

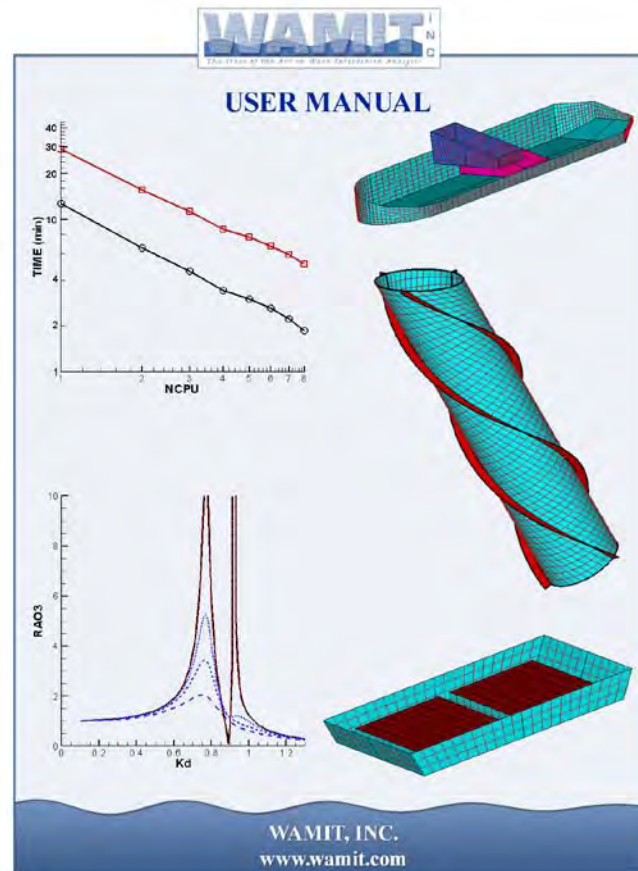
Report

2011 Annual WAMIT Consortium Meeting

November 2-3, 2011

Woods Hole, Massachusetts

WAMIT Version 7.0



List of extensions (from V6.4)

- Option to exploit geometric symmetry when $NBODY > 1$ *
- Output patch data in `wamitlog.txt` file if $NPER = 0$
- Improved error messages for bad input files
- Evaluate control surface drift forces without Option 9
- For option 9, list points with velocity $> VMAXOPT9$
- Modify tolerance for gaps on waterline
- Separate Froude-Krylov and scattering components of exciting force
- Use both `config.wam` and `runid.cfg` files for input *
- New algorithms for Rankine and Log singularities in the low-order method
- Use `RAMGBMAX` to avoid scratch disk I/O *
- Parallel processing ($NCPU > 1$) *
- `IFORCE=2`: evaluate `FORCE` outputs in `POTEN` period loop *
- Pressure surface elements on body boundary *
- Compiled with Intel Fortran 12.1
- `IPERIN` and `IPEROUT` replace `IPERIO`

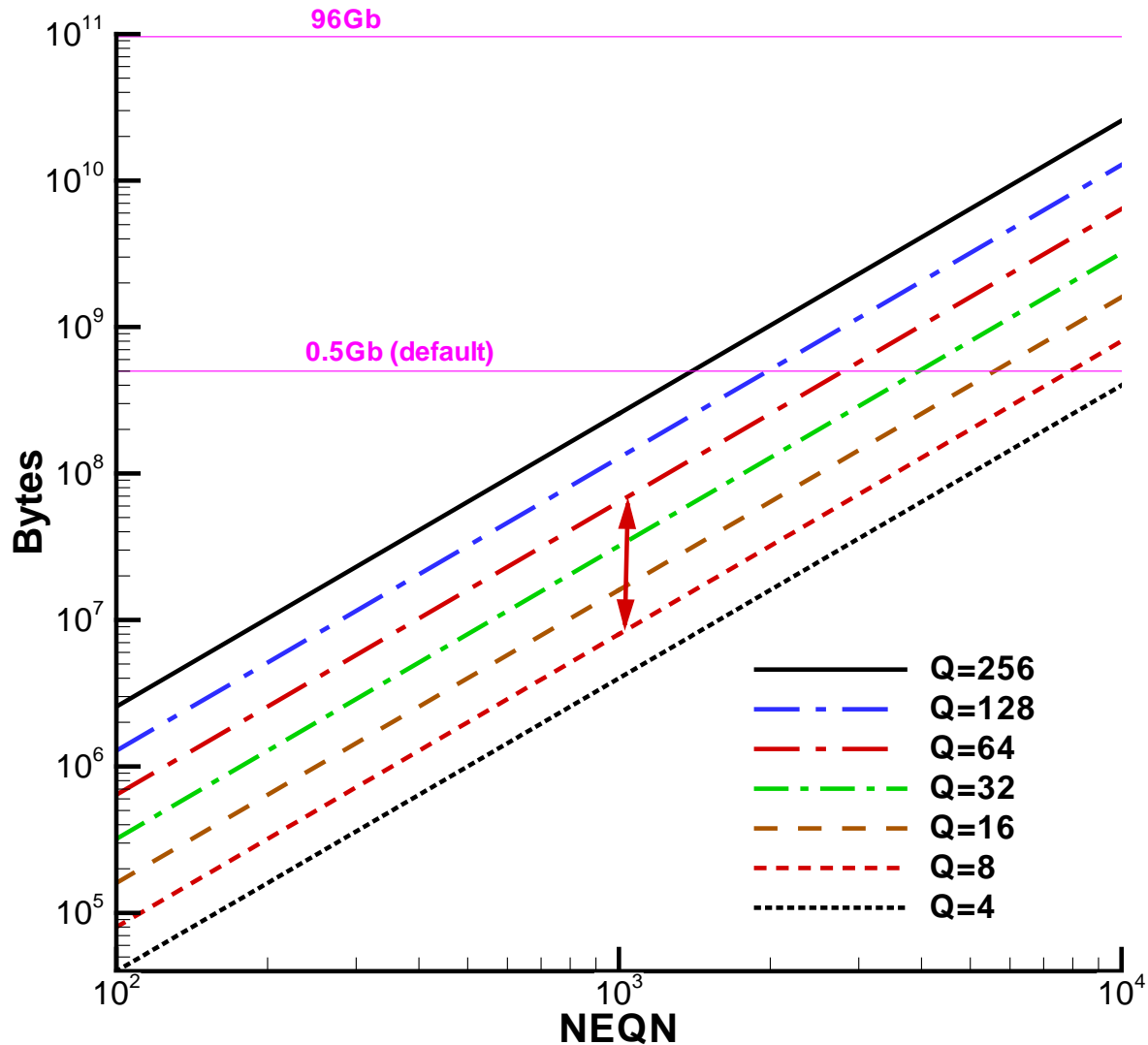
Principal extensions: further details

- **Option to exploit geometric symmetry when NBODY>1:** If all bodies have a common plane of symmetry this is used by the program, saving considerable time
- **Use both `config.wam` and `runid.cfg` files for input:** Use `config.wam` for system-dependent data (NCPU, RAMGBMAX, USERID_PATH)
- **IFORCE=2: evaluate FORCE outputs in POTEN period loop:** Enables viewing completed outputs during run
- **Pressure surface elements on body boundary:** BC for pressure instead of normal velocity. Useful for OWC, ACV, vessels with flooded compartments, possibly also for damping of free-surface resonances

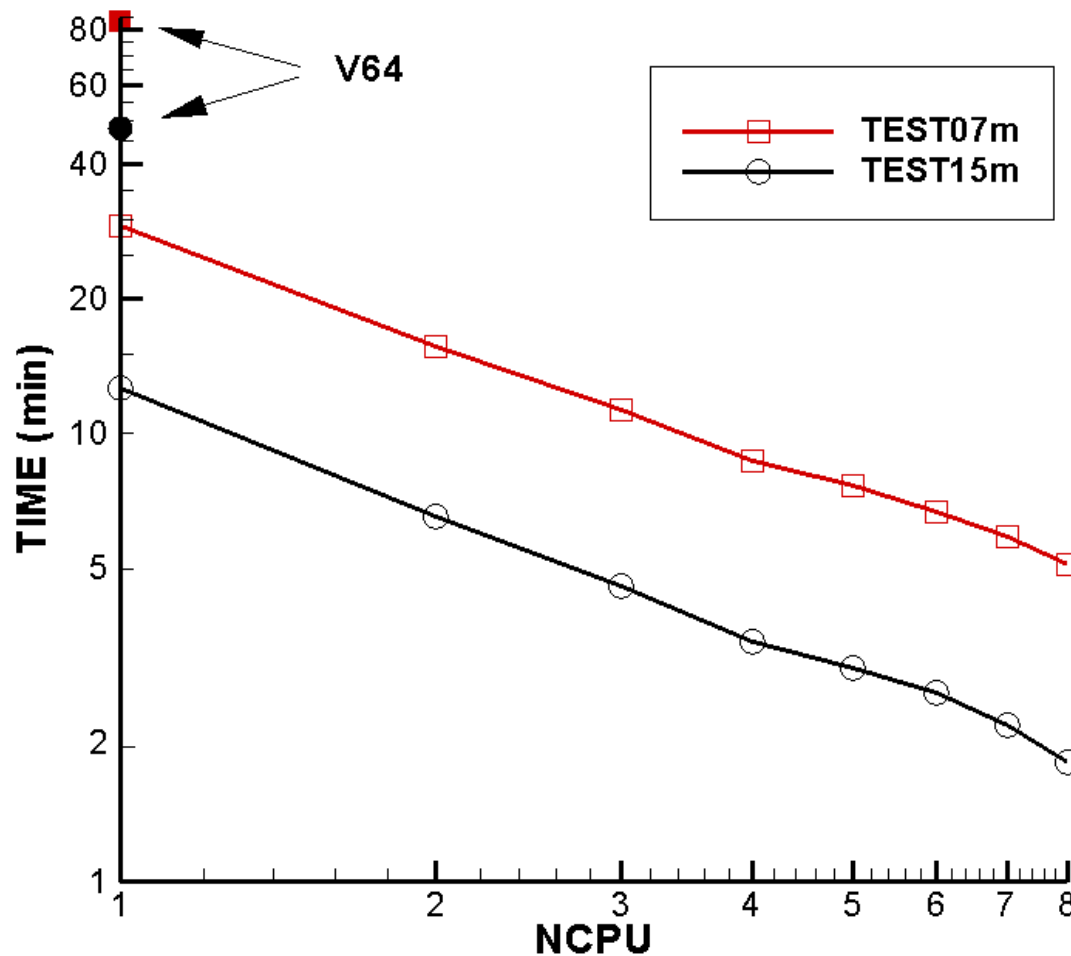
Principal extensions: continued

- **Use RAMGBMAX to avoid scratch disk I/O:** Saves considerable computing time, required for $N_{CPU} > 1$ (default $RAMGBMAX=0.5$)
- **Parallel processing ($N_{CPU} > 1$):** Main loops in POTEN and FORCE are parallelized. For long runs time is nearly $\sim 1/N_{CPU}$ (default $N_{CPU}=1$)

RAM required: **Q=8-64 is typical for NCPU=1**
(see User Manual Section 14.4 for details)



Runtimes for low-order and higher-order tests:
TEST07m: ISSC TLP, NEQN=4048, NPER=32
TEST15m: Semi-sub, NPER=32, OPTN(7)=1



Changes in input files

- Old Alternative 1 POT file not supported
- New POT file uses Alternative 2 format except NEWMDS and IRR moved to CFG
- IQUAD, IDIAG removed for low-order
- Old Option 7 combined with Option 6 (like Option 5)
- Option 7 used for control surface drift forces (replaces old Option 9c)
- Dipole panels or patches assigned in CFG only (not in GDF)
- ISX, ISY < 0 replaced by IWALLX0, IWALLY0
- IALTPOT, ICTRSURF, IDIAG, IQUAD, MAXSCR, IPERIO removed from CFG

v6v7inp.exe can be used to convert old files

(see Appendix B)

Status of WAMIT V6.4S

The new features and updates in V6.4S

(*Red Italic* is progress made since the last meeting)

- Option to evaluate quadratic forces using control surfaces.
- Complete second-order forces on vessels with internal tanks. (ILOWHI=0 and *ILOWHI=1*)
- As in V61S, the quadratic forcing on RHS is considered in a piecewise manner for ILOWHI=1. But exact body surface is considered instead of an approximation using flat panels.
- Option for automatic descretization on the external free surface (ILOWHI=0 and *ILOWHI=1*) and *tank free surface*