

User  
Guide

# Umoja Preventive Maintenance User Guide



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## Module 1: Umoja Preventive Maintenance Overview

### Why do we need preventive maintenance?

Preventive Maintenance (or Planned Maintenance) is the generic term for scheduled inspections, maintenance action and planned repairs, for which the time and scope of the work can be planned.

The basis of the planned maintenance initiative can be:

- Manufacturer recommendation. Preventive Maintenance should be conducted in accordance with Manufacturer recommendations. The manufacturer of technical objects (equipment) might recommend certain procedures to ensure that the objects always function optimally.
- The initiative to establish the Preventive Maintenance programme can be defined by the Organization or as best practices established by the responsible stakeholders.
- Legal requirement. A preventive maintenance programme established to adhere procedures mandated by a specific safety code. For example, elevators and life safety systems.
- Environmental requirements. Well maintained objects often have less impact on the environment.

Some of the benefits of using the Preventive Maintenance programme:

- Increase high availability of the equipment or functional locations
- Reduces the total maintenance cost and disruption to business
- Improves energy efficiency and reduces the carbon footprint for equipment that emits Carbon Dioxide (well-maintained equipment reduces the emissions)
- Avoids invalidating warranties on equipment or functional locations
- Allows more efficient budget and contract management planning

### How does it work in Umoja?

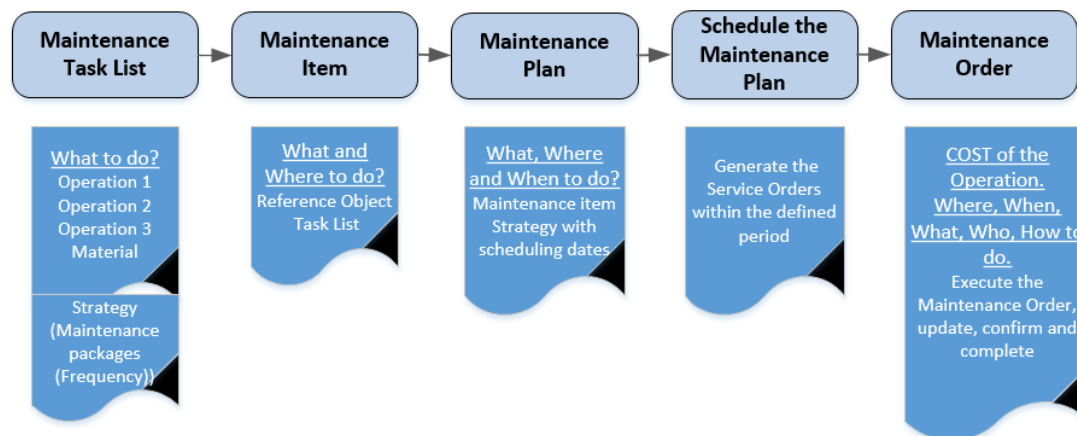
Maintenance Plans consist of information and objects that determine where, when and what task or inspection to undertake. Upon the Maintenance Plan scheduling transaction, the system triggers the creation of service orders.

For the processing of Service Orders (update, confirmation, technical completion, settlement, and business completion), please refer to the Service Order Management guide.

## End-to-End High-Level Process

Creation of the Preventive Maintenance programme in Umoja contains the following steps:

- Creation of a Task List (maintenance instructions)
- Creation of Maintenance Items (defines equipment to be maintained)
- Creation of a Maintenance Plan (defines what, where, and when to do)
- Scheduling of the Maintenance Plan (First Time Scheduling)
- Processing the Service Orders



**Note:** the final product of the Preventive Maintenance functionality are Service Orders that contain the operations, resources, costs, maintenance object and location, and other information that is necessary to organize and process the maintenance activities. Archive/history of the Maintenance Order is available and visible on equipment records and/or functional location.

## Maintenance Strategy

At this point, it is important to understand what a Maintenance strategy is and where it should be used. A maintenance strategy defines the rules for the sequence of planned maintenance work. It contains general scheduling information and can be assigned to as many maintenance task lists (PM task lists) and maintenance plans as required. A Maintenance Strategy is defined by the unit of measure. We recognize two types of the maintenance Strategy in Umoja:

- Time-Based Maintenance strategy – specified with time dimension unit of measure (Day, Mon, Year)
- Performance-Based Strategy – specified with activity unit of measure (distance in KM, operation hours in HR, etc.)

A maintenance strategy contains maintenance packages and cycles in which the individual work, task, or inspection should be performed, as per the following:

- In a Time Based Strategy - for example, every three months, every six months, every year
- In Performance-Based Strategy - Every 10000 miles/kilometres
- In Performance-Based Strategy - Every 500 operating hours

Maintenance Strategy is the data object defined centrally by Umoja. Maintenance Strategy is used in the creation of Task Lists and Maintenance Plans.

Note: More about Maintenance Strategy is in the Appendix of this document.

## Enterprise Roles & Responsibilities

Below are the Umoja Enterprise Roles with Preventive Maintenance transactions credentials:

Enterprise Roles	System Activities
<b>SD16: SD Preventive Maintenance Planner</b>	Use SAP -t-codes to: <ul style="list-style-type: none"> <li>• <b><u>Create, update and monitor the Task Lists</u></b></li> <li>• <b><u>Create, Update and monitor Maintenance Items</u></b></li> <li>• <b><u>Create, update, schedule and monitor Maintenance Plans</u></b></li> <li>• <b><u>Process Preventive Maintenance Service Orders (Type ZM02)</u></b></li> <li>• <b><u>Create and process the Service Orders for unscheduled maintenance activities, if required</u></b></li> </ul>
<b>SD04: SD Order Releaser</b>	Use SAP t-codes to: <ul style="list-style-type: none"> <li>• <b><u>Release Preventive Maintenance Service Orders</u></b> (for cost recovery scenario).</li> </ul>

## Module 2: Task Lists

What is a task list in Umoja?



**Task List**

Maintenance task lists describe the sequence of individual maintenance activities which must be performed repeatedly within a Plant. Task lists contain operations (Tasks) that need to be performed concerning the preventive maintenance programme for specific equipment groups (or types of equipment). Operations are ordered chronologically and assigned to packages.

In Umoja, the Planner should use the General Maintenance Task List. The General Maintenance Task List doesn't refer to specific technical objects (for example one specific air conditioning (AC) unit) but can be used, and should be used, for master data objects (equipment records or functional locations) with the same maintenance requirements. For example, most of the AC Units within the same plant can use just one Task list or you can have multiple Maintenance Plans for AC Units.

**In Umoja, Task lists groups are already created based on the equipment Object numbers (UNSPSC code).**

Furthermore, within a group, the Planner can create individual maintenance task lists. The group counter identifies the general maintenance task list within the group.

The following table describes the type of available task lists groups in Umoja:

Task List Group	Description
20000000	Mining and Well Drilling Machinery and Accessories
22000000	Building and Construction Machinery and Accessories
23000000	Industrial Manufacturing and Processing Machinery and Accessories
24000000	Material Handling and Conditioning and Storage Machinery and their Accessories and Supplies
24130000	Industrial refrigeration
25000000	Commercial and Military and Private Vehicles and their Accessories and Components
26000000	Power Generation and Distribution Machinery and Accessories
27000000	Tools and General Machinery
30000000	Structures and Building and Construction and Manufacturing Components and Supplies
32000000	Electronic Components and Supplies
39000000	Electrical Systems and Lighting and Components and Accessories and Supplies
39120000	Electrical equipment and components and supplies
40000000	Distribution and Conditioning Systems and Equipment and Components
40150000	Industrial pumps and compressors
41000000	Laboratory and Measuring and Observing and Testing Equipment
42000000	Medical Equipment and Accessories and Supplies
43000000	Information Technology Broadcasting and Telecommunications
43200000	Components for information technology or broadcasting or telecommunications
44000000	Office Equipment and Accessories and Supplies
45000000	Printing and Photographic and Audio and Visual Equipment and Supplies
46000000	Defense and Law Enforcement and Security and Safety Equipment and Supplies
47000000	Cleaning Equipment and Supplies
48000000	Service Industry Machinery and Equipment and Supplies
52000000	Domestic Appliances and Supplies and Consumer Electronic Products
56000000	Furniture and Furnishings
95000000	Land and Buildings and Structures and Thoroughfares

Before beginning to create new task lists, the Planner should ensure that within the existing task lists, there is a required Task List already created for the Plant. Otherwise, the Planner should create a new Task List.

Note: Key terminology for the Task List data is provided in the appendix of this document.

### More about Maintenance Strategies in the General Task List

Strategies are relevant to the sequences of maintenance operations.

In Umoja we will use the following maintenance strategies:

- ZMON - Time Based Maintenance Strategy, where the frequency (cycle) is based on a unit of measure such as month (MON) [monthly, quarterly (3 months), semiannually (6 months), annually (12 months), etc.]



- ZWEEK - Time Based Maintenance Strategy, where the frequency (cycle) is based on a week as the unit of measure (weekly, biweekly, four weeks, 26 weeks, and 52 weeks)
- ZPERH - Performance Based Maintenance Strategy, where the frequency depends on the performance. The unit of measure is HR (operating hours).
- ZPERK - Performance Based Maintenance Strategy, where the frequency depends on the performance. The unit of measure is KM (distance in kilometer).

The operations are assigned to the maintenance packages in the Task List as per following screenshots:

### Task List with Time Based Strategy

Op.	SOp	Operation Description	Z1	Z2	ZY	ZS	ZQ	ZB	ZM
0010		BOILER Monthly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
0020		BOILER Two Month	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0030		BOILER Six Months	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0040		BOILER Anually	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Time-based maintenance packages. If the cycle is checked, the operation will be performed for that operation. For example: Operation 0010 will be performed in cycle ZM (monthly cycle)

### Task List with Performance Based Strategy

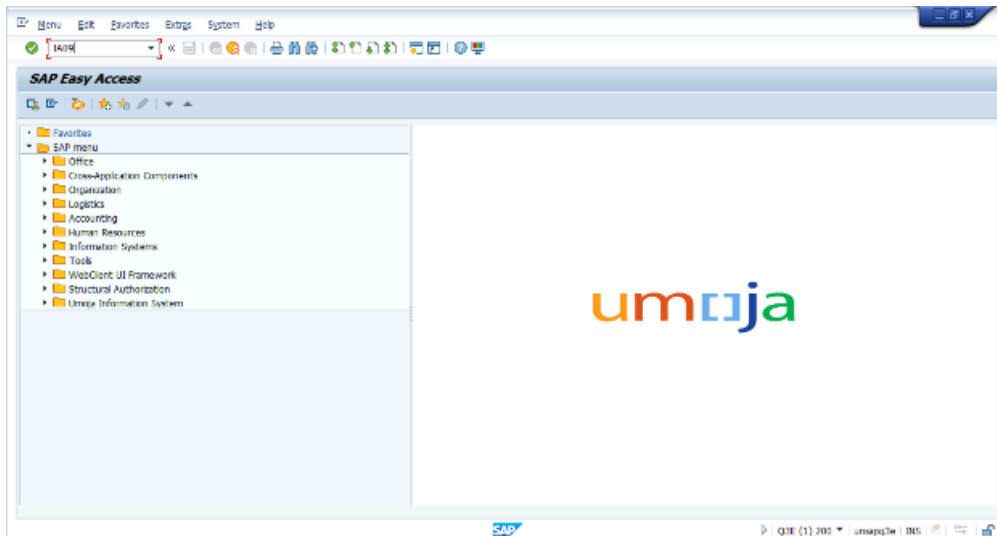
Op.	SOp	Operation Description	1	2	3
0010		operation 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0020		operation 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
0030		operation 3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Performance-based Maintenance packages. If the cycle is checked, the task will be performed in that operation. For example: Cycle 1: Operation 0010, 0020 and 0030 will be performed together in cycle 1 (cycle 1 conditions are defined in the Strategy).

## General Task List management - Step by Step Instructions

### Display existing General Task Lists

Use T-Code **IA09** to review the task lists:



In the Task list selection select the General Task List and your Plant:

Display Task Lists: Task List Selection

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**Display Task Lists: Task List Selection**

Task List Type  
 FunctLoc. Task List     Equip. Task List     Gen. Task List

Task List Selection

Functional Location	<input type="text"/>	to	<input type="text"/>	↕
Equipment	<input type="text"/>	to	<input type="text"/>	↕
Group	<input type="text"/>	to	<input type="text"/>	↕
Group Counter	<input type="text"/>	to	<input type="text"/>	↕
Key date	18.04.2018			
Class Selection	<input type="button" value="FunctLoc"/>		<input type="button" value="Equipment"/>	

Header Data

Usage	<input type="checkbox"/>	to	<input type="checkbox"/>	↕
Plant	ET30	to	<input type="text"/>	↕
Work center	<input type="text"/>	to	<input type="text"/>	↕
Status	<input type="checkbox"/>	to	<input type="checkbox"/>	↕
Planner group	<input type="text"/>	to	<input type="text"/>	↕
Maintenance strategy	<input type="text"/>	to	<input type="text"/>	↕
Assembly	<input type="text"/>	to	<input type="text"/>	↕
Short Text	<input type="text"/>	to	<input type="text"/>	↕
System Condition	<input type="checkbox"/>	to	<input type="checkbox"/>	↕
Controlling Area	<input type="text"/>	to	<input type="text"/>	↕
Deletion flag	<input type="checkbox"/>	to	<input type="checkbox"/>	↕

Admin. Data

Change Number	<input type="text"/>	to	<input type="text"/>	↕
Created on	<input type="text"/>	to	<input type="text"/>	↕
Created by	<input type="text"/>	to	<input type="text"/>	↕
Changed on	<input type="text"/>	to	<input type="text"/>	↕
Changed by	<input type="text"/>	to	<input type="text"/>	↕

Others

Layout

Select the Execution icon ; the general task list report will be generated:

Display Task Lists: List of Task Lists

S	TLType	Group	Grp.Countr	Task list description	Plant	COAr	Work center	Stat	Usage	PlGrp	Strategy
A		26000000	2	Panel Board ECA	ET30		FMS-A005	4	4	F00	ZMON
A		26000000	3	Diesel Generator ECA	ET30		FMS-A005	4	4	F00	ZMON
A		30000000	2	Passenger Elevator 1 ECA	ET30		FMS-A019	4	4	F00	ZWEEK
A		30000000	3	Passenger Elevator 2 ECA	ET30		FMS-A019	4	4	F00	ZWEEK
A		30000000	4	Passenger Elevator 3	ET30		FMS-A019	4	4	F00	ZWEEK
A		30000000	5	Passenger Elevator 4	ET30		FMS-A019	4	4	F00	ZWEEK
A		40000000	2	AIR HANDLING UNITS ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	3	WATER PUMP ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	4	CHILLER ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	5	BOILER ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	6	EXPANSION TANK ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	8	EXHAUST FAN ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40150000	2	BOOSTER PUMP ECA	ET30		FMS-A007	4	4	F00	ZMON

From the list, the Planner can select the Task List by double-clicking on the task list description:

Display Task Lists: List of Task Lists

S	TLType	Group	Grp.Countr	Task list description	Plant	COAr	Work center	Stat	Usage	PlGrp	Strategy
A		26000000	2	Panel Board ECA	ET30		FMS-A005	4	4	F00	ZMON
A		26000000	3	Diesel Generator ECA	ET30		FMS-A005	4	4	F00	ZMON
A		30000000	2	Passenger Elevator 1 ECA	ET30		FMS-A019	4	4	F00	ZWEEK
A		30000000	3	Passenger Elevator 2 ECA	ET30		FMS-A019	4	4	F00	ZWEEK
A		30000000	4	Passenger Elevator 3	ET30		FMS-A019	4	4	F00	ZWEEK
A		30000000	5	Passenger Elevator 4	ET30		FMS-A019	4	4	F00	ZWEEK
A		40000000	2	AIR HANDLING UNITS ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	3	WATER PUMP ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	4	CHILLER ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	5	BOILER ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	6	EXPANSION TANK ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40000000	8	EXHAUST FAN ECA	ET30		FMS-A006	4	4	F00	ZMON
A		40150000	2	BOOSTER PUMP ECA	ET30		FMS-A007	4	4	F00	ZMON


The system will display the Task List Operation Overview.

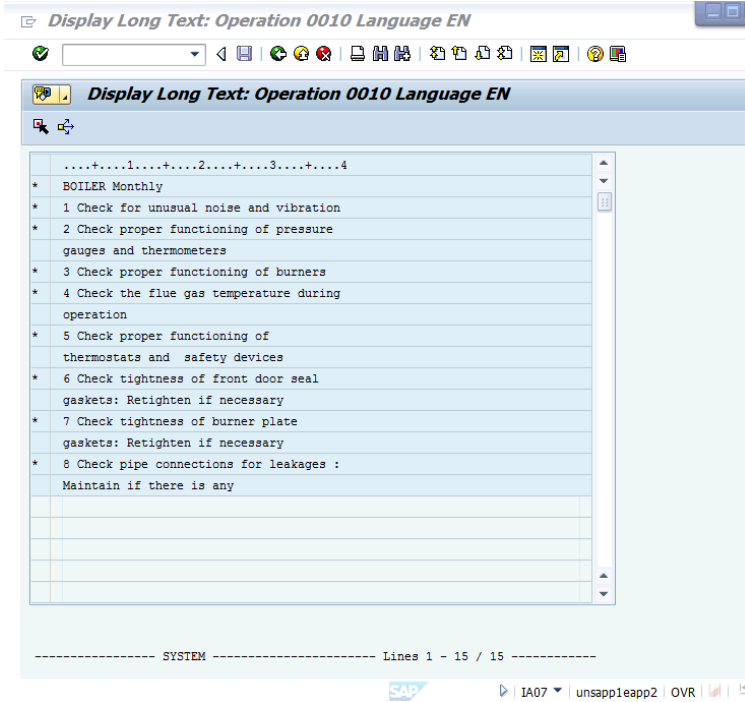
Display General Task List: Operation Overview

Group 40000000 BOILER ECA Grp.Countr 5

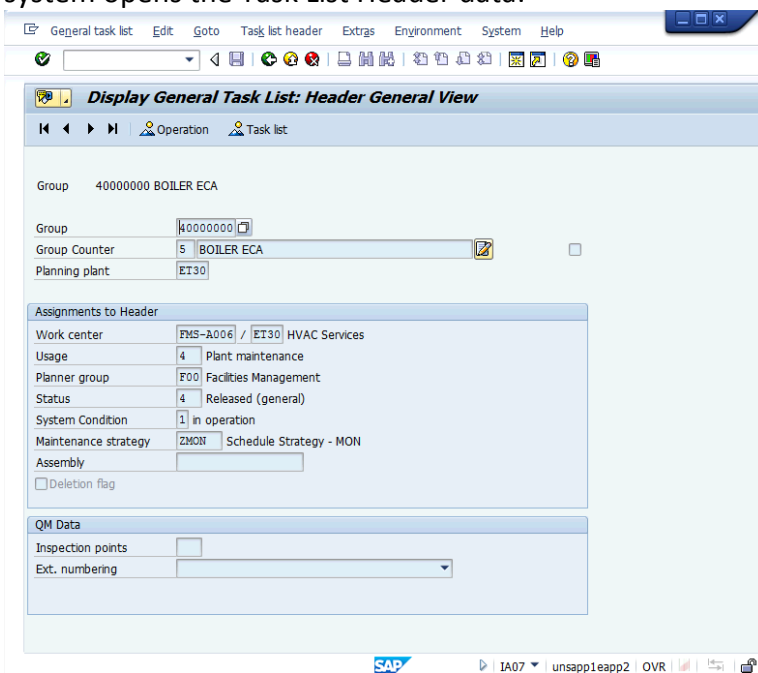
Op...	SOp	Work ctr	Plnt	Ctrl	Operation Description	LT	Work	Un.	No.	Duration	Un.	C	Pct	Int. distr	Fac	ActTyp	StTex...	Functional loc.
0010		FMS-A006	ET30	SM00	BOILER Monthly	4	✓	H	2	2	H	2	100		1	SF1124		
0020		FMS-A006	ET30	SM00	BOILER Two Month	6	✓	H	2	3	H	2	100		1	SF1124		
0030		FMS-A006	ET30	SM00	BOILER Six Months	9	✓	H	3	3	H	2	100		1	SF1124		
0040		FMS-A006	ET30	SM00	BOILER Anually	12	✓	H	3	4	H	2	100		1	SF1124		

MntPack Components Rel PRT SPack Insp.Char Entry 1 / 4

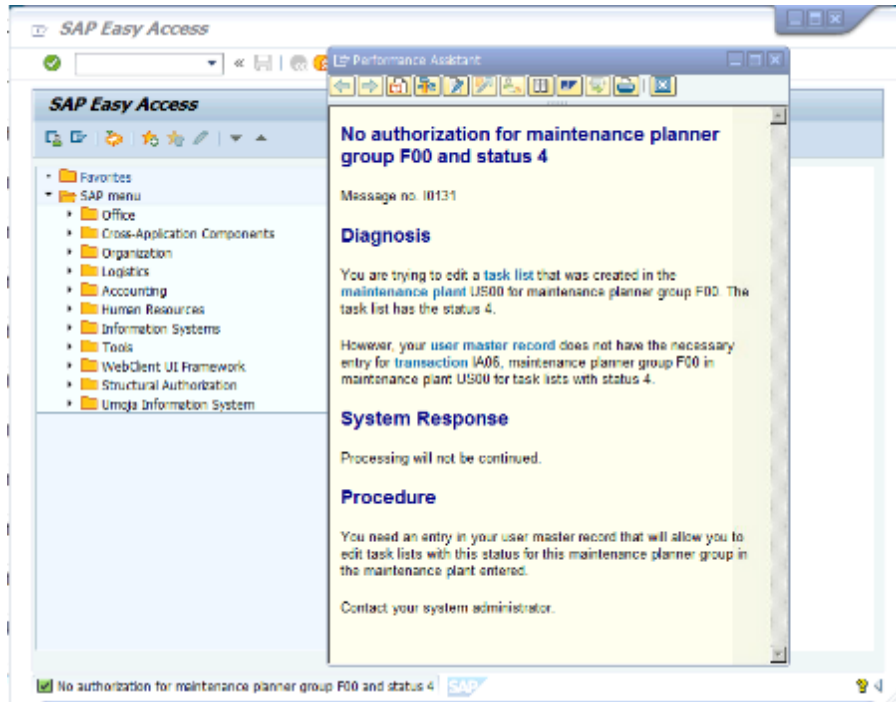
Review the activity type, duration, number of required staff and unit of measure. Next review the operation long text (LT) by double clicking on the tick under the LT (  ).



Select the green arrow to go back to Operation Overview and select the Header button. The system opens the Task List Header data:



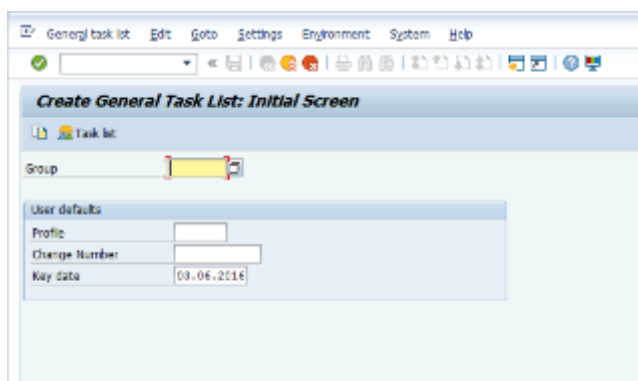
**Security restriction to create and update a Task List.** The Task List creation and update is restricted at Plant level. Therefore, if the PM Planner is not authorized to access or create the Task List in the chosen Plant, the following error message will appear:



## Create General Task List

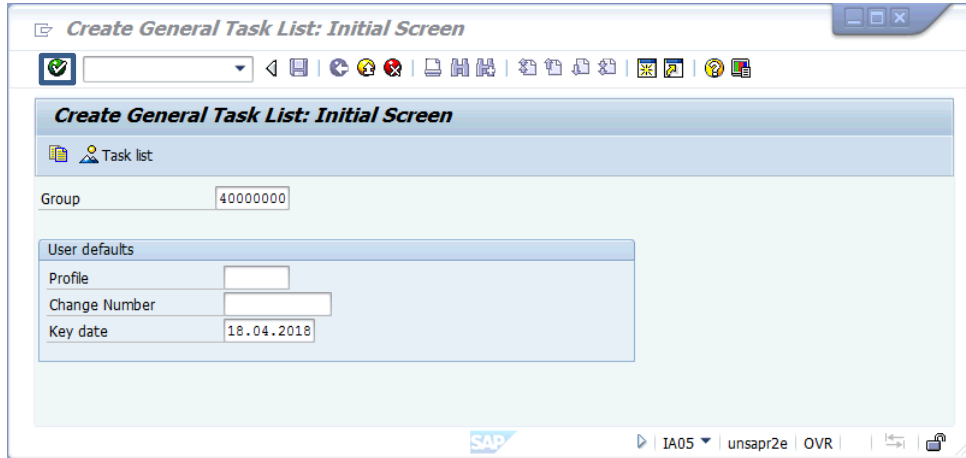
**Note:** Key terminology for Task List data is provided in the appendix of this document.

Task list creation is available through Mass Creation programme or individually by using transaction **IA05**. This instruction will guide you on how to create General Task Lists with transaction IA05.

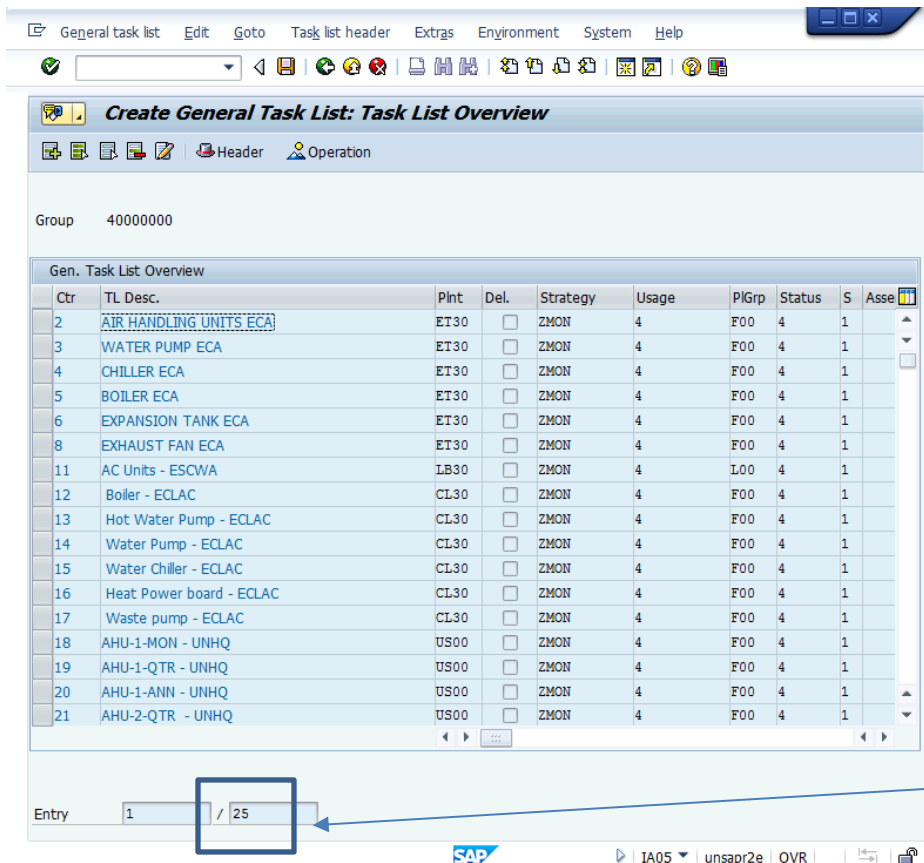


Concerning the Object type number in the equipment's record enter one of the 26 Task List Groups displayed on page 7.

Select and hit enter:

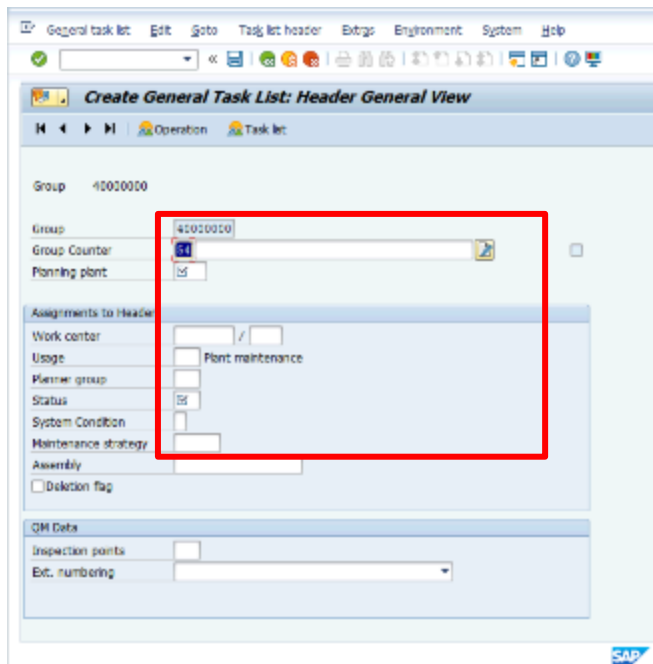


The task lists under that group will be displayed:



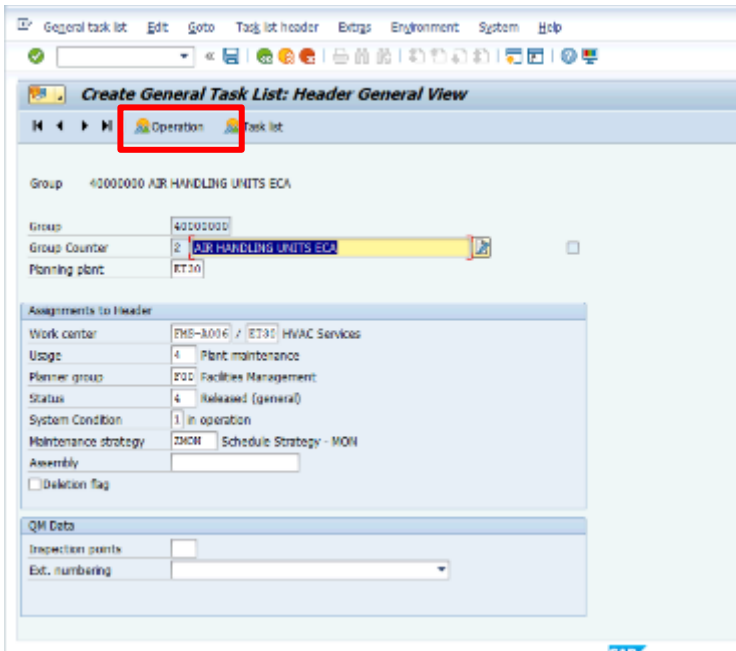
This is a total number of task lists created within the Task List Group.

To create a new task list, navigate to the Menu bar in “Edit” > “New Entries” or just hit F6. The system opens new Task List as below:

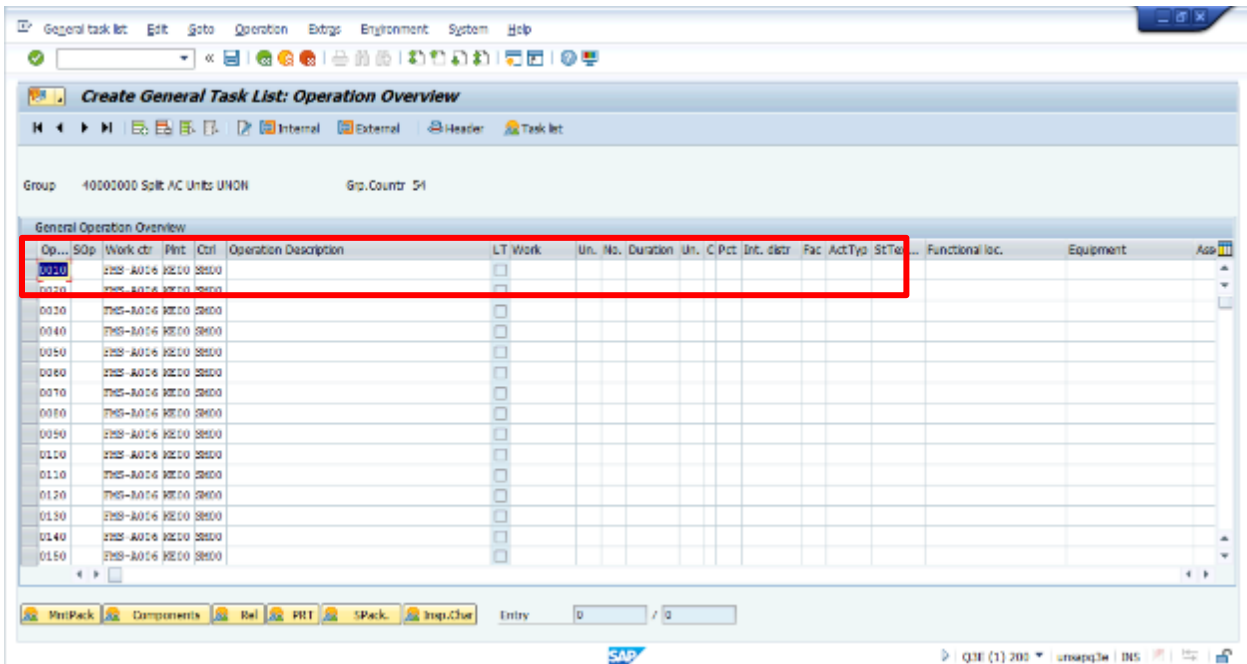


- The group counter should be automatically assigned, otherwise enter next available Group Counter.
- At the right side of Group Counter, include the name of the task list and entity, for example, “Split AC Units UNON”.
- Enter the Planner’s plant (for example KE00)
- The work center is the work center assigned to perform the operations (for example FMS-A006) and plant
- Usage select “4” (Plant Maintenance)
- Planner Group, select the correct planner group, for example, F00
- Status select “4” (Released / General)
- System condition select “1” (In Operation)
- Maintenance Strategy, select the appropriate strategy (for example “ZMON”) (see the detailed information on strategies at the beginning of this chapter).

Then hit enter and system will derive all master data required.



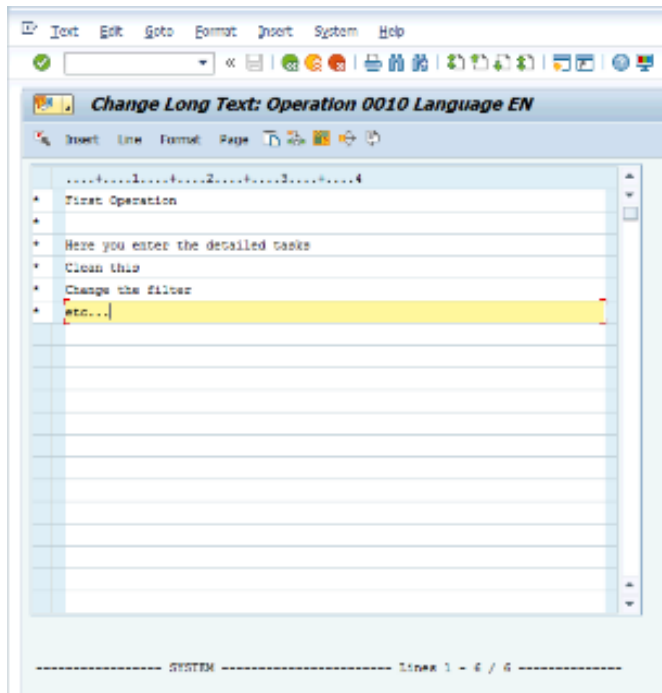
Select the “Operation” button



In the Operation overview screen, enter for each operation the following:

- Operation Description
- LT is long text, enter to LT and paste the already prepared detailed steps of the maintenance operation. Operations will appear in the service order once the Maintenance Plan will be scheduled.





Note: you might see the text processor to enter the long text without formatting options (notepad style) or with formatting options (word style). In both cases, you can type the detailed activities, or you can paste them from another file.

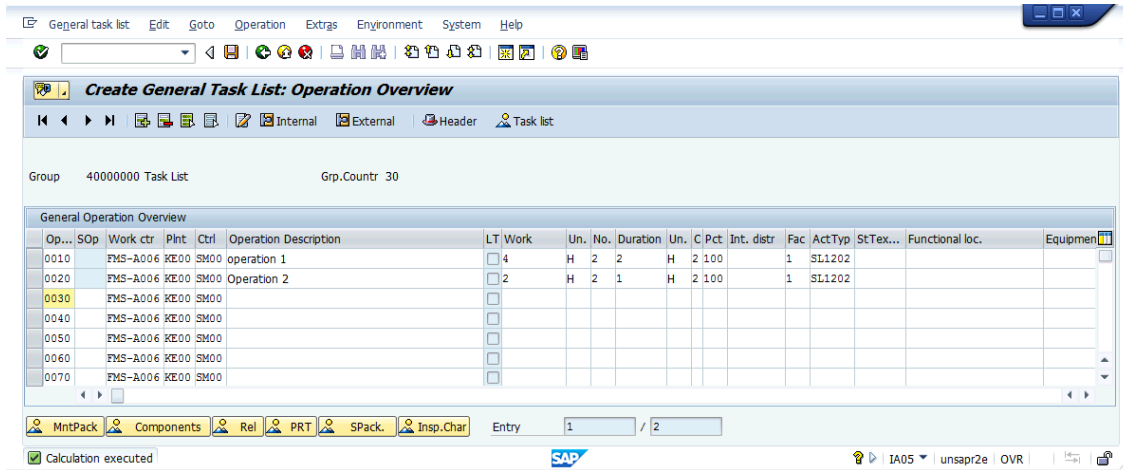
Once the long text is entered, select back arrow to resume on the main screen and populate the following fields:

- Un - unit of measure as defined in the Activity Type. Mostly, it is H (hour).
- No - is the number of technicians required
- Duration - is the total duration of the operation
- Un - unit of measure as defined in the Activity Type. Mostly, it is H (hour).
- In the column "C" select 2 (calculate work)
- Select the Activity type from the drop-down list. The activity type is master data assigned to Work Centre. In case the work will be performed "in-house" and there is no cost recovery involved, select the activity type that starts with S (Statistical). Why Statistical activity type? The Statistical activity type will generate the Cost but will NOT consume the budget.

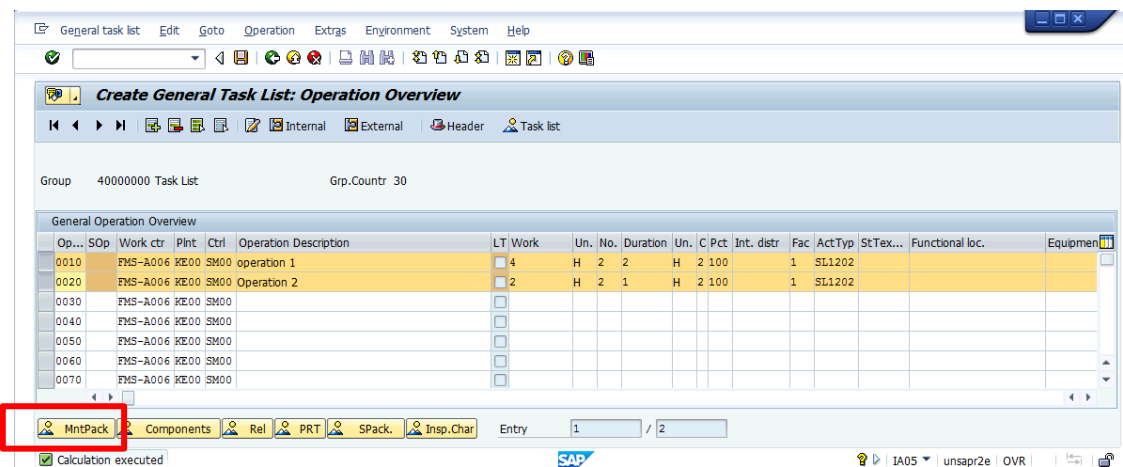
Once you hit enter, if there are no errors, the system will calculate the total work.

- Work - is the total amount of hours needed for the task (the multiplication of the number of technicians by the duration), calculated by the system.

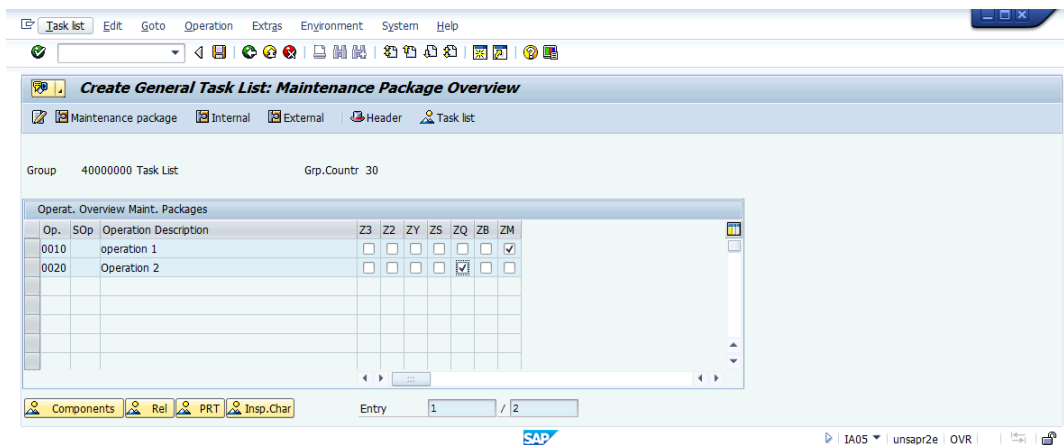
Complete one row for each operation that needs to be performed. In case there are only two operations the dashboard should look like below:



Once all the operations have been entered, set up the maintenance packages which represent frequency /cycle of the operations. Select the button MntPack (maintenance package).



Maintenance Package overview is opened:



Note: In the Production environment the Planner will be able to select one of the following frequencies (cycle) for Time Based Strategy (based on the strategy selected):

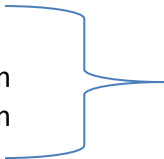
- Weekly
- Biweekly
- Monthly
- Bimonthly
- Quarterly
- Semi-annual
- Annual
- Biannual
- Triennial



These are the cycles in the time-based strategy that can be assigned to the Operations. The cycles create the packages

In case of Performance-Based Strategy, the followings frequencies (cycles) are available for distance:

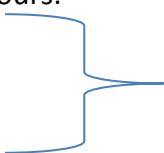
- Z1 – 5000 km
- Z2 – 10000 km
- Z2 – 15000 km



These are the cycles in the performance-based strategy with activity kilometer (KM) that can be assigned to the Operations. The cycles create the packages

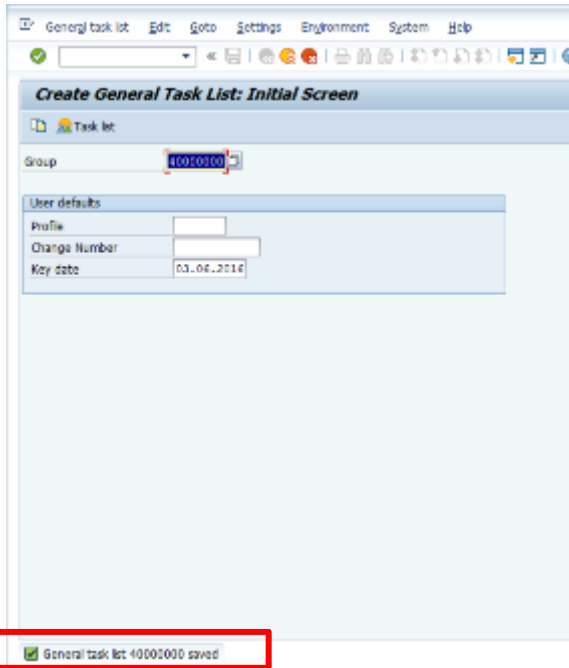
For running hours:

- Y1 – 500 HR
- Y2 – 1000 HR
- Y3 – 1500 HR

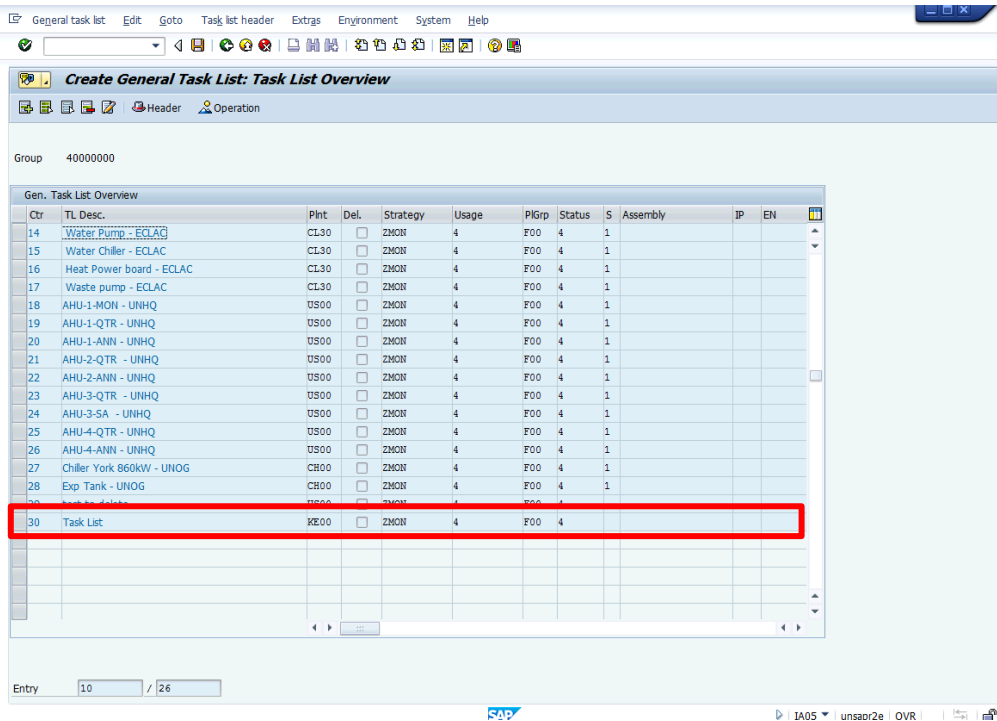


These are the cycles in the performance-based strategy with activity hours (HR) that can be assigned to the Operations. The cycles create the packages

Then select icon Save and the task list will be created.



Enter the Task List again to check the result:

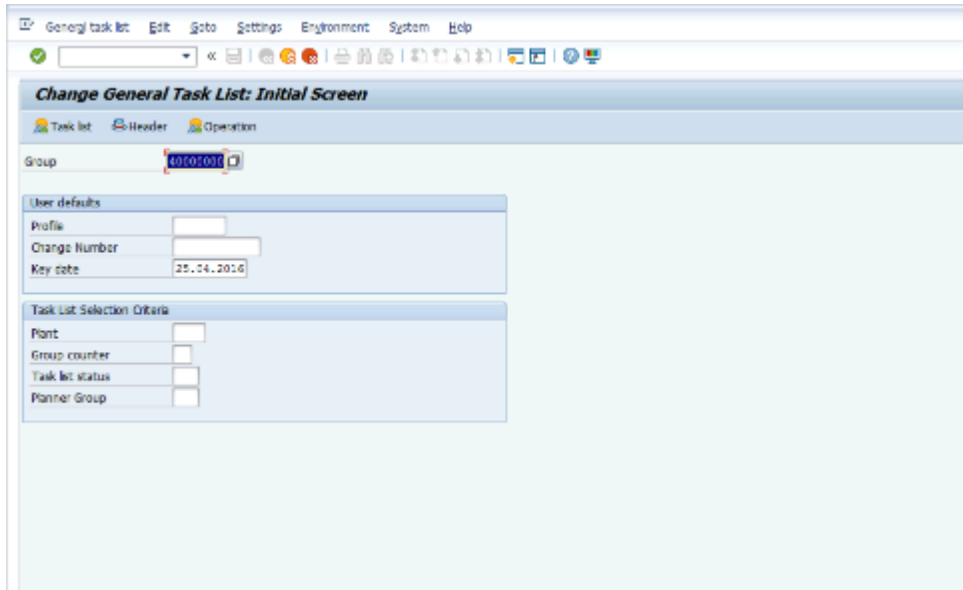


The newly created Task list has been added to the Task List Group.

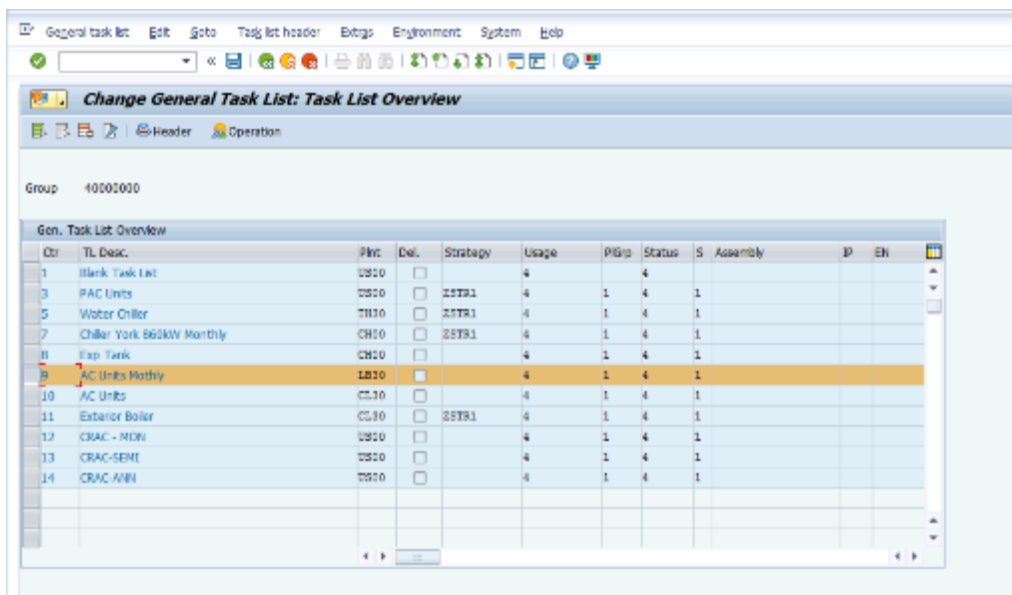
## Update the existing Task list

Maintenance Planner can manually update the Task List by using t-code IA06.

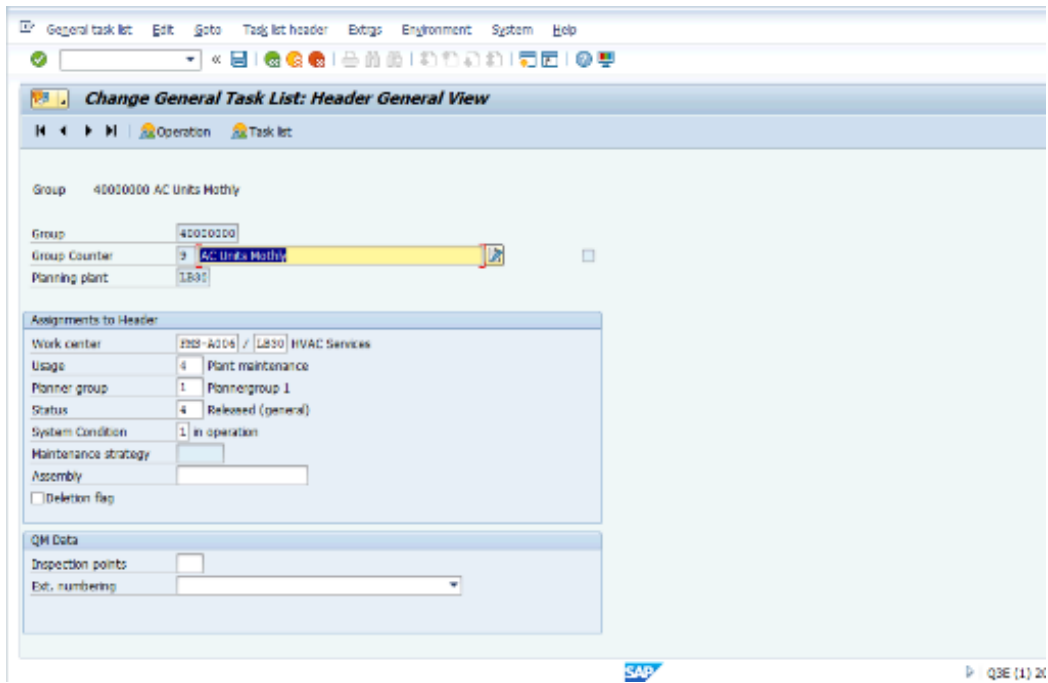
In the new screen enter the task list Group number and Plant.



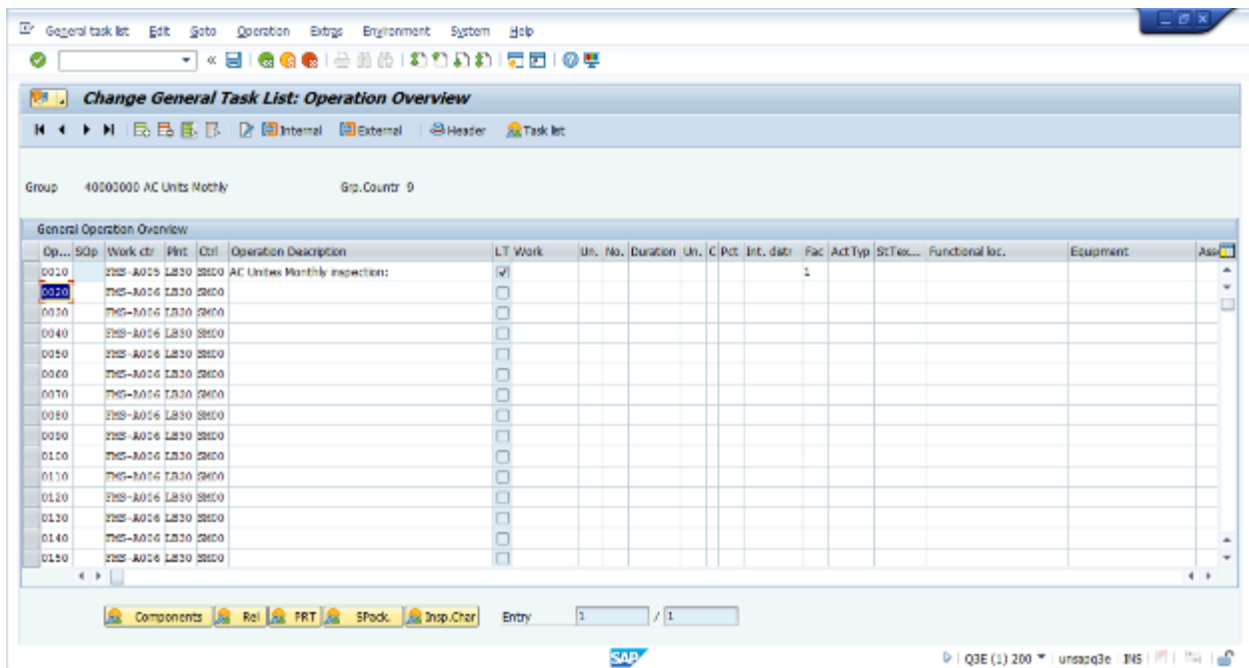
In the Task List Overview select the desirable task:



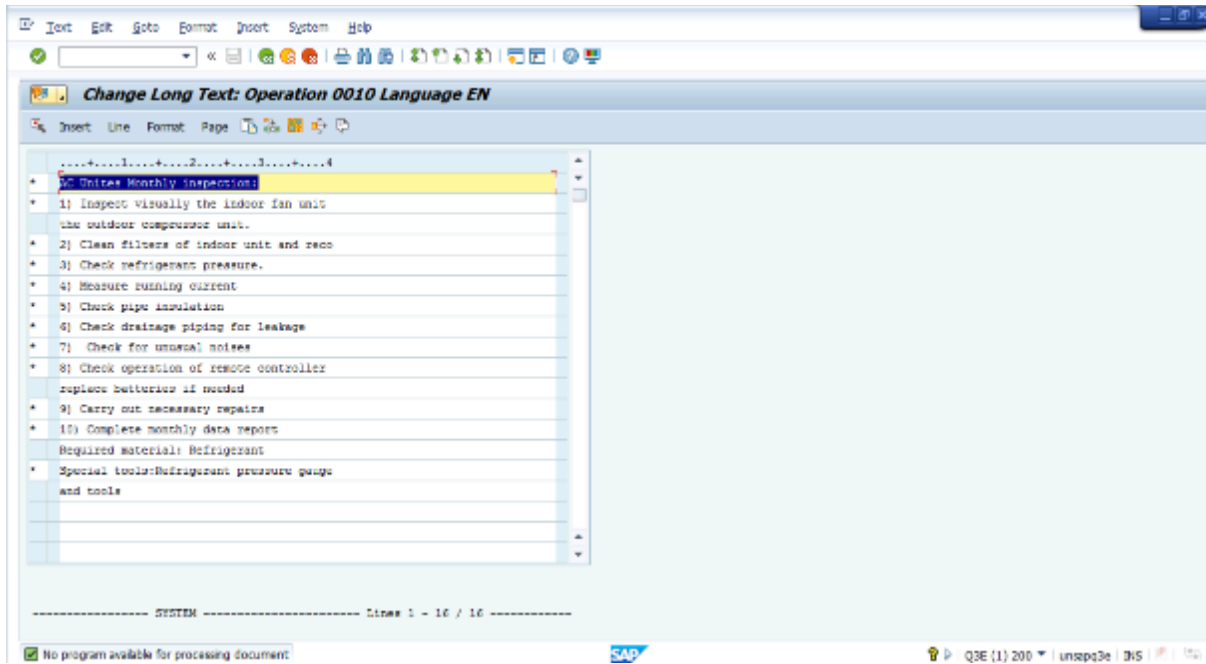
Hit the “Header” in the toolbar.



Hit the “Operation” in the toolbar:



Double click the tick in LT column to review or update the long text of the operation:



Once the task list is updated, hit Save.

**Note:** For the Multiple Counter Maintenance Plan create General Task List **without entering the Strategy** in the Task List header.

\* \* \* \* \*

Module 3: Maintenance Plan and Item



Maintenance Plan

- Maintenance Plan combines the Maintenance Item and scheduling parameters.
- By scheduling the Maintenance Plan the system automatically creates the Service Orders.
- A Maintenance Plan can contain multiple maintenance items (from one to hundreds).
- By scheduling the Maintenance plan the system generates a service order for each maintenance item based on the frequency (maintenance packages) defined in the task list



Maintenance Plan classification

In Umoja, we create the following Maintenance Plans:

Time Based Strategy Maintenance Plan

Performance Based Maintenance Plan

Multiple Counter Maintenance Plan

**Time-Based and Performance-Based Maintenance Plans can be created by using the same t-code (IP42). The maintenance Strategy determines whether the Maintenance Plan is time-based or it depends on the performance counter.**

Maintenance Strategy shows complex maintenance cycles and defines the criteria/rules for the sequence of planned maintenance work. It contains general scheduling information and can be assigned to as many maintenance task lists (general task lists) and maintenance plans as required.

Time dimension unit of measure specifies Time-based Strategy. The schedule of the Time-Based Maintenance Plan generates the Maintenance Orders within the stated time slot.

Activity unit of measure specifies Performance-based Strategy. The schedule of Maintenance Orders in Performance Based Maintenance Plan refers to counter readings (performance) maintained for measuring points at pieces of equipment and functional locations.

Note: More about Maintenance Strategy is in the Appendix of this document.



**Multiple Counter Maintenance Plans** are used in counter-based (performance-based) maintenance programme but can also have a time-based and performance-based element (mixed strategy). This type of maintenance planning doesn't refer to a maintenance strategy. In the multiple counter plan, the Planner creates maintenance cycles set and allocate counters of the maintained objects with different dimensions, for example, kilometers traveled or hours working.

As mentioned, the Multiple Counter Maintenance Plan also integrates time-based cycles into the maintenance plan. However, these do not have counters in the time-based cycle. In Umoja we create a multiple counter plan with a cycle set as a copy model for maintenance cycles.

For example: mixed cycles: the performance with the counter for kilometers (5000 KM) and the time - based on the cycle of 6 months. If the Operation type is set up to OR, as soon as any of these two cycles meet the condition of the vehicle (reaches 5000 KM or 6 months passed), the system will generate the maintenance order.

Note: Key terminology for maintenance plan data is provided in the appendix of this document.

## Time - Based Maintenance Plan (TBMP)

This module explains how to create Time Base Maintenance Plan and Maintenance Item within the maintenance plan. Further, you will be able to update and search the existing maintenance plan.

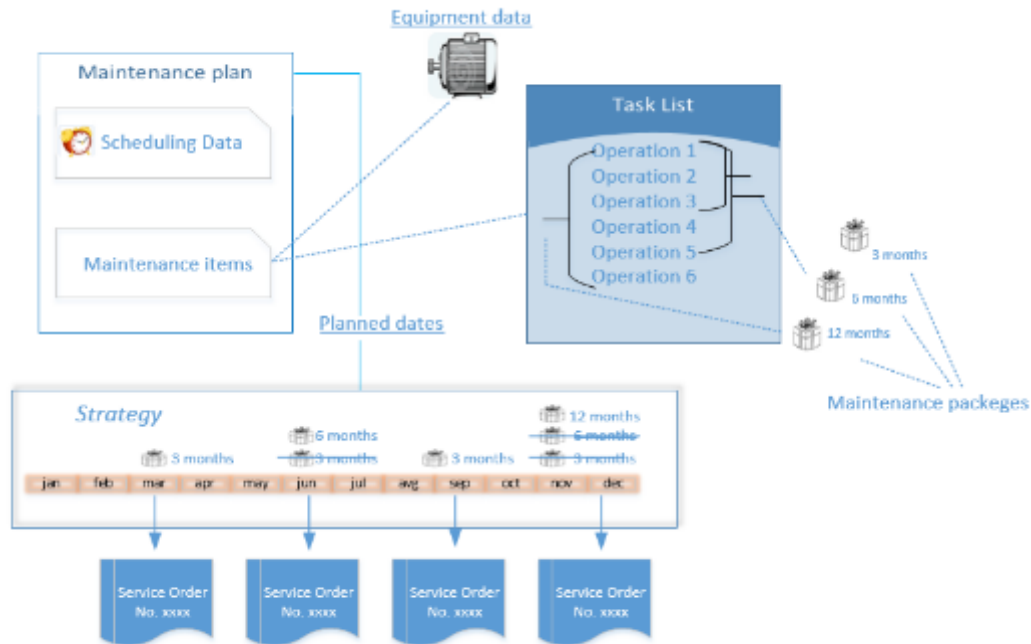
Maintenance Plans defines the scheduling parameters and applies them to the Maintenance Items.

TBMP creates the maintenance program within the defined time slot and for defined cycles (for example within five years, every X months).

The TBMP structure contains the following:

- Scheduling parameters – defined in TBMP header that includes Time Based Strategy and additional parameters
- Maintenance Item – defined maintenance object and General Task List.

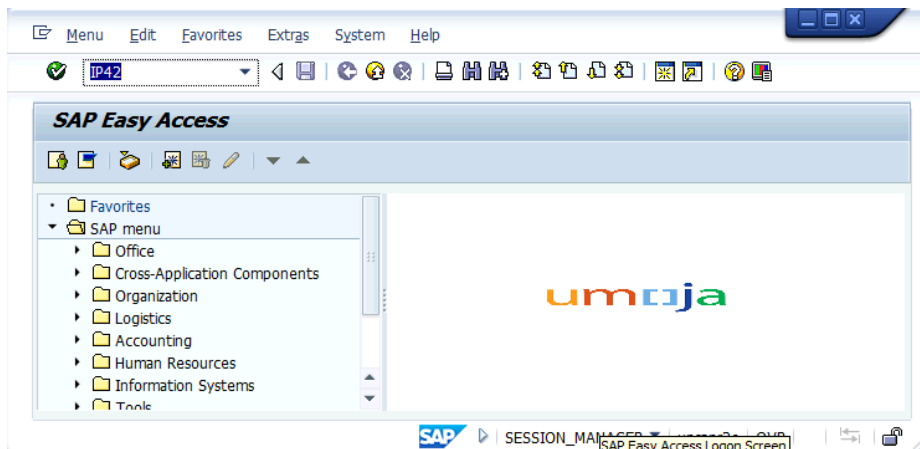
The following figure represents complete Time-Based Maintenance Plan structure and the final product (maintenance order) which the system would create by scheduling the TBMP.



A Maintenance Plan and Maintenance Items can be created within the same transaction. There is also an option to create the maintenance items through the separate transaction (IP04).

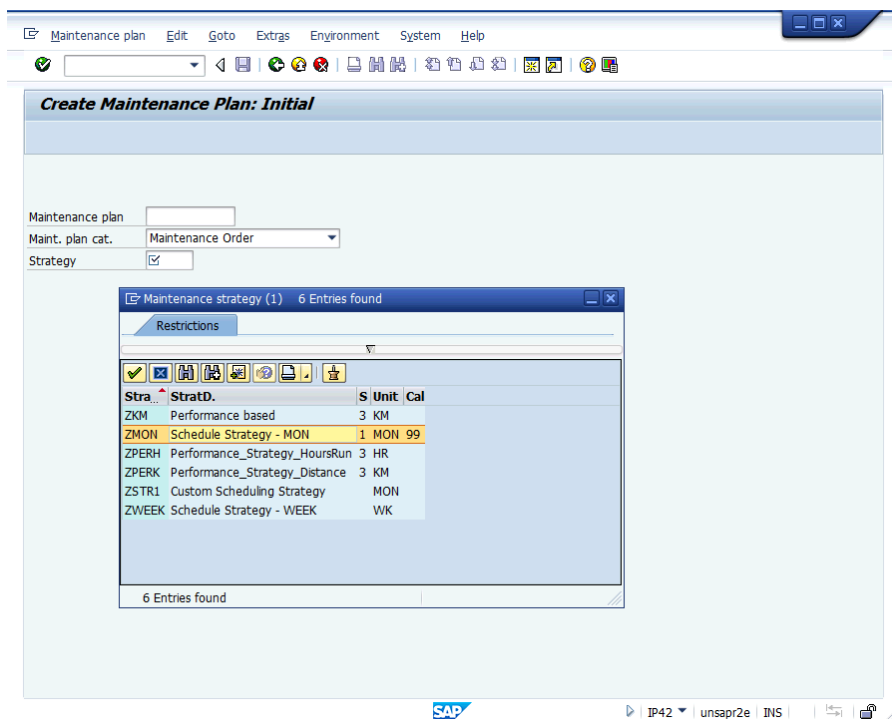
## Create Time Based Maintenance Plan

In the Umoja screen, type t-code IP42 and hit enter

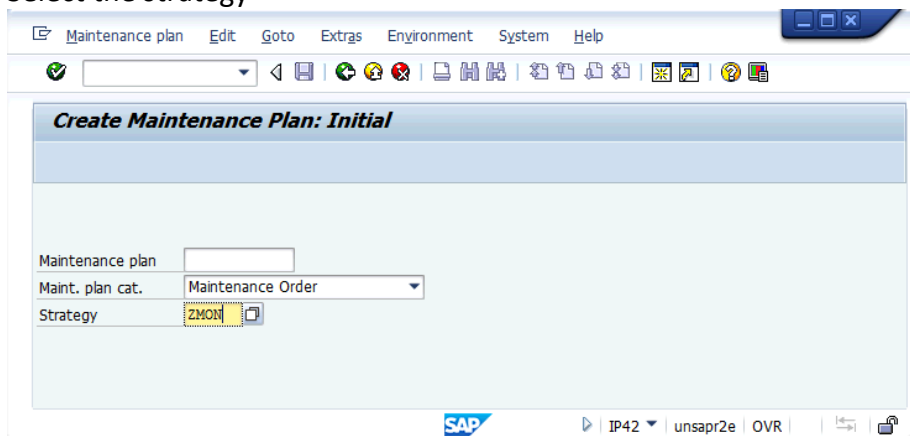


In the Create Maintenance Plan screen choose the following:

- Maint. Plan category: choose Maintenance Order
- Strategy: click on the matchcode near the Strategy field. In the pop-up select one of the two Time Based Strategy: ZMON or ZWEEK



### Select the strategy



Hit enter.

In the next screen, Create Maintenance Plan: Strategy plan:

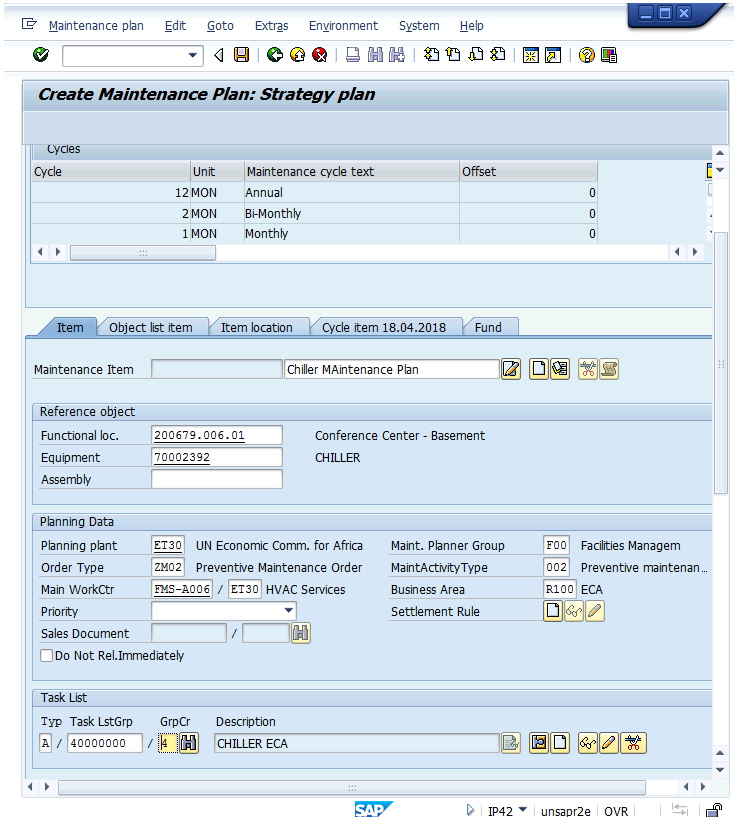
- Enter the maintenance plan short description

Next, in the maintenance item part enter the following:

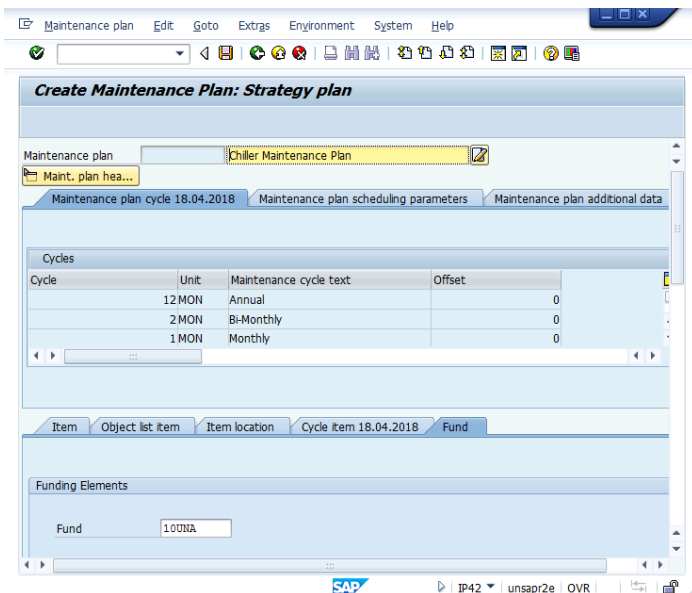
- A number of the maintenance object (equipment # in this instruction example).
- Order type: ZM02 , Note: always use order type ZM02 as this is the Maintenance Order
- Main Work Centre and Plant: enter the responsible work center (example FMS-A006) and your Plant (example ET30).

Hit enter. If a pop-up screen appears and asks you whether to copy master data from the equipment record, please select Yes.

The system will derive the data from the Master Equipment record (short description, Planning Plant, Maintenance Activity Type (002) and Business area).  
 Also, enter the Maintenance Planner Group (in this case F00).  
 Then enter the Task List number.



Further, select the tab Fund and enter the Fund responsible for the equipment maintenance. (in this case is 10UNA).



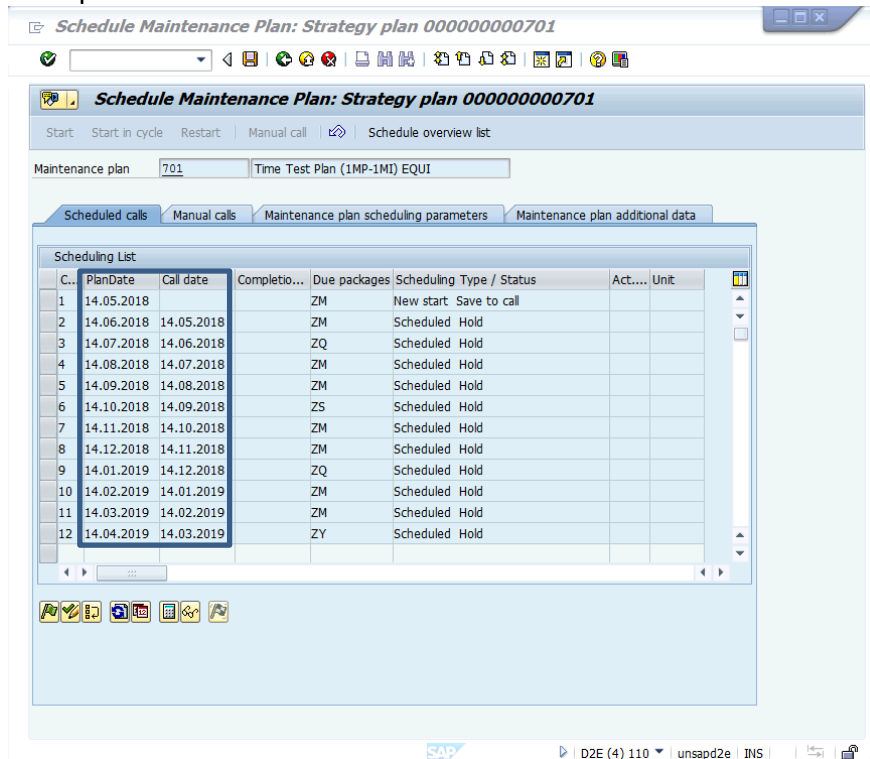
Then populate the scheduling parameters in the maintenance plan header tab: Maintenance plan scheduling parameters, as per below:

- Call horizon: interval from 0 to 100%. The Call horizon determines the period between the Call Date and Plan Date. The calculation period is based on the lowest cycle period incorporated in the maintenance plan. In the examples given below, there are three cycles: ZM – month, ZS – semi-annual, and ZY - annual. Since the lowest period is cycle ZM, the calculation time is based on a month. Review below the scheduling Call Date and Plan Date results for Call horizon 0%, 50%, and 100%.

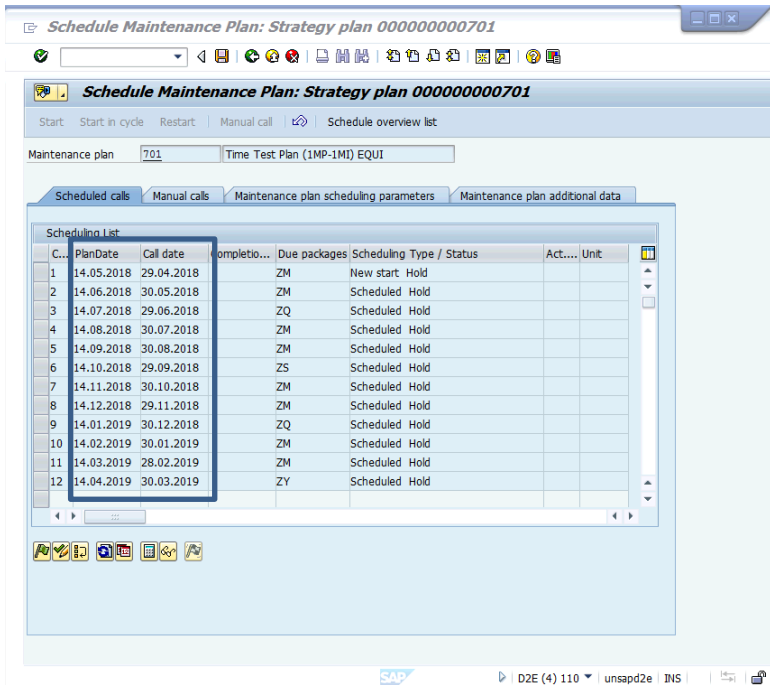
**Note:** Plan Date – Maintenance Order’s execution start date.

Call Date – the date of maintenance order creation.

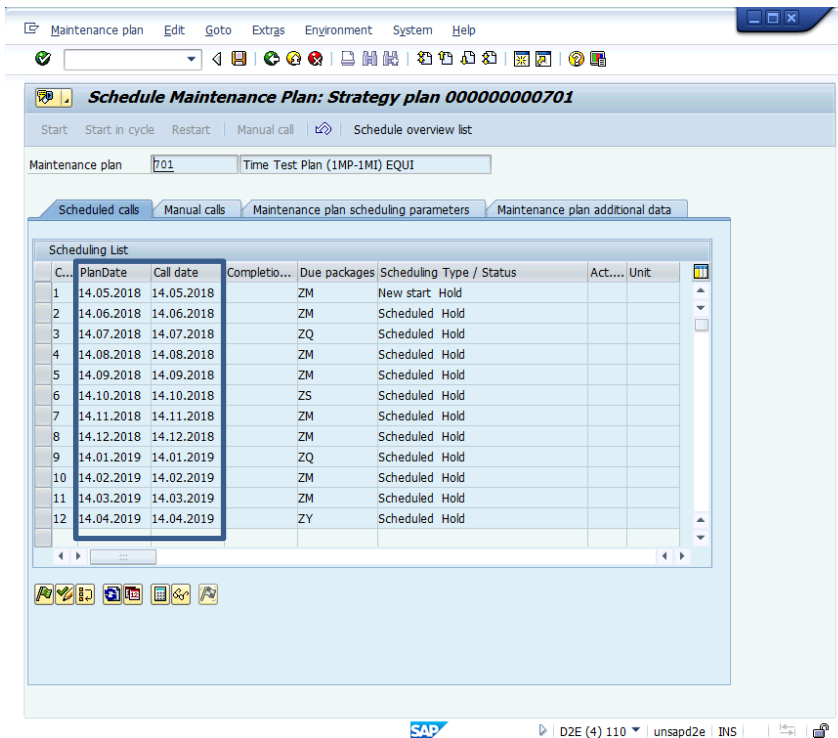
Example of maintenance order schedule for Call horizon 0%



Example of maintenance order schedule for Call horizon 50%

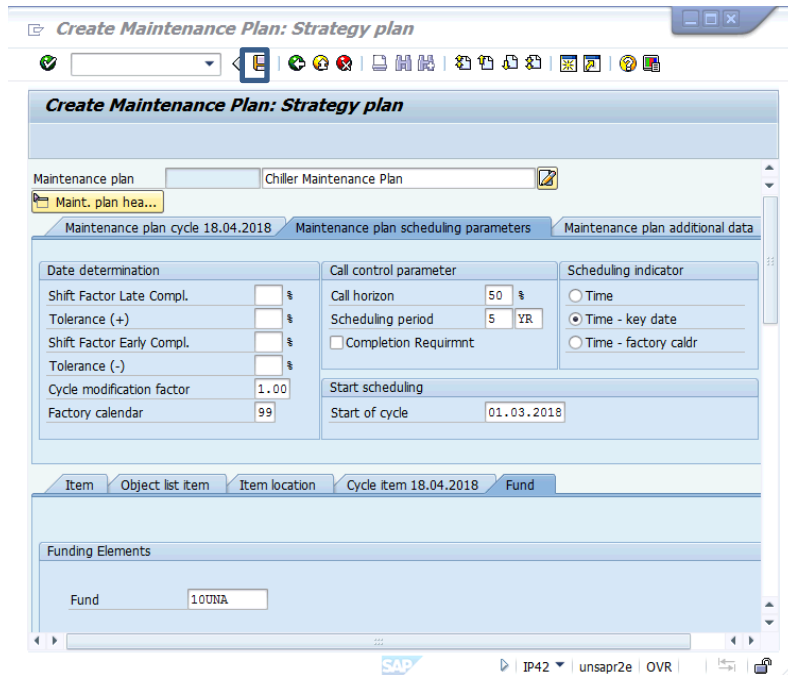


Example of maintenance schedule for Call horizon 100%

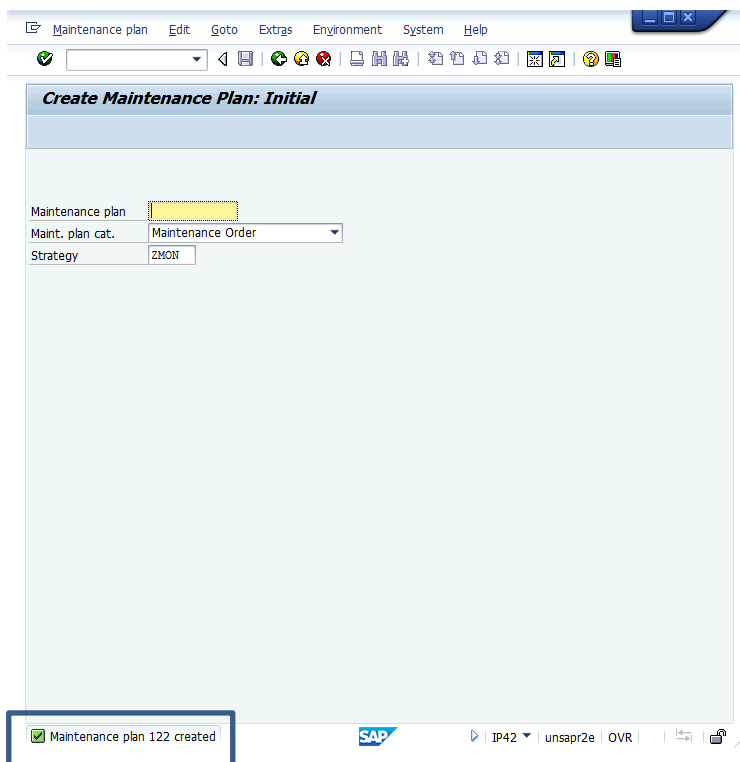


- Scheduling period: The scheduling period specifies days, months, or years the actual length of time over which scheduling will take place. For example, five years. Note, please enter a unit of measure (UoM) in the next cell.
- Start of the cycle: starting the day when scheduling period and cycle start to schedule the maintenance call objects (maintenance orders).

- Scheduling indicator: chose Time-key data (by choosing this scheduling indicator the planned date will be at the same date in the month (example: 4 March, 4 April, 4 May, etc.)
- Keep the Factory calendar "99" and Cycle modification factor "1". A cycle modification factor greater than 1 lengthens the cycle, whereas a factor less than one shortens the cycle. Umoja recommends using "1".

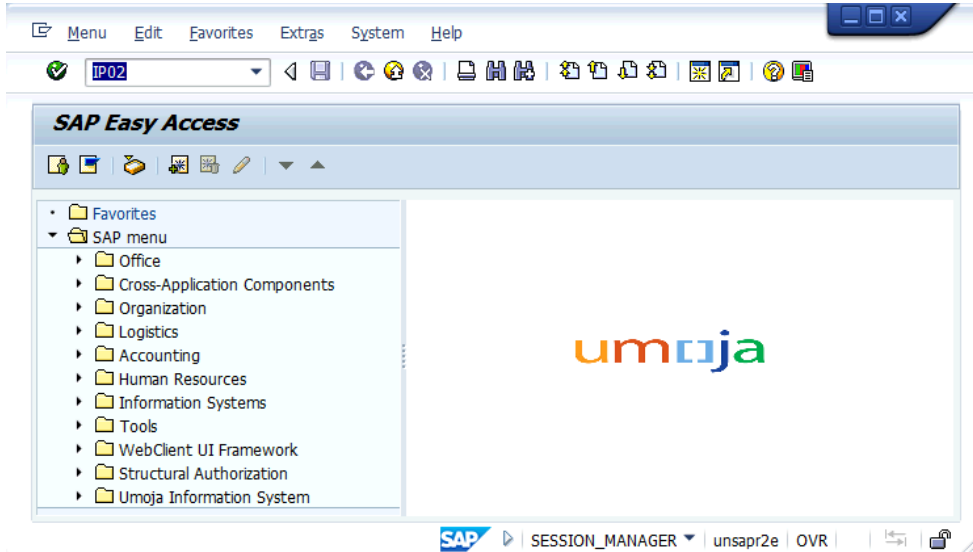


Then hit the Save button. The Maintenance Plan number is displayed at the bottom of the screen.

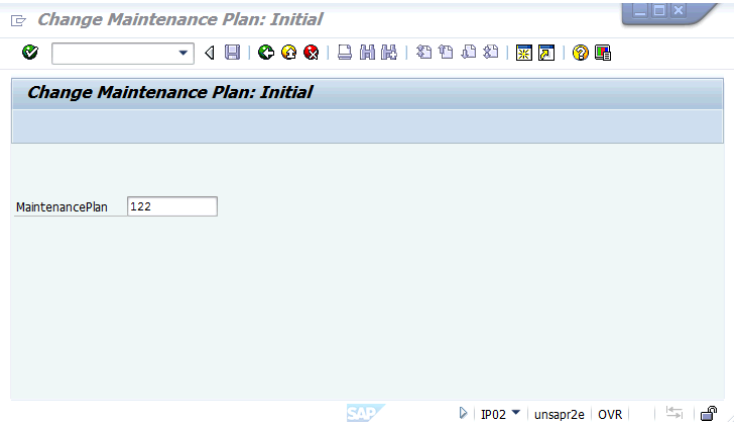


## Amend the Time-Based Maintenance Plan and add the Maintenance Item

Enter transaction IP02.

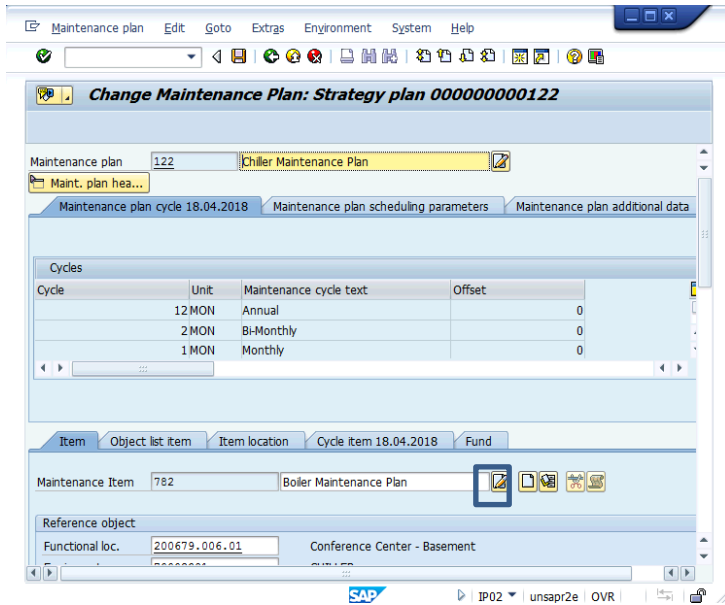


Then enter the Maintenance Plan number already created.

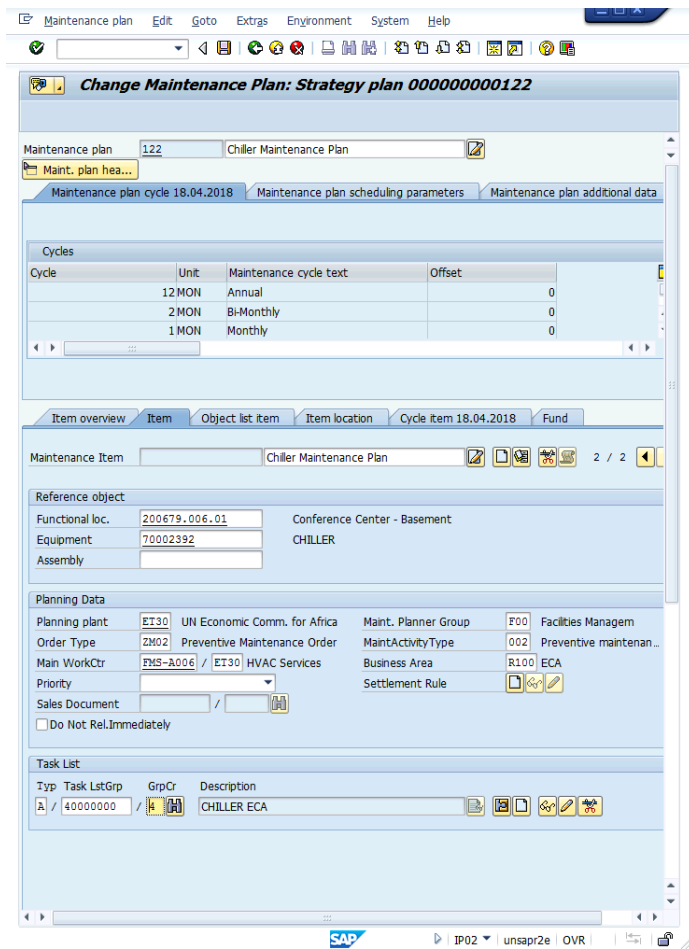


Hit the button “Create more items”

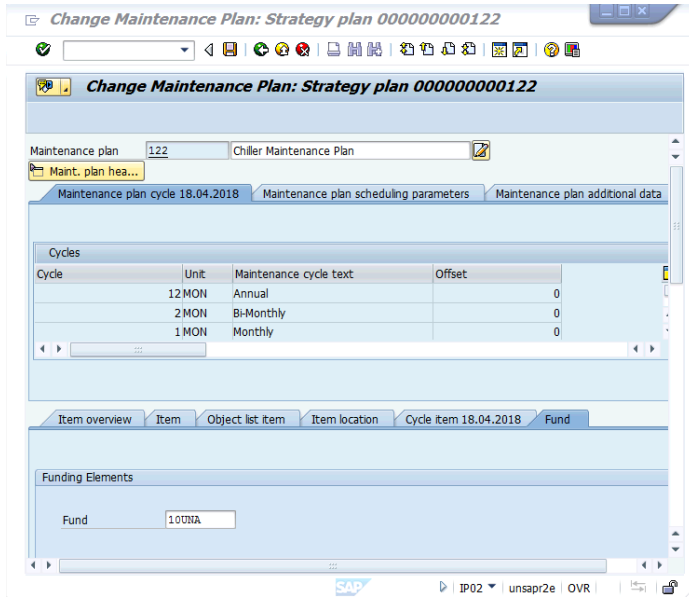




Enter another equipment number and follow the instruction for the previous maintenance item.

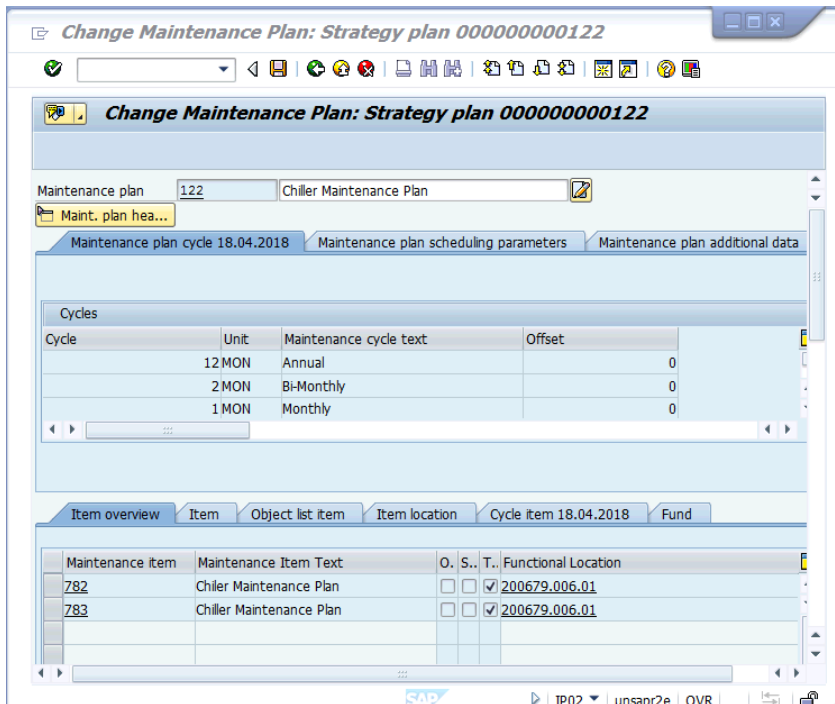


Enter the Fund in fund tab



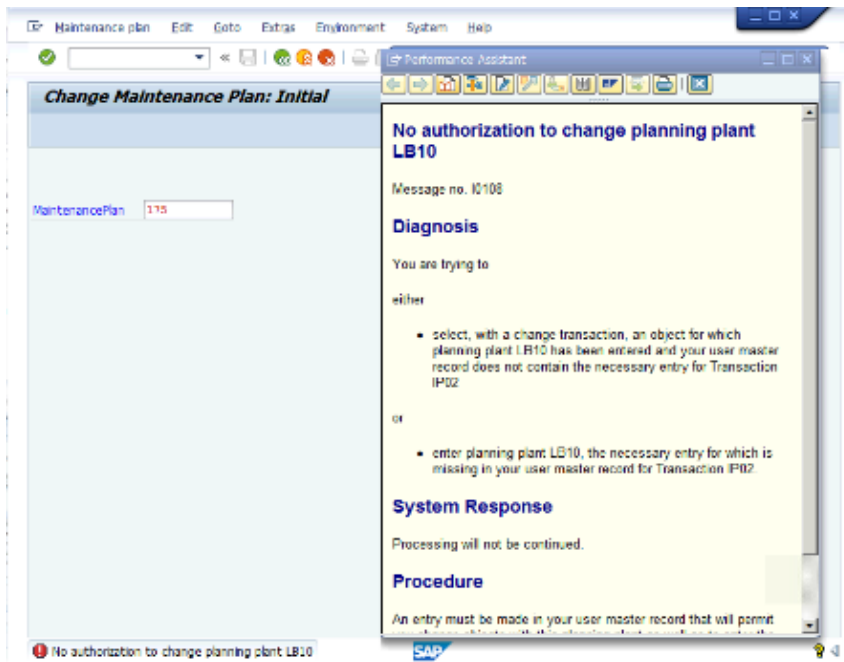
And hit the Save button.

Login again in the same Maintenance Plan and take a note of the two maintenance items within the same maintenance plan.



**Note: Security restriction to create and update the Maintenance Plan & Item.**

Maintenance Plan & Item are restricted at the Plant and Planner Group level. If the PM Planner is not authorized to update the Maintenance Plan & Item in the chosen Plant, the displayed error message will appear. This security restriction applies to all types of the Maintenance Plans and items.



## Performance – Based Maintenance Plan (PBMP)

As we already mentioned, the Time-Based and Performance-Based Maintenance Plan share the same t-codes and Umoja settings but are determined by Maintenance Strategy (time or performance strategy).

This module explains how to create Performance Based Maintenance Plan and Maintenance Item within the maintenance plan. Furthermore, you will be able to update and search the existing maintenance plan.

PBMP creates the maintenance plan based on counter readings maintained for measuring points within the equipment or functional locations. Counters are represented as a special form of measuring point located at the equipment record or functional location.

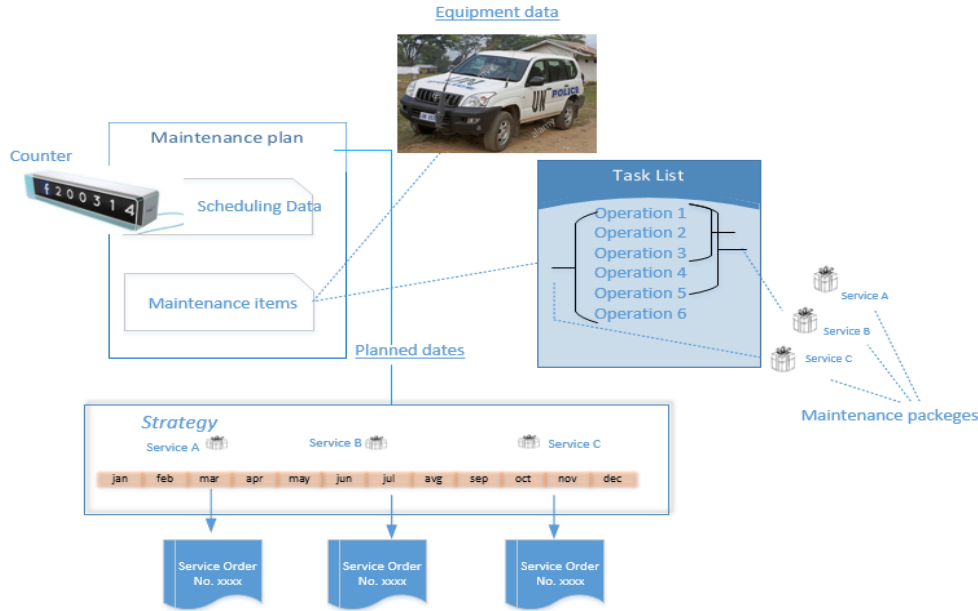
Counter readings are taken within specific intervals and in particular measurement units for example, counter readings for kilometers driven for vehicle or hours worked for generator set. Counter readings describe a status at a counter at a point in time (example: Carlog reading in kilometers). They are documented in the form of measurement documents.

Maintenance activities are performed when the counter of the technical object has reached a specific counter reading, for example, 5000 km per vehicle for Service A.

The PBMP structure contains the following:

- Scheduling parameters – defined in PBMP header that includes Performance Based Strategy and additional scheduling parameters.
- Maintenance Item – defined maintenance object and General Task List.

The following figure represents complete Performance-Based Maintenance Plan structure and the final product (maintenance order) which the system would create by scheduling the PBMP.



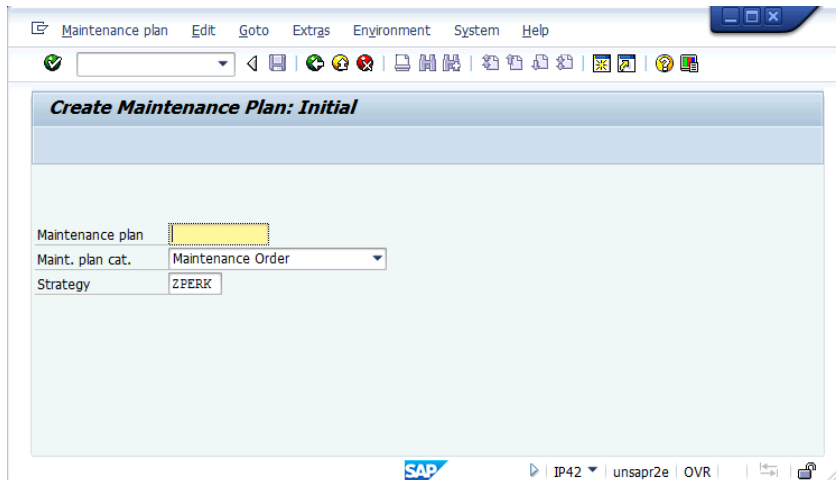
Note: Unlike time-based plans which can have multiple equipment records associated, performance (counter) based plan is specific to only one equipment record due to the measurement point. Therefore, please follow the instruction “only one equipment record within the same Performance-Based Maintenance Plan”.

### Create Performance – Based Maintenance Plan (PBMP)

In the Umoja screen write t-code IP42 and hit the enter.

In the following Create Maintenance Plan screen choose the following:

- Maint. Plan category: select Maintenance Order
- Strategy: enter one of two Performance Based Strategy: ZPERK (for vehicle-kilometers) or ZPERH (for a generator-working hour).



Hit enter.

In the next screen, Create Maintenance Plan: Strategy plan,

- Enter the maintenance plan short description

Further, in the maintenance item part enter the following:

- A number of the maintenance object (equipment # in this instruction example).
- Order type: write ZM02 , Note: always use order type ZM02 as this is a Maintenance Order
- Main Work Centre and Plant: enter the responsible work center (example CCS-C001) and your Plant (example LB10).

Hit enter. If a pop-up screen appears and asks you whether to copy master data from the equipment record, please select Yes.

The system will derive the data from the Master Equipment record (short description, Planning Plant, Maintenance Activity Type (002) and Business area.

Also, enter the Maintenance Planner Group (in this case L02).

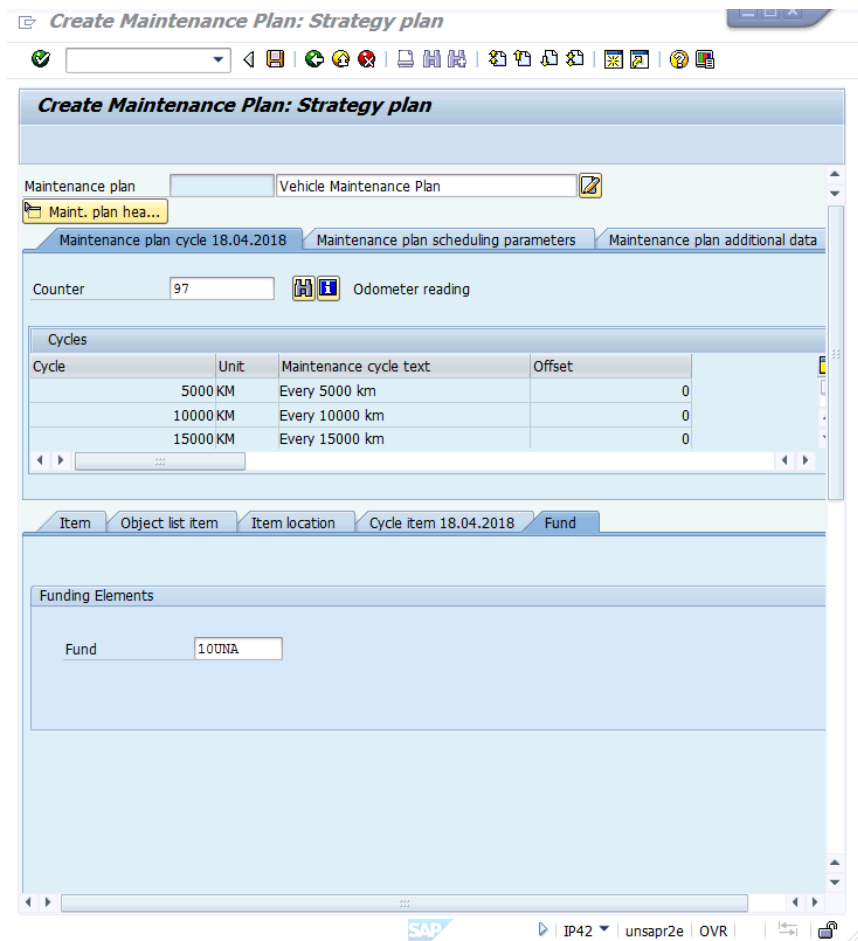
Note, the Counter number is derived from the equipment master data.

Then enter the Task List number.

The screenshot displays the SAP 'Create Maintenance Plan: Strategy plan' interface. The 'Maintenance plan' field is set to 'Vehicle Maintenance Plan'. The 'Counter' is 97, and the 'Odometer reading' is also 97. The 'Cycles' table shows three entries: 5000 KM (Every 5000 km, Offset 0), 10000 KM (Every 10000 km, Offset 0), and 15000 KM (Every 15000 km, Offset 0). The 'Item' section shows 'Vehicle Maintenance Plan' as the maintenance item. The 'Reference object' section includes 'Functional loc.' 100028.438 (Parking Area (Asphalt)), 'Equipment' 16812322 (TOYOTA, PRADO, KZJ120L-GKMG T), and 'Assembly'. The 'Planning Data' section shows 'Planning plant' LB10 (UN Interim Force in Lebanon), 'Maint. Planner Group' L02 (Transport Services), 'Order Type' ZM02 (Preventive Maintenance Order), 'MaintActivityType' 002 (Preventive mainten...), 'Main WorkCtr' CSS-C001 / LB10 (Transport Services), 'Business Area' P003 UNIFIL, and 'Settlement Rule'. The 'Task List' section shows 'Typ' A, 'Task LstGrp' 25000000, 'GrpCr' 4, and 'Description' Maintenance Task List Vehicle.

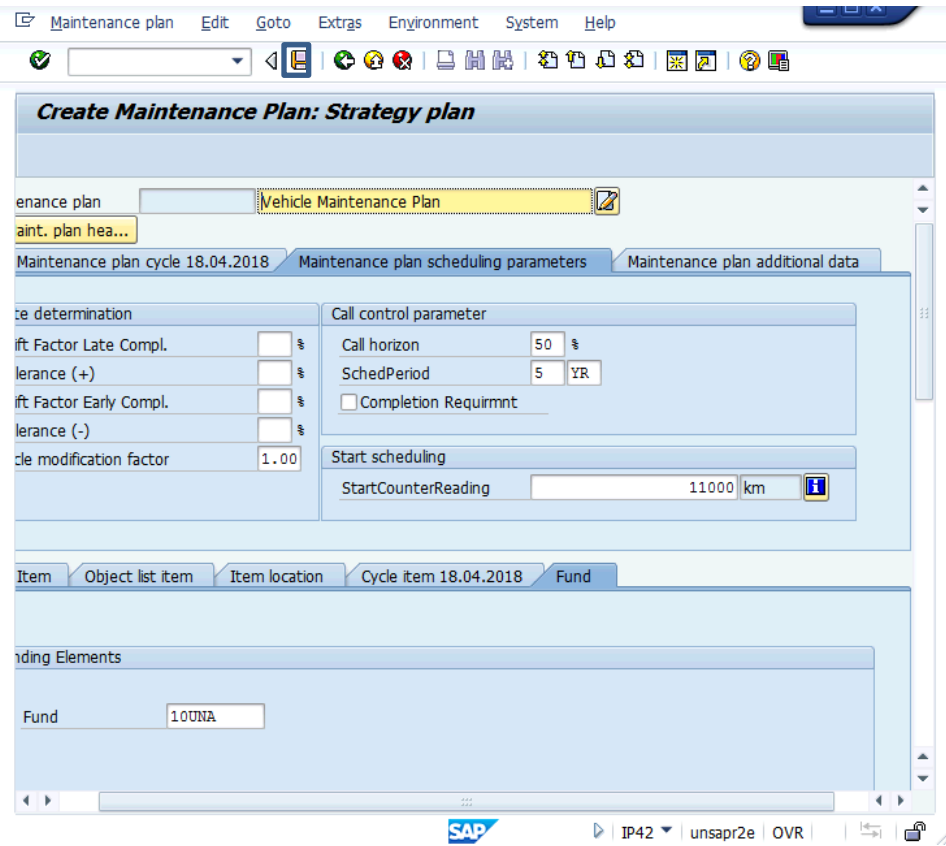
Cycle	Unit	Maintenance cycle text	Offset
5000 KM		Every 5000 km	0
10000 KM		Every 10000 km	0
15000 KM		Every 15000 km	0

Further, select the tab Fund and enter the Fund responsible for the equipment maintenance (in this case its 10UNA).

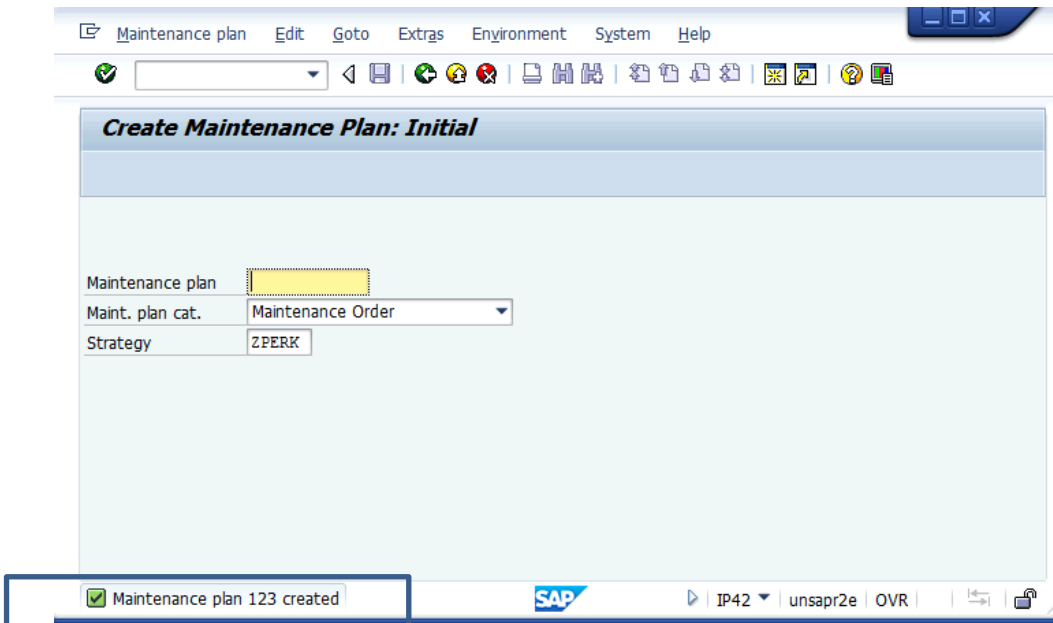


Then populate the scheduling parameters in the maintenance plan header tab: Maintenance plan scheduling parameters, as per below:

- Call horizon: from 0 to 100%. (in this example we chose 90%. That means the call object (Maintenance Order) will be generated at 90% of the time of fulfillment of the period between two cycles. The calculation is based on the last planned starting day for previous maintenance order).
- Scheduling period: The scheduling period specifies days, months, or years; the actual length of time over which scheduling will take place. For example, five years. Note, please enter a unit of measure (UoM) in the next cell.
- Start Counter Deading: represents the counter reading where maintenance schedule should start (in this vase 11000KM). Note: counter reading can not be less than the last measurement document reading.
- Unit of measure for Counter reading (KM in this example)
- Keep the Cycle modification factor "1". A cycle modification factor greater than 1 lengthens the cycle, whereas a factor less than 1 shortens the cycle. Umoja recommends use "1".

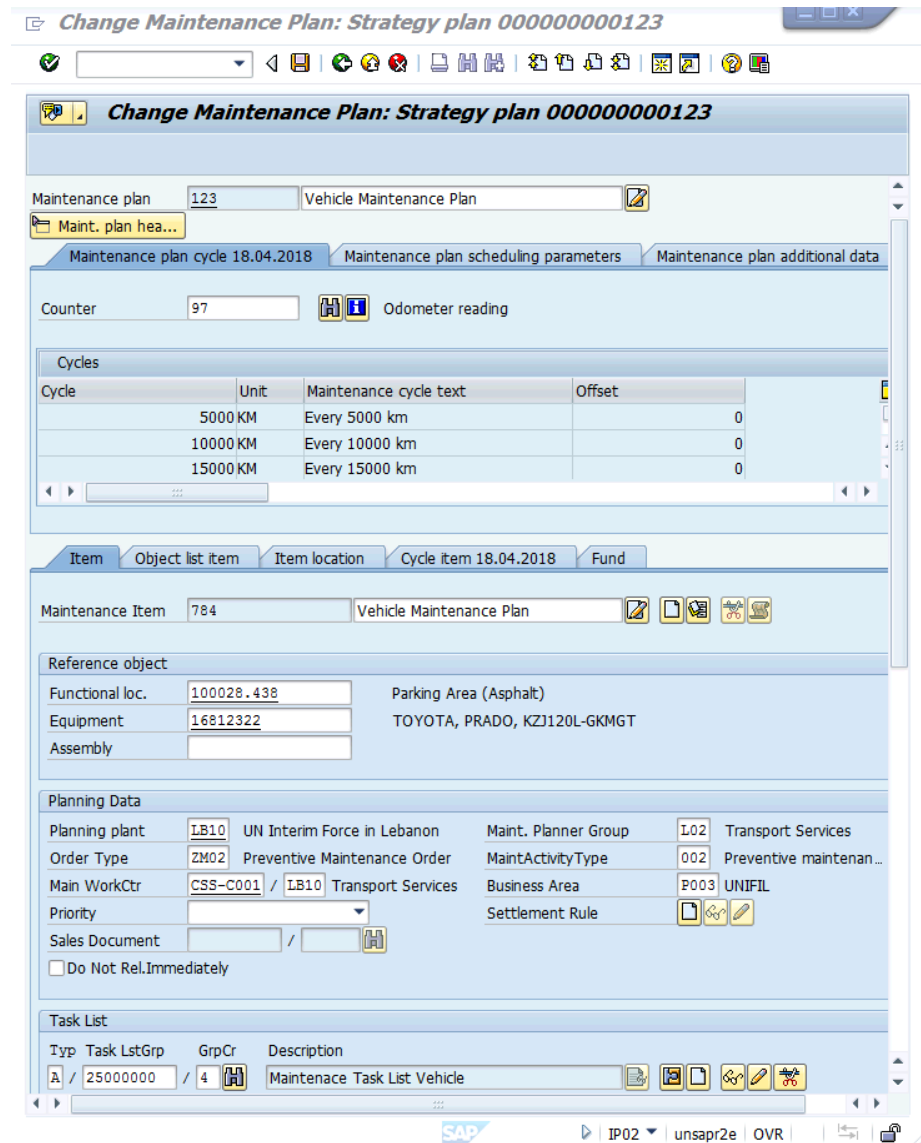


Then hit the Savebutton. The Maintenance Plan number is displayed at the bottom of the screen.



## Amend the Performance-Based Maintenance Plan

Enter transaction IP02, then Maintenance Plan number



The planner can amend any open (un-grayed out) data. **Note:** Do not create in Performance Based Maintenance Plan another maintenance item with different equipment number

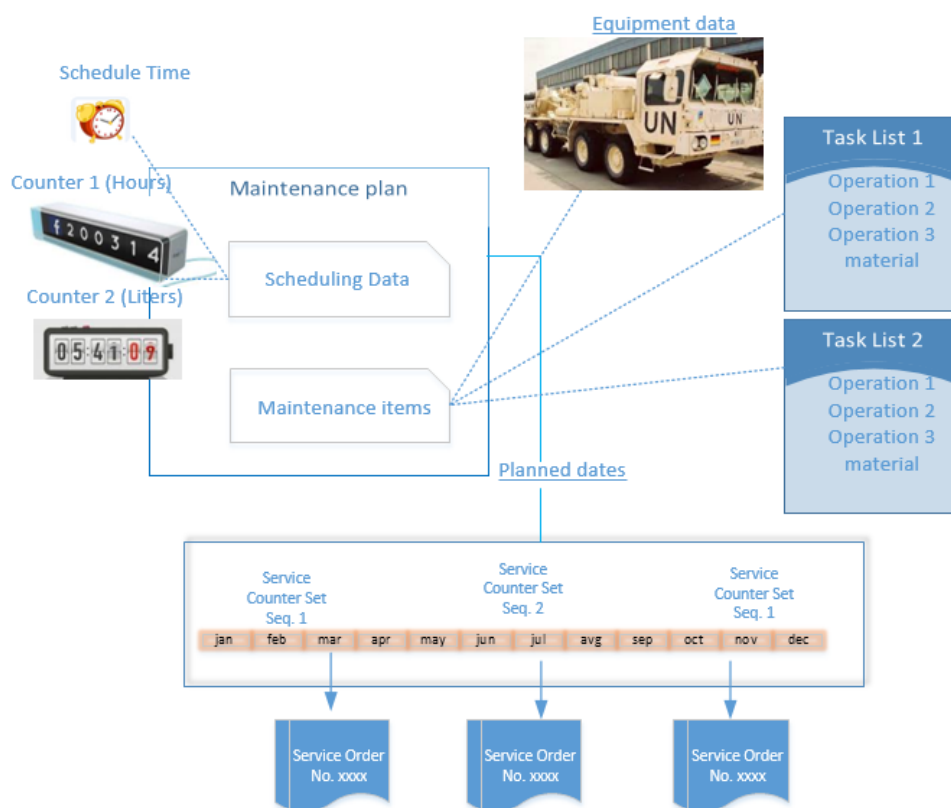


## Multiple Counter Maintenance Plan (MCMP)

**Multiple Counter Maintenance Plans** are used in a counter-based (performance-based) maintenance programme but can also create a combination of time-based and performance-based strategies. This type of maintenance planning doesn't refer to maintenance strategy. In the multiple counter plan, the Planner creates maintenance cycles set and allocates counters of the maintained objects with different dimensions, for example, kilometers traveled or hours working.

**Note:** Multiple Counter Maintenance Plan is specific to only one equipment record due to the measurement point. Therefore, please follow the instruction "only one equipment record within the same Multiple Counter Maintenance Plan".

The following figure represents Multiple Counter Maintenance Plan structure and the final product (maintenance order) which system would create by scheduling the PBMP.



As mentioned, the Multiple Counter Maintenance Plan also integrates time-based cycles into the maintenance plan. However, these do not have counters for the time-based cycle. In Umoja, we create a multiple counter plan with a cycle set as a copy model for maintenance cycles. **Note:** more about the Cycle Set is in the Appendix of this document.

**Note:** Key terminology for maintenance plan data is provided in the appendix of this document.

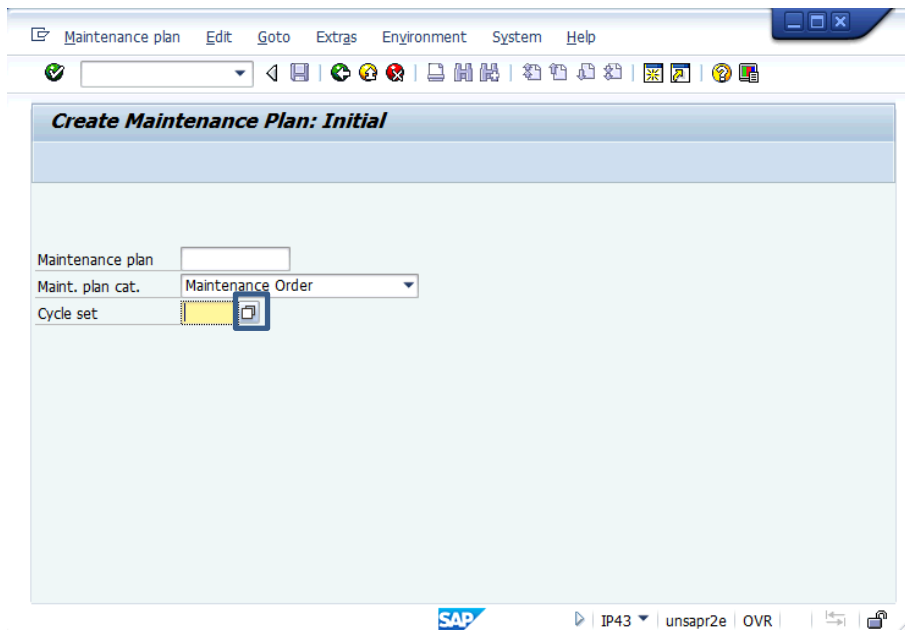
## Create Multiple Counter Maintenance Plan (MCMP)

In the Umoja screen write t-code IP43 and hit the enter.

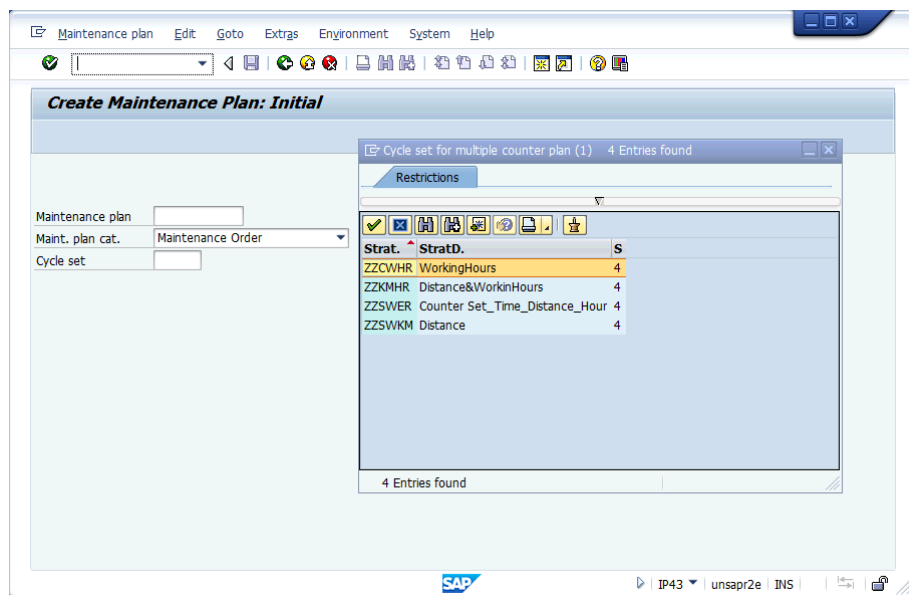
In the following Create Maintenance Plan screen choose the following:

- Maint. Plan category: choose Maintenance Order
- Cycle Set: select matchcode near Cycle Set. Select one of the Cycle Sets that are displayed in the pop up.

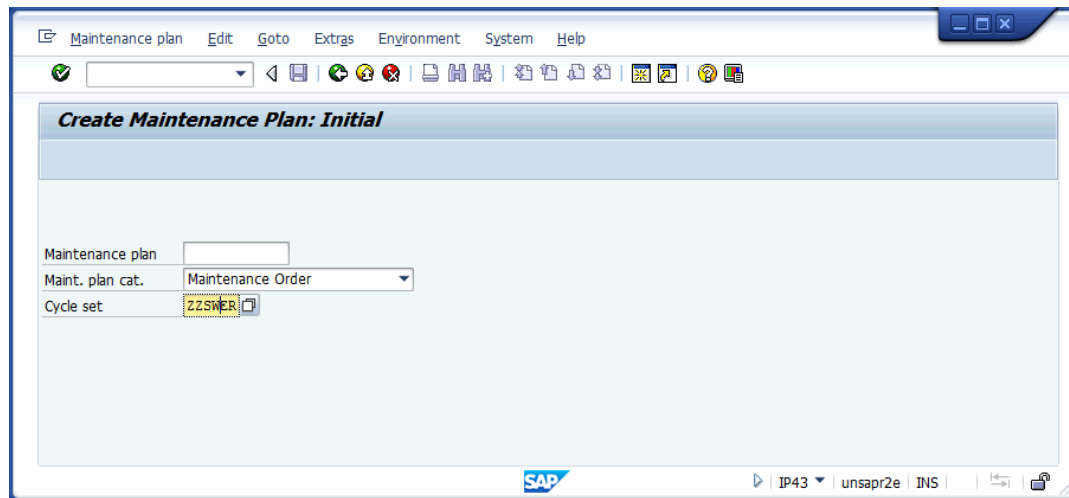
Note: More about Cycle Set in Appendix of this document.



The pop up screen with the list of the existing cycles will appear.



Choose the cycle set which will meet your requirement:



Hit enter

In the next screen, Create Maintenance Plan: Multiple counter plan,

- Enter the maintenance plan short description
- Enter Cycle set sequence. In this example we combined two cycles in Cycle set 1 and another two in Cycle set 2.

Further, in the maintenance item part enter the following:

- A number of the maintenance object (equipment # in this instruction example).
- Order type: write ZM02
- Main Work Centre and Plant: enter the responsible work center (example CSS-C001) and your Plant (example LB10).
- Cycle set sequence: **"1"** in this example for the first maintenance item.

Hit enter. If a pop-up screen appears and asks you whether to copy master data from the equipment record, please select Yes.

The system will derive the data from the Master Equipment record (short description, Planning Plant, Maintenance Activity Type (002) and Business area.

Also, enter the Maintenance Planner Group (in this case F00) and then enter the Task List number.

Cycle Set Seq.	Rep. Fact.	Cycle	U...	Maintenance cycle text	Counter	Description
1	1	500HR		Cycle 1	98	Operating hours
1	1	6MO		Cycle 2		
2	1	5000KM		cycle 3	97	Odometer readir
2	1	12000MO		Cycle 4		

Typ	Task LstGrp	GrpCr	Description
A	25000000	5	Maintenance Vehicle

**Note:** Create Task List for Multiple Counter Maintenance Plan without reference to any Maintenance Strategy.

Then enter Fund information in the fund tab.

Further, create another maintenance item for another cycle set sequence. Press button “Create new item”.

In the maintenance item part enter the following:

- A number of the maintenance object (equipment # in this instruction example).
- Order type: write ZM02 **Note: always use order type ZM02 as this is Maintenance Order**
- Main Work Centre and Plant: enter the responsible work center (example CSS-C001) and your Plant (example LB10).
- Cycle set sequence: “2” in this example for the first maintenance item.

Hit enter. If a pop-up screen appears and asks you whether to copy master data from the equipment record, please select Yes.

The system will derive the data from the Master Equipment record (short description, Planning Plant, Maintenance Activity Type (002) and Business area).

Also, enter the Maintenance Planner Group (in this case F00).

Enter the Task List number which should be different from the task in the previous maintenance item.

Cy...	Re...	Cycle	Unit	Maintenance cycle text	Counter	Description
1	1		500 HR	Hours	98	Operating hours reading
1	1		6 MON	Months		
2	1		10000 KM	Distance	97	Odometer reading
2	1		12 MON	Annual		

Typ	Task LstGrp	GrpCr	Description
A	/ 26000000	/ 6	Test Task List Upload 3

Enter Fund information in the Fund tab.

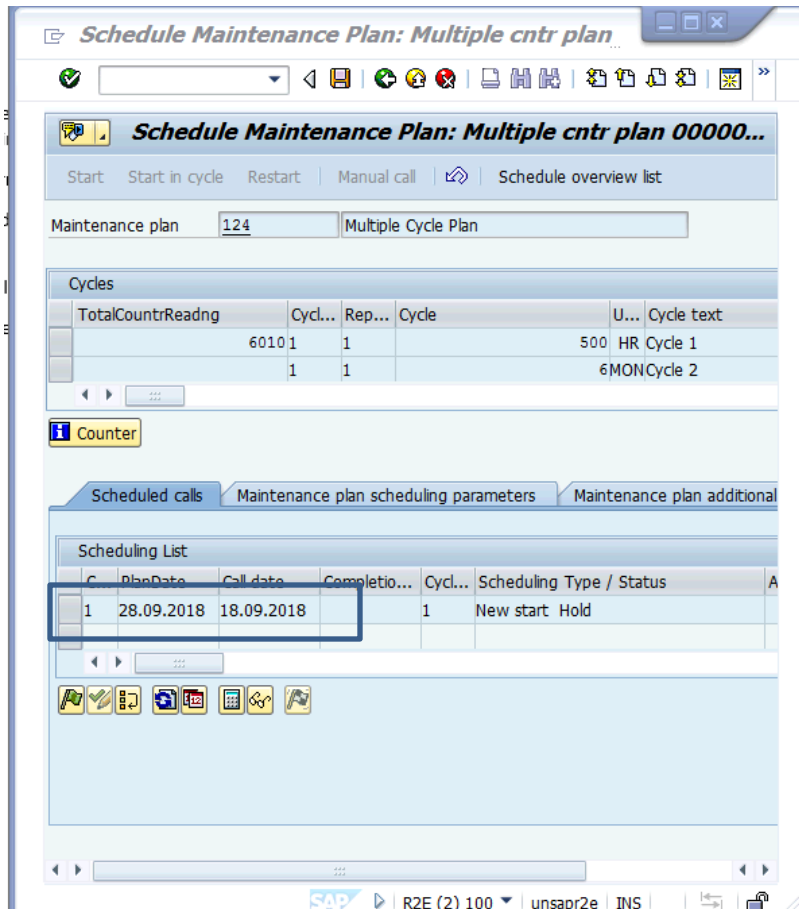
Further, in the Maintenance Plan header tab "Maintenance Plan scheduling parameters, enter the following:

- Operation type: Indicator for OR or AND link. (we choose OR operator type which means that maintenance call is due as soon as one maintenance cycle reached. In the case of an AND operation, a maintenance call is only due when all the maintenance cycles have finished/reached.)
- Start Date: Date formatting DD.MM.YYYY
- Schedule period: The scheduling period specifies days, months, or years the actual length of time over which scheduling will take place. For example, five years.

- Lead float (days): The lead float determines the number of the days for the period between the maintenance order Call Date and Plan Date.

Then Save.

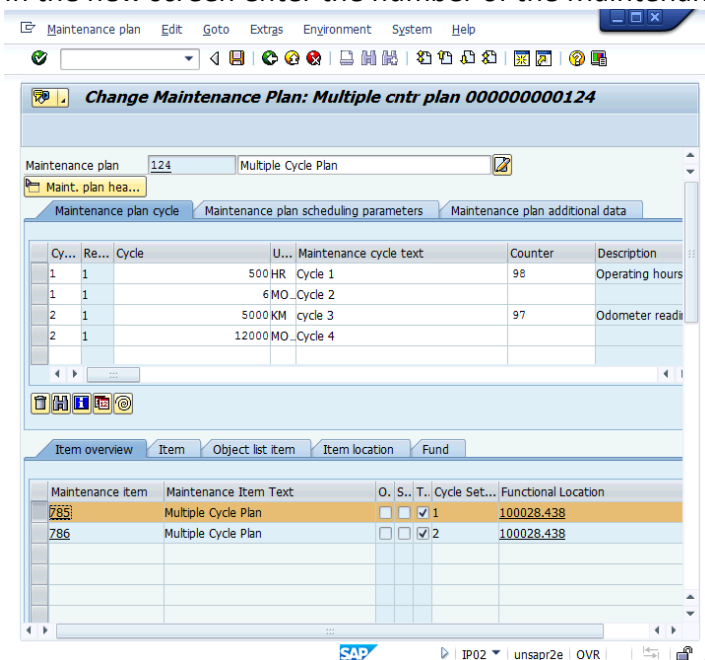
**Note:** The Lead float (Days) is similar to Call Horizon in Time Based Plan, but it is defined in days. See the example below for Lead float in 10 days. After scheduling the Maintenance Plan, the call date is 10 days before the Plan Date. That means the Maintenance Order will be generated 10 days before Planned Date for the Order execution. It gives time for the Planner to prepare resources for the maintenance procedure.



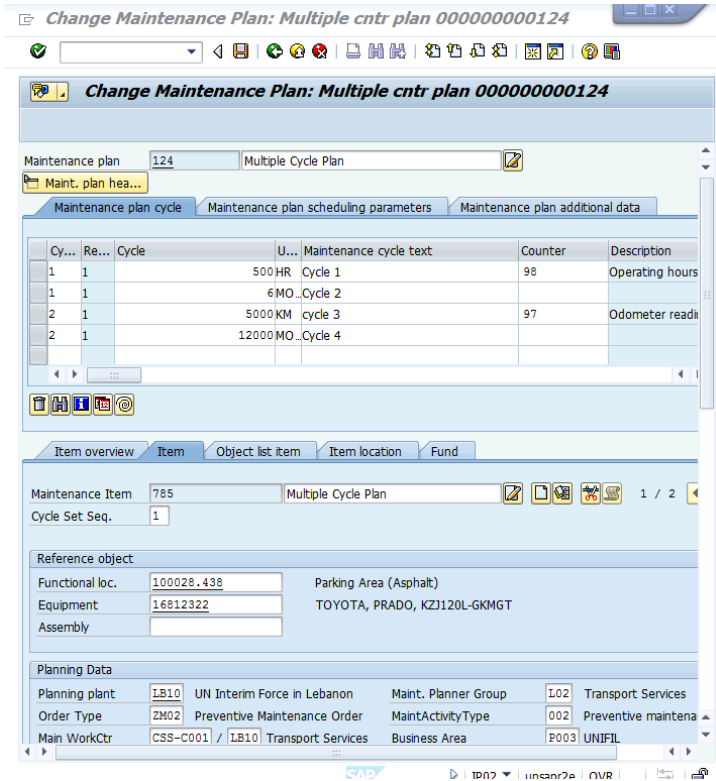
## Amend the Multiple Counter Maintenance Plan

Use t-code IP02 and hit enter.

In the new screen enter the number of the Maintenance Plan you want to amend.



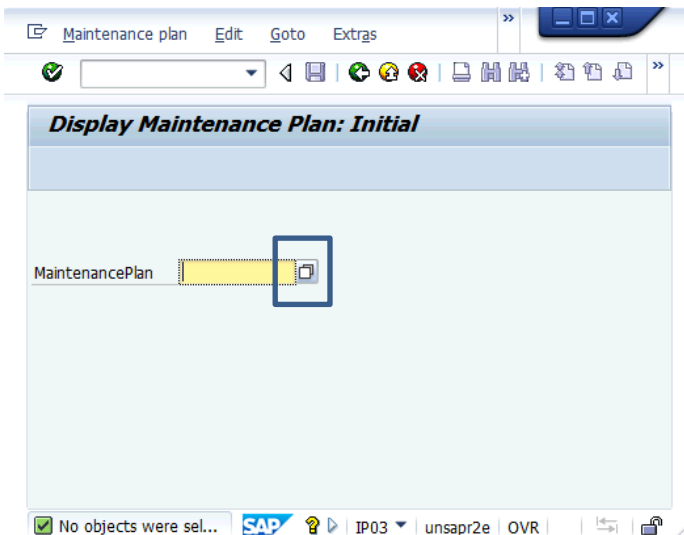
Highlight the maintenance item and press the Item tab:



The planner can amend any open (un-grayed out) data field.

### Search for existing Maintenance Plans in display mode

Use T-Code IP03





Select the matchcode near the Maintenance Plan field.

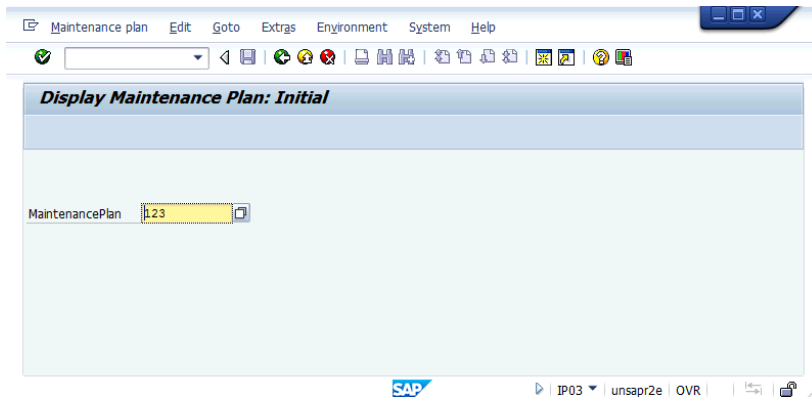
In the new screen, Display Maintenance Plan: Selection Criteria. My searching criteria will be keyword \*vehicle\* in the Maintenance plan text field.

Once a keyword is selected, or another filter, hit the execute icon at the top left.

The system displays the list of the Plans that match your selection criteria.

MntPlan	MaintPlan dscrptn	Strat.
72	vehicle plan	ZKM
123	Vehicle Maintenance Plan	ZPERK

Double click the line of the desirable plan (in this case #123)



Then hit “enter”. The system will display the Maintenance Plan.

## Maintenance Plan and Maintenance Item reports

SD-16 – Preventive Maintenance Planner credentials allow the following t-code to generate the report for Maintenance Plan and Maintenance Item in change and display mode:

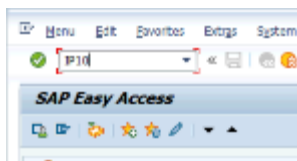
- IP15 – Change Maintenance Plan: Selection Criteria
- IP16 – Display Maintenance Plan: Selection Criteria
- IP17 – Change Maintenance Item: Selection Criteria
- IP18 – Display Maintenance Item: Selection Criteria

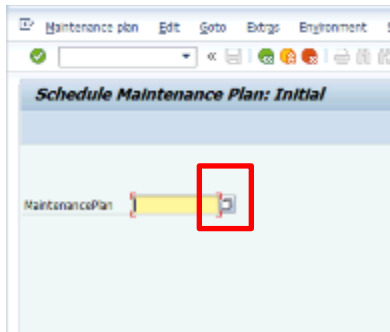
## Scheduling a single plan

**Once a Maintenance Plan is created, the maintenance plan will be automatically scheduled by the Umoja batch job every day at 12 AM (GMT).**

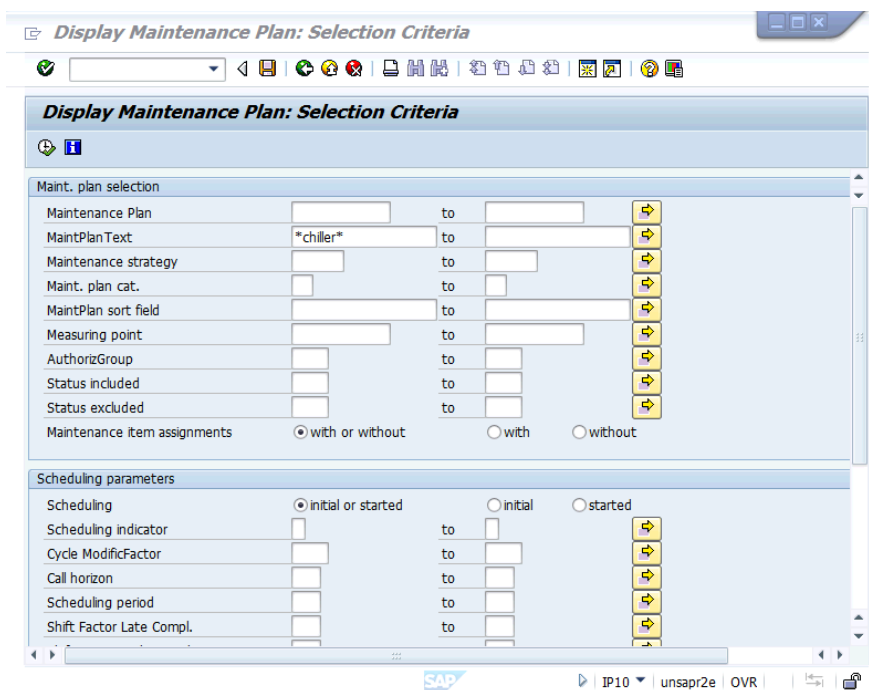
However, Maintenance Plans can be scheduled manually one by one, as shown in this chapter, or they can be scheduled in a batch, as shown in the following chapter.

Enter transaction IP10

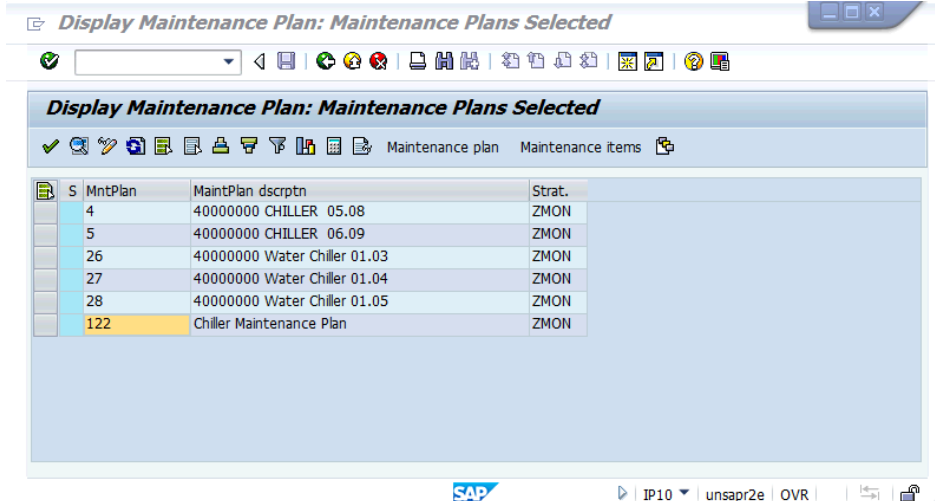




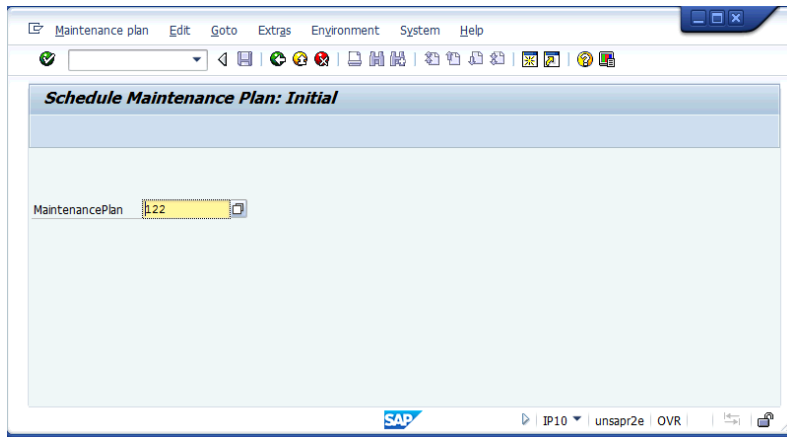
Enter the Maintenance Plan ID number that has to be scheduled, or select the match code icon at the right of the field to find the plan via the previously mentioned search process.



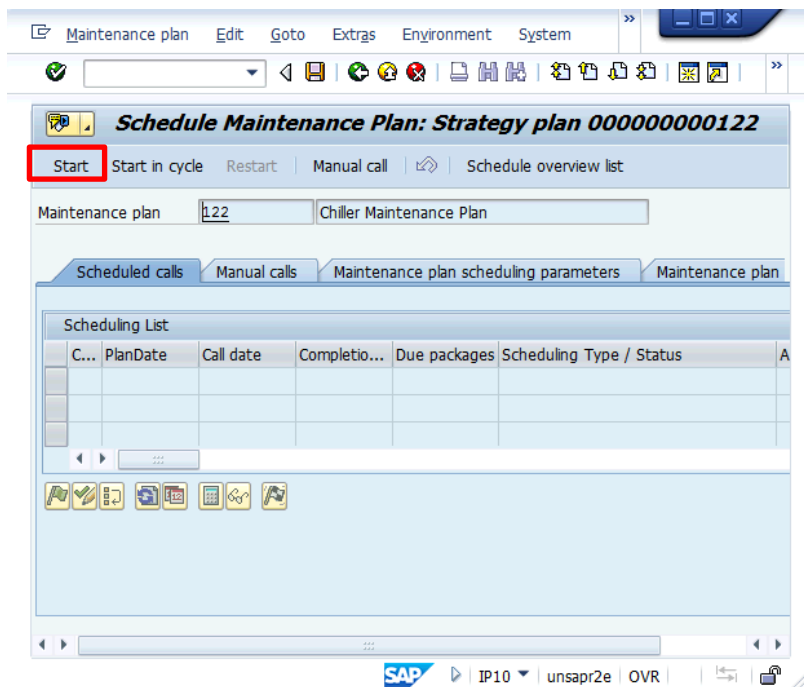
Filter to limit the results, for example, use “\*CHILLER\*” in Maint Plan Text



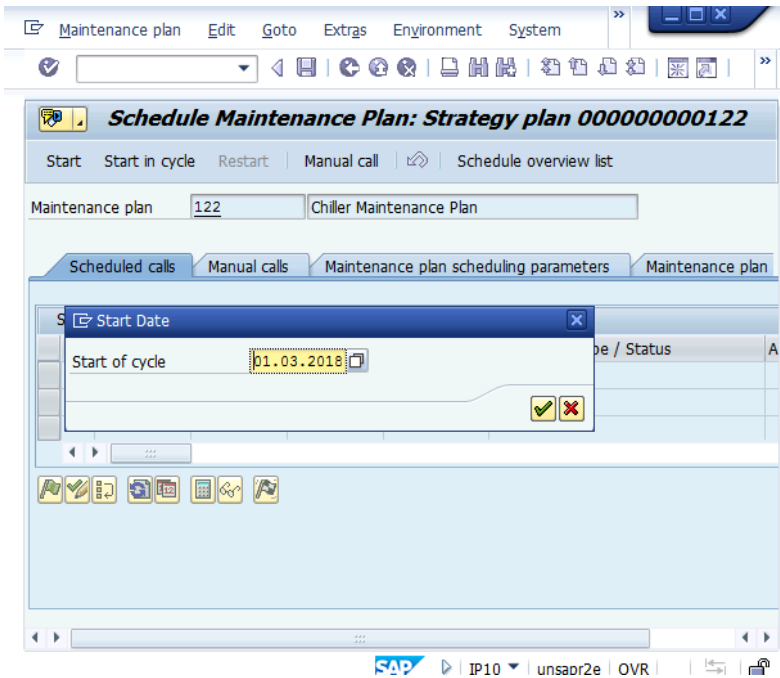
Double click the number of the plan that has to be scheduled.



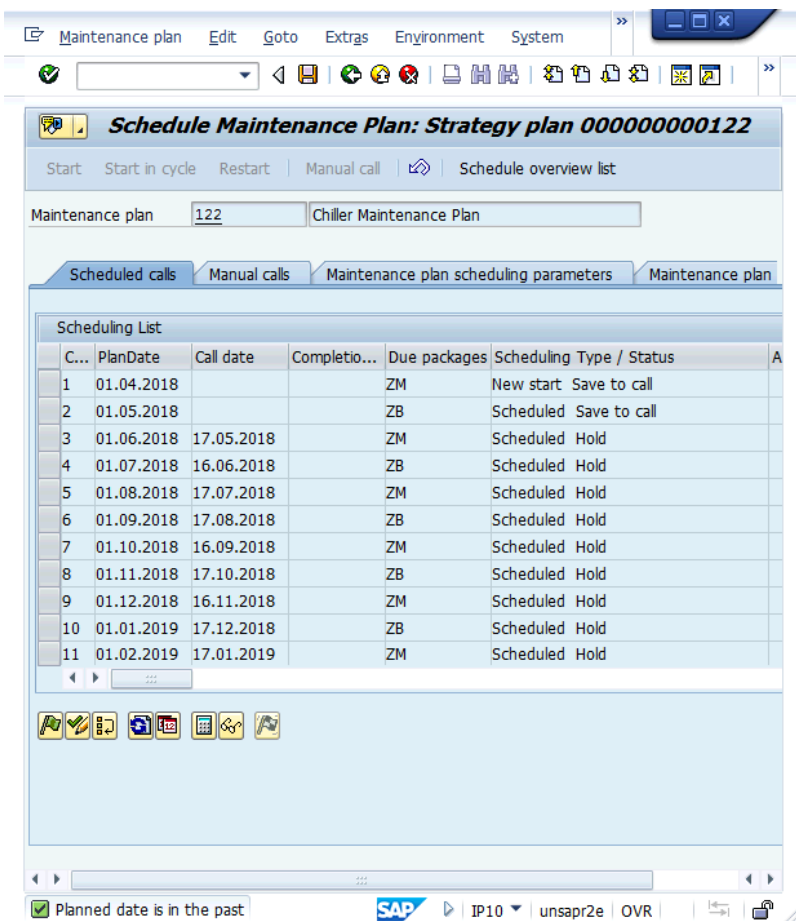
Click Enter.



Click on "Start", a pop up will display the Start Date created in the Maintenance Plan. The date can be updated. Then accept.



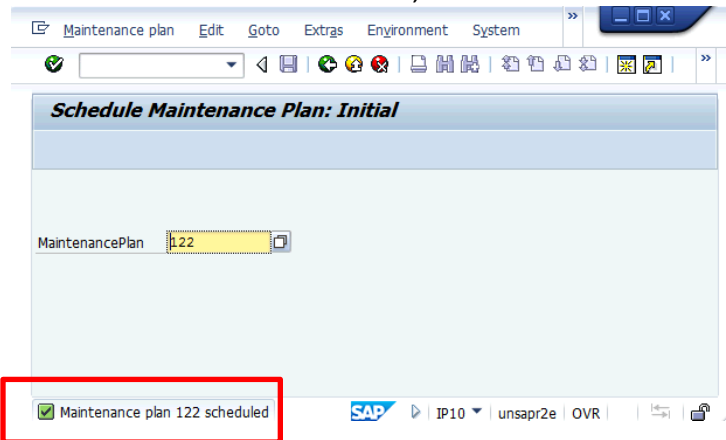
The system generates the scheduled calls. Scheduled calls are the service orders that will be created:



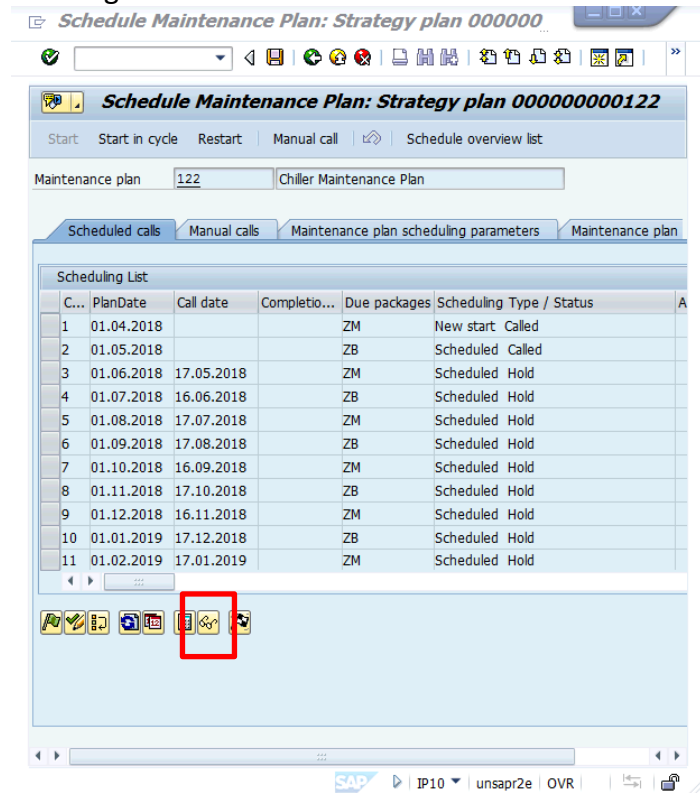
If the date of the service order to be created has passed, the service order will be created, and the status will be “Save to call”

If the date to create the service order is in the future, the system will create the service order as per Call date schedule. If Planner needs the system to create the service order immediately, this can be done by selecting the desired row and clicking on the Release button (green flag). Then Save.

Maintenance Plan is scheduled, which is indicated at the bottom of the screen below:

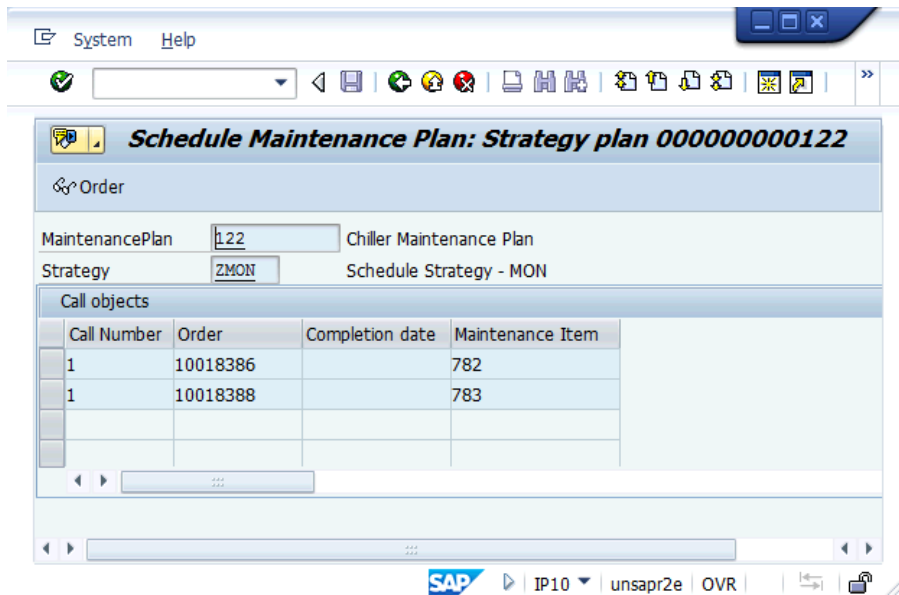


Enter again in the transaction IP10. The Call is scheduled, as per the following screen:

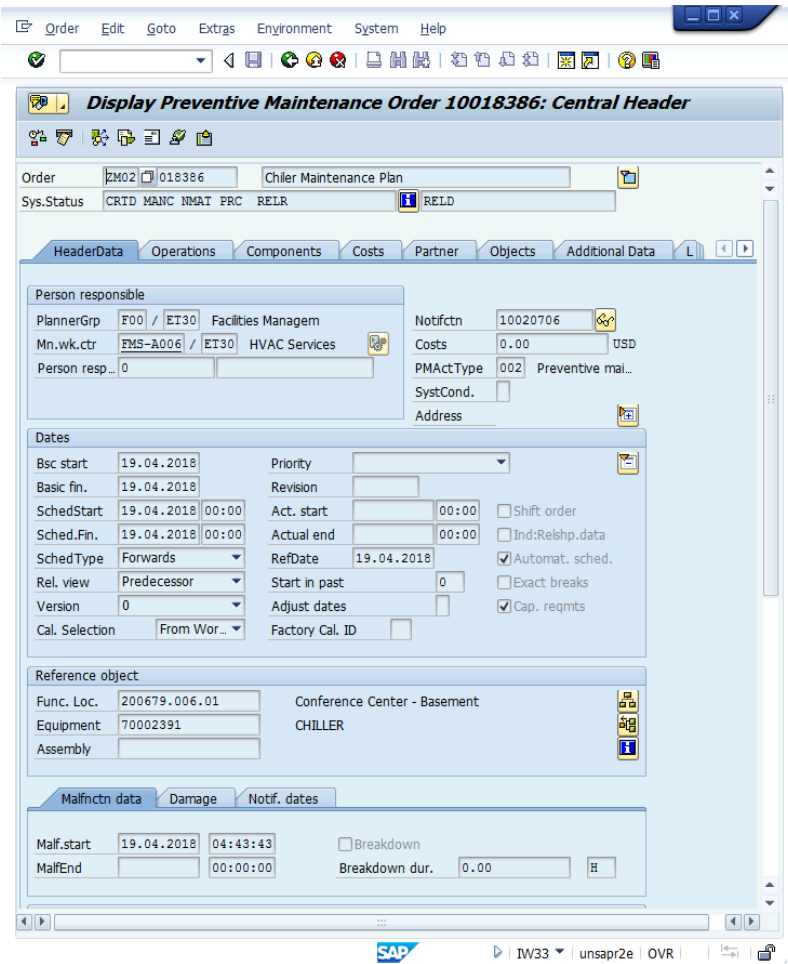


The call has been changed to “called”. The system indicates that the Service Orders have been created.

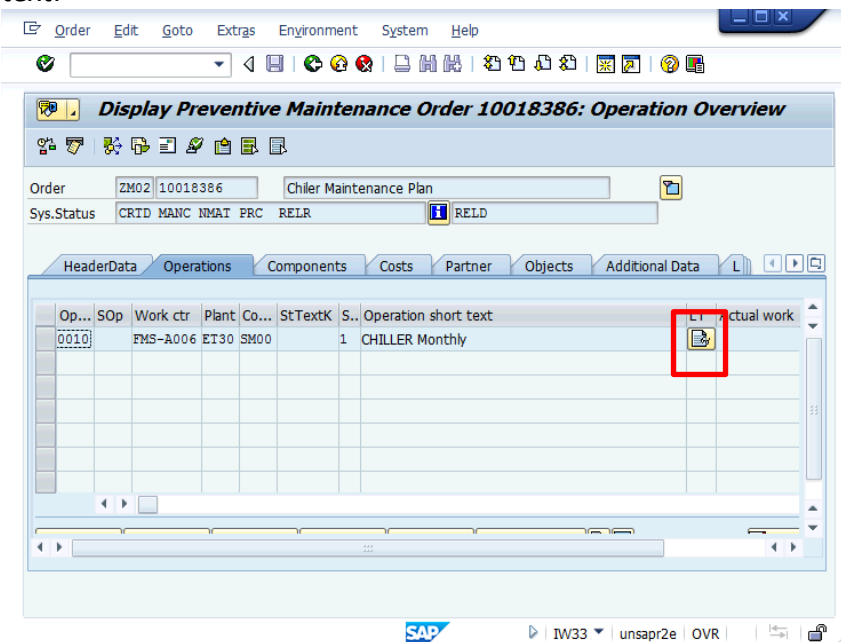
To review the Service Order select the scheduling list line and click on the eyeglasses icon. The service order list will be displayed. Since the Maintenance plan #122 contains two Maintenance Items, there are two service orders (one order per equipment record (maintenance item)):



If you double click the number of the order, the system displays the Service Order:

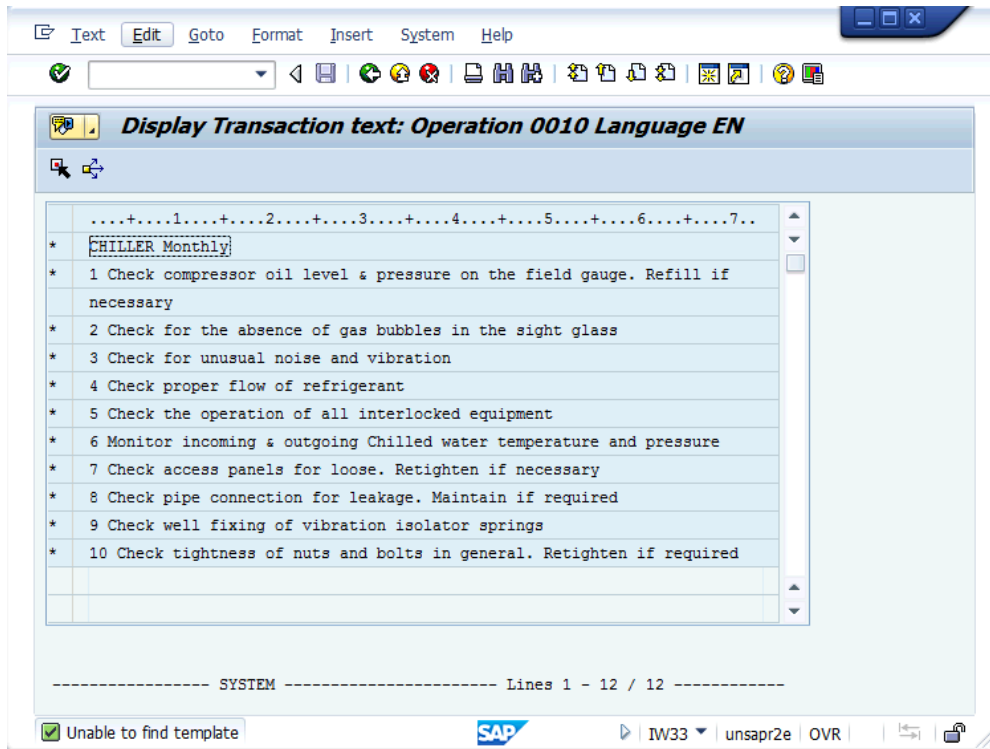


The planner might further review the Service Order. For example, review the Operation tab long text:




Select the long text icon of the operation, the operation details will be displayed:





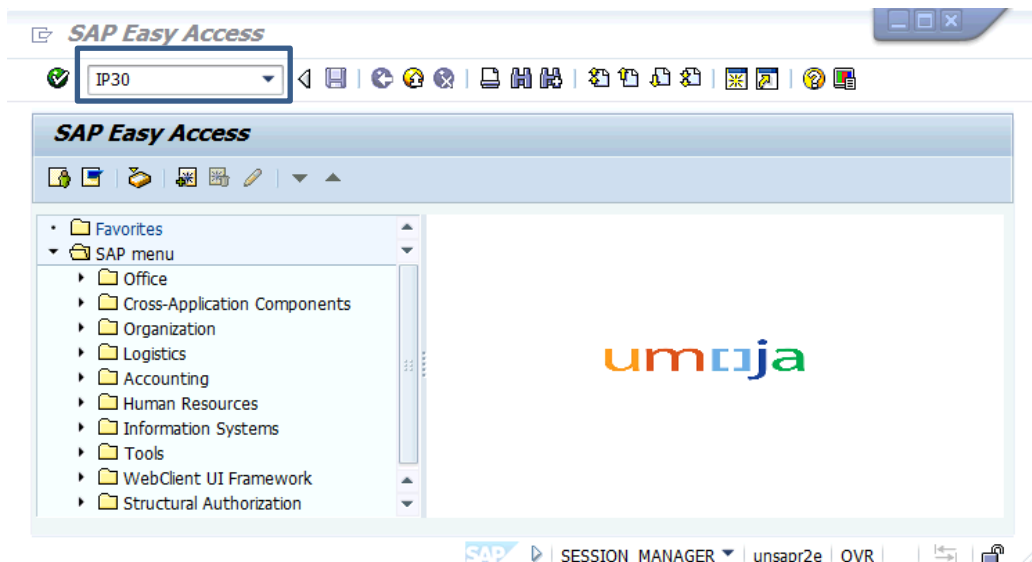
Continue to review the service order.

To exit from service order and scheduling transaction hit several times arrow  "back".

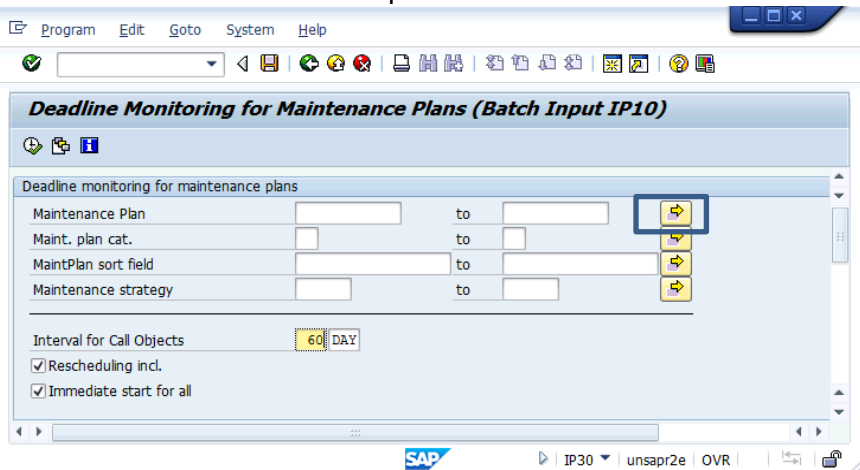
### Scheduling a batch of the Maintenance Plans

Schedule multiple plans at the same time in one transaction.

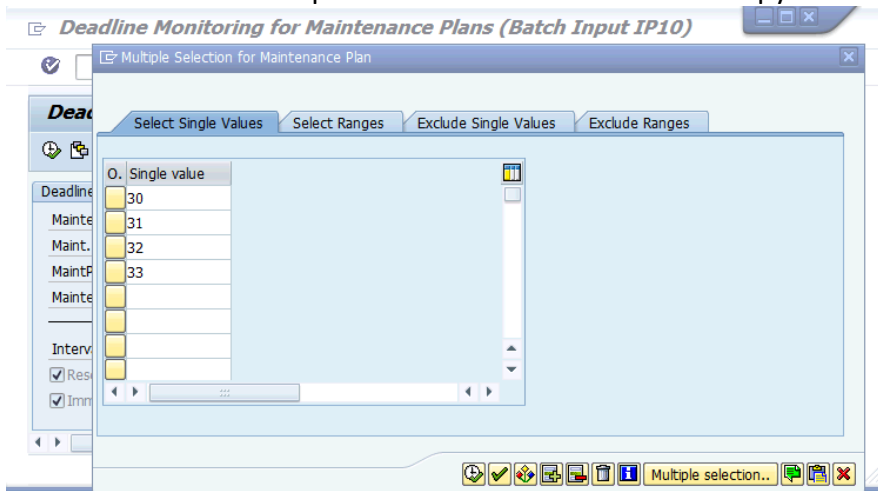
Use transaction IP30 and hit Enter.



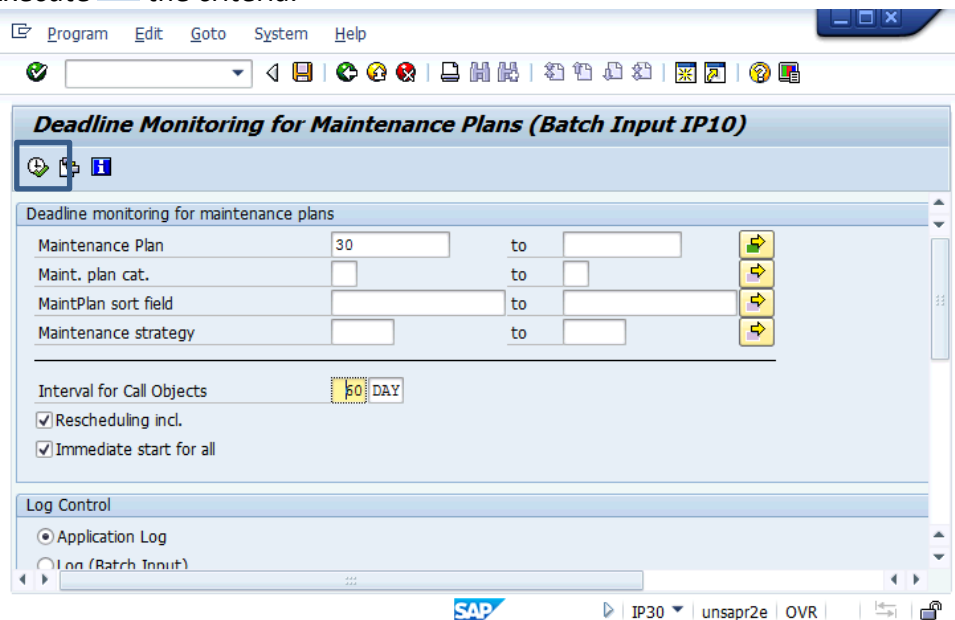
In the new screen hit the multiple selections  in the Maintenance Plan row.



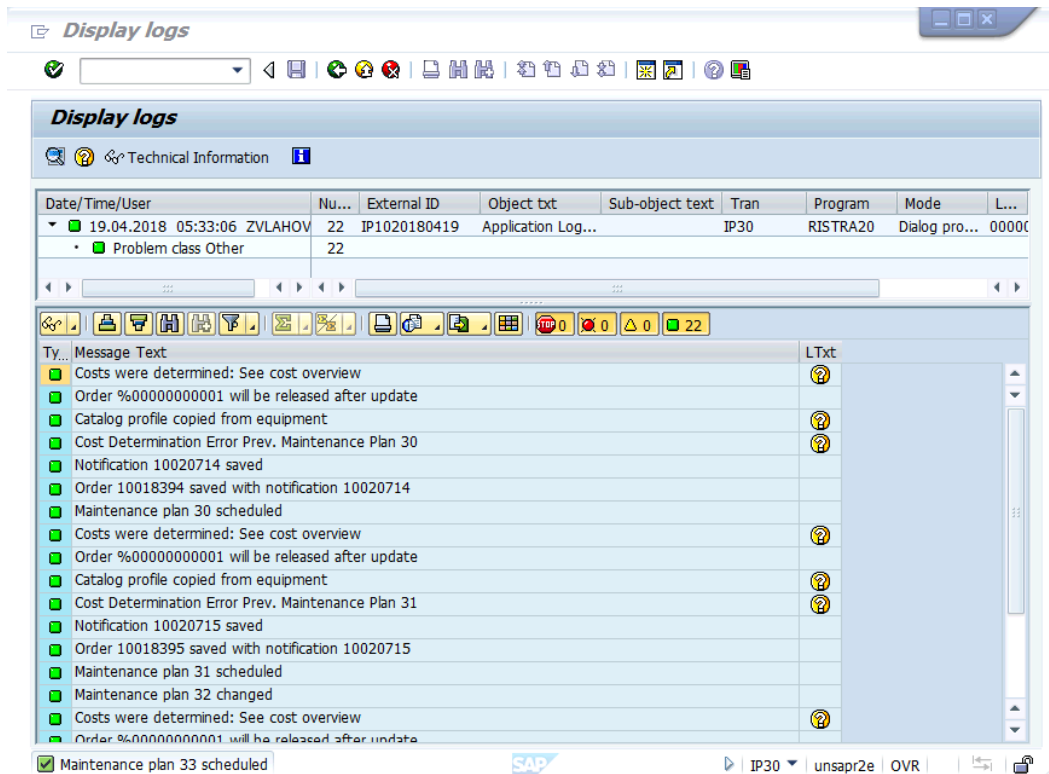
Enter the maintenance plan number IDs and hit button copy.



Execute  the criteria.

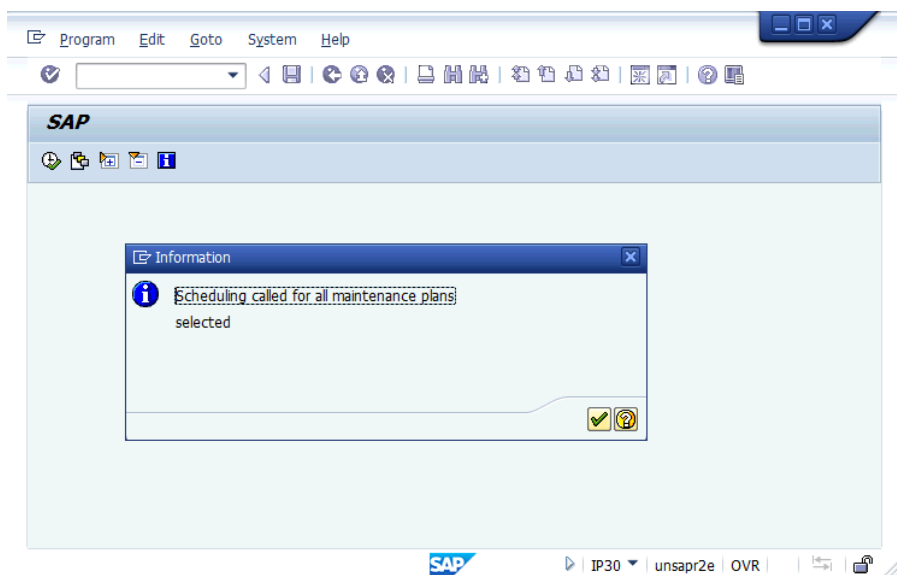


Display log will provide the messages related to the scheduling and the Service Orders that are being generated:

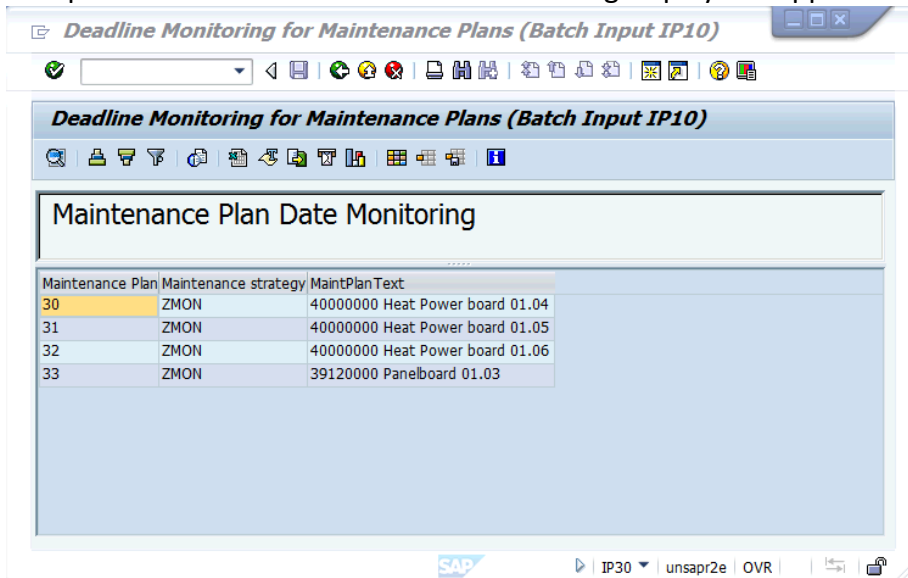


Note: The Cycle start date must be populated in Maintenance Plan prior to executing IP30.

Select the Back-green arrow ; the new pop-up will appear:

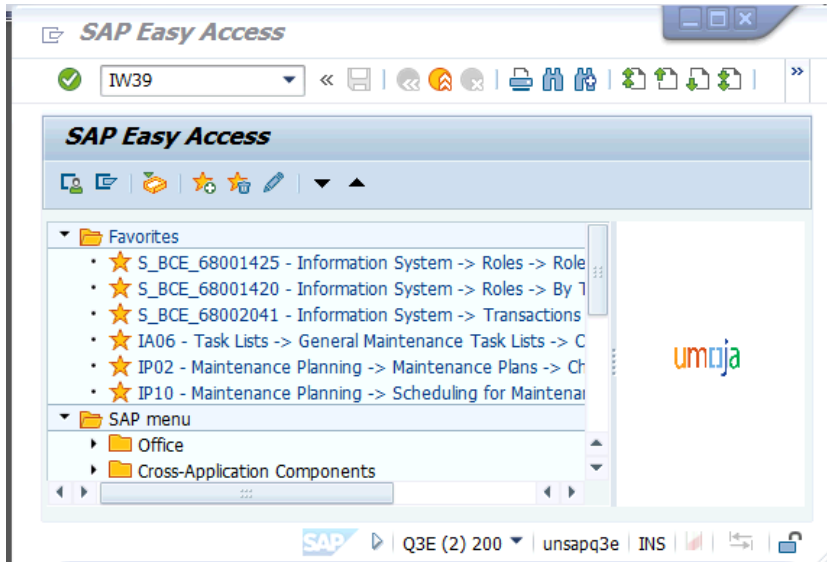


Accept. The Maintenance Plan date monitoring display will appear.

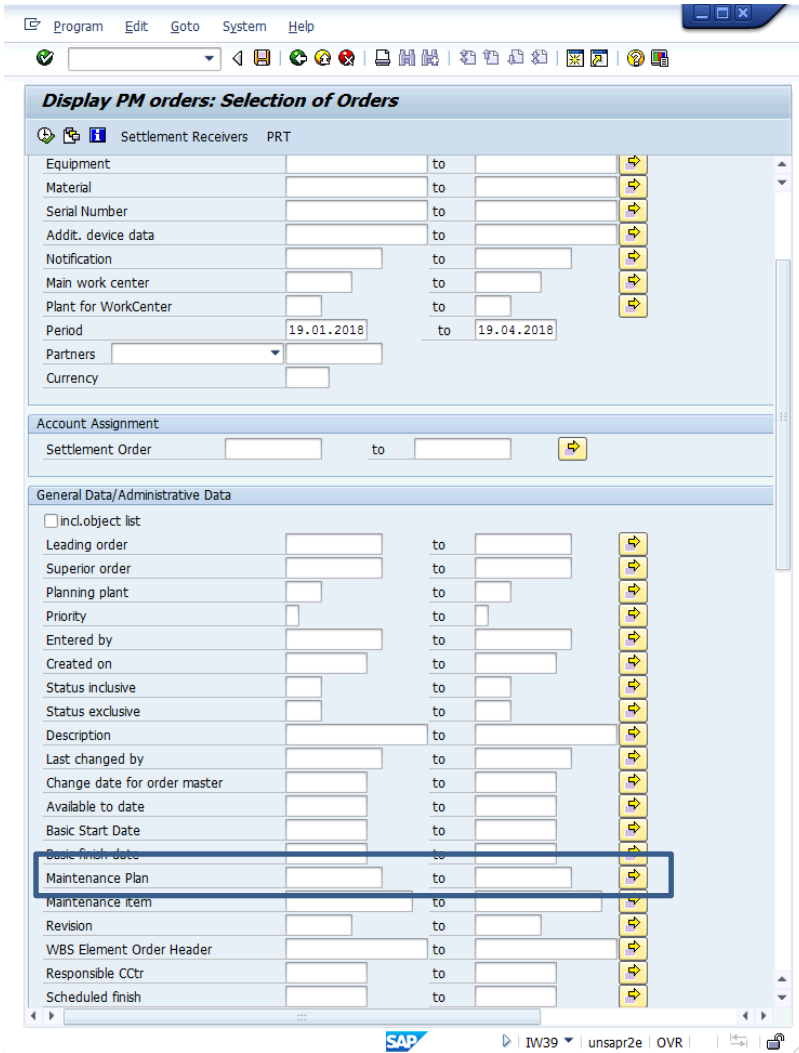


To review the call objects (service orders) use t-code IW39 for display mode (or IW38 for change mode).

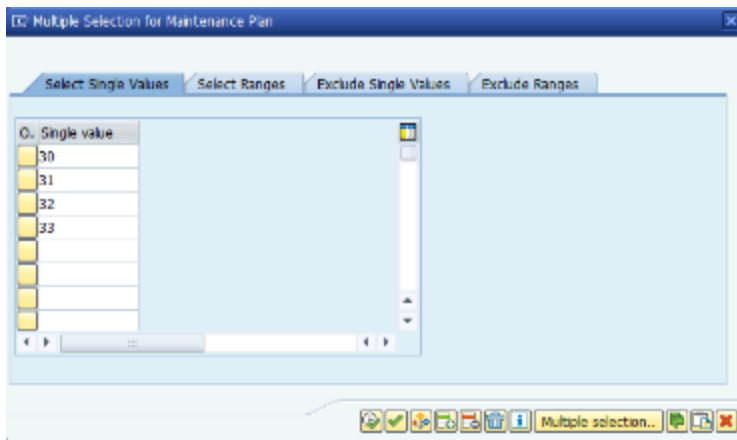
In the command field enter t-code IW39.



In the Selection Criteria/Maintenance Plan field enter the list of maintenance Plans scheduled in previous steps (select the arrow in the Maintenance Plan row and enter the Maintenance Plan numbers in the pop up "Multiple Selection...").

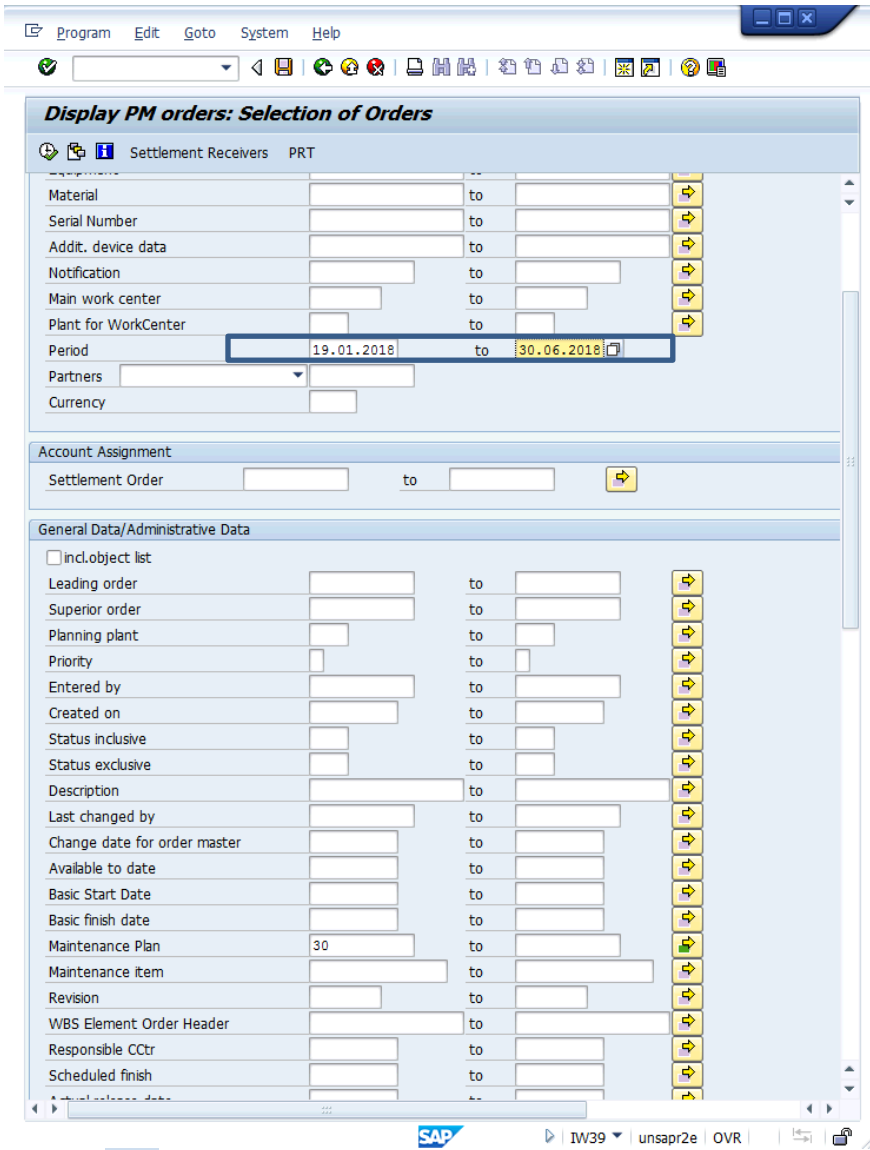



The screenshot shows the SAP 'Display PM orders: Selection of Orders' dialog box. It is divided into several sections: 'Settlement Receivers PRT', 'Account Assignment', and 'General Data/Administrative Data'. The 'General Data/Administrative Data' section contains a list of fields with input boxes and arrows, including 'Equipment', 'Material', 'Serial Number', 'Addit. device data', 'Notification', 'Main work center', 'Plant for WorkCenter', 'Period' (19.01.2018 to 19.04.2018), 'Partners', 'Currency', 'Leading order', 'Superior order', 'Planning plant', 'Priority', 'Entered by', 'Created on', 'Status inclusive', 'Status exclusive', 'Description', 'Last changed by', 'Change date for order master', 'Available to date', 'Basic Start Date', 'Basic finish date', 'Maintenance Plan', 'Maintenance item', 'Revision', 'WBS Element Order Header', 'Responsible Cctr', and 'Scheduled finish'. The 'Maintenance Plan' field is highlighted with a blue box. The SAP logo and navigation icons are visible at the bottom.

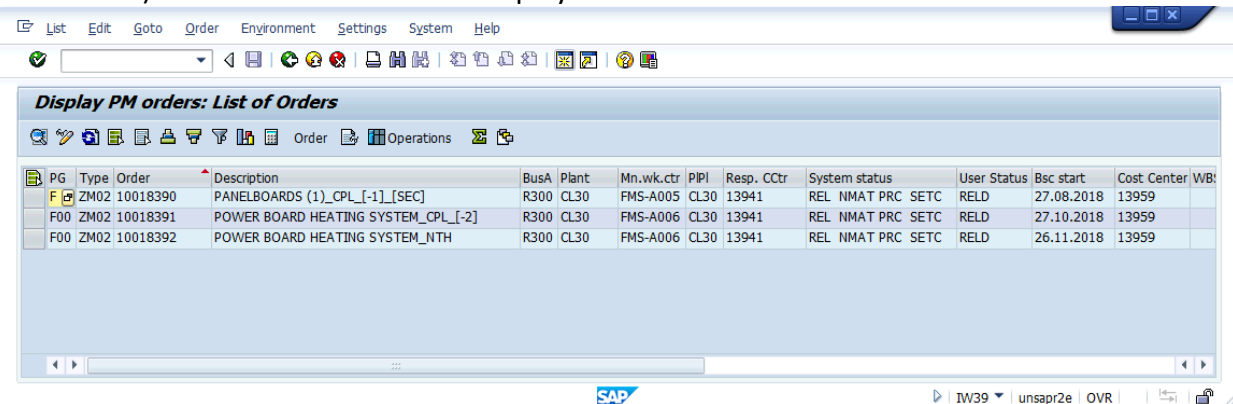


The screenshot shows the 'Multiple Selection for Maintenance Plan' dialog box. It has four tabs: 'Select Single Values', 'Select Ranges', 'Exclude Single Values', and 'Exclude Ranges'. The 'Select Single Values' tab is active, showing a list of values: 30, 31, 32, 33. The dialog box has a standard SAP toolbar at the bottom with icons for back, forward, and other actions.

Execute  Multiple Selection...



Execute  Selection of Orders. Note: Select the desirable Period (for example 19.01.2018 to 30.06.2018). The Service Order list is displayed.



Enter into Maintenance Order and review.

\* \* \* \* \*

## Module 4: Service Order type ZM02 (Maintenance Order)

This module will introduce the Service Order management process (update, print, confirm, technically complete, settle and close).

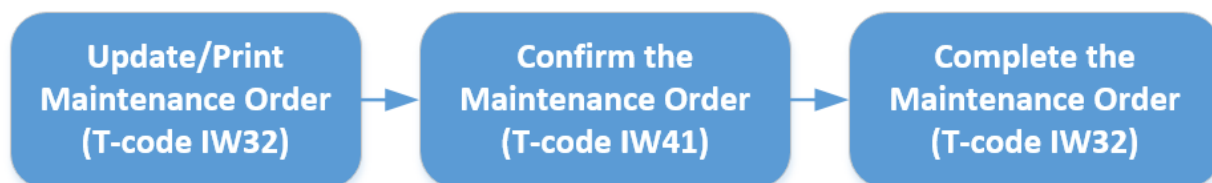
As described in the previous chapter, for the time being, Service Orders created by the maintenance plans are already released and they do not need any approval.

**Note: the service order processing will be updated in the near future to include the approve and manually release Maintenance Order where there is cost recovery involved.**

Preventive Maintenance service orders are always type ZM02.

### Maintenance Order management processing

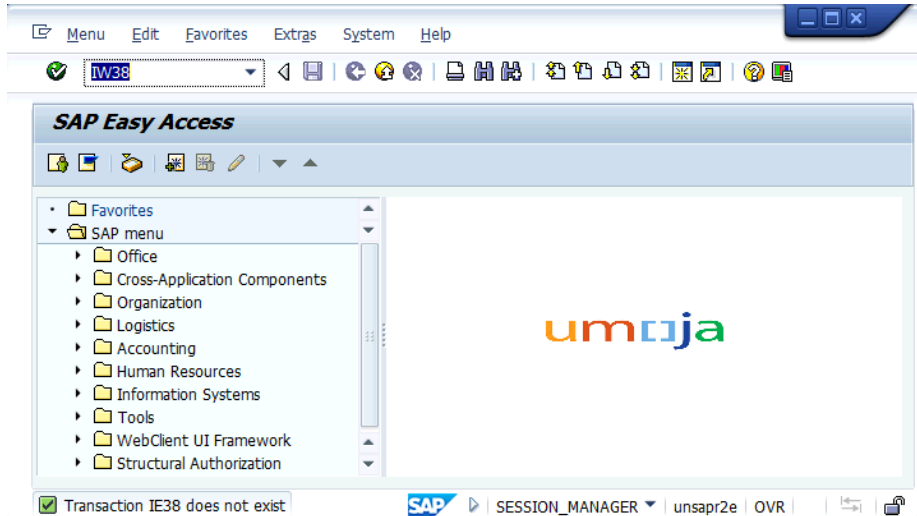
The single Maintenance Order management processing is displayed below:



It is the same process as for any Service Order type explained in Umoja User Guide: Service Order Management, available in Umoja Training, Services Delivery.

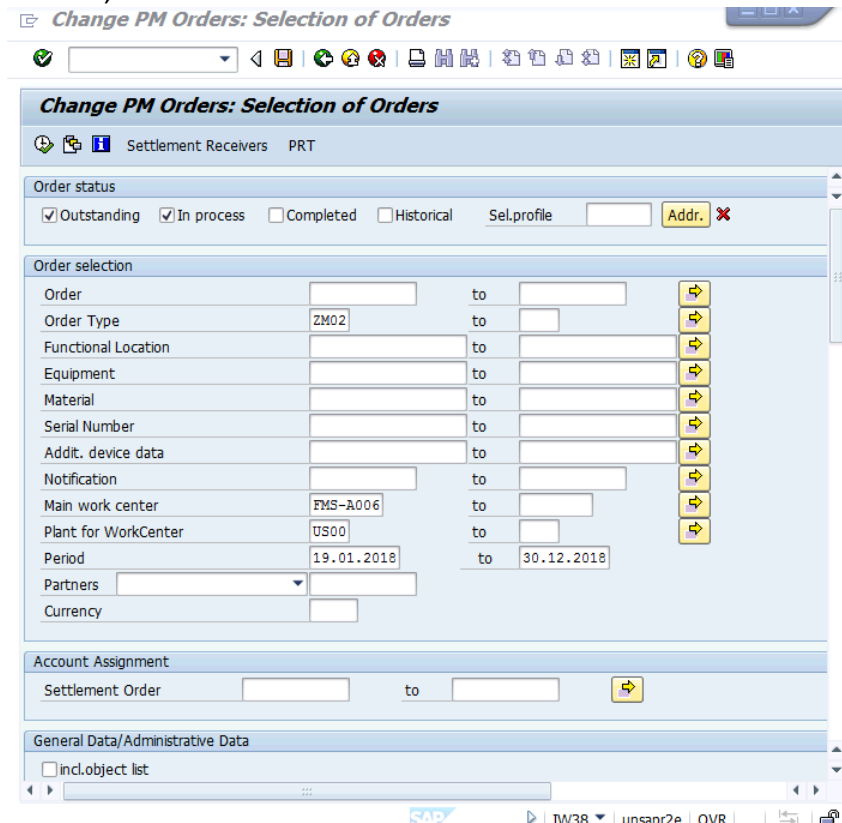
## Maintenance Order management by using report IW38

Use t-code IW38 to run the Maintenance Order list report in change mode.



In the new screen Change PM Order: Selection of Orders select the status of the Order that will be considered in the report (in this report is chosen only Outstanding and In Process, Orders), In the Order Type enter type ZM02. Also, define the Period (dates From and To). The report will consider only the Service Orders for which the Start date is within that Period.

Further, in the Location Data enter the Maintenance Plant and Work Centre.





The List of Service Orders will be displayed.

PG	Type	Order	Description	BusA	Plant	Mn.wk.ctr	PPI	Resp. Cctr	System status	User Status	Bsc start	Cost. Center	WBS element	TotSum
F00	ZM02	10013252	AHU 3018-01	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013253	AHU 3018-02	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013254	AHU 3018-03	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013255	AHU 3018-04	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013256	AHU 3018-05	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013257	AHU 3018-07	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013258	AHU 3018-07A	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013259	AHU 3018-08	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013260	AHU 3018-09	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013261	AHU 3018-10	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013262	AHU 3018-11	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013263	AHU 302-01	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013264	AHU 302-02	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013265	AHU 302-03	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013266	AHU 303-01	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013267	AHU 303-02	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013268	AHU 303-03	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013269	AHU 303-04	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013270	AHU 303-05	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013271	AHU 303-06	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013272	AHU 304-01	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013273	AHU 304-02	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013274	AHU 304-03	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		
F00	ZM02	10013275	AHU 304-04	S100	US00	FMS-A006	US00	16048	REL CSER NMAT PRC	RELD	22.05.2018	16048		

Now the Planner can change, update or print a service order by double-clicking on its number.

The Service Order is ready to be processed or updated.

**Change Preventive Maintenance Order 10013273: Central Header**

Order: ZM02 / 10013273 / AHU 304-02

Sys.Status: REL CSER NMAT PRC SETC

Complete (business)

Person responsible: PlannerGrp F00 / US00 Facilities Managem, Mn.wk.ctr FMS-A006 / US00 HVAC Services

Notfctn: 10015596, Costs: 0.00 USD, PMActType: 002 Preventive mai., SystCond:

Dates: Bsc start: 22.05.2018, Priority: , Basic fin.: 22.05.2018, Revision: , SchedStart: 22.05.2018 00:00, Act. start:  00:00, Sched.Fin.: 22.05.2018 00:00, Actual end:  00:00, SchedType: Forwards, RefDate: 22.05.2018, Rel. view: Predecessor, Start in past: 0, Version: , Adjust dates: , Cal. Selection: From Wor..., Factory Cal. ID:

Reference object: Func. Loc.: 200165.002.05.049, CB-04MR27, Equipment: 70003717, Air Handling Unit, Assembly:

If the maintenance activity requires materials from the warehouse, then select the Components tab.

At the Components tab:

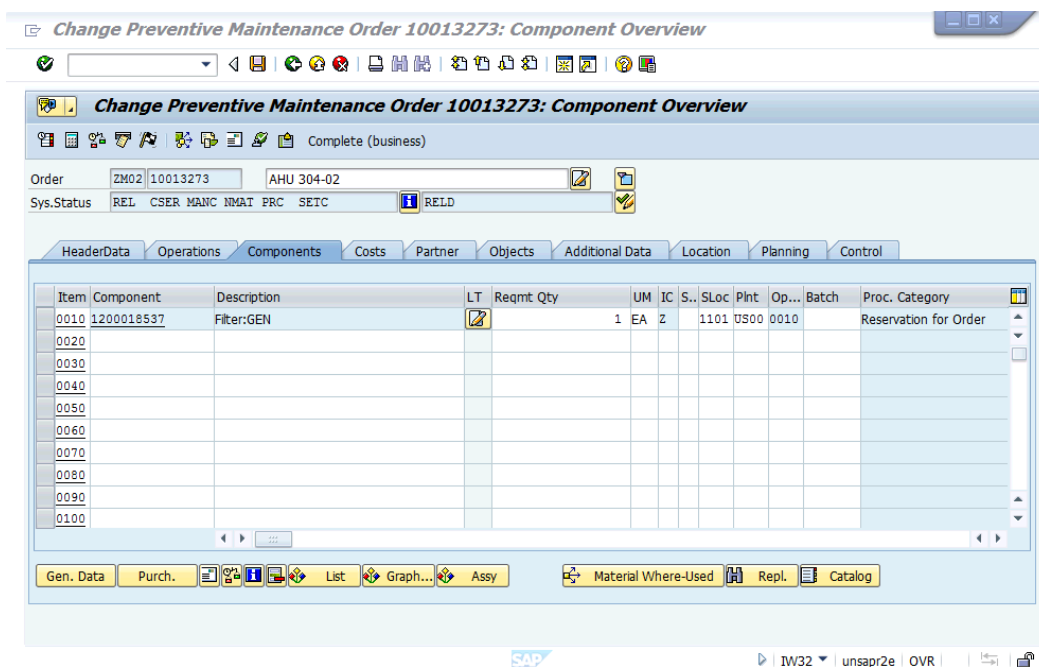
- a) Enter Material Number
- b) Enter Requirement Quantity
- c) Select Item Category
- d) Enter Storage Location & Plant
- e) Enter the Line Number of the Operation Activity of the Service Order that will use the Material
- f) If the system asks to populate the Batch field: use t-code MMBE, enter Plant and Stock Location. Execute and get the Batch information.
- g) Item Category options are:
  - C - Compatible Unit
  - I - PM structure element
  - L - Stock item (Budget)**
  - M - Intra material
  - N - Non-stock item
  - R - Variable-size item
  - T - Text item
  - Z - Stock item (Non-Budget)**

Select Item Category “Z”

h) Plant and Storage Options:

Select a matchcode and continue to search in the pop up screen through the selection criteria.

The completed line will look like the screen below:



To recap, in the Components tab, enter the material number, quantity, Stock Location, Item category, Plant. **Please note: for non-cost recovery activity use Item category Z (stock item non budget)**

- The system will further check material availability and generate a Reservation. The material can only come from own stock based upon storage location associated with a cost center.

Note: Please refer to the Logistics Course for the more information about movement types.

Select the Gen.Data at the bottom of the screen. The General data screen indicates that the Reservation number is generated.

The screenshot displays the SAP 'Change Preventive Maintenance Order 10013273: Component Detail General' screen. The 'General Data' section is expanded, showing the following fields:

- Order: 10013273
- Oper./Act.: 0010
- Material: 1200018537
- Filter: GEN
- Item: 0010
- Item Cat.: Z

The 'General Data' section includes:

- Component:
  - Plant: 0500
  - Stor. Location: 1101
  - Batch:
  - Sort String:
  - Goods Recipient:
  - Unloading Point:
  - Reqmt. Date: 22.05.2018 00:00:00
  - Offset:
  - Manual Requirement Date:
  - Reservation: 23001
  - Movement Type: 261
- Quantities:
  - Requirement Qty: 1
  - Unit of Measure: EA
  - Committed Qty: 0
  - Withdrawal Qty: 0
  - Fixed Qty:
  - Final Issue:

There is a new screen with general data.

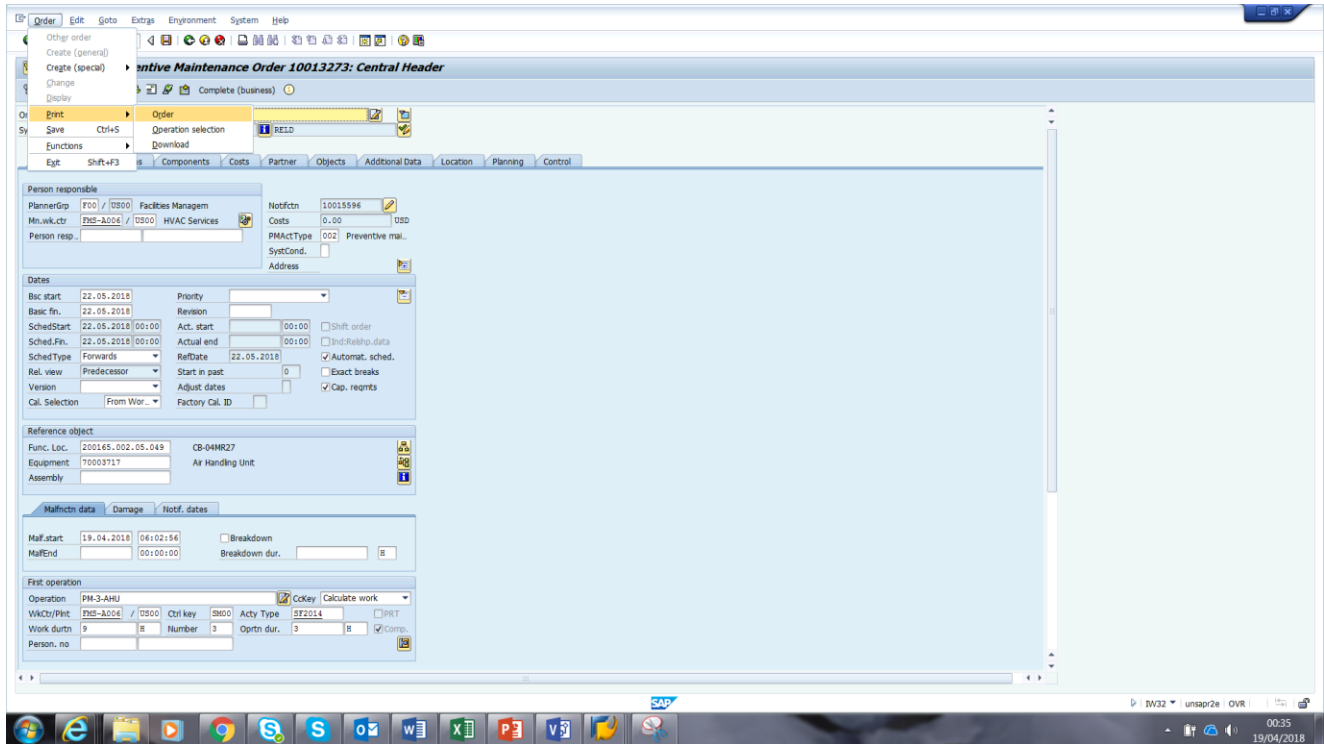
- Reservation Number
- Storage Location
- Requirement Date & Time
- Requirement Quantity & UoM
- Committed Quantity if the material has been reserved
- Withdrawal Quantity if the material has been issued

**All fields with a bright background can be updated.**

Save the order.

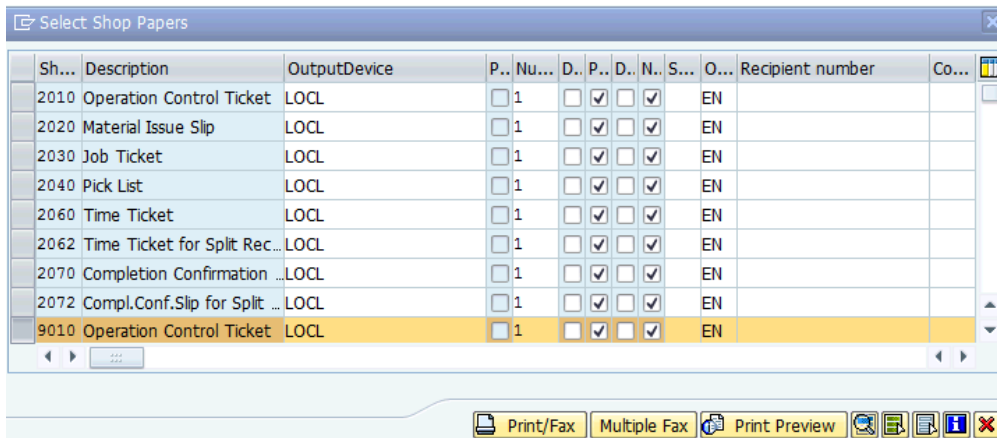
## Print the Service Order

In the Report IW38 or transaction IW32 Select the Order you need to print. Then, in the menu, select Order > Print > Order.



If the option is grey and you cannot select it, make sure that the order is released and you are in change mode.

The pop up screen appears:



If Planner would like to review the Service Order before sending to print, select the “Print Preview”.

You will see the order, with the Operation long text instructions at the bottom:

**Print Preview of LOCL Page 00001 of 00002**

**United Nations Nations Unies**  
**SERVICE ORDER**

Print Date: 19.04.2018 Page: 1 / 2

**ORDER: 10013273 , AHU 304-02**

Type: ZM02	Start Date: 22.05.2018	End Date: 22.05.2018
Status: REL CSER MSPT PRC SE	Reported By:	Priority:
Maintenance Plan: 58	Item: 279	Person Responsible:
Planning Plant: US00	Planner Group: F00	Phone:
Main work center: FMS-A005	Maint. Plant: US00	Ext.:

Equipment:	70003717	Air Handling Unit
Funct. Location:	200105.002.05.049	CB-04MR27
Assembly:		
Technical ID No.:	AHU_304-02	

<b>Operation</b>	<b>0010</b>	<b>PM-3-AHU</b>	<b>Confirmation number</b>	<b>30140</b>
Status	REL		Purchase Req.	/00000
Work center	FMS-A006	US00		
Activity type	SF2014	HVAC Sec. (Staff - Regular Time) (H)	Duration	3 H
Work	9	H	Number	3
Person Assigned				

<b>Funct. location</b>	<b>Equipment</b>
Component 0001 1200018537 Filter:GEN	
Storage Location/Plant 1101/US00	
Quantity 1.000 EA	Batch
Reservation No. 0000023001	Purchase Req. /00000
Earliest start date 22.05.2018	Start time 00:00:00
Latest end date 22.05.2018	End time 00:00:00
Actual Work 0 H	Total float 0 H

PM-3-AHU  
SEC-M-PM-3-AHU / GEN-M-PM-3-AHU / CB-M-PM-7-AHU /GA-M-PM-3-AHU  
PROCEDURES (Annual)

Safe Off

- Deactivate the Air Handling Unit from the BMS.
- Power down the Air Handling Unit from the disconnect switch located on the Air Handling Unit.
- Identify panel board and circuit breaker feeding the Air Handling Unit
- Open and de-energize the circuit breaker and check that Air Handling Unit is offline.
- Install Lock-out & Tag-out on de-energized breaker and install warning labels as necessary.

Hardware Check

- Inspect doors, handles, latches, and hinges for proper operation.
- Inspect Panels for damage. If panels show signs of excessive pressure change, they will appear to bulge inward/outward.
- Inspect door gaskets for damage and proper seal.
- Inspect mist eliminators for damage dirt and debris. The mist eliminators in air hoods are removable for cleaning.

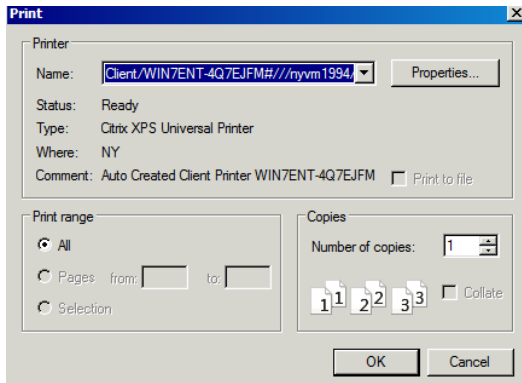
Fan Segment

- Clean all fans associated with AHU. Cleaning should be done using detergent or solvent that is environmentally safe. If water pressure is used, do not direct water stream onto bearing seals.

NOTE: Forward Curved fans are more susceptible to dirt accumulation than others. Dirt and debris on fan wheels and shafts may

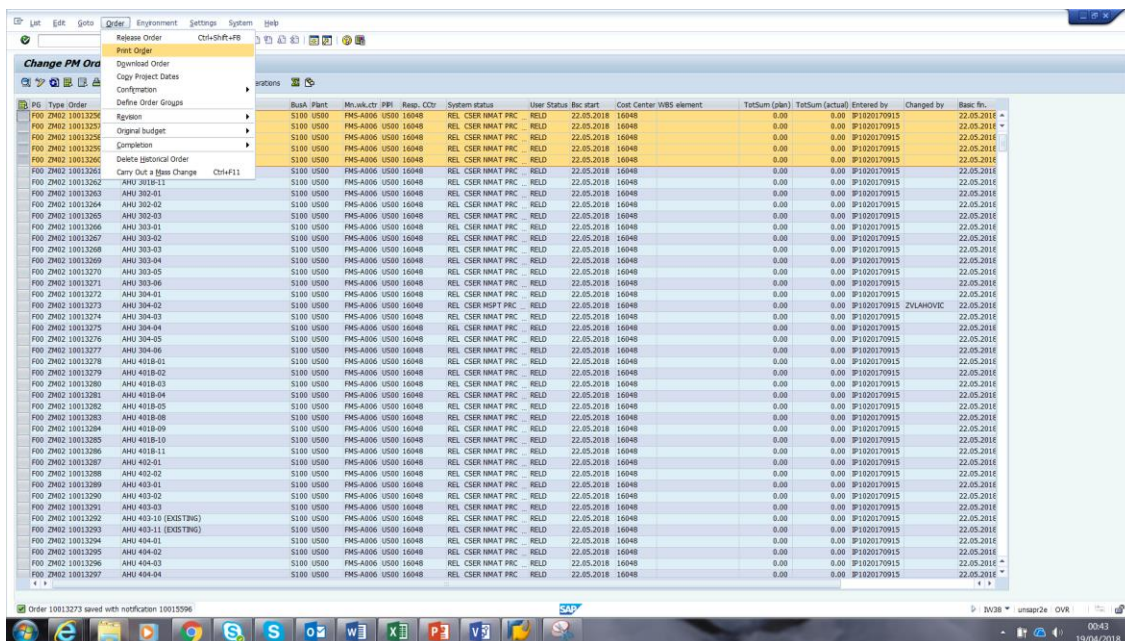
Go back with the green arrow at the top and click on “Print/Fax”

New pop-up screen will appear:



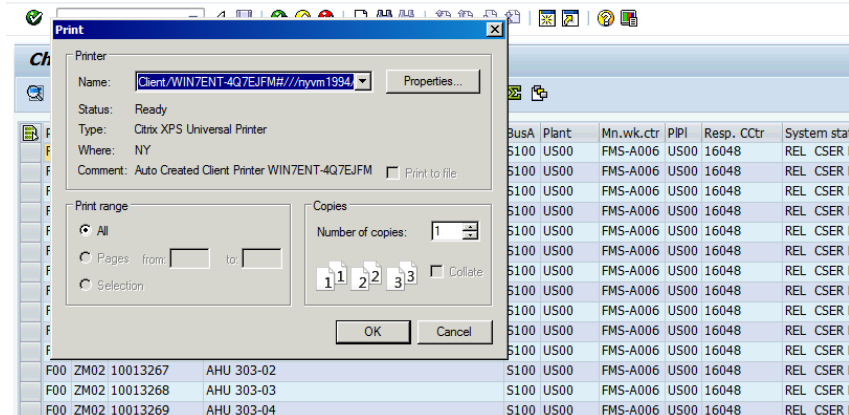
Select the printer and the order will be printed.

It is also possible to select a larger number of Service Orders in report IW38 and Print. Highlight the Service Orders to be printed and select header Order -> Print Order



The Printer selection pop up screen will appear for each of the selected Service Orders. Hit "OK" as many times as it's required.

Change PM Orders: List of Orders



## Confirmation of Maintenance Order by using t-code IW38

Enter t-code IW38.

In the new screen Change PM Order: Selection of Orders, select Outstanding and In Process service orders, enter Order Type ZM02, enter Main Work Centre and Plant for Work Centre. Further, enter Period for which you would like to display the created Service Orders.

**Change PM Orders: Selection of Orders**

Settlement Receivers PRT

**Order status**

Outstanding  In process  Completed  Historical Sel.profile  **Addr.** ✖

**Order selection**

Order	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Order Type	ZM02	to	<input type="text"/>	<input type="button" value="F5"/>
Functional Location	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Equipment	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Material	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Serial Number	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Addit. device data	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Notification	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Main work center	FMS-A006	to	<input type="text"/>	<input type="button" value="F5"/>
Plant for WorkCenter	H500	to	<input type="text"/>	<input type="button" value="F5"/>
Period	01.03.2016	to	31.03.2017	
Partners	<input type="text"/>			
Currency	<input type="text"/>			

**Account Assignment**

Settlement Order  to

**General Data/Administrative Data**

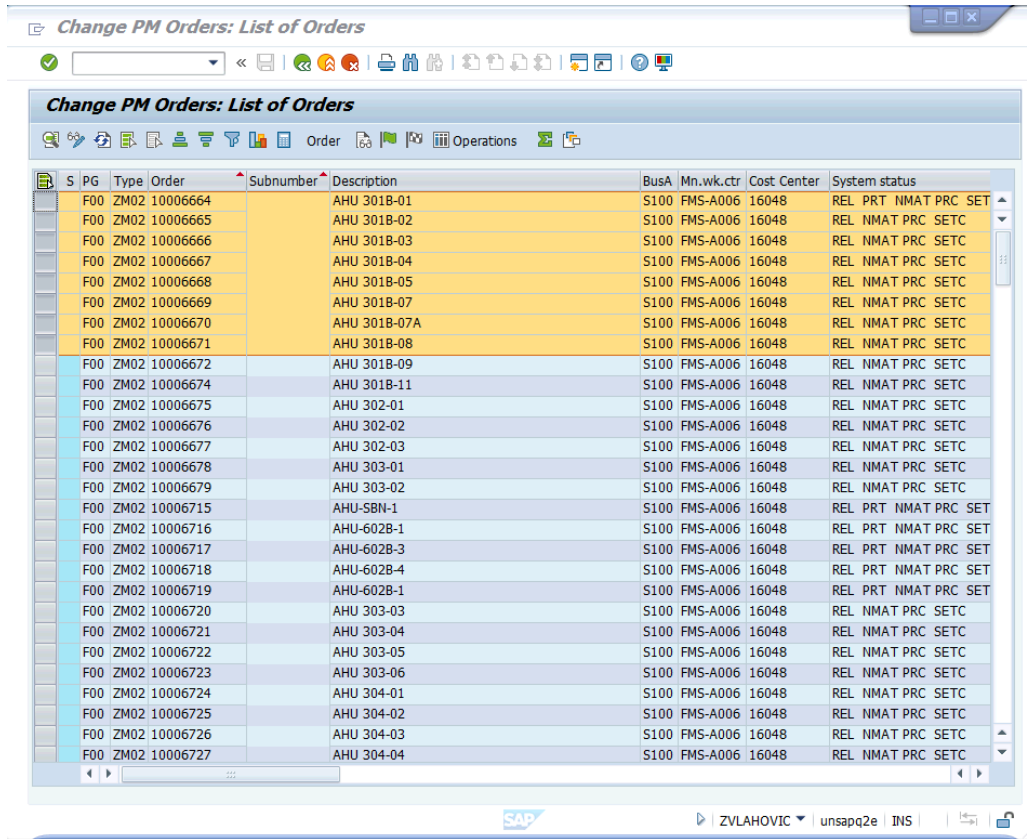
incl.object list

Leading order	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Superior order	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Planning plant	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>
Priority	<input type="text"/>	to	<input type="text"/>	<input type="button" value="F5"/>

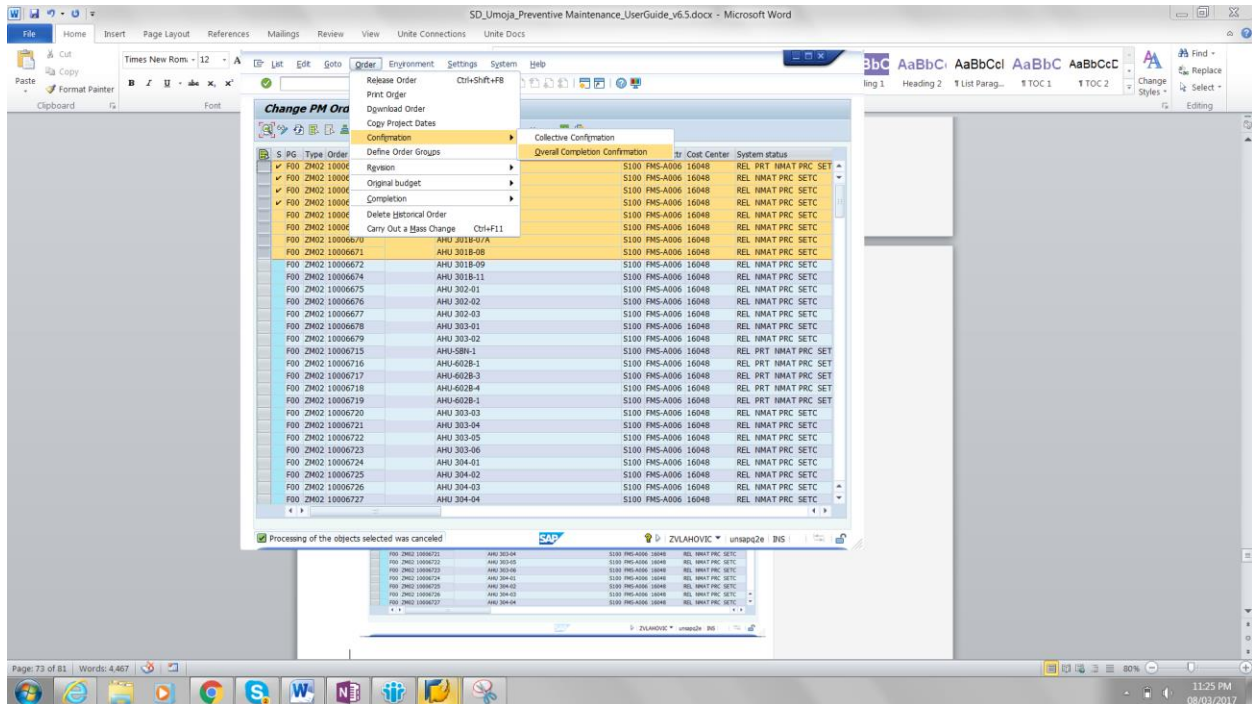
SAP | ZVLAHOVIC | unsapq2e | INS

Press Execute.

A list of the service orders as per selected criteria will be displayed. Mark the service order that should be confirm.

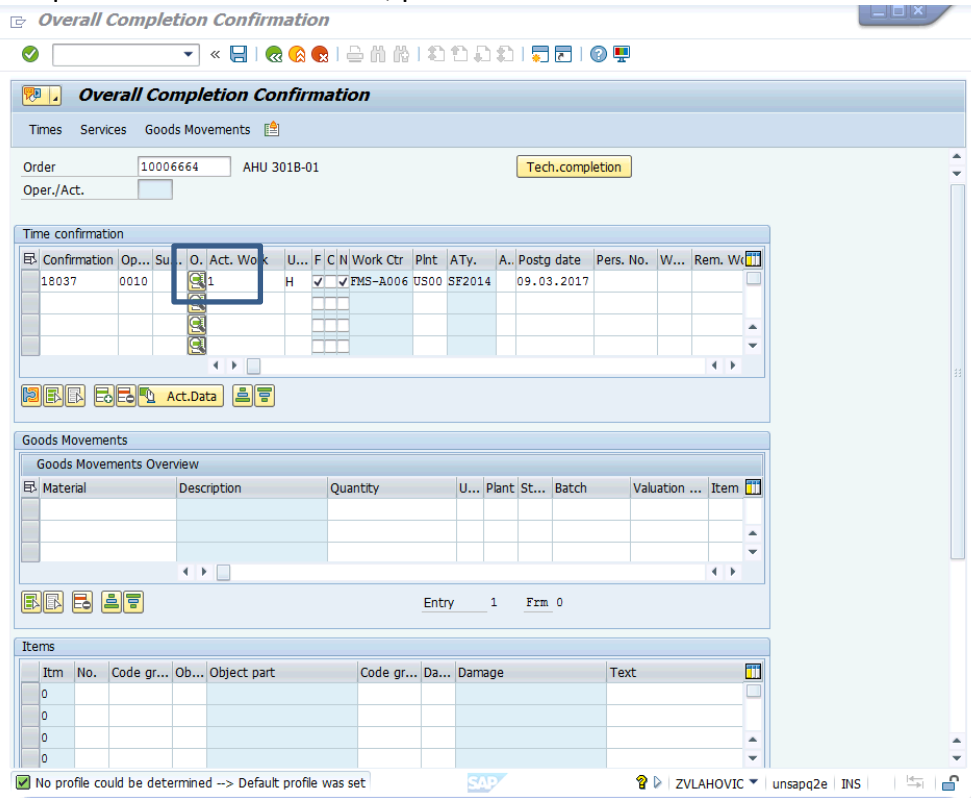


In the Menu bar, select Order/ Confirmation/ Overall Completion Confirmation.





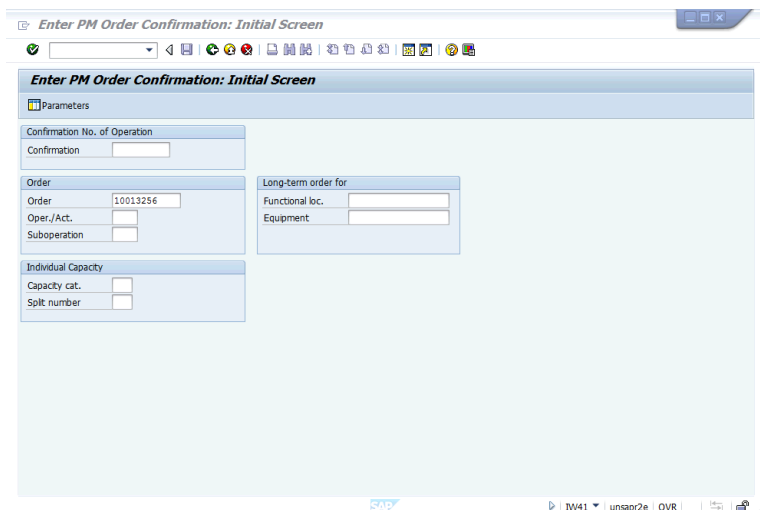
In the new screen, Overall Completion Confirmation review the Actual Work. If this amount complies with the actual work, press save.



Another Service Order Overall Completion Confirmation will display. Continue to repeat this process until the last selected Overall completion confirmation appears.

### Confirmations of Service Order by using t-code IW41

To confirm a single Maintenance Order use t-code IW41. This process is explained in detail in the User Guide: Service Order Management and Job Aid on Service Order Confirmation.



Enter the order number and hit enter

The screenshot shows the 'Enter PM Order Confirmation: Actual Data' screen in SAP. The 'Actual Work' field is highlighted with a red box and contains the value '9'. Other visible fields include Confirmation (90123), Work Center (FMS-A006), and Posting date (19.04.2018). The 'Final Confirmation' and 'No Remain. Work' checkboxes are checked.

The Actual work field will be pre-populated with the planned work. The Planner can overwrite the number if the duration of the Actual work is different.

Make sure that the “final confirmation” and “No remaining work” lines are ticked and hit enter and save.

The screenshot shows the 'Enter PM Order Confirmation: Initial Screen' in SAP. It features several input fields: Confirmation No. of Operation, Order (10013256), Oper./Act., Suboperation, Long-term order for (Functional loc. and Equipment), Individual Capacity (Capacity cat. and Split number), and a status bar at the bottom indicating 'Number of confirmations saved for order 10013256: 1'.

Now the order is confirmed (the work is done).

Next, the Planner can complete the order, as per procedure further explained.

## Technical Completion of Service Order using report IW38

Select the Service Order(s) that has been confirmed (i.e. mark the line in the report).

Hit the flag icon (Complete (technically)).

The pop up screen appears. Further, select the “Complete Orders” in the pop-up.

The screenshot shows the SAP report 'Change PM Orders: List of Orders'. The table below represents the data visible in the report:

PG	Type	Order	Description	BusA	Plant	Mn.wk.ctr	PIPI	Resp.	CCtr	System status	User Status	Bsc start	Cost C
F00	ZM02	10013252	AHU 301B-01	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013253	AHU 301B-02	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013254	AHU 301B-03	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013255	AHU 301B-04	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F	ZM02	10013256	AHU 301B-05	S100	US00	FMS-A006	US00	16048		REL CNF PRT CSER N...	RELD	22.05.2018	16048
F00	ZM02	10013257	Order Completion				006	US00	16048	REL PRT CSER NMAT ...	RELD	22.05.2018	16048
F00	ZM02	10013258					006	US00	16048	REL PRT CSER NMAT ...	RELD	22.05.2018	16048
F00	ZM02	10013259					006	US00	16048	REL PRT CSER NMAT ...	RELD	22.05.2018	16048
F00	ZM02	10013260					006	US00	16048	REL PRT CSER NMAT ...	RELD	22.05.2018	16048
F00	ZM02	10013261					006	US00	16048	REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013262					006	US00	16048	REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013263					006	US00	16048	REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013264					006	US00	16048	REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013265	AHU 302-03	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013266	AHU 303-01	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013267	AHU 303-02	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013268	AHU 303-03	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013269	AHU 303-04	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013270	AHU 303-05	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013271	AHU 303-06	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013272	AHU 304-01	S100	US00	FMS-A006	US00	16048		REL CSER NMAT PRC ...	RELD	22.05.2018	16048
F00	ZM02	10013273	AHU 304-02	S100	US00	FMS-A006	US00	16048		REL PRT CSER MSPT ...	RELD	22.05.2018	16048

The dialog box 'Do you want to Complete the orders?' is displayed over the table, with three buttons: 'Complete Orders', 'Incl. Notifications', and 'Cancel'. The 'Complete Orders' button is highlighted.

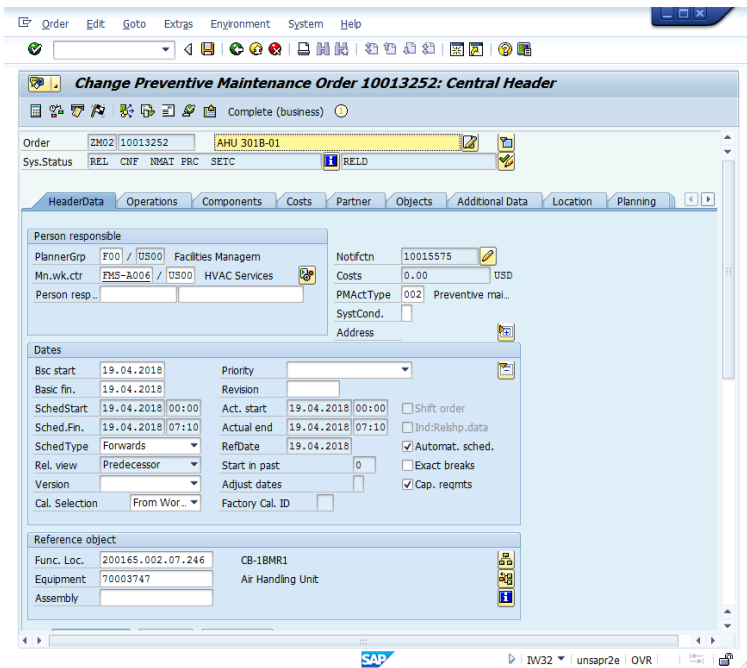
The Maintenance Order is technically completed.

## Technical completion of Service Order by using t-code IW32

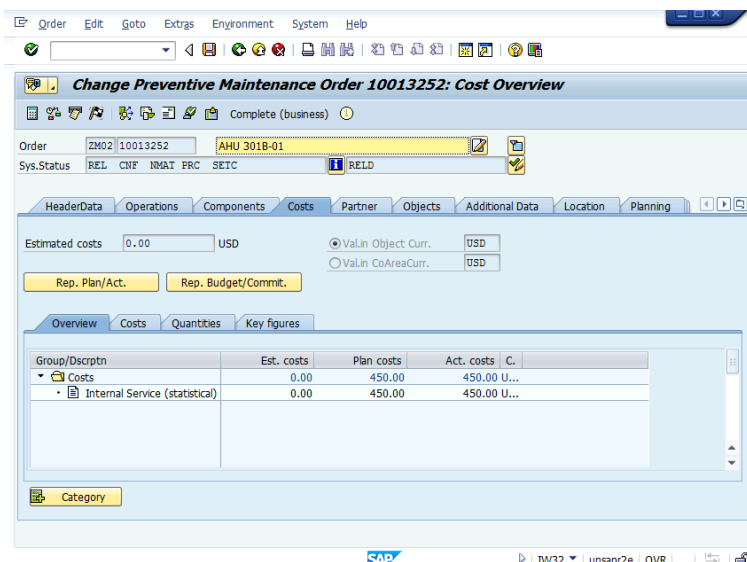
Technically complete individual Service Order in transaction IW32. This process is explained in the User Guide: Service Order Management.

Use transaction IW32

Enter the order number and click enter

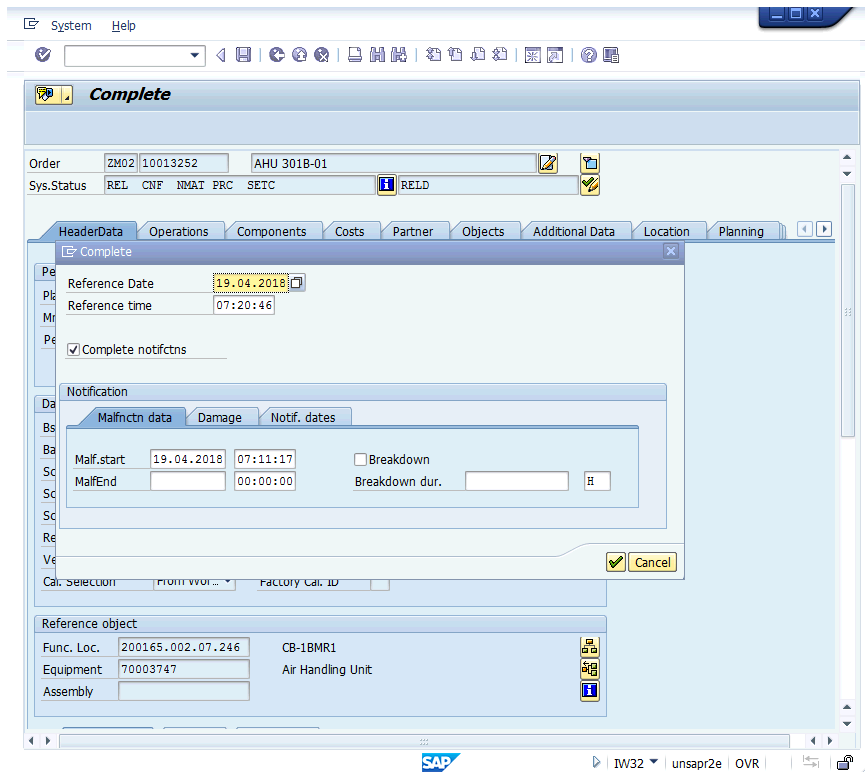


Review the costing information in the costs tab:

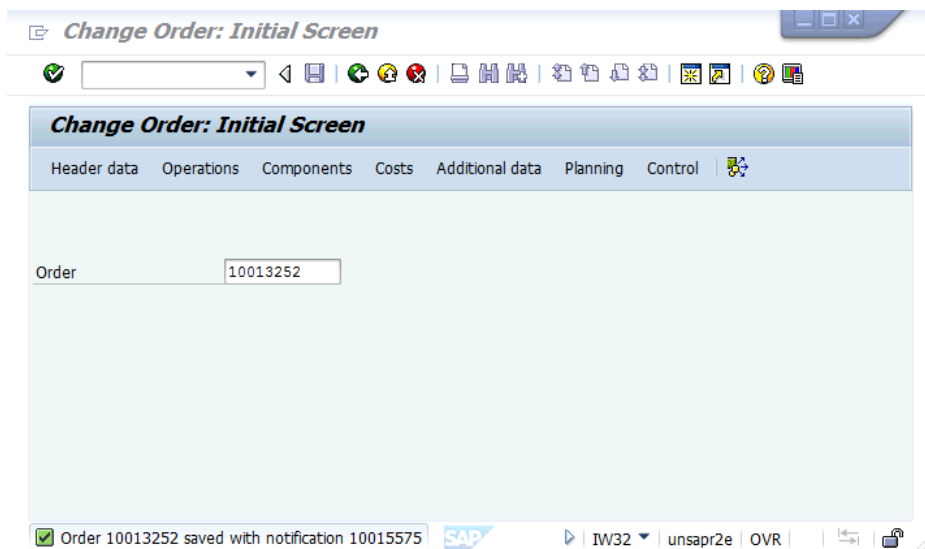


Then select icon (complete technically).

The Planner can update the date and time when the order was completed:



And hit Enter



Now the order is completed and it can be settled and business complete (performed by the Financial Users)

\* \* \* \* \*

## Module 5: Reports

Reports useful for Preventive Maintenance objects are listed below:

T-Code	Name	When to use
IA08	Task List list (Change)	To generate a report of existing task lists with defined filtering, and once the list is displayed, be able to change them
IA09	Task List list (Display)	To generate a report of existing task lists with defined filtering.
IA10	Task list multi-level list (Display)	To generate a report of existing task lists with defined filtering. Task lists are displayed with selected details.
IP15	Maintenance Plan list (Change)	To generate a report of existing maintenance plans with defined filtering, and once the list is displayed, be able to change them
IP16	Maintenance Plan list (Display)	To generate a report of existing maintenance plans with defined filtering.
IP17	Maintenance Item report (Change)	To review a list of Maintenance Items
IP18	Maintenance Item report (Display)	To review a list of Maintenance Items
IP19	Maintenance schedule overview and Simulation	To review maintenance schedule call objects
IW38	Order list (Change)	To list service orders and eventually change them
IW39	Order list (Display)	To list service orders and view them.
IW49N	Display Orders and Operations	To list service order and operations

## Appendix and Reference Information

### Maintenance Strategy

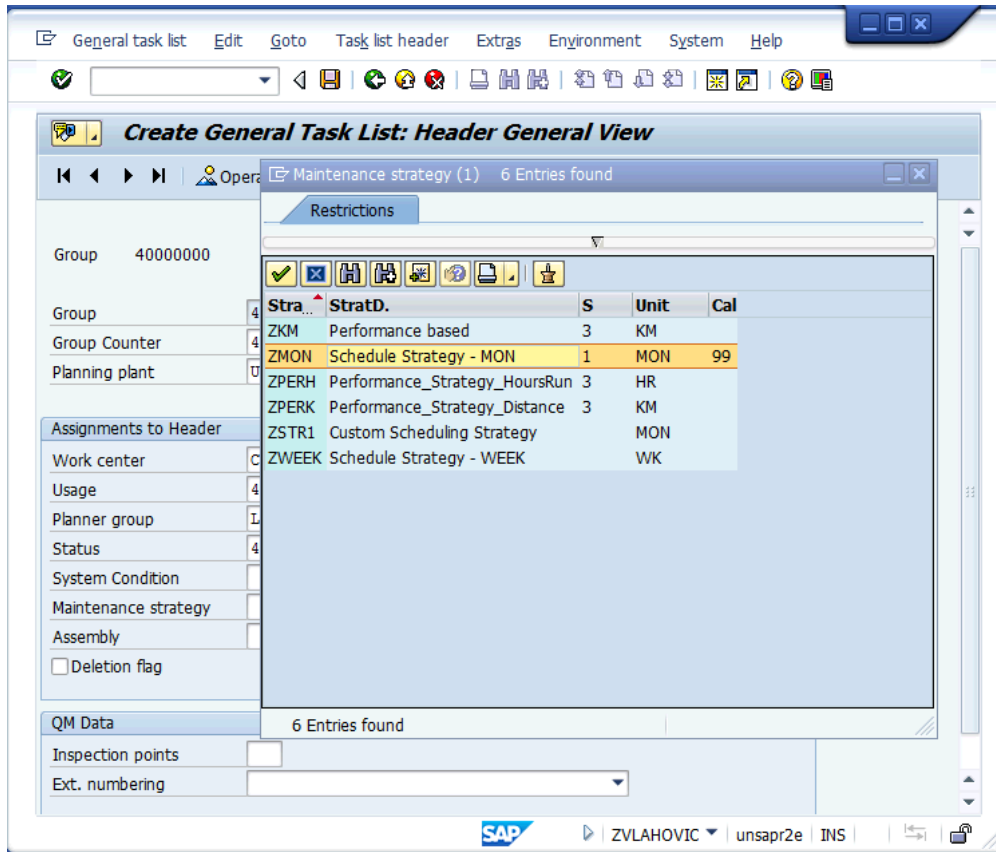
As already mentioned in the overview of Preventive Maintenance (page #4), a Maintenance Strategy defines the rules for the sequence of planned maintenance work. In Umoja, the strategy is required for use in the General Task List and Strategy Maintenance Plans. While manually creating the General Task List with transaction IA05, at the Header General View, select the field Maintenance strategy, then click on the matchcode near the field.

The screenshot displays the SAP IA05 transaction interface. The title bar reads "Create General Task List: Header General View". The main area contains several input fields and sections:

- Group:** 40000000
- Group:** 40000000
- Group Counter:** 49 Task List: Chiller 2
- Planning plant:** US00
- Assignments to Header:**
  - Work center: CSS-C001 / US00
  - Usage: 4
  - Planner group: I02
  - Status: 4
  - System Condition: [empty]
  - Maintenance strategy: [empty] (highlighted with a matchcode icon)
  - Assembly: [empty]
  - Deletion flag:
- QM Data:**
  - Inspection points: [empty]
  - Ext. numbering: [empty]

The SAP logo and user information (ZVLAHOVIC, unsapr2e, INS) are visible at the bottom of the window.

The pop up will display the list of the available Maintenance Strategies.



It is visible that among other specific information, the strategies are distinguishing by a unit of measure. We recognize two types of Maintenance Strategy in Umoja:

- Time-Based Maintenance strategy – specified with time dimension unit of measure (Day, MON, Year)
- Performance-Based Strategy – specified with activity unit of measure (distance in KM, operation hours in HR, etc.)

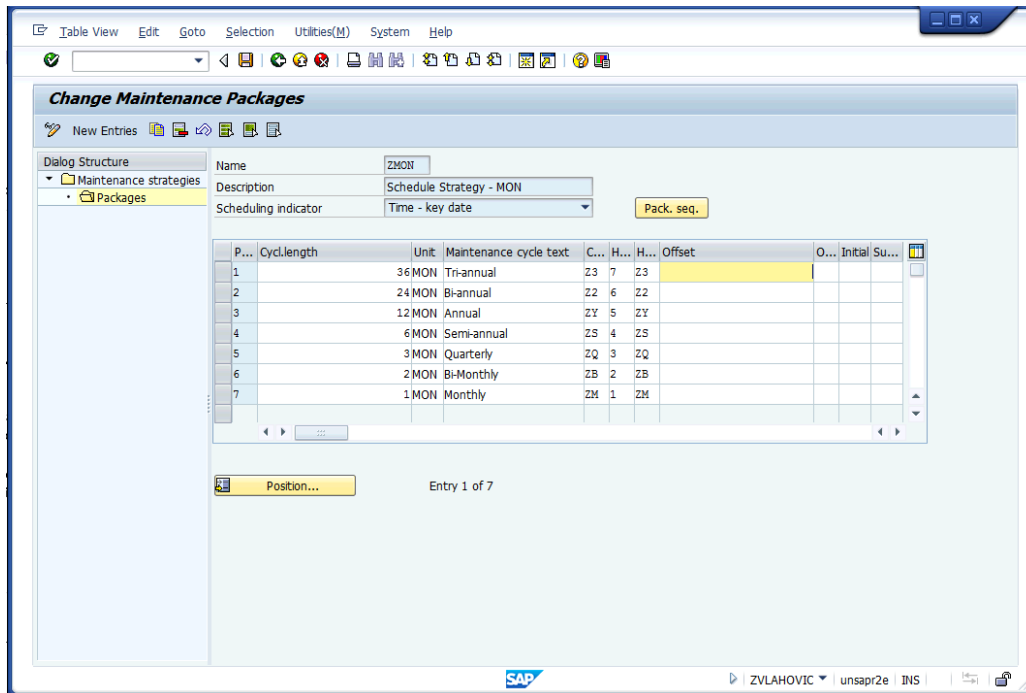
A maintenance strategy contains maintenance packages and cycles in which the individual work, task, or inspection should be performed, as per following:

- In Time Based Strategy - for example, every three months, every six months, every one year
- In Performance-Based Strategy - Every 10000 miles
- In Performance-Based Strategy - Every 500 operating hours

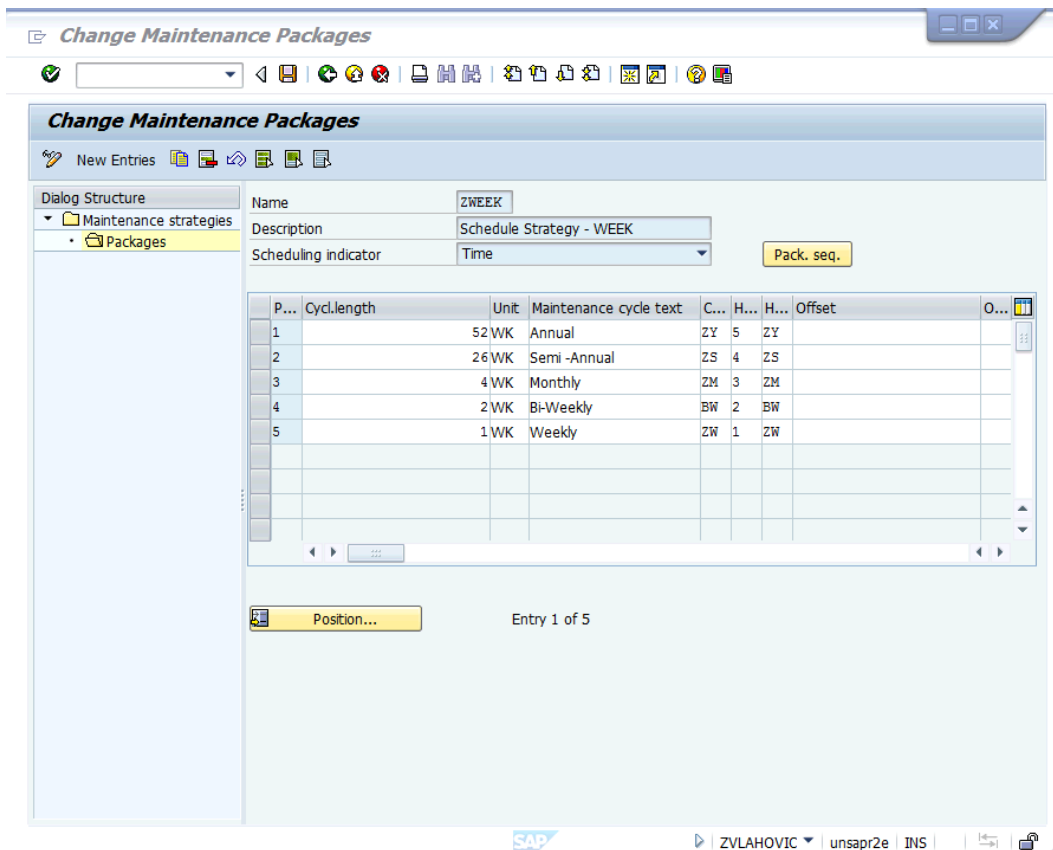
The following example represents time-based maintenance strategy ZMON:

The scheduling indicator is Time-key date; scheduling planning is based on the unit of measure MON (this is the lowest scheduling granularity in this maintenance strategy). Note: Time-key date will schedule the Service Order on the same day in each month, for example, every 5<sup>th</sup> of the month).



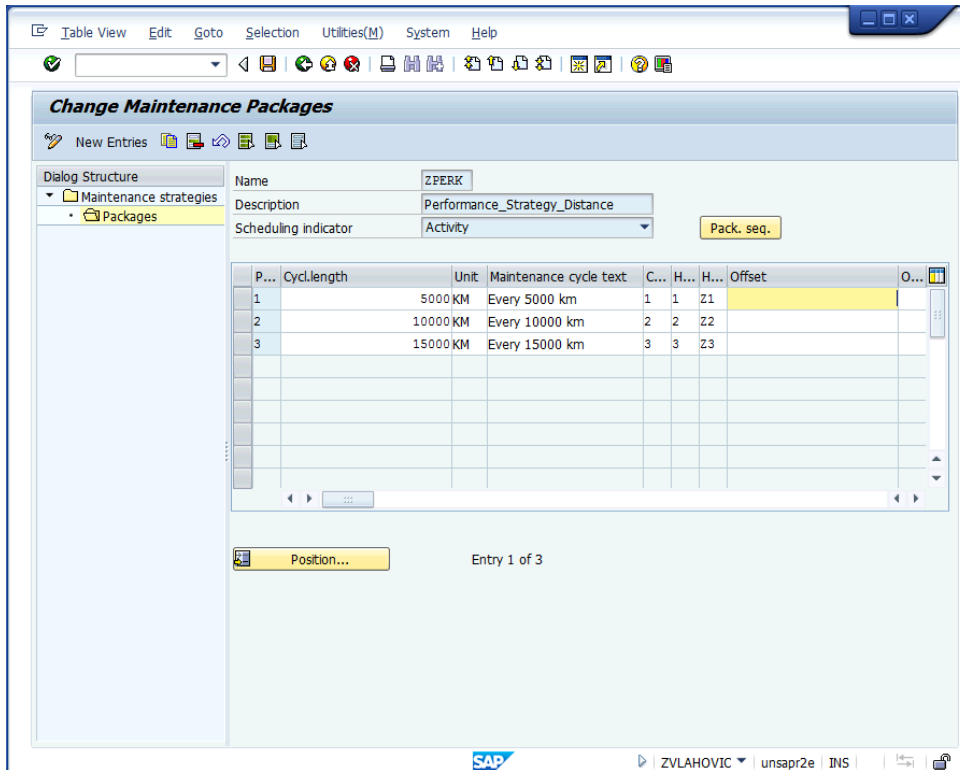


Next Time -Based strategy example is ZWEEK:

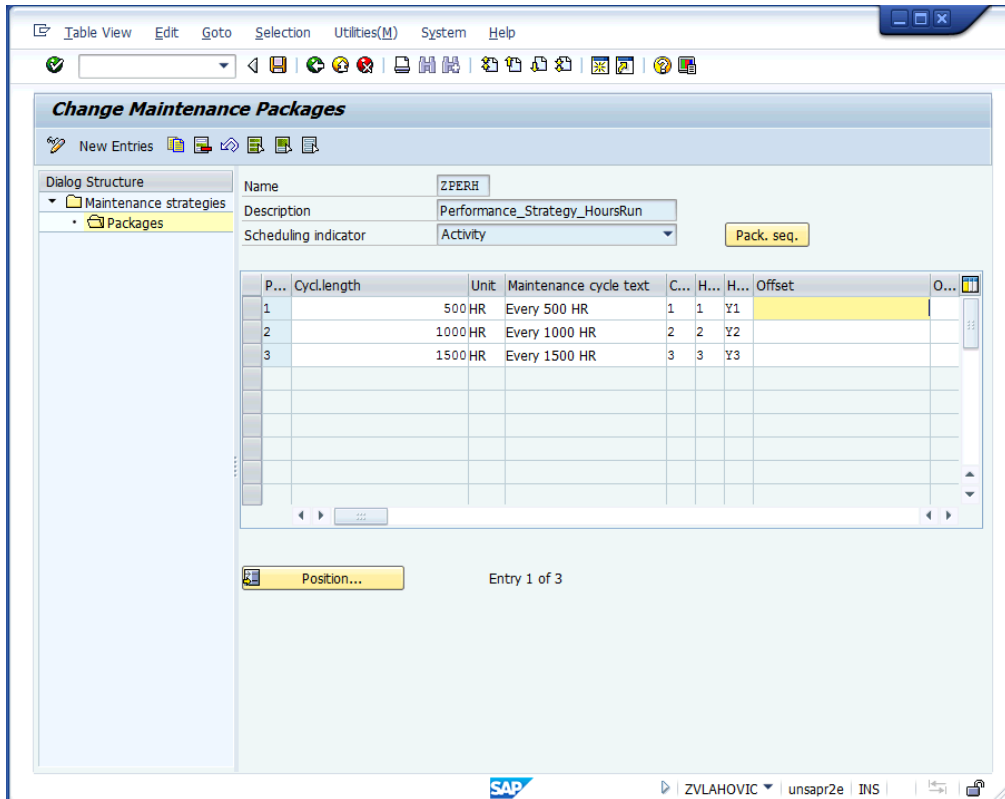


The following example represents maintenance strategy performance-based maintenance strategy ZPERK:

The scheduling indicator is Activity; scheduling planning is based on a unit of measure KM. The activity (performance) will schedule the Maintenance Order as per Cycle length information. In this example, the Service Order will be scheduled (create) once performance (measurement document) reach 5000KM, or 10000KM, or 15000 KM.

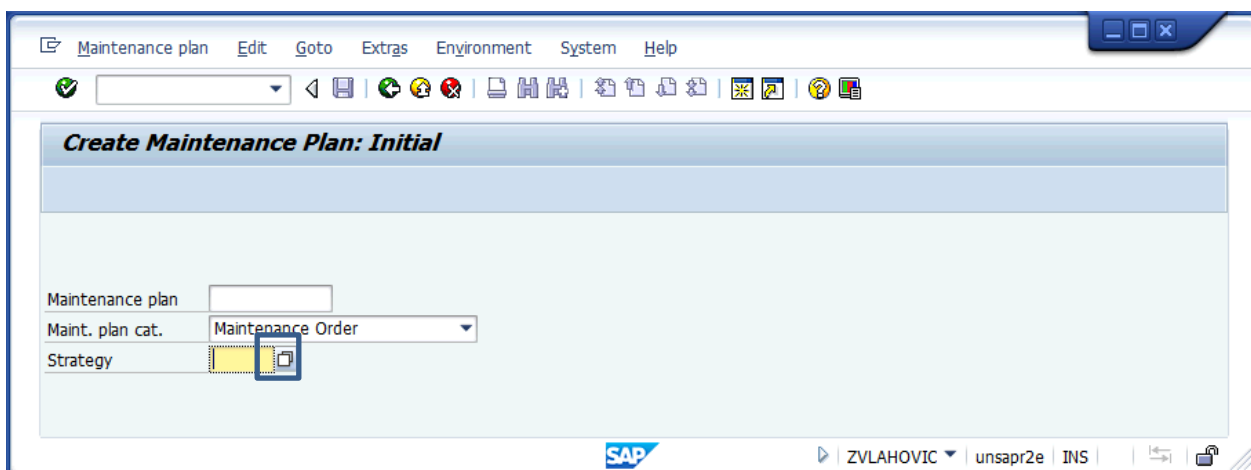


The next Performance-Based Strategy example is ZPERH with a unit of measure HR (hour):

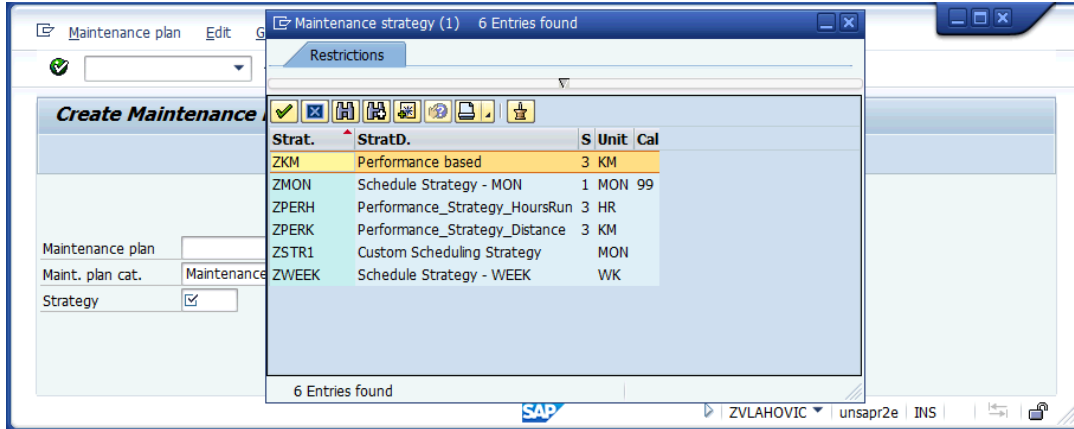


While further manually creating the Strategy Maintenance Plan, the Maintenance Strategy will distinguish whether the Maintenance Plan is Time-Based or Performance-Based.

Enter transaction IP42, at the Header General View, select the field Strategy, then click on the matchcode near the field.



The pop up will display the same list of the available Maintenance Strategies as happened in the previous step while creating Task List:



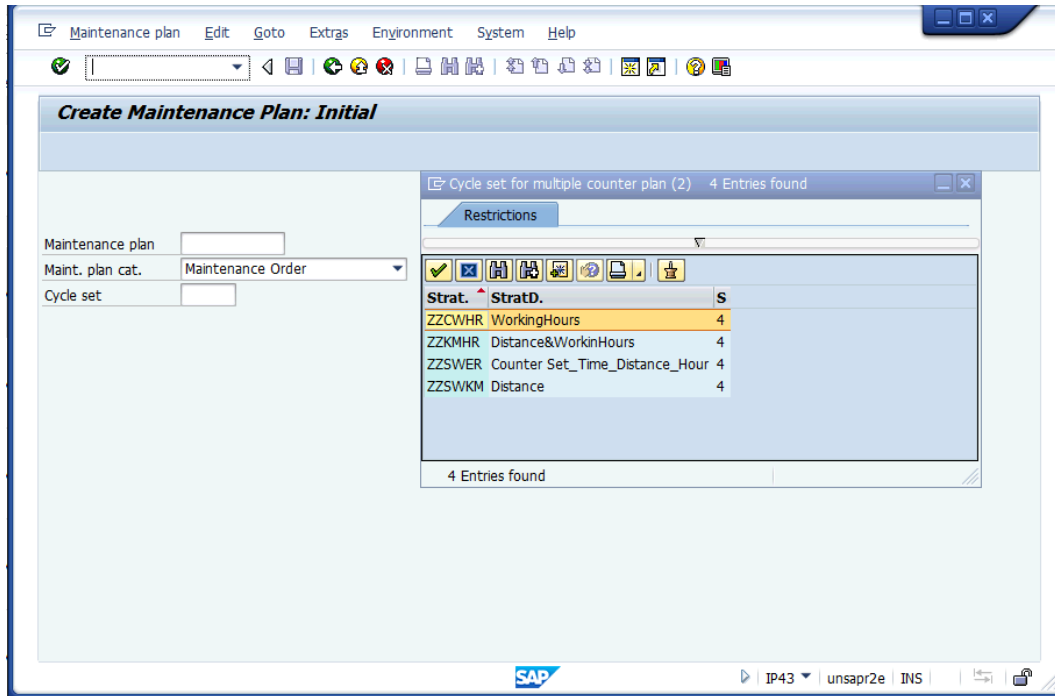
**Note:** Maintenance Strategy in the Maintenance Plan and Maintenance Strategy in the Task List that will be used in the Maintenance Plan MUST be aligned. Otherwise the system will indicate an error.

**Note:** Since the Maintenance Strategy is the data object defined centrally by Umoja, the end user (Preventive Maintenance Planner) doesn't have credentials to create or amend the Maintenance Strategy parameters. Therefore, if other maintenance strategy parameters are required, please contact Umoja through iNeed self-service, create and submit the RFS request (request for service). Umoja support will create the new Maintenance Strategy as per RFS (business) requirement.

## Cycle Set

Cycle Set is a compilation of cycles that define the period between two maintenance tasks. Cycle sets can be used as a copy model for the creation of multiple counter plans. Also, cycle sets can be compiled directly in the multiple counter plan

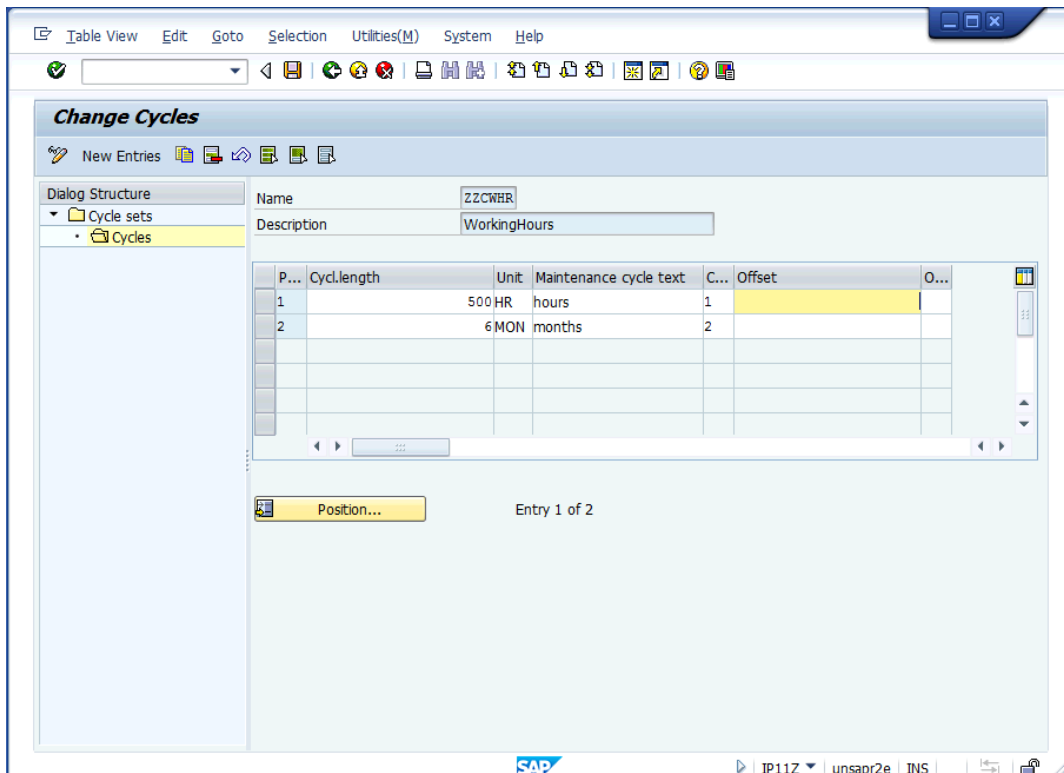
As already explained, since you would like to use an already created Cycle Set, choose Cycle Set in the pop up within transaction IP43.



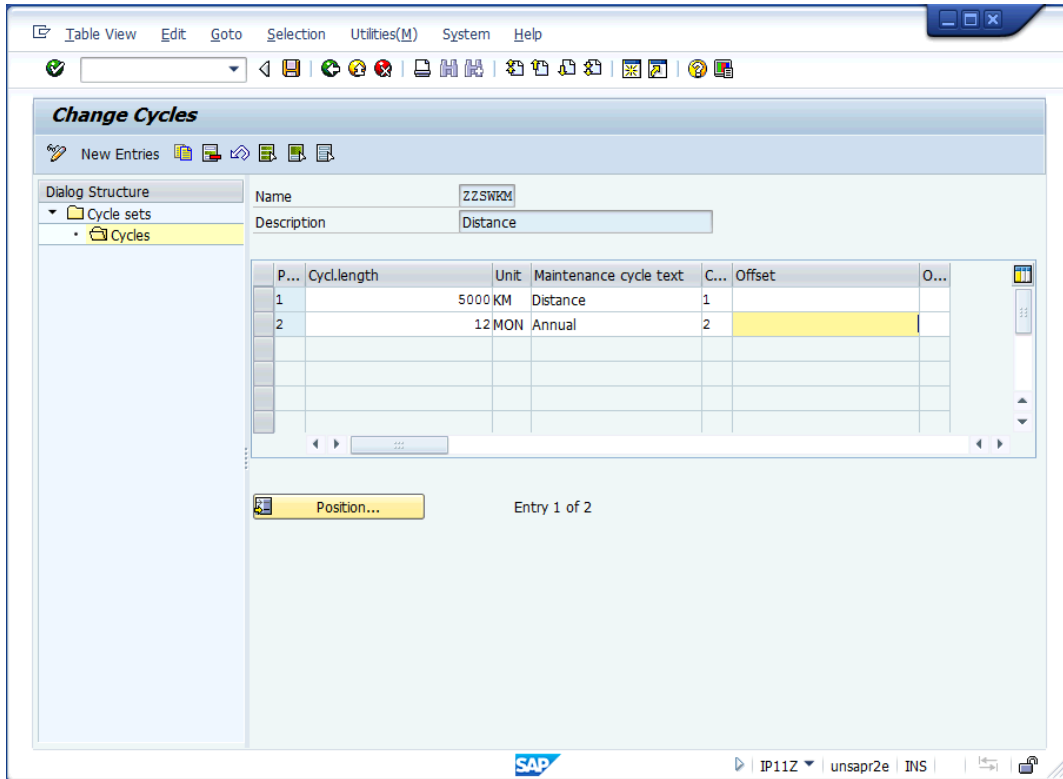
Then, select the Cycle Set and continue to create Multiple Counter Maintenance Plan, as was explained in Module #3.

The following will display the parameters for the Cycle Sets that displayed in the pop up.

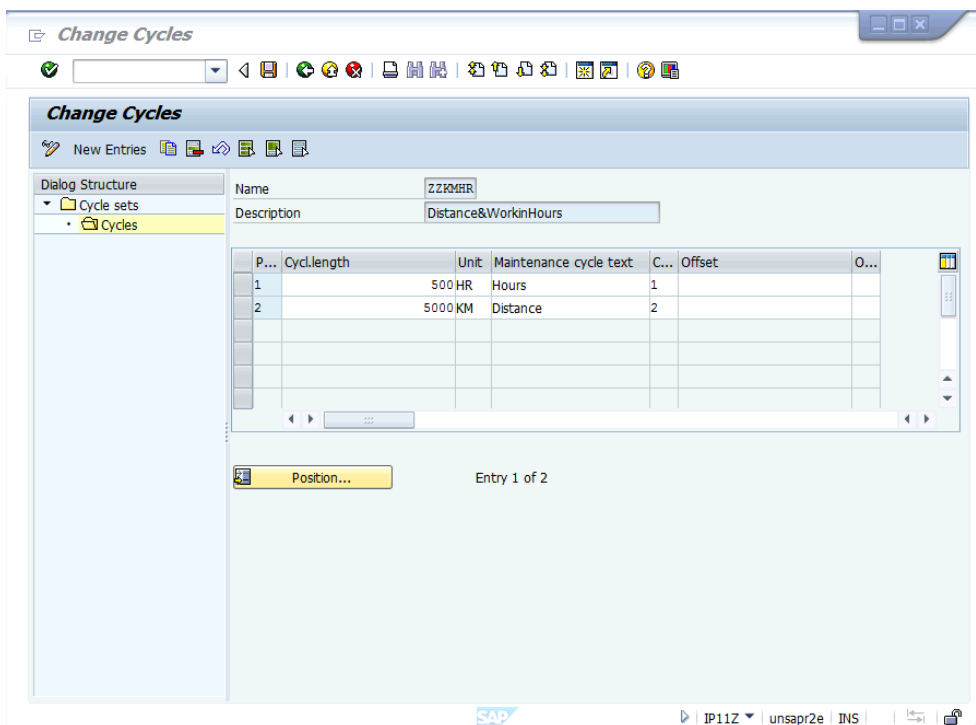
- ZZCWHR – this cycle set is a combination of Activity (performance) cycle with HR (hour) unite of measure and Time cycle.



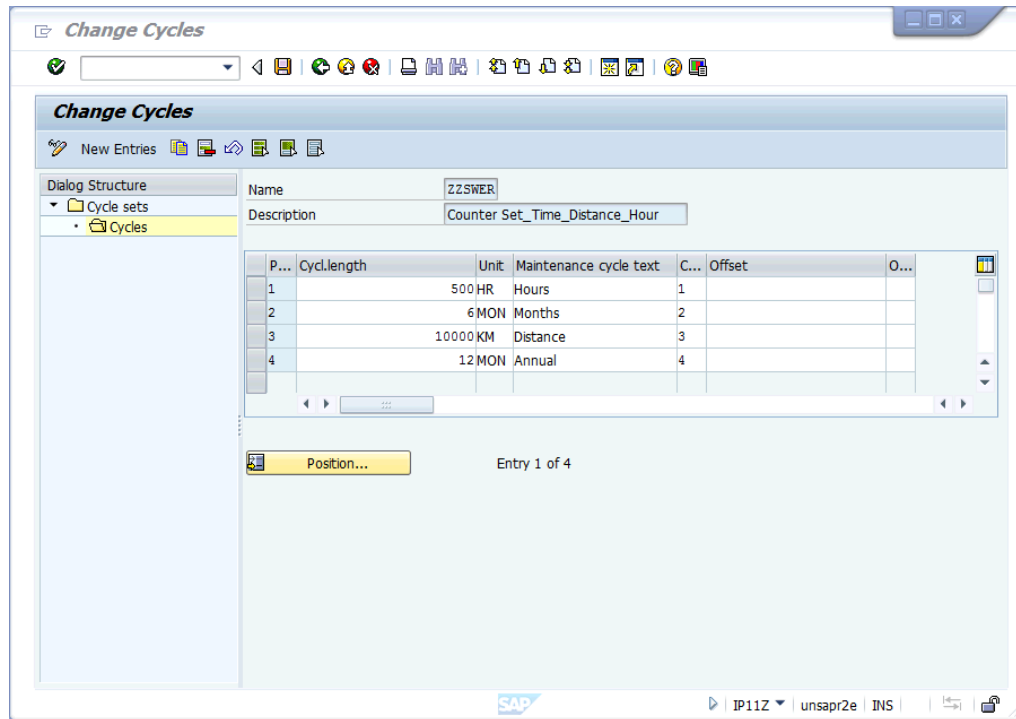
- ZZSWKM - this cycle set is a combination of Activity (performance) cycle with KM (kilometers) unit of measure and Time cycle.



- ZZKMHR - this cycle set is a combination of two Activities (performance) cycles with HR (hour) unit of measure and KM (kilometers) unit of measure.



- ZZSWER - this cycle set is a combination of two Activities (performance) cycles with HR (hour) unit of measure and KM (kilometers) unit of measure, and two cycles with a time dimension.



As mentioned earlier, the Cycle Set will be copied in the Multiple Counter Maintenance Plan in the transaction IP43. The Counter Set data (Cycle) needs an additional assignment to Cycle Set Sequence in the Multiple Counter Maintenance Plan.

Also, Cycle Set data can be amended in the Multiple Counter Maintenance Plan as per the following example:

**Note:** The Cycle Set is the data object defined centrally by Umoja, the end user (Preventive Maintenance Planner) does have credentials to amend the Cycle Set parameters in the Multiple Counter Maintenance Plan but doesn't have credentials to create or amend the Cycle Set as it is Umoja master data. Therefore, if other Cycle Set parameters are required, please contact Umoja through iNeed self-service, create and submit the RFS request (request for service). Umoja support will create the new Cycle Set as per RFS (business) requirement.

## Key Transactions

Transactions	T-Code
<b>Create Task Lists</b>	IA05
<b>Update Task Lists</b>	IA06
<b>Display Task Lists</b>	IA07
<b>Create Maintenance Item</b>	IP04
<b>Update Maintenance Item</b>	IP05
<b>Display Maintenance Item</b>	IP06
<b>Create Maintenance Plan – Strategy based</b>	IP42
<b>Create Multiple Counter Maintenance Plans</b>	IP43
<b>Update Maintenance Plans</b>	IP02
<b>Display Maintenance Plans</b>	IP03



Scheduling Maintenance Plans	IP10
Batch Scheduling Maintenance Plans	IP30
Service Order confirmation	IW41
Service Order update	IW32
Report: Display Task List	IA09
Report: Display Maintenance Plan	IP16
Report: Display Maintenance Item	IP18
Report: Maintenance Scheduling Overview and Simulation	IP19
Report: Change Service Order	IW38
Report: Display Orders and Operations	IW49N

## Key Terminology for General Task List

**Group Number:** eight digits, external assignment. Umoja created 26 task list groups that refer to the equipment's Object type. Select the Task List group from the drop-down list. In case your equipment's object number does not comply with any of the 26 Task List groups please refer to tab "Task List Group Analyses".

**Group Counter:** two characters (digit or capital letters or combination digit/cap. Letter. It defines Task List group counter within the same Task List Group. The Group Counter range is as per following: 1, 2, ....., 98, 99, A0, A1,....., A9, B0, B1, ....., B9,....., Z0, Z1, ....., Z9

**Maintenance Strategy:** A maintenance strategy defines the rules for the sequence of planned maintenance work. Select from the drop-down list; ZMON (time-based with a unit of measure MON) or ZWEEK (time-based with a unit of measure WK), ZPERH (performance based with unit of measure HR), ZPERK (performance based with unit of measure KM)

**Planning Plant:** Represents the Organizational identity where a Task List is created.

**Task List Description:** up to 40 characters. Any text/characters that describe the Task List (example HVAC, Chiller, etc.)

**Work Centre** (in the Task List Header): An organizational unit that identifies the responsible work center for the Task List. Check in Umoja with t-code CR03 whether the Work Centre is created for your Plant.

**Plant:** Represent Plant associated with Work Centre and responsible for the Task List. Select from the drop-down list. Note. Selected Plant must be consistent with the data used in step 5 (Work Centre).

**Task List Usage:** Key is specifying the areas in which the task list can be used (for example, in preventive maintenance). Note: recommended to use # 4 (Preventive Maintenance usage).

**Planner Group:** Key which identifies the planner group responsible for maintaining the task list. Select from drop down. Check in the "Task List Reference" whether the desired planner group is created for your Plant.

**Status:** The status key to indicate the processing status of a task list. For example, you can indicate whether the task list is still in the creation phase or has already been released. Note: recommend selecting # 4 (released).

**Operation Number:** Determines the order the operations of a sequence are carried out. It is operation reference number.

**Work Centre of the Operation:** Work centre is an organization unit where maintenance operation is performed. Check-in Umoja with tcode CR03 whether a Work Centre is created for your Plant.

**Plant of the Work Centre:** The Plant defines a place where the Work Centre is created. Check in Umoja with tcode CR03 whether Plant complies with the selected Work center.

**Operation Short Text:** up to 40 characters. Any text that describes the Operation and enables reporting. This text is copied into the first line of the long text for the operation or sub-operation.

**Maintenance Package:** This defines the operation frequencies (cycles). More than one "maintenance package" should be allowed by the operation.

**Activity Type:** Activity types describe the activity produced by a cost center. The activity type is measured in units of time or quantity. Select the matchcode near the Activity type field and select from the pop-up. Note: The pop-up list is the activity type rates with same cost centre that is assigned to work centre. Check in Umoja whether Activity type Rate is defined for your Plant. (use tcode KSBT). Note: in case there is no activity type the system will NOT calculate the cost (neither statistical nor real).

**Standard Text:** up to 7 characters. This identifies a text that is used to describe certain processes (for example, turning or milling).

**Control Key:** 4 characters. Determines which business transactions should be executed for the object that belongs to the task list or order. Enter SM00 which describes that internal resources will provide the Operation execution. Note: at the moment, following the business practice we don't use Framework Order or External resources in Task List that will trigger Service Entry Sheet creation.

**Work involved in the activity:** up to 9 digits. It is a total amount of work involved in performing the activity. The cell contains the formula that multiplies Normal Duration of the activity with No. of Capacity

**Unit of work:** up to 3 characters This is a Unit of Measure (UoM) in which the work involved is expressed. To identify which UoM should be used double click on the activity type that will display and check the UoM.

**Normal Duration of the activity:** up to 5 digits. The normal duration of the activity represents required activity duration by one capacity unit.

**Normal duration Unit of measure:** up to 3 characters, Unit of measure in which the normal duration of the activity is expressed.

**No. of Capacities:** up to 3 digits. A number of capacities (resources, for example, number of staff) required to carry of the Operation.

**Calculation Key:** always "2". Calculation key triggers the system to multiply Work involved and Capacity required.

**Operations Long Text:** There is no length and characters limitation. This text will be converted in Service Order in the Operation long text.

## Key Terminology for Maintenance Plans

**Maintenance Strategy:** A maintenance strategy defines the rules for the sequence of planned maintenance work. Umoja created the following strategies: ZMON (time-based with a unit of measure MON) or ZWEEK (time-based with a unit of measure WK), ZPERH (performance based with a unit of measure HR), ZPERK (performance based with a unit of measure KM)

**Maintenance Plan Text:** Use any text up to 40 characters that will describe the plan or/and the maintained object.

**Shift Factor for Late Completion:** The shift factor specifically for your maintenance plan by specifying the shift percentage to be taken into account when calculating the next due date. It is between 0% and 100%.

**Call horizon for maintenance plan calls:** The Call horizon determine the period between Call Date and Plan Date. It can be between 0% and 100%. The calculation period is based on the lowest cycle incorporated in the maintenance plan. **For example:** If Maintenance order contains three cycles: ZM – month, ZS - semiannual, and ZY - annual. Since the lowest period is the cycle ZM, the calculation time is one month. For 0% the Call Date is 30 days in advance to Plan Date. For 50%, the Call Date is 15 days in advance to Plan Date. For 100% the Call Date is at the same date as a Plan Date.

**Scheduling Period:** The scheduling period specifies days, months, or years the actual length of time over which scheduling will take place. For example, five years. Note, please enter a unit of measure (UoM) in the next cell.

**Unit in scheduling interval:** The unit of measure (UoM) refers to the scheduling period. Select the Day or Month or Year.

**Cycle Modification Factor:** By entering a cycle modification factor, you can lengthen or shorten the cycle specified in the maintenance strategy. A cycle modification factor greater than 1 lengthens the cycle, whereas a factor less than one shortens the cycle. Umoja recommends use "1".

**Start Date for Schedule Period (only for Time Based Strategy Maintenance Plan and Multiple Counter Maintenance Plan):** Date formatting DD.MM.YYYY.

**Start Counter Reading (only for Performance-Based Maintenance Plan):** The counter reading which the maintenance schedule should start. Enter only whole number.

**Equipment Number.** The equipment number refers to the Umoja master data. It is an eight-digit number. Check your Plant equipment records in Umoja with t-code IH08.

**Functional Location:** A functional location represents the place at which a maintenance task is performed. If choosing the equipment number, the functional location will derive from the equipment master data.

**Order Type:** It is type - ZM02 Maintenance Order. This will determine the call object after scheduling the Maintenance Plan

Main work center for maintenance tasks: represents department or maintenance unit/shop responsible for ensuring that the maintenance work is executed. Check in Umoja with t-code CR03 whether the Work Centre is created for your Plant.

Plant-associated with main work center: Defines the Plant location for Work Center.

Item Short Text: This text will be derived as per equipment record description, otherwise enter text up to 40 characters that will describe the Maintenance Item. Please use the text that will be recognized for reporting purposes.

Maintenance Planning Plant: A Plant in which maintenance tasks are planned and prepared.

Planner Group: Key which identifies the planner group responsible for maintaining the maintenance item. Select from drop down. Check in the "Maintenance Plan Reference" whether the desired planner group exists in subject Plant.

Maintenance Activity Type: This will derive from equipment record "002".

Task List Type: We use only General Task List (abbreviation "A").

Task List Group: Refer to the created Task List for the specific Plant created in the previous chapter.

Task List Counter: defines Task List counter group that is already created. Plant created in the previous chapter.

Fund: It is account assignment information that defines the fund commitment for preventive maintenance.

Cycle set: This is a combination of maintenance cycles which can be used as a copy model for creating multiple counter plans. When creating multiple counter plans, you can accelerate the creation process by specifying a cycle set as a copy model. You can delete cycles which are not required but are copied into the multiple counter plan. Similarly, you can add cycles which are missing.

Cycle Set Sequence Indicator (in the Maintenance Plan Header): The cycle set sequence has various tasks in a multiple counter plan: a) Grouping of multiple cycles into a set;

b) Determination of the set sequence in the scheduling. c) Determination of maintenance item and date for which a call object is generated.

If it complies with your requirements for Cycle set ZCNT, enter the following in first four cells:

" 1 1 2 2"

Cycle Set Sequence Indicator (in maintenance item): This is a determination of maintenance item and date for which the call object will be generated.

Operation Type: Indicator for OR or AND link. These are Indicators for defining the relationship between the maintenance cycles. In the case of an OR operation, a maintenance call is due as soon as one maintenance cycle finishes/reached. In the case of an AND operation, a maintenance call is only due when all the maintenance cycles have finished/reached."

Lead float (days): The lead float determines the number of the days for the period between the Call Date and Plan Date. We recommend to be equal or less than 30 days.

Note: Plan Date – Maintenance Order’s execution start date.

Call Date – the date of maintenance order creation.