27 July 1981

Topics for discussion with Messrs. Bond, Jones and Bertrand.

1. Tests carried out to date

- testing of base configuration ("Australia" 1980) - keel 1
- testing of keel with less leading edge slope - keel 2
- testing of keel with increased thickness (greater stability) - keel 3
- testing of keel with taper ratio greater than 1 - keel 4
- testing of keel with winglets - keel 4A
- testing of modified bustle with final keel - keel 5

2. Tests yet to be carried out

- testing of aft body with no bustle and final keel - keel 5A

3. Support activities carried out to date

- calculations of side force for various keel configurations at Netherlands Aerospace Laboratories
- design drawings and calculations (together with Ben Lexcen)
- computer fairing of hull form and calculation of 1 to 1 offsetts for building
- calculation of hydrostatics and stability cross-curves

4. Reasons for the success of the final keel configuration

- keel with large taper ratio has 5% greater side force (due to more efficient distribution of load)
- keel with winglets has 40% greater side force (winglets prevent loss of side force at bottom of keel, while also producing side force; effective increase in keel depth at heel angles)
- stability is 25% higher due to very low centre of gravity

5. Exploitation of new keel concept

- A greater stability is obtained for same keel volume (weight). Good windward performance can be obtained for small displacements for 12 Meter for the first time. New design therefore calls for a small displacement and large sail area to gain all the associated advantages thereof, no longer at the cost of windward performance
- small displacement (L = 13.40 m, displacement 22.719 m^3 = 50782 lb) on a long waterline (46.5 ft = 14.2m) can be

realized best by removal of bustle, leading to further improvements in:

- low speed drag (less wetted surface)
- reduced pitching and heaving motions in waves
- less added drag due to waves
- better and quicker turning
- a further increase in side force (a 12 M has negative side force on bustle)

while possible penalties (?) are:

- a slight increase in wave resistance at high speed (due to lower prismatic)
- decrease in course stability requiring adoptation of a larger rudder

6. Time frame and costs of work yet to be carried out

- discussions with Ben Lexcen on lines of aft body (without bustle) to be tested (discussions took place in Sydney on 17 to 19 July 1981)
- model modifications to aft body, keel and rudder (finished before 6 August 1981)
- tests with final configuration (on 6 August 1981)
- final 1 to 10 and 1 to 1 drawings of lines (ready for dispatch to Ben Lexcen on 13 August 1981)
- final reports on all tests, calculations, etc.(ready in September 1981)
- costs are listed in letter to Warren Jones dated 2 July 1981. Cost to date is Hfl. 338950.-. Cost of work yet to be carried out is Hfl. 36100.- (without further Aerospace Lab. calculations).

7. Discussion of proposal for tuning and evaluation of sailing performance in 1982-1983

- instrumentation on both yachts in Australia late 1982
- interfacing of on-board computer with instruments and Rochester equipment on both yachts in January 1983
- installation of on-shore computer with dual programming ability with telemetry-link to yachts in January 1983

Schedule of remaining activities

- inspect 1 to 3 scale model
- view films and video recordings of tests
- tour of facilities
- lunch