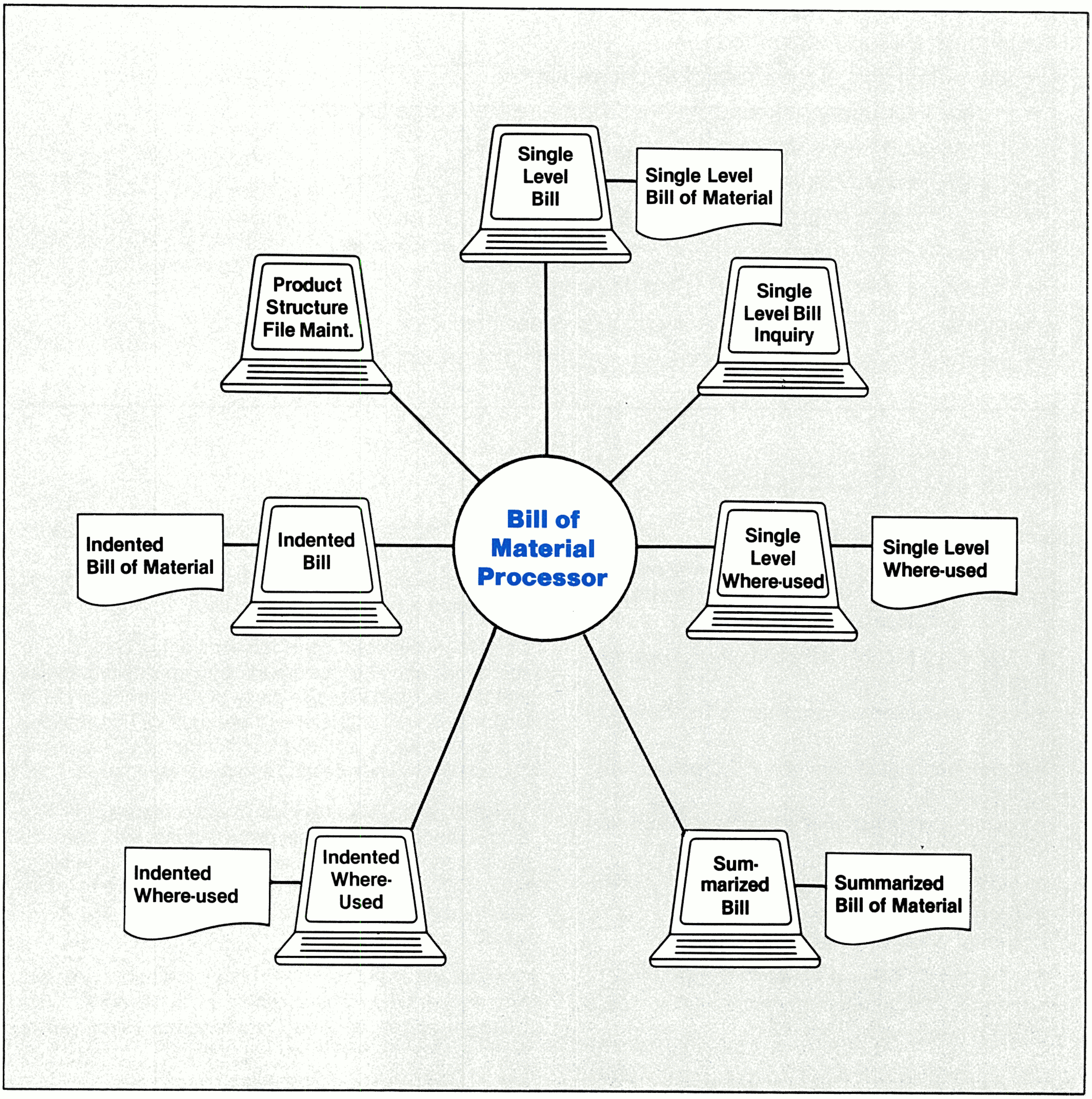
MCBA® Mini-Computer Business Applications, Inc.
2441 Honolulu Avenue
Montrose, California 91020
Telephone: (213) 957-2900 Telex: 194188

Product Description
December 1982

BILL OF MATERIAL PROCESSOR
in DIBOL® for DEC® PDP®-11s


Single Level Bill
Single Level Bill of Material
Product Structure File Maint.
Single Level Bill Inquiry
Indented Bill of Material
Indented Bill
Bill of Material Processor
Single Level Where-used
Single Level Where-used
Indented Where-used
Indented Where-Used
Sum-marized Bill
Summarized Bill of Material

Application Overview

BOMP is a multi-level Bill Processor and one of the key elements to a successful manufacturing system. It includes the following capabilities:

- Allows full Product Structure maintenance.
- Allows user-assigned sequence of components.
- Components' attaching operation can be specified.
- Quantity per parent is supported to 4 decimals.
- Scrap/shrinkage can be specified.
- Obsolete Bills are supported.
- Forecasted/planning Bills are supported.
- Modular Bills are supported.
- Allows fast sort of the Product Structure file.
- Provides for user-controlled Product Structure file reorganization.
- Prints/Displays *Single Level Bill of Materials* report.
- Prints/Displays *Single Level Where-Used* report.
- Prints/Displays *Indented Bill of Materials* report.
- Prints/Displays *Indented Where-Used* report.
- Prints/Displays *Summarized Bill of Materials* report.
- Interfaces to six other MCBA application packages.
- Security System and multi-company capabilities are supported.

Application Details

Product Structure Maintenance

On-line Product Structure file maintenance is provided allowing: add, change, inquire and delete. The product structure record includes:

- Parent Item Number (15 alphanumeric characters.
- Sequence number of component within this structure
- Component Item Number (15 alphanumeric characters)
- Quantity-Per (7 numeric characters including 4 decimals)
- Operation where component attaches to parent
- Scrap/Shrinkage Factor
- Parents' address in the Item Master File
- Components' address in the Item Master file
- User field (6 numeric characters—could be a date)

The Component Item Number is not part of the sort on the Product Structure file so components will appear in the order they were entered on inquiries/reports. However if some other component sequence is desired it can be handled via the sequence number.

One of the important considerations of the capability to specify the operation (where each component is used) is that the user can now see if any of his shortages are in fact not required until later on in the routing. This capability is used by MCBA's Shop Floor Control (SFC). It is also a consideration when costing scrapped assemblies.

The ability to specify how much each component shrinks or is scrapped, on average, gives the user the capability of being more accurate in estimating component usage. MRP, SFC and Product Costing will be able to more closely determine the correct component usage required.

Obsolete structures can be so noted. This allows the user to specify structures he doesn't want to use now but, for whatever reason, does not want to delete. He can leave them on file to be reviewed later to then determine if they should be modified or deleted.

Forecasted bills (planning bills) are an artificial grouping of items, in bill of material format, used to facilitate master scheduling and/or material planning. For example, forecasted bills can be used in MRP's master scheduling to explode requirements properly for optional components.

Modular bills are a type of planning bill which is arranged in product modules or options. Often used in companies where the product has many optional features; e.g. automobiles. The key to this function is the capability to specify a negative quantity-per (which is supported).

Sort Product Structure File

There are two ways to sort the Product Structure (P/S) File: directly with the specified sort function; or indirectly as a part of the slower but more functional reorganization. The P/S sort is fast and required in order for newly added components to be correctly sequenced on inquiries/reports.

This is a good example of MCBA's keep-it-simple approach. It makes the system more understandable and useful. Multiple chaining back and forth can be disastrous if any problems develop. To ensure the security of correct chaining, cumbersome chain validation code is usually written. MCBA's P/S file just chains directly back to parent and component parts, thus saving overhead. The only other P/S chains are in a small, separate file which shows components with their addresses of P/S records where used. Even if every chaining address were somehow wiped out of the P/S File, they could all be re-built by the function described herein.

Product Structure Reorganization

The P/S reorganization is a menu driven function. Normally MCBA programs automatically reorganize files containing fifty or more records flagged for deletion. However, it is worth noting that that is not the case here, as more user-control is appropriate.

The reorganization is needed to sort the P/S file, remove deleted records and re-establish the components where-used file.

Single Level Bill Inquiry

Designed for a video display, the Single Level Bill inquiry shows all the components for a parent (specified at run-time) on the next level down for that parent. If the screen cannot contain all these components the user is allowed to page through all remaining components.

Single Level Bill of Materials

Designed as a printed report, the *Single Level Bill of Materials* (VT100s only) program offers the user a run-time option to display the report instead of printing it. The report format contains more data than the inquiry above. If displayed, the 132 column screen format is condensed onto the VT100 and is automatically scrolled. Since the single level bill is the most popular format in actual usage, it is provided with the most accesses for the user. Like the inquiry above, but with more data per component, this report format shows all parent components one level down from that parent item. One, few or all parent items may be selected at run-time for this report.

Single Level Where-Used

The *Single Level Where-Used* program does just the reverse of the single level bill. Here, for a given component, all its parents one level above are shown. The *Single Level Where-Used* is designed as a printed report but may be printed or displayed (in the 132 column format) at the discretion of the user at run-time. One, few or all component items may be selected at run-time for this report. One common use of this is when a component is to be replaced by some other component. This report can be run to show all the to-be-replaced components' direct parents.

Indented Bill of Materials

Designed as a printed report, the *Indented Bill of Materials* (VT100s only) program offers the user a run-time option to display the report instead of printing it. If displayed, the 132 column format is condensed onto the VT100 and is automatically scrolled.

The *Indented Bill of Materials* shows *all* components of a specified parent. It is called indented because the output actually indents the component item number for each level as it goes down the structure. The entire structure for each specified parent item is output as it is. For example, if one component is used in four different parts of the structure, it appears on the report four times at the appropriate places in the structure. One, few or all parent items may be selected at run-time for this report. Some uses of this report are: 1) to see the entire product structure for a parent, and; 2) to see all the raw materials/purchased parts used for the parent. The act of executing the indented bill is sometimes referred to as an "explosion" of a parent's components, as it seems to explode or expand outwardly.

Indented Where-Used

The *Indented Where-Used* program does just the reverse of the indented bill. Here, for a given component, all its parents are shown. The *Indented Where-Used* is designed as a printed report and may be printed but may also be displayed at the discretion of the user at run-time. It is called indented because the output is indented by level all the way up to the end item. One, few or all component items may be selected at run-time for this report. One use of this report is to identify all parent items (particularly end-items) that may be affected by a change or replacement of a component. The act of executing the indented where-used is sometimes referred to as an "implosion" of a component's parents. Tracing up a structure is like closing in on the end-item, i.e. the structure gets smaller as you get closer to the top.

Summarized Bill of Materials

Designed as a printed report, the *Summarized Bill of Materials* (VT100s only) program offers the user a run-time option to display the report instead of printing it. If displayed, the 132 column format is condensed onto the VT100 and is automatically scrolled.

The summarized bill shows *all* the components of a specified parent. It is called summarized because each component is shown only once summarized by quantity-required (per this parent) at the lowest level the component appears in the parent's structure. This is the classical parts list in that each part is listed once along with total quantity-required to make one parent. One, few or all parent items may be selected at run-time for this report.

Interfaces to Six Other MCBA Application Packages

- Inventory Management (I/M)
- Customer Order Processing (COP)
- Shop Floor Control (SFC)
- Standard Product Costing (SPC)
- Base Material Requirements Planning (BMRP)
- Full Material Requirements Planning (FMRP)

I/M is the *only* prerequisite for BOMP; as BOMP carries no descriptions or other item master data.

COP uses BOMP to explode any line-item that is non-stocked and allocates its stocked components at the first level they appear. COP's picking list in this case can be used as a final assembly order. I/M, BOMP & COP are designed to work very well together.

SFC can copy bills from BOMP for its Master Bill File. SPC needs BOMP's structure file in order to do the elaborate things it does in standard costing products. MRP requires BOMP's structure file in order to know what components are required for the gross requirements MRP gets from the master schedule. Both Base & Full MRP need this function.

Security

The security system allows up to 200 passwords and provides access restrictions to the file level and the application level by company.

Multiple Companies

Multiple Company support is provided with up to eight (8) companies supported. Most users do not have that many but they still find this feature very useful for test files and/or for operator training.

Record Size

Product Structure	64 characters

Run-Time Size

Approximate disk space requirements for BOMP run-time/object modules is 233KB.