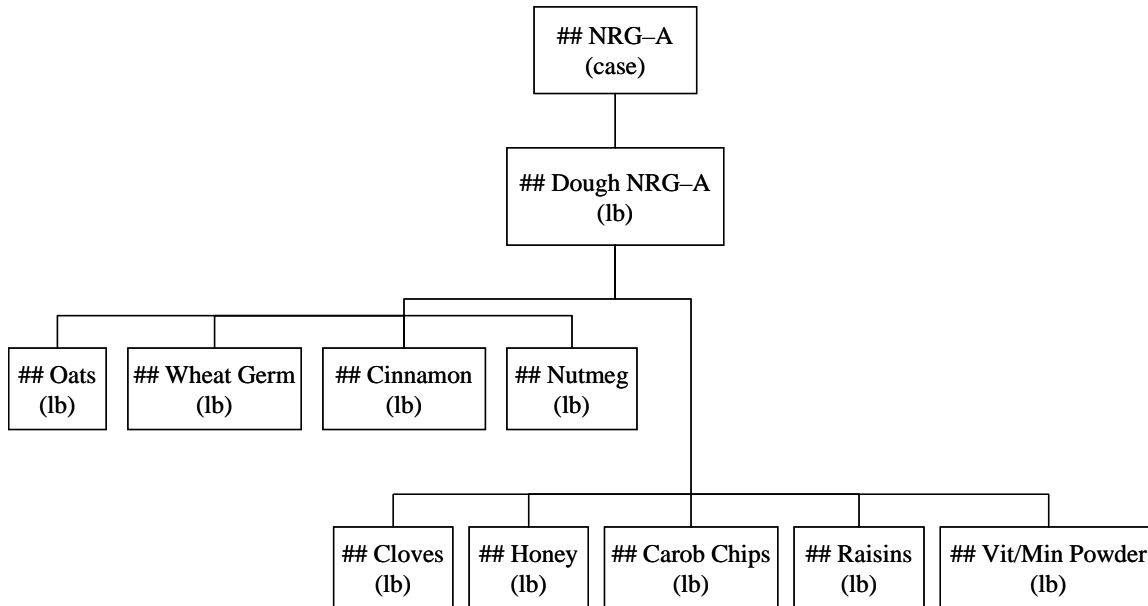




## Bill of Material (BOM)

A critical input to the MRP process is the bill of material (BOM), which shows how components and semifinished products are combined to produce the final product. A graphical representation of the BOM for the NRG-A bar is shown below:



The raw materials (Oats, Wheat Germ, etc.) are combined in a mixer to produce a 500 lb. batch of dough. The dough is then transferred to the baking line, where it is formed into bars, baked and packaged. For simplicity, we have ignored the wrappers, boxes and cases that are needed to produce a complete case of Fitter Snacker bars.

To view the BOMs for Fitter Snacker, follow the menu path:

**Logistics > Production > Master Data > Bills of Material > Reporting > BOM Explosion > Material BOM > Multilevel > Material BOM Browser**

Which will produce the following screen:



# MRP



Material BOM Edit Goto Extras Settings Environment System Help

**Explode BOM: Multi-Level BOM: Initial Screen**

Material: 00F100  
 Plant: 00PT  
 Alternative BOM:   
 BOM Application: PP01

Selection  
 Valid From: 07/31/2008  
 Change Number:   
 Required qty:

Enter ##F100 for Material, ##PT for Plant and PP01 for BOM Application, then click on the execute icon

Enter ##F100 for Material, ##PT for Plant and PP01 (P P Zero One) for BOM Application, then click on the execute icon (F8), which will produce the following screen:

Material BOM Edit Goto Extras Settings Environment System Help

**Display Multilevel BOM**

Material: 00F100  
 Plant/Usage/Alt: 00PT/1/01  
 Description: 00 NRG-A  
 Base Qty (CS): 7.000  
 Reqd Qty (CS): 7


This screen shows 7 cases of snack bars requires 500 lbs. of dough, and that to produce 500 lbs. of dough, 300 lbs. of Oats, 50 lbs. of Wheat Germ, etc. are required

Level no.	Item	Ob...	Component number	Object description	Ovfl	Comp. Qty (CUn)	Un	Ict	Ex.
.1	0010		00S200	00 Dough NRG-A		500	LB	L	
..2	0010		00R380	00 Oats		300	LB	L	
..2	0020		00R420	00 Wheat Germ		50	LB	L	
..2	0030		00R320	00 Cinnamon		5	LB	L	
..2	0040		00R370	00 Nutmeg		2	LB	L	
..2	0050		00R330	00 Cloves		1	LB	L	
..2	0060		00R360	00 Honey		10	GAL	L	
..2	0070		00R300	00 Canola		7	GAL	L	
..2	0080		00R410	00 Vit/Min Powder		5	LB	L	
..2	0090		00R310	00 Carob Chips		50	LB	L	
..2	0100		00R400	00 Raisins		50	LB	L	



# MRP





This screen shows the recipe required for seven cases of dough. To learn more about any of the materials required to make an NRG-A bar, select the item and click on the detail icon. For example, clicking on the ## Nutmeg row and clicking on the detail icon () will call up the material master for Nutmeg:

The screenshot displays the SAP Material Master interface for material 00R370 (Raw materials). The interface is multi-tabbed, with the following sections visible:

- General data:** Base Unit of Measure (LB), US pound, Material Group (MANU), Old material number, Ext. Matl Group, Division, Lab/Office, Product allocation, X-plant matl status, Valid from, Assign effect. vals, GenItemCatGroup.
- Material authorization group:** Authorization Group.
- Dimensions/EANs:** Gross Weight (0.000), Weight unit, Net Weight (0.000), Volume (0.000), Volume unit, Size/dimensions, EAN/UPC, EAN Category.
- Packaging material data:** Matl Grp Pack.Matls.
- Basic Data Texts:** Languages Maintained (0), Basic Data Text, Language.

The Material Master is a multi-tabbed screen that contains all information about a material used by any module in the SAP ERP system.

Click on the back icon () and then, with the nutmeg selected, click on the where-used icon () , which will call up the following screen:




Material Where-Used List

Material 00R370  
Description 00 Nutmeg  
Key date 07/31/2008

Lv	U	Plant	Ob...	Component number	Alt.	Item	R	Required quantity	Un	R	Resulting qty	B...
1	1	00PT		00S200		0040		2.000	LB		500.000	LB
1	1	00PT		00S210		0040		2.000	LB		500.000	LB

This screen shows that Nutmeg is used in two products—NRG-A and NRG-B bars. According to help.sap.com, the where-used list can be used to:

- Determine requirements for a specific material
- Select products that are affected by a change to an individual part
- Find assemblies that will be delayed if, for example, there is a delay in the delivery of a raw material
- Calculate the effect on the cost of a product if the price of a raw material rises

Click on the exit icon () until you return to the SAP Easy Access screen.

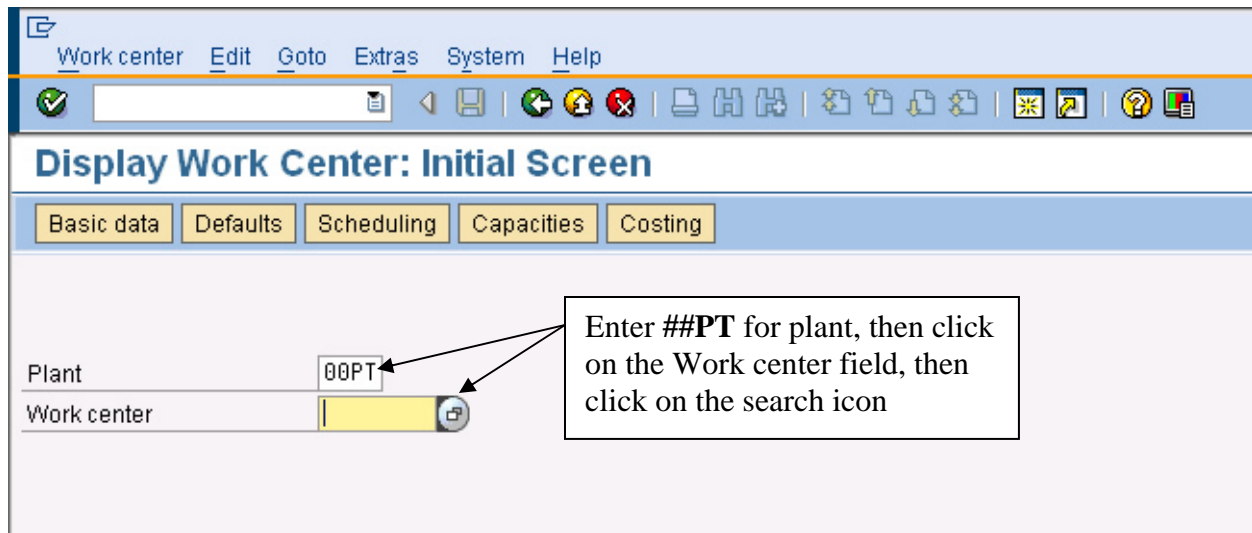
## Display Workcenters

Production is carried out at workcenters. In the SAP ERP system, workcenters can represent machines or groups of machines, production lines, assembly lines, employees or groups of employees.

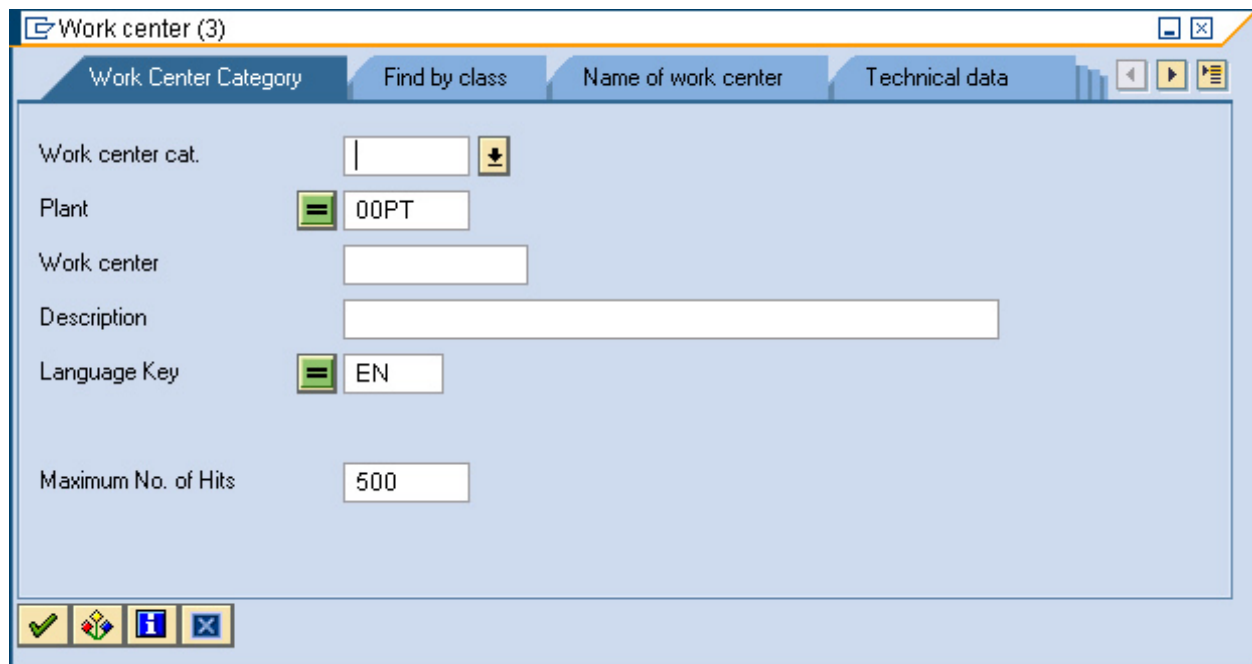
To display the workcenters used for Fitter Snacker’s snack bar production, follow the menu path:

**Logistics** ▷ **Production** ▷ **Master Data** ▷ **Work Centers** ▷ **Work Center** ▷ **Display**

which will produce the following screen:



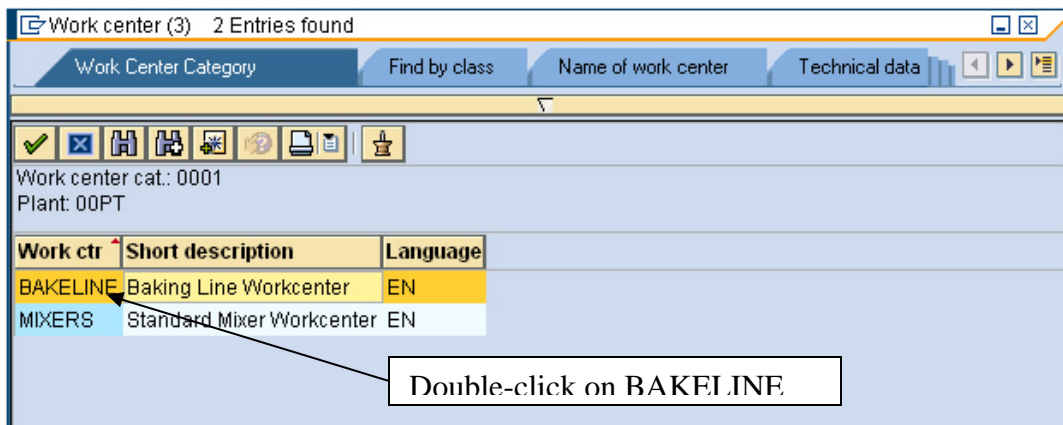
Enter **##PT** for Plant, then click on the search icon to call up the search window for Work centers:



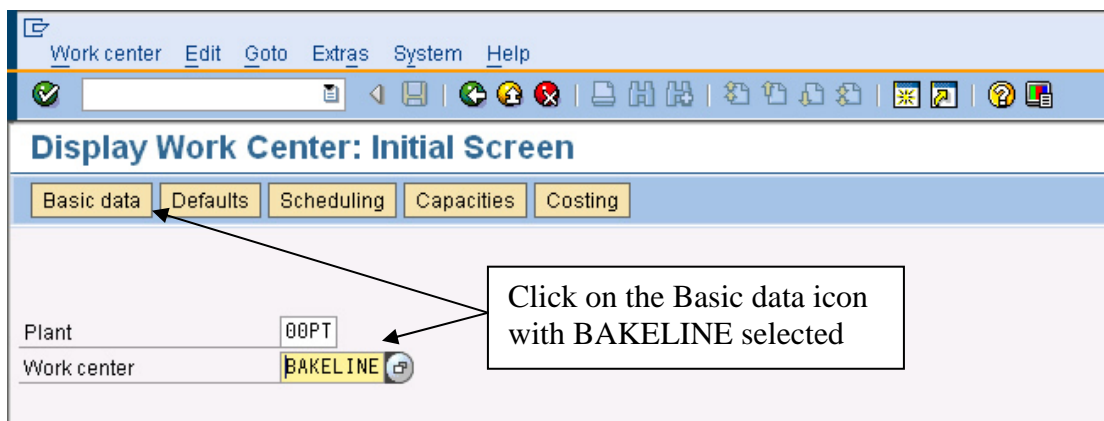
Make sure that you select the **Work Center Category** tab and that **##PT** is entered for **Plant**, then click on the enter icon (✓) to pull up a list of work centers:



# MRP



Double-click on the **BAKELINE** row to select it:



Then click on the Basic Data icon to get the following screen:



The screenshot shows the SAP 'Display Work Center: Basic Data' interface. At the top, there is a menu bar with 'Work center', 'Edit', 'Goto', 'Extras', 'System', and 'Help'. Below the menu is a toolbar with various icons. The main title is 'Display Work Center: Basic Data'. There are two tabs: 'HRMS' and 'Hierarchy'. The 'Plant' is '00PT' (00 Fitter Snacker Plant) and the 'Work center' is 'BAKELINE' (Baking Line Workcenter). Below this, there are several tabs: 'Basic data', 'Default values', 'Capacities', 'Scheduling', 'Costing', and 'Technical data'. The 'Basic data' tab is active, showing 'General Data' with fields for 'Work center cat.' (0001), 'Person responsible' (200), 'Location' (0000), 'QDR system', 'Supply Area', and 'Usage' (001). Below this is a 'Standard Value Maintenance' section with 'Standard value key' (SAP1) and 'Normal production'. A 'Standard Values Overview' table is displayed with columns for 'Key Word', 'Rule for Maint.', 'Ke...', and 'Description'. The table contains three rows: 'Setup' (no checking), 'Machine' (no checking), and 'Labor' (no checking). At the bottom, there is a 'Backflush' checkbox.

This multi-tabbed screen contains all relevant data for the workcenter. Click on the exit icon (🏠) until you return to the SAP Easy Access screen.



## Routings

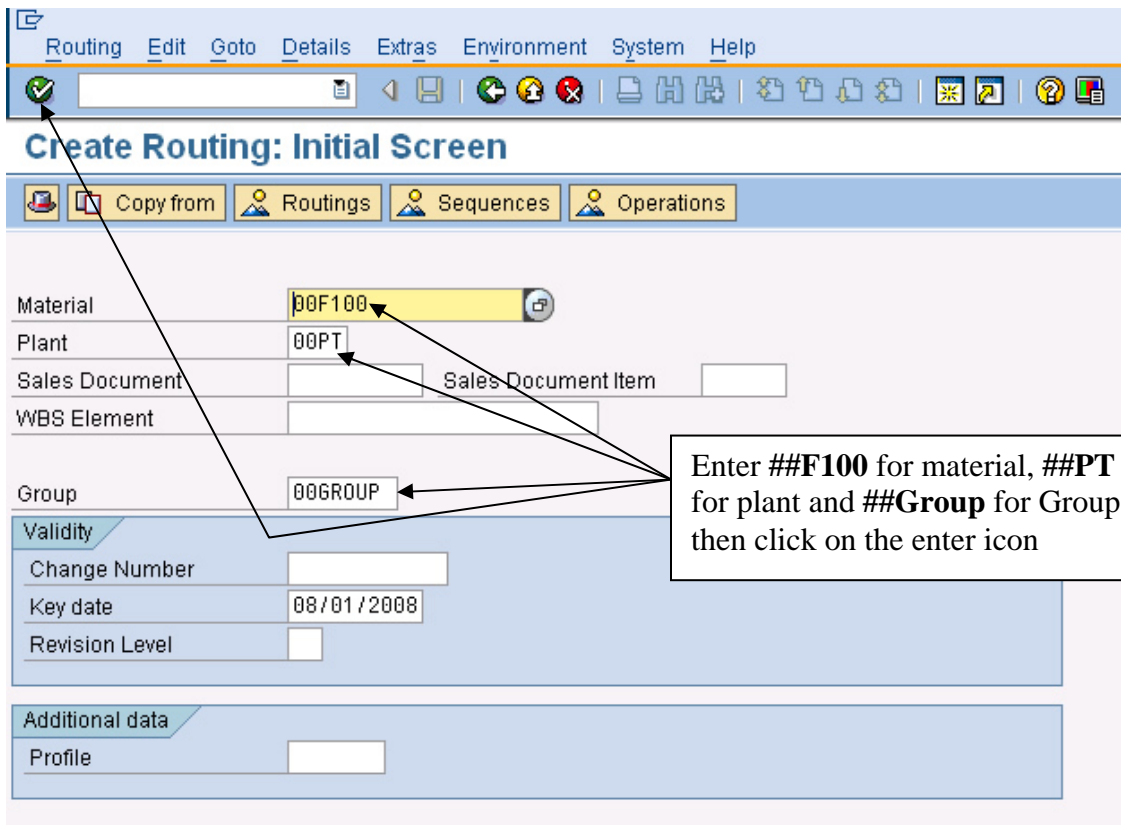
Routings define the workcenters that a product must visit in the production process. Routings also define the operations that must be performed at each workcenter and the components that are needed for each operation.

### 1. Create ##F100 (NRG-A bar) and ##F110 (NRG-B bar) Routings

To create a routing for the NRG-A bars, follow the menu path:

**Logistics** ▷ **Production** ▷ **Master Data** ▷ **Routings** ▷ **Routings** ▷ **Standard Routings** ▷ **Create**

which will produce the following screen:



Enter **##F100** for material, **##PT** for plant and **##Group** for group, click on the enter icon (👉) and the following screen will appear:



# MRP



Routing Edit Goto Details Extras Environment System Help

**Create Routing: Header Details**

Material 00F100 00 NRG-A

Task list

Group 00GROUP

Group Counter 1 00 NRG-A

Plant 00PT  Long text exists

Production line

Line hierarchy

General data

Deletion flag

Usage 1

Status 4

Planner group

Planning work center

CAPP order

From Lot Size To lot size 99,999,999 CS

Old task list no.

Enter 1 for Usage and 4 for Status, then click on the Operations icon

Enter 1 for Usage and 4 for Status, then click on the Operations icon (  Operations ), which will produce the following screen:

Routing Edit Goto Details Extras Environment System Help

**Create Routing: Operation Overview**

Material 00F100 00 NRG-A

Sequence 0

Operation Overview

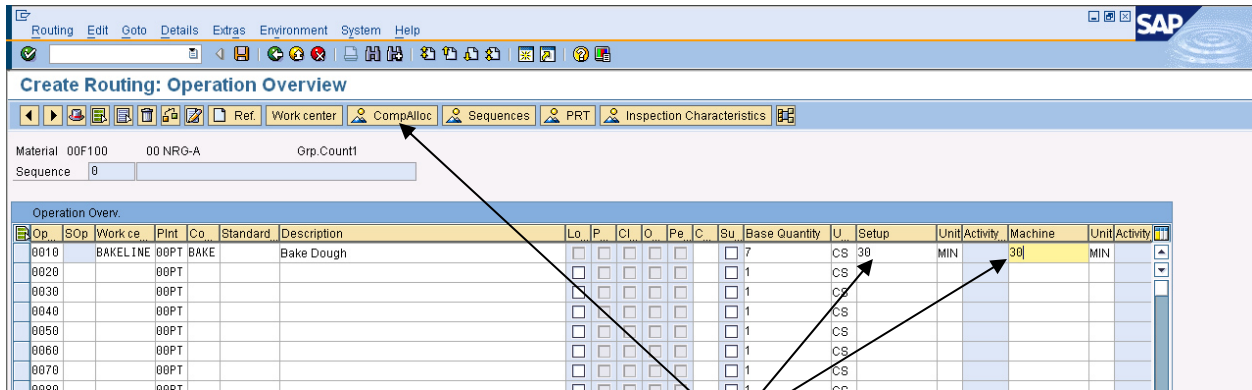
Op	SOp	Work ce	Plant	Co	Standard	Description	Lo	P	Cl	O	Pe	C	St	Base Quantity	U	StdValuTxt1	UnitActivity	UnitActivity
0010		BAKELINE	00PT	BAKE		Bake Dough								7	CS			
0020			00PT											1	CS			
0030			00PT											1	CS			

Enter **BAKELINE** for Work center  
 Enter **BAKE** for Control key  
 Enter **Bake Dough** for Description  
 Enter **7** for Base Quantity  
 Then click on the enter icon


Enter **BAKELINE** for Work center, **BAKE** for Control key, **Bake Dough** for Description, **7** for Base Quantity, then click on the enter icon (  ):

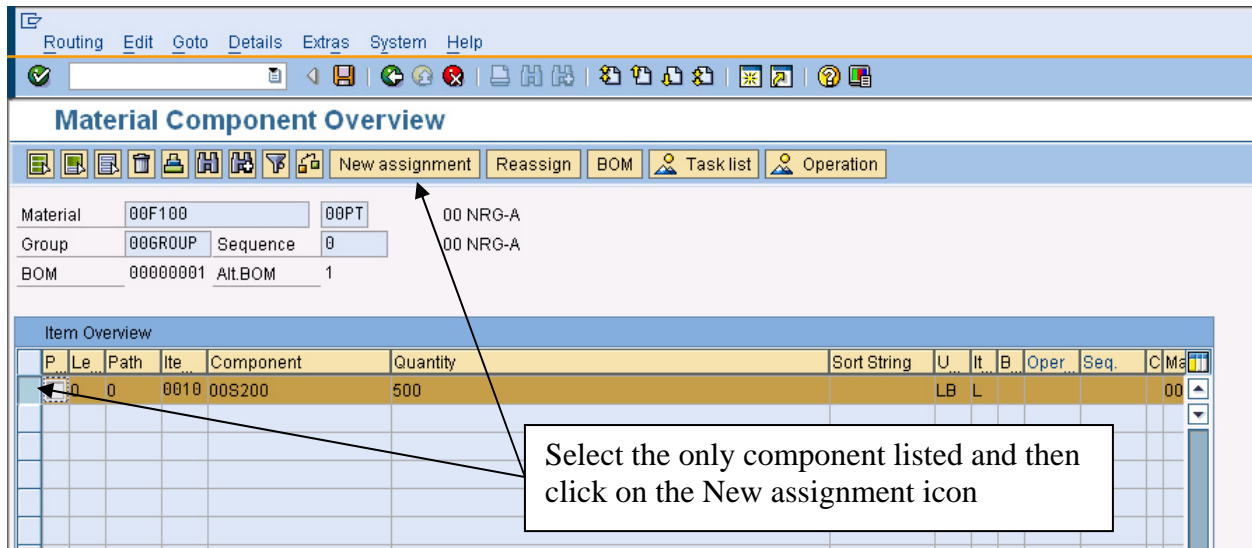


# MRP




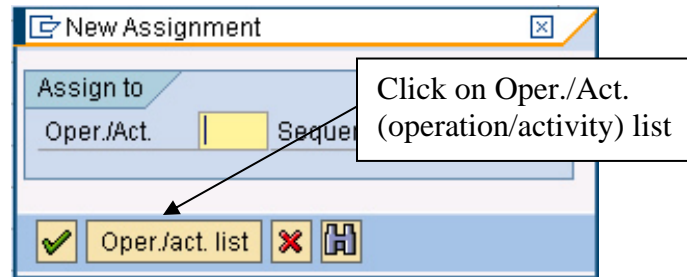
Scroll over and enter **30** for Setup and **30** for Machine, then click on the CompAlloc (component allocation) icon

Enter **30** for setup time (how long it takes to change the bakeline from one type of bar to another) and machine time (how long it takes to bake 7 cases of snack bars). Click on the CompAlloc (component allocation) icon (  ), which will produce the following screen:

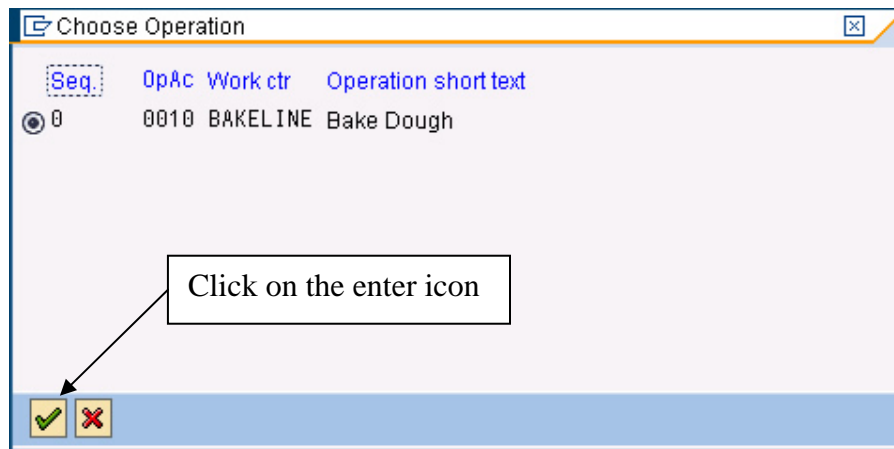


Select the only component listed and then click on the New assignment icon

Select the only component listed (SAP determined the list of components from the BOM) and then click on the New assignment icon (  ), which will bring up the following pop-up window:



Click on the Operation/Activity list icon to get the list of operations for this routing:



Click on the enter icon (✓) to allocate the material (dough) to the only operation on the routing (bake dough), then click on the save icon (💾) to save the routing. You will get a message like the following:

✓ Routing was saved with group 00GROUP and material 00F100.

Return to the beginning of section 1 and repeat the process to create a routing for material **##F110** (NRG-B bars). All entries are the same as for the **##F100** (NRG-A bars).



## 2. Create Routings for material ##S200 (dough for NRG-A bars) and ##S210 (dough for NRG-B bars)

To create a routing for ##S200 (dough for NRG-A bars), again follow the menu path:

**Logistics** ▷ **Production** ▷ **Master Data** ▷ **Routings** ▷ **Routings** ▷ **Standard Routings** ▷ **Create**

which will produce the following screen:

The screenshot shows the SAP 'Create Routing: Initial Screen'. The interface includes a menu bar (Routing, Edit, Goto, Details, Extras, Environment, System, Help) and a toolbar with various icons. Below the title bar, there are tabs for 'Copy from', 'Routings', 'Sequences', and 'Operations'. The main form contains the following fields:

- Material: 00S200
- Plant: 00PT
- Sales Document: (empty)
- Sales Document Item: (empty)
- WBS Element: (empty)
- Group: 00GROUP
- Validity section:
  - Change Number: (empty)
  - Key date: 08/01/2008
  - Revision Level: (empty)
- Additional data section:
  - Profile: (empty)

Annotations in the image include arrows pointing from a text box to the Material, Plant, and Group fields, and another arrow pointing to the enter icon (a green checkmark in a circle) in the toolbar. The text box contains the instruction: "Enter ##S200 for material, ##PT for plant and ##Group for Group, then click on the enter icon".

Enter ##S200 (dough for NRG-A bars), ##PT for Plant and ##Group for group, then click on the enter icon (👍) and the following screen will appear:



**Create Routing: Header Details**

Material 00S200 00 Dough NRG-A

Task list

Group 00GROUP

Group Counter 3 00 Dough NRG-A

Plant 00PT  Long text exists

Production line

Line hierarchy

General data

Deletion flag

Usage 1

Status 4

Planner group

Planning work center

CAPP order

From Lot Size To lot size 99,999,999 LB

Old task list no.

Enter 1 for Usage and 4 for Status, then click on the Operations icon

Enter 1 for Usage and 4 for Status, then click on the Operations icon (  Operations ), which will produce the following screen:


**Create Routing: Operation Overview**

Material 00S200

Sequence 00

Op	SOp	Workcenter	Plant	Control Key	Standard	Description	Lo	P	Cl	O	Pe	C	Su	Base Quantity	U	StdVa
0010		MIXERS	00PT	MIX		Mix Dough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	500	LB	
0020			00PT				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	LB	
0030			00PT				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	LB	

Enter the information shown, then click on the enter icon

Enter **MIXERS** for the Workcenter, **MIX** for the Control Key, **Mix Dough** for the description and **500** for base quantity, then click on the enter icon (  ). Clicking on the enter icon here will call up the headings for setup and machine time:




Routing Edit Goto Details Extras Environment System Help

**Create Routing: Operation Overview**

Material 00S200 00 Dough NRG-A Grp.Count3  
Sequence 0

Op. SOp Lo P Cl O Pe C Su Base Quantity U Setup Unit Activity Machine Unit Activity Labor Unit Activity

Op.	SOp	Lo	P	Cl	O	Pe	C	Su	Base Quantity	U	Setup	Unit Activity	Machine	Unit Activity	Labor	Unit Activity
0010									500	LB	30	MIN	30	MIN		
0020									1	LB						
0030									1	LB						

Scroll over and enter **30** for Setup and **30** for Machine, then and click on the CompAlloc (component allocation) icon (  CompAlloc ) to allocate components to the operations. This will produce the following screen:

Routing Edit Goto Details Extras System Help



**Material Component Overview**

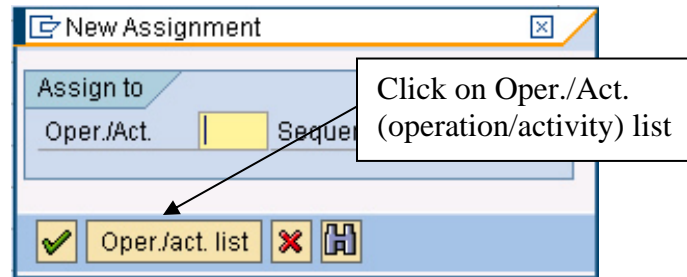
Material: 00S200 00PT 00 Dough NRG-A  
Group: 00SROUP Sequence: 0 00 Dough NRG-A  
BOM: 00000201 Alt.BOM: 1

New assignment Reassign BOM Task list Operation

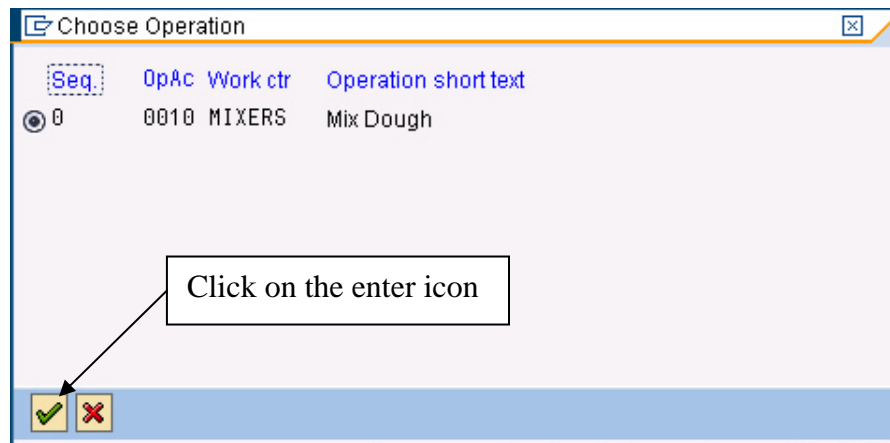
Item Overview

P	Le	Path	Itc	Component	U	It	B	Oper	Seq	C	Ma
<input type="checkbox"/>	0	0	0010	00R380	LB	L				00	
<input type="checkbox"/>	0	0	0020	00R420	LB	L				00	
<input type="checkbox"/>	0	0	0030	00R320	LB	L				00	
<input type="checkbox"/>	0	0	0040	00R370	LB	L				00	
<input type="checkbox"/>	0	0	0050	00R330	LB	L				00	
<input type="checkbox"/>	0	0	0060	00R360	GAL	L				00	
<input type="checkbox"/>	0	0	0070	00R300	GAL	L				00	
<input type="checkbox"/>	0	0	0080	00R410	LB	L				00	
<input type="checkbox"/>	0	0	0090	00R310	LB	L				00	
<input type="checkbox"/>	0	0	0100	00R400	LB	L				00	

Select all components by clicking on the select all icon (  ), then click on the New assignment icon (  ), which will bring up the following pop-up window:



Click on the Operation/Activity list icon to get the list of operations for this routing:



Click on the enter icon (✓) to allocate the materials to the only operation on the routing (mix dough), then click on the save icon (💾) to save the routing. You will get a message like the following:

✓ Routing was saved with group 00GROUP and material 00S200.

Return to the beginning of section 2 and repeat the process to create a routing for **##S210** (dough for NRG-B bars).  
All entries are the same as for **##S200** (dough for NRG-A bars).



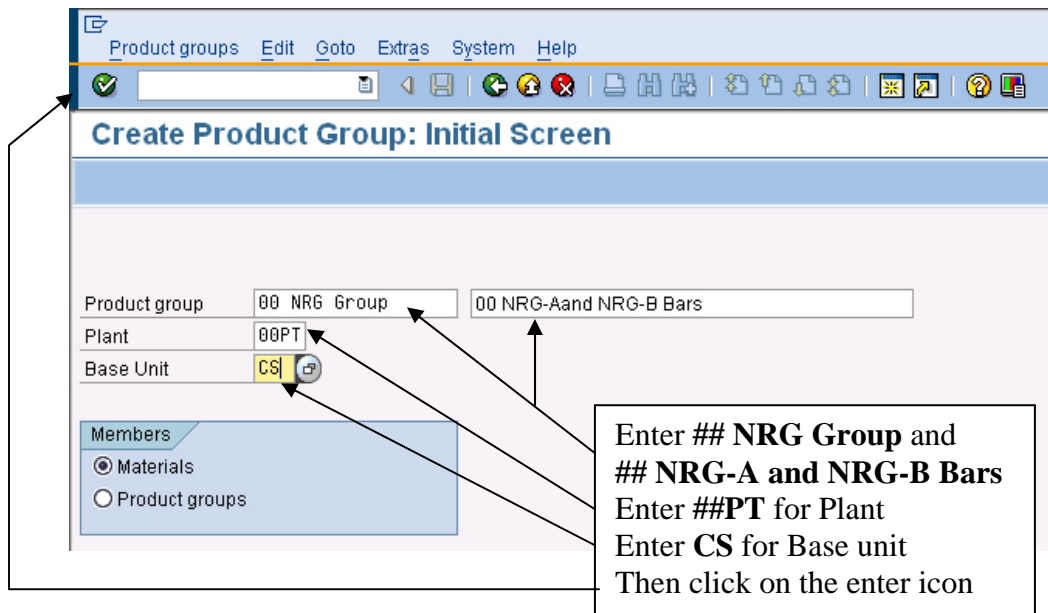
### 3. Create Product Group

Many firms produce hundreds of products, and planning for each product individually is not feasible or desirable. What these firms do is create product groups, and then plan production for a small number of product groups and then transfer these plans to individual products based on historic percentages. While Fitter Snacker does not have a large of number products, we will use the product group process anyway.

To create a product group for Fitter Snacker, follow the menu path:

**Logistics ▷ Production ▷ SOP ▷ Product Group ▷ Create**

which will produce the following screen:



Enter **## NRG Group** and **## NRG-A and NRG-B Bars** for the title of the product group, enter **##PT** for Plant and **CS** for Base unit then click on the enter icon (👉). This will produce the following screen:



# MRP



**Create Product Group: Maintain Members (Materials)**

Product group: 00 NRG GROUP    00 NRG-Aand NRG-B Bars  
 Plant: 00PT    00 Fitter Snacker Plant  
 Base Unit: CS

Member number	Plnt	Unit conv. Short Text	Aggr. fact.	Proportion	UoM	V M Fx	MTyp
00F100	00PT		1	70			
00F110	00PT		1	30			

Enter ##F100 and ##F110 for member numbers  
 Enter ##PT for Plnt, 1 for Aggr. fact. for both bars  
 Enter 70 for the Proportion for NRG-A and 30 for the proportion for NRG-B bars

Enter ##F100 and ##F110 for the two members of the group. For both members, enter ##PT for Plnt and 1 for “Aggr. fact.” Enter 70 for the Proportion for NRG-A bars and 30 for the proportion for NRG-B bars. These proportions mean that whatever production is planned for the NRG group, it will be assumed that 70% of the production should be NRG-A bars and 30% should be NRG-B bars. Click on the enter icon (✓) to confirm that you have the correct products in the group:

**Create Product Group: Maintain Members (Materials)**

Product group: 00 NRG GROUP    00 NRG-Aand NRG-B Bars  
 Plant: 00PT    00 Fitter Snacker Plant  
 Base Unit: CS

Member number	Plnt	Unit conv. Short Text	Aggr. fact.	Proportion	UoM	V M Fx	MTyp
00F100	00PT	00 NRG-A	1	70	CS		FERT
00F110	00PT	00 NRG-B	1	30	CS		FERT

Confirm the two products are the NRG-A and NRG-B bars

Click on the save icon (💾) to save the product group.



## 4. Run MRP

We can run the MRP process on our new product group. To do this, follow the menu path:

**Logistics > Production > MRP > Planning > Single-Item, Multi-Level Planning**

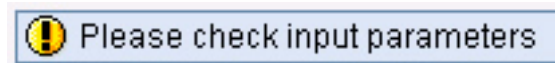
which will produce the following screen:

The screenshot shows the SAP MRP Planning screen for 'Single-Item, Multi-Level'. The interface includes a menu bar (Planning, Edit, Goto, Settings, Extras, System, Help) and a toolbar. The main area contains the following fields and sections:

- Material:** 00 NRG Group
- Plant:** 00PT
- Scope of planning:**  Product group
- MRP control parameters:**
  - Processing key: NETCH
  - Create purchase req.: 2
  - Delivery schedules: 3
  - Create MRP list: 1
  - Planning mode: 1
  - Scheduling: 1
- Process control parameters:**
  - Also plan unchanged components
  - Display results before they are saved
  - Display material list
  - Simulation mode

A callout box on the right provides instructions: 'Enter (or search for) ## NRG GROUP for Material', 'Enter ##PT for Plant', 'Check **Product group** for Scope of planning', 'Confirm the following MRP control parameters: Processing key: **NETCH**, Create purchase reg.: **2**, Delivery schedules: **3**, Create MRP list: **1**, Planning mode: **1**, Scheduling: **1**'. It concludes with 'Then click on the enter icon'. Arrows point from the callout box to the corresponding input fields in the screenshot.

Enter the information shown above, then click on the enter icon (👍). This will produce the following message:



Click on the enter icon (👍) again and you should get a report like the following:



List Edit Goto System Help

Single-Item, Multi-Level

**Statistics**

Materials planned	2
Materials with new exceptions	
Materials with terminated MRP list	

**Parameters**

Plnt	00PT
Processing Key	NETCH
Create Purchase Requisition	2
Sched. Agreement Schedule Line	3
Create MRP List	1
Planning Mode	1
Scheduling	1

**Database statistics**

No Procurement Proposals Changed

**Run-time statistics**

Start of planning run	10:59:23
End of planning run	10:59:24
Planning run time	00:00:01
CPU time : Import	00:00:01

Ranking list for materials with highest CPU times (in ms)

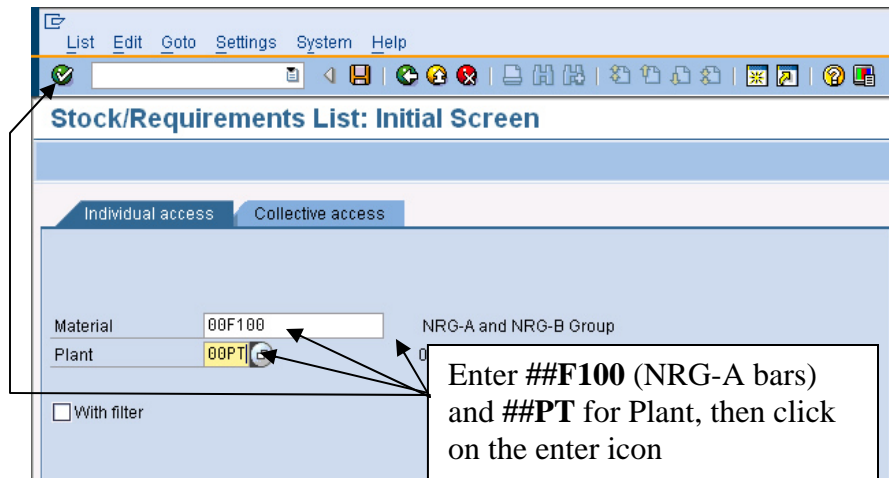
Material	Plnt	PlgRunTime	Read	Net calc.	BOM	LdTmeSched	Update
00F100	00PT						
		1,206	783	31	0	0	328
00F110	00PT						
		28	16	0	0	0	11

The details of your report may be different, but that is not a problem. As long as you don't have an error messages, things should be okay. To confirm that they are, we can check the status of key materials.

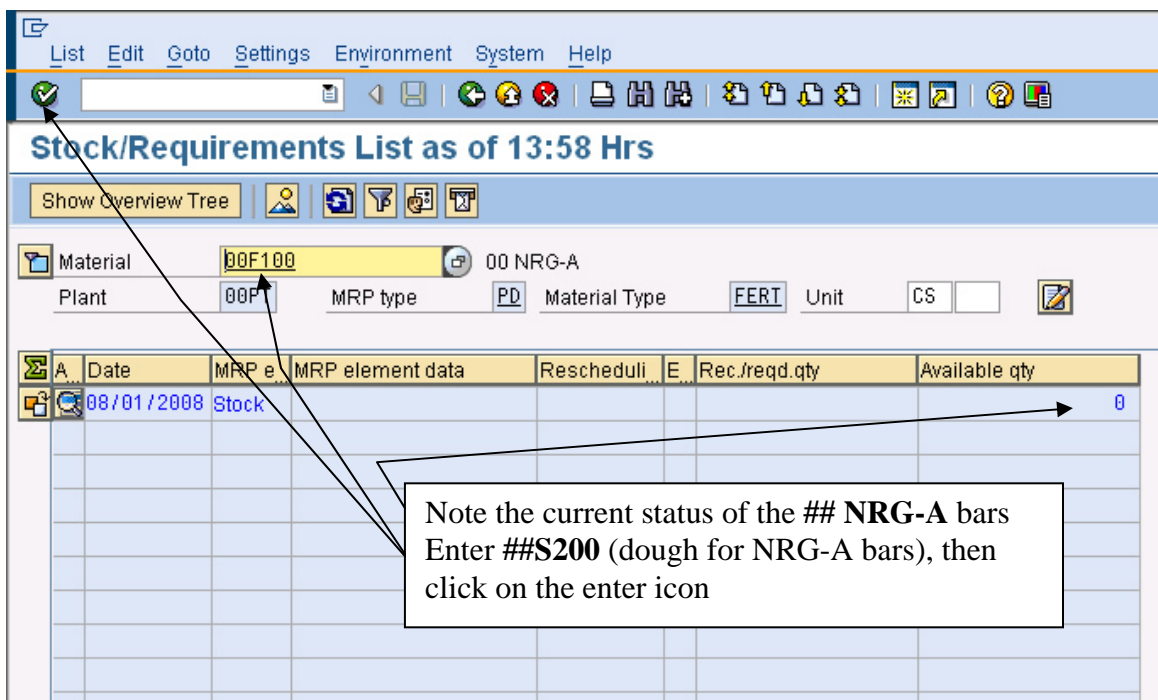
To view the status of a material, we can use the Stock/Requirements list. Like many transactions in the SAP system, there are a number of menu paths that can take you to the Stock/Requirements list. One of these is:

**Logistics > Production > MRP > Evaluations > Stock/Requirements List**

which will produce the following screen:



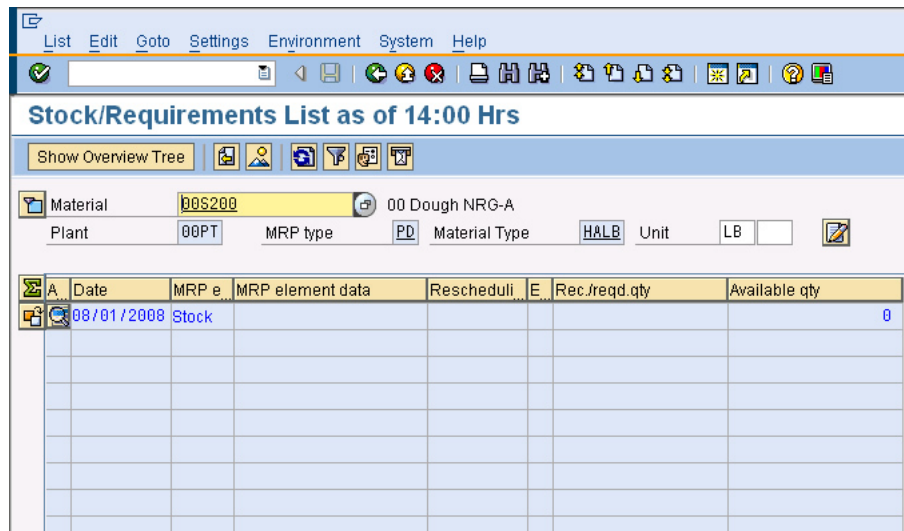
Enter **##F100** (NRG-A bars) and **##PT** for Plant, then click on the enter icon (🟢). This will produce the following screen:



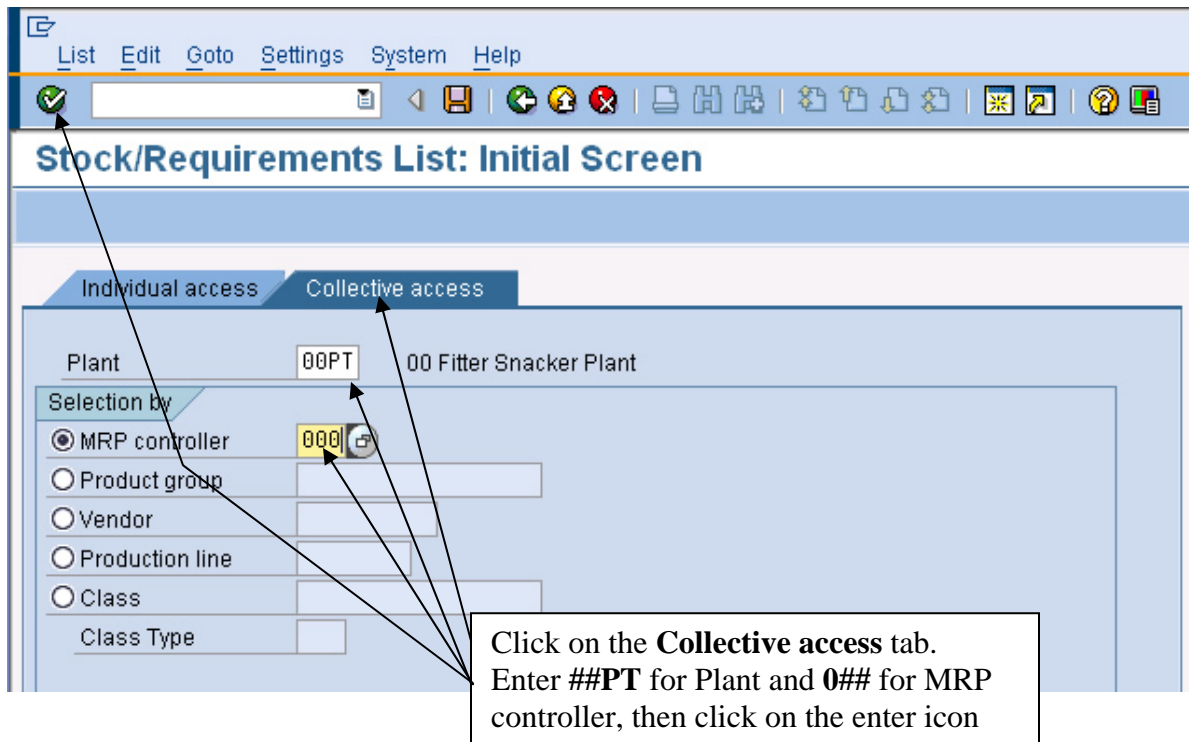
This screen shows that we have no material on hand, no sales orders and, as we haven't specified a safety stock level, we have no production orders planned. We can look at a different material by entering a new material in the Material field. For example, enter **##S200** (dough for NRG-A bars), click on the enter icon (🟢):



# MRP



There is an easier way to view the Stock/Requirements list for different materials. Use the back icon (🏠) to get to the first screen of the Stock/Requirements list:



Enter 0## for MRP controller, then click on the enter icon (🏠), which will produce the following screen:



# MRP



List Edit Goto System Help

Stock/Requirements List: Material List

Selected stock/requirements lists Define traffic light Exception groups

Plant 00PT 00 Fitter Snacker Plant  
MRP Controller 000 FS Controller

Light	Material	Material Description	A	Supply	1stRDS	2nd	1	2	3	4	5	6	7	8	Plant sto	B	MTyp	PT	S	A	MT	Cde	C
<input type="checkbox"/>	00F100	00 NRG-A	<input type="checkbox"/>	999.9	999.9	999.9									0	CS	FERT	E			PD	000	<input type="checkbox"/>
<input type="checkbox"/>	00F110	00 NRG-B	<input type="checkbox"/>	999.9	999.9	999.9									1,000	CS	FERT	E			PD	000	<input type="checkbox"/>
<input type="checkbox"/>	00R300	00 Canola	<input type="checkbox"/>	999.9	999.9	999.9									0	GAL	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R310	00 Carob Chips	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R320	00 Cinnamon	<input type="checkbox"/>																			002	<input type="checkbox"/>
<input type="checkbox"/>	00R330	00 Cloves	<input type="checkbox"/>																			002	<input type="checkbox"/>
<input type="checkbox"/>	00R340	00 Dates	<input type="checkbox"/>																			002	<input type="checkbox"/>
<input type="checkbox"/>	00R350	00 Hazelnuts	<input type="checkbox"/>																			002	<input type="checkbox"/>
<input type="checkbox"/>	00R360	00 Honey	<input type="checkbox"/>	999.9	999.9	999.9									0	GAL	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R370	00 Nutmeg	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R380	00 Oats	<input type="checkbox"/>	999.9	999.9	999.9							3		44,000	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R390	00 Protein Powder	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R400	00 Raisins	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R410	00 VitMin Powder	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00R420	00 Wheat Germ	<input type="checkbox"/>	999.9	999.9	999.9							3		2,000	LB	ROH	F			PD	002	<input type="checkbox"/>
<input type="checkbox"/>	00S200	00 Dough NRG-A	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	HALB	E			PD	001	<input type="checkbox"/>
<input type="checkbox"/>	00S210	00 Dough NRG-B	<input type="checkbox"/>	999.9	999.9	999.9									0	LB	HALB	E			PD	001	<input type="checkbox"/>

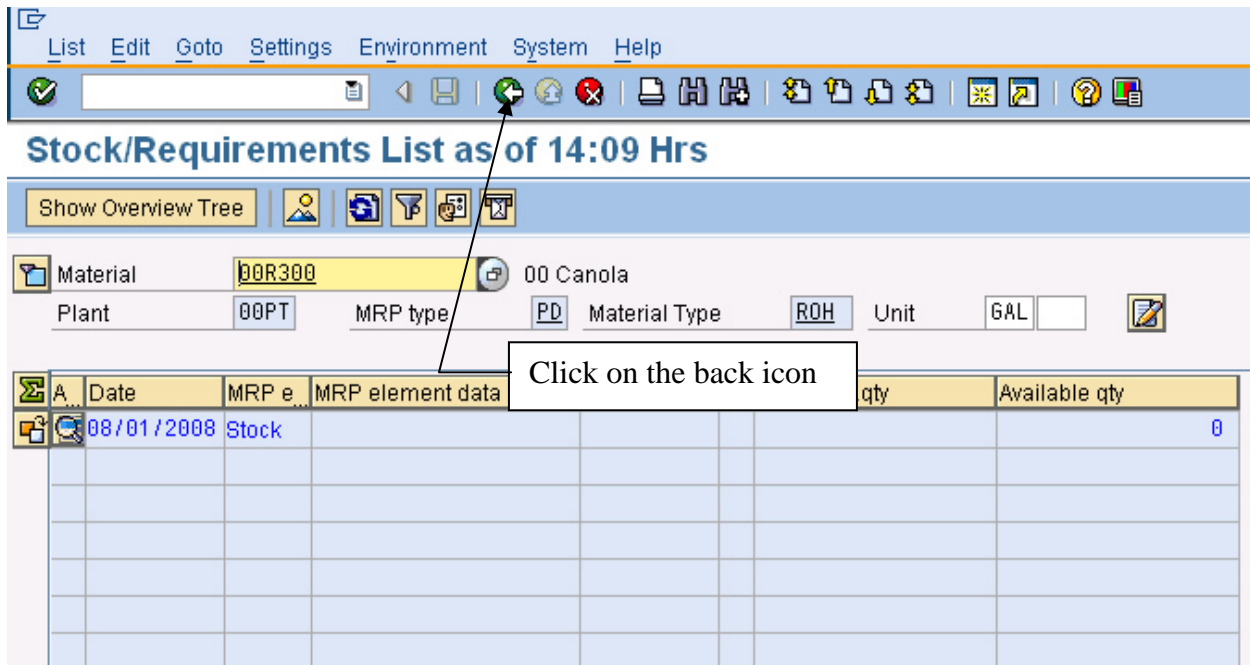
Select ## Canola and then click on the Display Selected stock/requirements lists icon

Selected stock/requirements lists

Select ## Canola and then click on the Display Selected stock/requirements lists icon (Selected stock/requirements lists), which will take you to the standard Stock/Requirements list:



# MRP




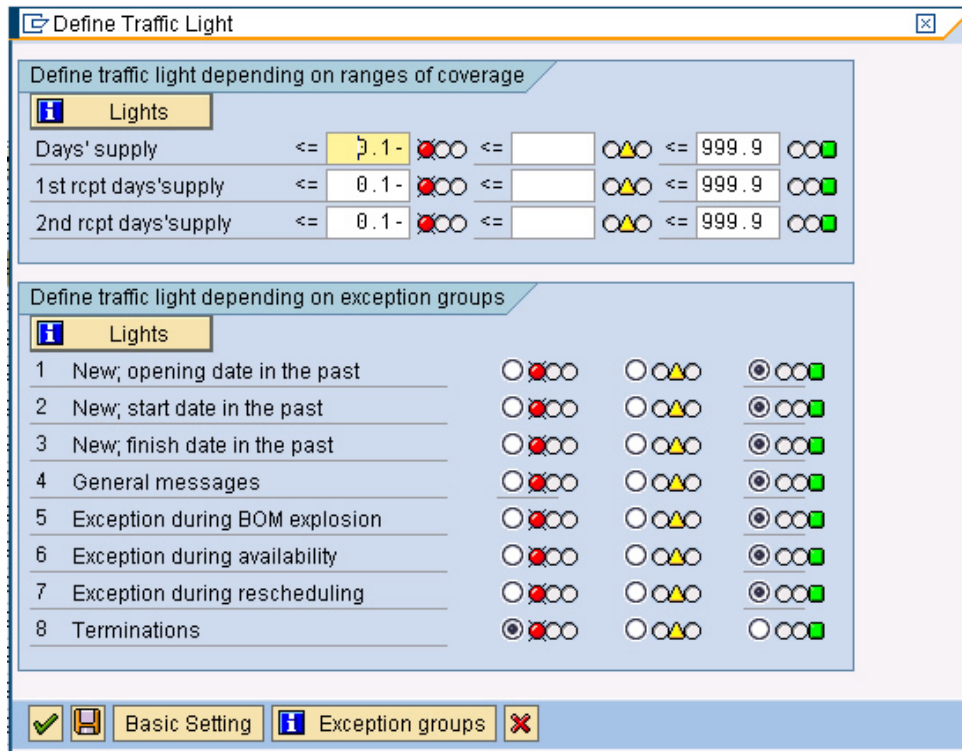
Click on the back icon, which will bring you back to the list of your materials. Note that there is now a check mark next to **## Canola** in the column **Already accessed**:

Light	Material	Material Description	A	Supp	999.9	999.9	999.9
	00F100	00 NRG-A	<input type="checkbox"/>		999.9	999.9	999.9
	00F110	00 NRG-B	<input type="checkbox"/>		999.9	999.9	999.9
	00R300	00 Canola	<input checked="" type="checkbox"/>		999.9	999.9	999.9
	00R310	00 Carob Chips	<input type="checkbox"/>		999.9	999.9	999.9
	00R320	00 Cinnamon	<input type="checkbox"/>		999.9	999.9	999.9
	00R330	00 Cloves	<input type="checkbox"/>		999.9	999.9	999.9

Already accessed

This feature helps the MRP controller keep track of which materials they have already reviewed. The traffic lights also help the MRP controller focus on critical materials. The traffic light concept is used in many areas of the SAP system to help the user prioritize tasks. In our case, the materials with a red traffic light have a non-zero safety stock specified. As there have been no goods receipts for these materials, they are below their safety stock levels and, hence, the red lights.

It is possible to customize the traffic lights. Click on the Define traffic lights icon () , which will produce the following icon:

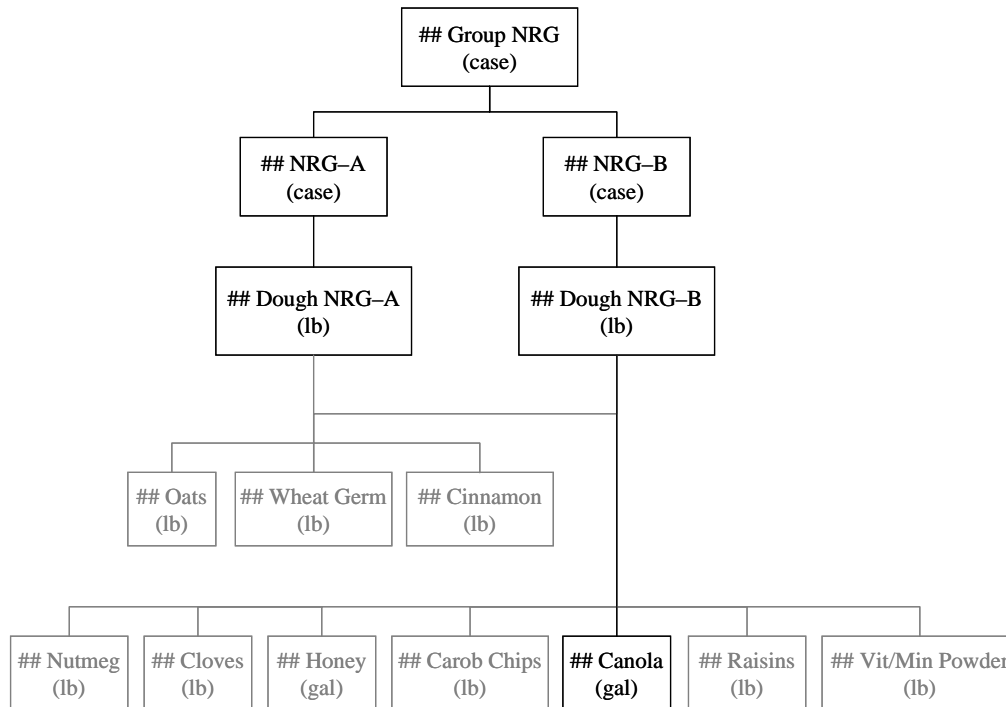


This screen shows that the SAP system provides the user with a great deal of flexibility in how to configure the traffic light system. Click on the cancel icon (X) to close this window.

We will keep the Stock/Requirements list open so that we can easily review the results of the MRP process. We will use the following materials to evaluate the MRP process:

- ## NRG-A
- ## NRG-B
- ## Dough NRG-A
- ## Dough NRG-B
- ## Canola

Which are illustrated in the following figure:



At this point, the Stock/Requirements list for these materials is pretty boring as there is no production scheduled.

## 5. Create Sales and Operations Plan

In SAP, the Sales and Operations Planning process is one way to create demand for the MRP process. In practice, Sales and Operations Planning is the process where operations and marketing agree on a demand forecast and a production plan to meet that demand. Ideally, this Sales and Operations Plan should optimize profit for the organization.

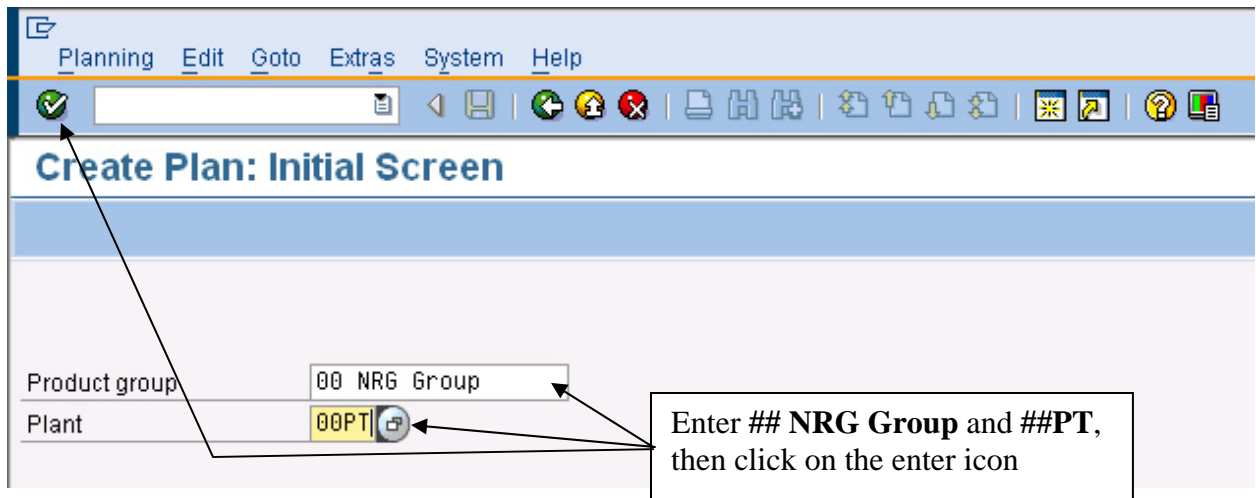
To perform Sales and Operations Planning, open a second session by following the pull-down menu path:

**System → Create session**

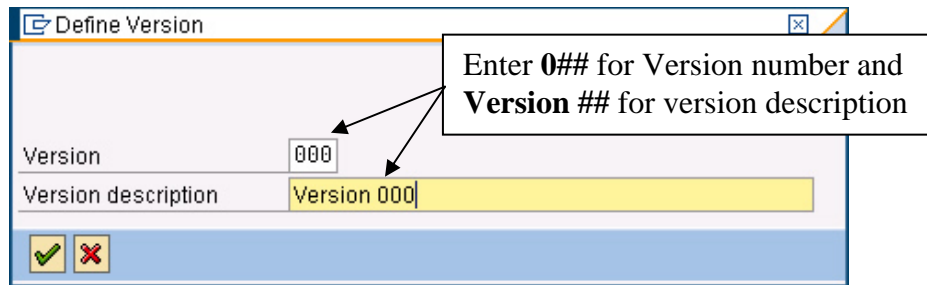
In this second session, follow the menu path:

**Logistics ▷ Production ▷ SOP ▷ Planning ▷ For Product Group ▷ Create**

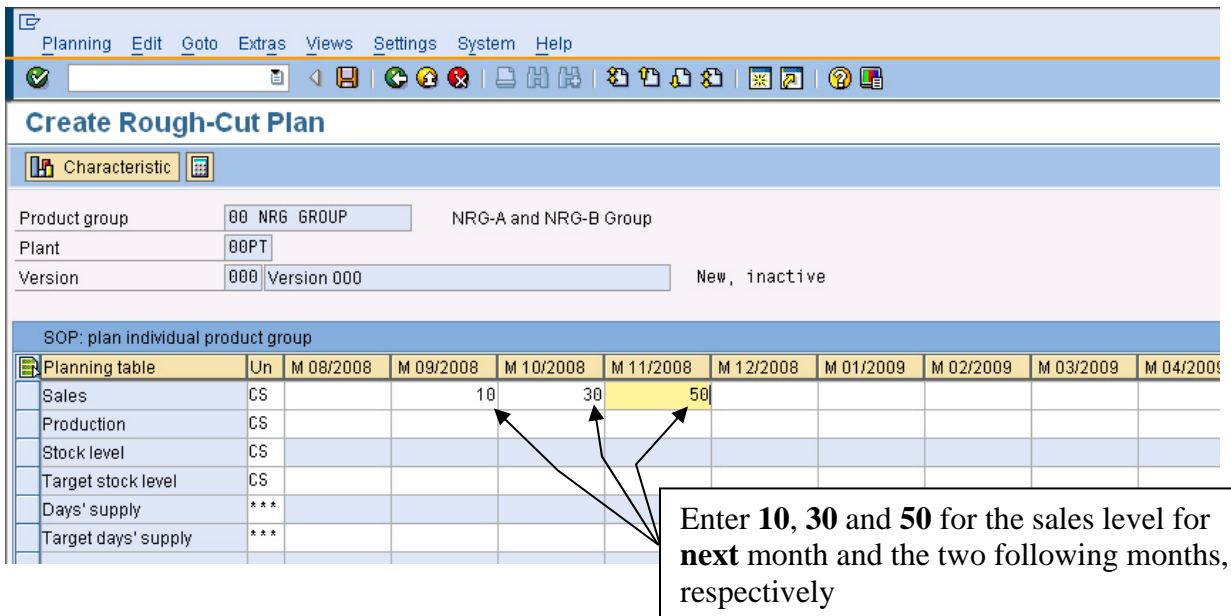
which will produce the following screen:



Enter **## NRG Group** and **##PT**, then click on the enter icon (👉), which will produce the following pop-up window:



Click on the enter icon (👉), then the following screen will appear:





There are a number of ways to develop a sales forecast in the SAP ERP system, however, we'll just enter the values **10**, **30** and **50** as the sales level for **next** month and the two following months, respectively.

There are also a number of ways to develop a production plan—for example, we can have production match sales. To do this automatically, follow the pull-down menu path:

**Edit→Create productn plan→Synchronous to sales**

and the system will create a production plan that exactly matches sales:

The screenshot shows the SAP 'Create Rough-Cut Plan' window. The 'SOP: plan individual product group' table is displayed with the following data:

Planning table	Un	M 08/2008	M 09/2008	M 10/2008	M 11/2008	M 12/2008	M 01/2009	M 02/2009	M 03/2009	M 04/2009
Sales	CS		10	30	50					
Production	CS		10	30	50					
Stock level	CS									
Target stock level	CS									
Days' supply	***									
Target days' supply	***									

An arrow points to the 'Production' row for M 11/2008, with a callout box stating: "Note that production matches sales".

Note that the production plan matches the sales level, which is just what we expected. We can also develop a plan that allows for a safety stock—a stock level above the expected sales level.



Planning Edit Goto Extras Views Settings System Help

### Create Rough-Cut Plan

Characteristic

Product group: 00 NRG GROUP      NRG-A and NRG-B Group  
 Plant: 00PT  
 Version: 000 Version 000      New, inactive

SOP: plan individual product group

Planning table	Un	M 08/2008	M 09/2008	M 10/2008	M 11/2008	M 12/2008	M 01/2009	M 02/2009	M 03/2009	M 04/2009
Sales	CS		10	30	50					
Production	CS		10	30	50					
Stock level	CS									
Target stock level	CS		5	15	25					
Days' supply	***									
Target days' supply	***									

Enter 5, 15 and 25 for Target stock level

To do this, enter **5, 15** and **25** for Target stock level, then follow the menu path:

**Edit→Create productn plan→Target stock level**

and the system will create a production plan that allows for a Target stock level:

Planning Edit Goto Extras Views Settings System Help

### Create Rough-Cut Plan

Characteristic

Product group: 00 NRG GROUP      NRG-A and NRG-B Group  
 Plant: 00PT  
 Version: 000 Version 000      New, inactive

SOP: plan individual product group

Planning table	Un	M 08/2008	M 09/2008	M 10/2008	M 11/2008	M 12/2008	M 01/2009	M 02/2009	M 03/2009	M 04/2009
Sales	CS		10	30	50					
Production	CS		15	40	60					
Stock level	CS		5	15	25	25	25	25	25	25
Target stock level	CS		5	15	25					
Days' supply	***		15	15	15					
Target days' supply	***									

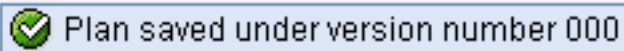
Note that the system calculates a production plan that will produce enough to meet the sales level and have the appropriate Target stock level. The system will also calculate the **Day's supply**, which is calculated as:



$$\text{Day's supply} = \frac{\text{Days in month}}{\text{Sales}} (\text{Target stock level})$$

Note that **Days in month** is taken from the factory calendar, which considers weekends, holidays and number of days in the month.

Click on the save icon (📁) to save the Sales and Operations Plan (SOP). You should get a message like the following:



## 6. Transfer Sales and Operations Plan to Products


Next, we have to transfer the production plan developed in the **SOP** transaction to the products in the product group. To do this, follow the menu path:


**Logistics** ▷ **Production** ▷ **SOP** ▷ **Disaggregation** ▷ **Transfer Product Group to Planning**


which will produce the following screen:

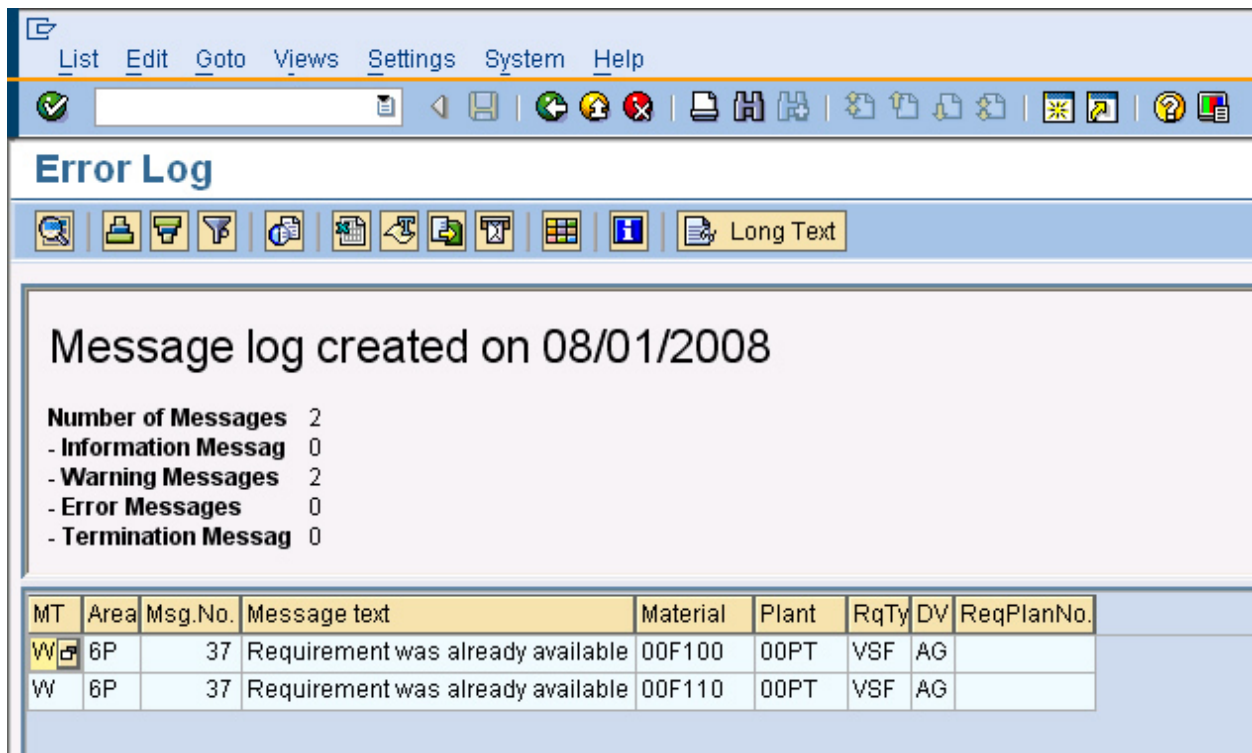
The screenshot shows the SAP Disaggregation screen titled "Transfer Planning Data to Demand Management". The interface includes a menu bar (Disaggregation, Edit, Goto, System, Help), a toolbar, and a main data entry area. The data entry area contains fields for Product group (00 NRG GROUP), Plant (00PT), and Version (000). Below these fields is the "Transfer strategy and period" section, which includes radio buttons for different transfer strategies, a date range (From 08/01/2008), and checkboxes for "Invisible transfer" and "Active". The "Independent requirement specifications" section includes a "Requirements type" field, a "Version" field, and a checked "Active" checkbox. A callout box on the right provides instructions: "Enter Product group ## NRG GROUP and Plant ##PT", "Enter 0## for Version", "Select Prod.plan for mat. or PG members as proportion of PG", "Check Invisible transfer", "Check Active", and "then click on the Transfer now icon".



Enter the information shown above, then click on the **Transfer now** icon (  ). This will produce the following screen:

 Planning version to be transferred is not the active version

Double-check that you entered **0##** for the Version, then click on the enter icon () , which will produce the following message:



The screenshot shows the SAP Error Log interface. At the top, there is a menu bar with options: List, Edit, Goto, Views, Settings, System, Help. Below the menu is a toolbar with various icons. The main area is titled "Error Log" and contains a sub-toolbar with icons for search, print, filter, and other actions. The message log is titled "Message log created on 08/01/2008" and lists the following statistics:

- Number of Messages: 2
- Information Messag: 0
- Warning Messages: 2
- Error Messages: 0
- Termination Messag: 0

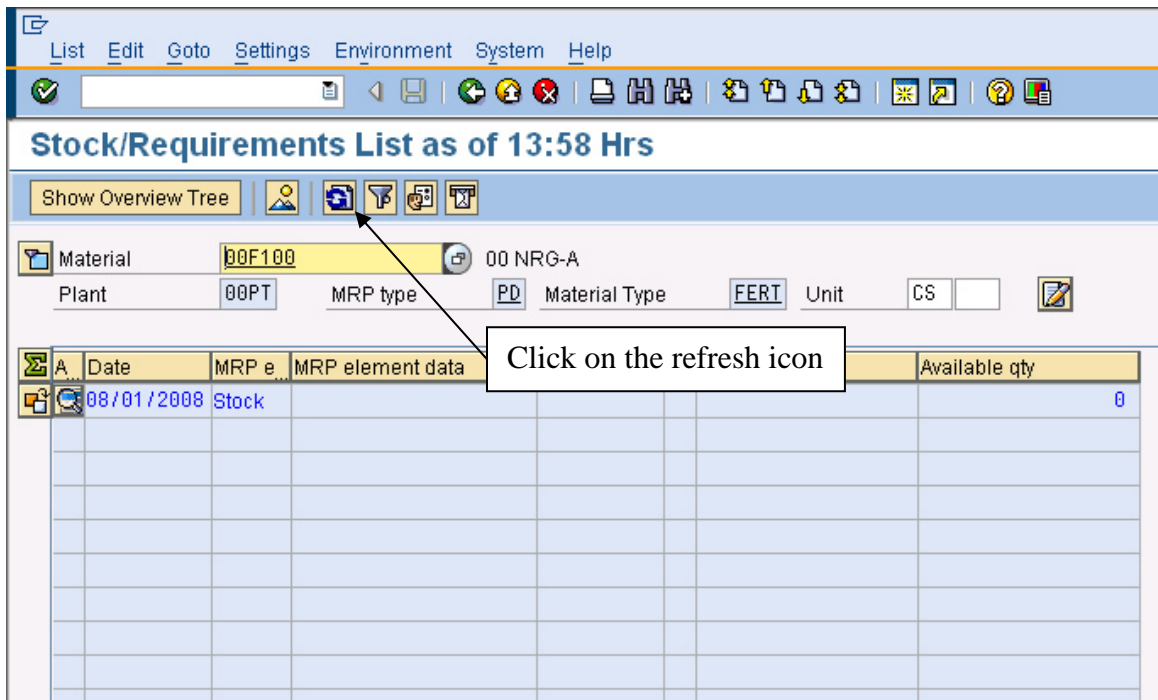
Below the statistics is a table with the following data:


MT	Area	Msg.No.	Message text	Material	Plant	RqTy	DV	ReqPlanNo.
W	6P	37	Requirement was already available	00F100	00PT	VSF	AG	
W	6P	37	Requirement was already available	00F110	00PT	VSF	AG	

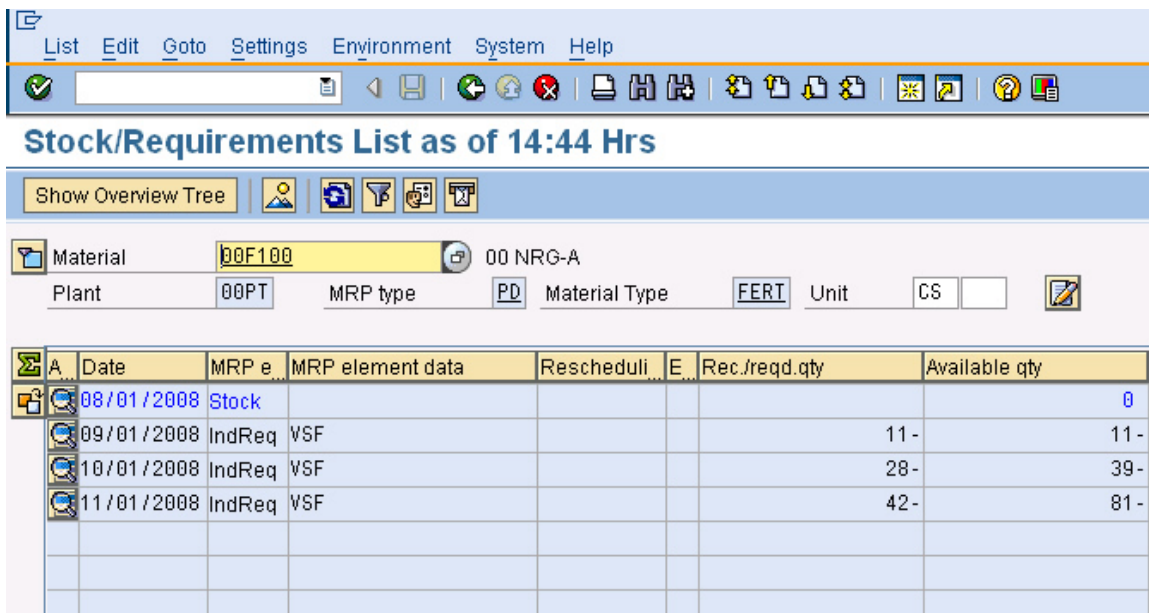
While this sounds ominous, ignore it (it's just a warning). Switch to the other session, make sure you have selected the material **## NRG-A** and are in the Display Stock/Requirements list screen:



# MRP



The results from transferring the Sales and Operations Plan are not yet displayed. To update the Stock/Requirements list, click on the refresh icon ():



Note that there are planned independent requirements for three months. Where did the quantity 11 come from in this month? In the Sales and Operations plan, the production quantity planned for NRG bars in this month was 15 (10 for sales, 5 for the target stock level). Seventy percent of 15 is 11 (actually, 10.5). Thirty percent of 15 is 4 (actually 4.5).



Check on ## **Canola** to verify that it has remained unchanged:

**Stock/Requirements List as of 14:09 Hrs**

Show Overview Tree

Material: **00R300** 00 Canola  
 Plant: 00PT MRP type: PD Material Type: ROH Unit: GAL

A	Date	MRP e	MRP element data	Rescheduli	E	Rec./reqd.qty	Available qty
	08/01/2008	Stock					0

## 7. Create Planned Orders with MRP

To meet the demand that is predicted by the SOP process, the MRP process will create planned orders. These planned orders can be converted into production orders (for internally manufactured materials) and purchase requisitions (for externally procured materials). To do this, we will repeat the MRP process as we did before. To run MRP, switch back to the other session (the one without the Stock/Requirements List) and follow the menu path:

**Logistics > Production > MRP > Planning > Single-Item, Multi-Level Planning**

which will produce the following screen:



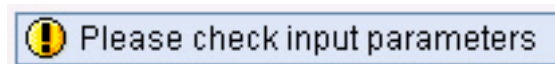
The screenshot shows the SAP MRP Single-Item, Multi-Level screen. The menu bar includes Planning, Edit, Goto, Settings, Extras, System, and Help. The toolbar contains various icons for navigation and actions. The main area is divided into several sections:

- Material:** 00 NRG Group
- Plant:** 00PT
- Scope of planning:**  Product group
- MRP control parameters:**
  - Processing key: NETCH
  - Create purchase req.: 2
  - Delivery schedules: 3
  - Create MRP list: 1
  - Planning mode: 1
  - Scheduling: 1
- Process control parameters:**
  - Also plan unchanged components
  - Display results before they are saved
  - Display material list
  - Simulation mode

A callout box with a black border contains the following text:

Enter (or search for) ## **NRG GROUP** for Material  
Enter ##**PT** for Plant  
Check **Product group** for Scope of planning  
Confirm the following MRP control parameters:  
Processing key: **NETCH**  
Create purchase reg.: **2**  
Delivery schedules: **3**  
Create MRP list: **1**  
Planning mode: **1**  
Scheduling: **1**  
Then click on the enter icon

Enter the information shown above, then click on the enter icon (👉). This will produce the following message:



Click on the enter icon (👉) again and you should get a report like the following:



List Edit Goto System Help

Single-Item, Multi-Level

Statistics	
Materials planned	13
Materials with new exceptions	12
Materials with terminated MRP list	

Parameters	
Plnt	00PT
Processing Key	NETCH
Create Purchase Requisition	2
Sched. Agreement Schedule Line	3
Create MRP List	1
Planning Mode	1
Scheduling	1

Database statistics	
Planned orders created	32
Dependent requirements created	132

Run-time statistics	
Start of planning run	13:51:47
End of planning run	13:51:51
Planning run time	00:00:04
CPU time: net calc. and lot-size calc	00:00:02
.. BAdI: Change char. value assgmt	00:00:01
CPU time: BOM explosion	00:00:02
.. BAdI: Alternative Explosion	00:00:01
CPU time: update	00:00:01

Ranking list for materials with highest CPU times (in ms)					
Material	Plnt				
PlgRunTime	Read	Net calc.	BOM	LdTmeSched	Update
00F100	00PT				
3,721	38	1,411	1,972	0	219
00S200	00PT				
339	9	3	55	0	269
00R300	00PT				
115	10	85	0	0	18
00F110	00PT				
34	12	0	0	0	19
00R320	00PT				
31	9	1	0	0	18
00R410	00PT				
26	10	1	0	0	12

This message shows that, because of the demand we created in the SOP process, there have been a number of calculations made in the MRP process.



# MRP



Switch to the session with the Stock/Requirements list, and look at the material **##F100** (dough for NRG-A bars). Remember to use the refresh icon (🔄):

List Edit Goto Settings Environment System Help

Stock/Requirements List as of 14:56 Hrs

Show Overview Tree

Material: **00F100** 00 NRG-A  
 Plant: 00PT MRP type: PD Material Type: FERT Unit: CS

A	Date	MRP e	MRP element data	Rescheduli	E	Rec./reqd.qty	Available qty
🔄	08/01/2008	Stock					0
🔄	09/01/2008	PIdOrd	0000005232/STCK			7	7
🔄	09/01/2008	PIdOrd	0000005233/STCK			7	14
🔄	09/01/2008	IndReq	VSF			11-	3
🔄	10/01/2008	PIdOrd	0000005234/STCK			7	10
🔄	10/01/2008	PIdOrd	0000005235/STCK			7	17
🔄	10/01/2008	PIdOrd	0000005236/STCK			7	24
🔄	10/01/2008	PIdOrd	0000005237/STCK			7	31
<div style="border: 1px solid black; padding: 5px;">           Notice that the SAP system has created planned orders to meet the predicted demand         </div>							
🔄	11/01/2008	PIdOrd	0000005239/STCK			7	17
🔄	11/01/2008	PIdOrd	0000005240/STCK			7	24
🔄	11/01/2008	PIdOrd	0000005241/STCK			7	31
🔄	11/01/2008	PIdOrd	0000005242/STCK			7	38
🔄	11/01/2008	PIdOrd	0000005243/STCK			7	45
🔄	11/01/2008	IndReq	VSF			42-	3

Note that the SAP system has created production orders of 7 cases (which is the fixed lot size for NRG-A bars) to meet the demand. Check on the material **##S200** (dough for NRG-B bars) by entering the material number (##S200) and clicking on the refresh icon (🔄):



# MRP



Stock/Requirements List as of 14:58 Hrs

Material: 005200 00 Dough NRG-A  
 Plant: 00PT MRP type: PD Material Type: HALB Unit: LB

A	Date	MRP e	MRP element data	Rescheduli	E	Rec./reqd.qty	Available qty
	08/01/2008		Stock				0
	08/31/2008	PldOrd	0000005244/STCK			500	500
	08/31/2008	PldOrd	0000005245/STCK			500	1,000
	08/31/2008	DepReq	00F100			500-	500
	08/31/2008	DepReq	00F100			500-	0
	09/30/2008	PldOrd	0000005246/STCK			500	500
	09/30/2008	PldOrd	0000005247/STCK			500	1,000
	09/30/2008	PldOrd	0000005248/STCK			500	1,500
	09/30/2008	PldOrd	0000005249/STCK			500	2,000
	09/30/2008	DepReq	00F100			500-	1,500
	09/30/2008	DepReq	00F100			500-	1,000
	09/30/2008	DepReq	00F100			500-	500
	09/30/2008	DepReq	00F100			500-	0
	10/31/2008	PldOrd	0000005250/STCK			500	500
	10/31/2008	PldOrd	0000005251/STCK			500	1,000
	10/31/2008	PldOrd	0000005252/STCK			500	1,500
	10/31/2008	PldOrd	0000005253/STCK			500	2,000
	10/31/2008	PldOrd	0000005254/STCK			500	2,500
	10/31/2008	PldOrd	0000005255/STCK			500	3,000
	10/31/2008	DepReq	00F100			500-	2,500
	10/31/2008	DepReq	00F100			500-	2,000
	10/31/2008	DepReq	00F100			500-	1,500
	10/31/2008	DepReq	00F100			500-	1,000
	10/31/2008	DepReq	00F100			500-	500
	10/31/2008	DepReq	00F100			500-	0

As the dough has a lot size for dough is 500 lb., the SAP system has create planned orders in 500 lb. batches. Check on the material ##R300, Canola:



# MRP



Stock/Requirements List as of 14:59 Hrs

Material: 00R300, Plant: 00PT, MRP type: PD, Material Type: ROH, Unit: GAL

A	Date	MRP e	MRP element data	Rescheduli	E	Rec./reqd.qty	Available qty
	08/01/2008	Stock					0
	08/30/2008	PldOrd	0000005256/STP0			500	500
	08/30/2008	DepReq	00S200			7-	493
	08/30/2008	DepReq	00S200			7-	486
	09/29/2008	DepReq	00S200			7-	479
	09/29/2008	DepReq	00S200			7-	472
	09/29/2008	DepReq	00S200			7-	465
	09/29/2008	DepReq	00S200			7-	458
	10/30/2008	DepReq	00S200			7-	451
	10/30/2008	DepReq	00S200			7-	444
	10/30/2008	DepReq	00S200			7-	437
	10/30/2008	DepReq	00S200			7-	430
	10/30/2008	DepReq	00S200			7-	423
	10/30/2008	DepReq	00S200			7-	416

Note that the SAP system has created a planned order for 500 gal. of Canola to meet the predicted demand.

Print the stock/requirements list for ## Canola oil to hand in by clicking on the print icon (🖨).

**Be sure to neatly print your name on a printout of the Stock/Requirements list for ##R300 (Canola) to hand in.**