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FOR ENGINEERING AND SCIENCE

Testing by a CO-OP Student

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Description

Jack Jacobs, an engineering co-op student from a State University, "fudges" the data, causing catastrophic failure.

Abstract

This case is one of thirty-two cases which address a wide range of ethical issues that can arise in engineering practice provided by the Center For the Study of Ethics in Society, Western Michigan University.

Body

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Project leader Bruce Barton was being sorely pressed to complete the development of several engineering prototypes for a field test of a new appliance model for the XYZ company. One particular plastic component of the new model had given difficulty in laboratory tests as it failed repeatedly before reaching the stress level necessary for successful operation. Bruce had directed a redesign of the component

using a tough new engineering plastic recommended by the Research Laboratory's Material Science Department. Stress tests needed to be run on the redesigned component, but Bruce was running short of time and needed to get on with building the prototype. Bruce sought out the manager of the Material Science Department for help in running stress tests on samples of the new component. With this assistance he could go ahead with prototype building and conduct the tests concurrently. The prototypes, of course, would not be released to field test until the stress tests on the redesigned component proved its design to be satisfactory.

Tom Mason, manager of the Material Science Department, was willing to assist because he knew how critical completion of the development was to XYZ's future appliance plans. However, this was also a busy time for Tom's department. So, Tom suggested to Bruce that he could assign the test work to one of the engineering co-op students. Tom was also coordinator of engineering co-op students, and he liked to use the co-op students in demanding situations to give them practical experience. Tom assigned the test work to Jack Jacobs, an engineering co-op student from the State University who was completing his second work session at XYZ.

Jack was familiar with the test equipment and previously had done similar test work. Jack was a good student and his co-op work had been usually well done. Tom commented to Jack that he would need to work diligently to complete the tests before he had to return to State University. Jack completed the tests on schedule and turned in a report to Tom indicating the component had successfully passed the stress tests. Upon completion of the test report Jack returned to the university for his next school session. Tom gave Bruce the good news. The prototypes were completed and the field test of these prototypes got underway on schedule.

A few weeks later, Bruce rushed into Tom's office to tell him that most of the prototypes were out of operation because of a catastrophic failure of the component that had been tested in Tom's lab. Bruce wanted to discuss the test immediately with Jack; but since Jack had already returned to the university, he and Tom settled for studying Jack's lab notebook in detail. After review Tom said, "Bruce, I hate to say it but these data look too good. I know the equipment and there should be more scatter in the measurements Jack took. I think some, if not all, these measurements are in error or they have been faked! At best, Jack probably took a few points and 'extrapolated' the rest!" What ethical issues, if any, does this scenario raise?

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Bruce and Tom made plans to run all the tests again. Meanwhile, Tom phoned Dr. Frank Thompson, Co-op Coordinator at State University, to discuss his fear that Jack had falsified data. In the course of the conversation he asked Dr. Thompson if any effort was made to discuss professional ethics with co-op students before their first work session and if the importance and value of engineering test results were stressed to these students. Dr. Thompson explained that no specific instruction on professional ethics was given to co-op students, but all lab courses emphasized the need for accuracy in data taking. Dr. Thompson added that he found it hard to believe that a co-op student would "fake" data!

- Was it appropriate for Tom to discuss his concerns about Jack with the university's Co-op Coordinator prior to discussing the matter with Jack?
- Should Tom have a conversation with Jack about his concerns? If so, what type of conversation should Tom have with Jack when he talks with him? Should he refuse to have Jack return to XYZ as a co-op student?
- What comments would you make about the supervision given co-op students at XYZ?
- Should State University incorporate into its instruction program some emphasis on professional ethics? If so, what form might this take? If not, why not?

Notes

This case was originally prepared by Dr. Gale Cutler, a management consultant in St. Joseph, Michigan. It was published in Research Technology Management, May/June, 1988, p. 50.

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