**Background**

In 1990 recognizing that vendors of safety-related material were beginning to abandon the nuclear industry, Scientech (then NUS) began working with nuclear utility supply chain professionals to develop an industry-wide database whereby on-hand nuclear plant inventory could be listed (pooled) and when necessary, made available to “participants in need.”

When conceived and developed, RAPID was intended to be nothing more than an emergency sourcing tool to support the operation of the nation's nuclear plants. Today, many years later, the pooling of inventory has grown beyond just nuclear plant inventory to include fossil, hydro and gas turbine plant and T&D inventory data, vendor catalogs and surplus inventory listings. At the same time, ever changing business philosophies/practices and technology have redefined the way the RAPID databases are perceived/utilized. Today, RAPID member utilities:

- Are reducing on-hand inventory, not hoarding it.
- View each other as both vendors and buyers, not only for emergency purchases, but also, for routine re-stock when a member indicates willingness to sell on-hand (in-stock) inventory or surplus inventory that has been "written off" available for sale.
- Depend upon each other for hard to find obsolete items that are no longer manufactured and/or available from the OEM and/or to identify and share information on equivalent replacement solutions.
- Are using advanced integrated material/work management systems that enable electronic purchasing and payment.
- Desire to integrate RAPID in to their material/work management systems to conduct automated pre-procurement checks of internal and external sources for material and to initiate purchases from the vendors they have pre-negotiated purchasing contracts established with.

As technology advances and even more member utilities seek to integrate their material/work management systems with the RAPID inventory databases, the issue of inventory data integrity (quality) or the lack thereof, looms large as a "barrier to success." Why? Because data integrity – the quality of the inventory data and the frequency it is made available/updated, is the foundation upon which the technology used to integrate disparate systems depends.

With the above in mind, Scientech, with guidance from supply chain professionals from RAPID member utilities, established the data submittal guidelines set forth herein.

**Guideline Objectives**

1. Provide guidance for what inventory listings should be submitted to the database.
2. Define the database fields that (as a minimum) each member utility should be populating.
3. Provide guidance for content/format of the data being submitted to populate fields that are deemed critical to success.
4. Establish a recommended method and schedule for updating listings.

**1. What to Submit to the Database**

RAPID members should submit inventory listings for all spare/repair parts/components they stock as necessary to maintaining their power plant(s) and T&D systems operable. Because RAPID members use RAPID to perform benchmarking studies and to identify opportunities for sharing common inventory (and the investment in it), listings meeting the criteria set forth herein should be submitted to the database even if the current in stock quantity is zero (0) and/or if the item is “reserved” for future use in an upcoming repair or modification.

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Inventory listings that are to be submitted include MRO spare/repair parts/components identified and purchased by a unique manufacturer part or model number or identified and purchased by “generic” description. Vendors should list their entire product catalog if it is comprised of spare/repair parts/components. All participants are discouraged from submitting listings for “housekeeping” consumables.

Examples of MRO spare/repair parts/components identified and purchased by a unique manufacturer part or model number include: Motors, pumps, valves and valve actuators/operators, transmitters, power supplies, transformers, cable, circuit breakers, turbine parts, etc., as well as the multitudes of sub-components parts that make up the base component.

Examples of spare/repair parts/components that may be identified by a part number that can typically be purchased by generic description include: Bolts, nuts, gaskets, o-rings, pipe fittings, electrical connectors/fittings, lamps, switches, etc.

Examples of “housekeeping” consumables that participants are discouraged from listing unless offered for sale as surplus include: Office supplies, janitorial supplies, safety gear (helmets, goggles, etc.), gloves, clothing, hand and power tools, etc. Also discouraged from listing unless offered for sale are vehicles, construction equipment, etc.

Where the participant’s inventory system contains multiple records for the same item (stock number/code), a listing should be submitted for each record. This situation typically arises when one of the following situations exist:

♦ The same item has more than one valid identifying number (part, model etc.)
♦ The item is used in multiple "applications."
♦ The OEM name has changed.
♦ The item can be purchased by either a part/model number or by generic description.
♦ The item can be/is purchased from several different vendor sources by both identifying number or by its generic description.

2. Data Fields to be Populated

There are three “classifications” of data fields that need to be populated by participants. These classifications are:

**Mandatory:** Fields that must be populated so that database programming functions as designed.

**Required:** Fields that should be populated to ensure maximum value is obtained from participation.

**Recommended:** Fields that if populated, help the user (viewer) make an informed choice.

**Mandatory fields include:**

a) **Member Primary Key:** **Member Primary Key:** A value that is unique to each record and one that never changes. If one does not already exist in the member’s inventory database, one should be created. For example, the key can be made up by concatenating any combination of fields in the part record (e.g. Catalog Id, Facility, and Q Level in a Passport system, or just the Stock Number at some other sites) which will uniquely identify that part. The decision for the appropriate member primary key should be discussed between the technical staff at the site and the RAPID programming staff prior to uploading the data the first time.

b) **Inventory Type:** RAPID provides participants with the codes that are to be used to define inventory type. These codes serve a dual role within the database:

i. The code is read during the data loading process to determine the correct inventory database the data is to be loaded in to - Nuclear, Fossil, utility surplus, vendor catalog, etc.
ii. The code is read by the search programming to which records to retrieve based upon the database(s) the user has selected to perform the search on.

c) UserID: RAPID provides all member users with a UserID. The UserID to be included with each listing is the UserID that has been assigned to the individual who will be responsible (the primary contact) for the plant’s (or company’s) inventory listings in the database.

Required fields include:

a) **Stock Number/Code**: The inventory owners inventory stock code/number.
b) **Manufacturer Name**: The name of the manufacturer of the item.
c) **Manufacturer Part Number**: The manufacturer’s assigned part or model number for the item.
d) **Part Name (Primary Noun)**: The single word that identifies the item.
e) **Description**: The noun modifiers (descriptive words) that detail the item’s characteristics and/or specifications.
f) **Quality Code**: Code that identifies the item as nuclear safety or non-safety related.
g) **Quantity in Stock**: The on hand quantity of the item at the time the data is uploaded.

Recommended fields include:

a) **Minimum Stock Quantity (Min)**: The inventory owner’s established minimum stocking quantity.
b) **Maximum Stock Quantity (Max)**: The inventory owner’s established maximum stocking quantity.
c) **Quantity for Sale**: Submit only if some part of the on-hand quantity in stock is for sale.
d) **Unit of Issue**:

1If the inventory owner uses “safety Stock” instead of min/max, submit the safety stock amount in the max quantity field.
2Quantity for Sale is defined as a required (vs. recommended) when the item is listed in the utility surplus for sale or vendor catalog database.

Other available fields that the owner may want to populate include:

a) **Unit Price**: The average unit price of the item. If this is provided the database administration can cause it to be turned on/off for viewing by users at the owners request
b) **Lead Time**: The known delivery lead-time when ordered from the OEM or Vendor.

3. Content & Format - Required Fields

The content and/or format of the data populating the following four required fields significantly impacts the value participants derive from participating in the industry-wide database:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Part name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer Name</td>
<td>Description</td>
</tr>
</tbody>
</table>

**Part Number:**

The part number field should be populated with the manufacturer part number or when appropriate, another valid identifying number such as the model, figure, drawing or catalog number.

Typically, the MRO part number (or other commonly known identifying number) of an item is the same from one participant to another, the difference being only in how it has been “formatted.” For that reason alone, whether searches are performed on-line (manually) or performed automatically through integration with the member’s material/work management system, the value loaded to the part number field is critical to achieving success. Simply put, it is the part (or other identifying)
number that when properly formatted and loaded to the part number field, and used as the primary search term, that leads to highly accurate search results, regardless of the quality of other descriptive detail provided.

Specific guidance for proper formatting/submittal of part (or other identifying) numbers

For each record submitted:

♦ The MRO part number or other commonly known identifying number of the item should be loaded to the part number field of the database, even if the number is also provided in the item’s description.
♦ Submit only one part number (or other commonly known identifying number) to the part number field per record/listing. In cases where multiple identifying numbers (or manufacturer names) apply to the same inventory stock code/number, submit a listing for each.
♦ The part or other identifying number should not contain embedded blank spaces.
♦ The part or other identifying number should not be prefixed with terms such as “part number”, PN, P/N, #, FIG, DWG#, Model No., etc.
♦ The part or other identifying number may be submitted with or without formatting characters - slashes (/) and/or dashes (-).
♦ Avoid use of specification values (dimensions, ratings, sizes, etc. as identifying numbers.
♦ If the item to be submitted is typically not identified by a part or other identifying number, if the number is unavailable and/or unknown, or the part is purchased by its “generic description”, the part number field should be left blank. Submittal of listings where the part number is unavailable/unknown and so indicated in the part number field by N/A, NOT AVAILABLE, NOT SPECIFIED, NONE, UNKNOWN, BY DESCRIPTION, etc. is discouraged. Listed below are some examples of proper and improper part (or other identifying) numbers:

<table>
<thead>
<tr>
<th>Proper</th>
<th>Improper</th>
</tr>
</thead>
<tbody>
<tr>
<td>02028J49P0001</td>
<td>ABC#800T-B2BP</td>
</tr>
<tr>
<td>50-180-183HEBY1APA</td>
<td>3&quot;-B0064C02TY</td>
</tr>
<tr>
<td>BB1543/15</td>
<td>1-1/2”x1-1/2”</td>
</tr>
<tr>
<td>4152-550-32/BU/AK-04</td>
<td>NOMFGPARTNO</td>
</tr>
<tr>
<td>6J41</td>
<td>PN#40-300</td>
</tr>
<tr>
<td>1-5103-LR23161-10</td>
<td>4000HP3600RPM4000VOLTS</td>
</tr>
</tbody>
</table>

Part Name:

The part name field should be populated with the single word (primary noun) that describes the item. The part name allows the user, when searching by common descriptive terms (keywords), to focus the search to the item of specific interest where the search terms being used to locate the item (other than the identifying number) are commonly included in the description of both the complete component and its sub-assemblies.

For example, a search using the descriptive word terms VELAN and GATE and 3” and 150# will return records for not only complete Velan 3”, 150# Gate Valve assemblies, but also many hundreds of sub-assembly parts used for repairing the valve described by the search terms. Adding the part name (primary noun) VALVE to the search criteria focuses the search to the complete valve assembly (component). Adding the part name STEM to the search focuses the search to the STEM sub-assembly for the Velan 3”, 150# Gate Valve.

Specific guidance for proper formatting/submittal of part name (primary noun)

♦ If the participant’s inventory database does not contain a field for part name, this field should be left blank. If left blank, the first word in the description field will automatically be inserted in to part name field by the data processing program.
♦ Submit only single words for the part name.
♦ Submit only one part name in the part name field.
♦ The part name should not be abbreviated.
♦ The part name should not be connected to another word term with a hyphen (-) or a slash (/).

Listed below are some examples of proper and improper part names:

<table>
<thead>
<tr>
<th>Proper</th>
<th>Improper</th>
</tr>
</thead>
<tbody>
<tr>
<td>VALVE</td>
<td>VLV, BRNG, GSKT, etc.</td>
</tr>
<tr>
<td>MOTOR</td>
<td>MOTOR-AC</td>
</tr>
<tr>
<td>SUPPLY</td>
<td>POWER SUPPLY</td>
</tr>
<tr>
<td>BEARING</td>
<td>KIT-GROUNDING</td>
</tr>
<tr>
<td>GASKET</td>
<td>RECEIVER/INDICATOR</td>
</tr>
</tbody>
</table>

**Manufacturer Name:**

The manufacturer name field should be populated with the proper name of the OEM for the item. The manufacturer name allows the user, when searching by identifying number (part, model, etc.) or by common descriptive terms (keywords), to focus the search to only those items containing (manufactured by) the manufacturer name.

For example, a search including the manufacturer name VELAN and the additional search terms GATE and 3” and 150# with part name VALVE will return records of 3”, 150# Gate Valves manufactured by Velan. A search using only the descriptive words GATE and 3” and 150# and part name VALVE, will return 3”, 150# Gate Valves manufactured by several different OEM’s.

**Specific guidance for proper formatting/submittal of manufacturer names**

♦ Submit the OEM name, not the vendor name where the item was purchased unless the manufacturer is also the vendor. For example, if the item is a Valve Operator manufactured by Limitorque, and the vendor it was purchased from is Framatome ANP Nuclear Parts Center, Limitorque should be submitted in the manufacturer name field.
♦ Submit only one manufacturer name in the manufacturer name field. In cases where there are multiple manufacturers of the same item (suitable substitutes), all with the same inventory stock code/number, submit a listing for each, even if they have the same identifying (part, model, etc.) number.
♦ Abbreviations of the manufacturer name are discouraged.
♦ If the name has more than one word, it is recommended the words be separated by a blank space. Using hyphens to connect multiple words in a manufacturer’s name is discouraged.

Listed below are some examples of proper and improper manufacturer names:

<table>
<thead>
<tr>
<th>Proper</th>
<th>Improper</th>
</tr>
</thead>
<tbody>
<tr>
<td>WESTINGHOUSE</td>
<td>WSTNGHSE</td>
</tr>
<tr>
<td>GENERAL ELECTRIC</td>
<td>GE, G.E., etc.</td>
</tr>
<tr>
<td>KIDDE</td>
<td>KIDDE/FENWAL DIV.</td>
</tr>
<tr>
<td>ANDERSON GREENWOOD</td>
<td>ANDERSON&amp;GREENWOOD</td>
</tr>
<tr>
<td>INGERSOLL DRESSER RAND</td>
<td>INGERSOLL/DRESSER-RAND</td>
</tr>
</tbody>
</table>

**Description:**

The data submitted to the description field should be the detailed specification/descriptive information necessary to accurately describe the item. Enough information should be provided to allow the viewer to determine whether the item being reviewed is (or is not) in fact the item needed.

**Data Submittal Guideline**
03/2008
Specific guidance for proper formatting/submittal of descriptive content

♦ The primary noun (part name) should be the first term in the description.
♦ The primary noun (part name) should be followed by either a comma (,), semicolon (;), or a colon (:) and a blank space.
♦ The primary noun (part name) should be followed by the noun modifiers and characteristics (specification values) necessary to adequately describe the item in detail.
♦ Connecting the primary noun to its modifier with a hyphen is discouraged.
♦ All words following the primary noun (part name) should be separated by a blank space or if appropriate, a comma, semicolon or colon.

Shown below is an example of good descriptive content:

VALVE, GATE; MANUAL, 3 IN., 150 LB., BUTT WELD, BOLTED BONNET, A105 GR II CS BODY, OS&Y, RENEWABLE SEAT RINGS, SOLID WEDGE DISC, STELLITED, ASME SECTION III CLASS 2

Content & Format- Other Required Fields

Guidance for other required fields

Stock Number/Code:

The inventory stock code/number should be submitted for two reasons:

1. It provides the user viewing the record with a “reference” to a specific inventory item when contacting the record owner.
2. It provides a “positive” search term for the record owner to go directly to one of his/her own records.

Specific guidance for inventory stock codes/numbers

♦ Submit the inventory stock code/number of the item.
♦ Submit only one stock code/number per record.

Quality Code:

Nuclear plant participants should submit information with each inventory listing indicating the item is either safety-related or non safety-related. In lieu of designators for safety/non safety-related all records – nuclear, fossil, etc. should provide the industry code/standard the item is built to (ASME, ANSI, etc.) in the quality code field.

Quantity in Stock:

The on hand quantity of the item at the time the data is uploaded should be submitted. The on-hand quantity is always submitted as a numeric value with no decimal places. Submitting the on-hand quantity serves two main purposes:

♦ It is an indication the inventory owner probably should not be contacted if the quantity the viewer needs is greater than the on-hand quantity displayed.
♦ If the on-hand quantity is submitted and if the inventory owner desires, the on-hand quantity and maximum stock quantity (see below) can be used to automatically calculate an overstock position at time of record display and indicate the overstock to users. The user in turn will then be able to quickly identify potential sourcing opportunity.

Content & Format- Recommended Fields

Data Submittal Guideline
03/2008
**Minimum (MIN) Stock Quantity:**

♦ The established minimum stocking quantity should be submitted. The MIN is always submitted as a numeric value with no decimal place.

**Maximum (MAX) Stock Quantity:**

♦ The established maximum stocking quantity should be submitted. The MIN is always submitted as a numeric value with no decimal place. If the on-hand quantity is submitted and if the inventory owner desires, the on-hand and MAX (see above) can be used to automatically calculate an overstock position at time of record display and indicate the overstock to users. The user in turn will then be able to quickly identify potential sourcing opportunity.

**Quantity for Sale:**

♦ The quantity for sale is always submitted as a numeric value with no decimal place. If the record is being submitted to one of the inventory data pooling databases – nuclear, fossil, T&D, etc., a quantity for sale value should only be submitted if some part of the on-hand quantity, e.g., overstock quantity (see above) is available for sale. For the utility Surplus and vendor catalog, the record owner should submit the quantity available for sale even if the value is the same as the quantity on hand.

**Unit Price:**

♦ The average unit price of the item. If this data is provided the database administration can cause it to be turned on/off for viewing by users at the owners request. The unit price is always submitted as a numeric value with two decimal places.

**Lead Time:**

♦ The known delivery lead-time when ordered from the OEM or Vendor in days, weeks or months.

**Reserved Quantity:**

♦ The quantity of the item currently reserved for work orders that are currently in-progress or scheduled for a future time. The reserve quantity is always submitted as a numeric value with no decimal place (whole number).

4. **Method and Schedule for data submittal**

**Method of Submittal**

The administrator of the industry inventory database specifies the method for submitting inventory listings to the database. Currently, the preferred method of submittal is by use of the administrators Inventory Upload Gateway, commonly called the “Gateway.”

**What is the Gateway?**

The Gateway is a Java program that is installed on a PC at the participating member’s site. When setup, the program automatically retrieves the inventory data from the member's inventory table/database and submits it directly to the **RAPID** server on the desired schedule.

Nothing in the automated upload process is initiated by **RAPID**. The Gateway is installed inside the Member site firewall, by the Member, and all communication or transfer of data is initiated by the Member so the Member’s security measures are never compromised.
How does the Gateway work?

Once installed on a Windows PC at the Member's site, the member, with assistance from the RAPID programming staff (if needed) configure it to retrieve the required inventory data for uploading to the server.

The Member logs in to the Gateway using the UserID (see mandatory Field section above) assigned to the individual who will be responsible (the primary contact) for the plant’s (or company’s) inventory listings in the database. The member specifies the database connection information: the type of database, the user ID and associated password, and the location on the member network where the database is to be found. The Member also provides a SQL statement (a database query), which will retrieve only those inventory listings the member desires to submit. At the desired interval (see Data Submittal Schedule below), the Gateway will read information directly from the member’s database, and write it to a compressed Extensible Markup Language (XML) file on the PC's hard drive. The XML document is then sent over the Internet to the RAPID server using standard FTP processing, where the file is then uncompressed, and inserted into the central database.

Data Submittal Schedule

Typically the Gateway is installed and configured on a Windows PC. To automate the scheduled upload of data the standard Windows "Scheduled Tasks" program is used to configure/control the frequency and timing of the submittal. Once the Gateway is properly setup/configured and the Scheduled Tasks program is set, the entire data upload process is fully automated. For that reason it is recommended that data be submitted/updated once every 24-hours, but in any event, no less frequent than once every 7 days.

Summary

It is understood the members participating in the industry inventory data pool typically do not have the resources necessary to review and where necessary, correct all of the data in their inventory management database to meet the recommendations in this guideline. It is hoped however, that whenever an opportunity arises to do so, even if it is one-at-a-time, over time that members will, when adding to or updating their inventory records, follow the guidelines provided herein.

Finally, should any member want a “snapshot” of the quality of their data in the industry’s database with recommendations on how to improve it, Scientech/RAPID will provide it upon request.