The Control Editor, operating within or outside the Integrity Controls Environment (ICE) can detect, record and protect against named events that impact z/OS Configurations.

The Control Editor (TCE)

Release 17.0
ICE17

USER GUIDE

Contact us for additional information:

NewEra Software Technical Support

800-421-5035 or 408-520-7100
Or text support requests to 669-888-5061

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www.newera.com

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1 Foreword

1.1 Copyright, Trademark and Legal Notices

1.1.1 Copyrights

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1.2 About this Document

This document is intended for those that have been given the responsibility to install, maintain, and support users of The Control Editor (TCE). It will explain, in detail, how The Control Editor is installed and configured.

1.2.1 Organization – Operational Overview

- An Overview of TCE and its primary Productivity and Control functions are presented in the first eight sections of the document, the Core Document.

1.2.2 Organization – Operational Detail

- A detailed description of the ICE and TCE Installation process and the TCE Configuration members and other important details are presented in various Appendices to the Core Document.

1.3 General Information

1.3.1 Other Documents and Resources

- In addition to this document, new users will benefit from the content of these three additional documents:

    1. The Control Editor Read Me;
    2. Getting Started with The Control Editor;
    3. The TCE Administratior Dialog User Guide.

- All of these documents are available in PDF format as downloads on the NewEra web site or can be requested directly by contacting NewEra Technical Support by email at the following email address: support@newera.com.

1.3.2 Online Help – PFK1

- In addition to the information contained in this document and others, The Control Editor user may access an Online Help Tutorial for any given panel by pressing PFK1 once the panel is fully displayed.

1.3.3 Reporting Problems

- When reporting a Control Editor problem to NewEra Technical Support, please provide the following information so that we may resolve the issue expeditiously:

    1. The JOBLOG/JCL/MESSAGE output from IFOM and IFOS;
    2. The contents of the NSECTLxx and NSEJRNxx members;
    3. An ISPF 3.4 listing of the Journal Datasets showing the allocation and DCB information;
    4. An ISPF 3.4 listing of the datasets in NSECTLxx.

1.4 Technical Support Information

Around-the-clock-support	NewEra Software is dedicated to providing the highest level of technical support to meet our customers' growing needs. In order to meet these needs, NewEra provides technical support, 7 days a week, 24 hours a day.
Reach us by Telephone during Business Hours	Please use the following phone numbers to reach our technical support staff during normal business hours (6 AM to 4 PM Pacific Time): • In North America, dial 1-800-421-5035 • Outside North America, dial 1-408-520-7100 • Support inquiries may also be texted to 669-888-5061
Reach us by Telephone during non-Business Hours	In case of an emergency, during non-business hours, phone the above numbers to receive instructions on how to contact a Technical Support Representative or a Technical Support Manager.
Sending Email	Our technical support staff can be reached by email at support@newera.com. Email messages will be answered by the next business day. Product technical questions or product recommendations may be sent via email.
Help through the NewEra website	You can access technical support from www.newera.com. Click the Support tab at the top of the screen to reach our Technical Support Request page.
Service Levels	NewEra is committed to providing the highest level of quality to our customers by adopting the following criteria for responding to customer requests: • All critical questions received by phone during working hours will be answered within 15 minutes of receiving the request; • Technical questions sent by email, or messages sent through our Technical Support Request page, will be answered by the next business day.
We Want Your Suggestions!	NewEra understands the significance of providing our customers with the highest quality support and welcomes all suggestions as to how we may improve Technical Support.

1.5 About The Control Editor

A Control and Productivity gap exists between conventional Change Management Systems and your External Security Manager (IBM-RACF, CA-ACF2, CA-Top Secret), making it difficult to comply with System Programming and System Security best practices. These practices are intended to shield the z/OS System Configuration, on an LPAR by LPAR basis, from unauthorized and/or undocumented changes but more often than not result in findings of non-compliance with industry and regulatory configuration control requirements.

1.5.1 TCE Compensates for Shortcomings

- First: enhancing the TSO/ISPF environment with state-of-the-art tools that automate configuration backups and place at your staff's fingertips access to Change History, Restore Points, Member Testing and Configuration Maps. Interactive Change Descriptors are easily added on a Dataset-by-Dataset basis to ensure that information is collected from the user at the point of the actual change to critical components;

- Second: extending the conditional access rights granted by your ESM from dataset boundaries to the Member Level, allowing you to enforce such rights based on member name, prefix, suffix, and as needed, by day, date and time. Within the TCE controls context, "*Configuration Update Projects*" may be easily created, activated, stored and reused with the assurance that Projects are fully documented, *"Opened and Closed on Schedule"*, and that Project Reports and Monitors support compliance requirements.

1.5.2 TCE Administrator Role

TCE is fully under the control of the z/OS Administrator. Using a 3270 interface she can easily define Control Boundaries (Datasets, Operator Commands, System Events) within which TCE will be vigilant. Changes, even those made outside the TSO/ISPF domain, are captured and reported; all changes are permanently stored in *Control Journals* for use in interactive or batch Forensic and Periodic Management Reporting. For a more detailed description of available functions designed to support Administrative activities, see The TCE Administrator Dialog User Guide.

1.6 System Requirements

1.6.1 Prerequisites

- To use The Control Editor, you will need Integrity Controls Environment (ICE) 17.0 and above and z/OS V2R4 or higher. You will find the latest release of ICE at www.newera.com.

1.6.2 The License Key

- A License Key is required to activate The Control Editor. Once the License Key is inserted, The Control Editor functions will be unlocked the next time you logon to the ICE Environment.

1.6.3 Releases Prior to Release 17.0 of ICE

- If you are a current ICE user and have not yet upgraded to Release 17.0, special care should be taken when you do upgrade to 17.0 to remove all pre-existing ICE Libraries.

- All pre-existing Inspection Reports (logs) and Package/Blueprints (packages) are fully supported in Release 17.0. However, existing HFS/zFS Control Journals must be converted to the new Control Journal default format RB4K. Contact NewEra Technical Support for assistance throughout the conversion process.

1.6.4 Event Notification Service

- To use IFOM with external notification, the minimum z/OS release level is z/OS 1.9.

- At z/OS 1.9, the NSIMTC3 REXX exec must be installed in the system REXX SYS1.SAXREXEC dataset. For z/OS 1.10 or newer, the NSIMTC3 REXX exec can be installed in either the SYS1.SAXREXEC dataset or in a user defined system REXX dataset as defined with the AXRxx parmlib member.

- The NSIMTC3 REXX exec is invoked through system REXX which uses a secondary address space to perform its work. The address space names used rotate through jobs named AXR01 - AXR08 and run under USERIDs of the same name. USERIDs AXR01 - AXR08 should be set up within the corresponding security product and should be set up with an OMVS security segment as well as an OMVS UID.

1.7 Things to look out for

1.7.1 Critical Relationship

- There should be a “One-to-One” relationship between a Dataset Category/Class and the Valid Datasets assigned/associated with the Category/Class. This is considered a “Critical Relationship” to the integrity of the information captured in the Control Journals and displayed in the various Control Editor panels and reports.

1.7.2 User Access to Datasets

- The Control Editor does not do any additional security checking when a user attempts to access a member, as any required security should already be in place. If the user does not have READ authority when the edit starts, then the user will get an open error. At exit (save), if the user does not have UPDATE authority to the member, then the user will get an open for output error. This is consistent with the way the normal processing of the ISPF editor works.

1.7.3 External Security Manager Issues

- The NSEJRNxx and NSECTLxx UPDATE (but is not needed for BROWSE or EDIT) function accessed via the Administrator Interface requires that the following (the example is for RACF) or equivalent changes must be made to the External Security Manager (ESM) settings where “userid” is the TSO user ID for each user that will be given TCE Dynamic Update Authority.

```
RDEFINE FACILITY NEZ.NSEPARM.** UACC(NONE)
PERMIT NEZ.NSEPARM.** CLASS(FACILITY) ID(userid) ACCESS(READ)
SETROPTS REFRESH RACLIST(FACILITY)
```

1.7.4 Journal Multivolume Dataset Toleration

- It is recommended that Multivolume datasets should not be used for BSAM journals. When the journal subsystem attempts to write to a journal that causes a switch to a second volume, the second volume will be ignored, and the current journal will be closed and a new journal will be created. This will leave an empty extent on the second volume and only the extents of the first volume will be used by the journal subsystem.

1.7.5 Moving to Shared Journals

- Care must be taken when moving to a Shared Journal environment, with the intention of utilizing already existing BSAM or HFS/zFS Formatted Journals. In these cases, contact NewEra Technical Support for assistance in converting the existing Journals to an intermediate format that can be converted to the Shared Journal File Format RB4K.

1.7.6 Conflicts with SMF Exits

- The allocation of TCE Control Journal Datasets is based on Best Practice Configuration Defaults or Default overrides specified in the TCE Configuration Member NSEJRNxx. When an SMF Allocation Exist is present these desired Allocation Parameters may be superseded by Exit specifications and result is unpredictable Journal Allocation errors.

1.7.7 Outdated IFOM Procedures

- The Parameter Keywords and Values specified in the IFOM Procedure are not static and will change from one TCE release to the next. Attempting to start a new release of TCE with an 'Old PROC' is not an advisable practice.

1.7.8 ReadMe File

- For additional assistance concerning product installation, review the "ReadMe" file associated with the product download.

1.8 Control Editor Limitations

This release of The Control Editor has the following restrictions and/or limitations. If you are uncertain as to how this may affect the operation and/or function of The Control Editor in your z/OS environment, contact NewEra Technical Support at support@newera.com for assistance.

1.8.1 Large Datasets

- If you have extremely large datasets, there is a potential to exhaust memory during The Control Editor processing. You can change your memory allocation by modifying your IFOS region size (you will need to LOGOFF, then LOGON to ICE).

1.8.2 Take care when setting Split-Screen support

- There is split-screen support for The Control Editor under TSO but you must follow the instructions found in the Installation Section carefully to avoid problems.

1.8.3 Use Site Standards for HLQ

- When allocating the Control Journals using the configuration member NSEJRN00, follow your site standards for HLQs and SMS definitions (e.g. STORCLAS).

1.8.4 Moving to Shared Journals

- Care must be taken when moving to a Shared Journal environment, with the intention of utilizing already existing BSAM or HFS/zFS Formatted Journals. In these cases contact NewEra Technical Support for assistance in converting the existing Journals to an intermediate format that can be converted to the Shared Journal File Format RB4K.

1.8.5 Padlock Control - Operator Commands

- In this release of TCE 'Padlock Control', allow/deny, use of Operator Commands is limited to IBM-RACF Operator Commands. A more general Control Interface is planned for a future release. This notwithstanding, as in past releases, when defined to TCE as controlled commands all SET, MODIFY, Miscellaneous, IBM-RACF, CA-ACF2 and CA-Top Secret operator commands will be noticed and recorded.

1.9 Recent Enhancements to The Control Editor

Updates to The Control Editor are made frequently and are available to Licensed Users. The listing below briefly describes enhancements in this and prior releases.

1.9.1 In This Release – TCE 17.0

- Mulit-Factor Edit – (MFE) is an extension of the available ICE control structures that surround a TCE Category. In practice it requires that a category be defined as an MFE Controlled Profile. Once a Profile is defined all access to its Datasets, Files and/or Load Libraries will be Denied/Warned unless/until users are specifically permitted access to the Profile. Permitted users attempting access will receive, or their designate will receive, a One-Time Pass Ticket by Email/SMS. This event specific OTP must be entered by the requesting user in order to continue along the access/update path. All actions taken by the user while in a TCE Controlled TSO/ISPF Edit Space immediately invoke TCE Descriptor and Journaling. For setup, configuration and use case detail see the MFE User Guide.

1.9.2 In Prior Releases

- Shared Journaling – A new configuration option is now available that allows all Control Events occurring on any LPAR throughout the Sysplex to be managed from a single consolidated Control List. Events managed in this way are recorded in a single set of Control Journals.

- Volume Serial and System Name Control List Dataset definitions are now honored in the consolidated Control List. This greatly enhances the specific identification of “Out-of-Policy” Detected Changes by automated TCE Change Detection processes.

- File Formats and Record Lengths below and beyond FB(80) (Fixed Block 80 byte) are now supported by Control Editor Control List and Journal Management functions.

- Administrator Dialogs – A new series of interactive 3270 Dialogs are now available to assist the TCE Administrator with configuration setup and maintenance. In order to assure, to the extent possible, the Integrity of the TCE Configuration, these Dialogs are accessed via the CONTROL Options from the Control Editor Primary Menu and by Default, Padlock Protected.

- The Change Descriptor may now be alternately defined as an ISPF POP-UP as well as a full screen dialog.

- The NEZUTIL “JCL Wrapper” is available to encapsulate existing BATCH JCL for the

purpose of determining and recording member changes as a result of JOB execution that impact Controlled Categories named in a definable dataset.

- Padlock access control can now be defined and applied to restrict an individual's usage of named IBM-RACF Operator Commands. These restrictions are implemented using the available IBM-RACF EXIT IRREVX01.

- For a listing of enhancements in Prior Releases see Appendix C of this User Guide.

1.10 Functions Regressed in The Control Editor

From time-to-time, new interfaces and functions will replace those found in prior releases of The Control Editor. The listing below briefly describes regressed functions in this and prior releases.

1.10.1 In this Release – TCE 17.0

- With this release TCE provides its own unique File Access Method – RB4K (Relative Block Addressing 4k). As RB4K is now the recommended file format for Control Journals, a conversion utility is provided that will convert existing BSAM and HFS/zFS files, making them compatible for use with the new RB4K format. Consult with NewEra Technical Support on your plans and/or needs to convert existing Journals.

- It is not considered a Best Practice to continue to use either BSAM or HFS/zFS as a Journal format. Neither BSAM nor HFS/zFS is allowed when Sharing Control Lists and Journals between LPARs.

- The functions provided by the ACTIONS Option previously accessible from the Control Editor Primary Menu are now accessible only to the TCE Administrator(s) and are accessed via the CONTROL Option.

1.10.2 In Prior Releases

- With this release TCE will no longer support execution on z900 or older processors. This regression results from the use of the LARL instruction, which is only supported on z10 or newer processors.

- With this release, users currently deploying TEMPLATE descriptors are encouraged to migrate to the newly announced DESCPNL descriptors. Future enhancements to edit descriptors will be directed to DESCPNL descriptors and enhancements and support for TEMPLATE descriptors are now frozen. New users of edit descriptors should not configure their environment to use TEMPLATE descriptors.

- History Function - The History function selection option, previously accessed from The Control Editor Administrator Primary Menu, has been removed from the panel. In prior releases this function, which required the downloading and installation of two separate modules, ISNEDIT and ISNTEXT, was used as a gateway to Batch Reporting and Ad Hoc Query. ISNEDIT and ISNTEXT are no longer required.

1. Batch Reporting – The TCE Background Reporting Interface has replaced all prior Batch Reporting functions. This interface is accessible via the redesigned Journal Interface. These new panels and services are supported by the addition of a new ICE Task NSWCEFM. NSWCEFM controls the background reporting cycle and intervals within a given cycle. This process is managed through control card settings in the ICE control member, NSEPRMxx.

   All users are encouraged to move away from Batch Reporting to Background Reporting as soon as possible. Users who wish to continue to use Batch Reporting as supported in prior releases should contact NewEra Technical Support for assistance.

2. Ad Hoc Query - In this release the Ad Hoc Query function has been upgraded and relocated from the History Primary Menu to the redesigned Journal Interface.

- Restore Function - The Restore function selection option previously accessed from The Control Editor Administrator Primary Menu has been removed from the panel and relocated to the redesigned Journal Interface.

1.11 Planned Enhancements

The following TCE Enhancements are planned for delivery in a future release.

1.11.1 Unix Support

Support for OMVS/zUNIX files in a manner similar to that provided by TCE over z/OS Datasets and Members.

1.11.2 TCE Projects

Support for TCE Managed Projects (TimeLock) allowing for the creation and enforcement of 'Access Windows' (defined to open/close based on day, date and time specifications) in which Access to Project Resources (Datasets, Members, Commands) will be allowed or denied.

1.11.3 TCE Approvals

Under certain configuration management protocols, it is desireable to obtain 'Specific Management Approval' of individual configuration change. Because of the nature of z/OS configurations and a desire for rapid deployment of changes to them this planned Padlock control ehnancement will be implimented on an 'After-the-Fact' basis, allowing the approving authority to 'Back-Off' changes that are disallowed. Optionally, notification of such actions would be sent to the originator.

2 Table of Contents

3 What to Expect

The Control Editor (TCE), an Integrity Controls Environment (ICE) Application, is a unique z/OS System Utility that enhances the TSO/ISPF experience for z/OS System Programmers by fully automating, step-by-step, the individual tasks that lead towards compliance with the best z/OS System Programming Practices. It provides a level of control over these tasks as they are being performed in order to reinforce boundaries established by any External Security Manager (ESM) and supports all z/OS Change Management Systems (CMS).

3.1 Boundary Configurations

TCE is fully under the control of the z/OS Administrator. Using a 3270 Interface, Control Boundaries (Categories, Datasets, Commands, System Messages and Projects) are easily defined. Within each boundary TCE will be vigilant for access rights and changes. Changes, even those made outside the TSO/ISPF domain, are captured and reported; all changes are permanently stored in *Control Journals* for use in interactive or batch Forensic and Periodic Management Reports.

3.2 Sysplex-Wide Control

TCE can operate, at the user's direction, as a tool active on each LPAR, tracking, controlling and reporting activity that occurs on that LPAR, or can operate as a SYSPLEX tool monitoring and controlling all activity occurring on all LPARS within a SYSPLEX. A more detailed explanation for the setup of a SYSPLEX tool follows in later sections of this document.

3.3 Controlled Datasets

TCE provides many services to TSO/ISPF users as they perform support activities used against TCE Controlled Datasets. These datasets (Sequential, PDS, or PDSE) can be determined automatically by TCE and/or can be defined by the TCE administrator.

3.4 Productivity and Control

Productivity Services provided by TCE, Automatic Backups, Change History, Restore Points, Component Inspection and Change Impact are designed to assist TSO/ISPF users at the point where changes are actually made. Control Services: Change Descriptor and Member Level Control work with all External Security Managers to reinforce existing ESM defined boundaries. To many TCE is considered a *'Compensating Control'*, filling a long-standing functional gap that exists between Change and External Security Managers.

3.5 How it Works

Designed to "Listen" on various z/OS subsystem interfaces, TCE matches system events against predetermined event profiles (Control Lists). When a targeted event is detected TCE follows a prescribed set of Administrator defined actions: logging the event in TCE Maintained Control Journals, possibly prohibiting the event i.e. submits, commands, updates and/or sending event notification. These processes require no z/OS modifications, "Hooks" or "Exits".

This design also allows for immediate detection and actions to be taken as a result of these events. There is no need to process SMF records or submit additional jobs to determine the results that match events; the results are known without a delay.

For all edit type activities, EDIT, Create, Delete, Rename, Copy, etc., TCE is able to accomplish via the Edit Service Window for ISPF (EDIF). While in the window, TCE enhances TSO/ISPF with the addition of several productivity and control enhancements.

3.6 TCE Configurations

TCE comes *'Ready-to-Use, Out-of-the-Box'* conforming to a default that will immediately extend basic, default productivity and control services to IPLPARM and PARMLIB Datasets. As these services become well known, it is an easy next step to customize the TCE configuration to meet site specific needs.

Several configuration members are provided that can be used to customize the set of productivity and controls specific to a class of events. These members can be directly managed using TSO/ISPF or the *'Best Practice'* of using the support services offered by the TCE Administrator Dialogs.

3.7 Category Specifications

The first step in customizing TCE is to define a Control List. The Control List (NSECTLxx) contains the list of datasets to be protected by TCE beyond IPLPARM and PARMLIB and may be shared (as can Control Journals) between LPARs. The datasets are organized by Category. Each Category is then refined to include the controls and actions to be enforced by TCE that are specific to the Category. Datasets with the same productivity or control requirements will generally be grouped together in the same category. An unlimited number of datasets may be defined within a given category.

3.8 Process Specifications

The next step would be to enhance each Category with additional functions: Change Descriptor, Event Notification, and Member Access Rules. These configuration options are defined in NSEJRNxx. NSEJRNxx contains Statements (80 column control cards) for defining

how each event impacting a Category will be treated, for example, providing a descriptor for documentation at the moment a change event is detected. Records in the Control Journals contain information about each detected event, such as a message, a command being entered and its response, or in the case of the content change or submission of a member, detail about the dataset, member, type of activity, and system where the change was made.

3.9 Event Reporting

TCE provides access to the information recorded in the journals in several ways, via notification of individual events, reporting of events within an interval of time, via a 3270 Dashboard and Timeline, and batch reporting of All TCE Events, TCE Configuration Changes and possible TCE Configuration Errors.

3.10 About this Document

This document is intended for those that have been given the responsibility to install, maintain and support users of The Control Editor (TCE). It will explain in detail how The Control Editor is installed and configured.

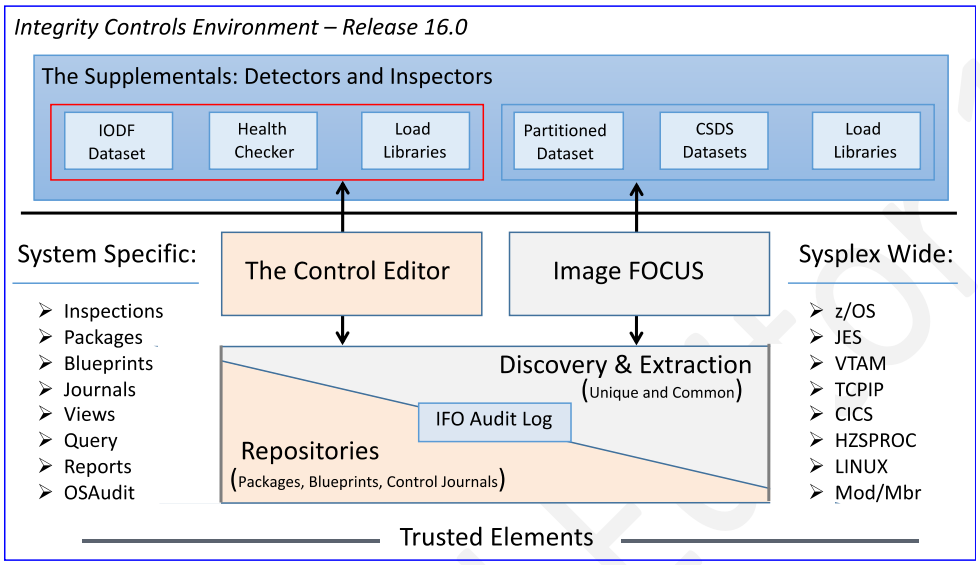
- An Overview of TCE and its primary Productivity and Control functions are presented in the first eight sections of the document, the Core Document.

- A Detailed description of the ICE and TCE Installation process and the TCE Configuration members and other important details are presented in various Appendices to the Core Document.

4 The Integrity Controls Environment (ICE)

The Control Editor (TCE) is an Integrity Controls Environment (ICE) Application that provides productivity and control features in both the ICE (VTAM Application Started Task) and the TSO/ISPF Environments.

z/OS Configuration Management and Compliance – ICE 16.0 - Overview



4.1 ICE Applications

Like all ICE applications, TCE is fully integrated into the ICE Application Support Architecture sharing data and resources with all other ICE Applications: Image FOCUS, The Supplementals, The Viewer and The IPLCheck Family. All ICE Applications, including the TCE System Administration Functions, are accessed from the ICE Primary Menu.

4.1.1 Image FOCUS

The Image FOCUS Application set automatically discovers, extracts, blueprints and inspects the z/OS configuration components that comprise a Sysplex and its Images. Process findings are shared with other ICE applications via a Sysplex Audit Log.

4.1.2 The Control Editor

The Control Editor should be considered a “Compensating Control” that reinforces security provided by the External Security Manager (ESM) over the z/OS configuration components. TCE significantly enhances support staff productivity and the achievement of z/OS System Programming Best Practices.

4.1.3 The Supplementals

These optional ICE applications provide both additional Inspection and Monitoring functions that extend the scope of the ICE processing to include Load Libraries, CSDS Datasets, IODF Datasets, named System Health Checkers, RACF and DB2 Configurations.

4.1.4 The IPLCheck Family

The IPLCheck Family is an integrated set of Predictive Failure Analysis (PFA) “Health Checks” that evaluates production and alternate z/OS and sub-system configuration settings against ‘Industry Best Practices’ to pinpoint the causes of potential system initialization failures and to document dynamic changes in the LNKLST, LPALST, APFLST and System Symbols that often limit system resource access in a post-IPL environment.

4.1.5 The ICE Viewer

The ICE Viewer provides an interactive Focal Point from which individual users may access reports and worksheets derived from findings provided by the IBM Health Checker for z/OS and the ICE Applications: Image FOCUS, The Control Editor and The Supplementals as they are configured to run on local and/or remote systems.

4.2 Starting the ICE Application Environment

The startup of the ICE Application Environment, AKA the Image FOCUS Environment, is defined in the IFOM Procedure found in the ICE INSTLIB and is created, as defined, when the IFOM PROC is started. Two configuration statements within the PROC must be defined before the PROC can be started correctly.

4.2.1 High Level Qualifier

The Dataset Qualifiers that will be used to complete the fully qualified name of ICE controlling (LOAD and PARMLIB) and TCE working (CTL.PAD, JRN.PAD and CTL.GLOBAL) Datasets is defined to NSSPRFX=, for example 'IFO.TEST' as shown below:

```
//IFOM     PROC NSSPRFX='IFO.TEST',
```

4.2.2 NSEPRMxx Suffix

The working NSEPRMxx Parmlib Member, the single point of control for all ICE Applications, is defined to PRM=, for example '00' as shown below:

```
//               PRM='00'
```

Note that before the IFOM PROC can be started correctly that the referenced NSEPRMxx Parmlib member must be correctly configured by defining:

1. ICE Operational TASK to be started by IFOM
2. TCE Configuration Member Suffixes to Prevail after startup
3. ICE Application License Keys and
4. IFOM Address Space Operational Characteristics

4.3 Activating ICE Applications

ICE Applications are activated when the primary, controlling ICE Started Task (IFOM) is executed (IFOM PROC). The resulting configuration of the Integrity Controls Environment (ICE) that emerges from this process is determined by configuration definitions: Task Activation, TCE Member Suffixes, License Keys and ICE Address Space characteristics found in the ICE NSEPRMxx Parmlib Member.

4.3.1 Starting IFOM

To start the ICE Application Environment, issue the following operator Command:

```
S IFOM (START IFOM)
```

Note that before the IFOM PROC can be started correctly that the referenced NSEPRMxx Parmlib member must be correctly configured.

4.3.2 Sample PROC

```
*-------------------------------------------------------------------*
//*                    NEWERA IMAGE FOCUS ENVIRONMENT                *
//*                       STARTED TASK PROCEDURE                     *
//*                                                                  *
//*             MULTIUSER IMAGE FOCUS PRIMARY ADDRESS SPACE          *
//*                                                                  *
//*              NSSPRFX - PREFIX FOR IMAGE FOCUS DATASETS           *
//*                                                                  *
//*-------------------------------------------------------------------*
//*
//IFOM    PROC NSSPRFX='IFO.TEST',
//             PRM='00'
//*
//* NOTE: MAKE SURE A KEYWORD ENDING COMMA REMAINS IN COLUMN 71
//*       OF THE PARM FIELD OTHERWISE CONTINUATION ERRORS MAY OCCUR
//*
//IEFPROC EXEC PGM=NSEINIT,
//             REGION=20M,
//             DYNAMNBR=350,
//       PARM='APPL=IFO,ULOG=Y,SUBS=IF01,UMAX=0,ICMD=PX PROFM,SP=IFOS,
//             PRM=&PRM,VTSB=N'
//*
//* THE FOLLOWING DATASETS MAY BE SHARED WITH IFOMS ON OTHER SYSTEMS
//*
//STEPLIB   DD DISP=SHR,DSN=&NSSPRFX..LOAD
//NSEPARM   DD DISP=SHR,DSN=&NSSPRFX..PARMLIB
//NSECTLNP  DD DISP=SHR,DSN=&NSSPRFX..CTL.NPAD
//NSECTLDS  DD DISP=SHR,DSN=&NSSPRFX..CTL.GLOBAL
//NSEJRNNP  DD DISP=SHR,DSN=&NSSPRFX..JRN.NPAD
//*
//* THE FOLLOWING DATASETS MUST BE UNIQUE FOR EACH IFOM
//*
//ICEWORK   DD DISP=SHR,DSN=&NSSPRFX..ICEWORK
//NSETABB   DD DISP=SHR,DSN=&NSSPRFX..SISPTABB
//*
//SYSUDUMP DD SYSOUT=A,HOLD=YES
//NSEDUMP  DD SYSOUT=A,HOLD=YES
//NSWJLOG  DD SYSOUT=A,HOLD=YES
//*
```

4.3.3 ICE Task Activation

The NSEPRMxx Parmlib Member is the single point of control for all ICE Applications and specifically the operational characteristics of The Control Editor and its configuration members.

The Service Tasks (Addresses Spaces) that are created when the ICE Address Space is started with the intention of activating The Control Editor include:

Extract From Sample NSEPRM00 found in ICE SAMPLIB

```
*-------------------------------------------------------------------*
*  THE FOLLOWING NSW TASKS ARE USED TO ACTIVATE TCE                  *
*-------------------------------------------------------------------*
TASK=NSWJSSI                                /*  JOURNAL SUBSYSTEM   */
TASK=NSWJSTI CTL(00) JRN(00) ENS(00) DET(00) SEL(00) GRP(00)
TASK=NSWSCTL INTERVAL(360)                  /*  SHARE CONTROL LIST  */
TASK=NSWJCTL INTERVAL(120)                  /*  SHARE CNTL JOURNALS */
TASK=NSWJSCI LOG(ERRORS)                    /*  CHANGE DETECTION    */
TASK=NSWJCDT                                /*  CHANGE AUTOMATION   */
TASK=NSWOMST                                /*  OPER MSG MANAGER    */
TASK=NSWCEFM                                /*  FUNCTION SCHEDULER  */
*-------------------------------------------------------------------*
```

4.3.3.1 NSWJSSI

Journal Sub-System (NSWJSSI)

The Journal Sub-System (JSS) manages the interaction of individual Control Editor users (logged on to individual IFOS Address Spaces) and the IFOM Address Space with The Control Journal(s). The primary configurable components that define this interaction are contained in the ICE Configuration Members NSEJRN00 and NSECTL00. Typical interactions would be backups controlled by IFOM and transactions controlled by cooperative processing between the JSS and the Journal Sub-Task (JST).

4.3.3.2 NSWJSTI

Journal Sub-Task (NSWJSTI)

The Control Editor invokes the Journal Sub-Task (NSWJSTI) when a user is actually editing a Control Member. It provides the isolation between individual users and edit sessions necessary to assure the integrity of the edit processes - retrieve, update, restore and store functions.

4.3.3.3 NSWSCTL

Control List Sharing (NSWSCTL)

The Control Editor invokes the Journal Sub-Task (NSWSCTL), if active, to determine the frequency with which it should poll members of the TCE Managed Group for

their updates to their NSECTLxx Parmlib member. Updates discovered in one or more Group Members will trigger an update to the Shared Control List and, if necessary, a Backup of new Group Member defined Datasets or Dataset additions from prior Group Members and new Dataset volume placement for previously Controlled Datasets.

4.3.3.4 NSWJCTL

Control Journal Sharing (NSWJCTL)

The Control Editor invokes the Journal Sub-Task (NSWJCTL), if active, to determine the frequency with which it should poll members of the TCE Managed Group to determine which are active, which are still sharing and any new systems that desire to be added to a TCE Added Group. Should the 'Controlling System' fail to poll the Group at the defined time, possibly because it has become inoperable, the first system in the Group to identify its absence will inherit the 'Controlling System' responsibility.

4.3.3.5 NSWJSCI

Change Detection (NSWJSCI)

The Control Editor invokes the Change Detection Sub-Task (NSWJSC) when a user selects the "Detect" option from The Control Editor Action Menu.

4.3.3.6 NSWJCDT

Automatic Change Detection (NSWJCDT)

This Control Editor Change Detection Sub-Task (NSWJSDT) is called hourly when optionally specified in NSEPRM00.

4.3.3.7 NSWOMST

Event Capture (NSWOMST)

The Control Editor invokes the Sub-Task (NSWOMST) to perform operational and system management functions such as event capture, as those events are defined by control card settings found in the TCE configuration members NSEJRNxx and NSEENSxx.

4.3.3.8 NSWCEFM

Interval Scheduler (NSWCEFM)

The ICE Interval Scheduler controls all TCE Background Processes and must be active if Background Reports are to be scheduled, created, stored and distributed.

4.3.4 TCE Member Suffixes

The TCE configuration settings are defined in a set of TCE specific Configuration Members. They, their prevailing suffixes, are named on the TASK=NSWJSTI statement found in the controlling NSEPRMxx member.

Extract From Sample NSEPRM00 found in ICE SAMPLIB

```
TASK=NSWJSTI CTL(00) JRN(00) ENS(00) DET(00) SEL(00) GRP(00)
```

4.3.4.1 NSECTLxx

NSECTLxx is used to define the Control Boundaries monitored by TCE. It consists of Named Category and their Datasets.

4.3.4.2 NSEJRNxx

NSEJRNxx is used to define the TCE Control Journals, Panel Descriptors and activation of various TCE Options.

4.3.4.3 NSESELxx

NSESELxx is used to define the Access Privileges that will be granted and/or denied to individual users or groups.

4.3.4.4 NSEGRPxx

NSEGRPxx is used to define TCE Control Groups and their Members. Used in conjunction with NSESELxx Member Level Control.

4.3.4.5 NSEENSxx

NSEENSxx is used to control the definitions of Notification Methods - Email, Text - and Action Triggering Notices.

4.3.4.6 NSEDETxx

NSEDETxx is used to define the set up of the Supplemental Detectors.

4.3.5 Application License Keys

```
*-------------------------------------------------------------------*
*  THE FOLLOWING LICENSE KEYS ARE USED TO ACTIVATE ICE AND TCE      *
*-------------------------------------------------------------------*
*
COMPANY=NEWERA/STANDARD/IFO  (SITE EDITION)
LICNAUTH=34D92F351A76F5 (UPDATE BY:12/30/18)
LICNOPT1=538939401BF105 (SUBSYSTEM INSPECTORS)
LICNOPT2=DBABB12013F1F4 (SUPPLEMENTAL INSPECTORS)
LICNOPT3=D4A5C4B27C108D (ICE PRODUCTION VIEW)
LICNOPT4=53255AC783A185 (ICE RECOVERY VIEW)
LICNOPT5=2EBD22419CFF9B (HEALTH CHECKER SUPPORT)
LICNOPT6=29DD34F0055865 (z/OS RELEASE ANALYSIS)
LICNOPT7=5638B27EF25866 (THE CONTROL EDITOR)
*
*-------------------------------------------------------------------*
```

See *'Appendix A - Product Installation'* for a detailed description of how a Self-Authorized Download vary from a Pre-Authorized Download.

4.3.6 Address Space Characteristics

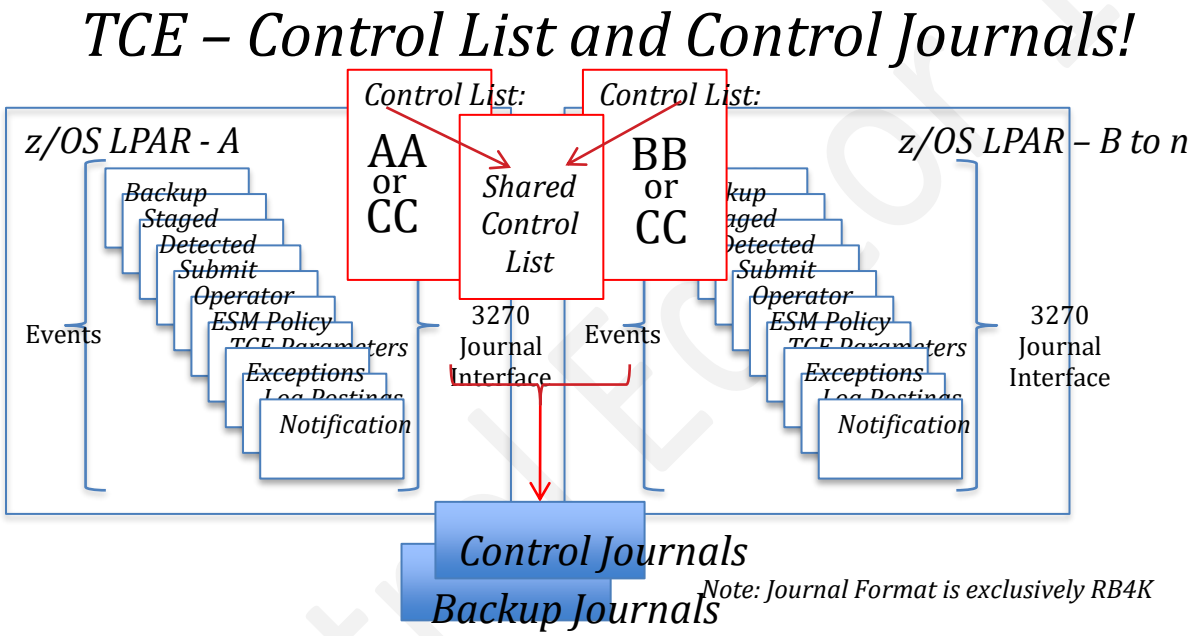
The following Address IFOM Space Characteristics are defined in the NSEPRMxx Configuration Member housed in the ICE HLQ.PARMLIB Dataset.

```
*--------------------------------------------------------------------*
*  THE FOLLOWING STATEMENTS DEFINE IFOM ADDRESS SPACE CHARACTERISTICS *
*--------------------------------------------------------------------*
*
PASSPHRASE=OFF        PASSWORD PHRASE SUPPORT FOR Z/OS V1R10 AND ABOVE.
*
SAFUPT=DISABLE        OPTION TO READ THE DSN PREFIX INFORMATION FROM
*                     SECURITY PACKAGE TSO SEGMENT.
*
*                     DISABLE - DSN PREFIX WILL BE SET TO THE USERID.
*                     ENABLE  - IFO WILL ATTEMPT TO READ THE UPT FROM
*                               THE TSO SEGMENT AND SET THE DSN PREFIX
*                               ACCORDINGLY.
*
MAXSTMT=020           MAXIMUM LINES*1024 IN AN INSPECTION MEMBER
*                     MAXSTMT=020 GIVES 20,480 LINES
*                     RANGE IS 002-999.
*
SECURITY=DISABLE      CHECKING FOR SYSTEM DATSETS TO SEE IF THEY ARE
*                     PROTECTED BY A SECURITY PACKAGE.
*                     (REVIEW MEMBER DEFSSDS)
*
*
USERMAX=000           MAXIMUM IFOS USERS ALLOWED
*                     RANGE IS 000-999.
*                     000 DISABLES MAX USER CHECKING
*
*ADMINFO=USERID       SEE ISNMAIL DOCUMENTATION
*
TASK=NSTINIT         /* WAKES UP EVERY 3 MINUTES */
*
*--------------------------------------------------------------------*
```

5 Getting Started with TCE

The Control Editor is included with the Integrity Controls Environment (ICE) Install Libraries: therefore, when you install ICE, The Control Editor application modules are installed.

To activate The Control Editor and its various operational sub-systems, a Control Editor License Key Control Card must be inserted into the ICE configuration control member NESPRMxx. Once the card is inserted and the ICE Primary Address Space (IFOM) is cycled, The Control Editor will become fully functional.



Once functional TCE offers its Administrator a variety of configuration options that can be used to support and facilitate a single system (or multiple systems) in a TCE Managed Group.

This notwithstanding the fastest way to get started with TCE and experience its benefits is to allow the TCE Controls Environment to initialize, starting IFOM, using its default settings as defined in the NSECTLxx and NSEJRNxx Parmlib members.

These settings enable the Default TCE Category List using the Category Names SYSTEM.IPLPARM and SYSTEM.PARMLIB, take the automatic step of discovering the related system datasets as used by the initializing system in its last IPL, format and build a Backup Journal Set using the RB4K File Format and take a backup of all members in the IPLPARM and PARMLIB Dataset Concatenation, building an Event Journal Set using the RB4K File Format. You are now ready to record change events that impact members in the datasets named in Default Control Categories.

Once beyond these initial steps and experiences you are now ready, if necessary, to customize your Category Control List and TCE Control Journal Settings.

5.1 The Category Control List

The Category Control List defined in the NSECTLxx Parmlib Member creates the principle TCE Control Boundary, a grouping (a concatenation) that contains one or more Dataset(s).

5.1.1 Specific or Shared

A Category Control List can be specific to a named System and stored in that system Parmlib Dataset or can be stored in a commonly accessible Parmlib Dataset and shared among several systems in a TCE Managed Group. When Control List Sharing is active and the Parmlib dataset is not shared among systems the Category Control List of each individual system in the TCE Controlled Group is automatically consolidated into a “Common and Shared” Control List.

When Sharing Control List, and in the absence of any specific overides in the NSECTLxx member, by default, up to eight systems may share a Common Control List.

5.1.2 Best Practice

It is a recommended Best Practice that a Common Parmlib Dataset containing a single Category Control List, NSECTLxx, be shared among the systems in a TCE Controlled Group.

5.1.3 Defining Categories

Category specifications in NSECTLxx are supported by two positional values. The Category Name beginning in position two and ending in position seventeen and the fully qualified Dataset Name beginning in position eighteen and ending in position seventy-two. Optionally a volume serial number and system name may be associated with each dataset by enclosing them within parentheses and separating the values with a comma, i.e. HLQ.Dataset(volser,system).

The NSECTLxx member may be commented out by placing an asterisk in column one.

5.1.4 The Scope of a Category Definition

When only a dataset (and not volser and system name) is defined the TCE Control Category Scope will extend to ALL Datasets, cataloged or not, that can be found within accessible DASD. When a volser is specified, the Scope will extend to ONLY that Dataset on that volser. And when a system name is provided the TCE Control Category Scope will be further limited to the named system.

5.1.5 Getting Started

To facilitate a rapid and agile TCE startup for new users two default Category definitions are specified in the default NSECTLxx Parmlib member: SYSTEM.IPLPARM and SYSTEM.PARMLIB. Both require a Dataset value of *AUTO* to denote that TCE is to determine the IPLParm and Parmlib datasets used to IPL the system upon which the IFOM Procedure (which starts the IFOM Started Task) is executed.

5.1.6 NSECTLxx Model Member

```
**--------------**-------------------------------------------*
**   CATEGORY   **             DSNAME                        *
**   COLS       **             COLS                          *
**   2-17       **             18-61                         *
**              **                                           *
**--------------**-------------------------------------------*

For Example:

  SYSTEM.IPLPARM  *AUTO*
  SYSTEM.PARMLIB  *AUTO*

or perhaps defined specifically with Dataset names only:

  SYSTEM.DATASETS SYS1.PARMLIB
  SYSTEM.DATASETS SYS2.PARMLIB

or perhaps defined specifically with Dataset, Volume and System names:

  SYSTEM.DATASETS SYS1.PARMLIB(VOLABC,GREEN)
  SYSTEM.DATASETS SYS2.PARMLIB(VOLDEC,BLUES)

or perhaps defined with a mix of definitions:

  SYSTEM.DATASETS SYS1.PARMLIB
  SYSTEM.DATASETS SYS2.PARMLIB(VOLDEC,BLUES)
```

5.1.7 Control Category Attributes

Associated with each Category, in addition to its Dataset Group, are a number of attributes: Padlock Control, Event Descriptor, Event Notification and Detected Change Notification. These are defined in NSESELxx, NSEENSxx and NSEJRNxx and best configured using the Administrator Dialogs available to the TCE Administrator.

5.2 Defining Control Journals

TCE employs a set of sequential datasets, named as defined by the HLQ Statement in the NSEJRNxx member, to contain Control Dataset Backups and Directed and/or Detected Change Events. Dataset Backup Journals include Searchable META data and a full copy of all members, in a dataset, and/or sequential datasets as they existed when TCE was first initialized (at the start of IFOM). These backup entries serve as a baseline for detecting future changes. Directed and Detected Change Journals are composed of Searchable META Data, Event Summary, full

copies of the impacted member and/or system log entries associated with an executed command, and for members, the detail change records generated as the current member is compared to its prior content.

Member and Sequential Dataset Backup and Event Journal entries represent:

- Consistently up to date Baselines,
- The complete History of Content Changes and
- Individual Restore Points

In addition to serving as historical documentation of configuration changes, Control Journal Records serve as a record of dynamic system activation.

Journal Records are maintained by System Name by Volume, are fully searchable and made available In-Line to staff members who need access to Change History and/or access to Member Restore Points all while utilizing TSO/ISPF Edit.

5.2.1 Specific or Shared

Control Journals can be specific to a named System or support any number of systems in a TCE Managed Group. When Control Journal sharing is active the Journal Sharing definitions defined in the NSEJRNxx Member of the first system to enter the group, the Controlling System will determine the journal configuration. Should a Controlling System leave the TCE Managed Group for some reason, the next active system would assume control of the Group and Journal attributes.

When Sharing Control List, and in the absence of any specific overides in the NSEJRNxx member, by default, up to eight systems may share a Common Control Journal structure.

5.2.2 Best Practice

It is a recommended Best Practice that a Common Parmlib Dataset containing a single NSEJRNxx member may be shared among the systems in a TCE Controlled Group.

5.2.3 Defining Journals

Journal specifications in NSEJRNxx are supported by a variety of Control Cards each of which is, in turn, constructed using a unique set of non-positional control statements and keywords. To be valid an NSEJRNxx Control Card's values must begin in column one and end in column 72.

The NSEJRNxx member may be commented out by placing an asterisk in column one.

5.2.4 The Scope of a Journal Definition

When Shared Journals are used, the system default, a common set of Control Journals will be used by all systems within the TCE Control Group. When Shared Journals are not used, defined in NSEJRNxx as 'SHARE JOURNAL(0)', a Control Journal set will be used only by the single system that was used to define and control it.

Care should be taken when mixing Shared and Un-Shared Journal environments to be certain that the Control List, NSECTLxx, of the TCE Managed Group, The Sharing Systems, and the Stand-alone Systems do not conflict. Such conflicts as matching Category and/or Dataset definitions will lead to duplication of 'Detected Finds' causing them to be recorded in both the Shared Journals and the Stand-alone Journal set. To avoid such duplication, it would be necessary to fully qualify the Control List of both the Shared and Stand-alone environments using both Volume Serial and System name.

5.2.5 Getting Started

To facilitate a rapid and agile TCE startup for new users all that need be specified in NSEJRNxx is the High-Level-Qualifier (HLQ) to be used in the allocation of both Backup and Event Journals. By default, these journals will be allocated in RB4K format and capable of supporting up to eight systems in a TCE Managed Group.

5.2.6 NSEJRNxx Model Member

```
*-------------------------------------------------------------------*
*                                                                   *
*      USE HLQ STATEMENT TO SPECIFY YOUR JOURNAL DATASET QUALIFIER  *
*                                                                   *
*-------------------------------------------------------------------*
*                                                                   *
*HLQ      YOUR.TCE.JOURNAL                                         *
*                                                                   *
*-------------------------------------------------------------------*
*      OPTIONAL JOURNAL STATEMENTS - ALL VALUES SHOWN ARE DEFAULTS  *
*-------------------------------------------------------------------*
*                                                                   *
*SHARE    MULTIO(RB4K)     /* RB4K ACCESS METHOD  - RECOMMENDED   */  *
*SHARE    CONTROL(8)       /* SHARED CONTROL LIST - USE 0 IF NOT  */  *
*SHARE    JOURNAL(8)       /* SHARED JOURNALS     - USE 0 IF NOT  */  *
*ALLOC    SPACE(20)        /* SHARED JOURNALS     - UP AS NEEDED  */  *
*ALLOC    VOL(STORAGE VOL)/* SHARED JOURNALS     - VALID VOLUME  */  *
*ENTRIES  120              /* SHARED JOURNALS     - UP AS NEEDED  */  *
*                                                                   *
*-------------------------------------------------------------------*
```

For Example:

```
HLQ YOUR.DATASET.JOURNAL
```

5.2.7 Control Journal Attributes

Once the HLQ is defined TCE will, during the initialization of IFOM, default to all other required Control Journal Specifications. These other specifications, like HLQ, are defined in NSEJRNxx and best configured using the Administrator Dialogs available to the TCE Administrator.

5.3 Integration of TCE with TSO/ISPF

Once the Control Editor is installed and validated the final step necessary before TCE can begin to enhance dataset boundaries and staff productivity is to integrate TCE into the TSO/ISPF environment. This integration can be done using a temporary method, best used during a product evaluation, or persistent method, best used once a production state is reached.

5.3.1 Common Library Structure

Irrespective of the method you implement both require that you establish a Dataset Library structure that can be referenced by TCE when it is operating within the TSO/ISPF environment. To build this structure the following three steps are necessary:

- First, verify that you have the CE#ALLOC and CE#BUILD in your HQL..INSTLIB dataset then:

  Submit CE#ALLOC from the HLQ..INSTLIB dataset. Verify return code is Zero (0).
  Submit CE#BUILD from the HLQ..INSTLIB dataset. Verify return code is Zero (0).

- Second, after the jobs are run, verify that the following datasets exist:

  HLQ..CETSO.LOAD - load modules in non-APF authorized library
  HLQ..CETSO.LPALIB - load module to be loaded into LPA and/or LPALST
  HLQ..SISPCLIB - REXX programs
  HLQ..SISPMENU - ISPF messages
  HLQ..SISPPENU - ISPF panels

- Third, make these two dynamic system changes:

  1 - Update IKJTSOxx by adding the TCE Command NEZCHKT as an authorized TSO command list. To do this invoke the following Operator Commands:

  set ikjtso=xx
  setprog lpa,add,modname=nezchkt,dsname=HLQ..cetso.lpalib

Once the Dataset structure is available either integration method, temporary or persistent, may be implemented.

5.3.2 Temporary Integration

When Temporary integration is selected TSO/ISPF users will need to choose to run either CETSO or CEINIT from the ISPF Command Shell (ISPF Option 6) to experience the benefits of TCE. Note, upon completion of a session the user should use CETERM to terminate The Controls Environment.

Found in the HLQ..SISPCLB2 library these programs MUST be edited during the install so that the dataset names inside the programs match the ones used in the install of ICE.

All of these Rexx programs must be launched from ISPF Option 6, using the following command format:

```
EX 'HLQ..SISPCLB2(CExxxx)'
```

5.3.2.1 CETSO

This command runs the same Control Editor function as if the user were logged on to the ICE/ISPF environment and displays the Dataset Panel giving the user access to the Category defined datasets by Category Name.

5.3.2.2 CEINIT

This command sets up the Control Editor Environment and invokes the provided TSO/ISPF EDIT macro. Once active any Controlled Dataset accessed via TSO/ISPF will inherit the control and productivity functions provided by TCE.

CEINIT has the following limitations:

The Delete and Rename events cannot be captured and/or recorded using the CEINIT function. Use either CETSO or the optional Transparent ISPF setup to capture and record Delete and Rename events. In addition, ISPF Split Screen functions are not supported by CEINIT.

5.3.2.3 CETERM

Removes the Control Editor environment and the TCE provided ISPF EDIT macro.

5.3.3 Persistent Integration

There are many ways to integrate The Control Editor and its functions into TSO/ISPF environment that will make its existence transparent to the TSO/ISPF end user. The method discussed here is one of many. We welcome your comments and feedback on this and other methods of integration you would suggest.

5.3.3.1 SAMC01A and SAMC01B

The ICE INSTLIB members SAMC01A and SAMC01B contain the instructions and sample job to allocate a dataset and run the ISPF Configuration Utility. It is a best practice to be certain that The Control Editor is functioning correctly within the ICE Environment before you attempt transparent integration into ISPF.

Once The Control Editor installation has been validated, do the following:

5.3.3.2 Integration Activation

Follow the instructions found in INSTLIB member SAMC01A as summarized below:

- Allocate Datasets to install the ISPF Configuration File. Submit JOB SAMC01B from the INSTLIB dataset and verify a zero completion code.

- Set up a System-wide Edit Macro for The Control Editor. Type “TSO ISPCCONF” on a TSO Command Line and press <ENTER>. Use the ISPF Configuration Utility panel to create/modify settings and build the configuration module.

- Update TSO Logon PROC.

1. Add the CE-TSO datasets to the library concatenations as detailed in INSTLIB member SAMC01A.

2. Add the following IFO dataset reference to your TSO Logon PROC:

```
//NSEPARM  DD    DISP=SHR,DSN=xxx.PARMLIB
```

Where the NSEPARM DD statement references the IFO parmlib dataset; and where 'xxx' is defined to be the HLQ(s) for your installed IFO datasets.

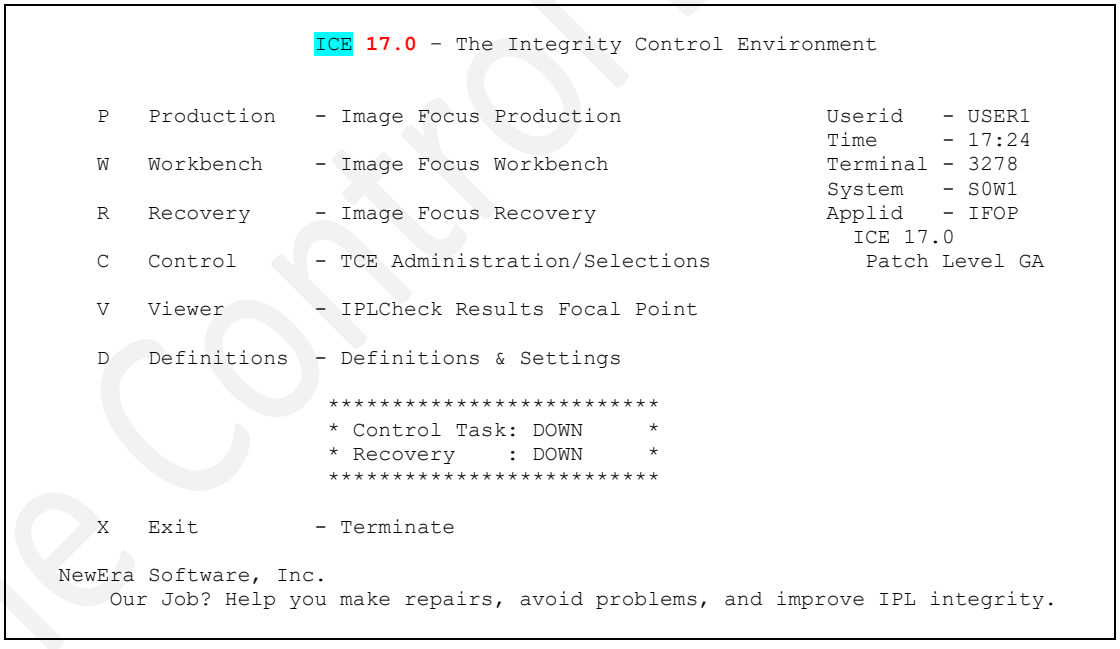
- Verify the installation. First log-off, then return to TSO. Edit a Controlled Dataset and verify that the Control Editor is being used.

5.4 TCE Administration

Once installed and activated TCE Controlled Categories, Control Journals and Administrator Dialogs are accessed from the TCE Primary Menu. To reach these Administration Functions logon to the ICE VTAM application named during the installation process. During this logon process a user's TSOUserId is validated by the External Security Manager, a specific user address space is created (a separate IFOS will be created for each individual user) and the ICE Primary Menu will be displayed for authorized users. When the user terminates a session the IFOS address space is quiesced.

5.4.1 >> ICE Primary Menu

As authorized users Logon to the ICE environment a separate Started Task (IFOS) is launched to manage the user's session and display The ICE Primary Menu providing access to all ICE Applications. When individual ICE Applications are licensed the Application Option Names will be highlighted, usually white text. Those that are not highlighted, usually appearing in yellow text are not licensed and cannot be accessed until they are. All ICE Applications are included in the ICE Download so that they can be turned on at any time, without additional download or installation steps, by requesting a License Key from NewEra Technical Support via email, support@newera.com.



5.4.2 Production

The Production View supports functions that are used to enable the interval monitoring of an Image FOCUS-managed Sysplex or Image. Once active, this critical

monitoring function will call the Image FOCUS Inspection Server as scheduled to perform a Sysplex-wide validation of the current configuration components that define a running production environment. As directed by optional settings, Packages are updated and "Need to Know" notices sent.

5.4.3 Workbench

The Workbench View will assist in the analysis of each Image Component by providing Operating System and Subsystem Inspection, New Release and Configuration Change Management Tools. Each of these tools will generate Inspection Logs or Change Reports that focus attention on changes to critical configuration components and/or their integrity.

5.4.4 Recovery

The Recovery View gives you access to critical system resources when JES, VTAM, RACF, and/or TSO are not available. In addition, the proven NoTSO Environment and IFOR (IFO Recovery) ensure that you retain access to Image FOCUS for problem analysis, repair and recovery under these adverse conditions. The Recovery View also houses the entry point for the Fast DASD Erase for z/OS application.

5.4.5 Control

The Control Editor is an optionally licensed application of the Image FOCUS Control Environment. Its intended purpose is to extend the Control Environment and, in doing so, provide to Image FOCUS users an ISPF editing platform from which they can both control and manage access and changes to critical system datasets. In Image FOCUS 17.0, the DELETE, RESTORE and RENAME capabilities in Control Editor are all available. Image FOCUS 17.0 also allows the user to run The Control Editor under TSO.

5.4.6 Viewer

The Viewer provides direct access to the IPLCheck Family of applications. IPLCheck applications are Predictive Failure Analysis (PFA) “Health Checks”. The analytic processes that they use are based on NewEra’s proven z/OS Inspection Server Technology.

5.4.1 Definitions

Definitions and Settings give you access to Import/Export Migration Tools that assist you in moving to new and/or enhanced releases of Image FOCUS. In addition, you will find options that allow you to build Custom Inspectors and Custom Reports.

5.4.2 ICE Functional Notices

In addition to the options provided on the Primary Menu, you will also find the following Functional Notices:

```
*************************
* Control Task: RUNNING  *
* Recovery    : RUNNING  *
*************************
```

5.4.2.1 Control Task

The started task BACKGROUND (IFOBG) is the platform from which all Inspection and Monitoring activity is run. Knowing that it is functional and running is critical. To ensure that you are informed of its status, this notice is updated each time you enter the Primary Menu. If the Background is "DOWN", you should go directly to the Production View. Select the Status Monitor Option to determine the reason why. It is recommended that IFOBG be run continuously.

5.4.2.2 Recovery

The started task, IFOR, provides access to Image FOCUS and other vital system resources and tools for System Recovery. It is recommended that IFOR run continuously. To keep you informed of its status, this notice is updated each time you enter the Primary Menu. If IFOR is "DOWN", you must restart it in order to gain access to the NoTSO Recovery View via the IFOR Address Space.

5.4.3 >> TCE Primary Menu

The Control option provides authorized users access to the TCE Administrator Dialogs and Enviornmental Options. These functions are intended for the exclusive use of the TCE Administrator(s).

5.4.4 Access Control

Control statements in the NSEJRNxx member define both Primary and Backup Administrators. When TCE is first used, before administrator assignment, those accessing these functions will be prompted for an access password. Under this circumstance only the password 'TCEUSER' is valid. Once Administrators are assigned individual TSOUserIds will be checked against the assignment list. Those users with

matching IDs will be allowed access; all others will be denied or warned of a possible future denial. All of these actions and notices will depend on Padlock Control Mode settings.

Once access is granted the TCE Primary Menu provides access to the Control Enviornment Options that are used by the TCE Administrator to define Control Boundaries, configure and activate the TCE Control Settings and for setting up and reviewing Event Reports.

```
                TCE 17.0 - The Control Environment Options

B   Boundary  .. - Establish TCE Control Boundaries      Userid   - PROBI1
                                                        Time     - 15:21
J   Journals  .. - Controlled Event Reporting Options    Sysplex  - ADCDPL
                                                        System   - ADCD113
S   Settings  .. - Configuration Settings Overview      IFOhlq   - TEST
                                                        ICE 17.0 - TCE 17.0
D   Activate  .. - Dynamically Activate TCE Members      Patch Level GA

M   Monitors  .. - Event and Configuration Monitors

N   NEZUtils  .. - Controlled Batch Update Procedures

A   Advanced  .. - Advanced Configuration Settings

L   LegacyVu  .. - Legacy Category/Journal Functions


X   Exit         - Return to the TCE Primary Menu

NewEra Software, Inc.
 Our Job? Help you make repairs, avoid problems, and improve IPL integrity.
```

5.4.5 Boundary

TCE uses Defined Boundaries as the basis for its Event Monitoring and Control. Three types are supported.

5.4.6 Journals

Detected Controlled Events are captured and recorded in Control Journals. This option shows reporting functions.

5.4.7 Settings

Settings in the NSEPRMxx ParmLib Member determine the state of Service Task and name Configuration Members.

5.4.8 Activate

TCE Configurations may be dynamically activated or will be automatically activated when IFOM is next restarted.

5.4.9 Monitors

Various Interval Reports may be optionally set up and initialized to 'Notice' Event & Configuration changes.

5.4.10 NEZUtils

Control Boundaries may be extended to the Batch Update of Datasets associated with Controlled Categories.

5.4.11 Advanced

Below the functional level interface described above Specific Member Access is provided for advanced users.

5.4.12 LegacyVu

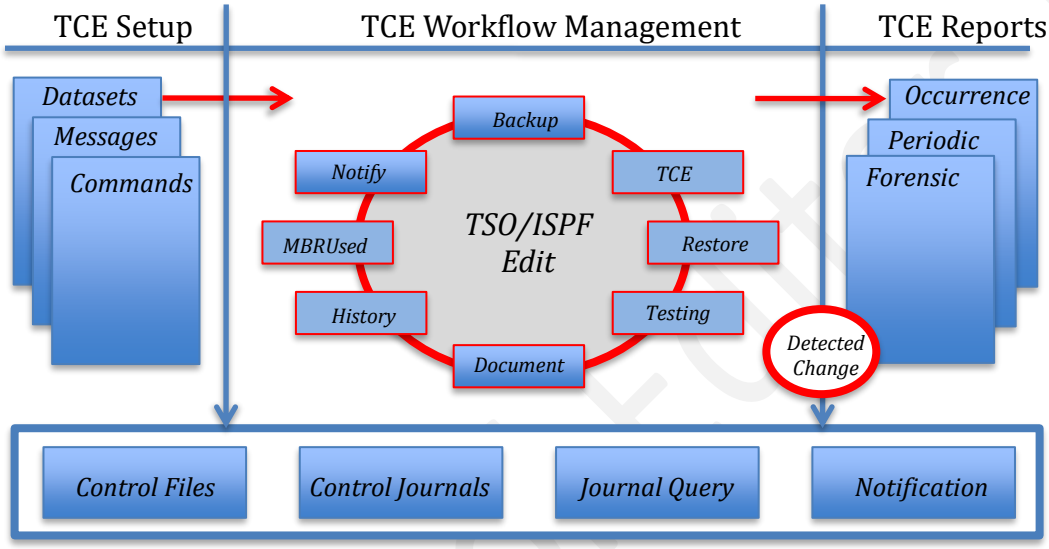
Below the functional level interface described above Specific Member Access is provided for advanced users. See Appendix G – LegacyVu.

5.4.13 Administrator Dialog User Guide

For a more detailed description of these Control functions see The TCE Configuration Dialog User Guide.

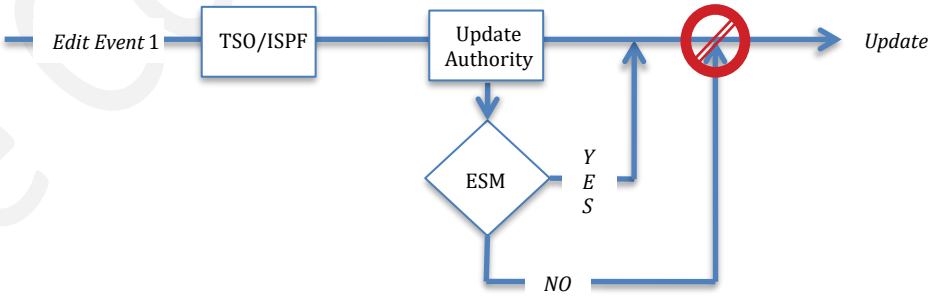
6 Enhancing Support Staff Productivity

Sound z/OS System Programming *Best Practices* are straightforward and simple enough, but we're all human, all busy, we all forget and our best intentions to conform to these practices will sometimes go unfulfilled. Once TCE is installed this will all change and staff productivity will increase dramatically as many of these practices, taking a backup for example, will become automatic while others will become possible for the first time, for example, having access to Restore Points, and other valuable configuration information available as TSO/ISPF Line Commands.



In this section we will examine workflow patterns commonly found in many System Programming configuration management tasks and how these tasks can be automatically conformed to Best Practices using The Control Editor's Expert TSO/ISPF *Workflow Assistant*.

6.1 Typical TSO/ISPF Edit Session



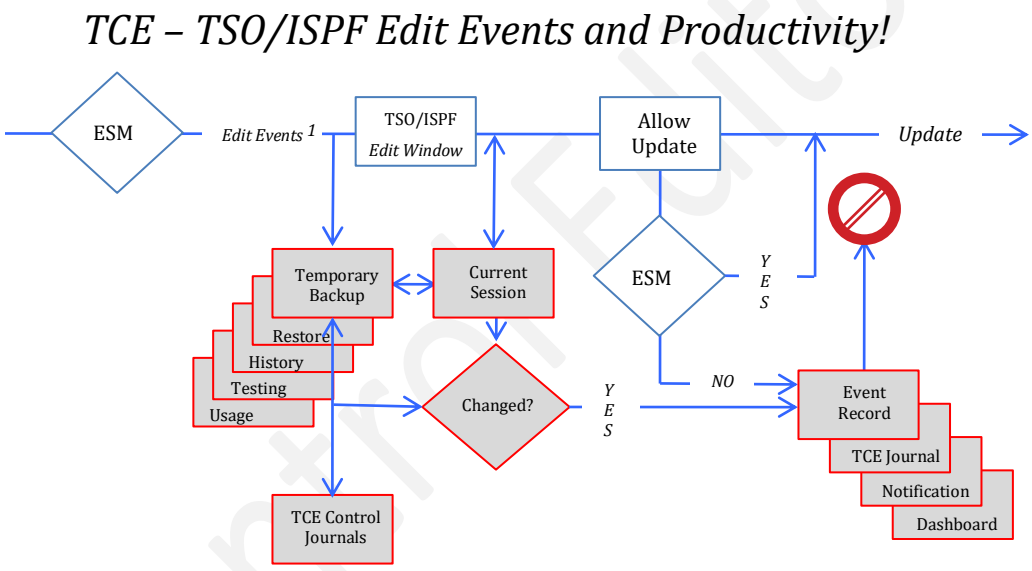
[1]TCE can Detect Edit, Copy, Create, Move, Replace, Rename, Add and Delete in PO and PS Datasets.

6.1.1 Normal Workflow

In a typical TSO/ISPF Edit Session, an Edit Event, a user begins by selecting the member from a selection list, generally generated by TSO/ISPF option 3.4. As the user proceeds to make changes to the selected member she will, at some point, use PFK3 to attempt a save. At this point, the External Security Manager (ESM) will check update authority. If authority has been granted the update is allowed.

6.1.2 With Workflow Assistance

When the TCE environment is present the functions available to a user during a TSO/ISPF Edit Session are upgraded dramatically to provide directed workflow assistance.



[1] *z/OS, z/UNIX - Browse, Edit, Copy, Create, Move, Replace, Rename, Add and Delete in PO and PS Datasets.*

First off, as the user makes her selection from the member selection, but before the member is displayed in the edit window, an "in memory copy" of the member is taken to be used for two specific purposes:

- First, as a Compare Point to determine if the actual current content of the member matches with the last version stored in the TCE Control Journals. If the member content does not match it is flagged as a Detected Change and the "in memory copy" is stored in the TCE Control Journal as a new Generational Backup. A summary record, called a META Record, is also stored in the Journal noting the details of the detected event.

  In those circumstances where a Detected Change is noted an optional Pop-Up may be displayed to alert the TSO/ISPF user of this finding. Because the event is

immediately recorded in the Journal the user can use the HISTORY Line Command to review the details of this detected event before proceeding.

- Second, as a Compare Point to be used to determine if the user actually makes a change during the Edit Session. If the user actually makes a change the "in memory copy" is discarded and the updated member is stored in the TCE Control Journals as a new Generational Backup. A summary record, called a META Record, is also stored in the Journal noting the details of the edit event.

As the process continues, following the user request to save her changes, the ESM will be called as it normally would to grant or deny authority to make the update. If update authority is granted the update takes place and the user is returned to her starting point, likely a Member Selection List. However, if update authority is denied by the ESM, TCE will take note of the denial and the action to record the denial in the Journal and optionally send notification via Email or SMS Text to a designated recipient or WTOR to the operator console.

6.2 TCE Productivity – Interactive Changes

TCE fully supports the default TSO/ISPF Line Commands MOVE, COPY, CREATE, REPLACE, and EDIT. In addition, TCE provides support for its own unique Line Commands RESTORE, HISTORY, IPLCHECK, TCEHELP, INSPECT, JSCAN, and PSCAN. Each is explained in this section.

6.2.1 TCE – Restore Points

It should be clear by now that TCE is taking a new Generational Backup whenever it encounters a change to a controlled Dataset or Member and that these backups are stored in the TCE Control Journals. The question then is "How can they be used by the TSO/ISPF user?"

To gain access to the generations of backups available for a selected member the TSO/ISPF user would enter RESTORE (R is the short form) on the Command Line of the Edit Window and press enter. This action will immediately display an ISPF Worksheet displaying a single line entry for each available Restore Point. Each single line entry details the Date, Time, User, Event Code and Control Dataset. Using the Worksheet Row Selection Commands users can Display, Compare and Restore members directly from the Control Journals.

6.2.1.1 Select (S)

Select will display, in an ISPF Browse Window, the content of the member as stored in the TCE Control Journal.

6.2.1.2 Compare (C)

Two selections are required before the selections are passed to SUPERCOMPARE. The results of the compare will be immediately displayed in an ISPF Browse Window.

6.2.1.3 Restore (R)

Note that when this command is used the journal content of the member as of the specific selection is "QUEUED" for a Restore and that the actual Restore will not take place until it is actually confirmed as the user exits her original TSO/ISPF Edit Session. A Sample of the Pop-Up displayed following the initial selection is shown below.

```
Confirm RESTORE of Member PROGVN to
DSN: VENDOR.PARMLIB
VOL: VPMVSD

Press ENTER to continue or END to exit
```

Pressing ENTER, at this point in the process, will preserve the Queued Restore. Using PFK3 will ABORT the process and release the Queued Member Content. A confirming message will be displayed stating that the Restore Request has been queued.

Upon returning the original Edit Session and from that point using PFK3 to exit to the Member Selection List, the following Pop-Up will be displayed asking the TSO/ISPF user to confirm their Restore Request.

```
History restore detected for PROGVN
Continue with restore on member exit (Y/N):_
```

Note that <u>POSITIVE CONFIRMATION IS REQUIRED</u> at this point to confirm the Restore Request. So if it is your intention to Restore the Member place "Y" in the Pop-Up panel and press enter. At this point the optional Descriptor Panel may be presented to the user. Descriptors and their construction are described in *'Appendix C – Event Descriptor'*.

6.2.2 TCE – Change History

All events captured during an Edit Session and the subsequent issuance of a Controlled Operator Command is recorded in the Control Journals. Complete access to the full Journal Set, including all event classes and types, is reserved for the TCE Administrator and accessible only via the ICE and The Control Editor Primary Menus.

But being able to research the history of a member in order to gain a more complete understanding of its changes over time is a valuable step toward z/OS System Programming Best Practices. To gain directed access to the history of the specific member being displayed in the Edit Window the TSO/ISPF user only needs to enter HISTORY (H) on the Command Line and press enter to immediately display the member's Timeline Worksheet.

The TimeLine Worksheet details five specific Classes of Events that may have impacted the selected member:

- Edit Events – Normal member edits and updates,
- Detected Changes – Updates made outside of the TCE Control but subsequently detected and captured in the Control Journals,
- Submit Events – Members submitted for Job Execution,
- Exceptional Events – ESM and TCE Exceptions, B37, Directory Blocks and
- Command Events – Controlled Operator Commands issued.

A sample of the History Interface Panel is shown below.

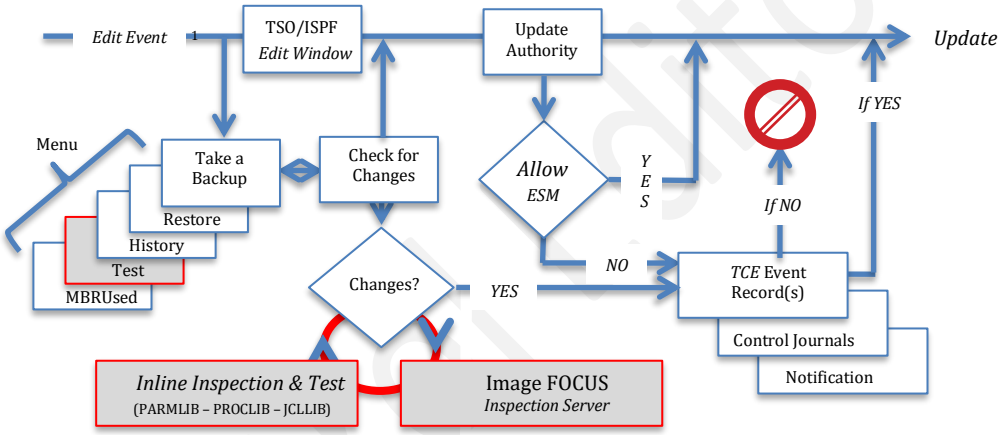
```
      TCE 17.0 - Control Journal - Event Selection   Row 1 to 7 of 7
--NSIMJRD 1130--                                          --Member Events--
--------- Journals IFO.TEST - Control DSN(MBR) VENDOR.PARMLIB(PROGVN) ---------
Option ===>                                                 Scroll ===> CSR
Selection: Cursor under Value then press enter to display History Worksheet
- Row ------------Event Targets---------- Your ---------Period to Date---------
S Num -Class- -----------Name------------ News Days Week Mths Qtrs Years Totals
_ 001 Updates Member_Edit/Update_Changes     0    1    4    4    4     4      4
_ 002 Detects AutoDetect_Member_Changes      0    0    0    0    1     1      1
_ 003 Submits Member_JCL/JOB_Submissions     0    0    0    0    0     0      0
_ 004 Excepts Exceptional_Member_Events      0    0    2    2    2     2      2
_ 005 OprCmds Named_Operator/Cmmd_Events     0    0    0    7    7     7      7
_ 006 ------- -------------------------- ---- ---- ---- ---- ---- ----- ------
_ 007 Totals  All_Journaled_Member_Events    0    0    6   13   14    14     14
****************************** Bottom of data ********************************
```

Review the five Event Classes shown in the panel and the history of events in each class displayed to the right. Take note that 'Your News' is specific to individual TSO/ISPF users and reflects the number of events, by class that have impacted the member since they last entered and displayed the panel. To select an event (by News, Days, Week, Mths, Qtrs, Years or Totals) cursor under any positive value and press enter. This action will immediately display the Event Selection List Worksheet.

6.2.3 TCE – Configuration Testing

While in the Edit Window a user may invoke the NewEra Inspection Server to perform three different types of Inspections:

- PARMLIB – To Inspect the content of a valid z/OS ParmLib Member enter INSPECT (I) on the Command line of the edit window and press enter.
- JCLLIB – To pass a valid JCL Member to the z/OS Internal Reader without the need to add a TYPERUN=SCAN control card to the member enter JSCAN (J) on the command line of the edit window and press enter.
- PROCLIB – To inspect the content of a valid z/OS Procedure (PROC) Member enter PSCAN (P) on the command line of the edit window and press enter.



1 *In addition to Edit Events, TCE can detect ESM Policy and Operator Commands and z/OS System Messages.*

With every execution of the Inspection Process the results are displayed in an ISPF Browse Window. Defects in syntax, construction or referential integrity (Dataset not on a Volume specified, for example) may be corrected as needed and the Inspection Process rerun. Inspections have no effect on the content of a member and any changes made during the Edit/Inspection process can be discarded by using the TSO/ISPF CANCEL Line Command before returning to the original Member Selection List.

6.2.3.1 An Example - JCL Validation

"TYPRUN=SCAN" has been available for the validation of JCL for a long, long time. It's considered a great way to pretest JCL prior to submission but unfortunately considered difficult to use. Inserting a new JOB CARD in the JCL Deck can be cumbersome, possibly leading to unintended JOB failures. TCE leverages JCL pretesting by automating the process. To do this TCE creates and submits a

conformed copy of the targeted JCL. TYPRUN=SCAN is automatically inserted in the conformed copy before it is actually submitted. Validation results are returned and immediately displayed on the user's screen, no need to try and track them down in the System Log. If results are not acceptable the JCL can be edited and resubmitted for validation as often as necessary to ensure a clean execution.

6.2.4 TCE – Member Usage

A single Central Processing Complex (CPC) may support many LPARs each with its own processing objectives and very likely a unique configuration. When the configuration of all LPARs, or just a few, resides in a common ParmLib Concatenation confusion can arise as to which LPARs will be impacted by a given configuration update.

When this is the case knowing the history of and being able to inspect a member is not sufficient to understand the impact that a change will have on one or more production LPARs. To complete the picture you must also know, with certainty, WHERE the member you are working with is used, thus avoiding the unintended consequences of a change.

6.2.4.1 IPLCheck Core

To create an operational profile of the full zEnterprise environment and each of its z/OS LPAR configurations TCE can optionally link to the Inspection Logs created by its companion application IPLCheck – Core.

IPLCheck – Core operates totally under the control of the IBM Health Checker for z/OS. It automatically identifies the IPL Parms of each system it is resident on, hopefully all, and using this information performs a virtual IPL of the z/OS environment. This virtual process, called an Inspection, identifies, along the IPL Path, all required components including startup and prevailing Parmlib Members.

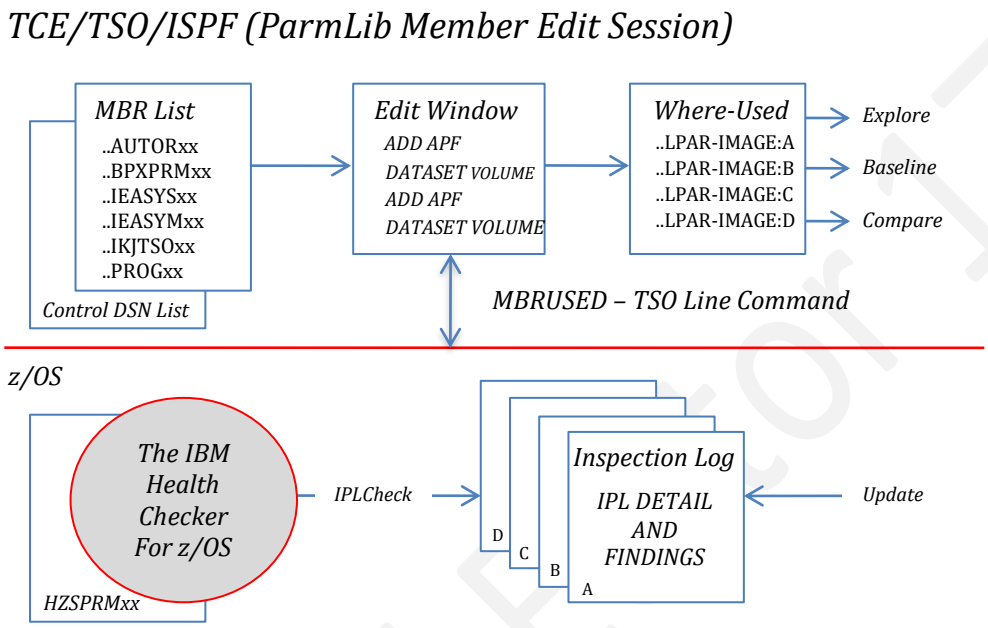
All of the information examined along with resulting inspection findings is written out to a uniquely qualified IPLCheck Log Dataset. It is recommended that this unique qualifier follows the recommended convention of HLQ.LLQ.IPLCHECK.system_name.

6.2.4.2 NSEJRNxx IPLCHECKHLQ Statement

If the recommendation is adhered to as a standard for ALL IPLCheck installations, TCE will be able to identify them automatically when you define the HLQ.LLQ.IPLCHECK portion of the qualifier in the NSEJRN00 configuration member using the IPLCHECKHLQ keyword.

6.2.4.3 MBRUSED Overview

An overview of the process interface that exists between TCE and the IPLCheck Inspection Log is shown below.



The IPLCheck LPAR-Images Selection List Worksheet supports four Row Selection Commands.

- Baseline Image

Placing a 'B' on the entry point preceding a specific LPAR-Image and pressing enter will set the content of its matching member, if any, as a baseline against which all other LPAR-Image members can be compared. Note that the selected LPAR-Image will appear above the heading row to indicate that it is now set as the baseline.

- Display Compare

Once a baseline has been set you would next place a 'D' on the entry point preceding the LPAR-Image you wish to compare, and press enter. This action will display The Member to Member Compare Worksheet. You can use additional Row Commands in the displayed worksheet to view the Baseline and Selected members.

- Update Inspection

Each row of the worksheet represents a single LPAR-Image with its corresponding inspection findings and Startup Parms discovered by IPLCheck. Using the 'U' command will pass these Parms to the NewEra Inspection Server with a call for an inspection update of the selected LPAR-Image. As the inspection update is proceeding you will note its state being displayed. When the inspection is

complete the updated Inspection Log will appear in TSO/ISPF Browse. This inspection update does not replace the IPLCheck Inspection Log.

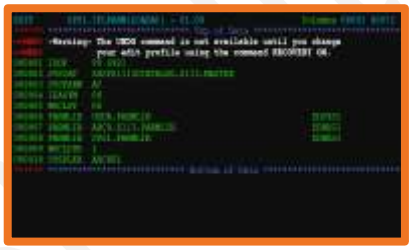
- View Inspection

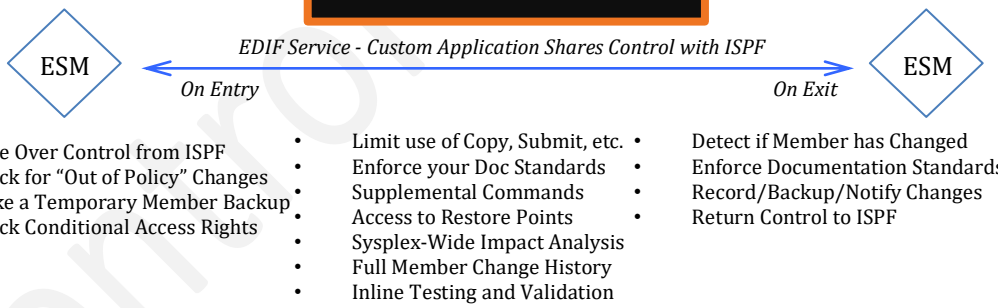
To view the latest available IPLCheck Inspection Log place 'V' on the entry point preceding the desired LPAR-Image and press enter.

6.3 EDIF – The Edit Interface Service

The Edit Interface (EDIF) service provides edit functions for data accessed through dialog-supplied I/O routines. The dialog intercept must perform all environment-dependent functions such as dataset allocation, opening, reading, writing, closing, and freeing.

TCE - The Edit Interface!





The dialog is also responsible for any necessary ENQ/DEQ serialization.

6.3.1 On Entry - Application Control

- pre-processing that can allow/deny dataset/member access, detect changes create backups,
- editing data in partitioned datasets and sequential files, and
- post-processing can detect changes, displaying inline descriptor information, generating optional occurrence notification and refreshing a backup as needed.

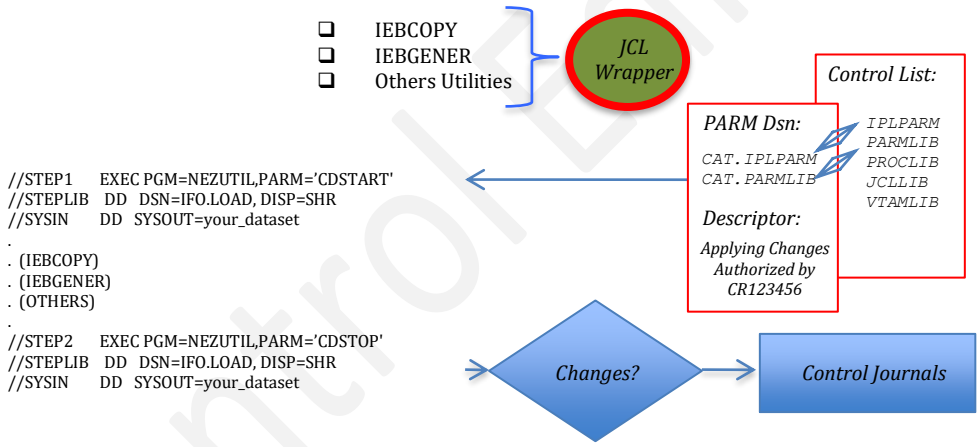
6.3.2 On Exit - Application Control

- provides routines that perform data read and write operations,
- provides command processing to support MOVE, COPY, CREATE, REPLACE, and the EDIT primary commands, and
- supports unique application specific TSO/ISPF primary line commands.

6.4 TCE Productivity – Batch Changes

Configuration support *'Best Practice'* Policies may not allow the direct update of system configuration members in *'Production Datasets'* using the interactive edit services of TSO/ISPF. Generally, the workflow patterns governed by such policies require that member updates occur only in 'Staged Datasets' and that these updates may only be moved to 'Production Datasets' via approved BATCH processes, for example the batch utilities IEBCOPY, IEBGENER.

TCE – Batch Utilities - Productivity!



6.4.1 NEZUTIL - The JCL Wrapper

The NEZUTIL JCL Wrapper is the TCE method of implementing a process that will encapsulate existing BATCH JCL within JOB Steps that first, identifies the start of Batch Execution to TCE. Second, names a PARM Dataset that contains targeted Control Categories and optional event descriptor. Third, determines and records member changes as a result of JOB execution within the Controlled Categories named in the PARM dataset.

Model of the NEZUTIL JCL Wrapper:

```
//STEP1     EXEC PGM=NEZUTIL,PARM='CDSTART,SUBS=IF01'
//STEPLIB   DD  DSN=ifom.load,DISP=SHR
```

```
/ /SYSIN        DD   your.control.card.dataset
.
.   (IEBCOPY)
.   (IEBGENER)
.   (OTHERS)
.
//STEP2     EXEC PGM=NEZUTIL,PARM='CDSTOP'
/ /STEPLIB      DD  DSN=ifom.load,DISP=SHR
/ /SYSIN        DD  *
          or
/ /SYSIN        DD your.control.card.dataset
```

6.4.2 PARM CDSTART/CSSTOP

CDSTART and CDSTOP are mutually exclusive and one or the other is required.

6.4.3 PARM SUBS=

SUBS= supports an up to 4 character subsystem name. The SUBS= parameter is optional - if nothing is specified, the NEZUTIL utility will connect to the default Control Editor IFOM. Before using SUBS= it is a best practice to contact NewEra Technical Support and discuss your need for specific subsystem identification.

6.4.4 PARM Examples

NEZUTIL is marked AC1 and must run from an authorized library OTHER THAN the ICE LOAD Libaries which do not run in an authorized state.

```
//NEZUTIL   EXEC PGM=NEZUTIL,PARM='CDSTART'

//NEZUTIL   EXEC PGM=NEZUTIL,PARM='CDSTOP'

//NEZUTIL   EXEC PGM=NEZUTIL,PARM='CDSTART,SUBS=IF01'

//NEZUTIL   EXEC PGM=NEZUTIL,PARM='CDSTOP,SUBS=IF01'

//NEZUTIL   EXEC PGM=NEZUTIL,PARM='SUBS=IF01,CDSTART'

//NEZUTIL   EXEC PGM=NEZUTIL,PARM='SUBS=IF01,CDSTOP'
```

6.4.5 STEPLIB Dataset

Points to the ICE Load Libaries.

/ /STEPLIB DD DSN=ifom.load,DISP=SHR

6.4.6 NEZUTIL Control Cards - In-Line

Control Cards may be specified In-Line within the JCL.

/ /SYSIN DD *

```
//ESSJDL1N JOB (ESSJDL1),'LAUTNER',NOTIFY=ESSJDL1,
//         MSGLEVEL=(1,1),MSGCLASS=O,CLASS=A
/*JOBPARM  L=9999
//NEZUTIL  EXEC PGM=NEZUTIL,PARM='SUBS=IF01,CDSTART'
//STEPLIB  DD   DSN=ESSJDL1.IFO101.B3.LOAD,DISP=SHR
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   *
CATEGROY SYSTEM.PARMLIB
CATEGORY SYSTEM.PARMLIB
CATEGORY ODD.DATASET
CATEGORY ODD.DATASET1
DESCRIPTOR .START
LINE 1 OF DESCRIPTOR
LINE 2 OF DESCRIPTOR
DESCRIPTOR .START
LINE 3 OF DESCRIPTOR
DESCRIPTOR .END
```

6.4.7 NEZUTIL Control Cards - In a Dataset

Using a Parm Dataset will often result in a single update to the production JCL used to copy staged configuration members into production datsets. From that point forward any changes in named Categories and/or Descriptor Text can be made to the //SYSIN dataset named in the JCL.

/ /SYSIN DD your.control.card.dataset

The Control Card Dataset, an adhoc dataset, contains the name of defined Control Categories that include the Controlled Datasets that are the update targets of the encapsulated Batch Utility and related Descriptor Text.

Parm dataset control cards supported are:

```
CATEGORY category_name
DESCRIPTOR .START
descriptor_line
descriptor_line
descriptor_line
DESCRIPTOR .END
```

Multiple CATEGORY control cards may be specified. The descriptor_lines between the DESCRIPTOR .START and DESCRIPTOR .END control cards are freeform text descriptor lines.

6.4.7.1 PARM Dataset – Category Names

Multiple CATEGORY control cards may be specified as shown below:

```
CATEGORY SYSTEM.PARMLIB
CATEGORY JES2.PROCLIB
```

6.4.7.2 PARM Dataset – Descriptor Lines

The optional multi-line Event Descriptor Text if included in the PARM Dataset will be recorded along with other detected change detail. The Event Descriptor is described in the section titled *'Collecting Point of Change Documentation'* in this User Guide.

```
DESCRIPTOR .START
This Batch Update
Authorized by
CR123456
DESCRIPTOR .END
```

6.5 NEZUTIL Batch Change Reporting

6.5.1 NEZUTIL Detection Process Worksheet

```
              TCE 17.0 - Named Period Selection Worksheet     Row 1 to 7 of 7
--NSIMJRL 1127--                                            --CDStart Events--
------------- IFO.TEST - NEZUTIL Detection Events - Week Worksheet ------------
Row Selection: Show_the_NEZUTIL_Configuration List_Detected_Changes_for_Event
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- -Row- ----Batch Update Event---- ----------NEZUTIL Control Elements----------
_ _____ ________ _____ _____ _____ ________ ________________________________
S Index yy/mm/dd hh:mm Types Total -Tokens- --------JOBName_ID_Sysplex---------
_ 00001 19/11/30 08:24 CDSTR     1 ABCDEFGH SAMNEZ1
_ 00002 19/11/30 08:19 CDSTR     0 ABCDEFGH SAMNEZ1
_ 00003 19/11/29 08:40 CDSTR     0 ABCDYYYY NEZUTIL
_ 00004 19/11/27 10:41 CDSTR     2 ABCDEFGH SAMNEZ1
_ 00005 19/11/27 10:22 CDSTR     0 ABCDEFGH SAMNEZ1
_ 00006 19/11/27 10:13 CDSTR     0 ABCDEFGH SAMNEZ1
_ 00007 19/11/27 07:42 CDSTR     0 ABCDEFGH SAMNEZ1
****************************** Bottom of data ********************************
```

6.5.2 NEZUTIL Process and Configuration Report

```
/*****************************************************************************/
/*                                                                           */
/*      The Control Editor - NEZUTIL Detection Process and Configuration     */
/*                                                                           */
/*               Date:2018/11/30 - Time:08:47:59 - User:USER1                */
/*                                                                           */
/*****************************************************************************/
|
TCE0000I +-------------------------------------------------------------------+
TCE0000I |                                                                   |
TCE0000I |          NEZUTIL CONTROLLED PROCESS - EVENT TYPE:CDSTR            |
TCE0000I |                                                                   |
TCE0000I +-------------------------------------------------------------------+
TCE0000I |                                                                   |
TCE0000I | -------------------------EVENT IDENTITY------------------------- |
TCE0000I |                                                                   |
TCE0000I | NEZUTIL-------------THE CONTROL EDITOR----------------- CDSTART - |
TCE0000I | ADCDPL   SYSNM:ADCD113  USRID:PROBI1  TIME:08:24:15 DATE:16/30/19  |
TCE0000I | SAMNEZ1   JOBID: JOB01324  TOKEN: ABCDEFGH----------------------- |
TCE0000I |                                                                   |
TCE0000I | ----------------------CONTROLLED CATEGORIES---------------------- |
TCE0000I |                                                                   |
TCE0000I | CATEGORY SYSTEM.PARMLIB                                           |
TCE0000I |      DSN USER.PARMLIB(ZDSYS1,ADCD113)                             |
TCE0000I |      DSN ADCD.Z113.PARMLIB(ZDRES1,ADCD113)                        |
TCE0000I |      DSN SYS1.PARMLIB(ZDRES1,ADCD113)                             |
TCE0000I |                                                                   |
TCE0000I | ------------------------EVENT DESCRIPTORS------------------------ |
TCE0000I |                                                                   |
TCE0000I | NEZUTIL IS DESIGNED TO                                            |
TCE0000I | FUNCTION IN CONJUNCTION WITH                                      |
TCE0000I | BATCH UPDATE UTILITIES                                            |
TCE0000I |                                                                   |
TCE0000I +-------------------------------------------------------------------+
```

6.5.3 NEZUTIL Change Events Worksheet

```
              TCE 17.0 - NEZUTIL Detected Changes Wksheet     Row 1 to 2 of 2
--NSIMJRL 1127--                                              --Dataset/Member--
------------------ IFO.TEST - Detected Change Event Worksheet -----------------
Row Selection: Show_the_Change_Details Browse_All_Journalled_Member_Events
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- -Row- -------Detected Events------- -----------Controlled Dataset---------- >
_ _____ ________ _____ _____ ________ ________ ____________________________________
S Index yy/mm/dd hh:mm Types --User-- -Member- -------Controlled Dataset-------
_ 00001 16/11/27 10:41 CDCNG ABCDEFG  COMMNDPR USER.PARMLIB
_ 00002 16/11/27 10:41 CDCNG ABCDEFG  COMMNDPH USER.PARMLIB
****************************** Bottom of data ********************************
```

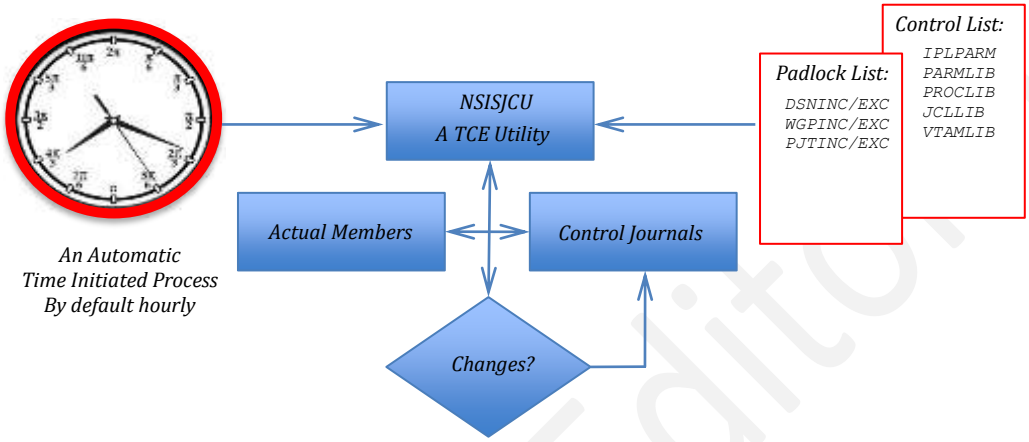
6.5.4 NEZUTIL Detected Member Change Detail

```
/*****************************************************************************/
/*                                                                           */
/*          The Control Editor - Control Members - Event Log Detail          */
/*                                                                           */
/*                Date:2018/11/30 - Time:08:54:56 - User:PROBI1              */
/*                                                                           */
/*****************************************************************************/
|
TCE0000I +-------------------------------------------------------------------+
TCE0000I |                                                                   |
TCE0000I |             CONTROLLED MEMBER DETAIL - EVENT TYPE:CDCNG           |
TCE0000I |                                                                   |
TCE0000I +-------------------------------------------------------------------+
TCE0000I |                                                                   |
TCE0000I | -------------------------EVENT IDENTITY------------------------- |
TCE0000I |                                                                   |
TCE0000I | -Member- --User-- --Date-- Times -------Controlled Dataset-------- |
TCE0000I | -------- -------- yy/mm/dd hh:mm -------------------------------- |
TCE0000I | COMMNDPR ABCDEFG  16/11/27 10:41 USER.PARMLIB                     |
TCE0000I | ======== ======== ======== ===== ================================ |
TCE0000I | ------------Record Length:80-----Record Format=F B---------------- |
TCE0000I |                                                                   |
TCE0000I | -------------------------MEMBER CHANGES------------------------- |
TCE0000I |                                                                   |
TCE0000I |                    SUPERC LINE COMPARE CHANGE DETAILS
TCE0000I |     ----+----1----+----2----+----3----+----4----+----5----+----6----+
TCE0000I | I - COM='S TN327X'
TCE0000I |     ----+----1----+----2----+----3----+----4----+----5----+----6----+
TCE0000I |                    I = LINE INSERTED D = LINE DELETED             |
TCE0000I |                                                                   |
TCE0000I | -------------------------UPDATED MEMBER------------------------- |
TCE0000I |                                                                   |
TCE0000I | COM='S TCPIP'
TCE0000I | COM='S TN3270'
TCE0000I | COM='S TN327X'
TCE0000I |                                                                   |
TCE0000I +-------------------------------------------------------------------+
```

6.6 Auto-Detected Changes

A Detected Change is any change that occurs to a member in a controlled Controlled Dataset as defined in either NSECTLxx or NSESELxx that is unknown to, unrecorded by TCE.

TCE – Detected Changes - Policy Violations!



6.6.1 Policy Violations

When TCE Interactive and Batch controls are adopted, such Detected Changes should be considered exceptional events and, when needed, investigated in order to tighten or validate TCE Controls and avoid policy violations.

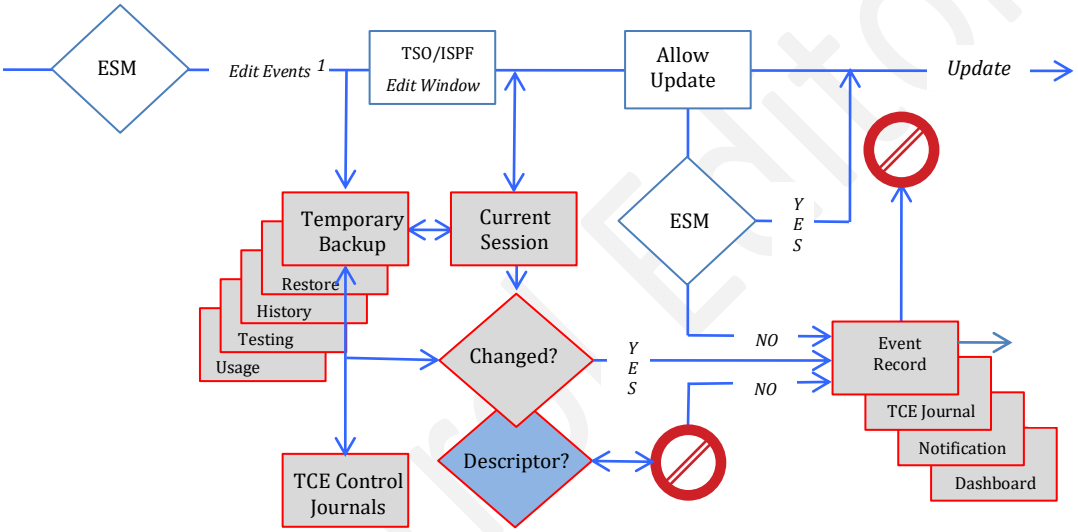
6.6.2 Repetitive Violations

When a specific type of Detected Change from an identifiable source remains outside the scope of TCE it is a *'Best Practice'* to consult with NewEra Technical Support to determine if a new control process may be desirable and therefore a TCE or Padlock product requirement.

7 Collecting Point of Change Documentation

While the TCE workflow management function can clearly help move support staff towards z/OS System Programming Best Practices it can also, optionally, be configured to dramatically improve the documenting of configuration changes, enhancing existing control, bringing them closer to conformity with industry or governmental standards. Generally, such standards require "Higher Levels" of configuration change documentation. The TCE solution to such requirements is to present support staff actually making changes with the requirement to provide prescribed documentation at the point where the change is actually being made, at the time it is being made. TCE can be optionally configured to display, in-line at the point of change, a definable full-screen TSO/ISPF panel or Pop-Up called *'The Change Descriptor'*.

TCE – Enhanced Workflow - Point of Change Documentation!



1

7.1 The Change Descriptor

The Change Descriptor, a full function ISPF panel, will be optionally displayed when both of the following conditions are true:

- First, TCE has detected that the user has actually made a change to a configuration member by comparing the Edit Window content with the "In Memory" version of the member saved upon entry and
- Second, that the user has pressed PFK3 indicating a desire to save changes made during an edit session.
- In addition, other events, such as SUBMIT, RESTORE, RENAME and DELETE can invoke the optional Change Descriptor.

7.1.1 Descriptor Violations

When the Inline Descriptor is presented to the user, its completion is enforced by TCE to the level specified by the TCE Administrator. If the Inline Descriptor is not completed, as required, TCE will deny the attempted update. If the user cancels out of the update the failure to complete the descriptor is recorded in the TCE Control Journals as an exceptional event.

Note that at the point at which the Change Descriptor is displayed the External Security Manager (ESM) has not yet been invoked and will not be until the requirements of the Change Descriptor, as designed and defined by the TCE Administrator, are fulfilled. If the requirements are fulfilled and optionally confirmed by the user then, and only then, will the attempted update be passed to the ESM for its evaluation and ultimate approval. Should the ESM deny the update, the denial is recorded as an exception. Such a condition would occur when a user with READ access attempts to UPDATE.

7.1.2 Descriptor API

The Inline Descriptor will fully support Rexx Applications that require access to information (displayed or not) in the Descriptor's ISPF Panel. This API is described elsewhere in the User Guide.

7.1.3 Descriptor Definition

Unique Descriptors may be optionally configured in NSEJRNxx using the DESCPNL Statement for each Controlled Category defined in NSECTLxx. Each such Descriptor Configuration must be accompanied with a matching is ISPF Panel Definition stored with a unique panel name in :

- HLQ.HLQ.SISPPENU(panel_name)

7.1.3.1 Descriptor Configuration Example

```
DESCPNL CAT(SYSTEM.PARMLIB) PANEL(DDE@PNL1) BYPASSCHAR(!)
```

7.1.4 Descriptor Attributes

The various DESCPNL Statement supported Keywords and Keyword Values are presented below in order to provide a more complete understanding of configuration possibilities.

- CATEGORY|CAT(category-name) - where 'category-name' is the Dataset Category name that is being included in this DESCPNL definition.

- PANEL|PNL(panelnam) - where 'panelnam' is the name of the member in the ISPPLIB dataset containing the full panel definition.

- POPUP|POP(panelnam) - where 'panelnam' is the name of the member in the ISPPLIB dataset containing the pop-up panel definition.

- BYPASSCHAR|BPC(char) - specified on the DESCPNL statement where the 'char' represents the panel TYPE character that, if located in column 1 of a panel)BODY line, will cause that line to be eliminated from the journal entry descriptor data.

  - CONF - YES|NO is used to confirm or not the information entered by the user in the descriptor. The Default is 'YES' meaning that the confirmation pop-up is displayed. A setting of 'NO' will suppress the descriptor Pop-Up.

  - EDITORDR|EORDR|EO(option) - specified on the DESCPNL statement where valid values for 'option' are:

  - MF (display the member data first)
  - DF (display the descriptor data entry edit window prior to the member)

  If not specified, the default will be MF.

- ACTIVE(Starting:hhmm-Ending:hhmm) - specified on the DESCPNL statement where

  - 'Starting:hhmm' represents the start time that this descriptor panel will be active (in 'hhmm' format)
  - 'Ending:hhmm' represents the end time that this descriptor panel will cease to be active.

  If not specified, the descriptor remains active throughout the entire 24 hour day.

  ACTIVE start and end times can span midnight. For example, ACTIVE(2200-0500) would indicate that this descriptor panel is active between 10:00 p.m. and 5:00 a.m.

7.1.5 Define Categories First

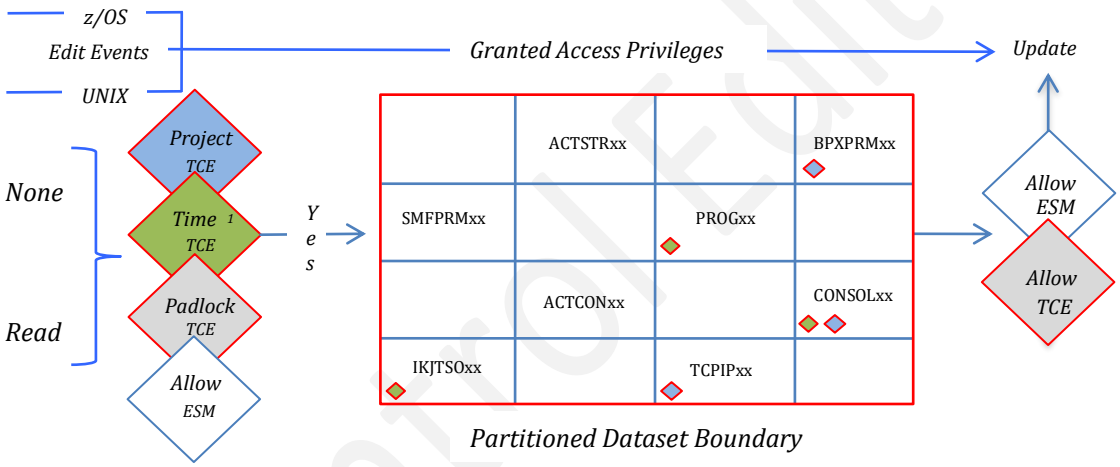
Once the Control Categories are defined, Descriptor may be assigned to each. Descriptor specifications are defined in NSEJRNxx and best configured using the Administrator Dialogs available to the TCE Administrator.

8 Establishing Control Boundaries

The Control Boundary forms the basis for TCE Event Monitoring and Access Control. The level and rigor of each is determined by specific TCE configuration settings. Based on these settings any action to alter a Dataset or Member, use an Operator Command or the occurrence of a defined message will be 'Noticed', Journaled and possibly prevented when TCE Padlock/TimeLock functions are active.

The diagram, below, shows how TCE can be used to reinforce a Dataset Control Boundary established by the External Security Manager (ESM). In this case an ESM Dataset Boundary has been subdivided into Member Boundaries. Within the boundary members are, in turn, assigned to specific staff members with the knowledge and responsibility to support and maintain them. In this way accountability and recognition of accomplishment can be easily established.

TCE – Reinforcing Dataset Control Boundaries!



[1] *Starting, Ending - Date and Time.*

When requirements for reinforcing an ESM Dataset Boundary extend beyond Global Member Level, Allow/Deny Access Rights, TCE Project Management oriented control can be used to establish 'Access Windows' with 'Access Keys'. Such Projects are easily constructed, stored and reused and are supported by a complement of Management Reports and Event Dashboards.

8.1 Security Vs. Control

The External Security Manager (ESM) provides enterprise level security. It is required, absolute and unmatched for securing, granting and/or denying user and/or application access to enterprise data and resources and system configurations and commands.

8.1.1 Designed to Reinforce

TCE Member Level and Command Level Controls are designed to reinforce ESM existing boundaries. For example, by subdividing a dataset boundary into member boundaries or by restricting the use of an operator command that would otherwise be available to a 'Group Special' user. In these ways TCE ensures that the activities of those granted access to system datasets or commands by the ESM are fully documented and that, when desirable, supplemental "ESM-like controls" can be applied directly by TCE.

8.1.2 Dataset Boundaries

When TCE Member Level Controls are active the ESM and TCE work in tandem; first, the ESM determining if a user may enter a dataset boundary and second, TCE, being called only if the ESM allows access to determine if the user is authorized to gain access to a selected member. If, and only if, TCE determines that the user is to be allowed access to the member, is the member displayed in the TSO/ISPF Edit Window. If a user is denied access to the member, TCE will display a message stating the denial. The displayed message will show a reason code, helpful to the TCE Administrator if a denial is called into question. A WTO announcing the denial is also issued by TCE.

8.1.3 Command Boundaries

When TCE Command Level Controls (only RACF-TSO Command, are supported in this release) are active the ESM and TCE work together to determine if the user is authorized to issue the command. TCE takes this action by 'Sitting' in a standard RACF EXIT intercepting the command before RACF actually 'Sees' it. If the command is denied TCE issues a non-zero return code and message text to RACF. RACF will ultimately display the passed message and its own IRRV022I message stating that the command was failed by exit at the same time. The displayed message will show a reason code helpful to the TCE Administrator if a denial is called into question. A WTO announcing the denial is also issued by TCE.

8.2 TCE Padlock

Padlock Control can be applied to any Dataset defined in a Controlled Category (NSECTLxx), as a Controlled Dataset (NSECTLxx or NSESELxx), as a Workgroup Dataset (NSESELxx) or a Project Dataset (NSEPJTxx), and to Operator Commands (NSESELxx).

8.2.1 Padlock – Global Definitions

The level and rigor of these controls is determined by Global and Boundary Configuration Settings defined in NSEJRNxx and a varity of Detail Configuration Settings as defined in the NSESELxx Configuration Member.

8.2.1.1 CONTROLMODE NONE|WARN|DENY

The value of CONTROLMODE determines the operational control that the Padlock will exert over various control resources, datasets, commands and projects.

- NONE

When CONTROLMODE is set to NONE, Padlock Controls are not operational.

- WARN

When CONTROLMODE is set to WARN, Padlock Controls are operational and users that would otherwise be denied access will be allowed access following the display of a *'Warning Message'* indicating that they may be denied access at some time in the future.

- DENY

When CONTROLMODE is set to DENY, Padlock Controls are operational, and users then will be denied access to control resources, datasets, commands and projects.

8.2.1.2 CONTROLCATS ON|OFF

For Padlock Controls over Category Boundaries to be active, CONTROLCATS must specify a value of ON.

8.2.1.3 CONTROLDSNS ON|OFF

For Padlock Controls over Dataset Boundaries to be active, CONTROLDSNS must specify a value of ON.

8.2.1.4 CONTROLCMDS ON|OFF

For Padlock Controls over Command Boundaries to be active, CONTROLCATS must specify a value of ON.

8.2.1.5 CONTROLWGPS ON|OFF

For Padlock Controls over Workgroup Boundaries to be active, CONTROLCATS must specify a value of ON.

8.2.1.6 CONTROLPJTS ON|OFF

For Padlock Controls over TCE Project Boundaries to be active, CONTROLCATS must specify a value of ON.

8.2.2 Padlock – Boundary Definitions

Established TCE Control Categories, as defined in NSECTLxx, form the basis for Padlock Control over Categories and Category Datasets. Standalone Datasets, Commands, Workgroups and TCE Projects do not require Category definitions and are defined completely within NSESELxx.

8.2.3 Padlock – Control Definitions

Each NSESELxx Control Card uses a combination of INCLUDE and EXCLUDE Statements to define the span of control over Members in Categories and Datasets, Operator Commands, WorkGroup Datasets and TCE Projects. The general processing rules controlling Include and Exclude Control Cards is described below.

8.2.3.1 INCLUDE Statements

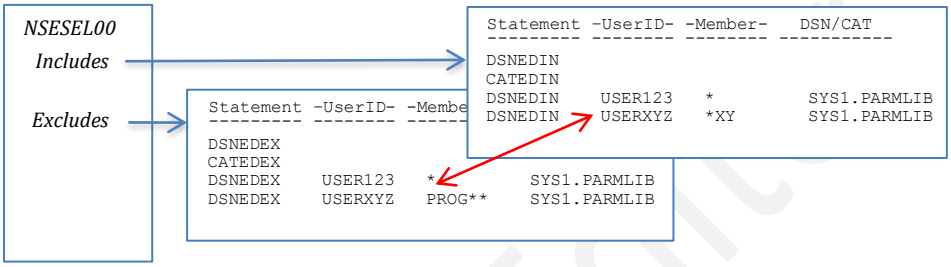
The Include Keywords are used to define users that will receive exclusive access rights to update and/or browse and/or submit controlled members. When an Include Statement is used and in the absence of any other Include statement, access to the member will be denied to all other users.

When an Include Statement is used it is best practice to create a “Super-User” with access to ALL Members in Controlled Datasets to prevent a “Lockout” condition. A “Super-User” is created when the controlled member name is specified as “*”.

8.2.3.2 EXCLUDE Statements

This class of access control statements is used to define user(s) that will be denied access to Controlled Members for the purpose of Update and/or b Browse/View and/or SUBMIT when such members reside in Datasets defined to TCE as Controlled Datasets or part of a Dataset concatenation defined to TCE as a Controlled Category.

In the event that an INCLUDE Vs. EXCLUDE conflict arises, the rights granted by TCE will default to those defined in the INCLUDE Statement Control Card(s).

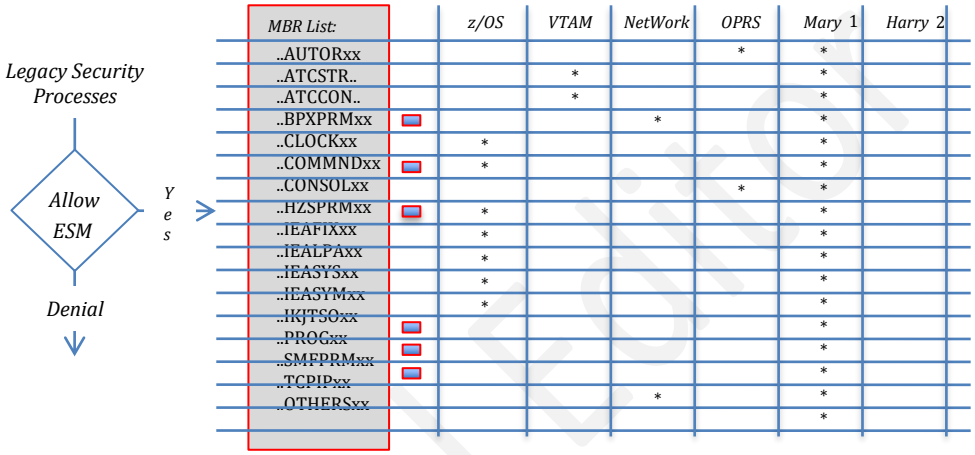


Controlled Access Priority:

- *If any DSNEDIN, CATEDIN, DSNBRIN, CATBRIN exists for the access attempt in question (i.e., for the member/dsn), then there *must* be an include for the userid in question or the access request will be denied.*
- *If no DSNEDIN, CATEDIN, DSNBRIN, CATBRIN exists for the access attempt in question, the userid in question will be granted access unless a DSNEDEX, CATEDEX, DSNBREX, CATBREX exists for the member/dsn and the userid in question.*

8.2.4 Control over Members

The NSESELxx Configuration Member is used for defining Member level control parameters to TCE. These controls are applied by the TCE Administrator to specfic members and can result in the specific assignment to support and maintenance of specific members. The result is not only improved control but also improved accountability. Such controls tend to enhance trust between coworkers and consultants. These benefits will be apparent when configuration concatenations are shared across multiple LPARs.

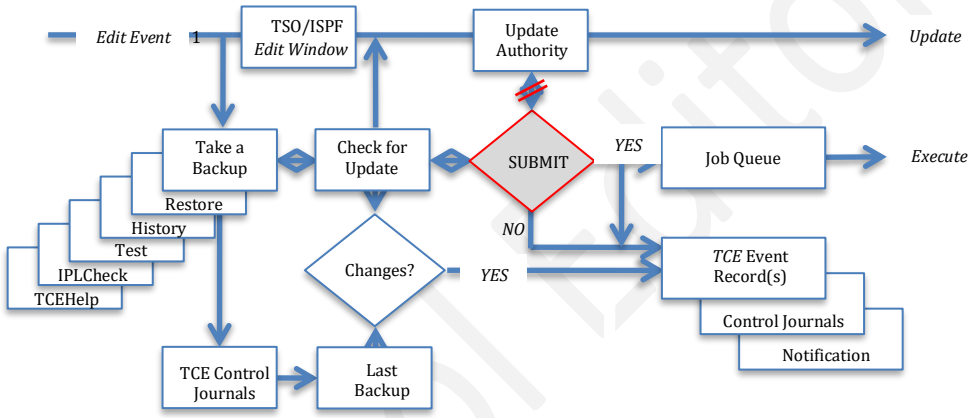


1 *A "Super-User", she has access to all members in PDS.* 2 *An ESM Updater and/or Browser Denied by TCE*

8.2.5 Control over Submits

There are system events towards which the ESM is "Totally Blind". One such Edit Event that represents an ever-present threat to z/OS integrity that TCE can control is the submission of JCL from a TCE Controlled Dataset.

This situation arises because a TSO/ISPF user with only READ access to an ESM controlled Dataset can select a member from the 3.4 Member List and display it in the standard TSO/ISPF Edit Window. Once displayed the member's content can be altered and submitted directly to the z/OS internal reader and passed to the JES Queue for execution. Nothing so far requires ESM authority, although for sake of completeness downstream checking of the Datasets in the JCL by the ESM "MAY" result in an execution failure.

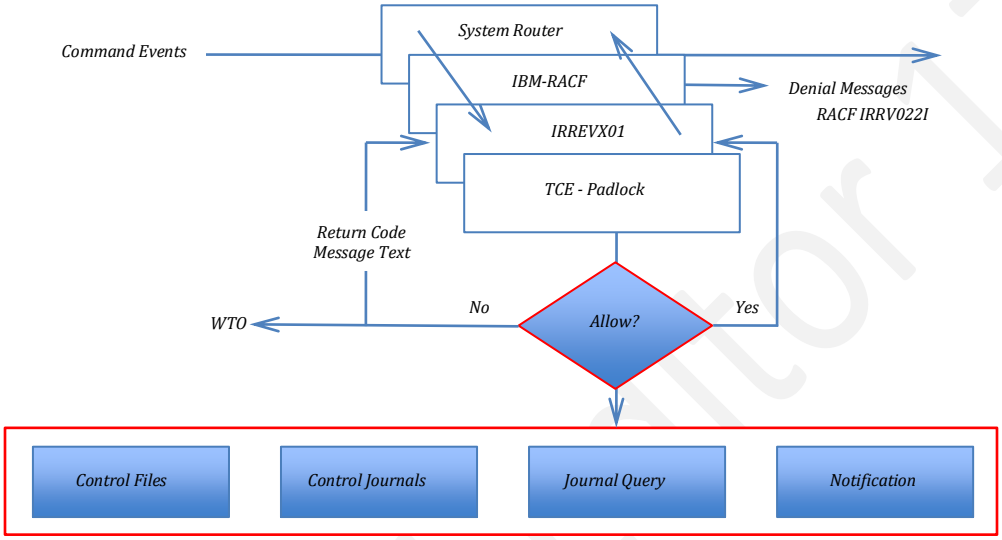


1 *TCE can Detect the submitting of JCL, recording JCL changes and/or blocking submissions undetected by the ESM.*

Much like any Edit Event TCE treats a SUBMIT on the Command Line as an attempt to update the member resulting in a Journal recording of the Submit Event and display of the Inline Descriptor. The net result is a complete recording of the overall event including any changes that might be attempted that the user subsequently "Cancels Out Of" or an update attempt that is denied by the ESM.

8.2.6 Control over Commands

In addition to the Operator Command detection and logging functions for SET, MODIFY and Miscellaneous and IBM-RACF, CA-ACF2 and CA-Top Secret provided by The Control Editor, the Padlock could be used to deny Operator Command usage. In this release this level of control applies only to IBM-RACF Operator Commands.



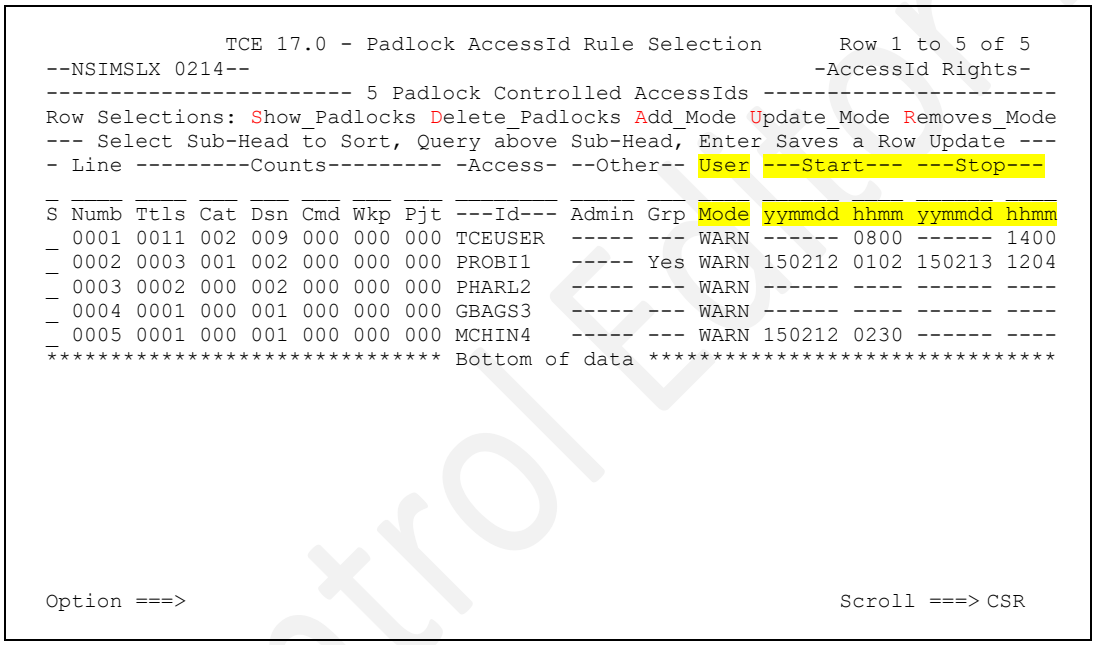
When the IBM-RACF Padlock is active the ESM and TCE work together to determine if the user is authorized to issue a command. TCE takes its part by 'Sitting' in the standard IBM-RACF EXIT, IRREVX01, intercepting commands before IBM-RACF actually 'Sees' them. If a command is defined to TCE and denied, TCE issues a non-zero return code and predetermined message back to IRREVX01. Based on the return code IBM-RACF will deny use of the command. IBM-RACF will ultimately display the passed message and its own IRRV022I message stating that the command was failed by EXIT. Both messages are displayed at the same time. The displayed message will show a reason code helpful to the TCE Administrator if a denial is called into question. A WTO announcing the denial is also issued by TCE and the event is logged in the Control Journal as a Command Exception.

8.3 TCE TimeLock

TimeLock is an extension of the Access Controls provided by the Padlock. Used to define 'Windows-of-Time' in which access will be Allowed/Denied. A 'Window' may be User specific or it may be refined to require a project ID and Key in order to gain access to defined Project Resources; Datasets, Commands and Members by authorized Project Staff Members.

8.3.1 TimeLock – User Specific

A sample of the TimeLock User Specific Interface is shown below.



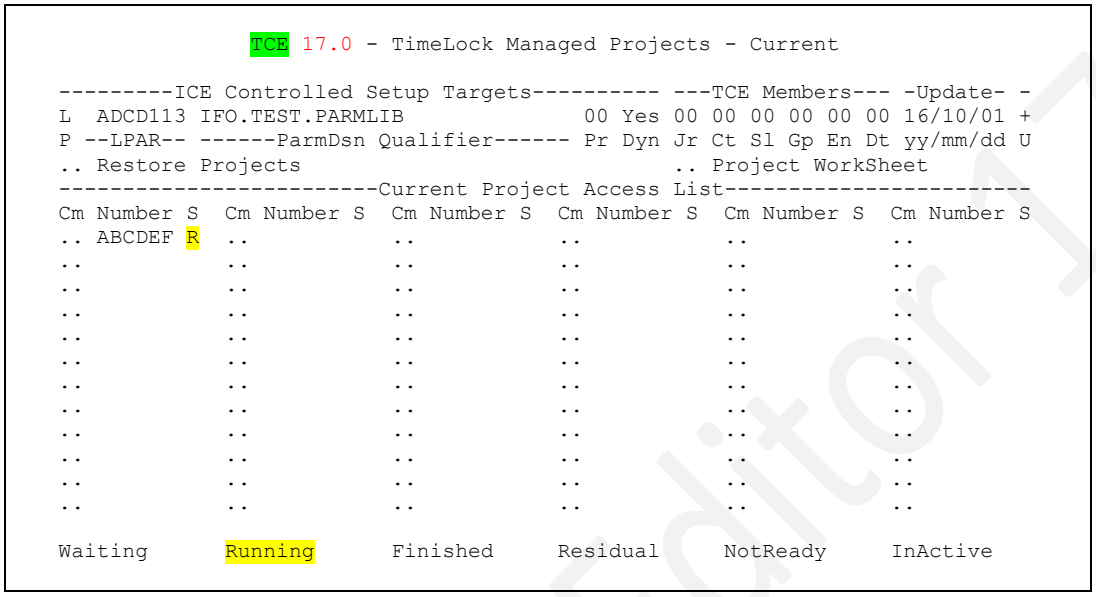
This Worksheet provides an overview the Padlock Controls assigned to each UserId as defined within the Controls Environment their status as TCE Administrator and their membership in TCE Managed Groups. To the right are USERMODE settings. These are used to override those settings globally established via CONTROLMODE and result in the opening and closing of an access window for the named UserId.

8.3.1 USERMODE

The access windows created by USERMODE maybe designed to open at a specific day/date/time and never close, result in altered access rights at some future day/date/time never having been opened and/or open at a specific day/date/time and ultimately close at a specific day/date/time. Chanes to USERMODE settings require a dynamic update or restart of IFOM to become effective.

8.3.2 TimeLock – Project Specific

A sample of the Project Dashboard is shown below.



8.3.3 New/Old Projects

To start a New Project all that is needed is to enter a six character Project Id in any available slot in this panel. To select a New or Old project enter 'S' before it and Press Enter. These actions will display the Project Definition Summary. To 'Delete' a project place a 'D' before it, press enter.

8.3.4 Project Controls

Because TCE Projects, are accessed by support staff using an encoded 'Project Key', which for control reasons are never displayed in 'Clear Text' outside of the TCE Administrator Interface Project Configurations contained in NSEPJTxx, may only be built and maintained using the TCE Administrator Dialogs.

Project Configuration Control Statements include:

8.3.4.1 ACTION PJT()

Required six-character, user assigned, project number. Must be unique.

8.3.4.2 ACT(ON|OFF)

Used to globally turn a project functional boundary on or off. Default is ON, meaning the function boundary is functional.

8.3.4.3 RES(ON|OFF)

Used to define the ongoing function of a project boundary once the project has reach its defined termination day, date, time. Default is ON meaning the project boundary remains in place BUT all resources are restricted.

8.3.4.4 PRI(ON|OFF)

Used to define the priority that a project will have relative to other established Padlock Controls. Default is ON meaning that Project Boundaries have priority (they are enforced first) over all other Padlock Controls.

8.3.4.5 KEY(encoded_string)

The encoded 'Project Key' required to access defined project resources.

8.3.4.6 PJTERM(start,stop)

The resolved Day, Date and Time when the project starts separated by a comma from the resolved Day, Date and Time when the project is scheduled to end.

8.3.4.7 PJCYCL(open,close)

The hour within a project 24-hour day when the project will be available for use separated by a comma from the 24 hour time when it will not, collectively the 'Project Window'.

8.3.4.8 CTLDSN (dataset(volume,system))

Fully qualified name of a project dataset and optionally volume name and if volume is specified optionally system name. One Control Card entry is required for each project Dataset.

8.3.4.9 CTLMBR member

The name of members found in project datasets that are to be included or excluded from the project. The Member Name may be fully qualified, prefixed or suffixed using an asterisk. One Control Card entry is required for each project Member.

8.3.4.10 CTLCMD command

The name of Operator Commands (in this release IBM-RACF Commands) included in or excluded from the project. All commands may be defined using 'RACFCMD'

as the name of the command. One Control Card entry is required for each project Command.

8.3.4.11 CTLUSR(userid)

The TSOUserId of Project Staff and the individual fully resolved day, date and time when their project access rights begin and end.

8.3.4.12 ACTION . END

Each Project definition must be properly ended using the ACTION .END Control Statement.

8.3.5 Project Status

The Operational Status of a Project is stated at six possible levels:

8.3.5.1 Waiting

The project has not reached the start of its operational window and is therefore waiting to start.

8.3.5.2 Running

The project is within the operational window and is performing access control functions over project-defined resources.

8.3.5.3 Finished

The project is finished and is no longer performing access control functions over project-defined resources.

8.3.5.4 Residual

The project has passed the end of its operational window but continues to perform access control functions over project-defined resources denying access to all, including project defined staff members, without other specific INCLUDE access rights.

8.3.5.5 NotReady

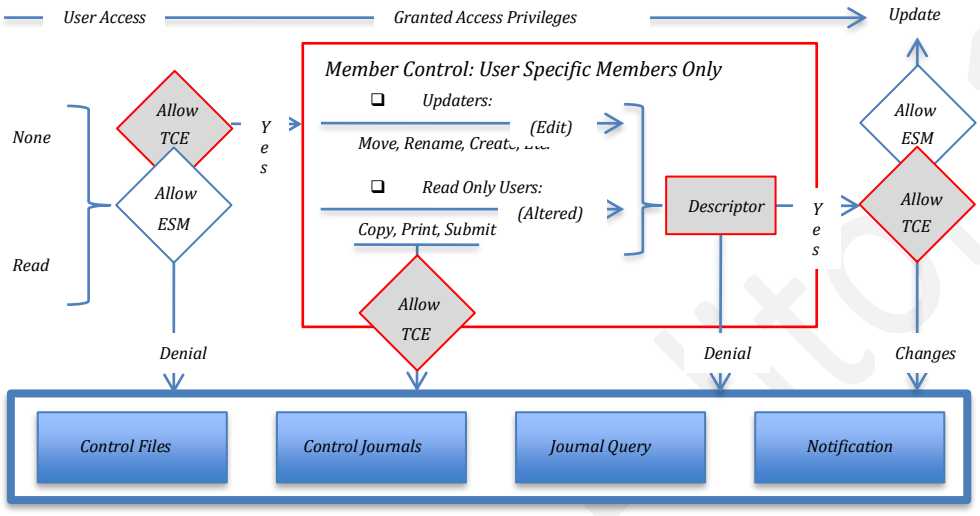
The project is not yet fully defined and therefore is not ready to start even though it may have reached the start time of its operational window.

8.3.5.6 InActive

The project is fully configured, within its operational window but has been marked as inactive and is therefore not providing operational access control over project-defined resources.

8.4 A New Experience

When TCE Member Level Controls are put in place, Users with either Update or Read access *WILL VERY LIKELY* experience a different level of member access than was afforded to them previously by the External Security Manager. As a general statement of the new experience, their access will now be limited and, in some cases, severely limited.



When access to a member is denied to a user, a message will be displayed stating the denial and providing a reason code that can be used by the TCE Administrator to determine the exact control statement in the NSESELxx member that forced the denial.

A typical denial message is shown below.

```
Edit access attempt denied by The Control Editor.
Reason Code 0037
Press END to exit
```

In addition, each denial is accompanied with a WTO.

9 TCE Administrator Support Interface

Once installed and activated the TCE Administrator Dialogs are accessed from the TCE Primary Menu. To reach these Administration Functions logon to the ICE VTAM application named during the installation process. During this logon process a user's TSOUserId is validated by the External Security Manager, a specific user address space is created (a separate IFOS will be created for each individual user) and the ICE Primary Menu will be displayed for authorized users. When the user terminates a session the IFOS address space is quiesced.

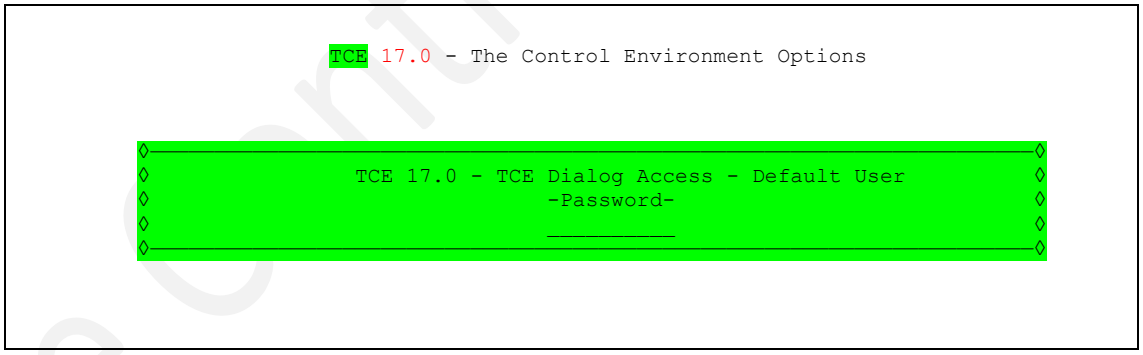
Selecting the Control 'C' Option will display the TCE Administrator Dialogs for authorized users.

9.1 Accessing Administrator Dialogs

The TCE Administrator functions can be used to provide *'Padlock Protected Access'* to the TCE Administrator Dialogs Interface. Depending on the configuration of TCEPRIME, TCEADMIN and CONTROLMODE Control Statements defined in NSEJRXxx and and USERMODE Control Statements defined in NSESELxx, one of the following Pop-Ups and/or displays will be presented.

9.1.1 In Default Mode

The initial attempt (before TCEPRIME or TCEADMIN is defined) to access the Administrator Dialogs will result in the following Pop-Up display highlighted in green below:

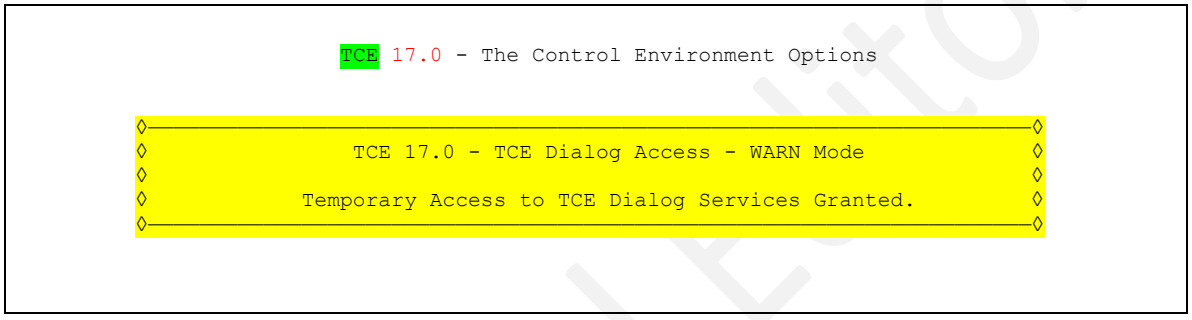


This Pop-Up is displayed when the TCE Padlock, operating in its default mode, WARN, determines that a user is not specifically authorized to access TCE Configuration Dialog Services. The Pop-Up requests that the user enter a Password to reach the Primary Configuration Dialog Menu. In its WARN Mode of operation the the Padlock will accept as valid the Password 'TCEUSER'. To proceed, enter 'TCEUSER' and press enter. These actions will immediately display the Configuration Dialog Primary Menu.

Take note that in the future the TCE Administrator (maybe that's you) may change the Padlock Mode of operation or exclude you from the TCEPRIME of TCEADMIN List of TSOUserIds defined in NSEJRNxx. If the Mode was changed to DENY and you were not included from the list of TCEPRIME or TECADMIN Users, you would be denied access to these TCE Configuration Dialog Services.

9.1.2 In WARN Mode

When TCEPRIME and/or TCEADMIN have been defined in NSEJRNxx and the Padlock is also defined to be operating in WARN mode the following Pop-Up (highlighted in yellow), is displayed when an unauthorized user attempts to access the Administrator Dialogs.



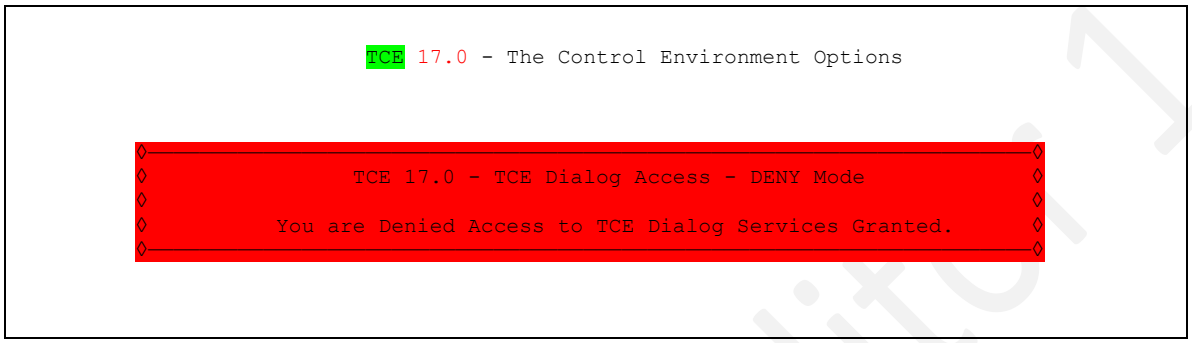
This Pop-Up is displayed when the TCE Padlock, operating in WARN Mode, determines that a user is not authorized to use TCE Configuration Dialog Services. Specific user authorization is determined by TSOUserIds defined in the NSEJRNxx Configuration Member using either the TCEPRIME and/or TCEADMIN control statements.

If you are a TCE Administrator and wish to establish a set of authorized users, select the Settings Option available from the Control Boundaries and Settings Menu.

Please take note of the fact that the TCE Administrator may, at any time in the future, change the Padlock Mode of operation. If the Mode were changed to DENY, access to the TCE Configuration Dialog Services would be denied.

9.1.3 In DENY Mode

When TCEPRIME and/or TCEADMIN have been defined in NSEJRNxx and the Padlock is also defined to be operating in DENY mode the following Pop-Up (highlighted in red), is displayed when an unauthorized use attempts to access the Administrator Dialogs.



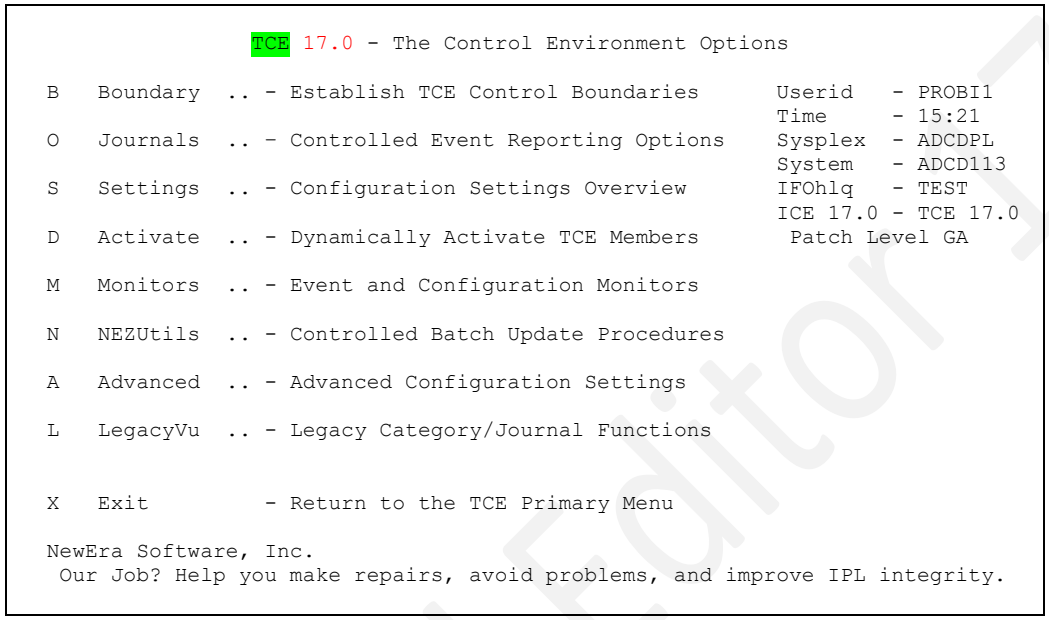
Based on your Logon UserId you have been denied access to the TCE Configuration Dialog Services Primary Menu; this action was taken by TCE Padlock a component of The Integrity Controls Environment (ICE). If you believe that this denial is an error, please contact your TCE Adminstrator to obtain the necessary access rights.

Since access to the TCE Configuration Dialog Services Primary menu is based on your Logon UserId it is possible, if you have more than one valid Logon UserId, that you might gain access with an alternate. If this is a possibility back out to the ICE Primary Menu, Exit this session and logon to ICE again using the alternate. If this second attempt fails, your only alternative is to contact the TCE administrator for access rights.

The Integrity Controls Environment (ICE) maintains a record of all attempted but denied attempts to access the TCE Configuration Dialog Services Primary Menu. Such records are sent to the TCE administrator and your Management.

9.1.1 Access Granted

When access is granted to the TCE Administrator Dialogs its primary menu, Control Boundaries and Setting Panel, is displayed.



9.1.1.1 Boundary

TCE uses Defined Boundaries as the basis for its Event Monitoring and Control; four types are supported – Categories, Datasets, Commands and Workgroups.

9.1.1.2 Journals

Detected Controlled Events are captured and recorded in Control Journals; this option shows reporting functions – Dashboard, Timeline and Event Detail.

9.1.1.3 Settings

Settings in the NSEPRMxx ParmLib Member determine the state of Service Task and name Configuration Members.

9.1.1.4 Activate

TCE Configurations may be dynamically activated or will be automatically activated when IFOM is next restarted.

9.1.1.5 Monitors

Various Interval Reports may be optionally set up and initialized to 'Notice' Event & Configuration changes.

9.1.1.6 NEZUtils

Control Boundaries may be extended to the Batch Update of Datasets associated with Controlled Categories.

9.1.1.7 Advanced

Below the functional level interface described above Specific Member Access is provided for advanced users.

9.1.1.8 LegacyVu

Below the functional level interface described above Specific Member Access is provided for advanced users; see Appendix G – LegacyVu.

9.1.1.9 Configuration Dialog User Guide

For a more detailed description of these Control functions, see The TCE Configuration Dialog User Guide.

9.2 Boundary

The Control Boundary forms the basis for TCE Event Monitoring and Access Control. The level and rigor of each is determined by specific configuration settings accessible from this panel. In addition, the panel provides a view of the status of Padlock, Monitor Scope and Global Command and Message Intercept configuration settings. Any action to alter a Dataset or Member, use a Command, the occurrance of a defined message will be 'Noticed', Journaled and possibly Prevented when Padlock is active.

TCE Control Boundary Selection Options

```
                  TCE 17.0 - Control Boundary Selection

C   Category  .. - Establish Boundaries  .. Padlock On    Userid    - PROBI1
                                                         Time      - 14:37
D   Datasets  .. - Establish Boundaries  .. Padlock On    Sysplex   - ADCDPL
                                                         System    - ADCD113
S   Cmds/Msg  .. - Establish Boundaries  .. Padlock Off   IFOhlq    - TEST
                                                         ICE 17.0 - TCE 17.0
W   WrkGroup  .. - Establish Boundaries  .. Padlock Off    Patch Level GA

T   TimeLock  .. - Establish Boundaries  .. Padlock Off


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

 X   Exit         - Return to the TCE Primary Menu

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```

9.2.1 Category

A Controlled Category Boundary is composed of one or more specifically named Datasets and related Settings.

9.2.2 Datasets

Any Dataset may be a stand alone Controlled Dataset representing a Control Boundary for its members.

9.2.3 Cmds/Msg

Access to RACF Operator Commands may be restricted and defined System Messages Captured and Acted Upon.

9.2.4 WrkGroup

Controlled Workgroups may be defined to include/exclude Individual Access to one or more named Working Datasets.

9.2.5 TimeLock

TimeLock is available to extend Padlock functions to a Day, Date and Time and Named Project Control Boundary.

9.3 Journals

When TCE is active (operating under either ICE and/or TSO) defined events are captured and a record of them stored in the TCE Control Journals. The HLQ names of these Control Journals, their dataset allocation and operational parameters are defined in the NSEJRNxx configuration member.

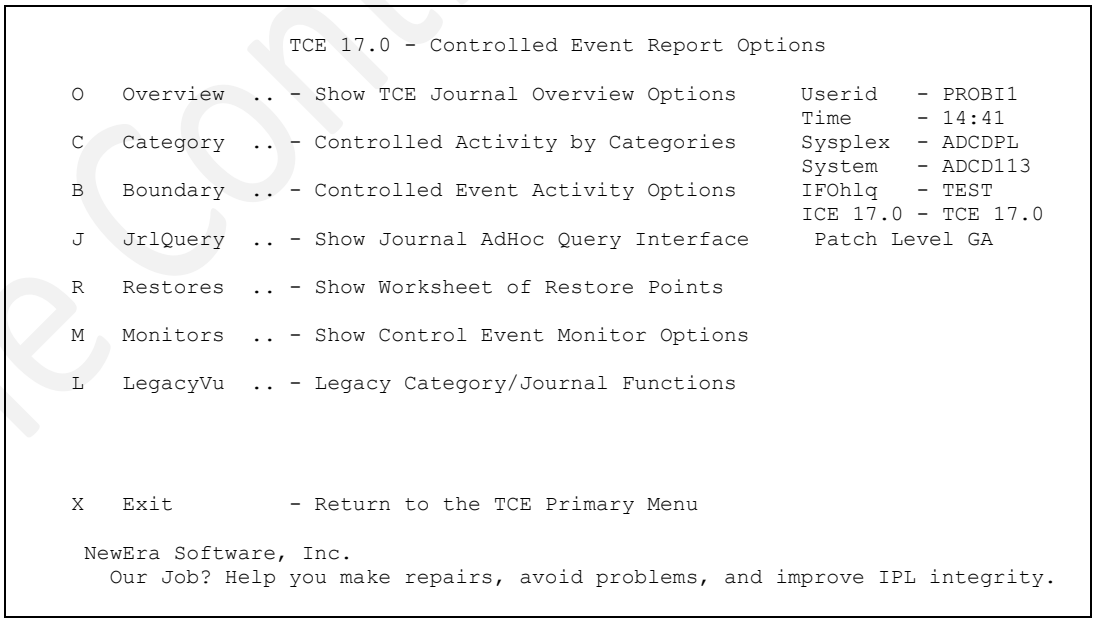
The specific events to be captured are defined in either NSEJRNxx or within the Controlled Category List(s) found in NSECTLxx. Once these Change Event Policies are correctly defined, the Control Journals will begin to record events. Each event will fall into one, and only one, Event Class, each of which is selectable from the Journal Interface Worksheet.

The first events recorded following a start/restart are a full backup and/or refresh of the content of the Sequential Datasets and the members in the Partitioned Dataset named in the Dataset Control List. Subsequently, events that impact their content (Adds, Deletes and Changes) or their use are detected and recorded.

In addition to the Controlled Dataset List defined in NSECTLxx, events defined in NSEJRNxx: Operator Commands, System Messages, Supplemental Changes, Exceptional Events, Image FOCUS Audit Logs, Event Notifications and Background Reports-are also detected and are recorded.

TCE offers a number of Event Reporting, Restore and Monitoring options. The Reporting options begin with the highlevel of summarization and descents offering greater levels of detail and full query. Restore Points may be accessed as can the background settings and their related reports.

TCE Controlled Event Reporting Options



9.3.1 Overview

Displays high-level Journal summary options: Dashboard for Mgmt. Reporting and Timeline for Forensic Analysis.

9.3.1.1 Dashboard

The Journal Dashboard is intended to dispaly the highest level of Journal Event Summarization. It should be viewed as the dynamic/interactive portal to Journal content, one suitable for management reviews. The "News" is specific to a TCE Administrator and shows summary of events that have ocurred since the last time the Dashboard was displayed for that individual. All underlined white text is selectable and "Hot-Linked" to additional detail.

```
                TCE 17.0 - Control Journal - Event Selection Row 1 to 15 of 15
--NSIMJRL 0214--                                                 ---CtlJournals---
--------------- Environment is IFO.TEST - 13 Controlled Classes ---------------
Row Selections: Setup_Background_Reporting_Interval Display_New_Event_Worksheet
.. Controlled Datasets .. Event Timeline .. Journal Queries .. Restore Datasets
- Row ---------Event Target---------- Bkg Your ---------Period to Date---------
S Num -Class-- ---------Name--------- Set News Days Week Mths Qtrs Years Totals
_ 001 BackUps  Named_Dataset_Backups  ---    0    0    0  491  491   491    491
_ 002 Staged   User_Session_Changes   ---    0    0    0    6    6     6      6
_ 003 CDStart  NEZUTIL_Update_Events  ---    1    2    7   35   35    35     35
_ 004 Submit   Submitted_JCL_Events   ---    0    0    0    0    0     0      0
_ 005 Dynamic  Operator_Comnd_Events  ---    0    0    0    0    0     0      0
_ 006 Change   Supplemental_Changes   ---    0   10  199  491  491   491    491
_ 007 Message  Named_System_Messages  ---    0    0    0    0    0     0      0
_ 008 Policy   ESM_Security_Changes   ---    0    0    0    0    0     0      0
_ 009 TCEPrms  TCE_Parameter_Changes  ---    0    0   10   18   18    18     18
_ 010 Except   Processed_Exceptions   ---    0    0    3    3    3     3      3
_ 011 Detects  Auto_Detection_Events  ---    0    9   92   92   92    92     92
_ 012 Notice   Notification_Details   ---    0    2   30   58   58    58     58
_ 013 Reports  TCE_Background_Events  ---    0    0    0    0    0     0      0
_ 014 -------- ---------------------- --- ---- ---- ---- ---- ---- ----- ------
_ 015 Totals   All_Classified_Events    0    1   23  341  703  703   703    703
```

9.3.1.2 Event Timeline

The Journal Timeline is intended to be a next step down into Journal Events. It is useful in tracking events for forensic purposes to a specific day/date/time interval. Options allow for the default "Daily View" to be summarized into weeks, months, quarters and yearly views. Each presentation is by Major Event Class with "Hot-Links" to all underlying journaled event detail.

```
             TCE 17.0 - Daily Event Timeline Worksheet       Row 1 to 8 of 8
--NSIMJRL 0214--                                            ----Day-By-Day----
-------------- IFO.TEST - The Day-By-Day Event Worksheet Interface ------------
Row Selection: Browse_a_Day
---------Alternate Views--------- - ---------Default Period Selection----------
Sysplex  System  CauseId  Periods - Daily  Weeks  Month  Quarter  Annual  Total
------ To Reorder the Columns select a related Event Class, PFK1 for Help -----
 Line ---Date--- Total Stage NEZu Xmit Oper Supp Mess ESMp TCEp Excp Dtec Note
_ 0001 2019/02/13    36     2    0    0    5    0    0    0    0    2   19    8
_ 0002 2019/02/12    54     0    0    0    1    0    0    0    8    0   39    6
_ 0003 2019/02/11    43     1    0    0    2    0    0    2    0    6   24    8
_ 0004 2019/02/10    77     1    0    0    3    0    0    0   40    5   24    4
_ 0005 2019/02/09    43     8    0    0    0    0    0    0    0    0   21   14
_ 0006 2019/02/08    26     0    0    0    0    0    0    0    0    0   24    2
_ 0007 2019/02/07  2065  1821    0    0    0    6    0    0   30  110   13   85
_ 0008 2019/02/06    42     2    0    0    0    7    0    0    8    0   13   12
****************************** Bottom of data ********************************
```

9.3.2 Category

Shows a Worksheet listing of Controlled Categories Automatically created by TCE and those defined in NSECTLxx.

9.3.3 Boundary

Additional Reporting Options specific to: Datasets, USSFiles, Commands, Access Failures and Detected Changes.

9.3.4 JrlQuery

Displays a general-purpose Journal Query Interface that is used for detailed examination of all recorded events.

9.3.5 Restores

Shows a Worksheet listing all Restore Points by Member; restores may be applied to specific member or groups.

9.3.6 Monitors

Displays Background Reporting Options from which you access interval settings and available reports.

9.3.7 LegacyVu

The original TCE Administrator Interface offered functions - Dataset and Journal - are retained here; see Appendix G – LegacyVu.

9.4 Settings

The Settings accessed from this panel are fundamental to the base operation of TCE, its Controls Environment, Control Journals and Methods of operation.

TCE Control Settings Selection Options

```
                  TCE 17.0 - TCE Control Settings Selection

T   TaskMbrs  .. - Configure Task and Members          Userid    - PROBI1
                                                      Time      - 14:44
J   Journals  .. - Configure Control Journals         Sysplex   - ADCDPL
                                                      System    - ADCD113
M   MetBlock  .. - Notification Method Blocks         IFOhlq    - TEST
                                                      ICE 17.0 - TCE 17.0
A   TCEAdmin  .. - Authorized Administrators          Patch Level GA

P   PadLocks  .. - PadLock Access Controls

U   UserMode  .. - CONTROLMODE User Override

S   MonScope  .. - System Monitor Controls

D   Detector  .. - Supplemental Detectors


X   Exit         - Return to the TCE Primary Menu

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```

9.4.1 TaskMbrs

NSEPRMxx defines which TCE Service Tasks will be started and the Suffixes of the various TCE Configuration Members to become active at system startup.

9.4.2 Journals

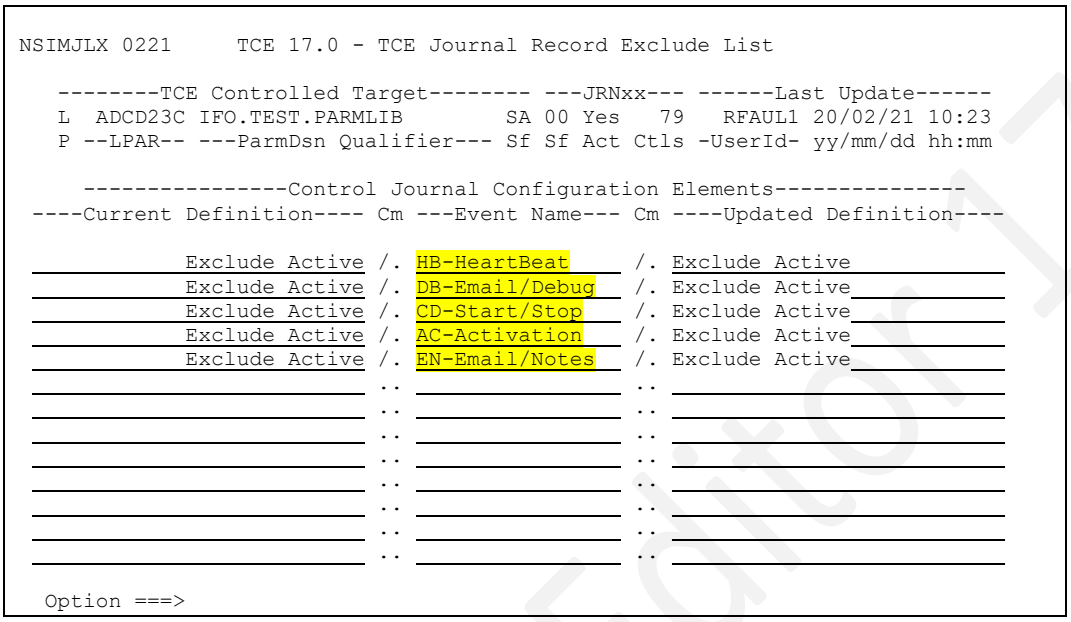
Format/Specifications of Control Journals are defined in NSEJRNxx. By default, Control Journals are SHARED across eight Systems.

```
NSIMJLX 0221     TCE 17.0 - TCE Journal Specifications    .. Excluded Events

   --------TCE Controlled Target-------- ---JRNxx--- ------Last Update------
   L  ADCD23C IFO.TEST.PARMLIB        SA 00 Yes   79   RFAUL1 20/02/21 10:23
   P --LPAR-- ---ParmDsn Qualifier--- Sf Sf Act Ctls -UserId- yy/mm/dd hh:mm

     ----------------Control Journal Configuration Elements---------------
 ----Current Definition---- Cm ----Elements---- Cm ----Updated Definition----

                       RB4K /. File: System Is  /. RB4K
            IFO.TEST.JOURNAL /. File: Qualifiers /. IFO.TEST.JOURNAL
                             .. DSAlloc: Space   ..
                             .. DSAlloc: Cyl/Trk ..
                             .. DSAlloc: Volume  ..
                             .. DSAlloc: DClass  ..
                             .. DSAlloc: SClass  ..
                             .. Max: BackUp Mbrs ..
                             .. Max: BackUp Recs ..
                             .. Max: BackUp Jrls ..
                       1900 /. Max: Jrl Entries /. 1900
                        8/8 /. Share: Jrnl/Ctls /. 8/8
                      Month /. Switch Journals  /. Month

  Option ===>
```

9.4.2.1 Excluded Events

In order to help reduce the volume of records being stored in the TCE Journal files, NewEra has provided a method for the customer to selectively stop the recording of some optional records into the journals. By excluding these records, a customer will continue to capture the most critical and needed records and may also realize a reduction in the size of the journals.

This panel reflects the current state of supported Control Events that may be excluded. Check to the right of the event title to exclude it from being detected and recorded in TCE Control Journal.



Events that may be excluded are:

HB-HeartBeat: The ICE/TCE/IFO heartbeat is automatically triggered and timestamped once at the start of each day or whenever the ICE main control task is started. Its primary intent was to provide audit information on the overall operational integrity of the ICE Environment.

DB-Email/Debug: The creation of an Email Debut is an optional feature specified in the METHOD BLOCK of the NSEENSxx ICE Parmlib. Include/Exclude as necessary.

CD-Start/Stop: Used automatically by TCE to announce start and termination of hourly change detection. Most valuable in tracking down detection change processes.

AC-Activation: Activation is the process of TCE Control Member, actions that may be taken manually or automatically. Valuable when used in the context of identifying ICE environment changes - Date, time, User.

EN-Email/Notes: Used to capture copies of Email Notifications sent to designated NSEENSxx Email Addresses.

A new control card has been added in the NSEJRNxx member with a JOURNALEXCLUDE control statement with the following syntax:

JOURNALEXCLUDE TYPE(jrnrectype1,jrnrectype2,...)

Sample: **JOURNALEXCLUDE TYPE(HB,DB)**

We suggest these records be excluded, using the statement below, once the user feels that TCE is working properly. They can be turn on at any time for recording if needed by the TCE administrator.

JOURNALEXCLUDE TYPE(HB,DB,CD,AC,EN)

This will exclude HB (heartbeat), DB (e-mail debug), CD (change detection start/stop), AC (activate parmlib members), CD (change detection start/stop), EN (email notices) entries.

9.4.3 MetBlock

Notification via Email is defined in the NSEENSxx ParmLib Member. The METHOD Block settings define the configuration of the Email Server.

9.4.4 TCEAdmin

TCE supports both Primary and up to six secondary Administrators that may be allowed access TCE Administration Dialogs.

9.4.5 Padlocks

The rights of users to access Controlled system resources - Datasets and Operator Commands - can be controlled with the Padlock.

9.4.6 UserMode

Displays an AccessId Summary Worksheet that can be used to refine Padlock settings and build 'Access Windows'. USERMODE value will override CONTROLMODE Setting of NONE|WARN|DENY.

9.4.7 MonScope

The Scope of environmental monitoring may be set to the Running System, The Sysplex or a named system set. Such settings determine systems messages and system commands.

9.4.8 Detector

The Optional Supplemental Detectors can be used to monitor and report on changes to specific z/OS settings.

9.5 Activate

TCE Configuration Utilities are designed to aid in common administration tasks: Dynamic Activation, Baselining configuration, Reporting Configuration Errors and the Cleaning Up of orphan Email Addresses/AccessIds.

TCE Configuration Utility Selection Options

```
                  TCE 17.0 - TCE Configuration Utilities

A   Activate  .. - Dynamically Activate all Members      Userid    - PROBI1
                                                        Time      - 14:46
B   Baseline  .. - View TCE Configuration Baselines      Sysplex   - ADCDPL
                                                        System    - ADCD113
E   TCErrors  .. - Check for TCE Configuration Errors    IFOhlq    - TEST
                                                        ICE 17.0 - TCE 17.0
C   CleanUps  .. - User Email Addresses and Padlocks      Patch Level GA

D   DChanges  .. - Invoke Detected Change Processing









X   Exit         - Return to the TCE Primary Menu

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```

9.5.1 Activate

Once you have completed TCE configuration updates, select this option to reinitialize the full TCE configuration. Note, the NSEPRMxx Member cannot be dynamically updated.

9.5.2 Baseline

It is a Best Practice to build a Baseline of the full TCE Configuration, save it by date and then compare a selected baseline against current setting for changes.

9.5.3 TCErrors

Problems can arise in the TCE Configuration. For example, when a dataset is moved to a new volume and its control boundary definition containing a volume specification is not updated to match the new placement.

9.5.4 CleanUps

From time to time it may be necessary to remove users from the TCE Configuration. These utilities provide access to a system-wide view of both Email Addresses and UserIds and the tools for updating/deleting them.

9.5.5 DChanges

This utility immediately runs the Detected Change Process and displays the results of its findings, if any.

9.6 Monitors

TCE provides a number of unique Management Reports designed as Controlled Event and Configuration Monitors. Each tracks changes and at specific intervals, reports findings as directed. Each operates independently of the others and may be configured to inform at a summary or detail level. Findings may be sent via Email.

The TCE Monitor Selection Panel

```
                TCE 17.0 - Configuration Monitors/Reporting

S   Settings  .. - System Configuration Monitor          Userid    - PROBI1
                                                        Time      - 14:49
C   Journals  .. - Control Journal Event Monitor        Sysplex   - ADCDPL
                                                        System    - ADCD113
E   TCErrors  .. - Monitor for Configuration Errors     IFOhlq    - TEST
                                                        ICE 17.0 - TCE 17.0
T   Trackers  .. - Controlled Interval Event Trackers    Patch Level GA

                   -------Tracker Selection-------

                    .. Staged .. OPRCmd .. ESMCmd

                    .. IFPost .. HZSIds .. MSGIds

                    .. UserId .. CtlJob .. WrkGrp


X   Exit         - Return to the TCE Primary Menu

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```

9.6.1 Settings

Understanding of the TCE Configuration is fundamental to to the integrity of the Controls Environment. This Monitor tracks/reports changes in Configuration Members.

9.6.2 Journals

Controlled Events are recorded in the TCE Control Journal as they occur. This Monitor tracks and reports changes at intervals across all Control Event Categories.

9.6.3 TCErrors

Potential configuration problems may arise resulting in a loss of control over Configuration Boundaries. This monitor discovers/reports these possible conditions.

9.6.4 Trackers

These Monitors operate over a 24-hour period reporting only on their specific topical area of interest at defined intervals during the period. Findings during the 24-hour period are automatically stored for later use.

9.7 NEZUtils

Once Controlled Categories are defined, updates to the Controlled Dataset defined to them can be detected when they occur, either interactively under TSO/ISPF and/or during a Batch Update managed by NEZUTIL. NEZUTIL is a 'JCL-Wrapper' Application that is used to front-end all common Batch Update Utilities like IEBGENR or IEBCOPY. To activate NEZUTIL, CDSTART and CDSTOP Control Statements MUST be added to existing JCL Procedures. In addition, inline Control Cards or alternately a SYSIN DD Dataset must be defined within the Update Procedure to direct NEZUTIL to the list of Control Categories that will be evaluated for changes following Batch Execution. A brief description of the Batch Event, if provided, will be associated with each discovered change.

9.7.1 Naming the Procedure

A Procedure Name is arbitrary text that is or will be assigned to a specific JCL Procedure. To create a new procedure name enter it in an open slot. Use the 'S' to select a name and display the Procedure Summary/Setup Panel. To remove a named procedure, use the 'D' to select the procedure or BLANK the Name Field, then press enter.

NEZUtil Procedure Naming and Selection Panel

```
                TCE 17.0 - TCE Controlled Procedure Selection

----------------------Defined NEZUTIL Control Procedures----------------------
-- Cm --Procedure Names-- -- Cm --Procedure Names-- -- Cm --Procedure Names--
01 .. BATCH_UPDATE_SYS01  19 ..                    37 ..
02 .. BATCH_UPDATE_SYS02  20 ..                    38 ..
03 .. BATCH_UPDATE_SYS03  21 ..                    39 ..
04 ..                     22 ..                    40 ..
05 ..                     23 ..                    41 ..
06 ..                     24 ..                    42 ..
07 ..                     25 ..                    43 ..
08 ..                     26 ..                    44 ..
09 ..                     27 ..                    45 ..
10 ..                     28 ..                    46 ..
11 ..                     29 ..                    47 ..
12 ..                     30 ..                    48 ..
13 ..                     31 ..                    49 ..
14 ..                     32 ..                    50 ..
15 ..                     33 ..                    51 ..
16 ..                     34 ..                    52 ..
17 ..                     35 ..                    53 ..
18 ..                     36 ..                    54 ..
```

9.7.2 Naming the Procedure Datasets

When a NEZUTIL Configuration Dataset is to be associated with a specific JCL Procedure the procedure must contain the fully qualified name of Configuration Dataset. The panel that follows provides Procedure and Configuration Dataset

fields. When these fully qualified Dataset values are provided, member name is optional and access to either dataset is provided via the panel.

NEZUtil Procedure Configuration Definition Panel

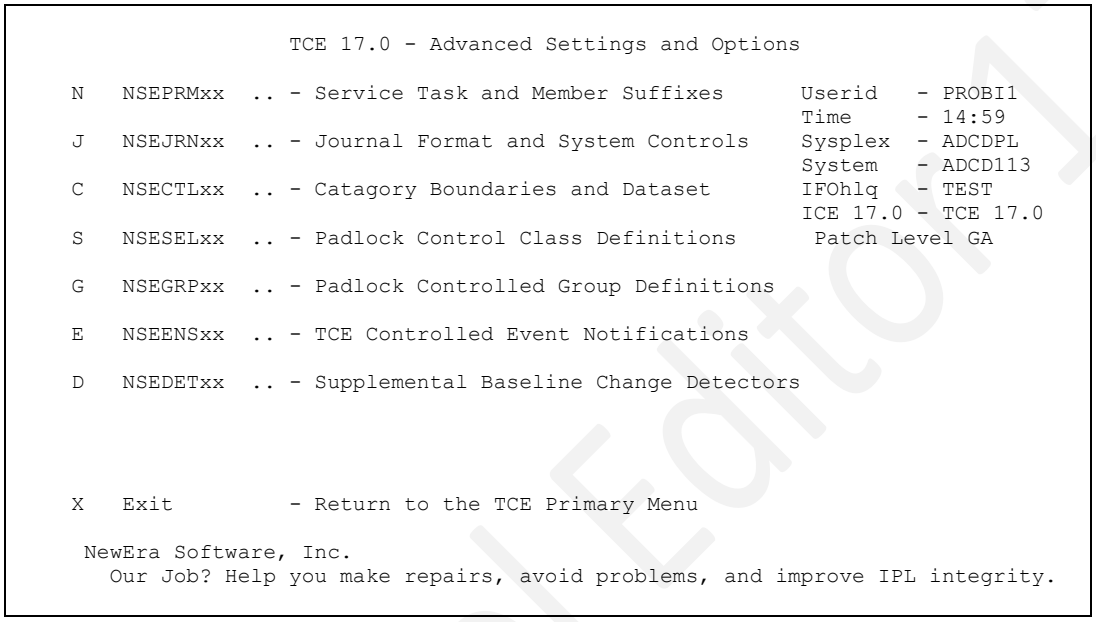
```
                TCE 17.0 - NEZUtility Configuration - BATCH_UPDATE

 JCL/Procedure .. Dsn: PROBI1.NEZUTIL.PROCS                   Mbr:
 Configuration .. Dsn: PROBI1.NEZUTIL.SETUP.LAST              Mbr:

-------------------NEZUTIL Configuration Dataset Parameters-----------------
-- Cm --Category Name--   -- ----------------Descriptor Text----------------
01 .. SYSTEM.IPLPARM    | 01 THIS IS THE ORIGIN OF THE CHANGE
02 .. SYSTEM.PARMLIB    | 02
03 .. GREATERT.PARM     | 03
04 .. LESSTHAN.PARM     | 04
05 ..                   | 05
06 ..                   | 06
07 ..                   | -- ------------Configuration Comments-------------
08 ..                   | 01 THIS IS THE REASON FOR THE CHANGE
09 ..                   | 02
10 ..                   | 03
11 ..                   | 04
12 ..                   | -- -----------Last Configuration Upate------------
13 ..                   | 01 USER:PROBI1 DATE:2019/09/16 TIME:12:25:00
14 ..                   | -- --------------Event Notification---------------
15 ..                   | 01 .. Notice No  .. Procedure Event Token ABCDYYYY
```

9.7.3 Defining the Category List

The Category List associated with a procedure is shown to the left. To add/update this List, cursor into the field and overtype its current content. Cursor under a blank field and press enter to display the currently defined Category list.

9.8 Advanced

This panel links to various TCE Setup Access Points. The local Setup is discovered. Each remote entry will require an LPAR Name, the Fully-Qualified IFO ParmLib Dataset and Suffix of the Controlling NSEPRMxx Member. Once defined, related specific TCE Member Control Information is updated each time you reselect an entry.



9.8.1 NSEPRMxx

The Primary TCE Configuration used to control the activation of TCE Task and define TCE Member Suffixes.

9.8.2 NSEJRNxx

Is used to define the TCE Control Journals, Panel Descriptor and activation of various TCE Options.

9.8.3 NSECTLxx

Is used to define the Control Boundaries monitored by TCE; consists of Named Category and their Datasets.

9.8.4 NSESELxx

Is used to define the Access Privileges that will be granted and/or denied to individual users or groups.

9.8.5 NSEGRPxx

Is used to define TCE Control Groups and their Members; used in conjunction with NSESELxx Member Level Control.

9.8.6 NSEENSxx

Is used to control the definitions of Notification Methods - Email, Text - and Action Triggering Notices.

9.8.7 NSEDETxx

Defines the set up of the Supplemental Detectors.

9.8.8 Multi-System Access Points

TCE supports Multiple Systems using a set of Advanced Functions that allow for access to a systems unique TCE Configuration within a shared DASD environment.

Multi-System Access Point Worksheet – NSEPRMxx Example

```
                TCE 17.0 - Controlled Configuration Access     Row 1 to 2 of 2
--NSIMCTL 0214--                                              ---Access List---
------------------- 2 NSEPRMxx Control Configuration Members ------------------
Row Selection: Show_TCE_Control Add_Parm_Setup Del_Parm_Setup Update_TCE_Config
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Row ---------ICE Controlled Setup Targets--------- ---TCE Members--- -Update-
_ ___ _ ________ ____________________________ __ ___ __ __ __ __ __ __ ________
S Num P --LPAR-- ------ParmDsn Qualifier----- Pr Dyn Jr Ct Sl Gp En Dt yy/mm/dd
_ 001 L _ADCD113 IFO.TEST.PARMLIB             ID --- 00 00 -- -- 00 00 19/12/06
_ 002 L _ADCD113 IFO.TEST.PARMLIB             00 Yes 00 00 00 00 00 00 19/02/13
****************************** Bottom of data ********************************
```

9.8.8.1 Column Headings NSEPRMxx Access Point

- Num - The Table Row Number.
- P - 'L' LPAR is Local/Running System, 'Y' in same Sysplex.
- LPAR - The LPAR Name you assigned to the Set-Up.
- ParmDsn - The Fully qualified ICE Configuration Parmlib Dataset.
- Pr - The Suffix of the NSEPRMxx Configuration Member.
- Dyn - 'Yes' indicates TCE Config can be dynamically Updated.

- Jr - Suffix as specified - JRN(xx) - in NSEPRMxx Member.
- Ct - Suffix as specified - CTL(xx) - in NSEPRMxx Member.
- Sl - Suffix as specified - SEL(xx) - in NSEPRMxx Member.
- Gp - Suffix as specified - GRP(xx) - in NSEPRMxx Member.
- En - Suffix as specified - ENS(xx) - in NSEPRMxx Member.
- Dt - Suffix as specified - DET(xx) - in NSEPRMxx Member.
- Update - Date last update. Cursor under, press enter for MORE.

9.8.8.2 Row Selection Commands

- S - Displays the NSEPRMxx TCE Configuration Worksheet.
- A - Opens new row for entry of a new Qualifier. You must provide: System Name, Qualifier and NSEPRMxx Suffix.
- D - Deletes Worksheet entries that match selected Set-up.
- U - Updates the TCE Configuration defined by Active NSEPRM Member that is associated with the Local System only.

Multi-System Access Point Worksheet – NSEJRNxx Example

```
                TCE 17.0 - Boundary Control Configurations     Row 1 to 2 of 2
--NSIMJLX 0214--                                                ---Access List---
-------------- 2 NSEJRNxx Dataset Boundary Control Configurations -------------
Row Selection: Show_Controls Add_Parms Update_Parms Delete_Parms ReStart_NSEJRN
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Row --------TCE Controlled Target-------- ---JRNxx--- ------Last Update------

_ ___ _ ________ ____________________ __ __ ___ ____ ________ ________ _____
S Num P --LPAR-- ---ParmDsn Qualifier--- Sf Sf Act Ctls -UserId- yy/mm/dd hh:mm
_ 001 L _ADCD113 IFO.TEST.PARMLIB        00 00 Yes __25 __PHARL2 19/02/10 16:04
_ 002 L _ADCD113 IFO.TEST.PARMLIB        00 01 --- __85 -------- --/--/-- --:--
****************************** Bottom of data ********************************
```

9.8.8.3 Column Headings NSEJRNxx Access Point

- Num - The Row Number.
- P - 'L' LPAR is the running system, 'Y' in same Sysplex.
- LPAR - The LPAR name you assigned to the Set-Up.
- ParmDsn - The Fully qualified ICE Configuration Parmlib Dataset.
- PRMSufx - The Suffix of the NSEPRMxx Configuration Member.
- CTLSufx - The Suffix of the Discovered NSEJRNxx Member(s).
- Act - 'Yes' indicates that Member is the Controlling Member.
- Ctls - The number of Active Control Cards in the Member.
- UserId - UserId of the last user to update the NSEJRNxx Member .
- yy/mm/dd - Date of the last NSEJRNxx Member update.
- hh:mm - Time of the last NSEJRNxx Member update

9.8.8.4 Row Selection Commands

- S - Select a NSEJRNxx Configuration LPAR/ParmDs Boundary.
- N - Add a New NSEJRNxx Configuration LPAR/ParmDs Boundary.
- U - Update an Existing New NSEJRNxx LPAR/ParmDs Boundary.
- D - Delete an LPAR/ParmDs Boundary and All references.
- A - Activate the Local Systems NSEJRNxx Configuration.

9.8.8.5 Adding a New Sysem Controlled Boundary

To add new LPAR/ParmDs Boundary use 'N' Row Selection Command. LPAR name, active Parmlib Dataset and NSEPRMxx Suffix are required.

10 Appendix A - Product Installation

10.1 Installing the Integrity Controls Environment - ICE

The Control Editor is one of three applications that execute within the Integrity Controls Environment (ICE). Each application - Image FOCUS, The Control Editor and ICE Viewer - is included in the ICE download package. Each requires the installation of ICE before it can become fully operational.

10.1.1 Downloading ICE

The Integrity Controls Environment (ICE) can be downloaded from the NewEra Web Site or from download links distributed by NewEra Technical Support. The Download Links contain all of the JCL necessary to install and start ICE and its applications: Image FOCUS, The Control Editor, The Supplementals, Fast DASD Erase for z/OS, The Viewer and The IPLCheck Family of Health Checks.

To ensure a successful installation, you should read and understand this section of the User Guide prior to installation. You should also read the Image FOCUS Getting Started Guide available at www.newera.com/startifo.pdf.

If you encounter problems, please contact NewEra Technical Support using one of the following:

- 1-800-421-5035 or 408-520-7100
- support@newera.com

10.1.2 Licensing and Authorization

The distribution files contain a complete version of Image FOCUS. You may use this link for installing a trial copy for evaluation purposes or updating an existing license. If you are installing for purposes of product evaluation, you will need to contact NewEra Technical Support for Temporary License Authorization. Please contact NewEra Technical Support using one of the following: 1-800-421-5035, 408-520-7100 or support@newera.com

10.1.3 Alternate Security Password

The Image FOCUS Recovery View allows a user to access the Primary Menu when JES, VTAM and TCP/IP are down or unavailable. It is also possible that RACF may be down or unavailable, thus preventing user access to the Primary Menu. If you want to overcome this possible access limitation, you can use an alternate password to bypass

RACF. This alternate password is enabled or disabled during installation and available by contacting NewEra Technical Support. Please contact NewEra Technical Support using one of the following:

- 1-800-421-5035 or 408-520-7100
- support@newera.com

NOTE: If an alternate security password is enabled, the security level assigned to the user is equivalent to the security level of the Image FOCUS address space. A description on how to enable/disable the alternate security password is described in this User Guide.

10.1.4 Planning for Installation

This section describes the steps necessary to prepare for installation of ICE including 1) Planning for Cataloging Datasets, 2) Selecting an index, and 3) Authorizing load libraries.

NOTE: There is an Installation Checklist available in the ICE readme file. The readme file is available via a download link, which is included in the Product Services Resource Links email that is sent by NewEra Support.

10.1.4.1 Selecting a High Level Qualifier

Select a high level qualifier (&nssprfx) to be used for the ICE related dataset names.

10.1.4.2 Select a Volume for Dataset Allocation

Select a volume to be used for the ICE datasets. This volume will be used in the symbolic parameter DSKVOLU.

10.1.4.3 Authorizing Load Libraries

The ICE load library must be authorized in SYS1.PARMLIB member IEAAAPFxx or PROGxx.

10.1.4.4 JCL Symbolics

The following symbolic parameters may need to be changed to conform to your installation standards in the Image FOCUS PROC and installation JOBS:

```
Mnemonic        Mnemonic Description
SPFPRFX    - IBM ISPF dataset prefix
NSSPRFX    - Image FOCUS chosen dataset prefix
DSKUNIT    - DASD unit for new ICE datasets
DSKVOLU    - VolSer for new ICE datasets
```

10.1.5 Upgrading from a Prior Release

If you are upgrading to a new release from an older prior release you will need to reinstall.

In addition, if you are back-leveled to a much older release you may need to update your License Authorization Code(s). To receive new License Authorization Codes, provide NewEra Technical Support with the CPU MODEL TYPE and SERIAL NUMBER(s) of the CPU(s) on which you plan to install.

Please contact NewEra Technical Support using one of the following:

- 1-800-421-5035 or 408-520-7100
- support@newera.com

10.1.6 Downloading from Web

The ICE installation package (Product Libraries, User Guide, Read Me) is available for download from the Web. To request an ICE download link contact NewEra Technical Support via Email at support@newera.com using the subject “ICE Download Link”.

When you receive these download links, click on ‘Download’ to begin downloading. Your system will then prompt you for the path and file name under which to store the download file. Total download time will be approximately 3-5 minutes.

When the download is complete, you will receive a single download file containing the ICE binary. The ICExx_read_me.txt file contains instructions on the content and use of the download package.

The first step of the install is to move DISKET.NEZ to a pre allocated dataset on your z/OS Host by creating and submitting a JOB similar to the one shown below where *"your.dsn"* is the name of the dataset that will be used to receive DISKET.NEZ and *"vol"* is the related VOLSER.

```
//ALLOC JOB ......
// EXEC PGM=IEFBR14
//FILE DD DSN=your.dsn,DISP=(,CATLG),VOL=SER=vol,
// UNIT=unit,SPACE=(CYL,(100,50)),LRECL=80,RECFM=FB,
// BLKSIZE=6160
//SYSPRINT DD DUMMY
```

10.1.6.1 Installing from Download

The installation of the ICE program libraries found in a download will require the following steps: transferring files to the host, allocating data sets, building product files, customizing, and authorizing the load library. Details of these procedures follow.

10.1.6.2 Transferring File to Host

If you are using TSO SEND/RECEIVE you would specify: SEND c:\DISKET.NEZ x:'your.dsn'. When you transfer the file make sure this is done as a BINARY transfer.

10.1.6.3 Edit and Run the Install Job

Edit the information contained in the Dataset using your site specifications. Once you have edited this dataset you will have to save the dataset and submit this job. You cannot submit the job from within the dataset as it is too large, and you will receive a space abend. There are some instructions in the Install Job that must be followed; please review the job closely. Once you submit the job it will create hlq.llq.INSTLIB. You are now ready to continue the Image FOCUS 17.0 installation as described below.

10.1.6.4 Application Installation

Once the distribution media has been unloaded, you will need to run two JOBS. These two JOBS will finish installing the Image FOCUS Application.

- JOB 1 - Allocating Datasets

  1 - EDIT Member ALLOC in the &nssprfx.INSTLIB dataset.
  2 - Create a standard Job Card.
  3 - Submit the Job from &nssprfx.INSTLIB (ALLOC).

- JOB 2 - Product Build

  1 - EDIT the member BUILD in the &nssprfx.INSTLIB dataset.
  2 - Create an installation-valid JOBCARD.
  3 - Submit the Job from &nssprfx.INSTLIB (BUILD).

10.1.6.5 Customizing an Installation

Once Image FOCUS is installed, follow these instructions to customize it as needed:

10.1.6.6 Authorizing load library

To authorize the Image FOCUS load library (&nssprfx.LOAD):

- Add the dataset name and volume serial number of the load library to the APF member list in either IEAAPFxx or PROGxx.
- If IEAAPFxx is used, edit the IEAAPFxx member in SYS1.PARMLIB adding the following line:

  “&nssprfx”.LOAD volser,

  Where “volser” is the volume serial number on which the ICE LOAD library will reside. “&nssprfx” is the chosen dataset prefix for ICE.

  Note: If &nssprf.LOAD volser is not the last entry in the member, a comma must follow.

- If PROGxx is used, edit an appropriate in-line PROGxx member adding the following line:

  APF ADD DSNAME(“&nssprfx”.LOAD) VOLUME(volser

  Where “volser” is the volume serial number on which the ICE LOAD library will reside. “&nssprfx” is the chosen dataset prefix for ICE.

10.1.6.7 VTAM Application Definition

If you wish to define ICE to ACF/VTAM consider the following:

- Use the APPLID statement in the VTAMLST.

- ICE APPL Definition Statements must either be added to an existing APPL major node or a new major node must be created.

- If the ICE APPL Statements are added to an existing major node, the ACF/VTAM operator must deactivate and then reactivate the major node containing the new APPL Statement.
- If a new major node is added to VTAMLST, then only the new major node needs to be activated.

- If the ICE APPLs are to come up active when ACF/VTAM is started, then whenever a new major node is added, the node name must be added to the ACF/VTAM start list, ATCCONxx,

Example Application ID: nssprfx.INSTLIB(VTAMAPPL)

```
APPLIFO VBUILD TYPE=APPL                        APPLICATION MAJOR NODE
*
IFO       APPL   AUTH=(ACQ,NVPACE),                                   X
                 SRBEXIT=YES,                 RUN EXITS IN SRB MODE X
                 VTAMFRR=YES,                 USE VTAM FRR          X
                 EAS=4
*
```

In the example, SRBEXIT= YES runs the VTAM EXIT routines of the Image FOCUS in SRB mode. VTAMFRR= YES is a required value that allows control to be passed to the VTAM recovery routine in the event of an ABEND in an Image FOCUS EXIT routine. AUTH= NVPACE is the recommended value for the parameter.

10.1.6.8 Configuring ICE to use VTAM

To configure Image FOCUS to use VTAM, add the following to the PARM field in the Image FOCUS cataloged procedure: APPL=IFO or add APPL=name
“name”= the name of the VTAM application defined for Image FOCUS.

10.1.7 Installing for Multiple Users

When installing Image FOCUS as a VTAM application to support multiple users, you will need to configure two additional tasks.

- IFOM is a started task that will remain active until stopped.
- IFOS started task is started by IFOM when each user logs on.

This task will self-terminate when the user logs off.

10.1.8 Customizing the IFOM Started Task

Copy IFOM from &nssprfx.PROCLIB to a system PROCLIB dataset. Modify the proc to meet your site standards. Note the following PARM field keywords:

- SUBS= specify a 1-4 character name for a MVS subsystem that will be created by IFOM. This should be a subsystem name that is not currently in use. The supplied name is IFO1. DO NOT use a name that is the same as one of the IFO procs.
- UMAX= this value must be zero. DO NOT use any other value.
- SP= specify a 1-8 character name for the task that will be started when a user logs on to IFOM. The supplied name is IFOS.

10.1.9 Customizing the IFOS Started Task

Copy IFOS from &nssprfx.PROCLIB to a system PROCLIB dataset. Modify the proc to meet customer standards. Note the following keywords:

- SUBS= specify the 1-4 character name for the MVS subsystem that was named in the IFOM started task SUBS=. The supplied name is IFO1.
- ICMD= this keyword is not new to Image FOCUS 17.0 but it is now used to control the profile exec that is run at user logon.

The supplied value is ICMD=PX PROFM. PX is the name of the Command Processor and PROFM is the PARM (name of a REXX program) passed to the Command Processor that allocates the ISPF profile and ICE table datasets.

10.1.10 Starting IFOM

To start the ICE Multi-User Environment, issue the MVS command START IFOM. IFOS tasks are automatically started as required by the IFOM address space.

10.2 Integrity Controls Environment (ICE) Procedures

When the IFOM Procedure (PROC) is started the IFOM Address Space is formed and becomes active. During this initialization process the content of the NSEPRMxx ParmLib is read to determine which additional TCE Service Task is to be started and which ParmLib Members are to be used to configure/build the TCE Controls Environment. Once TCE is operational users may begin to logon via TSO or via IFO. Their actions will be monitored/logged as was defined by the Configuration Parms used during the initialization process. However, as time passes, it is very likely that new TCE operational requirements will arise that necessitate an update to

one or more of the TCE Configuration Parms/Members. Such configuration updates may be done dynamically by reinitializing the affected Configuration Member. Such dynamic updates will have no adverse impact on users logged on at that time.

10.2.1 Image FOCUS Recovery (IFOR)

Image FOCUS Recovery (IFOR) is a separate started task that may be optionally started immediately after the successful start of the z/OS operating system and before the start of its subsystems. Using its self contained internal communication subsystem, IFOR provides access to ISPF and all Image FOCUS functions for finding and fixing problems that are preventing the successful initialization of JES, VTAM and TCP/IP and failed z/OS systems.

10.2.2 Image FOCUS Main (IFOM)

Image FOCUS Main (IFOM) is the primary Image FOCUS started task named to VTAM with a unique APPLID. It is used to spawn and control individual IFO Sub-Tasks (the Image FOCUS Sessions Manager - IFOS) and, when licensed to do so, automatically create full and incremental backups of members found in Control Datasets named in Control Lists.

10.2.3 Image FOCUS Sub-Task (IFOS)

Image FOCUS Sub-Task (the Image FOCUS Sessions Manager - IFOS) manages the individual user sessions spawned by IFOM by validating user access rights to Image FOCUS as they logon, as appropriate, presenting the Image FOCUS Primary Menu and responding to menu directives and line commands.

10.2.4 Image FOCUS Background (IFOBG)

The Image FOCUS Background (IFOBG) is an MVS Batch Process called by the Image FOCUS interval directive, or alternatively, the site Job Scheduler. Often referred to as IFO Production, IFOBG evaluates Controlled Images for fitness, changes and variances, reporting its findings as alerts, notifications and reports.

10.2.5 ICE on a Remote System (ICEAGNT)

The Integrity Controls Environment (ICE) can be installed on Remote Systems. For purposes of this discussion a Remote System is one that does not have an active VTAM APPL and therefore is not available for user logon. Such Remote Systems are

generally used to run specific ICE Applications - IPLCheck or Supplemental Detectors - as Remote Agents.

In order to activate a remote system, you will need to not only install ICE but you will also need to start the Remote Agent Procedure ICEAGNT and configure the Parmlib Members NSEMSGxx, if running IPLCheck, and NSEPRMxx if running either IPLCheck or Supplemental Detectors.

10.2.6 Installing ICE on a Remote System

The Integrity Controls Environment can be installed on a Remote System or LPAR. For purposes of this discussion a Remote System or LPAR is defined as an ICE installation that is running the ICE Procedure ICEAGNT as opposed to IFOM. Such a Remote System or LPAR would not be configured to have access to the ICE Primary Menu and is intended only for creating the environment in which remote ICE Applications can execute, for example, IPLCheck and/or Supplemental Detectors.

10.2.6.1 The ICE Remote Procedure – ICEAGNT

Once the ALLOC and BUILD jobs have run on a Remote System or LPAR you will need to locate and edit the NSEPRMID and NSEMSGID Configuration Members that are found in the ICE Parmlib Dataset.

Copy the ICEAGNT procedure from &nssprfx.PROCLIB to a system PROCLIB dataset. Modify the PROC to meet your site standards by specifying values for:

- NSSPRFX= One or more ICEAGNT Dataset Qualifiers
- SPFPRFX= IBM ISPF dataset prefix
- PRM= The suffix of the NSEPRMxx Configuration Member

To start the ICE Remote Environment, issue the MVS command START ICEAGNT.

```
//*-------------------------------------------------------*                00010000
//*            NEWERA IMAGE FOCUS ENVIRONMENT             *                00020000
//*              STARTED TASK PROCEDURE                   *                00030000
//*                                                       *                00040000
//*  DETECTOR ONLY ADDRESS SPACE                          *                00050000
//*                                                       *                00060000
//*  NSSPRFX - PREFIX FOR IMAGE FOCUS DATASETS            *                00070000
//*                                                       *                00080000
//*  SPFPRFX - PREFIX FOR IBM ISPF/PDF DATASETS           *                00090000
//*                                                       *                00100000
//*                                                       *                00110000
//*-------------------------------------------------------*                00120000
//*                                                                        00130000
//AGNT    PROC NSSPRFX='IFO.IFOB',                                        00140000
//             SPFPRFX='ISP',                                             00150000
```

```
//            PRM='ID'                NSEPRMXX SUFFIX                 00160000
//*                                                                   00170000
//IEFPROC EXEC PGM=NSEINIT,                                           00180000
//             REGION=60M,TIME=60,                                    00190000
//             DYNAMNBR=350,                                          00200000
//             PARM='SUBS=NONE,PRM=&PRM'                              00210000
//STEPLIB   DD DISP=SHR,DSN=&NSSPRFX..LOAD                            00220000
//NSEPARM   DD DISP=SHR,DSN=&NSSPRFX..PARMLIB                         00230000
//ICEWORK   DD DISP=SHR,DSN=&NSSPRFX..ICEWORK                         00240000
//NSETABB   DD DISP=SHR,DSN=&NSSPRFX..SISPTABB                        00250000
//NSWJLOG   DD SYSOUT=A,HOLD=YES                                      00260000
//SYSPROC   DD DISP=SHR,DSN=&NSSPRFX..SISPCLIB                        00270000
//          DD DISP=SHR,DSN=&SPFPRFX..SISPCLIB           ISPF         00280000
//*         DD DISP=SHR,DSN=SYS2.SERENA.PDSE510.CLIST    PDSTOOLS     00290000
//*         DD DISP=SHR,DSN=SYS1.DGTCLIB                 ISMF         00300000
//*         DD DISP=SHR,DSN=SYS1.SGIMCLS0                SMP/E        00310000
//*         DD DISP=SHR,DSN=SYS1.HRFCLST                 RACF         00320000
//*         DD DISP=SHR,DSN=SYS1.SCBDCLST                HCD          00330000
//SYSEXEC   DD DISP=SHR,DSN=&SPFPRFX..SISPEXEC           ISPF         00340000
//SYSHELP   DD DISP=SHR,DSN=SYS1.HELP                                 00350000
//          DD DISP=SHR,DSN=&SPFPRFX..SISPHELP           ISPF         00360000
//*ISPLLIB  DD DISP=SHR,DSN=SYS2.SERENA.PDSE510.LOAD     PDSTOOLS     00370000
//*         DD DISP=SHR,DSN=SYS1.DGTPLIB                 ISMF         00380000
//ISPMLIB   DD DISP=SHR,DSN=&NSSPRFX..SISPMENU                        00390000
//          DD DISP=SHR,DSN=&SPFPRFX..SISPMENU           ISPF         00400000
//*         DD DISP=SHR,DSN=SYS2.SERENA.PDSE510.MSGS     PDSTOOLS     00410000
//*         DD DISP=SHR,DSN=SYS1.DGTMLIB                 ISMF         00420000
//*         DD DISP=SHR,DSN=SYS1.SGIMMENU                SMP/E        00430000
//          DD DISP=SHR,DSN=ISF.SISFMLIB                 SDSF         00440000
//*         DD DISP=SHR,DSN=SYS1.HRFMSG                  RACF         00450000
//*         DD DISP=SHR,DSN=SYS1.SCBDMENU                HCD          00460000
//ISPEXEC   DD DISP=SHR,DSN=&SPFPRFX..SISPEXEC           ISPF         00470000
//ISPPLIB   DD DISP=SHR,DSN=&NSSPRFX..SISPPENU                        00480000
//          DD DISP=SHR,DSN=&SPFPRFX..SISPPENU           ISPF         00490000
//*         DD DISP=SHR,DSN=SYS2.SERENA.PDSE510.PANELS   PDSTOOLS     00500000
//*         DD DISP=SHR,DSN=SYS1.DGTPLIB                 ISMF         00510000
//*         DD DISP=SHR,DSN=SYS1.SGIMPENU                SMP/E        00520000
//          DD DISP=SHR,DSN=ISF.SISFPLIB                 SDSF         00530000
//*         DD DISP=SHR,DSN=SYS1.HRFPANL                 RACF         00540000
//*         DD DISP=SHR,DSN=SYS1.SCBDPENU                HCD          00550000
//ISPSLIB   DD DISP=SHR,DSN=&SPFPRFX..SISPSENU           ISPF         00560000
//          DD DISP=SHR,DSN=&SPFPRFX..SISPSLIB           ISPF         00570000
//*         DD DISP=SHR,DSN=SYS1.SGIMSENU                SMP/E        00580000
//*         DD DISP=SHR,DSN=SYS1.DGTSLIB                 ISMF         00590000
//*         DD DISP=SHR,DSN=SYS1.HRFSKEL                 RACF         00600000
//ISPTLIB   DD DISP=SHR,DSN=&SPFPRFX..SISPTENU           ISPF         00610000
//*         DD DISP=SHR,DSN=SYS1.DGTTLIB                 ISMF         00620000
//          DD DISP=SHR,DSN=ISF.SISFTLIB                 SDSF         00630000
//*         DD DISP=SHR,DSN=SYS1.SMP.OTABLES             SMP/E        00640000
//*         DD DISP=SHR,DSN=SYS1.SCBDTENU                HCD          00650000
//*ISPTABL  DD DISP=SHR,DSN=SYS1.SMP.OTABLES                           00660000
//*SMPTABL  DD DISP=SHR,DSN=SYS1.SMP.OTABLES                           00670000
//ISPCLT1   DD DISP=NEW,UNIT=SYSALLDA,SPACE=(CYL,(1,1)),              00680000
//             DCB=(LRECL=80,BLKSIZE=800,RECFM=FB)                    00690000
//ISPCLT2   DD DISP=NEW,UNIT=SYSALLDA,SPACE=(CYL,(1,1)),              00700000
//             DCB=(LRECL=80,BLKSIZE=800,RECFM=FB)                    00710000
//ISPLST1   DD DISP=NEW,UNIT=SYSALLDA,SPACE=(CYL,(1,1)),              00720000
//             DCB=(LRECL=121,BLKSIZE=1210,RECFM=FBA)                 00730000
//ISPLST2   DD DISP=NEW,UNIT=SYSALLDA,SPACE=(CYL,(1,1)),              00740000
//             DCB=(LRECL=121,BLKSIZE=1210,RECFM=FBA)                 00750000
//SYSUDUMP DD SYSOUT=A,HOLD=YES                                       00760000
//NSEDUMP  DD SYSOUT=A,HOLD=YES                                       00770000
```

10.2.6.2 Remote ICE Configuration Members

Once the ALLOC and BUILD jobs have run on a Remote System or LPAR you will need to locate and edit the NSEPRMID and NSEMSGID Configuration Members that are found in the ICE Parmlib Dataset.

10.2.6.3 Starting Related Task – NSEPRMxx

The NSEPRMxx Configuration Member determines which TASK will be started when the ICEAGNT Procedure is started: where *"xx"* is the suffix value that matches the value defined in the ICEAGNT PROC on the *"PRM="* Keyword. The default value assigned to the *"PRM="* Keyword is **ID**. If you intend to change this default value or any of the other values that appears in the default member it is best that you work with NewEra Technical Support BEFORE you submit ICEAGNT.

This member also contains the COMPANY Authorization Control Card. The value that follows the "=" is the License Key you will need to start ICEAGNT. Other License Keys are needed when ICE Applications other than IPLCheck – Core and the Level-One Detectors are to be used.

The COMPANY License Key is CPU Model and Serial Number specific so you will need a unique Key for each physical CPU upon which you intend to run ICEAGNT. NewEra Technical Support will assist you should you require a Key.

```
TASK=NSWJSSI                                    /*  JOURNAL SUBSYSTEM    */ 00010001
TASK=NSWJSTI CTL(00) JRN(00) ENS(00) DET(00) ICETDET /* JOURNAL CTL.  */ 00020001
TASK=NSWJSCI LOG(ERRORS)                        /*  LOG TASK             */ 00030001
TASK=NSWOMST                                    /*  OP CMD LOGGING       */ 00040001
TASK=NSWCEFM                                    /*  FUNCTION SCHEDULER   */ 00050001
TASK=NSTINIT                                    /*  WAKES UP EVERY 3MINS */ 00060001
*COMPANY=                                       /*  REQUIRED             */ 00070001
```

10.3 Installing The Control Editor - TCE

The Control Editor is included with the Integrity Controls Environment (ICE) Install Libraries; therefore, when you install ICE, The Control Editor application modules are installed.

To activate The Control Editor Administrator Interface and various operational sub-systems, a Control Editor Key Control Card must be inserted into the ICE configuration control member NSEPRMxx. Once the card is inserted and the ICE Primary Address Space (IFOM) is cycled, The Control Editor will be fully functional.

10.3.1 What to Expect

First, during the next (or first) restart of IFOM, The Control Editor Configuration Member NSECTLxx will be interrogated for a Control Dataset List. If a valid list is found, IFOM will "Create a Full Backup" of members found in the dataset target(s), storing them in a Control Journal. Note that each subsequent restart of IFOM will repeat this process backing up any additional datasets added to the control list that are not currently represented in the Control Journals.

Second, The Control Editor Administrator functions as accessed from the ICE primary menu using the "Control" command will be unlocked and become immediately available for use. The Control Editor Administrator functions are only available when accessed from the ICE primary menu.

Third, once The Control Editor Control Members NSECTLxx and NSEJRNxx are configured, ICE users with the needed External Security Manager (ESM) access authority who attempt to update or submit a member in a Controlled Dataset will be presented with a request for event documentation. Failure to provide the requested documentation will invalidate the update or submit attempt. These functions can be optionally extended to ALL ISPF USERS.

Fourth, dynamic system alterations, such as z/OS SETS or RACF SETROPTS, will be intercepted and recorded. No documentation request will be presented to users initiating such change events.

Finally, all events intercepted by The Control Editor will be recorded in an open Control Journal in both summary (Meta Data) and full format (Member Data or Log Data). This is to assure that a fully accessible Audit Trail of event history is readily available for reports and queries.

10.3.2 Critical Relationship

There should be a "One-to-One" relationship between a Dataset Category/Class and the Valid Datasets assigned/associated with the Category/Class. This is considered a

"Critical Relationship" to the integrity of the information captured in the Control Journals and displayed in the various Control Editor panels and reports.

10.3.3 User Access to Datasets

The Control Editor does not do any additional security checking when a user attempts to access a member, as any required security should already be in place. If the user does not have READ authority when the edit starts, then the user will get an open error. At exit (save), if the user does not have UPDATE authority to the member, then the user will get an open for output error. This is consistent with the way the normal processing of the ISPF editor works.

10.3.4 External Security Manager Issues

The NSEJRNxx and NSECTLxx UPDATE (but is not needed for BROWSE or EDIT) function accessed via the Administrator Interface requires that the following (the example is for RACF) or equivalent changes must be made to the External Security Manager (ESM) settings where "userid" is the TSO user ID for each user that will be given TCE Dynamic Update Authority.

```
RDEFINE FACILITY NEZ.NSEPARM.** UACC(NONE)
PERMIT NEZ.NSEPARM.** CLASS(FACILITY) ID(userid) ACCESS(READ)
SETROPTS REFRESH RACLIST(FACILITY)
```

10.3.5 When a Volume is Exhausted

It is recommended that Multivolume datasets should not be used for BSAM journals. When the journal subsystem attempts to write to a journal that causes a switch to a second volume the second volume will be ignored, and the current journal will be closed and a new journal will be created. This will leave an empty extent on the second volume, and only the extents of the first volume will be used by the journal subsystem.

10.3.6 ReadMe File

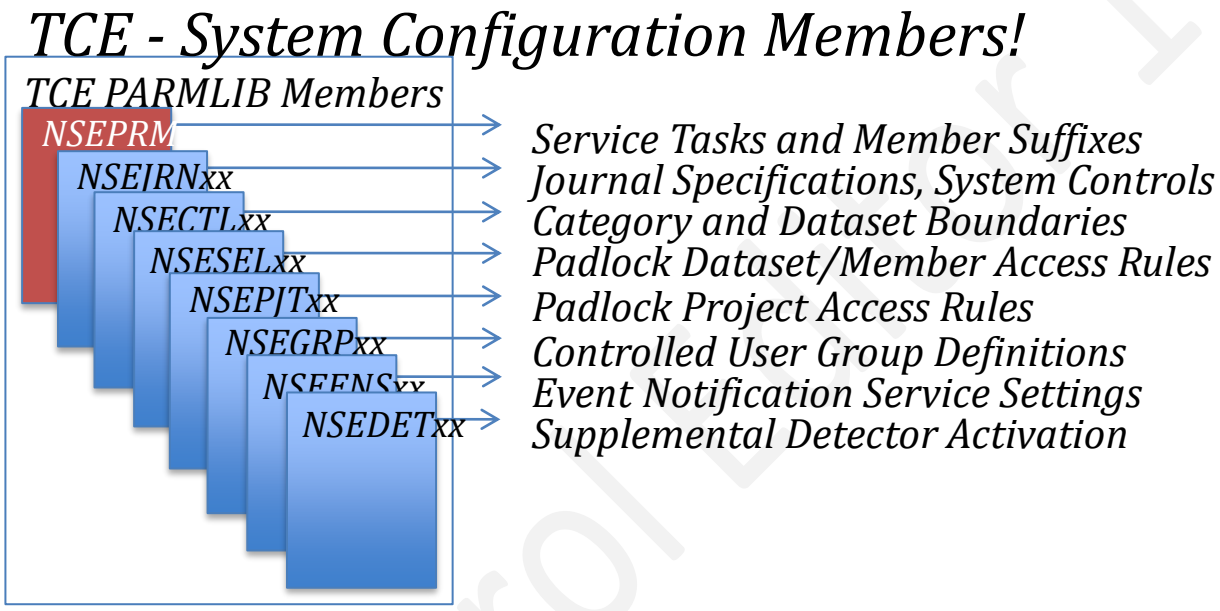
For additional assistance concerning product installation, review the "ReadMe" file associated with the product download.

11 Appendix B – TCE Configuration Members Detailed

The TCE configuration settings are defined in a set of TCE specific Configuration Members. Their prevailing suffixes are named on the TASK=NSWJSTI statement found in the controlling NSEPRMxx member.

Extract From Sample NSEPRM00 found in ICE SAMPLIB

```
TASK=NSWJSTI CTL(00) JRN(00) ENS(00) DET(00) SEL(00) GRP(00)
```



Each TCE Configuration Member, its syntax and keywords are explained in the remainder of this Appendix. Note that while each may be accessed directly in ICE Parmlib and updated using TSO/ISPF it is considered a *'Best Practice'* to employ the TCE Administrator Dialogs for this purpose. The TCE Administrator Dialogs are accessed from the TCE Adminstration Primary Menu and explained in detail in the TCE Administrator Dialogs User Guide.

11.1 NSEJRNxx Configuration Statements

The syntax of each NSEJRN00 Control Card is as follows:

|-----statement_Name keyword_name and/or keyword_value------|

Each Statement Name is separated from its Keyword Name and/or Keyword Value by at least one blank.

The value(s) associated with each Statement Name may be changed at any time but to become operational, the ICE Started Task, IFOM must be cycled. The NSEJRNxx member may be updated dynamically without having to cycle IFOM. This can be accomplished using the TCE Administrator Interface accessed from the ICE primary menu.

11.1.1 >> Journal Controls Follow

11.1.2 ALLOC

ALLOC is used to define the space allocation values that will be used in allocating new Control Journals. The ALLOC keyword can be split across multiple lines if needed BUT each new line must begin with a restatement of the ALLOC keyword. Changes to these values become effective with the next Control Journal Dataset allocation.

11.1.3 BMAXMEMS

Determines the maximum number of members that can be stored in a single Backup Dataset. By default the value is set to 10000 but can range from 1 to 32738.

11.1.4 BMAXRECS

Determines the maximum number of records in a member that can be stored in a Control Journal. By default the value is set to 15000 but can range from 1 to 65536.

11.1.5 BSPANMX

Specifies the maximum number of Journals that may be used to backup a specific dataset. A value of zero disables the Backup Function.

Default value = 4 Value range is 0 – 65535

11.1.6 DLINES

DLINES are the number of descriptor comment lines or change detail records that will be provided at the top of each Control Member and subsequently recorded in the Control Journal for each edit event. The recommended value range for descriptor and comment information 'M' is 3-96, for change detail 'N' 0-99. Changes to DLINES become effective immediately following the cycling of IFOM or a dynamic update to NSEJRN00 from the Administrator Interface.

The optional DLINES parameters include:

COUNT(M,N)

- M - Where M is the number of descriptor lines to create in each descriptor member. Range is 3-96, the default is 3.

- N – Where N is the number of change detail records to be captured when a member change is detected. Range is 8-99, the default is 8.

NONBLANK|NBLANK(N)
Where N is the minimum number of descriptor lines that must be non-blank. Range is 1-99. If 0 (ZERO) is used, the descriptor panel will be presented but will not require user entries.

EDITORDR|EORDR(option)
Where option is MEMFRST (display the member first) or DESCFRST (display the descriptor before the member). If not specified, the default MEMFRST is used.

ACTIVE(Starting:hhmm-Ending:hhmm)
Where Starting:hhmm represents the time of day when the descriptor, as defined for the named category, will become active. Ending:hhmm represents the time of day when the descriptor will cease to be active. If not specified, the descriptor remains active throughout the entire 24 hour day.

11.1.7 ENTRIES

ENTRIES are the number of entries allowed in a Control Journal, EXCEPT Control Journals that are used for member backups, for which it has no effect. The recommended value range for BSAM format is 16-116; the default is 116. The recommended value range for zFS/HFS is 16-16,382 the default is 1092. Changes to ENTRIES become effective immediately following the cycling of IFOM and closing of the current journal.

11.1.8 HLQ

HLQ is the High Level Qualifier(s) (up to three are allowed) that will be used as the name prefix for each Control Journal. An example of the resulting dataset name is shown below. Note that the automatically determined '.D and .T' HLQ values are expressed in Greenwich Mean Time (GMT). '.D' is expressed using the notation YYYYJJJ. '.T' is expressed using the notation HHMMSSS.

IFO.COMMON.JOURNAL.D2006052.T2326523

If you are running multiple copies of Image FOCUS each enabled with The Control Editor it is recommended, due to current system limitations, that you name each system's Control Journal with unique High Level Qualifiers (HLQ's).

As a general rule, Control Journals should not be deleted, renamed, copied nor their content changed. Doing so will result in a loss of system integrity.

11.1.9 PATH

The PATH Statement, used to define the HFS/zFS Journal Format was dropped as a journal format option in TCE 8.0.

11.1.10 SHARE

SHARE as a stand alone NSEJRNxx Statement was removed in TCE 8.0

11.1.11 SHARE MULTIO(RB4K)

RB4K is the Default and recommended Journal Format. It is compatible with existing BSAM Journals BUT NOT COMPATIBLE with existing HFS/zFS Journals. If the content of HFS/zFS Journals is to be retained and merged with newer RB4K Journals, the older HFS/zFS Jounals will need to be converted to RB4K format. Contact NewEra Technical Support for assistance with a conversion application and instructions.

11.1.12 SHARE CONTROL(8)

Control List as defined in NSECTLxx may be shared among multiple LPARs. The maximum number of LPARs to share Control Lists is specificed as the value of SHARE CONTROL. The default value is 8. If Control List sharing is not desired set the value to zero, '0'.

11.1.13 SHARE JOURNAL(8)

Control Journals may be shared among multiple LPARs. The maximum number of LPARs to shared Journals is specificed as the value of SHARE JOURNAL. The default value is 8. If Journal sharing is not desired set the value to zero, ‘0’.

11.1.14 SWITCH

SWITCH determines when an existing Control Journal will be automatically closed, and a new Control Journal dataset allocated and opened for use by The Control Editor. Values may be either "NO" or "MONTH". The effect of SWITCH is often referred to as the TERM of a Journal. Note that regardless of the value set, Control Journals will automatically close when they reach the number of entries specified using the ENTRIES keyword or when they run out of space.

11.1.15 >> Descriptor Controls Follow:

11.1.16 TEMPLATE / TEMPLATE .END

The control statements used to define Template Style Descriptor, as a definable entity, were dropped in TCE 8.0. A Template Style Descriptor remains a Descriptor Default when a DESCPNL(style descriptor is not defined.

11.1.17 DESCPNL(

The various DESCPNL Statement supported Keywords and Keyword Values are presented below in order to provide a more complete understanding of configuration possibilities.

- CATEGORY|CAT(category-name) - where 'category-name' is the Dataset Category name that is being included in this DESCPNL definition.

- PANEL|PNL(panelnam) - where 'panelnam' is the name of a full-size ISPF Panel member in the ISPPLIB dataset containing the full panel definition.

- POPUP|POP(panelnam) - where 'panelnam' is the name of a Popup-size Panel member in the ISPPLIB dataset containing the pop-up panel definition.

- BYPASSCHAR|BPC(char) - specified on the DESCPNL statement where the 'char' represents the panel TYPE character that, if located in column 1 of a panel)BODY line, will cause that line to be eliminated from the journal entry descriptor data.

  - CONF - YES|NO is used to confirm or not the information entered by the user in the descriptor. The Default is 'YES' meaning that the confirmation pop-up is displayed. A setting of 'NO' will suppress the descriptor Pop-Up.

  - EDITORDR|EORDR|EO(option) - specified on the DESCPNL statement where valid values for 'option' are:

  - MF (display the member data first)
  - DF (display the descriptor data entry edit window prior to the member)

  If not specified, the default will be MF.

- ACTIVE(Starting:hhmm-Ending:hhmm) - specified on the DESCPNL statement where

  - 'Starting:hhmm' represents the start time that this descriptor panel will be active (in 'hhmm' format)

- 'Ending:hhmm' represents the end time that this descriptor panel will cease to be active.

If not specified, the descriptor remains active throughout the entire 24 hour day.

ACTIVE start and end times can span midnight. For example, ACTIVE(2200-0500) would indicate that this descriptor panel is active between 10:00 p.m. and 5:00 a.m.

11.1.18 >> Notification Controls Follow:

11.1.19 EXTERNALNOTIFICATION ON|OFF

EXTERNALNOTIFICATION is used to toggle ON|OFF the Notification METHODS and ACTIONS found in the NSEENSxx Configuration Member.

11.1.20 >> Process Controls Follow:

11.1.21 CEDEF

Default TSO Client for Control Editor.

Default Value = YES Values are YES|NO

YES – Causes the Control Journals defined with the HLQ keywords to be assigned as the default Journals used by the Control Editor when used under TSO. If more than one IFOM is defined, the NSEJRNxx member of the first started specifying a value of "YES" will prevail.

NO - The Control Editor session under TSO must specify the name of the IFOM Address Space. The Address Space name is the same as the IFOM Subsystem name.

11.1.22 CONTROLMODE NONE|WARN|DENY

The value of CONTROLMODE determines the global operational control that the Padlock will exert over various control resources, datasets, commands and projects. This notwithstanding the USERMODE control statements defined in NSESELxx can be use to override CONTROLMODE settings on a user-by-user basis.

11.1.22.1 NONE

When CONTROLMODE is set to NONE, Padlock Controls are not operational except that an individual users access rights may still be governed by their individual USERMODE settings.

11.1.22.2 WARN

When CONTROLMODE is set to WARN, Padlock Controls are operational and users that would otherwise be denied access will be allowed access following the display of a *'Warning Message'* indicating that they may be denied assess at some time in the future.

11.1.22.3 DENY

When CONTROLMODE is set to DENY, Padlock Controls are operational, and users then will be denied access to control resources, datasets, commands and projects.

11.1.23 CONTROLCATS ON|OFF

For Padlock Controls over Category Boundaries to be active CONTROLCATS must specify a value of YES.

11.1.24 CONTROLDSNS ON|OFF

For Padlock Controls over Dataset Boundaries to be active CONTROLDSNS must specify a value of YES.

11.1.25 CONTROLCMDS ON|OFF

For Padlock Controls over Command Boundaries to be active CONTROLCMDS must specify a value of YES.

11.1.26 CONTROLWGPS ON|OFF

For Padlock Controls over Workgroup Boundaries to be active CONTROLWGPS must specify a value of YES.

11.1.27 CONTROLPJTS ON|OFF

For Padlock Controls over TCE Project Boundaries to be active CONTROLPJTS must specify a value of YES.

11.1.28 IPLCHECKHLQ

The high level qualifier used to define the Inspection Log written by IPLCheck Core or Plus. This value is used to link TSO/ISPF users to the MBRUSED Line Command available to them when working with a Controlled Dataset.

11.1.29 IFOINDEXHLQ

The high-level qualifier that defines the Image FOCUS Inspection Log Index created during background image inspections. This value is used to link TSO/ISPF users to the MBRUSED Line Command available to them when working with a Controlled Dataset.

11.1.30 TSO

TSO Client Support: DEFAULT is YES

- YES - ALLOWS CONTROL EDITOR TO BE USED FROM A TSO ADDRESS SPACE
- NO - CONTROL EDITOR CAN ONLY BE USED BY AN IFOS ADDRESS SPACE

11.1.31 TCEPRIME

The value of TCEPRIME should be the TSOUserId of the Primary TCE Administrator.

TCEPRIME tsouser_id

11.1.32 TCEADMIN

The value of TCEADMIN may be a single TSOUserId or a list of up to six TSOUserIds separated by commas and enclosed in parentheses.

TCEADMIN tsouser-id or (tsouser_id, tsouser_id,tsouser_id,tsouser_id)

11.1.33 DETCHNGNOTIFY

Upon entry into Controlled Datasets TCE Compares the current content of the selected member with the last copy stored. By default, when a change is detected a Pop-Up noting the finding is displayed. Use DETCHNGNOTIFY to turn the Pop-Up off, Category by Category by specifying the following:

DETCHNGNOTIFY CAT(category_name) OFF

11.1.34 LOGEDIT NO|YES

This keyword is used to turn ON|OFF Edit Class event logging. Default = NO.

In addition, to activate/deactivate this function the following control card must be present in the IFOM Proc.

```
//NSWJLOG  DD SYSOUT=*
```

LOGEDIT intended for exclusive use by NewEra Technical Support.

11.1.35 LOGCMDS NO|YES

This keyword is used to turn ON|OFF Command Class event logging. Default = NO.

In addition, to activate/deactivate this function the following control card must be present in the IFOM Proc.

```
//NSWJLOG   DD SYSOUT=*
```

LOGCMDS intended for exclusive use by NewEra Technical Support.

11.1.36 IFO PROC Update

In addition to activate/deactivate LOGEDIT and/or LOGCMDS, the following control card must be present in the IFOM Proc.

```
//NSWJLOG   DD SYSOUT=*
```

To prevent logging from being turned ON/OFF using the options available in NSEJRN00, comment out or remove the control card from the IFOM Proc.

11.1.36.1 Sample Event Log

A sample and field description of a collection of typical log records is shown below:

```
JDate ---Time---- --User-- Type: ----Command/Suboperator----
10042 13:40:52.35 ESSJDL1   Cmd: SETROPTS  LIST
10042 13:47:42.08 ESSJDL1  Edit: ESSJDL1.IFO80DR.ASM(NSWOMST)
10042 13:54:51.88 ESSJDL1  Edit: ESSJDL1.IFO80DR.ASM(#ASMNERA)
10042 13:56:05.17 ESSJDL1   Cmd: SETXCF 12345
10042 14:01:49.59 ESSJDL1   Cmd: SETXCF 98765
10042 14:03:48.88 ESSJDL1   Cmd: SET PROG=XX,SMF=KK
10042 14:05:45.51 ESSJDL1   Cmd: SET SMF=KK,CMD=HH
10042 14:06:25.60 ESSJDL1  Edit: ESSJDL1.IFO80DR.ASM(NSEPRM5)
10042 14:07:10.03 ESSJDL1   Cmd: SET SMF=KK,CLOCK=RR
10042 14:07:42.88 ESSJDL1   Cmd: SET DIAG=VV,SMF=KK
10042 14:13:39.93 ESSJDL1  Edit: ESSJDL1.IFO80DR.ASM(NSWOMST)
10042 14:18:51.82 ESSJDL1  Edit: ESSJDL1.IFO80DR.ASM(#ASMNERA)
```

11.1.37 >> Monitor Controls Follow:

11.1.38 MSGMONITOR MSCOPE(*)

MSGMONITOR is used to define the scope of messages being monitored by the Operational Management Service Task (NSWOMST). By default, only the local system's messages will be monitored for capture and reported. The default is equivalent to specifying:

If IFOM is active in a SYSPLEX environment, messages from systems other than the local system can also be monitored and captured. If messages from all systems in the SYSPLEX are to be monitored for capture and reporting, specify MSGMONITOR as follows:

MSGMONITOR MSCOPE(*ALL)

If messages from only select systems in a SYSPLEX are to be monitored and captured, specify MSGMONITOR as follows:

MSGMONITOR MSCOPE(sysnm1,sysnm2, ... ,sysnmx)

where 'sysnm1', 'sysnm2', etc. represent the system names of the specific systems that are to have their messages monitored.

11.1.39 MSGIDINTERCEPT ON|OFF

For TCE to intercept a System Message the MSGIDINTERCEPT Statement must be turned ON.

```
MSGIDINTERCEPT ON
```

11.1.40 MSGID

For a System Message to be intercepted by TCE the MSGIDINTERCEPT Statement must be ON and the targeted Message Identifier must be defined on the MSGID Statement.

```
MSGID message_id
```

When messages fall into a broad catagories varying only by severity, generally the last bit in the message ID, i.e. I,W,E and you would like to match on all severity levels use an “*” as the last character of the Message ID. Doing this will result in the identification of all matching message IDs regardless of severity.

MSGID MATCHSTR(‘ ‘)

Message intercept may be optionally defined by specifying as a sub-parm on the MSGID Statement a Match String which TCE wil use to match with the text that accompanies the target message.

```
MSGID message_id MATCHSTR('match_string')
```

11.1.41 OPERCMDINTERCEPT ON|OFF

For TCE to intercept SET, MODIFY or Miscellaneous Operator Commands the OPERCMDINTERCEPT Statement must be turned ON. If the OPERCMDINTERCEPT Statement is turned OFF, Operator Commands will not be intercepted. The default value is OFF.

```
OPERCMDINTERCEPT ON
```

11.1.42 SETCMD – COMMAND NAME

When the OPERCMDINTERCEPT Statement is turned ON, SET Operator Commands specifically named using the SETCMD Statement are captured. Specify ‘ALL’ as the value of SETCMD to capture all SET Commands.

SETCMD SET_operator_command

Valid SET_operator_command values include:

```
APPC       ASCH       AUTOR      CEE        CLOCK      CNGRP
CNIDTR     DAE        DATE       DEVSUP     DIAG       EXS
GRSRNL     IKJTSO     IOS        IXGCNF     NMS        MPF
MSGFLD     OMVS       OPT        PFK        PROD       PROG
RESET      RTLS       SCH        SLIP       SMF        SMS
TIMEZONE   UNI        SETAPPC    SETALLOC   SETAUTOR   SETCEE
SETCON     SETDMN     SETETR     SETGRS     SETHS      SETIOS
SETLOAD    SETLOGR    SETLOGRC   SETMF      SETOMVS    SETPROG
SETRRS     SETSMF     SETSMS     SETSSI     SETUNI     SETXCF
```

11.1.43 MODCMD – COMMAND NAME

When the OPERCMDINTERCEPT Statement is turned ON, MODIFY Operator Commands specifically named using the MODCMD Statement are captured. Specify ‘ALL’ as the value of MODCMD to capture all MODIFY Commands.

MODCMD MODIFY_operator_command

Valid MODIFY_operator_command values include:

```
AXR       BPXOINIT    CATALOG    CEA       DEVMAN     DLF
LLA       MVSNFS      OAM        OMVS      WLM        TRS
XWTR      ACF2        TSS
```

11.1.44 MISCCMD – COMMAND NAME

When the OPERCMDINTERCEPT Statement is turned ON, Miscellaneous Operator Commands specifically named using the MODCMD Statement are captured. Specify 'ALL" as the value of MISCCMD to capture the defined set of Miscellaneous Commands shown below.

MISCCMD Miscellaneous_operator_command

Valid Miscellaneous _operator_command values include:

```
CANCEL    DUMP      FORCE      QUIESCE    SWITCH    START
SWAP      STOP      SLIP       TRACE      VARY
```

11.1.45 ESMINTERCEPT ON|OFF

For TCE to intercept External Security Manager (ESM) Commands from IBM-RACF, CA-ACF2 or CA-Top Secret, the ESMINTERCEPT Statement must be turned ON. Turning the ESMINTERCEPT Statement OFF will turn off the intercept of all ESM Commands. The Default value is OFF.

11.1.46 RACFCMDINTERCEPT ON|OFF

For TCE to intercept External Security Manager (ESM) Commands from IBM-RACF, both the ESMINTERCEPT and RACFCMDINTERCEPT Statement must be turned ON. Turning the RACFCMDINTERCEPT Statement OFF will turn off the intercept of all IBM-RACF Commands. The Default value is OFF

11.1.47 RACFCMD – COMMAND NAME

When the RACFCMDINTERCEPT Statement is turned ON, IBM-RACF Operator Commands specifically named using the RACFCMD Statement are captured. Specify 'ALL' as the value of RACFCMD to capture all IBM-RACF Commands.

```
ALTDSD    ALTGROUP   ALTUSER   ADDSD     ADDGROUP   ADDUSER
CONNECT   DELDSD     DELGROUP  DELUSER   LISTDSD    LISTGRP
LISTUSER  PASSWORD   PERMIT    RALTER    RDEFINE    RDELETE
REMOVE    RLIST      SEARCH    SETROPTS
```

11.1.48 ACF2CMDINTERCEPT ON|OFF

For TCE to intercept External Security Manager (ESM) Commands from CA-ACF2 both the ESMINTERCEPT and ACF2CMDINTERCEPT Statement must be turned ON. Turning the ACF2CMDINTERCEPT Statement OFF will turn off the intercept of all CA-ACF2 Commands. The Default value is OFF.

11.1.49 ACF2CMD – COMMAND NAME

When the ACF2CMDINTERCEPT Statement is turned ON, CA-ACF2 Operator Commands specifically named using the ACF2CMD Statement are captured. Specify 'CGSO' as the value of ACF2CMD to capture this, the only valid command.

11.1.50 TSSCMDINTERCEPT ON|OFF

For TCE to intercept External Security Manager (ESM) Commands from CA-Top Secret both the ESMINTERCEPT and TSSCMDINTERCEPT Statement must be turned ON. Turning the TSSCMDINTERCEPT Statement OFF will turn off the intercept of all CA-Top Secret Commands. The Default value is OFF.

For the TSS Command Intercept to have its full effect, add the Top Secret Command, TSS to the AUTHCMD table in the IKJTSOxx PARMLIB member of the system supporting the product installation.

11.1.51 TSSCMD – COMMAND NAME

When the TSSCMDINTERCEPT Statement is turned ON, CA-Top Secret Operator Commands specifically named using the TSSCMD Statement are captured. Specify 'MODIFY' as the value of TSSCMD to capture this, the only valid command.

11.1.52 IKTTSOxx Parmlib Update Required

For the TSS Command Intercept to have its full effect, add the Top Secret Command, TSS to the AUTHCMD table in the IKJTSOxx PARMLIB member of the system supporting the product installation.

11.1.53 Command Origin Excludes

Any Operator Command can be issued from Started Tasks, Batch Jobs, Operator Consoles and TSO Sessions. Use the EXCLUDE(STC,JOB,CON,TSO) keyword to delimit the capture of command events where:

CON = Issued from an OPERATOR CONSOLE
JOB = Issued from a JOB, BATCH PROCESS
STC = Issued from a STARTED TASK
TSO = Issued from a TSO SESSION

The following examples show the use of the EXCLUDES sub-parm:

```
SETCMD  PROG EXCLUDE(STC,JOB) EXCLUDES STARTED TASK AND BATCH JOBS
MODCMD  ACF2 EXCLUDE(JOB)     EXCLUDES BATCH JOBS
MISCCMD VARY EXCLUDE(JOB,CON) EXCLUDES BATCH JOBS & OPERATOR CONSOLE
```

11.1.54 NSEJRNxx Model Member

```
*******************************
*    JOURNAL CONTROL OPTIONS   *
*******************************
HLQ      IFO.JOURNAL
SHARE    MULTIO(RB4K)
SHARE    CONTROL(8)  /* 0=Not Sharing */
SHARE    JOURNAL(8)  /* 0=Not Sharing */
ALLOC    SPACE(4)
ALLOC    CYL
BMAXMEMS 10000
BMAXRECS 15000
BSPANMX  4
ENTRIES  120
SWITCH   MONTH
***************************
* EDITOR CONTROL OPTIONS  *
***************************
CEDEF    YES
DLINES   COUNT(3)
DLINES   NONBLANK
TSO      YES
DETCHNGNOTIFY CAT(SYSTEN.IPLPARM) OFF
***************************
* DESCRIPTOR              *
***************************
DESCPNL CAT(SYSTEM.PARMLIB) PNL(DDE@PNL1) BYPASSCHAR(!)
DESCPNL CAT(SYSTEM.PARMLIB) POP(DDE@POP1) BYPASSCHAR(!)
***************************
* TCE CONTROL OPTIONS     *
***************************
LOGCMDS  NO
LOGEDIT  NO
MSGMONITOR MSCOPE(*)
LOGEDIT  NO
LOGCMDS  NO
OPERCMDINTERCEPT ON
MODCMD   LLA
MODCMD   ALL
SETCMD   ACTIVATE
SETCMD   ALL
MISCCMD  ALL
MISCCMD  VARY
MISCCMD  VARY EXCLUDE(JOB,STC)
ESMINTERCEPT ON
RACFCMDINTERCEPT ON
RACFCMD  SETROPTS
ACF2CMDINTERCEPT ON
ACF2CMD  CGSO EXCLUDE(STC,TSO)
TSSCMDINTERCEPT ON
TSSCMD   MODIFY
MSGIDINTERCEPT ON
MSGID    HZS0003E MATCHSTR('NEWERA,NEZ_OPSYS') JRNLPOST(YES)
MSGID    CSV410I  JRNLPOST(YES)
```

11.2 NSECTLxx Configuration Statements VERS(1)

Version One of the NSECTLxx Control Card Syntax is maintained to support existing configurations. Users that wish to extend the TCE Control Environment to include UNIX Files will need to upgrade to Version Two. Version Two supports both MVS Datasets and UNIX Files.

The syntax of each NSECTLxx VERS(1) Control Card set must begin as follows:

FORMAT VERS(1)

Followed by the individual Category Control Card containing the control statements described below:

|-----Category_Name Dataset(volume_name,system_name)------|

Control Card values are positional: Category_Name must begin in Column one, Dataset must begin in column eighteen.

11.2.1 *AUTO* The System Default

To facilitate a rapid and agile TCE startup for new users, two default Category definitions are specified in the default NSECTLxx Parmlib member: SYSTEM.IPLPARM and SYSTEM.PARMLIB. Both may use the Dataset value of *AUTO* to denote that TCE is to determine the IPLParm and Parmlib datasets used to IPL the system upon which the IFOM Procedure (which starts the IFOM Started Task) is executed.

11.2.2 DATASET

To associate one or more datasets with a specific Control Category, enter the fully-qualified dataset name, following the Category Name on the same line beginning in column eighteen as shown below.

```
SYSTEM.DATASETS SYS1.PARMLIB
```

Only one dataset is allowed per line as each line is processed by TCE as a separate Control Card. To add additional Datasets to a Control Category, repeat the line changing the dataset name as needed.

By default, when a Dataset is defined using just its fully qualified name, all datasets with matching names, regardless of Volume placement or System, are considered Controlled Datasets within a Controlled Category.

11.2.3 DATASET(VOLUME)

The scope of TCE control over a dataset may be limited to a specific Volume. When this is desired, indicate the Volume name within a set of parentheses immediately following the Dataset name as shown below.

```
SYSTEM.DATASETS SYS1.PARMLIB(VOLABC)
```

11.2.4 DATASET(VOLUME,SYSTEM)

The scope of TCE control over a dataset may be limited to a specific Volume when an action is taken from a specific Named system. When this is necessary indicate the Volume name and System name, separated by a single comma, within parentheses immediately following the Dataset name as shown below.

```
SYSTEM.DATASETS SYS1.PARMLIB(VOLABC,GREEN)
```

11.2.5 Critical Relationships

There should be a valid/direct relationship between a Category and the Valid Datasets assigned/associated to that Category. This is considered a “Critical Relationship” to the integrity of the information captured in the Control Journals and displayed in the various Control Editor panels and reports.

11.2.6 Controlled Datasets Derived From NSESELxx

Control Datasets appear in both the NSECTLxx and NSESELxx Configuration Members. Those in NSECTLxx are defined as elements of a Controlled Category. Control Datasets defined in NSESELxx may be defined independently and controlled by TCE Padlock functions. As a result, it is possible datasets defined for Padlock Control will not be defined in NSECTLxx. When such a mismatch is detected, TCE will automatically create the NSESEL.AUTOCNTL Category and include these discovered Padlock Dataset entries. With each start of IFOM or dynamic activation of NSECTLxx or NSESELxx, TCE performs a new cross-member discovery and updates the dataset grouping defined to NSESEL.AUTOCNTL. Any Dataset included in the NSESEL.AUTOCNTL inherits the control features afforded any Controlled Dataset.

11.2.7 Control Category Attributes

Associated with each Category, in addition to its Dataset Group, are a number of attributes: Padlock Control, Event Descriptor, Event Notification and Detected Change Notification. These are defined in NSESELxx, NSEENSxx and NSEJRNxx and best configured using the Administrator Dialogs available to the TCE Administrator.

11.2.8 Stealth Mode

The Descriptor Window, a Category Attribute, is normally displayed immediately before or immediately after an event, i.e. update, rename, restore. To proceed or to successfully complete, the requirements of the Descriptor definition must be satisfied. If this descriptor enforcement is not required, name the Category/Class using the reserved Category name “NEZAUTO.something” where “something” is a user-defined, one to eight character, qualifier.

11.3 NSECTLxx Configuration Statements VERS(2)

Version Two of the NSECTLxx Control Card Syntax is available to support both MVS Datasets and UNIX Files.

NSECTLxx Control Cards are constructed as “Sets” of MVS Datasets or UNIX Files bracketed by CATEGORY Statements to form a Category Control BLOCK. The opening CATEGORY Statement defines the Category Name and optionally the ROOT Directory of a set of UNIX Directories named within the BLOCK. The required closing CATEGORY Statement, CATEGORY .END, is required to terminate the Control Block.

The syntax of each NSECTLxx VERS(2) Control Card set must begin as follows:

FORMAT VERS(2)

Followed by Category Control Card “Sets” containing the control statements described below:

- For Categories containing MVS Datasets:

```
CATEGORY category_name
DSN *AUTO*
DSN fully_qualified_dsn(volume,system)
CATEGORY .END
```

- For Categories containing UNIX Files:

```
CATEGORY category_name (unix_root_directory)
DSN  fully_qualified_dsn(volume,system)
DIRS ‘/unix_directory/unix_sub_directory’
SUBD ‘/unix_sub_directory/unix_sub_directory’
PATH ‘/unix_directory_path/unix_sub_directory’
FILE ‘fully_qualified_unix_file_name’
CATEGORY .END
```

Note that each NSECTLxx Control Card, MVS or UNIX, must begin in Column One.

11.3.1 For Categories containing MVS Datasets

A Controlled Category may contain only one Dataset or File Type; MVS Dataset or UNIX File. Types may not be mixed within a Category.

11.3.1.1 CATEGORY_NAME

Each Category Name must be a unique string composed of two values separated by a single period. Each value may be up to eight characters.

xxxxxxxx.xxxxxxxx

11.3.1.2 *AUTO* The System Default

To facilitate a rapid and agile TCE startup for new users, two default Category definitions are specified in the default NSECTLxx Parmlib member: SYSTEM.IPLPARM and SYSTEM.PARMLIB. Both may use a Dataset value of *AUTO* to denote that TCE is to determine the IPLParm and Parmlib datasets used to IPL the system upon which the IFOM Procedure (which starts the IFOM Started Task) is executed.

```
CATEGORY SYSTEM.IPLPARM
DSN *AUTO*
CATEGORY .END

CATEGORY SYSTEM.PARMLIB
DSN *AUTO*
CATEGORY .END
```

11.3.1.3 DATASET

To associate one or more datasets with a specific Control Category, enter the DSN Statement followed by the fully qualified dataset name.

```
DSN SYS1.PARMLIB
```

Only one dataset is allowed per line as each line is processed by TCE as a separate Control Card. To add additional Datasets to a Control Category, repeat the line changing the dataset name as needed.

By default, when a Dataset is defined using just its fully qualified name, all datasets with matching names, regardless of Volume placement or System, are considered Controlled Datasets within a Controlled Category.

11.3.1.4 DATASET(VOLUME)

The scope of TCE control over a dataset may be limited to a specific Volume. When this is desired, indicate the Volume name within a set of parentheses immediately following the Dataset name as shown below.

```
DSN SYS1.PARMLIB(VOLABC)
```

11.3.1.5 DATASET(VOLUME,SYSTEM)

The scope of TCE control over a dataset may be limited to a specific Volume when an action is taken from a specific Named system. When this is necessary, indicate the Volume name and System name, separated by a single comma, within parentheses immediately following the Dataset name as shown below.

```
DSN SYS1.PARMLIB(VOLABC,GREEN)
```

11.3.1.6 Critical Relationships

There should be a valid/direct relationship between a Category and the Valid Datasets assigned/associated to that Category. This is considered a "Critical Relationship" to the integrity of the information captured in the Control Journals and displayed in the various Control Editor panels and reports.

11.3.1.7 Controlled Datasets Derived From NSESELxx

Control Datasets appear in both the NSECTLxx and NSESELxx Configuration Members. Those in NSECTLxx are defined as elements of a Controlled Category. Control Datasets defined in NSESELxx may be defined independently and controlled by TCE Padlock functions. As a result, it is possible datasets defined for Padlock Control will not be defined in NSECTLxx. When such a mismatch is detected, TCE will automatically create the NSESEL.AUTOCNTL Category and include these discovered Padlock Dataset entries. With each start of IFOM or dynamic activation of NSECTLxx or NSESELxx, TCE performs a new cross-member discovery and updates the dataset grouping defined to NSESEL.AUTOCNTL. Any Dataset included in the NSESEL.AUTOCNTL inherits the control features afforded any Controlled Dataset.

11.3.1.8 Control Category Attributes

Associated with each Category, in addition to its Dataset Group, are a number of attributes: Padlock Control, Event Descriptor, Event Notification and Detected Change Notification. These are defined in NSESELxx, NSEENSxx and NSEJRNxx and best configured using the Administrator Dialogs available to the TCE Administrator.

11.3.1.9 Stealth Mode

The Descriptor Window, a Category Attribute, is normally displayed immediately before or immediately after an event, i.e. update, rename, restore. To proceed or to successfully complete, the requirements of the Descriptor definition must be satisfied. If this descriptor enforcement is not required, name the Category/Class using the reserved Category name "NEZAUTO.something" where "something" is a user-defined, one to eight character, qualifier.

```
CATEGORY NEZAUTO.something
DSN *AUTO* or
DSN fully_qualified_dataset_name(volume,system)
CATEGORY .END
```

11.3.2 For Categories containing UNIX Files

A Controlled Category may contain only one Dataset or File Type; MVS Dataset or UNIX File. Types may not be mixed within a Category.

11.3.2.1 CATEGORY_NAME

Each Category Name must be a unique string composed of two values separated by a single period. Each value may be up to eight characters.

11.3.2.2 UNIX_ROOT_DIRECTORY

This optional value represents the starting point in a UNIX File system that will prefix to UNIX Directories defined within the Category Control Block using the DIRS Statement.

11.3.2.3 DIRS

Used to define a quoted string, the content of which is a UNIX Directory. Each Directory entry must begin with '/. If a UNIX Root Directory is defined, it will prefix the Directory. Multiple Directories may be defined with a single Category Control Block.

11.3.2.4 PATH

Used to define a quoted string, the content of which is a fully qualified UNIX Directory Path. Each such fully qualified Directory Path entry must begin with '/. If a UNIX Root Directory is defined, it WILL NOT prefix a Directory Path. Multiple Directory Paths may be defined with a single Category Control Block.

11.3.2.5 SUBD

Used to define a quoted string, this Control Statement must follow either a DIRS or PATH Statement and contain a UNIX SubDirectory. Each such SubDirectory entry must begin with '/. The SUBD Control Statatement may be repeted as needed to extend the Directory or Path to a targeted UNIX File.

11.3.2.6 FILE

Used to define a quoted string, this Control Statement must follow either a DIRS PATH or SUBD Statement and contain the name of a fully qualified UNIX File. Each such File Name entry must begin with '/. The FILE Control Statement may be repeated as needed to include all files that are associated with a specific Directory or Path.

11.4 NSECTLxx Model Member

Each NSECTLxx Configuration Member must begin with a FORMAT Statement, in column 1 or 2, as its first uncommented Control Card. Where the value defined on the VERS operand is either (1) or (2). If the FORMAT Statement is not encountered or it is incorrectly constructed when the NSECTLxx Member is read during IFOM initialization or a dynamic activation of NSECTLxx, an Error Message is recorded in the system log and TCE takes one of the following actions:

- If the FORMAT Statement is not encountered TCE continues to process the NSECTLxx Member as if it contains VERS(1) Control Card Systax.
- If the FORMAT Statement is found but is incorrectly constructed TCE will suppend ICE initialization: Both Image FOCUS and The Control Editor.

Comments may be added to a FORMAT Control Card by placing them within the /* */ pair to the right of the VERS(n) operand. Content, if any, in Columns 73 – 80 will be ignored.

A sample Control Card is shown below:

FORMAT VERS(n) /* comment */

Where:

VERS(1) is used to identify NSECTLxx Members that are using the TCE Legacy Control Card Syntax that exclusively supports Control Categories containing MVS Dataset Categories.

VERS(2) is used to identify NSECTLxx Members that are using the TCE Control Card Syntax that supports Control Categories containing MVS Dataset and Contorl Categories containing UNIX PATH/FILEs.

11.4.1 FORMAT VERS(1)

A model NSECTLxx Member in VERS(1) format is shown below. A full sample can be found in the ICE SAMPLIB Dataset.

```
FORMAT VERS(1)

**--------------**-------------------------------------------*
**   CATEGORY   **             DSNAME                        *
**   COLS       **             COLS                          *
**   2-17       **             18-61                         *
**--------------**-------------------------------------------*

For Example:

 SYSTEN.IPLPARM  *AUTO*
 SYSTEM.PARMLIB  *AUTO*

or perhaps defined specifically with Dataset names only:

 SYSTEM.DATASETS SYS1.PARMLIB
 SYSTEM.DATASETS SYS2.PARMLIB

or perhaps defined with Dataset, Volume and System names:

 SYSTEM.DATASETS SYS1.PARMLIB(VOLABC,GREEN)
 SYSTEM.DATASETS SYS2.PARMLIB(VOLDEC,BLUES)

or perhaps defined with a mix of definitions:

 SYSTEM.DATASETS SYS1.PARMLIB
 SYSTEM.DATASETS SYS2.PARMLIB(VOLDEC,BLUES)
```

11.4.2 FORMAT VERS(2)

A model NSECTLxx Member in VERS(2) format is shown below. A full sample can be found in the ICE SAMPLIB Dataset.

```
 FORMAT VERS(2)

 CATEGORY SYSTEM.PARMLIB
 DSN USER.PARMLIB(ZDSYS1,ADCD113)
 DSN ADCD.Z113.PARMLIB(ZDRES1,ADCD113)
 DSN SYS1.PARMLIB(ZDRES1,ADCD113)
 CATEGORY .END

 CATEGORY SYSTEM.IPLPARM
 DSN SYS1.IPLPARM(ZDSYS1,ADCD113)
 CATEGORY .END

 CATEGORY NEWUSS.SERVICE (/CDCD113/etc)
 DIRS '/ssh'
 FILE '/nohup.out'
 FILE '/ssh_config'
 FILE '/ssh_host_dsa_key.pub'
 FILE '/ssh_host_rsa_key.pub'
 FILE '/sshd.sh'
 DIRS '/dce'
 SUBD '/home'
```

```
SUBD '/dts_null_provider'
FILE '/SOME.FILE'
FILE '/OTHER.FILES'
PATH '/Z113'
SUBD '/samples'
FILE '/Dialcodes'
FILE '/Makefile'
FILE '/Ported_Tools_License.readme'
PATH '/BDCD113/etc/dce'
SUBD '/home/dts_null_provider'
FILE '/MAYBE.FILE'
CATEGORY .END
```

11.5 NSESELxx Configuration Statements

The syntax of each NSESELxx Control Card is as follows:

|----- control_keyword accessId member dataset(volume,system)------|

Each control_keyword must begin in column one and values may not extend beyond column seventy-two. An '*' in column one indicates a comment.

Following the control_keyword on the same line each value: accessid, member and dataset MUST start in a specific position:

- Accessid - must begin in position nine
- Member - must begin in position seventeen
- Dataset - must begin in position twenty-six

Each NSESELxx Control Card uses a combination of INCLUDE and EXCLUDE Statements to define the span of control over; Members in Categories and Datasets, Operator Commands, WorkGroup Datasets and TCE Projects. The general processing rules controlling Include and Exclude Control Cards is described below.

11.5.1 INCLUDE Statements

The Include Keywords are used to define users that will receive exclusive access rights to update and/or browse and/or submit controlled members. When an Include statement is used and in the absence of any other Include statement, access to the member will be denied to all other users.

When an Include Statement is used it is best practice to create a "Super-User" with access to ALL Members in Controlled Datasets to prevent a "Lockout" condition. A "Super-User" is created when the controlled member name is specified as "*".

11.5.2 EXCLUDE Statements

This class of access control statements is used to define user(s) that will be denied access to Controlled Members for the purpose of update and/or browse/view and/or SUBMIT when such members reside in Datasets defined to TCE as Controlled Datasets or part of a Dataset concatenation defined to TCE as a Controlled Category.

In the event that an INCLUDE Vs. EXCLUDE conflict arises the rights granted by TCE will default to those defined in the INCLUDE Statement Control Card(s).

11.5.3 Category Keywords

11.5.3.1 Includes

- CATEDIN Include Category Update Allows Editing_of_Member(s)_in_Category'
- CATBRIN Include Category Browse Allows Reading_of_Member(s)_in_Category'
- CATEBIN Include Category Ed|Br Allows Edit|Read_Member(s)_in_Category'
- CATSUBI Include Category Subimt Allows Submission_of_Member(s)_in_CAT'
- CATALLI Include Category E|B|S Allows Edit|Read|Submit_of_MBR(s)_in_CAT'

11.5.3.2 Excludes

- CATEDEX Exclude Category Update Denies Editing_of_Member(s)_in_Category'
- CATBREX Exclude Category Browse Denies Reading_of_Member(s)_in_Category'
- CATEBEX Exclude Category Ed|Br Denies Edit|Read_Member(s)_in_Category'
- CATSUBX Exclude Category Submit Denies Submission_of_Member(s)_in_CAT'
- CATALLX Exclude Category E|B|S Denies Edit|Read|Submit_of_MBR(s)_in_CAT'

11.5.4 Dataset Keywords

11.5.4.1 Includes

- DSNEDIN Include Dataset Update Allows Editing_of_Member(s)_in_Dataset'
- DSNBRIN Include Dataset Browse Allows Reading_of_Member(s)_in_Dataset'
- DSNEBIN Include Dataset Ed|Br Allows Edit|Read_Member(s)_in_Dataset'
- DSNSUBI Include Dataset Submit Allows Submission_of_Member(s)_in_DSN'
- DSNALLI Include Dataset E|B|S Allows Edit|Read|Submit_of_MBR(s)_in_DSN'

11.5.4.2 Excludes

- DSNEDEX Exclude Dataset Update Denies Editing_of_Member(s)_in_Dataset'
- DSNBREX Exclude Dataset Browse Denies Reading_of_Member(s)_in_Dataset'
- DSNEBEX Exclude Dataset Ed|Br Denies Edit|Read_Member(s)_in_Dataset'
- DSNSUBX Exclude Dataset Submit Denies Submission_of_Member(s)_in_DSN'
- DSNALLX Exclude Dataset E|B|S Denies Edit|Read|Submit_of_MBR(s)_in_DSN'

11.5.5 Operator Commands

11.5.5.1 Includes

- CMDINCL Include RACFCmmds Usage Allows RACF_Operator_Command'

11.5.5.2 Excludes

- CMDEXCL Exclude RACFCmmds Usage Denys RACF_Operator_Command'

11.5.6 WorkGroups

11.5.6.1 Includes

- WKGRPIN Include WrkGroup E|B|S Allows Edit|Read|Submit_Group_Datasets'

11.5.6.2 Excludes

- WKGRPEX Exclude Wrkgroup E|B|S Denies Edit|Read|Submit_Group_Datasets'

11.5.7 TCE Projects

11.5.7.1 Includes

- PJTDSNI Include Project Update Allows Edit|Read|Submit_MBR(s)_in_Project'
- PJTCMDI Include Project Usage Allows RACF_Operator_Command'

11.5.7.2 Exclude

- PJTDSNX Exclude Project Usage Denies Edit|Read|Submit_MBR(s)_in_Project'
- PJTCMDX Exclude Project Usage Denies RACF_Operator_Command'

11.5.8 TCE USERMODE

All USERMODE Control Cards MUST follow ALL Include/Exclude Padlock Control Cards defined in the NSESELxx Configuration Member.

USERMODE is used to establish optional Control Functions over individual users:

11.5.8.1 Overriding CONTROLMODE

Override, at the userid level, the default or defined settings of CONTROLMODE.

11.5.8.2 Establish Access Windows

Establish, on a userid basis, the opening and closing of a Controlled Access Window based on Day and/or Date and/or Time.

11.5.9 USERMODE Control Statements

USERMODE and all related values and sub-keywords and their enclosed values must appear as a single 80-column line. Continuation is not honored.

11.5.9.1 USERMODE Systax

```
USERMODE userid NONE|WARN|DENY STD() STM() ETM() STD()
```

USERMODE - Must begin in Column One.

Userid – Must be a fully qualified UserId that is both known to the External Manager (ESM) and have a requisite TSO Segment defined.

NONE|WARN|DENY – Specify one. Will override the more global CONTROLMODE Setting defined in the NSEJRNxx Configuration Member but only as it applies to the access rights of the accompanying Userid.

Access Windows – An optional Access Window may be established using the Sub-Keywords shown below. Each can be used stand-alone or together.

In this example a progression of sub-keyword usage first opens and then closes an Access Window an approximate duration of one month.

- STD(140101) can be used by itself to begin the override of CONTROLMODE on January 1, 2019.
- STM(0100) could be added to this control sequence to indicate that the override will START on January 1, 2019, at 01:00 oclock AM.

- ETD(140131) can be use to indicate that the control sequence descrbed will end on January 31, 2019 thus returning control to the value defined to CONTROLMODE.
- ETD(1200) could be added to this control sequence to indicate that the override will END on January 31, 2019, at 12:00 noon.

In this example a daily Access Window is opened and closed. Note that STD() and ETD() and not used.

- STM(0100) will open an access window daily at 01:00 AM at which time the global CONTROLMODE setting is overridden BUT only for the defined UserId.
- ETD(1200) adding this to the control sequence will close the access window at NOON each day returning to the global CONTROLMODE setting

11.5.9.2 USERMODE Sub-Keywords

STD – Start Date(yymmdd)
STM – Start Time(hhmm)
ETD – End Date(yymmdd)
ETM – End Time(hhmm)

11.5.10 NSESELxx Model Member

A set of NSESELxx Control Cards is shown below. A full sample can be found in the ICE SAMPLIB Dataset.

```
DSNALLI PROBI1  *00      PLAYFUL.PARMLIB(NEWVOL,ADCDXXXX)
DSNALL1 GBAGS1  *        PLAYFUL.PARMLIB(NEWVOL,ADCDXXXX)
WKGRPIN TCEUSER *ALL     PLAYFUL.DATASET(PLYVOL)
CMDINCL GBAGS1  SETROPTS RACFCMD
CMDEXCL GBAGS1  DELUSER  RACFCMD
CMDEXCL GBAGS1  ADDUSER  RACFCMD
```

NOTE: USERMODE CONTROL CARDS MUST FOLLOW MEMBER ACCESS CONTROL CARDS

```
USERMODE userid WARN
USERMODE userid DENY STD(140101)
USERMODE userid WARN ETD(140202)
USERMODE userid WARN STD(140101) ETD(140101)
USERMODE userid DENY STM(0800)
USERMODE userid WARN ETM(1800)
USERMODE userid NONE STM(0800) ETM(1800)
USERMODE userid WARN STD(140101)STM(0800)ETM(1800)STD(140202)
```

11.6 NSEPJTxx Configuration Statements

When requirements for reinforcing an ESM Dataset Boundary extend beyond Global Member Level, Allow/Deny Access Rights, TCE Project Management oriented control can be established using the NSEPJTxx member. Such controls establish 'Access Windows' with 'Access Keys'.

The syntax of each NSEPJTxx Project ACTION Block Control Card set is as follows:

```
|----- ACTION PJT(project_number) ACT() RES() PRI() KEY()------|
|----- PJTERM DUR()------|
|----- PJCYCL HRS()------|
|----- CTLDSN DSN()------|
|----- CTLMBR INC/EXC()------|
|----- CTLCMD INC/EXC()------|
|----- CTLUSR USR() START() STOP()------|
|----- ACTION .END------|
```

Because TCE Projects are accessed by users using an encoded 'Project Key' which is never displayed in 'Clear Text' outside of the TCE Administrator Interface projects may only be build and maintained using the TCE Administrator Dialogs.

11.6.1 ACTION PJT()

Required six-character, user assigned, project number. Must be unique.

11.6.2 ACT(ON|OFF)

Used to globally turn a project functional boundary on or off. Default is ON, meaning the function boundary is functional.

11.6.3 RES(ON|OFF)

Used to define the on going function of a project boundary once the project as reach it defined termination day, date, time. Default is ON meaning the project boundary remains in place BUT all resources are restricted.

11.6.4 PRI(ON|OFF)

Used to define the priority that a project will have relative to other established Padlock Controls. Default is ON meaning that Project Boundaries have priority (they are enforced first) over all other Padlock Controls.

11.6.5 KEY(encoded_string)

The encoded 'Project Key' required to access defined project resources.

11.6.6 PJTERM(start,stop)

The resolved Day, Date and Time when the project starts separated by a comma from the resolved Day, Date and Time when the project is scheduled to end.

11.6.7 PJCYCL(open,close)

The hour within a project 24 hour day when the project will be available for use separated by a comma from the 24 hour time when it will not, collectively the 'Project Window'.

11.6.8 CTLDSN (dataset(volume,system))

Fully qualified name of a project dataset and optionally volume name and if volume is specified optionally system name. One Control Card entry is required for each project Dataset.

11.6.9 CTLMBR member

The name of members found in project datasets that are to be included or excluded from the project. The Member Name may be full qualified, prefixed or suffixed using an astrick. One Control Card entry is required for each project Member.

11.6.10 CTLCMD command

The name of Operator Commands (in this release IBM-RACF Commands) included in or excluded from the project. All commands may be defined using 'RACFCMD' as the name of the command. One Control Card entry is required for each project Command.

11.6.11 CTLUSR(userid)

The TSOUserId of Project Staff and the individual fully resolved day, date and time when their project access rights begin and end.

11.6.12 ACTION . END

Each Project definition must be properly ended using the ACTION .END Control Statement.

11.6.13 NSEPJTxx Model Member

A set of NSEPJTxx Control Cards is shown below. A full sample can be found in the ICE SAMPLIB Dataset.

```
ACTION PJT(ABCDEF) ACT(ON) RES(ON) PRI(ON) KEY(D1OFX$SPKFD%LFZ4?*)
PJTERM DUR(1308261101,1309271101)
PJCYCL HRS(01,14)
CTLDSN DSN(SYS1.PARMLIB)
CTLDSN DSN(SYS1.PROCLIB)
CTLMBR INC(*00)
CTLMBR INC(AUTORRP)
CTLMBR INC(*SP)
CTLMBR INC(JES*)
CTLMBR INC(*RM)
CTLMBR INC(LISTUSER)
CTLCMD INC(DELGROUP)
CTLCMD INC(DELUSER)
CTLCMD INC(SETROPTS)
CTLCMD INC(LISTDSD)
CTLCMD INC(ADDSD)
CTLCMD INC(CONNECT)
CTLCMD INC(PASSWORD)
CTLUSR USR(TCEUSER) START(1308261146) STOP(1309261146)
CTLUSR USR(PROBI3) START(1309031658) STOP(1310031658)
ACTION .END
```

11.7 NSEGRPxx Configuration Statements

The NSEGRPxx Configuration member is used to define TCE Control Groups made up of: named TSOUserIds, ESMUSERID, and/or named External Security Manager (ESM) Groups, ESMGROUP. NSEGPPxx works in conjunction with the NSESELxx member to identify members within a TCE Group and to Padlock/TimeLock control functions that, in turn, enforce defined Group resource access rights.

The syntax of each NSEGRPxx Control Card set is as follows:

```
|----- TCEGROUP group_name------|
|----- ESMUSRID (userid,userid,userid)------|
|----- ESMGROUP 'esm_group_name'------|
|----- TCEGROUP .END------|
```

Each control_statement (TCEGROUP, ESMUSRID, ESMGROUP, TCEGROUP .END) must begin in column one and associated values may not extend beyond column seventy-two. An '*' in column one indicated a comment.

11.7.1 TCEGROUP

Each TCEGroup must begin with the naming of the Control Group Set on the TCEGROUP Statement. The Group's name must be six characters, beginning with an alpha character (A-Z). Each Control Group Set must be ended with TCEGROUP .END.

11.7.2 ESMUSRID

The ESMUSERID Statement is used to define individual TSOUserIds to be included within the TCE Group.

11.7.3 EMSGROUP

The ESMGROUP Statement is used to define existing groups that are controlled with the External Security Manager that are to be included within the TCE Group.

11.7.4 TCEGROUP .END

Each Control Group Set must be ended with TCEGROUP .END.

11.7.5 NSEGRPxx Model Member

A set of NSEGRPxx Control Cards is shown below. A full sample can be found in the ICE SAMPLIB Dataset.

Model:

```
TCEGROUP GROUP_NAME(MAX 6 CHARACTERS)
ESMUSRID (USERID,USERID,USERID)
ESMGROUP (GROUP_NAME,GROUP_NAME,GROUP_NAME) RACF / TOP SECRET
ESMGROUP 'UID_MASK                ' ACF2
TCEGROUP .END
```

Sample:

```
TCEGROUP IGRP01
ESMUSRID (USERID1,USERID2,USERID3,USERID4,USERID5,NAME01)
ESMUSRID (NAME02,NAME03,TEMP1,TEMP2,TEMP3,TEMP4)
ESMGROUP (SYS1,SYSPROG) RACF / TOP SECRET
ESMGROUP '***SYSPROG***           ' ACF2
TCEGROUP .END
```

11.8 NSEENSxx Configuration Statements

The EXTERNALNOTIFICATION Keyword, defined in the NSEJRNxx configuration member, is used to toggle ON|OFF the Notification METHODS and ACTIONS found in the NSEENSxx Configuration Member.

The METHOD and ACTION blocks share a common set of control cards. Currently there is only one valid METHOD, Email. Anything supplied in a METHOD block will be used as a default for an ACTION block if a specific parameter is not supplied in the ACTION block. For example, if the TO, FROM, CC, SERVER information is to be used for all e-mail notifications, but different SUBJECT information is to be used for each, specify the TO, FROM, CC, and SERVER information in the METHOD block and supply only the SUBJECT information in the individual ACTION blocks.

Each control card is processed as an independent "80 column" entity. Continuation to a second entity is NOT supported.

```
|-----Statement Keyword Value------|
```

Each control_keyword must begin in column one and keywords and values may not extend beyond column seventy-two. An '*' in column one indicates a comment.

11.8.1 Notification System Requirements

- To use IFOM with external notification, the minimum z/OS release level is z/OS 1.9.
- Copy from hlq.llq.SISPCLIB(NSIMTC3) to your REXX SYS1.SAXREXEC dataset or in a user-defined system REXX dataset.
- At z/OS 1.9, the NSIMTC3 REXX exec must be installed in the system REXX SYS1.SAXREXEC dataset. For z/OS 1.10 or newer, the NSIMTC3 REXX exec can be installed in either the SYS1.SAXREXEC dataset or in a user-defined system REXX dataset as defined with the AXRxx parmlib member.
- The NSIMTC3 REXX exec is invoked through system REXX which uses a secondary address space to perform its work. The address space names used rotate through jobs named AXR01 - AXR08 and run under USERIDs of the same name. USERIDs AXR01 - AXR08 should be set up within the corresponding security product and should be set up with an OMVS security segment as well as an OMVS UID.

11.8.2 >> METHOD BLOCK

A METHOD BLOCK is used to define parameters that configure the Email Server that will be used to send Email Notification.

11.8.3 SERVER

Use the SERVER Keyword to specify the name of the targeted Email Server that will be used for notification operations. The Server Name cannot exceed 64 bytes.

11.8.4 PORT

Use the PORT Keyword to specify the PORT address that the Mail Server is listening on. The default for this value is set as PORT 25.

11.8.5 TCPIPJBN

The TCPIPJBN Keyword is used to identify the name of the TCP/IP job. The default value is set as TCPIP.

11.8.6 TIMEOUT

The TIMEOUT is used to specify the timeout value to be used for the network operations. The default value is set as 60 seconds.

11.8.7 JRNLPOST YES|NO

By default, Debug and Email Log Documents are not posted to the Control Journals. If you would like to post these documents to the Control Journals creating a permanent record of them, set this value to “YES”. JRNLPOST may also be used with a specific ACTION BLOCK in order to log only those documents associated with Email or Debug activity.

11.8.8 TEMPDSNHLQ

The content of any Email Notification takes the form of an Email Attachment. To link the Attachment to the Email itself, a temporary dataset containing the actual Notification content is required.

Use the TEMPDSNHLQ Keyword to specify the high level qualifier of the dataset used for this purpose. The default is the high level qualifier of the parmlib dataset for IFOM. The TEMPDSNHLQ can be a maximum of 16-bytes and must follow standard dataset naming conventions. The suffix for the temporary dataset name is as follows:

```
$TCE.TEMP.Dyyyyjjj.Thhmmss
```

If the DEBUG Keyword is specified OFF, this dataset will automatically be deleted in the normal course of operation. However, if DEBUG is specified ON, this dataset will be retained.

11.8.9 KEEPTEMP xxx

Use this Keyword in conjunction with TEMPDSNHLQ to indicate the number of Temporary Datasets you would like to retain, where xxx is a numeric value between 0 – 999. KEEPTEMP may be used within an individual Notification ACTION BLOCK in order to set a unique maximum value specific to a certain class of events.

11.8.10 KEEPDHLQ xxx

When Event Notification is active BUT a TEMPDSNHLQ has not been defined the notification system will default to the Temporary Dataset HLQ to the ICE HLQ values defined during ICE installation. When this is the case use this Keyword to indicate the number of Temporary DATASETs you would like to retain, where xxx is a numeric value between 0 – 999. KEEPDHLQ may be used within an individual Notification ACTION BLOCK in order to set a unique maximum value specific to a certain class of events.

11.8.11 KEEPMBRS xxx

In addition to the Temporary Sequential Dataset used to store Event Notification Emails, a more long-lasting permanent copy is retained as a member in a PDS. This PDS is the same as that defined by TEMPDSNHLQ or the default value defined during ICE installation for the system in general. When this is the case use this Keyword to indicate the number of MEMBERs you would like to retain, where xxx is a numeric value between 0 – 999. KEEPMBRS may be used within an individual Notification ACTION BLOCK in order to set a unique maximum value that is specific to a certain class of events.

11.8.12 FROM

A single e-mail address is limited to 48 bytes.

11.8.13 SUBJECT

The SUBJECT Keyword is used to define the Subject Line of the Notification Email. The subject text must be enclosed in quotes and cannot exceed 64 bytes.

11.8.14 TO

The TO Keyword is used to direct Email notification of an event to one or more specific recipients. Up to 128 TO control cards can be provided in either the METHOD or ACTION block. A single e-mail address is limited to 48 bytes.

11.8.15 CC

A single e-mail address is limited to 48 bytes.

11.8.16 DEBUG

Use this Keyword to toggle ON|OFF the Email Debug facility.

11.8.17 DEBUGDSNHLQ

The DEBUGDSNHLQ Keyword can be optionally used to specify the high level qualifier of the dataset that gets created if DEBUG is specified as ON.

The default value is the high level qualifier of the parmlib dataset for IFOM.

DEBUGDSNHLQ can be a maximum of 16 bytes and must follow standard dataset naming conventions. The suffix for the debug dataset name is as follows:

```
$TCE.DEBUG.Dyyyyjjj.Thhmmss
```

11.8.18 KEEPDBUG xxx

Use this Keyword in conjunction with DEBUGDSNHLQ to indicate the number of Debug Datasets you would like to retain; where xxx is a numeric value between 0 – 999. KEEPDBUG may be used within an individual Notification ACTION BLOCK in order to set a unique maximum value specific to a certain class of events.

11.8.19 NSEENSxx Model Member – METHOD BLOCK

A set of NSEENSxx Control Cards specific to the Method BLOCK is shown below. A full sample can be found in the ICE SAMPLIB Dataset.

```
SERVER       smtp.server.name.or.ip.address
PORT         port#
TCPIPJBN     tcpjobnm
TIMEOUT      timeout_seconds
JRNLPOST     YES|NO posting of Debug/Email Log to Journal
TEMPDSNHLQ   temp.dsn.hlq
KEEPTEMP xxx specify the number of temp.dsn to keep
KEEPDHLQ xxx specify the number of default.dsn to keep
KEEPMBRS xxx spedify the number of dsnhlq.members to keep
SUBJECT      'default e-mail subject'
FROM         from.email.address
TO           to.email.address.1
TO           to.email.address.2
.
.
.
TO           to.email.address.128
CC           cc.email.address
DEBUG        ON|OFF
DEBUGDSNHLQ  debug.dsn.hlq
KEEPDBUG xxx specify the number of debug.dsn to keep
```

11.8.20 >> ACTION BLOCK

An ACTION BLOCK is used in conjunction with a specific METHOD block and begins with the Reserved Keyword ACTION appearing in column one and ends with the Reserved String ACTION .END beginning in column one. Failure to properly start and/or end an ACTION block will result in an unpredictable notification failure.

In addition, each set of ACTION Keywords; CAT, OBJ and SCOPE are processed as an independent "80 column" entity and ***MUST*** appear on a single line. Continuation to a second entity is ***NOT*** supported.

ACTION blocks come in five distinct types.

- Supplemental Detectors
- Staged Events
- Command Events
- Interval Events
- Message Events

11.8.21 Supplemental Detector Notification

The following ACTION block instructions, when combined with the Email METHOD, will send notification of Change Events discovered by the optional Supplemental Detector Applications.

An ACTION block used with Detected Events has the following format:

```
ACTION DET(detector_name) METHOD(EMAIL) SCOPE(REPORT)
ACTION .END
```

Each Detector named ACTION Block and related Statements within the Block processed are independent "80 column" entity and ***MUST*** appear to TCE as a single NSEENSxx Control Card. Continuation to a second line is ***NOT*** supported.

Supported Detector Action Blocks Include the following:

```
ACTION DET(LOADLIBRARY) - 'Load Module Changes'
ACTION DET(MBRDATASETS) - 'TEXT Dataset/Member Changes'
ACTION DET(IODFDATASET) - 'IODF Dataset Changes'
ACTION DET(HEALTHCHECK) - 'Health Checker Changes'
ACTION DET(USERDEFINED) - 'LPAR IPL Event Changes'
ACTION DET(TCEWEBCYCLE) - 'TCE Controlled Event Changes'
ACTION DET(TCERPTCYCLE) - 'TCE Configuration Changes'
```

```
ACTION DET(TCEERRCYCLE) - 'TCE Configuration Errors'
ACTION DET(DB2DSNTIDXX) - 'DB2 DSNZPARMS Changes'
ACTION DET(CICSCSDPARM) - 'CICS CSDS Parameter Changes'
ACTION DET(DSMONREPORT) - 'RACF DSMONS Report Changes'
ACTION DET(ZSYSTEMSVCS) - 'Running System SVC Changes'
ACTION DET(VOLUMELISTS) - 'Running System Volume Changes'
ACTION DET(ACF2REPORTS) - 'CA ACF2 ShowAll Changes'
ACTION DET(CATSREPORTS) - 'CA Top Secret Parm Changes'
ACTION DET(ZIMAGEFOCUS) - 'Image FOCUS Inspection Changes'
ACTION DET(IPLPACKAGES) - 'Image Configuration Changes'
ACTION DET(XCFDATASETS) - 'XCF Configuration Changes'
ACTION DET(APFDATASETS) - 'APF Authorization Changes'
ACTION DET(PPTPROGRAMS) - 'Program Property Changes'
ACTION DET(IMSSYSPARMS) - 'IMS Start Parm Changes'
ACTION DET(OMVSCONFIGS) - 'OMVS Configuration Changes'
ACTION DET(BPXSETTINGS) - 'BPX/USS Configuration Changes'
ACTION DET(SYSWRKGROUP) - 'ESM SYS1* Workgroup Changes'
ACTION DET(RACFSRCHECK) - 'HZS Sensitive Resource Check'
```

11.8.21.1 DET

The DET Keyword is used to define the source Detector Application. A DET ACTION Block is required for each individual Detector Application.

11.8.21.2 METHOD

The METHOD Keyword identifies a previously defined METHOD as the process that will be used for notification when notification ACTION is taken.

11.8.21.3 SCOPE

Currently the only valid SCOPE value is REPORT. This value will return the Event Identity Block and is accompanied with the associated Change Summary Report.

11.8.22 Staged Event Notification

A Staged Event is any Controlled Event that impacts a Controlled Boundary and can be related to a Category, Dataset, Member or TSOUserId.

The following ACTION block instructions, when combined with the Email METHOD, will send notification of Staged Events on an event-by-event basis as they occur.

One or more ACTION blocks can be set up, such that they are exclusively associated with Control Editor ***Events*** related to a ***Category, Dataset, Member or TSOUserId*** as defined in the NSECTLxx and/or the NSESELxx Configuration members.

An ACTION block for use with Edit Events has the following syntax:

```
ACTION CAT(category.name) METHOD(EMAIL)
OBJ(EDIT|DMDEDIT|SUBMIT|ALL)
SCOPE(IDENTITY|BODY|REPORT)
cntl_card
cntl_card
cntl_card
ACTION .END
```

Each ACTION Keyword set: CAT, OBJ and SCOPE is processed as an independent "80 column" entity and ***MUST*** appear on a single line. Continuation to a second entity is ***NOT*** supported.

Supported Staged Event Action Blocks Include the following:

```
ACTION CAT('category_name')  METHOD(EMAIL) OBJ() SCOPE()
ACTION DSN('dataset_name')   METHOD(EMAIL) OBJ() SCOPE()
ACTION MBR('member_name')    METHOD(EMAIL) OBJ() SCOPE()
ACTION USR('user_tsouserid') METHOD(EMAIL) OBJ() SCOPE()
```

11.8.22.1 CAT

The CAT Keyword is used to define the Dataset Control Category Name housing members for which Edit Event notification is desired. Create multiple ACTION Blocks in those cases where notification is desired for one or more but not all Dataset Control Categories.

When notification of all Edit Events to all defined Dataset Control Categories is desired, use the special case value .DEFAULT within the ACTION block definition to recognize any Edit Event as a candidate for external notification when no specific ACTION block definition of Category Name (CAT) is defined. Using .DEFAULT is a recommended *Best Practice*.

11.8.22.2 METHOD

The METHOD Keyword identifies a previously defined METHOD as the process that will be used for notification when notification ACTION is taken.

11.8.22.3 OBJ

The OBJ Keyword defines the specific edit event that can trigger the external notification within the specified category. These include EDIT (for edit requests which will include normal edit, delete, rename, and restore), DMDEDIT (for demand edit requests), SUBMIT (for submits performed within Control Editor edit sessions), and ALL (anything that would fall into EDIT, DMDEDIT, or SUBMIT).

11.8.22.4 SCOPE

The SCOPE Keyword defines the amount of information about the edit event that will be supplied in the external notification operation. If IDENTITY is specified, only the journal entry control information will be included in the external notification. If BODY is specified, the IDENTITY information will be included along with all other Descriptor Data. If REPORT is specified, the IDENTITY and BODY information will be included along with the specific data contents associated with the edit or submit request.

- Specify IDENTITY to receive the following:

```
01C|-SRC: PROBI1---------------THE CONTROL EDITOR-------------------- Edit -
02C|SYSPLX:SVSCPLEX SYSNM:S0W1     USRID:PROBI1  TIME:15:14:31 DATE:09/20/19
03C|-DSN: PROBI1.IFO80DR.PARMLIB(CLOCK00)----------------------VOL: PROBI1-
```

- Specify BODY to receive the following:

```
01C|-SRC: PROBI1---------------THE CONTROL EDITOR-------------------- Edit -
02C|SYSPLX:SVSCPLEX SYSNM:S0W1     USRID:PROBI1  TIME:15:14:31 DATE:09/20/19
03C|-DSN: PROBI1.IFO80DR.PARMLIB(CLOCK00)----------------------VOL: PROBI1-
04T|#1-CHANGE AUTHORITY
05D|                   Last Staff Meeting
06T|#2-CHANGE DESCRIPTION
07D|                   Adjusting for Time Change
08D|
09T|#3-CHANGE IMPACT
10D|                   No Impact expected. Backup Member Available.
11D|
12D|
```

- Specify REPORT to receive the following:

```
01C|-SRC: PROBI1---------------THE CONTROL EDITOR-------------------- Edit -
02C|SYSPLX:SVSCPLEX SYSNM:S0W1     USRID:PROBI1  TIME:15:14:31 DATE:09/20/19
03C|-DSN: PROBI1.IFO80DR.PARMLIB(CLOCK00)----------------------VOL: PROBI1-
04T|#1-CHANGE AUTHORITY
05D|                   Last Staff Meeting
06T|#2-CHANGE DESCRIPTION
07D|                   Adjusting for Time Change
08D|
09T|#3-CHANGE IMPACT
10D|                   No Impact expected. Backup Member Available.
11D|
12D|
OPERATOR NOPROMPT                                                  00050000
```

```
TIMEZONE W.00.00.00                                                     00100000
ETRMODE  YES                                                            00150000
ETRZONE  YES                                                            00200000
ETRDELTA 12                                                             00250000
******************************** Bottom of Data ********************************
```

11.8.23 Command Event Notification

The following ACTION block instructions, when combined with the Email METHOD, will send notification of Command Events on an individual event-by-event basis as they occur.

An ACTION block can also be set up for Command Events that are being captured as defined by MISCCMD, MODCMD, SETCMD, RACFCMD, ACF2CMD, and TSSCMD definitions in the NSEJRNxx configuration member.

An ACTION block for a command event has the following syntax:

```
ACTION CMD(.DEFAULT|command_type&command_name) METHOD(EMAIL)
OBJ(CON|JOB|STC|TSO|ALL)
SCOPE(IDENTITY|BODY|REPORT)
cntl_card
cntl_card
cntl_card
ACTION .END
```

Each ACTION Keyword set: CMD, OBJ and SCOPE is processed as an independent "80 column" entity and ***MUST*** appear on a single line. Continuation to a second entity is ***NOT*** supported.

Supported Staged Event Action Blocks Include the following:

```
ACTION CMD(.DEFAULT)              - All Commands
ACTION CMD(SETCMD)                - All SET Commands
ACTION CMD(SETCMD.command_name)   - Named SET Command Only
ACTION CMD(MODCMD)                - All Modify Commands
ACTION CMD(MODCMD.job_name)       - Named Modify Commands Only
ACTION CMD(MISCCMD)               - All Miscellaneous Commands
ACTION CMD(MISCCMD.command_name)- Named Misc. Commands Only

ACTION CMD(RACFCMD)               - All RACF Commands
ACTION CMD(racf_command)          - Named RACF Command Only
ACTION CMD(ACF2CGSO)              - ACF2 CGSO Command Only
ACTION CMD(TSSMODIF)              - Top Secret Modify Command
```

11.8.23.1 CMD

The CMD Keyword is used to define the Command types for which Event notification is desired. Create multiple ACTION Blocks in those cases where notification is desired for one or more but not all Command types.

When notification of all Command Events to all defined Commands is desired, use the special case value .DEFAULT within the ACTION block definition to recognize any Command Event as a candidate for external notification when no specific ACTION block definition of Command Name (CMD) is defined. Using .DEFAULT is a recommended *Best Practice*.

11.8.23.2 OBJ

OBJ defines the specific command entry location that can trigger the external notification. These include CON (for commands entered at a console), JOB (for commands entered from within a batch job), STC (for commands entered from within a started task), TSO (for commands entered from a TSO session), or ALL (for commands entered from any source).

11.8.23.3 SCOPE

SCOPE defines the amount of information about the edit event that will be supplied in the external notification operation. If IDENTITY is specified, only the journal entry control information will be included in the external notification. If BODY is specified, the IDENTITY information will be included along with the command that triggered the external notification event. If REPORT is specified, the IDENTITY and BODY information will be included along with console message buffer information that exists for the journal entry for this event.

- Specify IDENTITY to receive the following:

```
01C|-SRC: TSU04068------------THE CONTROL EDITOR------------------- Opcmd -
02C|SYSPLX:ADCDPL   CONNM:ESSJDL1  CONID:03000003 TM:12.26.56 DT:08/12/19
03C|-CMD: SET PROG  ------------------------------------------------------
```

- Specify BODY to receive the following:

```
01C|-SRC: TSU04068------------THE CONTROL EDITOR------------------- Opcmd -
02C|SYSPLX:ADCDPL   CONNM:ESSJDL1  CONID:03000003 TM:12.26.56 DT:08/12/19
03C|-CMD: SET PROG  ------------------------------------------------------
12.26.56.42 T PROG=QG
```

- Specify REPORT to receive the following:

```
01C|-SRC: TSU04068------------THE CONTROL EDITOR------------------- Opcmd -
02C|SYSPLX:ADCDPL   CONNM:ESSJDL1  CONID:03000003 TM:12.26.56 DT:08/12/19
03C|-CMD: SET PROG  ------------------------------------------------------
12.26.56.42 T PROG=QG
12.26.56.47 IEE538I PROGQG   MEMBER NOT FOUND IN PARMLIB
12.28.01.42 D A,L
```

```
12.28.01.45 IEE114I 12.28.01 2013.224 ACTIVITY 711
            JOBS     M/S    TS USERS    SYSAS    INITS   ACTIVE/MAX VTAM     OA
           00003    00013    00001      00031    00012    00001/00040       000
            LLA      LLA      LLA      NSW  S  JES2     JES2     IEFPROC  NSW
            ACF2     ACF2     IEFPROC  NSW  S  VLF      VLF      VLF      NSW
            VTAM     VTAM     VTAM     NSW  S  DLF      DLF      DLF      NSW
            TSO      TSO      STEP1    OWT  S  SDSF     SDSF     SDSF     NSW
            TN3270   TN3270   TN3270   NSW  SO TCPIP    TCPIP    TCPIP    NSW
            INETD4   STEP1    BPXOINIT OWT  AO PORTMAP  PORTMAP  PMAP     OWT
            FTPD1    STEP1    FTPD     OWT  AO PSYNCH1  PSYNCH1  PSYNCH1  NSW
            ESSJDL1Q DMX1              OWT  J  IFOM     IFOM     IEFPROC  NSW
            ESSJDL1 IN
```

11.8.24 Interval Event Notification

The ACTION block instructions described in this section combined with the Email METHOD block to construct and send an Interval Event Notification containing designated event(s) at a predetermined interval within and/or at the end of a user-defined 24 hour period called the ROLLOVER Time.

Interval Reports are constructed using the following content outline:

- User Defined Report Header:

```
HEADER "------user defined------"
```

- ENS Default Report Header:

```
/*****************************************************************************/
/*                                                                           */
/*       The Controls Environment(TCE) - Event Notication Service(ENS)       */
/*               Definition DSN(MBR):IFO.IFOT.PARMLIB(NSEENS00)              */
/*                                                                           */
/*                  Update:05M/04D/11Y     Time:07:00:02                     */
/*                                                                           */
/*****************************************************************************/
```

- First Event of designated Event Type:

```
SCOPE(IDENTITY|BODY|REPORT)
```

- User Defined Event Separator:

```
SEPARATOR "-----user defined-----"
```

- Second Event of designated Event Type:

```
SCOPE(IDENTITY|BODY|REPORT)
```

- User Defined Event Separator:

```
SEPARATOR "-----user defined-----"
```

- Last Event of designated Event Type:

```
SCOPE(IDENTITY|BODY|REPORT)
```

- Default Report Footer

```
/*****************************************************************************/
 NewEra Software, Inc.
   Our Job? Help you avoid problems and improve z/OS integrity.
```

The ACTION blocks that control the construction of Interval Reports have the following syntax:

```
ACTION DSRPT(STAGED|OPERCMD|ESMCMD|IFOPOST)
METHOD(NONE|EMAIL)
SCOPE(IDENTITY|BODY|REPORT)
HEADER "—header text—"
SEPARATOR "—separator text—"
ROLLOVER hh:mm INTERVAL(01|02|03|04|06|08|12) SEQDSDISP(KEEP|DELETE)
DSNHLQ hlq.llq.llq
DSALLOC TYPE(PDS) PRIMARY(8) SECONDARY(1) UNITS(TRK) DIRBLKS(12)
ACTION .END
```

Each ACTION Keyword is processed as an independent "80 column" entity and ***MUST*** appear on a single line. Continuation to a second entity is ***NOT*** supported.

11.8.24.1 DS|DSRPT(

The DSRPT Keyword is used to define the Event Content Type that will be stored/available in the Interval Notification Report. A Unique ACTION block is required for each unique Event Type:

(STAGED|OPERCMD|ESMCMD|IFOPOST|HZSIDS|MSGIDS)

There can only be one Event Type specified per DSRPT ACTION block.

11.8.24.2 METHOD (NONE|EMAIL)

METHOD specifies the method that will be used to deliver the Interval Notification Report. Currently only two METHODs are available. NONE is used to indicate that no METHOD has been defined and therefore no notification action is required. EMAIL is used to indicate that the Email METHOD of notification is to be used. When the Email METHOD is selected additional Email specific Keywords can be used within this ACTION block to override values specified in the Email METHOD block.

11.8.24.3 SCOPE (IDENTITY|BODY|REPORT)

SCOPE defines the amount of information about an event that will be written into the Interval Notification Report. If IDENTITY is specified, only the journal entry control information will be included. If BODY is specified, the IDENTITY information will be included along with the command that triggered the event. If REPORT is specified, the IDENTITY and BODY information will be included along with a copy of the affected member or console message buffer information that exists for the event.

11.8.24.4 HEADER "—header text—"

HEADER is used to specify up to 8 lines of text to be used as that part of the Report Header Block appearing before the ENS default header lines. The specified lines,

including any BLANK line, must be enclosed in quotes and will be automatically centered within the Header Block.

11.8.24.5 SEPARATOR "—separator text—"

SEPARATOR is used to specify up to 4 lines of text to be used as a separator appearing between individual events. The specified lines, including any BLANK line, must be enclosed in quotes and will be automatically centered.

11.8.24.6 ROLLOVER hh:mm

ROLLOVER is used to denote the HOUR and MINUTE at which the 24 hour Event Notification Cycle begins and ends. Time as used in this context is specified in military format where "hh" is a value from 00 to 23 and "mm" a value from 00 to 59. Regardless of the time specified a rollover is forced whenever the IFOM address space is stopped and restarted.

Once the Event Notification Cycle begins the sequential dataset allocated using the DSNHLQ PARM will continue to collect event information. If the INTERVAL keyword is used, all available information collected from the beginning of the cycle will be distributed using the ACTION block's defined METHOD() of delivery when an interval boundary is reached. When the end of the Event Cycle is detected, the sequential dataset *is Marked Complete* by MODDING the default footer to the report. The complete report is next written to the PDS defined using the DSALLOC keyword using the member name "?yymmdd" where "?" indicates the Event Type, "yy" the year, "mm" the month and "dd" the day. And as defined by the ACTION block's METHOD() the report content will be distributed. Currently only the Email METHOD is available for report distribution.

Only one sequential dataset or PDS member can exist for any given day. It is therefore possible that the IFOM address space could be stopped and restarted within the daily Event Notification Cycle. Should this happen, the default footer will appear multiple times to indicate the point in the cycle where the break occurred.

11.8.24.7 INTERVAL (01|02|03|04|06|08|12)

Each Event Notification Cycle may be optionally subdivided into Notification intervals using the INTERVAL keyword. A single keyword numeric value of two-digits is allowed to indicate the point in the Notification Cycle, in addition to Cycle Termination, when notification will be sent to defined Email recipients. If no value is specified, the default interval value is set to 24.

11.8.24.8 SEQDSDISP(KEEP|DELETE)

SEQDSDISP is used to denote the disposition of the sequential dataset at the end of the Event Monitor Cycle. The default value is KEEP.

11.8.24.9 DSNHLQ hlq.llq.llq

Represents the High-Level qualifier and Low-Level qualifier(s) that will be used to build the fully qualified name of the Daily Event Collector Dataset(s). A total of 16 characters including "." is allowed. The final name will appear as follows:

- hlq.llq.llq.'OPERCMD'.&system.'M'yymmdd (DYNAMIC Events)
- hlq.llq.llq.'STAGED'.&system.'S'yymmdd (STAGED Events)
- hlq.llq.llq.'EMSCMD'.&system.'E'yymmdd (POLICY Events)

11.8.24.10 DSALLOC

The DSALLOC keyword and its sub-parameters are used to allocate the PDS that will contain the completed daily Event Notification Reports. Currently only PDS datasets are supported. Recommended sub-parameters for TYPE PDS are:

- PRIMARY(8)
- SECONDARY(1)
- UNITS(TRK)
- DIRBLKS(12)

11.8.25 Message Event Notification

The ACTION block instructions described in this section combined with the Email METHOD block to construct and send notification based on the intercept of named system messages. Two Notification Services are provided:

This service supports only System, Health Checker or RACF Message Events as defined using the following Action Block Syntax:

```
MSGID(message_id)ACTION, for example MSGID(IEEXXXXI)ACTION
HZSID(message_id)ACTION, for example HZSID(HZSXXXXE)ACTION
ICHID(message_id)ACTION, for example ICHID(ICHXXXXE)ACTION
```

Note these Action blocks do not support the use of the MATCHSTR.

This service supports a broader set of messages from any source and can trigger supplemental actions and processes via a call to a named Rexx program stored in HLQ.HLQ.SISPCLIB. The Rexx program NSIDIPL is provided for supporting the 'Image Manager', an ICE Viewer Application that executes it in conjunction with the Health Checker Message 'HZS0003E' or similar message.

An ACTION block for use with Message Events has the following syntax:

```
ACTION EVENTMSG(message_id) METHOD(EMAIL)
OBJ(EDIT|DMDEDIT|SUBMIT|ALL)
SCOPE(IDENTITY|BODY|REPORT)
cntl_card
cntl_card
cntl_card
ACTION .END
```

Each ACTION Keyword set is processed as an independent "80 column" entity and ***MUST*** appear on a single line. Continuation to a second line is ***NOT*** supported.

11.8.25.1 MESSAGE_ID

For Message Identifier as issued by the system the '*' may be used to denote message severity wild-carding. Examples: NEZ0000E and NEZ0000* are acceptable Message IDs.

11.8.25.2 MATCHSTR

Used to specify an optional Message String. The Message String will generally follow a Message Id. It may be specified in part beginning with the start of the message and enclosed in single quotes. Examples: 'NEWERA' or 'NEWERA,NEZ' or 'NEWERA,NEZ_OPSYS' are acceptable Match Strings.

11.8.25.3 SUBJECT

Email Notification Subject.

11.8.25.4 TO

Recipient Email Address, repeat as needed.

11.8.25.5 FROM

Sender's Email Address, one only.

11.8.25.6 RPTHLQ

The Notification and Report Dataset Qualifiers hlq.llq.$RPTHLQ.

11.8.25.7 KEEPRPTS

YES indicates Report Dataset is to be kept, NO indicates it will be deleted.

11.8.25.8 BODYTEXT

Text enclosed in single quotes to be inserted into body of notification.
For example, 'PRODUCTION IPL CHANGE EVENT'

11.8.25.9 CMDNAME

Rexx Command name must be in SISPCLIB. NSIDIPL is provided for use with the Image Manager Application.

11.8.25.10 JRNLPOST

YES, Message Event posted to Control Journal.

11.8.25.11 PRODS/PRIME

When change detected in comparing Production Settings vs. Production Baseline send Text or Post WTO.

11.8.25.12 PRODS/SNAPS

When change detected in comparing Production Settings vs. Production Snapshot send Text or Post WTO.

11.8.25.13 ALTER/PRIME

When change detected in comparing Alternate Settings vs. Alternate Baseline send Text or Post WTO.

11.8.25.14 ALTER/SNAPS

When change detected in comparing Alternate Settings vs. Alternate Snapshot send Text or Post WTO.

11.8.25.15 PRODS/ALTER

When change detected in comparing Production Settings vs. Alternate Settings send Text or Post WTO.

11.8.25.16 TEXTANYCNGS

When any change is detected, at any configuration level, send Text or Post WTO.

11.8.26 NSEENSxx Model Member – ACTION BLOCK

```
ACTION DET(TCERPTCYCLE) METHOD(EMAIL) SCOPE(REPORT)
TO prr@newera.com
TO ghb@newera.com
FROM SUPPORT@NEWERA.COM
SUBJECT 'TCE_Configuration_Report'
ACTION .END

ACTION CMD(SET.APPC) METHOD(EMAIL) OBJ(ALL) SCOPE(REPORT)
TO pat@newera.com
FROM support@newera.com
SUBJECT 'Notice_SET.APPC_Issued'
ACTION .END

ACTION CMD(RACFCMD) METHOD(EMAIL) OBJ(ALL) SCOPE(REPORT)
TO prr@newera.com
FROM support@newera.com
SUBJECT 'Notice_all_RACF_Commands'
ACTION .END

ACTION DSRPT(STAGED) METHOD(EMAIL) SCOPE(IDENTITY)
TO pat@newera.com
TO support@newera.com
TO PLAYTWO@NEWERA.COM
TO ghb@newera.com
FROM support@newera.com
SUBJECT 'changes'
HEADER 'This Report Title'
SEPARATOR '/---------------/'
ROLLOVER 06:00 INTERVAL(8) SEQDSDISP(KEEP)
DSNHLQ IFO.TEST
DSALLOC TYPE(PDS)
ACTION .END

ACTION CAT(IPL.ALT) METHOD(EMAIL) OBJ(ALL) SCOPE(REPORT)
TO JMS@NEWERA.COM
FROM SUPPORT@NEWERA.COM
SUBJECT 'AlTERNATE IPL CHNAGES'
ACTION .END

ACTION DSN(SYS1.PARMLIB) METHOD(EMAIL) OBJ(ALL) SCOPE(REPORT)
TO PAT@NEWERA.COM
FROM SUPPORT@NEWERA.COM
SUBJECT 'SYS1 PARMLIB CHANGE'
ACTION .END

ACTION EVENTMSG(CSV410I) METHOD(EMAIL) SCOPE(REPORT)
MATCHSTR 'DATA SET'
SUBJECT 'APF Change Event'
TO recipient@yourcompany.com
FROM sender@yourcompany.com
RPTHLQ   hlq.llq.$RPTHLQ
KEEPRPTS YES
BODYTEXT 'APF Change Event'
```

```
CMDNAME  NSIDAPF
JRNLPOST YES
ACTION .END

ACTION EVENTMSG(HZS0003E) METHOD(EMAIL) SCOPE(REPORT)
MATCHSTR 'NEWERA,NEZ_OPSYS'
SUBJECT 'PRODUCTION IPL CHANGE EVENT'
TO recipient@yourcompany.com
FROM sender@yourcompany.com
RPTHLQ   hlq.llq.$RPTHLQ
KEEPRPTS YES
BODYTEXT 'PRODUCTION IPL CHANGE EVENT'
CMDNAME  NSIDIPL
JRNLPOST YES
PRODS/PRIME 4084827430@VTEXT.COM,WTOR
PRODS/SNAPS WTOR
ALTER/PRIME WTOR
ALTER/SNAPS WTOR
PRODS/ALTER WTOR
TEXTANYCNGS WTOR
ACTION .END
```

11.9 NSEDETxx Configuration Statements

The optional Supplemental Detectors are designed to extend the scope of configuration change detection within the Integrity Controls Environment (ICE). Each Detector creates specific configuration baselines and subsequently, at a user defined interval, compares stored baselines with newly discovered configuration settings. Changes detected, if any, form the content of Change Reports. Change Reports may be optionally sent to a named list of recipients via email, (see NSEENSxx), and/or posted to the TCE Control Journals ensuring a permanent record of all detected changes, Reports and Notifications.

11.9.1 LAUNCHPROC

The *"LAUNCHPROC"* Keyword is used to identify, by name, a specific procedure, other than the default procedure IFODET that you have placed into the System Procedure Library and subsequently started.

This Keyword should be used when you intend to associate a uniquely named IFODET Procedure with a specific instance of IFOM.

```
LAUNCHPROC IFOxDET
```

11.9.2 DETECTOR ON|OFF

To activate a Detector, it must be called by name and turned ON|OFF. For Example:

```
LOADLIBRARY ON
```

11.9.3 >>CYCLE

The CYCLE Keywords: HOURLY, DAILY and WEEKLY are mutually exclusive. Only the last encountered for a named Detector Cycle will be used.

11.9.4 CYCLE - DAILY

The Cycle Keyword must be associated with each active Detector. For example, when the Detector is to CYCLE DAILY beginning at 01:15AM each 12 hours, two intervals.

```
LOADLIBRARY CYCLE(DAILY) TIME(01:15) INTERVAL(2)
```

11.9.5 CYCLE - WEEKLY

The Cycle Keyword must be associated with each active Detector. For example, when to detector is to CYCLE on a WEEKLY basis on Monday, Tuesday, Wednesday and Sunday at 12:47PM.

```
LOADLIBRARY CYCLE(WEEKLY(MON,TUE,WED,SUN)) TIME(12:47)
```

11.9.6 CYCLE - MONTHLY

The Cycle Keyword must be associated with each active Detector. For example, when the detector is to CYCLE at 12:46PM on a MONTHLY on the `2,20,30,15,22 and at the end of the month.`

11.9.7 NSEDETxx Partial - Model Member

```
LAUNCHPROC IFOxDET

LOADLIBRARY ON|OFF

LOADLIBRARY CYCLE(DAILY) TIME(18:00)
LOADLIBRARY CYCLE(WEEKLY(MON,TUE,FRI,SUN)) TIME(15:03)
LOADLIBRARY CYCLE(MONTHLY(EOM)) TIME(01:01)
LOADLIBRARY CYCLE(MONTHLY(DOM(2,20,30,15,22),EOM)) TIME(12:46)
```

11.9.8 NSEDETxx Complete - Model Member

An explanation of all Detector configuration parameters, Operational Keywords, Detector Identifiers, Sub-Keywords and Full Syntax can be found in the ICE Supplemental Detectors User Guide.

12 Appendix C – Event Descriptor

To define a custom descriptor panel, first define the Category to which it will be bound. Next, use a copy of one of the example descriptor panels supplied in the HLQ.HLQ.SISPPENU install dataset. Select one that best fits your descriptor data entry requirements. Either DDE@PNL8 or DDE@PNL9 may be more appropriate for a specific need. DDE@PNL8 shows a basic ISPF data entry panel without a scrollable area definition; DDE@PNL9 shows a slightly more complex ISPF data entry panel that has a scrollable area definition.

12.1 DESCPNL Descriptor Panel Processing

Choose an appropriate name for a new panel member and copy the selected panel member example into this new panel member target. Modify the panel as required for the specific installation use.

The following ISPF panel sections are the ones processed specifically by The Control Editor DESCPNL processing:

```
- )ATTR
- )BODY
- )AREA
- )INIT
```

Other ISPF panel sections can be specified as necessary but will not be processed.

Once a panel member has been defined it must be stored in HLQ.HLQ.SISPPENU. This is required in order to make the panel accessible to TCE under either TSO/ISPF or ICE/ISPF.

12.1.1)ATTR Section

DESCPNL -)ATTR section processing will examine the specified panel's)ATTR section to determine the panel's active TYPE characters. It will also check for an AREA(SCRL) definition. DESCPNL processing supports one defined scrollable area.

Here is an example ISPF panel)ATTR section:

```
)ATTR
  \ TYPE(NEF) PAD(USER) CAPS(OFF)
 28 TYPE(NEF) CAPS(OFF) PADC(USER)
 31 AREA(SCRL) EXTEND(ON)
```

12.1.2)INIT Section

DESCPNL -)INIT section processing will examine the specified panel's)INIT section to determine the panel's active .ZVARS. If panel data entry will be used, the panel *must* contain an)INIT section and the)INIT section must contain a .ZVARS variable

assignment statement. DESCPNL processing supports a maximum of 100 .ZVARS variables)

DESCPNL processing will do panel data value insertion only for panel)BODY Z variables. DESCPNL processing will consider a Z variable as any)ATTR section TYPE character followed immediately by the character 'Z' as a Z variable and will do data value insertion at that point.

Here is an example ISPF panel)INIT section:

```
)INIT
.ZVARS = '($TCEAV00 $TCEAV02 $TCEAV01 $TCEAV03 $TCEAV04 $TCEAV05 +
           $TCEAV06 $TCEAV07 $TCEAV08 $TCEAV09             +
           $TCEAV10 $TCEAV11 $TCEAV12 $TCEAV13 $TCEAV14 $TCEAV15 +
           $TCEAV16 $TCEAV17 $TCEAV18 $TCEAV19              )'
.CURSOR = $TCEAV00
```

12.1.3)BODY Section Processing

The purpose of using a DESCPNL definition is to permit more sophisticated panel data entry and data value syntax checking, but the data entry values in and of themselves would provide little meaning without the panel's static area data. The DESCPNL)BODY processing allows for the marriage of a panel's static data along with the variable data that is entered via the panel user.

DESCPNL -)BODY section processing will take each static panel data line and scan for)ATTR section defined TYPE characters. For every TYPE character detected, DESCPNL)BODY section processing will determine if it represents a Z variable data substitution point (TYPE character followed immediately by 'Z'). If a Z variable is detected, DESCPNL)BODY section processing will substitute the value of the appropriate .ZVARS variable. If the TYPE character is not a Z variable indicator, DESCPNL)BODY section processing will substitute a blank into the descriptor
record data.

DESCPNL -)BODY section processing will also support one scrollable area. If a TYPE character is detected that represents a scrollable area definition, DESCPNL)BODY section processing will insert the scrollable area (as defined by the)AREA ISPF panel section). Appropriate Z variable substitution will continue with the data contained in the scrollable area.

12.1.4)AREA Section Processing

DESCPNL)AREA section processing will examine the specified panel's)AREA section to determine if there is a defined scrollable area. If a scrollable area definition is detected, the scrollable area records are captured and saved to be used in DESCPNL)BODY section processing for scrollable area substitution.

12.2 DESCPNL Descriptor Control Card

DESCPNL definitions as constructed in NSEJRNxx will override the DLINES keyword if the member to be edited is defined in a category with a corresponding DESCPNL.

12.2.1 Required DESCPNL Parameters

To define a Panel Descriptor the NSEJRNxx Member DESCPNL Statement requires the naming of a Controlled Category and an ISPF Panel. These required parameters include:

12.2.1.1 CATEGORY|CAT(category-name)

Where 'category-name' is the Dataset Category name that is being included in this DESCPNL definition.

12.2.1.2 PANEL|PNL(panelnam)

Where 'panelnam' is the name of a full-size ISPF Panel member in the ISPPLIB datasets containing the ICE/ISPF and TSO/ISPF full panel definition.

12.2.1.3 POPUP|POP(panelnam)

Where 'panelnam' is the name of a Popup-size Panel member in the ISPPLIB datasets containing the ICE/ISPF and TSO/ISPF pop-up panel definition.

12.2.2 Optional DESCPNL Parameters

Optional DESCPNL parameters can be specified for any DESCPNL definition. These parameters include:

12.2.2.1 BYPASSCHAR|BPC(char)

Specified on the DESCPNL statement where 'char' represents the panel TYPE character that, if located in column 1 of a panel)BODY line, will cause that line to be eliminated from the Journal Entry Descriptor record.

12.2.2.2 CONF - YES|NO

Used to confirm or not the information entered by the user in the descriptor. The Default is 'YES' meaning that the confirmation pop-up is displayed. 'NO' will suppress the descriptor Pop-Up.

12.2.2.3 EDITORDR|EORDR|EO

Specified on the DESCPNL statement where valid values for 'option' are:

1 - MF (display the member data first)
2 - DF (display the descriptor data entry edit window prior to the member)

If not specified, the default will be MF.

12.2.2.4 ACTIVE(Starting:hhmm-Ending:hhmm)

Specified when a descriptor will be active where:

1 - 'Starting:hhmm' represents the start time that this descriptor panel will be active (in 'hhmm' format)
2 - 'Ending:hhmm' represents the end time that this descriptor panel will cease to be active.

If not specified, the descriptor remains active throughout the entire 24 hour day.

ACTIVE start and end times can span midnight. For example, ACTIVE(2200-0500) would indicate that this descriptor panel is active between 10:00 p.m. and 5:00 a.m.

12.3 DESCPNL – An Example

12.3.1 Control Card

```
DESCPNL CAT(SYSTEM.PARMLIB) PANEL(DDE@PNL1) BYPASSCHAR(!)
```

In this example the panel member, DDE@PNL1, must be stored in HLQ.HLQ.SISPPENU. This is required in order to make the panel accessible to TCE under either TSO/ISPF or ICE/ISPF.

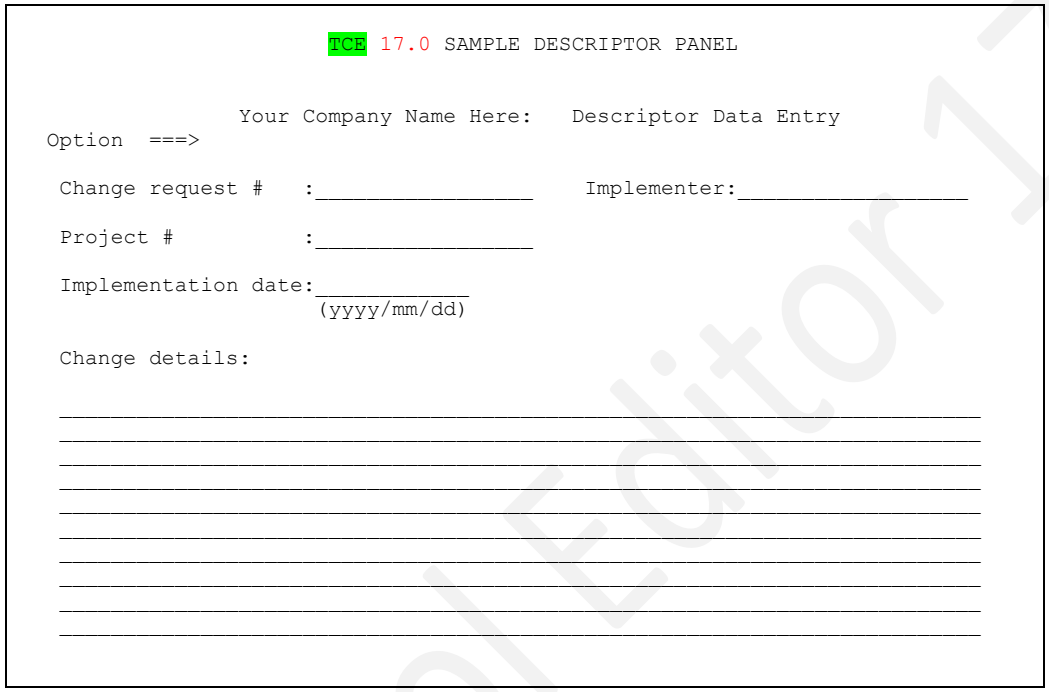
12.3.2 Full-Size ISPF Panel Definition

This Panel, member DDE@PNL7 is stored in hlq.llq.SISPPENU.

```
)ATTR
  ◊ TYPE(NEF) PAD(USER) CAPS(OFF)
  } TYPE(PT)
  { TYPE(NT)
  ^ TYPE(PIN)
  $ TYPE(SAC)
  ! TYPE(FP)
  \ TYPE(TEXT) INTENS(LOW) COLOR(GREEN) HILITE(REVERSE)
  ~ TYPE(TEXT) INTENS(LOW) COLOR(TURQ)
  õ TYPE(TEXT) INTENS(LOW) COLOR(RED)
 0A TYPE(NT)
 28 TYPE(NEF) CAPS(OFF) PADC(USER)
 31 AREA(SCRL) EXTEND(ON)
 32 TYPE(OUTPUT) INTENS(NON)
)BODY
!                     \TCEõ17.0~SAMPLE CUSTOM PANEL DESCRIPTOR
!
             %Your Company Name Here:   Descriptor Data Entry DDE@PNL7%
!Option  ===>◊ZCMD                                                          +
%
%  Change request #   :◊Z                 % Implementor:◊Z                 +
!
%  Project #          :◊Z                 +
!
%  Implementation date:◊Z         +
%                       (yyyy/mm/dd)
! TCEDSN                                        + TCEFUNC1 TCEFUNC2
! TCEMEM  + TCEVOL+ TCEUSR + TCESYS  + TCENEW  + TCEALT  +
! TCECAT         +
% Change details:
%
SCRLAREA ------------------------------------------------------------------
)AREA SCRLAREA DEPTH(3)
 Z
 Z
 Z
 Z
)INIT
.HELP = DDE@HLP7
.ZVARS = '($TCEAV00 $TCEAV02 $TCEAV01 $TCEAV03                   +
           $TCEAV04 $TCEAV05                                     +
           $TCEAV06 $TCEAV07 $TCEAV08 $TCEAV09             +
           $TCEAV10 $TCEAV11 $TCEAV12 $TCEAV13 $TCEAV14 $TCEAV15 +
           $TCEAV16 $TCEAV17 $TCEAV18 $TCEAV19              )'
VGET (TCEDSN TCEMEM TCEVOL TCEUSR TCESYS TCENEW TCEALT TCEFUNC1 TCEFUNC2)
.CURSOR = $TCEAV00
VER(&$TCEAV00,NUM)
)PROC
  &ZSEL = TRANS( TRUNC (&ZCMD,'.')
               X,'EXIT'
               ' ',' '
               *,'?' )
  &ZTRAIL = .TRAIL
  &CMD = TRUNC(&ZCMD,'.')
  VER(&$TCEAV00,NUM)
  VER(&$TCEAV01,NUM)
  VER(&$TCEAV03,STDDATE)
  IF (VER(&$TCEAV00,NUM))
  ELSE
    &$TCEAV00 = ' '
    REFRESH($TCEAV00)
  VPUT ($TCEAV00 $TCEAV01 $TCEAV02 $TCEAV03 $TCEAV04 $TCEAV05) PROFILE
  VPUT ($TCEAV06 $TCEAV07 $TCEAV08 $TCEAV09 $TCEAV10 $TCEAV11) PROFILE
  VPUT ($TCEAV12 $TCEAV13 $TCEAV14 $TCEAV15 $TCEAV16 $TCEAV17) PROFILE
  VPUT ($TCEAV18 $TCEAV19) PROFILE
  *REXX(*,(SAMRXPNL))
  .RESP=ENTER
)END
```

12.3.3 ISPF Full Panel - Displayed

The descriptor associated with the Descriptor Category, SYSTEM.PARMLIB as defined to ISPF as a full panel is shown below:



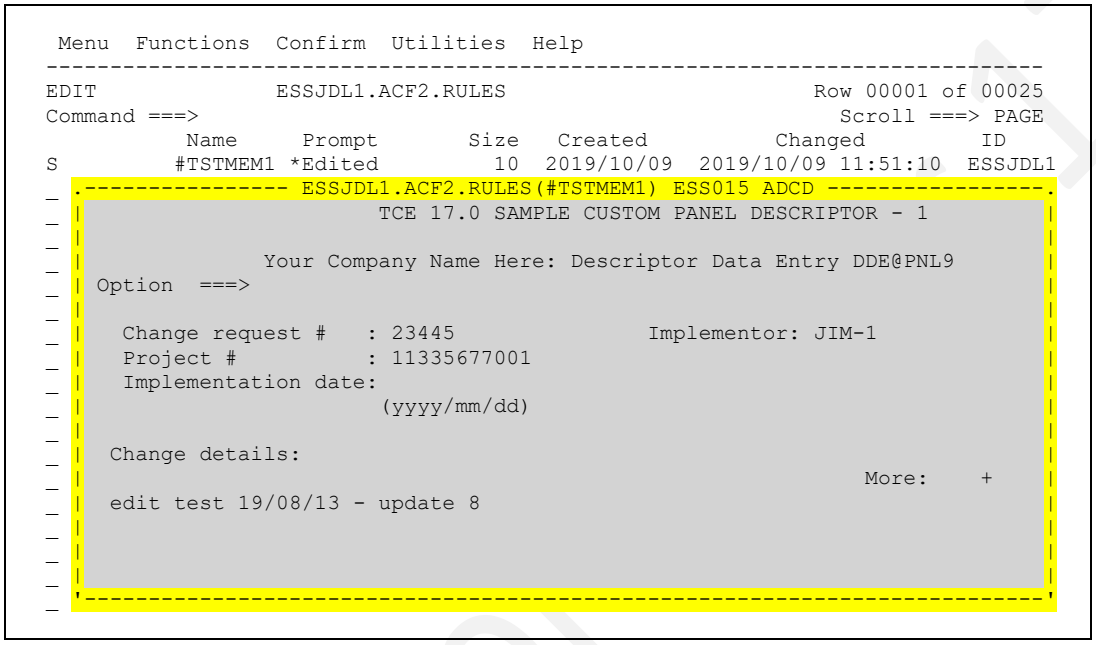
12.3.4 Pop-Up ISPF Panel Definition

This Panel, member DDE@PNL7 is stored in hlq.llq.SISPPENU.

```
)ATTR
  ◊ TYPE(NEF) PAD(USER) CAPS(OFF)
  } TYPE(PT)
  { TYPE(NT)
  ^ TYPE(PIN)
  $ TYPE(SAC)
  ! TYPE(FP)
  \ TYPE(TEXT) INTENS(LOW) COLOR(GREEN) HILITE(REVERSE)
  ~ TYPE(TEXT) INTENS(LOW) COLOR(TURQ)
  õ TYPE(TEXT) INTENS(LOW) COLOR(RED)
 0A TYPE(NT)
 28 TYPE(NEF) CAPS(OFF) PADC(USER)
 31 AREA(SCRL) EXTEND(ON)
 32 TYPE(OUTPUT) INTENS(NON)
)BODY (WINDOW 60,20) <-WINDOW size definition must be consistend with panel size.
!                     \TCEõ17.0~SAMPLE CUSTOM PANEL DESCRIPTOR
!
             %Your Company Name Here:   Descriptor Data Entry DDE@PNL7%
!Option  ===>◊ZCMD                                                          +
%
%  Change request #    :◊Z                 % Implementor:◊Z                 +
!
%  Project #           :◊Z                 +
!
%  Implementation date:◊Z         +
%                       (yyyy/mm/dd)
! TCEDSN                                        + TCEFUNC1 TCEFUNC2
! TCEMEM  + TCEVOL+ TCEUSR + TCESYS  + TCENEW  + TCEALT  +
! TCECAT         +
% Change details:
%
SCRLAREA ----------------------------------------------------------------------
)AREA SCRLAREA DEPTH(3)
 Z
 Z
 Z
 Z
)INIT
.HELP = DDE@HLP7
.ZVARS = '($TCEAV00 $TCEAV02 $TCEAV01 $TCEAV03                    +
           $TCEAV04 $TCEAV05                                      +
           $TCEAV06 $TCEAV07 $TCEAV08 $TCEAV09             +
           $TCEAV10 $TCEAV11 $TCEAV12 $TCEAV13 $TCEAV14 $TCEAV15 +
           $TCEAV16 $TCEAV17 $TCEAV18 $TCEAV19              )'
VGET (TCEDSN TCEMEM TCEVOL TCEUSR TCESYS TCENEW TCEALT TCEFUNC1 TCEFUNC2)
.CURSOR = $TCEAV00
VER(&$TCEAV00,NUM)
)PROC
  &ZSEL = TRANS( TRUNC (&ZCMD,'.')
               X,'EXIT'
               ' ',' '
               *,'?' )
  &ZTRAIL = .TRAIL
  &CMD = TRUNC(&ZCMD,'.')
  VER(&$TCEAV00,NUM)
  VER(&$TCEAV01,NUM)
  VER(&$TCEAV03,STDDATE)
  IF (VER(&$TCEAV00,NUM))
  ELSE
    &$TCEAV00 = ' '
    REFRESH($TCEAV00)
  VPUT ($TCEAV00 $TCEAV01 $TCEAV02 $TCEAV03 $TCEAV04 $TCEAV05) PROFILE
  VPUT ($TCEAV06 $TCEAV07 $TCEAV08 $TCEAV09 $TCEAV10 $TCEAV11) PROFILE
  VPUT ($TCEAV12 $TCEAV13 $TCEAV14 $TCEAV15 $TCEAV16 $TCEAV17) PROFILE
  VPUT ($TCEAV18 $TCEAV19) PROFILE
  *REXX(*,(SAMRXPNL))
  .RESP=ENTER
)END
```

12.3.5 ISPF Pop-Up - Displayed

In the sample show below the Pop-Up is shown overlaying the 3.4 Member Select Panel from which the #TSTMEM1 member was selected. The Pop-Up is outlined in yellow, a user preference. Note that in the upper border of the Pop-Up the identity of the edit source; Dataset, Member, Volume and System are displayed.



12.3.6 Sample Rexx Program using TCE Variables

A sample Rexx Exec, member SAMRXPNL, is stored in HLQ.HLQ.SISPCLIB as an example of panel value extraction.

```
/***REXX***/
  say'.hello'
  say'.'TCEDSN
  say'.'TCEFUNC1
  say'.'TCEFUNC2
  say'.'TCEMEM
  say'.'TCEVOL
  say'.'TCEUSR
  say'.'TCESYS
  say'.'TCENEW
  say'.'TCEALT
  say'.'TCECAT
EXIT
```

12.4 Direct Calls to ICE

The following API calls are made by Rexx application running within the Integrity Controls Environment (ICE) or from a batch Rexx application where initiating JCL contains the following STEPLIB Control Card where IFODSN is equal to the fully qualified name of the ICE Control Dataset.

```
//STEPLIB   DD DSN='IFODSN'.LOAD,DISP=SHR
```

12.4.1 NEZCHKT

```
ADDRESS TSO ; "NEZCHKT 1"  ; /* Returns Active IFOM */
```

The purpose of NEZCHKT 1 is to return, as the value of the variable SSNM, the name of the active IFOM Journal Address Space. Always remember to use "NEZCHKT 0" to terminate/close the service before exiting your subroutine or application.

12.4.2 NSISJCU

```
ADDRESS TSO  ;  "NSISJCU"
```

The purpose of NSISJCU is to update the Control Journals with any discovered Detected Changes to the Controlled Datasets. A Detected Change is a change that is caused by a process that is outside the scope of the Control Editor.

The following Rexx code snippet can be used to evaluate the Return Code (RC) NSISJCU returns to the calling program where the resulting value of the variable DCNGS is equal to the number of changes detected.

```
ADDRESS TSO
"NEZCHKT 1"
"NSISJCU"

IF RC = 0 THEN
   DCNGS = 'None'
ELSE
  DO
```

```
    IF RC > 256 THEN
      DCNGS = RC - 256
    ELSE
      DCNGS = 'Failed'
  END

ADDRESS TSO
"NEZCHKT 0"
```

12.4.3 NSIRQJR

```
ARC = NSIRQJR(0,'D','A')
```

The purpose of NSIRQJR is to return three arrays containing information directly related to the status of Control Journals. The arrays are:

IFO_JRN_DSNAME.0		Contains the name of a Control Journal Dataset,
IFO_JRN_JRSTAT.0		Contains the Status Code of a Journal Datasets IF 'O' THEN ; JRLStat = 'ACTIVE' IF 'C' THEN ; JRLStat = 'CLOSED' IF 'B' THEN ; JRLStat = 'BACKUP' IF 'N' THEN ; JRLStat = 'INVALD'
IFO_JRN_JRENTR.0		Contains the number of entries in a Journal Dataset.

The REXX sample program TCEJRLS illustrates how to call and display data provided by this function.

12.4.4 NSIRQDS

```
ARC = NSIRQDS(0,'A',IFO_JRN_DSNAME.XY)
```

The purpose of NSIRQDS is to return arrays that containing META information about each Event Transaction contained within a named Journal Dataset. The arrays are:

IFO_JRN_APDATA.0		A POSITIONAL STRING of Event Specific META Data

DSNName = 1	CNGStat = 7
VOLName = 2	MBRttrs = 8
USERtso = 3	VERMods = 9
PLXName = 4	INILine = 10
SYSName = 5	CREDate = 11
IMAName = 6	MODLine = 12

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td>IFO_JRN_JRTYPE.0</td><td></td><td>Contains the TYPE of Journal Datasets

IF 'O' THEN ; JRLType = 'ACTIVE'
IF 'C' THEN ; JRLType = 'CLOSED'
IF 'B' THEN ; JRLType = 'BACKUP'
IF 'N' THEN ; JRLType = 'INVALD'</td></tr>
<tr><td>IFO_JRN_JRCATN.0</td><td></td><td>Contains the Journal Dataset CATEGORY Name</td></tr>
<tr><td>IFO_JRN_JREFLAG.0</td><td></td><td>Contains a two character EVENT Type Flag

<table>
<tr><th>Character 1</th><th>Character 2</th></tr>
<tr><td>S = SAVED</td><td>B = BCKUP</td></tr>
<tr><td>B = FIRST</td><td>E = CEDIT</td></tr>
<tr><td>D = AUDIT</td><td>R = RSTOR</td></tr>
<tr><td>A = ATMPT</td><td>D = DELET</td></tr>
<tr><td>M = OTHER</td><td>O = RNOLD</td></tr>
<tr><td></td><td>N = RNNEW</td></tr>
<tr><td></td><td>S = SBMIT</td></tr>
<tr><td></td><td>F = DTCNG</td></tr>
<tr><td></td><td>C = ADDED</td></tr>
<tr><td></td><td>G = AUDIT</td></tr>
<tr><td></td><td>P = REPLC</td></tr>
<tr><td></td><td>X = CANCL</td></tr>
<tr><td></td><td>B = HBEAT</td></tr>
<tr><td></td><td>A = CEACT</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td>When Used with “M”</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td>1 = RACFS</td></tr>
<tr><td></td><td>2 = SETCM</td></tr>
<tr><td></td><td>3 = MODCM</td></tr>
<tr><td></td><td>4 = VARCM</td></tr>
<tr><td></td><td>5 = MISCM</td></tr>
<tr><td></td><td>B = BCAST</td></tr>
<tr><td></td><td>D = DDSET</td></tr>
<tr><td></td><td>E = EMAIL</td></tr>
<tr><td></td><td>L = DBUGS</td></tr>
<tr><td></td><td></td></tr>
</table>

Optional Detector Event Type Flag Determination

IF JRLCats = 'ISN.CSD.NSIMLOD' THEN
JRLFone = 'DETER' ; JRLFtwo = 'DTLOD'
IF JRLCats = 'TCE.DET.NSIMLOD' THEN
JRLFone = 'DETER' ; JRLFtwo = 'DTLOD'
IF JRLCats = 'ISN.CSD.NSIMIOD' THEN
JRLFone = 'DETER' ; JRLFtwo = 'DTIOD'
IF JRLCats = 'TCE.DET.NSIMIOD' THEN
JRLFone = 'DETER' ; JRLFtwo = 'DTIOD'
IF JRLCats = 'ISN.CSD.NSIMCHK' THEN
JRLFone = 'DETER' ; JRLFtwo = 'DTCHK'
IF JRLCats = 'TCE.DET.NSIMCHK' THEN
JRLFone = 'DETER' ; JRLFtwo = 'DTCHK'</td></tr>
<tr><td>IFO_JRN_CNGD</td><td></td><td>Contains a control member’s change date</td></tr>
<tr><td>IFO_JRN_CNGT</td><td></td><td>Contains a control member’s change time</td></tr>
<tr><td>IFO_JRN_WRTD</td><td></td><td>Contains the actual date event written to Journal</td></tr>
<tr><td>IFO_JRN_WRTT</td><td></td><td>Contains the actual time event written to Journal</td></tr>
<tr><td>IFO_JRN_JRRSLT</td><td></td><td>Contains the Journal process results flag</td></tr>
</table>

		IF 'SUCCESS' THEN EVENT PROCESSED SUCCESSFULLY ELSE EVENT PROCESS FAILED
IFO_JRN_JRMEMB		Contains the name of the affected member
IFO_JRN_JRRTKN		Contains Event entry location boundary in Journal POSITION 1-4 = START OF BOUNDARY POSITION 5-8 = END OF BOUNDARY
IFO_JRN_JRRECS		Contains number of records in stored member
IFO_JRN_JRRDRC		Contains number of records in stored descriptor

The REXX sample program TCERECS illustrates how to call and display data provided by this function.

12.4.5 NSISJRC

```
TKN1 = IFO_JRN_JRRTKN.xx
RECS1= IFO_JRN_JRRECS.xx,
       + IFO_JRN_JRRDRC.xx

DRC1 = STRIP(IFO_JRN_JRRDRC.xx)
FSZ1 = STRIP(IFO_JRN_JRRFSZ.xx)
RFC1 = STRIP(IFO_JRN_JRRRFC.xx)
LRL1 = STRIP(IFO_JRN_JRRLRL.xx,'L',0)ADDRESS TSO

"ALLOC DD(OLDDD) REU",
"SPA(4 4) CYL LRECL("LRL1")",
"RECFM("RFC1") BLKSIZE(0)"

CTKN1 = C2D(SUBSTR(TKN1,1,4))
CTKN2 = C2D(SUBSTR(TKN1,5,4))

"NSISJRC TOKEN("CTKN1 CTKN2")",
"MEMBER("RMEM")",
"RECORDS("RECS1")",
"FLSZ("FSZ1")",
"DRECS("DRC1")",
"DDNAME(OLDDD)"

"EXECIO * DISKR OLDDD (FINIS STEM MBRRECS."
```

The purpose of NSISJRC is to return an array (MBRRECS.) containing DETAIL information about a specific Event Transaction within a named Journal Dataset where:

- CTK1 = The START of the records boundary
- CTK2 = The END of the records boundary
- RECS = The Number of records within the boundary

The array contains change event detail as described below:

- An Edit Event results in the capture of:
  - Event Header
  - Event Descriptor
  - Update Member

- A Command Event results in the capture of:
  - Event Header
  - Up to 20 associated records from system log

The REXX sample program TCEDETL illustrates how to call and display data provided by this function.

12.5 Rexx API Samples

The Rexx application sample programs – TCEJRLS, TCERECS and TCEDETL demonstrate how the API Calls can be used to access Journaled event information. The function and output of these programs is described below. Executable copies of these programs can be found in hlq.llq.SISPCLIB.

12.5.1 TCEJRLS

The REXX program TCEJRLS is designed to provide a POSITIONAL List of each accessible Control Journal dataset.

Fields within each record are:

- Dataset Name,
- Operational Status and
- Event Member Count

A sample of program output is shown below.

```
...TCEJRLS = LIST ALL CONTROL JOURNAL DATASETS
...
.1.journal_dataset_name
.2.operational_status
.3.event_member_count
...
...IFO.IFOP.JOURNAL.D2019107.T0829067,ACTIVE,0061
```

```
...IFO.IFOP.JOURNAL.D2019100.T1840054,CLOSED,0090
...IFO.IFOP.JOURNAL.D2019098.T2217116,CLOSED,0090
...IFO.IFOP.JOURNAL.D2019094.T0100001,CLOSED,0090
...IFO.IFOP.JOURNAL.D2019091.T1502029,CLOSED,0090
...IFO.IFOP.JOURNAL.D2019089.T2051141,CLOSED,0007
...IFO.IFOP.JOURNAL.D2019082.T2100007,CLOSED,0090
...IFO.IFOP.JOURNAL.D2019070.T1810445,CLOSED,0090
...IFO.IFOP.JOURNAL.D2019070.T1810428,CLOSED,0090
```

Control Journal Status will be one of the following:

- ACTIVE = The Journal is OPEN and recording Change Events.
- CLOSED = The Journal is CLOSED and no longer recording Change Events.
- BACKUP = The Journal was used specifically to house control dataset backups.

12.5.2 TCERECS

The REXX program TCERECS is designed to list the content of all META Records within a Control Journal. The sample will list only ACTIVE JOURNAL records. Remove the conditional execution logic to list all records or filter as needed for a specific application.

Primary Meta Fields within each record are:

1. Record Number
2. Image FOCUS high level qualifier(s),
3. The Control Editor Configuration Member Suffix,
4. The Control List Member Suffix,
5. The Journal Dataset Name containing the event entry,
6. The status of the Journal Dataset – (ACTIVE, CLOSED, BACKUP),
7. The number of records associated with the event entry,
8. The Journal Dataset Type – (ACTIVE,INACTIVE),
9. The Control Dataset Category,====..==.
10. Primary Event Classification – (SAVE,FIRST,AUDIT,ATMPT,OTHER),
11. Secondary Event Classification – (See Detail Below),
12. Date of the Change Event,
13. Time of the Change Event,
14. Event processing results – (PASS,FAIL),
15. Event Member or Command,
16. Start of the event detail records,
17. End of the event detail records,
18. Event detail (Member) record count,
19. Event detail (Descriptor) record count,
20. Name of associated Control Dataset,
21. VOLSER associated with Control Dataset,
22. UserID, Console or Process associated with Event,

23. Associated Sysplex Name,
24. Associated System Name,
25. Associated Image Name,
26. Event record update status (SAVED,FAILED),
27. Event member version,
28. Event member initial records,
29. Event member creation date,
30. Event member modified lines,
31. Journal Dataset Volume(Reserved)

Extended Meta Fields in NSIMCEW Records Only

32. Date of Event Class Update
33. Date Format
34. Time of Event Class Update
35. Time Format
36. Event Class Name
37. Reporting Period
38. Total Events in Period

Secondary Event Classification:

BCKUP	CEDIT	RSTOR	DELET	RNOLD
RNNEW	SBMIT	DTCNG	ADDED	AUDIT
RACFS	SETCM	MODCM	VARCM	

A sample output from TCERECS is shown below.

```
   ...TCERECS = LIST THE CONTENT OF ALL TCE META RECORDS
   ...
   .1.image_focus_high_level_qualifier
   .2.configuration_member_suffix
   .3.control_list_suffix
   .4.journal_dataset_name
   .5.journal_dataset_status
   .6.event_member_count
   .7.control_journal_type
   .8.control_dataset_catagory
   .9.primary_event_classification
   10.secondary_event_classification
   11.event_date
   12.event_time
   13.event_process_result
   14.event_member
   15.start_of_event_record
   16.end_of_event_record
   17.event_record_count
   18.event_descriptor_count
   19.control_dataset_name
   20.control_dataset_volser
   21.associated_userid
   22.associated_sysplex_name
   23.associated_system_name
   24.associated_image_name
   25.event_transaction_status
   26.event_member_version
   27.event_initial_line
   28.event_create_date
   29.event_modified_lines
   ...

IFO.IFOP,00,00,IFO.IFOP.JOURNAL.D2019112.T2157054,ACTIVE,
0001,ACTIVE,PAULS.DATASETS,SAVED,CEDIT,04/22/2019,16:57:05,
PASS,ANTXIN00,419472960,0,0000014,00000
12,PROBI1.SYS1.PARMLIB,VPWRKI,PROBI1,SVSCPLEX,S0W1,N/A,
SAVED,01.00,000014,04/16/2007,000001
```

12.5.3 TCEDETL

The REXX program TCEDETL is designed to list the detail captured during a change event thus enhancing the summary information stored in the META Record. The sample will list up to ten ACTIVE records. Remove the conditional execution logic to list all records or filter as needed for a specific application.

Captured detail varies depending on the type of change events as described below:

- An Edit Event results in the capture of:
  - Event Header/Identifier
  - Event Descriptor/Body
  - Update Member/Report

- A Command Event results in the capture of:
  - Event Header/Identity
  - Up to 20 associated records from system log, the Report

A sample output from TCEDTL is shown below.

```
...01C|---------------------------THE CONTROL EDITOR-------------------- Edit -
...02C|SYSPLX:SVSCPLEX SYSNM:S0W1    USRID:PROBI1  TIME:15:14:31 DATE:09/20/15
...03C|-DSN: PROBI1.IFO80DR.PARMLIB(ANTXIN00)----------------------VOL: PROBI1-

...04T|#1-CHANGE AUTHORITY
...05D|                      As per planning meeting 04/04/2019.
...06T|#2-CHANGE DESCRIPTION
...07D|                      Change will update member as authorized.
...08D|
...09T|#3-CHANGE IMPACT
...10D|                      No adverse impact is expected to result.
...11D|
...12D|

.../*                                                                */ 00050000
.../*                  ANTXIN00                                      */ 00100000
.../*                                                                */ 00150000
.../*  This is an initialization parmlib member for DFSMS/MVS System  */ 00200000
.../*  Data Mover.  It resides in SYS1.PARMLIB.  The syntax of the    */ 00250000
.../*  parameters is found in DFSMS ADVANCED COPY SERVICES, SC35-0428.*/ 00300000
.../*                                                                */ 00350000
.../*  Change Activity:                                              */ 00400000
.../*                                                                */ 00450000
.../*  $L0=OW52938,HDZ11D0,011225,TUCRNC: Initial release           */ 00500000
.../*                                                                */ 00550000
...NAMES -                                                             00600000
...       Hlq(SYS1)  /* High level qualifier for XRC data sets */ -     00650000
...       MHlq(SYS1) /* High level qualifier for XRC master data set */  00700000
```

13 Appendix D – Journal Interface Functions

Supporting Worksheets enhance the functionality of the TCE Journal Interface Panels and Worksheets they support.

13.1 The Dataset Controlled List Worksheet

This Journal Support option allows you to set up a Watch List Composed of *Currently Defined Controlled Datasets*.

Note that a *Currently Defined Control Dataset* is one that is defined to TCE via the ICE NSECTLxx Parmlib Member. All other datasets that have historical events stored in the Control Journals but are not currently defined to TCE are by definition automatically excluded from Background Reporting. Such exclusions are shown in the Worksheet with the notation "Old" in the "Ctl/Lst" column.

When using the Worksheet press PFK1 for panel specific help.

```
            TCE 17.0 - Controlled Dataset Access Options  Row 1 to 13 of 20
----ICE 17.0----                                                -CntDsn_List-
------------ IFO.IFOP - The Control Editor - Controlled Dataset List ----------
Row Selection: System DSN Views Restore Dataset Include Dataset Exclude Dataset
.. Update the Dataset Background Settings .. Update the Controlled Dataset List
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Row --Last-- -----Controlled Datasets----- Ctl -------Controlled Events------
_ ___ ________ ________________________ ___ _____ ____ ____ ____ ____ ____
S Num yy/mm/dd ------Journaled Entries------ Lst Total Back Edit Dcng Xmit Excp
_ 001 17/01/24 PROBI1.ADCD.Z18.PARMLIB      Yes   227  220    4    3    0    0
_ 002 17/01/24 PROBI1.IFOP.JCLLIB           Yes    52    7   40    2    3    0
_ 003 17/01/24 VENDOR.PARMLIB               Yes   702   54   59  589    0    0
_ 004 17/01/23 LVL0.PARMLIB                 Yes   209  159    0   50    0    0
_ 005 17/01/19 PHARL2.PARIFOZ2              Yes   184  180    1    3    0    0
_ 006 17/01/19 PROBI1.SYS1.PARMLIB          Yes   207   94   70   36    7    0
_ 007 17/01/19 PHARL2.JCLLIB                Yes   179   46   19  111    3    0
_ 008 17/01/18 PROBI1.USER.PARMLIB          Yes    70   60    5    4    1    0
_ 009 17/01/17 PHARL2.USERLIB               Yes    45    8   21   16    0    0
_ 010 17/01/13 IFO.IFOP.PARMLIB             Old    16    0   16    0    0    0
_ 011 17/01/05 IFO.DEBUG.EMAIL              Old    70    0   70    0    0    0
_ 012 17/06/27 CGOLL1.PARMLIB2              Yes    52    7    0   45    0    0
_ 013 17/01/06 PHARL2.CLIST                 Old    58   29   15   14    0    0

Option ===>                                                 Scroll ===> PAGE
```

13.1.1 Updating the Dataset Background Settings

For a detail description of Background Report Settings see the section of this User Guide titled *"Background Reporting Options".*

13.1.2 Updating the Controlled Dataset List

For a detail discussion of how to update the Controlled Dataset List see the section of this User Guide titled *"Action – Administrative Functions".*

13.2 The Timeline Worksheet

This Timeline Worksheet displays a complete listing of all Controlled Events by default along the Daily Timeline. It provides an overview of and access to details of each active period by Event Class. The worksheet is ordered so that the most recent day is shown in the first row followed in successive rows of subsequent days. Use PFK8 to move down the listing and PFK7 to move up. Place an "M" on the command line and then PFK7 or PFK8 to move to the bottom or top of the list.

When using the Worksheet press PFK1 for panel specific help.

```
                TCE 17.0 - Daily Event Timeline Worksheet   Row 1 to 14 of 456
----ICE 17.0----                                              ----Day-By-Day----
-------------- IFO.IFOP - The Day-By-Day Event Worksheet Interface ------------
Row Selection: Browse a Day
---------Alternate Views--------- - ---------Default Period Selection----------
Sysplex  System  CauseId  Periods - Daily  Weeks  Month  Quarter  Annual  Total
------ To Reorder the Columns select a related Event Class, PFK1 for Help -----
S Line ---Date--- Total Stage Dtec Xmit Oper Supp Mess ESMp TCEp Excp Insp Note
_ 0001 2019/01/31    75     0    0    0    0    0   16    1    0    0    3   55
_ 0002 2019/01/30    97     0    0    0    0    0   24    1    0    0    3   69
_ 0003 2019/01/29    96     0    0    0    0    0   22    1    0    0    3   70
_ 0004 2019/01/28    91     0    0    0    0    0   24    1    0    0    3   63
_ 0005 2019/01/27    71     0    0    0    0    0   24    0    0    0    3   44
_ 0006 2019/01/26    98     0    0    0    0    0   24    1    0    0    3   70
_ 0007 2019/01/25   100     0    0    0    0    1   24    1    0    0    3   71
_ 0008 2019/01/24   203     3    0    0    0    0   12    2   60    0    3  123
_ 0009 2019/01/23   201     4    2    0    3    1    0    5   44    1    3  138
_ 0010 2019/01/22    61     1    0    0    0    0   14    0    6    0    4   36
_ 0011 2019/01/21   370     0    0    0    0   14   24    4   75    0    4  249
_ 0012 2019/01/20   361     0    0    0    0   16   22    0   82    0    4  237
_ 0013 2019/01/19   312     3    2    2   16    2   25    2   80    0    4  176
_ 0014 2019/01/18   171     9    6    2    5    0   10    0   72    0    0   67
_

Option ===>                                                 Scroll ===> PAGE
```

13.2.1 Selecting an Event

To select events associated with a specific date, place the cursor under the desired target's non-zero numeric value and press enter. This action will immediately display the selection's detail in the *Named Period Selection Worksheet*. When your review of the detail is concluded, use PFK3 to return to the Timeline Worksheet. See also the section in this User Guide titled The Period Display Worksheet.

13.2.2 Changing the Timeline

The Worksheet can be easily reordered, in descending sequence by event count, by placing the cursor under an Event Class, for example, Staged and pressing enter. This action will sort the values shown in the underlying column such that the day with the largest number of events in a selected Class will appear at the top of the Worksheet. This frequency distribution will be useful in helping to identify anomalous behavior. In addition, selecting each Class, in turn, may reveal potential trouble spots that warrant attention. To restore the list to its original order, place the cursor under the column heading titled Date and press enter.

13.2.3 Changing the Time Period

To change the Default Period from Daily, place the cursor under one of the following: Week, Month, Quarter, Annual or Totals and press enter. Note that these actions will redisplay the Worksheet now with the daily records summarized for the selected period.

13.2.4 Changing to an Alternative View

To change the default Alternative View from Periods, place the cursor under one of the following: CauseId, System or Sysplex and press enter. Note that these actions will reconfigure and redisplay the Worksheet such that it will display a listing of values associated with the selected View and the accumulated period to date values associated with each individual element of the list.

13.2.5 Browsing Event Detail

Use the Browse option 'B' on the command line associated with a row to display all events that appear in a single row at one time within the Named Period Selection Worksheet. When your review of the detail in the Named Period Selection Worksheet is concluded, use PFK3 to return.

13.3 The Period Display Worksheet

This Worksheet is designed to display META Information that is specific to a selected Event Class or Event Period. Each row represents a discrete event within the Class or Period and is used as a jumping off point to more detailed event data. Two Line Commands are provided to facilitate easy access to event detail. Use 'B' to browse available information about a selected event. Use 'H' to display a list of comparable events over time. As it relates to Members, the History functions support Compare and Restore operations. As it relates to Image FOCUS Sysplex Audit Log events, it supports Index Report Display.

When using the Worksheet press PFK1 for panel specific help.

```
              TCE 17.0 - Named Period Selection Worksheet  Row 1 to 14 of 314
 -ICE 17.0-                                                    ----All Events----
---------- IFO.IFOP - Month to Date Controlled Events - Mth Worksheet ---------
Row Selection: Browse History
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Line -------Detected Events-------- ----------All Controlled Events----------
_ _____ ________ _____ _____ ________ ________ ________________________________
S Lines yy/mm/dd hh:mm Types --User-- -CmdMbr- ---Control String or Dataset----
_ 00001 17/09/09 12:00 DELET PROBI1   BLSCECT  PROBI1.SYS1.PARMLIB
_ 00002 17/09/09 13:26 DELET CCHIN2   BLSCECTX PROBI1.SYS1.PARMLIB
_ 00003 17/09/10 10:15 ADDED PHARL2   PATSMP3  PHARL2.USERLIB
_ 00004 17/09/10 10:16 CEDIT PHARL2   PATSMP2  PHARL2.USERLIB
_ 00005 17/09/10 11:40 CEDIT $STAGED  MLSTAGED IFO.DEBUG.EMAIL
_ 00006 17/09/10 11:40 CEDIT $ESMCMD  MLESMCMD IFO.DEBUG.EMAIL
_ 00007 17/09/02 17:29 CEDIT PHARL2   COMMNDPH VENDOR.PARMLIB
_ 00008 17/09/02 17:44 CEDIT PHARL2   XITCPFT  PHARL2.USERLIB
_ 00009 17/09/02 15:20 CEDIT PROBI1   COFVLF00 PROBI1.SYS1.PARMLIB
_ 00010 17/09/02 16:33 CEDIT GBAGS1   COMMNDIF VENDOR.PARMLIB
_ 00011 17/09/02 16:36 CEDIT PHARL2   COMMNDPH VENDOR.PARMLIB
_ 00012 17/09/02 17:11 CEDIT PHARL2   COMMNDPH VENDOR.PARMLIB
_ 00013 17/09/02 17:25 CEDIT PHARL2   COMMNDP1 VENDOR.PARMLIB
_ 00014 17/09/09 12:00 DTDEL PROBI1   BLSCECT  PROBI1.SYS1.PARMLIB
_

Option ===>                                              Scroll ===> PAGE
```

The Worksheet itself can be manipulated in a number of different ways that assist in analysis and understanding of the events. For example, to delimit the displayed information in a specific column place the cursor under an item of interest in the column and press enter. The Worksheet will redisplay showing only matching values. Note that the selected value appears above the column heading. Selecting a value in any other column will delimit the list to records matching both selections. Cursor under a selected value, press enter to reset the column or enter 'RESET' on the Command Line; press enter to reset the Worksheet back to its original state. To sort on a column, place the cursor under the Column Heading and press enter; press enter a second time to reverse the sort order.

13.3.1 Browse

The Browse options will display all available event detail in a report formatted as follows:

```
/*****************************************************************************/
/*                                                                           */
/*          The Control Editor - Control Members - Event Log Detail          */
/*                                                                           */
/*                Date:2019/09/10 - Time:14:06:51 - User:PROBI1              */
/*                                                                           */
/*****************************************************************************/
|
TCE0000I +---------------------------------------------------------------------+
TCE0000I |                                                                     |
TCE0000I |             CONTROLLED MEMBER DETAIL - EVENT TYPE:CEDIT             |
TCE0000I |                                                                     |
TCE0000I +---------------------------------------------------------------------+
TCE0000I |                                                                     |
TCE0000I | -Member- --User-- --Date-- Times -------Controlled Dataset--------- |
TCE0000I | -------- -------- yy/mm/dd hh:mm -------------------------------- |
TCE0000I | PATSMP3  PHARL2   17/09/10 10:15 PHARL2.USERLIB                   |
TCE0000I | ======== ======== ======== ===== ================================ |
TCE0000I |                                                                     |
TCE0000I | PHARL2 --------------THE CONTROL EDITOR-------------------- Edit - |
TCE0000I | SVSCPLEX SYSNM:S0W1     USRID:PHARL2  TIME:10:14:50 DATE:18/10/10  |
TCE0000I | PHARL2.USERLIB(PATSMP3)-----------------------------VOL: VPWRKG- |
TCE0000I |                                                                     |
TCE0000I | DEFAULT USER DEFINED #1                                           |
TCE0000I |                 UPDATING THE MEMBER                               |
TCE0000I | DEFAULT USER DEFINED #2                                           |
TCE0000I |                                                                     |
TCE0000I | DEFAULT USER DEFINED #3                                           |
TCE0000I |                                                                     |
TCE0000I | -------------------------CHANGED RECORDS-------------------------- |
TCE0000I |                                                                     |
TCE0000I | I - ISNHLQ= *AUTO*                                                |
TCE0000I |                                                                     |
TCE0000I | ----------------------UPDATED MEMBER RECORDS---------------------- |
TCE0000I | ISNHLQ= *AUTO*                                                    |
TCE0000I | ISNHLQ= *AUTO*                                                    |
TCE0000I | ISNHLQ= *AUTO*                                                    |
TCE0000I |                                                                     |
TCE0000I +---------------------------------------------------------------------+
|
/*****************************************************************************/
/*                                                                           */
/*                   IFO.IFOP.$TCEFGRN.$REPTEMP($OPCDTL)                     */
/*                                                                           */
/*****************************************************************************/
 NewEra Software, Inc.
    Our Job? Help you avoid problems and improve z/OS integrity.
****************************** Bottom of Data ******************************
```

13.3.2 History

When the History function is used in conjunction with a Staged Event, a listing of all matching members is displayed in the Journal Selection Worksheet with the most recent showing at the top of the list. This specific Worksheet, as shown below, supports, in addition to Member View, both Member Compare and Member Restore.

```
                TCE 17.0  Journal Entry Selection          Row 1 to 3 of 3

Line Commands: S - Select (View the contents of the Entry)
               C - Compare (Two required)    R - Restore


LINE --- Category ---    --- Entry ---    --------------- Stored ----------------
CMD                     TYPE  NAME       USERID      DATE       TIME     RESULT
..     PATS.USERLIB       SE  PATSMP2     PHARL2   10/10/2018 10:16:24  SUCCESS
..     PATS.USERLIB       SE  PATSMP2     PHARL3   09/24/2018 11:41:23  SUCCESS
..     PATS.USERLIB       DC  PATSMP2              09/12/2018 13:40:20  SUCCESS
****************************** Bottom of data ********************************



COMMAND ===>                                                SCROLL ===> PAGE
```

13.3.2.1 Compare

To compare two members, place ‘C’ before any two targets and press enter. These actions will pass the members to Super Compare displaying the resulting Compare Report.

13.3.2.2 Restore

To restore a member, place ‘R’ before a target and press enter. These actions will display the following message:

```
          Confirm RESTORE of Member PATSMP2 to
          DSN: PHARL2.USERLIB
          VOL: VPWRKG

          Press ENTER to continue or END to exit
```

Examine the message content carefully before continuing with the Restore Operation. To abort the process, EXIT using PFK3.

13.4 The Restore Worksheet

The purpose of this Worksheet is to assist in the selection of member events that will be used in building a Transaction Restore List. Only the following Event Classes are eligible for restore operations.

Event		Event Description
CEDIT		Edit/Update of Controlled Member
RSTOR		Restore of Controlled Member from Journal
RNNEW		New Name of a Renamed Controlled Member
RNOLD		Old Name of a Renamed Controlled Member
ADDED		Newly Added Controlled Member
DELET		Deleted Controlled Member
REPLC		Replaced Controlled Member
DTCNG		Auto Detected Controlled Member Change
DTDEL		Auto Detected Controlled Member Deletion
DTADD		Auto Detected Controlled Member Addition
DTCNG		Auto Detected Controlled Member Change

The displayed Worksheet content is shown with the most recent event for each Controlled Member ordered by Date and Time. The most recent are shown at the top. In addition, the total number of events for each member is shown. To display all events for a given member use the Browse Line Command.

To delimit the Worksheet by DATE_TIME cursor under a value and press enter. When the Worksheet displays the needed members, cursor the Restore option shown in the upper right of the panel and press enter. These actions will display the Restore Option Selection menu.

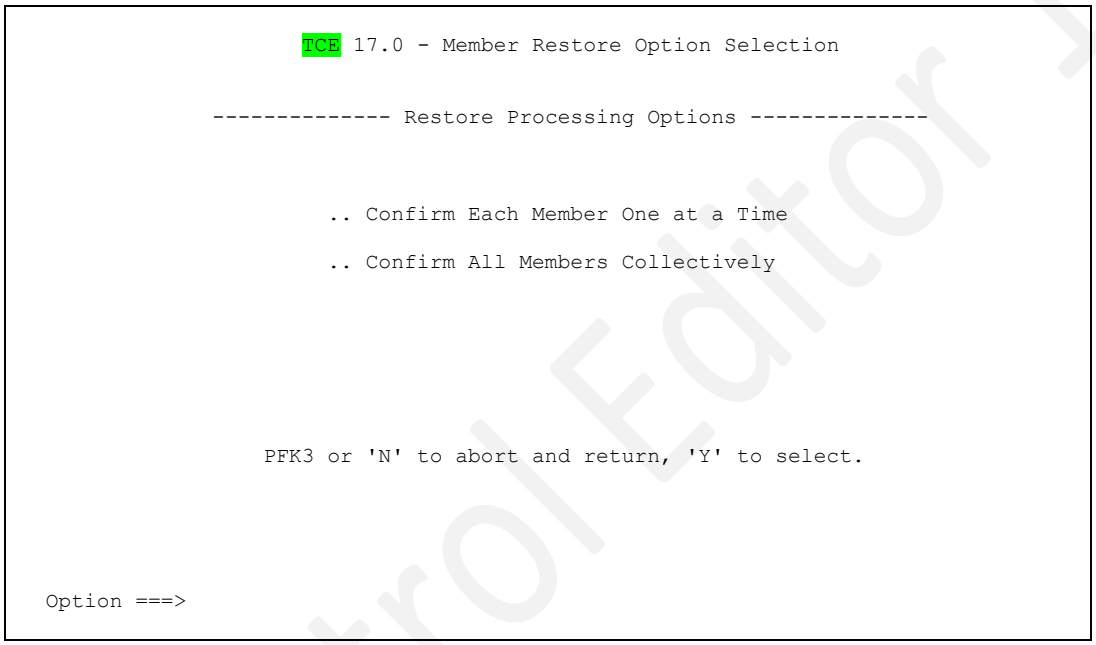
When using the Worksheet press PFK1 for panel specific help.

```
                TCE 17.0 - Controlled Restore Worksheet    Row 1 to 14 of 2,320
 -ICE 17.0-                                                  --Member Events--
--------------------- IFO.IFOP - Member/Event Selection --------- Restore -----
Row Selection: Browse Member Records
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Line --History--- -----Last Event----- ----------Positional Identity---------
_ ____ ___ ________ _____ _____________ ____________________________________ ______
S Numb Rec -Member- Class yy/mm/dd_hh:mm ------------Dataset------------ Volume
_ 0001   2   IFOPAT DTCNG 17/05/19_13:00 PHARL2.JCLLIB                     VPWRKH
_ 0002   1  IFOBATS DTCNG 17/05/19_13:00 PHARL2.JCLLIB                     VPWRKH
_ 0003  14 COMMNDGB DTCNG 17/05/19_08:00 VENDOR.PARMLIB                    VPMVSD
_ 0004   4   AZAP19 DTCNG 17/05/18_15:00 PHARL2.JCLLIB                     VPWRKH
_ 0005  90 COMMNDPH DTCNG 17/05/18_14:00 VENDOR.PARMLIB                    VPMVSD
_ 0006   4    AZAP2 DTCNG 17/05/17_17:00 PHARL2.JCLLIB                     VPWRKH
_ 0007  92 COMMNDP1 DTCNG 17/05/17_16:00 VENDOR.PARMLIB                    VPMVSD
_ 0008   1  CICSJOB DTCNG 17/05/17_13:00 PHARL2.JCLLIB                     VPWRKH
_ 0009  17  UNTERSE DTCNG 17/05/16_12:00 PHARL2.JCLLIB                     VPWRKH
_ 0010   1     IFOR DTCNG 17/05/13_13:00 PHARL2.JCLLIB                     VPWRKH
_ 0011   1   IFOBAT DTCNG 17/05/13_13:00 PHARL2.JCLLIB                     VPWRKH
_ 0012 129 COMMNDIF DTCNG 17/05/09_11:44 VENDOR.PARMLIB                    VPMVSD
_ 0013   1   PAULRR RNNEW 17/05/05_17:42 PROBI1.IFOP.JCLLIB                VPWRKH
_ 0014   1 P00OPCZ3 RNOLD 17/05/05_17:42 PROBI1.IFOP.JCLLIB                VPWRKH

Option ===>                                                 Scroll ===> PAGE
```

The Worksheet itself can be manipulated in a number of different ways that assist in analysis and understanding of the events. For example, to delimit the displayed information in a specific column place the cursor under an item of interest in the column and press enter. The Worksheet will redisplay showing only matching values. Note that the selected value appears above the column heading. Selecting a value in any other column will delimit the list to records matching both selections. Cursor under a selected value, press enter to reset the column or RESET on the Command Line; press enter to reset the Worksheet. To sort on a column cursor under the Column Heading and press enter.

13.4.1 Restore Option Selection Menu

This menu is designed to add integrity to Member Restore processing. First, by requiring the selection of one of the restore methods described below. And second, by invoking a set of controlled program steps that ensure that the needed checking of a Target Member's Control Dataset/Volume location and its ENQUEUE status are appropriately performed prior to beginning the actual restore of a Member to a Targeted Control Dataset on its Current Volume.



13.4.2 Confirm Each Member One at a Time

Select this option when you would like to confirm or deny the restore of each individual member queued to the Restore List. If this option is selected the Dataset Class Descriptor is immediately displayed for the first and each subsequent member. Complete the Descriptor to continue the Restore process. Enter CANCEL on the command line to abort the restore process for that single member. Either action will immediately display the next member in the List or return you to an updated Restore Worksheet when the list is exhausted.

13.4.3 Confirm All Members Collectively

Select this option when you would like to restore all the members in the Restore List at one time WITHOUT confirming each individually. Once the process is begun, it will run continuously until all members named in List have been restored. Dataset/Volume ENQUEUE status is individually checked and in certain cases may

delay the restore process of an individual member. Check the system state if the delay appears to be unreasonable. When the complete Restore List has been processed, the updated Restore Worksheet is displayed.

13.4.3.1 Member Display

Users with at least READ authority, as determined by the External Security Manager (ESM), can view member content by placing an "S" on the command line adjacent to the target and pressing enter.

```
Menu  Utilities  Compilers  Help
_____________________________________________________________________________
BROWSE    JOURNAL_BROWSE----MEMBER=TESTJCL          Line 00000000 Col 001 080
******************************** Top of Data ********************************
01C|--------------------------THE CONTROL EDITOR-------------------- Edit -
02C|SYSPLX:SVSCPLEX SYSNM:S0W1     USRID:PROBI1  TIME:15:14:31 DATE:09/20/15
03C|-DSN: PROBI1.IFO80DR.PARMLIB(SOMEJCL)----------------------VOL: PROBI1-
04T|#1-CHANGE AUTHORITY
05D|                   Change Control Authorization Number 00909
06T|#2-CHANGE DESCRIPTION
07D|                   Updating JCL prior to submission
08D|
09T|#3-CHANGE IMPACT
10D|                   New Datasets will be allocated, members copied
11D|
12D|
//TESTJCL JOB
//*-------------------------------------------------------------------*/
//*  COPY MIT IEBGENER ADDING AN UPDATE ENTRY PRR                      */
//*-------------------------------------------------------------------*/
//STEP1   EXEC  PGM=IEBGENER
//SYSIN    DD DUMMY
//SYSUT1   DD DSN=PHARL2.USERLIB(PLGLOAD),DISP=SHR
Command ===>                                              Scroll ===> 0020
```

13.4.3.2 Single Member Restore

Users with at least UPDATE authority, as determined by the External Security Manager (ESM) can restore member content by placing an "R" on the command line adjacent to the target and pressing enter. These actions will display a confirmation panel. Press enter to complete the restore or PFK3 to abort and return to the Journal Content Listing panel.

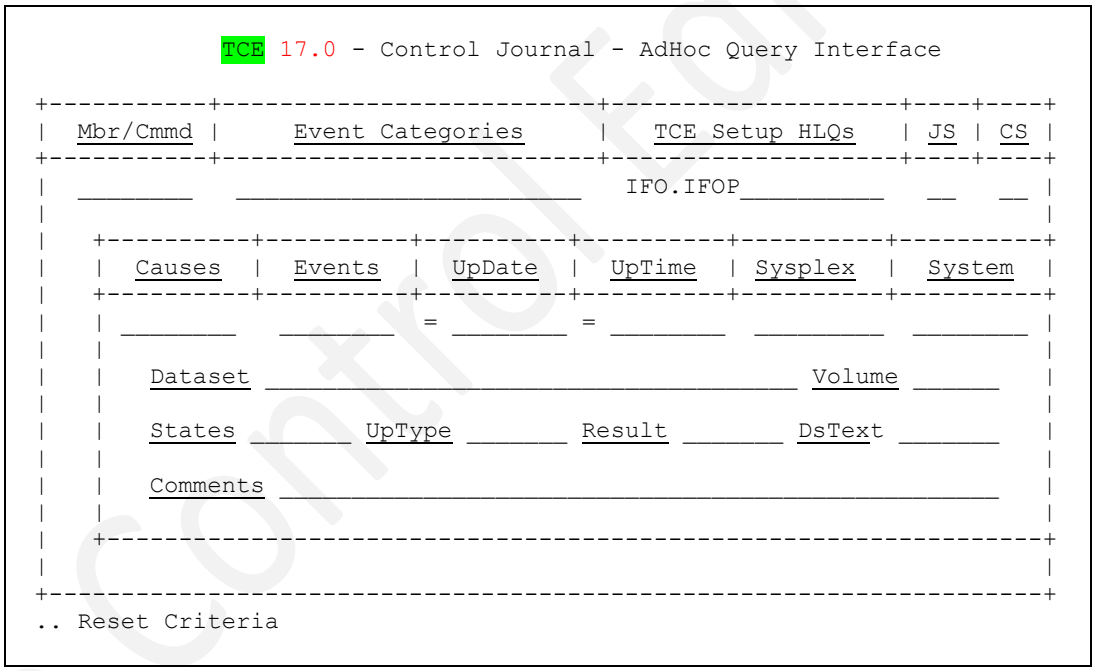
```
Confirm RESTORE of Member COMMNDIF to
DSN: VENDOR.PARMLIB
VOL: VPMVSD

Press ENTER to continue or END to exit
```

13.5 Ad Hoc Control Journal Query

As Controlled Events, defined to the Control Editor, occur they are recorded in the Control Journal at both a summary and detail level. The summary record called a "META Record" is created, stored and linked to a copy of the event detail. The exact event detail depends on the event type and/or class. For example, for Continuous Backup Events detail content would include the updated member, changes from its prior content, if any, and the associated Descriptor Window. For Resource Usage Events, for example an Operator Command, detail content would include the command string and the associated system response as would ordinarily be seen in the system log.

The Ad Hoc Query Interface serves two primary functions. First, it is used to specify the criteria to be matched in a scan of the META Records for matching values. Second, it is used to access a list of all available criteria for any META Record Field.

When using the Ad Hoc Query Interface use PFK1 to display interface specific help.



13.5.1 Searching Controlled Event Records

To begin a search, enter a value in the entry point associated with one or more META Fields(s) shown and press enter. If matching values are found, the Period Selection Worksheet is displayed. If no records match the criteria, a system message stating "No Match" is displayed.

When using the Worksheet press PFK1 to display panel specific help. For a more detailed description of this panel and how to use it, see also the section of this User Guide titled *Period Selection Worksheet*.

```
                  TCE 17.0 - Named Period Selection Worksheet
----ICE 17.0----                                          --MbrDsn/OprCmmd--
-------------- IFO.IFOP - Controlled MbrDsn/OprCmd Event Worksheet ------------
Row Selection: Browse History
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Line -------Detected Events-------- -------Controlled MbrDsn or OprCmd-------

_ _____ ________ _____ _____ ________ ________ ___Dataset or OperCmmd String___
S Lines yy/mm/dd hh:mm Types --User-- Mbr/Cmmd ___Dataset or OperCmmd String___
_ 00015 19/01/19 12:41 ENOTE PHARL2   MLOPRCMD Event_(OPRCMD)_Notification
_ 00016 19/01/19 12:41 SETCM PHARL2   SETPROG  SET_(SETPROG)_OperCmmd
_ 00017 19/01/19 12:40 ENOTE PHARL2   MLOPRCMD Event_(OPRCMD)_Notification
_ 00018 19/01/19 12:40 MISCM PHARL2   VARY     MIS_(VARY)_OperCmmd
_ 00019 19/01/19 12:38 ENOTE PHARL2   MLOPRCMD Event_(OPRCMD)_Notification
_ 00020 19/01/19 12:38 MISCM PHARL2   VARY     MIS_(VARY)_OperCmmd
_ 00021 19/01/19 12:37 ENOTE PHARL2   MLOPRCMD Event_(OPRCMD)_Notification
_ 00022 19/01/19 12:37 ESMPC PHARL2   SETROPTS ESM_(SETROPTS)_ProdCmmd
_ 00023 19/01/19 11:46 DTCNG PHARL2   BPXIPCSP PROBI1.SYS1.PARMLIB
_ 00024 19/01/18 09:00 DTCNG PHARL2   COMMNDP1 VENDOR.PARMLIB
_ 00025 19/01/16 18:00 DTCNG PHARL2   COMMNDIF VENDOR.PARMLIB
_ 00026 19/01/16 17:00 DTCNG PHARL2   COMMNDIF VENDOR.PARMLIB
_ 00027 19/01/16 15:08 DTCNG PHARL2   COMMNDIF VENDOR.PARMLIB
_ 00028 19/01/16 14:56 DTCNG PHARL2   COMMNDIF VENDOR.PARMLIB

Option ===>                                              Scroll ===> PAGE
```

Note that in this case a single User TSO Id, PHARL2, was used as the sole criteria for the search. This being the case, only those records matching this single value are then returned and displayed in the results worksheet: scan the "—User—" column. You could now cursor under the value "SETCM" in the "Type" Column and press enter to limit the display to only those records that result from the issuance of a SETROPTS Command by the User PHARL2. If you were to cursor under "SETCM" and press enter again the Worksheet would return to it original state.

Note the values shown in the "Mbr/Cmmd" column: a mix of Operator Commands and Control Member Names. Confusing? Not really. Now, look to the right and you will find an explanation of the command or the name of the Controlled Dataset that was used to house the member when the reported event occurred.

13.5.2 Event Detail

To drill down into the detail of any event place “B” on the Row Command Line that precedes a targeted event and press enter. This action will extract and display the event detail. The content of the displayed detail for Member Events is broken down into four sections: Event Identity, Event Descriptor, Member Changes and Updated Member.

```
/*****************************************************************************/
/*                                                                           */
/*          The Control Editor - Control Members - Event Log Detail          */
/*                Date:2019/09/04 - Time:10:51:00 - User:PROBI1               */
/*                                                                           */
/*****************************************************************************/
|
TCE0000I +---------------------------------------------------------------------+
TCE0000I |             CONTROLLED MEMBER DETAIL - EVENT TYPE:CEDIT             |
TCE0000I +---------------------------------------------------------------------+
TCE0000I |                                                                     |
TCE0000I | --------------------------EVENT IDENTITY-------------------------- |
TCE0000I |                                                                     |
TCE0000I | PHARL2 --------------THE CONTROL EDITOR-------------------- Edit - |
TCE0000I | SVSCPLEX SYSNM:S0W1     USRID:PROBI1  TIME:18:49:22 DATE:01/24/15   |
TCE0000I | PROBI1.IFOP.JCLLIB(ZAP)-------------------------------VOL: VPWRKH- |
TCE0000I |                                                                     |
TCE0000I | ------------------------EVENT DESCRIPTORS------------------------- |
TCE0000I |                                                                     |
TCE0000I | PROJECT DESCRIPTION                                                 |
TCE0000I |   UPDATE TO V1R                                                     |
TCE0000I | CHANGE AUTHORITY                                                    |
TCE0000I |   AUTHORIZATION #123                                                |
TCE0000I | CHANGE DESCRIPTION                                                  |
TCE0000I |   UPDATING ZAP                                                      |
TCE0000I |                                                                     |
TCE0000I | --------------------------MEMBER CHANGES-------------------------- |
TCE0000I |                                                                     |
TCE0000I |                  SUPERC LINE COMPARE CHANGE DETAILS
TCE0000I |     ----+----1----+----2----+----3----+----4----+----5----+----6----+
TCE0000I | D -    VER  00FC 9640,B034
TCE0000I | D -    REP  00FC 4700,0000
TCE0000I |     ----+----1----+----2----+----3----+----4----+----5----+----6----+
TCE0000I |               I = LINE INSERTED D = LINE DELETED                    |
TCE0000I |                                                                     |
TCE0000I | --------------------------UPDATED MEMBER-------------------------- |
TCE0000I |                                                                     |
TCE0000I | //ZAP  JOB MSGCLASS=H
TCE0000I | //S0 EXEC PGM=AMASPZAP
TCE0000I | //SYSPRINT DD SYSOUT=*
TCE0000I | //SYSLIB   DD DSN=IFO.IFOXX.LOAD,DISP=SHR <==== LOAD LIB
TCE0000I |    NAME NSEINIT NSECTSK
TCE0000I |    VER  00FC 9640,B034
TCE0000I |    REP  00FC 4700,0000
TCE0000I |    NAME NSEINIT NSECTSK
TCE0000I |                                                                     |
TCE0000I +---------------------------------------------------------------------+
|
/*****************************************************************************/
/*                                                                           */
/*                     IFO.IFOP.$TCEFGRN.RPTS($MBRDTL)                       */
/*                                                                           */
/*****************************************************************************/
   NewEra Software, Inc.
     Our Job? Help you avoid problems and improve z/OS integrity.
****************************** Bottom of Data ******************************
```

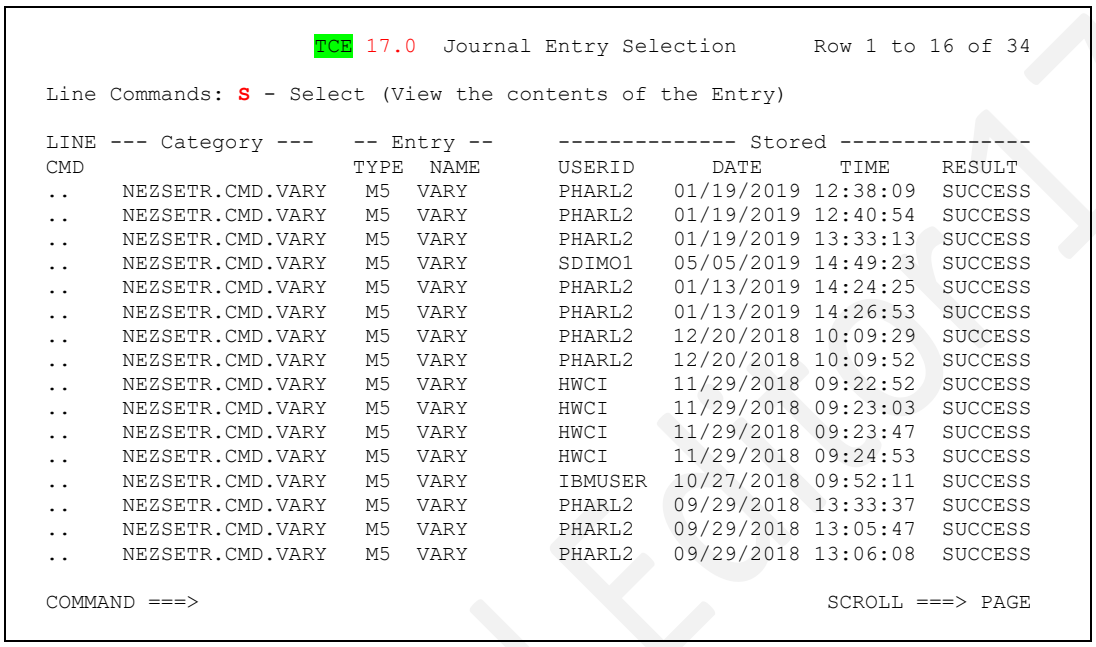
The content of the displayed detail for Operator Command Events is broken down into three sections: Event Identity, Command String, and Related Log Entries.

```
/*******************************************************************************/
/*                                                                             */
/*          The Control Editor - Operator Command - Event Log Detail           */
/*                Date:2019/09/04 - Time:11:02:16 - User:PROBI1                */
/*                                                                             */
/*******************************************************************************/
|
TCE0000I +-----------------------------------------------------------------------+
TCE0000I |                       OPERATOR COMMAND DETAIL                         |
TCE0000I +-----------------------------------------------------------------------+
TCE0000I |                                                                       |
TCE0000I | --------------------------EVENT IDENTITY--------------------------- |
TCE0000I |                                                                       |
TCE0000I | TSU05725-------------THE CONTROL EDITOR------------------- Opcmd - |
TCE0000I | PLX:SVSCPLEX CONNM:PHARL2   CONID:01000005 TM:13.05.46 DT:01/19/15 |
TCE0000I | VARY    ------------------------------------------------------------ |
TCE0000I |                                                                       |
TCE0000I | --------------------------COMMAND STRING--------------------------- |
TCE0000I |                                                                       |
TCE0000I | V 5PAT,OFFLINE                                                        |
TCE0000I |                                                                       |
TCE0000I | ----------------------RELATED LOG ENTRIES----------------------- |
TCE0000I |                                                                       |
TCE0000I | IEE313I 5PAT      UNIT REF. INVALID                                   |
TCE0000I | IEA631I  OPERATOR PHARL2   NOW INACTIVE, SYSTEM=S0W1    , LU=TCP0000
TCE0000I | $HASP100 IFOPDET  ON STCINRDR                                         |
TCE0000I | $HASP373 IFOPDET  STARTED                                             |
TCE0000I | $HASP395 IFOPDET  ENDED                                               |
TCE0000I | IEA989I SLIP TRAP ID=X33E MATCHED.  JOBNAME=*UNAVAIL, ASID=0035.      |
TCE0000I | IFO0167I PDS ENTRIES = 58  .                                          |
TCE0000I | IFO0167I PDS ENTRIES = 218  .                                         |
TCE0000I | IFO0167I PDS ENTRIES = 81  .                                          |
TCE0000I | IFO0167I PDS ENTRIES = 6  .                                           |
TCE0000I | IFO0167I PDS ENTRIES = 12  .                                          |
TCE0000I | IFO0167I PDS ENTRIES = 59  .                                          |
TCE0000I | IFO0167I PDS ENTRIES = 180  .                                         |
TCE0000I | IFO0167I PDS ENTRIES = 3  .                                           |
TCE0000I |                                                                       |
TCE0000I +-----------------------------------------------------------------------+
|
/*******************************************************************************/
/*                                                                             */
/*                    IFO.IFOP.$TCEFGRN.RPTS($OPCDTL)                          */
/*                                                                             */
/*******************************************************************************/
   NewEra Software, Inc.
    Our Job? Help you avoid problems and improve z/OS integrity.
******************************** Bottom of Data ********************************
```

13.5.3 Event History

Each entry in the “Mbr/Cmmd” column has its own unique history of occurrence, its own unique timeline. To display all of the records for a specific Controlled Member or Operator Command, place “H” on the Row Command Line that precedes a targeted event and press enter.

The Journal Entry Selection Worksheet displays a list of only those Controlled Members or Operator Commands that match the target selection. They are sorted so that the most recent occurrences appear at the top of the list. This Timeline of Events allows you to scan for a specific event at or about a specific time.



```
                    TCE 17.0  Journal Entry Selection      Row 1 to 16 of 34

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

LINE --- Category ---   -- Entry --     ------------- Stored ---------------
CMD                     TYPE  NAME      USERID      DATE      TIME     RESULT
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   01/19/2019 12:38:09  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   01/19/2019 12:40:54  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   01/19/2019 13:33:13  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       SDIMO1   05/05/2019 14:49:23  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   01/13/2019 14:24:25  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   01/13/2019 14:26:53  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   12/20/2018 10:09:29  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   12/20/2018 10:09:52  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       HWCI     11/29/2018 09:22:52  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       HWCI     11/29/2018 09:23:03  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       HWCI     11/29/2018 09:23:47  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       HWCI     11/29/2018 09:24:53  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       IBMUSER  10/27/2018 09:52:11  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   09/29/2018 13:33:37  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   09/29/2018 13:05:47  SUCCESS
..    NEZSETR.CMD.VARY   M5  VARY       PHARL2   09/29/2018 13:06:08  SUCCESS

COMMAND ===>                                          SCROLL ===> PAGE
```

To view the detail content associated with an entry, place “S” on the Row Command Line that precedes a targeted event and press enter. This action will display the Event Detail reports described earlier in this section.

13.5.4 Displaying Search Criteria List

To display a listing of the values associated with a specific Criteria by name, in an interactive worksheet, place the cursor under one of the Criteria Names shown in the panel as White Underlined Text and press enter. The displayed worksheet will show only those values to which the search process would respond positively, returning a matching set of META values.

Note the worksheet will dynamically change in appearance to accommodate the specific reporting needs of different search criteria. All will display the available criteria, rank ordered, so that those which the highest frequency of appearance in the Control Journals appear at the top of the list. The worksheet column titled “Event Count” is an actual real-time count of the number of times a specific event has been identified, recognized, and recorded. The “Description” column contains a brief description of the criteria.

When using any of the Search Criteria Selection Worksheet, press PFK1 to display panel specific help.

13.5.4.1 When ‘Cause’ Criteria Selected

```
                TCE 17.0 - Search Criteria Selection Worksheet
----ICE 17.0----                                              ---Criteria---
------------- The Control Editor - AdHoc Query - Criteria Listing -------------
Row Selection: Show Event Detail Worksheet
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- -Row- Event ------------------------Possible Criteria------------------------
S -Num- Count --Causes-- --------------------Descriptions---------------------
_ 00001 02054   GBAGS001 Sysplex Name, TSO UserId or System Command
_ 00002 01472   DETECTOR Captured of Supplemental Detector Event
_ 00003 01292     PHARL2 Sysplex Name, TSO UserId or System Command
_ 00004 00990     CCHIN1 Sysplex Name, TSO UserId or System Command
_ 00005 00926   INTERNAL Captured of Non-User Internal System Event
_ 00006 00908   $AUTOBOT Automated Capture of TCE System Posting/Procedure
_ 00007 00863    CONSOLE Captured of Console Initiated Event
_ 00008 00690    $ESMCMD Captured of Named External Security Manager Command
_ 00009 00553   BACKGRPT Sysplex Name, TSO UserId or System Command
_ 00010 00485     CCHIN2 Sysplex Name, TSO UserId or System Command
_ 00011 00483   SVSCPLEX Sysplex Name, TSO UserId or System Command
_ 00012 00340    $HZSIDS Captured Named Health Checker Messages
_ 00013 00340    $MSGIDS Captured Site Defined System Messages
_ 00014 00300     PHARL3 Sysplex Name, TSO UserId or System Command
_ 00015 00288     GBAGS1 Sysplex Name, TSO UserId or System Command

Option ===>                                                Scroll ===> PAGE
```

Note that if you cursor under a White Underlined Value and press enter, you will immediately be returned to the Ad Hoc Query Interface and that the selected value will be automatically entered in the criteria specification field associated, with your original criteria selection.

You may continue to populate the Ad Hoc Query Criteria specification fields in this manner prior to and/or after executing a search. The values specified will remain in the panel until they are overtyped, the panel is reset, or you leave and return.

Other Sample Search Criteria Selection Worksheet formats appear below.

13.5.4.2 When 'Event Class' Criteria Selected

```
                TCE 17.0 - Search Criteria Selection Worksheet
----ICE 17.0----                                                ---Criteria---
------------ The Control Editor - AdHoc Query - Criteria Listing -------------
Row Selection: Show Event Detail Worksheet
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- -Row- Event ------------------------Possible Criteria-------------------------
S -Num- Count Class --------------------Description---------------------------
_ 00001 03996 ENOTE The Logging of Event Notifications
_ 00002 01760 DTADD Non-Standard Addition of Member to Controlled Dataset
_ 00003 01749 MISCM Miscellaneous Operator Commands issued
_ 00004 01585 DTDEL Non-Standard Delete of Member in Controlled Dataset
_ 00005 00995 DTCNG Non-Standard Change to Member in Controlled Dataset
_ 00006 00817 CEACT Automated Activation of TCE Configuraton Element
_ 00007 00672 DEBUG Email Debug Messages
_ 00008 00582 MSHZS Captured Named Health Checker Messages
_ 00009 00486 AUDIT Postings of the Image FOCUS Inspection AuditLog
_ 00010 00253 DTDB2 Postings by DB2 Parameter Baseline Change Detector
_ 00011 00222 CEDIT Update to a Member in Controlled Dataset
_ 00012 00164 RDETC TCE Background Report - Detected Member Changes
_ 00013 00160 DTDSM Postings by IBM/RACF Baseline Change Detector
_ 00014 00139 ROPCM TCE Background Report - Operator Commands
_ 00015 00126 DTCEW Postings by Control Editor Baseline Change Detector

Option ===>                                                Scroll ===> PAGE
```

13.5.4.3 When Controlled Dataset Criteria Selected

```
                TCE 17.0 - Search Criteria Selection Worksheet
----ICE 17.0----                                                ---Criteria---
------------ The Control Editor - AdHoc Query - Criteria Listing -------------
Row Selection: Show Event Detail Worksheet
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- -Row- Event ------------------------Possible Criteria-----------------------
S -Num- Count ------Controlled Datasets------ -----------Description-----------
_ 00001 03126 CCHIN1.PARMLIB                 Inactive Controlled Dataset
_ 00002 00648 VENDOR.PARMLIB                 Active Controlled Dataset
_ 00003 00161 IFO.IFOP.USERLIB               Inactive Controlled Dataset
_ 00004 00133 PHARL2.JCLLIB                  Active Controlled Dataset
_ 00005 00113 PROBI1.SYS1.PARMLIB            Active Controlled Dataset
_ 00006 00093 SVTSC.PARMLIB                  Active Controlled Dataset
_ 00007 00085 SYS1.PARMLIB                   Active Controlled Dataset
_ 00008 00070 IFO.DEBUG.EMAIL                Inactive Controlled Dataset
_ 00009 00050 LVL0.PARMLIB                   Active Controlled Dataset
_ 00010 00045 PROBI1.IFOP.JCLLIB             Active Controlled Dataset
_ 00011 00045 CGOLL1.PARMLIB2                Active Controlled Dataset
_ 00012 00037 PHARL2.USERLIB                 Active Controlled Dataset
_ 00013 00033 IFO.IFOP.PARMLIB               Inactive Controlled Dataset
_ 00014 00029 PHARL2.CLIST                   Inactive Controlled Dataset
_ 00015 00010 PROBI1.USER.PARMLIB            Active Controlled Dataset

Option ===>                                                Scroll ===> PAGE
```

13.5.4.4 Showing Event Detail

To show the detail content associated with an entry place “S” on the Row Command Line that precedes a targeted event and press enter. This action will display the Event Listing from which you can drill-down into Detail reports described earlier in this section.

13.6 Ad Hoc Control Journal Query – Interval Reporting

The Ad Hoc Query can be defined, run at intervals, and distributed via Email using the functions of the Interval Settings Panel. Reports defined in this manner filter available Journal Records based on the content of the defined element – Category, Dataset, Member/Command, UserId/EventId, and Event Class - 'Included List' reporting ONLY new events that match the defined criteria, at the Intervals defined.

A 'Start Date' may be defined at any time or will be automatically determined, during the first Background Interval. The Interval Process functions as a TCE Detector and will carry the name assigned to the Detector PROC, during ICE Setup and Initialization. A SYSPRNT Log of Detector processing steps will note, during the initial execution, that reporting will begin with the next execution. This allows the Detector to establish the initial 'Start Date'. From that initial 'Start Date', events that are detected that fall between it and the current execution date, will be reported. With each subsequent execution, the 'Start Date' will be updated to the current execution date.

The 'Start Date' yyyy/mm/dd may be reset from the panel at the time when the Interval Settings are updated. Doing so will reestablish the processing start point for interval reporting which will then begin with the first event of the day. The new 'Start Date' for interval reporting, at the end of processing a new/updated 'Start Date', will be the last event of the processing day. From this point forward, the panel 'Start Date' and the interval processing start date will operate independently of each other, unless the 'Star Date' shown in the panel is changed and the Interval Settings updated. In such a case, the process begins anew, with the panel date overriding the interval processing date. This allows for the interval processing day to move backwards and forward along the journal event time-line.

13.6.1 Interval Settings

At bottom-right of the panel is the Interval Settings Option. Select this option with an 'S' and press enter to display the Interval Report Settings. Use the options to create an Ad Hoc 'Include List', Report Interval, and Format and Interval Timing. Once settings are saved/updated, Reports can be executed from the Command Line. Reports created from the Command Line may be Printed or Copied using standard TSO/ISPF services.

13.6.2 Adhoc Interval Settings

The panel shown below, displayed with Interval Settings, is used to set or provide access to all Background AdHoc Interval Settings.

```
          TCE 17.0 - Journal Query - AdHoc Interval Settings

+-----Record Filters-----+-----------+----------+----------+----------+
|    Event Categories    |  Dataset  |  MbrCmd  |  EvntId  |  Events  |
|---------- /. ----------|---- /. ---|--- /. ---|--- /. ---|--- /. ---|
|                                                                      |
| /. Day - Set Time 02 : 02 and Interval 24 (Specify One Interval)__   |
|                   hh : mm       Values 1|2|3|4|6|8|12|24           |
|                                                                      |
| .. 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         |
| /. Subject BACKGROUND                                                |
| /. Address PAT@NEWERA.COM                                            |
| .. Address                                                           |
| .. Address                                                           |
| /. FromAdd SUPPORT@NEWERA.COM                                        |
|                                                                      |
+-----Select---yyyy/mm/dd--------Report Options-----------Updates-----+
 .. Start Date 2018/01/01 /. Meta .. Idnt .. Body .. Interval Settings
                                                     Logic /. && .. Or
```

It is important to note that the various settings shown on this panel are updated ONLY when Interval Settings, as shown under the --Updates—heading, is selected with an ‘S’ and enter is pressed. In addition, note that the access provided to the Record Filters – Category, Dataset, MbrCmd, EvntId, and Events – show the Filter ‘Include-List’. These lists are maintained in real-time, meaning that any changes to them results in an automatic update and activation of their related list settings. Any such update will become apparent during the next Report Interval.

13.6.2.1 Record Filters - Overview

Record Filters provide a method for delimiting the scope of the records and their related content to be evaluated and possibly included with the working records, that may be used in an Interval Report. Using them results in the creation of an ‘Include-List’. This means that only those filters, selected with ‘/’, and their specifically selected filter elements, will be used to create, depending on ‘Start Date’, the working record set that will be evaluated for possible inclusion in the next Interval Report.

It is important to note that if a Filter is not ‘/’ or if the related ‘Inclusion-List’ is Blank/Null, then the filter will be ignored. This means, that ALL the records that might have been evaluated will not be evaluated BUT will be included for ‘Down-Stream’ evaluation, by any other filter.

13.6.2.2 Record Filters – Include List Definition

To display the 'Include List' of a specific Record Filter, cursor under the Filter Name – Category, Dataset, MbrCmd, EvntId, Events – shown in white with an underscore, and press enter. The list shown below results from the selection of Dataset.

```
          TCE 17.0 - Adhoc Inclusion List Selection    Row 1 to 11 of 11
  --NSIMJRL 0207--                                              ---Criteria---
------------------ The Control Editor - Datasets Include List -----------------
Row Selection: Show_Event_Detail Adds_To_List Deletes_From_List Resets_The_List
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- -Row- Event ------------------------Possible Criteria-------------------------
S -Num- Inc Count --------Controlled Datasets-------- -------Description-------
_ 00001 Yes 00358 IFO.TEST.PARMLIB                    Named Controlled Dataset
_ 00002 --- 00221 IFO.TEST.$TCERSXX.@ADCD22B.REPWORKS Named Controlled Dataset
_ 00003 --- 00196 IFO.TEST.$ICELDXX.@ADCD22B.MBRSPOST Named Controlled Dataset
_ 00004 --- 00142 IFO.TEST.$ICELDXX.@ADCD22B.LOADPOST Named Controlled Dataset
_ 00005 --- 00066 IFO.TEST.$BGM.@ADCD22B.WKSDAY      Named Controlled Dataset
_ 00006 --- 00022 IFO.COMMAND.CAPTURE                 Named Controlled Dataset
_ 00007 Yes 00022 PROBI1.TESTDSN                      Named Controlled Dataset
_ 00008 Yes 00011 USER.PARMLIB                        Named Controlled Dataset
_ 00009 Yes 00009 PHARL2.PARMLIB                      Named Controlled Dataset
_ 00010 --- 00008 IFO.TEST.$PCM.@ADCD22B.WKSDAY       Named Controlled Dataset
_ 00011 --- 00002 IFO.TEST.$TCEPOST.$OPERCMD          Named Controlled Dataset
****************************** Bottom of data ******************************
```

The values displayed in the worksheet rows are a summary of elements, in this case, Dataset(s), that have been captured and recorded in the TCE Journals. The first in the list is the element, again, in this case, a Dataset, that appears most frequently. On first entry into a list, it will be Blank/Null. Upon return, if a List was created, those elements included will show 'Yes' in the 'Inc' column.

Elements may be added or deleted from the list at any time. If an element is added, 'Add' will appear in the 'Inc' column; when deleted, 'Del' will appear. On return, 'Add' will become 'Yes' and 'Del' will become '---'.

It is important to note, use PFK3 to return to the Settings Panel and that any update to an 'Included List' becomes effective and activated, immediately, upon exit from the list.

The detail of recorded events can be shown by placing 'S' on the Row Selection Point, immediately preceeding a target. Use PFK1 for Help.

13.6.3 Report Logic Options

Once defined and selected, Record Filters may be applied in one of two ways – Using AND Logic or Using OR Logic. To set the Logic path, look to the lower right of the panel and find these entry points:

```
Logic /. && .. Or
```

In this example, AND Logic (&&) has been selected. Logic selection may be changed at any time for running/testing reports, interactively, using 'PRNT' or 'COPY' from the panel command line. BUT, it will only affect background reporting when the settings are updated.

13.6.3.1 Report Logic Option – AND (&&)

When AND Logic (&&) is selected, it will be displayed in reports as:

```
FILTER LOGIC IS: AND (C & D & M & U & E)
```

This is intended to indicate that, for a Journal record to prevail throughout the filtering process, to become a member of the final working record set, it MUST contain a matching element (from the 'Include List', if any) IN EACH of the active (Checked '/') Record Filters. Only records that meet this criteria, subject to 'Start Date' restrictions, will be reported.

13.6.3.2 Report Logic Option – OR (Or)

When OR Logic (Or) is selected, it will be displayed in reports as:

```
FILTER LOGIC IS: OR (C | D | M | U | E)
```

This is intended to indicate that, for a Journal record to prevail throughout the filtering process, to become a member of the final working record set, it MUST contain a matching element (from the 'Include List' if any) IN ANY ONE of the active (Checked '/') Record Filters. Only records that meet this criteria, subject to 'Start Date' restrictions, will be reported.

13.6.4 Report Execution Options

AdHoc Reports may be run/executed in the background at defined intervals or directly run/tested from the panel command line.

13.6.4.1 Setting the Background – Report Interval

To run/execute an AdHoc Report in the background, the report interval, interval start time, and interval frequency, must be set.

The interval may be only one of – Day, Wks, Mth – and is selected by placing a check '/' on the preceding insertion point.

The interval start-time is specified in hours (HH=00-24) and minutes (MM=00-59).

The interval frequency will depend on the selected interval:

- For Day (Daily), it will excute each hour - 1,2,3,4,6,8,12, or 24 hours.
- For Wks (Weekly), it will execute each day - SUN,MON,TUE,WED,THR,FRI,SAT
- For Mth (Monthly), it will execute by day – 1,2,3, through 31, or EOM

It is important to note that if no interval is specified, or if specified but not SELECTED with a check ('/'), the background process will be turned 'OFF' automatically.

13.6.4.2 Setting the Background – Report Distribution

Background AdHoc Reports are distributed via Email to those (1, 2, or 3) recipients noted and SELECTED with check ('/') in the panel. Subject and From Email address are required.

It is important to note that if no email recipients are specified, or if specified but not SELECTED with check ('/'), the background process will be turned 'OFF' automatically.

13.6.4.3 Running/Testing from the Panel

AdHoc Reports may be Run/Tested directly from the panel command line using either the 'PRNT' or 'COPY' line commands. Using either will display the report in ISPF Browse and then, upon exit, will display either the ISPF Print Utility or the ISPF Move/COPY Utility Interface.

13.6.5 Report Format Options

s

```
/*******************************************************************************/
/*                                                                             */
/*        The Control Editor - Background Report - Adhoc Query Reports         */
/*                                                                             */
/*       Class:ADHOC - Daily Cycle - Begins at:10:30 - Interval:1 Hour         */
/*                                                                             */
/*        Date:Y19/M12/D07 - Time:10:30:37 - TCE ADHOC Query Reporting         */
/*                                                                             */
/*******************************************************************************/
|
TCE0000I THE ADHOC QUERY PROCESS:
|
TCE0000I    NSIMRPD ADHOC QUERY CONFIGURATION FILE:
TCE0000I      IFO.TEST.$TCERPDX.BKGSETS($$ADHOC)
TCE0000I         LAST UPDATED BY = PROBI1
TCE0000I             UPDATE DATE = 18Y/02M/08D
TCE0000I             UPDATE TIME = 10:27:50
|
TCE0000I  ADHOC QUERY REPORTING LAST INDEX:20191201
TCE0000I  ADHOC QUERY REPORTING NEXT INDEX:20190206172248
TCE0000I  ELAPSED DAY(S) SINCE LAST REPORT:   67
|
TCE0000I  TOTAL ACCESSIBLE JOURNAL RECORDS:11882
TCE0000I  RECORDS DISCOVER AFTER LAST INDX:11882
|
TCE0000I  APPLYING ADHOC FILTERS =
TCE0000I       FILTER LOGIC IS: AND (C & D & M & U & E)
|
TCE0000I   CATEGORY INCLUSION LIST FOLLOWS:   42
TCE0000I       31 EVENT CATEGORY = PAT.TEST1
TCE0000I       11 EVENT CATEGORY = SYSTEM.PARMLIB
TCE0000I   DATASETS INCLUSION LIST FOLLOWS:   42
TCE0000I        0 EVENT DATASETS = IFO.TEST.PARMLIB
TCE0000I       22 EVENT DATASETS = PROBI1.TESTDSN
TCE0000I       11 EVENT DATASETS = USER.PARMLIB
TCE0000I        9 EVENT DATASETS = PHARL2.PARMLIB
TCE0000I   MBRSCMDS INCLUSION LIST FOLLOWS:    2
TCE0000I        0 EVENT MBRSCMMD = NSEDETSA
TCE0000I        0 EVENT MBRSCMMD = NSEPWR00
TCE0000I        2 EVENT MBRSCMMD = DIAG01
TCE0000I   USRCAUSE INCLUSION LIST FOLLOWS:    2
TCE0000I        0 EVENT USRCAUSE = PROBI1
TCE0000I        2 EVENT USRCAUSE = PHARL2
TCE0000I   EVNCLASS INCLUSION LIST FOLLOWS:    0
TCE0000I        0  EVENT CLASSES = DTCNG
|
TCE0000I      NET RECORDS AFTER FILTERING:    2
|
TCE0000I JOURNAL RECORDS RETURNED:
|
TCE0000I +-------------------------------------------------------------------+
TCE0000I | Event yy/mm/dd hh:mm -UserId- -Member- -----Controlled Dataset----- |
TCE0000I | ----- -------- ----- -------- -------- --------------------------- |
TCE0000I |                                                                   |
TCE1000I | CEDIT 19/12/07 16:07 PHARL2   DIAG01   PHARL2.PARMLIB             |
TCE1000I | DEDIT 19/12/07 16:07 PHARL2   DIAG01   PHARL2.PARMLIB             |
TCE0000I |                                                                   |
TCE0000I +-------------------------------------------------------------------+
|
TCE0000I ADHOC REPORT SUMMARY:
|
TCE0000I +-------------------------------------------------------------------+
```

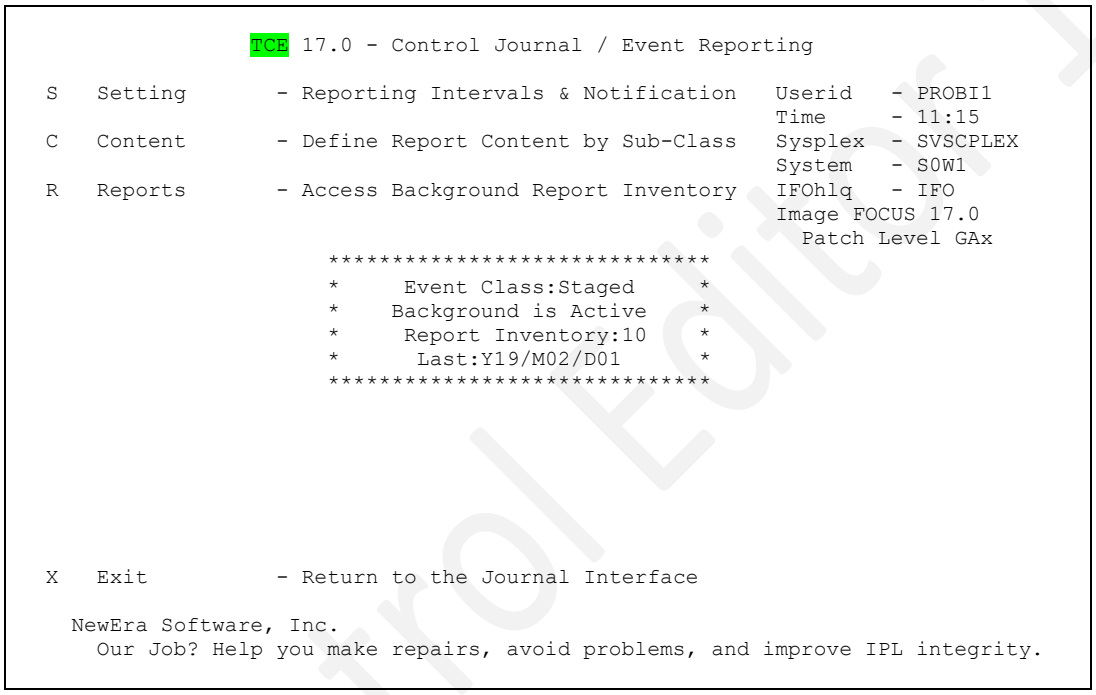
```
TCE0000I |              Recent Trends in Control Journal Activity              |
TCE0000I +----------------------+-----------------------------------------------+
TCE0000I |     SMFID:ADCD       |   INTERVAL DATES, TIMES, FILTERS, RESULTS     |
TCE0000I +----------------------+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I |        DATES         |02/08|02/07|02/07|02/07|02/07|02/07|02/07|02/07|
TCE0000I |        TIMES         |10:30|13:31|13:26|13:13|12:26|12:21|12:16|12:13|
TCE0000I +-AdHoc_Query_Filters-+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I |       Category       | 042 | 042 | 042 | 042 | 042 | 042 | 042 | 042 |
TCE0000I |       Dataset        | 042 | 042 | 042 | 042 | 042 | 042 | 042 | 042 |
TCE0000I |       Members        | 002 | 002 | 002 | 002 | 002 | 002 | 002 | 002 |
TCE0000I |       EventId        | 002 | 002 | 002 | 002 | 002 | 002 | 002 | 002 |
TCE0000I |       Classes        | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 |
TCE0000I +----------------------+-----+-----+-----+-----+-----+-----+-----+-----+
TCE0000I |     NET RECORDS      | 002 | 002 | 002 | 002 | 002 | 002 | 002 | 002 |
TCE0000I +----------------------+-----+-----+-----+-----+-----+-----+-----+-----+
|
TCE0000I ADHOC QUERY RECORD BODY:
|
|
| +-SRC: PHARL2--------DEDIT:User Session Edit/Change-----------REC: 00001---+
| | SYSPLX:--N/A--   SYSNM:--N/A--   USRID:PHARL2   TIME:16:07 DATE:19/12/07 |
| +-DSN: PHARL2.PARMLIB(DIAG01)---------------------------------VOL: B2WRKB--+
|
|                 SUPERC LINE COMPARE CHANGE DETAILS
|    ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
|
|I -  VSM TRACK CSA(ON) SQA(ON)
|
|    ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
VSM TRACK CSA(ON) SQA(ON)                                              00260007
VSM TRACK CSA(ON) SQA(ON)                                              00261009
VSM ALLOWUSERKEYCSA(YES)                                               00270007
VSM BESTFITCSA(YES)                                                    00280007
AUTOIPL SADMP(NONE) MVS(LAST)                                          00290007
REUSASID(YES)                                                          00300007
CBLOC VIRTUAL31(IHALCCA)                                               00310007
CBLOC VIRTUAL31(IHAPCCA)                                               00320007
CBLOC VIRTUAL31(IHAASVT)                                               00330007
|
| +-SRC: PHARL2--------CEDIT:User Session Edit/Change-----------REC: 00002---+
| | SYSPLX:--N/A--   SYSNM:--N/A--   USRID:PHARL2   TIME:16:07 DATE:19/12/07 |
| +-DSN: PHARL2.PARMLIB(DIAG01)---------------------------------VOL: B2WRKB--+
|
|-SRC: PHARL2  -------------THE CONTROL EDITOR--------------------- Edit -
|SYSPLX:ADCDPL   SYSNM:ADCD22B  USRID:PHARL2      TM:16:07:13 DT:12/07/17
|-DSN: PHARL2.PARMLIB(DIAG01)---------------------------------VOL: B2WRKB-
|                      TCE 17.0 SAMPLE CUSTOM PANEL DESCRIPTOR
|
|             Your Company Name Here:   Descriptor Data Entry DDE@PNL7
| Option  ===>
|
|   Change request #   : 1111               Implementor: PH
|
|   Project #          : 7773
|
|   Implementation date: 2019/12/07
|                       (yyyy/mm/dd)
|   TCEDSN                                        TCEFUNC1  TCEFUNC2
|   TCEMEM     TCEVOL   TCEUSR    TCESYS     TCENEW     TCEALT
|   TCECAT
|  Change details:
|
|  PH
|
|                 SUPERC LINE COMPARE CHANGE DETAILS
|    ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
|
|D -  VSM TRACK CSA(ON) SQA(ON)
|
|I -  REUSASID(YES)
```

```
|
|    ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
VSM TRACK CSA(ON) SQA(ON)                                                00260007
VSM ALLOWUSERKEYCSA(YES)                                                 00270007
VSM BESTFITCSA(YES)                                                      00280007
AUTOIPL SADMP(NONE) MVS(LAST)                                            00290007
REUSASID(YES)                                                            00300007
REUSASID(YES)                                                            00300008
CBLOC VIRTUAL31(IHALCCA)                                                 00310007
CBLOC VIRTUAL31(IHAPCCA)                                                 00320007
CBLOC VIRTUAL31(IHAASVT)                                                 00330007
|
/*******************************************************************************/
/*                                                                             */
/*                 RptDsn:IFO.TEST.$TCEADHO.@ADCD22B.D8039103                  */
/*                                                                             */
/*******************************************************************************/
     NewEra Software, Inc.
         Our Job? Help you avoid problems and improve z/OS integrity.
```

14 Appendix E - Background Reporting Options

The Settings Primary Menu provides access to the functions you will need to define reporting intervals, report content and to access background reports. In addition, in the lower center of the panel you will find indicators that denote the name of the Event Class you are working with, whether Background Reporting is active, the number of reports in the Report Inventory and the date when the latest report was added to the inventory.

When in the panel, use PFK1 for panel specific help and assistance.



Background Settings are used to turn background reporting processing ON|OFF, define the Cycle and/or Interval when the process is to run, an optional list of email recipients, the report format used in Email Notification SUMMARY|DETAILED and overrides that allow you to alter default process characteristics.

Each Event Class is composed of one or more sub-classes. By default all sub-classes are included in background reporting. However, you can use this function to define by sub-class those Event Sub-Classes you would like to include or exclude for background reports.

A Detail Background Report is always created, regardless of the format used for notification, and stored as a FB/80 Sequential Dataset. This option is used to display available reports in the Background Report Library for the selected Event Class.

14.1 Settings - Intervals and Notification

Background Settings are used to turn background reporting processing ON|OFF, define the Cycle and/or Interval when the process is to run, an optional list of email recipients, the report format use in Email Notification SUMMARY|DETAILED and overrides that allow you to alter default process characteristics.

To activate the Background Reporting Process for a specific Event Class you will need to follow the instructions described in this section. Panel entry validation is provided to assist you in fulfilling the minimum panel requirements successfully.

When in the panel, use PFK1 for panel specific help and assistance.

```
              TCE 17.0 - Control Journal / Background Processing
                   Last Report Date: 2019/01/16 Time: 12:10

   /. STAGEREPORT Control Member Changes__ /. Detail .. Report .. Update

      /. Day - Set Time 06 : 34 and Interval 2_ __(Specify One Interval)
      TTL - __0      hh : mm       Values 1|2|3|4|6|8|12

      .. Wks - Set Time __ : __ and Interval _____________________________
      TTL - __0      hh : mm       Values SUN,MON,TUE,WED,THR,FRI,SAT

      .. Mth - Set Time __ : __ and Interval _____________________________
      TTL - __0      hh : mm       Values 1,2,3,10,15,20,25,EOM

   /. EMAILREPORT Subject: TCE_Staged_Changes_____________________________

      /. Address prr@newera.com_____________________________________________
      .. Address ____________________________________________________________
      .. Address ____________________________________________________________
      /. SendAdd prr@newera.com_____________________ (Single Address)

   .. Report HLQ IFO.IFOP_____ .. JRLPost NO .. NewOnly NO .. Retain _10
```

14.1.1 Interactive Reporting

At the top of the Panel, under the first line header, you will notice Date and Time values. These are the date and time of the last interactive report activation. This value is updated each time an Event Class report is run in the foreground.

To run a report in the foreground, place a slash "/" on the command entry point that appears before panel word "*Report"* and press enter. This action will immediately update the request report and display it. Use PFK3 to return to the panel

14.1.2 Report Activation and Settings Update

To activate the Background Process you will need to place a slash "/" on the command entry point that appears before the *Background Application Name*, in the panel shown

above, STAGEREPORT. This is a critical entry in that it not only turns the setting ON it can also be used to turn it OFF without the need to alter other values in the setup panel.

14.1.3 Cycles/Interval Selection

Three different Reporting Cycles are supported – Daily, Weekly and Monthly. Within each of the Cycles you may define one or more reporting intervals. Background Reports are only created and distributed at the defined interval boundary points. To activate a specific Cycle place a slash "/" on the command entry point that precedes either – Day, Wks or Mth. Select only one Cycle.

Note that changing and updating the selected Cycle will force a change in reporting such that a new cycle with new intervals will be invoked at the next scheduled time of day. Things simply start over again!

When you make a change for any reason place a "/" on the command entry point that precedes *Update* and press enter. This action will check the panel for completeness and if it passes, force an immediate update to the ICEWORK Parmlib Members NSEDET00 and NSEENS00.

14.1.3.1 Day

For reference, the value specified in INTERVAL() is the number of hours until the next cycle trigger not the number of cycles in a 24 hour period.

For example, if INTERVAL(2) is specified, that would indicate that that event should run every two hours (12 times in a 24 hour period) not that that event will happen two times a day. So, the explanation in the doc should change from:

By example, if you specify the value "2" then there will be only TWO intervals within the Daily Cycle. The first will begin at the time of day you specify, the second twelve (12) hours later.

When the Daily Cycle is selected ("/" before Day) you must further qualify your selection by entering the time of day when you would like the Daily Cycle to begin and the number of intervals you would like with the Cycle. You may specify only:

1 | 2 | 3 | 4 | 6 | 8 | 12

as valid intervals. By example, if an INTERVAL value of "2" is specified, the event will be triggered twelve (12) times in a 24 hour period. The first will begin at the specified time of day and the subsequent events will be triggered every two hours thereafter.

You may change the Interval specified at any time without impacting reports created within the Daily cycle.

The "TTL" value that appears below the date and time entry points is the total number of events that have occurred within the *Current Day*. To view those events, place the cursor under a non-zero value and press enter.

14.1.3.2 Wks

When the Weekly Cycle is selected ("/" before Wks) you must further qualify your selection by entering the time of day when you would like the Daily Cycle to begin and then specify the day or days of the week within Cycle. You may specify only:

SUN,MON,TUE,WED,THR,FRI,SAT

as valid interval days. By example, if you specify the value "MON,THR" then there will be only TWO intervals within the Weekly Cycle. The first will begin at the time of day you specify on Monday and again at the time of day you specify on Thursday.

You may change the Interval specified at any time without impacting reports created within the Weekly cycle.

The "TTL" value that appears below the date and time entry points is the total number of events that have occurred within the "*Current Week*". To view those events, place the cursor under a non-zero value and press enter.

14.1.3.3 Mth

When the Monthly Cycle is selected ("/" before Mth) you must further qualify your selection by entering the time of day when you would like the Monthly Cycle to begin and the reporting days you would like with the Cycle. You may specify only:

BOM,1,2,3,10,15,20,25,EOM

as valid intervals. By example, if you specify the value "BOM,15" then there will be only TWO intervals within the Monthly Cycle. The first will begin on the first day of the month (BOM = Beginning of the Month while EOM = End of the Month) at the time of day you specify the second will begin on the 15th of the month.

You may change the Interval specified at any time without impacting reports created within the Monthly cycle.

The "TTL" value that appears below the date and time entry points is the total number of events that have occurred within the "*Current Month*". To view those events, place the cursor under a non-zero value and press enter.

14.1.4 Email Notification

Discoveries made and Reports created during Background processing may be optionally sent via Email to one or more named recipient(s). Each recipient list is unique to its supported Event Class.

To activate Email Notification place "/" on the command entry point that precedes `EMAILREPORT` and provided the required values for – Subject, Recipient and Sender. This is a critical entry in that it not only turns the Email ON it can also be used to turn it OFF without the need to alter other values in the setup panel.

When you make a change for any reason place a "/" on the command entry point that precedes *Update* and press enter. This action will check the panel for completeness and if it passes, force an immediate update to the ICEWORK Parmlib Members NSEDET00 and NSEENS00.

14.1.4.1 Subject

Each Email requires a Subject. Enter the desired Subject in the field provided. When Email is activated and the subject is entered as required the panel entry points appear as follows:

```
/. EMAILREPORT Subject: TCE_Staged_Changes
```

14.1.4.2 Recipient(s)

Each Email requires at least one valid email recipient. Three *Address* fields are provided for email addresses. If you would like to enter more than one email address in an *Address* field separate the addresses using a comma. To activate the addresses in an *Address* field you must enter "/" on the command entry point that precedes it. This is a critical entry in that it not only activates the addresses in the field it can also be used to deactivate them without the need to alter other values in the setup panel. When this is setup correctly and selected the panel entry point appears as follows:

```
/. Address prr@newera.com,pat@newera.com_
```

14.1.4.3 Sender

Each Email requires a Sender. Enter the Sender's email address in the field provided. Be certain to enter "/" on the command entry point that precedes *Sendadd.* This is a critical entry in that without the "/" panel validation will fail during the next setting update.

```
/. SendAdd ghb@newera.com_____________________
```

14.1.5 Execution Defaults and Options

14.1.5.1 Detail

By default, the report created and distributed via email during background processing is the Change Summary Report. You can optionally send a more detailed report by placing "/" on the command entry point that precedes *Detail*. When this option is selected the panel entry point appears as follows:

```
/. Detail
```

14.1.5.2 Report HLQ

Background Reports are always created, regardless of the format used for notification, and stored as FB/80 Sequential Datasets. By default, the higher-level qualifiers of these Report Datasets match those defined during ICE initialization. As needed an alternate higher-level qualifiers may be specified. To do this place "/" on the command entry point that precedes *Report HLQ* and overtype the values that currently appear in the field that immediately follows. When this option is selected the panel entry point appears with your Report HLQ as follows:

```
/. Report HLQ your.report.hlq_
```

14.1.5.3 JRLPost

By default, Background Reports are not Posted to and/or Stored in the TCE Control Journals. To optionally Post/Store background reports to the TCE Control Journals place "/" on the command entry point that precedes *JRLPost.* When this option is selected and the panel updated, the panel entry point appears as follows:

```
/. JRLPost OK
```

14.1.5.4 NewOnly

By default Email Notification is sent with each execution, even when no new events have occurred within an interval. Optionally you can specify that Email Notification only be sent when new events are discovered by placing "/" on the command entry point that precedes *NewOnly.* When this option is selected and the panel is updated, the panel entry point appears as follows:

```
/. NewOnly OK
```

14.1.5.5 Retain

Background Reports are always created, regardless of the format used for notification, and stored as FB/80 Sequential Datasets. By default, only the last 10 Change Reports are stored in the report inventory. Optionally you can increase or decrease this value by placing "/" on the command entry point that precedes *Retain* and overtype the values that currently appear in the field that immediately follows.

When this option is selected the panel entry point appears with your report retain value as follows where "??" is only being used to indicate your specified value.

```
/. Retain _??
```

14.2 Content - Report Content Specification

Each Event Class is composed of one or more sub-classes. By default, all sub-classes are included in background reporting. However, you can use the functions available in the panel shown below to define, by sub-class, those Event Sub-Classes you would like to include or exclude from background reports. See also that section of this User Guide titled *Controlled Event Types and Classification* for a full explaination and description of each Event Class and its associated Sub-Classes.

When in the panel, use PFK1 for panel specific help and assistance.

```
                TCE 17.0 - TCE Report Content Selection List
----ICE 17.0----                                              --BKGContent--
---------- The Control Editor - Background Report Content - STAGE -----------
Row Selection:Include a Sub-Class Exclude a Sub-Class Show the Sub-Class Detail
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Row Event -------------------------Event Sub-Classes-------------------------
S Num Count Types Rpt ----------------------Descriptions----------------------
_ 001   222 CEDIT Yes Update to a Member in Controlled Dataset
_ 002    49 RSTOR Yes Restore of a Member in Controlled Dataset
_ 003     6 RNNEW --- New name of a Renamed Controlled Member
_ 004     6 RNOLD --- Old name of a Renamed Controlled Member
_ 005    10 ADDED Yes Newely Added Member to a Controlled Dataset
_ 006    28 DELET Yes Member Deleted from a Controlled Dataset
_ 007     2 REPLC --- Member in Controlled Dataset that was Replaced
****************************** Bottom of data ********************************




Option ===>                                              Scroll ===> PAGE
```

As used in conjunction with the panel shown above terms *"Sub-Class"* and *"Type"* are used to mean the same thing and should be considered interchangeable.

Note that the Sub-Classes that appear in the worksheet may not represent all of the Sub-Classes within a specific Event Class. Only Sub-Classes for which one or more records exist are shown. This is by design so that as new or previously unreported Sub-Classes enter the system, they will automatically be included in reports within the interval where they first appear.

14.2.1 Include a Sub-Class

If a Sub-Class has been previously excluded and you would now like to include it in the next interval reporting cycle place "I" on the Row Command Entry Point and press enter. This action will immediately redisplay the panel. Note that in the *"RPT"* column the value associated with the selected Sub-Class has changed from"---" to "Yes" to indicate that the Sub-Class will be added to the report.

14.2.2 Exclude a Sub-Class

If a Sub-Class is currently included in the report and you would now like to exclude it in the next interval reporting cycle place "E" on the Row Command Entry Point and press enter. This action will immediately redisplay the panel. Note that in the *"RPT"* column the value associated with the selected Sub-Class has changed from "Yes" to "---" to indicate that the Sub-Class will be removed from the report.

14.2.3 Show the Sub-Class Detail

The values shown in the *"Event/Count"* column represent the up-to-date total number of events within a given Sub-Class recorded in the TCE Control Journals. To display a worksheet listing these records place "S" on the Row Command Entry Point and press enter. See also in this User Guide the Section titled *The Period Display Worksheet*.

14.3 Reports - Background Report Selection

A Detailed Background Report is always created, regardless of the format used for notification, and stored as a FB/80 Sequential Dataset. By default, the higher-level qualifiers of these Report Datasets match those defined during ICE initialization.

As needed an alternate higher-level qualifier may be specified via the available Settings Option. By default, the total number of *Historical* Background Reports stored is set to ten (10). As needed an alternate value may be specified via the available Settings Option.

The Background Reporting Selection Worksheet provides access to available reports by Event Class with the most recent report shown in the top row of the Worksheet.

When in the panel, use PFK1 for panel specific help and assistance.

```
                    TCE 17.0 - Background Reporting - Staged
----ICE 17.0----                                          Background Report
-------------- Background Report Selection - 10 Reports Available -------------
Row Selection: Display the Report Store a Report Print a Report Remove a Report
--- To Sort select a Sub-Head, To Query enter above Sub-Head, PFK1 for Help ---
- Row ------Background-Reports------ -Reporting-Interval- Eml -System- -Dsnllq-
S Num Class Report_Date hh:mm:ss Rec Cycle Begin SubCycle Num --Name-- Djjjjhhm
_ 001 STAGE Y19/M02/D01 08:34:14  19 Daily 06:34        2   1     S0W1 D2032083
_ 002 STAGE Y19/M01/D31 06:34:14  19 Daily 06:34        2   1     S0W1 D2031063
_ 003 STAGE Y19/M01/D30 04:34:13  19 Daily 06:34        2   1     S0W1 D2030043
_ 004 STAGE Y19/M01/D29 02:34:13  19 Daily 06:34        2   1     S0W1 D2029023
_ 005 STAGE Y19/M01/D28 00:34:13  19 Daily 06:34        2   1     S0W1 D2028003
_ 006 STAGE Y19/M01/D26 22:34:13  19 Daily 06:34        2   1     S0W1 D2026223
_ 007 STAGE Y19/M01/D25 20:34:13  19 Daily 06:34        2   1     S0W1 D2025203
_ 008 STAGE Y19/M01/D24 18:34:13  12 Daily 06:34        2   1     S0W1 D2024183
_ 009 STAGE Y19/M01/D24 16:34:14  12 Daily 06:34        2   1     S0W1 D2024163
_ 010 STAGE Y19/M01/D23 18:34:13  13 Daily 06:34        2   1     S0W1 D2023183
****************************** Bottom of data ********************************




Option                                                    Scroll ===> PAGE
```

14.3.1 Display a Report

To display a report place “D” on the target’s Row Command Entry Point and press enter.

14.3.2 Store a Report

To store the report using the system’s Move/Copy Utility place “S” on the target’s Row Command Entry Point and press enter. When the Move/Copy interface panel appears, press enter again to automatically transfer the report dataset name to the panel.

14.3.3 Print a Report

To print the report using the system’s Hardcopy Utility place “P” on the target’s Row Command Entry Point and press enter. When the Hardcopy interface panel appears note that the report dataset name was automatically transferred to the panel.

14.3.4 Remove a Report

To remove a report place “R” on the target’s Row Command Entry Point and press enter. This will immediately delete the dataset and redisplay the panel. Note there is no recovery or restore function for datasets deleted in this manner.

15 Appendix F - Controlled Event Classification

A Controlled Event is any zEnterprise Event that can be defined to The Control Editor. Generally, events that can be defined to The Control Editor fall into one or more of the following four major classifications:

15.1 Continuous Backups

The Control Editor maintains a Continuous Backup of all defined Controlled Datasets. It does this by taking an immediate backup when the system is first initialized and then by maintaining a running update of these backups as events occur that affect a dataset's content. Update Events include Staged and Detected Changes the details of which are described in this section.

15.2 Resource Usage

The Control Editor maintains a constant watch on its sub-system interface for resource usage, where a resource is defined as a System Job and/or JCL, System Operator Command, an External Security Manager Operator Command, or any System activity resulting in the issuance of a System Message.

15.3 System Reporting

The Control Editor can detect and maintain a permanent record of Image FOCUS Audit Logs, Supplemental Change Reports, TCE Event Class Reports and Event Notifications

15.4 Policy Exceptions

An Exceptional event is one that falls outside of the Best Practices implied by the TCE Administrator, for example someone or some process making changes to a Controlled Member via techniques outside of the scope of the ICE control environment. Other Exceptional Events include attempted changes within the control environment that are denied by the External Security Manager and/or self-denial imposed by a user who discovers that they are required to provide an event descriptor in order to complete an attempted update.

15.5 Event Classes and Sub-Classes

The Event Classes presented below correspond to those shown in the Journal Interface Worksheet which presents a menu by Event Classes and a summary of all event activity for each class across time.

```
             TCE 17.0 - Control Journal - Event Selection Row  1 to 15 of 15
----ICE 17.0----                                              ---CtlJournals---
--------------- Environment is IFO.IFOP - 13 Controlled Classes ---------------
Row Selections: Setup Background Reporting Interval Display New Event Worksheet
.. Controlled Datasets .. Event Timeline .. Journal Queries .. Restore Datasets
- Row ---------Event Target---------- Bkg Your ---------Period to Date---------
S Num -Class-- ---------Name--------- Set News Days Week Mths Qtrs Years Totals
_ 001 BackUps  Named_Dataset_Backups  ---    0    0    0    0    0     0   1428
_ 002 Staged   Control_Mbr_Changes    Yes    1    1    0  127  127   127    324
_ 003 Detects  Auto_Detected_Changes  Yes    0    0    0   19   19    19   4340
_ 004 Submit   JOB/JCL_Submit_Events  Yes    2    2    0    6    6     6     16
_ 005 Dynamic  Named_Opr/Cmd_Events   Yes    0    0    0  120  120   120   1808
_ 006 Change   Supplemental_Changes   Yes    0    0    0   50   50    50   1472
_ 007 Message  Named_System_Messages  Yes  118   12   58  626  626   626    626
_ 008 Policy   z/OS_Security_Changes  Yes    5    1    3   19   19    19     51
_ 009 TCEPrms  TCE_Parameter_Changes  Yes    0    0    0  811  811   811    834
_ 010 Except   Exceptional_Events     Yes    0    0    0    1    1     1     15
_ 011 Inspect  Inspection_Postings    Yes   15    3    9  120  120   120    483
_ 012 Notice   Notification_Details   ---  350   52  191 2767 2767  2767   4759
_ 013 Reports  TCE_Background_Reports Yes    0    0    0  553  553   553    553
_ 014 -------- ---------------------- --- ---- ---- ---- ---- ---- ----- ------
_ 015 Totals   All_Journaled_Events    11  491   71  264 5219 5219  5219  15281

Option ===>                                                 Scroll ===> PAGE
```

15.5.1 BackUps – Named Dataset Backups

Full backups of defined Controlled Datasets are automatically taken and/or renewed at each system startup (the start of IFOM) and stored in a discrete Control Journal called a “BACKUP” Journal. When the actual members represented by these stored copies are subsequently updated the events that affect them are captured and stored in “EVENT” Journals. Collectively, this process results in an updated configuration baseline from which configuration changes are identified and reported and, when needed for disaster recovery, from which members are restored.

As defined in the NSECTLxx Configuration Member, Control Datasets are automatically backed up when the IFOM Started Task is initiated. These backups represent detailed Control Member Baselines containing a full, record by record, copy of each member's content. Backup Events are reported using the following Event Class Descriptor.

Sub-Class		Sub-Class Description
BCKUP		Original Controlled Member Baseline Backup

15.5.2 Staged – Control Member Changes

A Staged Change Event is any event that sets the baseline of a Controlled Dataset (BACKUP), changes the state of a Controlled Dataset (Edit, Rename, Delete, Add, Restore) or utilizes the content of a member in a Controlled Dataset (SUBMIT).

A Controlled Dataset, sometimes called a Boundary Dataset, is a dataset that is defined to the Integrity Controls Environment (ICE) during the installation of, or later dynamically to, The Control Editor. These Controlled Datasets contain Controlled Members, sometimes called Configuration Control Points.

During the normal course of system operations and maintenance, changes are made to Controlled Datasets and their Controlled Members. This type of change is termed a "Staged Change" to indicate that the Member will, in all likelihood, only be used during the next scheduled IPL or perhaps called by a Program, Process or Operator Command at some time in the future. These Staged Events are detected as they occur and reported using one of the following Event Class Descriptors.

Sub-Class		Sub-Class Description
CEDIT		Edit/Update of Controlled Member
RSTOR		Restore of Controlled Member from Journal
RNNEW		New Name of a Renamed Controlled Member
RNOLD		Old Name of a Renamed Controlled Member
ADDED		Newly Added Controlled Member
DELET		Deleted Controlled Member
REPLC		Replaced Controlled Member

Events that affect Controlled Datasets or indicate the use of Controlled Commands are captured and recorded in real time in Control Journals. The grouping of possible event types is described below.

15.5.2.1 Edit and/or Copy

The editing, or the copying into, of configuration members (Edit/Copy Events) that take place either under TCE or TSO/ISPF will optionally spawn the display of an event Descriptor Window. To proceed with the Edit/Copy Event, the

requirements of the descriptor must be successfully completed, and the user must have appropriate UPDATE authority as determined by the External Security Manager (ESM). If the event is completed successfully, a copy of the member and the descriptor are stored. In addition, as with all Events, a summary record, called a META Record, containing "ISPF Like" statistics (META Data) is created and linked to the member and the descriptor. This META Data and associated links are accessed when TCE builds reports, displays or answers ad hoc queries.

In addition to the single event EDIT session described above, TCE also supports recursive EDIT sessions where secondary edits are initiated from the Command Line during the initial EDIT session using one of the following Line Command syntax:

- EDIT
- EDIT member_name
- EDIT(member_name)

When such a recursive EDIT event is detected, the EDIT descriptor will be displayed appropriately for each individual EDIT event. To save any changes made during the EDIT session, the requirements of the descriptor and ESM authorization must be satisfied.

15.5.2.2 Edit and/or Replace

The editing of a source member or the replacing of a target member with source member content (Edit/Replace Events) that takes place either under TCE or TSO/ISPF will optionally spawn the display of an event Descriptor Window. To proceed with a Replace Event, the requirements of the descriptor must be successfully completed and appropriate UPDATE authority, as determined by the External Security Manager (ESM) must be present. If the event is completed successfully, the replaced member and the descriptor are stored. To terminate the Replace Event use CANCEL, in which case the target member is NOT updated.

To determine if an Edit of the source member has taken place, the source member's original content is compared to its content when exit is attempted. If the content of the source member has changed, the event Descriptor Window is displayed. To proceed with an Edit Event, the requirements of the descriptor must be successfully completed and appropriate UPDATE authority, as determined by the External Security Manager (ESM) must be present. To terminate the Edit Event use CANCEL, in which case the source member is NOT updated.

15.5.2.3 Rename

The renaming of configuration members (Rename Events) that takes place either under TCE or TSO/ISPF will optionally spawn the display of an event Descriptor Window. To proceed with the Rename Event, the requirements of the descriptor must be successfully completed, and the user must have UPDATE authority as

determined by the External Security Manager (ESM). If the event is completed successfully, a copy of the member and the descriptor are stored.

15.5.2.4 Move (Delete and Update a Member)

A configuration member from the current edit session's Controlled Dataset can be moved into the current edit session's edit data window. To proceed with the Move Event, the requirements of the edit descriptor must be successfully completed, and the user must have the appropriate UPDATE authority as determined by the External Security Manager (ESM). If the event is completed successfully, two entries may be recorded in the Control Journal. The first entry will denote the deletion of the moved member from the Controlled Dataset. The second will indicate the edit update of the target member in the Controlled Dataset. Note that cancelling the edit update session after the member move but prior to saving the active edit session data, will render the Control Journal with the only copy of the moved member's data.

15.5.2.5 Delete

The deleting of configuration members (Delete Events) that takes place either using TSO under TCE or ISPF will optionally spawn the display of an event Descriptor Window. To proceed with the Delete Event, the requirements of the descriptor must be successfully completed, and the user must have UPDATE authority as determined by the External Security Manager (ESM).

If ISPF member delete confirmation is active, the standard ISPF member delete confirmation panel will be displayed. Exiting from this panel will prevent the member from being deleted and will cause a Delete AE journal entry to be created.

If ISPF member delete confirmation is not active or the member delete is confirmed from the confirmation panel, the Descriptor data entry panel will be displayed. If the event documentation is completed as defined by the Descriptor window, and the user has UPDATE authority as determined by the External Security Manager (ESM), the member is deleted, and the Control Journal is updated with a copy of the member and the details of the transaction.

A second opportunity to stop the member delete is available in the Descriptor data panel. If the panel has a command line area, entering CANCEL (or CAN) on the command line will have the same effect as exiting the member delete from the confirmation prompt panel.

If the event is completed successfully, a copy of the member and the descriptor are stored.

15.5.2.6 Create (Add a Member)

It is common practice to add a new member into an existing edit session's dataset using the CREATE (or CRE shortcut) primary edit command. Where the edit session's dataset is a Control Editor Controlled Dataset and the CREATE command specifies a simple new member name, the Control Editor will create the new member using the selected existing member's data. To proceed with a CREATE member Event, the requirements of the descriptor must be successfully completed and the user must have appropriate UPDATE authority as determined by the External Security Manager (ESM). If the event is completed successfully, a copy of the new member and the descriptor are stored in the Control Journal.

It is possible that members will be added to Controlled Datasets via processes other than CREATE member. Such events are captured automatically as Detected Additions. When detected, the new member and its associated META Data are stored in the Control Journal thus creating a new Backup and Baseline.

15.5.2.7 Restore

Members stored in BACKUP or EVENT Journals may be restored at any time. To perform a restore, a user must have appropriate authority, as determined by the External Security Manager (ESM) and access to the Restore Facility (Restore Event) provided within the Integrity Controls Environment. When a Restore is performed it will optionally spawn the display of an event Descriptor Window. To proceed with the Restore Event, the user must review and confirm the identity of the restore target and satisfy the requirements of the optional descriptor window. If the event is completed successfully, the member is restored, and a copy of the member and the descriptor are stored.

15.5.3 Automatically Detected Changes

A “Detected Change” is a change to a member (a Control Point) that is housed in a Controlled Dataset (a Boundary Dataset) that was made using a process not managed by TCE. Such events are called Detected Change Events. Generally, such changes should be viewed as a violation of the operation policy inferred by an established Control Dataset List. When Change or Add events are detected, a copy of the changed or added member is stored. When a Delete event is detected, the last copy of the member stored in the Controlled Journal is marked Deleted. In addition, as with all Events, a summary record called a META Record containing “ISPF Like” statistics (META Data) is created and linked to the member.

Actions that alter the content of a Controlled Dataset or its Controlled Member may be taken OUTSIDE of the operational scope of The Control Environment.

In order to ensure that such non-standard actions do not go unnoticed and/or unrecorded, a process, called “Auto Detect” is automatically run prior to the

presentation of Administrator Panels and/or Reports. Detected events are reported using the following Event Class Descriptors.

In addition, a set of optional Detectors, The Supplementals, may be employed to detect changes in named IODF Datasets, Load Libraries and/or the state of the Health Checker on named z/OS Systems.

Sub-Class		Sub-Class Description
DTCNG		Auto Detected Controlled Member Change
DTDEL		Auto Detected Controlled Member Deletion
DTADD		Auto Detected Controlled Member Addition
		See Also: OPTIONAL SUPPLEMENTAL DETECTORS

15.5.4 JOB/JCL Submission Events

JCL stored in Controlled Datasets can be SUBMITTED directly from the command line during an edit session (SUBMIT Event) without External Security Manager (ESM) intervention. The attempt of such a submission will optionally spawn the display of an event Descriptor Window. To proceed with the SUBMIT Event, the requirements of the descriptor must be successfully completed. If the event is completed successfully, a copy of the member and the descriptor are stored.

Members housed in Control Datasets may be submitted directly to the JOB Queue. Such submissions are automatically detected and reported using the following Event Class Descriptor.

Sub-Class		Sub-Class Description
SBMIT		Controlled Member Submitted to JOB Queue

15.5.5 Operator Command Events

The MVS Operator and Activate Command Sets are used to dynamically change the configuration or operation of the z/OS system environment. Generally, their use is limited to a select group of knowledgeable system operators and/or systems programmers.

Operator Commands may dynamically impact the integrity of the z/OS Environment. If the optional identification, capture and recording of named commands are activated, related command events are detected as issued and reported using the following Event Class Descriptors.

Sub-Class		Sub-Class Description
SETCM		Detected SET Operator Commands
MODCM		Detected MODIFY Operator Commands
MISCM		Detected Miscellaneous Operator Commands

15.5.5.1 Operator Commands

z/OS SET, SETxxxxx and MODIFY COMMANDS are used to dynamically alter the z/OS configuration (Dynamic Events). The command strings calling such events, (SET PROG=01, SETxxxxx, (SETPROG APF,add,dsnname=) and MODIFY LLA) are captured as is the message text written to the system log as a result of the event. No Descriptor Window is displayed to alert the user that the event is being captured. In addition, as with all Events, a summary record called a META Record containing "ISPF Like" statistics (META Data) is created and linked to the messages. This META Data is accessed in the building of reports and answering queries.

15.5.5.2 ACTIVATE

IODF ACTIVATE COMMANDS are used to dynamically alter the I/O configuration (ACTIVATE Events). The command strings calling such events (ACTIVATE) are captured as is the message text written to the system log as a result of the event. No Descriptor Window is displayed to alert the user that the event is being captured. In addition, as with all Events, a summary record called a META Record containing "ISPF Like" statistics (META Data) is created and linked to the messages. This META Data is accessed in the building of reports and answering queries.

15.5.6 Supplemental Changes

The optional Supplemental Detectors are available to extend the change detection and reporting capabilities of the Control Editor. They are user controlled and build baselines of specific z/OS components, subsequently comparing old Baselines to ones that have been newly created. Changes, if any, may be posted to the Control Journals and notification sent via email to named recipients.

Sub-Class		Sub-Class Description
DTACF		CA/ACF2 Configuration - Policy Change
DTTSS		CA/Top Secret Configuration - Policy Change
DTDSM		IBM/RACF Configuration – Policy Changes
DTSVC		Changes in z/OS System SVC on running system
DTVOL		System Volume Changes on running system
DTDB2		Name DB2 sysid Parameter Changes
DTUSR		User Defined – By default IPL Date/Time Change
DTIOD		Changes in one or more named IODF Dataset
DTLOD		Changes in one or more Load Library
DTHCK		Named System Health Checker State Changes
DTMBR		Named Member Dataset Changes
DTCSD		CICS/CSD Configuration Dataset Changes
DTIMS		IMS Control Region Starting Procedure Changes

DTIFO		Changes in Image FOCUS Message Summary
DTAPF		Changes in APF Dataset Authorization
DTPAK		IFO IPL Configuration Package Changes
DTXCF		Cross Coupling Facility Changes
DTPPT		Changes in the Program Properties Table
DTCEW		Changes in Control Journal Content

15.5.7 System Messages

z/OS and the IBM Health Checker for z/OS issue messages to highlight and/or call operator attention to specific system conditions or findings. User may designate specific messages as Controlled Messages, recording their occurrence in the Control Journals.

Sub-Class		Sub-Class Description
MSSYS		A Defined Message issued by a z/OS System
MSHZS		A Defined Message issued by the Health Checker
MSICH		A Defined Message issued by RACF

15.5.7.1 Issued by the System

System messages that are routed to the operator console may be specifically defined in NSEJRN00, captured and collectively routed via email reports to a recipient list at defined intervals during a 24-hour daily cycle.

15.5.7.2 Issued by the Health Checker

Health Checker messages that are routed to the operator console may be specifically defined in NSEJRN00, captured and collectively routed via email reports to a recipient list at defined intervals during a 24-hour daily cycle.

15.5.8 Security Policy

ESM specific commands may be detected then captured and recorded. No Descriptor Window is displayed to alert the user that the event is being captured. In addition, as with all Events, a summary record called a META Record containing “ISPF Like” statistics (META Data) is created and linked to the messages. This META Data is accessed in the building of reports and answering queries.

The integrity of The External Security Manager (ESM: RACF, ACF2 or Top Secret) is defined and controlled by its Policy Configuration. Changes to the Policy Configuration made either using commands or functions within the ESM’s native

interface or those that may be issued directly from the TSO Command/Shell are automatically detected and reported using the following Event Class Descriptors.

Sub-Class		Sub-Class Description
ESMPC		Detected ESM Internal Product Commands
ESMOC		Detected ESM Operator Commands

15.5.8.1 IBM/RACF Policy Settings

SETROPTS COMMANDS dynamically alter the RACF configuration (SETROPTS Events). The command strings calling such events, for example (SETROPTS PASSWORD(INTERVAL(30))) are captured as is the message text written to the system log as a result of the event.

15.5.8.2 Resource and Access Profiles

RACF Resource and Access Profiles can be updated and/or altered using the following RACF Commands and are captured, as is the associated message text written to the system log as a result of the event.

15.5.8.3 Top Secret Policy Settings

Both the MVS Operator Command MODIFY TSS and the Top Secret specific command set TSS MODIFY are detected.

15.5.8.4 ACF2 Policy Settings

The MVS Operator Command MODIFY ACF2 as well as the TSO ACF command Control GSO subcommands are detected.

15.5.9 TCE Configuration

The integrity of The Control Environment is defined and controlled by its Configuration Members: NSEJRNxx, NSEENSxx, NSECTLxx and NSEXCPxx. Each is described in detail elsewhere in this User Guide. Changes to and/or the Activation of these components are automatically detected and reported using the following Event Class Descriptors.

Sub-Class		Sub-Class Description
NSJRN		Detected Changes to TCE Member NSEJRNxx
NSENS		Detected Changes to TCE Member NSEENSxx
NSCTL		Detected Changes to TCE Member NSECTLxx
NSXCP		Detected Changes to TCE Member NSEXCPxx

15.5.10 Exceptional Events

Exceptions that result from a defined "Non-Standard" event, unanticipated user behavior or the failure of a TCE process are automatically detected and reported using the following Event Class Descriptors.

Sub-Class		Sub-Class Description
EXCEP		Detected Defined/Named Exception
CANCL		Cancelled Required Edit Descriptor Completion
ATMPT		Edit/Update Denied by External Security Manager
FAILS		TCE Journal Update/Processing Failed

15.5.11 Image Inspections

An AuditLog is a summary of Inspection results and Changes detected within each defined Image within each defined Sysplex during an Image FOCUS Production Inspection (AuditLog Event). This highly summarized information is automatically posted to the Control Journals following each Inspection Cycle. Each posting contains links directly to the underlying Inspection Reports and Configuration Blueprint Packages. The Control Editor History function uses these links to expand the information contained in the AuditLog into an articulating set of OSAudit Reports. In addition, as with all Events, a summary record called a META Record containing "ISPF Like" statistics (META Data) is created and linked to the AuditLog. This META Data is accessed in the building of reports and answering queries.

The Controls Environment works in conjunction with Image FOCUS to ensure that an auditable record, the Image FOCUS Audit-Log, containing a summary of the results of Background Sysplex/Image Inspections, is captured and posted to the Open Control Journal. These automatic postings are reported using the following Event Class Descriptor.

Sub-Class		Sub-Class Description
AUDIT		Notice of Posting of Image FOCUS Audit Log

15.5.12 Event Notification

Event Notification is a process by which any user defined Edit, Operator and/or Policy Command can be reported in real-time via Email to an independently named set of recipients. Notification content: Event Identity, Event Descriptor/Command and Event Report may be customized for each individually defined notification event.

Notification Events are a unique collection of Event Classes that arise as a result of configuration definitions defined and maintained in the NSEENSxx Configuration

Member. When such a notification activated by a related event is sent, a record of it is stored in the Open Control Journal. These notices are reported using one (possibly more) of the following Event Class Descriptors.

Sub-Class		Sub-Class Description
ENOTE		Individual Event Notification Email
IRPTS		Defined Interval(s) Notice within 24 Daily Cycle
DRPTS		Notice/Report of Completion of 24 Daily Cycle
NSTOP		Email Notification Process Suspended
DEBUG		Email Debug Report Included with Notification

15.5.13 Background Reports

Each Event Class may be configured to create, post and distribute its corresponding Background Report. When reports are posted to the Control Journal the following Sub-Classes are used to identify the report.

Sub-Class		Sub-Class Description
RBKUP		Background Reports - Backup Events
RSTAG		Background Reports - Staged Events
RDETC		Background Reports - Detected Change Events
RXMIT		Background Reports - JOB/JCL Submit Events
ROPCM		Background Reports - Named Command Events
RCNGS		Background Reports - Supplement Detector Events
RMESG		Background Reports - Named Message Events
RESPM		Background Reports - ESM Policy Events
RTCPM		Background Reports - TCE Policy Events
RINSP		Background Reports - Inspection Events
REXCP		Background Reports - Exceptional Events
RNOTE		Background Reports - Notification Events
RDLST		Background Reports - Controlled Dataset Events

16 Appendix G - LegacyVu

The Legacy View, the original Journal Interface, can be reached for the Cntrolled Event Reporting Options Menu.

```
                TCE 17.0 - Controlled Event Report Options

O   Overview  .. - Show TCE Journal Overview Options     Userid   - PROBI1
                                                        Time     - 17:41
C   Category  .. - Controlled Activity by Categories    Sysplex  - ADCDPL
                                                        System   - ADCD113
B   Boundary  .. - Controlled Event Activity Options    IFOhlq   - TEST
                                                        ICE 17.0 - TCE 17.0
J   JrlQuery  .. - Show Journal AdHoc Query Interface     Patch Level P0

R   Restores  .. - Show Worksheet of Restore Points

M   Monitors  .. - Show Control Event Monitor Options

L   LegacyVu  .. - Legacy Category/Journal Functions



X   Exit         - Return to the TCE Primary Menu

 NewEra Software, Inc.
   Our Job? Help you make repairs, avoid problems, and improve IPL integrity.
```

When the LegacyVu Option is selected the the Legacy Category/Journal Selection Menu is displayed.

```
                TCE 17.0 - Legacy Category/Journal Selection

 C   Category  .. - Show Current Category Definitions     Userid   - PROBI1
                                                         Time     - 17:45
 J   Journals  .. - List of Control Journal Datasets     Sysplex  - ADCDPL
                                                         System   - ADCD113
                                                         IFOhlq   - TEST
                                                         ICE 17.0 - TCE 17.0
                                                          Patch Level P0









 X   Exit         - Return to the TCE Primary Menu

  NewEra Software, Inc.
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```

16.1 Category – Accessing Controlled Dataset Categories

Datasets managed by The Control Editor are called “Controlled” or “Boundary” Datasets. To be either, a dataset must be defined to The Control Editor’s “Control List” by specifying the details of the list in the NSECTLxx Configuration member. Once correctly defined members found within Controlled Datasets, called “Control Members” or “Control Points”, will fall under the control and management of The Control Editor and events affecting them will be recorded in Control Journals.

Each managed dataset named in the “Control List” is paired with a user-defined “Dataset Category”, for example, SYSTEM.PARMLIB. These Categories are referenced in Control Editor reports and displays and therefore the relationship between a dataset and its assigned category is considered a critical relationship. It is a best practice to plan and examine these relationships carefully.

Once the category relationships are established, they can be reviewed and the datasets within them accessed via The Control Editor Administrator Interface. To display the active Category List, use the Dataset selection option by placing a “D” on the command line and pressing enter.

When it becomes necessary to change the “Control List”, do one of the following:

1 - Return to the NSECTLxx configuration member, make the changes and restart IFOM.
2 - Select the Action Option and update the configuration dynamically. *

*Dynamic updates do not require a restart of IFOM.

The remainder of this section will address the progression of panels and functions available when using the Dataset Option.

16.1.1 Dataset Categories

When the Dataset Option is used, the panel displayed presents a listing of the currently active Dataset Categories. Within each category will be found one or more Controlled Dataset(s). The Category Selection Panel below shows a list of the currently defined NSECTLxx Defined Categories

```
                TCE 17.0 Selection: Category Selection  Row 1 to 5 of 5

  Line Commands:  S- SELECT a Category
  CMD  --- Category ---
  ..   AUDIT.JCLLIB
  ..   WORKING.USERLIB
  ..   TEST.PARMLIB
  ..   SYSTEM.PARMLIB
  ..   SYSTEM.DATASETS
  ..   NSESEL.AUTOCNTL
****************************** Bottom of data ********************************


  COMMAND ===>                                                SCROLL ===> PAGE
```

To select a category and display related datasets, place “S” on the command line before the target and press enter.

16.1.2 Controlled Datasets Within a Category

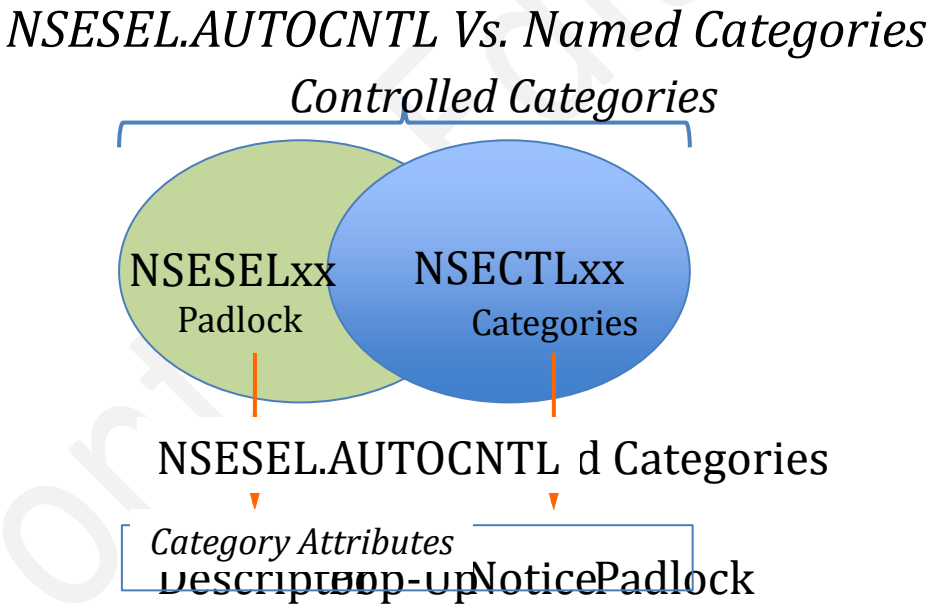
When a Category is selected, the datasets associated with that Category, currently defined in NSECTLxx are displayed. Access to the dataset in the list necessitates that the user have at least READ authority, as determined by the External Security Manager (ESM).

```
             TCE 17.0 Selection: Dataset Operations          Row 1 to 4 of 4

  CATEGORY=  SYSTEM.PARMLIB
  Line Commands:  E- EDIT Single Dataset
  Press ENTER to Edit as a concatenation
  CMD  DatasetName                              Volume
  ..   VENDOR.PARMLIB
  ..   SVTSC.PARMLIB
  ..   LVL0.PARMLIB
  ..   SYS1.PARMLIB
****************************** Bottom of data ********************************


  COMMAND ===>                                                SCROLL ===> PAGE
```

To select a single dataset and display its member list, place an "E" on the command line adjacent to the target and press enter. To display the "Full Member List" as a concatenation of all members in a Category, make no selection and press enter.

16.1.3 A Controlled Category Within a NSESELxx

Control Datasets appear in both the NSECTLxx and NSESELxx Configuration Members. Those in NSECTLxx are defined as elements of a Controlled Category. Control Datasets defined in NSESELxx may be defined independently and controlled by TCE Padlock functions. As a result it is possible datasets defined for Padlock Control will not be defined in NSECTLxx. When such a mismatch is detected TCE will automatically create the NSESEL.AUTOCNTL Category and include these discovered Padlock Dataset entries. With each start of IFOM or dynamic activation of NSECTLxx or NSESELxx TCE performs a new cross-member discovery and updates the dataset grouping defined to NSESEL.AUTOCNTL. Any Dataset included in the NSESEL.AUTOCNTL inherits the control features afforded any Controlled Dataset.



16.1.4 Controlled Members

When a single dataset is selected, the members associated with only that dataset are displayed. When a Category concatenation is selected, all members in the concatenation of datasets are displayed.

The Member List, shown below in its primary form, may be viewed in its Primary or Alternate form.

```
              TCE 17.0 Selection: Member List              Row 1 to 18 of 363

SYSPLEX =  SVSCPLEX  SYSTEM =  S0W1        For HELP use PF1
LINE Member  Concat  UPD  BKP  IFO  DUP   Volume Dataset Name
CMD  Name    Number
..   $$$COIBM  3          BKP             VIMVSB SYS1.PARMLIB
..   ADYSET00  3          BKP             VIMVSB SYS1.PARMLIB
..   ADYSET01  3          BKP             VIMVSB SYS1.PARMLIB
..   ADYSET02  3          BKP             VIMVSB SYS1.PARMLIB
..   ALLAUTO1  1          BKP             VTMVSG SVTSC.PARMLIB
..   ALLAUTO2  1          BKP             VTMVSG SVTSC.PARMLIB
..   ALLAUTO3  1          BKP             VTMVSG SVTSC.PARMLIB
..   ALLJ2     0     UPD  BKP             VPMVSD VENDOR.PARMLIB
..   ALLJ2     1          BKP        DUP  VTMVSG SVTSC.PARMLIB
..   ALLJ2     2          BKP        DUP  VTLVL0 LVL0.PARMLIB
..   ALLJ3     0          BKP             VPMVSD VENDOR.PARMLIB
..   ALLJ3     1          BKP        DUP  VTMVSG SVTSC.PARMLIB
..   ALLJ3     2          BKP        DUP  VTLVL0 LVL0.PARMLIB
..   ALLMPF    2          BKP             VTLVL0 LVL0.PARMLIB
..   ALLMPF1   2          BKP             VTLVL0 LVL0.PARMLIB
..   ALLMPF2   2          BKP             VTLVL0 LVL0.PARMLIB
..   ANTXIN00  3          BKP             VIMVSB SYS1.PARMLIB
..   APPCPMOM  2          BKP             VTLVL0 LVL0.PARMLIB

COMMAND ===>                                          SCROLL ===> PAGE
```

Members in the list are eligible for editing by users with UPDATE authority, as determined by the External Security Manager (ESM). Members that are selected by users with READ authority will be displayed in BROWSE and cannot be edited.

On the panel next to each member are a series of "Eye-Catchers," each intended to impart information as noted in the column heading.

1. CAT~- Concat Number - The member level in the dataset concatenation.

2. UPD~- Various: UPD=Update, ADD=Added, DEL=Deleted, VIO=Audit Violation

3. BKP~- A Control Journal Backup exists for the member.

4. IFO~- Member is known to the Image FOCUS Single Member Inspector.

5. DUP~- Member is a duplicate of one that appears before it.

16.1.4.1 Alternative View

An alternative view of the Member List can be displayed by making no selection and pressing enter. In this view, the headings and Volume and Dataset Name are dropped and replaced with UserId, Date and Time denoting the last update of the member. Making no selection and pressing enter will redisplay the Primary View.

```
          TCE 17.0 Selection: Member List              Row 1 to 18 of 363

SYSPLEX =  SVSCPLEX  SYSTEM =  S0W1        For HELP use PF1
LINE Member  Concat   Prompt              ---------- Stored ----------
CMD  Name    Number                       USERID      DATE      TIME
..   $$$COIBM  3                          SYSIPO   2019/07/22 09:27:00
..   ADYSET00  3                          SYSIPO   2019/07/22 09:27:00
..   ADYSET01  3                          SYSIPO   2019/07/22 09:27:00
..   ADYSET02  3                          SYSIPO   2019/07/22 09:27:00
..   ALLAUTO1  1                          SVTSCU   2018/11/13 10:18:55
..   ALLAUTO2  1                          SVTSCU   2018/11/13 10:19:05
..   ALLAUTO3  1                          SVTSCU   2018/11/12 11:42:27
..   ALLJ2     0                          IBMUSER  2019/01/12 09:51:24
..   ALLJ2     1                          SVTSCU   2018/11/12 11:43:33
..   ALLJ2     2                          PKRUTZA  2019/03/27 18:14:19
..   ALLJ3     0                          GBAGS2   2019/08/21 09:38:12
..   ALLJ3     1                          RALEY    2019/05/10 17:27:09
..   ALLJ3     2                          PKRUTZA  2019/03/27 18:14:50
..   ALLMPF    2                          RALEY    2018/12/27 21:56:18
..   ALLMPF1   2                          RALEY    2018/12/27 21:54:47
..   ALLMPF2   2                          RALEY    2018/12/27 21:55:20
..   ANTXIN00  3                          SYSIPO   2019/07/22 09:27:00
..   APPCPMOM  2                          SVTSCU   2019/06/26 10:15:12

COMMAND ===>                                          SCROLL ===> PAGE
```

16.1.5 Member Line Commands

The following line commands are functional when they are placed before a member name in either the Primary or Alternate View:

16.1.5.1 Edit a Member

E - To select a member for editing, place an "E" on the Command Line preceding the target and press enter. This may or may not display the member in ISPF edit as the actual presentation depends on the settings defined in NSECTLxx control member. If the Descriptor window is not displayed it will be when you PFK3 out of the edit session. In either case the requested documentation is required before the member is actually updated with changes. When an edit is attempted and documentation provided as defined by the Descriptor window, a copy of the member both before and after the edit and the descriptor are stored in the Control Journal. If you wish to terminate the edit session without an actual update to the member, enter “CANCEL” on the command line and press enter. This will void the attempted edit and return you to the Member List.

16.1.5.2 Scanning JCL

When the member being edited contains a normal sequence of JCL job steps, it can be submitted for evaluation prior to submission using the system function "TYPRUN=SCAN". To start the evaluation from an edit session, enter "SCAN" on the command line and press enter. This will result in a temporary copy (deleted immediately following submission) of the JCL being created with "TYPRUN=SCAN" Job Card inserted. Results of the scan findings are returned directly to your ISPF session. Press PFK3 to return to the EDIT session.

16.1.5.3 Delete a Member

D- To delete a member from a controlled dataset, type "D" on the command line preceding the target member and press enter.

If ISPF member delete confirmation is active, the standard ISPF member delete confirmation panel will be displayed. Exiting from this panel will prevent the member from being deleted and will cause a Delete AE journal entry to be created.

If ISPF member delete confirmation is not active or the member delete is confirmed from the confirmation panel, the Descriptor data entry panel will be displayed. If the event documentation is completed as defined by the Descriptor window, the member is deleted, and the Control Journal is updated with a copy of the member and the details of the transaction.

A second opportunity to stop the member delete is available in the Descriptor data panel. If the panel has a command line area, entering CANCEL (or CAN) on the command line will have the same effect as exiting the member delete from the confirmation prompt panel.

16.1.5.4 Rename a Member

R – To rename a member in a controlled dataset, type "R" on the command line preceding the target and press enter. Next, tab to the right and under the column heading "prompt" adjacent to the member enter the proposed new name and press enter. These actions will display the Descriptor window. Provide the required documentation or abort the rename by typing "CANCEL" on the command line and pressing enter. Before renaming the member, The Control Editor will conduct the normal check for detected changes and will store a copy of the member under its current and new name in the Control Journal. Once the journaling process is complete, the original member is actually renamed.

16.1.5.5 Member Histories

HD – To obtain detail history of events affecting a specific member, type "HD" on the command line before the member name and press enter. If no history exists for the selected member, the message "no entries exist" is displayed. If the member has event entries in the Control Journals they are displayed in chronological order.

HS – To obtain a listing of all events affecting a specific member, type “HS” on the command line before the member name and press enter. Available events are displayed in an ISPF Worksheet. Use the Worksheet commands to display the events or compare the state of the member at different points in time.

16.1.6 Primary Line Commands

Primary Line Commands are entered on the COMMAND Line shown at the bottom of the panel.

16.1.6.1 Scroll the Member List

To scroll the list to a specific member, enter the character “L” followed by a blank and then the member name. Press enter to scroll to the member.

16.1.6.2 Refresh the Member List

To refresh the Member List, enter “REFRESH” and press enter.

16.1.6.3 Insert a New Member

- Into a selected Dataset

To insert a new member into a selected DATASET, enter the character “S” followed by a blank and then the new member name. Press enter to display the “Blank” member. In the “Blank” enter member data as you would under TSO/ISPF pressing PFK3 to end the edit session and display the Descriptor Window. Provide the required descriptor information using PFK3 to save the new member and update the Control Journal.

- Into a selected Concatenation

To insert a new member into a selected CONCATENATION, enter the character “S” followed by a blank and then the concatenation number and new member name. Separate the concatenation number and new member name with “/”. Press enter to display the “Blank” member. In the “Blank” enter member data as you would under TSO/ISPF pressing PFK3 to end the edit session and display the Descriptor Window. Provide the required descriptor information using PFK3 to save the new member and update the Control Journal.

16.1.6.4 Sort the Member List

Change Date and User ID may be used to sort the member list. To do so, enter “SORT” followed by a blank followed by either “CHA” (sort on change date) or “ID” (sort on User ID).

16.2 Journals – Accessing Journal Datasets

When the Journals option is selected a list of all available Control Journal Datasets is displayed. Journal Datasets in the list can be selected and their contents displayed by users with at least READ authority, as determined by the External Security Manager (ESM).

```
            TCE 17.0 Selection: Journal Inventory         Row 1 to 16 of 42

Line Commands: S - Select (View the contents of the Journal)

---- LOCAL ----                    DATA SET NAME (GMT)     BACKUP OF:
CMD DATE       TIME    ITEMS STATE   IFO.IFOP.JOURNAL.
..  09/30/2018 18:39     34  OPEN    D2018027.T0039150
..  09/30/2018 18:39     90  CLOSED  D2018027.T0039124
..  09/30/2018 18:12     90  BACKUP  D2018027.T0012582  CCHIN1.PARMLIB
..  09/30/2018 18:12     90  BACKUP  D2018027.T0012565  CCHIN1.PARMLIB
..  09/30/2018 18:12     90  BACKUP  D2018027.T0012542  CCHIN1.PARMLIB
..  09/30/2018 18:12     90  BACKUP  D2018027.T0012523  CCHIN1.PARMLIB
..  09/20/2018 15:14     52  CLOSED  D2018020.T2114587
..  09/06/2018 16:49     84  CLOSED  D2018006.T2249023
..  09/06/2018 16:48      1  BACKUP  D2018006.T2248285  SYS1.PARMLIB
..  09/06/2018 16:48     90  BACKUP  D2018006.T2248268  SYS1.PARMLIB
..  09/06/2018 16:48     69  BACKUP  D2018006.T2248253  LVL0.PARMLIB
..  09/06/2018 16:48     90  BACKUP  D2018006.T2248236  LVL0.PARMLIB

COMMAND ===>                                            SCROLL ===> PAGE
```

16.2.1 Journal Initialization

New Control Journals are automatically initialized during the startup of IFOM or based on parameters (EVENTS and SWITCH) defined in configuration member NSEJRNxx. The date and time of the initialization are shown in the “DATE” and “TIME” columns.

16.2.2 Journal Entries

The specific number of events recorded in each Control Journal is shown in the “ITEMS” column.

16.2.3 Journal States

Control Journals may be in one of the following States as shown in the “STATE” column:

- Open - The Open Journal is the one currently being written into when The Control Editor detects change events or Audit postings are being made by IFOBG. There is only one OPEN Control Journal.

- Closed - The Closed Journals are those that are filled up based on parameters (ENTRIES and SWITCH) defined in NSEJRLxx or have been manually closed as the ACTION Functions are no longer recording new events.

- Backup - The Backup Journals contain Control Dataset Backups made by IFOM. Backup Control Journals only contain members from a single Control Dataset as shown in the panel under the “BACKUP OF” column.

- Process - The Process Journals contain incremental Control Dataset Backups and/or Audit Violations discovered by IFOM.

16.2.4 Journal Content

To display the content of a Control Dataset, place an "S" on the command line adjacent to the target and press enter. This action will immediately display a list of Control Journal Entries.

```
          TCE 17.0 Selection: Journal Entry Selection    Row 1 to 15 of 39

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

LINE --- Category ---    -- Entry --     ------------- Stored ---------------
CMD                     TYPE  NAME       USERID      DATE       TIME     RESULT
..     PATS.PARMLIB      DC   CUNIMG00   IBMUSER   05/13/2019 12:17:32  SUCCESS
..     PATS.PARMLIB      DC   XITCPFT    CCHIN1    09/08/2019 11:14:39  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 16:30:48  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 16:32:35  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 16:33:49  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 19:02:49  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 19:04:04  SUCCESS
..     SYSTEM.PARMLIB    DF   XITCPFT    GBAGS1    09/27/2018 19:11:39  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 19:12:45  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 20:29:03  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 20:30:17  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 20:37:38  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/27/2018 20:38:51  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/28/2018 11:50:58  SUCCESS
..     AUDIT.LOG         MG   AUDITLOG             09/28/2018 11:52:13  SUCCESS

COMMAND ===>                                                SCROLL ===> PAGE
```

16.2.4.1 Category

Each managed dataset named in the “Control List” is paired with a user-defined “Dataset Category”, for example, PAULS.JCLLIB. These Categories are referenced in Control Editor reports and displays. Therefore, the relationship between a dataset and its assigned category is considered a critical relationship. It is a best practice to plan and examine these relationships carefully.

16.2.4.2 Entry Type

Entry type is represented by a two-character code with character representation as follows:

- The 1st Character

'S' = Activity successful, event stored
'B' = First occurrence of an event
'D' = Detected change outside the ICE Environment
'A' = Event attempted but not successful, i.e. edit but no authority
'M' = Other Activates

- The 2nd Character

'B' = Backup
'E' = Edit
'R' = Restore
'D' = Delete
'O' = Rename Old
'N' = Rename New
'S' = Submit
'F' = Detected Change
'C' = Added
'G' = Audit Log Posting
'P' = Replace
'X' = Cancelled

- Events Types Decoded

Combine these two characters as shown in the examples below to gain an understanding of their full meaning:

“BB” – First Backup
“SE” – Edit event successfully stored
“DD” – Delete outside ICE - Detected
“DF” – Change made outside ICE - Detected
“SS” – Submit Event successfully stored
“SP” – Member was Replaced

When used in conjunction with the “Other Activity” indicator “M”:

“MG” – IFO Audit Log Posted
“MB” – Notification via TSO Broadcast (Future Release)
“MD” – Notification written to MVS Dataset (Future Release)

"ME" – Notification via a named Email Server
"ML" – Email Notification Debug Facility
"MX" – Descriptor requirement aborted

17 Appendix H - What Users Say About TCE

- *"…Shared Journal support really made the difference.* We have been using the Control Editor for sometime with great success. The Nanny functions it provides are really appreciated by our z/OS support staff, help to improve their productivity and have greatly enhanced the quality of our documentation at 'The Point-of-Change'. But the Detected Change process was driving us crazy, we just couldn't reconcile changes made from one LPAR with Detected Changes Events recorded on all others. But now with Shared Control List and Control Journals that all goes away, and Detected Changes becomes a valid identifier of changes being made outside of the authorized TCE Controls Evnironment.

- *"…the addition of the The z/OS Padlock,* the control component of The Control Editor has really enriched our Legacy Security processes by extending their security control boundaries capturing and reporting security events as they occur in real time and enforcing Member Level control over both authorized Updaters and Read Only users. This has allowed us to lock-down critical z/OS Configuration Components, for example the PROG Member, and assign specfic responsibility for its maintenance and support to help reestablish trust between coworkers and the consultants that frequently require access to configuration components"

- "…Sound z/OS System Programming *Best Practices* are straightforward and simple enough, but we're all human, all busy, we all forget and our best intentions to conform to these practices will sometimes go unfulfilled. We did a little soul searching amongst our z/OS Team asking the following questions. Do we:

    - *Take a* **Backup** *before making changes to z/OS Configuration components?*
    - **Test** *changes to PARMLIB, PROCLIB, JCLLIB before committing them to production?*
    - *Research the* **History** *of prior changes before attempting new ones?*
    - **Document** *Actual changes at the point where the change takes place?*
    - *Finally,* **Notify** *those with a need to know that a change has been made?*

  We were a little taken aback by the answers. But finally agreed: No *Backup*, no *Test*, no *Review*, no *Documentation*, no *Notification*. Any of these can lead to a loss of z/OS integrity or compliance or worse - to a loss of z/OS availability. TCE fixed this for us, for certain we all feel better knowing the z/OS Nanny is on the job."

- "…from the very beginning I have always felt that the methodology used to define the descriptor window was very limiting. I am very pleased to see that in the latest release this method is being replaced with a true ISPF Panel. This is going to allow me to

customize a panel for each Dataset Control Category and input fields and field checking as necessary to ensure that we enforce and collect the *CORRECT* change control information. This will make it much easier for us to comply with PCI and at the same time let our users take advantage of the productivity gains afforded by inline queries for Change History and similar requests for Component Inspections."

- "…as a Systems Programming manager I really want my team to stay on top of what's going on across the Sysplex we manage. My problem is that as we have become more sophisticated at the zEnterprise operational level most, if not all, of the system messages I would like to know about are filtered out via system automation techniques before they get to the operator console. This can become particularly annoying, more so if you are becoming dependent on the IBM Health Checker for z/OS. Being notified of a specific z/OS System or Health Checker message could be just the *"Heads-Up"* we need to get on top of problems now that could result in a denial of service later. With the new message identification, capture and notification functions added to The Control Editor we resolved this long-standing problem. Now all I need do is define a System or Health Checker message to TCE and it lets the team know when it occurs, immediately or collectively at intervals I define. We're all a little more relaxed now. That's a good thing."

- "…when we installed and customized the Control Editor, we noticed that certain critical z/OS Control Points (Load Modules, IODF Dataset and the Status of the IBM Health Checker for z/OS) were not monitored. We discussed this with NewEra and were really pleased when they announced the availability of the Supplemental Detectors to fill these control gaps. Using the Detectors, we can now monitor each at intervals that we define: Health Checker hourly, Load Modules daily, IODF weekly. The details associated with specific detected changes are sent via email to the responsible team for follow-up. By automatically posting each detected change to the Control Journals, we are assured a complete and accurate change history is always at our fingertips for each z/OS system. Thanks NewEra."

- "…we recently outsourced the operational aspects of our z/OS environment and related LPARs. Of course, we still have oversight responsibility for the integrity of the entire IT environment including all the pieces we outsourced. While we have a really good service contract with them and they have all the necessary SAS70 Service Audit Documentation in place, we still had concerns about knowing what was actually going on with our business application platforms. We are absolutely concerned with z/OS configuration changes especially ParmLib Member Updates, Dynamic MVS Operator and RACF Policy changes. We put all these concerns to bed with The Control Editor's External Notification Service. Now, when a change takes place, we get notification of the change automatically by email. With The Control Editor we know the "Who, What and Why" details of each and every change in real-time. Oversight responsibility satisfied, z/OS integrity retained."

- "…we originally passed on The Control Editor because it was not able to support really large datasets, datasets containing in excess of 10,000 members that we wanted to backup and actively track for changes. We changed our minds however when we learned about the new zFS/HFS file support option. Using it we can now capture over 16,000 members in a single Backup Journal and/or over 16,000 discrete change events in a single Control Journal. This has really simplified the backup process in our shop and provided us with a reliable method of maintaining complete documentation of generational changes. In short, we have a complete audit trail of all member changes. Safe, secure, responsible; that's the way I feel about The Control Editor."

- "...my guys say that they don't make changes but then, I guess by magic, changes show up. I am happy to say that since we installed The Control Editor the number of unexpected and undocumented changes has dropped dramatically. With the continued help of The Control Editor some day we'll get them down to zero. No surprises."

- "…our system audit reviews are done as part of our financial audit process. We have been written up several times for not having adequate documentation of actual changes. We do a good job of documenting what we are *going to do* but not what we *actually did*. The Control Editor filled this hole in our change management process by requiring users to provide descriptive information, documenting each change at the point of the change using standard TSO/ISPF. No more negative audit findings."

- "…everyone knows that submitting JCL during a TSO/ISPF Edit session can open a big hole in z/OS system security. JCL can be edited and submitted, even by those without UPDATE authority, and then the Edit session cancelled. No one is the wiser and generally RACF, ACF2 and Top Secret are totally bypassed. This has been an open audit finding in our environment for some time. The Control Editor closed this hole for us. No more undocumented changes to or submission of our JCL."

- "…we have contractors coming in and out of here all the time. We give them pretty much the same access we give to our own system programming staff. Until we began using The Control Editor, we had no idea what they were actually doing, what changes they were making. The TCE reporting and query functions resolved this completely. I now know who did what, to what and when."

- "…we give our operators lots of access to MVS system commands. This allows them to dynamically reconfigure our z/OS Sysplex as needed to meet demand. We have been hesitant to implement strict COMMAND class control for fear of locking them out of the system. Leveraging the non-invasive recording of SET and ACTIVATE commands provided by The Control Editor we now have a way to capture and analyze what our operators are doing. No lockouts, dynamic changes documented."

- "…I cannot tell you how many times I have had to get involved in a system security dispute between my Security Officer and System Programming Manager. Both are well intended; one wants more security of z/OS system changes; the other says no way. The Control Editor resolved this for me, for us. It was easy to set up and since it enhances ISPF it was a snap to learn. Security guy has lots of reports and the System guys are now on "Friendly Terms" with a compensating control. Everyone is happy."

- "...we've had a lot of turnover in the systems area in the last year or two so all of us have had to pitch in to keep things going. One area of real concern is the RACF policy settings. We lost our security guy and have not and may not be able to replace him. My team is stepping up and helping out, but we all know we need better control over the use of the SETROPTS commands. We were using The Control Editor for documenting z/OS Configuration changes and now with this new release we can easily extend its scope to include RACF as well. We all really like the added value."

- "…in our shop money is a problem and we are always on the lookout for ways to cut cost, it's a way of life. We were using what turned out to be a very costly Change Management system to control and document z/OS configuration changes. When we learned that The Control Editor could do a much better job at half the annual maintenance cost we were intrigued and started an evaluation. It turned out that The Control Editor does so much more than the system it's going to replace. More function, less cost, real value."

- "…we've been using Image FOCUS for years. Love it, cannot live without it. Last year we considered evaluating The Control Editor, but it was tough to build interest. Everyone seemed to be happy with our existing change management tool set. TCE 6.0 changed all that. The automatic posting of the Sysplex Audit Log to the Control Journals now allows ICE to pinpoint both configuration problems and to detail the complete history of components changes. Better integration, better integrity."

- "…we're in the insurance industry, lots of regulation, lots of compliance issues: SAS70, SOX and NAIC. Our CFO studied them all and concluded that what we needed was one approach to change management that satisfied all requirements, generally stated as: what changed, who changed it and on what authority. After an extensive evaluation of available software tools, we selected The Control Editor for three specific reasons: lowest total cost of ownership, seamless integration into our change process and its full set of compliance reporting tools. Regulations satisfied; CEO happy."

- "...recently we were not able to restore a z/OS component and as a result encountered a major delay following a system upgrade. The post review meeting brought to mind three important rules of life: number one, remember to brush your teeth, number two, take your vitamins, and number three, ALWAYS make a backup of your z/OS configuration members *BEFORE* you make changes to them. Simple, straightforward, common sense advice. So easy to say, so easy to forget. Since we installed The Control

Editor, I don't worry about my guy forgetting about number three. The Control Editor ALWAYS creates a backup before it allows an update. Let mom take care of one and two, The Control Editor will take care of the backups."

18 Appendix I - Enhancements Found in Prior Releases

- NSESELxx - Member Level Control - This optional TCE ParmLib Member supports the subdivision of the dataset control boundaries established by the External Security Manager (RACF, CA ACF2, CA Top Secret) and supported by the TCE Controlled Datasets defined in the NSECTLxx member to the member level.

- The MENU 'M' Line Command has been added for use during a TSO/ISPF Edit session. The command displays a menu of unique TCE functions available to the TSO/ISPF User.

- The MBRUSED 'MU' Line Command has been added for use during a TSO/ISPF Edit session. The Command works in conjunction with the TCE companion IPLCheck to produce a 'Sysplex-Wide" view of where a z/OS configuration member is used.

- An Automatic comparison of a member selected from the TSO/ISPF member selection list will now be made with the last stored version of said member found in the TCE Control Journals. If a member-to-member change is detected an optional Notification Pop-Up may be displayed.

- The following Commands may now be entered on the Command Line during a TSO/ISPF Edit session in order to access related functions:

    - Restore (R) – To select and restore a member from a member selection list,
    - Inspect (I) – To invoke the Image FOCUS Component Inspector,
    - History (H) – To display an interactive worksheet of member activities,
    - JScan (J) – To pass JCL to the internal reader with TYPERUN=SCAN and,
    - PScan (P) – To evaluate system procedures, PROCS.

- Inline Edit Event Descriptors are now fully functional ISPF Panels. Samples of these optional panel definitions are delivered with the intent that they be customized to suit the specific site needs. The older style Edit Macro Descriptors will continue to be supported.

- When an ISPF Panel is used as a Descriptor the various Data Field values supported by TCE, whether populated and/or displayed in the panel or not, may now be passed along to other programmatic processes as Rexx Variables, as the user exits the panel.

- The Descriptor Completion "Pop-Up" that is normally displayed when the user Exits the Descriptor Panel may now be suppressed. This is accomplished by setting the value of newly added but optional CONF keyword used with the DESCPNL statement.

- Enhanced Panel Descriptors are now offered as an alternative to the inline panel descriptor. These fully functional ISPF Panels are easily definable to meet individual site control requirements. User definable fields, for example, Project Number, Change Number can now be defined and become immediately searchable. Line command support will allow TSO/ISPF users to request Member History and/or the Inspection of ParmLib Members known to Image FOCUS.

- RACF, ICH, Messages have been added to the specific set of System Messages which can be detected and as directed result in immediate or periodic/interval notification to defined users.

- Four new Supplemental Detectors are now available.

Short Name	TCE Sub-Class	Sub-Class Description
NSIMSRC	DTSRC	RACF_Sensitive_Resource Health Check
NSIMGRP	DTGRP	SYS1 Workgroup, Sub-Group and Individuals
NSIMOMV	DTOMV	State and Status of Unix System Services
NSIMBPX	DTBPX	State and Status HFS and z/FS System Resources

- The Control Journal Interface has been updated to now provide support for the Batch (now background) Reporting, Member/Dataset Restore and Ad Hoc Query functions that were previously available via the Restore and History Functions.

- Batch Reporting functions have been replaced by a newly developed Background Reporting Started Task IFODET that is used to control background process timing and report distribution.

- System Messages can now be monitored by message number and/or message text. Messages detected may be stored in the Control Journals and/or notification of a single message or all messages within a specified interval can be sent via email.

- Fixed block, 80 byte, sequential datasets may now be added to the Dataset Control List. Changes to their content and/or their submissions as JCL are recorded as events in the Control Journals.

- Fifteen new Supplemental Detectors are now available. The optional Supplemental Detectors family now include ("*" is used to indicate that this Detector was introduced prior to Supplemental Detectors 2.0):

Short Name	TCE Sub-Class	Sub-Class Description
NSIMACF	DTACF	CA/ACF2 Configuration - Policy Change
NSIMTSS	DTTSS	CA/Top Secret Configuration - Policy Change
NSIMDSM	DTDSM	IBM/RACF Configuration – Policy Changes
NSIMSVC	DTSVC	Changes in z/OS System SVC on running system
NSIMVOL	DTVOL	System Volume Changes on running system

NSIMDB2	DTDB2		Name DB2 sysid Parameter Changes
NSIMUSR	DTUSR		User Defined – By default IPL Date/Time Change
NSIMIOD	DTIOD	*	Changes in one or more named IODF Dataset
NSIMLOD	DTLOD	*	Changes in one or more Load Library
NSIMHCK	DTHCK	*	Named System Health Checker State Changes
NSIMMBR	DTMBR		Named Member Dataset Changes
NSIMCSD	DTCSD		CICS/CSD Configuration Dataset Changes
NSIMIMS	DTIMS		IMS Control Region Starting Procedure Changes
NSIMIFO	DTIFO		Changes in Image FOCUS Message Summary
NSIMAPF	DTAPF		Changes in APF Dataset Authorization
NSIMPAK	DTPAK		IFO IPL Configuration Package Changes
NSIMXCF	DTXCF		Cross Coupling Facility Changes
NSIMPPT	DTPPT		Changes in the Program Properties Table
NSIMCEW	DTCEW		Changes in Control Journal Content

- The native RACF Command Set that can be monitored has been expanded to include all native RACF commands. Up to this release only the SETROPTS command set was supported. Native RACF Commands added in this release include:

ADDSD	CONNECT	RDEFINE	DELUSER	ALTDSD
ADDGROUP	PERMIT	DELDSD	RDELETE	ALTGROUP
ADDUSER	RALTER	DELGROUP	REMOVE	ALTUSER

- The MVS Operator Command Set that can be monitored has been expanded to include all SETxxxx Commands. Up to this release only the SETPROG, SETSMF AND SETXCF commands were supported. Operator Commands added in this release include:

SETAPPC	SETETR	SETIOS	SETLOGRC	SETSMS
SETCEE	SETGRS	SETLOAD	SETOMVS	SETSSI
SETCON	SETHS	SETLOGR	SETRRS	SETUNI
SETDMN				

- Edit Event Email Notification associated with member updates now includes a record-by-record listing of changes that impacted the affected member.

- Edit Event Email Notification event journaling has been enhanced to more completely record the identity of the member impacted by the originating edit event.

- Changes detected by The Supplemental Detectors are now grouped, for presentation purposes in Journal reports with all other detected changes using the Event Class Names defined below:

  - DTIOD – Detected Changes in the Configuration of Named IODF Datasets.
  - DTCHK – Detected Changes in Health Checker State/Status on Named Systems.
  - DTLOD – Detected Changes in Modules in Named Load Libraries.

- The Edit Descriptor may now be programmed, by dataset category, to be ACTIVE and therefore appearing only during a defined time interval during a 24 hour period.

- The Keyword Aliases NBLANK and EORDR have been added to shorten and represent, as needed, the Keywords NONBLANK and EDITORDR used in defining the Edit Descriptor.

- Controlled Member Restore functions have been added to the Primary Menu allowing access to the Controlled Member Restore Selection Worksheet.

- History Report functions (subsequently this function was removed) have been enhanced to support both foreground and batch reporting of changes impacting all or selected Controlled Datasets.

- Event management has been enhanced to allow for the recording and display, in reports and notifications, of the member changes detected during an Edit Session.

- Edit sessions of Controlled Datasets have been updated to include enhanced support for the COPY, CREATE, MOVE and REPLACE primary commands including the display of appropriate Event Descriptors for each.

- Support for recursive use of the following native EDIT Command Line Syntax:

  `EDIT, EDIT member_name` and `EDIT (member_name)`

  When used from within either a TSO/ISPF or TCE Edit Session, the EDIT Descriptor is displayed, and each recursive EDIT Event is independently captured and recorded.

- Update of the Control Journal Interface allows for the classification of Backups and Control Events across time. The prior Legacy Journal Interface is still supported.

- The Control Journal Interface has been enhanced to support Member Event Restore Operations. Each member in the Restore List can be confirmed for restore individually or the entire Restore List can be restored at one time.

- Journal Dataset Formats – A new configuration option supports the creation of zFS/HFS formatted Control Journal Datasets. This new Journal Type extends the storage capacity of each Journal from maximum of 116 to 16,382 Backup or Change Events.

- Event Notification – A new configuration option supports the real-time notification of events via Email. Event, Recipient and Notification Content are configured using the newly introduced NSEENSxx Configuration Member.

- Event Notification Reports – In conjunction with Event Notification, an Event Interval Report option is now available that will merge event activity throughout a 24 hour period into a single Report Dataset and forward same by email to designated recipients.

- Enhanced Recording – Event Journaling automatically subdivides event recording into three segments: Event Identity, Body and Report. Each is progressively selectable when used in conjunction with Event Notification.

- Dynamic Reconfiguration - The NSECTLxx, NSEJRNxx and NSEENSxx configuration members may now be dynamically reconfigured via the Administrator's Interface. Configuration changes become effective immediately and do not require a restart of IFOM.

- Detected Changes - The identification of changes made outside the Integrity Controls Environment, Detected Changes, has been fully automated and now runs optionally at predetermined intervals. The process may be run at any time via the Administrator's Interface and automatically prior to Report or OSAudit Library updates.

- IFO Results Posting – The results of Production Image FOCUS Sysplex configuration Inspection and change detection, the Sysplex Audit Log, is now posted directly to the Control Journals at the end of each Production cycle. Optionally, the results of Supplemental Inspections (ISNMBRS, ISNLOAD, ISNCSDS) may also be posted.

- Report Libraries - A library of standardized z/OS configuration change reports (The Report Library) and z/OS Audit Reports (The OSAudit Library) is now available.

- Batch Reporting - All library reports may be updated in batch and selected reports sent via email to selected recipients.

- SUBMIT Capture – The submission of JCL during an edit session is now captured and Journaled.

- Operator Command Capture - Dynamic system changes implemented via the MVS Operator Commands - SET, VARY, SWITCH, START, STOP, CANCEL, QUIESCE, TRACE, SWAP, SLIP, DUMP, FORCE and MODIFY can now be optionally captured and limited to one or more originating sources - Started Task, Console, JOB or TSOUser - and Journaled.

- SETROPTS Capture - Dynamic changes to RACF implemented via the SETROPTS Command can now be optionally captured and Journaled. Functions for ACF2 and Top Secret are implemented via Command Capture - MODIFY ACF2 and MODIFY TSS.

- ACTIVATE Capture – Dynamic IODF changes implemented via the ACTIVATE Command can now be optionally captured and Journaled.

- Ad hoc Event Logging – A system Event Trace Logging option has been added to assist in forensic system analysis.

- Transparent SCAN – JCL can be automatically scanned (TYPRUN=SCAN) for problems that could prevent successful JOB completion during an ISPF EDIT session.
- Stealth Mode – An Optional configuration setting that will suppress the display of the Descriptor Window associated with ICE or ISPF events. Journal recording is unchanged.

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