REPORT OF THE
DEPARTMENT OF FIRE PROGRAMS

Ability of Local Fire Service Agencies to Respond to Fire Emergencies in State Correctional Facilities

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 28

COMMONWEALTH OF VIRGINIA
RICHMOND
1994

A REPORT IN RESPONSE TO HOUSE BILL 30, ITEM 456. REGARDING A STUDY OF THE ABILITY OF LOCAL FIRE SERVICE AGENCIES TO RESPOND TO FIRE EMERGENCIES IN STATE CORRECTIONAL FACILITIES

November 1993

BACKGROUND:

The 1993 General Assembly requested a study of the abilities of local fire departments to respond to fire emergencies at state correctional facilities be made by the Department of Corrections in conjunction with the Department of Fire Programs and local fire service providers. The focus of the study was to estimate the overall capabilities of fire service organizations to respond to fire emergencies at or in those correctional facilities situated within normal response areas with particular emphasis the adequacy fire suppression apparatus, fire fighting equipment, and availability of fire fighter personnel.

The Department of Corrections included thirty-nine (39) facilities in the study and identified the thirty-four (34) fire departments nearest these facilities. Three facilities are served by the same municipal fire department. In two cases, two facilities are served by the same fire department. One fire department serves each of the remaining thirty-two (32) facilities.

The Department of Corrections surveyed their facilities to gather data on building numbers and types, construction classifications, water supplies and accessibility. The Department of Fire Programs surveyed the fire departments to gather data on the apparatus and equipment, fire fighter personnel and other resources available for local response.

Information from these surveys was reviewed by a group of executive fire officers, selected for their experience and expertise, as a means of validating the data collection process and evaluation criteria.

CORRECTIONS FACILITIES DATA:

Each correctional facility provided detailed information on building sizes, uses, combustibility, engineered fire protection, accessibility, and special hazards or security. In reviewing this information, it became obvious that each facility presented considerations unique to that facility and that these factors caused standard operating procedures to be necessarily different between facilities.

The most significant informational elements included widely divergent inmate population figures which equated to life-risk factors and security measures which, under all circumstances, restricted normal fire fighting and rescue operations. It was impossible to develop a model which accurately illustrated the common correctional facility.

An overall pattern of sprinkler or standpipe system installations was evident in newer structures. There were no organized fire brigades identified. Staff personnel are

trained to use portable fire extinguishers to suppress incipient stage fires and concentrate on the evacuation and control of inmates during fire emergencies.

Procedures for notifying local authorities of an emergency relied on telephone communications and were found to be generally uniform for specific types of facilities. Corrections officials routinely engage in pre-planning activities with local fire authorities to establish standard response and operating procedures for emergency situations.

FIRE SERVICE DATA:

The thirty-five (35) fire departments identified in correctional facilities data were sent information requests and twenty-eight (28) replied. Of the 28 responses, two were from municipal fire departments with full-time, salaried personnel; two were from county fire departments with a combination of salaried and volunteer personnel; and, twenty-four (24) were from all volunteer fire departments. In the latter case, some volunteer units have county-wide administrative staff support to coordinate the several independent units. Fire protection ranged from complete, full-time service in urban areas to limited volunteer service in rural communities.

The most significant informational elements included fire fighting apparatus and personnel availability. Apparatus features were indicative of mechanical and equipment capabilities but did not document proper maintenance or serviceability. The numbers of fire fighters available during specified time periods followed patterns which were uniform for each unit type, size and geographical location. Volunteer units have significantly fewer personnel responding during the day time hours than at night. Two counties utilize multi-station alarms to provide greater numbers of fire fighters but this practice requires at least one unit to travel outside normal boundaries and leaves large areas unprotected for the duration of operations.

Response distances varied widely from as little as 1/4-mile to as much as sixteen miles. Municipal fire departments conformed to maximum allowable for local Insurance Services Office classifications. Rural fire departments were not located for ISO recognition although the majority would meet the distance requirements.

All but two of the fire departments responding to the survey have 911 telephone reporting systems. All departments have two-way radio communications between the dispatch center and mobile units and between on-scene mobile and portable units. All volunteer departments are alerted by centrally controlled radio monitors.

Fire suppression capabilities, beyond the initial response factors, are difficult to measure with any accuracy because each fire is different and each locality determines its own level of protection. Response criteria also varies with local policy; however, there are established practices which are generally acceptable as minimal performance capabilities for initial fire attack. These criteria are outlined in Appendix 1 and were used to evaluate capabilities and assign functional categories in this report.

SUMMARY:

Based on available information and established criteria, 22 (76%) local fire departments are fully capable of responding to correctional facilities located within their jurisdictions and mounting an initial fire attack within fifteen minutes of the sounding of an alarm. All units have fire apparatus and fire hose to perform the specified evolutions. Two fire departments (7%) lack master stream appliances but meet other response criteria. Five fire departments (17%) do not have sufficient numbers of fire fighters available to meet the response criteria.

The conclusion that all fire departments have the necessary fire apparatus applies only to a minimum number of vehicles with recognized pumping capacities. Fire apparatus serviceability depends on vehicle maintenance practices and each fire department establishes its own maintenance standards.

The availability of vehicles such as aerial apparatus and heavy rescue trucks was not a consideration in the study. The need for specialized apparatus at correctional facilities is questionable. Access to structures and maneuvering room is too restricted for normal aerial apparatus positioning and limited numbers of fire fighters preclude routine truck company operations.

Determinations made on fire fighter availability are based on the reported average number of volunteer personnel per alarm during specific time periods and only consider the primary or first response unit. All the fire departments surveyed have mutual aid agreements with neighboring fire departments to provide additional resources as needed but these resources are not applicable to timely initial fire attack operations.

The study and report were conducted and prepared by staff personnel in the Department of Corrections and the Department of Fire Programs.

APPENDIX 1

Commonwealth of Virginia
DEPARTMENT OF FIRE PROGRAMS

FIRE DEPARTMENT EVALUATION CRITERIA
FIRE SUPPRESSION OPERATIONS AT CORRECTIONAL FACILITIES

First Response and Initial Fire Attack

Minimum First Response Resources

- Located no more than 7 miles from facility and capable of arrival on scene within 15 minutes of alarm dispatch.
- Two (2) pumping engines.
- Four (4) firefighters per engine, arriving on or with apparatus.
- Multi-alarm system or mutual aid agreement for additional apparatus/personnel.
- Facility emergency plan in place.

Minimum Apparatus/Equipment Resources

- Apparatus shall be in operational condition with current Virginia State Motor Vehicle Safety Inspection stickers and capable of front-line service in fire suppression operations.
- Engines shall have at least 750 gpm pumping capacity and 500 gallon water tank capacity with hose beds and other design features which meet, as closely as possible, the NFPA 1901 requirements for motor fire apparatus.
- Engines shall carry the minimum standard complement of fire fighting tools and equipment outlined in NFPA 1901.
- Engines shall have sufficient lengths/sizes of fire hose to put initial fire attack supply lines and hand lines into operation for specified evolutions.
- Full protective gear and SCBA must be provided for each interior firefighter and officer expected to engage in fire attack operations.
- Sufficient breathing air cylinders shall be available to provide one (1) hour of air for each SCBA required.

Minimum Initial Fire Attack Capabilities

- Evolution 1: Layout 300-foot supply line(s) from a hydrant to an engine and deliver 400 gpm fire flow through two (2) 200-foot pre-connected attack lines (1½-inch) and one (1) 200-foot backup line (2½-inch).
- Evolution 2: Layout 300-foot supply line(s) from a hydrant to an engine and deliver 500 gpm through 300-foot hose lines to a master stream appliance.
- Evolution 3: Layout 300-foot supply line(s) from a hydrant to an engine and deliver 700 gpm flow through 200-foot hose lines to support a sprinkler or standpipe system.

(Developed 10/93 from NFPA 1410, Training Standard on Initial Fire Attack [1988], and NFPA 1901, Standard for Pumper Fire Apparatus [1991], to establish measurable and uniform fire response and suppression factors for comparison purposes.)

FUNCTIONAL CATEGORIES

FIRST RESPONSE

MANPOWER - APPARATUS - EQUIPMENT

Meets all criteria			A
Meets all criteria	-	Except Manpower	B
Meets all criteria	-	Except Equipment	C
Does not neet criteria			D

APPENDIX 3

FIRE DEPARTMENT DATA SUMMARY

CORRECTIONAL FACILITY	FIRE DEPARMENT	RESPONSE FACTORS									OPERATIONAL FACTORS							FUNCTIONA CATEGORY
			MANPOWER				PRE-PLAN		COMMUNI-CATIONS		APPARATUS				EQUIPMENT			
		Response Distance (Miles)	Career		Volunteer		Mutual Aid	Local	Dis-patch	Scene	Pump Capacity	Master Stream	Supply Hose	Pre-con. Hose	Turn-out Gear	SCBA	Spare Cylr.	
			AM	PM	AM	PM												
Augusta Corr. Ctr.	Craigsville VFD	3			8	9	Yes	Yes	Yes	Yes	1750	Yes	Yes	Yes	Yes	Yes	Yes	A
Cold Spg.s CU#10	Stuarts Draft VFD	9			7	8	Yes	Yes	Yes	Yes	2250	Yes	Yes	Yes	Yes	Yes	Yes	A
Bland Corr. Ctr.	Bland Co. VFD	16			11	15	Yes	Yes	Yes	Yes	1750	Yes	Yes	Yes	Yes	Yes	Yes	A
Botetourt CFU #25	Troutville VFD	3			8	14	Yes	Yes	Yes	Yes	1250	Yes	Yes	Yes	Yes	Yes	Yes	A
Brunswick Corr. Ctr.	Lawrenceville VFD	2			15	13	Yes	Yes	Yes	Yes	1750	Yes	Yes	Yes	Yes	Yes	Yes	A
Keen Mtn. Corr. Ctr.	No Response																	
Buckingham Corr. Ctr.	No Response																	
Dillwyn Corr. Ctr.	No Response																	
Rustburg Corr. Ctr.	Rustburg VFD	2 1/2			8	16	Yes	Yes	Yes	Yes	1350	Yes	Yes	Yes	Yes	Yes	Yes	A
Caroline CU #2	Frog Level VFD	6			5	15	Yes	Yes	Yes	Yes	2250	Yes	Yes	Yes	Yes	Yes	Yes	B
Tidewater CU #2	No Response																	
St. Brides Corr. Ctr.	No Response																	
Indian Cr. Corr. Ctr.	No Response																	
Ch'Field Comm. CU #33	Chesterfield	4	30	30	2	4	Yes	Yes	Yes	Yes	2000	Yes	Yes	Yes	Yes	Yes	Yes	A

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		Response Distance (Miles)	MANPOWER				PRE-PLAN		COMMUNI-CATIONS		APPARATUS				EQUIPMENT			FUNCTIONAL CATEGORY
			Career		Volunteer		Mutual Aid	Local	Dis-patch	Scene	Pump Capacity	Master Stream	Supply Hose	Pre-con. Hose	Turn-out Gear	SCBA	Spare Cylr.	
			AM	PM	AM	PM												
Pocahontas Corr. Unit	Chesterfield	4	30	30	2	4	Yes	Yes	Yes	Yes	2000	Yes	Yes	Yes	Yes	Yes	Yes	A
White Pose CU #7	Stephens City VFD	6			10	20	Yes	Yes	Yes	Yes	4000	Yes	Yes	Yes	Yes	Yes	Yes	A
Dinwiddie CU #30	Ford VFD	1/4			3	15	Yes	Yes	Yes	Yes	2000	No	Yes	Yes	No	Yes	Yes	B - C
Halifax CU #23	South Boston VFD	4	2	2	12	31	Yes	Yes	Yes	Yes	1500	Yes	Yes	Yes	Yes	Yes	Yes	A
Pamunkey Farm	Hanover VFD	3			10	15	Yes	No	Yes	Yes	1950	Yes	Yes	Yes	Yes	Yes	Yes	A
Pat. Henery CU #28	No Response																	
Deep Meadow Corr Ctr	Fine Creek VFD	5			6	15	Yes	Yes	Yes	Yes	1450	Yes	Yes	Yes	Yes	Yes	Yes	A
VA Corr. Ctr. - Women	Goochland VFD	1 1/2			8	15	Yes	Yes	Yes	Yes	2500	Yes	Yes	Yes	Yes	Yes	Yes	A
James River Corr. Ctr.	Goochland VFD	5 1/2			8	15	Yes	Yes	Yes	Yes	2500	Yes	Yes	Yes	Yes	Yes	Yes	A
Powhatan Corr. Ctr.	Fine Creek VFD	7			6	15	Yes	Yes	Yes	Yes	1450	Yes	Yes	Yes	Yes	Yes	Yes	A
Greensville Corr. Ctr.	Jarrett VFD	3			8	15	Yes	Yes	Yes	Yes	2250	Yes	Yes	Yes	Yes	Yes	Yes	A
Mecklenburg Corr. Ctr.	Boydton VFD	3			10	20	Yes	Yes	Yes	Yes	1750	No	Yes	Yes	Yes	Yes	Yes	C
Baskerville CU #4	No Response																	
Nottoway Corr. Ctr.	Burkeville VFD	1 1/2			14	30	Yes	Yes	Yes	Yes	1750	Yes	Yes	Yes	Yes	Yes	Yes	A

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CORRECTIONAL FACILITY	FIRE DEPARMENT	RESPONSE FACTORS									OPERATIONAL FACTORS							FUNCTIONAL CATEGORY
			MANPOWER				PRE-PLAN		COMMUNI-CATIONS		APPARATUS				EQUIPMENT			
		Response Distance (Miles)	Career		Volunteer		Mutual Aid	Local	Dis-patch	Scene	Pump Capacity	Master Stream	Supply Hose	Pre-con. Hose	Turn-out Gear	SCBA	Spare Cylr.	
			AM	PM	AM	PM												
Chatham Corr. Ctr.	Chatham VFD	3 1/2			8	15	Yes	Yes	No	Yes	1450	Yes	Yes	Yes	Yes	Yes	Yes	A
Pulaski CU #15	Fairlawn VFD	2			10	15	Yes	Yes	Yes	Yes	1750	Yes	Yes	Yes	Yes	Yes	Yes	A
Haynesville CU #17	Richmond Co. VFD	6			15	30	Yes	Yes	Yes	Yes	2000	Yes	Yes	Yes	Yes	Yes	Yes	A
Harrisonburg CU #8	No Response																	
Appalachian CU	Honaker VFD	5			6	15	Yes	Yes	Yes	Yes	1750	Yes	Yes	Yes	Yes	No	No	B - C
Marion Corr. TC	No Response																	
Southampton R&C Ctr.	Capron VFD	5			5	10	Yes	Yes	Yes	Yes	2250	Yes	Yes	Yes	Yes	No	No	A
Stafford CU #21	Brooke VFD	3			3	5	Yes	Yes	Yes	Yes	2500	Yes	Yes	Yes	Yes	Yes	Yes	B
Staunton Corr. Ctr.	Staunton FD	2	7	7	15	25	Yes	Yes	Yes	Yes	2250	Yes	Yes	Yes	Yes	Yes	Yes	A
Tazewell CU #31	Clearfork VFD	6			6	12	Yes	Yes	No	Yes	1000	No	Yes	Yes	Yes	No	No	C
Wise CU #18	Coeburn VFD	3			4	14	Yes	Yes	Yes	Yes	2000	Yes	Yes	Yes	Yes	Yes	Yes	B

APPENDIX 4

Commonwealth of Virginia

DEPARTMENT OF FIRE PROGRAMS

State Correctional Facilities Fire Protection Resources Survey

Name of Fire Department _____ Date survey completed _____

Fire Department Mailing Address _____

Name of Chief _____ Phone no. _____

Name of Person Completing Survey _____ Phone no. _____

GEOGRAPHICAL INFORMATION

Please indicate distances, highway route numbers, and other factors which the fire department would encounter when making an emergency response to the state correctional facility in the locality.

Response route(s) (1) _____ (2) _____ (3) _____ (4) _____

Response distance is _____ miles. Estimated travel time from station to site is _____ minutes.

What are the geographical or topographical barriers (railroad crossings, school zones, bridges, narrow roads, hills, etc.) which could impede response time?

_____

_____

FIRE DEPARTMENT INFORMATION

Number of Responses Annually _____ Number Stations _____

	Paid	Volunteer	Combination	TOTAL
No. of Companies				
Total No. Personnel				
No. of Shifts/Platoons				
No. 24-hour On-duty Personnel				

Average No. Volunteers Per Response: 0600-1800 hours _____ 1800-0600 _____

Are firefighters covered by Workmen's Compensation Insurance? (Yes or No) ____

Mutual Aid Agreement(s) With: _____

Check the services which the Fire Department is equipped and trained to deliver:

☐ Emergency Medical Services ☐ Hazardous Materials Incidents ☐ Heavy or Specialized Rescue

Alarms Taken By/Dispatched From (Dispatch Center, Sheriff Office, etc.) _____

Is monitor service available for automatic fire detector/sprinkler systems? (Yes or No) ____

Is a 911 System Used? (Yes or No) ____ Does dispatch system have auxiliary power source? (Yes or No) ____

es communications system have auxiliary power source and back-up radio transmitter? (Yes or No) ____

Responders Notified By (Pagers, Station Alarms, Siren, etc.) _____

Radio Frequencies: Dispatch _____MHz Fireground _____MHz Other _____MHz

APPENDIX 4

FIRE APPARATUS INFORMATION

	PUMPERS AND TANKERS				AERIAL
Unit Designation					
Chassis Year & Make					
Approximate Gross Vehicle Weight					
Make of Pump					
GPM Pump Capacity					
Date of Last Pump Test					
Water Tank Capacity (Gallons)					
Supply Line Hose Size(s)					
Feet of Supply Hose Carried					
Hand Line Hose Size(s)					
Feet of Hand Line Hose Carried					
No. Pre-connected Hand Lines					
Check if apparatus has:					
2-way Mobile Radio					
Booster Line					
Deluge/Master Stream Device					
Elevated Master Stream					
Jet-dump Capability					
Portable Drafting Basin					
Hard Intake Hose					
Foam Concentrate					
Foam Application Equipment					
Indicate For Aerial Only:					
Ladder or Platform					
Tiller, Rear or Mid-ship Mount					
Telescoping or Articulating					
Maximum Working Height					
Total Feet of Ground Ladders					
Date Aerial Device Last Tested					

MISCELLANEOUS INFORMATION

No. SCBA in service _____ High or low pressure cylinders _____ No. spare cylinders _____

Does department have cascade or compressor to refill breathing air cylinders? (Yes or No) _____

Are firefighters furnished their own personal set of protective equipment? (Yes or No) _____

Commonwealth of Virginia

DEPARTMENT OF FIRE PROGRAMS

Correctional Facilities Survey

This survey is being conducted to determine the capability of local fire departments to respond to and operate at an emergency incident within state correctional facilities.

Name of Facility _____

Facility Mailing Address _____

FEATURE	STRUCTURE IDENTIFICATION											
	1	2	3	4	5	6	7	8	9	10	11	12
Please complete one column for each individual structure Section A - BUILDING PROFILE												
Height (no. floors)												
Square Footage Under Roof												
Type Construction: Wood Frame (combustible)												
Block/Masonry (non-combustible)												
Other (metal, etc.)												

APPENDIX 5

FEATURE	STRUCTURE IDENTIFICATION 1	2	3	4	5	6	7	8	9	10	11	12
Building Access from Paved Road/Street												
One side												
Two sides												
Three sides												
Four sides												
Heating/Cooking Utilities:												
Natural gas												
Oil												
Electric												
Other												
Population Average:												
Staff												
Inmates												
Inmate Housing Occupancy:												
Dormitory												
Single Cell												
Isolation												
Food Service Occupancy:												
Preparation												
Service												
Dining												
Refigerated Storage												
Range Hoods (yes or no)												

FEATURE	STRUCTURE IDENTIFICATION 1	2	3	4	5	6	7	8	9	10	11	12
Special Use Occupancy:												
Administration												
Clinical/Medical												
Cabinet/Woodworking Shop												
Education/Recreation												
Fabrication Shop												
Food Processing												
Laundry												
Machine Shop												
Paint/Body/Vehicle Repair Shop												
Print Shop												
Other												
Secured Storage Occupancy:												
Weapons												
Ammunition												
Explosives												
Flammables												
Other (specify												
Sprinkler System:												
Indicate Wet (W) or Dry (D) System												
Indicate Percent of Building Protected												
Fire Department Connection (yes or no)												
No Sprinkler System in Building												

FEATURE	STRUCTURE IDENTIFICATION 1	2	3	4	5	6	7	8	9	10	11	12
Standpipe System:												
Indicate Wet (W) or Dry (D) System												
Class I (2 1/2-in. - fire dept./brigade use)												
Class II (1 1/2-in - building occupant use)												
Fire Department Connection (yes or no)												
No Standpipe System in Building												
Alarm System:												
Smoke Detectors												
Heat Detectors												
Pull Stations												
Automatic Notification												
Local Fire Department												
On Site Only												
No Alarm System in Building												

Indicate Municipal (M) or Private (P) Supply	
Water Main Serving Facility:	
Indicate Gravity (G) or Pump (P) Feed	
Pipe Size (inches)	
Approximate Flow Capacity (GPM)	
Auxiliary Fire Pump (yes or no)	
Emergency Power for Pump (yes or no)	
On-site Storage Tanks:	
Number	
Minimum Capacity	
Fire Hydrants:	
Number	
Pipe Size	
Flow Capacity	

Trained Fire Brigade:	
Number of Staff	
Number of Inmates	
Check (one) intended functional level:	
Incipent Fire (fire extinguishers only)	
Exterior Fire Fighting Only	
Interior and Exterior Fire Fighting	
Emergency Operations Plans:	
Facility Evacuation Plan (yes or no)	
Reviewed by Local Fire Dept. (yes or no)	
Fire Response Established (yes or no)	
EMS Response Established (yes or no)	
Staging Area(s) Established (yes or no)	
Name and Location Fire Department:	

Section D - COMMENTS AND ADDITIONAL INFORMATION

Completed by _____ Title _____

Telephone No. (____)_____ Date _____