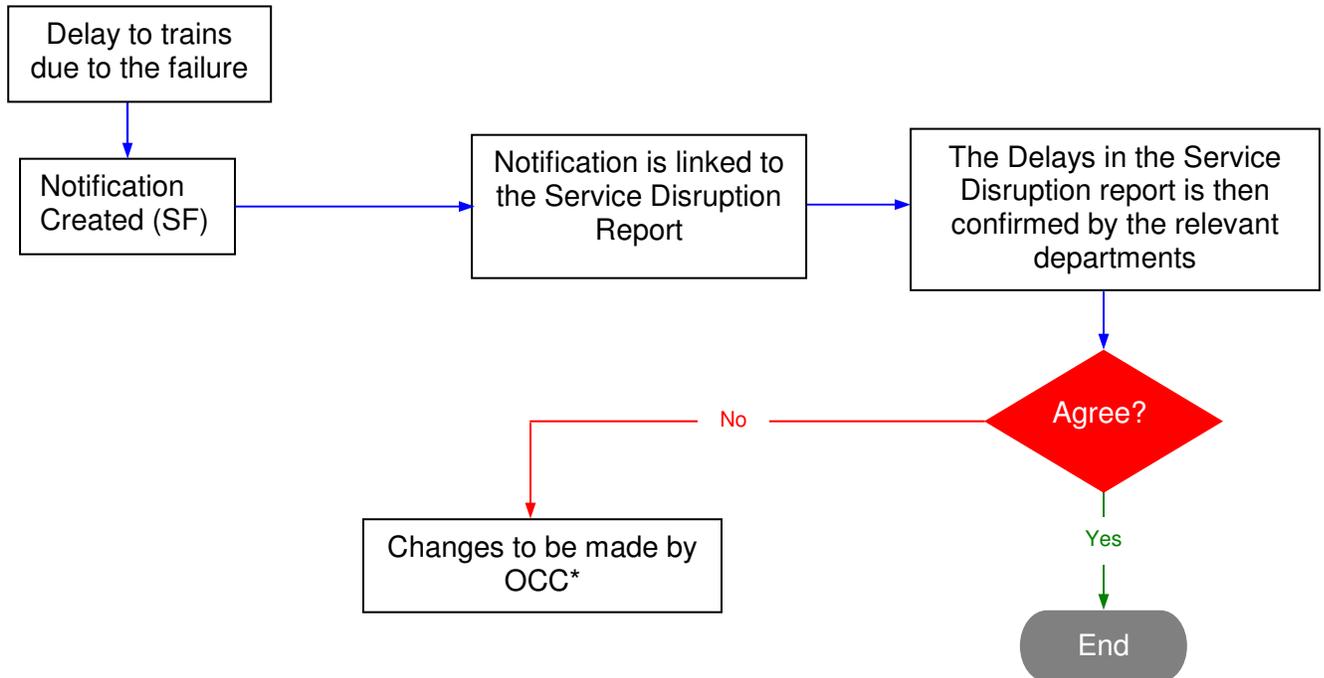
Notification	
Notification type	<ul style="list-style-type: none"> <li>according to the type of failure/ malfunction, e.g. <b>“SF”</b> for Unscheduled Maintenance which can influence the service, <b>“MR”</b> for Unscheduled maintenance discovered during Scheduled Maintenance</li> </ul>
completion	<ul style="list-style-type: none"> <li>only if w/o technically completed or no w/o assigned</li> </ul>
Malfunction end time	<ul style="list-style-type: none"> <li>must be entered</li> </ul>
	<ul style="list-style-type: none"> <li>as per finishing last activity in work order</li> </ul>
Functional location	<ul style="list-style-type: none"> <li>as detailed as possible, e. g. according to the description in failure code or notification text;</li> <li>same as FL in work order</li> </ul>
Planner Group	<ul style="list-style-type: none"> <li>has to belong to the Functional location</li> </ul>
Failure code	<ul style="list-style-type: none"> <li>at least one entry</li> <li>codes like <i>“others”</i> and <i>“unknown”</i> only to be accepted in exceptional cases</li> </ul>
Cause code	<ul style="list-style-type: none"> <li>at least one entry</li> </ul>
Incident Code	<ul style="list-style-type: none"> <li>should be entered</li> </ul>
FL affected	<ul style="list-style-type: none"> <li>same as functional location</li> </ul>
effect	<ul style="list-style-type: none"> <li>“maintenance related” or “not maintenance related” to be entered</li> </ul>
Work order	
<p><b>NOTE:</b> if notification contains the status <i>“maintenance related”</i> a work order must have been assigned</p>	
Order type	<ul style="list-style-type: none"> <li>according to the work done</li> </ul>
Order text	<ul style="list-style-type: none"> <li>to be entered</li> </ul>
Status	<ul style="list-style-type: none"> <li>technically completed</li> </ul>
PM activity type	<ul style="list-style-type: none"> <li>according to the work done</li> </ul>
Functional location	<ul style="list-style-type: none"> <li>as detailed as possible</li> <li>consider equipment / assemblies</li> <li>related to order text</li> </ul>
material	<ul style="list-style-type: none"> <li>material in hardcopy and softcopy must be identical</li> </ul>
confirmation	<ul style="list-style-type: none"> <li>start/ end date and time of operation,</li> <li>staff no.,</li> <li>activity type,</li> <li>work centre,</li> <li>if <i>partially</i> completed reason has to be selected</li> </ul>
<p><b>NOTE:</b> total duration for works or number of workers must be logical</p>	

**DELETE W/O OR NOTIFICATIONS ONLY IN THE CASE IT WAS CREATED BY MISTAKE!**

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 35 of 43	SAP Plant Maintenance Process Guide

**12 CHANGING DATA IN THE SERVICE DISRUPTION REPORT**

12.1 Flow Chart (findings in the OCC Journal)

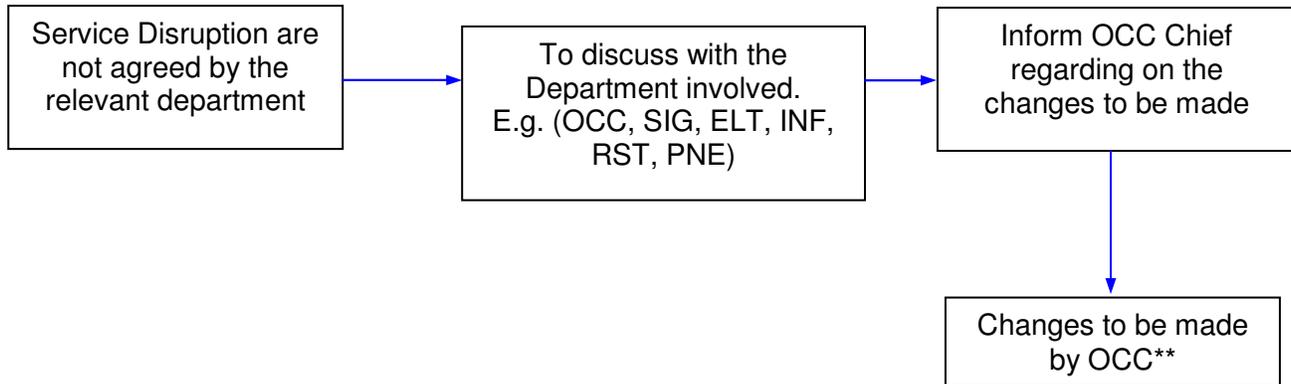


\* Guideline for OCC (Changing of Planner Group)

- 1) Instruction from the OCC Chief
- 2) OCS will then make the changes on the planner group as requested.
  - E.g. Please refer to 12.3

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 36 of 43	SAP Plant Maintenance Process Guide

## 12.2 Flow Chart (findings not in the OCC Journal)



### \*\* Guideline for OCC (Changing of Notification No in Service Disruption Report)

- 1) Instruction from the OCC Chief
- 2) OCS will then make the changes on the planner group as requested.
  - E.g. Please refer to 12.4

Note: Upon completion of any changes related to both guidelines above, the OCC Chief should then inform the related departments on the changes that have been done.

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 37 of 43	SAP Plant Maintenance Process Guide

12.3 Changing of Planner Group

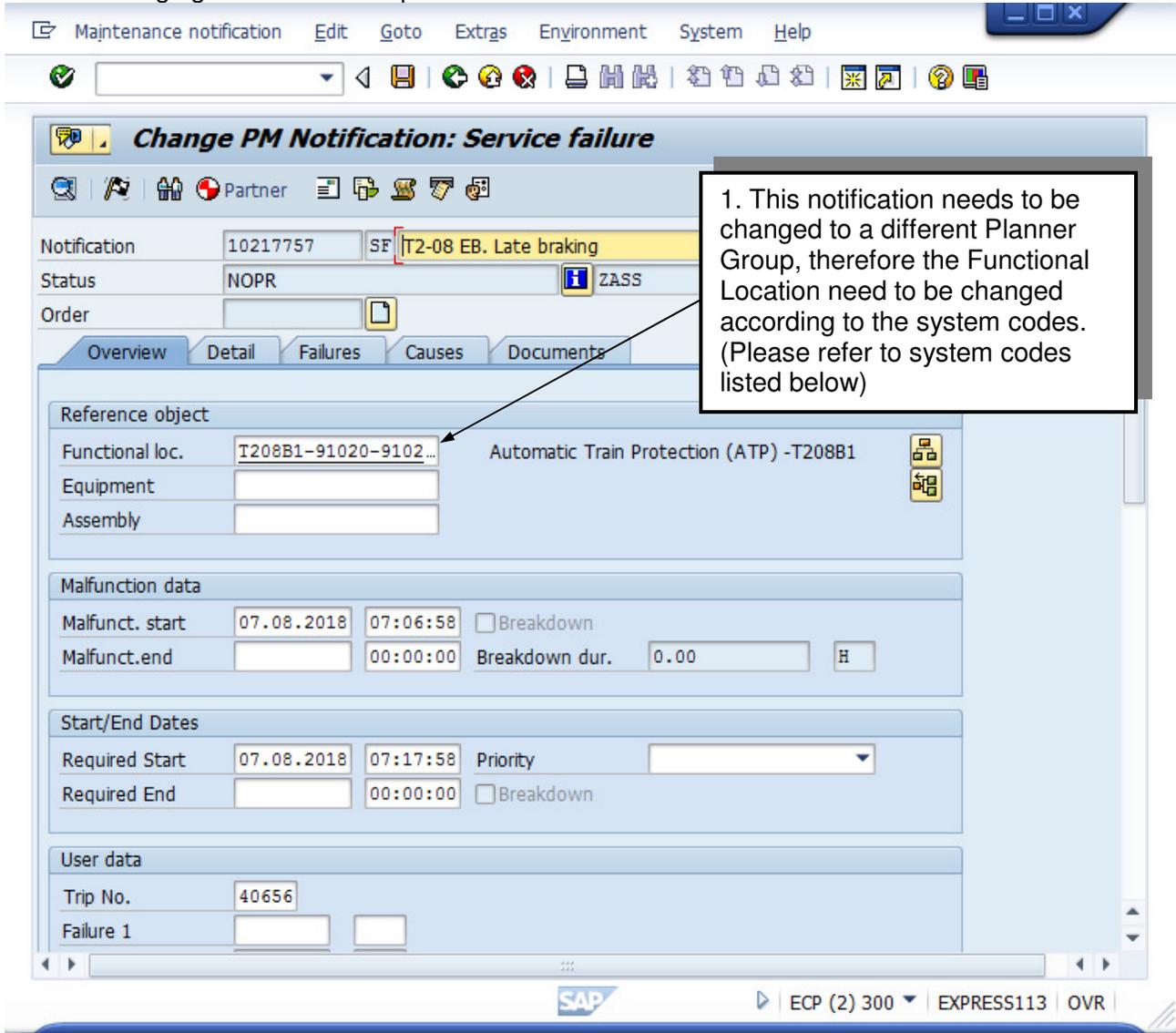


Figure 1 of 4 (Section 12.3) – Please see above

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 38 of 43	SAP Plant Maintenance Process Guide

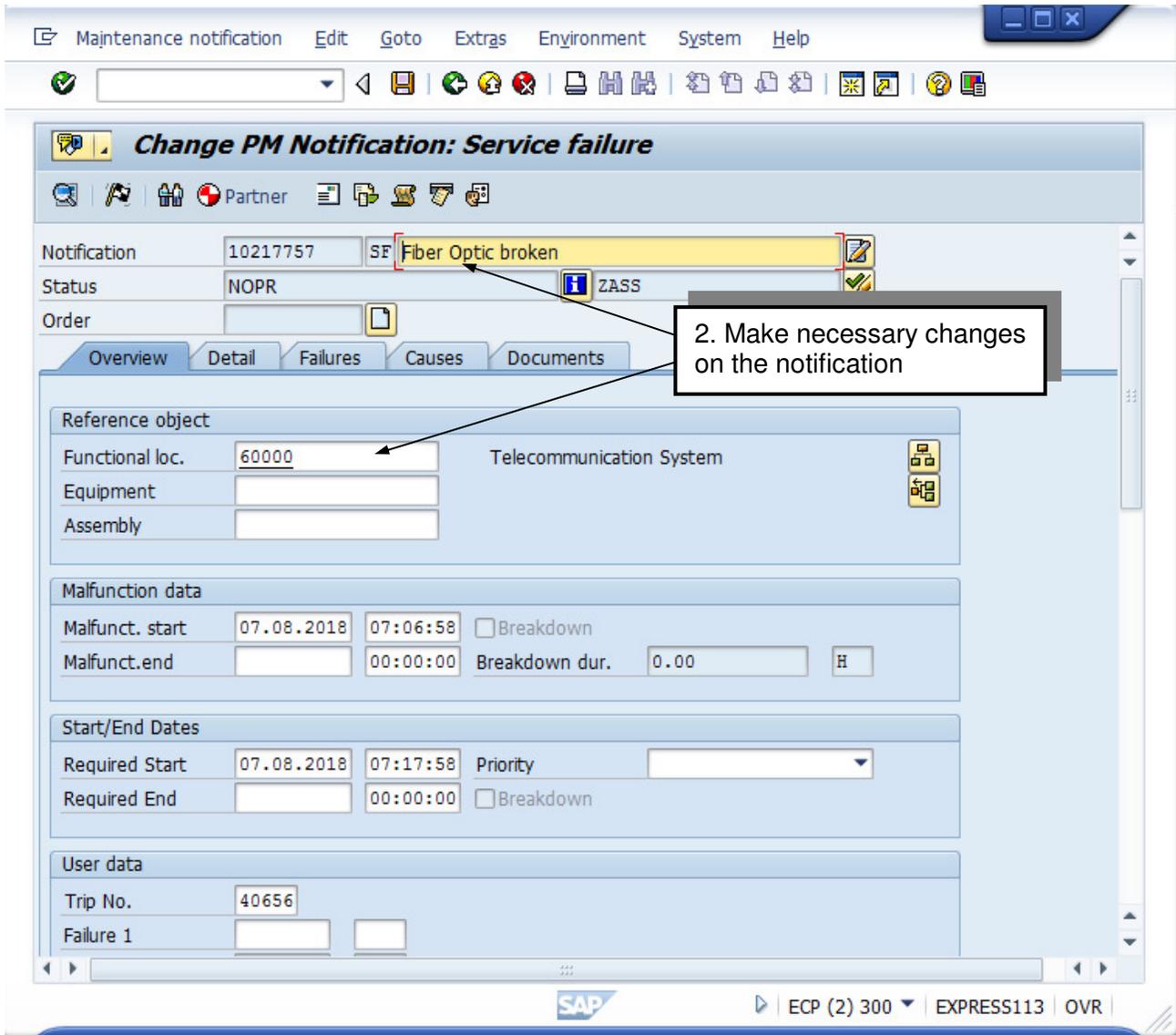


Figure 2 of 4 (Section 12.3) – Please see above

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 39 of 43	SAP Plant Maintenance Process Guide

**Change PM Notification: Structure List**

Functional loc. 60000      Valid From 08.08.2018

Description Telecommunication System

- 60000 Telecommunication System
  - 61000 Open Transport Network (OTN)
    - 61000-BTS OTN - Bandar Tasik Selatan Station
    - 61000-DEP OTN - Salak Tinggi DEPOT
    - 61000-KLA OTN - Kuala Lumpur International Airport
    - 61000-KLS OTN - Kuala Lumpur Sentral Station
    - 61000-PCS OTN - Putrajaya Cyberjaya Station
      - 61000-PCS-TLE PCS - Telecom Room
        - 61000-PCS-TLE-61211 PCS/TLE - Cabinet (2 Nodes)
          - 61000-PCS-TLE-61211-N40 PCS/TLE - OTN Node 40
          - 61000-PCS-TLE-61211-N41 PCS/TLE - OTN Node 41
          - 61000-PCS-TLE-61211-PPA PCS/TLE - Patch Panel
        - 61300-40-PPA Patch Panel
- 62000 Cable System
- 63000 Telephone System
- 64000 Radio System
- 65000 CCTV System
- 66000 Public Address System
- 67000 Clock System
- 68000 Auxiliary System

SAP | ECP (2) 300 | EXPRESS113 | OVR

Figure 3 of 4 (Section 12.3) – Please see above

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 40 of 43	SAP Plant Maintenance Process Guide

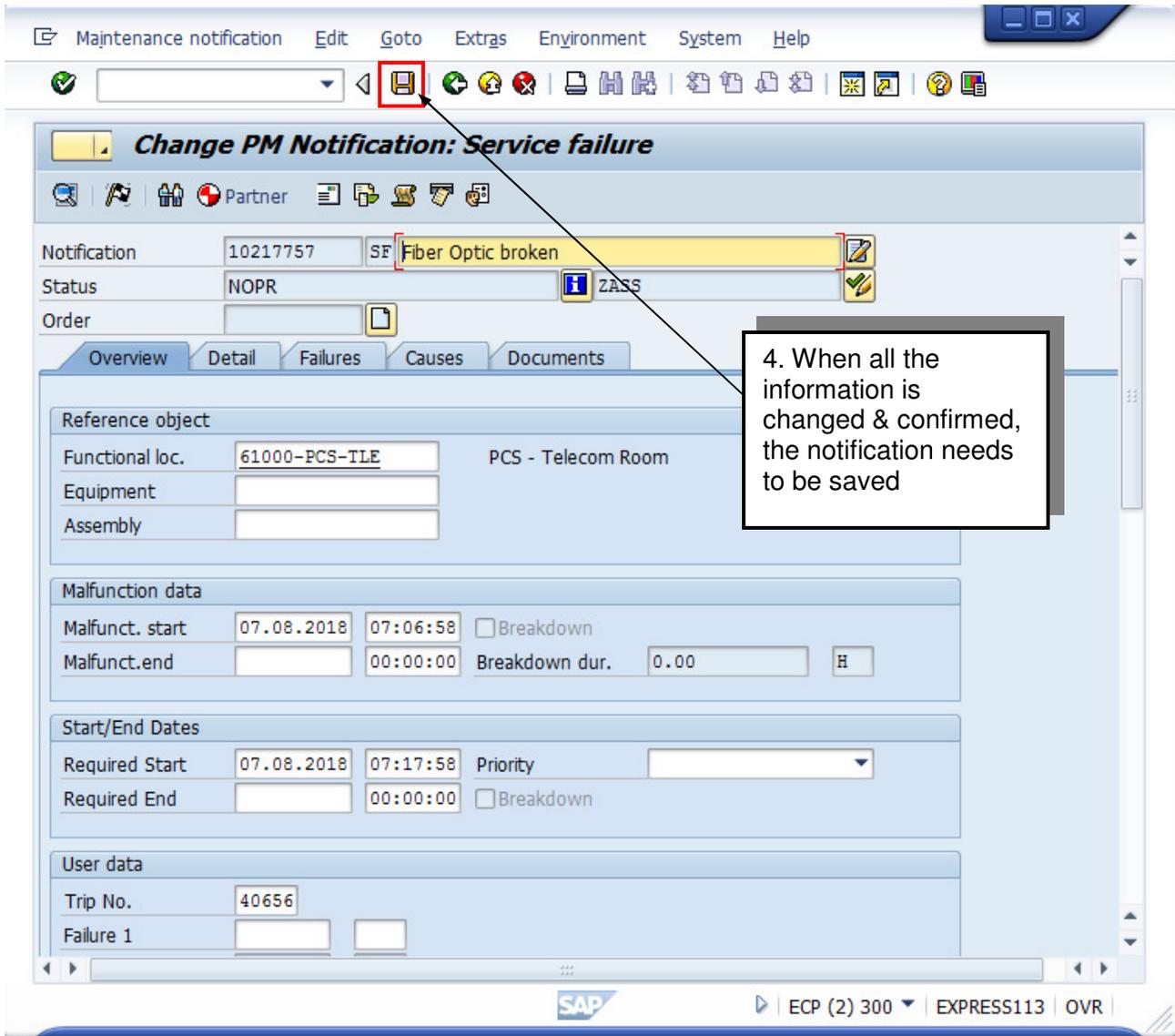


Figure 4 of 4 (Section 12.3) – Please see above

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 41 of 43	SAP Plant Maintenance Process Guide

12.4 Changing of Notification No. in the Service Disruption Report

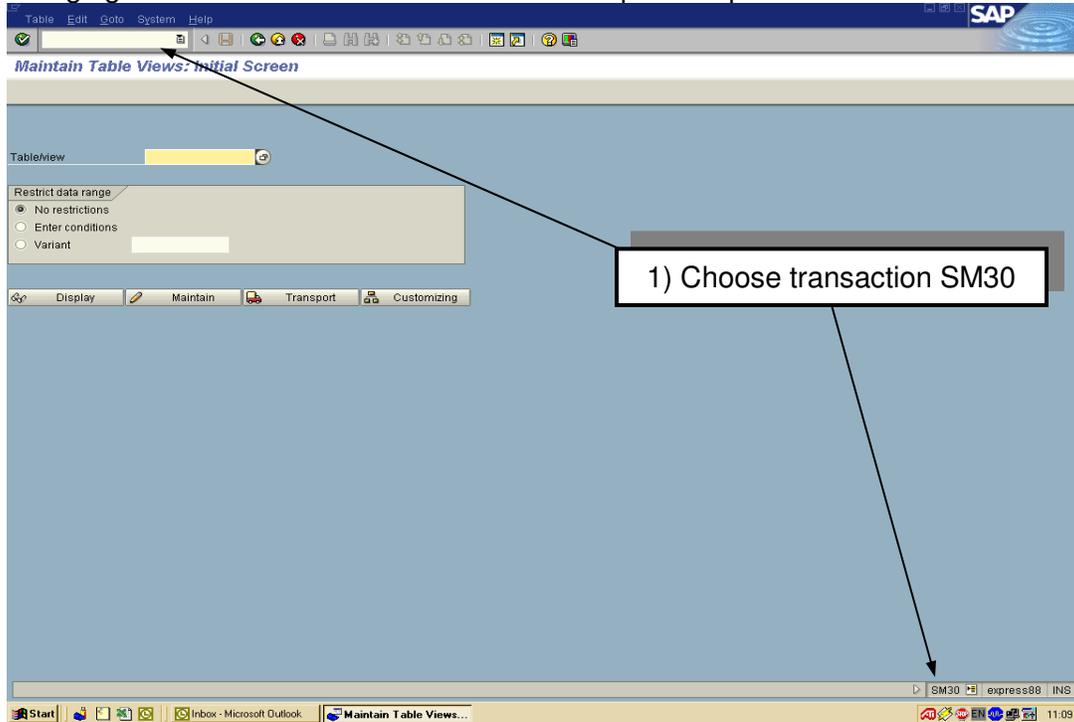


Figure 1 of 5 (Section 12.4) – Please see above

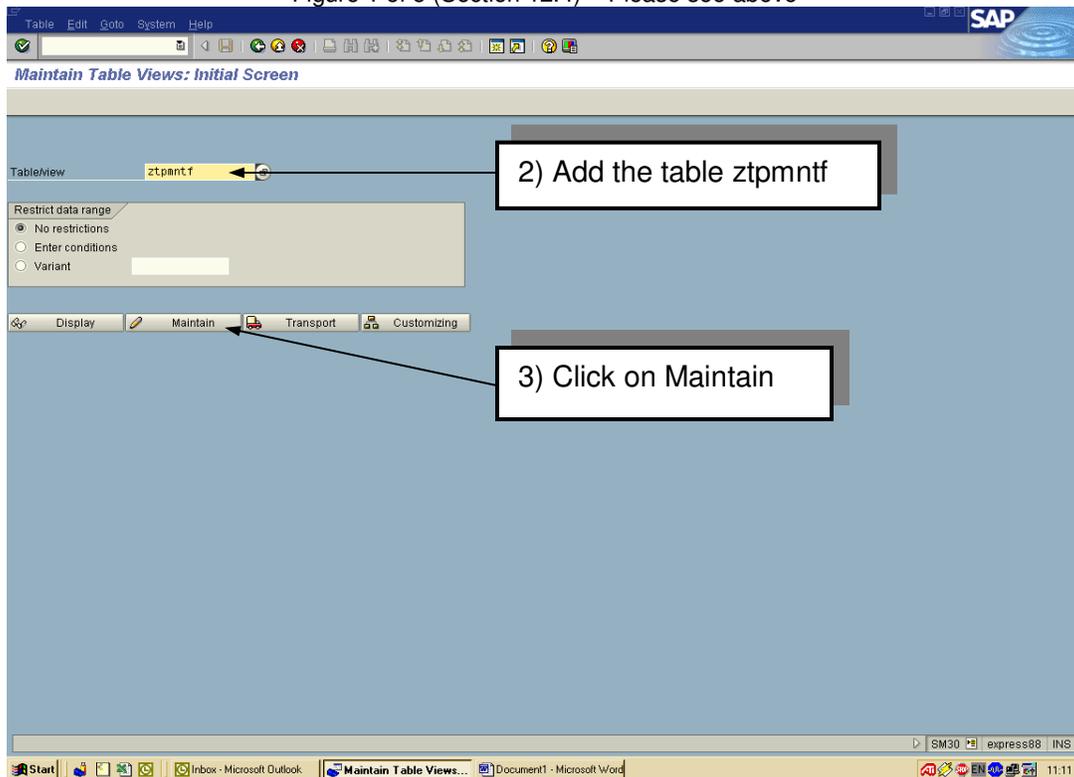


Figure 2 of 5 (Section 12.4) – Please see above

<i>Location</i>	<i>Reference</i>	<i>Rev.</i>	<i>Date</i>	<i>Page No.</i>	<i>Document Name</i>
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 42 of 43	SAP Plant Maintenance Process Guide

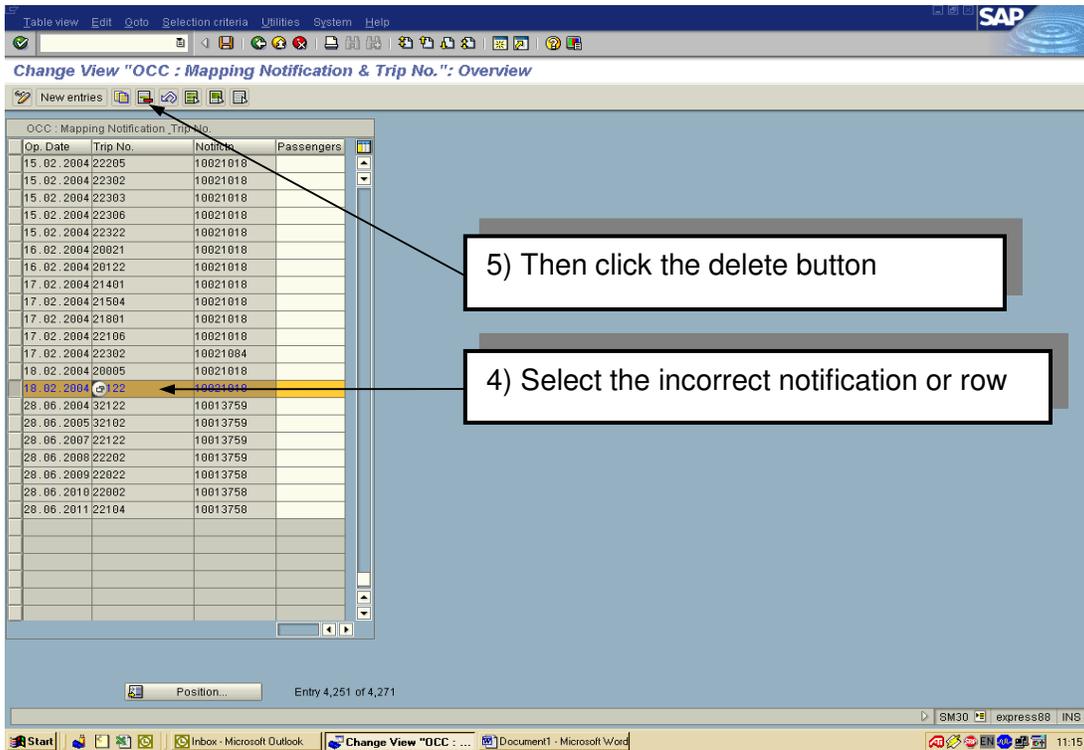


Figure 3 of 5 (Section 12.4) – Please see above

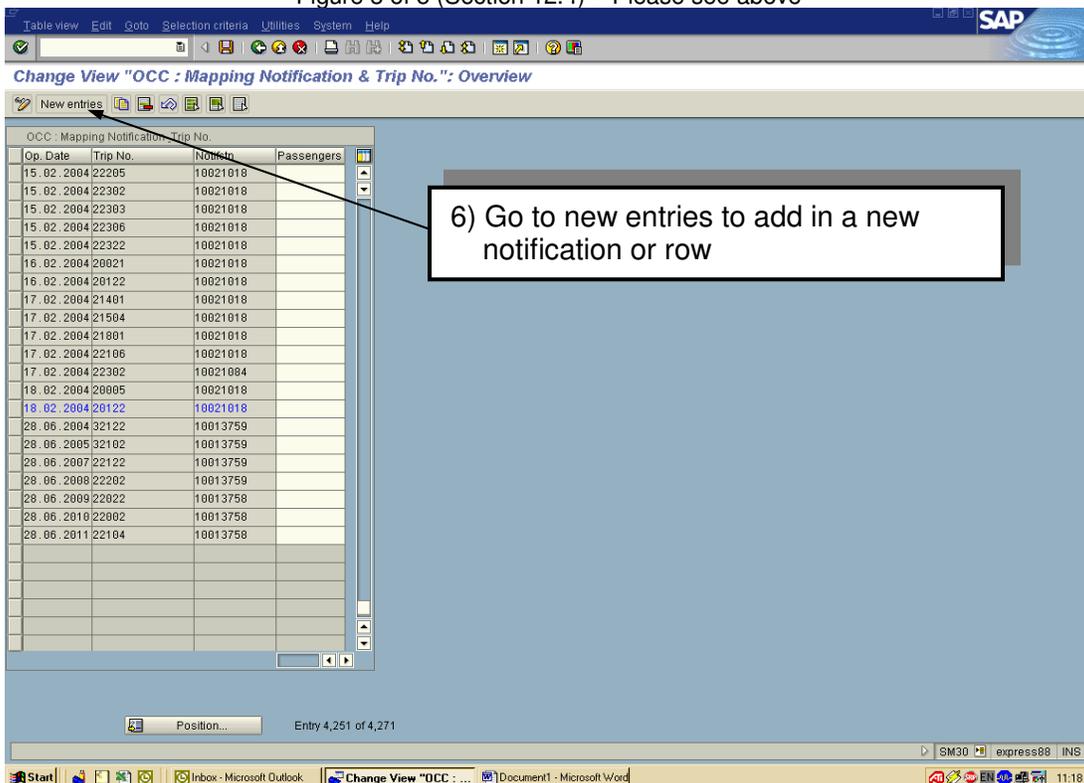


Figure 4 of 5 (Section 12.4) – Please see above

Location	Reference	Rev.	Date	Page No.	Document Name
E-MAS Offices	G00.OMN.M11070.CZ.1001.A	A	01 Aug 2018	Page 43 of 43	SAP Plant Maintenance Process Guide

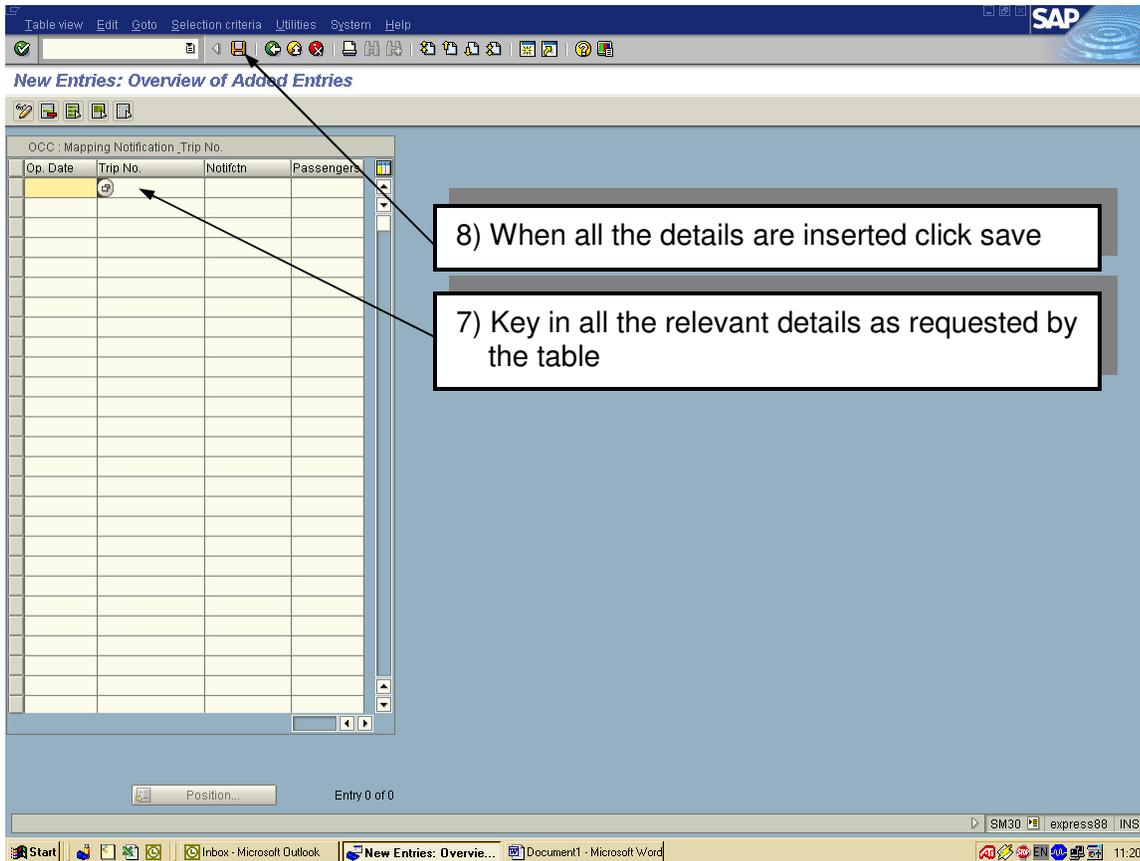


Figure 5 of 5 (Section 12.4) – Please see above

## System codes:

- 30000 - Overhead Contact Line (OCL)
- 40000 - Traction Power Supply (TPS)
- 50000 - Signalling (SIG)
- 58000 - SCADA
- 60000 - Telecommunications (TLE)
- 70000 - Infrastructure (INF)
- 80000 - Depot and Workshop Equipment (DWE)
- 90000 - Rolling Stock (RST)

\*\*codes above are just an example