Misleading LISTDSI information in SYSPRIMARY

The TSO built-in function LISTDSI is described in the IBM "z/OS TSO/E REXX Reference" manual. The function populates a number of pre-defined variables with attributes stored in the file label (Data Set Control Block (DSCB)) of the supplied data set name.

One of the variables is SYSPRIMARY and the manual states that this contains the "*Primary allocation in space units*". This is misleading as the value of the primary SPACE request in the JCL or equivalent source, is not saved in the file label. If the space is available the data set is created, and if it is not the job will fail with a JCL error indicating that the requested space was not available.

The actual process of SPACE allocation for the primary is as follows. If CONTIG is specified in the SPACE parameter the system will only attempt to obtain the requested amount of space in a single extent on disk. If CONTIG is not coded the system will attempt to satisfy the request in one extent, but if it cannot, it will attempt to satisfy the request in up to five extents. This could mean that on a fragmented disk a parameter of SPACE=(CYL,(100,100)) may have its first one hundred cylinders spread across five 20 cylinder extents or any other 5 extents which equate to 100 cylinders.. **This is where SYSPRIMARY is misleading.**

As the initial (primary) request information is not stored, what is the actual value reported? Well it is the size of the first extent on the disk, so in the case of the 100 cylinder example above, SYSPRIMARY would actually return a value of 20.

Proving the concept

To prove the above assertion the following job stream was used. The JCL symbol P represents the primary space request value and several runs were executed with different values for P to check the results.

With P=1, SYSPRIMARY returned 1.

With P=2 SYSPRIMARY returned 2

With p=2754 SYSPRIMARY returned 4 as on the volume in question the biggest available area was 2750 tracks, and there was a 4 track slot ahead of it on the disk.

```
//THISUSER JOB  CLASS=D,MSGCLASS=X,NOTIFY=&SYSUID
//         SET  ODSN=&SYSUID..LISTDSI.SEQ
//         SET  P=1,S=1,E=10
//S0010    EXEC PGM=IEBDG        Create multi-extent data set
//SYSPRINT DD   SYSOUT=*
//*        698 records per track (i.e. 2 blks)
//SYSUT2   DD   DISP=(,CATLG),UNIT=3390,SPACE=(TRK,(&P,&S)),
//              DSN=&ODSN,RECFM=FB,LRECL=80,BLKSIZE=27920
//SYSIN    DD   *
  DSD OUTPUT=(SYSUT2)
  FD NAME=A,LENGTH=80,FORMAT=AL,ACTION=RP
  CREATE QUANTITY=6980,NAME=(A)
  END
//IEBDG    IF   RC = 0 THEN
//S0020    EXEC PGM=IEBGENER    Load REXX routine to library
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   DUMMY
//SYSUT2   DD   DISP=(,PASS),UNIT=3390,SPACE=(TRK,(1,1,1)),
//              DSN=&&REXXLIB(SYSPRIM)
//SYSUT1   DD   *,DLM='?@'
/* REXX LISTDSI Demo to indicate SYSPRIMARY is misleading */
Parse Arg p s e dsn .         /* Get symbols from JCL
*/
prefix = SYSVAR(SYSPREF)      /* Extract TSO PROFILE PREFIX
*/
"PROFILE NOPREFIX"            /* Turn off prefixing
*/
Say 'JCL SPACE Primary  =' p
x = LISTDSI(dsn)              /* Get Data Set
Attributes!!!!*/
Say 'LISTDSI SYSPRIMARY =' SYSPRIMARY
Say 'Estimated Extents  =' e
Say 'LISTDSI SYSEXTENTS =' SYSEXTENTS
"DELETE " dsn                 /* Delete data set from S0010
*/
"PROFILE PREFIX("prefix")"    /* restore TSO PROFILE PREFIX
*/
Exit 0
?@
//TSO      IF   RC = 0 THEN
//S0030    EXEC PGM=IKJEFT1B,   Run REXX driven LISTDSI
//              PARM='SYSPRIM &P &S &E &ODSN.'
//SYSTSPRT DD   SYSOUT=*
//SYSTSIN  DD   DUMMY
//SYSEXEC  DD   DISP=(OLD,DELETE),DSN=&&REXXLIB
//TSOEND   ENDIF
//IEBDGEND ENDIF
```