

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

SESSION 9

PANEL SESSION: CODE ON NUCLEAR AIR AND GAS TREATMENT - AG-1

Tuesday: August 25, 1992
Moderator: W. H. Miller, Jr.

Panel
Members: C. Ashton
J. Paul
R. Porco
P. Olson
W. Paschal

CODE ON NUCLEAR AIR AND GAS TREATMENT ASME/ANSI AG-1
W. H. Miller, Jr.

DUCTWORK SECTION (SA) IMPROVEMENTS
C. Ashton

INSTRUMENT & CONTROLS SECTION (IA) IMPROVEMENTS
C. Kramer, J. Paul

FILTER SECTIONS OF ASME AG-1, CODE ON NUCLEAR AIR AND GAS
TREATMENT
R. Porco

CODES IN USE
W.B. Paschal

PANEL DISCUSSION

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

PANEL SESSION: CODE ON NUCLEAR AIR AND GAS TREATMENT
ASME/ANSI AG-1

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Introduction

Happy Birthday AG-1, you're seven years old now and you're about to experience a significant growth spurt! Yes CONAGT is very close to issuing three major AG-1 code sections as follows:

- * Section SA - Ductwork
- * Section IA - Instrumentation and Control
- * Section TA - Field Testing of Air Treatment Systems

Those of you who recently received your 92 Edition of AG-1 may have noticed that our seven year old is dressed in a new suit - a hot pink cover. Some of you have accused me of selecting this color to better market our youngster but this simply is not true. Our fully empowered ASME staff picked this color and I applaud their choice.

1990 Panel Session

Two years ago I chaired this same panel session and probably bored you with a review of AG-1's history and organization. For those of you who are unfamiliar with AG-1, please consult the 1990 Conference Proceedings for that perspective. Our panel discussion in 1990 centered primarily on our TA and TB field testing Code Sections which we thought would be published by now, but in fact are still running the consensus gauntlet. A comparison review of these documents revealed sufficient inconsistencies to merit a series of spirited Subcommittee meetings and a couple of Main Committee interventions, but all is well now.

1992 Panel Focus

This year we will focus more on the progress we've made in our equipment code section work in the past two years. We'll hear about:

- * Changes in our Filter Code Sections
- * Revamping of our Ductwork Code Section
- * Emergence of a vastly improved I & C Code Section

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

Then two of our CONAGT members will regale us with tales of actual applications of AG-1. To top this off, our panel will field your questions for the balance of our allotted time.

CONAGT Status

Before we get started with our panel presenters, I'd like to spend a few minutes making observations on CONAGT's health. As a charter member of CONAGT since 1976, I've had the opportunity to observe its ups and downs. I never cease to be amazed by the vigor and vitality of our members who are, in my opinion, the most committed group of code committee members in the world. We purposely hold only two Main Committee meetings a year in order to preserve our sponsor support, but what it really does is free up our members to teach ASME short courses, write white papers, hold Subcommittee and Subgroup meetings, study and vote on a dozen ballots every month, and participate in NACC, ANS, ASHRAE, ASTM, AGS committees and the list goes on. These CONAGT members are little dynamos who merit special recognition by this audience. Let's give all CONAGT members a loud round of applause.

I feel I owe you an update on what CONAGT's accomplished in the last 24 months since I last addressed you. The following are just a few of the most significant accomplishments:

- * CONAGT'S first ASME Short Course held in San Diego in conjunction with the 21'st NACC was only the beginning as it has been held, successfully, numerous times since and is being taught later this week on this site. My hat's off to our trainers and course coordinator Dr. Mel First.
- * In September 1991, we learned that our three years of correspondence with DOE to gain recognition of AG-1 was fruitful as DOE General Design Criteria 6340.18 was revised to invoke ASME AG-1 for air cleaning devices.
- * After learning from our NRC representatives of NRC's assigning a low priority to the revision of R.G. 1.52, CONAGT used its official communications link with NRC via ASME's Vice-President of NCS to lobby for a quicker update. When NRC's official response was negative, I took the matter up with BNCS' NRC rep, Mr. Guy Arlotto. Our understanding is that the R.G. 1.52 is literally racing around NRC now.
- * Earlier this year our CONAGT Vice-Chairman Mr. Ray Weidler was selected to fill a BNCS participant position, thereby further strengthening CONAGT'S influence on this prestigious managing board.
- * CONAGT'S liaison with ANS, ASHRAE, and our International Air Cleaning brethren continues to improve thanks to CONAGT members who serve our industry through multiple memberships, and Ray Weidler who continually promotes us overseas through frequent updates of the Listing of International Nuclear Air cleaning Codes, Standards,

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

Regulations and Texts. ASME requested CONAGT to consider rendering assistance to the American Glovebox Society (AGS) who is preparing a Glovebox Standard. We were recently represented at their AGS Board of Directors meeting and treated very well. We continue to explore opportunities for joint work.

- * CONAGT has debated for years what the ultimate destiny is for N509 and N510 once the full AG-1 Code is issued. Over the years the periodic maintenance of these standards has consumed a fair amount of CONAGT resources. Based on our most recent discussions it is probable that N510 will not be revised again once the TA Section of AG-1 is issued late this year. N509 is now recognized as an invaluable integrating standard for AG-1 component sections and as such five-year updates should be expected.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

DUCTWORK SECTION (SA) IMPROVEMENTS

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Amazing as it may sound, the Ductwork Section of AG-1 is about to be published, assuming that our second BNCS ballot, which was just initiated, is successful. My subgroup's hard work over the past two years in resolving literally hundreds of Main Committee and Board comments is about to be rewarded. Since we're the third group in 15 years to attempt to produce this code section, you must excuse us if we're a mite proud of this accomplishment.

Our Main Committee Chairman refers to the SA section as the "bridge that connects all components" and he has steadfastly refused to appear before the NRC to promote AG-1's adoption until SA is issued. If SA is so important then why has it been so hard to complete you might ask? I suspect it stems from the widely divergent expectations of the various customers of this code section: utilities want something different than contractors who expect something different than consultants who want something different than testing firms. The net result is a somewhat tortuous journey through the consensus process, time and time again. In defense of this process, however, I really believe this code section is a very high quality product which will stand the test of time.

I've been asked to summarize the improvements in the SA section in the past few years and I'll do so briefly as follows;

- * gradual transition of ANSI N509 and N510 air cleaning unit requirements into AG-1 code system related consideration of ductwork.
- * consideration of air conditioning/cooling function into code requirements.
- * revision of code section to remove overly restrictive requirements, allow for plant design flexibility to meet specific design, environmental and related criteria.
- * established more flexible guidance in determination of acceptable leakage criteria.
- * at the direction of the main committee, removed housings from the scope of SA section due to the decision to dedicate a new section HA to housings.
- * clarified interface boundaries.
- * clarified load combinations.
- * incorporated interface considerations for fire protection and plant security.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

- * improved the definitions of various design and operating pressure considerations consistent with other AG-1 sections.
- * incorporated lessons learned in ductwork field installations into code section requirements.
- * added metric units to code section.
- * provided non-mandatory guidance related to leakage determination.

Until we get this code section on the street and into a few specifications and installations, we will still be cautiously celebrating the completion of this task.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

INSTRUMENT & CONTROLS SECTION (IA) IMPROVEMENTS

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In reading Cliff Ashton's mini-paper, we couldn't help but relate to the sense of accomplishment that he portrays since we too are on the doorstep of publishing a code section in the making for some 15 years. While we're the second, not third group to attempt to complete this job, we too have labored long and hard to reach this milestone. Mothers sometime describe the actual delivery of a newborn as a tremendous relief and now we can relate better to that feeling too. But enough of feelings!

Our list of improvements in the IA code over the past few years reads as follows:

- * reformatted the entire document to make it read like a code section and not a specification.
- * revamped the definitions section to be consistent with other published code sections and ISA and IEEE standards.
- * added an allowable material table to conform to other sections.
- * added an appendix to provide guidance in determining the necessary instrumentation for major NACU components.
- * updated the reference document section.
- * rewrote the IA inspection and testing section to delete motherhood statements and reference correct sections of AG-1.
- * clarified the section scope
- * added separation requirements for wiring and tubing.
- * added specificity to the division of responsibility
- * referenced the appropriate ISA standards for setpoint calculation requirements.
- * improve the tubing requirements to be compliant with NRC requirements.
- * enhanced the documentation requirements of the section

When stated in summary form like this, these improvements may not sound like a whole lot but believe me there was a lot of word crafting involved in producing the IA section which is now being balloted a second time by BNCS. Thank-you!

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

PANEL SESSION: FILTER SECTIONS OF ASME AG-1, CODE ON NUCLEAR AIR AND GAS TREATMENT

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Introduction

The design, performance, construction, qualification, testing, and quality assurance requirements for nuclear air cleaning components are contained in Division II, Ventilation Air Cleaning and Ventilation Air Conditioning, of ASME AG-1. The filter sections are part of Deviation II, and are complete. Section FG, Mounting Frames is the last to be published and will appear in the Summer, 1992 Addenda. Section FA, Moisture Separators; Section FB, Medium Efficiency Filters; Section FC, HEPA Filters; Section FD, Type II Adsorber Cells; Section FE, Type III Adsorbers; and Section FF, Adsorbent Media are all currently undergoing maintenance and editorial revisions.

Section FA Moisture Separators

Moisture Separators, Section FA, was added to AG-1 in the 1991 Revision. Moisture separators are installed in air cleaning systems to remove entrained water droplets from the air stream that could adversely affect the HEPA filters and carbon adsorbers.

Section FB Medium Efficiency Filters

Medium Efficiency Filters, Section FB, was added to AG-1 in the 1991 Revision. This section applies to extended media, dry type, ASHRAE 52 rated filters with an average atmospheric dust spot efficiency greater than 45%.

Section FC HEPA Filters

The HEPA filter section of AG-1 was added in 1988. Since then we have continued to upgrade and revise this section. This section is currently under a relatively major maintenance and editorial revision mainly to the inspection and testing articles. Although this section has been around for some time, some subtle errors currently exist in the document. For instance, the penetration requirement after the heated air qualification test is in error. Pending CONAGT Main Committee reballot, corrections will be published. Another item of note is that the subcommittee is working on a non-mandatory guide that could include guidelines for the use of laser particle counters for production test efficiency of HEPA filters in lieu of the Q107 pentometer.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

Section FD Type II Adsorber Cells Section FE Type III Adsorbers

Section FD, Type II Adsorbers was added to AG-1 in 1987. Section FE Type III Adsorbers was added in 1989. These sections have also seen maintenance revisions and updates since initial publication. A new adsorber section, Type IV Adsorber Cells, is currently being prepared by the subcommittee. The Type IV Adsorber is a 24" x 24" x 18" deep V-bed cell similar to the old serpentine Type I cell, except the Type IV cell has a 2" thick bed and is nominally rated at 500 CFM. The Type IV Adsorber Cell is predominantly used in Bag-In/Bag-Out housings which are also being addressed in the housing sub-committee. Bag-In/ Bag-Out filter systems are more common at DOE sites, such as Idaho Falls, Idaho and Richland, Wa. The reason for the addition of these items to the code is to be responsive to their needs.

Section FF Adsorption Media

Adsorption Media, Section FF, was added to the code in 1988. This section has also undergone various maintenance revisions. This section contains the detailed requirements for adsorbent media used in nuclear air and gas treatment systems for the removal of radioiodine compounds. Activated impregnated carbon is addressed in this section because it is the primary adsorbent used in the nuclear industry. The subcommittee for this section has also addressed questions and responded with formal code interpretations.

Section FG Mounting Frames

Mounting Frames, Section FG, addresses filter holding frames or racks for moisture separators, prefilters, HEPA filters, and Type II adsorbers. This section will appear in the Summer 1992 Addenda of AG-1.

Conclusion

The filter sections of AG-1 have been completed and have been successfully implemented on commercial nuclear power plants such as YGN 3&4 in Korea and domestic retrofits and upgrades. The AG-1 Code is a working document and, as such, is continually being updated to incorporate new technologies and regulatory requirements. I urge all users of this code to submit questions or suggested changes to ASME. User feedback is the best way to initiate code improvements and to service the needs of the industry.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

CODES IN USE

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The actual application of AG-1 has had a variety of responses in the industry. These include the engineer, the client and the vendor. The following highlight several of our experiences.

AG-1 has been incorporated into the Department of Energy Standards and Criteria Guide for Nonreactor Nuclear Facilities. With this, CONAGT has asked and received more input from areas outside the energy production facilities and will monitor the usage of this code at sites such as Savannah River.

Drywell Dampers

In 1986, two control dampers were specified for a drywell cooling unit. The specification included compliance with AG-1. The vendor indicated that he would comply with the technical aspects of the specification but would not comply with AG-1. We believed this to be attributed to the newness of AG-1 and the limited size of the damper specification.

Bubble Tight Dampers-1

In 1988, a specification was written for bubble-tight dampers and appropriate references to AG-1 were made. The engineer involved had some difficulty following AG-1, due primarily to the number of cross-references within the code. The vendor did not take exception to AG-1, and the project proceeded smoothly.

Bubble Tight Dampers-2

In 1991, bubble-tight dampers were specified for another project. The design and construction data included in the Procurement Specification is based on information provided in AG-1. The test procedure/acceptance criteria is also based on the data in AG-1.

AG-1 was not invoked in entirety by name because the client felt that this document, if used in design, would form the baseline document and thereby they may be forced to use it in future mods.

As a result of this decision, the different applicable sections from AG-1 were incorporated into the specification.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

After the award, the vendor commented that he could have complied with AG-1 if it had been invoked.

New Nuclear Units

Sargent & Lundy is currently involved in the design and construction of the two newest nuclear units in the world today. The Yonggwang Nuclear Power Plant Units 3 and 4 (YGN) are currently being constructed in South Korea for the Korea Electric Power Corporation. There are PWR units and are approximately 1100 MW each.

The Safety-Related HVAC component specifications include:

- Air Cleaning Units
- Air Handling Units and Fans
- Cubicle Coolers
- Dampers
- Reactor Containment Fan Coolers
- Water Chillers

These specifications were prepared in 1987-88 with appropriate recognition of the initial issue of ASME AG-1 in 1985 as well as company standards. The scope of work, division of responsibility, section of AG-1 were very useful to the design engineer in establishing the requisite specification input parameters and in defining the vendor's responsibility in complying with AG-1.

The evaluation of the specification proposals included the resolution of clarifications and exceptions submitted by the vendors. Throughout this step in the process questions were raised and resolved. However, it is important to note that there were few, if any questions raised with regard to compliance with AG-1. The specification were subsequently awarded to both domestic and Korean vendors.

On the project, the use of AG-1 was positively received by the entire project team. Specifically the code provided

- Good Guidance
- Definition of Scope of Responsibility
- Flexibility in Construction

CONAGT is presently considering a revision to N509-1989. This revision is intended to further endorse AG-1 for component requirements in the design and fabrication process.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

In addition, CONAGT is working with the Nuclear Regulatory Commission to include AG-1 in a revision to R.G. 1.52 if/when that guide is reissued.

Both the above items are intended to have AG-1 made accessible to the owners of nuclear facilities, their suppliers and A-E's. This should also alleviate any confusion or hesitance in using AG-1 vs. another standard for materials in Nuclear Air Treatment Systems.

As we all mature in the AG-1 environment, improvements in understanding of the code are occurring steadily. We can use the code with confidence to ensure the quality of specifications and components needed in our industry.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

DISCUSSION

VOGAN: I am Chairman of the Air Cleaning Equipment Subcommittee. I have a comment and wish to request additional comments from the panel. I would like to have additional discussion on applications of AG-1. AG-1 is different from other ASME codes issued through ANSI in that it contains rules for designing components, trains, standards for the individual components, and in-service field testing procedures all in one document. I would like additional comments regarding the use of AG-1. The document is unique, it is very useful, and we are interested in its use.

PORCO: I think the real proof of the usefulness of AG-1 will be its application to nuclear plants. We found that AG-1 was applicable to components. Problems were encountered and we still had to use N509 for system design criteria. There are sections that are incomplete in AG-1. Because AG-1 is a component specification, some things have fallen through the cracks. Although they are addressed in N509, I think all the committees are now working to identify the missing sections and to close the gaps.

MILLER: Does that answer your questions, Mr. Vogan, or are you really interested in exploring the field testing aspects more?

VOGAN: AG-1 is a unique document; it is three documents in one. It is a design code, it is a set of standards for components, and it is a field test document. I want to encourage people to use the document for replacement components where they can. If you encounter difficulty with your interpretation of the code, or with interpretations of manufacturers' interpretations, those who build the equipment, bring the problems back to us and perhaps by the next Conference we can make this the best code and standards document that ASME puts out.

MILLER: Maybe this is the right time to mention the process that ASME has for asking questions. If you are having difficulty interpreting a code, you can send a question to ASME and the Committee will give you a response. In the past, our turn around time on responses was not admirable, but we have been trained in quality improvement processes and now we are making responses in short order.

TODD: My question is for Rich Porco, regarding the Filter Section. Will there be any change in the code regarding QPLs on HEPA filters? Currently the code refers to the fact that the QPL is not required when making purchases for power plants.

PORCO: There will be no change in the code for QPL listing. I will say now, as I did earlier, that qualification testing is still being addressed because it is not complete in Section FC. If you conduct qualification testing by MIL-F-51068 and you are a filter manufacturer, you can be listed on the QPL. You don't have to be listed according to the code, but if you have done the testing and want to sell to the military market, I would suggest that you get listed. It is not a requirement.

MILLER: So, it is not a nuclear power plant issue, but it just might be a good business decision.

TODD: It is a good business decision to apply only if the business is there.

PORCO: That is true. If you are going to go through the qualification test for nuclear power plants, the business is there and you have spent the money, whether you are listed or not.

MILLER: How much money is involved in a QPL test? Can anyone help me with that?

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

- PORCO:** Depending on the number of filters you are qualifying, it may be \$16,000 to \$18,000.
- TODD:** The test cost \$20,000, and must be updated every five years.
- PORCO:** It is supposed to be updated every five years in a Government facility.
- TODD:** It is supposed to be, that is what it says, but it doesn't quite work out that way.
- PORCO:** Does anybody remember when the last go-around was, other than this one?
- TODD:** I think it was around 1978, and then it was updated in 1990.
- FRANKLIN:** The last time was 1978. They said 5 years, but its been 10 years. DOE sent a letter recently saying that DOE safety-related systems require QPL filters. Some nuclear power plants have this requirement in their Technical Specifications. Today, their safety-related HEPA filters have to be QPL filters. So that takes care of that question.
- PORCO:** QPL is irrelevant because the qualification testing requirements are identical.
- EDWARDS, J:** The ambiguity arises in the HEPA filter section of N509, where it says you have to meet all the QPL requirements, but you don't have to be listed. This has caused difficulties. Let me give an example; some HEPA filters were ordered to meet the military standard. They were provided without being on the QPL. As a result, even though the HEPA filter manufacturer was sure he met the requirements of N509, he did not, in fact, meet the requirements of N510-1968. As a result, a Part 21 action was filed against the manufacturer. I am not sure it was totally his fault. I think N509 is very ambiguous in its treatment of HEPA filters. Indeed, I hope that section will be addressed to clarified. HEPA filters are a real problem right now with N509-1989.
- MILLER:** We were told a few minutes ago that the intention is to reference AG-1 in the N509 revision. That should clear up the conflicts.
- EDWARDS:** Does AG-1 require QPL listing?
- PORCO:** AG-1 does not, but it does require a qualification test. N509 calls for a HEPA filter qualification report. Whatever facility was responsible for not certifying that a qualification report was part of the documentation package was at fault.
- We can put the fault anywhere we want to but the simplest solution is to require listing on the QPL, and that assures that everybody meets N510-1968 plus later revisions. That addresses the problem adequately. To dance around the issue, in my opinion, is to invite these kinds of ambiguous actions by whatever vendor it may be, and by whatever power utility company it may be. For example, the DOE sites that I am familiar with reference N510-1968 but they do not require listing on the qualified products list. Commercial power plants that cite N510-1968 do require filters from manufactures on the QPL. That is a confusing issue in the industry.
- PAUL:** The general design document, 64301.A, has been referenced a few times. I have been told that draft document 5480 NNFDC may cancel Division 13 and the special facilities portions of 6430-1A. If AG-1 is to be referenced, it would probably be referenced by 5480 NNFDC,if it gets issued.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

MILLER: For those of us who don't recognize those document numbers, can you explain them a little better?

PAUL: Document 6430 contains general design criteria for DOE facilities. If draft 5480 NNFDC gets issued, it will remove Division 13 and all the 99 sections from 64301.A.

MILLER: But AG-1 is referenced in draft 6430 1.B. I don't have the specific chapter number it is in.

PAUL: It is in 1B, in Division 15.

FIRST: I would like to return to the issue of revising N509. The reason I am doing this is because I think it should be explained very clearly and carefully why that document cannot be abandoned. I want to see it spread on the record so that everybody will be able to understand it thoroughly.

OLSON: Right now, N509 is considered to provide the glue that holds together the various component specifications that are included in AG-1. Reviewing the previous issues of N509, I see sections that provide component requirements, and then there are system requirements that pull them all together. The intention of the revision of N509 is to further endorse AG-1 as a component specifications, yet to allow N509 to continue to provide that overview that makes it possible to pull all the sections together into an overall system.

There are a few additional items that need to be addressed. I mentioned earlier that there are a few inconsistencies between N509 and AG-1 that have been addressed through an inquiry. Also, there is an errata section being issued for N509. In addition, there is a change in maximum permissible concentrations related to control room habitability that will be addressed in the appendix to N509. Our intention is to slim down N509 because we will be taking credit in AG-1 for components. But it will maintain all the meat as far as pulling together the various components. At this Air Cleaning Conference two years from now, we expect to provide a paper that will outline more specifically where we are with the change and provide a little better idea of the schedule for issuance.

MILLER: Can you ever envision the day when the AG-1 Code would be so complete that you wouldn't need N509. I mean, is this temporary or is it something that we really have decided needs to go on and on.

OLSON: Right now, I don't ever see N509 going away based on the present scope dictated to CONAGT with respect to AG-1.

MILLER: It is probably important to note here that The American Nuclear Society prepares and maintains nuclear plant systems standards. ANS has a heavy interface role to determine the requirements for the various systems and the components that we design. To me, there is a logical relationship among ANS 59.2 (HVAC system Outside Containment), N509, and AG-1 that may be somewhat permanent. N509 acts as a type of integrator between ANS 59.2 and AG-1. I would have liked to report that the control room habitability standard that ANS decided to embark upon some 5 years ago is further along in completion, but I understand that it is now stagnant. As a result of the CONAGT Main Committee meeting last Friday, I will be taking some action to try to build a fire under that standard again. Many of us in the business feel that the document needs to be completed.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

FIRST: I don't think you have explained completely why the material that will remain in N509 cannot be included in AG-1. Again, I am asking the question because I would like to have it very clearly explained.

OLSON: Right now, N509 provides more of a system guideline, whereas the specifics of AG-1 are related to components. There are many integration details and I would like to defer discussion until we have a chance to consider them. The revision process for N509 has only been in the thought process for approximately 4 months. I would like to defer specifics until the next Air Cleaning Conference when we can really lay it out. We may be able to demonstrate at that time which areas have been withdrawn from N509 and deferred to AG-1, and which items of N509 are presently not addressed by AG-1 and will be remaining in this standard for good reasons.

MILLER: This subject was discussed in great detail at a Main Committee meeting during January 1992. The discussion is documented in the notes of that meeting. This panel, as members of the Main Committee, support the decision and will defend it in the future.

EDWARDS: May I suggest that future plants only reference AG-1 in its entirety and not cite N509. Then, N509 can be retired when all of the current plants have been finally decommissioned, because they represent tech specs that are not going to be ratcheted into compliance with AG-1. Is that a reasonable kind of timetable?

PORCO: I think it is a good point, but I am not sure it is a good timetable. There are a lot of plants that do not conform to the latest N509-1989 edition. So, you still have to maintain the prior editions of N509. That is what the Technical Specifications are based on. I think the point of maintaining the N509 document for the current plants is valid.

MYERS: I am not sure who to direct this question to. Obviously, a lot of plants are controlled by Technical Specifications. I wonder what efforts have been made to develop new specifications of a kind that would make it unnecessary to go to the NRC and say, "We don't quite meet this provision". In other words, can it be applied generically. For example, one of the requirements, I believe, states that the plants are to replace carbon after so many hours of operation. We have some plants that currently operate the designated hours but not go at the full system air rate. Normally, you would prorate the service and extend the hours. In other words, are such factors given consideration to make it easier for a plant to operate without violating NRC rules?

PORCO: The Technical Specifications specify the number of hours of operation between carbon testing, but radioiodine testing predicts when you must replace carbon. Replacement is based on test results. Does that answer your question?

OLSON: I think you are asking for a generic endorsement of AG-1 by the NRC. I think we will see that when Reg. Guide 1.52 revisions are completed. Until that time, we are pretty much bound by the current Reg. Guide 1.52 in operating areas. Individual stations must petition NRC for exemptions from Reg. Guide 1.52.

MILLER: The Committee on Air and Gas Treatment has been wrestling for at least two years with a white paper to consolidate practical problems that are being encountered by utilities in dealing with technical specifications and outdated Regulatory Guides and Standards. The white paper will be summarized by Mr. Kovach later in this Conference and after the Conference, I am committed by Main Committee action to send a letter which includes this paper to the ASME Vice-President of Nuclear Codes and Standards. If he agrees, we will send it to the NRC to request that they meet with CONAGT to discuss and lay out solutions to these issues. Will the

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

new AG-1 code automatically make this problem go away? No. We need to work together with the NRC and the utilities to get all the paper work to hang together. Right, Dr. Bellamy?

BELLAMY: The answer is, yes. Let me say something more along those lines. We have heard that there have been improvements, upgrades, and additional sections of the code issued over the last two years. And we have heard that there will be further additions, upgrades, and improvements on code sections that will be issued in the next two years. I submit, for the sake of argument, that we should not revise Reg. Guide 1.52 until the entire code is fully developed, published, and ready to be used. If I were to put a lot of effort into getting Reg. Guide 1.52 out this year, which I will not be doing, I would be in the same situation you are in. And then we would encounter the same situation two years from now. I invite your response, but I think your last statement that we simply need to work our way together through the paper work is an outstanding offer.

MILLER: I found it interesting that the 5 year period for QPL relisting died in 1978. Reg. Guide 1.52 has stagnated since 1978. The year 1978 must have been a special year for documents to freeze in place. I feel that the sections in the code that are currently available for use, insofar as they pertain to much of the important content of Reg. Guide 1.52, are adequate. There could be an argument made that the improvements made in the SA (Ductwork) Section, (which will be out shortly) would enhance Reg. Guide 1.52 if that document were available so that NRC would be able to reference both sections. There is some give and take there, I don't deny it. If, in fact, the official position of the NRC was that the document would not be revised until AG-1 was complete, we would then know that Reg. Guide 1.52 would never be issued, because a code is really never completed, it is a living document. It goes on, and on, and on. That is why our children will have work to do on codes and standards.

WEIDLER: Since I was gone for a few minutes, someone probably brought it up. Did anybody talk about the life span of N510?

MILLER: N510 will not enter another maintenance revision on the assumption that the TA and TB sections of the code will be sufficient to handle the material that N510 contained. The TA section is close enough to publication so that N510 will not have to be revised. But it will be available. It is still referenced in Technical Specifications. As long as there are copies in circulation, it will still be used. But it just will not be updated. Will the committee answer inquiries on it? Yes.

WEIDLER: The TA section covers surveillance testing and acceptance testing. Since the TA section covers the whole gambit of HVAC, not just filter filtration systems, I wonder if anybody would want to comment on what they think might be the impact to the industry of having all these topics together in one section and covering all the HVAC systems at the plant.

MILLER: Many of the members of the public have not seen the recent drafts of the TA section. Knowing that we are going to have surveillance testing, acceptance testing, and factory testing, all in one code, is that going to mean that there will be practical implementation problems in nuclear power plants or the nuclear facility industry? That is really the question.

VOGAN: I was going to ask a question dealing with the elimination of N510. Since many plant Technical Specifications currently require surveillance testing according to N510, I would envision, based on my knowledge of the current TA, that many plants would want to stay with N510 testing because if you eliminate N510, there is a potential for increased surveillance if you strictly follow the TA section. TA is intended for the future, not necessarily for the past. So, while I have been an advocate of eliminating N510, I think we may want to revisit where TA and N510 are today at another Main Committee meeting to reassess where we are going to go with TA and N510.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

Should we keep both documents alive until all Technical Specifications get up to date and reference TA. I feel that there is a potential for an impact in all TA sections and that we will need all those documents for a while.

MILLER: The chairman of the Subcommittee on Testing, who had a lot to do with the TA section, stated that he would be willing to prototype the use of the TA document at his nuclear power plant and that all the lessons that he might learn from that application could be fed back into either improvements in the TA section, or if we revisited the subject, perhaps some improvements in N510, although the Main Committee is on record right now as saying they don't want to revise N510. TA is a document that has been through the consensus process up to the Main Committee level. It is well written, it is not like anything you have seen before, but it definitely has possibilities of increasing some of the surveillance requirements. There is no getting around that. The people in the testing subgroup and subcommittee feel very strongly, based on their experience with real plants, that these requirements are necessary. Time will tell whether or not the utilities, who will read it and have to decide whether to invoke it, will agree. But I think your comment is well put. The other thing that I would like to say is, that at the CONAGT Executive Committee meeting last Saturday, we discussed the subject of a correspondence status with CONAGT. That is not a corresponding member, we can't use the term "member" when we are talking about correspondent. But we want to do what other committees have been doing very quietly; that is, maintain a mailing list of people who are really interested in seeing these code sections and standards when they are in preparation, before they get too far through the approval process. Otherwise, they are forced to make a tough decision whether to intercede in the public review period. The Executive Committee is going to recommend to the Main Committee, and I feel confident that the Main Committee will approve this action, that we will circulate a sign-up list in this group today and start the correspondence mailing list for our future code sections. If you want to receive new and revised draft code sections in the future, we will send them out to you. We will entertain all your comments, but I do not want to impose upon the Committees a responsibility to answer all comments because that takes a lot of work. I don't think the Committees will abuse the situation because they really want your comments, but the preparation of responses is time consuming, very time consuming.

KUMAR: Regarding N510, Technical Specifications, and AG-1, there is a possible solution for this particular problem, as I see it. Since we, at Davis-Besse, referenced N510 in the Technical Specifications, we can evaluate where the differences are between N510 and AG-1 and then with a software program we can take exception to those particular positions that we cannot meet because our unit may or may not have been designed to N509 requirements. Based on that, we could negotiate with NRC for a new date for us to make changes, if needed. As long as we are meeting our present commitment, I don't see any problem in this particular thing. It is a software problem rather than anything else.

MILLER: So that is a vote of confidence. That is the process, there are obstacles but they are not impossible.

EDWARDS, JIM: The question Weidler raised was, "Is TA going to be more difficult to handle than N510 and some other documents?" When I voted on TA, I looked at it from the point of view of a manufacturer who does in-plant factory testing. Although there are some sections I don't agree with, or some specifics I don't agree with, I didn't see any pitfalls as I read through it that are going to cause difficulty. I also read it through from the point of view of a surveillance and test person in the field, with which I have had some experience. I had some parts I disagreed with but I still didn't see any pitfalls that are going to make it unworkable. There may be some things that come up later, but I think, all in all, it is going to be easier for those of us who do testing

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

to have all the requirements and procedures in one place so that we can just refer to one document no matter what kind of testing we are doing.

MILLER: There is definitely additional guidance along the procedural line in the new TA section but it is my understanding that plants will still have to write additional implementing procedures.

EDWARDS, JIM: Yes. It is not an all-inclusive document. I said I disagreed with some of the things in it. For example, as a rule, we do a pressure decay leak test in a 5-minute time interval. The TA section is going to require a minimum of 15 minutes. That is all right as long as it is 15 minutes for everybody.

WILLIAMS: We are involved with the DOE. This may sound like a reiteration of the question the gentleman from Martin Marietta had, but I need clarification. I am not sure whether to ask DOE or CONAGT. The question refers to a special facility situation where there is no wording to legally define the test procedures. DOE cites AG-1 as being the document for compliance. Maybe AG-1 needs to be the document that should be cited for special facility compliance.

PAUL: There are quite a few documents that are referenced in DOE Orders, such as ERDA 76-21, AG-1, N509, and N510. There is a lot of overlap between these documents in terms of requirements and then it becomes a question of which is the higher-tiered document. I don't know if that is precisely your question, but I have a feeling these issues have come up before. ERDA 76-21 is a handbook and should be used as such. It wasn't intended to be a standard. My opinion is that if we replace N509 and N510 with AG-1, AG-1 should be the document that DOE facilities refer to in the future for the requirements for air cleaning systems. And I think ERDA 76-21 should be used for guidance only.

WILLIAMS: We had discussions to determine if N509 and N510 are the documents we should be in compliance with because their titles refer to nuclear power plants, but because we are not a reactor facility (we are what we consider to be a non-reactor special facility) it is not clear. Maybe the AG-1 should state, special nuclear facilities.

PAUL: The scope of AG-1 is for nuclear facilities including nuclear power plants. Where AG-1 may still be slanted in the direction of nuclear power plants, it can be improved. We need feedback from DOE or other industry segments if the requirements are not sufficiently inclusive of all types of nuclear facilities.

MILLER: I want to supplement that. The Board of Nuclear Codes and Standards developed a strategic plan within the last three years. As part of that strategic plan, the Board recognized that it needed to determine which nuclear facilities it wanted to serve in the total quality management arena. We are in the process of preparing a matrix for all of the Committees that the Board supervise, QA, O&M, QME (Qualification of Mechanical Equipment), CONAGT, and the Boiler and Pressure Vessel Committee. The major matrix contains all of the different nuclear facilities and each of the reporting committees is filling in squares in the matrix where it believes there is a client base. There are more people that we should be serving with our codes and standards. The matrix will be the first step in recognizing the broader base of potential customers of our codes and standards.

EDWARDS, JIM: Just to add to what you were saying, we have already recognized that the expansion of AG-1 into special nuclear facilities is a very desirable thing and have taken steps in that direction. For example, Joe Paul's subgroup on housings and Tom Vogan's subgroup on Type IV adsorbers, which are now used in special facilities, are already in development. So we are slightly ahead of the curve in terms of that effort and we are addressing special requirements.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

MILLER: Were Type IV adsorbers referred to late last week as alternative lifestyles?

EDWARDS, JIM: Type IV adsorbers are really mainstream lifestyle; everything else is alternative lifestyle, if you go by the numbers of units under construction in the last 5 years.

GHOSH: Different plants are committed to different versions of the standard. I know some plants are committed to the 1980 version and some to 1976. We run into problems with replacements such as a door being warped, or a gasket needs changing. If you think that AG-1 will be used, I don't think it will happen because the plants are never going to change commitments. ANS 59.2 and EPRI documents try to define how you can go back and classify the replacement components. Every effort has been made to qualify individual components of the filtration systems.

PORCO: You have quite a few questions wrapped up in that comment. Let me try to address a few of them. The first one you mentioned is the application of AG-1 in current plants. Indeed, there are plants now that are specifying retrofit units as conforming to AG-1. We are supplying those plants with replacement and upgraded systems. Component replacement is another issue, where you no longer get a direct replacement for some instruments. If you can't get a direct replacement, you must requalify the component before you use it. That is the basis for component qualification and re-qualification.

GHOSH: Commercial dedication, that is the only document that counts. What can we do from the ventilation aspect to make it easier for somebody to make a decision in terms of line replacement components?

PORCO: What we are doing as a company is generating a list of items we have qualified as specific replacements. We do it generically and provide replacements as a service to utilities. After we do a requalification for one plant, we find that there are other plants that can use the requalified item.

OLSON: I don't think I can answer your question, but I would like to provide some information that might help you out and that you can take into consideration. There is a repair and replacement section that is being developed to be included in AG-1. That would not necessarily cover repair and replacement components of N509 specifically. That is a separate standard. You have a very good point and it is something that should be taken into consideration. I want to make sure that you and everyone in the room, is aware that AG-1 will include repair and replacement of components in the code.

MILLER: This R & R section is the equivalent of a B & PV Section XI built into AG-1 and that is something we haven't brought up so you really helped us bring that out. We thank you.

DEMETRIA: Are you going to add to AG-1 new types of filtration units in addition to HEPA filters? Specifically, I am talking about (Mil 5) filters which are coming into the industry rather strong.

MILLER: I think that is an excellent question, especially in light of Wilhelm's comment that closed the morning session. Of the papers this morning, he said, why can't we all get together, decide what these systems should be, and then we don't have to prepare papers on all the differences every two years. I think that kind of paraphrases what he said. I feel the same way when I see all the new materials. A fellow, this morning, showed a piece of interesting-looking metal mesh and said he was going to put it into his containment to capture aerosols so they will not load the sand bed on the roof of his reactor building. At what point do we in the United States codes and standards business take a more pro-active approach to writing codes and standards for

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

components that are being used around the world successfully, but may not, for marketing reasons, or whatever, be used in this country. It is difficult for the Main Committee of CONAGT to decide to invest many, many volunteer manhours to develop codes or standards for products that aren't being used by the utilities or the manufacturers that are sponsoring the people on the code writing committees.

PORCO: Your point is well taken. The thing to remember is that AG-1 is a consensus document. So you must have people from the utilities, NRC, manufacturing, etc. voting on what goes into them. The debate on performance vs a component specification has been going on for years. I think the biggest fight was over what you would specify as adsorber media. We ended up limiting adsorbents to activated carbon. HEPA filter variations have also been a major decision problem, and we have talked about adding a section on unusual filter sizes and configurations.

VOGAN: In regard to carbon cells, FH is the main lifestyle section. We have Sections FD, FE, and FH that cover the three most common adsorbents. However, the case of other filters is on the agenda but we haven't made much progress. We discussed, but we may not yet have all of the knowledge needed to handle metal filters. We need more information, more help.

One vehicle you could use is to submit your alternative filter as a code change. If you submit all the data, test methods, test results, qualification of materials, we can review them and possibly allow it. The code does not make an attempt to exclude materials as long as they meet all the performance requirements.

MILLER: There is another alternative, join the Committee.

ANON: I was going to suggest a knowledgeable person as a member of the Committee so we can get something going because we have been working with these filters for over three years, almost 4 years now.

MILLER: I think your point is well taken. What I want to add here are some of the comments that were made during the morning session about changes in source terms and the increase in aerosols plus the possibility that with accidents we could have smoldering of organic materials that would greatly increase the particulate content of the aerosol and the loads on our filter systems. We may need new filters. We may not be able to use what we have today.

EDWARDS: A couple of years ago, Pall Corporation wrote a letter asking about stainless-steel filters. What you are suggesting is that rather than Pall writing a letter and asking the Committee what we are going to do about stainless-steel filters, Pall should develop a code case question concerning use of stainless-steel media filters and submit the question to the Main Committee for resolution. Is that correct?

MILLER: I am not sure that the only thing that could move CONAGT is a code case. I think if someone came in with a product with successful applications, and some good solid qualification data, the Committee would have a hard time looking the other way. I would like to say, yes, if you want to do it as a code case then fine, you will get an answer for sure. It won't be an expansive answer because the lawyers at ASME let us say, "Yes," or, "No," and very little else. But we definitely need to get more input so that our code doesn't end up stagnating and not being useful. It has to reflect what people need.

But we are also very aware of the ASME vs Hydro-level case. For those of you who aren't familiar with it, it was a rather significant case in ASME's history because it made a significant payout. A suit was filed against a committee that was dominated by an individual

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

manufacturer. The committee's actions resulted in forcing a competitor out of business. We are very sensitive about giving people an opportunity to convince us that we should be revising our codes and standards. We are at a point now where we can take on additional work. We are not fighting the same backlog of work that we had before. So, why not get at it? Is anyone in the audience currently using AG-1 to specify equipment or considering using AG-1 to specify equipment? Let's raise hands. Wow, a dozen people in this audience are going to be doing some prototype application of our code; please give us feedback. If you need help, let us know, and we will help you through it.

JACOX: You might want to mention that the Main Committee has honored requests from various vendors to come into the Main Committee and present something they believe is significant but currently excluded by the code.

MILLER: The easiest way to do that is just to call me or contact a member of the Main Committee and tell them that you want to be on the agenda for the upcoming meeting and we will do it. Our secretary is Michael Kozlik at ASME.

BLACKLAW: In Washington, we are introducing new regulations that require BACT, best available radionuclide control technology. As part of that, we referenced AG-1, N509, N510. We look for the most efficient equipment available, which does not necessarily limit the evaluation to standard nuclear-grade equipment. That will bring along things like metal filters and ULPA filters. These technologies, and others, will have to be evaluated. Therefore, any State agencies that use this engineering standard will have to address the same issue.

MILLER: I agree with you and I welcome your attendance here today and your interest in this session. I think it is a good sign that some of the states are interfacing through the Air Cleaning Conference. Perhaps you should also consider coming to one of our twice-a-year CONAGT Main Committee meetings and giving us your input. All the ASME meetings are open meetings to the public, except very small portions of the meeting that deal with personnel items.

PORCO: On the use of ULPA filters, when you evaluate the best available technology, you must also evaluate it for the application. ULPA filters have a higher efficiency but they do not meet the qualification tests that HEPA filters do. The filter medium is different. Although you get higher efficiency on penetration, you don't get the right type of construction nor the strength, nor radiation resistance with an ULPA filter. The question always comes up, "Why aren't we using ULPA filters?" That is the reason.

MILLER: I am going to plead ignorance and probably there is one other person in the audience that doesn't know what an ULPA filter is.

PORCO: ULPA stands for ultra-low penetration air filters. They are used predominantly in the clean room industry and you can get efficiencies up to 99.9995% on 0.3 μm size particles.

MILLER: What resistance?

PORCO: They are customized but usually use face velocities of 70-80 ft per minute for a resistance of 1 in. w.

GRAVES: In the matter of new technologies, CONAGT has a subcommittee on technology. That subcommittee would certainly be willing to listen to anything on new technologies. That is why CONAGT has that subcommittee.

22nd DOE/NRC NUCLEAR AIR CLEANING AND TREATMENT CONFERENCE

MILLER: Lou Kovach, from NUCON, is the subcommittee chairman of the Technology and Training Subcommittee. That would be a good place to start if you felt intimidated by the Main Committee.

This has really been a good session. I ordinarily would summarize it but I don't think that is needed here. I think I was concerned at some point whether we would have trouble filling two hours, and here we are about an hour and 56 minutes into the session.