



# **BIENNIAL REPORT 111<sup>th</sup> CONGRESS**

## **OCCUPATIONAL SAFETY AND HEALTH INSPECTIONS**



**Office of Compliance**

**May 2012**

## Table of Contents

STATEMENT FROM THE GENERAL COUNSEL.....	i
OVERVIEW .....	1
The Good News .....	1
The Bad News.....	2
CONTINUING CHALLENGES .....	2
Fire Safety and Emergency Evacuation on Capitol Hill .....	2
Improvements and Challenges Involving Fire Safety Communication Systems .....	4
Improvements and Challenges Involving Fire Suppression Systems .....	4
The Continuing Threat to Occupants and Visitors in a Post-9/11 World .....	5
Employing Offices Must Take into Account Known Risks Posed by Terrorism .....	6
<i>The Blue Ribbon Panel .....</i>	14
The Blue Ribbon Panel Endorses Compartmentation.....	15
Fire Safety Issues and Corresponding Life Safety Objectives Recognized by the Panel .....	15
Panel Made Nine Recommendations and Analyzed Three Design Options .....	16
Panel’s Fire Risk Matrix Approach Did Not Consider Risks Posed by Terrorism.....	17
General Counsel’s Endorsement of the Panel’s General Recommendations, All of Its Compartmentation Configurations in Option 2 and SALSA .....	18
Option 1 Provides the Least Protection and Does Not Meet Existing Legal Requirements .....	19
Option 2 Meets Historic Preservation and Life Safety Concerns .....	20
Option 3 May Not Be Economically or Technically Feasible .....	20
Compartmentation Recommendations Rejected by Senate Appropriations Committee.....	21
<i>CAPITOL POWER PLANT UTILITY TUNNELS .....</i>	23
<i>Capitol Visitor Center .....</i>	24
BIENNIAL INSPECTIONS .....	25
Inspection Scope and Process .....	25
<i>Risk-Based Biennial Inspections .....</i>	26
<i>Implications of Reduction in Hazard Findings: Safety Saves .....</i>	27
EMPLOYING OFFICE SAFETY INITIATIVES.....	28
REQUESTER-INITIATED INSPECTION CASES.....	32
TECHNICAL ASSISTANCE.....	32
EDUCATION AND OUTREACH.....	33
ACKNOWLEDGEMENTS.....	34

# Safety & Health in the Congressional Workplace – Report on the 111<sup>th</sup> Congress Biennial Occupational Safety & Health Inspections

## STATEMENT FROM THE GENERAL COUNSEL



I am pleased to present the accompanying Report to Congress and interested stakeholders concerning the state of occupational health and safety in the legislative branch of the United States Government.<sup>1</sup> This Report, prepared by the Office of the General Counsel (OGC) of the Office of Compliance (OOC), principally focuses on the results of our occupational safety and health (OSH) biennial inspection during the 111<sup>th</sup> Congress and inspections conducted at the request of covered employees. As in past years, the Report also describes where our Office is concentrating its efforts during the 112<sup>th</sup> Congress. Please let us know if you have questions or would like additional information about our OSH

program.

### Where we are now ...

This is a time of transition and challenge for both OOC and employing offices. Once each Congress since the 109<sup>th</sup> Congress, OGC safety and health specialists have conducted comprehensive inspections of legislative branch facilities throughout the Washington DC metropolitan area. These inspections, mandated by the Congressional Accountability Act (CAA),<sup>2</sup> are the principal means by which OGC identifies and seeks to prevent the occurrence of serious health and safety hazards<sup>3</sup> and ascertains whether such hazards are satisfactorily and timely abated by the employing offices.

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<sup>1</sup> The *Report on the 111<sup>th</sup> Congress Biennial Occupational Safety & Health Inspections* (“GC Report”) is prepared pursuant to §215(e)(2) of the Congressional Accountability Act of 1995 (CAA), 2 U.S.C. §§1301, 1341(e)(2).

<sup>2</sup> CAA, §215(e)(1), 2 U.S.C. §1301(e)(1). We provided a draft of this report to employing offices referred to in this report for their review and comment. We received written responses prepared by the Architect of the Capitol, the Office of the Senate Chief Counsel for Employment, the Library of Congress, the Chief Administrative Officer of the House, and the Office of the Attending Physician, which are reprinted in Appendix C. After reviewing these responses, we have revised the final report, as and where appropriate.

<sup>3</sup> See June 2, 2009, response by the OOC to the Questions for the Record for Office of Compliance from Senator Lisa Murkowski, Ranking Member, Senate Appropriations Subcommittee on the Legislative Branch, Hearing on the Fiscal Year 2010 Budget Requests for the Office of the Architect of the Capitol and the Office of Compliance, before the Subcommittee on the Legislative Branch (“FY 2010 Budget Request Hearing”), May 9, 2009 (Answer to Question 1, pp. 2-6, on the need for, cost and value of conducting comprehensive biennial campus-wide inspections), *GC Report*, App. D.; May 29, 2009 response by the OOC to the Questions for the Record for Office of Compliance from Senator Ben Nelson, Chairman, Senate Appropriations Subcommittee on the Legislative Branch, FY 2010 Budget Request Hearing, May 9, 2009 (Answer to Question 4, p. 7), *GC Report*, Appendix D.

Focusing mostly on hazardous structural conditions in each facility, these “wall-to-wall” biennial inspections have permitted OGC to compile a comprehensive inventory of hazards to the safety and health of employees and visitors on Capitol Hill. These include electrical, fire, life safety, boilers, heaters, machine guarding and fall protection hazards. Following each building inspection, our hazard findings are transmitted to the employing offices responsible for abating these hazards; in most cases the Office of the Architect of the Capitol (AOC) is charged statutorily with responsibility for the care and maintenance of legislative branch facilities.<sup>4</sup>

The number of hazards OGC identified during our biennial inspections has decreased from 13,140 in the 109<sup>th</sup> Congress to 5,400 in the 111<sup>th</sup> Congress even as the total space inspected increased from about 16 million to nearly 18 million square feet.<sup>5</sup> Employing offices reported that most of the hazards found in prior inspections were abated,<sup>6</sup> though many new hazards were also identified. While the number of higher-risk hazards in the legislative branch identified during the 111<sup>th</sup> Congress inspection is still not acceptable, the downward trend in safety and health violations represents significant progress. GC Report at 28-30. The efforts of the AOC’s Superintendents and safety personnel as well as individual employing offices have resulted in an ever-higher level of safety and health within legislative workplaces -- an accomplishment of which they all can be justly proud. App. C hereto. In addition, the AOC has implemented numerous fire protection/life safety improvements in Congressional buildings across campus and made substantial progress toward abating fire and life safety citations issued by OGC in 2000 and 2001;<sup>7</sup> however, challenges remain.<sup>8</sup>

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<sup>4</sup> See 2 U.S.C. §§ 2001, 2021, 2023 (protection, care and occupancy of office buildings are under the control and supervision of the Architect under the direction of respective Senate and House Committees.) The AOC does not have responsibility for Government Accountability Office and Government Printing Office facilities as well as the National Library Service for the Blind and Physically Handicapped (Taylor Street facility), the LOC Childcare facility, spaces used by the USCP in the Fairchild Building and at the National Law Enforcement Center in Cheltenham, MD, and the Senate offices in the Postal Square Building.

<sup>5</sup> In addition, the OGC is responsible under the CAA for inspecting remote legislative branch facilities, such as district and state offices. However, since its inception, the OGC has not had adequate resources to conduct these inspections. Instead, the OGC has provided technical assistance to these offices through its online *Fast Facts*, which enables them to conduct self-inspections.

<sup>6</sup> See, for example, Letter (“Architect’s Letter”), Stephen T. Ayers, Architect of the Capitol, September 27, 2011 to OGC General Counsel Peter Ames Eveleth (“OGC General Counsel Eveleth”), *AOC Significant Accomplishments in Occupational Safety and Health (OSH) 111<sup>th</sup> Congress*, Section E, Table 7 in Appendix C to the *GC Report*.

<sup>7</sup> *AOC Significant Accomplishments in Occupational Safety and Health (OSH) 111<sup>th</sup> Congress*, Sections A and B, Tables 1 and 2(a)-2(i) in Appendix C to the *GC Report*. Additional measures proposed by the Architect to abate citations have been included in funding provided by Congress for FY 2012. See, *H. Rept. 112-331*, Division G, pp. 895-897.

<sup>8</sup> With respect to the Russell Senate Office Building, in February 2008, the Architect proposed to construct protective compartmentalized zones within the building to enable safe evacuations in the event of a fire. This proposal, approved by the OGC General Counsel in March 2008, would fully abate fire and life safety hazards that are the subject of Citation 19-1 issued in 2000. GC Report, pp. 14-26. The hazardous conditions - unprotected stair enclosures, insufficient exit capacity and excessive travel distances - violate National Fire Protection Association (NFPA) fire and life safety codes. The Architect’s plan, if implemented, would create separate zones through the use of cross-corridor doors made of fire-rated materials that isolate fire and toxic gases within the zone containing the point of origin. Such configuration would permit occupants to escape using either of the two adjoining zones which are protected against fire and smoke intrusion or, if necessary, shelter in place within any of the protected zones. A Blue Ribbon Panel of experts in fire safety and historic buildings appointed by the AOC at the request of the Senate Committee on Rules and Administration found that a modified form of compartmentation would protect occupants from exposure to fire, smoke and toxic gases during emergencies when exiting the building or sheltering in place. Isolating a fire makes possible effective deployment of manual and automatic fire and smoke suppression

## .... and where we're going.

During the 112<sup>th</sup> Congress, we are implementing a new risk-based OSH program that focuses on inspecting and assuring abatement of higher-risk hazards in some of the facilities and operations that pose the greatest threat of fatalities and injuries to workers and building occupants, including fire and life safety and recurring RAC I and RAC II hazards.<sup>9</sup> GC Report at 27-28. As repeatedly underscored in previous GC Reports over the years, some of the most serious (RAC I) fire and life safety hazards in the House, Senate, Capitol and Library of Congress facilities continue to remain unabated despite citations issued in 2000 and 2001. While there has been much recent progress in this area, until abatement of all remaining open citations is assured, these high risk hazards will continue to receive our greatest attention. GC Report at 2-24.

We also are beginning to implement our plan to inspect safety programs and procedures mandated by OSHA standards.<sup>10</sup> These standards outline particular programs, such as personal protective equipment and hazard communication for employees exposed to hazardous materials, which are designed to protect workers engaged in both routine work and some higher-hazard operations. Some standards require that the employer's written program include specific engineering, administrative or personal protective equipment controls for the hazards identified. Other standards outline performance requirements that the employer's written program must

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methods. In turn, it potentially permits first responders and firefighters to safely enter a building containing fire, smoke or toxic gasses; establish a safe deployment area within the building; and exit safely if suppression is unsuccessful. Absent effective methods for correcting these hazardous conditions, should a serious fire occur, those occupying and visiting the RSOB may not reach safety in time and therefore face a greater chance of being injured or killed by the poisonous gases produced by the fire than in a code-compliant building. Though approving some of the recommendations of the Blue Ribbon Panel, the Senate concluded that compartmentation would be cost prohibitive with only minimal additional safety improvements beyond those currently being implemented and would result in similar risk exposure. Accordingly, it declined to fund either the AOC or Panel compartmentation variants. In light of the foregoing, the OGC will explore with the AOC other alternatives necessary to achieve sufficient additional protection to RSOB occupants and visitors against these continuing serious fire and life safety hazards.

<sup>9</sup> This is consonant with the Legislative Branch Appropriations Conference Committee's explanatory statement that the OOCGC use a comprehensive risk-based approach in implementing enforcement of health and safety standards. Congressional Record, p. H9933, September 24, 2009. See also, *Irving v. United States*, 162 F3d 154, 168 (1<sup>st</sup> Cir. 1988) (en banc) ("OSHA may legitimately devote its limited enforcement resources to monitoring workplaces and working conditions that pose the most serious threats to worker health and safety."). Compare *Office of Compliance Status of Management Control Efforts to Improve Effectiveness*, GAO-04-400 (February 2004) ("OOC is not fully in compliance with the CAA requirement that it 'conduct periodic inspections of all facilities' of the agencies covered by the provision. \*\*\* OOC officials told us that the decision not to inspect these facilities was largely due to resource constraints." at p. 25.) See CAA, §215(e) (1), 2 U.S.C. § 1341(e) (1).

<sup>10</sup> Section 215(a)(1) of the CAA provides that each legislative branch employing office "shall comply with the provisions of section 5 of the Occupational Safety & Health Act of 1970 (29 U.S.C. 654). Sections 5(a)(1) and (2) of the OSHAct require each employer to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious harm to his employees" and "comply with occupational safety and health standards promulgated under this Act." Consequently, "[a]ny standard ... properly imposed under the Act has the force of law because the Act imposes upon every employer the duty to 'comply with occupational safety and standards under' the Act. *Asbestos Information Ass'n v. OSHA*, 727 F2d 415, 417 (7<sup>th</sup> Cir. 1984). Compliance with the OSHAct standards promulgated by the Secretary of Labor is mandated by-Section 215(a) of the CAA and, contrary to what is stated on page 2 of the letter dated February 27, 2012 from Office of Senate Chief Counsel for Employment (included in App. C), the "standards" referenced in Section 215 of the CAA are distinct from the "regulations" requiring Congressional approval under Section 215(d) of the CAA. See Memorandum to General Counsel Eveleth from John D. Uelmen, Supervising Attorney, dated January 28, 2011 in Appendix E.

meet with respect to the hazards identified. Such standards also detail the training that employees must receive to enable them to recognize the associated hazards and how to implement the controls that the employer has devised for this purpose.

During inspections, OGC inspectors review the programs, interview employees to ascertain their knowledge of how program procedures are applied to their operations, and observe whether operations are conducted in accordance with program requirements. Program findings are then prepared and presented to employing offices to implement any needed changes. Because of the complex nature of some higher risk operations, greater time and expertise is required to conduct the inspections and assure that deficiencies are properly identified, recorded and corrected. Accordingly, with the current level of resources, it will take multiple cycles of biennial inspections to perform an initial review of these safety programs.

Like other instrumentalities of Congress, beginning in FY 2011 and continuing into FY 2012, the OOC has operated with considerably reduced resources. For example, OGC's safety and health inspector hours have been reduced by 47% when compared to FY 2010. Consequently, we have had to greatly limit the scope of our safety inspections and have scaled down or eliminated services we have provided to legislative branch offices in prior years. We have substantially reduced our wall-to-wall inspections, and parts of some facilities will probably not be inspected at all.<sup>11</sup> Thus, during the 112<sup>th</sup> Congress, we are not inspecting lower-risk areas such as administrative spaces and Member Offices and are discontinuing the OOC/National Safety Council Safe Office Awards program. That program recognized Member offices where no hazards to employees and visitors were found during our inspections. We likewise suspended our proposed pilot program to assist staff in Members' State and District offices to perform OSH self-inspections. Increased responsibility for preventing, identifying and abating hazards in such areas necessarily must rest with employing offices to assure that employees and visitors are provided hazard-free facilities.<sup>12</sup> Accordingly, we have recommended to the AOC<sup>13</sup> and other employing offices that they conduct periodic self-inspections;<sup>14</sup> some offices have agreed to undertake or have already accomplished such inspections.<sup>15</sup>

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<sup>11</sup> Under Section 215(e)(1) of the CAA, at least once each Congress, the General Counsel is required to "conduct an inspection of all facilities" of the employing offices covered by the OSHAct provisions in Section 215. When the GAO issued its report regarding the OOC in 2004, it noted that, due to lack of resources, the General Counsel had been unable to inspect all facilities in the Washington, D.C., area as required by statute. GAO, *Office of Compliance: Status of Management Control Efforts to Improve Effectiveness* (February 2004) at 25. While resources were increased in subsequent years when this situation was brought to the attention of Congress, the General Counsel is once again in this position.

<sup>12</sup> See *Irving v. United States*, 162 F3d 154, 169 (1<sup>st</sup> Cir. 1988)(en banc) ("The OSH Act, in no uncertain terms, places primary responsibility for workplace safety on employers, not on the federal government."); *Pate v. Oakwood Mobile Homes, Inc.*, 374 F3d 1081, 1084 (11<sup>th</sup> Cir. 2004) (collecting cases). As the AOC has noted, "[t]he primary responsibility for safety and prevention of injury and illnesses rests with the employing offices." Letter, Susan Adams, AOC Director of Safety, Fire and Environmental Programs, to OOC General Counsel Eveleth, September 6, 2011.

<sup>13</sup> The Architect of the Capitol reported that "[d]uring the 111<sup>th</sup> Congress, the AOC increased its emphasis on facility safety inspection, to include pre-inspections of Members' offices prior to the OOC's inspections." Statement of Stephen T. Ayers, AID, LEED, AP, then-Acting Architect of the Capitol regarding Fiscal Year 2011 Appropriations for the Office of the Architect of the Capitol, Hearings before the Committee on Appropriations House of Representatives, Legislative Branch Appropriations for 2011, p. 277.

<sup>14</sup> Several recent studies have shown that federal OSHA inspections reduce injuries. See Haviland et al., *Are there Unusually Effective Occupational Safety and Health Inspectors and Inspection Practices?*, RAND Working Paper

We have also discontinued various educational programs designed to assist employing offices and workers, including quarterly OSH/ADA Working Group meetings and monthly publication of OOC web-based OSH *Fast Facts* highlighting how to recognize and prevent common workplace hazards.<sup>16</sup> Finally, we will no longer be able to provide technical assistance to employing offices with respect to creating and implementing safety programs and procedures.

To summarize, our risk-based approach to our safety and health program during the 112<sup>th</sup> and future Congresses will include the following elements:

- Rather than inspecting for the presence of physical hazards in offices and administrative spaces where the number and severity of hazards has been reduced considerably over the years,<sup>17</sup> we will focus on higher-risk operations and workplaces that potentially pose greater risks of injury and illnesses<sup>18</sup> (workshops

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March 2012, [http://www.rand.org/content/dam/rand/pubs/working\\_papers/2012/RAND\\_WR914.pdf](http://www.rand.org/content/dam/rand/pubs/working_papers/2012/RAND_WR914.pdf); Gray et al., *Does Regulatory Enforcement Work? A Panel Analysis of OSHA Enforcement*, *Law and Society Review*, 1993,27:177-213.; Mendeloff et al., *The Declining Effects of OSHA Inspections in Manufacturing, 1979-1998*, *Industrial and Labor Relations Review*, 2005, 58:571-586; Haviland, et al. *What Kinds of Injuries Do OSHA Inspections Prevent?*, *Journal of Safety Research*, 2010, 41:339-345; Burns et al., *A New Estimate of the Impact of OSHA Interventions on Manufacturing Injury Rates, 1998-2005*, *American Journal of Industrial Medicine* 2011. In the Executive Branch, agencies are also required to conduct self-inspections, investigate injuries, and ensure prompt abatement of unsafe and unhealthful working conditions. 29 CFR Subpart D of Part 1960. As to these inspections, “[a]ll areas and operations of each workplace, including office operations, shall be inspected at least annually. More frequent inspections shall be conducted in all workplaces where there is an increased risk of accident, injury or illness due to the nature of the work performed. Sufficient unannounced inspections and unannounced follow-up inspections shall be conducted by the agency to ensure the identification and abatement of hazardous conditions.” 29 CFR §1960.25 (c). However, unlike executive branch agencies, employing offices in the legislative branch are not required by the CAA to conduct self-inspections and audits. Nevertheless, such measures effectively provide information necessary to enable employing offices to carry out their duty to “furnish each of [their] employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious harm to [their] employees.” OSHAct § 5(a)(1)(2); CAA §215 (a)(1); CAA §215(a)(2)(C). Hazard identification and assessment is an integral part of effective injury and illness prevention programs. Research demonstrates that such programs are effective in leading to reductions in injuries, illnesses and fatalities and lowering workers’ compensation and other costs. OSHA Injury and Illness Prevention Programs White Paper (January 2012).

<sup>15</sup> The Office of the Attending Physician and the United States Capitol Police completed and reported the results of their self-inspections to the OGC. We have requested that the employing offices share their self-inspection findings with our office.

<sup>16</sup> The CAA requires that the OOC carry out a program of education for Members of Congress and other employing authorities respecting the laws made applicable to them and a program to inform individuals of their rights under the CAA. See CAA, §301(h)(1); 2 U.S.C. §1381(h)(1). These OGC educational programs were part of the OOC’s implementation of that statutory mandate.

<sup>17</sup> For example, the average number of hazards identified in Member Offices in Washington, DC declined from 8.16 in the 109<sup>th</sup> Congress to 1.75 in the 111<sup>th</sup> Congress.

<sup>18</sup> Our ability to efficiently focus on operations with the highest frequency and severity of illnesses and injuries would be greatly enhanced if employing offices were required to maintain and provide this office with such data in advance of our inspections. This is required of employers in the private sector but is not mandated in the legislative branch under the Congressional Accountability Act. The OOC’s Board of Directors recommended to Congress that the CAA be amended to incorporate this requirement. See *Recommendations for Improvements to the Congressional Accountability Act* at 12-13 (2011). Risk-driven safety programs enable employing offices to realize substantial savings by reducing workers compensation claims and avoiding the need to hire and train replacement workers. See, for example, the cost avoidance achieved by the Library of Congress. *General Counsel’s Report on the 110<sup>th</sup> Congress Biennial Occupational Safety & Health Inspections* (June 2009) at 15-17.

and higher risk operations such as the Capitol Grounds landscaping division, etc.), areas of special interest (child care centers, page dormitories and schools), and locations where higher-risk hazards were found during previous biennial inspections.

- We will accelerate efforts to assure abatement of longstanding fire and life safety hazards throughout the Capitol Hill Campus, especially those that are the subject of fire and life safety citations issued by the General Counsel in 2000 and 2001.
- To protect employees engaged in higher risk operations, we will seek to assure that employing offices continue to develop and implement written hazard prevention procedures and programs.
- To lead our efforts to identify and correct higher-risk occupational safety and health hazards, we engaged Faith L. Perry as OSH Program Manager in August 2010. This position was authorized by Congress in FY 2010 to replace a detailee. Ms. Perry has extensive experience in private industry and government working with employers on implementing risk-based programs.
- To improve the efficiency and ensure consistent quality of our biennial inspections and to concentrate compliance efforts on higher-risk hazard abatement, especially repeat or continuing hazard findings, Congress approved the creation of a full-time OSH Compliance Manager position, which was filled by the appointment of Terry R. Wigfall in August 2010.

We recognize that lean times will require adjustments by both the employing offices and the OOC. We look forward to the continued cooperation of these offices as we work together to achieve a credible risk-based safety and health program in this new environment.

Peter Ames Eveleth  
General Counsel  
Office of Compliance



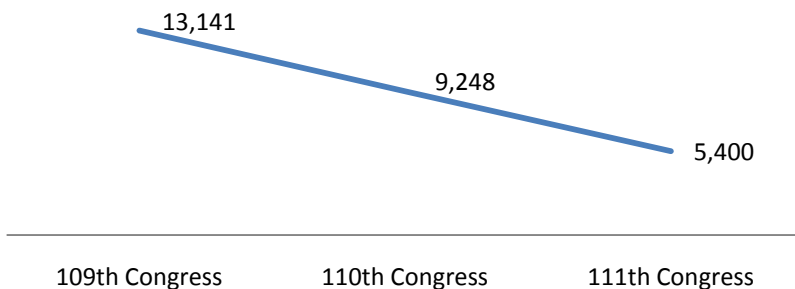
## OVERVIEW

The Congressional Accountability Act (CAA) requires the General Counsel of the Office of Compliance (OOC) to inspect legislative branch facilities for compliance with occupational safety and health standards at least once each Congress. Whereas the OOC is responsible for inspecting facilities and programs and identifying hazards, the employing offices, principally the Architect of the Capitol (AOC), are charged with abating those hazards. The General Counsel reports the results of these inspections to the Speaker of the House, President *pro tempore* of the Senate and employing offices responsible for correcting violations. This Report documents the results of inspections conducted during the 111<sup>th</sup> Congress. Individual hazard findings for each facility are included in Appendix A; highlights for each facility appear in Appendix B.

### *The Good News*

Since the OOC began its wall-to-wall biennial inspections in the 109<sup>th</sup> Congress, the number of hazards to which employees in Congressional workplaces are exposed has been reduced significantly. During the 111<sup>th</sup> Congress inspections, this trend accelerated: the number of hazards in legislative branch worksites dropped by over 40% when compared to the 110<sup>th</sup> Congress.

### Findings Identified per Congress



The number of higher-risk hazards<sup>19</sup> declined as well, from 2,796 in the 109<sup>th</sup> Congress to 2,317 in the 110<sup>th</sup> Congress to 1,336 in the 111<sup>th</sup>. As a result, Congressional workers are substantially less likely to incur serious injury or illness from such hazards than they were before the passage of the Act in 1995.

Offices and administrative spaces are safer, particularly Member Offices. By conducting pre-inspections in advance of OOC inspections, Senate and House Employment Counsel, along with the Architect of the Capitol and the Chief Administrative Officer of the House, successfully worked to make offices safe for Members, staff and visitors: The average number of hazards

<sup>19</sup> The OOC uses a Risk Assessment Code (RAC) system to classify hazards. RACs are classified in descending order of severity and likelihood of occurrence, with RAC I representing the potential for death or extremely serious injury and/or a very high likelihood of occurrence, and RAC IV indicating the potential for less serious injury and/or a lower likelihood of occurrence. As used in the text, “higher risk” refers to hazards rated RAC I or II. For further explanation, please see Appendix F of this Report.

identified in Member offices dropped from 8.16 during the 109<sup>th</sup> Congress inspection to 1.75 in the 111<sup>th</sup> Congress. There has been a similar reduction in the number of hazards identified in other administrative, office and meeting spaces throughout the legislative branch. Moreover, 154 Members maintained hazard-free offices during the 111<sup>th</sup> Congress and were rewarded with the OOC/National Safety Council's "Safe Office Award." More than four times as many Awards were presented during the 111<sup>th</sup> Congress as during the 110<sup>th</sup>, when 37 Members received such recognition. Twenty times as many Members won Awards in the 111<sup>th</sup> Congress as in 2006, when only seven Members received Awards in what was the program's first year. Unfortunately, as discussed below, a lack of resources has required the OOC to discontinue its inspections of these offices and the Safe Office Award Program during the 112<sup>th</sup> Congress. For this reason it is important that these offices conduct self-inspections.<sup>20</sup>

Employees are filing fewer Requests for Inspection with the OOC as well – still another indicator of improved safety and health conditions in the workplace. Between October 1, 2008 and September 30, 2010, we received a total of 16 Requests for Inspection – a substantial drop from the 33 new Requests that were filed during the previous two fiscal years.<sup>21</sup> This reduction may in part be due to our increased inspection presence in the legislative branch workplace, which has encouraged employees and employers to mitigate hazards earlier and more efficiently without having to file a request with our office. In addition, some employing offices have conducted pre-inspections in advance of scheduled OGC inspections. Whether this trend will continue is not clear given that the OOC is no longer able to conduct inspections of most offices and administrative spaces. On the other hand, the recent cases we have investigated have tended to be more complicated and extensive than in prior years, which means that the reduction in the number of requests has not resulted in any less staff time being expended to investigate these cases.

### ***The Bad News***

While there has been a reduction in the number of higher risk hazards, such conditions persist, endangering legislative branch employees and visitors. These include the improper use and storage of hazardous chemicals, work performed without required fall protection, inadequate protections against unauthorized entry into permit-required confined spaces, inadequate maintenance and/or inspection of boilers and high-pressure vessels, and a host of electrical hazards. Moreover, new higher-risk hazards continue to be identified during our biennial inspections.

## **CONTINUING CHALLENGES**

### ***Fire Safety and Emergency Evacuation on Capitol Hill***

Some of the most serious and longstanding hazards in the legislative branch consist of fire safety and emergency evacuation violations that the OGC identified over a decade ago. In 2000 and 2001, the OGC issued a series of citations requiring abatement of interior egress routes that do

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<sup>20</sup> *Fast Facts* on the OOC website provide guidance to employing offices in conducting OSH and ADA public access self-inspections of office and other administrative spaces. See, e.g., [www.compliance.gov/publications/fast-facts](http://www.compliance.gov/publications/fast-facts) (computer workstations, housekeeping, space heaters, extension cords, ADA office checklist, etc.).

<sup>21</sup> The OOC tracks Requester cases on a fiscal year basis, which does not coincide with the duration of a Congress. The 111th Congress ran from January 2009 through December 2010. The Requester cases enumerated in the text consist of those filed with the OOC in FY 2009 and FY 2010.

not provide protection against fire, smoke and airborne toxins to building occupants when they are evacuating during a fire or other emergency (“unprotected exit routes”); exits that were insufficient in number and size to allow all occupants to evacuate the building expeditiously (“insufficient egress capacity”); excessive travel distances to reach protected exit pathways used in an evacuation (“excessive exit access travel distances”); lack of properly rated fire doors (insufficient level or duration of protection); and other life safety issues in the three House Office Buildings, the Russell Senate Office Building, the Capitol, and the Adams and Jefferson buildings of the Library of Congress. We have repeatedly reported these violations in previous General Counsel biennial OSH reports. As noted in the General Counsel’s *Report on the 110<sup>th</sup> Congress Biennial Occupational Safety & Health Inspections* at 7-9, these citations remained substantially unabated although the statutory period for abating the hazards had long since expired. Fire and life safety issues are significant given the number of fires, including the incidence of fires of suspicious/incendiary origin,<sup>22</sup> that have occurred in legislative branch facilities on Capitol Hill. See U.S. Senate, Subcommittee of the Committee on Appropriations, Hearing, May 7, 2009, Questions submitted by Senator Ben Nelson to Tamara E. Chrisler, Executive Director, Office of Compliance, p. 50, et seq. and Appendix A, Identified Capitol Complex Fires; 1985 to Present, reproduced in App. D hereto.

In May 2009, staff on the Legislative Branch Subcommittee of the Senate Appropriations Committee requested that the AOC and OOC work together to develop a fire safety citation prioritization process. The Architect and the OOC agreed upon such a process based upon the NFPA’s 101-A Fire Risk Index. We concurred with the AOC that funding priority should address, in the following order, the abatement of unprotected stairwells and egress deficiencies in the Capitol, the Russell Senate Office Building, and the Cannon House Office Building, followed by hazards identified in the Jefferson, Adams, and Madison buildings. These recommendations were presented to the Subcommittee’s staff in early 2010.

During the 111<sup>th</sup> Congress, our office continued to work closely with the AOC to achieve fire hazard and emergency evacuation abatement throughout the Campus. In its FY 2011 and FY 2012 budget requests, the Architect identified abatement of many of these fire and emergency evacuation hazards as his top priority.

The three complementary components of modern fire safety engineering consist of communication, suppression and compartmentation. The communication component consists of alarm, annunciator, and radio communication systems that immediately notify occupants of the need to evacuate, quickly alert firefighters of the need for assistance, and provide first responders and firefighters with the communication capability to carry out their rescue and fire-suppression missions. The suppression component consists of devices such as automatic sprinklers, smoke suppression ventilators, fire extinguishers, and standpipes for hoses that can facilitate suppression of the fire before it becomes uncontrollable. The compartmentation component partitions a building into distinct zones and isolates a fire and its poisonous gases so that occupants can safely evacuate the building through protected pathways, automatic fire suppression devices can control the fire and gases more effectively, and first responders and firefighters can safely enter and exit the building and set up staging areas within protected areas of the building to facilitate victim rescue and firefighting operations.

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<sup>22</sup> Blue Ribbon Panel, *Final Report*, p. 237.

## **Improvements and Challenges Involving Fire Safety Communication Systems**

As described above, the communication component of fire safety involves systems for quickly informing building occupants of the need to evacuate and notifying firefighters of the need for assistance, as well as providing first responders and firefighters with the ability to communicate with and among each other so that they can carry out their security, rescue, and firefighting operations. Fire safety communication systems have improved throughout the campus and will continue to improve if current plans are fully funded. The AOC is working on providing full smoke detector coverage in all legislative branch buildings. The Capitol Building now has nearly 100% coverage. The House Office Buildings are at or near full coverage. The Senate Office Buildings and the Library of Congress Buildings are at or close to 90% coverage and are working toward 100% coverage. Fire alarm upgrades are being planned across the Capitol Hill complex. Planned and ongoing upgrades to the radio communication systems will allow first responders and firefighters to communicate within the buildings.

## **Improvements and Challenges Involving Fire Suppression Systems**

The General Counsel continues to endorse the AOC's effort to provide building-wide sprinkler coverage for all legislative branch buildings. At this time, we understand that the House Office Buildings are at or near 100% coverage. The Senate Office Buildings and the Library of Congress are working towards 100% coverage by automatic sprinklers. The Capitol still requires significant additions to its sprinkler system. Congress has approved funding for the last phase of a project to upgrade the Jefferson Building so that it will be considered a fully-sprinklered building.

## **Improvements and Challenges Involving Compartmentation**

The compartmentation component of fire safety involves partitioning buildings into distinct zones so that occupants can safely evacuate the building through protected pathways, automatic fire suppression devices can control the fire, and first responders and firefighters can safely enter and exit the building and setup staging areas within protected areas of the building to facilitate victim rescue and firefighting operations. In the words of one noted fire safety expert:

It's easy to see and understand what sprinklers and smoke alarms do. But it's compartmentation which saves lives and buildings. Obviously, it's vital to preserve life, but it is also important to minimize damage to property. Compartmentation allows occupants to leave a burning building and allows firefighters to get in, tackle the fire, and leave safely.

David Sugden, *FIRE SAFETY - Beware of buildings that flout the law on fire protection - Built-in fire protection could save your life and business, but you need to know what to look for*, 16 FACILITIES MANAGEMENT 4 (2009), p. 19.

While substantial progress has been made in improving many emergency evacuation deficiencies in the legislative branch,<sup>23</sup> in some facilities, serious hazards remain uncorrected: insufficient emergency egress capacity given the number of building occupants, unenclosed escape routes that do not protect occupants from smoke and poisonous gases in the event of a fire or other

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<sup>23</sup> See Committee on Appropriations, House of Representatives, Subcommittee on Legislative Branch, Fiscal Year 2012 Legislative Branch Appropriations Requests, Part 1, Architect of the Capitol Budget Request at 395-400; Letter, Stephen T. Ayers, Architect of the Capitol, September 27, 2011 to OOC General Counsel Eveleth, ("Architect's Letter"), *GC Report*, Appendix C.

emergency that releases toxins into the air, and excessive exit access travel distances for persons seeking to escape from the building. That said, as discussed below, Congress has approved requests by the Architect for funding of projects that will lead to full abatement of the egress hazards existing in the House, the Capitol, and the Library of Congress.

### **The Continuing Threat to Occupants and Visitors in a Post-9/11 World**

Some legislative branch stakeholders have questioned whether emergency evacuation improvements are necessary, given that many Capitol Hill buildings are made of marble and are protected by sprinklers. However, in most cases, fire deaths are not caused by high temperatures and burns but by the inhalation of smoke and poisonous gases as may occur even in a fully-sprinklered marble building.<sup>24</sup> We applaud the Architect and the Congress for their efforts to achieve comprehensive sprinkler, smoke detection and enhanced alarm systems coverage. Completing the installation of these systems in all legislative branch buildings will improve suppression of fire and mitigate life safety perils considerably.

But these measures are no substitute for emergency escape routes that are both (a) protected from perils like smoke and airborne toxins and (b) ensure that building occupants can evacuate in a protected, timely and orderly fashion. As the NFPA has recognized, “under no condition can manual or automatic fire suppression be accepted as a substitute for the provision and maintenance of a proper means of egress.” NFPA, *Fire Protection Handbook* at 4-65 (2003).<sup>25</sup>

The need for emergency evacuation improvements is increasingly critical given the dangers we now recognize in a post-9/11 world. As the 9/11 Commission found, buildings on Capitol Hill are prime targets for terrorism. Nat’l Comm’n on Terrorist Attacks on the United States, *The 9/11 Commission Report* (New York: W.W. Norton, 2004). “The U.S. Capitol is still faced with numerous threats, including a vehicle-borne explosive attack, terrorist-controlled aircraft attack, armed attacks on the Capitol Complex, suicide bombers or positioned explosive attacks, chemical, biological and/or radiological attacks, and attacks on Members and staff as well as ordinary crime.” Stmt. of Phillip D. Morse, Sr., Chief of Police, U.S. Capitol Police, before the U.S. House of Representatives Subcommittee on Legislative Branch Appropriations (March 8, 2007 at 197).

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<sup>24</sup> Combustion of materials commonly found in office buildings, such as furniture, carpeting, paper, and plastics creates airborne toxins and high temperatures. Carbon monoxide, a common combustion product of almost any fire, replaces oxygen in the bloodstream, causing drowsiness, sluggishness and eventually death. Burning plastics such as PVC produces hydrogen cyanide which can interfere with cellular respiration. Vinyl materials produce phosgene which causes death at very low exposure levels. Because this toxin is heavier than air, victims crawling out of an area can soon be overcome by this gas. Soot from incomplete combustion of carbon can irritate the eyes or digestive system or damage the respiratory system. David A. Purser, *Toxicity Assessment of Combustion Products*, SFPE HANDBOOK OF FIRE PROTECTION ENGINEERING (Nat’l Fire Protection Ass’n, 3<sup>rd</sup> ed. 2002), pp. 2-83 – 2-171; Robert W. Fitzgerald, *Human Reaction to Products of Combustion*, BUILDING FIRE PERFORMANCE ANALYSIS (John Wiley & Sons, 2004), pp. 370-371; Arthur E. Cote, editor, FIRE PROTECTION HANDBOOK (Nat’l Fire Protection Ass’n, 18<sup>th</sup> ed. 1997), pp. 4-10--4-20; Arthur E. Cote, editor, FIRE PROTECTION HANDBOOK (Nat’l Fire Protection Ass’n, 19<sup>th</sup> ed. 2003), pp. 8-5--8-27; R.G. Gann, V. Babrauskas, and R.D. Peacock, *Fire Conditions For Smoke Toxicity Measurement*, FIRE AND MATERIALS, Vol. 18, No. 3 (May-June 1994), pp. 193-199; J.R. Hall, *Burns, Toxic Gases, and Other Fire-Like Hazards in Non-Fire Situations* (Nat’l Fire Protection Ass’n, Feb. 2004); J. Flynn, *U.S. Structure Fires in Office Properties*, (Nat’l Fire Protection Ass’n, May, 2007); J. L. Bryan, *Human Behavior in Fire*, FIRE PROTECTION ENGINEERING (No. 16, Fall 2002), pp. 6-14; *NIOSH Pocket Guide To Chemical Hazards*, DHHS (NIOSH) Publication No. 2005-149, September 2007, p. 253.

<sup>25</sup> See Appendix D, Responses to Questions for the Record from OOC Executive Director Tamara E. Chrisler to Sen. Ben Nelson, Chair, U.S. Senate Appropriations Subcommittee on the Legislative Branch (May 29, 2009) at 8-9.

Terrorism is not a theoretical threat to the Capitol Complex. Both the anthrax attack of October 2001 and the ricin incident discovered in February 2004 were directed at Senators and their staff in Senate Office Buildings. As recently as September 2011, an American citizen was arrested and charged with plotting to attack the Capitol and the Pentagon using remote-controlled aircraft filled with plastic explosives. Abby Goodnough, *Man Is Held in a Plan to Bomb Washington*, N.Y. Times, September 29, 2011, at A12.

Terrorist attacks are deliberately designed to inflict maximum structural damage and personal injury. Both of these possibilities must be considered when assessing the risk of fire and other potential threats to life safety in Capitol Hill buildings. Improving emergency evacuation conditions allows building occupants to avoid or minimize their potential exposure to injuries during this type of emergency because they are able to exit the zone of danger as quickly as possible. In some instances, the danger posed by an emergency will require occupants to shelter in place. If the building has no areas that are protected from the spread of smoke or other airborne toxins, sheltering in place is not a viable option for the building's occupants. In contrast, if a building has protected stairwells or is compartmented into separate zones to limit the spread of fire, smoke, poisonous gases and other airborne toxins, occupants can quickly enter a protected zone providing egress from the building or, if so ordered by the Capitol Police, can seek shelter in a safe area protected from the spread of toxins, smoke or other airborne hazards. Compartmentation can also help to contain many forms of toxins that are deployed deliberately as part of an attack, allowing occupants more time to safely evacuate the building using a pathway isolated from the toxins and providing first responders and response teams with protected areas within the building to stage victim and toxin removal efforts .

The same is true in the case of intentionally set multiple fires. Incendiary fires that start in locations with ample fuel (such as paper or wood products) or in locations blocked from sprinkler coverage (such as under desks) can overwhelm sprinklers and rapidly spread fire, smoke and poisonous gases.<sup>26</sup> Occupants who are victims of such an attack may find that further dangers await them outside of the building. Occupants in a building with protected zones can seek shelter within a protected zone inside the building if so ordered by the Capitol Police, rather than having to evacuate to the outside with its attendant security concerns. Again, such measures could provide substantial protection in a variety of emergencies, be they accidental or intentional.

### **Employing Offices Must Take into Account Known Risks Posed by Terrorism**

At least one legislative branch stakeholder has suggested that the OSHAct does not require employers to consider the risks posed by terrorism because in 2003 and 2004 OSHA issued interpretive letters suggesting that unpredictable terrorist attacks are not “recognized hazards” within the meaning of the General Duty Clause of the OSHAct.<sup>27</sup> OSHA, however, has not

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<sup>26</sup> See John R. Hall, *U.S. Experience With Sprinklers And Other Automatic Fire Extinguishing Equipment* (NFPA, February 2010), p. 42 (“A fire with a sufficient number of different points of origin can overwhelm any sprinkler system. . . . Multiple points of origin can occur deliberately in an arson fire, but they can occur unintentionally or naturally, as when an outside fire spreads to numerous entry points in and on a building.”).

<sup>27</sup> See Letter, Office of Senate Chief Counsel for Employment to OOC General Counsel Eveleth, February 27, 2012 at 3 (included in App. C). The General Duty Clause of the OSHAct states that “each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.” OSHAct Sec. 5(a)(1), 29 U.S.C. § 654(a)(1). Under CAA § 215(a)(1), employing offices are required to “comply with the provisions of Section 5,”

issued guidance regarding the situation on Capitol Hill -- where law enforcement officials have specifically identified the facilities as being potential targets for specific terrorist acts. The recognition of these hazards by law enforcement officials and employing offices creates a duty to protect employees from these hazards under the General Duty Clause. See, e.g., John J. Marchulat, *Planning for terrorism: how far should an employer go?*, RISK MANAGEMENT, December 1, 2006; *OSHA'S FIELD OPERATIONS MANUAL* (November 9, 2009) at 4-18 (instructing inspectors who are investigating a potential General Duty Clause violation to review documents, memoranda and policies issued by employer for evidence that the employer recognized the hazard). Moreover, the OSHA standards do cover events that can include terrorism attacks. Under the OSHA standards, employing offices on the Capitol Hill campus are required to have emergency action plans.<sup>28</sup>

OSHA's written guidance on emergency planning suggests that employers should work with law enforcement officials to assess the risks of possible terrorist release of toxic substances in the workplace and include provisions in the emergency action plan that address these emergencies. See, e.g., *Evacuation Planning Matrix* (May 8, 2003);<sup>29</sup> *Emergency Preparedness and Response - Chemical Terrorism*;<sup>30</sup> *Evacuation Plans and Procedure etool*;<sup>31</sup> and *OSHA/NIOSH Interim Guidance: Chemical - Biological - Radiological - Nuclear (CBRN): Personal Protective Equipment Selection Matrix for Emergency Responders* (April 2005). Obviously, if the emergency action plan uses evacuation or shelter-in-place as potential responses to a fire, the release of toxic substances (either intentional or accidental) or other emergency, the employer's facility must provide exit pathways and shelter-in-place areas that will provide protection from these hazards.

### **Fire and Life Safety Citations – U.S. Capitol, House Office Buildings, and Library of Congress Buildings**

Substantial progress has been made in addressing serious, longstanding fire and life safety hazards by making significant fire protection/life safety improvements in Congressional buildings across campus. See *AOC Significant Accomplishments in Occupational Safety and Health (OSH) 111<sup>th</sup> Congress*, Sections A and B, Tables 1 and 2a-2i, Architect's Letter, September 27, 2011, Appendix C hereto.

***The Capitol*** – Citation 16 for the Capitol was issued in 2000 because, at the time, the Capitol lacked any exit stairwells that were protected against fire, smoke, or airborne toxins. The building also has an egress capacity deficiency and has excessive travel distances to protected areas. The deficiencies in this building are being addressed through a series of short-term initiatives as well as longer-term projects that will be implemented as part of the U.S. Capitol Master Plan. The short-term initiatives that have been completed include adding an egress door at the West Brumidi Corridor, implementing a fourth floor egress corridor, adding two additional

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which in turn requires that they “comply with occupational safety and health standards promulgated under [the OSHA Act]” in addition to the General Duty Clause. OSHA Act Sec. 5(a)(2), 29 U.S.C. § 654(a)(2).

<sup>28</sup> The OSHA standards require employers to have emergency action plans if certain circumstances exist. Most notably for the facilities on Capitol Hill, employees are required to evacuate facilities during emergencies and alarm activation is delayed in each of these facilities. When either of these circumstances exists (as well as several others), an employer is required to have an emergency action plan. See, e.g., 29 C.F.R. §§ 1910.157(b), 1910.164(e)(3) & 1910.38.

<sup>29</sup> <http://www.osha.gov/dep/evacmatrix/index.html>.

<sup>30</sup> [http://www.osha.gov/SLTC/emergencypreparedness/chemical\\_sub.html](http://www.osha.gov/SLTC/emergencypreparedness/chemical_sub.html).

<sup>31</sup> <http://www.osha.gov/SLTC/etools/evacuation/eap.html>.

egress doors on the West Terrace, and replacing fire doors on the S9 and H9 stairwells. The OOC has been advised that the AOC continues to make significant progress towards a building-wide fire protection strategy as part of the longer-term U.S. Capitol Master Plan that the OOC believes would result in a reasonable egress system within the building and the resolution of Citation 16. However, other key measures designed to correct the building's exit capacity deficit, reduce excessive exit travel distances, and offset the dangers posed by unenclosed stairways have yet to receive full Congressional authorization.

The primary issue is the AOC's proposal to divide the Capitol into three fire zones by installing self-closing fire doors on each level of the building. To date, the AOC has been granted the authority to install such doors only in the Capitol basement and on the building's third and fourth floors. This proposed action would create additional (horizontal)<sup>32</sup> exits, substantially reduce exit travel distances on the third floors of the House and Senate chambers, and serve a vital smoke control function that would lessen the impact of the unenclosed stairways. The AOC has informed the OOC that the smoke purge system it has proposed to protect the House and Senate Grand Stairways requires such fire zoning.

The AOC has also advised that the barriers needed to create the fire zones, which would remain open unless the building's fire alarms were activated, can be designed and installed without adversely affecting historic features of the Capitol. The design for the smoke control system at the Grand Stairwells was funded in FY 2009 and has been completed. The designs for the egress improvements at the Old Senate and Old Supreme Court Chambers have also been completed. The design for West Grand Stairwell enclosure has been completed and construction has been funded pending approval by oversight committees. The AOC anticipates that the addressable fire alarm system will be constructed during FY 2014.

***The House***<sup>33</sup> - The OOC is greatly pleased by the progress achieved in the House Office Buildings toward final abatement of three citations issued in 2000. The citation for the Rayburn House Office Building (Citation 20-1) for lack of proper fire doors, panic hardware and closing mechanisms was abated in 2009. In January 2012, the AOC submitted a formal notification (NOCA) to the OOC indicating that the citation for the Longworth House Office Building for unenclosed exit stairways (Citation 17) has been abated. Our formal review of this NOCA found that the successful integration of the self-closing mechanisms on the cross-corridor doors with the building's fire alarm system has not only abated Citation 17 in its entirety, but did so in a manner that fully preserved the historic features of the building. Citation 17 is now closed.

With respect to the Cannon House Office Building (Citation 18), the AOC plans to divide the building into fire zones and design barriers between each zone capable of serving as horizontal exits. When completed in late 2013 or early 2014, this project will protect occupants against fire, smoke and airborne toxins that pose an undue danger to their lives and safety during the

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<sup>32</sup> A "horizontal exit" protects building occupants during a fire by erecting fireproof barriers between so-called "fire zones" inside the building. During a fire emergency, occupants of the zone where the fire is burning retreat for protection to a fire and smoke free zone within the facility. A "vertical exit," by contrast, consists of a safe area such as a protected stairway that occupants can use to evacuate a burning building and reach the outdoors.

<sup>33</sup> See Architect's Letter, Table 1 (September 27, 2011), App. C; Additional information from *House Office Building Fire Safety Citation Update* (September 14, 2011).



time necessary to escape in case of fire or other emergency. Congress recently approved funding in FY 2012 for the Architect's request.<sup>34</sup>

***The Senate***<sup>35</sup> - Fire safety improvements continue to be made in the Senate Office Buildings. Improvements in the Hart Senate Office Building include installation of a new fire alarm system (99% complete); extension of sprinkler coverage to the attic; and installation of a new fire pump and test header. In the Dirksen Senate Office Building improvements include installation of a new emergency generator, dual fire pumps and test headers, and extension of sprinkler protection in the sub-basement. Substantial improvements implemented in the Russell Senate Office Building (RSOB) include the following that were recommended by the OOC:<sup>36</sup> keeping attic fire doors closed; implementation of an acceptance testing program for the fire protection systems; installation of fire barriers at the connections to the tunnels; proper installation of the glass doors leading to the underground subway; performance of regular testing and maintenance of the sprinkler system; provision of guidance to occupants regarding maximum storage height to prevent sprinkler obstruction; installation of egress signage and emergency evacuation plan maps; separation of multiple storage rooms under stair landings with fire-rated construction; institution of a program for regular testing of the emergency generator; changing door swing on Committee rooms to comply with the Life Safety Code; installation of a dedicated emergency generator and emergency lighting; and replacement of exterior door hardware with panic hardware incorporating delayed egress. Other improvements implemented in the RSOB include: installation of emergency backup power to the fire pump; installation of a new public address system; extending the annunciator system throughout the RSOB attic; completion of design for the new addressable fire alarm system; extension of sprinkler coverage to the attic; and development of new procedures for hot work permits, fire watches, contractor training, fire alarm panel checking, and space heater use.

However, because of existing emergency evacuation hazards in the RSOB, the OOC General Counsel issued Citation 19 against the Architect in March 2000. The RSOB is the only facility on Capitol Hill with no protected means of egress for Members, staff, employees, and visitors to use to evacuate the building safely in the event of an emergency. The egress capacity of the RSOB is also inadequate and the evacuation travel distances to protected areas outside of the building are excessive. These fire and life safety code violations increase the chance that occupants of the building may be injured or killed by the airborne toxins produced by fire before they can escape from the building. As discussed in greater detail below, the continuing lack of any exit pathways with passive protection for occupants of the RSOB remains a very serious concern to this Office.

***The Library of Congress***<sup>37</sup> – In March 2001, the OOC issued six citations for hazards in the primary Library of Congress buildings: the John Adams Building, the Thomas Jefferson Building, and the James Madison Memorial Building. These hazards included: inadequate fire and smoke resistance in the exit enclosures for all three buildings due to a failure to fully repair

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<sup>34</sup> P.L. 112-74 provides for funding of \$4,229,000 for the project known as the "Alternative Life Approach – CHOB." See Text of the Joint Statement of Managers, Conference Report, HR. 2055.

<sup>35</sup> See Architect's Letter, Table 1 (September 27, 2011), App. C.

<sup>36</sup> The AOC acknowledged these OOC recommendations in its *OOC Briefing: Fire and Life Safety Improvements, Senate Office Buildings* (June 7, 2011). By letter dated January 22, 2008, the OOC made twelve recommendations in addition to SALSA that were added to the RFMA that was eventually approved by the OOC.

<sup>37</sup> See Architect's Letter, Table 1 (September 27, 2011), App. C. Additional information from *Library Buildings and Grounds: Office of Compliance Citation Program* (October 4, 2011).

penetrations made into the fire-rated enclosure materials; fire doors in all three buildings that were rendered ineffective because they were being blocked open; improperly maintained and operating Halon extinguishing systems in all three buildings; unprotected openings and inadequate fire resistance in the book conveyor system connecting all three buildings; lack of energy isolating devices in the book conveyor system affecting all three buildings; unprotected vertical openings and penetrations between tiers of books in both the Jefferson and Adams buildings; unenclosed exit stairwells in the Adams and Jefferson buildings that were not effectively protected against fire, smoke or airborne toxins; and fire doors in the Jefferson Building that were ineffective because they could not close properly.

The AOC has abated some of these hazards: penetrations into fire-resistant materials have been filled; fire doors that were blocked open were placed on magnetic hold-open devices tied into the fire alarm so that they close when the alarm is activated; the Halon extinguishing systems have been removed and replaced with FM-200 systems; electrical equipment was added to the book conveyor system to provide the necessary isolation; and vertical openings and penetrations between the tiers of books staffs have been sealed.

With respect to the open citations, the AOC has initiated projects in all three buildings. The one project affecting all three buildings is the removal of the book conveyor system, including making all necessary infrastructure repairs. The LOC and AOC have determined that this is the best solution because the system is now inoperable, irreparable, and obsolete. The demolition and infrastructure repair design is currently underway and was scheduled to be completed at the end of February 2012. If funded in FY 2013, the AOC anticipates that this project will be completed by the end of 2015.

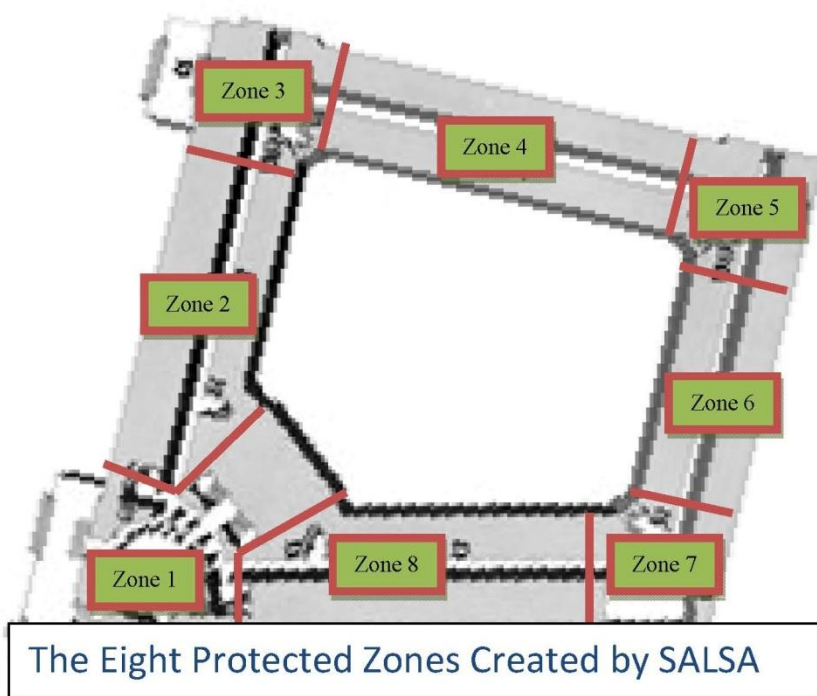
Ongoing and pending projects that will improve egress conditions in the Adams Building include: installing new exits from the north side of the building; extending a stairway to the cellar to provide a second exit; upgrading the south egress exit by installing cross-corridor doors and adjusting the existing doors so that they swing in the direction of exit travel; upgrading the ground floor egress components by widening the stair discharge doors and replacing the revolving doors with swinging doors; pinning the brass doors and installing ornamental glass doors in the east and west ground floor and south first floor lobbies; isolating the restrooms and storerooms located off the four corner stairways through the use of fire doors; providing a second means of egress from the shops and storage areas on the cellar floor by placing a tunnel under the driving lane in the parking garage; and pressurizing the exit stairwells and connecting the north corner stairways with the new north exits.

Ongoing and pending projects that will improve egress conditions in the Jefferson Building include: adding exit stairways in the northeast stacks, in the southwest courtyard, and the southeast stacks; adding second, remote exits to spaces with only one exit; adding smoke control to the Main Reading Room and Great Hall; and replacing all fire doors that do not close properly.

We have concluded that successfully completing these projects will abate the open citations in the Library of Congress buildings. Congress has provided some funding for these projects as part of FY 2012 appropriations bill. The OOC will be working with stakeholders to develop reasonable additional measures to reduce fire-related risks until the completion of the proposed abatement actions.

## Russell Senate Office Building – Compartmentation Essential to Assure Safe Evacuation of Occupants and Visitors and Limit Damage to the Building and its Contents in the Event of a Fire

As noted earlier, the OOC issued Citation 19 because all exit stairwells in the RSOB “are unprotected against fire, smoke or toxic fumes, posing an undue danger to the lives of occupants during the period of time necessary for escape in case of fire or other emergency.”<sup>38</sup> The citation specifically describes how the unenclosed stairwells do not comply with 29 C.F.R. § 1910.36(b)(2) and NFPA 101-1997 *Life Safety Code* Sections 2-9; 5-1.3.1; 6-2.4.1; and 27-3.1.1.<sup>39</sup> The citation alleges that these conditions are “violations of Section 215 of the Congressional Accountability Act (2 U.S.C. § 1341) which requires compliance with Section 5 of the Occupational Safety and Health Act. (29 U.S.C. § 654).”<sup>40</sup> Citation 19 recognizes that enclosing stairwells was not necessarily the right solution for the RSOB. In fact, the abatement specified by the citation was for the Architect “to evaluate alternatives to reduce the danger posed by the lack of any protected exit stairwells and develop plan to reduce [this] danger taking into account costs, benefits, and preservation of historic features.”<sup>41</sup>



The citation required that the Architect submit to the OOC a plan to reduce the danger posed by the unenclosed stairwells by January 30, 2000 and to complete design and installation by June 2002.<sup>42</sup> The OOC General Counsel subsequently rejected the initial plan submitted by the Architect because it lacked sufficient detail and suggested that the proposed abatement measures would take nearly twenty years to complete.<sup>43</sup>

<sup>38</sup> Citation 19, p. 1.

<sup>39</sup> Citation 19, pp. 1-2.

<sup>40</sup> Citation 19, p. 1.

<sup>41</sup> Citation 19, p. 2. The abatement also required that the Architect submit the plan by January 30, 2001, with design and installation to be completed by June 2002.

<sup>42</sup> Citation 19, p. 2.

<sup>43</sup> On September 19, 2006, the AOC submitted to the OOC General Counsel a Request for Modification of Abatement (“RFMA”) dated August 16, 2006. In his letter of May 1, 2007, the General Counsel informed the AOC that the RFMA was rejected because it failed to justify completion of abatement until 2019, 19 years after issuance of the citation. He offered to reconsider the AOC’s RFMA if it provided additional information necessary to evaluate its request.

After being notified that the OOC General Counsel was contemplating additional enforcement action,<sup>44</sup> the Architect developed a detailed plan known as the Senate Alternative Life Safety Approach (“SALSA”) to abate the hazards posed by the unprotected exit pathways, insufficient emergency exit capacity, and excessive exit travel distances, all conditions that fail to comply with the life safety objectives. SALSA addresses the emergency evacuation deficiencies and historicity issues by creating protected horizontal exit pathways through the use of solid cross-corridor doors. These doors lie flush against the corridor walls and only close when an evacuation alarm is activated. Because the doors are located in the corridors, they do not encroach on office space and can be installed without relocating or disturbing Senate offices. When closed, the doors create separate zones within the building that isolate fire and airborne toxins within one zone; consequently, Senators, staff, employees and visitors are able to quickly escape the zone where the danger is located by moving into an adjacent zone that is protected by the doors against the rapid spread of fire and airborne toxins.<sup>45</sup> The Architect’s historian found



**Longworth Cross-Corridor Doors in Open Position**

that this approach would allow the historically significant stairwells to remain unenclosed and that the cross-corridor doors could be installed in such a way as to maintain the historical integrity of the building. SALSA addresses all of the major egress deficiencies by increasing the number of exits to protected areas, reducing travel distances to protected areas, and providing protected exit pathways.<sup>46</sup> The Architect submitted the plan to the OGC in February 2008; the General Counsel approved it in March 2008.

SALSA proposes a method of compartmentation. As noted previously, during 2011, the SALSA method of compartmentation was successfully completed in the Longworth House Office Building to address the hazards posed by that building’s unenclosed stairwells. The photo

above illustrates the cross-corridor doors used in the Longworth Building to create the protected zones.

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<sup>44</sup> When the AOC failed to provide the information requested by the OOC General Counsel in his letter dated March 1, 2007, the General Counsel issued a letter on May 18, 2007 indicating that he “would be forced to consider other steps needed to assure compliance with the unabated citation” unless a revised RFMA was submitted no later than May 31, 2007.

<sup>45</sup> SALSA also allows all of the occupants of the RSOB to shelter in place within a protected zone. While the RSOB currently has certain committee rooms prominently marked as relocation areas, these rooms cannot shelter everyone in the building and are not fully protected against smoke and gas infiltration.

<sup>46</sup> The number of exits is increased because each set of cross-corridor doors can be counted as an exit into a protected area. For example, under SALSA, at each of the building corners there would be two horizontal exits in addition to the vertical exit provided by the staircase and exterior door. While there may still be congestion at the staircases during an evacuation, which will delay egress from the building, under SALSA, the occupants would be waiting their turn in a protected zone. Egress time is decreased under SALSA because the time it takes to reach a protected zone is being measured rather than the time it takes to exit from the building.

The SALSA method of compartmentation increases life safety protection in the RSOB by shortening the time it takes occupants and visitors to reach safety. By providing more exits, shorter travel distances and protected exit pathways, SALSA allows people more quickly to reach a place protected from fire, smoke and toxic gases in less time. During a fire, the length of time before conditions become untenable can be remarkably short when stairways are unenclosed. For example, the fire modeling study performed on the East Grand Stair in the U.S. Capitol showed that within 1.7 minutes, smoke conditions in the stairway were untenable for visibility in one of the designed fire scenarios (Scenario 4 involving a medium-growing fire).<sup>47</sup> In another scenario, it took only 2.5 minutes for smoke conditions in the stairway to become untenable for visibility (Scenario 1 involving a fast-growing fire at a different location)<sup>48</sup> In a general study of the effects of smoke on visibility, only 2 minutes after the fire's ignition, a test subject was unable to identify a stairway less than two feet away.<sup>49</sup>

In addition to providing additional life safety protection, compartmentation provides additional protection for the building itself, as well as its contents. As noted earlier, one of the primary benefits of compartmentation is that it allows firefighters to safely enter the building, set up in a protected area, and fight the fire. This feature is critical in a building such as the RSOB where ladder truck access to the building is limited.<sup>50</sup> A fire in the RSOB's attic poses a substantial risk of roof collapse.<sup>51</sup> Firefighters will not enter an area where such a risk exists and would have to fight such a fire from the building's exterior.<sup>52</sup> This type of firefighting can be less effective because the water meant to extinguish the fire cannot be directed at the precise location of the fire. This could mean that the fire would not be fully extinguished until after the building had collapsed. Without compartmentation, the chance that the RSOB will survive a significant fire without substantial damage to the building and its contents is therefore greatly diminished.

Another benefit to compartmentation is redundancy. While properly maintained sprinkler systems can be a reliable method of active fire suppression, as with all active fire safety systems, at times sprinkler systems are inoperable or ineffective. This can occur when service or maintenance is necessary or when water or electrical service interruptions occur (either accidentally or intentionally).<sup>53</sup> The RSOB system relies upon the municipal water system and an electrically powered pump that is not currently connected to an emergency generator. Without compartmentation, the building will be vulnerable whenever the sprinkler system is inoperable. In contrast, because compartmentation is a "passive" system that always functions, such a system will protect the RSOB, its contents and its occupants from fire, smoke, and airborne toxins even when the sprinkler system is not functioning or when the sprinkler system

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<sup>47</sup> *United States Capitol House East Grand Stair Modeling, Egress Modeling and Tenability Analysis* (July 25, 2002) p. 36.

<sup>48</sup> *Id.*, p. 22.

<sup>49</sup> See note 96.

<sup>50</sup> At the RSOB, the lowest level of fire department vehicle access is along the northwest side of the building and corresponds to an elevation slightly above the Basement level. The attic is approximately 81 feet above the lowest possible level of fire department vehicle access. Large trees that line the streets on Delaware Ave, C Street and First Street impede access to the upper floors from aerial ladders on fire department vehicles.

<sup>51</sup> Blue Ribbon Panel, *Final Report*, p. 58.

<sup>52</sup> NIOSH, *Preventing Deaths and Injuries of Fire Fighters Using Risk Management Principles at Structure Fires*, (DHHS, July 2010), p. 2 ("Fire-fighting operations should be limited to defensive (exterior) strategy if the structure is judged to be unsafe and in any situation where the risks to fire fighter safety are excessive.").

<sup>53</sup> A planned terrorist attack on the RSOB could intentionally rupture the sprinkler pipes, rendering the system inoperable and leaving the building unprotected unless it is compartmented.

cannot handle the fire, such as in explosions, fires that begin in concealed or other unsprinklered areas, and multiple-origin fires.<sup>54</sup>

### *The Blue Ribbon Panel*

Because of its concern with the possible effects the AOC's SALSA plan might have on the RSOB, on April 20, 2009 the Senate Committee on Rules and Administration directed the Architect to convene a panel comprised of fire protection and historic preservation experts. Among its various objectives, the "Blue Ribbon Panel" sought to assess the OOC citation; "evaluate the level of life safety compliance of the [RSOB] in its current state with consideration to the historic nature of the building;" "analyze comparable historic buildings and how they achieve life safety compliance;" and "prepare three alternative solutions to improve the life safety issues in the RSOB."<sup>55</sup> Following completion of its work, the Panel issued its Final Report in August 2011. As discussed below, the Panel's Final Report makes a compelling case for compartmenting the RSOB in order to assure life safety for employees and visitors.

The Panel's evaluation of the level of life safety compliance of the RSOB concluded that, even assuming full sprinkler coverage,<sup>56</sup> the building fails to meet the critical life safety objectives embodied in NFPA 101. This is because unprotected exit pathways, insufficient emergency exit capacity, and excessive exit travel distances are all conditions that fail to comply with the life safety objectives embodied in the NFPA's emergency evacuation requirements. Consequently, under current conditions, should a serious fire occur, those occupying and visiting the RSOB might not reach safety in time and therefore face a greater chance of being injured or killed by the airborne toxins produced by the fire than those occupying and visiting a code-compliant building.

When analyzing how comparable historic buildings achieved life safety compliance, the Panel found that these buildings used some combination of communication, suppression and compartmentation to meet the life safety objectives. The Panel did not find any comparable building that relied solely upon suppression and communication systems. The Panel did find that comparable buildings used various strategies to provide protected emergency pathways that had less impact on features considered to be of historic importance. Of particular interest to the Panel was the use of pocket accordion doors (Won Doors) to achieve compartmentation<sup>57</sup> and the use of smoke control systems (particularly in atriums) to provide protection.

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<sup>54</sup> See John R. Hall, *U.S. Experience With Sprinklers And Other Automatic Fire Extinguishing Equipment* (NFPA, February 2010), p. 53 ("There are certain fire situations where even a complete sprinkler system will have limited impact: (a) Explosions and flash fires that may overpower the system; (b) Fires that begin very close to a person (e.g., clothing ignition) or unusually sensitive and expensive property (e.g., an art gallery) where fatal injury or substantial property loss can occur before sprinklers can react; and (c) Fires that originate in unsprinklered areas (e.g., concealed wall spaces) or adjacent properties (e.g., exposure fires), which may grow to unmanageable size outside the range of the sprinkler system."). Also see note 27.

<sup>55</sup> Blue Ribbon Panel, *Final Report*, p. 11.

<sup>56</sup> See *AOC Significant Accomplishments in Occupational Safety and Health (OSH) 111<sup>th</sup> Congress*, Section A, Building Sprinkler and Smoke Detection System Coverage Statistics FY09-FY10, Table 1, Russell Building. As of September 2011, the AOC estimated completion date for the sprinklers to be FY 11. Architect's Letter, September 27, 2011, App. C hereto. The most recent information received by the OOC indicates that, in various locations, the sprinkler piping has been installed but the sprinklers have not been activated. A sprinkler system is not considered complete until acceptance testing has been completed and the system has been activated in all areas.

<sup>57</sup> The Blue Ribbon Panel examined the Won Doors used to partition the Eisenhower Executive Office Building and the Herbert Hoover Department of Commerce Building. More modern Won Doors can be installed in pockets that are less than half the size required by the older Won Doors. See <http://www.wondoor.com/CrossCorridor.html>.

## The Blue Ribbon Panel Endorses Compartmentation

The Panel found that compartmentation would provide more life safety benefits than would enclosing all of the stairwells. Partitioning the building into fire zones creates more exits to protected zones by creating horizontal exits, i.e., if eight protected zones are created by adding eight sets of cross-corridor doors on each floor, each floor would have eight additional horizontal exits leading into a protected zone in addition to the existing stairways (vertical exits) that eventually lead to the outside of the building. For similar reasons, partitioning reduces the travel distance to protected exit pathways, because the distance is measured to the horizontal exit leading into the protected zone rather than to the exit leading to the outside of the building. With respect to the merits of enclosing stairwells, the Panel found the RSOB contained four staircases of lesser historical significance that could be enclosed in a manner that is historically acceptable and technically feasible.<sup>58</sup>

When evaluating the upgrades being considered by the AOC, the Panel stated that it “generally endorses the life safety improvements achieved by implementing the SALSA option.”<sup>59</sup> The Panel further suggested that the SALSA option could be modified to have less impact on the RSOB’s “historic character and fabric” by using accordion doors (Won Doors) that could be concealed within compartments built into the corridor walls rather than using the solid cross-corridor doors that lie flush against the corridor walls in the SALSA plan.<sup>60</sup>

## Fire Safety Issues and Corresponding Life Safety Objectives Recognized by the Panel

Regarding the directive from the Senate Rules Committee that three solutions to improve life safety issues should be included in the report, the Panel developed criteria against which to judge the effectiveness of different options in addressing the identified nine “Major Fire Safety Issues” and Life Safety Objectives respecting the RSOB in addition to the historicity issue. These fire safety issues were identified by comparing the existing features of the RSOB with the requirements of Life Safety Code (“LSC”)<sup>61</sup> and the International Building Code (“IBC”).<sup>62</sup> These nine issues were presented in Table 4.1<sup>63</sup> and Table 10.1,<sup>64</sup> the relevant portions of which are reproduced below.

Table 4.1: Summary of Major Fire Safety Issues

Ref.	Fire Safety Issue	Life Safety Objective
FS-1	The RSOB consists primarily of fire-resistive construction. However, much of the Attic contains unprotected structural steel and portions of structural fire protection in other areas have been damaged or removed. In addition, the temporary office wing in the courtyard consists of combustible construction. Unprotected structural elements and combustible construction would not be permitted based on IBC requirements for new construction and is not permitted based on LSC criteria for existing assembly occupancies.	Maintain structural integrity during fire
FS-2	The gated storage areas in the Attic are not separated by smoke-resistant construction as required by the IBC. Maintenance shops in the Basement are not separated by minimum 1-hour fire-rated construction as required by the LSC.	Separate hazardous areas from remainder of building

<sup>58</sup> Blue Ribbon Panel, *Final Report*, p. 89.

<sup>59</sup> *Id.* at 79.

<sup>60</sup> *Id.* A video depicting the operation of Won Doors can be found at <http://www.wondoors.com/video-archive.html>.

<sup>61</sup> National Fire Protection Association, *NFPA 101: Life Safety Code* (2009 ed.).

<sup>62</sup> International Code Council (“ICC”), *International Building Code* (2009 ed.).

<sup>63</sup> *Id.* at 19-20.

<sup>64</sup> *Id.* at 84.

FS-3	Air-transfer openings in the egress corridors and the open exit stairs are used as part of the HVAC return-air system, which is not permitted by NFPA 90A.	Restrict some movement from rooms adjacent to corridors to remainder of building
FS-4	The nine stairs that connect between three and six floor levels are not enclosed with fire-resistance-rated construction as required by the IBC and LSC.	Provide protected egress path to occupants, restrict vertical smoke movement
FS-5	The Rotunda does not comply with IBC and LSC requirements for atria since it is not provided with a smoke control system. If the Rotunda were considered a “previously approved atrium” it would generally meet LSC requirements for atria.	Restrict vertical smoke movement
FS-6	Numerous shafts are not fully enclosed in fire resistance rated construction as required by the IBC and LSC. Typical deficiencies include penetrations that are not properly firestopped, duct penetrations without dampers, and unsealed openings in the shaft walls.	Restrict vertical smoke movement
FS-7	The available egress capacity is not sufficient on the First, First Mezzanine, Second and Third Floors.	Provide adequate egress capacity for the intended occupant load
FS-8	Maximum exit access travel distances exceed allowable LSC limits on all floors levels.	Limit distance occupants have to travel in order to reach protected path
FS-9	Many of the open stairs discharge within the building. If these stairs are considered exit enclosures, at least 50 percent of these would be required to discharge directly to the outside or through code-compliant exit passageways.	Once in protected path, occupants should not reenter unprotected area of building to evacuate

### Panel Made Nine Recommendations and Analyzed Three Design Options

After considering the nine major fire safety issues, the Panel made nine “General Recommendations”<sup>65</sup> and provided an analysis of three Design Options.<sup>66</sup>

The Panel developed the General Recommendations and analyzed the Design Options after using various methods to consider the major fire risk issues existing in the RSOB.<sup>67</sup> In one method, the Panel examined the building in light of various building and fire codes, including those specifically intended for historic buildings. This analysis resulted in the identification of the nine major fire safety issues and life safety objectives described in the above table.<sup>68</sup> In another

<sup>65</sup> The General Recommendations are divided into “Immediate,” “Short Term” and “Long Term” Recommendations. The Immediate Recommendations, which are to be implemented “as soon as possible,” involve attic improvements (removal of combustible materials or installation of automatic sprinkler protection along with smoke barriers and compartmentation of the storage areas), basement workshop and storage improvements (removal of furniture refinishing workshop, enclosing other workshops with one hour fire separation and removal of combustible materials in the Basement corridor), and inspections (develop and implement annual inspection program focusing on fire prevention best practices). The Short Term Recommendations, planning for which “should begin as soon as possible,” involve providing smoke control in the Atrium and providing a remote means of egress for all assembly spaces with occupant loads exceeding 50 persons. The Long Term Recommendations, which “appear to be most viable as part of the 2025 Building renewal program,” include adding protective materials to the attic roof structure, modifying or replacing the HVAC systems to eliminate air-transfer openings into the corridors and use of the corridors as air plenums, providing fire stopping for utility shafts and floor openings, and removing the combustible courtyard structure.

<sup>66</sup> As discussed more fully within, Option 1 is to do nothing more than what has already been approved: complete the fire detection and automatic sprinkler systems. *Report*, pp. 21-22. Option 2 provides three alternative vertical compartmentation designs. Option 2(a) adopts the SALSA configuration but uses concealed, cross-corridor doors (Won Doors) in lieu of solid doors that lie flush to the wall when in the open position (such as in the Longworth Building). Options 2(b) and 2(c) place the doors in alternative locations and encloses stairs of little historical significance. Option 3 proposes the installation of a smoke control system either alone or in conjunction with compartmentation.

<sup>67</sup> Blue Ribbon Panel, *Final Report* at 194 (Enclosure C).

<sup>68</sup> *Id.* at 138-139 (Enclosure B).



method, the Panel used “a commonly applied” fire indexing system known as FSES (“Fire Safety Evaluation System”). This approach recognizes the value of building attributes that are superior to code requirements (such as marble construction, automatic sprinklers and 24-hour security) as well as the deficiencies. The FSES analysis revealed that, even with full sprinkler coverage and some existing attributes superior to code requirements, the RSOB does not provide “an equivalent level of fire safety as that required” by either the LSC or the IBC.<sup>69</sup>

The Panel also reviewed available fire modeling and egress data presented in previous reports provided to the AOC. The reports revealed that “[e]ven with sprinkler protection, tenable egress conditions were not maintained in all cases.”<sup>70</sup> As mentioned previously, the Panel also evaluated comparable historic structures. All of the comparable historical buildings identified by the Panel underwent renovations to address egress deficiencies and did not rely solely upon fire-resistant construction, 24-hour security and sprinkler coverage to protect building occupants.<sup>71</sup> Finally, to evaluate the “relative effectiveness of proposed design options” the Panel chose to apply a combination of “established FSES methods” and a “fire risk matrix.”<sup>72</sup>

The Panel used an FSES analysis to evaluate the comparative benefits of the various Design Options by examining whether each Option achieved any of the nine unique life safety objectives identified by the Panel: (1) maintaining structural integrity during a fire, (2) separating hazardous areas from the remainder of the building, (3) restricting smoke movement from rooms to the exit corridors and to other areas of the building, (4) providing protected occupant egress paths, (5) restricting vertical smoke movement in the Atrium, (6) restricting vertical smoke movement throughout the building, (7) providing adequate egress capacity, (8) limiting exit travel distances, and (9) creating contiguous protected exit paths.

### **Panel’s Fire Risk Matrix Approach Did Not Consider Risks Posed by Terrorism**

The Panel also used a Fire Risk Matrix approach to help develop the General Recommendations and analyze the Design Options.<sup>73</sup> Neither the FSES analysis nor the Fire Risk Matrix was intended to be used in isolation.<sup>74</sup>

The Fire Risk Matrix approach involved developing twenty-two potential fire scenarios and subjectively evaluating how the probability and consequences of such fires would be affected by any changes made to the RSOB. Although this matrix was developed in part using NFPA 551(2007) *Guide for the Evaluation of Fire Risk Assessments*,<sup>75</sup> contrary to NFPA guidelines, the fire scenarios and the estimated probabilities and consequences were developed without the participation of all interested stakeholders, which should have included “all those who have a financial, personnel safety, public safety, or regulatory interest in the fire risk.”<sup>76</sup> Stakeholders such as the United States Capitol Police undoubtedly could have assisted the Panel in developing fire scenarios and estimating probabilities and consequences that reflect the unique security threats under which the Russell Building operates.

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<sup>69</sup> *Id.* at 194 (Enclosure C).

<sup>70</sup> *Id.* at 194.

<sup>71</sup> *Id.* at 23-45.

<sup>72</sup> *Id.* at 194 (Enclosure C).

<sup>73</sup> *Id.*

<sup>74</sup> *Id.* at 194 (Enclosure C).

<sup>75</sup> *Id.* at 195 (Enclosure C).

<sup>76</sup> NFPA 551(2007) *Guide for the Evaluation of Fire Risk Assessments* at 551-6 § 4.2.

The fire scenarios considered by the Panel did not include fires intentionally set in multiple building locations, arson used as a weapon to cause harm and disruption, or fire used as a diversion to force occupants to evacuate to areas where other threats are present. The Panel subjectively determined the probability and consequences of each of its twenty-two scenarios based upon the experience of panel members in evaluating business occupancies. It is not clear that these subjective determinations have much relevance to a unique structure such as the RSOB that is a recognized potential target for terrorist attack including arson.

Because of these limitations, the Panel's Fire Risk Matrix approach does not accurately predict the risk or consequences of all potential fire scenarios in the building; instead, it does merely what the Panel intended: it provides a *relative* comparison of how risk is affected by each option.

Using the Fire Risk Matrix approach, the Panel evaluated each of the twenty-two fire scenarios and determined whether the risk of that scenario was low, moderate or high. Improbable scenarios with negligible consequences were represented as having low risk levels, while frequently occurring scenarios with more serious consequences were represented as having high risk levels. Frequently occurring scenarios with minor consequences, occasionally occurring scenarios with minor or serious consequences, as well as remote-chance scenarios with serious and severe consequences were all represented as having moderate risk levels. The Panel determined that all high risk scenarios are "unacceptable and must be eliminated," while scenarios of moderate risk "need careful consideration to address whether the risk is acceptable or requires mitigation." The Panel offered no specific opinions regarding which moderate risk scenarios were acceptable or needed to be mitigated.

Using this approach, the Panel found two scenarios with high risk: a fire from refinishing operations in the basement and an incendiary fire in the storage area of the attic involving boxed paper and plastic goods. Because the Panel did not have access to information regarding the potential high risk scenarios posed by the unique security threats to the RSOB, the Panel's Risk Matrix undoubtedly underestimates the number of potential high risk fire scenarios in the RSOB, particularly those scenarios involving multiple arson fires.

### **General Counsel's Endorsement of the Panel's General Recommendations, All of Its Compartmentation Configurations in Option 2 and SALSA**

The General Counsel agreed with and has endorsed the Panel's General Recommendations and urged that they be implemented as soon as possible.<sup>77</sup> With respect to the Panel's three Immediate Recommendations, the Architect has installed sprinklers and some partial smoke barriers in the Russell Building attic (Recommendation #1); designed the new location for the refinishing shop, begun the process of moving the refinishing shop out of the basement and improving conditions in the basement workshops with an estimated completion date of May 2012 (Recommendation #2); and initiated development of an annual fire inspection program that

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<sup>77</sup> See Letter, OOC General Counsel Eveleth to the Honorable Charles E. Schumer, Chairman, and the Honorable Lamar Alexander, Ranking Member, U.S. Senate Committee on Rules and Administration, May 23, 2011 (Attached hereto as App. G; Responses to QFR, OOC Executive Director Chrisler to Honorable Ben Nelson, Chairman, U.S. Senate Appropriations Subcommittee on the Legislative Branch, March 18, 2011, App. H.

would be implemented throughout the Campus, with the pilot project to be implemented in the RSOB in early 2012 (Recommendation #3).<sup>78</sup>

Similarly, full implementation of the two Short Term Recommendations will address some very serious emergency evacuation deficiencies in the building. The first Short Term Recommendation requires that “an engineered smoke control system for the Rotunda Atrium” be provided. This system would include exhaust fans above the Atrium and a means for activation of fans. A preliminary study by fire protection engineering students from the University of Maryland suggests that providing smoke control in the Atrium is feasible as long as smoke barriers are installed to isolate smoke in the atrium when the exhaust fans are activated.

Smoke barriers are different from and can be less expensive than the cross-corridor fire doors recommended in SALSA because smoke barriers do not have to latch and are not required to meet the same fire rating as the SALSA doors. A smoke barrier is merely a membrane to restrict the movement of smoke and can even be composed of fire-rated glass or fabric. Recent technological advances have led to the development of code-compliant curtains that can be used to provide fire and smoke control in an atrium. These curtains can be installed in hidden ceiling compartments surrounding the atrium and are only visible after evacuation alarms have been activated<sup>79</sup>. The Panel did not consider the option of using smoke or fire control curtains.

The second Short Term recommendation requires that a “second, remote means of egress” be provided for “all conference rooms and other assembly spaces with occupant loads exceeding 50 persons.” Under the Life Safety Code, for a second means of egress to be “remote,” it must discharge from the assembly space using a different pathway to a safe area. After the smoke control system is installed in the Atrium, the Caucus Room, the largest assembly space in the RSOB, will have the necessary protected, remote means of egress. It is unclear how the other assembly spaces on the upper floors can accomplish this without compartmentation.

Finally, following the long term recommendations during the building renewal scheduled for 2025 is a sensible way to address some of the current structural defects that compromise fire and life safety. Adding protective materials to the attic roof structure, modifying or replacing the HVAC systems to eliminate air-transfer openings into the corridors and use of the corridors as air plenums, providing fire stopping for utility shafts and floor openings, and removing the combustible courtyard structure are all structural improvements that would enhance fire and life safety in the building.

### **Option 1 Provides the Least Protection and Does Not Meet Existing Legal Requirements**

Option 1 – which is to do nothing more than complete the fire detection and automatic sprinkler systems – is listed by the Panel as a no-cost option because it merely does what has already been approved and funded.<sup>80</sup> With respect to the three alternative solutions to improve life safety

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<sup>78</sup> The Senate Chief Counsel for Employment has advised that “certain additional measures have been taken to improve fire safety in the RSOB, including the addition of an exit for mobility-impaired individuals and installation of annunciator alarm systems throughout the RSOB attic.” Letter, Jean M. Manning, Senate Chief Counsel for Employment, to OOC General Counsel Eveleth, Aug. 29, 2011 App. C hereto.

<sup>79</sup> For more information on how fire and smoke curtains are currently being used to meet code requirements and help control smoke in atriums *see* <http://ceu.construction.com/crs.php?L=180&C=815>.

<sup>80</sup> Blue Ribbon Panel, *Final Report*, p. 6 & 7.

issues in the RSOB, the Panel found that *Option 1 provides the least protection because it fails to meet any of the life safety objectives, unlike the other two options.*<sup>81</sup> It is noteworthy that this option was not even mentioned as an alternative to SALSA in the Panel's previous *100% Report* issued on April 6, 2010. Each of the four options presented in the 100% Report involved some type of compartmentation, which the Panel obviously thought was necessary to reduce risk in the building and enhance life safety. Throughout the 100% Report and the Final Report, the Panel analyzed the building assuming that the automatic sprinkler and smoke detections systems had already been completed.

The General Counsel has concluded that Option 1 fails to abate the hazards identified in Citation 19. The danger posed by the unenclosed stairwells remains unabated under Option 1 and Option 1 does nothing to comply with 29 C.F.R. § 1910.36 and NFPA 101-1997 *Life Safety Code*. The violations of Section 215 of the Congressional Accountability Act (2 U.S.C. § 1341), which requires compliance with Section 5 of the Occupational Safety and Health Act. (29 U.S.C. § 654), would remain.<sup>82</sup> Because Option 1, while somewhat increasing the level of fire protection, does not abate the Citation 19 hazards, allowing the open stairwells in their present form could, as the Panel concluded, reasonably be viewed as a violation of the CAA and the OSHAct.<sup>83</sup>

### **Option 2 Meets Historic Preservation and Life Safety Concerns**

Option 2 provides three alternative vertical compartmentation designs. Option 2(a) adopts the SALSA configuration but uses concealed, cross-corridor doors (Won Doors) in lieu of solid doors that lie flush to the wall when in the open position (such as in the Longworth Building).<sup>84</sup> Options 2(b) and 2(c) place the doors in alternative locations and encloses stairs of little historical significance.<sup>85</sup> The alternative compartmentation designs contained in Option 2 meet both the historic preservation goals and the life safety objectives because, in addition to extending sprinklers and smoke detectors, they provide for compartmentation of Russell into separate fire zones. This is accomplished through the use of fire-rated accordion doors that remain hidden inside the walls until activation of an alarm causes them to close, thereby preventing the spread of fire and airborne toxins while creating protected areas for occupants to escape safely from the building. The Panel estimated the cost of this type of compartmentation to be between \$1.5 million (for Option 2(b)) and \$2.5 million (for option 2(a)).<sup>86</sup> The General Counsel has endorsed SALSA and all of the compartmentation designs contained in Option 2 as being sufficient to abate Citation 19.<sup>87</sup>

### **Option 3 May Not Be Economically or Technically Feasible**

Option 3 proposes the installation of a smoke control system either alone or in conjunction with compartmentation.<sup>88</sup> While Design Option 3 could also meet the historic preservation goals and

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<sup>81</sup> Blue Ribbon Panel, *Final Report*, p. 91.

<sup>82</sup> As suggested in the Panel's legal analysis, unenclosed stairwells are not only a violation of the OSH standards [29 C.F.R. § 1910.36(b)(2)], but could be considered a violation of the OSHAct's "General Duty Clause" because the hazard is well recognized and is likely to cause death or serious physical harm. Blue Ribbon Panel, *Final Report*, p. 132.

<sup>83</sup> *Id.* ("The Panel has concluded that allowing the open stairwells in the RSOB to continue in their present form might reasonably be viewed as a violation of Section 5 of OSHA.")

<sup>84</sup> Blue Ribbon Panel, *Final Report*, p. 6.

<sup>85</sup> *Id.*

<sup>86</sup> Blue Ribbon Panel, *Final Report*, p. 7.

<sup>87</sup> See note 69.

<sup>88</sup> Blue Ribbon Panel, *Final Report*, p. 6.

life safety objectives through the use of a fairly unobtrusive smoke control system that would limit the amount and extent of smoke spread in the building, the Panel cautioned that the technical feasibility and potential benefits of this approach have not been evaluated and would require further technical investigation and computational fire and egress modeling.<sup>89</sup> The Panel further acknowledged that this option may not be economically feasible.<sup>90</sup> The Panel was unable to provide any cost estimates for this option, but it is likely to be the most expensive of any of the options.<sup>91</sup>

In sum, either Design Option 2 or SALSA, together with the General Recommendations, would address all of the fire and life safety objectives relating to emergency evacuation that the Panel identified. In contrast, Design Option 1, which the Panel found provided the least potential for reducing the risk of death, illness or injury, addresses none of the life safety objectives identified by the Panel.

### **Compartmentation Recommendations Rejected by Senate Appropriations Committee**

On September 15, 2011, the Senate Appropriations Committee approved the FY2012 Legislative Branch Appropriations Bill. H.R. 2551, 112<sup>th</sup> Cong. (Sep. 15, 2011). The Committee denied the Architect's request for \$5 million<sup>92</sup> for the first phase of a multi-phase project that would address the Russell Building's Life Safety Code deficiencies with respect to egress capacity, travel distances, and lack of protected exit pathways and abate Citation 19. S.Rep. No. 112-80, 112<sup>th</sup> Cong. (Sep. 15, 2011).<sup>93</sup> The Committee explained in part that:

implementation of the short-term and immediate recommendations, in addition to implementation of design option 1, eliminates all high risk fire scenarios in the Russell Building while minimizing impact to its historic integrity, most effectively utilizing limited resources. . . . Considering the risk mitigation of the compensating features and the fact that implementation of design options 2 and 3 result in similar risk exposure to the Russell Building, the Committee considers these options to be cost prohibitive with minimal additional safety improvements beyond those currently being implemented. The Committee concludes that, as additional funding resources become available, that funding should be expended on other projects and deferred maintenance requirements that have a greater impact on life and safety throughout all of the Senate office buildings.<sup>94</sup>

As suggested earlier, the two "high risk" scenarios considered by the Panel and referenced by the Committee are not representative of "all high risk fire scenarios" in the building since the range of scenarios considered by the Panel did not include multiple fires that could occur during

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<sup>89</sup> *Id.* p. 90.

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* p. 91.

<sup>92</sup> The record does not provide the Architect's total cost estimate for SALSA or why the amount requested is so much greater than the Panel's cost estimates for Option 2(a) (\$2.5 million for the SALSA configuration using the more expensive Won doors, see Blue Ribbon Panel, *Final Report*, p. 7) or the Architect's estimated cost for compartmenting the Longworth Building (\$5.5 million for a building with more floors and more doors, see House Committee on Appropriations Subcommittee on the Legislative Branch, *Legislative Branch Appropriations for 2009: Justification of the Budget Estimates*, Part 1, p. 501 (USGPO 2008); or the amount budgeted for the Cannon compartmentation project (\$4.3 million for a similar building).

<sup>93</sup> See Committee on Appropriations, House of Representatives, Subcommittee on Legislative Branch, Fiscal Year 2012 Legislative Branch Appropriations Requests, Part 1, Architect of the Capitol Budget Request at 476-77.

<sup>94</sup> Excerpt of the Senate Appropriations Committee Report is attached hereto as Appendix I.

terrorist, arson and other intentional attacks. Nor did the Panel take into account those scenarios involving emergencies other than fire that would also require protected and prompt evacuation of all persons, including those with mobility impairments, from the building.

Moreover, the elimination of the identified “high risk” scenarios occurs by implementing two of the immediate recommendations (not by Option 1): moving the furniture refinishing shop out of the building and compartmenting the storage in the attic. While adopting these recommendations would undoubtedly reduce risk, making the suggested changes would not alter the underlying structural issues that make fire in these locations so hazardous. Due to the open stairways and the multiple unprotected penetrations in the floor and ceiling, an incendiary fire in the basement could produce catastrophic consequences due to the rapid spread of smoke and airborne toxins.<sup>95</sup> Similarly, due to the unprotected steel in the attic roof structure, a fire in the attic would be potentially devastating to the building, even if the storage areas were compartmented.

Furthermore, it is not accurate to state that the risk exposure to the RSOB resulting from adopting Design Option 1 is “similar” to the risk exposure that would exist if Design Options 2 or 3 were adopted. If the General Recommendations and Design Option 1 were to be chosen, the Panel’s Fire Risk Matrix shows that the consequences from three of the fire scenarios would be severe<sup>96</sup> and that the consequences from eight of the fire scenarios would be serious.<sup>97</sup> On the other hand, if Options 2 or 3 were adopted, none of the fire scenarios would result in severe consequences and only seven scenarios would result in serious consequences.<sup>98</sup> These moderate risk scenarios involve precisely the types of fires that have occurred most frequently in buildings on the Capitol Hill campus.<sup>99</sup>

Nevertheless, complete implementation of the Immediate and Short Term Recommendations, together with Option 1, will certainly improve some of the life safety deficiencies in the RSOB. The Committee’s commitment to implementing the Short Term Recommendations is particularly noteworthy since implementing these recommendations would provide protected evacuation pathways through the rotunda atrium by the use of an engineered mechanical smoke control system and would also allow those who crowd into assembly spaces near the atrium a protected way out of those spaces should the primary entrance and exit be blocked by fire, smoke, or airborne toxins. This would provide a protected exit pathway for occupants of the Caucus Room and for those occupying spaces near the southwest corner of the RSOB, but would still leave most building visitors and occupants with no protected exit pathway within a reasonable travel distance from their location.

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<sup>95</sup> Smoke can reduce visibility to zero within 2 minutes of a fire’s ignition. A test subject was unable to find a stairway located less than 2 feet away. Robert J. Fischer and Gion Green, *Introduction to Security*, p. 218 (7<sup>th</sup> ed. 2004); see, e.g., NFPA, *Fire Protection Handbook*, p. 12-116 (2003).

<sup>96</sup> Consequences are classified as “severe” if they “will cause personal injury or result in substantial historic damage” such as serious injuries, permanent disabilities among occupants, or hospitalization for some occupants or destruction of the building’s major features and minor impact on the surrounding building fabric. Blue Ribbon Panel, *Final Report*, p. 53.

<sup>97</sup> Consequences are classified as “serious” if they will cause “significant thermal and non-thermal impact” such as medical treatment or work restrictions or localized reparable damage with no impact on the surrounding building fabric. Blue Ribbon Panel, *Final Report*, p. 53.

<sup>98</sup> Blue Ribbon Panel, *Final Report*, p. 89.

<sup>99</sup> The Panel analyzed the 51 recorded fires occurring on the Capitol Hill Complex between 1985 and 2009. It noted that “[o]f particular interest is that the leading causes for the Capitol Complex of identified fires are electrical and suspicious/incendiary causes. These two potential causes are a higher risk for the Capitol Complex than reflected by NFPA [data].” Blue Ribbon Panel, *Final Report*, p. 238.

While the General Counsel will continue to work with the Architect and monitor his progress to insure that all of the Immediate and Short Term Recommendations are fully implemented as soon as possible, the Report from the Senate Appropriations Committee does not address the basic problem faced by the Architect and the OOC: implementation of the General Recommendations and completion of Option 1 does not result in compliance with existing law. As noted above, the danger posed by the unenclosed stairwells remains unabated under Option 1 and Option 1 does nothing to comply with 29 C.F.R. § 1910.36 and NFPA 101-1997 *Life Safety Code*. It also does nothing to address the inadequate egress capacity and excessive travel distances, which are also violations of OSHA standards and the Life Safety Code.<sup>100</sup>

The Congressional Accountability Act (“CAA”) allows employing offices to request from the OOC Board of Directors (“the Board”) “a variance from a standard made applicable by [Sec. 215 of the CAA].” CAA § 215(c)(4). The Board is required to submit any such request for a variance to a hearing officer, whose decision is subject to review by the Board and the U.S. Court of Appeals for the Federal Circuit. CAA §§ 215(c)(4) & (5); Proc. Rules of OOC § 4.26. Until or unless such a variance is requested and granted, the OOC General Counsel must treat the violation of the standard as being unabated. See CAA § 215(c)(3).

### ***CAPITOL POWER PLANT UTILITY TUNNELS***

In February 2006, the General Counsel filed a first-ever formal complaint regarding potentially life-threatening conditions in the U.S. Capitol Power Plant utility tunnels. The complaint alleged that the AOC had failed to correct citations dating from 2000 and 2001 that addressed falling concrete, lack of a reliable communications system to enable monitoring the status of employees working in the tunnels, asbestos exposure, severe heat stress involving temperatures up to 160 degrees Fahrenheit, inadequate training for employees required to work in confined spaces, and insufficient egress points in the tunnels to assure prompt rescue of workers in emergency situations.

A comprehensive settlement was approved in June 2007 by a hearing officer appointed by the Executive Director of the OOC. It requires the AOC to abate all high risk (RAC I and RAC II) hazards in the tunnel system by June 2012. Further, it mandates regular inspections and quarterly reports by the AOC, and monitoring by the OGC. During the 111<sup>th</sup> Congress, our monitoring revealed significant progress in reducing hazards by means of egress installation, concrete and structural improvements, ventilation system installation, and electrical and lighting upgrades. Many projects are underway for work to be



Upgraded egress hatch and ventilation

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<sup>100</sup> 29 C.F.R. § 1910.36(b) (“The number of exit routes must be adequate.”); 29 C.F.R. § 1910.36(f) and (g)(3) (“The capacity of an exit route must be adequate. Exit routes must support the maximum permitted occupant load for each floor served. Width of an exit route must be sufficient to accommodate the maximum permitted occupant load of each floor served by the exit route.”); NFPA 101, *Life Safety Code* §§ 7.3.1.1, 7.5.1.3.3 & 7.5.1.3.5 (2003 ed.).

performed during the 112<sup>th</sup> Congress, including egress installations and upgrades, continuing concrete removal, signage installation, and inspection program development and implementation. We anticipate that the necessary work will be completed before June 2012.



Upgraded lighting in utility tunnel



New egress, ladder, and hatch

### ***Capitol Visitor Center***

The U.S. Capitol Visitor Center (“CVC”) is the newest addition to the Capitol complex. At nearly 580,000 square feet, the Visitor Center is the largest project in the Capitol’s more than two-century history and is approximately three quarters the size of the Capitol itself. The entire facility is located underground on the east side of the Capitol so as not to detract from the appearance of the Capitol and the grounds designed by Frederick Law Olmsted in 1874. The CVC serves as the gateway to the Capitol for the millions of visitors who tour the facility every year. The CVC welcomed its 5 millionth visitor on March 31, 2011 – slightly more than two years after opening to the public on December 2, 2008.

In addition to displays, the CVC has two theaters, each of which seats roughly 250 people, and a restaurant that can serve over 400 people. Two small theaters in the Exhibition Hall can seat another 40 people each. Another part of this space is reserved for the use of Members of Congress and their guests and includes two large meeting rooms and the Congressional Auditorium, which seats some 450 people.

The OOC devoted substantial resources to pre-inspecting the CVC before its official opening in December 2008. At the request of the House Subcommittee on Legislative Branch Appropriations and the AOC, we spent well over 2,000 hours on the pre-inspection, during which we identified hundreds of safety and health hazards and barriers to public access for people with disabilities. See *110th Congress Report on Occupational Safety and Health Inspections* at 10-11 (June 2009).

We conducted our first regular biennial inspection of the CVC in January 2010. The inspection team identified 74 hazards, 47 of which involved fire safety issues. Nearly half of the fire safety hazards involved fire doors that failed to close and latch properly during a fire emergency. A



number of the fire door latches had been covered with tape, which could prevent them from working in an emergency. We also found numerous electrical hazards, which ranged from outlet, panel and switch hazards to emergency lighting deficiencies. The team noted that emergency communication mechanisms were high-quality and well-marked, which is particularly important given that the majority of CVC occupants at any given time are likely to be tourists, including children, seniors and people with disabilities, who will have little knowledge of emergency exit routes or procedures.

## **BIENNIAL INSPECTIONS**

The OOC inspected roughly 96% of the nearly 18 million square feet of legislative branch workspace subject to our inspection authority in the metropolitan Washington, D.C. area. The remaining areas were not accessible to the inspectors; some were undergoing renovations, while others were deemed “off-limits” due to protocol concerns. Our inspection identified roughly 5,400 hazards – a 40% reduction when compared to the 110<sup>th</sup> Congress.

### ***Inspection Scope and Process***

During the 111<sup>th</sup> Congress, we completed our third successive comprehensive inspection of legislative branch facilities in the Washington, D.C. metropolitan area. During the inspections, OOC inspectors were accompanied by representatives of the Architect and the employing offices. The inspection team assessed the physical hazards present in nearly 18 million square feet of space. In addition to Member and staff offices and hearing rooms, our team also inspected child care facilities, food service areas, the Page Schools and dormitories, Congressional subways and garages, warehouses, mechanical rooms, the Capitol Power Plant and a host of other workplaces. The legislative branch is essentially a city unto itself; virtually every service imaginable is available on Capitol Hill in one form or another. The 4-person OGC inspection team — since reduced in number — thus covered, not just millions of square feet, but hundreds of types of workplaces that presented a vast array of potential hazards.<sup>101</sup> This small team of inspectors deserves enormous credit for completing so monumental a task.

The OOC instituted enhanced procedures for these inspections that were designed to accelerate the abatement of hazards. For example, at the end of each day’s inspection, OOC inspectors review their findings with representatives of the employing office and the Architect. We also began supplying written reports during “closing conferences” held with employing offices and the Architect’s Building Superintendents after the team completed its inspection of a given jurisdiction. These reports included a narrative highlighting the more severe hazards that the inspectors had identified, as well as those they found more frequently; as a result, employing office staff were able to address safety concerns more quickly and, in certain instances, institute preventive measures to address the concerns the team had noted.

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<sup>101</sup> During the 111<sup>th</sup> Congress, biennial inspections were conducted by one full-time employee inspector, one part-time and two full-time inspection consultants, and a part-time student intern. The part-time consultant also investigated requestor-initiated inspections. In July 2010, one of the full-time inspection consultants was appointed OSH Compliance Manager in charge of the biennial inspections. The full-time employee inspector retired effective May 2012. Because of a lack of funding, we were unable to fill the vacant consultant position, replace the full-time employee or hire an intern. Accordingly, we currently conduct biennial inspections with one full-time and one part-time inspection consultant.

We also formalized our process for employing offices to contest inspection findings. Under this procedure, offices may challenge the existence of a hazard, or assert that they had incorrectly been identified as having responsibility for remedying a hazard.

Our inspectors' thorough review documented the continued downward trend in the number of hazards. The number of hazards in legislative branch worksites dropped by over 40% when compared to the 110<sup>th</sup> Congress. Hazards have been reduced by nearly 60% since our first wall-to-wall inspection in the 109<sup>th</sup> Congress. During this same period, the area inspected increased from 15.3 million to nearly 18 million square feet.<sup>102</sup> The highest-risk hazards have also declined; we found 40% fewer RAC 1 and RAC 2 hazards in the 111<sup>th</sup> Congress than we did in the 110<sup>th</sup>. In short, safety and health conditions in legislative workplaces continue to improve.

The types of hazards that the team found are in many respects quite similar to those found in past biennial inspections. For example, electrical and fire safety hazards remain the most common violations. Extension cords strung together in so-called "daisy chains" topped the list of common hazards for the third successive Congress; this is not surprising given that employee use of electrical equipment continues to increase, overwhelming the capacity of electrical outlets. The most common hazards identified during the 111<sup>th</sup> Congress included fire sprinkler and unprotected exit route hazards. These findings reflect the ongoing threats to people and property presented by fire hazards in the Capitol, Russell, Cannon, Jefferson and other Capitol Hill buildings. See discussion above.

### ***Risk-Based Biennial Inspections***

For the 112<sup>th</sup> Congress, we are adopting a risk-based approach to our biennial inspection. This will enable us to devote special attention to areas and operations having the greatest potential for injuries and illnesses. Given our limited resources, we are asking employing offices to conduct self-inspections of lower hazard/lower risk areas such as offices and administrative spaces, based on the results of previous biennial inspections, which reflect a downward trend in identified hazards.

We will, however, continue to inspect new facilities and potentially higher risk facilities and operations such as workshops, mechanical/electrical spaces and food preparation areas. These inspections will be similar to past inspections except that we will inspect these areas while employees are actually working, rather than at a time when no one is present. This will enable us to observe and speak to employees working in those areas to ascertain their familiarity with safety programs and procedures mandated by OSHA standards that apply to their work.

In addition, during this Congress we will review safety and health programs. We will focus on programs required by the Hazard Communication (HazCom) Standard and the Personal Protective Equipment (PPE) Standard for all legislative branch workplaces that are subject to these standards. Employees in workshops and other higher-risk areas often perform work activities or use materials that subject them to the HazCom and PPE Standards. Accordingly, we will review the programs in use in such areas to ensure that employees are aware of and working in compliance with these standards.

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<sup>102</sup> See Committee on Appropriations, House of Representatives, Subcommittee on Legislative Branch, Fiscal Year 2012 Legislative Branch Appropriations Requests, Part 1, Architect of the Capitol Budget Request at 387.

We will also inspect landscaping operations performed by the AOC's Capitol Grounds Division. Landscapers have among the highest injury and illness rates of any occupation, according to the U.S. Department of Labor.<sup>103</sup>

Because of budget cuts affecting our safety and health programs, we have been compelled to reduce or eliminate services that we provided in prior years. Thus, during the 112<sup>th</sup> Congress, we will not be inspecting lower-risk areas, such as Member and Committee Offices, hearing rooms and other administrative spaces. As noted above, we will suspend the Safe Office Awards whose presentation has been cosponsored by the National Safety Council during the past three Congresses. We will also eliminate quarterly meetings of the Occupational Safety & Health/Americans with Disabilities Act Working Group. We will stop developing and publishing monthly *Fast Facts*. We will no longer be able to provide the sustained technical assistance that certain employing offices have welcomed in the past. We are postponing the implementation of a pilot project to assist staff in Members' state and district offices to perform self-inspections. Although we hope to be able to reinstitute these activities, that possibility appears highly unlikely at this time. We will focus on the higher-risk areas and operations described above, as well as child care centers and the schools and dormitories that serve Senate Pages, to the extent that resources permit.

### ***Implications of Reduction in Hazard Findings: Safety Saves***

As the number of hazards is reduced, so too are the costs to employees and employing offices. In both the private and public sectors, safety saves. If workers are not injured on the job, they do not incur medical expenses, need not draw workers' compensation, and do not suffer a decrease in productivity. The employer need not pay to hire and train replacement workers. Preventing injuries means avoiding expenditures by employer and employee alike.

Research supports this proposition. In 2009, researchers at the Finnish Institute of Occupational Health evaluated 26 peer-reviewed studies of the "business case" for occupational safety and health interventions.<sup>104</sup> The underlying studies examined firms in North America, Europe and Southeast Asia. The interventions consisted of engineering controls, with and without worker training, and considered their effects in a number of industries, including health care, transportation, manufacturing and materials handling. These interventions resulted in reduced/avoided sick leave, lower medical costs, less turnover and decreased/prevented costs of training new workers. In addition, productivity increased in six of the interventions, while quality improved in two. The researchers noted that, although intangible benefits such as improved reputation or greater worker satisfaction "are important drivers of business decisions,"<sup>105</sup> the studies did not measure these indicators. Nineteen of the studies found that the business recovered the cost of the safety measures within one year. The median profitability of the intervention was €214 (roughly \$306) per worker per year.

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<sup>103</sup> See <http://www.bls.gov/iif/oshwc/osh/os/ostb2435.pdf> (Incidence rates of nonfatal occupational injuries and illnesses by industry and case type, 2009). Rates are higher in certain occupations that are not performed on Capitol Hill, e.g., air transport workers, pet store employees and animal slaughterers.

<sup>104</sup> Verbeek J., Pulliainen M., Kankaanpaa E. A systematic review of occupational safety and health business cases, *Scandinavian Journal of Work & Environmental Health*, vol. 35 no. 6, 403-412 (2009).

<sup>105</sup> *Id.* at 409.

A 2007 study by Canadian researchers reached similar conclusions.<sup>106</sup> The researchers posed the question, “What is the credible evidence that incremental investment in health and safety is worth undertaking?” To answer the inquiry, the researchers examined 85 peer-reviewed studies of workplaces in Europe, the United States and Canada; those studies in turn assessed disability management systems, ergonomic and other musculoskeletal injury prevention methods and occupational disease prevention measures. The researchers found strong evidence supporting disability management interventions in multiple industries and strong evidence supporting ergonomic and other injury prevention measures in the manufacturing and warehousing sector.<sup>107</sup>

Although common sense dictates that the results found in these meta-studies could be replicated in legislative branch workplaces, unfortunately we lack sufficient data to be certain for all employing offices. This is because, unlike employers in the private sector, legislative branch employers are not required by statute to maintain and provide to us records of occupational injuries and illnesses. Without the ability to acquire such data, the OOC cannot assess the costs and benefits of safety enhancements instituted by employing offices, nor can the employing office or the OOC concentrate their respective resources where the need is greatest. For this reason, the Office’s Board of Directors has repeatedly recommended to Congress that covered employing offices be required to keep and provide injury and illness records to the OOC, just as private employers are required to do under section 8(c) of the OSHA Act, 29 U.S.C. §657(c). *See Recommendations for Improvements to the Congressional Accountability Act* (Office of Compliance Board of Directors 2010) at 12-13.

As set forth in the *Biennial Report on Occupational Safety and Health Inspections* for the 110<sup>th</sup> Congress at 15-17 (June 2009), we have received generalized information regarding the effects of injury reduction in the Library of Congress. We explained there that “we examined injury rates and associated costs in the legislative branch by evaluating data from the Labor Department’s Office of Workers Compensation (OWCP). . . . We looked at the Library of Congress’ systematic implementation of safety programs between 2000 and 2007. On-the-job injuries declined by almost 75% during those seven years. . . . In addition, OWCP reported that the LOC’s Lost Production Days [days following an injury when the injured worker cannot return to normal duty] dropped almost 90%, from a high of 2,000 days per year to roughly 200.” *Id.* at 15. “We concluded that the LOC may have achieved injury cost avoidance in excess of \$11 million” between 2001 and 2007. *Id.* at 16.

Although these data are encouraging, we remain convinced that employees and employing offices across the legislative branch would see significant benefit if detailed injury and illness records were uniformly maintained by all employing offices and provided to the OOC. This would enable a comparison of data and sharing of best practices.

## **EMPLOYING OFFICE SAFETY INITIATIVES**

During the 111<sup>th</sup> Congress, employing offices instituted notable safety improvements. For example, Janet Jones, a paralegal in the Office of the Senate Chief Counsel for Employment, personally conducted “pre-inspections” at the offices of all 100 Senators, as well as Committee,

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<sup>106</sup> Tompa E. Dolinschi R, de Oliveira C, Irvin E. *A systematic review of OHS interventions with economic evaluations*. Toronto: Institute for Work & Health, 2007.

<sup>107</sup> *Id.* at 18-22.

Subcommittee and Leadership offices. She crawled under desks checking for electrical hazards and climbed on ladders looking at sprinkler clearances. She talked to staff, reviewed the applicable safety standards and offered training sessions throughout the year. Her efforts, along with those of the AOC's Senate Superintendent and the Senate Sergeant-at-Arms, contributed to the 53% reduction in hazards identified in Senate jurisdictions during the 111<sup>th</sup> Congress.

Rick Rogers, the Safety and Health Manager for the United States Capitol Police, also demonstrated exemplary efforts. He developed a comprehensive incident database and job hazard analysis, to identify problems and implement systemic solutions. He instituted safety training for all new officers. And he works closely with safety experts on and off Capitol Hill, to ensure that his programs are state-of-the-art. These activities are particularly important given that Capitol Police officers face potentially life-threatening hazards on a daily basis. Due in part to his impressive work, hazards in Capitol Police workplaces were reduced by 19% when compared to the 110<sup>th</sup> Congress.

Conditions in the Library of Congress also improved markedly in the 111<sup>th</sup> Congress, thanks in large part to the work of the Joint Occupational Safety and Health (JOSH) Committee led by a union representative, Nan Ernst, and Bob Browne, Chief of the Safety Services Office, representing management. The JOSH Committee obtained special training in occupational safety and health standards and hazard identification. Committee members made inspections, documented safety and health problems and worked together to suggest improvements. As discussed above, these activities contributed to a 75% drop in on-the-job injuries at the Library between 2000 and 2007 – the latest figures available. The OOC estimates that the Library saved as much as \$14 million on workers compensation and other expenses. Further, in the 111<sup>th</sup> Congress, hazards in Library buildings were reduced by early 30%.

In recognition of these exemplary efforts by Jones, Rogers, Ernst and Browne, on March 3, 2010, the OOC, partnering with the National Safety Council, presented them with Advocate of Workplace Safety Awards. These individuals' activities represent precisely the type of initiative that the Office encourages. Incorporating safety and health awareness into employees' regular workdays is a powerful force for improving conditions on the job for all. We applaud the emphasis that these individuals and their respective employing offices are placing on workplace safety and health.

This emphasis on safety conditions in the workplace was reflected in the threefold increase in the number of Senators and Members of the House of Representatives who received Safe Office Awards during the 111<sup>th</sup> Congress. 154 Members achieved hazard-free offices – 64 Senators and 90 Members of the House. The OOC and the National Safety Council partnered again to recognize these Members at a ceremony on March 3, 2010. Two-time Safe Office Award winner Senator Jon Tester served as keynote speaker at the event, which began in moving fashion with the presentation of the colors by the U.S. Capitol Police Honor Guard and the National Anthem sung by a uniformed Capitol Police officer.

The recipients of the awards were:

**U.S. SENATE**

Daniel Akaka (HI)	Mike Johanns (NE)
Lamar Alexander (TN)	Tim Johnson (SD)
Mark Begich (AK)	Ted Kaufman (DE)
Michael Bennet (CO)	Edward Kennedy (MA)
Robert Bennett (UT)	Amy Klobuchar (MN)
Jeff Bingaman (NM)	Herb Kohl (WI)
Barbara Boxer (CA)	Jon Kyl (AZ)
Sherrod Brown (OH)	Mary Landrieu (LA)
Robert Byrd (WV)	Frank Lautenberg (NJ)
Benjamin Cardin (MD)	Carl Levin (MI)
Robert Casey (PA)	Joseph Lieberman (CT)
Thad Cochran (MS)	Blanche Lincoln (AR)
Susan Collins (ME)	Richard Lugar (IN)
Bob Corker (TN)	John McCain (AZ)
Mike Crapo (ID)	Claire McCaskill (MO)
Jim DeMint (SC)	Barbara Mikulski (MD)
Byron Dorgan (ND)	Lisa Murkowski (AK)
Richard Durbin (IL)	Patty Murray (WA)
Michael Enzi (WY)	Ben Nelson (NE)
Russ Feingold (WI)	Bill Nelson (FL)
Dianne Feinstein (CA)	Jack Reed (RI)
Al Franken (MN)	Pat Roberts (KS)
Kirsten Gillibrand (NY)	John D. Rockefeller IV (WV)
Lindsey Graham (SC)	Charles Schumer (NY)
Charles Grassley (IA)	Jeff Sessions (AL)
Judd Gregg (NH)	Jon Tester (MT)
Kay Hagan (NC)	John Thune (SD)
Orrin Hatch (UT)	Tom Udall (NM)
Kay Bailey Hutchison (TX)	George Voinovich (OH)
James Inhofe (OK)	Mark Warner (VA)
Daniel Inouye (HI)	Jim Webb (VA)
Johnny Isakson (GA)	Roger Wicker (MS)

## U.S. HOUSE OF REPRESENTATIVES

Robert Aderholt (4-AL)	Patrick Kennedy (1-RI)
Rodney Alexander (5-LA)	Peter King (3-NY)
Melissa Bean (8-IL)	Dennis Kucinich (10-OH)
Earl Blumenauer (3-OR)	Doug Lamborn (5-CO)
Roy Blunt (7-MO)	Leonard Lance (7-NJ)
Mary Bono Mack (45-CA)	Barbara Lee (9-CA)
Madeleine Bordallo (GU)	Frank LoBiondo (2-NJ)
Rick Boucher (9-VA)	Daniel B. Maffei (25-NY)
Steve Buyer (4-IN)	Betsy Markey (4-CO)
John Campbell (48-CA)	Carolyn McCarthy (4-NY)
Anh "Joseph" Cao (2-LA)	James P. McGovern (3-MA)
Kathy Castor (11-FL)	Patrick T. McHenry (10-NC)
Jason Chaffetz (3-UT)	Mike McIntyre (7-NC)
Lacy Clay (1-MO)	John L. Mica (7-FL)
Gerald E. Connolly (11-VA)	Brad Miller (13-NC)
Jerry Costello (12-IL)	Jeff Miller (1-FL)
Ander Crenshaw (4-FL)	Richard E. Neal (2-MA)
Elijah E. Cummings (7-MD)	Ed Pastor (4-AZ)
Kathy Dahlkemper (3-PA)	Ron Paul (14-TX)
Lincoln Davis (4-TN)	Gary Peters (9-MI)
Nathan Deal (9-GA)	Collin C. Peterson (7-MN)
Bill Delahunt (10-MA)	George Radanovich (19-CA)
Charles Dent (15-PA)	Nick J. Rahall II (3-WV)
Lincoln Diaz-Balart (21-FL)	Denny Rehberg (MT)
David Dreier (26-CA)	Harold Rogers (5-KY)
John J. Duncan, Jr. (2-TN)	Thomas J. Rooney (16-FL)
Chet Edwards (17-TX)	Edward R. Royce (40-CA)
Vernon J. Ehlers (3-MI)	Tim Ryan (17-OH)
Keith Ellison (5-MN)	Kurt Schrader (5-OR)
Jo Ann Emerson (8-FL)	Heath Shuler (11-NC)
Eni F.H. Faleomavaega (AS)	Adam Smith (9-WA)
Chaka Fattah (2-PA)	Lamar Smith (21-TX)
Bob Filner (51-CA)	Mac Thornberry (13-TX)
Elton Gallegly (24-CA)	Patrick J. Tiberi (12-OH)
Jim Gerlach (6-PA)	John F. Tierney (6-MA)
Bart Gordon (6-TN)	Paul D. Tonko (21-NY)
Kay Granger (12-TX)	Edolphus Towns (10-NY)
Gene Green (29-TX)	Debbie Wasserman Schultz (20-FL)
Maurice Hinchey (22-NY)	Peter Welch (VT)
Ruben Hinojosa (15-TX)	Lynn A. Westmoreland (3-GA)
Mazie Hirono (2-HI)	Lynn A. Woolsey (6-CA)
Darrell E. Issa (49-CA)	David Wu (1-OR)
Sheila Jackson-Lee (18-TX)	John Yarmuth (3-KY)
Paul E. Kanjorski (11-PA)	C.W. Bill Young (10-FL)
Marcy Kaptur (9-OH)	Don Young (AK)

## **REQUESTER-INITIATED INSPECTION CASES**

The 111<sup>th</sup> Congress saw a continued reduction in the number of inspections of potential health and safety hazards requested by covered employees – another indicator of safety and health improvements in the legislative branch. Under the Congressional Accountability Act, covered employees, employing offices, and bargaining unit representatives of covered employees may ask the General Counsel to inspect and investigate places of employment under the jurisdiction of employing offices to ascertain whether there are violations of the Occupational Safety and Health Act. 2 U.S.C. §1341(c)(1). Upon receipt of such requests, the OOC investigates the allegations, and when hazards are found to exist, the General Counsel issues a report to all involved parties and directs that appropriate abatement be made by the employing office responsible for correction of the violation. These inspections are conducted by a part-time inspection consultant under the direction of the OSH Program Manager. The report also may make recommendations based upon “best practices” used in the private sector which, while not required to be followed, would enhance the level of safety and health in legislative branch facilities. The employing office may submit comments, agree to abate the hazard, or contest the findings. In the vast majority of cases where a hazard is found, the employing office agrees to abatement. Once the employing office has informed the OOC that it has abated the hazard, and the OOC has confirmed that abatement is complete, the OOC closes its investigation. Apart from biennial inspections, these requests are the single most important source of information to the OGC concerning health and safety violations, since they are most often filed by employees who are familiar with, or exposed to, hazardous conditions in the legislative branch.

The Office received sixteen requests for inspection of occupational safety and health issues during the 111<sup>th</sup> Congress. More than one employing office was often named in a given case. As the office responsible for maintaining facilities for the majority of legislative branch offices, the Architect was named in ten cases. The Library of Congress and the United States Capitol Police were named in five and four requests respectively. Half of the cases opened during the 111<sup>th</sup> Congress have been closed. Of the remaining eight, most are near to closure, while one case requires asbestos and lead abatement that has only just recently received partial funding approval by Congress.

The potential hazards that the OOC was asked to inspect covered a broad range. Some requests involved hazards not often seen in the private sector, such as emergency communications concerns in security-sensitive areas and an injury caused by a collapsing security barrier. Others asserted more common safety and health concerns, such as insufficient safety equipment and procedures for concrete demolition, poorly maintained powered industrial trucks, and employee complaints regarding exposure to extreme heat and cold. The OOC will continue to address these issues thoroughly and efficiently in order to ensure that legislative branch employees’ jobs and workplaces are safe and hazard-free.

## **TECHNICAL ASSISTANCE**

During the 111<sup>th</sup> Congress, the OOC received many requests for technical guidance from employing offices, employees and safety staff. We provided assistance on a wide variety of topics, which ranged from controlling exposure to noise and exhaust on loading docks to developing an effective evacuation plan for employees in a large legislative branch facility. Other offices sought guidance on how to prevent employee exposure to bloodborne pathogens;



ensuring safe operation of forklifts; and limiting confined space entry to personnel with appropriate training and equipment. OOC staff advised two employing offices on the development and implementation of a comprehensive lockout/tagout program.

The Office also offered to provide assistance to employing offices concerning safety procedures and programs required by OSHA standards in preparation for the program review inspections slated for the 112<sup>th</sup> Congress. Such procedures can provide significant ongoing protection to employees, especially those engaged in high-risk activities. Several employing offices requested us to review and provide guidance regarding comprehensive safety programs, including respiratory protection, hazard communication and lockout/tagout. OOC safety professionals provided substantial assistance concerning these programs.

We also responded when one office asked for guidance in developing an injury investigation procedure; although OSHA standards at present do not require such programs, many firms in the private sector have found that a systematic approach to identifying the cause of injuries and illnesses help tailor preventive measures that reduce the number and severity thereof. Unfortunately, resource constraints have required us to put this project on hold; we will resume work if and when our budget permits.

## **EDUCATION AND OUTREACH**

In October 2009, the OOC sponsored its third Congressional Safety Conference, entitled *Safety and Health Programs: Reducing Injuries and Costs on Capitol Hill.* The Conference focused on developing safety and health management systems in the legislative branch. The Acting Assistant Secretary for the Occupational Safety and Health Administration, Jordan Barab, offered opening remarks. Other speakers included the Senior Director, Workplace Safety Initiatives, National Safety Council; the incoming President, American Society of Safety Engineers; and an Environmental Health & Safety consultant to the U.S. Department of Defense, among others. Attendees included staff from Senate and House Appropriations Committees; Committee on House Administration staff; staff from the AOC, LOC, GAO, Senate and House Employment Counsel, U.S. Capitol Police and other employing offices, as well as officials from unions representing legislative branch employees. Participants stated that they benefited from the presentations and the workshops, and were impressed by the high caliber of the presenters and their material.

The Office continued its monthly *Fast Facts* on the OOC website, [www.compliance.gov](http://www.compliance.gov). These short publications are targeted at both a general audience and safety and health specialists; they routinely receive the highest number of “hits” on the Office’s website. During the 111<sup>th</sup> Congress, we posted *Fast Facts* on subjects as varied as extension ladders, materials handling, landscaping, and the hazards of using mobile devices while walking, among other topics. We continue to receive positive feedback on these publications.

We also continued our quarterly meetings of the Legislative Branch OSH/ADA Working Group. These meetings provide continuing education for safety office staff, employment counsel and personnel from Member and Committee offices. During the 111<sup>th</sup> Congress, we offered presentations on a wide array of topics. Experts from the National Institute of Occupational Safety and Health/Centers for Disease Control offered information on the future of safety and health given an aging workforce. The incoming President of the American Society of Safety

Engineers made a timely presentation entitled “Advancing Safety and Health While Tightening Your Belt.” Staff from the Congressional Research Service and the Chief Administrative Office of the House presented an update on the Americans with Disabilities Act public access provisions. And OOC staff made two presentations about the risk-based process that we are implementing during the 112<sup>th</sup> Congress. In addition to the quarterly meetings, OOC staff met with all AOC Superintendents and every employing office that wanted to discuss self-inspections or the risk-based process.

## **ACKNOWLEDGEMENTS**

The 111<sup>th</sup> Congress Biennial Inspection was begun under the leadership of Stephen Mallinger, C.I.H., who had served as Special Assistant to the General Counsel on a long-term detail from the Occupational Safety and Health Administration until his retirement in January 2010. Faith L. Perry, C.S.P. and Certified Occupational Hearing Conservationist, now has overall responsibility for our safety and health program. Faith has over twenty years’ experience in occupational safety and industrial hygiene, including work for manufacturing, steel, health care and environmental cleanup firms; she joined the Office in August 2010 as OSH Program Manager, a new position authorized by Congress starting in 2010. The biennial inspection team was managed by Terry Wigfall, A.S.P., our recently-appointed OSH Compliance Manager; Terry has nearly 25 years’ experience in the field and has been a consultant to the OOC since 2007.

The other members of the inspection team were John Baugher, a safety consultant who joined the OOC after several years of service as a safety manager with Safeway Stores; Luis Guzman, the office’s first-ever employee safety and health inspector; and Thomas H. Seymour, a part-time consultant to the General Counsel since 1999 and a registered Professional Safety and Fire Protection Engineer. David K. Young, Management/Program Analyst, also scheduled inspections and prepared reports of hazard findings and abatement information for distribution to the employing offices. Matthew Baker, who graduated from the University of Maryland’s Fire Protection Engineering program in May 2011, provided valuable assistance as a part-time intern during the biennial inspections. Requester-initiated inspections were conducted principally by Thomas Seymour and Henry C. Woodcock, C.I.H., a part-time consultant to the Office since 1999. Robert W. Judd, Engineer-in-Training, continued his able service as Utility Tunnels Settlement Liaison.

Susan Green, Deputy General Counsel, and John Uelmen, Supervising Attorney, made significant contributions to the writing of this Report; David Young provided production assistance. Kathy Schluter, Administrative Assistant, and Joseph Loomis, a clerical assistant, helped produce and distribute the Report. Staff Attorneys Charles Tetreault and Robert Coomber provided ongoing legal support to the OSH program.

Peter Ames Eveleth  
General Counsel  
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## **OFFICE OF COMPLIANCE**

Room LA 200, John Adams Building  
110 Second Street, SE  
Washington, DC 20540-1999

**Recorded Information Line:** 202.724.9260

Phone: 202.724.9250

Fax: 202.426.1663