Report on a Case by the Board of Ethical Review

Case No. 65-12

Subject:
Participation in Production of Unsafe Equipment - Section l(c) -Code of Ethics; Section 2-Code of Ethics; Section 2(a)-Code of Ethics; Section 2(c)- Code of Ethics.

Facts:
Engineers of Company "A" prepared plans and specifications for machinery to be used in a manufacturing process and Company "A" turned them over to Company "B" for production. The engineers of Company "B" in reviewing the plans and specifications came to the conclusion that they included certain miscalculations and technical deficiencies of a nature that the final product might be unsuitable for the purposes of the ultimate users, and that the equipment, if built according to the original plans and specifications, might endanger the lives of persons in proximity to it. The engineers of Company "B" called the matter to the attention of appropriate officials of their employer who, in turn, advised Company "A" of the concern expressed by the engineers of Company "B". Company "A" replied that its engineers felt that the design and specifications for the equipment were adequate and safe and that Company "B" should proceed to build the equipment as designed and specified. The officials of Company "B" instructed its engineers to proceed with the work.

Question:
What are the ethical obligations of the engineers of Company "B" under the stated circumstances?

References:
Code of Ethics-Section l(c)- "He will advise his client or employer when he believes a project will not be successful."

Section 2-"The Engineer will have proper regard for the safety, health, and welfare of the public in the performance of his professional duties. If his engineering judgment is overruled by non-technical authority, he will clearly point out the consequences. He will notify the proper authority of any observed conditions which endanger public safety and health."

Section 2(a)-"He will regard his duty to the public welfare as paramount."

Section 2(c)-"He will not complete, sign, or seal plans and/or specifications that are not of a design safe to the public health and welfare and in conformity with accepted engineering standards. If the client or employer insists on such unprofessional conduct, he shall notify the proper authorities and withdraw from further service on the project."

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Discussion:

The engineers of Company "B" fulfilled their obligation under Section l(c) of the Code by notifying their employer that they did not believe the project would be successful as designed by the engineers of Company "A". They also met the requirements of Section 2 in pointing out the consequences to be expected from proceeding under the original plans and specifications. By their actions the engineers of Company "B" regarded their "duty to the public welfare as paramount," as required by Section 2(a).

The further and more difficult question, however, is whether the engineers of Company "B" are required or ethically permitted to refuse to proceed with the production on the basis of plans and specifications which they continue to regard as unsafe.

In Case 61-10, we held that engineers assigned to the redesign of a commercial product of lower quality should not question the company's business decision, but had an obligation to point out any safety hazards in the new design. In that case, however, the redesign of the product involved only a question of a lower quality product and did not raise the problem of the product endangering public health or safety.

Section 2(c) of the Code is specific in holding that engineers will not complete, sign, or seal plans and/or specifications that are not of a design safe to the public health and welfare. In this situation the engineers of Company "B" have not been requested, or required, to "sign, or seal plans and/or specifications" at all. This has been clone by the engineers of Company "A". A literal construction of the Code language may, therefore, indicate that the engineers of Company "B" may ethically proceed with their role in the production process. But we think that this is too narrow a reading of the Code and that the purpose and force of Section 2(c) is that the engineer will not participate in any way in engineering operations which endanger the public health and safety.

The last sentence of Section 2(c) is likewise clear in requiring that the engineers not only notify proper authority of the dangers which they believe to exist, but that they also "withdraw from further service on the project." This mandate applies to engineers serving clients or employers.

Where, as in this case, there is an apparent honest difference of opinion as to the safety features of the machinery between the engineers of Company "A" and the engineers of Company "B" it would be appropriate for the question to be referred to an impartial body of experts, such as a technical engineering society in the particular field of practice, for an independent determination.

So long as the engineers of Company "B" hold to their opinion that the machinery as originally designed and specified would be unsafe to the public they should refuse to participate in its processing or production under the mandate of Section 2(c). While such refusal to comply with the instruction of their employer may cause a most difficult situation, or even lead to the loss of employment, we must conclude that these considerations are subordinate to the requirements of the Code.

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Conclusion:
The ethical obligations of the engineers of Company "B" are to notify their employer of possible dangers to the public safety and seek to have the design and specifications altered to make the machinery safe in their opinion; if the opinions cannot be reconciled they should propose submission of the problem to an independent and impartial body of experts: unless and until the engineers of Company "B" are satisfied that the machinery would not jeopardize the public safety they should refuse to participate in any engineering activity connected with the project.

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