THE CONSORTIUM FOR
MATHEMATICS AND
ITS APPLICATIONS

April 19, 2015

Dear Faculty Advisor,

Thanks for participating in the MCM. The author of this evaluation served as a judge during the B Problem judging of the MCM. With respect to Contest Paper #41747, he or she is providing constructive feedback from both an absolute sense of how this paper treated a requirement and how it compared to the field of papers entered in the contest. Additionally, he or she has identified several issues that discriminated the better papers from the rest.

A word of caution: Your paper is being compared against the entire field of 2280 B Problem contest papers submitted. The typical university has one problem B team consisting of three of the best modeling students at that school. We are aggregating what all of these students accomplished during the contest. There are discriminators identified below that perhaps only a very few, say one or two, Outstanding teams addressed. What we are trying to show you is how your team performed absolutely against the requirements of the problem and how they performed relative to the field against the discriminators that our judges identified. We hope these comments will highlight areas in which your team's work could be improved.

The first page in what is to follow is an analysis of paper #41747 in relation to the stated requirements of the problem and in relation to the performance of other teams. We note that many executive summaries were improved this year. These summaries should motivate the reader and be polished with a good synopsis of key results.

The second page in what is to follow indicates how your team fared relative to other papers regarding the discriminators. Discriminators are identified during the entire judging process.

Requirements for Problem B

REQUIREMENT	Fulfillment	Relative to other papers
Proper documentation throughout the paper and in the references section	No	Few citations and a few indications of where they are needed.
Nontechnical letter explains the results and model in about 1-2 pages	Yes	No promised results or probability of finding the plane.
Executive Summary motivates the reader & contains results.	No	Only one page of synopsis which this reader interpreted to be the nontechnical letter.
Coherently & well written paper addressing:	No	Many typos. Proofreading would have cleared this up.
1. Restatement of the Problem	Yes	Your paper addressed with two distinct models.
2. Assumptions with rationale or justification that lead to model used	Yes	Extensive clearly stated assumptions with good rationale.
3. Model Design and Justification with a clear modeling process to obtain results.	Yes	Mostly descriptive bullets of the algorithm used.
4. Model Testing and/or Sensitivity/Error Analysis	No	Better papers had some form of model testing and/or sensitivity analysis.
5. Strengths and Weaknesses	Yes	Very few..
6. Provides algorithms for any computer codes (not the code)	Yes	But no discussion of what the team was trying to do.
7. Conciseness and Organization of document	No	Too concise and no descriptive enough..

Discriminators for Problem B

Discriminator/ Issue	Performance against the Field
Did team model flight path and reasonable search regions?	They said they planned but there was little evidence of an actual model.
Did team consider water currents, wind, or debris sinking rates?	Yes. But there was no underwater search.
Did team consider allocation or use of search assets?	In very general terms in the algorithm.
Did team provide a reasonable search pattern for their platforms?	Much talk about allocation in the letter but no evidence of coordination of possible resources.
Did team provide a numerical/reasonable probability of success for their search model?	No.
Did team do useful sensitivity analysis on useful and reasonable variables or parameters or Did they test their model with another lost/found flight?	There was no sensitivity analysis or model testing.
Are graphs and charts clearly labeled and do they add clarity to the discussion? Do graphs or charts that are clearly imported have references?	Graphs and charts that were not used.

Overall, your paper received a rating of Meritorious. This paper either lacked an executive summary or a nontechnical paper. This reader interpreted the first page as the nontechnical paper. Your team relied too heavily your assumptions for the reader to understand your model(s). However, the clearly stated and justified assumptions aided your focus on the problem. Your simulations lacked description and made this reader question the credibility of any results. To achieve a higher rating your paper should have had some form of model testing or sensitivity analysis. Finally a good proofreading would have rid your paper of several distracting typos. This team should be congratulated for a rating of Meritorious.

Sincerely,

MCM Contest Coordinator