TABLE OF CONTENTS

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Observatory Controller Message

This special issue of the ESA IUE newsletter is dedicated to the work done at VILSPA to improve the archival support.

The current issue supplies you with the Database User's Guide. This facility now supports many features such as:

- Remote query of the IUE Merged log and associated files.

- Remote dearchiving and reprocessing requests

- All direct daily support of the 80,000 images currently inside IUE archive

- Various combined searches through different files.

- And now also, the introduction of a so-called "simple" standard query language which will put in your hands a very powerful tool for using the statistical information in the IUE VILSPA Database.

I hope that as usual you will find that the tools we supply are useful for you and do not hesitate to contact us for further queries. We count on our users to inform us of problems we have not anticipated.

June 1991 Willem Wamsteker

VILSPA Database User's Guide

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Table of Contents

INTRODUCTION: About This Guide

This is the User's Guide of the VILSPA database, in which one should be able to find all the information necessary to access and interrogate the VILSPA database and especially the observing scripts of the International Ultraviolet Explorer (IUE) satellite of both NASA's Goddard Space Flight Center (GSFC) and ESA's Villafranca satellite tracking station (VILSPA). Many ideas for this guide were taken from the MULTIPLAN (TM) User's Guide by Erwin Schneider.

Who should read this guide ?

All people interested in IUE observations and their publications. People seeking answers to questions like

- 'Has HD 12345 been observed by IUE and how often ?'
- 'Which active galaxies have been observed in the far UV (1000 till 3200 A) ?'
- 'Are all observations of SN987A released so that I can request them ?'
- etc.

should read this guide. But also those scientists who want to issue on-line dearchiving requests of IUE observations or people who are simply interested in how to connect to the VILSPA Microvax II via public data networks.

How to Use This Guide?

You should read this guide selectively. This means that there is no point in studying it from page one through to the very last page (there are better guides for doing this). The intention is that you can find quickly what you are looking for. Don't let the size and the structure of this guide discourage you from either using the VILSPA database query facility DBQ or reading this guide. Both are simpler to use than you will realize from just reading this manual. The best way to find out is by trying it.

1. The VILSPA Database Environment

1.1 Introduction

In this part of the manual we will be looking at the general environment of the VILSPA database. We will learn under which database management system the database is implemented and at which computer it is installed.

We will explain how to access the VILSPA database both locally at VILSPA and via X.25 public data networks which have become available in the last few years.

We will take a quick look at the files available to the common user and explain their contents.

If we speak of all its power and glory we must also mention the limitations of DBQ especially in comparison with other interactive database systems available to the scientific user community in Europe.

1.2 What is DBQ?

DBQ is a set of application programs written in both VAX-11 FORTRAN (DBQ itself, etc.) and VAX-11 C (SSQL - see section 2.4 [SSQL - Simple SQL], page 22). These application programs, developed back in 1983 [Ref. 1], call ADABAS/VMS using the standard VAX/VMS call interface. ADABAS/VMS is a commercial database management system (DBMS) of Software AG (Darmstadt, Germany) and provides a powerful and flexible set of commands to perform database queries, reads and updates. ADABAS/VMS comes with NATURAL, a 4th generation application development environment. At VILSPA we use NATURAL to perform most of the monthly database upgrades.

ADABAS/VMS is a *relational* DBMS, where all information is represented by values in *tables*. These tables have horizontal *rows* and vertical *columns*. In this guide we also use *files*, *records* and *fields* or the nearly synonymous terms *relations*, *tuple* and *attributes*.

1.3 Local and Remote Access to DBQ

The VILSPA database was formerly installed on a VAX 730 (3Mb), but has been moved onto a

Microvax II (16Mb) in Feb. 1989. The Microvax II (node MAX, SPAN number: 28845) is linked via VILSPA's Local Area Network (LAN) and ESANET to all major networks (BITNET/EARN, SPAN, etc.) and in particular to the international packet switching data networks (PSDN).

The **local access** to DBQ is achieved by simply logging into the Microvax II [`destination: VAX` in the Network Control Center (NCC) menu] from any terminal (or PC) connected to the VILSPA LAN. As '`DBQ`' is defined as a system-wide symbol, typing '`DBQ`' to any VAX/VMS system prompt will start up DBQ.

For **remote access** a *captive account* has been created:

```
Username: VILSPA
Password: DB
```

which will automatically activate DBQ and disable any other access to the VAX/VMS operating system. But remote users have first to connect either to the VILSPA Local Area Network Control Center (LAN-NCC) by calling the X.25 PSDN number:

```
02145 213 021 3323
```

or directly to the VILSPA SPAN node by dialing

```
02145 213 021 3328
```

In the NCC menu one selects destination '`VAX`' and logs in with the above given username and password. Please remember to hit <RETURN> when seeing the message "CALL RECEIVED ..." to get the attention of the Microvax II.

Access via SPAN (Space Physics Analysis Net) is possible by setting the host to VILSPA (number 28843) ie:

```
SET HOST VILSPA or
SET HOST 28843 or 28845
```

Use the username and password as given above.

A *mail account* to handle SPAN e-mail messages has been set up. The address is VILSPA::IUEOBS. Observatory staff will monitor this account and will pass e-mails to

the appropiate persons.

Unfortunately there is no access possible via normal telephone modems (although plans are in hand). Also direct access via BITNET/EARN is currently not possible. But ASCII files, to be used by either DBQBAT (see section 2.5 [DBQBAT - DBQ in batch mode], page 42) or SSQL(see section 2.4 [SSQL - Simple SQL], page 22), can be sent to the following addresses:

```
BITNET/EARN:  CSASTRE@VILSPA
SPAN:         VILSPA::CS
```

Be sure to include a return address for the output.

1.4 Contents of the VILSPA database

From the files loaded under ADABAS/VMS the following ones are available to common users:

File Nr	Filename	Explanation	Status	Nr of records
11	USERS	registered users of DBQ	mid 1990	218
12	PIUE	IUE publications	end 1989	13,862
13	TAPES	IUE tape data	May 1991	75,238
14	VILSPA	IUE log of VILSPA	May 1991	23,129
25	GSFC	IUE log of GSFC	May 1991	59,936
29	HOI	Homogeneous Object Idents.	May 1990	46,584
31	PROGRAMS	IUE program titles and PI's	13th year	4,206
40	IUEORB	Orbital elements of IUE	mid 1990	446

The user can interrogate these files either individually (menu branch 4) or in parallel (menu branch 1, 2, 3, or 4). For the current status of each of these files enter 'HELP STATUS' in one of the first four menu branches.

The following JOURNALS have been searched for IUE publications (first col- umn is the abbreviation to be used when interogating file PIUE):

Abbr	Journal
A&A	Astronomy and Astrophysics
A&AS	Astronomy and Astrophysics Supplement
AJ	Astronomical Journal
APJ	Astrophysical Journal

```
APJS            Astrophysical Journal Supplement
MN              Monthly Notices of the Royal Astronomical Soc.
NAT             Nature
PASP            Publications of the Astron. Soc.of the Pacific
```

You will find further information in:

- NASA IUE Newsletter No.24, p.177 and
- ESA IUE Newsletter No.20, p.71.

'File GSFC'
: contains detailed descriptions of IUE images taken at Goddard Space Flight Center (GSFC), while File VILSPA holds the same informations for IUE images observed at VILSPA.

'File PIUE'
: contains references to publications of IUE observations and is completed up to May, 1989.

'File TAPES'
: holds the tape data information ie. which images are on which tape identified by a tape id. (TID) together with the file position. This information is important during the processing of dearchiving requests but is of no use to the common user.

'File PID'
: lists all program titles and principal investigators (PIs) till the 13th year of IUE operations together with the program id, agency and year of observation.

'File USERS'
: contains all currently registered users together with their codename, postal address, date of last login and total number of logins.

'File IUEORB'
: holds all orbital elements of IUE since the beginning of the project till mid. 1990. See [Ref. 2] for more details.

1.5 Limitations of DBQ

It is important to recognize that DBQ, versatile and highly capable as it is, is not the complete answer to all your database queries. Some people have struggled bravely to make it do something for which it was not intended for.

First of all one has to bear in mind that DBQ has evolved from programs written for the

old DBMS ADABAS-M on a PDP-11/35 (which has been available since 1982 [Ref. 1]). With the exception of SSQL, its developement started at the beginning of 1989. Secondly it is worth mentioning some of the requirements DBQ has to fulfill ie. the interaction with the system is supposed to be via any ASCII terminal (80 characters/line) and the command syntax should be similar to the one used on the PDP-11/35.

Hence be not disappointed if you see that DBQ is not supporting video mode where the cursor can be placed anywhere on the screen allowing 'forms' style in- and output. DBQ is a mixture of menu and command driven programs. Many of the limitation of DBQ could be solved by SSQL i.e.

- remote users are now able to handle (ie. edit, up and downlink, etc.) the temporary files of their query session.
- access to the operating system for remote users (hence file transfer via KERMIT, etc.)

The user interface has still the following limitations:

- command-line editing is possible only on the last command.
- add here the limitations you found and return to the author !

1.6 Current and Future Developments

Among current developments and improvements to the VILSPA database (Mar. 1991) we have

- continue the implementation of homogeneous object identifiers and accurate coordinates (in cooperation with the Centre de Donnees Astronomiques de Strasbourg) [Ref. 3 and 4]
- upgrades to SSQL (including data retrieval commands, etc.) which in the long term future should be replacing all other DBQ menu branches (see section 2.4 [SSQL - Simple SQL], page 22).
- installation of a SSQL (mail) server
- provide remote observation preparation information (RTOPS)

Future developments might include, among others:

- access via modems
- installation of a ESIS user and service shell [Ref. 5]

- on-line image reprocessing requests
- remote proposal entry

2. Major Themes in DBQ

2.1 Introduction

This part of the manual covers the comprehensive treatment of all commands and facilities in DBQ. It is structured after the DBQ menu and will overlap with the treatment given in chapter 3 (see chapter 3 [Full Command Reference Guide (non-SQL)], page 49), which is ordered alphabetically.

We will explain how and why to register as a user of DBQ. We will also get acquainted with the DBQ menu and its different menu branches starting with menus 1 and 2, where the homogeneous object identifications and 1950.0 coordinates are the only search keys to access the information of the IUE log.

Menu branches 3 and 4 offer a more sophisticated way to retrieve the contents of the various files of the VILSPA database.

Next will describe the new interactive SQL facility of the VILSPA database.

Last but not least we will still mention DBQBAT - an unsupported facility which runs DBQ in batch mode allowing ASCII file in- and output. This facility will fade away once SSQL will be able to handle DEARCHING requests, ASCII file in- and output is also available under SSQL (see section 2.4 [SSQL - Simple SQL], page 22).

2.2 How and Why to Register?

To register yourself as a user of the VILSPA database enter NEW to the codename prompt. Choose a codename of 2 to 4 characters and then enter your name as you would like it to appear on an address label. Four lines for your address are provided next and finally you are asked for your telephone number. Then you can opt to add yourself to the userlist, or to exit without registration or to correct one of the items you have entered as eg. the third line of your address - see following example (user input appears in **this font**):

Example:

```
%DBQ-I-VILSPA, database menu selection 30-JAN-1987 10:10:52.74

        Enter HELP to get help
              EXIT to get out
              LOG to get logged off
              NEW to get registered

or your codename > NEW

You will get registered now - for that we need:

a new codename (up to 4 char.) chosen by you
your name       (up to 20 char.)
your address    (4 lines of up to 18 char.) to where images you
requested during query sessions will be sent
your telephone nr. (up to 14 char.)

(The ___ indicate the size of each field, do not exceed it!)
                        ----
Enter new code name: miba
                        --------------------
Your name please:    dr. michael barylak
                        ------------------
Address (1st line)?  esa villafranca
                        ------------------
Address (2nd line)?  po box 50 727
                        ------------------
Address (3rd line)?  madrid
                        ------------------
Address (4th line)?  spain
                        --------------
Telephone number?    +34-1-8131115

Codename : MIBA
Name     : DR. MICHAEL BARYLAK
Address 1: ESA VILLAFRANCA
2: PO BOX 50 727
3: MADRID
4: SPAIN
Telephone: +34-1-8131115

A .... to Add yourself to userlist !
C .... to Correct an item !
E .... to Exit without registration : C

1 - Codename          2 - Name            3 - Address 1
4 - Address 2         5 - Address 3       6 - Address 4
7 - Telephone

Enter one option number: 5
```

```
                    ------------------
Address (3rd line)? 28080 madrid

Codename : MIBA
Name     : DR. MICHAEL BARYLAK
Address 1: ESA VILLAFRANCA
        2: PO BOX 50 727
        3: 28080 MADRID
        4: SPAIN
Telephone: +34-1-8131115

A .... to Add yourself to userlist !
C .... to Correct an item !
E .... to Exit without registration : A
%DBQ-I-REGISTERED, under codename MIBA - try it

        Enter HELP to get help
              EXIT to get out
              LOG to get logged off
              NEW to get registered

or your codename > MIBA

Which menu branch (0-7 or (E)nd, ? for HELP):
...
```

Many people might find the registration and then the use of the codename annoying but this scheme has been introduced for two reasons. Firstly we didn't want to manage over 200 user accounts on our VAX and secondly we found it more annoying to enter always our name and address etc. when making dearchiving requests. Hence one important reason for registration is to ensure that your dearchiving requests are being processed and sent to the right person and address. Users who have not provided us with an address and have submitted a dearchiving request will never get the request satisfied.

Do not be afraid to register yourself more than once if you have forgotten your codename or you are not sure if the address given was correct. Note that the system will not allow duplicate codenames. Note that you can check your name and address with SSQL - see section 2.4 [SSQL - Simple SQL], page 22 for more details.

2.3 The DBQ Menu

Once you have identified yourself (by giving your codename) you may select one of 8 menu branches, ie.

```
Which menu branch (0-7 or (E)nd, ? for HELP): ?

You can choose:

0 - Simple SQL (SSQL)

1 - query of the IUE log by homogeneous object ids. or coordinates

2 - query of the publication file by object id. or coordinates

3 - query of the IUE log by any key combination (like date,
    obj.class, dispersion, etc. ...)

4 - query of all files (IUE logs, publications, tape data, etc.)
    by any key combination

5 - enter the VAX MAIL facility

6 - exit to the operating system ( for local users only)

7 - logoff

Which menu branch (0-7 or (E)nd, ? for HELP):
...
```

2.3.1 Menu Branch_0

See section 2.4 [SSQL - Simple SQL], page 22

2.3.2 Menu Branch_1

provides a simple database query of the IUE observation logs of both VILSPA and Goddard employing as search keys either homogenous object ids. or coordinates (equinox 1950.0) as given in the database of Centre de Donnees astronomiques de Strasbourg (CDS) [Refs. 10 and 11].

2.3.3 Menu Branch_2

is similar to branch 1 as the search keys to be use are either the homogeneous object id. or 1950.0 coordinates. However the query is made against the P file which holds the information on publications of IUE observations.

2.3.4 Menu Branch_3

offers a more sophisticated query facility. You are working with the IUE logs of Goddard and VILSPA in parallel, and you will need to know the 14 keys defined for these files as query can be expressed in any combination of these 14 search keys.

This is the menu branch most frequently used by common users.

2.3.5 Menu Branch_4

provides access to almost all files loaded under ADABAS/VMS individually or in parallel. For this the user has to open (close) the files explicitly with the OF (CF) command. Files can be opened or closed at any time during the query session. Interrogation of the file(s) is only possible via the search keys which are defined in all of the file(s) currently open.

This menu branch is used for very special and specific queries. It is used mainly by the database specialist and by the people in charge of image dearchiving.

2.3.6 Menu Branch_5

gives access to the VAX/VMS Mail facility for urgent messages to Resident Astronomers (WW, JC, ...) or if you have problems with the VAX/VMS (SYS) or DBQ itself (MB). You could also mail errors in the IUE logs which you have discovered (JAF, CS). Here is a list of useful user ids.:

```
SYS ... VAX system manager          (Mr. Francisco Marcelo)
CS  ... VILSPA Database specialist  (Ms. Carmela Sastre)
WW  ... IUE observatory controller  (Dr. Willem Wamsteker)
JC  ... Deputy obs. controller      (Dr. Jean Clavel)
AT  ... Resident Astronomer (RA)    (Dr. Antonio Talavera)
AC  ... RA                          (Dr. Angelo Cassatella)
JAF ... SERC RA                     (Dr. John Fernely)
CH  ... RA                          (Dr. Rosario Gonzalez)
DDM ... RA                          (Dr. Domitilla De Martino)
RM  ... RA                          (Dr. Richard Monier)
MB  ... RA Data Base Administrator  (Dr. Michael Barylak)
```

2.3.7 Menu Branch_6

provides an exit to the operating system. This is only possible for local users or users who have started DBQ under their own user accounts.

2.3.8 Menu Branch_7

Logoff from the VAX/VMS operating system (with automatic disconnection of remote users - ie. line hang up).

2.3.9 Menu Branches 1 and 2

In cooperation with Centre de Donnees Astronomiques de Strasbourg (CDS) the IUE project has undertaken the task of homogenizing the object identifications in the IUE observing logs [Ref. 3 and 4]. The aim of this homogenization is that all you'll have to know is either the name of your object or the 1950.0 coordinates. Although this sounds nice and easy, it is something like trying to domesticate a cage of lions and tigers as there is no accepted astronomical nomenclature hierarchy.

Given the nature of IUE data ie. primarily spectral data, the following nomenclature hierarchy was adopted by the IUE project (the numbers in the first column give the hierarchical sequence):

Catalog	Explanation	Example
0, IUE	IUE specific images	IUE NULL
1, HD	Henry Draper catalog	HD 219749
2, BD	Bonner Durchmusterung	BD +28 5211
3, CD	Cordoba Durchmusterung	CD -26 1340
4, CPD	Cape Durchmusterung	CPD -69 2698
5, V*	Variable stars (Kukarkin)	V* BF CYG
6, WD	White Dwarf	WD 2034-53
7, GD	Giclas white dwarfs	GD 323
8, NGC	New General Catalog	NGC 4151
9, IC	Index catalog	IC 2003
10, PK	Perek-Kohoutek Plan.Neb.	PK 059+09 1
11, MC	Magellanic clouds	MC SK 80
12, MRK	Markarian	MRK 509
13, ESOB	ESO (B) Catalog	ESOB 113-IG45
14, MCG	Morph. Catalog of Galax.	MCG +08-11-0011
15, PG	Palomar Green	PG 0108+101
16, QSO	Hewitt Burbidge	QSO 0414-060
17, ABCG	Abell rich clusters	ABCG 36

```
18, ZZ   Solar System objects      ZZ COM 1982J
19, NOVA Novae                     NOVA MUS 1983
20, SN   Supernovae                SN 1983N
21, AOO  Any Other Objects         AOO PKS 1543+091
```

Four 'super-groups' were created to avoid an excessive number of catalogs, ie.:

'IUE' which contain all IUE specific images such as WAVECAL, NULL, CALUV, T FLOOD, UV FLOOD, etc.

'ZZ' the CDS invented 'Z'olar 'Z'ystem catalog

'MC' which holds all objects of both the Small and Large Magellanic Cloud (ie. catalogs LMC, SMC, FD, SK, AZV)

'AOO' our invented catalog of 'A'll 'O'ther 'O'bjects which holds currently unidentified objects or objects not included in any of the above given catalogs or supergroups.

One systematic exception to the hierarchical structure has been made for extended objects containing many stars such as bright galaxies or globular clusters. For these objects the NGC catalog has preference over the stellar catalogs (eg. Omega Centauri is NGC 5139 rather than HD 116790).

Example:

```
Which menu branch (0-7 or (E)nd, ? for HELP): 1
%DBQ-I-WELCOME, to DBQ Version 4.5/3     4-NOV-1987 13:34:40.79
Coordinates (C) or Object id. (O) - (E)nd, ? for Help: ?

Valid commands:

(C)oordinates      - I want to enter coordinates
(E)nd              - end this program
(H)elp             - give help
(M)ail             - use VMS mail facility
(O)bject id.       - I want to enter object names
(P)rint            - print save file
(T)hrow            - throw away save file

Coordinates (C) or Object id. (O) - (E)nd, ? for Help: C

HHMMSSss+DDMMSSs  (epoch 1950.0) - (E)nd, ? for help
?

Enter the right ascension and declination of your object of
interest. The epoch has to be 1950.0 and can be as accurate as
```

```
desired, ie.  you can leave  blank  items  which  you dont know.

Please  provide  coordinates taken out of a catalogue (eg.  CDS, etc.)
as they may be different of the ones you  find  in  the Merged IUE log
(ie.  slit position of IUE) !

HHMMSSss+DDMMSSs  (epoch 1950.0) - (E)nd, ? for help
1212
%DBQ-S-FOUND,     5 records - elapsed time:   1.08 secs

------     HZ    22 ------------------------------------------------------

Coord. 1950.0= 12:12:18.     36.55.26  Object class:  20     Magnitude:13.2
Observing  date: 79010501   at G
Camera: 2    Imagenr.: 03388                  Release    date: 791010      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 015700  Length: 0025:00       Processing date: 790105     at G
Dispersion    :      L  Apert.: L   (0)       Exp. Class.Code:
FES m:cnts  SO:    104  Pro.id: BSJLG         Observer       :       GREENSTE
Comments: MAXDN255
-------------------------------------------------------------------------------

Homogeneous object id.: V*  UX CVN       RAS: 12h12m16.00s DEC: +36d56'18"0

(S)ave, (A)ll, (N)ext, (E)nd, (D)earchive,  ? - help: E

HHMMSSss+DDMMSSs  (equinox 1950.0) - (E)nd, ? for help
        +62
%DBQ-S-FOUND,   189 records - elapsed time:   0.38 secs

--- HD      2905 ----------------------------------------------------------
Coord. 1950.0= 00:30:08.     62.39.22  Object class:  23     Magnitude:   4.15
Observing  date: 78061917   at G
Camera: 3    Imagenr.: 01814                  Release    date: 801008      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 172800  Length: 0006:00       Processing date: 800113     at G
Dispersion    :      H  Apert.: S   (C)       Exp. Class.Code:
FES m:cnts   U:    637  Pro.id: SGABU         Observer       :       UNDERHIL
Comments:
-------------------------------------------------------------------------------
Homogeneous object id.: HD  2905         RAS: 00h30m08.34s DEC: +62d39'22"1

(S)ave, (A)ll, (N)ext, (E)nd, (D)earchive,  ? - help: ?

At   this   stage  you have built up an ISN (Internal Sequence Number)
list.   You can   scan through this list via the  (N)ext  command  and
(S)ave   individual   records  of  interest into a temporary save file
for later print out.
You can also save (A)ll records of your ISN list.
(D)earchive  will  place the currently displayed record  in   an  tape
```

```
dearchival request which you have to fill in eventually.
(E)nd will allow you to enter new coordinates.

(S)ave, (A)ll, (N)ext, (E)nd, (D)earchive,  ? - help: E

HHMMSSss+DDMMSSs  (epoch 1950.0) - (E)nd, ? for help
E

Coordinates (C) or Object id. (O) - (E)nd, ? for Help: O

Cat  Object id.          -  CTRL+Z for end, ? for help
....------------
?

Enter in  the four  character field Cat (marked  by  four  points) the
catalogue  source  (eg.  HD,  BD,  ...). Enter in the twelve character
field named Object  id.  (marked  by  ____)  the   object id. (eg. the
catalogue number, etc.). Below three examples:
Cat  Object id.     Cat  Object id.     Cat  Object id.
....------------   ....------------   ....------------
HD  121212          BD  +64 325         NGC 4332

The  following ten catalogues  are the  ones  most  commonly  used:

HD          NGC         BD          V*
QSO         MRK         PG          NOVA

Special catalogs:
IUE  - IUE specific observations (NULL, UVCAL, TFLOOD, ...)
ZZ   - Solar system objects
AOO  - 'A'ny 'O'ther 'O'bjects

Cat  Object id.          -  CTRL+Z for end, ? for help
....------------
SN
%DBQ-S-FOUND,   128 records - elapsed time:   0.34 secs

--- SN(NGC1265   ------------------------------------------------------------
Coord. 1950.0= 03:14:56.9   +41.40.31  Object class:  56     Magnitude:  08.89
Observing  date: 83013100   at V
Camera: 9    Imagenr.: 01395                  Release    date: 830801      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 000000  Length: 0000:00       Processing date: 830131     at V
Dispersion    :      E  Apert.: 2   (0)       Exp. Class.Code:
FES m:cnts  SO:  00142  Pro.id: PHCAL         Observer       : PANAGIA
Comments: FES IMAGE
-------------------------------------------------------------------------------
Homogeneous object id.: SN  NGC 1265     RAS:   h  m  .  s DEC:    d  '  "

(S)ave, (A)ll, (N)ext, (E)nd, (D)earchive,  ? - help: E
```

```
Cat  Object id.          -  CTRL+Z for end, ? for help
.....------------
^Z

Coordinates (C) or Object id. (0) - (E)nd, ? for Help: E
%DBQ-I-TERMINATED,  4-NOV-1987 13:38:09.78 thanks for timesharing
%DBQ-I-STATISTICS, elapsed time: 00:03:28.81     used CPU time:0:00:02.51

Which menu branch (0-7 or (E)nd, ? for HELP): E
```

2.3.10 Menu Branches 3 and 4

These menu branches provide a very powerful tool for interrogating the VILSPA database. Menu branch 3 allows you to interrogate the IUE Merged Log since you are working with the IUE log of Goddard and VILSPA in parallel. It is mainly used by the Resident Astronomers and Guest Observers. From the following example the user should get a feeling of how to use this query facility. The on-line helps which is available will also be demonstrated. For further information on a particular command please refer to part 3 (Full Command Reference Guide (non-SQL)).

For both menu branches you need to know three things, ie.

- the **name** of the available search keys (column KEY)
- the key **charateristics** (column 'L'ength 'F'ormat - 'A'scii/'N'umeric)
- for **which file** the key is defined

Example:

```
Which menu branch (0-7 or (E)nd, ? for HELP): 3

%DBQ-I-WELCOME, to DBQ Version 4.5/3     4-NOV-1987 17:06:54.22
DBQ_2> ?

Valid commands:

DEarchive        - dearchive record
DR or DIsplay    - display record
FInd key=value   - find record
GN or NExt       - display next record
HElp             - give help
MAil             - use VMS mail facility
PRint            - print save file
```

```
PUrge            - purge save file
REcall           - recall last 20 commands
SAve, SAA        - save record, save all
SOrt key=value   - sort records
BYe, EXit        - bye, exit program
DBQ_2> KEYS

Valid keys are:
                                                    +-----files-----+
Key !    Description     ! LF ! Example    ! G ! P ! T ! V
----+-------------------+----+------------+---+---+---+----
APE !APErtures           ! 1A !APE=L       ! X ! - ! - ! X
CAM !CAMera              ! 1N !CAM=9       ! X ! X ! X ! X
CIM !Camera & IMage nr. ! 6N !CIM=102345  ! X ! X ! X ! X
CLA !object CLAss        ! 2N !CLA=64      ! X ! X ! - ! X
DEC !DEClination (+ddmm)!+4N !DEC=-2349   ! X ! X ! - ! X
DIS !DISpersion          ! 1A !DIS=H       ! X ! - ! - ! X
DTO !DaTe of Observ.     ! 8N !DTO=79082100! X ! X ! - ! X
JOU !JOUrnal of publ.    ! 4A !JOU=A&AS    ! - ! X ! - ! -
PAG !PAGe of publication! 4A !PAG=013L    ! - ! X ! - ! -
PDA !Last Processing DAt! 6N !PDA=831224  ! X ! - ! X ! X
PID !Program IDent.      ! 5A !PID=PHCAL   ! X ! - ! - ! X
RAS !Right AScen. (hhmm)! 4N !RAS=0033    ! X ! X ! - ! X
REL !RELease flag        ! 1A !REL=*       ! X ! - ! - ! X
RDA !Release DAte(YYMMDD! 6N !RDA=850324  ! X ! - ! - ! X
STN !STatioN code (V/G) ! 1A !STN=V       ! X ! - ! - ! X
TID !Tape Identification! 6A !TID=N0321A  ! - ! - ! X ! -
VOL !VOLume of publ.     ! 4A !VOL=0082    ! - ! X ! - ! -
YEA !YEAr of publication! 2N !YEA=82      ! - ! X ! - ! -
----+-------------------+----+------------+---+---+---+---
DBQ_2> FIND APE=L
%DBQ-I-WORKING, on file V ...
%DBQ-S-FOUND, 13543 records - elapsed time:   2.63 secs
%DBQ-I-WORKING, on file G ...
%DBQ-S-FOUND, 30926 records - elapsed time:   5.85 secs
DBQ_2> DISPLAY
%DBQ-I-WORKING, on file V ...

------     HD137389 ------------------------------------------------------------
Coord. 1950.0= 15:21:41.0   +62.13.29  Object class:  30     Magnitude:  05.95
Observing  date: 78030209   at V
Camera: 2    Imagenr.: 01031                  Release    date: 821105      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 095000  Length: 0001:00       Processing date: 821105     at V
Dispersion    :      L  Apert.: L   (0)       Exp. Class.Code:
FES m:cnts    :  00000  Pro.id: EVAL1         Observer       :
Comments: *** TPREP USED
-------------------------------------------------------------------------------
%DBQ-I-WORKING, on file G ...
------ HD     34029 ---------------------------------------------------------
```

```
Coord. 1950.0= 05:12:59.5   +45.56.57  Object class:  45     Magnitude:   0.09
Observing  date: 78020919   at G
Camera: 1    Imagenr.: 01022                  Release    date: 780321      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 194100  Length: 0003:00       Processing date: 780321     at G
Dispersion    :      H  Apert.: L   (0)       Exp. Class.Code:
FES m:cnts    :         Pro.id: CEJLL         Observer       :       LINSKY
Comments: COMMISSIONING PERIOD
-------------------------------------------------------------------------------

DBQ_2> FI CAM=3 & DIS=H & CLA=20 - 30 & STN=V
%DBQ-I-WORKING, on file V ...
%DBQ-S-FOUND,  1196 records - elapsed time:   8.11 secs
%DBQ-I-WORKING, on file G ...
%DBQ-S-FOUND,     0 records - elapsed time:   8.79 secs
DBQ_2> DR
%DBQ-I-WORKING, on file V ...
------      HD 53138 ---------------------------------------------------------
Coord. 1950.0= 07:00:56.0   -23.46.00  Object class:  23     Magnitude:  03.00
Observing  date: 78041605   at V
Camera: 3    Imagenr.: 01368                  Release    date: 781016      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 053800  Length: 0010:00       Processing date: 780507     at V
Dispersion    :      H  Apert.: S   (C)       Exp. Class.Code:
FES m:cnts    :  00000  Pro.id: MHB02         Observer       :
Comments: BIT OXP LW
-------------------------------------------------------------------------------
DBQ_2> EX
%DBQ-I-TERMINATED,  4-NOV-1987 17:09:36.47 thanks for timesharing
%DBQ-I-STATISTICS, elapsed time: 00:02:42.00    used CPU time: 0:00:01.95

Which menu branch (0-7 or (E)nd, ? for HELP): 4
%DBQ-I-WELCOME, to DBQ Version 4.5/3     4-NOV-1987 17:09:44.93
DBQ_0> OF
File (G,P,T or V) ? G
DBQ_1> OF P
DBQ_2> OF T
DBQ_3> OF V
DBQ_4> FI CAM=4
%DBQ-I-WORKING, on file V ...
%DBQ-S-FOUND,   105 records - elapsed time:   0.51 secs
%DBQ-I-WORKING, on file G ...
%DBQ-S-FOUND,    36 records - elapsed time:   0.41 secs
%DBQ-I-WORKING, on file P ...
%DBQ-S-FOUND,    20 records - elapsed time:   0.48 secs
%DBQ-I-WORKING, on file T ...
%DBQ-S-FOUND,   137 records - elapsed time:   0.44 secs

DBQ_4> DR
%DBQ-I-WORKING, on file V ...
```

```
------              ------------------------------------------------------
Coord. 1950.0= 00:00:00.0   +00.00.00  Object class:  99     Magnitude:  99.99
Observing  date: 78071600   at V
Camera: 4    Imagenr.: 01077                  Release    date: 790116      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 000000  Length: 0000:00       Processing date: 000000     at V
Dispersion    :         Apert.:     ( )       Exp. Class.Code:
FES m:cnts    :  00000  Pro.id:               Observer       :
Comments:     SAFETY READ
------------------------------------------------------------------------------
%DBQ-I-WORKING, on file G ...
------ HD     34029 ---------------------------------------------------------
Coord. 1950.0= 05:12:59.5   +45.56.57  Object class:  45     Magnitude:   0.09
Observing  date: 78020922   at G
Camera: 4    Imagenr.: 01022                  Release    date: 780321      <*>
hhmmss          mmmm:ssth md                   yymmddhh
Exp.start time: 220200  Length: 0001:20       Processing date: 780321     at G
Dispersion    :      H Apert.: S   (0)       Exp. Class.Code:
FES m:cnts    :         Pro.id: CEJLL         Observer       :       LINSKY
Comments: COMMISSIONING PERIOD
------------------------------------------------------------------------------
%DBQ-I-WORKING, on file P ...
------ BD+75  325   ---------------------------------------------------------
Coord. 1950.0= 0804430   +750648                  Object class: 16

Camera : 4    Imagenr.:   01024           Obs.date (YYMMDDHH): 78021004

Journal: NAT   Vol. 0275, pg. 0385, 1978
------------------------------------------------------------------------------
%DBQ-I-WORKING, on file T ...
------------------------------------------------------------------------------
Camera  : 4         Imagenr.  : 01022     Obs_Stn.: G

Tape id.: N9001A    File_start: 005       File_end: 006
Last Processing Stn.: G       Last processing date: 780321
Arc.Comm:
------------------------------------------------------------------------------
DBQ_4> CF T
DBQ_3> CF G
DBQ_2> CF V
DBQ_1> FI JOU=A&A
%DBQ-S-FOUND,  1617 records - elapsed time:   0.46 secs
DBQ_1> FI YEA=84
%DBQ-S-FOUND,  1833 records - elapsed time:   0.60 secs
DBQ_1> DR
------ PK 0637-75   ---------------------------------------------------------
Coord. 1950.0= 0637233   -751337                  Object class: 85

Camera : 3    Imagenr.:   10832           Obs.date (YYMMDDHH): 80121818
```

```
Journal: APJ   Vol. 0280, pg. 0091, 1984
-------------------------------------------------------------------------
DBQ_1> EX
%DBQ-I-TERMINATED,  4-NOV-1987 17:11:23.68 thanks for timesharing
%DBQ-I-STATISTICS, elapsed time: 00:01:38.50    used CPU time: 0:00:02.19
```

2.4 SSQL - Simple SQL

We have seen that the files under ADABAS/VMS can be consulted individually or in parallel by the following commands of DBQ:

```
DEarchive       - dearchive record
DR or DIsplay   - display record
FInd key=value  - find record
GN or NExt      - display next record
HElp            - give help
MAil            - use VMS mail facility
PRint           - print save file
PUrge           - purge save file
REcall          - recall last 20 commands
SAve, SAA       - save record, save all
SOrt key=value  - sort records
BYe, Exit       - bye, exit program
```

The syntax of DBQ has been developed many years ago (1982) and suffers from being too specific and inflexible (especially when adding new tables). There are *at least* four things one has to know when consulting heterogeneous databases:

- the **SYNTAX** of the query language
- the **NAMES** of the keys (descriptors, columns) and of the available database files (tables)
- the **OPERATORS** (greater than, less than, etc.) and the possibly available **FUNCTIONS** (average, sum, max, min, etc.)
- the **FORMAT** of the key values (e.g. a date is YYMMDD, etc.)

Scientists retrieve needed informations rather infrequently, as needs arise. Hence the knowledge of the four above mentioned items may become a severe problem when one has to gather information from several geographically distributed heterogeneous databases. Standards have been introduced to alleviate such situations - in the relational database world it is SQL.

Some people maintain that the SQL language, although not difficult, cannot be learned imme-

diatly by non-specialists. But its widespread use (around 100 SQL-based products are available, even on PCs - e.g. dBase IV) should make SQL worth learning. Furthermore it is an ISO standard [Ref. 7] and hence brings advantages like *application portability* and *longevity, reduced training,* etc. and hence eliminates some of the necessary knowledge about the SYNTAX of the query language and its OPERATORS and FUNCTIONS.

For the above mentioned reasons, the VILSPA database environment was enriched with an interactive SQL facility, which allows adhoc queries by selecting data from the database by

```
SELECT column_list
FROM table
WHERE search_condition
```

Remember that in a *relational* DBMS and hence also under the SQL language, all information is represented by values in *tables*, which have horizontal *rows* and vertical *columns.*

SSQL provides also commands for changing data. There are three basic SQL **data modification** statements i.e. INSERT, UPDATE, and DELETE. Obviously these commands are reserved for the sole use by the *superuser* (i.e. Database Specialist, Database Administrator, and similar).

2.4.1 Standard SQL

When looking at the major facilities of standard SQL [Ref. 7] which support the *definition, manipulation,* and *control* of data in a relational database, it was clear right from the beginning (due to available resources and IUE project requirements) that we could only implement the **data manipulation** operations of SQL. Data manipulation statements employing *modules* or *procedures* written in the host-language independent *module language* were discarded. The only SQL data manipulation statements considered were the *noncursor operations*, ie. SELECT, INSERT, UPDATE and DELETE.

Considering the above mentioned limitations on implementing the full SQL standard, an interactive Simple SQL (SSQL) interpreter was designed, which was based on a former attempt to provide a *Natural Language Parser* [Ref. 8].

2.4.2 SSQL basic language elements

One of the advantages of SSQL is its flexible and powerful parser. This parser breaks up a

query into tokens (delimited by blanks, tabs, comma, quotes, etc.) and searches each token for the following *keywords*:

BYE	WHERE	EQ (=)
COMMIT	HAVING	LT (<)
DATABASE	ORDER	GT (<)
DELETE	INTO	LE (<=)
EXIT	IN	GE (>=)
HELP	ALL	OR (!)
INSERT	FROM	AND (&)
LOG		BETWEEN
RECALL		
ROLLBACK		
SELECT		
UPDATE		

A *keyword* is a token which has some predefined meaning within SSQL. Hence keywords are reserved (ie. can not be used as column or table name, etc.) and must be given unabbreviated. Keywords are grouped into commands (first column), modifiers (second column) and operators (third column). See the SSQL session example for the usage of these keywords.

Any token not matching the above given keywords is expected to be either a column or table name. To translate this column or table name to an entity which is meaninful for ADABAS/VMS it is compared with names found in the sorted translation table. This translation table, which is loaded during SSQL start-up, is listed in Appendix B.

The problem with this translation table is that the column names are a mixture of names used both in the other branches of DBQ and as IUE FITS keywords. These names can be abbreviated down to 3 characters. Ambigious names are accepted but translation depends upon the result of the binary search employed when searching the given column name in the translation table. Tokens with less than 3 characters are treated as ADABAS field definitions and hence no translation is performed. This is a very important feature for the superuser. It allows working with all files loaded under ADABAS.

2.4.2.1 Selecting Data from the Database

You will realize that the SELECT statement is the real heart of Simple SQL (SSQL) as all retrieval operations are expressed by the keyword SELECT. The most complicated SELECT statement begins with this skeleton:

```
SELECT list_of_columns
FROM table
WHERE search_conditions
```

```
Example:  SSQL> SELECT CAMERA IMAG OBJECT DISP APE
          SSQL: FROM VILSPA
          SSQL: WHERE CLASS EQ 64 AND DIS=H;
```

To see *all columns* of a table issue the following command:

```
SELECT * FROM table WHERE search_condition
```

The asterisk (*) is a shorthand which allows you to get all columns in a table. To see *all rows* of a table perform the query with the following search_condition:

```
SELECT * FROM table WHERE ISN>0;
```

ISN stands for Internal Sequence Number and is a special ADABAS-specific column name. ISNs are most often used by the superusers.

```
(i)     SELECT ?;
(ii)    SELECT * FROM ?;
(iii)   SELECT * FROM table WHERE ?;
```

The above commands will help you to find (i) all available columns, (ii) all available tables and (iii) all available keys. Furthermore, SSQL is case insensitive meaning that all your input will be translated to uppercase. This is because all string data in the VILSPA database are currently stored in uppercase only.

Another feature of SSQL allows you to insert character strings into the column list ie.:

```
SSQL> SELECT 'cam&imagenr:' $cim 'object:' object FROM vilspa WHERE cla=64;
31 row(s) selected (dataset S001) !
CAM&IMAGENR: 305398 OBJECT: SS 433
CAM&IMAGENR: 213666 OBJECT: +40 4227
CAM&IMAGENR: 317413 OBJECT: +40 4227
  ...
```

If you are only interested in the number of rows resulting from your query then issue the following command:

```
SSQL> select NULL from vilspa where cam eq 4;
137 row(s) selected (dataset S033) !
```

Obviously this manual is not the place to explain SQL in all its gory details. See the References (Appendix) for some practical SQL handbooks and the chapter 'SSQL session example' for more information. See the following chapter for some SSQL specific commands.

2.4.3 Non-standard SQL syntax

The following features of standard SQL are NOT supported by SSQL:

- no treatment of NULL values (not yet supported by ADABAS/VMS)
- no support of the NE/NOT operator (not supported by ADABAS/VMS)
- GROUP BY cannot by used
- DISTINCT syntax is not supported
- aggregate function COUNT is not supported
- no support of direct subqueries (subqueries can be done via temporary files)
- no support of mathematical operations on columns
- only one aggregate function per query
- no differentiation between normal column and key (superdescriptor in ADABAS format buffer results in error 41)

2.4.3.1 Wildcard Search

With SSQL literally each column in the database is a key due to the implemtation of a powerful (GREP like) pattern matching facility.

```
SSQL> SELECT * FROM PROGRAMS WHERE *='TITAN';
```

In the above example all columns of table PROGRAMS is searched for the string 'TITAN' and matches are displayed! Your joker lies in the WHERE clause with the *wildcard search* *=. For big tables, this form of query might take some time as each row in the table has to be read. Currently you cannot combine the wildcard search with other search conditions. But to speed up the search, select a subset with keys and apply the HAVING clause (see next chapter).

It is always the selected column_list which is searched for a given pattern or searchstring. It is safest to enclose the entire search expression in single or double quotes. This has to be done when the searchstring contains spaces or commas. The following characters take on special meanings in searchstrings:

'^'	The character ^ matches the very beginning of the selected column list.
'$'	This character at the end of the searchstring matches the end of a line.
'.'	A . (dot) matches any character except newline.
'\'	A \ followed by a single character matches that character. For example, \. matches a dot instead of any character.
':'	The colon (:) is used to match a class of characters. ': ' (colon blank) matches spaces, tabs and other control characters such as new-line.
':a'	Matches any alphabetic characters.
':d'	Matches any digits.
':n'	Matches any alphanumeric characters.
'[ ]'	A string enclosed in brackets [ ] matches any single character from the string. Ranges of ASCII character codes may be abbreviated as in 'a-z0-9'. For example, *[xyz]* matches *x*, *y*, or *z*.
'*'	A searchstring followed by an * (asterisk) matches a sequence of 0 or more matches of the searchstring. For example, *fo** matches *f, fo, foo, fooo, etc.* but doesn't match *fa.*
'+'	A searchstring followed by a + (plus) matches a sequence of one or more matches of the searchstring. For example, *fo+* matches *fo, foo, fooo, etc.* but not *f.*

```
SSQL> SELECT ECC OBJECT $CIM FROM VILSPA WHERE CLASS=64 HAVING '^5..';
```

This example selects all observations of object class 64 from the VILSPA log having an exposure classification code of 5 something. For further explanation of the exposure classification code see [Ref. 10] or Appendix C.

2.4.3.2 The HAVING clause

Most of the time, one uses HAVING with GROUP BY. In SSQL, HAVING is used as a pattern matching mechanism under a WHERE clause.

```
SSQL> SELECT CAM IMAGE OBJECT FROM VILSPA
SSQL: WHERE CLASS BETWEEN 0 AND 10 HAVING 'MOON';
```

See the previous section for an explanation of the pattern matching mechanism.

2.4.3.3 The INTO clause

In standard SQL, the noncursor SELECT-FROM-WHERE operation should retrieve at most one row (hence sometimes called *singleton SELECT*). Hence the INTO clause is used to copy the column_list into target parameters, for example:

```
standard SQL - at most one row:
               SELECT camera, image
               INTO   camera_param, image_param
               FROM   vilspa
               WHERE  date-obs between 88010100 and 89010100
```

In SSQL the INTO clause is used to save the resulting rows into an ASCII file, for example:

```
SSQL - at least one row:
               SELECT camera, image
               FROM   vilspa
               WHERE  date-obs between 88010100 and 89010100
               INTO CIM88.DAT;
```

Note that this save file can be created also on a remote node, for example:

```
SELECT $cim, date-obs, time-obs, object, date-pro
FROM   gsfc  WHERE  class BETWEEN 20 and 29
INTO   'node"user passw"::class20.dat';
```

2.4.3.4 The ORDER BY syntax

The ORDER BY clause allows one to sort the resulting rows by any key. In SSQL, one can specify up to three sort elements which, in contrary to other SQL implementation, DO NOT have to appear in the selected column_list. Sorts are performed in either ASCENDING or DESCENDING order.

```
SSQL> SELECT object date-obs class disp apertur
SSQL: FROM gsfc WHERE cam=2 and disp=h
SSQL: ORDER BY cim, class, aperture, DESCENDING;
```

2.4.3.5 Aggregate Functions

In SSQL, aggregate functions can be applied to rows selected by a WHERE clause. Since aggregates are functions they always take an *argument.* In SSQL this argument must be one and only one *numeric column* and it is enclosed in parentheses. Furthermore, only one aggregate function is allowed per query. The following aggregate functions are available under SSQL:

```
SUM(column)    total of values in a numeric column
AVG(column)    average of values in a numeric column
MAX(column)    the highest value in a numeric column
MIN(column)    the lowest value in a numeric column
 JD(column)    the Julian date of a column in YYMMDD[HH] format
MJD(column)    the Modified Julian date of a date column
```

Example:

```
SSQL> select max(cputime) name logins from users where isn gt 0;
237 row(s) selected (dataset S006) !
005293 CARMELA SASTRE       0147
MAX(CPUTIME) = 5293

SSQL> select mjd(dto) object fescounts fesmode from vilspa
SSQL: where class=64 and dis=h;
2 row(s) selected (dataset S003) !
47011.75000 87080418 HD20630      20727 F0
47011.87500 87080421 HD209100     24752 F0
```

2.4.3.6 Sub- or nested queries

In SQL a subquery is a SELECT statement that nests inside a WHERE clause of another SELECT statement. For example,

```
SELECT $cim dis ape object date-obs time-obs from vilspa
   where cim in (SELECT $CIM from HOI where cat=ngc)
```

In SSQL subqueries are NOT yet possible. Currently there is a workaround available using the 'IN' clause. In SSQL the above subquery should be splitted into two queries, ie.:

```
SSQL> SELECT $cim from HOI where cat=ngc into ngc_cim.dat;
SSQL> SELECT $cim dis ape object date-obs time-obs from vilspa
SSQL: where cim in NGC_CIM.dat;
```

2.4.4 SSQL Command Summary

2.4.4.1 BYE or EXIT

The BYE or EXIT command closes your query session. Under SSQL also a CTRL+Z performs a session close. A session close performs many other internal (householding) functions e.g. release of all records currently in hold status (see COMMIT command), etc. completely transparent to the user.

2.4.4.2 DATABASE

This statement allows you to move from one database to another. SSQL starts up with the database 0 which tells ADABAS to use the currently installed default database which is database 1 (see Appendix B for information on which table is loaded under which database). Currently at VILSPA a database 2 has been installed to compile all the necessary parameters (Core Data Items) for the creation of an IUE Final Archive!

2.4.4.3 HELP

This command displays the following message:

```
SSQL> help
SSQL:
    The following commands are available:

       EXIT or BYE .. to exit program SSQL
       DATABASE ..... switch to another database
       RECALL ....... to recall one of the 20 latest commands
       LOG .......... to log all commands given into SSQL.LOG
       HELP ......... this help message
       UPDATE ....... update rows (for superuser only)
       DELETE ....... delete rows (for superuser only)
       INSERT ....... insert rows (for superuser only)
       COMMIT ....... perform data modifications (for superuser only)
       ROLLBACK ..... back out data modifications (for superuser only)
       SELECT ....... consult database
       $ command .... VAX/VMS command string

    Command syntax follows, in general, standard SQL, e.g.:
```

```
SELECT column1, column2, column3, ...
   FROM  table
   WHERE column1 = value1 and ... (* = pattern)
   HAVING pattern
   INTO save.file
   ORDER BY column1[,column2,column3]

Please, REMEMBER to terminate each command by ';' !!!
```

2.4.4.4 LOG

This command allows to save all SSQL statements into the logfile SSQL.LOG. This logfile is created under the current directory and can be used later by SSQL (see SSQL - Special Features). Logging of SSQL statements can be switched off by re-issuing the LOG command.

2.4.4.5 RECALL

This command is not a SQL command but was taken over from the other DBQ branches because of its usefulness. It displays the last 20 entered commands together with a line number. To re-execute a command just enter the line number next to the command.

```
SSQL> RECALL;

  RECALL 0: SELECT * FROM ...
  RECALL 1: SELECT ...
  ...
  RECALL 19:

SSQL> RECALL 12;
```

2.4.5 SSQL Superuser Command Summary

In this section we summerize the command syntax of SSQL for the superusers (i.e. Database Specialist, Database Administrator, and similar). Normal user can skip this section.

2.4.5.1 COMMIT

To ensure that all updates performed by a superuser will be applied to the database (regardless of

subsequent user session interruption or even system crash) the COMMIT command must be issued. This command also releases all ISNs held by the superuser from the *Hold Queue*. ISNs are placed into a so-called 'Hold Queue' each time a data modification is performed on the corresponding record, i.e. the record is placed into hold status. This prevents another user updating this record. Currently up to 200 ISNs can be stored in this 'Hold Queue'.

2.4.5.2 DELETE

To remove rows from a table the superuser employs the DELETE command, ie.:

```
DELETE FROM table
WHERE search_condition
```

Currently only up to 200 records can be deleted by *one* DELETE statement as only up to 200 ISNs can be placed in hold status.

2.4.5.3 INSERT

This statement allows the superuser to add new rows to the database. The syntax of the INSERT command in SSQL reads:

```
INSERT INTO table column1, col2, ...
VALUES constant1, const2, ...;
```

Example:

```
SSQL> INSERT INTO VILSPA cam, image VALUES 8, 88888;
```

Note that all necessary modifications to the Associator and Data storage is done by ADABAS.

2.4.5.4 ROLLBACK

This superuser command removes all data modifications (ie. UPDATE, INSERT, DELETE) performed so far. It also releases all ISNs from hold status.

2.4.5.5 UPDATE

To modify values in the rows of a table the superuser employs the UPDATE command. Other then the INSERT statement, wich adds new rows to a table, the UPDATE command changes existing rows. The UPDATE syntax is:

```
UPDATE table
SET column1=value1, column2=value3, ...
WHERE search_condition
```

Example:

```
SSQL> UPDATE vilspa SET fescounts=0 fesmode=bo
SSQL: WHERE isn between 231 and 322;
```

As with all data modification statements the updated rows are placed in hold status. Hence the current maximum number of rows which can be changed by *one* UPDATE statement is 200. Then either the COMMIT command has to be issued to apply the updates physically to the database or the ROLLBACK statement which discards all updates so far.

2.4.6 SSQL - Special Features

There are several special features of SSQL we want to point out. The first one is the access to the VAX/VMS operating system within SSQL (see next section). Here you can transfer the SSQL output files (created by the INTO clause) via MAIL, COPY or KERMIT to your local machine. But you can also create SSQL jobs or edit the SSQL.LOG file to modify some of your SSQL statements to be used later by employing UNIX styly I/O redirection and background execution.

2.4.6.1 SSQL - Access to VAX/VMS

Access to the VAX/VMS operating system is provided under SSQL. Hence you can use any of the available VAX/VMS commands provided you preceed the commands by a $ (dollar) sign, i.e.:

```
SSQL> $ type ssql.log
SSQL:
...

SSQL> $ kermit
SSQL:
```

```
C-Kermit, 4E(072) 24 Jan 89, Vax/VMS
Type ? for help
...

C-Kermit>exit
SSQL>
```

But you have also access to specific database commands defined as VAX/VMS symbols, i.e. to the *IRR* and *DAR* command.

2.4.6.2 The IRR command

The Image Reprocessing Request (**IRR**) command allows you to request reprocessing of 'old' images with the latest version of the IUE Spectral Image Processing System (IUESIPS). But CAUTION - the command (implemented as a NATURAL application) expects that you are working on a VT-100 type terminal and your keyboard supports both the GOLD and the KEYPAD ENTER keys !

```
SSQL> $ IRR
SSQL:

+-------------------------------------------------------------------------+
!                                                    Camera  :  0         !
!   I M A G E   R E P R O C E S S I N G   R E Q U E S T   Image nr:  00000 !
!                                                    Aperture:  .         !
!     of Name:  ...................              Date:   24-APR-1991       !
+-------------------------------------------------------------------------+
!      IUESIPS required parameters:      (last processing date:  00/00/00) !
!                                                                         !
!   Object id.:                 R.A.           DEC:          (1950.0)     !
!   Obs. date :  00/00/00/00    Obs.station:             Disper:          !
!   Aperture  :                 Exp.start time: 00:00:00 Length:  0000:00 !
+-------------------------------------------------------------------------+
!      SCHEME options:                        DATA  OUTPUT options :       !
!   Dispersion :  .                        Plots [Y/N] :  .                !
!   Aperture  Small/Large/Both :  .        Tape density:  .... bpi selected !
!   Registration   Auto/Manual :  .        800/1600/6250                    !
!   LAP source                                                            !
!      Point/Extend/Trail/Mult :  .                        (I.R.R. sign)  !
!   Reason, comments, special requirements :                              !
!   **  ..................................................... **          !
!                                                                         !
!Keypad ENTR searches  TAB/BS next/prev. field  Gold+S saves  Gold+E exits !
+-------------------------------------------------------------------------+
```

Note that the combinations of GOLD+S (save) and GOLD+E (end) work with uppercase S and E only. This is a limitation of NATURAL. The IRR command creates the file IRR.LIS which holds all requests you saved by GOLD+S. This file has to be mailed to the RA in charge of the database. His username is **DBRA**.

```
SSQL> $ MAIL
SSQL:

MAIL> SEND IRR.LIS
To:   DBRA
Subj: Urgently need these images to finish my thesis !

MAIL> EXIT
SSQL>
```

Note that requesting images for reprocessing is a privilege and not a right. Please supply good reasons why you need a particular image to be reprocessed. As mentioned already we have very limited resources.

2.4.6.3 The DAR command

The DeArchiving Request (**DAR**) command enables you to build the necessary header file for a dearchiving request. Use this file to append the camera and imagenr. of the desired IUE obervations (see the example). The camera and imagenr. ($CIM) has always to be the first column. You may select any other column but only the $CIM column is really necessary.

The DAR command accepts one parameter which is the filename you want to use. If you don't give a filename the file SSQL.DAR will be created. The DAR command will prompt you for:

- your codename (which is used to get your address where the tapes will be sent to)
- the desired tape density (800, 1600 or 6250 bpi)
- the type of data you want (R/E/C ie. Raw image only, Extracted spectra, or the Complete data set of an image)
- the type of request you are making (ie. normal or special dearchiving request)
- some comments (eg. explaining why you made a special request, etc.)

```
SSQL> $ DAR
SSQL:

     DAR - DeArchiving Request header file creation
```

```
Your codename: mbq
Tape Density (800/1600/6250bpi): 6250
Data Type (Raw/Complete/Extracted spectra): complete
Request Type (Special/Normal): normal
Comments: this is a test

      DAR Header file  SSQL.DAR created !

SSQL> SELECT $CIM OBJECT FROM VILSPA WHERE CLASS = 64 AND DISP=H
SSQL: INTO SSQL.DAR;
2 row(s) selected (dataset S001) !

Affected row(s) are being stored - patience
SSQL> SELECT FROM GSFC INTO SSQL.DAR;
6 row(s) selected (dataset S002) !

Affected row(s) are being stored - patience
SSQL> $ TY SSQL.DAR
SSQL:
DATA 9999
USER MBQ
DENS 6250
TYPE COMPLETE
SREL NORMAL
REAS THIS IS A TEST
IDEN *SSQL*
111322 HD20630
111324 HD209100
208051 HD    109995
310585  TT  HYA
314778 EPS  AUR
211365 EPS  AUR
314779 EPS  AUR
112005  FU  ORI
SSQL>
SSQL> $ MAIL
SSQL:

MAIL> SEND SSQL.DAR
To:   DBRA
Subj: my first DAR under SSQL !!

MAIL> EXIT
SSQL>
```

Due to the limited resources it is kind to those who share this resources if you split up huge dearchiving requests in patches of ca. 50 images each.

For people with access to SPAN, they can also request IUE data from NSSDC's Online Data and Information Service (NODIS) on SPAN node **NSSDC** - menu branch *International Ultraviolet Explorer Data Request.* Up to six images can practically be retrieved on-line.

```
SPAN> set host nssdc

      <<<   NSSDC     VAX 8650   >>>      Friday,  Apr. 24, 1991

  ANY UNAUTHORIZED ATTEMPT TO ACCESS THIS SYSTEM IS A FEDERAL OFFENSE

Username: NSSDC

                N       O       D       I       S

          NSSDC'S   ONLINE   DATA  &  INFORMATION  SERVICE
              (Formerly known as the NSSDC Account)
```

2.4.6.4 I/O redirection and Background Execution

We have seen that SSQL expects input from a terminal and produces output on the terminal. It is sometimes desireable (and under UNIX universial) that the terminal can be replaced by a file for either input or output. SSQL is able to handle such a replacement using the redirection symbols < which means take the input from the following file and > which routes the output to a file rather than to the terminal.

```
SSQL> $ SSQL < MY_SSQL.JOB > MY_SSQL.OUTPUT
SSQL:
```

This takes SSQL commands (as you would have typed them from the terminal) from file MY_SSQL.JOB and writes all output to file MY_SSQL.OUTPUT. These capabilities are very convenient when you have to issue SSQL statements which may take several minutes like a wild-card search on tables with many rows or sorting or saving of many records, etc. but even more so if you would be able to continue working. This is also possible with SSQL by employing the UNIX-style syntax for background execution i.e.:

```
SSQL> $ SSQL < MY_SSQL.JOB > MY_SSQL.OUTPUT &
SSQL:
```

The & (ampersand) at the end of command line tells SSQL to start a subprocess (which takes all input from file MY_SSQL.JOB and writes all output to file MY_SSQL.OUTPUT) and then to accept further commands from the terminal immediately.

```
Example:

 Which menu branch (0-7 or (E)nd, ? for HELP): 0
****   SSQL - Simple Structured Query Language        VILSPA V2.0 * SSQL0913
SSQL> $ edi my_ssql.job
SSQL:
...

SSQL> $ ty my_ssql.job
SSQL:
select title from programs where *='CASSATELLA';

SSQL> $ ssql < my_ssql.job > my_ssql.outoput &
SSQL:
Subprocess 0000023B started
SSQL> select * from hoi where cat=hd and ident=144;
...

SSQL> $ ty my_ssql.output
SSQL:

****   SSQL - Simple Structured Query Language        VILSPA V2.0 * SSQL0915
SSQL> 'COOL GIANT VARIABLES' A. CASSATELLA - VILSPA
 'UV OBSERVATIONS OF R CRB STARS' A. CASSATELLA - VILSPA
 ...
 UV MONITORING OF THE SYMBICTIC STAR Z AND - CASSATELLA - VILSPA

SSQL>
```

2.4.7 SSQL - Error Messages

Under SSQL we have to distinguish between two kinds of error messages. The first one coming directly from SSQL (most likely command syntax errors) and second one coming from the DBMS ADABAS. The error messages from ADABAS are called *response codes* (RCs) to make this distinction easier. We list here the most common errors which may occur. So this is by no means an exhaustive list.

Error messages from SSQL:

`'"BAD_DB, illegal database identification"'`
: Here you tried to switch to a database (via the DATABASE command) which has an illegal number. Note that if you try to open a database which is not active, you will get the error message "DBCLOSED, Database could not be accessed - pls. try later" and your SSQL session will be terminated.

`'"BADFILE, the IN file could not be opened"'`
A subquery was intented but the file specified under the IN clause could not be opened. Check filename for typing errors or re-generate the file.

`'"BADLOG, logfile SSQL.LOG could not be opened"'`
You issued to LOG command but the logfile could not be opened. Check your current directory for privilege violation or exceeded disk quotas.

`'"BADOPR, Invalid or unsupported operator"'`
An unsupported operator (most probably the 'NOT EQUAL' operator, which is not available under ADABAS/VMS) was specified under the WHERE clause. Try to rephrase your search_condition.

`'"BADSAV, Could not open SAVEFILE"'`
The file you specified under the INTO clause could not be opened. Check the output directory for privilege violations or exceeded disk quotas. Also the remote host (if specified) might be unaccessible!

`'"BADSYN, Syntax error after WHERE"'`
Somewhere after the WHERE clause the SSQL parser got lost. Check carefully your search criteria.

`'"DBCLOSED, Database could not be accessed - pls. try later"'`
If the default database is inactive you will not be able to use SSQL. You should really try it again at a later stage - presumable some database maintainence task is in progress. The same message is displayed when you try to switch to an inactive database!

`'"INVCOL, Invalid column name"'`
Invalid column names are discarded after the SELECT statement (noise disposal parser) but at certain instances (e.g. after the WHERE clause) SSQL needs to understand of which columns you are talking of. Check the column names used after the WHERE or ORDER BY clause.

`'"PARSERR, command syntax error - try HELP"'`
This error message appears if you have mistyped a command or in conjunction with other error message explained above. This is merely a complain by the SSQL parser who didn't receive the expected response from the called subroutine.

The most common **Response Codes** from the DBMS ADABAS are (for any other respond codes, send either an e-mail or contact the DBA):

`'"RC009: Time-out, Transaction back-out or nucleus terminated"'`
The cause for this response is most certainly a termination of the nucleus by the superuser, as a time-out (set to hours) is unlikely and a transaction back-out can not occur for an access only user. Hence exit SSQL immediately to avoid damage to your work files.

'"RC017: Invalid TABLE number"'

'"RC018: Invalid TABLE number usage"'
The table specified was not in the current database. Check if the table name is not mistyped and that the table is available under the current database (see Translation Table - Appendix B). Correct the table name or switch to the right database.

'"RC040: Syntax error in Format Buffer"'

'"RC041: An error was detected in Format Buffer"'
The selected column list is in error. Check if **all** columns you requested are available under the specified table.

'"RC060: A syntax error was detected in the Search Buffer"'

'"RC061: An error was detected in Search or Value Buffer"'
Make sure that the columns you entered under the WHERE clause (search_condition) are access keys (see Translation Table - Appendix B). Check if the given key values make sense (ASCII instead of numeric; value out of range; etc.)

'"RC071: An overflow occured in the Table of resulting ISNs"'

'"RC073: An overflow occured in the WORK data set (ISN list storage)"'
Seems that you tried to work on too much rows at a time. Limit the number of affected rows to a more reasonable number by specifying a more restrictive search criterion.

'"RC113: The specified ISN was invalid"'
There are certain limits to ISNs. ISNs can neither be negative nor zero nor greater than 16 million.

2.4.8 SSQL session example

The following is a small demonstration of the current capabilities of the interactive SSQL facility of VILSPA under ADABAS/VMS:

```
                                * MAX *

Username: MB
Password:

 - Type DBQ to consult the IUE databases.
 - Type QUEST to consult the ULDA/USSP database.

    Last interactive login on Tuesday, 19-MAR-1991 17:50
    Last non-interactive login on Tuesday, 19-MAR-1991 17:49
_Terminal type VT100 ...

I don't even know how you managed it! That machine is supposed to be
```

```
foolproof. Well, it only goes to show: You can't trust the simplest
product nowadays.

VDB> dbq
%DBQ-I-VILSPA, database menu selection  19-MAR-1991 17:58:55.49◇>

          Enter HELP to get help
                EXIT to get out
                LOG  to get logged off
                NEW  to get registered

          or your codename >

 Which menu branch (0-7 or (E)nd, ? for HELP): 0
**** SSQL - Simple Structured Query Language    VILSPA V2.0 * SSQL1759
SSQL> select camera image date-obs object date-pro
SSQL: from vilspa
SSQL: where cam eq 1 and dispersn= 'I';
3864 row(s) selected (dataset S001) !
1 01181 79052507 NULL          790604
1 01197 79122012 HD 52973      791220
1 01210 80050701 BD+75325      800507
...
---  More  ---q
SSQL>
SSQL> select from gsfc where date-pro between 890202 and 890331;
962 row(s) selected (dataset S002) !
2 01028 78022802 B1101+38      890227
2 01029 78022804 B1101+38      890308
2 01310 78041219 PKS 0405-12   890314
...
---  More  ---q
SSQL>
SSQL> select order by pda ascending;
 a_... Sorting will take some time... a_

962 row(s) selected (dataset S003) !
2 18203 88050916 HD      60753 890202
2 18204 88050918 BD  +28 4211 890202
2 18205 88050919 BD  +75  325 890202
...

SSQL> select NULL from gsfc;
962 row(s) selected (dataset S004) !

SSQL> select max(logins) name cputim from users where codename gt ' ';
237 row(s) selected (dataset S005) !
0304 Dr. Michael Barylak  003698
MAX(LOGINS) = 304
```

```
SSQL> select max(cputime) name logins from users where codename gt ' ';
237 row(s) selected (dataset S006) !
005293 CARMELA SASTRE        0147
MAX(CPUTIME) = 5293

SSQL> select cam nim object class dis from gsfc
SSQL: where cla=64 & dis=h into 'vilspa"go vscc"::class64h.dat'
SSQL: order by cim descending;
 a_... Sorting will take some time... a_

6 row(s) selected (dataset S007) !

Affected row(s) are being stored - patience
SSQL> select from vilspa;
2 row(s) selected (dataset S008) !
1 11322 HD20630      64 H
1 11324 HD209100     64 H

SSQL> select from gsfc having 'eps' order by cim;
 a_... Sorting will take some time... a_

6 row(s) selected (dataset S010) !
2 11365 EPS  AUR     64 H
3 14778 EPS  AUR     64 H
3 14779 EPS  AUR     64 H

SSQL> bye
SSQL:
VDB>
```

2.5 DBQBAT - DBQ in batch mode

DBQ in batch mode is an unsupported facility for both local users with huge queries and dearchiving requests and remote users who have no direct access to the X.25 public data networks but can make use of other electronic mail systems for ASCII file exchange. In the first instance it was considered as a workaround for VILSPA's inaccessibility by either EARN or SPAN, but soon it turned out to be a very useful tool. Many people prefer to prepare quickly an ASCII file and submit the queries as a background job rather than having to wait for each command to execute, especially sorted output which might take minutes. Another reason for using DBQBAT might be that you want to get a sorted output of more than 1000 records which is the upper limit of all 4 menu branches. In DBQBAT you can save up to 8000 records.

In DBQBAT you have to imagine that you are working in menu branch 3 ie. with the IUE log of GSFC and VILSPA. But instead of working interactively, you prepare an ASCII file which contains

valid DBQ commands (eg. FIND, SORT, SAVE, and DEARCHIVE (!!)). Note that you can also make dearchiving requests but you have to provide the 4 needed items (ie. tape density, type of data, type of request and comments) immedately after the first time you issue this command and in the above indicated sequence - see the following example.

2.5.1 Structure of the ASCII input file

The first lines of the ASCII input file may contain any garbage until the command USER (this is to ignore MAIL headers and the like). From there on DBQBAT is expecting valid DBQ commands beginning in column 1 of each line. Lines starting with "!" are treated as comment lines. Note that the command lines are case insensitive as all user input will be translated into upper case.

Example:

```
123456789-123456789=123456789+123456789_123456789-123456789=

============================================================
Received: by DDAESA10 (Mailer X1.24) id 6653; Mon, 03 Aug 87
Date:         Mon, 03 Aug 87 18:36:32 SET
From:         "Dr. Michael Barylak" <LX@ESOC>
Subject:      Remote DB query
To:           IUE Mailbox <IUEHOT@ESOC>

Remote database queries via DBQBAT are an unsupported facility for
users under EARN, SPAN, JANET or other public networks. Database
queries can only be directed to the IUE logs of Goddard and VILSPA
(ie. like working in menu branch 3).

The first command must be USER together with a valid username as
registered in the VILSPA user database. Hence send your name and
address before sending your first DBQBAT input file so that we can
register you and give you your codename !

Anything before the command USER will be ignored - you see !?

****************** now lets start ************************
USER ....    <-- place your codename here !
HELP STATUS
find cla=63 & dis=l
save all
find cla=64 & dis=h
save all
print save file
!
! you can also place a DEARCHIVING REQUEST
```

```
!
dearchive 322121  ! will dearchive camera 3 imagenr. 22121
1600bpi
complete
normal request
***  no comments to make
DE 101232 ! this image we want too
DE 110112 ! and this one
!
!  If you use command SORT please remember to indicate by
!  what to sort, ie. by DTO; by CIM; by PID; by CLA; by RAS;
!
sort cla=64 & dis=h & stn=g by dto
!
! enter EXIT or BYE to indicate the end of your query session.
! (Note that a non-printed save file will be printed now.)
exit
******   Listing of save file follows (132 chars/line):
```

All ASCII files to be used by DBQBAT should be sent to one of the following addresses:

```
BITNET/EARN:  CSASTRE@VILSPA
SPAN       :  VILSPA::CS
```

Be sure to include a return address for the output file of DBQBAT. Obviously we cannot give any guarantee that your files will be processed and the output sent back to you for any patricular time due to the many factors that might inhibit the processing and delivery of your request, but so far we have had neither problems nor complaints.

2.5.2 Invoking DBQBAT

Assume we have created the ASCII input file MY_JOB.DAT and we want to have the output in file MY_OUT.DAT. Then to start DBQBAT we have to enter the following command (as DBQ, DBQBAT is defined as a system wide symbol):

```
$ DBQBAT (MY_DEVICE:[MY_DIR]MY_JOB.DAT,MY_OUT.DAT)
```

If MYJOB.DAT contains many commands (SORT requests especially bring the system under intense pressure), then users should act responsibly and start the job during the night by:

```
$ DBQBAT (MYJOB.DAT,MYOUT.DAT)/AFTER=DD-MON-YYYY:HH:MM
```

The symbol DBQBAT is defined as:

```
DBQBAT == "SUBMIT/NOPRINT SYS$ADADEVICE:[ADABAS.COM]DBQBAT/PAR="
```

2.6 Merged Log of IUE Observations

The Merged Log of IUE observations is available in two formats. On *microfiche* as produced annually at GSFC, and now also in **Table FITS** format [Ref. 6]. People interested in receiving the IUE Merged Log in either format should contact Carmela Sastre at VILSPA (BITNET: CSASTRE@VILSPA, SPAN: VILSPA::CS). Here we print the header file of the 1988 version of the IUE Merged Log in table FITS format (which is very similar to the one on the microfiche):

```
SIMPLE                  T / Standard FITS Format                                :
BITPIX                  8 / Character information                               :
NAXIS                   0 / No image data                                       :
EXTEND                  T / Table extension                                     :
ORIGIN  'VILSPA  '        / Site which wrote the tape                           :
DATE    '31/08/88'        / Date tape was written  (DD/MM/YY)                   :
COMMENT              Merged Log of IUE observations                             :
COMMENT              ==============================                             :
COMMENT This log contains data from:  January 26, 1978 through March 31,1988    :
COMMENT This log is sorted by   Right Ascension (Epoch 1950.0)                  :
COMMENT                                                                         :
COMMENT ************************************************************************ :
COMMENT * The data in those fields whose  descriptions in this preface are *    :
COMMENT * marked with an arrow are closely controlled and monitored by the *    :
COMMENT * IUE project (GSFC/VILSPA/SERC). Care should be taken  when using *    :
COMMENT * the data in the remaining fields  since  they are  obtained from *    :
COMMENT * Guest Observers and other sources and are not closely monitored. *    :
COMMENT ************************************************************************ :
COMMENT                                                                         :
COMMENT The columns that appear in the IUE Merged Log are as follows:           :
COMMENT    Object id:  Name of the object                                       :
COMMENT -> Program id: 5-character alphanumeric code identifying the            :
COMMENT                observing programs                                       :
COMMENT -> Target's right ascension and declination - 1950.0 coordinates        :
COMMENT    Magnitude: from Jan. 18, 1983 the magnitude for VILSPA images        :
COMMENT               is estimated from FES counts and FES tracking mode        :
COMMENT               (see ESA IUE Newsletter no. 5, pg. 30, 1980)              :
COMMENT    Object class: a number classification system - for its definition    :
COMMENT               see any ESA IUE Newsletter                                :
COMMENT -> FES mode and counts: targets brightness as measured by the FES      :
COMMENT               in primary mode at the time of target acquisition.        :
COMMENT               Mode designations: FU = Fast track/Underlap               :
COMMENT                                  FO = Fast track/Overlap                :
COMMENT                                  SO = Slow track/Overlap                :
COMMENT               Counts are photon counts averaged over an integration     :
COMMENT               time dependent on the needs of target acquisition.        :
COMMENT               The FES detector saturates at a count of 28673 !          :
COMMENT -> Image Sequence number: camera used plus a sequential image number   :
COMMENT               LWP  Long Wavelength Prime Camera        (Camera no.1):   :
COMMENT               LWR  Long Wavelength Redundant Camera    (Camera no.2):   :
COMMENT               SWP  Short Wavelength Prime Camera       (Camera no.3):   :
COMMENT               SWR  Short Wavelength Redundant Camera   (Camera no.4):   :
COMMENT               FES  Fine Error Sensor star field images (Camera no.9):   :
COMMENT -> Dispersion: High (H) or Low (L)                                      :
COMMENT               For FES: D - Default (10 arcmin square)                   :
COMMENT                        E - Extended (16 arcmin square)                  :
COMMENT                        F - Full (18 arcmin square)                      :
COMMENT                        P - Postage stamp (usually 1 arcmin square)      :
COMMENT                        S - Special (optional)                           :
COMMENT -> Aperture used: the 10 by 20 arc second large oval aperture (L) or    :
```

```
COMMENT                the 3 arc second small circular aperture (S)          :
COMMENT                For FES images: 2 - FES unit 2 (normal operational use
COMMENT                                1 - FES unit 1                        :
COMMENT -> Large Aperture Status: Open (O) or Closed (C)                     :
COMMENT -> Exposure Mode: Beginning March 12, 1982 for GSFC and Oct. 1982 for:
COMMENT                VILSPA, trailed images are flagged with a 'T' in this :
COMMENT                field, multiple exposures are flagged with an 'M'.    :
COMMENT -> Exposure Time: minutes and seconds - images exposed for less than :
COMMENT                1 second will have zero exposure length in log.       :
COMMENT                For FES images: the dwell time per sample is indicated:
COMMENT                in this field as                                      :
COMMENT                   dwell time (millisec) = 1024/Exp.time(min)         :
COMMENT -> Observation Date: start time of exposure in DD/MM/YY (UT)         :
COMMENT -> Station id: G - image take at GSFC;  V - image taken at VILSPA    :
COMMENT -> Processing Date: the last date the image was processed. The state :
COMMENT                of the image processing system at both ground stations:
COMMENT                as a function of time is documented in the IUE News-  :
COMMENT                letter. The most detailed information appeared in     :
COMMENT                    NASA IUE Newsletter no. 25 and                    :
COMMENT                    ESA  IUE Newsletter no. 14 & 21                   :
COMMENT    Exposure Classification Code of VILSPA:                           :
COMMENT                see any ESA IUE Newsletter for an explanation         :
COMMENT    Comments:   as provided by the Resident Astronomer:              :
COMMENT                For GSFC and VILSPA images taken before March 13,1982 :
COMMENT                widened spectra obtained by trailing the star along   :
COMMENT                the major axis of the large aperture is so indicated. :
COMMENT                As of that date, GSFC trailed images are identified   :
COMMENT                only in the aperture field, while VILSPA trailed      :
COMMENT                continue to be noted as such in the comments.         :
COMMENT                For GSFC images taken after April 21, 1979 the        :
COMMENT                following information is given:                       :
COMMENT                E - gross exposure level in DN for strongest emission :
COMMENT                    lines in spectrum                                 :
COMMENT                C - gross DN value for the most highly exposed region :
COMMENT                    of the continuum                                  :
COMMENT                B - average DN value for the background               :
COMMENT                N - peak DN value for the microphonic noise           :
END                                                                          :
XTENSION'TABLE   '           / IUE Merged log table extension                :
BITPIX                     8 / Character information                         :
NAXIS                      2 / Simple 2-D matrix                             :
NAXIS1                   132 / Characters per row                            :
NAXIS2                 66607 / No. of rows                                   :
PCOUNT                     0 / No. of group parameters                       :
GCOUNT                     1 / Only one group                                :
TFIELDS                   21 / No. of columns                                :
TELESCOP'IUE     '           / International Ultraviolet Explorer            :
EXTNAME 'IUEMLOG '           / Catalog name: IUE Merged Observing Log        :
EXTVER                    88 / Version of IUE year 1988                      :
etc.
```

3. Full Command Reference Guide (non-SQL)

3.1 Introduction

In this part of the manual you will find all the commands of DBQ in alphabetical order except the commands of SSQL which are thouroughly described in section 2 (see section 2.4 [SSQL - Simple SQL], page 22). It covers the major operational techniques together with examples of the commands listed below:

Command	Description
DEARCHIVE or DE	Dearchive image
DISPLAY or DR	Display current record
EXIT or EX	Exit from this program
FIND or FI	To find records of interest
HELP or HE	Give some help
MAIL or MA	To enter the VAX MAIL facility
NEXT or GN	Get Next record and display it
OF / CF	Open File / Close File
PRINT or PR	To print the current save file
PURGE or PU	To purge the current save file
RECALL or RE	To recall the 20 last entered commands
SAVE or SA	Save current record into save file
SAVE ALL or SAA	Save all current records
SORT or SO	To find and sort records of interest

3.2 DEARCHIVE command

The DEARCHIVE command enables you to make an on-line dearchiving request of up to 50 images per request. When you issue the DEARCHIVE command for the first time in your query session, you have to enter the following four items in the sequence shown below:

- the desired tape density (800, 1600 or 6250 bpi)
- the type of data you want (R/E/C ie. Raw image only, Extracted spectra, or the Complete data set of an image)
- the type of request you are making (ie. normal or special dearchiving request)
- some comments (eg. explaining why you made a special request, etc.)

The first two items need no explanation. The type of request takes into account that sometimes

one is authorized to request images not yet released to the scientific community after the 6-month proprietary period (eg. collaborators, damaged GO tape etc.). In this case you have to declare your dearchiving request as "special" and give the reason for it (eg. "images from my program SHQR77", ...). Comments can be very useful eg. you could request images for your next observing run which can be reduced with the MIDAS system of the VSCC, so you do not waste time between your shifts.

The DEARCHIVE command can be issued in two ways. Either you enter 'DE 201111' to dearchive image 1111 of camera 2 or you simply enter DE to the currently displayed record (see following example).

Examples:

```
Which menu branch (0-7 or (E)nd, ? for HELP): 3

%DBQ-I-WELCOME, to DBQ Version 4.5/3     4-NOV-1987 23:31:32.28
DBQ_2> FI CLA=64 & DIS=H
DBQ-I-WORKING, on file V ...
%DBQ-S-FOUND,      2 records - elapsed time:    1.10 secs
%DBQ-I-WORKING, on file G ...
%DBQ-S-FOUND,      5 records - elapsed time:    1.81 secs
DBQ_2> DR
%DBQ-I-WORKING, on file V ...

------ HD20630      ------------------------------------------------------
Coord. 1950.0= 03:16:44.1   +03.11.17  Object class:  64     Magnitude:  05.35
Observing  date: 87080418   at V
Camera: 1    Imagenr.: 11322                  Release    date: 880301      < >
hhmmss          mmmm:ssth md                  yymmddhh
Exp.start time: 184353  Length: 0025:00       Processing date: 870805     at V
Dispersion    :      H  Apert.: L   (0)       Exp. Class.Code: 651
FES m:cnts  FO:  20727  Pro.id: JC028         Observer       :         GENOVA
Comments:
-------------------------------------------------------------------------------
%DBQ-I-WORKING, on file G ...
------ HD    109995 ------------------------------------------------------
Coord. 1950.0= 12:36:23.2   +39.35.06  Object class:  64     Magnitude:   7.6
Observing  date: 80061521   at G
Camera: 2    Imagenr.: 08051                  Release    date: 810114      <*>
hhmmss          mmmm:ssth md                  yymmddhh
Exp.start time: 210900  Length: 0040:00       Processing date: 800616     at G
Dispersion    :      H  Apert.: L   (0)       Exp. Class.Code:
FES m:cnts  FO:   3389  Pro.id: HBCAC         Observer       :       CODE
Comments: C=170,B=75
-------------------------------------------------------------------------------
```

```
DBQ_2> DEARC

For this tape dearchival request we have to know 4 things, ie.

*  the tape density (800, 1600, 6250bpi)
*  the type  of  data (C=complete images,  R=raw images only,
   E=extracted spectra)
*  the type of request (special, ie. request  of non-released
   images)
*  the reason for request (if special request)

Tape density: 800, 1600 or 6250bpi (def.: 1600): 1600
%DBQ-I-DENSITY, 1600bpi selected
Complete,  Raw,  or  Extracted  data  [C/R/E] : E
%DBQ-I-DATATYP, Extracted data selected
Special or  Normal request (def.: Normal) [S/N]: N
%DBQ-I-REQUEST, is normal
Reason of request (if special) or comments:
*** Please discard this request - making example for User's manual***
%DBQ-I-WORKING, on file V ...
%DBQ-I-CIM, 111322 added to dearchiving request - total number: 1
%DBQ-I-WORKING, on file G ...
%DBQ-I-CIM, 208051 added to dearchiving request - total number: 2
DBQ_2> DE 310585
%DBQ-I-CIM, 310585 added to dearchiving request - total number: 3
DBQ_2> EX
%DBQ-I-TERMINATED,  4-NOV-1987 23:33:23.70 thanks for timesharing
%DBQ-I-STATISTICS, elapsed time: 00:01:51.24     used CPU time:0:00:02.54
%DBQ-I-SENDING, tape dearchival request ...

Which menu branch (0-7 or (E)nd, ? for HELP): E
```

3.2.1 Common Problems

'Q:' Is there a command analogous to SAVE ALL ie. DEARCHIVE ALL?

'A:' No, but we will keep such a command in mind . For the time being we have suppressed it in order to avoid a flood of requests which could not be processed with the current manpower at VILSPA.

'Q:' I want to dearchive only images taken at GSFC, but when I enter 'DEAR' to the currently displayed record I will also get the VILSPA image - what do I do?

'A:' Add either search key '& STN=G' to your query or use menu branch 4 and G file only.

'Q:' How can I make large dearchiving requests efficiently ?

'A:' Prepare an ASCII input file and use DBQBAT - but there the upper limit per request is also 50 images.

3.3 DISPLAY command

The DISPLAY or DR (for Display Record) command displays the current record of an ISN list at the issuing terminal. Normally this command is issued immediately after the FIND command to view the first record of the constructed ISN list. A NEXT command would already display the second record. When working in menu branch 4 with all files G, V, T, P open, the information will not fit on one screen and hence a redisplay might be useful.

3.4 EXIT command

The EXIT command closes your query session and brings you back to the menu selection program. Upon exit remote users have to print or delete the save file. Depending upon the menu branch you are in, the exit command is also executed by entering BYE or CTRL Z.

3.5 FIND command

The FIND command is used to select a set of records which satisfy a given search criterion. This search criterion may be built by using a single search key or several search keys (also called 'descriptors') connected by logical operators. The result will be a so-called ISN (Internal Sequence Number) list which the user can browse using the DISPLAY and NEXT commands.

The following relational operators are available:

```
=  Equal              <=  Less than or equal to
>  Greater than       >=  Greater than or equal to
<  Less than
```

The following logical operators are valid:

```
&  And              !  Or              -  Through
```

Here again is the list of search keys:

```
                                                +-----files-----+
Key !     Description      ! LF ! Example      ! G ! P ! T ! V
----+--------------------+----+-------------+---+---+---+----
APE !APErtures            ! 1A !APE=L         ! X ! - ! - ! X
```

```
CAM !CAMera              ! 1N !CAM=9        ! X ! X ! X ! X
CIM !Camera & IMage nr.  ! 6N !CIM=102345   ! X ! X ! X ! X
CLA !object CLAss        ! 2N !CLA=64       ! X ! X ! - ! X
DEC !DEClination (+ddmm)!+4N !DEC=-2349     ! X ! X ! - ! X
DIS !DISpersion          ! 1A !DIS=H        ! X ! - ! - ! X
DTO !DaTe of Observ.     ! 8N !DTO=79082100! X ! X ! - ! X
JOU !JOUrnal of publ.    ! 4A !JOU=A&AS     ! - ! X ! - ! -
PAG !PAGe of publication! 4A !PAG=013L     ! - ! X ! - ! -
PDA !last Processing DAt! 6N !PDA=831224   ! X ! - ! X ! X
PID !Program IDent.      ! 5A !PID=PHCAL    ! X ! - ! - ! X
RAS !Right AScen. (hhmm)! 4N !RAS=0033     ! X ! X ! - ! X
REL !RELease flag        ! 1A !REL=*        ! X ! - ! - ! X
RDA !Release DAte(YYMMDD! 6N !RDA=850324   ! X ! - ! - ! X
STN !STatioN code (V/G) ! 1A !STN=V        ! X ! - ! - ! X
TID !Tape IDentification! 6A !TID=N0321A   ! - ! - ! X ! -
VOL !VOLume of publ.     ! 4A !VOL=0082     ! - ! X ! - ! -
YEA !YEAr of publication! 2N !YEA=82       ! - ! X ! - ! -
----+------------------+----+------------+---+---+---+---

where L =  length of key value
      F =  format of key value (Ascii or strictly Numeric)
```

And finally, let's summarize the syntax rules demonstrated by some examples.

```
Syntax:                    Example:

FI key=value               FIND CAM=1
find camera equal 1 (ie. LWP)

FI key>value               FIND RAS>2340
find right ascension greater than 23h40m

FI key<=value              FIND CLA<=10
find object class less than or equal 10

FI key=value - value       FIND DTO=83030300 - 83040100
find all observations between dates
83Mar03 at 00h and 83Apr01 at 00h

FI key=value & key<value FIND DIS=L & CAM<3
find low dispersion spectra taken with
camera 1 and 2 (ie. LWP and LWR)

FI  key=value ! key=value & key>value
FIND JOU=A&A  ! JOU=APJ  & CAM>2
find publications in journals  Astronomy & Astrophys.
or Astrophy.Journal where observations were made with
camera 3, 4 or 9 (ie. SWP, SWR or FES)
```

Remarks:

Please note that blanks are important around the logical operators '&' and '!' and cannot be left out.

Note also that you MUST NOT enter blanks around the relational operators as these will be interpreted as either belonging to the key name or to the key value.

Finally take the length of the key values carefully into account. For example to look for all unreleased images of camera 3 you have to enter:

```
FIND REL=  & CAM=3      and not   FIND REL= & CAM=3
          ^^                                 ^
two blanks one for key value, second to separate '&' operator
```

3.6 HELP command

Depending on the menu branch chosen the HELP command is available by either typing 'HELP' or '?'.

In menu branches 1 and 2 you have to press <RETURN> when you enter '?'. In menu branches 3 and 4, '?' is a line terminator and hence you need not press <RETURN>.

3.7 MAIL command

The MAIL command will make use of the VMS MAIL facility. Use this facility to leave messages for the Resident Astronomers (RAs) or to file your commments, suggestions etc. or errors in the IUE logs that you have detected. Please do not use this facility to send dearchiving requests - use the DEARCHIVE command instead !

Here is a list of user names:

```
SYS ... VAX system manager          (Mr. Francisco Marcelo)
CS  ... VILSPA Database specialist  (Ms. Carmela Sastre)
WW  ... IUE observatory controller  (Dr. Willem Wamsteker)
JC  ... Deputy obs. controller      (Dr. Jean Clavel)
```

```
AT  ... Resident Astronomer (RA)    (Dr. Antonio Talavera)
AC  ... RA                          (Dr. Angelo Cassatella)
JAF ... SERC RA                     (Dr. John Fernely)
CH  ... RA                          (Dr. Rosario Gonzalez)
DDM ... RA                          (Dr. Domitilla De Martino)
RM  ... RA                          (Dr. Richard Monier)
MB  ... RA Data Base Administrator (Dr. Michael Barylak)
```

3.8 NEXT command

Once a FIND command has been issued (and hence an ISN list has been created) one can browse the records found with the DISPLAY and NEXT commands.

The NEXT command can be abbreviated to NE or GN (Get Next) or can be simply invoked by hitting <RETURN>.

3.9 OF/CF command

The OF (open file) and CF (close file) commands need to be issued only in menu branch 4. This menu branch provides the possibility of working with up to 4 files in parallel. Any files can be opened or closed at any time in the query session. Interrogation can only be performed by the set of common keys ie. by these search keys which are defined in all files currently open !

3.10 PRINT command

Depending on the mode under which you are working with DBQ, local or remote (this will be determined by DBQ itself), the PRINT command dumps the contents of the temporary save file 'ADASAVE.TMP' either onto the lineprinter (situated in the VSCC room) or onto the terminal screen. Local users for which the default output device is the lineprinter in the VSCC room can direct the output to their terminal by issuing the command:

PRINT TT

Note that 132 chars./line will be sent to your terminal. Hence, if a local printer is attached, put it in condensed mode if necessary. After printing, the save file will be deleted automatically !

Common problems:

1, I get wrapped line when printing the save file on my terminal. => DBQ is setting your terminal automatically to /NOWRAP. In most cases it is the communication software (Kermit, etc.) which is reponsible for the line wrap around. When you run Kermit V2.29b do 'SET TERM WRAP OFF'.

2, Can I keep my save file for later editing (eg. to prepare the input file for dearchiving with DBQBAT) and how? => Only local users are allowed to keep their save file. Just exit DBQ without issuing the PRINT command !! Note that the 'ADASAVE.TMP' file which will be in your directory will also contain paging control characters (ie. form feed).

3, My local printer is very slow and cannot keep up with the fast terminal output; everything gets messed up what can I do? => Use CTRL+S to stop and CTRL+Q (which are standard VAX/VMS commands to the terminal driver) to resume output to your terminal

3.11 PURGE command

The PURGE command will delete your current save file 'ADASAVE.TMP'. Note that the PRINT command will automatically delete this save file after the print-out. This command enables you to start over again if you realize that you have saved things which you didn't want to save. Note that the commands SAVE and SORT use the same save file !

3.12 RECALL command

The RECALL command displays the last 20 entered commands together with a line number. To re-execute a command just enter the line number next to the command. Only for the last entered command is command line editing provided by the VAX/VMS terminal driver for terminals in VT100 mode.

- Use CTRL B to redisplay last entered command.
- CTRL D to move backwards one character.
- BACKSPACE to move to the beginning of the command line.
- CTRL E to move to the end of the command line.
- CTRL A to toggle between insert and typeover mode.

3.13 SAVE command

The SAVE command saves the currently displayed record in a temporary save file. The SAVE ALL command saves all records of the current ISN list ('current' means that if you have displayed records with the NEXT command they will not be saved - hint: compare the number of records found with the the number of records saved) in the save file.

The save file can be printed (PRINT command) or deleted (PURGE command) at any time during the query session. Remote users have to either print or purge the save file upon exit. Local users will find a file called 'ADASAVE.TMP' in their directory when neither a PRINT nor PURGE command has been issued during the query session.

The maximum number of records that can be saved in the save file is 1000 - please request (via MAIL to MB) a change in this limit when you think that it is unacceptable for your purposes. Note that up to 8000 records can be saved when using DBQBAT.

3.14 SORT command

The SORT command has the same syntax as the FIND (q. v.) command. The list of sorted records is written into the save file 'ADASAVE.TMP' which can be printed by issuing the PRINT command. Note that this is the same file used for the save command !

Records can be sorted by one of the following sort keys:

```
DTO  DaTe of Observation
CIM  Camera and IMage number
RAS  Right AScension
CLA  object CLAss
PID  Program IDentification
```

Example:

```
SORT CAM=2 & DIS=H & CLA=20 - 23 BY DTO
```

sorts all LWR observations taken in High dispersion in the object classes 20 thru 23 by date of observation.

3.14.1 Common problems

'Q:' When I issue a sort command in DBQBAT for more than aprox. 2000 records I get ADABAS_RC 1?

'A:' ADABAS_RC 1 means ADABAS Response Code 1 - you can find out the meaning by issuing the command HELP ADABAS RC001. When you issue the sort command, ADABAS will have to sort the resulting ISN list and hence will have to store the entire list in its work pool. The size of the work pool currently allows the storing of 2000 - 4000 records. This size was selected to ensure that, on the one hand, the 1000 records which can be saved in the same file could be sorted, and on the other hand, efficient sharing of memory with other processes was still possible. As work around for large sorts use the FIND and SAVE ALL commands and sort the resulting file with the help of the VAX/VMS SORT command.

4. Acknowledgments

I am grateful for the comments and suggestions that I received from my collegues of the ESA IUE observatory. The first version (October 1988) was revised and proofread by *Willem Wamsteker*, *Dave Pike* and *Carmela Sastre* - their efforts are most appreciated. *Carmela* was also most helpful during the development of DBQ and SSQL. *Carmela*, *Willem* and *John Fernely* showed also sheer unexhaustable patience in proof reading the drafts of the current version. Many thanks to them all!!

Appendix A. References

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Appendix B. Translation Table

Column names of the VILSPA Database - May, 1991)			
Column name	**Trans.**	**Description**	**Applicable Tables**
$CIDA	CM-AP	: CIDA column for format buffer	16,17,18
$CIM	CM,IM	: camera and image number column for format buffer	12,13,14,16,17,18,25,29
$TARG-DEC	DD,DS	: Declination of target (+DDMMSS)	12,14,16,17,18,25
$TARG-RA	RA,RB	: Right Ascen. of target (HHMMSSs)	12,14,16,17,18,25
*	*	: selects all columns of a table	all
ADD-COMMENTS	AD	: additional comments	14,25
ARC-COMMENTS	AC	: archive comments	13
ADR1	AA	# first user address field	11
ADR2	AB	# second user address field	11
ADR3	AC	# third user address field	11
ADR4	AD	# forth user address field	11
AGENCY	AG	* agency which received program proposal	31
APERTURE	AP	* aperture (small, large, ...)	14,16,17,18,25
CAMERA	CM	* IUE camera (LWP= 1, LWR= 2, SWP= 3, SWR= 4, FES= 9)	12,13,14,16,17,18,25,29
CATALOG	CA	* homogeneous catalog as provided by CDS	29
CDI-PRIMARY	16	! TABLE 16 - Primary Core Data Items	
CDI-SECOND	17	! TABLE 17 - Secondary Core Data Items	
CDI-VERIFIED	18	! TABLE 18 - Verified Core Data Items	
CDS-DEC	DE	* homogeneous declination (+DDMM[SSs]) provided by CDS	16,17,18,29
CDS-RA	RI	* homogeneous right ascension (HHMM[SSss]) provided by CDS	16,17,18,29
CIDA	SS	* access key of CDIs table ie. Cam Image Dis Aperture	16,17,18
CIDENT	CI	* complementary object identification (table HOI)	29
CIM	SC	* camera and image number access key	12,13,14,16,17,18,25,29
CLASS	CL	* IUE object class (see any ESA IUE Newsletter)	12,14,16,17,18,25
CODENAME	CN	# user's code name	11
COMMENTS	CO	: general comments	14,16,17,18,25
CPUTIME	CP	: spent CPU time by users	11
DATE-OBS	DA	* date of observation (YYMMDD[HH])	12,14,16,17,18,25
DATE-PRO	PD	* date of last IUESIPS processing (YYMMDD)	13,14,16,17,18,25
DATE-REL	RD	* release date	14,25
DATE-VER	DV	: Date of CDI verification	16,17,18
DECLINATION	DD	* declination (epoch 1950.0 +DDMM)	14,16,17,18,25,29
DEDEGREES	DD	* declination - degrees only	29
DEMINUTES	DM	* declination - minutes only	29
DESECONDS	DS	* declination - seconds only	29
DIM	DI	: number of requested images for dearchiving	11
DISPERSN	DP	* dispersion	14,16,17,18,25
DMM	DM	* declination - minutes only	29
DSS	DS	* declination - seconds only	29
DTO	DA	* date of observation (YYMMDDHH)	14,16,17,18,25
ECC	EC	: exposure classification code	14,25
EPOCH	OE	* Orbital Epoch of IUE (YYMMDD)	40
EXDURATION	ED	: exposure duration time (MMMMSS)	14,16,17,18,25
EXP-MOD1	PE	: exposure mode 1: P=Point E=Extended source	16,17,18
EXP-MOD2	TL	: Trailed exposure: 0=no, 1=trail-x, 2=trail-y	16,17,18
EXP-MOD3	MU	: Multiple exposures: Y=Yes, N=No	16,17,18
EXP-MOD4	SE	: Segmented exposure: Y=Yes, N=No	16,17,18
EXP-MODES	EM	: All 4 exposure modes	14,16,17,18,25
EXPOGAIN	EG	: Expo Gain: X=max, D=medium, M=minimum	16,17,18
EXPOTIME	ED	: exposure duration time (MMMMSSss)	14,16,17,18,25
EXPTIME	ED	: exposure duration time (MMMMSSss)	14,16,17,18,25

Column names of the VILSPA Database - May, 1991)			
Column name	**Trans.**	**Description**	**Applicable Tables**
FCOUNTS	FC	: FES counts	14,16,17,18,25
FED	FE	: image file's end position on magtape	13
FES-MODE	FM	: FES mode (FO, FU, SO, BO)	14,16,17,18,25
FESCOUNTS	FC	: FES counts	14,16,17,18,25
FESMODE	FM	: FES mode (FO, FU, SO, BO)	14,16,17,18,25
FLAG	FL	# completion flag of homogenization of object ids.	29
FLG	FL	# completion flag of homogenization of object ids.	29
FMODE	FM	: FES mode (FO, FU, SO, BO)	14,16,17,18,25
FOCUS	FS	: Focus	16,17,18,25
FPM	FP	: Fast Particle Monitor read out	16,17,18,25
FST	FS	: image file's start position on magtape	13
GONAME	GO	: Guest observers name	14,25
GSCOUNT	GC	# Guide star FES count	16,17,18
GSFC	25	! TABLE 25: GSFC log of IUE observations	
GSTAR-CN	GC	: FES counts of guide star	16,17,18
GSTAR-MD	GM	: FES mode of guide star (FO, FU, SO, NO=no guide used)	16,17,18
GSTAR-X	GX	: FES X coordinate of guide star	16,17,18
GSTAR-Y	GY	: FES Y coordinate of guide star	16,17,18
GSX	GX,U	# Guide star X	16,17,18
GSY	GY,U	# Guide star Y	16,17,18
HOI	29	! TABLE 29 - homogeneous object identifications	
IDENT	FO	* identification field of homogeneous object id.	29
IMAGENUMBER	IM	: number of IUE image	12,13,14,16,17,18,25,29
IUE-CLASS	CL	* IUE object class (see any ESA IUE Newsletter)	12,14,16,17,18,25
IUEORBELEM	40	! TABLE 40 - IUE orbital elements	
JOURNAL	JO	* name of journal of IUE publication	12
LAMP	TF	: Lamp: T=TFlood, U=UVcal, N=None	16,17,18
LAPSTAT	LA	: status of the large aperture (C=closed, O=open)	14,16,17,18,25
LOGINS	LO	# number of user's logins	11
MAGNITUDE	MA	: magnitude of observed object	14,25
MJD-OBS	JD	: Modified Julian Date in CDI tables	16,17,18
NAME	NA	# user's name	11
NIMAGE	IM	: number of IUE image	12,13,14,16,17,18,25,29
NULL	..	: unselect colums	
OBJ-IDENT	CT,OI	: object idendification	14,25
OBJECT	CT,OI	: object idendification	14,25
OID	CT,OI	: object identification	14,25
ORB-AXIS	OA	: Semi-Mayor Axis in km of IUE Orbit	40
ORBANOMALY	OO	: Mean Anomaly of IUE Orbit (degrees)	40
ORBASCEN	OR	: Ascending Node of IUE Orbit (longitude)	40
ORBAXIS	OA	: Semi-Mayor Axis in km of IUE Orbit	40
ORBECCENT	OC	: Eccentricity of IUE Orbit	40
ORBEPOCH	OE	* Orbital Epoch of IUE (YYMMDD)	40
ORBINCLI	OI	: Inclination of IUE Orbit in degrees	40
ORBPERIGEE	OP	: Arg of Perigee (degrees)	40
PAGE	PA	* page of a IUE publication	12
PDATE	PD	* date of last IUESIPS processing (YYMMDD)	13,14,25
PGM-ID	PI	* IUE program identification	14,16,17,18,25,31
PIDENT	PI	* IUE program identification	14,16,17,18,25,31
PIUE	12	! TABLE 12 - IUE publications	
POSANGLE	PA	: Position Angle of Large aperture	16,17,18
PROGRAMS	31	! TABLE 31 - progam titles, PIs, etc.	
PSTATION	PS	* processing station	13,14,25

Appendix C. IUE Object Classes and ECC

This classification is supplied by D. Stickland for use only within the IUE project:

OBJECT CLASSES 00 - 29		
0 Sun	10 W C	20 B0-B2 V-IV
1 Earth	11 W N	21 B3-B5 V-IV
2 Moon	12 Main Sequence O	22 B6-B9,5 V-IV
3 Planet	13 Supergiant O	23 B0-B2 III-I
4 Planetary satellite	14 OE	24 B3-B5 III-I
5 Minor planet	15 OF	25 B6-B9,5 III-I
6 Comet	16 SD O	26 BE
7 Interplanet. medium	17 WD O	27 BP
8 Giant red spot	18	28 SDB
9	19 UV-strong	29 WDB
OBJECT CLASSES 30 - 59		
30 A0-A3 V-IV	40 F0-F9	50 R, N OR S TYPES
31 A4-A9 V-IV	41 F3-F9	51 Long Period Variable
32 A0-A3 III-I	42 FP	52 Irregular Variable
33 A4-A9 III-I	43 Late Type Degen.stars	53 Regular Variable
34 AE	44 G IV-VI	54 Dwarf Novae
35 AM	45 G I-II	55 Classical Novae
36 AP	46 ELSE K IV-VI	56 Supernovae
37 WDA	47 K I-III	57 Symbiotic Stars
38 Horizontal Branch	48 M Dwarf	58 T Tauri
39 Composite	49 M I-III	59 X-ray
OBJECT CLASSES 60 - 79		
60 Shell Star	70 Planetary Nebula+central star	
61 ETA Carinae	71 Planetary Nebula-central star	
62 Pulsar	72 H II Region	
63 Nova-like	73 Reflection Nebula	
64 Stellar Objects not given above	74 Dark Cloud (absorption spectrum)	
65 Misidentified Targets	75 Supernova Remnant	
66 Interacting Binaries	76 Ring Nebula (shock ionised)	
68	78	
69 Herbig - Haro Object	79	
OBJECT CLASSES 80 - 99		
80 Spiral Galaxy	90 Intergalactic Medium	
81 Elliptical Galaxy	91	
82 Irregular Galaxy	92	
83 Globular Cluster	93	
84 Seyfert Galaxy	94	
85 Quasar	95	
86 Radio galaxy	96	
87 BL Lacertae object	97	
88 Emission Line Galaxy(non-seyfert)	98 Wavelength Calibration	
89	99 NULLS & Flat Fields	

Exposure Classification Code - ECC

The Exposure Classification Code of VILSPA serves to indicate the DN (Data Number ie. 0 to 255) levels of IUE images.
It consists of three digits:

'C'ontinuum, 'E'mission, and 'B'ackground = CEB

C & E:		B:
0 :	not applicable	0 : < 20 DN
1 :	no spectrum visible	1 : 21 - 30
2 :	<20 DN above bckgr (faint spectrum)	2 : 31 - 40
3 :	<100 DN above bckgr (underexpose)	3 : 41 - 50
4 :	100 - 150 above bckgr (weak)	4 : 51 - 60
5 :	>150 above bckgr (good)	5 : 61 - 70
6 :	few pixels saturated (ie. = 255)	6 : 71 - 80
7 :	saturated for less than half spectrum	7 : 81 - 90
8 :	mostly saturated but some parts usable	8 : 91 - 100
9 :	complete saturated	9 : >101 DN
X :	overexposure in GSFC records	X : saturated (GSFC)

Remarks

i, No ECC was assigned to VILSPA images before Aug. 1, 1978.

ii, Prior to Sep. 1, 1979 the background digit was not included.

iii, GSFC images are described in the comments by the cross DN of the continuum (C=), emission lines (E=) and background (B=).

Appendix D. Term Index

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