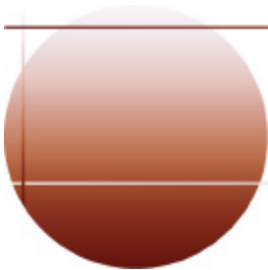


H04

HALDB Migration and Conversion Aid

Session 1

Christian Koeppen

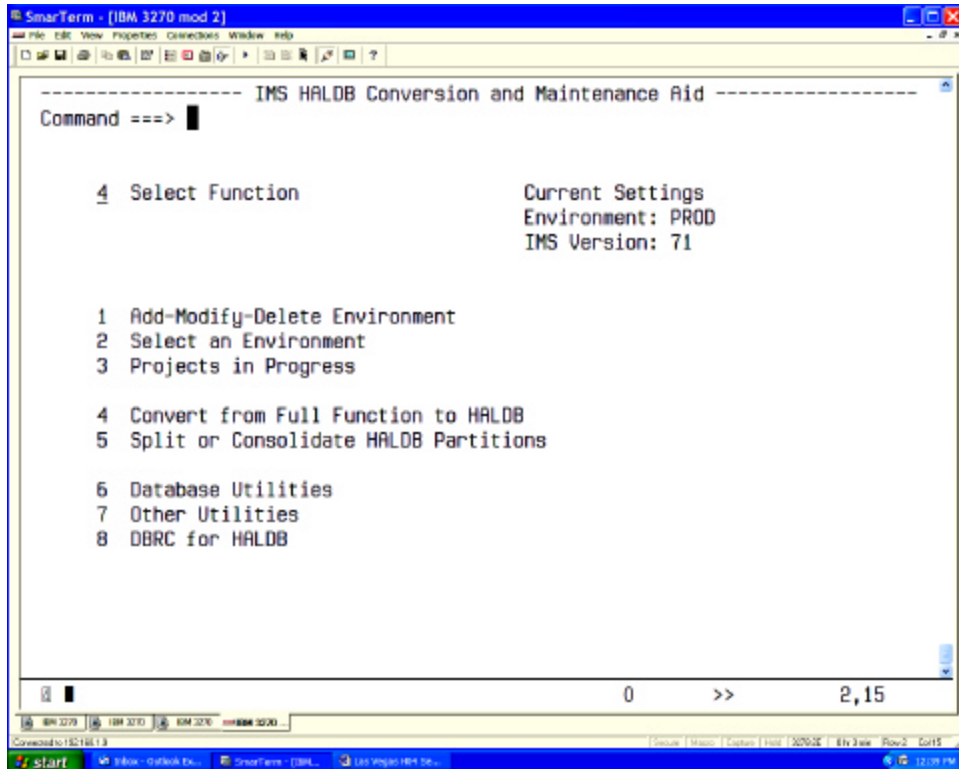


IMS

technical conference

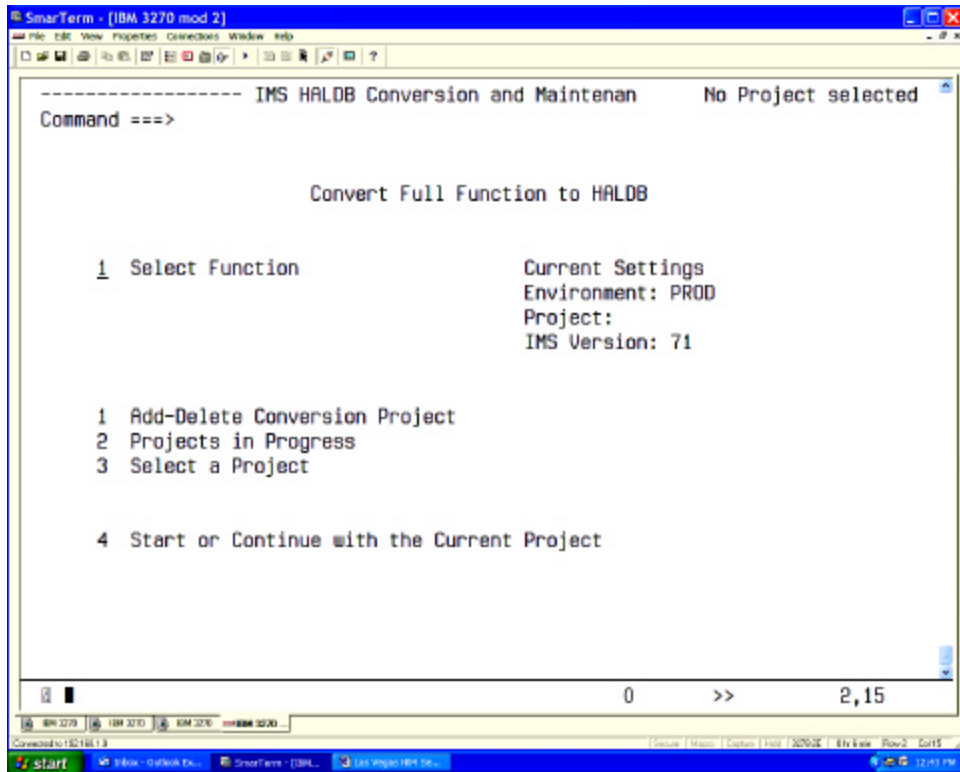
How to Setup a Conversion Project

Primary Selection Panel



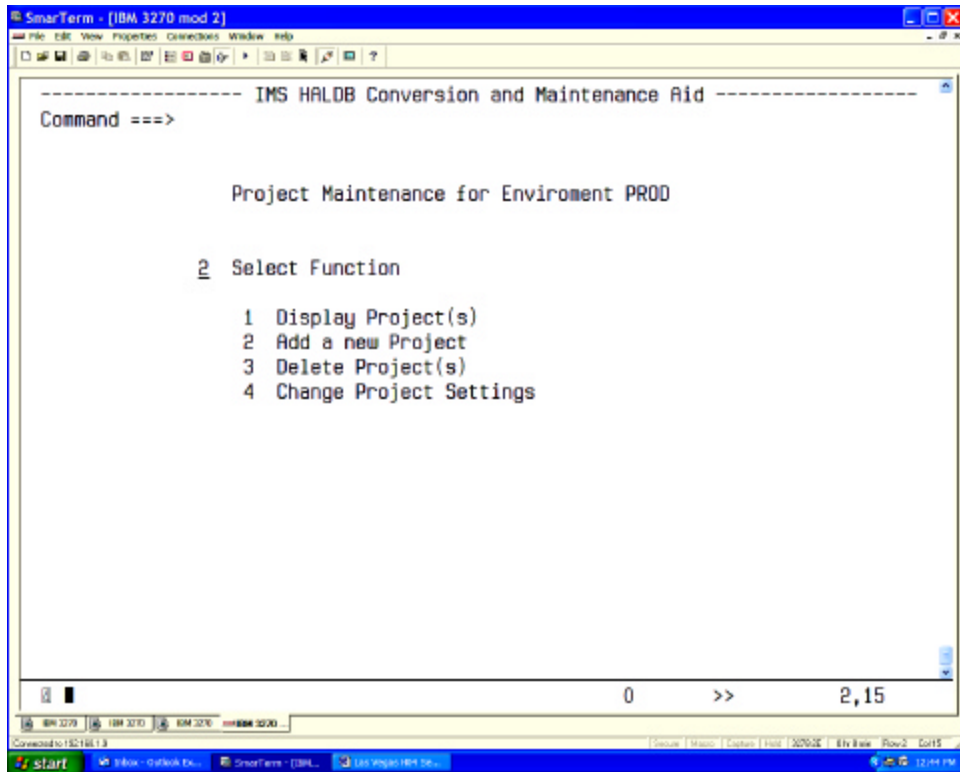
This is the first panel when running the product CLIST. We are connected to an IMS environment called "PROD"

Our intention is to do a DBD conversion.

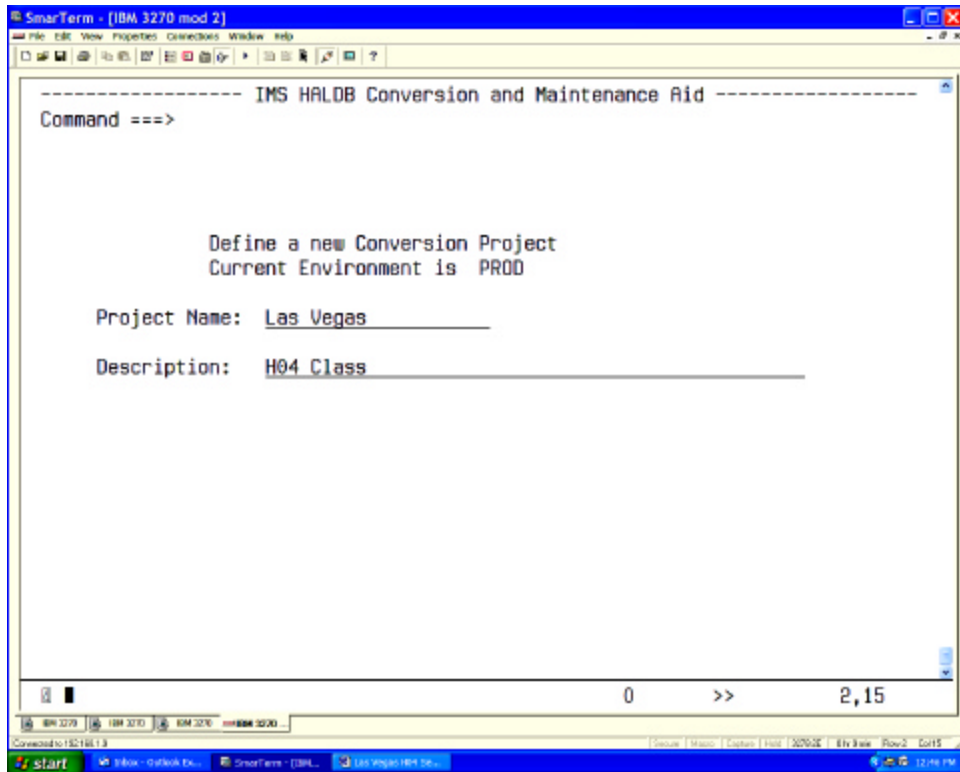


We would have been connected to the last project. There has been none yet.

We go and add a conversion project.

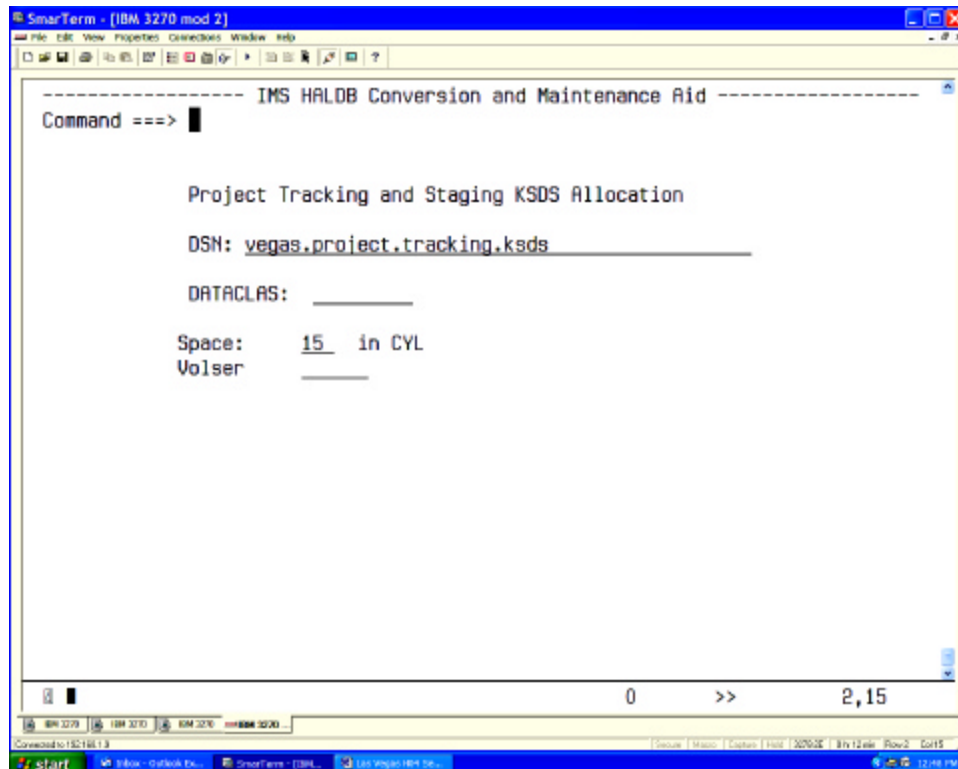


This panel allows for other functions as well. We want to create (=add) a new project.



The first thing it does is to ask for a project name. You should add a meaningful description for future reference.

The next thing is do create a project tracking dataset. This is a VSAM KSDS. It will store all data related to this project. If you wipe this dataset out, the project will need to start from the beginning.



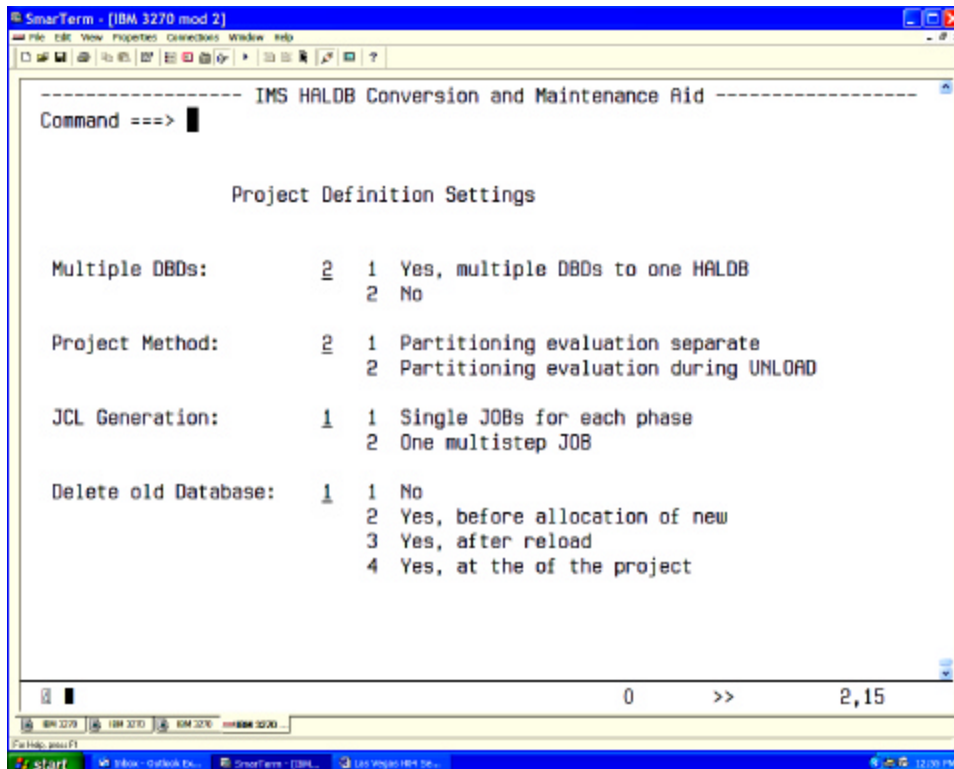
This panel is there to set the dataset name, some space allocation and additional parameter.

If you are not using SMS you need to specify a volser.

If you are using SMS you could specify a DATACLAS if your installation needs one. Most installations assign the SMS constructs in their ACS routines using the dataset name.

JCL will be created to allocate and to initialize the VSAM KSDS. Submit the JCL and check the output for zero return code. If all is fine, leave the ISPF VIEW panel.

We now start setting the parameter for our project. All parameter are predefined. They are taken from the environment. When you define an environment, you see the same panels.



Do we have **multiple** DBDs that are to be converted to **one** HALDB?

Do we want the data collector to run separate?

Y Unload reads the database again

N We must accept the partitioning scheme created then.

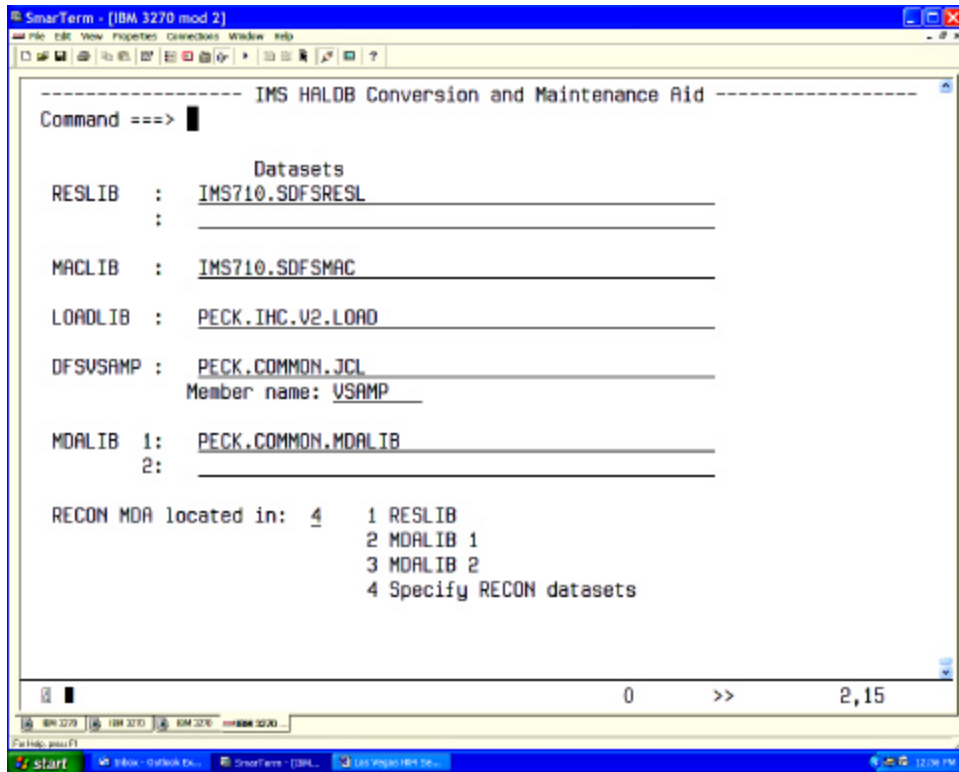
Do we want the implementation one big JCL?

Y Restart within that JCL is now the user's problem

N Each action is presented as a single JOB.

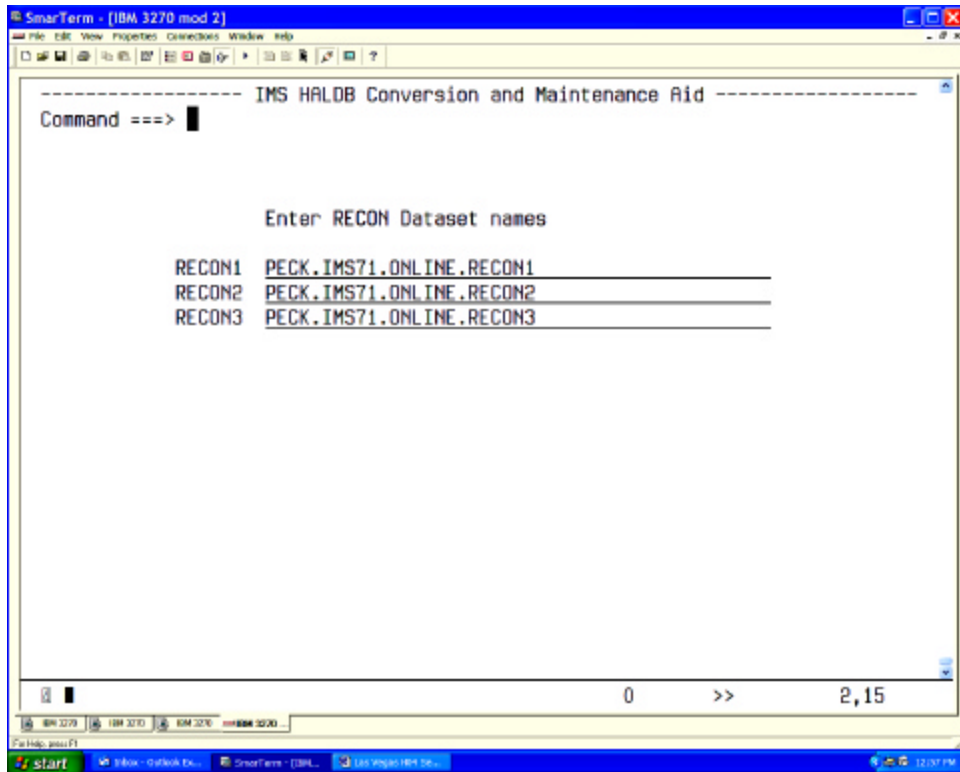
At what point in the conversion shall we delete the "old" datasets?

"2" You are constraint for disk space



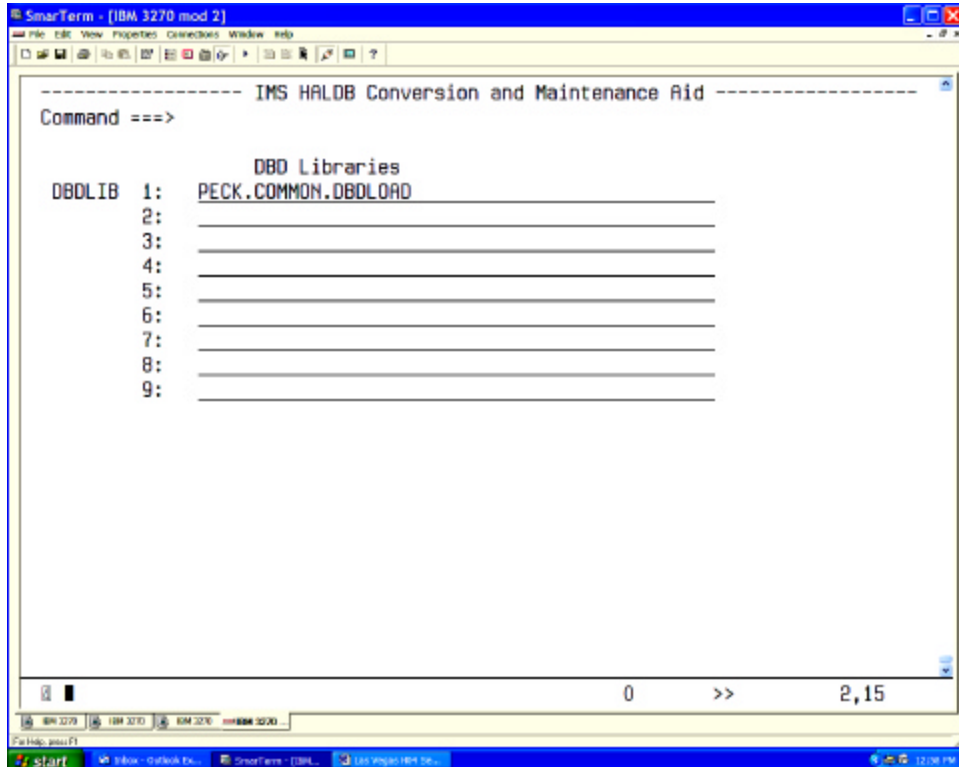
These are settings you should not modify. They are entered initially when defining the environment.

However, selection “4” may be needed for test databases.



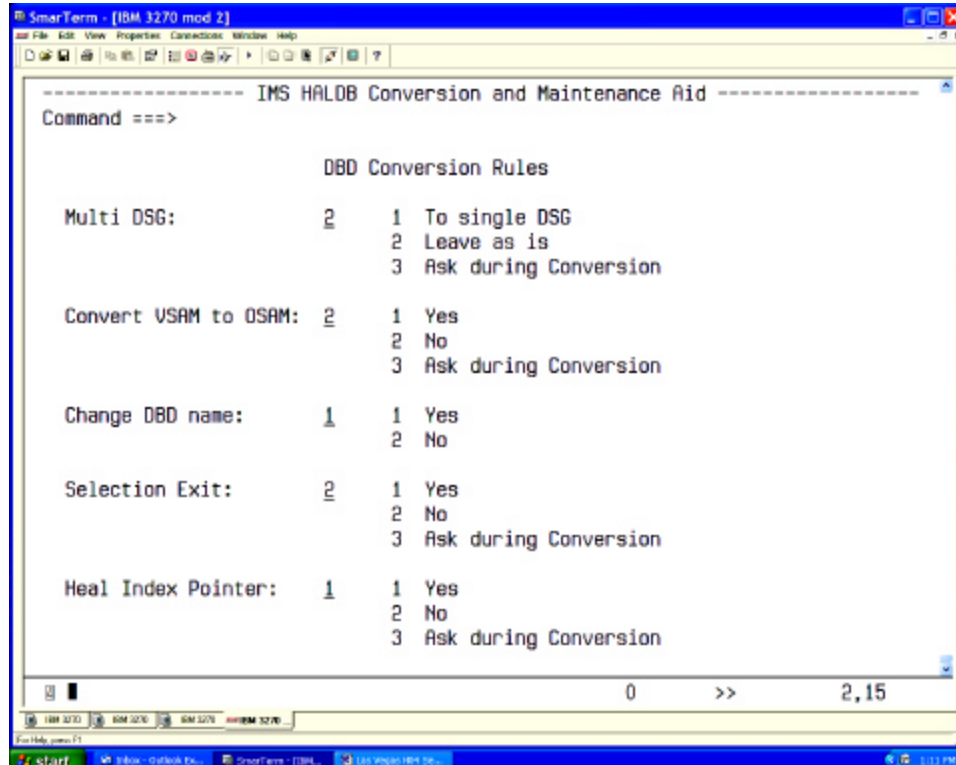
This should be used only if your recons cannot be dynamically allocated. We will discuss this together with “how to deal with test databases”.

Defining the DBD libraries.



There should be no need to have this list changed.

Converting the DBD



Does our DBD have multiple DSGs that were created because of space constraints?

Do we want to go to OSAM?

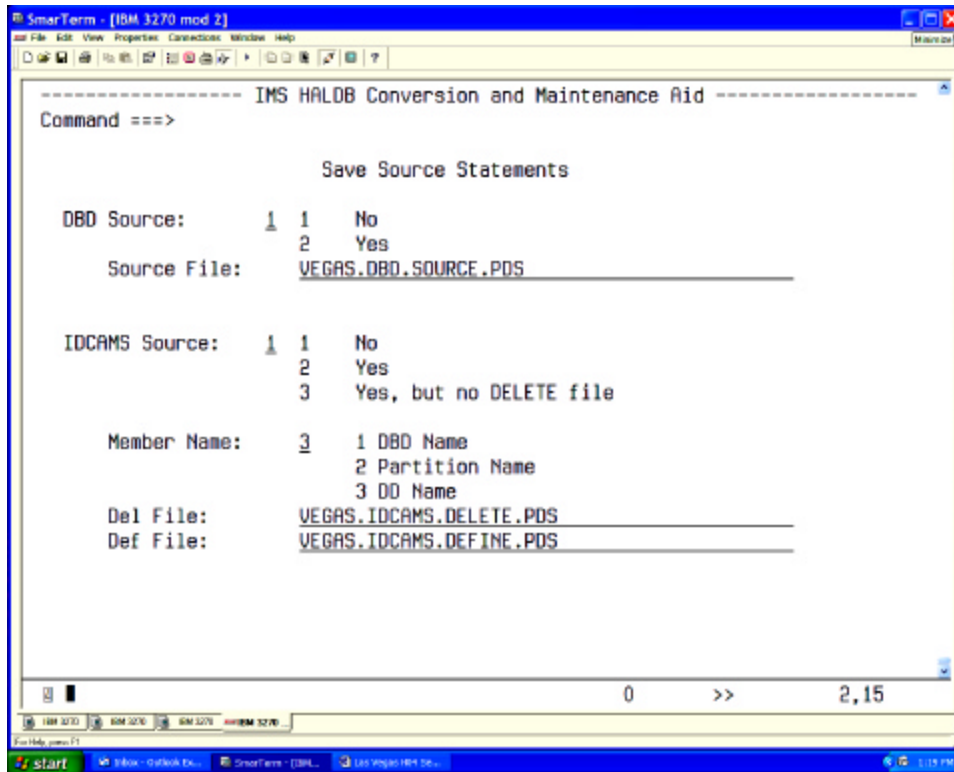
- Y Take advantage of OSAM Sequential Buffering
Caution: adjust the buffer pool definition

Do we want to change the DBD name?

- Y Add the DBD to the online system.
Change all PSBs.
Check if the application looks for the DBD name in the PCB.
- N All RECON information of the "old" DBD will be lost.

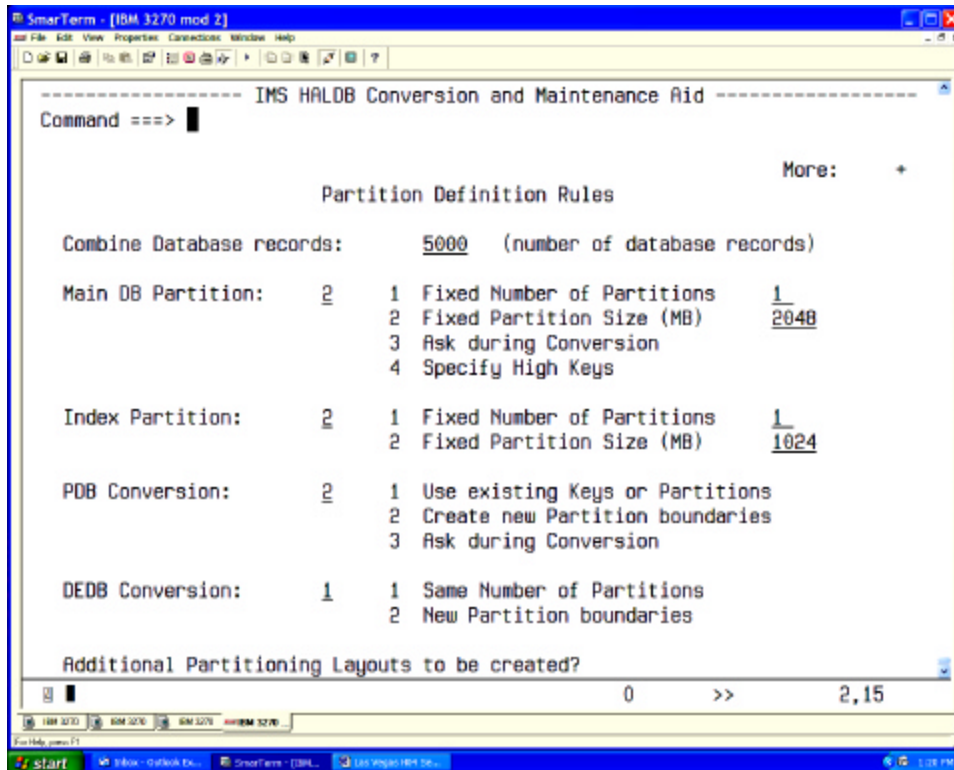
Selection Exit is not discussed.

Pointer healing is only a choice for method 1 (evaluation not together with unload). The normal IMS utilities are used. All secondary index pointer will need healing.



The implementation process will create the JCL to save the DBD source and/or the IDCAMS statements.

The member name of the IDCAMS should be selected based on usage.



How to partition the main database?

Automatic: Select option “2”

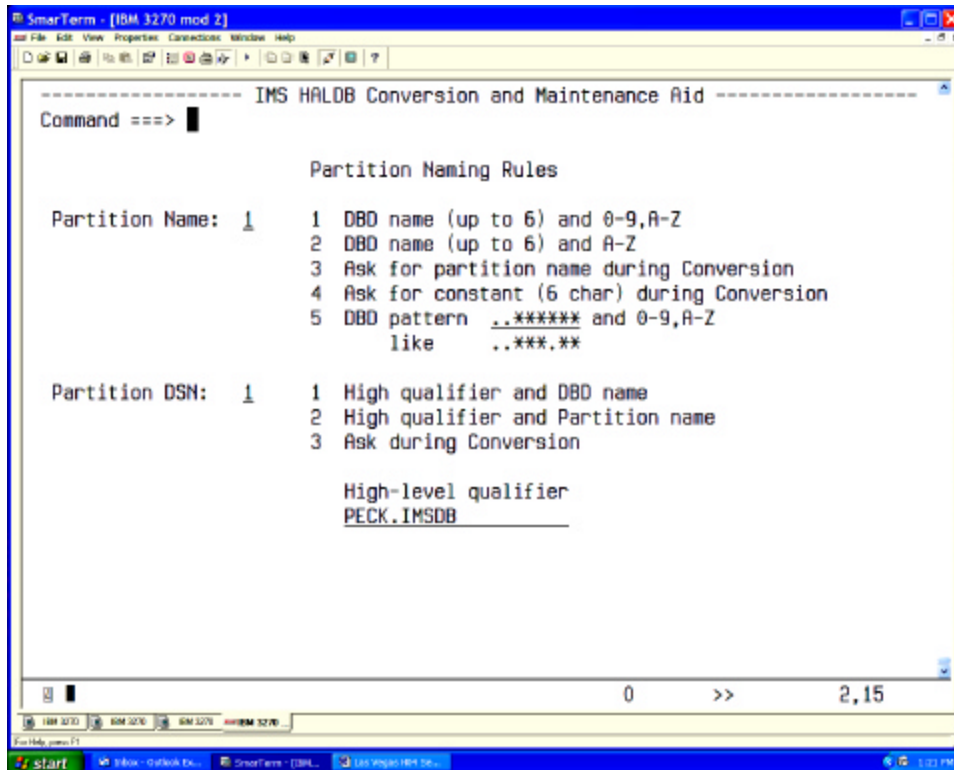
User definition

My favorite: “2”

How to partition the secondary indexes?

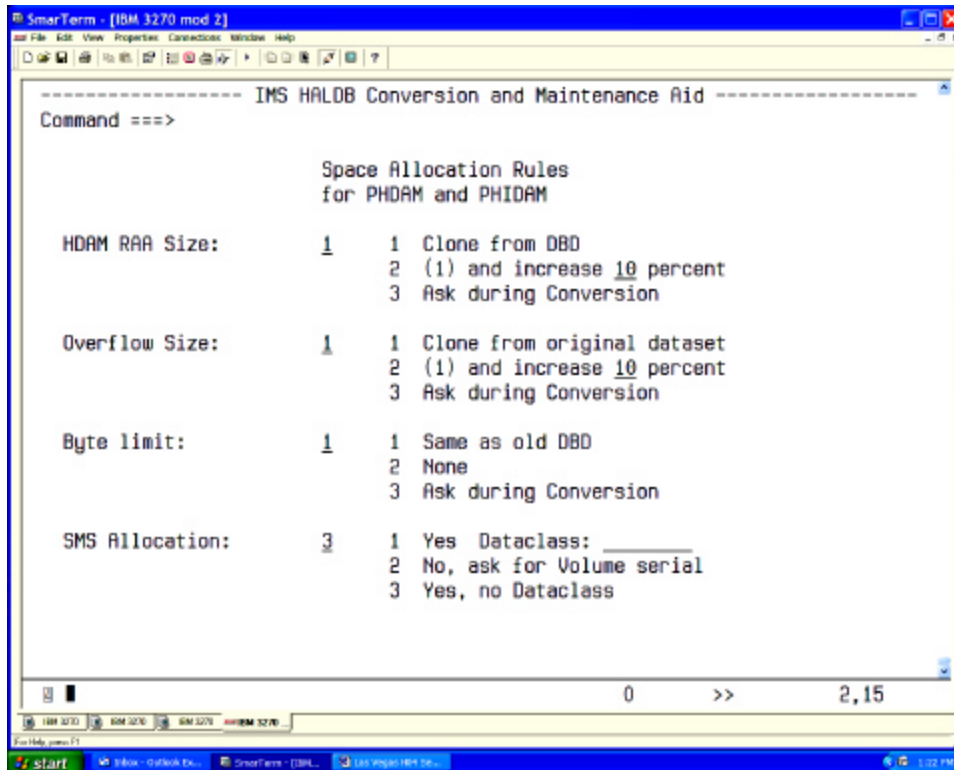
My favorite: “2”

Note: Index partitions and primary database partitions are **not** aligned at the same boundaries. They have different keys.



How to name the partitions?

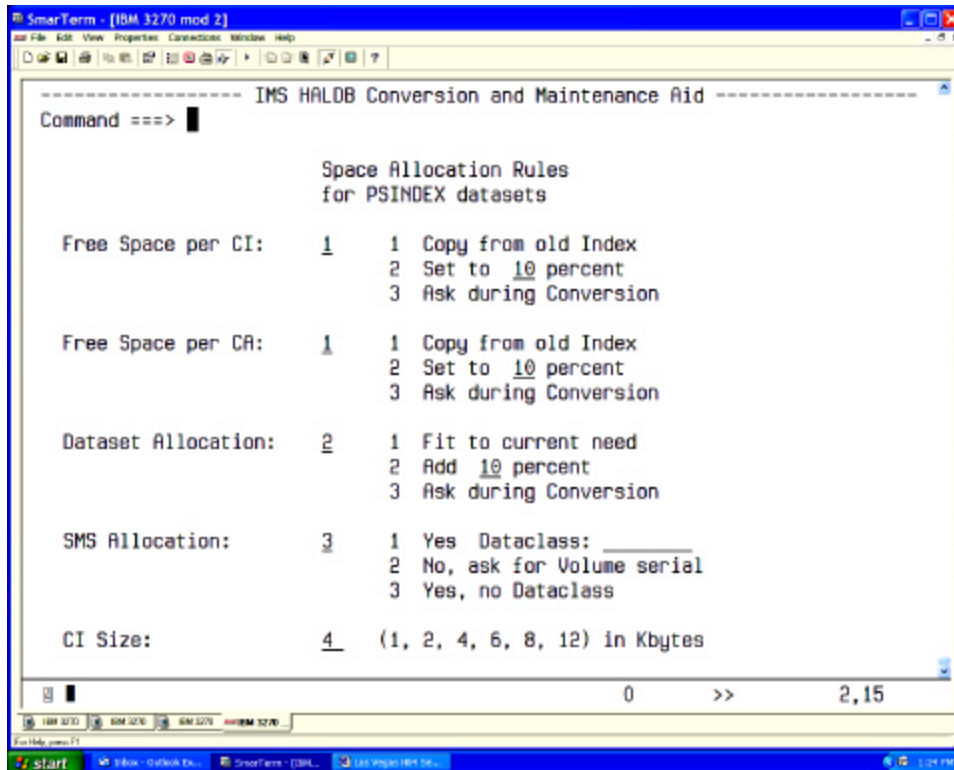
The names will be checked against the RECON. There must not be a DBD or partition using the same name currently in the recon. You may be asked for a different partition name.



This tool is not a database optimizer. It assumes that your current DBD definitions are ok. If you know you have a performance problem, you can deal with it now.

Size of RAA was ok?

Byte limit was ok? No cascading there?

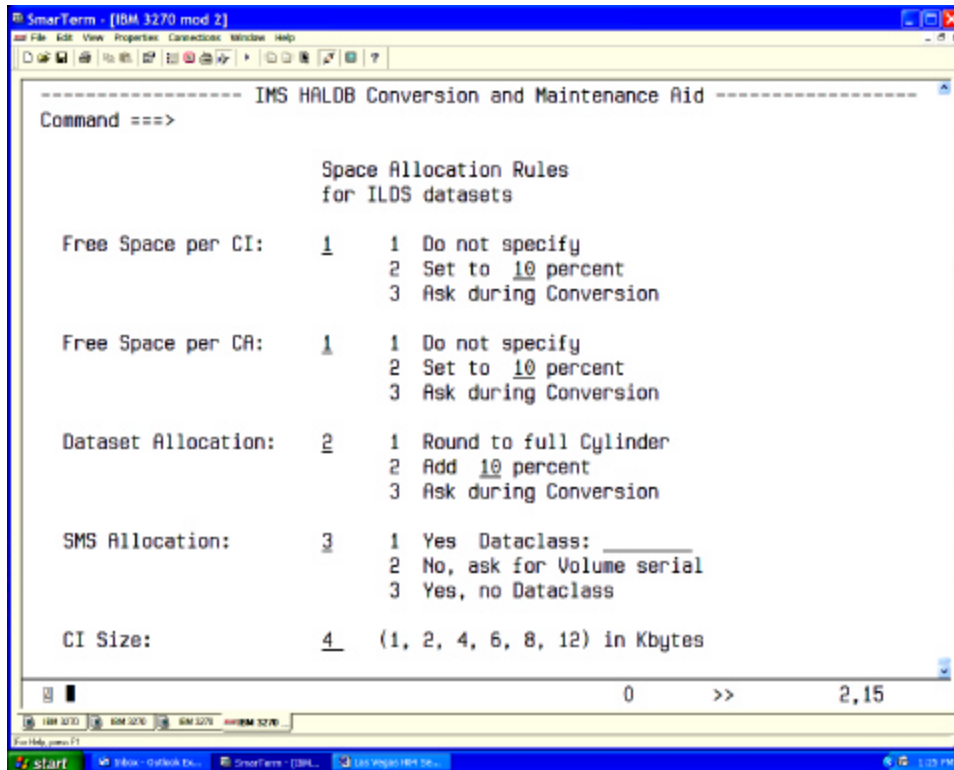


Secondary index databases normally have many inserts and deletes. Keep in mind that changing the index source segment will change the secondary index key.

The dataset should have VSAM FRSPC parameter.

Guideline: FRSPC(10,10): that fills up each CI to 90% and leaves 18 CI empty (assuming a CISZ of 4k).

The dataset will grow. If not by the number of records, by the amount of CA splits. CA splits are not a bad thing. You do not have to reorg a KSDS because of CA splits.



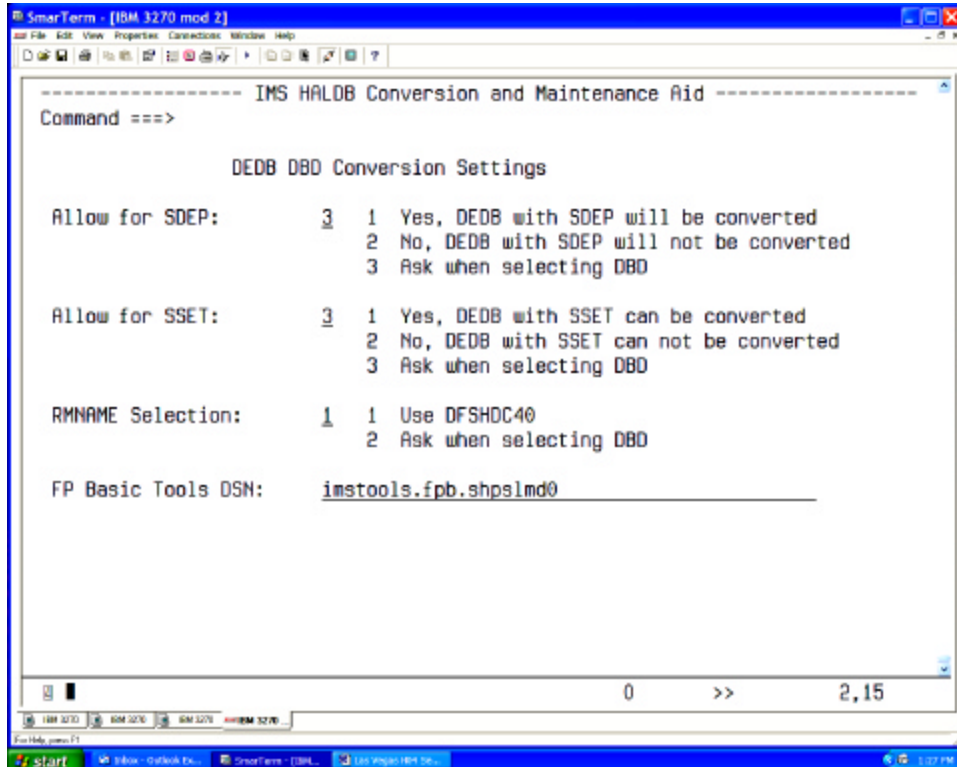
The ILDS (indirect list dataset) is needed for pointer healing. If no pointers are to heal, the ILDS can be empty.

The online system does not update the ILDS. Only reorganization reload updates the ILDS.

Conclusion: You do not want VSAM FRSPC defined. When pointer healing is needed, you want the tightest packing to increase the buffer handler hit ratio.

Downside: reorg will create many CI and CA splits. The ILDS should then be reorganized after the reorganization.

DEDB Setup Parameter:



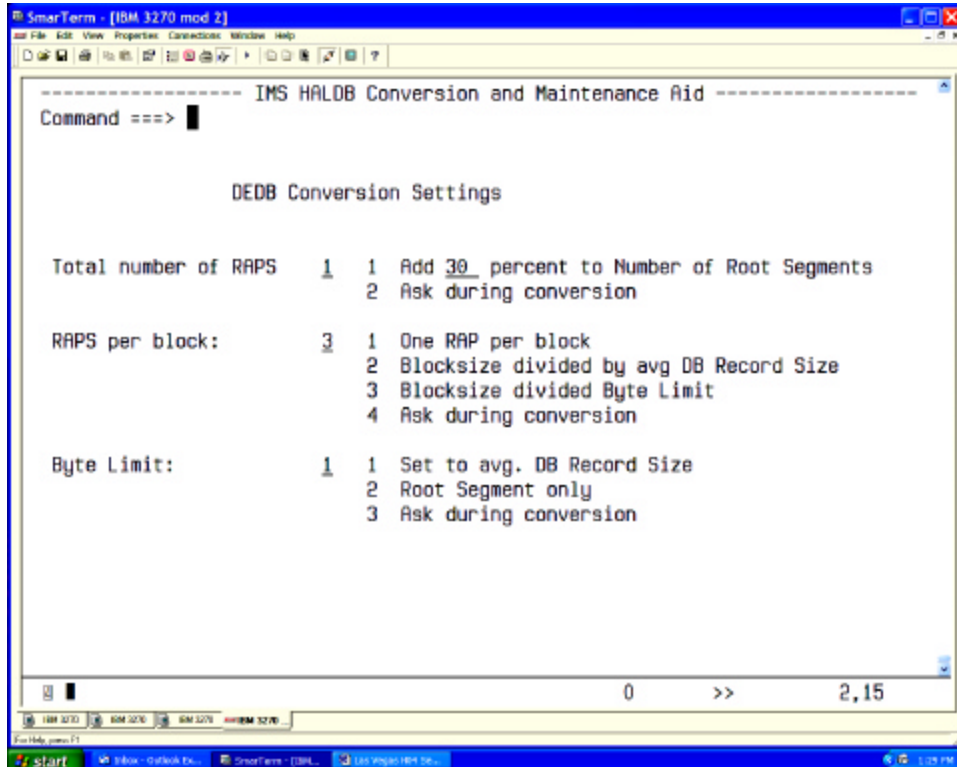
We do not handle DEDBs in this workshop.

SDEPs: Full function does not have this segment type. You do not have the utility to cycle of the segments. This program has to be written.

Subset pointer: Full function does not have these pointers. If the application uses and needs those, an application change is required.

RMNAME: The randomizing of DEDBs is different.

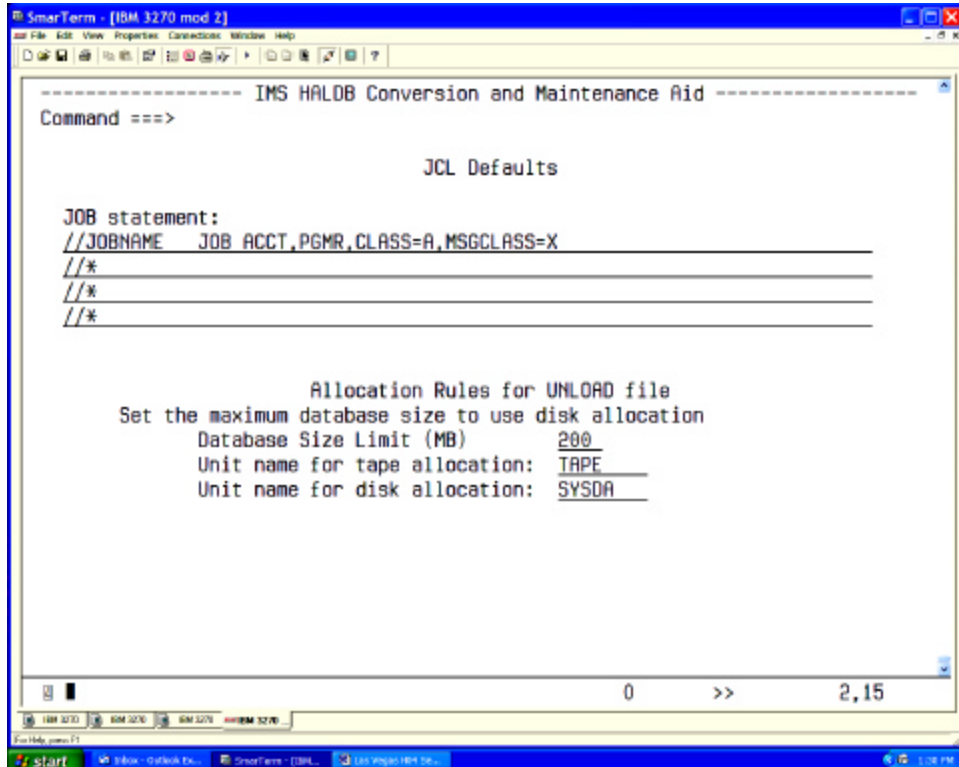
Converting AREA definitions into PHDAM RAA definitions



This deals with parameter used in a PHDAM database that are to be created out of the information we can get from the DEDB.

Note: Converting DEDBs to HALDB is not an easy task. But if you need secondary indexing this is what you may have to do.

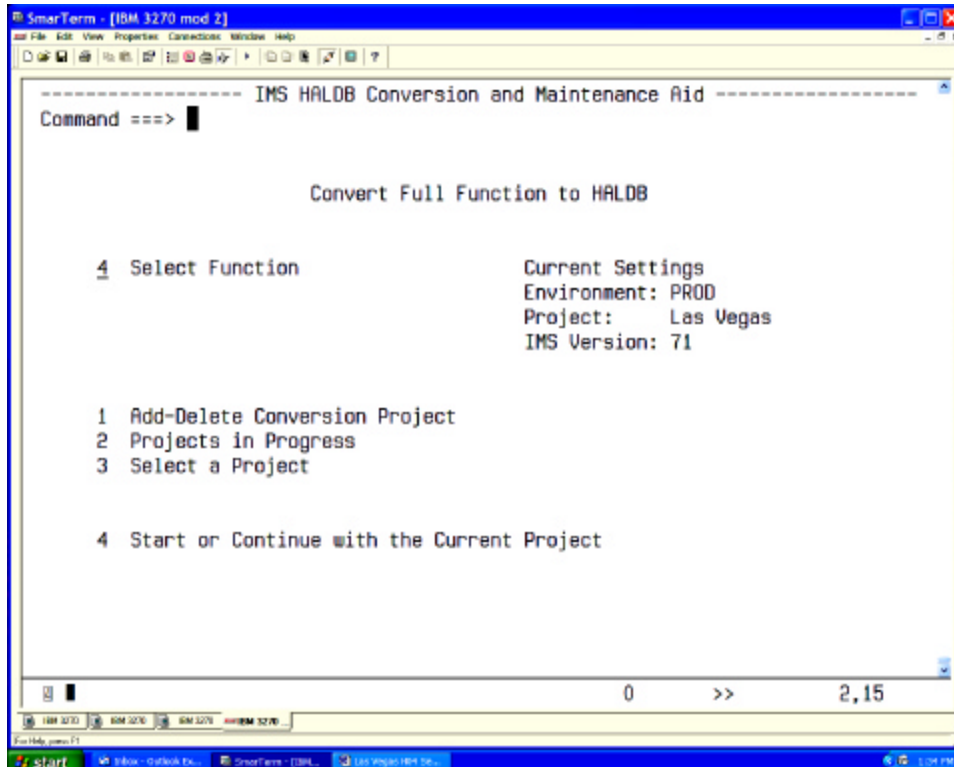
Specifying a JOB statement for the JCL to be created.



This is the end of defining a conversion project. We will see how to reuse this when the project is done.

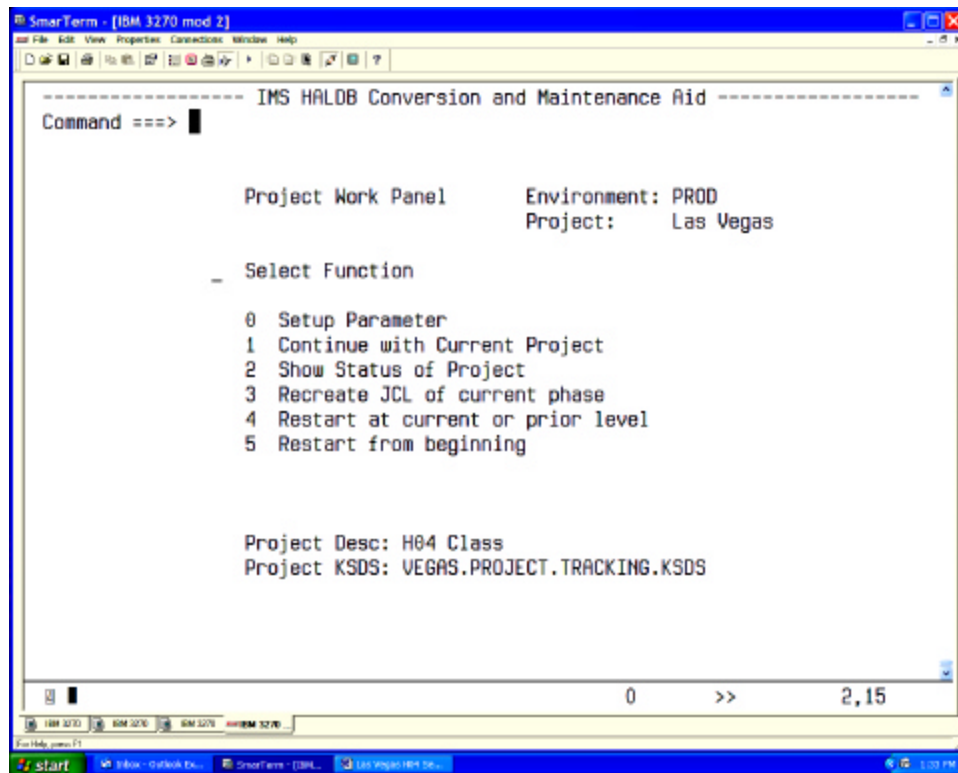
Running the Conversion

Project Start Panel



You can see the current project. If this is not the one, go and select the project you want to work on. Only one user can be on the same project at a time.

Project Work Panel



```
SmartTerm - [IBM 3270 mod 2]
File Edit View Properties Connections Windows Help
----- IMS HALDB Conversion and Maintenance Aid -----
Command ==>

      Project Work Panel      Environment: PROD
                               Project:   Las Vegas

  _ Select Function

    0 Setup Parameter
    1 Continue with Current Project
    2 Show Status of Project
    3 Recreate JCL of current phase
    4 Restart at current or prior level
    5 Restart from beginning

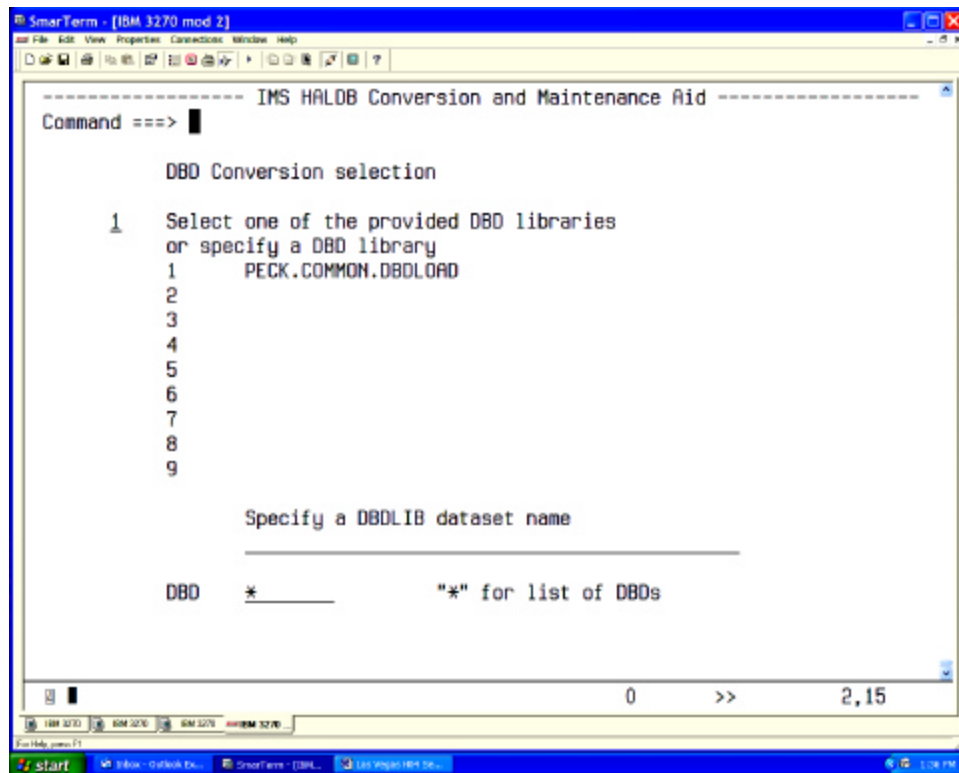
      Project Desc: H04 Class
      Project KSDS: VEGAS.PROJECT.TRACKING.KSDS

0 >> 2,15
```

You can change the parameter of your project now. Once the DBDs are selected, certain parameter can not be changed anymore.

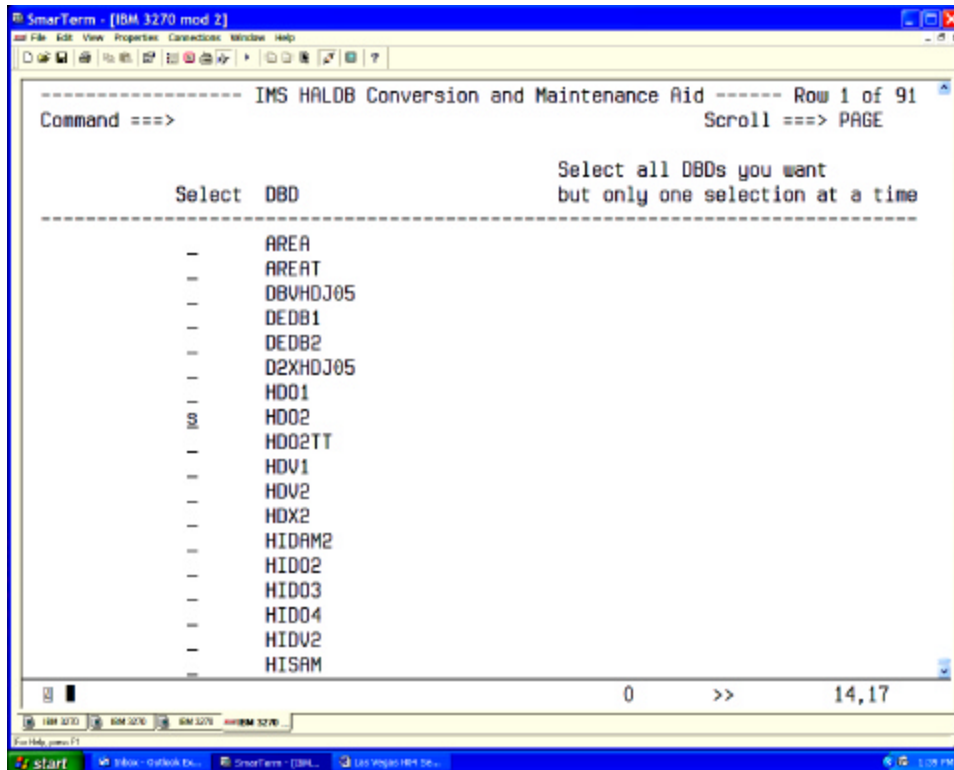
On a fresh start, we can select only “1”. Since there are no DBDs selected yet, it will go and ask for the DBDs.

DBD Selection



You first select from the DBD library list. If your DBD is not in that list, you may enter a different one. This will be the library we will be using to obtain the “old” DBD and store the “new” DBD.

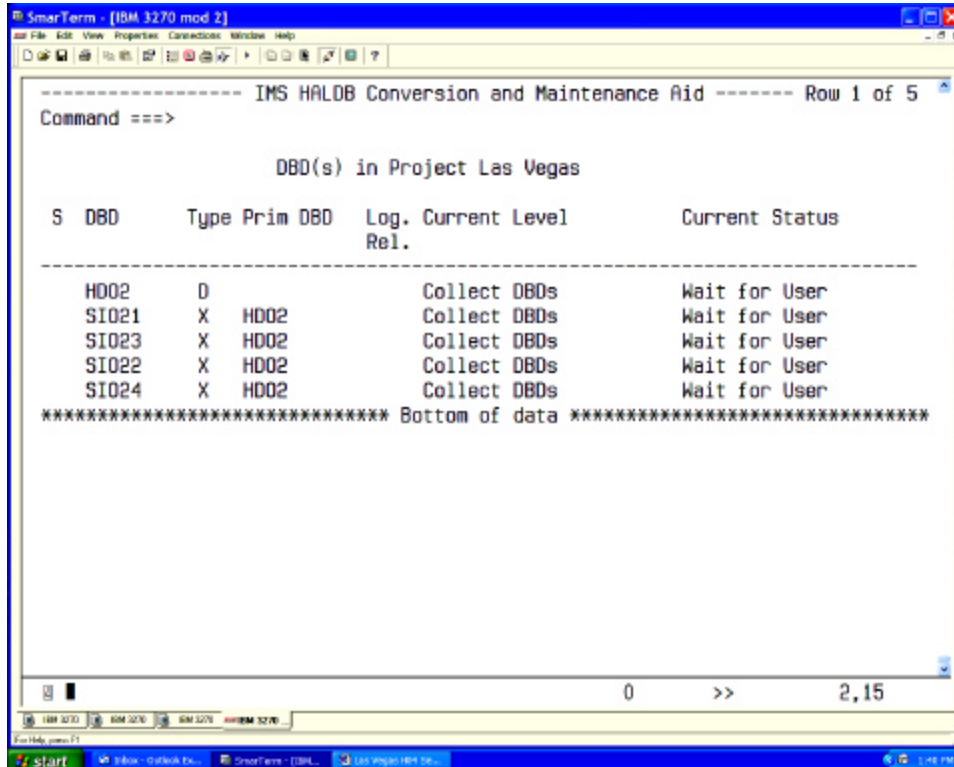
How do I get my “old” DBD back?



We select the DBD to be converted. More than one DBD can be selected. However, secondary indexes and logical related databases are automatically added.

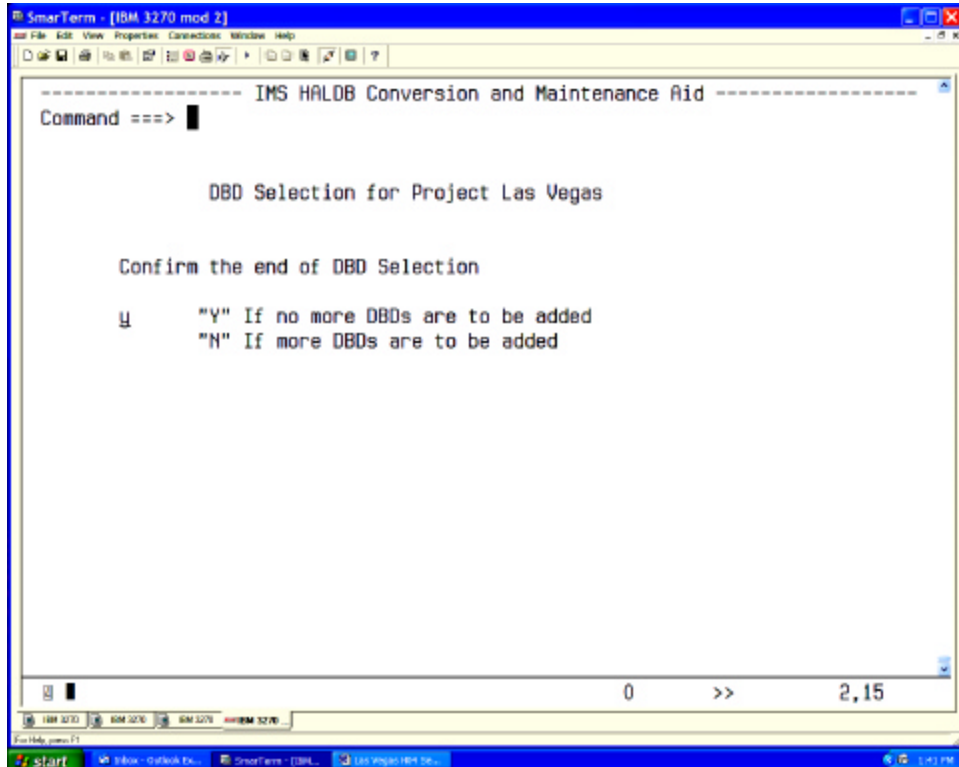
When we are done selecting DBDs, we press PF3 (end).

DBDs currently in the project list



This is the list of DBDs that will get converted. PF3 will leave this panel.

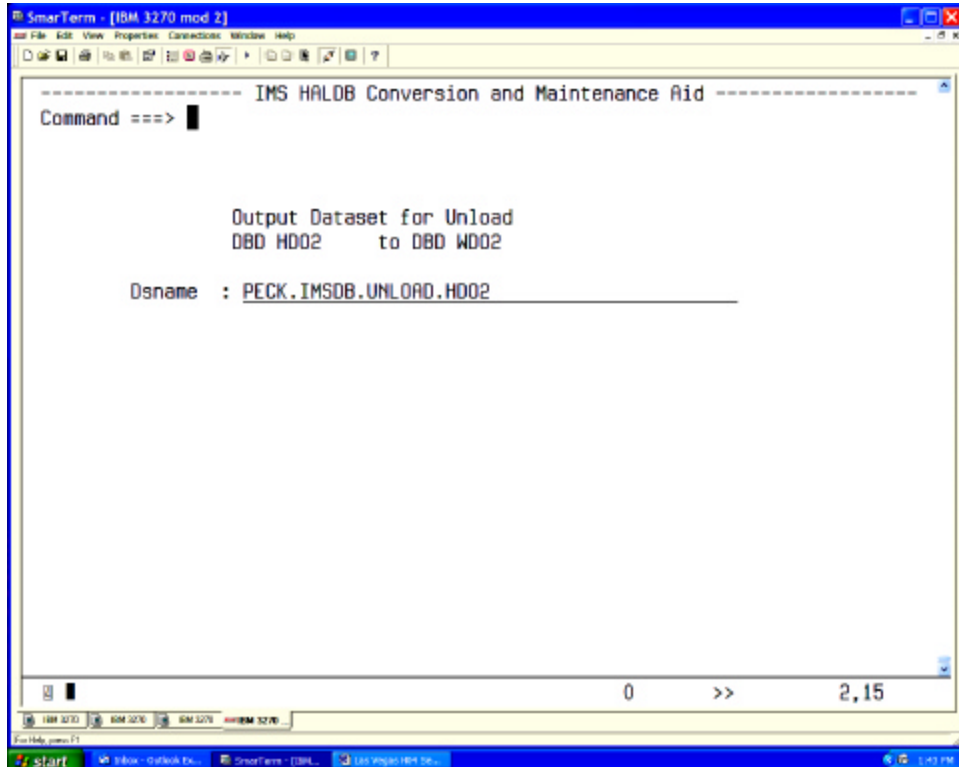
Confirmation:



This is now the last chance to add additional DBDs.

From now on you will be prompted only to answer questions or to submit JCL.

Prompt for the unload dataset name



You can see that this name was constructed using the high level qualifier from our options.

The JCL created will also use the parameter specified on the JCL panel. It will allocate the file as tape when the database is larger than the specified amount.

Output from Data Collector

Part	Roots	%	All Segments	%	Prefix Bytes	%
Total	24	100.00	1,325	100.00	24,694	100.00
1	24	100.00	1,325	100.00	24,694	100.00

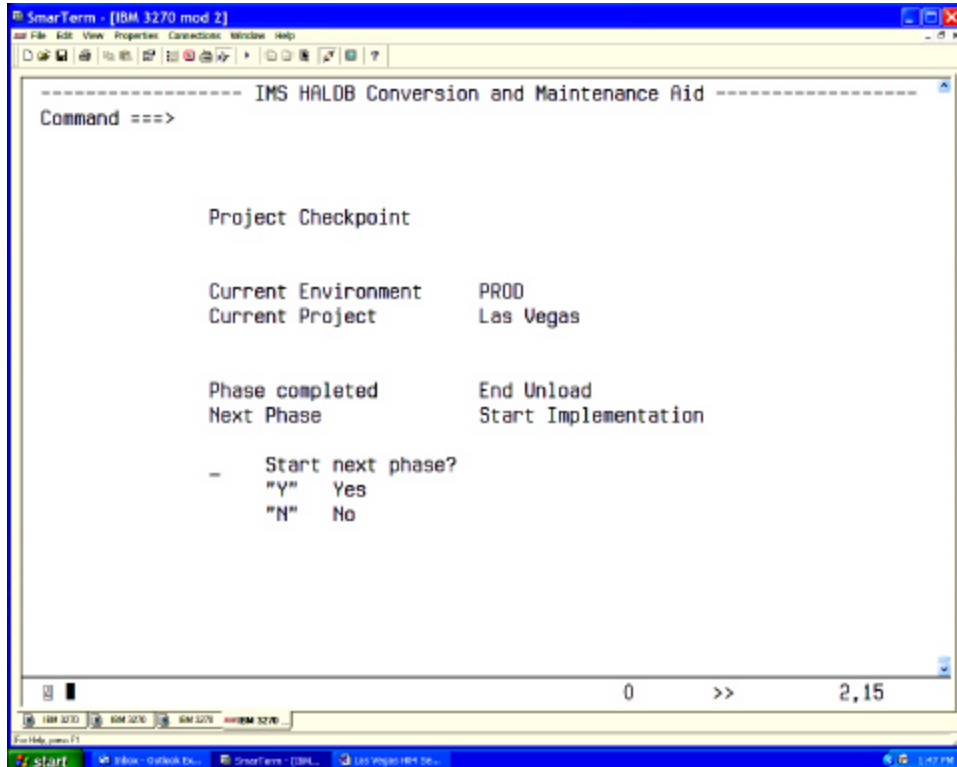
Partitioning for DBD HDO2
Key: 00004023
F0F0F0F0F4F0F2F3

Partitioning for DBD SIO21

Part	Roots	%	All Segments	%	Prefix Bytes	%
Total	24	100.00	24	100.00	888	100.00
1	24	100.00	24	100.00	888	100.00

This is the report created by the data collector. We can see how the partitioning will be done and what the high keys are for each partition. The last partition will be defined as X'FF'.

Project Checkpoint

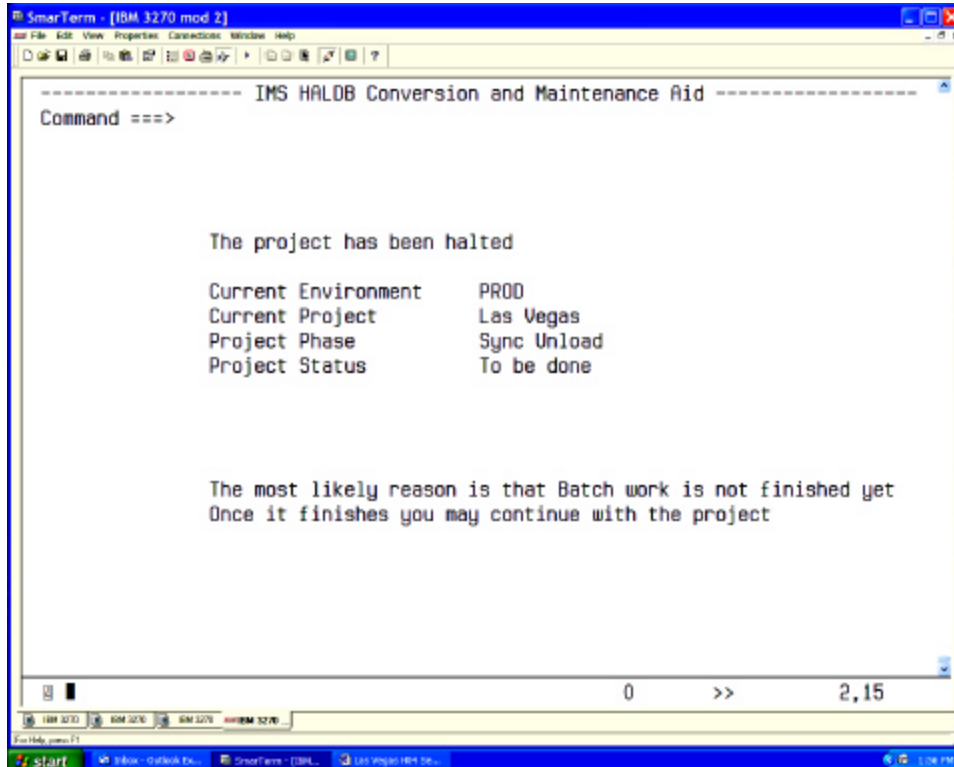


This is to allow you to interrupt the project at certain stages. In this case we have done the evaluation and the unload. We are now “ready to rock and roll”.

The next steps are:

- Cleanup the RECON if we use the same DBD name
- Generate the new DBDs
- Save DBD source (optional)
- Create the partitions
- Allocate the new files
- Save IDCAMS statements (optional)
- Initialize the new files
- Reload the databases (including the indexes)

This is the panel you get when interrupting the project.



When pressing “enter” we are back in the work panel

Show Status

We selected “2” from the work panel. This is what we get:

```
----- IMS HALOB Conversion and Maintenance Aid ----- Row 1 of 5
Command ==>

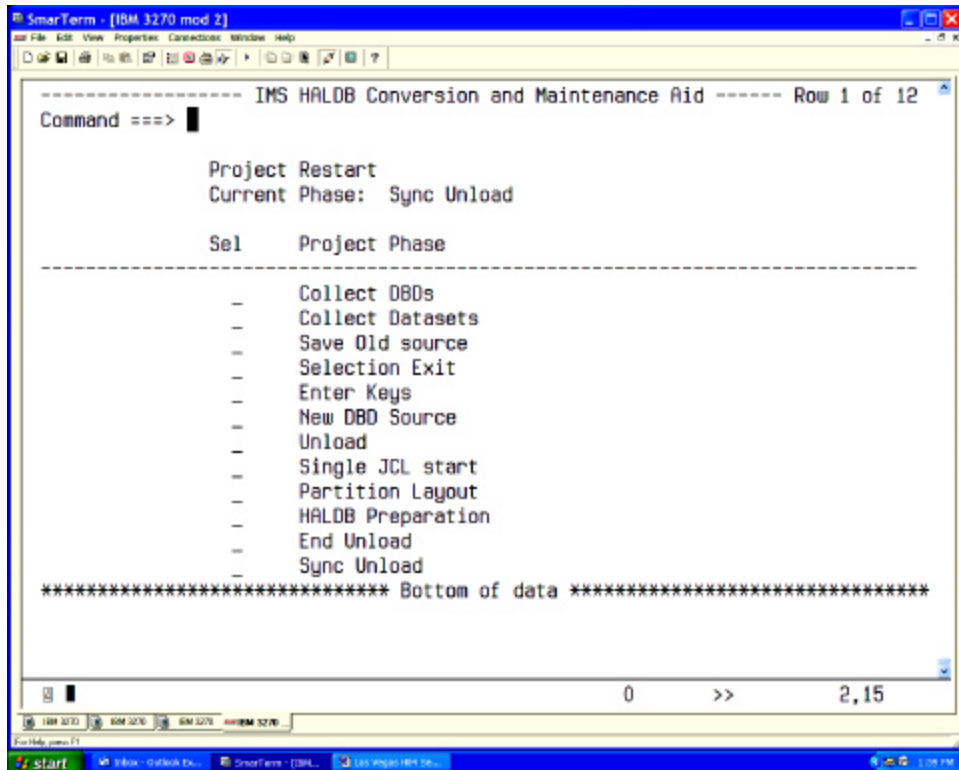
                DBD(s) in Project Las Vegas

S  DBD      Type Prim DBD  Log. Current Level      Current Status
-----
   HD02     D           HD02     Sync Unload             To be done
   SI021    X    HD02     Sync Unload             To be done
   SI023    X    HD02     Sync Unload             To be done
   SI022    X    HD02     Sync Unload             To be done
   SI024    X    HD02     Sync Unload             To be done
***** Bottom of data *****

0 >> 2,15
```

We know this already from the previous screen.

Restart at an earlier Level



The screenshot shows a terminal window titled "SmartTerm - [IBM 3270 mod 2]". The main text reads "----- IMS HALOB Conversion and Maintenance Aid ----- Row 1 of 12". Below this, it says "Command ==>". A menu titled "Project Restart" is displayed, with the "Current Phase: Sync Unload". The menu items are listed under two columns: "Sel" and "Project Phase". The items are: Collect DBDs, Collect Datasets, Save Old source, Selection Exit, Enter Keys, New DBD Source, Unload, Single JCL start, Partition Layout, HALOB Preparation, End Unload, and Sync Unload. A line of asterisks indicates the "Bottom of data". At the bottom of the terminal, there is a status bar showing "0" and ">>" followed by "2,15".

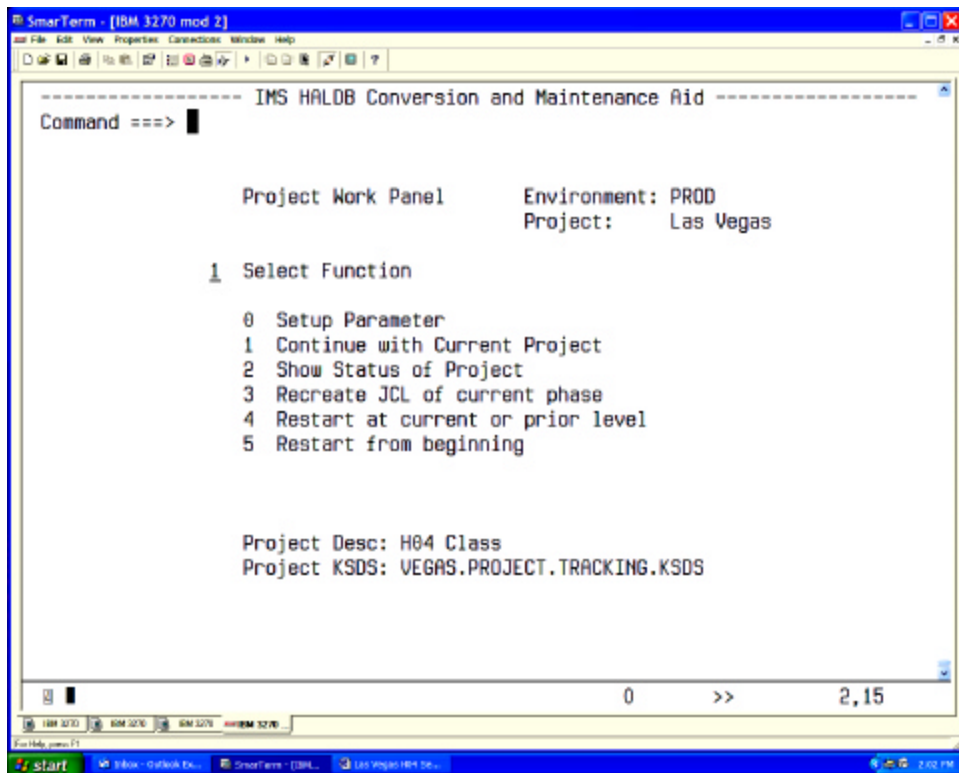
```
----- IMS HALOB Conversion and Maintenance Aid ----- Row 1 of 12
Command ==>

      Project Restart
      Current Phase: Sync Unload

      Sel   Project Phase
-----
      -    Collect DBDs
      -    Collect Datasets
      -    Save Old source
      -    Selection Exit
      -    Enter Keys
      -    New DBD Source
      -    Unload
      -    Single JCL start
      -    Partition Layout
      -    HALOB Preparation
      -    End Unload
      -    Sync Unload
***** Bottom of data *****

                                0    >>    2,15
```


Restart



The screenshot shows a terminal window titled "SmartTerm - [IBM 3270 mod 2]". The main content is a menu for "IMS HALDB Conversion and Maintenance Aid". The menu is displayed as follows:

```
----- IMS HALDB Conversion and Maintenance Aid -----  
Command ==> █  
  
Project Work Panel      Environment: PROD  
Project:               Las Vegas  
  
 1 Select Function  
  
 0 Setup Parameter  
 1 Continue with Current Project  
 2 Show Status of Project  
 3 Recreate JCL of current phase  
 4 Restart at current or prior level  
 5 Restart from beginning  
  
Project Desc: H04 Class  
Project KSDS: VEGAS.PROJECT.TRACKING.KSDS
```

At the bottom of the terminal window, there is a status bar showing "0 >> 2,15". The Windows taskbar at the bottom of the screen shows the "start" button and several open applications, including "Inbox - Outlook Ex...", "SmartTerm - [IBM...", and "Las Vegas.H04 Ex...". The system clock in the bottom right corner shows "2:00 PM".

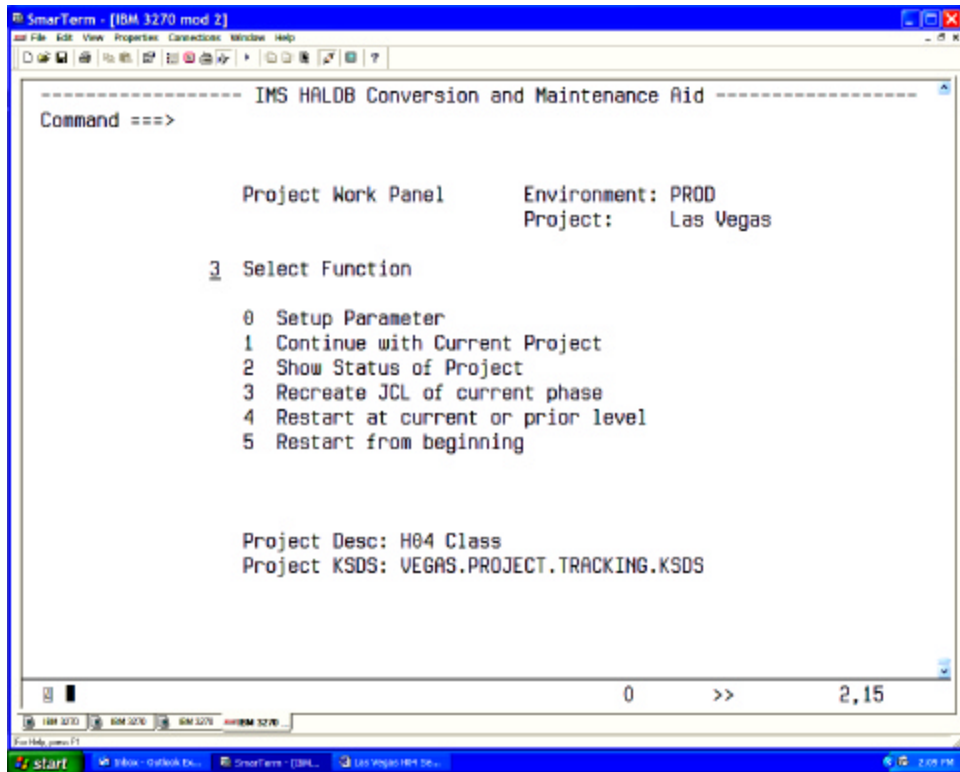
Recreate JCL

```
----- IMS HALDB Conversion and Maintenance Aid ----- Row 1 of 5
Command ==>

                DBD(s) in Project Las Vegas

-----
S  DBD      Type Prim DBD   Log. Current Level      Current Status
-----
HD02      D
SI021     X  HD02      Do DBD gens            Ended normally
SI023     X  HD02      Do DBD gens            Ended normally
SI022     X  HD02      Do DBD gens            Ended normally
SI024     X  HD02      Do DBD gens            Ended normally
***** Bottom of data *****

0 >> 2,15
```



End of Project

```
----- IMS HALOB Conversion and Maintenance Aid -----
Command ==>

The conversion project is at its end.
The following activities are still necessary:

1. If you changed the DBD Names
   Define the new DBDs to your online system.
   Change all PSBs to the new DBD name.

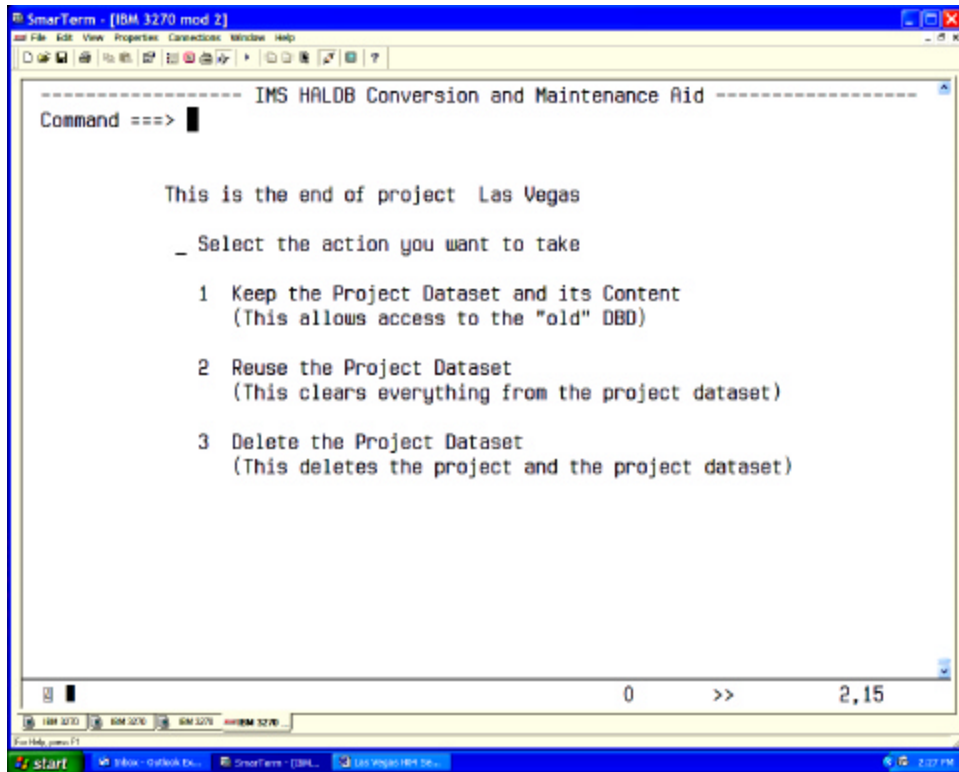
2. Run ACBGENs

3. Change applications that have the PSINDEX DBD as PCB
   if the index has SX (Key increased by 4)

4. Activate everything (Online Change)

N Say Y if all has been done
   Say N if not (and you need this as a reminder)

0 >> 2,15
```



Do we need any data?

Do we want to run another project using the same setting?

Test Databases

Set all parameter to automatic.

Specify “one big JCL”

Predefine the project setting.

You may have to give them their own RECONs for batch applications.

Next session: how to transport partition definitions to other RECONs

Give it to the programmer.

Let them use the “reuse project dataset” at the end.