Case Study 2: Machine Failure

(Fictional case study developed by Dr. Michael S. Pritchard and Dr. Kenneth L. Carper from Washington State University)

Part 1

R&M Machinery had for years provided XYZ Inc. with sophisticated equipment and reliable repair service. XYZ Inc. returned a failed piece of equipment. A meeting was held which included Archie Hunter, a representative from XYZ Inc.; Norm Nash, R&M's returned goods area representative, and Walt Winters, an R&M engineer intimately acquainted with the kind of equipment XYZ Inc. had returned. Norm Nash represented R&M's "official position": the piece of equipment is all right. However, during the course of the meeting it becomes apparent to Walt Winters that the problem has to be R&M's. He suspects that the equipment was not properly tested out by R&M, and that it failed because of an internal problem.

Discussion Question: Should Walt say anything about this in the presence of the customer, or should he wait until after the meeting to discuss this with Norm Nash?

Part 2

Walt keeps silent during the meeting. After the meeting he talks with Norm about his diagnosis. He suggests they tell XYZ Inc. that the problem is R&M's fault, and that R&M will replace the defective equipment. Norm replies, "I don't think it's wise to acknowledge that it's our fault. There's no need to hang out our wash and lessen XYZ Inc.'s confidence in the quality of our work. A 'good will' gesture to replace the equipment should suffice." R&M management decides to tell XYZ Inc. that they will adjust to the customer's needs "because you have been such a good customer all these years." Although R&M replaces the equipment at its own expense, it does not tell XYZ Inc. the real nature of the problem.

Discussion Question: Discuss R&M’s resolution of the problem. Should R&M's way of handling the problem be of any concern to Walt Winters at this point, or is it basically a "management problem"?

Part 3

Many engineers eventually move into management positions.

Discussion Question: If Walt Winters moves into management, what lessons, if any, might he take with him from the above situation?

Commentary from the Authors:

The fundamental moral concept of honesty is at stake in this case study. Norm Nash, representing the position of management, has made the decision to deny the possibility of a defective product. This decision has been made on the basis of public image and ignores the technical opinion given by Walt Winters, one of the firm's engineers. Winter's silence is probably appropriate in the first meeting with the client. His position is one of technical support, not public relations. Also, his suspicions are not yet confirmed, and a preliminary contradiction of Nash's statement is unwarranted. However, Winters is correct in raising his objections directly with Nash following the meeting with the client. Norm Nash's reaction is unfortunate. Walt Winters should be distressed by this reaction. His first move should be to disassemble the equipment to confirm his diagnosis, if possible. If the evidence supports his hypothesis, he should then press Nash vigorously to deal honestly with the client. While this one experience with one executive may not be indicative of the attitudes of all management executives in the corporation, Winter should observe corporate management decisions carefully for other moral deficiencies. The expression that this is merely a "management problem" of little concern to technical staff can lead to serious consequences. If management decisions routinely overrule factual technical information, placing public relations over honesty, the stage has been set for potential moral disaster.

What is the cost of honesty here? The relationship between R&M and XYZ Inc. is firmly established, based on years of reliable service. An honest admission of equipment failure will not damage such a relationship. Confidence is built, not destroyed, by honesty and integrity. This client is left with unanswered questions: Is this an equipment deficiency? Is it an installation problem? Has the breakdown occurred due to operator error or improper maintenance? These unanswered questions may lead to suspicions. Unanswered questions are far more likely to undermine client confidence than an honest admission of potential manufacturing defects. And Nash has already agreed to replace the

equipment at no cost to the customer. What possible economic cost could honesty demand beyond this? It is precisely the lack of economic cost that makes this case so disturbing.

The lessons for Winters, potentially a future manager, are clear: If honesty can be compromised in such a trivial instance, why should one insist on integrity when the costs are high? Honesty is not always this inexpensive. Sometimes it costs a great deal. When the stakes are high, surely it will be easier to dismiss moral commitments. The image of infallibility cultivated by managers like Nash, and their unwillingness to admit fault leads to unrealistic expectations by clients. When failures do occur, society is unprepared for the consequences. The concept of risk is not at all well understood by the public. Instead of providing assistance in understanding this concept, many engineers and managers like Nash have encouraged unrealistic expectations by their attitudes. The public has become more intolerant of failure and more suspicious of the technical experts who are unable to deliver the promised risk-free society. In fact, the very foundation of engineering design is based in trial-and-error experience. The state-of-the-art cannot be advanced without failure. The implication of a condition where failure does not occur is that technology is not advancing. When products do not fail once in a while, one must conclude that they are inefficient and over-designed. Technical professionals and product manufacturers have a clear ethical responsibility to communicate honestly about failures, thus contributing to the safety and reliability of products and the advancement of engineering design practice.