Treball de Fi de Grau en Enginyeria en
Tecnologies Industrials

The Ocean CleanUp
Annex

Escola Tècnica Superior

d'Enginyeria Industrial de Barcelona

Miguel Bárcena González

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1. Fitxers del model ocean

1.1. Ocean.dat

```
$---------------------------------------------------------------------
RUN_DATA
  ALYA:                 name
$  RUN_TYPE:             Preliminary, Frequency=1e6
  LIVE_INFORMATION:     Screen
END_RUN_DATA
$---------------------------------------------------------------------
PROBLEM_DATA
  TIME_COUPLING:        Global, From_critical
  $TIME_COUPLING:       local, From_critical
  TIME_INTERVAL=        0.0, 1e6
  TIME_STEP_SIZE=       0.01
  NUMBER_OF_STEPS=      1000
  MAXIMUM_NUMBER_GLOBAL=  1
  NASTIN_MODULE:        On
  END_NASTIN_MODULE
  TURBUL_MODULE:        On
  END_TURBUL_MODULE
  PARALL_SERVICE:       On
    PARTITION_TYPE:     FACES
```

```
  END_PARALL_SERVICE

END_PROBLEM_DATA

$-------------------------------------------------------------
```

1.2. Ocean.dom.dat

```
$-------------------------------------------------------
DIMENSIONS
  NODAL_POINTS=       17953
  ELEMENTS=           25272
  SPACE_DIMENSIONS=       2
  TYPES_OF_ELEMENTS=     10,     0,    12,     0,     0,     0,     0,     0,     0,     0,     0
  BOUNDARIES=           792
  SKEW_SYSTEMS=           0
  SLAVES=                 0
  PERIODIC_NODES=         0
  ZONES=                  1
  SUBDOMAINS=             1
END_DIMENSIONS
$-------------------------------------------------------
STRATEGY
  INTEGRATION_RULE:         Open
  DOMAIN_INTEGRATION_POINTS: 0
END_STRATEGY
$-------------------------------------------------------
GEOMETRY
  GROUPS =    100
```

```
  INCLUDE  ocean.geo.dat
END_GEOMETRY
$-------------------------------------------------------------
SETS
  INCLUDE  ocean.set.dat
END_SETS
$-------------------------------------------------------------
BOUNDARY_CONDITIONS,EXTRAPOLATE
  INCLUDE  ocean.fix.dat
END_BOUNDARY_CONDITIONS
$-------------------------------------------------------------
```

1.3. Ocean.geo.dat

NODES_PER_ELEMENT

1 3

2 3

3 3

4 3

5 3

6 3

7 3

8 3

9 3

10 3

11 3

12 3

13 3

14 3

15 3

16 3

17 3

18 3

19 3

20 3

21 3

22 3

23 3

24 3

25 3

[...]

9045 4

9046 4

9047 4

9048 4

9049 4

9050 4

9051 4

9052 4

9053 4

9054 4

9055 4

[...]

24261 4724 4804 4747

24262 4710 4653 4633

24263 4633 4653 4595

24264 4595 4653 4619

24265 4804 4779 4862

24266 4653 4724 4674

24267 4640 4581 4568

24268 4320 4379 4336

24269 4364 4320 4303

24270 4410 4364 4345

24271 3929 3956 3974

24272 4645 4640 4712

24273 4422 4410 4471

24274 4471 4410 4455

24275 4455 4410 4390

24276 4471 4455 4517

24277 5023 5099 5157

24278 5157 5222 5290

24279 4895 4829 4820

24280 4991 5023 4924

24281 4829 4763 4772

24282 5522 5503 5316

24283 4400 4336 4379

24284 4390 4410 4345

24285 4390 4345 4329

24286 4329 4345 4288

1538 2 17737 17691 2

1539 2 2454 2409 2

1540 2 1034 983 2

1541 2 1 3 3

1542 2 3382 3305 2

1543 2 1762 1713 2

1544 2 207 177 2

1545 2 10709 6070 2

1546 2 2099 2055 2

1547 2 563 507 2

1548 2 2866 2812 2

1549 2 1415 1369 2

1550 2 60 49 2

1551 2 17398 17134 2

1552 2 2275 2236 2

1553 2 810 748 2

1554 2 3102 3039 2

1555 2 1589 1546 2

1556 2 120 102 2

1557 2 4041 3767 2

1558 2 1928 1885 2

1559 2 355 312 2

1560 2 2656 2602 2

1561 2 1236 1186 2

1562 2 23 16 2

1563 2 17880 17877 1

1564 2 42 54 3

1565 2 17877 17876 1

1566 2 17870 17868 1

1567 2 3 6 3

1568 2 24 32 3

1569 2 17873 17872 1

1570 2 11 17 3

1571 2 17876 17873 1

1572 2 17868 17867 1

1573 2 6 11 3

1574 2 32 42 3

1575 2 17872 17870 1

1576 2 17 24 3

1577 2 2 1 2

1578 2 17867 17865 1

1579 2 9675 9788 8

1580 2 9567 9675 8

1581 2 9455 9567 8

1582 2 9354 9455 8

1583 2 9252 9354 8

1584 2 9149 9252 8

END_ON_BOUNDARIES

1.4. Ocean.nsi.dat

```
$-------------------------------------------------------
PHYSICAL_PROBLEM
$-------------------------------------------------------
PROBLEM_DEFINITION
  TEMPORAL_DERIVATIVES:     On
  CONVECTIVE_TERM:          On
  VISCOUS_TERM:             DIVERGENCE
$ LAPLACIAN
  TURBULENCE =              FROM_TURBUL
  GRAVITY:                  NORM: 9.81,GX:0.0,GY:-1.0,GZ:0.0
END_PROBLEM_DEFINITION
$-------------------------------------------------------
END_PHYSICAL_PROBLEM
$-------------------------------------------------------
NUMERICAL_TREATMENT
  ELEMENT_LENGTH:           Minimum
  STABILIZATION:            ASGS
  TRACKING:                 Time
  $TRACKING:                Time, CONVECTION, ITERAT=100, TOLER=1.0e-5, RELAX=1.0,
ORDER=1, NEWTON
  TIME_INTEGRATION:         Trapezoidal, ORDER: 1, EULER=20
```

```
  SAFETY_FACTOR:          500.0
$  SAFETY_FACTOR          1.0 expon 1.01  maxim 50.0 mingl  50.0
  STEADY_STATE_TOLER:     -1e-12

  NORM_OF_CONVERGENCE:    LAGGED_ALGEBRAIC_RESIDUAL
  MAXIMUM_NUMBER_OF_IT:   2
  CONVERGENCE_TOLERANCE:  1e-2

  ALGORITHM:              SCHUR
    SOLVER:               ORTHOMIN,MOMENTUM_PRESERVING
$CONTINUITY_PRESERVING
$MOMENTUM_PRESERVING
    PRECONDITIONER:       TAU
$TAU
    ELEMENT_LENGTH:       Minimum
    TAU_STRATEGY:         Codina
  END_ALGORITHM

  MOMENTUM
    ALGEBRAIC_SOLVER
      SOLVER:             GMRES, KRYLOV=30
      CONVERGENCE:        ITERA=1000, TOLER=1.0e-14, ADAPTIVE, RATIO=0.001
      OUTPUT:             CONVERGENCE
```

```
$     PRECONDITIONER:       DIAGONAL
      PRECONDITIONER:       RAS, RIGHT
    END_ALGEBRAIC_SOLVER
  END_MOMENTUM
  HYDROSTATIC_PRESSURE
    METHOD:               ANALYTICAL
$PDE
    UPDATE:               Off
    INTERFACE_HEIGHT:     CONSTANT, VALUE=0.88
    ALGEBRAIC_SOLVER
      SOLVER:             GMRES, KRYLOV=30
      CONVERGENCE:        ITERA=1000, TOLER=1.0e-14, ADAPTIVE, RATIO=1.0e-2
      OUTPUT:             CONVERGENCE
      PRECONDITIONER:     DIAGONAL
    END_ALGEBRAIC_SOLVER
  END_HYDROSTATIC_PRESSURE
  CONTINUITY
    ALGEBRAIC_SOLVER
      SOLVER:             DEFLATED_CG
      CONVERGENCE:        ITERA=1000, TOLER=1.0e-14, ADAPTIVE, RATIO=0.001
      OUTPUT:             CONVERGENCE
      PRECONDITIONER:     DIAGONAL
    END_ALGEBRAIC_SOLVER
```

```
  END_CONTINUITY


END_NUMERICAL_TREATMENT
$-------------------------------------------------------------
OUTPUT_&_POST_PROCESS
  START_POSTPROCES_AT       STEP  = 0
  POSTPROCESS VELOCITY,     STEPS = 1
  POSTPROCESS PRESSURE,     STEPS = 1
  POSTPROCESS FIXPR,        STEPS = 1
  POSTPROCESS SCHUR,        STEPS = 1
  POSTPROCESS YPLUS,        STEPS = 1
  POSTPROCESS HYDRO,        STEPS = 1
  $ELEMENT_SET
  $  KINETIC_ENERGY
  $END_ELEMENT_SET
  BOUNDARY_SET
    FORCE
    MASS
    REATTACHMENT
    MEANP
    MEANY
  END_BOUNDARY_SET
  $NODE_SET
```

```
  $  VELOX
  $  PRESS
  $END_NODE_SET
  $WITNESS_POINTS
  $  VELOX
  $  VELOY
  $  VELOZ
  $  PRESS
  $END_WITNESS_POINTS
END_OUTPUT_&_POST_PROCESS
$-------------------------------------------------------------
BOUNDARY_CONDITIONS
  PARAMETERS
    INITIAL: CONSTANT, VALUE=0.1,0.0
    PRESSURE: HYDROSTATIC
  END_PARAMETERS
  CODES,NODES
$
$    INFLOW
$    --------------------
        1  11   0.1  0.0
     1 & 4  11   0.1  0.0
     1 & 2  11   0.1  0.0
```

```
$
$   GROUND
$   --------------------
      2  01   0.0  0.0
      4  01   0.0  0.0
    3 & 2  01   0.0  0.0
$
$   OUTFLOW
$   --------------------
      3  00   0.0  0.0
    3 & 4  01   0.0  0.0
$
$   FLOTADOR
$   --------------------
      5  10   0.0  0.0, AXES=LOCAL
    5 & 4  11   0.0  0.0
$
      6  10   0.0  0.0, AXES=LOCAL
      7  10   0.0  0.0, AXES=LOCAL
      8  10   0.0  0.0, AXES=LOCAL
    5 & 6  10   0.0  0.0, AXES=LOCAL
    5 & 7  10   0.0  0.0, AXES=LOCAL
    6 & 8  10   0.0  0.0, AXES=LOCAL
```

```
    7 & 8  10   0.0  0.0, AXES=LOCAL
$$$         8  00   0.0  0.0
  END_CODES
 CODES,BOUNDARIES
$    2 3
   5 3
   6 3
   7 3
   8 3
   3 12
 END_CODES
END_BOUNDARY_CONDITIONS
$-------------------------------------------------------------
```

1.5. Ocean.ker.dat

```
$-----------------------------------------------------------------
PHYSICAL_PROBLEM
 $ROUGHNESS  FIELD = 1
 $WALL_LAW   REICHARDT, VARIABLE  MULTIPLIER= 2
 WALL_LAW   REICHARDT, WALL_DISTANCE=0.0002
 PROPERTIES
  MATERIAL: 1
    DENSITY:      CONSTANT,  VALUE=1000.0
    VISCOSITY:    CONSTANT,  VALUE=1.0e-3
  END_MATERIAL
 END_PROPERTIES
END_PHYSICAL_PROBLEM
$-----------------------------------------------------------------
NUMERICAL_TREATMENT
 ELSEST
  STRATEGY:    Bin
  $MAXIMUM=     10
  NUMBER:   100,33
  DATAF: LINKED_LIST
 END_ELSEST
 WALL_DISTANCE
  ALGEBRAIC_SOLVER       DEFLATED_CG,  ITERA=  5000,TOLER=  1e-9,  ADAPTIVE,
```

```
RATIO=1e-9
  PRECONDITIONING     DIAGONAL
  CODES, BOUNDARIES
    5  1
    6  1
    7  1
    8  1
  END_CODES
 END_WALL_DISTANCE
 MESH
   EXTENDED_GRAPH=ON
   MULTIPLICATION= 0
 END_MESH
END_NUMERICAL_TREATMENT
$-----------------------------------------------------------------
OUTPUT_&_POST_PROCESS
  On_last_mesh
  STEPS = 100
  POSTPROCESS WALL_DISTANCE
  POSTPROCESS FIXNO
  POSTPROCESS CODNO
END_OUTPUT_&_POST_PROCESS
$-----------------------------------------------------------------
```

1.6. Ocean.post.alyadat

```
$-----------------------------------------------------------------
DATA
  FORMAT:                 gid
  MARK_ELEMENTS:          type
  ELIMINATE_BOUNDARY_NODES: yes
  MULTIPLE_FILE:          OFF
  BOUNDARY:               ON
  SUBDOMAINS, ALL
  END_SUBDOMAINS
  $ONLY_STEPS
  $   0
  $ 100
  $ 200
  $ 300
  $ 400
  $ 500
  $ 1000
  $END_ONLY_STEPS
END_DATA
$-----------------------------------------------------------------
```

1.7. Ocean.tur.dat

$----------

PHYSICAL_PROBLEM

$----------

PROBLEM_DEFINITION

MODEL: std_k_epsilon

$std_k_epsilon

$SPALART_ALMARAS

$SST_k_omega

TEMPORAL_DERIVATIVES: On

END_PROBLEM_DEFINITION

$----------

$ PROPERTIES

$ L_MAXI 0.1E+10

$$0.1856367E+04

$ TURBULENT_PRANDTL 0.9

$ REAL_PARAMETERS 1.0000 1.2000 0.0000 1.9000 0.0000 0.0900 $sigma_k, sigma_e, c1, c2, c3, cmu

$ INTEGER_PARAMETERS AUTOMATIC

$ END_PROPERTIES

PROPERTIES:

TURBULENT_PRANDTL= 0.9

REAL_PARAMETERS= AUTOMATIC

```
  INTEGER_PARAMETERS=       AUTOMATIC
END_PROPERTIES
$-----------------------------------------------------------
END_PHYSICAL_PROBLEM
$-----------------------------------------------------------
NUMERICAL_TREATMENT
  STABILIZATION:            ASGS
$OSS  , LIMITER: SOTO
$  CLIPPING:                LAST VALUE
  ELEMENT_LENGTH:           Minimum
  SHOCK_CAPTURING=          Anisotropic, VALUE: 1.0
  TEMPORAL_TERM_WEIGHT=     All
  TIME_INTEGRATION:         Trapezoidal, ORDER: 1, EULER=0
  SAFETY_FACTOR=            1.0e6
$  SAFETY_FACTOR            1.0 expon 1.01  maxim 50.0 mingl 50.0
  STEADY_STATE_TOLER=       -1e-8
  NORM_OF_CONVERGENCE:      L2
  MAXIMUM_NUMBER_OF_ITER=   2
  INNER_ITERATIONS =        2
  RELAXATION_FACTOR=        0.2
  CONVERGENCE_TOLERANCE=    1e-10
  ALGEBRAIC_SOLVER
   SOLVER:                  GMRES, KRYLOV=30
```

```
    CONVERGENCE:          ITERA=1000, TOLER=1.0e-14, ADAPTIVE, RATIO=0.0001
    OUTPUT:               CONVERGENCE
    PRECONDITIONER:       DIAGONAL, RIGHT
$   PRECONDITIONER:       RAS, RIGHT
  END_ALGEBRAIC_SOLVER
END_NUMERICAL_TREATMENT
$-------------------------------------------------------------
OUTPUT_&_POST_PROCESS
  START_POSTPROCES_AT       STEP  =0
  POSTPROCESS KEY,          STEPS =1
  POSTPROCESS OMEGA,        STEPS =1
  POSTPROCESS TUR_VISCOSITY, STEPS = 1
  POSTPROCESS WALL_DISTANCE, STEPS = 1
END_OUTPUT_&_POST_PROCESS
$-------------------------------------------------------------
BOUNDARY_CONDITIONS
  PARAMETERS
    INFLOW:             INTENSITY, RATIO_VISCOSITIES
    INTENSITY_TURBULENCE= 0.01
    RATIO_VISCOSITIES=    10.0
  END_PARAMETERS
$$$ VERSION GEOMETRICALS
  $CODES, NODES, GEOMETRICAL
```

```
  $  10
  $END_CODES
$$$----------------------
$$$ VERSION A MANOLPLA
  CODES,NODES
    1  6
    5  3
    6  3
    7  3
    8  3
    1 & 4  6
    1 & 2  6
    5 & 4  3
    5 & 6  3
    5 & 7  3
    6 & 8  3
    7 & 8  3
  END_CODES
END_BOUNDARY_CONDITIONS
$-----------------------------------------------------------
```

1.8. Ocean.pts.dat

PHYSICAL_PROBLEM

MAXIMUM = 5000

TYPE= 1

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY $$$,FRICTION

DENSITY= 930

DIAMETER= 5.263E-06

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 2

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 955

DIAMETER= 5.263E-06

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 3

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 965

DIAMETER= 5.263E-06

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 4

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 975

DIAMETER= 5.263E-06

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 5

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 990

DIAMETER= 5.263E-06

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 6

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 930

DIAMETER= 1.579E-05

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 7

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 955

DIAMETER= 1.579E-05

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 8

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 965

DIAMETER= 1.579E-05

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 9

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 975

DIAMETER= 1.579E-05

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 10

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 990

DIAMETER= 1.579E-05

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 11

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 930

DIAMETER= 2.631E-04

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 12

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 955

DIAMETER= 2.631E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 13

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 965

DIAMETER= 2.631E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 14

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 975

DIAMETER= 2.631E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 15

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 990

DIAMETER= 2.631E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 16

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 930

DIAMETER= 5.263E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 17

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 955

DIAMETER= 5.263E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 18

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 965

DIAMETER= 5.263E-04

BROWNIAN_MOTION: OFF

$TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 19

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 975

DIAMETER= 5.263E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 20

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 990

DIAMETER= 5.263E-04

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 21

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 930

DIAMETER= 5.263E-03

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 22

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 955

DIAMETER= 5.263E-03

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 23

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 965

DIAMETER= 5.263E-03

BROWNIAN_MOTION: OFF

$ TIME_INTEGRATION: ANALYTICAL

END_TYPE

TYPE= 24

MODEL= FORCE

FORCES: DRAG, GRAVITY, BUOYANCY

DENSITY= 975

```
      DIAMETER=       5.263E-03
      BROWNIAN_MOTION: OFF
  $ TIME_INTEGRATION: ANALYTICAL
 END_TYPE
TYPE= 25
      MODEL=          FORCE
      FORCES:         DRAG, GRAVITY, BUOYANCY
      DENSITY=        990
      DIAMETER=       5.263E-03
      BROWNIAN_MOTION: OFF
  $ TIME_INTEGRATION: ANALYTICAL
 END_TYPE
END_PHYSICAL_PROBLEM
$-----------------------------------------------------------------
NUMERICAL_TREATMENT
   NEWMARK: GAMMA=0.5, BETA=0.25       $ Diffusive
$   NEWMARK: GAMMA=1.0, BETA=0.5625    $ Very diffusive
END_NUMERICAL_TREATMENT
$-----------------------------------------------------------
OUTPUT_&_POST_PROCESS
 LEVEL     = 1
 FREQUENCY = 1
 OUTPUT DEPOSITION
$  POSTPROCESS DEPOSITION, STEPS=1
```

$ POSTPROCESS PARTICLES, STEPS=1

END_OUTPUT_&_POST_PROCESS

$----------

BOUNDARY_CONDITIONS

$ INJECTION_CONDITIONS = 1

INJE1: SQUARE, PARAM=-0.0265,0.8750,0.0,-0.0260,0.8795,0.0 1

INJE2: SQUARE, PARAM=-0.0265,0.8668,0.0,-0.0260,0.8669,0.0 1

INJE3: SQUARE, PARAM=-0.0265,0.8536,0.0,-0.0260,0.8537,0.0 1

INJE4: SQUARE, PARAM=-0.0265,0.8273,0.0,-0.0260,0.8274,0.0 1

INJE5: SQUARE, PARAM=-0.0265,0.7747,0.0,-0.0260,0.7748,0.0 1

$xmini,ymini,zmini,xmaxi,ymaxi,zmaxi arrel_del_num_particules

INITIAL_TIME= 0.0

PERIOD_TIME= 1.0e6

END_BOUNDARY_CONDITIONS