**RESTARTING CATEGORIES:**

**1-Continuing with additional steps**
If the previous analysis completed successfully and, having viewed the results, you want to add additional steps to the load history, the specified step and increment should be the last step and last increment of the previous analysis.

**2-Continuing an interrupted run**
If the given step and increment do not correspond to the end of the previous analysis (for example, if the analysis was interrupted by a computer malfunction).

**3-Changing an analysis**
Having viewed the results of the previous analysis, you may want to restart the analysis from an intermediate point and change the remaining load history in some manner (Often this is necessary when a step has exceeded its maximum number of increments)

**TIP:**
1-the restart analysis model must not modify or add any geometry, mesh, materials, sections, … that are already defined in the original analysis model
2-it must not modify any step, load, boundary condition, field, or interaction at or before the restart location.
3-it may, however, define new sets and amplitude curves in the restart analysis model.

## Files required to restart an analysis (Abaqus/Explicit)

- Output database (`.odb`)
- Restart file (.res) [file size limited to 16 gigabytes]
- Model file (`.mdl`)
- Package file (`.pac`)
- Part file (`.prt`)
- State files (`.abq` and `.stt`)
- Selected results file (`.sel`)

**1-Continuing with additional steps**
**Overview:** we want to do another step which is actually a Redeepdrawing after a deepdrawing step.

- Lunch **Abaqus** software
- Open the **Restart.cae**
- Try to understand the model
- Before submitting the job, go to Step module: **Output⟶Restart Requests** (Fig 1)

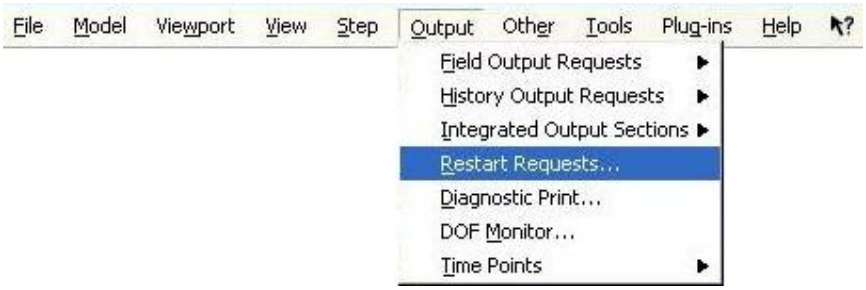


Fig 1

- In Step module: **Output⟶Restart Requests**: enter 10 in the **Intervals** column (Fig 2)

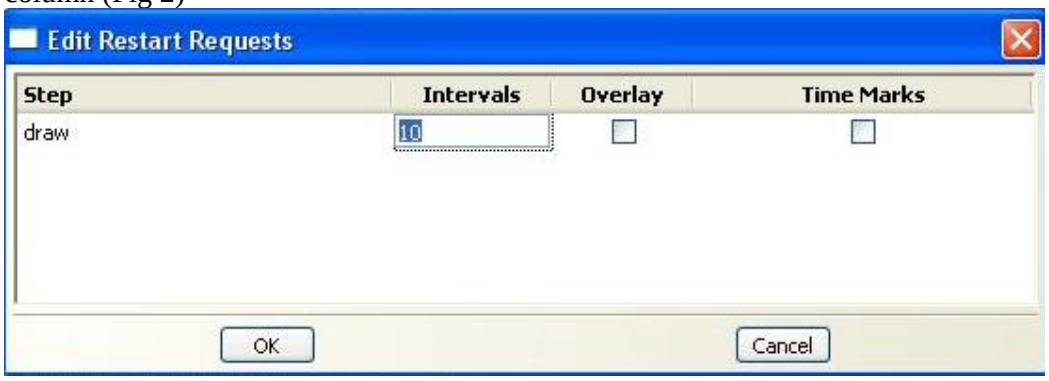


Fig 2

- In Job module: **Job⟶create**: name it Job-deepdrawing (Fig 3)

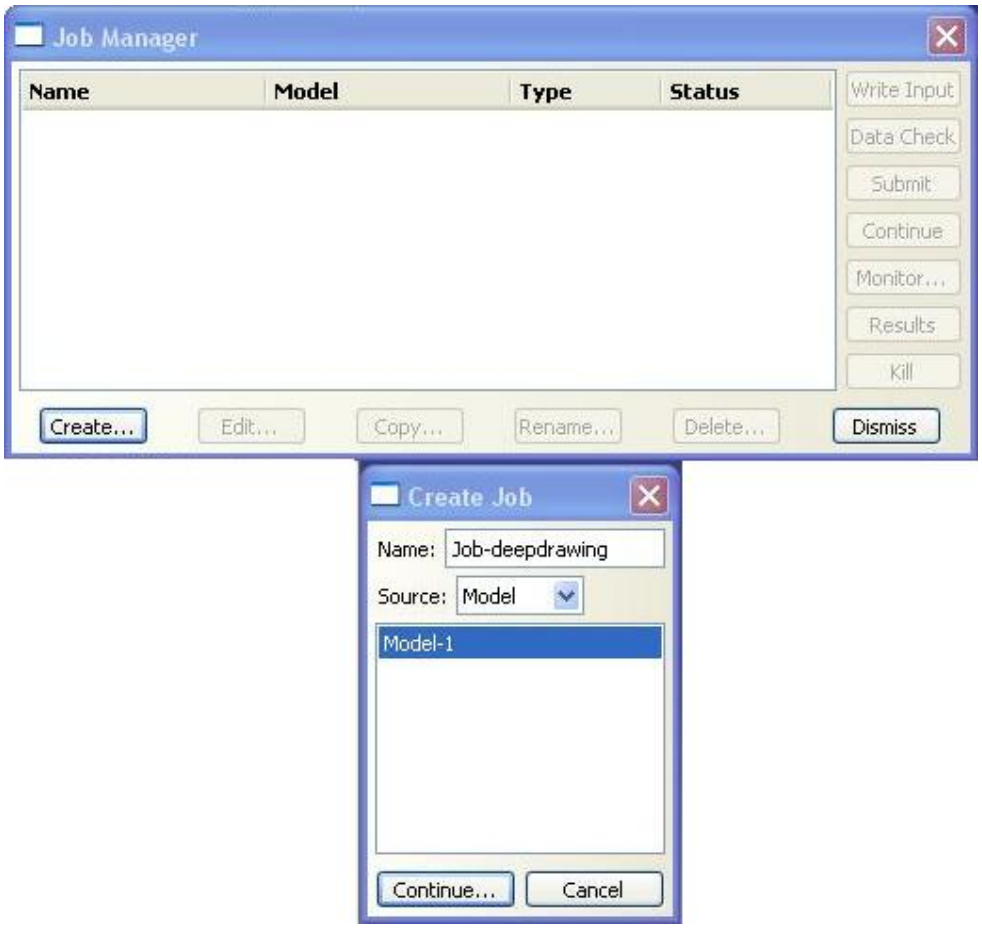


Fig 3

- Submit the current Job
- Take a look at results (Fig 4)

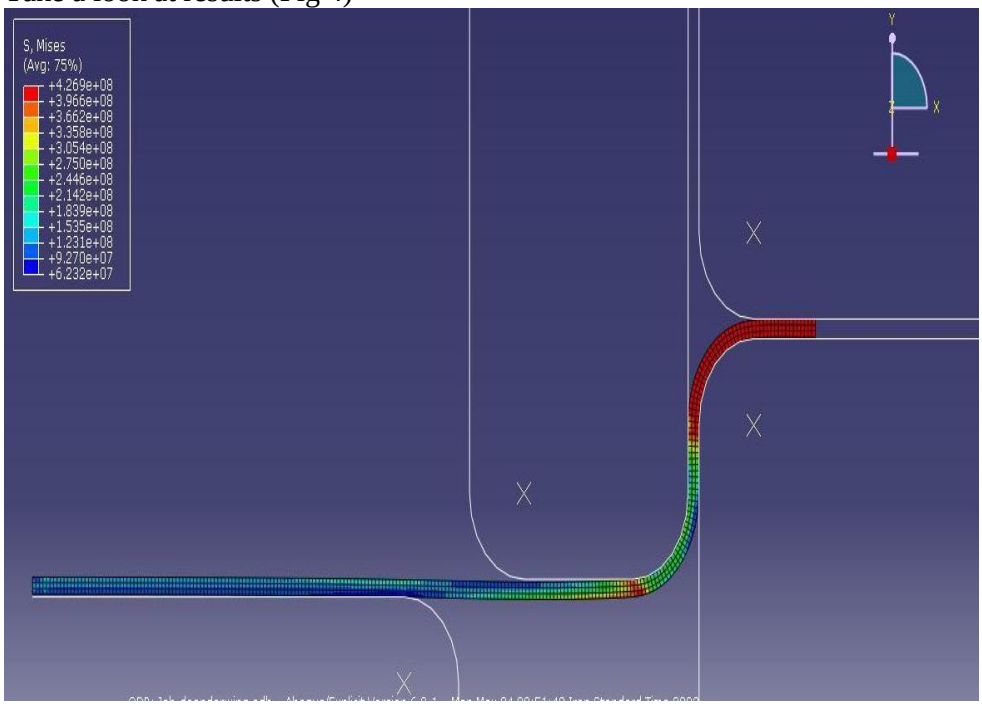

Fig 4

- Now we like to add another step and Re-deepdraw the deformed blank.
- In Step module: **Step⟶create**: name it Redraw and select the procedure Type as Dynamic, Explicit and use the Time period=0.1 s (Fig 5&6)

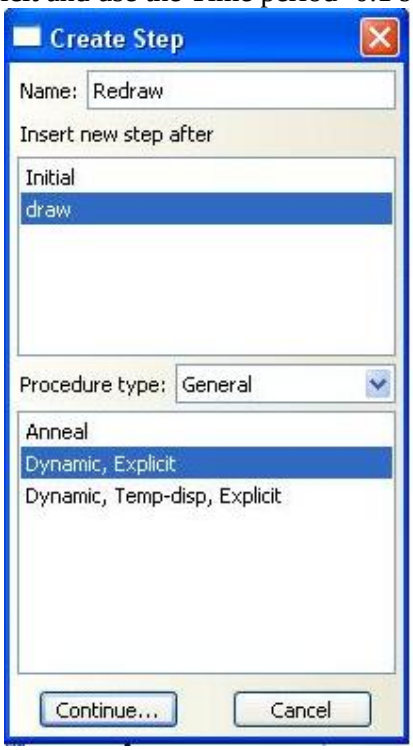


Fig 5

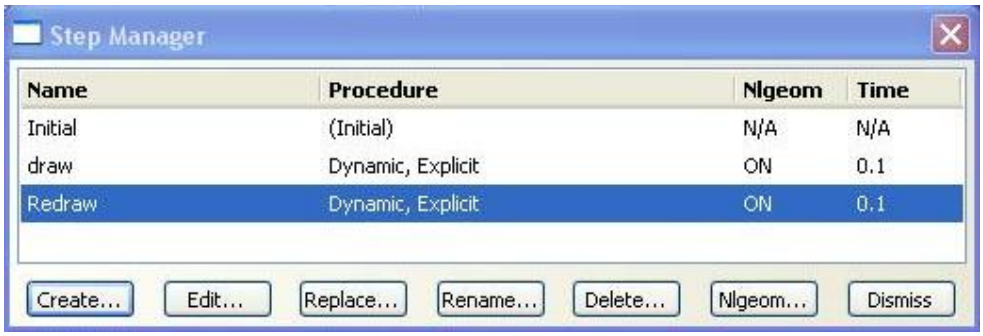


Fig 6

- In Load module: **BC ⟶manager:** you see the new step boundary conditions are added (Fig 7)

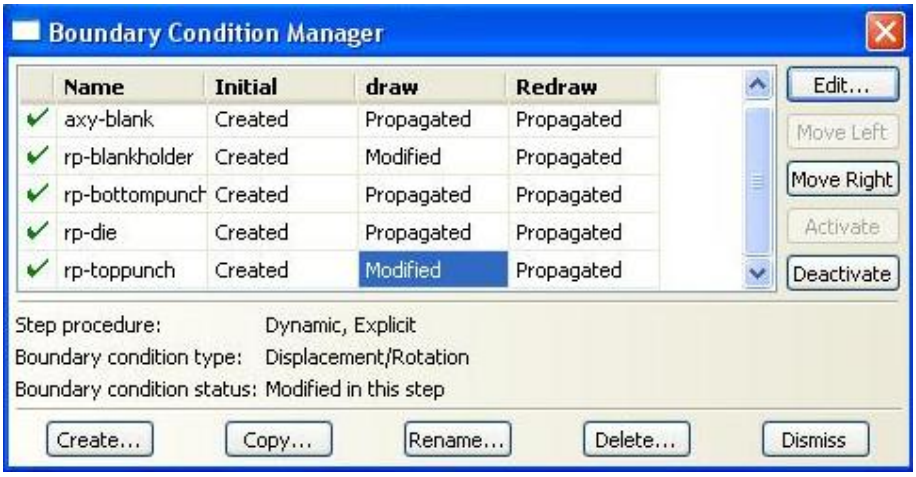


Fig 7

- Here you like to do a Re-deepdrawing. To do so, you have to modify the boundary condition of Bottom punch
- Just select the cell from Redraw column and rp-bottompunch row and click on Edit button, then choose +0.0075 for displacement in **y** direction (Fig 8)

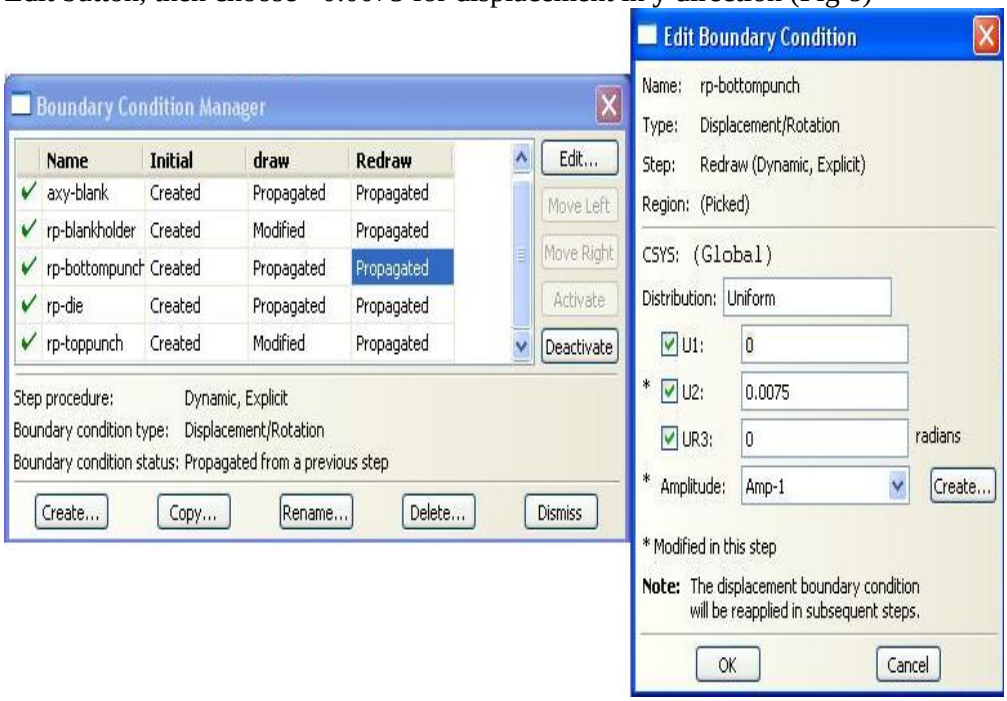


Fig 8

- After click on ok, you will see the previous cell is now modified (not propagated) (Fig 9)

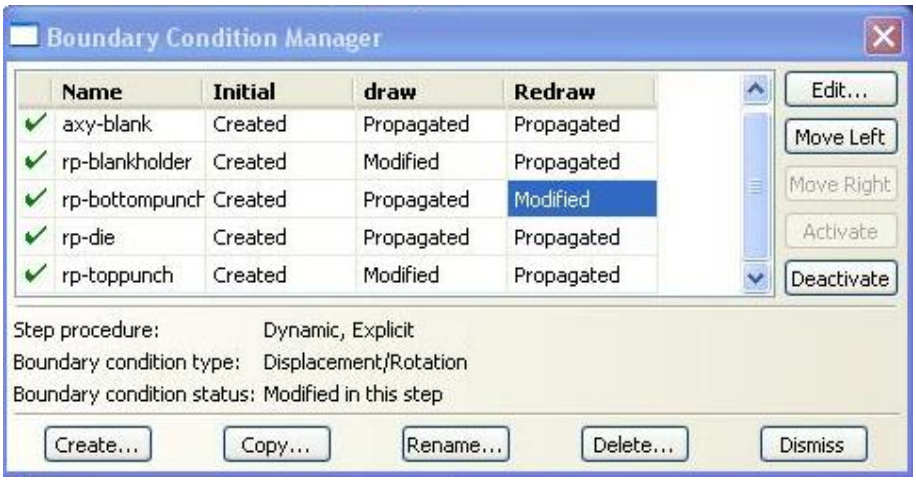


Fig 9

- In any module: **Model⟶Edit Attributes⟶*Model_1*** (Fig 10)

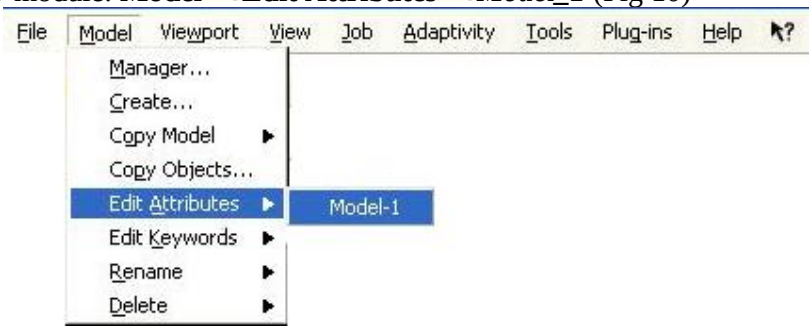


Fig 10

- In Restart Tab, toggle on **Read data from job** and enter the name of pervious job without extension, also enter the Step name in **Step name** of previous analysis (for this example the step name is draw) and choose the "**Restart from the end of the step**" option (Fig 11)

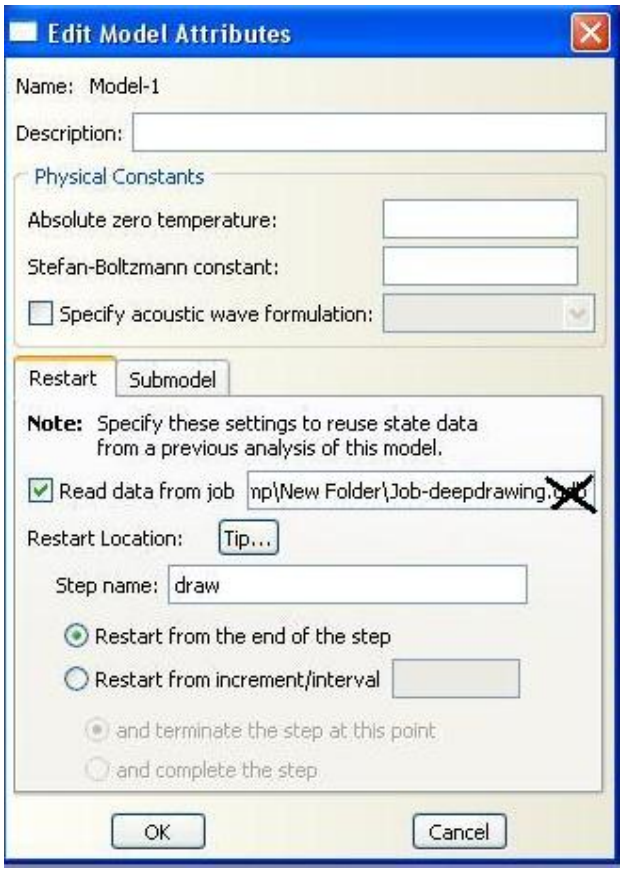


Fig 11

- Now in Job module: **Job⟶create⟶**enter the name of restart job for accomplishing the second step (Fig 12) and click on Continue

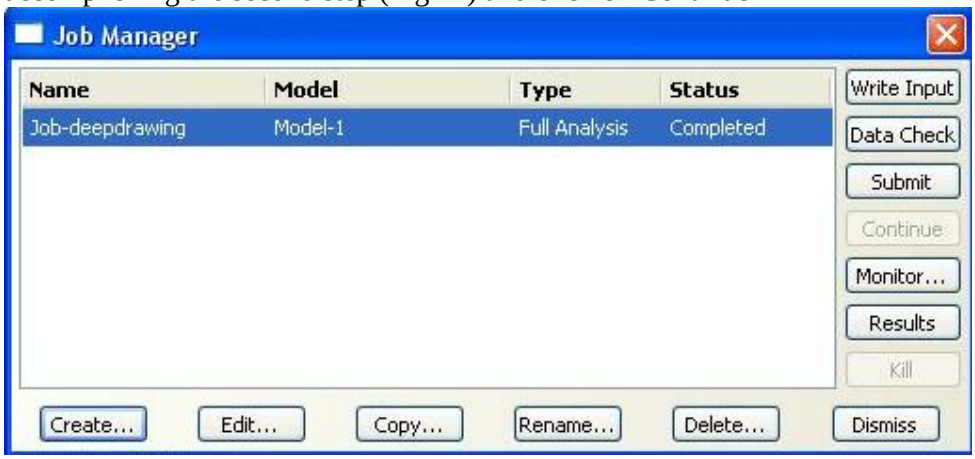


Fig 12

- You see that in *Edit Job window*, in the *submission Tab*, **Restart** option is toggled, click on Ok and submit the Job. (Fig 13)

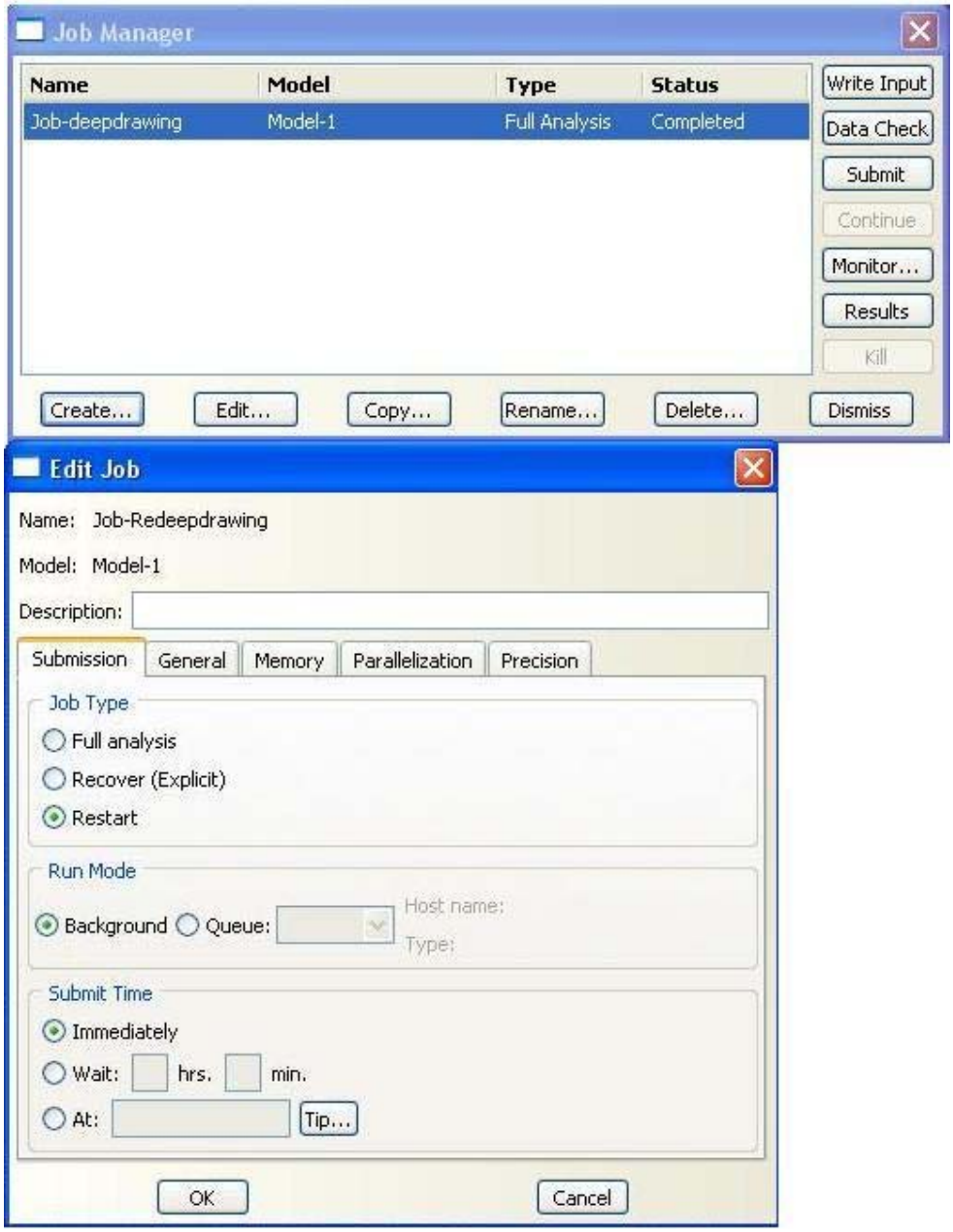


Fig 13

- You see the total time is actually begins from 0.1 s which means you are just running the Second Step and use the previous step results (Fig 14)

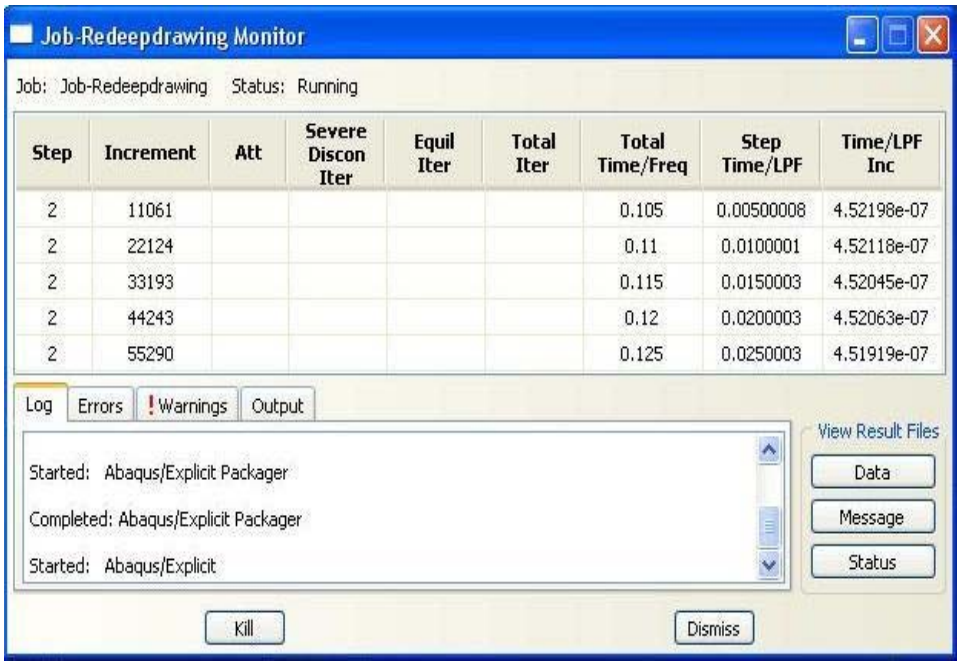


Fig 14

- Take a look at results to see what really happened (Fig 15)

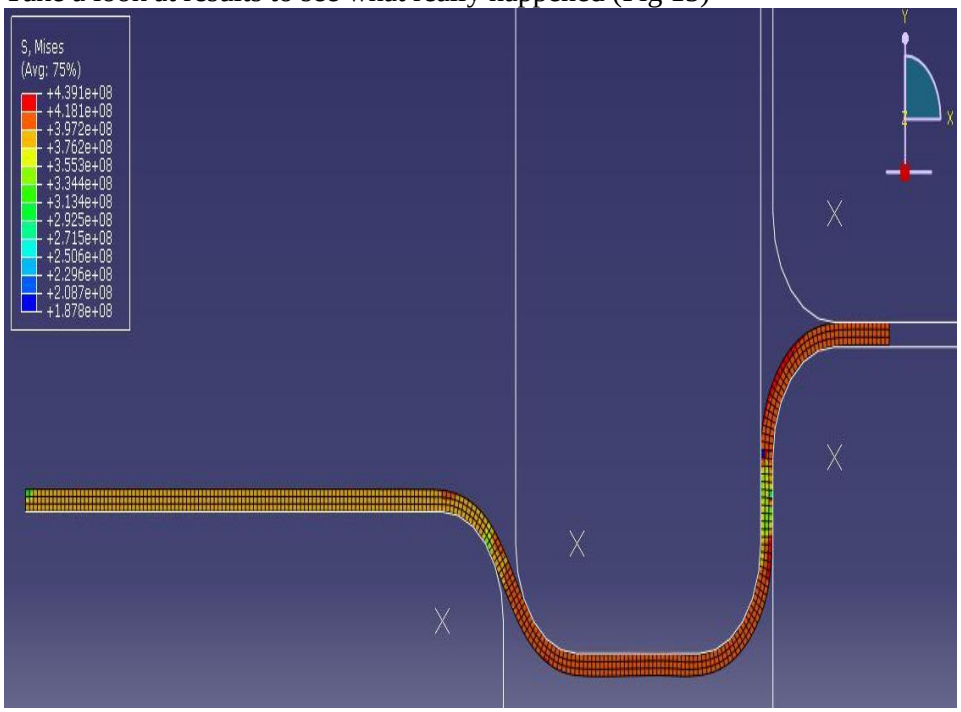


Fig 15

**2-Continuing an interrupted run**

**Overview:** we want to use recovery ability of abaqus/explicit when our running Job is terminated somehow.

- Lunch **Abaqus** software

- Open the **Restart.cae**
- Try to understand the model
- Before submitting the job, go to Step module: **Output⟶Restart Requests** (Fig 1)
- In Step module: **Output⟶Restart Requests**: enter 10 in the **Intervals** column (Fig 2)
- In Job module: **Job⟶create**: name it Job-Recovery (Fig 16)

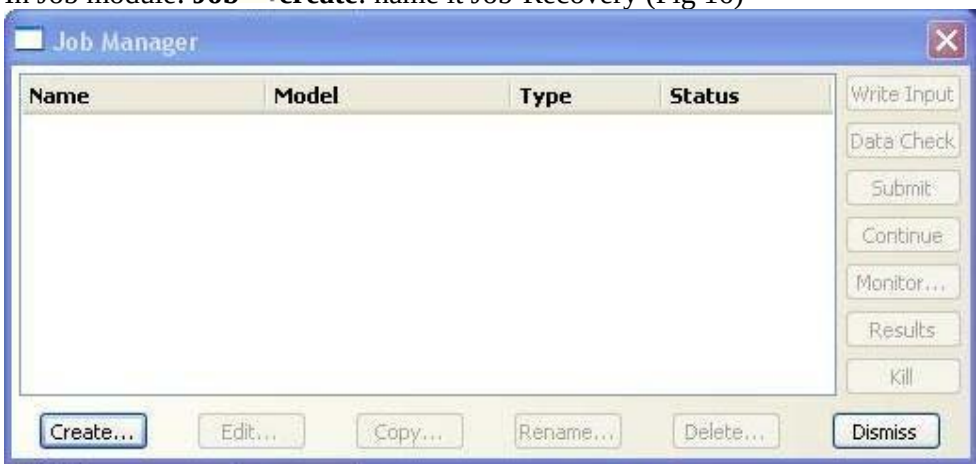


Fig 16

- Make sure that Type of this job is *Full analysis*, then Submit the current Job (Fig 17)

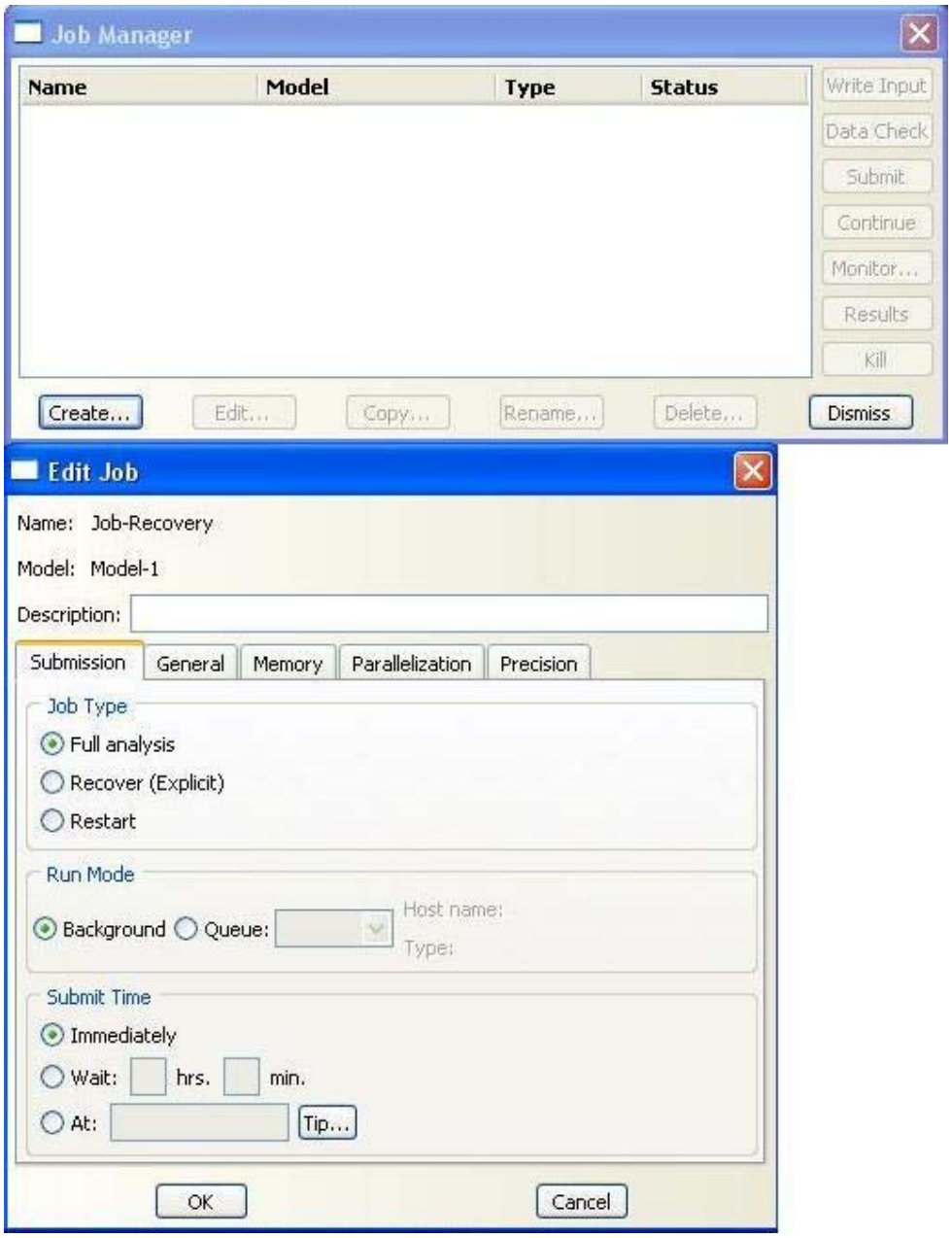


Fig 17

- During the running of current job, kill the process after some time passed (Fig 18)

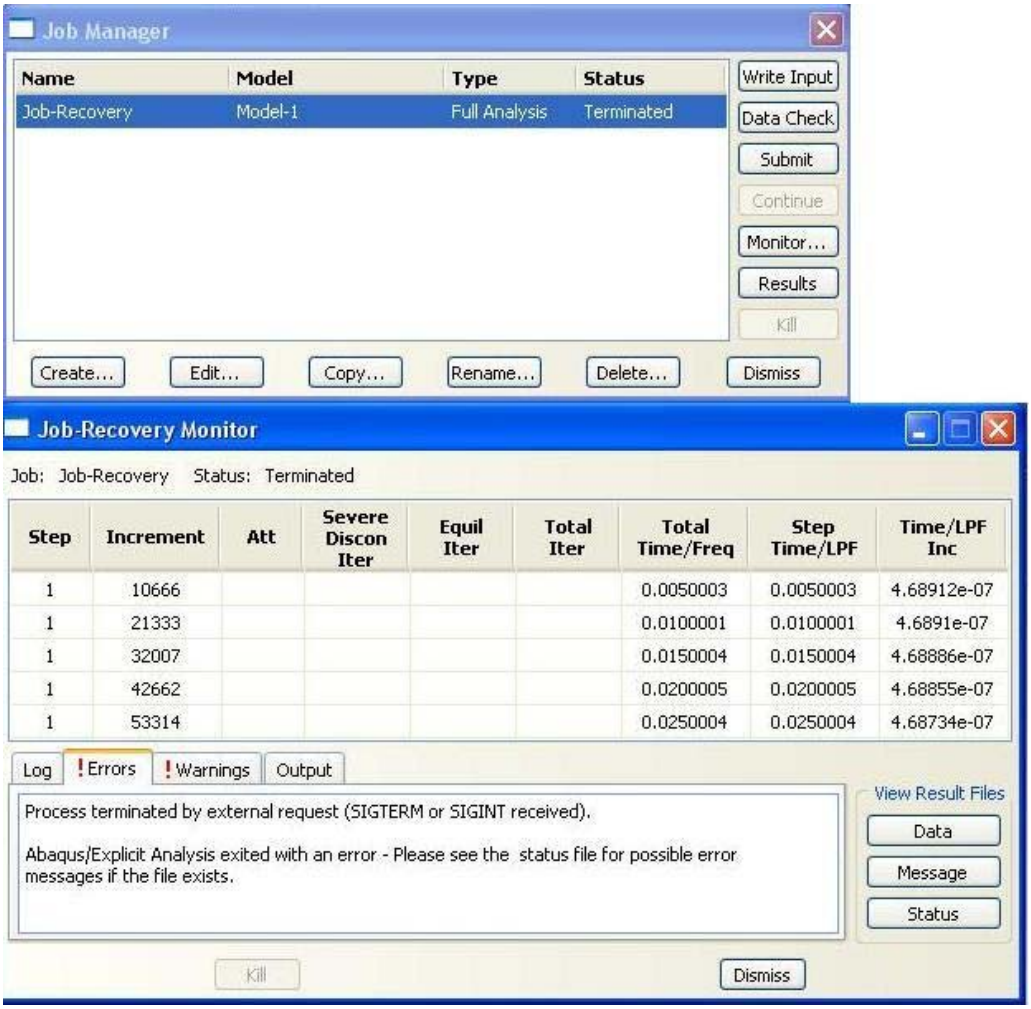


Fig 18

Care should be taken if the current run interrupted someway other than killing the job by user, before do anything for recovery operation, you should delete the *name_job*.lck file where it is located on the user define Temp directory.

- To continue the solution of that terminated step without running the whole job from the start point, in Job module: **Job⟶Edit⟶**select the terminated job file and in *Submission Tab*, choose the **Recovery** option (Fig 19)

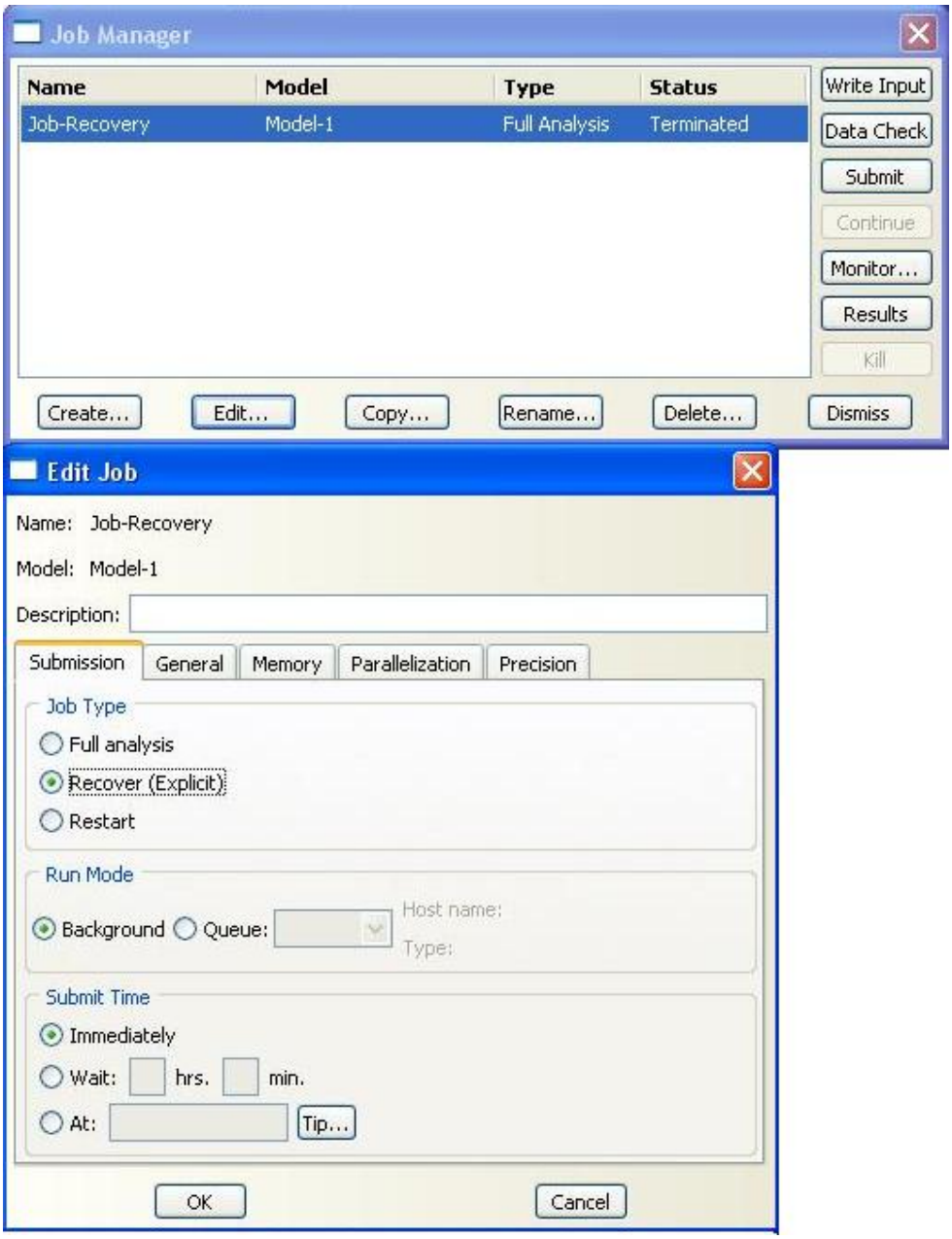


Fig 19

- Submit the job and you see that solution is running just after the time that previous analysis was terminated. (Fig 20)

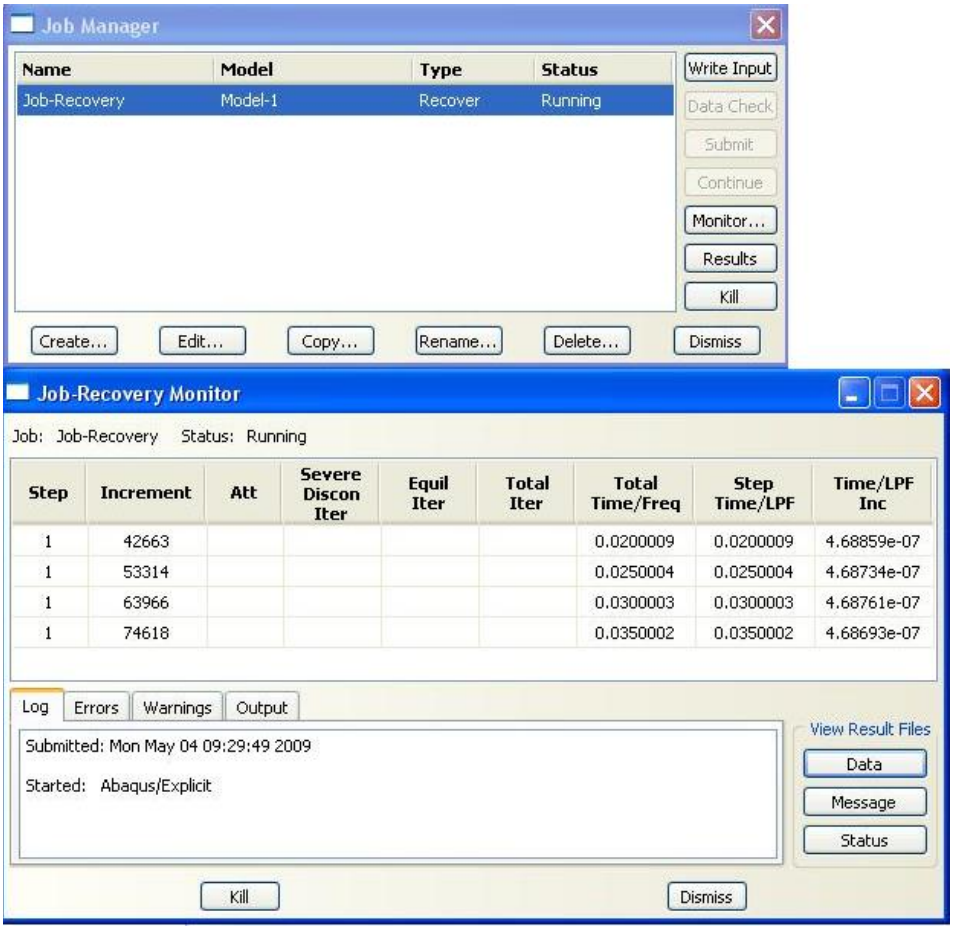

Fig 20

**3-Changing an analysis**

**Overview:** we want to redo the initial step with new defined Amplitude and load condition after some time interval.

- Lunch **Abaqus** software
- Open the **Restart.cae**
- Try to understand the model
- Before submitting the job, go to Step module: **Output⟶Restart Requests** (Fig 1)
- In Step module: **Output⟶Restart Requests**: enter 10 in the **Intervals** column (Fig 2)
- In Job module: **Job⟶create**: name it Job-draw (Fig 21)

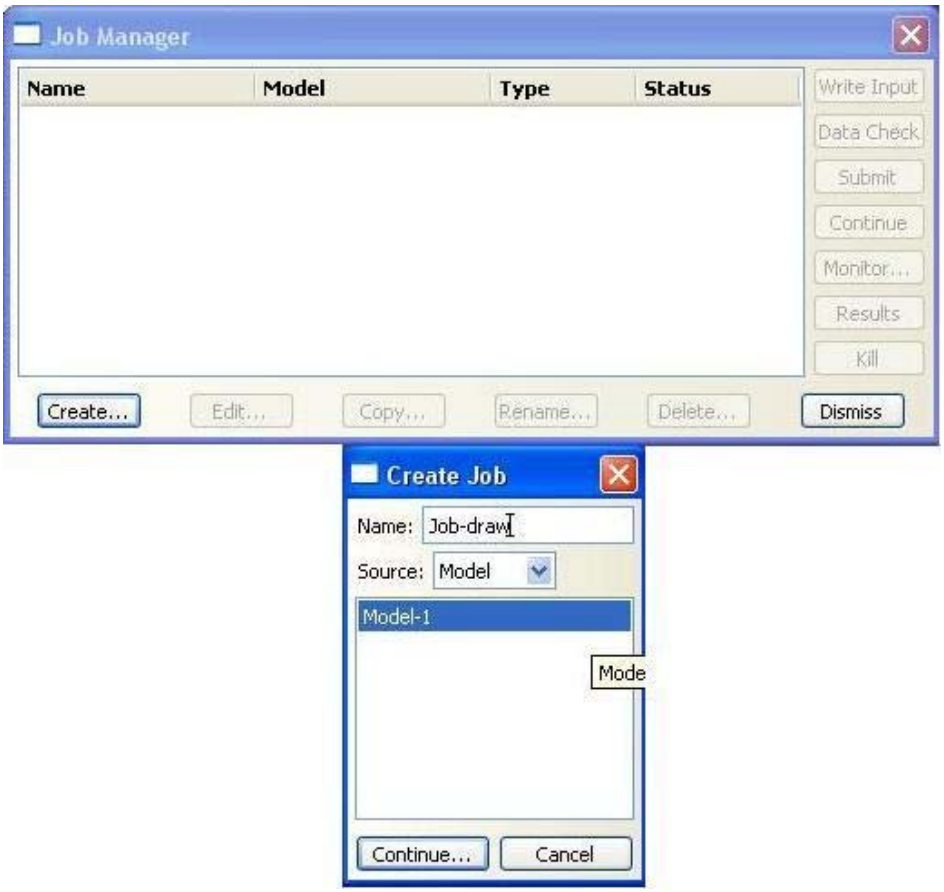


Fig 21

- Make sure that Type of this job is *Full analysis*, then Submit the current Job (Fig 22)

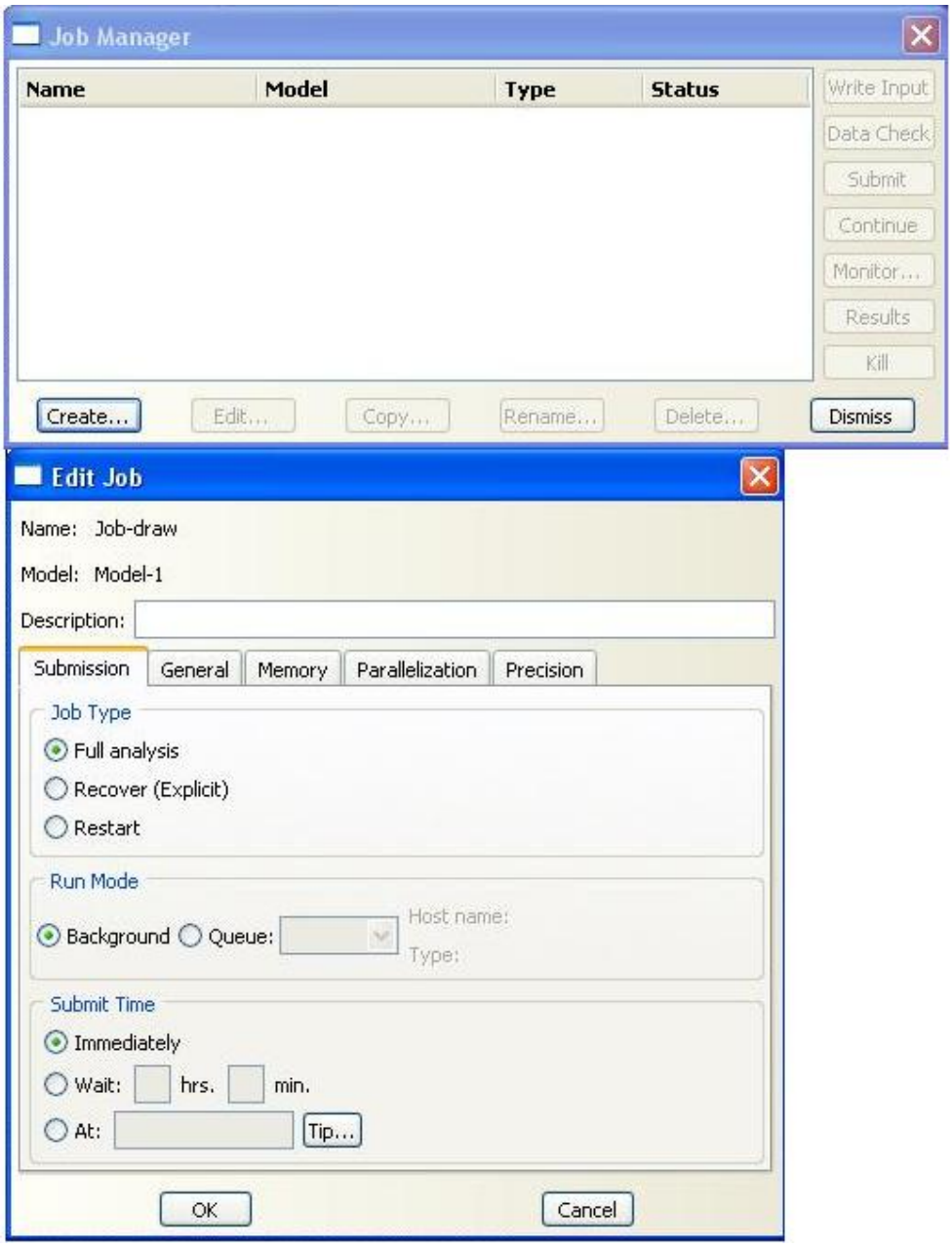


Fig 22

- In any module: **Model⟶Edit Attributes⟶*Model_1*** (Fig 10)
- In Restart Tab, toggle on **Read data from job** and enter the name of pervious job, also enter the Step name in **Step name** of previous analysis (for this example the step name is draw) and choose the "**Restart from Increment/Interval**" option and use *interval=5*, and also choose the "**and terminated the step at this point"** sub-option (Fig 23)

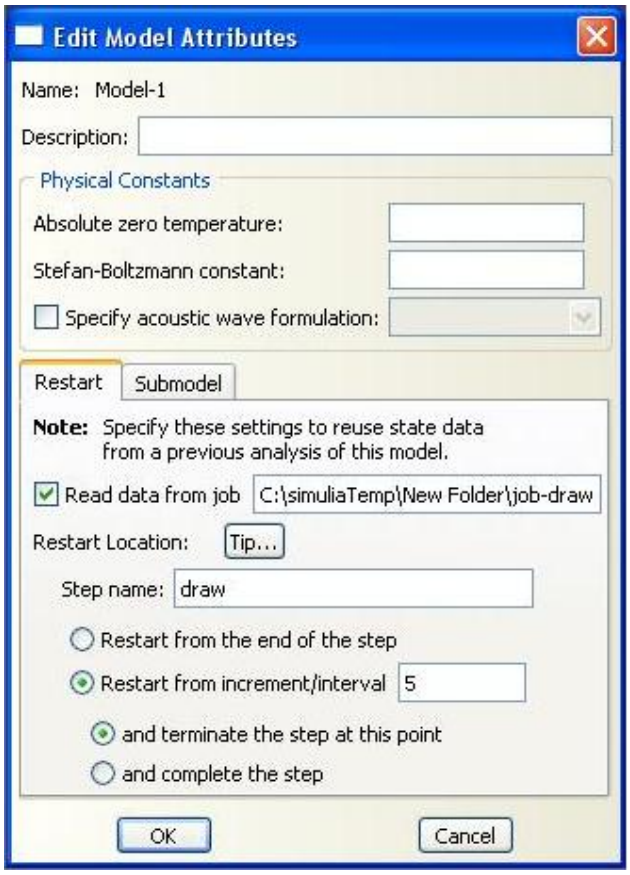


Fig 23

- In Step module: **Step⟶create**: name it Continue and select the procedure Type as Dynamic, Explicit and use the Time period=0.1 s (Fig 24)

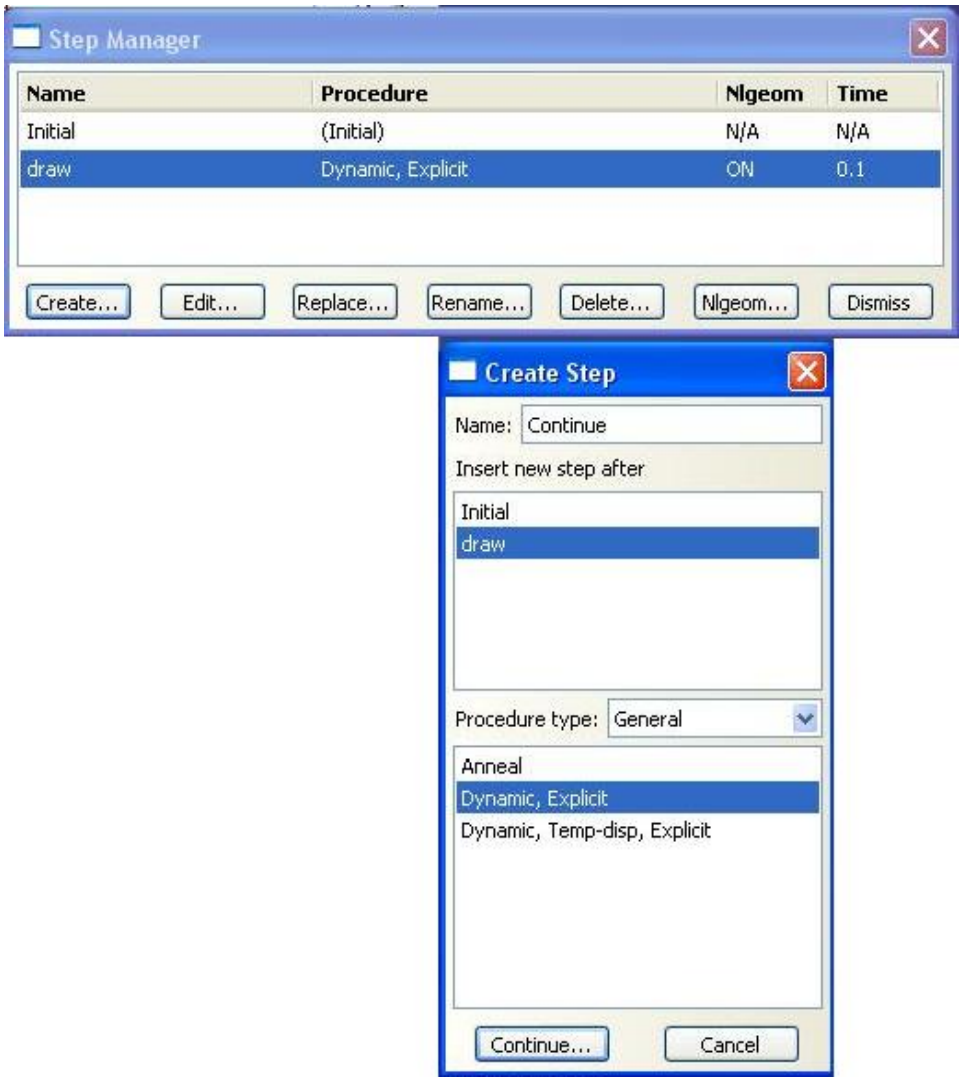


Fig 24

- In Load module: **Load ⟶manager:** select the cell from draw column and then Edit it. In edit load window, create another amplitude and consider its Type as: smooth step (Fig 25)

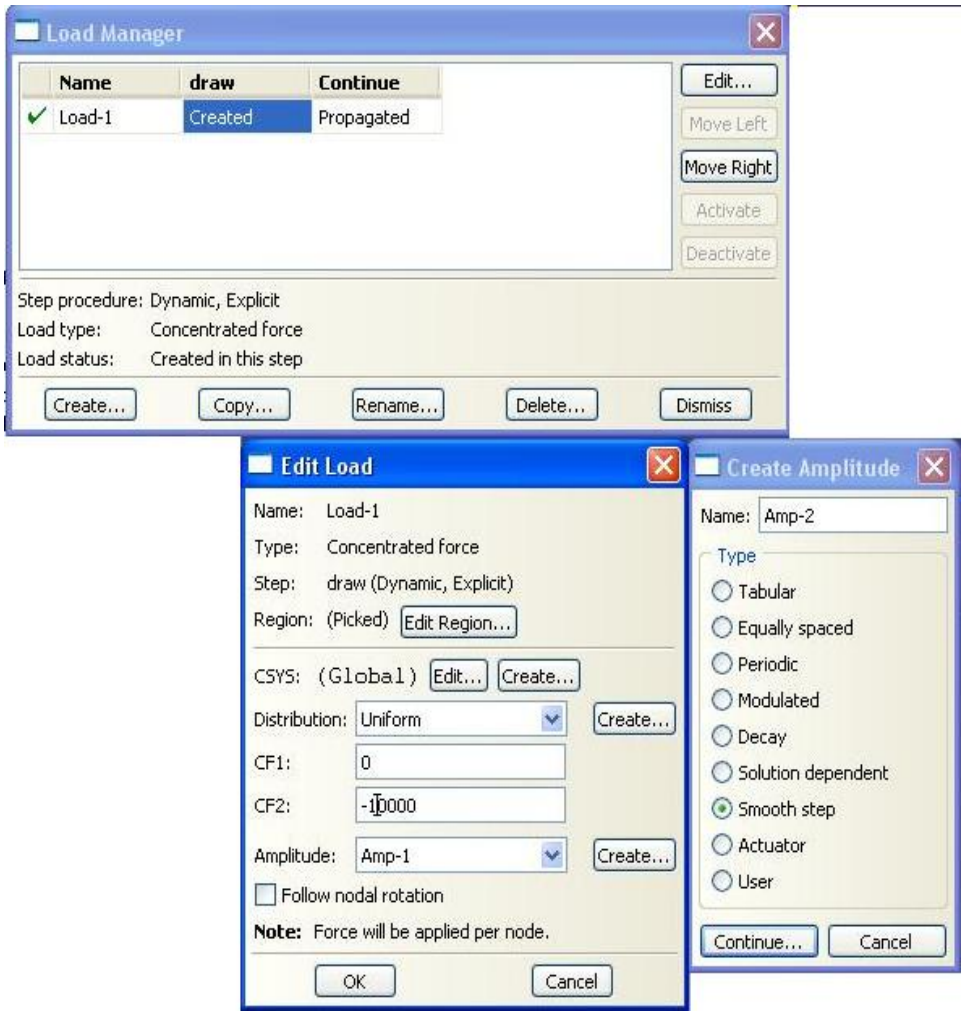


Fig 25

- Fill the cell as shown in Fig 26

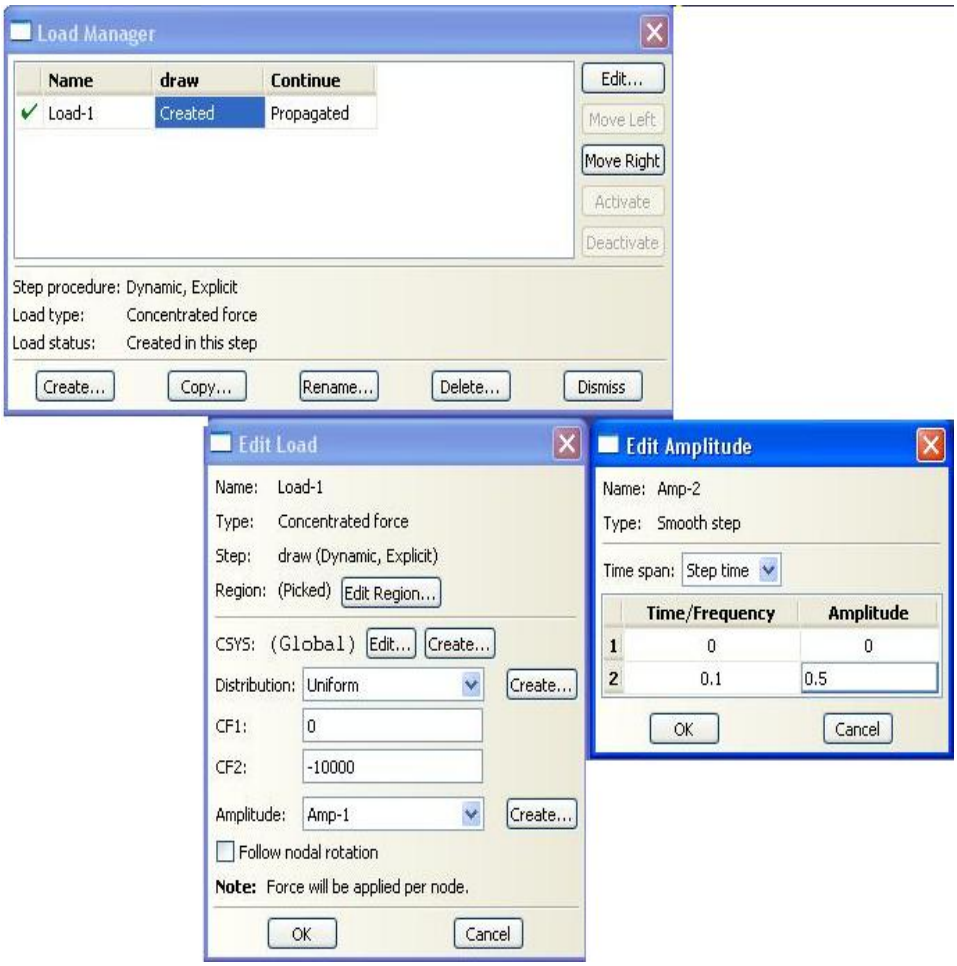


Fig 26

- Change the y direction force to -20000 (Fig 27)

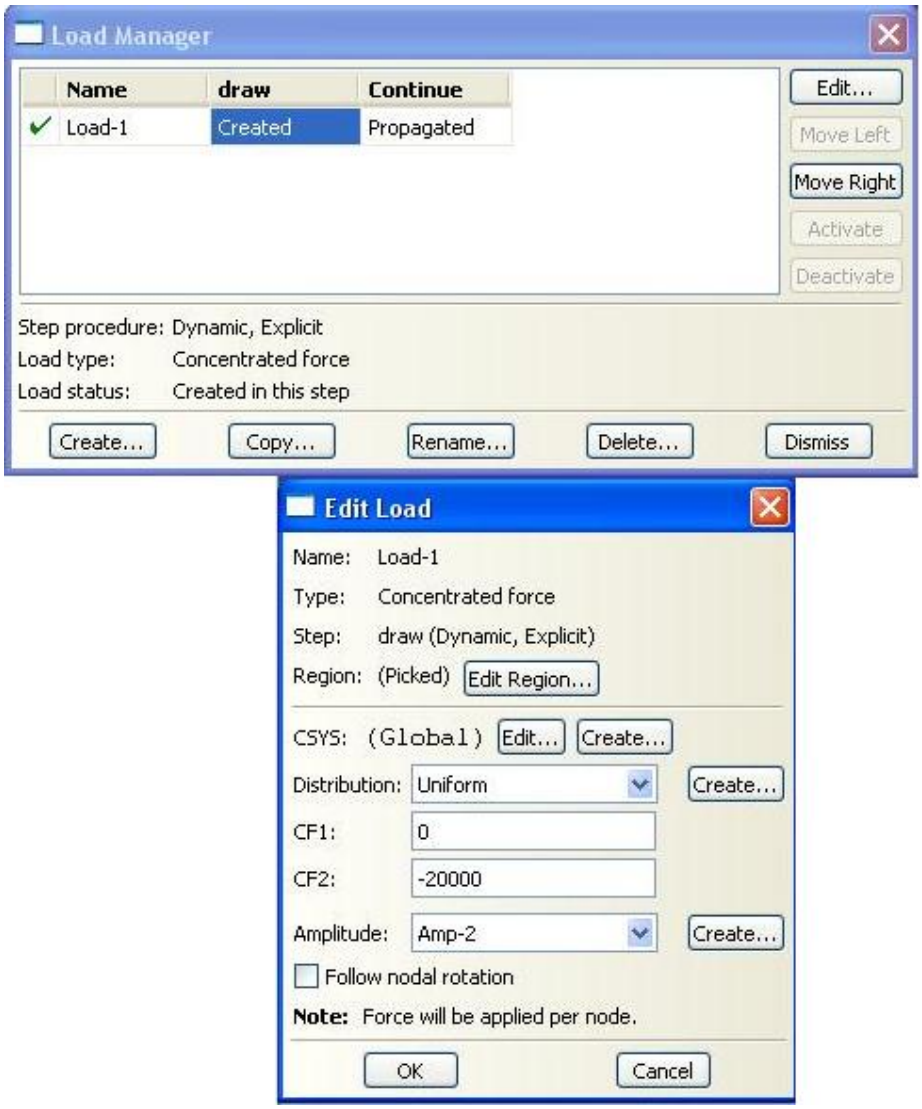


Fig 27

- In Load module: **BC ⟶manager:** you see the new step boundary conditions are added. Here you like to Continue the previous analysis from interval 5 with new defined amplitude for rp-toppunch. So, you have to modify that boundary condition. Just select the cell from Redraw column and rp-toppunch row and click on Edit button, then choose Amp-2 (Fig 28)

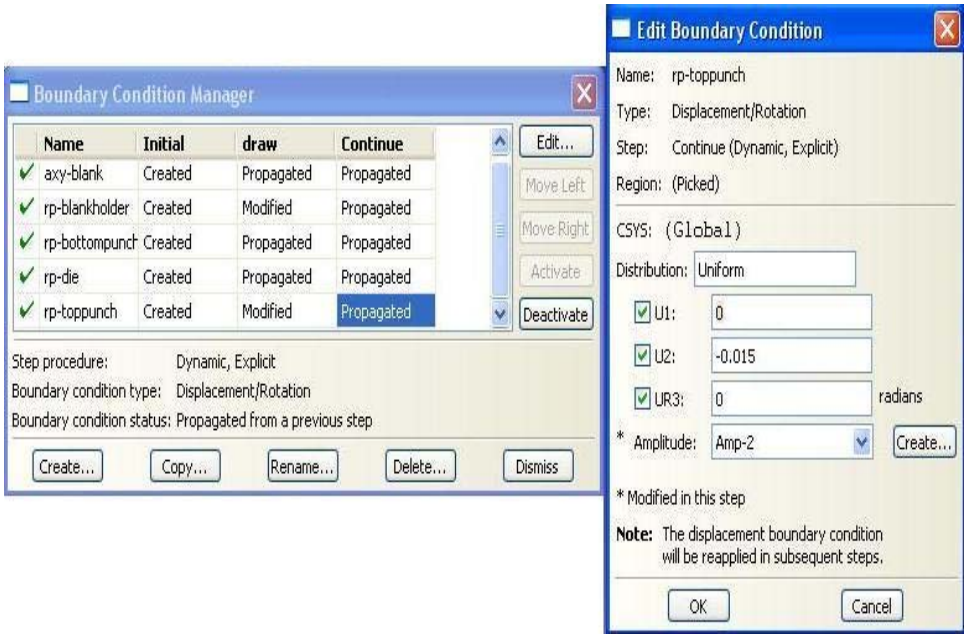


Fig 28

- Now in Job module: **Job⟶create⟶**enter the name of restart job for continuing the previous step from interval 5 (Fig 29) and click on Continue

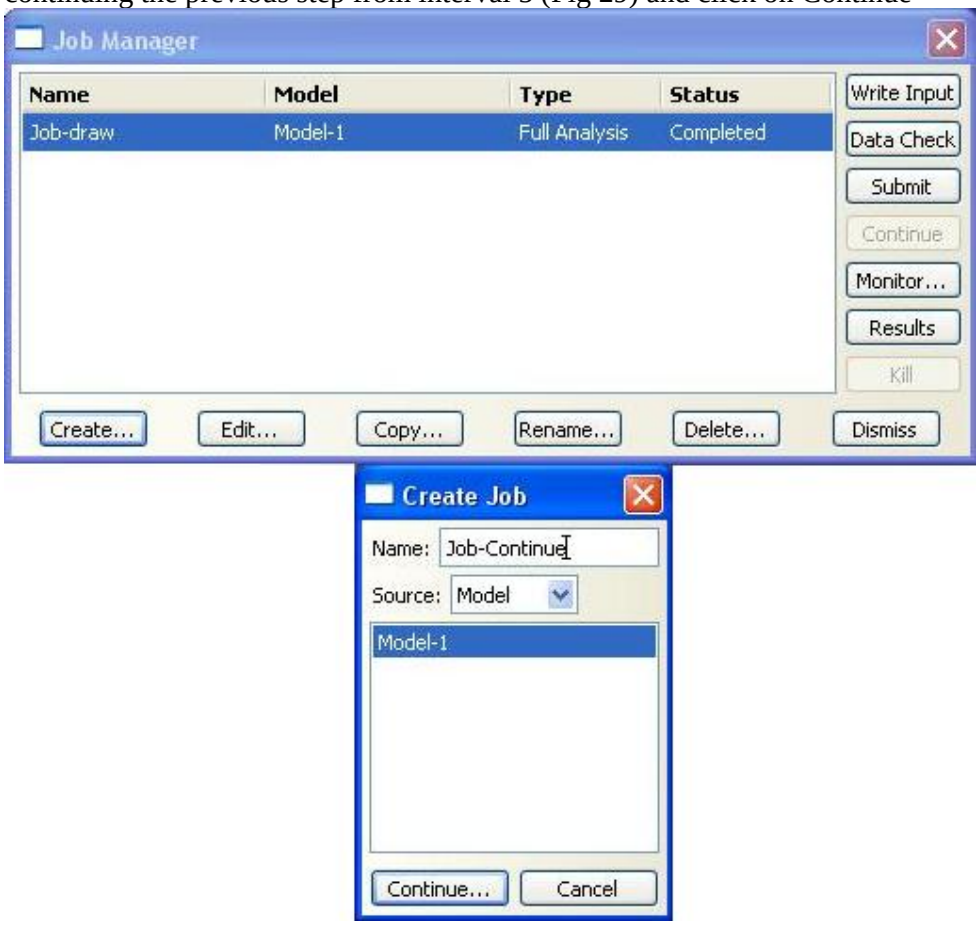


Fig 29

- You see that in *Edit Job window*, in the *submission Tab*, **Restart** option is toggled, click on Ok and submit the Job. (Fig 30)

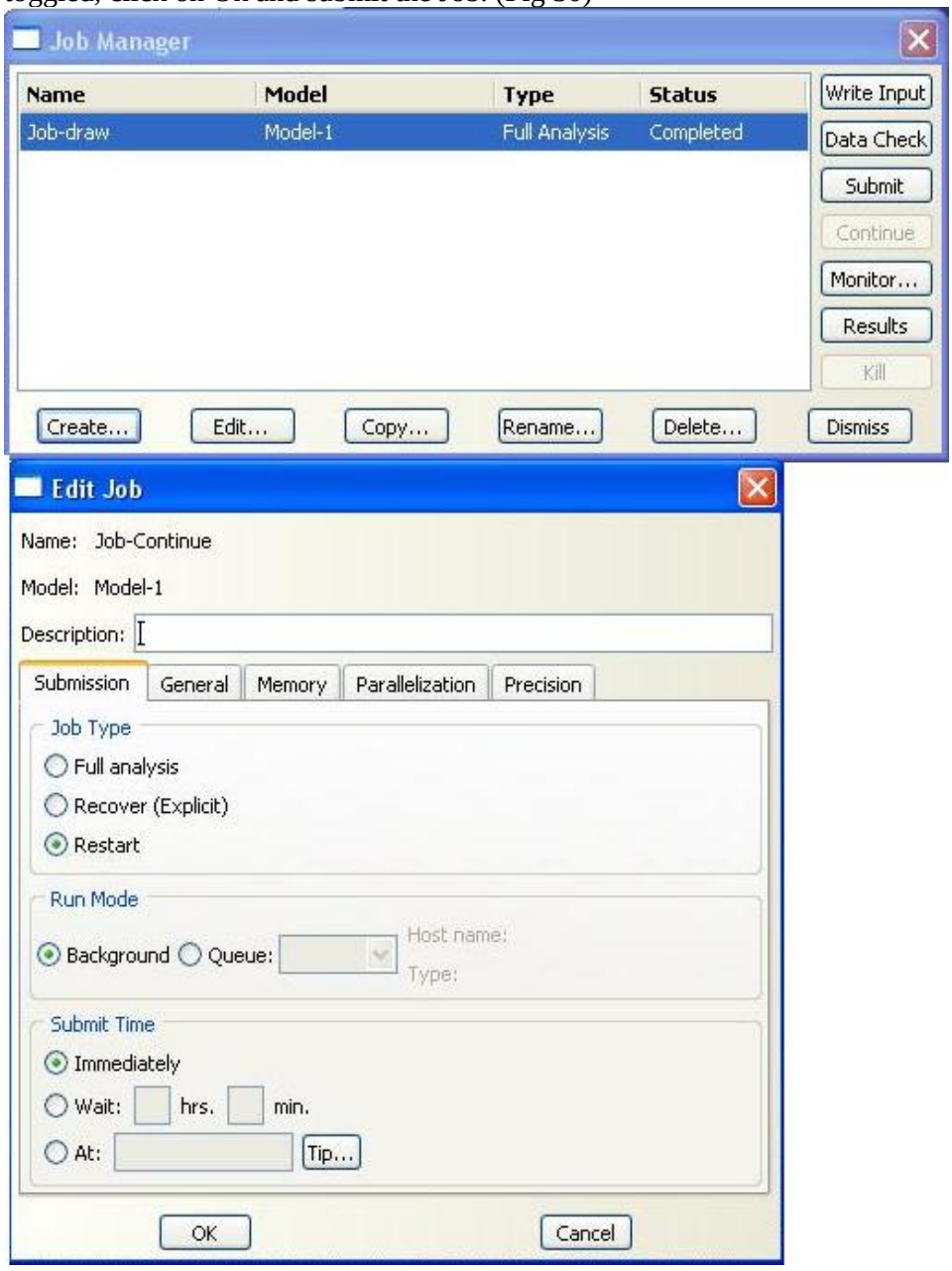


Fig 30

- You see the total time is actually continued from the point you wanted which means you are just running the Second Step and use the previous step results till interval 5 and continue it with new defined Amplitude and load condition (Fig 31)

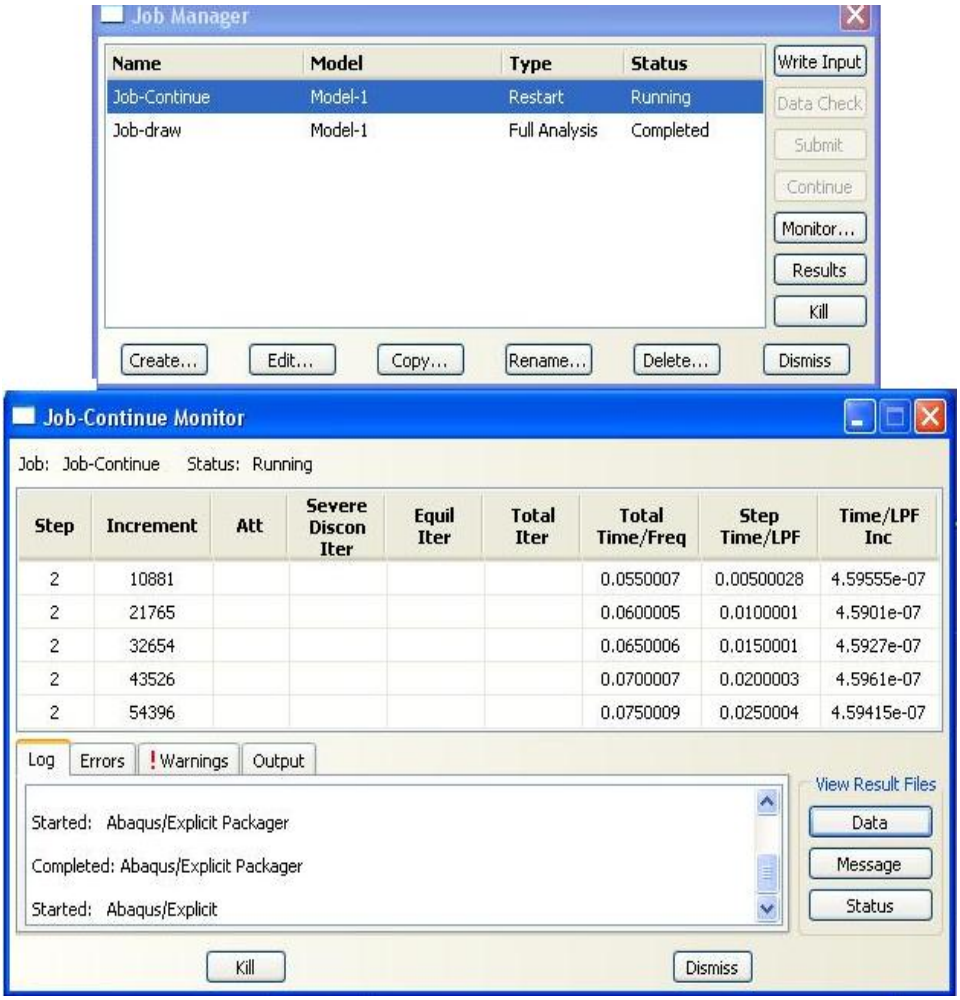


Fig 31

- Take a look at results to see what really happened