

MURRAY
BURNS
DOVELL

June 3, 1999

Ms Pam Lazarini
Crown Solicitor's Office
60-70 Elizabeth Street
Sydney, NSW 2000

By Fax: 9224 5177

3 pages

Naval
Architecture
&
Composite
Engineering

Dear Pam,

I have reviewed Martin Renilson's proposal for model testing in relation to your inquiry of yacht stability as it pertains to the 1998 Sydney to Hobart yacht race tragedy, and in particular, how it may have effected what happened aboard the yacht *Naiad*. Following are my observations and recommendations on this proposal:

1. Modelling ultimate stability performance of a yacht in a towing tank has been done at towing tank facilities around the world, (and in fact I believe that the AMC has done some of this type of testing in the 1980's), with some useful results. But it is difficult and is not a standard type of tank testing experiment.
2. Phase 1 is basically a series of validation experiments for the tank, the wavemaker and the modelling technique. While this may be important to add credibility to any work leading to conclusions, (Phase 2), it is not necessary as a first step.
3. The Phase 2 tests are the tests that, if valid, will answer your primary concern; that being the question: is it possible that the *Naiad* would have righted itself in significantly less time than it did if it had a limit of positive stability of 115° or greater?
4. Phase 3, while interesting, and possibly of some use in developing more precise standards for adequate safety of offshore racing yachts, is not directly of use to your inquiry. It is a research project that may find a source of funding. I believe that Martin is looking for an endorsement from your office for this work to give him credibility in his search for funding. This may be appropriate depending on the outcome of any testing that is done.
5. In light of your objectives and in light of the fact that this type of experiment does not guarantee an answer, I would

PO Box 729
Newport Beach
NSW 2106

SUITE 3 RPAYC
MITALA STREET
Newport NSW 2106
AUSTRALIA

Tel: (61) 2 9979 6202
Fax: (61) 2 9979 6215

e-mail:

murray@burns-dovell.com.au

IAN MURRAY
AM

IAN BURNS
R.Eng.(Mech)

ANDREW DOVELL
R.Eng.Sc. M.Eng.(N. Am.)

MURRAY BURNS & DOVELL PTY LTD
A CN 000 433 707

04-06-99:04:38PM

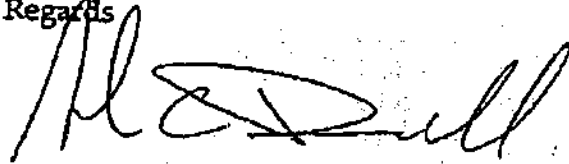
recommend proceeding in a slightly re-arranged format as outlined below:

- a. Run Phase 2 type self righting tests on a model of *Naiad* in only 2 ballast conditions. One with the boat in the condition in which it was rolled, ie 105° limit of positive stability, a second with the boat at 115° limit of positive limit of stability.
 - b. If these tests indicate that there is a significant difference in the amount of time required to self right with the boat in these two conditions, then proceed with some form of Phase 1 tests to create the required level of credibility; and then continue with the remaining portions of Phase 2.
 - c. If the tests do not show any significant difference in the self righting time with the boat in these two extreme ballasting conditions, or if the difference is small in relation to the experimental errors as identified during the course of the experiments, then there is no point in going any further with these tests.
6. It is of note that there appears to be a discrepancy between the IMS certificate held by *Naiad* at the time of the Hobart race, dated the 15th of October, 1998, and that held immediately prior. This discrepancy needs to be sorted out in order to be certain that the boat did in fact have a limit of positive stability of 105° at the time of the Hobart race.
 7. In my opinion it is possible that the rating with which *Naiad* entered the 1998 Sydney to Hobart race was incorrect, and that the boat actually had a higher limit of positive stability, closer to that of her previous rating. This would also be more consistent with certificates carried by sisterships.
 8. It would be possible to explain this discrepancy with a series of righting moment experiments, (similar to those carried out as part of a boat's IMS measurement procedure), on a sister ship to the *Naiad*, of which there are several in Australia. One of the reasons I question the latest certificate is that the freeboards and righting moment measurements were taken by the Tasmanian IMS measurer, who has limited experience with conducting these measurements in comparison with those in New South Wales and Victoria. The IMS measurement procedures are not simple and it is very easy to make a mistake

or to be less precise than someone who does it on a more regular basis.

- 9. It is my opinion that to determine if stability played any part in the *Naiad* incident both sets of experiments need to be conducted: at least a limited sub set of the Phase 2 tests as outlined in 5a above, and a series of righting moment tests on a sistership to *Naiad* to determine if the limit of positive stability was in fact as low as 105° when the boat started the race.

Regards



Andrew C Dovell



Crown Solicitor's Office

NEW SOUTH WALES

Facsimile

To: DETECTIVE SENIOR CONSTABLE STEWART GRAY

From: Pam LAZZARINI

Fax: 9692 5427

Tel: (02) 9224 5185
Fax: (02) 9224 5

Ref:

Ref:

Date: 4/6/99

Total no. of pages: 4

RE: Inquest into Deaths in Sydney To Husband
Jacob RACE

Please find enclosed ANDY DOUGLIS
Report

Regards Pam

Should you have any problems regarding the complete receipt of this transmission please contact the sender on the above telephone number.

Confidentiality Notice: This facsimile transmission (including any documents accompanying this facsimile transmission) may contain information which is confidential and/or privileged. Therefore if you are not the intended recipient of this facsimile transmission, any dissemination, copying or action taken in reliance on the contents of this facsimile transmission is strictly prohibited. If you have received this facsimile transmission in error, please notify the sender on the above telephone number.

MURRAY
BURNS
DOVELL

June 3, 1999

Ms Pam Lazarini
Crown Solicitor's Office
60-70 Elizabeth Street
Sydney, NSW 2000

Naval
Architecture

By Fax: 9224 5177

3 pages

&
Composite
Engineering

Dear Pam,

I have reviewed Martin Renilson's proposal for model testing in relation to your inquiry of yacht stability as it pertains to the 1998 Sydney to Hobart yacht race tragedy, and in particular, how it may have effected what happened aboard the yacht *Naiad*. Following are my observations and recommendations on this proposal:

1. Modelling ultimate stability performance of a yacht in a towing tank has been done at towing tank facilities around the world, (and in fact I believe that the AMC has done some of this type of testing in the 1980's), with some useful results. But it is difficult and is not a standard type of tank testing experiment.
2. Phase 1 is basically a series of validation experiments for the tank, the wavemaker and the modelling technique. While this may be important to add credibility to any work leading to conclusions, (Phase 2), it is not necessary as a first step.
3. The Phase 2 tests are the tests that, if valid, will answer your primary concern; that being the question: is it possible that the *Naiad* would have righted itself in significantly less time than it did if it had a limit of positive stability of 115° or greater?
4. Phase 3, while interesting, and possibly of some use in developing more precise standards for adequate safety of offshore racing yachts, is not directly of use to your inquiry. It is a research project that may find a source of funding. I believe that Martin is looking for an endorsement from your office for this work to give him credibility in his search for funding. This may be appropriate depending on the outcome of any testing that is done.
5. In light of your objectives and in light of the fact that this type of experiment does not guarantee an answer, I would

PO Box 729
Newport Beach
NSW 2106

SUITE 3 RPAYC
MITALA STREET
NEWPORT NSW 2106
AUSTRALIA

Tel: (61) 2 9979 6202
Fax: (61) 2 9979 6215

e-mail:
madd@murrayburnsdovell.com.au

IAN MURRAY
AM

IAN BURNS
B.Eng.(Mech)

ANDREW DOVELL
B.Eng.Sc.M.Eng.(N. Aust.)

MURRAY BURNS & DOVELL (VT) LTD
A C N DEED 451 747

04-06-99:04:38PM