



National Fire Protection Association

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MEMORANDUM

TO: NFPA Technical Committee on Respiratory Protection Equipment
FROM: Stacey Van Zandt
DATE: September 9, 2011
SUBJECT: NFPA 1981 ROP TC FINAL Ballot Results (F2012)

The Final Results of the NFPA 1981 ROP Letter Ballot are as follows:

31 Members Eligible to Vote
4 Not Returned (Dower, Johnson, Kaller, and Radtke)
23 Affirmative on All (Kuhn – affirmative with comment)
4 Negatives (Bernzweig, Harkness, Martin, and Sell on one or more proposals as noted in the report)
0 Abstentions

There are two criteria necessary to pass ballot [(1) affirmative $\frac{2}{3}$ vote and (2) simple majority].

- (1) The number of affirmative votes needed for the proposal/comment to pass is 18.
(31 eligible to vote - 4 not returned - 0 abstentions = $27 \times 0.66 = 17.82$)
- (2) In all cases, an affirmative vote of at least a simple majority of the total membership eligible to vote is required. This is the calculation for simple majority:
[31 eligible $\div 2 = 15.5 = (16)$]

Reasons for negative votes, etc. from alternate members are not included unless the ballot from the principal member was not received.

According to the final ballot results, all ballot items received the necessary $\frac{2}{3}$ required affirmative votes to pass ballot.

Document # 1981

1981-1 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # 1)

- Not Returned**
- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

1981-2 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # 2)

- Not Returned**
- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

1981-3 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # 3)

- Not Returned**
- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

1981-4 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # 4)

- Not Returned**
- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

1981-5 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # 5)

- Not Returned**
- Dower, N.**

Document # 1981

Johnson, J.

Kaller, C.

Radtke, T.

1981-6 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # 10)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.

1981-7 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Entire Document (Log # CP1)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.

1981-8 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

Chapters 1, 3, 6, 7, 8 (Log # CP4)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.

1981-9 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

1.6 (Log # 8)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.

Document # 1981

1981-10 Eligible To Vote:31 Affirmative: 26 Negative: 1 Abstain: 0 Not Returned: 4**Chapters 2, 3, 6, 7, 8 (Log # CP2)**

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.****Negative**

Sell, R. We agree that speech intelligibility can be measured/established by using the Speech Transmission Index (STI) method, but the proposed set-up does not take into account the effects of inhalation and exhalation that occur in real use situations. Breathing can cause noises which compromise intelligibility which is not detected by the proposed set-up, especially when amplified by a voice amplifier.

In addition, the STI method is extremely sensitive to clicking or rattling noises which significantly influence the readings. Donning the mask on the Head and Torso simulator with a 2nd stage regulator attached is a good practice since sound propagation would be comparable to actual use but this is only one portion of the process of using a SCBA. The other portion of SCBA use comes when the system is pressurized and without pressurizing the system, the 2nd stage regulator and the mask would not have the internal components pre-tensioned in the manner of actual use. Also, humans always exhale when speaking and this also puts the valves into a defined state of use.

During development testing at Ultra Electronics and additional testing at Draeger we have found that a mask/2nd stage regulator without the system being pressurized can emit a rattling or clicking noise that degrades the STI readings. A possible solution to remedy the second part of our objection would be to utilize a blind plug in place of the 2nd stage regulator or to pressurize the system in order to obtain more realistic results. Please reference attachment: NFPA-1981-10-CP2 Objective Estimation of Speech Quality-STI.ppt

1981-11 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**2.3.6 (Log # 9)**

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-12 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**2.3.6 (Log # 15)**

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-13 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

2.3.6 (Log # 17)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.

1981-14 Eligible To Vote:31 Affirmative: 26 Negative: 1 Abstain: 0 Not Returned: 4

3.3 Reserve Air Supply, 6.2, and 6.3 (Log # CP3)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.

Negative

Harkness, A. The current 42 CFR 84 requirement is that “each remaining service-life indicator or warning device shall give an alarm when the remaining service life of the apparatus is reduced within a range of 20 to 25 percent of its rated service time.” It is anticipated that NIOSH will change this requirement, removing the upper limit, to allow respiratory protection program managers to determine the most appropriate setting for their users. The committee consensus is that the next edition of NFPA 1981 should require that it be 33% of full cylinder pressure for all users of an NFPA approved SCBA. I disagree.

NIOSH indicates on its docket pages for docket numbers 034 and 034-A that it is responding to stakeholders. Obviously, NIOSH recognizes that a one-size-fits-all setting does not best serve all users, and that NIOSH believes an organization that uses SCBA knows what setting is best for its users and its tactics, techniques, and procedures. The submissions to the docket are by and large in favor of the change, and not a few would have the setpoint at 50%.

The committee suggests in its justification that raising the EOSTI activation setpoint from the current NIOSH mandated 20 to 25 percent of rated duration to a value of 33% of full cylinder pressure will increase NFPA 1981 SCBA user safety by increasing “reserve” air -- i.e., the usable volume of air remaining in the cylinder when the EOSTI begins alarming -- thereby “likely” providing the user more air for escape from the IDLH environment and thereby decreasing the chance that a user will run out of air while still in the IDLH environment. The committee rationale then is in two parts:

- 1) Increasing the air remaining in the cylinder when the EOSTI begins to alarm is more likely than not to reduce the rate at which users run out of air while still in the IDLH environment, and
- 2) To that end, the required EOSTI alarm setpoint for all NFPA 1981 SCBA should be increased to 33% of full cylinder pressure.

Is this rationale valid?

Taking the second point first, it is obvious that not all users of NFPA 1981 SCBA are the same. Indeed, while not even all structural firefighters are the same, the standard is written not just for structural firefighters but for “all open-circuit SCBA ... used by emergency services organizations for respiratory protection of its personnel during firefighting, rescue, hazardous materials, terrorist incident, and similar operations where the products of combustion, oxygen deficiency, particulates, toxic products, or other IDLH atmospheres exist or could exist at the incident scene.” Clearly, some of the committee members may know the best setpoint for themselves, but it is impossible for the committee to know the best setpoint for all users, or that 33% is even acceptable for all users. The U.S. Navy, for example, is an NFPA 1981 SCBA user and the 33% setpoint is not appropriate for shipboard firefighting in the U.S. Navy.

The Navy practices strict breathing air management when fighting a shipboard fire and rotates firefighters to maintain an uninterrupted attack. Cylinder sizes are chosen appropriate for the duty. Start times on air are tracked by a repair party leader who estimates when low air alarms will sound, so that reliefs are ready to replace teams exiting, and personnel are required to exit immediately when their alarm activates. This is the way the U.S. Navy trains, the way it fights, and the way U.S. Navy surface ship firefighting doctrine is written.

For the U.S. Navy shipboard firefighter, the current 30 CFR 84 requirement is satisfactory. An EOSTI setpoint value of 33% will have the result of end-of-service alarms activating too early and firefighters exiting too early. What is the solution the committee would advise? Ignore the EOSTI?

And what about the thousands of SCBA the U.S. Navy has now on its ships? What about existing instructions and training curriculum? Like any other organization, the U.S. Navy cannot have SCBA with different EOSTI setpoint values. The U.S. Navy will have to pay to have existing units upgraded, and pay to have instructions and curriculum revised, for a purpose that is not even appropriate or necessary for the U.S. Navy. And, that is just the afloat Navy. The ashore Navy, and no doubt many organizations, will be facing the same issues, and may be finding the changes unnecessary, as well as an unnecessary expense.

It is obvious a one-size-fits-all solution is not appropriate. This recognition, after all, was part of NIOSH’s rationale for considering a change in the first place. But, will increasing the setpoint as a percentage of full cylinder pressure truly increase firefighter safety? Is it to be expected that increasing the EOSTI setpoint will necessarily lower the rate at which firefighters run out of air while in an IDLH environment? The committee considered no data regarding this question. The reference cited in the committee justification does not even speak to this question. The committee proposal is a guess from assumption. If firefighters ignore the EOSTI now, how will a higher setpoint change this behavior? What will prevent other firefighters from ignoring the EOSTI alarm when it is set at 33%, rationalizing that they still have a third of their air supply when the alarm activates? How does simply increasing the alarm setpoint without actually supplying the firefighter with more air reduce the number of firefighters who run out of air? The committee does not really know. It is guessing.

Maybe raising the activation setpoint of the EOSTI is a good idea for some organizations, and maybe 33% is the appropriate value for some, but, NFPA 1981 is a minimum performance standard. The minimum permissible setpoint value defined in the revised regulatory requirement should define the minimum in this instance, and the next edition of NFPA 1981 should be required, as it does now, that the EOSTI meet the activation requirements of the NIOSH certification.

Affirmative with Comment

Kuhn, J. It should be understood that the Committee proposal for alarm activation of 33% +/-5% is potentially in conflict with the NIOSH directive that alarm activation occur at 25% +/-2%. Until the NIOSH directive is revised, an SCBA with alarm activation set at 33% can not be approved by NIOSH.

Document # 1981

1981-15 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**4.2.8.2 (Log # 13)**

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-16 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**6.1.2 (Log # 12)**

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-17 Eligible To Vote:31 Affirmative: 26 Negative: 1 Abstain: 0 Not Returned: 4**6.1.2.2 (Log # 14)**

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

Negative

Bernzweig, D. With the committee action taken on Log CP3 and pending action in NFPA 1500 (Log CP36: 7.14.11 SCBA Cylinder Volume: Standardized IDLH exiting shall require that an exit strategy will be practiced when the SCBA bottle reaches a level of 600 liters or more.), continued use of 1200L (30-minute rated) cylinders by the fire service is difficult to justify. SCBA air allocated for operational period usage would be inadequate under most conditions resulting in the end user having to make a decision to sacrifice reserve air in favor of operational air.

With steps finally being taken to address the inadequacy of reserve air, the committee has the responsibility to complete the job and ensure that reserve air is not compromised by operational realities when adequate air for work is not allocated on the front end. The 1200 liter cylinder should be phased out beginning with the 2013 edition of NFPA 1981.

1981-18 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**6.1.3 (Log # 11)**

Not Returned**Dower, N.**

Document # 1981

Johnson, J.**Kaller, C.****Radtke, T.**

1981-19 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**6.2.3** (Log # 16)

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-20 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**6.3.4** (Log # CP8)

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-21 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**6.7 (New)** (Log # 6)

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

1981-22 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4**6.7 (New)** (Log # 7)

Not Returned**Dower, N.****Johnson, J.****Kaller, C.****Radtke, T.**

Document # 1981

1981-23 Eligible To Vote:31 Affirmative: 26 Negative: 1 Abstain: 0 Not Returned: 4

7.21 and 8.28 (New) (Log # CP5)

Not Returned

- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

Negative

Martin, C. I agree with this in principle but feel that the decision to move forward was rushed without proper justification. The developmental testing was not conducted on all manufacturer's equipment and the data was not made available to base a logical decision.

Affirmative with Comment

Sell, R. This test will stress the visor in a way which is repeatable and simulates the use of the SCBA while it is service.

1981-24 Eligible To Vote:31 Affirmative: 26 Negative: 1 Abstain: 0 Not Returned: 4

7.22 and 8.29 (New) (Log # CP6)

Not Returned

- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

Negative

Sell, R. This test is a complete SCBA systems test and a not a facepiece visor stress test. Any performance problems related to the SCBA pneumatic system would result in a failure to meet the inhalation and exhalation pressure requirements even if the facepiece lens is intact and functional. This test should be removed as a proposal for the next edition of the NFPA 1981 standard.

1981-25 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

8.1.4.8.1 (New) (Log # 18)

Not Returned

- Dower, N.**
- Johnson, J.**
- Kaller, C.**
- Radtke, T.**

Affirmative with Comment

Kuhn, J. The benefit to the fire service of conditioning the exhaled air from the breathing machine to 80 degrees F is unclear, particularly in light of decades of test results without such conditioning. As such, it seems an unnecessary complication of the test.

1981-26 Eligible To Vote:31 Affirmative: 27 Negative: 0 Abstain: 0 Not Returned: 4

8.3.4.2.3 (New) (Log # CP7)

Not Returned

Dower, N.

Johnson, J.

Kaller, C.

Radtke, T.