4.2.6 Fatigue Damage Option:

Purpose: Activate the Fatigue Damage analysis option

☞ **Note:** Currently this option is **only available** for continuous reinforcements, modid=1 see section **4.2.8**

☞ **FEAMAC Note:** This option is currently **not available** from within ***FEAMAC***

✻DAMAGE
NCY=*ncycle* D=*deld* DMAX=*dmax* FG=*fg* FL=*fl*

where:

ncycle - number of "blocks" of cycles to be run (see Fig. 5)

deld - damage increment

dmax - maximum amount of damage allowed $(0 \le dmax \le 1)$

fg:
0 - no macro (global) failure check
1 - macro failure check

fl:
0 - no micro failure check
1 - micro failure check

☞ **Note:** For FG=1, the following data is required on a new line;

T=ss IC=comp V=val

Where

ss:
1 - stress
2 - strain

comp:
1 - component 11
2 - component 22
3 - component 33
4 - component 23
5 - component 13
6 - component 12

val - value of failure stress or strain (depending on value of *ss*)

☞ **Note:** For FL=1, see description of additional required data in section **4.2.12**

☞ **Note:** the actual time vs. load data for the “block” of cycles is specified using the previously defined ✻**MECH** input data (section **4.2.4**).

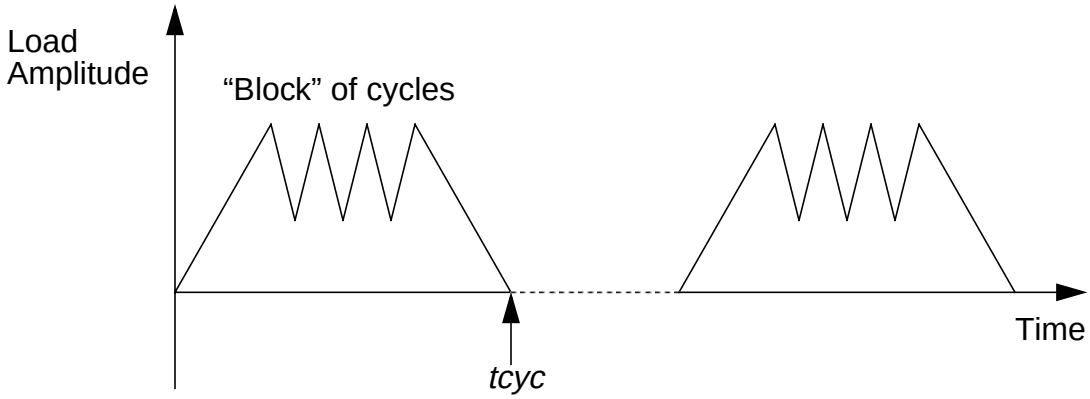

Figure 8

☞ **Note**: When the fatigue damage analysis option is activated the following additional files will be generated:

dam1.data	intermediate damage calculations
dam2.data	print-out of cycles to failure at the end of each load block
dam3.data	print-out of current damage in each subcell at the end of each load block

Example:

✻**DAMAGE**
NCY=2 D=0.25 DMAX=0.95 FG=1 FL=0
T=1 IC=2 V=100.

☞ **Note**: In the above example:

- 2 “blocks” of cycles have been specified via NCY
- the damage increment is 0.25 (25%) with a maximum allowable amount of damage set to 0.95 (95%)
- a <u>Global</u> failure criteria is used: stress component -22 with a failure value of 100.