Canadian Standards Association
Mississauga, Ontario
To the Part I Committee

Subject No. 2822 Chair: M. Anderson Date: March 25, 2004

Title: Clarification of Fire Pump Circuit, Rule 32-212

Submitted by: A. Tsisserev of City of Vancouver on June 24, 1998.

Proposal:

1. Renumber existing Rule 32-212 as Subrule (1).

2. Add a new Subrule (2) to read as follows:

(2) For the purpose of Subrule (1), a fire pump circuit is defined as the circuit supplied from an electrical transfer switch to a fire pump equipment as described in Rule 32-206.

Reasons for Request:

To clarify the intent of Subrule 32-212(1). New Subrule (2) will explain that the extent of a "fire pump circuit" is defined as a circuit from a dedicated fire pump transfer switch to a fire pump equipment. This clarification is essential in situations where a separate service box permitted by Rule 32-204 is not provided for a fire pump and a fire pump feeder is supplied from the building main distribution bus. In many cases rating of the main bus might exceed 1000 A for 347/600 V power supply or exceed 2000 A for 120/208 V supply. As a result such main distribution has to be provided with ground fault protection in conformance with Rule 14-102. The latter condition might create a perception of a conflict with Rule 32-212. New Subrule 32-212(2) will clarify that such a conflict does not exist, as long as a "fire pump circuit" starts from the fire pump transfer switch, which provides a power supply to the pump from a normal or emergency source.

Chair's Comments: I agree with this proposal.

Subcommittee Deliberations: I believe we have a consensus. There were eight members in favour of the proposal, including two with comments and one member against. The comments are as follows:

1. Connection of a fire pump electric feeder circuit to a building main distribution bus does not meet the NFPA 20 requirements. Question can NFPA 20 be overruled?
2. I agree with the proposal, but there may be confusion where no transfer switch is used.

3. If applied as written we could see a large installation where an emergency generator could have GFCI protection.

In answer to the first comment, NFPA 20 electrically is not the enforceable document so this comment is rendered non- germane.

Comment no. 2, under the National Building Code, electrical power to a fire pump must be supplied by a generator via a transfer switch. Therefore, the fire pump circuit is proposed to start from an electrical transfer switch.

Comment no. 3, was from the negative commenter and its interesting to note, this commenter is in support of the intent of the proposal. So to answer the negative commenter, this type of installation is not common and could be dealt with on an individual basis, I don't agree with the reword of the rule suggested.

Subcommittee recommendation: To accept the proposal.

Chair's Comments (Second Round): At the June 2003 meeting of the Part I Committee, this Subject was returned to the Subcommittee for further consideration.

Part I's direction was as follows:

- to change the title to "Ground Fault Protection(see Appendix B & G)" to meet the intent of the rule; and
- move the proposed Subrule to an Appendix B Note since the proposal is more of a clarification of the rule.

In discussion with the submitter these changes are acceptable.

Subcommittee Deliberations: Six of the eleven members responded in agreement and although there was a poor submissions of voters, there was a clear consensus.

Subcommittee Recommendation: To accept the proposal.

Chair's Comments (Third Round): Revise the Appendix B Note recommended in the Chair's Comments (Second Round) above to read as follows:

32-212 *For the purpose of this rule, a fire pump circuit is defined as the circuit supplied from the emergency power source described in Rule 32-200, or the circuit supplied from a separate service box in accordance with rule 32-204 to a fire pump equipment.*

Rationale (provided by submittor):

I went today on inspection of the newly built Cancer Institute complex and looked at installation of the emergency generator among other things.

This monster is huge: 2.5 mVA of power, rated at 347/600 V. When I looked at control and protection for this generator I noticed a ground fault relay controlling the generator main 2500 A breaker. This breaker feeds a splitter, supplying two other breakers (one of them - the circuit to the main transfer switch, another - the circuit to the transfer switch for a fire pump).

As you can recall, we just recently sent Subject 2822 to Part I. This subject dealt with clarification of "fire pump circuit" and it explained in Appendix B on Rule 32-212 that it is a circuit that supplied from an electrical transfer switch to a fire pump equipment.

We needed this explanation to emphasize that ground fault protection is not allowed in a fire pump circuit. When I made this proposal, I simply forgot that we might encounter generators rated 1000 kVA or more at 600 V, and that such generators would have to be provided with the ground fault protection in accordance with Rule 14-102.

Thus, in accordance with Subject 2822 we might have a circuit without a ground fault protection between the fire pump transfer switch and the fire pump, but this protection would be present in the fire pumps emergency supply circuit upstream from the transfer switch.

Therefore the original intent of this requirement - to allow the fire pump to function without unnecessary trips, may not work.

This wording not only would improve the intent of the original proposal, but would also delete unnecessary reference to Rule 32-206 (this rule would be numbered differently under Subject # 3079).

I'm concerned with potential delays, but I'm more concerned with possible technical problems in the future if the explanatory Note is not adequately corrected.

As a coincidence, I just received an e-mail questioning me on this subject. The concern was related to the fact that we forgot to mention a circuit derived from a separate service rated breaker allowed under Rule 32-204 as a fire pump circuit - for the purpose of restricting installation of GFP in this fire pump circuit

In light of this comment I made a modification to my original change. I think that we have enough time to remove the letter ballot on this subject, to take this subject back to the Subcommittee and to bring it to Part I with a new Subcommittee recommendation based on the proposed wording.

Subcommittee Deliberations: Seven of the eleven members responded, six in agreement and one disagreement with the following comments:

There now appears to be some concern with the issue of GFCI protection when supplied via a large generator. This is the very concern I raised in round one, (identified as comment no. 3) and at that time it my concern over the wording was discounted.

Moving the wording to the Appendix B will not solve the issue, I stand behind my original suggested wording.

Chair's response: Although I can appreciate the comments, I think the suggested wording in the Appendix B provides good clarification around the rule as opposed to nothing.

Subcommittee Recommendation: To accept the wording in the Third Round of the Chair's comments.