Appendix A

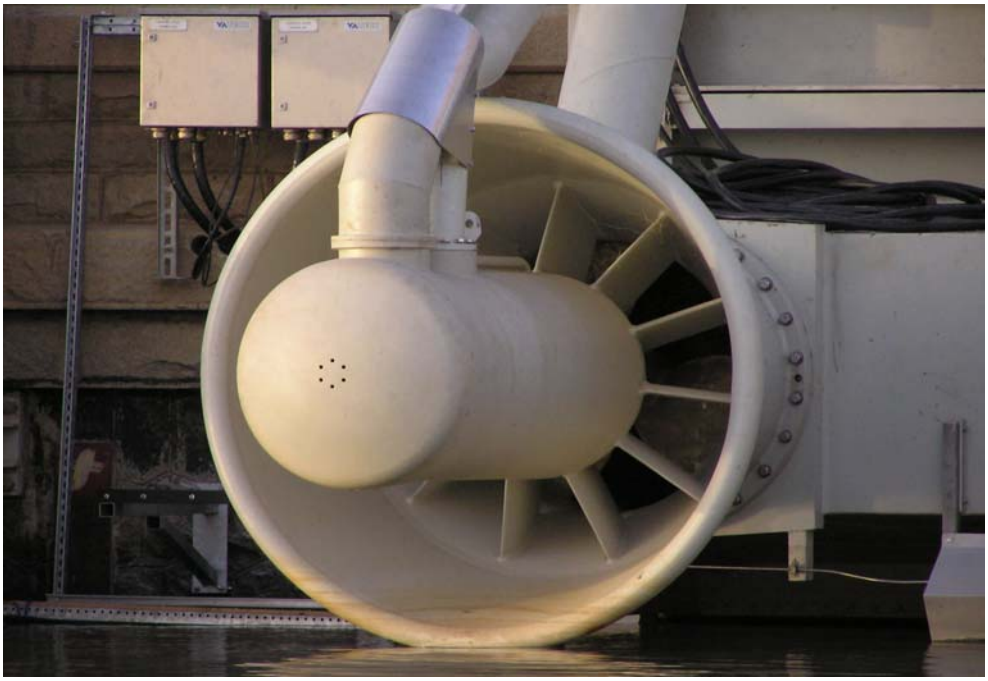
Plant Chart

Hydro Matrix Power Plant

8 Lots

40 Modules

80 Turbine Generators



Picture 1: Turbine Generators at Jebel Aulia

Picture 2: The first lot of 10 units together with the new crane at Jebel Aulia

Picture 3: Module in upper position

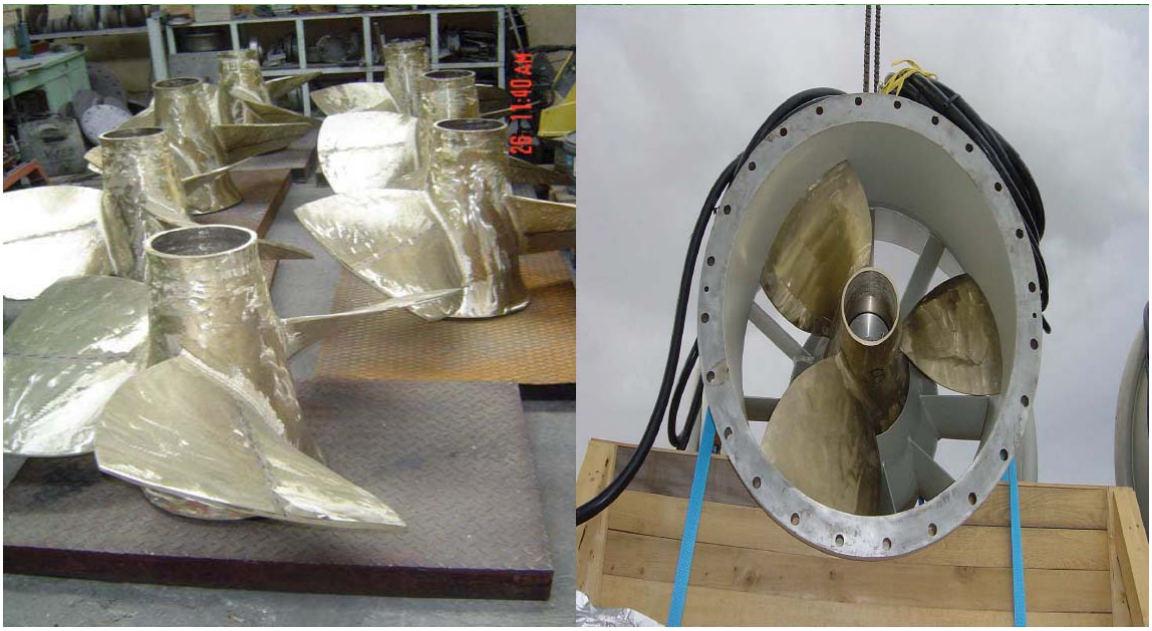
Picture 4: Jebel Aulia dam with HYDROMATRIX ® modules

Picture 5: Modules in lowered position

Picture 6: Modules in raised position seen from upstream side, yellow painted gantry crane to the right

Picture 7: Lot One

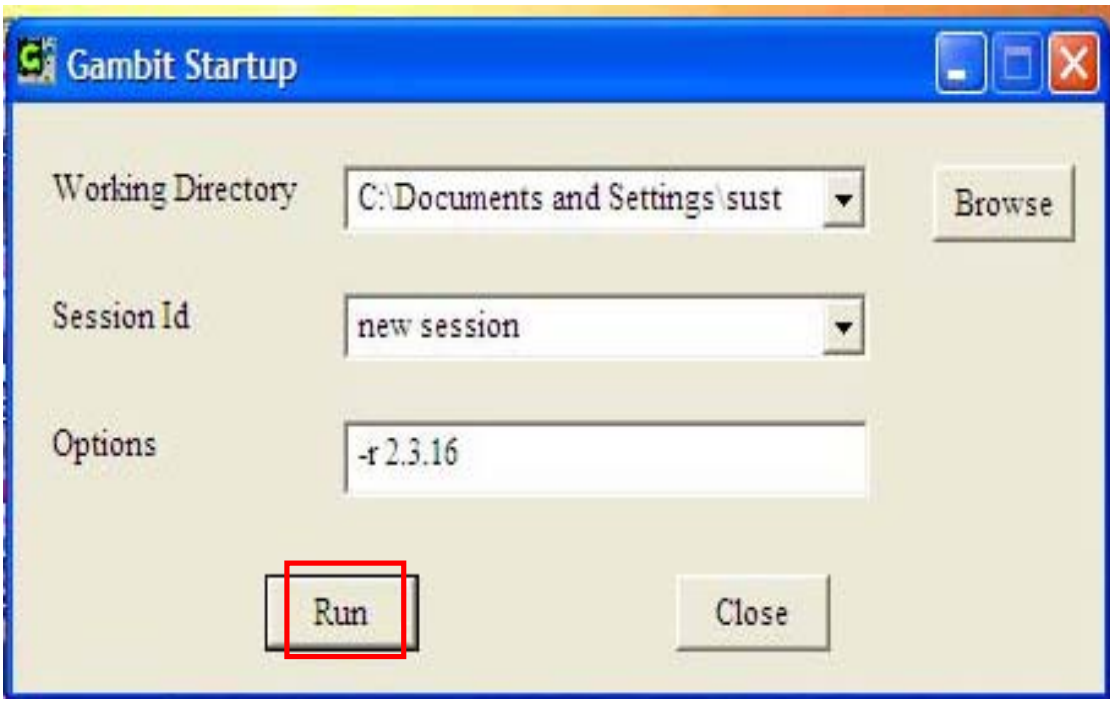
Picture 8: Transformers &the Crane

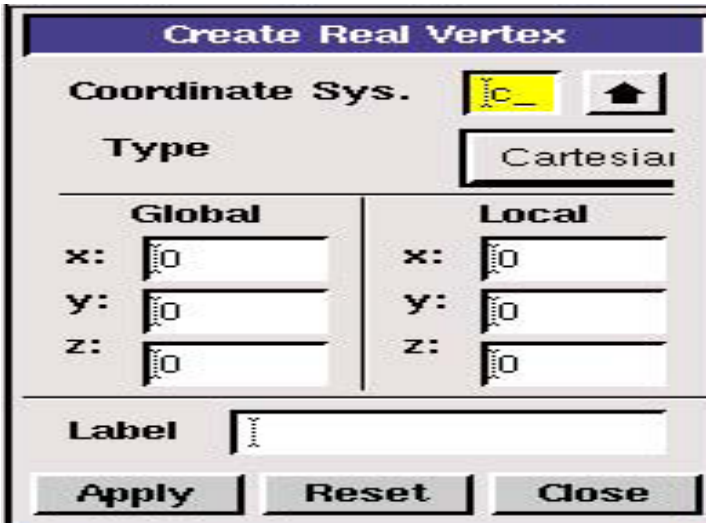


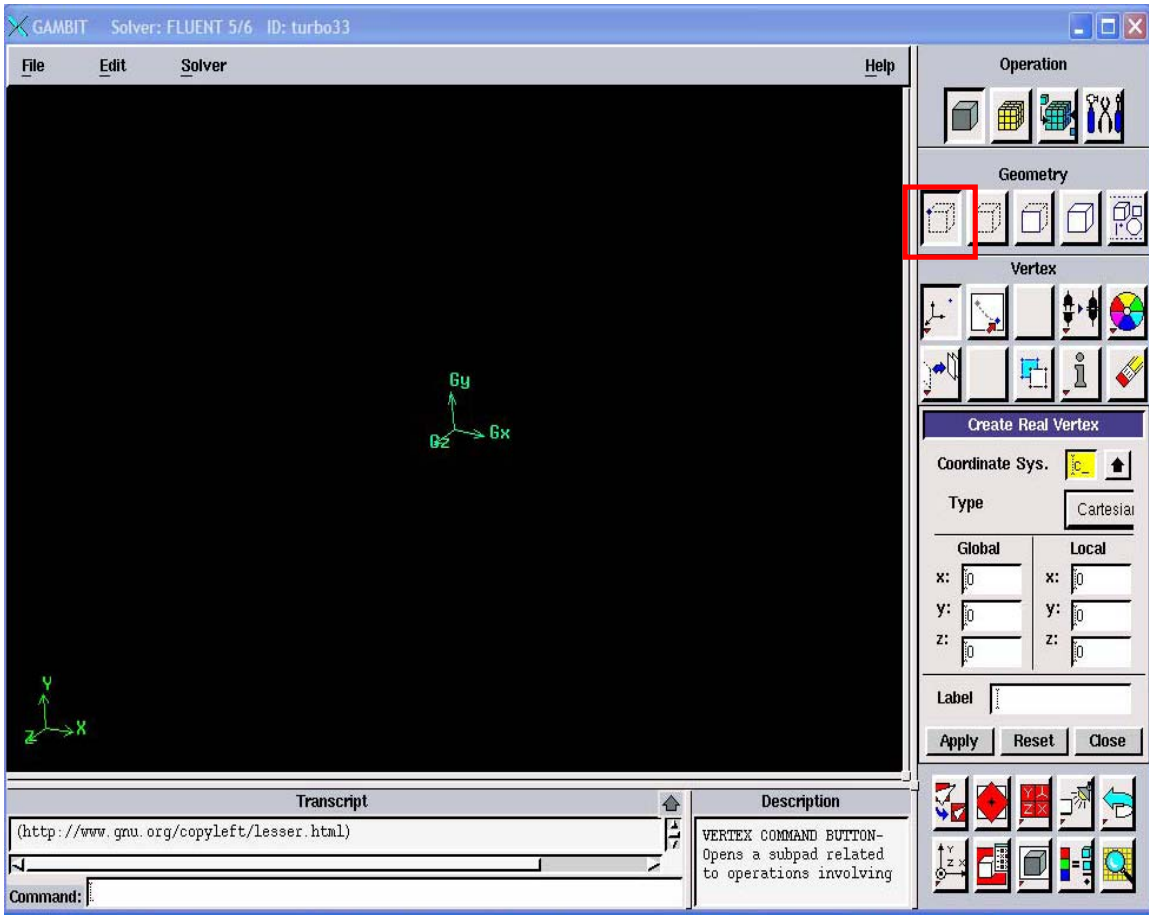
Picture 9: Runner blades

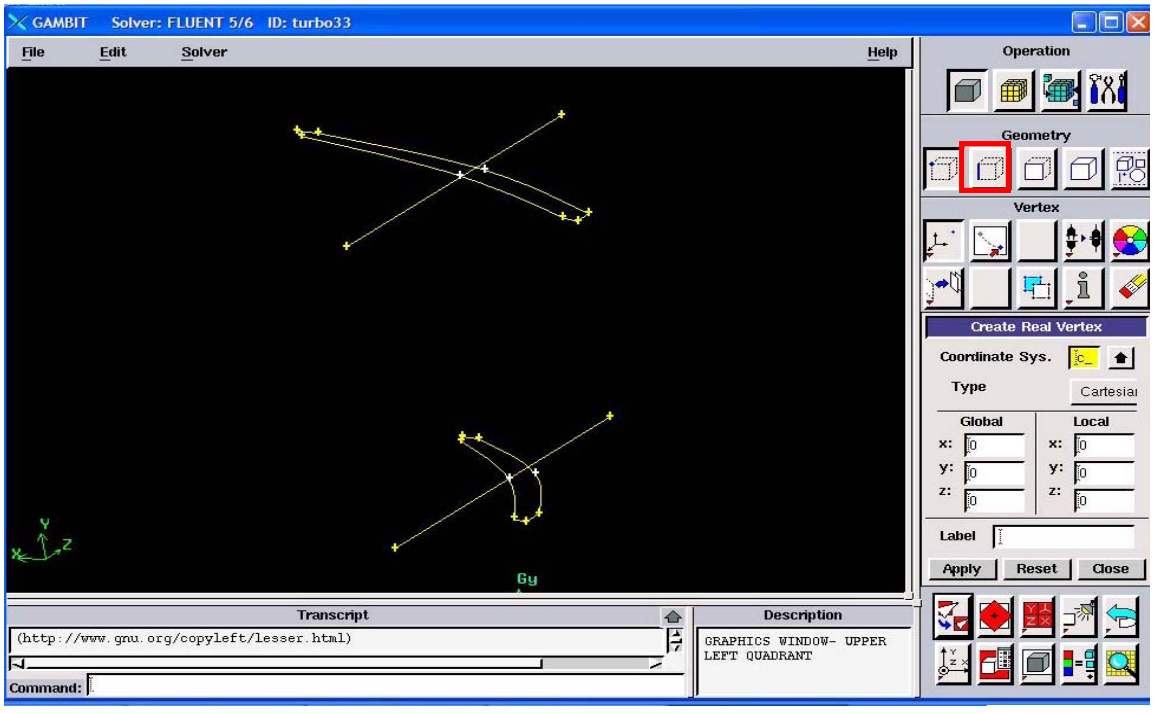
Appendix B

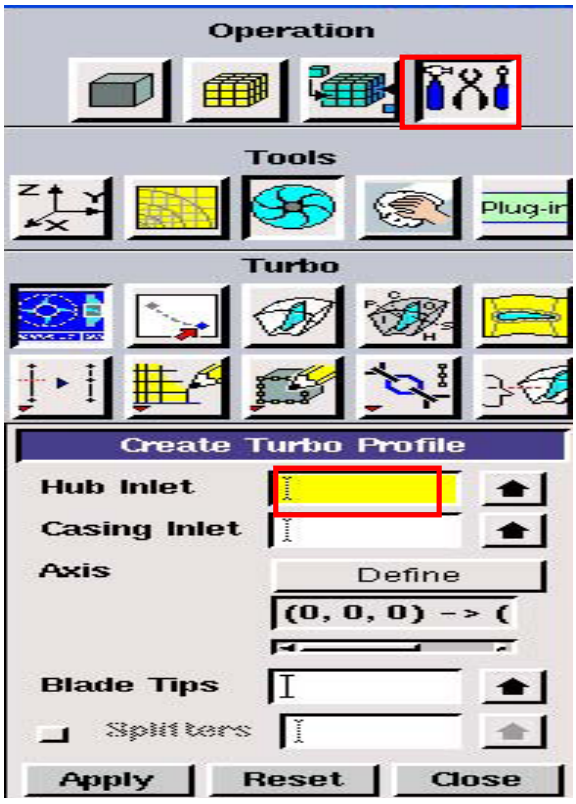
Gambit 2.3 Program

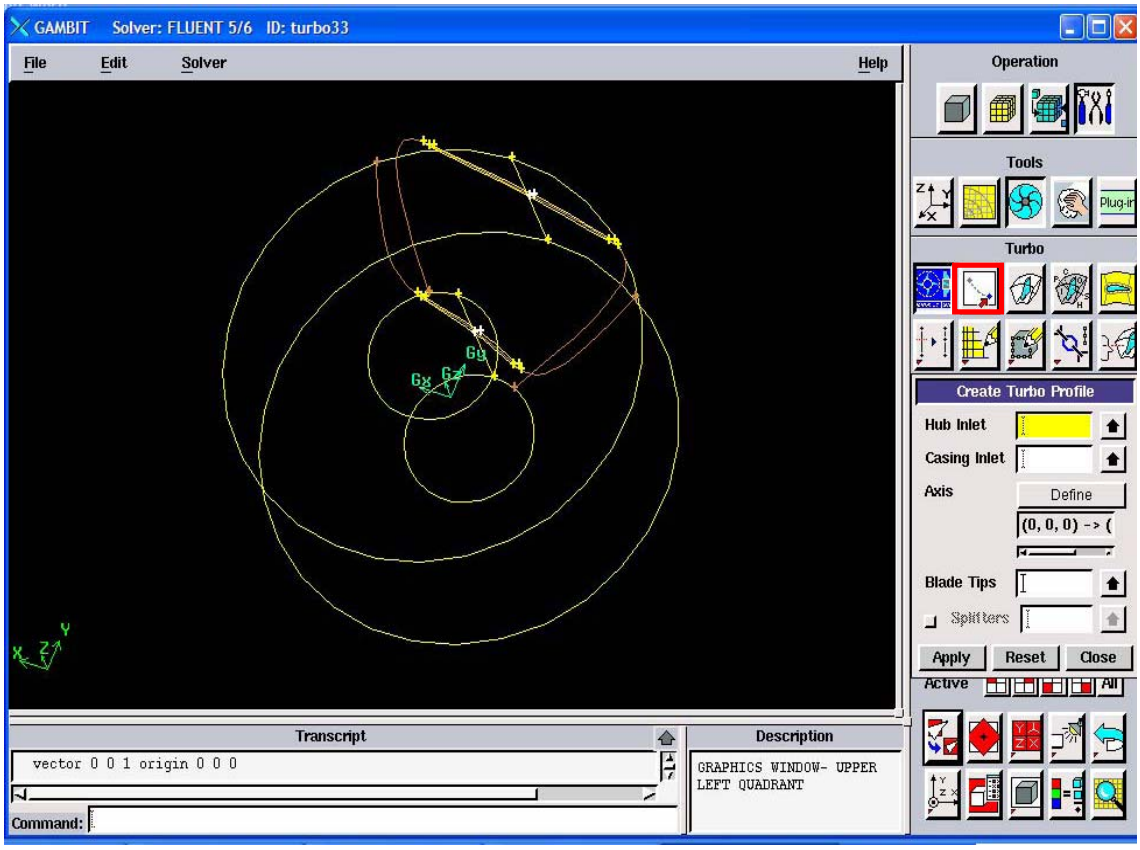


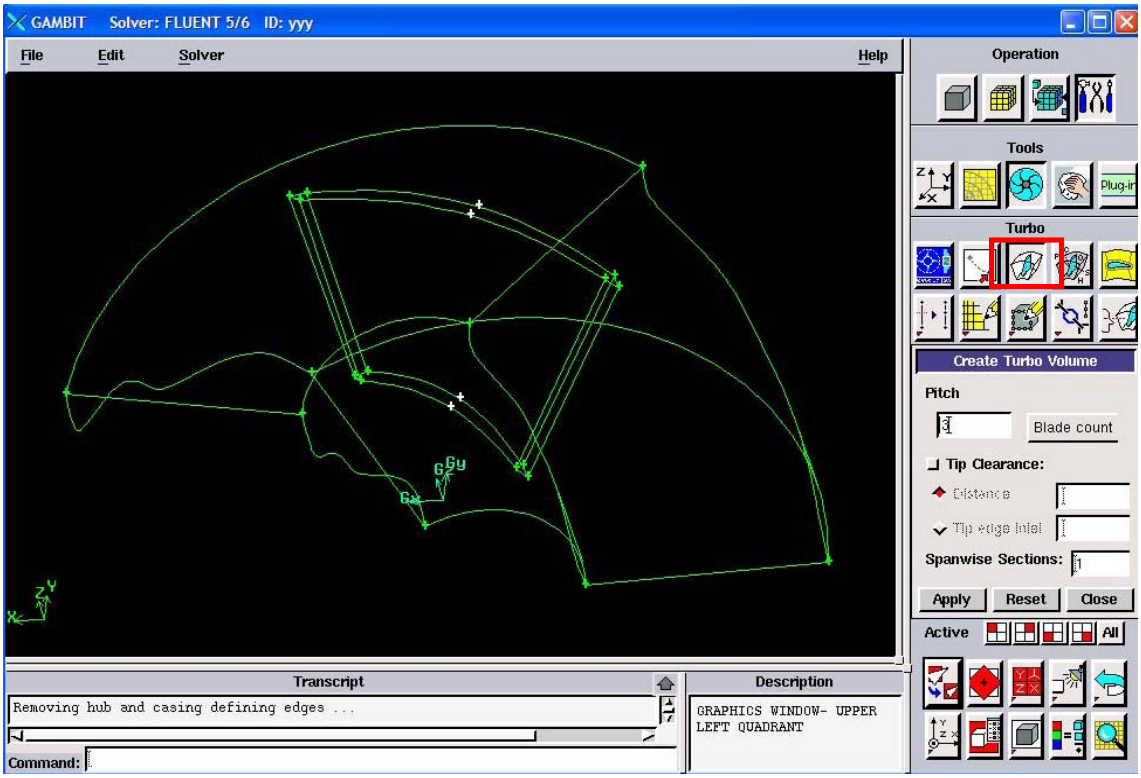


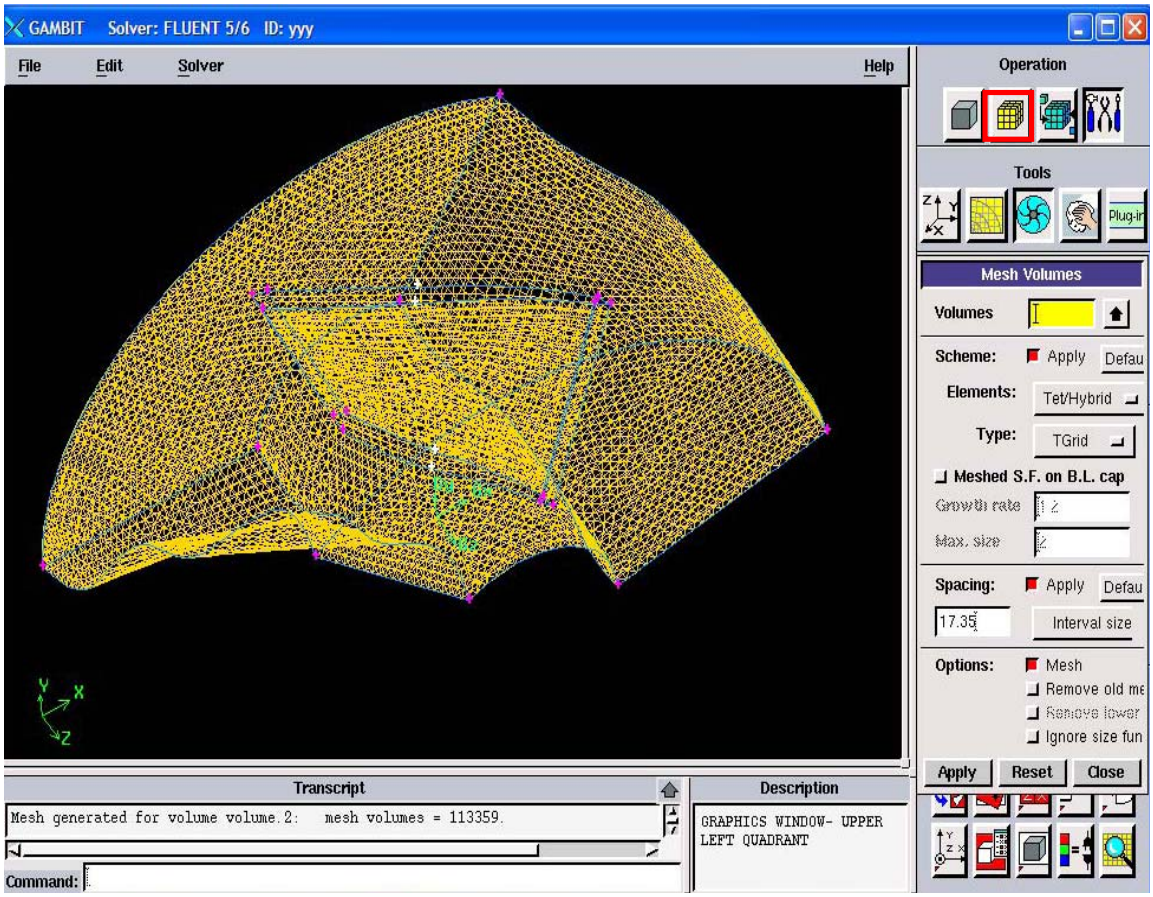

GAMBIT Solver: FLUENT 5/6 ID: turbo33
File
Edit
Solver
Help
Operation
Geometry
Vertex
Create Real Vertex
Coordinate Sys.
Type
Cartesian
Global
Local
x:
y:
z:
Label
Apply
Reset
Close
Transcript
(http://www.gnu.org/copyleft/lesser.html)
Command:
Description
VERTEX COMMAND BUTTON- Opens a subpad related to operations involving

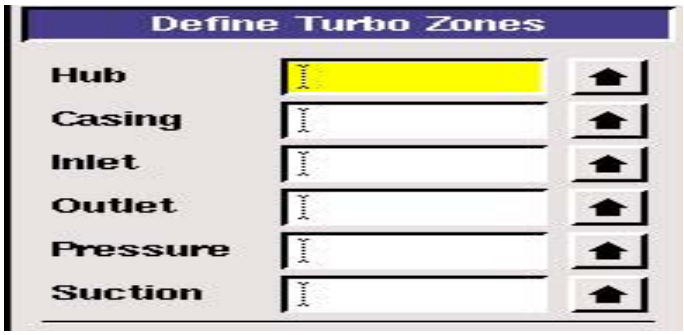

GAMBIT Solver: FLUENT 5/6 ID: turbo33
File
Edit
Solver
Help
Operation
Geometry
Vertex
Create Real Vertex
Coordinate Sys.
Type
Cartesian
Global
Local
x:
y:
z:
Label
Apply
Reset
Close
Transcript
(http://www.gnu.org/copyleft/lesser.html)
Command:
Description
GRAPHICS WINDOW- UPPER LEFT QUADRANT

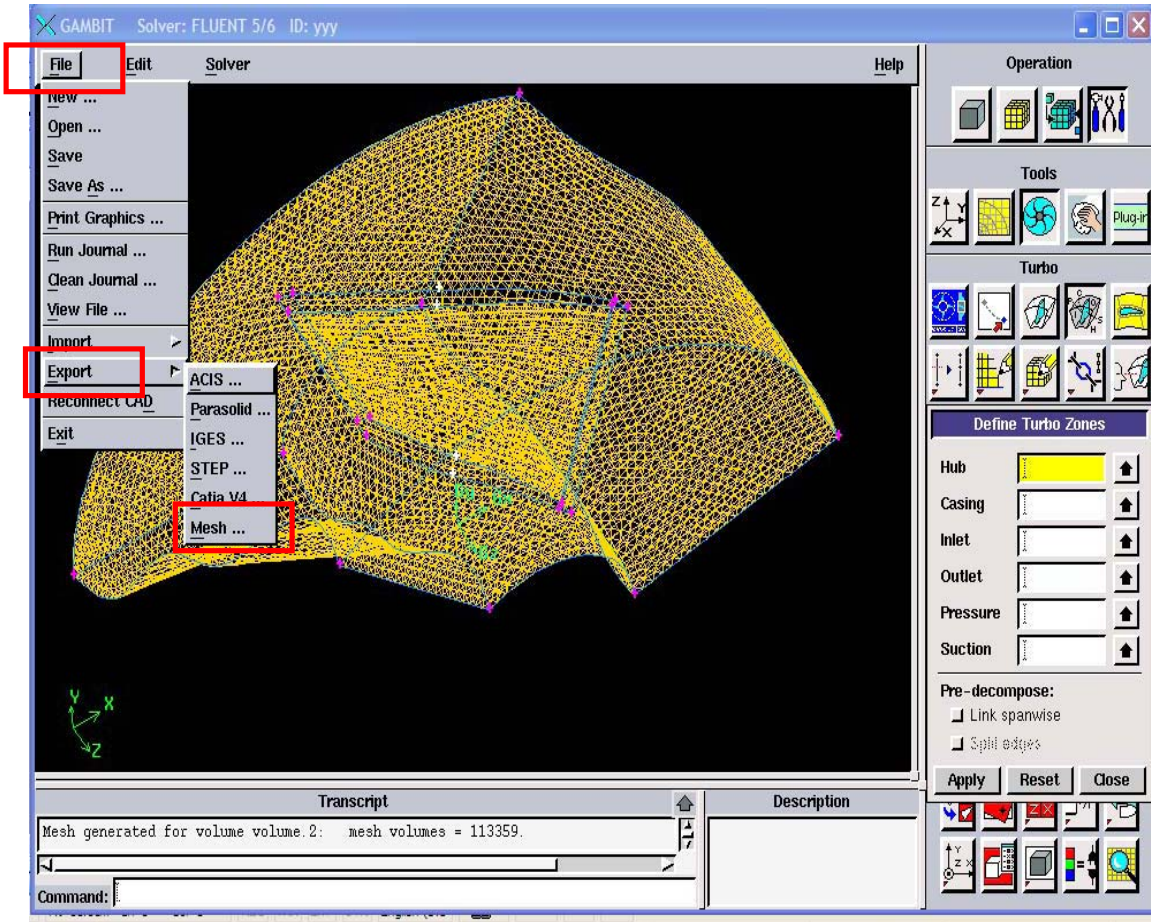

Operation
Tools
Plug-in
Turbo
Create Turbo Profile
Hub Inlet
Casing Inlet
Axis
Define
(0, 0, 0) -> (
Blade Tips
Splitters
Apply
Reset
Close

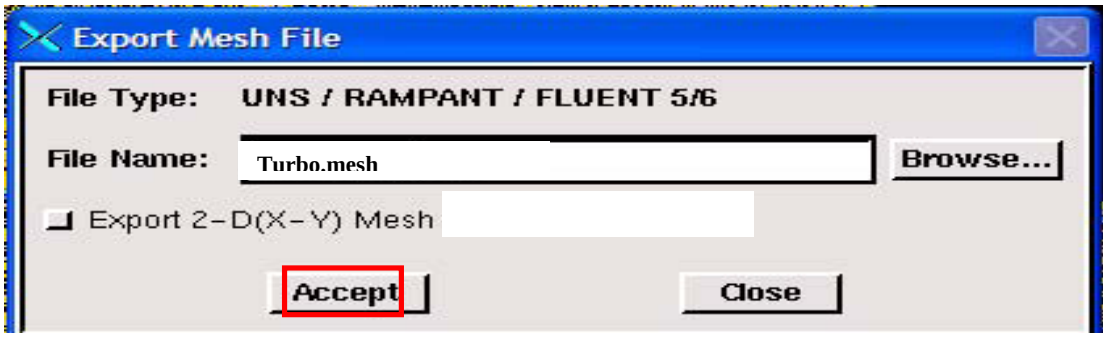

GAMBIT Solver: FLUENT 5/6 ID: turbo33
File
Edit
Solver
Help
Operation
Tools
Plug-in
Turbo
Create Turbo Profile
Hub Inlet
Casing Inlet
Axis
Define
(0, 0, 0) -> (
Blade Tips
Splitters
Apply
Reset
Close
Active
All
Transcript
vector 0 0 1 origin 0 0 0
Description
GRAPHICS WINDOW- UPPER LEFT QUADRANT
Command:


GAMBIT Solver: FLUENT 5/6 ID: yyy
File Edit Solver Help
Operation
Tools
Turbo
Create Turbo Volume
Pitch
Blade count
Tip Clearance:
Distance
Tip edge inset
Spanwise Sections:
Apply Reset Close
Active All
Transcript
Removing hub and casing defining edges ...
Description
GRAPHICS WINDOW- UPPER LEFT QUADRANT
Command:

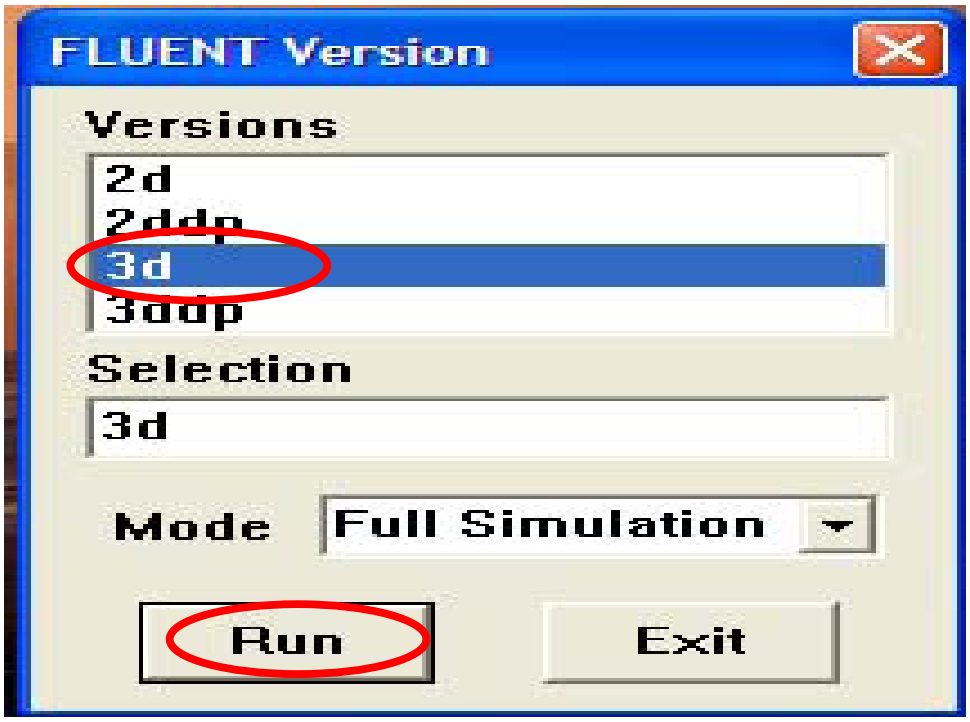

GAMBIT Solver: FLUENT 5/6 ID: yyy
File Edit Solver Help
Operation
Tools
Mesh Volumes
Volumes
Scheme: Apply Defau
Elements: Tet/Hybrid
Type: TGrid
Meshed S.F. on B.L. cap
Growth rate
Max. size
Spacing: Apply Defau
17.35
Interval size
Options: Mesh
Remove old me
Remove lower
Ignore size fun
Apply Reset Close
Transcript
Mesh generated for volume volume.2: mesh volumes = 113359.
Description
GRAPHICS WINDOW- UPPER LEFT QUADRANT
Command:

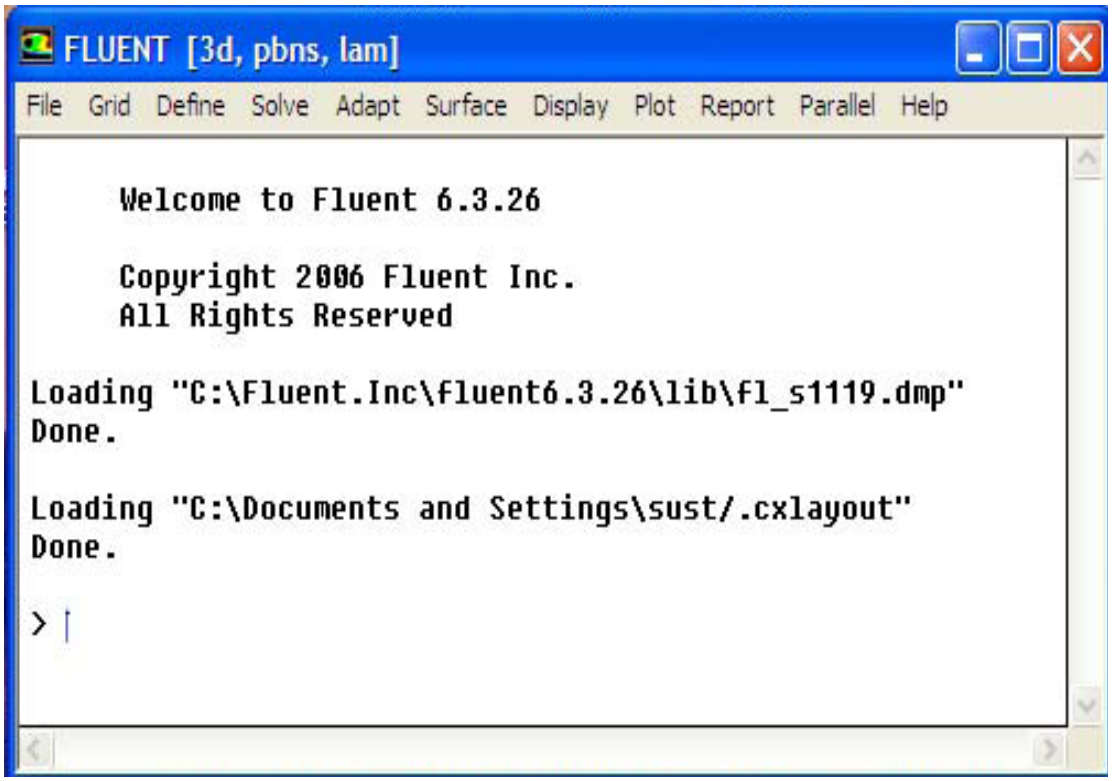

Define Turbo Zones
Hub
Casing
Inlet
Outlet
Pressure
Suction

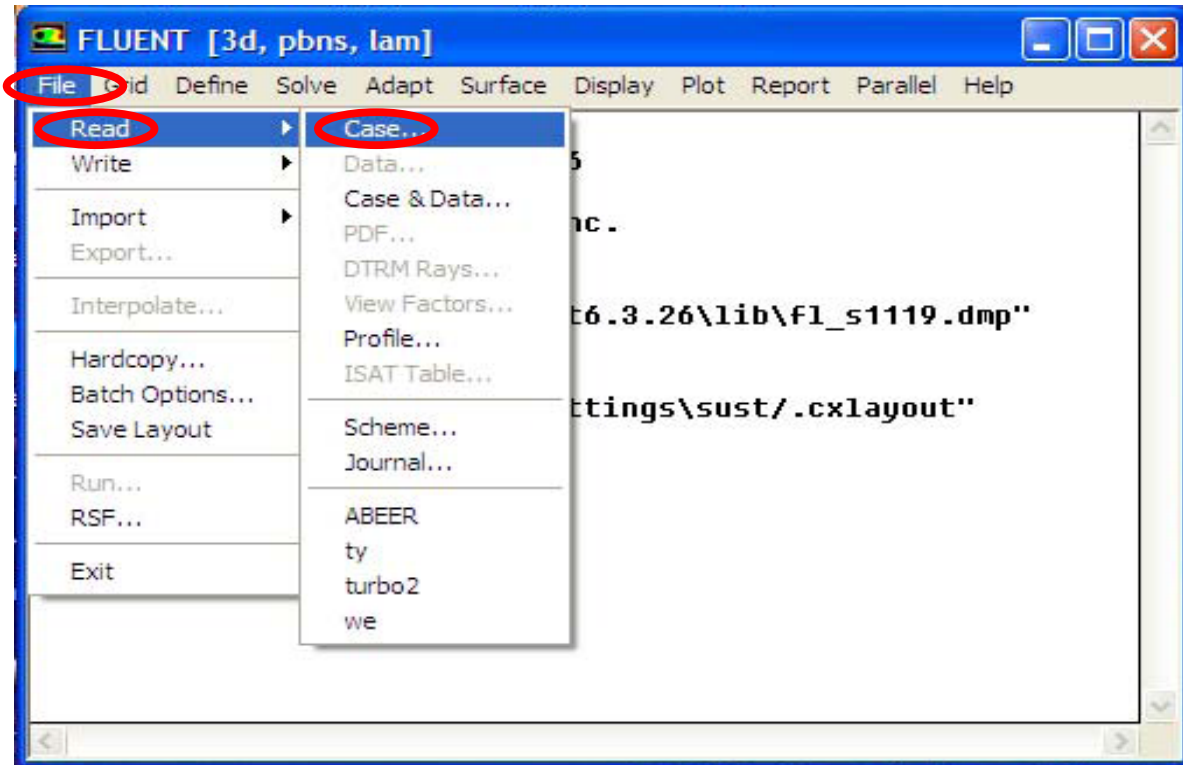

GAMBIT Solver: FLUENT 5/6 ID: yyy
File
Edit
Solver
Help
New ...
Open ...
Save
Save As ...
Print Graphics ...
Run Journal ...
Clean Journal ...
View File ...
Import
Export
Reconnect CAD
Exit
ACIS ...
Parasolid ...
IGES ...
STEP ...
Catia V4
Mesh ...
Operation
Tools
Turbo
Define Turbo Zones
Hub
Casing
Inlet
Outlet
Pressure
Suction
Pre-decompose:
Link spanwise
Split edges
Apply
Reset
Close
Transcript
Mesh generated for volume volume.2: mesh volumes = 113359.
Description
Command:

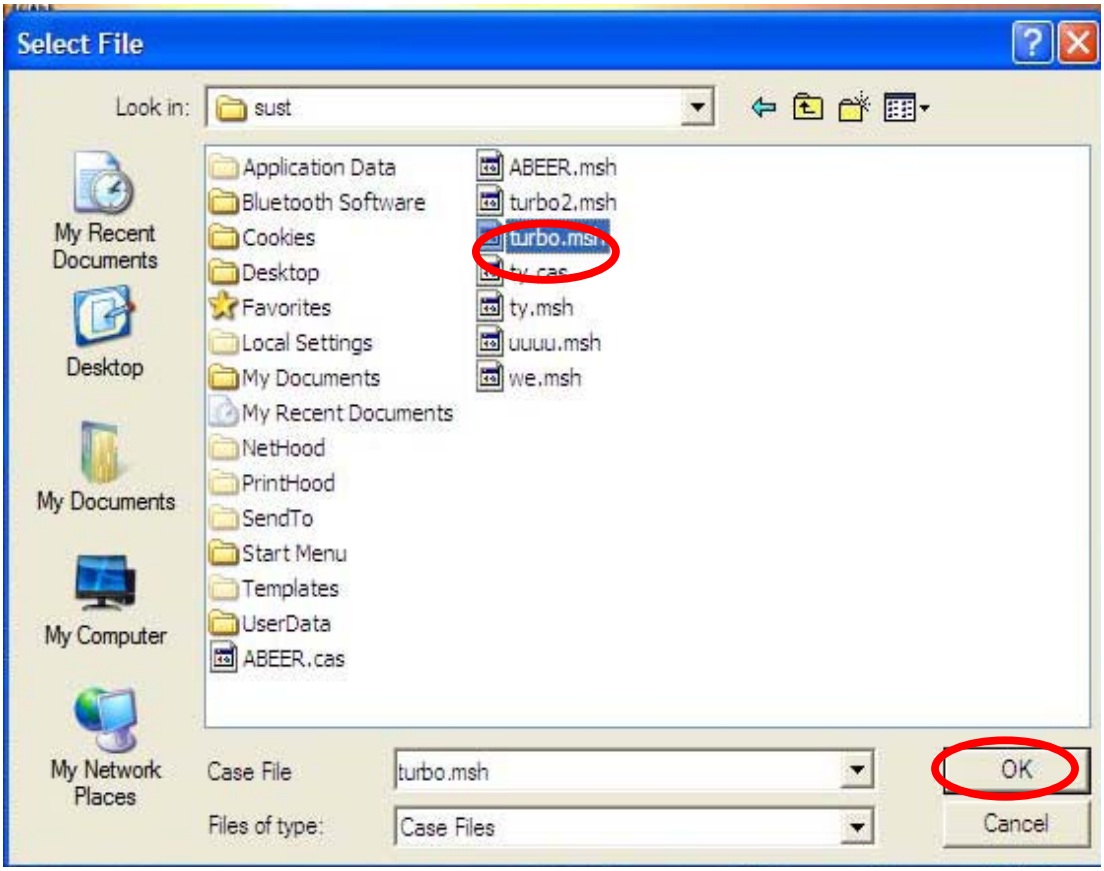

Export Mesh File
File Type: UNS / RAMPANT / FLUENT 5/6
File Name: Turbo.mesh
Browse...
Export 2-D(X-Y) Mesh
Accept
Close

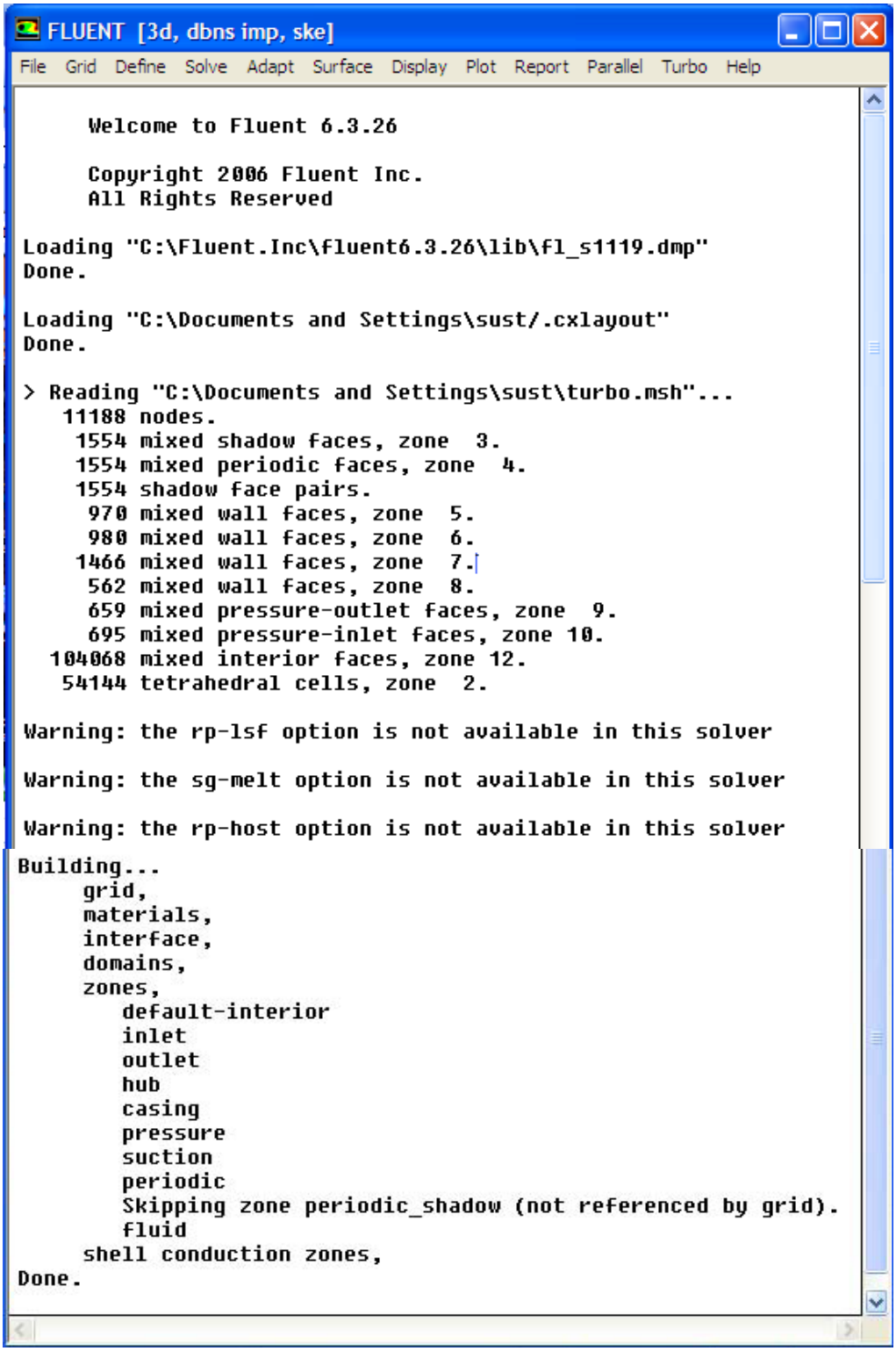
Fluent 6.3 Programs

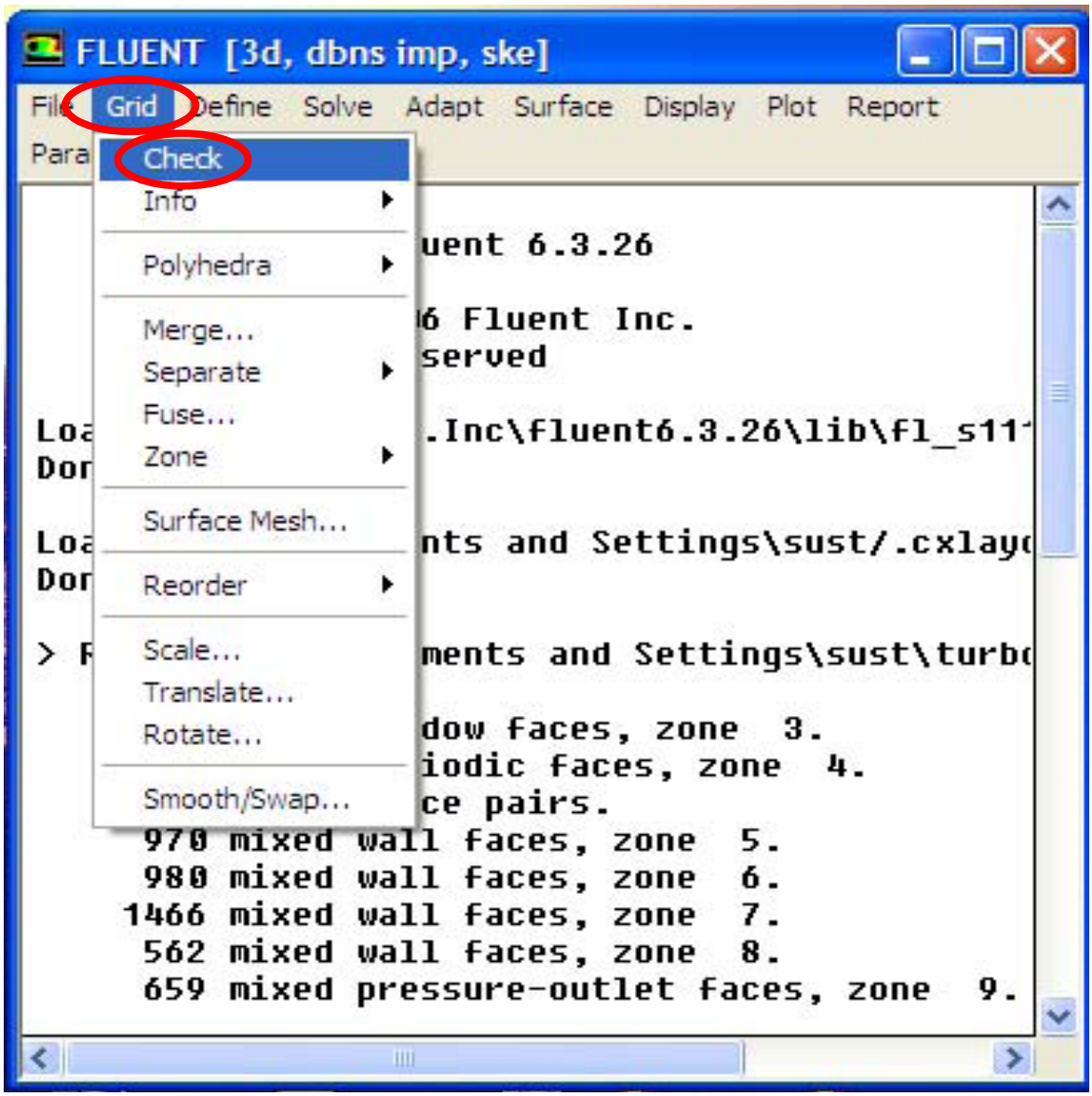


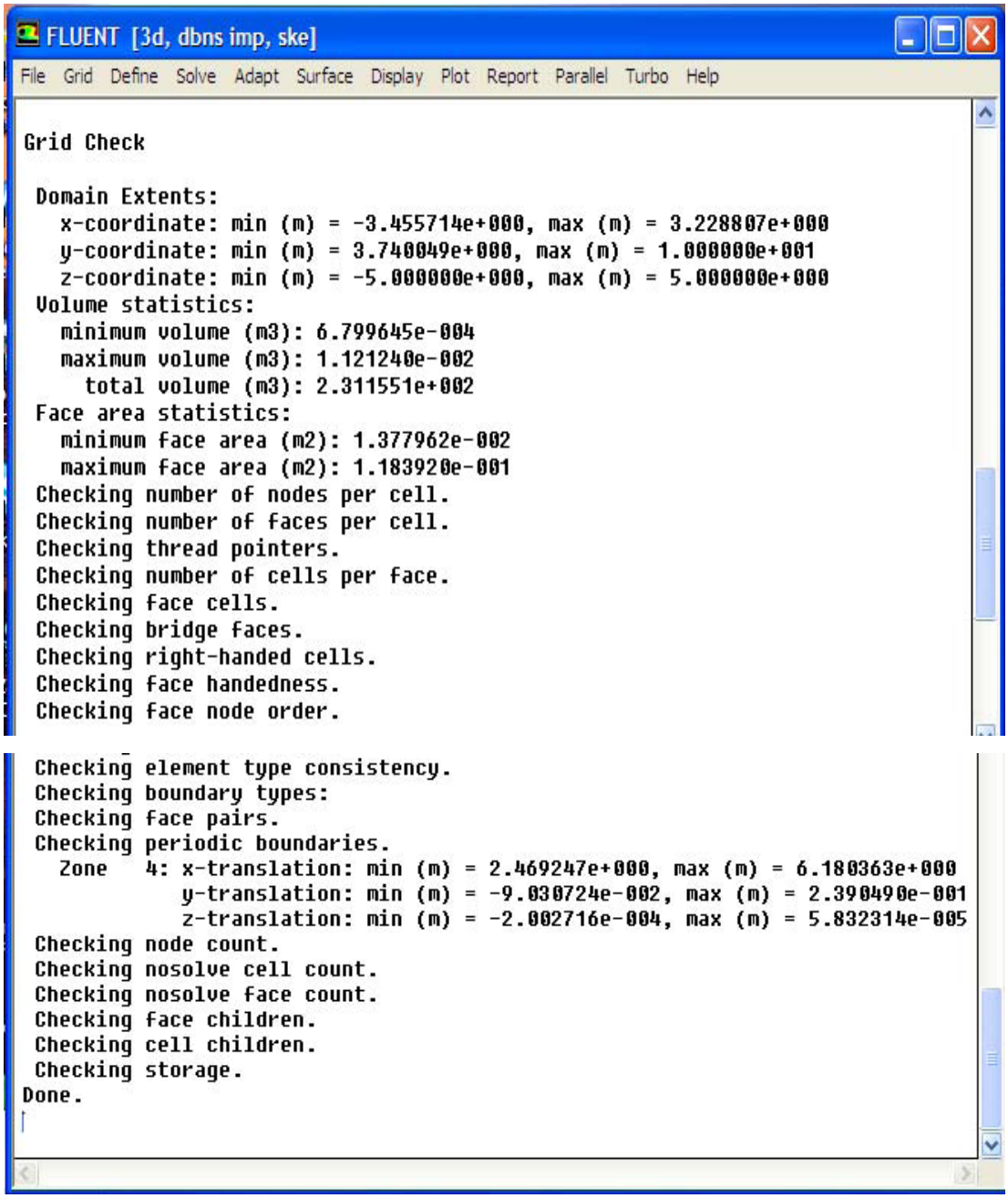


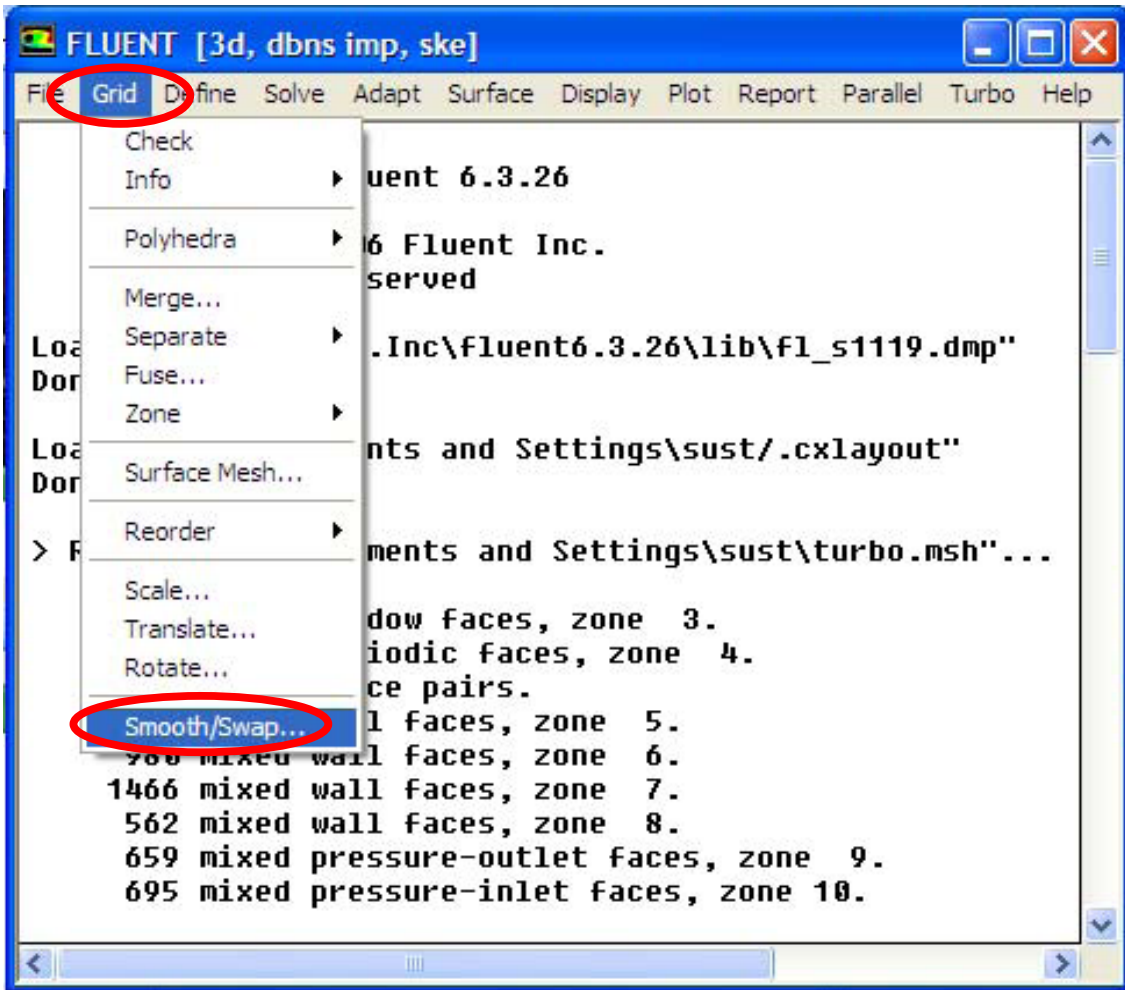

FLUENT [3d, pbns, lam]
File
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Help
Read
Write
Import
Export...
Interpolate...
Hardcopy...
Batch Options...
Save Layout
Run...
RSF...
Exit
Case...
Data...
Case & Data...
PDF...
DTRM Rays...
View Factors...
Profile...
ISAT Table...
Scheme...
Journal...
ABEER
ty
turbo2
we
nc.
t6.3.26\lib\fl_s1119.dmp"
ttings\sust/.cxlayout"

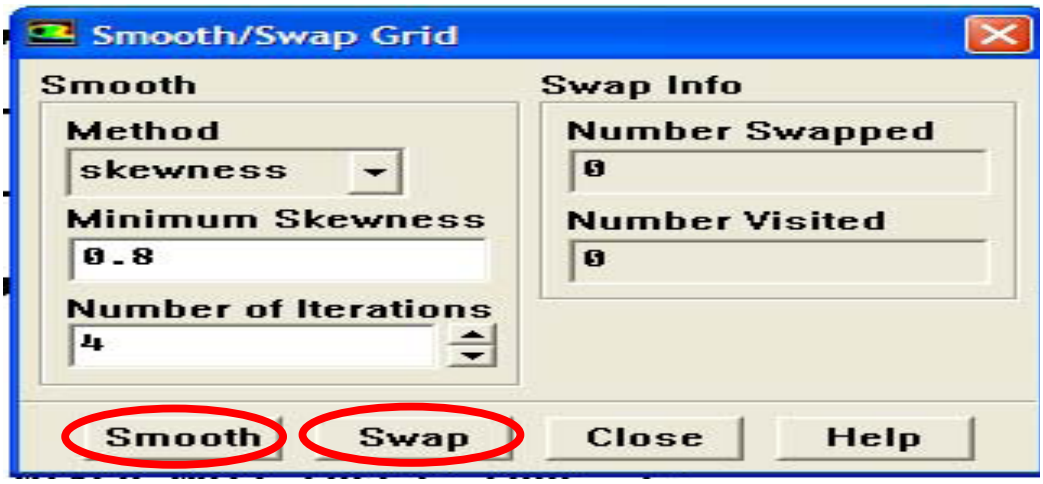

Select File
Look in:
sust
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
Application Data
Bluetooth Software
Cookies
Desktop
Favorites
Local Settings
My Documents
My Recent Documents
NetHood
PrintHood
SendTo
Start Menu
Templates
UserData
ABEER.cas
ABEER.msh
turbo2.msh
turbo.msh
ty.msh
uuuu.msh
we.msh
Case File
turbo.msh
Files of type:
Case Files
OK
Cancel

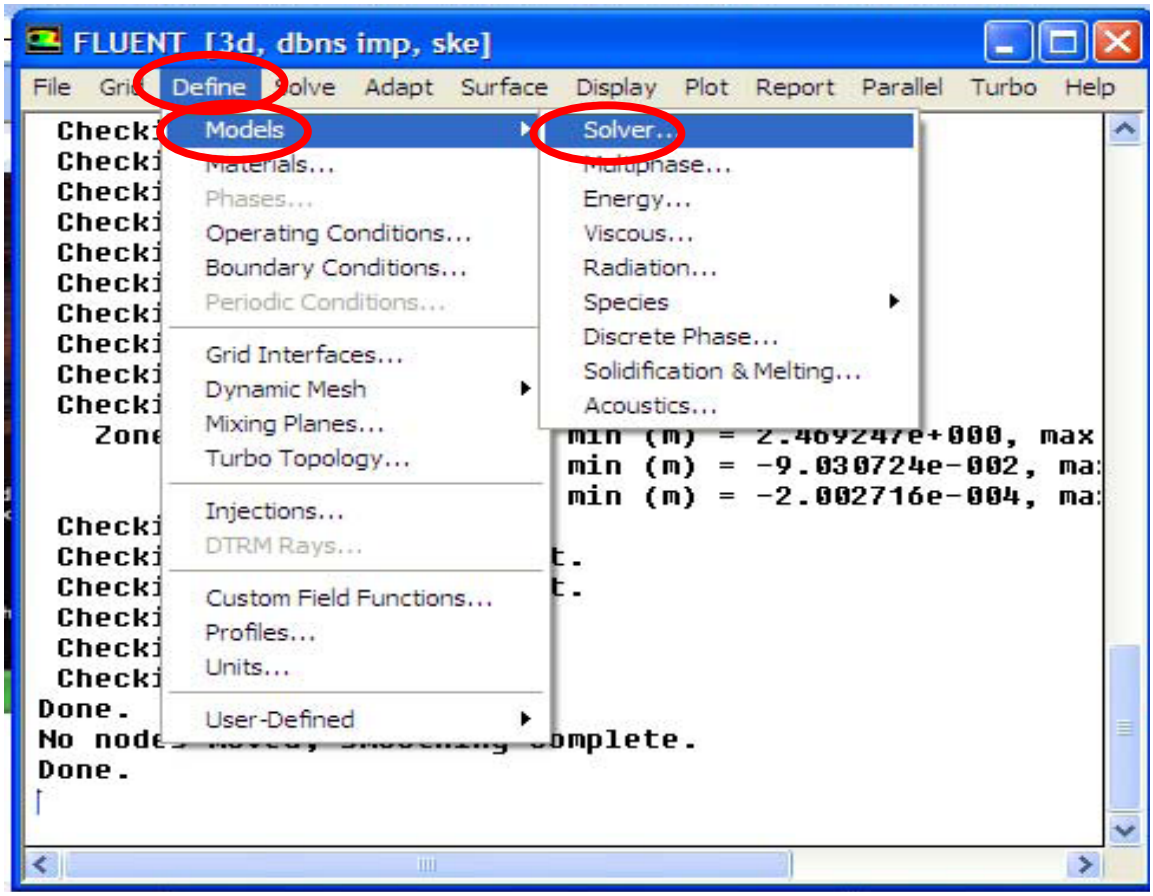

FLUENT [3d, dbns imp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Welcome to Fluent 6.3.26
Copyright 2006 Fluent Inc.
All Rights Reserved
Loading "C:\Fluent.Inc\fluent6.3.26\lib\fl_s1119.dmp"
Done.
Loading "C:\Documents and Settings\sust/.cxlayout"
Done.
> Reading "C:\Documents and Settings\sust\turbo.msh"...
11188 nodes.
1554 mixed shadow faces, zone 3.
1554 mixed periodic faces, zone 4.
1554 shadow face pairs.
970 mixed wall faces, zone 5.
980 mixed wall faces, zone 6.
1466 mixed wall faces, zone 7.
562 mixed wall faces, zone 8.
659 mixed pressure-outlet faces, zone 9.
695 mixed pressure-inlet faces, zone 10.
104068 mixed interior faces, zone 12.
54144 tetrahedral cells, zone 2.
Warning: the rp-lsf option is not available in this solver
Warning: the sg-melt option is not available in this solver
Warning: the rp-host option is not available in this solver
Building...
grid,
materials,
interface,
domains,
zones,
default-interior
inlet
outlet
hub
casing
pressure
suction
periodic
Skipping zone periodic_shadow (not referenced by grid).
fluid
shell conduction zones,
Done.

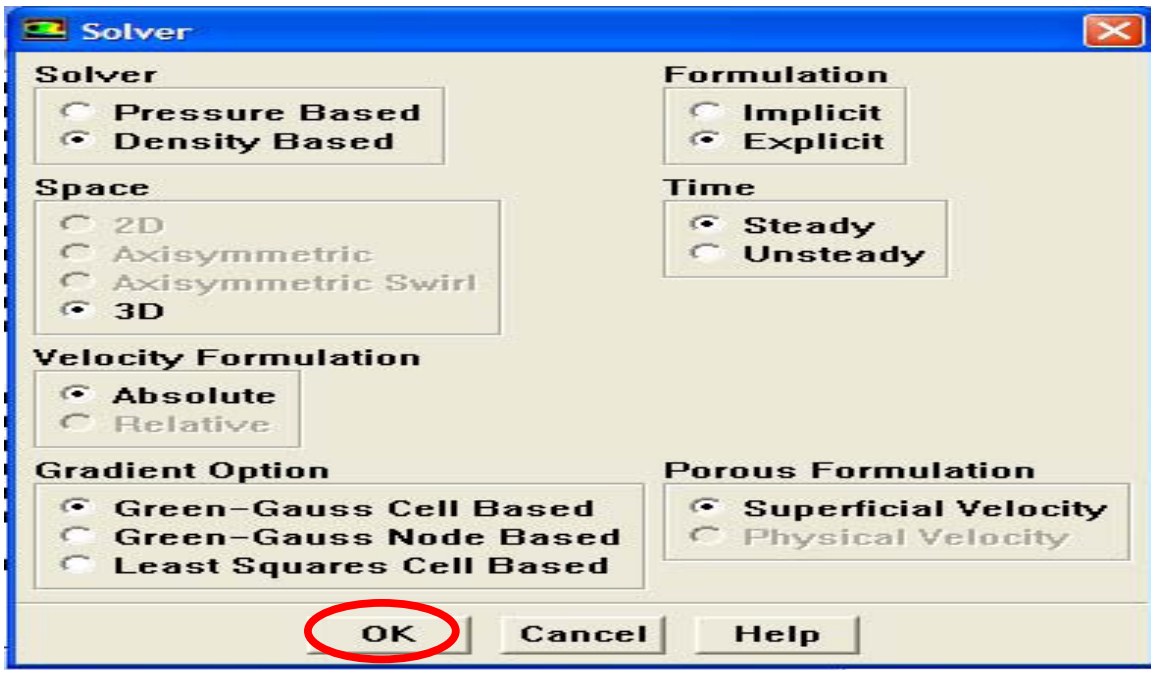

FLUENT [3d, dbns imp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Para
Check
Info
Polyhedra
Merge...
Separate
Fuse...
Zone
Surface Mesh...
Reorder
Scale...
Translate...
Rotate...
Smooth/Swap...
uent 6.3.26
6 Fluent Inc.
served
.Inc\fluent6.3.26\lib\fl_s11
nts and Settings\sust/.cxlay
ments and Settings\sust\turb
dow faces, zone 3.
iodic faces, zone 4.
ce pairs.
970 mixed wall faces, zone 5.
980 mixed wall faces, zone 6.
1466 mixed wall faces, zone 7.
562 mixed wall faces, zone 8.
659 mixed pressure-outlet faces, zone 9.

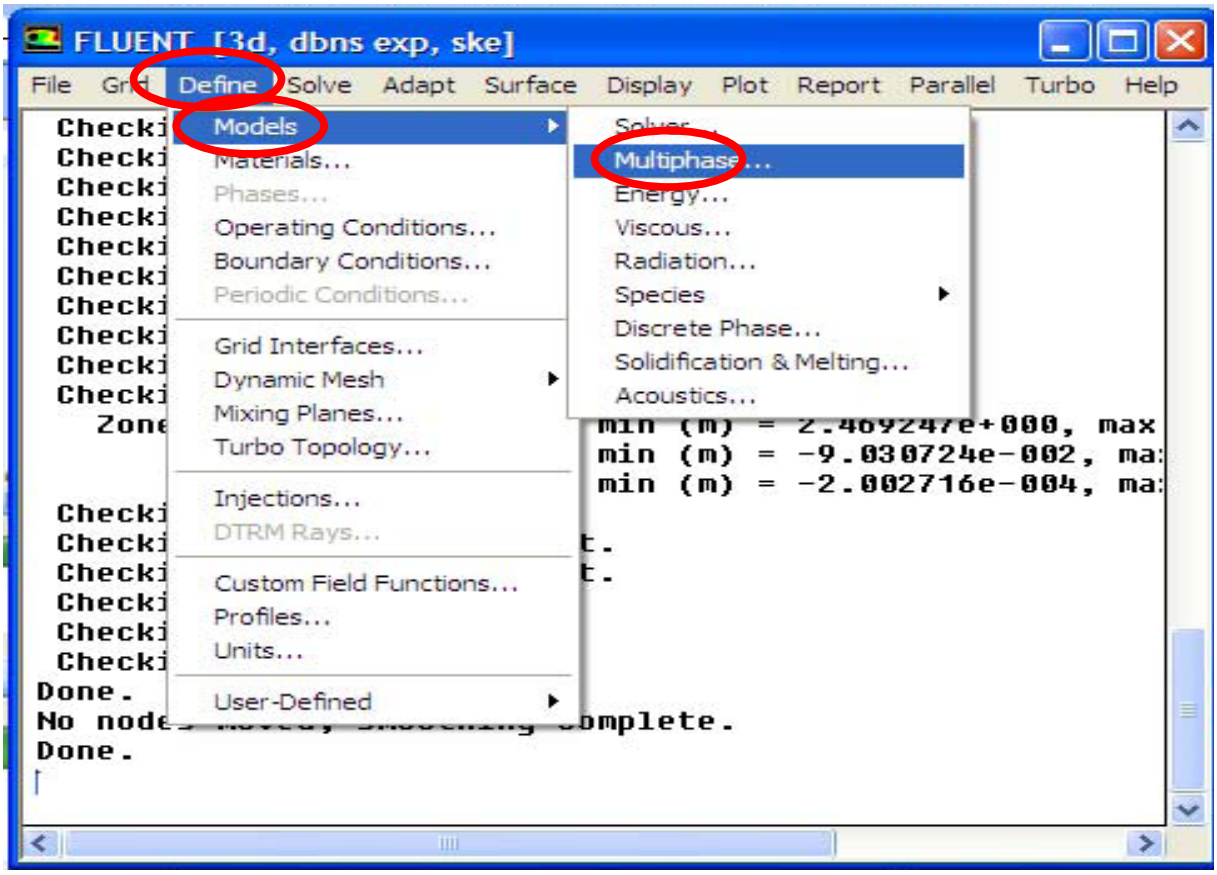

FLUENT [3d, dbns imp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Grid Check
Domain Extents:
x-coordinate: min (m) = -3.455714e+000, max (m) = 3.228807e+000
y-coordinate: min (m) = 3.740049e+000, max (m) = 1.000000e+001
z-coordinate: min (m) = -5.000000e+000, max (m) = 5.000000e+000
Volume statistics:
minimum volume (m3): 6.799645e-004
maximum volume (m3): 1.121240e-002
total volume (m3): 2.311551e+002
Face area statistics:
minimum face area (m2): 1.377962e-002
maximum face area (m2): 1.183920e-001
Checking number of nodes per cell.
Checking number of faces per cell.
Checking thread pointers.
Checking number of cells per face.
Checking face cells.
Checking bridge faces.
Checking right-handed cells.
Checking face handedness.
Checking face node order.
Checking element type consistency.
Checking boundary types:
Checking face pairs.
Checking periodic boundaries.
Zone 4: x-translation: min (m) = 2.469247e+000, max (m) = 6.180363e+000
y-translation: min (m) = -9.030724e-002, max (m) = 2.390490e-001
z-translation: min (m) = -2.002716e-004, max (m) = 5.832314e-005
Checking node count.
Checking nosolve cell count.
Checking nosolve face count.
Checking face children.
Checking cell children.
Checking storage.
Done.

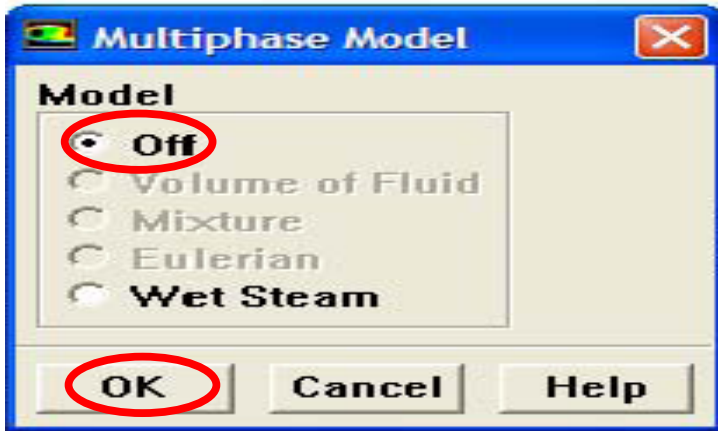

FLUENT [3d, dbns imp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Check
Info
Polyhedra
Merge...
Separate
Fuse...
Zone
Surface Mesh...
Reorder
Scale...
Translate...
Rotate...
Smooth/Swap...
uent 6.3.26
6 Fluent Inc.
served
.Inc\fluent6.3.26\lib\fl_s1119.dmp"
nts and Settings\sust/.cxlayout"
ments and Settings\sust\turbo.msh"...
dow faces, zone 3.
iodic faces, zone 4.
ce pairs.
1 faces, zone 5.
1466 mixed wall faces, zone 7.
562 mixed wall faces, zone 8.
659 mixed pressure-outlet faces, zone 9.
695 mixed pressure-inlet faces, zone 10.

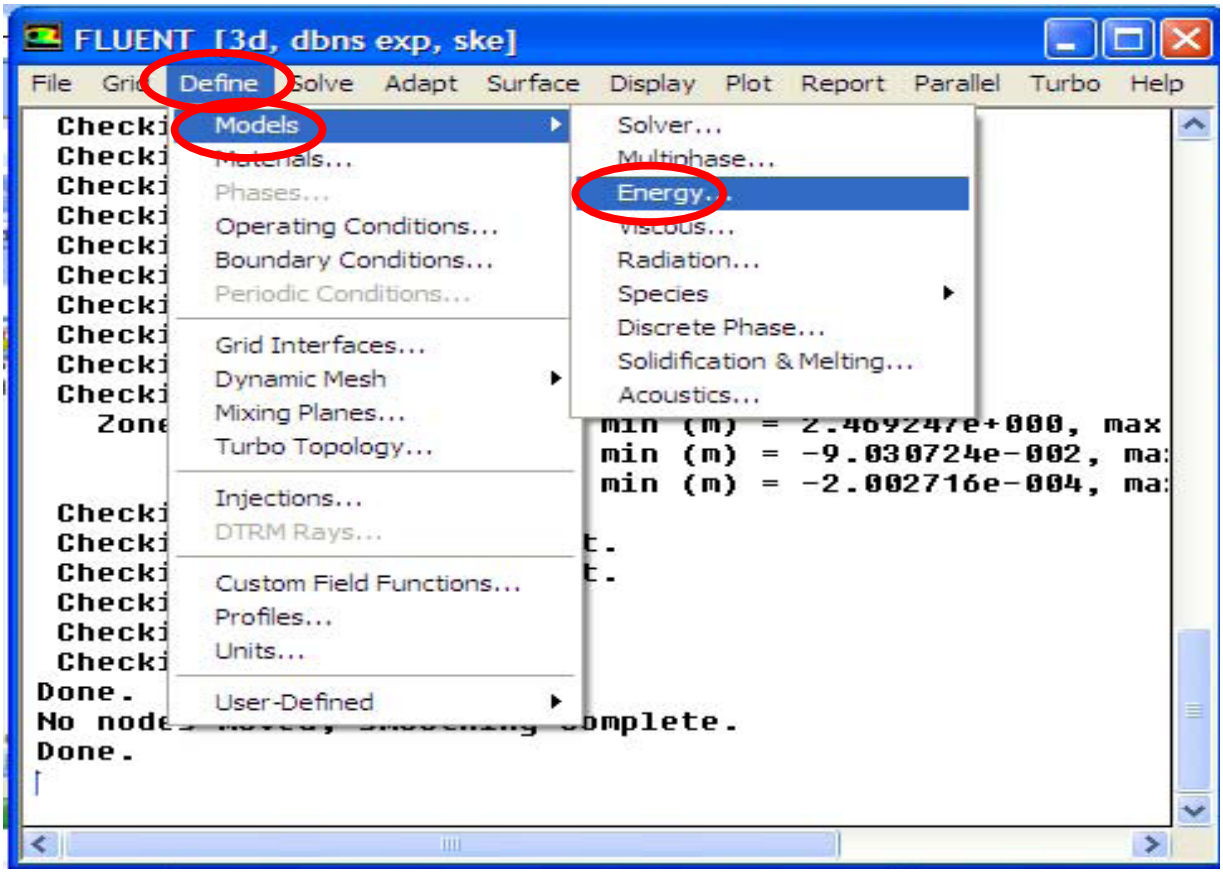

Smooth/Swap Grid
Smooth
Method
skewness
Minimum Skewness
0.8
Number of Iterations
4
Swap Info
Number Swapped
0
Number Visited
0
Smooth
Swap
Close
Help

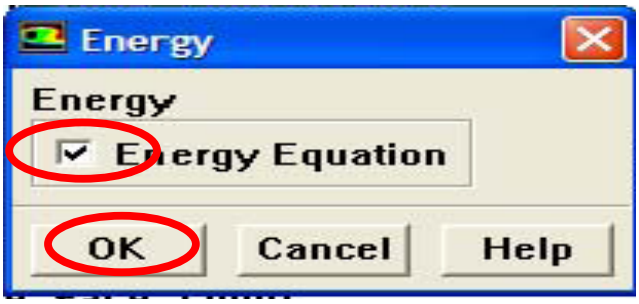

FLUENT [3d, dbns imp, ske]
File
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Models
Materials...
Phases...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Solver...
Multiphase...
Energy...
Viscous...
Radiation...
Species
Discrete Phase...
Solidification & Melting...
Acoustics...
Done.
Done.

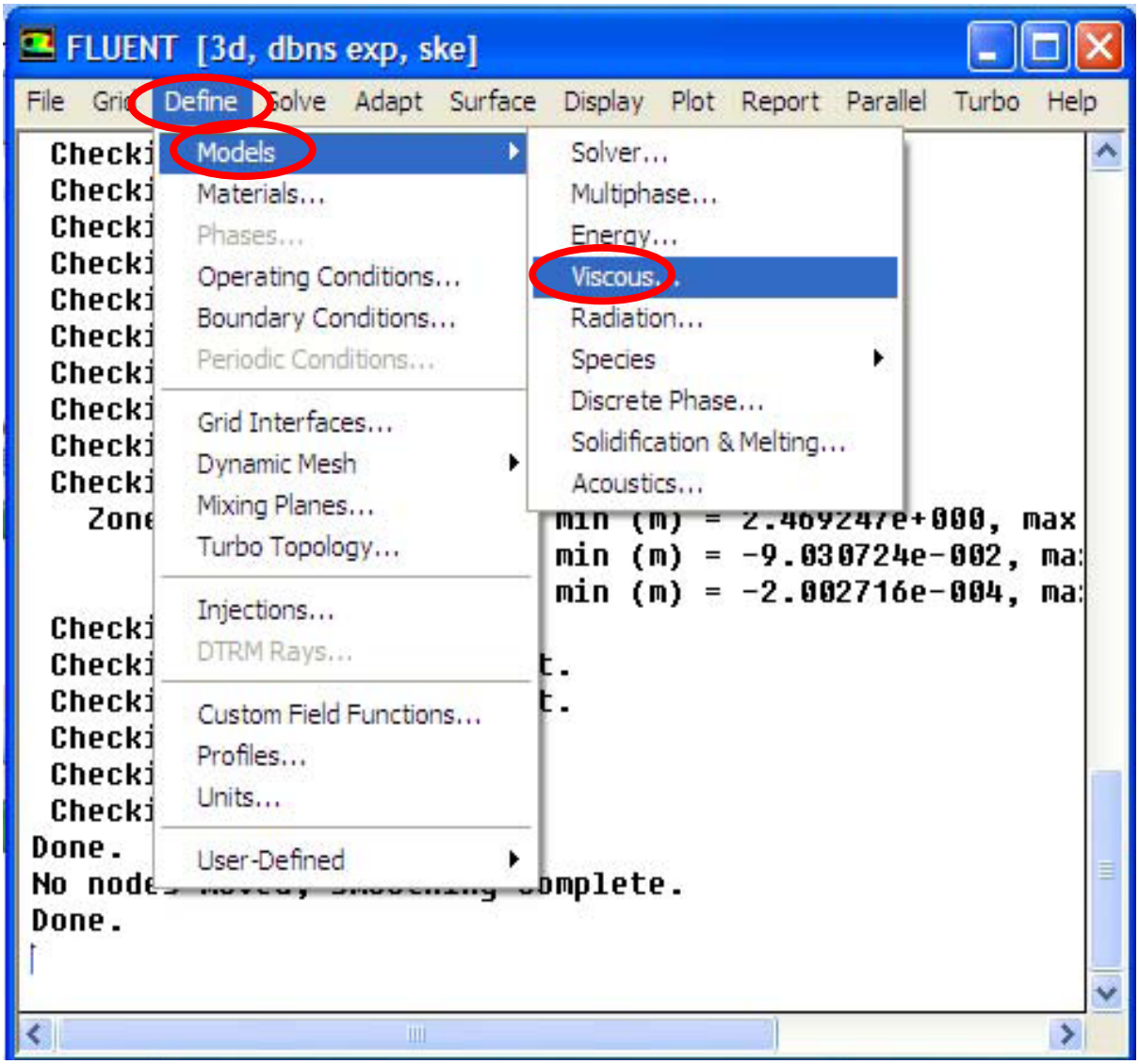

Solver
Solver
Pressure Based
Density Based
Formulation
Implicit
Explicit
Space
2D
Axisymmetric
Axisymmetric Swirl
3D
Time
Steady
Unsteady
Velocity Formulation
Absolute
Relative
Gradient Option
Green-Gauss Cell Based
Green-Gauss Node Based
Least Squares Cell Based
Porous Formulation
Superficial Velocity
Physical Velocity
OK
Cancel
Help

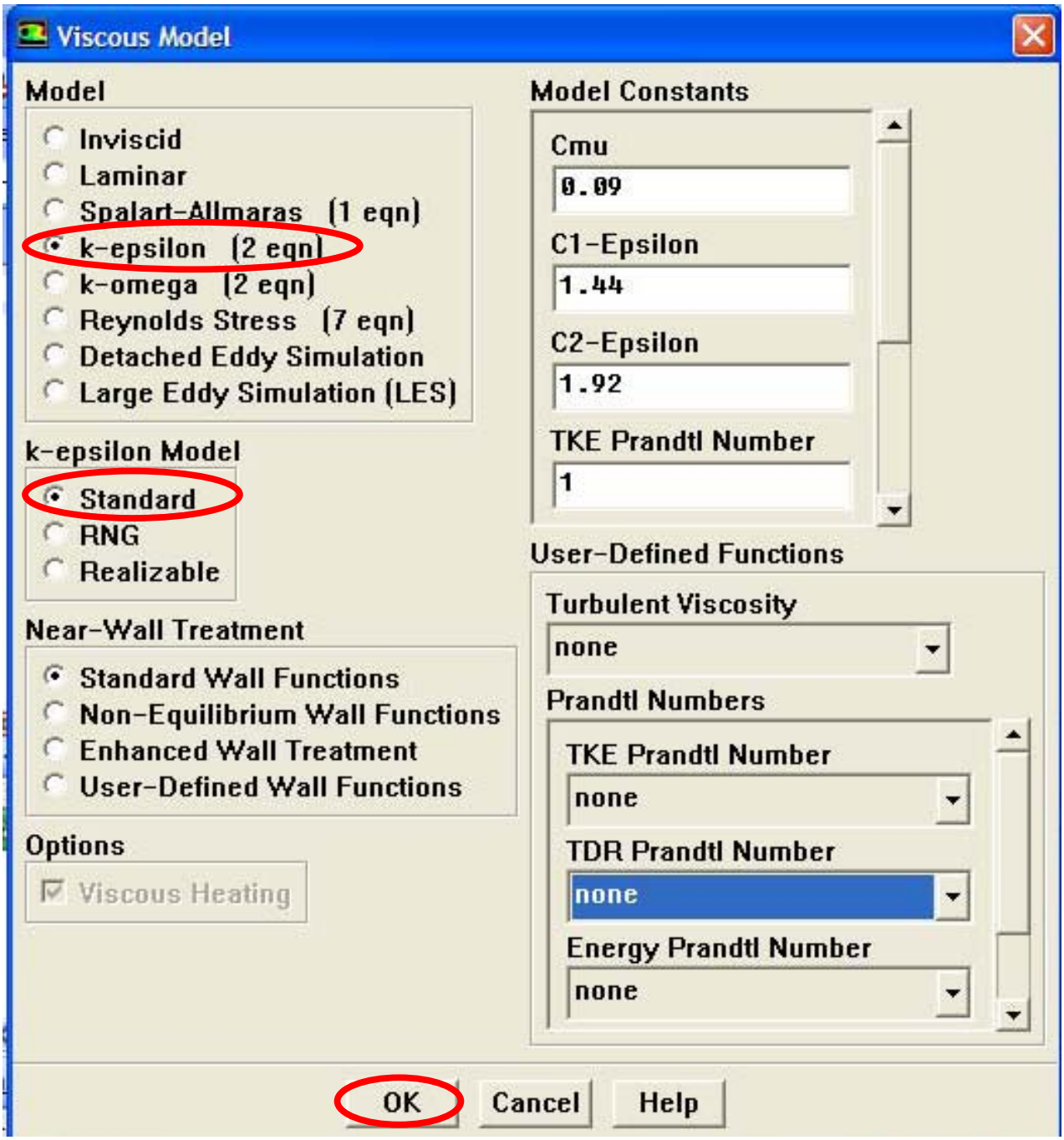

FLUENT [3d, dbns exp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Models
Materials...
Phases...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Solver...
Multiphase...
Energy...
Viscous...
Radiation...
Species
Discrete Phase...
Solidification & Melting...
Acoustics...
Done.
Done.

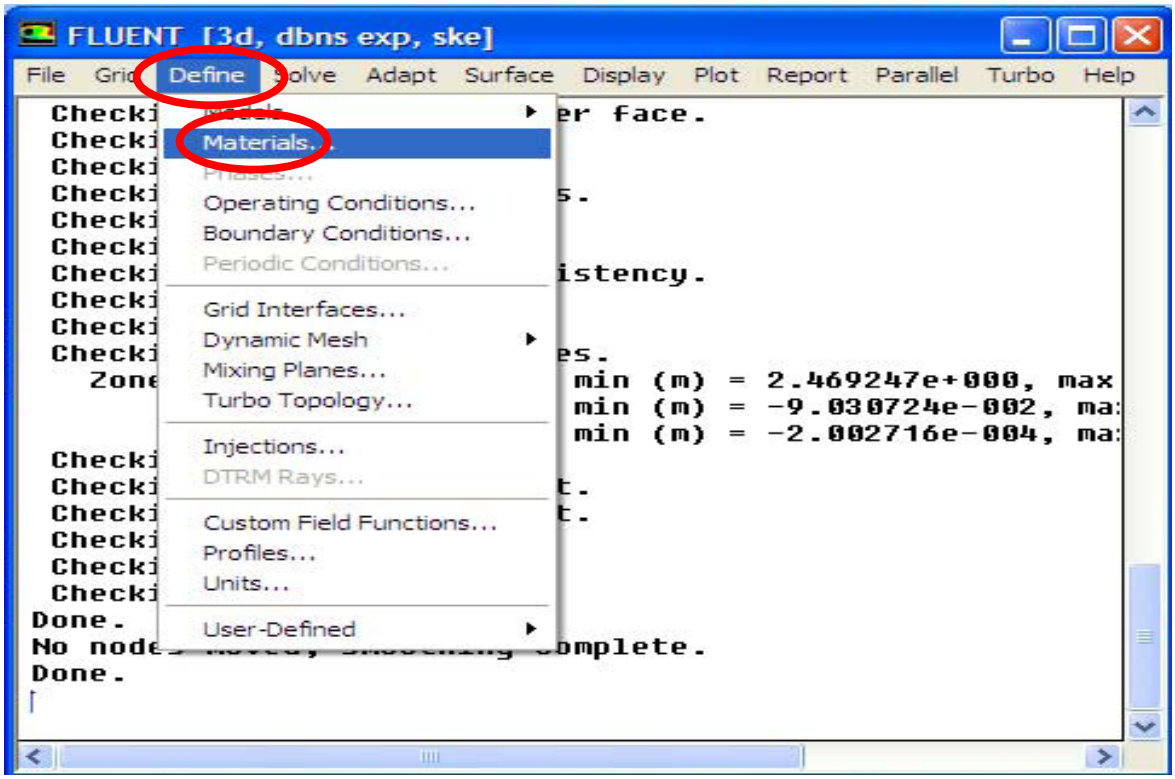

Multiphase Model
Model
Off
Volume of Fluid
Mixture
Eulerian
Wet Steam
OK
Cancel
Help

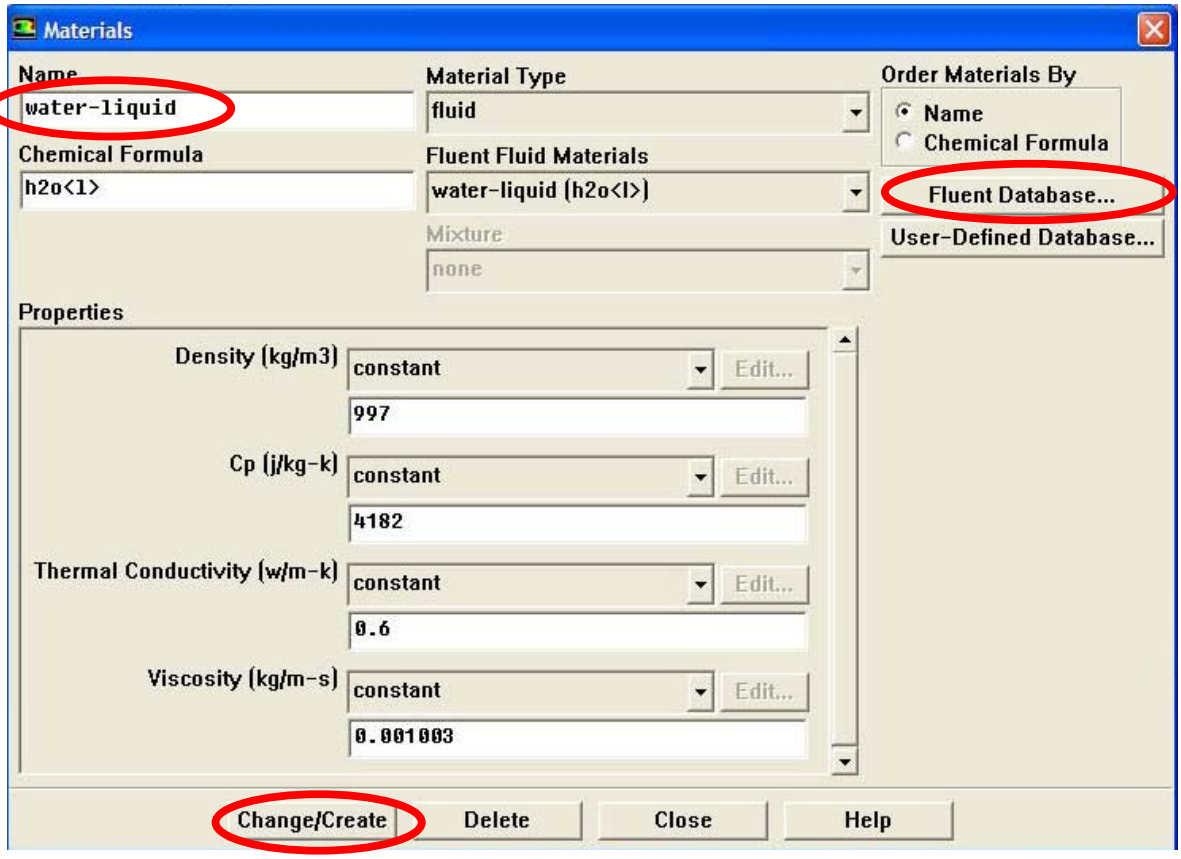

FLUENT [3d, dbns exp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Models
Materials...
Phases...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Solver...
Multiphase...
Energy...
Viscous...
Radiation...
Species
Discrete Phase...
Solidification & Melting...
Acoustics...
Done.
Done.

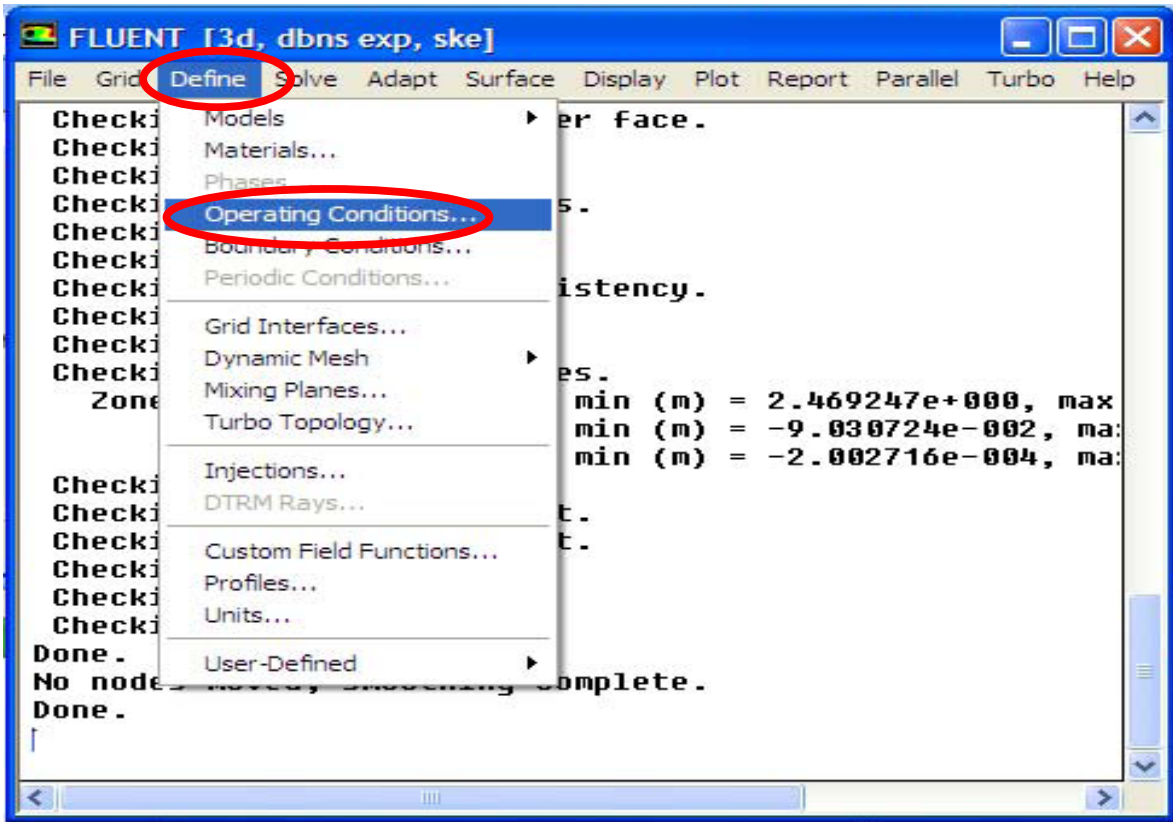

Energy
Energy
Energy Equation
OK
Cancel
Help

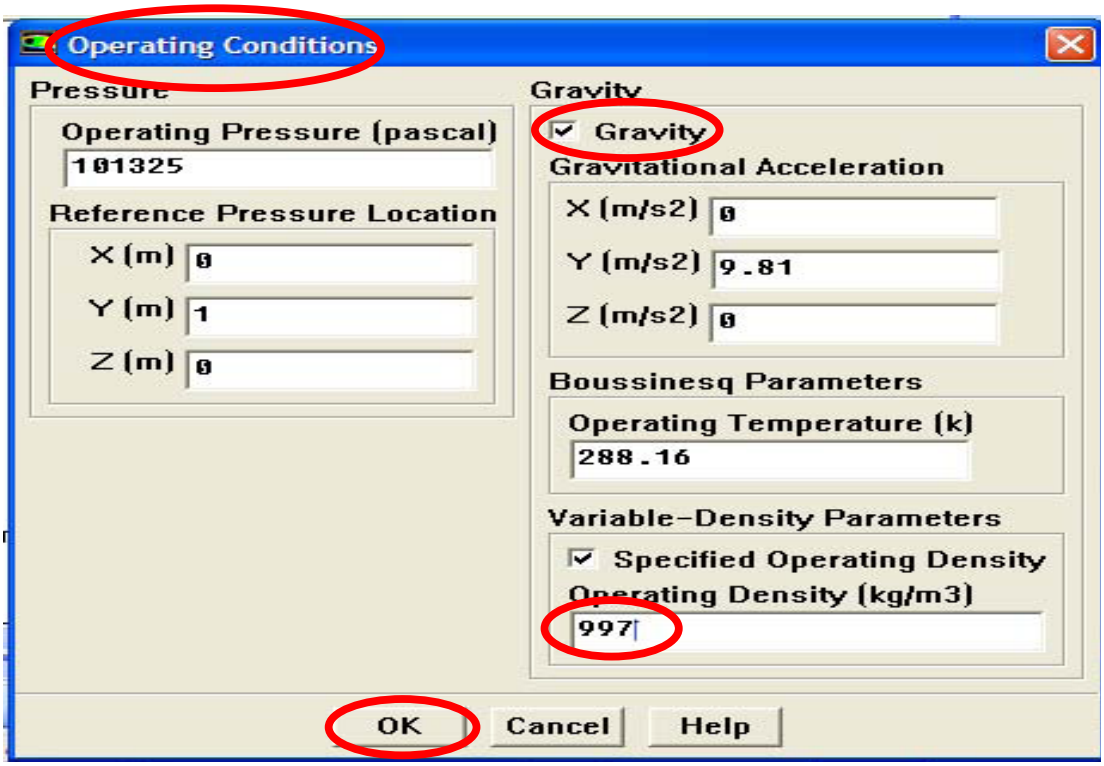

FLUENT [3d, dbns exp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Models
Materials...
Phases...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Solver...
Multiphase...
Energy...
Viscous...
Radiation...
Species
Discrete Phase...
Solidification & Melting...
Acoustics...
Done.
Done.

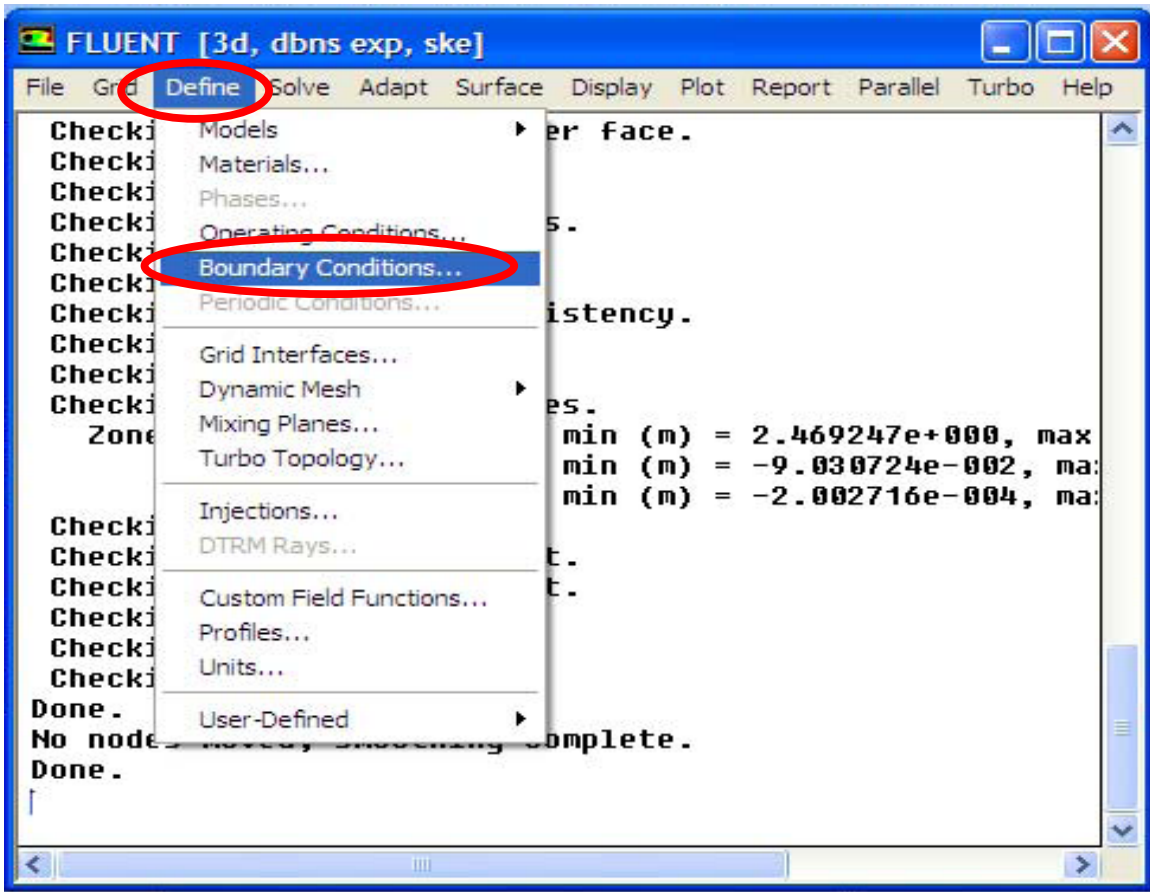

Viscous Model
Model
Inviscid
Laminar
Spalart-Allmaras (1 eqn)
k-epsilon (2 eqn)
k-omega (2 eqn)
Reynolds Stress (7 eqn)
Detached Eddy Simulation
Large Eddy Simulation (LES)
k-epsilon Model
Standard
RNG
Realizable
Near-Wall Treatment
Standard Wall Functions
Non-Equilibrium Wall Functions
Enhanced Wall Treatment
User-Defined Wall Functions
Options
Viscous Heating
Model Constants
Cmu
0.09
C1-Epsilon
1.44
C2-Epsilon
1.92
TKE Prandtl Number
1
User-Defined Functions
Turbulent Viscosity
none
Prandtl Numbers
TKE Prandtl Number
none
TDR Prandtl Number
none
Energy Prandtl Number
none
OK
Cancel
Help

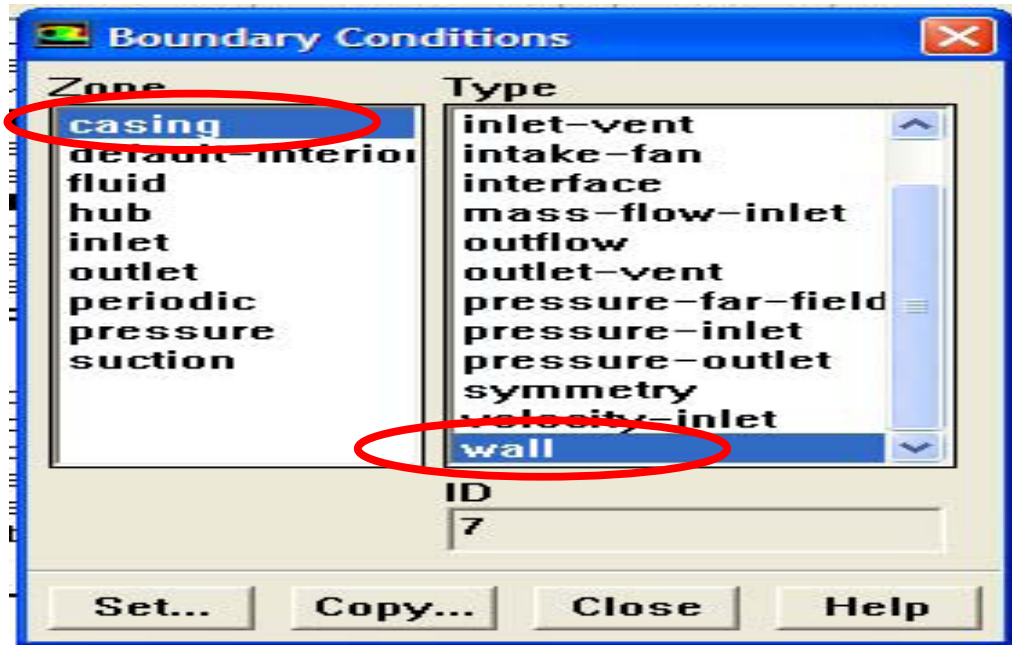

FLUENT [3d, dbns exp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Materials...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Done.
Done.

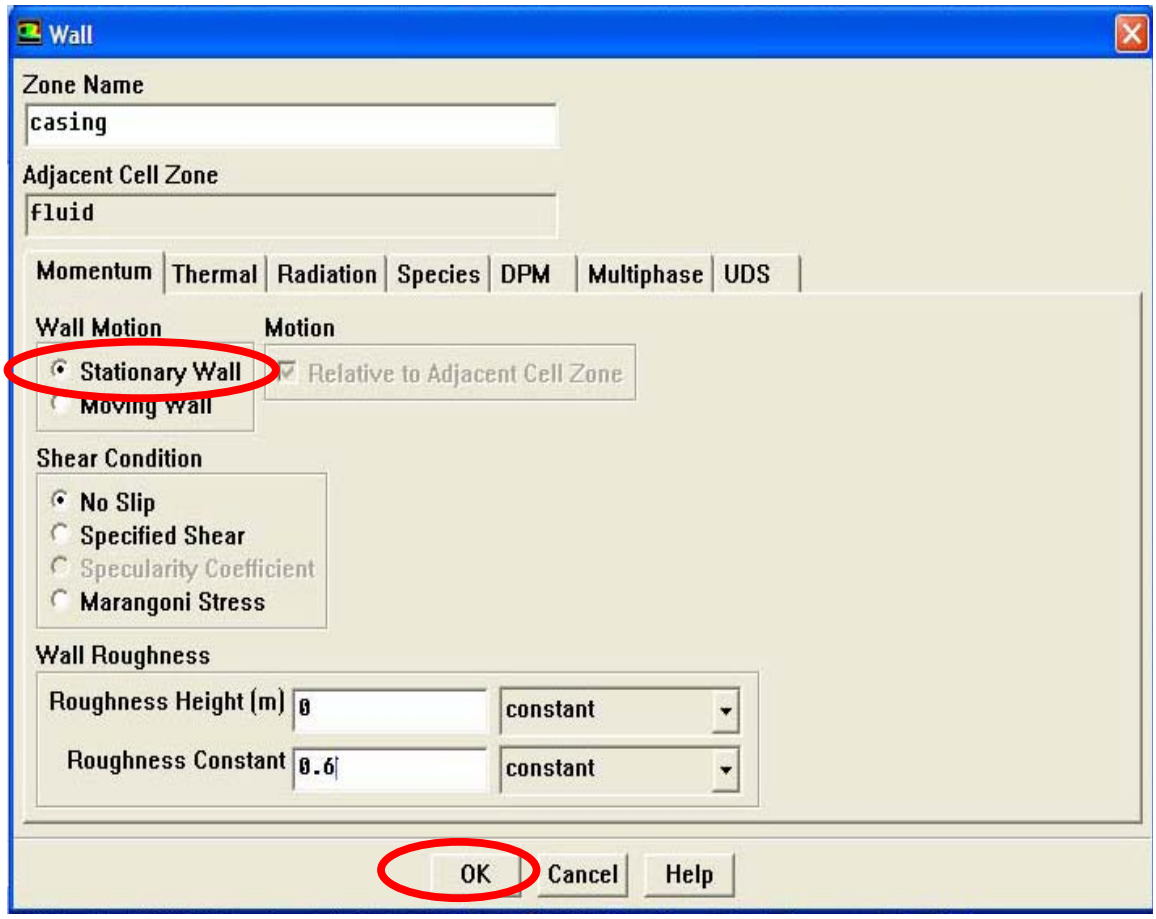

Materials
Name
water-liquid
Material Type
fluid
Order Materials By
Name
Chemical Formula
Chemical Formula
h2o<l>
Fluent Fluid Materials
water-liquid (h2o<l>)
Fluent Database...
Mixture
none
User-Defined Database...
Properties
Density (kg/m3)
constant
Edit...
997
Cp (j/kg-k)
constant
Edit...
4182
Thermal Conductivity (w/m-k)
constant
Edit...
0.6
Viscosity (kg/m-s)
constant
Edit...
0.001003
Change/Create
Delete
Close
Help

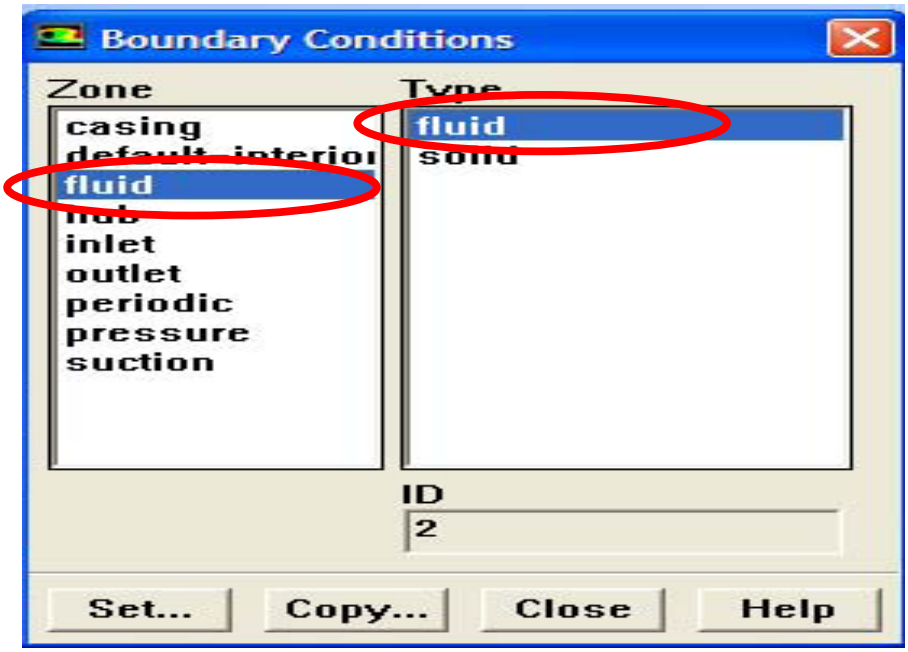

FLUENT [3d, dbns exp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Models
Materials...
Phases...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Done.
Done.

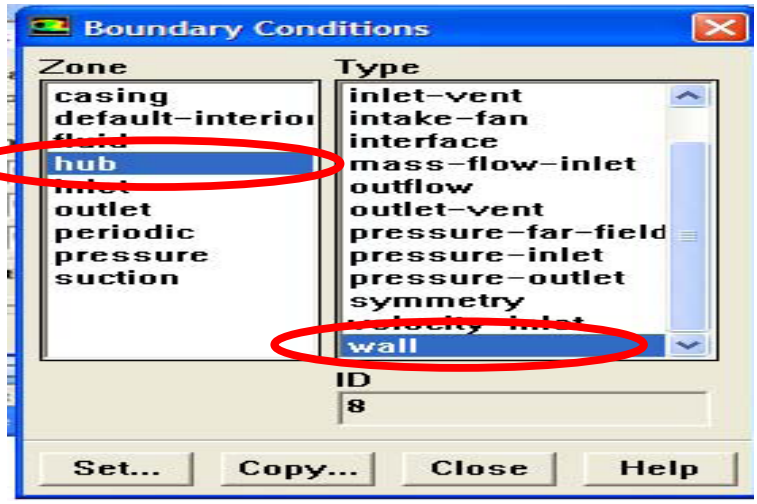

Operating Conditions
Pressure
Operating Pressure (pascal)
101325
Reference Pressure Location
X (m) 0
Y (m) 1
Z (m) 0
Gravity
Gravity
Gravitational Acceleration
X (m/s2) 0
Y (m/s2) 9.81
Z (m/s2) 0
Boussinesq Parameters
Operating Temperature (k)
288.16
Variable-Density Parameters
Specified Operating Density
Operating Density (kg/m3)
997
OK
Cancel
Help

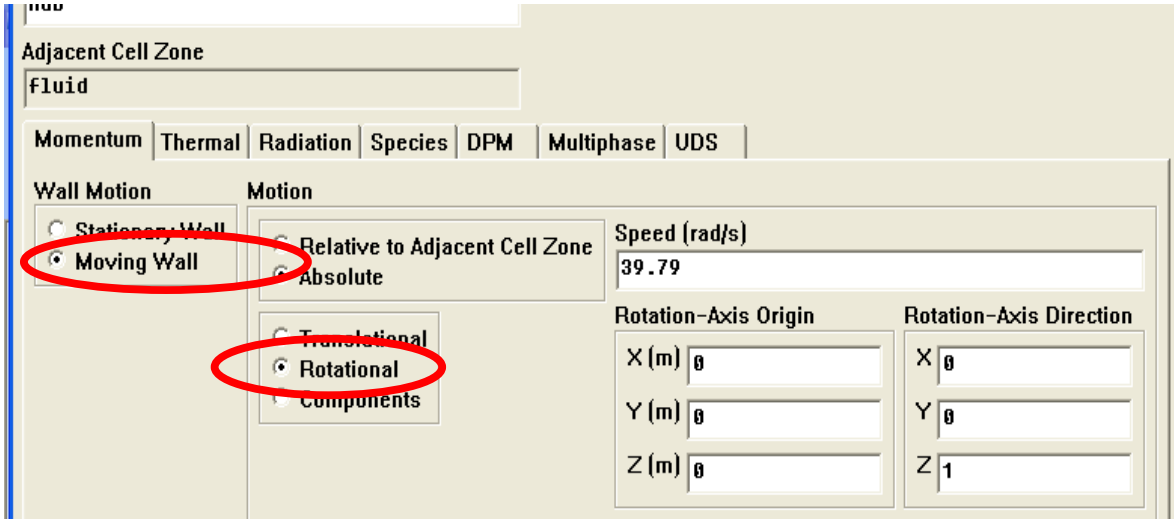

FLUENT [3d, dbns exp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Models
Materials...
Phases...
Operating Conditions...
Boundary Conditions...
Periodic Conditions...
Grid Interfaces...
Dynamic Mesh
Mixing Planes...
Turbo Topology...
Injections...
DTRM Rays...
Custom Field Functions...
Profiles...
Units...
User-Defined
Done.
Done.

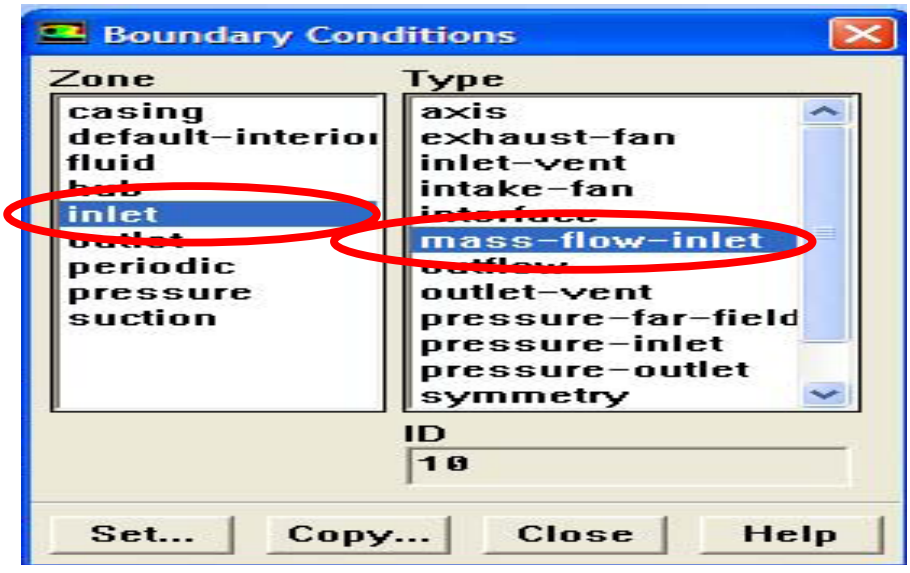

Boundary Conditions
Zone
casing
fluid
hub
inlet
outlet
periodic
pressure
suction
Type
inlet-vent
intake-fan
interface
mass-flow-inlet
outflow
outlet-vent
pressure-far-field
pressure-inlet
pressure-outlet
symmetry
wall
ID
7
Set...
Copy...
Close
Help

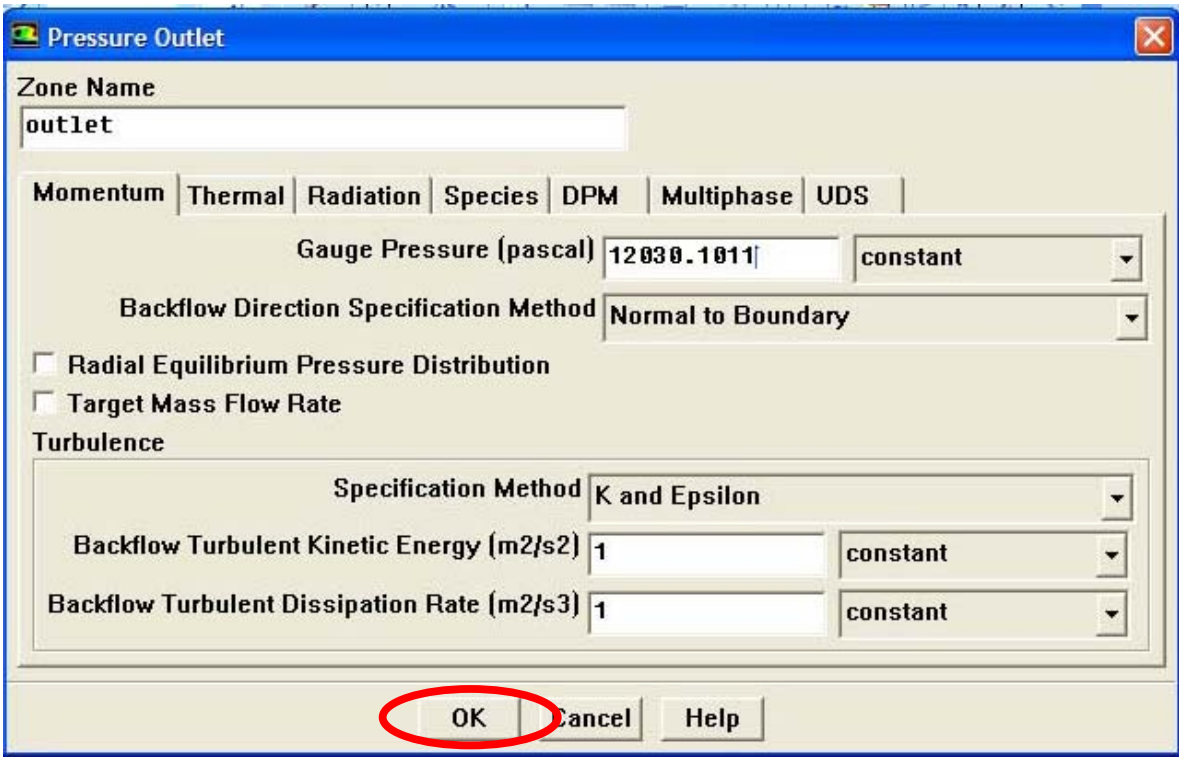

Wall
Zone Name
casing
Adjacent Cell Zone
fluid
Momentum
Thermal
Radiation
Species
DPM
Multiphase
UDS
Wall Motion
Stationary Wall
Moving Wall
Motion
Relative to Adjacent Cell Zone
Shear Condition
No Slip
Specified Shear
Specularity Coefficient
Marangoni Stress
Wall Roughness
Roughness Height (m)
0
constant
Roughness Constant
0.6
constant
OK
Cancel
Help

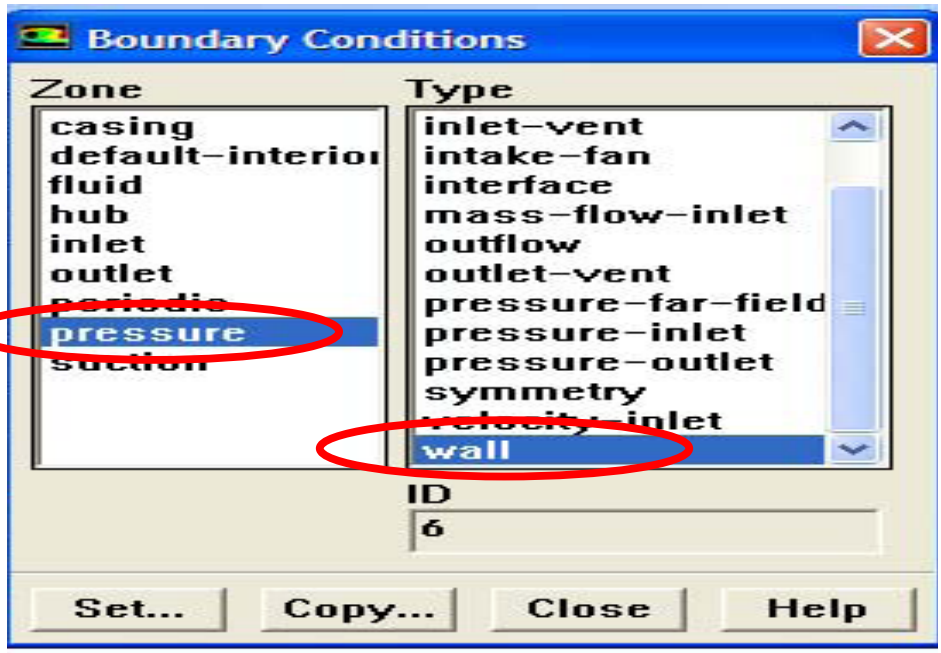

Boundary Conditions
Zone
casing
fluid
inlet
outlet
periodic
pressure
suction
Type
fluid
solid
ID
2
Set...
Copy...
Close
Help

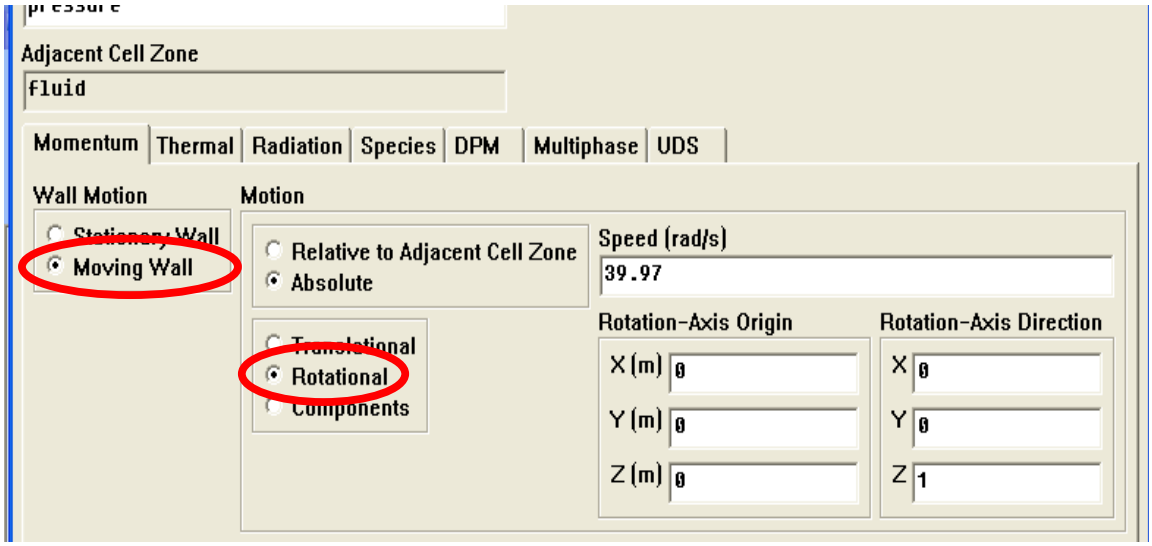

Boundary Conditions
Zone
casing
default-interior
fluid
hub
inlet
outlet
periodic
pressure
suction
Type
inlet-vent
intake-fan
interface
mass-flow-inlet
outflow
outlet-vent
pressure-far-field
pressure-inlet
pressure-outlet
symmetry
velocity-inlet
wall
ID
8
Set...
Copy...
Close
Help

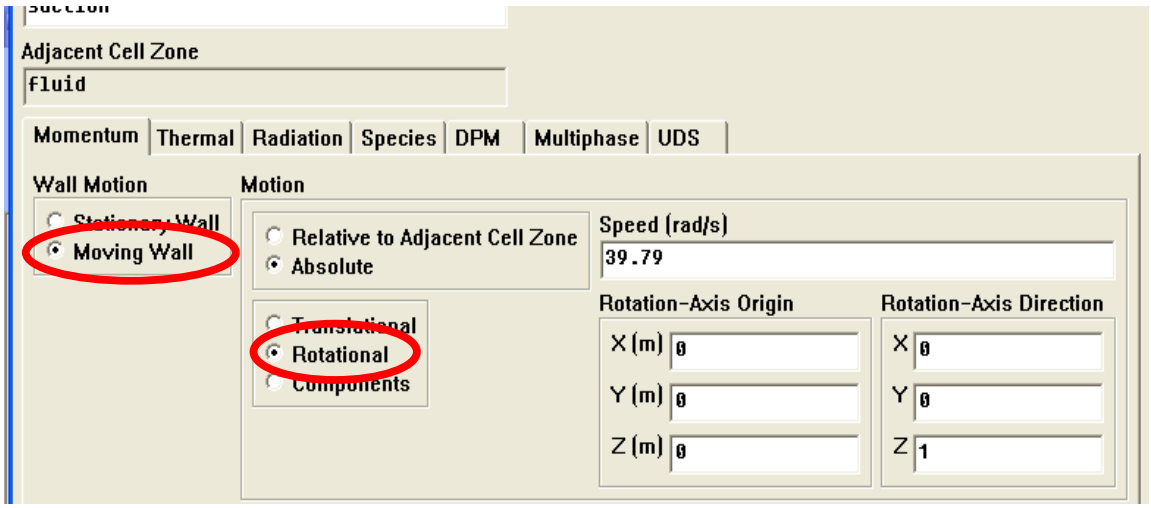

Adjacent Cell Zone
fluid
Momentum
Thermal
Radiation
Species
DPM
Multiphase
UDS
Wall Motion
Stationary Wall
Moving Wall
Motion
Relative to Adjacent Cell Zone
Absolute
Translational
Rotational
Components
Speed (rad/s)
39.79
Rotation-Axis Origin
X (m) 0
Y (m) 0
Z (m) 0
Rotation-Axis Direction
X 0
Y 0
Z 1

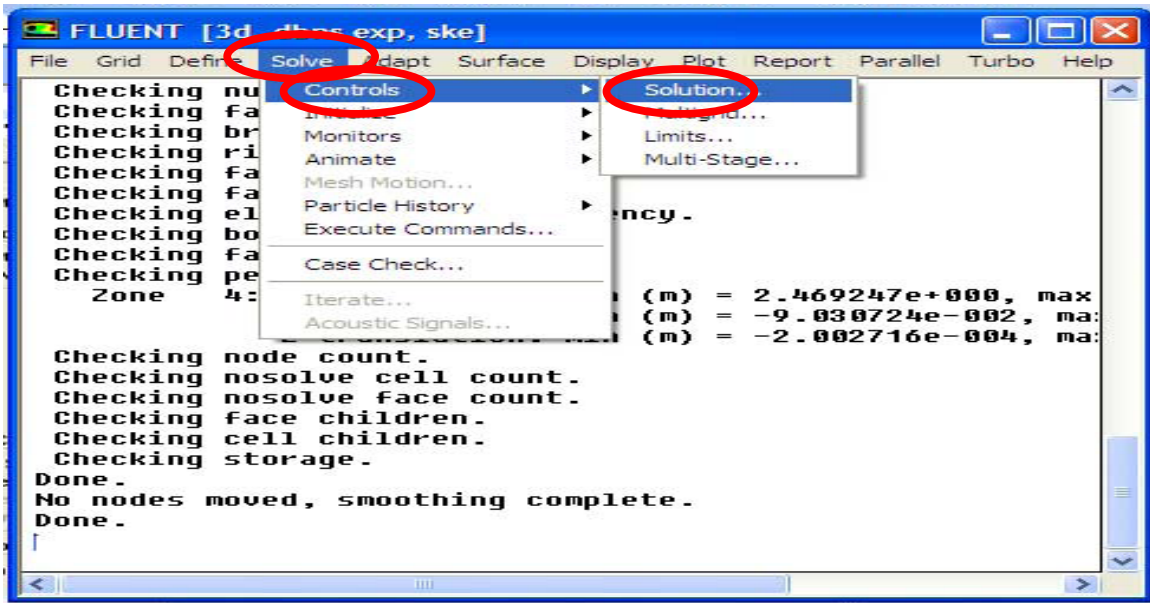

Boundary Conditions
Zone
casing
default-interior
fluid
hub
inlet
outlet
periodic
pressure
suction
Type
axis
exhaust-fan
inlet-vent
intake-fan
interface
mass-flow-inlet
outflow
outlet-vent
pressure-far-field
pressure-inlet
pressure-outlet
symmetry
ID
10
Set...
Copy...
Close
Help

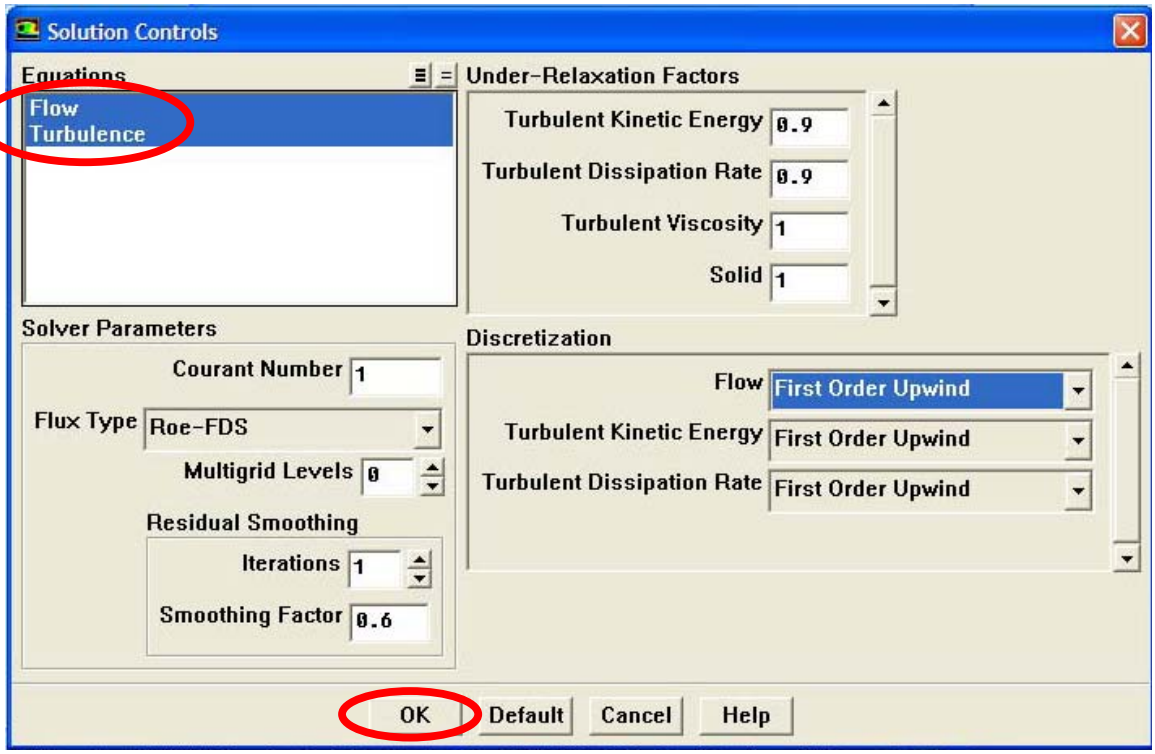

Pressure Outlet
Zone Name
outlet
Momentum
Thermal
Radiation
Species
DPM
Multiphase
UDS
Gauge Pressure (pascal)
12030.1011
constant
Backflow Direction Specification Method
Normal to Boundary
Radial Equilibrium Pressure Distribution
Target Mass Flow Rate
Turbulence
Specification Method
K and Epsilon
Backflow Turbulent Kinetic Energy (m2/s2)
1
constant
Backflow Turbulent Dissipation Rate (m2/s3)
1
constant
OK
Cancel
Help

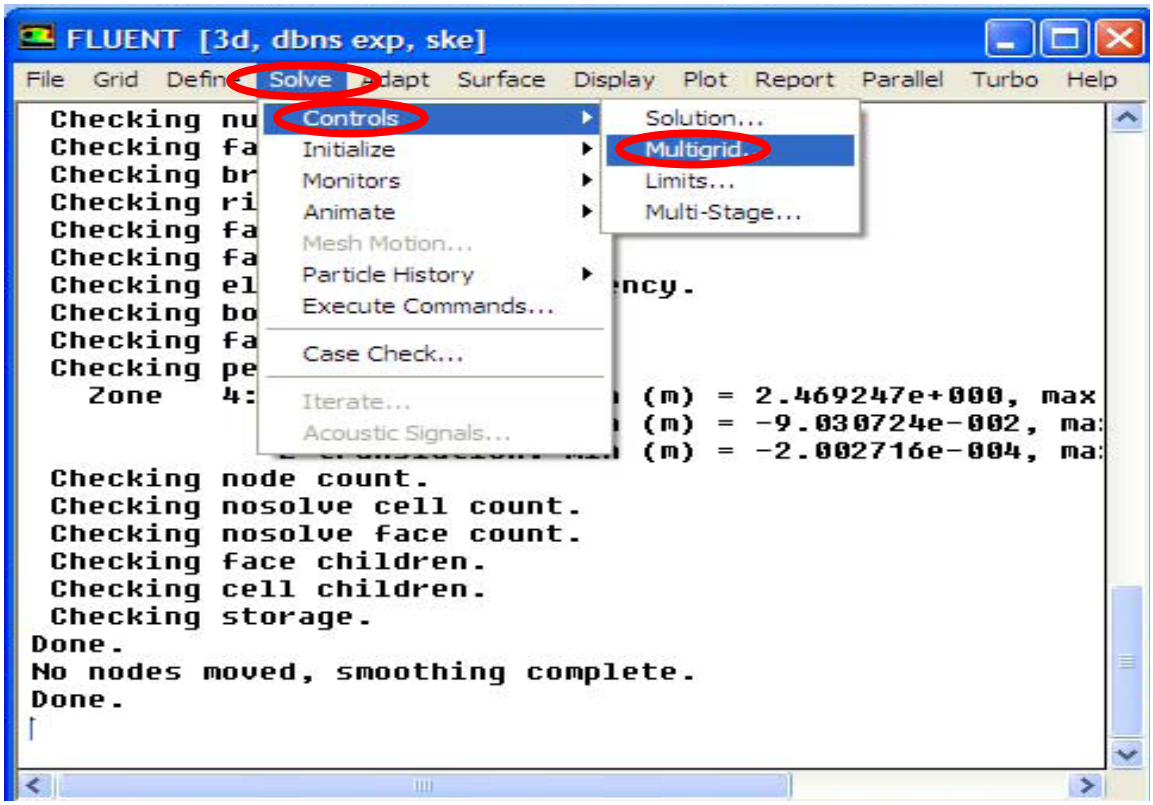

Boundary Conditions
Zone
casing
default-interior
fluid
hub
inlet
outlet
pressure
suction
Type
inlet-vent
intake-fan
interface
mass-flow-inlet
outflow
outlet-vent
pressure-far-field
pressure-inlet
pressure-outlet
symmetry
wall
ID
6
Set...
Copy...
Close
Help

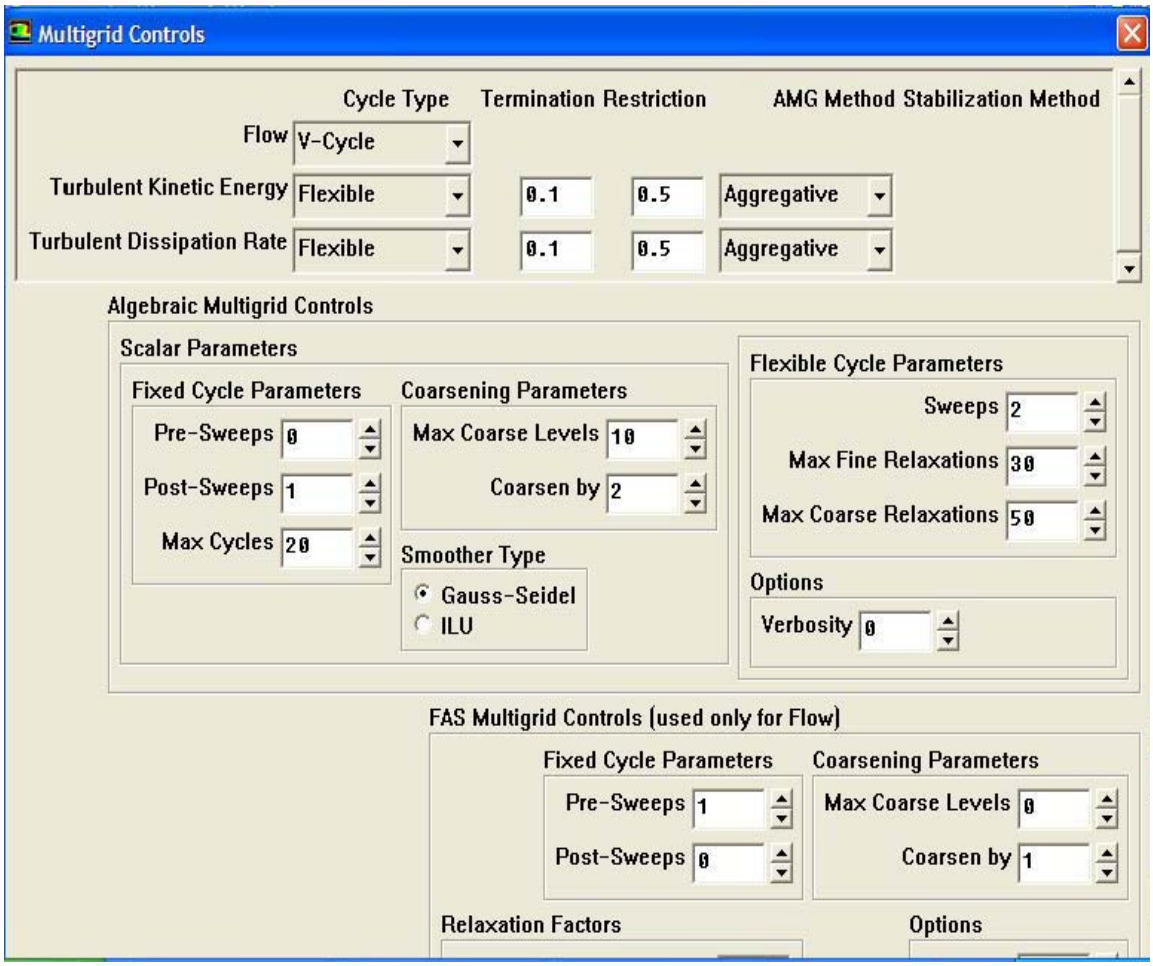

Adjacent Cell Zone
fluid
Momentum
Thermal
Radiation
Species
DPM
Multiphase
UDS
Wall Motion
Moving Wall
Motion
Relative to Adjacent Cell Zone
Absolute
Rotational
Speed (rad/s)
39.97
Rotation-Axis Origin
Rotation-Axis Direction
X (m)
Y (m)
Z (m)
X
Y
Z

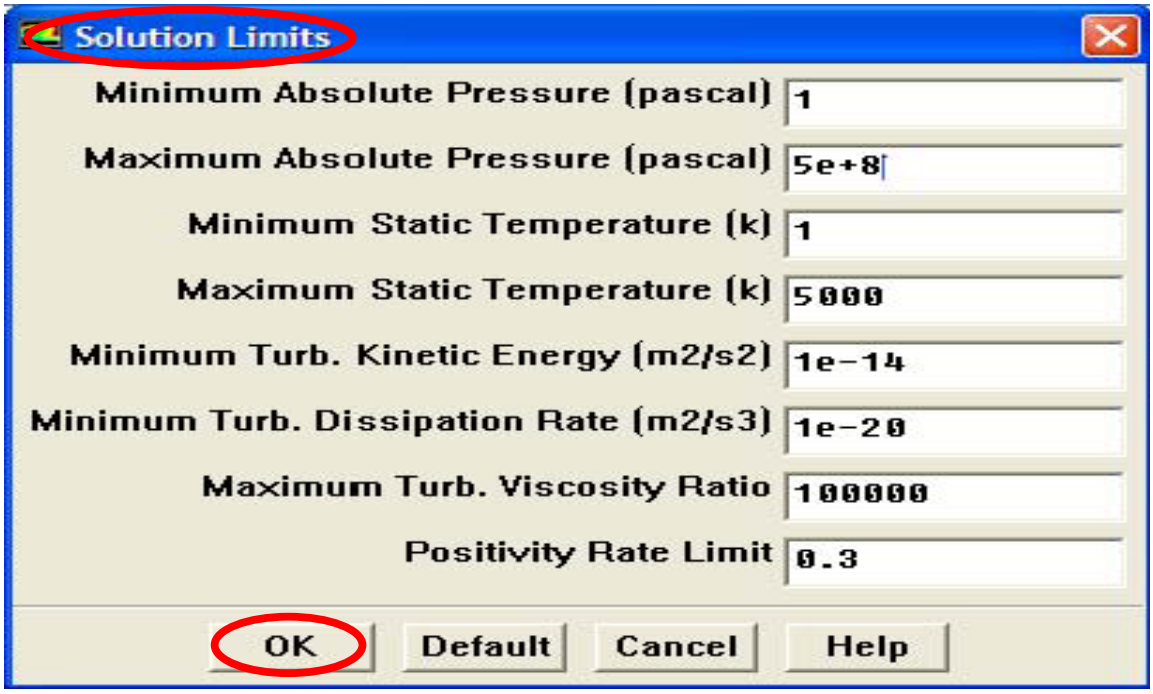

Adjacent Cell Zone
fluid
Momentum
Thermal
Radiation
Species
DPM
Multiphase
UDS
Wall Motion
Moving Wall
Motion
Relative to Adjacent Cell Zone
Absolute
Rotational
Speed (rad/s)
39.79
Rotation-Axis Origin
Rotation-Axis Direction
X (m)
Y (m)
Z (m)
X
Y
Z

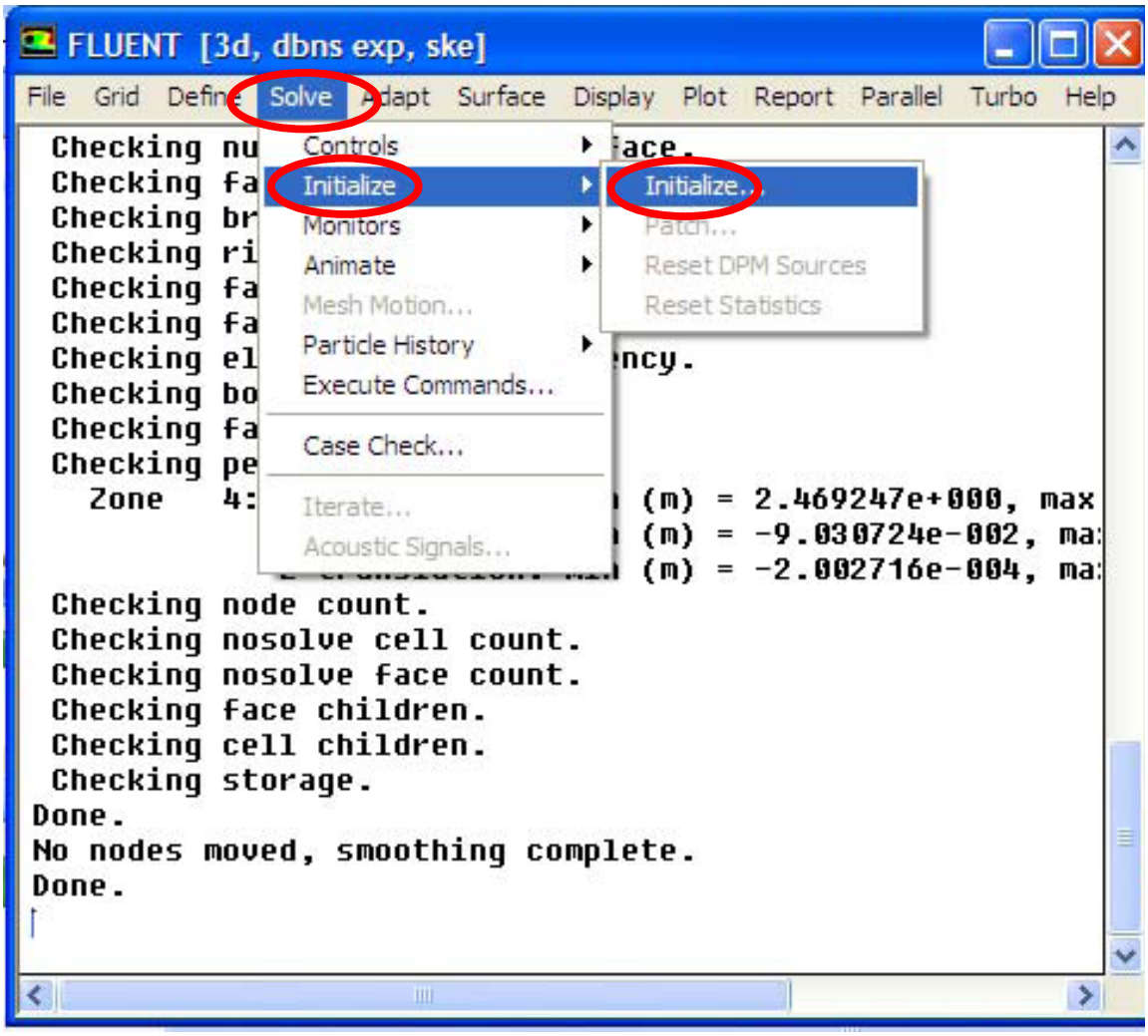

FLUENT [3d, dbns exp, ske]
File
Grid
Define
Solve
Adapt
Surface
Display
Plot
Report
Parallel
Turbo
Help
Controls
Monitors
Animate
Mesh Motion...
Particle History
Execute Commands...
Case Check...
Iterate...
Acoustic Signals...
Solution...
Limits...
Multi-Stage...
Checking node count.
Checking nosolve cell count.
Checking nosolve face count.
Checking face children.
Checking cell children.
Checking storage.
Done.
No nodes moved, smoothing complete.
Done.

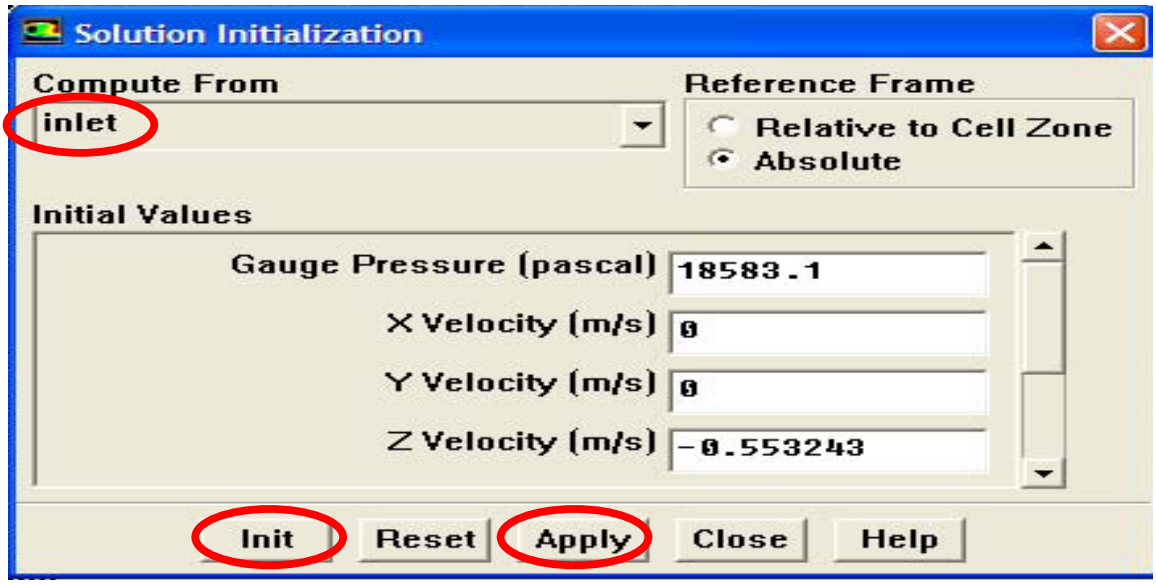

Solution Controls
Equations
Flow
Turbulence
Under-Relaxation Factors
Turbulent Kinetic Energy 0.9
Turbulent Dissipation Rate 0.9
Turbulent Viscosity 1
Solid 1
Solver Parameters
Courant Number 1
Flux Type Roe-FDS
Multigrid Levels 0
Residual Smoothing
Iterations 1
Smoothing Factor 0.6
Discretization
Flow First Order Upwind
Turbulent Kinetic Energy First Order Upwind
Turbulent Dissipation Rate First Order Upwind
OK
Default
Cancel
Help

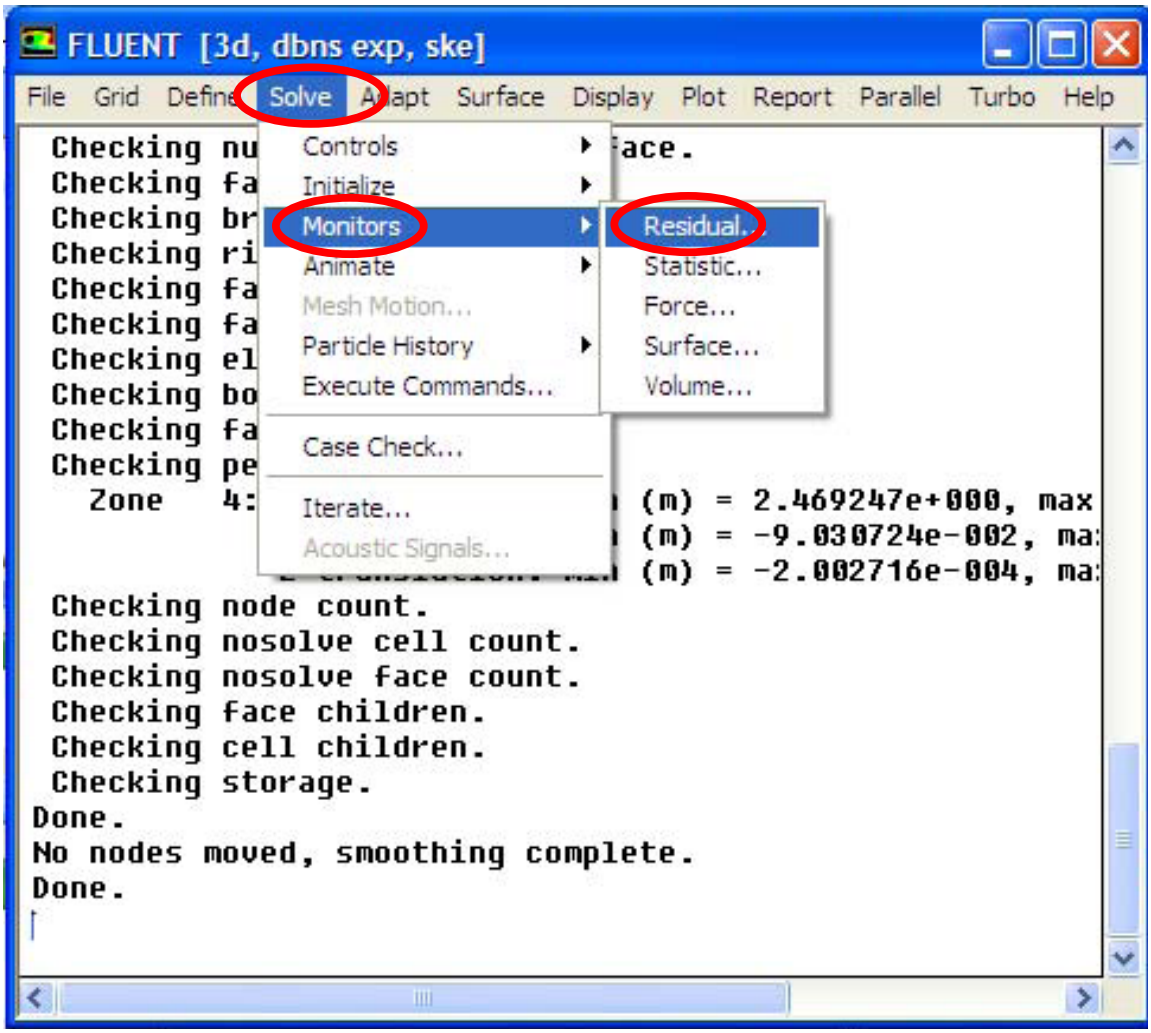

FLUENT [3d, dbns exp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Controls
Initialize
Monitors
Animate
Mesh Motion...
Particle History
Execute Commands...
Case Check...
Iterate...
Acoustic Signals...
Solution...
Multigrid...
Limits...
Multi-Stage...
Checking node count.
Checking nosolve cell count.
Checking nosolve face count.
Checking face children.
Checking cell children.
Checking storage.
Done.
No nodes moved, smoothing complete.
Done.

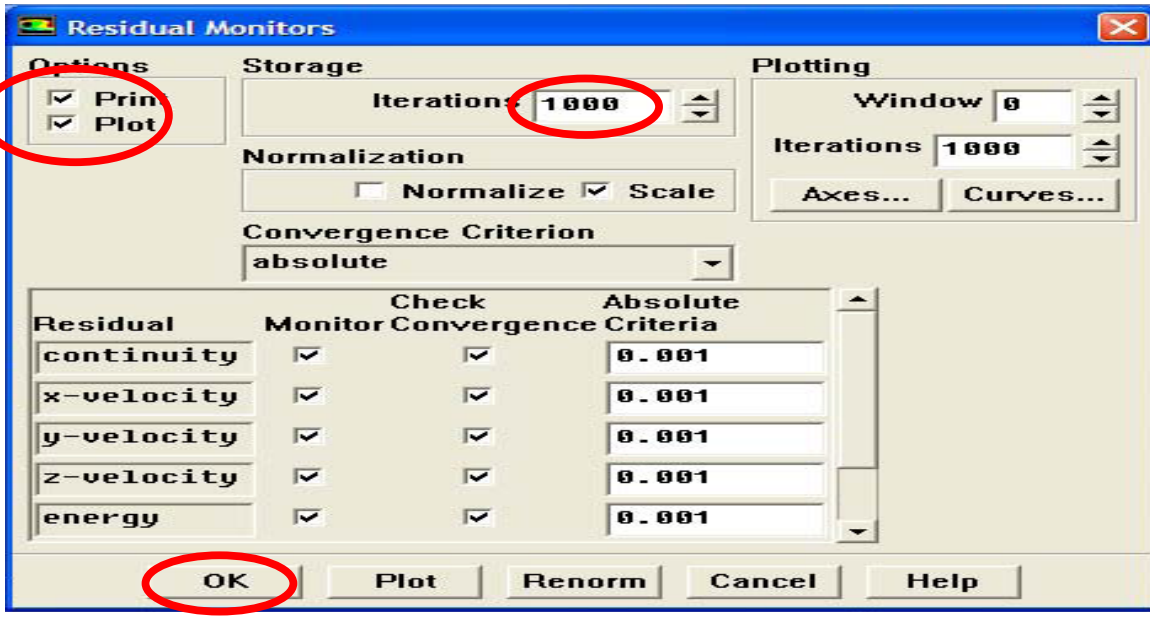

Multigrid Controls
Cycle Type
Termination Restriction
AMG Method Stabilization Method
Flow
V-Cycle
Turbulent Kinetic Energy
Flexible
0.1
0.5
Aggregative
Turbulent Dissipation Rate
Flexible
0.1
0.5
Aggregative
Algebraic Multigrid Controls
Scalar Parameters
Fixed Cycle Parameters
Pre-Sweeps
0
Post-Sweeps
1
Max Cycles
20
Coarsening Parameters
Max Coarse Levels
10
Coarsen by
2
Smoother Type
Gauss-Seidel
ILU
Flexible Cycle Parameters
Sweeps
2
Max Fine Relaxations
30
Max Coarse Relaxations
50
Options
Verbosity
0
FAS Multigrid Controls (used only for Flow)
Fixed Cycle Parameters
Pre-Sweeps
1
Post-Sweeps
0
Coarsening Parameters
Max Coarse Levels
0
Coarsen by
1
Relaxation Factors
Options

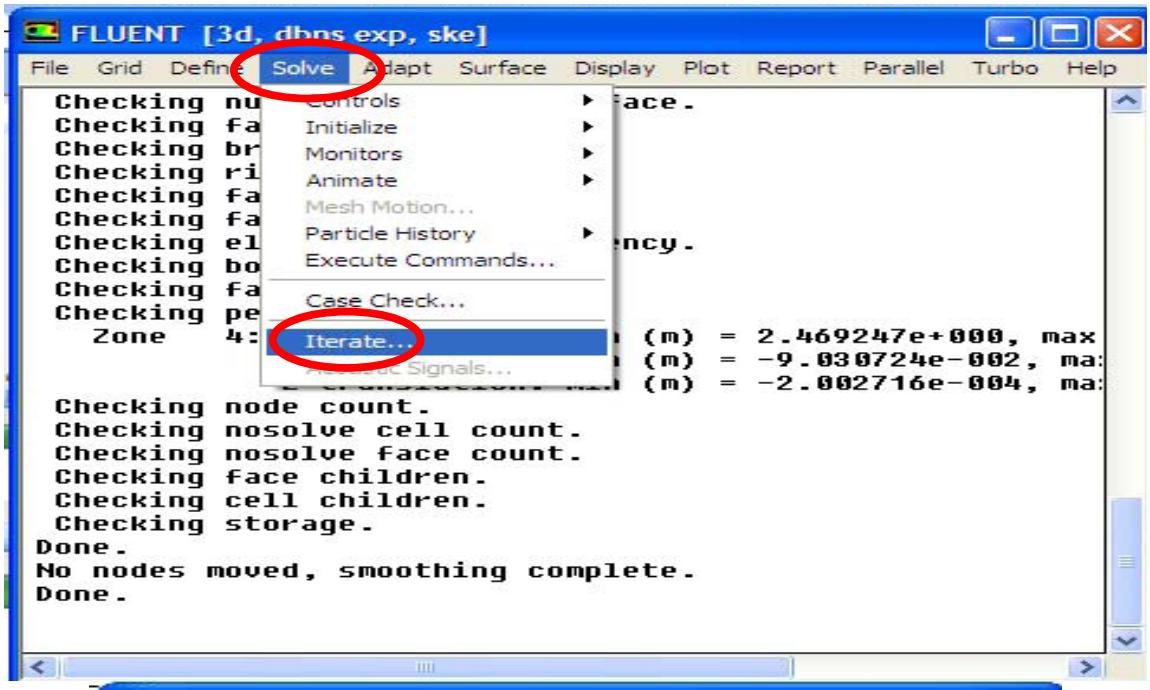

Solution Limits
Minimum Absolute Pressure (pascal)
1
Maximum Absolute Pressure (pascal)
5e+8
Minimum Static Temperature (k)
1
Maximum Static Temperature (k)
5000
Minimum Turb. Kinetic Energy (m2/s2)
1e-14
Minimum Turb. Dissipation Rate (m2/s3)
1e-20
Maximum Turb. Viscosity Ratio
100000
Positivity Rate Limit
0.3
OK
Default
Cancel
Help

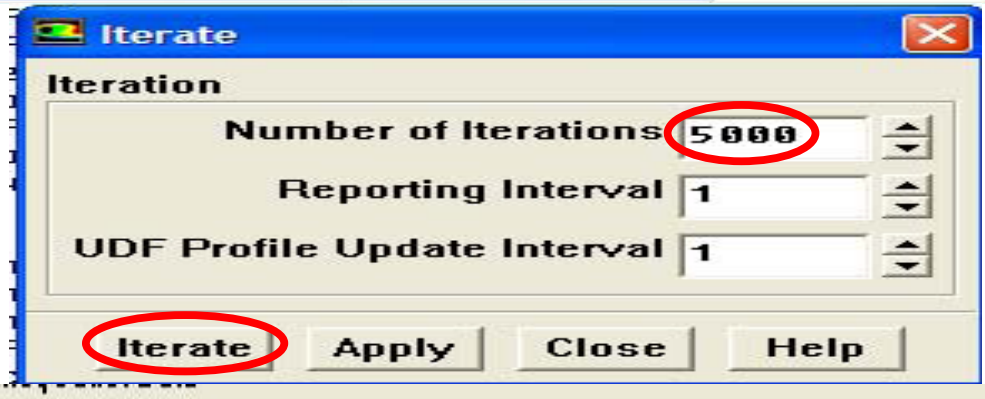

FLUENT [3d, dbns exp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Controls
Initialize
Monitors
Animate
Mesh Motion...
Particle History
Execute Commands...
Case Check...
Iterate...
Acoustic Signals...
Initialize...
Patch...
Reset DPM Sources
Reset Statistics
Checking node count.
Checking nosolve cell count.
Checking nosolve face count.
Checking face children.
Checking cell children.
Checking storage.
Done.
No nodes moved, smoothing complete.
Done.

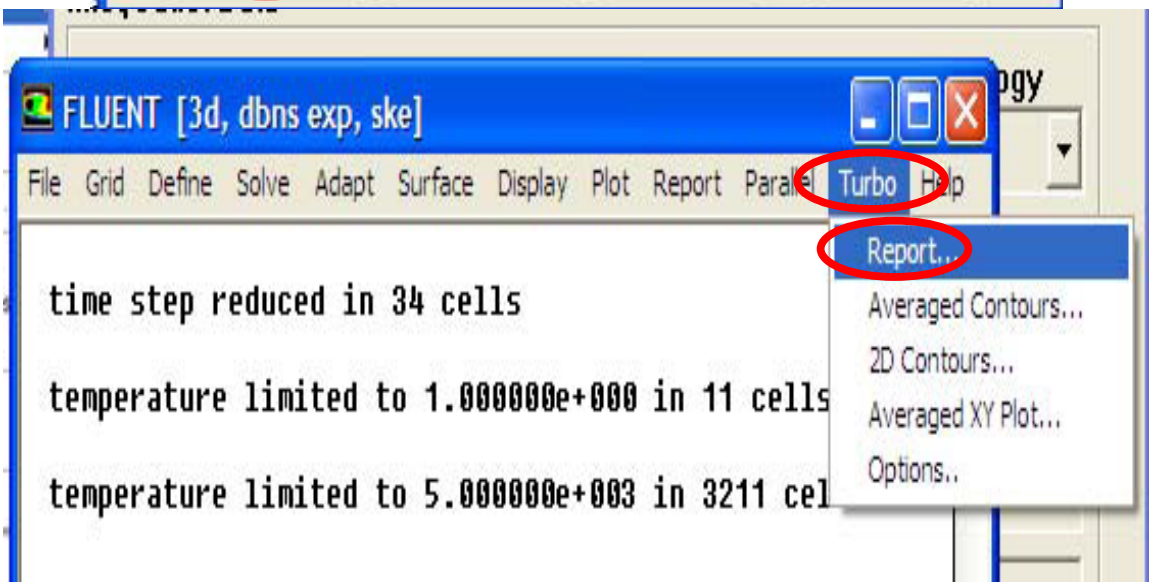

Solution Initialization
Compute From
inlet
Reference Frame
Relative to Cell Zone
Absolute
Initial Values
Gauge Pressure (pascal) 18583.1
X Velocity (m/s) 0
Y Velocity (m/s) 0
Z Velocity (m/s) -0.553243
Init
Reset
Apply
Close
Help

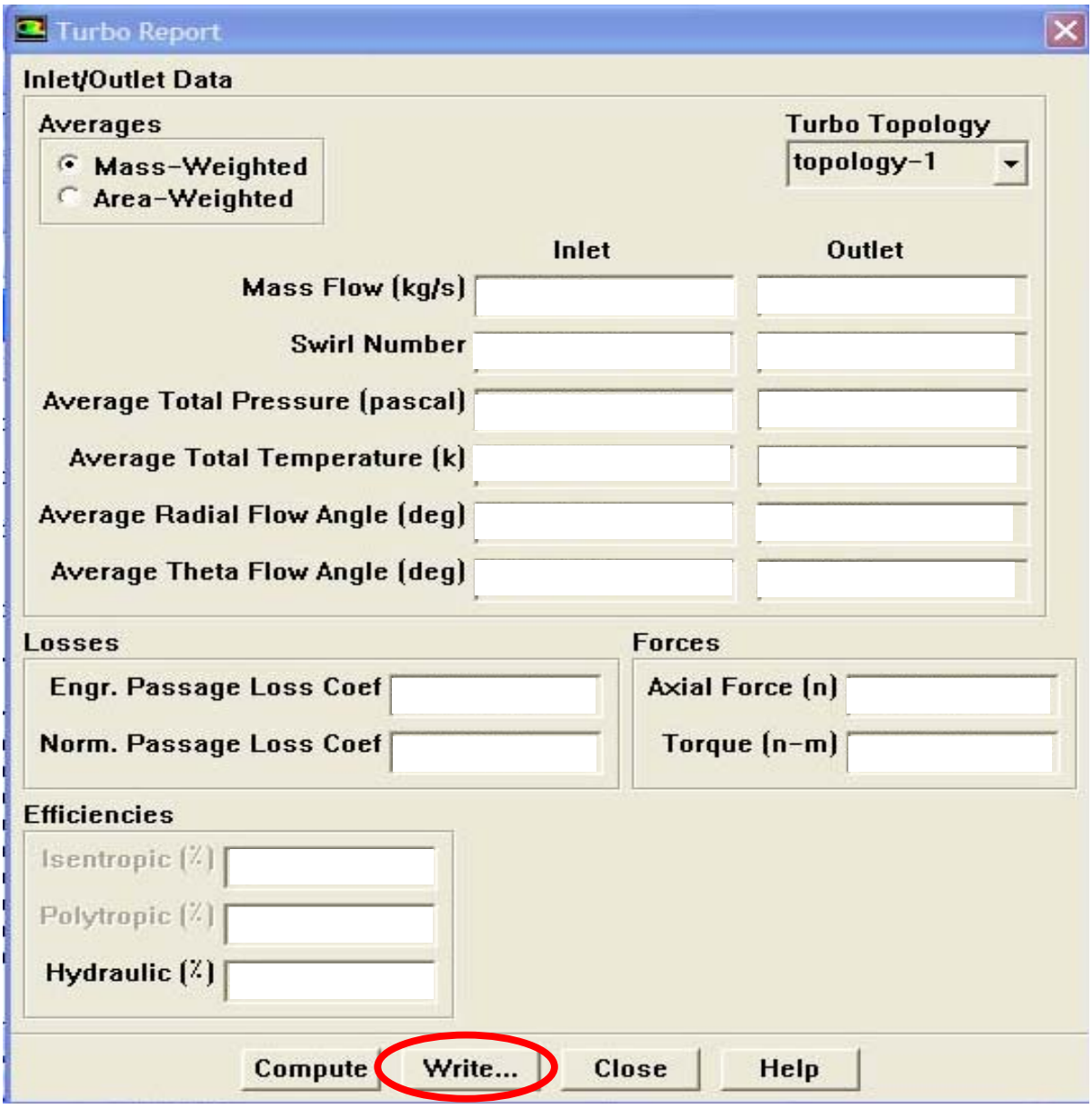

FLUENT [3d, dbns exp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Controls
Initialize
Monitors
Animate
Mesh Motion...
Particle History
Execute Commands...
Case Check...
Iterate...
Acoustic Signals...
Residual...
Statistic...
Force...
Surface...
Volume...
Checking node count.
Checking nosolve cell count.
Checking nosolve face count.
Checking face children.
Checking cell children.
Checking storage.
Done.
No nodes moved, smoothing complete.
Done.


Residual Monitors
Options
Print
Plot
Storage
Iterations 1000
Normalization
Normalize
Scale
Convergence Criterion
absolute
Plotting
Window 0
Iterations 1000
Axes...
Curves...
Residual
Monitor
Check Convergence
Absolute Criteria
continuity 0.001
x-velocity 0.001
y-velocity 0.001
z-velocity 0.001
energy 0.001
OK
Plot
Renorm
Cancel
Help


FLUENT [3d, dbns exp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Controls
Initialize
Monitors
Animate
Mesh Motion...
Particle History
Execute Commands...
Case Check...
Iterate...
Checking node count.
Checking nosolve cell count.
Checking nosolve face count.
Checking face children.
Checking cell children.
Checking storage.
Done.
No nodes moved, smoothing complete.
Done.


Iterate
Iteration
Number of Iterations 5000
Reporting Interval 1
UDF Profile Update Interval 1
Iterate
Apply
Close
Help


FLUENT [3d, dbns exp, ske]
File Grid Define Solve Adapt Surface Display Plot Report Parallel Turbo Help
Report...
Averaged Contours...
2D Contours...
Averaged XY Plot...
Options..
time step reduced in 34 cells
temperature limited to 1.000000e+000 in 11 cells
temperature limited to 5.000000e+003 in 3211 cel


Turbo Report
Inlet/Outlet Data
Averages
Mass-Weighted
Area-Weighted
Turbo Topology
topology-1
Inlet
Outlet
Mass Flow (kg/s)
Swirl Number
Average Total Pressure (pascal)
Average Total Temperature (k)
Average Radial Flow Angle (deg)
Average Theta Flow Angle (deg)
Losses
Engr. Passage Loss Coef
Norm. Passage Loss Coef
Forces
Axial Force (n)
Torque (n-m)
Efficiencies
Isentropic (%)
Polytropic (%)
Hydraulic (%)
Compute
Write...
Close
Help