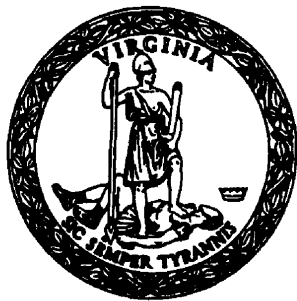


**REPORT OF THE BOARD OF  
HOUSING AND COMMUNITY  
DEVELOPMENT ON**

**The Need and Feasibility  
for Equipping General  
Inpatient, Outpatient, and  
Psychiatric Hospitals with  
Fire Suppression Systems**

**TO THE GOVERNOR AND  
THE GENERAL ASSEMBLY OF VIRGINIA**



**SENATE DOCUMENT NO. 7**

**COMMONWEALTH OF VIRGINIA  
RICHMOND  
1992**



COMMONWEALTH of VIRGINIA  
DEPARTMENT OF  
HOUSING AND COMMUNITY DEVELOPMENT

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September 13, 1991

MEMORANDUM

TO: The Honorable L. Douglas Wilder and the Honorable Members of the 1991 Virginia General Assembly

FROM: Neal J. Barber *Neal*

SUBJECT: Senate Joint Resolution No. 185

The 1991 General Assembly, by Senate Joint Resolution No. 185, requested that the Board of Housing and Community Development continue their study of the feasibility and need for requiring hospitals to be equipped with fire suppression systems.

Enclosed for your review and consideration is the report that has been prepared in response to this resolution.

cc: Honorable Lawrence H. Framme, III

Enclosure

B:\RRSJR185



# Report of The Board of Housing and Community Development

*The need and feasibility for equipping  
General Inpatient, Outpatient, and Psychiatric Hospitals  
with fire suppression systems*

*Report for Senate Joint Resolution 185  
passed by the 1991 General Assembly*

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## I. INTRODUCTION

Senate Joint Resolution 1 of the 1990 General Assembly requested that the Board of Housing and Community Development study the feasibility and need for equipping hospitals, nursing homes, psychiatric hospitals, homes for adults, congregate facilities, and child-caring institutions with automatic sprinkler systems. The Resolution requested that the Board identify the number of buildings used as hospitals, nursing homes, psychiatric hospitals, homes for adults, congregate facilities which house the elderly and handicapped adults, and child caring institutions that are not equipped with fire suppression systems; to examine the fire safety record of such institutions and facilities; to determine any structural problems with installation of fire suppression systems in these facilities and institutions; to estimate the cost of retrofitting these facilities with recommended systems; and to identify any other methods or systems deemed appropriate for increasing the fire safety of these facilities. The Resolution also directed the Board to submit its findings to the General Assembly no later than November 1, 1990.

### A. Response to SJR 1 (Senate Document 7)

The Board's findings were reported to the 1991 General Assembly in Senate Document Number 7. The Board concluded that " Fire suppression, detection, and alarm systems need to be installed in existing nursing homes and homes for adults which house residents that [cannot be considered capable of self-preservation in an emergency] .... Also, additional study needs to be conducted before the Board can conclude that adequate fire safety currently exists in hospitals." The Board specifically suggested that any additional study of hospitals should include the State Fire Marshal's submission of fire safety validation surveys for each hospital which had been identified as lacking a complete fire suppression system; an accurate count of the number of patient beds that are not protected by sprinklers; and an estimated cost for sprinklering these facilities.

The 1991 General Assembly responded to the findings reported in Senate Document 7 with Senate Joint Resolution 185, which states in part,

" That the Board of Housing and Community Development be requested to continue to study the feasibility and need for equipping certain buildings with fire suppression systems. As part of the study the Board is requested to identify the number of hospitals, psychiatric hospitals, and other facilities that present a high risk of loss of life and injury in the event of a fire that are not equipped with fire suppression systems; to examine the fire safety records of such facilities; to determine any structural problems with installation of fire suppression systems in these facilities; to estimate the cost of retrofitting these facilities with recommended systems; and to identify any other methods or systems deemed appropriate for increasing the fire safety of these facilities. The Board is further requested to study the cost and effectiveness of various fire protection systems. The Board is also requested to continue to examine water service fees charged by local water utilities for fire suppression systems."

## II. FINDINGS

### A. Number of Facilities not Equipped with Suppression Systems

Senate Document 7 reported that there were 61 General Inpatient Hospitals licensed by the Virginia Department of Health that were not equipped with a complete sprinkler system. Fifty-three of these facilities were equipped with partial sprinkler systems, with only 19 of the 53 having more than 50% of their total square footage sprinklered. The Department of Health also listed 13 private Psychiatric Hospitals, of which 5 are not sprinklered; and 17 State-owned Psychiatric Hospitals, of which 3 are not sprinklered, and 4 are equipped with partial sprinkler systems. There were also 17 Outpatient Surgical Hospitals licensed by the Department of Health, of which only 2 are not sprinklered.

The Board identified 10 additional unsprinklered General Inpatient Hospitals through the State Fire Marshal's compilation of fire safety validation surveys. These hospitals were not reported in Senate Document 7 because of the hospitals confusion as to what constitutes a fully sprinklered building. The State Fire Marshal's surveys identified 9 Psychiatric Hospitals, and 10 Outpatient Hospitals, that were not fully sprinklered.

### B. Hospital Fire Safety Records

Senate Document 7 detailed the fire safety records of all health care occupancies by reviewing national fire data collected by the National Fire Protection Association (NFPA) through the United States Fire Administration's National Fire Incident Reporting System (NFIRS), and Virginia's fire data which is compiled by the Department of Fire Programs for submission to NFIRS.

This national data was published by the NFPA as part of an extensive report on the United States fire problem. This report provides the average number of fires which occur annually in each category of building type (i.e. Educational, Mercantile, Business, Institutional, etc.) from 1983 to 1987, and lists the number of civilian deaths and injuries, and the direct property loss attributable to these fires. The report listed an annual average of 16,800 fires in all types of health caring institutions (i.e. nursing homes, hospitals, residential care facilities, etc.). Hospitals represented 6100 of these fires, but only 10 civilian deaths and 175 civilian injuries. Property loss figures were placed at \$5.8 million.

In comparison, the NFPA reported the following total annual averages for all structure fires; 826,800 fires, 4950 civilian deaths, 23,820 civilian injuries, and \$6,045.5 million in direct property loss. These statistics also clearly indicate that residential properties represent the most significant fire problem in the United States. One- and two- family dwellings accounted for 473,300 fires, 3,689 civilian deaths, 13,522 civilian injuries, and \$2,794.5 million in direct property loss. Multiple-family dwellings accounted for 114,500 fires, 870 civilian deaths, 5,699 civilian injuries, and \$637.9 million in direct property loss. Therefore, residential structures account for 71% of all structure fires, 92% of all civilian fire deaths, 81% of all civilian fire injuries, and 57% of all direct property loss. Hospitals accounted for .7% of all structure fires, .2% of all civilian fire deaths, .7% of all civilian fire injuries and .09% of all direct property loss.

The NFIPA report also contains a separate section on fire causes in health caring institutions. This section states that "... an overwhelming majority of fatal victims in these fires are very close to the point of ignition, which tends to be clothing, a mattress, or bedding, ignited accidentally or deliberately by a lighted cigarette, match, or lighter." The data in this section indicates that an annual average of 61% of fire fatalities in hospitals can be attributed to patients igniting their clothing or bedding with smoking materials. An additional 34% of the fire deaths were caused by incendiary fires, or fires with suspicious origins. Incendiary fires are those which are deliberately started (e.g. arson, etc.), and suspicious fires are those which appear to be incendiary but lack sufficient evidence to conclude that they were deliberately set. Since clothing and bedding materials are usually made of synthetic fibers which ignite and burn readily, one could conclude that flaming fires are responsible for 95% of the fire fatalities in hospitals (61% smoking + 34% incendiary/suspicious = 95% total).

The fire data compiled within Virginia by the Department of Fire Programs from 1987-88 confirms the national trend of fires in health care facilities being caused by smoking materials. The data documented 5 health care facility fires which resulted in injuries. Four of the five fires were caused by either a lighter, matches, or cigarettes. No fatalities were attributed to these fires. Only two of the unsprinklered facilities that are part of the Board's study reported any fire injury within the last five years. Both injuries were caused by patients setting their clothing on fire with cigarettes (see Figure 2a).

### C. Fire Safety Validation Surveys

The Board requested that the State Fire Marshal complete a fire safety validation survey for each unsprinklered hospital. These surveys assess the existing levels of fire safety that are provided at each facility. The State Fire Marshal normally conducts validation surveys on four hospitals each year at the request of the Department of Health and Human Services (HHS) through the Virginia Department of Health (DOH). These surveys assure that a hospital is maintained in compliance with the National Fire Protection Association Life Safety Code (NFIPA 101), and is a condition for retaining accreditation from the Joint Commission on the Accreditation of Healthcare Organizations, and being eligible to receive Medicaid/Medicare funding.

The survey consists of the inspection form contained in Appendix A, and must be completed by an inspector that has received a certificate from HSS qualifying him as competent to complete the validation survey. The inspections required by the survey evaluate the following building components: the construction type of the building; the flammability of interior finishes; the fire resistance ratings of corridor wall separations; the fire resistance ratings of required compartmentation; the protection of areas that are deemed as hazardous; the fire resistance ratings of exits; the number of exits available within the building; the presence of operable fire alarm systems, smoke detection systems, emergency power systems, and automatic fire suppression systems. Each of these elements is evaluated for compliance with the applicable edition of the NFIPA Life Safety Code specified by the HHS regulations. The applicable edition of the NFIPA standard varies depending on the date that the hospital was originally constructed. The inspections conducted by the State Fire Marshal were made using only the 1981 edition of the

NFiPA standard so that the compiled data would provide some degree of consistency. It should be emphasized that many of these hospitals were constructed prior to the development of the 1981 NFiPA standard, and may be considered fire safe by the HHS standards even though components are listed as noncompliant in this survey.

Figures 1a, 1b, 2a and 2b of this report contain the final results of the State Fire Marshal's evaluation of each unsprinklered General Inpatient and Outpatient hospital that is licensed by the Virginia Department of Health, and Psychiatric hospital licensed by the Department of Mental Health Mental Retardation and Substance Abuse Services. The indication that a component does not comply with the criteria of the NFiPA standard is determined by failure of that component to meet all conditions of the standard. For example, there are specific limitations on the type and amount of protection required for any openings (e.g. doors, vision panels, etc.) that are located in a fire-resistance rated wall. Therefore, if one vision panel in a fire-resistance rated corridor wall was not constructed of the proper materials, then the entire corridor is noted as failing to meet the validation survey requirements for corridors.

#### **D. Fiscal Impact of Sprinklering Existing Hospitals: Structural Barriers to Suppression**

The Board did not identify any structural barriers that make the retrospective installation of sprinklers difficult other than the need to abate asbestos-containing materials. However, there are several issues affecting the cost of retrofitting suppression systems in existing hospitals, including the costs of abating asbestos-containing materials.

The State Fire Marshal solicited each unsprinklered hospital to estimate the costs for installing suppression systems in existing hospitals when they conducted the fire safety validation survey. The Fire Marshal requested the following information from each facility;

1. The number of patient room beds that are/are not protected with sprinklers,
2. The number of fire incidents that have occurred in the last five years which resulted in any injury or fatality,
3. Whether the building has a standpipe system that is of adequate size to supply a sprinkler system,
4. Whether an automatic water supply is available to serve a sprinkler system, and whether a fire pump needs to be installed to supplement the system,
5. Whether the building contains any asbestos, and the estimated cost of abating the asbestos as part of the sprinkler system installation, and
6. The estimated costs for installing a sprinkler system, fire pumps, standpipes, and/or water supply.

These items are reflected in Figures 2a and 2b. Figure 2a also includes the Virginia Hospital Association's cost estimates for installing sprinkler systems and removing asbestos from

the General Inpatient Hospitals. The Virginia Hospital Association's estimates were \$2.4 million lower than the figures collected by the State Fire Marshal for those hospitals reporting estimates to both the Fire Marshal, and the association. Figure 2a also lists those unsprinklered hospitals which operated at a loss in the years 1988 and 1989.

The totals for Figure 2a reflect an estimated cost of \$63.556 million to sprinkler 49 of the 71 General Inpatient Hospitals listed in the survey. Four hospitals represent \$30.5 million (47%) of this total sprinkler estimate. Excluding these four hospitals from the cost figures reduces the total estimate to \$33.056 million. Figure 2b reflects a total estimate of \$2.265 million to sprinkler 8 of the 18 outpatient and psychiatric hospitals that responded to the survey.

The total cost figures include removing asbestos-containing materials. Twenty-eight of the General Inpatient hospitals reported asbestos removal costs of \$34.821 million. The remaining 43 hospitals either did not report any estimated costs for removing asbestos, or provided insufficient information to determine the actual asbestos removal costs. Six outpatient and psychiatric hospitals reported having asbestos which would need to be removed; however, only one outpatient hospital reported an estimate, of \$3000, for asbestos removal.

There are 8454 patient beds that are not protected by sprinklers in the 49 General Inpatient hospitals that provided sprinkler estimates. Therefore, the cost to provide sprinkler protection in these facilities is approximately \$7500 per patient bed. Excluding the four hospitals which accounted for 47% of the total estimate reduces the figure to \$4750 per patient bed. There are 1237 unprotected patient beds in the Outpatient and Psychiatric hospitals; however, those hospitals which reported sprinkler estimates house only 653 patient beds. Therefore, the cost of protecting these 653 patient beds is estimated at \$3277 per bed. Eight of the Outpatient hospitals have no patient beds available for overnight use.

Seventeen of the 71 General Inpatient hospitals would also need to install fire pumps to support the operation of a sprinkler system, and 21 others did not report whether fire pumps would be necessary. Two of the Psychiatric hospitals would require the installation of fire pumps.

#### **E. Other Fire Suppression Systems**

Senate Joint Resolution 185 requested that the Board study the cost and potential effectiveness of various fire protection systems for these facilities.

The only fire suppression systems available other than sprinklers use chemical agents which can be toxic to humans, are not proven to be as reliable as sprinklers, and are more costly. Examples of the suppression agents used in these other systems include carbon dioxide, halon, dry chemical, and foam suppression systems.

Carbon dioxide and foam systems extinguish fire by displacing the oxygen, so the fire is essentially smothered. These agents are most effective on flammable and combustible liquid fires, with carbon dioxide also used for electrical fires. The design and use of these systems would require that each room be equipped with a separate system, which increases the cost of protecting the entire building. Also, the installation standard for carbon dioxide systems requires that



occupants of the room must be capable of evacuation prior to system activation because the discharging carbon dioxide obscures egress paths and lowers oxygen content to lethal levels.

Dry chemicals and halons are chemical compounds that extinguish fire by interrupting the combustion process. Although halons do not displace oxygen the byproduct of the extinguishing process can be toxic. The effectiveness of halon systems is dependent on maintaining a minimum concentration of the agent in the room for an extended period of time. Since halons are heavier than air it is difficult for large open areas, or rooms which are not "air tight", to retain the concentration levels long enough to control or extinguish the fire. Finally, halon suppression agents are expensive, and are major contributors to the depletion of the earth's ozone layer. Dry chemical agents are typically powder substances that are not suited to extinguishing deep-seated fires.

It should also be noted that activation of these systems immediately discharges all of the extinguishing agent; therefore, they only have one opportunity to control or extinguish the fire. Sprinkler systems are connected to a water source that will keep the system operational for an extended period of time. Also, the sprinkler design standard requires that systems be installed so that the fire department can supplement the water supply. The other types of suppression systems are not designed to be supported by fire department operations.

#### **F. Water Service Fees**

Senate Joint Resolution 1 from the 1990 General Assembly requested that the Board estimate the costs of retrofitting health care facilities with the recommended fire suppression systems. The Board's economic impact study revealed concerns for the water service charges levied by local governments and water authorities. Section 15.1-292 of the Code of Virginia authorizes localities to establish service charges and tap fees for providing public water to users. Therefore, many jurisdictions have promulgated separate connection fee costs for sprinkler systems. These fees vary from one locality to the next, and are typically based on the size of the line being served. The total costs for these charges can approach tens of thousands of dollars. These authorities also typically charge standby fees to assure availability of fire suppression system water. Figures 2a and 2b indicate that 29 General Inpatient, and 10 Outpatient or Psychiatric hospitals are served by local water systems that charge separate connection fees for sprinkler systems.

Water authorities may also require sprinklered facilities to install metering devices to detect system leaks and unauthorized use of water through the sprinkler system. However, the sprinkler system design standard mandates the installation of electronic water flow devices and an alarm panel to detect system activation and assure that the system is operable. The water flow alarms are monitored through the alarm panel by an approved supervisory service. The supervisory service notifies the fire department of any system activation which is detected by the water flow device. Although these devices are not typically sensitive enough to detect system leaks, they will activate if an occupant attempts to steal water through the system.

Water authorities are also mandated to protect the public water supply from any potential sources of contamination or cross connections. The Department of Health promulgates the Virginia

Waterworks Regulations to require the installation of backflow prevention devices at water service line connections that pose a threat to the public water supply. The waterworks regulations identify sprinkler systems as a potential threat that requires protection, but do not specify the type of protection needed. The authority generally requires the installation of double detector check valve assemblies, or reduced pressure principle backflow preventors. These backflow devices, and the water meter, are then required to be installed in concrete vaults to allow access for maintenance, repair, or replacement. The meter, backflow preventer and vault all add significant costs to the installation of sprinkler systems. The American Waterworks Association has published Manual M-14 to prescribe the level of backflow protection that should be required for sprinkler system based on the type of equipment and water supply connection used in the installation. The M-14 manual identifies appropriate, economical methods of providing backflow protection for sprinkler systems that are connected to the municipal water supply.

The Board's study also determined that sprinkler systems actually reduce water consumption when fires occur. This reduced demand on the local water system is obvious when comparing common firefighting practices against the hydraulic design and operation of sprinkler systems. Sprinklers are typically designed to flow only 20 gallons of water per minute at a pressure of 12-15 pounds per square inch. Historically, sprinkler systems have an effective operation of over 90%, and control the fire with the activation of no more than two sprinklers. Therefore, a sprinkler system would successfully control over 90% of typical fire scenarios with a maximum flow rate of 40 gallons per minute. Comparatively, fire department personnel are instructed to use a minimum 1-1/2 inch fire lines at a minimum flow of 95 gallons per minute and a pressure of 100 pounds per square inch. These fire lines are supplied by pumps that are mounted on fire department vehicles. The water supply for these pumps is provided by direct connections to public water mains through fire hydrants. The water used by the fire department to fight fire is not metered, and the pumps are not equipped with any means of backflow protection. It should also be noted that the first priority of any fire department is to supplement the water supply of any sprinkler system that is installed within a building.

These findings prompted the recommendations published in Senate Document 7 to amend the Code of Virginia to prohibit local water utilities from 1) requiring the installation of water meters on sprinkler systems, and 2) charging any water service fees for sprinkler systems beyond actual connection costs. The Board also recommended adherence to the backflow guidelines developed by the American Waterworks Association.

Local water authorities were requested to comment on the findings and recommendations that the Board published in Senate Document 7. The concerns of the respondents are divided into the following categories:

1. Prohibiting connection fees could violate the water authorities bond trust agreements,
2. Prohibiting connection fees restricts revenues,
3. Prohibiting water meters leaves no ability to detect system leaks, or unauthorized use of water,

4. The recommendations will require that users without sprinkler systems must subsidize those users that have sprinkler systems, and
5. It is inappropriate to grant this exclusion only for sprinkler systems in health care facilities.

It should also be noted that some of the respondents only suggested that the study be thorough and stated that they were not opposed to the recommendations published in Senate Document 7.

### **G. Fire Preparedness**

The last issue considered during the Board's study was the ability of hospital staff to respond appropriately to a fire emergency condition. This subject was evaluated based on the numbers of professional staff that are available, and the expectation for this staff to respond appropriately during a hospital fire emergency.

The Virginia Statewide Fire Prevention Code (SFPC) requires that each hospital have a written evacuation plan that is available to all supervisory personnel. This plan is required to provide for the protection of all persons within the hospital. The SFPC requires that all hospital employees be periodically instructed and kept informed with respect to their duties under this plan.

Hospitals are also required to conduct fire drills, to include transmission of a fire alarm signal, and simulation of emergency fire conditions except that the movement of bedridden patients is not required. These drills are to be conducted quarterly on each shift. At least twelve drills must be conducted each year. Audible fire alarms are not required when the drill is conducted between 9:00 p.m. and 6:00 a.m.

Hospitals are also required to keep records on each of these fire drills, and must submit written reports to the fire official at least twice each year. The fire official may require that reports be submitted more frequently if he desires. Figures 1a and 1b identify only one General Inpatient, and one Psychiatric hospital as not having records of these fire drills.

The Virginia Fire Services Board submitted reports of hospital fire drills to the Board of Housing and Community Development which suggested that inadequate numbers of hospital staff were available to implement the required evacuation plans. These reports also suggest that the hospital staff are typically not trained to properly initiate the evacuation plan.

## **III. RECOMMENDATIONS**

The Board of Housing and Community Development concluded that existing hospitals in Virginia do not present a high risk of loss of life and injury in the event of fire. The Board based this conclusion on the good fire safety record that has been achieved both nationally and within

the State, and the current levels of fire safety demonstrated through the validation surveys conducted by the State Fire Marshal. The Board further concluded that the installation of fire suppression systems within existing hospitals would do little to improve current hospital fire safety records, because the fatalities usually result from victims setting themselves on fire. The Board also concluded that the costs for installing suppression systems in existing hospitals are prohibitive, especially given that hospitals are not designed to be fully occupied at all times.

Pursuant to these findings, the Board does not recommend requiring that existing unsprinklered hospitals be equipped with fire suppression systems. However, the Board does recommend that the Department of Health review the regulations which establish minimum staffing ratios for hospitals. These ratios should provide that enough staff be present to assure proper implementation of the approved fire emergency plan. The fire drill reports submitted to the Board by the Virginia Fire Services Board suggest that inadequate numbers of properly trained staff are available to respond to emergency conditions within hospitals, especially during the late evening and early morning hours when fires are most likely to occur.

The Board concluded that local water authorities should have the ability to charge fair and equitable rates to users of public water systems. The Board does not advocate restrictions of revenues to defray the operational costs of local water authorities, but recommends that the fees collected from users should fairly represent the actual demand that each system places on the water supply. The local charges which are currently applied to sprinkler systems do not appear to be equitable and discourage voluntary system installations. A substantiated fee schedule would recognize that sprinkler systems only use water during emergency fire conditions, use far less water than what would be used by local fire departments during conventional firefighting operations, and do not demand any more water of the municipal system than is already available at the time of installation. The recommendation published in Senate Document 7, to prohibit any fees other than costs for labor and materials to make the connection, was founded on these principles. Also, the Board intends that this recommendation apply to all buildings that are equipped with sprinkler systems.

The Board also concluded that sprinkler systems which are required to be equipped with water flow alarms can adequately detect unauthorized use of water through the sprinkler system. Although the water flow devices may not detect system leakages, the national design standard requires that systems be pressure tested to confirm that no leaks are present. The design standard also requires periodic maintenance inspections to assure the integrity of the piping, joints, valves, and all other portions of the system where leaks could potentially occur. Also, none of the statistical evidence available on sprinkler system reliability suggests that these systems are prone to leaks. Finally, the Board believes that building owners will continually monitor systems during normal building usage to avoid the cost of repairs resulting from water damage. The Board continues to recommend that water authorities be prohibited from requiring water meters for sprinkler systems.

The Board further concluded that the extent of backflow protection necessary for sprinkler systems is not adequately addressed by the Virginia Waterworks Regulations. These regulations do not prescribe the levels of protection that should be provided based on the relative hazard created by the sprinkler system connection to the water service line. The absence of specific regulation results in local adoption of nonuniform criteria that often requires excessive backflow

protection versus that which is most appropriate for the potential hazard. The Board recommends that the Department of Health give due consideration to amending the Virginia Waterworks Regulations to require that backflow protection for sprinkler systems be in accordance with the American Waterworks Association Manual M-14.

### **Acknowledgements**

The Board would like to thank the following State agencies and professional associations for their assistance in studying the issues covered by this report:

- Virginia Department of Health
- Virginia Department of Fire Programs
- Virginia Fire Services Board
- Virginia Hospital Association
- Virginia Safe Drinking Water Coalition
- Association of Virginia Water Companies
- Virginia Rural Water Association
- Virginia Section American Waterworks Association
- Virginia Water and Sewage Authorities Association

FIGURE 1 ■

HOSPITAL SURVEY DATA

BASED ON COMPLIANCE WITH 1981 LIFE SAFETY CODE SURVEY

<u>FACILITY</u>	<u>CONST. TYPE</u>	<u>INT. FINISH</u>	<u>CORRIDOR<sup>a</sup> SEPARATION</u>	<u>COMPART-<sup>a</sup> MENTATION</u>	<u>HAZARDOUS AREA</u>	<u>EXIT FIRE<sup>b</sup> RATING</u>	<u>NUMBER OF EXITS</u>	<u>EMERGENCY POWER</u>	<u>FIREALARM<sup>c</sup> SYSTEM</u>	<u>SMOKE<sup>c</sup> DETECTION</u>	<u>SMOKING REGULATION</u>	<u>RECORD OF FIRE DRILLS</u>
1. Augusta Kings Dau.	Y	Y	N	N	Y	Y	Y	*	Y	*	Y	Y (2)
2. Alexandria Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N (1)
3. Arlington Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Bedford Co. Mem.	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y (1)
5. Childrens Hosp.	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y (1)
6. Childrens Hosp. of Kings	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7. Comm. Hosp. of Roanoke	Y	*	Y	Y	Y	Y	Y	*	Y	*	Y	Y
8. Culpeper Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9. DePaul Hosp.	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y (1)
10. Fairfax Co.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11. Fauquier Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y (1)
12. Franklin Mem.	Y	Y	Y	*	Y	Y	Y	*	Y	*	Y	Y
13. Giles Mem.	N	Y	N	N	N	Y	Y	Y	N	Y	N	Y (6)
14. Gill Mem.	Y	*	N	Y	*	N	N	*	Y	*	Y	Y (3)
15. Greensville Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
16. Halifax So. Boston Comm.	Y	Y	Y	*	*	N	Y	*	Y	*	Y	Y (1)
17. Henrico Doc. Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
18. Humana Bayside	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
19. Humana St. Luke	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y (1)

\* insufficient information on survey to determine compliance.

<u>FACILITY</u>	<u>CONST. TYPE</u>	<u>INT. FINISH</u>	<u>CORRIDOR<sup>a</sup> SEPARATION</u>	<u>COMPART-<sup>a</sup> MENTATION</u>	<u>HAZARDOUS AREA</u>	<u>EXIT FIRE<sup>b</sup> RATING</u>	<u>NUMBER OF EXITS</u>	<u>EMERGENCY POWER</u>	<u>FIREALARM<sup>c</sup> SYSTEM</u>	<u>SMOKE<sup>c</sup> DETECTION</u>	<u>SMOKING REGULATION</u>	<u>RECORD OF FIRE DRILLS</u>
20. Kings Dau. Trans. Care	Y	Y	*	Y	*	Y	Y	*	*	*	Y	Y
21. Jefferson Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
22. Lewis Gale Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
23. Loudoun Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
24. Louise Obici Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
25. Lynchburg Co. Gen.	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y (2)
26. Maryview	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
27. Mary Washington	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
28. Mem. Mart. & Hen. Co.	Y	Y	Y	Y	Y	Y	Y	*	Y	*	Y	Y
29. Mem. of Danville	Y	Y	Y	Y	Y	*	Y	*	Y	*	Y	Y
30. Metropolitan Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
31. Montgomery Regional	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y (3)
32. Mount Vernon	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
33. National Orthopedics	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
34. Accom. Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
35. No. VA. Doc.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
36. Page Mem. Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
37. Portsmouth Gen. Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
38. Potomac Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39. Prince William Hosp.	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y (2)

\*Insufficient information on survey to determine compliance.

<u>FACILITY</u>	<u>CONST. TYPE</u>	<u>INT. FINISH</u>	<u>CORRIDOR<sup>a</sup> SEPARATION</u>	<u>COMPART-<sup>a</sup> MENTATION</u>	<u>HAZARDOUS AREA</u>	<u>EXIT FIRE<sup>b</sup> RATING</u>	<u>NUMBER OF EXITS</u>	<u>EMERGENCY POWER</u>	<u>FIREALARM<sup>c</sup> SYSTEM</u>	<u>SMOKE<sup>c</sup> DETECTION</u>	<u>SMOKING REGULATION</u>	<u>RECORD OF FIRE DRILLS</u>
40. Pulaski Comm.	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y (2)
41. R. J. Rey. Pat. Co.	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y (1)
42. Radford Comm.	Y	Y	Y	N	N	N	N	Y	Y	N	Y	Y (5)
43. Rappahannock Gen.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
44. Retreat Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
45. Richmond Eye & Ear	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y (1)
46. Richmond Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
47. Riverside Middle Penn	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
48. Riverside Reg. Med Ctr.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
49. Riverside Tapp. Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
50. Roanoke Mem.	Y	Y	Y	Y	Y	Y	Y	*	Y	*	Y	Y
51. Rockingham Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y (1)
52. St. Mary's of Richmond	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y (1)
53. Sentara Hampton Gen.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
54. Sentara Leigh	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
55. Sentara Norfolk Gen.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
56. Shenandoah Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
57. Southhampton Mem.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
58. Southside Comm. Farmville	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

\*Insufficient information on survey to determine compliance



<u>FACILITY</u>	<u>CONST. TYPE</u>	<u>INT. FINISH</u>	<u>CORRIDOR<sup>a</sup> SEPARATION</u>	<u>COMPART-<sup>a</sup> MENTATION</u>	<u>HAZARDOUS AREA</u>	<u>EXIT FIRE<sup>b</sup> RATING</u>	<u>NUMBER OF EXITS</u>	<u>EMERGENCY POWER</u>	<u>FIREALARM<sup>c</sup> SYSTEM</u>	<u>SMOKE<sup>c</sup> DETECTION</u>	<u>SMOKING REGULATION</u>	<u>RECORD OF FIRE DRILLS</u>
59. Southside Reg. Med. Ctr.	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y (1)
60. Smyth Co. Comm.	Y	Y	Y	N	*	Y	Y	Y	Y	Y	Y	Y (1)
61. Stuart Circle Hosp.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
62. VA Bapt Eng. Bldg.	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y (1)
63. VA Beach Gen.	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y (1)
64. Waynesboro Comm.	Y	Y	N	N	*	N	N	*	Y	*	Y	Y (4)
65. Williamsburg Comm.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
66. Wise Appala-chian Reg.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
67. Woodrow Wilson Rehats.	Y	Y	Y	Y	Y	Y	Y	*	Y	*	Y	Y
68. Wythe Co. Comm.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
69. Bristol Mem. Hall	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y (2)
70. Roanoke Mem. Rehats Ctr.	Y	*	Y	Y	Y	Y	Y	*	Y	*	Y	Y
71. VA. Baptist	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>TOTAL NOT COMPLYING</b>	<b>2</b>	<b>0</b>	<b>10</b>	<b>10</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>

**Note:**

- a. The most common cause of partitions not complying were unprotected penetrations, and not extending to the underside of the roof or floor above.
- b. The most common cause of exit fire ratings not complying were the use of non rated vision panels in the partitions.
- c. Violation of the fire alarm or smoke detection system criteria were because of unprotected areas within the building.



PSYCHIATIC AND OUTPATIENT

HOSPITAL SURVEY DATA

BASED ON COMPLIANCE WITH 1981 LIFE SAFETY CODE SURVEY

<u>FACILITY</u>	<u>CONST. TYPE</u>	<u>INT. FINISH</u>	<u>CORRIDOR SEPARATION</u>	<u>COMPART-MENTATION</u>	<u>HAZARDOUS AREA</u>	<u>EXIT FIRE RATING</u>	<u>NUMBER OF EXITS</u>	<u>EMERGENCY POWER</u>	<u>FIREALARM SYSTEM</u>	<u>SMOKE DETECTION</u>	<u>SMOKING REGULATION</u>	<u>RECORD OF FIRE DRILLS</u>
Western State Hosp. Pettis Bldg.	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y 0
Western State Med. Surgery	Y	Y	Y	Y	Y	Y	Y	*	Y	N	Y	Y 1
Willis Eye Surgical Center	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y 0
<b>TOTALS</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>1</b>

FIGURE 2 a

HOSPITAL SURVEY DATA  
GENERAL INPATIENT HOSPITALS

<u>FACILITY</u>	<u>NUMBER OF BEDS NOT PROTECTED (NUMBER OF BEDS PROTECTED)</u>	<u>FIRE RECORD WITH INJURY OR FATALITY</u>	<u>ASBESTOS IN BUILDING</u>	<u>STANDPIPE ADEQUATE</u>	<u>REQUIRE NEW FIRE PUMP</u>	<u>ESTIMATED COSTS (ASBESTOS REMOVAL COST)</u>	<u>VHA ESTIMATES (ASBESTOS REMOVAL COSTS)</u>
1. Augusta Kings Dau. <sup>12</sup>	243	N	Y	Y	N	2.5 Mil (1.5)	.333
2. Alexandria Hosp.	60(300)	N	Y	Y	Y	.25 Mil (.03)	.23
3. Arlington Mem.	189(166)	N	Y	Y	Y	5.5 Mil (1.8)	5.5
4. Bedford Co. Mem.	67	N	Y	Y	N	*	*
5. Bristol Mem. Hall <sup>12</sup>	80	N	Y	N	N	.006 Mil (0)	
6. Childrens Hosp. <sup>11/12</sup>	36	N	Y	Y	N	.07 Mil (0)	*
7. Child. Hosp. of Kings Dau.	42(90)	N	N	Y	Y	* (*)	
8. Comm. Hosp. of <sup>12</sup> Roanoke	215(45)	N	Y	Y	Y	5.8 Mil (5)	
9. Culpeper Mem	97	N	Y	Y	*	.25 Mil (0)	.8 (.25)
10. DePaul Hosp. <sup>10/12</sup>	402	N	Y	Y	N	* (*)	*
11. Fairfax Co. <sup>1/12</sup>	612(42)	Y <sup>2</sup>	Y	Y	Y	4.0 Mil (*)	4 (.2)
12. Fauquier Mem.	85(36)	N	Y	*	*	* (.1 Mil)	*
13. Franklin Mem. <sup>9</sup>	62	N	Y	N	*	.2 Mil (*)	.127
14. Giles Mem <sup>9</sup>	6(59)	N	Y	N	Y	* (0)	.04
15. Gill Mem <sup>12</sup>	11	N	Y	*	*	.06 Mil (.02)	*
16. Greensville Mem. <sup>10</sup>	117(68)	N	Y	N	N	.2 Mil (.15)	*
17. Halifax-South Boston Comm.	99(100)	N	N	Y	Y	.3 Mil (0)	*
18. Henrico Doc. Hosp. <sup>12</sup>	168(180)	N	N	Y	Y	.2 Mil (0)	.218
19. Humana Bayside	250	N	Y	Y	Y	* (0)	
20. Humana St. Luke <sup>9</sup>	200	N	Y	*	N	* (0)	.295
21. Kings Dau. Trans. <sup>12</sup> Care	12	N	N	N	N	.1 Mil (*)	

<u>FACILITY</u>	<u>NUMBER OF BEDS NOT PROTECTED (NUMBER OF BEDS PROTECTED)</u>	<u>FIRE RECORD WITH INJURY OR FATALITY</u>	<u>ASBESTOS IN BUILDING</u>	<u>STANDPIPE ADEQUATE</u>	<u>REQUIRE NEW FIRE PUMP</u>	<u>ESTIMATED COSTS (ASBESTOS REMOVAL COST)</u>	<u>VHA ESTIMATES (ASBESTOS REMOVAL COSTS)</u>
22. Jefferson Mem. <sup>12</sup>	120	N	Y	Y	N	* (*)	.280
23. Lewis Gale Hosp.	332(50)	N	Y	Y	*	* (*)	*
24. Loudoun Mem. <sup>9</sup>	119(12)	N	Y	Y	N	* (1 Mil)	.9 (.7)
25. Louise Obici Mem <sup>11</sup>	65(120)	N	Y	Y	Y	2 Mil (1.25)	1.5 (1)
26. Lynchburg Gen.	258(12)	N	Y	Y	N	.4 Mil (.35)	.9 (.3)
27. Maryview <sup>12</sup>	237(84)	N	Y	Y	N	1.55 Mil (0)	*
28. Mary Washington	110(230)	N	Y	Y	N	.4 Mil (.2)	.47 (.2)
29. Mem. Mart. & Hen. Co.	236(28)	N	Y	N	Y	.79 Mil (*)	.75
30. Mem. of Danville	506	Y <sup>3</sup>	Y	N	N	1.2 Mil (.2)	1
31. Metropolitan Hosp.	180	N	N	Y	N	* (0)	*
32. Montgo. Reg. <sup>10/12</sup>	158	N	Y	Y	N	* (*)	
33. Mount Vernon <sup>12</sup>	235	N	N	Y	N	.4 Mil (0)	*
34. National Orthopedics	164(10)	N	Y	Y	N	1.5 Mil (.5)	*
35. Northhamp-Accom. Mem.	127(31)	N	Y	Y	Y	1.25 Mil (1)	1.5
36. No. VA. Doctors <sup>10</sup>	258(15)	N	N	N	*	1 Mil (0)	
37. Page Mem. Hosp. <sup>9</sup>	54	N	N	N	N	* (0)	
38. Portsmouth Gen. Hosp. <sup>9/12</sup>	128(56)	N	Y	*	Y	2.2 Mil (1.8)	2.25 (.9) <sup>4</sup>
39. Potomac Hosp. <sup>12</sup>	128(25)	N	Y	*	N	.01 Mil (0)	.459
40. Prince William Hosp.	100(71)	N	Y	*	*	* (*)	*
41. Pulaski Comm. <sup>11/12</sup>	143(10)	N	Y	N	*	.08 Mil (*)	.08
42. R. J. Rey. Pat. Co.	77	N	Y	*	Y	* (*)	.176 <sup>7</sup>
43. Redford Comm.	175	N	Y	Y	*	.02 Mil (.012)	.212 (.012)
44. Rappahannock Gen. <sup>9</sup>	76	N	N	Y	N	* (*)	*

<u>FACILITY</u>	<u>NUMBER OF BEDS NOT PROTECTED (NUMBER OF BEDS PROTECTED)</u>	<u>FIRE RECORD WITH INJURY OR FATALITY</u>	<u>ASBESTOS IN BUILDING</u>	<u>STANDPIPE ADEQUATE</u>	<u>REQUIRE NEW FIRE PUMP</u>	<u>ESTIMATED COSTS (ASBESTOS REMOVAL COST)</u>	<u>VHA ESTIMATES (ASBESTOS REMOVAL COSTS)</u>
45. Retreat Hosp.	160(70)	N	Y	Y	N	3.2 Mil (.2)	.5 (.3)
46. Richmond Eye & Ear	60	N	N	Y	N	.03 Mil (0)	
47. Richmond Mem. <sup>12</sup>	14(336)	N	Y	Y	N	.02 Mil (*)	*
48. Riverside Middle Penn. <sup>12</sup>	71	N	*	*	*	.02 Mil (*)	*
49. Riverside Reg. Med. Ctr. <sup>12</sup>	576	N	*	N	N	.75 Mil (*)	2.25 (1.5)
50. Riverside Tapp. Hosp.	100	N	N	*	*	1 Mil (0)	*
51. Roanoke Mem. <sup>12</sup>	492	N	Y	Y	N	15.2 Mil (14)	15
52. Rockingham Mem. <sup>12</sup>	330	N	Y	Y	N	* (*)	2.6 (1)
53. St. Marys of Richmond	361(40)	N	Y	Y	N	* (*)	*
54. Sentara Hampton Gen. <sup>12</sup>	343(26)	N	Y	Y	N	.3 Mil (.25)	*
55. Sentara Leigh <sup>12</sup>	256	N	N	Y	*	.01 Mil (0)	.467
56. Sentara Norfolk Gen. <sup>12</sup>	210(391)	N	Y	Y	Y	1.6 Mil (1.5)	*
57. Shenandoah Hosp.	93	N	Y	Y	*	.15 Mil (*)	.5 (.3)
58. Southhampton Mem.	126(109)	N	Y	*	Y	.25 Mil (*)	.185 (.005) <sup>5</sup>
59. Southside Comm. <sup>11</sup> Hosp. Farmville	20(117)	N	Y	Y	N	.15 Mil (.05)	
60. Southside Reg. Med Ctr.	320	N	Y	Y	Y	1.1 Mil (.2)	*
61. Smyth Co. Comm.	176	N	Y	N	*	.5 Mil (.219)	*
62. Stuart Cir. Hosp. <sup>9/12</sup>	156	N	Y	Y	N	* (0)	.05
63. VA Bap. Eng. Bldg.	85	N	N	Y	N	.2 Mil (.0)	.8 <sup>8</sup>
64. VA Beach Gen. <sup>12</sup>	73(201)	N	Y	Y	N	1 Mil (.15)	.7 <sup>8</sup>
65. Waynesboro Comm. <sup>12</sup>	171	N	Y	*	*	2.2 (1.5)	.22 <sup>8</sup>

<u>FACILITY</u>	<u>NUMBER OF BEDS NOT PROTECTED (NUMBER OF BEDS PROTECTED)</u>	<u>FIRE RECORD WITH INJURY OR FATALITY</u>	<u>ASBESTOS IN BUILDING</u>	<u>STANDPIPE ADEQUATE</u>	<u>REQUIRE NEW FIRE PUMP</u>	<u>ESTIMATED COSTS (ASBESTOS REMOVAL COST)</u>	<u>VHA ESTIMATES (ASBESTOS REMOVAL COSTS)</u>
66. Williamsburg Comm. <sup>12</sup>	81(75)	N	Y	N	*	14 Mil (.09)	.203 (.025)
67. Wise, Appalachian Reg. <sup>11</sup>	67	N	N	N	*	* (0)	.13 <sup>8</sup>
68. Woodrow Wilson Rehab.	56	N	N	*	*	.5 Mil (0)	*
69. Wythe Co. Comm.	106	N	Y	Y	*	* (1.6 Mil)	*
70. Roanoke Mem Rehab <sup>12</sup> Ctr.	200	N	N	Y	*	.3 Mil (0)	
71. VA Baptist	250	N	Y	Y	*	* (.150)	
<b>TOTALS</b>	<b>11,742(3205)</b>	<b>2</b>	<b>45</b>	<b>46</b>	<b>17</b>	<b>63.556 Mil (34.821)</b>	<b>45.625 (6.692)</b>

Note:

1. Hospital will be fully sprinklered by May, 1992.
  2. Patient ignited mask with cigarette.
  3. Patient ignited by lighting a cigarette during inhalation therapy.
  4. Hospital lists .896 million for "other associated costs".
  5. Hospital lists .075 million for "other associated costs".
  6. Written sprinkler estimate for 13 system unless otherwise noted.
  7. Written sprinkler estimate for 130 or 13R system.
  8. Hospital's sprinkler estimate for 13 system.
  9. Hospital operated at a loss in 1988.
  10. Hospital operated at a loss in 1989.
  11. Hospital operated at a loss in 1988 and 1989.
  12. Local water authority charges water service fee for sprinkler systems.
- \* Insufficient detail was provided to develop conclusion.

VHA list includes:

- Bath County Community Hospital
- Chesapeake General
- Martha Jefferson
- > Portsmouth Naval
- Stonewall Jackson
- > St. Johns
- John Randolph
- > Blue Ridge

VHA list does not include:

- Children Hospital of Kings Daughters
- Community Hospital of Roanoke
- Montgomery Regional Hospital
- Northern Virginia Doctors Hospital
- Page Memorial Hospital
- Richmond Eye and Ear
- Southside Community Hospital, Farmville
- Roanoke Memorial Rehab. Center
- Humana Bayside

- > These hospitals are not on the list of hospitals licensed by the Department of Health.

PSYCHIATRIC AND OUTPATIENT HOSPITAL SURVEY DATA

<u>FACILITY</u>	<u>TOTAL NUMBER OF BEDS (NUMBER OF BEDS PROTECTED)</u>	<u>FIRE RECORD WITH INJURY OR FATALITY</u>	<u>ASBESTOS IN BUILDING (REMOVAL COST)</u>	<u>STANDPIPE ADEQUATE</u>	<u>REQUIRE NEW FIRE PUMP</u>	<u>ESTIMATED COSTS</u>	<u>LOCAL WATER SERVICE FEES</u>
Activities Therapy Psych Institute	N.A.	0	N	Y	N	*	N
Acute Care Psych Institute	66	0	N	N.A.	N	.055M	N
Cataract Surgery Center	N.A.	0	N	*	N	*	Y
Catawba Hospital	300	0	Y(0)	Y	Y	.822M	*
Central VA Training Center	82	0	Y(\$0)	N	*	.225M	N
Charter Hosp. of Charlottesville	75(15)	0	N	N	N	*	Y
Dejaraette Center	60	0	Y(*)	N	Y	.397M	Y
Northern VA Training Center	299	0	N	N	N	*	Y
Piedmont Day Surgery	N.A.	0	*	N	N	.125M	N
Riverside Surgery Center	N.A.	0	N	N.A.	N	*	Y
Tuckahoe Orthopedic Surgery	12	0	N	N	N	*	Y
Urological Center of Richmond	N.A.	0	Y(*)	N	N	*	Y
Urological Center South	N.A.	0	N	N	N	*	Y
VA Heart Institute	N.A.	0	*	N	N	*	Y
Westbrook Psych. Hosp.	198(1)	0	*	N	N	*	N
Western State Hosp. Pettis Bldg.	101	0	Y(\$0)	N	N	.370M	N
Western State Med. Surgery	60	0	Y(.003M)	N	N	.268M	N
Willis Eye Surgical Center	N.A.	0	N	N	N	*	Y
<b>TOTALS</b>	<b>1253</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>2.262M</b>	<b>10</b>

\*Insufficient detail submitted to develop conclusion