APPENDIX B: INDEXING EXAMPLE

The following is an example that will demonstrate the major tasks needed to perform Indexing. The user will set up an index, collect spool entry data, and search the Index. The example is intended to be an introduction to Indexing, and will refer the user to places to get more detailed information. This example will cover the following major areas:

+ **Monitor/Selection Specifications Requirements**
+ **Defining Index Specifications**
+ **Controlling the Index Manager**
+ **Searching Indexes**
+ **Displaying and Printing Results**
+ **Using Stored Search Specifications**

To use this exercise, the user must have authority to the following commands:

> **CRTOUTQ**
> **DSPSPLF**
> **CHGSPLFA**
> **CLROUTQ**
> **DLTOUTQ**

The exercise should require approximately 45 minutes to complete.

Note: Prior to performing this example the user should have a thorough knowledge of Monitors and Selection Specifications. It is strongly recommended that new users perform the "Monitor Setup Example" in Appendix B before performing this example. Also note that the setup steps performed in the Monitor example will be used in this example. Therefore we recommend you do not delete the objects created in the Monitor Setup example until after you have finished this example.

If you have completed the Monitor Setup Example and have not deleted the objects, start with step 3, "Inspect the spool entry's data". Otherwise, start with step 1 below.

1) Create new outqs and sample output.
Note: Command **CRTSOEXP** (Create Spool Org. Example) is provided to create outqs **BPRT01** thru **BPRT05** and **BJOBLOGS** into library **BRODERICK**. This will allow the example to simulate your production environment without disrupting your operations. The command also creates a sample Inventory report, PO report, and job log. Outq **BPRT02** and the Purchase Order listing will be needed to complete this example. To execute enter the following:

> **CRTOUTQ BRODERICK/BPRT02P TEXT('Accounting Printer')**

> **BRODERICK/CRTSOEXP**

2) Create a User, Monitor, Selection Specification, and Archive/Purge Specification
 (Chapter 4, "Define Users, Chapter 5, Define Monitors, Chapter 6, "Define Selection Criteria", Chapter 8, "Define Archive/Purge Specifications")

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a) Sign on as **QSECOFR** (or any existing SpoolOrganizer Security Officer).

b) Add library **BRODERICK** to the library list:

 ADDLIBLE BRODERICK

c) Display the SpoolOrganizer Administrator Menu:

 SPLADM

d) Select option **1**, "Define System" and press **ENTER**. Then select option **1**, "Define Users" and press **ENTER**. Press **ENTER** to display all users.

Note: If you wish to use an existing Spool Organizer Security Officer, add security code "P" to the user's Change Security Table and skip the add step below.

e) Press **F6** (Add a user)

 User Name: **QSECOFR**
  Press **ENTER**
Change Security Table: * (all spool entries)
User Class: **S** (Security Officer)

 Press **ENTER**

 Press **F12**

f) A list of your Users appears. Press **ENTER** to return to the "Define System Menu".

g) Select option **2** "Define Monitors" and press **ENTER**. Press **ENTER** to display all defined Monitors.

h) A list of all Monitors will appear. Press **F6** (Add a monitor)

i) The Add Monitors screen appears.   Monitor: **BPRT02**

 Press **ENTER**

j) From Outq: **BPRT02**   **BRODERICK**
 Descr. Text: **Accounting Printer**
 To Outq: **BPRT02P**   **BRODERICK**

 Press **ENTER**

k) The Add Monitor screen appears. Press **F12**.

l) A list of your Monitors appears. Press **ENTER** to return to the "Define System Menu".

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m) Select option **3** "Define Monitors Selection Criteria" and press **ENTER**. Press **ENTER** to display all Selection Specs.

n) Press **F6** (Add a Monitor Selection Criteria)

o) The Add screen appears. Enter Monitor/ID/Seq. Number:
> **BPRT02**   **(blank)**   **100**

> Press **ENTER**

p) Spool File Name: **PO**
Form ID: **PO7055**
Descriptive Text: **Purchase Orders Selection Spec**
To Outq: **BPRT02P**
Library: **BRODERICK**
Online DB Type: **ND**   Value: **30**
Arc Cat Type: **NY**   Value: **2**
Read Sec Table: **P**
Chg Sec Table: **P**

> Press ENTER

q) The add screen appears. Press **F12.**

r) The List screen appears. Press **ENTER** to return to the "Define System Menu".

s) Select option **6**, "Define Archive/Purge Criteria"

Fill out the screen as follows:

A/O	Field	Rel	Value	UC	Wild
	4	EQ	PO7055		
A	3	EQ	PO		

Name to Save or Restore: **PO**
Text: **Purchase Orders**
> Press **F9**(Save)
> Press **F3** to exit

t) Press **F3** to return to the main menu. Press **F3** to exit.

3) Inspect the spool entry's data
Prior to defining Index specifications, the user should look at the spool entry to determine its attributes and the exact location of the desired values to collect. The sample Purchase Orders listing created in this example will be used.

a) Enter the following command:

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WRKOUTQ BRODERICK/BPRT02

Note: If you have completed the Monitor Setup example, the Purchase Orders listing will be in outq **BPRT02P**.

b) Place an **8** (attributes) by the Purchase Orders listing and press **ENTER**.

c) The "Work with Spooled File Attributes" screen is displayed. Note the "File" (PO) and "Form type" (PO7055). This example will use the File name and Form type attributes to uniquely identify the Purchase Orders listing. You may wish to scroll through the attributes display at this time. When you are finished, press **ENTER**.

d) Place a **5** (display) by the Purchase Orders listing and press **ENTER**.

e) The Purchase Orders listing is displayed. This example creates 2 Indexes:

+ Vendor Names
+ Amounts

f) Type +**1** in the "Control" field and press **ENTER** until the line with "NAME: A1 Plumbing Supply" is on the top line of the display area. Note the current line number (10) is displayed in the top right corner of the screen. Also note the rule shows the column range of the vendor name (A1 Plumbing Supply) as 25 through 44. The vendor name appears at this location on every page of this listing.

g) Note the column of numbers under the heading "AMOUNT". Press ENTER until the first line item (Moen Kitch. Faucet, ...) is the top line of the display area. Note the current line (18), and the column range (80-93) of the amounts.

Note: If your screen only displays 80 columns, enter **W40** in the "Control" field to see the amount column. (Reset the +**1** value).

h) The objective of this example is to collect the amounts, but not the sub totals. Press ENTER until the line with "SUB-TOTAL:" is the top line of the display area. Note the column range of "SUB-TOTAL:" (65-74).

i) Press **F3** to exit the spool entry display. Press **F3** to exit the outq display.

4) Define Index Specifications (Chapter 14, "Define Index Specifications**)**
Note if you are not on the "Define System" menu, enter the following:

ADDLIBLE BRODERICK
SPLADM

Select option **1** (Define System)

Perform the following:

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a) Select option **13**, "Define Index Specifications".

b) The "Display Specifications" screen should appear. If many Index Specifications exist, this screen can be used to limit the number displayed. Press **ENTER**.

c) Press **F6**, Add.

d) Enter the following:

> Index Name: **POVENDNAME**
> Index ID: **(blank)**
> Data Type: **C**   (Character)
>
> Press **ENTER**.

e) The "Define Index Specifications Criteria" screen should appear.

f) Enter the following:

> Monitor/ID/Sequence Number: **BPRT02   (blank)   100**
> StL: **10**
> EnL: **10**
> StC: **25**
> EnC: **44**
> Rel: **GE**
> (data)   **(blank)**
> UC: **N**
> Data Length: **20**
>
>   Press **ENTER**.

g) The "Add/Copy Index Specifications" screen should reappear. Enter the following:

> Index Name: **POAMOUNT**
> Index ID: **QPGMR**
> Data Type: **D**   (Decimal)
>
>   Press **ENTER**

h) The "Define Index Specifications Criteria" screen should appear. Enter the following:

> Monitor/ID/Sequence Number: BPRT02   (blank)   100
>
> StL: **18**
> EnL: **66**
> StC: **80**
> EnC: **93**
> Rel: **GE**
> Data: **(zero)**

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Data Length:	**14**
Qualifier Strings:	**Y**

Qualifier String Data

StC:	**65**
EnC:	**74**
Rel:	**NE**
Len:	**10**
(Data)	**sub-total:**

Press **ENTER**.

Note: The qualifier string is specified to prevent the vendor sub totals from being collected.

i) The "Add/Copy Index Specifications" screen should reappear. Press **F12** to exit add mode. Press **ENTER** to exit and **F3** to return to the "Administrator Main Menu".

5) Apply Changes to Production (Chapter 21, "Control the Index Manager")

a) Select option **2**, "Control System Execution"

b) Select option **53**, "Apply Index Changes". There are no parameters for the **APYIXSCHG** command, so press **ENTER**. The "Control System Execution" menu will reappear.

6) Release the Purchase Order Spool Entry
Note: If you have performed the Monitor Setup example, your sample Purchase Order listing may be in outq **BPRT02P**. If so, move it to outq **BPRT02** and skip this step.

a) From the command line, enter the following command:

WRKOUTQ BRODERICK/BPRT02

b) Place a **6** next to the PO spool entry to release it. Press ENTER to exit the outq display. Press **F3** to return to the "Control System Execution" menu.

7) Start the Monitor. (Chapter 15, "Monitor Selections)

a) Select option **1**, "Start a Monitor". Enter the following:

Monitor to Start: **BPRT02**

Press **ENTER**.

8) Start the Index Manager (Chapter 21, "Control the Index Manager")

a) Select option **51**, "Start Index Manager".

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b) The **STRIDXMGR** command parameters will appear. Press **ENTER**.

9) Watch the Monitor and Index Manager Execute

a) When the "Control System Execution" menu reappears, press **F10** to get to an OS/400 command line.

b) Enter the following command:

WRKACTJOB

You will see subsystem BDS, with jobs BSOIDXMGR, BDSUSRPRF, and BPRT02 (your Monitor) executing. Periodically (every 5 seconds or so), press **F5** to refresh the screen. The Monitor job and Index Manager job will change to a DEQW status when they are finished processing the PO spool entry. At that time, press **ENTER** to exit the WRKACTJOB display.

10) Search Indexes (Chapter 28, "Display Index Entries)

a) Press **F3** until the "Administrator Main Menu" appears or from an OS/400 command line enter the following command:

BRODERICK/SPLADM

b) Select option **3**, "End User Functions" and press **ENTER**. The "User Menu" should appear.

c) Select option **5**, "Display Index Entries" and press **ENTER**. This option executes the **DSPIDXE** command, press **ENTER** to accept the defaults for the command parameters.

The "Search Index Entries" screen should appear.

d) Enter the following:

Index Name/ID:			POVENDNAME	(blank)	
A/O	Rel	Value		UC	Wild
	GE	A			
A	LE	z		Y	

Press **F6** to start the search.

e) If you correctly entered the Search Specs described in Line **d** above, there should be five Index Entries on the display. Place a **1** next to the first entry, "Acme Cabinetry", and press **ENTER**. A screen showing the attributes of the spool entry which contains the Index Entry data will be displayed. Press **ENTER**, **F3** or **F12** to return to the "Index Entries Display".

Note: If no matching entries appear, verify the following:

+ **Monitor/Selection Spec defined correctly (check spelling)**
+ **Index spec defined correctly (check spelling, line/col ranges)**

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+ **Index Specs applied to production**
+ **Monitor and Index Manager Started**
+ **Spool entry moved to outq and released**
+ **Index search entered correctly (check spelling)**

f) Change the "Order" field to ***DESCEND** and press **F6**. Note the result list is sorted in descending order. Press **ENTER**.

g) Change the "Sort By" field to ***JOBDATE** and press **F6**. The result list is sorted by the base spool entries' creation date. In this example there is only one base spool entry, thus the sort by job date doesn't do much. However in a production environment this may be very useful. Also note that a Job Date range can be specified in a production environment to narrow down the search results. Press **ENTER**.

h) Change the "Search OLDB, ArcCat, and OptCat" fields to **N Y N** and press **F6**. Note that there are no matching Index Entries. The location of the base spool entry (Online Database, Archive Catalog, Optical Catalog) is tracked by Indexing. Press **ENTER**.

i) Reset the following fields:

Sort by: ***VALUES**
Order: ***ASCEND**
Search OLDB...:   **Y N N**

Press **F6**.

11) Display a spool entry (Chapter 30, "Display a Spool Entry")

a) Place a **5** next to the first entry, "Acme Cabinetry", and press **ENTER**. The "BDS Display Spool Entry" screen will appear. Notice the spool entry is positioned to the Index Entry's value. Enter **W25** in the "Ctrl" field of this display and press **ENTER**. Type in **W1** in the "Ctrl" field and press **ENTER**.

b) Type **P+1** in the "Ctrl" field and press **ENTER**. Notice that the entire spool entry can be displayed. You may wish to scroll though the spool entry at this time. When you are finished, space out the "Ctrl" field and press **ENTER**.

c) Place a **5** next to any of the other Index Entries to display them. When you are finished displaying the spool entry, return to the "Index Entries Display".

12) Print spool entry information (Chapter 30, "Display a Spool Entry", Chapter 28, "Display Index Entries")

This section will print a specified range of the spool, print the entire spool entry, and print the page where the search value appears.

a) Place a **5** next to the first entry, "Acme Cabinetry", and press **ENTER**.

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b) The "BDS Display Spool Entry" screen will appear. Press **F14** (Print).

c) Specify the following:

> From page: **3**   From line: 8
>   To Page: **3**   To line: 12
>
> To outq: **BPRT02P   BRODERICK**   (or your outq)
>
> Press **ENTER**

d) The specified range will print. Press **F3** to exit the print display, and **ENTER** to exit the spool entry.

Note: Any range within the entire spool entry can be printed from this screen.

e) In the Outq fields, enter the outq **BPRT02P BRODERICK** (or any outq of your choice). Do **not** press **ENTER**.

f) Place a **6** next to the desired Index Entry and press **ENTER**. This will reprint the entire spool entry.

g) Place a **7** next to the desired Index Entry and press **ENTER**. This will print the page containing the Index Entry.

h) When you are finished experimenting with the options available from the "Index Entries Display", press **F3**. The "Search Index Entries" screen will appear.

13) Modify a Stored Search Specification (Chapter 28, "Display Index Entries)

a) Press **F8**. The "Search Index Entries" display will change from a Character Search Specification definition screen to a Numeric Search Specification definition screen.

b) Enter the following:

> Index Name/ID: **POAMOUNTQPGMR**
> A/O   Rel   Value
>   **GE**   **.00000**
>
>
> Name to Save/Rest: **POSCHN*PUBLIC**
> Text: **QPGMR Index Search - Numeric**

Press **F9** to save the Search Specification.

c) Press **F4** to display the list of Stored Search Specifications. Please note that SpoolOrganizer Security Officers will see all specs. Other users will only see specs with their user profile, or *PUBLIC.

Press **ENTER** to return to the Search screen.

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d) Press **F6**. The "Index Entries Display" screen will appear. Notice that many values matched the search criteria. Press **ENTER**.

e) The search screen will appear. Enter the following:

Index Name/ID:		**POAMOUNTQPGMR**
A/O	Rel	Value
	GE	**1000.00000**
A	**LE**	**2000.00000**
O	**GE**	**3000.00000**
A	**LE**	**4000.00000**

Name to Save/Rest:	**POSCHNQPGMR**
Text:	**QPGMR Index Search - Numeric**

Press **F10** to replace the old Search Specification.

f) Press **F6**. The "Index Entries Display" will reappear. Notice that there are fewer matches that the last search.

Note: It is recommended to define Index Specifications that collect a wide range of values and allow the user to narrow the search using the Search display.

g) Press **ENTER** and **F3** to exit the search function.

h) The User Menu should appear. Press **F3** to return to the main menu. Press **F3** to exit.

14) Execute a search from a command (Chapter 28,"Display Index Entries)

From a command line, enter the following command:

BRODERICK/DSPIDXE SRCHSPEC(POSCHN) ALWSCH(*NO)

The Index Entries list screen should appear. Press **ENTER**. Notice that the search screen was not shown.

Note: The administrator can connect Index searches to user menus and applications by inserting the above command.

15) Archive and Purge Procedures. (Chapter 17, "Archive Online Database to Tape/Optical", Chapter 19, "Purge Selections")

On a daily, weekly or monthly basis execute the Archive and Purge procedures. You may wish to place the commands in a **CL** program or include in an automatic job scheduler.

Note: The following steps require the use of a tape or optical drive, and an initialized tape or optical volume.

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WARNING: If SpoolOrganizer is being used in production, care should be taken when Archiving or Purging entries.

a) To Archive Purchase Orders to Tape, enter the following:

> **ARCOLE ARCID(PO) DEV(QTAPE1) VOL(*MOUNTED) EXPENTRY(*ALL)**
> **ENDOPT(*UNLOAD) DLTARC(*NO)**

To archive Purchase Orders to Optical Disk, enter the following:

> **OPTOLE ARCID(PO) VOL(SPLE) DIRPATH(SPOOL_ENTRIES JUNE PO)**
> **DIROPT(*CREATE) EXPENTRY(*ALL) DLTARC(*NO)**

b) Search the Indexes again. Refer to the step "Search Indexes" above if needed. Change the "Search OLDB, ArcCat, and OptCat" fields to **Y Y Y** before pressing **F6**.

c) Note the A/O field (location) reflects the location of the base spool entry containing the Index Entry. Press **F1** or the **Help** key to see the locations and their codes. Press **ENTER** to return to the Index Entries display.

d) Place a 1 (display attributes) by one of the Index Entries that have A or O as their location and press **ENTER**. Note the attributes of the base spool entry, including archiving information. Press **ENTER** to return to the list.

e) If you archived your spool entries to Optical disk, you may select option **5** (display) and option **7** (print page) at this time.

f) You may select option **6** (print) at this time. If you archived your spool entries to tape, this option will submit a job which sends a tape mount message to message queue **QSYSOPR**.

g) Press **ENTER** to exit. Press **F3** to exit the search screen. Exit the SpoolOrganizer menus.

h) To Purge Purchase Orders from the Online Database:

> **PUROLE ARCID(PO) EXPENTRY(*ALL)**

To purge Purchase Orders from the Archive Catalog:

> **PURARCCAT ARCID(PO) EXPENTRY(*ALL)**

To purge Purchase Orders from Optical Catalog:

> **PUROPTCAT ARCID(PO) EXPENTRY(*ALL)**

Note: You may wish to use **ARCID(*ALL)** in this example when purging the Online Database, Optical Catalog, or Archive Catalog **AND YOU ARE NOT USING SPOOLORGANIZER IN PRODUCTION**. **IF YOU DON'T KNOW, ASK!**

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Note: Index entries are deleted when their base spool entry is deleted, removed, or purged.

16) End the Monitor (Chapter 15, "Monitor Selections")

a) Enter the following command (or select option **2** from the "Control System Execution Menu"):

BRODERICK/ENDSOMON BPRT02

17) End the Index Manager (Chapter 21, "Control the Index Manager")

a) Enter the following command (or select option **52** from the "Control System Execution Menu"):

BRODERICK/ENDIDXMGR

18) Delete SpoolOrganizer Objects.
Delete all descriptions created by this example. Other examples may be affected by the setup performed here.

a) Bring up the Administrator Menu (**SPLADM**).

b) Select option **1**, "Define System Menu".

c) Select each of the following options below. Place a **4** (delete) by each object created and then press enter to delete:

> **Users** (Leave **QSECOFR** and your User **ID**)
> **Monitors**
> **Monitor Selection Criteria**
> **Index Specifications**