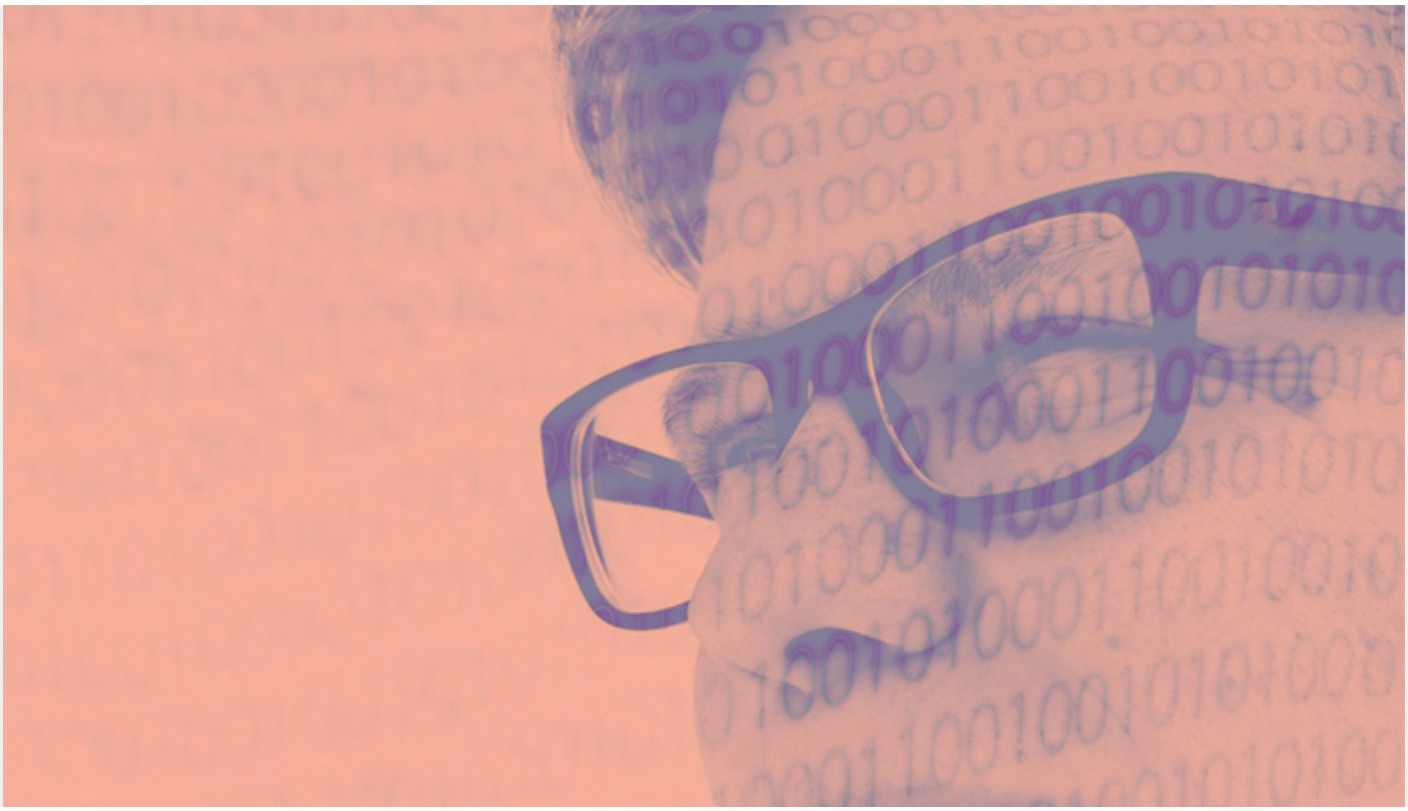
# IBM UTILITIES IN DB2 12

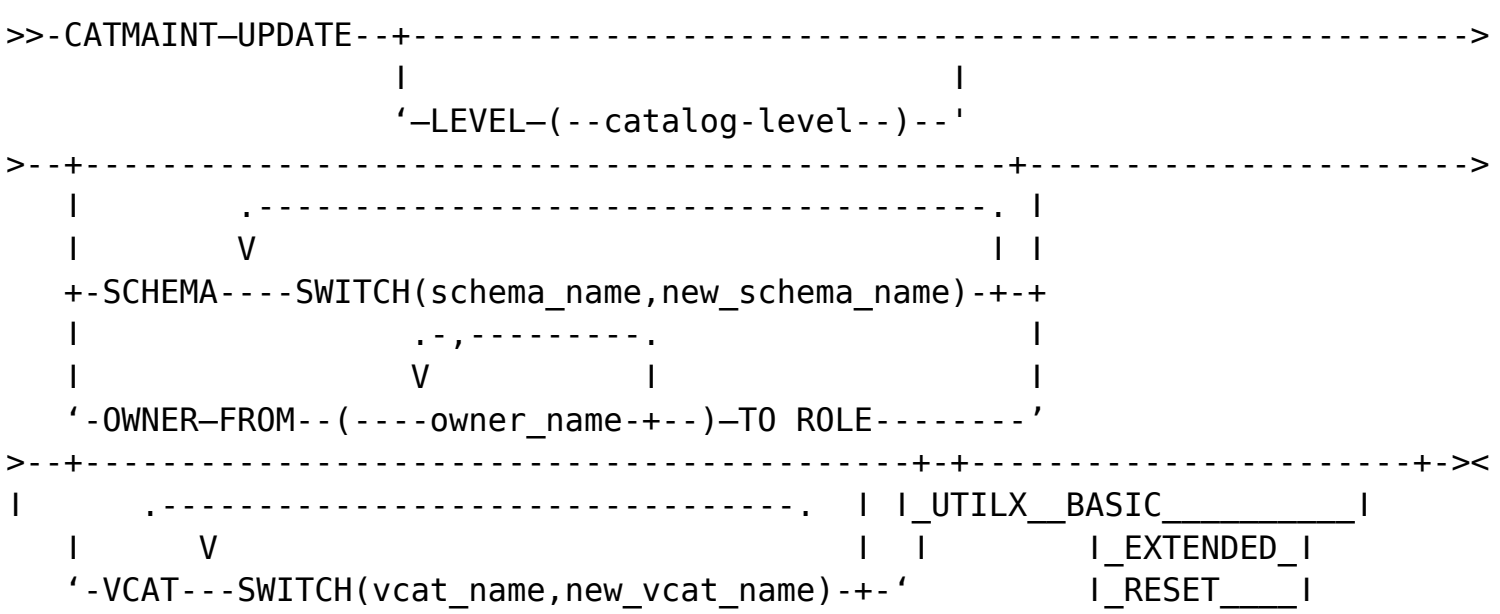


*(This article is part of our Db2 Guide. Use the right-hand menu to navigate.)*

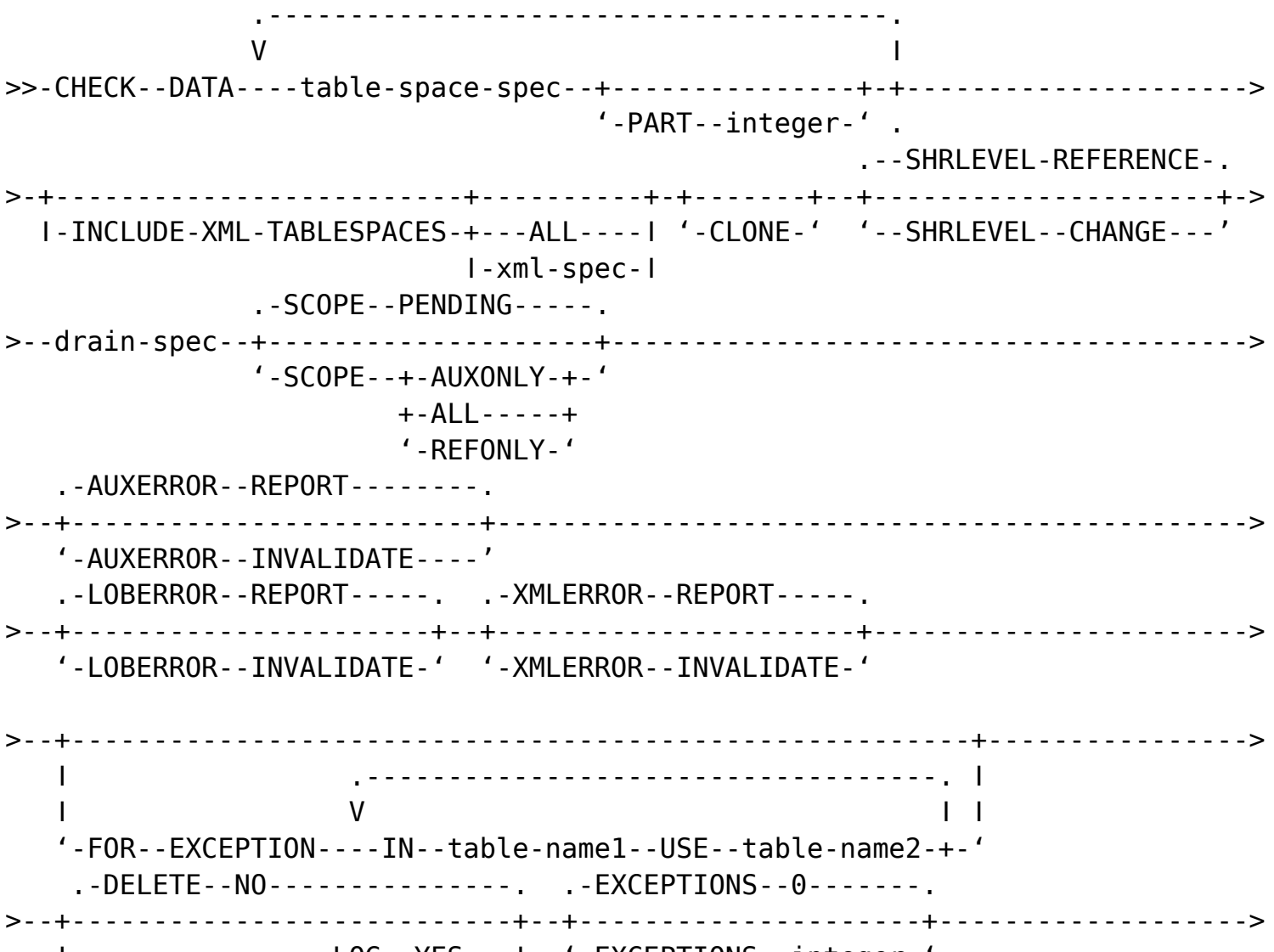
## BACKUP SYSTEM

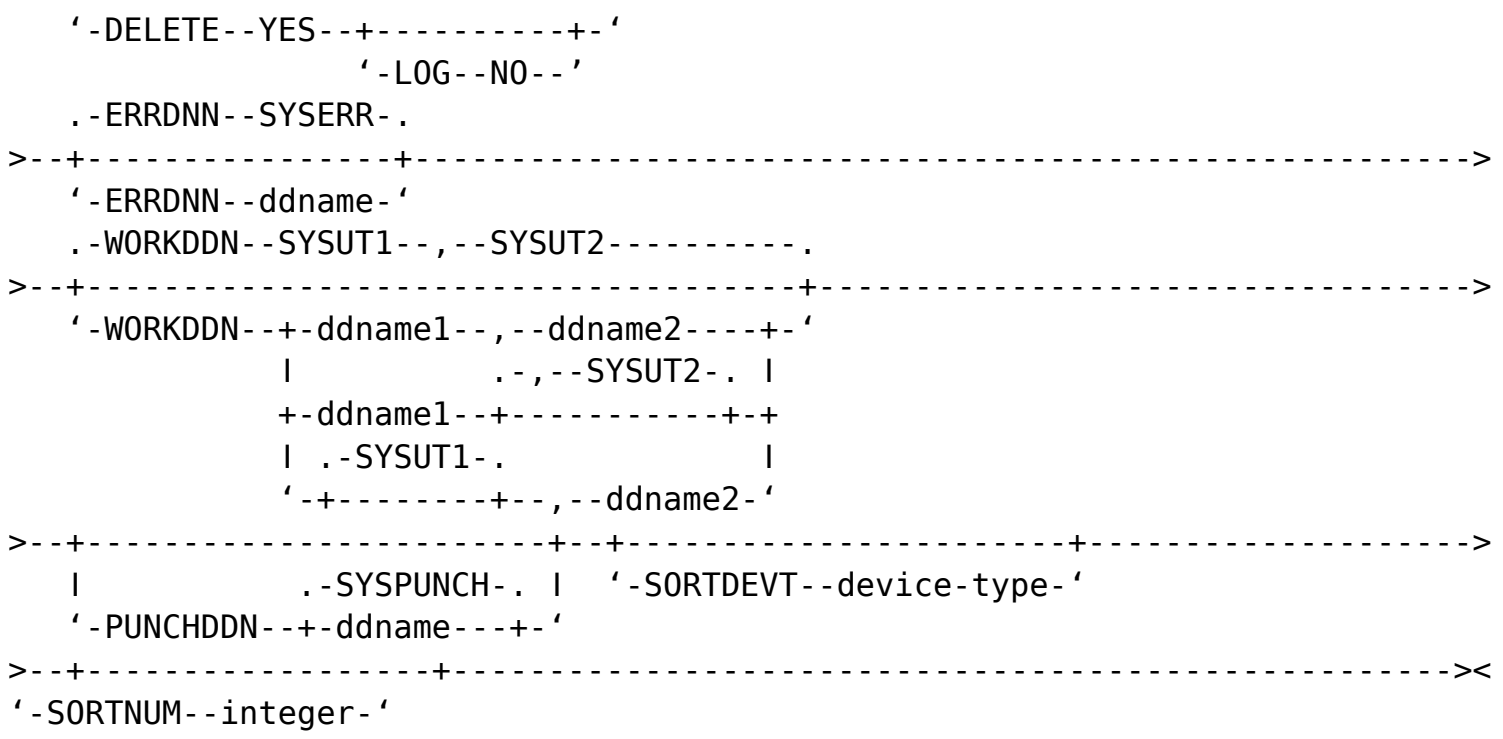
```
                    .-FULL-----.
>>-BACKUP SYSTEM--+-----------+--+-----------------------+-----------------><
                  '-DATA ONLY-'  +-ESTABLISH INCREMENTAL-+
                                 '-END INCREMENTAL-------'

>--+-------------------------------------------------------------------------+-->
   +--ALTERNATE_CP (copy-pool)--+-----------------+--+---------------+--+
                                '-DBBSG(stogroup)-'  '-LGBSG(stogroup-'
>--+-------------------------------------------------------+-----------><
+--FORCE-----------------------------------------------+ +--DUMP--+-----
-------------+--+------+------------------+ I '- dumpclass-spec---+ '-
FORCE-' I '-DUMPONLY--+------------------------+-+-----------------+' '-
TOKEN- (X'byte-string')' '- dumpclass-spec -' dumpclass-spec: >--DUMPCLASS-(-
-dc1---)-------------------------------------------------><  I-dc2-I
             I-dc3-I
             I-dc4-I
             I-dc5-I
```

# CATMAINT

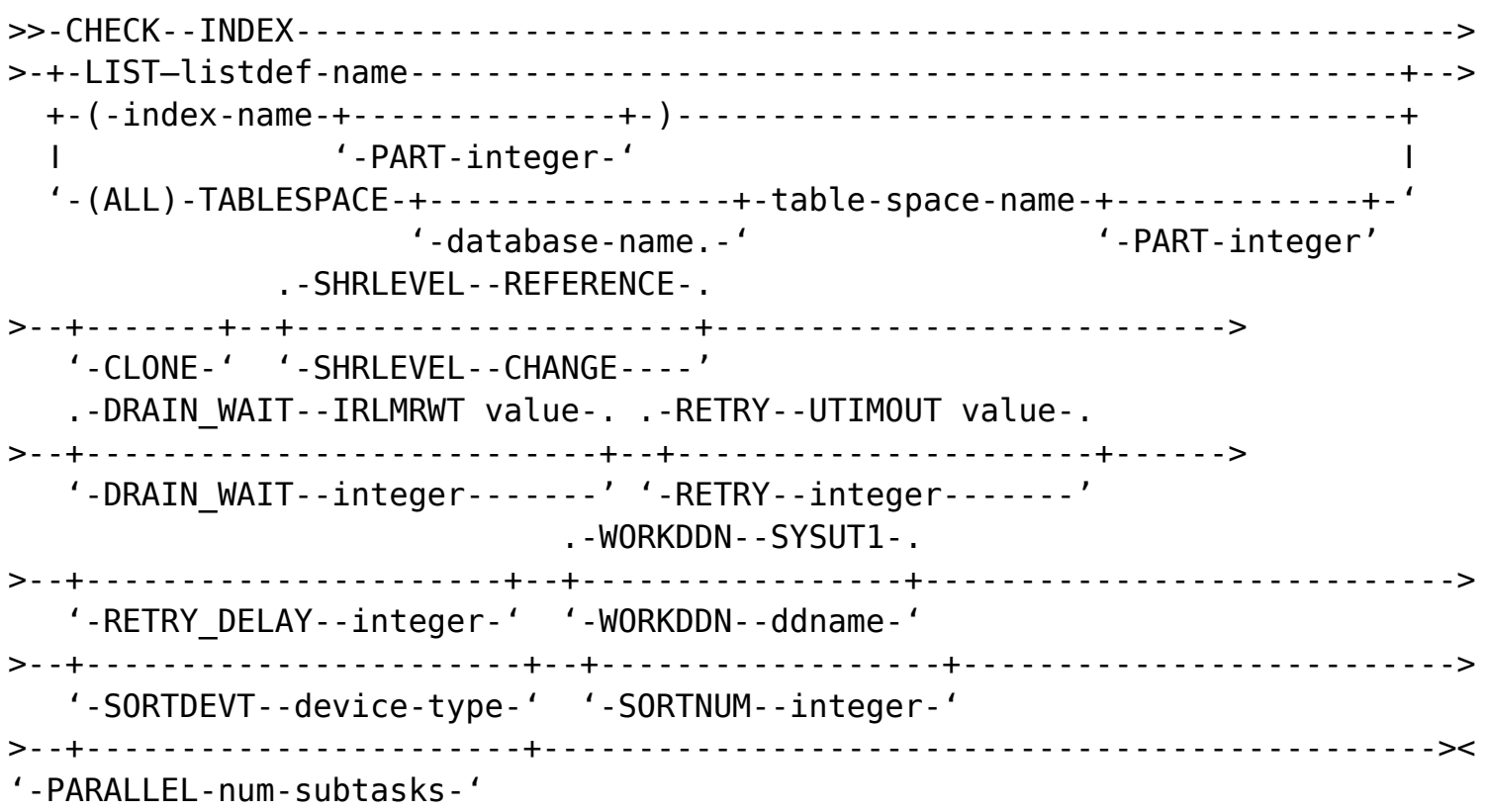



# CHECK DATA

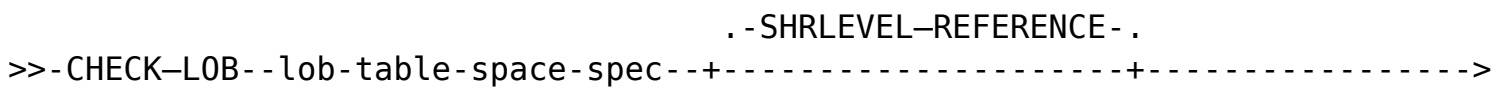





# CHECK INDEX



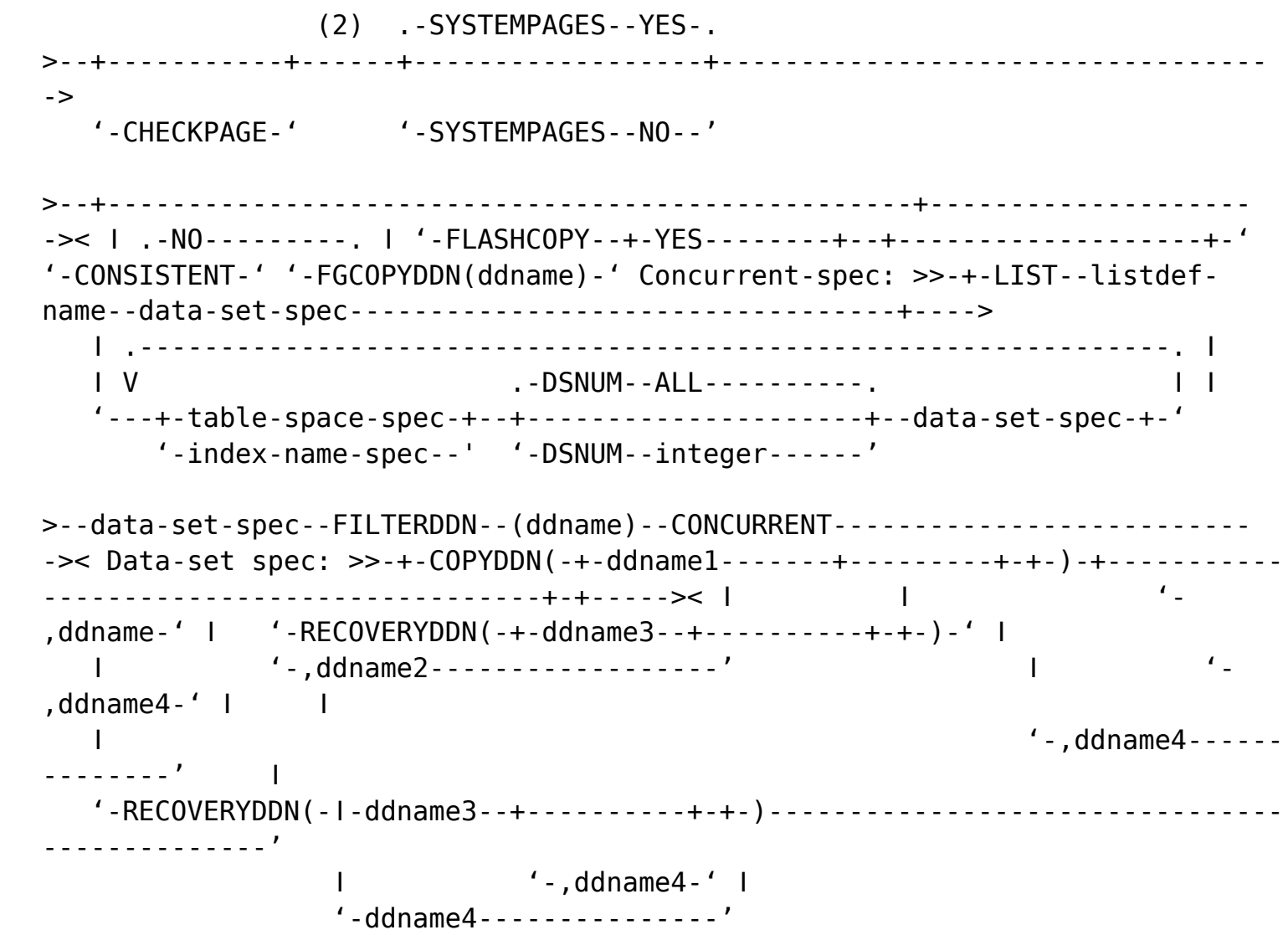

# CHECK LOB



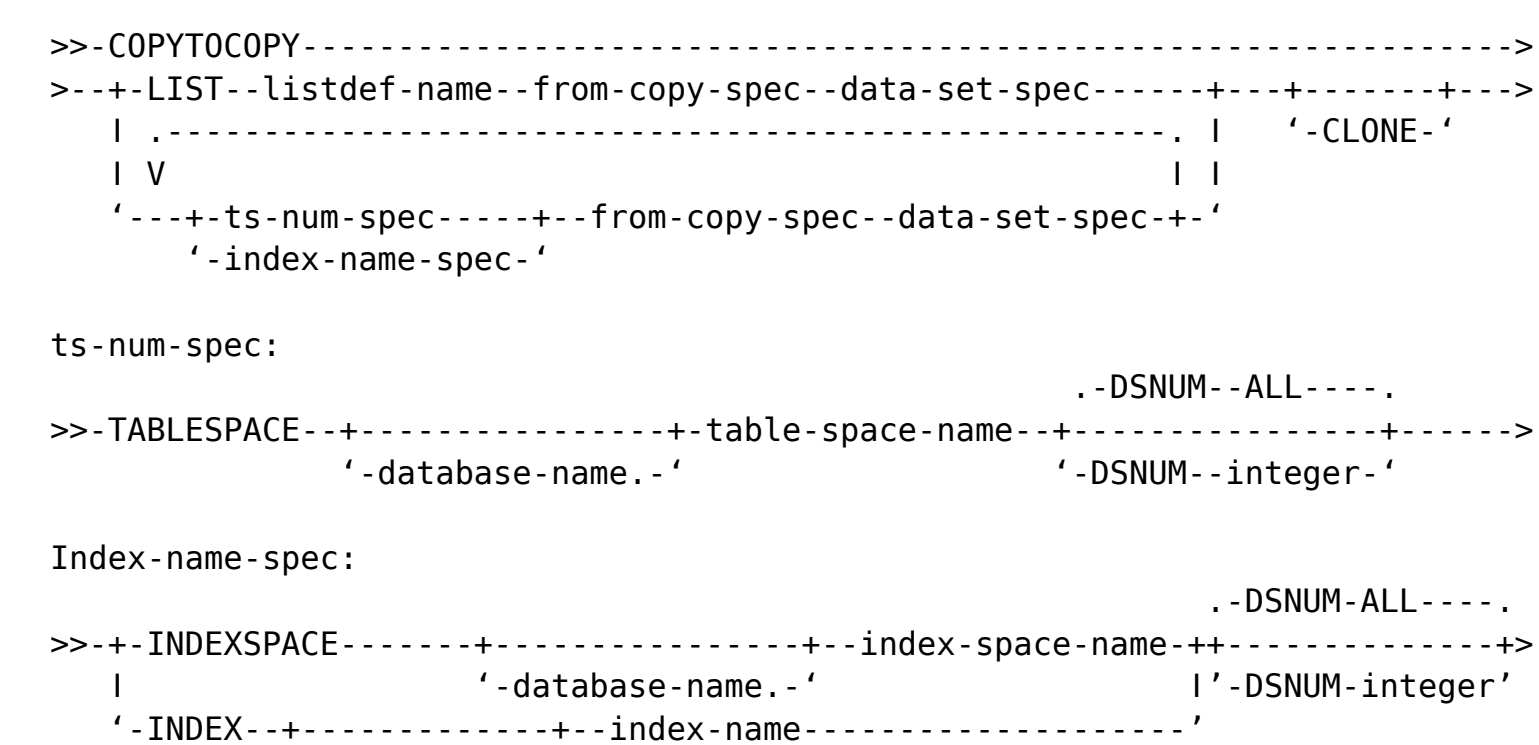
```
                                    '-SHRLEVEL--CHANGE----'
               .-EXCEPTIONS--0-------.
>--drain-spec--+--------------------+------------------------------------>
               '-EXCEPTIONS--integer-'
>--+-----------------------+--+----------------------+------------------->
   |           .-SYSPUNCH-. |  '-SORTDEVT--device-type-'
   '-PUNCHDDN--+-ddname---+-'
>--+-----------------+-------------------------------------------------->
   '-SORTNUM--integer-'

Lob-table-space-spec:
>-TABLESPACE-+---------------+-lob-table-space-name--+-------+------------->
             '-database-name-'                       '-CLONE-'



drain-spec:
   .-DRAIN_WAIT--IRLMRWT value-. .-RETRY--UTIMOUT value-.
>--+--------------------------+--+---------------------++-----------------
+>
   '-DRAIN_WAIT--integer-------' '-RETRY--integer-------' '-RETRY_DELAY-int-'
```

# COPY

```
                                          .-FULL--YES-----------.
>>-+-LIST--listdef-name--| data-set-spec |--+------------------+------------
------------------+-----><
   |                                        +-FULL--NO---------+
|
   |                                        '-| changelimit-spec |-'
|
   | .-------------------------------------------------------------------
------------------+|
   | V                       .-FULL--YES------------.  .DSNUM--ALL----------.
|
   '---+-table-space-spec-+--+---------------------+--+------------------
+--data-set-spec-+-'
       '-index-name-spec-'   +-FULL--NO-------------+  |                   |
                             '-| changelimit-spec |-'  '-DSNUM--integer-----'

>--+-------------------------------------------------------------+-------
->
   '-PARALLEL-+--------------+-+---------------------------------+-'
              '-(num-objects)-' '-TAPEUNITS--(--num-tape-units--)-'
```


(2) .-SYSTEMPAGES--YES-.
>--+----------+------+-----------------+-------------------------------
->
'-CHECKPAGE-' '-SYSTEMPAGES--NO--'
>--+-------------------------------------------------+-------------------
-><| .-NO---------. | '-FLASHCOPY--+-YES--------+--+-------------------+-'
'-CONSISTENT-' '-FGCOPYDDN(ddname)-' Concurrent-spec: >>-+-LIST--listdef-
name--data-set-spec-----------------------------------+---->
| .-------------------------------------------------------------. |
| V .-DSNUM--ALL----------. | |
'---+-table-space-spec-+--+--------------------+--data-set-spec-+-'
'-index-name-spec--' '-DSNUM--integer------'
>--data-set-spec--FILTERDDN--(ddname)--CONCURRENT------------------------
-><| Data-set spec: >>-+-COPYDDN(-+-ddname1-------+---------+-+-)-+-----------
-------------------------------+-+-----><| | '-
,ddname-' | '-RECOVERYDDN(-+-ddname3--+----------+-+-)-' |
| '-,ddname2-----------------' | '-
,ddname4-' | |
| '-,ddname4------
--------' |
'-RECOVERYDDN(-|-ddname3--+----------+-+-)-------------------------------
--------------'
| '-,ddname4-' |
'-ddname4--------------'

# COPYTOCOPY


>>-COPYTOCOPY-------------------------------------------------------------->
>--+-LIST--listdef-name--from-copy-spec--data-set-spec------+---+-------+--->
| .-------------------------------------------------. | '-CLONE-'
| V | |
'---+-ts-num-spec-----+--from-copy-spec--data-set-spec-+-'
'-index-name-spec-'
ts-num-spec:
.-DSNUM--ALL----.
>>-TABLESPACE--+---------------+-table-space-name--+---------------+------>
'-database-name.-' '-DSNUM--integer-'
Index-name-spec:
.-DSNUM-ALL----.
>>-+-INDEXSPACE-------+---------------+--index-space-name-++--------------+>
| '-database-name.-' |'-DSNUM-integer'
'-INDEX--+------------+--index-name-------------------'

```
            '-creator-id.-'



From-copy-spec:
   .-FROMLASTCOPY-------------------------------------------------------.
>>-+-----------------------------------------------------------------+----><
+-FROMLASTFULLCOPY-----------------------------------------------+ +-
FROMLASTINCRCOPY-------------------------------------------------+ +-
FROMLASTFLASHCOPY------------------------------------------------+ '-
FROMCOPY-------dsn--+-------------------------------------------+-' '-
FROMVOLUME--+-CATALOG-----------------+-' '-volser--+-------------+-' '-
FROMSEQNO--n-' Data-set-spec >>-+-COPYDDN(-+-ddname1-------+---------+-+-)-+-
-----------------------------------------+-+-----><  |          |
'-,ddname-' |   '-RECOVERYDDN(-+-ddname3--+----------+-+-)-' |
   |          '-,ddname2-----------------'                  |          '-
,ddname4-' |     |
   |                                                        '-,ddname4------
--------'     |
   '-RECOVERYDDN(-|-ddname3--+----------+-+-)-------------------------------
--------------'
                  |           '-,ddname4-' |
                  '-ddname4---------------'
```

# DIAGNOSE

```
>>-DIAGNOSE--+-diagnose statement-+-----------------------------------------
-><  '-END----------------' Diagnose-statement: >>-+--------------------+----
-------------------------------------------------->
   | .-,-------.         |
   | V         |         |
   '-TYPE(---integer-+-)-'
>--+-----------------------------------+-----------------------------------
->
   '-ALLDUMPS-+----------------------+-'
              | .-,-------------.     |
              | V               |     |
              '-(---X'abend-code'-+-)-'
>--+-----------------------------------+-----------------------------------
->
   '-NODUMPS-+----------------------+-'
             | .-,-------------.     |
             | V               |     |
             '-(---X'abend-code'-+-)-'
>--+------------------+--+---------------+--+----------------+----------
-><  '-display statement-'  '-wait statement-'  '-abend statement-'  Display-
```

```
statement: >>-DISPLAY-----------------------------------------------------
----------->
>--+-OBD-+-----------------+-table-space-name-+---------+-+-------+---+---
-><  I ‘-database-name--.-‘ +-ALL-----+ ‘-CLONE-‘ I I +-TABLES--+ I I ‘-
INDEXES-‘ I +-SYSUTIL-------------------------------------------------------
---+ +-MEPL-------------------------------------------------------------+ +-
AVAILABLE-----------------------------------------------------+ ‘-DBET-+-
DATABASE--database-name-----------------------+-+-------+-‘ +-TABLESPACE-+--
-------------+-table-space-name-+ ‘-CLONE-‘ I ‘-database-name.-‘ I ‘-INDEX--
index-name-----------------------------’ Wait-statement: .------------------
--------------------------------. V I >>-WAIT----+-MESSAGE--message-id--+---
---------------+------+-+------------><  I ‘-INSTANCE--integer-‘ I ‘-
TRACEID--+-X’trace-id’-+--+------------------+-‘ ‘-integer-----’ ‘-INSTANCE-
-integer-‘ Abend-statement: >>-ABEND--+-MESSAGE--message-id--+--------------
----+------+--+--------+----><  I                      ‘-INSTANCE--integer-‘
I  ‘-NODUMP-‘
          ‘-TRACEID--+-X’trace-id’-+--+------------------+-‘
                     ‘-integer-----’  ‘-INSTANCE--integer-‘
```

# EXEC SQL

```
>>-EXEC--SQL--+-declare-cursor-spec--------------+--ENDEXEC---------------
-><  ‘-non-select dynamic SQL statement-‘ Declare-cursor-spec: >>-DECLARE--
cursor-name--CURSOR--FOR--select-statement---------------------><
```

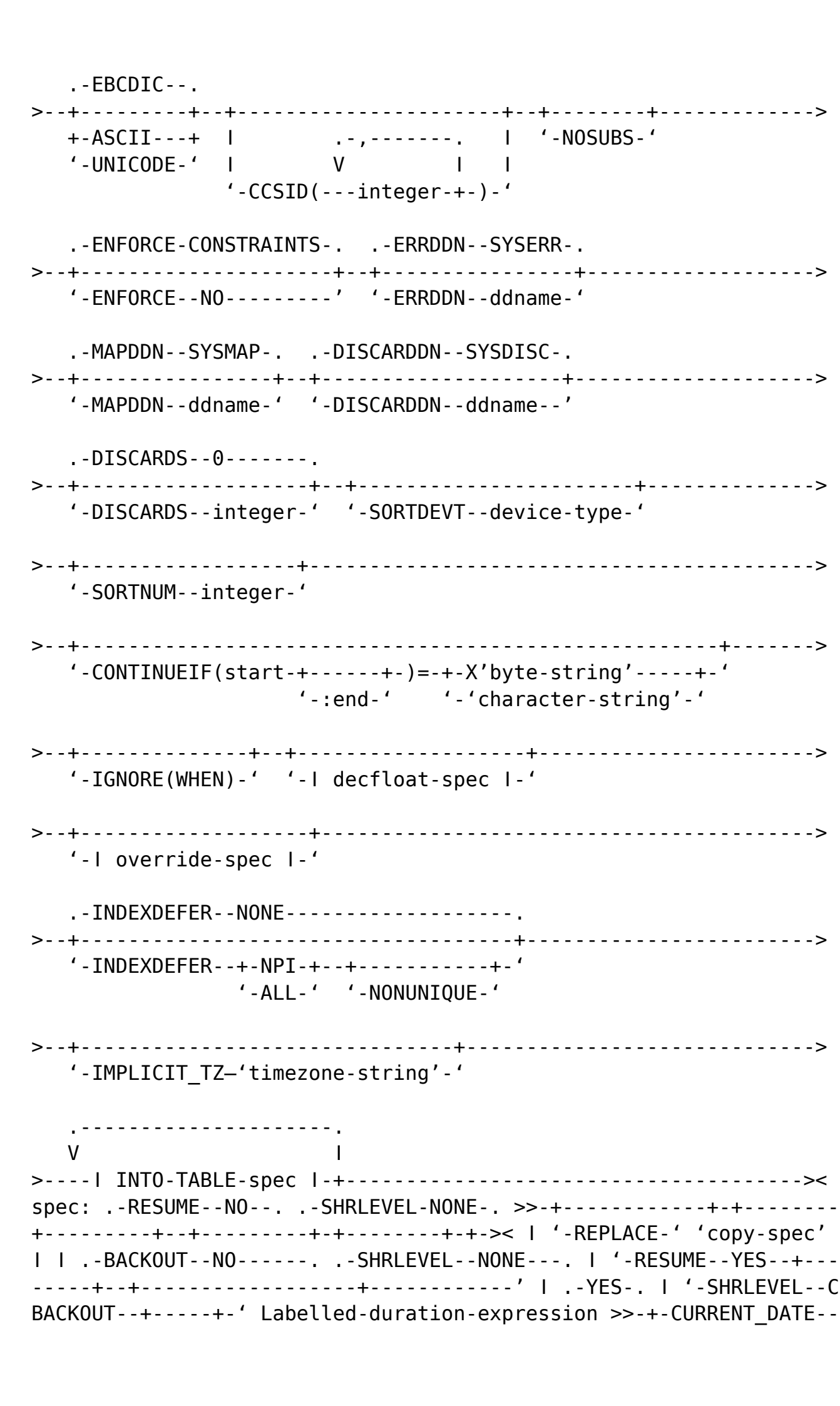
# LISTDEF

```
                       .----------------.
                       V                |
>>-LISTDEF--list-name------list-options-----------------------------------
->

List-options:
>-+INCLUDE+-+-----------+-+-LIST-ref-list-+-+--------------++----+-+-----+-
+->
  ‘EXCLUDE’ I           I ‘-init-obj-spec-‘ ‘CLONED-+-YES-+-’’-RI-‘ +-ALL-+
            ‘-type-spec-‘                           ‘-NO--’         +-BASE+
                                                                    +-LOB-+
                                                                    ‘-XML-‘

    .-DEFINED YES-.
>--+-------------+--+---------+-----------------------------------------------
->
   +-DEFINED NO--+  +-HISTORY-+
   ‘-DEFINED ALL-‘  ‘-ARCHIVE-‘

>--+---------------+--+-----------------+-----------------------------
```

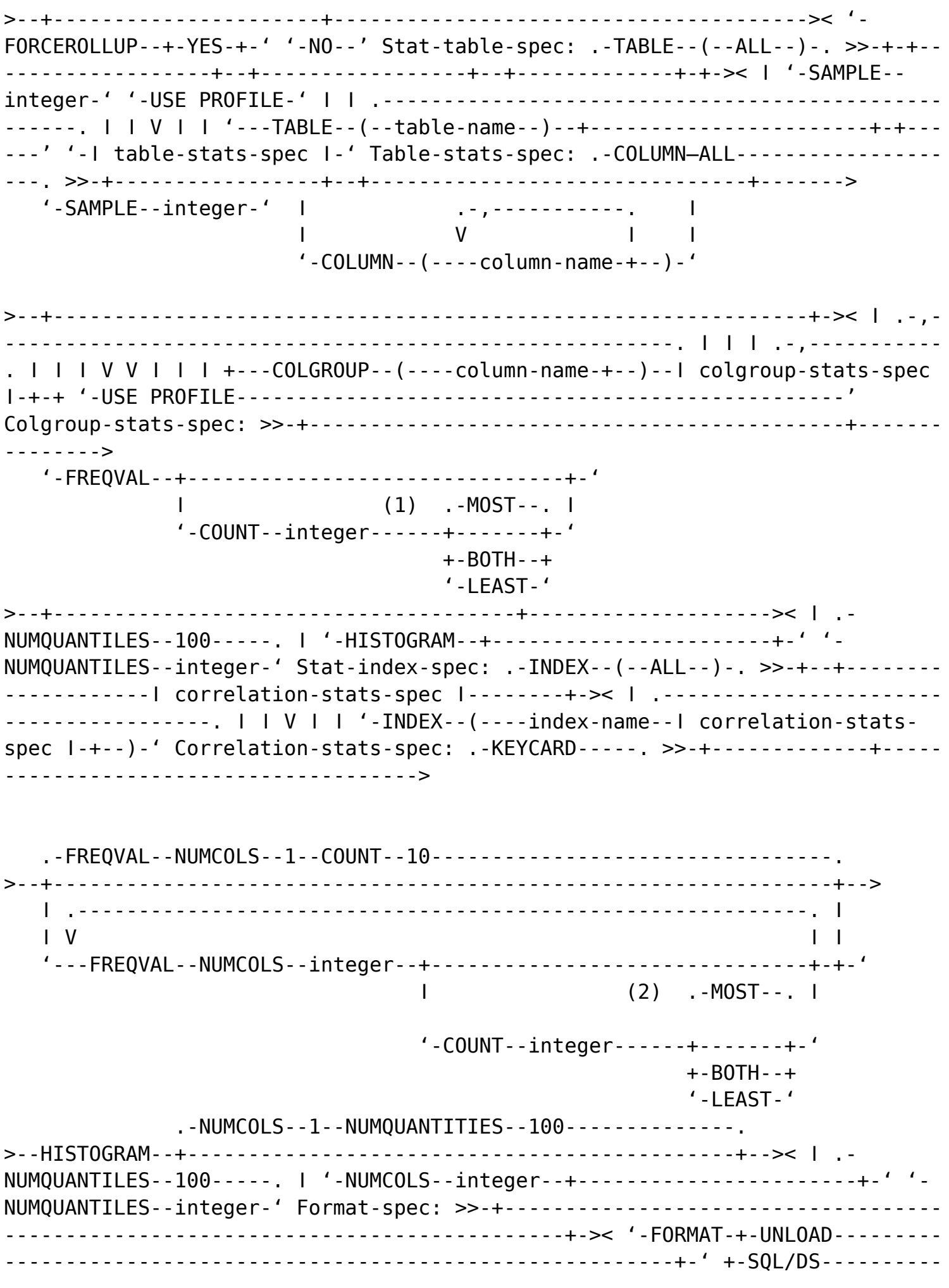
```
-><  '-BASIC--+-NO--+-'  '-EXTENDED--+-NO--+-'  '-YES-'  '-YES-'  Init-obj-spec
>>-+-DATABASE--database-name-+--+--------------------+---------------------
-><  +-table-space-spec--------+  '-PARTLEVEL--+-----+-'  +-index-space-spec----
----+  '-(n)-'  +-table-spec-------------+  +-index-spec-------------+  Table-
space-spec: TABLESPACE--+----------------+--table-space-name----------------
-----------><  '-database-name.-'  Index-space-spec: >>-INDEXSPACE--+--------
-------+--index-space-name-------------------------><  '-database-name.-'
Table-spec: >>-TABLE--+------------+--table-name--------------------------
-----------><  '-creator-id.-'  Index-space: >>-INDEX--+------------+--index-
name-------------------------------------><  '-creator-id.-'
```

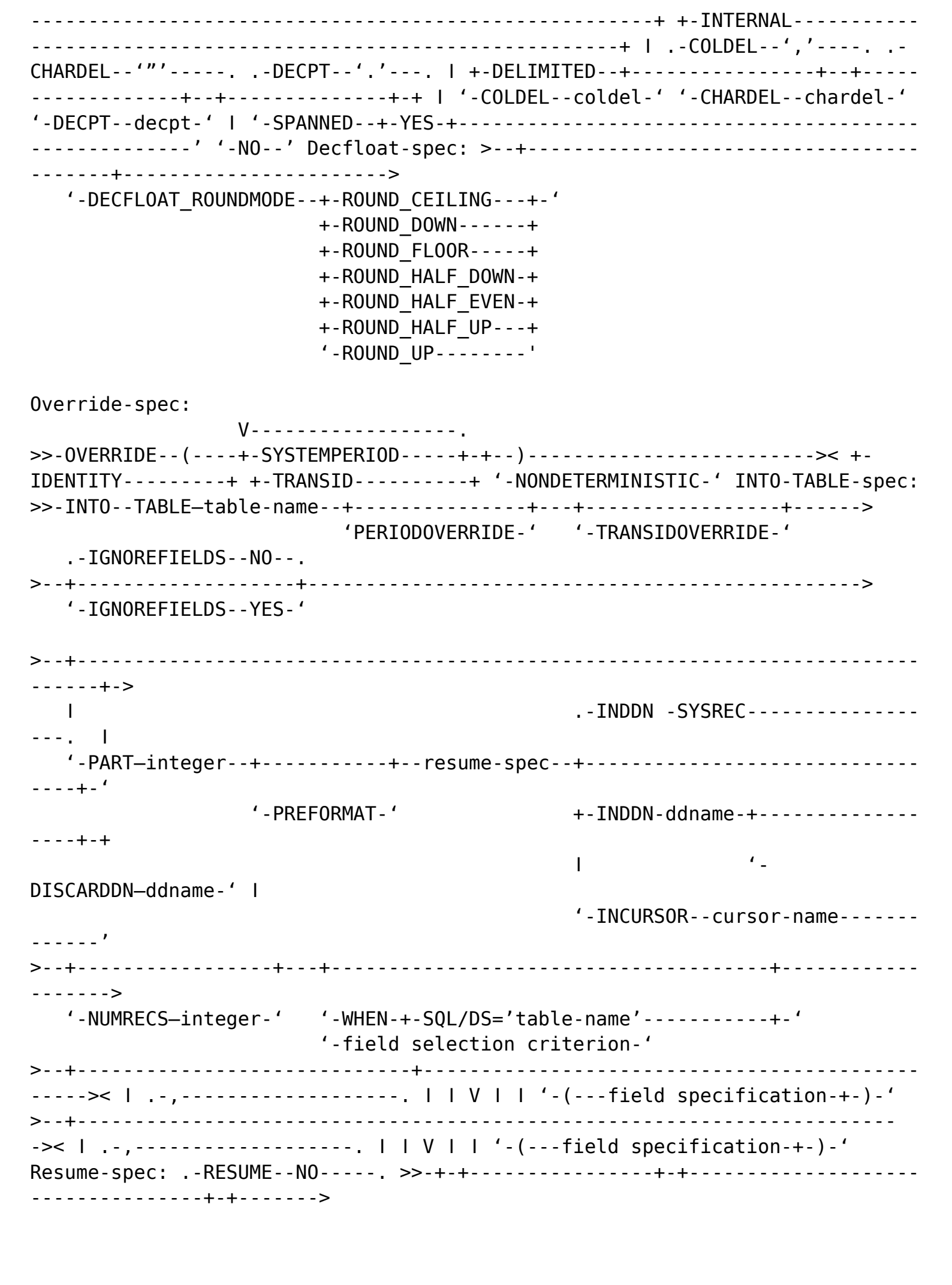
# LOAD

```
         .-DATA-.  .-INDDN--SYSREC---------.
>>-LOAD--+------+--+----------------------+--+-----------+------>
                  +-INDDN--ddname---------+  '-PREFORMAT-'
                  +-INCURSOR--cursor-name-+

                                     .-PRESORTED--NO--.
>--+-----------------------------+--+----------------+----------->
   |                  .-1-------. |  '-PRESORTED--YES-'
   '-COPYDICTIONARY--+-integer-+-'


>--+-----------------------------+--+--------------------+------>
   '-PARALLEL--+----------------+-'  '-ROWFORMAT--+-BRF-+-'
               '-(num-subtasks)-'                 '-RRF-'

>--+---------------------------------+--| resume-spec |--------->
   '-RBALRSN_CONVERSION--+-NONE-----+-'
                         +-BASIC----+
                         '-EXTENDED-'
>--| flashcopy-spec |--+----------------+--+-------+------------>
                       '-KEEPDICTIONARY-'  '-REUSE-'

   .-LOG--YES---------------.
>--+------------------------+--| workddn-spec |----------------->
   '-LOG--NO--+-----------+-'
              '-NOCOPYPEND-'

                  (1)
   .-SORTKEYS--0-------.                   .-FLOAT(S390)-.
>--+-------------------+--| format-spec |--+-------------+------->
   +-SORTKEYS--NO------+                   '-FLOAT(IEEE)-'
   '-SORTKEYS--integer-'
```

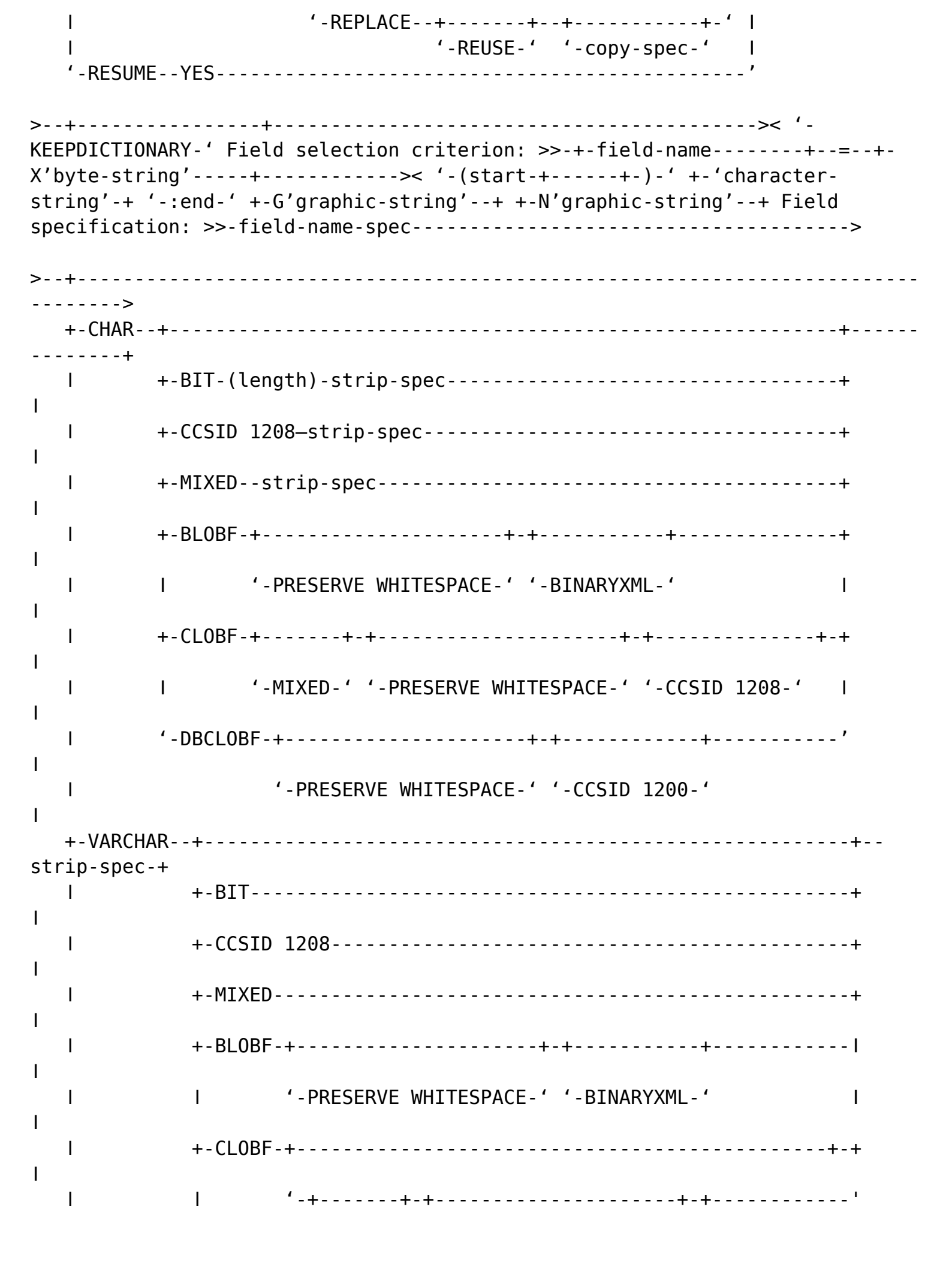

.-EBCDIC--.
>--+---------+--+----------------------+--+--------+------------>
+-ASCII---+ | .-,-------. | '-NOSUBS-'
'-UNICODE-' | V | |
'-CCSID(---integer-+-)-'
.-ENFORCE-CONSTRAINTS-. .-ERRDDN--SYSERR-.
>--+---------------------+--+----------------+------------------>
'-ENFORCE--NO---------' '-ERRDDN--ddname-'
.-MAPDDN--SYSMAP-. .-DISCARDDN--SYSDISC-.
>--+----------------+--+--------------------+------------------->
'-MAPDDN--ddname-' '-DISCARDDN--ddname--'
.-DISCARDS--0-------.
>--+-------------------+--+----------------------+-------------->
'-DISCARDS--integer-' '-SORTDEVT--device-type-'
>--+------------------+------------------------------------------>
'-SORTNUM--integer-'
>--+-----------------------------------------------------+------->
'-CONTINUEIF(start-+------+-)=-+-X'byte-string'-----+-'
':end-' '-'character-string'-'
>--+--------------+--+-------------------+----------------------->
'-IGNORE(WHEN)-' '-| decfloat-spec |-'
>--+-------------------+------------------------------------------>
'-| override-spec |-'
.-INDEXDEFER--NONE-------------------.
>--+-------------------------------------+----------------------->
'-INDEXDEFER--+-NPI-+--+-----------+-'
'-ALL-' '-NONUNIQUE-'
>--+------------------------------+----------------------------->
'-IMPLICIT_TZ—'timezone-string'-'
.---------------------.
V |
>----| INTO-TABLE-spec |-+-------------------------------------><
Resume-spec: .-RESUME--NO--. .-SHRLEVEL-NONE-. >>-+------------+-+---------------+-+---------+--+---------+-+--------+-+-><
| '-REPLACE-' 'copy-spec' '-stats-'
| | .-BACKOUT--NO------. .-SHRLEVEL--NONE---. | '-RESUME--YES--+-------------+--+-----------------+-----------'
| .-YES-. | '-SHRLEVEL--CHANGE-' '-BACKOUT--+-----+-'
Labelled-duration-expression >>-+-CURRENT_DATE-----------

-CURRENT_TIMESTAMP-
-WITH TIME ZONE-
constant-
YEAR
YEARS
MONTH
MONTHS
DAY
DAYS
HOUR
HOURS
MINUTE
MINUTES
SECOND
SECONDS
MICROSECOND-
MICROSECONDS-
Workddn-spec:
WORKDDN(SYSUT1,SORTOUT)
WORKDDN-
(ddname1,ddname2)
SORTOUT
SYSUT1
Copy-spec:
SYSCOPY
COPYDDN-
(ddname1-
,ddname2
RECOVERYDDN(ddname3-
ddname4
Flashcopy-spec:
FLASHCOPY-NO
FLASHCOPY-YES
CONSISTENT
FCCOPYDDN-
(-template-name-)
Stats-spec:
STATISTICS-
stat-table-spec
stat-index-spec
REPORT-NO
REPORT-YES
UPDATE-ALL
UPDATE-
ACCESPATH
SPACE
NONE
INVALIDATECACHE-NO
INVALIDATECACHE YES
HISTORY-
ALL
ACCESSPATH
SPACE
NONE

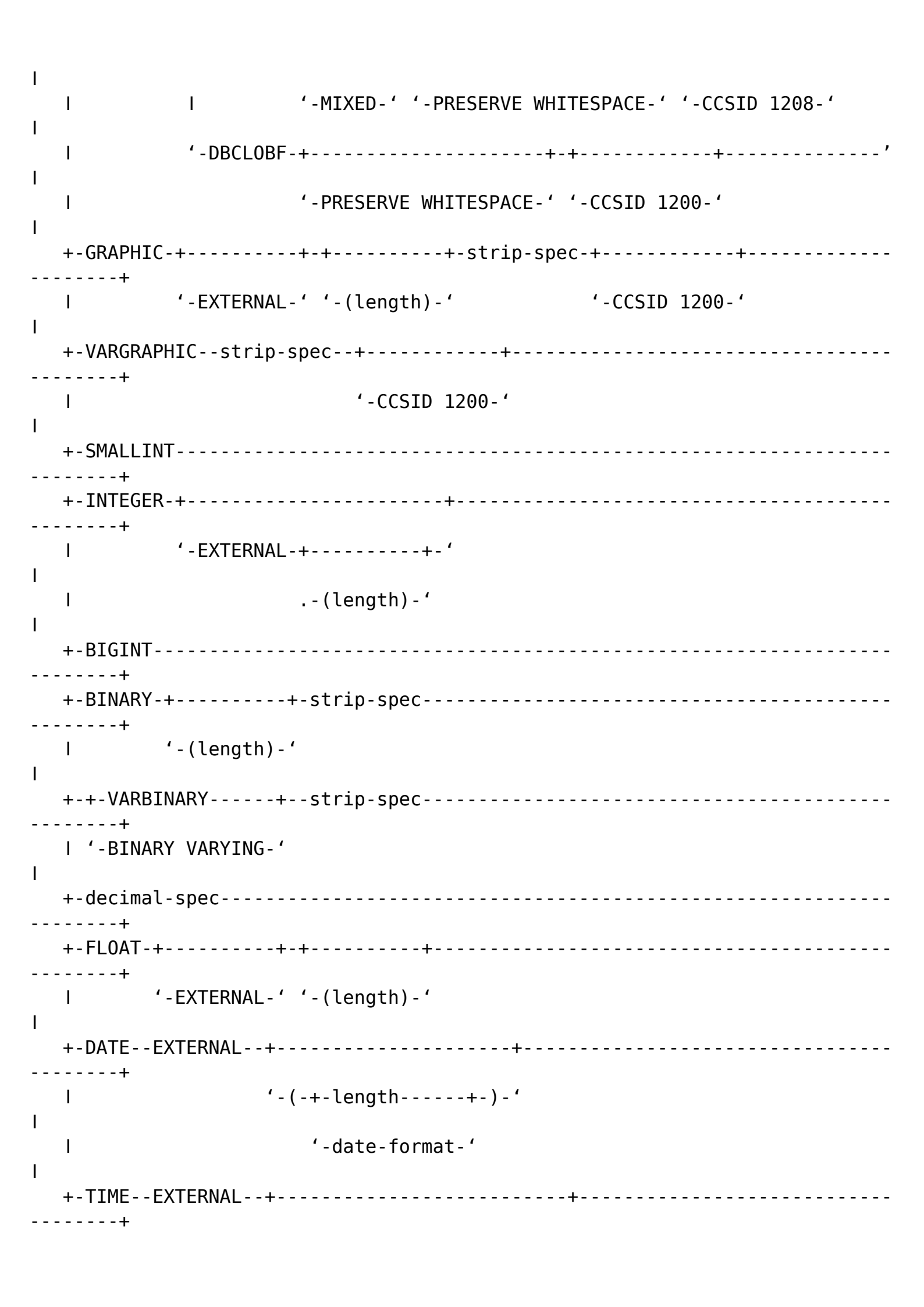

FORCEROLLUP
YES
NO
Stat-table-spec:
TABLE
ALL
SAMPLE
integer
USE PROFILE
table-name
table-stats-spec:
COLUMN—ALL
COLUMN
column-name
Table-stats-spec:
COLGROUP
colgroup-stats-spec
Colgroup-stats-spec:
FREQVAL
COUNT
integer
MOST
BOTH
LEAST
NUMQUANTILES
HISTOGRAM
Stat-index-spec:
INDEX
index-name
correlation-stats-spec
Correlation-stats-spec:
KEYCARD
NUMCOLS
NUMQUANTITIES
Format-spec:
FORMAT
UNLOAD
SQL/DS

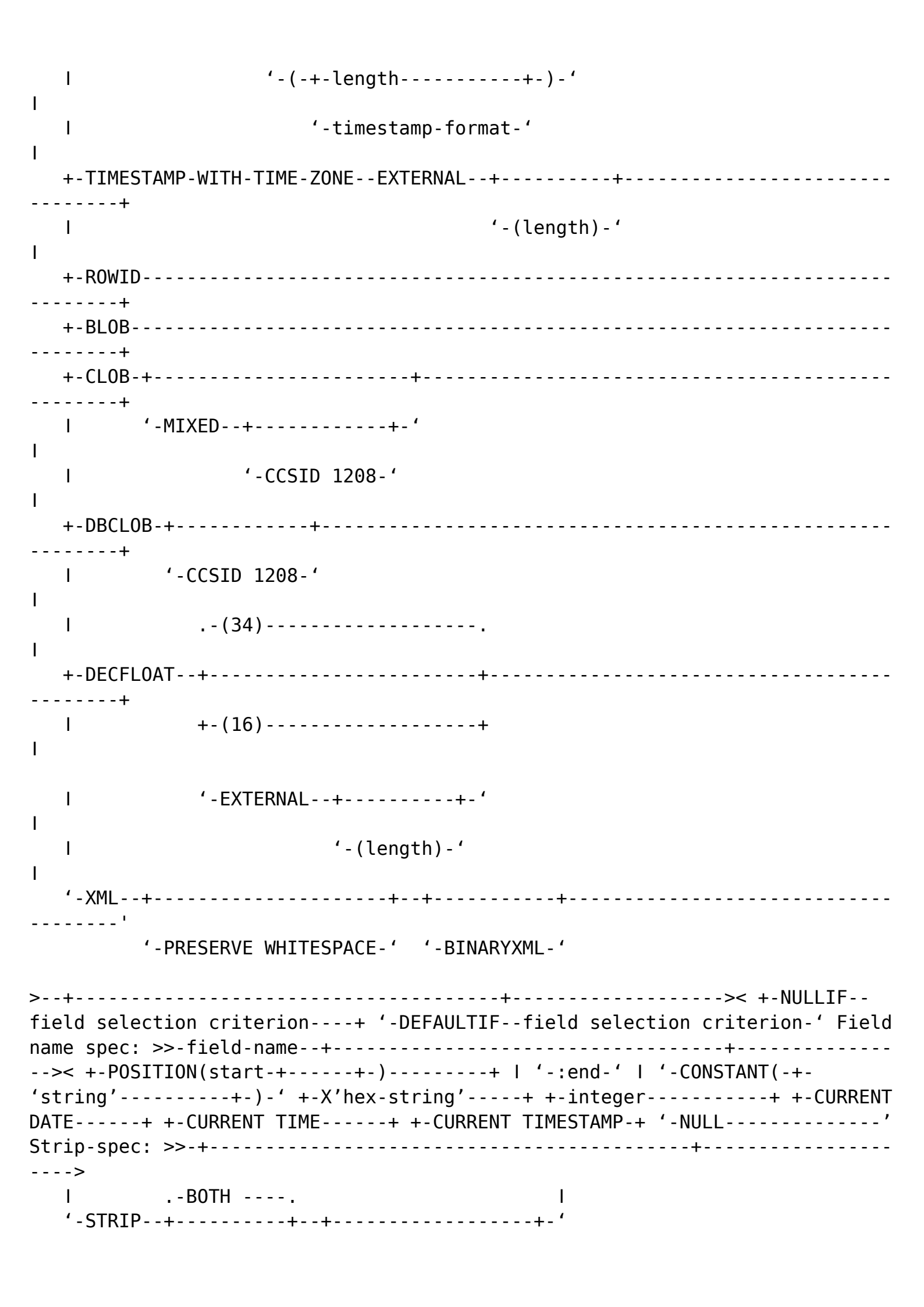


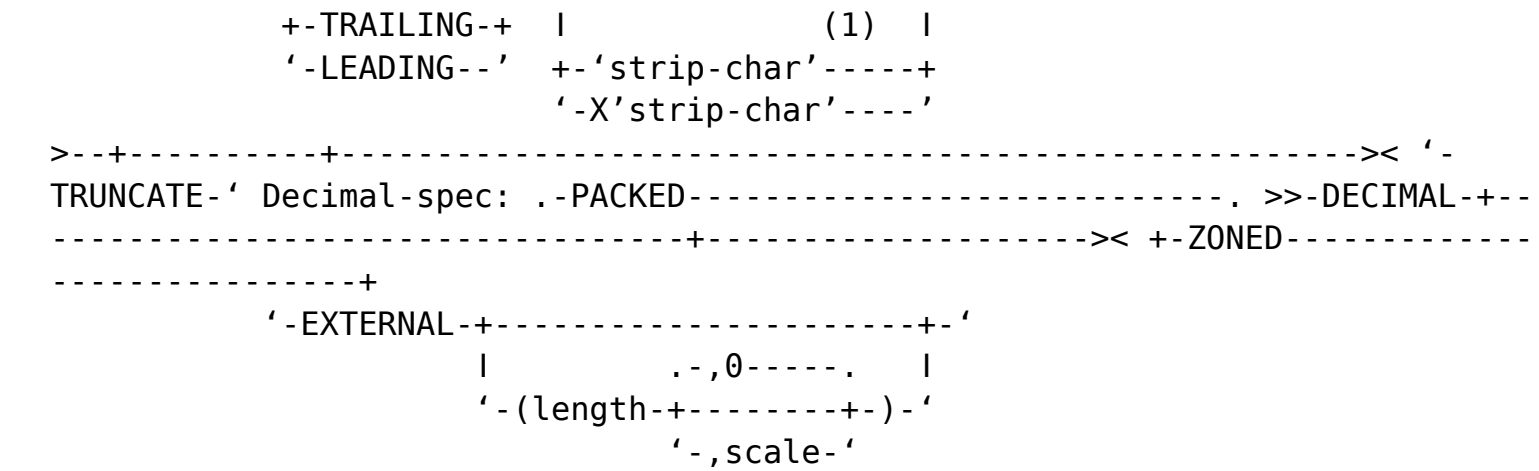
```
-----------------------------------------------------+ +-INTERNAL-----------
-----------------------------------------------+ | .-COLDEL--‘,’----. .-
CHARDEL--‘”’-----. .-DECPT--‘.’---. | +-DELIMITED--+----------------+--+-----
-------------+--+--------------+-+ | ‘-COLDEL--coldel-‘ ‘-CHARDEL--chardel-‘
‘-DECPT--decpt-‘ | ‘-SPANNED--+-YES-+---------------------------------------
--------------’ ‘-NO--’ Decfloat-spec: >--+----------------------------------
-------+----------------------->
   ‘-DECFLOAT_ROUNDMODE--+-ROUND_CEILING---+-‘
                         +-ROUND_DOWN------+
                         +-ROUND_FLOOR-----+
                         +-ROUND_HALF_DOWN-+
                         +-ROUND_HALF_EVEN-+
                         +-ROUND_HALF_UP---+
                         ‘-ROUND_UP--------'

Override-spec:
                  V------------------.
>>-OVERRIDE--(----+-SYSTEMPERIOD-----+-+--)------------------------><  +-
IDENTITY---------+ +-TRANSID----------+ ‘-NONDETERMINISTIC-‘ INTO-TABLE-spec:
>>-INTO--TABLE—table-name--+---------------+---+-----------------+------>
                           ‘PERIODOVERRIDE-‘   ‘-TRANSIDOVERRIDE-‘
   .-IGNOREFIELDS--NO--.
>--+-------------------+------------------------------------------------>
   ‘-IGNOREFIELDS--YES-‘

>--+-------------------------------------------------------------------------
------+->
   |                                          .-INDDN -SYSREC---------------
---.  |
   ‘-PART—integer--+-----------+--resume-spec--+---------------------------
----+-‘
                   ‘-PREFORMAT-‘              +-INDDN-ddname-+--------------
----+-+
                                              |              ‘-
DISCARDDN—ddname-‘ |
                                              ‘-INCURSOR--cursor-name-------
------’
>--+-----------------+---+-------------------------------------+------------
------->
   ‘-NUMRECS—integer-‘   ‘-WHEN-+-SQL/DS=’table-name’-----------+-‘
                         ‘-field selection criterion-‘
>--+-----------------------------+-------------------------------------------
----->< | .-,-------------------. | | V | | ‘-(---field specification-+-)-‘
>--+-----------------------------------------------------------------------
-><  | .-,-------------------. | | V | | ‘-(---field specification-+-)-‘
Resume-spec: .-RESUME--NO-----. >>-+-+----------------+-+--------------------
---------------+-+------->
```



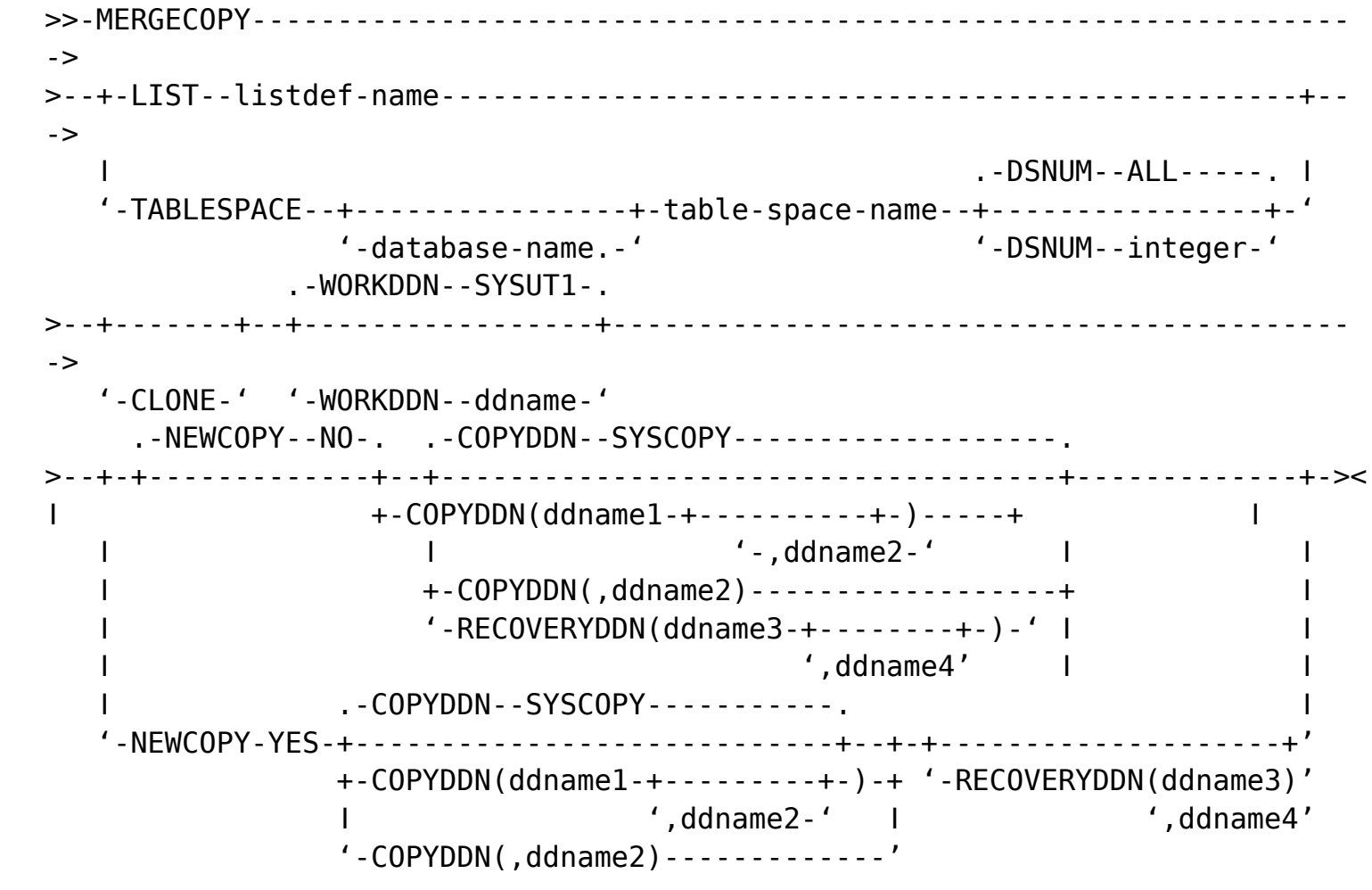
```
   |                   '-REPLACE--+-------+--+-----------+-' |
   |                              '-REUSE-'  '-copy-spec-'   |
   '-RESUME--YES-----------------------------------------------'

>--+----------------+-------------------------------------------><  '-
KEEPDICTIONARY-' Field selection criterion: >>-+-field-name--------+--=--+-
X'byte-string'-----+------------><  '-(start-+------+-)-' +-'character-
string'-+ '-:end-' +-G'graphic-string'--+ +-N'graphic-string'--+ Field
specification: >>-field-name-spec-------------------------------------->

>--+-------------------------------------------------------------------------
-------->
   +-CHAR--+-------------------------------------------------------------+------
--------+
   |       +-BIT-(length)-strip-spec---------------------------------+
|
   |       +-CCSID 1208—strip-spec-----------------------------------+
|
   |       +-MIXED--strip-spec---------------------------------------+
|
   |       +-BLOBF-+---------------------+-+-----------+--------------+
|
   |       |       '-PRESERVE WHITESPACE-' '-BINARYXML-'              |
|
   |       +-CLOBF-+-------+-+---------------------+-+--------------+-+
|
   |       |       '-MIXED-' '-PRESERVE WHITESPACE-' '-CCSID 1208-'   |
|
   |       '-DBCLOBF-+---------------------+-+------------+-----------'
|
   |                 '-PRESERVE WHITESPACE-' '-CCSID 1200-'
|
   +-VARCHAR--+-------------------------------------------------------+--
strip-spec-+
   |          +-BIT-------------------------------------------------+
|
   |          +-CCSID 1208-------------------------------------------+
|
   |          +-MIXED------------------------------------------------+
|
   |          +-BLOBF-+---------------------+-+-----------+------------|
|
   |          |       '-PRESERVE WHITESPACE-' '-BINARYXML-'            |
|
   |          +-CLOBF-+-----------------------------------------------+-+
|
   |          |       '-+-------+-+---------------------+-+------------'
```


‘-MIXED-‘ ‘-PRESERVE WHITESPACE-‘ ‘-CCSID 1208-‘
‘-DBCLOBF-
‘-PRESERVE WHITESPACE-‘ ‘-CCSID 1200-‘
+-GRAPHIC-
‘-EXTERNAL-‘ ‘-(length)-‘ ‘-CCSID 1200-‘
+-VARGRAPHIC--strip-spec--
‘-CCSID 1200-‘
+-SMALLINT
+-INTEGER-
‘-EXTERNAL-
.-(length)-‘
+-BIGINT
+-BINARY-
strip-spec
‘-(length)-‘
+-+-VARBINARY------
‘-BINARY VARYING-‘
+-decimal-spec
+-FLOAT-
‘-EXTERNAL-‘ ‘-(length)-‘
+-DATE--EXTERNAL--
‘-(-+-length------+-)-‘
‘-date-format-‘
+-TIME--EXTERNAL--

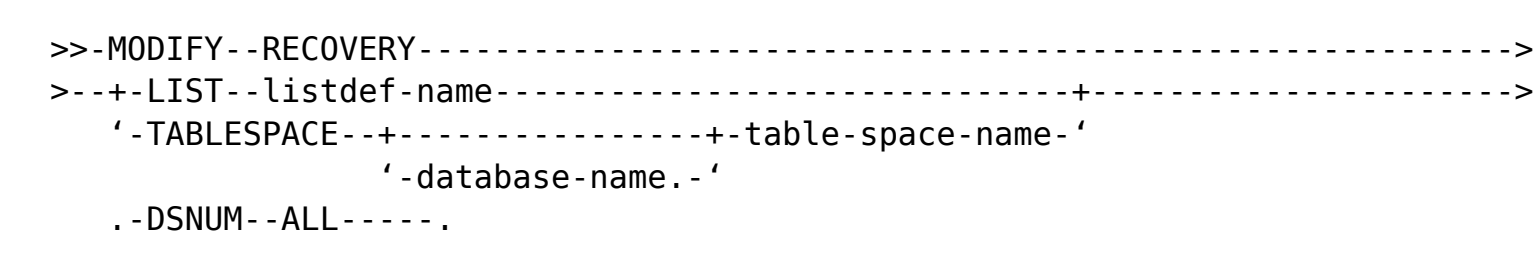

‘-(-+-length----------+-)-‘
‘-timestamp-format-‘
+-TIMESTAMP-WITH-TIME-ZONE--EXTERNAL--+----------+
‘-(length)-‘
+-ROWID
+-BLOB
+-CLOB-+
‘-MIXED--+------------+-‘
‘-CCSID 1208-‘
+-DBCLOB-+
‘-CCSID 1208-‘
.-(34)-------------------.
+-DECFLOAT--+
+-(16)-------------------+
‘-EXTERNAL--+----------+-‘
‘-(length)-‘
‘-XML--+
‘-PRESERVE WHITESPACE-‘
‘-BINARYXML-‘
>--+
field selection criterion----+
‘-DEFAULTIF--field selection criterion-‘
Field name spec: >>-field-name--+
--><
+-POSITION(start-+------+-)---------+
‘string’----------+-)-‘
+-X’hex-string’-----+
+-integer-----------+
+-CURRENT DATE------+
+-CURRENT TIME------+
+-CURRENT TIMESTAMP-+
‘-NULL-------------’
Strip-spec: >>-+
----->
.-BOTH ----.
‘-STRIP--+----------+--+-----------------+-‘

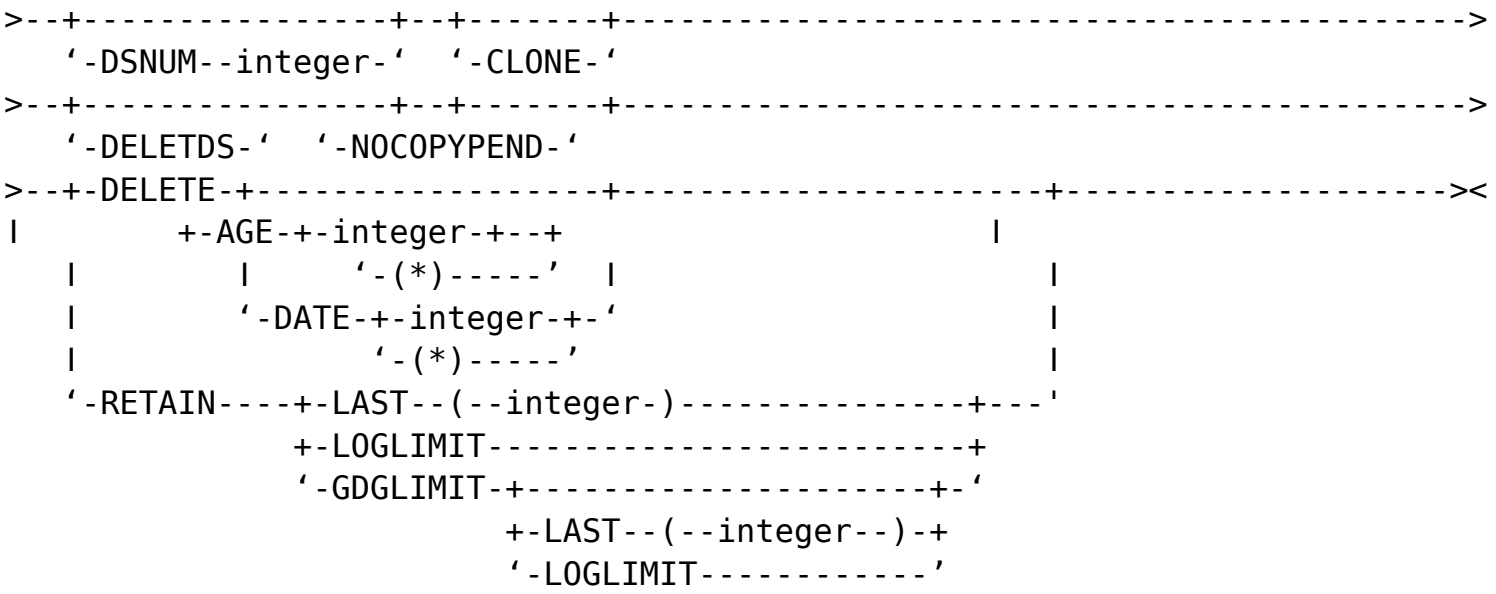



# MERGECOPY

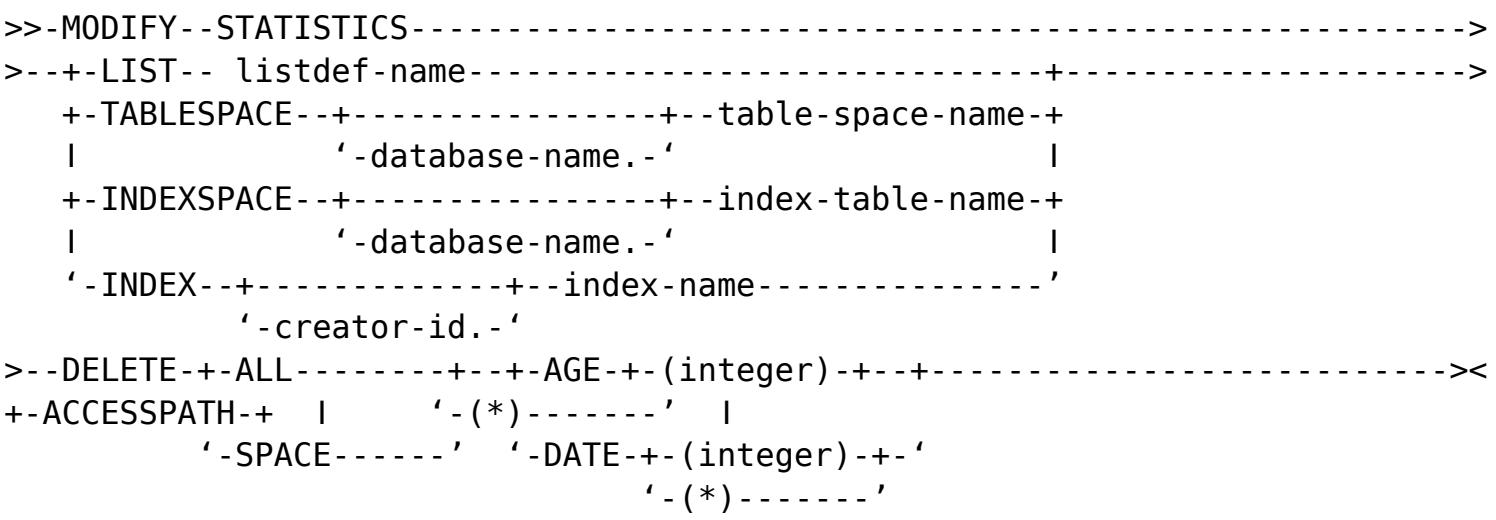



# MODIFY RECOVERY

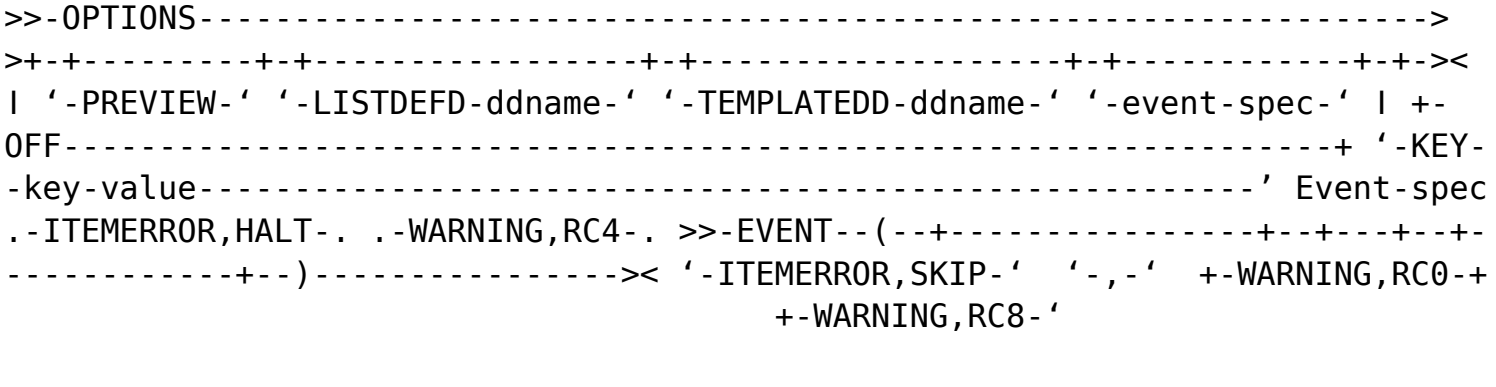




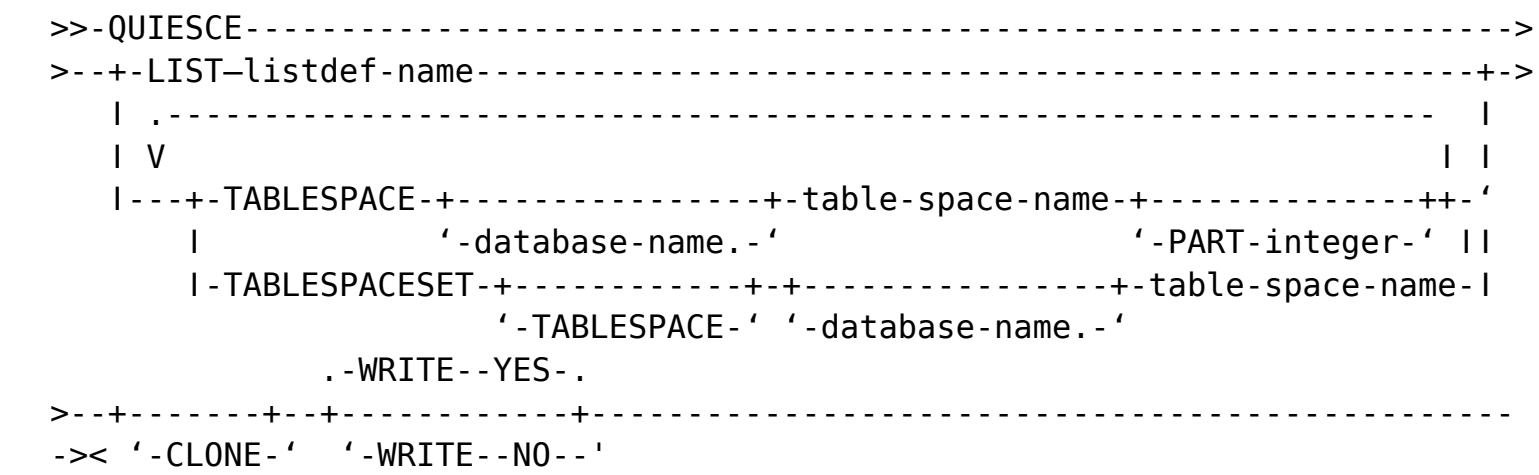

# MODIFY STATISTICS



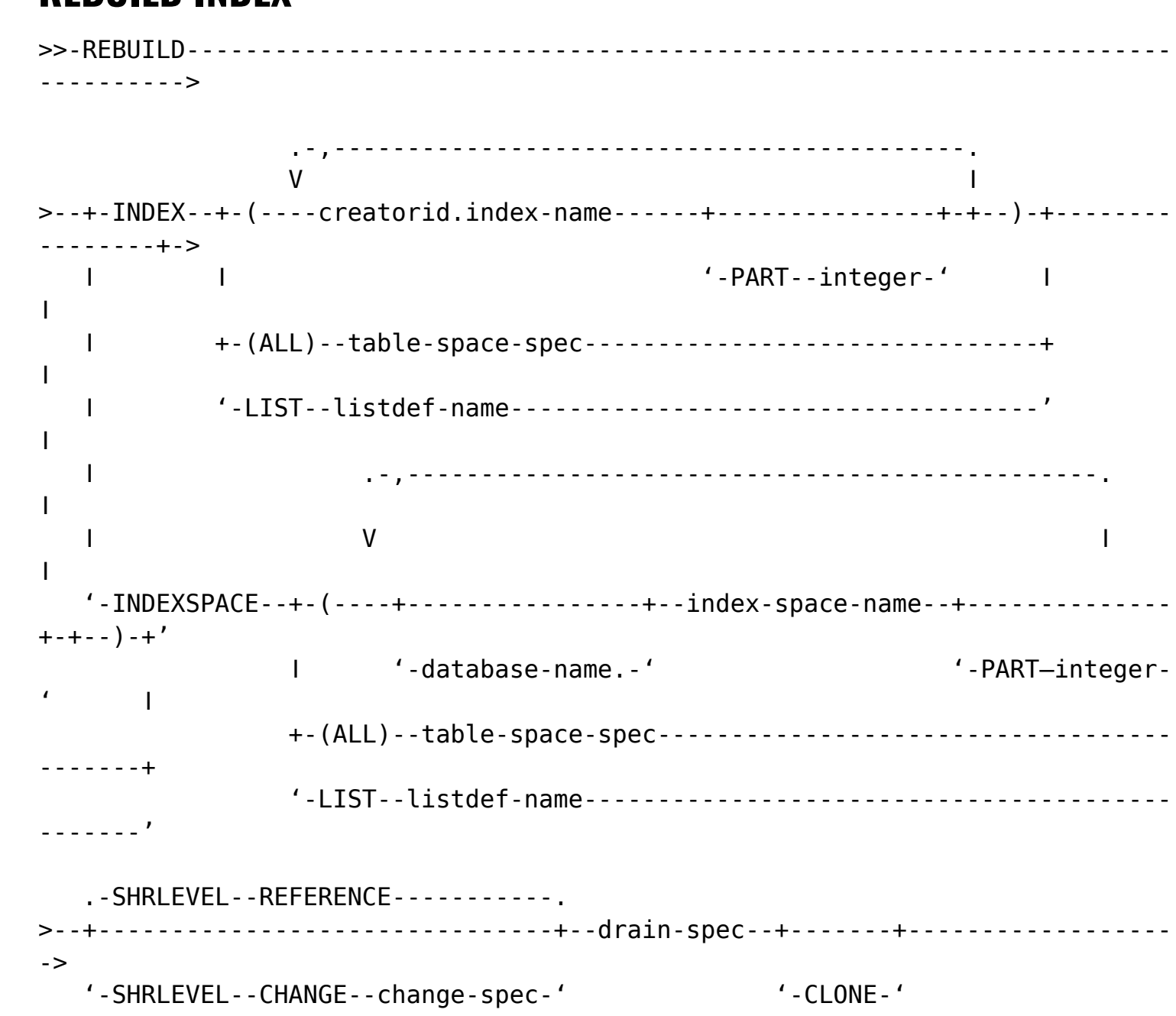

# OPTIONS

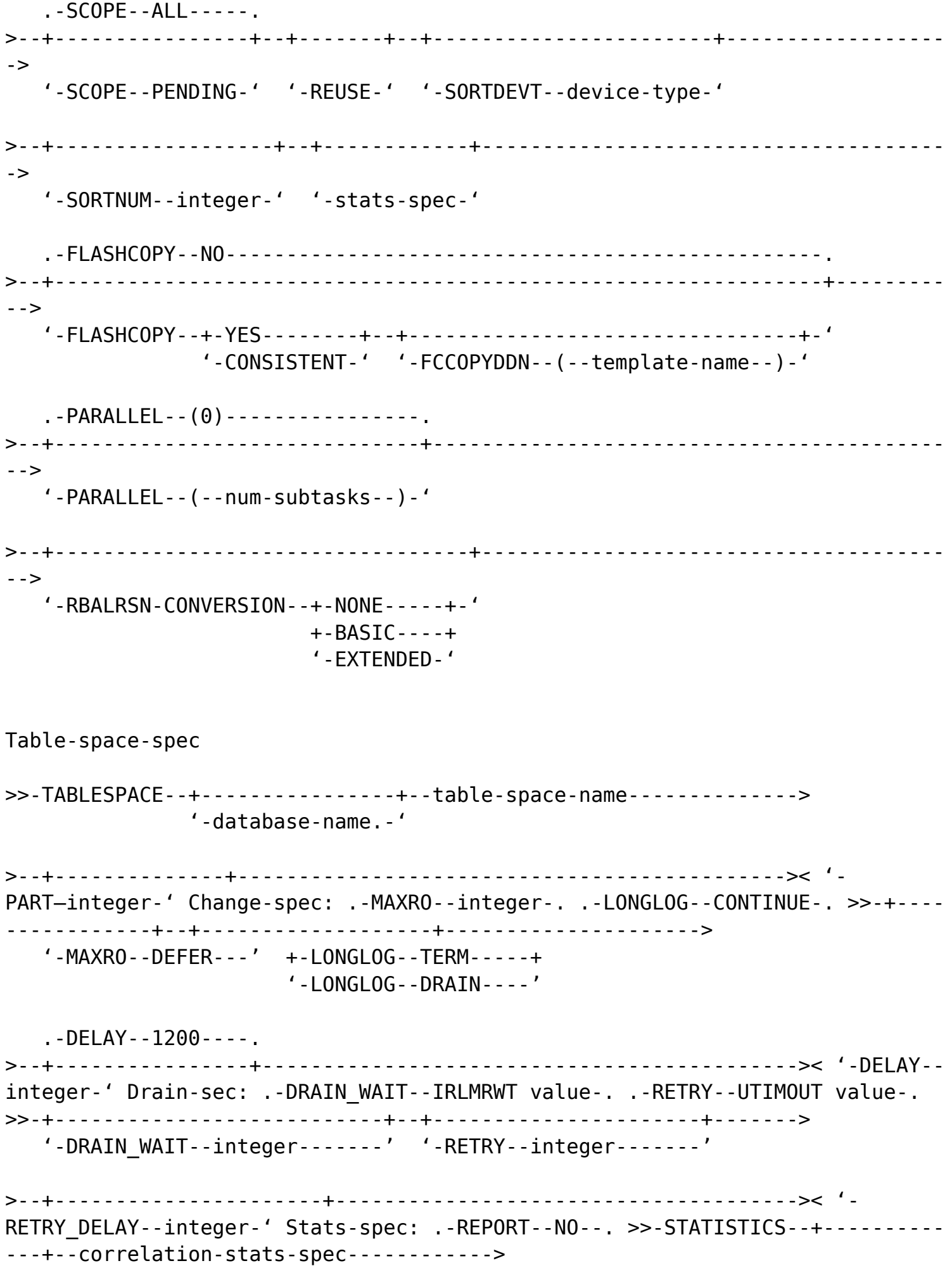


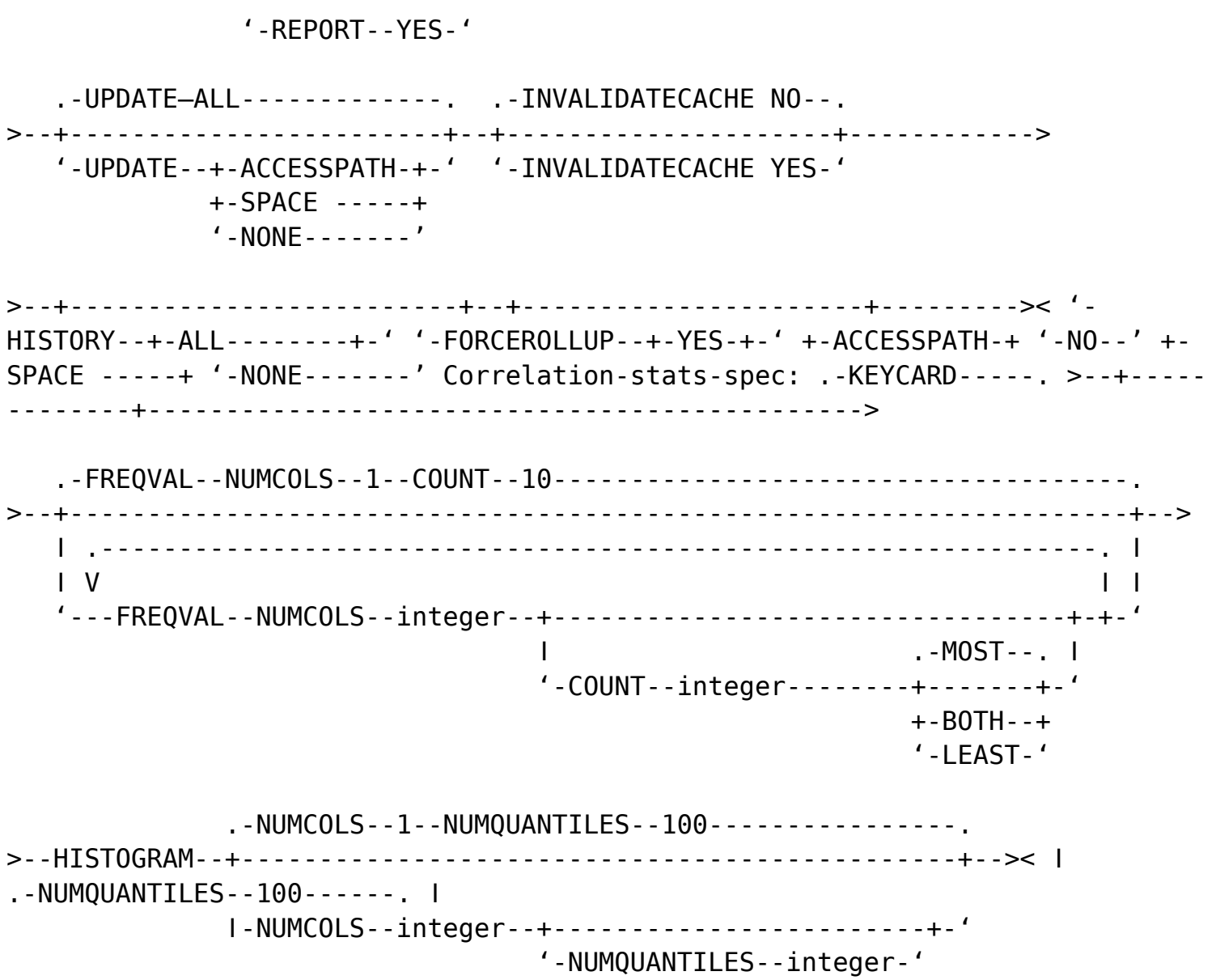
# QUIESCE



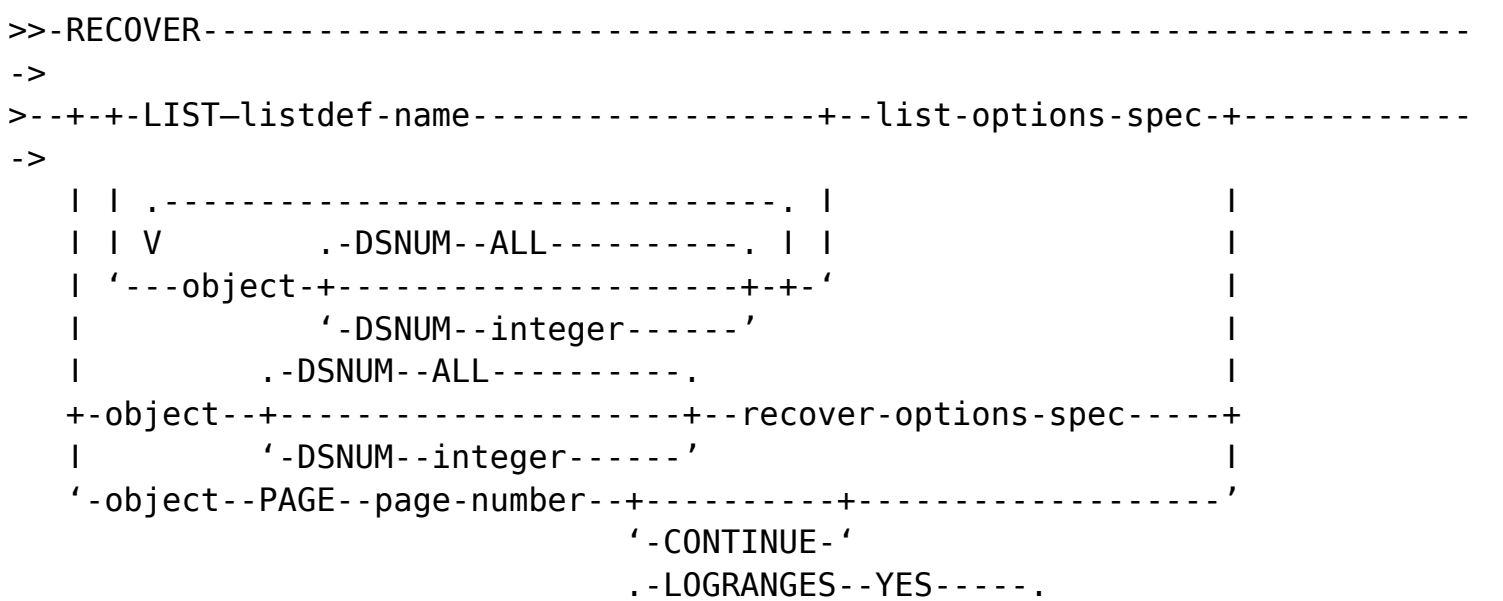

# REBUILD INDEX

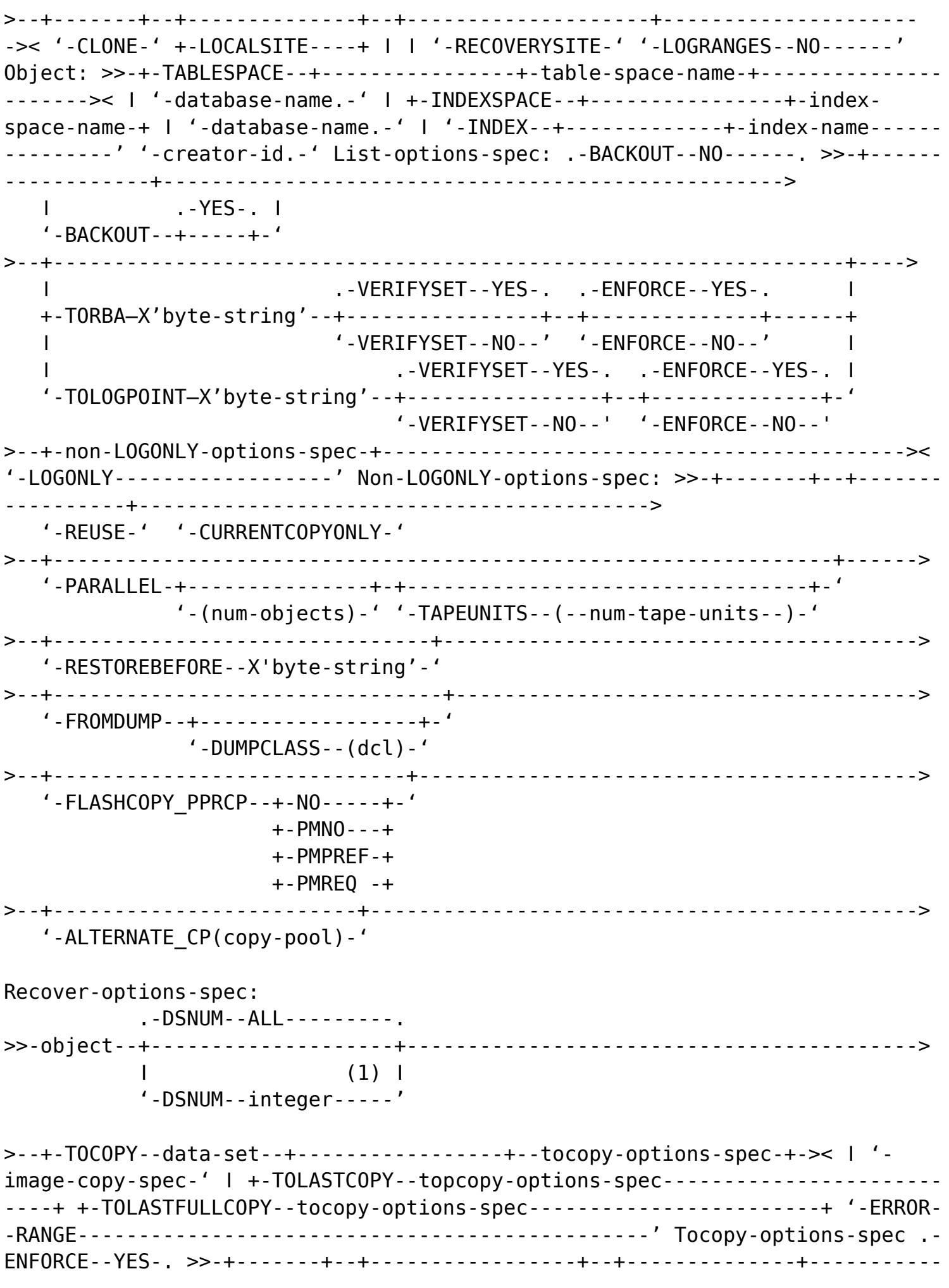



.-SCOPE--ALL-----.
>--+---------------+--+-------+--+----------------------+-----------------
->
‘-SCOPE--PENDING-‘ ‘-REUSE-‘ ‘-SORTDEVT--device-type-‘
>--+-----------------+--+-----------+-----------------------------------
->
‘-SORTNUM--integer-‘ ‘-stats-spec-‘
.-FLASHCOPY--NO-------------------------------------------------.
>--+-----------------------------------------------------------+---------
-->
‘-FLASHCOPY--+-YES--------+--+-------------------------------+-‘
‘-CONSISTENT-‘ ‘-FCCOPYDDN--(--template-name--)-‘
.-PARALLEL--(0)---------------.
>--+-----------------------------+-----------------------------------------
-->
‘-PARALLEL--(--num-subtasks--)-‘
>--+---------------------------------+-------------------------------------
-->
‘-RBALRSN-CONVERSION--+-NONE-----+-‘
+-BASIC----+
‘-EXTENDED-‘
Table-space-spec
>>-TABLESPACE--+---------------+--table-space-name------------->
‘-database-name.-‘
>--+-------------+-----------------------------------------------><
‘-PART—integer-‘ Change-spec: .-MAXRO--integer-. .-LONGLOG--CONTINUE-. >>-+----
-----------+--+------------------+-------------------->
‘-MAXRO--DEFER---’ +-LONGLOG--TERM-----+
‘-LONGLOG--DRAIN----’
.-DELAY--1200----.
>--+---------------+-------------------------------------------><
‘-DELAY--integer-‘ Drain-sec: .-DRAIN_WAIT--IRLMRWT value-. .-RETRY--UTIMOUT value-.
>>-+-------------------------+--+---------------------+------->
‘-DRAIN_WAIT--integer-------’ ‘-RETRY--integer-------’
>--+------------------+----------------------------------><
‘-RETRY_DELAY--integer-‘ Stats-spec: .-REPORT--NO--. >>-STATISTICS--+----------
---+--correlation-stats-spec---------->


'-REPORT--YES-'
.-UPDATE—ALL-------------. .-INVALIDATECACHE NO--.
>--+-----------------------+--+--------------------+----------->
'-UPDATE--+-ACCESSPATH-+-' '-INVALIDATECACHE YES-'
+-SPACE -----+
'-NONE-------'
>--+-------------------------+--+----------------------+---------><
'-
HISTORY--+-ALL--------+-' '-FORCEROLLUP--+-YES-+-' +-ACCESSPATH-+ '-NO--' +-
SPACE -----+ '-NONE-------' Correlation-stats-spec: .-KEYCARD-----. >--+-----
--------+------------------------------------------->
.-FREQVAL--NUMCOLS--1--COUNT--10-------------------------------------.
>--+-----------------------------------------------------------------+-->
| .-------------------------------------------------------------. |
| V | |
'---FREQVAL--NUMCOLS--integer--+-----------------------------------+-+-'
| .-MOST--. |
'-COUNT--integer--------+-------+-'
+-BOTH--+
'-LEAST-'
.-NUMCOLS--1--NUMQUANTILES--100----------------.
>--HISTOGRAM--+----------------------------------------------+--><
.-NUMQUANTILES--100------. |
|-NUMCOLS--integer--+------------------------+-'
'-NUMQUANTILES--integer-'

# RECOVER


>>-RECOVER-------------------------------------------------------------
->
>--+-+-LIST—listdef-name-----------------+--list-options-spec-+-----------
->
| | .-------------------------------. | |
| | V .-DSNUM--ALL----------. | | |
| '---object-+--------------------+-+-' |
| '-DSNUM--integer------' |
| .-DSNUM--ALL----------. |
+-object--+--------------------+--recover-options-spec-----+
| '-DSNUM--integer------' |
'-object--PAGE--page-number--+----------+------------------'
'-CONTINUE-'
.-LOGRANGES--YES-----.


>--+-------+--+--------------+--+--------------------+--------------------
-><  '-CLONE-'  +-LOCALSITE----+  |  |  '-RECOVERYSITE-'  '-LOGRANGES--NO------'
Object: >>-+-TABLESPACE--+----------------+-table-space-name-+---------------
-------><  |  '-database-name.-'  |  +-INDEXSPACE--+----------------+-index-
space-name-+  |  '-database-name.-'  |  '-INDEX--+-------------+-index-name------
---------'  '-creator-id.-'  List-options-spec:  .-BACKOUT--NO------.  >>-+------
------------+-------------------------------------------------->
   |          .-YES-.  |
   '-BACKOUT--+-----+-'
>--+-------------------------------------------------------------------+---->
   |                        .-VERIFYSET--YES-.  .-ENFORCE--YES-.       |
   +-TORBA—X'byte-string'--+----------------+--+--------------+------+
   |                        '-VERIFYSET--NO--'  '-ENFORCE--NO--'       |
   |                             .-VERIFYSET--YES-.  .-ENFORCE--YES-.  |
   '-TOLOGPOINT—X'byte-string'--+----------------+--+--------------+-'
                                '-VERIFYSET--NO--'  '-ENFORCE--NO--'
>--+-non-LOGONLY-options-spec-+-------------------------------------------><
'-LOGONLY-----------------'  Non-LOGONLY-options-spec:  >>-+-------+--+-------
---------+------------------------------------------->
   '-REUSE-'  '-CURRENTCOPYONLY-'
>--+-------------------------------------------------------------+------>
   '-PARALLEL-+--------------+-+--------------------------------+-'
              '-(num-objects)-'  '-TAPEUNITS--(--num-tape-units--)-'
>--+-------------------------------+---------------------------------------->
   '-RESTOREBEFORE--X'byte-string'-'
>--+-------------------------------+---------------------------------------->
   '-FROMDUMP--+-----------------+-'
               '-DUMPCLASS--(dcl)-'
>--+---------------------------+------------------------------------------->
   '-FLASHCOPY_PPRCP--+-NO-----+-'
                      +-PMNO---+
                      +-PMPREF-+
                      +-PMREQ -+
>--+-------------------------+------------------------------------------->
   '-ALTERNATE_CP(copy-pool)-'

Recover-options-spec:
            .-DSNUM--ALL---------.
>>-object--+--------------------+------------------------------------------>
            |                (1) |
            '-DSNUM--integer-----'

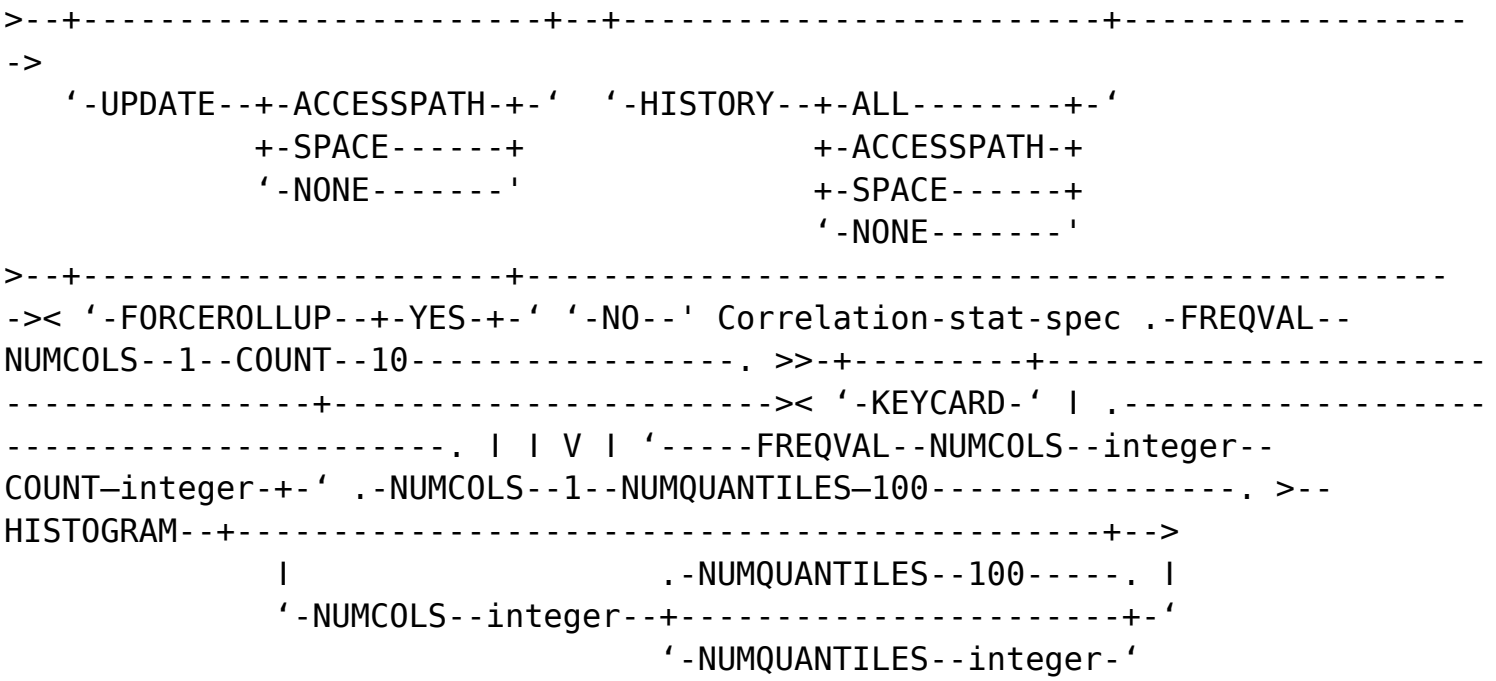
>--+-TOCOPY--data-set--+----------------+--tocopy-options-spec-+-><  |  '-
image-copy-spec-'  |  +-TOLASTCOPY--topcopy-options-spec----------------------
----+  +-TOLASTFULLCOPY--tocopy-options-spec-----------------------+  '-ERROR-
-RANGE-----------------------------------------'  Tocopy-options-spec  .-
ENFORCE--YES-.  >>-+-------+--+----------------+--+-------------+-----------

```
-->
   '-REUSE-'  '-CURRENTCOPYONLY-'  '-ENFORCE--NO--'

>--+-----------------------+----------------------------------->
   '-NOSYSCOPY--+---------+-'
                +-INLCOPY-+
                '-FCCOPY--'

>--+---------------------------+-----------------------------><
FLASHCOPY_PRCP--+-NO-----+-' +-PMNO---+ +-PMPREF-+ '-PMREQ —' Image-copy-
spec: >>-TOVOLUME-+-CATALOG----------------------+------------------><
vol-ser-+------------------+-'
                    '-TOSEQNO--integer-'
```

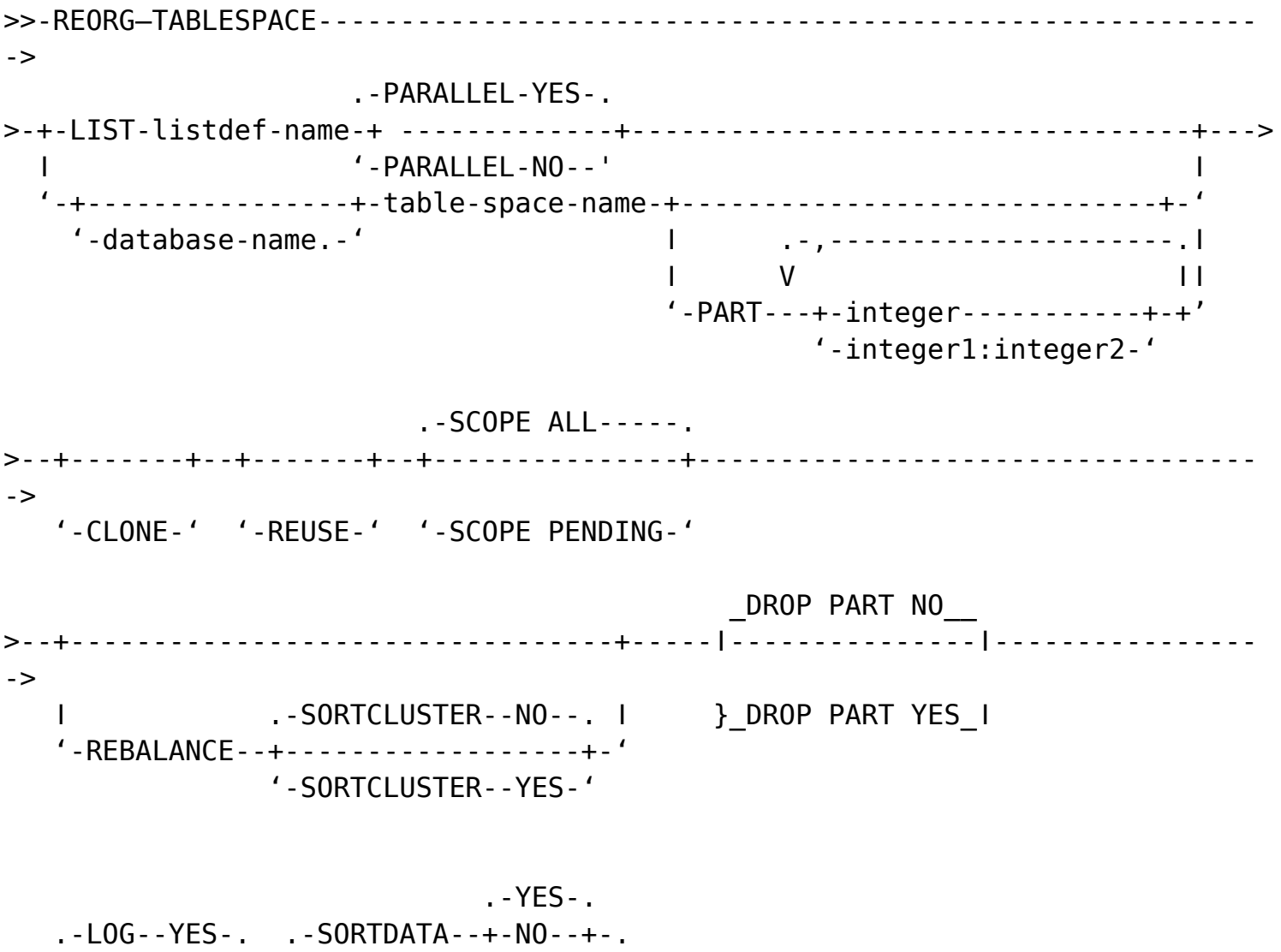
# REORG INDEX

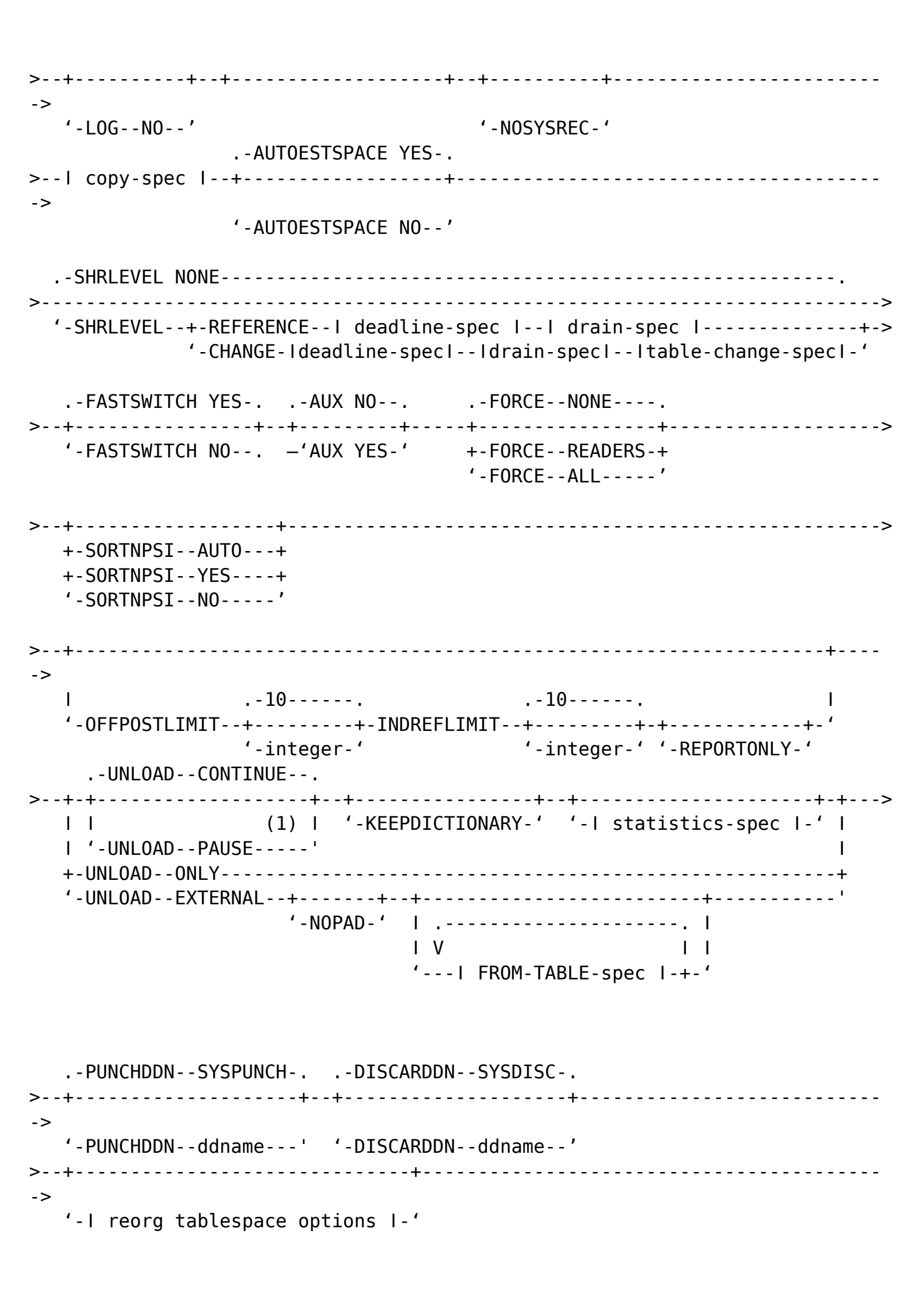
```
>>-REORG--+-INDEX--LIST--listdef-name-+--+-------+--+-------+------------>
          '-index-name-spec-----------'  '-REUSE-'   '-CLONE-'

   .-SHRLEVEL NONE-------------------------------------------------.
>--+-----------------------------------------------------------------+-------->
   '-SHRLEVEL-+-REFERENCE--deadline-spec--drain-spec-----------+-'
              '-CHANGE--deadline-spec--drain-spec--change-spec-'

   .-FASTSWITCH YES----.
>--+-------------------|------------------------------------------------>
   '-FASTSWITCH NO-----'

                                                    .-FORCE—NONE----.
>--+-------------------------------------------+----+--------------+------->
   '-LEAFDISTLIMIT-+---------+-+------------+-'    +-FORCE—READERS-+
                   '-integer-' '-REPORTONLY-'      '-FORCE--ALL----'

   .-UNLOAD—CONTINUE-------.
>--+-----------------------+--+----------------+------------------------->
   '-UNLOAD--+-PAUSE-----+-'  '-stats-spec------'
             '-ONLY------'
   .-WORKDDN--(SYSUT1)-.
>--+-------------------+--+----------+---------------------------------->
   '-WORKDDN--(ddname)-'  '-PREFORMAT-'
>--+-------------------------------------------------+------------------><
I .-NO---------. I '-FLASHCOPY--+-YES--------+--+------------------+-' '-
CONSISTENT-' '-FCCOPYDDN(ddname)-' >--+----------------------------------+---
------------------------------><  '-RBALRSN_CONVERSION--+-NONE-----+-' +-
BASIC----+ '-EXTENDED-' Index-name-spec >>-+-INDEX-+-------------+-index-
name--------------+---------------------->
```

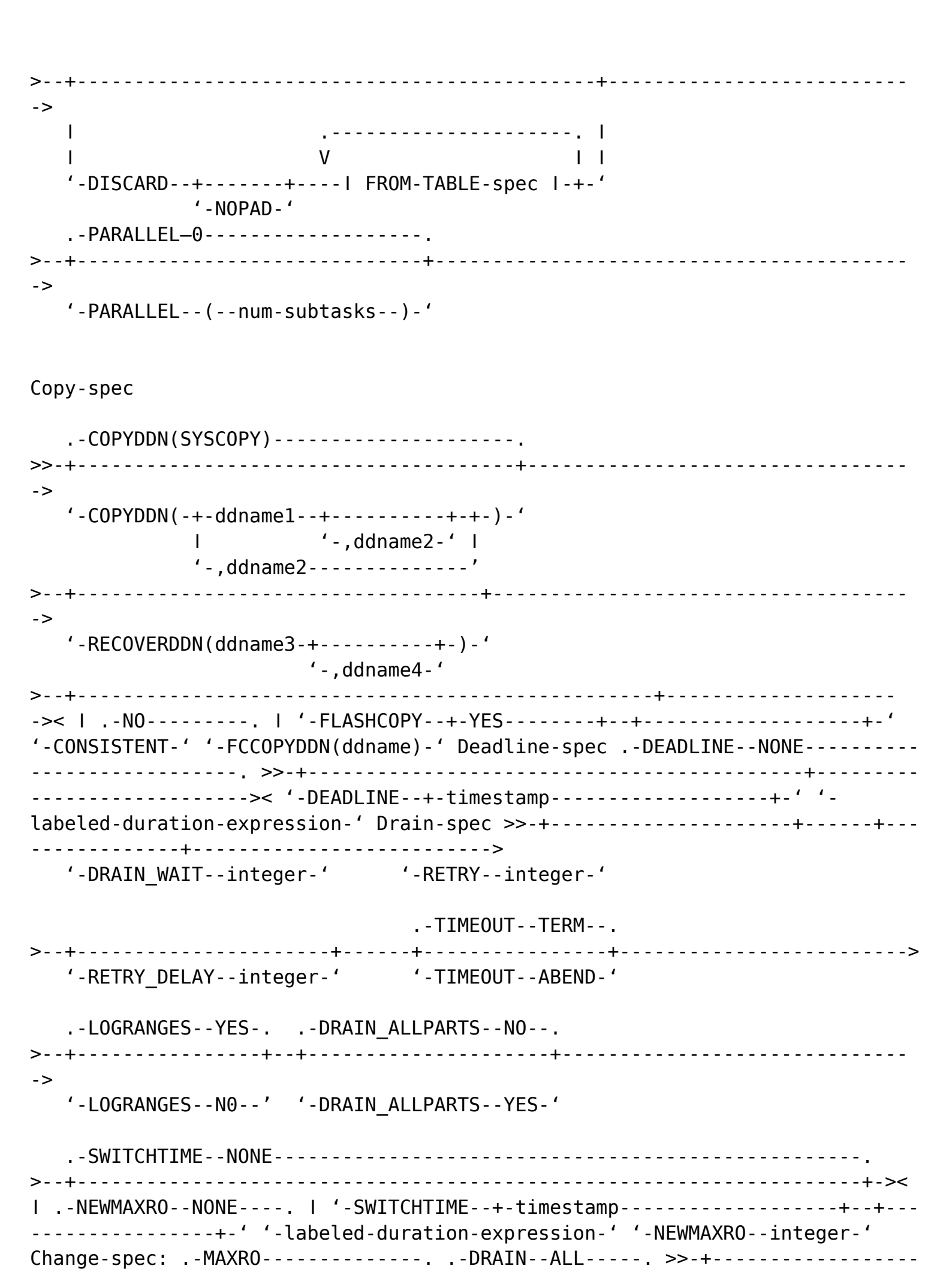
'-creator-id.-'
'-INDEXSPACE-+----------+-index-space-name-'
'-database-name.-'
'-PART--integer-' Deadline-spec .-DEADLINE--NONE----------.
.-DEADLINE--+-timestamp----------+-' '-labeled-duration-expression-'
Drain-spec .-DRAIN_WAIT--integer-'
'-RETRY--integer-'
_TIMEOUT TERM---
'-RETRY_DELAY--integer-' |-TIMEOUT ABEND__| Change-spec .-DRAIN--ALL-----.
(1)
'-MAXRO--+-integer-+-----'
'-DEFER---'
.-LONGLOG--CONTINUE--.
'-LONGLOG--+-TERM--+-'
'-DRAIN-'
.-DELAY--1200----.
'-DELAY--integer-'
.-LOGRANGES--YES-.
'-LOGRANGES--NO--'
.-SWITCHTIME--NONE----------.
| .-NEWMAXRO--NONE----. | '-SWITCHTIME--+-timestamp----------+--+-
'-labeled-duration-expression-' '-NEWMAXRO--integer-'
Labelled-duration-expression .-CURRENT_DATE----------.
'-CURENT_TIMESTAMP---+----------+-----'
'-WITH TIME ZONE-'
.----------.
+ -+--constant--+-YEAR---------+-+
+-YEARS--------+ +-MONTH--------+ +-MONTHS-------+ +-DAY----------+ +-
DAYS---------+ +-HOUR---------+ +-HOURS--------+ +-MINUTE-------+ +-MINUTES-
----+ +-SECOND-------+ +-SECONDS------+ +-MICROSECOND--+ +-MICROSECONDS-+
Stats-spec .-REPORT--NO--. STATISTICS--+----------+--correlation-stats-
spec
'-REPORT--YES-'
.-UPDATE-ALL----------.



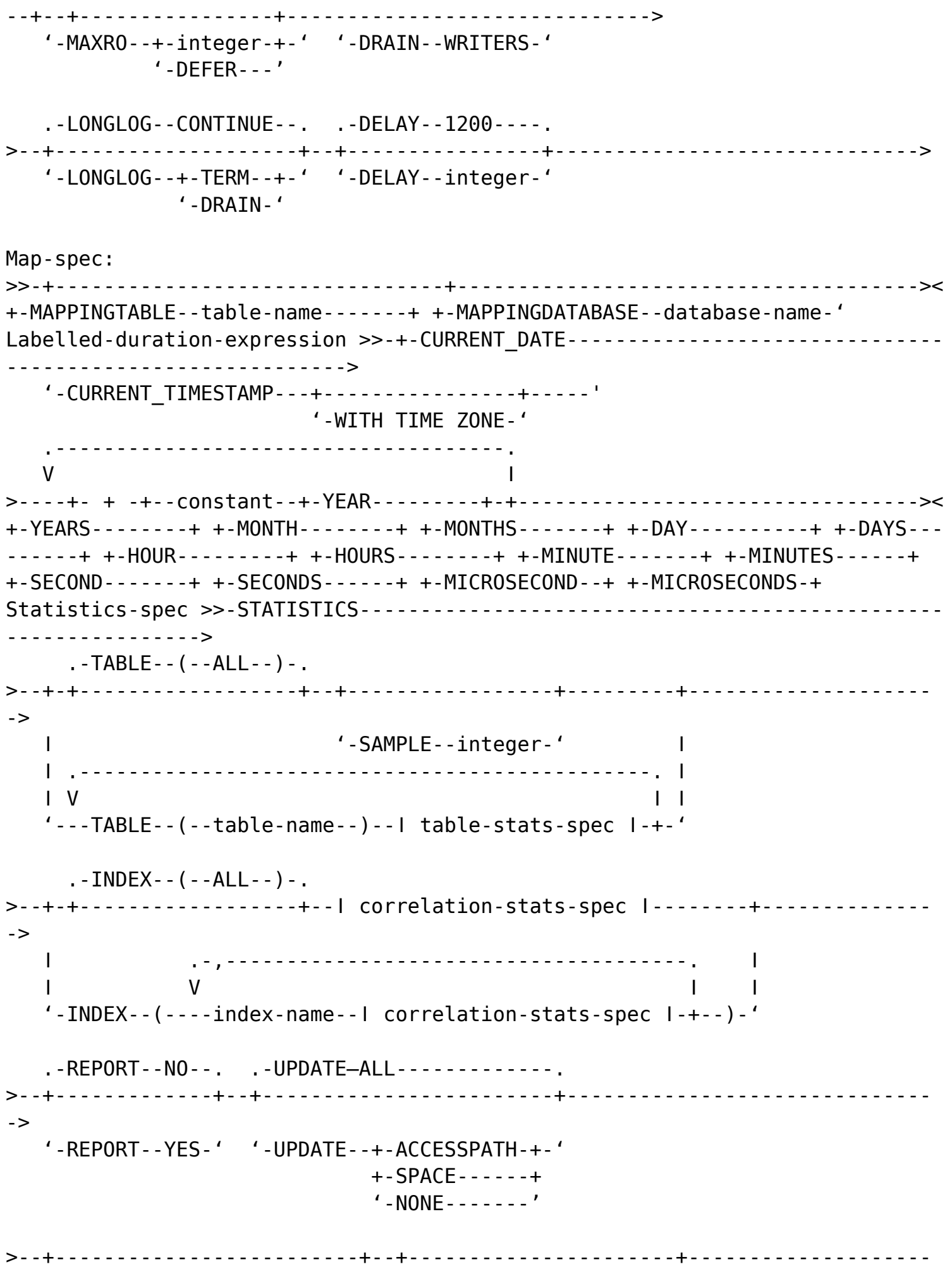

# REORG TABLESPACE

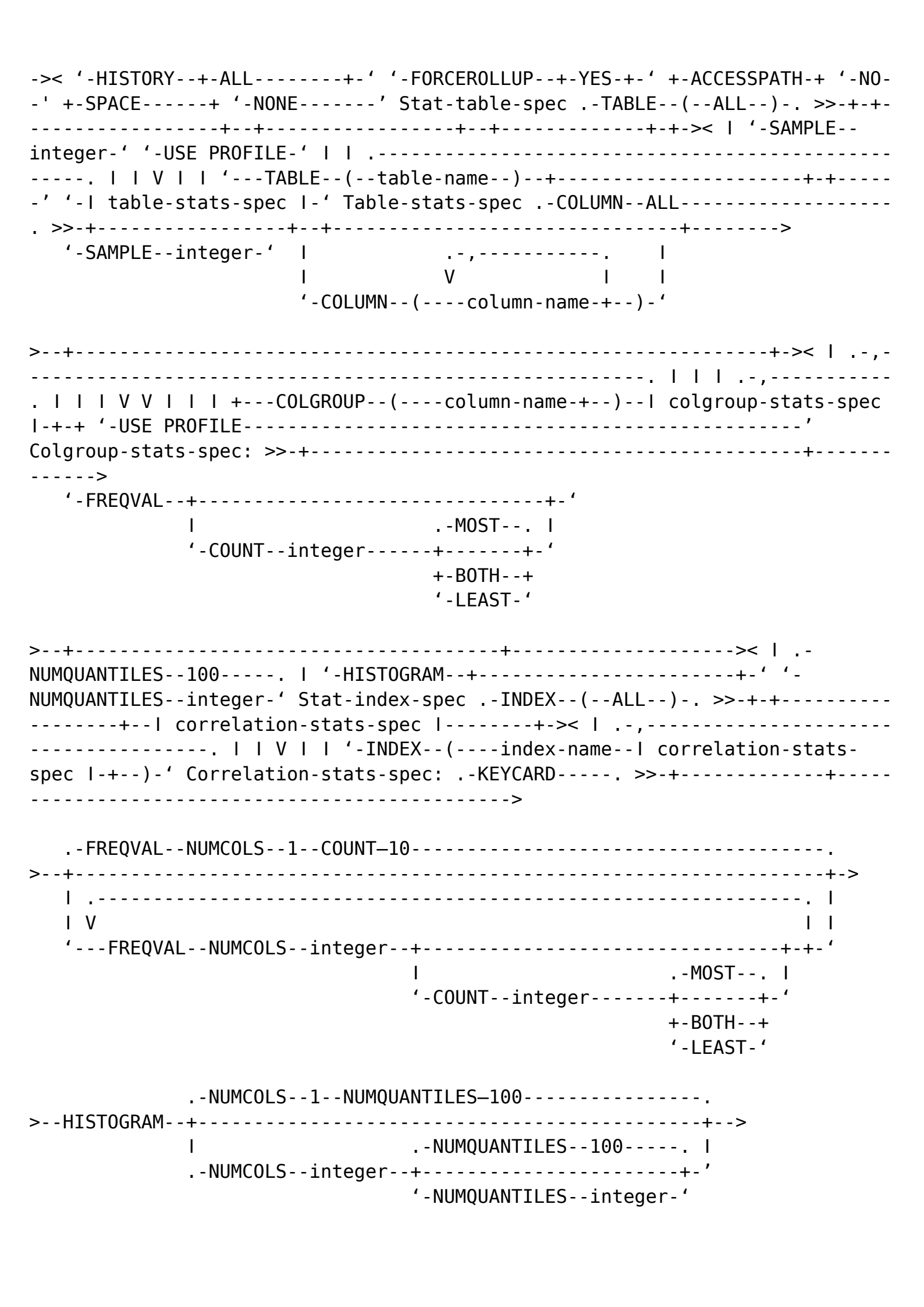



-LOG--NO--'
'-NOSYSREC-'
.-AUTOESTSPACE YES-.
copy-spec
'-AUTOESTSPACE NO--'
.-SHRLEVEL NONE-
'-SHRLEVEL--+-REFERENCE--
deadline-spec
drain-spec
'-CHANGE-
table-change-spec
.-FASTSWITCH YES-.
.-AUX NO--.
.-FORCE--NONE----.
'-FASTSWITCH NO--.
'AUX YES-'
+-FORCE--READERS-+
'-FORCE--ALL-----'
+-SORTNPSI--AUTO---+
+-SORTNPSI--YES----+
'-SORTNPSI--NO-----'
.-10------.
'-OFFPOSTLIMIT--+
'-integer-'
-INDREFLIMIT--
'-integer-'
'-REPORTONLY-'
.-UNLOAD--CONTINUE--.
(1)
'-KEEPDICTIONARY-'
'-I statistics-spec I-'
'-UNLOAD--PAUSE-----'
+-UNLOAD--ONLY-
'-UNLOAD--EXTERNAL--+-------+--
'-NOPAD-'
FROM-TABLE-spec
.-PUNCHDDN--SYSPUNCH-.
.-DISCARDDN--SYSDISC-.
'-PUNCHDDN--ddname---'
'-DISCARDDN--ddname--'
'-I reorg tablespace options I-'

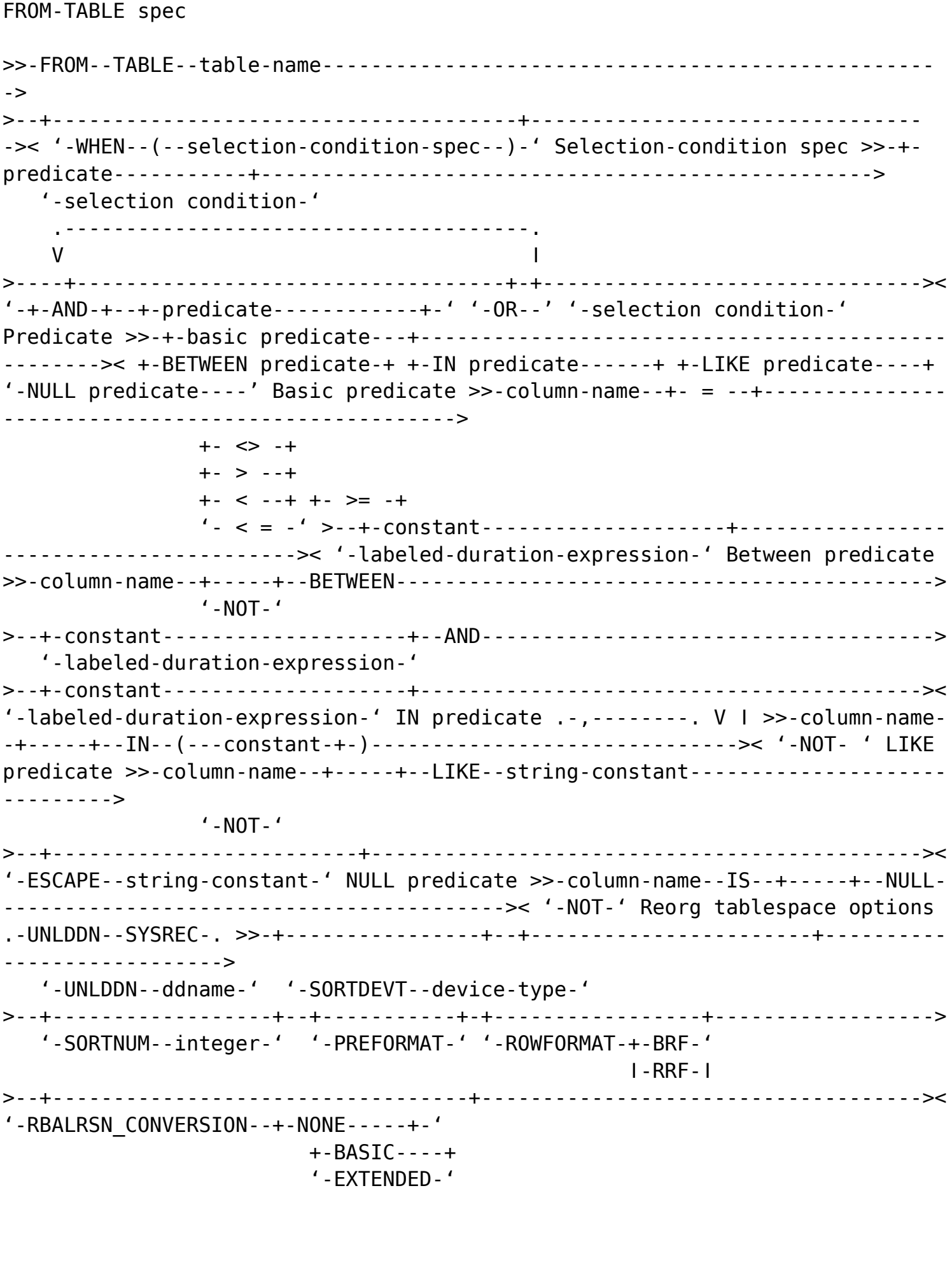


```
>--+-------------------------------------------+-------------------------
->
   |                    .--------------------. |
   |                    V                    | |
   `-DISCARD--+-------+----| FROM-TABLE-spec |-+-`
              `-NOPAD-`
   .-PARALLEL—0------------------.
>--+-----------------------------+-----------------------------------------
->
   `-PARALLEL--(--num-subtasks--)-`


Copy-spec

   .-COPYDDN(SYSCOPY)--------------------.
>>-+-------------------------------------+--------------------------------
->
   `-COPYDDN(-+-ddname1--+----------+-+-)-`
              |          `-,ddname2-` |
              `-,ddname2--------------'
>--+----------------------------------+-----------------------------------
->
   `-RECOVERDDN(ddname3-+----------+-)-`
                        `-,ddname4-`
>--+-------------------------------------------------+-------------------
-><| .-NO---------. | `-FLASHCOPY--+-YES--------+--+-------------------+-`
`-CONSISTENT-` `-FCCOPYDDN(ddname)-` Deadline-spec .-DEADLINE--NONE----------
------------------. >>-+-------------------------------------------+---------
------------------><| `-DEADLINE--+-timestamp-------------------+-` `-
labeled-duration-expression-` Drain-spec >>-+---------------------+------+---
-------------+-------------------------->
   `-DRAIN_WAIT--integer-`      `-RETRY--integer-`

                                 .-TIMEOUT--TERM--.
>--+---------------------+------+----------------+------------------------>
   `-RETRY_DELAY--integer-`      `-TIMEOUT--ABEND-`

   .-LOGRANGES--YES-.  .-DRAIN_ALLPARTS--NO--.
>--+----------------+--+---------------------+-----------------------------
->
   `-LOGRANGES--N0--'  `-DRAIN_ALLPARTS--YES-`

   .-SWITCHTIME--NONE-------------------------------------------------.
>--+-------------------------------------------------------------------+-><
| .-NEWMAXRO--NONE----. | `-SWITCHTIME--+-timestamp-------------------+--+---
----------------+-` `-labeled-duration-expression-` `-NEWMAXRO--integer-`
Change-spec: .-MAXRO--------------. .-DRAIN--ALL-----. >>-+------------------
```

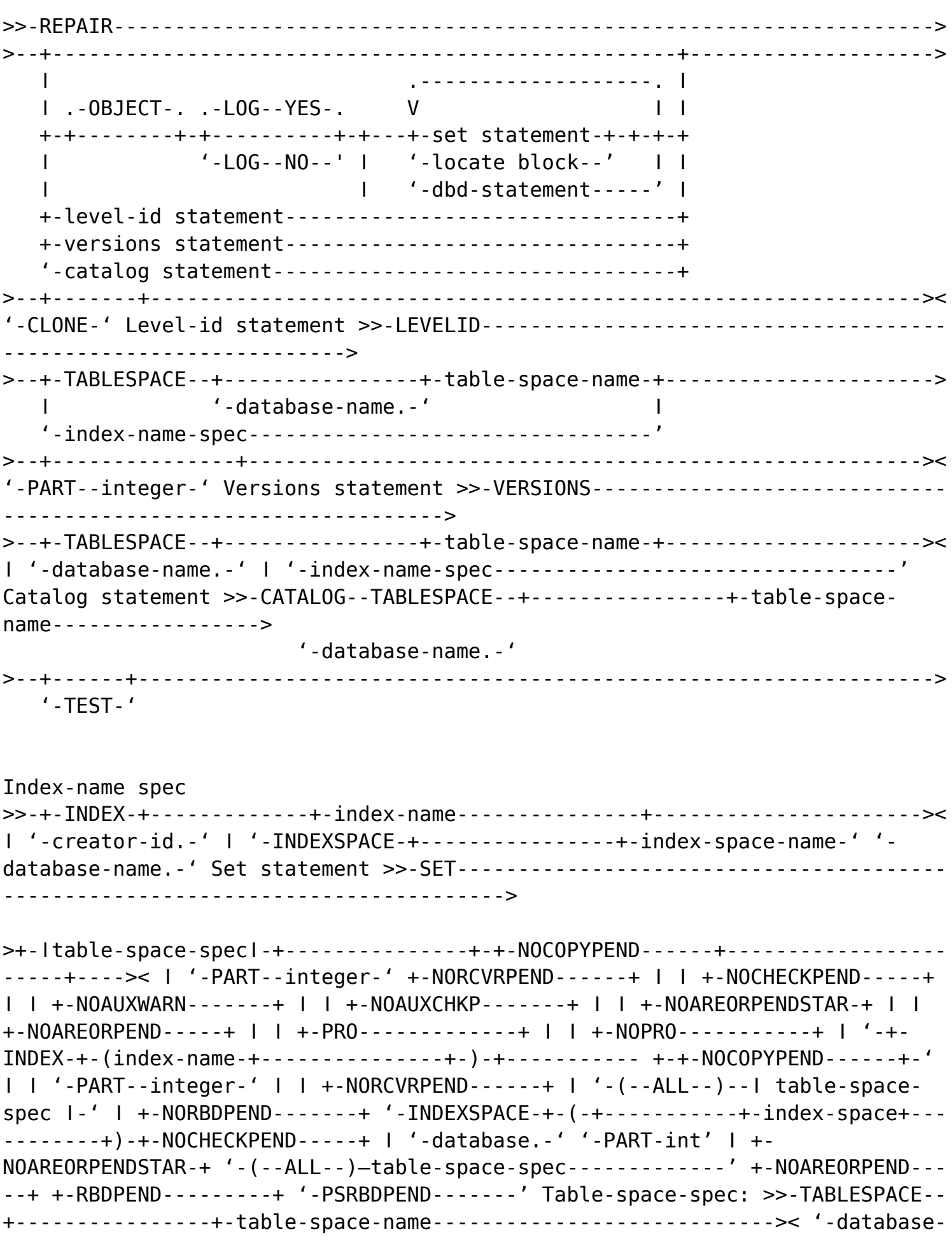

--+--+----------------+----------------------------->
'-MAXRO--+-integer-+-' '-DRAIN--WRITERS-'
'-DEFER---'
.-LONGLOG--CONTINUE--. .-DELAY--1200----.
>--+-------------------+--+---------------+----------------------------->
'-LONGLOG--+-TERM--+-' '-DELAY--integer-'
'-DRAIN-'
Map-spec:
>>-+--------------------------------+-------------------------------------><
+-MAPPINGTABLE--table-name-------+ +-MAPPINGDATABASE--database-name-'
Labelled-duration-expression >>-+-CURRENT_DATE-----------------------------
--------------------------->
'-CURRENT_TIMESTAMP---+----------------+-----'
'-WITH TIME ZONE-'
.--------------------------------------.
V |
>----+- + -+--constant--+-YEAR---------+-+-------------------------------><
+-YEARS--------+ +-MONTH--------+ +-MONTHS-------+ +-DAY----------+ +-DAYS---
------+ +-HOUR---------+ +-HOURS--------+ +-MINUTE-------+ +-MINUTES------+
+-SECOND-------+ +-SECONDS------+ +-MICROSECOND--+ +-MICROSECONDS-+
Statistics-spec >>-STATISTICS----------------------------------------------
---------------->
.-TABLE--(--ALL--)-.
>--+-+------------------+--+----------------+---------+-------------------
->
| '-SAMPLE--integer-' |
| .---------------------------------------------. |
| V | |
'---TABLE--(--table-name--)--| table-stats-spec |-+-'
.-INDEX--(--ALL--)-.
>--+-+------------------+--| correlation-stats-spec |--------+-------------
->
| .-,-----------------------------------. |
| V | |
'-INDEX--(----index-name--| correlation-stats-spec |-+--)-'
.-REPORT--NO--. .-UPDATE—ALL-------------.
>--+-------------+--+-----------------------+-----------------------------
->
'-REPORT--YES-' '-UPDATE--+-ACCESSPATH-+-'
+-SPACE------+
'-NONE-------'
>--+-----------------------+--+--------------------+------------------


-><
'-HISTORY--+-ALL--------+-'
'-FORCEROLLUP--+-YES-+-'
+-ACCESSPATH-+
'-NO-
-'
+-SPACE------+
'-NONE-------'
Stat-table-spec
.-TABLE--(--ALL--)-.
>>-+-+-
integer-'
'-USE PROFILE-'
'---TABLE--(--table-name--)--+----------+-+-----
-'
'-I table-stats-spec I-'
Table-stats-spec
.-COLUMN--ALL-
. >>-+-
'-SAMPLE--integer-'
.-,----------.
'-COLUMN--(----column-name-+--)-'
>--+-
. I I I V V I I I +---COLGROUP--(----column-name-+--)--I colgroup-stats-spec
I-+-+
'-USE PROFILE-
Colgroup-stats-spec: >>-+-
------>
'-FREQVAL--+-
.-MOST--. I
'-COUNT--integer------+-------+-'
+-BOTH--+
'-LEAST-'
>--+-
NUMQUANTILES--100-----. I
'-HISTOGRAM--+-
NUMQUANTILES--integer-'
Stat-index-spec
.-INDEX--(--ALL--)-. >>-+-+-
--------+--I correlation-stats-spec I--------+-><
.-,-
. I I V I I
'-INDEX--(----index-name--I correlation-stats-
spec I-+--)-'
Correlation-stks-spec:
.-KEYCARD-----. >>-+-
.-FREQVAL--NUMCOLS--1--COUNT—10-
'---FREQVAL--NUMCOLS--integer--+-
.-MOST--. I
'-COUNT--integer-------+-------+-'
+-BOTH--+
'-LEAST-'
.-NUMCOLS--1--NUMQUANTILES—100-
>--HISTOGRAM--+-
.-NUMQUANTILES--100-----. I
.-NUMCOLS--integer--+-
'-NUMQUANTILES--integer-'

FROM-TABLE spec



# REPAIR


>>-REPAIR
.-OBJECT-. .-LOG--YES-.
'-LOG--NO--'
'-set statement
'-locate block--'
'-dbd-statement-----'
+-level-id statement
+-versions statement
'-catalog statement
'-CLONE-' Level-id statement >>-LEVELID
>--+-TABLESPACE--+
'-database-name.-'
'-index-name-spec
'-PART--integer-' Versions statement >>-VERSIONS
| '-database-name.-' | '-index-name-spec
Catalog statement >>-CATALOG--TABLESPACE--+
name
'-database-name.-'
'-TEST-'
Index-name spec
>>-+-INDEX-+
| '-creator-id.-' | '-INDEXSPACE-+
database-name.-' Set statement >>-SET
>+-|table-space-spec|-+
'-PART--integer-' +-NORCVRPEND------+
+-NOAUXWARN-------+
+-NOAREORPEND-----+
INDEX-+-(index-name-+
'-PART--integer-'
spec |-'
NOAREORPENDSTAR-+ '-(--ALL--)—table-space-spec-------------' +-NOAREORPEND-----+ +-RBDPEND---------+ '-PSRBDPEND-------' Table-space-spec: >>-TABLESPACE--+
name-------------------------><
'-database-

name.-‘

# REPORT

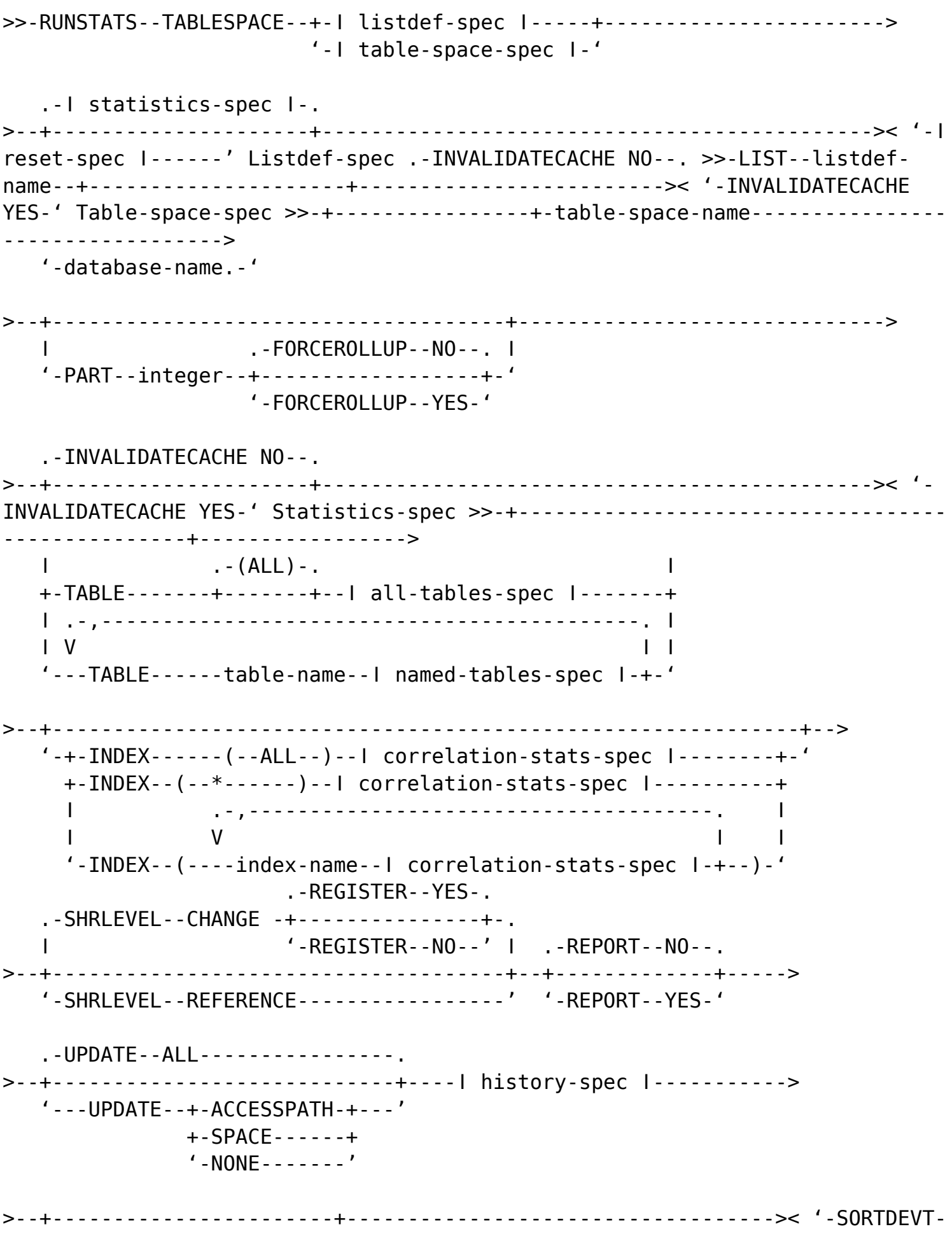
```
>>-REPORT------------------------------------------------------------------>
                                                  .-INDEX NONE-.
>-+-RECOVERY-+-TABLESPACE+-LIST-listdef-name---+-+-----------+-+-+----+-+--><
| | ‘-tablespace-name-spec’ ‘-INDEX ALL-‘ | ‘info’ | | ‘-index-list-spec-----
---------------------------’ | ‘-TABLESPACESET--+------------+--table-space-
name-spec--+----------+--’ ‘-TABLESPACE-‘ ‘-SHOWDSNS-‘ Index-list-spec >>-+-
INDEXSPACE--+-+----------------+-index-space-name-+-+-----------------><  | |
‘-database-name.-‘ | | | ‘-LIST—listdef-name-------------------’ | ‘-INDEX--
+-+-------------+-index-name-+---------------’ | ‘-creator-id.-‘ | ‘-LIST--
listdef-name---------’ Info-options .-DSNUM--ALL-----. >>-+----------------+-
-+---------+--+---------+---------------------------->
   ‘-DSNUM--integer-‘  ‘-CURRENT-‘  ‘-SUMMARY-‘
                                   .-ARCHLOG--1-------.
>--+-----------+--+-------------+--+------------------+-------------------><
‘-LOCALSITE-‘ ‘-RECOVERYSITE-‘ ‘-ARCHLOG--+-2---+-‘ ‘-ALL-‘ Table-space-name-
spec >>-+----------------+--table-space-name--------------------------------
---><  ‘-database-name.-‘
```

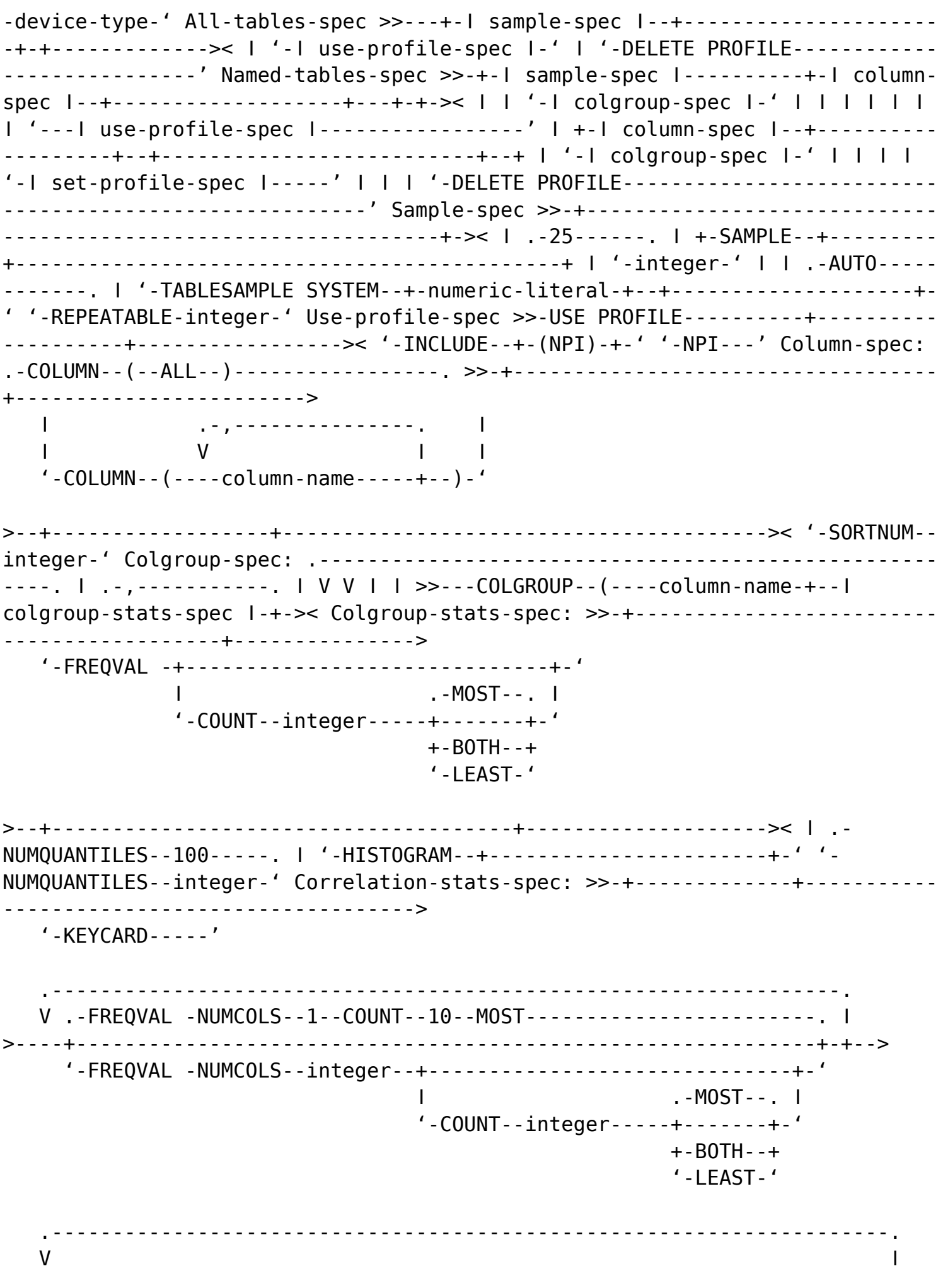
# RESTORE SYSTEM

```
>>-RESTORE SYSTEM---------------------------------------------------------->
>--+-| non-LOGONLY spec |---------------------------------------+-------><  ‘-
LOGONLY--+-------------------------------------------------+-‘ ‘-SWITCH VCAT--
+-------------------------+-‘ ‘-SYSVALUEDDN(ddname)-‘ Non-LOGONLY spec >>-+-
-----------------------+------------------------------------------->
   ‘-ALTERNATE_CP(copy-pool)-‘
>--+-------------------------------+------------------------------------>
   ‘-RESTOREBEFORE-- X’byte-string’-‘
>-+-------------------------------------------------------------------+->
  +-FROMDUMP-+-----------------++-----------------++-------------------+-+
  |          ‘-DUMPCLASS-(dcl)-‘’-RSA-(key-label)-‘‘—TAPEUNITS-+-------+-‘
  |                                                            ‘units’   |
  ‘-FLASHCOPY_PPRCP--+-NO-----+-----------------------------------------’
                     +-PMNO---+
                     +-PMPREF-+
                     ‘-PMREQ —‘
```

# RUNSTATS

```
>>-RUNSTATS--TABLESPACE--+-I listdef-spec I-----+----------------------->
                         '-I table-space-spec I-'

   .-I statistics-spec I-.
>--+--------------------+-------------------------------------------><  '-I
reset-spec I------' Listdef-spec .-INVALIDATECACHE NO--. >>-LIST--listdef-
name--+--------------------+-----------------------><  '-INVALIDATECACHE
YES-' Table-space-spec >>-+----------------+-table-space-name---------------
------------------>
   '-database-name.-'

>--+-----------------------------------+----------------------------->
   I                .-FORCEROLLUP--NO--. I
   '-PART--integer--+------------------+-'
                    '-FORCEROLLUP--YES-'

   .-INVALIDATECACHE NO--.
>--+--------------------+-------------------------------------------><  '-
INVALIDATECACHE YES-' Statistics-spec >>-+---------------------------------
---------------+----------------->
   I             .-(ALL)-.                           I
   +-TABLE-------+-------+--I all-tables-spec I-------+
   I .-,-------------------------------------------. I
   I V                                             I I
   '---TABLE------table-name--I named-tables-spec I-+-'

>--+-------------------------------------------------------------+-->
   '-+-INDEX------(--ALL--)--I correlation-stats-spec I--------+-'
     +-INDEX--(--*------)--I correlation-stats-spec I----------+
     I           .-,-------------------------------------.    I
     I           V                                       I    I
     '-INDEX--(----index-name--I correlation-stats-spec I-+--)-'
                      .-REGISTER--YES-.
   .-SHRLEVEL--CHANGE -+---------------+-.
   I                   '-REGISTER--NO--' I  .-REPORT--NO--.
>--+-----------------------------------+--+-------------+----->
   '-SHRLEVEL--REFERENCE-----------------'  '-REPORT--YES-'

   .-UPDATE--ALL----------------.
>--+---------------------------+----I history-spec I----------->
   '---UPDATE--+-ACCESSPATH-+---'
               +-SPACE------+
               '-NONE-------'

>--+----------------------+---------------------------------><  '-SORTDEVT-
```



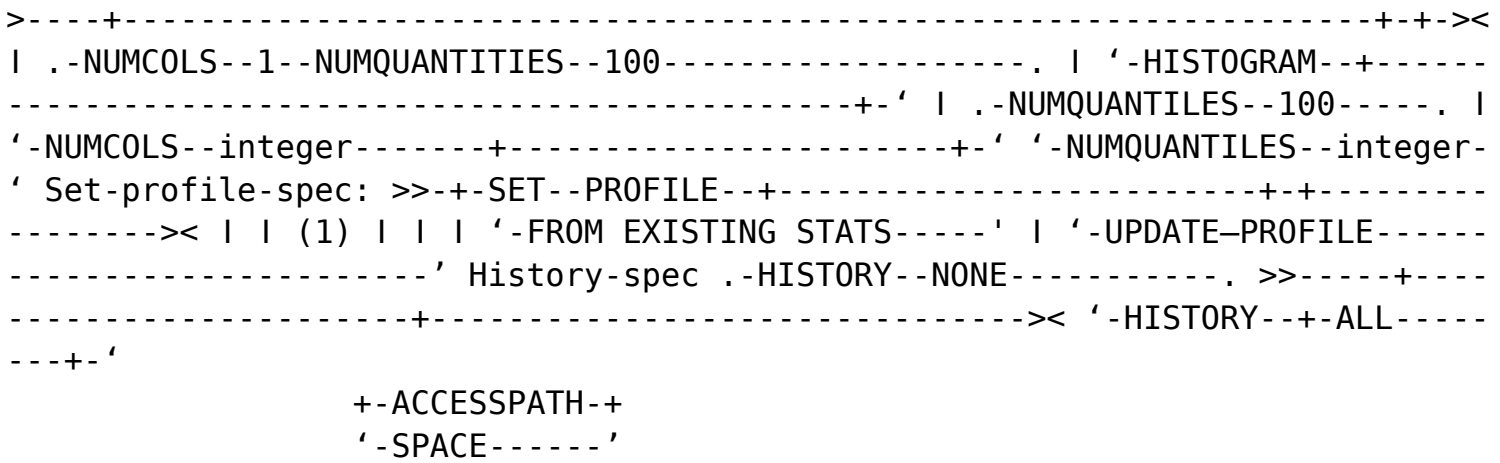

-device-type-‘ All-tables-spec >>---+-I sample-spec I--+-------------------
-+-+------------>< I ‘-I use-profile-spec I-‘ I ‘-DELETE PROFILE-----------
---------------’ Named-tables-spec >>-+-I sample-spec I----------+-I column-
spec I--+------------------+---+-+-><  I I ‘-I colgroup-spec I-‘ I I I I I I
I ‘---I use-profile-spec I----------------’ I +-I column-spec I--+----------
---------+--+-------------------------+--+ I ‘-I colgroup-spec I-‘ I I I I
‘-I set-profile-spec I-----’ I I I ‘-DELETE PROFILE-------------------------
-----------------------------’ Sample-spec >>-+----------------------------
-----------------------------------+-><  I .-25------. I +-SAMPLE--+---------
+-----------------------------------------+ I ‘-integer-‘ I I .-AUTO-----
-------. I ‘-TABLESAMPLE SYSTEM--+-numeric-literal-+--+-------------------+-
‘ ‘-REPEATABLE-integer-‘ Use-profile-spec >>-USE PROFILE----------+----------
----------+-----------------><  ‘-INCLUDE--+-(NPI)-+-‘ ‘-NPI---’ Column-spec:
.-COLUMN--(--ALL--)-----------------. >>-+---------------------------------
+------------------------>
   I            .-,---------------.    I
   I            V                 I    I
   ‘-COLUMN--(----column-name-----+--)-‘

>--+-----------------+-----------------------------------------><  ‘-SORTNUM--
integer-‘ Colgroup-spec: .-------------------------------------------------
----. I .-,-----------. I V V I I >>---COLGROUP--(----column-name-+--I
colgroup-stats-spec I-+-><  Colgroup-stats-spec: >>-+-----------------------
-----------------+--------------->
   ‘-FREQVAL -+-----------------------------+-‘
              I                     .-MOST--. I
              ‘-COUNT--integer-----+-------+-‘
                                   +-BOTH--+
                                   ‘-LEAST-‘

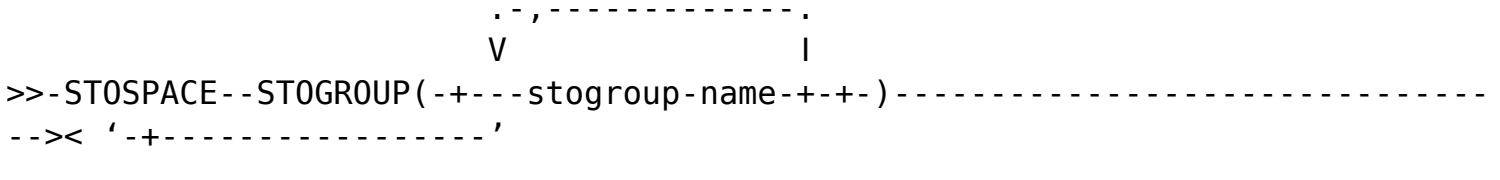
>--+-------------------------------------+-------------------><  I .-
NUMQUANTILES--100-----. I ‘-HISTOGRAM--+-----------------------+-‘ ‘-
NUMQUANTILES--integer-‘ Correlation-stats-spec: >>-+-------------+-----------
---------------------------------->
   ‘-KEYCARD-----’

   .-------------------------------------------------------------.
   V .-FREQVAL -NUMCOLS--1--COUNT--10--MOST-----------------------. I
>----+-------------------------------------------------------------+-+-->
     ‘-FREQVAL -NUMCOLS--integer--+-----------------------------+-‘
                                  I                     .-MOST--. I
                                  ‘-COUNT--integer-----+-------+-‘
                                                       +-BOTH--+
                                                       ‘-LEAST-‘

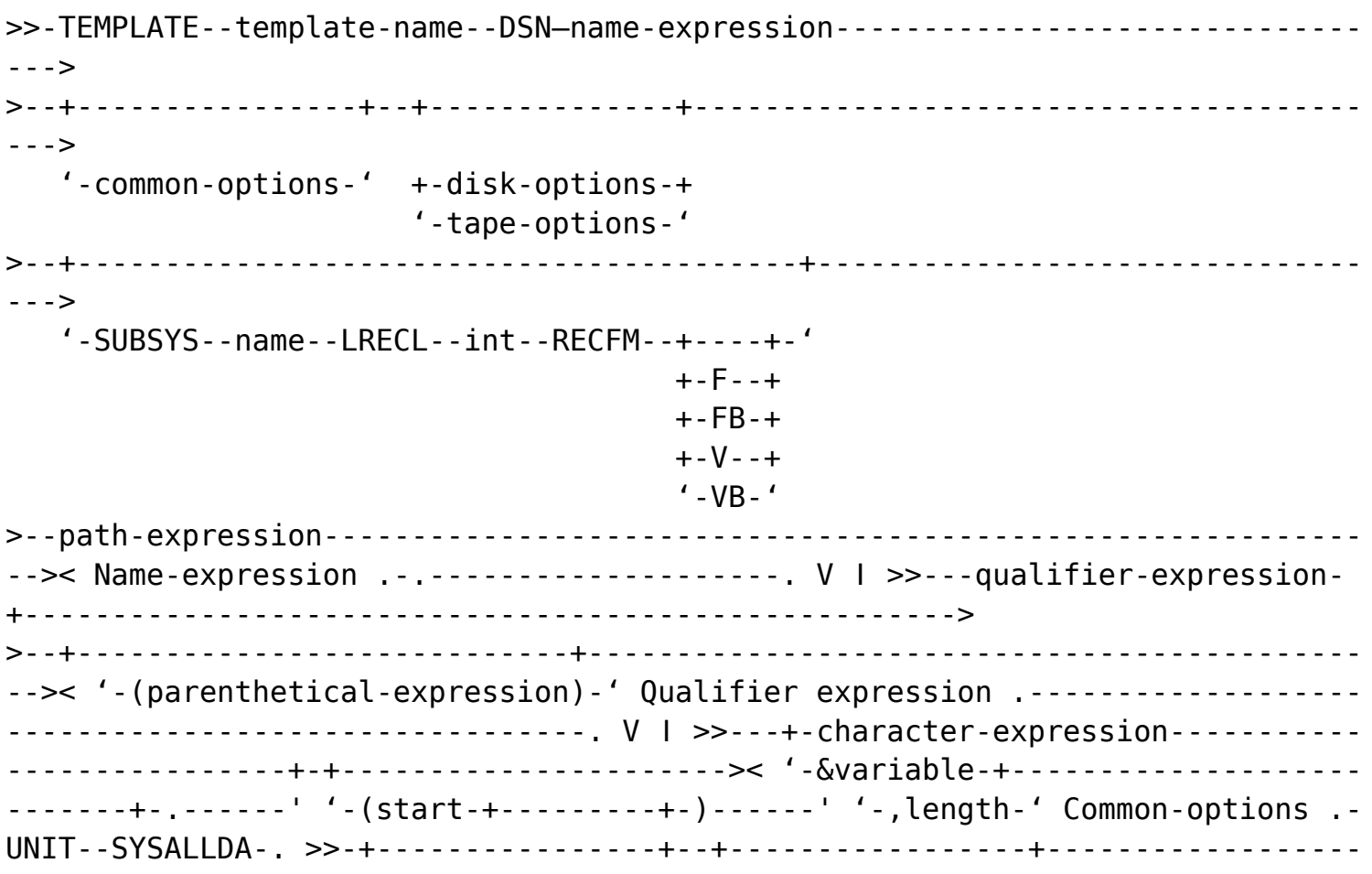
   .-------------------------------------------------------------------.
   V                                                                   I

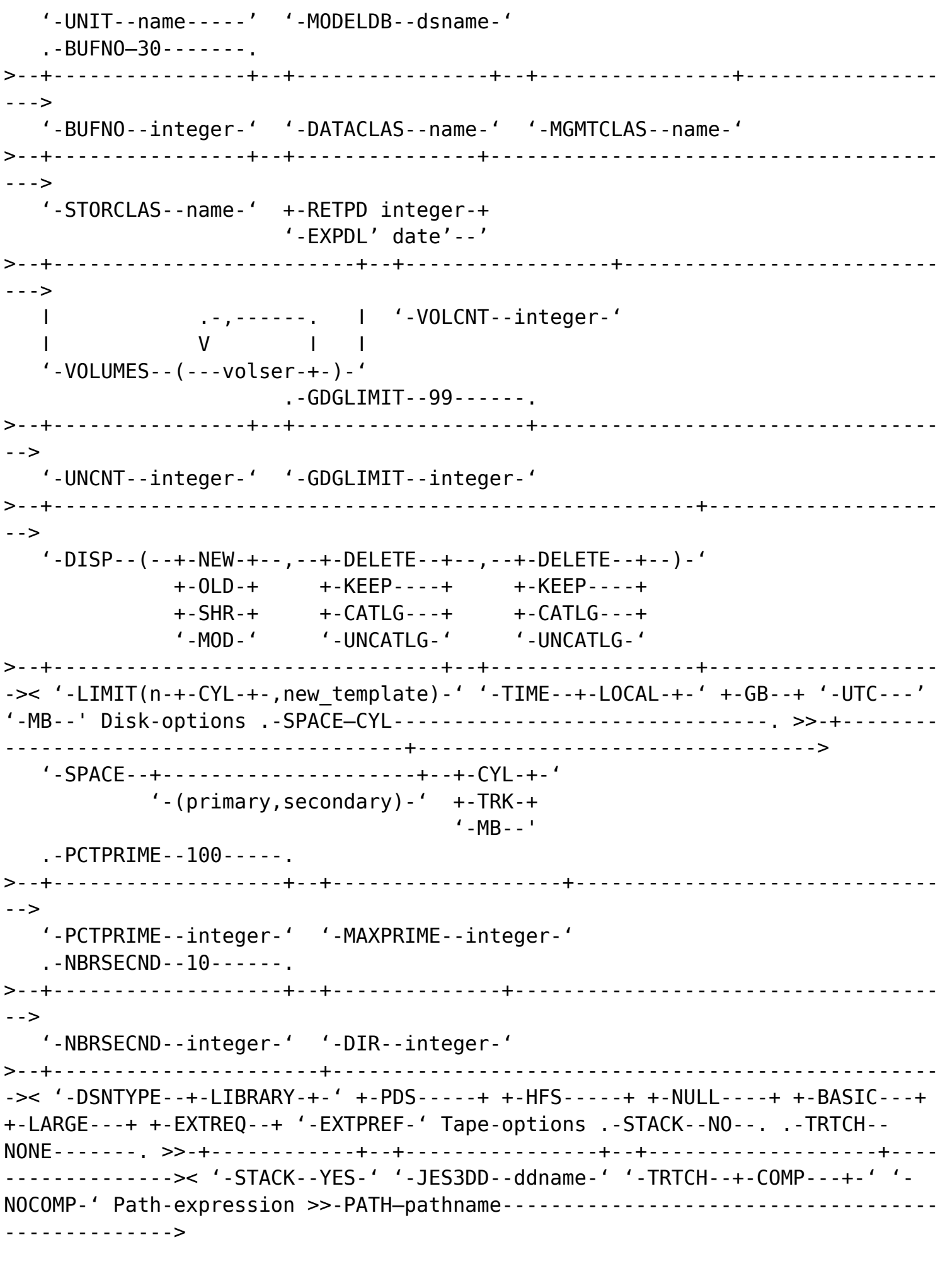


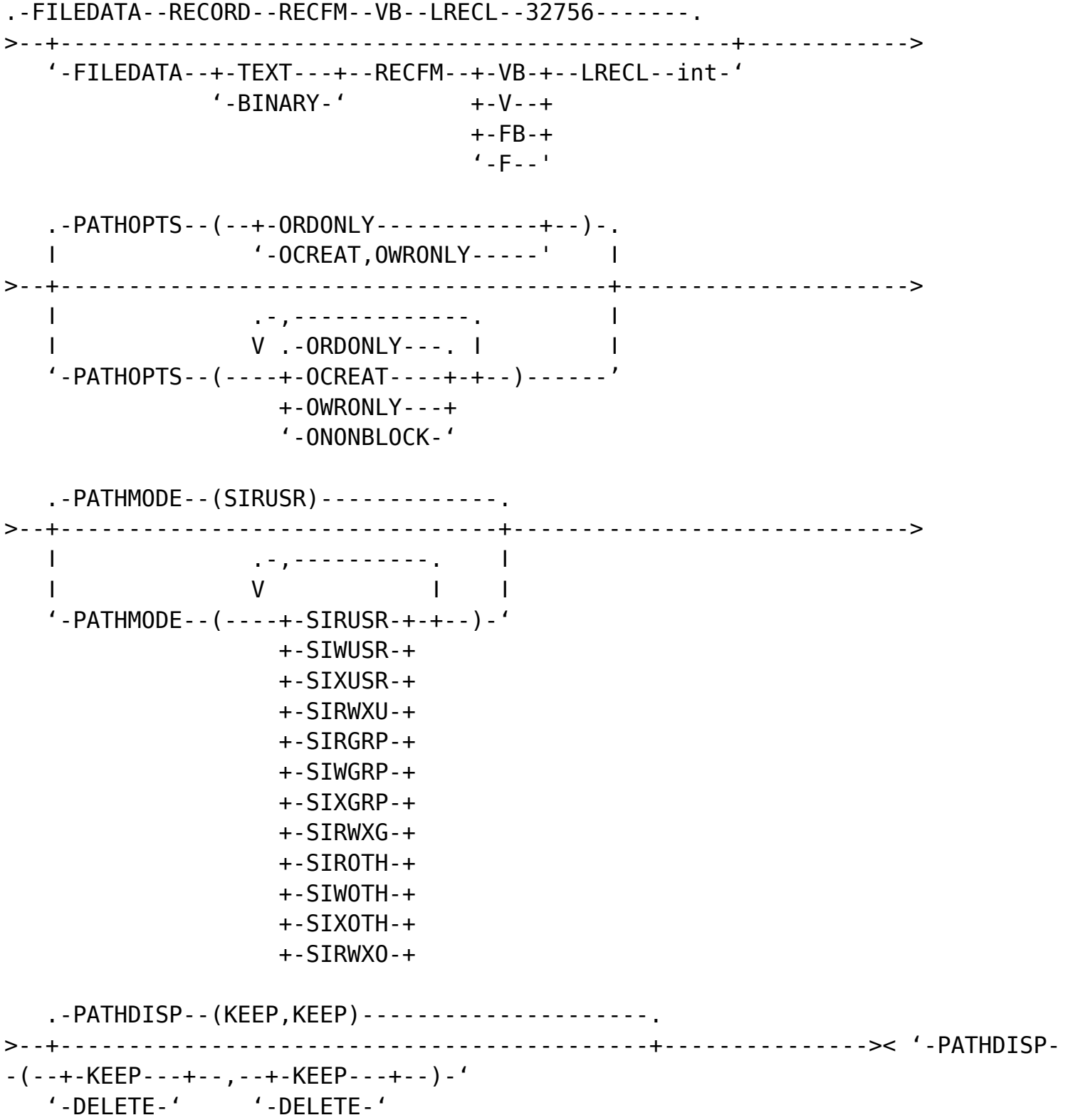

# STOSPACE



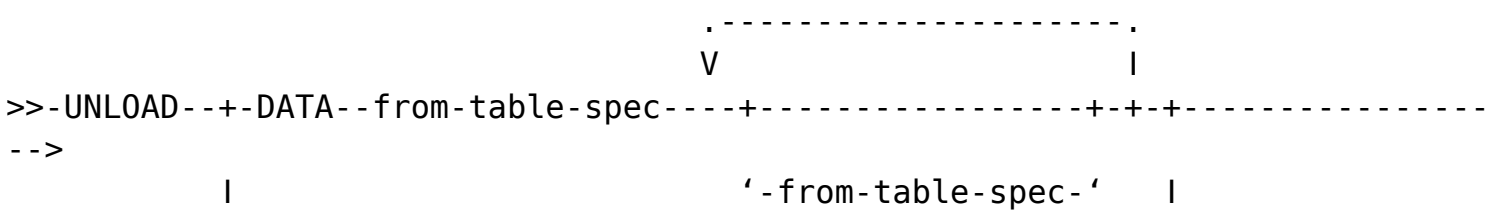

# TEMPLATE




'-UNIT--name-----'  '-MODELDB--dsname-'
.-BUFNO—30-------.
'-BUFNO--integer-'  '-DATACLAS--name-'  '-MGMTCLAS--name-'
'-STORCLAS--name-'  +-RETPD integer-+
'-EXPDL' date'--'
'-VOLCNT--integer-'
'-VOLUMES--(---volser-+-)-'
.-GDGLIMIT--99------.
'-UNCNT--integer-'  '-GDGLIMIT--integer-'
'-DISP--(--+-NEW-+--,--+-DELETE--+--,--+-DELETE--+--)-'
+-OLD-+  +-KEEP----+  +-KEEP----+
+-SHR-+  +-CATLG---+  +-CATLG---+
'-MOD-'  '-UNCATLG-'  '-UNCATLG-'
'-LIMIT(n-+-CYL-+-,new_template)-' '-TIME--+-LOCAL-+-' +-GB--+ '-UTC---'
'-MB--' Disk-options .-SPACE—CYL-------------------------------. >>-+--------
'-SPACE--+--------------------+--+-CYL-+-'
'-(primary,secondary)-'  +-TRK-+
'-MB--'
.-PCTPRIME--100-----.
'-PCTPRIME--integer-'  '-MAXPRIME--integer-'
.-NBRSECND--10------.
'-NBRSECND--integer-'  '-DIR--integer-'
-><  '-DSNTYPE--+-LIBRARY-+-' +-PDS-----+ +-HFS-----+ +-NULL----+ +-BASIC---+
+-LARGE---+ +-EXTREQ--+ '-EXTPREF-' Tape-options .-STACK--NO--. .-TRTCH--
NONE-------. >>-+------------+--+----------------+--+------------------+----
-------------><  '-STACK--YES-' '-JES3DD--ddname-' '-TRTCH--+-COMP---+-' '-
NOCOMP-' Path-expression >>-PATH—pathname-----------------------------------
------------>

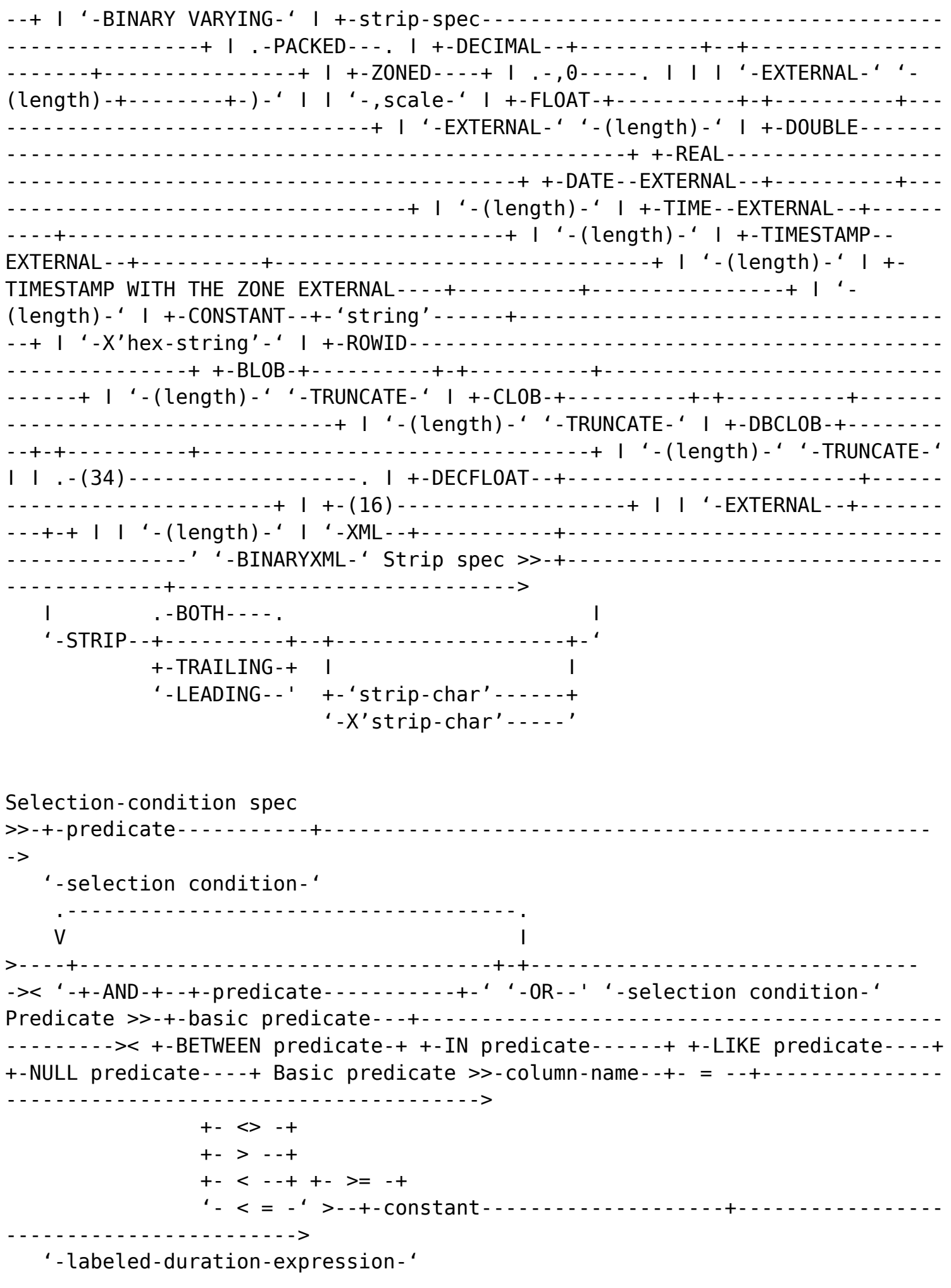

.-FILEDATA--RECORD--RECFM--VB--LRECL--32756-------.
>--+-----------------------------------------------+----------->
'-FILEDATA--+-TEXT---+--RECFM--+-VB-+--LRECL--int-'
'-BINARY-' +-V--+
+-FB-+
'-F--'
.-PATHOPTS--(--+-ORDONLY-----------+--)-.
'-OCREAT,OWRONLY-----' |
>--+---------------------------------------+--------------------->
.-,-------------. |
V .-ORDONLY---. | |
'-PATHOPTS--(----+-OCREAT----+-+--)------'
+-OWRONLY---+
'-ONONBLOCK-'
.-PATHMODE--(SIRUSR)-------------.
>--+-------------------------------+------------------------------>
.-,----------. |
V | |
'-PATHMODE--(----+-SIRUSR-+-+--)-'
+-SIWUSR-+
+-SIXUSR-+
+-SIRWXU-+
+-SIRGRP-+
+-SIWGRP-+
+-SIXGRP-+
+-SIRWXG-+
+-SIROTH-+
+-SIWOTH-+
+-SIXOTH-+
+-SIRWXO-+
.-PATHDISP--(KEEP,KEEP)---------------------.
>--+-----------------------------------------+--------------><
'-PATHDISP--(--+-KEEP---+--,--+-KEEP---+--)-'
'-DELETE-' '-DELETE-'

# UNLOAD

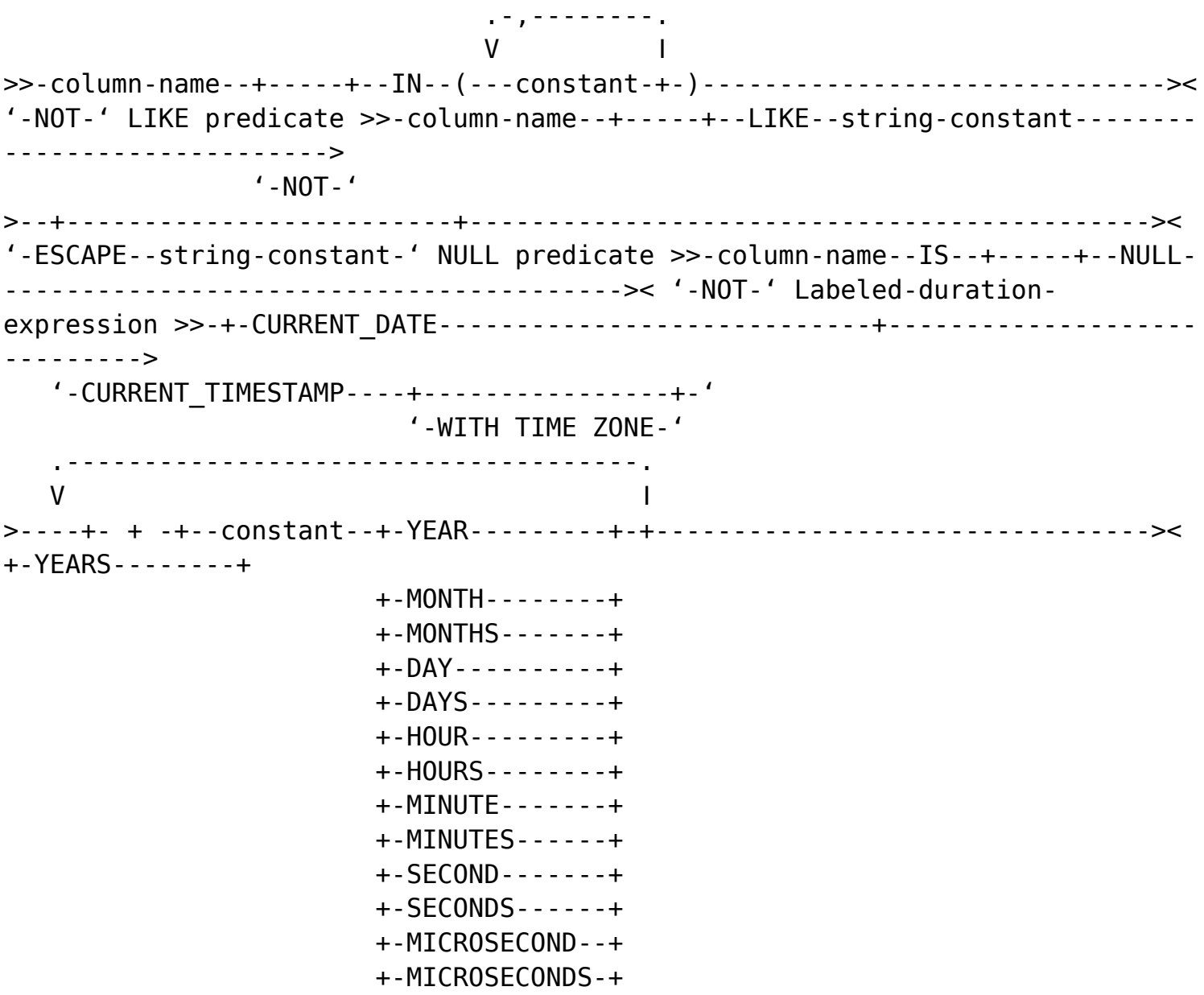

.---------------------.
V |
>>-UNLOAD--+-DATA--from-table-spec----+----------------+-+-+----------------
-->
| '-from-table-spec-' |

```
          |              .--------------------.          |
          |              V                    |          |
          +-source-spec----+-----------------+-+----------+
          |                ‘-from-table-spec-‘            |
          ‘-LIST--listdef-name----------------------------’

>--unload-spec--+-------+-----------------------------------------------------
-><‘-CLONE-‘ Source-spec >>-TABLESPACE--+----------------+-tablespace-name--
---------------------------->
              ‘-database-name.-‘
>--+-----------------------+-----------------------------------------------
-->
   |-PART-+-integer-------+-‘
          ‘-int1--:--int2-‘

>-+-------------------------------------------------------------------+-><
+-FROMCOPY--data-set-name-+-----------------------------------------+-+ | ‘-
FROMVOLUME-+-CATALOG-------------------+-‘ | | ‘-vol-ser--+--------------+-‘
| | ‘-FROMSEQNO--n-‘ | ‘-FROMCOPYDDN--ddname--------------------------------
-----------------’ Unload-spec .-PUNCHDDN--SYSPUNCH----------. >>-+----------
-------------------+-------------------------------------------->
   ‘-PUNCHDDN--+-ddname--------+-‘
              ‘-template-name-‘
   .-UNLDDN--SYSREC------------.
>--+---------------------------+--+---------+-------------------------------
-->
   ‘-UNLDDN--+-ddname--------+-+  +-EBCDIC--+
             ‘-template-name-‘    +-ASCII---+
                                  ‘-UNICODE-‘
                                                     ‘-SPANNED NO--'
>--+---------------------+--+--------+--+-------+----+-------------+--------
->
   |        .-,-------.   |  ‘-NOSUBS-‘  ‘-NOPAD-‘    ‘-SPANNED YES-‘
   |        V         |   |
   ‘-CCSID(---integer-+-)-‘
>+-------------------------------------------------------------------+-->
 |            .-COLDEL--‘,’----.  .-CHARDEL--‘”’-----.  .-DECPT--‘.’---. |
 ‘-DELIMITED--+----------------+--+------------------+--+--------------+-‘
              ‘-COLDEL--coldel-‘  ‘-CHARDEL--chardel-‘  ‘-DECPT--decpt-‘
   .-FLOAT--S390-.  .-MAXERR--1-------.
>--+-------------+--+-----------------+------------------------------------>
   ‘-FLOAT--IEEE-‘  ‘-MAXERR--integer-‘
   .-SHRLEVEL--CHANGE--ISOLATION--CS--+------------------+-.
   |                                  ‘-SKIP LOCKED DATA-‘ |
>--+-------------------------------------------------------+---------------->
   ‘-SHRLEVEL-+-CHANGE--ISOLATION-UR-+---------------------’
>-+-------------------------------------+-+-----------------------------+-->
```

'-DECFLOAT_ROUNDMODE-+-ROUND_CEILING---' '-IMPLICIT_TZ-timezone-string-'
+-ROUND_DOWN------+
+-ROUND_FLOOR-----+
+-ROUND_HALF_DOWN-+
+-ROUND_HALF_EVEN-+
+-ROUND_HALF_UP---+
+-ROUND_UP--------+
>--+-------------------------------+-----------------------------------
->
'-IMPLICIT_TZ--'timezone-string'-'
.-PARALLEL--0-----------.
>--+-----------------------+-------------------------------------------
-><'-PARALLEL—num-subtasks-' From-table spec >>-FROM--TABLE--table-name-----
-------------------------------------------->
.-HEADER--OBID------------------------.
>--+-------------------------------------+---------------------------------
->
'-HEADER--+-NONE--------------------+-'
'-CONST--+-'string'------+-'
'-X'hex-string'-'
>--+-----------------+--+---------------+---------------------------------
->
'-SAMPLE--decimal-' '-LIMIT--integer-'
>--+-----------------------------+-----------------------------------------
->
| .-,------------------. |
| V | |
'-(---field-specification-+-)-'
>--+-----------------------------+-----------------------------------------
-><'-WHEN--(selection-condition)-' Field spec .-POSITION(*)-----. >>-field-
name--+-----------------+-------------------------------------------->
'-POSITION(start)-'
>--+-----------------------------------------------------------------+---><
+-CHAR-+----------+-+-----------------------------------------------+-+ | '-
(length)-' +-TRUNCATE-----------------------------------+ | | '-+-BLOBF---+--
template-name---+-----------+ | | +-CLOBF---+ '-BINARYXML-' | | '-DBCLOBF-' |
+-VARCHAR-+----------+-+-----------------------------------------+-+ | '-
(length)-' +-strip-spec----------------------------+ | | '-+-BLOBF---+-
template-name-+-----------+ | | +-CLOBF---+ '-BINARYXML-' | | '-DBCLOBF-' |
+-GRAPHIC-+----------+-+----------+-+----------+-----------------+ | '-
EXTERNAL-' '-(length)-' '-TRUNCATE-' | +-VARGRAPHIC-+----------+-strip-spec--
--------------------------+ | '-(length)-' | +-SMALLINT-------------------
-----------------------------------+ +-INTEGER--+----------------------+---
--------------------------+ | '-EXTERNAL-+----------+-' | | '-(length)-' |
+-BIGINT-----------------------------------------------------+ +-BINARY-
+----------+-+----------+-------------------------------+ | '-(length)-' '-
TRUNCATE-' | +-+-VARBINARY------+-----------------------------------------


--+ | '-BINARY VARYING-' | +-strip-spec----------
----------+ | .-PACKED---. | +-DECIMAL--+----------+--+----------
-------+----------+ | +-ZONED----+ | .-,0-----. | | | '-EXTERNAL-' '-
(length)-+--------+-)-' | | '-,scale-' | +-FLOAT-+----------+-+----------+---
----------+ | '-EXTERNAL-' '-(length)-' | +-DOUBLE-------
----------+ +-REAL----------
----------+ +-DATE--EXTERNAL--+----------+---
----------+ | '-(length)-' | +-TIME--EXTERNAL--+------
----+----------+ | '-(length)-' | +-TIMESTAMP--
EXTERNAL--+----------+----------+ | '-(length)-' | +-
TIMESTAMP WITH THE ZONE EXTERNAL----+----------+----------+ | '-
(length)-' | +-CONSTANT--+-'string'------+----------
--+ | '-X'hex-string'-' | +-ROWID----------
----------+ +-BLOB-+----------+-+----------+----------
------+ | '-(length)-' '-TRUNCATE-' | +-CLOB-+----------+-+----------+-------
----------+ | '-(length)-' '-TRUNCATE-' | +-DBCLOB-+--------
--+-+----------+----------+ | '-(length)-' '-TRUNCATE-'
| | .-(34)----------. | +-DECFLOAT--+----------+------
----------+ | +-(16)----------+ | | '-EXTERNAL--+-------
---+-+ | | '-(length)-' | '-XML--+----------+----------
----------' '-BINARYXML-' Strip spec >>-+----------
----------+---------->
| .-BOTH----. |
'-STRIP--+----------+--+----------+-'
+-TRAILING-+ | |
'-LEADING--' +-'strip-char'------+
'-X'strip-char'-----'
Selection-condition spec
>>-+-predicate----------+----------
->
'-selection condition-'
.----------.
V |
>----+----------+-+----------
->< '-+-AND-+--+-predicate----------+-' '-OR--' '-selection condition-'
Predicate >>-+-basic predicate---+----------
---------><
+-BETWEEN predicate-+
+-IN predicate------+
+-LIKE predicate----+
+-NULL predicate----+
Basic predicate >>-column-name--+- = --+----------
---------->
+- <> -+
+- > --+
+- < --+ +- >= -+
'- < = -' >--+-constant----------+----------
---------->
'-labeled-duration-expression-'

IN predicate

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