

Recent Functional Enhancements The Control Editor (TCE) Release 18



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Rev: 2023-9-30

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2 Overview

The purpose of this document is to describe certain 'Mid Release' functional enhancements to The Integrity Controls Environment, specifically The Control Editor. They include:

- Control Options that ensure the integrity of the NSECTLxx Parmlib Member and the Boundaries established by the Control Categories contained therein.
- An Interval Monitor Application that provides Notice/Alert of Changes and/or Errors in the Active TCE Category Control List. Where Errors could include: Uncataloged entries, Duplicate entries and/or the Misclassification of a Dataset/Library within Category Type - EDIT/LOAD.
- The addition of Load Libraries and the Modules they contain as a valid, supported TCE Control Boundary Type.
- Support for defining and controlling the use of TSO/ISPF options 3.4/3.2 for Renaming, Deleting and/or Uncataloging Datasets and Libraries defined within a Control Category.
- Extension of the TCE Edit Control structures to include - Renaming, Deleting, Copying - of Modules in Controlled Categories composed of Load Libraries. Including Padlock Control and Controlled Event Notification support.
- Additions to the TCE Auto Change Detection Function such that change in Modules within defined TCE Managed Load Libraries are detected and recorded in the TCE Control Journal.
- An Application Programming Interface (API) that allows for the dynamic configuring and subsequent presentation of the Member/Module TSO/ISPF Display - Panel Header.
- Several new/updated Application Panels, Reports, Worksheets and Help Panels designed to support the functions described herein.
- Extended TSO/ISPF Stats are now supported as are 8 character Job/UserIds.

3 New/Enhanced Category Definition Syntax

In this release of The Control Editor, Category Definition Syntax has been enhanced to provide better control over the scope of a Controlled Category Boundary.

- The required TYPE Keyword allows for the definition of Control Category Boundaries that exclusively contain Formatted Datasets (EDIT) or Unformatted Libraries (LOAD). Mixed Categories are not supported.
- The optional CNTL Keyword allows for the definition of specific Control over either (EDIT) or (LOAD) TYPE Categories to prevent Delete, Rename or Uncatalog actions against a Dataset or Library defined with a Category Control Boundary.
- The optional CHNG Keyword can be used to turn OFF the TCE legacy process, Auto Change Detection for Categories defined as TYPE(EDIT).

3.1 Category Type

In the SYNTAX example shown below, the Category TYPE is defined as (EDIT) to indicate that the Category Control Boundary will include only Partitioned or Sequential Datasets with Define Dataset Formats. If unspecified, a system error will be reported upon initialization or dynamic activation of the TCE Primary Task.

```
CATEGORY GHB.PARMLIB TYPE(EDIT) CNTL(ON) CHNG(ON)
```

Use TYPE(LOAD) when the Category Boundary is to include Partitioned Libraries that contain LOAD MODULES.

This Keyword(Value) pair must be specified for each Controlled Category, however it is not used/not valid in defining UNIX Categories.

3.2 Category Access Control

In the SYNTAX example shown below, the Category Control Option CNTL is shown as (ON). If unspecified, this value, by default is set to (OFF).

```
CATEGORY GHB.PARMLIB TYPE(EDIT) CNTL(ON) CHNG(ON)
```

This control setting is applied to Datasets or Libraries within a Category and will prevent them from being Renamed, Deleted or Uncataloged when the attempt is made via TSO/ISPF 3.4. If the attempt is made via TSO/ISPF 3.2, a warning is displayed stating that the action will alter the scope of a Category Control Boundary.

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When such events are detected, they are recorded along with available descriptive text in the TCE Control Journal as shown below.

3.2.1 Journal Event Selection - Legacy View

```
TCE 18.0 Administration: Journal Entry Selecti Row 25 to 39 of 311

Line Commands: S - Select (View the contents of the Entry)
                R - Restore

LINE --- Category --- -- Entry -- ----- Stored -----
CMD      TYPE  NAME  USERID  DATE    TIME    RESULT
..      PAUL.PLAYLOAD  AE  -REN3.4-  PHARL3  07/19/2021 09:32:55  SUCCESS
```

3.2.2 Journal Event Selection - Extended View

```
TCE 18.0 - Journalized Event Selection      Row 25 to 38 of 311
NSIMJLY:0428                                -Journal Entries-
----- 311 Journal Entries in DSN:IFO.TEST.JOURNAL.D2016200.T1645026 -----
Selection Options: Show Journal Event Detail Restore a Selected Member
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Line ----Category---- -----Event Identification----- --Date and Time-- Post
-
S Numb -----Name----- JF Flag1 Flag2 -JrlMbr- EventIds yy/mm/dd hh:mm:ss Rslt
_ 0026 PAUL.PLAYLOAD      AE ATMP T PLOCK -REN3.4-  PHARL3 21/07/20 09:32:55 PASS
```

3.2.3 Control Journal Entry - An Example:

Both Legacy and Extended View provide access to the same Control Journal Entry.

```

[1]
[SEP]
01C|-SRC: -REN3.4-----THE CONTROL EDITOR----- CNTLdeny(R) -
02C|SYSPLX:LOCAL  SYSNM:CPAC  USRID:ESSJDL1  TM:10:22:01 DT:05/13/21[1]
03C|-DSN: ESSJDL1.TEST.LOAD2-----VOL: ESPRO
04P| [1]
[SEP]
05P| Change request # : 4455 Implementor: JIM [1]
[SEP]
06P| Project # : 6677 [1]
[SEP]
07P| Implementation date: 2021/06/04 Authority: JL [1]08P| (yyyy/mm/dd) [1]
[SEP]
09P|
```

Depending on the Method of access, 3.4 or 3.2, and the Action taken, delete, rename or uncatalog, the Journal Entry header text will dynamically change as described below:

3.2.4 3.4 Denial - Journal Entry Heading Text

```
CNTLdeny(D) - an ISPF 3.4 dataset delete event when CATEGORY CNTL(ON) specified
CNTLdeny(R) - an ISPF 3.4 dataset rename event when CATEGORY CNTL(ON) specified
CNTLdeny(U) - an ISPF 3.4 dataset uncatalog event when CATEGORY CNTL(ON) specified
```

3.2.5 3.2 Warning - Journal Entry Heading Text

```
CNTLwarn(D) - an ISPF 3.2 dataset delete event when CATEGORY CNTL(ON) specified
CNTLwarn(R) - an ISPF 3.2 dataset rename event when CATEGORY CNTL(ON) specified
CNTLwarn(U) - an ISPF 3.2 dataset uncatalog event when CATEGORY CNTL(ON) specified
```

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3.2.6 Steps Necessary to Implement 3.4/3.2 Event Intercept

Use of the 3.4/3.2 Event Intercept requires that the ISPF configuration settings be updated to include the following:

```
DATA_SET_LIST_LINE_COMMAND_PROGRAM_EXIT      = NSWDLCX
ACTIVITY_MONITORING_PROGRAM_EXIT              = NSWDUSX
MEMBER_LIST_LINE_COMMAND_COMMAND_EXIT        = NSIMLSTD
SITE_WIDE_INITIAL_MACRO                       = NSIMLSTM
```

A description of the steps necessary to set up the setting can be found in a later chapter titled - Conforming TSO/ISPF - Support for the 3.4/3.2 Event Intercept.

3.3 Auto Detect Changes

In the SYNTAX example shown below, the Detected Change Option CHNG is shown as (ON). If unspecified, this value, by default, is set to (ON).

```
CATEGORY GHB.PARMLIB  TYPE(EDIT) CNTL(ON) CHNG(ON)
```

This control setting applies to Categories of the (EDIT) TYPE only. Detecting changes in (LOAD) TYPE Categories is an optional process discussed later in this document.

Discovering unrecorded changes in (EDIT) TYPE Categories is a legacy process that can now be turned ON/OFF.

4 TCE Configuration Dialogs

In order to support these enhancements, the TCE Configuration Dialogs have been updated.

First, the Dataset and UNIX File boundary definition selections options have been brought forward and now appear on the Boundary Selection Panel.

Second, as a result of new support for LOAD Libraries, the Library option has been added and now appears on the Boundary Selection Panel.

The updated panel appears below:

```

TCE 18.0 - Control Boundary Selection

D  Datasets .. - Dataset Categories - .. Padlock On    Userid   - PROB11
                                           Time     - 15:42
L  LoadLibs .. - LoadLib Categories - .. Padlock On   Sysplex  - ADCDPL
                                           System   - ADCD113
U  USSFiles .. - USSFile Categories - .. Padlock On   ApplId   - TEST
                                           ICE 18.0 - TCE 18.0
C  Commands .. - Command Categories - .. Padlock On   Patch Level GA
M  Messages .. - Message Categories - .. Padlock On

+-----Global Settings-----+
| .. Padlock Control Modes .. Warn |
| .. External Notification .. Send |
| .. SysMonitor Intercepts .. On  |
| .. Command Event Logging .. On  |
+-----+

X  Exit - Return to the TCE Primary Menu

```

Selecting either Dataset, LoadLibs or USSFiles will display the related Category Selection Panel. The Load Library panel is shown below as an example:

```

Vers(2)          TCE 18.0 - Category Selection - LOAD Libraries .. Overview
-----TCE Parameter Settings-----  ---CTLxx---  -----Last Update-----
L  ADCD113 INFO.TEST.PARMLIB          SA 00 Yes    5    PROB11 21/07/15 04:53
P --LPAR--  ---ParmDsn Qualifier---  Sf Sf Act Ctls -UserId- yy/mm/dd hh:mm

----- Controlled LoadLib Categories -----
Cm ---Category--- Lib Cm ---Category--- Lib Cm ---Category--- Lib
..  GHB.LOADMN       2 ..
..  PATS.PLAYLOAD   2 ..
..  PAUL.PLAYLOAD   1 ..
..
..
..
..
..
..
..
..
..
..
..
..
..

.. LoadLib .. Prompts .. PadLock .. EmlNote .. On-View .. DesCript

```

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Note that LoadLib is highlighted. Selecting any of the defined Categories in this mode will display the Controlled Library Selection Panel. In this example GHB.LOADMN was selected.

This panel is used to define the names of the LOAD Libraries that will be included with the scope of the Controlled Category, Padlock Controls, Notification Settings and information display of modules within a Library.

```
TCE 18.0 - Controlled Library Selection          Row 1 to 2 of 2
--NSIMCLX 0704--                               -Library Control-
----- 2 Control Libraries in Category:GHB.LOADMN -----
Category Rules: AutoDetect Cng On Prevent Del/Ren/UCat On Permits UserIds 002
Row Selections: Add_New Delete Update Shows_Padlock Journal Notices Module_List
--- Select Sub-Head to Sort, Query above Sub-Head, Enter Saves a Row Update ---
- Row -----Counts----- -----Control Boundaries-----
S Num Pad Jrl Not Mods -----Controlled Libraries----- Volume -System-
_ 001 000 000 000 0368 IFO.GHB.LOAD -----
_ 002 000 000 000 0372 IFO.PAT.LOAD -----
***** Bottom of data *****
```

The enhancements CNTL(ON/OFF) and CHNG(ON/OFF) are shown at the top of the panel, in this example highlighted in yellow.

- If no changes to the default settings have been made, 'AutoDetect Cng' will be set to 'On'. To turn it to 'Off' place the cursor under the 'On' and press enter. This action will turn the option 'Off'.
- If no changes to the default settings have been made, 'Prevent Del/Ren/UCat' will be set to 'Off'. To turn it to 'On' place the cursor under the 'Off' and press enter. This action will turn the option 'On'.

Any changes made using this panel are automatically saved upon exit by updating the currently active NSECTLxx ICE Parmlib Member.

4.1 Permit/Exclude UserIds

The use of the optional CNTL(ON) control is on. It applies globally to all UserIds but may be qualified by UserId such that, when the control is in effect, users may be exempted from the control and therefore PERMITTED to (from 3.4) Delete, Rename or Uncatalog a controlled Library or (from 3.2) receive a WARNING, when such action is attempted.

On the other hand when the option CNTL(OFF) control is off, it applies globally to all UserIds but may be qualified by UserId such that, when the control is in effect, users may be EXCLUDED by the control and therefore prevented (from 3.4) Delete, Rename or Uncatalog a controlled Library or (from 3.2) receive a WARNING, when such action is attempted.

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Note that the panel wording shown for this option changes dynamically, as does the supporting UserId worksheet, depending on the setting of the CNTL Keyword.

Examples of the UserId 'Permit/Exclude' Worksheet are shown below:

4.1.1 When CNTL(ON) is set User may be Permitted access

```
TCE 18.0 - Permit LOAD Category - GHB.LOADMON

-----TCE Controlled Target----- ---SELxx--- -----Last Update-----
L ADCD113 INFO.TEST.PARMLIB          SA 00 Yes 1 PROBI1 21/07/18 15:36
P --LPAR-- ---ParmDsn Qualifier--- Sf Sf Act Ctls -UserId- yy/mm/dd hh:mm

----- UserIds Denied Del/Ren/UCat of Libraries in Category -----
Cm -UserId- Cm -UserId- Cm -UserId- Cm -UserId- Cm -UserId- Cm -UserId-
.. PATONE_ .. _____ .. _____ .. _____ .. _____ .. _____
.. _____ .. _____ .. _____ .. _____ .. _____ .. _____
.. _____ .. _____ .. _____ .. _____ .. _____ .. _____
.. _____ .. _____ .. _____ .. _____ .. _____ .. _____
```

4.1.2 When CNTL(OFF) is set Users may be Excluded/Denied Access

```
TCE 18.0 - Exclude LOAD Category - GHB.LOADMON

-----TCE Controlled Target----- ---SELxx--- -----Last Update-----
L ADCD113 INFO.TEST.PARMLIB          SA 00 Yes 2 PROBI1 21/07/18 15:36
P --LPAR-- ---ParmDsn Qualifier--- Sf Sf Act Ctls -UserId- yy/mm/dd hh:mm

----- UserIds Permitted to Del/Ren/UCat Libraries in Category -----
Cm -UserId- Cm -UserId- Cm -UserId- Cm -UserId- Cm -UserId- Cm -UserId-
.. PATTWO_ .. PATCAKE_ .. _____ .. _____ .. _____ .. _____
.. _____ .. _____ .. _____ .. _____ .. _____ .. _____
.. _____ .. _____ .. _____ .. _____ .. _____ .. _____
.. _____ .. _____ .. _____ .. _____ .. _____ .. _____
```

5 Category Overview Worksheet

The addition of the new Controls Options - CNTL and CHNG and the requirement to define specific Boundary Types - EDIT(ED), LOAD(LD) and UNIX(EF) is supported by 'Overview' option shown to the top right of the Category Selection Panel. The contents of this worksheet have been described above except for the indicator shown in the 'P' prompt column.

```

      ICE 18.0 - All Category Overview Worksheet      Row 1 to 14 of 15
NSIMLDX:0426                                         Category Controls
----- 15 TCE Category Control Records -----
Row Selections: Show_Category_Settings_Interface
To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help
- Row ---Controlled--- TY -----Category Includes----- ---Setting---

S  --#- ---Categories--- PE -----DSN/LIB/USS----- Volume Ctl Det IEx P
- 001 PATS.DIR5          EF /u/pat/tes1.txt          -File- ON  ON  CTL -
- 002 SYSTEM.PARMLIB    ED USER.PARMLIB          ZDSYS1 OFF ON  ''  Y
- 003 ''                '' ADCD.Z113.PARMLIB        ZDRES1 OFF ON  ''  Y
- 004 ''                '' SYS1.PARMLIB          ZDRES1 OFF ON  ''  Y
- 005 ''                '' PHARL2.PARMLIB        LVWRKB OFF ON  ''  Y
- 006 PAT.TEST1         '' PHARL2.PARMLIB        LVWRKB OFF ON  000 -
- 007 ''                '' PROBI1.TESTDSN        LVWRKB OFF ON  ''  -
- 008 GHB.PARMLIB       '' GBAGS1.PARMLIB        ZDSYS1 ON  ON  000 -
- 009 ''                '' GBAGS1.PARMLIB2        ZDSYS1 ON  ON  ''  -
- 010 NSEPARM.CONTROL   '' IFO.TEST.PARMLIB     LVWRKD ON  ON  000 -
- 011 GHB.LOADMON       LD IFO.PAT.LOAD          LVWRKA ON  ON  002 -
- 012 ''                '' IFO.GHB.LOAD          LVWRKA ON  ON  ''  -
- 013 PATS.PLAYLOAD     '' IFO.DEVL.LOAD        LVWRKD ON  OFF 000 Y
- 014 ''                '' IFO.PAT.LOAD          LVWRKA ON  OFF ''  Y
    
```

5.1 Category Prompting

Category Prompting is a legacy feature of TCE set up as a secondary control over access to Datasets, and now libraries, that fall within a Control Category Boundary. When this control feature is used, users are prompted to provide a 'Pass Token' in order to gain access to members, modules or sequential content. The token can be unique to each Control Boundary and may be changed as frequently as needed.

In the report shown above, the 'Y' appears in the prompt column. It means that prompting for the Dataset or Libraries within the Category is in effect.

6 Monitoring Controlled Category List

The Control Journal Review Options Panel has been updated with new functions that allow access to a new set of Category Change Monitors. One for EDIT type Categories and the other for LOAD type Categories. The Updated panel is shown below.

```
TCE 18.0 - Control Journal Review Options

J  ListJrnl  .. - List all Available Control Journals      Userid   - PROBI1
C  ShowCats  .. - Show only Active Control Categories     Time     - 10:28
V  ViewJrnl  .. - View Recorded TCE Controlled Events    Sysplex  - ADCDPL
                                     System    - ADCD113
D  EditCngs  .. - Detects & Records Unrecorded 'EDIT'    ApplId   - TEST
M  LoadCngs  .. - Detects & Records Unrecorded 'LOAD'    ICE 18.0 - TCE 18.0
C  ClseOpen  .. - Force 'Close' Open Journal Dataset     Patch Level GA
```

6.1 Monitoring for Control List Changes and/or Errors

Each monitors for changes and errors in the Category Control List, without regard for Category Type (EDIT, LOAD, UNIX). When changes or errors are detected each is noted in the TCE Control Journal, accessed as shown below, and an optional Email Notification, as shown on the following page, is sent.

6.1.1 Journal Event Selection - Legacy View

```
TCE 18.0 Administration: Journal Entry Selectio Row 1 to 15 of 335

Line Commands: S - Select (View the contents of the Entry)
R - Restore

LINE --- Category --- -- Entry -- ----- Stored -----
CMD      TYPE  NAME      USERID   DATE      TIME      RESULT
.. TCE.DET.LISTERR  MG  DSLSTERR  DETCNGS  07/19/2021 10:45:07 SUCCESS
.. TCE.DET.LISTCNG  MG  DSLSTCNG  DETCNGS  07/19/2021 10:45:07 SUCCESS
.. TCE.DET.LIBDEL   MG  DELETED   DETCNGS  07/19/2021 11:57:23 SUCCESS
.. TCE.DET.LIBADD   MG  DSADEDED  DETCNGS  07/19/2021 11:57:23 SUCCESS
```

6.1.2 Journal Event Selection - Extended View

```
TCE 18.0 - Journalled Event Selection          Row 1 to 14 of 335
NSIMJLY:0428                                -Journal Entries-
----- 335 Journal Entries in DSN:IFO.TEST.JOURNAL.D2021200.T1645026 -----
Selection Options: Show_Journal_Event_Detail Restore_a_Selected_Member
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Line ----Category-----Event Identification----- --Date and Time-- Post

S Numb -----Name----- JF Flag1 Flag2 -JrlMbr- EventIds yy/mm/dd hh:mm:ss Rslt
- 0002 TCE.DET.LISTERR  MG OTHER AUDIT DSLSTERR  DETCNGS 21/07/20 10:45:07 PASS
- 0003 TCE.DET.LISTCNG  MG OTHER AUDIT DSLSTCNG  DETCNGS 21/07/20 10:45:07 PASS
- 0002 TCE.DET.LIBDEL   MG OTHER AUDIT DELETED   DETCNGS 21/07/20 11:57:23 PASS
- 0003 TCE.DET.LIBADD   MG OTHER AUDIT DSADEDED  DETCNGS 21/07/20 11:57:23 PASS
```

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6.1.3 Notification Email - Control List Changes and/or Errors

```

/*****
/*          ICE/DETECTOR - Dataset/Library - Active Control List          */
/*          Report Date:07/19/2021 - Time:10:45:04 - User:START2        */
/*****

- ---Categories--- TY -----Dataset/Library----- Volume CNG CTL EXC P
- -----
- PATS.DIR5        EF /u/pat/tes1.txt                -File- ON  ON  CTLUSE
- SYSTEM.PARMLIB  ED USER.PARMLIB                    ZDSYS1 OFF ON  000 Y
-      ''         '' ADCD.Z113.PARMLIB              ZDRES1 OFF ON  '' Y
-      ''         '' SYS1.PARMLIB                   ZDRES1 OFF ON  '' Y
-      ''         '' PHARL2.PARMLIB                 LVWRKB OFF ON  '' Y
- PAT.TEST1       '' PHARL2.PARMLIB                 LVWRKB OFF ON  000 -
-      ''         '' PROBI1.TESTDSN                 LVWRKB OFF ON  '' -
- GHB.PARMLIB     '' GBAGS1.PARMLIB                 ZDSYS1 ON  ON  000 -
-      ''         '' GBAGS1.PARMLIB2                ZDSYS1 ON  ON  '' -
- NSEPARM.CONTROL '' IFO.TEST.PARMLIB               LVWRKD ON  ON  000 -
- GHB.LOADMON     LD IFO.PAT.LOAD                    LVWRKA ON  ON  002 -
-      ''         '' IFO.GHB.LOAD                   LVWRKA ON  ON  '' -
- PATS.PLAYLOAD   '' IFO.DEVL.LOAD                   LVWRKD ON  OFF  000 Y
-      ''         '' IFO.PAT.LOAD                    LVWRKA ON  OFF  '' Y
- PAUL.PLAYLOAD   '' IFO.TEST.LOAD                    LVWRKB OFF ON  000 -
-      ''         '' IFO.TEST.DEMO                   ----- OFF ON  '' -
= =====
/*****
/*          RPTDSN:IFO.TEST.$ICELDX.@ADCD113.LOADRPTS ($ACTLIST)      */
/*****
/*          ICE/DETECTOR - Dataset/Library - New/Old List Comparison   */
/*          New Baseline Date:07/19/2021 - Time:10:45:06 - User:START2  */
/*          Old Baseline Date:07/19/2021 - Time:09:36:02 - User:START2  */
/*****

TCE0000N THE ACTIVE TCE CATEGORY CONTROL LIST HAS CHANGED.

- ---Categories--- TY -----Dataset/Library----- Volume CNG CTL EXC P
- -----
A PAUL.PLAYLOAD   LD IFO.TEST.DEMO                   ----- OFF ON  000 -
= =====

LEDGEND: A=ADDED, D=DELETED, N=NEW CONTROL , O=OLD CONTROL

/*****
/*          RPTDSN:IFO.TEST.$ICELDX.@ADCD113.LOADRPTS ($LSTCHNG)     */
/*****
/*          ICE/DETECTOR - Dataset/Library - Control List Errors       */
/*          Report Date:07/19/2021 - Time:10:45:07 - User:START2      */
/*****

TCE0000E THE ACTIVE TCE CATEGORY CONTROL LIST HAS ERRORS.

- ---Categories--- TY -----Dataset/Library----- Volume CNG CTL EXC P
- -----
D PAT.TEST1       ED PHARL2.PARMLIB                 LVWRKB OFF ON  000 -
D PATS.PLAYLOAD   LD IFO.PAT.LOAD                    LVWRKA ON  OFF  000 Y
U PAUL.PLAYLOAD   LD IFO.TEST.DEMO                   ----- OFF ON  000 -
= =====

LEDGEND: D=DUPLICATE, U=UNCATALOGED, M=MISCLASSIFIED

/*****
/*          RPTDSN:IFO.TEST.$ICELDX.@ADCD113.LOADRPTS ($LSTERRS)     */
/*****

```

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Note that the Notification shown above contains the full Content of the Control Category Worksheet, previously discussed, a Change Report as well as an Errors Report.

6.2 Monitoring for Module Changes within a Controlled Library

What truly differentiates one Monitor from the other is how they detect unrecorded changes within its Boundary Type at the Member, File or Module level.

- Unrecorded member or file changes in EDIT and UNIX Type Control Boundaries are monitored by TCE on an hourly basis. Changes, discovered by comparing the journal content of the last stored member or file to the current member or file, are recorded in the TCE Control Journals and Notification set as directed.
- Unrecorded changes in LOAD Type Control Boundaries are monitored by TCE on a Date/Day/Time schedule as defined in the Monitor Settings Panel and NOT hourly as with EDIT or UNIX. Changes, discovered by comparing a separately maintained Baseline as TCE DOES NOT Journal Module Content, are recorded in the TCE Control Journals and Notification set as directed.

A sample of a module change Event is shown below

6.2.1 Journal Event Selection - Legacy View

```
TCE 18.0 Administration: Journal Entry Selectio Row 1 to 15 of 394

Line Commands: S - Select (View the contents of the Entry)
                R - Restore

LINE --- Category --- -- Entry -- ----- Stored -----
CMD          TYPE  NAME  USERID  DATE      TIME      RESULT
..   TCE.DET.MODDEL  MG  CALLDEMO  DETCNGS  07/19/2021 12:06:11  SUCCESS
..   TCE.DET.MODADD  MG  CALL     DETCNGS  07/19/2021 12:06:11  SUCCESS
```

6.2.2 Journal Event Selection - Extended View

```
TCE 18.0 - Journalled Event Selection          Row 1 to 14 of 392
NSIMJLY:0428                                -Journal Entries-
----- 392 Journal Entries in DSN:IFO.TEST.JOURNAL.D2021200.T1645026 -----
Selection Options: Show Journal Event Detail Restore a Selected Member
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Line -----Category-----Event Identification----- --Date and Time-- Post

- - - - -
S Numb -----Name----- JF Flag1 Flag2 -JrlMbr- EventIds yy/mm/dd hh:mm:ss Rslt
_ 0002 TCE.DET.MODDEL  MG OTHER AUDIT CALLDEMO  DETCNGS 21/07/20 12:06:11 PASS
_ 0003 TCE.DET.MODADD  MG OTHER AUDIT     CALL  DETCNGS 21/07/20 12:06:11 PASS
```

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6.2.3 Module Change Journal Entry -Typical

```
-SRC: DETCNGS-----THE CONTROL EDITOR----- Detector -
SYSPLX:ADCDPL  SYSNM:ADCD113  USRID:DETCNGS TIME:12:06:11 DATE:07/19/16
-DSN: IFO.TEST.$ICELDXX.@ADCD113.LOADPOST (CALLDEMO)-----VOL: LVWRKD-
|DTL: -----CHANGE DETAIL-----
MODULE DELETED FROM LIBRARY:IFO.PAT.LOAD
  State:-Module- -Alias-- --Size-- -TTRs- AC AMO RMO
  OLDMOD:CALLDEMO NSECCAL 00000898 008510 00 31 24
```

6.2.4 Module Change Notification Email -Typical

```
/*****/
/*
/*          ICE/DETECTOR - Library - Module Profile Changes          */
/*          Report Date:07/19/2021 - Time:12:06:11 - User:START2    */
/*          */
/*****/
TCE0000N MODULE WITHIN CONTROLLED LIBRARY HAS CHANGED.
|
ICE0000I MODULE ADDED TO LIBRARY:IFO.PAT.LOAD
ICE0000I State:-Module- -Alias-- --Size-- -TTRs- AC AMO RMO
ICE0000I  NEWMOD:CALL NSECCAL 00000898 008510 00 31 24
|
ICE0000I MODULE DELETED FROM LIBRARY:IFO.PAT.LOAD
ICE0000I State:-Module- -Alias-- --Size-- -TTRs- AC AMO RMO
ICE0000I  OLDMOD:CALLDEMO NSECCAL 00000898 008510 00 31 24

/*****/
/*          RPTDSN:IFO.TEST.$ICELDXX.@ADCD113.LOADRPTS ($MODCNGS)  */
/*****/
```

6.2.5 Module No Change Notification Email -Typical

```
/*****/
/*
/*          ICE/DETECTOR - Library - Module Profile Changes          */
/*          Report Date:07/19/2021 - Time:14:06:13 - User:START2    */
/*          */
/*****/
TCE0000I NO MODULE CHANGES IN ACTIVE TCE CONTROL LISTS.

/*****/
/*          RPTDSN:IFO.TEST.$ICELDXX.@ADCD113.LOADRPTS ($MODCNGS)  */
/*****/
```

6.3 Monitor Interface - Libraries and Modules

The Monitor Interface Panel is used to control the Scope and Timing of Monitor Activity and to provide a path to Monitor Reports and the Control List Worksheet.

```
ICE 18.0 - Library and/or Module Change Monitor

/. LOADMODETC Library And Module Changes .. Reports .. Update .. CtlList

<> /. NSE - Only Edit .. USR Only Edit .. BTH All View Lst .. RUN Now <>
    Report Library/Module Chngs: /. Addition /. Deletion /. StatCng

    /. Day - Set Time 12 : 06 and Interval 2_ Specify Hourly Interval
        hh : mm          Values 1|2|3|4|6|8|12
    .. Wks - Set Time ___ : ___ and Interval _____
        hh : mm          Values SUN,MON,TUE,WED,THR,FRI,SAT
    .. Mth - Set Time ___ : ___ and Interval _____
        hh : mm          Values 1,2,3,10,15,20,25,EOM

/. EMAILREPORT Subject LIBRARY/MODULE_CHANGES_____

/. 1-To PRR@NEWERA.COM_____
.. 2-To _____
.. 3-To _____
.. From _____

.. AlthLQ IFO.TEST_____ /. JrlPost Ok /. CngOnly Ok /. ErrOnly Ok
.. PROC Name TESTDTA_ .. Email Method Yes .. Email Note On_ .. Retain _10
```

As can be seen there are many optional settings available to control the monitor and access its reports. Each is described when you place the cursor under any “underlined” descriptive text and press enter. In addition, PFK1 Help is available.

6.3.1 Background Vs. Foreground Operations

The Monitor may be run in the Foreground by selecting ‘RUN’. This differs from Background/Detector operation in that a ‘User’ provided list of Datasets/Libraries may be exclusively included and/or merged with the NSECTL Control List in the Change Detection process.

6.3.2 Building a User Defined Control List

To build the User Defined Control List, position the cursor under the word ‘Edit’ following USR and press enter. If no list is present, a blank Member will be presented in TSO/ISPF Edit with the DSN(MBR) name:

```
ifo_prefix.$ICELDXX.@system_namr.LOADBASE($MODCTLX)
```

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A working member sample is shown below:

```
EDIT          IFO.TEST.$ICELDXX.@ADCD113.LOADBASE($MODCTLX) - Columns 00001 00072
***** ***** Top of Data *****
000001 CATEGORY LOAD.LIBRARY.TEST
000002 LIB IFO.TEST.LOAD
000003 LIB SYS1.LPALIB
000004 LIB SYS2.LPALIB
000005 LIB SYS3.LPALIB
000006 LIB GBAGS1.PARMLIB3
000007 CATEGORY .END
000008 CATEGORY SYSTEM.LNKLST
000009 *AUTO*
000010 CATEGORY .END
000011 CATEGORY SYSTEM.LPALST
000012 *AUTO*
000013 CATEGORY .END
000014 CATEGORY SYSTEM.APFLST
000015 *AUTO*
000016 CATEGORY .END
***** ***** Bottom of Data *****
```

Note the Auto Action Indicator ***AUTO*** associated with the Category Names **SYSTEM.LNKLST**, **SYSTEM.LPALST** AND **SYSTEM.APFLST**. When the User List is constructed this way, TCE will automatically resolve the names of the Libraries associated with each and display their names in a fully resolved list, when you Exit.

A sample of a resolved - Found, Missing, Duplicate, Miss-Classified - User List is shown below:

```
000001 TCE0000I EXTRACT FROM: IFO.TEST.$ICELDXX.@ADCD113.LOADBASE($MODCTLX)
000002 |
000003 TCE0000I  USR LIB IFO.TEST.LOAD
000004 TCE0000I  USR LIB SYS1.LPALIB
000005 TCE0000I  *A* APF SYS1.LINKLIB
000006 TCE0000I  *A* APF SYS1.SVCLIB
000007 TCE0000I  *A* APF SYS1.SHASLNKE
000008 TCE0000I  *A* APF SYS1.SIEAMIGE
...
000058 TCE0000I  *A* LPA SYS1.SORTLPA
000059 TCE0000I  *A* LPA SYS1.SDWWDLPA
000060 TCE0000I  *A* LPA SYS1.SICELPA
000061 |
000062 TCE0000I  DUPLICATE LIBRARIES IN USER DEFINED LIST.
000063 |
000064 TCE0000I  *A* APF IFO.TEST.LOAD
000065 TCE0000I  *A* LNK SYS1.LINKLIB
000066 TCE0000I  *A* LNK SYS1.MIGLIB
000067 TCE0000I  *A* LNK SYS1.CSSLIB
...
000076 TCE0000I  *A* LNK GIM.SGIMLMD0
000077 TCE0000I  *A* LNK CEE.SCEERUN
000078 TCE0000I  *A* LPA SYS1.LPALIB
000087 |
000088 TCE0000I  MISSING LIBRARIES IN USER DEFINED LIST.
000089 |
000090 TCE0000I  USR LIB SYS2.LPALIB
000091 TCE0000I  USR LIB SYS3.LPALIB
000092 TCE0000I  *A* APF IFO.SYSUV.LOAD
000093 |
000094 TCE0000I  DATASETS IN LIST MISCLASSIFIED AS LIBRARIES.
000095 |
000096 TCE0000I  USR LIB GBAGS1.PARMLIB3 - FORMAT IS:FB
000095 |
000098 TCE0000I  NSIMLDX USER DEFINED LIBRARY CONSOLIDATION ENDED.
```


7 TCE/ISPF Panel - Dynamic Intercept API

A new TCE LOAD Module, NSISEUX1, is provided. Its function is to provide an API driven intercept of calls to the ISPF Member Display Panel such that the Member Information Line Text (highlighted in yellow) may be altered.

A sample panel header is shown below:

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT      IFO.TEST.PARMLIB(NSECTL00) - 01.00          Columns 00001 00072
*****  ***** Top of Data *****
```

7.1 An overview of NSISEUX1 - On entry:

```
R1 - ADDRESS OF A 6-WORD PARAMETER LIST

WORD 1 - ADDR OF 54-BYTE TITLE AREA
WORD 2 - ADDR OF DSNAME
WORD 3 - ADDR OF MEMBER NAME OR BLANKS
WORD 4 - ADDR OF USERID
WORD 5 - ADDR OF VOLSER
WORD 6 - CAT/UNCAT INDICATOR
        - 0 IF UNCATALOGED
        - 1 IF CATALOGED
```

On exit, R15 contains a return code used as follows:

```
0 - TITLE UNMODIFIED BY EXIT
4 - TITLE MODIFIED BY EXIT
```

The exit should be re-entrant, not APF authorized; AC(0); AMODE ANY, RMODE 24.

The exit gets invoked key 8, problem state.

7.2 An overview of NSISEUX1 - LINKEDIT

Requirements are as follows:

```
THE OBJECT CODE FOR THE EXIT SHOULD BE LINKEDITED INTO THE IMAGE FOCUS LOAD LIBRARY
DATASET WITH THE FOLLOWING LINKEDIT CONTROL
```

```
CARD INFORMATION:
```

```
INCLUDE object(NSISEUX1)
MODE AMODE(31),RMODE(24)
NAME NSISEUX1(R) RC=0
```

```
WHERE 'object' IS THE DDNAME OF THE OBJECT CODE DATASET WHERE THE NSISEUX1 OBJECT
CODE RESIDES.
```

7.3 One Example

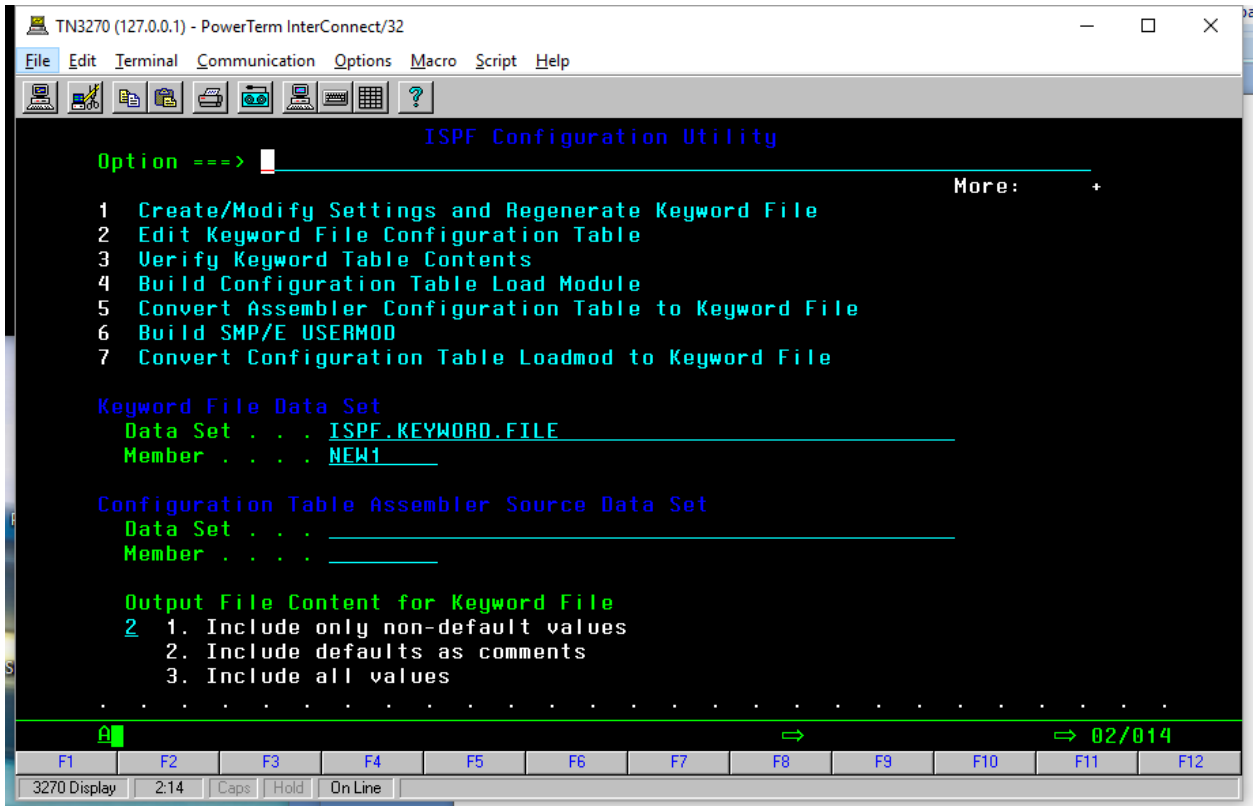
The API, NSISEUX, as found in the Image FOCUS LOAD Library, is an API example that displays the VOLSER of Uncataloged Datasets, when the VOLSER is provided on the TSO/ISPF 3.4 'Data Set List Utility' Panel.

8 Conforming TSO/ISPF - Support for the 3.4/3.2 Event Intercept

Enter the following on an ISPF primary command line:

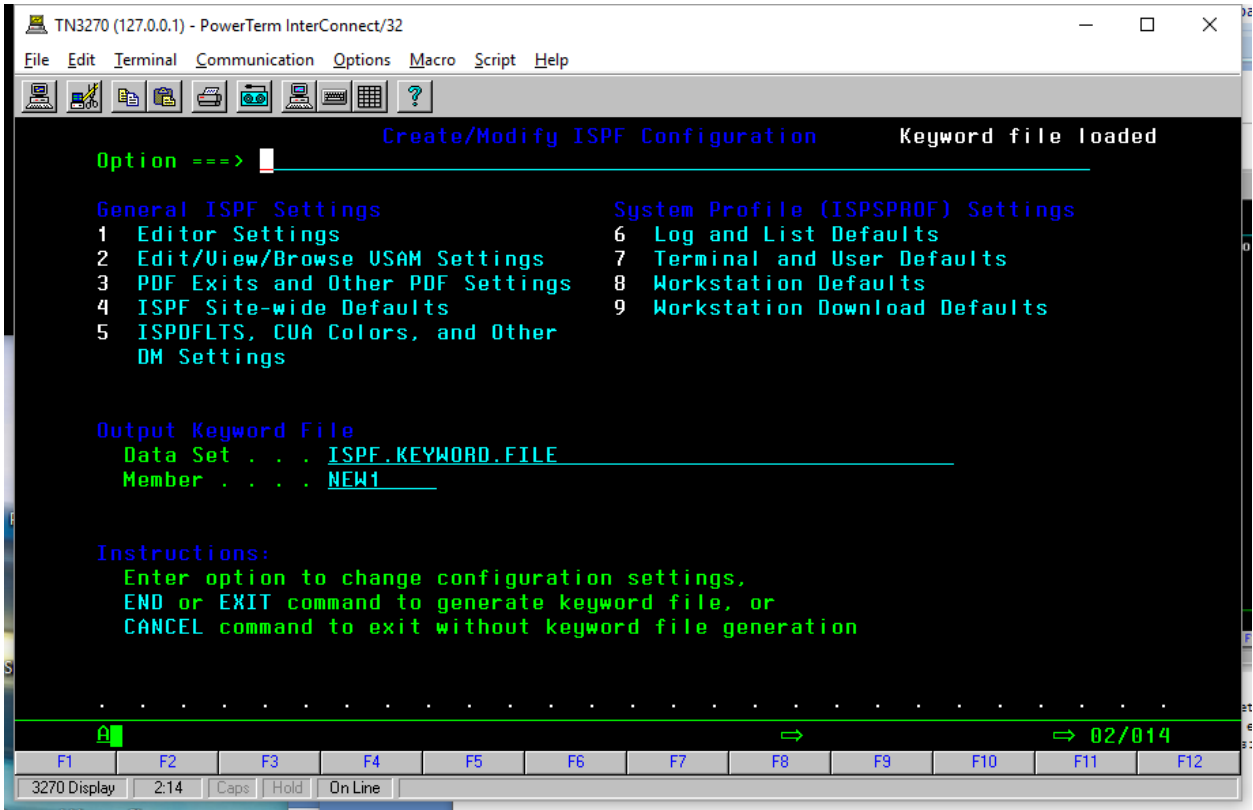
TSO ISPCCONF

The following ISPF panel will be displayed:

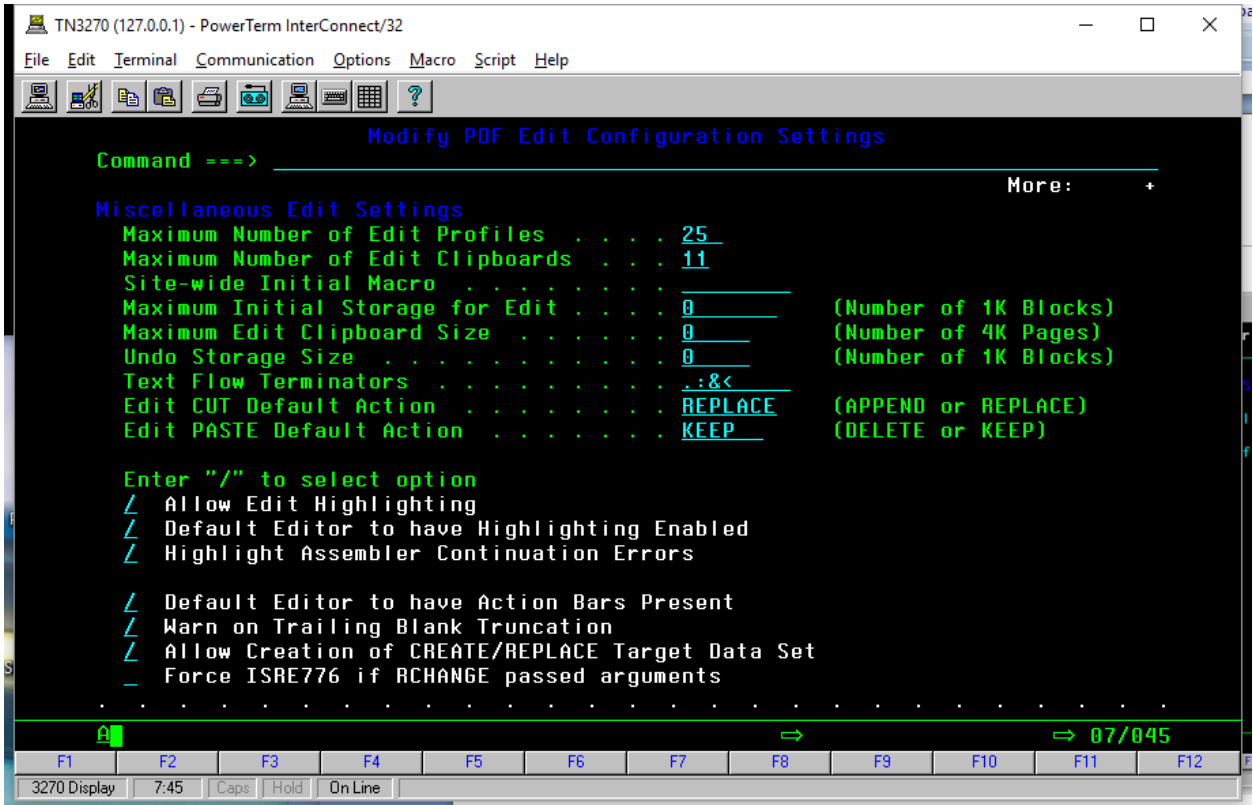


If you have not previously generated ISPF configuration settings, the Data Set and Member fields will be blank. Select an appropriate dataset name and member name and then enter a 1 on the Option line. This will cause the next ISPF panel to be displayed as follows:

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A panel similar to the following will be displayed:

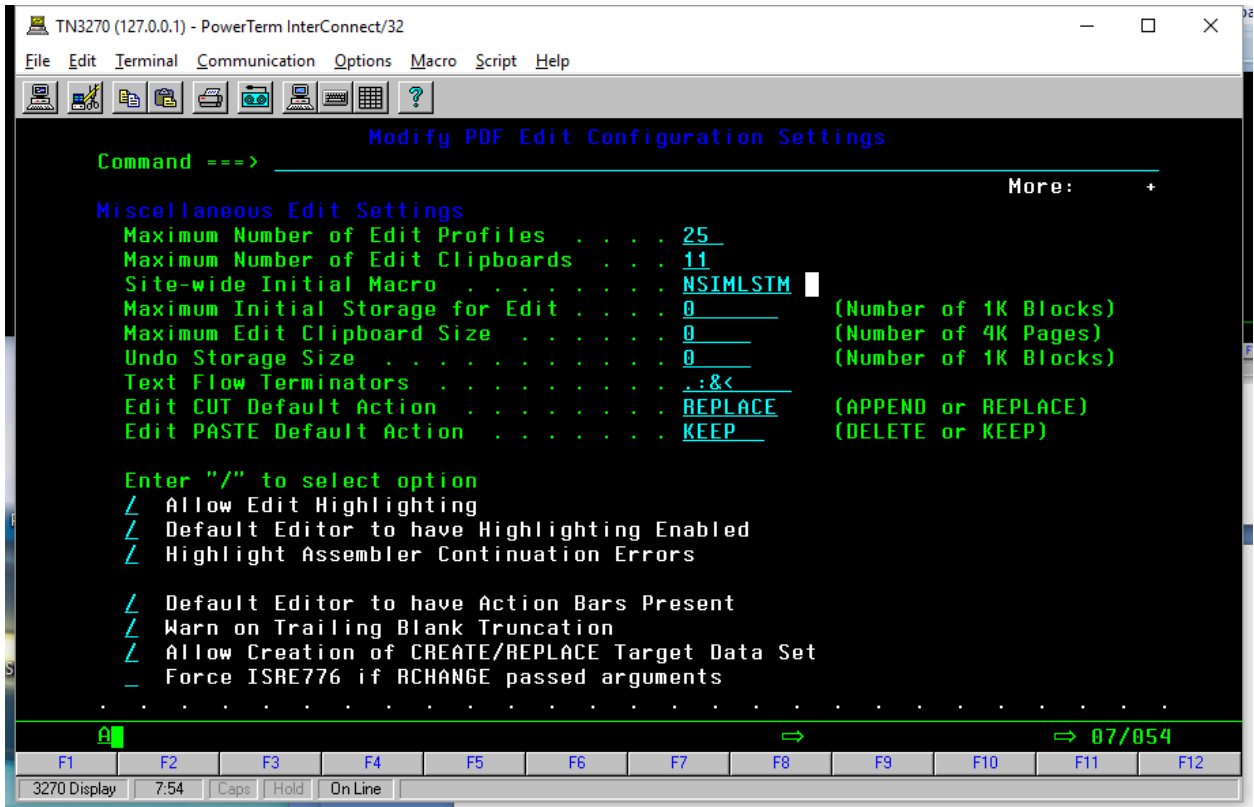


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Fill in the Site-wide Initial Macro field with:

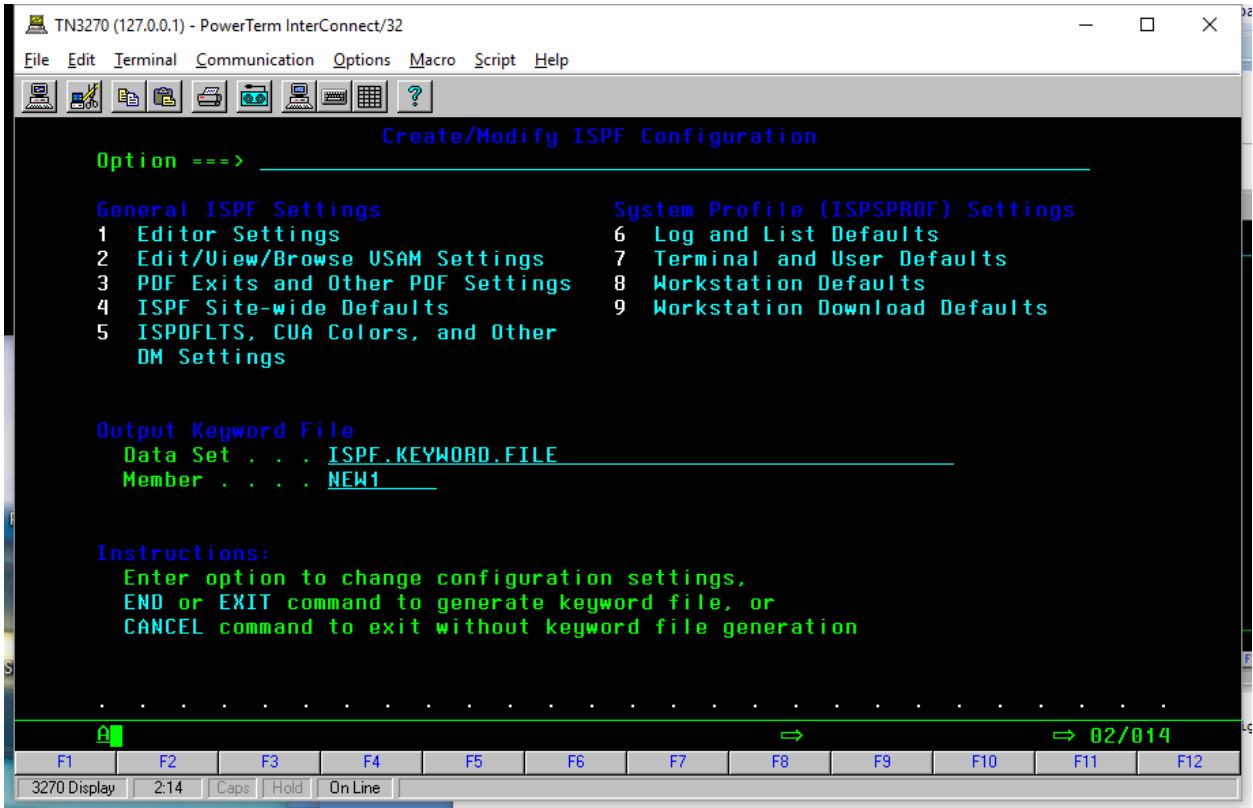
NSIMLSTM

So that the panel now looks like:

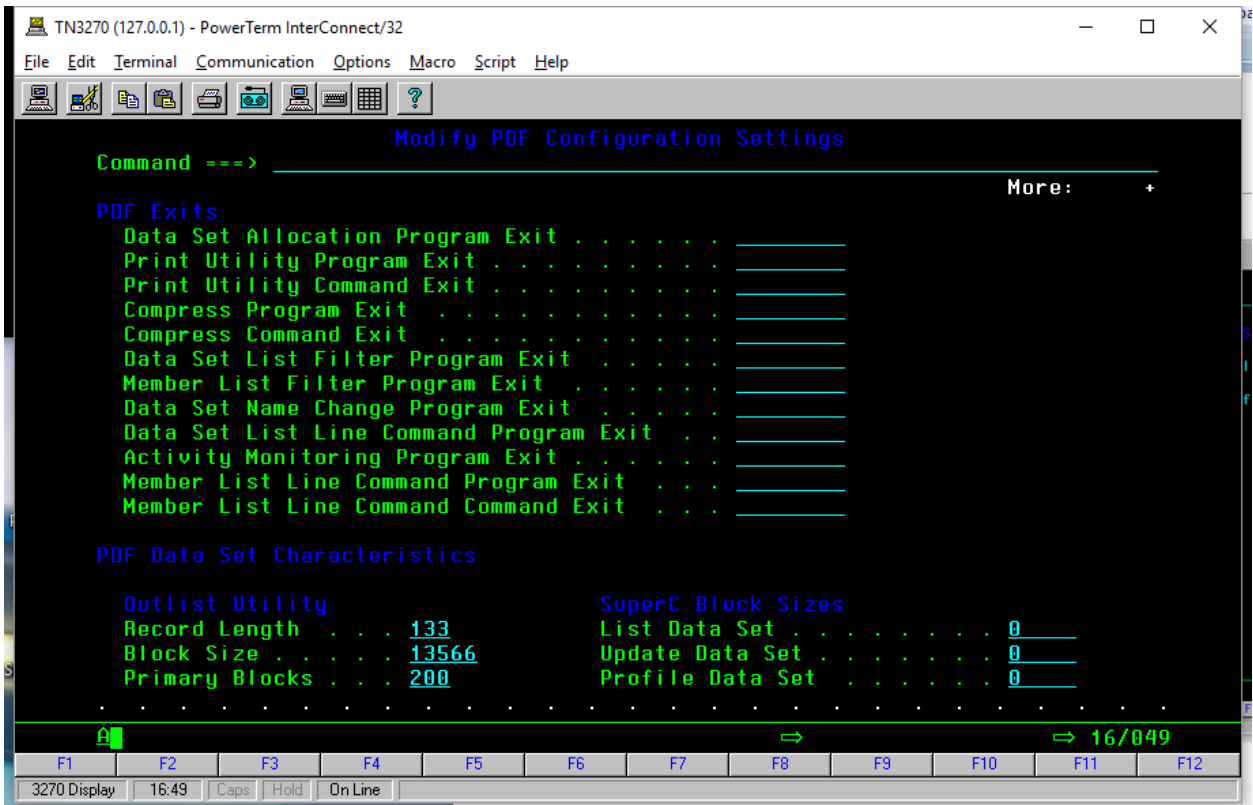


And use the F3 function key. This will return the display to the main configuration panel as follows:

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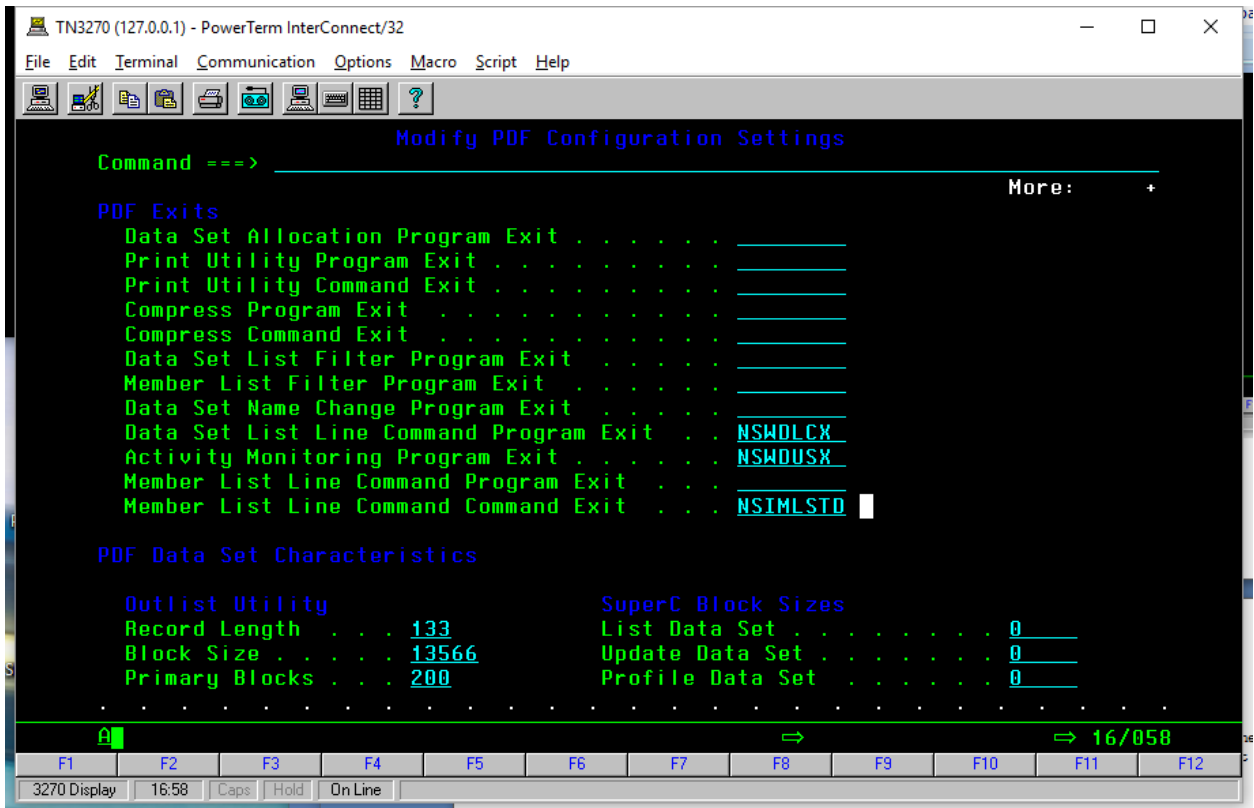


Now select option 3. The following pane should be displayed:



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Fill in the Data Set List Line Command Program Exit with NSWDLCX; fill in the Activity Monitoring Program Exit with NSWDUSX; fill in the Member List Line Command Exit with NSIMLSTD so that the panel now looks like this:



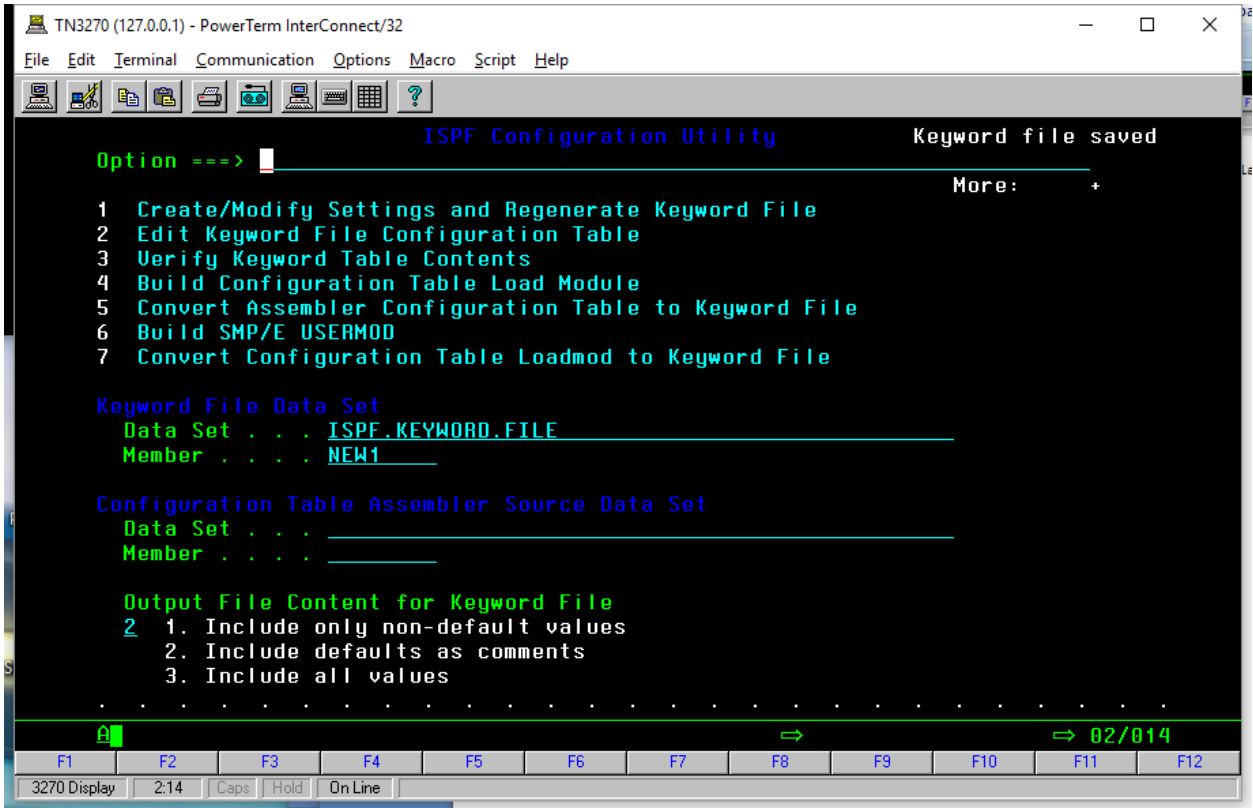
And use the F3 function key twice. This will take you to an ISPF edit display and in that data, you should see the following information:

```

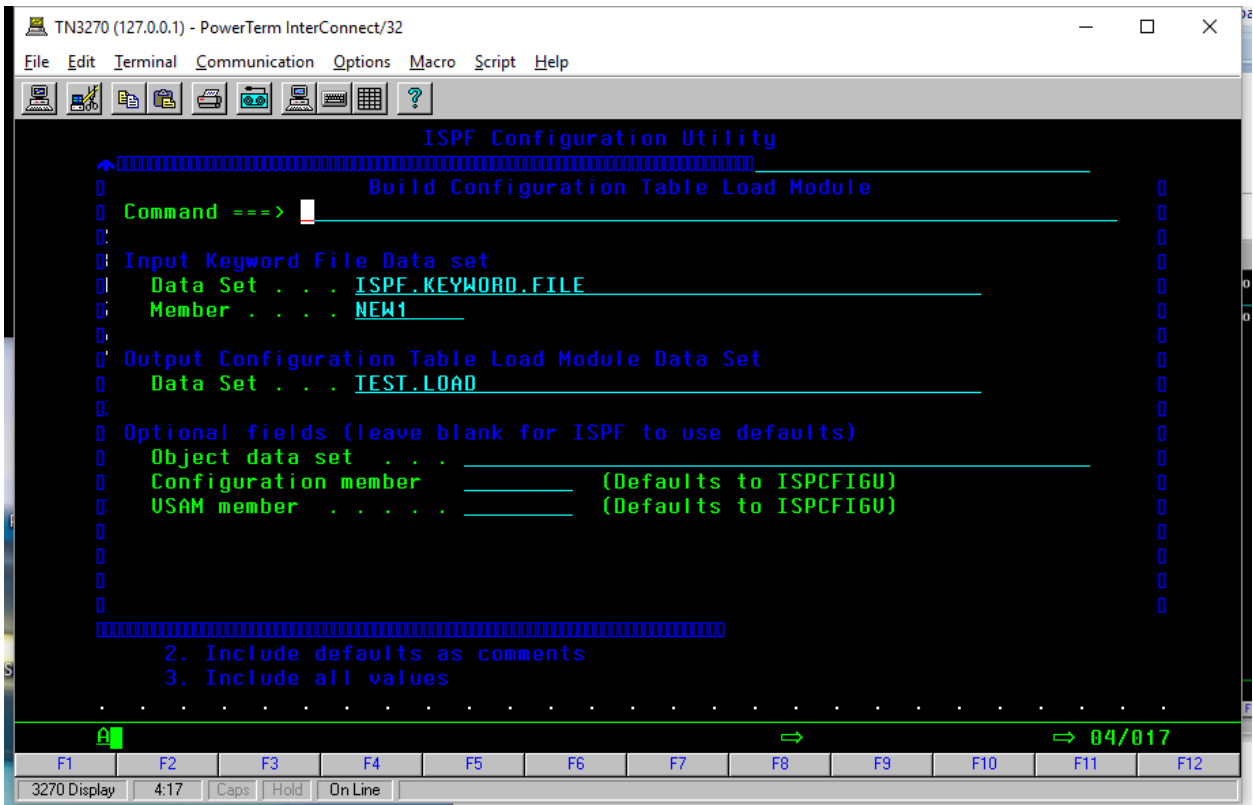
DATA_SET_LIST_LINE_COMMAND_PROGRAM_EXIT      = NSWDLCX
ACTIVITY_MONITORING_PROGRAM_EXIT             = NSWDUSX
MEMBER_LIST_LINE_COMMAND_COMMAND_EXIT       = NSIMLSTD
SITE_WIDE_INITIAL_MACRO                     = NSIMLSTM
```

Use the F3 function key. The following panel will now be displayed:

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Select option 4. The following panel will be displayed:



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Choose a Data Set name for the Output Configuration Table Load Module Data Set. In the panel displayed above, the chosen dataset name is 'tsoprfx.TEST.LOAD'. After entering the F3 function key, member ISPCFIGU will be generated in the specified load module data set.

To make these new ISPF configuration options available to an active TSO session, ensure that the generated ISPCFIGU load module is available in the system linklist, or more appropriately, in the STEPLIB or ISPLLIB dataset concatenations of a TSO logon proc.

For use in The Control Editor environment, the ISPCFIGU member is probably best located in both the Image FOCUS load library dataset Image FOCUS CETS0 Load library. Following this, the recommended approach, ensures that support for the intercept is available both within the Integrity Controls Environment(ICE) and native TSO/ISPF.

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