EspControl

User Manual

Cronus

consulting

READ ME FIRST

Copyright Reserved ©

Disclaimer

Cronus Consulting (Pty) Ltd hereby disclaims any and all guarantees and warranties for the correct use and application of the ESP software.
Cronus Consulting (Pty) Ltd reserves the right to revise and make changes to the software and the content of this document from time to time without obligation to notify any person of the changes.

Ownership

The ESP Products are developed by, and is fully owned by Cronus Consulting (Pty) Ltd.

TABLE OF CONTENTS

1. Introduction

1.1 Purpose

EspControl has been designed to assist the system administrator in the migration, documentation and backup of Natural Objects between environments on a Unix/Linux platform.

Correct usage of the change control system, will ensure that any given module is only updated by one developer at a time. Depending on the ISR profile and/or security definitions, restrictions may exist or be defined to enable specific user to migrate ISR's to and from master environment.

1.2 Pre-Requisites

- Depending on the SHELL environment elected, you will have to enable "rsh", "remsh" or "ssh" commands on each of the server(s).
- Before the EspControl product is installed ensure that basic remote-copy commands can be executed. Refer to the installation documentation for examples of remote shell commands.

1.3 Product Overview

EspControl provides the following functionality:

- Migration of Natural Objects – GDA, PDA, LDA, MAP, COPYCODE, TEXT, HELPROUTINE, CLASS, ADAPTER (AJAX), SUBROUTINE, SUBPROGRAM, PROGRAM
- Multiple backups of Source and Object Code per environment as defined by the system administrator
- Initial Backup of ALL objects at install or upgrade time before any migration takes place
- Transfer across physical machines and multiple Natural environments.
- Return transfer for specified objects in the ISR across physical machines and multiple natural environments
- Profiles per ISR where each profile is a subset of the Master Control Variables
- Variable DEVELOPMENT environment where the Initial Environment of a profile path need not necessarily be the actual Development environment. Due to this fact, the DEVELOPMENT, unless true DEVELOPMENT, will be referred to as the INITIAL Environment in the rest of this manual.
- A PATH CHOICE which allows the user to decide on the first migration step of an ISR whether to DOWNLOAD from the MASTER or to miss this step and start directly with the UPLOAD from the Initial Environment or an UPLOAD ONLY option.
- Dependencies allow an object and all its dependents to be selected (if the allow source option is valid and source exists in Development)
- Automatic restore capability

- Back out and restore on migrated objects
- Updating of the Natural buffer pool
- Source allowed or only Object code per environment
- Where SOURCE is ALLOWED a further option is available to REMOVE the source and object after a successful migration to the next environment.
- STOW or CAT per environment or NONE per environment, where only the source is copied and the object is neither STOWed or CATalogued but only SAVEd
- Optional Backup per environment, if No backup selected, no Restore will be done on back-out.
- Objects can be moved from one library to a different library in each environment, where the library may be specified on either the Profile or linked to the individual object when linked to an ISR.
- Optional Restore during a migration, where the ISR is stopped, if in error, or continues with other objects if no restore required, creating an Error report for the user to use, to manually fix objects in error.
- Objects can be moved from one library to a different library in each environment, via the Object itself or the entire ISR to a specified library.
- User or Group security per Profile
- ISR Security where only the “owner” may approve the ISR and link objects.
- A copy facility where a COMPLETED ISR can be copied to a NEW ISR and the original links will be copied if the object is available.
- The COMMENT that is added to the end of an object during migration may be turned on or off.
- Migrate User can be linked where all migration transactions are handled by this user irrespective of the environment being migrated to.
- Source can be unloaded via the SYSOBJH function per environment creating a UNIX file for further distribution or manual upload.
- System Error Messages (SYSERR) can be transferred from one environment to the other, where the error messages have been set up in the SYSERR Natural function.
- An Audit Report option may be turned on and off, and if on, an audit report will be printed at the end of each migration move. This audit report is per ISR, but if turned on, will produce an audit report for all ISR’s, until turned off again.
- An Audit History option where a full audit per selected start and end dates and environments will be produced, either via a report to the print queue or a .csv file. This audit reflects the following events – Create, Approve, User, Transfer, Return, Restore.
- If Current Environment includes EspBatch, then SCL’s may also be migrated from one environment to the next. All required routines will have an option for SCL’s. These will only be available if EspBatch is running.

Master Setup

On installation the system Administrator will specify the Natural environments (these environments can reside on different physical machines) and define one as the master environment. The master environment should be the current Production environment or a copy of it. This environment should be captured as the **LAST** environment in your system. However, it is possible to have more than one Production Environment specified if different fusers reside on the same physical machine or the same fuser, but different application setups. It is therefore possible to have multiple environments for each physical machine. Short paths are also available, meaning that only two environments need be selected in a profile.

Dynamic allocation of Change Control functions and security at function level determine who has access to specific functions, with more specific security options that may be set up on different transaction types.

During installation the System Administrator will be requested to specify whether EspBatch is running or not. If Yes is specified, then SCL migration will be available and will work in the same manner as Object migration.

An appendix at the end of the manual will detail the screen differences for sites able to migrate SCL's, and will explain the manner in which SCL's are to be migrated and the process to do so.

The screen shown in the current manual below may differ slightly for SCL's, see Appendix A below for further verification if the screen shown below is not exactly the same as viewed on your actual Change Control system. This will only be the case if SCL transfer has been made applicable to your environment.

The Change Control System consists of six parts:

- Control Variables and Profiles
- Initial Backup Routine
- ISR (Information Service Request) capture, Object Selection and Transfer.
- ISR Maintenance.
- Various enquiry and History options on object and ISR level.
- ISR Return and Restore

Operational overview

An initial backup routine may be executed if required, where the user selects the applicable environments. This backup routine is only run when installing the product (this initial backup MUST run at install time) or an upgrade of the software is being done (initial backup is optional). Since the backups are taken when moving “from” an environment and not backed up before moving “to” an environment, an initial backup will ensure that there will be a backup available if a problem occurs when an object is migrated for the very first time.

An ISR can either be registered by a User or a member of the development team. The ISR contains information about the requested development/enhancement which includes: current date, date required, title and a detail description. The ISR is linked to a particular profile which details the path and migration rules for all objects linked to this ISR. Once an ISR has been captured it must be approved by the responsible person, assigned to a developer and time estimation must be included.

Once an ISR has been approved the required objects can be linked to the ISR for transfer from the master environment, which may differ from one ISR to the next, and depending on whether the ISR must start from the Master or in the case of a short path, from the initial environment. As soon as an object has been linked to an ISR it is no longer available for selection by any other ISR. Once a new ISR has been approved, the linked objects of a completed ISR may be copied to this new ISR, which allows an automated link and not a manual one via the user.

When transferring objects between environments the Change Control will make a backup (if the backup configuration is set on), of the object AFTER the transfer takes place from a specific environment and will back up the object being MOVED if the environment being moved FROM is NOT the Master Environment. Therefore the DOWNLOAD move from Production will neither backup Production or the environment it is being moved to. Once moving in an UPLOAD direction the backup will be made of the environment being moved FROM. When the environment being moved TO, is the MASTER Environment, the object will be backed up in the FROM as well as the TO environment. After an object has been transferred it is compiled in the new environment (if the compile configuration is set on) and removed from the Natural buffer pool, if the compilation fails the object will be restored, if the Restore Indicator is set to YES and the Backup indicator is set to YES. The object will only be compiled if the profile specifies such otherwise the object will be SAVED without any object code in the new environment. If the transfer is from the Master environment, then the ISR will NOT be restored if the compile fails, but an error report will be produced for the user to investigate. A version number is allocated to each ISR and with each backup in each different environment the same version number will be used throughout.

If the object is new and being moved to the Master, no backup will be taken as obviously the object never existed in the Master Environment. If the Restore Indicator is set to No and the backup fails when moving from an environment or to the Master, the ISR will NOT abort and restore, but a window will be displayed at the end of the transfer with the option of a report being created which will detail the objects not backed up. All backup parameters are written to the History file and may be viewed in option CC095. In the History of the backup cycle, the object, the library and the environment will be recorded as well as whether a backup is taken or not. If a backup fails due to permissions (and the restore indicator is set to no) and the user wishes to redo the last transfer, the objects may be returned to the previous environment (see below) and then re-transferred to create a correct backup.

Specified objects in an ISR may be returned to the previous environment (objects selected by user and not entire ISR) for further development. Once complete, the normal transfer of objects may be selected and these same specified objects will be returned to the original environment (before the return), with the new changes.

Users may decide whether to have Restore as an option or not. This Restore Indicator set to YES when referring to the restore when a migration fails and returns all objects to their previous state and the user must correct the error and redo the entire migration step. If Restore is set to NO, then a failed object will not cause the entire ISR to be restored, but will continue with all other objects in that ISR. At the end of the migration an error report will be produced, reflecting the error objects.

Users may decide whether or not a Backup should be taken in the migration process. If YES, the ISR continues as normal. If NO, the objects will not be backed up and consequently, if one fails, the object will not be restored.

A standard library per environment per ISR may be set up and this library will be used in the entire migration process via the Profiles option. A library may also be specified per individual object for the migration path. The library setup order will be as follows 1. Input Library per object in Linking Option, 2. ISR Library in Profile and then 3. Actual scanned Library per Object. If the Initial Environment is TRUE Development, neither the object nor ISR library may used, as the object must be transferred using the scanned in Natural Library. If the Initial Environment is NOT True Development, then any of the Library options may be used.

Users may request Source NOT to be migrated to the next environment, in this instance only the object code will be migrated to the next environment. If Source is No in Development or the Initial Environment, it will be transferred from the Master, allow the user to make changes and then deleted after a successful migration to the next environment, with only the object code being moved.

Users may request the Source and Object to be REMOVED after a successful migration to the next environment. This will leave NO source or object in the “environment from” and will have to be DOWNLOADED again before any migration may take place. In this scenario the object will be “tested for existence” when moving to the MOVE SOURCE environment and if there, the user may either, reject this object, overwrite in the next environment or STOP the entire ISR. The rejection will only be for the ONE move and will re-test when the ISR is again moved up the line. If the ISR is STOPPED, it will be put in hold, and must first be reset via CC075 before it will be allowed to continue. The rules for testing for existence are if the source code is to be REMOVED from either the TO or FROM environment. The ALLOW-SOURCE option in the Control Variable section (CC001) sets up the default for the Change Control system, as each profile may either “Remove” or “Not Remove’ source. For e.g. if transferring to the TRUE Master Environment from an environment with “Remove Source” option, then the “testing for existence” will always be true and will be time-consuming and a nuisance. By marking the ALLOW-SOURCE to YES in the default Control Variable section (Environment 01), it will bypass this check.

Users may select to use a “short-path” ISR, which means that the Initial Environment may not be the first environment (Development) selected in the profile. In this scenario, the Initial Environment Index must be marked as to what the first required path of a profile should be. The “Master Environment” of a short-path may also not be the TRUE Master and the ISR will complete once the “Master” has been transferred to.

A “PATH CHOICE” has been catered for, whereby the user may decide whether an UPLOAD, either optional or forced, or DOWNLOAD, must occur in the first step of a transfer. Once the ISR is in the migration process, the path choice may not be amended, and if necessary the RETURN option must be used to re-download the object.

A Migration User has been catered for, whereby all migration routines will use this user-id to do the copying, moving, stowing or compiling, restoring and backup functions. The creation of temporary work files and initial “ssh” etc setup will use the actual user-id and so the user running the ISR will need correct authorisation and remote shell command setup.

Users may decide NOT to have the default comment with the ISR number added to the object. If the COMMENT = N, then this will not happen. A comment may only be added to Development or a profile with an Initial Environment, other than Development, but where this environment is on the local server.

The change control provides functionality whereby an ISR may be “Approved for Upload”, depending on the profile, whereby the ISR must first be “Approved” before it can be transferred to the next environment. Each environment may or may not require Approval, depending on how the profile was set up. This function would typically be assigned to either the project leader or user.

Additional objects can be linked to or removed from the ISR at any stage. If an object is removed, the user will be asked whether a restore or not is required. If a restore is selected then all changes will be backed out, if not selected the object will be left in the environments already migrated to. An object can be transferred from one ISR to another as long as it is in the “Development” stage i.e. status of 01

The Change Control System provides numerous enquiry screens where the status of an ISR can be monitored. An audit trail of the ISR is updated throughout the Change Control System to track the progress of the ISR. An audit record per object is provided whereby all changes to the object can be traced back to individual ISR's and their related profiles. History of the path followed per object is available as well. The History option reflects ALL moves, errors and restores, and is to be used for investigation in the event of a failed migration or return. A log file of all shell commands and scripts run during a migration is available in an external Unix file, with the key always being the ISR number. Typically, if there is an error in the ISR, the log file may be interrogated to view the actual commands being used and try and manually recreate the error.

The Change Control System will provide PATH VALIDATION at the start of each migration process. This Path Validation will scan through all the linked objects in the correct status for the current migration step and validate all the UNIX PATHS necessary for Backups, Compiles and any other Natural utility required for the successful migration to the next environment. This path validation will also check that the linked object actually exists in the specific Natural Library for migration. If the PATH VALIDATION fails, the necessary error paths will be written to the History function, for the user to check and correct and then redo the migration step. An error report will also be available to be printed if required by the user. The path validation, tests for all objects before failing and will produce an error list of all the failed objects. If an ISR fails during the Path Validation step, it will remain in HOLD and must be reset via the reset in hold function before continuing. This is done so that the user can investigate the error before any more work is done on that particular ISR.

During installation a temporary directory for trace files is created in $ESPCCTMP (this is set up as $CRONUS/espcctmp initially). This directory is used for all trace files in case of errors or script problems. If no errors occur, then these files are deleted after every migration. If a migration fails, and the logfile, that is created per ISR in the shell script directory (see CC001 for further explanation) is not enough for finding the error, please refer to the trace files in the temporary directory.

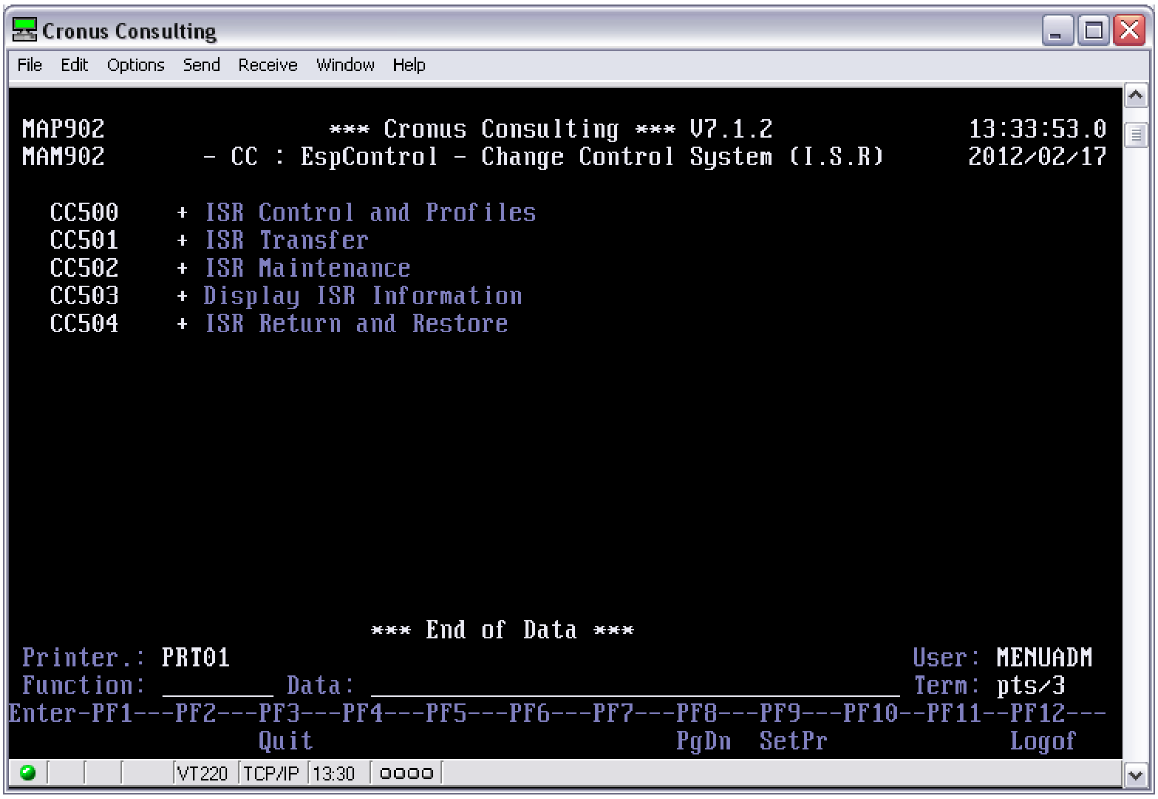
See examples of these files below:

```
-rw-rw-r--   1 hentie   sag        6370 Nov 20 11:38 BENCH010.NSP
-rw-rw-r--   1 hentie   sag           0 Nov 20 11:38 copy.BENCH010.NSP
-rw-rw-r--   1 hentie   sag           0 Nov 20 11:38 rc.txt.475
-rw-rw-r--   1 hentie   sag         686 Nov 20 11:38 remcopy.log.BENCH010.NSP
-rw-rw-r--   1 hentie   sag         155 Nov 20 11:32 remcreate.log
-rw-rw-r--   1 hentie   sag         758 Nov 20 11:43 remftouch.log.BENCH010.NSP
-rw-rw-r--   1 hentie   sag         137 Nov 20 11:43 remnbp.log.BENCH010
```

SCL's are copied via Natural routines and not via scripts, as specified for objects above. If any failure occurs during SCL migration, please refer to ISR History function (CC095) to get exact detail of error. The actual SCL detail and errors per SCL is carried across environments in text files, and these will be available, if code COMPDEBUG is set to Y, by viewing the $ESPCCTMP directory for files with the ISR Number included.

2. Menu Overview And Function Selection

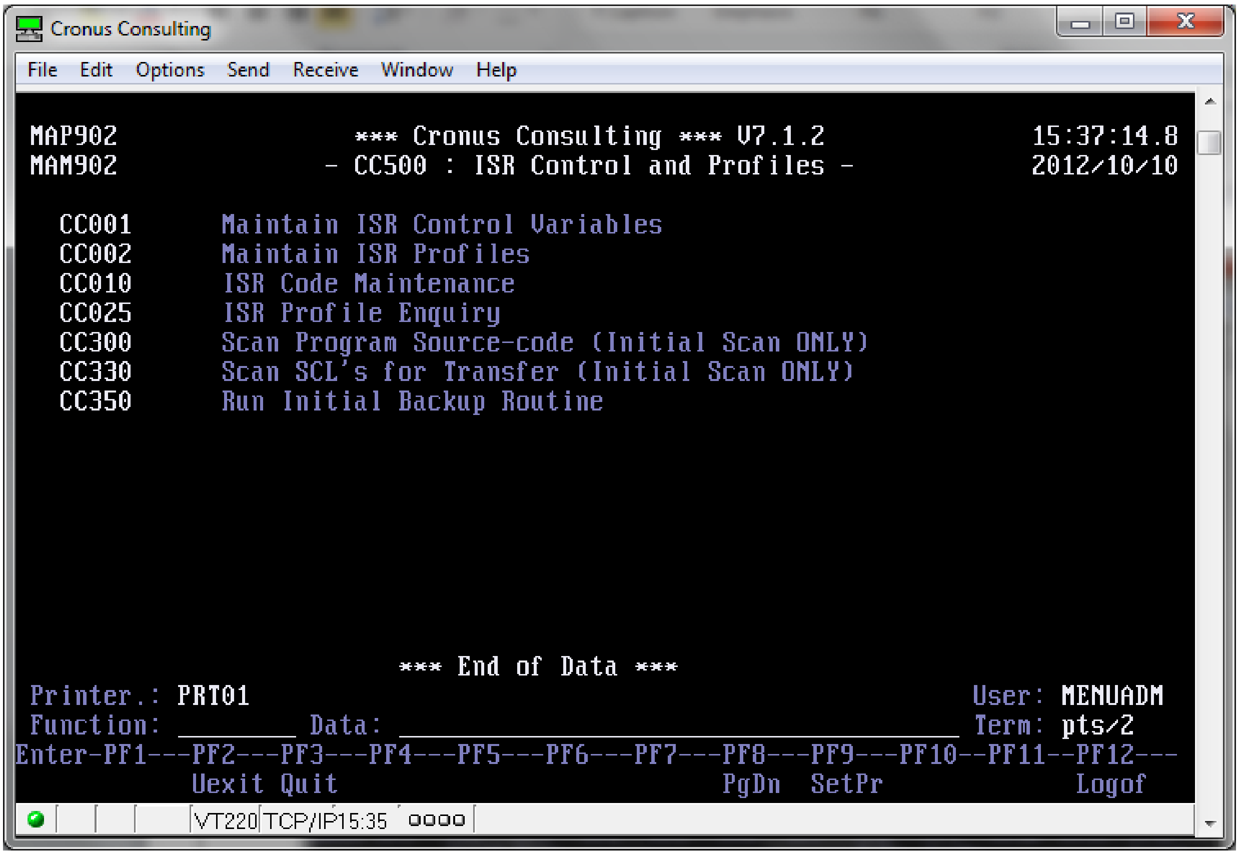
Once a user logs on, the EspControl main menu will be displayed with a list of sub-menu’s. These sub-menu’s will each display a subset of functions that the user has access to. The following information is displayed on the main menu screen.



```
MAP902               *** Cronus Consulting *** V7.1.2             13:33:53.0
MAM902        - CC : EspControl - Change Control System (I.S.R)    2012/02/17

   CC500    + ISR Control and Profiles
   CC501    + ISR Transfer
   CC502    + ISR Maintenance
   CC503    + Display ISR Information
   CC504    + ISR Return and Restore











                          *** End of Data ***
 Printer.: PRT01                                               User: MENUADM
 Function: ________ Data: ______________________________________ Term: pts/3
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                              PgDn  SetPr          Logof
```

Figure 1: Main Menu

- Top line - Environment name
- Second line - Date, Menu Name and Time
- Lines 4 to 8 - Sub Menu’s
- Line 20 - Default Printer-Id (UNDEFINED is displayed if no printer has been assigned)
  - The User-Id or Group of the current user
- Line 21 - Function selection area
- Line 22 and 23 - Available function keys
- Function keys: PF3 - Quit (out of current function, will return to previous menu)
  PF9 - Set up default printer assignments (applicable for EspBatch)
  PF7 - Page Backward (if more than one page exists)
  PF8 - Page Forward
  PF12 - Logoff



```
MAP902               *** Cronus Consulting *** V7.1.2             15:37:14.8
MAM902             - CC500 : ISR Control and Profiles -           2012/10/10

  CC001      Maintain ISR Control Variables
  CC002      Maintain ISR Profiles
  CC010      ISR Code Maintenance
  CC025      ISR Profile Enquiry
  CC300      Scan Program Source-code (Initial Scan ONLY)
  CC330      Scan SCL's for Transfer (Initial Scan ONLY)
  CC350      Run Initial Backup Routine




                        *** End of Data ***
 Printer.: PRT01                                              User: MENUADM
 Function: ________ Data: ______________________________________ Term: pts/2
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Uexit Quit                          PgDn  SetPr              Logof
```

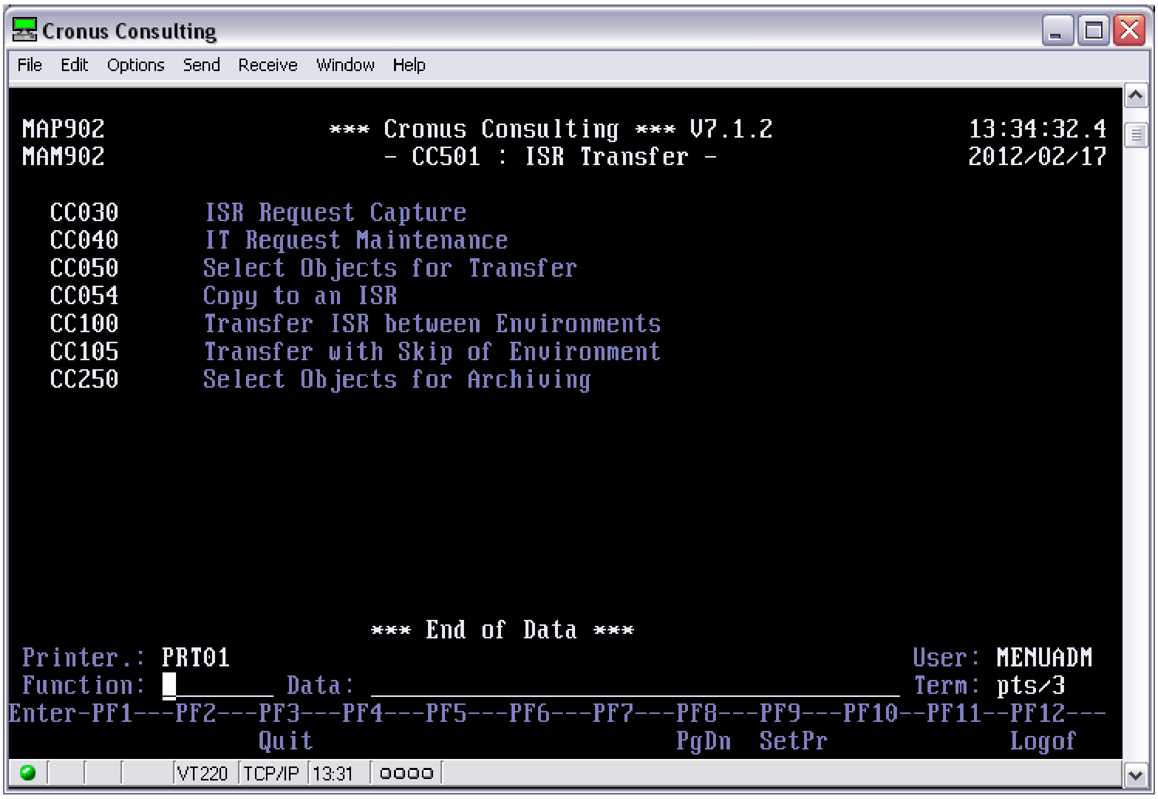
Figure 2: Sub Menu CC500

- Line 2 - Sub-Menu Name
- Lines 4 to 9 - Functions relating to Control Variables, Profiles, Source Scanning and Initial Backup

Function / Menu selection can be done as follows:

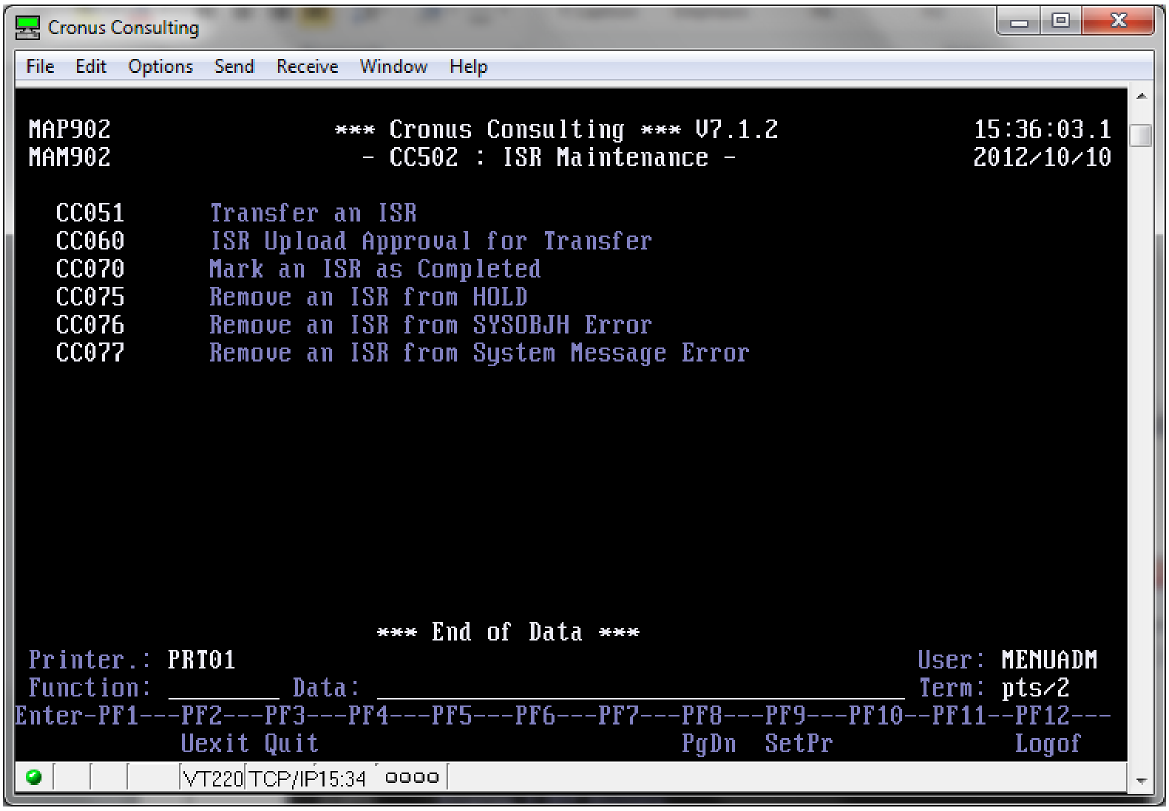
- All menu and function selections are cursor sensitive and can be selected by positioning the cursor on the line containing the desired menu or function and then pressing <ENTER>.
- Typing the menu or function name in the function selection area. Parameters required by the function can be typed in the data area, which will be passed to the function.
- The full function for e.g. CC100 may be typed in, or only 100 if required. If only 100 is typed in, the sub-menu that the user is busy with (in this case CC) will be used to complete the function and navigate to the correct function

All sub-menus have specific functions and work alike. See below the rest of the sub-menu's and their related functions. The functions and sub-menus can be allocated in full, or only a portion thereof, to each user or group, to enable further function security in the system. This is done in the MENU ADMINISTRATION section.



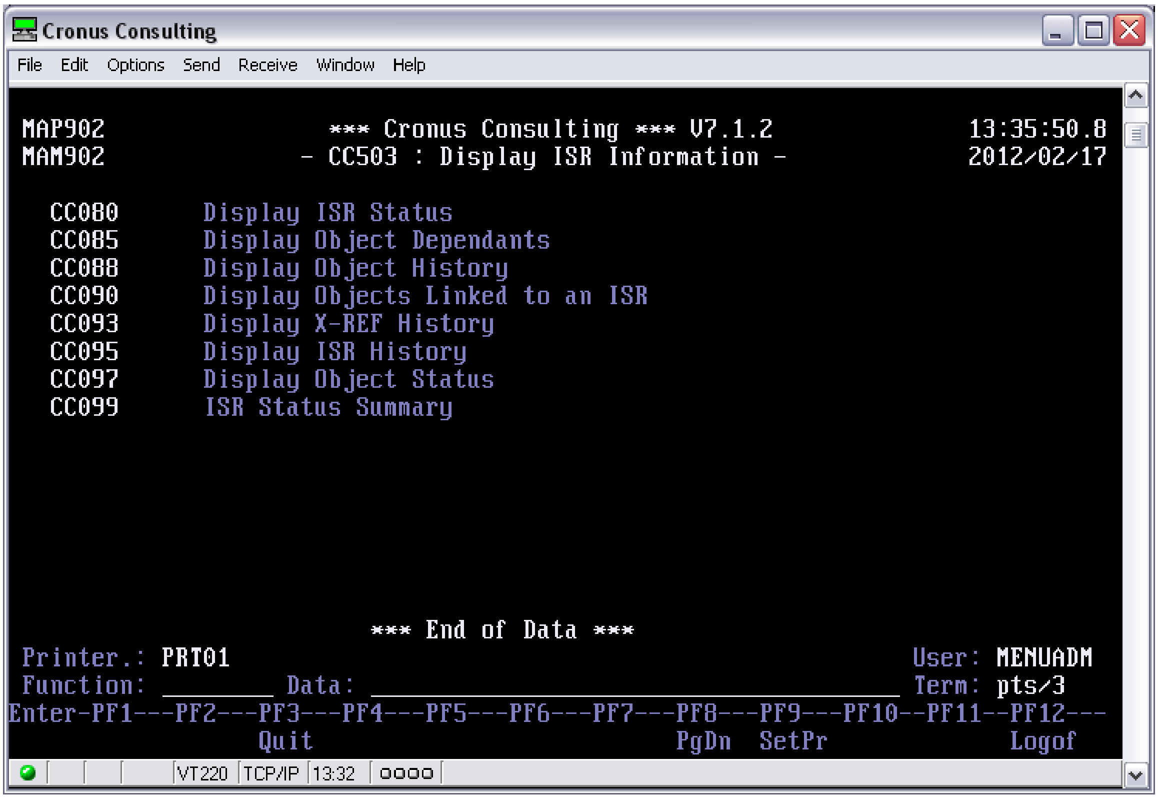
```
MAP902                    *** Cronus Consulting *** V7.1.2              13:34:32.4
MAM902                        - CC501 : ISR Transfer -                  2012/02/17

  CC030       ISR Request Capture
  CC040       IT Request Maintenance
  CC050       Select Objects for Transfer
  CC054       Copy to an ISR
  CC100       Transfer ISR between Environments
  CC105       Transfer with Skip of Environment
  CC250       Select Objects for Archiving

                                *** End of Data ***
Printer.: PRT01                                                    User: MENUADM
Function: ________ Data: _______________________________________   Term: pts/3
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn  SetPr              Logof
```

Figure 3: Sub Menu CC501



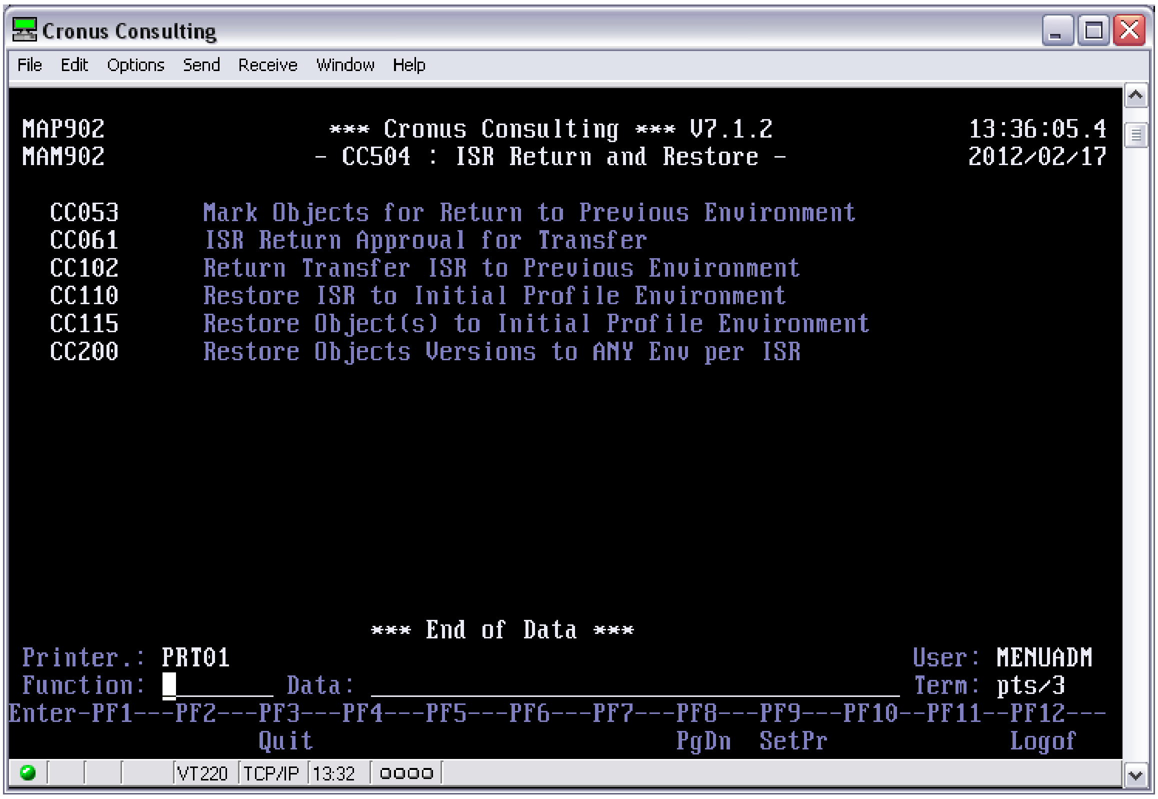
```
MAP902                    *** Cronus Consulting *** V7.1.2              15:36:03.1
MAM902                      - CC502 : ISR Maintenance -                 2012/10/10

  CC051       Transfer an ISR
  CC060       ISR Upload Approval for Transfer
  CC070       Mark an ISR as Completed
  CC075       Remove an ISR from HOLD
  CC076       Remove an ISR from SYSOBJH Error
  CC077       Remove an ISR from System Message Error

                                *** End of Data ***
Printer.: PRT01                                                    User: MENUADM
Function: ________ Data: _______________________________________   Term: pts/2
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Uexit Quit                          PgDn  SetPr              Logof
```

Figure 4: Sub Menu CC502



```
MAP902                 *** Cronus Consulting *** V7.1.2                13:35:50.8
MAM902               - CC503 : Display ISR Information -               2012/02/17

  CC080      Display ISR Status
  CC085      Display Object Dependants
  CC088      Display Object History
  CC090      Display Objects Linked to an ISR
  CC093      Display X-REF History
  CC095      Display ISR History
  CC097      Display Object Status
  CC099      ISR Status Summary

                          *** End of Data ***
Printer.: PRT01                                                   User: MENUADM
Function: ________ Data: ______________________________________   Term: pts/3
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn  SetPr              Logof
```

Figure 5: Sub Menu CC503



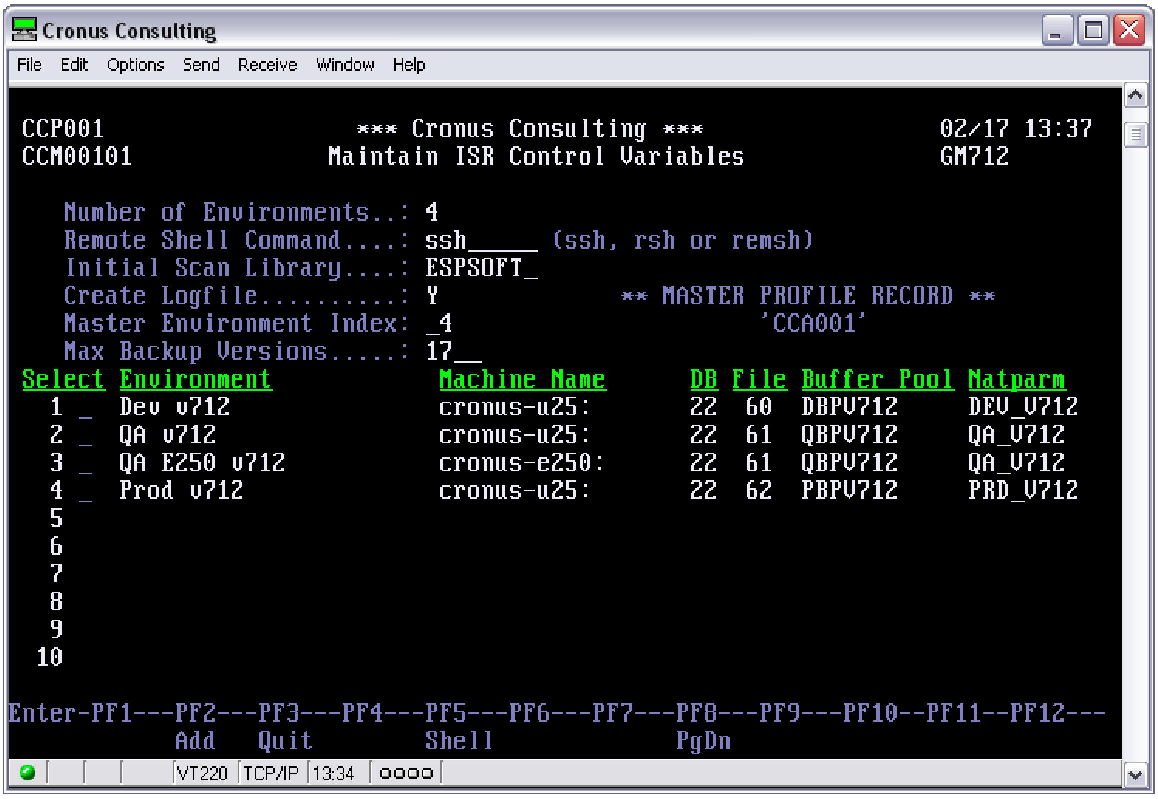
```
MAP902                 *** Cronus Consulting *** V7.1.2                13:36:05.4
MAM902                - CC504 : ISR Return and Restore -               2012/02/17

  CC053      Mark Objects for Return to Previous Environment
  CC061      ISR Return Approval for Transfer
  CC102      Return Transfer ISR to Previous Environment
  CC110      Restore ISR to Initial Profile Environment
  CC115      Restore Object(s) to Initial Profile Environment
  CC200      Restore Objects Versions to ANY Env per ISR

                          *** End of Data ***
Printer.: PRT01                                                   User: MENUADM
Function: ________ Data: ______________________________________   Term: pts/3
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn  SetPr              Logof
```

Figure 6: Sub Menu CC504

3.1 ISR Control And Profile Function Overview

3.1.1 CC001 – Maintain Control Variables

This function is used to define the EspControl control variables for the Master Profile Record. This is used as a default to create various migration Profiles in CC002. These variables are used during the execution of the migration process and are defined in two groups: a) **Global** variables – these are set once and are applicable for all environments defined in EspControl. b) **Local** variables – definitions for each of the Natural environments that forms part of the EspControl environment. Information regarding the Natural program environments, libraries, host destinations and paths are defined and maintained under the local variable set-up. An environment entry should be defined for each of the Natural program environments that are required to be migrated to. If objects need to be moved to another section of the same environment for e.g. copied from one library to a common library for all applications in the same environment, then this must be set up as a separate entry as well (therefore there may be two entries for Development for example) and then manipulated in the Profile section



```
CCP001                    *** Cronus Consulting ***                 02/17 13:37
CCM00101                 Maintain ISR Control Variables             GM712

   Number of Environments..: 4
   Remote Shell Command....: ssh_____ (ssh, rsh or remsh)
   Initial Scan Library....: ESPSOFT_
   Create Logfile..........: Y             ** MASTER PROFILE RECORD **
   Master Environment Index: _4                      'CCA001'
   Max Backup Versions.....: 17__
Select Environment                 Machine Name       DB File Buffer Pool Natparm
  1 _  Dev v712                    cronus-u25:        22  60  DBPV712     DEV_V712
  2 _  QA v712                     cronus-u25:        22  61  QBPV712     QA_V712
  3 _  QA E250 v712                cronus-e250:       22  61  QBPV712     QA_V712
  4 _  Prod v712                   cronus-u25:        22  62  PBPV712     PRD_V712
  5
  6
  7
  8
  9
 10

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Add   Quit        Shell             PgDn
```

Figure 7: ISR Control Variables

This is the default “company record” where the number of environments in total, are specified and their related Path data (see next screen image). The following option (CC002) allows the setting up of a profile whose environment path may differ, but the Path data behind each environment is taken from this Master Profile record. An environment, once set up, may never be deleted, if it is no longer required, it must just not be linked to any new Profiles that have been set up. This is because of History and Restore options.

The following global control variables should be defined:

Number of Environments : The total number of Natural environments needed for migration. This will be set up automatically once all individual environments have been captured.

Remote Shell-Command : The remote access command protocol to use for transfers between environments. (ssh, rsh or remsh)

Initial Scan Library : Used in CC050 for default scanning library and for Object enquiries.

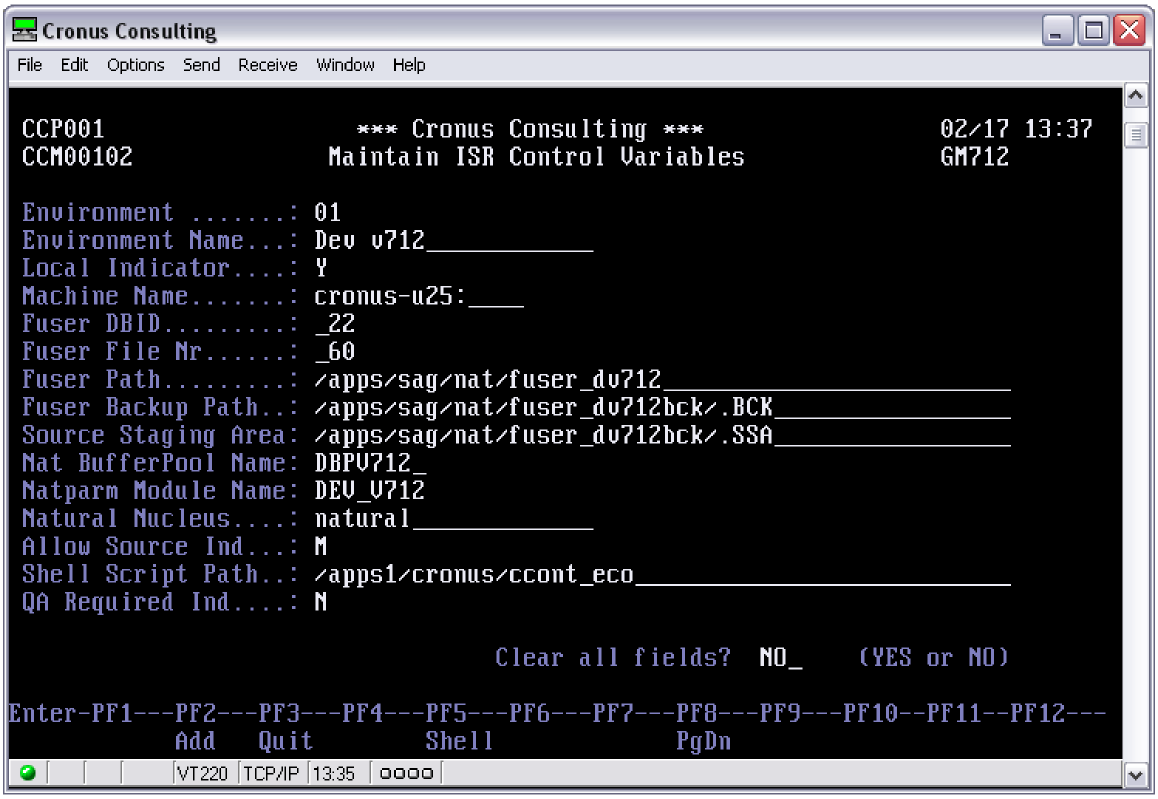
Create Logfile : Enable additional logfile (for error checking this must be set to Y)

Master Env Index : The Master Environment (TRUE PRODUCTION) for the Company.

Max Backup Versions : The maximum number of Backups to be taken in each Environment when transferring objects. This version number is the same for each environment move.

The **LOGFILE** should always be marked with Y, as it gives the user command detail and return code detail for all commands issued via the Change Control throughout the migration, path validation, SYSOBJH and SYSERR loads, return, backup or restore processes. The log file is ALWAYS found in the first environment specified in CC001 (even if the migration is for e.g. to Production) and is situated in the Shell Script Path directory as indicated in the below screen and then appended with /logs. Should any move through the change control fail, these log files may be interrogated in Unix. Each ISR has its own log file in the shell script path/logs directory with the naming convention ISRnnnnnnnn.LOG where n is the ISR number. Each Change Control routine adds to the log file of an ISR and this is never over-written.

Local control variables for each environment:



```
CCP001                   *** Cronus Consulting ***               02/17 13:37
CCM00102               Maintain ISR Control Variables            GM712

Environment .......: 01
Environment Name...: Dev v712____________
Local Indicator....: Y
Machine Name.......: cronus-u25:____
Fuser DBID.........: _22
Fuser File Nr......: _60
Fuser Path.........: /apps/sag/nat/fuser_dv712_________________________
Fuser Backup Path..: /apps/sag/nat/fuser_dv712bck/.BCK_________________
Source Staging Area: /apps/sag/nat/fuser_dv712bck/.SSA_________________
Nat BufferPool Name: DBPV712_
Natparm Module Name: DEV_V712
Natural Nucleus....: natural_____________
Allow Source Ind...: M
Shell Script Path..: /apps1/cronus/ccont_eco___________________________
QA Required Ind....: N

                                   Clear all fields?  NO_    (YES or NO)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Add   Quit        Shell             PgDn
```

Figure 8: Control Variables per Environment

The following control variables should be defined:

Environment : Environment Number (System allocated)

Environment Name : Environment Name – Description

Local Indicator : Local indicator to server where EspControl is running

Machine Name : Machine name/Host-name or IP address

Fuser DBID : Fuser DBID as defined in NATPARM

Fuser File Number : Fuser FILE NR as defined in NATPARM

Fuser Path : Complete path to fuser where source and object exist

Fuser Backup Path : Complete path to backup fuser

Source Staging Area : Area used by EspControl to stage the source-code for Allow-Source = N. Even if Allow Source is not N, a copy is moved here so that this variable may be changed in future.

Nat buffer Pool Name : Natural Bufferpool name for this environment

Natparm Module Name : Natparm that is used to access this environment (ESP)

Natural Nucleus Name : Natural nucleus name (must be in default path)

Allow Source Indicator : Indicates if source code should be allowed or Moved (used for default as this is specified in Profile)

Shell Script Path : The complete path to ESP scripts, log files and transfer (ccont)
See below for Development default

QA Required Indicator : Indicates an approval step is required before copy to an Environment
(default only as specified per separate profile)

The shell script path for Development when CC001 is first set up after install, will default to the $CRONUS/ccont_eco directory, which is where all the EspControl scripts are installed from. This directory should keep this same name for Development and this entire directory must be copied to all environments. If the environments are on the same server, then this directory must be copied with a new name, for example, adding the environment name as a suffix $CRONUS/ccont_eco_dev2. If all environments are NOT on the same servers this name may remain the same. However, for ease of use it is better to include the environment name as a suffix, even if the environments are on different servers. Remember to update these directory names correctly in CC001 for each environment as set up in the install.

The Allow source Indicator and the QA Required indicator are only defaulted in the Master Control and can be changed in each Profile defined (CC002) depending on requirements. The Allow-source indicator on the Control record (CC001) determines if OBJECT TESTING occurs between environments and if dependents are allowed. This indicator should be set to the default required in that environment and not as part of a mini-path.

Caution: If Natural security is installed, the access to the Natural application system should be defined with **AUTO=ON**

The ISR code, SAMESTAGE, determines if the Staging Area Path may be the same in any of the environments. **Caution**: Remember that if this staging area is allowed to be the same and environments exist in the same fuser, the objects with the same object name and library will be over-written. The safest option is to have this code set to N. See CC010.

When creating control variables, a **MASTER PROFILE** is automatically created, using the entered local variables and defaults, and this can be enquired on in the ISR PROFILE function (CC002). This Master Profile may not be used to link to ISR's and migrate objects. This profile cannot be modified, but may be enquired on. This default profile is named **MASTER.** The MASTER PROFILE is re-created every time a change is made to CC001, and that is why it is not allowed to be linked to ISR's.

Caution: Any natural library **startup** programs should be limited to start **only** if *DEVICE is **not** set to "BATCH". This causes background tasks in EspControl to **fail**. If **startup** programs are used the default **natural nucleus** command should be change to "**natural batch**" in function CC001.

…

Nat BufferPool Name: NATBP___

Natparm Module Name: DEVCC___

Natural Nucleus....: natural batch_________

Allow Source Ind...: Y

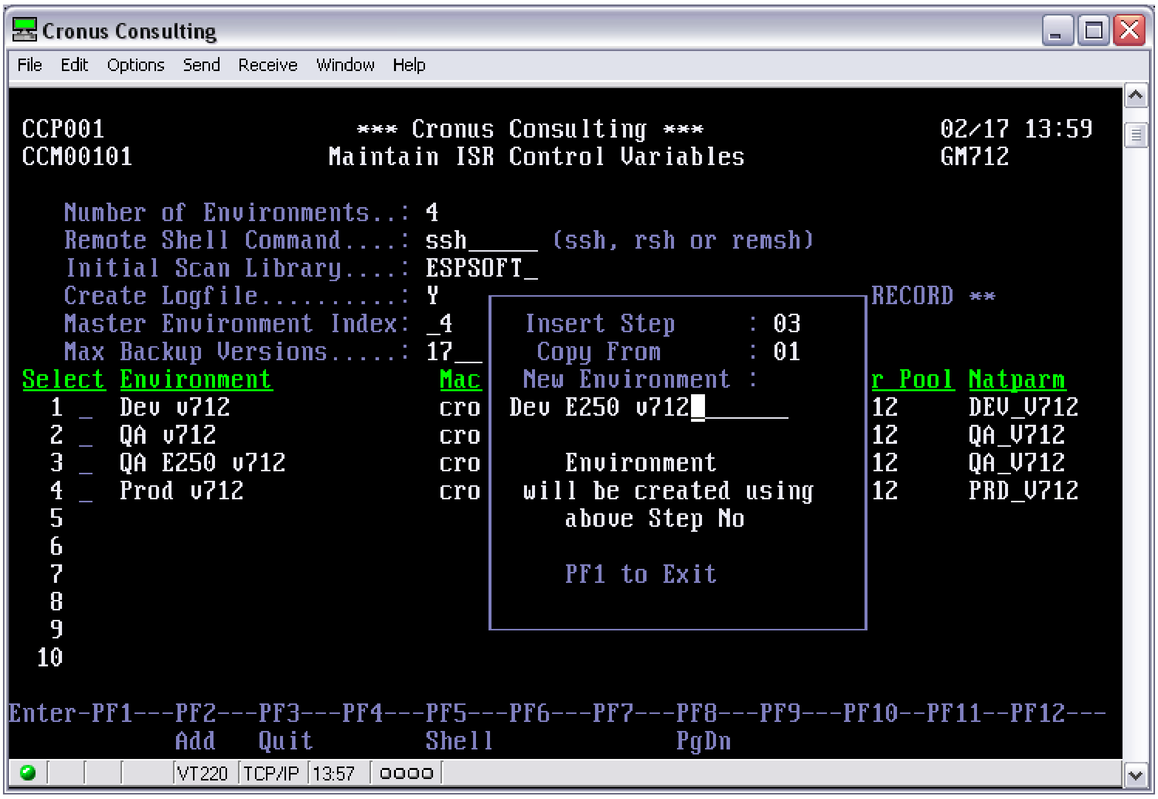
Max Backup Versions: ___7

….

Example where the “natural” command is changed to use “batch mode”

The program **ESPERRTA** is used to **reset** the standard/default ***ERROR-TA** error handling programs for the migration session. This program should exist in library **SYSTEM** in all environments. As part of every migration, it is automatically included in the PATH VALIDATION routine and the ISR will abort if it does not exist in any particular environment in Library System.

During the install either the “ssh” or “rsh”, depending on the chosen shell, must be authenticated and to test if this is correct, press PF5 from CC001 on the header screen. PF5 may only be tested (when setting CC001 up for the first time), when all variables are entered correctly for the header screen. It is useful to test this before entering any environment variables, as specified below, as if this does not work, then the validation for the paths entered per environment will not work, and return an invalid path, even if the path is valid. Remember that this authentication MUST be done across all servers.

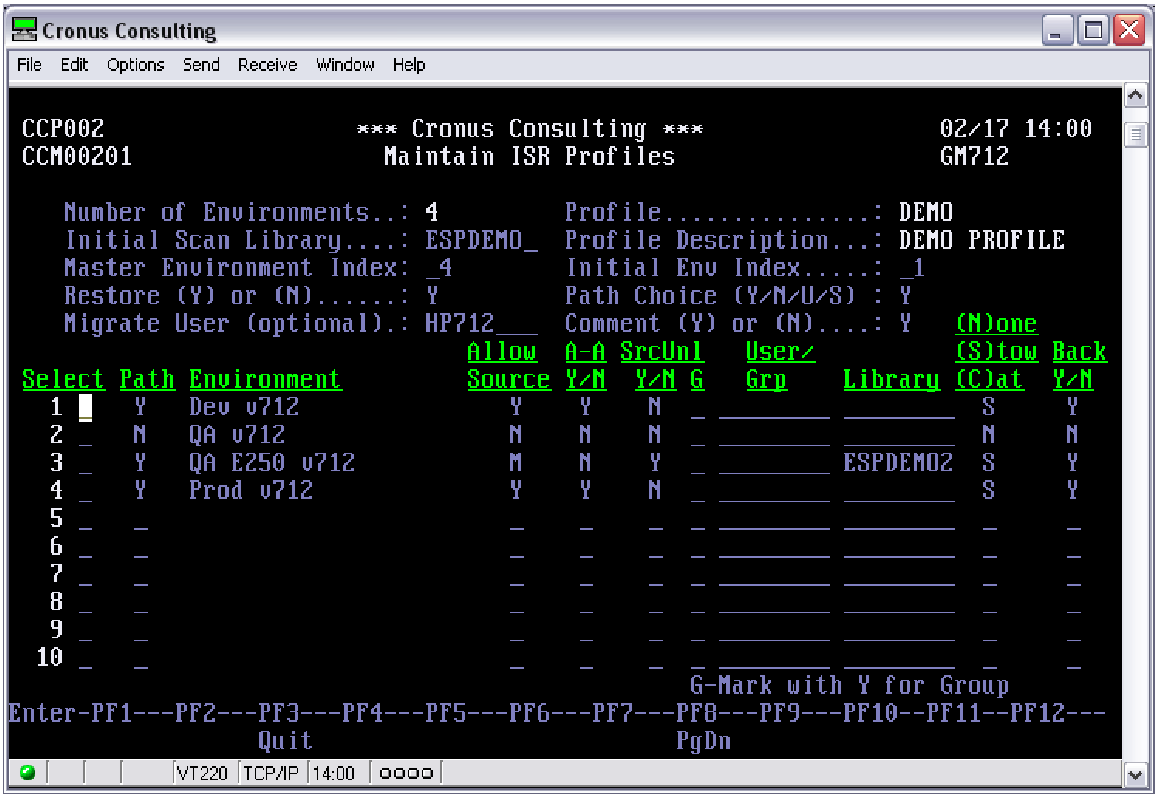


```
CCP001                  *** Cronus Consulting ***                02/17 13:59
CCM00101              Maintain ISR Control Variables             GM712

   Number of Environments..: 4
   Remote Shell Command....: ssh_____ (ssh, rsh or remsh)
   Initial Scan Library....: ESPSOFT_
   Create Logfile..........: Y       ┌──────────────────────────┐RECORD **
   Master Environment Index: _4      │ Insert Step       : 03   │
   Max Backup Versions.....: 17__    │  Copy From        : 01   │
Select Environment              Mac  │New Environment  :        │r Pool  Natparm
  1 _  Dev v712                 cro  │Dev E250 v712_______      │12      DEV_V712
  2 _  QA v712                  cro  │                          │12      QA_V712
  3 _  QA E250 v712             cro  │     Environment          │12      QA_V712
  4 _  Prod v712                cro  │ will be created using    │12      PRD_V712
  5                                  │     above Step No        │
  6                                  │                          │
  7                                  │     PF1 to Exit          │
  8                                  │                          │
  9                                  └──────────────────────────┘
 10

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Add   Quit        Shell             PgDn
```

Figure 9: PF2 – Add or Insert Environment

Once CC001 has an environment and the user has exited CC001 and saved the data, any future updating to this function will require the use of PF2. PF2 allows the **insertion** or **addition** of an environment, as seen in the above example, or an addition to the end of the defined path for e.g. to add a new Master environment to No 05. The user may copy all control variables from a specific environment to the newly inserted or added one. The user must then change the details to the new environment's variables. Please note, until all variables have been amended and SAVED, this new environment will not be added. Use PF1 to exit without completing insert. This "insert" may be done at any time, even after profiles (CC002) have been set up. This function will insert or add a "nil" path to all profiles already created, with a PATH-REQUIRED of NO. New profiles via CC002 may now be set up to use this new environment.

3.1.2 CC002 – Maintain ISR Profiles

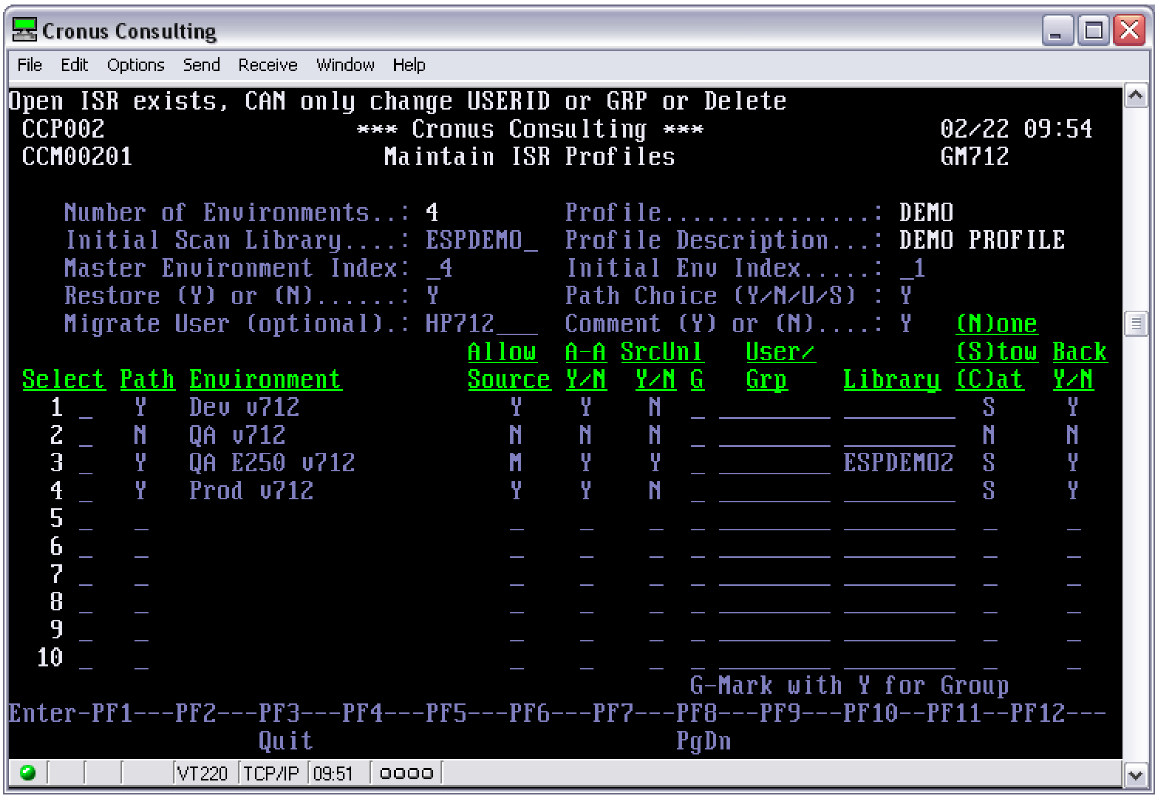


```
 CCP002                  *** Cronus Consulting ***                  02/17 14:00
 CCM00201                  Maintain ISR Profiles                    GM712

    Number of Environments..: 4         Profile...............: DEMO
    Initial Scan Library....: ESPDEMO_  Profile Description...: DEMO PROFILE
    Master Environment Index: _4        Initial Env Index.....: _1
    Restore (Y) or (N)......: Y         Path Choice (Y/N/U/S) : Y
    Migrate User (optional).: HP712___  Comment (Y) or (N)....: Y   (N)one
                                 Allow  A-A SrcUnl    User/          (S)tow Back
 Select Path Environment         Source Y/N  Y/N  G   Grp    Library (C)at  Y/N
   1 █   Y   Dev v712                Y    Y    N  _ ________ ________  S     Y
   2 _   N   QA v712                 N    N    N  _ ________ ________  N     N
   3 _   Y   QA E250 v712            N    N    Y  _ ________ ESPDEMO2  S     Y
   4 _   Y   Prod v712               Y    Y    N  _ ________ ________  S     Y
   5 _   _                           _    _    _  _ ________ ________  _     _
   6 _   _                           _    _    _  _ ________ ________  _     _
   7 _   _                           _    _    _  _ ________ ________  _     _
   8 _   _                           _    _    _  _ ________ ________  _     _
   9 _   _                           _    _    _  _ ________ ________  _     _
  10 _   _                           _    _    _  _ ________ ________  _     _
                                                  G-Mark with Y for Group
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                           PgDn
```

Figure 10: ISR Profile Capture

Profiles can be set up and these may be linked to an ISR. These variables are used during the execution of the migration process, using the **actual paths** and Natural Parameters from the Master Profile Record. These are set per environment on the **Master Profile in CC001.** The purpose of the separate Profile Record is to allow different ISR's to follow their own path. The environments are reflected as set in the Master Profile and depending on the required PATH, '**Y**' or '**N**' must be entered. If the environment is not selected, the ISR will skip to the next environment whose path = "Y". Any ISR linked to a specific profile will follow the path of "Y", and must include at least two environments.

The first entry into CC002 with an addition of a new profile will automatically reflect defaults as '**Y'** for required path and '**S**" for **STOW** for all required entries up to the Master Environment Index. These may be amended according to user specifications. Profiles may **not** be modified if an **open** ISR **exists** for that **profile**. This is to prevent migrations from going wrong. Once all ISR's linked to a profile have been completed, a profile may be changed. As many profiles as required, may be entered at any time. Profiles that have been used in successful migrations may NEVER be DELETED. This is because History exists for this profile and the function CC200, where any object may be restored to any environment will use this profile, even if no more migration occurs with this profile. Profiles may be Suspended which will mean that the profile will not be allowed to be linked to any further ISR's but will be used if necessary in enquiries or restores. Enter “S” under path choice for suspension. An exception exists to the modification of an open ISR, whereby the profile may be modified when it comes to the USERID or GROUP entry on the profile. See below -



```
Open ISR exists, CAN only change USERID or GRP or Delete
 CCP002                  *** Cronus Consulting ***                 02/22 09:54
 CCM00201                  Maintain ISR Profiles                   GM712

    Number of Environments..: 4         Profile...............: DEMO
    Initial Scan Library....: ESPDEMO_  Profile Description...: DEMO PROFILE
    Master Environment Index: _4        Initial Env Index.....: _1
    Restore (Y) or (N)......: Y         Path Choice (Y/N/U/S) : Y
    Migrate User (optional).: HP712___  Comment (Y) or (N)....: Y   (N)one
                                 Allow  A-A SrcUnl   User/          (S)tow Back
 Select Path Environment         Source Y/N  Y/N G   Grp    Library (C)at  Y/N
   1 _   Y   Dev v712               Y    Y    N  _ ________ ________  S     Y
   2 _   N   QA v712                N    N    N  _ ________ ________  N     N
   3 _   Y   QA E250 v712           M    Y    Y  _ ________ ESPDEMO2  S     Y
   4 _   Y   Prod v712              Y    Y    N  _ ________ ________  S     Y
   5 _   _                          _    _    _  _ ________ ________  _     _
   6 _   _                          _    _    _  _ ________ ________  _     _
   7 _   _                          _    _    _  _ ________ ________  _     _
   8 _   _                          _    _    _  _ ________ ________  _     _
   9 _   _                          _    _    _  _ ________ ________  _     _
  10 _   _                          _    _    _  _ ________ ________  _     _
                                                 G-Mark with Y for Group
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn
```

Figure 11: Modification of Open ISR

The following rules apply:

- **No** entries are acceptable beyond the Number of Environments specified in **Master Index**.
- Any entries below the Master Environment Index for that specific profile are not allowed and must therefore be marked as ‘**N**’.
- The Master Environment index is the main control where the path of the selected ISR will be **started** for existing objects and will in turn complete an ISR cycle.
- The **first** Environment of the Master Profile on the Control Record CC001 (but not necessarily the user profile) is always the “Development” Environment where all new objects must be created and be scanned in CC050 or CC300, with the exception of multiple Development environments that may exist on the same local server. The library reflected in the scanning of the object will always remain the DEFAULT library. Whenever objects are migrated to the “development” environment they **MUST** always first migrate to this library if downloaded from the Master. From then onwards, different libraries may be selected per environment. All new objects will start their migration path from this environment. If more than one environment exists in the “Development Arena”, an object may be scanned in to this environment as well, by entering the Environment Index in either CC300 or CC050,

as long as these “Development environments” have different library names but exist in the “Development” fuser. Obviously, having more than one Development area defined in CC001, requires the use of different libraries to avoid code being overwritten.

- This real first environment (number 1) is referred to as the True Development environment, but may be left out of a path profile. If the Development environment is to be ignored, then the **INITIAL ENVIRONMENT INDEX** must be marked with the environment number that will form the first path in the transfer of the objects. If True Development is to be included, then this index must be number ‘**1’**. In this manner a user may set up a sub-set of any number of environments defined in CC001, and a profile may exist of a “mini-path”, with a minimum of two environments.
- If the Initial Env Index is not 1, then all paths less than this environment number MUST be marked with an **‘N’.**
- **PATH** must be ‘**Y**’ or ‘**N**’ and must be ‘**Y**’ for Initial Environment and Master Index Environment marked on that specific profile.
- **ALLOW SOURCE** must be ‘**Y**’ or ‘**N**’ or **‘M’** however it must be ‘N’ if the Path is set to ‘N’. If Allow source is set to NO only the object code will be migrated. If ALLOW-SOURCE = ‘N”, then the staging area defined in the Master Profile is used for keeping the source. If Allow source is set to M, then both the source and object will be migrated to the next environment and then deleted from the “From Environment”. If ALLOW-SOURCE of either the FROM or TO environment is set to M, a further “object” check will be applicable. This check will inform the user if the object already exists in the TO environment. The user will then have a choice to overwrite the object in the TO environment or REJECT the object from being migrated to the TO environment, or alternatively, STOP the ISR from continuing until the user has sorted out the problem. If stopped then when necessary, RESET the ISR from HOLD and continue with the TRANSFER. The Staging Area is always used in the background when migrating objects or restoring source of an object, even if source is allowed. This is to allow the user the option of changing profiles from Allow-source of YES to NO, as there will always be a last version of the source residing in the staging area. Therefore, if source is ever restored, the source is sent to both the normal fuser and the staging area in order to keep objects in synch.
- **TEXT and COPYCODE** - If text or copy-code is to be migrated, if the ISR has an Allow-Source of NO, even though NO OBJECT code exists for these modules, it is impossible for these objects to migrate without source, so source will be migrated (override the profile) to both the environment and staging area. If a restore is needed, the same rule will be applicable, restoring object only for object types other than text or copy-code, and source for text and copy-code
- **UPLOAD APPROVAL** must be ‘Y’ or ‘N’. However it must be ‘N’ if Path is set to ‘N’. If ‘Y’ is chosen then a user will be required to approve the upload to that particular environment before migration will be allowed. This indicator will not be used when moving Down from the Master, but if the ISR is used for Upload only, it will request approval for the first migration move, if marked with a Y.

- **USERID** must be a valid User (and not a group). The field need only be entered if security is required around the actual migration option (CC100). If left blank, the transaction security will be used. i.e. if CC100 allocated to a user's menu, the function will be allowed, but if a user-id has been added to an environment on a profile, then this will be a further check and only the allocated environment user will be able to migrate FROM the environment, it has been linked to. An error will be displayed if a user-id has been allocated and another user attempts the migration. Note, if a user must have security to be the only user to move TO for example, Production, then the user-id must be allocated to the environment BEFORE production, as the check works in the FROM environment.
- **GROUP** must be a valid Group (and not a user). The Group security works the same way as explained in the USERID section directly above. However, the user attempting the migration must from part of the Group linked to the environment. Note, both the **USERID** and **GROUP** are entered in the same column, but if it is a group that has been entered, mark **column G with a Y**. Only the userid and group column may be amended when an open ISR exists against the modified profile. See figure 11 above.
- **STOW/CAT** must be '**S'** for stowing or a '**C'** for catalog or **'N'** for NONE meaning a move only. The STOW option will ensure that both the SAVE and OBJECT dates are updated. The CATALOG option will only update the object date and the SAVE date will remain. The 'True Production' Environment is set at 'S' and cannot be changed. It must be noted that if objects have to be restored, both the SAVE and OBJECT date will reflect the restore date, unless option **CC200** is used as this **ONLY** restores source and must be manually Stow'ed. The NONE option will transfer the code and do a SAVE only. This will update the save date and will reflect NO dates for the object code or any object code itself. If the object is moved to an environment, where the source and object already exists, this old object code will be removed via an UNCATALOG, so that only source remains. Using the restore option, these same parameters will be used when restoring source or object.
- **BACKUP** must be 'Y' or 'N'. The 'True Development' Environment is set to 'Y' and cannot be amended. If Backup is marked as 'Y' migration will proceed as normal, if marked as 'N", no backup of the object will be done and consequently no RESTORE will be done if a problem occurs and objects must be restored, or if the Restore functions are selected from the menu. Backup must be 'N' if the Path is set at 'N'.

  The backup function follows the following path depending on the profile linked to the migrated ISR –

  1. If the Master Environment is not TRUE PRODUCTION, a backup of the object is taken as it is downloaded to the initial environment of the profile.
  2. If the Master Environment IS equal to true production, a backup is NOT taken when the object is downloaded to the initial environment.
  3. A backup is NOT taken of the object in the environment being migrated TO.
  4. Once the object has been maintained by the user, or a new object has been developed and a migration is now in progress, a backup is taken of the object in FROM environment as it is being migrated to the next environment.

5. If the migration is now being processed to the Master environment: a). if the Master is NOT True Production, NO backup is taken of the object in the TO environment as this has already been done when downloading occurred, or b). if the Master IS True Production, then a backup is taken of the object in the TO environment before migration occurs and over-writes the object. In scenario b) both a FROM and TO backup will take place.
6. An “F” for From and “T” for To will be displayed on the screen for the user to view if a from or to backup is being processed. This is also viewable in the History function (CC095).
7. During a migration, if any backup is unsuccessful and the restore indicator is set to N, then an **E** for Error will be displayed under the backup column of the migration screen, but will NOT ABORT the ISR migration. At the end of the migration process a non-backup error report will be sent to the printer for the user to view. If the backup is not successful, then the object may be returned via CC102, the backup error fixed, and then retransferred via CC100 for a backup to be made. This sequence of non-backups can also be viewed in the ISR History enquiry (CC095).

- **RESTORE IND** must be ‘Y’ or ‘N’. If ‘Y’ and if any object in the migration has a problem, the migration will stop and the entire ISR will be restored depending on the Backup Indicator and restored to the version that was backed up as specified above. If ‘N’ and any object in the migration has a problem, it will be bypassed and the other objects in that ISR will carry on with the current migration. At the end of the migration, the user can request an Error report to be printed, which will reflect all error objects. This sequence of error events can also be viewed in the ISR History enquiry (CC095). During a migration, if any object is unsuccessful, then an **E** for Error will be displayed under the backup, copy or compile column of the migration screen, depending on what section is in error. If an ISR is restored and no backup yet exists for the object being restored, the object will be restored to the previous backup version of that object i.e. the last backup taken in the last migration of that object, no matter the ISR number. If a backup in that ISR does exist, this backup will be used. View the History function if a restore tales place to see which backup version was used.
- **ISR LIBRARY** - This library is used for the migration for each environment in the ISR, as a constant library and need not be the initial library specified in the Master Profile. However, the ISR Library is not allowed for the ‘Development’ Environment, as the scanning of the source code determines the library for ‘Development’. From the second Environment onwards, this ISR Library can be different to the scanned library of the source code, and this ISR Library will be used in the move from one environment to the next. If a copy of the source code is required in ‘Development’ in another library to the scanned one, use PF1 in transaction CC050 to do a duplicate copy to another library. In this way, a different library to the scanned one can be used in ‘Development’. This ISR LIBRARY will however, be overridden by the Object Library that can be specified in transaction CC050 per object per environment. The ISR Library should be used when the entire ISR should be migrated to a specific library and the Object Library should be used when objects in an ISR must be migrated to a different

library to the scanned ones. This Library must be valid and the function will return an error message if an invalid library is entered. If left blank, the migration will use the default “scanned” library.

- **“GENERIC” ISR LIBRARY –** an ISR LIBRARY may be marked as GENERIC instead of the actual library in the environment. This GENERIC library is controlled by the site and needs to have coding added to the user exit, **ISNUX100**, that exists in library ESPSOFT. The instructions for this coding reside in ISNUX100 itself. The Generic library should be used if the library name differs from one environment to the next or perhaps from one object to the next or from one developer to the next. If this is the case, then you would need a separate profile for each library in each environment, as it would need to be specified in the ISR LIBRARY. The coding added to the user exit must specify the rules to which the library name will be changed automatically, and in this manner will become the “ISR LIBRARY” through all migration routines. If the GENERIC library is not to be used, leave ISNUX100 as it is.

  NOTE: When setting up the coding in ISNUX100, the field #TEMP-LIB must always be populated and the following statement is mandatory, once it has been populated –

  MOVE #TEMP-LIB TO #TRANSLATE-LIB(#XX)

- **SRC UNL – SOURCE UNLOAD –** This indicator is to be set if the user requires the migrating source to be unloaded to a Unix Text file at the end of a successful migration to a particular environment. If Unload is required mark with ‘Y’ else mark with ‘N’. If ALLOW-SOURCE = ‘N’ in any environment other than Development, the unload of the source will not be allowed. Due to the fact that Development always has source even if ALLOW-SOURCE = N, until a successful migration to the next environment, it is allowed here. The SYSOBJ function to unload the source is called once all objects have been successfully migrated or if NO RESTORE is required and the SRC UNL Indicator has been marked with a ‘Y’. For e.g., if environment 1 is marked, then the source will be unloaded from env 1 after it has been moved to env 2 etc. As the migration stops at the Master Environment, the SYSOBJH function will be called twice, once for the Master and once for the From environment.
- **PATH CHOICE –** The user may decide on whether to UPLOAD, DOWNLOAD or UPLOAD ONLY during the initial migration step. PATH CHOICE set to Y will allow the user the choice of an UPLOAD or DOWNLOAD, a PATH CHOICE set to U will force the user into an UPLOAD migration only, with no choice, while PATH CHOICE set to N will default to the normal migration process. i.e. N = during the first migration step the objects linked in the ISR will automatically be downloaded from the MASTER to the INITIAL environment, once the code has been amended in the INITIAL environment, the migration will once again move up the line in an UPLOAD movement. Y = during the first migration step the user will be requested to enter a ‘U’ for Upload or ‘D’ for download. If D is selected, the default process as set up in PATH CHOICE = N will be followed. If U is selected, the objects linked in the ISR will NOT be brought down from the MASTER environment, but will move directly from the INITIAL environment. Please note, that if U is selected, the code must be available in the initial environment for movement, else the ISR will abend. If the object is NEW, it will automatically have a choice of U set, as there will

be nothing in the MASTER to download. If a profile needs to be SUSPENDed, then enter a path choice of an ‘S’. This will allow no further use of the profile, but it will be available for history purposes (restores via CC200 or enquiries).

- **IMPORTANT NOTE referring to path choice –** if U is selected, and the object is therefore NOT brought down from the MASTER, there will be no backup of this object in the initial environment and if a restore is needed, it will be restored from the previous backup version of that particular object
- **COMMENT –** This indicator must be set to **‘Y’** or **‘N’**. If set to Y a comment will be added to the end of the source of a migrated object, referring to the ISR number and date of migration. If set to ‘N’, a comment will be NOT added. Comment of ‘Y’ is only allowed for Development Environments and if a compile option is selected, where Development Environments refer to any environment that resides on the True Development Server.
- **MIGRATE USER –** This user will be used in the migration of objects to and from environments, irrespective of who is signed on when the migration takes place. All copies, backups, restores and compiles will be carried out by this userid. The Userid or Group Allowed will continue to be valid even if a Migrate User has been entered. This Userid or Group Allowed is a security based option, ensuring that only specified users are allowed migration. A MIGRATE USER does not prevent a user from migration, but ensures that only the migrate user will be used in the actual transaction of migration. This MIGRATE USER must be a valid user and must be authenticated, else the migration will not be successful. See below for example of authentication. Note, however, that the Userid doing the migration must still be authenticated for remote shell commands, as well as being used in the creating of temporary work files during a migration process.

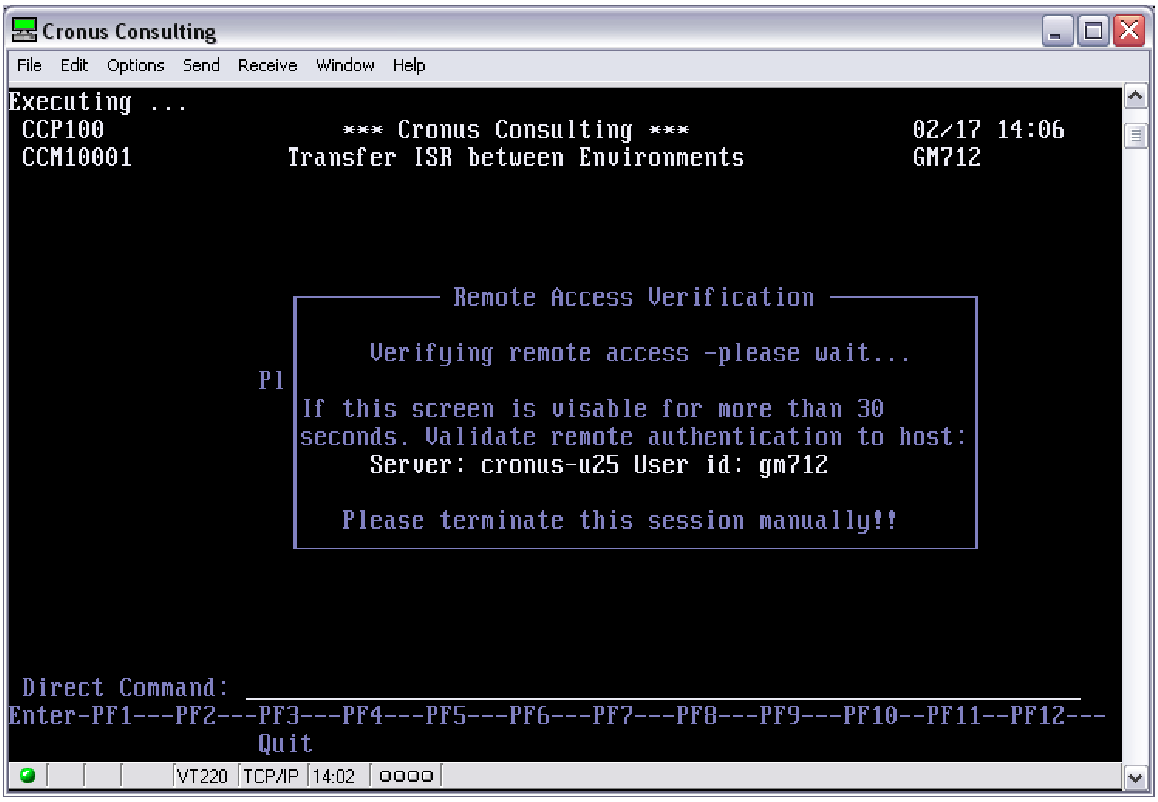
Authentication as follows:

Secure Shell Authentication When using a Migration User-id

- The Unix/Linux ssh security definitions located in the **~migration-user-id-home/.ssh/authorized_keys** file, should be duplicated to all users required to execute function CC100.
- The Unix/Linux administrator should facilitate this access.
- The administrator can use the following command to validate the access:
  From your user-id on O/S level execute:
  ssh <your-server> -l <migration user-id> ls –l

  Example:
  ssh cronus-dev -l sag ls –l

If the User-id has not been authenticated, then a window will be displayed during a migration using function CC100, and this window will cause the user to “hang” and the migration will not continue. See function CC100 for further explanation. See screen print below. To test this, before taking a migration option, use PF5 in option CC001 signed on as the required user.



```
Executing ...
 CCP100                  *** Cronus Consulting ***                02/17 14:06
 CCM10001              Transfer ISR between Environments          GM712


                     ────────── Remote Access Verification ──────────

                               Verifying remote access -please wait...
                  Pl
                     If this screen is visable for more than 30
                     seconds. Validate remote authentication to host:
                          Server: cronus-u25 User id: gm712

                        Please terminate this session manually!!


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

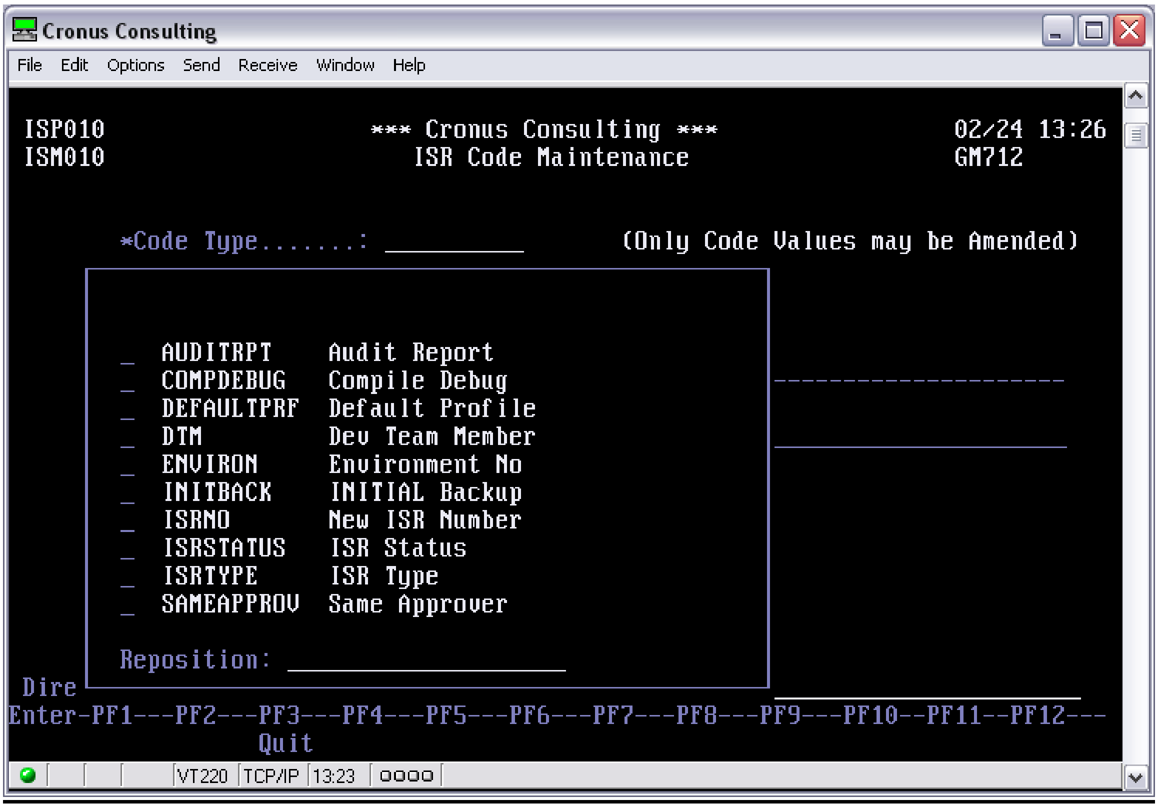
Figure 12: Authentication Window in CC100

3.1.3 CC010 – ISR Code Maintenance

This function is used to maintain codes that are specific to the run environment of all change control processes and should be administered by the person responsible for setting up and maintaining the system run environment.

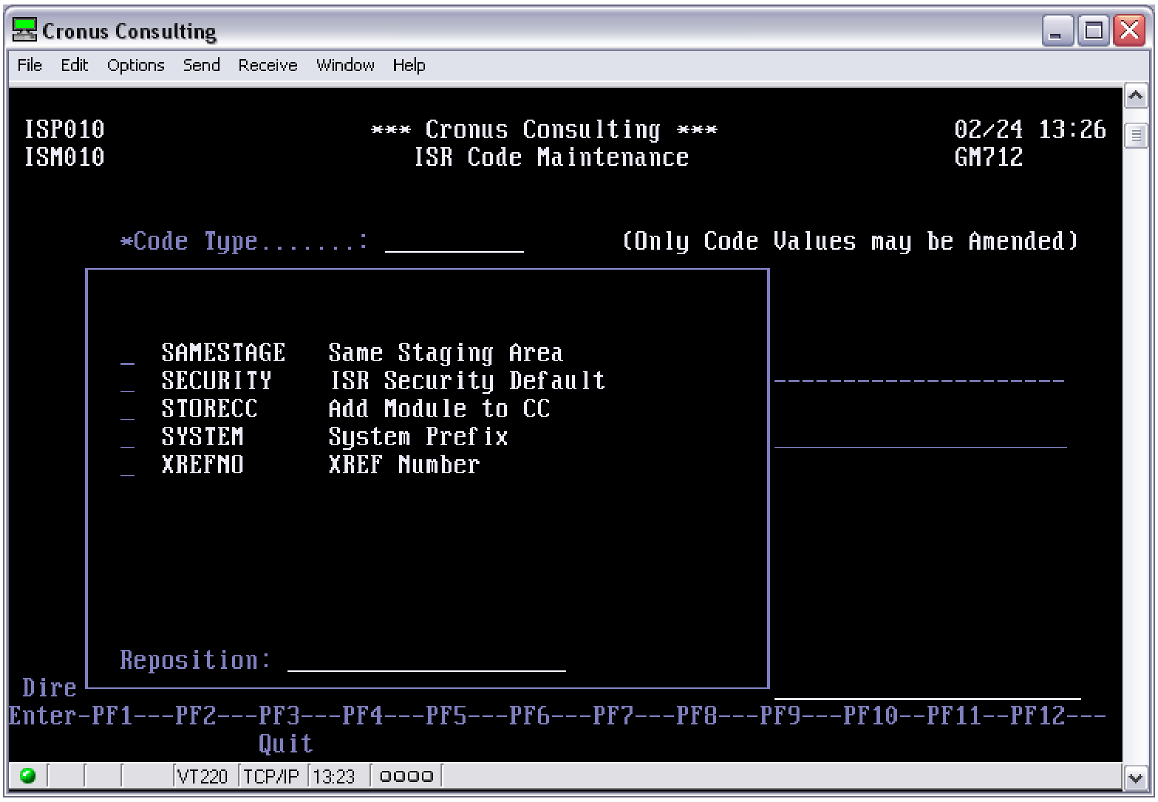
ISR CODE TYPES:

Code Type	Description
AUDITRPT	Determines whether an Audit Report is printed after each migration move. See CC100 for examples
COMPDEBUG	Determines if the temporary Compile Files are deleted or not after a migration move
DEFAULTPRF	Set with a default profile that will be pulled in for each ISR creation in CC030, or NONE for no default pull in. This profile must be an existing profile and will be used for all CC030 functions if set. This can however be overridden in CC030.
DTM	Provides a list of all Development Team Members that an ISR can be assigned to.
ENVIRON	Contains the next number to be used as a pre-numbered Environment and not the environment number on the Control Variable definitions (used in background of ESP)
ESPBATCH	Contains a Y or N and if set to Y, SCL transfer will be allowed, if set to N SCl transfer will not be available.
INITBACK	Contains a Y or N and if set to Y the initial backup routine may be run and normal migration may not, and if set to N normal migration may continue and the initial backup may not.
ISRNO	Contains the next ISR no to be allocated when an ISR is created via CC030.
ISRSTATUS	Provides a list of possible status's that a Master Profile might have.
ISRTYPE	Provides a list of possible ISR types. ISRTYPE is used to group an ISR according to the type of development e.g. Maintenance, Program Error. NAT and OLD are system defined types and cannot be amended. ISRTYPE OLD is used to indicate that the objects linked to this ISR will be archived.
SAMEAPPROV	Contains a Y or N, if set to Y then the user who creates the ISR may also approve the ISR, if set to N, the creator and approver and the user who migrates the ISR may not be the same
SAMESTAGE	Contains a Y or N and if set to Y, staging area may be duplicated across environments, and if N, then different staging areas must be set up.
SECURITY	Contains an A, N or Y and refers to the ISR Security indicator in CC030, if code = A, indicator may be marked with Y or N, if code = N, the indicator may ONLY be marked with N, and if Y, the default will be N when creating the ISR, but may be amended by the user to Y if necessary.
STORECC	Library names added here will be allowed to be used in the scan function in CC050 option PF2, without doing an actual check to see if the source exists. Thereby, only creating the entry in the Inventory List picking up object information from the existing entry in the actual library. These will typically be call-out libraries. CC050 option PF5 will also validate these libraries.
SYSTEM	Provides a list of defined systems within the development environment. The SYSTEM variable may also be loaded with "codes" which can be used to control the GENERIC library set up if GENERIC is used in any profiles. In this manner a GENERIC library may be set up per ISR as SYSTEM is linked to each ISR. For example, this could be used if multiple Developer libraries are used. See ISNUX100 for how to set up if SYSTEM is to be used to control GENERIC libraries.
XREFNO	Contains a Y or N and if set to Y will force user to enter a XREF No when creating an ISR, and if N, then XREF is optional. This number is normally a site-specific number and there is a user-exit available to validate this number if required, ISNUX030. This routine may be amended per site and exists in library ESPSOFT. Instructions will be found in ISNUX030 itself.



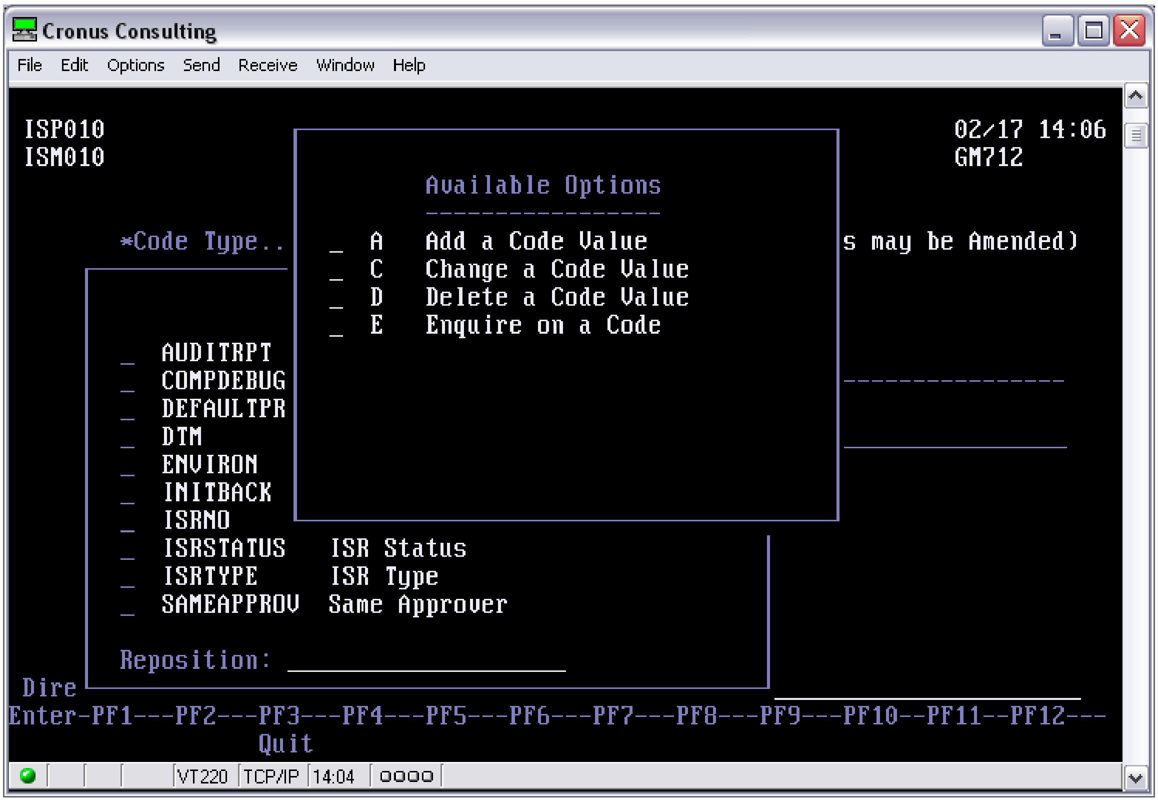
```
ISP010                   *** Cronus Consulting ***                02/24 13:26
ISM010                     ISR Code Maintenance                   GM712


        *Code Type.......: __________       (Only Code Values may be Amended)



        _  AUDITRPT     Audit Report
        _  COMPDEBUG    Compile Debug
        _  DEFAULTPRF   Default Profile
        _  DTM          Dev Team Member
        _  ENVIRON      Environment No
        _  INITBACK     INITIAL Backup
        _  ISRNO        New ISR Number
        _  ISRSTATUS    ISR Status
        _  ISRTYPE      ISR Type
        _  SAMEAPPROV   Same Approver

        Reposition: ____________________
 Dire
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 13: ISR Code Types as specified in table above



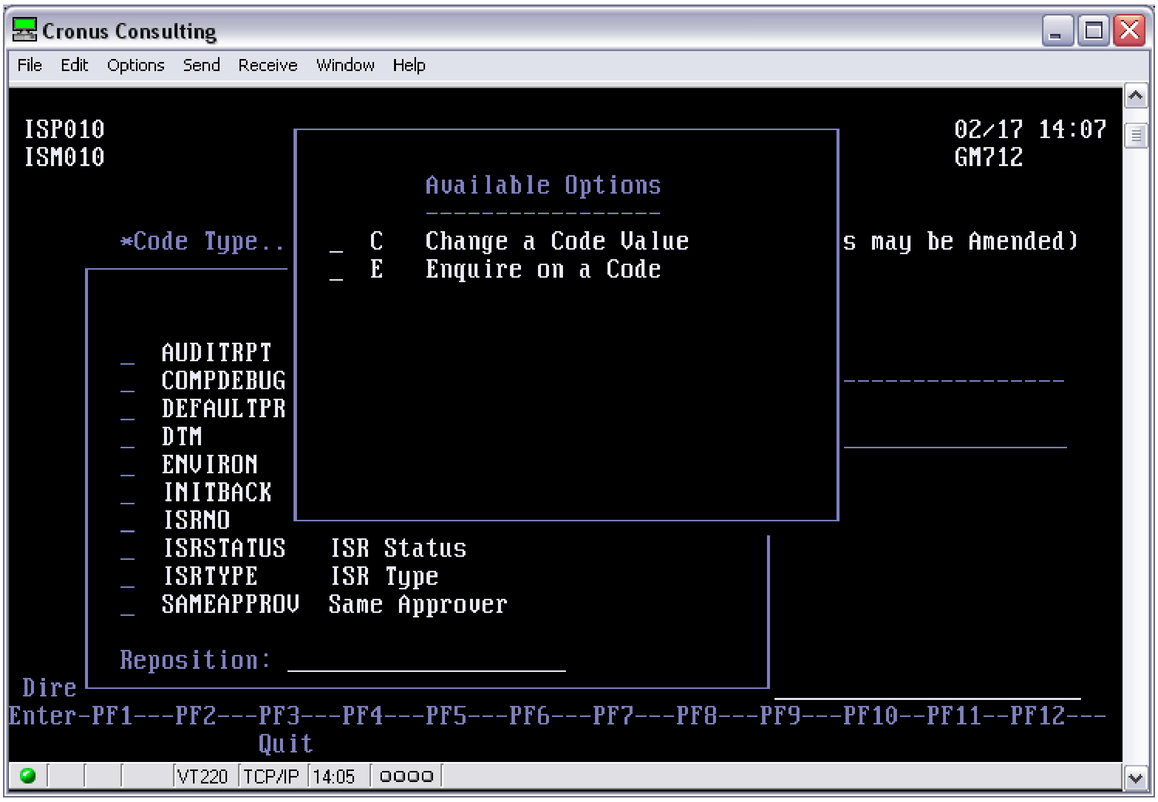
```
ISP010                   *** Cronus Consulting ***                02/24 13:26
ISM010                     ISR Code Maintenance                   GM712


        *Code Type.......: __________       (Only Code Values may be Amended)



        _  SAMESTAGE    Same Staging Area
        _  SECURITY     ISR Security Default
        _  STORECC      Add Module to CC
        _  SYSTEM       System Prefix
        _  XREFNO       XREF Number






        Reposition: ____________________
 Dire
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 14: More ISR Code Types as specified in table above



```
ISP010                                                         02/17 14:06
ISM010                                                         GM712

                            Available Options
                            -----------------
      *Code Type..   _  A   Add a Code Value                  s may be Amended)
                     _  C   Change a Code Value
                     _  D   Delete a Code Value
                     _  E   Enquire on a Code
      _  AUDITRPT
      _  COMPDEBUG                                             ----------------
      _  DEFAULTPR
      _  DTM
      _  ENVIRON
      _  INITBACK
      _  ISRNO
      _  ISRSTATUS   ISR Status
      _  ISRTYPE     ISR Type
      _  SAMEAPPROV  Same Approver

      Reposition: ____________________
Dire
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 15: Available options for Selected Code Type for e.g. DTM



```
ISP010                                                         02/17 14:07
ISM010                                                         GM712

                            Available Options
                            -----------------
      *Code Type..   _  C   Change a Code Value               s may be Amended)
                     _  E   Enquire on a Code

      _  AUDITRPT
      _  COMPDEBUG                                             ----------------
      _  DEFAULTPR
      _  DTM
      _  ENVIRON
      _  INITBACK
      _  ISRNO
      _  ISRSTATUS   ISR Status
      _  ISRTYPE     ISR Type
      _  SAMEAPPROV  Same Approver

      Reposition: ____________________
Dire
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 16: Example of a different subset of options for a specific Code Type for e.g. COMPDEBUG

ISR CODES are predefined and may not be added to or deleted, only CODE VALUES associated with these code types may be amended and their functional options are determined by what type of ISR Code is being selected. Therefore, only specific codes may be amended or code values added to. By selecting the required code, the help function will assist the user in reflecting what options are allowed, either Add, Change, Enquire or Delete. See two examples below of different code types having different option selections.

Example 1: DTM – new users may be added or deleted for this code, so this ISR code may have many code values and not just 2 as in COMPDEBUG below.

Example 2: COMPDEBUG – code value may only be amended to either a Y or N, no additions allowed. See sub-set examples on screen above.

Special Notes:

- COMPDEBUG – when any migration (transfer, return or restore) is executed, the objects get compiled, stow'ed or saved, depending on the profile indicators. These compile-type routines generate scripts across servers. If this indicator is marked as 'N', these scripts will not be removed at the end of a migration. If marked with 'Y', these scripts will remain for debugging purposes. It is a good idea to leave this indicator as an 'N', until a problem occurs that requires compile debugging. This can then be turned on, and the ISR rerun.

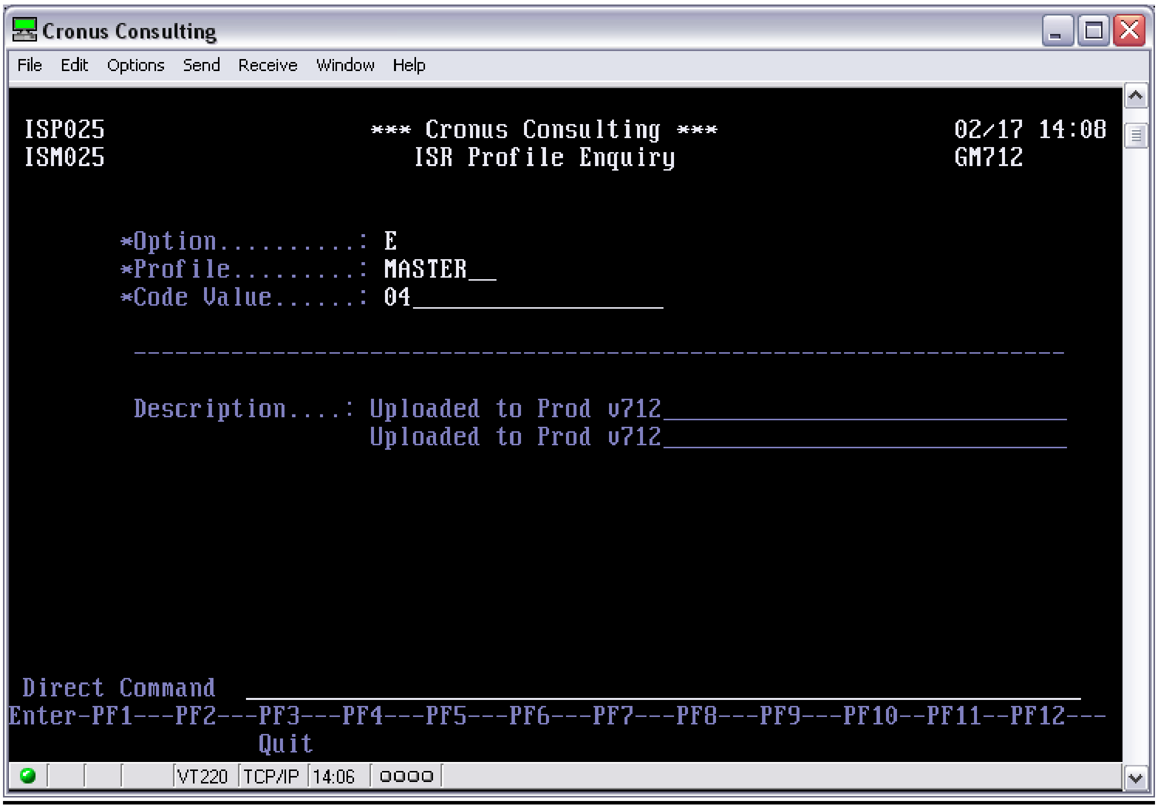
- AUDITRPT – if set to Y, after each successful migration, irrespective of the environment from or to, an audit report (resembling all details on CC100 window) will be automatically sent to the print queue. This will detail all successes, as well as all errors and error codes. See CC100 for sample screens.

- ISRTYPE – In order to archive an object, the ISRTYPE must be selected as OLD. Use function CC250 and not CC050 and CC100 with ISRs that have the ISRSTATUS set to OLD. If an ISR is created with type OLD, normal migration will not be possible via CC100 and an error will be returned. In the same manner CC250 will return an error if the type is NOT specified as OLD.
  In order to run an initial backup, the ISRTYPE must be selected as UBK, this will be run via CC350 and as explained above, an error will be returned if CC100 or CC250 is run with this type and vice versa.
  If SCL transfer is available, the ISRTYPE must be selected as SCL. This will differentiate between normal ISR's and SCL ISR's and will execute the correct routine from each function selected.

  ESPBATCH – during installation select "Y" if EspBatch is running in environment or 'N' if not. If ESPBATCH = 'Y', SCL selection, copy, transfer, profiles, return and display options will be available.

3.1.4 CC025 – ISR Profile Enquiry

This function is used to enquire on Profiles and depending on the profile path, the status codes will be reflected. It must be noted that each ISR may contain a different path, therefore more than one ISR may contain the same status, but this status will reflect a different environment. All enquiries show the status dynamically with the correct environment path per code. The function is for clarification purposes.



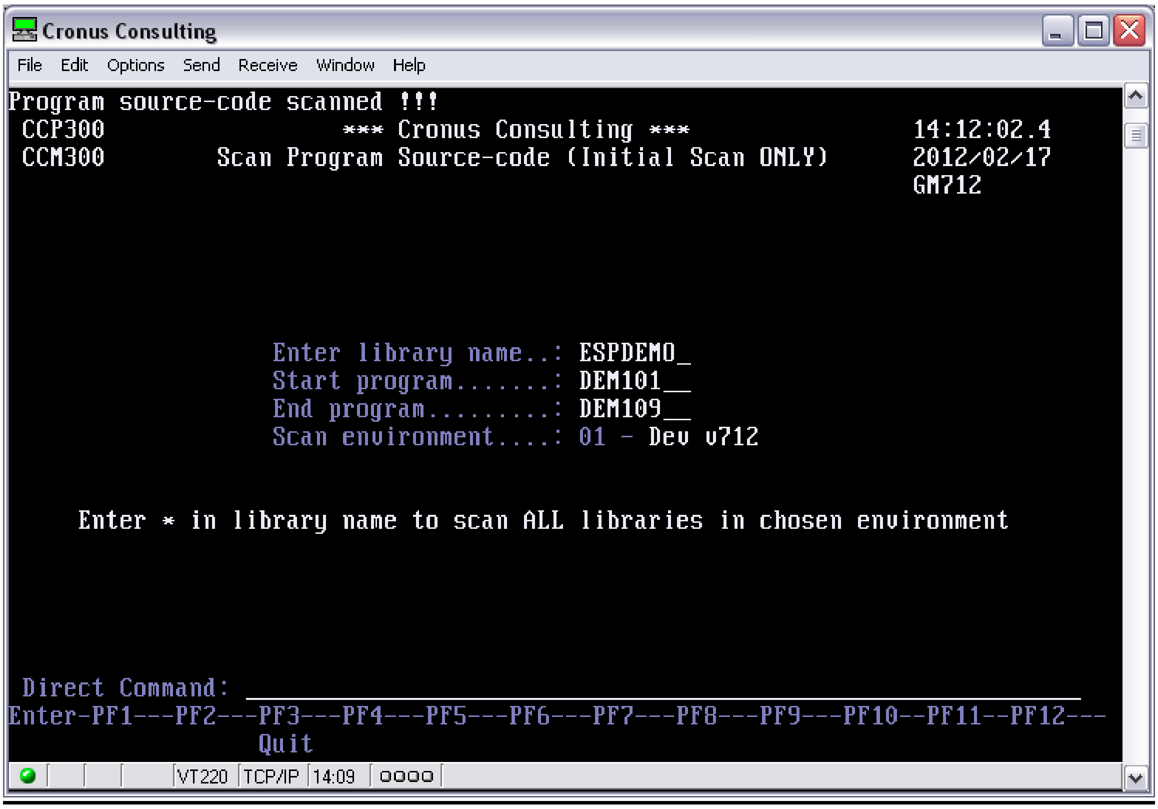
```
ISP025                     *** Cronus Consulting ***                02/17 14:08
ISM025                        ISR Profile Enquiry                   GM712


        *Option..........: E
        *Profile.........: MASTER__
        *Code Value......: 04__________________

         ------------------------------------------------------------------

         Description....: Uploaded to Prod v712_____________________________
                          Uploaded to Prod v712_____________________________










 Direct Command  ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 17: ISR Profile Enquiry

Therefore, status 04 as in the example above means Uploaded to Production, but another profile that only has 2 environments in its path will reflect status 02 as being Uploaded to Production. When checking an ISR status, always refer to the profile to get full clarity. The status will refer to the environment number as selected in a specific profile, and not the environment number set out on the Master in CC001.

3.1.5 CC300 – Initial Source Code Scanner

This function is used to populate the EspControl object inventory and update the “new-object” indicator to “old” on all the objects being scanned in. The function should **only** be executed during the installation procedure of EspControl – or when duplicate copies are made of production libraries on development and the user wants the object to be scanned in as OLD. All objects scanned will be recorded as existing objects in all the environments (to which the object has been linked in an ISR to a profile) which means that the ISR transfer flow will **start** from the Master Index environment to the Initial Environment specified on the profile. If more than one Development environment is specified, this is controlled by the environment number being scanned in from (as reflected below). This means that an object does not have to exist in ALL Development Environments, but at least one, and will be controlled by the profile.



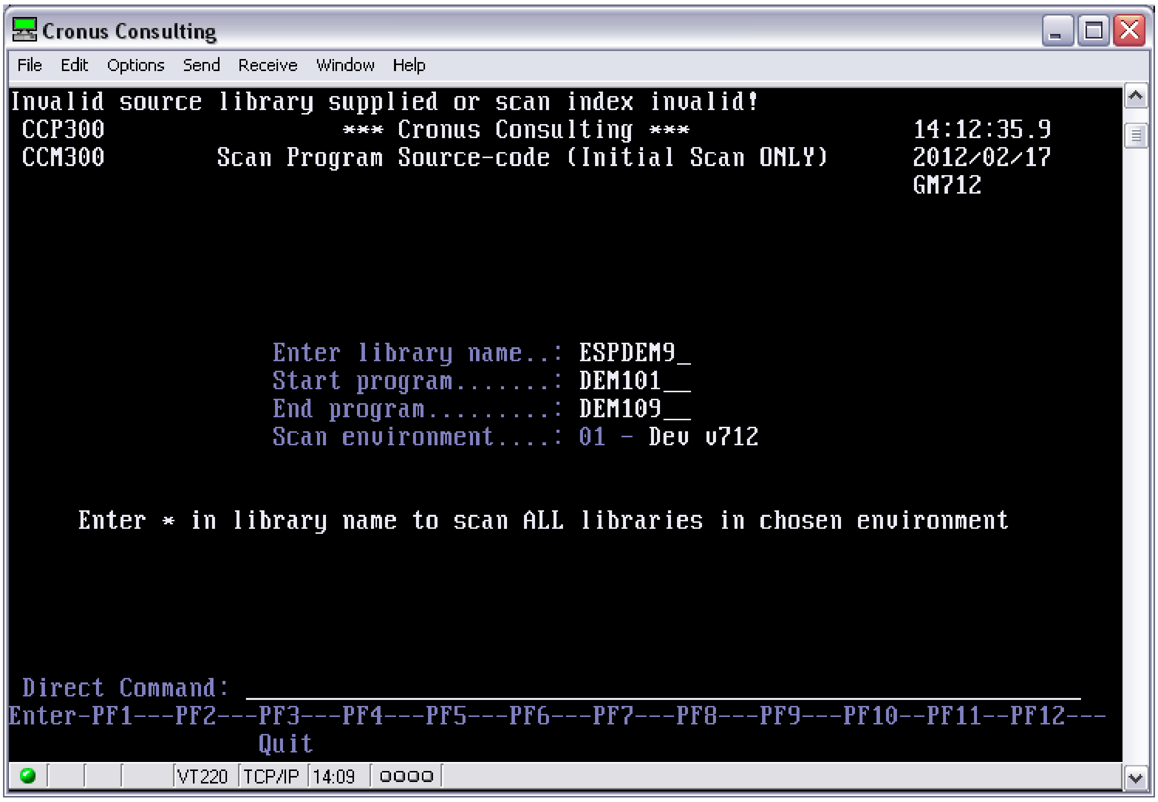
```
Program source-code scanned !!!
 CCP300                 *** Cronus Consulting ***               14:12:02.4
 CCM300        Scan Program Source-code (Initial Scan ONLY)     2012/02/17
                                                                GM712



                   Enter library name..: ESPDEMO_
                   Start program.......: DEM101__
                   End program.........: DEM109__
                   Scan environment....: 01 - Dev v712


     Enter * in library name to scan ALL libraries in chosen environment



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 18: Initial Source Scan

If the Master source-code environment is on a remote system you would have to set the DBID on the EspControl DDMs to reference the Development ESP Database before you execute CC300 – this if Entire Net-Work is available – if not **Please contact us to discuss the best options to do the initial source code scan.**

If SCL migration is available, SCL’s are not scanned in via CC300, but via a new option CC330. See Appendix A function CC330 at the end of the manual, for detail explanation of how to scan in SCL’s.

The Scan Environment may be selected by the user and this will pick up the correct DBID and FUSER from which to scan in the objects. However, this environment MUST be an environment that exists on the Development machine or remote mounted onto Development. This environment is the same environment number as specified in the Control Variables on CC001. The Scan Library entered will be validated for the environment entered, and if it does not exist, an error will be given. See below:



```
Invalid source library supplied or scan index invalid!
 CCP300             *** Cronus Consulting ***              14:12:35.9
 CCM300        Scan Program Source-code (Initial Scan ONLY)     2012/02/17
                                                            GM712




                     Enter library name..: ESPDEM9_
                     Start program.......: DEM101__
                     End program.........: DEM109__
                     Scan environment....: 01 - Dev v712


     Enter * in library name to scan ALL libraries in chosen environment




 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 19: Initial Source Scan Library Error

All types of Objects (e.g. Programs, Maps, Text etc.) may be scanned and will be updated in the Object Inventory with the correct Object Type as they exist in the fuser. A range of programs may be entered and all objects in between, will be scanned in, for example DEMO1* thru DEMO9*. If the entire library is required enter only * and * in both the start and end program parameters.

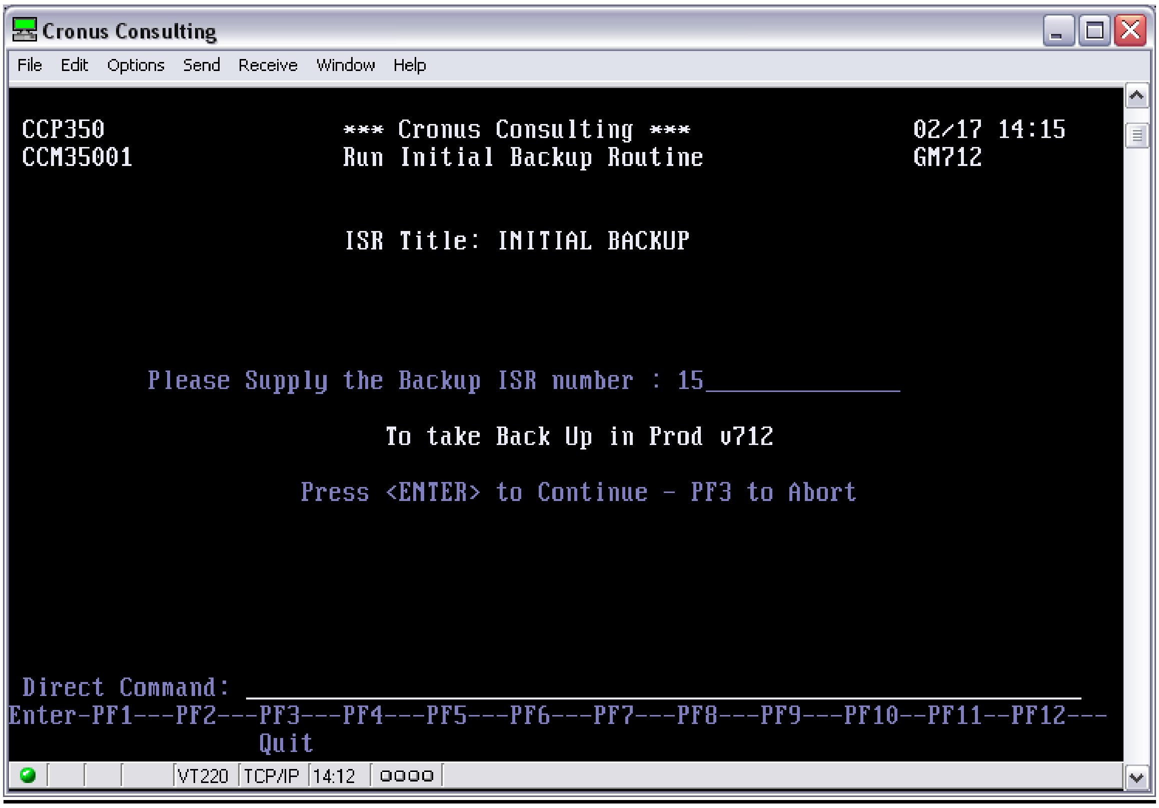
For this option to work, the code MUST exist in the Development Environment that has been selected. If an environment is chosen, that is not a Development one, or one remote mounted, then the source code scanner will not pick up any code and will not add these objects to the Object Inventory.

If a new object is developed and needs to be part of the Inventory List, this option must NOT be used, but the new object must be scanned in via PF6, option CC050 as explained below in the manual.

3.1.6 CC350 – Run Initial Backup Routine

This function is used to run an initial backup of all objects in a choice of environments, so that a formal Change Control Backup will exist before a new install or an upgrade of the change control system. As the backup cycle (see CC100 below in as explained below in the manual), takes the backup when moving FROM an environment, if a problem occurs the very first time an object is migrated, there will be no initial backup. This routine will create such a backup. It is not necessary, but is the client's choice to run such a backup. **Please note, an Initial Backup is highly recommended, as if not run and an ISR aborts which contains an object which is being moved for the first time, no restore will be done and a manual restore will have to be done. This could cause a problem if the ISR aborts while being migrated to the production environment or the user ran a migration on an ISR that has a profile of UPLOAD.**

CC350 runs in the same manner as CC100, it must be executed once for each environment needed to be backed up. While CC350 is in the process of running or has CC350 not yet completed the backup for all selected environments, the normal migration of objects via CC100 will NOT be allowed and CC100 will issue an error message if run.



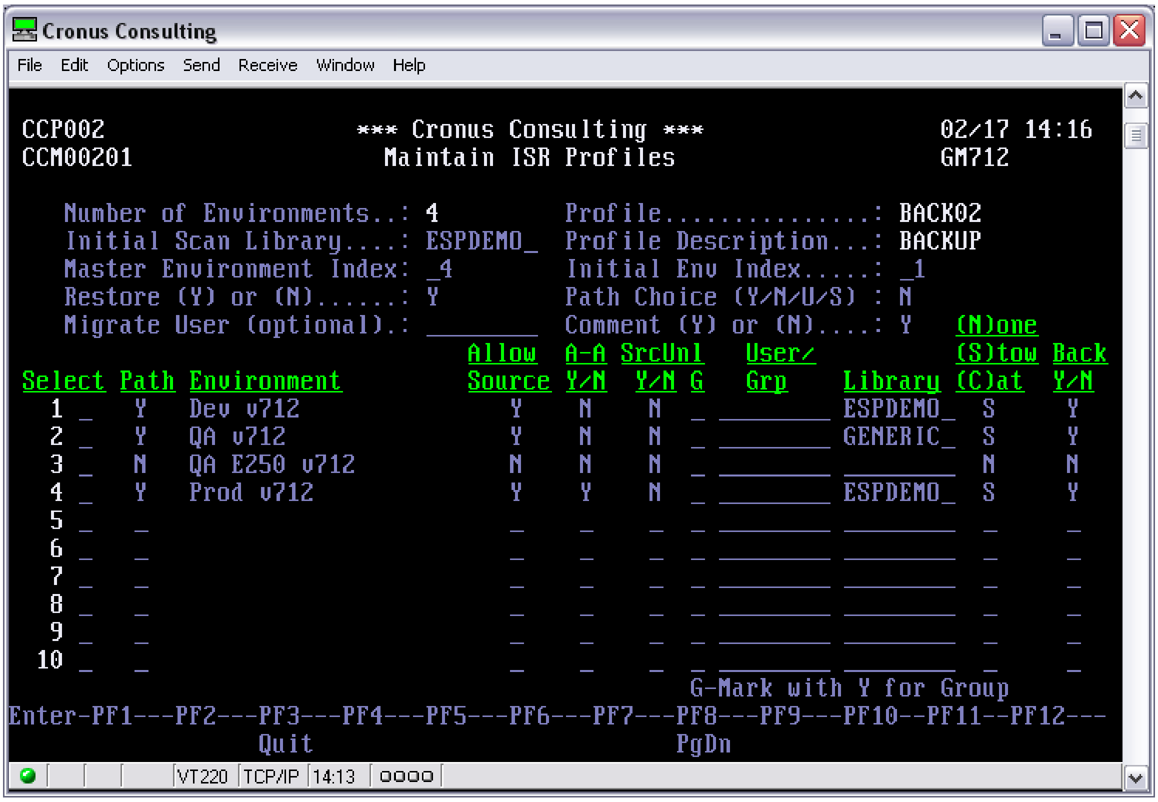
```
CCP350                   *** Cronus Consulting ***              02/17 14:15
CCM35001                 Run Initial Backup Routine             GM712

                         ISR Title: INITIAL BACKUP


          Please Supply the Backup ISR number : 15______________

                            To take Back Up in Prod v712

                       Press <ENTER> to Continue - PF3 to Abort




 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 20: Run Initial Backup Routine

The initial backup routine has specific steps that must be completed in a specific order, before the above CC350 may commence running. Some of these steps will include transactions explained further in the manual.

STEP 1:

- CC002 - Create a profile, ensuring that you have 'BACK' as part of your profile name e.g. BACK01, BACK02 etc
- This profile must have all paths linked that you want to have backed up. E.g. if you want Dev, QA and Prod to be backed up, then PATH = Y for all of the environments. If only Dev and QA, then only mark PATH = Y for these two.
- The profile must have ALLOW-SOURCE = Y and BACKUP = Y. All other indicators may remain as the default as they are ignored.
- Ensure that the ISR-LIBRARY is correctly set up, as this library will determine what library is to be backed up, if specified. If not specified, the library that the object was scanned in with will be used for all environments being backed up. The OBJECT LIBRARY is not used in the initial backup and cannot be set via CC050.
- GENERIC ISR Libraries may also be selected (see CC002 for GENERIC explanation)
- With a BACK* profile, the library for the initial environment (i.e. True Development) may be amended (this is disallowed with all other profiles). By amending the ISR LIBRARY in Backup profile, a different backup may be run for each library in each environment (a different ISR number), if required.

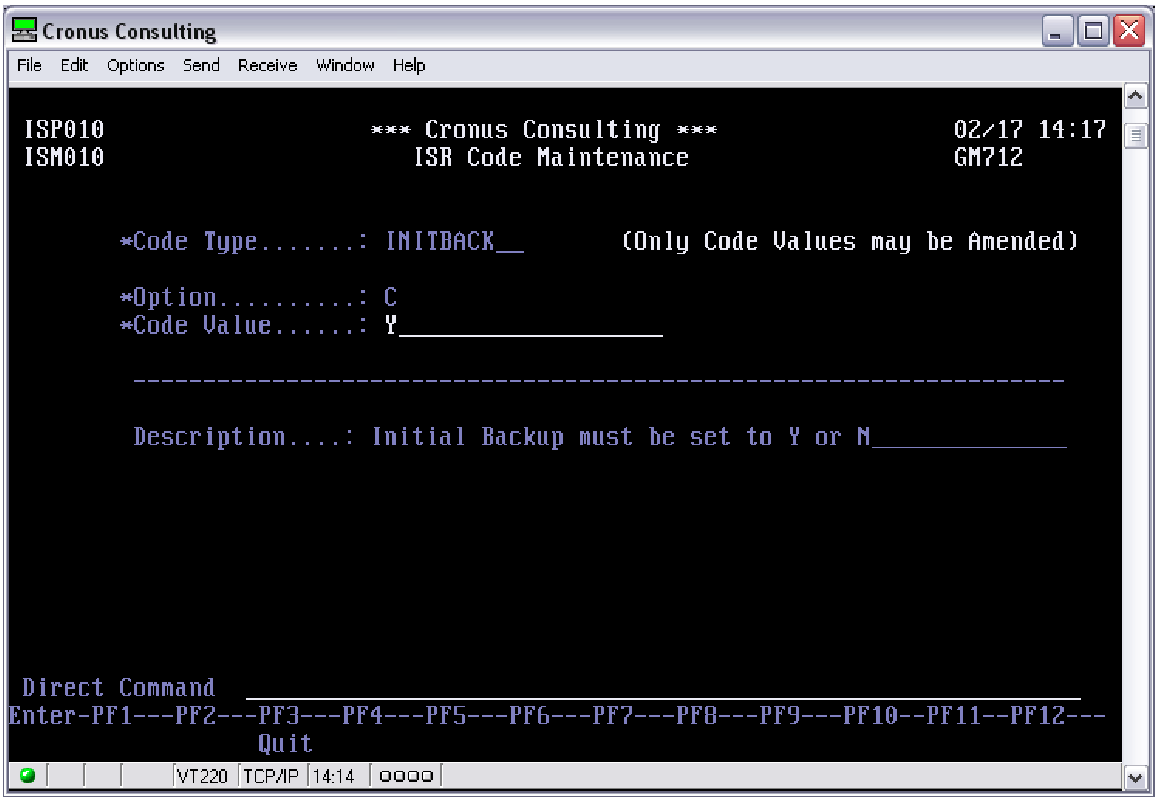


```
 CCP002                  *** Cronus Consulting ***                 02/17 14:16
 CCM00201                  Maintain ISR Profiles                   GM712

    Number of Environments..: 4         Profile...............: BACK02
    Initial Scan Library....: ESPDEMO_  Profile Description...: BACKUP
    Master Environment Index: _4        Initial Env Index.....: _1
    Restore (Y) or (N)......: Y         Path Choice (Y/N/U/S) : N
    Migrate User (optional).: ________  Comment (Y) or (N)....: Y   (N)one
                                 Allow  A-A SrcUnl   User/          (S)tow Back
 Select Path Environment         Source Y/N  Y/N G   Grp    Library (C)at  Y/N
   1 _   Y   Dev v712               Y    N    N  _ ________ ESPDEMO_  S     Y
   2 _   Y   QA v712                Y    N    N  _ ________ GENERIC_  S     Y
   3 _   N   QA E250 v712           N    N    N  _ ________ ________  N     N
   4 _   Y   Prod v712              Y    Y    N  _ ________ ESPDEMO_  S     Y
   5 _   _                          _    _    _  _ ________ ________  _     _
   6 _   _                          _    _    _  _ ________ ________  _     _
   7 _   _                          _    _    _  _ ________ ________  _     _
   8 _   _                          _    _    _  _ ________ ________  _     _
   9 _   _                          _    _    _  _ ________ ________  _     _
  10 _   _                          _    _    _  _ ________ ________  _     _
                                                 G-Mark with Y for Group
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn
```

Figure 21: CC002 Step 1: Create BACKUP profile

STEP 2:

- CC010 – Check ISR-CODE INITBACK and it will be set to Y after an install, but will still be N if an upgrade has been done (Y is the default from the install program that is run initially). If you do not want to run an initial backup, then set this to N and the Change Control will not allow you to run CC350. If it is set to N and you want to run an initial backup after an upgrade, set to Y. Once CC350 is complete, the Change Control will automatically set INITBACK to N. If you wish to run another initial backup, you can manually amend the code to Y and redo CC350.

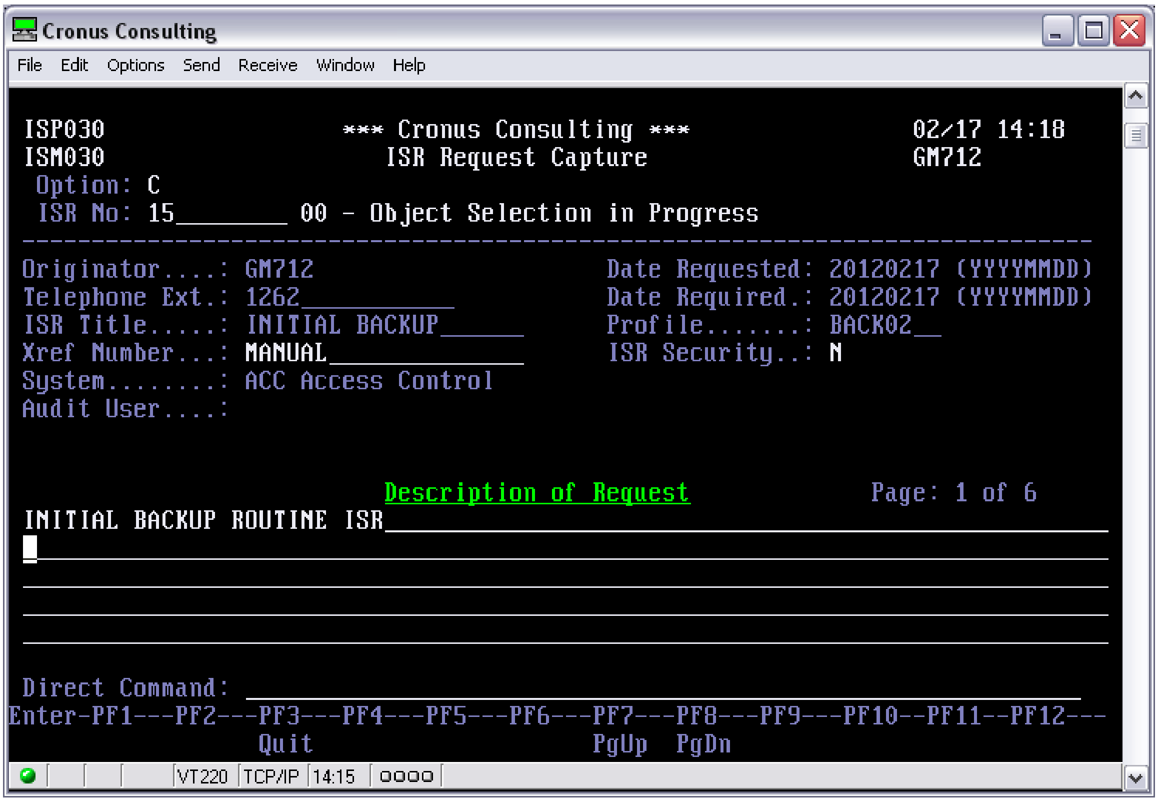


```
ISP010                    *** Cronus Consulting ***                 02/17 14:17
ISM010                       ISR Code Maintenance                   GM712

       *Code Type.......: INITBACK__      (Only Code Values may be Amended)

       *Option..........: C
       *Code Value......: Y___________________

        -------------------------------------------------------------------

        Description....: Initial Backup must be set to Y or N______________

 Direct Command  ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 22: CC010 Step 2: Set INITBACK code

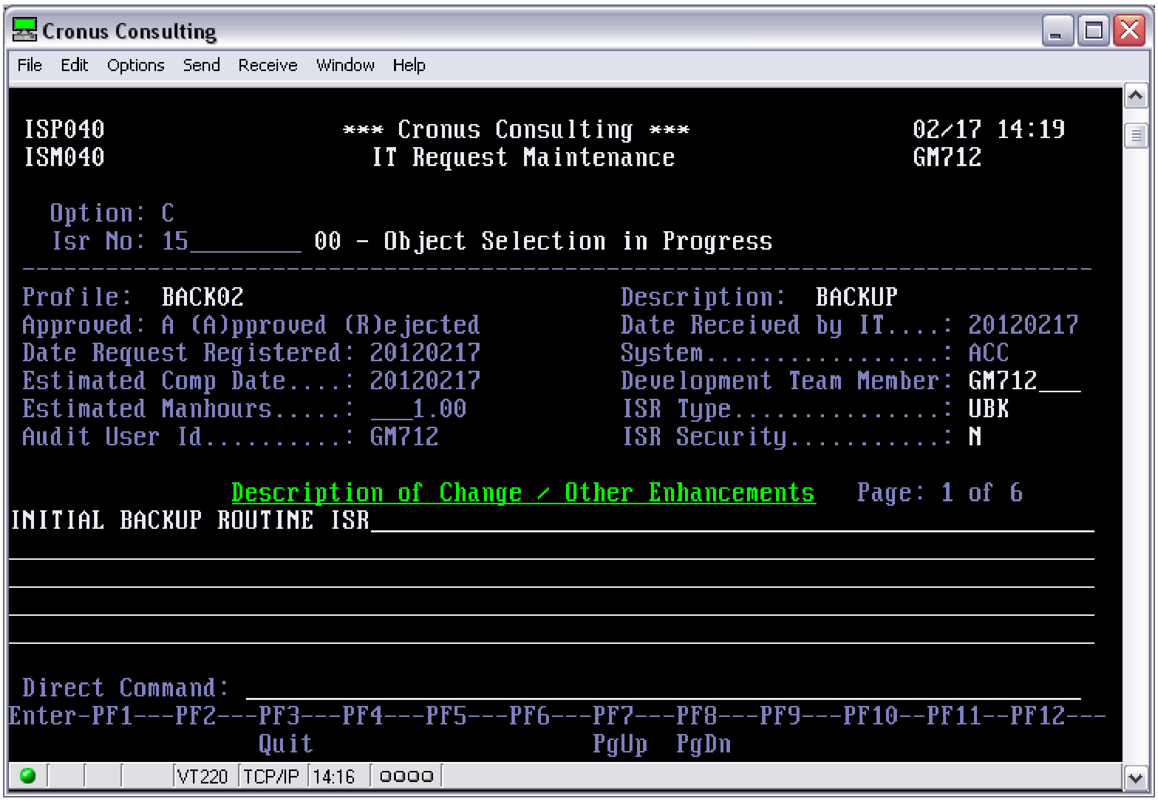
STEP 3:

- CC030 - Create an ISR as explained below in the manual. Link your “BACK01” profile to this ISR.
- CC040 - Approve the ISR as explained below in the manual and choose ISR type UBK as your ISR type. If any of the others e.g. NAT are chosen, then CC350 will not run. This option will also validate that only BACK* profiles may be linked to types UBK and vice versa, for validation purposes. Help is available on the ISR type in CC040.
- The ISR created in CC030 will be used to link the objects, and this backup ISR will run as normal – it creates history, displays objects etc. and completes as a normal ISR, after running once for each environment specified in the BACKUP profile, but only does a backup of the module, no actual copying occurs.



```
ISP030                 *** Cronus Consulting ***              02/17 14:18
ISM030                    ISR Request Capture                 GM712
 Option: C
 ISR No: 15________  00 - Object Selection in Progress
------------------------------------------------------------------------------
Originator....: GM712                   Date Requested: 20120217 (YYYYMMDD)
Telephone Ext.: 1262___________         Date Required.: 20120217 (YYYYMMDD)
ISR Title.....: INITIAL BACKUP______    Profile.......: BACK02__
Xref Number...: MANUAL______________    ISR Security..: N
System........: ACC Access Control
Audit User....:


                          Description of Request              Page: 1 of 6
INITIAL BACKUP ROUTINE ISR_____________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                    PgUp  PgDn
```

Figure 23: CC030 Step 3: Create the ISR



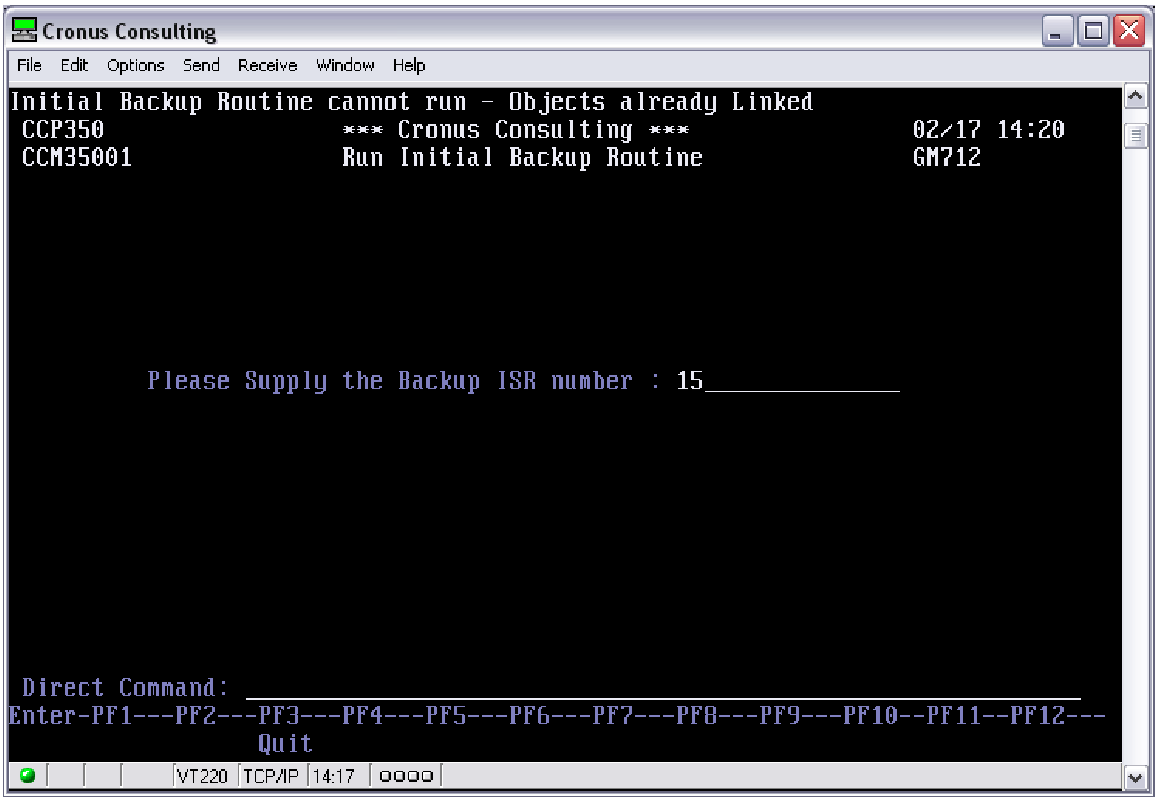
```
 ISP040                 *** Cronus Consulting ***                02/17 14:19
 ISM040                   IT Request Maintenance                 GM712

   Option: C
   Isr No: 15________ 00 - Object Selection in Progress
 ----------------------------------------------------------------------------
 Profile:  BACK02                           Description:  BACKUP
 Approved: A (A)pproved (R)ejected          Date Received by IT....: 20120217
 Date Request Registered: 20120217          System.................: ACC
 Estimated Comp Date....: 20120217          Development Team Member: GM712___
 Estimated Manhours.....: ___1.00           ISR Type...............: UBK
 Audit User Id..........: GM712             ISR Security...........: N

                Description of Change / Other Enhancements   Page: 1 of 6
INITIAL BACKUP ROUTINE ISR______________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                    PgUp  PgDn
```

Figure 24: CC040 Step 3: Approve the ISR Request

STEP 4:

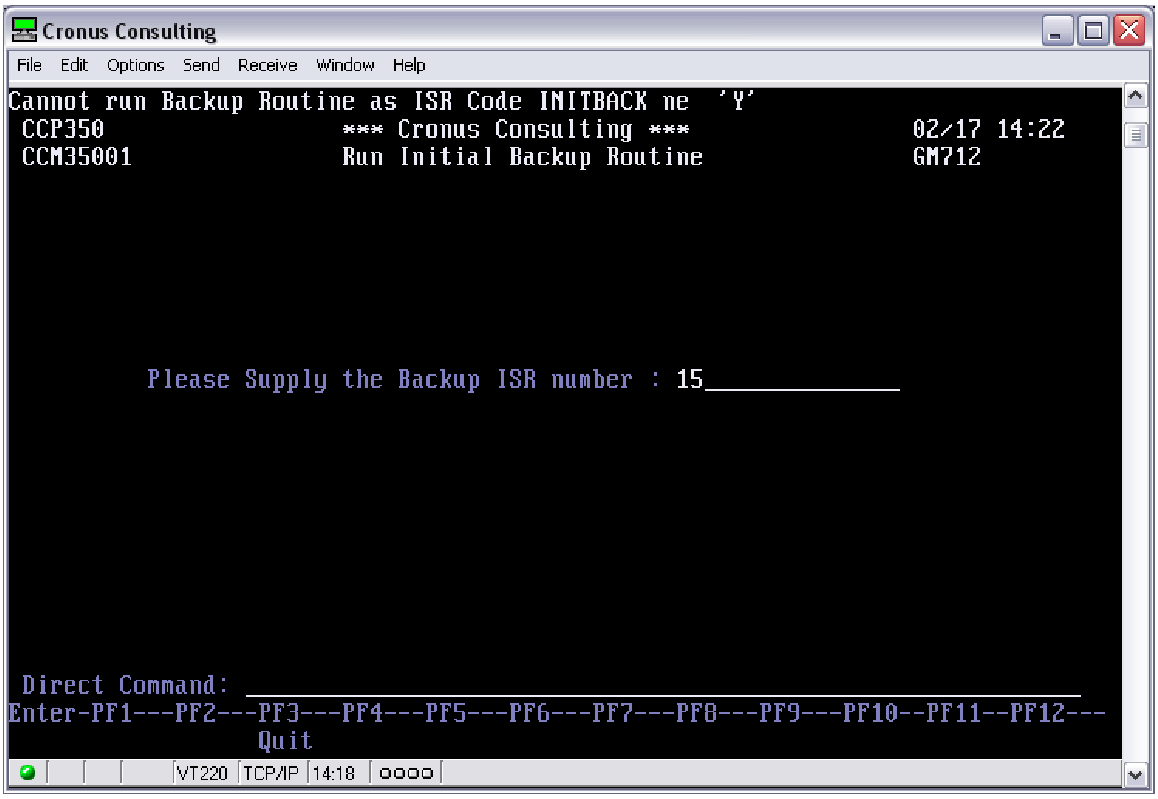
- CC350 – Run the initial backup option, various validation checks will be done and only if all these checks are clean will the routine commence.
- Run CC350 for as many times as number of environments linked in the backup profile. CC350 will execute one backup per environment at a time.
- Only UBK ISR's created and linked to BACK* profiles will be allowed. The backup routine MAY NEVER be run when any objects are linked to other ISRs. It must run as a stand-alone routine, with all objects being open for backup. This will also be validated.
- ISR Code INITBACK (CC010) must be a Y.
- No Objects are linked physically in CC350, as in a normal ISR (See CC050 as explained below in the manual). The CC350 routine does this for you, depending on the ISR library captured in the BACK* profiles.
- CC350 will use the library set up in the initial environment in the backup profile as its base and only set up a file of these objects to be backed up, depending on what the ISR-LIBRARY is. If no library is specified, the routine will pick up ALL scanned in objects. CC350 can therefore be run as many times as necessary if the client wants the backup split up, as long as INITBACK has been correctly updated.

- The objects being backed up will reflect on the screen and also the status of the backup. Y for backup correctly and N for no backup if an error has occurred. CC350 will never halt if the objects do not exist or could not be backed up correctly. A report will be sent to the spooler at the end of the routine for any objects that were not correctly backed up. These may also be viewed in the history transaction CC095 (explained below in the manual).
- CC350 will also do a path validation of all the paths needed for the backups (see detailed explanation in CC100 below in manual). If these paths do not yet exist, they will be created and so may take a bit longer if the paths are not manually created. For e.g. /apps/sag/nat/fuser_dev may exist, but when backing up the source library, the Library and SRC type will be appended, so if /apps/sag/nat/fuser_dev/ESPSOFT/SRC does not exist, the path validation will create it.



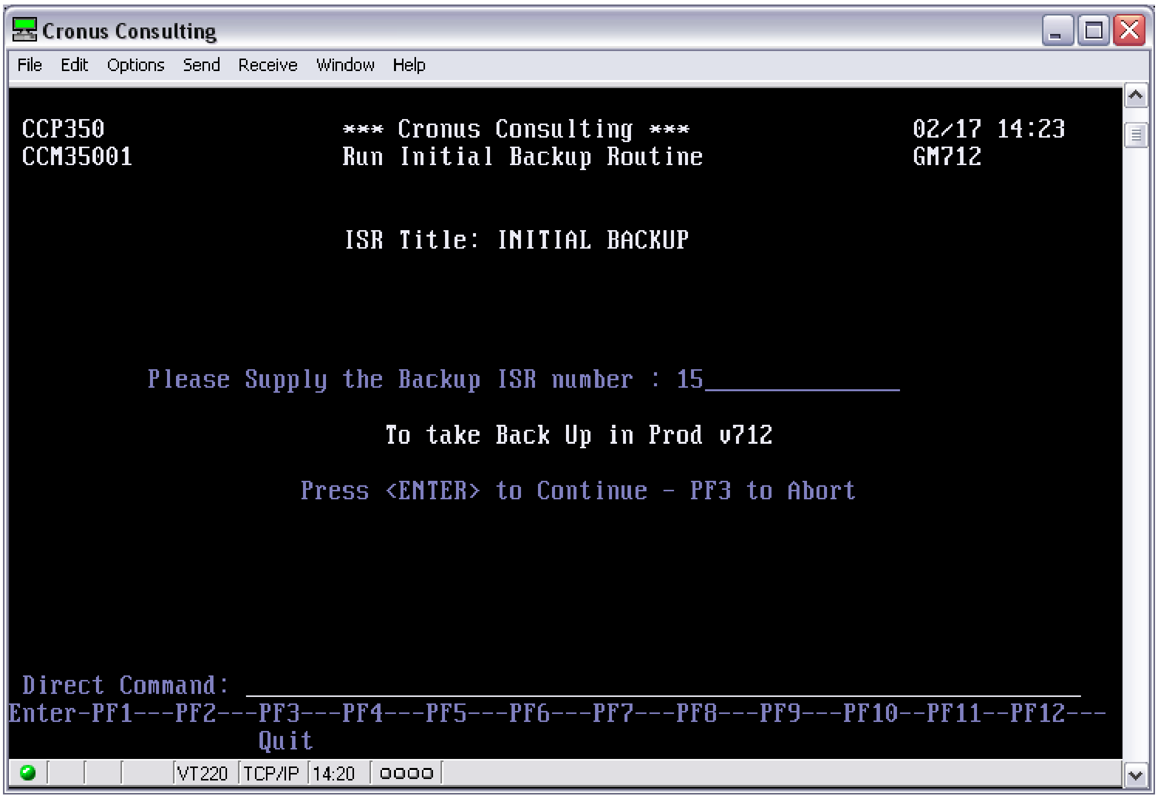
```
Initial Backup Routine cannot run - Objects already Linked
 CCP350                  *** Cronus Consulting ***               02/17 14:20
 CCM35001                Run Initial Backup Routine              GM712




          Please Supply the Backup ISR number : 15______________







 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 25: CC350 Step 4: Validation check for Linked Objects - Error



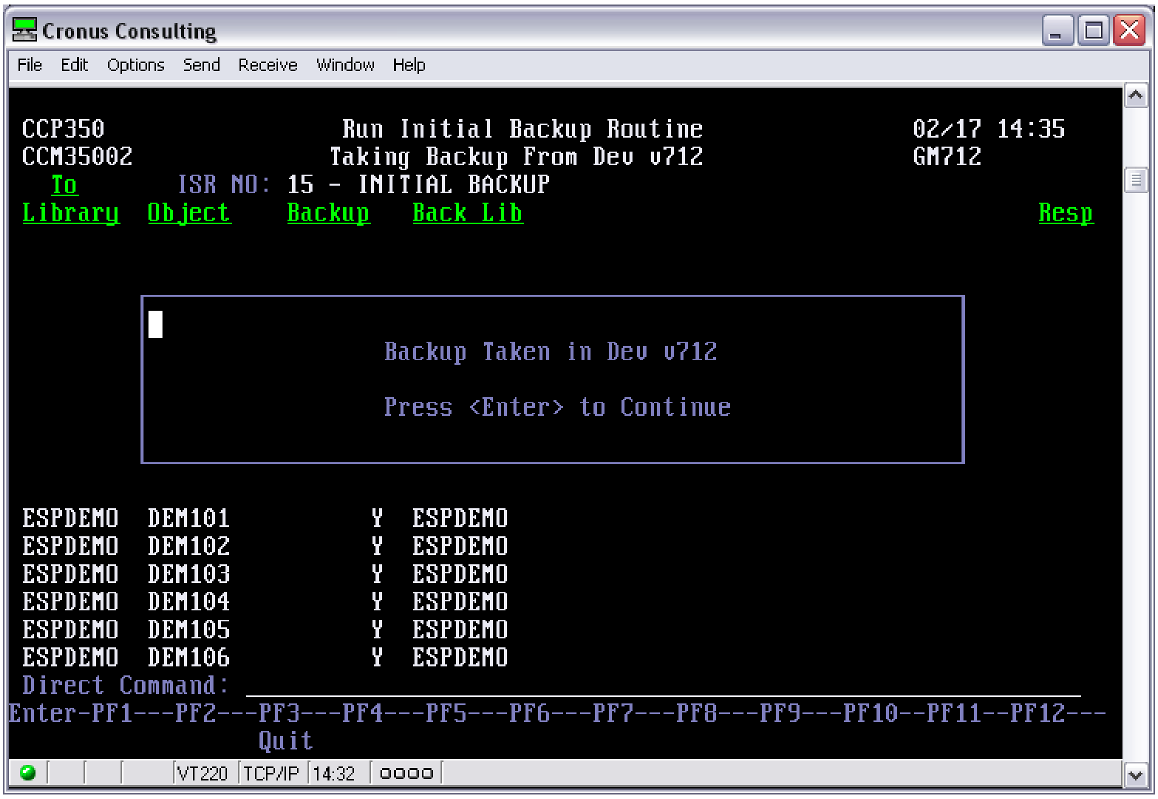
```
Cannot run Backup Routine as ISR Code INITBACK ne  'Y'
 CCP350                  *** Cronus Consulting ***                02/17 14:22
 CCM35001                Run Initial Backup Routine               GM712



          Please Supply the Backup ISR number : 15______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 26: CC350 Step 4: Validation check code INITBACK to equal Y



```
 CCP350                  *** Cronus Consulting ***                02/17 14:23
 CCM35001                Run Initial Backup Routine               GM712

                         ISR Title: INITIAL BACKUP


          Please Supply the Backup ISR number : 15______________

                            To take Back Up in Prod v712

                     Press <ENTER> to Continue - PF3 to Abort


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 27: CC350 Step 4: Confirmation screen for Backup Routine to commence



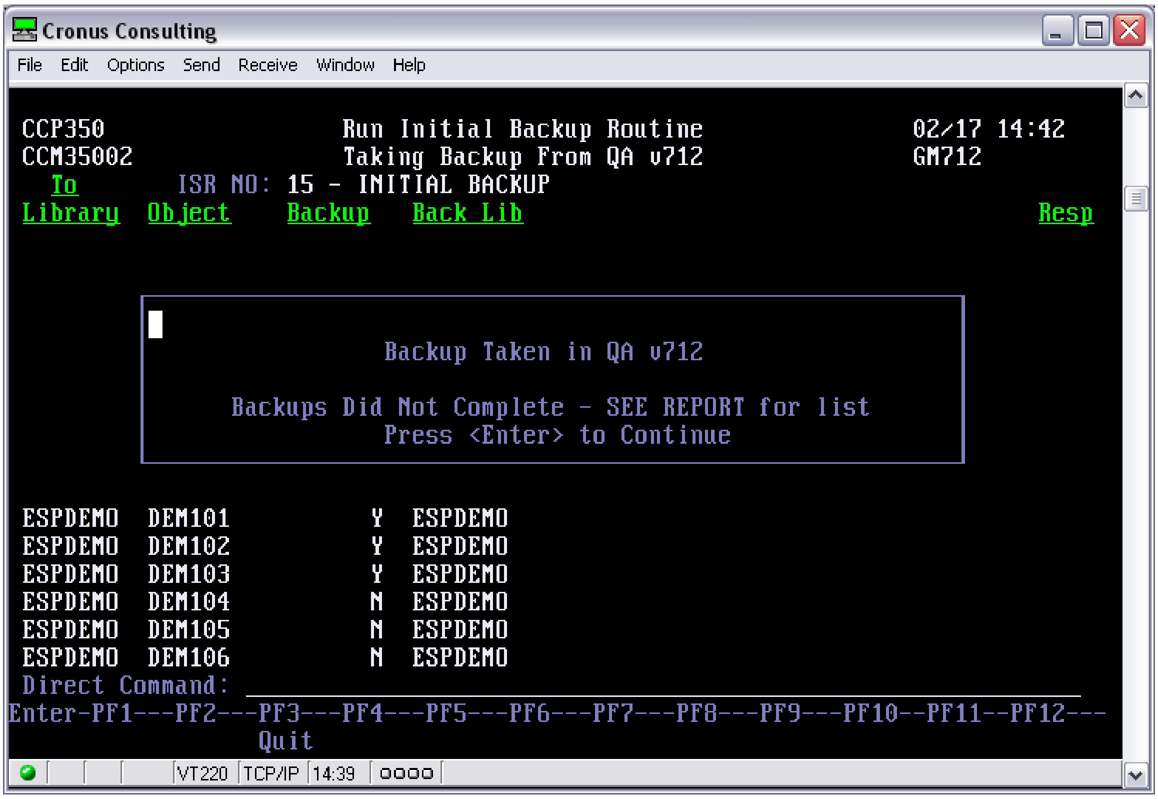
```
CCP350                 Run Initial Backup Routine              02/17 14:35
CCM35002              Taking Backup From Dev v712              GM712
  To       ISR NO: 15 - INITIAL BACKUP
Library  Object     Backup   Back Lib                                 Resp


          Backup Taken in Dev v712

          Press <Enter> to Continue


ESPDEMO  DEM101          Y  ESPDEMO
ESPDEMO  DEM102          Y  ESPDEMO
ESPDEMO  DEM103          Y  ESPDEMO
ESPDEMO  DEM104          Y  ESPDEMO
ESPDEMO  DEM105          Y  ESPDEMO
ESPDEMO  DEM106          Y  ESPDEMO
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 28: CC350 Step 4: Detail screen reflecting objects being backup up

STEP 5:

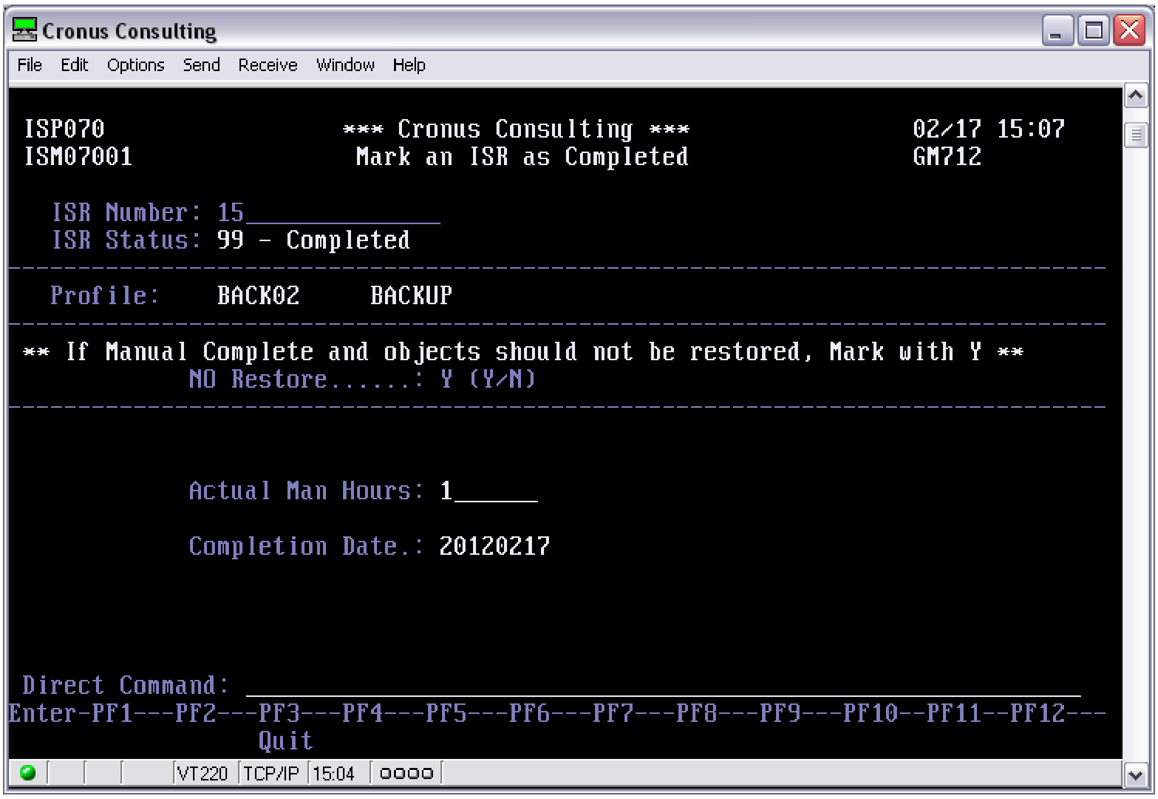
- CC070 - Once CC350 has been run for all linked environments, the ISR will complete via CC070 in the same manner as a normal migration routine (see CC070 as explained below in the manual).
- All the objects will be un-linked, the completion flag for the ISR set on and the INITBACK code set to N. Continue with change control.
- These backups will then be used as a “previous backup”, if your ISR abends on a specific object and it is the first time the object is being migrated and therefore no backup exists (see further explanation in CC100).
- These backups are linked to a normal ISR so may be restored via the normal ISR routines for e.g. CC200 as explained below in the manual.

NOTE: New Objects are not included in the Initial Backup. At install time all objects would already be existing objects and if the initial backup is run again at upgrade time or whenever requested, NEW OBJECTS do not need a backup as they only exist in Development and will create the first backup once being moved from Development. The New Object Indicator seen in CC050, as explained below in the manual, will determine this.



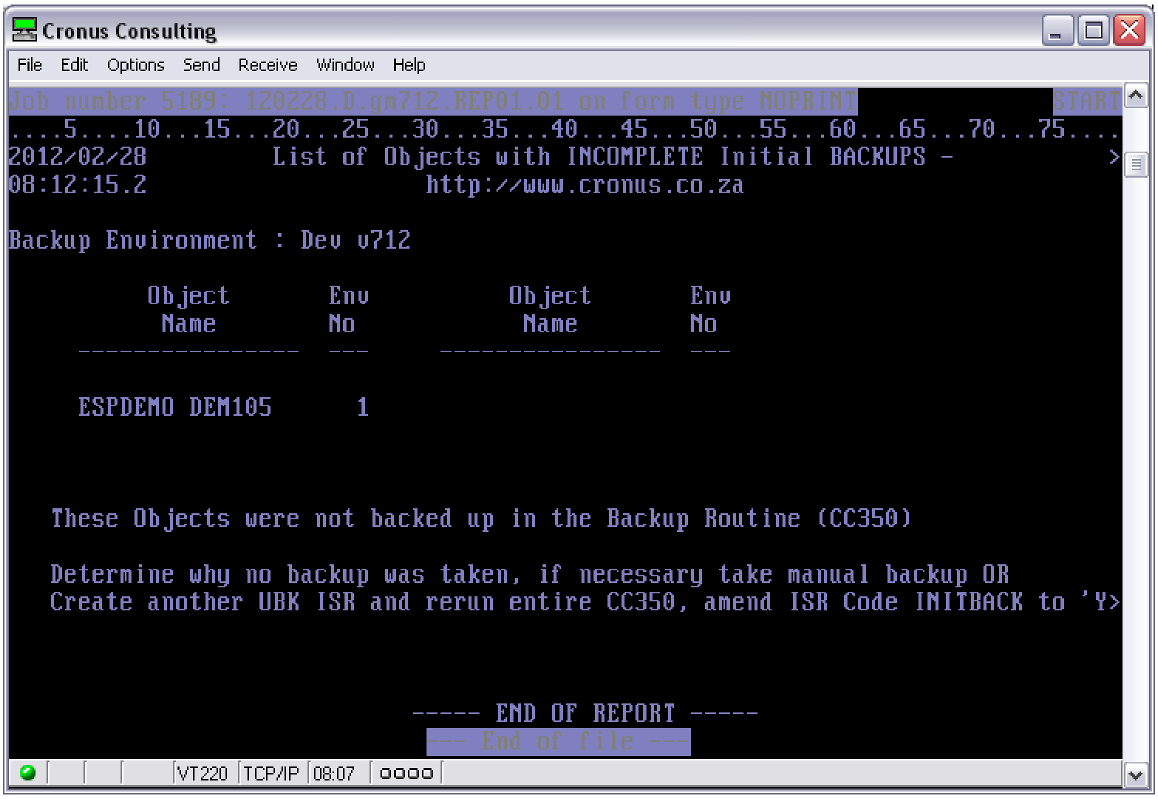
```
CCP350                   Run Initial Backup Routine                02/17 14:42
CCM35002                 Taking Backup From QA v712                GM712
  To        ISR NO: 15 - INITIAL BACKUP
Library  Object     Backup   Back Lib                                      Resp

                    Backup Taken in QA v712

        Backups Did Not Complete - SEE REPORT for list
                    Press <Enter> to Continue

ESPDEMO  DEM101           Y  ESPDEMO
ESPDEMO  DEM102           Y  ESPDEMO
ESPDEMO  DEM103           Y  ESPDEMO
ESPDEMO  DEM104           N  ESPDEMO
ESPDEMO  DEM105           N  ESPDEMO
ESPDEMO  DEM106           N  ESPDEMO
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 29: CC350 Step 5: Completion screen for each environment



```
ISP070                   *** Cronus Consulting ***                 02/17 15:07
ISM07001                  Mark an ISR as Completed                 GM712

  ISR Number: 15______________
  ISR Status: 99 - Completed
-------------------------------------------------------------------------------
  Profile:    BACK02     BACKUP
-------------------------------------------------------------------------------
** If Manual Complete and objects should not be restored, Mark with Y **
             NO Restore......: Y (Y/N)
-------------------------------------------------------------------------------


             Actual Man Hours: 1______

             Completion Date.: 20120217



Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 30: CC070 Step 5: Final completion after all linked environments have been backed up



```
Job number 5189: 120228.D.gm712.REP01.01 on form type NOPRINT                START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/28          List of Objects with INCOMPLETE Initial BACKUPS -           >
08:12:15.2                      http://www.cronus.co.za

Backup Environment : Dev v712

          Object        Env          Object        Env
           Name         No            Name         No
     ----------------  ---     ----------------  ---

     ESPDEMO DEM105      1



   These Objects were not backed up in the Backup Routine (CC350)

   Determine why no backup was taken, if necessary take manual backup OR
   Create another UBK ISR and rerun entire CC350, amend ISR Code INITBACK to 'Y>


                             ----- END OF REPORT -----
                              --- End of File ---
```

Figure 31: Initial Backup Error Report

3.2 ISR Transfer Function Overview

3.2.1 CC030 – ISR Request Capture

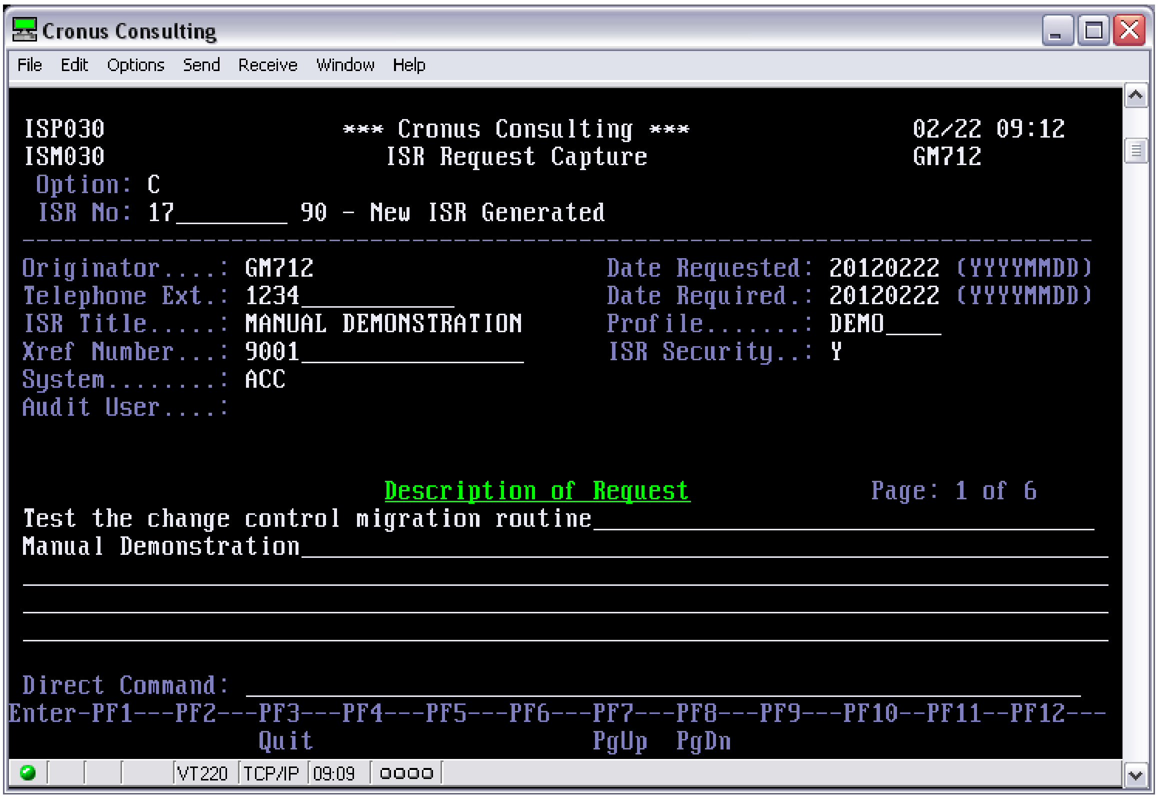
This function is used to capture and maintain an ISR (Information Service Request). The ISR detail should be completed either by the business analyst responsible for the request or by the developer on behalf of the originator of the service request.

Function Options:

A - Add ISR

C - Change ISR

E - Enquire on a ISR



```
 ISP030                  *** Cronus Consulting ***                 02/22 09:12
 ISM030                     ISR Request Capture                    GM712
  Option: C
  ISR No: 17________ 90 - New ISR Generated
 ------------------------------------------------------------------------------
 Originator....: GM712                      Date Requested: 20120222 (YYYYMMDD)
 Telephone Ext.: 1234___________            Date Required.: 20120222 (YYYYMMDD)
 ISR Title.....: MANUAL DEMONSTRATION       Profile.......: DEMO____
 Xref Number...: 9001__________________     ISR Security..: Y
 System........: ACC
 Audit User....:


                          Description of Request              Page: 1 of 6
 Test the change control migration routine____________________________________
 Manual Demonstration_________________________________________________________
 _____________________________________________________________________________
 _____________________________________________________________________________
 _____________________________________________________________________________

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                    PgUp  PgDn
```

Figure 32: ISR Capture

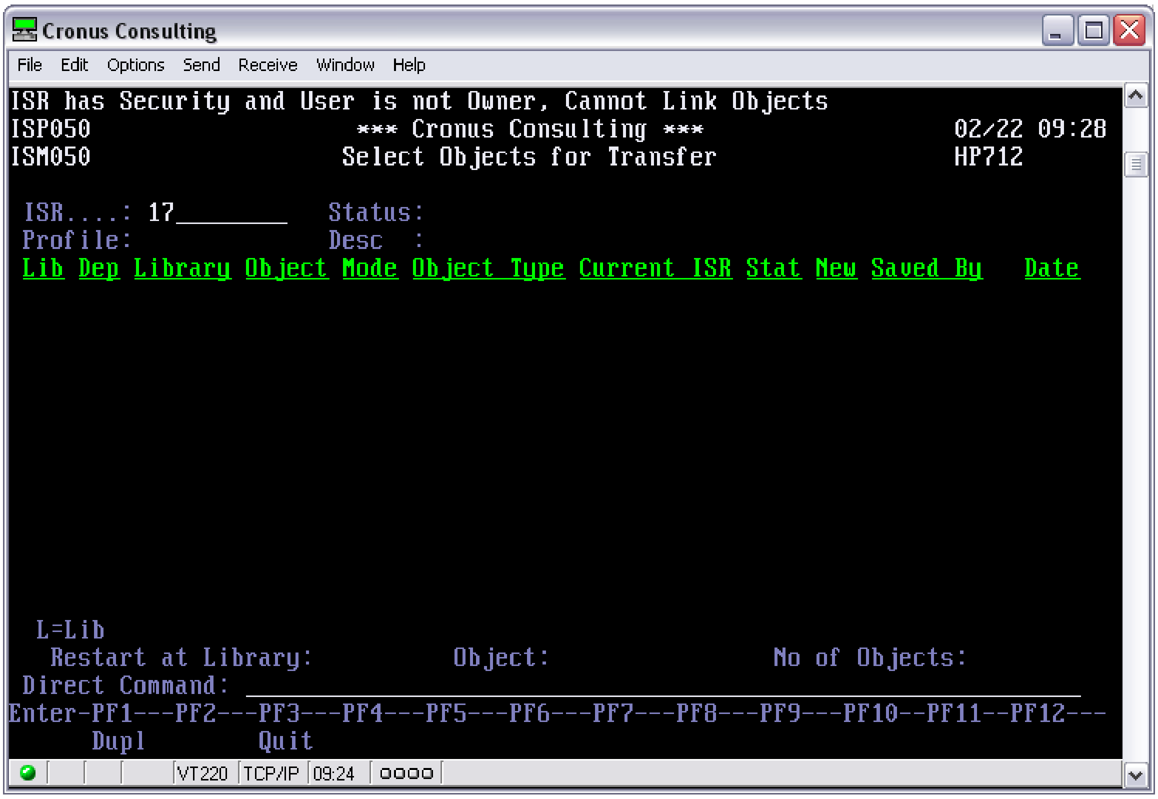
When adding a new ISR (Option **A**) the system will automatically generate the next ISR number using the ISRNO Code Type found in CC010. This number is used internally by EspControl and referenced through-out the application from now on. If the Comment Indicator is switched on, then EspControl automatically inserts a reference at the end of the source object during the migration between environments. The ISR Number, ISR Title and Dev Team Member (from CC040) fields are inserted as the comment line. Option "**C**" is used to maintain the ISR detail. Access to the ISR detail is restricted as soon as the ISR is approved.

The following information must be entered for an ISR:

- Originator - Set to the User-ID of the person capturing the ISR
- Date Requested - The date that the ISR was requested.
- Telephone Ext. - The telephone number or extension of the person that initiated the ISR.
- Date Required - The date when the ISR should be completed.
- ISR Title - A brief description of the ISR.
- Profile - This must be a valid Profile (enter for help on Profile names).
- Description - A detailed description of all requirements pertaining to the request. The description is a scrollable area – PF7 and PF8 can be used to page backwards or forwards.
- XREF Number - The Project Number or Ticket Number used by the client to link the ISR to their own Project Control system. If the ISR CODE XREFNO is set on, then this number MUST be captured. This number can be verified by the client in coding inserted in the user exit ISNUX030, and then if not valid an error will be returned. If this is not required, leave ISNUX030 as it is.
- ISR Security - Must be Y or N. If "Y", then security is switched on and only the originator may approve (CC040), link objects (CC050) and transfer objects (CC100). If set to N, no user-id restrictions, but menu restrictions will be used. The ISR Code SECURITY can be set to determine defaults (see CC010 as explained above in manual).
- System - Enter for help on System Code, enter system affected by ISR. The System may also be used to assist with the creation of GENERIC libraries (see CC010 for code SYSTEM and ISNUX100 for updating of these GENERIC libraries). In this manner a different GENERIC library may be set up for each ISR.
- Audit User - Audit user will be automatically updated by the user creating the ISR.

The ISR will be migrated using the path and all the data captured on the Profile (see CC002) linked to this ISR. Therefore, every ISR set-up could be linked to a different profile and will follow its own path using its own set of indicators to determine Source, Restore, Backup, Stow/Cat and User-id functionality. The ISR No will be used through the entire Change Control system, linking objects, restore capabilities, history enquiries, status summaries and migration routines together.

Only ISR Status – 90, 91, 92 (created, approved and new) will allow specific detail to be amended, once the ISR is in migration status, only certain detail may be amended, depending on the status. The long description, XREF number and ISR Security may still be amended via CC030, once a migration move has taken place and the status does not conform to the ones specified above, but ONLY by the originator of the ISR or the approver of CC040. Any other user will be disallowed from amending these. Use CC040 to amend the long description if necessary by the approver as well. Once the ISR has been completed, NO detail amendments will be allowed by any user, originator or not.



```
ISR has Security and User is not Owner, Cannot Link Objects
ISP050                 *** Cronus Consulting ***                02/22 09:28
ISM050                  Select Objects for Transfer             HP712

 ISR....: 17________    Status:
 Profile:               Desc   :
 Lib Dep Library Object Mode Object Type Current ISR Stat New Saved By   Date









  L=Lib
   Restart at Library:          Object:                No of Objects:
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl        Quit
```

Figure 33: Example of the error message in function CC050, if SECURITY in CC030 is YES

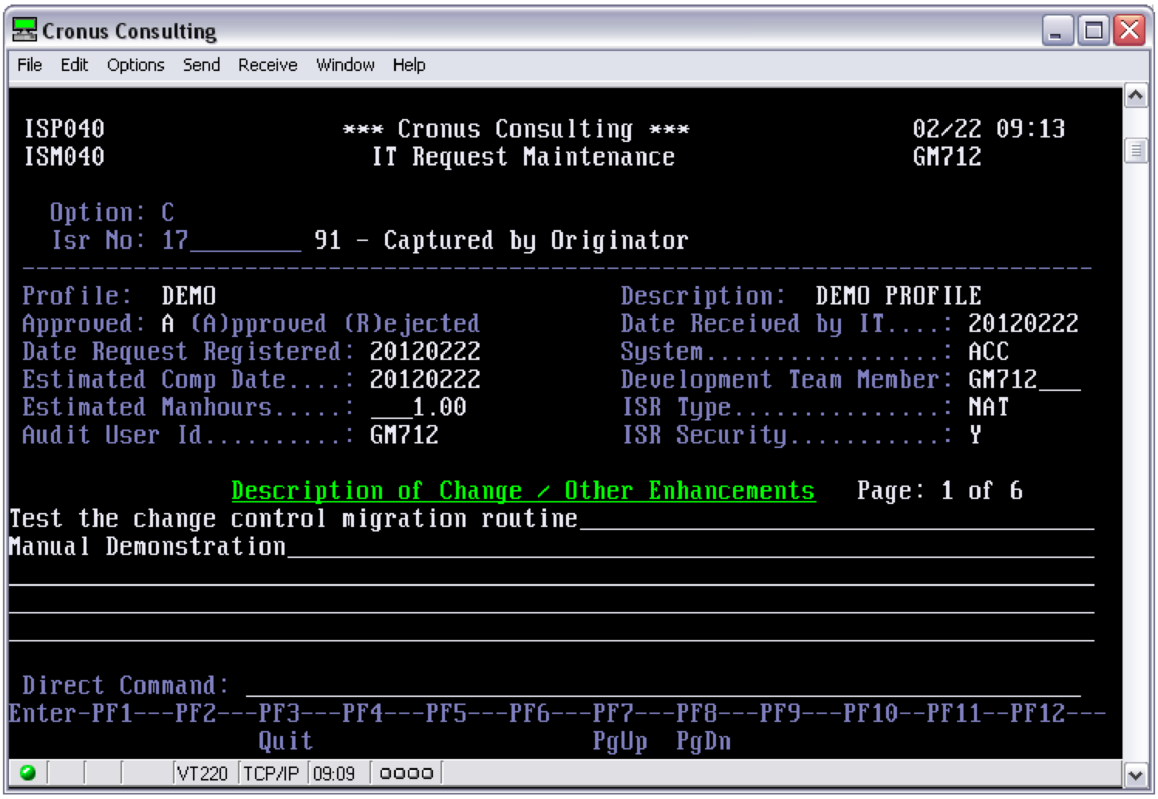
3.2.2 CC040 – Approve ISR Request

This function is used to capture all IT related information that pertains to an ISR. This function is also used to approve or reject an ISR. If rejected, the ISR will not be allowed for any further linking of objects or migrating of objects. It will be in the Change Control system for History purposes only as a project not allowed.

Function Options:

C - **Change an ISR** or

E - **Enquire on an ISR**



```
ISP040                  *** Cronus Consulting ***                02/22 09:13
ISM040                    IT Request Maintenance                 GM712

   Option: C
   Isr No: 17________  91 - Captured by Originator
 -----------------------------------------------------------------------------
 Profile:   DEMO                           Description:  DEMO PROFILE
 Approved: A (A)pproved (R)ejected         Date Received by IT....: 20120222
 Date Request Registered: 20120222         System.................: ACC
 Estimated Comp Date....: 20120222         Development Team Member: GM712___
 Estimated Manhours.....: ___1.00          ISR Type...............: NAT
 Audit User Id..........: GM712            ISR Security...........: Y

                Description of Change / Other Enhancements   Page: 1 of 6
Test the change control migration routine_____________________________________
Manual Demonstration__________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                    PgUp  PgDn
```

Figure 34: ISR Approval

If the ISR Code SAMEAPPROV has been set to “N”, then this function must be handled by a user other than the creator of the ISR in CC030. If the same user who created the ISR in CC030, tries to approve the ISR via CC060, an error will be returned to the user and the ISR will NOT be approved and will therefore be disallowed from any further migration until approved via another user. This rule does not apply if SAMEAPPROV is set to “Y”.

If the ISR SECURITY field has been marked with a “Y” in CC030, then only the user who created the ISR in CC030 may approve this request. If marked with “N”, then also depending on SAMEAPPROV either the owner or another user may approve.

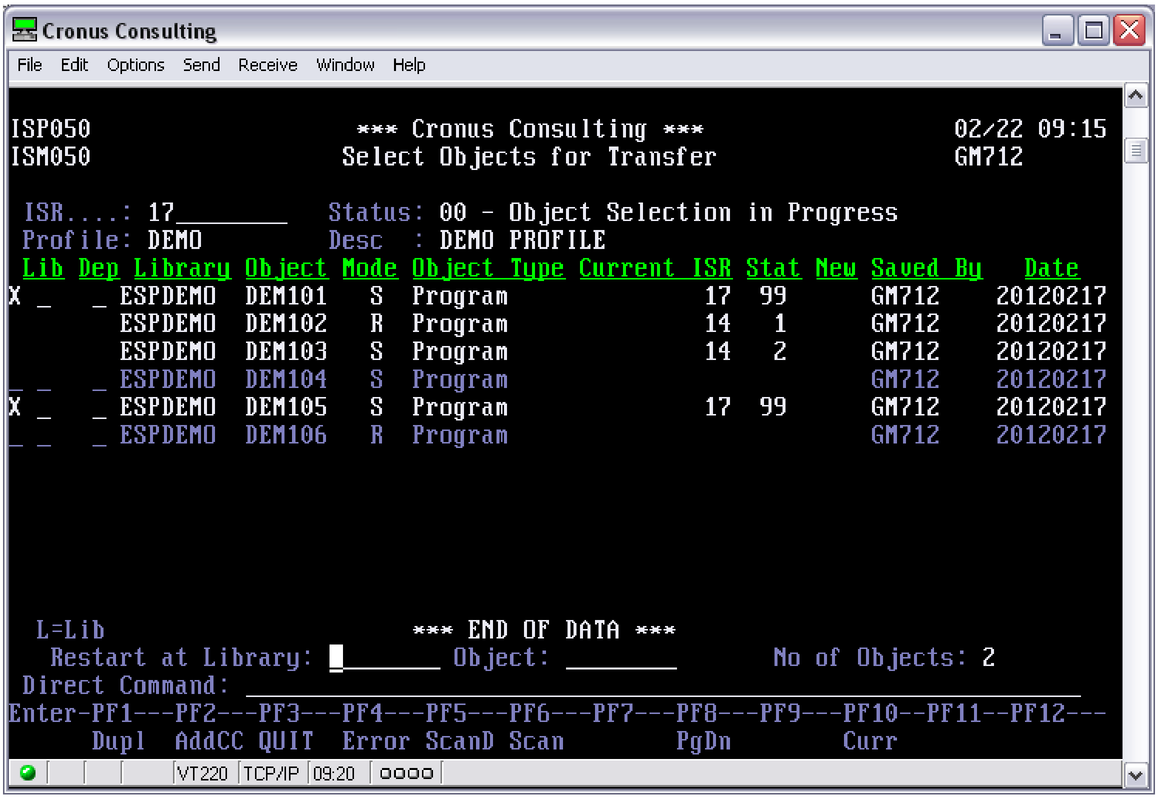
- **The following data, that is not populated from CC030, must be entered for an ISR:**
- Approved - Approve / Reject the ISR (Y or N)
- Date Received by IT - Set to System Date
- Date Request Registered - Date that ISR was requested
- Estimated Comp Date - Date by which request will be completed
- Development Team Member - Developer assigned to the request
- Estimated Manhours - Time required completing the ISR
- ISR Type - Type of request (E.G. Natural program, New Report, program bug).

  Always select OLD for Archiving.

  Always select UBK for Initial Backup.
- Description - May be added to or amended here, once blocking of CC030 detail has occurred

3.2.3 CC050 – Link Objects to an ISR

The function is used to select all objects that form part of the requested ISR.



```
ISP050                      *** Cronus Consulting ***                02/22 09:15
ISM050                      Select Objects for Transfer              GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc  : DEMO PROFILE
 Lib Dep Library Object Mode Object Type Current ISR Stat New Saved By   Date
X _   _ ESPDEMO DEM101   S  Program             17  99       GM712    20120217
        ESPDEMO DEM102   R  Program             14   1       GM712    20120217
        ESPDEMO DEM103   S  Program             14   2       GM712    20120217
_ _   _ ESPDEMO DEM104   S  Program                          GM712    20120217
X _   _ ESPDEMO DEM105   S  Program             17  99       GM712    20120217
_ _   _ ESPDEMO DEM106   R  Program                          GM712    20120217




  L=Lib                        *** END OF DATA ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
          Dupl  AddCC QUIT  Error ScanD Scan        PgDn        Curr
```

Figure 35: Object Selection for Transfer

Once the ISR No has been entered a list of all objects will be displayed that can be linked to the ISR. If an object is currently linked to another ISR it will still be displayed but will **not** be available for selection.

Objects can now be linked by entering a ‘X’ next to the object in the New Column. The number of objects that are currently linked to the ISR will be updated at the bottom right of the screen during object selection.

By marking the **Dependents** column for a given object all dependents for the selected object will be marked automatically (EG. If the Object contains a FETCH and a CALLNAT, both objects will be selected and form part of the ISR). However, if these dependents are already linked to another ISR, they will be ignored. Once the ISR is in progress, i.e. it has been through the migration process for any environment, if the Dependents are selected, these dependents will be updated as part of the ISR, but will start the migration process from the beginning until all object statuses on the ISR are the same.

Please note: Dependents are not available for LDAs, PDAs and GDAs. The Dependents option is only available if SOURCE exists in the scanned Development environment and has not been moved out via Allow-source = N or = M. In this case, the user must mark the dependents manually to become part of an ISR.

PF10 acts as a toggle key to display all objects or just the objects linked to the current ISR.

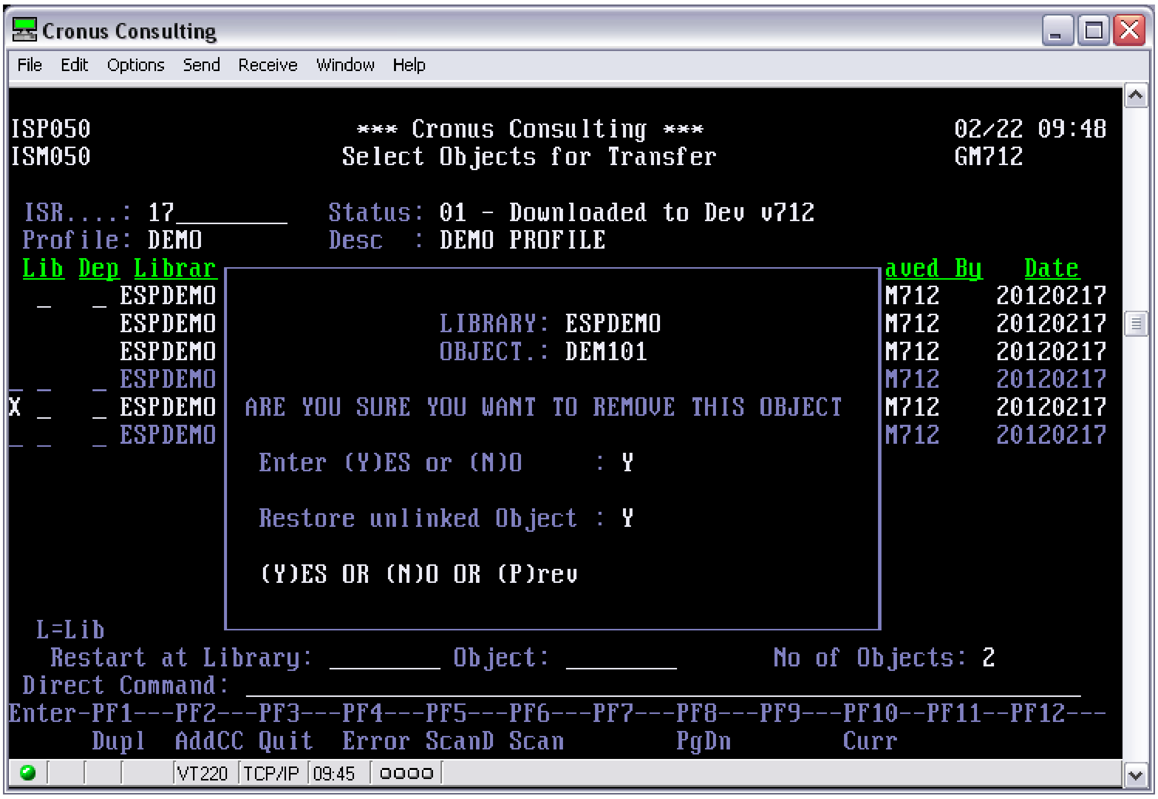
Once an object has been selected the Current ISR column will be updated to reflect that the object is now linked to the current ISR. The Status displayed under the Status column will indicate in which environment the object currently is. The status of an object will constantly be updated as transfers take place across the defined environments. Depending on the profile per ISR, each status could reflect a different environment. For example, 01 could reflect DEVELOPMENT on one ISR and QA on another ISR if the second ISR was linked to a short-path profile (from QA to PROD only).

When an object is selected the status will be updated to one of the following values:

- 99 - The object is currently in the master environment and will be downloaded to Initial Environment (Existing Object) or Upload only as specified by the profile
- 01 - New Object (Does not require download from master environment as new objects are created in development)

If the object status is greater than 01, it indicates that the object was previously selected and the ISR has already been transferred. This does not prohibit the linking of additional objects to the ISR.

If an object is deselected from the ISR, a choice is given to select a restore of the object or not. If NO RESTORE is selected (mark with N), the object is unlinked, the object status is reset, but the object itself will remain where it is in the migration path of the chosen ISR. e.g. if the object had been moved from Dev to QA and then deselected with no restore, the object will remain as is, in both Dev and QA. If RESTORE is selected (mark with Y for Restore from current backup version or P to restore from Previous backup version), the object is unlinked, the object status is reset and the object is restored using the backup version selected above to all the environments processed in the migration path of the chosen ISR. For Restore = Y, the backup version used will be the one from the current ISR or if no backup exists, the previous version backed up in the previous ISR. For Restore = P, the previous version will always be used irrespective if a current backup exists or not. Once an object has been removed from the ISR it will be available for selection by other ISR's. If the indicator ALLOW-SOURCE has been set to 'N', the object (compiled) code will be restored to all affected environments, but the source will only be restored to the initial environment of the profile linked to the ISR. This will allow the user to work on the object source again before being re-linked to another ISR .Remember that the source is always restored to the Staging Area in all environments, irrespective of the ALLOW-SOURCE indicator. If the indicator ALLOW-SOURCE has been set to 'M', then the source and object will be restored back to the environments. The restoring window will reflect as in function CC110 in this document.



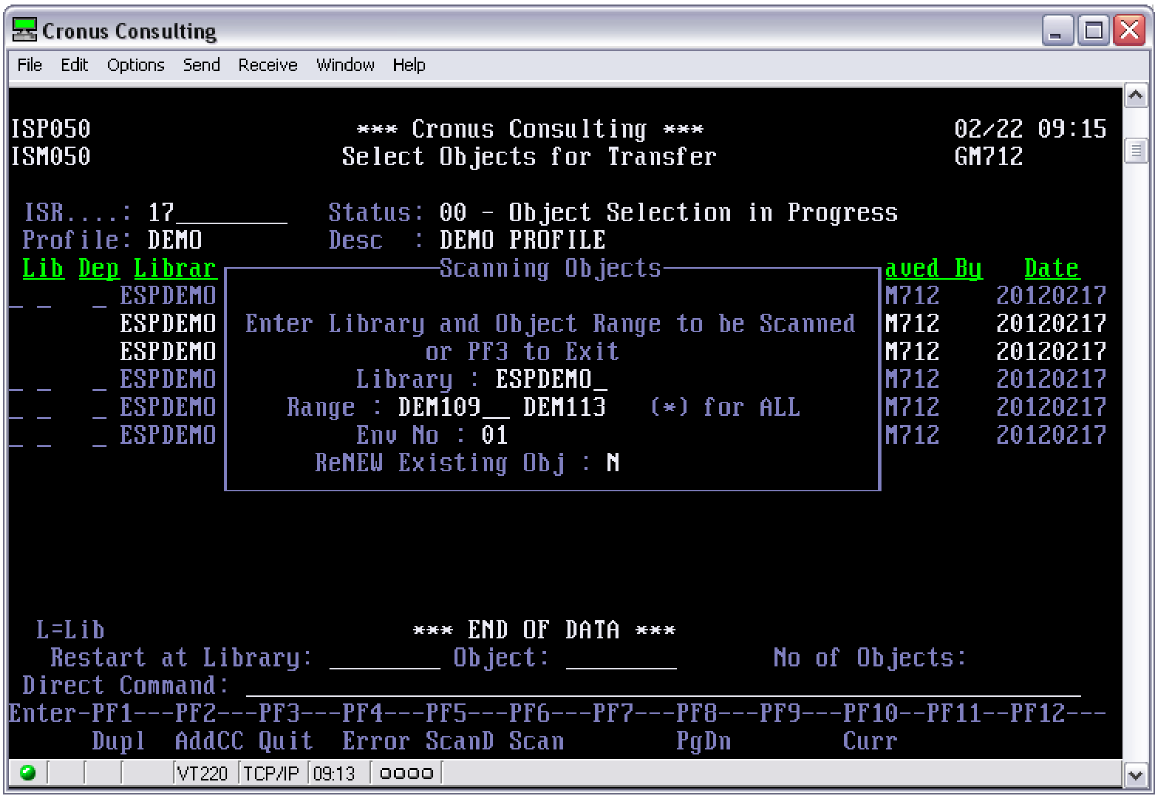
```
ISP050                   *** Cronus Consulting ***                   02/22 09:48
ISM050                  Select Objects for Transfer                  GM712

 ISR....: 17________     Status: 01 - Downloaded to Dev v712
 Profile: DEMO           Desc  : DEMO PROFILE
 Lib Dep Librar                                               aved By    Date
  _   _ ESPDEMO                                               M712     20120217
        ESPDEMO              LIBRARY: ESPDEMO                 M712     20120217
        ESPDEMO              OBJECT.: DEM101                  M712     20120217
_ _   _ ESPDEMO                                               M712     20120217
X _   _ ESPDEMO  ARE YOU SURE YOU WANT TO REMOVE THIS OBJECT  M712     20120217
_ _   _ ESPDEMO                                               M712     20120217
                  Enter (Y)ES or (N)O      : Y

                  Restore unlinked Object : Y

                  (Y)ES OR (N)O OR (P)rev

  L=Lib
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC Quit  Error ScanD Scan        PgDn        Curr
```

Figure 36: Unlinking of Objects with Restore options

The scan function (**PF6 Scan**) is used to scan NEW objects in from a specific Natural library and will add this object to the EspControl inventory, to be available for further selection. The function key **PF6** is used to initiate the scan of source code library and scan environment specified, and to update the EspControl inventory with objects added. When scanning via PF6, the object must exist in the environment requested, so that the object type and mode may be picked up. If the object does not exist, it will NOT e added to the Inventory List.

Please note that the **initial scan (CC300)** is still required to build inventory (only for OLD and existing Objects) and using the PF6 option will add or update objects. If an object changes its mode, or object type etc, for example from REPORT to STRUCT, then PF6 must be used to update the mode in the Inventory List. Failure to do this, will result in the ISR aborting as the compile will not work. Using PF6 on an old object will not affect the NEW OBJECT indicator, using PF6 on a new object will update the new object indicator with Y. However, using CC300 on a NEW object WILL affect the new object indicator and the object will be updated into the inventory list incorrectly. If this has been done in error, use PF6 and mark the RENEW indicator with a Y. This will again update the object to NEW.

PF6 may be used with a range of objects using “*” as the range indicator, but if the Renew Indicator is marked with a Y, no range is allowed and the start and end object must be the same.



```
ISP050                   *** Cronus Consulting ***                02/22 09:15
ISM050                  Select Objects for Transfer               GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc   : DEMO PROFILE
 Lib Dep Librar ──────────Scanning Objects──────────────aved By   Date
_ _   _ ESPDEMO │                                       │M712     20120217
        ESPDEMO │ Enter Library and Object Range to be Scanned │M712     20120217
        ESPDEMO │           or PF3 to Exit              │M712     20120217
_ _   _ ESPDEMO │         Library : ESPDEMO_            │M712     20120217
_ _   _ ESPDEMO │    Range : DEM109__ DEM113   (*) for ALL │M712     20120217
_ _   _ ESPDEMO │         Env No : 01                   │M712     20120217
                │      ReNEW Existing Obj : N           │
                └───────────────────────────────────────┘



  L=Lib                     *** END OF DATA ***
   Restart at Library: ________ Object: ________       No of Objects:
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC Quit  Error ScanD Scan        PgDn        Curr
```

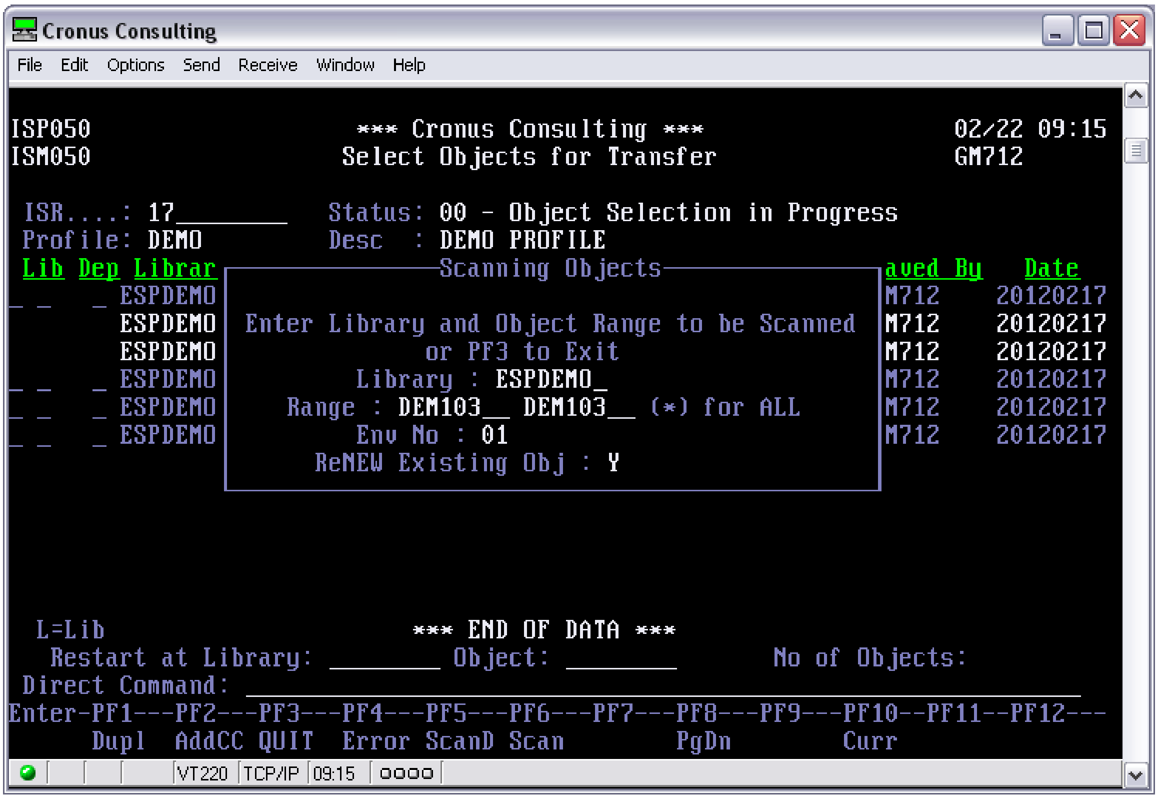
Figure 37: PF6 – Scan Source Code for New Objects

PF6

Enter the starting from and ending at range **or** * to scan the complete library. Scanning a **complete** library might take **some time,** depending on the number of new objects in the Natural Library – a selection can be entered for a specific range of objects. The library name is validated, but the objects are not, the scanning of these objects will add them to the Object Inventory if they exist or ignore them if they do not.

The “Env No” that must be entered is defaulted to TRUE DEVELOPMENT, but may be amended by the user if more than one development environment exists. If an environment is chosen that does not exist on the development machine or does not match the Library entered, the scanning will not work! The Library that is scanned in for each of the development environments becomes the default library of that object. These objects will all be scanned in and the Object Inventory updated with the NEW OBJECT indicator set to Yes if the object is new. If an old object is re-scanned it will re-update the Object Type and Mode, but will not set the New Object indicator on.

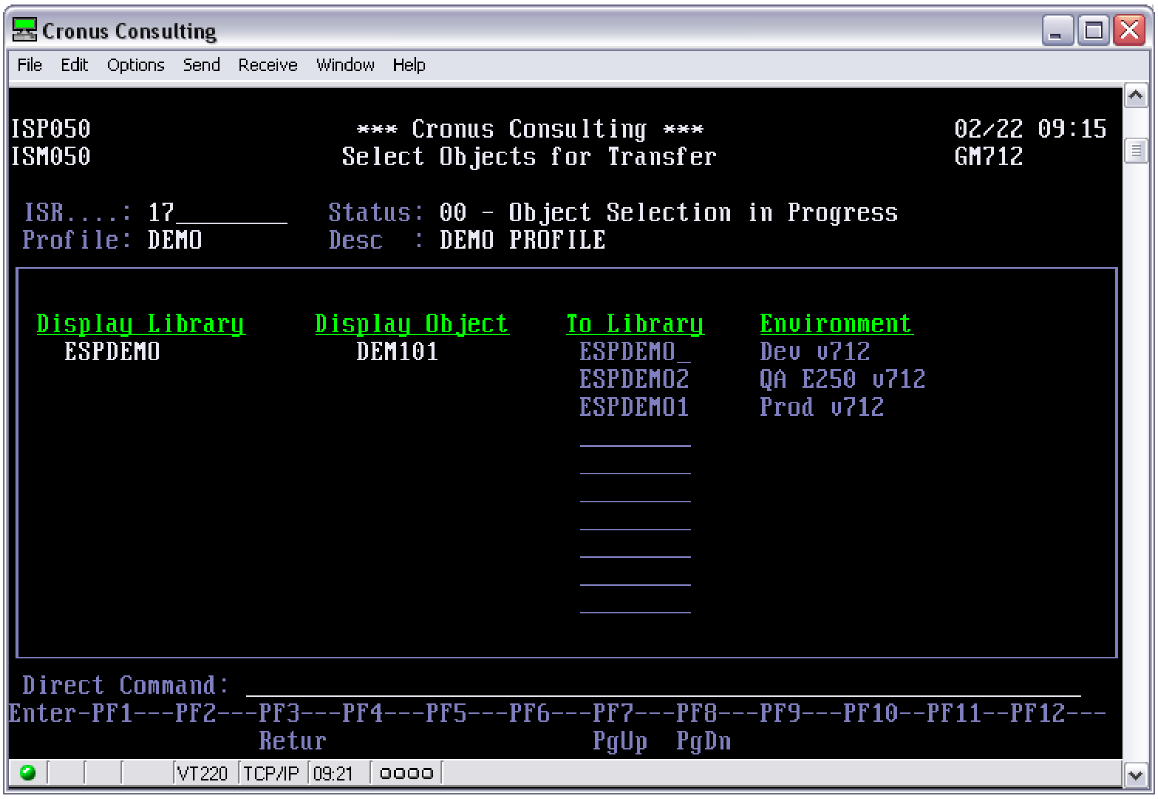
NOTE – If the Allow-source = M option is set on Development and an object is scanned for example, to change the object type or mode and the object does not exist, then no updating will take place. This will also be the case for PF1, the duplicating of objects, see section below. Therefore, these objects MUST be present in this environment when they are being scanned or duplicated.



```
ISP050                   *** Cronus Consulting ***                 02/22 09:15
ISM050                  Select Objects for Transfer                GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc   : DEMO PROFILE
 Lib Dep Librar ---------------Scanning Objects----------------aved By    Date
_ _   _ ESPDEMO                                                M712     20120217
        ESPDEMO  Enter Library and Object Range to be Scanned  M712     20120217
        ESPDEMO              or PF3 to Exit                    M712     20120217
_ _   _ ESPDEMO          Library : ESPDEMO_                    M712     20120217
_ _   _ ESPDEMO     Range : DEM103__ DEM103__ (*) for ALL      M712     20120217
_ _   _ ESPDEMO          Env No : 01                           M712     20120217
                      ReNEW Existing Obj : Y



  L=Lib                      *** END OF DATA ***
   Restart at Library: ________ Object: ________       No of Objects:
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC QUIT  Error ScanD Scan        PgDn        Curr
```

Figure 38: PF6 – ReNEW Existing Object Indicator set to Y

Changing Library Names



```
ISP050                   *** Cronus Consulting ***                 02/22 09:15
ISM050                  Select Objects for Transfer                GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc   : DEMO PROFILE


  Display Library     Display Object     To Library    Environment
    ESPDEMO                DEM101         ESPDEMO_      Dev v712
                                          ESPDEMO2      QA E250 v712
                                          ESPDEMO1      Prod v712

                                          ________
                                          ________
                                          ________
                                          ________
                                          ________
                                          ________
                                          ________


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Retur                   PgUp  PgDn
```

Figure 39: Library Selection per Object

By marking the **LIB** column with an ‘**L**’, a window will be reflected (see above) and if required to be different from the default, another migration library may be entered. The library from the “TRUE DEVELOPMENT” Environment(s) may **never** change from what was scanned in via **PF6 or the initial setup scan CC300**. This True Development is environment 01 in CC001 and not the first environment, in for instance, a short-path profile. If the same object-name exists in different libraries in Development, it may be scanned in again via PF6, so that two entries exist in the Inventory. If the client uses different development libraries for each developer, this may be overcome, by creating a DUMMY first environment on CC001 that is never marked as a Y in any profile path. Then scan the objects in using the Production library and use GENERIC in the profile to “change” the library name for each developer as required.

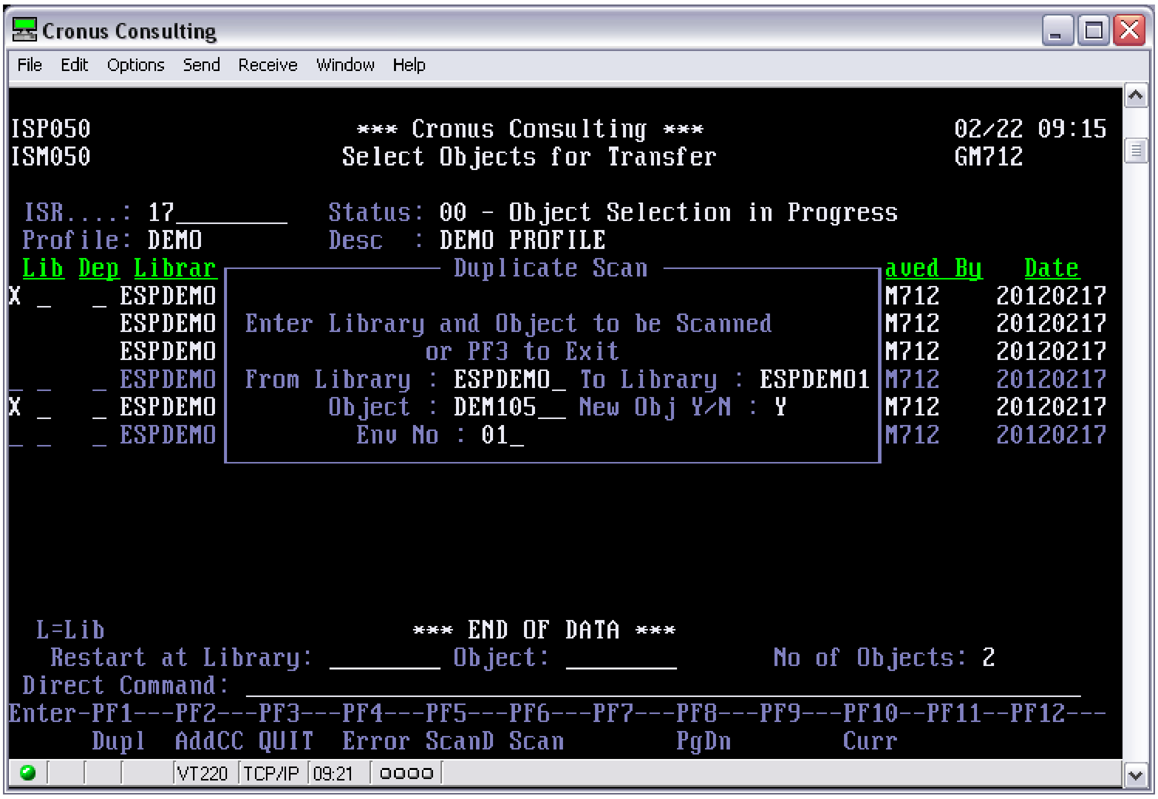
However, migration from the “True Development” library to any **other** library in the objects migration path **is** possible. This library path will be cleared once the ISR is complete and the next time an object is linked to an ISR, a new set of libraries may be selected. The path of the selected objects via the profile and selected libraries linked to these environments will be stored in History and may be viewed on Option **CC095** or Option **CC088**. If ‘L’ is entered, the library names (if already there or if an ISR Library has been set up in the profile), are displayed, but may be amended accordingly.

This is optional and if no libraries are selected the scanned library will be used for an entire migration path, with the exception of when an ISR Library has been set up in the profile linked to the specific ISR. Therefore, the migration path of an object, with regards to the linked libraries will be as follows:

1. No external libraries added, no ISR Library set up in profile linked to ISR, use OBJECT LIBRARY in Inventory List (scanned) across all environments.
2. No external libraries added, but GENERIC ISR Library exists, use GENERIC user-exit ISNUX100 to determine library.
3. No external libraries added, but ISR Library exists (not GENERIC), use ISR library then Object Library from Inventory List
4. External Libraries added, override both ISR Library and Object Library
5. Restores – use the library that was migrated at the time of the ISR (history kept of this)

The above Library path is always followed during Migration, Return or Restore.

Duplicating Objects



```
ISP050                  *** Cronus Consulting ***                 02/22 09:15
ISM050                 Select Objects for Transfer                GM712

 ISR....: 17________    Status: 00 - Object Selection in Progress
 Profile: DEMO          Desc  : DEMO PROFILE
 Lib Dep Librar ------------- Duplicate Scan ------------- aved By    Date
X _    _ ESPDEMO|                                         |M712     20120217
         ESPDEMO| Enter Library and Object to be Scanned  |M712     20120217
         ESPDEMO|             or PF3 to Exit              |M712     20120217
_ _    _ ESPDEMO| From Library : ESPDEMO_ To Library : ESPDEMO1|M712     20120217
X _    _ ESPDEMO|      Object : DEM105__ New Obj Y/N : Y  |M712     20120217
_ _    _ ESPDEMO|        Env No : 01_                     |M712     20120217
                ------------------------------------------


  L=Lib                          *** END OF DATA ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC QUIT  Error ScanD Scan        PgDn        Curr
```

Figure 40: PF1 – Duplicate Scan

This function (**PF1 Duplicate Scan**) is used to create a copy of a selected object, from the EspControl inventory in another library in any Development environment and again update the EspControl inventory with the new object name and library. This new object may now be linked to an ISR and be migrated accordingly. **Remember**, to amend the Library (option L under the **LIB** column) of this new duplicated object as to follow its own path of the environments to come, if necessary.

The function key **PF1** is used to initiate the scan, and in turn will copy the source code of the entered **Object** and **From Library,** to the **To Library**. In this manner a duplicate of the object source can be created in the development environment and be migrated to another library and environment or follow the same path of the original object, one environment behind the object.

The copy of the object will include all codes from original object as well, i.e. backup indicators, To-Libraries, version numbers etc. PF1 only copies SOURCE and the object must be manually compiled by the user.

Object Status

The **New Obj** can be marked as a "Y" or "N" depending on the user requirements. If the original copied object is a new object, then this will be overridden and treated as a new object as well.

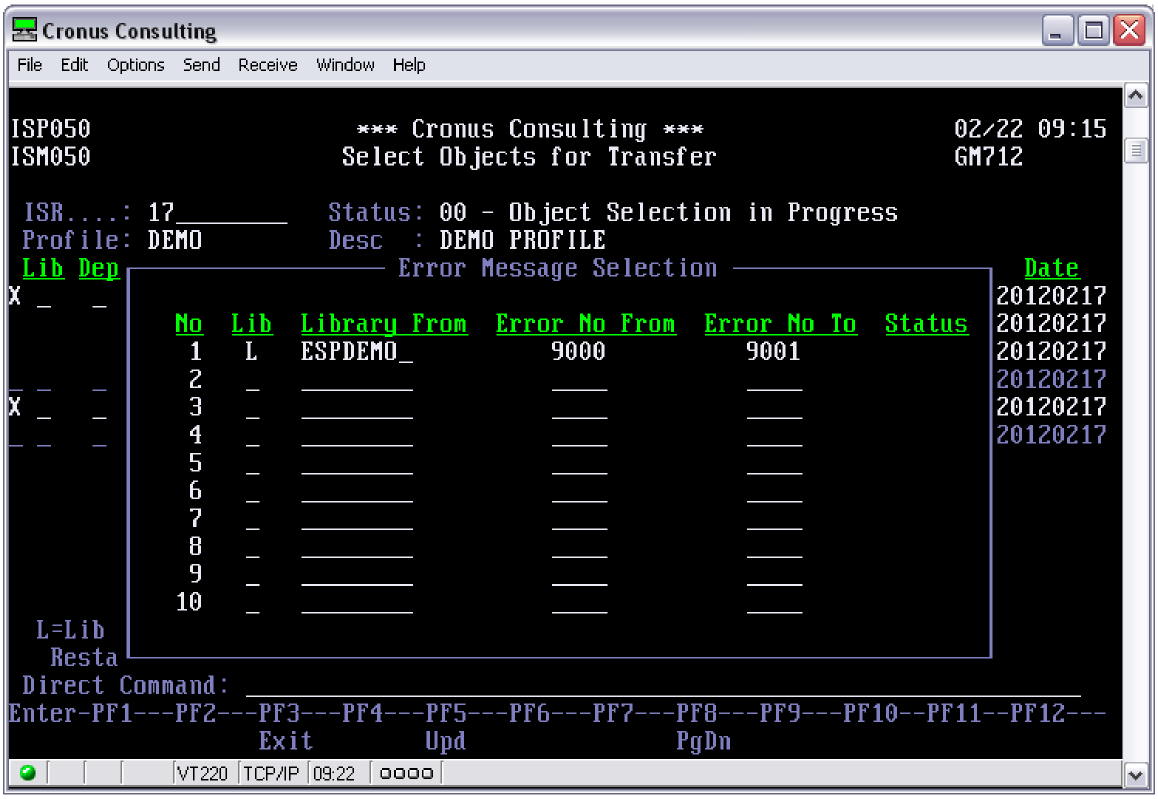
"Y" - Once selected will follow profile path and libraries selected or allocated in column 'L', moving up from Initial Environment to the Master Environment.

"N" – Copied object will be created as OLD, amend Libraries in column 'L' if necessary. However, when linked to an ISR, the migration will attempt to move this object down from Production first. If this is not required, use a Profile with a Path Choice.

In this manner, ISR's may run in tandem with an object, as long as one ISR is one environment ahead of the other.

If an ISR is selected for migration in CC100 whereby an object is going to over-write the same object from another ISR, in the same environment, a WARNING will be given. Use <PF4> to override or <PF3> to reject. This will only occur if objects with the same name, but different Development libraries, are linked to multiple ISR's.

PF4: Setting up Migration of System Error Messages



```
ISP050                     *** Cronus Consulting ***                02/22 09:15
ISM050                    Select Objects for Transfer               GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc  : DEMO PROFILE
 Lib Dep ------------------ Error Message Selection ------------------ Date
X _   _ |                                                             |20120217
        |  No  Lib  Library From  Error No From  Error No To  Status  |20120217
        |   1   L   ESPDEMO_            9000          9001            |20120217
_ _   _ |   2   _   ________            ____          ____            |20120217
X _   _ |   3   _   ________            ____          ____            |20120217
_ _   _ |   4   _   ________            ____          ____            |20120217
        |   5   _   ________            ____          ____            |
        |   6   _   ________            ____          ____            |
        |   7   _   ________            ____          ____            |
        |   8   _   ________            ____          ____            |
        |   9   _   ________            ____          ____            |
        |  10   _   ________            ____          ____            |
  L=Lib |                                                             |
   Resta ---------------------------------------------------------------
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Exit        Upd               PgDn
```

Figure 41: PF4 – Setting Up Error Messages

System Error Messages

User defined SYSERR messages, may be migrated along with the objects in an ISR. Error messages can be added to the ISR using PF4 while linking objects in function CC050, a window will be displayed as reflected in the figure 41 above. If no objects are currently being linked, set up a dummy program in the environments where the system error messages are being migrated to, for e.g. SYSERRP and then this program may always be used to transfer error messages without impacting on other objects and ISR's.

Multiple libraries may be specified, with varying range of error numbers. These error numbers should be reflected as a FROM or TO number. If only one error is required, then the FROM and TO error numbers will be the same.

The Libraries that the error messages are being transferred to are specified per ENVIRONMENT. See figure 42 below.

LIB: If Libraries that error messages are being migrated to, do not differ from the LIBRARY FROM, then this field need not be used, as the LIBRARY TO will be automatically populated with the same Library as the LIBRARY FROM. If the libraries are to differ, user must enter 'L' in this column. See 42 below for further explanation.

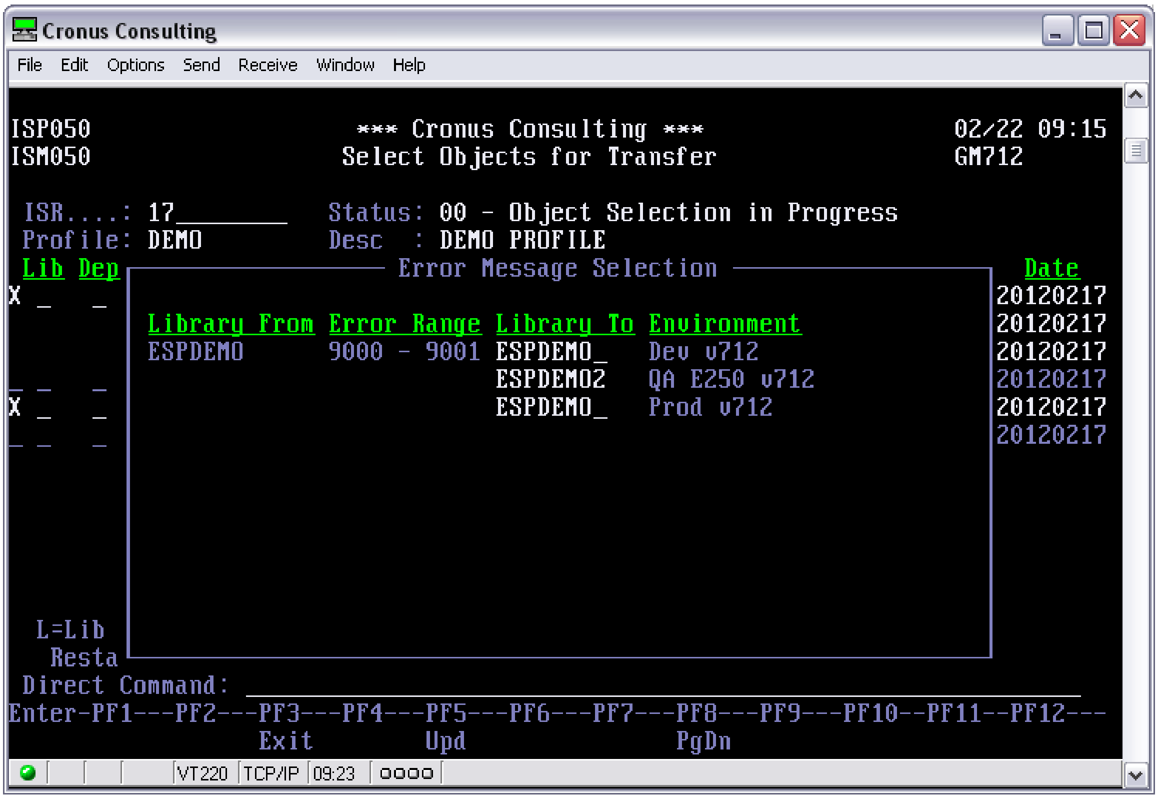
LIBRARY FROM: Library System Error Messages are being moved from. This must be a valid library in the Initial Environment.

ERROR NO FROM: The Starting error number in the range specified.

ERROR NO TO: The Ending error number in the range specified. The TO ERROR NO cannot be less than the FROM ERROR NO

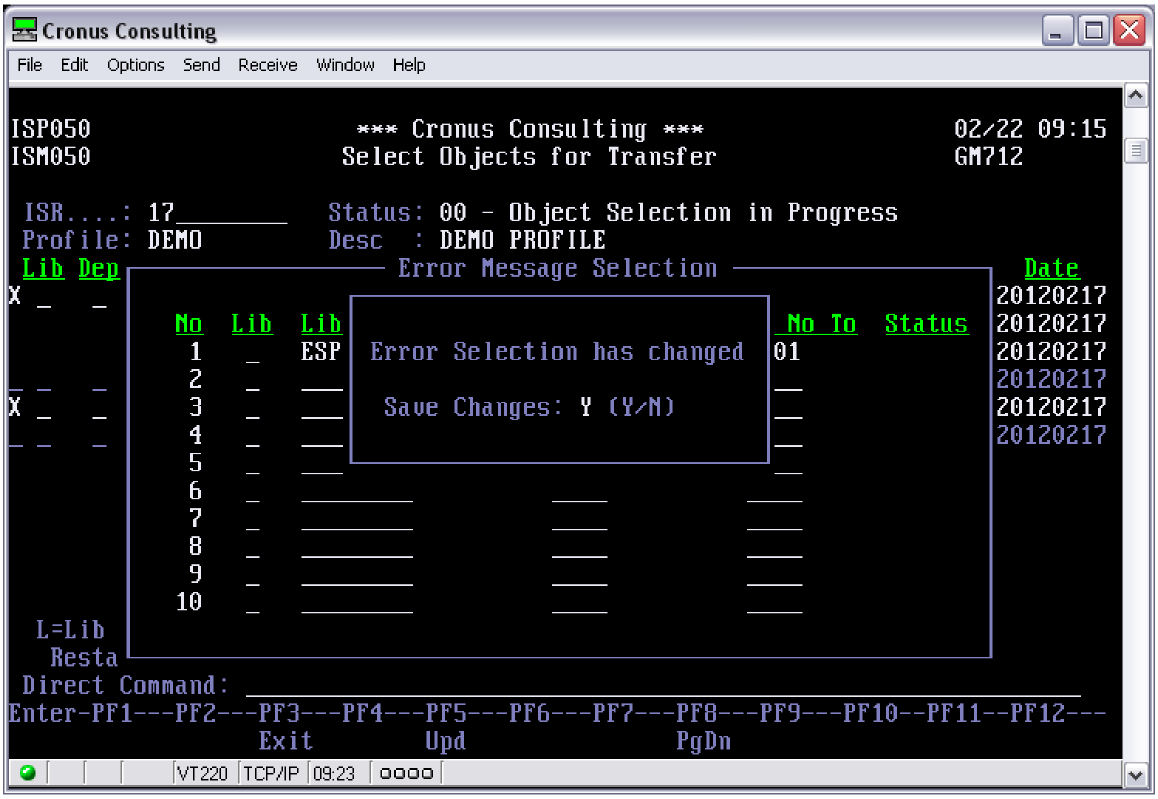
LIBRARY TO: The TO LIBRARY specified must be a valid library in the migrated to environment and ALL environments must have a specified LIBRARY TO, as the system error messages will be migrated along with the objects in the same PATH as the linked objects to the specified ISR.

If the linked objects are OLD objects the original error messages will be migrated from the MASTER Environment to the Initial Environment at the start of the ISR. These may then be amended in the Initial Environment and may be transferred again accordingly. Alternatively, only add the system error messages via PF4 once all objects are in the Initial Environment (Status 01).



```
ISP050                    *** Cronus Consulting ***                02/22 09:15
ISM050                   Select Objects for Transfer               GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc  : DEMO PROFILE
 Lib Dep                     Error Message Selection                Date
X _   _                                                            20120217
         Library From Error Range  Library To Environment          20120217
         ESPDEMO      9000 - 9001  ESPDEMO_   Dev v712             20120217
_ _   _                            ESPDEMO2   QA E250 v712         20120217
X _   _                            ESPDEMO_   Prod v712            20120217
_ _   _                                                            20120217



  L=Lib
   Resta
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Exit        Upd               PgDn
```

Figure 42: ‘L’ in Lib column, specify Environment Libraries for SYSERR

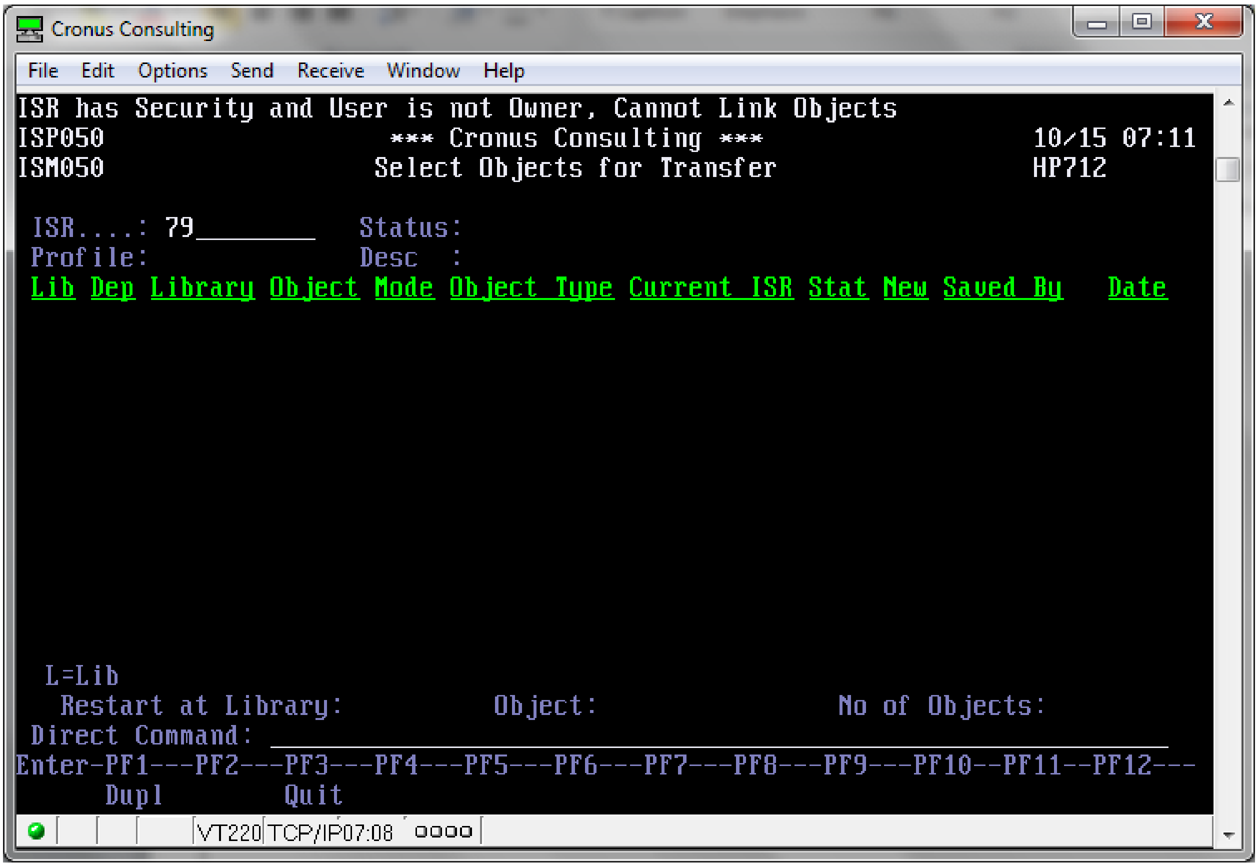


```
ISP050                    *** Cronus Consulting ***                02/22 09:15
ISM050                   Select Objects for Transfer               GM712

 ISR....: 17________      Status: 00 - Object Selection in Progress
 Profile: DEMO            Desc  : DEMO PROFILE
 Lib Dep                     Error Message Selection                Date
X _   _                                                            20120217
            No  Lib  Lib                              No To  Status 20120217
             1   _   ESP   Error Selection has changed 01          20120217
_ _   _      2   _   ____                              __          20120217
X _   _      3   _   ____   Save Changes: Y (Y/N)      __          20120217
_ _   _      4   _   ____                              __          20120217
             5   _   ____                              __
             6   _   ________         ____       ____
             7   _   ________         ____       ____
             8   _   ________         ____       ____
             9   _   ________         ____       ____
            10   _   ________         ____       ____

  L=Lib
   Resta
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Exit        Upd               PgDn
```

Figure 43: Save System Error Selection

To save the captured Error Numbers, press ‘Y’ for SAVE or N for Quit without save. Once saved, these error messages will be migrated when function CC100 is executed for the specified ISR to which this Error Selection has been linked. PF5 will also save changes.

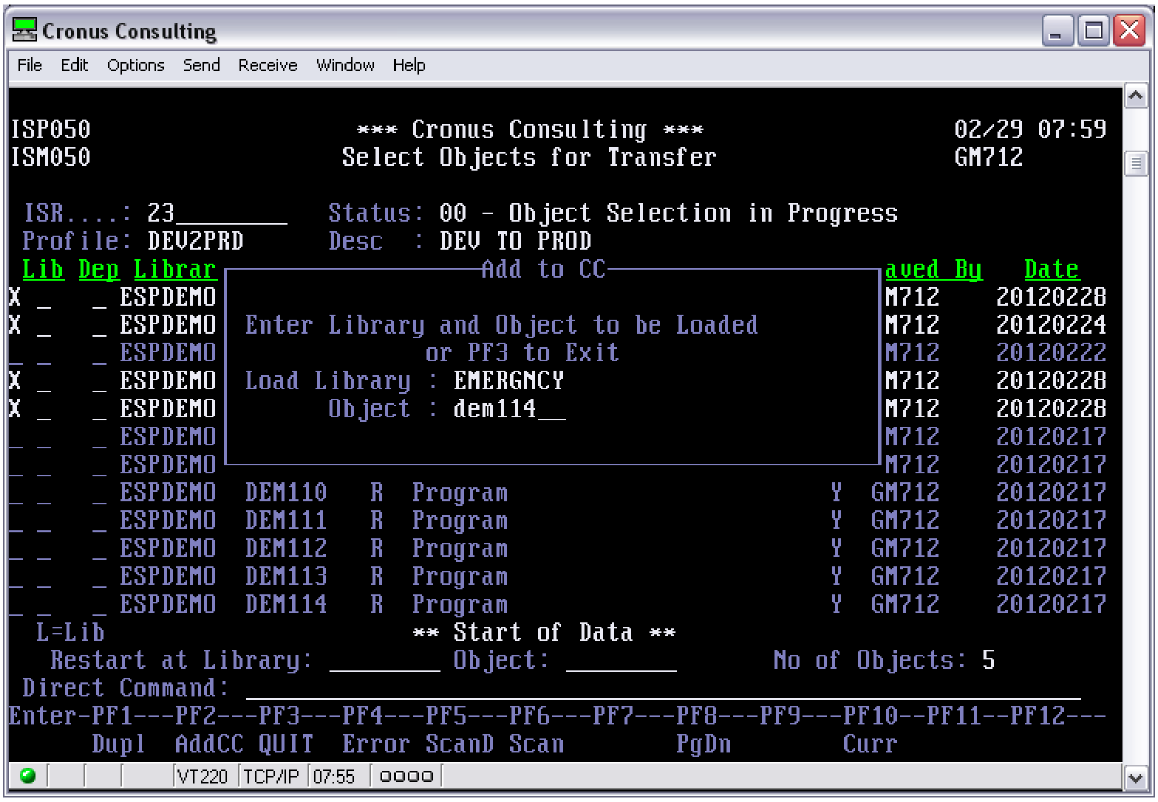
ISR SECURITY – If the ISR Security of the current ISR has been marked with Y, then CC050 may only be used by the same user who created the ISR. This is irrespective of the function security and whether you have the CC050 function allocated to you or not. Even if it is allocated, if ISR Security is on, then any user other than the creator will receive the error (as specified in figure below) that they are not the owner and cannot continue with CC050. See figure 32 as in CC030 above in manual.



```
ISR has Security and User is not Owner, Cannot Link Objects
ISP050                        *** Cronus Consulting ***                  10/15 07:11
ISM050                         Select Objects for Transfer               HP712

 ISR....: 79________     Status:
 Profile:                Desc   :
 Lib Dep Library Object Mode Object Type Current ISR Stat New Saved By    Date

  L=Lib
   Restart at Library:           Object:                 No of Objects:
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl        Quit
```

Figure 44: Error if ISr has Security and user for CC050 is not Owner

Add Emergency Modules to Change Control



```
ISP050                 *** Cronus Consulting ***                 02/29 07:59
ISM050                 Select Objects for Transfer               GM712

 ISR....: 23________      Status: 00 - Object Selection in Progress
 Profile: DEV2PRD         Desc  : DEV TO PROD
 Lib Dep Librar ---------------------Add to CC---------------------aved By   Date
X _   _ ESPDEMO |                                                 |M712    20120228
X _   _ ESPDEMO | Enter Library and Object to be Loaded           |M712    20120224
_ _   _ ESPDEMO |             or PF3 to Exit                      |M712    20120222
X _   _ ESPDEMO | Load Library : EMERGNCY                         |M712    20120228
X _   _ ESPDEMO |       Object : dem114__                         |M712    20120228
_ _   _ ESPDEMO |                                                 |M712    20120217
_ _   _ ESPDEMO ---------------------------------------------------M712    20120217
_ _   _ ESPDEMO  DEM110   R  Program                          Y GM712    20120217
_ _   _ ESPDEMO  DEM111   R  Program                          Y GM712    20120217
_ _   _ ESPDEMO  DEM112   R  Program                          Y GM712    20120217
_ _   _ ESPDEMO  DEM113   R  Program                          Y GM712    20120217
_ _   _ ESPDEMO  DEM114   R  Program                          Y GM712    20120217
  L=Lib                       ** Start of Data **
   Restart at Library: ________ Object: ________       No of Objects: 5
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC QUIT  Error ScanD Scan        PgDn        Curr
```

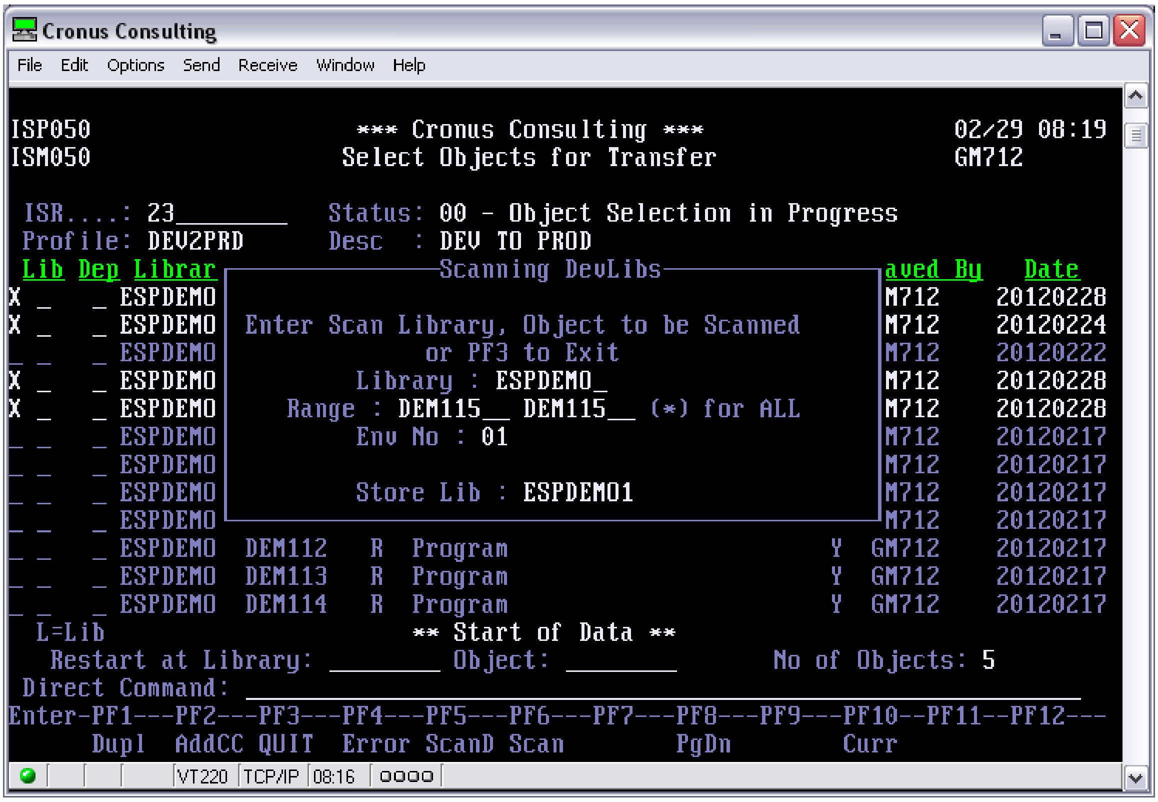
Figure 45: PF2 – Add modules to Change Control

This function (**PF2 Add CC**) is used to add modules to the EspControl inventory in CC050, to be used in a migration move, but with a different library name, in Emergency or Call-Out situations. This function will load the module with the input library name and input object name (as seen above) to the Inventory List for linking and migrating. This function would be used in the case of a call-out where the developer is not allowed in the actual Production Library – he will add the module name to the change control, using the call-out library and then move the code from the actual Production Library to the call-out library, work on the module and then return it to the actual Production Library. In this manner modules added via PF2 could only move in a Production to Production profile from one library to the other.

The validation rules for PF2 are as follows:

- The library entered is validated against the code STORECC in CC010, where all libraries to be used in this function are specified. Failure to load the library name against the STORECC code will return an error when using PF2.
- The module entered must already exist in the Inventory List on CC050 and the object mode and type will be picked up from this already existing entry.
- Once a module has been added to the EspControl inventory list to a call-out library, if used in a call-out situation again, it need not be re-added as the entry will remain for further use.
- The module loaded via PF2 is not scanned and checked for valid source, but the object information is obtained from the current entry in the Inventory List.

Add Emergency Modules to Change Control



```
ISP050                 *** Cronus Consulting ***                02/29 08:19
ISM050                Select Objects for Transfer               GM712

 ISR....: 23________     Status: 00 - Object Selection in Progress
 Profile: DEV2PRD        Desc  : DEV TO PROD
 Lib Dep Librar ---------------Scanning DevLibs---------------aved By   Date
X _   _ ESPDEMO |                                              |M712     20120228
X _   _ ESPDEMO | Enter Scan Library, Object to be Scanned     |M712     20120224
_ _   _ ESPDEMO |              or PF3 to Exit                  |M712     20120222
X _   _ ESPDEMO |           Library : ESPDEMO_                 |M712     20120228
X _   _ ESPDEMO |      Range : DEM115__ DEM115__ (*) for ALL   |M712     20120228
_ _   _ ESPDEMO |           Env No : 01                        |M712     20120217
_ _   _ ESPDEMO |                                              |M712     20120217
_ _   _ ESPDEMO |           Store Lib : ESPDEM01               |M712     20120217
_ _   _ ESPDEMO |______________________________________________|M712     20120217
_ _   _ ESPDEMO  DEM112    R  Program                        Y  GM712    20120217
_ _   _ ESPDEMO  DEM113    R  Program                        Y  GM712    20120217
_ _   _ ESPDEMO  DEM114    R  Program                        Y  GM712    20120217
  L=Lib                       ** Start of Data **
   Restart at Library: ________ Object: ________      No of Objects: 5
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC QUIT  Error ScanD Scan        PgDn        Curr
```

Figure 46: PF5 – Scanning Modules in Development libraries adding to another library

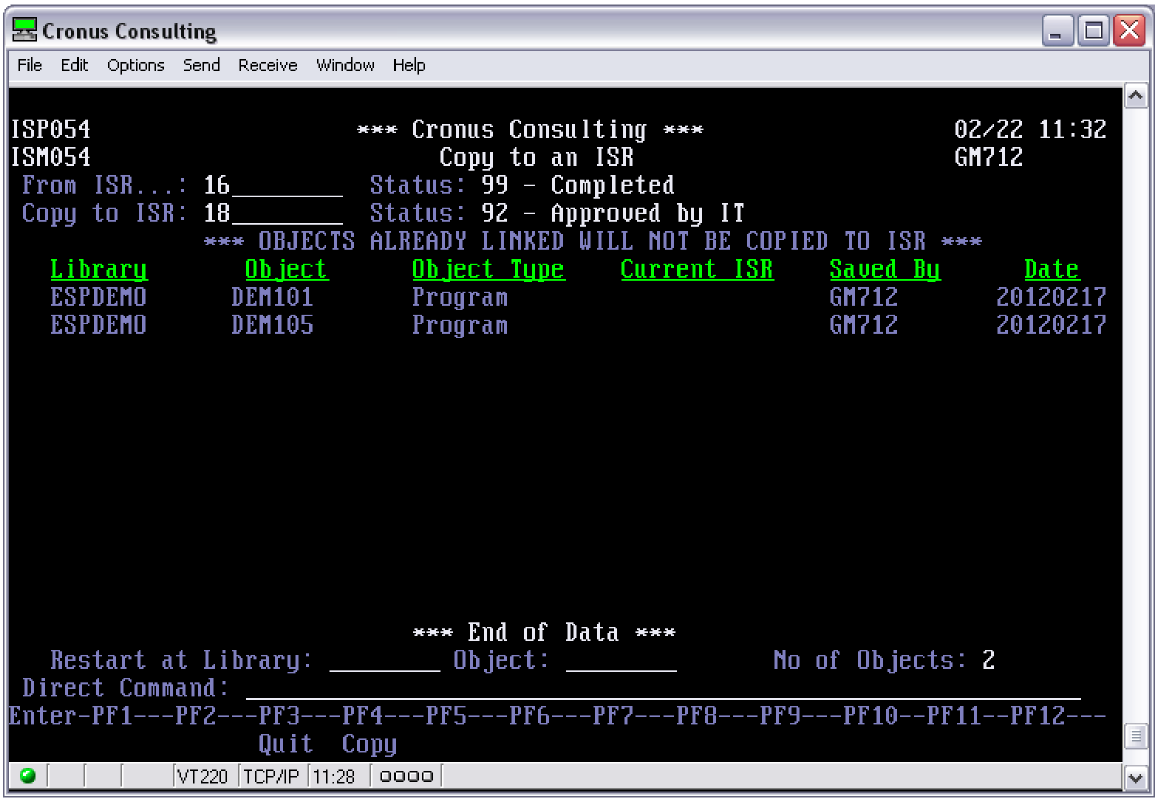
This function (**PF5 – Scan Devlibs**) is a combination of PF6 and PF1 scanning functions, whereby the module is scanned in the Environment number entered (a Development Environment), all object information is obtained from the scan, but the module is stored in the EspControl Inventory using the Store Library as reflected in the figure 46 above. The difference to PF1 is that it does not make a duplicate copy of the code in the Store Library.

The validation rules for PF5 are as follows:

- The Library entered will be used for the actual scan and must exist in a Development environment.
- The module range will be used for the scan and these modules must exist. No entries will be created if the modules do not exist (if this is what is required – use PF2).
- The Store Lib will be validated against the STORECC code in CC010 and must have a valid entry in STORECC for PF5 to work, else an error will be returned.
- The scanned in objects will be created in the Inventory List, but under the Store Library and NOT the scanned in Library.

3.2.4 CC054 – Copy an ISR

This function is used to copy the links of a completed ISR to a new object, instead of manually linking the objects via CC050 one by one.



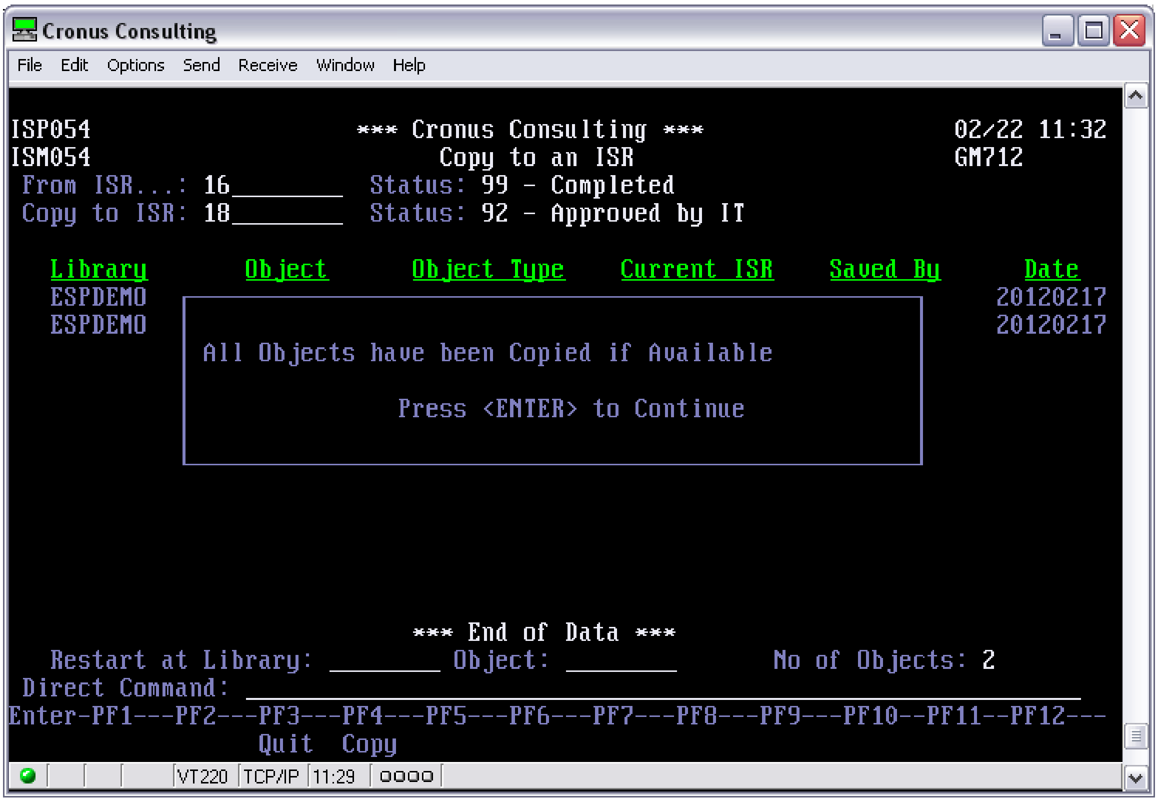
```
ISP054                     *** Cronus Consulting ***                 02/22 11:32
ISM054                           Copy to an ISR                      GM712
 From ISR...: 16________   Status: 99 - Completed
 Copy to ISR: 18________   Status: 92 - Approved by IT
              *** OBJECTS ALREADY LINKED WILL NOT BE COPIED TO ISR ***
   Library      Object      Object Type    Current ISR    Saved By      Date
   ESPDEMO      DEM101      Program                       GM712         20120217
   ESPDEMO      DEM105      Program                       GM712         20120217




                                *** End of Data ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Copy
```

Figure 47: Copy an ISR and link objects to a New ISR

The ‘COPY FROM’ ISR must be a completed ISR, as if it is not completed, the objects will not be available for linking as each object may only have one current ISR. Once an ISR has been completed it may be used in this transaction. The ‘COPY TO’ ISR must be a new ISR that has been created via CC030 with a linked profile and then approved via CC040. If both ISR’s are in the correct status then the copy function may be requested. The new ‘COPY TO’ ISR must not have had any migrations yet, else the copy will not be allowed.

The objects that were linked to the Copy From ISR will be displayed on the screen, including the Current ISR No, if any. If any objects are already linked to another open ISR, they will be displayed for the user to see, but will NOT be copied to the new ISR.

Press PF4 for the linking of the available objects to the new ISR.



```
ISP054                     *** Cronus Consulting ***                  02/22 11:32
ISM054                           Copy to an ISR                       GM712
 From ISR...: 16________    Status: 99 - Completed
 Copy to ISR: 18________    Status: 92 - Approved by IT

   Library       Object       Object Type    Current ISR    Saved By       Date
   ESPDEMO                                                              20120217
   ESPDEMO                                                              20120217

             All Objects have been Copied if Available

                          Press <ENTER> to Continue

                                *** End of Data ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Copy
```

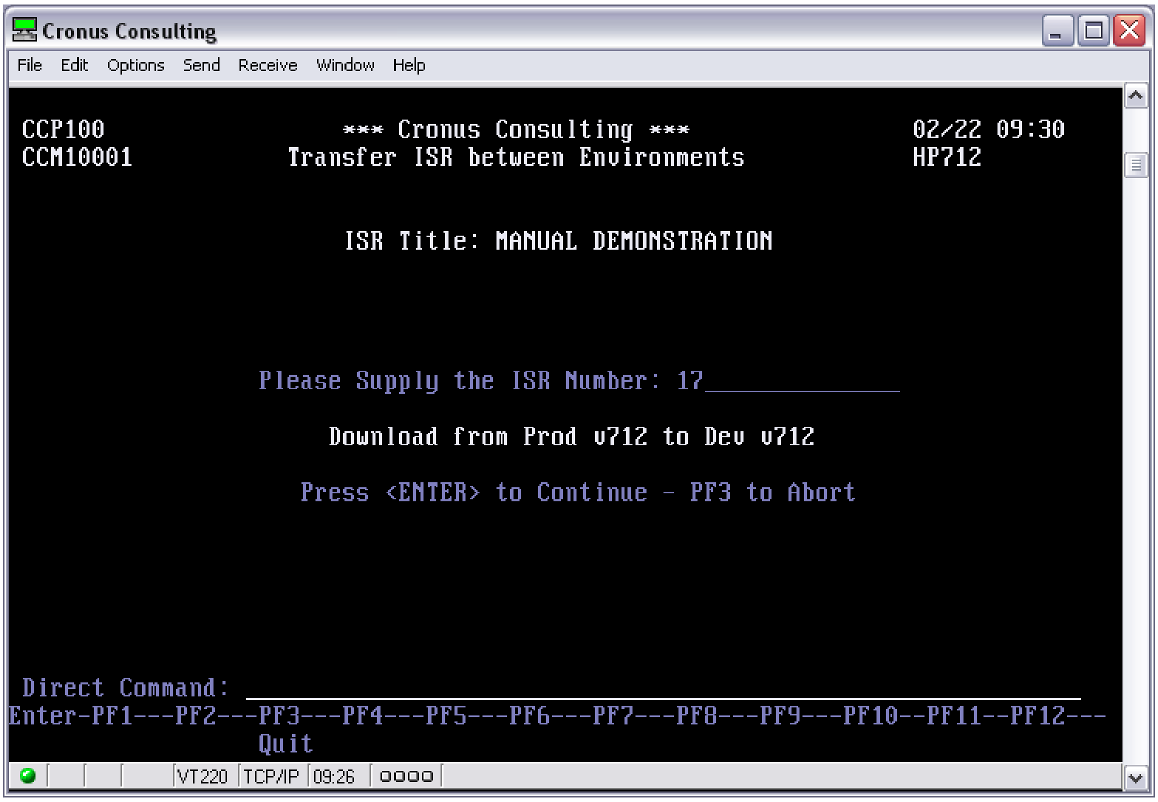
Figure 48: PF4 Confirmation of Copied Objects to new ISR

Once PF4 has been pressed and the objects have been copied to the new ISR, the transaction is complete. To view or de-select any of these objects, the user must once again go and use option CC050. Once inCC050 objects may be removed and others may be added. CC054 is a linking tool only and has no other function.

3.2.5 CC100 – Transfer an ISR between Environments

The function is used to **transfer** all **objects** linked to an ISR between the defined environments. Any user that has access to this function can transfer an ISR, Additional security is controlled with **CC060 – Upload Approval** per environment for the ISR and **USERID** or **GROUP** linked to the profile in **CC002**. If entered, only that user will be allowed to migrate to the specified environment. If ISR SECURITY is set on in CC030, only the originator may transfer objects.

According to the current status of an ISR and the profile linked to it, the system will determine to which environment objects must be transferred. Those already in Development (New Objects) will not be transferred until all other objects have been transferred to Development from the Master Environment of that profile if the profile specifies a download move.



```
CCP100                  *** Cronus Consulting ***               02/22 09:30
CCM10001             Transfer ISR between Environments          HP712

                        ISR Title: MANUAL DEMONSTRATION


                   Please Supply the ISR Number: 17______________

                        Download from Prod v712 to Dev v712

                     Press <ENTER> to Continue - PF3 to Abort



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 49: Migration Transfer of ISR

If Upload Approval is required by the specified profile, it must first be APPROVED in CC060 before the migration will be allowed. However, the migration WILL always be DISALLOWED if the Return Approval indicator has been set on. This will ensure that an ISR cannot be both Transferred and Returned at the same time. If Return is no longer required and objects have been marked for return, use PF5 to reset objects in function CC053.

Once the user has pressed enter to continue, the ISR will be put through the PATH VALIDATION routine. This routine will validate all UNIX paths required (fuser, source staging, backup paths set up in the Control Variable section CC001), as well as testing the existence of objects in the FROM environment to ensure unnecessary ISR failures and consequent restores. If the Path Validation fails, the ISR will be put on HOLD for investigation and once the paths or objects are in the correct state, the user may reset the ISR via CC075 and redo option CC100. The Path Validation for the existence of Objects in the From environment is completed in full, and then if any error objects exist, the ISR will fail. The user will be able to print an error report if required or the user may enquire on all error objects in the ISR History transaction (CC095). The TO environment UNIX paths (as specified in CC001) are also checked and if they do not exist, they will be created in UNIX via the path validation routine. If this is the case, the path validation routine will run longer than usual. ESPERRTA is also checked for existence in library SYSTEM in both the From and To environments and will return an error and the ISR will fail if ESPERRTA does not exist in the required environments.

If the TO environment has “SOURCE MOVE” as part of the linked profile, then the existence of objects will be checked. Since the environment is one where there should be no source, if source does exist it will create a problem and will require user intervention. See below in manual for further re-explanation.

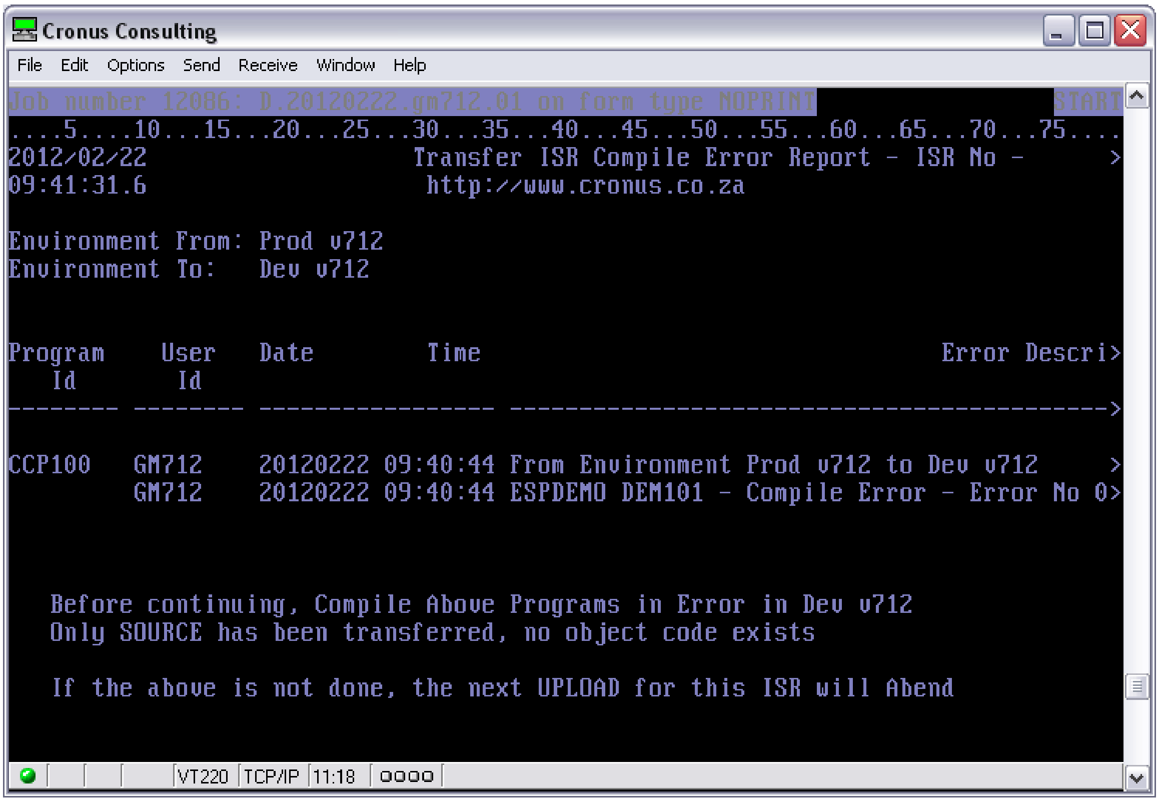
NON-COMPILE in Initial Environment during DOWNLOAD from Master

When transferring objects from the Master Environment to the Initial Environment e.g. Prod to Dev and the object does not compile, the ISR is no longer stopped with an automatic restore. The ISR will continue and store all Error Compile Objects in the ISR History. This ISR History transaction (CC095) will allow the user the opportunity of checking out the details of the non-compiles. The Object that does not compile in the Initial Environment is transferred as source only and the user will have to manually compile these objects in this environment before continuing with the ISR. The user will also be able to print a non-compile error report, if required.

Please note, this non-compile ONLY exists in the Initial Environment specified in the linked profile, when DOWNLOADED and when the object is again migrated in a UPLOAD transfer, a COMPILE by the user will be necessary for the successful migration to the next environment. If the RESTORE-IND indicator is set to ‘N’, which implies no restores if errors occur, this option will override the above changes as the ISR is not restored in any event due to compile errors when downloading.

NON-COMPILE Error Report

If the RESTORE-IND = ‘Y’ and the above condition occurs, then the user has a choice to print out an Error Report reflecting all objects in Compile Error. The user will be requested to input a “Y” if a report is required and “N” if it is not. If YES, the report will be sent to the relevant print queue. See figure 50 below.

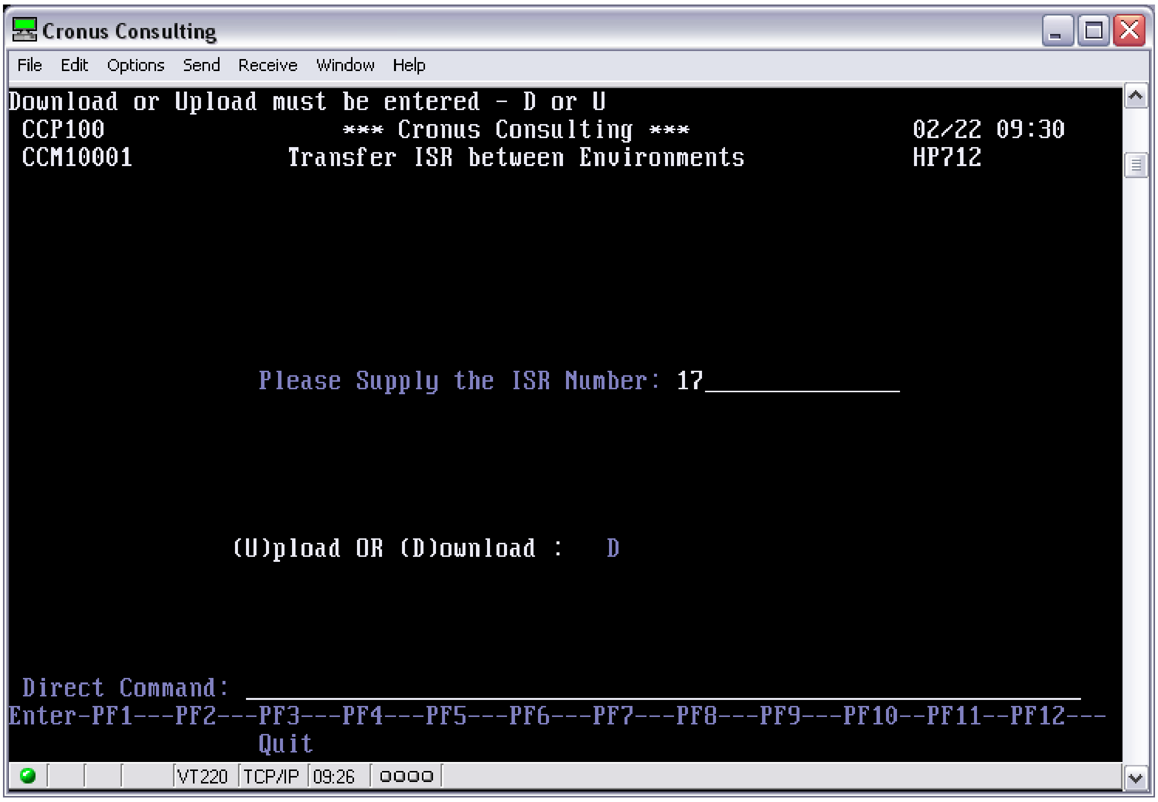


```
Job number 12086: D.20120222.gm712.01 on form type NOPRINT                START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22                     Transfer ISR Compile Error Report - ISR No -      >
09:41:31.6                      http://www.cronus.co.za

Environment From: Prod v712
Environment To:   Dev v712


Program    User    Date         Time                                Error Descri>
   Id       Id
-------- -------- ----------------- ------------------------------------------->

CCP100   GM712    20120222 09:40:44 From Environment Prod v712 to Dev v712      >
         GM712    20120222 09:40:44 ESPDEMO DEM101 - Compile Error - Error No 0>



   Before continuing, Compile Above Programs in Error in Dev v712
   Only SOURCE has been transferred, no object code exists

   If the above is not done, the next UPLOAD for this ISR will Abend
```

Figure 50: ISR Compile Error Report

NON-COMPILE during UPLOAD from Initial Environment

All objects are automatically re-compiled in the Initial Environment before being transferred to the next environment during an UPLOAD phase, UNLESS the STOW-CAT indicator in the profile for the Initial Environment is defined as NONE. In this case, the objects will be moved directly forwards without a compile and will initiate a SAVE only in the initial environment before being transferred. The marking of NONE in the initial environment will also only move the code in a DOWNLOAD movement from the Master to the Initial environment with a SAVE function only. This means that the NON-COMPILE Error report and routine will not be part of a transfer, as the compile step will be by-passed. If NONE is selected, then it is up to the user to ensure that the source is stowed in the Initial Environment, as if it is not and an error does exist, the source will not stow in the next environment causing the ISR to be restored if the restore indicator is set to Yes.



```
Download or Upload must be entered - D or U
 CCP100                 *** Cronus Consulting ***                02/22 09:30
 CCM10001             Transfer ISR between Environments          HP712




                  Please Supply the ISR Number: 17______________



                (U)pload OR (D)ownload :   D



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 51: Download or Upload option Window

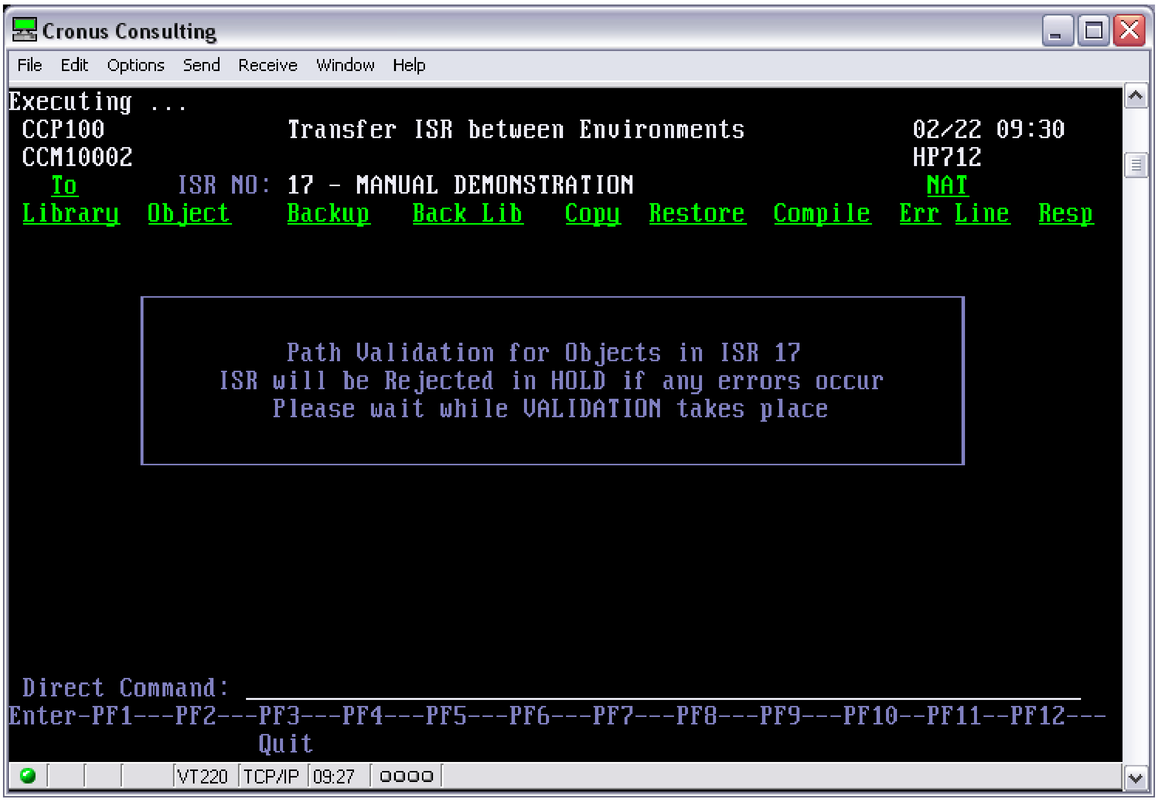
If the PATH CHOICE of the linked profile is set to YES, then the user will be given the choice of whether the initial movement of the ISR should be a DOWNLOAD or an UPLOAD, as specified in the figure 51 above. This choice will only be given at the start of a transfer i.e. the very first time a specific ISR is being transferred. Once the ISR is busy in its migration path, it will always move up the line in an UPLOAD option. To move back down, the Return option (CC102) must be used.

If D for DOWNLOAD is taken, the object will be downloaded from the MASTER environment to the Initial environment, as is the normal case for the transferring of objects in an ISR with a path choice of No.
If U for UPLOAD is taken, the movement down from the MASTER environment is skipped and the object will be moved directly up from the INITIAL environment. The objects MUST therefore already exist in this environment, as if they do not the PATH ALIDATION routine will abort and the ISR will be stopped.

If the PATH CHOICE of the linked profile is set to U (Upload), then the user will NOT be given the choice of whether the initial movement of the ISR should be a DOWNLOAD or an UPLOAD, as specified in the 51 above, but the ISR will be forced in an UPLOAD movement. With this profile, the object will NEVER be downloaded from the MASTER.
If the objects linked in the ISR are NEW OBJECTS, there will be no option given, even if the PATH CHOICE is set to YES, as the objects MUST be moved up the line.

For clients using the BACKUP and RESTORE options, care should be taken that when using the PATH CHOICE and UPLOAD option, the backup of this object in the Master environment will only be taken when moving to the Master environment (if the Master is not True Production). If a restore is done, the previous ISR backup will be used.

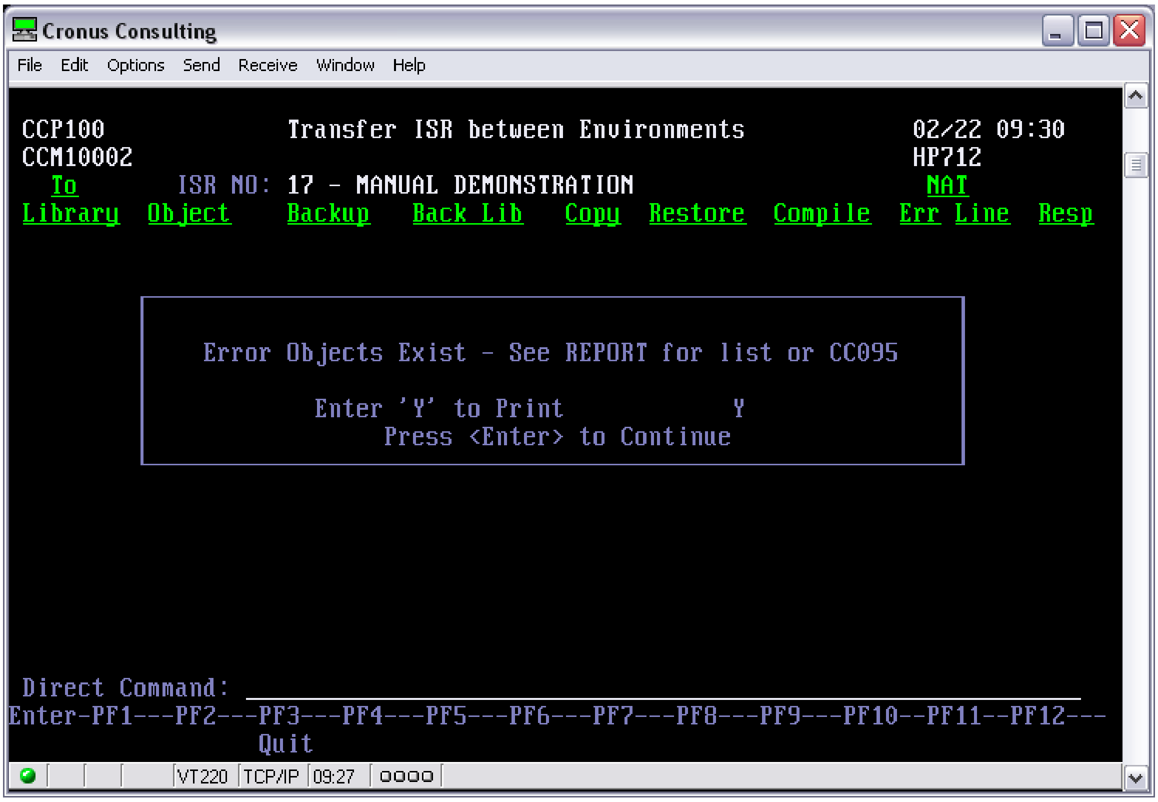
Path Validation



```
Executing ...
 CCP100              Transfer ISR between Environments          02/22 09:30
 CCM10002                                                       HP712
   To        ISR NO: 17 - MANUAL DEMONSTRATION                   NAT
 Library  Object     Backup    Back Lib    Copy  Restore  Compile  Err Line  Resp


              Path Validation for Objects in ISR 17
           ISR will be Rejected in HOLD if any errors occur
               Please wait while VALIDATION takes place


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

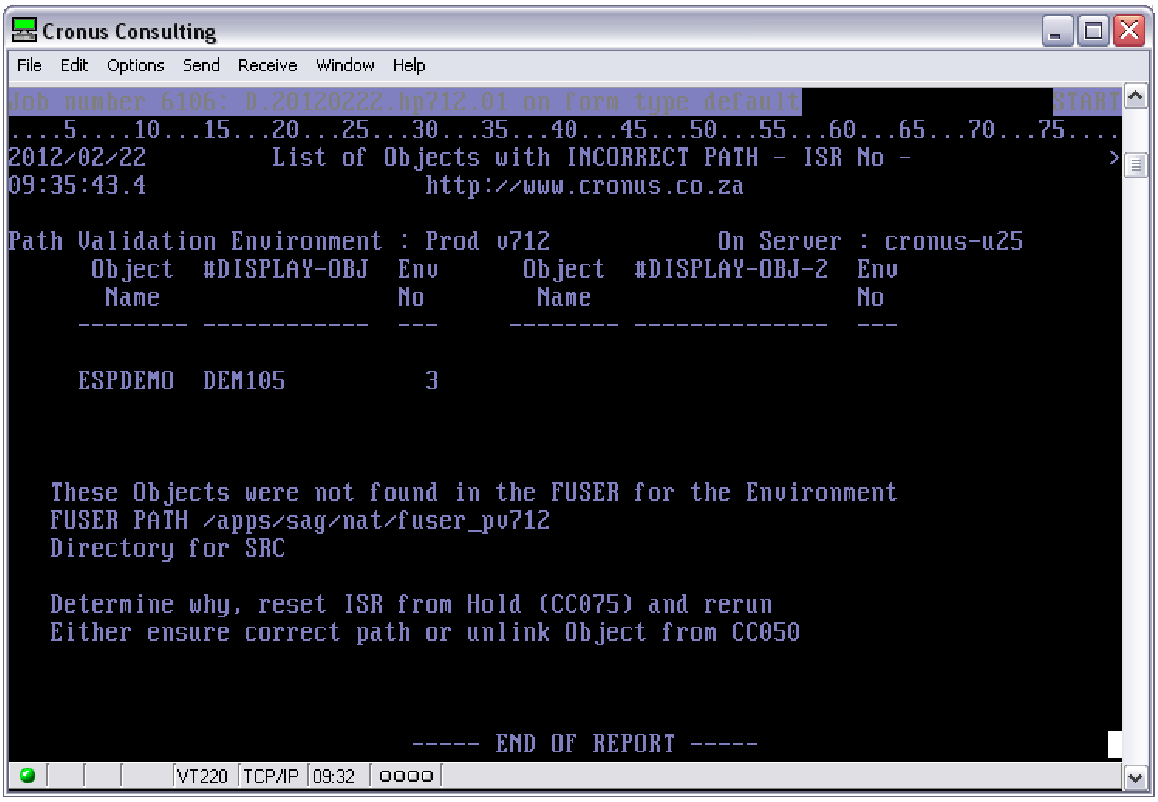
Figure 52: Path Validation

At the start of every migration process via CC100, the PATH VALIDATION as seen above will be executed, to check that all objects being migrated exist and that all backup, staging areas, libraries and fuser paths are also valid. In this manner, most of the errors of an ISR will be handled and the ISR will not fail in the middle of the migration causing the entire ISR to be backed out. A permissions error will not be determined in this validation as this will only be found out, when the migration function tries to update a path. If the path validation fails, a window will be displayed as seen below, and the user will be able to go and correct all the errors. The history function (CC095) may be viewed to get the path error and also error objects that do not exist. A report of all error objects, if Y is entered by the user, will be sent to the print queue. The ISR is also put on hold, so no further migration will take place until the problem has been solved. The ISR must be removed from hold (CC075) before being migrated again. Remember, this path validation will also automatically check for program ESPERRTA in library SYSTEM.



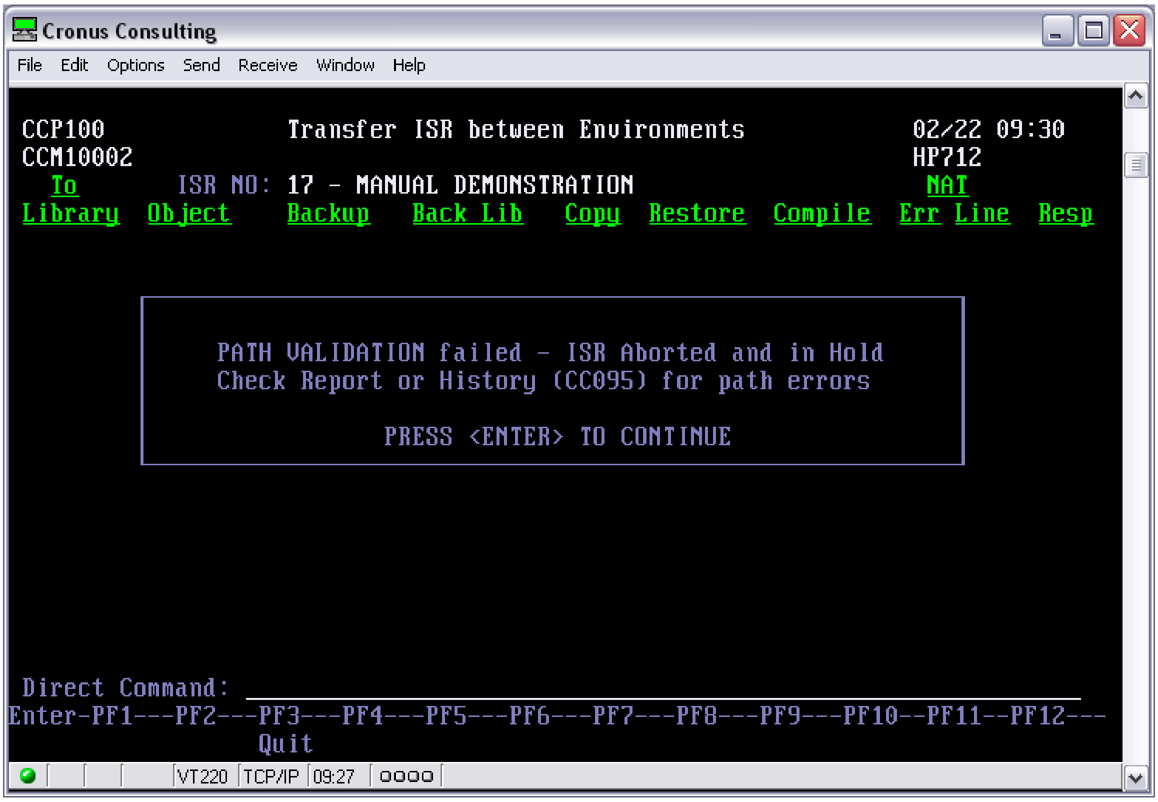
```
CCP100              Transfer ISR between Environments             02/22 09:30
CCM10002                                                          HP712
  To          ISR NO: 17 - MANUAL DEMONSTRATION                     NAT
Library  Object    Backup    Back Lib   Copy  Restore  Compile  Err Line  Resp



          Error Objects Exist - See REPORT for list or CC095

                  Enter 'Y' to Print              Y
                       Press <Enter> to Continue








 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 53: Path Validation Error Window



```
Job number 6106: D.20120222.hp712.01 on form type default                   START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22          List of Objects with INCORRECT PATH - ISR No -                >
09:35:43.4                      http://www.cronus.co.za

Path Validation Environment : Prod v712             On Server : cronus-u25
      Object  #DISPLAY-OBJ  Env       Object  #DISPLAY-OBJ-2  Env
       Name                 No         Name                   No
     -------- ------------  ---     -------- --------------  ---


     ESPDEMO  DEM105          3




   These Objects were not found in the FUSER for the Environment
   FUSER PATH /apps/sag/nat/fuser_pv712
   Directory for SRC

   Determine why, reset ISR from Hold (CC075) and rerun
   Either ensure correct path or unlink Object from CC050



                           ----- END OF REPORT -----
```

Figure 54: List of Objects with Incorrect Path

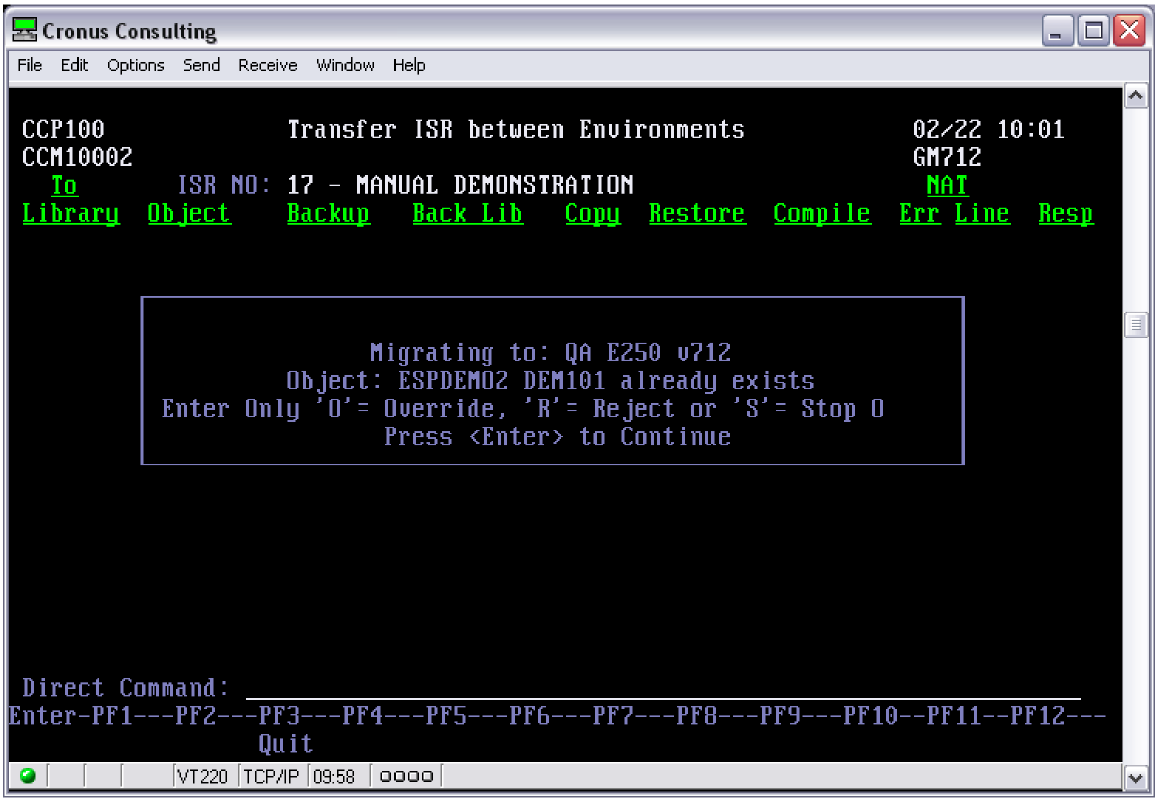


```
CCP100              Transfer ISR between Environments              02/22 09:30
CCM10002                                                           HP712
  To        ISR NO: 17 - MANUAL DEMONSTRATION                        NAT
Library  Object     Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp


          PATH VALIDATION failed - ISR Aborted and in Hold
          Check Report or History (CC095) for path errors

                      PRESS <ENTER> TO CONTINUE


Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 55: Final Confirmation window for Errors in Path Validation

Testing the Existence of Objects in a MOVE SOURCE environment

If the Allow-Source option of the “from” or the “to” environment = M, which is REMOVE SOURCE once the migration to the next environment is successful, the existence of these objects is tested. If they exist in the “to” environment, then a window as reflected below will be displayed and the user must decide on one of the following options reflected below the example screen. However, this test will be omitted, even if allow-source is marked as ‘M’ if the Allow-Source indicator in CC001 (master control variables) is marked as a ‘Y’ or ‘N’. In this manner, a site may bypass this check if necessary.



```
CCP100               Transfer ISR between Environments            02/22 10:01
CCM10002                                                          GM712
  To          ISR NO: 17 - MANUAL DEMONSTRATION                    NAT
Library  Object     Backup    Back Lib    Copy  Restore  Compile  Err Line  Resp


              Migrating to: QA E250 v712
          Object: ESPDEMO2 DEM101 already exists
   Enter Only 'O'= Override, 'R'= Reject or 'S'= Stop O
              Press <Enter> to Continue


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

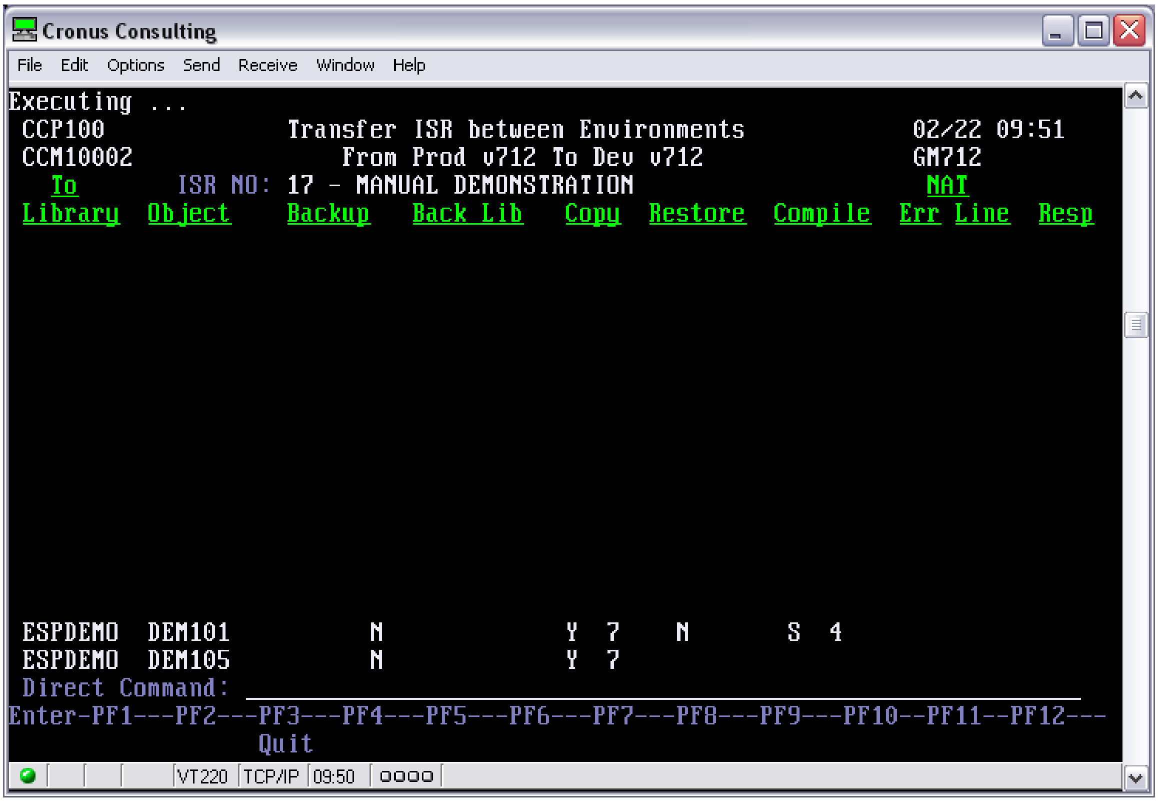
Figure 56: Test Existence of OBJECTS window

The user has 3 choices:

1. **Overwrite the Object** – Copy the linked object to the next environment and overwrite the code that currently resides in the next environment.
2. **Reject the Object** – Ignore the object in this section of the migration transfer and write a record to the History option (CC095) stating that the object has been “Linked but not Copied”
3. **STOP the entire ISR** – This will return the user to the menu with the ISR being placed in HOLD. Once the user has decided on what to do, the ISR must be removed from hold via CC075 and then it can again be transferred via option CC100.

The above options are for one movement of an ISR and on the next movement, the objects will be re-tested, including the rejected ones. If these rejected objects are no longer required to be part of the ISR, they must be unlinked via option CC050, before CC100 can be rerun for the specified ISR.

When compiling objects in the initial environment (this is automatically done for the first Upward move if the compile indicator is not set to N), the objects will be compiled in the necessary correct order of Natural object types.



```
Executing ...
 CCP100              Transfer ISR between Environments          02/22 09:51
 CCM10002                From Prod v712 To Dev v712             GM712
   To          ISR NO: 17 - MANUAL DEMONSTRATION                 NAT
 Library  Object    Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp










 ESPDEMO  DEM101          N              Y  7    N       S  4
 ESPDEMO  DEM105          N              Y  7
 Direct Command: ______________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 57: Current Migration Details of ISR

The following attributes are displayed for each object transferred:

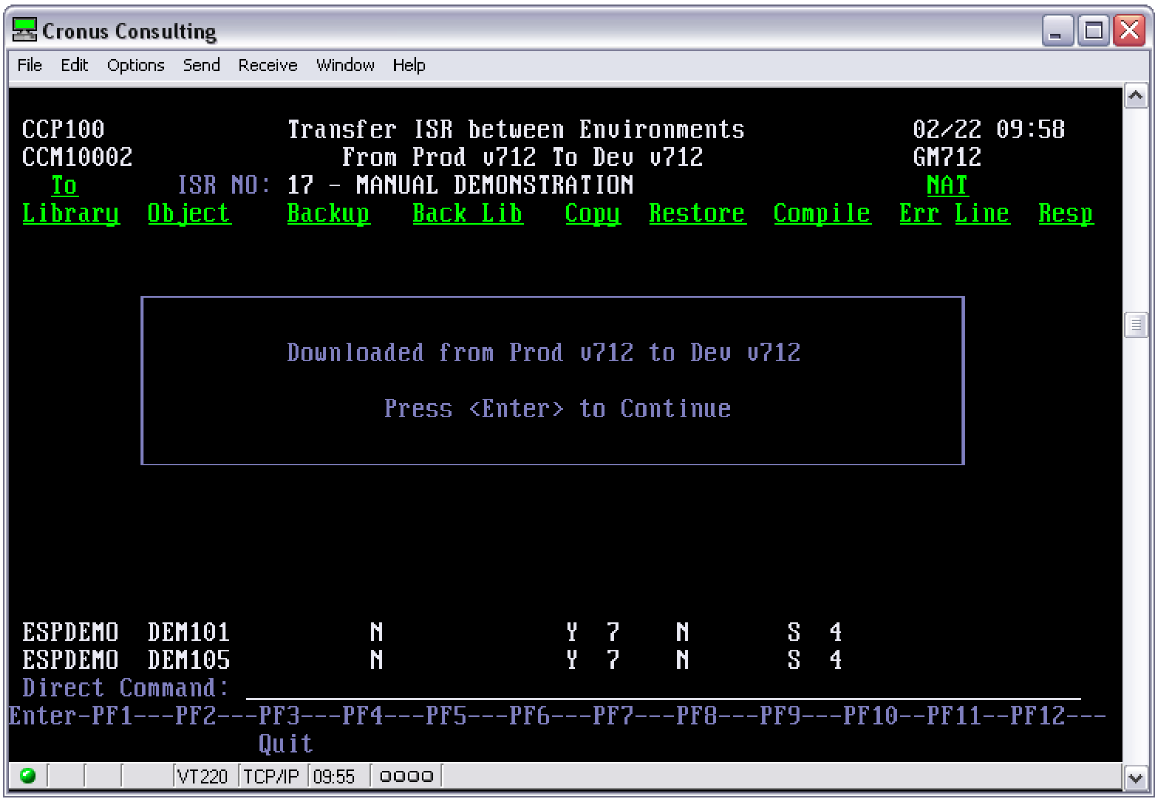
- To Library - Library that Object is being migrated TO. This will be either the current library that the object is in, or the To-Library selected in CC050 library options where the object is being migrated to or the ISR Library updated in the Profile record or the GENERIC library rule from ISNUX100.
- Object - Name of Object
- Backup - “T” indicates that a backup copy was taken in the TO environment
  “F” indicates that a backup copy was taken in the FROM environment
  “N” indicates that NO backup was taken,
  “E” indicates there is an error with the Backup and a report will be sent to Printer Queue at end of ISR of all objects not backed up if No restore option taken or view CC095
  See option CC002 for the backup cycle of the migration.
  The duration will be reflected in between the two backup indicators.

- Back Lib - Backup Lib is the Lib of the Object being backed up in the FROM env.
- Copy - "Y" indicates that the object was copied and the duration.
  "E" indicates there is an error with the Copy (and report will be printed on if restore indicator is No)
- Restore - "N" indicates that the download operation was completed successfully.
  "Y" indicates that the object was restored to the backup version, depending on if one exists for the current ISR, or the previous backed up version. If the restore indicator is NO, then N will mean that no restore will be done if any object is in error
- Compile - "S" indicates that the object was compiled with a STOW, "C" indicates that the object was CATalogued, and "N" indicates that the object was moved and SAVED only and the duration of the compile time depending on STOW-CAT indicator set on profile.
  "E" indicates there is an error with the Compile (and report will be printed only if restore indicator is No or the move is to the Initial Environment).
- Nat Error - Contains the Natural error and line number if a compile error occurred
- Response - Response Codes 11 and 20 and Blank indicates successful completion, else all other response codes indicate a problem.

Once an ISR is complete, without any errors, a transfer confirmation window will be displayed. See figure 58 below on next page.

If any error should occur during the transfer process, and the backup and restore indicators are set to Yes, all objects that form part of the ISR will be restored to either the prior backup version or the current version if the backup has already been taken in this ISR. If the restore indicators are set to No, the ISR will continue with an error report printed at the end of the transfer. **If the user requires a restore of the previous ISR and not of the current version, this may be done during a migration process via option CC200 to any environment and the library of choice.**

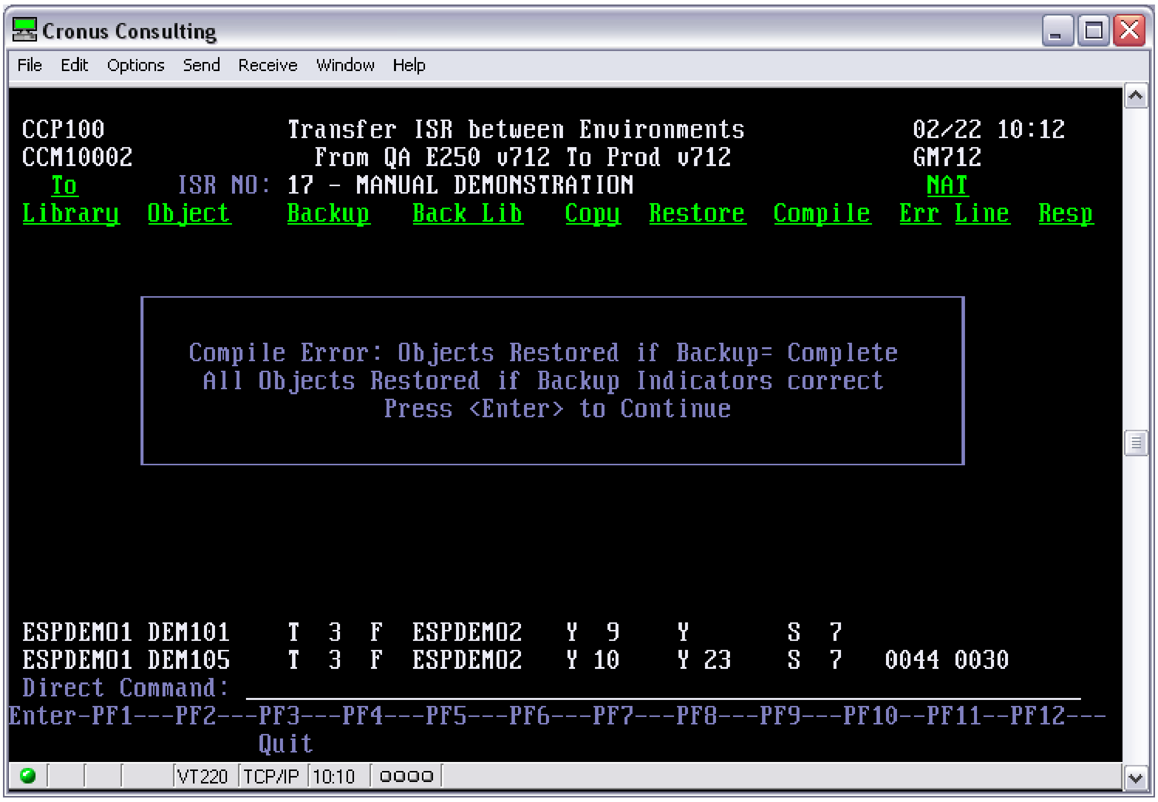
If RESTORE INDICATOR = Yes, then if any error should occur during the transfer process, all objects that form part of the ISR will be restored as specified above to the environment it is being moved from.
If RESTORE INDICATOR = No, then an object in error will reflect "E" in the correct column and the ISR migration will be continued with the other objects. NO restore of the error objects will be done, but a RESTORE ERROR report will be sent to the print queue if required and requested by the user at the end of the current migration function. If not printed, these errors may also be viewed in the History enquiry (CC095).



```
CCP100              Transfer ISR between Environments            02/22 09:58
CCM10002                From Prod v712 To Dev v712                GM712
  To        ISR NO: 17 - MANUAL DEMONSTRATION                      NAT
Library  Object     Backup    Back Lib   Copy  Restore  Compile  Err Line  Resp


                Downloaded from Prod v712 to Dev v712

                       Press <Enter> to Continue


ESPDEMO  DEM101          N              Y  7    N       S  4
ESPDEMO  DEM105          N              Y  7    N       S  4
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

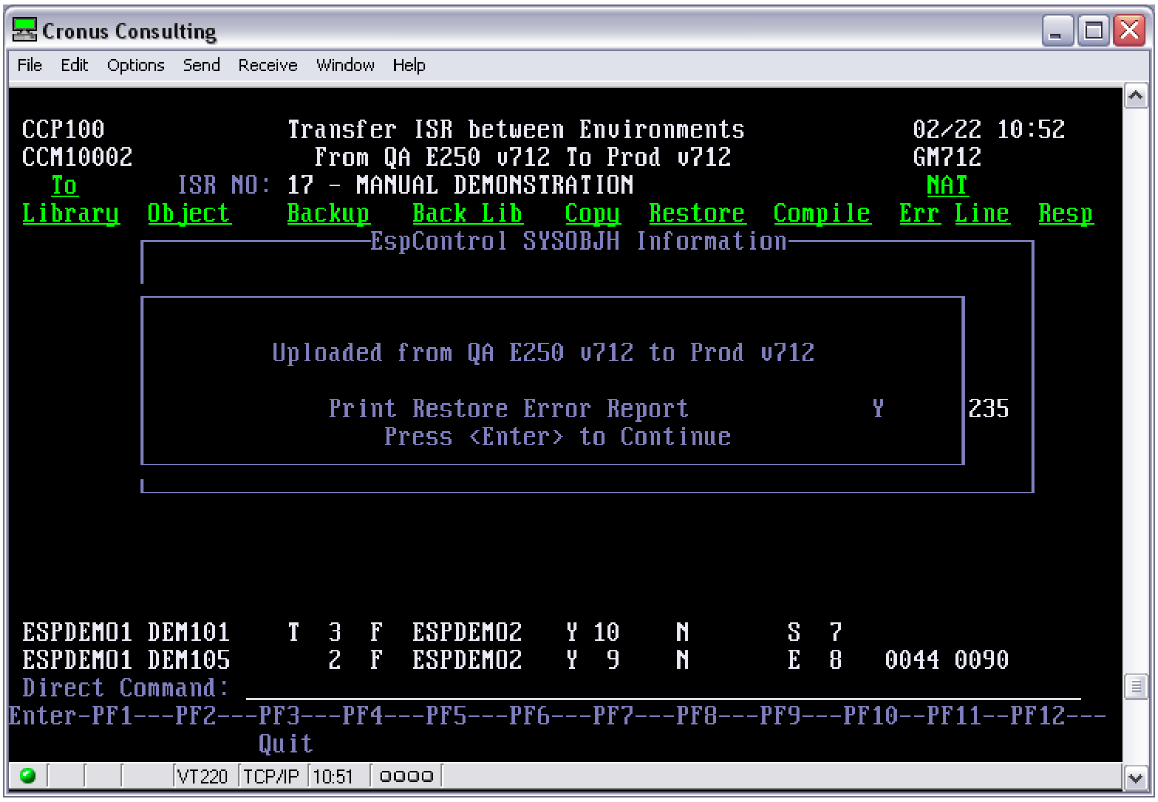
Figure 58: Transfer Confirmation without any errors

See example windows below for transfer confirmation with no restore, error with an ISR, or error with NO restore, but restore printout. The Restore window is the same for all restore options and a sample of this window may be viewed in the explanation of CC110 in this document. If there is no backup of the object at all, whether via the current ISR or a previous version, no restore of this object will be done and a sample of this window may also be viewed in CC110.



```
CCP100                 Transfer ISR between Environments             02/22 10:12
CCM10002                 From QA E250 v712 To Prod v712              GM712
  To         ISR NO: 17 - MANUAL DEMONSTRATION                         NAT
Library  Object     Backup    Back Lib   Copy  Restore  Compile  Err Line   Resp


          Compile Error: Objects Restored if Backup= Complete
           All Objects Restored if Backup Indicators correct
                        Press <Enter> to Continue


ESPDEMO1 DEM101     T  3  F  ESPDEMO2   Y  9     Y        S  7
ESPDEMO1 DEM105     T  3  F  ESPDEMO2   Y 10     Y 23     S  7   0044 0030
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

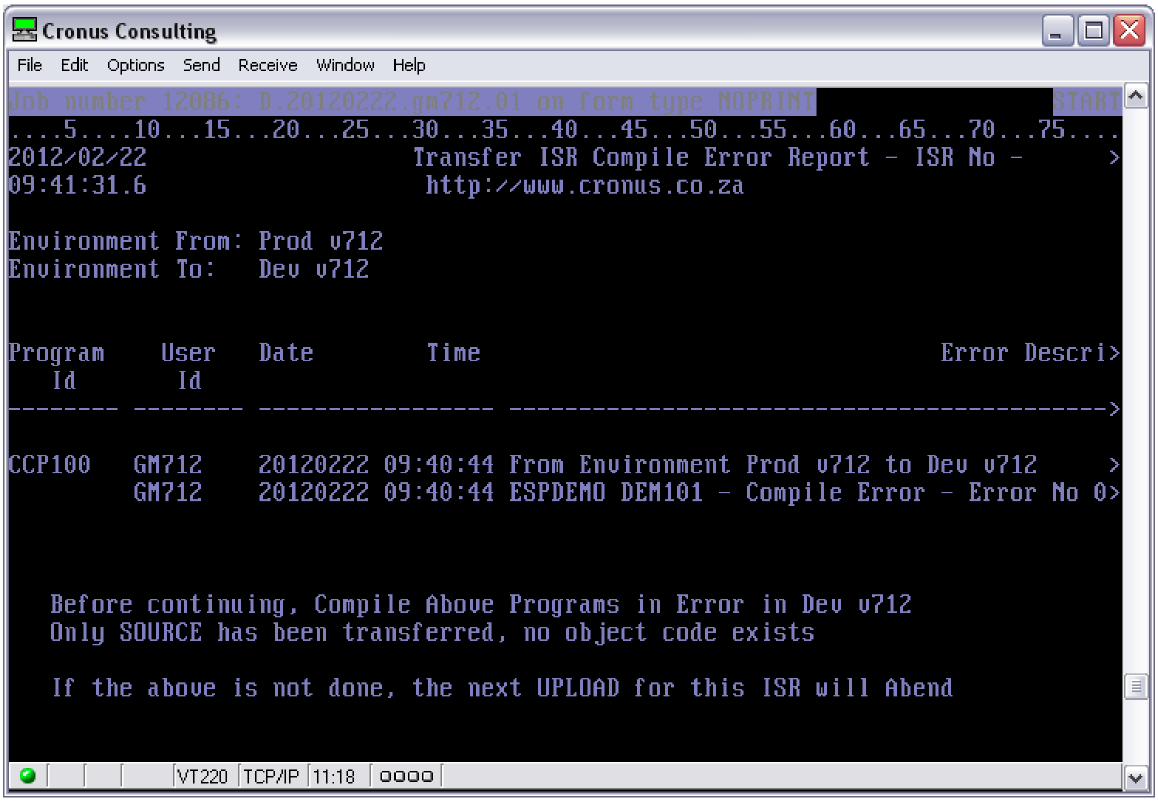
Figure 59: Transfer ISR with ERROR



```
CCP100                 Transfer ISR between Environments             02/22 10:52
CCM10002                 From QA E250 v712 To Prod v712              GM712
  To         ISR NO: 17 - MANUAL DEMONSTRATION                         NAT
Library  Object     Backup    Back Lib   Copy  Restore  Compile  Err Line   Resp
                         EspControl SYSOBJH Information

                 Uploaded from QA E250 v712 to Prod v712

                     Print Restore Error Report               Y      235
                         Press <Enter> to Continue


ESPDEMO1 DEM101     T  3  F  ESPDEMO2   Y 10     N        S  7
ESPDEMO1 DEM105        2  F  ESPDEMO2   Y  9     N        E  8   0044 0090
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 60: ISR in Error with No Restore

These objects are given the same ISR STATUS as successful objects and therefore these errors must be fixed manually, as the next time that CC100 is run, it will assume that these objects are correct in the same environment as all other successful objects in the migration. If not needed, unlink via CC050.

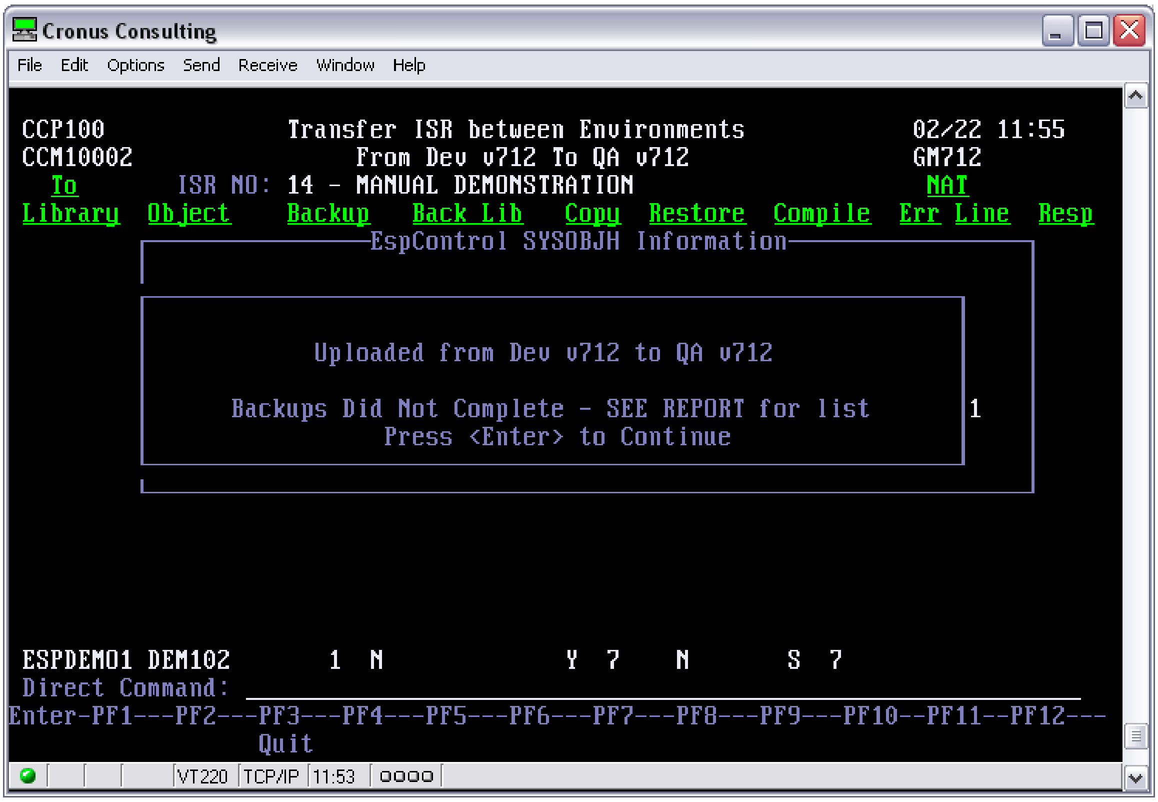


```
Job number 12086: D.20120222.gm712.01 on form type NOPRINT                 START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22                   Transfer ISR Compile Error Report - ISR No -      >
09:41:31.6                    http://www.cronus.co.za

Environment From: Prod v712
Environment To:   Dev v712


Program    User   Date        Time                                 Error Descri>
   Id       Id
-------- -------- ----------------- -------------------------------------------->

CCP100   GM712    20120222 09:40:44 From Environment Prod v712 to Dev v712     >
         GM712    20120222 09:40:44 ESPDEMO DEM101 - Compile Error - Error No 0>



   Before continuing, Compile Above Programs in Error in Dev v712
   Only SOURCE has been transferred, no object code exists

   If the above is not done, the next UPLOAD for this ISR will Abend
```

Figure 61: Sample ISR Error Report with No restore

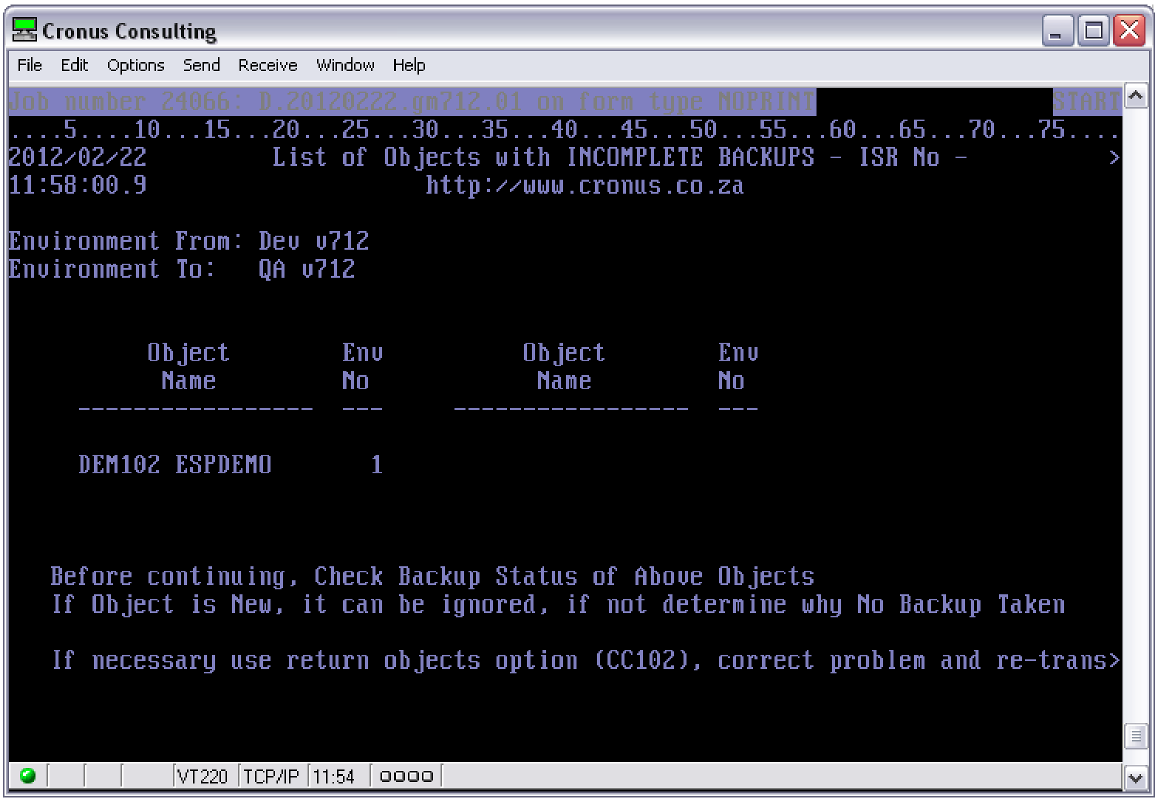
If BACKUP of any particular object does not complete, and the restore indicators are set to No, the migration will not abort, but will reflect a window stating that a non-backup report has been sent to the print queue. This report contains all objects that were not backed up. Users may determine the reason, and fix if necessary. Return non-backed up objects via CC102 and then re-migrate via CC100 to get a correct backup. If a new object is transferred, then a backup will not be taken in the TO environment as the object never existed in the Master environment. The backups get taken AFTER amendment and at the start of a move to the new environment, so new objects and existing objects will be backed up in the FROM environment. See window below and go to the print queue for report.

If the BACKUP fails and the From or To Environment is the Master Index and the restore indicators are set to Yes (with the exception of new objects), then the ISR will abort and be restored as explained in a transfer error above. If the From or To Environment is not the master index, then an incomplete backup report will be produced, but the ISR will not abort.



```
CCP100              Transfer ISR between Environments              02/22 11:55
CCM10002                 From Dev v712 To QA v712                   GM712
  To          ISR NO: 14 - MANUAL DEMONSTRATION                       NAT
Library  Object     Backup    Back Lib    Copy  Restore  Compile  Err Line   Resp
                               EspControl SYSOBJH Information

                      Uploaded from Dev v712 to QA v712

                Backups Did Not Complete - SEE REPORT for list             1
                           Press <Enter> to Continue



ESPDEMO1 DEM102       1  N             Y  7    N       S  7
Direct Command:
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

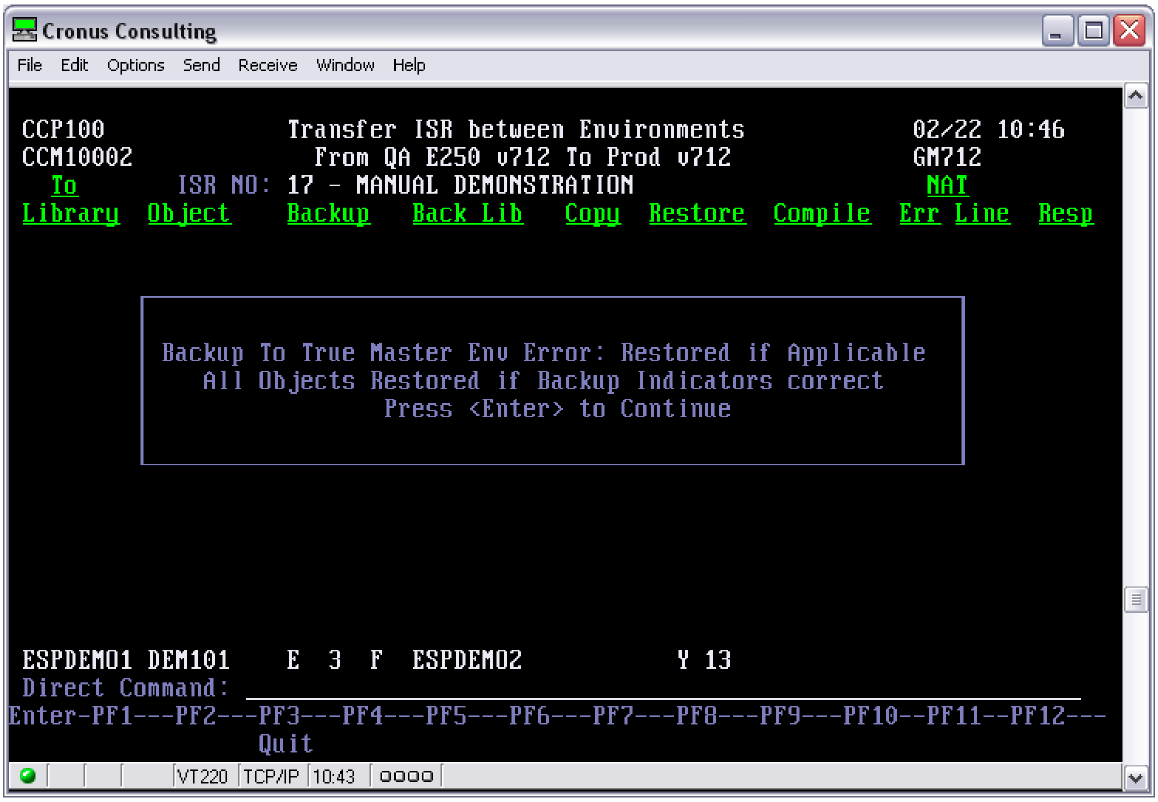
Figure 62: ISR Incomplete Backup Error



```
Job number 24066: D.20120222.gm712.01 on form type NOPRINT                  START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22          List of Objects with INCOMPLETE BACKUPS - ISR No -           >
11:58:00.9                     http://www.cronus.co.za

Environment From: Dev v712
Environment To:   QA v712


          Object        Env          Object        Env
           Name         No            Name         No
     -----------------  ---     -----------------  ---


     DEM102 ESPDEMO       1



   Before continuing, Check Backup Status of Above Objects
   If Object is New, it can be ignored, if not determine why No Backup Taken

   If necessary use return objects option (CC102), correct problem and re-trans>
```

Figure 63: Sample ISR Backup Error Report with No Restore

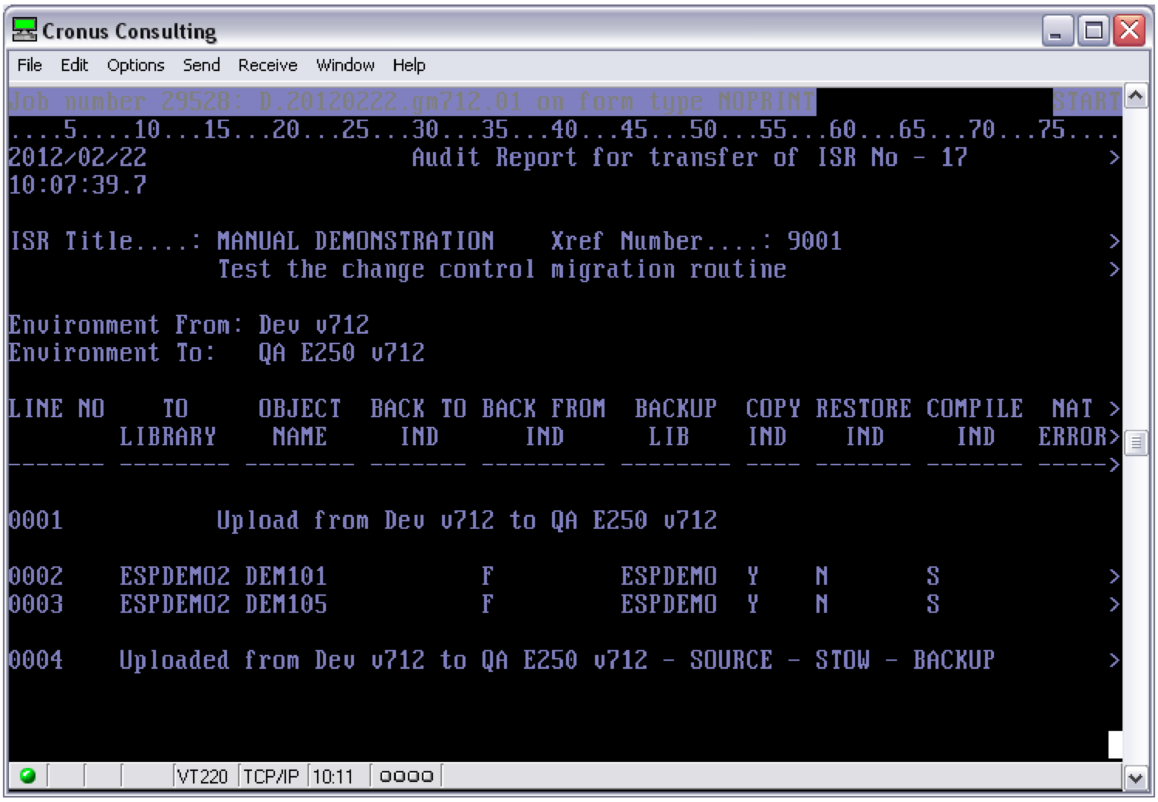
If the Backup is being done during the TO Migration and the To environment is the MASTER environment, then the ISR will abort if the backup was not successful, and the ISR will be restored according to the profile rules. See example window below.



```
CCP100              Transfer ISR between Environments           02/22 10:46
CCM10002              From QA E250 v712 To Prod v712            GM712
  To         ISR NO: 17 - MANUAL DEMONSTRATION                   NAT
Library  Object     Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp


          Backup To True Master Env Error: Restored if Applicable
             All Objects Restored if Backup Indicators correct
                          Press <Enter> to Continue


ESPDEMO1 DEM101    E  3  F  ESPDEMO2           Y 13
Direct Command: ______________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

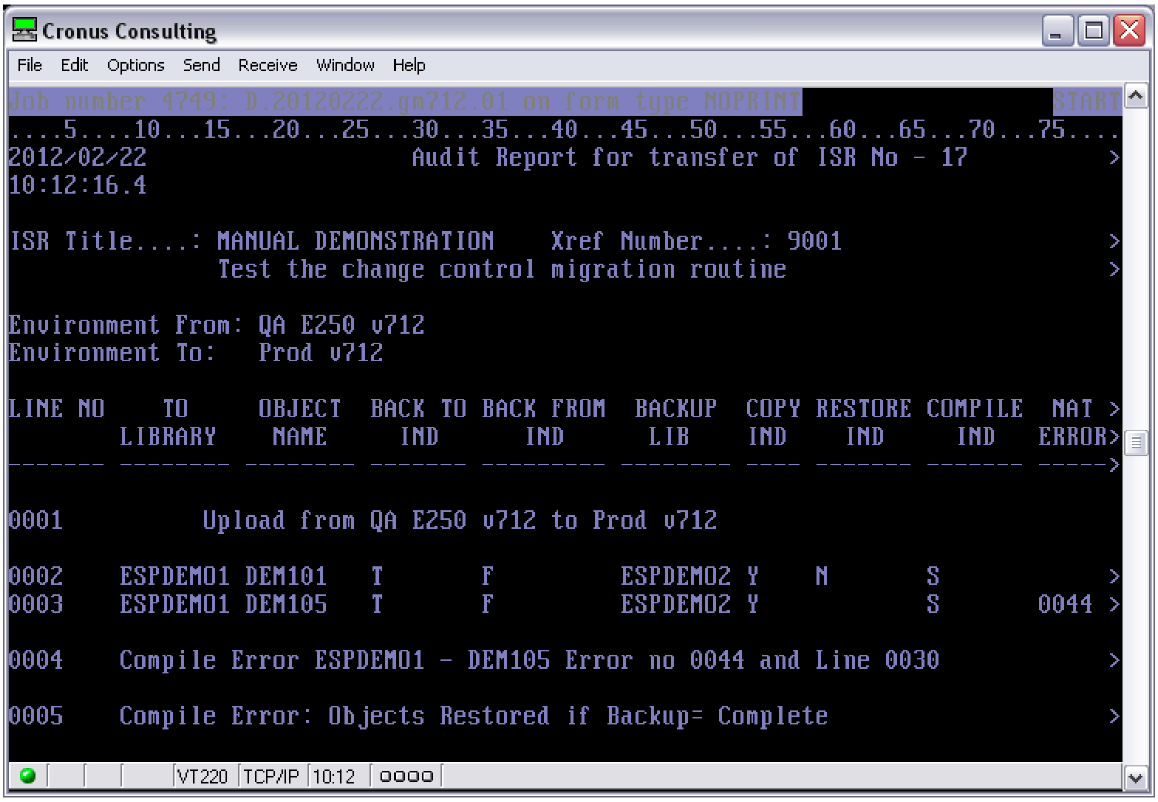
Figure 64: ISR Backup Error to Master Environment

AUDIT REPORT – if AUDITRPT is set to Y in CC010 then see examples below of the printed report



```
Job number 29528: D.20120222.gm712.01 on form type NOPRINT                 START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22                   Audit Report for transfer of ISR No - 17          >
10:07:39.7

ISR Title....: MANUAL DEMONSTRATION    Xref Number....: 9001                   >
               Test the change control migration routine                       >

Environment From: Dev v712
Environment To:   QA E250 v712

LINE NO    TO     OBJECT  BACK TO BACK FROM  BACKUP  COPY RESTORE COMPILE  NAT >
        LIBRARY    NAME     IND      IND      LIB    IND    IND     IND   ERROR>
------- -------- -------- ------- --------- -------- ---- ------- ------- ----->

0001           Upload from Dev v712 to QA E250 v712

0002    ESPDEMO2 DEM101           F         ESPDEMO  Y    N       S            >
0003    ESPDEMO2 DEM105           F         ESPDEMO  Y    N       S            >

0004    Uploaded from Dev v712 to QA E250 v712 - SOURCE - STOW - BACKUP        >
```

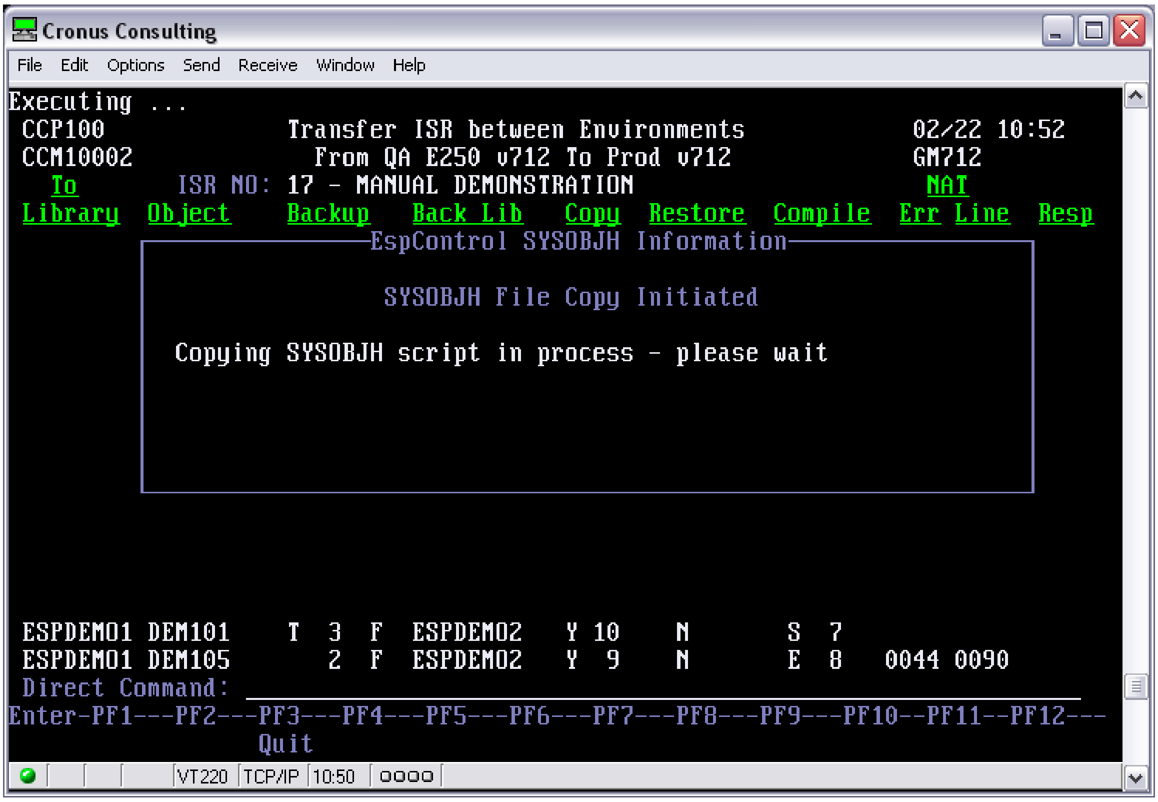
Figure 65: Audit Report with Errors



```
Job number 4749: D.20120222.gm712.01 on form type NOPRINT                  START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22                   Audit Report for transfer of ISR No - 17          >
10:12:16.4

ISR Title....: MANUAL DEMONSTRATION    Xref Number....: 9001                   >
               Test the change control migration routine                       >

Environment From: QA E250 v712
Environment To:   Prod v712

LINE NO    TO     OBJECT  BACK TO BACK FROM  BACKUP  COPY RESTORE COMPILE  NAT >
        LIBRARY    NAME     IND      IND      LIB    IND    IND     IND   ERROR>
------- -------- -------- ------- --------- -------- ---- ------- ------- ----->

0001          Upload from QA E250 v712 to Prod v712

0002    ESPDEMO1 DEM101   T       F         ESPDEMO2 Y    N       S            >
0003    ESPDEMO1 DEM105   T       F         ESPDEMO2 Y            S       0044 >

0004    Compile Error ESPDEMO1 - DEM105 Error no 0044 and Line 0030            >

0005    Compile Error: Objects Restored if Backup= Complete                    >
```

Figure 66: Clean Audit Report (Below)

SOURCE UNLOAD function



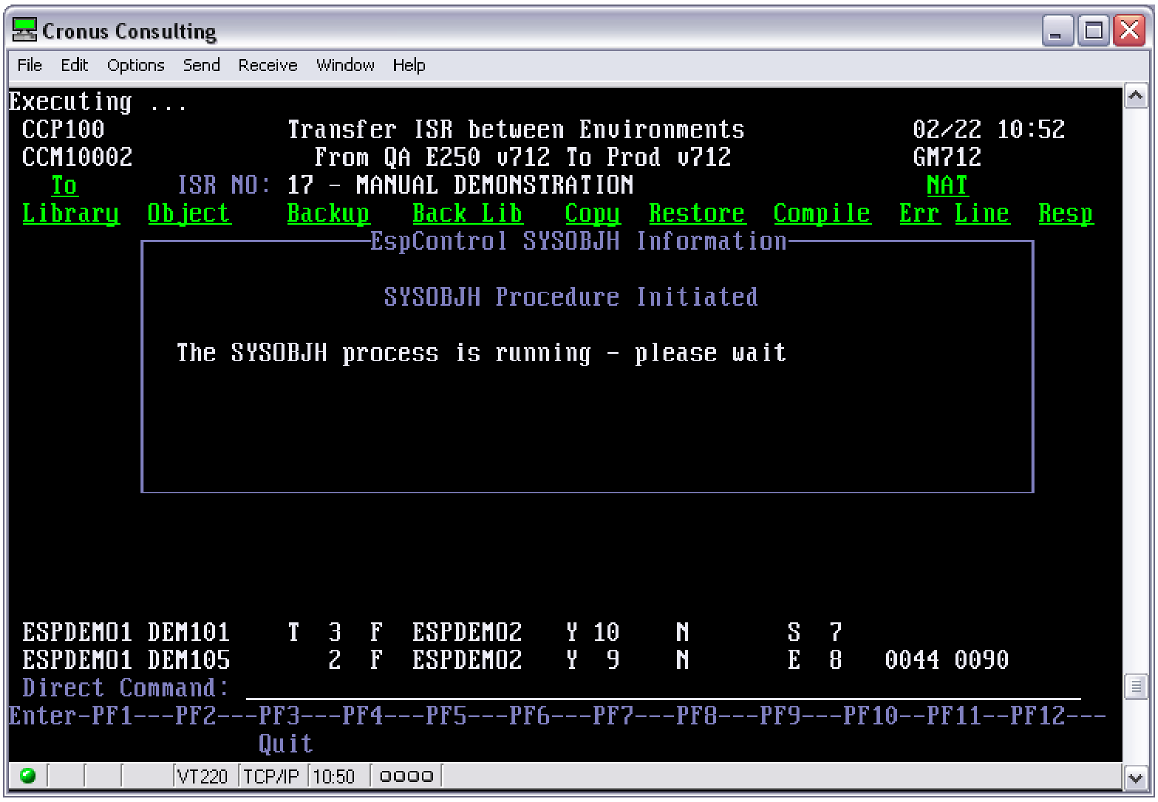
```
Executing ...
 CCP100               Transfer ISR between Environments          02/22 10:52
 CCM10002              From QA E250 v712 To Prod v712            GM712
   To         ISR NO: 17 - MANUAL DEMONSTRATION                    NAT
 Library  Object     Backup    Back Lib   Copy  Restore  Compile  Err Line  Resp
                ----------------EspControl SYSOBJH Information---------------

                            SYSOBJH File Copy Initiated

            Copying SYSOBJH script in process - please wait




 ESPDEMO1 DEM101     T  3  F  ESPDEMO2   Y 10    N       S  7
 ESPDEMO1 DEM105        2  F  ESPDEMO2   Y  9    N       E  8   0044 0090
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 67: Start of SYSOBJH Function

If the SOURCE UNLOAD indicator has been set to ‘Y’ in the linked Profile, the SYSOBJH function to unload the source during the migration of the FROM environment, as a text file on Unix, will be called at the end of the successful move of all objects linked in the ISR and the successful transfer of system error messages, if error messages have been linked to the ISR.

If the linked profile has a RESTORE INDICATOR of NO, then the SYSOBJH function will be called even if some objects were not successfully migrated.

This function will unload all the source of all objects that have been migrated to a specified /transfer directory in UNIX. This directory has been built up from the shell script path in CC001 with /transfer appended. This function will create a report saved on the UNIX server, as well as a text file with the ISR number as the start of the file name. The time will be appended to the files, in the case of a migration being returned to the previous environment or new objects being linked. This new file will only contain the objects being moved once again, and not the objects that have already been successfully migrated to the next environment in the specified ISR. Therefore, more than one file for a migrated ISR could exist and all these files will have to be used in the Upload of the source via SYSOBJH if required, as they will reflect different objects at different migration times.



```
Executing ...
 CCP100              Transfer ISR between Environments          02/22 10:52
 CCM10002              From QA E250 v712 To Prod v712           GM712
   To       ISR NO: 17 - MANUAL DEMONSTRATION                    NAT
 Library  Object    Backup   Back Lib  Copy  Restore  Compile  Err Line  Resp
                    EspControl SYSOBJH Information

                     SYSOBJH Procedure Initiated

           The SYSOBJH process is running - please wait

 ESPDEMO1 DEM101    T  3  F  ESPDEMO2   Y 10    N       S  7
 ESPDEMO1 DEM105       2  F  ESPDEMO2   Y  9    N       E  8   0044 0090
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 68: Current SYSOBJH Function

While the Unload is busy, the screen above will be reflected. No user input is required and the user must wait until COMPLETE and the screen requests an ENTER. This function could take a while and the user should be patient.

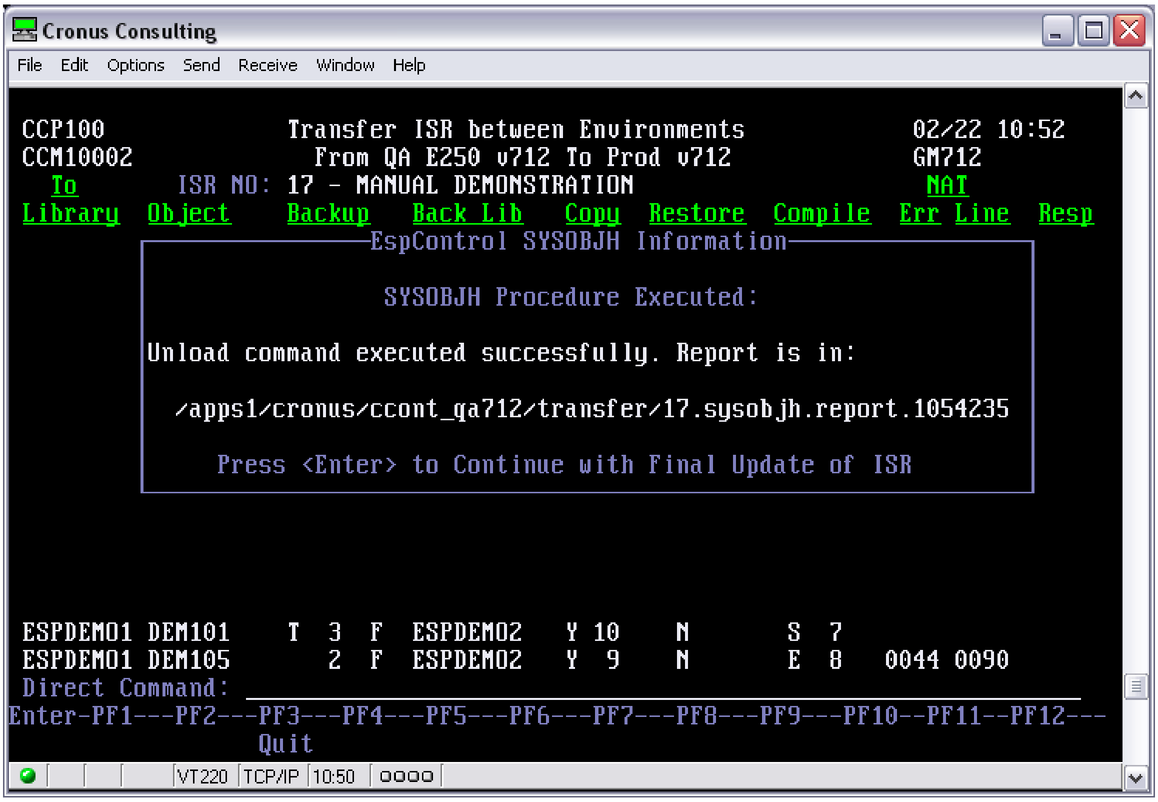
See window below for examples of text files and the subsequent file names that would have been generated are as follows:

- **17.sysobjh.report.1054235** where 17 is the ISR number and the timestamp is at the end of the name
- **17.sysobjh.src.txt.11255**

The above files are created in the /transfer directory using the SHELL SCRIPT PATH set up in function CC001 as the base of this directory and using the shell script path linked to the From Environment or the To environment when migrating to the Master..

The .txt file should be used in the SYSOBJH Upload function. (The export file is created in "transfer" format).

Once completed successfully, the following screen will be reflected:

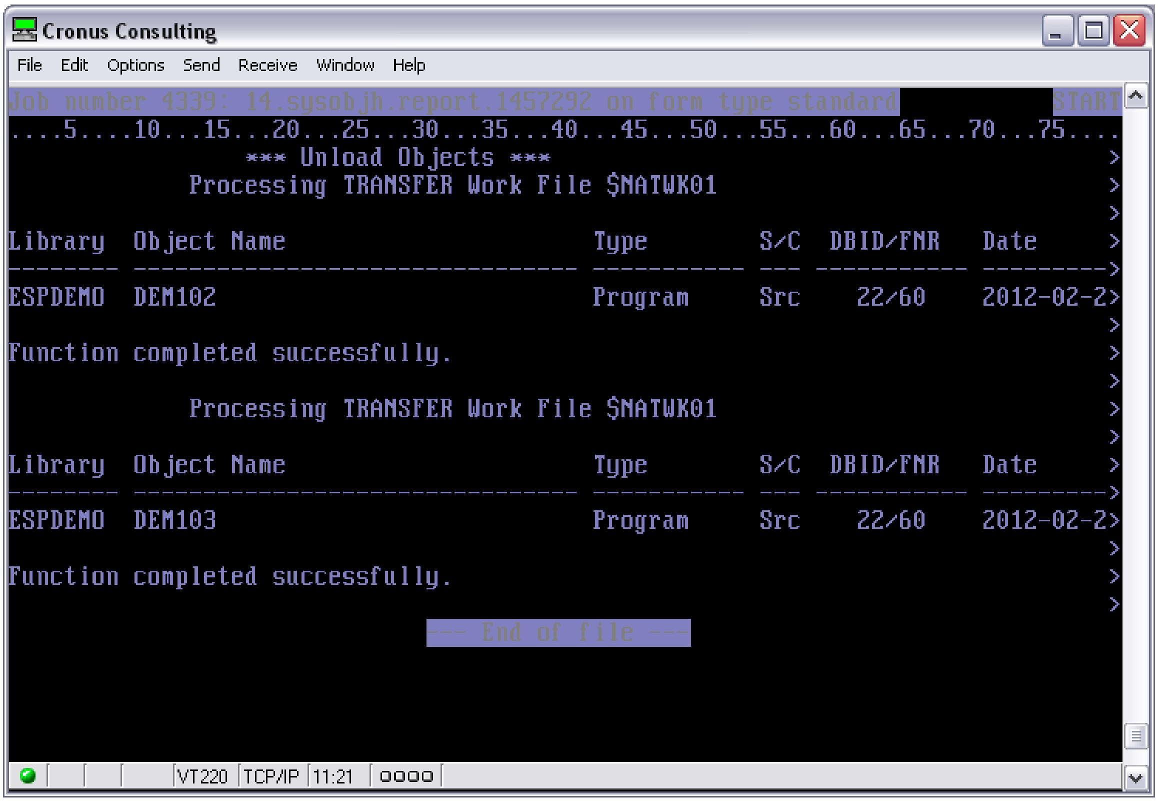


```
CCP100              Transfer ISR between Environments          02/22 10:52
CCM10002             From QA E250 v712 To Prod v712            GM712
  To         ISR NO: 17 - MANUAL DEMONSTRATION                  NAT
Library  Object     Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp
                           EspControl SYSOBJH Information

                                SYSOBJH Procedure Executed:

         Unload command executed successfully. Report is in:

           /apps1/cronus/ccont_qa712/transfer/17.sysobjh.report.1054235

              Press <Enter> to Continue with Final Update of ISR



ESPDEMO1 DEM101     T  3  F  ESPDEMO2   Y 10    N       S  7
ESPDEMO1 DEM105        2  F  ESPDEMO2   Y  9    N       E  8   0044 0090
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 69: SYSOBJH Confirmation window

The above screen will be reflected after the successful unload showing the directory where to find the REPORT and TEXT file. The user must now ENTER to finalize the Update of the current movement of the ISR. At this stage the ISR status and the Object Status of each linked object will be updated to ensure that the object has completed the migration successfully.

See examples of report below:



```
Job number 4339: 14.sysobjh.report.1457292 on form type standard            START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
                 *** Unload Objects ***                                         >
             Processing TRANSFER Work File $NATWK01                             >
                                                                                >
Library  Object Name                       Type        S/C  DBID/FNR    Date    >
-------- --------------------------------  ----------- ---  ----------  --------->
ESPDEMO  DEM102                            Program     Src     22/60    2012-02-2>
                                                                                >
Function completed successfully.                                                >
                                                                                >
             Processing TRANSFER Work File $NATWK01                             >
                                                                                >
Library  Object Name                       Type        S/C  DBID/FNR    Date    >
-------- --------------------------------  ----------- ---  ----------  --------->
ESPDEMO  DEM103                            Program     Src     22/60    2012-02-2>
                                                                                >
Function completed successfully.                                                >
                                                                                >
                              --- End of file ---
```

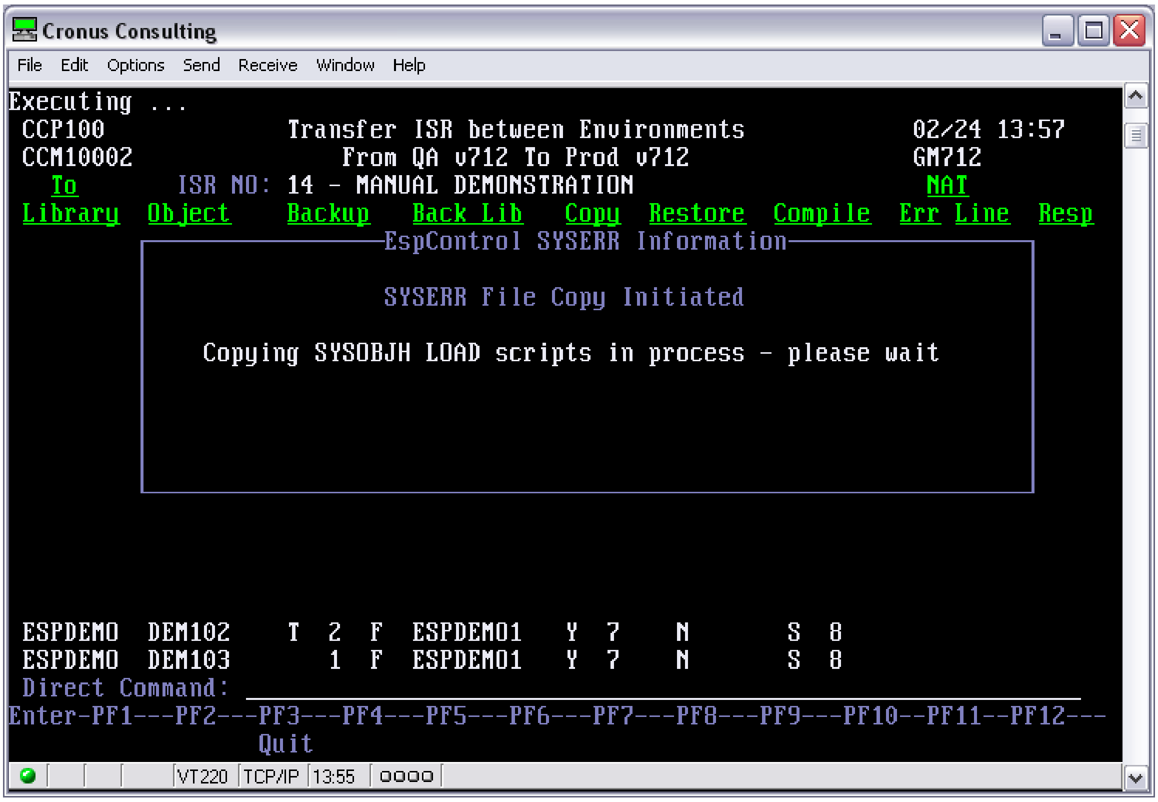
Figure 70: SYSOBJH Unload Report

SYSOBJH and SYSERR errors

Explained below in the SYSERR function, the transferring of system error messages, also uses the SYSOBJH unload routine and if this routine aborts for either the Source Unload or System Error Message function, the rules for this error are the same in both SYSOBJH and SYSERR options. Therefore this error routine, how to fix and continue with the migration, is only explained using the example in the window reflected for the system error messages. If an error does occur in the source unload transfer, the SYSOBJH ERROR indicator is set (see function CC076) and all other ISR functions will be blocked until the source has been unloaded without error. If the user wishes to continue without the Unload then the SYSOBJH ERROR indicator should be reset.

NOTE: the /apps1/cronus/ccont_eco is an example of what the SHELL SCRIPT PATH would be set up as in the MASTER CONTROL record in CC001. The /transfer directory is always appended to the Environment's shell script path for the unload. Therefore, each environment will have its own path and directory for the creation of this file, so it could be /apps1/cronus/ccont_qa/transfer for QA. Various scripts and temporary files are created during the SYSOBJH and SYSERR transfer. Source and SYSERR TMP scripts and files are generated on the "development" server and migrated to the other servers for source unloading or error transferring. These are removed once the transfer is complete.

SYSTEM ERROR MESSAGE transfer



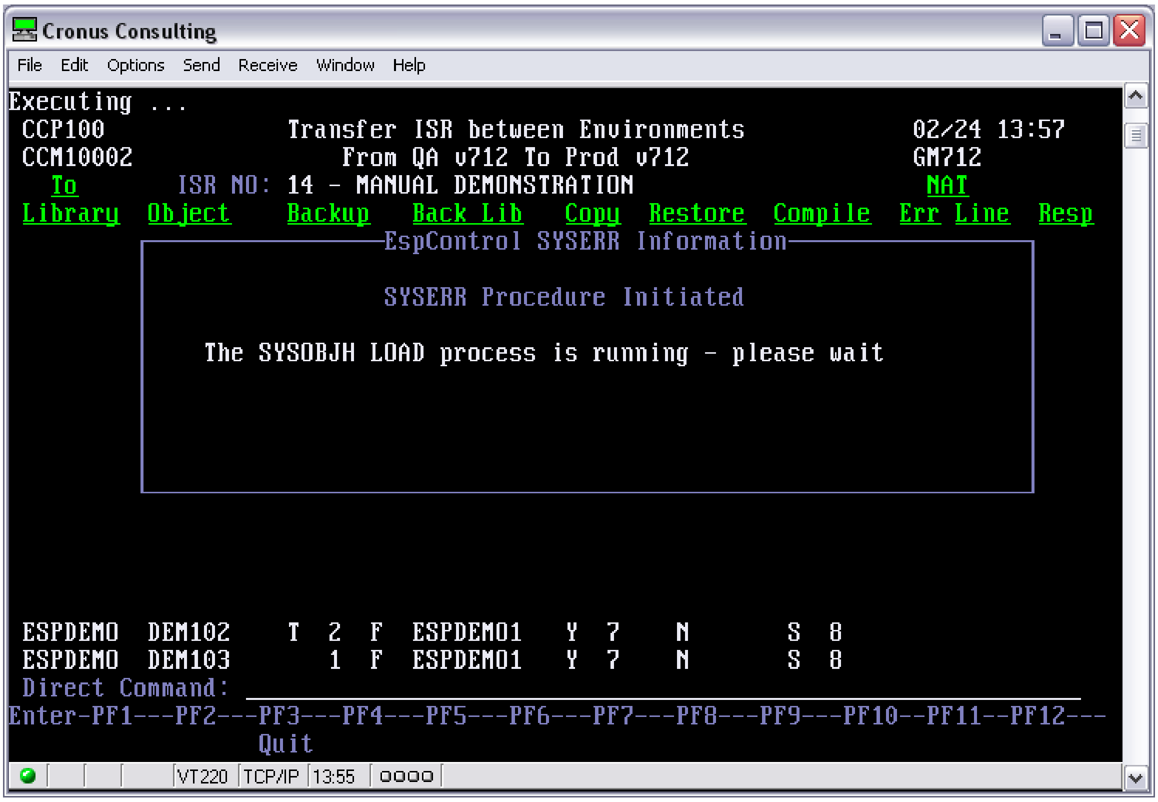
```
Executing ...
 CCP100              Transfer ISR between Environments          02/24 13:57
 CCM10002                From QA v712 To Prod v712              GM712
   To         ISR NO: 14 - MANUAL DEMONSTRATION                   NAT
 Library  Object    Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp
                           EspControl SYSERR Information

                             SYSERR File Copy Initiated

              Copying SYSOBJH LOAD scripts in process - please wait

 ESPDEMO  DEM102    T  2  F  ESPDEM01   Y  7    N       S  8
 ESPDEMO  DEM103       1  F  ESPDEM01   Y  7    N       S  8
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 71: Start of SYSERR transfer

If System Error Messages have been linked to an ISR in CC050, the SYSOBJH function to transfer these error messages during the migration of the FROM environment to the TO environment, will be called at the end of the successful move of all objects linked in the ISR. If the linked profile has a RESTORE INDICATOR of NO, then the System Error transfer function will be called even if some objects were not successfully migrated.

This function will transfer all system error numbers with from and to libraries specified in PF4 in CC050 and will update the SYSERR function with the error number range in the next environment, using the error message data from the previous environment. Both a load and unload report will be created in the /transfer directory in UNIX. Each time a migration is done the system error messages will also be transferred. So, therefore, if an ISR is returned and then re-migrated the error messages will again be transferred. If an ISR is downloaded from the Master Environment, then the error messages will be taken from this environment to the Initial Environment as well as the objects first, and then may be amended to move upwards if necessary.

If error messages are only ever migrated in an upload movement i.e. from the Initial Environment upwards, then create an ISR linked to a dummy program only and choose the path of UPLOAD when using CC100, and in this way error messages will always move up the line.



```
Executing ...
 CCP100             Transfer ISR between Environments            02/24 13:57
 CCM10002               From QA v712 To Prod v712                GM712
   To        ISR NO: 14 - MANUAL DEMONSTRATION                    NAT
 Library  Object    Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp
                    ----------EspControl SYSERR Information----------

                           SYSERR Procedure Initiated

              The SYSOBJH LOAD process is running - please wait



 ESPDEMO  DEM102    T  2  F  ESPDEM01   Y  7    N       S  8
 ESPDEMO  DEM103       1  F  ESPDEM01   Y  7    N       S  8
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 72: Actual SYSERR transfer

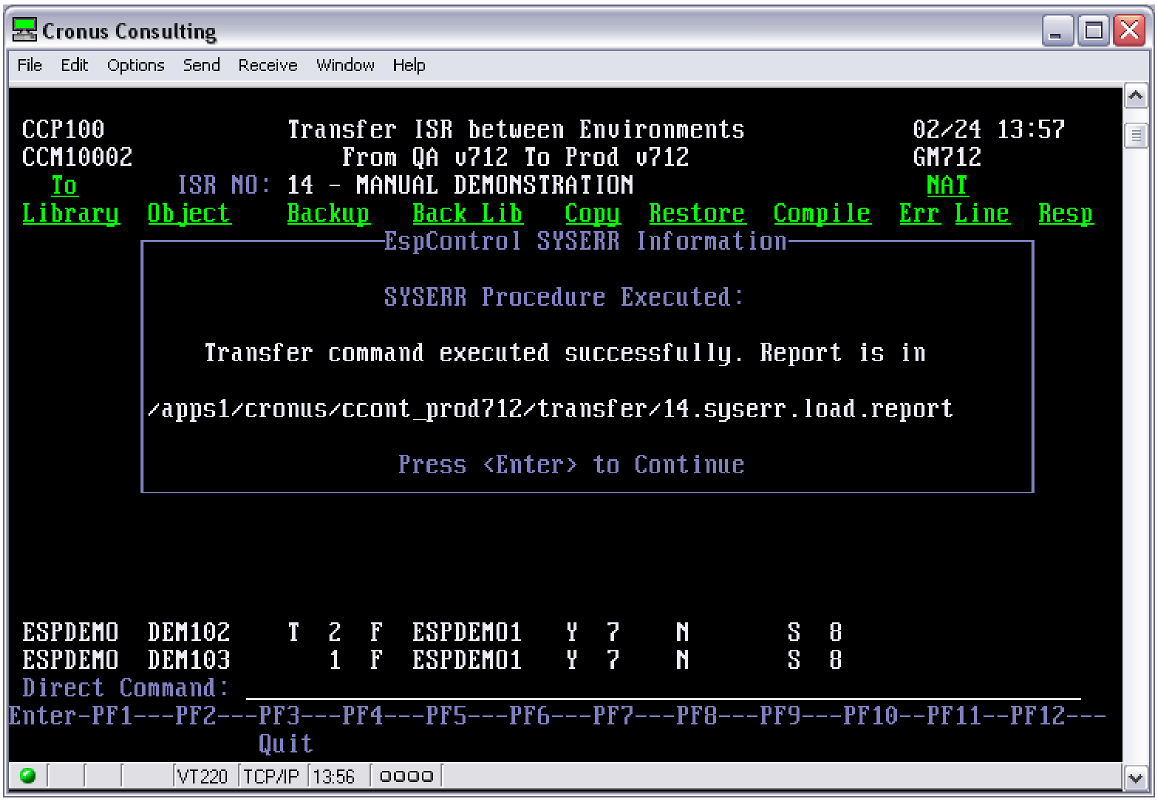
While the transfer of these error messages is busy, the screen above will be reflected. No user input is required and the user must wait until COMPLETE and the screen requests an ENTER. This function could take a while and the user should be patient.

The file names are as follows:

- **14.syserr.unld.report** where 14 is the ISR number
- **14.syserr.load.report**

The above files are created in the /transfer directory using the SHELL SCRIPT PATH set up in function CC001 as the base of this directory.

Once completed successfully, the following screen will be reflected:

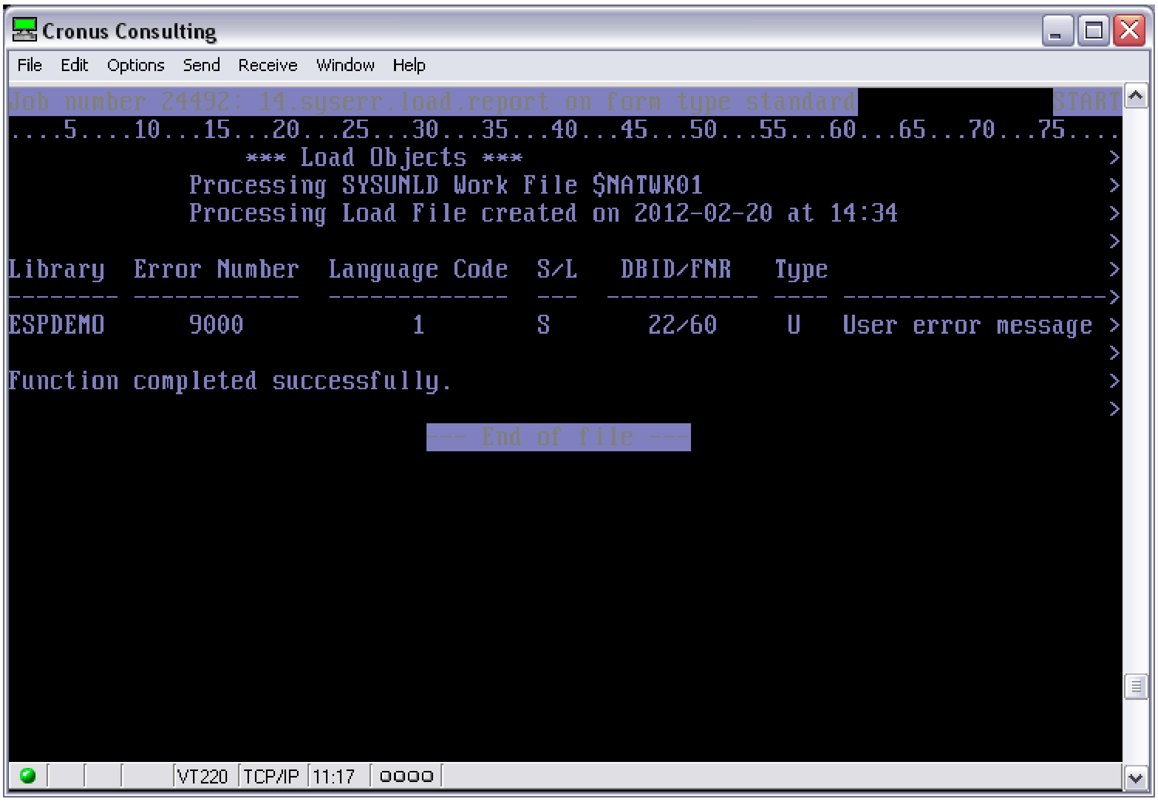


```
CCP100              Transfer ISR between Environments          02/24 13:57
CCM10002                From QA v712 To Prod v712               GM712
  To         ISR NO: 14 - MANUAL DEMONSTRATION                    NAT
Library  Object     Backup    Back Lib   Copy  Restore  Compile  Err Line   Resp
                     ─EspControl SYSERR Information─

                        SYSERR Procedure Executed:

             Transfer command executed successfully. Report is in

          /apps1/cronus/ccont_prod712/transfer/14.syserr.load.report

                         Press <Enter> to Continue



ESPDEMO  DEM102     T  2  F  ESPDEM01   Y  7    N       S  8
ESPDEMO  DEM103        1  F  ESPDEM01   Y  7    N       S  8
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 73: SYSERR Confirmation window

The above screen will be reflected after the successful transfer of the error messages to the next environment. The user must now ENTER to either finalize the current movement of the ISR or create the SYSOBJH file if the linked profile has SOURCE UNLOAD = ‘Y’. At this stage the ISR status and the Object Status of each linked object will be updated to ensure that the object has completed the migration successfully, if no SYSOBJH has been called for. If a SYSOBJH unload is still to occur, then this will complete first before updating the object statuses.

See examples of report below:



```
Job number 24492: 14.syserr.load.report on form type standard                START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
                                  *** Load Objects ***                          >
                          Processing SYSUNLD Work File $NATWK01                 >
                          Processing Load File created on 2012-02-20 at 14:34   >
                                                                                >
Library  Error Number  Language Code  S/L   DBID/FNR   Type                     >
-------- ------------  -------------  ---  ----------- ---- -------------------->
ESPDEMO        9000             1      S       22/60     U   User error message >
                                                                                >
Function completed successfully.                                                >
                                                                                >
                              --- End of file ---
```

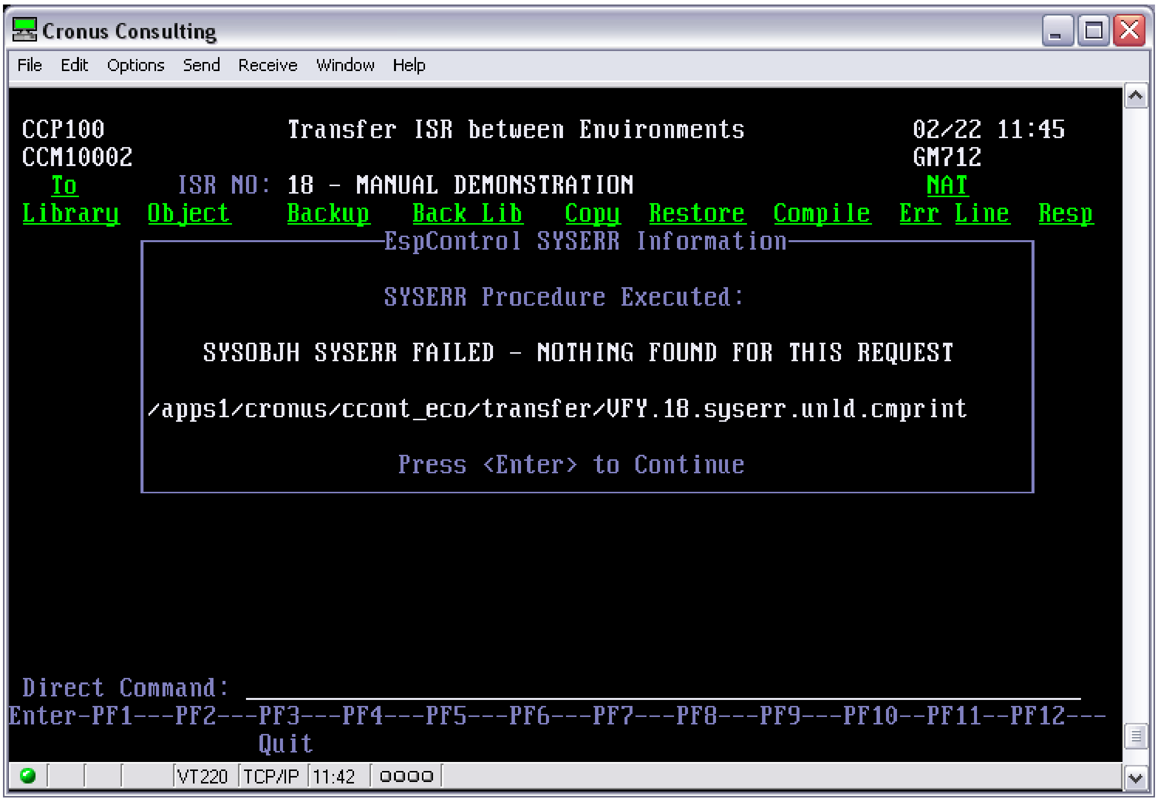
Figure 74: Example of SYSERR report

If the TRANSFER of System Error Messages or Source Unload aborts, the following screen will be reflected with the appropriate error message. In the Source Unload option, the error window and instructions will reflect SYSOBJH.

This error message may vary according to the actual error. The logs or the ISR History function CC095 may be viewed to check the error status of the unload.

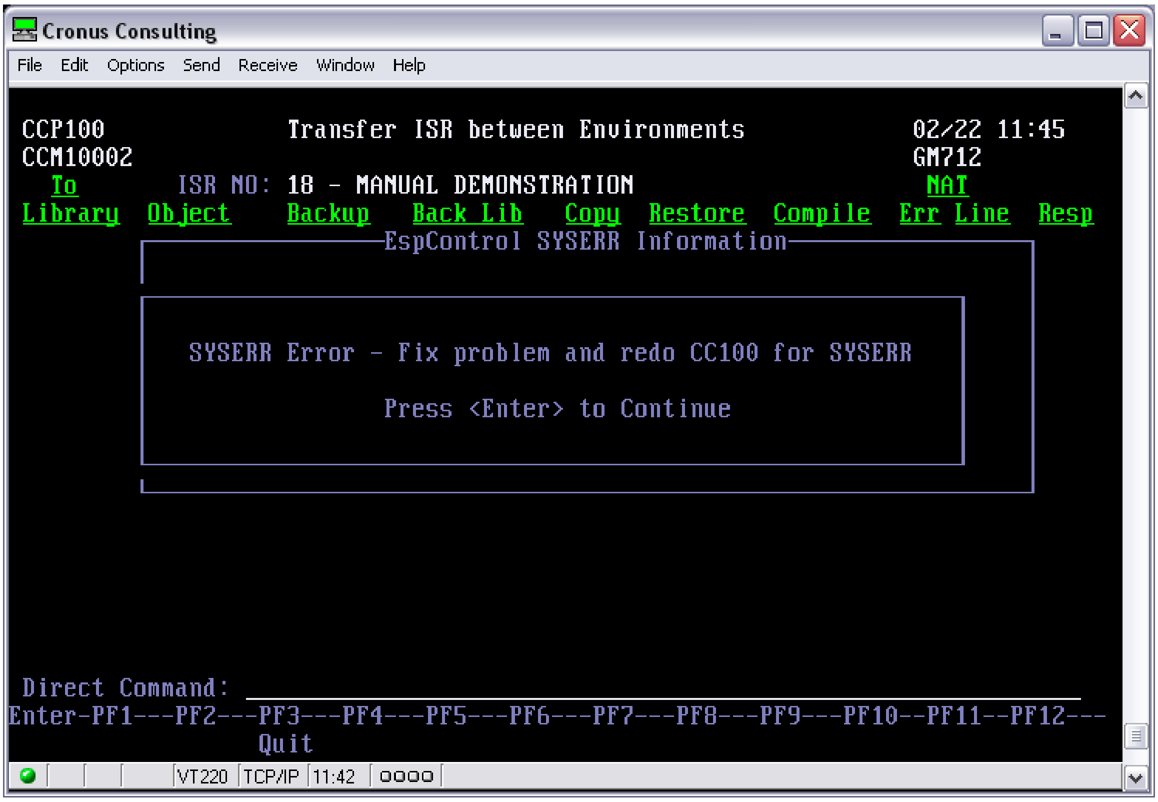
See next page for example:

SYSERR Error Screen and the following screen - SYSERR and SYSOBJH Error Instructions



```
CCP100              Transfer ISR between Environments              02/22 11:45
CCM10002                                                           GM712
  To         ISR NO:  18 - MANUAL DEMONSTRATION                      NAT
Library  Object     Backup    Back Lib    Copy  Restore  Compile  Err Line  Resp
                         EspControl SYSERR Information
          |                                                                 |
          |                SYSERR Procedure Executed:                       |
          |                                                                 |
          |     SYSOBJH SYSERR FAILED - NOTHING FOUND FOR THIS REQUEST      |
          |                                                                 |
          |/apps1/cronus/ccont_eco/transfer/VFY.18.syserr.unld.cmprint      |
          |                                                                 |
          |                 Press <Enter> to Continue                       |
          |_________________________________________________________________|

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 75: SYSERR Error Screen



```
CCP100              Transfer ISR between Environments              02/22 11:45
CCM10002                                                           GM712
  To         ISR NO:  18 - MANUAL DEMONSTRATION                      NAT
Library  Object     Backup    Back Lib    Copy  Restore  Compile  Err Line  Resp
                         EspControl SYSERR Information

          SYSERR Error - Fix problem and redo CC100 for SYSERR

                 Press <Enter> to Continue


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

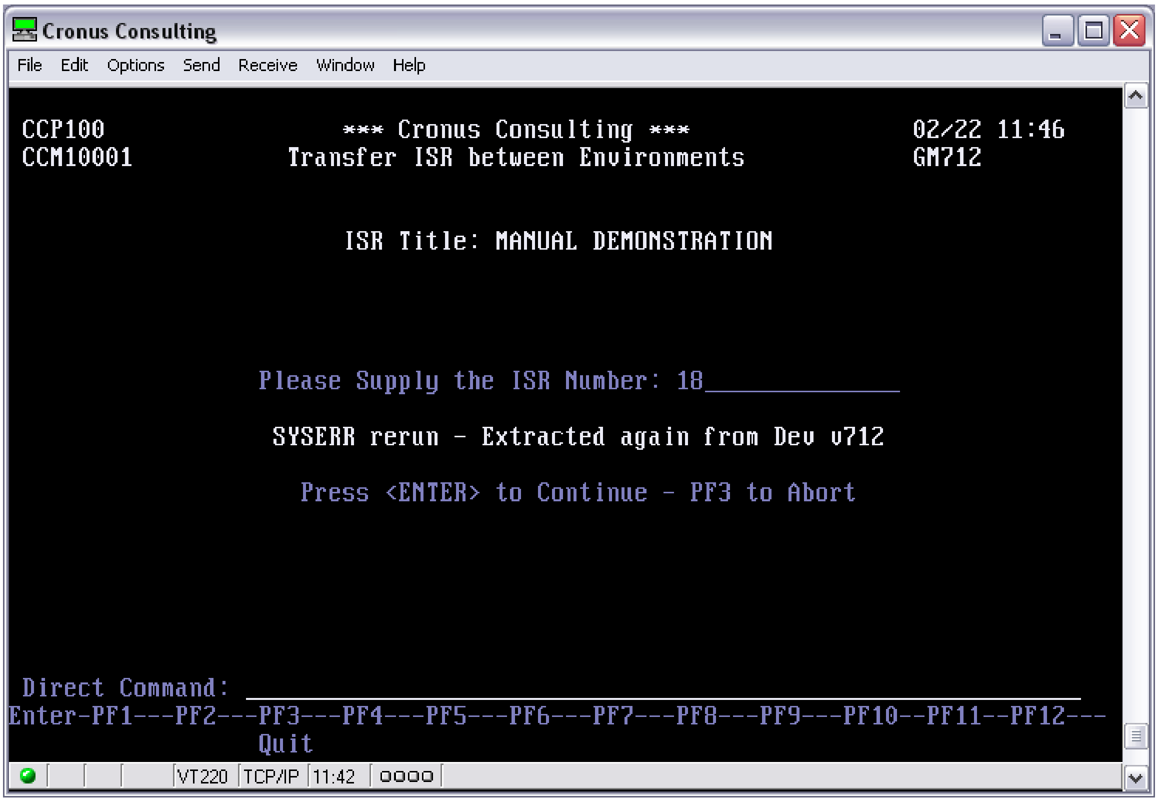
Figure 76: SYSERR Error Instructions

The SYSERR and SYSOBJH source unload transfer function have been set-up in such a manner that an error in the TRANSFER does not RESTORE the entire ISR. The SYSOBJH or SYSERR transfer only commences once the objects have been moved. If an error in the source unload occurs, the user should correct the problem and redo CC100. This will only redo the SYSERR or SYSOBJH Function, but not the migration of the objects. Once the SYSERR or SYSOBJH function is successful, the migration may continue as normal to the next environment.

If an error occurs, the SYSERR ERROR indicator is set (see function CC077) and all other ISR functions will be blocked until the error messages have been transferred without error. If the user wishes to continue without the Transfer of these error messages then the SYSERR ERROR indicator should be reset.

For a SYSOBJH ERROR, another indicator is set (see function CC076) and the same rules as specified above will apply.

Rerun of CC100, for SYSERR Error or SYSOBJH source unload will reflect SYSOBJH



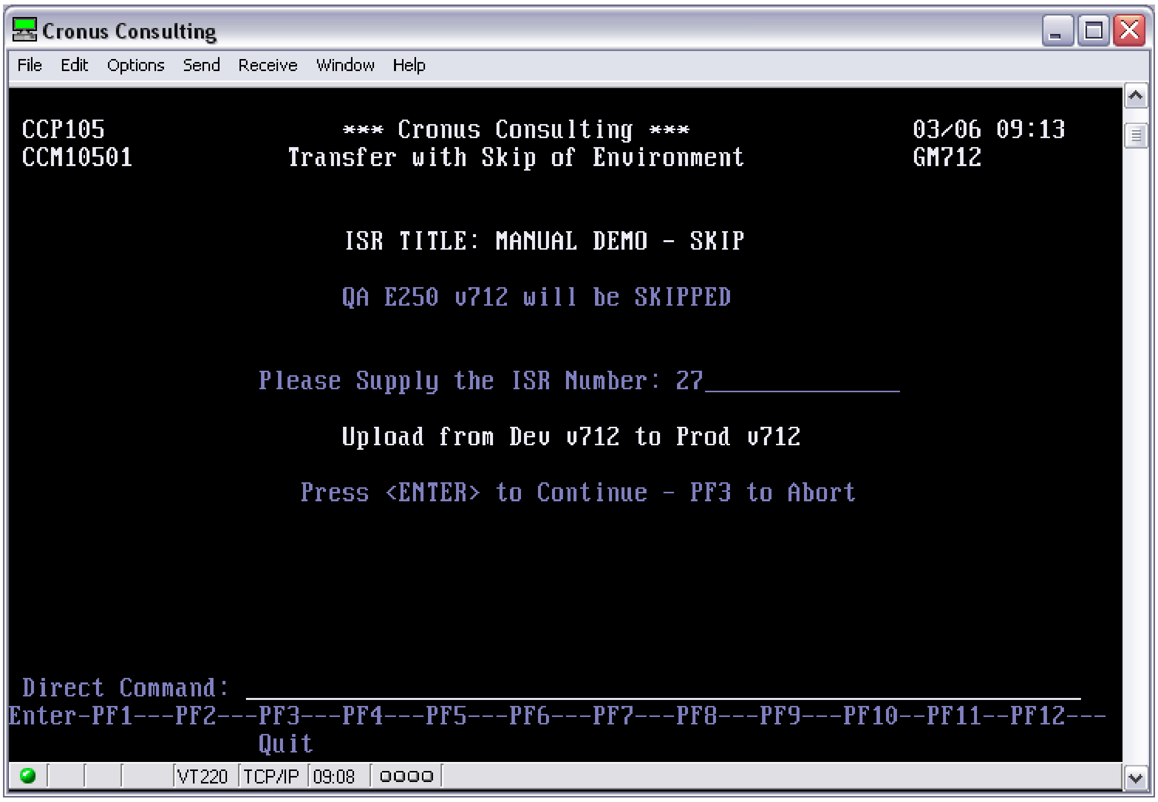
```
CCP100                 *** Cronus Consulting ***              02/22 11:46
CCM10001            Transfer ISR between Environments         GM712

                       ISR Title: MANUAL DEMONSTRATION



                    Please Supply the ISR Number: 18______________

                     SYSERR rerun - Extracted again from Dev v712

                       Press <ENTER> to Continue - PF3 to Abort





 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 77: SYSERR Error Rerun of CC100

The above is an example of where a SYSERR error occurred and the user has solved the problem, and is now re-running CC100. The above message will be returned as the objects will NOT be re-transferred, but only the source unload or system error messages transfer, depending on what has been marked.

3.2.6 CC105 – Transfer with Skip of Environment

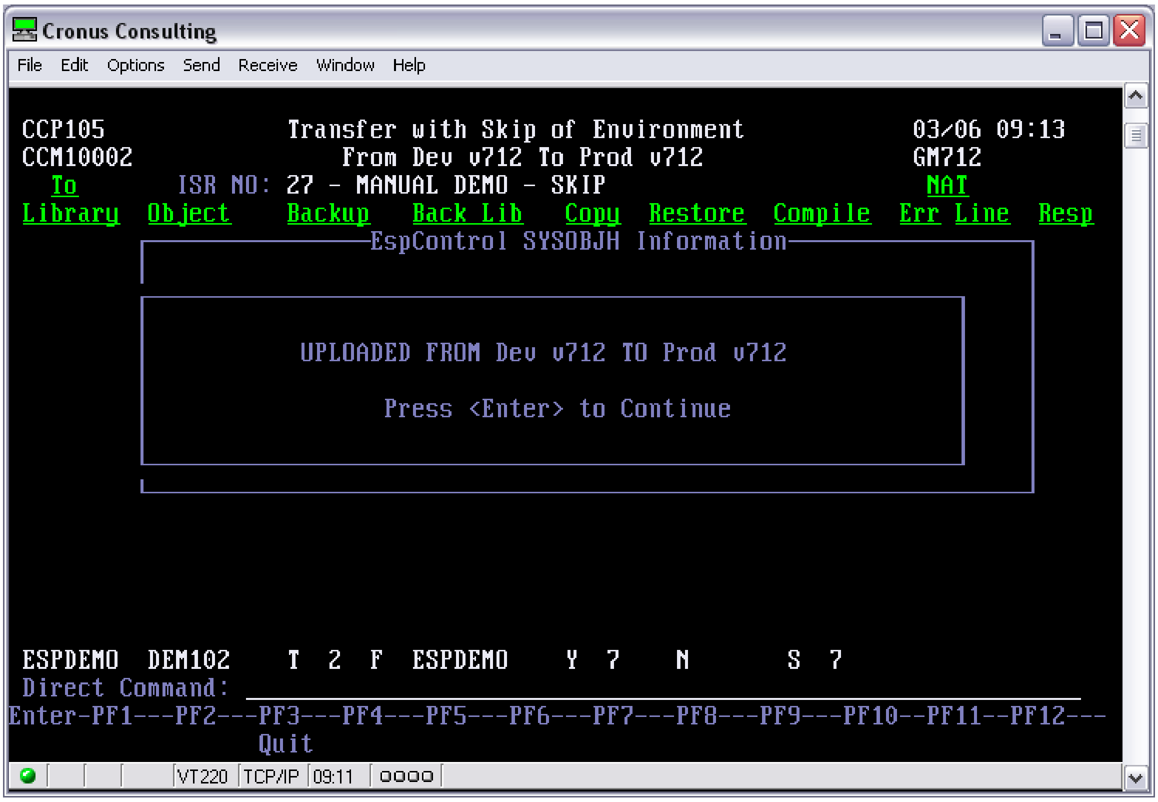
The function CC105, transfer with a skip of an environment, works in the same manner as the CC100 migration function (as explained above in the manual), except that it allows the user to skip an environment. In other words, one of the environments of the ISR in the linked profile may be skipped. For example, if the profile has two test environments and after testing in the first environment, it is decided to skip the next test environment, then function CC105 may be used. This will perform a migration from for e.g. environment 2 directly to environment 4 without having to select a different profile. For obvious reasons, environment 2 will be backed up and environment 4 will be backed up, but no code will be migrated or backup will be done in the environment which has been skipped, in this example 3.



```
CCP105                  *** Cronus Consulting ***                03/06 09:13
CCM10501             Transfer with Skip of Environment           GM712

                        ISR TITLE: MANUAL DEMO - SKIP

                        QA E250 v712 will be SKIPPED

                  Please Supply the ISR Number: 27______________

                        Upload from Dev v712 to Prod v712

                     Press <ENTER> to Continue - PF3 to Abort



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

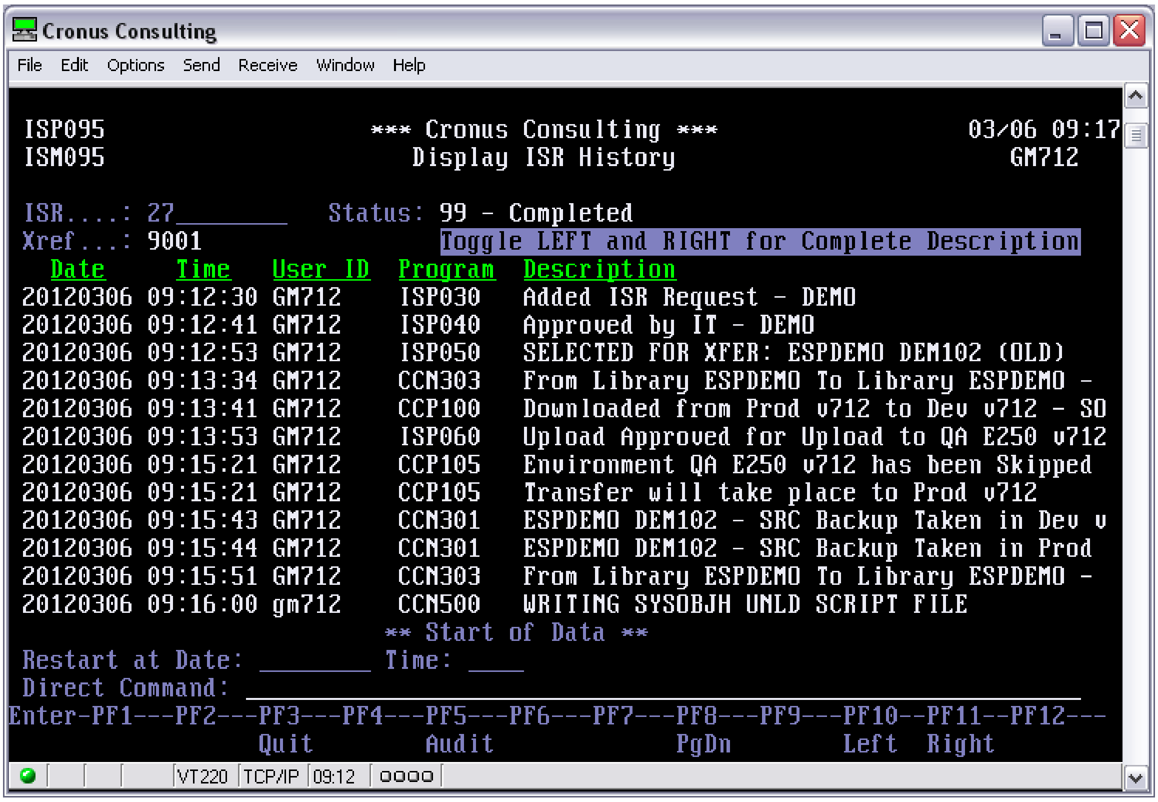
Figure 78: Transfer with Skip of an Environment (direct from Dev to Prod, QA skipped)

The rules regarding the skip are fairly specific and will not allow the user to skip an environment if the rules do not apply. The skip to the Master environment is NOT allowed and the Skip to the Initial Environment (the download move if done) is NOT allowed. To skip the download move, the profile with a Path Choice of "Y" must be used and the user must request Upload only.



```
CCP105               Transfer with Skip of Environment             03/06 09:13
CCM10002                 From Dev v712 To Prod v712                GM712
  To         ISR NO: 27 - MANUAL DEMO - SKIP                         NAT
Library  Object     Backup    Back Lib    Copy  Restore  Compile  Err Line   Resp
                      EspControl SYSOBJH Information

                    UPLOADED FROM Dev v712 TO Prod v712

                          Press <Enter> to Continue

ESPDEMO  DEM102     T  2  F  ESPDEMO     Y  7    N       S  7
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 79: Confirmation window after a SKIP

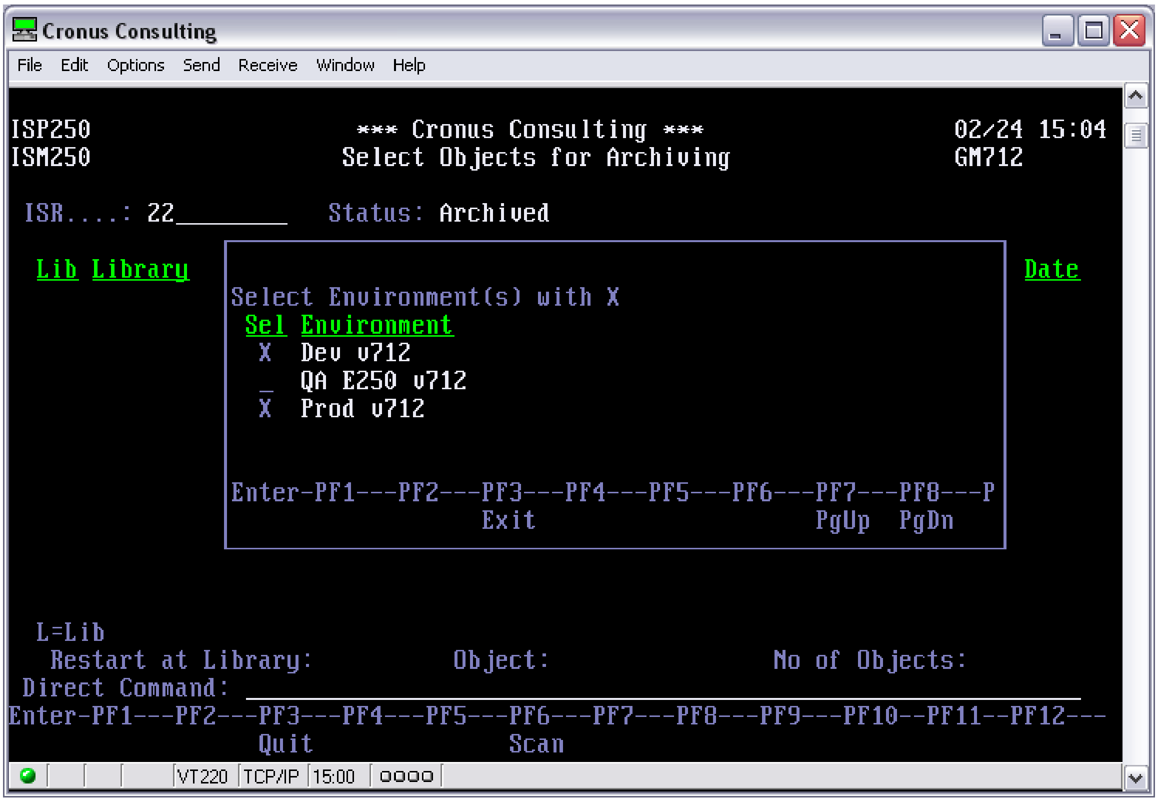


```
ISP095                       *** Cronus Consulting ***                     03/06 09:17
ISM095                          Display ISR History                          GM712

ISR....: 27________       Status: 99 - Completed
Xref...: 9001                    Toggle LEFT and RIGHT for Complete Description
 Date      Time    User ID   Program   Description
20120306 09:12:30 GM712     ISP030    Added ISR Request - DEMO
20120306 09:12:41 GM712     ISP040    Approved by IT - DEMO
20120306 09:12:53 GM712     ISP050    SELECTED FOR XFER: ESPDEMO DEM102 (OLD)
20120306 09:13:34 GM712     CCN303    From Library ESPDEMO To Library ESPDEMO -
20120306 09:13:41 GM712     CCP100    Downloaded from Prod v712 to Dev v712 - SO
20120306 09:13:53 GM712     ISP060    Upload Approved for Upload to QA E250 v712
20120306 09:15:21 GM712     CCP105    Environment QA E250 v712 has been Skipped
20120306 09:15:21 GM712     CCP105    Transfer will take place to Prod v712
20120306 09:15:43 GM712     CCN301    ESPDEMO DEM102 - SRC Backup Taken in Dev v
20120306 09:15:44 GM712     CCN301    ESPDEMO DEM102 - SRC Backup Taken in Prod
20120306 09:15:51 GM712     CCN303    From Library ESPDEMO To Library ESPDEMO -
20120306 09:16:00 gm712     CCN500    WRITING SYSOBJH UNLD SCRIPT FILE
                                   ** Start of Data **
Restart at Date: ________ Time: ____
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        Audit              PgDn         Left   Right
```

Figure 80: CC095 – History to show Skip of an Environment

3.2.7 CC250 – Select Objects for Archiving

This function is used to **remove** objects from the EspControl object **inventory** and the actual module is **scratched** in the Natural **Source** library for all the selected environments. The library that must be used can be selected if required, per object, as in the CC050 selection and will be used for the chosen environment for archiving.

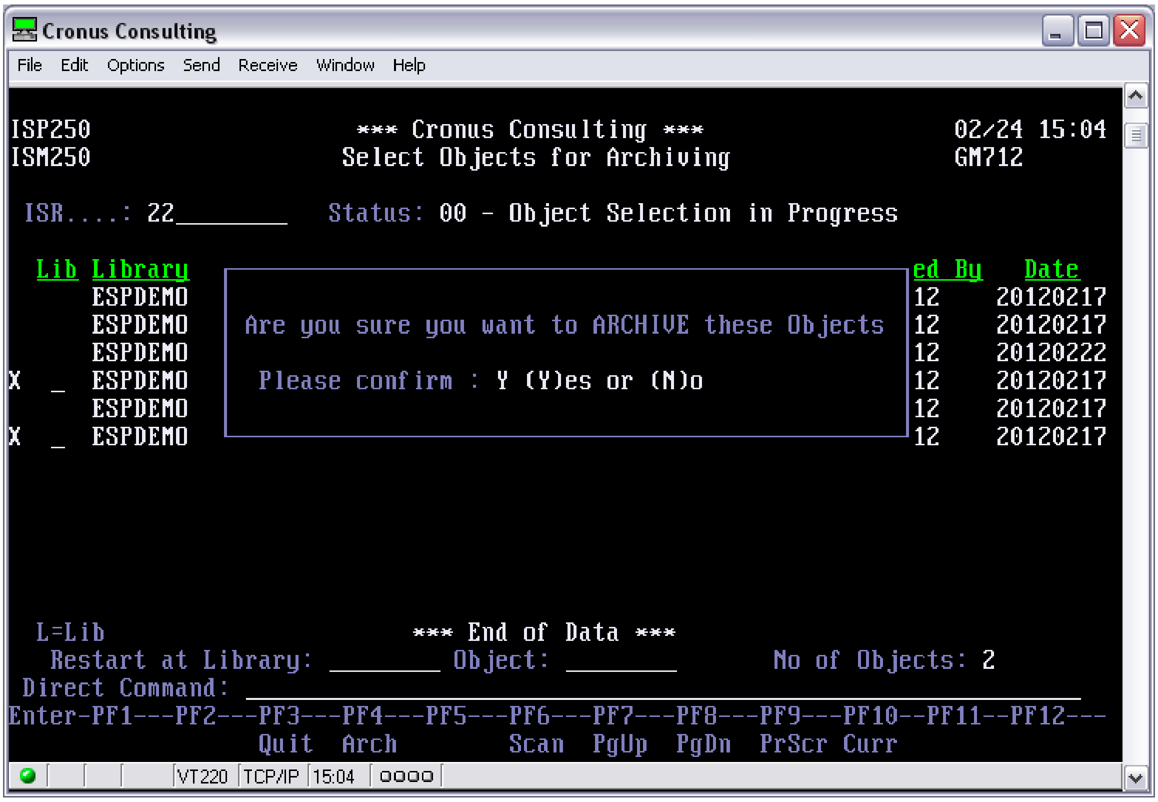


```
ISP250                   *** Cronus Consulting ***                02/24 15:04
ISM250                    Select Objects for Archiving             GM712

 ISR....: 22________      Status: Archived

  Lib Library                                                        Date
              Select Environment(s) with X
               Sel Environment
                X  Dev v712
                _  QA E250 v712
                X  Prod v712

              Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---P
                                  Exit                    PgUp  PgDn

  L=Lib
   Restart at Library:            Object:                 No of Objects:
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                Scan
```

Figure 81: Archive ISR

Enter the ISR number (**ISRTYPE** defined on **CC040** must be **OLD** to use this function) and select the required environments where the Object must be archived from. All the environments or a subset of these connected to the linked profile will be used in the transaction. The object will be backed up if available, scratched from the selected environments and removed from the Object Inventory List. The removal and such will be written to the ISR History file and may be viewed in option CC095. As the program is removed from the Inventory List it will not be viewable from any object enquiries once archived. However, if the object name is known it may be entered in option CC088 using PF6 and then all available history will be displayed, even if this object no longer exists. This could always be manually restored from the backup path specified in the history, if necessary. If the object must again be added to the Inventory List, it may be scanned in CC050 using PF6 and a new object entry will be created.

Select the objects for archiving. Confirm the start the archive process with function key **PF4.**



```
ISP250                    *** Cronus Consulting ***                02/24 15:04
ISM250                    Select Objects for Archiving             GM712

 ISR....: 22_______    Status: 00 - Object Selection in Progress

  Lib Library                                                    ed By    Date
      ESPDEMO                                                    12     20120217
      ESPDEMO    Are you sure you want to ARCHIVE these Objects  12     20120217
      ESPDEMO                                                    12     20120222
X  _  ESPDEMO     Please confirm : Y (Y)es or (N)o               12     20120217
      ESPDEMO                                                    12     20120217
X  _  ESPDEMO                                                    12     20120217




  L=Lib                          *** End of Data ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Arch        Scan  PgUp  PgDn  PrScr Curr
```

Figure 82: Archive confirmation Y or N

Archive with PF4

The selected objects are removed from the EspControl object inventory including source code or object code in the selected environment.

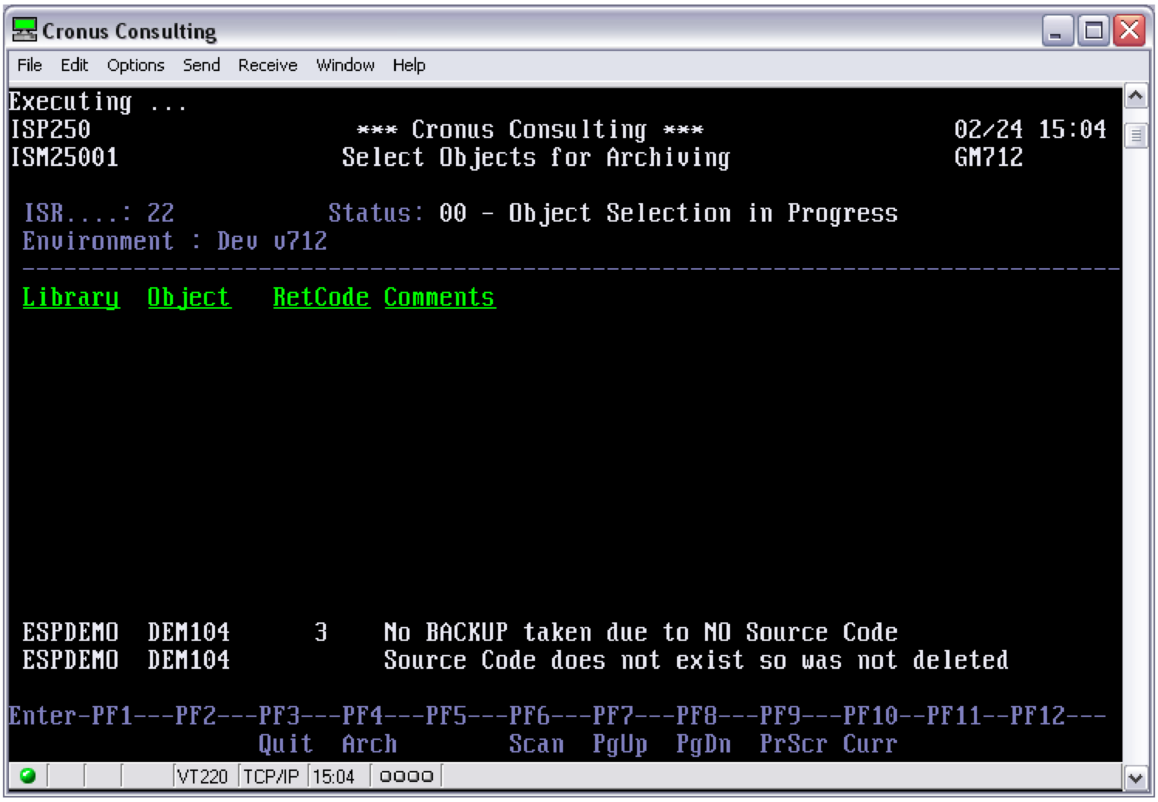
The ISR history functions can be used as audit trail for archived objects.

The source code and object code for the modules are saved to the “fuser-backup” directory defined in the CC001 Control Variable function.

The ISR is automatically completed after the archive process terminates.

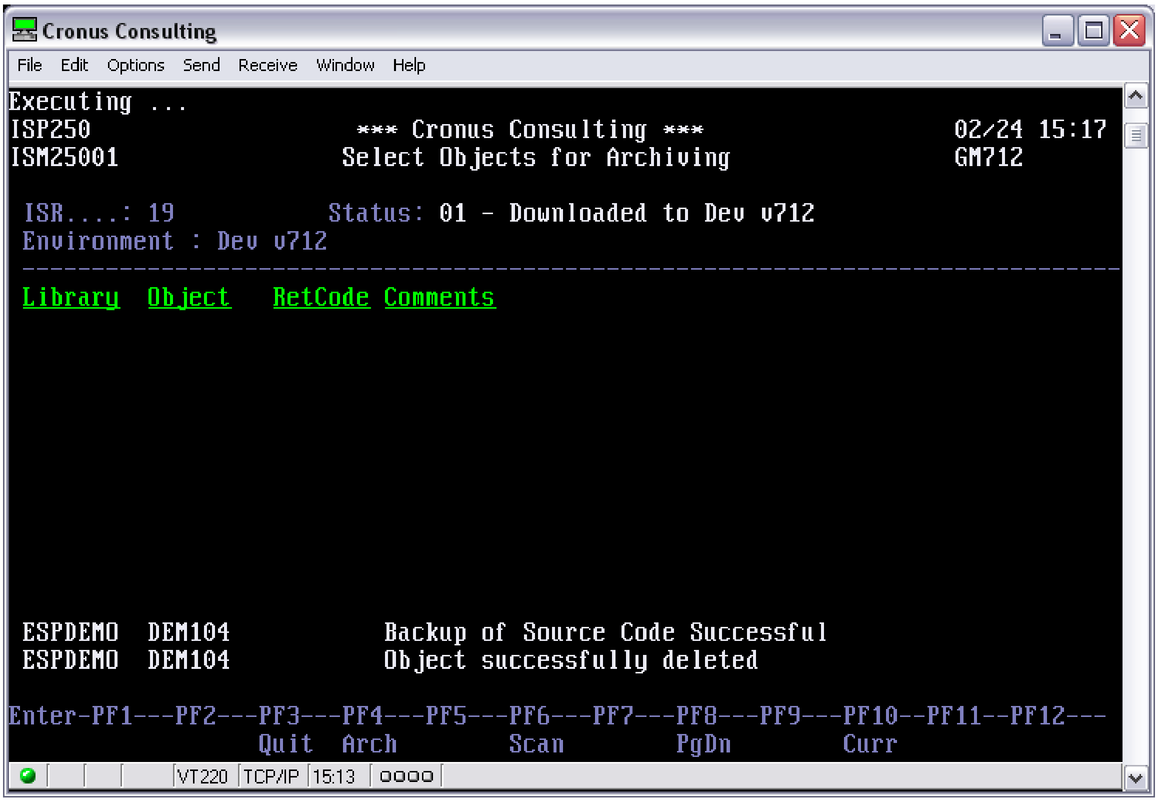
If the code does not exist in the chosen environment i.e. Allow-Source was = M and so code was removed, there will be no removal and obviously no backup as nothing exists. The object will however be removed from the Inventory List, but the ISR will not abort if code is not available for backup

See below window for archiving of objects with examples of both backup and no backup –



```
Executing ...
ISP250                   *** Cronus Consulting ***                 02/24 15:04
ISM25001                 Select Objects for Archiving              GM712

 ISR....: 22           Status: 00 - Object Selection in Progress
 Environment : Dev v712
 ------------------------------------------------------------------------------
 Library  Object   RetCode Comments








 ESPDEMO  DEM104      3    No BACKUP taken due to NO Source Code
 ESPDEMO  DEM104           Source Code does not exist so was not deleted

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Arch        Scan  PgUp  PgDn  PrScr Curr
```

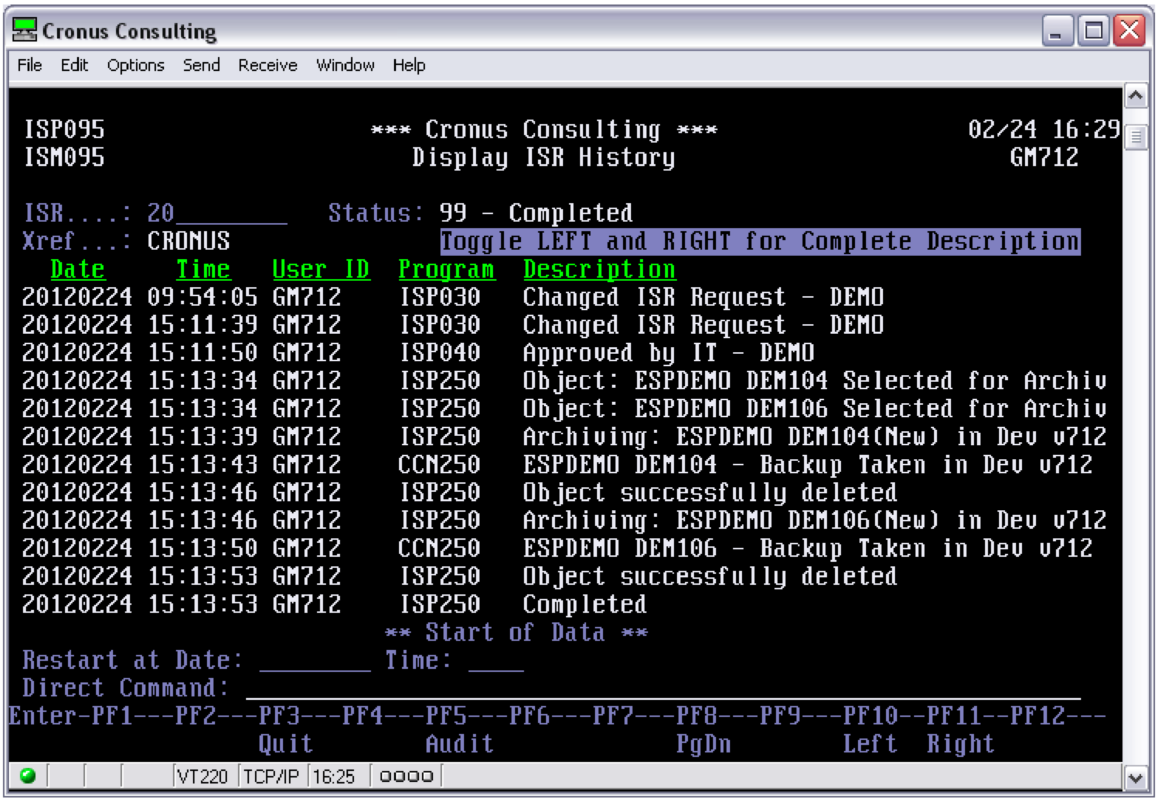
Figure 83: Archive details while processing – in this example no source exists so no backup



```
Executing ...
ISP250                   *** Cronus Consulting ***                 02/24 15:17
ISM25001                 Select Objects for Archiving              GM712

 ISR....: 19           Status: 01 - Downloaded to Dev v712
 Environment : Dev v712
 ------------------------------------------------------------------------------
 Library  Object   RetCode Comments








 ESPDEMO  DEM104           Backup of Source Code Successful
 ESPDEMO  DEM104           Object successfully deleted

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Arch        Scan        PgDn        Curr
```

Figure 84: Archive details– in this example correct backup and deletion of object

The above detail for each archived environment will be written to the History file and may be viewed in CC095 per ISR or CC088 per object. Each specific library per environment is also recorded. See example below of what History looks like.

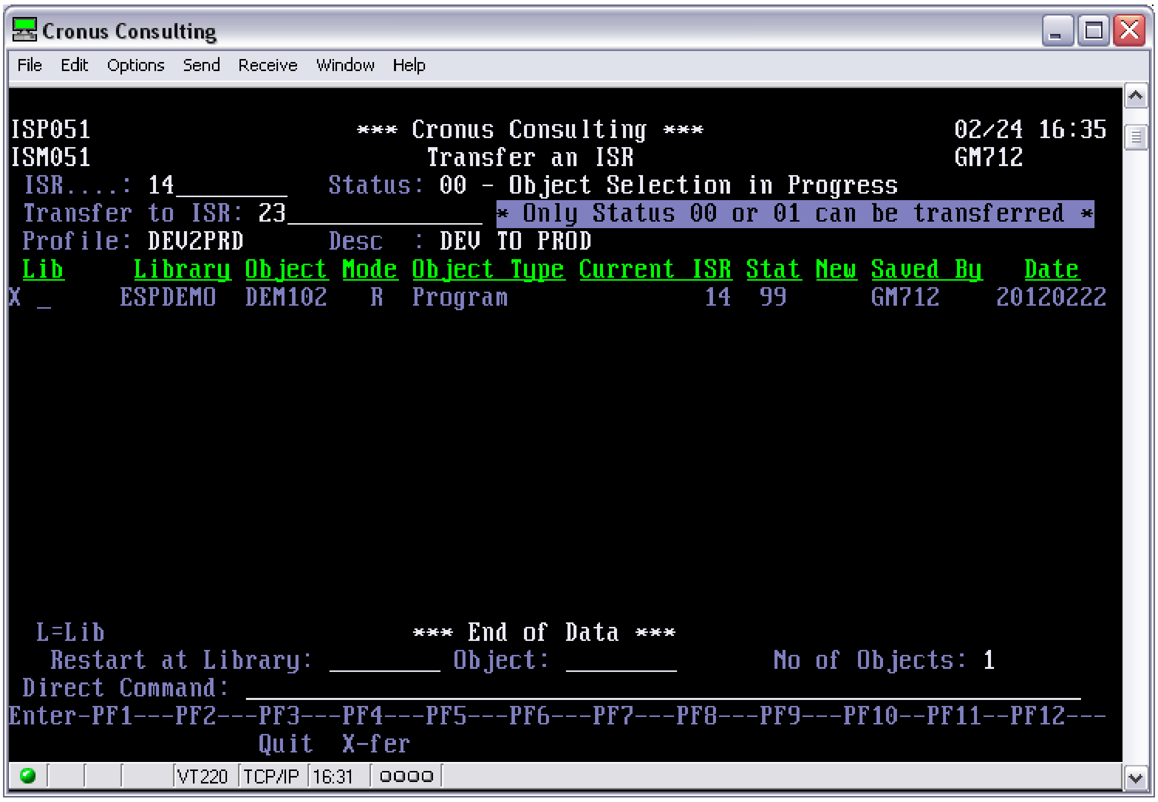


```
 ISP095                    *** Cronus Consulting ***                 02/24 16:29
 ISM095                       Display ISR History                       GM712

 ISR....: 20________     Status: 99 - Completed
 Xref...: CRONUS                 Toggle LEFT and RIGHT for Complete Description
   Date     Time    User ID  Program  Description
 20120224 09:54:05 GM712     ISP030   Changed ISR Request - DEMO
 20120224 15:11:39 GM712     ISP030   Changed ISR Request - DEMO
 20120224 15:11:50 GM712     ISP040   Approved by IT - DEMO
 20120224 15:13:34 GM712     ISP250   Object: ESPDEMO DEM104 Selected for Archiv
 20120224 15:13:34 GM712     ISP250   Object: ESPDEMO DEM106 Selected for Archiv
 20120224 15:13:39 GM712     ISP250   Archiving: ESPDEMO DEM104(New) in Dev v712
 20120224 15:13:43 GM712     CCN250   ESPDEMO DEM104 - Backup Taken in Dev v712
 20120224 15:13:46 GM712     ISP250   Object successfully deleted
 20120224 15:13:46 GM712     ISP250   Archiving: ESPDEMO DEM106(New) in Dev v712
 20120224 15:13:50 GM712     CCN250   ESPDEMO DEM106 - Backup Taken in Dev v712
 20120224 15:13:53 GM712     ISP250   Object successfully deleted
 20120224 15:13:53 GM712     ISP250   Completed
                            ** Start of Data **
 Restart at Date: ________ Time: ____
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        Audit             PgDn        Left  Right
```

Figure 85: Archive ISR History Details

3.3 ISR Maintenance Function Overview

3.3.1 CC051 – Transfer an Object to another ISR



```
ISP051                    *** Cronus Consulting ***                      02/24 16:35
ISM051                         Transfer an ISR                          GM712
 ISR....: 14________    Status: 00 - Object Selection in Progress
 Transfer to ISR: 23_______________ * Only Status 00 or 01 can be transferred *
 Profile: DEV2PRD        Desc   : DEV TO PROD
 Lib      Library Object Mode Object Type Current ISR Stat New Saved By    Date
X _       ESPDEMO  DEM102    R  Program              14   99      GM712     20120222




  L=Lib                          *** End of Data ***
   Restart at Library: ________ Object: ________        No of Objects: 1
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  X-fer
```

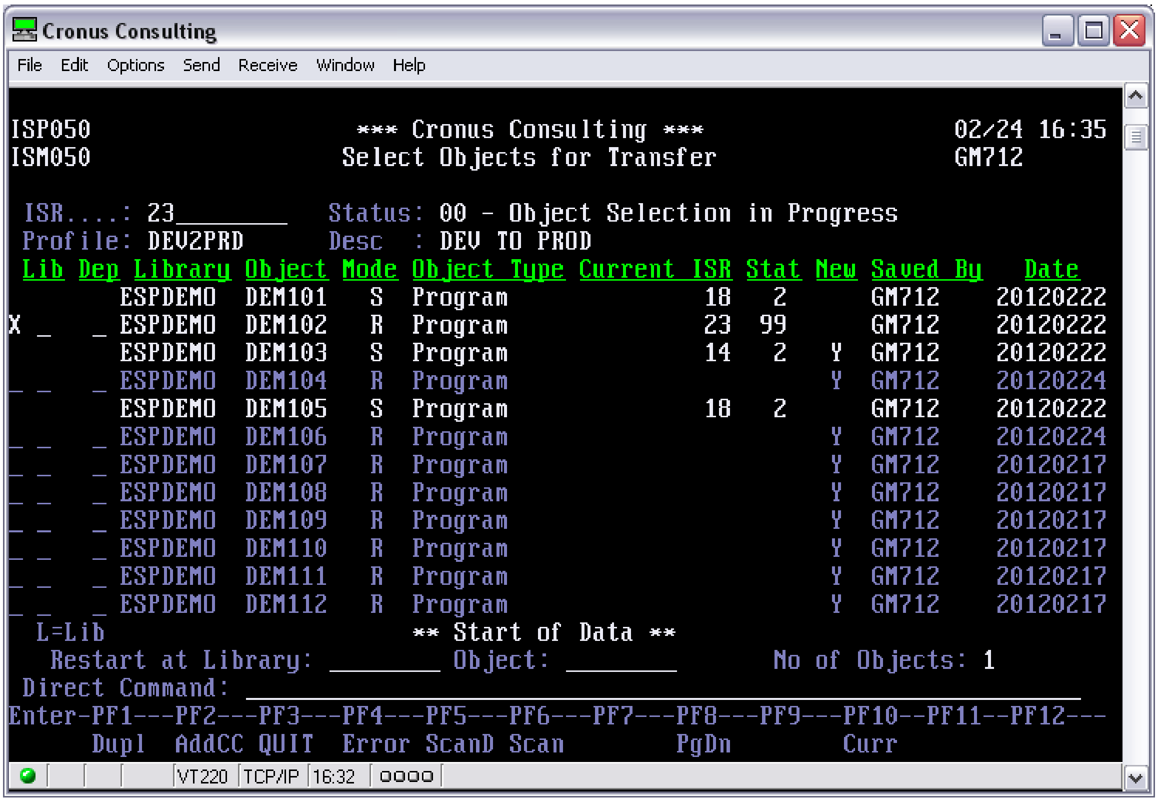
Figure 86: Object Transfer between ISR's

Objects, while in the development phase or any initial environment as determined by the profile linked to the ISR, may be **transferred** from one **ISR** to another. Both the **From ISR Nr** and the **Transfer To ISR Nr** must be in a development status, status 00 or 01.

This means that the objects must have either only been linked, or been downloaded **to** the "**Initial**" environment. All objects linked to the From ISR, which are in the correct status, will be reflected. All objects that need to be transferred must be selected with 'X' in the first column (see above).

Confirm by pressing <**PF4**>, and the selected objects will be transferred, with their current object status, to the new **Transfer To ISR.** This action removes these objects from their current ISR and places them in the Transfer ISR. **History** (CC095) is available on both the From and To ISR numbers.

See example below of how the above transfer will look when the user re-enters CC050.



```
ISP050                   *** Cronus Consulting ***                   02/24 16:35
ISM050                    Select Objects for Transfer                 GM712

 ISR....: 23________     Status: 00 - Object Selection in Progress
 Profile: DEV2PRD         Desc  : DEV TO PROD
 Lib Dep Library Object Mode Object Type Current ISR Stat New Saved By   Date
        ESPDEMO  DEM101   S  Program              18    2     GM712    20120222
X _   _ ESPDEMO  DEM102   R  Program              23   99     GM712    20120222
        ESPDEMO  DEM103   S  Program              14    2   Y GM712    20120222
_ _   _ ESPDEMO  DEM104   R  Program                        Y GM712    20120224
        ESPDEMO  DEM105   S  Program              18    2     GM712    20120222
_ _   _ ESPDEMO  DEM106   R  Program                        Y GM712    20120224
_ _   _ ESPDEMO  DEM107   R  Program                        Y GM712    20120217
_ _   _ ESPDEMO  DEM108   R  Program                        Y GM712    20120217
_ _   _ ESPDEMO  DEM109   R  Program                        Y GM712    20120217
_ _   _ ESPDEMO  DEM110   R  Program                        Y GM712    20120217
_ _   _ ESPDEMO  DEM111   R  Program                        Y GM712    20120217
_ _   _ ESPDEMO  DEM112   R  Program                        Y GM712    20120217
  L=Lib                      ** Start of Data **
   Restart at Library: ________ Object: ________       No of Objects: 1
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Dupl  AddCC QUIT  Error ScanD Scan        PgDn        Curr
```

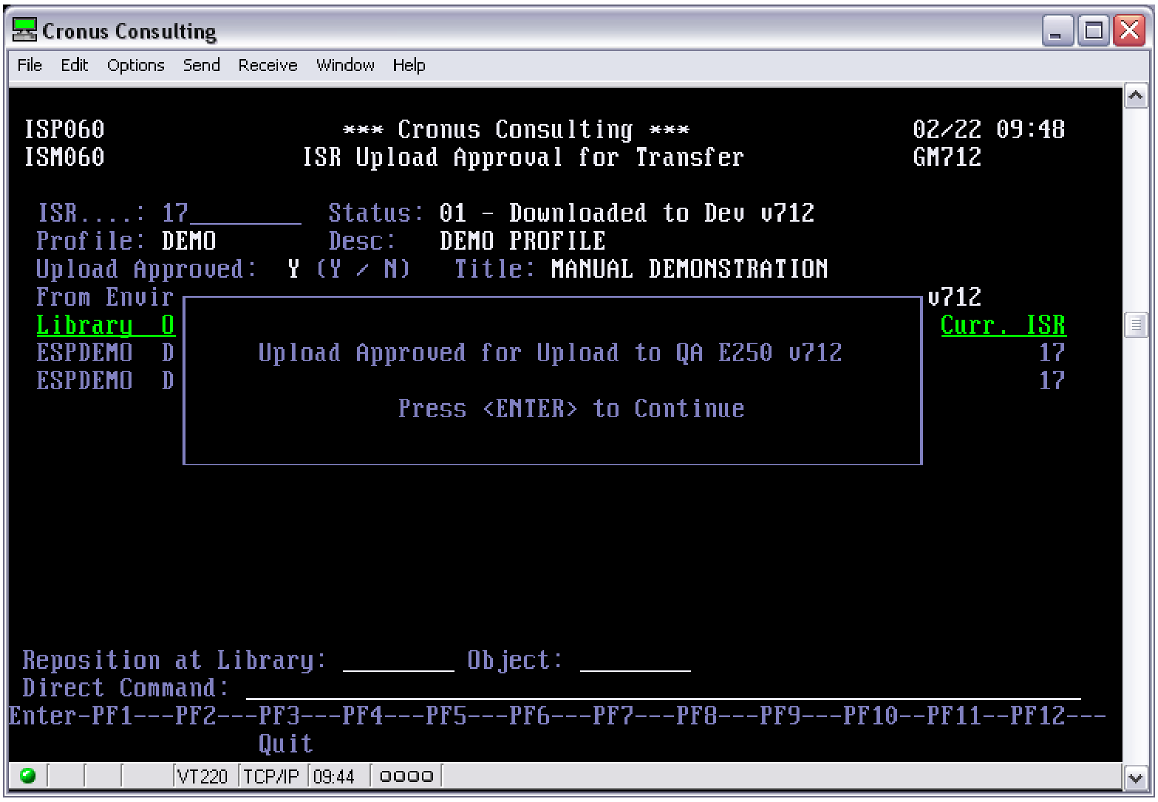
Figure 87: Example of the Objects being transferred between ISR 454 and 457

Object selection or removal may continue as normal for both ISR's 14 and 23.

The transfer option is just a tool for the assistance of removing objects from one ISR and then re-selecting them to another ISR via CC050.

3.3.2 CC060 – Upload Approval ISR for Transfer

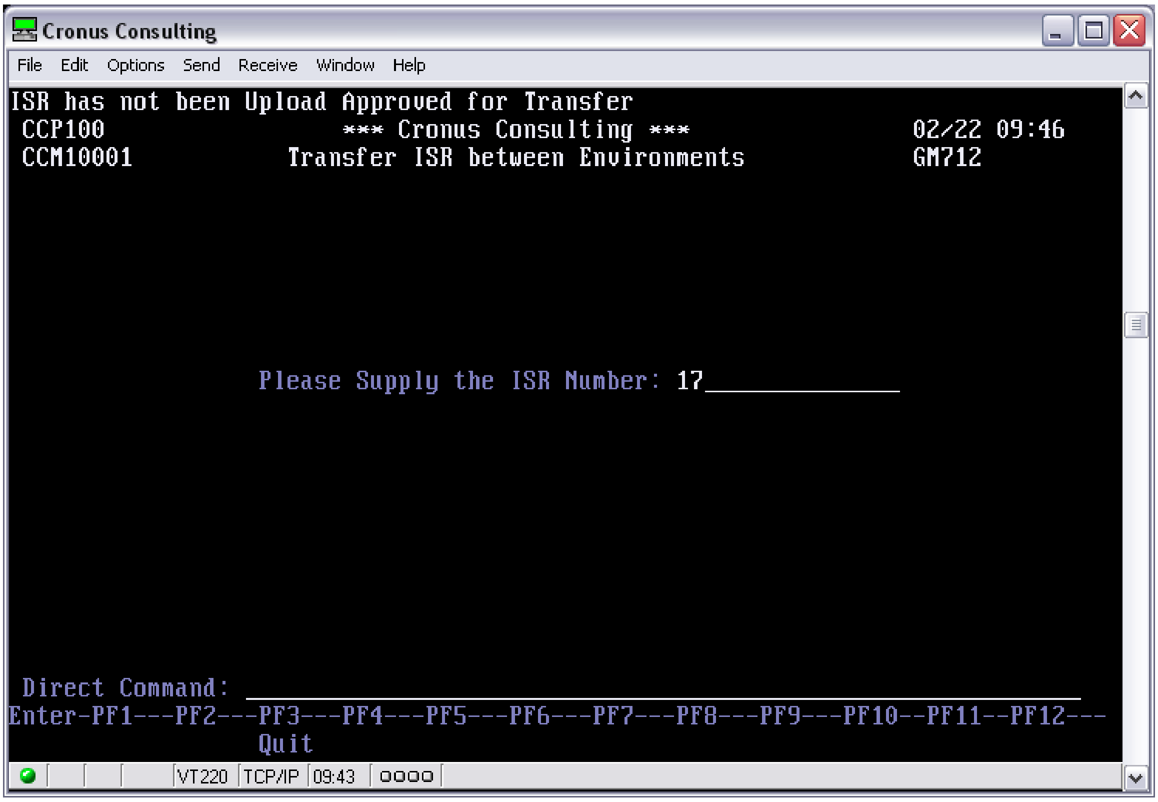
This function is used to **Upload Approve** an ISR and to set the approval status of the ISR in order to advance to the next environment. Once an ISR has been upload approved, the migration function CC100 (Transfer ISR) is used to transfer all objects linked to the ISR. By providing separate functions for Upload Approval and ISR transfer, the project leader is freed from doing the physical transfer that can be a timely exercise for an ISR with many objects linked to it. Upload Approval cannot be set if the Return Approval is already set. This approval request is set on the linked profile via CC002 when marking A-A indicator with a “Y” or “N”. The indicator will reflect against the environment being migrated TO. If no approval is required (N), as specified by the profile, then CC100 can continue as normal and will return no error.



```
ISP060                  *** Cronus Consulting ***               02/22 09:48
ISM060               ISR Upload Approval for Transfer          GM712

 ISR....: 17_________   Status: 01 - Downloaded to Dev v712
 Profile: DEMO          Desc:    DEMO PROFILE
 Upload Approved:  Y (Y / N)   Title: MANUAL DEMONSTRATION
 From Envir                                                     v712
 Library  O                                                      Curr. ISR
 ESPDEMO  D     Upload Approved for Upload to QA E250 v712            17
 ESPDEMO  D                                                           17
                       Press <ENTER> to Continue


Reposition at Library: ________ Object: ________
Direct Command: ______________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 88: Upload Approval per ISR

The **Upload Approval Indicator** field on Profile set-up function **CC002** is used to control the “Upload Approval” of ISRs before they are migrated **to** the next environment. The approver usually will quality assure the objects in the environment being moved from, before he accepts the ISR for Upload Approval. The **Upload Approval Indicator** can be set to “**Y**” or “**N**” on each of the environments. Function **CC060** – Upload Approve ISR for transfer is required for any environment where the **Upload Approval Indicator** is set. During the move from the Master to the Initial Environment (First move), no upload approval will be requested. However, if the ISR only moves in an Upload direction, the upload approval, if marked in the profile, WILL be requested from the initial environment, this now being the FIRST move of the ISR.



```
ISR has not been Upload Approved for Transfer
 CCP100                   *** Cronus Consulting ***               02/22 09:46
 CCM10001              Transfer ISR between Environments          GM712



                  Please Supply the ISR Number: 17______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

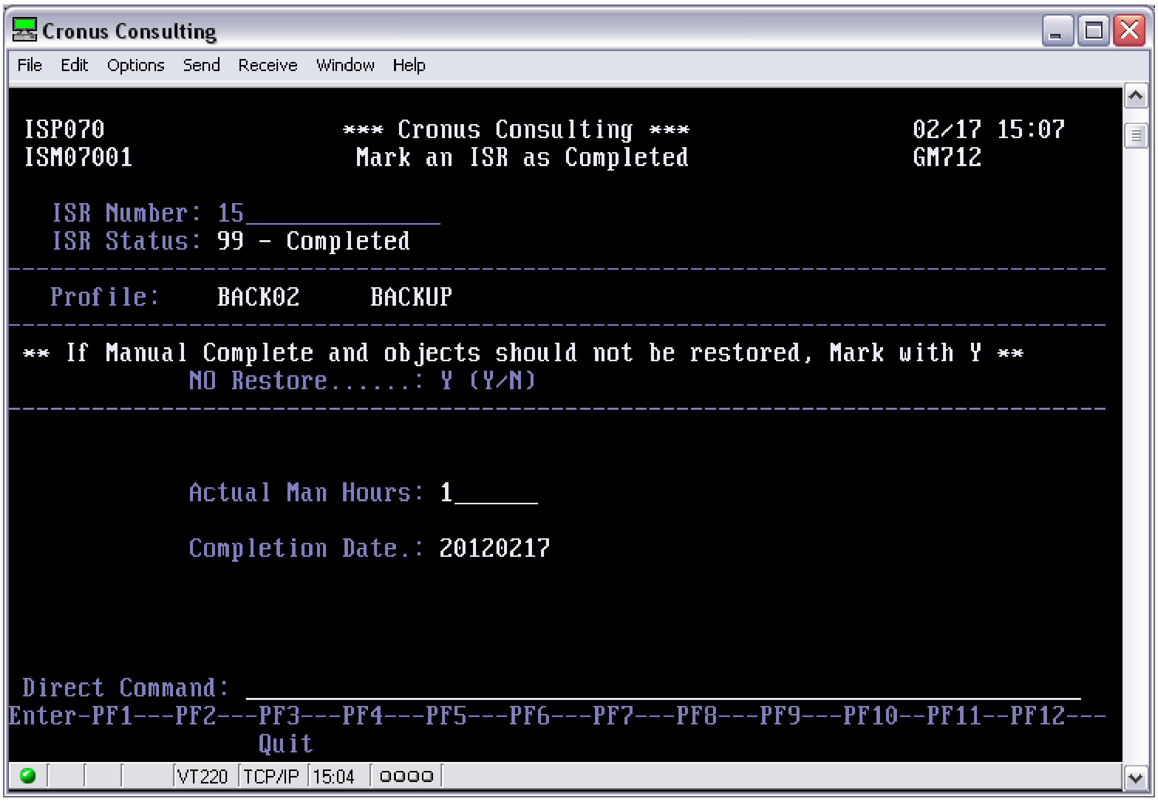
Figure 89: If Upload Approval Required on ISR, CC100 will be disallowed if not yet set

The Environment Path for which Upload Approval is required is now reflected in ‘FROM and ‘TO’ Environments for e.g. from Development to Production, depending on the status of the ISR.

If the ISR Code SAMEAPPROV has been set to “N”, then a user other than the creator (CC030) of the ISR needs to do the Upload Approval. If the same user executes this function, an error message will be returned.

3.3.3 CC070 – Mark an ISR as Completed

This function is used to change the status of an ISR to complete. Once an ISR's status has been changed to completed, all objects linked to that ISR will once again be available for selection and no more migration may take place against the completed ISR.



```
 ISP070                  *** Cronus Consulting ***              02/17 15:07
 ISM07001                 Mark an ISR as Completed              GM712

   ISR Number: 15______________
   ISR Status: 99 - Completed
--------------------------------------------------------------------------------
   Profile:     BACK02      BACKUP
--------------------------------------------------------------------------------
 ** If Manual Complete and objects should not be restored, Mark with Y **
              NO Restore......: Y (Y/N)
--------------------------------------------------------------------------------


              Actual Man Hours: 1______

              Completion Date.: 20120217



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 90: Complete an ISR

The following information must be entered:

- Actual Man Hours - Number of hours used to complete the request
- Completion Date - Set to System Date
- NO Restore - If ISR is completed in middle of migration, mark with Y if NO restore is to be done, else ISR will default to restore

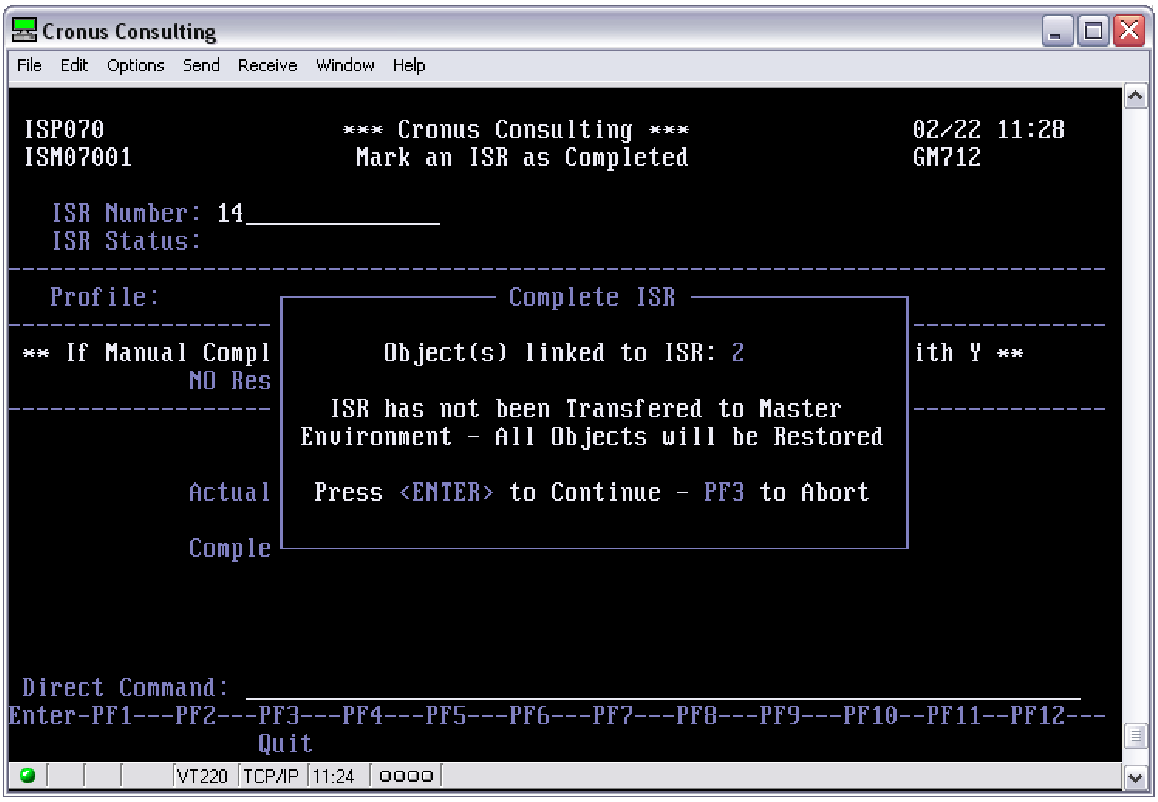
On completion of the ISR the status will be updated to 99 and this screen as reflected above will be automatically displayed for completion once CC100 has reached the Master Environment Index of a specific ISR. However, this option may be manually chosen to end the cycle of a current ISR. The cycle will be completed and the ISR status will also then be updated to 99.

When selecting CC070 manually and the ISR is in the middle of a migration cycle, the user has a choice of whether to restore all objects in the ISR to the Initial Environment or whether NOT to restore.

NO Restore – default to N – this means that the No Restore Indicator is set to No and the ISR will be **RESTORED.** If the ISR has **not been** transferred back to the master environment, a window will be displayed indicating that all objects will be **restored** from the backed up version.

To abort completion of the ISR press 'PF3', (by pressing <ENTER> all changes will be lost and ISR will be restored to all applicable environments). PF3 will give the user a chance to mark No Re with a Y, refusing restore.

NO Restore – if marked with Y, then restore is refused and the ISR will **NOT** be restored. All objects will be unlinked, ISR will be closed off as complete and the object source will be left as is, in whatever environment it has been migrated too.

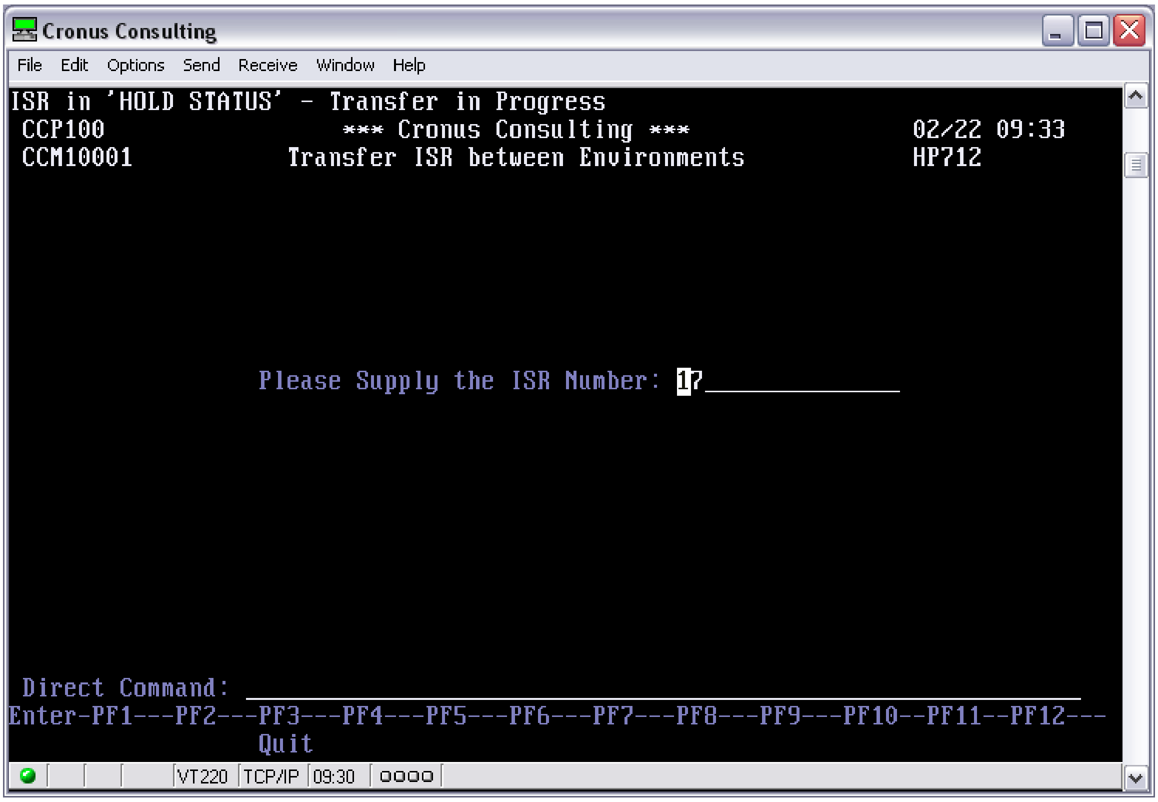


```
ISP070                  *** Cronus Consulting ***                 02/22 11:28
ISM07001                  Mark an ISR as Completed                GM712

  ISR Number: 14______________
  ISR Status:
--------------------------------------------------------------------------------
  Profile:           ------------- Complete ISR -------------
-------------------                                             --------------
** If Manual Compl       Object(s) linked to ISR: 2             ith Y **
             NO Res
-------------------    ISR has not been Transfered to Master    --------------
                     Environment - All Objects will be Restored

             Actual   Press <ENTER> to Continue - PF3 to Abort

             Comple


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 91: Completion Restore if NO Restore marked as N

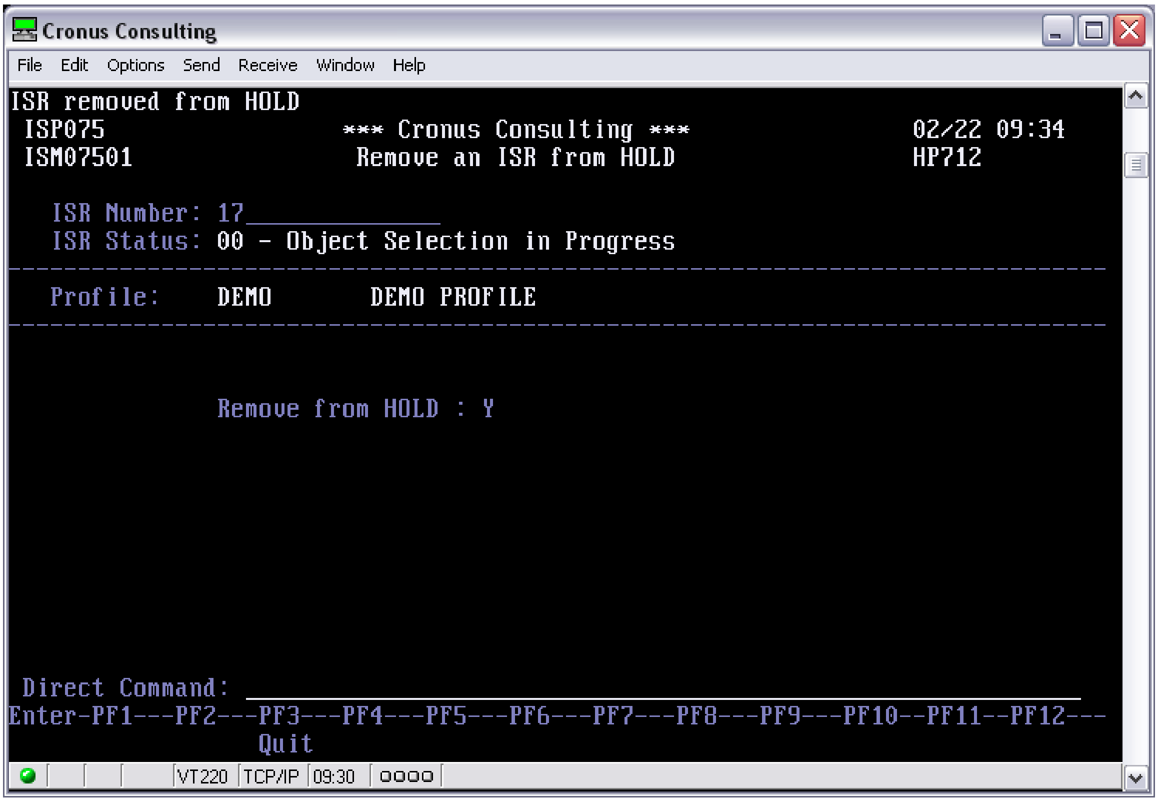
3.3.4 CC075 – Reset ISR Status

The function is used to **reset** the status of an ISR. This should only be used if a technical problem occurred during the migration of objects or if the ISR is STOPPED via the user during a migration process due to OBJECT COLLISION or if the ISR fails the PATH VALIDATION at the start of each migration step.



```
ISR in 'HOLD STATUS' - Transfer in Progress
 CCP100                  *** Cronus Consulting ***                 02/22 09:33
 CCM10001              Transfer ISR between Environments           HP712



                  Please Supply the ISR Number: 17______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 92: Example of ISR in HOLD error



```
ISR removed from HOLD
 ISP075                    *** Cronus Consulting ***                  02/22 09:34
 ISM07501                   Remove an ISR from HOLD                   HP712

   ISR Number: 17______________
   ISR Status: 00 - Object Selection in Progress
-------------------------------------------------------------------------------
   Profile:    DEMO        DEMO PROFILE
-------------------------------------------------------------------------------


               Remove from HOLD : Y









 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 93: Remove an ISR from Hold

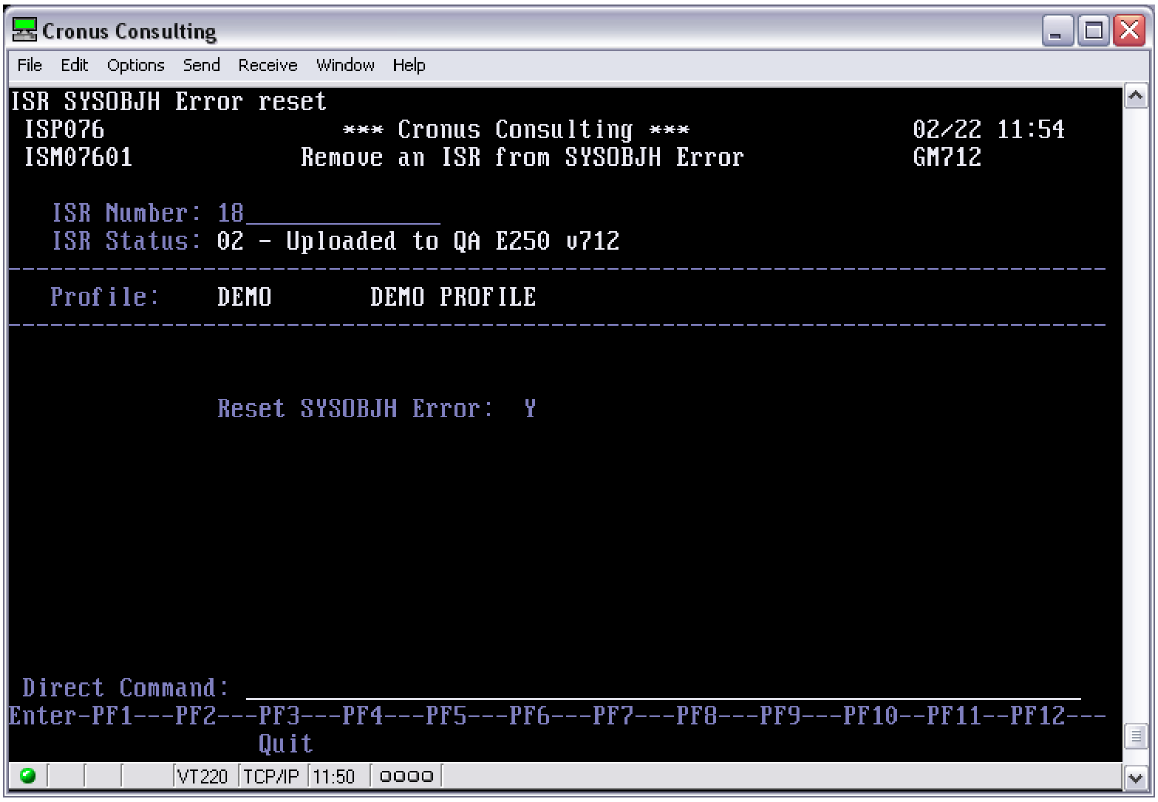
Whenever an ISR gets selected for a particular function, e.g. Linking of Objects, Migration, Return of Objects etc., the selected ISR gets automatically updated to a HOLD status. This is a security measure that prevents other users from using the same ISR when it is being worked on, or from running a function while a selected function is still busy. For example, while an ISR is busy being migrated via CC100, the ISR cannot be amended via CC050.

This HOLD indicator may be manually RESET by using the above function. This should only be done if the ISR is in HOLD due to a line error or a function did not complete correctly as specified in the manual which will force the ISR to HOLD.

Enter ISR NO and mark Remove from HOLD with a ‘Y’. This will then allow the ISR to be used again.

This function should not be allocated to all users, so that ISR’s do not get reset out of turn.

3.3.5 CC076 – Remove ISR from SYSOBJH Error



```
ISR SYSOBJH Error reset
 ISP076                   *** Cronus Consulting ***              02/22 11:54
 ISM07601              Remove an ISR from SYSOBJH Error          GM712

   ISR Number: 18______________
   ISR Status: 02 - Uploaded to QA E250 v712
-------------------------------------------------------------------------------
   Profile:     DEMO       DEMO PROFILE
-------------------------------------------------------------------------------


               Reset SYSOBJH Error:  Y








 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

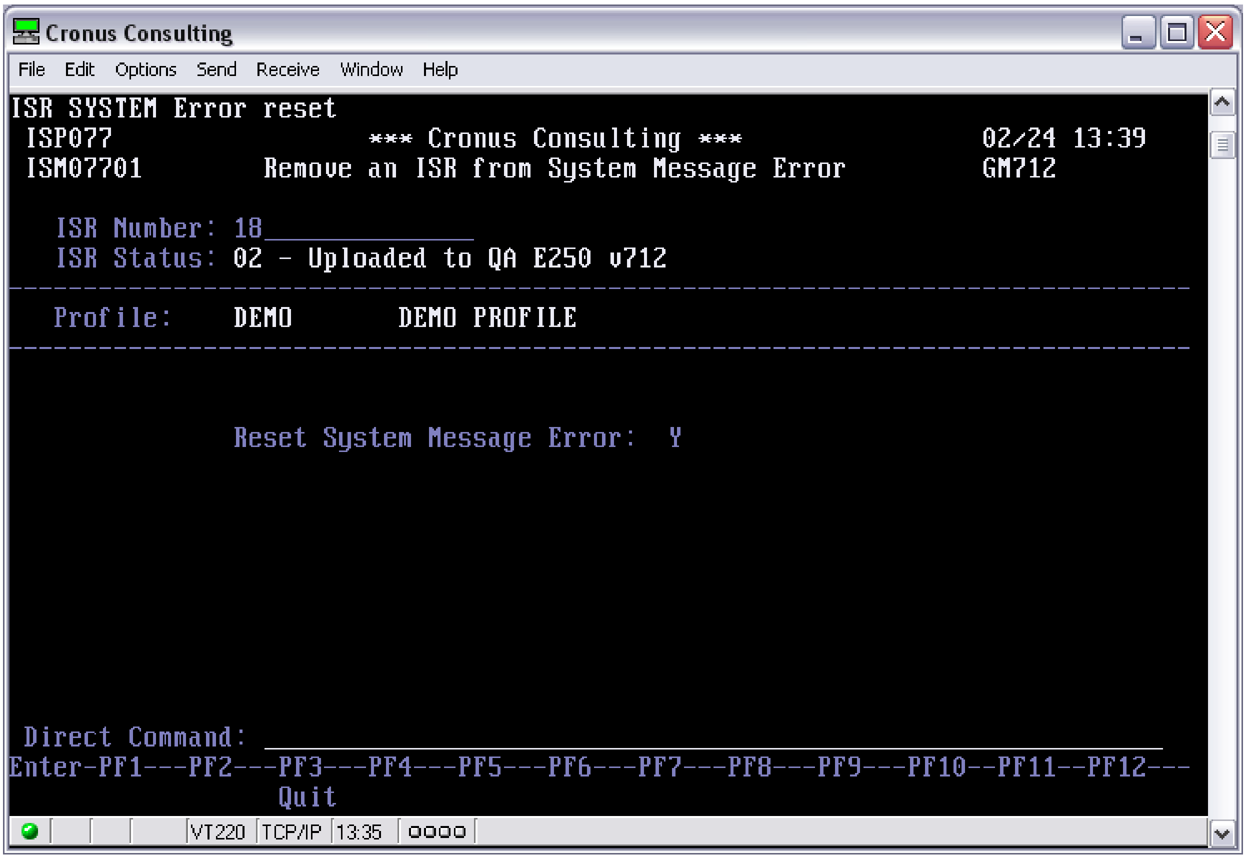
Figure 94: Reset an ISR from SYSOBJ ERROR

If an ISR has been marked for Source Unload and during the migration via CC100, the Unload function did not complete successfully, then the ISR is marked as being in SYSOBJH ERROR. This allows the user to redo the migration by re-running CC100 without the objects being migrated again. This SYSOBJH ERROR indicator allows the re-migration of the ISR until the source unload has completed successfully.

If the User decides that he does not want the source unload to be re-migrated, then this function must be used to RESET the SYSOBJH Error indicator, allowing the user to continue with the migration in CC100 without the unloading of the source.

For security purposes, this ISR will be blocked from any other function until the source has been unloaded successfully or the SYSOBJH Error indicator has been reset.

3.3.6 CC077 – Remove an ISR from System Message Error



```
ISR SYSTEM Error reset
 ISP077                 *** Cronus Consulting ***                02/24 13:39
 ISM07701         Remove an ISR from System Message Error        GM712

   ISR Number: 18______________
   ISR Status: 02 - Uploaded to QA E250 v712
-------------------------------------------------------------------------------
   Profile:    DEMO        DEMO PROFILE
-------------------------------------------------------------------------------


               Reset System Message Error:  Y










 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 95: Reset an ISR from System Message Error

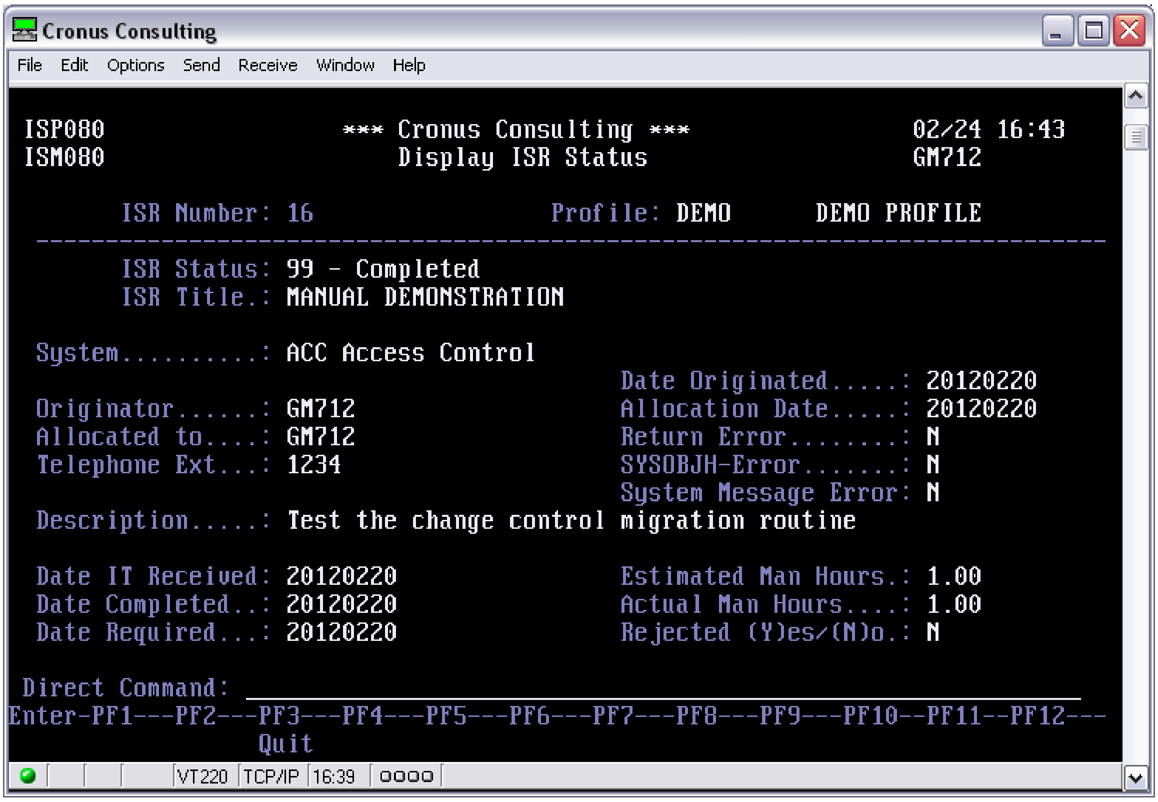
If a range of Error numbers has been linked to an ISR in CC050 for the migration of the SYSERR error messages and during the migration via CC100, the SYSERR transfer function did not complete successfully, then the ISR is marked as being in SYSERR ERROR. This allows the user to redo the migration by re-running CC100 without the objects being migrated again. This SYSERR ERROR indicator allows the re-migration of the ISR until the system error messages have been transferred.

If the User decides that he does not want the system error messages to be re-migrated, then this function must be used to RESET the SYSERR Error indicator, allowing the user to continue with the migration in CC100 without the transferring of these error messages.

For security purposes, this ISR will be blocked from any other function until the System Error Messages have been transferred successfully or the SYSERR Error indicator has been reset.

3.4 Display ISR Information Function Overview

3.4.1 CC080 – Display ISR Status



```
 ISP080                  *** Cronus Consulting ***               02/24 16:43
 ISM080                      Display ISR Status                  GM712

        ISR Number: 16                     Profile: DEMO       DEMO PROFILE
  ------------------------------------------------------------------------------
        ISR Status: 99 - Completed
        ISR Title.: MANUAL DEMONSTRATION

  System..........: ACC Access Control
                                            Date Originated.....: 20120220
  Originator......: GM712                   Allocation Date.....: 20120220
  Allocated to....: GM712                   Return Error........: N
  Telephone Ext...: 1234                    SYSOBJH-Error.......: N
                                            System Message Error: N
  Description.....: Test the change control migration routine

  Date IT Received: 20120220                Estimated Man Hours.: 1.00
  Date Completed..: 20120220                Actual Man Hours....: 1.00
  Date Required...: 20120220                Rejected (Y)es/(N)o.: N

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

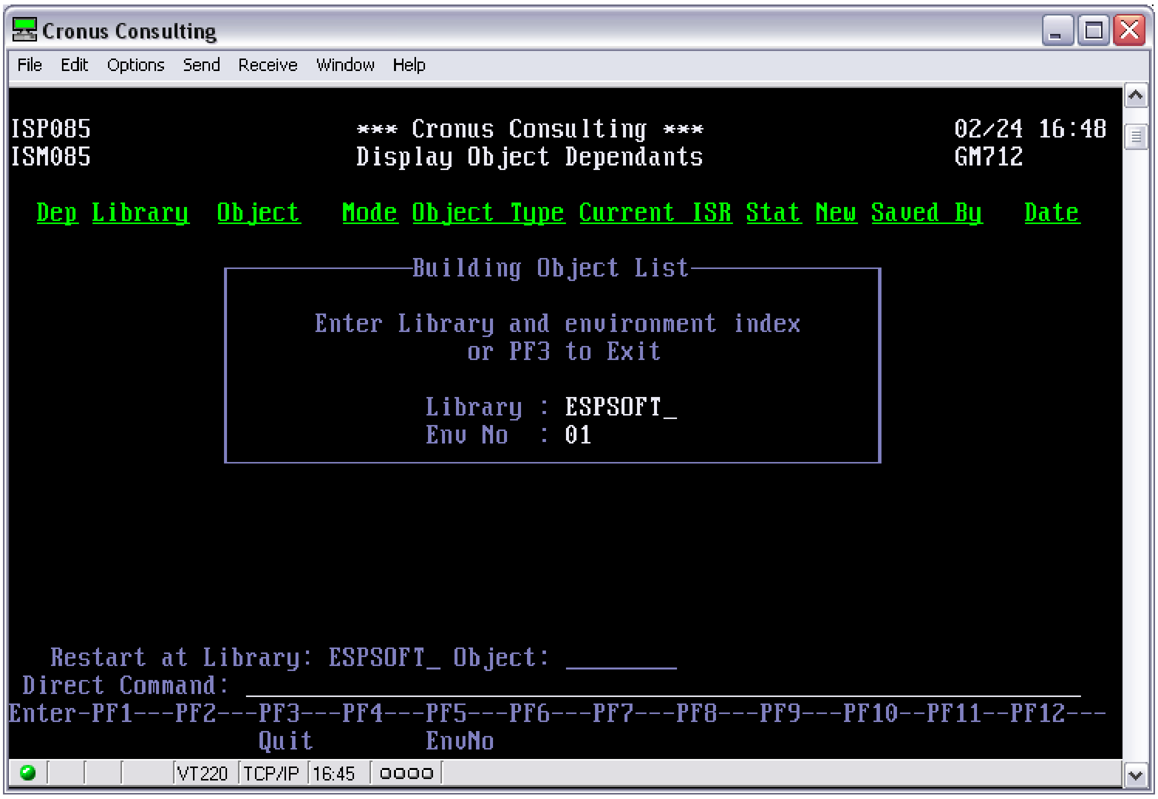
Figure 96: ISR Status Enquiry

The function is used to display general information about the ISR:

- ISR Status - Status of ISR (Internal Status from EspControl)
- ISR Title - Title of ISR as defined on CC030
- System - The system the ISR has been linked to from CC030
- Originator - Person who captured the ISR
- Date Originated - Date Captured
- Allocated to - Team Member that was allocated to the ISR
- Allocation Date - Date allocated for commencement
- Date Received - Date the request was received
- Data Completed - Date it was completed
- Estimated Man Hours Number of estimate hours (as per CC030)
- Actual Man Hours - Actual man hours entered when ISR completed (as per CC070)
- Return Error - Error in Return of Object to Previous Environment
- SYSOBJH Error - Error in Unload of Source during migration
- System Message Error - Error in the transfer of SYSERR error messages

3.4.2 CC085 – Display Object Dependents

The function is used to display the dependants of a selected Object:

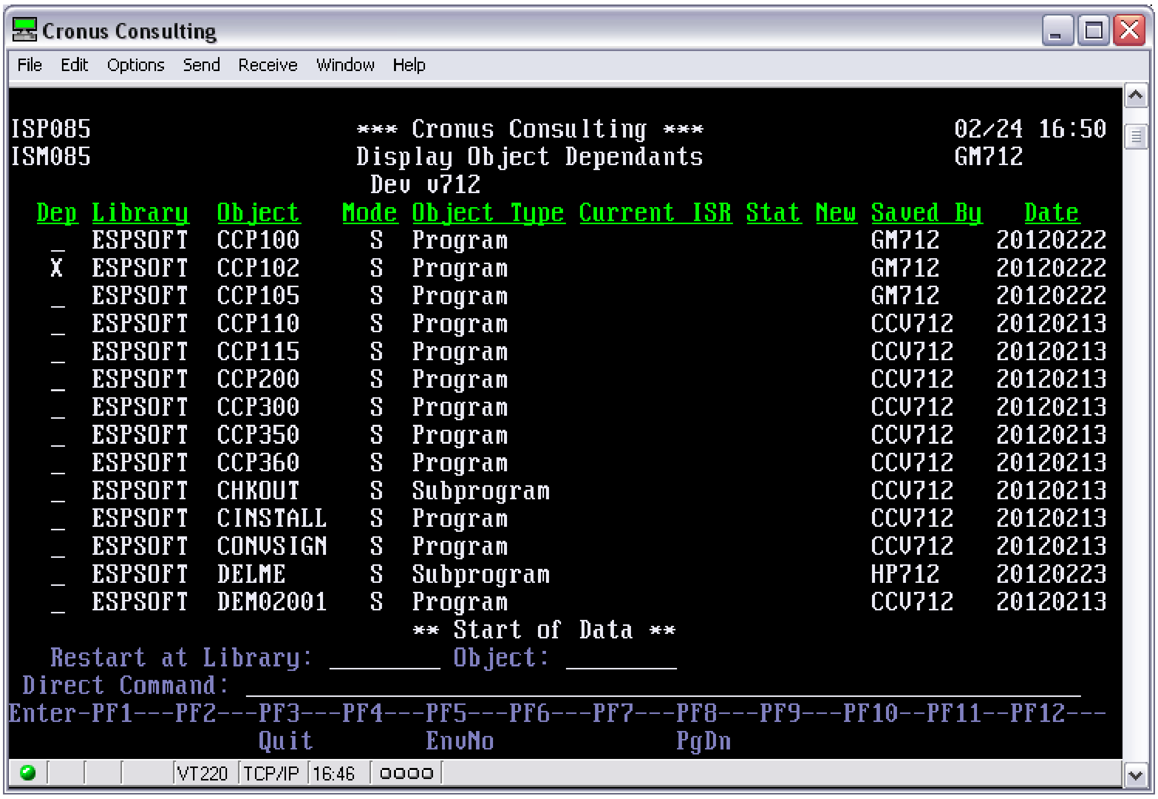


```
ISP085                  *** Cronus Consulting ***                  02/24 16:48
ISM085                  Display Object Dependants                  GM712

  Dep Library  Object   Mode Object Type Current ISR Stat New Saved By   Date
                    -------------Building Object List-------------
                   |                                               |
                   |      Enter Library and environment index      |
                   |                 or PF3 to Exit                |
                   |                                               |
                   |              Library : ESPSOFT_               |
                   |              Env No  : 01                     |
                    -----------------------------------------------






   Restart at Library: ESPSOFT_ Object: ________
  Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        EnvNo
```

Figure 97: Object Dependents Environment Number and Library Input

This function does server validation in the background and if CC001 is populated with more than one Development environment with different fusers on the Local Server, it will first bring up a window (see above screen) for the user to capture the environment number and the library. It will use this environment number to set up the correct fuser which in turn will find all the dependents of the selected object. The library will be validated against the entered environment number. This library and environment number would tie up to the initial scan in CC300 or any new objects scanned in CC050. It will use these entered parameters to determine the Inventory List for that particular environment and only display these objects. PF5 must be used to change the environment number for a new library if required. However, if the background validation determines that CC001 does not have multiple Development environments, this window will be bypassed and the full Inventory List displayed.

A list of objects for the given library (either per environment number or default environment number) is displayed. Select the object required to display Object dependants with an ‘X’. See example screen below. The initial scan library entered in CC001 will be used as default for this enquiry, if no environment number is required as input, and any other library in the Object Inventory may be called up via the Restart Library or PF5 if more than one environment exists.



```
ISP085                    *** Cronus Consulting ***                02/24 16:50
ISM085                    Display Object Dependants                GM712
                           Dev v712
  Dep Library  Object   Mode Object Type Current ISR Stat New Saved By   Date
   _  ESPSOFT  CCP100     S  Program                          GM712     20120222
   X  ESPSOFT  CCP102     S  Program                          GM712     20120222
   _  ESPSOFT  CCP105     S  Program                          GM712     20120222
   _  ESPSOFT  CCP110     S  Program                          CCV712    20120213
   _  ESPSOFT  CCP115     S  Program                          CCV712    20120213
   _  ESPSOFT  CCP200     S  Program                          CCV712    20120213
   _  ESPSOFT  CCP300     S  Program                          CCV712    20120213
   _  ESPSOFT  CCP350     S  Program                          CCV712    20120213
   _  ESPSOFT  CCP360     S  Program                          CCV712    20120213
   _  ESPSOFT  CHKOUT     S  Subprogram                       CCV712    20120213
   _  ESPSOFT  CINSTALL   S  Program                          CCV712    20120213
   _  ESPSOFT  CONVSIGN   S  Program                          CCV712    20120213
   _  ESPSOFT  DELME      S  Subprogram                       HP712     20120223
   _  ESPSOFT  DEMO2001   S  Program                          CCV712    20120213
                             ** Start of Data **
   Restart at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        EnvNo             PgDn
```

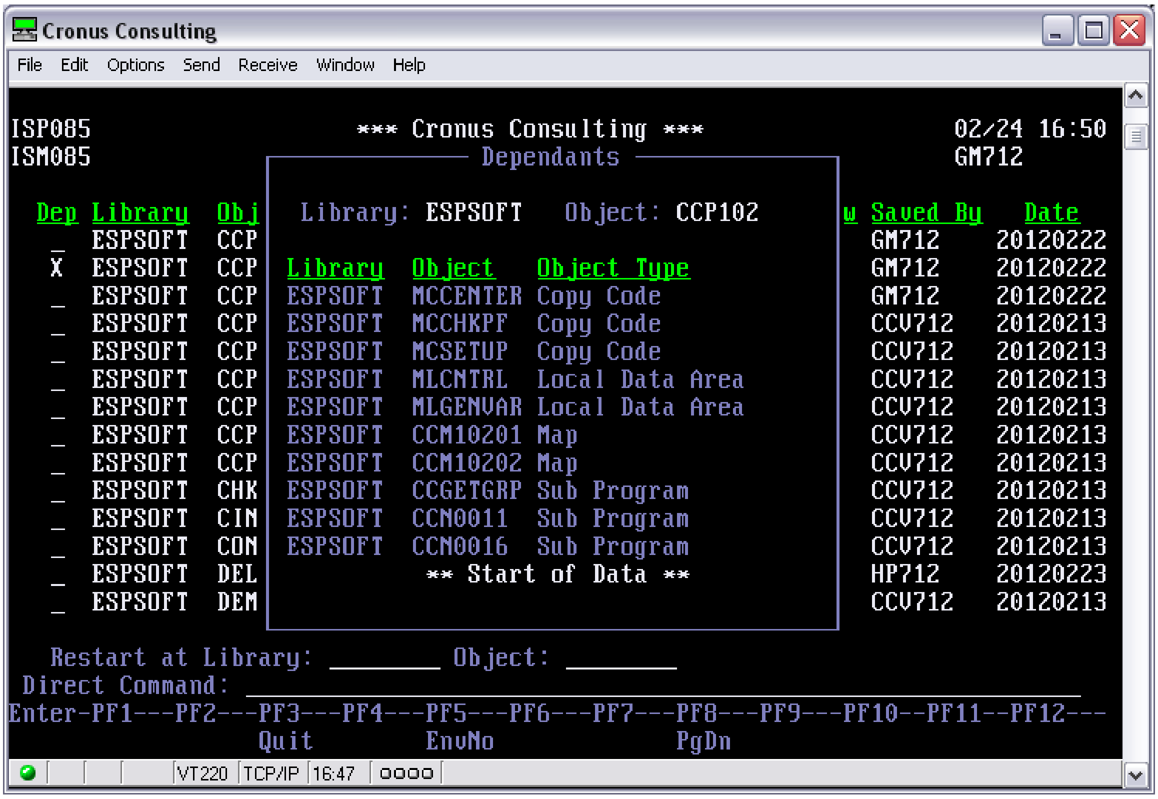
Figure 98: Object Dependents

Information regarding the library and its objects are displayed:

• Library Name	-	Object Library Name (Scanned in Library)
• Object	-	Object Name
• Mode	-	Programming Mode (S/R)
• Object Type	-	Object Type as defined in Natural
• Current ISR	-	ISR number - Blank if not linked
• Object Status	-	Internal EspControl status of object
• Object new indicator	-	New or old indicator (marked with Y for New or left Blank for Old)
• Saved information	-	User that last saved the object
• Date Saved	-	Date last saved

Select Objects with ‘X’

A list of the dependants found for the object is displayed detailing the **Object Name** and **Object Type.**



```
ISP085                    *** Cronus Consulting ***                 02/24 16:50
ISM085                 ---------- Dependants ----------             GM712

  Dep Library  Obj |  Library: ESPSOFT   Object: CCP102       |w Saved By   Date
   _  ESPSOFT  CCP |                                          |  GM712    20120222
   X  ESPSOFT  CCP | Library  Object   Object Type            |  GM712    20120222
   _  ESPSOFT  CCP | ESPSOFT  MCCENTER Copy Code              |  GM712    20120222
   _  ESPSOFT  CCP | ESPSOFT  MCCHKPF  Copy Code              |  CCV712   20120213
   _  ESPSOFT  CCP | ESPSOFT  MCSETUP  Copy Code              |  CCV712   20120213
   _  ESPSOFT  CCP | ESPSOFT  MLCNTRL  Local Data Area        |  CCV712   20120213
   _  ESPSOFT  CCP | ESPSOFT  MLGENVAR Local Data Area        |  CCV712   20120213
   _  ESPSOFT  CCP | ESPSOFT  CCM10201 Map                    |  CCV712   20120213
   _  ESPSOFT  CCP | ESPSOFT  CCM10202 Map                    |  CCV712   20120213
   _  ESPSOFT  CHK | ESPSOFT  CCGETGRP Sub Program            |  CCV712   20120213
   _  ESPSOFT  CIN | ESPSOFT  CCN0011  Sub Program            |  CCV712   20120213
   _  ESPSOFT  CON | ESPSOFT  CCN0016  Sub Program            |  CCV712   20120213
   _  ESPSOFT  DEL |          ** Start of Data **             |  HP712    20120223
   _  ESPSOFT  DEM |                                          |  CCV712   20120213

   Restart at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        EnvNo             PgDn
```

Figure 99: Dependents Displayed for Selected Object

The object dependants detail:

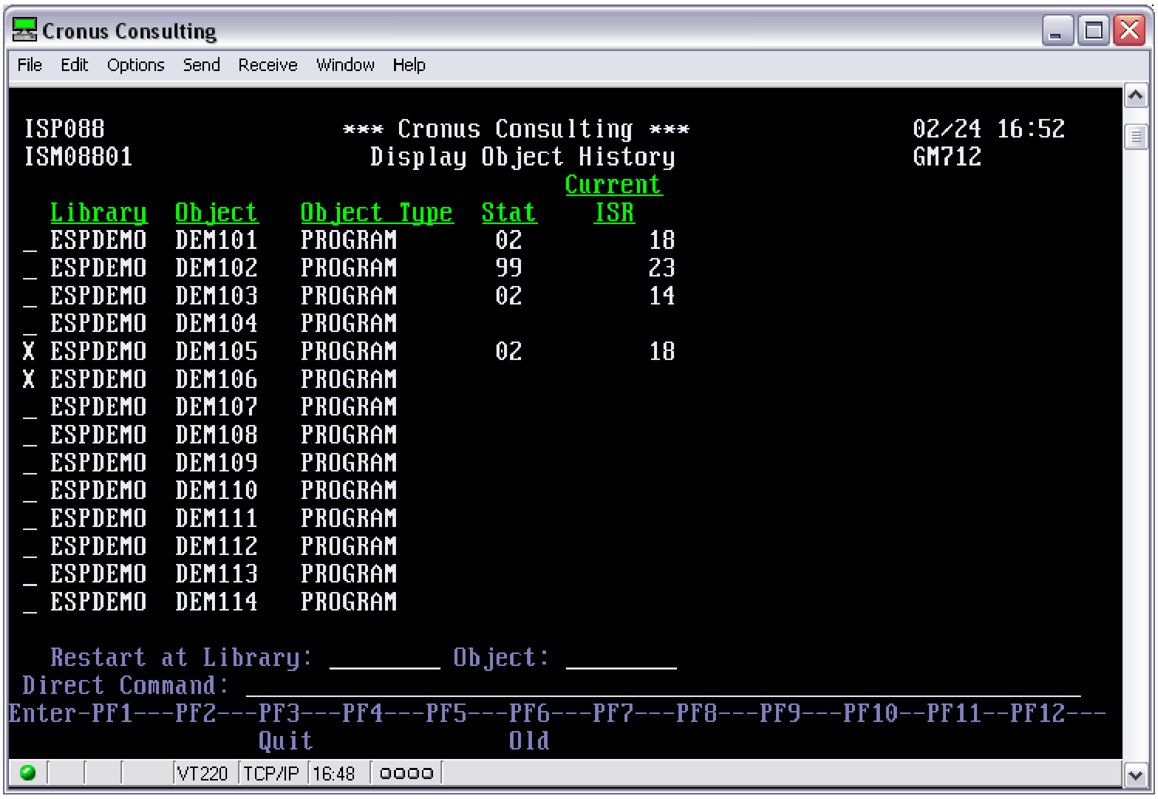
- Library Name - Library Name of Object
- Object Name - Object Name
- Object Type - Description of object type

Only 10 objects are displayed per page – use **PF8** to page forward and **PF7** to page back.

NOTE : This option will not give the correct results if the code has been “moved” from or only “object code” exists in the scanned environment, it will only reflect objects where source is currently residing in the Development Areas, as this option reads through the actual code that exists in the fuser.

3.4.3 CC088 – Display Object History

This function is used to display the History of objects during any ISR that the object has been linked too, whether successful or not. A list of all objects in the Object Inventory (scanned objects) will be displayed, and the user can choose as many objects, by marking with an 'X', as he likes. This will in turn display all the history pertaining to this object.

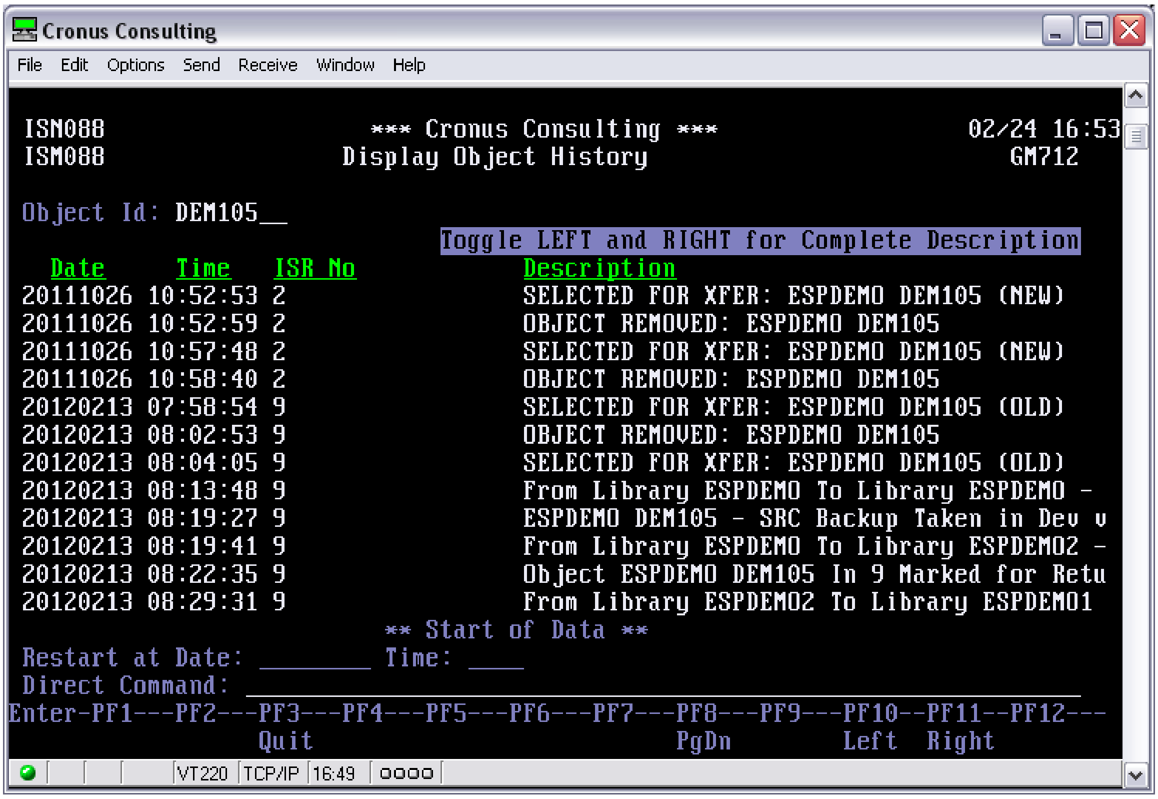


```
 ISP088                *** Cronus Consulting ***                    02/24 16:52
 ISM08801                Display Object History                     GM712
                                           Current
   Library  Object   Object Type  Stat    ISR
 _ ESPDEMO  DEM101   PROGRAM       02          18
 _ ESPDEMO  DEM102   PROGRAM       99          23
 _ ESPDEMO  DEM103   PROGRAM       02          14
 _ ESPDEMO  DEM104   PROGRAM
 X ESPDEMO  DEM105   PROGRAM       02          18
 X ESPDEMO  DEM106   PROGRAM
 _ ESPDEMO  DEM107   PROGRAM
 _ ESPDEMO  DEM108   PROGRAM
 _ ESPDEMO  DEM109   PROGRAM
 _ ESPDEMO  DEM110   PROGRAM
 _ ESPDEMO  DEM111   PROGRAM
 _ ESPDEMO  DEM112   PROGRAM
 _ ESPDEMO  DEM113   PROGRAM
 _ ESPDEMO  DEM114   PROGRAM

   Restart at Library: ________  Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit              Old
```

Figure 100: Object List for History Selection

The information displayed includes:

'X' (to select)	-	Selected Object(s) to be for History Display
Library Name	-	Library Name of Object
Object Name	-	Object Name
Object Type	-	Object Type
Object Status	-	Object internal EspControl status, which equals the status of the selected profile's environment where the object has currently been migrated to. 99 means complete
Current ISR Number	-	Linked ISR number (if still linked to an ISR)



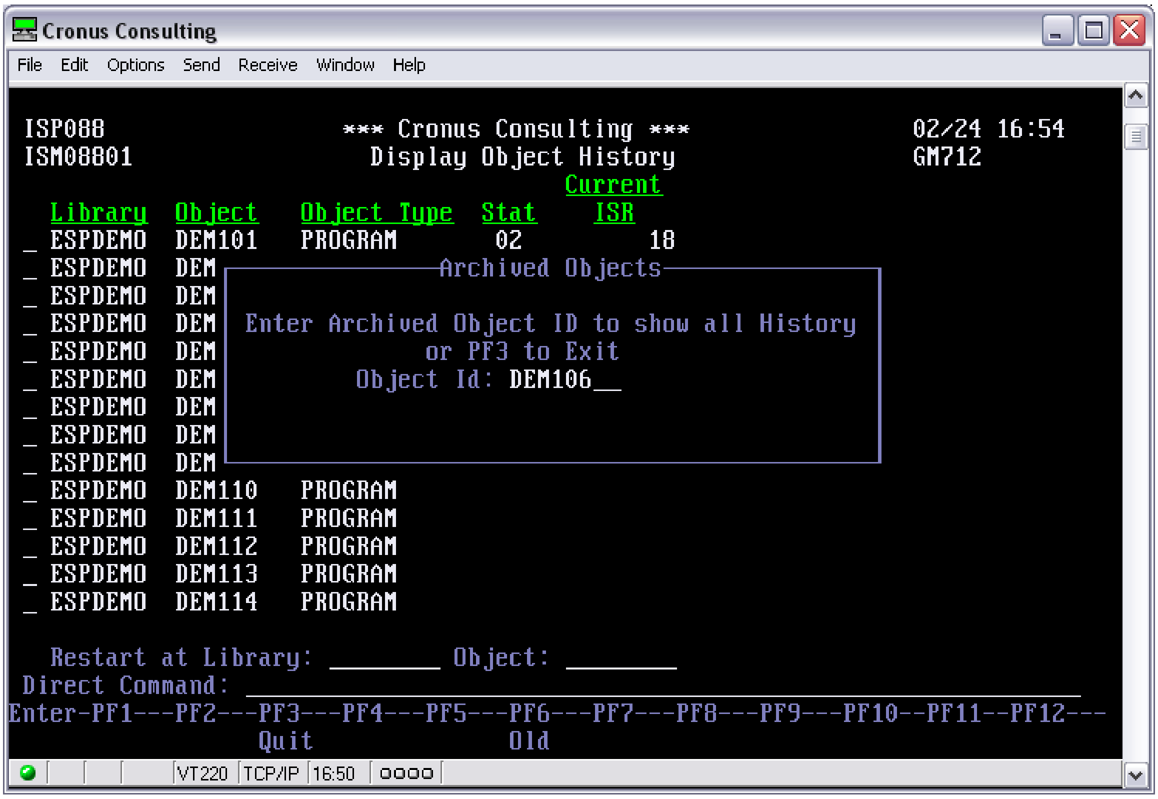
```
ISN088                  *** Cronus Consulting ***               02/24 16:53
ISM088                    Display Object History                     GM712

Object Id: DEM105__
                              Toggle LEFT and RIGHT for Complete Description
  Date      Time     ISR No             Description
20111026 10:52:53 2                     SELECTED FOR XFER: ESPDEMO DEM105 (NEW)
20111026 10:52:59 2                     OBJECT REMOVED: ESPDEMO DEM105
20111026 10:57:48 2                     SELECTED FOR XFER: ESPDEMO DEM105 (NEW)
20111026 10:58:40 2                     OBJECT REMOVED: ESPDEMO DEM105
20120213 07:58:54 9                     SELECTED FOR XFER: ESPDEMO DEM105 (OLD)
20120213 08:02:53 9                     OBJECT REMOVED: ESPDEMO DEM105
20120213 08:04:05 9                     SELECTED FOR XFER: ESPDEMO DEM105 (OLD)
20120213 08:13:48 9                     From Library ESPDEMO To Library ESPDEMO -
20120213 08:19:27 9                     ESPDEMO DEM105 - SRC Backup Taken in Dev v
20120213 08:19:41 9                     From Library ESPDEMO To Library ESPDEMO2 -
20120213 08:22:35 9                     Object ESPDEMO DEM105 In 9 Marked for Retu
20120213 08:29:31 9                     From Library ESPDEMO2 To Library ESPDEMO1
                          ** Start of Data **
Restart at Date: ________ Time: ____
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn        Left  Right
```

Figure 101: ISR History per Object chosen

The above screen is the result of marking ‘X’ in the selection field and displays all History information (as in CC095 when an ISR is selected), per ISR. This window, by using PF8 to page down and PF7 to page up, will reflect **ALL** ISR’s that the selected object was linked to and all the relevant information pertaining to that object in that ISR.

Use PF11 to scroll to the right and PF10 and scroll to the left to see more information per screen.

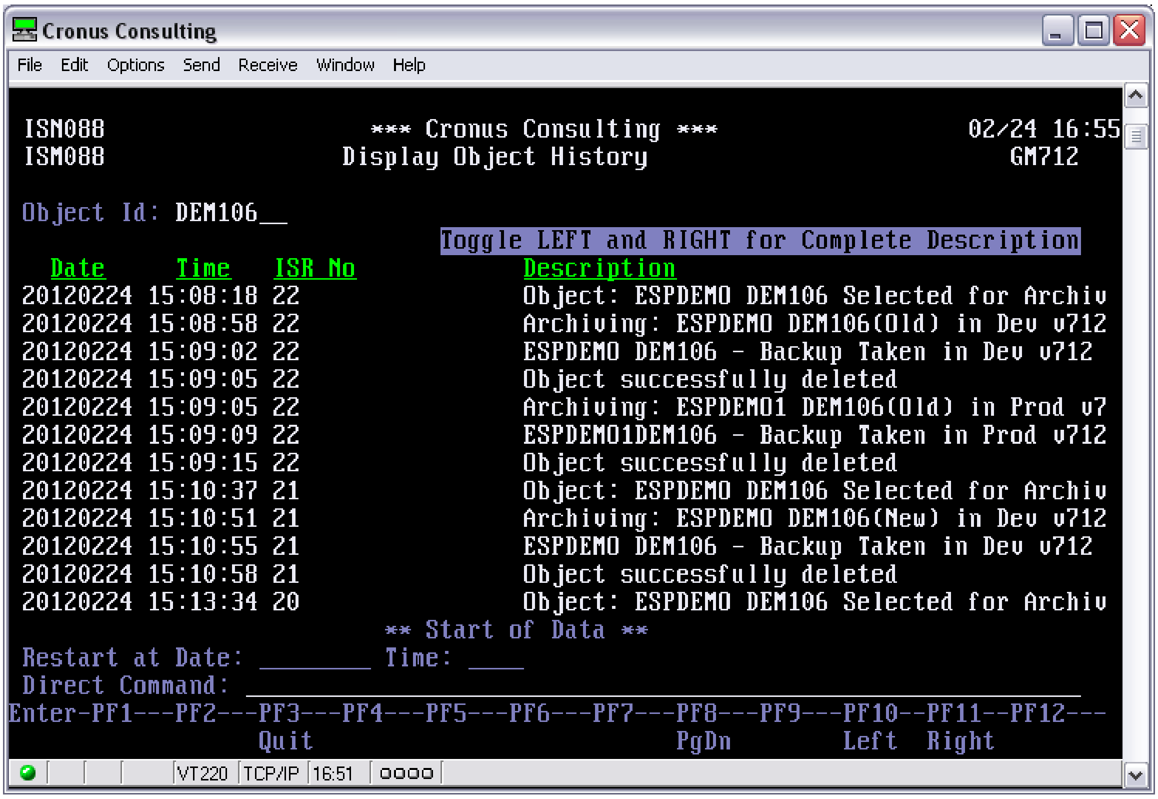
Display History for Archive Objects



```
ISP088                    *** Cronus Consulting ***                 02/24 16:54
ISM08801                    Display Object History                  GM712
                                         Current
  Library  Object  Object Type  Stat    ISR
_ ESPDEMO  DEM101  PROGRAM       02         18
_ ESPDEMO  DEM ----------------Archived Objects-----------------
_ ESPDEMO  DEM |                                               |
_ ESPDEMO  DEM | Enter Archived Object ID to show all History   |
_ ESPDEMO  DEM |              or PF3 to Exit                   |
_ ESPDEMO  DEM |           Object Id: DEM106__                 |
_ ESPDEMO  DEM |                                               |
_ ESPDEMO  DEM |                                               |
_ ESPDEMO  DEM -------------------------------------------------
_ ESPDEMO  DEM110  PROGRAM
_ ESPDEMO  DEM111  PROGRAM
_ ESPDEMO  DEM112  PROGRAM
_ ESPDEMO  DEM113  PROGRAM
_ ESPDEMO  DEM114  PROGRAM

  Restart at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit              Old
```

Figure 102: History for Archived Objects

If the user requires information regarding an archived object, press **PF6** for a manual input of this object name. This will then in turn display all the ISR history as reflected in the figure 103 below for the selected objects.



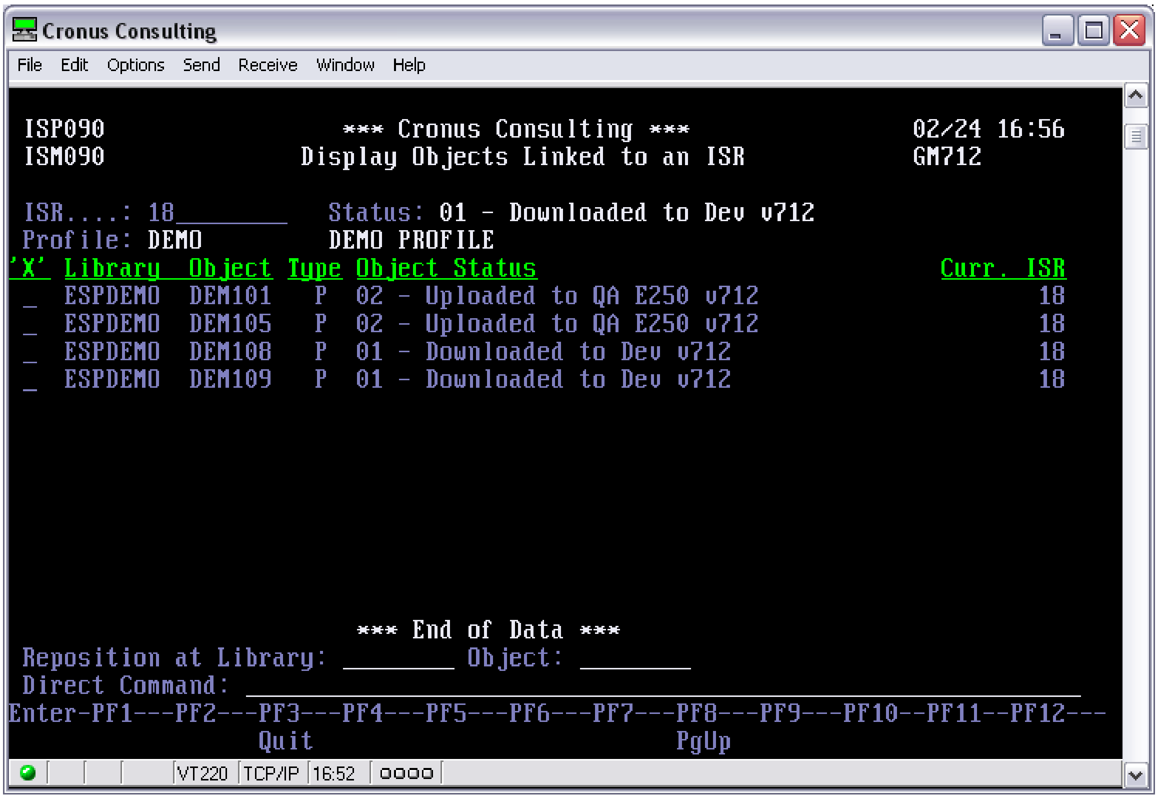
```
ISN088                    *** Cronus Consulting ***                  02/24 16:55
ISM088                     Display Object History                        GM712

Object Id: DEM106__
                               Toggle LEFT and RIGHT for Complete Description
  Date      Time    ISR No                 Description
20120224 15:08:18 22                       Object: ESPDEMO DEM106 Selected for Archiv
20120224 15:08:58 22                       Archiving: ESPDEMO DEM106(Old) in Dev v712
20120224 15:09:02 22                       ESPDEMO DEM106 - Backup Taken in Dev v712
20120224 15:09:05 22                       Object successfully deleted
20120224 15:09:05 22                       Archiving: ESPDEMO1 DEM106(Old) in Prod v7
20120224 15:09:09 22                       ESPDEMO1DEM106 - Backup Taken in Prod v712
20120224 15:09:15 22                       Object successfully deleted
20120224 15:10:37 21                       Object: ESPDEMO DEM106 Selected for Archiv
20120224 15:10:51 21                       Archiving: ESPDEMO DEM106(New) in Dev v712
20120224 15:10:55 21                       ESPDEMO DEM106 - Backup Taken in Dev v712
20120224 15:10:58 21                       Object successfully deleted
20120224 15:13:34 20                       Object: ESPDEMO DEM106 Selected for Archiv
                           ** Start of Data **
Restart at Date: ________ Time: ____
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn        Left  Right
```

Figure 103: Actual History Enquiry for Archived Objects

The above enquiry will show the user what happened to the object, as all archived objects will not appear on the actual inventory list. This history enquiry will provide the details of a backup if taken, and this backup could be restored via SYSMAIN for example, if necessary. A restore utility for these archived objects does not exist in EspControl as the object no longer appears in the Inventory List (CC050).

3.4.4 CC090 – Display Objects Linked to an ISR

This function is used to display the status of the ISR and all the objects linked to the ISR during the change request. Once an ISR has been completed the objects will still be displayed, however the Current ISR column will either be blank or contain the ISR No to which the object is now currently linked.

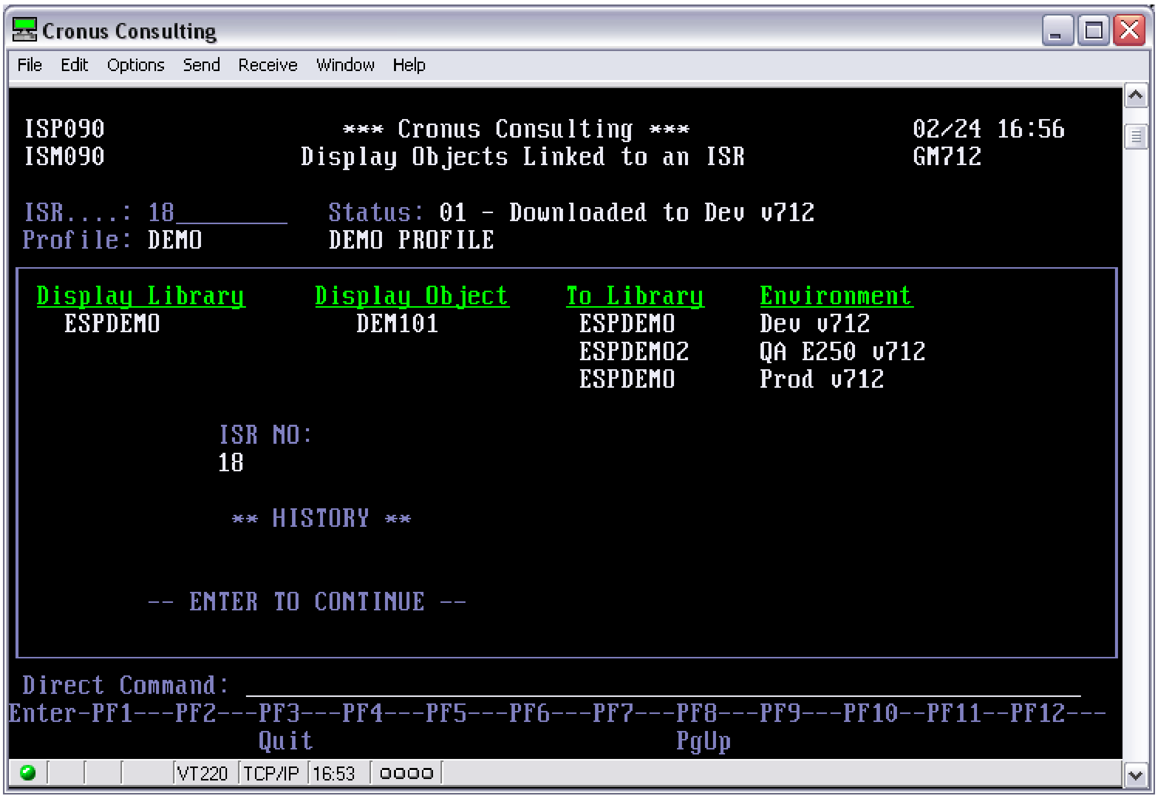


```
 ISP090                  *** Cronus Consulting ***              02/24 16:56
 ISM090               Display Objects Linked to an ISR          GM712

 ISR....: 18________      Status: 01 - Downloaded to Dev v712
 Profile: DEMO            DEMO PROFILE
'X' Library  Object  Type Object Status                            Curr. ISR
 _  ESPDEMO  DEM101   P   02 - Uploaded to QA E250 v712                  18
 _  ESPDEMO  DEM105   P   02 - Uploaded to QA E250 v712                  18
 _  ESPDEMO  DEM108   P   01 - Downloaded to Dev v712                    18
 _  ESPDEMO  DEM109   P   01 - Downloaded to Dev v712                    18




                        *** End of Data ***
 Reposition at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                        PgUp
```

Figure 104: Objects linked per ISR

The information displayed includes:

• ‘X’ (to select)	-	Reflects the Environment and Libraries used for the selected Object during the cycle of the ISR
• Library Name	-	Library Name of Object
• Object Name	-	Object Name
• Object Type	-	Object Type
• Object Status	-	Object internal EspControl status, which equals the status of the selected profile’s environment where the object has currently been migrated to. 99 means complete
• Current ISR Number	-	Linked ISR number (if still linked to an ISR)



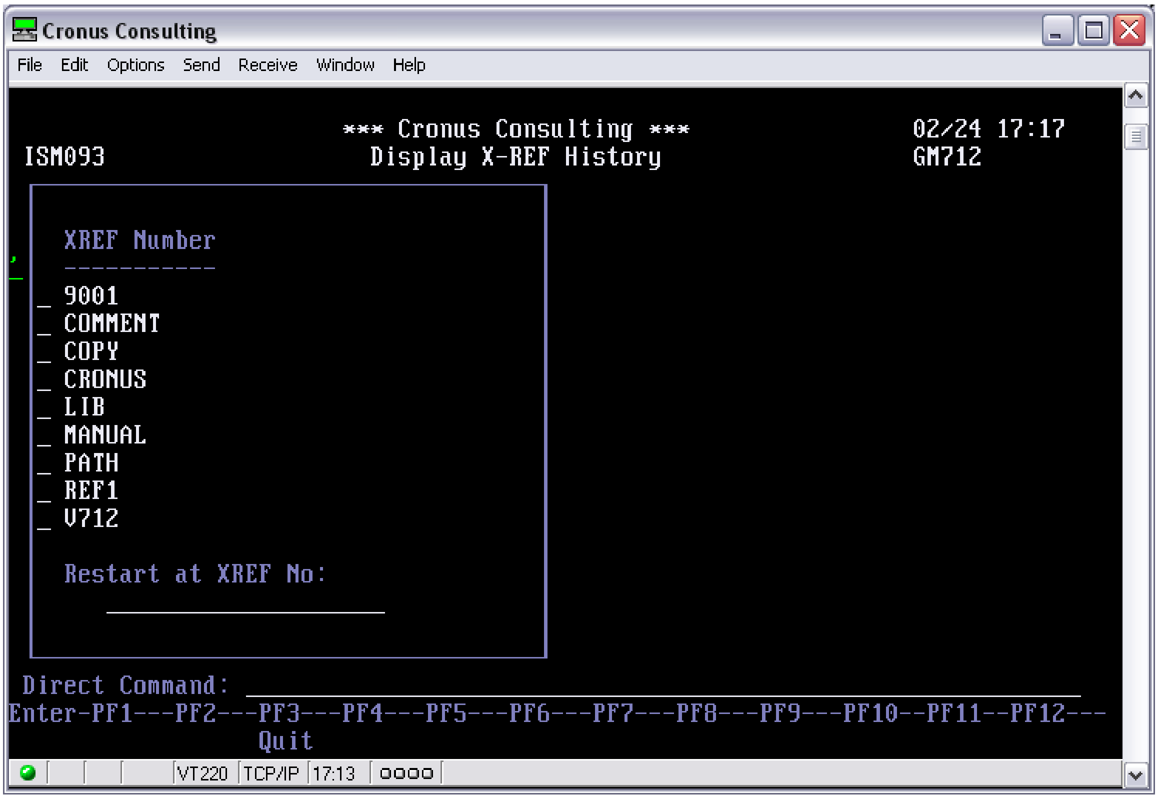
```
ISP090                   *** Cronus Consulting ***                 02/24 16:56
ISM090                Display Objects Linked to an ISR              GM712

ISR....: 18________     Status: 01 - Downloaded to Dev v712
Profile: DEMO           DEMO PROFILE

  Display Library     Display Object     To Library     Environment
    ESPDEMO              DEM101             ESPDEMO        Dev v712
                                            ESPDEMO2       QA E250 v712
                                            ESPDEMO        Prod v712

                   ISR NO:
                   18

                    ** HISTORY **


             -- ENTER TO CONTINUE --

Direct Command: ________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgUp
```

Figure 105: Reflects Libraries per Environment of Selected Object

The above screen is the result of marking ‘X’ in the selection field next to the object name and will show the migration path and the libraries used in each environment. This function will show the history of the library and environment movement, even if the profile has since changed for new ISR’s.

3.4.5 CC093 – Display X-REF History

This function is used to display the History of all ISR's that have been linked to a specific X-REF Number. This X-REF Number should be used by clients who want to link their internal project control to an ISR No and migration process. This number will be used in auditing purposes to call up all ISR's that have been linked to a particular X-REF. An X-REF Number may have more than one linked ISR, but an ISR will only have one X-REF number. A list of all X-REF numbers used in migrations will be displayed, if function entered without an X-REF number, and the user may select the particular X-REF that he is interested in. This will in turn display all ISR numbers linked to this X-REF and then the history pertaining to each selected ISR, once selected by the user.



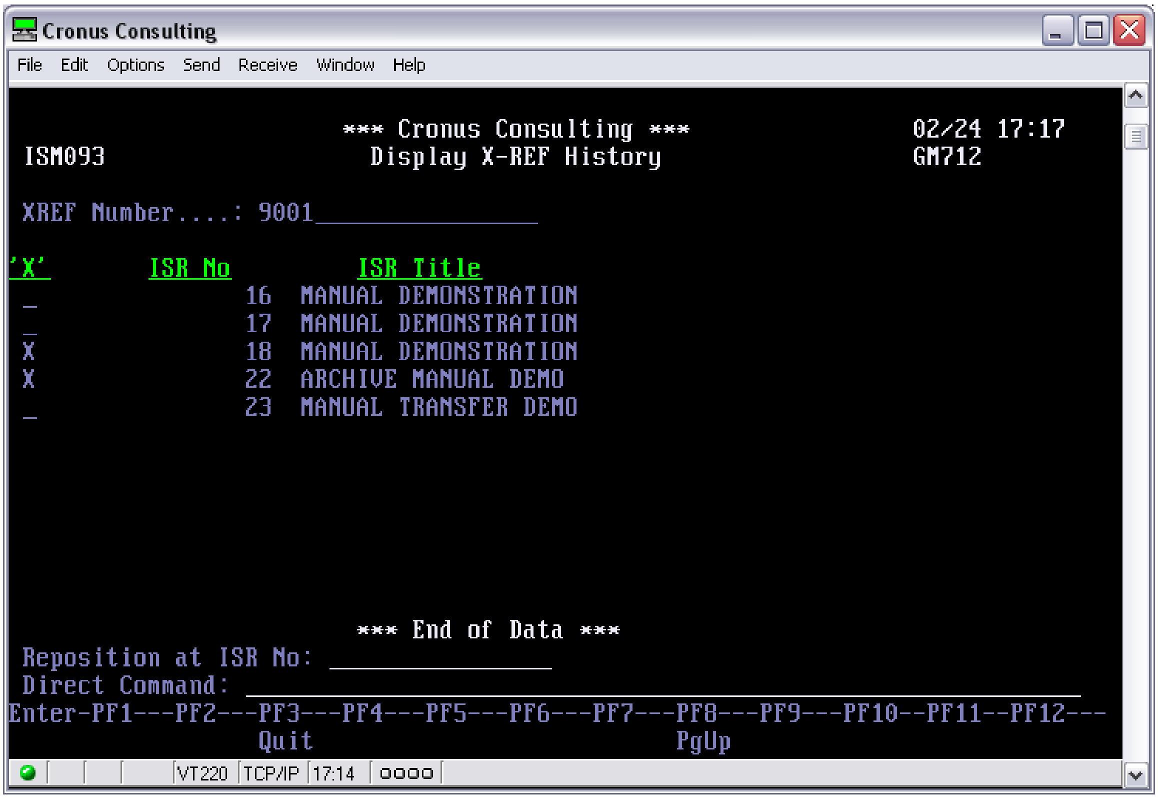
```
                         *** Cronus Consulting ***                  02/24 17:17
ISM093                     Display X-REF History                    GM712

   XREF Number
   -----------
 _ 9001
 _ COMMENT
 _ COPY
 _ CRONUS
 _ LIB
 _ MANUAL
 _ PATH
 _ REF1
 _ V712

   Restart at XREF No:
      ____________________

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 106: Help on X-REF numbers when entering in CC093

Select the X-ref number required, by positioning the cursor on the relevant X-Ref number. This will return the X-Ref number to the initial screen. Hit enter for the following window (on the next page) to be displayed, which displays all linked ISR's to the entered XREF. Use PF8 to page up and PF7 to page down. Note – refer to the manual for user exit ISNUX030 where site validation may be done on this XREF number.

The information displayed includes:

'X' (to select)	-	Selected ISR(s) for History Display
ISR No	-	Linked ISR No
ISR Title	-	The title associated with the ISR set up in CC030

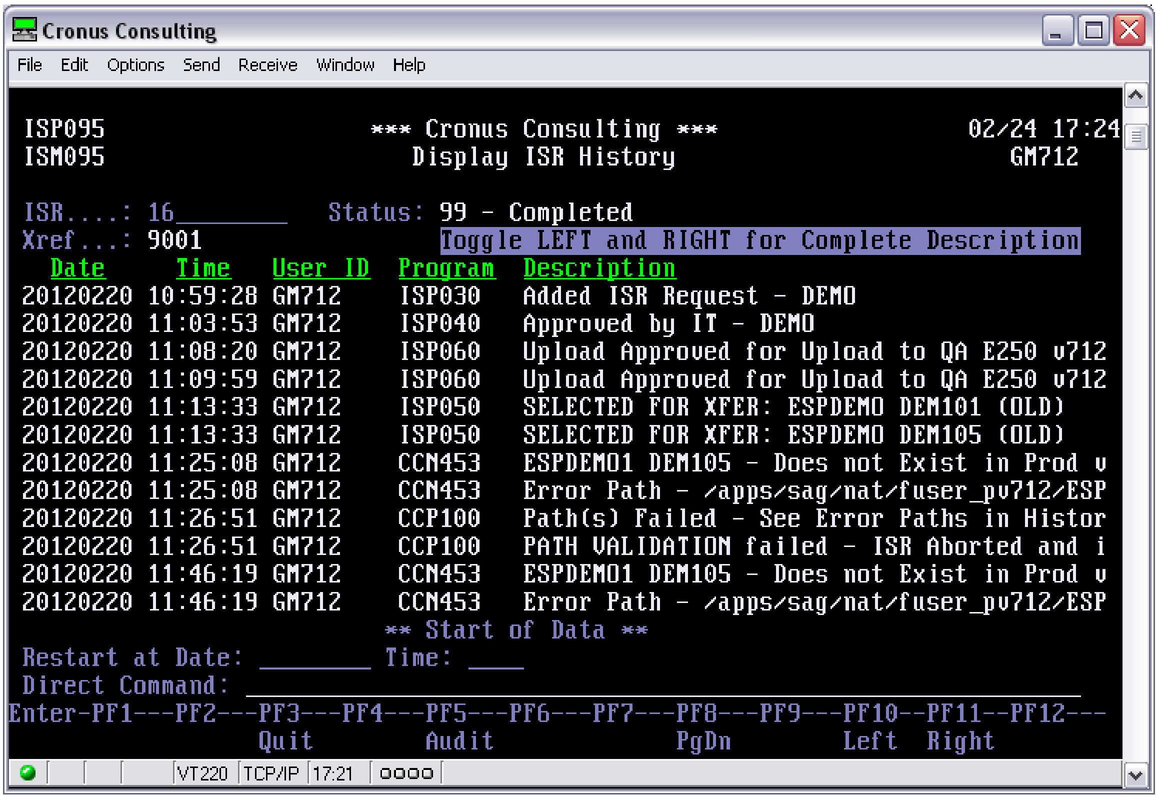


```
                         *** Cronus Consulting ***                  02/24 17:17
 ISM093                   Display X-REF History                     GM712

 XREF Number....: 9001________________

'X'       ISR No         ISR Title
 _                 16  MANUAL DEMONSTRATION
 _                 17  MANUAL DEMONSTRATION
 X                 18  MANUAL DEMONSTRATION
 X                 22  ARCHIVE MANUAL DEMO
 _                 23  MANUAL TRANSFER DEMO



                          *** End of Data ***
 Reposition at ISR No: ________________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgUp
```

Figure 107: Display X-REF History per ISR

On selection of as many ISR’s as required, the function will in turn for each selected ISR, reflect the History screen. PF3 to exit each History screen to see the next selected ISR. On PF3 of the last selected ISR, the user will be returned to the X-Ref Display main window.

Select as many History ISR's as required and the history of each of these will be displayed in turn.

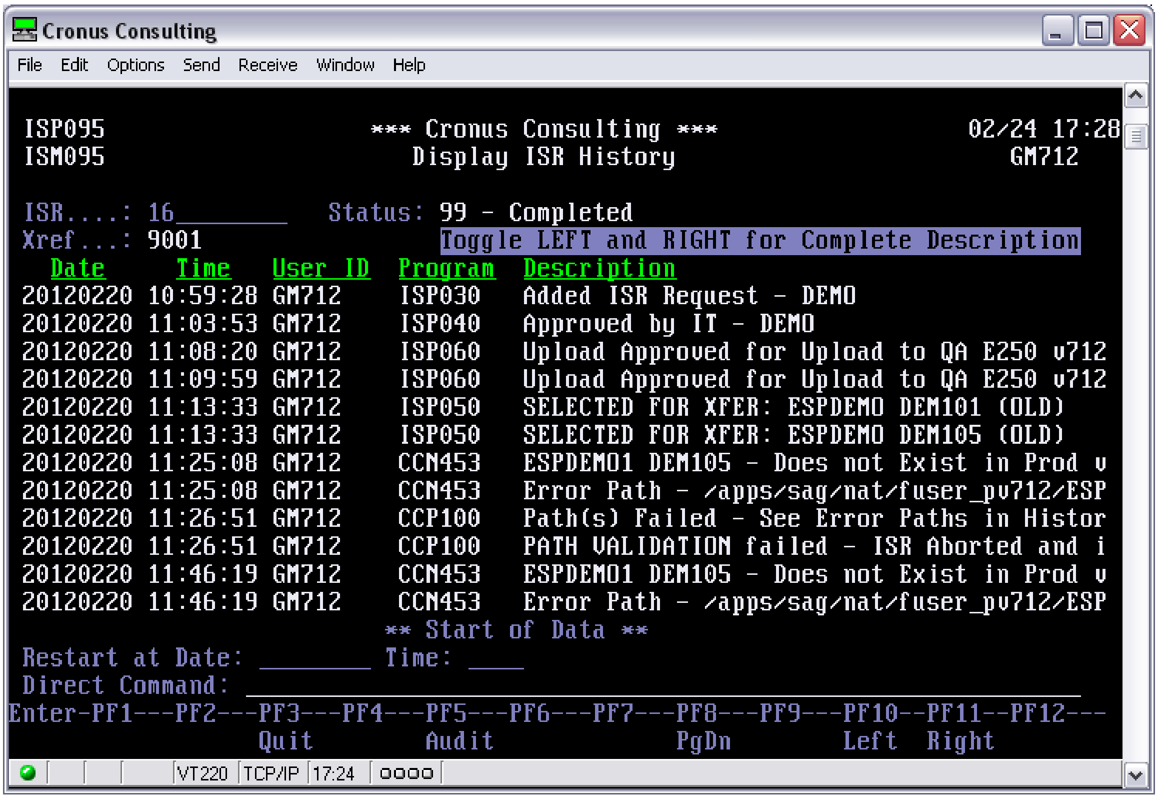


```
ISP095                        *** Cronus Consulting ***                02/24 17:24
ISM095                           Display ISR History                      GM712

ISR....: 16________      Status: 99 - Completed
Xref...: 9001                    Toggle LEFT and RIGHT for Complete Description
  Date      Time   User ID   Program   Description
20120220 10:59:28 GM712     ISP030    Added ISR Request - DEMO
20120220 11:03:53 GM712     ISP040    Approved by IT - DEMO
20120220 11:08:20 GM712     ISP060    Upload Approved for Upload to QA E250 v712
20120220 11:09:59 GM712     ISP060    Upload Approved for Upload to QA E250 v712
20120220 11:13:33 GM712     ISP050    SELECTED FOR XFER: ESPDEMO DEM101 (OLD)
20120220 11:13:33 GM712     ISP050    SELECTED FOR XFER: ESPDEMO DEM105 (OLD)
20120220 11:25:08 GM712     CCN453    ESPDEMO1 DEM105 - Does not Exist in Prod v
20120220 11:25:08 GM712     CCN453    Error Path - /apps/sag/nat/fuser_pv712/ESP
20120220 11:26:51 GM712     CCP100    Path(s) Failed - See Error Paths in Histor
20120220 11:26:51 GM712     CCP100    PATH VALIDATION failed - ISR Aborted and i
20120220 11:46:19 GM712     CCN453    ESPDEMO1 DEM105 - Does not Exist in Prod v
20120220 11:46:19 GM712     CCN453    Error Path - /apps/sag/nat/fuser_pv712/ESP
                           ** Start of Data **
Restart at Date: ________ Time: ____
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        Audit             PgDn        Left  Right
```

Figure 108: Display ISR History for selected XREF

3.4.6 CC095 – Display ISR History

This function provides an audit trail of the ISR's progress with date's, time's and descriptions of the various actions performed during the selection, migration, backup or restore of any particular ISR.



```
 ISP095                    *** Cronus Consulting ***               02/24 17:28
 ISM095                       Display ISR History                      GM712

 ISR....: 16________     Status: 99 - Completed
 Xref...: 9001                   Toggle LEFT and RIGHT for Complete Description
   Date     Time    User ID   Program   Description
 20120220 10:59:28 GM712     ISP030    Added ISR Request - DEMO
 20120220 11:03:53 GM712     ISP040    Approved by IT - DEMO
 20120220 11:08:20 GM712     ISP060    Upload Approved for Upload to QA E250 v712
 20120220 11:09:59 GM712     ISP060    Upload Approved for Upload to QA E250 v712
 20120220 11:13:33 GM712     ISP050    SELECTED FOR XFER: ESPDEMO DEM101 (OLD)
 20120220 11:13:33 GM712     ISP050    SELECTED FOR XFER: ESPDEMO DEM105 (OLD)
 20120220 11:25:08 GM712     CCN453    ESPDEMO1 DEM105 - Does not Exist in Prod v
 20120220 11:25:08 GM712     CCN453    Error Path - /apps/sag/nat/fuser_pv712/ESP
 20120220 11:26:51 GM712     CCP100    Path(s) Failed - See Error Paths in Histor
 20120220 11:26:51 GM712     CCP100    PATH VALIDATION failed - ISR Aborted and i
 20120220 11:46:19 GM712     CCN453    ESPDEMO1 DEM105 - Does not Exist in Prod v
 20120220 11:46:19 GM712     CCN453    Error Path - /apps/sag/nat/fuser_pv712/ESP
                                  ** Start of Data **
 Restart at Date: ________ Time: ____
 Direct Command: ______________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        Audit             PgDn        Left  Right
```

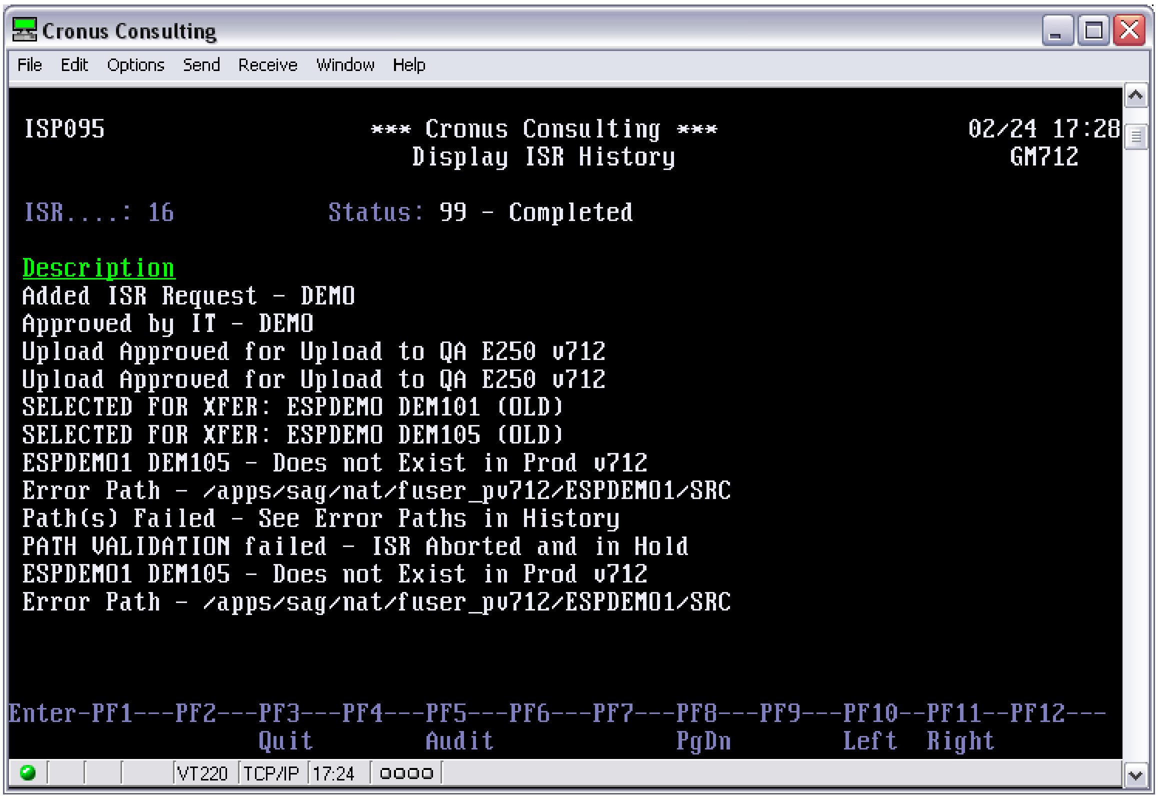
Figure 109: ISR History Enquiry

The information displayed includes:

• Date	-	Date transferred
• Time	-	Time of transfer
• User Id	-	User that executed the transfer
• Program	-	EspControl Program executed (function)
• Description :	-	Description of the actual event, including environments, paths, library and object names
• XREF Number	-	The XREF number captured per ISR in CC030 if Applicable
• PF5	-	Audit Facility (see explanation below)

The description is more than one screen in width. Use **PF11** to toggle to the Right to see more information and **PF10** to return to the left again.

Right hand side of the History Display screen



```
ISP095                    *** Cronus Consulting ***                    02/24 17:28
                               Display ISR History                        GM712

ISR....: 16            Status: 99 - Completed

Description
Added ISR Request - DEMO
Approved by IT - DEMO
Upload Approved for Upload to QA E250 v712
Upload Approved for Upload to QA E250 v712
SELECTED FOR XFER: ESPDEMO DEM101 (OLD)
SELECTED FOR XFER: ESPDEMO DEM105 (OLD)
ESPDEMO1 DEM105 - Does not Exist in Prod v712
Error Path - /apps/sag/nat/fuser_pv712/ESPDEMO1/SRC
Path(s) Failed - See Error Paths in History
PATH VALIDATION failed - ISR Aborted and in Hold
ESPDEMO1 DEM105 - Does not Exist in Prod v712
Error Path - /apps/sag/nat/fuser_pv712/ESPDEMO1/SRC


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        Audit             PgDn        Left  Right
```

Figure 110: ISR History Enquiry – PF11 to the right

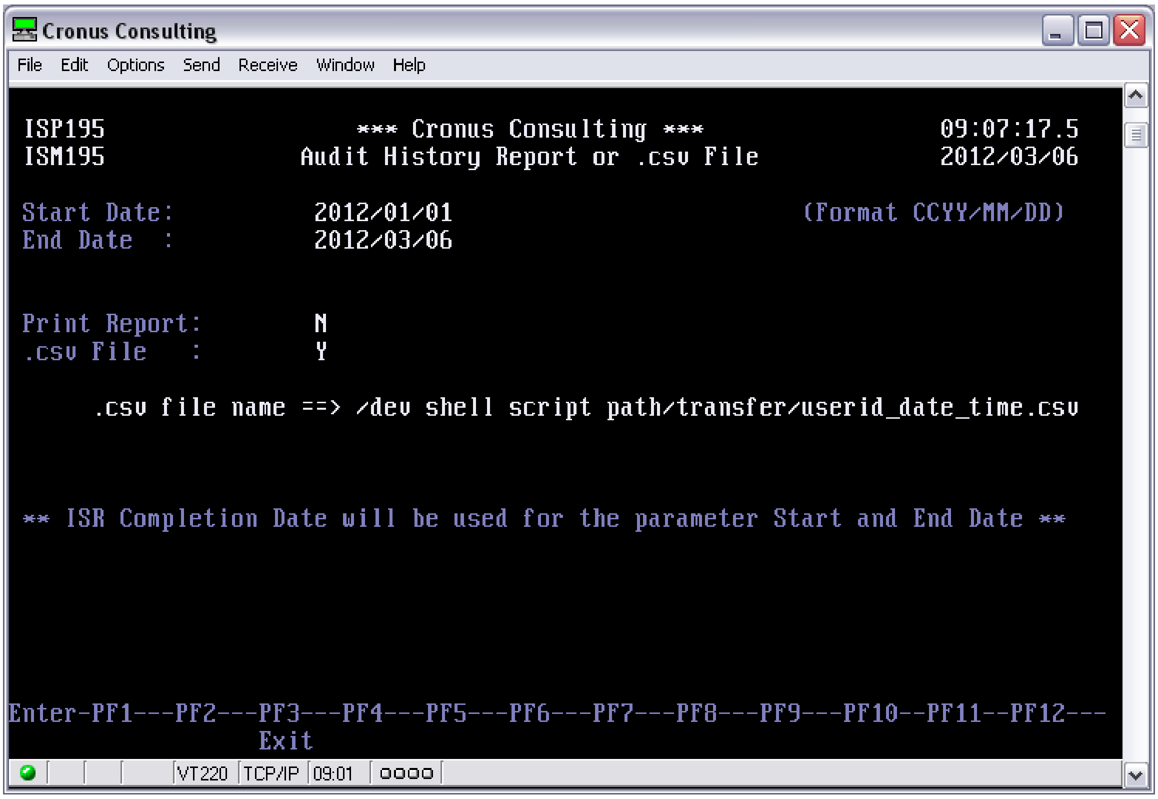
Detailed information regarding the ISR is kept – every phase of the migration is recorded and logged on the ESP audit history file – ISR creation, ISR approval, Linking of Objects, Transfer, Return, Restores, Archiving etc.

PF5 – Audit Facility

By pressing PF5, the user will execute the audit facility. This audit is a reflection of events between a start and end date entered by the user, as well as a selection of the required environments, and will in turn produce either a report or .csv file, depending on the selection by the user. The start and end date will refer to the start of the ISR (when Created via CC030) and the end date will refer to the Completion of the ISR (CC070).

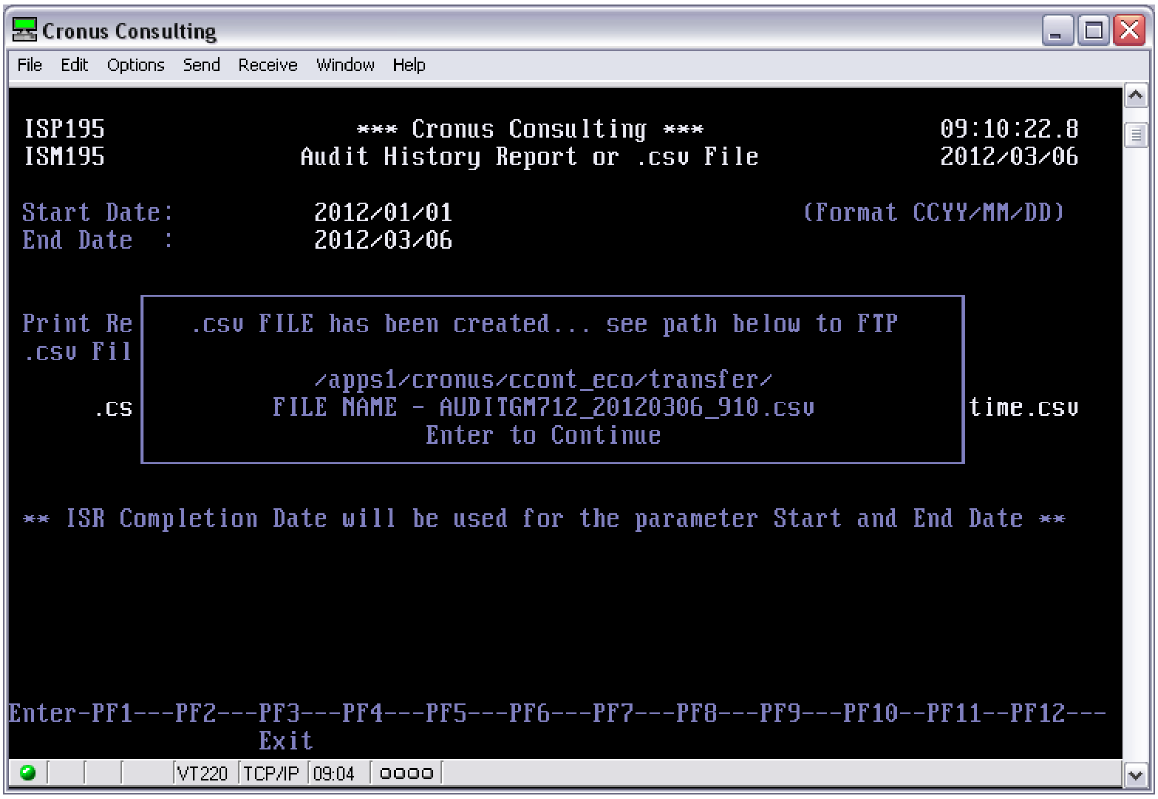
The audit events reflected will be per object, using input data, as follows:

- The creation of the ISR and user, the approval of the ISR and user, the migration of the ISR and user, and date and time and the calling option (function request by user in EspControl)
- ECOCOPY – the migration of an object
- ECORETN – the return of an object
- ECOREST – the restore of an object
- ECORESTA – the restore of an object with error



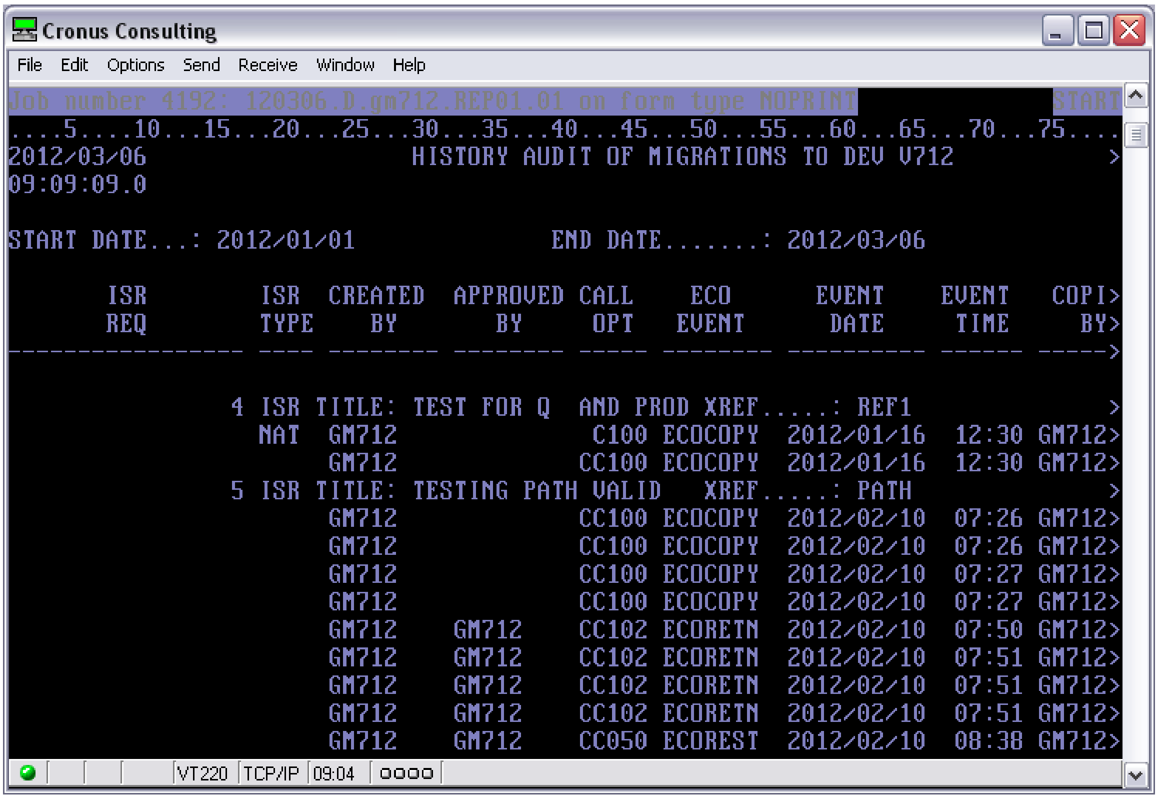
```
ISP195                   *** Cronus Consulting ***                   09:07:17.5
ISM195               Audit History Report or .csv File               2012/03/06

Start Date:          2012/01/01                        (Format CCYY/MM/DD)
End Date  :          2012/03/06


Print Report:        N
.csv File   :        Y

     .csv file name ==> /dev shell script path/transfer/userid_date_time.csv



** ISR Completion Date will be used for the parameter Start and End Date **






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Exit
```

Figure 111: PF5 – Audit input screen



```
ISP195                   *** Cronus Consulting ***                   09:10:22.8
ISM195               Audit History Report or .csv File               2012/03/06

Start Date:          2012/01/01                        (Format CCYY/MM/DD)
End Date  :          2012/03/06


Print Re|   .csv FILE has been created... see path below to FTP         |
.csv Fil|                                                               |
        |          /apps1/cronus/ccont_eco/transfer/                    |
     .cs|        FILE NAME - AUDITGM712_20120306_910.csv                |time.csv
        |                   Enter to Continue                           |


** ISR Completion Date will be used for the parameter Start and End Date **






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Exit
```

Figure 112: Audit .csv file Confirmation Window

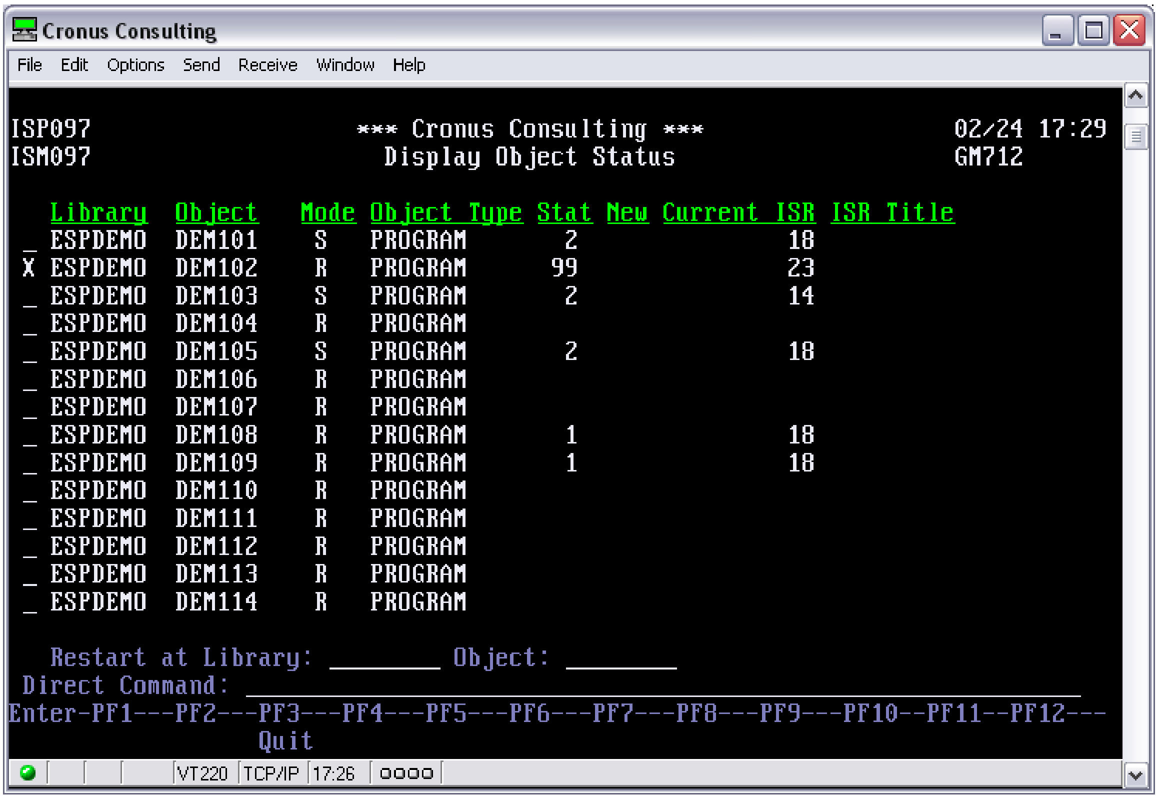


```
Job number 4192: 120306.D.gm712.REP01.01 on form type NOPRINT              START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/03/06                   HISTORY AUDIT OF MIGRATIONS TO DEV V712           >
09:09:09.0

START DATE...: 2012/01/01              END DATE.......: 2012/03/06

       ISR        ISR  CREATED  APPROVED CALL    ECO      EVENT    EVENT   COPI>
       REQ        TYPE    BY       BY     OPT   EVENT      DATE     TIME     BY>
----------------- ---- -------- -------- ----- -------- ---------- ------ ----->

                4 ISR TITLE: TEST FOR Q  AND PROD XREF.....: REF1              >
                  NAT  GM712              C100 ECOCOPY  2012/01/16  12:30 GM712>
                       GM712             CC100 ECOCOPY  2012/01/16  12:30 GM712>
                5 ISR TITLE: TESTING PATH VALID   XREF.....: PATH              >
                       GM712             CC100 ECOCOPY  2012/02/10  07:26 GM712>
                       GM712             CC100 ECOCOPY  2012/02/10  07:26 GM712>
                       GM712             CC100 ECOCOPY  2012/02/10  07:27 GM712>
                       GM712             CC100 ECOCOPY  2012/02/10  07:27 GM712>
                       GM712    GM712    CC102 ECORETN  2012/02/10  07:50 GM712>
                       GM712    GM712    CC102 ECORETN  2012/02/10  07:51 GM712>
                       GM712    GM712    CC102 ECORETN  2012/02/10  07:51 GM712>
                       GM712    GM712    CC102 ECORETN  2012/02/10  07:51 GM712>
                       GM712    GM712    CC050 ECOREST  2012/02/10  08:38 GM712>
```

Figure 113: Audit Report Example

3.4.7 CC097 - Display Object Status

Displays a list off all objects currently defined to the Change Control System.



```
ISP097                   *** Cronus Consulting ***                  02/24 17:29
ISM097                     Display Object Status                    GM712

   Library  Object   Mode Object Type Stat New Current ISR ISR Title
 _ ESPDEMO  DEM101    S   PROGRAM       2               18
 X ESPDEMO  DEM102    R   PROGRAM      99               23
 _ ESPDEMO  DEM103    S   PROGRAM       2               14
 _ ESPDEMO  DEM104    R   PROGRAM
 _ ESPDEMO  DEM105    S   PROGRAM       2               18
 _ ESPDEMO  DEM106    R   PROGRAM
 _ ESPDEMO  DEM107    R   PROGRAM
 _ ESPDEMO  DEM108    R   PROGRAM       1               18
 _ ESPDEMO  DEM109    R   PROGRAM       1               18
 _ ESPDEMO  DEM110    R   PROGRAM
 _ ESPDEMO  DEM111    R   PROGRAM
 _ ESPDEMO  DEM112    R   PROGRAM
 _ ESPDEMO  DEM113    R   PROGRAM
 _ ESPDEMO  DEM114    R   PROGRAM

   Restart at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 114: Current Object Status

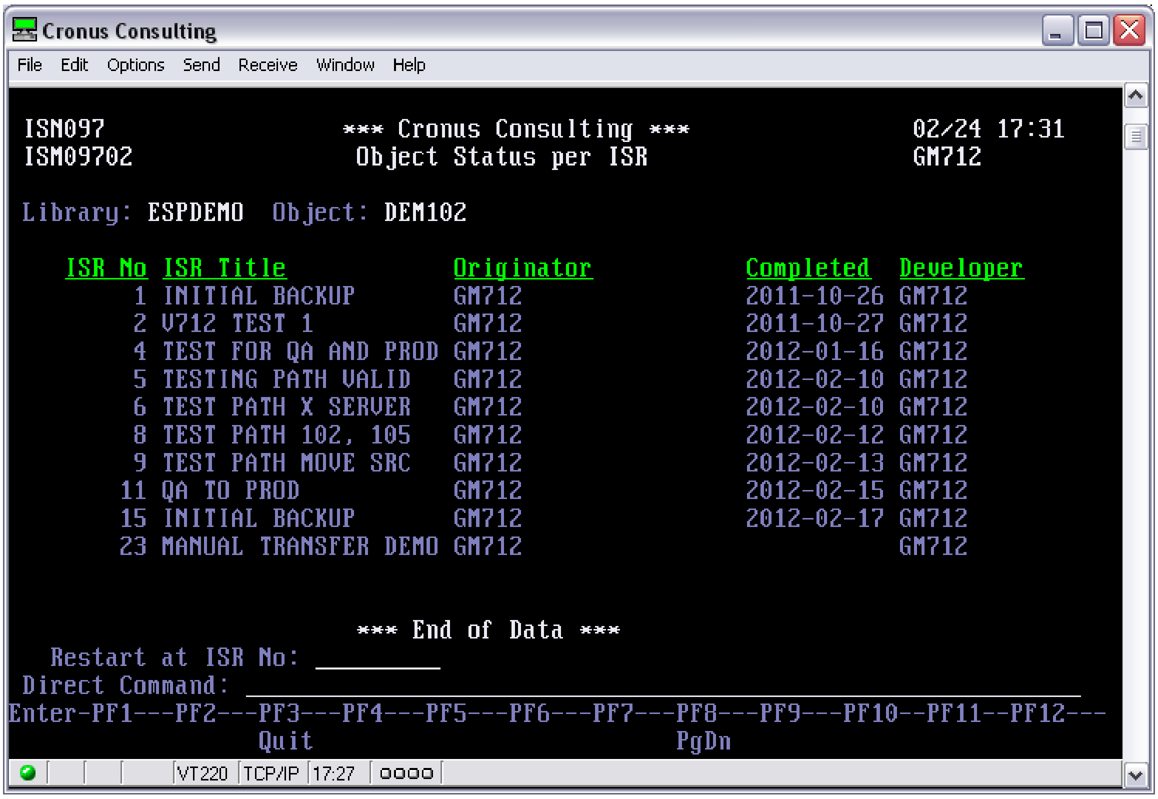
If an object is selected with a ‘X”, a list of all ISR’s that the object has been linked to will be displayed (see below screen image)

The following information is given per object:

- Library - Library where object resides (Scanned in Library)
- Object Name - Object name
- Object Mode - Object programming mode (S/R)
- Object Type - Object type description
- Object Status - Object status - Blank if not linked or current environment depending on the profile that is linked to current ISR

  - New/Old indicator – Y for New and Blank for Old
- Current ISR No - Current ISR nr. - Blank if not linked to an ISR
- ISR Title - Current ISR Title - Blank if not linked to an ISR

A list of all ISR's that the object has been linked to will be displayed by selecting the object.



```
ISM097                    *** Cronus Consulting ***                   02/24 17:31
ISM09702                   Object Status per ISR                      GM712

Library: ESPDEMO  Object: DEM102

   ISR No ISR Title            Originator             Completed  Developer
        1 INITIAL BACKUP       GM712                  2011-10-26 GM712
        2 V712 TEST 1          GM712                  2011-10-27 GM712
        4 TEST FOR QA AND PROD GM712                  2012-01-16 GM712
        5 TESTING PATH VALID   GM712                  2012-02-10 GM712
        6 TEST PATH X SERVER   GM712                  2012-02-10 GM712
        8 TEST PATH 102, 105   GM712                  2012-02-12 GM712
        9 TEST PATH MOVE SRC   GM712                  2012-02-13 GM712
       11 QA TO PROD           GM712                  2012-02-15 GM712
       15 INITIAL BACKUP       GM712                  2012-02-17 GM712
       23 MANUAL TRANSFER DEMO GM712                             GM712


                       *** End of Data ***
  Restart at ISR No: _________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgDn
```

Figure 115: ISR History per Object selected

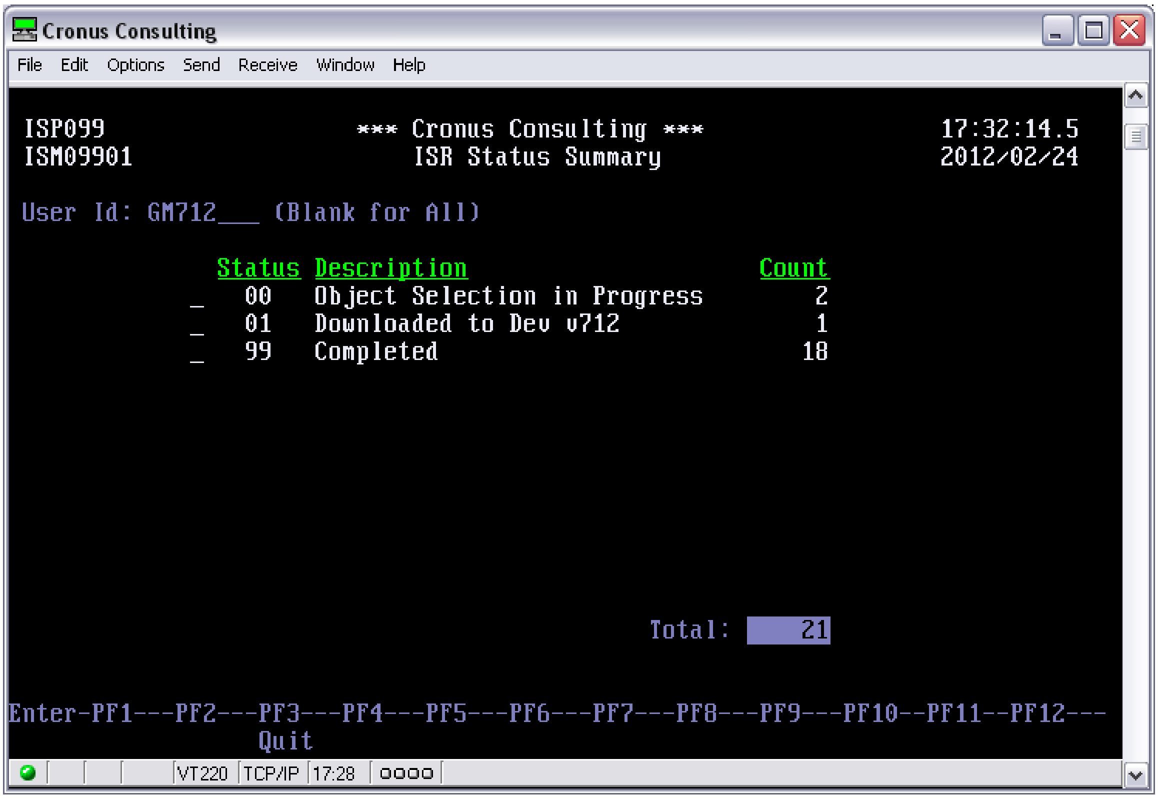
The following information history is displayed per object:

• ISR No	-	Previously linked ISRs
• ISR Title	-	Title of ISR
• Originator	-	Originator of the ISR
• Completed	-	Date ISR was completed
• Developer	-	The name of the developer

NOTE: This function displays a list of all objects that have been scanned into the Object Inventory List, whether old or new objects, but NOT archived objects.

3.4.8 CC099 - ISR Status Summary

This function will display a summary of all ISR’s and their current statuses (status description is dependent on Profile) in a summarised format that have been created by the Userid entered. The summary can also be displayed for ALL users by omitting the User-ID.



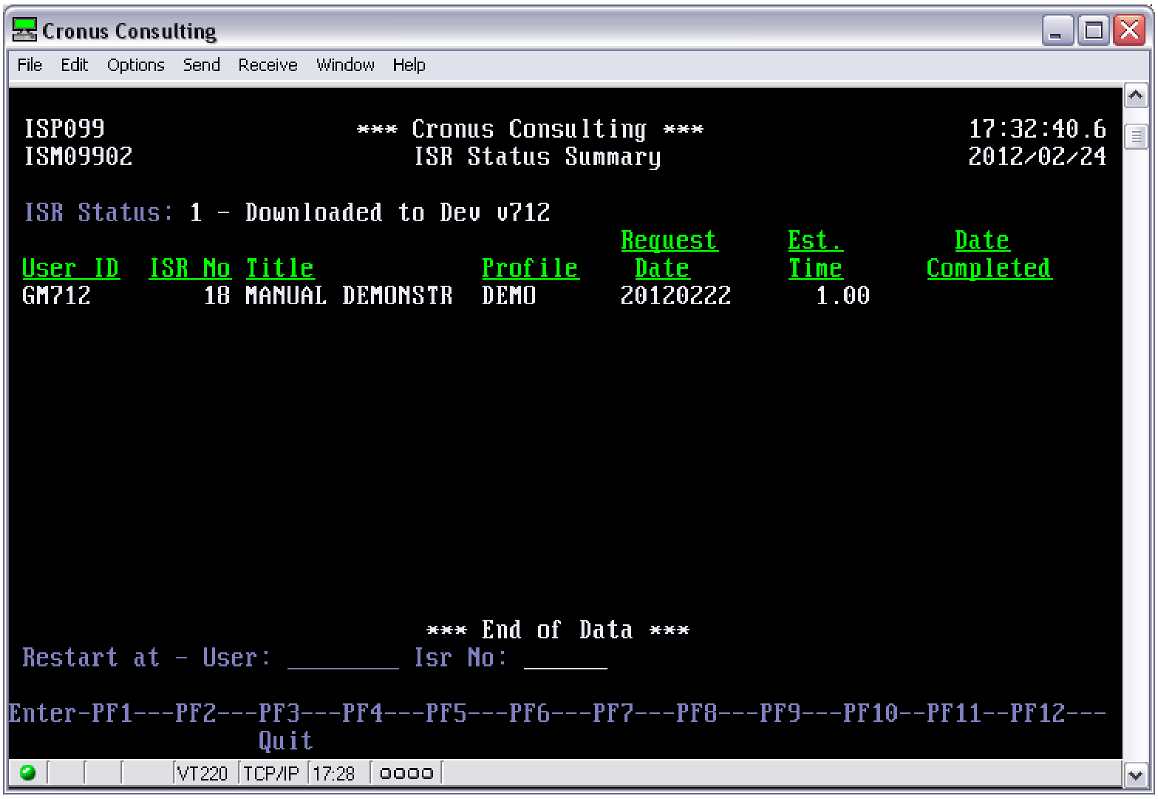
```
ISP099                  *** Cronus Consulting ***                17:32:14.5
ISM09901                    ISR Status Summary                   2012/02/24

User Id: GM712___ (Blank for All)

               Status Description                    Count
             _   00   Object Selection in Progress       2
             _   01   Downloaded to Dev v712             1
             _   99   Completed                         18




                                            Total:      21

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 116: ISR Status Enquiry reflecting ALL ISRs

The following information history is displayed per user:

Status	-	Internal EspControl Status
Description	-	Description of internal status
Count	-	Number of ISRs with the associated status

To view all ISRs in a particular status – select the relevant status with an ‘X’.



```
ISP099                  *** Cronus Consulting ***                   17:32:40.6
ISM09902                   ISR Status Summary                       2012/02/24

ISR Status: 1 - Downloaded to Dev v712
                                       Request     Est.        Date
User ID   ISR No Title             Profile    Date        Time      Completed
GM712         18 MANUAL DEMONSTR   DEMO       20120222      1.00








                              *** End of Data ***
Restart at - User: ________ Isr No: ______

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 117: ISR Status Selection

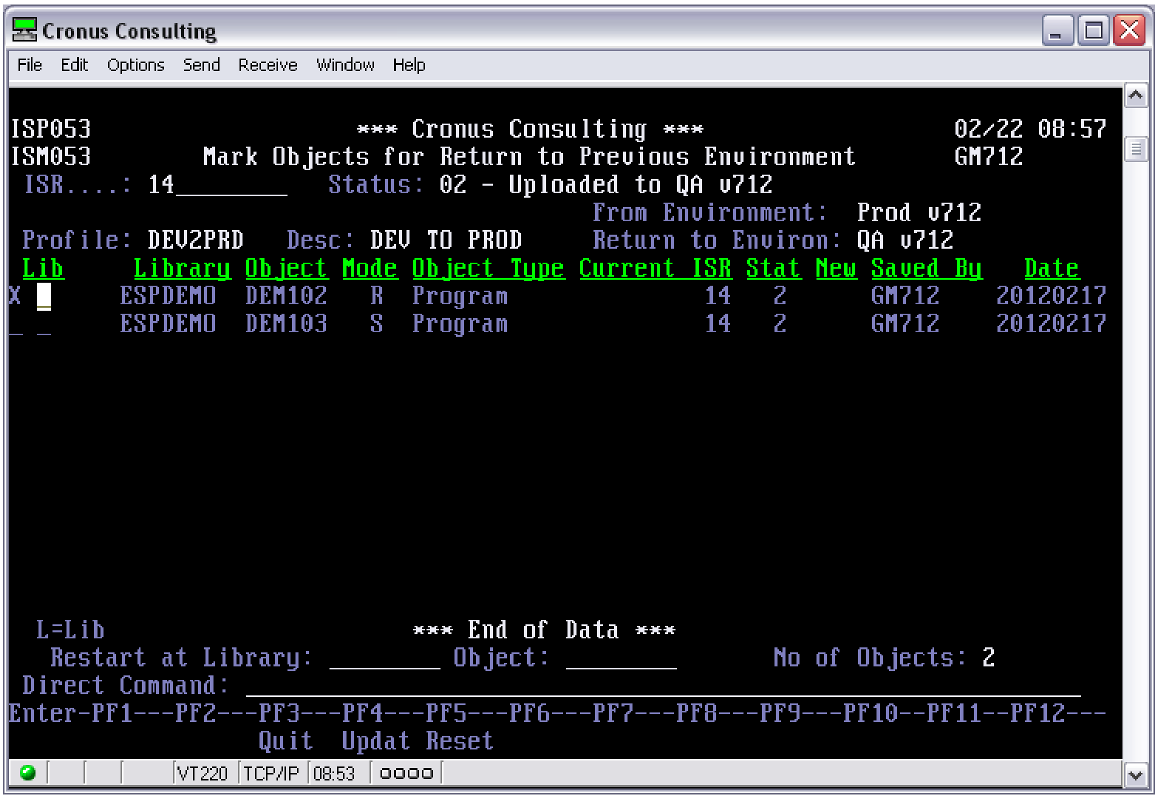
The following information history is displayed per status as selected in figure 117 above:

• User ID	-	User-id of developer
• ISR No	-	ISR Number
• ISR Title	-	ISR Title
• Profile	-	Profile Name
• Request Date	-	Date ISR was requested
• Est Time	-	Estimate man hours
• Date Completed	-	Date the ISR was completed

3.5 ISR Return And Restore Function Overview

3.5.1 CC053 – Link Objects per ISR for RETURN

This function is used to select all objects that will form part of the requested ISR that is to be returned to the previous environment.

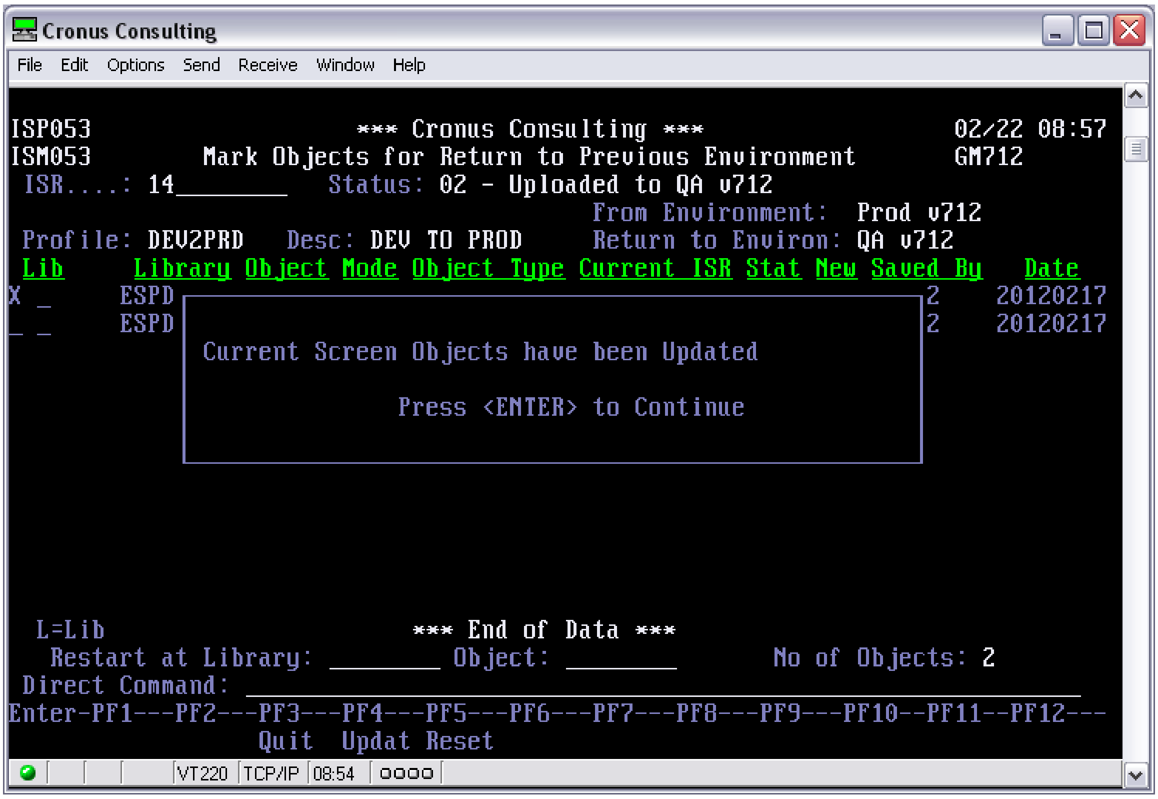


```
ISP053                   *** Cronus Consulting ***                   02/22 08:57
ISM053        Mark Objects for Return to Previous Environment       GM712
 ISR....: 14________     Status: 02 - Uploaded to QA v712
                                      From Environment:  Prod v712
 Profile: DEV2PRD   Desc: DEV TO PROD      Return to Environ: QA v712
 Lib      Library Object Mode Object Type Current ISR Stat New Saved By    Date
X _       ESPDEMO  DEM102   R   Program               14    2      GM712    20120217
_ _       ESPDEMO  DEM103   S   Program               14    2      GM712    20120217



  L=Lib                          *** End of Data ***
   Restart at Library: ________ Object: ________        No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Updat Reset
```

Figure 118: Link Objects to ISR for Return to Previous Environment

Once the ISR No has been entered a list of all objects already LINKED to that ISR will be displayed and then these objects must be marked for Return to a previous environment. Only the objects selected will be returned to the previous environment. Only objects already in the second and upper environment may be linked, as if the object is already in the Initial Environment, it cannot be returned anywhere. If an ISR is complete, i.e. in the Master Environment, then the ISR cannot be returned either. In this scenario, a new ISR must be opened for the migration of these objects to be downloaded to Development.

Objects can now be linked by entering an 'X' next to the object in the New Column. Once selection is complete for the displayed screen, press PF4 for the updating of these linked objects. A confirmation window will be displayed as reflected below. The user may now move forwards via PF8 to the next available screen and then link and update via PF4 again, until all linked objects have been viewed or move back to the previous screen via PF7 or exit the transaction using PF3. The objects must first be approved via CC061 and then the actual return executed via option CC102. (See explanation below in manual).



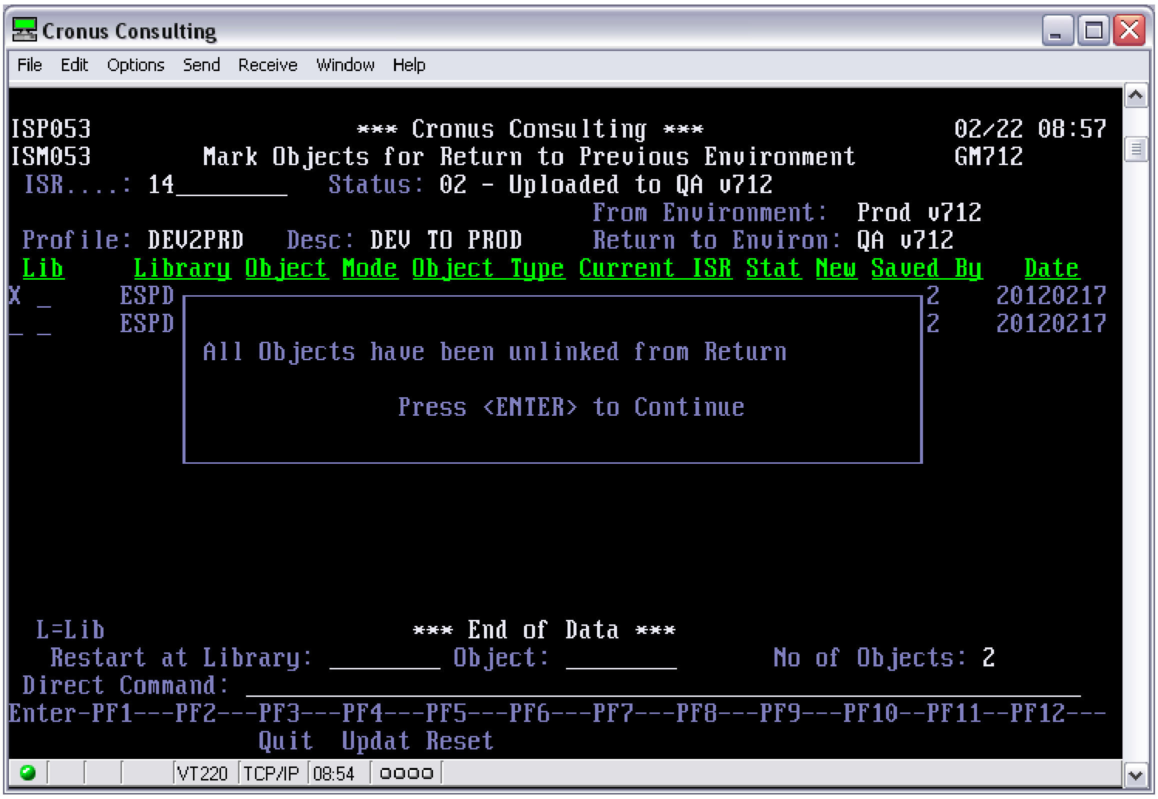
```
ISP053                    *** Cronus Consulting ***                  02/22 08:57
ISM053         Mark Objects for Return to Previous Environment       GM712
 ISR....: 14________       Status: 02 - Uploaded to QA v712
                                      From Environment:  Prod v712
 Profile: DEV2PRD   Desc: DEV TO PROD     Return to Environ: QA v712
 Lib     Library Object Mode Object Type Current ISR Stat New Saved By   Date
X _     ESPD                                          2    20120217
_ _     ESPD                                          2    20120217

             Current Screen Objects have been Updated

                           Press <ENTER> to Continue

  L=Lib                       *** End of Data ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Updat Reset
```

Figure 119: PF4 Confirmation of Return Linking Update

Objects that are returned, will be returned to the previous environment using the source or object in the current environment, in the same manner that it was moved forwards (rules of the linked profile). However, no backups of these objects are taken. The backup will be redone when moving back up the line via CC100 again, using the same version number and therefore overwriting the backup with the new source.

Multiple returns of an ISR are also allowed, without all the objects being in the same status. This means that if the objects are in QA and for example, only 2 are returned to Dev, more returns via CC053 are still allowed with other objects not already in return status, being selected and then re-running CC053 until the user requires another migration via CC100. When CC100 is run again, all the modules that are in Dev will again be moved up the line to QA until all the objects are in the same status.

Objects may also be deselected by removing the X next to the object. PF5 may be used to RESET the entire ISR from Return, i.e. un-link all linked objects, reset any Error Returns in this ISR and reset the RETURN APPROVAL (see CC061) so that normal migration may continue. After the successful resetting of the ISR, a confirmation window will be displayed as follows:



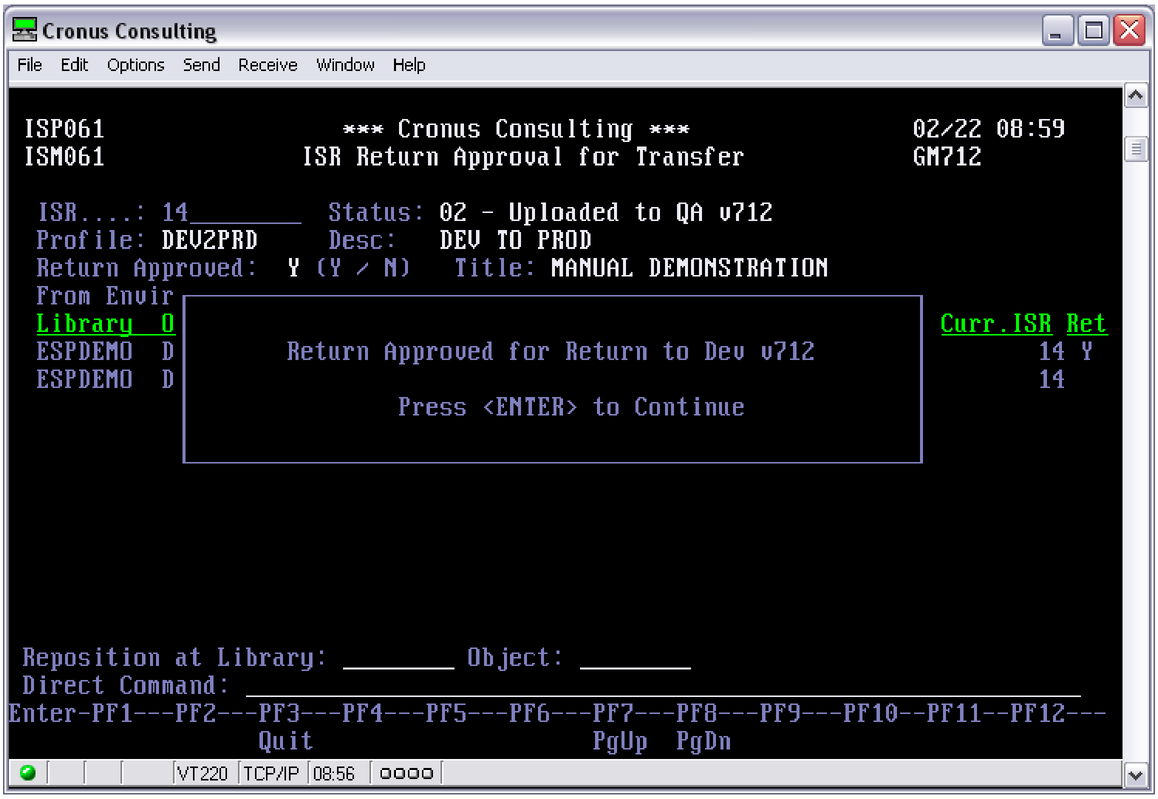
```
ISP053                  *** Cronus Consulting ***                  02/22 08:57
ISM053        Mark Objects for Return to Previous Environment       GM712
 ISR....: 14________    Status: 02 - Uploaded to QA v712
                                      From Environment:  Prod v712
 Profile: DEV2PRD   Desc: DEV TO PROD     Return to Environ: QA v712
 Lib     Library Object Mode Object Type Current ISR Stat New Saved By   Date
X _      ESPD                                           2      20120217
_ _      ESPD                                           2      20120217

              All Objects have been unlinked from Return

                           Press <ENTER> to Continue

  L=Lib                         *** End of Data ***
   Restart at Library: ________ Object: ________       No of Objects: 2
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit  Updat Reset
```

Figure 120: PF5 – Reset Returned Objects

By marking the LIB column with an ‘L’, a window will be reflected displaying all the libraries linked to the selected object. This window is read-only, as the Return ISR transaction involves ISR’s already in use, and therefore these libraries cannot be amended here. The same Library rules will be applied as were set up in the normal migration.

3.5.2 CC061 – Return Approval for ISR

This function is used to Return Approve an ISR and to internally set the status of the ISR so that return is possible. Once an ISR has been approved for return to a previous environment, the return migration function (CC102) will be used to return all objects that have been linked for return (in CC03) to the previous environment.



```
ISP061                 *** Cronus Consulting ***                02/22 08:59
ISM061              ISR Return Approval for Transfer            GM712

 ISR....: 14________  Status: 02 - Uploaded to QA v712
 Profile: DEV2PRD     Desc:   DEV TO PROD
 Return Approved:  Y (Y / N)   Title: MANUAL DEMONSTRATION
 From Envir
 Library  O                                                    Curr.ISR Ret
 ESPDEMO  D        Return Approved for Return to Dev v712            14 Y
 ESPDEMO  D                                                          14
                       Press <ENTER> to Continue

Reposition at Library: ________ Object: ________
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                    PgUp  PgDn
```

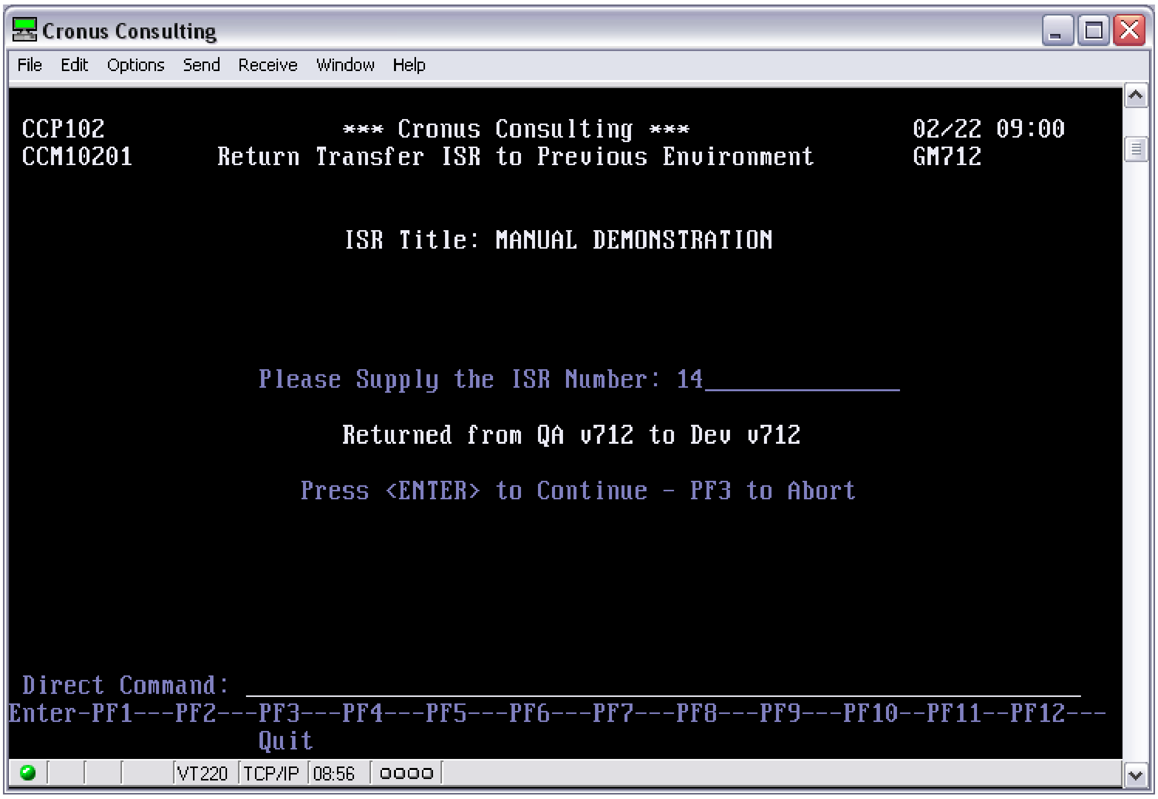
Figure 121: Return Approval of an ISR

The Environment Path for which Return Approval is required is now reflected in ‘FROM and ‘TO’ Environments for e.g. from QA to Development. Please note that these FROM and TO Environments will be the opposite of a normal migration. If multiple returns are required, the return approval must be set for each set of the objects that were updated for return in CC053.

3.5.3 CC102 - Return ISR to Previous Environment

This function is used to **return** all **objects marked for Return (via CC053)** linked to an ISR between the defined environments. This function is identical to the function CC100 specified above, except that the marked objects are migrated to the previous environment and no backup or restores are done. i.e. transferred back to the environment they were previously migrated from. If any error occurs during the return, NO RESTORE is done. These error objects will be displayed in the ISR History enquiry and will be reflected on an error report. The function CC102 may be run again and again to return these error objects to the previous environment, until the return is successful, therefore no restore is necessary.

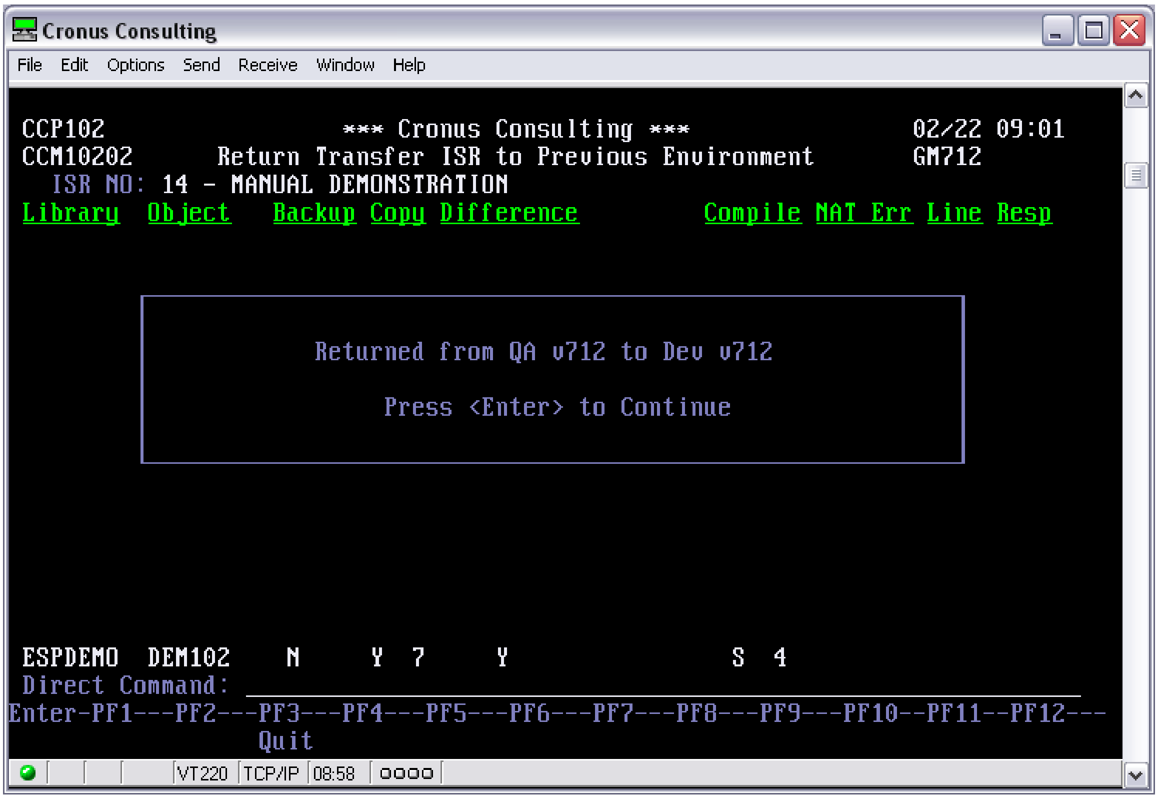
According to the current status of an ISR and the profile linked to it, the system will determine to which environment, objects must be returned.



```
CCP102                *** Cronus Consulting ***               02/22 09:00
CCM10201      Return Transfer ISR to Previous Environment      GM712

                    ISR Title: MANUAL DEMONSTRATION


                 Please Supply the ISR Number: 14______________

                    Returned from QA v712 to Dev v712

                 Press <ENTER> to Continue - PF3 to Abort




 Direct Command: ______________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 122: Return an ISR

Once the user has pressed enter to continue the ISR will be validated for return via the normal PATH VALIDATION routine – see explanation in CC100.



```
CCP102                  *** Cronus Consulting ***               02/22 09:01
CCM10202      Return Transfer ISR to Previous Environment       GM712
  ISR NO: 14 - MANUAL DEMONSTRATION
Library  Object   Backup Copy Difference         Compile NAT Err Line Resp



                Returned from QA v712 to Dev v712

                  Press <Enter> to Continue




ESPDEMO  DEM102    N     Y  7     Y                S  4
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 123: Return ISR Confirmation

If ALLOW-SOURCE = “N”, when returning to the Initial Environment (the first environment of the profile), the source will be migrated to this environment. If ALLOW-SOURCE = “N” in any other environment, the return of objects will be the object code only.

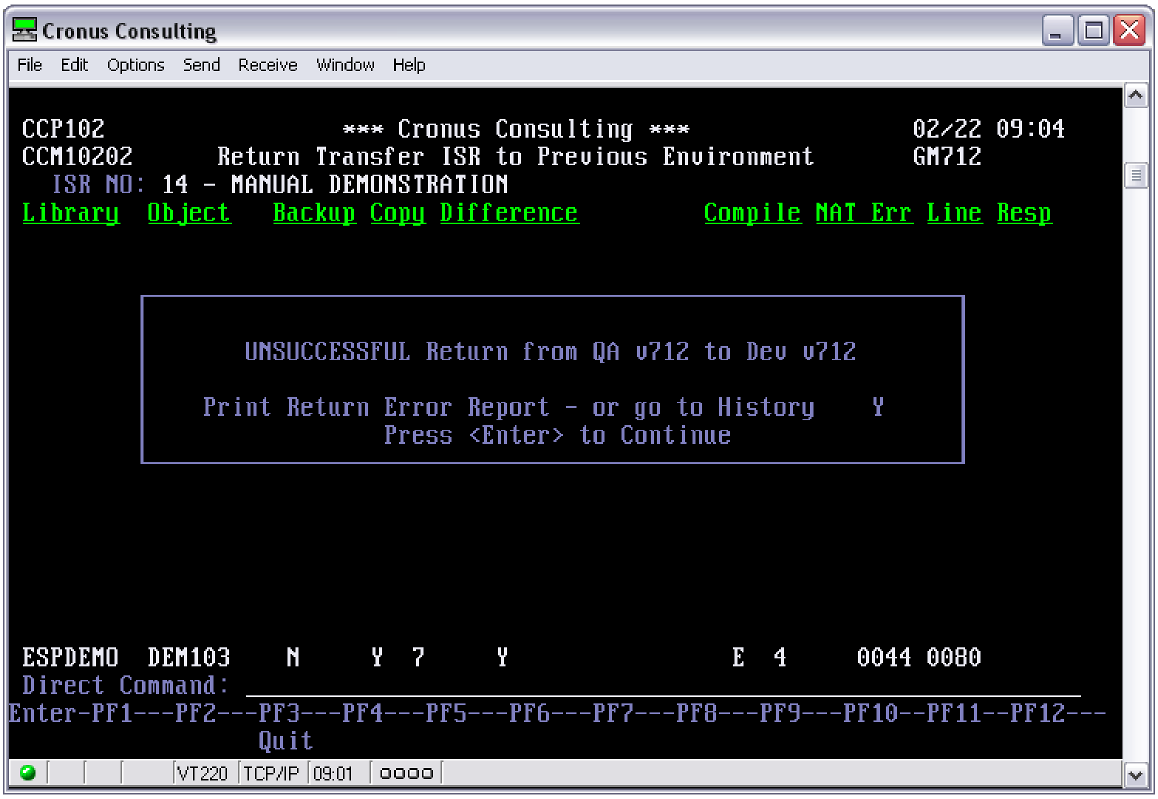
If the ALLOW-SOURCE = “M” or “Y”, the code will always be returned to the previous environment.

If the STOW-CAT option = N, then only the source will be returned and saved, else it will be STOWed or CATalogued as selected.

The purpose of the Return ISR function is to allow changes in the higher environment and then return these to a lower environment with the changed copy so that re-testing may occur. The next time the ISR is migrated it will have to move forwards again to the next environment and so on.

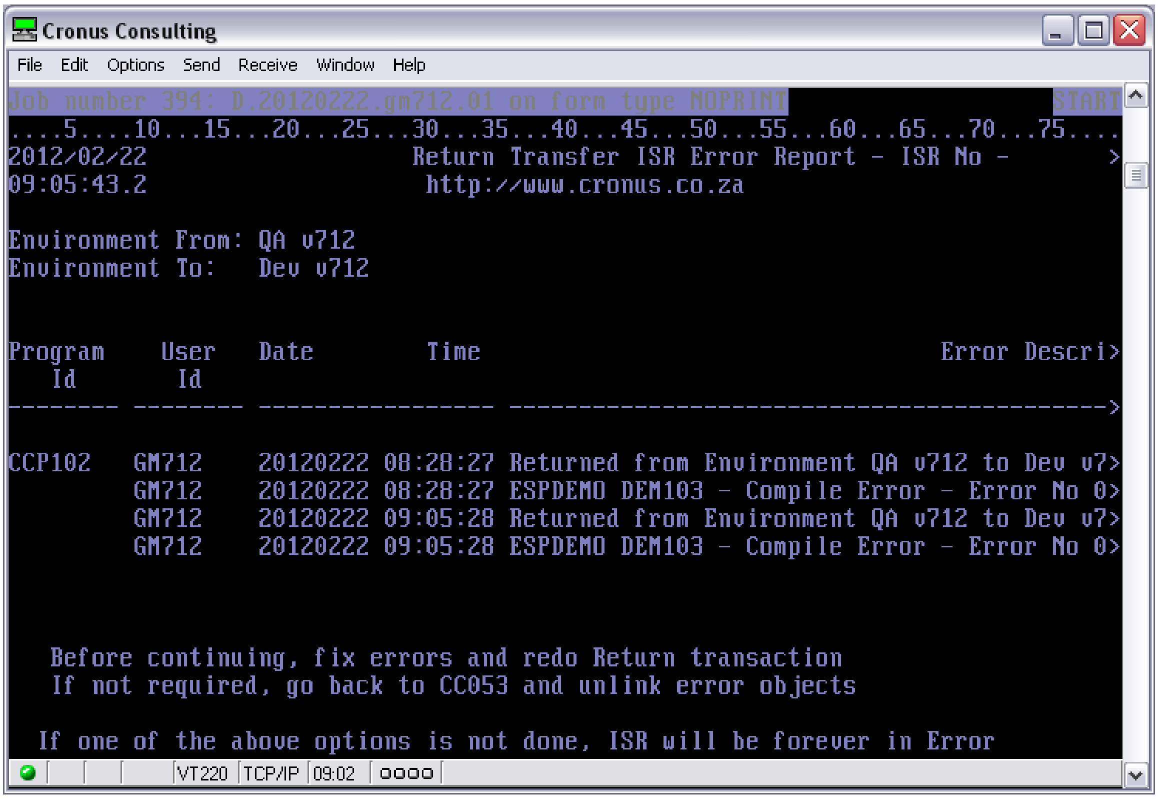
Remember, only objects marked for Return will be returned, all unmarked objects will remain in the higher environment until all the returned objects have been migrated forward again and all objects are in the same status.

If the object is successfully returned, the object status is updated with the new environment (lower status) and is treated accordingly. If the object is unsuccessful it will remain **LINKED FOR RETURN** and the function CC102 must again be run until the object has been moved successfully. See below for Error Report example or go to the ISR History (CC095) to view the error.



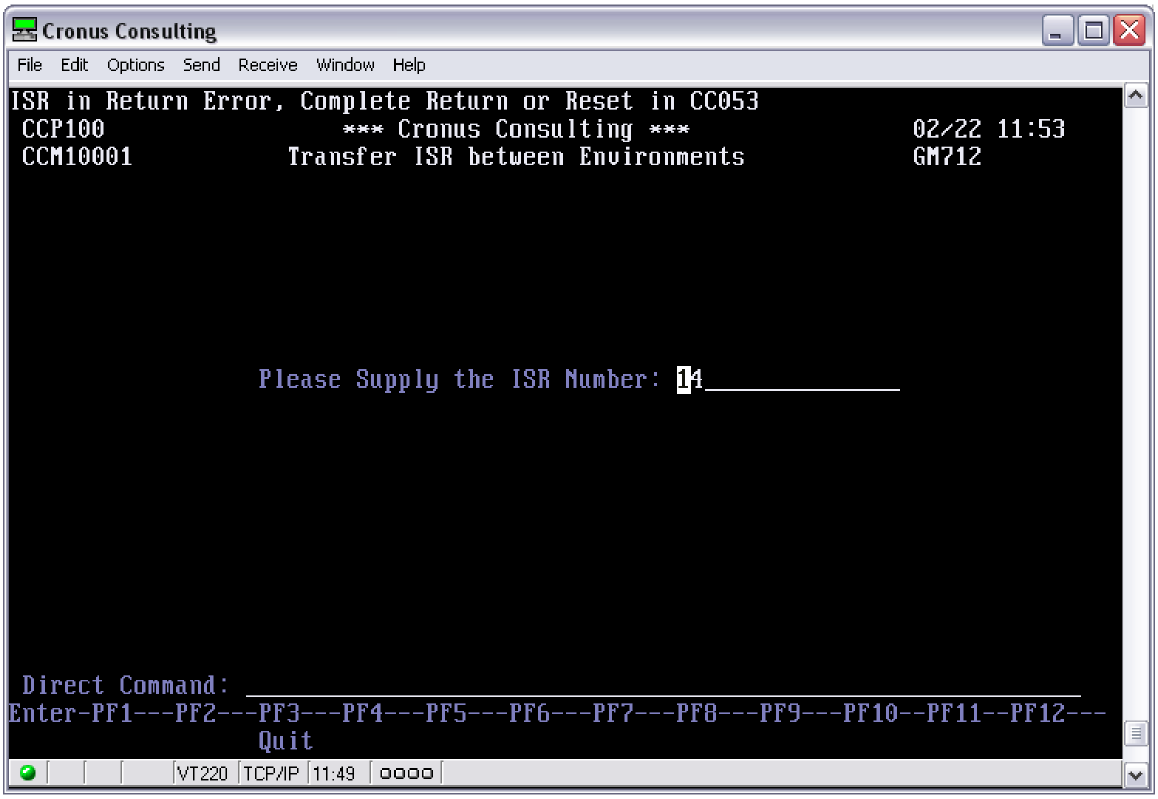
```
CCP102                 *** Cronus Consulting ***                02/22 09:04
CCM10202      Return Transfer ISR to Previous Environment       GM712
  ISR NO: 14 - MANUAL DEMONSTRATION
Library  Object   Backup Copy Difference        Compile NAT Err Line Resp



         UNSUCCESSFUL Return from QA v712 to Dev v712

       Print Return Error Report - or go to History    Y
                    Press <Enter> to Continue







ESPDEMO  DEM103    N     Y  7     Y                E  4     0044 0080
Direct Command:
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 124: Error Screen for Return



```
Job number 394: D.20120222.gm712.01 on form type NOPRINT                  START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/02/22                     Return Transfer ISR Error Report - ISR No -      >
09:05:43.2                      http://www.cronus.co.za

Environment From: QA v712
Environment To:   Dev v712


Program    User    Date         Time                                Error Descri>
   Id       Id
-------- -------- ----------------- ------------------------------------------->

CCP102   GM712    20120222 08:28:27 Returned from Environment QA v712 to Dev v7>
         GM712    20120222 08:28:27 ESPDEMO DEM103 - Compile Error - Error No 0>
         GM712    20120222 09:05:28 Returned from Environment QA v712 to Dev v7>
         GM712    20120222 09:05:28 ESPDEMO DEM103 - Compile Error - Error No 0>



   Before continuing, fix errors and redo Return transaction
   If not required, go back to CC053 and unlink error objects

  If one of the above options is not done, ISR will be forever in Error
```

Figure 125: Error Report for Return



```
ISR in Return Error, Complete Return or Reset in CC053
 CCP100                 *** Cronus Consulting ***            02/22 11:53
 CCM10001            Transfer ISR between Environments        GM712



                  Please Supply the ISR Number: 14______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 126: CC100 - Example of an ISR in Return Error

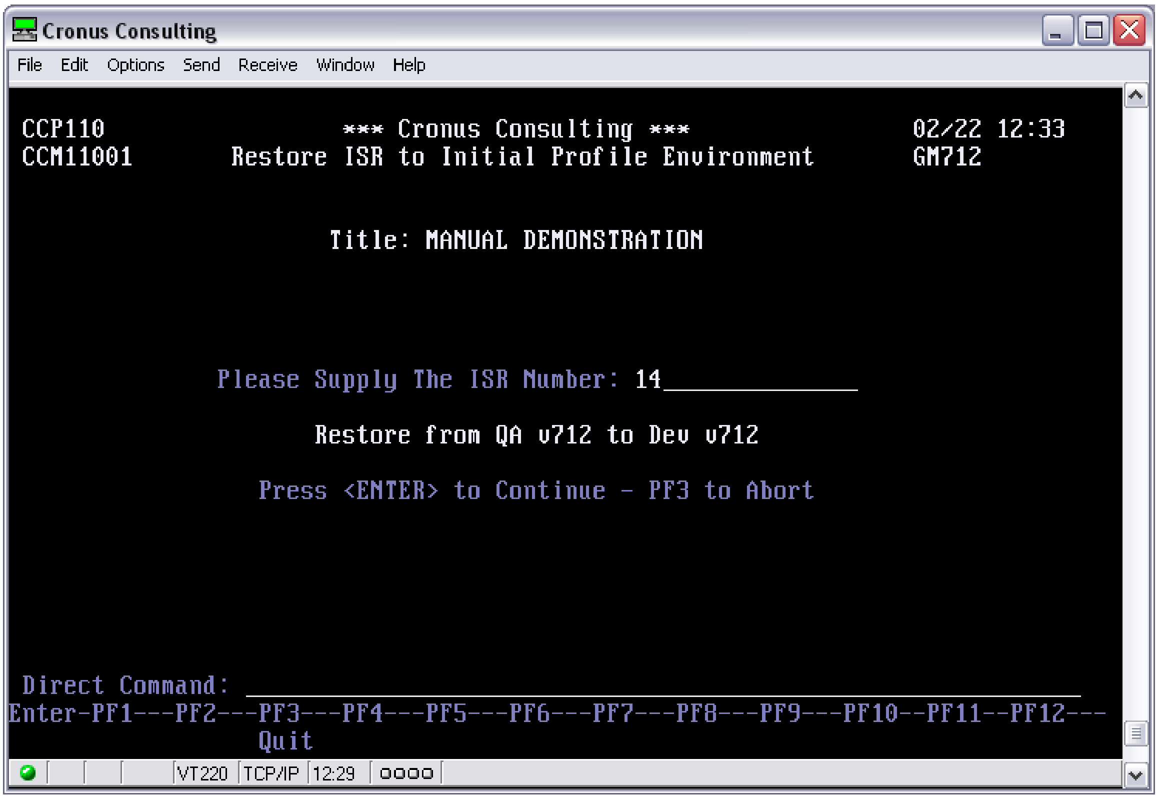
The above ISR is in return error and until a successful return has occurred via option CC102 or all the objects have been reset in CC053, the normal migration via CC100 will be disallowed.

3.5.4 CC110 - Restore ISR to Initial Environment

This function is used to restore all objects linked to an ISR, back to the initial environment of the profile linked to the ISR being restored. All other environments will be restored to the backup that was taken during the migration process of the ISR. If an environment has not yet been reached, no changes or restore will take place.

NOTE: The restore of an ISR will restore to the backups taken in the ISR (which only happen after a migration move) and so will not restore the code to the state it was in before the ISR was run. If no backup exists, then a previous backup version of the previous ISR linked to this object will be used. If this is not what is required, then option CC200 MUST be used and the correct ISR may be chosen to restore whatever source or object is necessary.

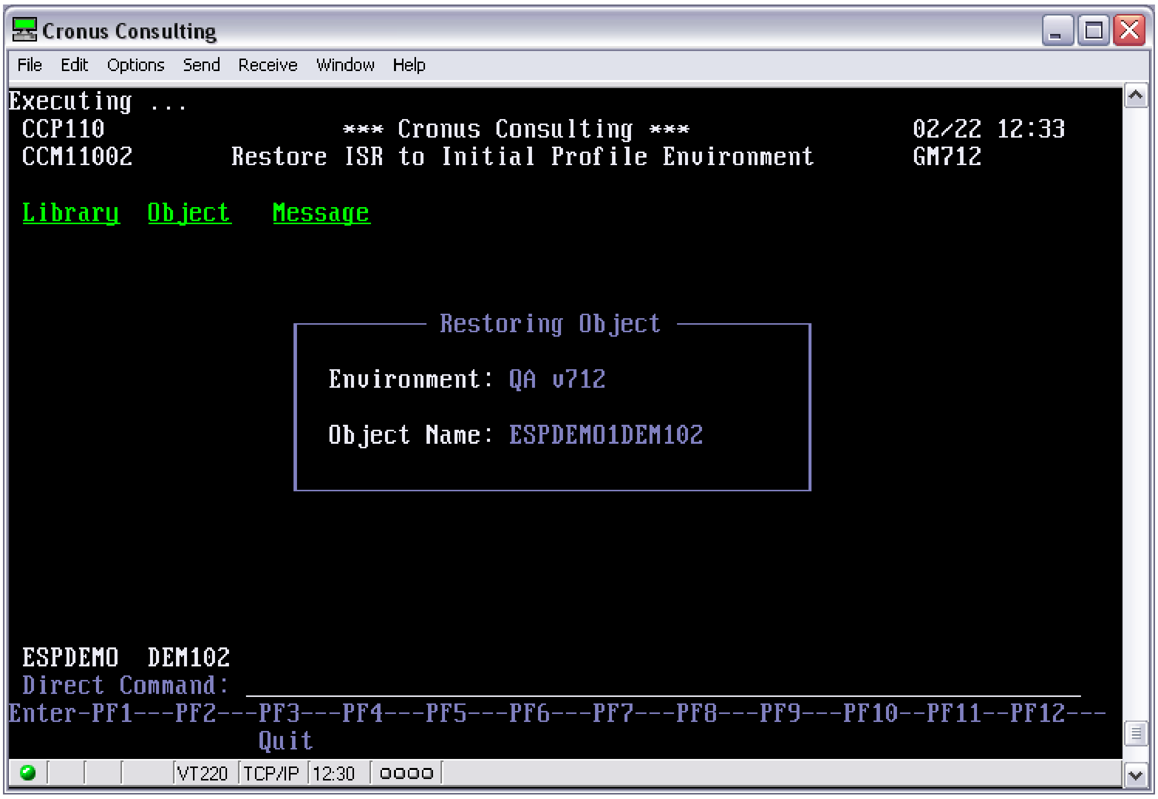
This is also library dependent on the library rules that were set up for the object when migrating via CC100. The same library per object will be used that was used in CC100. The objects will be restored in the correct object type order, so that compiling may take place correctly.



```
CCP110                 *** Cronus Consulting ***              02/22 12:33
CCM11001        Restore ISR to Initial Profile Environment    GM712

                       Title: MANUAL DEMONSTRATION



              Please Supply The ISR Number: 14______________

                    Restore from QA v712 to Dev v712

                 Press <ENTER> to Continue - PF3 to Abort





 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 127: Restore Full ISR to Development

The rules specified for which backups are used in the restore, follow the backup path explained in CC100 and the restore routine as explained above, for all restore options CC110, CC115, complete ISR CC070 with restore and unlink objects CC050 with restore.



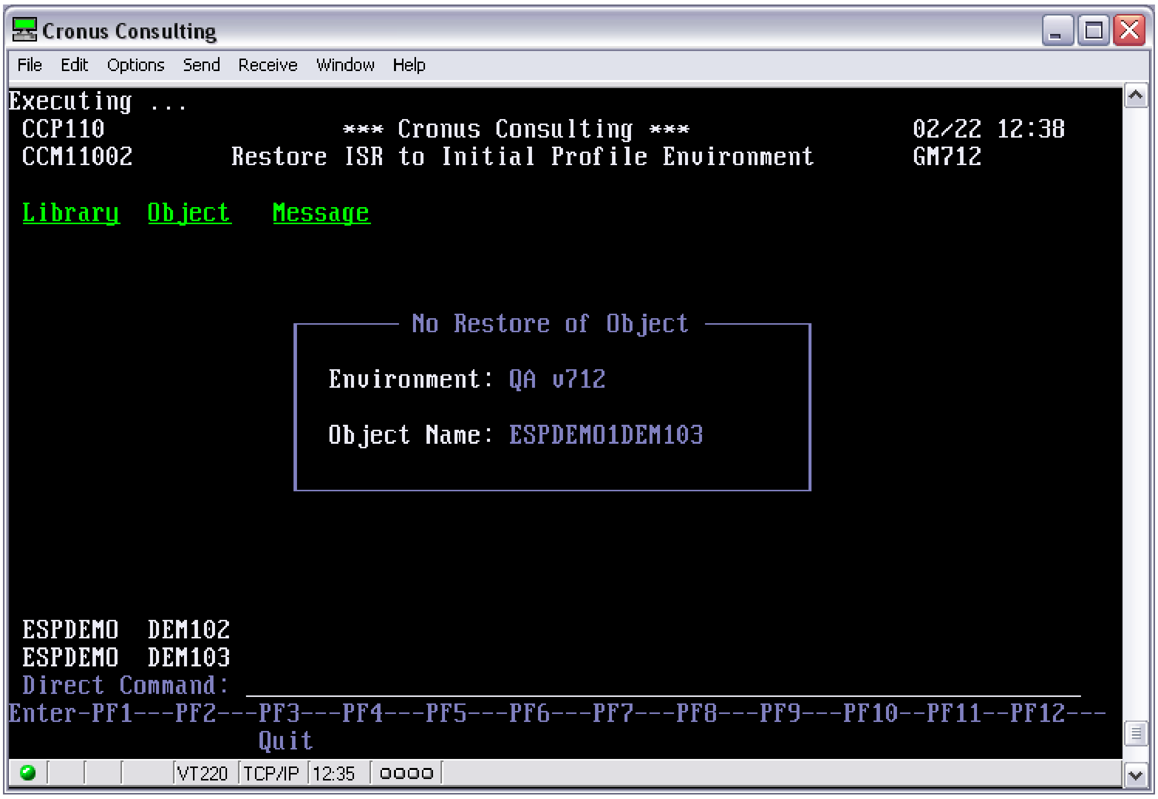
```
Executing ...
 CCP110                 *** Cronus Consulting ***              02/22 12:33
 CCM11002        Restore ISR to Initial Profile Environment    GM712

 Library  Object   Message


                      Restoring Object

                   Environment: QA v712

                   Object Name: ESPDEMO1DEM102


 ESPDEMO  DEM102
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 128: Restoring Confirmation window

The backup version of the source code is restored in the target environment and the ISR status is updated accordingly – the object status for each object is set to the initial environment status.

If there is no backup (and no previous backup) or backup indicator is set to No, then a window reflecting “no restore of object” will be displayed. If backups exist, a window reflecting “restoring object” and what environment is being restored to, is displayed as seen in the above figure 128. These windows are representative of ALL restore options and are displayed in the same manner, no matter what restore functions have been selected. See next page for examples of the “no restore window”.

If backup indicators are set to “N” for the profile linked to the ISR, none of the objects in the ISR will be restored, but the object status will be set to the initial environment.



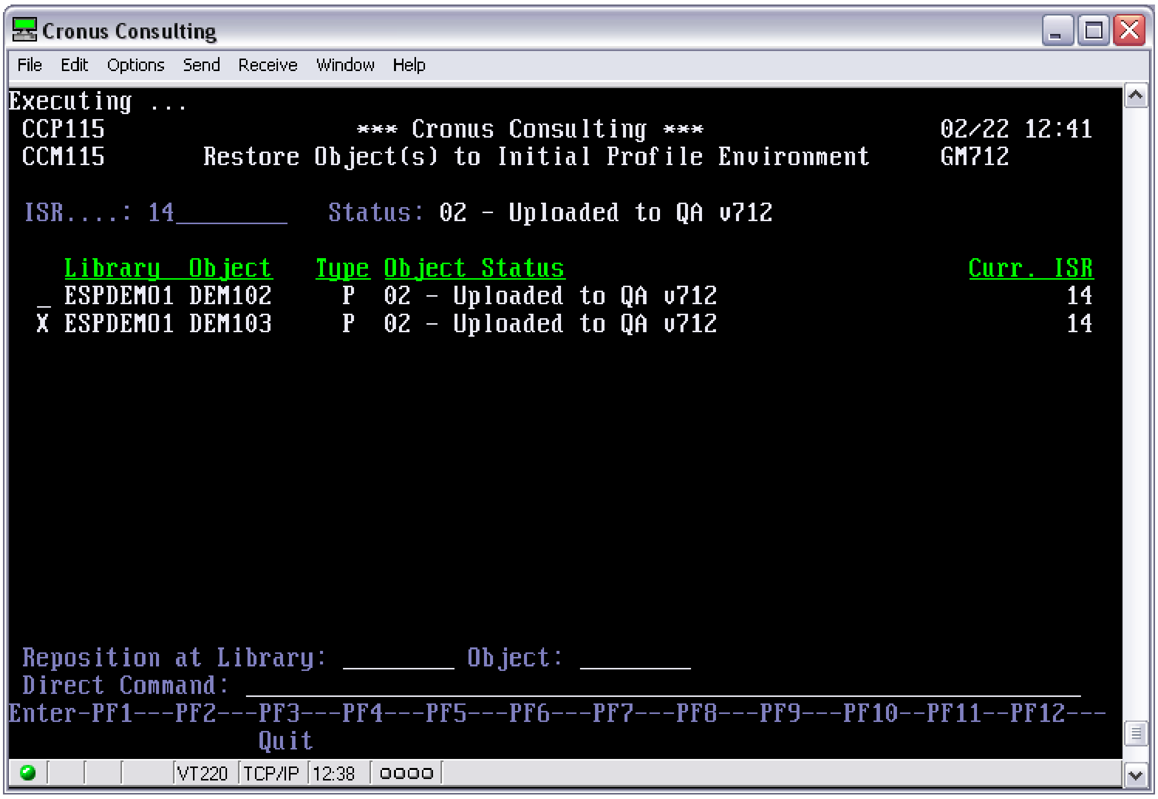
```
Executing ...
 CCP110                  *** Cronus Consulting ***              02/22 12:38
 CCM11002       Restore ISR to Initial Profile Environment      GM712

 Library  Object   Message


                    ——— No Restore of Object ———

                      Environment: QA v712

                      Object Name: ESPDEMO1DEM103



 ESPDEMO  DEM102
 ESPDEMO  DEM103
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 129: No Restore window

3.5.5 CC115 - Restore Object(s) to Initial Environment

This function is used to restore individual objects linked to an ISR back to the initial environment. All environments that have been migrated to, including the initial (if in the case of no source), will be restored to the backup version, either taken in the ISR after a move, or the previous backup taken for that specific object. If the backup indicators are set to N, none of the objects will be restored, only the object status will be updated to the initial environment. **See rules for restore in function CC110, the only difference between the two functions is that CC115 allows restore of selected objects while CC100 restores entire ISR giving no choice.**

This is also library dependent using the same rules as was set up when first running CC100 for a particular ISR.



```
Executing ...
 CCP115                  *** Cronus Consulting ***                 02/22 12:41
 CCM115        Restore Object(s) to Initial Profile Environment     GM712

 ISR....: 14________     Status: 02 - Uploaded to QA v712

    Library  Object    Type Object Status                           Curr. ISR
  _ ESPDEM01 DEM102      P  02 - Uploaded to QA v712                       14
  X ESPDEM01 DEM103      P  02 - Uploaded to QA v712                       14









 Reposition at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

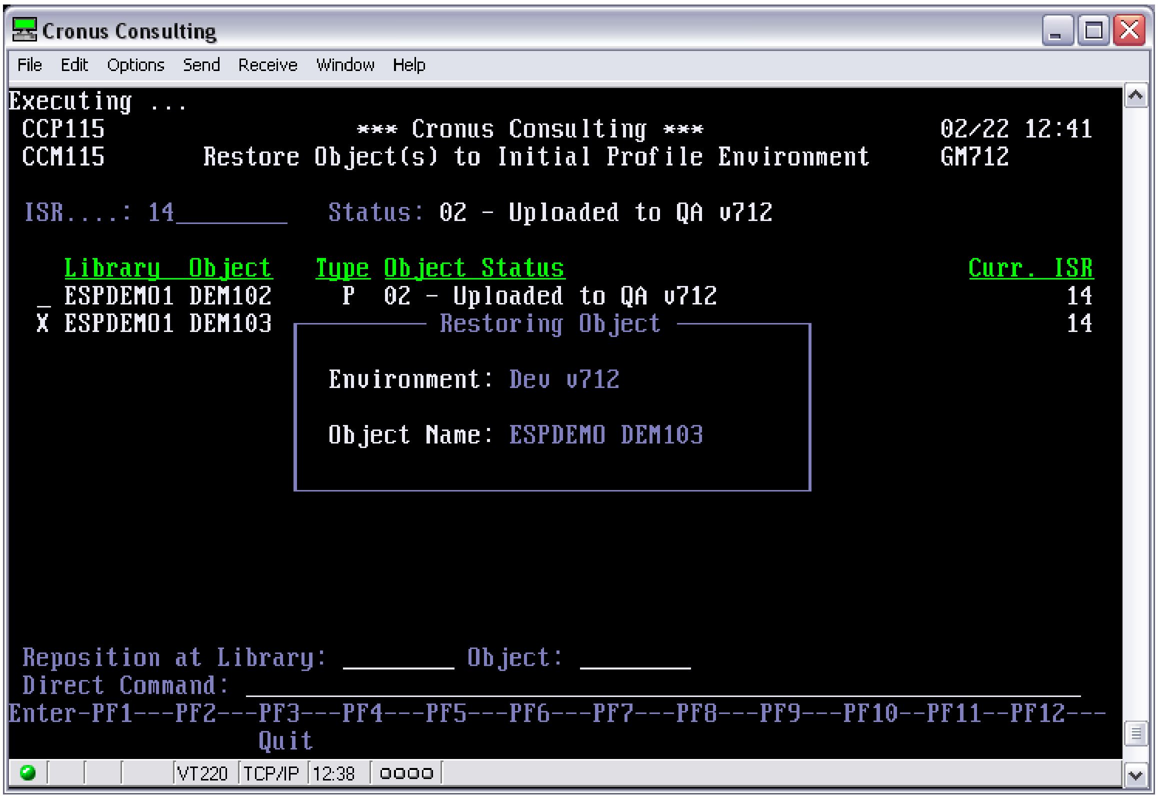
Figure 130: Object Selection for Restore

The required objects are selected by entering an ‘X’ next to the object.

The following information is displayed per object:

- Library - Library where object resides (Scanned in Library)
- Object Name - Object name
- Object Mode - Object programming mode (S/R)
- Object Type - Object type
- Object Status - Object internal status
- Current ISR No - Current ISR number

Confirm the restore with <enter>



```
Executing ...
 CCP115                  *** Cronus Consulting ***                02/22 12:41
 CCM115       Restore Object(s) to Initial Profile Environment     GM712

 ISR....: 14________    Status: 02 - Uploaded to QA v712

    Library  Object    Type Object Status                              Curr. ISR
  _ ESPDEMO1 DEM102     P   02 - Uploaded to QA v712                        14
  X ESPDEMO1 DEM103  ---------- Restoring Object ----                       14

                        Environment: Dev v712

                        Object Name: ESPDEMO DEM103



 Reposition at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 131: Restoring Confirmation Window

The following information is displayed per object:

- Environment Name - The environment in which the object is being restored.
- Object Name - Object name being restored.

See CC110 for example of NO RESTORE window, if no backups exist or backup indicator is set to N.

NOTE : As this is a manual restore option, the correct object types must be selected first e.g. maps, copy-code etc for restore, else the compile of the restored object will not take place correctly and only the source will be SAVEd. If the entire ISR is to be restored, rather use function CC110, which restores objects in correct object order. The unlinking of objects in CC050, also has the same manual restore effect if, unlinking with restore, is selected.

3.5.6 CC200 - Restore Objects Versions to ANY Environment in ISR

This function is used to Display or Restore previous object versions using the backed up copy via the Change Control System per ISR. The number of object versions available is dependent on the system default for Maximum backups set in CC001. If No backup is selected for specific ISR's, then obviously no restore or display may be done. This option is available to restore to or display source of any ISR (as long as backup still exists) across any of the environments that were used during the migration of that specific ISR. If a specific restore of objects is required, then this is the function to use, as the user may manually decide what to restore to.

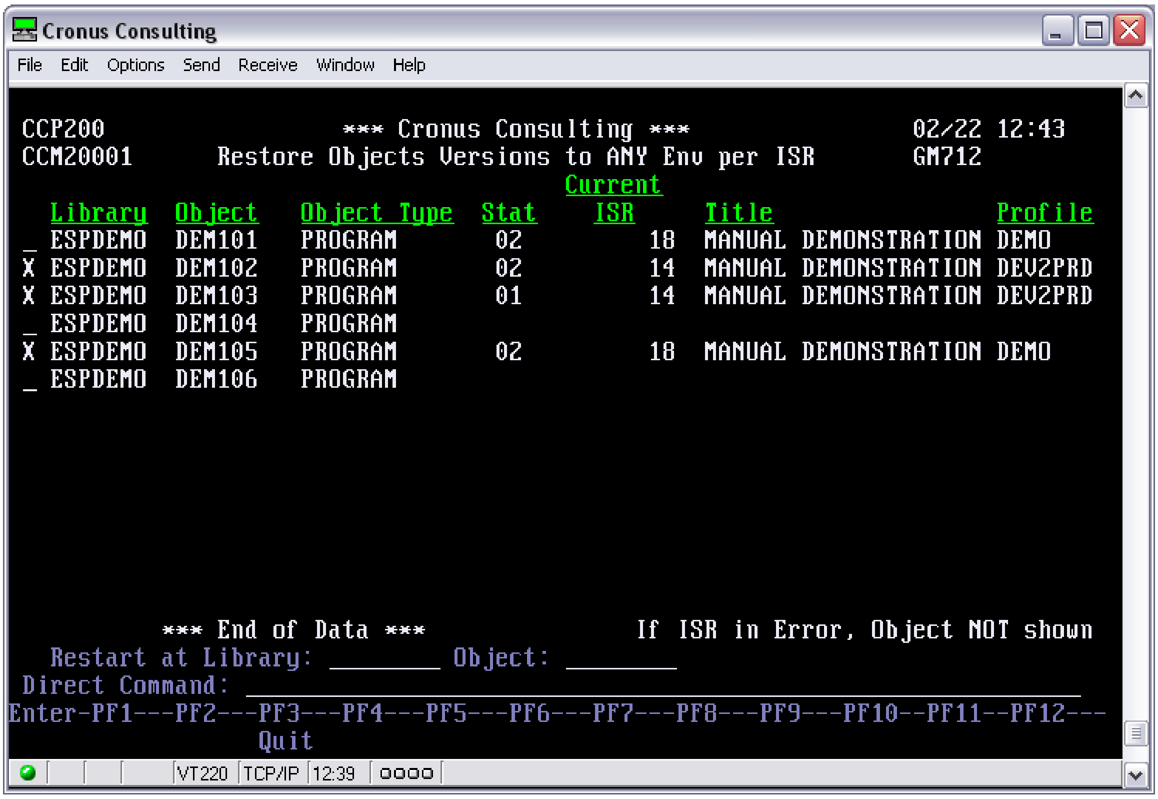
The display function across all environments enables one to first check the code before doing a restore. The display function will display the code on the screen, with the version number, environment name and object name at the top of the window. Use PF3 to exit. Enter ? on the command line and a list of commands will be displayed. Use these to page backwards and forwards and even scan for a specified piece of code. The scan function is not case sensitive and so will find the scan-set in both upper and lower case.

The default is to restore to library RESTORE (which should be used in Production environments so as not to impact on working users), or the user may enter a specific library where the code must be restored to. This library is validated per selected environment and an error will be returned if the library is not valid.

A list of all objects in the Inventory List is displayed for the user to select, starting with the initial scan library set up in CC001 (more than one object may be selected at any given time). Once selected, the linked ISR's will be displayed. If the selection field is not open for any specific ISR, it means that the backups no longer exists for those ISR's, due to no backup taken or backups were deleted due to maximum number of versions set up in CC001, and therefore no DISPLAY or RESTORE can be done. The number of maximum versions is therefore of great importance for the site to decide on when and how to restore.

Once an ISR No has been selected, the environments for that ISR (as were set up from the linked profile) will be reflected and the user may select one or all of the environments, depending on the type of restore or display. Once restore has been confirmed and relevant restore library selected by the user, the restore will commence. If only Display has been selected, code will be displayed on the screen. Once complete for that particular object use PF3 to automatically continue to the next selected object or the same object in the next selected environment.

The backup path is built up in this function using the fuser-backpath set up in CC001 for the selected environment. If only object code exists as a backup, then this object code may be restored, but may not be displayed.



```
CCP200                  *** Cronus Consulting ***               02/22 12:43
CCM20001      Restore Objects Versions to ANY Env per ISR       GM712
                                                 Current
  Library  Object   Object Type  Stat    ISR      Title               Profile
_ ESPDEMO  DEM101   PROGRAM       02          18  MANUAL DEMONSTRATION DEMO
X ESPDEMO  DEM102   PROGRAM       02          14  MANUAL DEMONSTRATION DEV2PRD
X ESPDEMO  DEM103   PROGRAM       01          14  MANUAL DEMONSTRATION DEV2PRD
_ ESPDEMO  DEM104   PROGRAM
X ESPDEMO  DEM105   PROGRAM       02          18  MANUAL DEMONSTRATION DEMO
_ ESPDEMO  DEM106   PROGRAM







          *** End of Data ***              If ISR in Error, Object NOT shown
  Restart at Library: ________ Object: ________
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

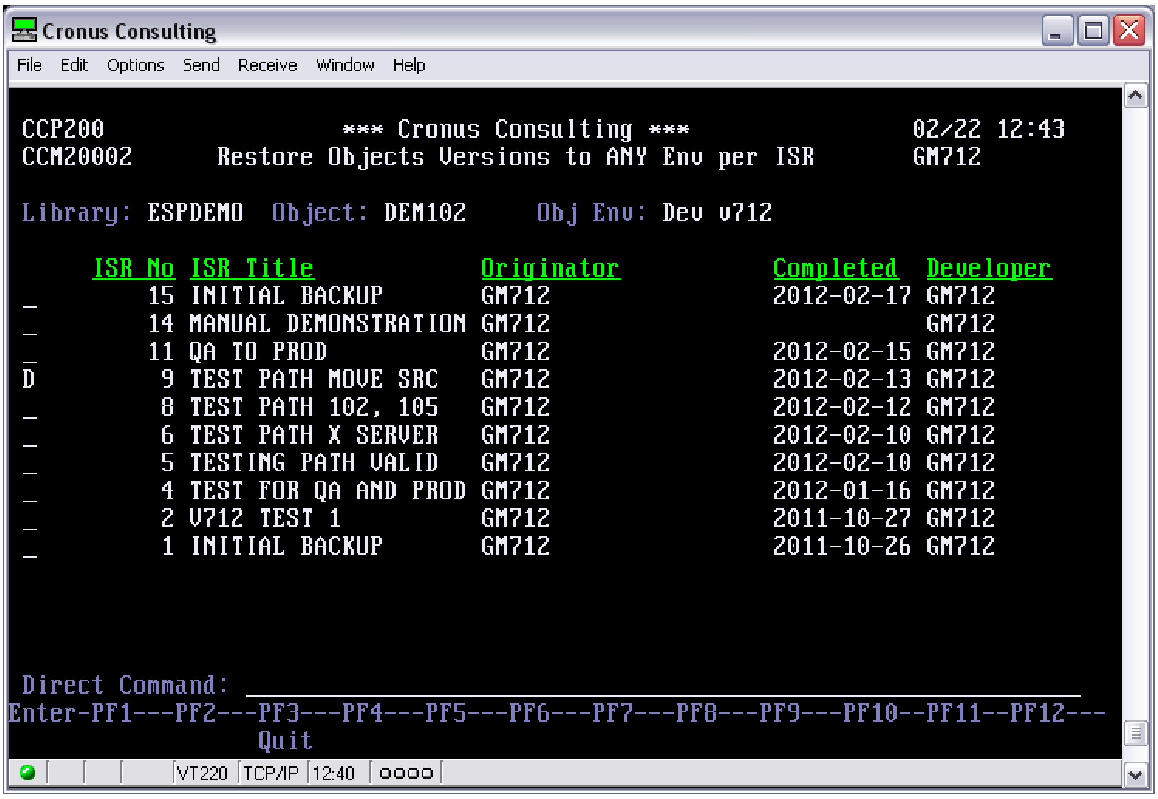
Figure 132: Object Selection for Restore

Select the object(s) to see available versions saved for this object.

The following information is given per object:

• Library	-	Library where object resides (Scanned in Library)
• Object Name	-	Object name
• Object Mode	-	Object programming mode (S/R)
• Object Type	-	Object type description
• Object Status	-	Object status - Blank if not linked
• Current ISR No	-	Current ISR nr - Blank if not linked to an ISR
• ISR Title	-	ISR Title - Blank if not linked to an ISR
• Profile	-	Profile Name if linked to an ISR

Note: This function does not compile the objects but merely restores the source or the object code depending on the backup. For restored source, the object must be manually compiled in each of the libraries in the restored environments.



```
CCP200                 *** Cronus Consulting ***                02/22 12:43
CCM20002       Restore Objects Versions to ANY Env per ISR       GM712

Library: ESPDEMO  Object: DEM102     Obj Env: Dev v712

     ISR No ISR Title            Originator           Completed  Developer
_        15 INITIAL BACKUP       GM712                2012-02-17 GM712
_        14 MANUAL DEMONSTRATION GM712                           GM712
_        11 QA TO PROD           GM712                2012-02-15 GM712
D         9 TEST PATH MOVE SRC   GM712                2012-02-13 GM712
_         8 TEST PATH 102, 105   GM712                2012-02-12 GM712
_         6 TEST PATH X SERVER   GM712                2012-02-10 GM712
_         5 TESTING PATH VALID   GM712                2012-02-10 GM712
_         4 TEST FOR QA AND PROD GM712                2012-01-16 GM712
_         2 V712 TEST 1          GM712                2011-10-27 GM712
_         1 INITIAL BACKUP       GM712                2011-10-26 GM712




 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 133: ISR Selection for Restore or Display

Function Options:

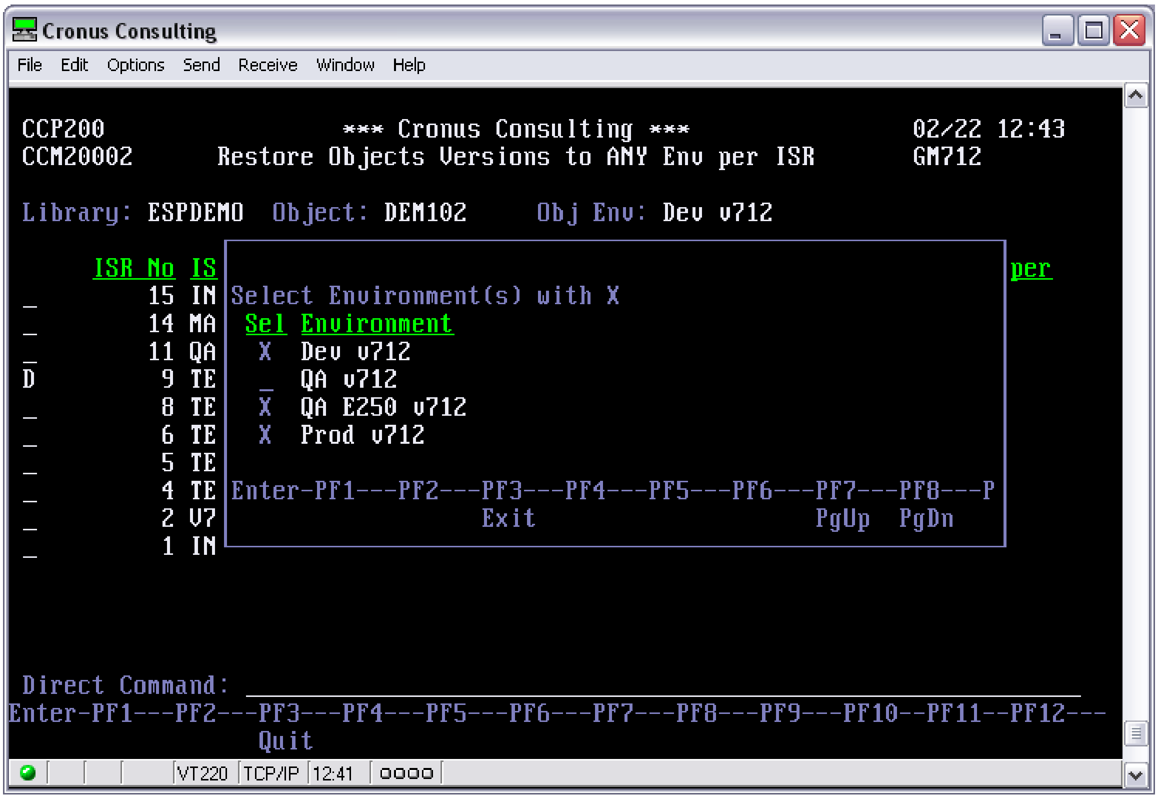
D - Display Object

R - Restore Object

The following information is given per object:

- Current ISR No - Current ISR nr - Blank if not linked to an ISR
- ISR Title - ISR Title - Blank if not linked to an ISR
- Originator - Originator of ISR
- Completed - Date selected ISR was completed
- Developer - Developer/Person that modified the code

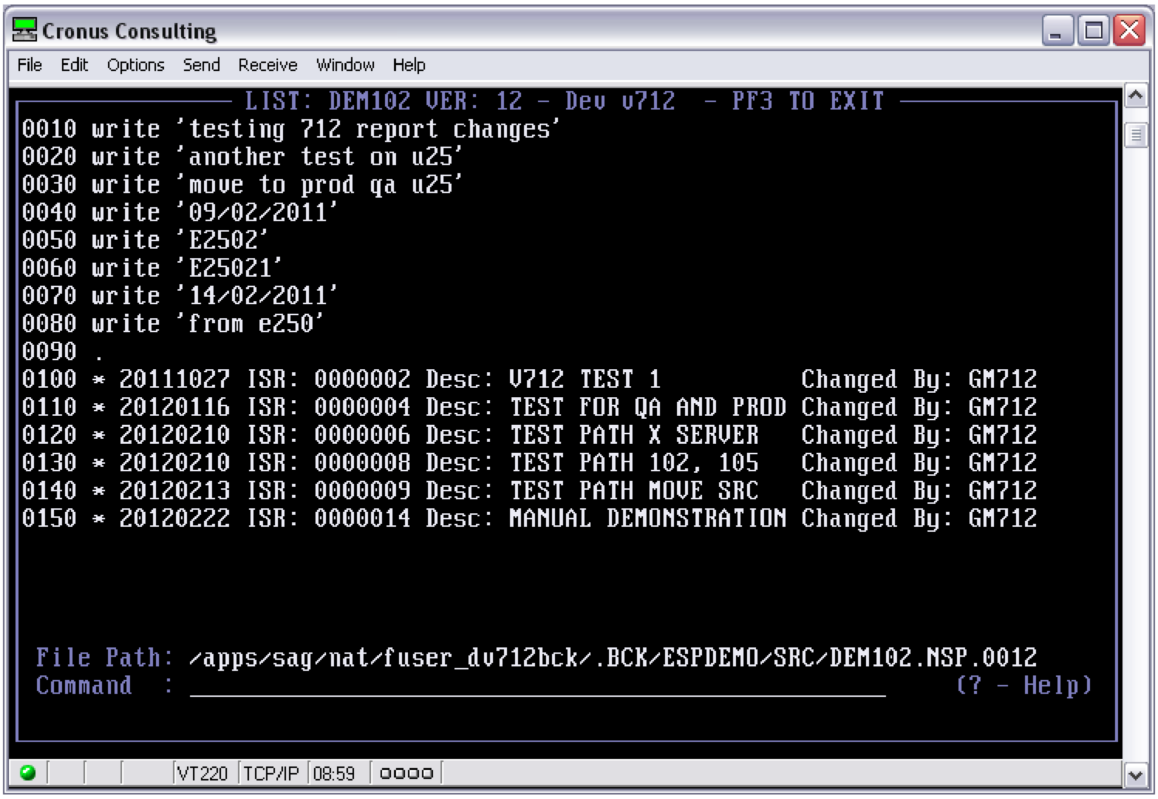
A window will next be displayed of the environments of the selected ISR. It is for this reason that environments may **not** be deleted from CC001, as they may be needed for further use in a restore. If an environment is no required, then mark PATH = N, for all current profiles still in use. This will not allow any further migrations to these environments.



```
CCP200                 *** Cronus Consulting ***                02/22 12:43
CCM20002      Restore Objects Versions to ANY Env per ISR       GM712

Library: ESPDEMO  Object: DEM102     Obj Env: Dev v712

     ISR No  IS                                                 per
_        15  IN Select Environment(s) with X
_        14  MA  Sel Environment
_        11  QA   X  Dev v712
D         9  TE   _  QA v712
_         8  TE   X  QA E250 v712
_         6  TE   X  Prod v712
_         5  TE
_         4  TE Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---P
_         2  V7                   Exit                     PgUp  PgDn
_         1  IN



Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

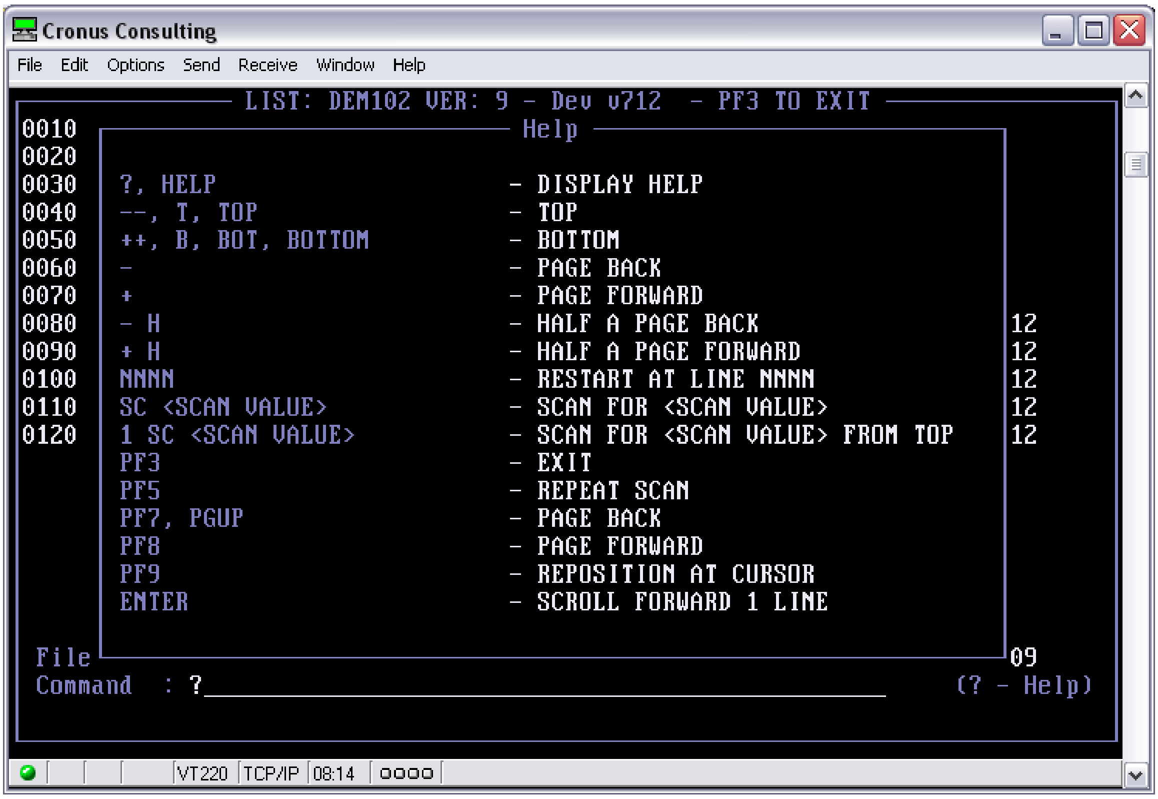
Figure 134: Select Environment for Restore or Display

All available environments linked to the selected ISR, as determined by the profile for that ISR, will be displayed and the user may select with “X” more than one or a subset for restore or display.



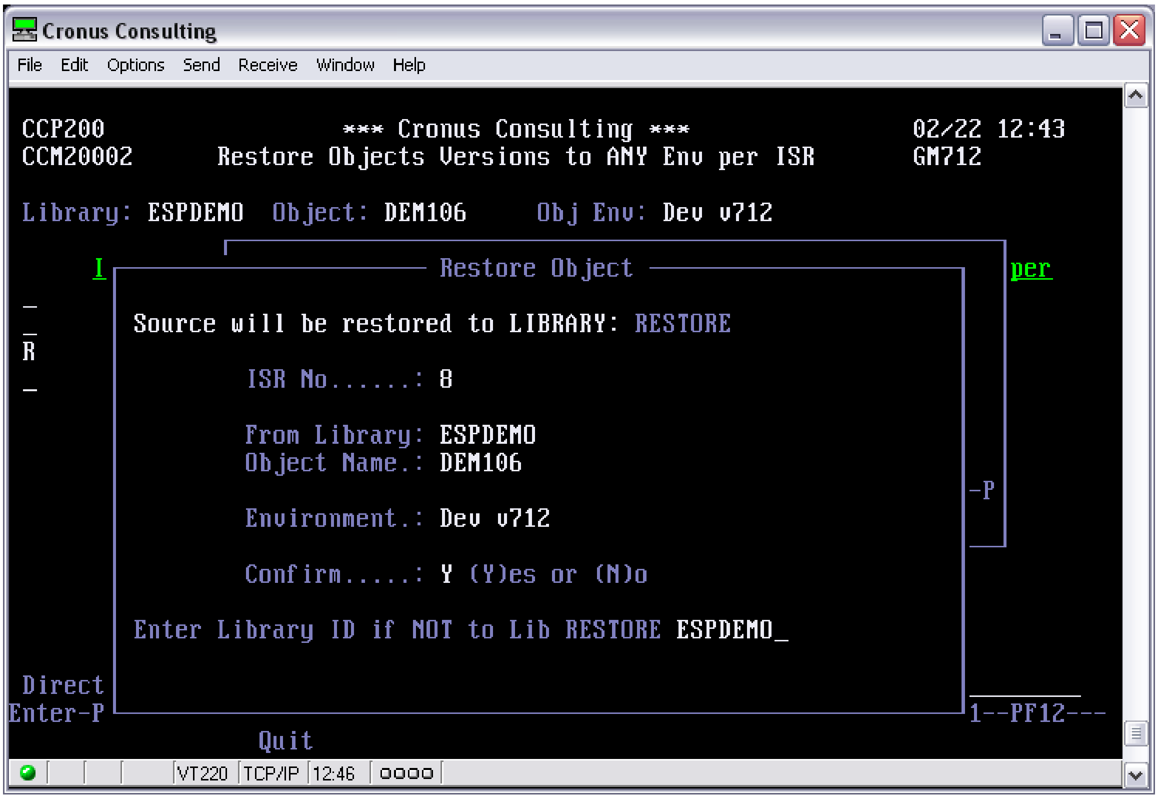
```
 ─────────────── LIST: DEM102 VER: 12 - Dev v712  - PF3 TO EXIT ───────────────
0010 write 'testing 712 report changes'
0020 write 'another test on u25'
0030 write 'move to prod qa u25'
0040 write '09/02/2011'
0050 write 'E2502'
0060 write 'E25021'
0070 write '14/02/2011'
0080 write 'from e250'
0090 .
0100 * 20111027 ISR: 0000002 Desc: V712 TEST 1          Changed By: GM712
0110 * 20120116 ISR: 0000004 Desc: TEST FOR QA AND PROD Changed By: GM712
0120 * 20120210 ISR: 0000006 Desc: TEST PATH X SERVER   Changed By: GM712
0130 * 20120210 ISR: 0000008 Desc: TEST PATH 102, 105   Changed By: GM712
0140 * 20120213 ISR: 0000009 Desc: TEST PATH MOVE SRC   Changed By: GM712
0150 * 20120222 ISR: 0000014 Desc: MANUAL DEMONSTRATION Changed By: GM712



  File Path: /apps/sag/nat/fuser_dv712bck/.BCK/ESPDEMO/SRC/DEM102.NSP.0012
  Command   : __________________________________________________     (? - Help)
```

Figure 135: Display Source Window



```
 ─────────────── LIST: DEM102 VER: 9 - Dev v712  - PF3 TO EXIT ───────────────
0010 ┌──────────────────────────── Help ────────────────────────────┐
0020 │                                                              │
0030 │ ?, HELP                    - DISPLAY HELP                    │
0040 │ --, T, TOP                 - TOP                             │
0050 │ ++, B, BOT, BOTTOM         - BOTTOM                          │
0060 │ -                          - PAGE BACK                       │
0070 │ +                          - PAGE FORWARD                    │
0080 │ - H                        - HALF A PAGE BACK                │12
0090 │ + H                        - HALF A PAGE FORWARD             │12
0100 │ NNNN                       - RESTART AT LINE NNNN            │12
0110 │ SC <SCAN VALUE>            - SCAN FOR <SCAN VALUE>           │12
0120 │ 1 SC <SCAN VALUE>          - SCAN FOR <SCAN VALUE> FROM TOP  │12
     │ PF3                        - EXIT                            │
     │ PF5                        - REPEAT SCAN                     │
     │ PF7, PGUP                  - PAGE BACK                       │
     │ PF8                        - PAGE FORWARD                    │
     │ PF9                        - REPOSITION AT CURSOR            │
     │ ENTER                      - SCROLL FORWARD 1 LINE           │
     │                                                              │
  File└──────────────────────────────────────────────────────────────┘09
  Command   : ?_________________________________________________     (? - Help)
```

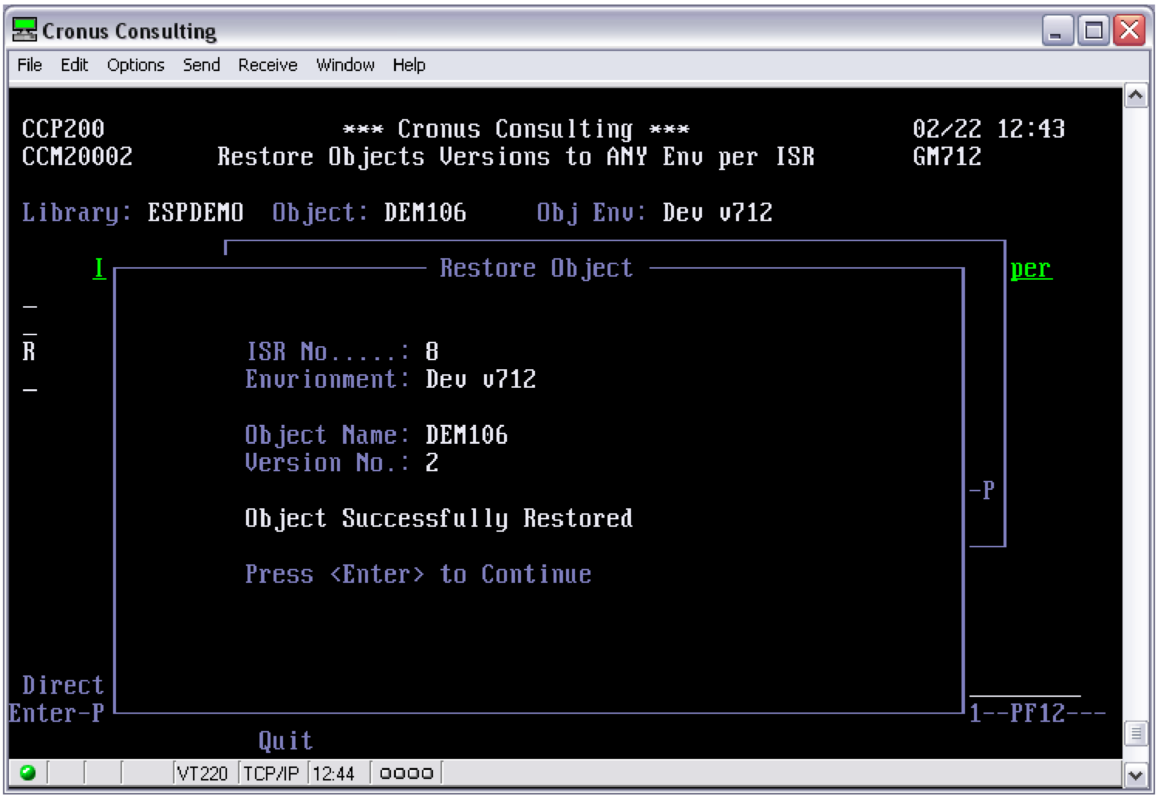
Figure 136: List of commands for User to enter on Command Line



```
CCP200                  *** Cronus Consulting ***                02/22 12:43
CCM20002      Restore Objects Versions to ANY Env per ISR        GM712

Library: ESPDEMO  Object: DEM106     Obj Env: Dev v712

      I ─────────────── Restore Object ──────────────────────  per
_
_    Source will be restored to LIBRARY: RESTORE
R
_              ISR No......: 8

               From Library: ESPDEMO
               Object Name.: DEM106                           -P

               Environment.: Dev v712

               Confirm.....: Y (Y)es or (N)o

     Enter Library ID if NOT to Lib RESTORE ESPDEMO_

Direct
Enter-P                                                      1--PF12---
               Quit
```

Figure 137: Restore Details per ISR

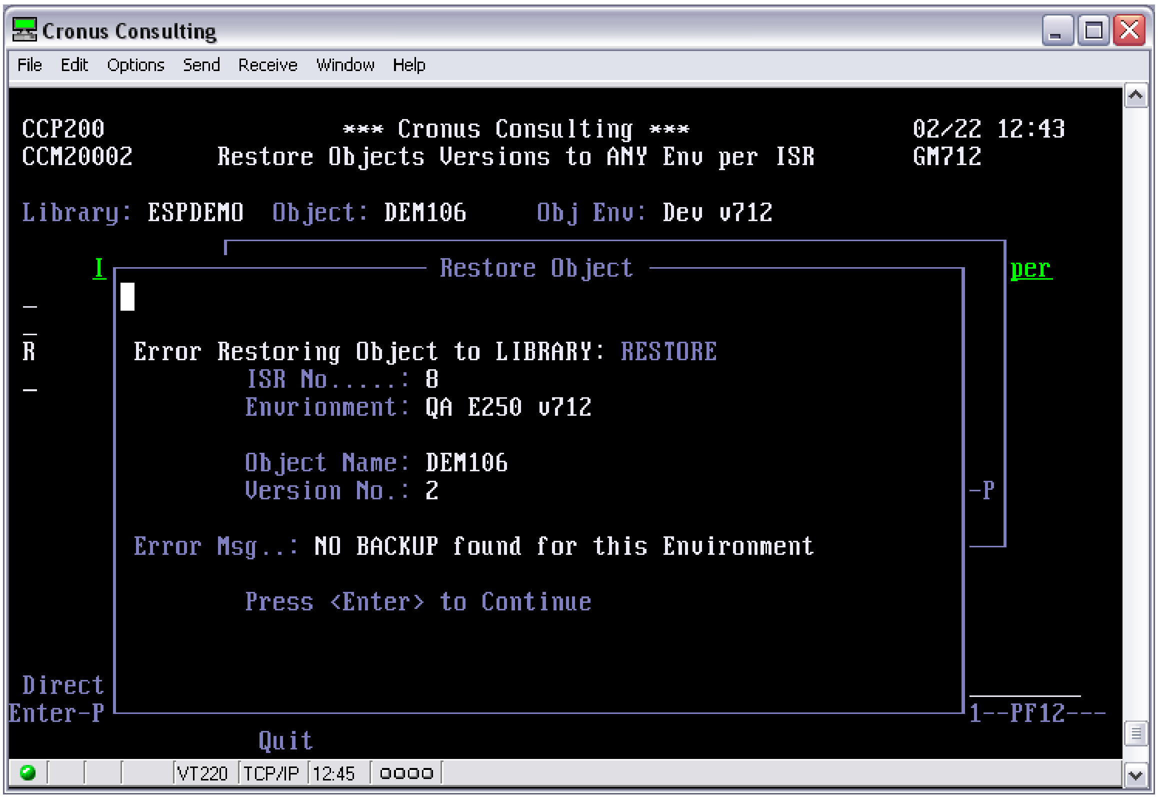
Source code may be restored to library **RESTORE**. (The library RESTORE should be available in Natural Security if Natural Security is used) or a valid library must be entered. The environment being restored to is also displayed, as well as the”from library” that was written away to the history file at the time of backup. This library could now have changed and therefore the object may be restored to another library in the environment. If restore is required to any other library than RESTORE, enter library id as in example above.



```
CCP200                 *** Cronus Consulting ***                02/22 12:43
CCM20002       Restore Objects Versions to ANY Env per ISR       GM712

Library: ESPDEMO  Object: DEM106     Obj Env: Dev v712
      I ┌─────────────────── Restore Object ──────────────────┐ per
_
R               ISR No.....: 8
_               Environment: Dev v712

                Object Name: DEM106
                Version No.: 2                                   -P

                Object Successfully Restored

                Press <Enter> to Continue



Direct
Enter-P └──────────────────────────────────────────────────────┘1--PF12---
          Quit
```

Figure 138: Restore Confirmation per ISR

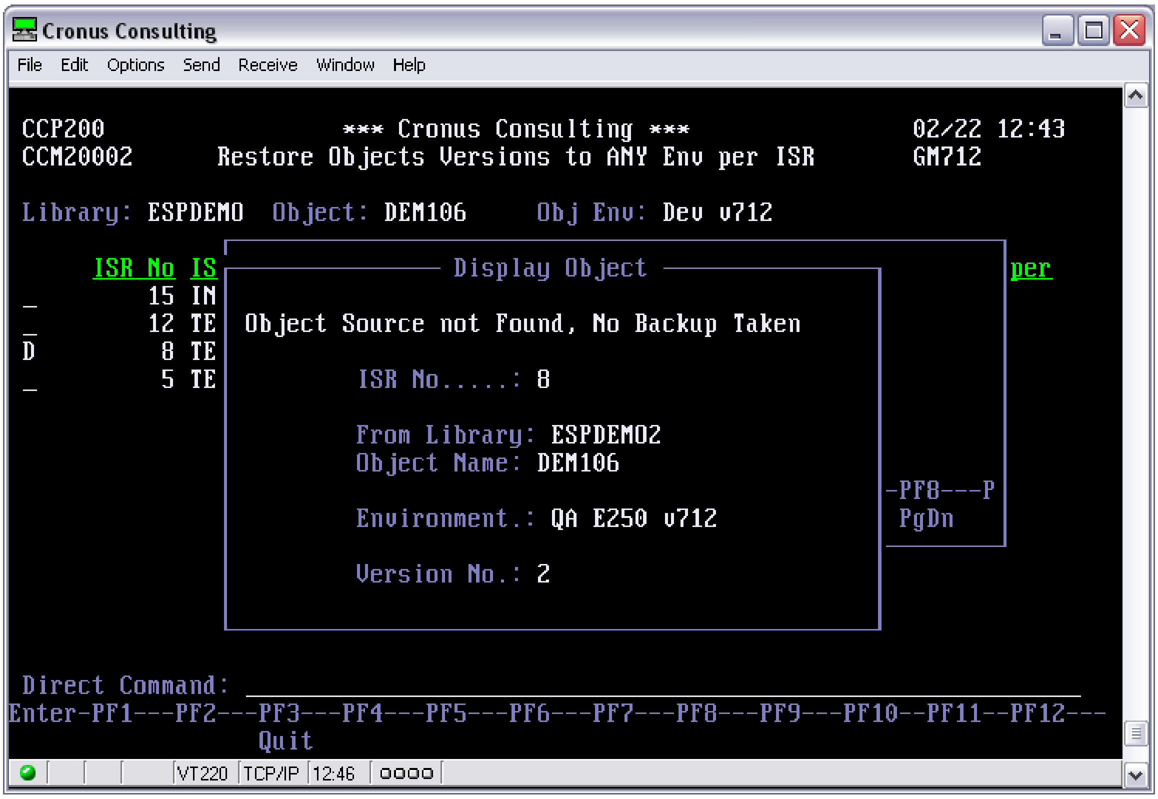
See example of error window below if no backup exists, so no source can be restored.



```
CCP200                 *** Cronus Consulting ***                02/22 12:43
CCM20002       Restore Objects Versions to ANY Env per ISR       GM712

Library: ESPDEMO  Object: DEM106     Obj Env: Dev v712
      I ┌─────────────────── Restore Object ──────────────────┐ per
_
R        Error Restoring Object to LIBRARY: RESTORE
_               ISR No.....: 8
                Environment: QA E250 v712

                Object Name: DEM106
                Version No.: 2                                   -P

         Error Msg..: NO BACKUP found for this Environment

                Press <Enter> to Continue


Direct
Enter-P └──────────────────────────────────────────────────────┘1--PF12---
          Quit
```

Figure 139: No source backup so No Restore

See example of error window below if no backup exists, so no source can be displayed.



```
CCP200                 *** Cronus Consulting ***                02/22 12:43
CCM20002      Restore Objects Versions to ANY Env per ISR       GM712

Library: ESPDEMO  Object: DEM106     Obj Env: Dev v712
                ┌───────────────────────────────────────────────────┐
     ISR No  IS │              ──────────── Display Object ──────────── │ per
 _        15 IN │                                                     │
 _        12 TE │ Object Source not Found, No Backup Taken           │
 D         8 TE │                                                     │
 _         5 TE │         ISR No.....: 8                              │
                │                                                     │
                │         From Library: ESPDEMO2                      │
                │         Object Name: DEM106                         │
                │                                                     │-PF8---P
                │         Environment.: QA E250 v712                  │ PgDn
                │                                                     │
                │         Version No.: 2                              │
                │                                                     │
                └─────────────────────────────────────────────────────┘

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure 140: No source backup so No Display

Appendix A – SCL Transfer

SCL transfer will only be available if EspBatch is set to 'Y' at installation of EspControl. Obviously, EspBatch cannot be set to 'Y' if no EspBatch is actually running. This will in turn create a code ESPBATCH in CC010 with a code value of 'Y' and an extra code value of 'SCL' for code ISRTYPE in CC010. Both of these codes need to be set up if SCL transfer is required.

Once set up, if SCL Transfer is no longer required, delete code value 'SCL' on code ISRTYPE and amend code ESPBATCH to 'N'.

All EspControl routines that allow SCL access, will be discussed below. If no SCL access is applicable, these screens will not be affected at all, no SCL detail or options will be displayed, and will execute as specified in the EspControl manual above.

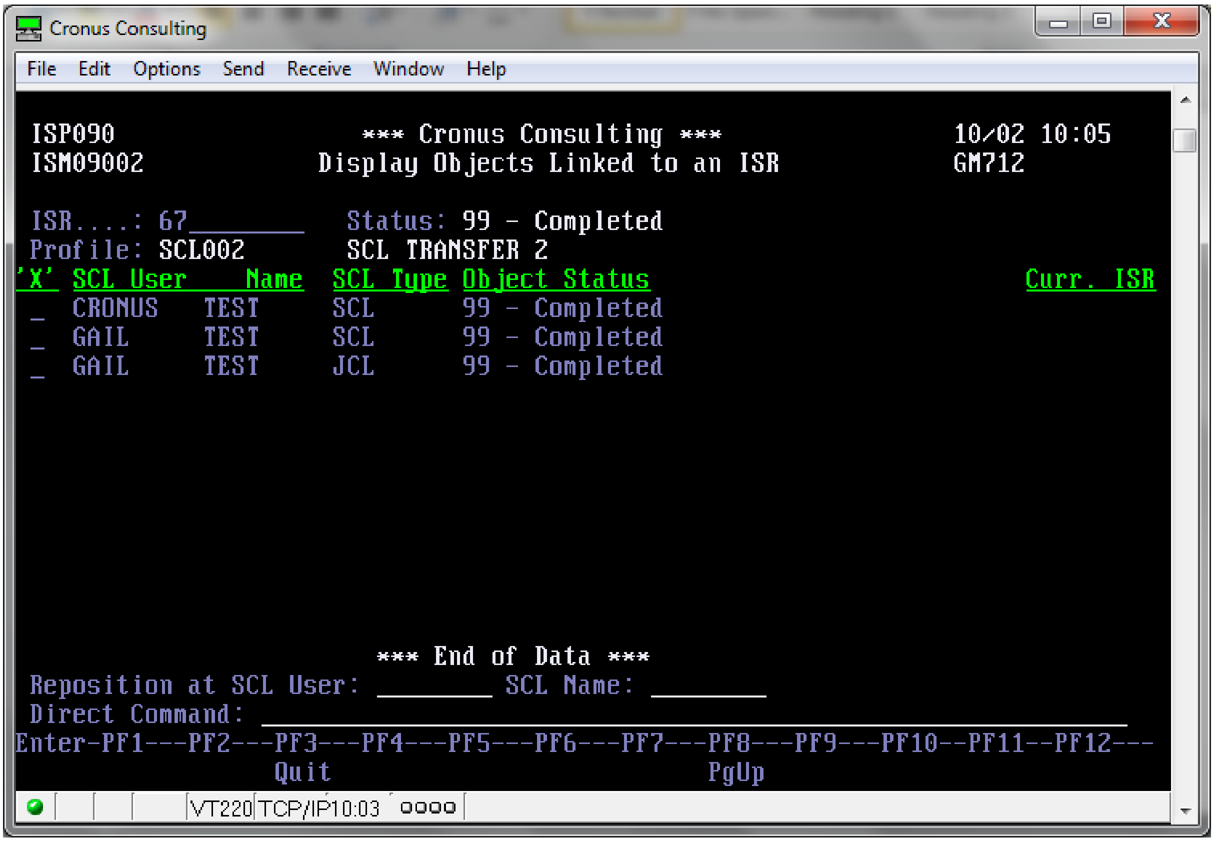
The functions specified below, will detail the SCL option on the screen, and unless the process is different to the function process explained above in the EspControl manual, the execution and rules for the function will remain as explained for objects, and will not appear in the Appendix A at all.

An SCL ISR and a normal ISR may not be mixed together i.e. an SCL ISR will have a different ISR number to a normal object ISR. SCL ISR's must always be linked to ISR Type 'SCL' and this will be the indicator the change control system needs to determine whether it is an SCL or normal ISR function. Due to the fact that specific rules are required for SCL profiles (for e.g. Move source or No source cannot be selected), these ISR's must also be linked to their own profiles. Every SCL profile must start with SCLxxx and this must always be linked to SCL type ISR's.

The backup cycle is completely different for an SCL ISR compared to a normal ISR. See explanation in manual above for backup cycle for normal ISR's. The backup of a SCL is always done BEFORE the move to the next environment, and not after the move as is done in normal ISR's. For this reason, no initial backup is required for SCL's. i.e. no CC350 must be executed for SCL's. No previous backup may be requested when unlinking a SCL from CC050, as the current backup will always be for the current ISR. Therefore, when selecting any restore function, the SCL will be restored to a version of the SCL before it was overwritten in the last migration.

Each point specified below, will use the same number conventions as used in the above manual, for ease of use and will only detail any differences. All other explanation and details may be taken from the EspControl manual as detailed above for Normal ISR's.

These ISR's may be linked and run simultaneously, or they may be executed individually at the user's discretion. The SCL's must be scanned in separately to the normal objects. This will be done for new SCL's via CC050 as with objects, but for the initial scan it must be done via a separate function – CC330. This is the only function that has been separated from normal ISR's. Every other function will detect whether it is an SCL ISR or a normal ISR and execute accordingly.



```
ISP090                  *** Cronus Consulting ***             10/02 10:05
ISM09002               Display Objects Linked to an ISR       GM712

ISR....: 67________     Status: 99 - Completed
Profile: SCL002         SCL TRANSFER 2
'X' SCL User   Name    SCL Type Object Status                    Curr. ISR
 _  CRONUS    TEST     SCL       99 - Completed
 _  GAIL      TEST     SCL       99 - Completed
 _  GAIL      TEST     JCL       99 - Completed

                         *** End of Data ***
 Reposition at SCL User: ________ SCL Name: ________
 Direct Command: _______________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                          PgUp
```

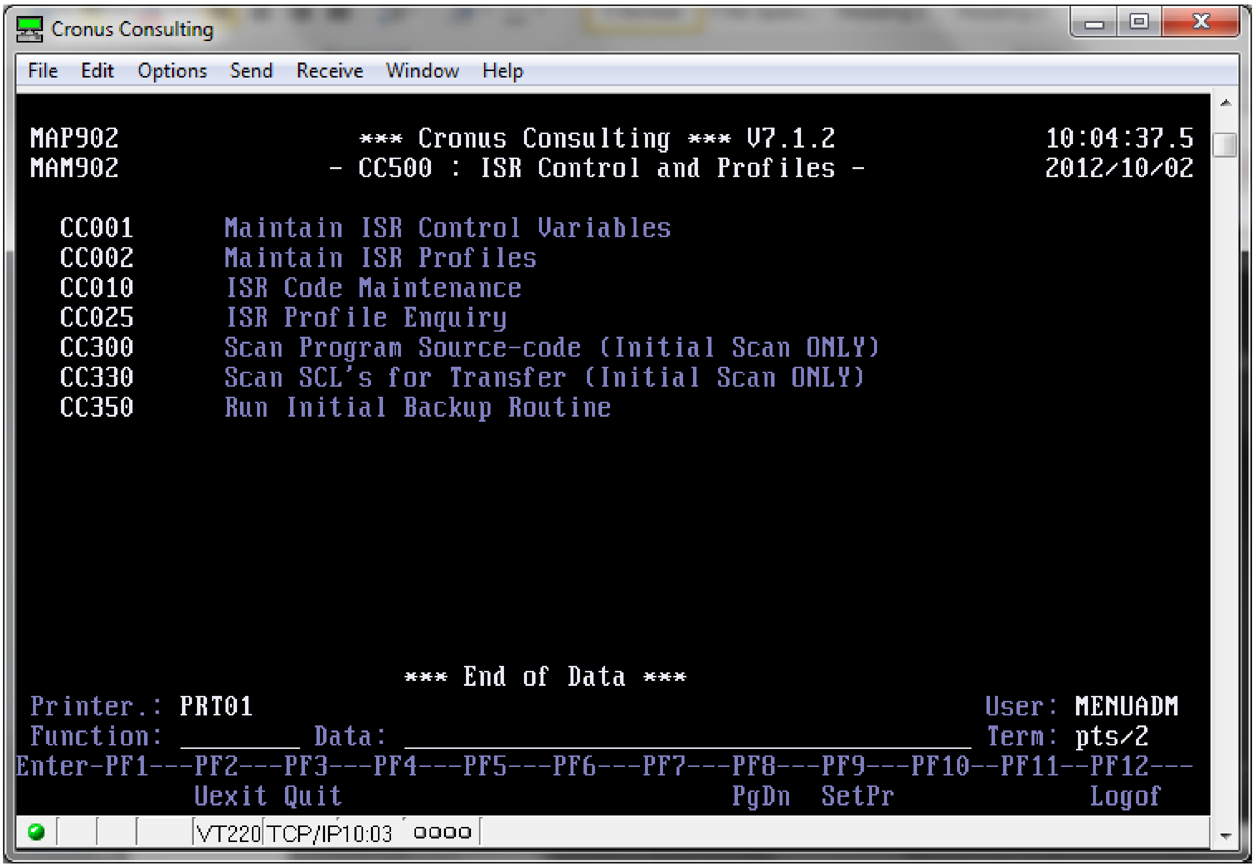
Figure A1: Example of how SCL's will be reflected – per user, per name and per type

Note, if an environment includes entries in CC001 for the same fuser, this must not be included in a profile for an SCL. i.e. only one entry must be marked as a PATH for an SCL. This is because, when migrating normal objects, they may move from one Natural Library to the next, in the same fuser, thereby allowing "duplicate fuser's" with different environment names. Because an SCL is not linked to a Natural environment, it will only occur once in each fuser in EspBatch under JS300.i.e there is one ESPSOFT Natural library per environment. Marking duplicate fuser's will effectively do nothing as the same SCL will overwrite itself.

If the function is to work as is, no further detail will be given, and will not be specified below at all. Note, not all screens will be shown. If an SCL ISR is allowed, the screen will function in the same manner as shown in the screen image below. For objects – Object Name and Library will be reflected. For SCL's – SCL User, SCL Name and SCL Type will be reflected, but the process of the function will remain the same.

2. Menu Overview And Function Overview

Sub Menu CC500



```
MAP902               *** Cronus Consulting *** V7.1.2                 10:04:37.5
MAM902             - CC500 : ISR Control and Profiles -               2012/10/02

  CC001      Maintain ISR Control Variables
  CC002      Maintain ISR Profiles
  CC010      ISR Code Maintenance
  CC025      ISR Profile Enquiry
  CC300      Scan Program Source-code (Initial Scan ONLY)
  CC330      Scan SCL's for Transfer (Initial Scan ONLY)
  CC350      Run Initial Backup Routine





                             *** End of Data ***
 Printer.: PRT01                                                   User: MENUADM
 Function: ________ Data: ______________________________________ Term: pts/2
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Uexit Quit                             PgDn  SetPr            Logof
```

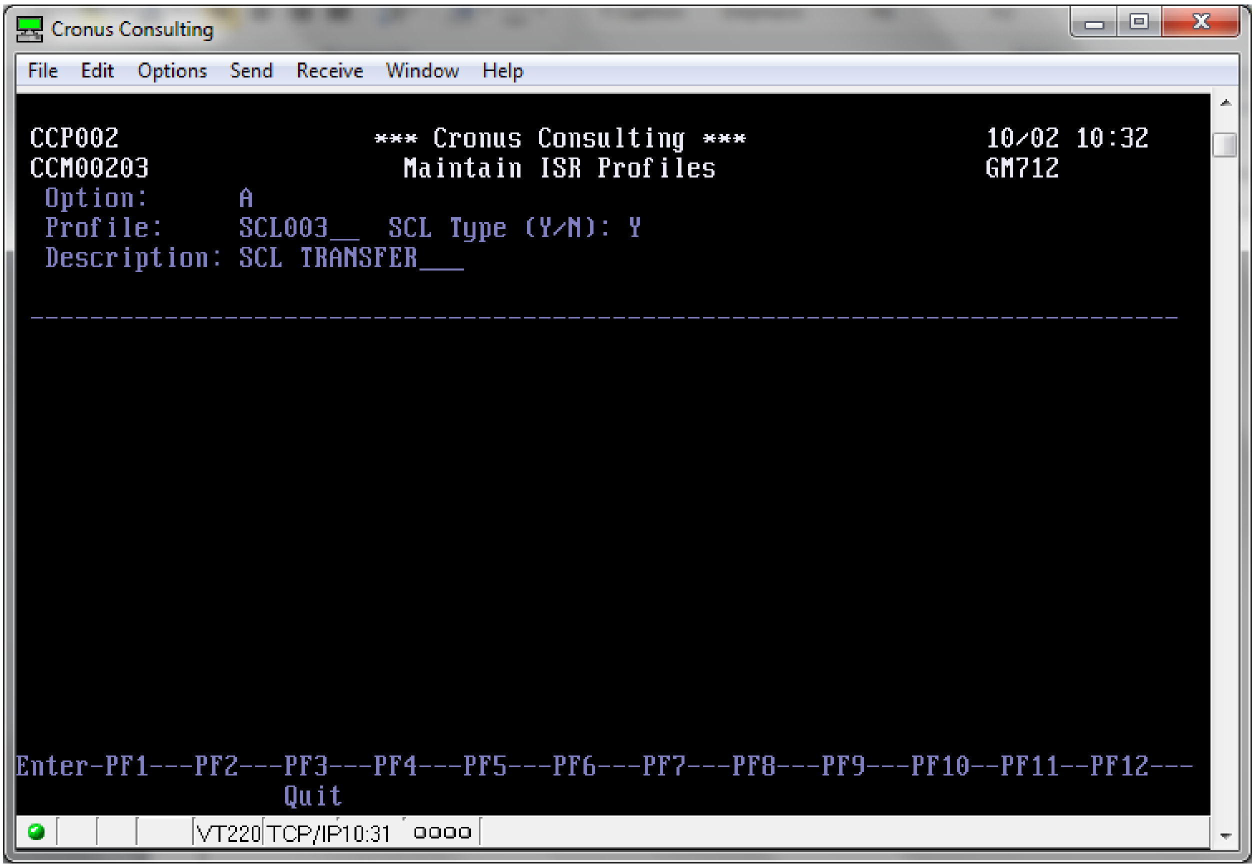
Figure A2: Sub Menu CC500

CC330 – new option for scanning in SCL's. This will only be visible on sub menu CC500, if SCL transfer is allowed. The scanning of new SCL's must be done from the Production environment to set up the correct Inventory List visible in CC050. Any new SCL will be scanned via PF6 in CC050 in the Development environment.

3.1 ISR Control And Profile Function Overview

3.1.2 CC002 – Maintain ISR Profiles

When creating a new profile, the user will be requested to indicate if this is an SCL profile or a normal profile. Once created, this profile type will be displayed on the CC002 maintenance screen, but cannot be amended. If an error has been made about the type of profile, delete the profile and recapture.



```
CCP002                  *** Cronus Consulting ***                10/02 10:32
CCM00203                  Maintain ISR Profiles                  GM712
 Option:      A
 Profile:     SCL003__  SCL Type (Y/N): Y
 Description: SCL TRANSFER___

 -----------------------------------------------------------------------------

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A3: CC002 – SCL Type Y or N

- For normal type profiles, mark SCL Type as N
- For SCL type profiles, mark SCL Type as Y
- If SCL type marked as Y, profile name must start with SCLxxxxx
- IF SCL type profile created, specific rules apply and will force an error if not followed:
  - (a) Initial Scan SCL user must not be a library, but a valid SCL user in JS300 (the main user in the Production environment)
  - (b) Restore indicator may never be N, always mark with Y
  - (c) Comment must be marked with N, as no text comment will be added to the SCL
  - (d) Allow Source must be Y
  - (e) Source Unload must be N (No SYSOBJH function available for SCL's)

(f) Stow/Cat indicator must be S

(g) Backup must be marked with Y, backups always made before the move of an SCL

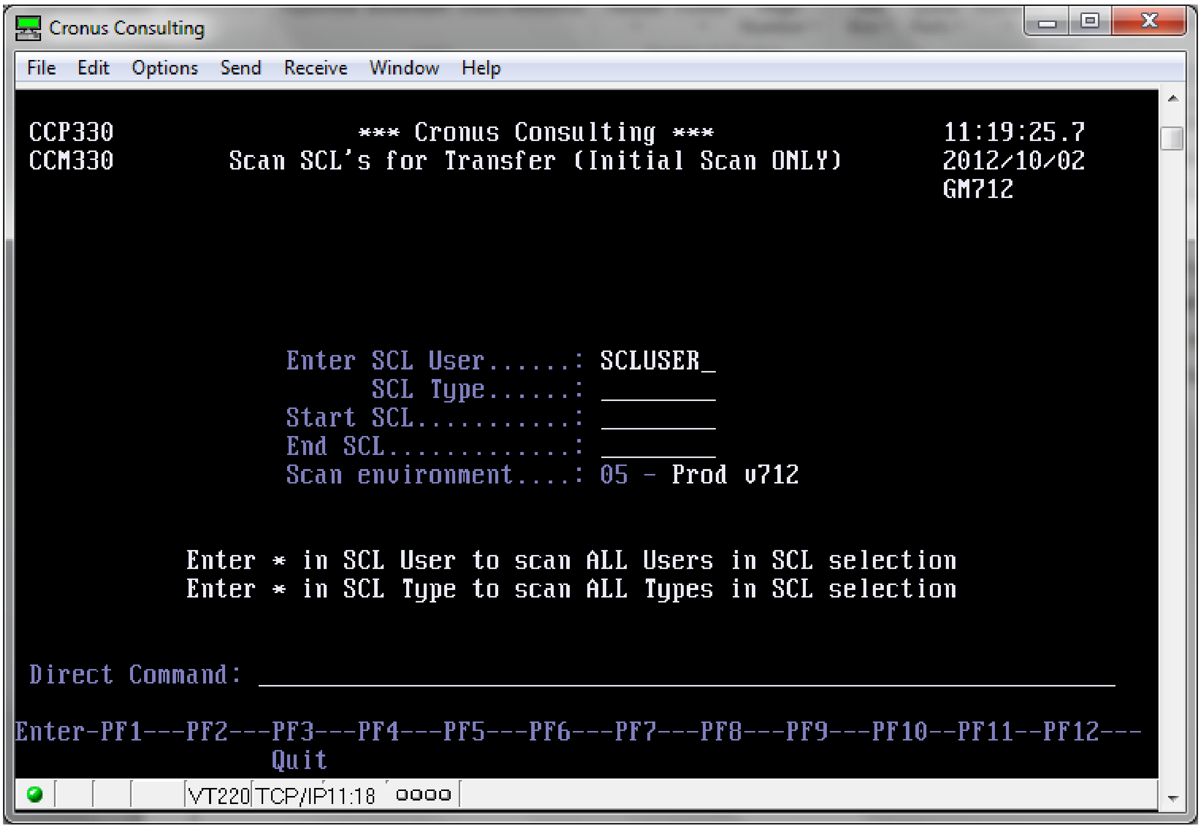
(h) ISR Library is not allowed, as SCL's are transferred using the same user, name and type that they were scanned in with.

3.1.3 CC010 – ISR Code

New codes ESPBATCH must be marked with Y for the SCL transfer options to be valid. This will be done at installation time, if a new installation, and can be amended via CC010 after installation if necessary.
A new code value SCL will be automatically added at installation time for the code ISRTYPE. These 2 codes work together. If at a later stage it is decided not to use SCL transfer anymore, and ESPBATCH is amended to N, then the ISRTYPE SCL must first be deleted, before the amendment can take place.

3.1.5 CC330 – Scan SCL's for Transfer

This is a new function to scan in SCL's from the EspBatch environment. Only SCL's may be scanned in from this option and objects must be scanned in via CC300 as specified in the manual above. This function is used to populate the EspControl SCL inventory and update the "new-scl" indicator to "old" on all the SCL's being scanned in. The function should **only** be executed during the installation procedure of EspControl. All SCL's scanned will be recorded as existing SCL's in all the environments (to which the SCL has been linked in an ISR to a SCL profile) which means that the ISR transfer flow will **start** from the Master Index environment to the Initial Environment specified on the profile. The SCL scan must take place from the Production environment (and not the Development environment as is the case for normal ISR's).



```
CCP330               *** Cronus Consulting ***                  11:19:25.7
CCM330        Scan SCL's for Transfer (Initial Scan ONLY)       2012/10/02
                                                                GM712



                  Enter SCL User......: SCLUSER_
                        SCL Type......: ________
                  Start SCL...........: ________
                  End SCL.............: ________
                  Scan environment....: 05 - Prod v712


            Enter * in SCL User to scan ALL Users in SCL selection
            Enter * in SCL Type to scan ALL Types in SCL selection


 Direct Command: ____________________________________________________________

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A4: CC330 – Scan SCL's for Transfer

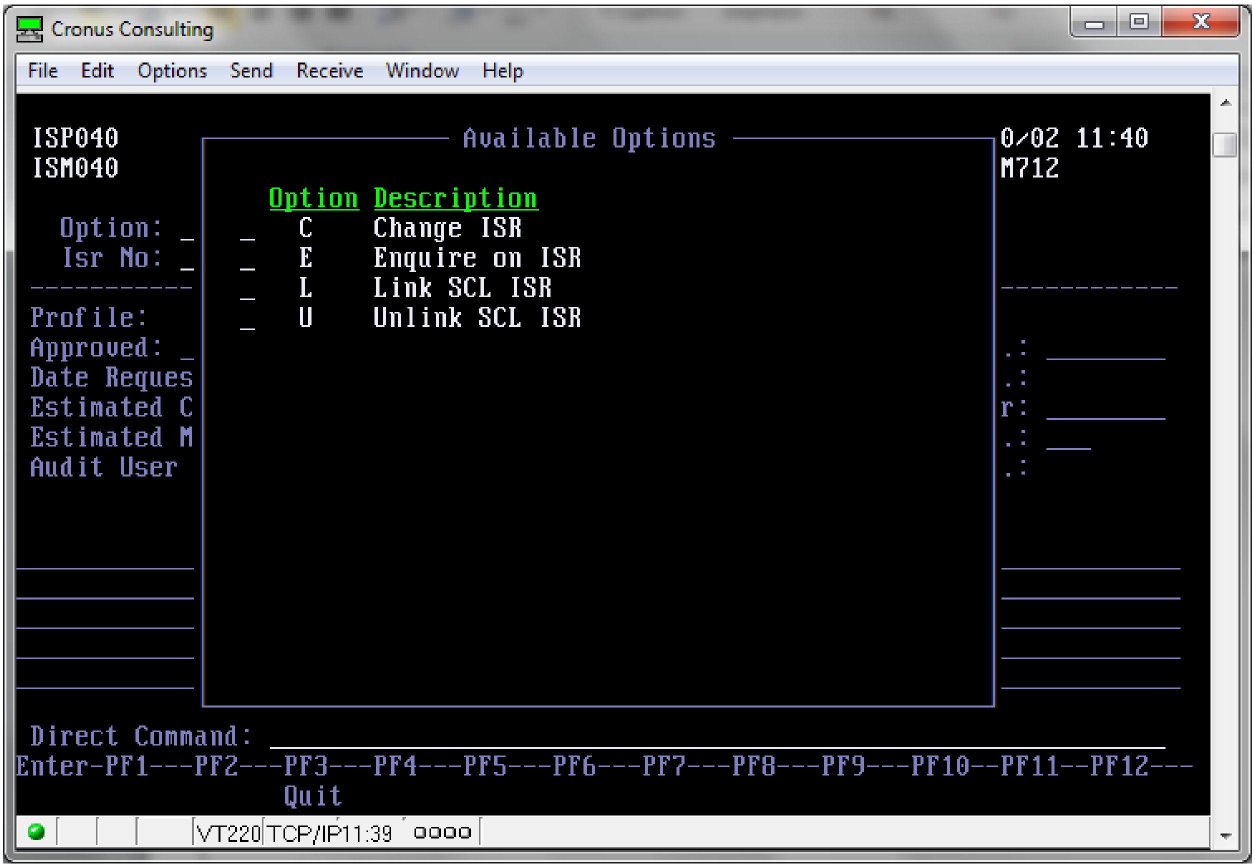
3.1.6 CC350 – Run Initial Backup Routine

This routine must not be executed for SCL's. No initial backup is required, as each SCL will be backed up before the move to the next environment and not after the move as for normal ISR's.

3.2 ISR Transfer Function Overview

3.2.2 CC040 – Approve ISR Request

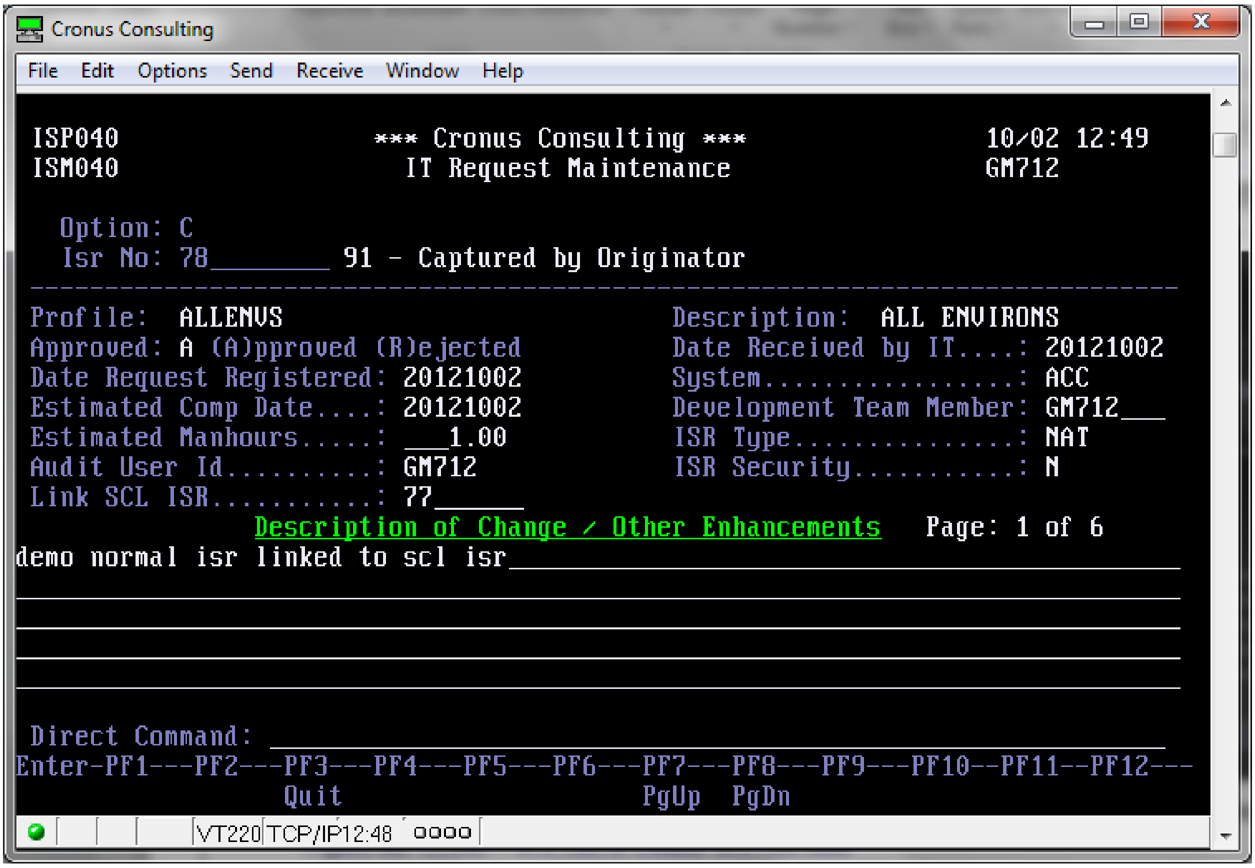
Approve the SCL ISR as normal. However, the ISRTYPE must be selected as SCL and the profile must have been set up in CC030 as an SCL type Profile. Failure to do this will result in the SCL ISR not being approved. There is a new option where the SCL ISR may be linked to a normal ISR. This will enable the migration to be run in synch and will prompt the user to start the SCL ISR once the normal ISR has completed one move to the next environment. To link the ISR, the normal ISR must be used as the base. In CC040, either C for change the normal ISR, or L for Link of an SCL ISR – but in both cases, use the normal ISR number. Enter the SCL ISR number in the "LINK SCL ISR" field as show in the figure A6 below. This must be a SCL type ISR and must also be in the correct status (new). Once a SCL ISR has been through a migration, it cannot be linked to a normal ISR, unless the entire SCL ISR is restored to the initial environment. Once linked, if the SCL ISR is enquired on, it will reflect the linked normal ISR as enquiry only. An SCL ISR can however be unlinked at any time, or when in any status (unless complete), from the normal ISR. Use option U for the unlinking, and enter the normal ISR number, and then remove the SCL ISR from the linked SCL ISR field.



```
ISP040      ———————— Available Options ————————  0/02 11:40
ISM040                                            M712

                 Option Description
  Option: _   _     C    Change ISR
  Isr No: _   _     E    Enquire on ISR
-----------   _     L    Link SCL ISR             ------------
Profile:      _     U    Unlink SCL ISR
Approved: _                                       .:  ________
Date Reques                                       .:
Estimated C                                       r:  ________
Estimated M                                       .:  ___
Audit User                                        .:

Direct Command: ______________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A5: CC040 – New options L and U

When linking an SCL ISR to a normal ISR, it will only be possible to run the SCL ISR in tandem via CC100 or CC105. If the SCL ISR number is entered in CC100, an error will be given to inform the user to run the normal ISR. If this is no longer required, unlink via CC040 and then the SCL ISR may again be run individually. If no link of the SCL ISR has taken place, then this SCL ISR may be entered in CC100 or CC105. The linking of an ISR does not affect the Return option CC102. If an SCL of a linked ISR is to be returned, it must be run individually in CC102.



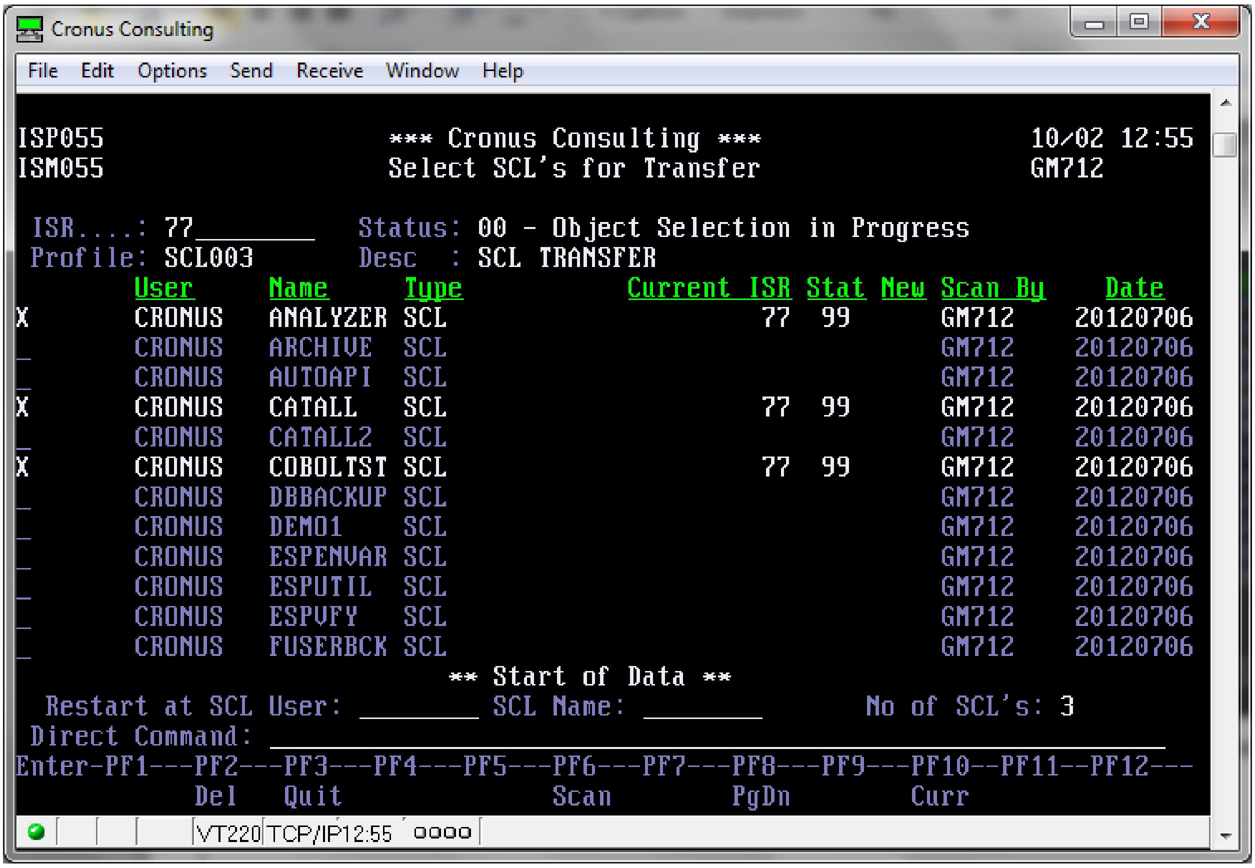
```
ISP040                 *** Cronus Consulting ***                 10/02 12:49
ISM040                   IT Request Maintenance                  GM712

  Option: C
  Isr No: 78________  91 - Captured by Originator
 -----------------------------------------------------------------------------
 Profile:  ALLENVS                          Description:  ALL ENVIRONS
 Approved: A (A)pproved (R)ejected          Date Received by IT....: 20121002
 Date Request Registered: 20121002          System.................: ACC
 Estimated Comp Date....: 20121002          Development Team Member: GM712___
 Estimated Manhours.....: ___1.00           ISR Type...............: NAT
 Audit User Id..........: GM712             ISR Security...........: N
 Link SCL ISR...........: 77______
                Description of Change / Other Enhancements   Page: 1 of 6
demo normal isr linked to scl isr______________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                      PgUp  PgDn
```

Figure A6: CC040 – SCL ISR in Linked SCL ISR field

As reflected in the example above, SCL ISR 77 is going to be linked to normal ISR 78. When migrating via CC100 or CC105, only enter ISR number 78, and once a move has completed for 78, the function will automatically call SCL ISR 77 to be migrated as well.

3.2.3 CC050 – Link SCL's to an ISR

The normal CC050 function has been amended to allow both normal and SCL type ISR's. When an ISR number is entered and CC050 detects that it is an SCL ISR, it calls the Link SCL's to an ISR routine automatically. SCL's may be linked to an ISR via an 'X' in the select column in the same manner as normal objects. However, no library selection exists as SCL's must be transferred to and from environments with the same SCL user and SCL Type. SCL's may be unlinked by removing the 'X' from the selection column, users will be requested to do a restore (if in correct status) but only current versions restores will be allowed. Previous backup restores are not available as they are in normal object ISR's.



```
ISP055                   *** Cronus Consulting ***                  10/02 12:55
ISM055                   Select SCL's for Transfer                  GM712

 ISR....: 77________   Status: 00 - Object Selection in Progress
 Profile: SCL003       Desc   : SCL TRANSFER
        User     Name     Type           Current ISR Stat New Scan By    Date
X       CRONUS   ANALYZER SCL                     77  99      GM712    20120706
_       CRONUS   ARCHIVE  SCL                                 GM712    20120706
_       CRONUS   AUTOAPI  SCL                                 GM712    20120706
X       CRONUS   CATALL   SCL                     77  99      GM712    20120706
_       CRONUS   CATALL2  SCL                                 GM712    20120706
X       CRONUS   COBOLTST SCL                     77  99      GM712    20120706
_       CRONUS   DBBACKUP SCL                                 GM712    20120706
_       CRONUS   DEMO1    SCL                                 GM712    20120706
_       CRONUS   ESPENVAR SCL                                 GM712    20120706
_       CRONUS   ESPUTIL  SCL                                 GM712    20120706
_       CRONUS   ESPVFY   SCL                                 GM712    20120706
_       CRONUS   FUSERBCK SCL                                 GM712    20120706
                             ** Start of Data **
  Restart at SCL User: ________ SCL Name: ________       No of SCL's: 3
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Del   Quit              Scan        PgDn        Curr
```

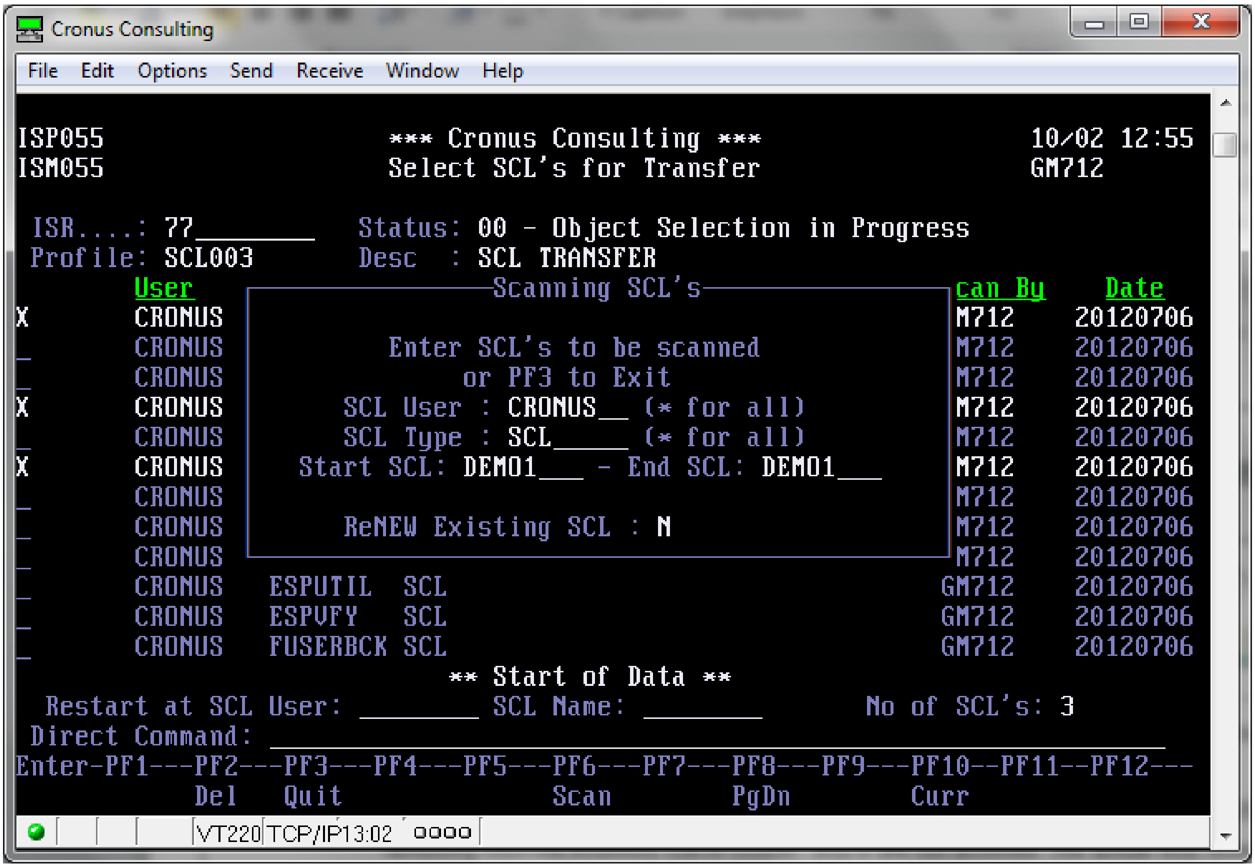
Figure A7: CC050 – Select SCL's for Transfer

The only PFKEYS available are PF2, PF3, PF6, PF7, PF8 and PF10. The other PFKEYS visible in CC050 for a normal ISR are not applicable to SCL's and so cannot be selected.

- The common keys PF3 for Quit, PF7 for PgUp, PF8 for PgDn and PF10 for Curr and All operate as normal
- PF6 – scan in SCL's. If a new SCL has been created in the Development ESPBATCH, scan in this SCL via PF6, which will create a new entry in CC050. 'Y' will be indicated under New and when a migration is done the New SCL will follow the same rules as a New object. There will be

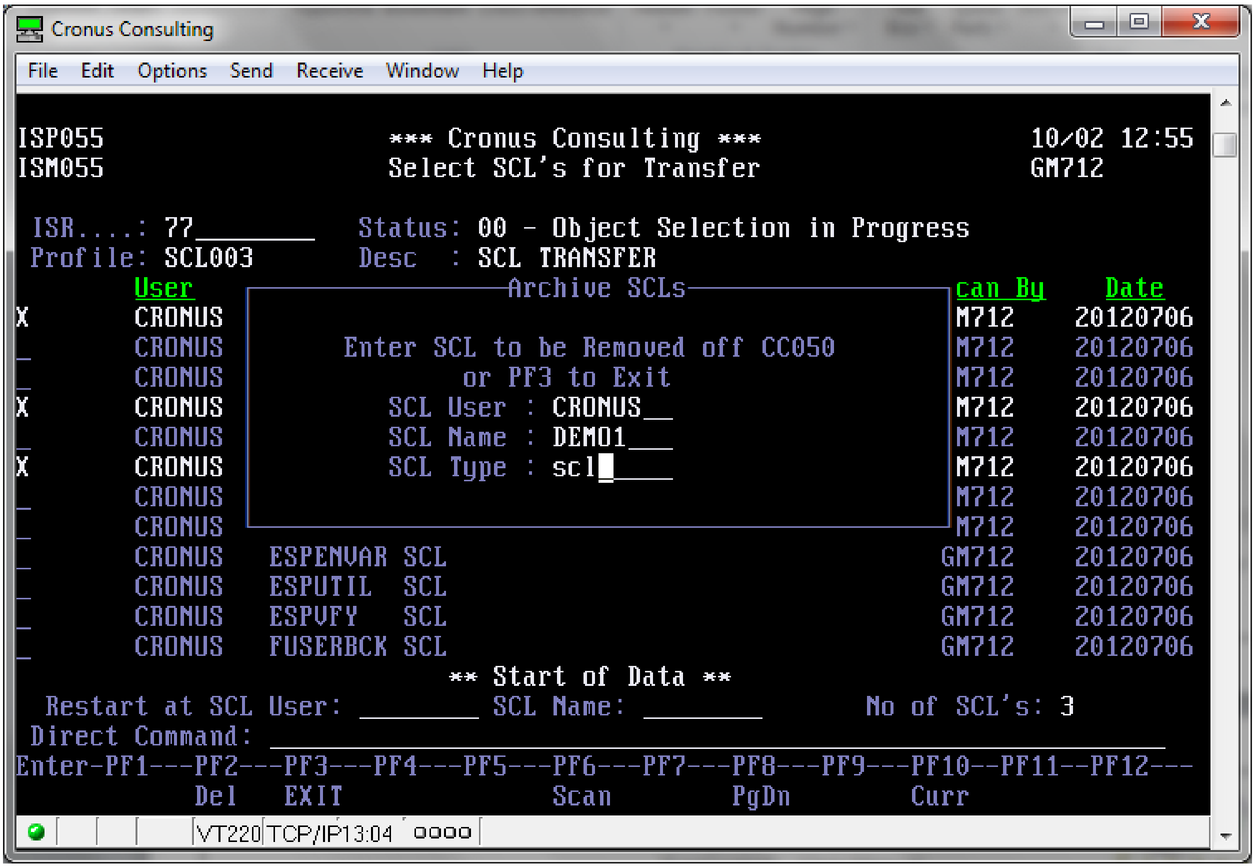
no download from Production and because the SCL does not exist, there will be no backup of the SCL in the next environment. See figure A8.

- PF2 – Delete SCL off the Inventory List. Unlike Objects which must be archived via CC250 when removing from the Inventory List in CC050, SCL's are not archived. The actual SCL does not get deleted from EspBatch, only the entry in CC050 gets removed, which means that no further migration will be possible for this SCL, but the SCL will still exist in all environments in EspBatch. Removal from EspBatch must be done via JS300 as is normal for SCL's. See figure A9.



```
ISP055                   *** Cronus Consulting ***                  10/02 12:55
ISM055                   Select SCL's for Transfer                  GM712

 ISR....: 77________     Status: 00 - Object Selection in Progress
 Profile: SCL003         Desc   : SCL TRANSFER
        User   ┌────────────────Scanning SCL's────────────────┐can By    Date
X       CRONUS │                                              │M712    20120706
_       CRONUS │         Enter SCL's to be scanned            │M712    20120706
_       CRONUS │              or PF3 to Exit                  │M712    20120706
X       CRONUS │      SCL User : CRONUS__ (* for all)         │M712    20120706
_       CRONUS │      SCL Type : SCL_____ (* for all)         │M712    20120706
X       CRONUS │   Start SCL: DEMO1___ - End SCL: DEMO1___    │M712    20120706
_       CRONUS │                                              │M712    20120706
_       CRONUS │      ReNEW Existing SCL : N                  │M712    20120706
_       CRONUS └──────────────────────────────────────────────┘M712    20120706
_       CRONUS   ESPUTIL  SCL                                 GM712    20120706
_       CRONUS   ESPVFY   SCL                                 GM712    20120706
_       CRONUS   FUSERBCK SCL                                 GM712    20120706
                             ** Start of Data **
  Restart at SCL User: ________ SCL Name: ________       No of SCL's: 3
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Del   Quit              Scan        PgDn        Curr
```

Figure A8: CC050 – New SCL to be scanned



```
ISP055                   *** Cronus Consulting ***                10/02 12:55
ISM055                   Select SCL's for Transfer                GM712

 ISR....: 77________     Status: 00 - Object Selection in Progress
 Profile: SCL003         Desc   : SCL TRANSFER
        User    ┌────────────Archive SCLs────────────┐can By    Date
X       CRONUS  │                                    │M712    20120706
_       CRONUS  │   Enter SCL to be Removed off CC050│M712    20120706
_       CRONUS  │           or PF3 to Exit           │M712    20120706
X       CRONUS  │        SCL User : CRONUS__         │M712    20120706
_       CRONUS  │        SCL Name : DEMO1___         │M712    20120706
X       CRONUS  │        SCL Type : scl_____         │M712    20120706
_       CRONUS  │                                    │M712    20120706
_       CRONUS  └────────────────────────────────────┘M712    20120706
_       CRONUS   ESPENVAR SCL                        GM712    20120706
_       CRONUS   ESPUTIL  SCL                        GM712    20120706
_       CRONUS   ESPVFY   SCL                        GM712    20120706
_       CRONUS   FUSERBCK SCL                        GM712    20120706
                          ** Start of Data **
  Restart at SCL User: ________ SCL Name: ________       No of SCL's: 3
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
            Del   EXIT              Scan        PgDn        Curr
```

Figure A9: CC050 – SCL to be Removed

3.2.4 CC054 – Copy an ISR

The copy function operates as normal but a check exists that will only allow normal ISR's to be copied to normal ISR's and SCL ISR's to be copied to SCL ISR's. I.E. both Copy from and Copy To must be the same type of ISR.

3.2.5 CC100 – Transfer an ISR between Environments

The transfer of SCL's differs to the transfer of normal objects in the manner of the actual transfer, not in the running of the routine CC100. An SCL ISR may be run via CC100 individually or if linked to a normal object ISR, it will be run in tandem with the normal ISR. If the SCL ISR is run individually, CC100 will process as normal with regards to the rules of migration, approvals and returns. The actual transfer of the SCL, whether individually run or linked to a normal ISR, will be detailed below.

Linked ISR's

Only the normal ISR number will be entered and the routine will prompt the user to start the linked SCL ISR, once the normal ISR has completed one migration. In this manner, both the linked normal object ISR and the SCL ISR will always be in the same status and will be transferred together to each environment in the selected profile. Each ISR will use its own profile to determine the migration as an SCL ISR has to be linked to an SCL type profile.

The exception to this rule is if the user is prompted to run the SCL ISR and the user elects to Exit via PF3, and not go through with the SCL ISR. In this case the SCL ISR will be one migration behind the normal object ISR. However, when running CC100 again, even if the SCL ISR is behind the normal ISR, enter the normal ISR number. CC100 will control the migrations of linked ISR's and always ensure that each ISR will be on the same level / status before running the next migration. In this case, when entering the normal ISR number via CC100, CC100 will inform the user that the SCL ISR is one migration behind and immediately transfer the user to the SCL migration and will ignore the normal ISR migration, until the linked SCL ISR's are in the same status. See screen images below to see detail. The rules of CC100 will apply to both linked ISR's and will not allow any migration of either ISR to be commenced until all the validations have been passed. For example, if only the SCL profile specifies approval and when running CC100, the normal ISR does not request approval, the normal ISR will not be processed and an error will be displayed that the linked SCL ISR must first be approved. This will apply to approvals, user / group security, return indicators, ISR's in hold. If a normal ISR goes through the final migration, completes and then the user exits before the completion migration cycle of the SCL, the next time CC100 is run, the SCL ISR number must be used, even though it was linked. The user will be prompted to do this. If at any time, a linked SCL ISR is not required to be linked anymore, use option U in CC040 to unlink the ISR. Note, an SCL ISR can only be linked to a normal ISR if no migration of the normal ISR has taken place.

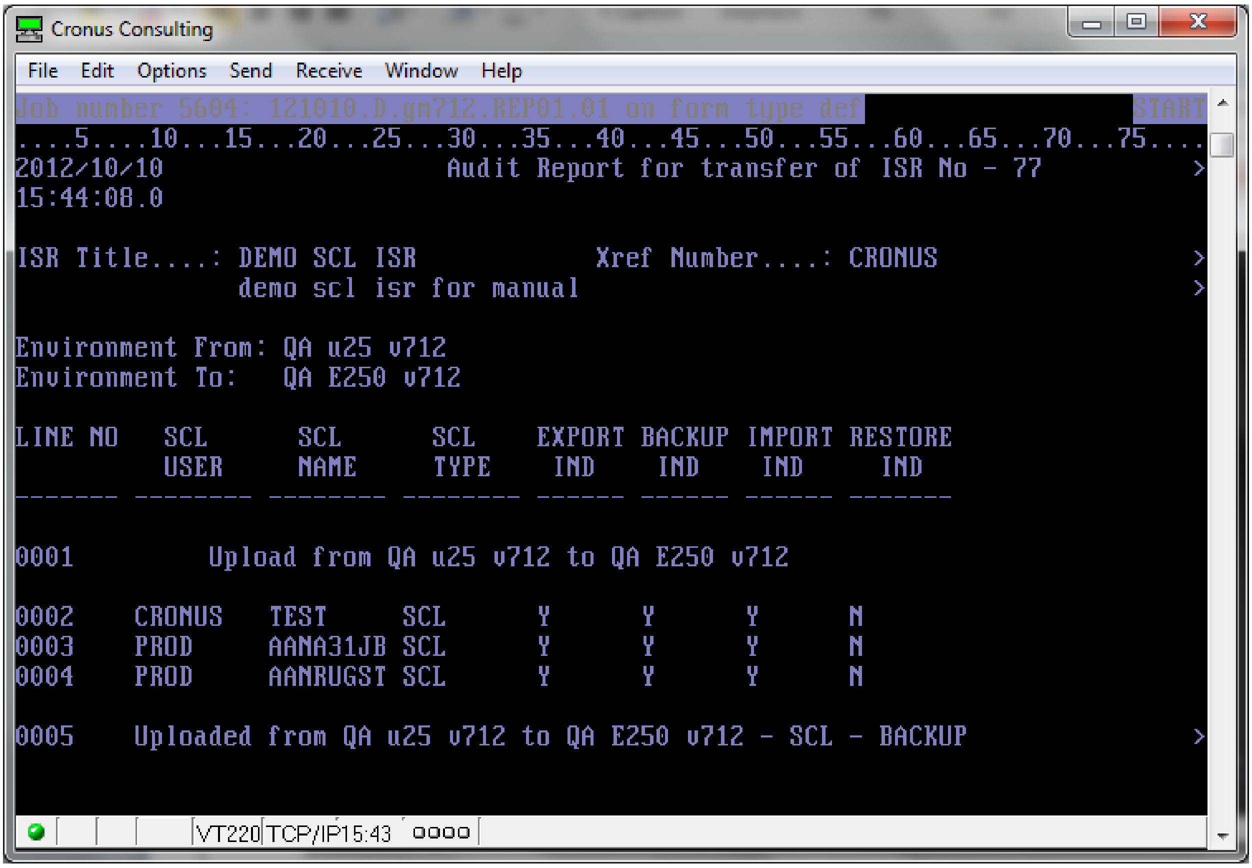
SCL Transfer

The running of an SCL ISR performs the following tasks (this differs from normal object ISR's).

- EXPORT of SCL from the FROM Environment
- BACKUP of SCL in the TO Environment (before overwriting SCL with new transferred SCL)
- IMPORT of SCL into the TO Environment

Audit Report

If the code AUDITRPT is set to ‘Y’ in ISR Codes (CC010), a audit report will be produced in the same manner as the audit report for normal object ISR’s. If a SCL ISR has been linked to a normal ISR, two separate reports, one for each ISR number will be produced. The SCL audit report will reflect the SCL indicators Export, Backup and Import and the SCL User, Name and Type, with the rest of the display and format the same as the normal object ISR report.

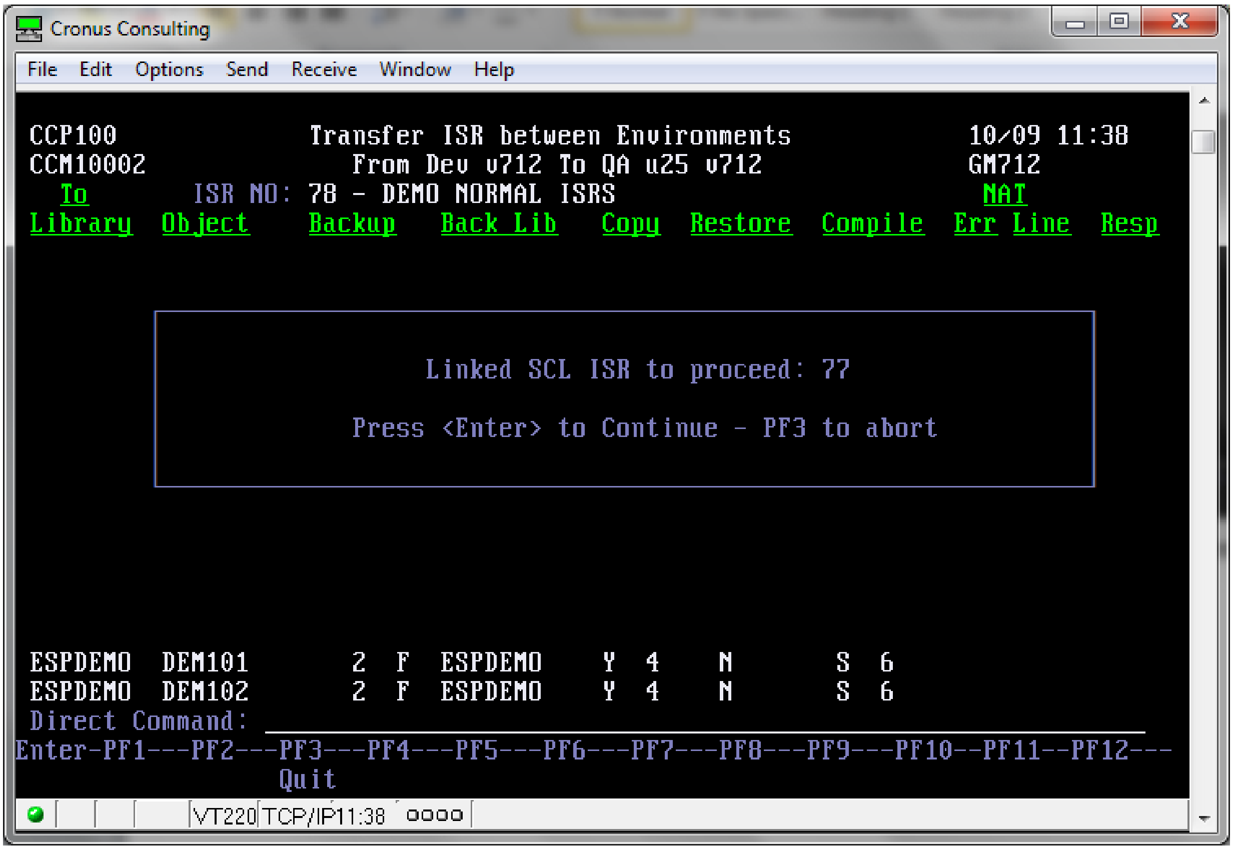


```
Job number 5604: 121010.D.gm712.REP01.01 on form type def                  START
....5....10...15...20...25...30...35...40...45...50...55...60...65...70...75....
2012/10/10                   Audit Report for transfer of ISR No - 77          >
15:44:08.0

ISR Title....: DEMO SCL ISR            Xref Number....: CRONUS                 >
               demo scl isr for manual                                         >

Environment From: QA u25 v712
Environment To:   QA E250 v712

LINE NO   SCL      SCL      SCL    EXPORT BACKUP IMPORT RESTORE
          USER     NAME     TYPE    IND    IND    IND     IND
------- -------- -------- -------- ------ ------ ------ -------

0001         Upload from QA u25 v712 to QA E250 v712

0002    CRONUS   TEST     SCL      Y      Y      Y      N
0003    PROD     AANA31JB SCL      Y      Y      Y      N
0004    PROD     AANRUGST SCL      Y      Y      Y      N

0005    Uploaded from QA u25 v712 to QA E250 v712 - SCL - BACKUP              >
```

Figure A10: CC100 – Audit Report produced for SCL ISR if AUDITRPT is set to Y

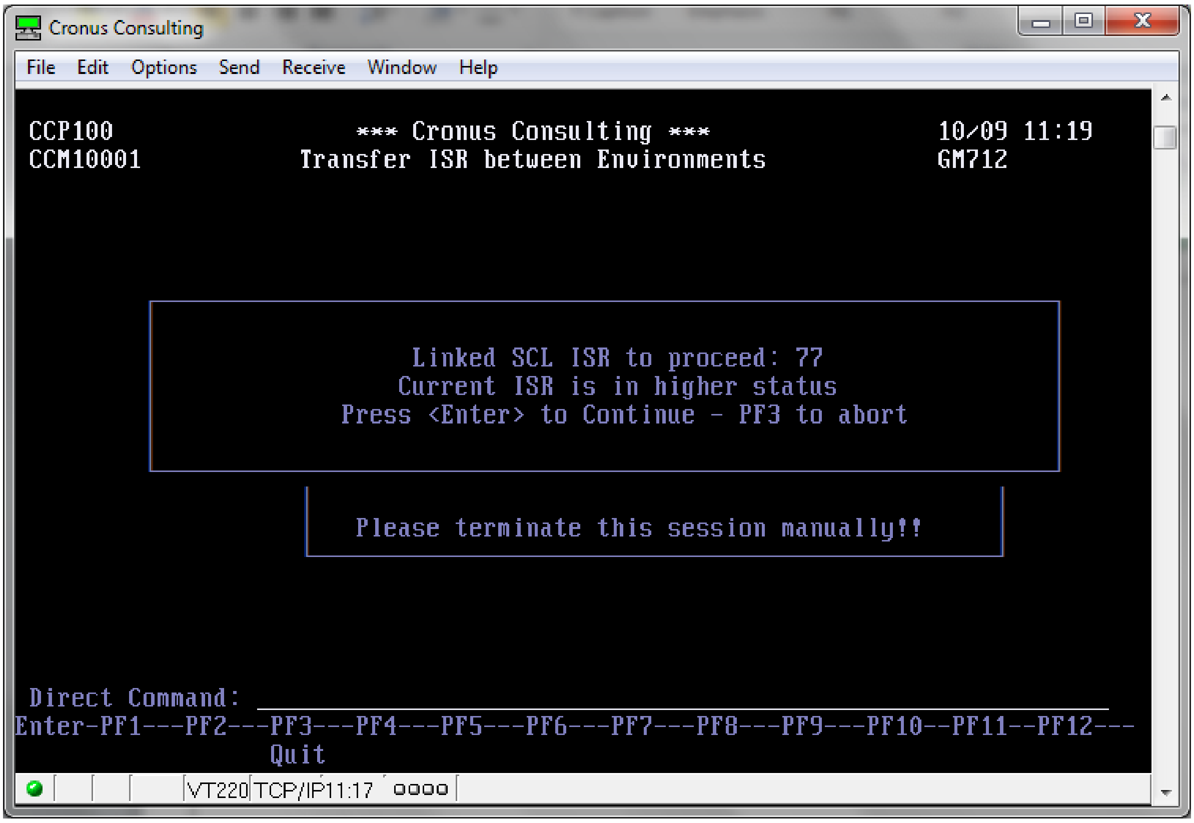
Examples of CC100 for transfer of SCL's:

See below for examples of validation rules, linked SCL's, the actual transfer of an SCL, migrations that abort and the display of error messages.



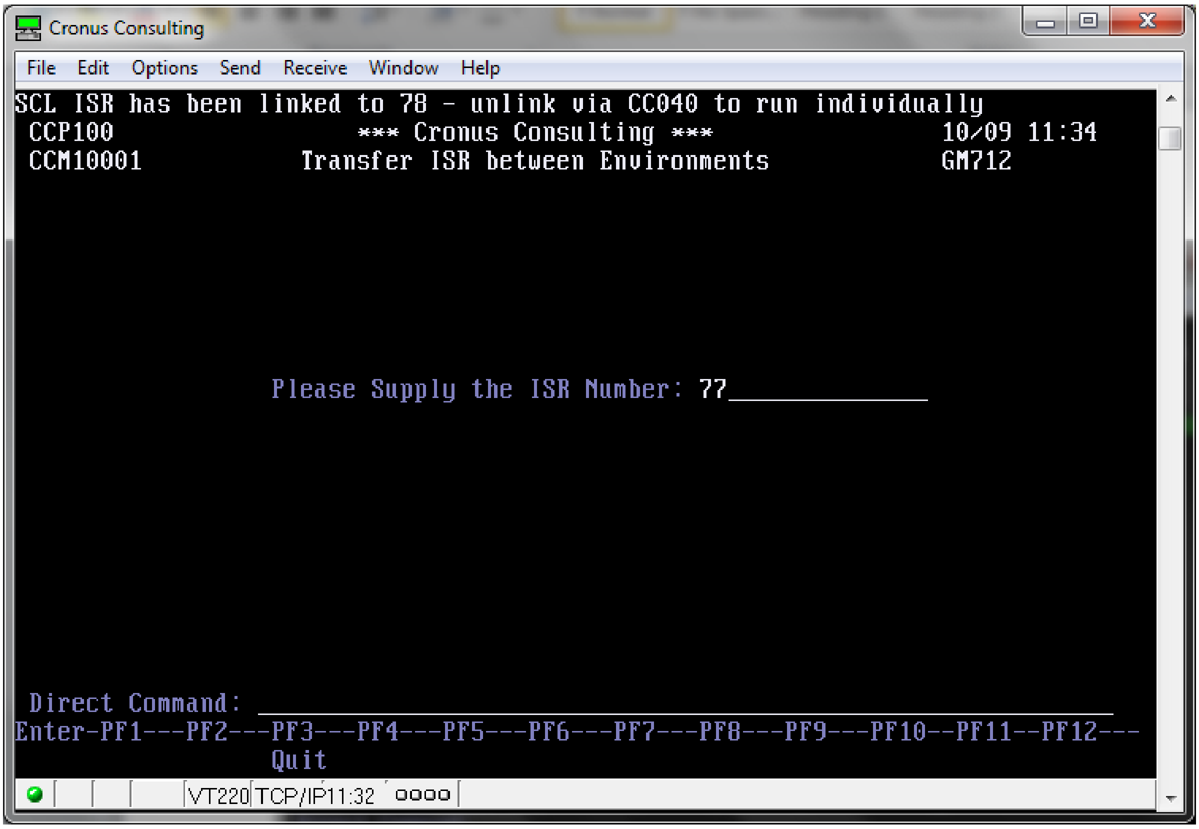
```
CCP100              Transfer ISR between Environments            10/09 11:38
CCM10002               From Dev v712 To QA u25 v712               GM712
  To        ISR NO: 78 - DEMO NORMAL ISRS                          NAT
Library  Object     Backup   Back Lib   Copy  Restore  Compile  Err Line  Resp


                  Linked SCL ISR to proceed: 77

             Press <Enter> to Continue - PF3 to abort


ESPDEMO  DEM101       2  F  ESPDEMO    Y  4    N       S  6
ESPDEMO  DEM102       2  F  ESPDEMO    Y  4    N       S  6
Direct Command: _____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A11: CC100 – Linked SCL prompt



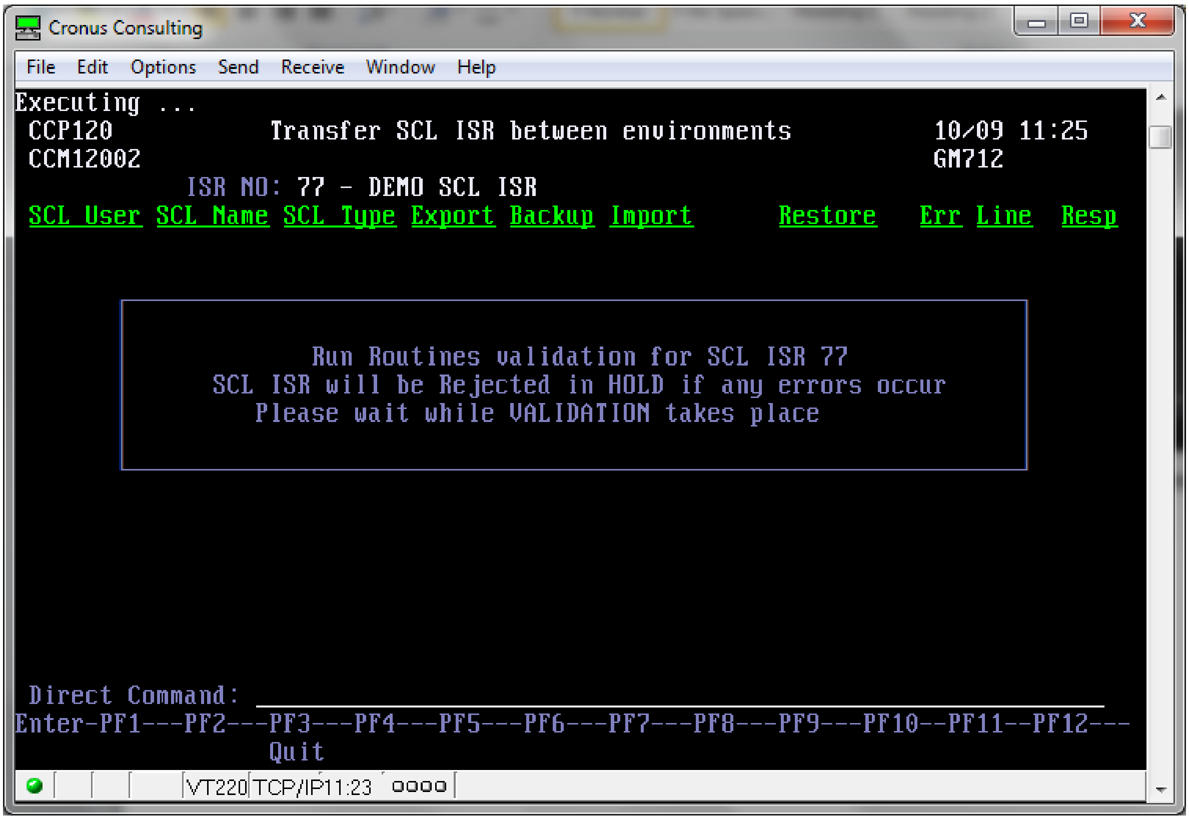
```
CCP100                   *** Cronus Consulting ***                 10/09 11:19
CCM10001              Transfer ISR between Environments           GM712


                        Linked SCL ISR to proceed: 77
                        Current ISR is in higher status
                    Press <Enter> to Continue - PF3 to abort

                       Please terminate this session manually!!

 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A12: CC100 – Linked SCL in lower status than Normal, Normal ISR bypassed



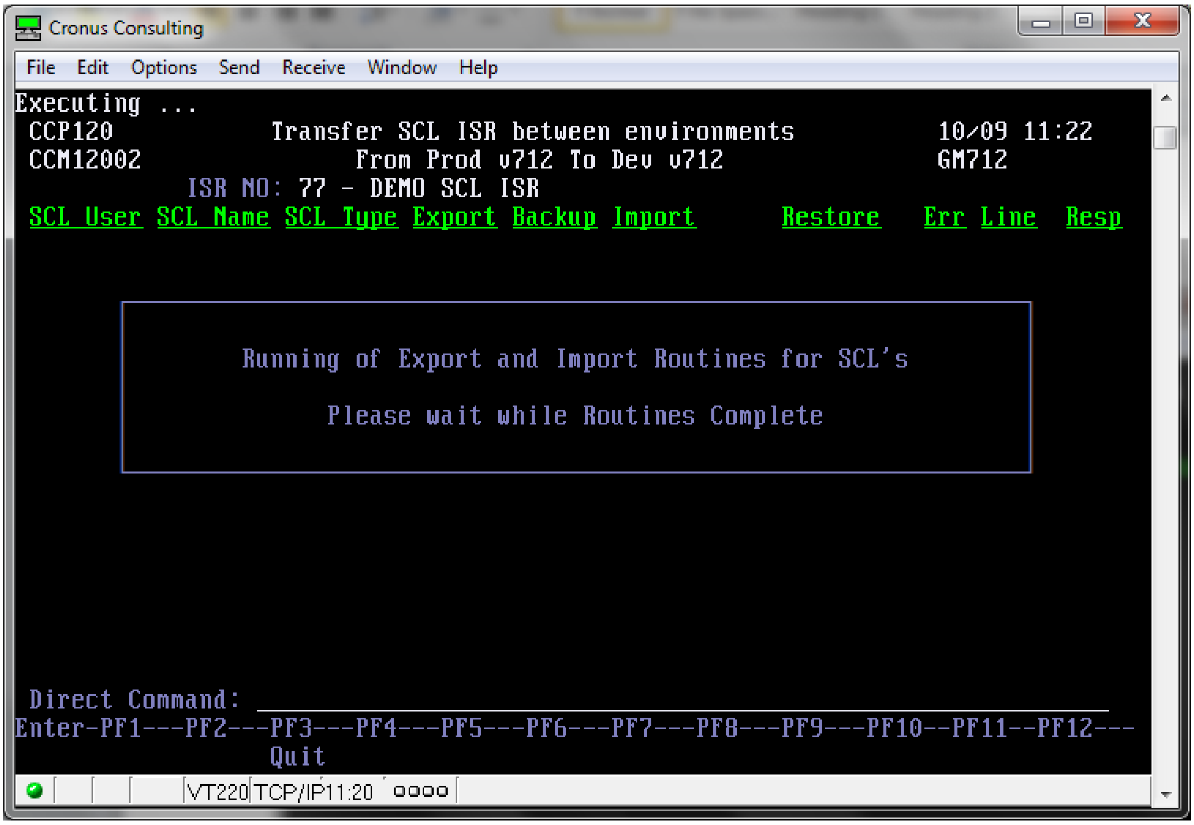
```
SCL ISR has been linked to 78 - unlink via CC040 to run individually
 CCP100                   *** Cronus Consulting ***                 10/09 11:34
 CCM10001              Transfer ISR between Environments           GM712



                  Please Supply the ISR Number: 77______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A13: CC100 – If SCL ISR has been linked, it cannot be run individually



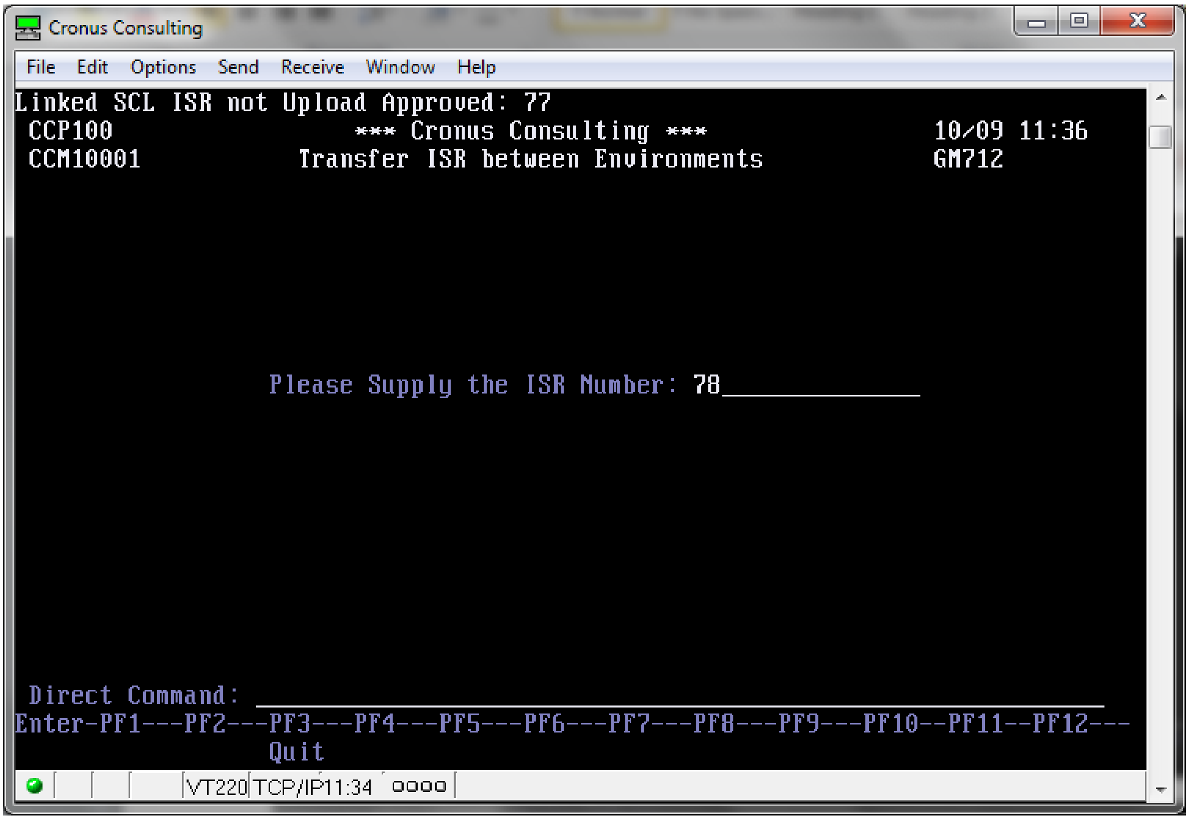
```
Executing ...
 CCP120          Transfer SCL ISR between environments          10/09 11:25
 CCM12002                                                       GM712
            ISR NO: 77 - DEMO SCL ISR
 SCL User SCL Name SCL Type Export Backup Import      Restore   Err Line  Resp


            Run Routines validation for SCL ISR 77
      SCL ISR will be Rejected in HOLD if any errors occur
         Please wait while VALIDATION takes place


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A14: CC100 – Validation routines Window before start of SCL Migration



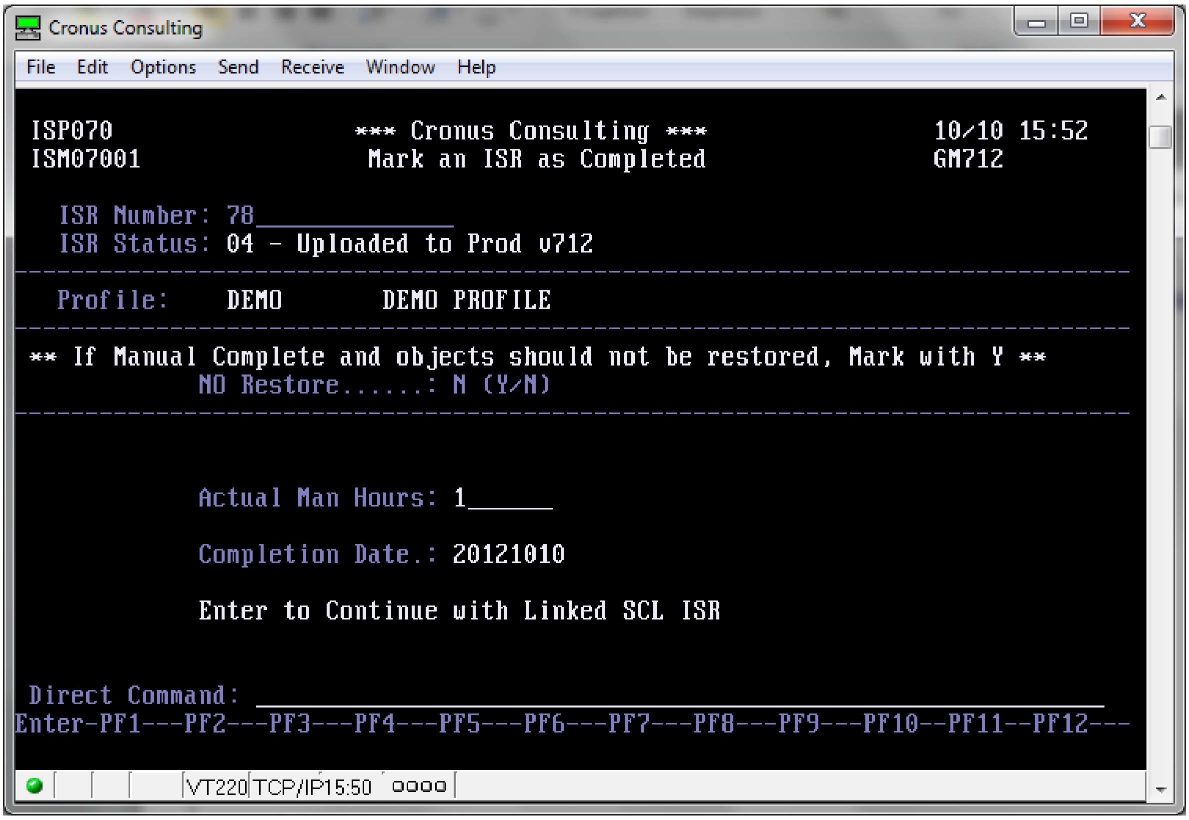
```
Executing ...
 CCP120          Transfer SCL ISR between environments          10/09 11:22
 CCM12002              From Prod v712 To Dev v712               GM712
            ISR NO: 77 - DEMO SCL ISR
 SCL User SCL Name SCL Type Export Backup Import      Restore   Err Line  Resp


          Running of Export and Import Routines for SCL's

                Please wait while Routines Complete


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A15: CC100 – Wait Window for SCL's during actual Migration



```
Linked SCL ISR not Upload Approved: 77
 CCP100                 *** Cronus Consulting ***                10/09 11:36
 CCM10001             Transfer ISR between Environments           GM712



                  Please Supply the ISR Number: 78______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A16: CC100 – Example that validation rules apply to linked SCL ISR before any migration



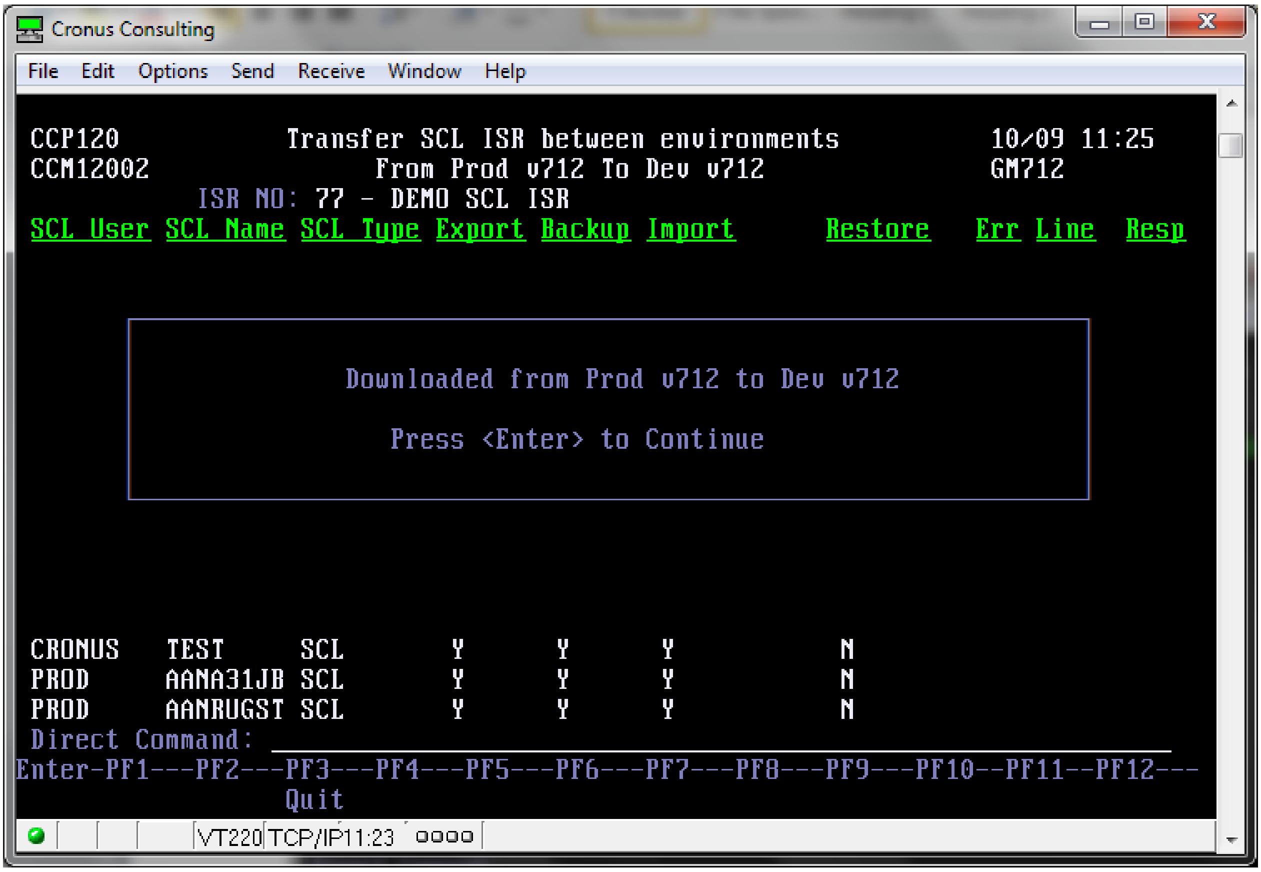
```
 ISP070                 *** Cronus Consulting ***                10/10 15:52
 ISM07001                Mark an ISR as Completed                 GM712

   ISR Number: 78______________
   ISR Status: 04 - Uploaded to Prod v712
-------------------------------------------------------------------------------
   Profile:    DEMO        DEMO PROFILE
-------------------------------------------------------------------------------
 ** If Manual Complete and objects should not be restored, Mark with Y **
             NO Restore......: N (Y/N)
-------------------------------------------------------------------------------


             Actual Man Hours: 1______

             Completion Date.: 20121010

             Enter to Continue with Linked SCL ISR


 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
```

Figure A17: CC100 – When Normal ISR completes, user will be prompted to start linked ISR

SCL Transfer

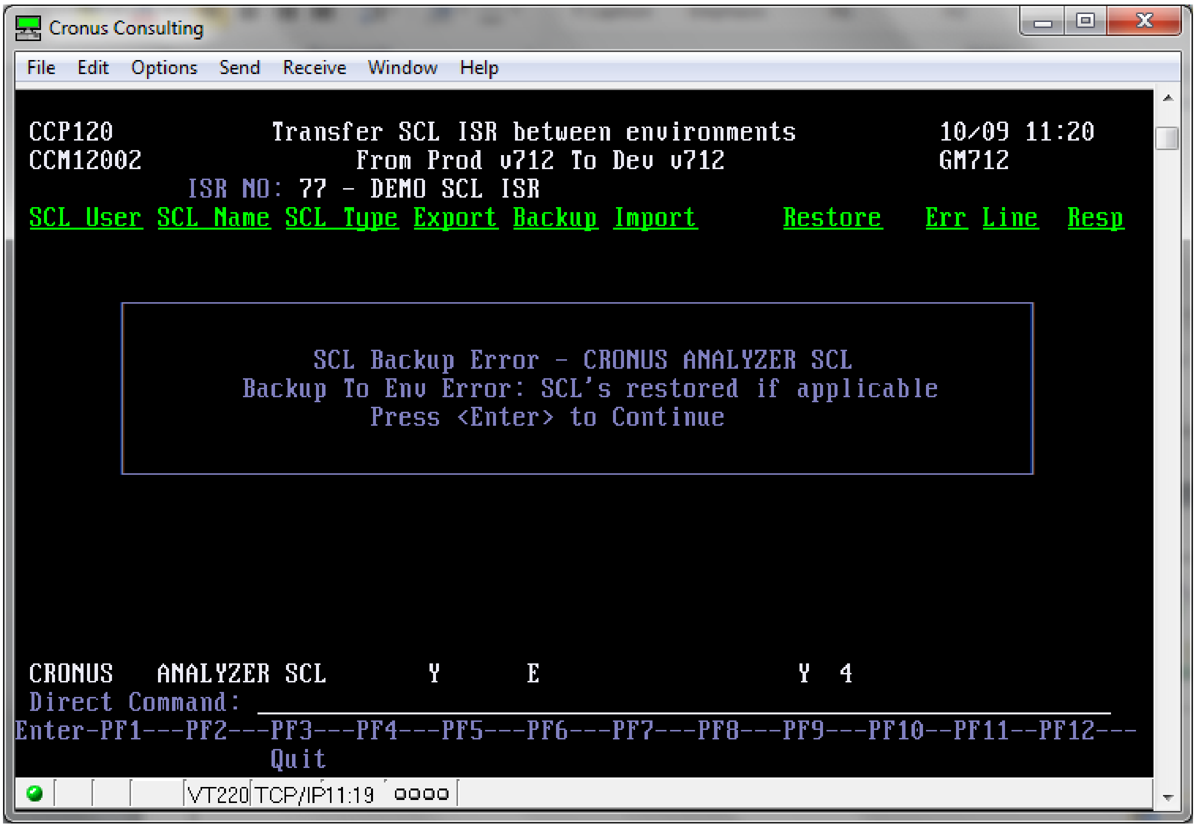
See below Figure A18 for completion window of an SCL Transfer. Notice the different indicators for an SCL transfer viz. Export, Backup and Import, the 3 processes for migration of an SCL. The restore indicator is also displayed and if N, no errors occurred and the SCL will complete successfully.

A SCL transfer will export all SCL's, then Backup all SCL's and then Import all SCL's. If a problem occurs in any of the 3 processes, the ISR will abort on the error SCL and only restore the SCL's already through the specific processes. Therefore, no restore is done if the Export process aborts as no update has taken place to the actual SCL. Backups are created before the move to an environment and are also linked to a version number per ISR. See option CC200 in the Appendix below for detailed explanation of how the backup version is created and linked to an ISR.



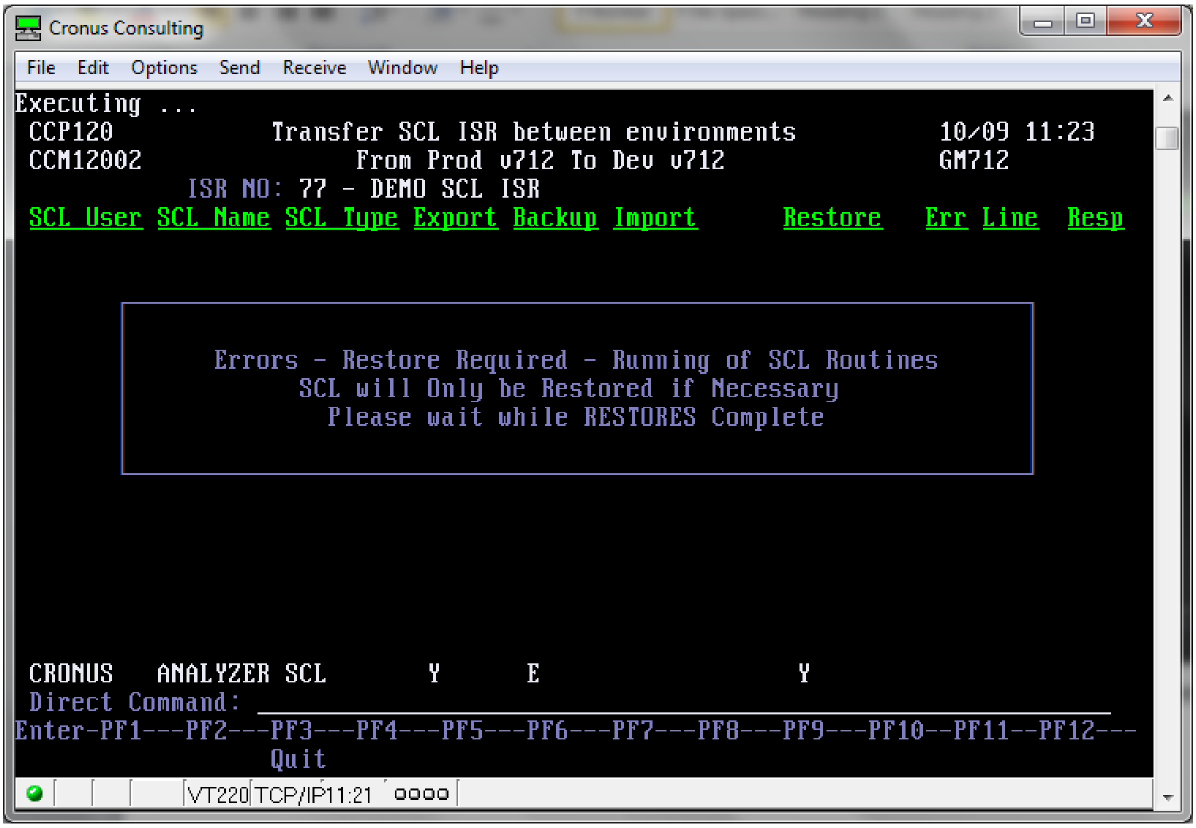
```
CCP120           Transfer SCL ISR between environments         10/09 11:25
CCM12002               From Prod v712 To Dev v712              GM712
           ISR NO: 77 - DEMO SCL ISR
SCL User SCL Name SCL Type Export Backup Import      Restore    Err Line   Resp

                  Downloaded from Prod v712 to Dev v712

                       Press <Enter> to Continue

CRONUS   TEST     SCL       Y      Y      Y            N
PROD     AANA31JB SCL       Y      Y      Y            N
PROD     AANRUGST SCL       Y      Y      Y            N
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A18: CC100 – Completion Window showing indicators for Export, Backup and Import



```
CCP120            Transfer SCL ISR between environments          10/09 11:20
CCM12002                From Prod v712 To Dev v712               GM712
           ISR NO: 77 - DEMO SCL ISR
SCL User SCL Name SCL Type Export Backup Import      Restore    Err Line   Resp

                  SCL Backup Error - CRONUS ANALYZER SCL
             Backup To Env Error: SCL's restored if applicable
                      Press <Enter> to Continue

CRONUS   ANALYZER SCL       Y      E                  Y  4
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A19: CC100 – Example of ISR error during migration



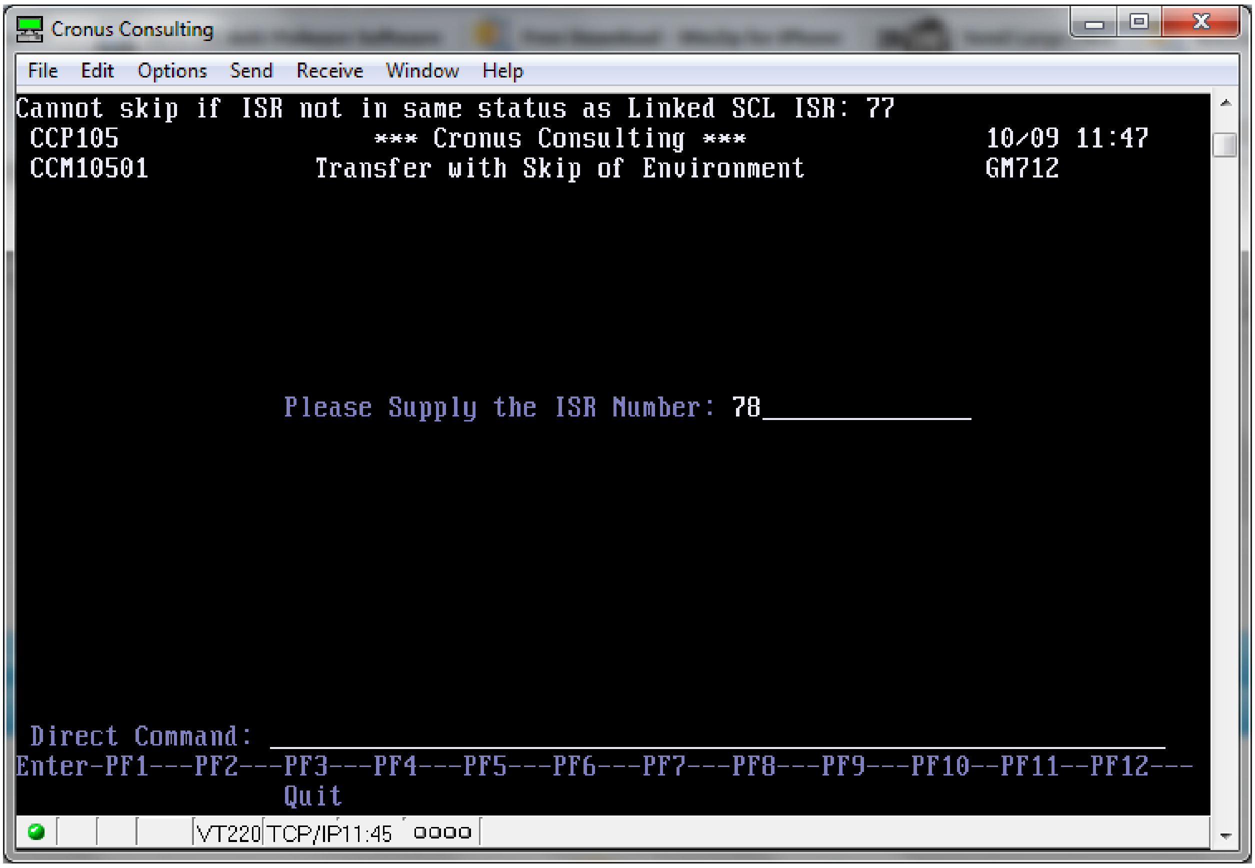
```
Executing ...
CCP120            Transfer SCL ISR between environments          10/09 11:23
CCM12002                From Prod v712 To Dev v712               GM712
           ISR NO: 77 - DEMO SCL ISR
SCL User SCL Name SCL Type Export Backup Import      Restore    Err Line   Resp

            Errors - Restore Required - Running of SCL Routines
                  SCL will Only be Restored if Necessary
                    Please wait while RESTORES Complete

CRONUS   ANALYZER SCL       Y      E                  Y
Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A20: CC100 – Example of Restore Window

3.2.6 CC105 – Transfer with Skip of Environment

CC105, transfer with the skipping of an environment, works in the same manner as described above in CC100 for SCL's, except that an environment will be skipped and the SCL will be transferred to an environment plus one. (As is done in CC105 for normal objects, see further detail in CC105 above in manual).

Individual SCL ISR's may be run via CC105 on their own, and linked SCL ISR's may be run via the normal object ISR as is explained in CC100 for SCL's above. The only exception being, that the ISR's must be in synch, status wise, else it will not allow the skip. See image below.



```
Cannot skip if ISR not in same status as Linked SCL ISR: 77
 CCP105                  *** Cronus Consulting ***               10/09 11:47
 CCM10501              Transfer with Skip of Environment          GM712



                  Please Supply the ISR Number: 78______________



 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A21: CC105 – Skip error when trying to skip linked SCL's not in synch

3.2.7 CC250 – Select Objects for Archiving

This routine must not be executed for SCL's. NO SCL's are archived. If it is required to remove an SCL from the Inventory List, use PF2 in CC050 on a valid SCL ISR, to remove the SCL from CC050. This is explained in CC050 in the SCL section above.

3.3 ISR Maintenance Function Overview

3.3.1 CC051 – Transfer a SCL to another ISR

The transfer function operates as normal but a check exists that will only allow objects from normal ISR's to be transferred to another normal ISR and SCL's from SCL ISR's to be transferred to another SCL ISR. I.E. both Transfer from and Transfer To must be the same type of ISR.

3.3.6 CC076 – Remove ISR from SYSOBJH Error

This function will not be used for SCL type ISR's, as an SCL cannot use the SYSOBJH function. An error will be returned if a SCL type ISR is entered via CC076.

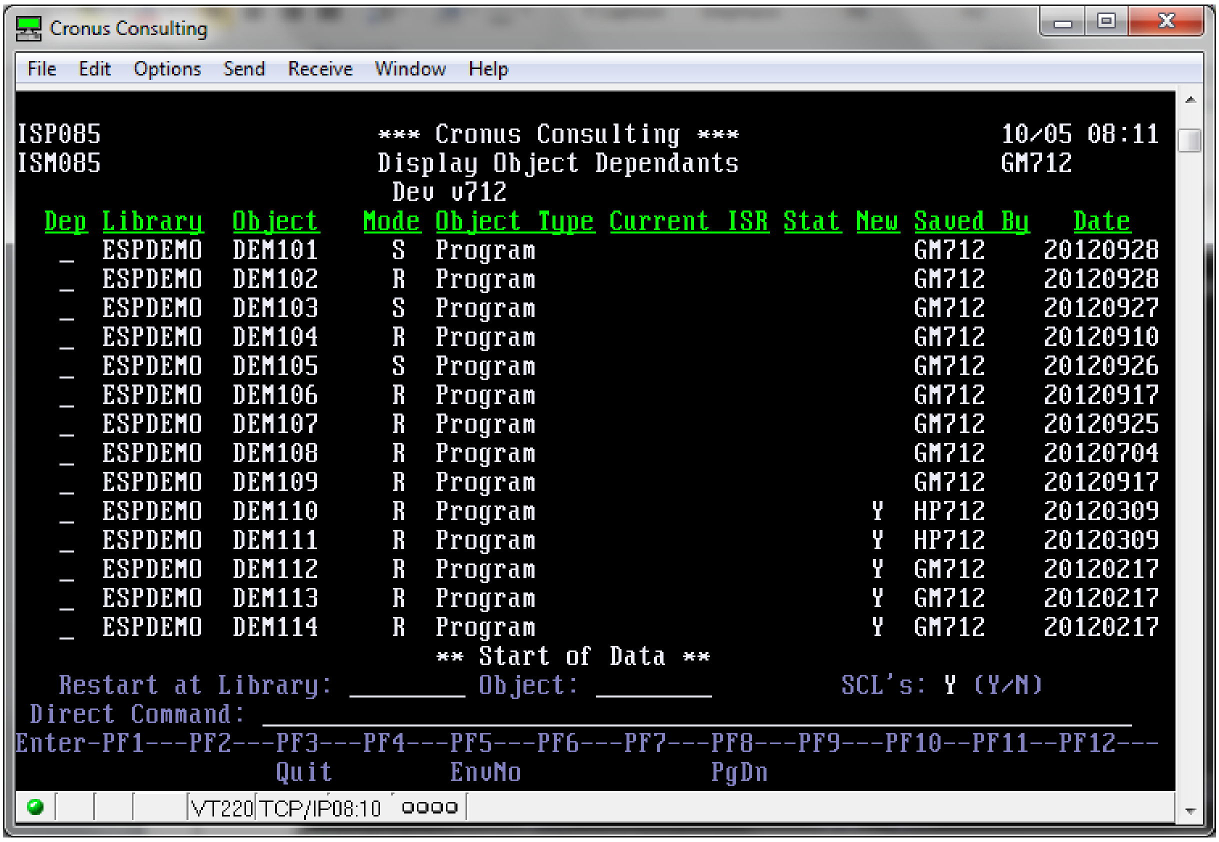
3.3.7 CC077 – Remove ISR from System Message Error

This function will not be used for SCL type ISR's. System error messages must be transferred via normal ISR's. An error will be returned if a SCL type ISR is entered via CC077.

3.4 Display ISR Information

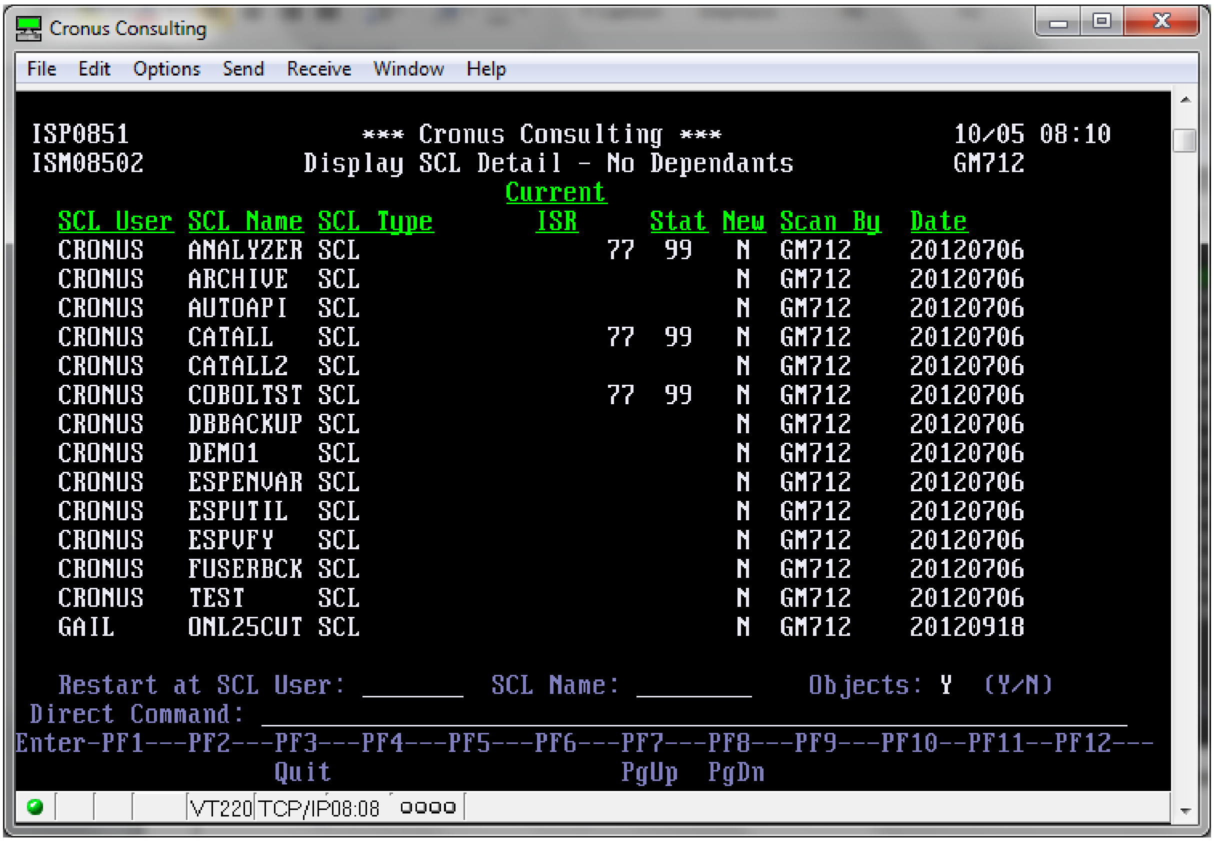
The functions specified below, have all been amended in the same manner. There is an indicator which switches between Objects and SCL's and objects will be reflected when on the Objects screen and all SCL's will be reflected when on the SCL screen. Screen prints will be shown in the function description below (CC085), but all other functions specified under 3.4 Display ISR Information, will have the same set of indicators and operate in the same manner as CC085. The initial screen displayed will always be for Objects. To view SCL's mark Y in the SCL indicator. This will transfer you to the SCL view, and again, to go back to the Object view, mark Y in the Object indicator. . Amend SCL user (in field Restart at SCL User) to view other SCL Users. The default SCL user in the display will be taken from the last updated SCL profile.

3.4.2 CC085 – Display Object Dependents



```
ISP085                    *** Cronus Consulting ***                    10/05 08:11
ISM085                    Display Object Dependants                    GM712
                           Dev v712
  Dep Library  Object    Mode Object Type Current ISR Stat New Saved By   Date
   _  ESPDEMO  DEM101      S  Program                            GM712     20120928
   _  ESPDEMO  DEM102      R  Program                            GM712     20120928
   _  ESPDEMO  DEM103      S  Program                            GM712     20120927
   _  ESPDEMO  DEM104      R  Program                            GM712     20120910
   _  ESPDEMO  DEM105      S  Program                            GM712     20120926
   _  ESPDEMO  DEM106      R  Program                            GM712     20120917
   _  ESPDEMO  DEM107      R  Program                            GM712     20120925
   _  ESPDEMO  DEM108      R  Program                            GM712     20120704
   _  ESPDEMO  DEM109      R  Program                            GM712     20120917
   _  ESPDEMO  DEM110      R  Program                         Y  HP712     20120309
   _  ESPDEMO  DEM111      R  Program                         Y  HP712     20120309
   _  ESPDEMO  DEM112      R  Program                         Y  GM712     20120217
   _  ESPDEMO  DEM113      R  Program                         Y  GM712     20120217
   _  ESPDEMO  DEM114      R  Program                         Y  GM712     20120217
                              ** Start of Data **
   Restart at Library: ________ Object: ________         SCL's: Y (Y/N)
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        EnvNo             PgDn
```

Figure A22: CC080 – See Objects with SCL indicator to move to SCL's



```
 ISP0851                *** Cronus Consulting ***                  10/05 08:10
 ISM08502            Display SCL Detail - No Dependants            GM712
                                   Current
   SCL User SCL Name SCL Type        ISR       Stat New Scan By  Date
   CRONUS   ANALYZER SCL                   77   99   N  GM712    20120706
   CRONUS   ARCHIVE  SCL                             N  GM712    20120706
   CRONUS   AUTOAPI  SCL                             N  GM712    20120706
   CRONUS   CATALL   SCL                   77   99   N  GM712    20120706
   CRONUS   CATALL2  SCL                             N  GM712    20120706
   CRONUS   COBOLTST SCL                   77   99   N  GM712    20120706
   CRONUS   DBBACKUP SCL                             N  GM712    20120706
   CRONUS   DEMO1    SCL                             N  GM712    20120706
   CRONUS   ESPENVAR SCL                             N  GM712    20120706
   CRONUS   ESPUTIL  SCL                             N  GM712    20120706
   CRONUS   ESPVFY   SCL                             N  GM712    20120706
   CRONUS   FUSERBCK SCL                             N  GM712    20120706
   CRONUS   TEST     SCL                             N  GM712    20120706
   GAIL     ONL25CUT SCL                             N  GM712    20120918

   Restart at SCL User: _______  SCL Name: ________    Objects: Y  (Y/N)
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit                    PgUp  PgDn
```

Figure A23: CC080 – See SCL's with Object indicator to move to Objects

3.4.3 CC088 – Display Object History

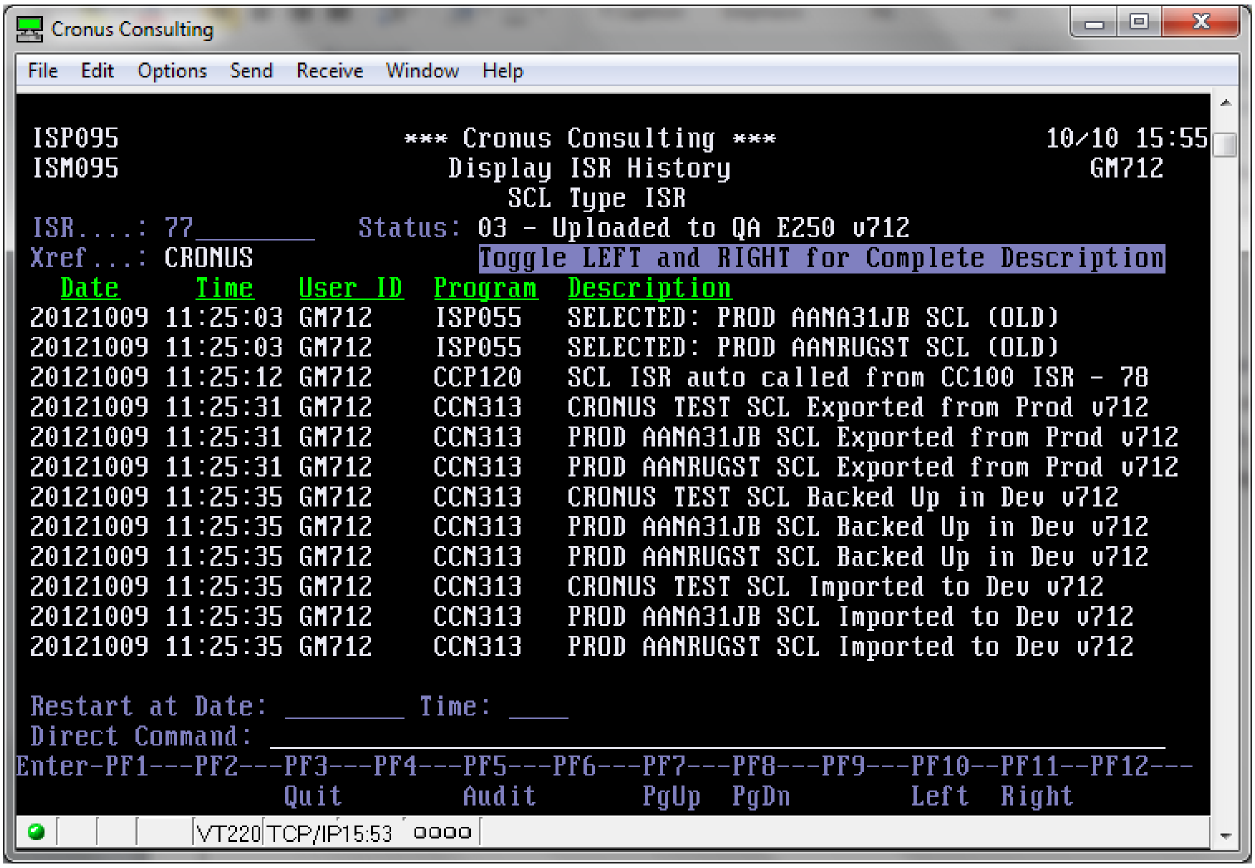
As shown above in CC085, mark the SCL or Object indicator to switch between the different screens.

3.4.4 CC090 – Display Objects linked to an ISR

Depending on the ISR number entered, the type will be picked up and either Objects (with Object Name and Library) will be reflected or SCL's (with SCL User, Name and Type) will be reflected.

3.4.6 CC095 – Display ISR History

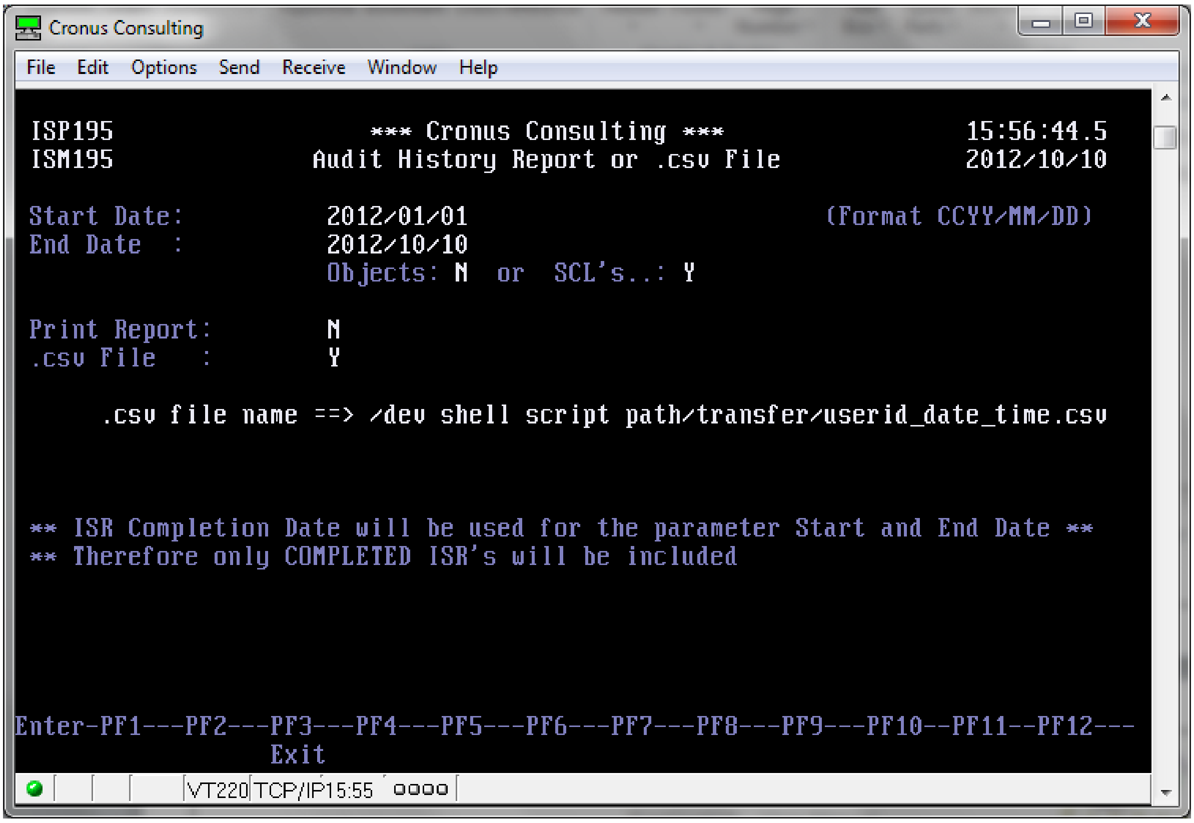
Both SCL type ISR's and normal Object ISR's use the same enquiry. There is no difference to the actual enquiry, except the details displayed. More detail for SCL's is shown in the History as SCL's do not update the log file. The major difference is that SCL's are Exported, Backed Up and Imported in each move. The Objects are Backed Up, Copied and Stowed in each move.



```
ISP095                    *** Cronus Consulting ***                10/10 15:55
ISM095                       Display ISR History                        GM712
                                 SCL Type ISR
ISR....: 77________   Status: 03 - Uploaded to QA E250 v712
Xref...: CRONUS                  Toggle LEFT and RIGHT for Complete Description
  Date      Time    User ID  Program  Description
20121009 11:25:03 GM712     ISP055   SELECTED: PROD AANA31JB SCL (OLD)
20121009 11:25:03 GM712     ISP055   SELECTED: PROD AANRUGST SCL (OLD)
20121009 11:25:12 GM712     CCP120   SCL ISR auto called from CC100 ISR - 78
20121009 11:25:31 GM712     CCN313   CRONUS TEST SCL Exported from Prod v712
20121009 11:25:31 GM712     CCN313   PROD AANA31JB SCL Exported from Prod v712
20121009 11:25:31 GM712     CCN313   PROD AANRUGST SCL Exported from Prod v712
20121009 11:25:35 GM712     CCN313   CRONUS TEST SCL Backed Up in Dev v712
20121009 11:25:35 GM712     CCN313   PROD AANA31JB SCL Backed Up in Dev v712
20121009 11:25:35 GM712     CCN313   PROD AANRUGST SCL Backed Up in Dev v712
20121009 11:25:35 GM712     CCN313   CRONUS TEST SCL Imported to Dev v712
20121009 11:25:35 GM712     CCN313   PROD AANA31JB SCL Imported to Dev v712
20121009 11:25:35 GM712     CCN313   PROD AANRUGST SCL Imported to Dev v712

 Restart at Date: ________  Time: ____
 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit        Audit       PgUp  PgDn        Left  Right
```

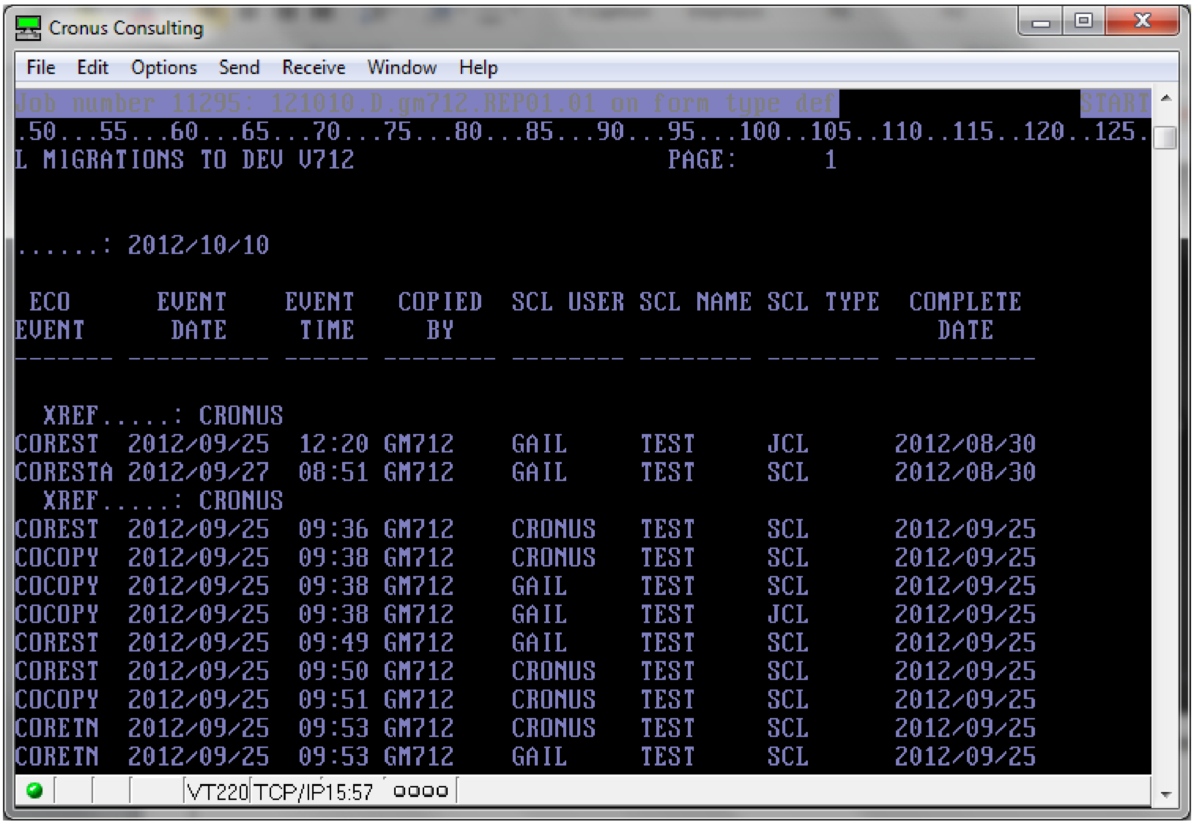
Figure A24: CC095 – History Detail for SCL ISR – Export, Backup and Import

PF5 for Audit History has been amended for the user to request either Objects or SCL's. Both cannot be run simultaneously and the audit routine will produce separate .csv files or audit reports, depending on the selection. The process for gathering information remains the same, but the SCL Audit History report will reflect the SCL User, SCL Name and SCL Type. The events will also remain the same as for normal object ISR's. See below for screen images.



```
ISP195                   *** Cronus Consulting ***                15:56:44.5
ISM195                 Audit History Report or .csv File           2012/10/10

Start Date:           2012/01/01                        (Format CCYY/MM/DD)
End Date  :           2012/10/10
                      Objects: N  or  SCL's..: Y

Print Report:         N
.csv File   :         Y

     .csv file name ==> /dev shell script path/transfer/userid_date_time.csv


** ISR Completion Date will be used for the parameter Start and End Date **
** Therefore only COMPLETED ISR's will be included



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Exit
```

Figure A25: CC095 – PF5 Audit History – Select either Objects or SCL's



```
Job number 11295: 121010.D.gm712.REP01.01 on form type def                 START
.50...55...60...65...70...75...80...85...90...95...100..105..110..115..120..125.
L MIGRATIONS TO DEV V712                                 PAGE:      1


......: 2012/10/10

 ECO      EVENT     EVENT    COPIED   SCL USER SCL NAME SCL TYPE  COMPLETE
EVENT      DATE      TIME      BY                                   DATE
------- ---------- ------ -------- -------- -------- -------- ----------

  XREF.....: CRONUS
COREST  2012/09/25  12:20 GM712    GAIL     TEST     JCL      2012/08/30
CORESTA 2012/09/27  08:51 GM712    GAIL     TEST     SCL      2012/08/30
  XREF.....: CRONUS
COREST  2012/09/25  09:36 GM712    CRONUS   TEST     SCL      2012/09/25
COCOPY  2012/09/25  09:38 GM712    CRONUS   TEST     SCL      2012/09/25
COCOPY  2012/09/25  09:38 GM712    GAIL     TEST     SCL      2012/09/25
COCOPY  2012/09/25  09:38 GM712    GAIL     TEST     JCL      2012/09/25
COREST  2012/09/25  09:49 GM712    GAIL     TEST     SCL      2012/09/25
COREST  2012/09/25  09:50 GM712    CRONUS   TEST     SCL      2012/09/25
COCOPY  2012/09/25  09:51 GM712    CRONUS   TEST     SCL      2012/09/25
CORETN  2012/09/25  09:53 GM712    CRONUS   TEST     SCL      2012/09/25
CORETN  2012/09/25  09:53 GM712    GAIL     TEST     SCL      2012/09/25
```

Figure A26: CC095 – PF5 Audit History Report example

3.4.7 CC088 – Display Object Status

As shown above in CC085, mark the SCL or Object indicator to switch between the different screens.

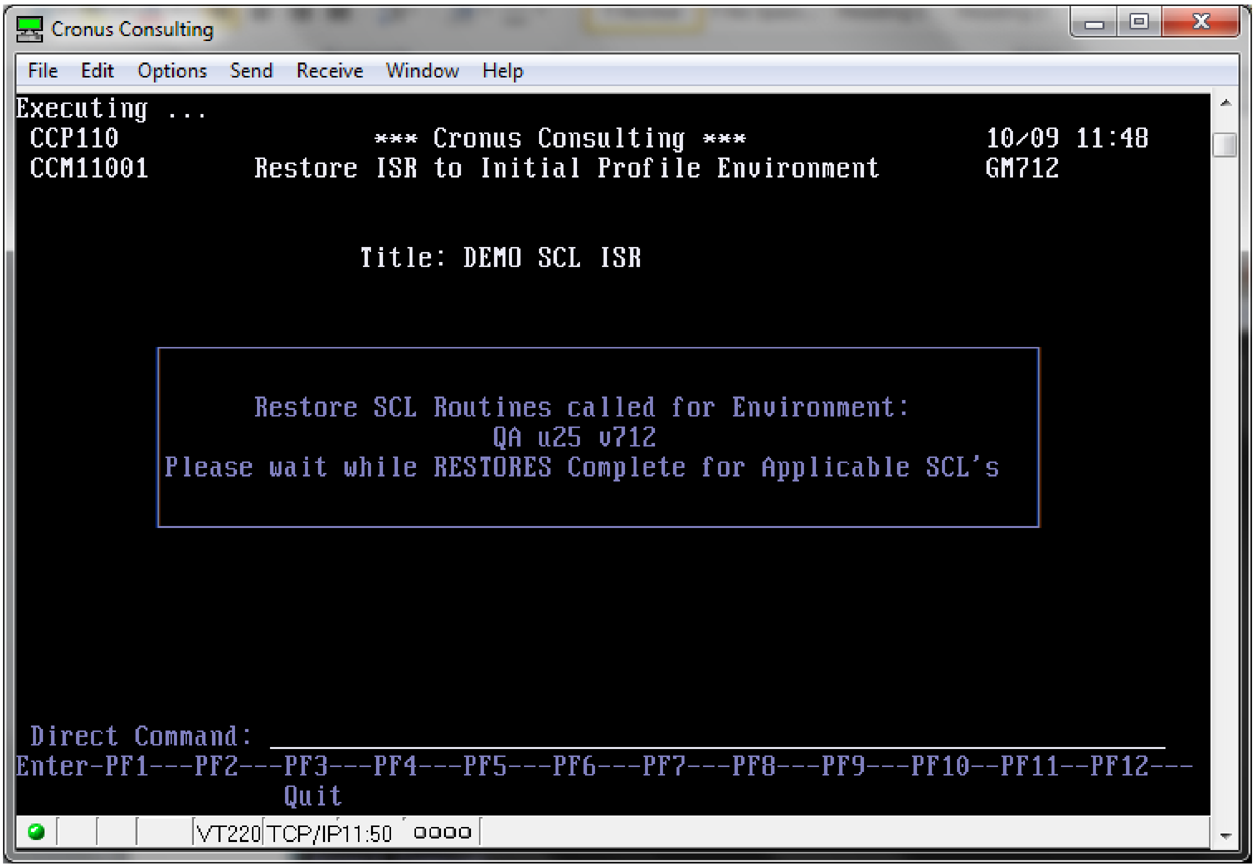
3.5 ISR Return And Restore Function Overview

3.5.3 CC102 – Return Transfer ISR to Previous Environment

The return of an SCL works in the same manner as explained above in the SCL appendix for CC100. The only difference is that a linked SCL ISR must be run individually in CC102 and will not be called automatically as in the case of CC100 linked ISR's. SCL's that are to be returned must be updated via CC053 in the same manner as objects are and must also be approved via CC061 in the same manner as objects are.

3.5.4 CC110 – Restore ISR to Initial Profile Environment

Operates in the same manner as objects, but because the backup cycle is different to that of objects, when restoring, it will always restore to the version before the environment move. SCL's are restored all at once in each applicable environment, whereas objects are done one at a time in all environments. See screen image below as these will differ from the restore screens of normal object ISR's.



```
Executing ...
 CCP110                 *** Cronus Consulting ***                10/09 11:48
 CCM11001       Restore ISR to Initial Profile Environment       GM712


                        Title: DEMO SCL ISR



                Restore SCL Routines called for Environment:
                                 QA u25 v712
          Please wait while RESTORES Complete for Applicable SCL's




 Direct Command: ____________________________________________________________
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
                  Quit
```

Figure A27: CC110 – Restores all SCL's Per Environment

3.5.5 CC115 – Restore Object(s) to Initial Profile Environment

Operates in the same manner as objects, where applicable SCL's must be selected for restore and not the entire ISR as in CC110. Once the SCL's have been selected, the restores will complete as in CC110 but only for the selected SCL's. Screen images will be the same as in CC110.

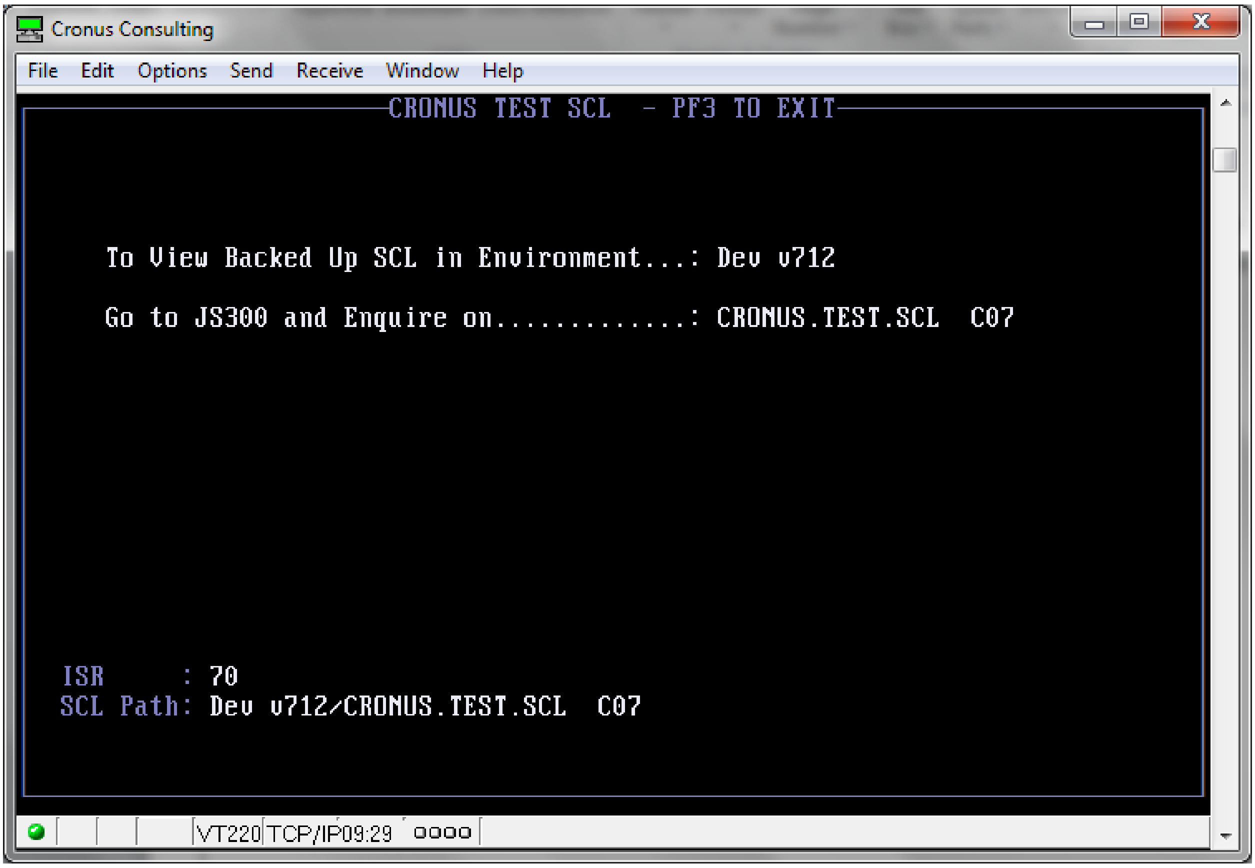
3.5.6 CC200 – Restore Object Versions to ANY Env per ISR

As shown above in CC085, mark the SCL or Object indicator to switch between the different types of ISR's. Depending on your selection, either all objects or all SCL's will be displayed. Amend SCL user (in Restart at SCL User field) to view other SCL Users. The default SCL user in the display will be taken from the last updated SCL profile.

Both the selection process for the applicable SCL's and the type of either D for display or R for Restore, and the environments, work as in the normal Object CC200. However the actual Display and Restore functions differ for SCL's.

DISPLAY:

A backed up SCL is actually created in EspBatch and may be viewed in JS300 in the applicable environment. For this reason, the actual source of the backup will not be displayed in the Display function, but only the environment and backup version number for the user to view in JS300. This version number will be different for each ISR, in the same manner as objects have version numbers per ISR.



```
CRONUS TEST SCL  - PF3 TO EXIT

   To View Backed Up SCL in Environment...: Dev v712

   Go to JS300 and Enquire on.............: CRONUS.TEST.SCL  C07

 ISR     : 70
 SCL Path: Dev v712/CRONUS.TEST.SCL  C07
```

Figure A28: CC200 – Display function showing where to view applicable backup

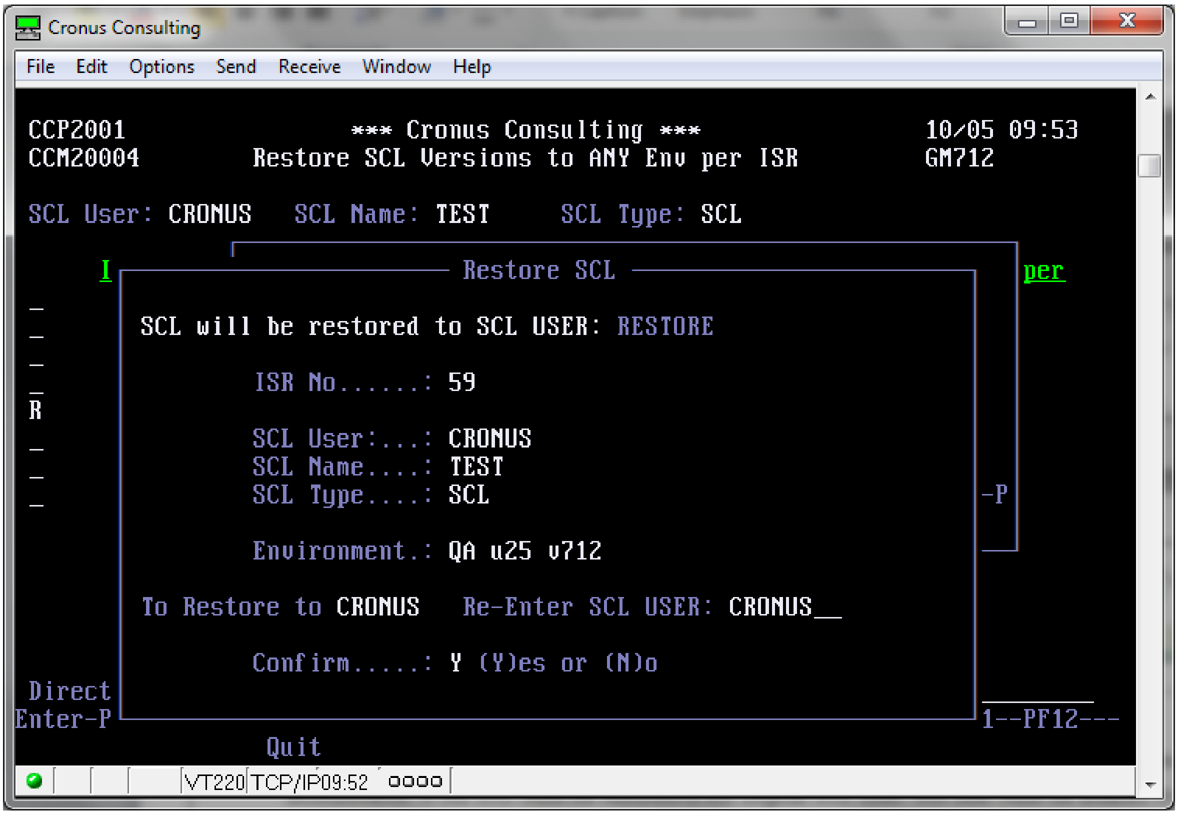
RESTORE:

The restore function for SCL’ s will be restored to SCL User RESTORE by default, in each of the selected environments. If the SCL must be restored to the original SCL User, this user must be entered in the field as seen below (Re-Enter SCL User). If the field is left blank the original SCL will not be affected, but the applicable backed up version will be restored to SCL User – RESTORE. The restore function will restore from the linked backup version to the selected ISR, but the restored version will not include the version number Cnn in the SCL Type, it will restore to the original SCL Type that excludes the Cnn.

Explanation of Backed Up Versions:

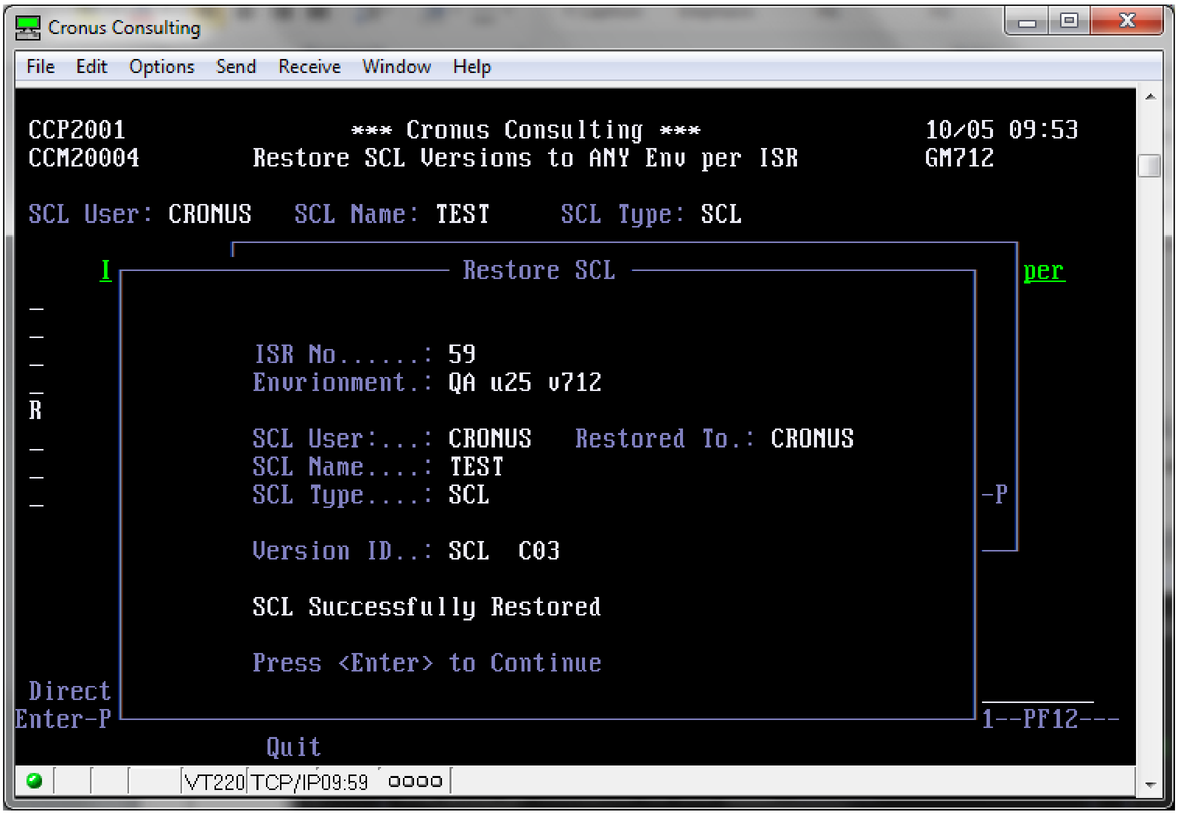
- Whenever a migration takes place, the SCL is backed up before the move.
- A version number is allocated per ISR (same version number for each environment)
- The backed up version is actually stored in EspBatch in the same file as the normal SCL’s.
- The backed up version may be viewed in JS300 (Enquiry and Print only), it may not be amended or deleted.
- The SCL Type of each backed up version is created as follows - SCL Type “C” version number, for e.g. SCL C03. This backup version is created in the same manner the “Versioning” Option in JS300 which a user may create. The “Versioning” option creates a “V01”, whereas the backup option uses a “C01” etc.
- Versions are automatically deleted, depending on the Maximum Version Number entered in CC001. Once the maximum number of versions has been reached the oldest version will be deleted. This will mean that although a link may exist to a backup version number, it will no longer exist and any restore or display in CC200 will specify that the backup cannot be found.

See examples below of Restore Functions.



```
CCP2001              *** Cronus Consulting ***                10/05 09:53
CCM20004        Restore SCL Versions to ANY Env per ISR       GM712

SCL User: CRONUS   SCL Name: TEST     SCL Type: SCL

     I   ┌──────────────── Restore SCL ──────────────────┐  per
_
_        SCL will be restored to SCL USER: RESTORE
_
R                ISR No......: 59
_
_                SCL User:...: CRONUS
_                SCL Name....: TEST                              -P
                 SCL Type....: SCL

                 Environment.: QA u25 v712

         To Restore to CRONUS   Re-Enter SCL USER: CRONUS__

                 Confirm.....: Y (Y)es or (N)o
Direct
Enter-P                                                          1--PF12---
                   Quit
```

Figure A29: CC200 – Restore function to restore to Original User



```
CCP2001              *** Cronus Consulting ***                10/05 09:53
CCM20004        Restore SCL Versions to ANY Env per ISR       GM712

SCL User: CRONUS   SCL Name: TEST     SCL Type: SCL

     I   ┌──────────────── Restore SCL ──────────────────┐  per
_
_
_                ISR No......: 59
R                Envrionment.: QA u25 v712
_
_                SCL User:...: CRONUS   Restored To.: CRONUS
_                SCL Name....: TEST
                 SCL Type....: SCL                               -P

                 Version ID..: SCL  C03

                 SCL Successfully Restored

                 Press <Enter> to Continue
Direct
Enter-P                                                          1--PF12---
                   Quit
```

Figure A30: CC200 – Successful Restore showing Version used for Restore