MODIFICATION OF CODE REPORT RELATING TO NUCLEAR FACILITY CHILLER DESIGN

Case No. 00-8

Facts:

Engineer A is a mechanical engineer in Company X and responsible for the design of liquid chillers to be used in a nuclear power plant operated by the Customer. The pressure vessels used are manufactured in accordance with mechanical engineering standards. The design parameters are specified to manufacturers by Engineer A, employed by Company X.

A utilities quality assurance program specifies that for their records, a pressure vessel code report stamped and signed by a professional engineer must accompany each vessel.

Engineer A received an initial code report from Manufacturer B entitled "Revision 0" for submission to Customer C for review. This code report contained numerous errors and was not stamped or generated by a professional engineer. Engineer A returned it to Manufacturer B, authorizing the manufacturer to "Proceed with manufacture with exceptions noted." Engineer A's engineering superiors support Engineer A's actions in requiring Manufacturer B to fix the errors and to hire a consulting professional engineer to review and rewrite the report as necessary.

Thereafter, Manufacturer B submits Revision 1 of the code report to Company X for submission to Customer C, but the report is returned to Manufacturer B because the text on the drawing contained in the code report was not entirely legible. The drawing insert of the code report is clearly titled with the code report number.

The vice president of Company X requests that Engineer A replace the text on the drawing with more legible text and resubmit the code report to Customer C. Engineer A responded that this would not be proper. Following a contentious discussion, Engineer A called the director of engineering and left a voicemail message that he needed to discuss with him the fact that he was being asked to do an improper act. Thereafter, Engineer A was called into the vice president's office. After a contentious discussion, the vice president acknowledged that "it was technically improper to substitute text." He also explained that this was "only text on a drawing so that a department secretary would do it" if Engineer A continued to refuse to prepare text on the drawing. The vice president indicates that he does "not want to put Manufacturer B through the exercise of rewriting another code report requiring a minor correction."

Question:

Copyright © 2000 National Society of Professional Engineer (NSPE) www.nspe.org . All rights reserved.
To request permission to reproduce this NSPE Board of Ethical Review Case, please contact the NSPE Legal Department (legal@nspe.org)

Would it be ethical for Engineer A to make the text in the code report legible and resubmit the code report to Customer C?

References:

Section II.1.	-	*Code of Ethics:*	*Engineers shall hold paramount the safety, health and welfare of the public.*
Section II.2.b.	-	*Code of Ethics:*	*Engineers shall not affix their signatures to any plans or documents dealing with subject matter in which they lack competence, nor to any plan or document not prepared under their direction and control.*
Section II.2.c.	-	*Code of Ethics:*	*Engineers may accept assignments and assume responsibility for coordination of an entire project and sign and seal the engineering documents for the entire project, provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.*

Discussion:

The issues identified under the facts in this case raise some basic questions about the role of the professional engineer specifying design parameters for equipment procurement as the ethical “gatekeeper” in the design and manufacturing process, and the “slippery slope” that professional engineers sometimes face while involved in relations with management, clients, vendors, the public, and other parties.

The ethical conflicts with which engineers are frequently faced was discussed in BER Case No. 76-4. In that case, XYZ Corporation had been advised by a State Pollution Control Authority that it had 60 days to apply for a permit to discharge manufacturing wastes into a receiving body of water. XYZ was also advised of the minimum standard that must be met. In an effort to convince the authority that the receiving body of water, after receiving the manufacturing wastes, will still meet established environmental standards, the corporation employed Engineer Doe to perform consulting engineering services and submit a detailed report. After completion of his studies but before completion of any written report, Doe concluded that the discharge from the plant will lower the quality of the receiving body of water below established standards. He further concluded that corrective action would be very costly. Doe verbally advised the XYZ Corporation of his findings. Subsequently, the corporation terminated the contract with Doe with full payment for services performed, and instructed Doe not to render a written report to the corporation. Thereafter, Doe learned that the authority had called a public hearing and that the XYZ Corporation had presented data to support its view that the present discharge met minimum standards. In ruling that XYZ’s actions were improper, and that Doe had an ethical obligation to report his findings to the authority upon learning of the hearing, the Board noted that upon learning of the hearing, Doe was squarely confronted with his obligations to the public concerning its safety, health, and welfare. The NSPE Code required that his duty to the public be paramount. In that case, it was presumed that a failure to meet the minimum standards established by law is detrimental to the public health and safety.

Copyright © 2000 National Society of Professional Engineer (NSPE) www.nspe.org . All rights reserved.
To request permission to reproduce this NSPE Board of Ethical Review Case, please contact the NSPE Legal Department (legal@nspe.org)

The Board believes BER Case No. 76-4 is instructive for purposes of the present case. In Case No. 76-4, Engineer Doe had concluded there might be a threat to the public welfare. On the contrary, the issue in this case appears to be legibility of text on a drawing, which has been signed and sealed by a professional engineer, at the request of Engineer A, and a request to Engineer A, by a senior officer of his company, to replace the illegible text to meet the customer's quality assurance requirements for records. The facts indicate that Manufacturer B had responsibility for direction and control of the product design, while Engineer A specified design parameters, which included quality assurance requirements for Customer C. Under the facts, there is evidence of procedural problems, but no clear evidence of a danger to the public health and safety. The facts do not state that the equipment in question is to be used in a safety-related system. Engineer A apparently concurred with the design on the basis he authorized manufacture with the inclusion of his exceptions. If Engineer A understood the text as complying with his specified changes, then it would be reasonable and in the interest of all parties for Engineer A to make the text adequately legible. However, if Engineer A could not reliably read and interpret the text to his satisfaction, then it would not be ethical for Engineer A to do anything but go back to the originator. The facts do not make this distinction clear, but the Board assumes that the latter must have been the case for Engineer A to have escalated his resistance to the vice-president level. The perception of the Board is reinforced by the vice-president's concession that "it was technically improper to substitute text". The facts do not indicate any deficiency with the drawing, but rather legibility of the text in the accompanying report. The Board is puzzled by the resistance of Company X to asking Manufacturer B to make an improvement in text legibility. While it may be that the proposed course of action posed no direct threat to the public safety as far as the design of the vessel was concerned, Company X's failure to take actions regarding Manufacturer B exposes Company X and Engineer A to professional misconduct and, perhaps, other consequences. In addition, by failing to notify the originator of the code report if there were changes being made to his work and then resubmitting it, Engineer A and Company X would be violating their professional obligations to another professional engineer. In sum, any effort saved by putting the manufacturer to an added inconvenience is not worth the risk of an employee suffering professional sanctions and other consequences.

Obviously, these types of situations involve sensitive circumstance, requiring the engineer to exercise great skill and prudent judgment in dealing with the employer. Engineer A may be viewed by management as a "can't do'er" and may seriously damage his promotional prospects. One additional alternative in this type of situation is for Engineer A to obtain a copy of the state engineering licensure board's rules to discuss with the employer. Under those rules, the engineer is legally bound under the state board's rules of professional conduct. In this connection, it appears that the actions the engineer is being requested to take would be in direct violation of the state law and rules. Engineer A might have suggested that the applicable provisions be reviewed by the company's legal counsel for a legal opinion.

Copyright © 2000 National Society of Professional Engineer (NSPE) www.nspe.org . All rights reserved.
To request permission to reproduce this NSPE Board of Ethical Review Case, please contact the NSPE Legal Department (legal@nspe.org)

In sum, ethics should not be a matter of what might be convenient for the engineering firm, a vendor, or a client. Instead, engineering ethics is intended to provide guidance to practicing engineers to help navigate through professional obligations and restrictions. Moreover, a corporate official that ignores a mandate of licensure laws is acting irresponsibly, and it would seem that higher-ranking corporate officials, particularly those with engineering backgrounds, as well as shareholders would presumably be interested in being made aware of that fact.

Conclusion:

It would not be ethical for Engineer A to substitute text in a code report which supports the design of a component prepared by another engineer. This conclusion rests on the presumption that the text was too illegible to discern with certainty the substance and wording.

BOARD OF ETHICAL REVIEW
Lorry T. Bannes, P.E., NSPE
John W. Gregorits, P.E., F.NSPE
Louis L. Guy, Jr., P.E., F.NSPE
William J. Lhota, P.E., NSPE
Paul E. Pritzker, P.E., F.NSPE
Harold E. Williamson, P.E., NSPE
E. Dave Dorchester, P.E., NSPE, Chair

NOTE: The NSPE Board of Ethical Review (BER) considers ethical cases involving either real or hypothetical matters submitted to it from NSPE members, other engineers, public officials and members of the public. The BER reviews each case in the context of the NSPE Code and earlier BER opinions. The facts contained in each case do not necessarily represent all of the pertinent facts submitted to or reviewed by the BER.

Each opinion is intended as guidance to individual practicing engineers, students and the public. In regard to the question of application of the NSPE Code to engineering organizations (e.g., corporations, partnerships, sole-proprietorships, government agencies, university engineering departments, etc.), the specific business form or type should not negate nor detract from the conformance of individuals to the NSPE Code. The NSPE Code deals with professional services -- which services must be performed by real persons. Real persons in turn establish and implement policies within business structures.

This opinion is for educational purposes only. It may be reprinted without further permission, provided that this statement is included before or after the text of the case and that appropriate attribution is provided to the National Society of Professional Engineers' Board of Ethical Review.

Visit NSPE's website (www.nspe.org) and learn how to obtain volumes that include NSPE Opinions (or call 1-800-417-0348).

Copyright © 2000 National Society of Professional Engineer (NSPE) www.nspe.org . All rights reserved.
To request permission to reproduce this NSPE Board of Ethical Review Case, please contact the NSPE Legal Department (legal@nspe.org)