

**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA**

<p>AMERICAN SOCIETY FOR TESTING AND MATERIALS d/b/a/ ASTM INTERNATIONAL;</p> <p>NATIONAL FIRE PROTECTION ASSOCIATION, INC.; and</p> <p>AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS,</p> <p style="text-align:right">Plaintiffs/ Counter-Defendants,</p> <p>v.</p> <p>PUBLIC.RESOURCE.ORG, INC.,</p> <p style="text-align:right">Defendant/ Counter-Plaintiff.</p>	<p>Case No. 1:13-cv-01215-TSC</p>
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**DECLARATION OF JORDANA S. RUBEL**

Pursuant to 28 U.S.C. § 1746, I, Jordana S. Rubel, declare the following statements to be true under the penalties of perjury:

1. I am over the age of 18 years and am fully competent to testify to the matters stated in this Declaration.
2. This declaration is based on my personal knowledge. If called to do so, I would and could testify to the matters stated herein.
3. I am an associate at Morgan Lewis & Bockius LLP, which represents Plaintiff American Society for Testing and Materials in this matter.
4. Attached as Exhibit 1 is a true and correct copy of the Expert Report of John C. Jarosz that was served on June 5, 2015.

5. Attached as Exhibit 2 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of Public.Resource.Org, Inc., which took place on February 26, 2015.

6. Attached as Exhibit 3 are true and correct copies of excerpts of the transcript of the deposition of Carl Malamud, which took place on February 27, 2015.

7. Attached as Exhibit 4 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of Point.B Studio, which took place on November 13, 2014.

8. Attached as Exhibit 5 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of HTC Global, Inc., which took place on November 5, 2014.

9. Attached as Exhibit 6 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of Christian Dubay on behalf of the National Fire Protection Association, Inc., which took place on April 1, 2015.

10. Attached as Exhibit 7 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of Stephanie Reiniche on behalf of the American Society for Heating, Refrigerating and Air Conditioning Engineers, which took place on March 30, 2015.

11. Attached as Exhibit 8 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of Steven Comstock on behalf of the American Society for Heating, Refrigerating and Air Conditioning Engineers, which took place on March 5, 2015.

12. Public.Resource.Org, Inc. ("Defendant") submitted Freedom of Information Act ("FOIA") requests to a number of executive agencies requesting copies of standards that are incorporated by reference in federal regulations. Attached as Exhibit 9 are true and correct copies of letters of requests Public.Resource.Org, Inc. submitted to the U.S. Department of Housing and Urban Develop and the U.S. Consumer Product Safety Commission that were downloaded from Defendant's website.

13. No agency has provided Defendant with copies of the standards it has requested through these FOIA requests. Numerous federal agencies have explicitly taken the position in communications with Defendant that incorporation by reference of materials into regulations does not destroy the copyright in those materials. Attached as Exhibit 10 are true and correct copies of letters to Defendant from the U.S. Department of Interior, the U.S. Department of Housing and Urban Development and the U.S. Consumer Product Safety Commission that were downloaded from Defendant's website.

14. Attached as Exhibit 11 are true and correct copies of excerpts from Defendant's responses to interrogatories served by American Society for Testing and Materials. Defendant did not serve supplemented responses to these interrogatories.

15. Copies of 43 of Defendant's versions of ASTM's standards at issue, with Defendant's cover page, were uploaded by "dharlanuctcom" onto the Scribd platform. See <https://www.scribd.com/dharlanuctcom>. Attached as Exhibit 12 is a true and correct copy of a printout of a page showing uploads made by dharlanuctcom to the Scribd platform.

16. Even after Mr. Malamud was notified of specific errors in Defendant's versions of Plaintiffs' standards that were posted on Defendant's website, Defendant did not correct those mistakes and maintained versions of the standards that contained these errors on its website until it removed its copies of Plaintiffs' standards in November 2015 at the Court's suggestion.

17. Attached as Exhibit 13 is a true and correct copy of Exhibit 55 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

18. Attached as Exhibit 14 is a true and correct copy of Exhibit 33 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

19. Attached as Exhibit 15 is a true and correct copy of Exhibit 69 to the deposition of Carl Malamud.

20. Attached as Exhibit 16 is a true and correct copy of Exhibit 63 to the deposition of Carl Malamud.

21. Attached as Exhibit 17 is a true and correct copy of Exhibit 2 to the 30(b)(6) deposition of HTC Global.

22. Attached as Exhibit 18 is a true and correct copy of excerpts from the expert deposition of James Fruchterman, which took place on July 31, 2015.

23. Attached as Exhibit 19 is a true and correct copy of Exhibit 21 to the 30(b)(6) deposition of Point.B Studio.

24. Attached as Exhibit 20 is a true and correct copy of Exhibit 57 to the deposition of Carl Malamud.

25. Attached as Exhibit 21 is a true and correct copy of Exhibit 62 to the deposition of Carl Malamud.

26. Attached as Exhibit 22 is a true and correct copy of Exhibit 18 to the 30(b)(6) deposition of Point.B Studio.

27. Attached as Exhibit 23 are true and correct copies of Exhibits 52 and 53 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

28. Attached as Exhibit 24 is a true and correct copy of Exhibit 75 to the deposition of Carl Malamud.

29. Attached as Exhibit 25 are true and correct copies of documents Bates stamped PRO\_00082474, PRO\_00082837, and PRO\_00083112, which were produced by Public.Resource.Org, Inc.

30. Attached as Exhibit 26 is a true and correct copy of a document Bates stamped PRO\_00101955-57, which was produced by Public.Resource.Org, Inc.

31. Attached as Exhibit 27 is a true and correct copy of Exhibit 38 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

32. Attached as Exhibit 28 is a true and correct copy of Exhibit 40 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

33. Attached as Exhibit 29 is a true and correct copy of Exhibit 64 to the deposition of Carl Malamud.

34. Attached as Exhibit 30 is a true and correct copy of Exhibit 58 to the deposition of Carl Malamud.

35. Attached as Exhibit 31 is a true and correct copy of Exhibit 59 to the deposition of Carl Malamud.

36. Attached as Exhibit 32 is a true and correct copy of a document I downloaded from the law.resource.org website on November 19, 2015.

37. Attached as Exhibit 33 is a true and correct copy of Exhibit 77 to the deposition of Carl Malamud.

38. Attached as Exhibit 34 is a true and correct copy of Exhibit 65 to the deposition of Carl Malamud.

39. Attached as Exhibit 35 is a true and correct copy of Exhibit 27 to the 30(b)(6) deposition of Point.B Studio.

40. Attached as Exhibit 36 is a true and correct copy of Exhibit 73 to the deposition of Carl Malamud.

41. Attached as Exhibit 37 is a true and correct copy of Exhibit 49 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

42. Attached as Exhibit 38 is a true and correct copy of Exhibit 43 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

43. Attached as Exhibit 39 is a true and correct copy of Exhibit 51 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

44. Attached as Exhibit 40 is a true and correct copy of Exhibit 44 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

45. Attached as Exhibit 41 is a true and correct copy of Exhibit 54 to the 30(b)(6) deposition of Public.Resource.Org, Inc.


46. Attached as Exhibit 42 is a true and correct copy of Exhibit 56 to the 30(b)(6) deposition of Public.Resource.Org, Inc.

47. Attached as Exhibit 43 is a true and correct copy of Exhibit 76 to the deposition of Carl Malamud.

48. Attached as Exhibit 44 is a true and correct copy of Exhibit 70 to the deposition of Carl Malamud.

49. Attached as Exhibit 45 are true and correct copies of excerpts of the transcript of the 30(b)(6) deposition of Bruce Mullen on behalf of on the American Society for Heating, Refrigerating and Air Conditioning Engineers, which took place on March 31, 2015.

Dated: November 19, 2015

  
Jordana S. Rubel

**EXHIBIT 1**

**FILED UNDER SEAL**

# **EXHIBIT 2**



UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR TESTING AND  
MATERIALS D/B/A ASTM INTERNATIONAL;  
NATIONAL FIRE PROTECTION, INC.;  
AND AMERICAN SOCIETY OF HEATING,  
REFRIGERATING, AND AIR-CONDITIONING  
ENGINEERS, INC.

Plaintiffs, /  
Counter-Defendants, Case No.:

vs. 1:13-cv-01215-EGS

PUBLIC.RESOURCE.ORG, INC.

Defendant/  
Counter-Plaintiff

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VIDEOTAPED DEPOSITION OF THE 30 b) 6) OF  
PUBLIC.RESOURCE.ORG

DATE: Thursday, February 26, 2015

TIME: 10:07

LOCATION: 1 Market Street, Spear Tower, Suite  
2000, San Francisco, California

Reported by: Ashley Soevyn  
Certified Shorthand Reporter  
License Number 12019

1 Resource? 10:23:05AM  
2 A I am. 10:23:06AM  
3 Q What is your position at Public Resource 10:23:08AM  
4 at this time? 10:23:10AM  
5 A I'm the president and founder. 10:23:11AM  
6 Q Has that been your title ever since you 10:23:14AM  
7 founded Public Resource? 10:23:16AM  
8 A Yes. 10:23:18AM  
9 Q Is that a full-time position? 10:23:20AM  
10 A It is. 10:23:24AM  
11 Q Do you do any other work that leads to any 10:23:26AM  
12 sort of compensation other than your work for Public 10:23:30AM  
13 Resource at this time? 10:23:32AM  
14 A I do not. 10:23:34AM  
15 Q As the president and founder of Public 10:23:37AM  
16 Resource, what are your job responsibilities? 10:23:39AM  
17 MR. BRIDGES: Objection, vague and 10:23:46AM  
18 ambiguous. 10:23:46AM  
19 THE WITNESS: I run the corporation. 10:23:51AM  
20 BY MR. FEE: 10:23:53AM  
21 Q Okay. Can you be any more specific than 10:23:53AM  
22 that? 10:23:59AM  
23 MR. BRIDGES: Same objection. 10:24:00AM  
24 THE WITNESS: I speak. I program. I run 10:24:03AM  
25 computers. 10:24:06AM

1 BY MR. FEE: 10:24:07AM  
2 Q What is Public Resource? 10:24:09AM  
3 MR. BRIDGES: Objection, vague and 10:24:12AM  
4 ambiguous. 10:24:13AM  
5 THE WITNESS: A 501(c)(3) nonprofit 10:24:14AM  
6 corporation. 10:24:19AM  
7 BY MR. FEE: 10:24:20AM  
8 Q What products or services does Public 10:24:20AM  
9 Resource provide? 10:24:22AM  
10 MR. BRIDGES: Objection, vague and 10:24:23AM  
11 ambiguous, argumentative. 10:24:25AM  
12 THE WITNESS: We make government 10:24:31AM  
13 information more broadly available to inform 10:24:32AM  
14 citizens. 10:24:35AM  
15 BY MR. FEE: 10:24:35AM  
16 Q How does Public Resource do that? 10:24:39AM  
17 A I'm sorry? 10:24:42AM  
18 Q How does Public Resource do that? 10:24:43AM  
19 A We use the Internet. 10:24:46AM  
20 Q At this point in time, do you own any 10:25:03AM  
21 controlling interest in the corporation, or do you 10:25:07AM  
22 hold any positions for any nonprofit organizations 10:25:09AM  
23 other than Public Resource? 10:25:13AM  
24 MR. BRIDGES: Objection, compound. 10:25:15AM  
25 MR. FEE: It is compound. I'll break that 10:25:17AM

1 down. Let me re-ask that. 10:25:19AM  
2 BY MR. FEE: 10:25:21AM  
3 Q First of all, do you own a controlling 10:25:21AM  
4 interest in any corporation putting aside what you 10:25:23AM  
5 do for Public Resource? 10:25:27AM  
6 A No, I do not. 10:25:29AM  
7 Q Do you have a role in connection with any 10:25:31AM  
8 nonprofit organization other than Public Resource 10:25:34AM  
9 at -- 10:25:38AM  
10 MR. BRIDGES: Objection, vague and 10:25:38AM  
11 ambiguous. 10:25:39AM  
12 BY MR. FEE: 10:25:39AM  
13 Q -- at this time? 10:25:40AM  
14 MR. BRIDGES: Objection, vague and 10:25:40AM  
15 ambiguous. 10:25:40AM  
16 THE WITNESS: I'm on the board of 10:25:41AM  
17 directors of Common Crawl, a 501(c)(3) nonprofit 10:25:42AM  
18 corporation. 10:25:46AM  
19 BY MR. FEE: 10:25:48AM  
20 Q Any others? 10:25:49AM  
21 A No, sir. 10:25:51AM  
22 MR. BRIDGES: Just leave me time to 10:25:52AM  
23 object. I should have objected to that one. 10:25:52AM  
24 BY MR. FEE: 10:25:56AM  
25 Q What is Common Crawl? 10:25:56AM

1 THE WITNESS: And -- and manage those 10:31:03AM  
2 objects, yes. 10:31:03AM  
3 BY MR. FEE: 10:31:04AM  
4 Q Can you explain to me what the basis is 10:31:05AM  
5 for that belief? 10:31:08AM  
6 A Well, there are a large number of 10:31:11AM  
7 collections on the Internet Archive, such as the 10:31:13AM  
8 Grateful Dead Archive, for example. 10:31:16AM  
9 Q Has Public.Resource.Org ever posted any 10:31:20AM  
10 materials to the Internet Archive? 10:31:24AM  
11 A Yes. 10:31:26AM  
12 Q Does Public Resource have any employees 10:31:37AM  
13 besides yourself? 10:31:39AM  
14 A No. 10:31:41AM  
15 Q Since its found -- founding, did Public 10:31:43AM  
16 Resource have any employees other than yourself? 10:31:46AM  
17 A Yes, I had one employee. 10:31:51AM  
18 Q Who is that? 10:31:53AM  
19 A Joel Hardi, H-A-R-D-I. 10:31:54AM  
20 Q What was Joel Hardi's role at Public 10:32:00AM  
21 Resource while he was there? 10:32:03AM  
22 A He was a systems administrator and 10:32:05AM  
23 programmer. 10:32:09AM  
24 Q During what time frame did Mr. Hardi work 10:32:13AM  
25 at Public Resource? 10:32:15AM

1 A No, that was it. 11:07:41AM  
2 Oh, I'm sorry. I got e-mail from 11:08:10AM  
3 Mr. Cooper at ANSI as well. 11:08:13AM  
4 Q Do you recall the substance of that 11:08:16AM  
5 e-mail? 11:08:18AM  
6 A I think he liked the packaging. 11:08:18AM  
7 THE REPORTER: You said that he's from 11:08:24AM  
8 ANSI? 11:08:24AM  
9 THE WITNESS: A-N-S-I, American National 11:08:24AM  
10 Standards Institution -- or Institute. 11:08:30AM  
11 BY MR. FEE: 11:08:34AM  
12 Q When you were purchasing the 73 standards, 11:08:35AM  
13 why did you decide to buy paper copies as opposed to 11:08:38AM  
14 electronic copies? 11:08:41AM  
15 MR. BRIDGES: Objection, vague, ambiguous, 11:08:43AM  
16 relevance. 11:08:44AM  
17 THE WITNESS: It's by far the easiest way 11:08:45AM  
18 to process them. 11:08:48AM  
19 BY MR. FEE: 11:08:49AM  
20 Q Can you explain why it would be easier to 11:08:50AM  
21 process paper documents than to, for example, print 11:08:53AM  
22 electronic copies? 11:08:56AM  
23 A A paper document you throw it on a scanner 11:08:57AM  
24 and you scan it. 11:09:01AM  
25 Q So you take the paper and make an 11:09:02AM

1 electronic copy as opposed to just having the 11:09:05AM  
2 electronic copy? 11:09:08AM  
3 MR. BRIDGES: I'll object -- I object. 11:09:09AM  
4 Argumentative terminology, vague and ambiguous. 11:09:10AM  
5 THE WITNESS: Yes, you scan it and make an 11:09:12AM  
6 electronic copy. 11:09:14AM  
7 BY MR. FEE: 11:09:15AM  
8 Q So wouldn't it have been easier to 11:09:16AM  
9 purchase electronic copies from the standards 11:09:19AM  
10 organizations? 11:09:21AM  
11 MR. BRIDGES: Objection, lacks foundation, 11:09:22AM  
12 vague and ambiguous, argumentative. 11:09:23AM  
13 THE WITNESS: No, it wouldn't be. 11:09:26AM  
14 BY MR. FEE: 11:09:28AM  
15 Q And your decision to buy paper copies as 11:09:28AM  
16 opposed to electronic copies was not in order to 11:09:32AM  
17 avoid any terms of use in connection with a license 11:09:34AM  
18 agreement of an electronic copy? 11:09:39AM  
19 MR. BRIDGES: Objection, lacks foundation, 11:09:41AM  
20 vague and ambiguous. 11:09:42AM  
21 THE WITNESS: Both terms of use and the 11:09:43AM  
22 way a PDF document are packaged make them much 11:09:47AM  
23 harder to work with. 11:09:53AM  
24 BY MR. FEE: 11:09:54AM  
25 Q If you had purchased an electronic copy of 11:09:55AM

1 in many news media reports, for example. 11:29:55AM  
2 BY MR. FEE: 11:29:58AM  
3 Q Are you aware of any individuals who 11:29:58AM  
4 actually had a problem accessing one of the 11:30:00AM  
5 plaintiffs' standards and -- and that were governed 11:30:03AM  
6 by those standards via incorporation by reference? 11:30:06AM  
7 MR. BRIDGES: All the same objections as I 11:30:13AM  
8 last said. 11:30:14AM  
9 THE WITNESS: Yes, I am. 11:30:15AM  
10 BY MR. FEE: 11:30:16AM  
11 Q Identify all those for me. 11:30:16AM  
12 A I don't know if I can identify all of 11:30:17AM  
13 them, but can -- can I -- 11:30:19AM  
14 Q Identify all that you can think of sitting 11:30:21AM  
15 here right now. 11:30:23AM  
16 A Okay. Mr. Carl Weimer is the executive 11:30:24AM  
17 director of the Pipeline Safety Trust. 11:30:29AM  
18 MR. BRIDGES: You've been asked to 11:30:35AM  
19 identify the individuals. That's what he's asked 11:30:35AM  
20 you to do. 11:30:39AM  
21 BY MR. FEE: 11:30:41AM  
22 Q Who else. 11:30:41AM  
23 A There were a large number of submissions 11:30:46AM  
24 to federal information gathering that included 11:30:52AM  
25 submissions by groups that complained about lack of 11:31:01AM



1 access. 11:31:06AM

2 Q Any others that you can identify? 11:31:07AM

3 MR. BRIDGES: Same -- same objections as 11:31:10AM

4 to my earlier -- as -- as my earlier objections. 11:31:12AM

5 THE WITNESS: Again, in the dockets there 11:31:16AM

6 were a large number of groups that identified 11:31:18AM

7 access problems. 11:31:22AM

8 BY MR. FEE: 11:31:22AM

9 Q But the only individual that you've 11:31:23AM

10 identified is Carl Weimer; is that right? 11:31:25AM

11 A That I -- 11:31:27AM

12 MR. BRIDGES: Same -- same objections as 11:31:30AM

13 my earlier ones. 11:31:31AM

14 THE WITNESS: The only one identified by 11:31:33AM

15 name, yes. 11:31:34AM

16 BY MR. FEE: 11:31:34AM

17 Q And Mr. Weimer, as you said, was the 11:31:35AM

18 executive director of Pipeline Safety Trust; is that 11:31:35AM

19 right? 11:31:39AM

20 A Yes. 11:31:40AM

21 Q And what did he tell you about his 11:31:41AM

22 inability to access one of the plaintiffs' 11:31:43AM

23 standards? 11:31:45AM

24 MR. BRIDGES: Objection, lacks foundation, 11:31:46AM

25 vague and ambiguous. 11:31:47AM

1 THE WITNESS: He spoke at a information 11:31:52AM  
2 gathering process at PHMSA, P-H-M-S-A, which is a 11:31:54AM  
3 federal government agency. 11:32:05AM  
4 MR. BRIDGES: I'll ask the witness to 11:32:07AM  
5 listen to the question and to answer the question. 11:32:08AM  
6 THE WITNESS: Okay. 11:32:10AM  
7 BY MR. FEE: 11:32:11AM  
8 Q So what did Mr. Weimer say about his 11:32:15AM  
9 inability to access plaintiffs' standards? 11:32:18AM  
10 MR. BRIDGES: Objection, lacks foundation, 11:32:24AM  
11 vague and ambiguous. 11:32:25AM  
12 THE WITNESS: He said that lack of 11:32:27AM  
13 availability of the standards was a significant 11:32:27AM  
14 issue for him. 11:32:33AM  
15 MR. FEE: Did he identify the lack of 11:32:34AM  
16 availability of one of the plaintiffs' standards in 11:32:37AM  
17 particular? 11:32:41AM  
18 A I don't recall. 11:32:42AM  
19 Q Did he explain to you or to -- this is a 11:32:42AM  
20 group speech he made; is that what you said? He 11:32:44AM  
21 made a presentation? 11:32:46AM  
22 MR. BRIDGES: Objection, compound, vague 11:32:47AM  
23 and ambiguous. 11:32:49AM  
24 THE WITNESS: It was testimony before a 11:32:50AM  
25 federal proceeding. 11:32:52AM

1 BY MR. FEE: 11:32:53AM

2 Q During his testimony did Mr. Weimer 11:32:54AM

3 explain why he was unable to access any standards 11:32:57AM

4 through reading rooms who were purchasing copies of 11:33:00AM

5 those standards? 11:33:04AM

6 MR. BRIDGES: Objection, lacks foundation, 11:33:05AM

7 argumentative, vague and ambiguous. 11:33:06AM

8 THE WITNESS: I don't recall. 11:33:08AM

9 BY MR. FEE: 11:33:08AM

10 Q Do you recall any explanation as to why 11:33:08AM

11 Mr. Weimer could not access any of the plaintiffs' 11:33:10AM

12 standards? 11:33:13AM

13 MR. BRIDGES: Objection, lacks foundation, 11:33:15AM

14 vague and ambiguous. 11:33:16AM

15 THE WITNESS: I don't recall. 11:33:18AM

16 BY MR. FEE: 11:33:18AM

17 Q Do you recall any testimony about why 11:33:19AM

18 Mr. Weimer couldn't access any standard that had 11:33:20AM

19 been incorporated by reference by any governmental 11:33:23AM

20 agency? 11:33:26AM

21 MR. BRIDGES: Objection, lacks foundation, 11:33:28AM

22 vague and ambiguous. 11:33:28AM

23 THE WITNESS: I remember the general topic 11:33:37AM

24 of his testimony, but not the specifics. 11:33:39AM

25 BY MR. FEE: 11:33:41AM

1           Q       So you can't recall any circumstance that       11:33:42AM  
2 prevented him from accessing any particular                   11:33:46AM  
3 standard?   11:33:49AM  
4           MR. BRIDGES:  Objection, lacks foundation,       11:33:50AM  
5 vague and ambiguous.   11:33:50AM  
6           THE WITNESS:  I -- I don't recall.               11:33:52AM  
7 BY MR. FEE:   11:33:52AM  
8           Q       Can you identify any circumstances in       11:33:53AM  
9 which any home builder, for example, was unable to           11:33:55AM  
10 access standards that were incorporated by reference       11:33:58AM  
11 that might be relevant to someone building a home?       11:34:00AM  
12           MR. BRIDGES:  Objection, competence, may       11:34:04AM  
13 call for speculation, vague and ambiguous, lacks           11:34:07AM  
14 foundation.   11:34:09AM  
15           THE WITNESS:  Mr. Peterson related such a       11:34:11AM  
16 story.   11:34:13AM  
17 BY MR. FEE:   11:34:15AM  
18           Q       Any others?                                   11:34:17AM  
19           MR. BRIDGES:  Same objections.                   11:34:19AM  
20           THE WITNESS:  I don't recall.                   11:34:22AM  
21 BY MR. FEE:   11:34:22AM  
22           Q       So Mr. Peterson identified one instance in   11:34:23AM  
23 which a home builder was unable to access a standard       11:34:26AM  
24 as incorporated by reference?                               11:34:29AM  
25           MR. BRIDGES:  Same objections.                   11:34:32AM

1 THE WITNESS: It's in a video on our 11:34:34AM  
2 website. 11:34:37AM  
3 BY MR. FEE: 11:34:37AM  
4 Q And it's one home builder? 11:34:39AM  
5 MR. BRIDGES: Same objection. 11:34:44AM  
6 THE WITNESS: I -- I don't recall. 11:34:45AM  
7 BY MR. FEE: 11:34:45AM  
8 Q Do you recall there being more than one 11:34:45AM  
9 home builder that he referenced? 11:34:47AM  
10 A I'd have to review the transcript to see 11:34:49AM  
11 if he was speaking about one or many. 11:34:52AM  
12 MR. BRIDGES: The answer (sic) is do you 11:34:54AM  
13 recall. 11:34:56AM  
14 THE WITNESS: No, I don't. 11:34:59AM  
15 MR. BRIDGES: Please -- 11:34:59AM  
16 BY MR. FEE: 11:34:59AM  
17 Q Are you aware of any circumstances -- 11:34:59AM  
18 MR. BRIDGES: I've just -- I've got to 11:34:59AM  
19 instruct the witness. Please listen carefully to 11:34:59AM  
20 his questions and answer his question. 11:35:00AM  
21 THE WITNESS: Okay. 11:35:04AM  
22  
23 BY MR. FEE: 11:35:04AM  
24 Q Are you aware of any of the circumstances 11:35:23AM  
25 that led to this home builder's inability to access 11:35:25AM

1 standards that he was governed by via incorporation 11:35:29AM  
2 by reference? 11:35:35AM  
3 MR. BRIDGES: Objection, lacks foundation, 11:35:38AM  
4 assumes facts not in evidence, vague and ambiguous, 11:35:38AM  
5 argumentative. 11:35:39AM  
6 THE WITNESS: No. 11:35:41AM  
7 MR. BRIDGES: I'm sorry? 11:35:41AM  
8 THE WITNESS: No. 11:35:41AM  
9 BY MR. FEE: 11:35:41AM  
10 Q Are you aware of any evidence that that 11:35:48AM  
11 home was actually not built due to this inability to 11:35:49AM  
12 access standards incorporated by reference? 11:35:53AM  
13 MR. BRIDGES: Objection, completely lacks 11:35:57AM  
14 foundation, vague and ambiguous, argumentative. 11:35:58AM  
15 THE WITNESS: No. 11:36:01AM  
16 BY MR. FEE: 11:36:01AM  
17 Q Have you been looking for somebody who you 11:36:36AM  
18 could identify as an example of a person who 11:36:39AM  
19 suffered as a result of inability to access a 11:36:44AM  
20 standard incorporated by reference? 11:36:47AM  
21 MR. BRIDGES: Objection, argumentative, 11:36:49AM  
22 lacks foundation, argumentative -- or that's -- I 11:36:50AM  
23 guess I said that -- vague and ambiguous. 11:36:54AM  
24 THE WITNESS: No. 11:36:58AM  
25 BY MR. FEE: 11:36:58AM

1 registration for any of the plaintiffs' standards? 11:43:24AM  
2 MR. BRIDGES: Lacks foundation, vague and 11:43:28AM  
3 ambiguous. 11:43:29AM  
4 THE WITNESS: Yes. 11:43:30AM  
5 BY MR. FEE: 11:43:30AM  
6 Q Have you seen copyright registrations for 11:43:31AM  
7 all three of the plaintiffs' works? 11:43:34AM  
8 MR. BRIDGES: Same objections. 11:43:36AM  
9 THE WITNESS: I don't know. 11:43:39AM  
10 BY MR. FEE: 11:43:39AM  
11 Q Which plaintiffs do you recall seeing 11:43:40AM  
12 copyright registrations for? 11:43:42AM  
13 MR. BRIDGES: Same objections. 11:43:44AM  
14 THE WITNESS: I actually don't recall. 11:43:48AM  
15 BY MR. FEE: 11:43:59AM  
16 Q Are you aware of any evidence that any 11:44:03AM  
17 participants in the ASTM standard development 11:44:06AM  
18 process claimed to be the owner of the copyrights 11:44:10AM  
19 for any of the standards that ASTM claims to be 11:44:13AM  
20 infringed in this case? 11:44:17AM  
21 MR. BRIDGES: Well, objection. Calls for 11:44:19AM  
22 a legal conclusion, may call for attorney-client 11:44:20AM  
23 communications, in which case I would instruct him 11:44:29AM  
24 not to answer. 11:44:33AM  
25 THE WITNESS: I don't know. I'm sorry. 11:44:35AM

1 MR. BRIDGES: Please let me -- 11:44:36AM  
2 THE WITNESS: I'm sorry. 11:44:38AM  
3 MR. BRIDGES: -- finish my objections. 11:44:38AM  
4 Assumes facts not in evidence and lacks foundation. 11:44:44AM  
5 BY MR. FEE: 11:44:45AM  
6 Q Are you aware of any evidence that any 11:44:45AM  
7 participants in the NFPA standard development 11:44:47AM  
8 process claim to be the owner of the copyright for 11:44:51AM  
9 any NFPA standards? 11:44:55AM  
10 MR. BRIDGES: All the same objections, and 11:44:58AM  
11 I can't remember if I included argumentative. 11:44:59AM  
12 THE WITNESS: I don't know. 11:45:02AM  
13 BY MR. FEE: 11:45:02AM  
14 Q You don't know if you're aware or you're 11:45:03AM  
15 not aware of any? 11:45:04AM  
16 A I -- I'm not aware of any. 11:45:06AM  
17 Q Are you aware of any evidence that members 11:45:07AM  
18 or participants in the ASHRAE standard development 11:45:11AM  
19 process claimed to be owners of the copyrights that 11:45:15AM  
20 are at issue and were registered by ASHRAE? 11:45:19AM  
21 MR. BRIDGES: I'm -- I'm sorry. Can you 11:45:26AM  
22 repeat that, please? 11:45:26AM  
23 (The reporter read the record 11:45:41AM  
24 as requested.) 9:21:04AM  
25 MR. BRIDGES: Okay. Calls for a legal 11:45:41AM



1 conclusion, assumes facts not in evidence, 11:45:43AM  
2 argumentative, lacks foundation, vague and 11:45:45AM  
3 ambiguous. 11:45:47AM  
4 THE WITNESS: I'm not aware of any. 11:45:48AM  
5 MR. BRIDGES: And -- and one other, 11:45:51AM  
6 please, attorney-client privilege. I'm asking him 11:45:51AM  
7 not to testify as to -- attorney-client privileged 11:45:55AM  
8 and work product. Asking you not to testify as to 11:45:59AM  
9 anything you may know from counsel or subject to 11:46:04AM  
10 communication with counsel. 11:46:06AM  
11 BY MR. FEE: 11:46:08AM  
12 Q Are you aware of any evidence that any 11:46:08AM  
13 participants in the ASTM standard development 11:46:11AM  
14 process claimed to be the owners of the copyrights 11:46:14AM  
15 in the standards that they were involved in? 11:46:17AM  
16 MR. BRIDGES: All the same objections. 11:46:22AM  
17 THE WITNESS: Same answer; I'm not aware. 11:46:24AM  
18 BY MR. BRIDGES: 11:46:25AM  
19 Q You're not aware of any evidence along 11:46:26AM  
20 those lines? 11:46:28AM  
21 MR. BRIDGES: All the same objections. 11:46:32AM  
22  
23 BY MR. FEE: 11:46:33AM  
24 Q Correct? 11:46:34AM  
25 A I -- I don't want to discuss 11:46:35AM

1 Q Do you deny saying that? 11:49:47AM  
2 A I don't think I would ever use the phrase, 11:49:50AM  
3 "strong copyright interests," sir. 11:49:50AM  
4 Q No? 11:49:53AM  
5 A That doesn't sound like me. 11:49:53AM  
6 Q Okay. Who is Debra Hunt? 11:50:05AM  
7 A I -- I don't recall. 11:50:18AM  
8 Q I'm going to hand you what's been marked 11:50:32AM  
9 as Exhibit 33. It's a series of e-mails between you 11:50:34AM  
10 and Debra Hunt, Bates-labeled PRO\_166616 through 18. 11:50:38AM  
11 (Exhibit 33 marked for identification.) 11:50:51AM  
12 THE WITNESS: Yeah, this appears to be an 11:51:29AM  
13 exchange between me and -- and Ms. Hunt. 11:51:31AM  
14 BY MR. FEE: 11:51:32AM  
15 Q Have you had a chance to read this e-mail 11:51:35AM  
16 enough to see that you referred to the standards 11:51:37AM  
17 having a strong copyright interest? 11:51:40AM  
18 A I do indeed. 11:51:42AM  
19 Q Okay. Does that refresh your recollection 11:51:43AM  
20 about whether or not you've referred to the 11:51:44AM  
21 standards as having strong copyright interests in 11:51:47AM  
22 the past? 11:51:51AM  
23 MR. BRIDGES: Objection, may call for a 11:51:52AM  
24 legal conclusion and vague and ambiguous. 11:51:54AM  
25 THE WITNESS: And I think you've pulled 11:51:58AM

1 standards? 12:00:36PM

2 A I don't recall. 12:00:44PM

3 Q I want to draw your attention to the first 12:00:47PM

4 page you see at the top it says -- on March 12, 2012 12:00:50PM

5 at 12:41 p.m., Seamus Kraft wrote -- and it says, 12:00:58PM

6 "can you give me a few more details on what is going 12:01:01PM

7 to happen?" 12:01:05PM

8 Do you see that? 12:01:06PM

9 A Uh-huh. Yes. 12:01:06PM

10 Q And then below there is one, two, three, 12:01:07PM

11 four, five -- six paragraphs and a numbered list of 12:01:09PM

12 three items. Do you see that? 12:01:15PM

13 A Yes, I do. 12:01:18PM

14 Q And then your name is below that, correct? 12:01:19PM

15 A Yes. 12:01:24PM

16 Q And isn't it correct that you wrote those 12:01:25PM

17 paragraphs that list the three items and your name 12:01:28PM

18 there? 12:01:32PM

19 A Yes. 12:01:34PM

20 Q I want to turn your attention to the 12:01:36PM

21 second paragraph on this, the one that starts with 12:01:38PM

22 sure. Do you see that? 12:01:40PM

23 A Uh-huh. Yes. 12:01:42PM

24 Q So the third sentence says all of these 12:01:42PM

25 standards are heavily copyright protected. 12:01:47PM

1 Do you see that? 12:01:50PM

2 MR. BRIDGES: Objection, misstates the 12:01:51PM

3 document and -- yeah, misstates -- misdescribes the 12:01:52PM

4 document. 12:01:58PM

5 THE WITNESS: I see that sentence in that 12:02:00PM

6 paragraph, yes. 12:02:02PM

7 BY MR. FEE: 12:02:02PM

8 Q Okay. And you wrote that, correct? 12:02:03PM

9 A Yes, I did. 12:02:05PM

10 Q And you were referencing the 73 standards, 12:02:06PM

11 correct? 12:02:15PM

12 A Yes, sir. 12:02:16PM

13 Q What did you mean when you said that all 12:02:16PM

14 of the 73 standards are heavily copyright protected? 12:02:18PM

15 MR. BRIDGES: Objection to the extent it 12:02:23PM

16 calls for a legal conclusion, vague and ambiguous. 12:02:24PM

17 THE WITNESS: I meant that the standards 12:02:27PM

18 bodies were very aggressive in claiming copyright 12:02:29PM

19 on those documents. 12:02:33PM

20 BY MR. FEE: 12:02:34PM

21 Q So you understood that they were copyright 12:02:34PM

22 protected? 12:02:37PM

23 MR. BRIDGES: Objection. That calls for a 12:02:38PM

24 legal conclusion. 12:02:40PM

25 THE WITNESS: That's not what I said. I 12:02:42PM

1 Q So it's your understanding that the NFPA 12:09:24PM  
2 web -- NFPA website has evidence of federal 12:09:27PM  
3 government employees attempting to assign whatever 12:09:31PM  
4 copyrights they have to NFPA? 12:09:34PM  
5 MR. BRIDGES: All the same objections as 12:09:37PM  
6 to the earlier line of questions and same 12:09:38PM  
7 instruction. 12:09:43PM  
8 THE WITNESS: Yes. 12:09:43PM  
9 BY MR. FEE: 12:09:43PM  
10 Q Did you see similar information with 12:09:45PM  
11 respect to the other plaintiffs in this case? 12:09:46PM  
12 MR. BRIDGES: All the same objections, 12:09:49PM  
13 plus lacks foundation, vague and ambiguous. 12:09:50PM  
14 THE WITNESS: I actually don't recall. 12:09:53PM  
15 BY MR. FEE: 12:09:54PM  
16 Q Aside from federal government employees, 12:09:57PM  
17 are you aware of any other evidence that 12:09:58PM  
18 participants in the standard development for any of 12:10:02PM  
19 the plaintiffs failed to properly transfer their 12:10:05PM  
20 copyright interests to the plaintiffs in this case? 12:10:09PM  
21 MR. BRIDGES: All the same objections. 12:10:11PM  
22 THE WITNESS: That's totally beyond my 12:10:15PM  
23 expertise. I -- I can't answer that question. 12:10:17PM  
24 BY MR. FEE: 12:10:19PM  
25 Q Does Public Resource claim to be the owner 12:10:26PM

1 of any copyrighted interest in any of the standards 12:10:29PM  
2 at issue in this case? 12:10:32PM  
3 MR. BRIDGES: Objection, calls for a legal 12:10:34PM  
4 conclusion. 12:10:35PM  
5 THE WITNESS: No. 12:10:36PM  
6 BY MR. FEE: 12:10:37PM  
7 Q Do you personally claim to be the owner of 12:10:37PM  
8 any copyright interest for any of the standards at 12:10:39PM  
9 issue in this case? 12:10:43PM  
10 MR. BRIDGES: Same objections. 12:10:44PM  
11 THE WITNESS: No. 12:10:46PM  
12 BY MR. FEE: 12:10:46PM  
13 Q Do you acknowledge that the writing of 12:11:06PM  
14 plaintiffs' standards requires some sort of 12:11:09PM  
15 creativity to actually put words on paper? 12:11:13PM  
16 MR. BRIDGES: Objection to the extent it 12:11:17PM  
17 calls for a legal conclusion, assumes many facts 12:11:19PM  
18 not in evidence, lacks foundation, competence, 12:11:23PM  
19 calls for speculation and vague and ambiguous. 12:11:25PM  
20 THE WITNESS: I'm not qualified to answer 12:11:35PM  
21 that question, sir. 12:11:36PM  
22  
23 BY MR. FEE: 12:11:36PM  
24 Q Are you aware of any evidence that would 12:11:36PM  
25 suggest that any of the standards at issue in this 12:11:38PM

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1 THE WITNESS: A specific incorporation by 1:08:27PM  
2 reference for PHMSA, of the Pipeline and Hazardous 1:08:30PM  
3 Materials Safety Administration is actually Section 1:08:32PM  
4 192.7 of that section of the CFR. 1:08:37PM  
5 BY MR. FEE: 1:08:41PM  
6 Q Okay. 1:08:41PM  
7 MR. FEE: What are we on? 1:09:02PM  
8 THE REPORTER: Now we're on 38. 1:09:05PM  
9 (Exhibit 38 marked for identification.) 1:09:06PM  
10 BY MR. FEE: 1:09:07PM  
11 Q I'm going to hand you what's been marked 1:09:07PM  
12 as Exhibit 38. It's entitled, "Public Safety 1:09:10PM  
13 Standards, United States Federal Government," 1:09:12PM  
14 PRO\_166182 through 166257. 1:09:12PM  
15 MR. BRIDGES: Do you have any further 1:09:29PM  
16 questions on Exhibit 37 or -- 1:09:30PM  
17 MR. FEE: We're going to be going back to 1:09:37PM  
18 that. 1:09:41PM  
19 BY MR. FEE: 1:09:41PM  
20 Q Mr. Malamud, do you recognize what Exhibit 1:09:41PM  
21 38 is? 1:09:46PM  
22 A It appears to be our U.S. manifest for the 1:09:47PM  
23 Code of Federal Regulations. 1:09:50PM  
24 Q Can you identify a place in Exhibit 38 1:09:54PM  
25 where you identify any standard -- or identified 1:09:57PM

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1 of the specific standard. Those are the two 1:21:50PM  
2 criteria we use. 1:21:53PM  
3 THE REPORTER: 40. 1:22:12PM  
4 (Exhibit 40 marked for identification.) 11:31:26AM  
5 BY MR. FEE: 1:22:13PM  
6 Q I'm going to hand you what's been marked 1:22:14PM  
7 as Exhibit 40. It's a -- entitled, "Public Safety 1:22:15PM  
8 Codes Incorporated by Law," PRO\_166258 through -267. 1:22:18PM  
9 Mr. Malamud, is Exhibit 40 essentially the 1:22:53PM  
10 state version of Exhibit 38 that you were testifying 1:22:55PM  
11 about earlier? 1:22:57PM  
12 MR. BRIDGES: Objection, vague and 1:22:58PM  
13 ambiguous. 1:22:59PM  
14 THE WITNESS: This appears to be an older 1:23:03PM  
15 version of our -- there's no date on this. When 1:23:04PM  
16 was this screen dump taken? 1:23:13PM  
17 BY MR. FEE: 1:23:16PM  
18 Q Your -- you produced this document. Do 1:23:16PM  
19 you see the Bates label? 1:23:17PM  
20 A Okay. Yeah, this -- this says, "Public 1:23:20PM  
21 Safety Codes Incorporated by Law" and by States 1:23:22PM  
22 and -- and one city. 1:23:27PM  
23 Q Do you believe Exhibit 40 to be an old 1:23:29PM  
24 version of this document? 1:23:31PM  
25 MR. BRIDGES: Objection, vague and 1:23:33PM



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1 of the standards that were posted on Public 1:27:37PM  
2 Resource's website as a result of an incorporation 1:27:39PM  
3 by reference by a nonfederal government entity? 1:27:42PM  
4 A I think so. 1:27:49PM  
5 MR. FEE: We've been going about an hour 1:28:58PM  
6 again. Do you want to take a lunch break now? 1:29:00PM  
7 MR. BRIDGES: If you want. 1:29:02PM  
8 MR. FEE: Why don't we do that. 1:29:04PM  
9 THE VIDEOGRAPHER: We're going off the 1:29:05PM  
10 record. The time is 1:29 p.m. 1:29:06PM  
11 (Lunch recess taken.) 10:27:40AM  
12 THE VIDEOGRAPHER: We're back on the 2:25:54PM  
13 record. The time is 2:26 p.m. 2:25:55PM  
14 BY MR. FEE: 2:25:58PM  
15 Q Mr. Malamud, before lunch we spoke a 2:25:59PM  
16 little bit about the process that you went through 2:26:02PM  
17 in purchasing and making copies of the 73 standards. 2:26:05PM  
18 I -- I want to talk to you now about the process you 2:26:09PM  
19 used to make electronic copies of some of the 2:26:12PM  
20 standards going forward. 2:26:16PM  
21 Can you describe briefly what process you 2:26:19PM  
22 go through to post the standards at issue on your 2:26:21PM  
23 website? 2:26:26PM  
24 A Step one is to determine whether a 2:26:31PM  
25 standard has been explicitly incorporated by 2:26:33PM

1 reference. Step two is to get a copy of the 2:26:38PM  
2 standard and scan it. Step three is to append a 2:26:43PM  
3 cover sheet. And then Step four is to transfer it 2:26:55PM  
4 onto the htdocs segment of our web server, which is 2:27:01PM  
5 where documents live. 2:27:05PM  
6 Q And once the document is on your htdocs 2:27:11PM  
7 web server, is it generally accessible to the 2:27:14PM  
8 public? 2:27:25PM  
9 A Yes. 2:27:25PM  
10 Q Now, for the standards that are posted on 2:27:25PM  
11 your website, did you always purchase paper copies 2:27:29PM  
12 of those standards and then scan them, or did you 2:27:32PM  
13 buy electronic copies at times? 2:27:36PM  
14 A For the standards at issue they're all 2:27:39PM  
15 paper copies. 2:27:43PM  
16 Q Did you purchase any of the paper copies 2:27:45PM  
17 of the standards at issue directly from one of the 2:27:47PM  
18 plaintiffs? 2:27:50PM  
19 MR. BRIDGES: Objection, asked and 2:27:51PM  
20 answered. 2:27:51PM  
21 THE WITNESS: We -- we already went over 2:27:52PM  
22 that, I believe, on NFPA and ASTM for -- 2:27:53PM  
23 BY MR. FEE: 2:27:57PM  
24 Q And that was with respect to standards 2:27:58PM  
25 that are on the Public Resource website? You did 2:28:01PM

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1 purchase directly from NFPA and ASTM? 2:28:05PM  
2 MR. BRIDGES: Same objection. 2:28:13PM  
3 THE WITNESS: Yes. 2:28:13PM  
4 BY MR. FEE: 2:28:14PM  
5 Q And, to the best of your recollection, you 2:28:14PM  
6 never purchased electronic copies of any of the 2:28:16PM  
7 standards at issue; is that right? 2:28:19PM  
8 A That is correct. 2:28:23PM  
9 Q Now, how did you determine whether or -- 2:28:23PM  
10 strike that. 2:28:34PM  
11 Once you obtained a paper copy of the 2:28:41PM  
12 standard, who scanned that paper copy? 2:28:44PM  
13 A I did. 2:28:48PM  
14 Q And that's true for all the standards at 2:28:49PM  
15 issue in this case? 2:28:55PM  
16 A Yes. 2:28:56PM  
17 Q In what file format was the output from 2:28:56PM  
18 your scan? 2:29:00PM  
19 MR. BRIDGES: Objection, vague, ambiguous. 2:29:03PM  
20 THE WITNESS: PDF. 2:29:06PM  
21 BY MR. FEE: 2:29:07PM  
22 Q Did you post a PDF copy of every of the 2:29:14PM  
23 standards at issue in this case on the Public 2:29:18PM  
24 Resource website? 2:29:21PM  
25 MR. BRIDGES: Objection, vague and 2:29:23PM

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1 ambiguous. 2:29:24PM

2 THE WITNESS: Each of the standards at 2:29:28PM

3 issue were posted on our website. 2:29:29PM

4 BY MR. FEE: 2:29:32PM

5 Q In PDF format? 2:29:33PM

6 A In PDF format. 2:29:34PM

7 Q Now, is it true that you also posted at 2:29:36PM

8 least a subset of the standards at issue in a file 2:29:39PM

9 format other than PDF? 2:29:42PM

10 A Yes. 2:29:43PM

11 Q How did you go about taking the PDF file 2:29:48PM

12 format and wind up with some other file format? 2:29:52PM

13 A Sent it to our contractor, HTC, which 2:29:55PM

14 double-keyed the standards into HTML. 2:30:01PM

15 THE WITNESS: We're going to be doing a 2:30:11PM

16 lots of acronyms, so let me know. 2:30:12PM

17 THE REPORTER: Okay. Slow it down. 2:30:13PM

18 BY MR. FEE: 2:30:16PM

19 Q Are there any other steps that were 2:30:21PM

20 implemented to take the PDF file format and arrive 2:30:23PM

21 at some other file format that was posted on the 2:30:27PM

22 Public Resource website? 2:30:29PM

23 MR. BRIDGES: Objection, vague and 2:30:31PM

24 ambiguous. 2:30:31PM

25 THE WITNESS: Well, the second step of the 2:30:33PM

1 workflow is the double-key operation, um, and 2:30:35PM  
2 that's the conversion into an HTML file with JPG 2:30:36PM  
3 images, J -- J-P-G. 2:30:39PM  
4 BY MR. FEE: 2:30:42PM  
5 Q Who did the conversion of the HTM -- HTML 2:31:00PM  
6 file into JPG? 2:31:03PM  
7 A HTC did. 2:31:07PM  
8 THE REPORTER: HTC? 2:31:09PM  
9 THE WITNESS: HTC. 2:31:09PM  
10 BY MR. FEE: 2:31:09PM  
11 Q What would happen after the file was 2:31:16PM  
12 converted into a JPG format and before it was posted 2:31:19PM  
13 on the Public Resource website? 2:31:22PM  
14 A I'm not sure I understand that question. 2:31:29PM  
15 Q Okay. Right. Isn't it the case that at 2:31:34PM  
16 least with some of the standards at issue you posted 2:31:37PM  
17 file formats that included SVG and/or MathML 2:31:40PM  
18 elements? 2:31:43PM  
19 A That would be the third step of the 2:31:46PM  
20 workflow after the HTML JPG step. 2:31:48PM  
21 Q Okay. That's what I was trying to get at. 2:31:53PM  
22 Who did that work? 2:31:54PM  
23 A Point.B Studio. 2:31:55PM  
24 Q And Point.B Studio is run by your wife, 2:32:03PM  
25 Rebecca Malamud, correct? 2:32:07PM

1 understanding, yes. 2:33:30PM

2 BY MR. FEE: 2:33:31PM

3 Q Do you have any more detailed knowledge 2:33:32PM

4 regarding the process used that were used by your 2:33:34PM

5 contractors other than what you've already described 2:33:37PM

6 to me? 2:33:39PM

7 MR. BRIDGES: Objection, argumentative, 2:33:40PM

8 vague and ambiguous. 2:33:40PM

9 THE WITNESS: Yeah, I have a vague and 2:33:42PM

10 overall understanding of the process they went 2:33:44PM

11 through. 2:33:46PM

12 BY MR. FEE: 2:33:47PM

13 Q Okay. Well, let's start with HTC, then. 2:33:47PM

14 First of all, I want to make sure I understand. You 2:33:49PM

15 delivered to HTC PDFs of the standards at issue in 2:33:53PM

16 this case, correct? 2:33:58PM

17 A That's correct. 2:33:59PM

18 Q After HTC received the PDF files, what is 2:34:00PM

19 your understanding as to the next step that was done 2:34:06PM

20 by HTC Global? 2:34:08PM

21 A The next -- 2:34:10PM

22 MR. BRIDGES: Objection, vague and 2:34:12PM

23 ambiguous. 2:34:13PM

24 Sorry. 2:34:14PM

25 THE WITNESS: Next step is to take each of 2:34:15PM

1 the images inside of the document and save them as 2:34:17PM  
2 a separate JPG file with a very specific 2:34:21PM  
3 file-naming convention which I gave them. 2:34:25PM  
4 BY MR. FEE: 2:34:27PM  
5 Q What happens next at HTC, to the best of 2:34:29PM  
6 your knowledge? 2:34:32PM  
7 A They then go through the double-key 2:34:33PM  
8 process with the text. 2:34:35PM  
9 Q What is the double-key process? 2:34:40PM  
10 A In the double-key process, two individuals 2:34:41PM  
11 or two teams of individuals independently type in 2:34:45PM  
12 the document and then the two versions are compared 2:34:50PM  
13 to find any errors. 2:34:55PM  
14 Q Is it your understanding as of today that 2:35:13PM  
15 HTC Global engaged in a double-key process for the 2:35:15PM  
16 standards at issue? 2:35:19PM  
17 A Yes. 2:35:23PM  
18 Q You don't believe that HTC was using OCR 2:35:40PM  
19 software to deliver the HTML that was provided to 2:35:46PM  
20 you? 2:35:52PM  
21 MR. BRIDGES: Objection, lacks foundation, 2:35:52PM  
22 vague and ambiguous, argumentative. 2:35:53PM  
23 THE WITNESS: I -- I don't believe they 2:35:56PM  
24 were. 2:35:57PM  
25 BY MR. FEE: 2:35:59PM

1 BY MR. FEE: 2:37:26PM

2 Q Did you consider using a triple-key 2:37:27PM

3 process with HTC Global? 2:37:29PM

4 MR. BRIDGES: Objection, vague and 2:37:32PM

5 ambiguous. 2:37:33PM

6 THE WITNESS: I asked HTC for a quote for 2:37:34PM

7 triple-key. 2:37:37PM

8 BY MR. FEE: 2:37:38PM

9 Q Did HTC provide a quote for triple-key? 2:37:39PM

10 A They did. 2:37:44PM

11 Q I'm going to hand you -- I'm going to hand 2:37:47PM

12 you what's previously been marked as Exhibit 2. 2:37:54PM

13 It's an e-mail to you from Hemant Talwalkar, 2:37:58PM

14 Bates-label PRO\_4964. 2:38:01PM

15 MR. BRIDGES: I'm sorry. Can you read 2:38:29PM

16 back his statement? 2:38:29PM

17 (The reporter read the record 2:38:30PM

18 as requested.) 2:38:30PM

19 MR. BRIDGES: I'm sorry.

20 THE REPORTER: Sure.

21 BY MR. FEE: 2:38:31PM

22 Q First of all, do you recognize Exhibit 2 2:38:31PM

23 as an e-mail between you and Hemant Talwalkar? 2:38:32PM

24 A It appears to be a message from Hemant to 2:38:40PM

25 me. 2:38:42PM



1 Q Is this the price quote that you were 2:38:43PM  
2 referencing? 2:38:45PM  
3 A It is, yes. 2:38:49PM  
4 Q In the chart that has the price quote, do 2:38:50PM  
5 you see that there's a column there that says, 2:38:53PM  
6 "accuracy"? 2:38:56PM  
7 A Yes. 2:38:59PM  
8 Q And for double-key compare, it has an 2:39:00PM  
9 accuracy of 99.51 percent. Do you see that? 2:39:05PM  
10 A I do. 2:39:11PM  
11 MR. BRIDGES: Objection. 2:39:11PM  
12 THE WITNESS: I'm sorry. 2:39:13PM  
13 BY MR. FEE: 2:39:16PM  
14 Q Do you have an understanding as to what 2:39:17PM  
15 that means? 2:39:18PM  
16 MR. BRIDGES: Objection, lack of 2:39:21PM  
17 competence, may call for speculation, vague and 2:39:24PM  
18 ambiguous. 2:39:26PM  
19 THE WITNESS: That is the error tolerance 2:39:28PM  
20 for the double-key versus the triple-key process. 2:39:30PM  
21 BY MR. FEE: 2:39:38PM  
22 Q Is it your understanding that the e-mail 2:39:38PM  
23 from -- Mr. Talwalkar, first of all, he's from HTC 2:39:43PM  
24 Global, right? 2:39:45PM  
25 A Yes. 2:39:47PM

1 Q Okay. So does his e-mail to you 2:39:47PM  
2 indicating the double-key compare has an accuracy of 2:39:51PM  
3 99.51 percent mean that there are up to 0.49 percent 2:39:54PM  
4 inaccurate results from double-keying? 2:40:02PM  
5 MR. BRIDGES: Objection, lacks foundation, 2:40:05PM  
6 assumes facts not in evidence, argumentative, vague 2:40:06PM  
7 and ambiguous. 2:40:09PM  
8 THE WITNESS: It's -- it's the error 2:40:11PM  
9 tolerance, are -- there are no more than that many 2:40:13PM  
10 errors. 2:40:16PM  
11 BY MR. FEE: 2:40:17PM  
12 Q You understood that double-key compare 2:40:17PM  
13 would lead to some inaccuracies, right? 2:40:20PM  
14 MR. BRIDGES: Objection, lacks foundation. 2:40:24PM  
15 THE WITNESS: Not necessarily. It depends 2:40:25PM  
16 on the subject matter of -- of the source material. 2:40:27PM  
17 BY MR. FEE: 2:40:29PM  
18 Q Did you have any reason to believe that 2:40:30PM  
19 the standards at issue if double-keyed would lead to 2:40:31PM  
20 100 percent accuracy? 2:40:34PM  
21 MR. BRIDGES: Objection, argumentative, 2:40:37PM  
22 lacks foundation, vague and ambiguous. 2:40:38PM  
23 THE WITNESS: I -- I believe that -- that 2:40:45PM  
24 there would be a -- a maximum error tolerance of -- 2:40:45PM  
25 of 99.51 minus 100. 2:40:57PM

1 BY MR. FEE: 2:41:01PM

2 Q Was it your understanding that this error 2:41:02PM

3 tolerance -- or strike that -- accuracy, I should 2:41:02PM

4 say, rate was based upon a sampling of the materials 2:41:04PM

5 that you were asking HTC Global to double-key? 2:41:08PM

6 MR. BRIDGES: Objection, lacks foundation, 2:41:13PM

7 assumes facts not in evidence, argumentative, vague 2:41:14PM

8 and ambiguous. 2:41:20PM

9 THE WITNESS: 99.51 percent is, I believe, 2:41:23PM

10 the industry standard for a double-key compare. 2:41:25PM

11 BY MR. FEE: 2:41:29PM

12 Q And HTC Global also provided you with a -- 2:41:33PM

13 a price quote for triple-key compare, correct? 2:41:36PM

14 A That's correct. 2:41:41PM

15 Q And the accuracy rate for triple-key 2:41:42PM

16 compare is greater than the double-key compare, 2:41:49PM

17 right? 2:41:52PM

18 MR. BRIDGES: Objection, hypotheticals, 2:41:53PM

19 lacks foundation, assumes facts not in evidence, 2:41:54PM

20 argumentative, vague and ambiguous. 2:41:55PM

21 THE WITNESS: The maximum error tolerance 2:41:57PM

22 is less for triple-key than it is for double-key. 2:42:00PM

23 BY MR. FEE: 2:42:04PM

24 Q And triple-keying is more expensive than 2:42:05PM

25 double-keying, correct? 2:42:07PM

1 MR. BRIDGES: Objection, lacks foundation, 2:42:09PM  
2 vague and ambiguous. 2:42:09PM  
3 THE WITNESS: On this quote it is. 2:42:11PM  
4 BY MR. FEE: 2:42:15PM  
5 Q And is it correct that after receiving 2:42:16PM  
6 this quote, Public Resource elected to use 2:42:19PM  
7 double-key compare instead of triple-key compare? 2:42:24PM  
8 A Yes. 2:42:30PM  
9 Q Why did it make that decision? 2:42:31PM  
10 A Again, based on my research on standard 2:42:36PM  
11 industry practices, double-key is what's used in the 2:42:39PM  
12 legal industry. 2:42:42PM  
13 Q You understood that double-keying would be 2:42:49PM  
14 less accurate than triple-keying in this 2:42:51PM  
15 circumstance, right? 2:42:56PM  
16 MR. BRIDGES: Objection, misstates 2:42:57PM  
17 testimony, lacks foundation, argumentative and 2:42:58PM  
18 assumes facts not in evidence. 2:43:02PM  
19 THE WITNESS: Again, I think you 2:43:05PM  
20 misstated. It's the maximum error tolerance is 2:43:06PM  
21 less on triple-key than on double-key. 2:43:11PM  
22  
23 BY MR. FEE: 2:43:13PM  
24 Q Is it true that Public Resource was 2:43:15PM  
25 willing to live with a higher error tolerance in 2:43:15PM

1 order to save money on HTC Global's services? 2:43:21PM

2 MR. BRIDGES: Objection, lacks foundation, 2:43:24PM

3 argumentative, vague and ambiguous. 2:43:25PM

4 THE WITNESS: Double-key seemed to be 2:43:31PM

5 perfectly appropriate for the task at hand. 2:43:33PM

6 BY MR. FEE: 2:43:37PM

7 Q So public Resource was willing to accept 2:43:37PM

8 the higher error tolerance associated with 2:43:40PM

9 double-keying -- 2:43:43PM

10 MR. BRIDGES: Objection -- 2:43:44PM

11 BY MR. FEE: 2:43:44PM

12 Q -- right? 2:43:44PM

13 MR. BRIDGES: Objection, misstates 2:43:44PM

14 testimony, lacks foundation, vague and ambiguous 2:43:45PM

15 and argumentative. 2:43:47PM

16 THE WITNESS: It's potentially higher 2:43:48PM

17 error tolerance under the double-key method. 2:43:48PM

18 BY MR. FEE: 2:43:52PM

19 Q Well, your supplier told you that it was 2:43:53PM

20 going to be a higher error tolerance, right? 2:43:54PM

21 MR. BRIDGES: Objection, lacks foundation, 2:43:57PM

22 vague and ambiguous. 2:43:58PM

23 THE WITNESS: Again, it depends on the 2:44:00PM

24 nature of the source material. But, yes, the -- 2:44:01PM

25 the -- the error tolerance of double-key is, in 2:44:02PM

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1 fact, 99.51 percent, which is what HTC quoted. 2:44:06PM  
2 BY MR. FEE: 2:44:13PM  
3 Q At any point in time did you suggest to 2:44:30PM  
4 any person working with Public Resource that HTC may 2:44:35PM  
5 not be double-keying the standards that you had 2:44:39PM  
6 provided to it? 2:44:42PM  
7 MR. BRIDGES: Objection, lacks foundation, 2:44:45PM  
8 vague and ambiguous. 2:44:47PM  
9 THE WITNESS: I don't recall. 2:44:50PM  
10 BY MR. FEE: 2:44:52PM  
11 Q Have you ever suggested to Rebecca Malamud 2:45:35PM  
12 that HTC Global may have been cheating and doing OCR 2:45:38PM  
13 in connection with some of the work it was doing for 2:45:43PM  
14 Public Resource? 2:45:46PM  
15 MR. BRIDGES: Objection, vague and 2:45:47PM  
16 ambiguous. 2:45:47PM  
17 THE WITNESS: No, I don't recall. If you 2:45:48PM  
18 have a specific message, I'd be very happy to look 2:45:48PM  
19 at it. 2:45:52PM  
20 BY MR. FEE: 2:45:52PM  
21 Q I'm going to hand you what's been marked 2:45:53PM  
22 as Exhibit 21. It's a e-mail chain between 2:45:54PM  
23 Mr. Malamud and Mrs. Malamud, Bates-labeled 2:45:58PM  
24 PRO\_42289 through -91. 2:46:02PM  
25 THE REPORTER: Kevin, you said that was 2:46:21PM

1 previously marked, right -- 2:46:23PM  
2 MR. FEE: Yes. 2:46:25PM  
3 THE REPORTER: -- as 21? Thanks. 2:46:26PM  
4 THE WITNESS: This seems like e-mail 2:46:48PM  
5 between me and Rebecca. 2:46:50PM  
6 BY MR. FEE: 2:46:55PM  
7 Q I want to draw your attention to the 2:46:56PM  
8 fourth paragraph of this e-mail chain, fourth from 2:46:57PM  
9 the top of the first page. First of all, that 2:47:00PM  
10 portion of the e-mail is a e-mail written by you to 2:47:04PM  
11 Ms. Malamud, correct? 2:47:06PM  
12 A That's correct. 2:47:10PM  
13 Q And do you see the fourth paragraph it 2:47:10PM  
14 says, "All the docs you see are in theory 2:47:13PM  
15 double-keyed. Of course, they may cheat and do OCR 2:47:15PM  
16 first and then do their QA." 2:47:21PM  
17 Do you recall having that communication 2:47:23PM  
18 with Ms. Malamud? 2:47:26PM  
19 A Yes. I just told you that this appears to 2:47:28PM  
20 be e-mail between me and Rebecca. 2:47:31PM  
21 Q Did you have reason to believe that HTC 2:47:34PM  
22 Global may have been -- may have been cheating and 2:47:36PM  
23 not double-keying the work they were doing for you? 2:47:40PM  
24 A No. 2:47:42PM  
25 Q Why did you say that, then? 2:47:44PM

1 Q My math is wrong. You can go ahead and 3:02:20PM  
2 say it. 3:02:22PM  
3 It's about 175,000 kilo-characters? 3:02:23PM  
4 A \$350,000 -- 3:02:27PM  
5 MR. BRIDGES: The math will speak for 3:02:28PM  
6 itself. 3:02:29PM  
7 THE WITNESS: Yeah, it's 700,000 3:02:31PM  
8 kilo-characters, right? 3:02:34PM  
9 BY MR. FEE: 3:02:35PM  
10 Q Oh, you're right. It's double. I'm not 3:02:36PM  
11 doing math today. 3:02:36PM  
12 Do you know how many page -- 3:02:39PM  
13 kilo-characters there are on an average page in a 3:02:41PM  
14 standard? 3:02:43PM  
15 MR. BRIDGES: Objection, lacks foundation, 3:02:47PM  
16 vague and ambiguous. 3:02:47PM  
17 THE WITNESS: I knew that at one point. 3:02:49PM  
18 It's not on -- off the top of my head. 3:02:50PM  
19 BY MR. FEE: 3:02:52PM  
20 Q So, Mr. Malamud, we were talking about the 3:05:23PM  
21 process by which you took paper versions and they 3:05:24PM  
22 wound up being posted on your website. And we've 3:05:28PM  
23 now talked a lot about the double-keying that was 3:05:33PM  
24 done by HTC Global. After you received the results 3:05:36PM  
25 or the end work from HTC Global, what happened next 3:05:40PM



1 in the process at Public Resource? 3:05:44PM

2 A Performed quality assurance, validated the 3:05:49PM

3 HTML, made sure that all the JPG images were there, 3:05:55PM

4 so did a link validity check, and then pushed them 3:06:00PM

5 to our web server. 3:06:09PM

6 Q And that would complete the process with 3:06:13PM

7 respect to standards that are posted in HTML format, 3:06:15PM

8 right? 3:06:18PM

9 A That's a good high-level overview of the 3:06:19PM

10 work flow, yes. 3:06:22PM

11 Q Now, you had also mentioned that there 3:06:23PM

12 were some standards for which Point.B Studios did 3:06:25PM

13 some additional work; is that right? 3:06:31PM

14 A That's correct. 3:06:32PM

15 Q Okay. First of all, how would you go 3:06:32PM

16 about identifying which standards you would had ask 3:06:35PM

17 Point.B Studios to do work on? 3:06:38PM

18 A Based on my personal judgment of what 3:06:42PM

19 were -- were compelling standards that deserved that 3:06:44PM

20 next level of the workflow, given our limited 3:06:47PM

21 budget. 3:06:50PM

22 Q Once you identified an appropriate 3:06:51PM

23 standard for Point.B Studios to work upon, what 3:06:53PM

24 happened next? 3:06:57PM

25 A The job was very specific: take the HTML 3:06:59PM

1 file and the JPG images, convert the JPG images 3:07:02PM  
2 exactly into SVG -- SVG, silicon vector graphics or 3:07:06PM  
3 whatever that is -- and MathML, which is a language 3:07:09PM  
4 for typesetting mathematical formulas. 3:07:20PM  
5 Q Prior to the first time you retained 3:07:33PM  
6 Point.B Studios to do this work on converting JPG 3:07:39PM  
7 images, what experience or expertise were you aware 3:07:41PM  
8 of that Point.B Studios had with respect to that 3:07:46PM  
9 type of activity? 3:07:49PM  
10 A Rebecca Malamud is a expert on SVG graphic 3:07:56PM  
11 design, use of graphic processing tools. 3:08:00PM  
12 Q Had -- to the best of your knowledge, had 3:08:05PM  
13 Point.B Studios ever done a project similar to what 3:08:12PM  
14 you had asked Point.B Studios to do for Public 3:08:15PM  
15 Resource? 3:08:18PM  
16 MR. BRIDGES: Objection, competence, vague 3:08:19PM  
17 and ambiguous. 3:08:22PM  
18 THE WITNESS: I know they had worked 3:08:26PM  
19 extensively with SVG and with the -- the tools used 3:08:27PM  
20 to process SVG. 3:08:31PM  
21 BY MR. FEE: 3:08:33PM  
22 Q Would that include taking JPG file formats 3:08:34PM  
23 and converting them into SVG file formats? 3:08:39PM  
24 MR. BRIDGES: Same objections. 3:08:44PM  
25 THE WITNESS: I'm not aware of anyone 3:08:44PM

1 speculation. 3:11:03PM

2 THE WITNESS: No, I don't. 3:11:04PM

3 BY MR. FEE: 3:11:05PM

4 Q Do you know if children did that work? 3:11:05PM

5 MR. BRIDGES: Objection, argumentative, 3:11:08PM

6 lacks foundation. 3:11:08PM

7 THE WITNESS: I know Rebecca ran a 3:11:12PM

8 mentoring program teaching people graphic design 3:11:13PM

9 skills. 3:11:17PM

10 MR. BRIDGES: Please answer his question. 3:11:18PM

11 THE WITNESS: Okay. I'm sorry. Please 3:11:20PM

12 repeat the question. 3:11:21PM

13 BY MR. FEE: 3:11:22PM

14 Q My question is if you were aware of 3:11:22PM

15 whether or not children were doing the conversion 3:11:25PM

16 from JPG to MathML or SVG. 3:11:28PM

17 MR. BRIDGES: Objection, argumentative, 3:11:32PM

18 lacks foundation, vague and ambiguous. 3:11:33PM

19 THE WITNESS: Children. I'm sorry. Is -- 3:11:35PM

20 do you have a particular age limit in mind or -- 3:11:37PM

21 BY MR. FEE: 3:11:41PM

22 Q Why don't we start with under 18. 3:11:41PM

23 A Yes, I believe some students were 3:11:46PM

24 involved. 3:11:48PM

25 Q Do you know which students were involved? 3:11:52PM

1	A	No.	3:11:58PM
2	Q	Was -- were these students involved	3:11:58PM
3		through something called Rural Design Collection	3:12:02PM
4		(sic)?	3:12:03PM
5	A	That's correct.	3:12:06PM
6	Q	And are you aware of whether or not Rural	3:12:07PM
7		Design Collective says that its target group is	3:12:11PM
8		children ages 7 to 14?	3:12:16PM
9	A	If that's what it says on their website.	3:12:20PM
10		I -- I just don't recall.	3:12:23PM
11	Q	Would it be your expectation that there	3:12:27PM
12		are children ages 7 to 14 doing the conversion of	3:12:29PM
13		the JPG file format images to MathML and SVG on --	3:12:33PM
14		for Public Resource?	3:12:40PM
15		MR. BRIDGES: Objection, lacks foundation,	3:12:44PM
16		vague and ambiguous.	3:12:45PM
17		THE WITNESS: I would be speculating, but	3:12:46PM
18		that sounds awfully advanced for a 7-year-old.	3:12:48PM
19		BY MR. FEE:	3:12:52PM
20	Q	Do you have any understanding as to the	3:12:53PM
21		age range of the kids who are working on a	3:12:54PM
22		conversion process for Point.B Studios' project for	3:12:58PM
23		Public Resource?	3:13:02PM
24		MR. BRIDGES: Objection, lacks foundation,	3:13:04PM
25		may call for speculation, vague and ambiguous,	3:13:04PM

1 argumentative. 3:13:11PM

2 THE WITNESS: My sole point of contact was 3:13:13PM

3 Rebecca, and the job was very simple: JPG in, SVG 3:13:14PM

4 and MathML back out. And that was my concern. 3:13:19PM

5 BY MR. FEE: 3:13:22PM

6 Q Did you at least understand that a group 3:13:50PM

7 of students from RDC, Rural Design Collective, were 3:13:52PM

8 doing the converting of the formulas and graphics on 3:13:57PM

9 the standards that you asked them to work on? 3:14:00PM

10 Strike that. 3:14:04PM

11 Do you at least understand that a group of 3:14:05PM

12 students from Rural Design Collective were doing the 3:14:07PM

13 conversion of formulas and graphics for the 3:14:13PM

14 standards work that you had asked Point.B Studios to 3:14:16PM

15 do for Public Resource? 3:14:23PM

16 MR. BRIDGES: Objection, lacks foundation, 3:14:25PM

17 argumentative, vague and ambiguous. 3:14:25PM

18 THE WITNESS: They did a lot more than 3:14:26PM

19 standards, the California Code of Regulations, for 3:14:27PM

20 example, the graphics images in there which are not 3:14:28PM

21 standards. 3:14:31PM

22

23 BY MR. FEE: 3:14:32PM

24 Q But you understood that children at Rural 3:14:32PM

25 Design Collective were working on the conversion of 3:14:34PM

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1 the standards that you posted on your website? 3:14:37PM

2 MR. BRIDGES: Same objections. 3:14:41PM

3 THE WITNESS: I know that students were 3:14:42PM

4 working on a conversion of JPG images into SVG and 3:14:46PM

5 MathML. I don't know which specific items anybody 3:14:51PM

6 worked on. 3:14:55PM

7 BY MR. FEE: 3:14:56PM

8 Q And you know that those kids were working 3:14:56PM

9 on that -- a conversion for work that was requested 3:14:58PM

10 by Public Resource? 3:15:00PM

11 MR. BRIDGES: Same objections. 3:15:03PM

12 THE WITNESS: Yes. 3:15:07PM

13 BY MR. FEE: 3:15:08PM

14 Q Were those kids paid? 3:15:11PM

15 MR. BRIDGES: Objection, competence, may 3:15:14PM

16 call for speculation. 3:15:16PM

17 THE WITNESS: I really don't know. 3:15:18PM

18 BY MR. FEE: 3:15:27PM

19 Q Did Public Resource provide any funds to 3:15:27PM

20 Point.B Studios for this student program? 3:15:31PM

21 MR. BRIDGES: Objection, lacks foundation, 3:15:36PM

22 argumentative, vague and ambiguous. 3:15:37PM

23 THE WITNESS: Yes. Several summers in a 3:15:41PM

24 row I added extra money to the monthly fee that we 3:15:43PM

25 paid to Point.B with the understanding that it 3:15:46PM

1 optimized for viewing on the web in multiple 3:18:42PM  
2 platforms, all right, so there's a -- and then the 3:18:47PM  
3 third item is an SVG source directory, which 3:18:49PM  
4 included the core work files in MathML and the fully 3:18:54PM  
5 editable SVG graphics. 3:19:00PM  
6 Q What would you do with all those files? 3:19:04PM  
7 MR. BRIDGES: Objection, vague and 3:19:10PM  
8 ambiguous. 3:19:11PM  
9 THE WITNESS: A series of quality 3:19:11PM  
10 assurance checks, link validity, HTML validity, a 3:19:12PM  
11 comparison of at least some of the JPGs to the 3:19:18PM  
12 SVGs, a quality assurance step. 3:19:23PM  
13 BY MR. FEE: 3:19:27PM  
14 Q Did anything else happen after that and 3:19:28PM  
15 before the files were posted to the web? 3:19:30PM  
16 MR. BRIDGES: Objection, vague and 3:19:33PM  
17 ambiguous. 3:19:34PM  
18 THE WITNESS: Once I was satisfied that 3:19:36PM  
19 the work was properly done, then we posted it 3:19:37PM  
20 online. 3:19:40PM  
21 BY MR. FEE: 3:19:42PM  
22 Q Now, for all the files that you posted 3:19:43PM  
23 online, where did you post these files? 3:19:45PM  
24 A On -- 3:19:51PM  
25 MR. BRIDGES: Objection, lacks foundation 3:19:52PM

1 and vague and ambiguous. 3:19:53PM

2 THE WITNESS: On Law.Resource.Org. 3:19:56PM

3 BY MR. FEE: 3:19:59PM

4 Q Did you also post some version of 3:20:01PM

5 plaintiffs' standards on Internet Archive at or 3:20:06PM

6 around the same time as you posted them on the 3:20:10PM

7 Public Resource website? 3:20:12PM

8 MR. BRIDGES: Objection, argumentative, 3:20:15PM

9 lacks foundation, vague and ambiguous. 3:20:17PM

10 THE WITNESS: Are we still talking about 3:20:19PM

11 SVG and HTML files? 3:20:20PM

12 BY MR. FEE: 3:20:23PM

13 Q No. I'm asking a more general question 3:20:23PM

14 now. I -- maybe I should take a step back. 3:20:25PM

15 Have you completed the story as to how the 3:20:27PM

16 files received from Point.B Studios go from Point.B 3:20:30PM

17 Studios to Public Resource to being posted for the 3:20:33PM

18 public to view on the web. 3:20:38PM

19 MR. BRIDGES: Objection, calling for a 3:20:40PM

20 narrative, vague and ambiguous, argumentative, 3:20:40PM

21 lacks foundation. 3:20:43PM

22 THE WITNESS: That was a high-level 3:20:44PM

23 overview of the workflow. 3:20:45PM

24 BY MR. FEE: 3:20:46PM

25 Q So at or around the time that any of the 3:20:47PM



1 standards, either in PDF form or HTML with SVG or 3:20:52PM  
2 MathML, are posted on a Public Resource website, 3:20:56PM  
3 would Public Resource also post some version of that 3:20:59PM  
4 standard on the Internet Archive? 3:21:03PM  
5 MR. BRIDGES: Objection, hypothetical, 3:21:06PM  
6 lacks foundation, vague and ambiguous. 3:21:07PM  
7 THE WITNESS: Some of the PDF documents 3:21:10PM  
8 were added to my Internet Archive collection. 3:21:13PM  
9 BY MR. FEE: 3:21:19PM  
10 Q How do you decide which of the PDF 3:21:24PM  
11 documents containing standards were on your Internet 3:21:27PM  
12 Archive collection? 3:21:30PM  
13 MR. BRIDGES: Objection, vague and 3:21:34PM  
14 ambiguous. 3:21:34PM  
15 THE WITNESS: I tried to get most of the 3:21:35PM  
16 ones that were PDF files that were standards 3:21:37PM  
17 incorporated by reference into that -- that 3:21:40PM  
18 collection. 3:21:42PM  
19 BY MR. FEE: 3:21:42PM  
20 Q Why did you only post PDF versions of the 3:21:43PM  
21 standards to the Internet Archive? 3:21:47PM  
22 MR. BRIDGES: Objection, argumentative, 3:21:49PM  
23 lacks foundation. 3:21:50PM  
24 THE WITNESS: The Internet Archive doesn't 3:21:51PM  
25 have an HTML viewing capability. 3:21:53PM

1	(Recess taken.)	10:27:40AM
2	THE VIDEOGRAPHER: We're back on the	3:48:01PM
3	record. The time is 3:48 p.m. This marks the	3:48:02PM
4	beginning of Disc No. 3 in the deposition of Carl	3:48:07PM
5	Malamud.	3:48:09PM
6	BY MR. FEE:	3:48:10PM
7	Q Mr. Malamud, before you posted any copies	3:48:14PM
8	of the plaintiffs' standards at issue on the Public	3:48:19PM
9	Resource website, did you obtain the consent of any	3:48:23PM
10	of the plaintiffs?	3:48:27PM
11	MR. BRIDGES: Objection, argumentative.	3:48:28PM
12	THE WITNESS: No.	3:48:32PM
13	BY MR. FEE:	3:48:32PM
14	Q Did you attempt to get the consent of any	3:48:33PM
15	of the plaintiffs?	3:48:36PM
16	MR. BRIDGES: Same objections,	3:48:38PM
17	argumentative, vague and ambiguous.	3:48:38PM
18	THE WITNESS: I talked to at least one of	3:48:40PM
19	the plaintiffs, NFPA.	3:48:43PM
20	BY MR. FEE:	3:48:45PM
21	Q Did you ask for NFPA's permission to post	3:48:45PM
22	the standards on the website?	3:48:48PM
23	MR. BRIDGES: Objection, argumentative.	3:48:51PM
24	THE WITNESS: We discussed broader	3:48:52PM
25	availability of standards and the issues that were	3:48:54PM

1 involved. 3:48:56PM

2 BY MR. FEE: 3:48:57PM

3 Q But you don't contend that NFPA consented 3:48:57PM

4 to your posting of the standards on your website, 3:48:59PM

5 correct? 3:49:04PM

6 MR. BRIDGES: Objection. To the extent it 3:49:05PM

7 calls for a legal conclusion or position in this 3:49:06PM

8 lawsuit, that's going to be attorney -- that's 3:49:08PM

9 going to be legal opinion and attorney-client 3:49:10PM

10 privileged and attorney work product. If you want 3:49:15PM

11 to ask what Public Resource's public statements 3:49:18PM

12 have been outside the context of this litigation, 3:49:21PM

13 feel free, but I'm going to instruct him not to 3:49:24PM

14 talk about what the positions are taken by the 3:49:27PM

15 counsel in the lawsuit. 3:49:30PM

16 BY MR. FEE: 3:49:31PM

17 Q You're instructing him not answer whether 3:49:32PM

18 or not NFPA granted consent to the posting of those 3:49:34PM

19 standards on Mr. Malamud's website on the grounds of 3:49:37PM

20 privilege? 3:49:41PM

21 MR. BRIDGES: I don't think that's what 3:49:41PM

22 the question -- maybe I'm wrong, but could the 3:49:41PM

23 court reporter please reread the question? 3:49:42PM

24 THE REPORTER: Okay. 3:49:45PM

25 (The reporter read the record 3:49:45PM

1 as requested.) 9:21:04AM  
2 MR. BRIDGES: Oh, okay. All right. 3:50:07PM  
3 It's -- it's argumentative and vague and ambiguous. 3:50:07PM  
4 THE WITNESS: No. 3:50:12PM  
5 MS. RUBEL: 43? 3:51:22PM  
6 THE REPORTER: 43. 3:51:23PM  
7 (Exhibit 43 marked for identification.) 3:51:24PM  
8 BY MR. FEE: 3:51:26PM  
9 Q Mr. Malamud, I'm going to hand you what's 3:51:26PM  
10 been marked as Exhibit 43. It is a spreadsheet. On 3:51:29PM  
11 the first page it has headers of downloads, 3:51:36PM  
12 identifier and title. 3:51:38PM  
13 Can you identify what Exhibit 43 is? 3:52:15PM  
14 A No. What is this document? 3:52:17PM  
15 Q This is a document that was produced in -- 3:52:19PM  
16 by your -- your counsel in connection with this 3:52:19PM  
17 case. 3:52:22PM  
18 A Okay. 3:52:22PM  
19 Q So what I -- I don't know what this is, 3:52:24PM  
20 obviously, that's why I'm asking, but in the 3:52:30PM  
21 left-hand column you see a reference to downloads. 3:52:33PM  
22 At some point in time did you try to create a 3:52:35PM  
23 spreadsheet that identified the number of downloads 3:52:39PM  
24 of various ASTM standards from your website? 3:52:41PM  
25 A You know, I don't recall this document. 3:52:44PM

1 Do you have a date? 3:52:58PM

2 Q This is the document as it was produced. 3:53:00PM

3 It's a -- it was produced as an Excel spreadsheet 3:53:02PM

4 with just this data in it, I believe. The Bates 3:53:06PM

5 label for the record is PRO\_0023265. 3:53:08PM

6 A So when I see the word "identifier," that 3:53:17PM

7 tells me that this is data obtained from the 3:53:21PM

8 Internet Archive search engine. 3:53:23PM

9 Q Did you at some point in time attempt to 3:53:29PM

10 determine how many downloads there were from the 3:53:31PM

11 Internet Archive website of standards that you had 3:53:35PM

12 posted to the Internet Archive website? 3:53:39PM

13 MR. BRIDGES: Objection, vague and 3:53:41PM

14 ambiguous. 3:53:41PM

15 THE WITNESS: Yes, I did. 3:53:43PM

16 BY MR. FEE: 3:53:48PM

17 Q Is that what defendant's exhibit -- or 3:53:48PM

18 what Exhibit 43 is? 3:53:48PM

19 MR. BRIDGES: Objection, may call for 3:53:51PM

20 speculation, competence. 3:53:52PM

21 THE WITNESS: It would require speculation 3:53:53PM

22 on my part, that's certain. Yes. 3:53:55PM

23 BY MR. FEE: 3:53:57PM

24 Q Are you able to identify how many times 3:54:59PM

25 any particular ASTM standard that you posted to the 3:55:02PM

1 Internet Archive had been downloaded by individuals 3:55:05PM  
2 at the Internet Archive website? 3:55:09PM  
3 MR. BRIDGES: Objection, competence, calls 3:55:13PM  
4 for speculation, vague and ambiguous. 3:55:14PM  
5 THE WITNESS: I can run the advanced 3:55:18PM  
6 search query and ask for the download identifier 3:55:19PM  
7 and title fields from the Internet Archive. 3:55:22PM  
8 BY MR. FEE: 3:55:26PM  
9 Q And you had done that before in connection 3:55:27PM  
10 with this matter? 3:55:29PM  
11 A Yes. 3:55:31PM  
12 Q But you're not sure if Exhibit 43 is the 3:55:33PM  
13 end result of that search? 3:55:35PM  
14 A I -- I have no idea if this is 3:55:37PM  
15 intermediate work product, what the date is. I 3:55:39PM  
16 don't know. 3:55:42PM  
17 BY MR. FEE: 3:55:52PM  
18 Q I'm going to hand you a spreadsheet that 3:55:52PM  
19 was produced in native format as PRO\_00345530. It's 3:55:55PM  
20 going to be marked as Exhibit 44. 3:56:03PM  
21 (Exhibit 44 marked for identification.) 3:56:09PM  
22  
23 BY MR. FEE: 3:56:09PM  
24 Q Can you identify Exhibit 44? 3:56:48PM  
25 A This appears to be an initial stats run on 3:56:50PM

1 an HTML version that was produced in conjunction 4:31:36PM  
2 with HTC and -- and yourself; is that correct? 4:31:40PM  
3 MR. BRIDGES: If he's asking about the 4:31:46PM  
4 whole document, then make sure that you understand 4:31:47PM  
5 the whole document and answer the question. 4:31:50PM  
6 THE WITNESS: Uh-huh. Yes. 4:31:52PM  
7 BY MR. REHN: 4:31:57PM  
8 Q And -- and when -- and the other link 4:31:59PM  
9 would generally be a link to a PDF, and -- and the 4:32:01PM  
10 way that that PDF was made was you scanned the 4:32:08PM  
11 standard as it was purchased, ran OCR and uploaded 4:32:11PM  
12 that with your cover page attached as well? 4:32:16PM  
13 A Yes. 4:32:19PM  
14 Q And the cover page has a representation 4:32:19PM  
15 these standards have been incorporated by reference; 4:32:22PM  
16 is that right? 4:32:25PM  
17 A Yes, sir. 4:32:29PM  
18 Q Now, when we see examples of standards 4:32:30PM  
19 where there's only one link, like if you'll turn to 4:32:34PM  
20 the second page of this document, you'll look, for 4:32:37PM  
21 example, in Connecticut and you'll see in the 4:32:40PM  
22 electrical column there's the NEC 2005. Do you see 4:32:43PM  
23 that? 4:32:49PM  
24 A Yes, I do. 4:32:49PM  
25 Q In that case, do you know which -- do you 4:32:51PM

1 Q Including downloading a copy of the 5:04:22PM  
2 standards that are listed here? 5:04:23PM  
3 MR. BRIDGES: Objection, lacks foundation, 5:04:25PM  
4 assumes facts not in evidence, vague and ambiguous. 5:04:26PM  
5 THE WITNESS: You can view the object and, 5:04:29PM  
6 yes, they do have a download button. 5:04:33PM  
7 BY MR. REHN: 5:04:36PM  
8 Q So you could, for example, download a copy 5:04:36PM  
9 to your desktop on your computer at home? 5:04:38PM  
10 MR. BRIDGES: Objection, hypothetical and 5:04:41PM  
11 assumes facts not in evidence. 5:04:45PM  
12 THE WITNESS: Yes. 5:04:47PM  
13 BY MR. REHN: 5:04:47PM  
14 Q If you can take a quick look at another 5:04:48PM  
15 document. I think this will be No. 50. Sorry. 5:04:52PM  
16 Wide table here. 5:05:39PM  
17 (Exhibit 50 marked for identification.) 11:31:26AM  
18 BY MR. REHN:  
19 Q And Exhibit 50 has a column marked 5:05:46PM  
20 downloads, then a column marked identifier and a 5:05:50PM  
21 column marked title; is that correct. 5:05:53PM  
22 MR. BRIDGES: You're asking about the 5:05:57PM  
23 exhibit paper itself, I assume? Otherwise, I'm 5:05:59PM  
24 objecting. 5:06:03PM  
25 THE WITNESS: That's what this piece of 5:06:04PM



1 paper says, yes. 5:06:05PM  
2 BY MR. REHN: 5:06:06PM  
3 Q And I can represent to you that this is a 5:06:07PM  
4 document that Public Resource produced to the 5:06:09PM  
5 plaintiffs in this litigation. 5:06:12PM  
6 MR. BRIDGES: Do you have a Bates number 5:06:14PM  
7 on that, since this doesn't? 5:06:15PM  
8 MR. REHN: Hold on. I e-mailed it to 5:06:18PM  
9 Kevin. It's the first one e-mailed to you today. 5:06:21PM  
10 It should be like one page. 5:06:53PM  
11 MR. FEE: PRO\_00232652, 232652. 5:07:02PM  
12 MR. BRIDGES: Thank you. 5:07:15PM  
13 BY MR. REHN: 5:07:20PM  
14 Q But have you seen this document before? 5:07:20PM  
15 A Yes. 5:07:25PM  
16 Q You have seen this document before today? 5:07:27PM  
17 A I have seen the data on this document. 5:07:34PM  
18 Q And what's your understanding of what that 5:07:37PM  
19 data represents? 5:07:40PM  
20 A It's the result of an advanced query on 5:07:42PM  
21 the search interface for the Internet Archive with 5:07:45PM  
22 three pieces of data returned, the number of 5:07:48PM  
23 downloads, the identifier and the title of -- 5:07:50PM  
24 THE REPORTER: I'm sorry. The three 5:07:50PM  
25 pieces of data returned... 5:07:50PM

1 THE WITNESS: Which include the downloads, 5:07:55PM  
2 the identifier and the title. 5:07:55PM  
3 THE REPORTER: Thank you. 5:07:58PM  
4 BY MR. REHN: 5:07:59PM  
5 Q Did you run that query? 5:08:02PM  
6 A Yes. 5:08:03PM  
7 Q To produce this data? 5:08:04PM  
8 A Yes. 5:08:06PM  
9 Q Do you remember when you ran that query? 5:08:06PM  
10 A No. 5:08:09PM  
11 Q Could you give me a -- was it six months 5:08:10PM  
12 ago, a year ago? Do you have any rough ballpark 5:08:14PM  
13 recollection? 5:08:18PM  
14 A January 2014 is my rough recollection. 5:08:20PM  
15 Q So a little over a year ago? 5:08:24PM  
16 A Correct. 5:08:26PM  
17 Q And your understanding is that as of that 5:08:27PM  
18 date, this represents the number of times each of 5:08:29PM  
19 these standards have been downloaded on the Internet 5:08:32PM  
20 Archive website? 5:08:34PM  
21 MR. BRIDGES: Objection, may call 5:08:39PM  
22 speculation, assumes facts not in evidence, lacks 5:08:41PM  
23 foundation. 5:08:42PM  
24 THE WITNESS: Download is a very imprecise 5:08:43PM  
25 term. It's -- it's what the Internet Archive says 5:08:45PM

1 how it was typed in -- 5:22:52PM  
2 THE REPORTER: -- in the transcription. 5:22:52PM  
3 MR. REHN: I'll just repeat the question. 5:22:58PM  
4 BY MR. REHN: 5:22:59PM  
5 Q Between -- on Rows 2 through 24 in the 5:22:59PM  
6 identifier column, each identifier begins 5:23:01PM  
7 gov.law.nfpa and is followed by the number of the 5:23:04PM  
8 standard; is that correct? 5:23:12PM  
9 MR. BRIDGES: You're talking about the 5:23:13PM  
10 document? I'll -- I'll object to the extent that 5:23:15PM  
11 you're asking a question beyond what is stated on 5:23:16PM  
12 this document. 5:23:20PM  
13 THE WITNESS: It is Rows 2 through 25, not 5:23:23PM  
14 Rows 2 through 24, and some of the identifiers have 5:23:26PM  
15 a number and some say NEC. 5:23:32PM  
16 BY MR. REHN: 5:23:36PM  
17 Q Right. So, for example, in Row 12 it 5:23:37PM  
18 says, gov.law.nfpa.NEC.2011. 5:23:40PM  
19 A That is, in fact, what it says. 5:23:47PM  
20 Q And then on Row 26, what does the 5:23:50PM  
21 identifier say there? 5:23:52PM  
22 MR. BRIDGES: By the way, objection, lack 5:23:59PM  
23 of foundation, assumes facts not in evidence, vague 5:24:00PM  
24 and ambiguous. 5:24:02PM  
25 THE WITNESS: It says, NFPA.NEC.2014. 5:24:04PM

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1 BY MR. REHN: 5:24:09PM

2 Q And is it your understanding that is the 5:24:10PM

3 identifier you used when you uploaded that 5:24:10PM

4 particular document to the Internet Archive website? 5:24:13PM

5 MR. BRIDGES: Objection, lacks foundation, 5:24:16PM

6 assumes facts not in evidence and argumentative, 5:24:17PM

7 vague and ambiguous. 5:24:21PM

8 THE WITNESS: It apparently is. 5:24:30PM

9 BY MR. REHN: 5:24:32PM

10 Q I'd invite you just to scroll through this 5:24:32PM

11 document. Are there any other standards listed in 5:24:36PM

12 this document that do not begin gov.law? 5:24:38PM

13 MR. BRIDGES: I'm sorry. Can you -- can I 5:25:02PM

14 have the court reporter repeat the question? 5:25:02PM

15 (The reporter read the record 5:25:02PM

16 as requested.) 9:21:04AM

17 MR. BRIDGES: Objection, misleading, lacks 5:25:03PM

18 foundation, mischaracterizes testimony, I think. 5:25:05PM

19 And if it presumes to be based on earlier 5:25:09PM

20 testimony, argumentative and vague and ambiguous. 5:25:14PM

21 THE WITNESS: All of the identifiers in 5:25:19PM

22 Column A, with the exception of Row 26, begin with 5:25:21PM

23 gov.law. 5:25:25PM

24 BY MR. REHN: 5:25:29PM

25 Q So do you know why you picked a different 5:25:29PM

1 (Recess taken.) 10:27:40AM

2 THE VIDEOGRAPHER: We're back on the 5:40:19PM

3 record. The time is 5:41 p.m. This marks the 5:40:23PM

4 beginning of Disc No. 4 in the deposition of Carl 5:40:27PM

5 Malamud. 5:40:30PM

6 BY MR. REHN: 5:40:31PM

7 Q Could I just ask you to clarify again what 5:40:31PM

8 your understanding of the word "access" is -- is, as 5:40:34PM

9 we've been discussing it? 5:40:38PM

10 MR. BRIDGES: Objection to the extent it's 5:40:41PM

11 not in the context of a particular question, vague 5:40:42PM

12 and ambiguous, lacks foundation. 5:40:46PM

13 THE WITNESS: I can tell you what access 5:40:48PM

14 means in the context of the web server that I 5:40:50PM

15 operate. 5:40:52PM

16 BY MR. REHN: 5:40:53PM

17 Q Sure. 5:40:53PM

18 A Access is an HTTP GET request from a 5:40:55PM

19 client, G-E-T, which returns data successfully that 5:41:01PM

20 the client had asked for. 5:41:08PM

21 Q So it means that -- when you say "client," 5:41:11PM

22 you mean somebody who is using your website, 5:41:14PM

23 somebody who is on the Internet and goes to your 5:41:16PM

24 website? Is that what you mean by the word "client" 5:41:19PM

25 in that -- 5:41:23PM

1 MR. BRIDGES: Objection, lacks foundation. 5:41:24PM

2 THE WITNESS: I mean another computer on 5:41:26PM

3 the Internet that contacts the HTTP server on my 5:41:27PM

4 computer. 5:41:31PM

5 BY MR. REHN: 5:41:32PM

6 Q So when that other computer receives 5:41:32PM

7 information from your server that they've requested, 5:41:35PM

8 that's an access? 5:41:38PM

9 A The way I count accesses is I look for a 5:41:42PM

10 status code 200, which is a complete transfer of the 5:41:46PM

11 requested file, or a series of access codes 206, 5:41:51PM

12 which are partial transfers as used on, for example, 5:41:57PM

13 a mobile phone that gets a piece of a document, then 5:42:01PM

14 another piece, then another piece. 5:42:05PM

15 Q And when you have the series of transfers, 5:42:08PM

16 you only count it as an access if they sum to the 5:42:10PM

17 entire document? 5:42:14PM

18 A No. 5:42:15PM

19 MR. BRIDGES: Objection, mischaracterizes 5:42:17PM

20 his testimony. 5:42:19PM

21 THE WITNESS: The way I count it is very 5:42:20PM

22 specific. It is the number of 200 or 206 status 5:42:27PM

23 codes by a unique IP address to a unique document 5:42:31PM

24 within a given hour. 5:42:35PM

25 BY MR. REHN: 5:42:45PM

1 MR. BRIDGES: Objection, lacks foundation, 5:43:48PM  
2 vague and ambiguous. 5:43:49PM  
3 THE WITNESS: I know that some people 5:43:50PM  
4 count unique accesses over a 24-hour period, not a 5:43:51PM  
5 one-hour period, so I think I'm actually being more 5:43:56PM  
6 conservative. 5:43:58PM  
7 BY MR. REHN: 5:44:00PM  
8 Q And do you -- is it your understanding 5:44:00PM  
9 that the Internet Archive's method for counting 5:44:01PM  
10 accesses is similar to what you've described? 5:44:05PM  
11 MR. BRIDGES: Objection, competence, lacks 5:44:09PM  
12 foundation, may call for speculation, vague and 5:44:09PM  
13 ambiguous. 5:44:09PM  
14 THE WITNESS: My understanding is that 5:44:13PM  
15 they count over a 24-hour period. 5:44:14PM  
16 BY MR. REHN: 5:44:16PM  
17 Q I'm going to hand you what we're marking 5:44:16PM  
18 as Exhibit No. 52. 5:44:29PM  
19 (Exhibit 52 marked for identification.) 5:44:59PM  
20 BY MR. REHN: 5:44:59PM  
21 Q Do you recognize this document? 5:44:59PM  
22 A I certainly did not produce it. 5:45:00PM  
23 Q Do you recognize what it is? 5:45:03PM  
24 MR. BRIDGES: Objection, lacks foundation, 5:45:05PM  
25 vague and ambiguous. 5:45:05PM

1 THE WITNESS: It's possible it's a screen 5:45:07PM  
2 dump from the Internet Archive. 5:45:10PM  
3 BY MR. REHN: 5:45:13PM  
4 Q What do you mean by "screen dump"? 5:45:13PM  
5 A It looks like somebody accessed a -- a URL 5:45:18PM  
6 and hit the print command in this case. 5:45:22PM  
7 Q So does -- does this appear to be the URL 5:45:25PM  
8 where the 2011 National Electrical Code is on the 5:45:28PM  
9 Internet Archive? 5:45:32PM  
10 A Yes. 5:45:36PM  
11 Q And I can represent to you -- 5:45:37PM  
12 MR. BRIDGES: I'm sorry. I need more time 5:45:39PM  
13 to object. I am going to object on the basis of 5:45:39PM  
14 vague and ambiguous. 5:45:41PM  
15 BY MR. REHN: 5:45:45PM  
16 Q Well, I can represent to you that you got 5:45:46PM  
17 it right. This is the Internet Archive page where 5:45:47PM  
18 the 2011 National Electrical Code is available. It 5:45:51PM  
19 was accessed yesterday at 11:35 a.m. And there's a 5:45:54PM  
20 box kind of in the center of the page, and in that 5:46:03PM  
21 box we can see a -- a graphic that says, "notice of 5:46:07PM  
22 incorporation." Do you see that? 5:46:10PM  
23 A Yes, I do. 5:46:13PM  
24 Q And do you recognize what that is? 5:46:14PM  
25 A It looks like my standard cover page for 5:46:19PM



1 THE WITNESS: They can access this 5:47:29PM  
2 document in a variety of formats. 5:47:30PM  
3 BY MR. REHN: 5:47:33PM  
4 Q And by "access," that would encompass the 5:47:33PM  
5 possibility of downloading a copy of the standard to 5:47:36PM  
6 their own computer? 5:47:40PM  
7 MR. BRIDGES: Objection, argumentative, 5:47:41PM  
8 lacks foundation, assumes facts not in evidence, 5:47:42PM  
9 vague and ambiguous. 5:47:44PM  
10 THE WITNESS: "Download" is simply not a 5:47:46PM  
11 term that -- it's just not a very precise term. 5:47:49PM  
12 "Access" is the term that I understand and it's 5:47:52PM  
13 when a computer on the Internet accesses an HTTP 5:47:54PM  
14 server on the Internet. 5:47:57PM  
15 BY MR. REHN: 5:47:59PM  
16 Q Okay. Is it your understanding that a 5:47:59PM  
17 user of a computer on the Internet can go to this 5:48:02PM  
18 web page and obtain a PDF version of this document, 5:48:05PM  
19 save it to their desktop, from which they can then 5:48:10PM  
20 use it as they see fit, without even being connected 5:48:16PM  
21 to the Internet in the future? 5:48:21PM  
22 MR. BRIDGES: Lacks foundation, assumes 5:48:23PM  
23 facts not in evidence, vague and ambiguous, 5:48:24PM  
24 hypothetical. 5:48:25PM  
25 THE WITNESS: Are -- are you asking 5:48:30PM

1	whether that capability is possible?	5:48:31PM
2	BY MR. REHN:	5:48:34PM
3	Q Yes, using these links here.	5:48:34PM
4	MR. BRIDGES: Objection, may call for	5:48:38PM
5	speculation, may lack knowledge.	5:48:39PM
6	THE WITNESS: It's theoretically possible,	5:48:42PM
7	yes.	5:48:44PM
8	BY MR. REHN:	5:48:45PM
9	Q So -- so -- and that same user, having	5:48:45PM
10	that -- a copy of that document saved on their	5:48:47PM
11	desktop, could, say, print a copy of that document	5:48:50PM
12	if they have a printer attached to their computer?	5:48:54PM
13	MR. BRIDGES: Objection, hypothetical,	5:48:59PM
14	lacks foundation, assumes facts not in evidence,	5:48:59PM
15	vague and ambiguous.	5:49:00PM
16	THE WITNESS: On -- on some computers,	5:49:04PM
17	yes.	5:49:04PM
18	BY MR. REHN:	5:49:06PM
19	Q And on those computers from which people	5:49:06PM
20	can print PDFs that are saved to their desktop, they	5:49:09PM
21	can print as many copies as they like?	5:49:13PM
22	MR. BRIDGES: Objection, hypothetical,	5:49:16PM
23	lacks foundation, vague and ambiguous,	5:49:16PM
24	argumentative.	5:49:19PM
25	THE WITNESS: It's -- it's very	5:49:22PM

1 hypothetical. It's if -- if you have a printer on 5:49:22PM  
2 your computer, you can print a piece of paper. 5:49:24PM  
3 BY MR. REHN: 5:49:27PM  
4 Q And if you have a file that you've 5:49:28PM  
5 accessed and saved to your desktop from the Internet 5:49:30PM  
6 but is now saved on your computer, you can print 5:49:34PM  
7 multiple copies of that file? 5:49:37PM  
8 MR. BRIDGES: Objection, assumes many 5:49:40PM  
9 facts not in evidence, lacks foundation, 5:49:41PM  
10 hypothetical, vague and ambiguous. 5:49:44PM  
11 THE WITNESS: I believe you accessed a URL 5:49:47PM  
12 on the Internet and printed a file, so I would say 5:49:51PM  
13 yes, you certainly were capable of doing that. 5:49:54PM  
14 MR. BRIDGES: Let the record reflect that 5:49:57PM  
15 the client was holding Exhibit 52 up in the air in 5:49:57PM  
16 context with that response. 5:50:04PM  
17 BY MR. REHN: 5:50:10PM  
18 Q If we could go and look at the information 5:50:10PM  
19 underneath that box in the center, is that 5:50:13PM  
20 information that you entered when you uploaded this 5:50:18PM  
21 document to the Internet Archive website? For 5:50:22PM  
22 example, where it says "description" and then it 5:50:26PM  
23 says "legally binding document," would that be 5:50:28PM  
24 information you entered? 5:50:30PM  
25 MR. BRIDGES: Objection, vague and 5:50:32PM

1       ambiguous. Are you asking specifically about the       5:50:33PM  
2       description?       5:50:37PM  
3               MR. REHN: We'll start with the       5:50:38PM  
4       description.       5:50:40PM  
5               THE WITNESS: Yes.       5:50:42PM  
6       BY MR. REHN:       5:50:43PM  
7               Q       And we'll just go through it. Where it       5:50:49PM  
8       says author, National Fire Protection Association,       5:50:52PM  
9       did you enter that information?       5:50:56PM  
10              A       Yes.       5:50:59PM  
11              Q       When you -- I believe it -- was it the APC       5:51:01PM  
12       call? What was it?       5:51:06PM  
13              A       API, application programming interface.       5:51:07PM  
14              Q       API call. So when you use the API, does       5:51:11PM  
15       it give you an option to enter an author? Is that       5:51:14PM  
16       one of the options that are identified there?       5:51:16PM  
17              A       You can specify any piece of metadata and       5:51:21PM  
18       a value associated with that metadata.       5:51:25PM  
19              Q       And you identified National Fire       5:51:29PM  
20       Protection Association as the author of this       5:51:31PM  
21       document?       5:51:33PM  
22              A       I did.       5:51:35PM  
23              Q       So -- and that was consistent with your       5:51:37PM  
24       understanding that the NFPA is the author of the       5:51:39PM  
25       2011 NEC?       5:51:41PM

1 MR. BRIDGES: Objection, calls for a legal 5:51:44PM  
2 conclusion, lacks -- calls for a legal opinion, 5:51:45PM  
3 assumes facts not in evidence, lacks foundation, 5:51:48PM  
4 vague and ambiguous. 5:51:50PM  
5 THE WITNESS: I don't know the precise 5:51:54PM  
6 meaning of the term "author." They were certainly 5:51:56PM  
7 the source of this document. 5:51:59PM  
8 BY MR. REHN: 5:52:04PM  
9 Q But you identified them as the author 5:52:04PM  
10 here. 5:52:06PM  
11 MR. BRIDGES: Objection, asked and 5:52:07PM  
12 answered. 5:52:08PM  
13 THE WITNESS: Just as you discussed 5:52:10PM  
14 "downloads" as a term. Yes, I -- I use the word 5:52:12PM  
15 "author." 5:52:16PM  
16 BY MR. REHN: 5:52:16PM  
17 Q So it was your understanding when you 5:52:17PM  
18 uploaded this document that the NFPA was the author 5:52:18PM  
19 of this document? 5:52:21PM  
20 MR. BRIDGES: Objection, asked and 5:52:22PM  
21 answered and calls for a legal conclusion, lacks 5:52:23PM  
22 foundation, assumes facts not in evidence, vague 5:52:27PM  
23 and ambiguous. 5:52:29PM  
24 THE WITNESS: I put the word "author," a 5:52:30PM  
25 colon and National Fire Protection Association. As 5:52:32PM

1 to the technical meaning of the term "author," 5:52:36PM  
2 that's -- you folks are lawyers. 5:52:39PM  
3 BY MR. REHN: 5:52:41PM  
4 Q Sure. But just in the way you understand 5:52:41PM  
5 the term, that's what -- you understood that NFPA 5:52:43PM  
6 was the author? 5:52:44PM  
7 MR. BRIDGES: Objection, misstates 5:52:45PM  
8 testimony, calls for a legal conclusion, lacks 5:52:47PM  
9 foundation, vague and ambiguous. 5:52:50PM  
10 THE WITNESS: I put the word "author," 5:52:51PM  
11 colon and National Fire Protection Association. 5:52:53PM  
12 BY MR. REHN: 5:53:09PM  
13 Q And if we could turn to the next page, 5:53:09PM  
14 you'll see a section titled, "Selected Metadata." 5:53:11PM  
15 A Yes, I see that. 5:53:24PM  
16 Q And do you see a -- a line that says, 5:53:24PM  
17 "credits"? 5:53:26PM  
18 A I do. 5:53:30PM  
19 Q And what does that say? 5:53:32PM  
20 A It was uploaded by Public.Resource.Org. 5:53:33PM  
21 Q And do you always put that credits line in 5:53:38PM  
22 documents that you upload to the Internet Archive? 5:53:41PM  
23 MR. BRIDGES: Objection, argumentative. 5:53:44PM  
24 THE WITNESS: I don't know if I always do. 5:53:46PM  
25 BY MR. REHN: 5:53:47PM

1 creator of this object was not asserting any 5:58:59PM  
2 rights. 5:59:03PM  
3 BY MR. REHN: 5:59:04PM  
4 Q What do you mean by "creator of this 5:59:04PM  
5 object"? 5:59:06PM  
6 A The person who exercised the API call that 5:59:06PM  
7 resulted in the creation of this identifier; me in 5:59:09PM  
8 this case. 5:59:16PM  
9 Q I'm going to mark Exhibit 53. 5:59:47PM  
10 (Exhibit 53 marked for identification.) 11:31:26AM  
11 BY MR. REHN: 11:31:26AM  
12 Q Do you recognize this document?  
13 A It appears to be an Internet Archive 6:00:23PM  
14 screen dump like your previous exhibit. 6:00:27PM  
15 Q And this one is for the 2014 National 6:00:30PM  
16 Electrical Code; is that right? 6:00:36PM  
17 A That is what it appears to be, yes. 6:00:39PM  
18 Q Now, this is -- looks pretty similar to 6:00:41PM  
19 Exhibit 52. Would you agree with that? 6:00:45PM  
20 MR. BRIDGES: Objection, lacks foundation, 6:00:48PM  
21 vague and ambiguous. 6:00:49PM  
22 THE WITNESS: There are some similarities. 6:00:55PM  
23 BY MR. REHN: 6:00:57PM  
24 Q Like there's the box in the middle and 6:00:58PM  
25 then there's options for how to view the book on the 6:01:00PM

1 left? 6:01:03PM

2 A Yes. 6:01:04PM

3 Q And then there's some information below 6:01:05PM

4 the box in the middle such as author, subject and so 6:01:08PM

5 forth? 6:01:14PM

6 MR. BRIDGES: Objection, lacks foundation, 6:01:14PM

7 vague and ambiguous. 6:01:16PM

8 THE WITNESS: Yes. 6:01:22PM

9 BY MR. REHN: 6:01:24PM

10 Q And you put that information in this -- in 6:01:26PM

11 this as well when you used the API interface to 6:01:28PM

12 upload this document? 6:01:37PM

13 MR. BRIDGES: Objection, vague and 6:01:38PM

14 ambiguous. 6:01:39PM

15 THE WITNESS: Yes. 6:01:40PM

16 BY MR. REHN: 6:01:42PM

17 Q So again, you have -- you -- you chose to 6:01:43PM

18 identify the author as National Fire Protection 6:01:44PM

19 Association? 6:01:47PM

20 MR. BRIDGES: Objection. To the extent 6:01:51PM

21 you're asking him a question with significance of 6:01:52PM

22 legal terms, I'll object on the ground that it 6:01:55PM

23 calls for a legal opinion. 6:01:57PM

24 THE WITNESS: Once again, I put the 6:02:00PM

25 identifier author, colon, and National Fire 6:02:01PM



1 Protection Association in -- in the HTML. 6:02:03PM  
2 BY MR. REHN: 6:02:07PM  
3 Q And was -- and that was your understanding 6:02:07PM  
4 at the time you uploaded this document, that the 6:02:09PM  
5 National Fire Protection Association was the author 6:02:11PM  
6 as you would use that word? 6:02:14PM  
7 MR. BRIDGES: Objection, vague and 6:02:17PM  
8 ambiguous, calls -- may call for a legal 6:02:18PM  
9 conclusion, lacks foundation, assumes facts not in 6:02:19PM  
10 evidence. 6:02:22PM  
11 THE WITNESS: Again, I use the label 6:02:24PM  
12 author and a colon and National Fire Protection 6:02:26PM  
13 Association. 6:02:28PM  
14 BY MR. REHN: 6:02:31PM  
15 Q And you -- you chose the word "author"? 6:02:32PM  
16 A Yes. 6:02:34PM  
17 Q And then under subject, there's a few 6:02:34PM  
18 things listed, and the first one -- what is the 6:02:38PM  
19 first one there? 6:02:41PM  
20 MR. BRIDGES: Objection, vague and 6:02:43PM  
21 ambiguous. 6:02:44PM  
22 THE WITNESS: Subject, colon, required in 6:02:46PM  
23 all 50 states, Public Safety Code, legally binding 6:02:48PM  
24 document. 6:02:52PM  
25 BY MR. REHN: 6:02:52PM

1 MR. BRIDGES: And you need to review the 6:20:14PM  
2 document if you're going to answer that question. 6:20:16PM  
3 And I'll object on the -- to the question 6:20:23PM  
4 as vague and ambiguous. 6:20:26PM  
5 Read the whole document, please. 6:20:41PM  
6 THE WITNESS: The statements by Man 1 do, 6:21:16PM  
7 in fact, represent my views. 6:21:17PM  
8 BY MR. REHN: 6:21:20PM  
9 Q And did you make the decision that this 6:21:21PM  
10 video should be posted on Public Resource's website? 6:21:22PM  
11 A Yes. 6:21:26PM  
12 Q And do the statements by you in this 6:21:26PM  
13 document represent the views of Public Resource? 6:21:28PM  
14 A Yes. 6:21:33PM  
15 Q So let's take a look at the page 6:21:33PM  
16 Bates-stamped 167544. And it's your view that the 6:21:42PM  
17 National Fire Protection Association does amazing 6:21:52PM  
18 work and saves lives? 6:21:57PM  
19 A Yes, I said that. 6:21:58PM  
20 Q And it's your view that the National Fire 6:21:59PM  
21 Protection Association protects the lives of 6:22:01PM  
22 volunteer firefighters? 6:22:04PM  
23 MR. BRIDGES: Objection. That misstates 6:22:13PM  
24 the document. 6:22:14PM  
25 THE WITNESS: No, that's not what I say on 6:22:15PM

1 this page. 6:22:17PM  
2 BY MR. REHN: 6:22:17PM  
3 Q It's your view that the National Fire 6:22:18PM  
4 Protection Association's standards for fire 6:22:20PM  
5 sprinklers, standards for fire hydrants, standards 6:22:22PM  
6 for foam, standards for life safety protect lives of 6:22:27PM  
7 our volunteer firefighters. 6:22:28PM  
8 A Oh. Yes. 6:22:31PM  
9 Q And do you also -- would you also take the 6:22:32PM  
10 view that National Fire Protection itself protects 6:22:33PM  
11 the lives of volunteer firefighters through its 6:22:35PM  
12 activities? 6:22:39PM  
13 MR. BRIDGES: Objection, argumentative, 6:22:40PM  
14 lacks foundation, vague and ambiguous. 6:22:41PM  
15 THE WITNESS: I can't speak to that. I -- 6:22:43PM  
16 the standards certainly do. 6:22:44PM  
17 BY MR. REHN: 6:22:47PM  
18 Q And is it your view that the standards 6:22:47PM  
19 protect the lives of children? 6:22:49PM  
20 A Yes. 6:22:51PM  
21 Q And it's your view that it's important 6:22:52PM  
22 that organizations like the National Fire Protection 6:22:53PM  
23 Association continue to survive? 6:22:55PM  
24 A Absolutely. 6:22:59PM  
25 Q And would you extend that to other 6:22:59PM

1 standards development organizations as well, that 6:23:02PM  
2 it's important they continue to survive? 6:23:04PM  
3 MR. BRIDGES: Objection, lacks foundation. 6:23:07PM  
4 THE WITNESS: Do you have a specific 6:23:08PM  
5 standards organization in mind? 6:23:09PM  
6 BY MR. REHN: 6:23:11PM  
7 Q How about ASTM. 6:23:12PM  
8 A I'm a big fan of ASTM. 6:23:14PM  
9 Q So it's important they continue to 6:23:17PM  
10 survive? 6:23:18PM  
11 MR. BRIDGES: Objection, argumentative. 6:23:19PM  
12 THE WITNESS: I think the standards that 6:23:21PM  
13 are -- the subject area of the standards that ASTM 6:23:22PM  
14 works in is very important and we need to continue 6:23:27PM  
15 to have standards in that area. 6:23:30PM  
16 BY MR. REHN: 6:23:32PM  
17 Q And continue to have organizations that 6:23:32PM  
18 develop standards and keep them up-to-date? 6:23:34PM  
19 MR. BRIDGES: Objection, argumentative, 6:23:36PM  
20 lacks foundation. 6:23:37PM  
21 THE WITNESS: Yes, I believe standards are 6:23:41PM  
22 important. 6:23:43PM  
23 BY MR. REHN: 6:23:43PM  
24 Q And would you say the same about the 6:23:43PM  
25 standards of ASHRAE? 6:23:45PM

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30(b)(6) Public.Resource.Org 02-26-2015

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1 MR. BRIDGES: Objection, lacks foundation, 6:23:47PM  
2 vague and ambiguous. 6:23:48PM  
3 THE WITNESS: I think ASHRAE Standard 90.1 6:23:51PM  
4 is an important standard. 6:23:53PM  
5 BY MR. REHN: 6:23:59PM  
6 Q Is it your view that standards development 6:24:01PM  
7 organizations need funding to do the work that they 6:24:04PM  
8 do, including standards development? 6:24:07PM  
9 MR. BRIDGES: Objection, may call for a 6:24:09PM  
10 lay opinion, vague and ambiguous, and -- 6:24:11PM  
11 THE WITNESS: I think -- 6:24:19PM  
12 MR. BRIDGES: -- and to the extent it 6:24:19PM  
13 calls for a legal opinion, I would object on that 6:24:21PM  
14 basis. 6:24:25PM  
15 THE WITNESS: I would want to analyze the 6:24:25PM  
16 specific standards body and their funding sources 6:24:26PM  
17 and the work that they do. 6:24:28PM  
18 BY MR. REHN: 6:24:31PM  
19 Q Can you read the first sentence of that 6:24:33PM  
20 paragraph that begins with, Man 1 804, the sentence 6:24:34PM  
21 following Man 1 804? 6:24:38PM  
22 A "Our goal is here to publish a law to 6:24:40PM  
23 establish the principle that the law become 6:24:43PM  
24 available, but then government should take this over 6:24:46PM  
25 and figure out a way to make the law available and 6:24:49PM

# **EXHIBIT 3**

**FILED UNDER SEAL**

# **EXHIBIT 4**

UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

----- :  
AMERICAN SOCIETY FOR TESTING :  
AND MATERIALS dba ASTM :  
INTERNATIONAL, :  
NATIONAL FIRE PROTECTION :  
ASSOCIATION, INC., and :  
AMERICAN SOCIETY OF HEATING, :  
REFRIGERATING AND AIR :  
CONDITIONING ENGINEERS, :  
 :  
Plaintiffs/ :  
Counter-Defendants, :  
 :  
v. : No. 1:13-cv-01215-EGS  
 :  
PUBLIC.RESOURCE.ORG, :  
 :  
Defendant/ :  
Counter-Plaintiff. :  
----- :

Coos Bay, Oregon

Thursday, November 13, 2014

39 (b) (6) DEPOSITION OF:

REBECCA MALAMUD,  
PUBLIC.RESOURCE.ORG,

taken pursuant to notice, by counsel for Plaintiffs/  
Counter-Defendants at Red Lion Inn, 1313 North  
Bayshore Drive, Coos Bay, Oregon, before Jan R.  
Duiven, CSR, FCRR, CCP, Certified Shorthand Reporter  
in and for the State of Oregon, beginning at 9:00  
a.m., when were present on behalf of the respective  
parties:



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Malamud, Rebecca 11-13-2014

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1 MR. STOLTZ: Objection to form. 09:48:11

2 "Core group." 09:48:14

3 BY MR. FEE: 09:48:15

4 Q. Have you ever used the phrase "core 09:48:15

5 group" in connection with Rural Design Collective 09:48:17

6 before? 09:48:20

7 A. This year. 09:48:20

8 Q. Have you used the phrase "core group"? 09:48:20

9 A. Yes. 09:48:23

10 Q. Okay. What does that mean? 09:48:23

11 A. It just -- most of the people working 09:48:27

12 this summer were that age. 09:48:37

13 Q. Okay. You're comfortable using the 09:48:40

14 word "core group" in connection with this business 09:48:42

15 of yours? Your counsel objected. He didn't think 09:48:44

16 you could understand "core group." I just want to 09:48:47

17 make sure you understand the phrase. 09:48:49

18 A. I'm just using it as a phrase. 09:48:54

19 Q. Okay. And just tell me what you meant 09:48:55

20 by "core group." I want to make sure we're all 09:48:58

21 clear here. What did core group mean? 09:49:00

22 A. Most of the mentees this year were in 09:49:02

23 that age group. 09:49:06

24 Q. Okay. So the core group as of 2014 at 09:49:08

25 Rural Design Collective was children ages 7 to 14? 09:49:14

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1	A. Yes.	09:49:16
2	Q. What was the age range of the core	09:49:17
3	group in 2013?	09:49:20
4	A. Well, we -- like 7 to 35.	09:49:22
5	Q. Okay. Was there one 35-year-old?	09:49:39
6	A. Yes.	09:49:42
7	Q. Okay. Who was the next oldest person	09:49:42
8	in 2013?	09:49:45
9	A. 2013? Probably 14. I don't think I	09:49:47
10	had high school in 2013 -- last year, '14.	09:50:06
11	Q. Who was the 35-year-old mentee of	09:50:22
12	yours that participated in the Rural Design	09:50:24
13	Collective?	09:50:26
14	A. That was Jasper.	09:50:26
15	Q. Did persons in the Rural Design	09:50:31
16	Collective program work on any ASTM or NFPA	09:50:40
17	standards?	09:50:43
18	A. Yes.	09:50:45
19	Q. Do you know which persons in the	09:51:04
20	program worked on the ASTM or NFPA standards?	09:51:07
21	A. Jasper and Levi.	09:51:10
22	Q. So Levi's also part of the Rural	09:51:11
23	Design Collective?	09:51:16
24	A. Yes, but he has graduated. He's --	09:51:16
25	he's a mentor.	09:51:21

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1	of some sort. Correct?	09:55:52
2	A. Right.	09:55:53
3	Q. Do the participants pay Point B	09:55:53
4	anything to be in this program?	09:56:00
5	A. No. But I -- we have stipends based	09:56:01
6	on performance.	09:56:08
7	Q. Point B pays stipends to the	09:56:09
8	participants?	09:56:12
9	A. Awards, scholarship funds.	09:56:13
10	Q. Did any participants in the Rural	09:56:22
11	Design Collective earn awards or stipends for	09:56:24
12	their work on NFPA or ASTM standards?	09:56:26
13	A. No.	09:56:28
14	Q. What is a standard sprint?	09:56:29
15	A. We pick an area of public concern that	09:56:54
16	we were enthusiastic about and convert the	09:57:03
17	graphics for that topic.	09:57:09
18	Q. You --	09:57:16
19	A. It was intended to be motivational.	09:57:17
20	It is.	09:57:22
21	Q. What graphics are you converting with	09:57:26
22	standard sprint?	09:57:34
23	A. At the time it was public safety	09:57:35
24	related to theater accessibility.	09:57:40
25	Q. Was there only one standard sprint	09:57:45

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1	(Deposition Exhibit No. 18	11:05:05
2	marked for identification.)	11:05:22
3	BY MR. FEE:	11:05:22
4	Q. Ms. Malamud, I'm going to hand you	11:05:24
5	Exhibit 18, which is a printout of the Rural	11:05:26
6	Design Collective Headquarters Codes of the World	11:05:28
7	Overview and Roadmap. It's six pages.	11:05:31
8	A. Okay.	11:05:33
9	Q. Are you familiar with Exhibit 18?	11:05:38
10	A. Yes.	11:05:39
11	Q. Is this a page from the Rural Design	11:05:40
12	Collective website?	11:05:46
13	A. Yes.	11:05:46
14	Q. Did you author this page?	11:05:47
15	A. Yes, I did.	11:05:49
16	Q. Is everything that's included in this	11:05:50
17	page accurate to the best of your knowledge?	11:05:53
18	A. Yes.	11:05:56
19	Q. I have no other questions about that.	11:05:56
20	MR. STOLTZ: You can put it aside.	11:06:06
21	THE WITNESS: Okay.	11:06:08
22	BY MR. FEE:	11:06:10
23	Q. At some point in time do you recall	11:06:14
24	having a series of communications with Carl	11:06:16
25	Malamud regarding whether or not you were	11:06:20

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1	(Deposition Exhibit No. 21	12:06:52
2	marked for identification.)	12:07:00
3	BY MR. FEE:	12:07:00
4	Q. Ms. Malamud, I'm going to hand you	12:07:01
5	what's been marked as Exhibit 21. It appears to	12:07:02
6	be a series of emails. The top one is from	12:07:06
7	Mr. Malamud to you, dated January 4th, 2014, at	12:07:10
8	12:01 p.m. Bates labeled PR042289-01. Take your	12:07:16
9	time and look at it, but once you've read it, if	12:07:35
10	you can identify this as a series of emails	12:07:38
11	between you and Mr. Malamud.	12:07:40
12	A. (Pause.) Okay.	12:07:51
13	Q. First of all, can you recognize -- do	12:08:35
14	you recognize this as a series of emails between	12:08:38
15	you and Mr. Malamud?	12:08:40
16	A. Yes.	12:08:41
17	Q. Why don't we start at the beginning of	12:08:41
18	the email chain, which would be on the last page.	12:08:45
19	There's an email on December 31, 2013, at	12:08:47
20	3:02 p.m. from you. Can you see? It starts off	12:08:52
21	saying, "All art completed, both diagrams and	12:09:01
22	MathML, with the exception of NFPA.NEC.2011. We	12:09:03
23	have about 12 more diagrams to complete on that.	12:09:09
24	And we should have that completed by Friday."	12:09:13
25	Do you see that?	12:09:15

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1 (Recess: 2:54 p.m. to 3:02 p.m.) 15:03:07

2 THE VIDEOGRAPHER: We're going back 15:03:07

3 on the record. The time is 3:02 p.m. 15:03:13

4 (Deposition Exhibit No. 27 15:03:22

5 marked for identification.) 15:03:22

6 (Mr. Childs not present.) 15:03:43

7 BY MR. FEE: 15:03:43

8 Q. I'm going to hand you Exhibit 27, 15:03:43

9 which is a single-page email from Carl to you, 15:03:45

10 dated January 16th, 2014, at 3:48 p.m., and Bates 15:03:53

11 labeled PRO42317. Can you identify Exhibit 27 as 15:03:59

12 an email from Mr. Malamud to you? 15:04:17

13 A. Yes. 15:04:19

14 Q. And the subject is funding. Correct? 15:04:22

15 A. Yes. 15:04:26

16 Q. And it says, you're funded at the 15:04:27

17 5K-per-month level for at least six months from 15:04:31

18 p.r.o., as long as you can keep pumping out 15:04:35

19 visible progress on the SVG/MathML front." 15:04:38

20 A. Yes. 15:04:46

21 Q. And in parentheses, it says, "Plus, of 15:04:46

22 course, your design health, which I need, but what 15:04:49

23 the funders are going to be looking for is walking 15:04:53

24 through the standards. They're funding my legal 15:04:56

25 fight so that's the piece they care about." Do 15:04:59

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1 you see that? 15:05:04

2 A. Yes. 15:05:04

3 (Mr. Childs present.) 15:05:04

4 BY MR. FEE: 15:05:04

5 Q. Do you know what funders he's 15:05:04

6 referring to? 15:05:13

7 A. I don't know exactly who they are. 15:05:13

8 Q. Do you have any idea what funders he's 15:05:15

9 referring to? 15:05:19

10 A. No. 15:05:19

11 Q. Did you ever ask, "Who are these 15:05:21

12 funders?" 15:05:25

13 A. I -- I wait for him to supply the 15:05:26

14 information when he wants to. 15:05:35

15 Q. So you never asked him for 15:05:41

16 information? 15:05:43

17 MR. STOLTZ: Object to the form. It 15:05:47

18 mischaracterizes her testimony. 15:05:50

19 A. There is funders. 15:05:59

20 BY MR. FEE: 15:06:02

21 Q. You never asked him who they were? 15:06:02

22 A. No. 15:06:04

23 MR. STOLTZ: Objection. Asked and 15:06:06

24 answered. 15:06:07

25 BY MR. FEE: 15:06:08

# **EXHIBIT 5**



UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR TESTING  
AND MATERIALS d/b/a ASTM  
INTERNATIONAL;  
NATIONAL FIRE PROTECTION  
ASSOCIATION, INC.; and  
AMERICAN SOCIETY OF HEATING,  
REFRIGERATING, AND AIR  
CONDITIONING ENGINEERS,

Plaintiffs/

Counter-Defendants,

Case No.

v.

1:13-CV-01215-EGS

PUBLIC.RESOURCE.ORG, INC.,

Defendant/

Counter-Plaintiff.

-----/

VIDEOTAPED DEPOSITION

DEPONENT: VIKAS BHUTADA

DATE: Wednesday, November 5, 2014

TIME: 9:11 a.m.

LOCATION: 2000 Town Center, Suite 1900

Southfield, Michigan

REPORTER: Jeanette M. Fallon, CRR/RMR/CSR-3267

1 Q. Anything else that you're aware of? 09:33  
2 A. No. 09:33  
3 Q. What is content conversion? 09:33  
4 A. Basically converting a document or -- yeah, converting 09:33  
5 any content or any document from one format to another 09:33  
6 format and making it available in an electronic -- in 09:33  
7 an electronic way. 09:33  
8 Q. Do you know what format Public Resource would provide 09:33  
9 to HTC Global for the work that HTC Global did for 09:34  
10 Public Resource? 09:34  
11 A. Yeah, usually PDF -- digital PDF format or image 09:34  
12 format. 09:34  
13 Q. By image format is that the TIF image or something 09:34  
14 else? 09:34  
15 A. Yeah, something other, TIF or JPEG, some image format. 09:34  
16 Q. What is your understanding of the instructions that 09:34  
17 Public Resource provided if any to HTC Global 09:34  
18 regarding the work that HTC Global did for it? 09:34  
19 A. Public Resource wanted us to -- to convert it -- 09:34  
20 convert the content in a format whereby it is 09:34  
21 available as a text or images are tagged and make it 09:34  
22 available in an output format like an HTML. 09:35  
23 Q. So was the direction then to take the JPEG or the TIF 09:35  
24 file or the PDF file and then make basically an HTML 09:35  
25 version of that file? 09:35

1 A. Yes, mostly that was the -- that was the direction. 09:35

2 Q. And was the intent to make all the text from the TIF 09:35

3 or PDF file be copied word for word into the HTML 09:35

4 code? 09:35

5 A. Yes, the text conversion, correct. 09:35

6 Q. Is there anything more to text conversion as you use 09:35

7 that term than copying the text in one format and 09:35

8 making it in another format? 09:36

9 A. No. 09:36

10 Q. And what would you do for Public Resource with respect 09:36

11 to images? 09:36

12 A. We would just tag them; meaning if there's an image on 09:36

13 a PDF, we would extract that image from the PDF and 09:36

14 provide a tag so that it is identifiable as an image 09:36

15 that particular piece. 09:36

16 Q. So HTC Global would not do any conversion for images? 09:36

17 A. No. 09:36

18 Q. It would just take basically a copy of the image in 09:36

19 the TIF file, for example, and drop it into the HTML 09:36

20 code? 09:36

21 A. That's correct. 09:36

22 Q. With a tag to identify this as an image? 09:36

23 A. We would actually just tag it so then it can be -- and 09:36

24 the way HTC stores images, there's a format in which 09:36

25 it does, so it would automatically give a tag and 09:36

1 copies that it was requesting to be made? 09:42

2 A. No. 09:42

3 Q. Have there been any discussions between HTC Global and 09:42

4 Public Resource regarding an indemnification agreement 09:42

5 between the parties since you became aware of this 09:42

6 lawsuit? 09:42

7 MR. COUTILISH: Objection, I believe that's 09:42

8 asked and answered. Go ahead, answer if you can. 09:42

9 A. Sorry, can you repeat the question? 09:42

10 Q. Sure. Since you've become aware of this lawsuit have 09:42

11 there been any communications with Public Resource 09:42

12 regarding indemnification? 09:42

13 A. Not that I'm aware, no. 09:42

14 Q. Is Public Resource paying for HTC's legal 09:42

15 representation in connection with the subpoena? 09:42

16 A. No. 09:42

17 Q. Besides the individuals that you've already identified 09:43

18 during your deposition this morning, can you identify 09:43

19 any other specific persons that were involved in HTC 09:43

20 Global's relationship or work for Public Resource? 09:43

21 A. No, I'm not aware of any other. I'm sure there would 09:43

22 be people who worked in India, but I haven't worked 09:43

23 with them. 09:43

24 Q. Would all of the content digitization that was done by 09:43

25 HTC Global have been done by persons in India? 09:43

1 A. Yes. 09:43

2 Q. Are you knowledgeable regarding the hiring policies 09:43

3 and procedures for the persons who do that type of 09:43

4 work? 09:43

5 A. Broadly, yes. In general HTC policies, yes. 09:43

6 Q. What can you tell me regarding the hiring policies or 09:44

7 requirements for persons who do content digitization 09:44

8 in India? 09:44

9 A. We have a hiring process in place which whereby we 09:44

10 screen the employees, review their resumes, personal 09:44

11 interviews, they go through the training and the 09:44

12 reference checks, we bring them on board. 09:44

13 Q. Is there any requirement that they have a particular 09:44

14 level of educational background? 09:44

15 A. Yes, they have to at least have a high school degree 09:44

16 and reasonable English communication. 09:44

17 Q. So they don't need to be native English speakers? 09:44

18 A. No. 09:44

19 Q. Do you have any idea what portion of the persons who 09:44

20 do content digitization for HTC are native English 09:44

21 speakers? 09:44

22 A. I don't know. 09:44

23 Q. Where in India are HTC's content digitization 09:45

24 capacities located? 09:45

25 A. Chennai; Chennai, India. C-H-E-N-N-A-I. 09:45

1 Q. Do you have knowledge regarding whether or not most of09:45  
2 the persons in that town are native English speakers?09:45  
3 A. What do you mean by native English speakers? They do09:45  
4 speak English as a second -- most of them speak 09:45  
5 English as a second language. 09:45  
6 Q. It's a second language? 09:45  
7 A. Yes. 09:45  
8 Q. What is the primary language in that town? 09:45  
9 A. Tamil, T-A-M-I-L. 09:45  
10 Q. What mechanism is in place at HTC to determine whether09:45  
11 or not the persons involved in content digitization 09:45  
12 have I think you used the term reasonable English 09:45  
13 capabilities? 09:46  
14 A. Oh, I'm sure there are some entrance tests they go 09:46  
15 through, but I'm not aware of exact tests what they 09:46  
16 do. 09:46  
17 Q. Are you aware of any non-HTC employees who were 09:46  
18 involved in the content digitization for Public 09:46  
19 Resource? 09:46  
20 A. No. 09:46  
21 Q. Would HTC be the entity that actually posted the 09:46  
22 content that was digitized on the internet so it would09:46  
23 be publicly available? 09:46  
24 A. No, we did not post it on the internet. 09:46  
25 Q. What would HTC do with the files once they had 09:46

1 does that. 09:49

2 Q. Is that group also located in the same town in India? 09:49

3 A. Yes. 09:49

4 Q. Do you know if the requirements for the quality 09:49

5 assurance personnel are any different from the persons 09:49

6 who do the initial digital content conversion? 09:49

7 A. I don't know that, no. 09:49

8 Q. Do you know if the quality assurance persons are 09:49

9 native English speakers? 09:49

10 A. They are all -- typically in India you would see most 09:49

11 Indians would have English as a second language not as 09:49

12 a first language. 09:49

13 Q. Did HTC have a discussion with Public Resource at any 09:49

14 point in time about whether or not it would double key 09:50

15 or triple key these standards? 09:50

16 A. Yes. 09:50

17 Q. What do you know about that communication or 09:50

18 communications? 09:50

19 A. We had submitted a proposal initially for triple key 09:50

20 data entry. Obviously the -- I mean, it's more 09:50

21 accurate, but there is a higher cost so we went with 09:50

22 the double key entry approach. 09:50

23 Q. Can you describe what double key is? 09:50

24 A. In the case of double key there are two operators who 09:50

25 either enter or extract or take the text that is 09:50

1 extracted by the OCR and validate as long as their 09:50  
2 entries tally. That means the text is accurate. If 09:50  
3 the entries don't tally, then there are exceptions and09:50  
4 that's where the quality assurance person could look 09:50  
5 into it, validate and update the -- update the text 09:51  
6 correctly. 09:51

7 Q. How does that differ from triple key? 09:51

8 A. In the case of triple key you have three operators who09:51  
9 do the data entry or the correction, and again, they 09:51  
10 would tally and look at that. There is a higher rate,09:51  
11 higher accuracy rate because of that. 09:51

12 Q. And it's your understanding that HTC proposed triple 09:51  
13 key compare and Public Resource refused to do that and09:51  
14 opted for double key compare? 09:51

15 A. That's correct. HTC did not -- I don't know whether 09:51  
16 HTC proposed or PRO asked for it, but eventually it 09:51  
17 was done with double key. We had submitted a proposal09:51  
18 is what I know. 09:51

19 Q. The initial proposal was for triple key? 09:51

20 A. Correct. 09:51

21 (Marked for identification 09:51

22 Deposition Exhibit No. 2.) 09:52

23 Q. I'm going to hand you what's been marked as Exhibit 2.09:52  
24 It's an August 27th, 2010 email from 9:28 a.m. from 09:52  
25 Mr. Talwalkar to Carl@media.org and it's Bates labeled09:52



1 PRO4964 through 65. 09:52

2 Let me know when you've had a chance to 09:52

3 review that. 09:52

4 A. Yeah. 09:53

5 Q. First of all, can you identify this as an email from 09:53

6 Mr. Talwalkar at HTC to Mr. Malamud? 09:53

7 A. Yes. 09:53

8 Q. Towards the top of the first page you see there's a 09:53

9 description of the accuracy of double key compare and 09:53

10 triple key compare? 09:53

11 A. Yes. 09:53

12 Q. Can you tell me first of all what the number means in 09:53

13 the accuracy column for both of those? 09:53

14 A. That means that the conversion rate -- so if you have, 09:53

15 let's say, 1,000 characters being entered, that means 09:53

16 with triple key you could achieve an accuracy whereby 09:53

17 only 3 characters could be wrong and with double key 09:53

18 you would achieve an accuracy whereby up to 49 09:53

19 characters could be wrong. Meaning it's a tolerance 09:53

20 for quality. Doesn't necessarily mean they are wrong, 09:53

21 but it's a tolerance that you would have. 09:53

22 Q. Do you know how HTC arrived at those accuracy figures? 09:54

23 A. We have an operational metrics whereby when the 09:54

24 quality control people catch issues or sometimes 09:54

25 customers provide feedback, we are able to track that. 09:54

1 Q. So this accuracy number is the accuracy of the final 09:54  
2 work that's delivered to the customer? 09:54  
3 A. Yes. 09:54  
4 Q. So if you were to do double key compare, HTC would 09:54  
5 expect there to be 49 mistakes out of 10,000 09:54  
6 characters or out of 1,000 characters? 09:54  
7 A. Forty-nine out of 1,000, yeah, yes. 09:54  
8 Q. Okay. And that's even after you've compared the 09:54  
9 double entry from both sides, gone through the QA 09:54  
10 process? 09:54  
11 A. I'm sorry, not 49 -- 49 out of 10,000, you're right, 09:54  
12 yeah. 09:54  
13 Q. Okay. But you would expect 49 mistakes out of 10,000 09:54  
14 characters even after you've done the double keying, 09:54  
15 compared them both and gone through HTC's QA process? 09:55  
16 A. It's not the expectation, but that is the maximum 09:55  
17 tolerance. You could achieve 100 percent accuracy as 09:55  
18 well, but there could be a tolerance of 49 -- 49 09:55  
19 characters for every thousand. 09:55  
20 Q. Is the 99.51 percent the mean for the work that's been 09:55  
21 examined by HTC? 09:55  
22 A. Yes. 09:55  
23 Q. So there could be -- 49 characters would be the 09:55  
24 average case, there could be perfect, or there could 09:55  
25 be 99 mistakes in 1,000 -- or 10,000; right? 09:55

1 they would have an orientation to this. 10:00

2 Q. The operators, are they trained in English? 10:00

3 A. Yeah. 10:00

4 Q. So all the training documents are also in English? 10:00

5 A. Yes. 10:00

6 Q. Does Exhibit 3 accurately describe the process that 10:00

7 was used for HTC's work for Public Resource? 10:00

8 A. Yes. 10:00

9 Q. Is there anything that is described in Exhibit 3 that10:00

10 was not done in connection with the Public Resource 10:00

11 work? 10:00

12 A. Not that I know of, no. 10:00

13 Q. Are you aware of anything extra that was done to 10:00

14 ensure the accuracy of the work done for Public 10:01

15 Resource that's not described in Exhibit 3? 10:01

16 A. Not that I'm aware of, no. 10:01

17 Q. Now, when you were describing the double key process 10:01

18 earlier, I think you said that there would be two 10:01

19 operators and they would either rekey something or 10:01

20 start with an OCR of an image file; is that right? 10:01

21 A. Uh-huh. 10:01

22 Q. You have to answer yes or no for the court reporter. 10:01

23 A. Yes, yes. 10:01

24 Q. Okay. Do you know whether or not the Public Resource10:01

25 work started with two operators retyping or with an 10:01

1 OCR process? 10:01

2 A. The decision on that really depends on the quality of 10:01  
3 the image. So if you have a good image quality and if 10:01  
4 OCR does a good job of converting and there are very 10:01  
5 few errors, then operators would validate and the QC 10:01  
6 would validate. If the image quality is bad, then 10:02  
7 they would do the double key entry as well. 10:02

8 Q. How do you determine at HTC whether or not the OCR has 10:02  
9 done a good job at character recognition? 10:02

10 A. It's the quality of the image usually, which typically 10:02  
11 with the experience of the operators they know -- the 10:02  
12 scan operators would know that the image is bad and it 10:02  
13 would have to be rekeyed and that's what happens. 10:02

14 Q. In the case of Public Resource did HTC ever receive 10:02  
15 paper documents? 10:02

16 A. No. 10:02

17 Q. So HTC was never scanning anything; correct? 10:02

18 A. No. 10:02

19 Q. So for Public Resource, did HTC first run an OCR 10:02  
20 software on every image that it received? 10:02

21 A. I don't know that part whether we ran it on every 10:03  
22 major part of the image, I don't know. 10:03

23 Q. Would the first step in the work that was done for 10:03  
24 Public Resource ordinarily be running OCR software on 10:03  
25 the image by two operators? 10:03

1 key or single key, it all depends. 12:19

2 Q. And if accuracy is the most important consideration, 12:19

3 then you would use triple key? 12:19

4 A. Yes. 12:19

5 Q. Do you know how many characters appear on a common 12:19

6 page? 12:19

7 MR. COUTILISH: Objection to the form of 12:19

8 the question. 12:19

9 Q. Let me withdraw it. 12:19

10 On an average page how many characters are 12:19

11 there? 12:19

12 MR. COUTILISH: Same objection. What is an 12:19

13 average page? 12:19

14 Q. You can answer. 12:19

15 A. It's about 4,000. 12:19

16 Q. And if we go back to the error rate or the accuracy 12:19

17 rate that's identified in Exhibit 2, you told me that 12:19

18 you'd expect 49 errors in 10,000 based on this 12:19

19 percentage; right? 12:19

20 A. Yeah, that's correct. 12:19

21 Q. And so every two and a half pages approximately, 49 12:19

22 errors on an average page of 4,000 per page? 12:19

23 A. Like I said -- 12:19

24 MR. STOLTZ: Objection to form. 12:20

25 A. Yeah, like I had said earlier, that is the 12:20

1 tolerance -- 12:20

2 Q. Okay. 12:20

3 A. -- level. 12:20

4 Q. So that's the level that's still deemed to be 12:20

5 acceptable? 12:20

6 A. That's permissible, yeah. 12:20

7 Q. Okay. So in a two and a half page document, if it has 12:20

8 an average of 4,000 characters per page, you would 12:20

9 expect there to be 49 -- or not expect -- 49 mistakes 12:20

10 would be within the tolerance? 12:20

11 A. Yes. 12:20

12 MR. STOLTZ: Objection to form. 12:20

13 Q. Do you have any personal knowledge of regarding any 12:20

14 efforts to correct problems that were identified by 12:20

15 Mr. Malamud? 12:20

16 MR. COUTILISH: Are you asking him or HTC? 12:20

17 MR. FEE: I'm just asking what he 12:20

18 personally knows. 12:20

19 MR. COUTILISH: Okay. 12:20

20 A. I would -- I personally wouldn't know, but in general 12:20

21 HTC would always correct errors identified by the 12:20

22 clients. 12:21

23 Q. During the course of your investigation in connection 12:21

24 with this deposition, did you learn any information 12:21

25 regarding specific instances where any errors were 12:21

# EXHIBIT 6

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UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR )  
TESTING AND MATERIALS, )  
d/b/a ASTM INTERNATIONAL; ) Civil Action No.  
NATIONAL FIRE PROTECTION ) 1:13-cv-01215-TSC  
ASSOCIATION, INC.; and )  
AMERICAN SOCIETY OF )  
HEATING, REFRIGERATION AND )  
AIR CONDITIONING ENGINEERS, )  
Plaintiffs and )  
Counter-Defendants, )  
vs. )  
PUBLIC.RESOURCE.ORG, INC., )  
Defendant and )  
Counter-Plaintiff.

VIDEOTAPED 30(b)(6) DEPOSITION OF NATIONAL  
FIRE PROTECTION ASSOCIATION, INC., BY  
CHRISTIAN DUBAY, before Jeanette N. Maracas,  
Registered Professional Reporter and Notary  
Public in and for the Commonwealth of  
Massachusetts, at 42 Chauncy Street, Boston,  
Massachusetts, on Wednesday, April 1, 2015,  
commencing at 10:00 a.m.

PAGES 1 - 250



1 A. Primarily around the media interviews. 10:26:12  
2 Q. Any other ways? 10:26:15  
3 A. The primary, from a public communications 10:26:21  
4 resource outreach aspect, is through media 10:26:32  
5 inquiries, media interviews and media 10:26:37  
6 responses when I'm requested. 10:26:40  
7 Q. How many media interviews have you given 10:26:41  
8 in the past year? 10:26:48  
9 A. I don't know. Approximately ten. 10:26:49  
10 Q. On what subjects? 10:27:02  
11 A. I don't recall. 10:27:06  
12 Q. You don't recall any of the subjects? 10:27:09  
13 A. Not off the top of my head, no, I do not. 10:27:19  
14 Q. You say that NFPA brings together a multitude 10:27:22  
15 of interested parties who participate in a 10:28:09  
16 consensus process to determine the best level 10:28:15  
17 of minimum safety; is that right? 10:28:18  
18 MR. REHN: Object to the form. 10:28:20  
19 A. NFPA has an open consensus standards 10:28:24  
20 development process that brings together many 10:28:27  
21 differing viewing points of interest, 10:28:32  
22 interest categories as well as the public in 10:28:35  
23 order to develop our codes and standards. 10:28:39  
24 Q. How does NFPA bring them together? 10:28:43  
25 MR. REHN: Objection as to form. 10:28:51

1	A. One way is through our technical committee	10:28:53
2	meetings.	10:28:55
3	Q. How else does NFPA bring them together?	10:29:01
4	A. Through our annual meeting.	10:29:07
5	Q. How else?	10:29:10
6	A. Through special, specially called topical	10:29:17
7	meetings.	10:29:23
8	Q. How else?	10:29:28
9	A. Through technical forums and summits.	10:29:29
10	Q. How else?	10:29:40
11	A. That's all I can think of off the top of my	10:29:41
12	head.	10:29:57
13	Q. And what does NFPA do to bring them together?	10:29:57
14	MR. REHN: Object to the form.	10:30:05
15	Vague.	10:30:07
16	A. With respect to our technical committee	10:30:10
17	meetings, we, through the committee, call the	10:30:12
18	meeting and book the meeting facility and	10:30:16
19	host the meeting.	10:30:20
20	Q. Anything else?	10:30:30
21	MR. REHN: Same objection.	10:30:32
22	A. To clarify, with respect to committee	10:30:35
23	meetings?	10:30:37
24	Q. Yes.	10:30:38
25	A. We publicly promote them, as all of our	10:30:39

1 handle all the logistics around that meeting 10:32:09  
2 space and any required hotels. 10:32:12  
3 Q. How does NFPA host the meeting? 10:32:14  
4 MR. REHN: Object to the form. 10:32:20  
5 Q. I should say how does NFPA host the meetings? 10:32:24  
6 MR. REHN: Same objection. 10:32:28  
7 A. I think the best approach is that because 10:32:29  
8 it's an NFPA meeting, so it's -- we're 10:32:31  
9 calling -- when I say we're calling the 10:32:36  
10 meeting, so it's our committee meeting as an 10:32:37  
11 example. 10:32:41  
12 So NFPA staff is there, technical 10:32:41  
13 staff is there facilitating and running the 10:32:46  
14 meeting along with the actual volunteer 10:32:48  
15 technical committee chair. So I think that 10:32:50  
16 should clarify what I'm implying by 10:32:54  
17 "hosting." 10:32:56  
18 Q. How does the NFPA staff facilitate and run 10:32:57  
19 the meetings along with the technical 10:33:15  
20 committee chairs? 10:33:17  
21 A. Again, just to clarify, just focusing on 10:33:20  
22 technical committee meetings? 10:33:23  
23 Q. Yes. 10:33:24  
24 A. Okay. We have a technical staff liaison 10:33:25  
25 who's assigned to each of our standards and a 10:33:30

1           portion of their job is to attend the           10:33:33  
2           technical committee meetings.           10:33:36  
3       Q.   What do the liaisons do at those meetings       10:33:39  
4           when they attend them?           10:33:45  
5                       MR. REHN:   Object to the form.           10:33:45  
6       A.   Their primary responsibility is to capture       10:33:46  
7           all of the technical changes that the           10:33:51  
8           committee is making to the document they're       10:33:54  
9           working on or standard they're working on.       10:33:57  
10      Q.   What do you mean by technical changes in that   10:34:02  
11           context?           10:34:24  
12      A.   Our technical committees are responsible for   10:34:27  
13           developing changes to our codes and           10:34:31  
14           standards.   And one of the primary           10:34:34  
15           responsibilities of the technical staff       10:34:37  
16           liaison is to capture those changes.       10:34:39  
17      Q.   In what respect are those changes technical   10:34:46  
18           changes?           10:34:50  
19      A.   Those changes are specific, technical being   10:34:53  
20           scientific or wording changes to our codes       10:34:57  
21           and standards which are technical documents.   10:35:01  
22      Q.   How do you distinguish between scientific       10:35:08  
23           changes and wording changes to the technical   10:35:11  
24           documents?           10:35:17  
25                       MR. REHN:   Object to the form.           10:35:18

1 committee is trying to accomplish to ensure 10:38:27  
2 that when those changes go out for ballot to 10:38:29  
3 our technical committees, it's accurate. 10:38:32  
4 Q. That it accurately reflects what the 10:38:35  
5 technical committee intended to produce? 10:38:38  
6 A. The primary job -- 10:38:41  
7 MR. REHN: Object to the form. 10:38:43  
8 A. The primary job of the technical staff 10:38:44  
9 liaison is to ensure that any recorded 10:38:46  
10 actions accurately reflect that intent of the 10:38:48  
11 technical committee. 10:38:51  
12 MR. REHN: If I can just remind the 10:38:52  
13 witness to give me a chance to object after 10:38:53  
14 the question is asked. Helps the court 10:38:56  
15 reporter out if we're not talking over each 10:39:03  
16 other. 10:39:06  
17 A. Sorry. 10:39:07  
18 Q. You mentioned some sort of the editorial 10:39:16  
19 activity in support of the technical 10:39:30  
20 committees; is that correct? 10:39:35  
21 MR. REHN: Object to form. 10:39:35  
22 Q. You used the word "editorial." I didn't 10:39:36  
23 quite understand the context. 10:39:39  
24 A. There's an extensive amount of support that 10:39:41  
25 NFPA staff provides to our standards 10:39:43

1 development process. A piece of that is, for 10:39:45  
2 example, compliance with our manual of style. 10:39:50  
3 Q. What form does that support take? 10:39:57  
4 MR. REHN: Object to the form. 10:40:03  
5 A. It takes several forms. First and foremost 10:40:07  
6 is to capture the specific text or record the 10:40:10  
7 specific technical changes that occurred at 10:40:14  
8 the meeting. 10:40:17  
9 Q. Anything else? 10:40:17  
10 A. Second is to ensure that the wording is in 10:40:26  
11 compliance with our manual style. 10:40:32  
12 Q. Anything else? 10:40:39  
13 A. Also the technical staff is there to ensure 10:40:40  
14 that the new or modified requirements align 10:40:47  
15 with the remainder of the document. 10:40:51  
16 Q. Anything else? 10:40:58  
17 A. They also spend time reviewing those 10:41:05  
18 requirements, the technical staff does, to 10:41:10  
19 make sure they don't establish conflicting 10:41:12  
20 requirements with other portions of that 10:41:14  
21 document or other NFPA standards. 10:41:18  
22 Q. Anything else? 10:41:21  
23 A. Another responsibility is to come back to 10:41:25  
24 NFPA to their offices and ensure that our 10:41:32  
25 editorial production team has full knowledge 10:41:34

1 of those changes as they modify the -- 10:41:39  
2 develop the next edition of the standard. 10:41:43  
3 Q. Anything else? 10:41:48  
4 A. There's an extensive amount of back and forth 10:42:08  
5 between the editorial and production staff 10:42:11  
6 and the technical staff to finalize the 10:42:14  
7 language prior to balloting. 10:42:18  
8 Q. Anything else? 10:42:27  
9 A. Once the language is finalized, the technical 10:42:31  
10 staff works with our project administrators 10:42:37  
11 to develop a technical committee ballot which 10:42:41  
12 is then circulated to that technical 10:42:44  
13 committee. 10:42:44  
14 Q. Anything else? 10:42:51  
15 A. Once the ballot is completed and approved, 10:43:16  
16 the technical staff, working with the project 10:43:22  
17 administrators, then circulates the ballot of 10:43:23  
18 the proposed changes to that full technical 10:43:27  
19 committee. 10:43:30  
20 Q. Do they circulate the proposed ballot or 10:43:39  
21 the actual ballot to the full technical 10:43:39  
22 committee? 10:43:39  
23 A. The actual ballot. The actual ballot is 10:44:03  
24 submitted to the committee for formal voting. 10:44:07  
25 Q. Anything else? 10:44:15

1 Q. Is there anything about the development of 11:16:19  
2 standards that the regulations do not cover? 11:16:21  
3 A. Our regulations cover the specific accredited 11:16:27  
4 rules and hence, its regulations. We also 11:16:33  
5 have our committee officers guide which 11:16:35  
6 provides guidance to our technical committee 11:16:37  
7 members as well as our chairs and our manual 11:16:41  
8 style. 11:16:46  
9 Q. What other documents govern or regulate the 11:16:46  
10 development of standards within NFPA? 11:17:44  
11 A. Off the top of my head I can't think of 11:17:56  
12 anything else. 11:17:59  
13 Q. Who participates in -- strike that. 11:18:09  
14 Who are the members, generally 11:18:17  
15 speaking, the category of NFPA's technical 11:18:20  
16 committees? 11:18:26  
17 A. Just for clarification, the representation or 11:18:29  
18 are they members of NFPA? We have 11:18:36  
19 categories -- we have interest categories of 11:18:39  
20 our committee members. 11:18:43  
21 Q. Who -- what persons are entitled to be 11:18:43  
22 members of NFPA's technical committees? 11:18:48  
23 MR. REHN: Objection as to form. 11:18:51  
24 A. Anyone can apply to be a member of an NFPA 11:18:55  
25 technical committee, and based upon their 11:18:59



1 expertise and their background, they're 11:19:01  
2 evaluated through a process that ultimately 11:19:04  
3 involves standards council appointing them 11:19:07  
4 to, or not appointing, depending on their 11:19:10  
5 credentials, to the various technical 11:19:12  
6 committees. 11:19:14  
7 Q. So the standards council determines who gains 11:19:17  
8 admission to membership in the technical 11:19:21  
9 committees? 11:19:23  
10 A. That's correct. 11:19:24  
11 Q. What criteria does the standards council 11:19:27  
12 apply in determining who should gain 11:19:35  
13 membership to the technical committees? 11:19:39  
14 MR. REHN: Objection as to form. 11:19:42  
15 A. It's a multipart criteria. First is 11:19:46  
16 technical expertise within that subject 11:19:51  
17 matter. Second is balance; is the committee 11:19:54  
18 an appropriate balance. And third is the 11:20:01  
19 ability to participate. 11:20:02  
20 Q. What do you mean by balance? 11:20:06  
21 A. By our regulations, NFPA technical committees 11:20:12  
22 are required to have a balance of interest 11:20:16  
23 categories to ensure that no one party or one 11:20:18  
24 interest category can dominate the process. 11:20:21  
25 Q. What are the interest categories? 11:20:24

1 A. There are, I believe, nine interest 11:20:27  
2 categories, including -- one example is 11:20:31  
3 research and testing is an example. Another 11:20:37  
4 example is enforcer, which includes 11:20:40  
5 government officials, both, sometimes federal 11:20:44  
6 but state and local jurisdictions, as well as 11:20:48  
7 special expert, which is consultants as an 11:20:52  
8 example. 11:20:56  
9 Users, installer maintainers which 11:20:56  
10 are those who install the systems, consumers, 11:21:02  
11 and that's all I can think of. I'm not sure 11:21:13  
12 if I said it, but consumer is another one 11:21:30  
13 that can represent a special -- have a 11:21:34  
14 specific slot. Oh, I'm sorry, one other slot 11:21:35  
15 is labor, is another slot. 11:21:38  
16 Q. Thank you. Are all NFPA employees members of 11:21:51  
17 the technical committees? 11:22:16  
18 MR. REHN: Objection as to form. 11:22:20  
19 A. NFPA employees are not -- cannot be members 11:22:23  
20 of our technical committees. However, as I 11:22:27  
21 stated previously, it's important -- there's 11:22:30  
22 an important role that NFPA staff plays in 11:22:32  
23 guiding, advising the committee, coordinating 11:22:35  
24 the activities and providing their technical 11:22:37  
25 expertise, especially technical staff liaison 11:22:40

1                   How are persons chosen to serve on                   11:24:06  
2                   the standards council?                   11:24:08  
3                   MR. REHN: Object to the form.                   11:24:12  
4           A. Because the standards council is the                   11:24:15  
5                   overarching body over our entire standards                   11:24:18  
6                   development process, they are appointed                   11:24:21  
7                   through a process that involves the NFPA                   11:24:24  
8                   president making recommendations to the NFPA                   11:24:27  
9                   board of directors. Ultimately the standards                   11:24:29  
10                  council members are appointed by our board of                   11:24:33  
11                  directors.                   11:24:35  
12           Q. Are any NFPA employees members of the                   11:24:40  
13                  standards council?                   11:24:43  
14                  MR. REHN: Objection as to form.                   11:24:45  
15           A. Specifically, no. However, similar to the                   11:24:49  
16                  technical committees, there is staff assigned                   11:24:51  
17                  to support the standards council, their                   11:24:55  
18                  activities and their decisions.                   11:24:58  
19           Q. I'd like to go back for a moment to the                   11:25:11  
20                  process after the technical committee has                   11:25:19  
21                  decided on changes to a standard.                   11:25:26  
22                  And you say that a staff                   11:25:31  
23                  representative, NFPA staff representative                   11:25:38  
24                  will capture those changes from the technical                   11:25:41  
25                  committee, correct?                   11:25:44

1 MR. REHN: Object to the form. 11:25:48

2 A. The NFPA technical staff that serves as, the 11:25:50

3 term we use is a staff liaison to a technical 11:25:54

4 committee, they do more than just capture the 11:25:56

5 specific wordings. 11:26:00

6 What they do is they are each 11:26:01

7 technical experts in their field and they not 11:26:03

8 only capture or record those changes, but 11:26:06

9 they provide their expertise to the 11:26:09

10 committee, their field experience, what they 11:26:11

11 have, the information that they're bringing 11:26:14

12 in through questions on the standards and 11:26:16

13 such. 11:26:18

14 And they provide that technical 11:26:19

15 expertise to the committee so the committee 11:26:21

16 can utilize that, a complete combination with 11:26:24

17 all the public input or comments, to land on 11:26:27

18 a final set of proposed language. In 11:26:32

19 summary, it's more than just recording. 11:26:37

20 They're not really recording secretaries, per 11:26:39

21 se. 11:26:43

22 Q. But who ultimately determines the language of 11:26:43

23 the technical committee's proposed changes to 11:26:47

24 a code or standard? 11:26:51

25 MR. REHN: Objection as to form. 11:26:53

1	It's ambiguous.	11:26:54
2	A. The final decision is accomplished through	11:26:56
3	that ballot of the technical committee, but	11:26:58
4	the wording itself is that combination of the	11:27:01
5	technical staff and the committee working to	11:27:05
6	capture the requirement and get it worded	11:27:07
7	properly in the right context, in the right	11:27:09
8	order within a document so that when the	11:27:12
9	final specific words are balloted, the	11:27:14
10	committee has it in context of the whole	11:27:18
11	standards and they can make that decision,	11:27:20
12	seeing it within the body of the standard.	11:27:22
13	Q. When the text is balloted, is there any	11:27:24
14	indication to the members of the committee	11:27:27
15	what variations have occurred as a	11:27:32
16	consequence of staff input from the text that	11:27:38
17	the committee itself was proposing?	11:27:43
18	MR. REHN: Objection as to form.	11:27:47
19	Vague. Lacks foundation. Assumes facts not	11:27:48
20	in evidence.	11:27:51
21	A. There are really two types of changes the	11:27:53
22	committee is balloted on. One is the -- a	11:27:57
23	plain first revision or second revision,	11:28:01
24	which may have been edited to comply with our	11:28:04
25	manual style, get the wording right. That is	11:28:07

1 system, so there would not be a first or 11:31:14  
2 second draft report. There would be a report 11:31:17  
3 on proposals and a report on comments. 11:31:23  
4 Q. Does either of those reports show what 11:31:26  
5 changes in text may have been contributed by 11:31:30  
6 technical staff, technical committee 11:31:33  
7 liaisons? 11:31:38  
8 A. All of the changes in our old system were 11:31:41  
9 contained within the proposals and action on 11:31:45  
10 proposals and comment and actions on 11:31:48  
11 comments, so, in some cases, they may have 11:31:50  
12 been called out on the report and in some 11:31:53  
13 cases not. 11:31:56  
14 Ultimately, all of them had been 11:31:57  
15 balloted through the technical committees. 11:31:58  
16 Whatever you see in the report on proposals 11:32:01  
17 are comments that had gone through the 11:32:03  
18 committee process. 11:32:05  
19 Q. I'm trying to understand how one can 11:32:05  
20 ascertain what, if any, text in any code or 11:32:08  
21 standard has been contributed by NFPA 11:32:17  
22 technical staff. 11:32:21  
23 MR. REHN: Objection as to form, and 11:32:26  
24 the compound nature of the question. 11:32:29  
25 Q. Please tell me how one can ascertain that. 11:32:31

1 MR. REHN: Same objection. 11:32:34

2 A. What I can say about when you look at the 11:32:36

3 wording of a standard, what's been added or 11:32:39

4 worked on by technical staff is, any changes, 11:32:42

5 any text that has been modified in the 11:32:45

6 document has been worked on by technical 11:32:47

7 staff, has been modified, been adjusted to 11:32:49

8 fit the form of our manual style as well as 11:32:54

9 to be consistently worded with the technical 11:32:57

10 body of the standard. 11:32:59

11 So each and every change has been 11:33:01

12 clarified or worked on by technical staff to 11:33:06

13 get it ready for committee ballot. So 11:33:09

14 there's an extensive amount of time. The NEC 11:33:11

15 is an excellent example of the NFPA staff get 11:33:15

16 it worded correctly and in proper format, 11:33:18

17 style and technical comments to be balloted 11:33:23

18 by the technical committee. 11:33:28

19 Q. Where can one detect what changes -- you used 11:33:28

20 the word "worked on," for example. That's a 11:33:33

21 little vague in this context. I would like 11:33:36

22 to know how one can identify any text 11:33:38

23 contributed by technical committee staff 11:33:42

24 liaison in any NFPA code or standard. 11:33:48

25 MR. REHN: Objection as to form. 11:33:54

1           It's ambiguous. It's compound.           11:33:55

2       A. Because -- how can I explain. Because           11:34:03

3           ultimately the final text, the changes are           11:34:06

4           balloted by the technical committee,           11:34:10

5           oftentimes the staff's work on that text is           11:34:12

6           contained within the same wording that's           11:34:15

7           being balloted, the ultimate wording that's           11:34:17

8           balloted by the committee.           11:34:20

9                        So in our old system, that was           11:34:21

10          all -- when you see a change in the document,           11:34:22

11          you can know, and that's why I had my           11:34:24

12          previous answer, that staff was involved in           11:34:26

13          that process.           11:34:28

14                        In the new process that happens with           11:34:30

15          every revision, every revision staff is           11:34:31

16          involved in and worked on and more or less           11:34:35

17          touched, modified, cleaned up to get it ready           11:34:37

18          for balloting.           11:34:40

19                        There's also an additional level in           11:34:41

20          our new process of editorial revisions so           11:34:42

21          that it's clear to the committee that this is           11:34:47

22          something that is not directly tied but it is           11:34:48

23          because of another technical change. So it's           11:34:52

24          just slightly different.           11:34:54

25                        But I can say clearly, if you see a           11:34:56



1 revision to the document or a change, for 11:34:57  
2 example, to the 2008 NEC, that text has been 11:35:00  
3 worked on by editorial production, technical 11:35:05  
4 expertise of the staff liaisons on that 11:35:07  
5 project. That's their job. 11:35:11  
6 Q. But I'm not asking about what the technical 11:35:14  
7 staff have worked on because they may have 11:35:16  
8 worked on language that may have come from 11:35:20  
9 the 2005 NEC that has survived into the 2008, 11:35:22  
10 2011, 2014. I'm asking how does one identify 11:35:29  
11 any text contributed by a technical committee 11:35:34  
12 staff liaison in any code or standard of NEC? 11:35:41  
13 MR. REHN: Objection as to form. 11:35:45  
14 That's ambiguous. It's compound. 11:35:48  
15 A. Again, to further try to clarify this is if 11:35:52  
16 the text was in a previous edition of the 11:35:57  
17 document and moved forward, it would not 11:36:00  
18 show an indication of being modified. But 11:36:03  
19 wherever there is new text added, deleted 11:36:06  
20 or modified, there's an indication in the 11:36:09  
21 margin or shading, in the case of NEC, that 11:36:11  
22 shows that text has been modified, worked 11:36:15  
23 on, whatever. 11:36:18  
24 And those words can come from lots 11:36:18  
25 of places. And the technical staff is 11:36:20

1 go -- strike that. 11:40:50

2 If you needed to identify the 11:40:53

3 language that NFPA employees contributed to 11:40:55

4 NFPA codes and standards, how would you 11:41:05

5 determine that language? 11:41:07

6 MR. REHN: Objection as to form. 11:41:10

7 It's vague and compound. 11:41:11

8 A. What we could determine is the language the 11:41:15

9 technical committee at the end of the day 11:41:19

10 approved. Into -- each individual word and 11:41:21

11 such would be difficult, if not impossible, 11:41:25

12 because of ultimately the technical staff 11:41:30

13 provides that content to the committee which 11:41:33

14 then approves those words. 11:41:35

15 Q. You said the technical staff provides the 11:41:37

16 content to the committee? The technical 11:41:44

17 staff doesn't draft the standards, correct? 11:41:47

18 MR. REHN: Objection as to form. 11:41:51

19 Mischaracterizes. 11:41:53

20 A. In many cases the technical staff in the room 11:41:59

21 is drafting the text. 11:42:02

22 Q. Is proposing new text? 11:42:04

23 A. In some cases yes, to accomplish what the 11:42:10

24 committee is trying to accomplish. The 11:42:13

25 technical staff of NFPA are experts in their 11:42:15

1 field, and the committee may want to 11:42:20  
2 establish a requirement for X and the 11:42:23  
3 technical staff is there saying, well, we can 11:42:24  
4 word it this way and that way, does this meet 11:42:27  
5 your intent, how about we do this, I can 11:42:29  
6 research some information, get back to you at 11:42:30  
7 the next meeting. 11:42:32  
8 The technical staff provides a vital 11:42:33  
9 role in helping the technical committee 11:42:35  
10 accomplish their mission of developing those 11:42:38  
11 words that become ultimately the final words 11:42:40  
12 of the standard. 11:42:43  
13 Q. Who makes the decision about the words in a 11:42:44  
14 standard? 11:42:46  
15 MR. REHN: Objection as to form. 11:42:46  
16 Ambiguous. 11:42:48  
17 A. The final decision is -- and to summarize, 11:42:49  
18 it's a two-part decision. A committee 11:42:54  
19 ballots on it, the ballot's on the final 11:42:55  
20 word, the committee approves it. At the 11:42:58  
21 end of the day our standards council issues 11:43:00  
22 that document, but the committee ballot 11:43:03  
23 establishes the position of the type of 11:43:03  
24 committee at that time. 11:43:07  
25 Q. And how does the text evolve up to the point 11:43:07

1           that the text of the technical committee is           11:43:16  
2           balloted?           11:43:19  
3                       MR. REHN:  Objection as to form.           11:43:20  
4           Ambiguous.  Compound.           11:43:22  
5       A.  The text can evolve and by evolve, you mean           11:43:25  
6           created and included?  Is that what you're           11:43:28  
7           saying?           11:43:31  
8       Q.  I think so.           11:43:32  
9       A.  So in a few ways.  One is it can be submitted           11:43:33  
10           through a proposal form or public input form           11:43:37  
11           or a public comment form.  The language can           11:43:45  
12           come from that.  It can come from the           11:43:49  
13           expertise of the technical committee members           11:43:53  
14           who are sitting on the committee, or it can           11:43:55  
15           come from technical staff providing that to           11:43:58  
16           the committee as their work progresses along.           11:44:01  
17                       Ultimately that evolution is the           11:44:06  
18           staff liaison synthesizes all that with the           11:44:08  
19           direction of the committee to land on the           11:44:13  
20           final technical language that is balloted.           11:44:15  
21       Q.  With the direction of the committee, meaning           11:44:18  
22           with the approval of the committee members?           11:44:29  
23                       MR. REHN:  Objection as to form.           11:44:31  
24           Mischaracterizes the testimony.           11:44:34  
25       Q.  What do you mean by with the direction of the           11:44:36

1	committee?	11:44:38
2	A. So a committee could want to establish a	11:44:40
3	requirement again for X for something and	11:44:45
4	they may say, we want the requirement to read	11:44:48
5	12 and the staff liaison would have to put	11:44:51
6	text around that to get it to read in context	11:44:55
7	of the document. Or they may say we want to	11:44:57
8	have a draft chapter on something, technical	11:45:00
9	staff can you do research, pull together	11:45:03
10	drafting of documents to present to the	11:45:12
11	committee to consider.	11:45:14
12	In the end the committee will agree	11:45:16
13	through a meeting vote what text is going to	11:45:19
14	move forward towards ballot. Then the	11:45:21
15	staff's job is to turn that into a ballot and	11:45:24
16	make sure it fits to our manual style and	11:45:28
17	ballot with the technical committee on the	11:45:28
18	final language.	11:45:31
19	Q. What criteria do technical committees use	11:45:31
20	to determine what text moves forward to a	11:45:34
21	ballot?	11:45:37
22	MR. REHN: Objection as to form.	11:45:38
23	A. It's their expertise. It's their	11:45:42
24	professional opinion in a balanced way	11:45:46
25	through a meeting vote of what they believe	11:45:48

1 A. No. There's no place on our form to indicate 12:48:27  
2 what category you are applying to. That's 12:48:46  
3 ultimately the decision of our standards 12:48:50  
4 council. 12:48:52  
5 Q. Do you see on the third page of Exhibit 1231, 12:48:52  
6 the page ending 38520, there's no assigned -- 12:48:59  
7 copyright assignment language on this, 12:49:10  
8 correct? 12:49:14  
9 MR. REHN: Object to the form. 12:49:15  
10 Mischaracterizes the document. Calls for a 12:49:17  
11 legal opinion. 12:49:19  
12 A. Each and every committee member participates 12:49:23  
13 in the NFPA process with the full 12:49:26  
14 understanding that the material that they're 12:49:28  
15 developing is the intellectual property of 12:49:30  
16 NFPA. And that has been that way for as long 12:49:33  
17 as I've been involved in NFPA and as part of 12:49:36  
18 the application process as well as we have a 12:49:38  
19 policy that we verify each and every public 12:49:42  
20 input public comment proposal that comes in 12:49:44  
21 that that has happened. 12:49:47  
22 Q. Do you understand what a work-made-for-hire 12:49:51  
23 is? 12:49:55  
24 MR. REHN: Object to the form. 12:49:55  
25 Calls for a legal opinion. 12:49:56

1	Q. That's a yes, then?	03:00:28
2	A. Yes, it does look typical.	03:00:29
3	Q. It appears that this document lacks a	03:00:39
4	signature. I gather that NFPA would accept	03:00:42
5	proposals like this that lacked signatures;	03:00:46
6	is that correct?	03:00:50
7	MR. REHN: Object to the form.	03:00:50
8	A. We have a policy in place to not accept any	03:00:52
9	proposals, comments, public inputs or public	03:00:54
10	comments in our new process without the	03:00:57
11	appropriate copyright transfer. In my	03:00:59
12	personal opinion, I note that it's an -- it	03:01:02
13	appears to be a Word file and many times we	03:01:04
14	would get individuals would submit large	03:01:07
15	numbers of proposals and comments with a	03:01:10
16	cover sheet having a signature applying to	03:01:13
17	all of them.	03:01:15
18	And this may be that case, but I'm	03:01:18
19	speculating on that point. But we have a	03:01:20
20	strict policy in place to review each policy	03:01:22
21	for signature.	03:01:26
22	Q. Because it's important to NFPA to get a	03:01:26
23	signature to Point 5 on this document; is	03:01:29
24	that correct?	03:01:34
25	MR. REHN: Object to the form.	03:01:34

1 A. We have a policy in place, and the importance 03:01:39  
2 of that policy is to verify each and every 03:01:42  
3 public input, public comment and under the 03:01:45  
4 old system, proposal that a signature was 03:01:48  
5 provided on any and all submissions. 03:01:51  
6 Q. My question was whether it was important to 03:01:54  
7 get that for Paragraph 5? 03:01:56  
8 MR. REHN: Object to the form. 03:02:00  
9 Asked and answered. 03:02:03  
10 A. Historically, for my team, it was important 03:02:05  
11 because we had a policy in place to the point 03:02:11  
12 that we had full-time staff assigned to that 03:02:13  
13 one task. And during times of heavy volumes, 03:02:15  
14 we would assign multiple staff to that 03:02:18  
15 specific task. 03:02:21  
16 (Exhibit 1247 marked for 03:03:06  
17 identification.) 03:03:41  
18 Q. I've handed you Exhibit 1247. Do you 03:03:41  
19 recognize this as a document that NFPA 03:03:53  
20 maintains in the ordinary course of business 03:03:55  
21 as part of the standard development process? 03:04:00  
22 A. Yes, this form does look typical, 03:04:08  
23 Exhibit 1247. 03:04:11  
24 Q. This was a non-electrical form, but the 03:04:11  
25 sender indicated it was for the National 03:04:14



1	off the record.	05:38:17
2	VIDEOGRAPHER: The time is 5:38.	05:38:17
3	This is the end of Tape No. 3, and we are now	05:38:19
4	off the record.	05:38:22
5	(Break taken)	05:38:25
6	VIDEOGRAPHER: The time is 5:53.	05:53:03
7	This is the beginning of Tape No. 4, and we	05:53:15
8	are now back on the record.	05:53:17
9	BY MR. BRIDGES:	05:53:20
10	Q. Mr. Dubay, you mentioned earlier that NFPA's	05:53:20
11	staff check each of these proposal and	05:53:26
12	comment forms when they are submitted to look	05:53:34
13	for signatures on the copyright language and	05:53:42
14	indications as to whether the material is	05:53:46
15	original or comes from another source; is	05:53:48
16	that correct?	05:53:52
17	A. We have a policy that each and every	05:53:53
18	proposal, public input or comment is reviewed	05:53:57
19	for completeness being signature, copyright	05:53:59
20	release as well as any attached materials for	05:54:03
21	potential copyright with those as well.	05:54:08
22	Q. How many proposals, communications with	05:54:11
23	public input or comments, falling in the	05:54:20
24	categories you just mentioned, does NFPA	05:54:26
25	receive each year?	05:54:29

# **EXHIBIT 7**

UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

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 AMERICAN SOCIETY FOR TESTING AND ) Case No.  
 MATERIALS d/b/a ASTM INTERNATIONAL;) 1:13-cv-01215-EGS  
 NATIONAL FIRE PROTECTION )  
 ASSOCIATION, INC.; and )  
 AMERICAN SOCIETY OF HEATING, )  
 REFRIGERATING, AND )  
 AIR-CONDITIONING ENGINEERS, INC., )  
 Plaintiffs, )  
 vs. )  
 PUBLIC.RESOURCE.ORG, INC., )  
 Defendant. )  
 -----)  
 AND RELATED COUNTERCLAIMS. )  
 -----)

RULE 30(B)(6) VIDEOTAPED DEPOSITION OF AMERICAN  
SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING  
ENGINEERS, INC.

BY AND THROUGH ITS DESIGNEE,

STEPHANIE REINICHE

MONDAY, MARCH 30, 2015

9:10 a.m.

VERITEXT LEGAL SOLUTIONS

1075 PEACHTREE STREET

SUITE 3625

ATLANTA, GEORGIA

Reported By:

SHARON A. GABRIELLI, CCR B-2002

Job No. 2035289

1 knowledge, it's the -- the requirement is all 09:45  
2 states are supposed to become compliant with 09:48  
3 it or deem to comply by another method every 09:43  
4 so many years to the latest version of 09:49  
5 90.1. 09:41

6 Q (BY MR. BECKER) When you say that all states 09:45  
7 must become compliant, does that mean that the states 09:47  
8 have to adopt this into their regulations or does it 09:40  
9 mean that these states have to build their buildings to 09:45  
10 comply with the EPAct? 09:49

11 MR. CUNNINGHAM: Object to form. 09:41

12 THE WITNESS: It means they're supposed 09:43  
13 to adopt a code that is equivalent to the 09:45  
14 current version of 90.1 within two -- I 09:48  
15 believe it's within two years of each year, 09:41  
16 or there is some other rules that they have 09:45  
17 to follow if they don't deem to comply. 09:48

18 It does not have to be 90.1. It could 09:42  
19 be another version of a different code. 09:44  
20 So... 09:47

21 Q (BY MR. BECKER) What other codes would -- 09:45  
22 would suffice to -- to satisfy the EPAct? 09:40

23 MR. CUNNINGHAM: Object to form. 09:44

24 THE WITNESS: The IECC. 09:47

25 Q (BY MR. BECKER) What is the IECC? 09:40

1           A     International Energy -- I'm not positive. I 09:44  
2     just speak in acronyms, so I can't remember. I have to 09:49  
3     look it up, to be honest. But it's through 09:42  
4     International Code Council. It's their energy 09:47  
5     efficiency code. 09:42

6           Q     The International Code Council, are they 09:46  
7     known as ICC? 09:48

8           A     Yes. 09:40

9           Q     What's the -- is there any relationship of 09:44  
10    the IECC to ASHRAE's Standard 90.1? 09:47

11          A     90.1 is a compliance option to the IECC. 09:43

12          Q     What does that mean? 09:42

13          A     It means you can choose -- if you adopt that 09:44  
14    as your code and you adopt it in its entirety and 09:49  
15    then -- and 90.1 is a reference as a compliance option 09:43  
16    at the -- whatever level you're -- design your code -- 09:49  
17    wherever that code is adopted, if they -- if the 09:43  
18    builder wants to build according to what's in 90.1, 09:46  
19    they have that option or they can build according to 09:49  
20    the IECC, and then that's their choice. 09:42

21          Q     Does the IECC say within it that someone can 09:41  
22    comply with ASHRAE Standard 90.1 and that would be 09:47  
23    sufficient? 09:40

24                 MR. CUNNINGHAM: Object to form. 09:41

25                 THE WITNESS: It -- there is a reference 09:43

1 that are assigned to other managers in the department? 09:47

2 A We just -- we just split them up because 09:41

3 of staff loads. One person can't support them based on 09:44

4 their meeting schedules; one person can't do all of 09:40

5 them. Some of them, it's based on their prior 09:43

6 expertise. 09:47

7 Q And do you know what standards they are that 09:49

8 are not assigned to Mark Weber that are American 09:41

9 standards? 09:45

10 A Yes. 09:45

11 Q And which standards are those? 09:46

12 A 90.1, 90.2, 90.4, 189.1, 15, 34. 09:49

13 Q And who is Standard 90.1 assigned to? 09:53

14 A Steve Ferguson. 09:59

15 Q And you say that Steve Ferguson reports to 09:50

16 you as well? 09:53

17 A Yes. 09:54

18 Q And what is Steve Ferguson's position? 09:55

19 A Manager of standards for codes. 09:58

20 Q And he's also the staff liaison for 90.1, you 09:56

21 were saying? 09:51

22 A Yes. 09:51

23 Q Okay. What does Mr. Ferguson do as staff 09:54

24 liaison for 90.1? 09:57

25 A A lot of things. He'll -- he does -- he'll 09:59

1 do a double review of the membership items reviewed by 09:53  
2 Katrina, works with the project committee chair to help 09:58  
3 come up with a balance committee, looking at terms, you 09:54  
4 know, helping making sure they, you know, get -- rotate 09:59  
5 people in and out per our rules. He attends all the 09:52  
6 full project committee meetings, some of the 09:59  
7 subcommittee meetings. 09:52

8 He processes the letter ballots for approval 09:55  
9 of all drafts. He reviews the drafts to make sure 09:57  
10 they're written consistently. He points out conflicts 09:52  
11 when they make one change to a section and then they 09:56  
12 haven't made a similar change to another section so 09:58  
13 there's not conflicts. 09:53

14 He reviews all of the public -- final 09:55  
15 publication drafts in the final roll-ups of the 90.1 09:58  
16 for each new version every three years. He does the 09:53  
17 minutes. 09:57

18 Q Are you aware of any other work that 09:53  
19 Mr. Ferguson does as the staff liaison for 90.1? 09:55

20 A That's -- that's pretty much the general 09:51  
21 stuff that I can think of. He has other duties besides 09:54  
22 90.1. 09:57

23 Q Does Mr. Ferguson draft any of the text for 09:58  
24 90.1? 09:53

25 A He reviews the drafts and points out 09:54

1 conflicts. 09:57

2 Q But he doesn't contribute text directly to 09:57

3 90.1? 09:51

4 A No. He may comment when they're discussing 09:52

5 proposed text changes to make them aware of something, 09:56

6 but he does not necessarily, unless they wrote 09:50

7 something in the incorrect format. 09:53

8 Q And what would he do if they had written 09:56

9 something in an incorrect format? 09:58

10 A He would edit it, send it back. If it's a 09:50

11 substantive change to fix it, then it would have to go 09:53

12 back to the committee for a new vote. If it's 09:56

13 editorial, then the chair or a subcommittee -- or in 09:59

14 consultation with a subcommittee chair can say that's 09:54

15 correct and -- and then move it forward in whatever 09:58

16 step in the process it's in. 09:50

17 Q When you say he edits it and sends it back, 09:51

18 does that mean that he actually changes the text, or 09:54

19 does this mean that he sends a comment that there is a 09:56

20 conflict or something like that and leaves it to the 09:50

21 committee to make the change? 09:52

22 A If it's -- it depends. If it's a conflict 09:54

23 and he understands -- he has an engineering degree, so 09:57

24 if he understands how to change it, he can propose a -- 09:51

25 he may propose the wording change. If it's not 09:55



1 something he understands and it's a conflict, then 09:50  
2 he'll comment and ask the committee for direction. 09:53  
3 Q And is there any record of the wording 09:53  
4 changes that Mr. Ferguson has proposed? 09:56  
5 A There's probably -- if he sent something 09:52  
6 back, it -- to the committee, it would have been sent 09:54  
7 via email. 09:58  
8 Q If you wanted to go back and find any 09:51  
9 proposed changes that Mr. Ferguson had made, how would 09:57  
10 you go about doing that? 09:51  
11 A I'd have to look in his email. He wouldn't 09:52  
12 have proposed them in the minutes. That's not 09:55  
13 something recorded in the minutes, so he would have 09:57  
14 sent it via email. 09:59  
15 Q And how would that -- would that change be 09:52  
16 reflected in the minutes in -- in any way? 09:54  
17 A Not -- not unless it was -- if he sent a 09:58  
18 change back, this assumes that the committee has 09:54  
19 already approved the proposed change. And if there was 09:57  
20 an issue and he sent it back, then if -- if a change 09:59  
21 had to be made that was substantive, there would be 09:54  
22 another -- there would be a letter ballot. So then it 09:57  
23 would be reflected in a letter ballot. If it's 09:51  
24 editorial, the chair would accept it. 09:54  
25 Q Who makes the determination for a substantive 09:59

1 Q And the -- who drafts the title, purpose and 13:03  
2 scope? 13:07

3 A The title, purpose and scope can be -- a new 13:02  
4 one can be submitted by anyone. I could submit one; 13:05  
5 you could submit one. The technical committee within 13:07  
6 ASHRAE is usually how it's submitted. 13:01

7 Q And is the technical committee, are they 13:02  
8 volunteers or are they employees of ASHRAE? 13:07

9 A Volunteers. 13:00

10 Q And the project committee as well is 13:01  
11 volunteers, correct? 13:03

12 A That's correct. 13:04

13 Q How are ASHRAE employees involved in the 13:01  
14 creation and maintenance of ASHRAE Standard 90.1? 13:05

15 A In the -- are you talking from now or are you 13:01  
16 talking about when it was first started? 13:04

17 Q Let's -- let's go from when it first started 13:07  
18 until now. 13:09

19 A So when the title, purpose and scope would 13:01  
20 have been proposed, a staff member would -- would 13:03  
21 review that to make sure it's in the correct format 13:05  
22 and, if there is some questions, would actually send it 13:09  
23 back to whoever had proposed it to make -- to correct 13:01  
24 it or say if they're okay, if we met their intent, and 13:05  
25 then send it forward to -- it probably when -- 19 -- 13:09

1 90.1 was developed in, I think, 1975. They probably 13:05  
2 didn't have all the subcommittees that we have now, but 13:01  
3 would have went through the approving bodies up through 13:04  
4 the board that way. 13:07

5 Q And would there have been a project committee 13:07  
6 as well for -- for the original 90.1? 13:09

7 A Yes. 13:01

8 Q And during that process, did staff members 13:09  
9 draft any of the text for 90.1? 13:15

10 A From the beginning? 13:10

11 Q Yeah. 13:12

12 A Not unless they were making the edits to -- 13:13  
13 because of conformity and -- or conflicts or things 13:16  
14 like that. 13:19

15 Q And would staff members have contributed any 13:12  
16 text to subsequent versions of 90.1? 13:18

17 A In the same way, either in the discussions, 13:10  
18 if there's a conflict or stuff doesn't -- or through 13:13  
19 the editing and review of the material. 13:17

20 Q And does ASHRAE have any record of that? 13:12

21 A If it was done -- it would have been done via 13:17  
22 email, at the time email started. 90.1 started before 13:10  
23 the Internet, so if the -- if -- if the records still 13:15  
24 existed, it would have been in paper format. 13:10

25 Q What is ASHRAE's purpose in creating these 13:11

1 A No. 14:00

2 Q What -- what does it mean, then? 14:01

3 A It means -- because the IECC uses 90.1 as 14:03  
4 a -- as a compliance option, if the state or 14:06  
5 jurisdiction adopted it and left that requirement in 14:01  
6 and did not change it, then that -- that particular 14:04  
7 state or jurisdiction could use 90.1. 14:09

8 Q And on page 6, what's marked ASHRAE0003500 14:13  
9 titled "Challenges to Adoption," it says, "Cost of the 14:13  
10 standard," then subpoint, "Revenue objectives are 14:17  
11 antithetical to widespread adoption." 14:11

12 Do you know what that statement was in 14:14  
13 reference to? 14:15

14 A That people don't want to have to pay for the 14:18  
15 standard, is my guess, or they think the cost of the 14:12  
16 standard is too high. 14:14

17 Q Has ASHRAE received comments or complaints 14:17  
18 that the cost of the -- the Standard 90.1 is too high? 14:10

19 MR. CUNNINGHAM: I'm going to object to 14:14  
20 the scope. 14:16

21 THE WITNESS: That would have been 14:17  
22 something that Steve Comstock would have 14:18  
23 known. He's the one that deals with the 14:10  
24 standards and the cost. 14:14

25 Q (BY MR. BECKER) Are you personally aware of 14:15

1 any instances where individuals have complained about 14:17  
2 the cost of -- of the -- the 90.1 standard being too 14:11  
3 high? 14:16

4 MR. CUNNINGHAM: Object to the scope 14:16  
5 again. Ms. Reiniche is not being deposed in 14:17  
6 her personal capacity. 14:10

7 THE WITNESS: No, I'm not. 14:13

8 Q (BY MR. BECKER) Two pages after that, on 14:13  
9 ASHRAE003502, it says, "Some recognized risks." And 14:16  
10 then in the middle of that page, it says, "Code 14:11  
11 proposals that are more stringent than 90.1 viewed as a 14:13  
12 significant risk to our standing in the marketplace. 14:19  
13 Others are not passive." 14:12

14 Do you know what that refers to? 14:14

15 A That means that there's been code proposals 14:10  
16 submitted to -- to the IECC that are more stringent 14:13  
17 than 90.1. 14:18

18 Q Do you know how ASHRAE responded to this 14:17  
19 perceived risk that there were code proposals submitted 14:12  
20 that were more stringent than 90.1? 14:15

21 A If a code proposal that was submitted was 14:10  
22 more stringent than 90.1, then ASHRAE would have spoke 14:13  
23 most likely against that proposal, depending on -- 14:18  
24 there's a lot of factors that that would have been 14:14  
25 dependent on. It would have depended on what part, 14:17

1 include ASHRAE. 17:44

2 And sent it to -- purportedly sent it to 17:46

3 media, Congress, Federal Trade Commission, 17:41

4 including salaries of the CSOs of those 17:44

5 organizations, and then indicating that 17:48

6 they're going to post those online on 17:40

7 May 1st. 17:44

8 Appears a member of the board responded 17:46

9 back to Jeff asking why ASHRAE standards 17:40

10 aren't included, and Jeff reported back that 17:43

11 he -- he doesn't know, but right now they're 17:46

12 happy to let someone else fight the battle 17:49

13 since we're not included. 17:42

14 Q (BY MR. BECKER) And this is in March 2012, 17:50

15 correct? 17:54

16 A Correct. 17:55

17 Q So ASHRAE was at the very least aware of 17:56

18 Public Resource in March of 2012, correct? 17:52

19 A Correct. 17:56

20 Q And Mr. Littleton says at the top of the page 17:52

21 in the middle of the paragraph, "Developing standards, 17:56

22 particularly those that are adopted into law, takes 17:59

23 time and resources that someone must underwrite." 17:52

24 Can you tell me about the time and resources 17:58

25 that are required to develop standards? 17:52

1           A     For 90.1, I would say it's another full-time 17:56  
2     job for the volunteers that work on that, with the 17:59  
3     amount of hours they spend on subcommittee calls where 17:51  
4     they're drafting the -- where smaller groups are 17:55  
5     drafting it based on the expertise of the different 17:58  
6     chapters within 90.1, in addition to meeting four times 17:50  
7     a -- four times a year face-to-face, full subcommittee, 17:55  
8     full project committee members -- meetings for four 17:59  
9     days straight from 8 in the morning until 10 at night. 17:52  
10    It's a huge time commitment for those volunteers. 17:55

11           Q     And he says, "particularly those that are 17:53  
12    adopted into law." Why is it particularly those that 17:57  
13    are adopted into law that take time and resources? 17:52

14           A     Because usually when it's something that's 17:57  
15    going to be adopted into law and it's going to be a 17:59  
16    major change, it -- it generates a lot of comments, not 17:52  
17    just one or two, talking 50 to a hundred lengthy 17:56  
18    comments, because people in -- in the industry have 17:52  
19    different opinions and the committee has to listen to 17:55  
20    those, look at the -- whatever technical justification 17:58  
21    they submit, determine if -- if what they're submitting 17:51  
22    is cost justified, looking at, you know, what the 17:56  
23    change would do, and if that's truly what's being done 17:50  
24    in the industry. 17:53

25                    So what -- the more significant the change, 17:54

1 the longer it takes to get something through the 17:56  
2 standards development process. 17:58

3 Q And are there other reasons why the standards 17:52  
4 that are adopted into law would take greater time and 17:55  
5 resources? 17:53

6 A I suppose that when you're -- if you define 17:57  
7 laws including the codes, then there's the time it 17:50  
8 takes to present those changes to the code, to the 17:54  
9 testimony. Again, that's almost another full-time job, 17:57  
10 the amount of time people spend at those code hearings, 17:51  
11 talking about the issues. 17:55

12 Q And are those code hearings before 17:50  
13 governmental bodies? 17:52

14 A They're by code bodies. 17:53

15 Q Code bodies. And what do you mean by "code 17:54  
16 bodies"? 17:56

17 A International Code Council, NFPA, IATMO. 17:57

18 Q Does that also include time and resources 17:52  
19 spent working with government officials? 17:58

20 A It could, if it's going into federal 17:52  
21 regulations or federal law. 17:54

22 Q Would it also include time and resources when 17:58  
23 it's going into state regulations or state law? 17:51

24 A Yes, if -- if people are aware it's -- it's 17:55  
25 happening. 17:58



# **EXHIBIT 8**

1 IN THE UNITED STATES DISTRICT COURT  
2 FOR THE DISTRICT OF COLUMBIA

3  
4 AMERICAN SOCIETY FOR TESTING  
5 AND MATERIALS d/b/a ASTM  
6 INTERNATIONAL; NATIONAL FIRE  
7 PROTECTION ASSOCIATION, INC., ;  
8 and AMERICAN SOCIETY OF HEATING,  
9 REFRIGERATING, AND AIR-CONDITIONING  
10 ENGINEERS, INC.

11 Plaintiffs, CIVIL ACTION FILE

12 vs. NO. 1:13-CV-01215-EGS

13 PUBLIC.RESOURCE.ORG, INC.,

14 Defendant.

15  
16 30(b)(6) VIDEOTAPED DEPOSITION OF  
17 STEVEN COMSTOCK

18 March 5, 2015

19 10:20 a.m.

20 1075 Peachtree Street

21 Suite 3625

22 Atlanta, Georgia 30309

23 Lee Ann Barnes, CCR-1852, RPR, CRR

24  
25 PAGES 1 - 199

1 90.1 in the 2010 edition, whether that is by physical  
2 copy sale, whether it's by bundled or value-added  
3 sale, whether it's by license, whether it's by some  
4 subscription or network license, but I'm omitting  
5 from this question the free reading facility.

6 MR. LEWIS: Object to form.

7 THE WITNESS: That would be pure conje- --

8 I -- I do not know.

9 Q. (By Mr. Bridges) What -- is there a  
10 standard retail price for the current version of  
11 ASHRAE 90.1?

12 A. Yes, there is.

13 Q. How much is that?

14 A. That's what I'm -- I believe the ASHRAE  
15 member price for the current edition of standard 90.1  
16 is \$99. I believe the list price is \$120.  
17 Typically, our member discount is 15 percent.

18 Q. Does ASHRAE have a figure of -- strike  
19 that.

20 Does ASHRAE have an understanding of the  
21 approximate revenue that it has gained from the sale  
22 or licensing, direct or indirect, of the ASHRAE 90.1  
23 standard?

24 A. We would have the information that would  
25 represent the revenue from the copies that we sell.

1 ASHRAE home page.

2 Secondly would be if they con- -- if they  
3 just contact ASHRAE in -- in general.

4 Q. And if -- are there any other ways that  
5 you're aware of?

6 A. No, just those two.

7 Q. If someone contacts ASHRAE in general, is  
8 it my understanding, based on your testimony earlier,  
9 that the person contacting ASHRAE is likely to be  
10 directed to your assistant?

11 A. That is correct.

12 Q. And your assistant would typically act as  
13 some kind of interface between ASHRAE and whoever's  
14 seeking the permission?

15 A. That is correct.

16 Q. Who besides yourself would direct your  
17 assistant in connection with the assistant's handling  
18 the requests for permission?

19 A. I would be the only person who would be  
20 giving her that direction.

21 Q. I also want to review systematically some  
22 of the information that I've heard today about  
23 sources other than ASHRAE for ASHRAE standards.

24 So to begin with, ASHRAE makes its  
25 standards available through the Web to persons who

1 want to view or acquire the standards through the Web  
2 interface, whether by using the free viewing facility  
3 or by ordering a PDF or ordering a CD; is that  
4 correct?

5 A. That is correct, or a book.

6 Q. If somebody wants networked access to  
7 ASHRAE's standards, that person normally goes through  
8 a reseller; is that correct?

9 A. That is correct.

10 Q. And you identified several resellers  
11 earlier today; correct?

12 A. That is correct.

13 Q. Are there any other significant resellers  
14 apart from the four you mentioned who resell ASHRAE's  
15 standards?

16 A. I don't -- significant sellers, the only  
17 other ones that come to mind, SAI Global -- I don't  
18 believe I referenced them, and Barber Index would  
19 be -- would be -- I think that may be six then.  
20 Those are the principal resellers.

21 Q. And then apart from them, there may be book  
22 retailers?

23 A. (Witness nodded head affirmatively.)

24 MR. LEWIS: You have to --

25 THE WITNESS: Yes.

1 Q. (By Mr. Bridges) What other major sources  
2 of AS- -- sorry, of ASHRAE standards other than  
3 ASHRAE have I missed?

4 A. When you say "sources," sources that make  
5 our documents available in the marketplace?

6 Q. Right, right. What I would consider to be  
7 a source to which a member of the public would go in  
8 order to obtain ASHRAE standards.

9 A. I know we have publications in Amazon, for  
10 example. I don't know if -- offhand, I can't recall  
11 if among the titles they offer are standards, but I  
12 would think it's likely that they would be.

13 Q. Any others that we haven't reviewed?

14 A. There's an assortment of small book  
15 redistributors, Engineer's Bookstore over at Georgia  
16 Tech, for example, Barnes & Noble, which does college  
17 bookstores. They may maintain inventory of ASHRAE  
18 standards for resale.

19 Q. Do college students get a discount on the  
20 price of AS- -- of ASHRAE standards?

21 A. We have a student member price that is  
22 available to student members of ASHRAE.

23 Q. And do members have to purchase standards  
24 through ASHRAE's website in order to take advantage  
25 of member discount?

# EXHIBIT 9



**PUBLIC.RESOURCE.ORG** ~ A Nonprofit Corporation

**Public Works for a Better Government**

April 1, 2015

VIA EMAIL AND FIRST CLASS MAIL

FOIA Requester Service Center  
US Consumer Product Safety Commission  
4330 East West Highway, Room 820  
Bethesda, MD 20814  
E-mail: [cpssc-foia@cpssc.gov](mailto:cpssc-foia@cpssc.gov)

**RE: Freedom of Information Act Request**

Dear FOIA Officer:

On behalf of Public.Resource.Org, and pursuant to the Freedom of Information Act, **5 U.S.C. § 552**, I request a copy of *ASTM F 1447-94, Standard Specification for Protective Headgear Used in Bicycling 1994 Edition* which is incorporated by reference in **16 CFR 1203.53(b)** and used in **16 CFR 1203.53(a)**.

Please provide the record in electronic form if possible.

If it is your position that *ASTM F 1447-94* (or portions thereof) is exempt from disclosure, please state the basis of the denial of each portion of the record withheld. In addition, please provide the nonexempt portions of the record.

Public.Resource.Org requests that all fees in connection with this FOIA request be waived in accordance with **5 U.S.C. § 552(a)(4)(A)(iii)**, because it does not seek the records for a commercial purpose and disclosure “is in the public interest because it is likely to contribute significantly to public understanding of the operations and activities of the government.” Because it was incorporated by reference into the Code of Federal Regulations, the requested record is part of the agency’s governing law. Accordingly, it is the essence of the “operations and activities of the government.” However, because it is not published in the Federal Register, the public does not have the same access to it that it has to other parts of the agency’s regulations. Disclosure of the record will allow the public to gain knowledge about what is included in the agency’s binding law.

Public.Resource.Org does not have a commercial interest in the requested record. Public.Resource.Org is a 501(c)(3) public charity chartered to make government information more broadly available without fee to any and all users. Public.Resource.Org has demonstrated an ability to disseminate information about the government and its activities to the public. It is one of the largest distribution



sites for public information related to the U.S. government, including over 14,000 hours of video from Congressional hearings posted at the request of the Speaker of the House, over 8 million Form 990 reports filed with the Internal Revenue Service, over 6,000 U.S. government videos posted in cooperation with the Archivist of the United States, and the historical opinions of the U.S. Court of Appeals. As the President of Public.Resource.Org, I am frequently quoted in major media publications such as **the New York Times**, **Business Week**, **the New Republic**, and **the Washington Post**. I also testify before Congress on issues of public access to government information and am a frequent public speaker on the subject.

Accordingly, we request that you waive all fees for locating and duplicating the requested record. If, however, a waiver is not granted, and if the fees to be assessed in connection with this request exceed \$200, please obtain my approval before any such costs are incurred.

We will expect a response within 20 working days as provided by law. If you have any questions regarding this request, please contact me at (707) 827-7290.

Thank you very much for your attention to this matter.

Sincerely,



Digitally signed by Carl  
Malamud  
DN: cn=Carl Malamud,  
o=Public.Resource.Org  
, ou,  
email=carl@media.org,  
c=US  
Date: 2015.04.01  
06:30:44 -07'00'

Carl Malamud  
President & CEO  
Public.Resource.Org

cc: David Halperin  
Of Counsel  
Public.Resource.Org



**PUBLIC.RESOURCE.ORG** ~ A Nonprofit Corporation

**Public Works for a Better Government**

April 1, 2015

VIA HTTP AND FIRST CLASS MAIL

U.S. Department of Housing and Urban Development  
Freedom of Information Act Office  
451 7th Street, SW, Room 10139  
Washington, DC 20410-3000  
URL: <https://hudpal.foia-host.com/palMain.aspx>

**RE: Freedom of Information Act Request**

Dear FOIA Officer:

On behalf of Public.Resource.Org, and pursuant to the Freedom of Information Act, **5 U.S.C. § 552**, I request a copy of Underwriters' Laboratories *UL 181-2003, Standard for Safety Factory-Made Air Ducts and Air Connectors* which is incorporated by reference in **24 CFR 3280.4** and used in **24 CFR 3280.702**.

Please provide the record in electronic form if possible.

If it is your position that *UL 181-2003, Standard for Safety Factory-Made Air Ducts and Air Connectors* (or portions thereof) is exempt from disclosure, please state the basis of the denial of each portion of the record withheld. In addition, please provide the nonexempt portions of the record.

Public.Resource.Org requests that all fees in connection with this FOIA request be waived in accordance with **5 U.S.C. § 552(a)(4)(A)(iii)**, because it does not seek the records for a commercial purpose and disclosure "is in the public interest because it is likely to contribute significantly to public understanding of the operations and activities of the government." Because it was incorporated by reference into the Code of Federal Regulations, the requested record is part of the agency's governing law. Accordingly, it is the essence of the "operations and activities of the government." However, because it is not published in the Federal Register, the public does not have the same access to it that it has to other parts of the agency's regulations. Disclosure of the record will allow the public to gain knowledge about what is included in the agency's binding law.

Public.Resource.Org does not have a commercial interest in the requested record. Public.Resource.Org is a 501(c)(3) public charity chartered to make government information more broadly available without fee to any and all users. Public.Resource.Org has demonstrated an ability to disseminate information about the government and its activities to the public. It is one of the largest distribution

sites for public information related to the U.S. government, including over 14,000 hours of video from Congressional hearings posted at the request of the Speaker of the House, over 8 million Form 990 reports filed with the Internal Revenue Service, over 6,000 U.S. government videos posted in cooperation with the Archivist of the United States, and the historical opinions of the U.S. Court of Appeals. As the President of Public.Resource.Org, I am frequently quoted in major media publications such as **the New York Times**, **Business Week**, **the New Republic**, and **the Washington Post**. I also testify before Congress on issues of public access to government information and am a frequent public speaker on the subject.

Accordingly, we request that you waive all fees for locating and duplicating the requested record. If, however, a waiver is not granted, and if the fees to be assessed in connection with this request exceed \$200, please obtain my approval before any such costs are incurred.

We will expect a response within 20 working days as provided by law. If you have any questions regarding this request, please contact me at (707) 827-7290.

Thank you very much for your attention to this matter.

Sincerely,



Digitally signed by Carl  
Malamud  
DN: cn=Carl Malamud,  
o=Public.Resource.Org  
, ou,  
email=carl@media.org,  
c=US  
Date: 2015.04.01  
06:30:44 -07'00'

Carl Malamud  
President & CEO  
Public.Resource.Org

cc: David Halperin  
Of Counsel  
Public.Resource.Org

# **EXHIBIT 10**



# United States Department of the Interior

OFFICE OF THE SOLICITOR  
1849 C STREET, NW  
WASHINGTON, DC 20240

IN REPLY REFER TO:

**VIA U.S. MAIL**

Mr. Carl Malamud  
President, Public.Resource.Org  
1005 Gravenstein Highway North  
Sebastopol, CA 95472

**SEP - 8 2015**

Re: Your letter dated July 20, 2015

Dear Mr. Malamud,

I am writing to you on behalf of Solicitor Hilary Tompkins in response to your letter dated July 20, 2015. As you know, in that letter you identified a number of concerns with respect to the treatment of your public comment by the Bureau of Safety and Environmental Enforcement (BSEE) in conjunction with BSEE's proposed regulatory update concerning cranes mounted on fixed oil and gas platforms on the outer Continental Shelf (OCS). BSEE's proposed rule would incorporate by reference the updated Seventh Edition of American Petroleum Institute (API) Specification 2C (Spec. 2C), "Offshore Pedestal-mounted Cranes" (2012), into its regulations in place of the Sixth edition of API Spec. 2C currently incorporated by reference in BSEE regulations.<sup>1</sup>

Your principal concerns focus on two issues: the initial unavailability of your comment in Hypertext Markup Language (HTML), the native file format in which you submitted your comment, and BSEE's decision to withhold publishing two comment attachments based on BSEE's determination that those attachments contain copyrighted material. Specifically, your attachments presented the Sixth edition of API Spec. 2C in two different formats.

With respect to the first issue, it is my understanding that the administrator of the Federal Docket Management System (FDMS) is responsible for maintenance of the public dockets on regulations.gov and the manner and format in which public comments are posted on that website. In any event, as you requested, FDMS ultimately posted your comment in the HTML format. Accordingly, it appears that FDMS has addressed your concern about your comment's file format and its accessibility.

In regard to your second issue concerning copyrighted material, I have confirmed that BSEE's incorporation by reference of materials into its regulations does not waive or vitiate any applicable copyright protections associated with those materials. The Office of the Federal

---

<sup>1</sup> 30 C.F.R. § 250.108(c) and (d) currently require compliance with the Sixth edition of API Spec. 2C. The proposed rule would require compliance with the Seventh edition of API Spec. 2C. BSEE's current incorporation by reference of the Sixth edition of API Spec. 2C is reflected in 30 C.F.R. § 250.198(h)(69).

Register (OFR) recently explained that relevant laws “have not eliminated the availability of copyright protection for privately developed codes and standards . . . incorporated into federal regulations.” 79 Fed. Reg. 66267, 66268 (Nov. 7, 2014). Based on API’s longstanding position and BSEE’s review of the standard itself, BSEE reasonably concluded that the Sixth edition of API Spec. 2C is a privately developed standard protected by copyright maintained by API.<sup>2</sup> As OFR noted, an agency’s incorporation by reference of a copyrighted standard does not eliminate applicable copyright protections. Therefore, BSEE reasonably and properly concluded that FDMS should not post on regulations.gov the attachments associated with your comment because those attachments contained copyrighted material. BSEE also properly described its obligations concerning copyrighted material in the notice of proposed rulemaking: “When a copyrighted industry standard is incorporated by reference into our regulations, BSEE is obligated to observe and protect that copyright.”<sup>3</sup> However, consistent with BSEE’s longstanding practice, and with OFR’s regulations on incorporation by reference (1 C.F.R. § 51.5), BSEE also provided instructions in that notice on how the public may view the incorporated API standard on API’s public website.<sup>4</sup>

In addition, even though BSEE correctly decided not to post API Spec. 2C in the docket on regulations.gov because of the copyright protections, BSEE continues to make this standard available, without charge, for public review and inspection at its offices.<sup>5</sup> Thus, BSEE has made the material it proposes to incorporate by reference reasonably available to interested parties and discussed the reasonable availability of this material in accordance with 1 C.F.R. § 51.5(a)(1).

Sincerely,



Dennis Daugherty  
Assistant Solicitor, Offshore Resources  
Division of Mineral Resources  
Office of the Solicitor

Cc: Honorable Hilary C. Tompkins  
Solicitor, U.S. Department of the Interior

Mr. Brian M. Salerno  
Director, Bureau of Safety and Environmental Enforcement

---

<sup>2</sup> In fact, it is my understanding that your attachments, which reproduced the Sixth edition of API Spec. 2C, also reflected API’s copyright designation and prohibition against reproduction or transmission without prior written permission.

<sup>3</sup> 80 Fed. Reg. 34113, 34114 (June 15, 2015).

<sup>4</sup> Id.

<sup>5</sup> Id.



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
WASHINGTON, DC 20410-3000

OFFICE OF ADMINISTRATION

AUG - 6 2015

Mr. Carl Malamud  
President and CEO  
Public Resource Organization  
1005 Gravenstein Highway North  
Sebastopol, CA 95472

RE: Freedom of Information Act Request  
FOIA Control No.: 15-FI-HQ-01670

Dear Mr. Malamud:

This letter is in response to your Freedom of Information Act (FOIA) request dated July 2, 2015. Specifically, you requested the Underwriter Laboratories (UL) 737 standard which applies to homes and manufactured housing.

When responding to a FOIA request, the Department of Housing and Urban Development searches for responsive documents existing up to the date that the request is received in the Department's FOIA Branch. Your request was received on July 2, 2015.

A search of Headquarters' records by knowledgeable staff failed to locate any documents at HUD Headquarters that would be responsive to your request. The standard that you requested is copyrighted by UL. You will need to purchase a copy of the standard directly from UL.

I am the official responsible for this determination based on information provided by the Office of Housing. You may appeal this determination within 30 days from the date of this letter. If you decide to appeal, your appeal should include copies of your original request and this response, as well as a discussion of the reasons supporting your appeal. The envelope should be plainly marked to indicate that it contains a FOIA appeal and be addressed to:

U.S. Department of Housing and Urban Development  
Attention: FOIA Appeals  
OGC, Ethics and Appeals Law Division  
451 Seventh Street, SW, Suite 213  
Washington, DC 20410

Telephone: (202) 708-3815

For your information, your FOIA request, including your identity and any information made available, is releasable to the public under subsequent FOIA requests. In responding to these requests, the Department does not release personal information, such as home address telephone number, or Social Security number, all of which are protected from disclosure under FOIA Exemption 6.

If you need additional information, please contact Ms. Eugenia Harris at (202) 402-5074. Thank you for your interest in the Department's programs and policies.

Sincerely,

*for Deborah Snowden*

Vicky Lewis  
Deputy Director, Office  
Of the Executive Correspondence





U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
WASHINGTON, DC 20410-3000

OFFICE OF ADMINISTRATION

AUG - 6 2015

Mr. Carl Malamud  
President and CEO  
Public Resource Organization  
1005 Gravenstein Highway North  
Sebastopol, CA 95472

RE: Freedom of Information Act Request  
FOIA Control No.: 15-FI-HQ-01670

Dear Mr. Malamud:

This letter is in response to your Freedom of Information Act (FOIA) request dated July 2, 2015. Specifically, you requested the Underwriter Laboratories (UL) 737 standard which applies to homes and manufactured housing.

When responding to a FOIA request, the Department of Housing and Urban Development searches for responsive documents existing up to the date that the request is received in the Department's FOIA Branch. Your request was received on July 2, 2015.

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I am the official responsible for this determination based on information provided by the Office of Housing. You may appeal this determination within 30 days from the date of this letter. If you decide to appeal, your appeal should include copies of your original request and this response, as well as a discussion of the reasons supporting your appeal. The envelope should be plainly marked to indicate that it contains a FOIA appeal and be addressed to:

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Attention: FOIA Appeals  
OGC, Ethics and Appeals Law Division  
451 Seventh Street, SW, Suite 213  
Washington, DC 20410

Telephone: (202) 708-3815

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If you need additional information, please contact Ms. Eugenia Harris at (202) 402-5074. Thank you for your interest in the Department's programs and policies.

Sincerely,

*for Deborah Snowden*

Vicky Lewis  
Deputy Director, Office  
Of the Executive Correspondence



## U.S. CONSUMER PRODUCT SAFETY COMMISSION

4330 EAST WEST HIGHWAY  
BETHESDA, MARYLAND 20814-4408

Todd A. Stevenson  
The Secretariat • Office of the Secretary  
Office of the General Counsel

Tel: 301-504-6836  
Fax: 301-504-0127  
Email: [tstevenson@cpsc.gov](mailto:tstevenson@cpsc.gov)

May 18, 2015

### CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Carl Malamud  
President & CEO  
Public Resource.Org  
1005 Gravenstein Highway North  
Sebastopol, CA 95472

Re: FOIA Request 15-F-00342 seeking the ASTM product standard, *ASTM F 1447-94, Standard Specification for Protective Headgear Used in Bicycling 1994 Edition*, which is incorporated by reference in 16 CFR 1203.53(b) and used in 16 CFR 1203.53(a) FCPSC interaction with the ANSI Z21/CGP Joint Central Furnace working group.

Mr. McFarlan:

Thank you for your Freedom of Information Act (“FOIA”) request seeking information from the U.S. Consumer Product Safety Commission (“Commission”).

The records that you seek, *ASTM F 1447-94, Standard Specification for Protective Headgear Used in Bicycling 1994 Edition*, are the copyright property of ASTM (American Society for Testing and Materials). The ASTM standard must be purchased from ASTM from their website, [www.astm.org/](http://www.astm.org/).

According to the Commission's FOIA regulations at 16 C.F.R. § 1015.7, you may appeal our decision within thirty (30) days of your receipt of this letter by writing to: FOIA APPEAL, General Counsel, ATTN: Office of the Secretary, U.S. Consumer Product Safety Commission, 4330 East West Highway, Bethesda, Maryland 20814-4408.

Processing this request, performing the file searches and preparing the information, cost the Commission \$50.00. In this instance, we have decided to waive all of the charges.

Sincerely,

A handwritten signature in black ink, appearing to read "Todd A. Stevenson", is written over a horizontal line.

Todd A. Stevenson

Enclosures



**U.S. CONSUMER PRODUCT SAFETY COMMISSION**

4330 EAST WEST HIGHWAY  
BETHESDA, MARYLAND 20814-4408

Todd A. Stevenson  
The Secretariat • Office of the Secretary  
Office of the General Counsel

Tel: 301-504-6836  
Fax: 301-504-0127  
Email: [tstevenson@cpsc.gov](mailto:tstevenson@cpsc.gov)

May 18, 2015

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Carl Malamud  
President & CEO  
Public Resource.Org  
1005 Gravenstein Highway North  
Sebastopol, CA 95472

Re: FOIA Request 15-F-00342 seeking the ASTM product standard, *ASTM F 1447-94, Standard Specification for Protective Headgear Used in Bicycling 1994 Edition*, which is incorporated by reference in 16 CFR 1203.53(b) and used in 16 CFR 1203.53(a) (Corrected Response)

Mr. Malamud:

Thank you for your Freedom of Information Act (“FOIA”) request seeking information from the U.S. Consumer Product Safety Commission (“Commission”).

The records that you seek, *ASTM F 1447-94, Standard Specification for Protective Headgear Used in Bicycling 1994 Edition*, are the copyright property of ASTM (American Society for Testing and Materials). The ASTM standard must be purchased from ASTM from their website, [www.astm.org/](http://www.astm.org/).

According to the Commission's FOIA regulations at 16 C.F.R. § 1015.7, you may appeal our decision within thirty (30) days of your receipt of this letter by writing to: FOIA APPEAL, General Counsel, ATTN: Office of the Secretary, U.S. Consumer Product Safety Commission, 4330 East West Highway, Bethesda, Maryland 20814-4408.

Processing this request, performing the file searches and preparing the information, cost the Commission \$50.00. In this instance, we have decided to waive all of the charges.

Sincerely,

  
Todd A. Stevenson

# **EXHIBIT 11**

UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR TESTING AND  
MATERIALS d/b/a/ ASTM INTERNATIONAL;

NATIONAL FIRE PROTECTION  
ASSOCIATION, INC.; and

AMERICAN SOCIETY OF HEATING,  
REFRIGERATING, AND AIR-CONDITIONING  
ENGINEERS, INC.

Plaintiffs,

v.

PUBLIC.RESOURCE.ORG, INC.,

Defendant.

---

PUBLIC.RESOURCE.ORG, INC.,

Counterclaimant,

v.

AMERICAN SOCIETY FOR TESTING AND  
MATERIALS d/b/a/ ASTM INTERNATIONAL;

NATIONAL FIRE PROTECTION  
ASSOCIATION, INC.; and

AMERICAN SOCIETY OF HEATING,  
REFRIGERATING, AND AIR-CONDITIONING  
ENGINEERS, INC.

Counterdefendants.

---

Case No. 1:13-cv-01215-EGS

**DEFENDANT-COUNTERCLAIMANT  
PUBLIC.RESOURCE.ORG, INC.'S  
RESPONSE TO PLAINTIFF-  
COUNTERDEFENDANT AMERICAN  
SOCIETY FOR TESTING AND  
MATERIALS d/b/a ASTM  
INTERNATIONAL'S FIRST SET OF  
INTERROGATORIES (NOS. 1-15)**

Filed: August 6, 2013

Trademarks is a fair use, describe all facts and evidence supporting your contention.

**RESPONSE TO INTERROGATORY NO. 8:**

Public Resource incorporates its general objections as if fully set forth herein. Public Resource objects to this interrogatory to the extent it seeks disclosure of “all facts and evidence supporting your contention” and therefore seeks disclosure of information that falls under the work product doctrine. Public Resource objects to this interrogatory and to the term “fair use” as vague and ambiguous. Public Resource objects to this interrogatory because it seeks information that is publicly available, already known, or equally available to Plaintiffs. Public Resource objects to this interrogatory as premature, as it seeks “all facts and evidence” at an early stage of the litigation.

**INTERROGATORY NO. 9:**

If you contend that Plaintiffs are misusing or have misused their copyrights and/or trademarks, describe all facts and evidence supporting your contention.

**RESPONSE TO INTERROGATORY NO. 9:**

Public Resource incorporates its general objections as if fully set forth herein. Public Resource objects to this interrogatory to the extent it seeks disclosure of “all facts and evidence supporting your contention” and therefore seeks disclosure of information that falls under the work product doctrine. Public Resource objects to this interrogatory and to the term “misused” as vague and ambiguous. Public Resource objects to this interrogatory because it seeks information that is publicly available, already known, or equally available to Plaintiffs. Public Resource objects to this interrogatory as premature, as it seeks “all facts and evidence” at an early stage of the litigation.

**INTERROGATORY NO. 10:**

If you contend that Public Resource has not used Plaintiffs’ Trademarks in commerce, describe all facts and evidence supporting your contention.

**RESPONSE TO INTERROGATORY NO. 10:**

Public Resource incorporates its general objections as if fully set forth herein. Public

Resource objects to this interrogatory to the extent it seeks disclosure of “all facts and evidence supporting your contention” and therefore seeks disclosure of information that falls under the work product doctrine. Public Resource objects to this interrogatory because it seeks information that is publicly available, already known, or equally available to Plaintiffs. Public Resource objects to this interrogatory as premature, as it seeks “all facts and evidence” at an early stage of the litigation.

**INTERROGATORY NO. 11:**

If you contend that Plaintiffs’ claims are barred by waiver or estoppel, describe all facts and evidence supporting your contention.

**RESPONSE TO INTERROGATORY NO. 11:**

Public Resource incorporates its general objections as if fully set forth herein. Public Resource objects to this interrogatory to the extent it seeks disclosure of “all facts and evidence supporting your contention” and therefore seeks disclosure of information that falls under the work product doctrine. Public Resource objects to this interrogatory because it seeks information that is publicly available, already known, or equally available to Plaintiffs. Public Resource objects to this interrogatory as premature, as it seeks “all facts and evidence” at an early stage of the litigation.

**INTERROGATORY NO. 12:**

For each interrogatory, identify all persons who provided information or documents for Public Resource’s responses and the persons who are most knowledgeable about the factual subject matter.

**RESPONSE TO INTERROGATORY NO. 12:**

Public Resource incorporates its general objections as if fully set forth herein. Public Resource objects to this interrogatory to the extent it seeks disclosure of information that falls under the attorney-client privilege, the work product doctrine, or any other applicable privilege or protection. Public Resource objects to this interrogatory because it seeks information that is publicly available, already known, or equally available to Plaintiffs.



# **EXHIBIT 12**

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MIL-C-26074E

[Nasa Std 5020](#)

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Nasa Std 5020

[NASA-RP-1228](#)

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NASA-RP-1228

[Sequence Software 3.0 Object Chart](#)

dharlanuctcom

Sequence Software 3.0 Object Chart

[astm.e606.1980](#)

dharlanuctcom

astm.e606.1980

[astm.f682.1982](#)

dharlanuctcom

astm.f682.1982

[astm.f853.2005](#)

dharlanuctcom

astm.f853.2005

[astm.f1155.1998](#)

dharlanuctcom

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[astm.f1193.2004](#)

dharlanuctcom

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[astm.f1548.1994](#)

dharlanuctcom

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[astm.f2007.2006](#)

dharlanuctcom

astm.f2007.2006

[astm.f2291.2006](#)

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[astm.d1692.1968](#)  
dharlanuctcom  
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[astm.d1081.1960](#)  
dharlanuctcom  
astm.d1081.1960  
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dharlanuctcom  
astm.d4268.1993  
[astm.d3236.1988](#)  
dharlanuctcom  
astm.d3236.1988  
[astm.d1785.1986](#)  
dharlanuctcom  
astm.d1785.1986  
[astm.e23.1993](#)  
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[astm.e29.1967](#)  
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[astm.e23.1982](#)  
dharlanuctcom  
astm.e23.1982  
[astm.f478.1992](#)  
dharlanuctcom  
astm.f478.1992  
[astm.b21.1983](#)  
dharlanuctcom  
astm.b21.1983  
[astm.b209.1996](#)  
dharlanuctcom  
astm.b209.1996  
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dharlanuctcom  
astm.b694.1986  
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dharlanuctcom  
astm.d750.1968  
[astm.d785.1965](#)  
dharlanuctcom  
astm.d785.1965  
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 see moreThat's it!

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scribd

# **EXHIBIT 13**

# Show Me The Manual

[music]

**Man 1:** [0:10] Public Resource is a nonprofit corporation, and our mission is to make government information more available. We've put 14,000 hours of congressional hearings online, we've put 100 years of the Court of Appeals that were not available on the Internet for anybody to use without restriction. But people may not realize this, there's a large part of the federal law and the state law that isn't available, and it costs money to purchase.

**Efren Carrillo:** [0:37] My name is Efren Carrillo, Sonoma County Supervisor representing the 5th District. Another responsibility that comes with being on the Board is also a Director of the Sonoma County Water Agency. We are charged with the duties of water supply, flood control and sanitation. [0:50] In fulfilling our responsibility to provide water to our constituents, we're required to follow strict state regulations and federal regulations. Here in our agency, we do spend thousands of dollars in ensuring that we have the codes and the regulations available to us to ensure that we are meeting our requirements.

**Roberta MacIntyre:** [1:09] Hi, I'm Roberta MacIntyre, I'm the Fire Marshal for the County of Sonoma. That means I'm responsible for fire prevention. As the Fire Marshal for Sonoma County, one of the things we have to do is maintain an enormous library of codes and standards. [1:24] For example, not only do we have to have the California fire code, but we also have to have the California building code, the California electrical code, the residential code now, which is new to California. On top of all of that, we have the entire NFPA standard set, which in itself is, for my budget, about \$1,500.

**Shems Peterson:** [1:46] I'm Shems Peterson, Head Building Inspector for Sonoma County. This is my 26th year of service. [1:52] The department has to purchase the codes for all the inspection and plan check staff for the County of Sonoma. I believe it was over \$30,000 for the last code cycle.

**Man 1:** [2:02] Because a lot of technical standards developed by the private sector are mandated by the federal government and by state governments, we think that citizens have a right to read these laws that are binding, that are critical to the public safety, that have criminal penalties attached for noncompliance. [2:21] We're buying these standards. We started by spending \$7,500 for 73 standards that are mandated by OSHA and the Department of Transportation. We've gone on and spent another \$30,000 buying some of these standards that have been incorporated by reference. We're beginning the process

of copying those standards, retyping them into HTML so that the tables are nicely typeset, we're taking the diagrams and we're redrawing the diagrams so that they look nice, and we're trying to make this information available to the people.

**Man 2:** [2:53] When somebody can say to you, "This is the law," and you can't read it unless you pay for it, then we've really undermined something really fundamental in our society.

**Shems:** [3:04] Contractors, designers, architects, civil engineers, structural engineers need to know or to verify they're in compliance by looking at the code, particularly structural engineers, because there's actually formulas in there that they have to use in order to demonstrate their design will withstand the structural loads that are going to be imposed.

**Efren:** [3:26] You know, oftentimes people think that the regulations or the laws in the books are only for the engineers or for the decision-makers. Private residents want to see this information and want to have access to that as well, whether it's the private resident turning on the tap, whether it's the farmer who depends on the water to grow their crop. I absolutely believe that this information should be made available to everybody.

**Roberta:** [3:51] For volunteer firefighters, really, fundamentally, they should have an awareness of fire prevention. In terms of the reference standards for them, the one that comes to the top of my mind is NFPA 1500. That is the reference standard that speaks to their fire protection ensemble, their clothing that they wear.

**Man 1:** [4:12] I'm a firm believer that when you put technical information up on the Internet, people have the opportunity to educate themselves, to create new businesses, and just as importantly, they have the opportunity to know what the law says and obey the law. They have the opportunity to have access to justice, to be able to say, "Gee, I want to do something; let's make sure I'm doing it right."

**Bill Fink:** [4:36] My name's Bill Fink. Over the years, I've imported a number of vehicles for sale in this country. The standards have never told you how to meet them. The standards basically say what needs to be done, and how you do it is up to you.

**Man 1:** [4:49] Our goal is that our government reform the way they make regulations, and make public access to the law a fundamental part of the regulatory process.



**Shems:** [5:00] One time when I was out during an inspection, not going out in the field like I used to, I had 1998 codebooks in my vehicle, because I hadn't changed them over yet, and we were in the 2007 version. The gentleman on-site had a smartphone, and we went to your website, got into the building code, and could look at a specific section that I needed in order to determine whether he was in compliance or not. The laptop for the standards would be able to do the same thing, it'd be wonderful.

**Roberta:** [5:29] I remember years ago, before we had the ensemble requirements per se, we would go into a building to make a fire attack, and you knew it was about time to back out when the earwax in your ears started to melt and drip out. That was an indicator that, "You know what? It's getting a little hot in here, let's get out."

**Man 3:** [5:49] Part of the magic of the automobile manufacturing procedure is to do good without obviously doing good. This car will stand up to a 50-mile-an-hour rear impact.

**Shems:** [6:03] In an earthquake, when a force comes this way, the tendency is for the building to want to uplift on one end. It's hard for us, as people to conceive a huge building actually lifting up and turning over, but yet it does happen. [6:16] If you have a load path that allows the energy or the load to be transmitted from the topmost down to the ground, and they're all connected properly, the result will be less catastrophic damage. You'll always have damage in an earthquake, broken windows, broken sheetrock, some doors and things like that, but what we're trying to prevent here is catastrophic damage where lives are lost and huge property damage occurs. The purpose of the code provides for methods and prescribes methods that you have to use to help mitigate those forces that are applied in an earthquake.

[6:54] When you have an "X" or cross like this embracing the vertical elements, what it does is it will help move everything together and again, prevent catastrophic damage and that's an important part of a seismic force-resisting element.

**Rob Bulik:** [7:09] My name is Rob Bulik. I own Schank Brothers' Garage and I care about workplace safety. [music plays] It's a high-current electric motor that runs a hydraulic pump that powers the pistons. The shop's main air compressor powers all of our air tools that we have here. It runs two hydraulic cylinders and it's also balanced with the steel cables that support everything. [7:29] Just some light duty welding, things like that, anything that needs heat applied to it. The electrical part is quite dangerous if we had issues with the wiring or something

like that. If one of these tanks was to fall over and the top was to break off, the thing will basically shoot off like a missile. [music ends]

[music 07:44 to 08:03]

**Man 1:** [8:04] Our goal here is to publish a law to establish the principle that the law become available, but then government should take this over and figure out a way to make the law available and do it in a way that the standards bodies that make these standards are able to survive because they do need money. [8:21] The National Fire Protection Association, for example, does amazing work. They save lives. They have standards for fire sprinklers, standards for fire hydrants, standards for foam, standards for life safety, and these protect the lives of our volunteer fire fighters. They protect the lives of our children. It's important that organizations like the National Fire Protection Association continue to survive.

**Roberta:** [8:44] To do my job properly, I have to have those standards. I refer to those standards on a daily basis. With the extrication equipment that we use to get people that are trapped in vehicles out, we have a couple of fundamental kinds. [8:57] This is called a set of cutters. Obviously, you could see how the blades would operate. They open up wide and they're used to cut like the posts on vehicles, to take the roof off.

**Shems:** [9:07] What we have here are several safety features that are very common in buildings. First of all, we have the luminescent exit sign that during a fire, for instance, where you would have perhaps a lot of smoke, you should be able to see that sign through the smoke.

**Bill:** [9:20] The passenger bags now are dual-stage and if it's a light impact, only stage one will deploy, but stage two is still there.

**Shems:** [9:30] Emergency back-up lighting, that if the power goes off, that would act as a lighting to help people find their way to this exit. In addition to that, we have what we call panic hardware on the doors. Anybody just gets pushed right up against the door and you're outside.

**Man 4:** [9:46] I'm based in California, but I frequently go to Washington D.C., and people look at this quest to make the law available. In fact, to make any government database available, like patents or the Securities and Exchange Commission. [9:58] They say, "You know, this is really silly because most people don't want this information. It's boring. It's technical. Most people aren't going to be able to read this. Why do you want to make the building codes for free when the only people who really need it are a couple of building inspectors and a couple of engineers?"

[10:15] I call that the "Dumb American" theory. The theory that Americans are not capable of reading a building code, that a homeowner wouldn't be able to consult a building code to see whether their contractor put those electrical outlets at the proper spacing.

[10:29] I think Americans are smart and in fact, every time I've put a big database online...I remember when the Commissioner of Patents, the Honorable Bruce Lehman, and he and I had a long fight about whether the U.S. Patent Database should be available on the Internet or not.

[10:45] Well, we put that patent database online, and do you know what? All of a sudden, engineering students and engineers in Silicon Valley and journalists and just people that were interested, amateur inventors were able to start reading these patents without paying a lot of money and they understood what was in there.

**Man 5:** [11:04] MAKE Magazine is really a kind of a magazine for amateurs who build things, who make things, lots mostly with technology. I like to think of it as kind of a reinvention of some of the older magazines that once existed in this vein of Popular Mechanics, Popular Science. [11:20] Encourage people to go out and build things, and a lot of the world has become professionalized. Meaning, in a sense, you pay for access to information. You pay for access to a society. You're certified to belong there and I think we've squeezed out some of the amateur level.

[11:40] Not that it's necessarily ever gone away, it's just we almost ignore it because it's not...doesn't fit into the professionalization picture. I think one of the things...I'm an advocate is, the role of amateurs. They build...if we just take something that is traditional DIY space, they build additions to their home, they repair their car. They probably should have access to the same kind of information as either a professional licensed carpenter or a professional mechanic.

**Man 6:** [12:09] I think standards, making them publicly available, actually, is one of the best things is that it enables discussion around those standards. People can not only know what their legally required to do, but then they can make new suggestions.

**Efren:** [12:23] In a time when we have competitive dynamics here, where the United States is competing with other markets around the world, we need to ensure that our students have the resources and the tools available to ensure academic success. [12:37] Whether it's engineering students, science students or math and science students in our universities, having access to these codes and

regulations is just as important to them in their education as it is to someone carrying it out in the practical real world in the work world.

[12:52] I believe that when we provide these codes and these regulations to our students, we're strengthening their academic ability to ensure future success in their careers.

**Shems:** [13:01] Students often read codes. In fact, I used to teach at the JC, local JC here, and that was part of the problem was that a code book, just the building code, was \$270. If they're not going into a field where they'd be able to reuse it's...it's a large investment.

**Woman 1:** [13:20] I think it's not for us to decide who can and cannot make sense of the law or whatever is available to them to read. It's up to the people themselves to judge whether or not they want to make sense of it and some certainly will.

**Man 1:** [13:32] We think a lot of these technical standards are important for engineering students. They're important for small businessmen who are trying to start new businesses. It's about innovation. It's about America's competitiveness. It shouldn't have to cost a lot of money to know what the law is. [13:48] Every day we get dozens of standards in from different kinds of bodies. Sometimes we buy them on the used market...Amazon, eBay, some of the used stores. Sometimes we write away to the different standards bodies. This is the orifice metering of natural gas standards, the cosmetic ingredient dictionary. This is a fun one. This is "The Safety and Handling and Use of Explosives."

[14:09] This is "The Air Release, Air Vacuum and Combination Air Valves Manual of Water Supply Practices." It comes in a shrink wrapped agreement and by opening this package, you agree to certain terms and conditions and what you're agreeing to is you're not going to even give this copy to somebody else. That's really not very fair. Not only that for the amount of money we're spending to buy the law, you ought to be able to at least make fair use.

[14:35] This is "The US Public Health Service Drinking Water Standards." It came from a library which disposed of it like libraries do, and it ends up on the used market. This is a 1962 standard. There's obviously safety implications of the federal government requiring standards from 1962. One of our hopes is that by publishing this information, the government regulators will go in and clean up the books.

[15:03] I bought this on the used market. This is "The International Maritime Dangerous Goods Code." I found a used copy for \$31. This normally costs a few

hundred dollars for the current version but because the specific version incorporated by the federal government is an older one, we were able to purchase this on the used market. Not all standards are like that. Some of them are simply just not available that way.

**Man 7:** [15:26] The whole progression of technology depends on our ability to see and understand what went before and I think the same is true of the law and particularly when we incorporate technical standards into the law. We have a real problem if only some people can read them.

**Man 8:** [15:45] The laws of the operating system of the government. If you don't have access to the code of government, you have no idea how things are working. If there are things that are wrong, you can't bug fix if you don't have access to the source code.

**Jennifer Polka:** [15:53] It's not just the legal outcomes that we should think about here. I think we should be thinking about the way citizens are thinking about government and the larger impacts of the way we think and feel about government on the way we fund our public institutions. [16:07] If we feel like we're being treated fairly, if we have access to the information that we need in order to live a legal, free lives as citizens here, it's going to improve our relationship in a way that makes us care about government and we need to start caring about government again. We need to make it work for the people.

[music 16:28 to 16:47]

**Man 1:** [16:47] When our government was formed...When our founding fathers came up with our constitution, there was a big argument about the level of democracy that we would have. There was the Roman republic model which was a top down, aristocratic...the senators telling people what to do. [17:05] That led to big empires. There were good things about the Roman republic, but there was also the Greek democratic model in which everybody had a voice. John Adams felt very strongly that if democracy was going to work, it would only work if the citizenry was informed.

[17:22] If people had knowledge and were able to educate themselves, then we would have a democracy that functioned and we would have a government that would become great and that would fair and it would be an economy that would prosper for everyone.

[17:36] What John Adams said and it was very memorable quote, he said, "Let every sluice of knowledge be set a-flowing." That wasn't a, "knowledge must be free," like we do in today's free culture world. It was for democracy to work, "let

every sluice of knowledge to be set a-flowing" because that is what would make America work.

[17:56] I think John Adams was right. I think we need to go back to those fundamental values. The idea that American people are smart and can make their government work and can make our economy work, but that only happens if we take away these barriers to that very fundamental information which are the basic laws of our country.

**Jennifer:** [music begins] [18:16] I'm Jennifer Polka from Oakland, California. I can read the law. I want to read the law. Show me the manual.

**Shems:** [18:24] My name is Shems Peterson. I'm a building inspector and I believe everybody ought to have access to public safety codes.

**Nick Thompson:** [18:29] My name is Nick Thompson. I'm from Los Alamos, New Mexico. By making the law available, we make it better. Show me the manual.

**Jill Marante:** [18:36] I'm Jill Marante. I'm from New York. I truly believe that technical standards are essential to our modern society. Show me the manual.

**Dale Doregthy:** [18:43] Hi. I'm Dale Doregthy and I believe that public safety codes are relevant to the makers, the doers, the risk takers.

**Rob Bracket:** [18:50] My name is Rob Bracket. I'm from Chicago. I think open standards and understanding our laws is critically important. Show me the manual.

**Roberta:** [18:57] My name is Roberta Macintyre and as the Fire Marshall, I believe everyone should have access to the codes and regulations.

**Zach Williams:** [19:04] My name is Zach Williams. I'm from Fort Worth, Texas. I think it's important that people be able to read the manuals. Show me the manuals.

**Man 1:** [19:10] Laws are the source code for democracy, so show me the manual.

**Efren:** [19:13] My name is Efren Carrillo and I believe all of our citizens should have access to public safety codes and have the right to bear knowledge. [music ends] [music 19:23 to 20:10]

[19:23]

Transcript by CastingWords

# **EXHIBIT 14**



Date 2/26/15  
Witness:  
MALAMUD

From: Carl Malamud  
Sent: Tue 6/30/2009 5:22 PM (GMT -7)  
To: Deborah Hunt  
Cc:  
Bcc:  
Subject: Re: special libraries

Thanks so much for this tip ... I am actually in Missouri as we speak, but won't be heading through Kansas City until Friday, and they are unfortunately closed for the holidays. But, I will definitely give them a ring.

The Illinois State Library and the Linda Hall Library appear to be the only two in the U.S. with a decent collection of these technical standards from organizations such as ANSI, ASTM, and UL. While many of these standards have a strong copyright interest, there is a subset of these that have been incorporated by reference into the Code of Federal Regulations. Since those standards have become law of the land, and since the courts have ruled that those standards that have been incorporated as law are not subject to copyright, I'm trying to figure out how to make these standards more broadly available for the public to read.

Thanks again for the tip. Perhaps we could do a phone call or I could stop by the Exploratorium to meet you and explain what we're trying to do? I'm based in Sebastopol, about an hour north of you and get to the city frequently.

Best regards,

Carl

On Jun 30, 2009, at 3:56 PM, Deborah Hunt wrote:

- > Hi, Carl.
- > I've been back over 10 days and this got buried.
- > What kind of tech standards are you after?
- > The Linda Hall Library has a fabulous collection:
- > <http://www.lindahall.org/collections/engineering/specs.shtml>
- >
- > Deb
- >
- > On Wed, Jun 10, 2009 at 7:41 PM, Deborah Hunt
- > <[dhunt@exploratorium.edu](mailto:dhunt@exploratorium.edu)> wrote:
- > Hi, Carl.
- > I'm in DC on vacation and then at the SLA Annual Conference and not
- > back at work till 6/22.
- > If you can wait till then, we can talk.
- >
- > have you tried [worldcat.org](http://worldcat.org) to look for your standards or
- > [firstgov.gov](http://firstgov.gov)?
- > Deb

2/10/09

> On Wed, Jun 10, 2009 at 4:46 PM, Carl Malamud <carl@media.org> wrote:

> Hi -

> I run a small nonprofit called Public.Resource.Org that tries to put  
> more government information on-line. We've had a big impact on  
> putting more judicial information on the Internet, but also do  
> video, and a variety of other documents such as IRS nonprofit tax  
> returns.

> I'm looking for a special library that might have a particular set  
> of docs (technical standards) and I was wondering if perhaps you  
> might have a few minutes for a phone call to point me in the right  
> direction? I must confess, I found your name by scanning the SLA  
> board page. My father spent 6 months at the Exploratorium as  
> assistant director working with Oppenheimer and then went off and  
> started a science museum called SciTech. So, Exploratorium rang a  
> bell. :)

> Let me know if you might have a few minutes.

> Best regards,

> Carl Malamud  
> Public.Resource.Org

> \_\_\_\_\_  
> Deborah Hunt  
> Manager, Learning Commons  
> Exploratorium  
> 3601 Lyon Street  
> San Francisco, CA 94123  
> Voice: 415-353-0485  
> Fax: 415-561-0370  
> <mailto:dhunt@exploratorium.edu>

> "There is no such thing as a self-made (wo)man. We are made up of  
> thousands of others. Everyone who has ever done a kind deed for us, or  
> spoken one word of encouragement to us, has entered into the makeup of  
> our character and our thoughts, as well as our success."

> George Matthew Adams

> \_\_\_\_\_  
> Deborah Hunt  
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- > spoken one word of encouragement to us, has entered into the makeup of
- > our character and our thoughts, as well as our success."
- > George Matthew Adams

# **EXHIBIT 15**

From: Carl Malamud  
Sent: Mon 4/23/2012 5:23 PM (GMT -7)  
To: Joseph Lorenzo Hall  
Cc:  
Bcc:  
Subject: Re: sibr

EXHIBIT 69  
Ashley Soevyn, CSR No. 12019

Date 2/27/15  
Witness: MALAMUD

ok. let's keep it just at what you've done up till now.

I'd like to look at the docs, but it is under two provisos:

1. You need to stay both anonymous and mum on this. No bragging about it, talking about it. And, I'm not going to do that either.
2. We're not going to use your docs. I just wanted to see if they are there and are basically in the range we need.

I may still end up going retail (about \$50/doc).

FYI, the exact match is actually pretty important ... only specific docs that have been deliberately incorporated and are critical to the public safety. So, must be the exact doc that is cited. Or, since the CFR is pretty fucked up, if it isn't, a pretty convincing case has to be made that the doc cited did not actually exist and what they meant was the previous revision just before the named year. But, normally, it has to be exactly the right doc, and it can't be taken in violation of terms of use unless me and our legal folks have scrubbed the situation very carefully. (Using the Berkeley license won't count because it could lead to them being cancelled, so we would only do that with somebody pretty high up backing the decision.)

Appreciate your help ... look forward to looking at the docs.

Carl

On Apr 23, 2012, at 5:15 PM, Joseph Lorenzo Hall wrote:

> for 2513, I can't seem to go back to 1999... only as far as 2000  
> (attached screen shot)... I'll include 2000, even though that's not  
> right. And it was A106/A106M (not A333/A333M as my previous email  
> stated) that has fucked up PDFs... I'll also include the 4b revision  
> that is not fucked up (both 4a and 4 for that one have screwy PDFs).  
> best, Joe

>  
> On Mon, Apr 23, 2012 at 8:07 PM, Joseph Lorenzo Hall <joehall@gmail.com> wrote:

>> I think I can get them all... the PDF for A333/A333M is very strange  
>> (rendered badly as if there are PDF lingo mistakes). Will send them in  
>> a ZIP... naturally, I'm a bit concerned these might be watermarked as  
>> my having downloaded them (they're watermarked visually at the bottom  
>> of the page, but not specific to my name). best, Joe

>>  
>> On Mon, Apr 23, 2012 at 7:35 PM, Carl Malamud <carl@media.org> wrote:

>>> Hi -

>>>

>>> See if you can see any of these documents:

>>>

>>> ASTM D 2517 Standard Specification for Reinforced Epoxy Resin Gas Pressure Pipe and Fittings 2000

>>> ASTM A 333/A 333M Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service 2005

>>> ASTM A 106/A 106M Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

-2004-

>>> ASTM D 2513 Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings 1999

>>> ASTM A 240/A 240M Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Fusion-Welded Unfired Pressure Vessels 1999

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>>> Has to be the exact version (e.g., D2517-2000).

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# **EXHIBIT 16**



CERTIFICATE

By Authority Of  
THE UNITED STATES OF AMERICA  
Legally Binding Document

By the Authority Vested By Part 5 of the United States Code § 552(a) and Part 1 of the Code of Regulations § 51 the attached document has been duly INCORPORATED BY REFERENCE and shall be considered legally binding upon all citizens and residents of the United States of America. HEED THIS NOTICE: Criminal penalties may apply for noncompliance.



**Document Name:** ASTM D86: Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure

**CFR Section(s):** 40 CFR 1065.710

**Standards Body:** American Society for Testing and Materials

EXHIBIT 63  
Ashley Scovin, CSR No. 12019

Date 2/27/15  
Witness: MALAMUD



*Official Incorporator:*

THE EXECUTIVE DIRECTOR  
OFFICE OF THE FEDERAL REGISTER  
WASHINGTON, D.C.





## Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure<sup>1</sup>

This standard is issued under the fixed designation D 86; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

### 1. Scope\*

1.1 This test method covers the atmospheric distillation of petroleum products using a laboratory batch distillation unit to determine quantitatively the boiling range characteristics of such products as light and middle distillates, automotive spark-ignition engine fuels, aviation gasolines, aviation turbine fuels, 1-D and 2-D regular and low sulfur diesel fuels, special petroleum spirits, naphthas, white spirits, kerosines, and Grades 1 and 2 burner fuels.

1.2 The test method is designed for the analysis of distillate fuels; it is not applicable to products containing appreciable quantities of residual material.

1.3 This test method covers both manual and automated instruments.

1.4 Unless otherwise noted, the values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.5 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

### 2. Referenced Documents

2.1 All standards are subject to revision, and parties to agreement on this test method are to apply the most recent edition of the standards indicated below, unless otherwise specified, such as in contractual agreements or regulatory rules where earlier versions of the method(s) identified may be required.

#### 2.2 ASTM Standards:<sup>2</sup>

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.08.0A on Distillation.

In the IP, the equivalent test method is published under the designation IP 123. It is under the jurisdiction of the Standardization Committee.

Current edition approved Jan. 15, 2007. Published February 2007. Originally approved in 1921. Last previous edition approved in 2005 as D 86–05.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- D 97 Test Method for Pour Point of Petroleum Products
- D 323 Test Method for Vapor Pressure of Petroleum Products (Reid Method)
- D 2892 Test Method for Distillation of Crude Petroleum (15-Theoretical Plate Column)
- D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products
- D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products
- D 4953 Test Method for Vapor Pressure of Gasoline and Gasoline-Oxygenate Blends (Dry Method)
- D 5190 Test Method for Vapor Pressure of Petroleum Products (Automatic Method)
- D 5191 Test Method for Vapor Pressure of Petroleum Products (Mini Method)
- D 5842 Practice for Sampling and Handling of Fuels for Volatility Measurement
- D 5949 Test Method for Pour Point of Petroleum Products (Automatic Pressure Pulsing Method)
- D 5950 Test Method for Pour Point of Petroleum Products (Automatic Tilt Method)
- D 5985 Test Method for Pour Point of Petroleum Products (Rotational Method)
- E 1 Specification for ASTM Liquid-in-Glass Thermometers
- E 77 Test Method for Inspection and Verification of Thermometers
- E 1272 Specification for Laboratory Glass Graduated Cylinders
- E 1405 Specification for Laboratory Glass Distillation Flasks
- 2.3 *Energy Institute Standards:*<sup>3</sup>
  - IP 69 Determination of Vapour Pressure—Reid Method
  - IP 123 Petroleum Products—Determination of Distillation Characteristics
  - IP 394 Determination of Air Saturated Vapour Pressure
  - IP Standard Methods for Analysis and Testing of Petroleum and Related Products 1996—Appendix A

<sup>3</sup> Available from Energy Institute, 61 New Cavendish St., London, W1G 7AR, U.K., <http://www.energyinst.org.uk>.

\*A Summary of Changes section appears at the end of this standard.

**TABLE 1 Preparation of Apparatus**

	Group 1	Group 2	Group 3	Group 4
Flask, mL	125	125	125	125
ASTM distillation thermometer	7C (7F)	7C (7F)	7C (7F)	8C (8F)
IP distillation thermometer range	low	low	low	high
Flask support board	B	B	C	C
diameter of hole, mm	38	38	50	50
Temperature at start of test				
Flask				
°C	13-18	13-18	13-18	not above
°F	55-65	55-65	55-65	ambient
Flask support and shield	not above ambient	not above ambient	not above ambient	
Receiving cylinder and 100 mL charge				
°C	13-18	13-18	13-18 <sup>A</sup>	13-ambient <sup>A</sup>
°F	55-65	55-65	55-65 <sup>A</sup>	55-ambient <sup>A</sup>

<sup>A</sup> See 10.3.1.1 for exceptions.

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *charge volume, n*—the volume of the specimen, 100 mL, charged to the distillation flask at the temperature specified in Table 1.

3.1.2 *decomposition, n*—of a hydrocarbon, the pyrolysis or cracking of a molecule yielding smaller molecules with lower boiling points than the original molecule.

3.1.2.1 *Discussion*—Characteristic indications of thermal decomposition are evolution of fumes and erratic temperature readings that usually decrease after any attempt is made to adjust the heat.

3.1.3 *decomposition point, n*—the corrected thermometer reading that coincides with the first indications of thermal decomposition of the liquid in the flask.

3.1.3.1 *Discussion*—The decomposition point, as determined under the conditions of this test method, does not necessarily correspond to the decomposition temperature in other applications.

3.1.4 *dry point, n*—the corrected thermometer reading that is observed at the instant the last drop of liquid (exclusive of any drops or film of liquid on the side of the flask or on the temperature sensor), evaporates from the lowest point in the distillation flask.

3.1.4.1 *Discussion*—The end point (final boiling point), rather than the dry point, is intended for general use. The dry point can be reported in connection with special purpose naphthas, such as those used in the paint industry. Also, it is substituted for the end point (final boiling point) whenever the sample is of such a nature that the precision of the end point (final boiling point) cannot consistently meet the requirements given in the precision section.

3.1.5 *dynamic holdup, n*—the amount of material present in the neck of the flask, in the sidearm of the flask, and in the condenser tube during the distillation.

3.1.6 *emergent stem effect, n*—the offset in temperature reading caused by the use of total immersion mercury-in-glass thermometers in the partial immersion mode.

3.1.6.1 *Discussion*—In the partial immersion mode, a portion of the mercury thread, that is, the emergent portion, is at a lower temperature than the immersed portion, resulting in a shrinkage of the mercury thread and a lower temperature reading.

3.1.7 *end point (EP) or final boiling point (FBP), n*—the maximum corrected thermometer reading obtained during the test.

3.1.7.1 *Discussion*—This usually occurs after the evaporation of all liquid from the bottom of the flask. The term maximum temperature is a frequently used synonym.

3.1.8 *front end loss, n*—loss due to evaporation during transfer from receiving cylinder to distillation flask, vapor loss during the distillation, and uncondensed vapor in the flask at the end of the distillation.

3.1.9 *initial boiling point (IBP), n*—the corrected thermometer reading that is observed at the instant the first drop of condensate falls from the lower end of the condenser tube.

3.1.10 *percent evaporated, n*—the sum of the percent recovered and the percent loss.

3.1.11 *percent loss (or observed loss), n*—one hundred minus the percent total recovery.

3.1.11.1 *corrected loss, n*—percent loss corrected for barometric pressure.

3.1.12 *percent recovered, n*—the volume of condensate observed in the receiving cylinder, expressed as a percentage of the charge volume, associated with a simultaneous temperature reading.

3.1.13 *percent recovery, n*—the maximum percent recovered, as observed in accordance with 10.18.

3.1.13.1 *corrected percent recovery, n*—the percent recovery, adjusted for the difference between the observed loss and the corrected loss, as described in Eq 8.

3.1.13.2 *percent total recovery, n*—the combined percent recovery and residue in the flask, as determined in accordance with 11.1.

3.1.14 *percent residue, n*—the volume of residue in the flask, measured in accordance with 10.19, and expressed as a percentage of the charge volume.

3.1.15 *rate of change (or slope), n*—the change in temperature reading per percent evaporated or recovered, as described in 13.2.

3.1.16 *temperature lag, n*—the offset between the temperature reading obtained by a temperature sensing device and the true temperature at that time.

3.1.17 *temperature measurement device, n*—a thermometer, as described in 6.3.1, or a temperature sensor, as described in 6.3.2.

3.1.18 *temperature reading, n*—the temperature obtained by a temperature measuring device or system that is equal to the thermometer reading described in 3.1.19.

3.1.18.1 *corrected temperature reading, n*—the temperature reading, as described in 3.1.18, corrected for barometric pressure.

3.1.19 *thermometer reading (or thermometer result), n*—the temperature of the saturated vapor measured in the neck of the flask below the vapor tube, as determined by the prescribed thermometer under the conditions of the test.

3.1.19.1 *corrected thermometer reading, n*—the thermometer reading, as described in 3.1.19, corrected for barometric pressure.

#### 4. Summary of Test Method

4.1 Based on its composition, vapor pressure, expected IBP or expected EP, or combination thereof, the sample is placed in one of four groups. Apparatus arrangement, condenser temperature, and other operational variables are defined by the group in which the sample falls.

4.2 A 100-mL specimen of the sample is distilled under prescribed conditions for the group in which the sample falls. The distillation is performed in a laboratory batch distillation unit at ambient pressure under conditions that are designed to provide approximately one theoretical plate fractionation. Systematic observations of temperature readings and volumes of condensate are made, depending on the needs of the user of the data. The volume of the residue and the losses are also recorded.

4.3 At the conclusion of the distillation, the observed vapor temperatures can be corrected for barometric pressure and the data are examined for conformance to procedural requirements, such as distillation rates. The test is repeated if any specified condition has not been met.

4.4 Test results are commonly expressed as percent evaporated or percent recovered versus corresponding temperature, either in a table or graphically, as a plot of the distillation curve.

#### 5. Significance and Use

5.1 The basic test method of determining the boiling range of a petroleum product by performing a simple batch distillation has been in use as long as the petroleum industry has existed. It is one of the oldest test methods under the jurisdiction of ASTM Committee D02, dating from the time when it was still referred to as the Engler distillation. Since the test method has been in use for such an extended period, a tremendous number of historical data bases exist for estimating end-use sensitivity on products and processes.

5.2 The distillation (volatility) characteristics of hydrocarbons have an important effect on their safety and performance, especially in the case of fuels and solvents. The boiling range gives information on the composition, the properties, and the behavior of the fuel during storage and use. Volatility is the major determinant of the tendency of a hydrocarbon mixture to produce potentially explosive vapors.

5.3 The distillation characteristics are critically important for both automotive and aviation gasolines, affecting starting, warm-up, and tendency to vapor lock at high operating

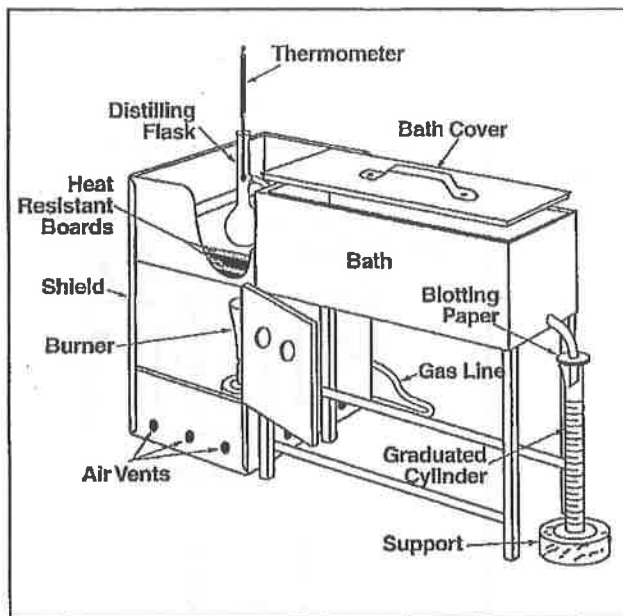


FIG. 1 Apparatus Assembly Using Gas Burner

temperature or at high altitude, or both. The presence of high boiling point components in these and other fuels can significantly affect the degree of formation of solid combustion deposits.

5.4 Volatility, as it affects rate of evaporation, is an important factor in the application of many solvents, particularly those used in paints.

5.5 Distillation limits are often included in petroleum product specifications, in commercial contract agreements, process refinery/control applications, and for compliance to regulatory rules.

#### 6. Apparatus

##### 6.1 Basic Components of the Apparatus:

6.1.1 The basic components of the distillation unit are the distillation flask, the condenser and associated cooling bath, a metal shield or enclosure for the distillation flask, the heat source, the flask support, the temperature measuring device, and the receiving cylinder to collect the distillate.

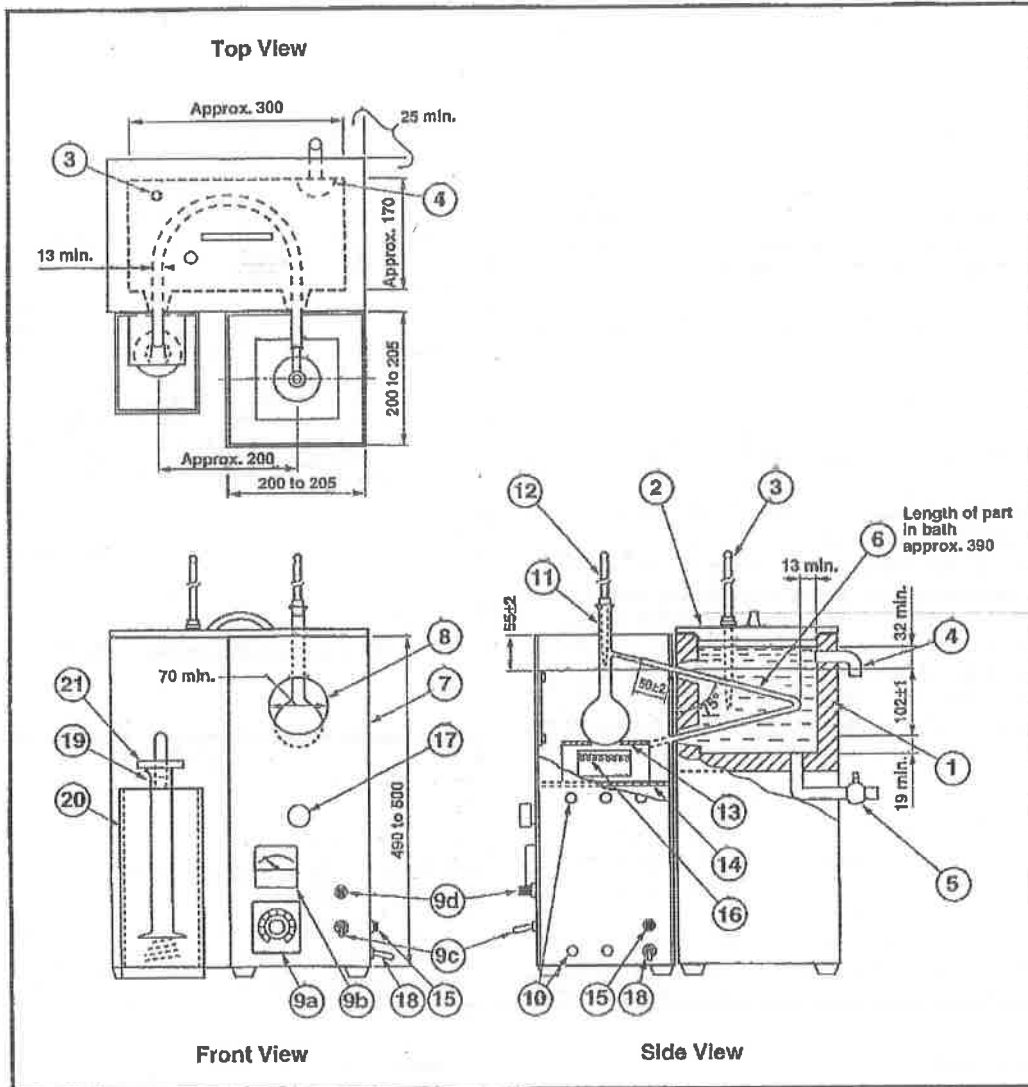
6.1.2 Figs. 1 and 2 are examples of manual distillation units.

6.1.3 In addition to the basic components described in 6.1.1, automated units also are equipped with a system to measure and automatically record the temperature and the associated recovered volume in the receiving cylinder.

6.2 A detailed description of the apparatus is given in Annex A2.

##### 6.3 Temperature Measuring Device:

6.3.1 Mercury-in-glass thermometers, if used, shall be filled with an inert gas, graduated on the stem and enamel backed. They shall conform to Specification E 1 or IP Standard Methods for Analysis and Testing of Petroleum and Related Products 1996—Appendix A, or both, for thermometers ASTM



- |                           |   |
|---------------------------|---|
| 1-Condenser bath          | 11-Distillation flask                           |
| 2-Bath cover              | 12-Temperature sensor                           |
| 3-Bath temperature sensor | 13-Flask support board                          |
| 4-Bath overflow           | 14-Flask support platform                       |
| 5-Bath drain              | 15-Ground connection                            |
| 6-Condenser tube          | 16-Electric heater                              |
| 7-Shield                  | 17-Knob for adjusting level of support platform |
| 8-Viewing window          | 18-Power source cord                            |
| 9a-Voltage regulator      | 19-Receiver cylinder                            |
| 9b-Voltmeter or ammeter   | 20-Receiver cooling bath                        |
| 9c-Power switch           | 21-Receiver cover                               |
| 9d-Power light indicator  |   |
| 10-Vent                   |   |

FIG. 2 Apparatus Assembly Using Electric Heater

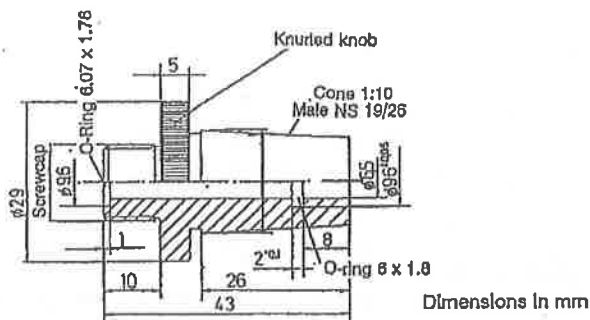


FIG. 3 PTFE Centering Device for Ground Glass Joint

7C/IP 5C and ASTM 7F for the low range thermometers, and ASTM 8C/IP 6C and ASTM 8F for the high range thermometers.

6.3.1.1 Thermometers that have been exposed for an extended period above an observed temperature of 370°C shall not be reused without a verification of the ice point or checked as prescribed in Specification E 1 and Test Method E 77.

NOTE 1—At an observed thermometer reading of 370°C, the temperature of the bulb is approaching a critical range in the glass and the thermometer may lose its calibration.

6.3.2 Temperature measurement systems other than those described in 6.3.1 are satisfactory for this test method, provided that they exhibit the same temperature lag, emergent stem effect, and accuracy as the equivalent mercury-in-glass thermometer.

6.3.2.1 The electronic circuitry or the algorithms, or both, used shall include the capability to simulate the temperature lag of a mercury-in-glass thermometer.

6.3.2.2 Alternatively, the sensor can also be placed in a casing with the tip of the sensor covered so that the assembly, because of its adjusted thermal mass and conductivity, has a temperature lag time similar to that of a mercury-in-glass thermometer.

NOTE 2—In a region where the temperature is changing rapidly during the distillation, the temperature lag of a thermometer can be as much as 3 seconds.

6.3.3 In case of dispute, the referee test method shall be carried out with the specified mercury-in-glass thermometer.

#### 6.4 Temperature Sensor Centering Device:

6.4.1 The temperature sensor shall be mounted through a snug-fitting device designed for mechanically centering the sensor in the neck of the flask without vapor leakage. Examples of acceptable centering devices are shown in Figs. 3 and 4. (Warning—The use of a plain stopper with a hole drilled through the center is not acceptable for the purpose described in 6.4.1.)

NOTE 3—Other centering devices are also acceptable, as long as they position and hold the temperature sensing device in the proper position in the neck of the distillation column, as shown in Fig. 5 and described in 10.5.

NOTE 4—When running the test by the manual method, products with

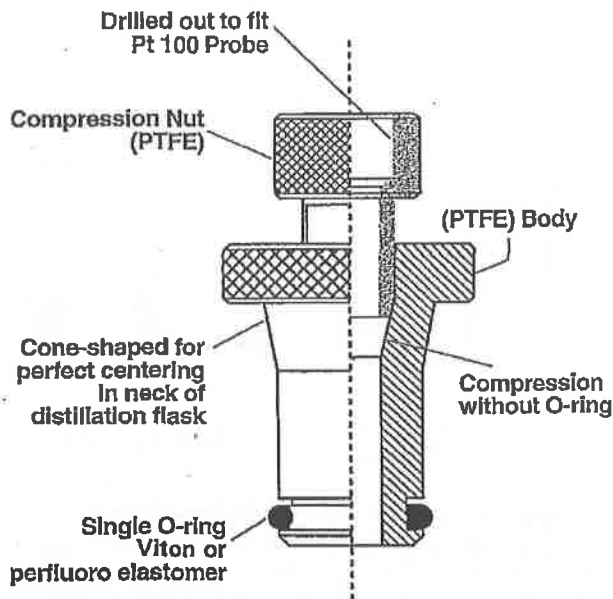


FIG. 4 Example of Centering Device Designs for Straight-Bore Neck Flasks

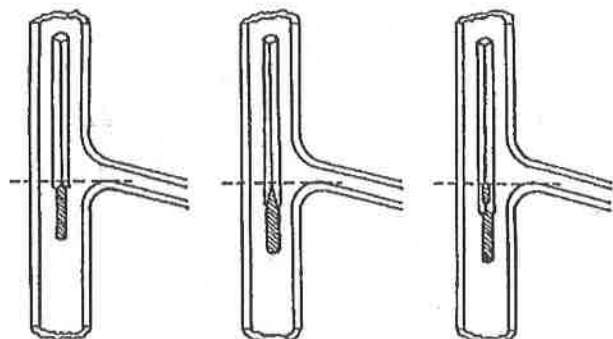


FIG. 5 Position of Thermometer in Distillation Flask

a low IBP may have one or more readings obscured by the centering device. See also 10.14.3.1.

6.5 Automated equipment manufactured in 1999 and later shall be equipped with a device to automatically shut down power to the unit and to spray an inert gas or vapor in the chamber where the distillation flask is mounted in the event of fire.

NOTE 5—Some causes of fires are breakage of the distillation flask, electrical shorts, and foaming and spilling of liquid sample through the top opening of the flask.

6.6 Barometer—A pressure measuring device capable of measuring local station pressure with an accuracy of 0.1 kPa (1 mm Hg) or better, at the same elevation relative to sea level as the apparatus in the laboratory. (Warning—Do not take readings from ordinary aneroid barometers, such as those used

**TABLE 2 Group Characteristics**

	Group 1	Group 2	Group 3	Group 4
Sample characteristics				
Distillate type				
Vapor pressure at				
37.8°C, kPa	≥65.6	<65.5	<65.5	<65.5
100°F, psi	≥9.5	<9.5	<9.5	<9.5
(Test Methods				
D 323, D 4953,				
D 5190, D 5191,				
D 5482, IP 69 or				
IP 394)				
Distillation, IBP °C			≤100	>100
°F			≤212	>212
EP °C	≤250	≤250	>250	>250
°F	≤482	≤482	>482	>482

at weather stations and airports, since these are precorrected to give sea level readings.)

### 7. Sampling, Storage, and Sample Conditioning

7.1 Determine the Group characteristics that correspond to the sample to be tested (see Table 2). Where the procedure is dependent upon the group, the section headings will be so marked.

#### 7.2 Sampling:

7.2.1 Sampling shall be done in accordance with Practice D 4057 or D 4177 and as described in Table 3.

7.2.1.1 *Group 1*—Condition the sample container to below 10°C, preferably by filling the bottle with the cold liquid sample and discarding the first sample. If this is not possible because, for instance, the product to be sampled is at ambient temperature, the sample shall be drawn into a bottle prechilled to below 10°C, in such a manner that agitation is kept at a minimum. Close the bottle immediately with a tight-fitting closure. (Warning—Do not completely fill and tightly seal a cold bottle of sample because of the likelihood of breakage on warming.)

7.2.1.2 *Groups 2, 3, and 4*—Collect the sample at ambient temperature. After sampling, close the sample bottle immediately with a tight-fitting closure.

7.2.1.3 If the sample received by the testing laboratory has been sampled by others and it is not known whether sampling has been performed as described in 7.2, the sample shall be assumed to have been so sampled.

#### 7.3 Sample Storage:

7.3.1 If testing is not to start immediately after collection, store the samples as indicated in 7.3.2, 7.3.3, and Table 3. All samples shall be stored away from direct sunlight or sources of direct heat.

7.3.2 *Group 1*—Store the sample at a temperature below 10°C.

NOTE 6—If there are no, or inadequate, facilities for storage below 10°C, the sample may also be stored at a temperature below 20°C, provided the operator ensures that the sample container is tightly closed and leak-free.

7.3.3 *Group 2*—Store the sample at a temperature below 10°C.

NOTE 7—If there are no, or inadequate, facilities for storage below

10°C, the sample may also be stored at a temperature below 20°C, provided the operator ensures that the sample container is tightly closed and leak-free.

7.3.4 *Groups 3 and 4*—Store the sample at ambient or lower temperature.

#### 7.4 Sample Conditioning Prior to Analysis:

7.4.1 Samples shall be conditioned to the temperature shown in Table 3 before opening the sample container.

7.4.1.1 *Groups 1 and 2*—Samples shall be conditioned to a temperature of less than 10°C (50°F) before opening the sample container.

7.4.1.2 *Groups 3 and 4*—If the sample is not fluid at ambient temperature, it is to be heated to a temperature of 9 to 21°C above its pour point (Test Method D 97, D 5949, or D 5985) prior to analysis. If the sample has partially or completely solidified during storage, it shall be vigorously shaken after melting prior to opening the sample container to ensure homogeneity.

7.4.1.3 If the sample is not fluid at room temperature, the temperature ranges shown in Table 3 for the flask and for the sample do not apply.

#### 7.5 Wet Samples:

7.5.1 Samples of materials that visibly contain water are not suitable for testing. If the sample is not dry, obtain another sample that is free from suspended water.

7.5.2 *Groups 1 and 2*—If such a sample cannot be obtained, the suspended water can be removed by maintaining the sample at 0 to 10°C, adding approximately 10 g of anhydrous sodium sulfate per 100 mL of sample, shaking the mixture for approximately 2 min, and then allowing the mixture to settle for approximately 15 min. Once the sample shows no visible signs of water, use a decanted portion of the sample, maintained between 1 and 10°C, for the analysis. Note in the report that the sample has been dried by the addition of a desiccant.

NOTE 8—Suspended water in hazy samples in Groups 1 and 2 can be removed by the addition of anhydrous sodium sulfate and separating the liquid sample from the drying agent by decanting without statistically affecting the results of the test.<sup>4</sup>

7.5.3 *Groups 3 and 4*—In cases in which a water-free sample is not practical, the suspended water can be removed by shaking the sample with anhydrous sodium sulfate or other suitable drying agent and separating it from the drying agent by decanting. Note in the report that the sample has been dried by the addition of a desiccant.

### 8. Preparation of Apparatus

8.1 Refer to Table 1 and prepare the apparatus by choosing the appropriate distillation flask, temperature measuring device, and flask support board, as directed for the indicated group. Bring the temperature of the receiving cylinder, the flask, and the condenser bath to the indicated temperature.

8.2 Make any necessary provisions so that the temperature of the condenser bath and the receiving cylinder will be maintained at the required temperatures. The receiving cylinder shall be in a bath such that either the liquid level is at least

<sup>4</sup> Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: D02-1455.

**TABLE 3 Sampling, Storage, and Sample Conditioning**

		Group 1	Group 2	Group 3	Group 4
Temperature of sample bottle	°C	<10			
	°F	<50			
Temperature of stored sample	°C	<10 <sup>A</sup>	<10	ambient	ambient
	°F	<50 <sup>A</sup>	<50	ambient	ambient
Temperature of sample after conditioning prior to analysis	°C	<10	<10	Ambient or 8 to 21°C above pour point <sup>B</sup>	Ambient or 8 to 21°C above pour point <sup>B</sup>
	°F	<50	<50	Ambient or 48 to 70°F above pour point <sup>B</sup>	Ambient or 48 to 70°F above pour point <sup>B</sup>
If sample is wet		resample	resample		
If resample is still wet <sup>C</sup>		dry in accordance with 7.5.2			

<sup>A</sup> Under certain circumstances, samples can also be stored at temperatures below 20°C (68°F). See also 7.3.2 and 7.3.3.

<sup>B</sup> If sample is (semi)-solid at ambient temperature, see also 10.3.1.1.

<sup>C</sup> If sample is known to be wet, resampling may be omitted. Dry sample in accordance with 7.5.2 and 7.5.3.

as high as the 100-mL mark or the entire receiving cylinder is surrounded by an air circulation chamber.

8.2.1 *Groups 1, 2, and 3*—Suitable media for low temperature baths include, but are not limited to, chopped ice and water, refrigerated brine, and refrigerated ethylene glycol.

8.2.2 *Group 4*—Suitable media for ambient and higher bath temperatures include, but are not limited to, cold water, hot water, and heated ethylene glycol.

8.3 Remove any residual liquid in the condenser tube by swabbing with a piece of soft, lint-free cloth attached to a cord or wire.

## 9. Calibration and Standardization

9.1 *Temperature Measurement System*—Temperature measurement systems using other than the specified mercury-in-glass thermometers shall exhibit the same temperature lag, emergent stem effect, and accuracy as the equivalent mercury-in-glass thermometer. Confirmation of the calibration of these temperature measuring systems shall be made at intervals of not more than six months, and after the system has been replaced or repaired.

9.1.1 The accuracy and the calibration of the electronic circuitry or computer algorithms, or both, shall be verified by the use of a standard precision resistance bench. When performing this verification, no algorithms shall be used to correct the temperature for lag and the emergent stem effect (see manufacturer's instructions).

9.1.2 Verification of the calibration of temperature measuring devices shall be conducted by distilling toluene in accordance with Group 1 of this test method and comparing the 50% recovered temperature with that shown in Table 4.<sup>5</sup>

9.1.2.1 If the temperature reading is not within the values shown in Table 4 for the respective apparatus being used (see Note 10 and Table 4), the temperature measurement system shall be considered defective and shall not be used for the test.

NOTE 9—Toluene is used as a verification fluid for calibration; it will yield almost no information on how well an electronic measurement system simulates the temperature lag of a liquid-in-glass thermometer.

9.1.2.2 Reagent grade toluene and hexadecane (cetane), conforming to the specifications of the Committee on Analyti-

cal Reagents of the American Chemical Society,<sup>6</sup> shall be used. However, other grades may also be used, provided it is first ascertained that the reagent is of sufficient purity to permit its use without lessening the accuracy of the determination.

NOTE 10—At 101.3 kPa, toluene is shown in reference manuals as boiling at 110.6°C when measured using a partial immersion thermometer. Because this test method uses thermometers calibrated for total immersion, the results typically will be lower and, depending on the thermometer and the situation, may be different for each thermometer. At 101.3 kPa, hexadecane is shown in reference manuals as boiling at 287.0°C when measured using a partial immersion thermometer. Because this test method uses thermometers calibrated for total immersion, the results typically will be lower, and, depending on the thermometer and the situation, may be different for each thermometer.

9.1.3 A procedure to determine the magnitude of the temperature lag is described in Annex A3.

9.1.4 A procedure to emulate the emergent stem effect is described in Appendix X4.

9.1.5 To verify the calibration of the temperature measurement system at elevated temperatures, use hexadecane. The temperature measurement system shall indicate, at 50% recovered, a temperature comparable to that shown in Table 4 for the respective apparatus under Group 4 distillation conditions.

NOTE 11—Because of the high melting point of hexadecane, Group 4 verification distillations will have to be carried out with condenser temperatures >20°C.

### 9.2 Automated Method:

9.2.1 *Level Follower*—For an automated distillation apparatus, the level follower/recording mechanism of the apparatus shall have a resolution of 0.1 mL or better with a maximum error of 0.3 mL between the 5 and 100 mL points. The calibration of the assembly shall be verified in accordance with manufacturer's instructions at intervals of not more than three months and after the system has been replaced or repaired.

NOTE 12—The typical calibration procedure involves verifying the output with the receiver containing 5 and 100 mL of material respectively.

9.2.2 *Barometric Pressure*—At intervals of not more than six months, and after the system has been replaced or repaired,

<sup>6</sup> Reagent Chemicals, American Chemical Society Specifications, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopoeia and National Formulary*, U.S. Pharmacopoeial Convention, Inc. (USPC), Rockville, MD.

<sup>5</sup> Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: D02-1580.

**TABLE 4 True and Min and Max D 86 50 % Recovered Boiling Points (°C)<sup>^</sup>**

		Manual		Automated	
		Distillation conditions min D 86 50 % boiling point	Distillation conditions max D 86 50 % boiling point	Distillation conditions min D 86 50 % boiling point	Distillation conditions max D 86 50 % boiling point
Toluene	ASTM/IP true boiling point	Group 1, 2, and 3	Group 1, 2, and 3	Group 1, 2, and 3	Group 1, 2, and 3
		105.9	111.8	108.5	109.7
Hexadecane	ASTM/IP true boiling point	Group 4	Group 4	Group 4	Group 4
		272.2	283.1	277.0	280.0

<sup>^</sup> The manual and automated temperatures show in this table are the values for the 95 % tolerance interval for the 99 % population coverage. The proposed tolerance is approximately 3 × sigma. Information on the values in this table can be found in RR:D02-1580.

the barometric reading of the instrument shall be verified against a barometer, as described in 6.6.

### 10. Procedure

10.1 Record the prevailing barometric pressure.

10.2 *Groups 1 and 2*—Fit a low range thermometer provided with a snug-fitting cork or stopper of silicone rubber, or equivalent polymeric material, tightly into the neck of the sample container and bring the temperature of the sample to the temperature indicated in Table 3.

10.3 *Groups 1, 2, 3, and 4*—Check that the temperature of the sample is as shown in Table 3. Pour the specimen precisely to the 100-mL mark of the receiving cylinder, and transfer the contents of the receiving cylinder as completely as practical into the distillation flask, ensuring that none of the liquid flows into the vapor tube.

**NOTE 13**—It is important that the difference between the temperature of the specimen and the temperature of the bath around the receiving cylinder is as small as practically possible. A difference of 5°C can make a difference of 0.7 mL.

10.3.1 *Groups 3 and 4*—If the sample is not fluid at ambient temperature, it is to be heated to a temperature between 9 and 21°C above its pour point (Test Methods D 97, D 5949, D 5950, or D 5985) prior to analysis. If the sample has partially or completely solidified in the intervening period, it shall be vigorously shaken after melting, and prior to sampling, to ensure homogeneity.

10.3.1.1 If the sample is not fluid at ambient temperatures, disregard the temperature range shown in Table 1 for the receiving cylinder and sample. Prior to analysis, heat the receiving cylinder to approximately the same temperature as the sample. Pour the heated specimen precisely to the 100-mL mark of the receiving cylinder, and transfer the contents of the receiving cylinder as completely as practical into the distillation flask, ensuring that none of the liquid flows into the vapor tube.

**NOTE 14**—Any material that evaporates during the transfer will contribute to the loss; any material that remains in the receiving cylinder will contribute to the observed recovery volume at the time of the IBP.

10.4 If the sample can be expected to demonstrate irregular boiling behavior, that is, bumping, add a few boiling chips to the specimen. The addition of a few boiling chips is acceptable for any distillation.

10.5 Fit the temperature sensor through a snug-fitting device, as described in 6.4, to mechanically center the sensor in the neck of the flask. In the case of a thermometer, the bulb is centered in the neck and the lower end of the capillary is level with the highest point on the bottom of the inner wall of the vapor tube (see Fig. 5). In the case of a thermocouple or resistance thermometer, follow the manufacturer's instructions as to placement (see Fig. 6).

**NOTE 15**—If vacuum grease is used on the mating surface of the centering device, use the minimum amount of grease that is practical.

10.6 Fit the flask vapor tube, provided with a snug-fitting cork or rubber stopper of silicone, or equivalent polymeric material, tightly into the condenser tube. Adjust the flask in a vertical position so that the vapor tube extends into the condenser tube for a distance from 25 to 50 mm. Raise and adjust the flask support board to fit it snugly against the bottom of the flask.

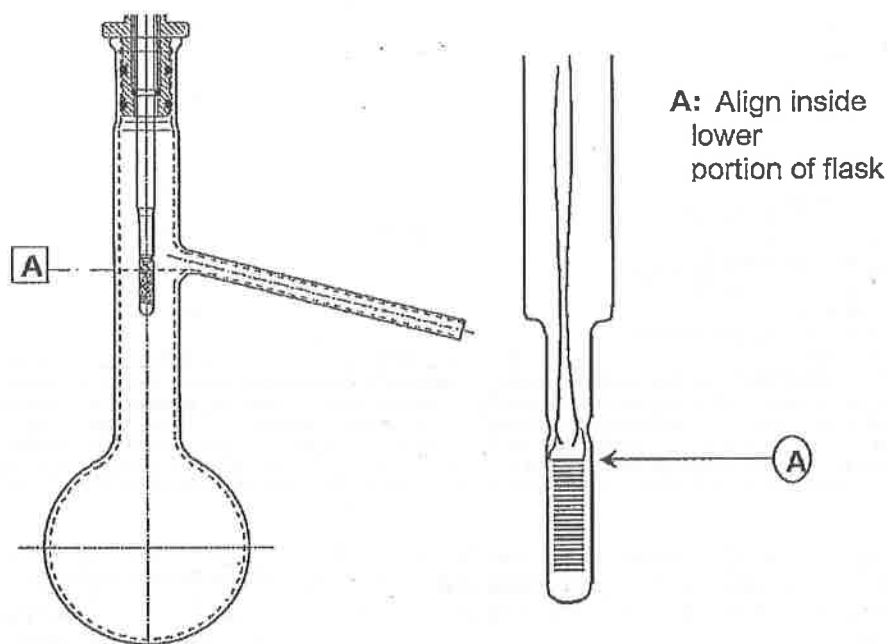
10.7 Place the receiving cylinder that was used to measure the specimen, without drying the inside of the cylinder, into its temperature-controlled bath under the lower end of the condenser tube. The end of the condenser tube shall be centered in the receiving cylinder and shall extend therein for a distance of at least 25 mm, but not below the 100-mL mark.

#### 10.8 Initial Boiling Point:

10.8.1 *Manual Method*—To reduce evaporation loss of the distillate, cover the receiving cylinder with a piece of blotting paper, or similar material, that has been cut to fit the condenser tube snugly. If a receiver deflector is being used, start the distillation with the tip of the deflector just touching the wall of the receiving cylinder. If a receiver deflector is not used, keep the drip tip of the condenser away from the wall of the receiving cylinder. Note the start time. Observe and record the IBP to the nearest 0.5°C (1.0°F). If a receiver deflector is not being used, immediately move the receiving cylinder so that the tip of the condenser touches its inner wall.

10.8.2 *Automated Method*—To reduce evaporation loss of the distillate, use the device provided by the instrument manufacturer for this purpose. Apply heat to the distillation flask and contents with the tip of the receiver deflector just touching the wall of the receiving cylinder. Note the start time. Record the IBP to the nearest 0.1°C (0.2°F).





**FIG. 6 Example of Recommended Placement of Pt-100 Probe Relative to Distillation Flask Sidearm for Automated D 86 Distillation Instrument**

10.9 Regulate the heating so that the time interval between the first application of heat and the IBP is as specified in Table 5.

10.10 Regulate the heating so that the time from IBP to 5 or 10 % recovered is as indicated in Table 5.

10.11 Continue to regulate the heating so that the uniform average rate of condensation from 5 or 10 % recovered to 5 mL residue in the flask is 4 to 5 mL per min. (**Warning**—Due to the configuration of the boiling flask and the conditions of the test, the vapor and liquid around the temperature sensor are not in thermodynamic equilibrium. The distillation rate will consequently have an effect on the measured vapor temperature. The distillation rate shall, therefore, be kept as constant as possible throughout the test.)

**NOTE 16**—When testing gasoline samples, it is not uncommon to see the condensate suddenly form non-miscible liquid phases and bead up on the temperature measuring device and in the neck of the boiling flask at a vapor temperature of around 160°C. This may be accompanied by a sharp (about 3°C) dip in the vapor temperature and a drop in the recovery rate. The phenomenon, which may be due to the presence of trace water in the sample, may last for 10 to 30 s before the temperature recovers and the condensate starts flowing smoothly again. This point is sometimes colloquially referred to as the Hesitation Point.

10.12 Repeat any distillation that did not meet the requirements described in 10.9, 10.10, and 10.11.

10.13 If a decomposition point, as described in 3.1.3, is observed, discontinue the heating and proceed as directed in 10.17.

10.14 In the interval between the IBP and the end of the distillation, observe and record data necessary for the calculation and reporting of the results of the test as required by the

specification involved, or as previously established for the sample under test. These observed data can include temperature readings at prescribed percentages recovered or percentages recovered at prescribed temperature readings, or both.

10.14.1 *Manual Method*—Record all volumes in the graduated cylinder to the nearest 0.5 mL, and all temperature readings to the nearest 0.5°C (1.0°F).

10.14.2 *Automated Method*—Record all volumes in the receiving cylinder to the nearest 0.1 mL, and all temperature readings to the nearest 0.1°C (0.2°F).

10.14.3 *Group 1, 2, 3, and 4*—In cases in which no specific data requirements have been indicated, record the IBP and the EP (FBP) or the dry point, or both, and temperature readings at 5, 15, 85, and 95 % recovered, and at each 10 % multiple of volume recovered from 10 to 90, inclusive.

10.14.3.1 *Group 4*—When a high range thermometer is used in testing aviation turbine fuels and similar products, pertinent thermometer readings can be obscured by the centering device. If these readings are required, perform a second distillation in accordance with Group 3. In such cases, reading from a low range thermometer can be reported in place of the obscured high range thermometer readings, and the test report shall so indicate. If, by agreement, the obscured readings are waived, the test report shall so indicate.

10.14.4 When it is required to report the temperature reading at a prescribed percent evaporated or recovered for a sample that has a rapidly changing slope of the distillation curve in the region of the prescribed percent evaporated or recovered reading, record temperature readings at every 1 % recovered. The slope is considered rapidly changing if the

TABLE 5 Conditions During Test Procedure

		Group 1	Group 2	Group 3	Group 4
Temperature of cooling bath <sup>A</sup>	°C	0-1	0-5	0-5	0-60
	°F	32-34	32-40	32-40	32-140
Temperature of bath around receiving cylinder	°C	13-18	13-18	13-18	±3
	°F	55-65	55-65	55-65	±5
					of charge temperature
Time from first application of heat to initial boiling point, min		5-10	5-10	5-10	5-15
Time from initial boiling point to 5 % recovered, s		60-100	60-100		
to 10 % recovered, min					
Uniform average rate of condensation from 5 % recovered to 5 mL in flask, mL/min		4-5	4-5	4-5	4-5
Time recorded from 5 mL residue to end point, min		5 max	5 max	5 max	5 max

<sup>A</sup> the proper condenser bath temperature will depend upon the wax content of the sample and of its distillation fractions. The test is generally performed using one single condenser temperature. Wax formation in the condenser can be deduced from (a) the presence of wax particles in the distillate coming off the drip tip, (b) a higher distillation loss than what would be expected based on the initial boiling point of the specimen, (c) an erratic recovery rate and (d) the presence of wax particles during the removal of residual liquid by swabbing with a lint-free cloth (see 8.3). The minimum temperature that permits satisfactory operation shall be used. In general, a bath temperature in the 0 to 4°C range is suitable for kerosine, Grade No. 1 fuel oil and Grade No. 1-D diesel fuel oil. In some cases involving Grade No. 2 fuel oil, Grade No. 2-D diesel fuel oil, gas oils and similar distillates, it may be necessary to hold the condenser bath temperature in the 38 to 60°C range.

change in slope ( $C$ ) of the data points described in 10.14.2 in that particular area is greater than 0.6 (change of slope ( $F$ ) is greater than 1.0) as calculated by Eq 1 (Eq 2).

$$\text{Change of Slope } (C) = \frac{(C_2 - C_1)(V_2 - V_1) - (C_3 - C_2)(V_3 - V_2)}{(1)} \quad (1)$$

$$\text{Change of Slope } (F) = \frac{(F_2 - F_1)(V_2 - V_1) - (F_3 - F_2)(V_3 - V_2)}{(2)} \quad (2)$$

where:

$C_1$  = temperature at the volume % recorded one reading prior to the volume % in question, °C,

$C_2$  = temperature at the volume % recorded in question, °C,

$C_3$  = temperature at the volume % recorded following the volume % in question, °C,

$F_1$  = temperature at the volume % recorded one reading prior to the volume % in question, °F,

$F_2$  = temperature at the volume % recorded in question, °F,

$F_3$  = temperature at the volume % recorded following the volume % in question, °F,

$V_1$  = volume % recorded one reading prior to the volume % in question,

$V_2$  = volume % recorded at the volume % in question, and

$V_3$  = volume % recorded following the volume % in question.

10.15 When the residual liquid in the flask is approximately 5 mL, make a final adjustment of the heat. The time from the 5 mL of liquid residue in the flask to the EP (FBP) shall be within the limits prescribed in Table 5. If this condition is not satisfied, repeat the test with appropriate modification of the final heat adjustment.

NOTE 17—Since it is difficult to determine when there is 5 mL of boiling liquid left in the flask, this time is determined by observing the amount of liquid recovered in the receiving cylinder. The dynamic holdup has been determined to be approximately 1.5 mL at this point. If there are no front end losses, the amount of 5 mL in the flask can be assumed to

correspond with an amount of 93.5 mL in the receiving cylinder. This amount has to be adjusted for the estimated amount of front end loss.

10.15.1 If the actual front end loss differs more than 2 mL from the estimated value, the test shall be rerun.

10.16 Observe and record the EP (FBP) or the dry point, or both, as required, and discontinue the heating.

10.17 Allow the distillate to drain into the receiving cylinder, after heating has been discontinued.

10.17.1 *Manual Method*—While the condenser tube continues to drain into the graduated cylinder, observe and note the volume of condensate to the nearest 0.5 mL at 2 min intervals until two successive observations agree. Measure the volume in the receiving cylinder accurately, and record it to the nearest 0.5 mL.

10.17.2 *Automated Method*—The apparatus shall continually monitor the recovered volume until this volume changes by no more than 0.1 mL in 2 min. Record the volume in the receiving cylinder accurately to the nearest 0.1 mL.

10.18 Record the volume in the receiving cylinder as percent recovery. If the distillation was previously discontinued under the conditions of a decomposition point, deduct the percent recovered from 100, report this difference as the sum of percent residue and percent loss, and omit the procedure given in 10.19.

10.19 After the flask has cooled and no more vapor is observed, disconnect the flask from the condenser, pour its contents into a 5-mL graduated cylinder, and with the flask suspended over the cylinder, allow the flask to drain until no appreciable increase in the volume of liquid in the cylinder is observed. Measure the volume in the graduated cylinder to the nearest 0.1 mL, and record as percent residue.

10.19.1 If the 5-mL graduated cylinder does not have graduations below 1 mL and the volume of liquid is less than 1 mL, prefill the cylinder with 1 mL of a heavy oil to allow a better estimate of the volume of the material recovered.

10.19.1.1 If a residue greater than expected is obtained, and the distillation was not positively terminated before the EP,

check whether adequate heat was applied towards the end of the distillation and whether conditions during the test conformed to those specified in Table 5. If not, repeat test.

NOTE 18—The distillation residues of this test method for gasoline, kerosine, and distillate diesel are typically 0.9–1.3, 0.9–1.3, and 1.0–1.4 volume %, respectively.

NOTE 19—The test method is not designed for the analysis of distillate fuels containing appreciable quantities of residual material (see 1.2).

10.19.2 Groups 1, 2, 3, and 4—Record the volume in the 5-mL graduated cylinder, to the nearest 0.1 mL, as percent residue.

10.20 If the intent of the distillation is to determine the percent evaporated or percent recovered at a predetermined corrected temperature reading, modify the procedure to conform to the instructions described in Annex A4.

10.21 Examine the condenser tube and the side arm of the flask for waxy or solid deposits. If found, repeat the test after making adjustments described in Footnote A of Table 5.

## 11. Calculations

11.1 The percent total recovery is the sum of the percent recovery (see 10.18) and the percent residue (see 10.19). Deduct the percent total recovery from 100 to obtain the percent loss.

11.2 Do not correct the barometric pressure for meniscus depression, and do not adjust the pressure to what it would be at sea level.

NOTE 20—The observed barometric reading does not have to be corrected to a standard temperature and to standard gravity. Even without performing these corrections, the corrected temperature readings for the same sample between laboratories at two different locations in the world will, in general, differ less than 0.1°C at 100°C. Almost all data obtained earlier have been reported at barometric pressures that have not been corrected to standard temperature and to standard gravity.

11.3 Correct temperature readings to 101.3 kPa (760 mm Hg) pressure. Obtain the correction to be applied to each temperature reading by means of the Sydney Young equation as given in Eq 3, Eq 4, or Eq 5, as appropriate, or by the use of Table 6. For Celsius temperatures:

$$C_c = 0.0009 (101.3 - P_k) (273 + t_c) \quad (3)$$

$$C_c = 0.00012 (760 - P) (273 + t_c) \quad (4)$$

For Fahrenheit temperatures:

$$C_f = 0.00012 (760 - P) (460 + t_f) \quad (5)$$

where:

- $t_c$  = the observed temperature reading in °C,
- $t_f$  = the observed temperature reading in °F,
- $C_c$  and  $C_f$  = corrections to be added algebraically to the observed temperature readings,
- $P_k$  = barometric pressure, prevailing at the time and location of the test, kPa, and
- $P$  = barometric pressure, prevailing at the time and location of the test, mm Hg.

After applying the corrections and rounding each result to the nearest 0.5°C (1.0°F) or 0.1°C (0.2°F), as appropriate to the

TABLE 6 Approximate Thermometer Reading Correction

Temperature Range		Correction <sup>a</sup> per 1.3 kPa (10 mm Hg) Difference in Pressure	
°C	°F	°C	°F
10–30	50–86	0.35	0.63
30–50	86–122	0.38	0.68
50–70	122–158	0.40	0.72
70–90	158–194	0.42	0.76
90–110	194–230	0.45	0.81
110–130	230–266	0.47	0.85
130–150	266–302	0.50	0.89
150–170	302–338	0.52	0.94
170–190	338–374	0.54	0.98
190–210	374–410	0.57	1.02
210–230	410–446	0.59	1.07
230–250	446–482	0.62	1.11
250–270	482–518	0.64	1.15
270–290	518–554	0.66	1.20
290–310	554–590	0.69	1.24
310–330	590–626	0.71	1.28
330–350	626–662	0.74	1.33
350–370	662–698	0.76	1.37
370–390	698–734	0.78	1.41
390–410	734–770	0.81	1.46

<sup>a</sup> Values to be added when barometric pressure is below 101.3 kPa (760 mm Hg) and to be subtracted when barometric pressure is above 101.3 kPa.

apparatus being used, use the corrected temperature readings in all further calculations and reporting.

NOTE 21—Temperature readings are not corrected to 101.3 kPa (760 mm Hg) when product definitions, specifications, or agreements between the parties involved indicate, specifically, that such correction is not required or that correction shall be made to some other base pressure.

11.4 Correct the actual loss to 101.3 kPa (760 mm Hg) pressure when temperature readings are corrected to 101.3 kPa pressure. The corrected loss,  $L_c$ , is calculated from Eq 6 or Eq 7, as appropriate, or can be read from the tables presented as Fig. X3.1 or Fig. X3.2.

$$L_c = 0.5 + (L - 0.5) / \{1 + (101.3 - P_k) / 8.00\} \quad (6)$$

$$L_c = 0.5 + (L - 0.5) / \{1 + (760 - P) / 60.0\} \quad (7)$$

where:

- $L$  = observed loss,
- $L_c$  = corrected loss,
- $P_k$  = pressure, kPa, and
- $P$  = pressure, mm Hg.

NOTE 22—Eq 6 and 7 above have been derived from the data in Table 7 and Eqs 5 and 6 in Test Method D 86–95 and earlier versions. It is probable that Eq 6 and 7 shown were the original empirical equations from which the table and equations in the Test Method D 86–95 and earlier versions were derived.

11.4.1 Calculate the corresponding corrected percent recovery in accordance with the following equation:

$$R_c = R + (L - L_c) \quad (8)$$

where:

- $L$  = percent loss or observed loss,
- $L_c$  = corrected loss,
- $R$  = percent recovery, and
- $R_c$  = corrected percent recovery.

TABLE 7 Data Points for Determining Slope,  $S_c$  or  $S_f$

Slope at %	IBP	5	10	20	30	40	50	60	70	80	90	95	EP
$T_L$ at %	0	0	0	10	20	30	40	50	60	70	80	90	95
$T_U$ at %	5	10	20	30	40	50	60	70	80	90	90	95	$V_{BP}$
$V_U - V_L$	5	10	20	20	20	20	20	20	20	20	10	5	$V_{BP-95}$

11.5 To obtain the percent evaporated at a prescribed temperature reading, add the percent loss to each of the observed percent recovered at the prescribed temperature readings, and report these results as the respective percent evaporated, that is:

$$P_e = P_r + L \quad (9)$$

where:

- $L$  = observed loss,
- $P_e$  = percent evaporated, and
- $P_r$  = percent recovered.

11.6 To obtain temperature readings at prescribed percent evaporated, and if no recorded temperature data is available within 0.1 volume % of the prescribed percent evaporated, use either of the two following procedures, and indicate on the report whether the arithmetical procedure or the graphical procedure has been used.

11.6.1 *Arithmetical Procedure*—Deduct the observed loss from each prescribed percent evaporated to obtain the corresponding percent recovered. Calculate each required temperature reading as follows:

$$T = T_L + (T_H - T_L)(R - R_L)/(R_H - R_L) \quad (10)$$

where:

- $R$  = percent recovered corresponding to the prescribed percent evaporated,
- $R_H$  = percent recovered adjacent to, and higher than  $R$ ,
- $R_L$  = percent recovered adjacent to, and lower than  $R$ ,
- $T$  = temperature reading at the prescribed percent evaporated,
- $T_H$  = temperature reading recorded at  $R_H$ , and
- $T_L$  = temperature reading recorded at  $R_L$ .

Values obtained by the arithmetical procedure are affected by the extent to which the distillation graphs are nonlinear. Intervals between successive data points can, at any stage of the test, be no wider than the intervals indicated in 10.18. In no case shall a calculation be made that involves extrapolation.

11.6.2 *Graphical Procedure*—Using graph paper with uniform subdivisions, plot each temperature reading corrected for barometric pressure, if required (see 11.3), against its corresponding percent recovered. Plot the IBP at 0 % recovered. Draw a smooth curve connecting the points. For each prescribed percent evaporated, deduct the distillation loss to obtain the corresponding percent recovered and take from the graph the temperature reading that this percent recovered indicates. Values obtained by graphical interpolation procedures are affected by the care with which the plot is made.

NOTE 23—See Appendix X1 for numerical examples illustrating the arithmetical procedure.

11.6.3 In most automated instruments, temperature-volume data are collected at 0.1 volume % intervals or less and stored in memory. To report a temperature reading at a prescribed percent evaporated, neither of the procedures described in 11.6.1 and 11.6.2 have to be used. Obtain the desired temperature directly from the database as the temperature closest to and within 0.1 volume % of the prescribed percent evaporated.

## 12. Report

12.1 Report the following information (see Appendix X5 for examples of reports):

12.2 Report the barometric pressure to the nearest 0.1 kPa (1 mm Hg).

12.3 Report all volumetric readings in percentages.

12.3.1 *Manual Method*—Report volumetric readings to the nearest 0.5, and all temperature readings to the nearest 0.5°C (1.0°F).

12.3.2 *Automated Method*—Report volumetric readings to the nearest 0.1, and all temperature readings to the nearest 0.1°C (0.2°F) or less.

12.4 After barometric corrections of the temperature readings have been made, the following data require no further calculation prior to reporting: IBP, dry point, EP (FBP), decomposition point, and all pairs of corresponding values involving percent recovered and temperature readings.

12.4.1 The report shall state if the temperature readings have not been corrected for barometric pressure.

12.5 When the temperature readings have not been corrected to 101.3 kPa (760 mm Hg) pressure, report the percent residue and percent loss as *observed* in accordance with 10.19 and 11.1, respectively.

12.6 Do not use the corrected loss in the calculation of percent evaporated.

12.7 It is advisable to base the report on relationships between temperature readings and percent evaporated when the sample is a gasoline, or any other product classified under Group 1, or in which the percent loss is greater than 2.0. Otherwise, the report can be based on relationships between temperature readings and percent evaporated or percent recovered. Every report must indicate clearly which basis has been used.

12.7.1 In the manual method, if results are given in percent evaporated versus temperature readings, report if the arithmetical or the graphical procedure was used (see 11.6).

12.8 Report if a drying agent, as described in 7.5.2 or 7.5.3, was used.

12.9 Fig. X1.1 is an example of a tabular report. It shows the percent recovered versus the corresponding temperature reading and versus the corrected temperature reading. It also shows the percent loss, the corrected loss, and the percent evaporated versus the corrected temperature reading.

**TABLE 9 Repeatability and Reproducibility for Groups 2, 3 and 4 (Manual Method)**

	Repeatability <sup>A</sup>		Reproducibility <sup>A</sup>	
	°C	°F	°C	°F
IBP	1.0+0.35S <sub>O</sub>	1.9+0.36S <sub>F</sub>	2.8+0.93S <sub>O</sub>	5.0+0.93S <sub>F</sub>
5-95 %	1.0+0.41S <sub>O</sub>	1.8+0.41S <sub>F</sub>	1.8+1.33S <sub>O</sub>	3.3+1.33S <sub>F</sub>
FBP	0.7+0.36S <sub>O</sub>	1.3+0.36S <sub>F</sub>	3.1+0.42S <sub>O</sub>	5.7+0.42S <sub>F</sub>
% volume at temperature reading	0.7+0.92/S <sub>O</sub>	0.7+1.86/S <sub>F</sub>	1.5+1.78/S <sub>O</sub>	1.53+3.20/S <sub>F</sub>

<sup>A</sup> Calculate S<sub>O</sub> or S<sub>F</sub> from 13.2.

13.3.2.1 *GROUP 1*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this method, exceed the values calculated from Table 9 in only one case in twenty.<sup>7</sup>

13.3.2.2 *GROUPS 2, 3, and 4*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from the data in Table 9 in only one case in twenty.<sup>8</sup>

#### 13.4 Automated Method:

##### 13.4.1 Repeatability:

13.4.1.1 *GROUP 1*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 8 in only one case in twenty.

13.4.1.2 *GROUPS 2, 3, and 4*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 10 in only one case in twenty.

##### 13.4.2 Reproducibility:

13.4.2.1 *GROUP 1*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from Table 8 in only one case in twenty.<sup>7</sup>

13.4.2.2 *GROUPS 2, 3, and 4*—The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the normal and correct operation of this test method, exceed the values calculated from Table 10 in only one case in twenty.

#### 13.5 Bias:

13.5.1 *Bias*—Due to the use of total immersion thermometers, or temperature sensing systems designed to emulate them, the distillation temperatures in this test method are somewhat lower than the true temperatures. The amount of bias depends on the product being distilled and the thermometer used.

13.5.2 *Relative Bias*—There exists a bias between the empirical results of distillation properties obtained by this test method and the true boiling point distillation curve obtained by Test Method D 2892. The magnitude of this bias, and how it relates to test precision, has not been rigorously studied.

13.5.3 *Relative Bias*—An interlaboratory study<sup>5</sup> conducted in 2003 using manual and automated apparatus has concluded that there is no statistical evidence to suggest that there is a bias between manual and automated results.

<sup>7</sup> Precision data obtained from RR study on both manual and automated D 86 units by North American and IP Laboratories.

<sup>8</sup> Table 9 has been derived from the nomographs in Figs. 6 and 7 in ASTM D 86-97.

## 14. Keywords

14.1 batch distillation; distillates; distillation; laboratory distillation; petroleum products

TABLE 8 Repeatability and Reproducibility for Group 1

Evaporated Point, %	Manual Repeatability <sup>A</sup>		Manual Reproducibility <sup>A</sup>		Automated Repeatability <sup>A</sup>		Automated Reproducibility <sup>A</sup>	
	°C	°F	°C	°F	°C	°F	°C	°F
IBP	3.3	6	5.8	10	3.9	7	7.2	13
5	1.9+0.86S <sub>C</sub>	3.4+0.86S <sub>F</sub>	3.1+1.74S <sub>C</sub>	5.6+1.74S <sub>F</sub>	2.1+0.67S <sub>C</sub>	3.8+0.67S <sub>F</sub>	4.4+2.0S <sub>C</sub>	7.9+2.0S <sub>F</sub>
10	1.2+0.86S <sub>C</sub>	2.2+0.86S <sub>F</sub>	2.0+1.74S <sub>C</sub>	3.6+1.74S <sub>F</sub>	1.7+0.67S <sub>C</sub>	3.0+0.67S <sub>F</sub>	3.3+2.0S <sub>C</sub>	6.0+2.0S <sub>F</sub>
20	1.2+0.86S <sub>C</sub>	2.2+0.86S <sub>F</sub>	2.0+1.74S <sub>C</sub>	3.6+1.74S <sub>F</sub>	1.1+0.67S <sub>C</sub>	2.0+0.67S <sub>F</sub>	3.3+2.0S <sub>C</sub>	6.0+2.0S <sub>F</sub>
30-70	1.2+0.86S <sub>C</sub>	2.2+0.86S <sub>F</sub>	2.0+1.74S <sub>C</sub>	3.6+1.74S <sub>F</sub>	1.1+0.67S <sub>C</sub>	2.0+0.67S <sub>F</sub>	2.6+2.0S <sub>C</sub>	4.7+2.0S <sub>F</sub>
80	1.2+0.86S <sub>C</sub>	2.2+0.86S <sub>F</sub>	2.0+1.74S <sub>C</sub>	3.6+1.74S <sub>F</sub>	1.1+0.67S <sub>C</sub>	2.0+0.67S <sub>F</sub>	1.7+2.0S <sub>C</sub>	3.0+2.0S <sub>F</sub>
90	1.2+0.86S <sub>C</sub>	2.2+0.86S <sub>F</sub>	0.8+1.74S <sub>C</sub>	1.4+1.74S <sub>F</sub>	1.1+0.67S <sub>C</sub>	2.0+0.67S <sub>F</sub>	0.7+2.0S <sub>C</sub>	1.2+2.0S <sub>F</sub>
95	1.2+0.86S <sub>C</sub>	2.2+0.86S <sub>F</sub>	1.1+1.74S <sub>C</sub>	1.9+1.74S <sub>F</sub>	1.1+0.67S <sub>C</sub>	4.5+0.67S <sub>F</sub>	2.6+2.0S <sub>C</sub>	4.7+2.0S <sub>F</sub>
FBP	3.9	7	7.2	13	4.4	8	8.9	16

<sup>A</sup> S<sub>C</sub> or S<sub>F</sub> is the average slope (or rate of change) calculated in accordance with 13.2.

### 13. Precision and Bias

#### 13.1 Precision:

13.1.1 The precision of this test method has been determined by the statistical examination of interlaboratory test results obtained by 26 laboratories on 14 gasolines, by 4 laboratories on 8 samples of kerosine by the manual procedure, 3 laboratories on 6 samples of kerosine by the automated procedure, and 5 laboratories on 10 samples of diesel fuel by both the manual and automated procedures. Table A.1.1 lists which tables and figures are to be used for the different fuel groups, distillation methods, and temperature scales.

13.1.2 The following terms are used in this section: (1) *r* = repeatability and (2) *R* = reproducibility. The value of any of these terms will depend upon whether the calculations were carried out in °C or °F.

#### 13.2 Slope or Rate of Change of Temperature:

13.2.1 To determine the precision of a result, it is generally necessary to determine the slope or rate of change of the temperature at that particular point. This variable, denoted as S<sub>C</sub> or S<sub>F</sub>, is equal to the change in temperature, either in °C or in °F, respectively, per percent recovered or evaporated.

13.2.2 For Group 1 in the manual method and for all groups in the automated method, the precision of the IBP and EP does not require any slope calculation.

13.2.3 With the exception stated in 13.2.2 and in 13.2.4, the slope at any point during the distillation is calculated from the following equations, using the values shown in Table 7:

$$S_C \text{ (or } S_F) = (T_U - T_L) / (V_U - V_L) \quad (11)$$

where:

- S<sub>C</sub> = is the slope, °C/volume %,
- S<sub>F</sub> = is the slope, °F/volume %,
- T<sub>U</sub> = is the upper temperature, °C (or °F),
- T<sub>L</sub> = is the lower temperature, °C (or °F),
- V<sub>U</sub> = is the volume % recovered or evaporated corresponding to T<sub>U</sub>,
- V<sub>L</sub> = is the volume % recovered or evaporated corresponding to T<sub>L</sub> and
- V<sub>EP</sub> = is the volume % recovered or evaporated corresponding to the end point.

13.2.4 In the event that the distillation end point occurs prior to the 95 % point, the slope at the end point is calculated as follows:

$$S_C \text{ (or } S_F) = (T_{EP} - T_{HR}) / (V_{EP} - V_{HR}) \quad (12)$$

where:

T<sub>EP</sub> or T<sub>HR</sub> is the temperature, in °C or °F at the percent volume recovered indicated by the subscript,

V<sub>EP</sub> or V<sub>HR</sub> is the volume % recovered.

13.2.4.1 The subscripts in Eq 12 refer to:

- EP = end point
- HR = highest reading, either 80 % or 90 %, prior to the end point.

13.2.5 For points between 10 to 85 % recovered which are not shown in Table 7, the slope is calculated as follows:

$$S_C \text{ (or } S_F) = 0.05 (T_{(v+10)} - T_{(v-10)}) \quad (13)$$

13.2.6 For samples in Group 1, the precision data reported are based on slope values calculated from percent evaporated data.

13.2.7 For samples in Group 2, 3, and 4, the precision data reported (Table 8) are based on slope values calculated from percent recovered data.

13.2.8 When results are reported as volume % recovered, slope values for the calculation of precision are to be determined from percent recovered data; when results are reported as volume % evaporated slope values are to be determined from % evaporated data.

#### 13.3 Manual Method:

##### 13.3.1 Repeatability:

13.3.1.1 *GROUP 1*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from Table 9 in only one case in twenty.

13.3.1.2 *GROUPS 2, 3, and 4*—The difference between successive results obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of this test method, exceed the values calculated from the values in Table 9 in only one case in twenty.

##### 13.3.2 Reproducibility:

TABLE 10 Repeatability and Reproducibility for Groups 2, 3 and 4 (Automated)

Collected, %	Repeatability <sup>A</sup>		Reproducibility <sup>A</sup>	
	°C	°F	°C	°F
IBP	3.5	6.3	8.5	15.3
2 %	3.5	6.3	2.6 + 1.92S <sub>C</sub>	4.7 + 1.92S <sub>F</sub>
5 %	1.1 + 1.08S <sub>C</sub>	2.0 + 1.08S <sub>F</sub>	2.0 + 2.53S <sub>C</sub>	3.6 + 2.53S <sub>F</sub>
10 %	1.2 + 1.42S <sub>C</sub>	2.2 + 1.42S <sub>F</sub>	3.0 + 2.84S <sub>C</sub>	5.4 + 2.84S <sub>F</sub>
20-70 %	1.2 + 1.42S <sub>C</sub>	2.2 + 1.42S <sub>F</sub>	2.9 + 3.97S <sub>C</sub>	5.2 + 3.97S <sub>F</sub>
80 %	1.2 + 1.42S <sub>C</sub>	2.2 + 1.42S <sub>F</sub>	3.0 + 2.84S <sub>C</sub>	5.4 + 2.84S <sub>F</sub>
90-95 %	1.1 + 1.08S <sub>C</sub>	2.0 + 1.08S <sub>F</sub>	2.0 + 2.63S <sub>C</sub>	3.8 + 2.53S <sub>F</sub>
FBP	3.5	6.3	10.5	18.9

<sup>A</sup> S<sub>C</sub> or S<sub>F</sub> is the average slope (or rate of change) calculated in accordance with 13.5.

## ANNEXES

### (Mandatory Information)

#### A1. REPEATABILITY AND REPRODUCIBILITY DEFINITION AIDS

A1.1 Table A1.1 is an aid for determining which repeatability and reproducibility table or section, is to be used.

TABLE A1.1 Summary of Aids for Definition of Repeatability and Reproducibility

Group	Method	Temperature Scale	Table or Section to Use	
			Repeatability	Reproducibility
1	Manual	°C	Table 8	Table 8
		°F	Table 8	Table 8
1	Automated	°C	Table 8	Table 8
		°F	Table 8	Table 8
2,3,4	Manual	°C	Table 9	Table 9
		°F	Table 9	Table 9
2,3,4	Automated	°C	Table 10	Table 10
		°F	Table 10	Table 10

#### A2. DETAILED DESCRIPTION OF APPARATUS

A2.1 *Distillation Flasks*—Flasks shall be of heat resistant glass, constructed to the dimensions and tolerances shown in Fig. A2.1 and shall otherwise comply with the requirements of Specification E 1405. Flask A (100 mL) may also be constructed with a ground glass joint, in which case the diameter of the neck shall be the same as the 125-mL flask.

NOTE A2.1—For tests specifying dry point, specially selected flasks with bottoms and walls of uniform thickness are desirable.

A2.2 *Condenser and Condenser Bath*—Typical types of condenser and condenser baths are illustrated in Figs. 1 and 2.

A2.2.1 The condenser shall be made of seamless noncorrosive metal tubing, 560 ± 5 mm in length, with an outside diameter of 14 mm and a wall thickness of 0.8 to 0.9 mm.

NOTE A2.2—Brass or stainless steel has been found to be a suitable material for this purpose.

A2.2.2 The condenser shall be set so that 393 ± 3 mm of the tube is in contact with the cooling medium, with 50 ± 3 mm outside the cooling bath at the upper end, and with 114 ± 3 mm outside at the lower end. The portion of the tube projecting at the upper end shall be set at an angle of 75 ± 3° with the vertical. The portion of the tube inside the condenser bath shall be either straight or bent in any suitable continuous smooth curve. The average gradient shall be 15 ± 1° with respect to the horizontal, with no 10-cm section having a gradient outside of the 15 ± 3° range. The projecting lower portion of the condenser tube shall be curved downward for a length of 76 mm and the lower end shall be cut off at an acute angle. Provisions shall be made to enable the flow of the distillate to run down the side of the receiving cylinder. This can be accomplished by using a drip-deflector, which is attached to the outlet of the tube. Alternatively, the lower portion of the condenser tube can be curved slightly backward to ensure

contact with the wall of the receiving cylinder at a point 25 to 32 mm below the top of the receiving cylinder. Fig. A2.3 is a drawing of an acceptable configuration of the lower end of the condenser tube.

A2.2.3 The volume and the design of the bath will depend on the cooling medium employed. The cooling capacity of the bath shall be adequate to maintain the required temperature for the desired condenser performance. A single condenser bath may be used for several condenser tubes.

A2.3 *Metal Shield or Enclosure for Flask.* (Manual units only).

A2.3.1 *Shield for Gas Burner* (see Fig. 1)—The purpose of this shield is to provide protection for the operator and yet allow easy access to the burner and to the distillation flask during operation. A typical shield would be 480-mm high, 280-mm long and 200-mm wide, made of sheet metal of 0.8-mm thickness (22 gauge). The shield shall be provided with at least one window to observe the dry point at the end of the distillation.

A2.3.2 *Shield for Electric Heater* (see Fig. 2)—A typical shield would be 440-mm high, 200-mm long, and 200-mm wide, made of sheet metal of approximately 0.8-mm thickness (22 gauge) and with a window in the front side. The shield shall be provided with at least one window to observe the dry point at the end of the distillation.

A2.4 *Heat Source:*

A2.4.1 *Gas Burner* (see Fig. 1), capable of bringing over the first drop from a cold start within the time specified and of continuing the distillation at the specified rate. A sensitive manual control valve and gas pressure regulator to give complete control of heating shall be provided.

A2.4.2 *Electric Heater* (see Fig. 2), of low heat retention.

NOTE A2.3—Heaters, adjustable from 0 to 1000 W, have been found to be suitable for this purpose.

A2.5 *Flask Support:*

A2.5.1 *Type 1*—Use a Type 1 flask support with a gas burner (see Fig. 1). This support consists of either a ring support of the ordinary laboratory type, 100 mm or larger in diameter, supported on a stand inside the shield, or a platform adjustable from the outside of the shield. On this ring or platform is mounted a hard board made of ceramic or other heat-resistant material, 3 to 6 mm in thickness, with a central opening 76 to 100 mm in diameter, and outside line dimensions slightly smaller than the inside boundaries of the shield.

A2.5.2 *Type 2*—Use a Type 2 flask support assembly with electric heating (see Fig. 2 as one example). The assembly consists of an adjustable system onto which the electric heater is mounted with provision for placement of a flask support board (see A2.6) above the electric heater. The whole assembly is adjustable from the outside of the shield.

A2.6 *Flask Support Board*—The flask support board shall be constructed of ceramic or other heat-resistant material, 3 to 6 mm in thickness. Flask support boards are classified as A, B, or C, based on the size of the centrally located opening, the dimension of which is shown in Table 1. The flask support board shall be of sufficient dimension to ensure that thermal heat to the flask only comes from the central opening and that extraneous heat to the flask other than through the central opening is minimized. (Warning—Asbestos-containing materials shall not be used in the construction of the flask support board.)

A2.7 The flask support board can be moved slightly in different directions on the horizontal plane to position the distillation flask so that direct heat is applied to the flask only through the opening in this board. Usually, the position of the flask is set by adjusting the length of the side-arm inserted into the condenser.

A2.8 Provision shall be made for moving the flask support assembly vertically so that the flask support board is in direct contact with the bottom of the distillation flask during the distillation. The assembly is moved down to allow for easy mounting and removal of the distillation flask from the unit.

A2.9 *Receiving Cylinders*—The receiving cylinder shall have a capacity to measure and collect 100 mL. The shape of the base shall be such that the receiver does not topple when placed empty on a surface inclined at an angle of 13° from the horizontal.

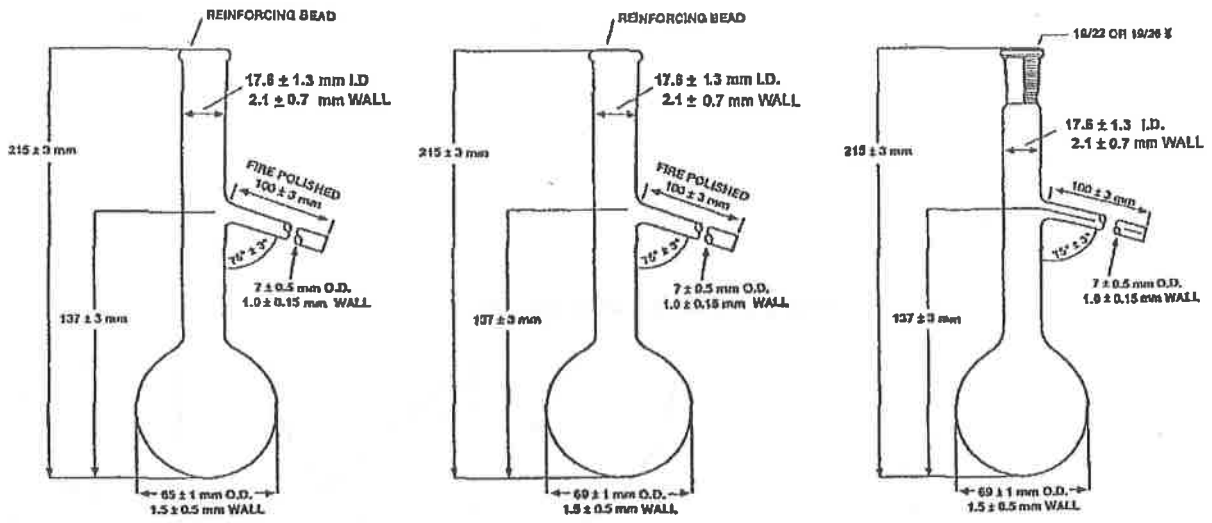
A2.9.1 *Manual Method*—The cylinder shall be graduated at intervals of 1 mL and have a graduation at the 100-mL mark. Construction details and tolerances for the graduated cylinder are shown in Fig. A2.4.

A2.9.2 *Automated Method*—The cylinder shall conform to the physical specifications described in Fig. A2.4, except that graduations below the 100-mL mark are permitted, as long as they do not interfere with the operation of the level follower. Receiving cylinders for use in automated units may also have a metal base.

A2.9.3 If required, the receiving cylinder shall be immersed during the distillation to above the 100-mL graduation line in a cooling liquid contained in a cooling bath, such as a tall-form beaker of clear glass or transparent plastic. Alternatively, the receiving cylinder may be placed in a thermostated bath air circulation chamber.

A2.10 *Residue Cylinder*—The graduated cylinder shall have a capacity of 5 or 10 mL, with graduations into 0.1 mL subdivisions, beginning at 0.1 mL. The top of the cylinder may be flared, the other properties shall conform to Specification E 1272.





Flask A, 100 mL

Flask B, 125 mL

Flask B, 125 mL

FIG. A2.1 Flask A, 100 mL, Flask B, 125 mL, and Flask B with Ground Glass Joint, 125 mL

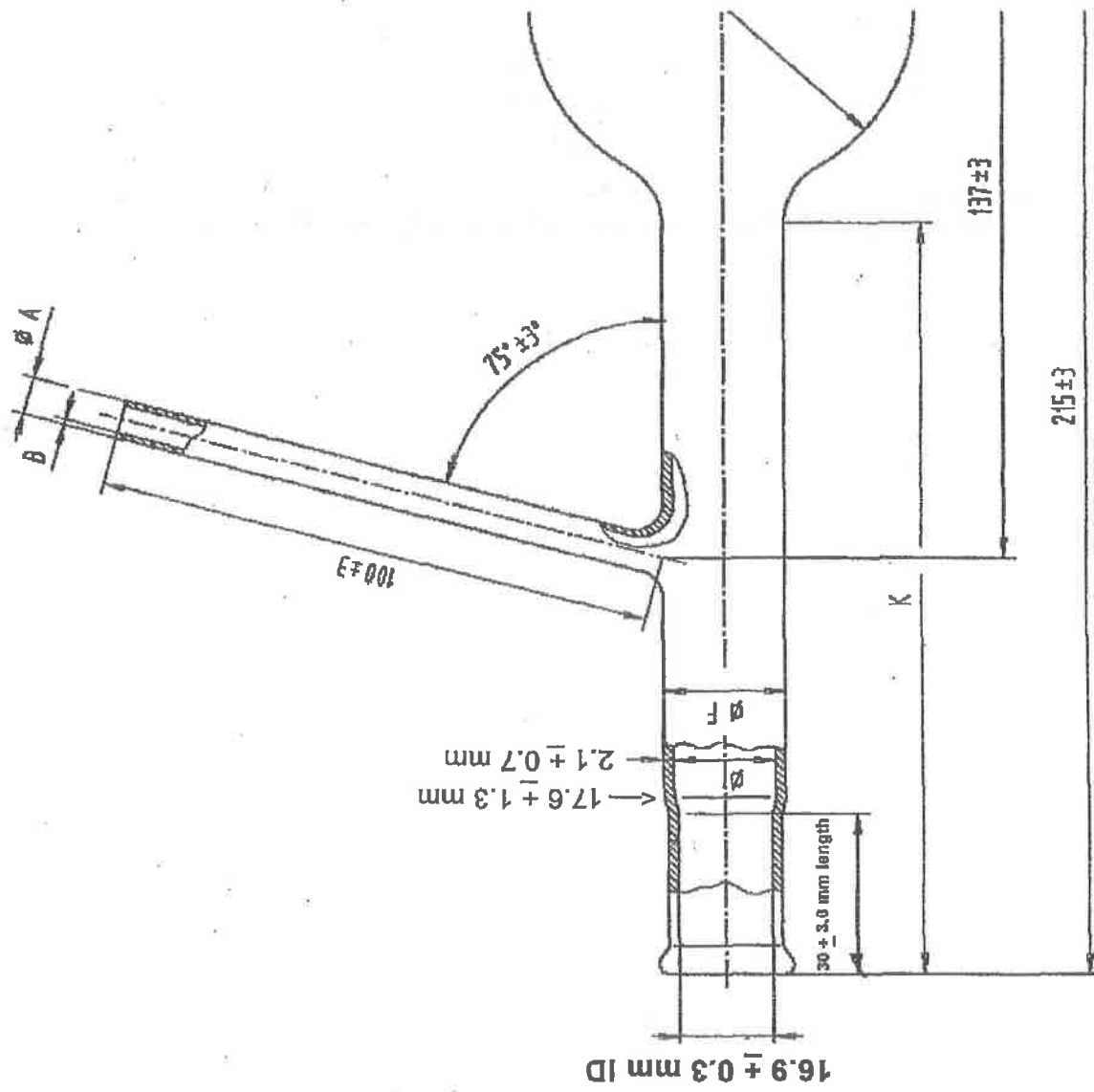
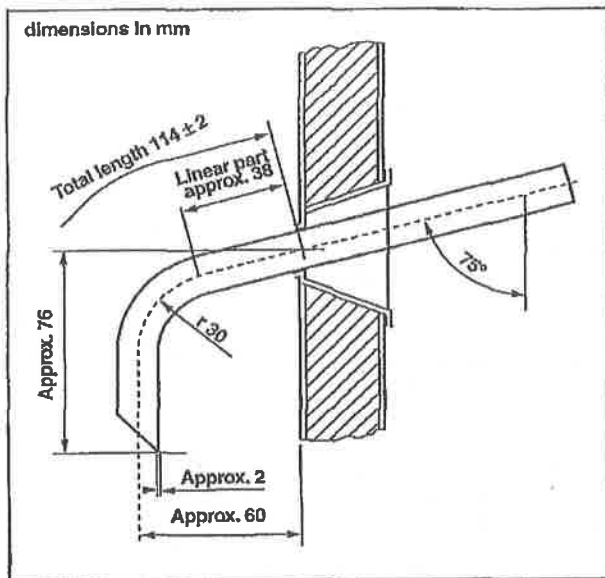
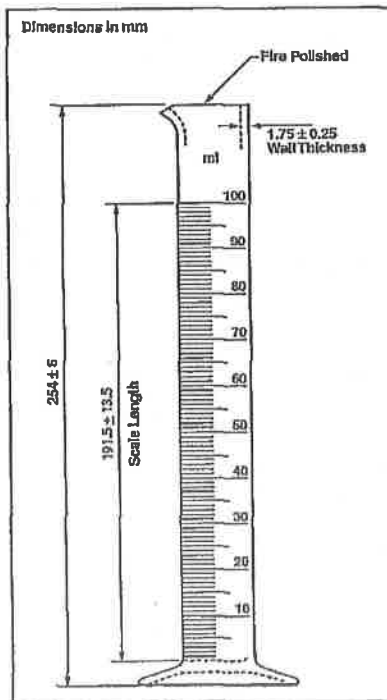


FIG. A2.2 Detail of Upper Neck Section



Lower End of Condenser Tube  
 FIG. A2.3 Lower End of Condenser Tube



NOTE—1 to 100 mL in 1 mL graduations; tolerance  $\pm 1.0$  mL.  
 FIG. A2.4 100 mL Graduated Cylinder

### A3. DETERMINATION OF THE DIFFERENCE IN LAG TIME BETWEEN AN ELECTRONIC TEMPERATURE MEASUREMENT SYSTEM AND A MERCURY-IN-GLASS THERMOMETER

A3.1 The response time of an electronic temperature measuring device is inherently more rapid than that of a mercury-in-glass thermometer. The temperature measuring device assembly in general use, consisting of the sensor and its casing, or an electronic system and its associated software, or both, is so designed that the temperature measuring system will simulate the temperature lag of the mercury-in-glass thermometer.

A3.2 To determine the difference in lag time between such a temperature measuring system and a mercury-in-glass thermometer, analyze a sample such as gasoline, kerosine, jet fuel, or light diesel fuel with the electronic temperature measurement system in place and in accordance with the procedures described in this test method. In most cases this is the standard distillation step performed with an automated unit.

A3.2.1 Do not use a single pure compound, a very narrow boiling range product, or a synthetic blend of less than six compounds for this test.

A3.2.2 Best results are obtained with a sample that is typical of the sample load of the laboratory. Alternatively, use a full-range mixture with a 5 to 95 % boiling range of at least 100°C.

A3.3 Replace the electronic temperature measuring device with a low range or a high range mercury-in-glass thermometer, depending on the boiling range of the sample.

A3.4 Repeat the distillation with this thermometer, and manually record the temperature at the various percent recovered as described in 10.14.

A3.5 Calculate the values for the repeatability for the observed slope ( $\Delta T/\Delta V$ ) for the different readings in the test.

A3.6 Compare the test data obtained using these two temperature measuring devices. The difference at any point shall be equal to, or less than, the repeatability of the method at that point. If this difference is larger, replace the electronic temperature measuring device or adjust the electronics involved, or both.

### A4. PROCEDURE TO DETERMINE THE PERCENT EVAPORATED OR PERCENT RECOVERED AT A PRESCRIBED TEMPERATURE READING

A4.1 Many specifications require specific percentages evaporated or recovered at prescribed temperature readings, either as maxima, minima, or ranges. The procedures to determine these values are frequently designated by the terms Exxx or Rxxx, where xxx is the desired temperature.

NOTE A4.1—Regulatory standards on the certification of reformulated gasoline under the complex model procedure require the determination of E 200 and E 300, defined as the percent evaporated fuel at 93.3°C (200°F) and 148.9°C (300°F), respectively. E 158, the percent evaporated at a distillation temperature of 70°C (158°F), is also used in describing fuel volatility characteristics. Other typical temperatures are R 200 for kerosines and R 250 and R 350 for gas oils, where R 200, R 250, and R 350 are the percent recovered fuel at 200°C, 250°C, and 350°C, respectively.

A4.2 Determine the barometric pressure, and calculate the correction to the desired temperature reading using Eq 3, Eq 4, or Eq 5 for  $t = xxx^\circ\text{C}$  (or  $t_f = xxx^\circ\text{F}$ ).

A4.2.1 *Manual Method*—Determine this correction to 0.5°C (1°F).

A4.2.2 *Automated Method*—Determine this correction to 0.1°C (0.2°F).

A4.3 Determine the expected temperature reading to yield  $xxx^\circ\text{C}$  (or  $xxx^\circ\text{F}$ ) after the barometric correction. To obtain the expected value, add the absolute value of the calculated correction to the desired temperature if the barometric pressure is above 101.3 kPa. If the barometric pressure is below 101.3 kPa, subtract the absolute value of the calculated correction from the desired temperature.

A4.4 Perform the distillation, as described in Section 10,

while taking into account A4.5 and A4.6.

#### A4.5 *Manual Distillation:*

A4.5.1 In the region between about 10°C below and 10°C above the desired expected temperature reading determined in A4.3 record the temperature reading in intervals of 1 volume %.

A4.5.2 If the intent of the distillation is to solely determine the value of Exxx or Rxxx, discontinue the distillation after at least another 2 mL of distillate have been collected. Otherwise, continue the distillation, as described in Section 10, and determine the observed loss, as described in 11.1.

A4.5.2.1 If the intent of the distillation is to determine the value of Exxx and the distillation was terminated after about 2 mL of distillate was collected beyond the desired temperature, allow the distillate to drain into the receiving graduate. Allow the contents of the flask to cool to below approximately 40°C and then drain its contents into the receiving graduate. Note the volume of product in the receiving graduate to the nearest 0.5 mL at 2 min intervals until two successive observations agree.

A4.5.2.2 The amount recovered in the receiving graduate is the percent recovery. Determine the amount of observed loss by subtracting the percent recovery from 100.0.

#### A4.6 *Automated Distillation:*

A4.6.1 In the region between about 10°C below and 10°C above the desired expected temperature reading determined in A4.3, collect temperature-volume data at 0.1 volume % intervals or less.

A4.6.2 Continue the distillation, as described in Section 10, and determine the percent loss, as described in 11.1.

**A4.7 Calculations:**

**A4.7.1 Manual Method**—If a volume % recovered reading is not available at the exact temperature calculated in A4.3, determine the percent recovered by interpolation between the two adjacent readings. Either the linear, as described in 11.6.1, or the graphical procedure, as described in 11.6.2, is permitted. The percent recovered is equal to Rxxx.

**A4.7.2 Automated Method**—Report the observed volume to 0.1 volume % corresponding to the temperature closest to the expected temperature reading. This is the percent recovered, or Rxxx.

**A4.7.3 Manual and Automated Methods**—To determine the value of Exxx, add the observed loss to the percent recovered, Rxxx, as determined in A4.7.1 or A4.7.2 and as described in Eq 9.

A4.7.3.1 As prescribed in 12.6, do not use the corrected loss.

**A4.8 Precision:**

A4.8.1 The statistical determination of the precision of the volume % evaporated or recovered at a prescribed temperature has not been directly measured in an interlaboratory program. It can be shown that the precision of the volume % evaporated or recovered at a prescribed temperature is equivalent to the precision of the temperature measurement at that point divided by the rate of change of temperature versus volume % evaporated or recovered. The estimation of precision becomes less precise at high slope values.

A4.8.2 Calculate the slope or rate of change in temperature reading,  $S_C$  (or  $S_F$ ), as described in 13.2 and Eq 11 and using temperature values bracketing the desired temperature.

A4.8.3 Calculate the repeatability,  $r$ , or the reproducibility,  $R$ , from the slope,  $S_C$  (or  $S_F$ ), and the data in Table 8, Table 9, or Table 10.

A4.8.4 Determine the repeatability or reproducibility, or both, of the volume % evaporated or recovered at a prescribed temperature from the following formulas:

$${}^v\text{volume \%} = r/S_C(S_F) \quad (\text{A4.1})$$

$${}^R\text{volume \%} = R/S_C(S_F) \quad (\text{A4.2})$$

where:

- ${}^v\text{volume \%}$  = repeatability of the volume % evaporated or recovered,
- ${}^R\text{volume \%}$  = reproducibility of the volume % evaporated or recovered,
- $r$  = repeatability of the temperature at the prescribed temperature at the observed percent distilled,
- $R$  = reproducibility of the temperature at the prescribed temperature at the observed percent distilled, and
- $S_C(S_F)$  = rate of change in temperature reading in °C (°F) per the volume % evaporated or recovered.

A4.8.5 Examples on how to calculate the repeatability and the reproducibility are shown in Appendix X2.

## APPENDIXES

### (Nonmandatory Information)

#### X1. EXAMPLES ILLUSTRATING CALCULATIONS FOR REPORTING OF DATA

X1.1 The observed distillation data used for the calculation of the examples below are shown in the first three columns of Fig. X1.1.

X1.1.1 Temperature readings corrected to 101.3 kPa (760 mm Hg) pressure (see 11.3) are as follows:

$$\text{correction } (^\circ\text{C}) = 0.0009 (101.3 - 98.6) (273 + t_c) \quad (\text{X1.1})$$

$$\text{correction } (^\circ\text{F}) = 0.00012 (760 - 740) (460 + t_c) \quad (\text{X1.2})$$

X1.1.2 Loss correction to 101.3 kPa (see 11.4) are as follows. The data for the examples are taken from Fig. X1.1.

$$\text{corrected loss} = (0.5 + (4.7 - 0.5)/ \quad (\text{X1.3})$$

$$\{1 + (101.3 - 98.6)/8.0\} = 3.6$$

X1.1.3 Recovery correction to 101.3 kPa (see 11.4.1) are as follows:

$$\text{corrected recovery} = 94.2 + (4.7 - 3.6) = 95.3 \quad (\text{X1.4})$$

X1.2 *Temperature Readings at Prescribed Percent Evaporated:*

X1.2.1 Temperature reading at 10 % evaporated (4.7 % observed loss = 5.3 % recovered) (see 11.6.1) are as follows:

$$T_{10E} (^\circ\text{C}) = 33.7 + [(40.3 - 33.7) \quad (\text{X1.5})$$

$$(5.3 - 5)/(10 - 5)] = 34.1^\circ\text{C}$$

$$T_{10E} (^\circ\text{F}) = 92.7 + [(104.5 - 92.7) \quad (\text{X1.6})$$

$$(5.3 - 5)/(10 - 5)] = 93.1^\circ\text{F}$$

X1.2.2 Temperature reading at 50 % evaporated (45.3 % recovered) (see 11.6.1) are as follows:

$$T_{50E} (^\circ\text{C}) = 93.9 + [(108.9 - 93.9) \quad (\text{X1.7})$$

$$(45.3 - 40)/(50 - 40)] = 101.9^\circ\text{C}$$

$$T_{50E} (^\circ\text{F}) = 201 + [(228 - 201) \quad (\text{X1.8})$$

$$(45.3 - 40)/(50 - 40)] = 215.3^\circ\text{F}$$

X1.2.3 Temperature reading at 90 % evaporated (85.3 % recovered) (see 11.6.1) are as follows:

$$T_{90E} (^\circ\text{C}) = 181.6 + [(201.6 - 181.6) \quad (\text{X1.9})$$

$$(85.3 - 85)/(90 - 85)] = 182.8^\circ\text{C}$$

D 86 - 07

$$T_{90E} (^{\circ}F) = 358.9 + [(394.8 - 358.9) (85.3 - 85)/(90 - 85)] = 361.0^{\circ}F \quad (X1.10)$$

X1.2.4 Temperature reading at 90 % evaporated (85.3 % recovered) not corrected to 101.3 kPa pressure (see 11.6.1) are as follows:

$$T_{90E} (^{\circ}C) = 180.5 + [(200.4 - 180.5) (85.3 - 85)/(90 - 85)] = 181.7^{\circ}C \quad (X1.11)$$

$$T_{90E} (^{\circ}F) = 357 + [(392 - 357) (85.3 - 85)/(90 - 85)] = 359.1^{\circ}F \quad (X1.12)$$

NOTE X1.1—Results calculated from  $^{\circ}C$  data may not correspond exactly to results calculated from  $^{\circ}F$  data because of errors in rounding.

Sample ID:  
Date analyzed:  
Equipment No:  
Remarks:

Barometric pressure: 98.6 kPa  
Analyst:

% recovered	Barometric pressure				procedure	
	observed 98.6 kPa 740 mm Hg $^{\circ}C$		corrected 101.3 kPa 760 mm Hg $^{\circ}C$		arithmetic/geophysical X evaporated	$^{\circ}C$ $^{\circ}F$
IRP	25.5	78	26.2	79.2	5	26.7 80.0
5	33.0	91	33.7	92.7	10	34.1 93.4
10	39.5	103	40.3	104.5	15	40.7 105.2
15	44.0	115	46.8	116.2	20	47.3 117.1
20	54.5	130	53.3	131.5	30	63.7 150.2
30	74.0	165	74.8	166.7	40	84.9 184.9
40	93.0	199	93.9	201.0	50	101.9 215.3
50	108.0	226	108.9	228.0	60	116.9 242.4
60	123.0	253	124.0	255.1	70	134.1 273.3
70	142.0	288	143.0	289.4	80	156.0 312.8
80	166.5	332	167.6	333.6	85	168.4 335.1
85	180.5	357	181.6	358.9	90	182.8 361.0
90	200.4	393	201.6	394.8	95	202.4 396.3
EP	215.0	419	216.2	421.1		
recovered, %	94.2		95.3			
residue, %	1.1		1.1			
loss, %	4.7		3.6			

FIG. X1.1 Example of Test Report

**X2. EXAMPLES OF CALCULATION OF REPEATABILITY AND REPRODUCIBILITY OF VOLUME % (RECOVERED OR EVAPORATED) AT A PRESCRIBED TEMPERATURE READING**

X2.1 Some specifications require the reporting of the volume % evaporated or recovered at a prescribed temperature. Table X2.1 shows the distillation data of a Group 1 sample as obtained by an automated unit.

**X2.2 Example Calculation:**

X2.2.1 For a Group 1 sample exhibiting distillation characteristics as per Table X2.1, as determined by an automated unit, the reproducibility of the volume evaporated,  $R$ , volume %, at 93.3°C (200°F) is determined as follows:

X2.2.1.1 Determine first the slope at the desired temperature:

$$S_C \% = 0.1 (T_{(20)} - T_{(10)}) \quad (X2.1)$$

$$= 0.1 (94 - 83)$$

$$= 1.1$$

$$S_F \% = 0.1 (T_{(20)} - T_{(10)})$$

$$= 0.1 (201 - 182)$$

$$= 1.9$$

X2.2.2 From Table 9, determine the value of  $R$ , the reproducibility at the observed percentage distilled. In this case, the observed percentage distilled is 18 % and

$$R = 3.3 + 2.0 (S_C) \quad (X2.2)$$

$$= 3.3 + 2.0 \times 1.1$$

$$= 5.5$$

$$R = 6.0 + 2.0 (S_F)$$

$$= 6.0 + 2.0 \times 1.9$$

$$= 9.8$$

X2.2.3 From the calculated value of  $R$ , determine the value of volume, as described in A4.8.4.

$$R \text{ volume \%} = R/(S_C) \quad (X2.3)$$

$$= 5.5/1.1$$

$$= 5.0$$

$$R \text{ volume \%} = R/(S_F)$$

$$= 9.8/1.9$$

$$= 5.1$$

**TABLE X2.1 Distillation Data from a Group 1 Sample Automated Distillation**

Distillation Point Recovered, mL	Temperature° C	Temperature° F	Volume (mL) Recovered at 93.3°C (200°F)
10	84	183	18.0
20	94	202	
30	103	217	
40	112	233	
40	112	233	

Distillation Point Evaporated, mL	Temperature° C	Temperature° F	Volume (mL) Evaporated at 93.3°C (200°F)
10	83	182	18.4
20	94	201	
30	103	217	
40	111	232	
40	111	232	

**X3. TABLES OF CORRECTED LOSS FROM MEASURED LOSS AND BAROMETRIC PRESSURE**

X3.1 The table presented as Fig. X3.1 can be used to determine the corrected loss from the measured loss and the barometric pressure in kPa.

X3.2 The table presented as Fig. X3.2 can be used to determine the corrected loss from the measured loss and the barometric pressure in mm Hg.

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Barometric Pressure, kPa

from through	78.1 80.8	80.9 84.4	84.5 87.2	87.3 89.5	89.6 91.4	91.5 93.0	93.1 94.0	94.1 95.4	95.5 96.3	96.4 97.1	97.2 97.8	97.9 98.3	98.4 98.8	98.9 99.4	99.5 99.9	100.0 100.3	100.4 100.7	100.8 101.1	101.2 101.4	101.5 101.9	102.0 102.3	102.4 102.7	102.8 103.1	103.2 103.5
Observed Loss	/-- Corrected Loss ----->																							
Units																								
0	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.23	0.20	0.18	0.16	0.14	0.13	0.11	0.09	0.08	0.04	0.02	-0.00	-0.02	-0.05	-0.09	-0.13	-0.17
1	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.78	0.80	0.82	0.84	0.85	0.87	0.89	0.92	0.94	0.95	0.98	1.00	1.03	1.09	1.13	1.17	1.21
2	0.89	0.95	1.01	1.08	1.14	1.20	1.28	1.33	1.40	1.46	1.52	1.57	1.62	1.68	1.75	1.81	1.87	1.94	2.00	2.08	2.17	2.27	2.38	2.51
3	1.16	1.25	1.38	1.46	1.57	1.67	1.77	1.88	1.99	2.09	2.19	2.28	2.37	2.47	2.58	2.69	2.79	2.90	3.00	3.13	3.29	3.46	3.63	3.84
4	1.41	1.55	1.70	1.84	1.99	2.14	2.28	2.43	2.59	2.73	2.87	3.00	3.12	3.26	3.41	3.58	3.70	3.85	4.00	4.18	4.40	4.63	4.89	5.18
5	1.68	1.85	2.04	2.23	2.42	2.61	2.79	2.98	3.19	3.37	3.55	3.71	3.87	4.05	4.25	4.44	4.62	4.81	5.00	5.23	5.51	5.81	6.14	6.52
6	1.94	2.16	2.39	2.61	2.84	3.08	3.30	3.53	3.78	4.01	4.23	4.42	4.62	4.84	5.08	5.31	5.53	5.77	6.00	6.28	6.63	6.99	7.40	7.88
7	2.20	2.48	2.73	3.00	3.27	3.55	3.80	4.09	4.39	4.65	4.90	5.14	5.37	5.63	5.91	6.18	6.44	6.73	7.00	7.33	7.74	8.17	8.65	9.20
8	2.48	2.78	3.07	3.39	3.70	4.02	4.31	4.63	4.98	5.28	5.58	5.85	6.12	6.41	6.74	7.08	7.39	7.90	8.00	8.38	8.86	9.35	9.90	10.53
9	2.72	3.07	3.41	3.76	4.12	4.49	4.82	5.18	5.57	5.92	6.26	6.59	6.97	7.20	7.57	7.93	8.27	8.85	9.00	9.43	9.97	10.53	11.16	11.87
10	2.98	3.37	3.78	4.13	4.55	4.98	5.33	5.73	6.17	6.58	6.94	7.23	7.62	7.99	8.41	8.81	9.19	9.60	10.00	10.48	11.08	11.71	12.41	13.21
11	3.24	3.67	4.10	4.53	4.97	5.43	5.84	6.28	6.77	7.20	7.61	7.99	8.37	8.78	9.24	9.69	10.10	10.56	11.00	11.53	12.20	12.89	13.67	14.58
12	3.50	3.97	4.44	4.92	5.40	5.90	6.35	6.83	7.36	7.84	8.29	8.71	9.12	9.57	10.07	10.56	11.02	11.52	12.00	12.59	13.31	14.07	14.92	15.89
13	3.78	4.27	4.78	5.30	5.83	6.38	6.86	7.39	7.96	8.47	8.97	9.42	9.86	10.35	10.90	11.43	11.93	12.48	13.04	14.43	15.25	16.17	17.22	18.40
14	4.03	4.58	5.13	5.69	6.25	6.83	7.36	7.94	8.56	9.11	9.64	10.13	10.61	11.15	11.74	12.31	12.85	13.44	14.00	14.69	15.54	16.43	17.43	18.56
15	4.29	4.88	5.47	6.07	6.68	7.30	7.87	8.49	9.15	9.75	10.32	10.85	11.38	11.93	12.57	13.18	13.78	14.40	15.00	15.74	16.65	17.61	18.68	19.90
16	4.55	5.18	5.81	6.45	7.10	7.77	8.38	9.04	9.75	10.39	11.00	11.58	12.11	12.72	13.40	14.08	14.88	15.36	16.00	16.79	17.77	18.79	19.94	21.24
17	4.81	5.49	6.16	6.84	7.53	8.24	8.89	9.59	10.35	11.03	11.68	12.27	12.88	13.51	14.23	14.93	15.59	16.31	17.00	17.84	18.88	19.97	21.19	22.58
18	5.07	5.78	6.50	7.22	7.98	8.71	9.40	10.14	10.94	11.66	12.35	12.99	13.61	14.30	15.07	15.80	16.60	17.27	18.00	18.89	20.00	21.15	22.44	23.91
19	5.33	6.08	6.84	7.61	8.38	9.18	9.91	10.69	11.54	12.30	13.03	13.70	14.39	15.09	15.88	16.68	17.42	18.23	19.00	19.94	21.11	22.33	23.70	25.25
20	5.59	6.39	7.18	7.99	8.81	9.65	10.41	11.24	12.14	12.94	13.71	14.41	15.11	15.86	16.73	17.55	18.33	19.19	20.00	20.99	22.23	23.51	24.95	26.59
Tenths	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.1	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.08	0.08	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.11	0.12	0.13	0.13
0.2	0.05	0.06	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.14	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.24	0.25	0.27	0.28
0.3	0.08	0.08	0.10	0.12	0.13	0.14	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.24	0.25	0.26	0.27	0.29	0.30	0.32	0.33	0.35	0.38	0.40
0.4	0.10	0.12	0.14	0.15	0.17	0.19	0.20	0.22	0.24	0.26	0.27	0.29	0.30	0.33	0.35	0.37	0.38	0.40	0.42	0.43	0.47	0.50	0.54	0.58
0.5	0.13	0.15	0.17	0.19	0.21	0.23	0.25	0.28	0.30	0.32	0.34	0.36	0.37	0.39	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.59	0.63	0.67
0.6	0.16	0.18	0.21	0.23	0.26	0.28	0.31	0.33	0.36	0.38	0.41	0.43	0.45	0.47	0.50	0.52	0.55	0.58	0.60	0.63	0.67	0.71	0.75	0.80
0.7	0.18	0.21	0.24	0.27	0.30	0.33	0.36	0.39	0.42	0.45	0.47	0.50	0.52	0.56	0.58	0.61	0.64	0.67	0.70	0.74	0.78	0.83	0.88	0.94
0.8	0.21	0.24	0.27	0.31	0.34	0.38	0.41	0.44	0.48	0.51	0.54	0.57	0.60	0.63	0.67	0.70	0.73	0.77	0.80	0.84	0.89	0.94	1.00	1.07
0.9	0.24	0.27	0.31	0.35	0.38	0.42	0.46	0.50	0.54	0.57	0.61	0.64	0.67	0.71	0.75	0.79	0.82	0.86	0.90	0.95	1.00	1.06	1.13	1.20

FIG. X3.1 Corrected Loss from Observed Loss and Barometric Pressure kPa

Barometric Pressure, mm Hg.

from through	671 806	672 807	673 808	674 809	675 810	676 811	677 812	678 813	679 814	680 815	681 816	682 817	683 818	684 819	685 820	686 821	687 822	688 823	689 824	690 825	691 826	692 827	693 828	694 829	695 830	696 831	697 832	698 833	699 834	700 835	701 836	702 837	703 838	704 839	705 840	706 841	707 842	708 843	709 844	710 845	711 846	712 847	713 848	714 849	715 850	716 851	717 852	718 853	719 854	720 855	721 856	722 857	723 858	724 859	725 860	726 861	727 862	728 863	729 864	730 865	731 866	732 867	733 868	734 869	735 870	736 871	737 872	738 873	739 874	740 875	741 876	742 877	743 878	744 879	745 880	746 881	747 882	748 883	749 884	750 885	751 886	752 887	753 888	754 889	755 890	756 891	757 892	758 893	759 894	760 895	761 896	762 897	763 898	764 899	765 900	766 901	767 902	768 903	769 904	770 905	771 906	772 907	773 908	774 909
Observed Loss	/-- Corrected Loss ----->																																																																																																							
Units																																																																																																								
0	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.23	0.20	0.18	0.16	0.14	0.13	0.11	0.09	0.07	0.05	0.02	-0.00	-0.03	-0.06	-0.09	-0.13	-0.17																																																																																
1	0.63	0.65	0.67	0.69	0.71	0.73	0.75	0.77	0.80	0.82	0.84	0.86	0.87	0.89	0.91	0.93	0.95	0.98	1.00	1.03	1.06	1.09	1.13	1.17																																																																																
2	0.89	0.95	1.01	1.07	1.14	1.20	1.26	1.33	1.39	1.45	1.51	1.57	1.62	1.68	1.74	1.80	1.88	1.93	2.00	2.08	2.17	2.27	2.38	2.50																																																																																
3	1.16	1.25	1.38	1.48	1.58	1.67	1.77	1.87	1.99	2.09	2.19	2.28	2.38	2.48	2.57	2.67	2.77	2.88	3.00	3.13	3.29	3.44	3.63	3.83																																																																																
4	1.41	1.55	1.70	1.84	1.99	2.14	2.27	2.42	2.58	2.72	2.86	2.99	3.11	3.25	3.40	3.54	3.68	3.85	4.00	4.19	4.39	4.62	4.88	5.17																																																																																
5	1.67	1.85	2.04	2.22	2.41	2.61	2.78	2.97	3.18	3.38	3.54	3.70	3.88	4.09	4.28	4.41	4.59	4.79	5.00	5.24	5.50	5.80	6.13	6.50																																																																																
6	1.93	2.16	2.39	2.61	2.84	3.07	3.29	3.52	3.77	3.99	4.21	4.41	4.60	4.82	5.05	5.28	5.50	5.74	6.00	6.29	6.61	6.97	7.38	7.84																																																																																
7	2.19	2.48	2.72	2.99	3.26	3.54	3.79	4.07	4.36	4.63	4.88	5.12	5.35	5.60	5.88	6.15	6.41	6.69	7.00	7.34	7.72	8.15	8.63	9.17																																																																																
8	2.48	2.78	3.07	3.37	3.69	4.01	4.30	4.62	4.96	5.27	5.56	5.83	6.09	6.38	6.71	7.02	7.32	7.64	8.00	8.40	8.84	9.33	9.88	10.50																																																																																
9	2.72	3.08	3.41	3.76	4.11	4.48	4.81	5.17	5.55	5.90	6.23	6.54	6.84	7.17	7.54	7.89	8.23	8.60	9.00	9.48	9.95	10.50	11.13	11.84																																																																																
10	2.98	3.38	3.75	4.14	4.54	4.94	5.31	5.71	6.15	6.54	6.91	7.25	7.58	7.95	8.37	8.78	9.14	9.55	10.00	10.50	11.08	11.68	12.38	13.17																																																																																
11	3.24	3.68	4.09	4.52	4.98	5.41	5.82	6.28	6.74	7.17	7.58	7.96	8.33	8.74	9.19	9.63	10.05	10.50	11.00	11.56	12.17	12.80																																																																																		





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## SUMMARY OF CHANGES

Subcommittee D02.08 has identified the location of selected changes to this standard since the last issue (D 86-05) that may impact the use of this standard. (Approved Jan. 15, 2007.)

- (1) Deleted "natural gasolines" from 1.1.
- (2) Deleted "Group 0" from the entire standard.
- (3) Added Fig. 6.

Subcommittee D02.08 has identified the location of selected changes to this standard since the last issue, (D 86-04b), that may impact the use of this standard. (Approved July 1, 2005.)

- (1) Replaced Table 4 with new values.
- (2) Revised 9.1.2-9.1.2.2, 9.1.5, and Notes 9-11.
- (3) Added 13.5.3 and footnote reference to the research report.
- (4) Added Appendix X5, and cross-reference in Section 12.1.

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### "Percent Evaporated" Report Form

Laboratory: \_\_\_\_\_

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_  
 Operator: \_\_\_\_\_

Ambient temperature (°C)	_____
Atmospheric pressure (kPa)	_____
Condenser temperature (°C)	_____
Temperature of the bath around receiving cylinder (°C)	_____

Percent Recovered	Corrected Temperature Reading (°C)	Time or mL / min	Percent Evaporated	Temperature Readings at prescribed percent evaporated (°C)
IBP			IBP	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
35			35	
40			40	
45			45	
50			50	
55			55	
60			60	
65			65	
70			70	
75			75	
80			80	
85			85	
90			90	
5 ml residue				
95			95	
FBP			FBP	

Percent Recovery	_____
Percent Residue	_____
Percent Total Recovery	_____
Percent Loss	_____
Corrected Percent Recovery	_____
Corrected Loss	_____
Corrected Total Recovery	_____

Comments: \_\_\_\_\_

- Ambient temperature at the start of the test
- Ambient barometric pressure at the start of the test
- Volume of condensate observed in the receiving cylinder at any point in the distillation, expressed as a percentage of the charge volume, in connection with simultaneous temperature reading
- Temperature measuring device readings which are corrected to 101.3 kPa barometric pressure
- Sum of the percent recovered and the percent loss
- Temperature measuring device readings at specified percentages evaporated calculated with arithmetical or graphical procedures
- Group 0: 2 to 5 minutes
- Group 1, 2 & 3: 5 to 10 minutes
- Group 4: 5 to 15 minutes
- Group 1 & 2: 60 to 100 seconds
- Group 0: time from first application of heat to 10% recovered = 3 to 4 minutes
- Group 0, 1, 2, 3 & 4: 4 to 5 ml / min uniform average rate from 5% recovered to 5 ml in flask
- Volume of condensate observed in the receiving cylinder when the 5ml conditions are reached
- Volume of condensate observed in the receiving cylinder when the final boiling point is observed
- Maximum percent recovered
- Volume of residue in the flask expressed as a percentage of the charge volume
- Combined Percent Recovery and Percent Residue in the flask
- Time from 5 ml in flask to FBP = < 5 minutes
- 100 minus the Total Recovery
- Percent Recovery corrected for barometric pressure
- Percent Loss corrected for barometric pressure
- Combined Percent Recovery and Percent Residue in the flask corrected for barometric pressure

FIG. X5.2 Percent Evaporated Report Form

### "Percent Recovered" Report Form

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_  
 Operator: \_\_\_\_\_

Ambient temperature (°C) \_\_\_\_\_  
 Atmospheric pressure (kPa) \_\_\_\_\_  
 Condenser temperature (°C) \_\_\_\_\_  
 Temperature of the bath around receiving cylinder (°C) \_\_\_\_\_

Percent Recovered	Corrected Temperature Reading (°C)	Time or mL / min
IBP		
5		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
5 ml residue		
95		
FBP		

Percent Recovery \_\_\_\_\_  
 Percent Residue \_\_\_\_\_  
 Percent Total Recovery \_\_\_\_\_  
 Percent Loss \_\_\_\_\_  
 Corrected Percent Recovery \_\_\_\_\_  
 Corrected Total Recovery \_\_\_\_\_  
 Corrected Loss \_\_\_\_\_

Ambient temperature at the start of the test

Ambient barometric pressure at the start of the test

Volume of condensate observed in the receiving cylinder at any point in the distillation, expressed as a percentage of the charge volume, in connection with simultaneous temperature reading

Temperature measuring device readings which are corrected to 101,3 kPa barometric pressure

Group 1, 2 & 3: 5 to 10 minutes  
 Group 4: 5 to 15 minutes

Group 1 & 2: 60 to 100 seconds

4 to 5 ml / min uniform average rate from 5% recovered to 5 ml in flask

Volume of condensate observed in the receiving cylinder when the 5ml conditions are reached

Volume of condensate observed in the receiving cylinder when the final boiling point is observed

Maximum percent recovered

Volume of residue in the flask expressed as a percentage of the charge volume

Combined Percent Recovery and Percent Residue in the flask

Time from 5 ml in flask to FBP =< 5 minutes

100 minus the Total Recovery

Percent Recovery corrected for barometric pressure

Percent Loss corrected for barometric pressure

Combined Percent Recovery and Percent Residue in the flask corrected for barometric pressure

Comments:

FIG. X5.1 Percent Recovered Report Form

#### X4. PROCEDURE TO EMULATE THE EMERGENT STEM ERROR OF A MERCURY-IN-GLASS THERMOMETER

X4.1 When an electronic or other sensor without an emergent stem error is used, the output of this sensor or the associated data system should emulate the output of a mercury-in-glass thermometer. Based on information supplied by four manufacturers of automated Test Method D 86 equipment, the averaged equations shown in X4.2 and X4.3 have been reported to be in use.

X4.1.1 The equations shown in X4.2 have limited applicability and are shown for information purposes only. In addition to the correction for the emergent stem, the electronic sensor and associated data system will also have to emulate the lag in response time observed for mercury-in-glass thermometers.

X4.2 When a low range thermometer would have been used, no stem correction is to be applied below 20°C. Above this temperature, the correction is calculated using the following formula:

$$ASTM\ 7C\ T_{etr} = T_t - 0.000162 \times (T_t - 20^\circ C)^2 \quad (X4.1)$$

X4.3 When a high range thermometer would have been used, no stem correction is to be applied below 35°C. Above this temperature the correction is calculated using the following formula:

$$ASTM\ 8C\ T_{ehr} = T_t - 0.000131 \times (T_t - 35^\circ C)^2 \quad (X4.2)$$

where:

$T_{etr}$  = emulated temperature in °C for low range thermometers,

$T_{ehr}$  = emulated temperature in °C for high range thermometers, and

$T_t$  = true temperature in °C.

#### X5. EXPLANATORY REPORT FORMS

X5.1 Fig. X5.1 and Fig. X5.2 show report forms.

# **EXHIBIT 17**

From: Hemant Talwalkar  
Sent: Fri 8/27/2010 9:28 AM (GMT -7)  
To: carl@media.org  
Cc:  
Bcc:  
Subject: Pricing Matrix

Carl,

Here is the Pricing Matrix for 5 Kchar per page.

Process	Accuracy	Price/Kchar	
		5000 pages	>= 20000 pages
Double Key Compare	99.51%	\$0.61	\$0.48
Triple Key Compare	99.97%	\$0.85	\$0.69

Please let us know your process preference and how we can move forward.

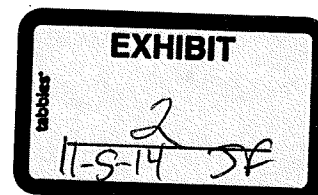
Looking forward to your approval and working with you.

Have a nice day and week end!

Regards,

Hemant

-----  
Hemant Talwalkar  
Director, Business Development  
HTC Global Services, Inc.  
3270 West Big Beaver Road  
Troy, MI 48084



PRO\_00004964

**Phone: (248) 530-2595**

**(248) 470-2939 (Cell)**

**Fax: (248) 786-2515**

# **EXHIBIT 18**



UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR  
TESTING AND MATERIALS,  
d/b/a ASTM INTERNATIONAL;  
NATIONAL FIRE PROTECTION  
ASSOCIATION, INC.; and  
AMERICAN SOCIETY OF  
HEATING, REFRIGERATION AND  
AIR CONDITIONING ENGINEERS,

Plaintiffs and  
Counter-Defendants,

v.

Civil Action No.  
1:13-cv-01215-TSC

PUBLIC.RESOURCE.ORG, INC.,

Defendant and  
Counter-Plaintiff.

PAGES 1 - 264

----- /  
Videotaped Deposition of: JAMES FRUCHTERMAN

DATE: Friday, July 31, 2015

TIME: 9:34 a.m.

LOCATION: Morgan, Lewis & Brockius, LLP  
Two Palo Alto Square, Suite 700  
Palo Alto, California

REPORTED BY: Kelli Combs  
Certified Shorthand Reporter  
License 7705.

CONFIDENTIAL - PURSUANT TO PROTECTIVE ORDER

1 a writing?

2 MR. KAPLAN: Objection; vague, incomplete  
3 hypothetical.

4 THE WITNESS: There are -- there is  
5 content where the OCR does not do a great job.  
6 That's very unusual but it happens.

7 BY MS. RUBEL:

8 Q Does it happen in the context of technical  
9 writings frequently?

10 MR. KAPLAN: Objection; vague, incomplete  
11 hypothetical.

12 THE WITNESS: It can. You might have a  
13 very detailed graphic that has text that overlays a  
14 picture. It's hard for the OCR to separate.

15 BY MS. RUBEL:

16 Q Are the Plaintiffs' standards technical  
17 documents?

18 MR. KAPLAN: Objection; vague.

19 THE WITNESS: Generally, yes.

20 BY MS. RUBEL:

21 Q Would you anticipate that there might be  
22 problems with the OCR of Plaintiffs' standards?

23 MR. KAPLAN: Objection; vague, incomplete  
24 hypothetical.

25 THE WITNESS: OCR usually makes errors in

1 scanning documents generally, so I'm sure that a raw  
2 OCR scan of those documents would also have errors.

3 BY MS. RUBEL:

4 Q And, in particular, because they're  
5 technical documents, do you think the likelihood of  
6 errors is greater?

7 MR. KAPLAN: Objection; incomplete  
8 hypothetical, vague.

9 THE WITNESS: Yes, because of diagrams;  
10 diagrams and tables are more difficult than  
11 paragraphs or text.

12 BY MS. RUBEL:

13 Q And, in particular, with diagrams and  
14 tables, would you anticipate that some of the  
15 character recognition might actually create content  
16 that's incomprehensible?

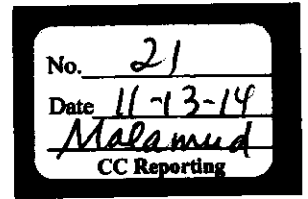
17 MR. KAPLAN: Objection; vague, incomplete  
18 hypothetical.

19 THE WITNESS: Yes. I could imagine a  
20 table that was constructed visually in such a way to  
21 make the OCR not be successful on it.

22 BY MS. RUBEL:

23 Q You indicated in your report that there  
24 was an additional way, other than the process that  
25 you used, to extract the text from the PDFs, that

# **EXHIBIT 19**



From: Carl Malamud  
Sent: Sat 1/04/2014 12:01 PM (GMT -8)  
To: Rebecca Malamud  
Cc:  
Bcc:  
Subject: Re: SVG and MathML (India and NFPA / Q4)

ok. this works for me. You're not spending a lot on contractors. I just needed to know that. (If you were spending \$3k a month on contractors, that obviously would have been an easy place for me to save money. At \$1k/month, it's noise.)

Keep uploading to the dropbox. But, do let me know what's coming so that I don't dive in and process things and then see more showing up the next day.

The app is sort of interesting, but doesn't help me in my core work, which is showing that we make the standards better. I'm happy to look at it, I'll tweet it, but it isn't something I'd use.

All the docs you see are, in theory, double-keyed. Of course, they may cheat and do OCR first and then do their QA. In any case, I won't be paying for double-key work for the foreseeable future.

What I \*am\* getting, at least from India, is full and accurate text inside of the PDF files. So, setting that text into HTML is a possible path.

But, for now, let's take January and February and get as much svg/math done as possible.

Let's also make sure we've done any NFPA docs that are in HTML but not in SVG. Also, we can do any ASTM or ASHRAE docs as well as those are helpful to me in my suit. And, India is useful.

Definitely keep plowing away on that stuff ... that's the kind of output that makes it much easier for me to try and raise money to keep you going for the rest of the year. (The book work is also very valuable to me, but I can't raise money for that.)

The summer thing may or may not happen ... I wouldn't count on it though. Right now, just raising my salary, my overhead, and your \$60k is a challenge. I think I'll be able to do it, but I'm definitely running on fumes.

On Jan 4, 2014, at 11:48 AM, Rebecca Malamud <webchick@invisible.net> wrote:

>> I'll take the ones you just sent in and get them ready. Send me the next batch when they're ready.  
>> I really wish this stuff were on a reasonable schedule. Nothing for 3 months and then a whole bunch of transactions as a flurry. Doesn't work for me.  
>  
> I could just upload the files to your server directly ... would that be easier for you?  
>  
>> You didn't answer my previous question, which was how much of the \$5k a month that I'm sending you is being turned around as salary for your contractor? I'm digging really deep to find money for you post-February and I need to understand where my money is going if I'm going to keep digging for you. I'm happy with the work, but I don't understand the finances.  
>  
> I suppose I could break everything down, however I use my contractor(s) on other things as well. If I had to gauge a rough ballpark estimate, I would say that about \$850 - \$1200 is paid out monthly to outside contractors trained through my program to do the work. I don't think that is unreasonable, and I do much of the work as well plus manage the project. I have to figure out how to manage my time effectively so I can work on other things related to my business. You mentioned not having the "Codes of the World" summer program this year, and if that is a strain for you then lets not do the SVG/MathML track.  
>

> I also mentioned that my MathML coder is working on an app. I was writing it up if you want to see it. It isn't ready for prime time but it promises to speed up production on that front. Of course, I notice that more and more of the equations are in the code now. I presume it is being keyed in unless that process has switched over to OCR. I found a couple of mistakes that appear to be OCR-related like the one below:

>

> <Screen Shot 2013-12-30 at 9.28.54 AM.png>

>

>> I just went through processing the previous batch. If I knew there were more, I would have waited an hour. Basically just doubled my work.

>

> I thought you were expecting more India ... sorry!

>

> Becky

>

>

>

> On Jan 4, 2014, at 11:19 AM, Carl Malamud <carl@media.org> wrote:

>

>> I just went through processing the previous batch. If I knew there were more, I would have waited an hour. Basically just doubled my work.

>>

>> I'll take the ones you just sent in and get them ready. Send me the next batch when they're ready.

>>

>> I really wish this stuff were on a reasonable schedule. Nothing for 3 months and then a whole bunch of transactions as a flurry. Doesn't work for me.

>>

>> You didn't answer my previous question, which was how much of the \$5k a month that I'm sending you is being turned around as salary for your contractor? I'm digging really deep to find money for you post-February and I need to understand where my money is going if I'm going to keep digging for you. I'm happy with the work, but I don't understand the finances.

>>

>> On Jan 4, 2014, at 11:15 AM, Rebecca Malamud <webchick@invisible.net> wrote:

>>

>>> Hi -

>>>

>>> I just placed six new docs in teh Dropbox folder - I just finished proofing them. I thought we would have 11, but some of them were more complex than anticipated (is.3025.04.1983\_008\_01.svg ... it's the CIE1931 color gamut!).

>>>

>>> I can finish the five in the queue if you like to reach the promised quota of 11 ... do you want me to do that?

>>>

>>> Becky

>>>

>>>

>>> On Jan 3, 2014, at 2:18 PM, Rebecca Malamud <webchick@invisible.net> wrote:

>>>

>>>> Yes - I should have the next delivery at 5PM today ...

>>>>

>>>>

>>>> On Jan 3, 2014, at 2:01 PM, Carl Malamud <carl@media.org> wrote:

>>>>

>>>>> Hi -

>>>>>

>>>>> Just checking that this is still happening? If so, I'll work on it this weekend.

>>>>

>>>> Carl

>>>>

>>>> On Dec 31, 2013, at 3:02 PM, Rebecca Malamud <webchick@invisible.net> wrote:

>>>>

>>>>> All are completed (both diagrams and MathML), with the exception of nfpa.nec.2011 - we have about 12 more diagrams to complete on that and we should have that completed by Friday. If you look at the diagrams, you will see that many are very complex. All have been proofed against the original JPG.

>>>>>

>>>>>

>>>>>

>>>>

>>>

>>>

>>

>>

>>

>

# **EXHIBIT 20**



Date 2/27/15  
Witness: MALAMUD

From: Kickstarter  
Sent: Tue 10/01/2013 12:23 PM (GMT -7)  
To: carl@media.org  
Cc:  
Bcc:  
Subject: Project Update #1: Public Safety Codes of the World: Stand Up For Safety! by Carl Malamud, Public.Resource.Org

## Project Update #1: 106 New ASTM Standards Converted

Posted by Carl Malamud, Public.Resource.Org



The work we're doing to rekey standards is part of a long-standing process we've put in place, starting with the California building codes and moving on to over 1,000 standards so far that span the globe. Just today, I added HTML versions of 106 standards from ASTM to our directory of standards required by U.S. federal law. These standards are particularly important because many of these are out-of-date although still required by federal law and there are no readily available version of these documents on the net or in public libraries around the country.

You can really see the difference between the original HTML and the rekeyed HTML:

- A47 is the 1968 standard for Standard Specification for Malleable Iron Castings. It is required by law in the OSHA standards for storage and handling of anhydrous ammonia. Here's the [PDF version](#). Compare that to the [HTML version](#).
- The U.S. Coast Guard requires by law the use of ASTM A333: Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service. Here's the [PDF version](#). Compare that to the [HTML version](#).

One of the hopes as we move beyond the rekey stage is that we can do more than simply recover text, but can start adding true value. For example, rekeying the mathematical formulas into MATHML, adding section ID headers so you can permalink not only the standard but a subsection of the standard, and converting the graphics to vector format.

We'll have another 100 or so ASTM standards done in a couple of weeks, plus there is a queue of several hundreds standards from India that have been converted into HTML and are undergoing QA.

We do get some pushback from time to time from organizations that think legally-mandated standards shouldn't be made available, but we fight hard for our right to read, know, and speak the law. Read what our lead firm, the Electronic Frontier Foundation,

21/12/12  
(10/11/12) AM

has to say in their post yesterday entitled "The Law Belongs To Everyone, We Tell Standards Organizations." Some of the best intellectual property lawyers in the United States are standing firmly with us on this fundamental right to know the laws by which we govern ourselves. I hope you'll stand with us. Thank you for your support.

Care to comment? [View this update on Kickstarter](#) →

Want to get these notifications straight to your iPhone?  
Get the Kickstarter app for iPhone.

---

This is a copy of the email notification that your backers receive.

**KICKSTARTER**

# **EXHIBIT 21**

From: Carl Malamud  
Sent: Tue 1/28/2014 2:09 PM (GMT -8)  
To: Rebecca Malamud  
Cc:  
Bcc:  
Subject: Re: ASTM Graphic Question ...

EXHIBIT 62  
Ashley Scovyn, CSR No. 12019  
Date 2/27/15  
Witness: MALAMUD

oh my god.

house style?

do you understand how much I'm being sued for by the ASTM? And, how absolutely, crucially important it is that you do exactly what I asked you to do, which is an exact copy?

And, do you understand that your mail to me is subject to discovery? E.g., I may have to turn these over to the court?

Either you get what we're doing with these svg and math standards or you don't. Exact copy has been the absolutely positively 100% important criteria the whole time. If there is any question whatsoever in your mind that this is the guiding principle for this work, you need to quit immediately and stop working on this project. And, if there is any question in my mind that you are not making exact copies, I have to fire you.

On Jan 28, 2014, at 2:04 PM, Rebecca Malamud <webchick@invisible.net> wrote:

> +1

>

> However - I can see that image I sent you reinterpreted in our "house style" (i.e. more modern) ... but I know our goal is to make an "exact copy" ...

>

> Hence, the one-off question.

>

> Becky

>

>

> On Jan 28, 2014, at 1:16 PM, Carl Malamud <carl@media.org> wrote:

>

>> Can you please look through the data, figure out what is going on, then send me a note with your recommendation as to the situation. I could look through the diagrams and do that assessment, but I'd rather you do it and let me know once you've gathered the facts.

>>

>> On Jan 28, 2014, at 1:11 PM, Rebecca Malamud <webchick@invisible.net> wrote:

>>

>>> I am sorting the images for MathML -vs- Diagrams ...

>>>

>>> This is the first document I found that had images like this - I am still finding plenty in the "normal" style - and I have plenty more to go through (303 total)

>>>

>>> Becky

>>>

>>>

>>>

>>> On Jan 28, 2014, at 1:08 PM, Carl Malamud <carl@media.org> wrote:

>>>

>>>> that looks like an awful lot of work.

>>>>

>>>> is there just one of those or are there a bunch that are that hard?

>>>>

>>>> On Jan 28, 2014, at 1:07 PM, Rebecca Malamud <webchick@invisible.net> wrote:

>>>>

>>>>> Do you want us to redraw illustrations that look like this?

>>>>>

>>>>> <astm.c150.1917\_30\_01.jpg>

>>>>

>>>

>>>

>>

>>

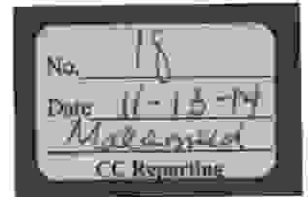
>

>

# **EXHIBIT 22**



- [HOME](#)
- [RDC BLOG](#)
- [About The Program](#)



- [Buy Our Stuff](#)
- [RDC T-shirts](#)

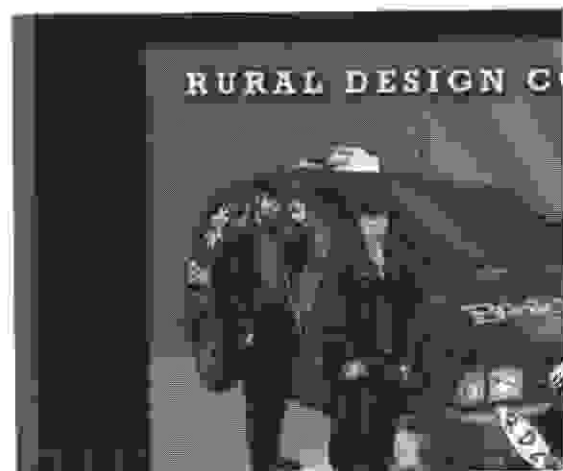
- [SUSTAINABLE WORLD](#)
- [COBWORLD - PEU](#)

Search

## Codes of the World Overview & Roadmap

### An Overview of the Project History

"Codes of the World" is a core focus at the Rural Design Collective, under development since 2011. The project gives participants in our program the opportunity to learn a wide variety of web, design and production skills that apply to most any STEM field of interest and are essential to creating on the Internet today. Our core group at this time ranges from 7-14 years of age and when they begin, their experience level is generally basic computer user skills. At the RDC, they get the opportunity to excel in a collaborative environment outfitted with state-of-the-art equipment, and learn that a computer is a tool to unleash their creativity in a positive way. The techniques and experiences gained in our program give them the power to use technology to innovate and express themselves on independent projects, to make and invent things, and to enhance their performance in the classroom.



### Codes of the World – General Skills Covered

**Animation** – SVG animation methods include SMIL, SVG animation using the DOM as specified by the W3C, and HTML5 + CSS3. Production methods emphasize thinking of an illustration as distinct objects and movable parts so they are readily animated. The video below “The Power of Vectors” illustrates this concept and was created during the youth program.

**Coding** – Basic coding skills include page markup with HTML + CSS with more advanced coding concepts implemented in the development of our workflow for automating SVG production.

**Computer Skills** – Participants are required to set up their own computers in our lab and install, maintain and troubleshoot software and connectivity issues independently which is not generally offered in a shared computer environment where a system administrator oversees consistency across a network. This freedom instills confidence in participants and invites them to explore and invent.

**Current Best Practices** – Participants are introduced to concepts such as open source early in the program. They learn how to work directly in code using a text editor. They learn how to organize a project and meet realistic milestones to consistently achieve success. We emphasize superior production values and pride in craftsmanship in every endeavor as well as the importance of standards in the World and on the Web. Design is approached as a broad-ranging discipline where creative solutions to problems are encouraged. Open collaboration and communication during meetups encourages sense of teamwork and leads to serendipitous discovery.



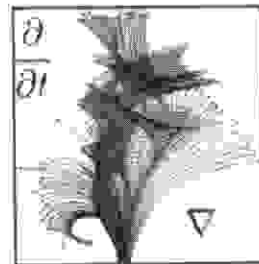
See also [Reflect and Clone Objects](#) and [Basic Lines Tutorial](#)

**Document Production** – Although not heavily emphasized in the youth track, basic elements of document production such as scanning and optical character recognition are discussed to enhance understanding of page elements and web content.

**Elements of Typography** – A subset of design, typography is emphasized as fundamental building blocks and an important means to clearly communicate. Understanding at this level of granularity leads to a better appreciation of the aesthetics and functionality in web design and programming.

**Extra Credit** – We support and encourage extracurricular activities at #rdcHQ. These projects run the gamut and give participants an opportunity to further pursue and enhance a particular skill. One such example is building a web site for the robotics team at the local middle school. This project employs many of the skills learned in our “Codes of the World” track.

**Markup (HTML, MathML)** – Basic Page Markup and Advanced MathML Markup are explored. At this time, only Presentation MathML Markup has been covered in-depth.



Read more at [“Decoding Unicode”](#)

**Vector Illustration** – Basic, Intermediate and Advanced skills in vector illustration are explored. We emphasize open source programs so participants can download and install the software on their own computers. Inkscape is the primary tool used in our “Codes of the World” illustration track.

**Understanding of Math Symbols** – A fundamental understanding of all symbols used in MathML is acquired. This is primarily from a presentation standpoint, however it is useful on other levels.

**Work Ethic** – Closely related to production values, participants learn the importance of giving 100% to their project and seeing it through to completion.

**Workflow Processes** – An understanding of how all phases of the project work together is stressed. In 2011 and 2012, the focus of the program was developing and establishing the processes currently in use.

**Video Production** – Participants learn media skills in order to document work in progress. The above video “Understanding the Symbols” is an example of a tutorial video created during the youth program.



See also [Part One: Getting Started](#) and [Part Two: Learning the Basics](#).

## Roadmap (Historical) – Specific Techniques – SVG Art

### 2011 SVG Track

Our first season involved getting familiar with the Tools of the Trade. In the case of the creation and production of scalable vector graphics, our tool of choice was [Inkscape](#) with a bit of crossover into [Adobe Illustrator](#) for specialized tasks. Illustration techniques involved basic diagrams and schematics, typographic controls, and working with blends and patterns. Concepts of open source art were introduced and the methodology for creating production ready art was put in place. The very simple concepts we developed are still in force today in our lab and have created a base for more advanced design and animation pursuits. See below for a list of “Quick Start” tutorials developed during our first year.

1. [Strokes and Compound Paths](#)

2. [Patterns and Blends](#)

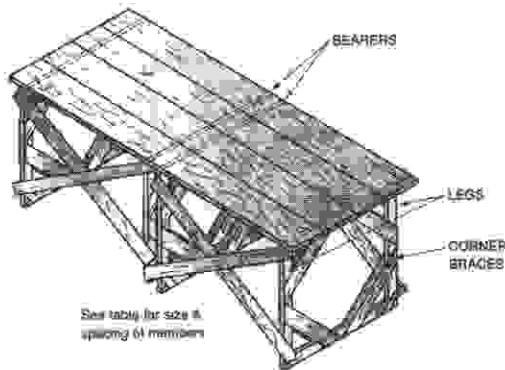




- 2. [Antialias, Duplicate and Move](#)
- 3. [Typography, Fill and Layers](#)
- 4. [Break Apart and Exclude](#)
- 5. [Crosshatch and Guide](#)
- 6. [Interpolate and Exclusion](#)
- 7. [Interpolate and Tiled Clones](#)
- 8. [Working with Paths Effectively](#)
- 9. [Cloning and Layering](#)
- 10. [Building Graphic Libraries](#)

**2012 SVG Track**

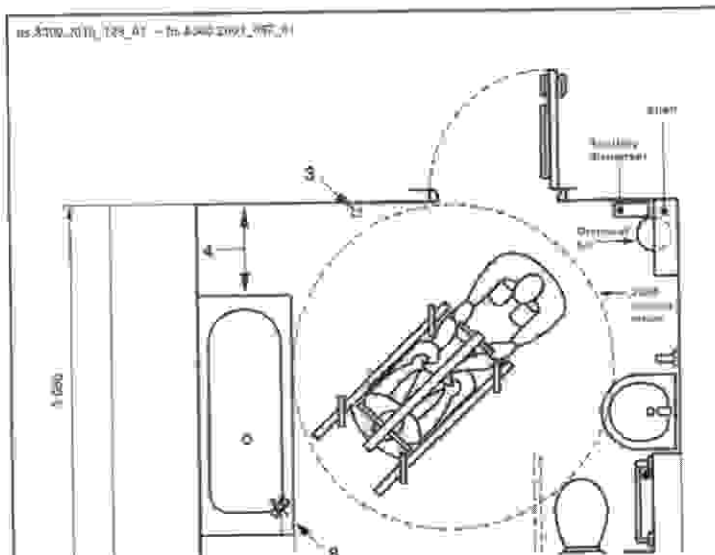
In 2012, the focus was on more of the same material as all technical artistic skills require *practice, practice, practice!* We had the opportunity to expand our illustration repertoire with intermediate and advanced schematics and maps involving crosshatching, shading with patterns, and working with perspective and on a grid. Techniques such as modifying or repurposing existing art and using auto-trace to create patterns or achieve effects where precision is less important were introduced.



**ART BEFORE (L) AND AFTER (R):** An excellent example of how the RDC improves the art of any standard from the 2012 program

**2013 SVG Track**

In 2013, we introduced "Standards Sprints" so participants could focus on an area of interest where they want to make a difference with their art. Improving safety standards was a unanimous favorite and repurposing existing art between two disability documents in the British Standard provided plenty of material to hone our vector skills. Basic SVG animation concepts were introduced to provide an understanding of technique (See [BIG Update from #rdcHQ](#))



**British Standard: Two Examples**

An example of modifying existing art between two documents in the British Standard. The before and after versions show where mime descriptions are added for clarity or where the diagram has been modified to reflect an upgrade to the previous standard.

Pull the center green handle to the left and right to see the difference between the graphics in the two

publications

Another sample from the same set of documents: 10 years have elapsed between images which means that safety improvements have been developed and added to the diagram.

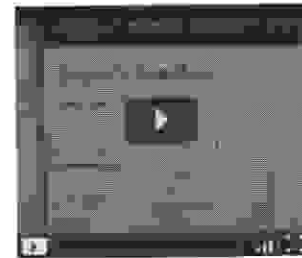
## Roadmap (Historical) – Specific Techniques – MathML

### 2011 MathML Track

As with the SVG Art Track, our inaugural year for “Codes of the World” involved researching many techniques and topics that led to our current processes. We learned how to use [Amun](#), the open source web editor by the W3C, and explored cross-platform presentation technologies such as [MathJax](#) for rendering in a web browser. Ultimately, we chose to create SVG representations of our coded equations to ensure accuracy when the work is translated to print. We discovered the open source [SVGMath](#) for our MathML to SVG conversion and modified it to suit our purposes.

### 2012 MathML Track

The 2012 season introduced document generation to enhance a greater understanding of the technologies involved in web content production. Through this knowledge, we were able to refine our method of producing MathML equations to the point where we were able to begin involving members of our youth group.



Exercise in Accessibility: – Working with MathPlayer by Design Science in 2011. (Click to hear a MathML EQ.)



### 2013 MaOoML Track

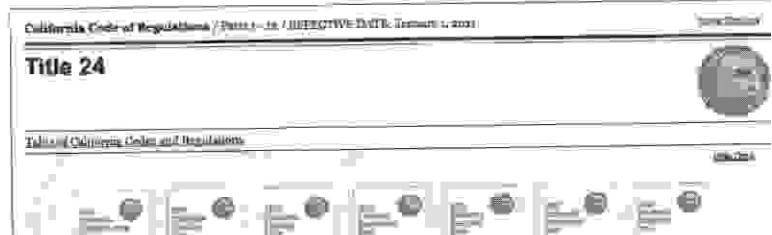
2013 reinforced the techniques established in the previous seasons. Previously, obscure concepts are now easily grasped by all age levels and are documented in video tutorials

## Roadmap (Historical) – Document Collections

### Collections with Improved Art by The Rural Design Collective

California Building Standards Code – Title 24 of the California Code of Regulations contains the regulations that govern the construction of buildings in California.

California Code of Regulations – The remaining 27 Titles in the California Code of Regulations aside from Title 24.



**US Public Safety Codes** – Information and resources on safety and structural performance capabilities in construction in the U.S. **Sample document set with improved art by The Rural Design Collective**

**Eurocode (European Union)** – The building code of the European Union. All citizens of Europe and those wishing to do business in the European Union must conform to the safety provisions of the Eurocode.

**Public Safety Standards of India** – Standards regulating the public safety of bicycles, buildings, condiments and spices, the testing of water, buildings safety, the control of pollution, and the proper functioning of fire fighting equipment

**Global Accessibility Standards** – Standards regulating access to buildings and public facilities for [links]

**European Public Safety Standards** – Standards for the safety of child perambulators and wheeled child conveyances, code of practice for the design of buildings to meet the needs of disabled people, standards for fire safety and the safety of electrical installations.

## Roadmap (Present and Future) – Next Steps

Codes of the World continues to have a positive impact on our program and has led to other successful projects at Rural Design Collective Headquarters and potential future avenues of exploration. Below are a few such examples.

### Cobwebs College / Cobwebs The Movie



Cobwebs is an animated series being produced by creative youth at Rural Design Collective Headquarters. They are writing the script, creating the music, drawing the art and producing the movie all on-site at rdchQ. As they create the series, they learn new software programs and production processes. The core techniques introduced in the "Codes of the World" SVG Illustration Track outlined above are practiced in the creation of the Cobwebs artwork.

### SVG Animation / SVG Markup



As our public domain library of graphics continues to grow, our interest is beginning to focus on how to take these scalable vector graphics to the next level through animation. Our tool of choice, [Inkscape](#), is a powerful interface to building interactivity into these currently static graphics with the ability to assign object IDs to every shape, layer and stroke. The 2014 program will begin focusing on this to provide additional knowledge for our animation track.

### Library Management / Similarity Engine



Over the three year evolution of our program, we have amassed an impressive collection of production-ready graphics that are in need of a more sophisticated method of search and retrieval. As our work is intended for the public domain and is continuously published to the Internet, tools such as Google's Image Search are useful but not particularly effective. SVG Markup and Metadata will play a role in this and we have conducted preliminary research into technologies such as [OpenCV](#).

### MathML (Content Markup)



Optical character recognition does an increasingly better job at rendering most mathematical equations and will theoretically handle more complex equations at some point and even automate MathML markup. As a result, we have de-emphasized the MathML track in our core offering, however alumni of the Rural Design Collective have pursued independent projects, most notably an [application](#) that facilitates the collaborative coding of MathML equations in a web-based interface. A Content MathML track would be interesting to explore in the future and would enhance the

current repository of Presentation MathML.



CWOL [The Bumper Sticker - Make Good Things Happen!]

# **EXHIBIT 23**

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EXHIBIT 52  
Ashley Scovyn, CSR No 12019  
Date 2/26/15  
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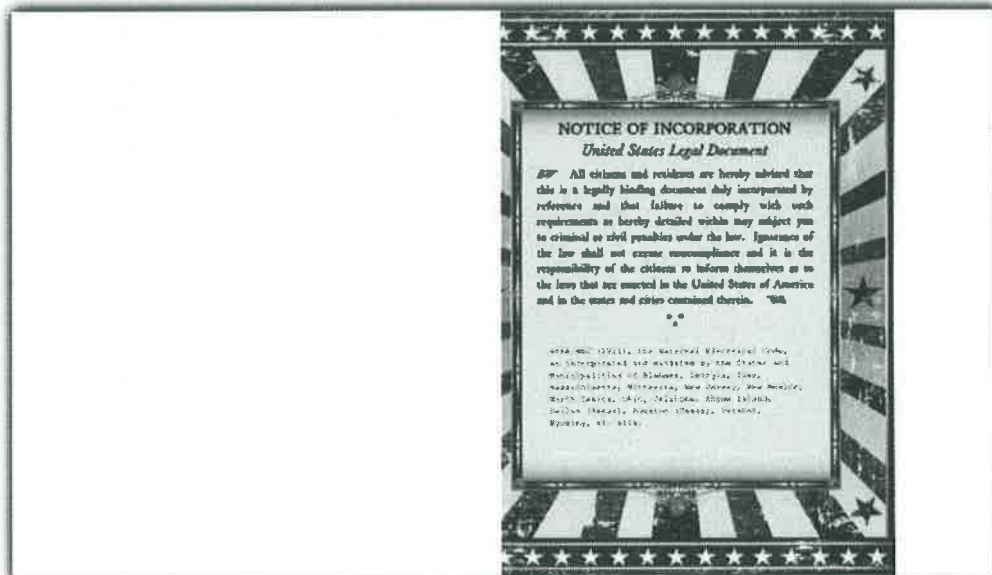
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**Resources**

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### NFPA NEC (2011): National Electrical Code (January 1, 2011)



[NFPA NEC \(2011\): National Electrical Code](#)

[fullscreen](#)

**Author:** [National Fire Protection Association](#)  
**Subject:** [public.resource.org](#)  
**Year:** 2011  
**Language:** [English](#)  
**Collection:** [publicsafetymcode](#); [USGovernmentDocuments](#); [additional\\_collections](#)

**Description**

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**Name of Legally Binding Document:** NFPA NEC (2011): National Electrical Code  
**Name of Standards Organization:** National Fire Protection Association

**Errata**  
[Errata 70-11-2](#) (issued 1/24/2012) (PDF, 18 KB)  
[Errata 70-11-1](#) (issued 4/8/2011) (PDF, 48 KB)

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**Subject:** NEC 2011  
NEC 2011

**Selected metadata**

**Identifier:** gov.law.nfpa.nec.2011  
**Credits:** Uploaded by Public.Resource.Org  
**Licenseurl:** <http://creativecommons.org/publicdomain/zero/1.0/>  
**Mediatype:** texts  
**Identifier-access:** <http://archive.org/details/gov.law.nfpa.nec.2011>  
**Identifier-ark:** ark:/13960/t0bv8p02s  
**Ppi:** 300  
**Ocr:** ABBYY FineReader 8.0

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- Full Text (4.2 M)
- Divu (38.7 M)

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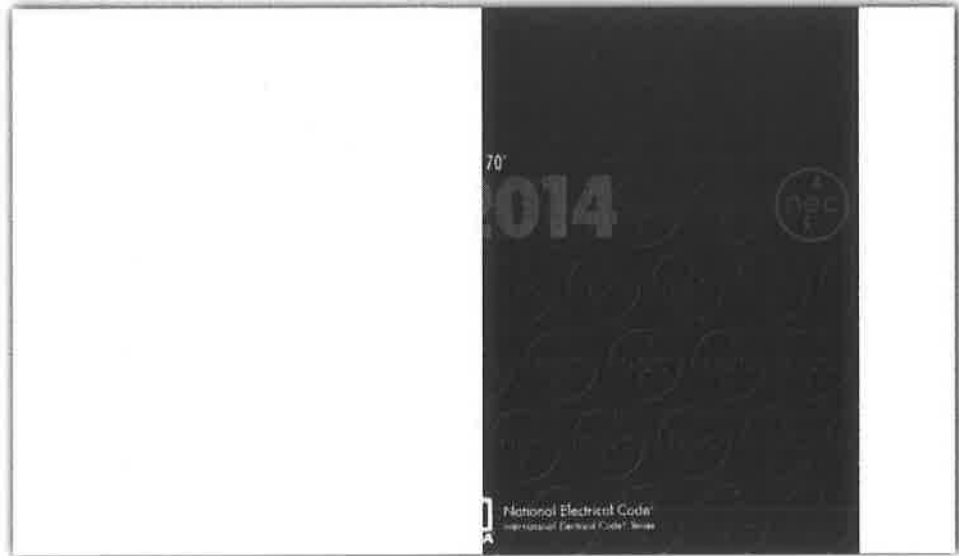
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Resources

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2014 National Electrical Code (2014)



[2014 National Electrical Code](#)

[fullscreen](#)

**Author:** [National Fire Protection Association](#)  
**Subject:** [required in all 50 states](#); [public safety code](#); [legally binding document](#)  
**Year:** 2014  
**Language:** [English](#)  
**Collection:** [publicsafetycode](#); [USGovernmentDocuments](#); [additional\\_collections](#)

Description

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**Name of Legally Binding Document:** [NFPA NEC \(2014\) National Electrical Code](#)  
**Name of Standards Organization:** [National Fire Protection Association](#)  
**Standards Organization Source:** [NFPA National Electrical Code](#) (Free Access Available Form Original Publisher)  
**Log Of Value-Added Operations:** [Internet Archive Task ID 292795164](#) (1,106 Lines of Processing, 7:04:31 Compute Time)  
**Name of Incorporating Jurisdiction:** [Commonwealth of Massachusetts \(527 CMR 12.00\)](#)  
**Name of Incorporating Jurisdiction:** [City of Montgomery, Alabama \(Ordinance 64-2013\)](#)

Errata

- [Errata 70-14-1](#) (issued 9/16/2013) (PDF, 56 KB)
- [Errata 70-14-2](#) (issued 12/3/2013) (PDF, 32 KB)
- [Errata 70-14-3](#) (issued 4/21/2014) (PDF, 21 KB)
- [Errata 70-14-4](#) (issued 7/29/2014) (PDF, 17 KB)

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best electrical engineer reference book!Reviewer: [brewster](#) - ★★★★★ - March 19, 2014Subject: Go Carl Malamud for making the public domain publicly accessible  
thank you.**Selected metadata**

**Identifier:** nfpa.nec.2014  
**Mediatype:** texts  
**Licenseurl:** <http://creativecommons.org/publicdomain/zero/1.0/>  
**Scanner:** Internet Archive HTML5 Uploader 1.5.2  
**Identifier-access:** <http://archive.org/details/nfpa.nec.2014>  
**Identifier-ark:** <ark:/11960/t2g760354>  
**Imagecount:** 924  
**Ppl:** 300  
**Ocr:** ABBYY FineReader 9.0

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# **EXHIBIT 24**

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EXHIBIT 75  
Ashley Soevyn, CSR No. 12019

Date 2/27/15

Witness: MARANNA