

AFFIDAVIT OF DR IVOR VAN HEERDEN
IN SUPPORT OF PLAINTIFFS' MOTION TO STRIKE
DEFENDANT'S SUPPLEMENTAL REPORT OF DONALD T. RESIO
AND THE RESULTS OF HIS DATA

I, Dr. Ivor van Heerden, make this Affidavit in support of plaintiff's motion to strike the Supplemental Report on Waves and Overtopping Characteristics along the MRGO, by Donald T. Resio, Ph.D., (Resio) undated but received on March 24, 2009.

1. Dr. Resio's initial Expert Report dated December 21, 2008, furnished without reliance data, documented his professional opinion to a "reasonable degree of scientific and engineering certainty" that wave overtopping alone during the Katrina event caused levee failure in the New Orleans area.
2. Dr. Resio utilized a wave model of limited application, developed by Pat Lynett, Ph.D. of Texas A&M, whose application is mostly to analyze long waves during tsunamis; COULWAVE. This model operates as a derivative program from STWAVE a numerical model that simulates waves.
3. The COULWAVE application is not analogous to a model that simulates short wave dynamics generated at a coastline similar to those experienced during Katrina along the levees of the MRGO.
4. Dr. Resio testified that the validation of his COULWAVE for its application in this scenario was only performed on low slopes like beaches not comparable to the slope experienced by a hurricane wave against a feature like a levee. (248:4-10)
5. Dr. Resio's report explained that his conclusions were based on an analysis produced by a third party, he utilized spectral wave periods of 6, 8 and 12 seconds (p.47). Basing his conclusions on the STWAVE model data he concluded that there were significant wave periods of between 4.2 to 5.8 seconds. (See fig 25 on page 52 of his reports.) This was confirmed during his examination (228:6). During his examination, however, it became evident that Resio had performed no independent modeling analysis to formulate his opinions. Rather, Dr. Resio acknowledged that his analysis was reached exclusively on the reliance data generated by others. (71:21)



6. Ultimately after pursuing supporting data for these representations particularly the data to support the significant wave periods of 5-6 seconds, on March 13, 2009, the Corps acknowledged that Resio conducted no wave modeling of the alleged significant wave period of 6 sec., only 8,12, and 16 second waves. (See, Exhibit A.)
7. During his deposition, Dr. Resio could not identify the version of COULWAVE was utilized for his conclusion.(164:16.)
8. Dr. Resio could not testify with certainty, whether the modelers who performed the wave modeling that he relied upon utilized any bottom friction coefficients. (165:4.)
9. Further, Dr. Resio testified that the results presented in pages 25 and 26 figures 8 and 9 were generic and were not specific to the MRGO, Resio also testified that he could not identify the physical model they used for the validation in this case. (161:19).
10. On March 24, 2009, the Corps Supplemented Dr. Resio's report with a Supplemental Report and seven (7) separate, five hundred (500) Gigabyte hard drives supposedly of COULWAVE data.
11. In Dr. Resio's Supplemental report there are apparently 3456 *new* COULWAVE runs recorded on this data set, used to generate a digital lookup table. (This lookup table is where all the results would be stored in a format similar to an excel spread sheet to see variations in the numbers.) This look up table appears to reflect entirely different values from the material referenced in his initial expert report of December 2008.
12. Dr. Resio's supplemental report also adds an entirely new analysis of front side velocities that was not presented in his original report to present the argument that frontside wave attack did not affect the levees. The supporting data reflects that approximately 20 new runs were done to support his new theories. See, Appendix D.
13. The Corps supplied no instructions with these hard drives produced in support of Resio's Supplemental Report and thus no explanation on how the hard drives were organized, the format of the data or any notes on the software needed to read the data, nor any instructions on reading the data. Basically the Corps supplied 7 hard drives each with 500 gigabytes of data and nothing more. This equates to at least 35 home style personal computers with 100 gig hard drives with their hard drives completely full of information and no applications to run it.
14. After initially attempting to determine the correct programs to run this new data, on 2nd April 2009 Plaintiffs' experts noted that:

Resio now claims to have done 3456 new individual runs but supplied data for about 65 new runs (figures), with very pertinent data missing from the figure captions, things like wave period in some, wave height in others, etc. This is all new material not part of the original report.

Further as to Appendix D, Resio has furnished no wave periods for these new theories of front side attack. We would assume that there are 3465 runs with front side velocity calculated that should have been supplied.

The new 3465 runs each should have accompanying wave parameters and other profile characteristics clearly identified.”

15. On 7th April 2009 the Corps again refused to furnish the basic information necessary to read the 3500 Gigabytes of raw data that accompanied this Supplemental Report. Plaintiffs and their experts have been relegated to attempting to guess at which program might be able to read this enormous volume of data and then hopefully having the opportunity to analyze it in a meaningful way prior to the impending trial.

Dated: April 9, 2009

A handwritten signature in cursive script, appearing to read 'Ivor van Heerden', written over a horizontal line.

Ivor van Heerden

Rob Warren

From: McConnon, Jim (CIV) [Jim.McConnon@usdoj.gov]
Sent: Friday, March 13, 2009 10:13 AM
To: Rob Warren
Cc: Smith, Robin (CIV); Joe Bruno
Subject: FW: Missing Data Request

Attachments: stwave_hp_pc_5.6.f90; stwave_fp_pc_5.6.f90



stwave_hp_pc_5.6.f90 (105 KB)
stwave_fp_pc_5.6.f90 (117 KB)

Rob,

Concerning your below message, the following is provided:

Regarding your first question, 6 second waves were not run. References to such period waves in the report are in error. Consequently, there is no input and output data for those period waves.

Regarding your second question, attached are the STWAVE half plane and full plane source codes.

I hope this helps. We will be formally producing the attachments.
Jim

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From: Rob Warren [mailto:rob@jbrunolaw.com]
Sent: Thursday, March 12, 2009 1:55 PM
To: Smith, Robin (CIV); McConnon, Jim (CIV)
Cc: Joe Bruno; Scott Joanen; Pierce ODonnell
Subject: Missing Data Request

Robin & Jim -

With regards to the data produced by Westerink & Resio we find the following information missing and request it be produced.

1. We cannot find any input or output data for the 6 sec period waves. Resio in his report Page 47 line 1 states "Incident waves were run for a number of significant wave heights (0, 2, 4, 6, and 8 feet), a number of spectral peak wave periods (6, 8, and 12 seconds) and a number of relative

freeboards (-4, -2, 0 , and 2 feet). ." and on line 12 states "The time series of wave heights, periods and surge elevations were obtained from the STWAVE runs..." Resio's figure 24 on page 52 reveals for his base case periods from 4.2 and 5.8 seconds. If he did run 6 seconds waves, then we need the input and output files.

2. We need the version of STWAVE as used by the US experts to generate their data. The only version available from the Internet seems to be version 4. The reports would seem to suggests version 2 and/or 3. Please indicate which version was used and if earlier than version 4, please produce.

Thanks for your attention to this.

Rob

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