

XPEDITER/TSO — Finding Variables Affecting Execution (COBOL Only)

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What does the XPEDITER/TSO Enhanced Find enable me to do beyond the standard ISPF Find?

The FIND command enables you to search character strings. The Enhanced Find refers to the added functionality available under XPEDITER/TSO, which enables you to perform searches based on data names and COBOL structures.

With the Enhanced Find, you can find all fields that define an area of storage; you can also find all fields that it will affect. Then you can locate the fields that those fields will affect. With the highlighting effect and the capability to suppress statements that do not qualify for the search category, the source display screen can turn into a true representation of "data flow cross reference" and a high-level structure." This can help you in impact analysis for field changes and Y2K projects. With XPEDITER/TSO's Enhanced Find, you can very quickly and easily identify all fields and data areas that could be impacted by a change in one field. These Enhanced Find parameters can even be used to debug your programs.

What is the difference between the ISPF Find and the XPEDITER/TSO Find?

With the ISPF FIND command, you can search for character strings. The XPEDITER/TSO FIND command enables you to search for character strings as well as data relationships and program structures.

What might cause the Enhanced Find to appear not to work?

In order for the Enhanced Find to work, the Enhanced Find option must be set to YES in the installation defaults table and the program you are analyzing must be compiled with the Enhanced Find option.

What language processor option is required in order for Enhanced Find to function?

The parameter DDIO(OUTPUT (FIND)) must be added to your CSS CWPPRMO compile time dataset.

How can I use Enhanced Find to debug my program?

1. Begin a new test of your program.

```
Profile: DEFAULT ----- XPEDITER/TSO - STANDARD (2.1) -----
COMMAND ==> [ENTER]

COMMANDS:  Setup (Display Setup Menu)

TEST SELECTION CRITERIA:

          Program ==> CWXTCOB
          Entry Point ==>
          Load Module ==>

          Initial Script ==>
          Post Script ==>

          PARM String ==> 00003

          File List/JCL Member ==> 'USERID.XPEDITER.V6R5M0.SAMPLIB(CWXTJCLC) '

          Code Coverage Test? ==> NO
          Is This a DB2 Test? ==> NO   Plan ==>           System ==>
          Test with XPEDITER+ ==> NO   Qualified LU name ==> .
          Press ENTER to process or enter END command to terminate
```

Figure 1: Test Standard Screen

FIND Locate character strings, data names, and COBOL structures.

Primary Commands: FIND, F

Examples:

- F 'OPEN'
- F PARA X
- F 'OPEN' IN PARA
- F HOLD-LINE
- F HOLD-LINE ALIAS
- F HOLD-LINE ALIAS IND X NOL
- F EMP-TYPE IN CALL
- F * IN CALL

NOTE: If you would like a record of your FIND commands, you must first enter the SET LOG FIND ON command, which will record the results of the FIND commands you issue to the log file.

2. Find REGION-SALES.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f region-sales                                SCROLL ==> CSR
                BEFORE BREAKPOINT ENCOUNTERED
                -----
000347  01  PARMINFO                                     >  ..00003
                **  END  **

----- Before CWXTCOB <>
====> B  PROCEDURE DIVISION USING PARMINFO.
000351  0000-MAINLINE.
000352      PERFORM 9000-OPEN.
000353      PERFORM 9100-CHECK-PARM.
000354      IF GOOD-PARM
000355          PERFORM 9200-INIT
000356          PERFORM 8000-READ-INPUT
000357              UNTIL RECORDS-READ = START-NUMBER
000358              OR END-OF-FILE
000359          PERFORM 1000-PROCESS-DATA
000360              UNTIL END-OF-FILE
000361          PERFORM 6000-PRINT-EMPLOYEE-REPORT
000362          MOVE 1 TO REGION-SUB
000363          IF END-OF-MONTH
000364          PERFORM 7000-PRINT-REGION-REPORT

```

Figure 2: FIND Command

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>
                5 DATA REFS: 1 DEF, 2 USES, 2 MODS FOUND FOR REGION-SALES
                -----
000347  01  PARMINFO                                     >  ..00003
                **  END  **

----- Before CWXTCOB <>
000109      10  REGION-SALARY                            PIC 9(4)V99.
000110      10  REGION-SALES                            PIC 9(6)V99.          DEF
000111      10  REGION-COMMENT                            PIC X(5).
000112      **
000113      **  FIELDS USED BY CALLED PROGRAM CWXTSUBC TO CALCULATE
000114      **  COMMISSION BASED ON SALES AMOUNT
000115      **
000116      01  CALC-COMMISSION-FIELDS.
000117          05  EMP-TYPE                                PIC X.
000118          05  CALC-SALES                              PIC 9(6)V99          VALUE 0.
000119          05  CALC-COMMISSION                        PIC 9(5)V99  COMP-3  VALUE 0.
000120      **
000121      **  ACCUMULATORS USED FOR CALCULATING HOURLY EMPLOYEE WAGES,
000122      **  TOTAL EMPLOYEE COMPENSATION (SALARY PLUS COMMISSION OR
000123      **  HOURLY EMPLOYEE WAGES PLUS OVERTIME), AND TOTAL MANAGEMENT

```

Figure 3: Results of FIND Command

3. Repeat find.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===> [PF5]                                SCROLL ===> CSR
          5 DATA REFS: 1 DEF, 2 USES, 2 MODS FOUND FOR REGION-SALES
          -----
000347   01 PARMINFO                                >  .00003
          ** END **

----- Before CWXTCOB <>
000109           10 REGION-SALARY                PIC 9(4)V99.
000110           10 REGION-SALES                  PIC 9(6)V99.                DEF
000111           10 REGION-COMMENT                PIC X(5).
000112   **
000113   ** FIELDS USED BY CALLED PROGRAM CWXTSUBC TO CALCULATE
000114   ** COMMISSION BASED ON SALES AMOUNT
000115   **
000116   01 CALC-COMMISSION-FIELDS.
000117           05 EMP-TYPE                        PIC X.
000118           05 CALC-SALES                      PIC 9(6)V99          VALUE 0.
000119           05 CALC-COMMISSION                PIC 9(5)V99  COMP-3  VALUE 0.
000120   **
000121   ** ACCUMULATORS USED FOR CALCULATING HOURLY EMPLOYEE WAGES,
000122   ** TOTAL EMPLOYEE COMPENSATION (SALARY PLUS COMMISSION OR
000123   ** HOURLY EMPLOYEE WAGES PLUS OVERTIME), AND TOTAL MANAGEMENT

```

Figure 4: Repeat FIND

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===>                                SCROLL ===> CSR
PROGRAM: CWXTCOB    MODULE: CWXTCOB    COMP DATE: 02/25/99    COMP TIME: 09:47:36
          -----
000347   01 PARMINFO                                >  .00003
          ** END **

----- Before CWXTCOB <>
000420           IF WA-SALES-AMOUNT > 0
000421           ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)    MOD
000422           MOVE WA-SALES-AMOUNT TO CALC-SALES
000423           MOVE 0 TO CALC-COMMISSION
000424           MOVE 'S' TO EMP-TYPE
000425           CALL 'CWXTSUBC' USING EMP-TYPE,
000426           CALC-SALES,
000427           CALC-COMMISSION
000428           ELSE
000429           MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430           COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431           CALC-COMMISSION.
000432           ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433           CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434           YRS-OF-SERVICE

```

Figure 5: Results of Repeat FIND

EXCLUDE Exclude from view all lines that were not found.

Keywords: EXCLUDE, EX, X

4. Find REGION-SALES and exclude other statements.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f region-sales x                                SCROLL ==> CSR
PROGRAM: CWXTCOB      MODULE: CWXTCOB    COMP DATE: 02/25/99  COMP TIME: 09:47:36
                                -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <> -----
000420          IF WA-SALES-AMOUNT > 0
000421          ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)      MOD
000422          MOVE WA-SALES-AMOUNT TO CALC-SALES
000423          MOVE 0 TO CALC-COMMISSION
000424          MOVE 'S' TO EMP-TYPE
000425          CALL 'CWXTSUBC' USING EMP-TYPE,
000426          CALC-SALES,
000427          CALC-COMMISSION
000428          ELSE
000429          MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430          COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431          CALC-COMMISSION.
000432          ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433          CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434          YRS-OF-SERVICE
    
```

Figure 6: FIND Exclude

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                SCROLL ==> CSR
      5 DATA REFS: 1 DEF, 2 USES, 2 MODS FOUND FOR REGION-SALES
                                -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <> -----
***** TOP OF MODULE *****
- - - - - 109 LINES NOT DISPLAYED
000110          10 REGION-SALES          PIC 9(6)V99.          DEF
- - - - - 310 LINES NOT DISPLAYED
000421          ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)      MOD
- - - - - 157 LINES NOT DISPLAYED
000579          MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.          USE
000580          MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.          USE
- - - - - 85 LINES NOT DISPLAYED
000666          MOVE 0 TO REGION-SALES (REGION-SUB).          MOD
- - - - - 26 LINES NOT DISPLAYED
***** BOTTOM OF MODULE *****
    
```

Figure 7: Results of FIND Exclude

5. Reset excluded lines.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> [PF3]                                SCROLL ==> CSR
          5 DATA REFS: 1 DEF, 2 USES, 2 MODS FOUND FOR REGION-SALES
          -----
000347   01 PARMINFO                               >  .00003
          ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
----- 109 LINES NOT DISPLAYED
000110           10 REGION-SALES          PIC 9(6)V99.          DEF
----- 310 LINES NOT DISPLAYED
000421           ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION) MOD
----- 157 LINES NOT DISPLAYED
000579           MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES. USE
000580           MOVE REGION-SALES (REGION-SUB) TO CALC-SALES. USE
----- 85 LINES NOT DISPLAYED
000666           MOVE 0 TO REGION-SALES (REGION-SUB). MOD
----- 26 LINES NOT DISPLAYED
***** BOTTOM OF MODULE *****

```

Figure 8: Reset Excluded Lines

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                SCROLL ==> CSR
PROGRAM: CWXTCOB      MODULE: CWXTCOB      COMP DATE: 02/25/99  COMP TIME: 09:47:36
          -----
000347   01 PARMINFO                               >  .00003
          ** END **

----- Before CWXTCOB <>
000420           IF WA-SALES-AMOUNT > 0
000421             ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION) MOD
000422             MOVE WA-SALES-AMOUNT TO CALC-SALES
000423             MOVE 0 TO CALC-COMMISSION
000424             MOVE 'S' TO EMP-TYPE
000425             CALL 'CWXTSUBC' USING EMP-TYPE,
000426                 CALC-SALES,
000427                 CALC-COMMISSION
000428           ELSE
000429             MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430           COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431                 CALC-COMMISSION.
000432           ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433           CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434                 YRS-OF-SERVICE

```

Figure 9: Result of Resetting Excluded Lines

ALIAS Find references to the data name and any other field referencing the same storage location. This includes group levels, elementary items, redefinitions and 88 levels.

Keyword: ALIAS, ALI

6. Find REGION-SALES, all of its aliases, and exclude all other statements.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f region-sales alias x                                SCROLL ==> CSR
PROGRAM: CWXTCOB      MODULE: CWXTCOB      COMP DATE: 02/25/99  COMP TIME: 09:47:36
-----+-----
000347  01 PARMINFO                                     >  ..00003
      ** END **

----- Before CWXTCOB <>
000420          IF WA-SALES-AMOUNT > 0
000421          ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)      MOD
000422          MOVE WA-SALES-AMOUNT TO CALC-SALES
000423          MOVE 0 TO CALC-COMMISSION
000424          MOVE 'S' TO EMP-TYPE
000425          CALL 'CWXTSUBC' USING EMP-TYPE,
000426                                     CALC-SALES,
000427                                     CALC-COMMISSION
000428          ELSE
000429          MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430          COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431                                     CALC-COMMISSION.
000432          ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
    
```

Figure 10: FIND Alias Exclude

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                                    SCROLL ==> CSR
      7 DATA REFS: 3 DEFS, 2 USES, 2 MODS FOUND FOR REGION-SALES
-----+-----
000347  01 PARMINFO                                     >  ..00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
- - - - - 104 LINES NOT DISPLAYED
000105  01 REGION-SALES-TABLE.                                DEF
000106  05 REGION-DATA          OCCURS 4 TIMES.              DEF
- - - - - 3 LINES NOT DISPLAYED
000110  10 REGION-SALES          PIC 9(6)V99.                DEF
- - - - - 310 LINES NOT DISPLAYED
000421  ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION) MOD
- - - - - 157 LINES NOT DISPLAYED
000579  MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.    USE
000580  MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.       USE
- - - - - 85 LINES NOT DISPLAYED
000666  MOVE 0 TO REGION-SALES (REGION-SUB).                MOD
- - - - - 26 LINES NOT DISPLAYED
***** BOTTOM OF MODULE *****
    
```

Figure 11: Results of FIND Alias Exclude

7. Reset excluded lines.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===> [PF3]                                SCROLL ===> CSR
          7 DATA REFS: 3 DEFS, 2 USES, 2 MODS FOUND FOR REGION-SALES
          -----
000347   01 PARMINFO                                >  .00003
          ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
----- 104 LINES NOT DISPLAYED
000105   01 REGION-SALES-TABLE.                      DEF
000106   05 REGION-DATA                              OCCURS 4 TIMES.    DEF
----- 3 LINES NOT DISPLAYED
000110   10 REGION-SALES                             PIC 9(6)V99.            DEF
----- 310 LINES NOT DISPLAYED
000421   ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION) MOD
----- 157 LINES NOT DISPLAYED
000579   MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.    USE
000580   MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.      USE
----- 85 LINES NOT DISPLAYED
000666   MOVE 0 TO REGION-SALES (REGION-SUB).              MOD
----- 26 LINES NOT DISPLAYED
***** BOTTOM OF MODULE *****

```

Figure 12: Reset Excluded Lines

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===>                                SCROLL ===> CSR
PROGRAM: CWXTCOB    MODULE: CWXTCOB    COMP DATE: 02/25/99    COMP TIME: 09:47:36
          -----
000347   01 PARMINFO                                >  .00003
          ** END **

----- Before CWXTCOB <>
000420   IF WA-SALES-AMOUNT > 0
000421     ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION) MOD
000422     MOVE WA-SALES-AMOUNT TO CALC-SALES
000423     MOVE 0 TO CALC-COMMISSION
000424     MOVE 'S' TO EMP-TYPE
000425     CALL 'CWXTSUBC' USING EMP-TYPE,
000426                                     CALC-SALES,
000427                                     CALC-COMMISSION
000428   ELSE
000429     MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430   COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431                                     CALC-COMMISSION.
000432   ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433   CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434                                     YRS-OF-SERVICE

```

Figure 13: Results of Resetting Excluded Lines

INDIRECT Find all statements in the program that directly or indirectly affect the data name.

Keywords: INDIRECT, IND

8. Find REGION-SALES and all indirect references, exclude other statements, and suppress dashed separator lines.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f region-sales ind x nol                SCROLL ==> CSR
PROGRAM: CWXTCOB   MODULE: CWXTCOB   COMP DATE: 02/25/99   COMP TIME: 09:47:36
-----+-----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <>
000420          IF WA-SALES-AMOUNT > 0
000421          ADD  WA-SALES-AMOUNT  TO REGION-SALES (WA-EMP-REGION)      MOD
000422          MOVE WA-SALES-AMOUNT  TO CALC-SALES
000423          MOVE 0 TO CALC-COMMISSION
000424          MOVE 'S' TO EMP-TYPE
000425          CALL 'CWXTSUBC' USING EMP-TYPE,
000426          CALC-SALES,
000427          CALC-COMMISSION
000428          ELSE
000429          MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430          COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431          CALC-COMMISSION.
000432          ADD  EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433          CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434          YRS-OF-SERVICE
    
```

Figure 14: FIND Indirect Exclude No Lines

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>
      5 DATA REFS: 1 DEF, 2 USES, 2 MODS FOUND FOR REGION-SALES
      SCROLL ==> CSR
-----+-----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000110          10 REGION-SALES                      PIC 9(6)V99.          DEF
000421          ADD  WA-SALES-AMOUNT  TO REGION-SALES (WA-EMP-REGION)      MOD
000579          MOVE REGION-SALES      (REGION-SUB) TO REG-DTL-SALES.      USE
000580          MOVE REGION-SALES      (REGION-SUB) TO CALC-SALES.          USE
000666          MOVE 0 TO REGION-SALES      (REGION-SUB).                  MOD
***** BOTTOM OF MODULE *****
    
```

Figure 15: Results of FIND Indirect Exclude No Lines

9. Find indirect references to REGION-SALES.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f ind                                SCROLL ==> CSR
      5 DATA REFS: 1 DEF, 2 USES, 2 MODS FOUND FOR REGION-SALES
      -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000110      10 REGION-SALES      PIC 9(6)V99.      DEF
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)  MOD
000579      MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.      USE
000580      MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.      USE
000666      MOVE 0 TO REGION-SALES (REGION-SUB).      MOD
***** BOTTOM OF MODULE *****
    
```

Figure 16: PF17 (Same as FIND Indirect)

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                     SCROLL ==> CSR
      11 DATA REFS: 3 DEFS, 3 USES, 5 MODS FOUND FOR REGION-SALES
      -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000110      10 REGION-SALES      PIC 9(6)V99.
000118      05 CALC-SALES      PIC 9(6)V99      VALUE 0.      DEF
000175      10 WA-SALES-AMOUNT PIC 9(5)V99.      DEF
000298      05 REG-DTL-SALES  PIC ZZZZZ9.99.      DEF
000420      IF WA-SALES-AMOUNT > 0      USE
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)  USE
000422      MOVE WA-SALES-AMOUNT TO CALC-SALES      1 USE, 1 MOD
000426      CALC-SALES ,      MOD
000579      MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES .      MOD
000580      MOVE REGION-SALES (REGION-SUB) TO CALC-SALES .      MOD
000584      CALC-SALES ,      MOD
000666      MOVE 0 TO REGION-SALES (REGION-SUB).
***** BOTTOM OF MODULE *****
    
```

Figure 17: Results of FIND Indirect

10. Find next level of indirect references to REGION-SALES.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f ind                                SCROLL ==> CSR
      11 DATA REFS: 3 DEFS, 3 USES, 5 MODS FOUND FOR REGION-SALES
      -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000110      10 REGION-SALES      PIC 9(6)V99.
000118      05 CALC-SALES        PIC 9(6)V99      VALUE 0.      DEF
000175      10 WA-SALES-AMOUNT   PIC 9(5)V99.      DEF
000298      05 REG-DTL-SALES     PIC ZZZZZ9.99.    DEF
000420      IF WA-SALES-AMOUNT > 0      USE
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)  USE
000422      MOVE WA-SALES-AMOUNT TO CALC-SALES      1 USE, 1 MOD
000426      CALC-SALES,      MOD
000579      MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.    MOD
000580      MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.      MOD
000584      CALC-SALES,      MOD
000666      MOVE 0 TO REGION-SALES (REGION-SUB).
***** BOTTOM OF MODULE *****
    
```

Figure 18: PF17 (Same as FIND Indirect)

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                SCROLL ==> CSR
                                END OF INDIRECT SEARCH
      -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000110      10 REGION-SALES      PIC 9(6)V99.
000118      05 CALC-SALES        PIC 9(6)V99      VALUE 0.      DEF
000175      10 WA-SALES-AMOUNT   PIC 9(5)V99.      DEF
000298      05 REG-DTL-SALES     PIC ZZZZZ9.99.    DEF
000420      IF WA-SALES-AMOUNT > 0      USE
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)  USE
000422      MOVE WA-SALES-AMOUNT TO CALC-SALES      1 USE, 1 MOD
000426      CALC-SALES,      MOD
000579      MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.    MOD
000580      MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.      MOD
000584      CALC-SALES,      MOD
000666      MOVE 0 TO REGION-SALES (REGION-SUB).
***** BOTTOM OF MODULE *****
    
```

Figure 19: Results of FIND Indirect

11. Reset excluded lines.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===> [PF3]                                SCROLL ===> CSR
                END OF INDIRECT SEARCH
                -----+-----
000347  01 PARMINFO                                >  .00003
      ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000110      10 REGION-SALES      PIC 9(6)V99.
000118      05 CALC-SALES        PIC 9(6)V99      VALUE 0.      DEF
000175      10 WA-SALES-AMOUNT   PIC 9(5)V99.      DEF
000298      05 REG-DTL-SALES     PIC ZZZZZ9.99.    DEF
000420      IF WA-SALES-AMOUNT > 0                      USE
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)  USE
000422      MOVE WA-SALES-AMOUNT TO CALC-SALES      1 USE, 1 MOD
000426      CALC-SALES,                                  MOD
000579      MOVE REGION-SALES (REGION-SUB) TO REG-DTL-SALES.    MOD
000580      MOVE REGION-SALES (REGION-SUB) TO CALC-SALES.        MOD
000584      CALC-SALES,                                  MOD
000666      MOVE 0 TO REGION-SALES (REGION-SUB).
***** BOTTOM OF MODULE *****
    
```

Figure 20: Reset Excluded Lines

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===>                                SCROLL ===> CSR
PROGRAM: CWXTCOB      MODULE: CWXTCOB      COMP DATE: 02/25/99  COMP TIME: 09:47:36
                -----+-----
000347  01 PARMINFO                                >  .00003
      ** END **

----- Before CWXTCOB <>
000420      IF WA-SALES-AMOUNT > 0                      USE
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)  USE
000422      MOVE WA-SALES-AMOUNT TO CALC-SALES      1 USE, 1 MOD
000423      MOVE 0 TO CALC-COMMISSION
000424      MOVE 'S' TO EMP-TYPE
000425      CALL 'CWXTSUBC' USING EMP-TYPE,
000426      CALC-SALES,                                  MOD
000427      CALC-COMMISSION
000428      ELSE
000429      MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430      COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431      CALC-COMMISSION.
000432      ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433      CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434      YRS-OF-SERVICE
    
```

Figure 21: Result of Resetting Excluded Lines

MODIFY Identify where the data name has been changed or could be changed.

Keywords: MODIFY, MOD

12. Find all statements where REGION-SALES is modified, excluding all other statements.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f region-sales mod x                SCROLL ==> CSR
PROGRAM: CWXTCOB    MODULE: CWXTCOB    COMP DATE: 02/25/99    COMP TIME: 09:47:36
                                -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <> -----
000420          IF WA-SALES-AMOUNT > 0                                USE
000421          ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)    USE
000422          MOVE WA-SALES-AMOUNT TO CALC-SALES                      1 USE, 1 MOD
000423          MOVE 0 TO CALC-COMMISSION
000424          MOVE 'S' TO EMP-TYPE
000425          CALL 'CWXTSUBC' USING EMP-TYPE,
000426                                     CALC-SALES,                      MOD
000427                                     CALC-COMMISSION
000428          ELSE
000429          MOVE 'UH-OH' TO REGION-COMMENT (WA-EMP-REGION).
000430          COMPUTE EMP-COMPENSATION = WA-SALES-SALARY +
000431                                     CALC-COMMISSION.
000432          ADD EMP-COMPENSATION TO GRAND-TOTAL-EMP.
000433          CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434                                     YRS-OF-SERVICE
    
```

Figure 22: FIND Modify

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>
                                2 DATA MODS FOUND FOR REGION-SALES
                                -----
000347  01 PARMINFO                                >  ..00003
      ** END **

----- Before CWXTCOB <> -----
***** TOP OF MODULE *****
000421          ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)    MOD
000666          MOVE 0 TO REGION-SALES (REGION-SUB).                    MOD
***** BOTTOM OF MODULE *****
    
```

Figure 23: Results of FIND Modify

13. Find all paragraph names.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f para                                SCROLL ==> CSR
                2 DATA MODS FOUND FOR REGION-SALES
                -----
000347  01 PARMINFO                                >  ..00003
        ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000420      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)      MOD
000666      MOVE 0 TO REGION-SALES (REGION-SUB).                      MOD
***** BOTTOM OF MODULE *****
    
```

Figure 24: FIND Paragraphs

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                SCROLL ==> CSR
                20 PARAGRAPHS FOUND
                -----
000347  01 PARMINFO                                >  ..00003
        ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000351  0000-MAINLINE.
000374  1000-PROCESS-DATA.
000395  2000-PROCESS-HOURLY.
000419  3000-PROCESS-SALES.
000421      ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)
000444  4000-PROCESS-MANAGEMENT.
000453  5000-STORE-EMPLOYEE-DETAIL.
000479  5100-SET-INDEX.
000504  6000-PRINT-EMPLOYEE-REPORT.
000527  6100-PRINT-EMPLOYEE-DETAIL.
000550  6200-PRINT-EMPLOYEE-HEADERS.
000572  7000-PRINT-REGION-REPORT.
000601  7100-PRINT-REGION-HEADERS.
000620  8000-READ-INPUT.
    
```

Figure 25: Results of FIND Paragraphs

14. Reset the excluded lines.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===> [PF3]                                SCROLL ===> CSR
                20 PARAGRAPHS FOUND
                -----
000347  01 PARMINFO                                >  .00003
        ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000351  0000-MAINLINE.
000374  1000-PROCESS-DATA.
000395  2000-PROCESS-HOURLY.
000419  3000-PROCESS-SALES.
000421          ADD WA-SALES-AMOUNT TO REGION-SALES (WA-EMP-REGION)
000444  4000-PROCESS-MANAGEMENT.
000453  5000-STORE-EMPLOYEE-DETAIL.
000479  5100-SET-INDEX.
000504  6000-PRINT-EMPLOYEE-REPORT.
000527  6100-PRINT-EMPLOYEE-DETAIL.
000550  6200-PRINT-EMPLOYEE-HEADERS.
000572  7000-PRINT-REGION-REPORT.
000601  7100-PRINT-REGION-HEADERS.
000620  8000-READ-INPUT.
    
```

Figure 26: Reset Excluded Lines

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ===>                                SCROLL ===> CSR
PROGRAM: CWXTCOB  MODULE: CWXTCOB  COMP DATE: 02/25/99  COMP TIME: 09:47:36
                -----
000347  01 PARMINFO                                >  .00003
        ** END **

----- Before CWXTCOB <>
=====> B  PROCEDURE DIVISION USING PARMINFO.
000351  0000-MAINLINE.
000352          PERFORM 9000-OPEN.
000353          PERFORM 9100-CHECK-PARM.
000354          IF GOOD-PARM
000355              PERFORM 9200-INIT
000356              PERFORM 8000-READ-INPUT
000357                  UNTIL RECORDS-READ = START-NUMBER
000358                  OR END-OF-FILE
000359              PERFORM 1000-PROCESS-DATA
000360                  UNTIL END-OF-FILE
000361              PERFORM 6000-PRINT-EMPLOYEE-REPORT
000362              MOVE 1 TO REGION-SUB
000363              IF END-OF-MONTH
000364              PERFORM 7000-PRINT-REGION-REPORT
    
```

Figure 27: Results of Resetting Excluded Lines

15. Find all call statements.

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==> f call x                                SCROLL ==> CSR
PROGRAM: CWXTCOB   MODULE: CWXTCOB   COMP DATE: 02/25/99  COMP TIME: 09:47:36
-----+-----
000347   01 PARMINFO                                >   ..00003
        ** END **

----- Before CWXTCOB <>
====> B  PROCEDURE DIVISION USING PARMINFO.
000351   0000-MAINLINE.
000352       PERFORM 9000-OPEN.
000353       PERFORM 9100-CHECK-PARM.
000354       IF GOOD-PARM
000355           PERFORM 9200-INIT
000356           PERFORM 8000-READ-INPUT
000357               UNTIL RECORDS-READ = START-NUMBER
000358               OR END-OF-FILE
000359       PERFORM 1000-PROCESS-DATA
000360           UNTIL END-OF-FILE
000361       PERFORM 6000-PRINT-EMPLOYEE-REPORT
000362       MOVE 1 TO REGION-SUB
000363       IF END-OF-MONTH
000364       PERFORM 7000-PRINT-REGION-REPORT
    
```

Figure 28: FIND Call Command

```

----- XPEDITER/TSO - SOURCE -----
COMMAND ==>                                SCROLL ==> CSR
                                5 CALLS FOUND
-----+-----
000347   01 PARMINFO                                >   ..00003
        ** END **

----- Before CWXTCOB <>
***** TOP OF MODULE *****
000405       CALL 'CWXTDATE' USING END-OF-MONTH-SW
000406           YRS-OF-SERVICE
000407           TODAYS-DATE
000408           WA-EMP-HIRE-DATE.
000425       CALL 'CWXTSUBC' USING EMP-TYPE,
000426           CALC-SALES,
000427           CALC-COMMISSION
000433       CALL 'CWXTDATE' USING END-OF-MONTH-SW
000434           YRS-OF-SERVICE
000435           TODAYS-DATE
000436           WA-EMP-HIRE-DATE.
000583       CALL 'CWXTSUBC' USING EMP-TYPE,
000584           CALC-SALES,
000585           CALC-COMMISSION.
    
```

Figure 29: Results of FIND Call Command